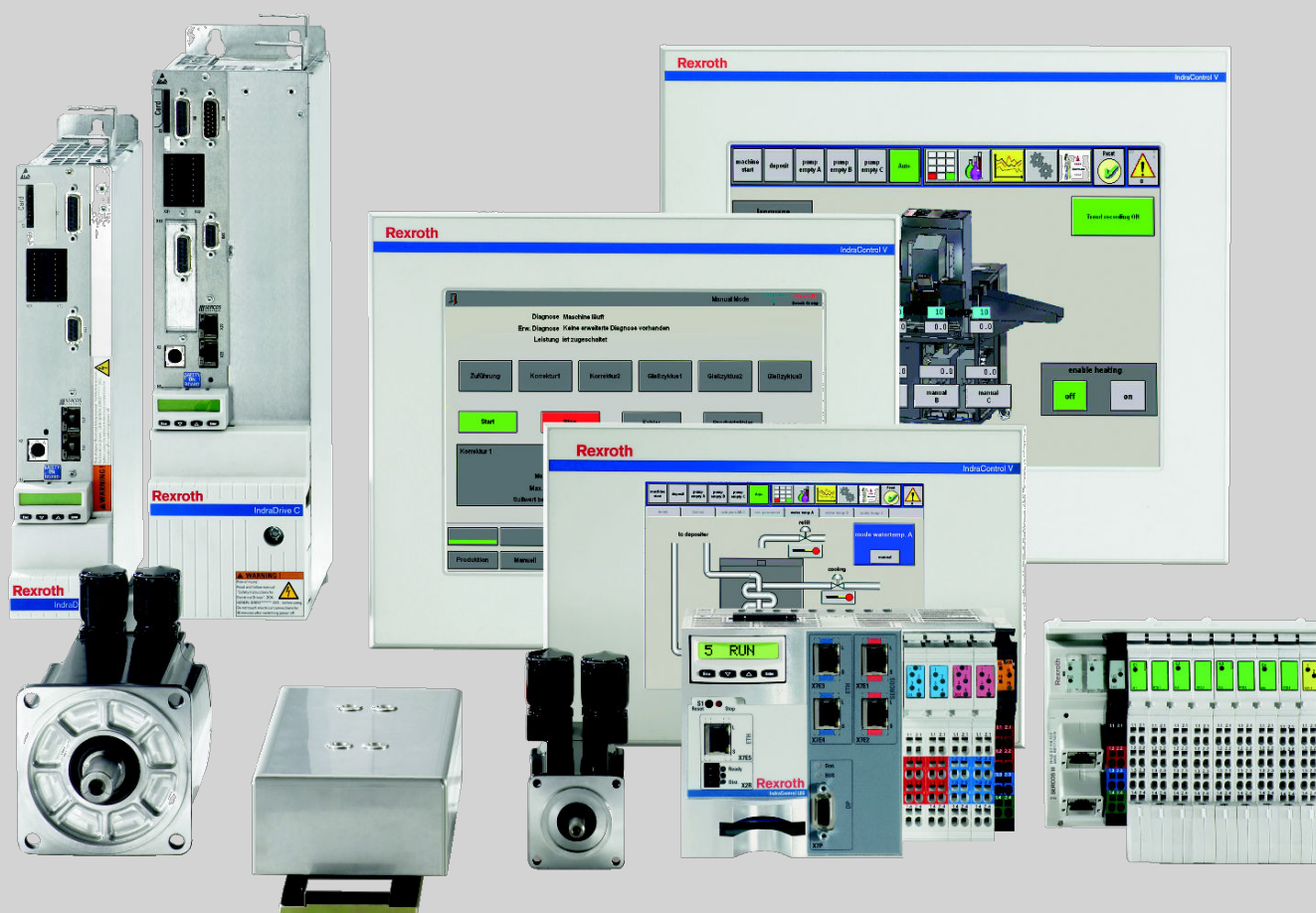


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1 About this documentation

Editions of this documentation

Edition	Release date	Note
01	2014-10	First edition for MLC/XLC 14VRS, only online help, only Robot Control V2
02	2015-10	Update: A-0-0002 , A-0-0009 , A-0-0011 , A-0-0021 , A-0-0024 , A-0-0052 , A-0-0064 , A-0-0151 , A-0-0204 , A-0-0622 , A-0-0623 , A-0-1000 , A-0-2710 , A-0-2740 , A-0-2790 , A-0-2791 , A-0-2805 , C-0-0009 , C-0-0023 , C-0-0037 , C-0-0041 , C-0-0050 , C-0-0110 , C-0-0111 , C-0-0408 , C-0-0415 et seq. , C-0-0450 et seq. , C-0-0465 et seq. , C-0-0485 , C-0-0506 , C-0-0511 , C-0-0578 , C-0-0701 , C-0-0957 , C-0-1051 , K-0-0009 et seq. , M-0-0005 , M-0-0009 , M-0-0021 , M-0-0132 ,
03	2016-01	A-0-2800 , A-0-2807 , A-0-2808 , C-0-0018 , C-0-0514 , C-0-0551 , C-0-0552 , C-0-1051 MDT/AT updated, new Access export format
04	2016-04	Update: A-0-0030 , A-0-0031 , A-0-0039 , A-0-0040 ; A-0-0021 , A-0-2601 , A-0-2605 , A-0-2610 , A-0-2611 , A-0-2615 , A-0-2620 , A-0-2807 , C-0-0023 , C-0-1009
05	2016-08	New: K-0-0095 , Update: C-0-1050 , C-0-0414 , C-0-0413 , C-0-0412 , C-0-0404 , C-0-0403 , C-0-0018 , A-0-2801 , A-0-0651 , A-0-0021
06	2017-01	New: A-0-0661 , A-0-0662 , A-0-0663 , A-0-2120 ; update: K-0-0095 , A-0-0007 , A-0-0103 , A-0-3009 , A-0-0651
07	2017-10	Update: K-0-0095 , K-0-0099 , C-0-0036 , C-0-0039 , C-0-0040 , C-0-0218 , C-0-0476 , C-0-0650 , C-0-0859 , C-0-0950 , C-0-0957 , A-0-0007 , A-0-0022 , A-0-0032 , A-0-0046 , A-0-0053 , A-0-0054 , A-0-0055 , A-0-0056 , A-0-0057 , A-0-0058 , A-0-0060 , A-0-0061 , A-0-0062 , A-0-0150 , A-0-0152 , A-0-0651 , A-0-0661 , A-0-2806
08	2018-05	New: K-0-0028 , K-0-0029 , K-0-0030 , K-0-0037 , K-0-0090 , C-0-0921 , C-0-0958 Update: K-0-0008 , C-0-0036 , C-0-0041 , C-0-0400 , C-0-0405 , C-0-0503 , C-0-0957 , C-0-1001 , C-0-1002 , C-0-1003 , C-0-1004 , C-0-1006 , C-0-1007 , A-0-0007 , A-0-0662 , A-0-0663
09	2018-10	Update: C-0-0039 , C-0-0040 , C-0-0050 , C-0-0218 , C-0-0400 , C-0-0415 , C-0-0416 , C-0-0417 , C-0-0957 , M-0-0006 , M-0-0024 , M-0-0405 , A-0-0008 , A-0-0200
10	2019-05	Update: A-0-2808
11	2019-08	Update: C-0-0036 , C-0-0403 , C-0-0957 , C-0-0958 , A-0-0056 , A-0-0059
12	2020-02	Update: A-0-0021 (Defdb00207865 resolved) Update: C-0-0036 (bit 23, note added)
13	2021-06	New: C-0-0508 , C-0-0509 Update: A-0-3009 (Defdb00205604 resolved) Update: C-0-0036 , C-0-1001 , C-0-1002

Tab. 1-1: Change Record

1.1 Validity of the documentation

This documentation describes the parameter system of the controls IndraLogic XLC L25, L45, L65 and IndraMotion MLC L25, L45, L65, XM21, XM22, VPx in 14VRS.

Target group *This documentation is intended for*

- System programmers and commissioners
- Technologists and process specialists

Required qualification: Individual who is able to assess the tasks assigned and to identify possible safety risks owing to qualification in the subject, knowledge and experience. The individual should also be familiar with the standards and regulations.

Application phases This documentation supports the user during the following phases

- Engineering
- Commissioning
- Operating and programming

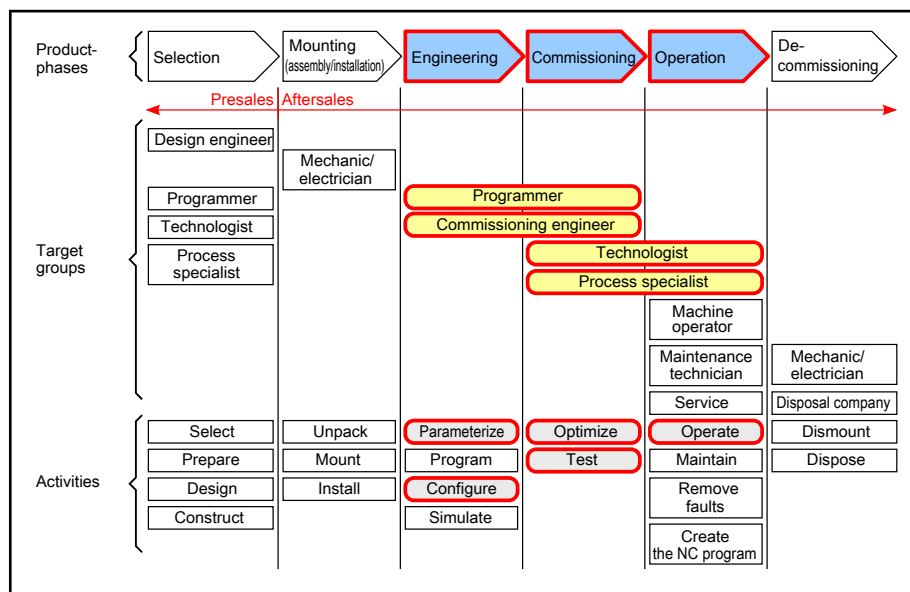


Fig. 1-1: Application phases

1.2 Documentation structure

The first part of the document describes the basics of the IndraLogic XLC / IndraMotion MLC parameter system.

Using parameters with PLC functions blocks is described on page 14.

Additionally, the PLC access to the parameter values is included:

- PLC access to parameter values with function block, page 15
- PLC access to parameter values via Shared Memory, page 16
- PLC access to parameter values function variable access on page 16 and
- PLC access to the parameter values with function variable access synchronously in the C2C link, page 17

An overview on the parameters is given sorted according to their purpose of usage.

Subsequently, the individual parameters are described arranged according to types.

- Axis parameters (A-parameters) on page 51 distinguished between axis types
- Control parameters (C-parameters), page 431
- Kinematic parameters (K-parameters), page 654
- Touch probe parameters (M-parameters), page 683
- Programmable limit switch parameters (N-parameters), page 701

- [Oscilloscope parameters \(O-parameters\), page 722](#)

Comparing A-/C- or S-/P-parameters follows on [page 729](#). Data is exchanged among them. The data exchange differs according to axis types and whether the respective motion calculation in the drive is performed in the drive or control.

For information on the Bosch Rexroth customer service help desk, refer to [Service and support on page 751](#).

1.3 Using safety instructions

1.3.1 Structure of the safety instructions

The safety instructions are structured as follows:

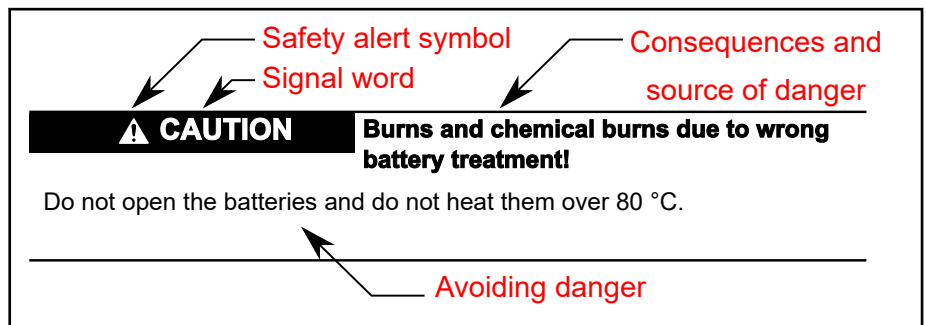


Fig. 1-2: Structure of the safety instructions

1.3.2 Explaining signal words and safety alert symbol

The safety instructions in this documentation contain specific signal words (danger, warning, caution, notice) and, if necessary, a safety alert symbol (according to ANSI Z535.6-2006).

The signal word draws attention to the safety instruction and indicates the risk potential.

The safety alert symbol (triangular safety reflector with exclamation marks), preceding the signal words Danger, Warning, Caution indicates hazards for persons.

⚠ DANGER

In case of non-compliance with this safety instruction, death or serious injury **will** occur.

⚠ WARNING

In case of non-compliance with this safety instruction, death or serious injury **can** occur.

⚠ CAUTION

In case of non-compliance with this safety instruction, minor or moderate injury can occur.

NOTICE

In case of non-compliance with this safety instruction, material damage can occur.

1.3.3 Symbols used

Pointers are displayed as follows:



This is a note.

Tips are displayed as follows:



This is a tip.

1.3.4 Explaining the signal alert symbol on the device



If this symbol is on your device, you have to observe the documentation on the device. The respective documentation informs on the type of hazard as well as the steps required to avoid this hazard.

1.4 Required and supplementing documentation XLC/MLC

Documentation titles with type codes and part numbers

System overview
IndraLogic XLC IndraMotion MLC 14VRS System Overview DOK-XLCMLC-SYSTEM**V14-PRRS-EN-P, R911341504 This documentation provides an overview on the possible hardware/software components of the automation systems IndraLogic XLC and IndraMotion MLC of the mentioned version. The documentation facilitates assembling a system.
First steps
IndraMotion MLC 14VRS First Steps DOK-MLC***-F*STEP**V14-CORS-EN-P, R911341517 This documentation describes the first steps of the IndraMotion MLC and the RobotControl. It includes the hardware and software prerequisites as well as the creation of a project.
IndraLogic XLC 14VRS First Steps DOK-XLC***-F*STEP**V14-CORS-EN-P, R911341489 This documentation describes the first steps of the IndraLogic XLC. It includes the hardware and software prerequisites as well as the creation of a project.
Rexroth IndraLogic XLC IndraMotion MLC 14VRS Project Conversion DOK-XLCMLC-PROCONV*V14-APRS-EN-P, R911341494 This documentation describes the project conversion of the IndraMotion MLC.

Tab. 1-3: XCL/MLC documentation overview - First steps

Engineering
IndraWorks 14VRS Software Installation DOK-IWORKS-SOFTINS*V14-CORS-EN-P, R911344286 This documentation describes the IndraWorks installation.
IndraWorks 14VRS Engineering DOK-IWORKS-ENGINEE*V14-APRS-EN-P, R911343566 This documentation describes the application of IndraWorks in which the Rexroth Engineering tools are integrated. It includes instructions on how to work with IndraWorks and how to operate the oscilloscope function.
IndraLogic XLC IndraMotion MLC 14VRS Function Description DOK-XLCMLC-FUNC****V14-APRS-EN-P, R911341700 This documentation describes wizards, context menus, dialogs, control commissioning, device configuration and functionalities of the IndraMotion MLC.

Tab. 1-4: XCL/MLC documentation overview - Engineering

Diagnostics and service
IndraLogic XLC IndraMotion MLC 14VRS Diagnostics DOK-XLCMLC-DIAG****V14-RERS-EN-P, R911341481 This documentation includes all control diagnostics implemented in the control systems IndraLogic XLC and IndraMotion MLC.
IndraLogic XLC IndraMotion MLC 14VRS Parameters DOK-XLCMLC-PARAM***V14-RERS-EN-P, R911341479 This documentation describes the parameters of the XLC/MLC systems as well as the interaction between parameterization and programming. It includes the axis parameters, control parameters, kinematic parameters, touch probe parameters and programmable limit switch parameters.
IndraLogic XLC IndraMotion MLC 14VRS Commissioning DOK-XLCMLC-STARTUP*V14-CORS-EN-P, R911341502 This documentation describes the steps to commission and service the IndraMotion MLC and IndraLogic XLC systems. It includes checklists for frequent tasks and a detailed description of the steps.
WebAssistant DOK-GENERL-WEB*ASSIST*-APRS-EN-P, R911381469 This documentation describes the WebAssistant. The WebAssistant is a webbased diagnostic tool used to access a control system via an Ethernet highspeed connection. The WebAssistant allows OEMs, end users and service engineers to access and to remotely diagnose a system. A PC with Internet Explorer version 11 or higher, Firefox version 45 or above or Google Chrome version 54 or above is required. The following control variants are supported: - IndraMotion MLC L45/L65/L75/XM21/XM22/XM42/VPx - IndraLogic XLC L45/L65/L75/VEP
IndraWorks IndraMotion Service Tool DOK-IWORKS-IMST*****-APRS-EN-P, R911341383 This documentation describes the IndraMotion Service Tool (IMST). IMST is a web-based diagnostic tool used to access a control system via an Ethernet high-speed connection. The IMST allows OEMs, end users and service engineers to access and remotely diagnose a system. The PC has to use at least Internet Explorer 8, Firefox 3.5 or a higher version. The following control variants are supported: - IndraMotion MLC L45/L65/L75/XM21/XM22/XM42/VPx - IndraLogic XLC L45/L65/L75

Tab. 1-5: XLC/MLC documentation overview - Diagnostics and service

Firmware
Rexroth IndraDrive MPx-20, Functions ¹⁾ DOK-INDRV*-MP*-20VRS**-AP01-EN-P, R911345608 This documentation describes all functional properties of the IndraDrive firmware in the variants MPB-20, MPM-20, MPC-20 and MPE-20.
Rexroth IndraDrive MPx-16 to MPx-20 und PSB, Parameters DOK-INDRV*-GEN1-PARA**-RERS-EN-P, R911328651 This documentation contains the descriptions of all parameters implemented in the firmware for drive controllers of the IndraDrive range. It supports the drive controller parameterization.
Rexroth IndraDrive MPx-16 to MPx-20 und PSB, Diagnostic Messages DOK-INDRV*-GEN1-DIAG**-RERS-EN-P, R911326738 This documentation contains the descriptions of all diagnostic messages implemented in the following firmware products: • Drive controller firmware variants MPx-16 to MPx-20 • PSB firmware variants for "HMu05" and "KMV03" type supply units • Firmware variants for "HMu01" type supply units It assists machine operators and installation programmers with troubleshooting.
Hardware
Rexroth IndraDrive Control Sections CSB02, CSE02, CSH02, CDB02 DOK-INDRV*-Cxx02*****-PRRS-EN-P, R911338962
Rexroth IndraDrive Cs Drive Systems with HCS01 DOK-INDRV*-HCS01*****-PRRS-EN-P, R911322210
Rexroth IndraDrive Mi Drive Systems with KCU02, KSM02, KMS02/03, KMV03 DOK-INDRV*-KCU02+KSM02-PRxx-EN-P, R911335703
Rexroth IndraDrive ML Drive Systems with HMu05 DOK-INDRV*-Hxx05*****-PRxx-EN-P, R911344279

1) In preparation
Tab. 1-6: Overview of documentations for drive controllers

PLC
IndraWorks 14VRS PLC Programming System IndraLogic 2G DOK-IWORKS-IL2GPRO*V14-APRS-EN-P, R911343571 This documentation describes the PLC programming tool IndraLogic 2G and its usage. It includes the basic use, first steps, visualization, menu items and editors.
IndraWorks 14VRS Basic Libraries IndraLogic 2G DOK-IL*2G*-BASLIB**V14-LIRS-EN-P, R911343920 This documentation describes the system-comprehensive PLC libraries.
IndraLogic XLC IndraMotion MLC 14VRS PLCopen Libraries DOK-XLCMLC-FUNLIB**V14-LIRS-EN-P, R911341491 This documentation describes the function blocks, functions and data types of the RIL_CommonTypes, ML_Base and ML_PLCOpen libraries for the IndraLogic XLC/IndraMotion MLC. It also includes the error reactions of function blocks.

Tab. 1-7: XCL/MLC documentation overview - PLC

Field buses
IndraWorks 14VRS Field Buses DOK-IWORKS-FB*****V14-APRS-EN-P, R911341485 This documentation describes the field bus and local periphery connections supported by the IndraLogic XLC, IndraMotion MLC and IndraMotion MTX systems. The focus of this documentation is on the configuration, parameterization, commissioning and the diagnostics of the different periphery connections. This documentation is the basis for the online help.
IndraWorks 14VRS Field Buses Libraries DOK-IWORKS-FB*LIB**V14-LIRS-EN-P, R911343575 This documentation describes the field bus libraries: RIL_ProfibusDP_02, RIL_ProfibusDP Slave, RIL_ProfinetIO, RIL_ProfinetIODevice, RIL_EtherNetIPAdapter, RIL_MappingList, RIL_SERCOSIII, RIL_Inline including their diagnostics and error reactions of the function blocks.
Rexroth IndraWorks 12VRS FDT Container DOK-IWORKS-FDT*CON*V12-APRS-EN-P, R911334398 This documentation describes the IndraWorks FDT Container functionality. It includes the activation of the functionality in the project and working with DTMs.
Sercos System Manual for I/O Devices DOK-CTRL-ILS3*****-APxx-EN-P, R911333512 This documentation describes the configuration, parameterization, commissioning and diagnostics of I/O devices with a Sercos interface.

xx

Corresponding edition

Tab. 1-8:

XCL/MLC documentation overview - Field buses

HMI
IndraWorks 14VRS HMI DOK-IWORKS-HMI*****V14-APRS-EN-P, R911343569 This documentation describes the functions, configuration and operation of the user interfaces IndraWorks HMI Engineering and IndraWorks HMI Operation.
IndraWorks 14VRS WinStudio 7.4 DOK-IWORKS-WINSTUD*V14-APRS-EN-P, R911341585 This "User Manual and Technical Reference Book" facilitates working with the "Rexroth WinStudio" software for optimal results. This document provides technical information and step-by-step instructions to create web-enabled HMI/SCADA programs.
Rexroth IndraLogic XLC IndraMotion MLC 14VRS HMI Connection DOK-XLCMLC-HMI*****V14-APRS-EN-P, R911341497 This documentation describes the visualization systems supported by the IndraLogic XLC and IndraMotion MLC and their connection.

Tab. 1-9:

XCL/MLC documentation overview - HMI

Technology
IndraLogic XLC IndraMotion MLC 14VRS Generic Application Template DOK-XLCMLC-TF*GAT**V14-APRS-EN-P, R911341487 This documentation provides a structured template to the IndraLogic PLC programmer. This template can be used to add and edit the PLC programming code. It includes the template, the template wizard and example applications.
IndraMotion MLC 14VRS Technology Libraries DOK-MLC***-TF*LIB**V14-LIRS-EN-P, R911341511 This documentation describes the function blocks, functions and data types of the "ML_TechInterface.library", "ML_TechMotion.library", "RMB_TechCam.library" and "ML_TechBase.library". It also includes libraries for the winder functionality, register controller functionality and CrossCutter functionality.
IndraWorks 14VRS Energy Efficiency Management DOK-IWORKS-4EE*****V14-APRS-EN-P, R911339229 This documentation describes the HMI connection of the energy management system and the function blocks, functions and data types of the "RIL_4EE" library. The documentation also includes the error reactions of the function blocks.
Rexroth IndraMotion MLC 14VRS RegisterControl (Library) DOK-MLC***-REGI*CO*V14-LIRS-EN-P, R911341509 This documentation describes the inputs and outputs of the individual function blocks and provides notes on their use.
IndraMotion MLC 14VRS RegisterControl (Application Description) DOK-MLC***-REGI*CO*V14-APRS-EN-P, R911341507 This documentation describes the application of the integrated register control for a rotogravure printing machine. The components of the mark stream sensor, the HMI application and the error recovery options are described. This instruction provides information on how to operate the register control, react to errors and query diagnostics. This documentation is written for machine setters and machine operators.
Rexroth IndraMotion MLC 14VRS Winder Function Application DOK-MLC***-TF*WIND*V14-APRS-EN-P, R911341513 This application-related system documentation describes the application of the winder technology functions.
Rexroth IndraWorks CamBuilder 13VRS DOK-IWORKS-CAMBUIL*V13-APRS-EN-P, R911336291 This documentation describes the basic principles and operation of the CamBuilder, the cam editing tool.
IndraMotion MLC 14VRS Robot Control V2 DOK-MLC***-ROCO****V14-RERS-EN-P, R911341588 This documentation provides information about the Robot Control V2. The focus is on PLCopen programming. The program structure, variables, functions, motion statements and the required system parameters are described. This documentation also includes the description of the "ML_Robot" library. Robot Control V2 is supported by a kinematic interface. The components of this interface are described in the "ML_KinTech" library.

Tab. 1-10: XCL/MLC documentation overview - Technology

Open Core Engineering - OCE
IndraLogic XLC IndraMotion MLC 14VRS First Steps MLPI (online help) DOK-XLCMLC-MLPI****V14-CORS-EN-E, R911341033 This document describes the installation and the commissioning of the MLPI interface.
IndraLogic XLC IndraMotion MLC 14VRS Automation Interface (online help) DOK-XLCMLC-AUT*INT*V14-APRS-EN-E, R911341499 This documentation describes the script-based access to IndraWorks project data via the interface of the Automation Interface.

Tab. 1-11: XCL/MLC documentation overview - Open Core Engineering - OCE

SafeLogic
IndraWorks SafeLogic 14VRS First Steps DOK-IWORKS-SL*STEP*V14-CORS-EN-P, R911341520 This documentation describes the initial commissioning of the Safety function module and its external Safety periphery. Taking the example of a project, all required steps to commission a simple Safety application are executed.
IndraLogic XLC IndraMotion MLC 14VRS SafeLogic System Overview DOK-XLCMLC-SL**SYS*V14-PRRS-EN-P, R911341696 This documentation describes the project planning, configuration, creation and commissioning of safety-related devices.
IndraWorks 14VRS SafeLogic - Project Configuration, Version 1.2.0.0. DOK-IWORKS-SL**PRJ*V14-APRS-EN-P, R911341694 This documentation describes the configuration of Safety applications.
IndraControl CFL01.1-F1 Safety Function Module DOK-CONTRL-SL**FM*****-ITRS-EN-P, R911336576 This documentation is provided with the hardware and describes the commissioning, the installation, the decommissioning and disposal of the hardware.

Tab. 1-12: XCL/MLC documentation overview - SafeLogic

Hardware
Rexroth IndraControl L45/L65/L85 Control DOK-CONTRL-ICL45L65L85-PRxx-EN-P, R911332116 This documentation describes the IndraControl L45/L65/L85 controls.
Rexroth IndraControl Lxx 14VRS Function Modules DOK-CONTRL-FM*LXX**V14-APRS-EN-P, R911341583 This documentation describes all function modules of the Lxx controls including engineering and diagnostics.
IndraControl XM21, XM22 Controls DOK-CONTRL-IC*XM2*****-ITRS-EN-P, R911340667 This documentation describes the IndraControl XM21/XM22 controls.
IndraControl XM42 Controls DOK-CONTRL-XM4X*CTRL**-ITRS-EN-P, R911345566 This documentation describes the IndraControl XM42 controls.
IndraControl XFE 01.1 Extension Modules Profibus, RT-Ethernet, Sercos, CAN DOK-CONTRL-XFE**EXTMOD-ITRS-EN-P, R911345570 This documentation describes all extension modules of the XM controls.

xx Corresponding edition
Tab. 1-13: XCL/MLC documentation overview - Hardware

Hydraulics
Rexroth IndraMotion MLC 14VRS Hydraulic Functions DOK-MLC***-TF*HMOT*V14-LIRS-EN-P, R911341907 This documentation describes the function blocks, functions and data types of the MH_TechHydrBase and MH_TechHydrMotion libraries. The documentation also includes the error reactions of the function blocks.
Rexroth IndraLogic XLC IndraMotion MLC 14VRS Sequential Programming DOK-XLCMLC-SEQPROG*V14-LIRS-EN-P, R911341909 This documentation describes the sequential programming options, also when using GAT, and the MH_HydrControlProg library.

Tab. 1-14: XCL/MLC documentation overview - Hydraulics

1.5 Names and abbreviations

Term	Explanation
IndraLogic XLC	Compact PLC system with integrated Motion functionality, basic function package PLC
IndraMotion MLC	Compact Motion Logic systems with Motion, Robot and Logic Control functionalities according to function packages
IndraWorks Engineering Framework	Configuration and commissioning tool by Bosch Rexroth
IndraDrive	Drive control device
Hydraulic-Drive	Hydraulic drive control section
SercosDrive	Drive control section with parameter block according to the Pack Profile
Wizard	Wizard guiding through several dialogs for an ergonomic data input
IEC	International Electrotechnical Commission (Standardization platform for electrotechnical engineering)
OEM	Original Equipment Manufacturer
OM	Operating mode
PM	Parameterization mode
Sercos	Sercos (SErial Realtime COmmunication System) interface is a world-wide standardized interface for the communication between controls and drives
XML	Extensible Markup Language (XML). It is a markup language to represent hierarchical structured data as text data

Tab. 1-15: Terms and abbreviations

2 XLC/MLC parameter description, general information

2.1 Interaction between parameters and function blocks

The basic idea of the PLCopen is to facilitate the PLC access to the controlled drives to control motion processes for the user **according to the PLC possibilities and its programming philosophy**.

From the of the **drive technology point of view** (Motion), data assigned to a drive/an axis such as actual values, limit values, command values and controller parameters is named as **parameters** and provided according to the parameter application (read-only and/or write access). The data type of the respective parameter is specified by the Sercos standard for example.

Also refer to

- [Axis parameters \(A-parameters\), page 51](#)
- [Control parameters \(C-parameters\), page 431](#)
- [Kinematic parameters \(K-parameters\), page 654](#)
- [Touch probe parameters \(M-parameters\), page 683](#)
- [Programmable limit switch parameters \(N-parameters\), page 701](#)
- [Oscilloscope parameters \(O-parameters\), page 722.](#)

Seen from the **PLC technology point of view**, it is about the **variables** representing the content of the parameters based on a data type allowed in EN 61131-3.

Typical PLC equivalents of the
Motion data formats

	1ByteVar	2Byte	2ByteVar	4Byte	4ByteVar	8Byte	8ByteVar
BINARY		WORD	ARRAY of WORD	DWORD	ARRAY of DWORD	LWORD	ARRAY of LWORD
UINT_HEX		UINT	ARRAY of UINT	UDINT	ARRAY of UDINT	ULINT	ARRAY of ULINT
UINT_DEC		UINT	ARRAY of UINT	UDINT	ARRAY of UDINT	ULINT	ARRAY of ULINT
INT_DEC		INT	ARRAY of INT	DINT	ARRAY of DINT	LINT	ARRAY of LINT
TEXT	STRING						
UINT_IDN		WORD	ARRAY of WORD				
MLC_IDN						MB_IDN	ARRAY of MB_IDN
FLOAT				REAL	ARRAY of REAL		
DOUBLE						LREAL	ARRAY of LREAL

Tab. 2-1: PLC use of the MLC data formats

XLC/MLC parameter description, general information



With the upgrade from MLC 04VRS to MLC/XLC 09VRS, the data length of the parameter ID "MLC_IDN" increased from 32 bits to 64 bits.

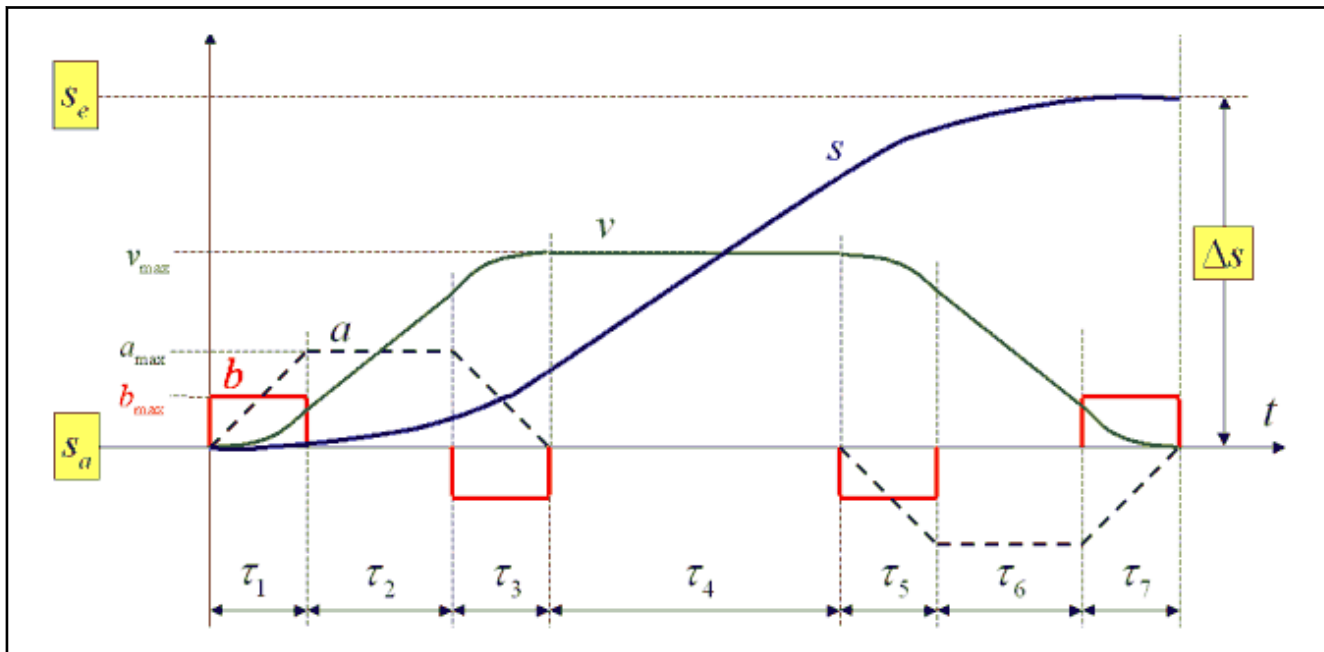


With FLOAT (REAL) variables, the "double precision" calculation options are used for L45/L65/L75 controls.

Due to the processor, this approach is not possible for L25 controls. Therefore, it is calculated with the "single precision" method.

Using parameters with PLC functions blocks

The value transfer from the PLC to the axis/drive and from the axis/drive to the PLC is now described in detail:



v_{max} Maximum velocity value specified by the user
 a_{max} Maximum acceleration value specified by the user
 b_{max} Maximum jerk value specified by the user

Fig. 2-1: Motion from point S_a to point S_e

The PLC is to control the motion from point S_a to point S_e .

The maximum values for velocity, jerk, acceleration and deceleration are required as additional information. They have to be lower than the maximum values allowed for the drive.



The limitation of the values permitted for the drive is always automatically ensured.

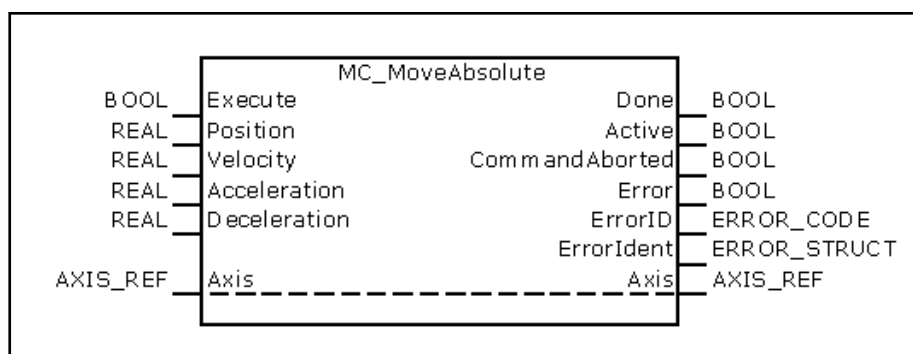


Fig. 2-2: *PLCopen function block MC_MoveAbsolute*

At a rising edge at the "Execute" input, the input values at the function block instance are applied to the "command" parameters:

- Position: [A-0-2200](#), Command position
- Velocity: [A-0-2202](#), Command velocity
- Acceleration: [A-0-2203](#), Command acceleration
- Deceleration: [A-0-2204](#), Command deceleration

The "[A-0-2200](#), Command position" is copied to "[A-0-2201](#), Target position" at **MC_MoveAbsolute**.



"[A-0-2205](#), Command jerk" belongs to this parameter set. As an alternative, this parameter value is applied by the parameter "[A-0-0216](#), Jerk" (standard jerk).

The complete motion process is calculated

- after copying the values from the inputs of the function block instance to the A-parameters of the axis and then to the S- and P-parameters of the drive at IndraDrive or HydraulicDrive at Sercos interfaces on the drive.
- or -
- after copying the values from the inputs of the function block instances to the A-parameters of the axis on the control. Subsequently, the command values are transferred to the drives.

PLC access to parameter values
with function block

The PLC function blocks M*_Read...parameters and M*_Write...parameters permit reading parameter values or - under certain conditions - writing to parameters (parameter attribute "Editable").

The variable name derives from the name of the respective parameter:

Example: Parameter [A-0-0100](#) has the parameter number **FP_A_0_0100**,

Editable: READ_ONLY.



Instead of using the constants **FP_x_...**, the following function of the RIL_SercosIII library can be used to generate the value for the "ParameterNumber" input:

- IL_SIIStringToldn
- IL_SIIIElementsToldn

XLC/MLC parameter description, general information

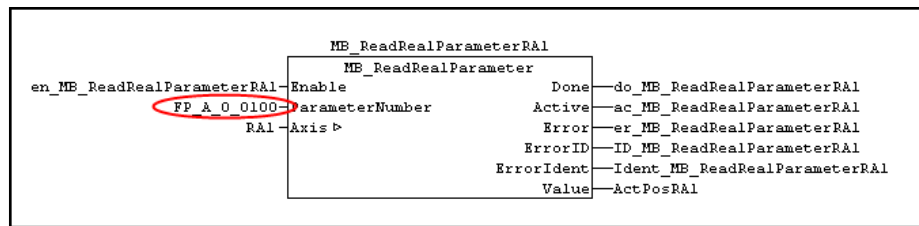


Fig. 2-3: Parameter access via function block (FBD editor)



The function blocks read via the service channel and require several PLC cycles.

PLC access to parameter values via Shared Memory

The read-only access to data in the shared memory can be carried out via the following equivalent statements (ST).

Read-only access to data in the shared memory:

```

MyVar:= AxisData[MyAxisName.AxisNo].FlexProfil_Active;
MyVar:= AxisData[Index].FlexProfil_Active;
MyVar:= AxisData[1].FlexProfil_Active;

```

The write access to data in the shared memory can be carried out via the following equivalent statements (ST).

Writing end Access to data in the shared memory:

```

AxisData[MyAxisName.AxisNo].dwFlexProfileEventControlBits_q:= MyVar;
AxisData[Index].dwFlexProfileEventControlBits_q:= MyVar;
AxisData[1].dwFlexProfileEventControlBits_q:= MyVar;

```

The IntelliSense of a variable in the shared memory contains the parameter ident number and if necessary the bit, access possibilities (RD or RW), parameter names and bit description.

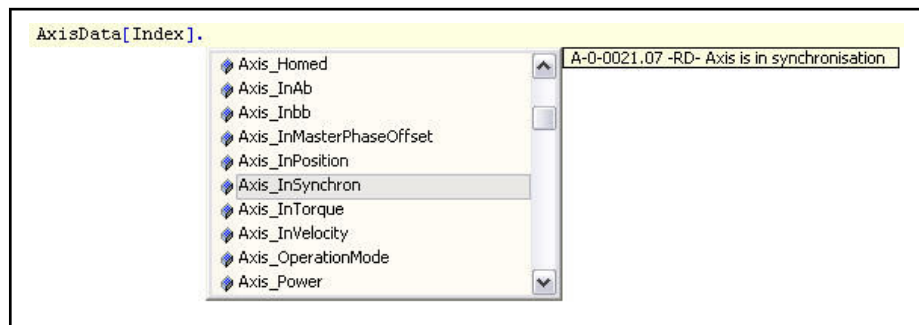


Fig. 2-4: IntelliSense of a variable in the shared memory



Variables of an axis in the shared memory can also be accessed via an user-defined designation by using references.

User-defined Naming by referencing:

```

VAR
  MyAxisName: REFERENCE TO ML_AXISDATA_SM:= AxisData[MyAxisName.AxisNo];
END_VAR

MyVar:= MyAxisName.FlexProfil_Active;
MyAxisName.dwFlexProfileEventControlBits_q:= MyVar;

```

PLC access to parameter values function variable access

The read-only access to a function variable can be executed via the following equivalent statements (ST) if the respective method is provided with a GET property (READ).

Read-only access to a function variable

```
MyVar:= DV_Axis[MyAxisName.AxisNo].A_0_0004;
MyVar:= DV_Axis[Index].A_0_0004;
MyVar:= DV_Axis[1].A_0_0004;
```

The write access to a function variable can be executed via the following equivalent statements (ST) if the respective method is provided with a SET property (WRITE).

Write access to a function variable

```
DV_Axis[MyAxisName.AxisNo].A_0_0216:= MyVar;
DV_Axis[Index].A_0_0216:= MyVar;
DV_Axis[1].A_0_0216:= MyVar;
```

The IntelliSense of a function variable contains the parameter ident number, the access options (READ or READ/WRITE), the parameter names as well as the method to determine the current access status.

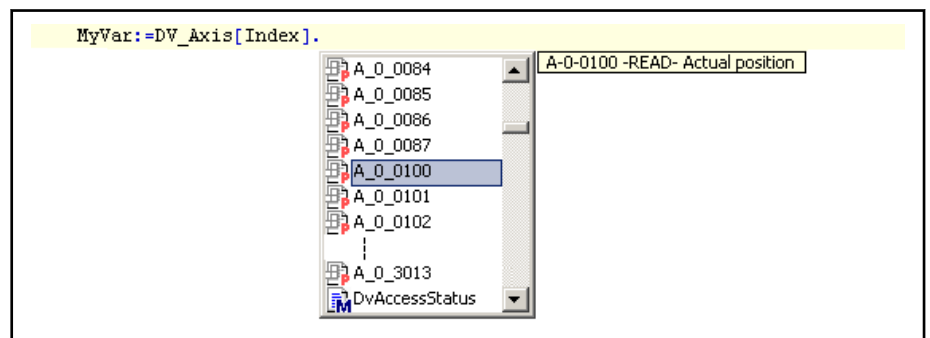


Fig. 2-5: Function variable access using the IntelliSense functionality



Function variables of an axis can also be accessed via an user-defined designation by using references.

Access via REFERENCE_TO

```
VAR
  MyAxisName: REFERENCE TO ML_DirectVarAxis:= DV_Axis[MyAxisName.AxisNo];
END_VAR
```

```
MyVar:= MyAxisName.A_0_0004;
MyAxisName.A_0_0216:= MyVar;
```

PLC access to the parameter values with function variable access synchronously in the C2C link

The read-only access to a function variable synchronously in the C2C link can be executed via the following equivalent instructions (ST) if the respective method is equipped with a GET property (READ).

Program:

```
MyVar:= GV_LinkAxis[CtrlNo, AxisNo].A_0_0021;
MyVar:= GV_LinkAxis[0, 1].A_0_0021;
```

The indexed, blocked access with CtrlNo equal to LOCAL_CTRL accesses the synchronized operating data of the local control located in the C2C link. This access is equivalent to the indexed, blocking access with CtrlNo equal to C-0-0031.

The write access to a function variable synchronous in the C2C link is not supported.

The IntelliSense of a function variable synchronous in the C2C variable contains the parameter ident number, the access possibilities (READ or READ/ WRITE), the parameter names as well as the method to determine the current access state.

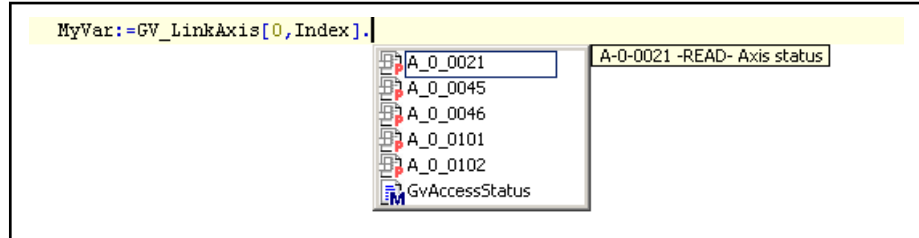


Fig. 2-6: Function variable access synchronous in the C2C link using the IntelliSense functionality



Function variables of an axis can also be accessed via an user-defined designation by using references.

Access via REFERENCE_TO

```
VAR
  MyAxisName: REFERENCE TO ML_GlobalVarAxis:= GV_LinkAxis[CtrlNo, AxisNo];
END_VAR

MyVar:= MyAxisName.A_0_0021;
```

2.2 Parameter types

Different parameter types are available for the controls IndraLogic XLC L25, L45, L65 with onboard Sercos III bus, IndraMotion MLC L25, L45, L65, L75 and IndraMotion MLC XM2*. For the IndraMotion MLC XM2*, the parameters required by the activated function packages are available.

The parameters as a whole are named system parameters.

C-parameters	The C-parameters describe the control function. Currently, one C-parameter is available in the IndraMotion system.
A-parameters	The A-parameters describe the behavior of the individual axes running at the Sercos bus. Thus, there is one such parameter set for each axis. Since all parameters are not supported by each axis type, the validity range is specified in the parameter descriptions.
K-parameters	K-parameters describe the kinematic functions. The K-parameters exist only once for each kinematics.
M-parameters	M-parameters describe the touch probe functions. One M-parameter is provided in each touch probe function.
N-parameters	N-parameters describe the programmable limit switch functions. A programmable limit switch requires a function module of type PLS (CFL01.1-N1) that matches an IndraControl CML25/ 45 /65 and a Sercos basic cycle as time base.
O-parameters	O-parameters describe the oscilloscope functions. One O-parameter is provided once in each oscilloscope function.
S-parameters	The S-parameters correspond to the default parameters specified in the Sercos interface standard.

P-parameters The P-parameters are manufacturer-specific and product-specific parameters defined according to the Sercos interface standard.

Each system parameter is identified by its unique ID number.

The description of the parameters is divided into two sections:

General description

This section contains important information on individual parameters, their amount of values as well as presetting notes.

Attribute description

The characteristic values and properties of the parameters are listed in a table. They are required to provide a complete description, but the detailed information is often not required.

3 Overview table

3.1 Overview: User-configurable data container, A-parameters

Organize the transfer of command values and actual values between the control and the individual drives (IndraDrive/HydraulicDrive/SercosDrive) via the following A-parameters.

User-defined command values

A-0-0500 , Configuration of user-defined command value A
A-0-0501 , Container of user-defined command value A
A-0-0502 , Configuration of user-defined command value B
A-0-0503 , Container of user-defined command value B
A-0-0504 , Configuration of user-defined command value C
A-0-0505 , Container of user-defined command value C
A-0-0506 , Configuration of user-defined command value D
A-0-0507 , Container of user-defined command value D
A-0-0508 , Configuration of user-defined command value E
A-0-0509 , Container of user-defined command value E
A-0-0510 , Reserved
A-0-0511 , Reserved

User-defined actual values

A-0-0520 , Configuration of actual user-defined value A
A-0-0521 , Container of actual user-defined value A
A-0-0522 , Configuration of actual user-defined value B
A-0-0523 , Container of actual user-defined value B
A-0-0524 , Configuration of actual user-defined value C
A-0-0525 , Container of actual user-defined value C
A-0-0526 , Configuration of actual user-defined value D
A-0-0527 , Container of actual user-defined value D
A-0-0528 , Configuration of actual user-defined value E
A-0-0529 , Container of actual user-defined value E
A-0-0530 , Configuration of actual user-defined value F
A-0-0531 , Container of actual user-defined value F

User-defined bit command values

A-0-0540 , Configuration of user-defined command value, bit A
A-0-0541 , Configuration of user-defined command value, bit number A
A-0-0542 , User-defined command value, bit number A
A-0-0543 , Configuration of user-defined command value, bit B

Overview table

A-0-0544 , Configuration of user-defined command value, bit number B
A-0-0545 , User-defined command value, bit number B
A-0-0546 , Configuration of user-defined command value, bit C
A-0-0547 , Configuration of user-defined command value, bit number C
A-0-0548 , User-defined command value, bit number C
A-0-0549 , Configuration of user-defined command value, bit D
A-0-0550 , Configuration of user-defined command value, bit number D
A-0-0551 , User-defined command value, bit number D

User-defined actual bit values

A-0-0560 , Configuration of actual user-defined value, bit A
A-0-0561 , Configuration of actual user-defined value, bit number A
A-0-0562 , Actual user-defined value, bit number A
A-0-0563 , Configuration of actual user-defined value, bit B
A-0-0564 , Configuration of actual user-defined value, bit number B
A-0-0565 , Actual user-defined value, bit number B
A-0-0566 , Configuration of actual user-defined value, bit C
A-0-0567 , Configuration of actual user-defined value, bit number C
A-0-0568 , Actual user-defined value, bit number C
A-0-0569 , Configuration of actual user-defined value, bit D
A-0-0570 , Configuration of actual user-defined value, bit number D
A-0-0571 , Actual user-defined value, bit number D

Lists

A-0-0596 , List of freely configurable parameters in the MDT
A-0-0597 , List of freely configurable parameters in the AT
A-0-0598 , List of configurable parameters in signal control word
A-0-0599 , List of configurable parameters in signal status word

3.2 Data exchange between control and drive

3.2.1 General information on data exchange

The control and the drives exchange data via the Sercos bus using

- the master data telegram (control ⇒ drives) and the
- Drive telegrams (drive ⇒ control)

Find an overview on the information available in the individual parameters in the following.

It is distinguished between a

- Interpolation in the drive (functions are calculated in the drive; available for IndraDrive MPx03/ HydraulicDrive and higher) and

- Interpolation in the control (functions are calculated in the control; IndraDrive/HydraulicDrive with interpolation in the control, SercosDrive acc. to PackProfile).



Every parameter may be transferred only **once** within one telegram.

It is not allowed to transfer a parameter and a bit from that parameter.

3.2.2 MLC-MDT configuration, IndraDrive/HydraulicDrive, interpolation in the drive

The interface is provided with a total of 50-byte data containers. The first four containers have already been assigned (2 bytes/2 bytes/2 bytes/4 bytes):

- S-0-0134, Master control word
- S-0-0368, Data container addressing
- S-0-0145, Signal control word
- P-0-0053, Master axis position.

The five containers, each of 4 bytes, whose content depends on the function (depending on the function block or operation mode) operating - according to the address stored in S-0-0368, Data container addressing - in multiplex operation.

The telegram is completed by five 4-byte containers freely configurable by the user ([A-0-0500](#) / [A-0-0501](#) ... [A-0-0508](#) / [A-0-0509](#); List of possible parameters: [A-0-0596](#)). The parameters [A-0-0510](#) / [A-0-0511](#) are reserved due to compatibility reasons.

MUX-Container									S-0-0360	S-0-0450	S-0-0451	S-0-0452	S-0-0453
MUX-Config List									S-0-0370	S-0-0490	S-0-0491	S-0-0492	S-0-0493
Layer	Commands (Actual FB)	Command Channel	Drive Mode	Layer dependency	2 Byte	2 Byte	2 Byte	4 Byte	4 Byte Internal	4 Byte	4 Byte	4 Byte	4 Byte
Layer 1	all after transmitting the data to the drive	No		Fix	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter
Layer 2	MC_TorqueControl	Main	0x0001 Torque control	Closed Loop only	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0080 Torque/force command value	S-0-0822 Torque/Force ramp	Torque/Force ramp time	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter
Layer 3	MC_MoveAbsolute MC_MoveRelative MC_MoveAdditive	Main	0x0215 Drive-controlled positioning (via axis control word)	Closed Loop only	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0346 Positioning control word	S-00282 Position	S-0-0259 Velocity	S-0-0280 acceleration	S-0-0359 deceleration
Layer 4	MC_MoveVelocity MC_CamOut MC_GearOut	Main	0x0002 Velocity control	Fix	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0036 Velocity	P-0-1203 acceleration ramp	P-0-1213 deceleration ramp	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter
Layer 5	MC_Stop	Main		Fix	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0036 Velocity	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter	S-0-0372 acceleration ramp	S-0-0000 Dummy-Parameter
Layer 6	MC_GearInPos MC_CamIn	Main	0x0245 Position synchronization	Closed Loop only	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	P-0-0088 Control word synchronization modes	P-0-0157 Gear output	P-0-0156 Gear input	P-0-0083 Fine adjustment	P-0-0093 H-factor
Layer 7	MB_Phasing	First Secondary	0x0245 Position synchronization	Closed Loop only	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	P-0-0054 Additive Master Position	P-0-0688 Additive master position velocity	P-0-0689 Additive master position acceleration	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter
Layer 8	MB_PhasingSlave	Third Secondary	0x0245 Position synchronization	Closed Loop only	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0048 Additive Slave Position	P-0-0686 Additive slave position velocity	P-0-0687 Additive slave position acceleration	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter
Layer 9	MC_GearIn	Main	0x0042 Velocity synchronization	Fix	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	P-0-0088 Control word synchronization modes	P-0-0157 Gear output	P-0-0156 Gear input	P-0-0083 Fine adjustment	S-0-0000 Dummy-Parameter
Layer 10	ML_WriteCyclicPosition MC_AddAxisToGroup	Main	0x0305 Position control drive-controlled (via axis control word)	Closed Loop only	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0047 Positioning command value	P-0-0100 Position command extension value	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter
Layer 11	MC_Power	Main	0x0215 Drive-controlled positioning (via axis control word))	Fix	S-0-0134 master control word	S-0-0368 MUX layer address	S-0-0145 signal control word	P-0-0053 master position	S-0-0346 Positioning control word	S-00282 Position	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter	S-0-0000 Dummy-Parameter

MLC-MDT configuration, IndraDrive, Interpolation in the drive

Fig. 3-2: MLC-MDT configuration, HydraulicDrive, Interpolation in the drive

Overview table

	Fixed		Only with synchronization
	Only with Closed Loop		Parameter-dependent

Tab. 3-1: Color coding to use the parameters

S-0-0145, Signal control word

Due to its use, the signal control word is split into twelve specified bits and four bits that can be preselected using the parameter editor or the IndraWorks interface (e.g. **Real axis (IndraDrive) ► Popup menu ► Communication ► Signal control word**). They remain constant up to the next reconfiguration.

The parameter "[A-0-0598](#), List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

Bit 0	Closed loop	S-0-0520.0	Axis controller control word; selection of actual position value
Bit 1	Closed loop	S-0-0520.1	Axis controller control word; selection of actual position value
Bit 2	Closed loop	S-0-0520.3	Axis controller control word; selection of actual position value
Bit 3	Sync	P-0-0155.1	Synchronization mode: 0 - absolute; 1 - relative
Bit 4	Sync	P-0-0154.0	Synchronization direction: 00 - shortest distance; 01 - pos.; 10 - neg. direction
Bit 5	Sync	P-0-0154.1	Synchronization direction: 00 - shortest distance; 01 - pos.; 10 - neg. direction
Bit 6	Sync	S-0-0393.0	Command value mode: 0 - pos.; 01 - neg. direction; 10 - shortest distance
Bit 7	Sync	S-0-0393.1	Command value mode: 0 - pos.; 01 - neg. direction; 10 - shortest distance
Bit 8	Reserved	S-0-0000.0	Dummy parameter
Bit 9	Reserved	S-0-0000.0	Dummy parameter
Bit 10	Reserved	S-0-0000.0	Dummy parameter
Bit 11	Reserved	S-0-0000.0	Dummy parameter
Bit 12	User	A-0-0540	Configuration of user-defined command value, bit A
Bit 13	User	A-0-0543	Configuration of user-defined command value, bit B
Bit 14	User	A-0-0546	Configuration of user-defined command value, bit C
Bit 15	User	A-0-0549	Configuration of user-defined command value, bit D

Tab. 3-2: Bit assignment in S-0-0145, Signal control word (IndraWorks)

Task	Container A	Container B	Container C	Container D
Defines the drive parameter	A-0-0540	A-0-0543	A-0-0546	A-0-0549
Defines the bit in the drive parameter	A-0-0541	A-0-0544	A-0-0547	A-0-0550
Contains the value to be written to the parameter bit	A-0-0542	A-0-0545	A-0-0548	A-0-0551

Tab. 3-3: Used parameters of a signal control word

User-configurable 4-byte containers

This becomes complete by five containers, each of four bytes, that can either be preselected via the parameter editor or the IndraWorks interface (e.g. **Real axis (IndraDrive) ► PopUp menu ► Communication ► Cyclic Sercos data channel**). They remain constant up to the next reconfiguration.

The parameter "[A-0-0596](#), List of freely configurable parameters in the MDT" contains the possible parameters whose values can be transferred.

Container for data transport

- [A-0-0500](#), Configuration of user-defined command value A
 - [A-0-0501](#), Container of user-defined command value A
- [A-0-0502](#), Configuration of user-defined command value B
 - [A-0-0503](#), Container of user-defined command value B
- [A-0-0504](#), Configuration of user-defined command value C
 - [A-0-0505](#), Container of user-defined command value C
- [A-0-0506](#), Configuration of user-defined command value D
 - [A-0-0507](#), Container of user-defined command value D
- [A-0-0508](#), Configuration of user-defined command value E
 - [A-0-0509](#), Container of user-defined command value E

3.2.3 MLC-MDT configuration, interpolation in the control

General structure

SercosDrive

The transfer mechanism described in [MLC-MDT configuration, IndraDrive/HydraulicDrive, interpolation in the drive, page 23](#), can be analogously used.

However, the mechanism is simplified, since the calculation is already executed on the control and not in the drive.

The following parameters are transferred as default (multiplexing is not required):

- S-0-0134, Master control word
- S-0-0047, Position command value
- S-0-0145, Signal control word

The telegram is completed by five 4-byte containers freely configurable by the user ([A-0-0500](#) / [A-0-0501](#) ... [A-0-0508](#) / [A-0-0509](#); List of possible parameters: [A-0-0596](#)).

Actual FB	1	2	3	4	5	6	7	8
	4 Byte	4 Byte	2 Byte					
all	S-0-0134 master control word	S-0-0047 position command value	S-0-0145 signal control word	Free configurable container A	Free configurable container B	Free configurable container C	Free configurable container D	Free configurable container E

Fig. 3-3: MLC-MDT configuration, SercosDrive, Interpolation on the Control

IndraDrive/HydraulicDrive

Additional command values are transferred for IndraDrives and Hydraulic-Drives.

The telegram is completed by five 4-byte containers freely configurable by the user ([A-0-0500](#) / [A-0-0501](#) ... [A-0-0508](#) / [A-0-0509](#); List of possible parameters: [A-0-0596](#)).

Overview table

Drive Mode	Internal					
	2 Byte	4 Byte	2 Byte	4 Byte	2 Byte	2 Byte
All	S-0-0134 master control word	S-0-0036 velocity command value	S-0-0145 signal control word	S-0-0047 position command value	P-0-0100 position command extension value	S-0-0080 torque command value

Fig. 3-4: MLC-MDT configuration, IndraDrive, Interpolation on the control

Drive Mode	Internal						
	2 Byte	4 Byte	2 Byte	4 Byte	2 Byte	2 Byte	4/2 Byte
All	S-0-0134 master control word	S-0-0036 velocity command value	S-0-0145 signal control word	S-0-0047 position command value	P-0-0100 position command extension value	S-0-0080 torque command value	S-0-08600 P-0-2891 valve command value

Fig. 3-5: MLC-MDT configuration, HydraulicDrive, Interpolation on the control

	Fixed		Only with synchronization
	Only with Closed Loop		Parameter-dependent

Tab. 3-4: Color coding to use the parameters

Signal control word

SercosDrive

No signal control word is supported for the SercosDrive.

IndraDrive/HydraulicDrive

If S-0-0145 is supported and the user configured at least one bit, the parameter S-0-0145 is transferred to the MDT.

Due to its use, the signal control word is split into twelve bits reserved for the communication between firmware and drive and four bits that can be preselected using the parameter editor or the IndraWorks interface (e.g. **Real axis (SercosDrive) ► PopUp menu ► Communication ► Signal control word**). They remain constant up to the next reconfiguration.

Task	Container A	Container B	Container C	Container D
Defines the drive parameter	A-0-0540	A-0-0543	A-0-0546	A-0-0549
Defines the bit in the drive parameter	A-0-0541	A-0-0544	A-0-0547	A-0-0550
Contains the value to be written to the parameter bit	A-0-0542	A-0-0545	A-0-0548	A-0-0551

Tab. 3-5: Used parameters of a signal control word

User-configurable 4-byte containers

If this is valid for the drive, it is completed by five containers, each of four bytes which can either be preselected via the parameter editor or the IndraWorks interface (e.g. **Real axis (SercosDrive) ► PopUp menu ► Communication ► Cyclic Sercos data channel**). They remain constant up to the next reconfiguration.

The parameter "A-0-0596, List of freely configurable parameters in the MDT" contains the possible parameters whose values may be transferred.

Container for data transport

- [A-0-0500](#), Configuration of user-defined command value A
 - [A-0-0501](#), Container of user-defined command value A
- [A-0-0502](#), Configuration of user-defined command value B
 - [A-0-0503](#), Container of user-defined command value B
- [A-0-0504](#), Configuration of user-defined command value C
 - [A-0-0505](#), Container of user-defined command value C
- [A-0-0506](#), Configuration of user-defined command value D
 - [A-0-0507](#), Container of user-defined command value D
- [A-0-0508](#), Configuration of user-defined command value E
 - [A-0-0509](#), Container of user-defined command value E

The containers follow the master data telegram.

3.2.4 MLC-AT configuration, IndraDrive/HydraulicDrive, interpolation in the drive

The interface is provided with a total of 50-byte data containers. The first four containers have already been assigned (2 bytes/2 bytes/2 bytes/4 bytes):

- S-0-0135, Drive status
- S-0-0368, Data container addressing
- S-0-0144, Signal status word
- P-0-0052, Actual position value of measuring encoder.

The four containers, each of 4 bytes, whose content depends on the function (depending on the function block or operation mode) operating - according to the address stored in the first container - in multiplex operation.

The telegram is completed by six 4-byte containers freely configurable by the user ([A-0-0520](#) / [A-0-0521](#) ... [A-0-0530](#) / [A-0-0531](#); List of possible parameters: [A-0-0597](#)).

MUX-Container									S-0-0364	S-0-0480	S-0-0481	S-0-0482
MUX-Config Liste									S-0-0371	S-0-0500	S-0-0501	S-0-0502
Layer	Commands (Actual FB)	Command Channel	Drive Mode	Layer dependency	Internal							
					2 Byte	2 Byte	2 Byte	4 Byte	4 Byte	4 Byte	4 Byte	4 Byte
Layer 1	none	Main	all operation modes	Fix	S-0-0135 Drive-Status	S-0-0368 MUX layer address	S-0-0144 signal status word	P-0-0052 encoder position	S-0-0386 Active position value	S-0-0040 Actual velocity	S-0-0084 Torque/Force feedback value	S-0-0390 Diagnostic message number
Layer 2	Default	Main	all operation modes	Fix	S-0-0135 Drive-Status	S-0-0368 MUX layer address	S-0-0144 signal status word	P-0-0052 encoder position	S-0-0386 Active position value	S-0-0040 Actual velocity	S-0-0084 Torque/Force feedback value	S-0-0390 Diagnostic message number

Fig. 3-6: MLC-AT configuration, IndraDrive/HydraulicDrive

	Fixed		Only with synchronization
	Only with Closed Loop		Parameter-dependent

Tab. 3-6: Color coding to use the parameters

S-0-0144, Signal status word

Due to its use, the signal status word is split into twelve specified bits and four bits that can be preselected using the parameter editor or the IndraWorks interface (e.g. **Real axis (IndraDrive)** ► **Popup menu** ► **Communication** ► **Signal status word**). They remain constant up to the next reconfiguration.

Overview table

The parameter "[A-0-0599](#), List of configurable parameters in signal status word" contains the possible parameters whose values can be transferred.

Bit 0	Fixed	S-0-0330.0	Message n_act = n_comm
Bit 1	Fixed	S-0-0331.0	Message n_act = 0
Bit 2	Closed loop	S-0-0437.2	Positioning status
Bit 3	Closed loop	S-0-0403.0	Status of the reference encoder "actual position value" (encoder 1 or 2): 0 - relative 1- referenced
Bit 4	Fixed	S-0-0419.0	Acknowledgement of the positioning command value
Bit 5	Sync	P-0-0089.0	Feedback of the active cam: Active cam table selection (1-4)
Bit 6	Sync	P-0-0089.1	Feedback of the active cam: Active cam table selection (1-4)
Bit 7	Sync	P-0-0089.8	Synchronous operation mode in synchronization: 0 - Slave axis is not synchronized, 1 - Slave axis is synchronized
Bit 8	Fixed	S-0-0824.0	Message "Torque/force command value reached" (S-0-0080 = P-0-0049) S-0-0080 + S-0-0081 - S-0-0084 < S-0-0826 0 - command value is ramped, 1 - command value reached
Bit 9	Sync	P-0-0089.5	Status word "synchronous modes": Status "distance switching 0" - Current distance value not active 1 - Current distance active
Bit 10	Closed loop	S-0-0336.0	Message "In-position"
Bit 11	Sync	P-0-0089.6	Status of positioning P-0-0054: 0 - Positioning active 1- Positioning completed
Bit 12	User	A-0-0560	Configuration of actual user-defined value, bit A
Bit 13	User	A-0-0563	Configuration of actual user-defined value, bit B
Bit 14	User	A-0-0566	Configuration of actual user-defined value, bit C
Bit 15	User	A-0-0569	Configuration of actual user-defined value, bit D

Tab. 3-7: Bit assignment in S-0-0144, Signal status word (IndraWorks)

Task	Container A	Container B	Container C	Container D
Defines the drive parameter	A-0-0560	A-0-0563	A-0-0566	A-0-0569
Defines the bit in the drive parameter	A-0-0561	A-0-0564	A-0-0567	A-0-0570
Contains the value read from the parameter bit	A-0-0562	A-0-0565	A-0-0568	A-0-0571

Tab. 3-8: Parameters for the signal status word

User-configurable 4-byte containers

This becomes complete by six containers, each of four bytes, that can either be preselected via the parameter editor or the IndraWorks interface (e.g. **Real axis (IndraDrive)** ► **Popup menu** ► **Communication** ► **Cyclic Sercos data channel**). They remain constant up to the next reconfiguration.

The parameter "[A-0-0597](#), List of freely configurable parameters in the AT" contains the possible parameters whose values can be transferred.

Container for data transport

- [A-0-0520](#), Configuration of actual user-defined value A
 - [A-0-0521](#), Container of actual user-defined value A
- [A-0-0522](#), Configuration of actual user-defined value B

- [A-0-0523](#), Container of actual user-defined value B
- [A-0-0524](#), Configuration of actual user-defined value C
 - [A-0-0525](#), Container of actual user-defined value C
- [A-0-0526](#), Configuration of actual user-defined value D
 - [A-0-0527](#), Container of actual user-defined value D
- [A-0-0528](#), Configuration of actual user-defined value E
 - [A-0-0529](#), Container of actual user-defined value E
- [A-0-0530](#), Configuration of actual user-defined value F
 - [A-0-0531](#), Container of actual user-defined value F

3.2.5 MLC-AT configuration, interpolation in the control

General structure

The transfer mechanism described in [MLC-AT configuration, IndraDrive/ HydraulicDrive, interpolation in the drive on page 29](#), can be analogously used.

Since the calculation is not executed on the drive but already in the control, the corresponding actual values have to be provided for the control.

The following parameters are transferred as default (multiplexing is not required):

- S-0-0135, Drive status
- *Position*
 - S-0-0051, Actual position value encoder 1 or S-0-0053, Actual position value encoder 2 for SercosDrive depending on [A-0-0007](#), Axis configuration, selection of the active encoder,
 - S-0-0386, Active actual position value for IndraDrive and HydraulicDrive.
- S-0-0144, Signal status word
- S-0-0040, Actual velocity value and
- S-0-0084, Actual torque/force value
- S-0-0390, Diagnostic number
- P-0-0052, Actual position value, measuring encoder (IndraDrive with function package: Synchronization (ELS)] to implement an encoder axis.

The telegram is completed by six 4-byte containers freely configurable by the user ([A-0-0520](#) / [A-0-0521](#) ... [A-0-0530](#) / [A-0-0531](#); List of possible parameters: [A-0-0597](#)).

Commands (Actual FB)	Command Channel	Drive Mode	Internal				
			2 Byte	4 Byte	4 Byte	4 Byte	2 Byte
All	All	All	S-0-0135 master status word	S-0-0051 (S-0-0053) actual Position	S-0-0040 Velocity feedback value	S-0-0084 Torque feedback value	S-0-0144 signal status word

Fig. 3-7: MLC-AT configuration, SercosDrive

Overview table

Commands (Actual FB)	Command Channel	Drive Mode	Internal						
			2 Byte	4 Byte	2 Byte	4 Byte	2 Byte	4 Byte	4 Byte
All	All	All	S-0-0135 Drive-Status	S-0-0386 active position feedback value	S-0-0144 signal status word	S-0-0040 velocity feedback value	S-0-0084 torque feedback value	S-0-0390 diagnosis number	P-0-0052 encoder position

Fig. 3-8: MLC-AT configuration, IndraDrive

Commands (Actual FB)	Command Channel	Drive Mode	Internal						
			2 Byte	4 Byte	2 Byte	4 Byte	2 Byte	4 Byte	4 Byte
All	All	All	S-0-0135 Drive-Status	S-0-0386 active position feedback value	S-0-0144 signal status word	S-0-0040 velocity feedback value	S-0-0084 torque feedback value	S-0-0390 diagnosis number	P-0-0052 encoder position

Fig. 3-9: MLC-AT configuration, HydraulicDrive

	Fixed		Only with synchronization
	Only with Closed Loop		Parameter-dependent

Tab. 3-9: Color coding to use the parameters

Signal status word

SercosDrive

No signal status word is supported for the SercosDrive.

IndraDrive/HydraulicDrive

A prerequisite is the support of the S-0-0144 and signal status word by the drive.

If S-0-0144 is supported and the user configured at least one bit, the parameters S-0-0144, Status control word and the actual values mentioned above are transferred.

Due to its use, the signal status word is split into twelve specified bits reserved for the firmware and four bits that can be preselected using the parameter editor or the IndraWorks interface (e.g. **Real axis (IndraDrive) ► Pop-Up menu ► Communication ► Signal status word**). They remain constant up to the next reconfiguration.

The parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values can be transferred.

Bit 0	Reserved	S-0-0000.0	Dummy parameter
Bit 1	Reserved	S-0-0000.0	Dummy parameter
Bit 2	Reserved	S-0-0000.0	Dummy parameter
Bit 3	Closed loop	S-0-0403.0	Status of the reference encoder "actual position value" (encoder 1 or 2): 0 - relative 1- referenced
Bit 4	Reserved	S-0-0000.0	Dummy parameter
Bit 5	Reserved	S-0-0000.0	Dummy parameter
Bit 6	Reserved	S-0-0000.0	Dummy parameter
Bit 7	Reserved	S-0-0000.0	Dummy parameter
Bit 8	Reserved	S-0-0000.0	Dummy parameter

Bit 9	Reserved	S-0-0000.0	Dummy parameter
Bit 10	Reserved	S-0-0000.0	Dummy parameter
Bit 11	Reserved	S-0-0000.0	Dummy parameter
Bit 12	User	A-0-0560	Configuration of actual user-defined value, bit A
Bit 13	User	A-0-0563	Configuration of actual user-defined value, bit B
Bit 14	User	A-0-0566	Configuration of actual user-defined value, bit C
Bit 15	User	A-0-0569	Configuration of actual user-defined value, bit D

Tab. 3-10: Bit assignment in S-0-0144, Signal status word (IndraWorks)

Task	Container A	Container B	Container C	Container D
Defines the drive parameter	A-0-0560	A-0-0563	A-0-0566	A-0-0569
Defines the bit in the drive parameter	A-0-0561	A-0-0564	A-0-0567	A-0-0570
Contains the value read from the parameter bit	A-0-0562	A-0-0565	A-0-0568	A-0-0571

Tab. 3-11: Parameters for the signal status word

Bit 0 is assigned in the reserved area of the signal status word by the parameter **S-0-0403**, Status of actual position values.

User-configurable 4-byte containers

If this is valid for the drive, it is completed by six containers, each of four bytes which can either be preselected via the parameter editor or the IndraWorks interface (e.g. **Real Axis (IndraDrive)** ► **Popup menu** ► **Communication** ► **Cyclic Sercos Data Channel**). They remain constant up to the next reconfiguration.

The parameter "[A-0-0597](#), List of freely configurable parameters in the AT" contains the possible parameters whose values can be transferred.

Container for data transport

- [A-0-0520](#), Configuration of actual user-defined value A
 - [A-0-0521](#), Container of actual user-defined value A
- [A-0-0522](#), Configuration of actual user-defined value B
 - [A-0-0523](#), Container of actual user-defined value B
- [A-0-0524](#), Configuration of actual user-defined value C
 - [A-0-0525](#), Container of actual user-defined value C
- [A-0-0526](#), Configuration of actual user-defined value D
 - [A-0-0527](#), Container of actual user-defined value D
- [A-0-0528](#), Configuration of actual user-defined value E
 - [A-0-0529](#), Container of actual user-defined value E
- [A-0-0530](#), Configuration of actual user-defined value F
 - [A-0-0531](#), Container of actual user-defined value F

The containers follow the drive telegram.

3.3 Overview: XLC/MLC diagnostic parameters

The following parameters are used for diagnostic purposes:

Overview table

Device status

C-0-0010, Version number, hardware
C-0-0012, Version number, firmware
C-0-0023, System status
C-0-0030, Control name
C-0-0031, Control address
C-0-0050, System time
C-0-0203, Engineering, user name
C-0-0626, Diagnostics

Extended device status

C-0-0010, Version number, hardware
C-0-0011, Version number, PLC firmware
C-0-0012, Version number, firmware
C-0-0013, Version number, BSP
C-0-0021, Hardware, details
C-0-0023, System status
C-0-0032, Serial number of control

Axis status

A-0-0002, Axis name
A-0-0020, Axis diagnostic message
A-0-0021, Axis status
A-0-0022, Extended axis status
A-0-0023, Axis diagnostic number
A-0-0100, Actual position value
S-0-0095, Diagnostics
S-0-0390, Diagnostic number

Clearing an error

A-0-1030, Command: Clear all axis errors
C-0-1030, Command: Clear all control errors

Error/diagnostic memory

C-0-0620, Diagnostic memory index
C-0-0621, Diagnostics, indexed message
C-0-0622, Diagnostics, number of messages in the memory
C-0-0623, Diagnostics, last reset message

C-0-0624, Diagnostics, absolute indices
C-0-0625, Diagnostics, display message
C-0-0626, Diagnostics
C-0-0627, Diagnostic number
C-0-0650, Diagnostics, status word
C-0-0660, Display, display period of messages

Invalid parameters

C-0-0111, List of all invalid C-parameters
C-0-0626, Diagnostics
and the parameters required for each axis
A-0-0011, List of all invalid A-parameters
A-0-0014, List of incorrect synchronized A-parameters
and the parameters required for each real axis and for each encoder axis
S-0-0021, IDN list of invalid operating data for phase 2
S-0-0022, IDN list of invalid operating data for phase 3
S-0-0390, Diagnostic number

Cycle times

C-0-0400, Motion, cycle time, command value
C-0-0503, sercos master, cycle time
C-0-0410, Motion, cycle time (Tcyc), actual value
C-0-0412, List of current time slot measurements
C-0-0413, List of maximum time slot measurements
C-0-0414, List of minimum time slot measurements
C-0-0420, Motion, watchdog sensitivity
C-0-0421, Motion, absolute error counter
C-0-0422, Motion, number of successive errors
C-0-1050, Command: Reset parameter C-0-0413 and C-0-0414
C-0-1052, Command: Reset parameter C-0-0421 and C-0-0422

3.4 Overview: XLC/MLC command parameters

The following lists provide an overview on parameters triggering a command.

Overview table

Load basic parameters

A-0-1000 , Command: Load basic axis parameters
C-0-1000 , Command: Load basic parameters
K-0-1000 , Command: Load basic kinematic parameters
M-0-1000 , Command: Load basic touch probe parameters
N-0-1000 , Command: Load basic PLS parameters
O-0-1000 , Command: Load basic oscilloscope parameters

More command parameters

A-0-1030 , Command: Clear all axis errors
A-0-2807 , Command: Set absolute position
A-0-3046 , FlexProfile 0, command: Check and apply event
A-0-3048 , FlexProfile 0, command: Check and apply profile
A-0-3076 , FlexProfile 1, command: Check and apply event
A-0-3078 , FlexProfile 1, command: Check and apply profile
A-0-3106 , FlexProfile 2, command: Check and apply event
A-0-3108 , FlexProfile 2, command: Check and apply profile
A-0-3136 , FlexProfile 3, command: Check and apply event
A-0-3138 , FlexProfile 3, command: Check and apply profile
C-0-0316 , PLS No.1, command: Initialize switch track
C-0-0317 , PLS No.1, command: Activate switch track
C-0-0341 , PLS No.2, command: Initialize switch track
C-0-0342 , PLS No.2, command: Activate switch track
C-0-0366 , PLS No.3, command: Initialize switch track
C-0-0367 , PLS No.3, command: Activate switch track
C-0-0391 , PLS No.4, command: Initialize switch track
C-0-0392 , PLS No.4, command: Activate switch track
C-0-0001 , Language selection
C-0-1001 , Command: Restore MC- and PLC-Retain-Data
C-0-1002 , Command: Save MC- and PLC-Retain-Data
C-0-1003 , Command: Restore PLC-Retain-Data
C-0-1004 , Command: Save PLC-Retain-Data
C-0-1005 , Command: Delete files on SYSTEM partition
C-0-1006 , Command: Delete files on OEM partition
C-0-1007 , Command: Delete files on USER partition
C-0-1009 , Command: Get extended sercos device information
C-0-1010 , Command: Export parameter

C-0-1011, Command: Import parameter
C-0-1018, Command: Restart to Initial-Firmware
C-0-1019, Command: Restart and reset to default
C-0-1020, Command: Restart after firmware update
C-0-1021, Command: Restart
C-0-1022, Command: Activate firmware update
C-0-1023, Command: Apply IP configuration
C-0-1024, Command: Load basic parameter of IP configuration
C-0-1030, Command: Clear all control errors
C-0-1041, Command: Start task record
C-0-1042, Command: Stop task record
C-0-1045, Command: External trigger
C-0-1050, Command: Reset parameter C-0-0413 and C-0-0414
C-0-1051, Command: Reset C-0-0416, C-0-0417, C-0-0466, C-0-0467
C-0-1052, Command: Reset parameter C-0-0421 and C-0-0422
C-0-1060, Command: Save all trace recordings
C-0-1061, Command: Unlock all trace buffers
C-0-1070, Command: Switch PM/OM
M-0-0024, Command: Activation
N-0-0316, Command: Initialize switch track
N-0-0317, Command: Activate switch track

3.5 Overview: XLC/MLC IP communication parameters

- The IP settings of the Engineering interface, the Sercos III interfaces and the bridge are applied with the command "C-0-1023, Command: Apply IP configuration". The command specification is defined for the onboard Sercos III interface via the parameter C-0-0220 for example. It is applied to the parameter C-0-0222 when the command "Apply IP settings" is started
- Being prepared: The IP settings of the Onboard Realtime Ethernet are specified in the IndraWorks dialogs (e.g. Profinet_IO_Controller node). They are applied after a control restart. The command specifications are not explicitly available via parameters
- The default values for the Sercos III interfaces (onboard and function module) and the bridge are copied to the command configuration parameters and then automatically applied via the command "C-0-1024, Command: Load basic parameter of IP configuration". Furthermore, the default value of the IP address generation is written to the command value parameter (C-0-0235) and then automatically applied.
- The parameter "C-0-0219, Status of network configuration" indicates bit by bit for the individual interfaces whether changes are entered but not yet applied in the IP settings

Overview table

- The parameter "[C-0-0234](#), Automatic IP address generation, actual configuration" indicates the current setting of the automatic IP address generation (actual configuration) bit by bit
- The parameter "[C-0-0235](#), Automatic IP address generation, command configuration" controls the automatic IP address generation bit by bit for all optional network interfaces on the control (command configuration)
- The parameter "[C-0-0218](#), List of existing network interfaces" indicates the network interfaces on hardware

Interface		IP address	Subnet mask	MAC address	Corresponding bit in C-0-0219 C-0-0235 C-0-0234
Engineering	Command configuration	C-0-0200	C-0-0201	C-0-0205	
Onboard Sercos III	Actual configuration	C-0-0222	C-0-0223	C-0-0224	Bit 0:
	Command configuration	C-0-0220	C-0-0221		
Sercos III function module	Actual configuration	C-0-0227	C-0-0228	C-0-0229	Bit 1
	Command configuration	C-0-0225	C-0-0226		
Onboard Realtime Ethernet	Actual configuration	C-0-0242	C-0-0243	C-0-0244	Bit 2
	Command configuration	IW dialogs	IW dialogs		
Bridge	Actual configuration	C-0-0236	C-0-0237	C-0-0238	Bit 3
	Command configuration	C-0-0230	C-0-0231		

Tab. 3-12: Overview on the most important IP communication settings

Parameters for the IP communication

C-0-0031 , Control address
C-0-0200 , Engineering, IP address
C-0-0201 , Engineering, subnet mask
C-0-0202 , Engineering, standard gateway
C-0-0203 , Engineering, user name
C-0-0205 , Engineering, MAC address
C-0-0206 , TCP, time to live
C-0-0207 , UDP, ports
C-0-0208 , TCP, port for acyclic channels

C-0-0209, Sender timeout
C-0-0210, TCP, max. number of connection
C-0-0211, Reserved
C-0-0212, Drive server, configuration
C-0-0216, Engineering, IP address, actual configuration
C-0-0217, Engineering, subnet mask, actual configuration
C-0-0218, List of existing network interfaces
C-0-0219, Status of network configuration
C-0-0220, sercos master, IP address, command configuration
C-0-0221, sercos master, subnet mask, command configuration
C-0-0222, sercos master, IP address, actual configuration
C-0-0223, sercos master, subnet mask, actual configuration
C-0-0224, sercos master, MAC address
C-0-0225, C2C, IP address, command configuration
C-0-0226, C2C, subnet mask, command configuration
C-0-0227, C2C, IP address, actual configuration
C-0-0228, C2C, subnet mask, actual configuration
C-0-0229, C2C, MAC address
C-0-0230, Bridge, IP address, command configuration
C-0-0231, Bridge, subnet mask, command configuration
C-0-0232, Bridge, command configuration of assigned interfaces
C-0-0233, Bridge, actual configuration of assigned interfaces
C-0-0234, Automatic IP address generation, actual configuration
C-0-0235, Automatic IP address generation, command configuration
C-0-0236, Bridge, IP address, actual configuration
C-0-0237, Bridge, subnet mask, actual configuration
C-0-0238, Bridge, MAC address
C-0-0242, Onboard RT Ethernet, IP address, actual configuration
C-0-0243, Onboard RT Ethernet, subnet mask, actual configuration
C-0-0244, Onboard RT Ethernet, MAC address, actual configuration
C-0-0250, Engineering, DHCP configuration
C-0-0251, Engineering, DNS server IP
C-0-0252, Engineering, DHCP initial address
C-0-0253, Engineering, DHCP end address
C-0-0254, Engineering, DHCP lease time
C-0-0260, sercos master, DHCP configuration
C-0-0261, sercos master, DNS server IP

Overview table

C-0-0262, sercos master, DHCP initial address
C-0-0263, sercos master, DHCP end address
C-0-0264, sercos master, DHCP lease time
C-0-0270, Bridge, DHCP configuration
C-0-0271, Bridge, DNS server IP
C-0-0272, Bridge, DHCP initial address
C-0-0273, Bridge, DHCP end address
C-0-0274, Bridge, DHCP lease time
C-0-0280, Onboard RT Ethernet, DHCP configuration
C-0-0281, Onboard RT Ethernet, DNS server IP
C-0-0282, Onboard RT Ethernet, DHCP initial address
C-0-0283, Onboard RT Ethernet, DHCP end address
C-0-0284, Onboard RT Ethernet, DHCP lease time
C-0-0290, C2C, DHCP configuration
C-0-0291, C2C, DNS server IP
C-0-0292, C2C, DHCP initial address
C-0-0293, C2C, DHCP end address
C-0-0294, C2C, DHCP lease time
C-0-1023, Command: Apply IP configuration
C-0-1024, Command: Load basic parameter of IP configuration

3.6 Overview: XLC/MLC MotionProfile, A-parameters

The following table provides an overview on the A-parameters used for MotionProfiles.

Common parameters for both sets

- A-0-2900, MotionProfile, master axis switching position
- A-0-2901, MotionProfile, motion step 1, initial slave axis position
- A-0-2904, MotionProfile, basic configuration
- A-0-2930, MotionProfile, control word
- A-0-2931, MotionProfile, status word

MotionProfile 0-parameters with parameter names	MotionProfile 1
A-0-2902, MotionProfile 0, diagnostics	A-0-2903
A-0-2910, MotionProfile 0, number of motion steps	A-0-2920
A-0-2911, MotionProfile 0, master axis velocity	A-0-2921
A-0-2912, MotionProfile 0, list of initial master axis positions	A-0-2922
A-0-2913, MotionProfile 0, list of motion laws	A-0-2923

MotionProfile 0-parameters with parameter names	MotionProfile 1
A-0-2914 , MotionProfile 0, list of distances	A-0-2924
A-0-2915 , MotionProfile 0, list of slave axis velocities	A-0-2925

3.7 Overview: XLC/MLC FlexProfile, A-parameters

The following table provides an overview on the A-parameters used for the FlexProfile control.

Common parameters for all four sets

- [A-0-3000](#), FlexProfile, current set
- [A-0-3001](#), FlexProfile, current step
- [A-0-3002](#), FlexProfile, master axis switching position
- [A-0-3003](#), FlexProfile, slave axis, additive command position value
- [A-0-3004](#), FlexProfile, master axis, additive command position value
- [A-0-3009](#), FlexProfile, control word
- [A-0-3010](#), FlexProfile, status word
- [A-0-3011](#), FlexProfile, conditions: control variables
- [A-0-3012](#), FlexProfile, conditions: status variables
- [A-0-3013](#), FlexProfile, value, current time-master.

FlexProfile 0-parameters with parameter names	FlexProfile 1	FlexProfile 2	FlexProfile 3
A-0-3020 , FlexProfile 0, master axis velocity	A-0-3050	A-0-3080	A-0-3110
A-0-3021 , FlexProfile 0, list of master axis sources	A-0-3051	A-0-3081	A-0-3111
A-0-3022 , FlexProfile 0, list of slave axis distances	A-0-3052	A-0-3082	A-0-3112
A-0-3023 , FlexProfile 0, list of master axis ranges	A-0-3053	A-0-3083	A-0-3113
A-0-3024 , FlexProfile 0, list of master axis ranges, units	A-0-3054	A-0-3084	A-0-3114
A-0-3025 , FlexProfile 0, list of motion laws	A-0-3055	A-0-3085	A-0-3115
A-0-3026 , FlexProfile 0, list of motion step types	A-0-3056	A-0-3086	A-0-3116
A-0-3027 , FlexProfile 0, list of slave axis starting velocities	A-0-3057	A-0-3087	A-0-3117
A-0-3028 , FlexProfile 0, list of slave axis starting accelerations	A-0-3058	A-0-3088	A-0-3118
A-0-3029 , FlexProfile 0, list of slave axis starting jerks	A-0-3059	A-0-3089	A-0-3119
A-0-3030 , FlexProfile 0, list of slave axis end velocities	A-0-3060	A-0-3090	A-0-3120
A-0-3031 , FlexProfile 0, list of slave axis end accelerations	A-0-3061	A-0-3091	A-0-3121
A-0-3032 , FlexProfile 0, list of slave axis end jerks	A-0-3062	A-0-3092	A-0-3122
A-0-3033 , FlexProfile 0, list of slave axis travel velocities	A-0-3063	A-0-3093	A-0-3123
A-0-3034 , FlexProfile 0, list of slave axis travel accelerations	A-0-3064	A-0-3094	A-0-3124
A-0-3035 , FlexProfile 0, list of slave axis travel jerks	A-0-3065	A-0-3095	A-0-3125
A-0-3036 , FlexProfile 0, list of turning point displacements	A-0-3066	A-0-3096	A-0-3126
A-0-3040 , FlexProfile 0, events, list of motion step assignments	A-0-3070	A-0-3100	A-0-3130
A-0-3041 , FlexProfile 0, events, list of trigger modes	A-0-3071	A-0-3101	A-0-3131

Overview table

FlexProfile 0-parameters with parameter names	FlexProfile 1	FlexProfile 2	FlexProfile 3
A-0-3042 , FlexProfile 0, events, list of action modes	A-0-3072	A-0-3102	A-0-3132
A-0-3043 , FlexProfile 0, events, list of trigger values	A-0-3073	A-0-3103	A-0-3133
A-0-3044 , FlexProfile 0, events, list of trigger values, units	A-0-3074	A-0-3104	A-0-3134
A-0-3046 , FlexProfile 0, command: Check and apply event	A-0-3076	A-0-3106	A-0-3136
A-0-3047 , FlexProfile 0, diagnostics	A-0-3077	A-0-3107	A-0-3137
A-0-3048 , FlexProfile 0, command: Check and apply profile	A-0-3078	A-0-3108	A-0-3138
A-0-3049 , FlexProfile 0, checksum	A-0-3079	A-0-3109	A-0-3139

3.8 Overview: K-parameters



- Kinematic functions are only supported by an IndraMotion MLC L25, L45, L65, L75 XM2* with Robot Control function package.

Axis-specific parameters

Limit values and axis-specific data are stored in the A-parameters of the respective axis.

Ident. No.	Parameter name
A-0-0028	Travel range limit switch
A-0-0029	Position polarities
A-0-0030	Position limit value, positive
A-0-0031	Position limit value, negative
A-0-0032	Velocity limit value, positive
A-0-0033	Velocity limit value, negative
A-0-0034	Acceleration limit value, bipolar
A-0-0035	Velocity limit value, bipolar
A-0-0036	Jerk limit value, bipolar
A-0-0038	Torque/force limit value, bipolar
A-0-0039	Torque/force limit value, positive
A-0-0040	Torque/force limit value, negative
A-0-0048	Velocity polarities
A-0-0049	Torque-/force polarities
A-0-0224	Rapid stop deceleration
A-0-0225	Rapid stop jerk
A-0-0240	Feedrate override
A-0-0241	Feedrate override control word

Tab. 3-13: Overview on available A-parameters

Control-specific parameters

The following C-parameters are created to manage **all** kinematic data of one control:

Ident. No.	Parameter name
C-0-0123	Maximum number of kinematics
C-0-2480	Configured kinematic number
C-0-2482	List of non-linked axes
C-0-2483	List of configured kinematics
C-0-2484	Kinematic configuration list

Tab. 3-14: Overview on available C-parameters

Parameters of one kinematics

The following K-parameters are created to manage the data of **one** kinematics in the control. Each parameter exists once in each kinematics.

Ident. no.	Parameter name
K-0-0000	Dummy, K-parameter
K-0-0001	Logic kinematic number
K-0-0002	Kinematic name
K-0-0003	Maximum path velocity
K-0-0005	Software limit switch, positive, MCS
K-0-0006	Software limit switch, negative, MCS
K-0-0007	Axis number of kinematics
K-0-0008	Axis configuration list
K-0-0009	Osci: list of all K-parameters that can be oscilloscoped
K-0-0010	List of all K-parameters
K-0-0011	List of all invalid K-parameters
K-0-0012	Checksum of all K-parameters
K-0-0013	IDN list of checksum K-parameters
K-0-0016	Project identification number
K-0-0019	Kinematic type
K-0-0020	Kinematic diagnostic message
K-0-0021	Kinematic status
K-0-0022	Extended kinematic status
K-0-0023	Kinematic diagnostic number
K-0-0028	Velocity limit auxiliary axes
K-0-0029	Acceleration limit auxiliary axes
K-0-0030	Jerk limit auxiliary axes
K-0-0031	Transformation scheme
K-0-0034	Maximum path acceleration (bipolar)
K-0-0035	Maximum path jerk (bipolar)
K-0-0037	Jerk for move commands during deceleration phase
K-0-0040	Transformation, lengths of the mechanics

Overview table

Ident. no.	Parameter name
K-0-0041	Transformation, factors
K-0-0042	Offset of BCS system
K-0-0050	Distance units MCS
K-0-0051	Velocity units MCS
K-0-0052	Acceleration units MCS
K-0-0053	Jerk units MCS
K-0-0054	Measuring unit for kinematic data
K-0-0070	Belt number of kinematics
K-0-0090	Taskpriority preparation
K-0-0095	ID of movement
K-0-0096	Peak value of command buffer size
K-0-0097	Maximum command buffer size
K-0-0098	Current command buffer size
K-0-0099	Kinematic configuration
K-0-0100	Current position, Cartesian Machine Coordinate System
K-0-0102	Current path velocity
K-0-0103	Current path acceleration
K-0-0104	Current path jerk
K-0-0150	Interpolated command position
K-0-0152	Interpolated path velocity
K-0-0153	Interpolated path acceleration
K-0-0154	Interpolated path jerk
K-0-0223	Selection of error reaction
K-0-0224	Emergency halt deceleration
K-0-0225	Emergency halt jerk
K-0-0240	Feedrate override
K-0-0241	Feedrate override control word
K-0-0242	Acceleration override
K-0-0243	Deceleration override
K-0-0250	Continuous slope lead time
K-0-0815	Odometer
K-0-1000	Command: Load basic kinematic parameters
K-0-2100	List of all backup operation K-parameters

Tab. 3-15: Overview on available K-parameters

3.9 Overview: Trace parameters

The following parameters support the "Trace" function of the IndraLogic XLC/ IndraMotion MLC.

C-0-0670 , List of active trace modules
C-0-0671 , Trace, storage settings
C-0-0672 , Save trace after this DSH message
C-0-0673 , Save trace in DSH message mask
C-0-0674 , Save trace after specified time
C-0-0675 , Save trace under this file name
C-0-0676 , Percentage of trace data saved after trigger signal
C-0-1060 , Command: Save all trace recordings
C-0-1061 , Command: Unlock all trace buffers

3.10 Overview: Touch probe parameters

The M-parameters represent the data set for one touch probe function.

Addressing takes place as for axes and controls:

M001...M100 for the respective touch probe function and the desired parameter, that is

M002: [M-0-0021](#), touch probe 2, status.

Suitable control inputs:

- 8 onboard inputs,
- 64 fast I/O inputs.

Since one input can be used for several touch probe functions, 100 touch probe functions is an arbitrary limitation.

Common C-parameters for all touch probes

- [C-0-2499](#), Touch probe, IDN list signal selection



The parameter attribute "Touch probe" indicates whether a parameter is intended for the signal selection.

M parameter dataset for each touch probe

M-0-0001 , Logic touch probe number
M-0-0002 , Touch probe name
M-0-0005 , Input selection
M-0-0006 , Signal selection
M-0-0007 , Control word
M-0-0009 , Osci: list of all M-parameters that can be oscilloscoped

Overview table

M-0-0010, List of all M-parameters
M-0-0016, Project identification number
M-0-0021, Status word
M-0-0024, Command: Activation
M-0-0130, Measured value, positive edge
M-0-0131, Measured value, negative edge
M-0-0132, Difference value
M-0-0133, Time difference
M-0-0140, Time stamp, positive edge
M-0-0141, Time stamp, negative edge
M-0-0200, Dead-time compensation, positive edge
M-0-0201, Dead-time compensation, negative edge
M-0-0202, Starting position of the expectation window, positive edge
M-0-0203, End position of the expectation window, positive edge
M-0-0204, Starting position of the expectation window, negative edge
M-0-0205, End position of the expectation window, negative edge
M-0-0206, Maximum number of marker failures
M-0-0224, Number of marker failures, positive edge
M-0-0225, Number of marker failures, negative edge
M-0-0401, Input status
M-0-0405, Enabling
M-0-0409, Counter of measured values, positive edge
M-0-0410, Counter of measured values, negative edge
M-0-0411, Counter of difference values
M-0-1000, Command: Load basic touch probe parameters
M-0-2100, List of all backup operation M-parameters



The parameter numbers are selected following the IndraDrive parameter numbers.

3.11 Overview: Programmable limit switches PLS (CFL01.1-N1), N-parameters



This programmable limit switch can only be used for an IndraControl CML25/45/65/75 with Sercos (Sercos basic cycle provides time basis for the programmable limit switch).

The following table shows the substitution of the C-parameters for up to four possible programmable limit switches via function module PLS (CFL01.1-N1) by N-parameters (for CML25 only PLS01 and PLS02).

The N-parameters display the data set for one programmable limit switch each.

Addressing takes place as for axes and controls:

N001...N004 for the respective programmable limit switch and the desired parameter, instead of

C-0-0325 now **N002: N-0-0300**.

N-parameters	Previous parameterization using C-parameters			
	PLS01	PLS02	PLS03	PLS04
N-0-0001, Logical switch track number	-	-	-	-
N-0-0002, Switch track name	-	-	-	-
N-0-0009, Osci: list of all N-parameters that can be oscillographed	-	-	-	-
N-0-0010, List of all N-parameters	-	-	-	-
N-0-0016, Project identification number	-	-	-	-
N-0-0300, Control word	C-0-0300	C-0-0325	C-0-0350	C-0-0375
N-0-0302, Signal selection	C-0-0302	C-0-0327	C-0-0352	C-0-0377
N-0-0303, Control signals	C-0-0303	C-0-0328	C-0-0353	C-0-0378
N-0-0304, Outputs	C-0-0304	C-0-0329	C-0-0354	C-0-0379
N-0-0305, Internal registers	C-0-0305	C-0-0330	C-0-0355	C-0-0380
N-0-0307, Reference axis configuration	C-0-0307	C-0-0332	C-0-0357	C-0-0382
N-0-0308, Reference axis position, additive	C-0-0308	C-0-0333	C-0-0358	C-0-0383
N-0-0309, Reference axis definition	C-0-0309	C-0-0334	C-0-0359	C-0-0384
N-0-0310, Hysteresis	C-0-0310	C-0-0335	C-0-0360	C-0-0385
N-0-0311, Lead time when switching on	C-0-0311	C-0-0336	C-0-0361	C-0-0386
N-0-0312, Lead time when switching off	C-0-0312	C-0-0337	C-0-0362	C-0-0387
N-0-0313, Switch track number	C-0-0313	C-0-0338	C-0-0363	C-0-0388
N-0-0314, Switch-on position of switch track	C-0-0314	C-0-0339	C-0-0364	C-0-0389
N-0-0315, Switch-off position of switch track	C-0-0315	C-0-0340	C-0-0365	C-0-0390
N-0-0316, Command: Initialize switch track	C-0-0316	C-0-0341	C-0-0366	C-0-0391
N-0-0317, Command: Activate switch track	C-0-0317	C-0-0342	C-0-0367	C-0-0392
N-0-0318, Output mode	C-0-0318	C-0-0343	C-0-0368	C-0-0393
N-0-0319, Switch-on duration	C-0-0319	C-0-0344	C-0-0369	C-0-0394
N-0-1000, Command: Load basic PLS parameters				
N-0-2100, List of all backup operation N-parameters				

Tab. 3-16: Parameter comparison

3.12 Overview: XLC/MLC oscilloscope parameters

The O-parameters represent the data set for one oscilloscope function each.

Addressing takes place as for axes and controls:

Overview table

O001...O128 for the corresponding oscilloscope function and the desired parameter, that is

O002: [O-0-0010](#), List of all O-parameters, Oscilloscope function 2.

Common C-parameters for all oscilloscope functions

C-0-0800 , Oscilloscope, status word
C-0-0801 , Oscilloscope, time resolution
C-0-0802 , Oscilloscope, memory depth
C-0-0803 , Oscilloscope, signal selection list
C-0-0804 , Oscilloscope, number of valid values
C-0-0805 , Oscilloscope, control word
C-0-0806 , Oscilloscope, number of channels
C-0-0807 , Oscilloscope, sample time stamp
C-0-0820 , Oscilloscope, sample task selection
C-0-0821 , Oscilloscope, sample task interval
C-0-0822 , Oscilloscope, sample task task ID
C-0-0825 , Oscilloscope, sample task status
C-0-0830 , Oscilloscope, IEC sample task 00
C-0-0831 , Oscilloscope, IEC sample task 01
C-0-0832 , Oscilloscope, IEC sample task 02
C-0-0833 , Oscilloscope, IEC sample task 03
C-0-0834 , Oscilloscope, IEC sample task 04
C-0-0840 , Oscilloscope, system sample task 00
C-0-0841 , Oscilloscope, system sample task 01
C-0-0850 , Oscilloscope, trigger mask
C-0-0851 , Oscilloscope, trigger signal
C-0-0852 , Oscilloscope, trigger threshold
C-0-0853 , Oscilloscope, trigger edge
C-0-0854 , Oscilloscope, number of measured values after trigger event
C-0-0855 , Oscilloscope, trigger time stamp
C-0-0856 , Oscilloscope, external trigger signal
C-0-0857 , Oscilloscope, internal trigger signal
C-0-0858 , Oscilloscope, AUX trigger path
C-0-0859 , Oscilloscope, AUX trigger
C-0-0860 , Oscilloscope, default trigger

O parameter data set for every oscilloscope function

O-0-0001 , Logical channel number
O-0-0002 , Channel name

O-0-0003 , Signal selection
O-0-0004 , Measured value list
O-0-0005 , AUX signal path
O-0-0006 , AUX signal
O-0-0007 , List index
O-0-0009 , Osci: list of all O-parameters that can be oscillosed
O-0-0010 , List of all O-parameters
O-0-0016 , Project identification number
O-0-0021 , Channel status
O-0-1000 , Command: Load basic oscilloscope parameters
O-0-2100 , List of all backup operation O-parameters

Lists of parameters that can be oscillosed

A-0-0009 , Osci: list of all A-parameters that can be oscillosed
C-0-0009 , Osci: list of all C-parameters that can be oscillosed
K-0-0009 , Osci: list of all K-parameters that can be oscillosed
M-0-0009 , Osci: list of all M-parameters that can be oscillosed
N-0-0009 , Osci: list of all N-parameters that can be oscillosed
O-0-0009 , Osci: list of all O-parameters that can be oscillosed

4 Describing individual parameters, arranged according to types

4.1 Axis parameters (A-parameters)

4.1.1 Axis parameters, general information

- IndraLogic XLC L25, L45, L65 with onboard Sercos III bus
- IndraMotion MLC L25, L45, L65, L75
- IndraMotion MLC XM21, XM22
- IndraMotion MLC VPx.

support various Sercos-based drive and axis types.

For the drive types of the IndraDrive and HydraulicDrive family 12VRS or higher, it can be calculated in the drive and in the control.

This provides the following options for the real axis:

- **IndraDrive/Control:** IndraDrive, calculation in the control,
- **IndraDrive/Drive:** IndraDrive, calculation in the drive,
- **SercosDrive:** (Third-party) drive meeting the requirements of the [Pack-Profile](#) specification; calculation in the control,
- **HydraulicDrive/Control:** HydraulicDrive, calculation in the control,
- **HydraulicDrive/Drive:** HydraulicDrive, calculation in the drive,

Example:

Use cases

The user wants to

1. use the options of the cams saved in the drive on an $\Rightarrow$ IndraDrive, calculation in the drive, PLCopen: MC_CamIn.
2. use the option of the FlexProfile with the point tables saved in the control on an IndraDrive $\Rightarrow$, calculation in the control, PLCopen: ML_FlexProfile.
3. use the options of the FlexProfile with point tables saved in the control on a (third-party) drive, which meets the requirement of the PackProfile specification, $\Rightarrow$ SercosDrive, calculation in the control, PLCopen: ML_FlexProfile, the limited PackProfile parameter set is used for transfer.



When using an IndraDrive (irrespective of where the calculation takes place), the complete diagnostic system of the IndraMotion MLC is provided to the user.

When using a SercosDrive, only the error collection message is available. This applies as well if an IndraDrive is used as SercosDrive!

The following axis types are supported:

- Virtual axes (interpolation only in the control)
- Encoder axes
- Link axes (Sercos II or Sercos III C2C via function module)
- Controller axes

Describing individual parameters, arranged according to types

One part of the following axis parameters is required for these drive or axis types.

The A-parameters to be processed further in the drive have to be transferred to the corresponding S- or P-parameters or distributed across several S- and/or P-parameters. Since this is different for the various drive types, these specifications complete the parameter attributes.

Transferring A-/C-parameters to S-/P-parameters for

- [IndraDrive: A-/C- ==> S-/P-parameters \(calculation in the drive\) , page 733](#)
- [IndraDrive: A-/C- ==> S-/P-parameters \(calculation in the control\) , page 729](#)
- [SercosDrive: A-/C- ==> S-/P-parameters, page 738](#)
- [HydraulicDrive: A-/C- ==> S-/P-parameters \(calculation in the drive\), page 745](#)
- [HydraulicDrive: A-/C- ==> S-/P-parameters \(calculation in the control\), page 742](#)

4.1.2 A-0-0000 - A-0-0499

A-0-0000, Dummy, A-parameter

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RW	RW	RW	RW	RW	RW	RW	RW	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function A parameter serves as a placeholder; it does not have a function. A parameter can be described and read cyclically.

Use Measure down time for writing and reading.

A-0-0000 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: BINARY, 4BYTE **PLC_data_type:** DWORD
Memory: NVRAM **Editability:** P0, P2, BB, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0001, Logic axis number

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter shows the actual logical axis number.

A-0-0001 - Attributes:

Function: PARAMETER
MLC_data_type: UINT_DEC, 2BYTE
Memory: RAM
Unit: --
PLC_data_type: UINT
Editability: READ_ONLY
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-0002, Axis name

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function A descriptive text for the axis can be saved in this parameter (e.g. swiveling axis). The text has no functional significance.

Describing individual parameters, arranged according to types

A-0-0002 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P2, BB, PM
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"Axis_name"
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0142, S-0-1302.0.3		
	IndraDrive/ Control:	S-0-0142, S-0-1302.0.3		
	HydraulicDrive/ Drive:	S-0-0142, S-0-1302.0.3		
	HydraulicDrive/ Control:	S-0-0142, S-0-1302.0.3		
	SercosDrive:	S-0-0142, S-0-1302.0.3		

A-0-0004, Axis type

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains information on the type of axis and their configuration.

Structure

Bit	Name/function
0	Interpolation method 0: Interpolation in the drive 1: Interpolation in the control
1	Telegram configuration 0: Device-specific 1: PackProfile-compliant
2	Drive type (only valid for real axes) 0: Electric 1: Hydraulic

Bit	Name/function
7..3	Axis types 00001: IndraDrive/HydraulicDrive/SercosDrive 00010: Virtual axis 00100: Encoder axis 01000: Link axis 10000: Controller axis
8..9	Reserved
10	Reserved
11	Operation mode "Velocity control" 0: Not available / not configured 1: Available
12	Operating mode "Position control" 0: Not available / not configured 1: Available
13	Operation mode "Torque/force control" 0: Not available / not configured 1: Available
14	Synchronization modes 0: Not available / not configured 1: Available
15	Parameterization level support 0: Parameterization level is not supported 1: Parameterization level is supported

Use *Representing the axis type (Bit 7...3)*

- 16#08 IndraDrive / HydraulicDrive / SercosDrive
- 16#10 Virtual axis
- 16#20 encoder axis
- 16#40 link axis
- 16#80 controller axis

Parameterization level support

Irrespective of the control and communication phase, devices can be configured via the parameterization level.

Thus, axes can be moved further, the I/Os can continue to exchange cyclic data and the PLC program keeps running.

Thus, these devices support two modes:

Parameterization mode

- In the parameterization mode, all device parameters - that are not write-protected - can be changed. This does not apply to communication partners such as configuration, timing or user-defined data containers.
- If a device is in the parameterization mode, it remains irrespective of the communication phase.

Describing individual parameters, arranged according to types

Operating mode

- Only parameters without write protection in this mode can be changed in the operating mode.
- The parameter crosscheck is performed when switching from parameterization to operating mode.
- The adjustment of A- to S-/P-parameter is executed.

Switching the modes

- For **one** device, switching between the two modes is controlled using the parameter "A-0-0024, Axis state".
- To switch **multiple** devices, the parameter "C-0-1070, Command: PM/OM switching" executed.

The devices are selected using "A-0-0004 Axis type, bit 15".

- To switch an axis, it has to be in the "Standstill" state.

The real axis has to be in the "Power off" state.

An axis in the parameterization mode cannot be traversed.

A-0-0004 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0005, Drive address

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	+	-	-
Direct access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the drive address configured for the axis. The drive is assigned via this axis address.

Use **IndraDrive/HydraulicDrive/SercosDrive**

0: Invalid drive address,

1..99: Drive addresses.

Encoder axis

0: Invalid drive address,

1..99: Encoder drive addresses.

A-0-0005 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: RAM **Editability:** READ_ONLY
Var.data_type: - **MinMax_check:** -
 Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0006, Drive type

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	+	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter shows the detected drive type.**Use** Possible entries are:

- "SercosDrive"
- "IndraDrive, Interpolation Drive"
- "IndraDrive, Interpolation Control"
- "HydraulicDrive, Interpolation Drive"
- "HydraulicDrive, Interpolation Control"
- "IndraDrive, Encoder"
- "SercosDrive, Encoder"

Describing individual parameters, arranged according to types

A-0-0006 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"Drive not in ring"
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0007, Axis configuration

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

**Function
Structure**

The axis configuration is set in this parameter.

Bit	Name/function
0	Lag error 0: Position control with lag error is specified for the axis 1: Position control without lag error is specified for the axis
1	Position control via encoder 1 or 2 (refer to bit 13) 0: Position control via encoder 1 (motor encoder) 1: Position control via encoder 2 (external encoder)
2	Deactivation of torque (only IndraDrive and HydraulicDrive) 0: Torque is enabled. The function block MC_TorqueControl can be used 1: Torque is disabled. The function block MC_TorqueControl cannot be used
3	Extending the position command value interface (only IndraDrive and HydraulicDrive) 0: Disabled (transmitting S-0-0047 to MDT) 1: Enabled (transmitting S-0-0047 and P-0-0100 to MDT)

Bit	Name/function
4	Synchronization settings for A-0-0242/A-0-0243 (only IndraDrive and HydraulicDrive with interpolation in the control) 0: A-0-0242/A-0-0243 are overwritten with A-0-0034 and A-0-0032/A-0-0033. 1: A-0-0242/A-0-0243 can be set individually by the user. No synchronization with A-0-0034 and A-0-0032/A-0-0033.
5	Mode "Selection of drive modes" (only controller axis, IndraDrive and HydraulicDrive with interpolation on the control) 0: Automatic selection of the drive mode for the PLCopen function block "MC_Stop" by the control firmware 1: Manual selection of the drive mode for the PLCopen function block "MC_Stop" via bit 6 and bit 7
7..6	Selection of the drive mode for the PLCopen function block MC_Stop 00: Drive ramps in velocity control 01: Drive ramps in position control 10: Drive ramps in current operation mode (position or velocity control) The following applies to the operation modes "Force/torque control" and "Direct valve control": • Electric drives ramp in velocity control • Hydraulic drives ramp in position control • Controller axes ramp in position control 11: Reserved
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Hybrid position control 0: Position control via encoder 1 or 2 (see A-0-0007 bit 1) 1: Position control via encoder 1 and 2 (hybrid)
14	Reserved
15	Status generation 0: Status bits, e.g. InPosition and InVelocity are generated based on the interpolated values of an axis 1: Status bits, e.g. InPosition and InVelocity are generated based on the actual values of an axis
31..16	Reserved



In case of HydraulicDrives, bit 1 (position control via encoder 1 or 2) cannot be configured on position control via encoder 2 (external encoder).

A second encoder is not supported.

Describing individual parameters, arranged according to types

A-0-0007 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	NVRAM	Editability:	P2, PM
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0x01
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0032 - S-0-0035, S-0-0284 - S-0-0287, S-0-0520		
	IndraDrive/ Control:	S-0-0032, S-0-0033, S-0-0034, S-0-0520		
	HydraulicDrive/ Drive:	S-0-0032, S-0-0033, S-0-0034, S-0-0035, S-0-0284, S-0-0285, S-0-0286, S-0-0287		
	HydraulicDrive/ Control:	S-0-0032, S-0-0033, S-0-0034		
	SercosDrive:	S-0-0032, S-0-0520		

A-0-0008, Link axis, master axis selection

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	-	+	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The link device's control address is defined and the master axis - of the two master axes available - required by the link device is set in this parameter.

The parameter is a list parameter with the following structure:

- Element 1: Control address selection
- Element 2: Master axis selection

Structure **Control address selection:**

1...64: a link device's control address.

The following maximum values are permitted for the control address, depending on the link cycle time (C-0-0700, C2C, cycle time (Tcyc), command value). This maximum value is checked when switching into operating mode:

Link cycle time	Maximum control address
2000 µs	16
4000 µs	32
8000 µs	64

Tab. 4-1: Maximum control address

Master axis selection:

Master axis A (element 2=1): Corresponds to the first axis in the link data of the selected link device

Master axis B (element 2=2): Corresponds to the second axis in the link data of the selected link device.



The axis addresses of the master axis in the link do not generally correspond to the local addresses of the master axis in the selected link device. In this case, master axis A and B are explicitly specified for this purpose.

A-0-0008 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	NVRAM	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	99	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0009, Osci: list of all A-parameters that can be oscilloscoped

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter contains the list of all A-parameters which can be oscilloscoped.

A-0-0009 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0010, List of all A-parameters

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list includes all A parameters of the axis. The entries are in ID number format.

The entries are sorted according to definition and how they belong together, but not according to ID number or alphabetically.

The A parameters of the axis are stored in the order of these entries.

Structure

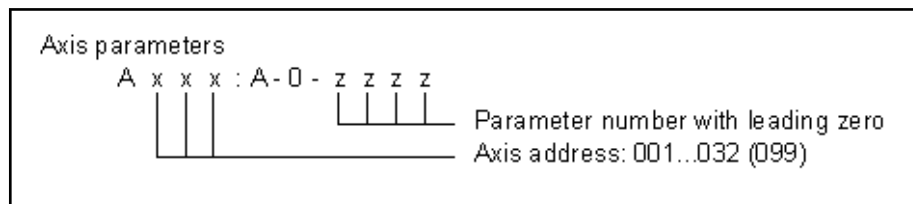


Fig. 4-1: ID number format of an A parameter

Use A001: [A-0-0004](#) - axis 1; parameter [A-0-0004](#).

A-0-0010 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0011, List of all invalid A-parameters

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list shows the all A parameters which are detected as illegal

- during the MLC checksum test, e.g., following a firmware update, or
- during the MLC plausibility test, e.g., as a result of an illegal operating mode.

The entries are in ID number format.

Structure

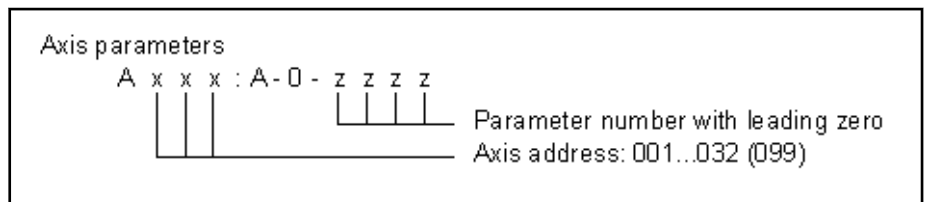


Fig. 4-2: ID number format of an A parameter

Use A001: [A-0-0004](#) - axis 1; parameter [A-0-0004](#).

A-0-0011 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0012, Checksum of all A-parameters

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function When reading this parameter the checksum is generated by all A parameter values the IDNs of which are listed in parameter "A-0-0013, IDN list of checksum A parameter".

A-0-0012 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0013, IDN list of checksum A-parameters

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The IDNs of those A parameters the checksum of which is to be generated are entered in this parameter.

The checksum generation is triggered with the reading of the "A-0-0012, Checksum of A parameters ". In the condition as supplied this does not yet contain any IDNs.

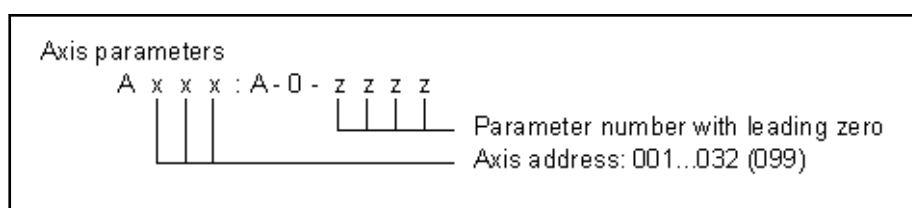
Structure

Fig. 4-3: ID number format of an A parameter

Use A001: A-0-0004 - axis 1; parameter A-0-0004.**A-0-0013 - Attributes:**

Function: PARAMETER **Unit:** --

MLC_data_type: MLC_IDN, 8BYTE_VAR **PLC_data_type:** ARRAY of MB_IDN

Memory: NVRAM **Editability:** P2, PM

Var.data_type: - **MinMax_check:** -

Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	4095	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0014, List of incorrect synchronized A-parameters

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list displays all A-parameters that cannot be transferred to the desired S-parameters.

Example:

The scaling was changed and therefore, the value range also changed. The A-parameters no longer match the new range.

Structure The entry is made in ID number format.

Describing individual parameters, arranged according to types

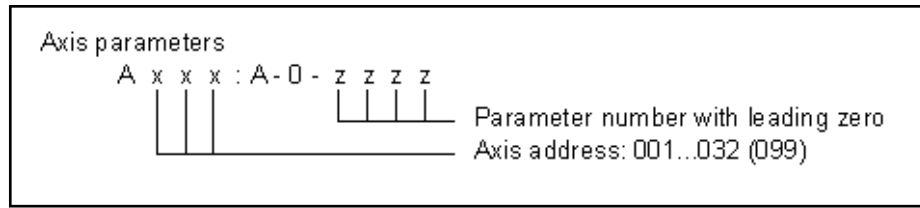


Fig. 4-4: ID number format

Use A001: A-0-0004 - axis 1; parameter A-0-0004.

A-0-0014 - Attributes:

Function: PARAMETER Unit: --
 MLC_data_type: MLC_IDN, 8BYTE_VAR PLC_data_type: ARRAY of MB_IDN
 Memory: RAM Editability: READ_ONLY
 MinMax_check: -
 Var.data_type: - Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0016, Project identification number

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function IndraWorks generates a unique character string in this parameter for the global identification of the project. The character string is unique for each project.

The parameter does not affect the control's function.



This parameter is only intended for internal use.

A-0-0016 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"Project ID number"
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0018, Control word of controller

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter defines the material control information of the controller of a controller axis, like e.g.:

- controller release
- drive halt
- selection of the target operating mode.

Structure

Bit	Designation/ function
7..0	reserved
9..8	Target operating mode: 00 - Position control, follows "A-0-0150, interpolated position" 01 - Force control, follows "A-0-0156, interpolated force" 10 - Velocity control, follows "A-0-0152, interpolated velocity" 11 - Direct valve control, follows "A-0-0158, interpolated analog direct value"
12..10	reserved
13	Drive halt: 1-0 change, stopping the drive, only possible if bit 14 = 1 and bit 15 = 1.

Describing individual parameters, arranged according to types

Bit	Designation/ function
14	Drive release: 1-0 change, instantaneous torque shut-down, irrespective of bit 15 or bit 13.
15	Drive On: 1-0 change, best shut-down possible, only possible if bit 14 = 1
32..16	reserved

Use The parameter will be generated by the control in each cycle. The value can be accessed via direct variable in "ML_AXISDATA".

A-0-0018 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: BINARY, 4BYTE **PLC_data_type:** DWORD
Memory: RAM **Editability:** READ_ONLY
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-0019, Status word of controller

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function Structure

This parameter defines the relevant status information of a controller axis.

Bit	Name/function
2..0	Reserved
3	Status of command value processing: 0 - Command values are not processed, 1 - Command values are processed,
7..4	Reserved

Bit	Name/function
10..8	Actual operation mode: 000 - HBA, position control 001 - NBA1, force control 010 - NBA2, velocity control 011 - NBA3, direct valve control 100 - NBA4, reserved 101 - NBA5, reserved 110 - NBA6, reserved 111 - NBA7, reserved
11	Reserved
12	State bit of state class 2, warning
13	State bit of state class 1, error
15..14	Readiness: 00 - Not ready for power on 01 - Ready for power on ("bb") 10 - Controller system ready ("Ab") 11 - In operation (e.g. "AF")
18..16	Reserved
19	Actual position value is relative/referenced
32..20	Reserved

Use The controller status word can be written from a PLC program via the function block ML_ControlWriteActualData.

A-0-0019 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:	---	---	---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0020, Axis diagnostic message

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter contains the current diagnostics message of the axis (message, warning or error).

If bit 8 or bit 9 of the "A-0-0021, Axis status " parameter is set to 1, this parameter contains either the warnig text (bit 8) or the error text (bit 9).

A-0-0020 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: TEXT, 1BYTE_VAR **PLC_data_type:** STRING
Memory: RAM **Editability:** READ_ONLY
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"No messages now available"
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-0021, Axis status

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter describes the current value of the axis status.

Structure

Bit	Name/function
0	Active CAM table, bit 0
1	Active CAM table, bit 1
2	Active CAM table, bit 2
3	Cam, distance enabled/applied
4	Commanded axis command velocity = Current axis command velocity (interpolation in the control) Commanded axis command velocity = Current actual axis velocity (interpolation in the drive) (depends on the parameter " A-0-0623 Synchronization run window, velocity")
5	Axis velocity smaller than/equal to A-0-0222 (Standstill window)
6	Commanded axis command position = Current axis command position (interpolation in the control) Commanded axis command position = Current actual axis position (interpolation in the drive)
7	Axis synchronized (depends on the parameter " A-0-0622 Synchronization run window, position")
8	Axis indicates a warning
9	Axis indicates an error
10	Actual position value is relative/referenced
11	Axis torque/force command value = actual value
12	Axis is in operating mode (P4)
13	bb - Ready for power on
14	Ab - Control and power section ready
15	AH_AF - "Drive halt", "Drive enabled"
16	Reserved
17	Error reaction enabled
18	Cyclic position command value channel open
19	Master phase offset reached
20	Cyclic force command value channel open
21	Cyclic velocity command value channel open
22	Cyclic analog value channel open
23	Communication via Sercos III NRT
24	Command value processing interrupted
25	PLC parameter system active
26	Reserved
27	Command value specification affected by PLC program
28	Position data in modulo format

Describing individual parameters, arranged according to types

Bit	Name/function
29	Position data is rotatorily scaled
30	Positions data of the (external) master axis is valid
31	Command value decoupling active



Only bit 5 and bit 10 are supported for encoder axes and link axes.

Use Bit 2...0:

The drive uses the bits 0/1 of this parameter to report from which cam table the table values are used.

- 000 - Cam 1 , active, (P-0-0072),
- 001 - Cam 2 , active, (P-0-0092),
- 010 - Cam 3 , active, (P-0-0080),
- 011 - Cam 4 , active, (P-0-0081),
- 100 - Cam 5 , active, (P-0-0782),
- 101 - Cam 6 , active, (P-0-0783),
- 110 - Cam 7 , active, (P-0-0784),
- 111 - Cam 8 , active, (P-0-0785).



The control firmware currently supports only the cams 1-4.

Bit 3:

Distance enabled/applied, copy of bit "P-0-0089, Status word synchronization modes, bit 5" from the drive

Bit 4:

Axis command velocity = actual axis velocity

For any velocity command value, "[A-0-0102](#), Actual velocity value" is in the range specified by "[A-0-0223](#), Velocity window".

Bit 5:

"[A-0-0102](#), Actual velocity value" smaller than/equal to "[A-0-0222](#), Standstill window".

For the velocity command value zero, "[A-0-102](#), Actual velocity value" is in the range specified by "[A-0-0222](#), Standstill window".

Bit 6:

Commanded axis command position = Current axis command position (interpolation in the control)

"[A-0-0150](#), Interpolated position" reached the commanded value.

Commanded axis command position = Current actual axis position (interpolation in the drive)

For any commanded command value, "[A-0-0100](#), Actual position value" is in the range specified by "[A-0-2795](#), Actual position value".

Bit 7:

Axis is synchronized.

The axis follows the master (master axis) in the closed-loop velocity control (MC_GearIn) or in the position data control (MB_GearInPos).

Bit 8:

Axis indicates a warning

During operation, the drive controller performs monitoring tasks. Some monitorings depend on the operation mode and/or the parameter settings. If it detects a state, in which proper operation is still possible, but which remains and leads to an error as the operation progresses, a warning is output.



Some warnings do not cause an error if ignored.



In the drive, warnings can be masked out via the parameter "S-0-0097, Mask class 2 diagnostics". In this case, bit 8 is also not set.

Bit 9:

Axis indicates an error

Depending on the operation mode and several parameter settings, the drive controller monitors. If it detects a state, in which proper operation is no longer possible, the drive controller outputs an error message.

Bit 10:

0 - Actual position value is relative

1 - Actual position value is referenced.

Bit 11:

Torque/force command value = Actual torque/force value

The actual torque/force value of a (hydraulic) drive is equivalent to the specified torque/force command value.

Bit 12:

Axis is in operating mode (P4)

Bit 13:

"bb" - Axis is ready for power on

The diagnostics "A0000013, Ready for power on" indicates that the drive is supplied with control voltage.

The drive is ready for power on.



This state is indicated on the drive control panel with "bb" (ready for operation).

If there is an error (bit 9) or a warning at the drive (bit 8), this message is displayed first.

Bit 14:

"Ab" - Control and power section ready

The diagnostics "A0000012, Control and power section ready" indicates that the drive is supplied with control voltage and that the power is connected. The drive is ready for power output.



This state is indicated on the drive control panel with "Ab" (drive ready).

If there is an error (bit 9) or a warning at the drive (bit 8), this message is displayed first. The error or warning can be impeded by a requested power output.

Bit 15:

"AH_AF" - Drive halt, drive enabled

The drive outputs power. That means that it is under torque.

The "Drive halt" function sets an axis with a defined acceleration and jerk to standstill.

"Drive enabled" means that the drive is enabled in the desired operation mode. Diagnostics (A0000100...A0000211)

Bit 17:

Error reaction active

The axes are stopped with the set deceleration according to the parameter "A-0-0224, Rapid stop deceleration". While ramping down, the bit is active, the axes are set to standstill and it is set to zero.

Bit 18:

Cyclic position command value channel open

A cyclic position command value channel was opened for the axis with the ML_OpenCyclicPositionChannel function block.

Bit 19:

Master phase offset reached

The phase offset entered at the MB_Phasing function block was reached.

Bit 20:

Cyclic force command value channel open

A cyclic force command value channel was opened for the axis with the ML_OpenCyclicTorqueChannel function block.

Bit 21:

Cyclic velocity command value channel open

A cyclic velocity command value channel was opened for the axis with the ML_OpenCyclicVelocityChannel function block.

Bit 22:

Cyclic analog command value channel open

A cyclic position command value channel was opened for the axis with the ML_OpenCyclicAnalogChannel function block. This channel is only available for HydraulicDrive.

Bit 23:

Communication via Sercos III NRT

Parameter queries to the drive via Sercos III NRT.

Bit 24:

Command value processing interrupted. There can be superordinate drive functions in the drive interrupting a Motion command by a superordinate PLC, but usually not canceling the commanding. This bit indicates whether such a drive function (e.g. drive-controlled referencing) is enabled.

Bit 25:

PLC parameter system is active

Bit 27:

The command values are affected or specified by the PLC program.

Bit 28:

0 - Absolute position data

1 - Position data in modulo format

Bit 29:

0 - Position data is translatorily scaled

1 - Position data is rotatorily scaled

Bit 30:

Positions data of the (external) master axis is valid

The external master axis produces parameter data in the C2C link according to "C-0-0778, C2C, command configuration". This data is marked as valid of bit 30 is set. This status bit is handled analogously for local master axes.

Bit 31:

Command value decoupling active

For the axis, the command value decoupling was enabled via "A-0-0024, Axis state". For real axes with interpolation in the control, the traversing commands are executed without the subsequent motion in the drive.

A-0-0021 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	AT Configuration
IndraDrive/ Control:	AT Configuration
HydraulicDrive/ Drive:	AT Configuration
HydraulicDrive/ Control:	AT Configuration
SercosDrive:	AT Configuration

A-0-0022, Extended axis status

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter describes the current axis status based on the PLCopen state diagram. An active bit indicates that the axis is in the respective state.

Describing individual parameters, arranged according to types



The following has to be noted for real axes:

After a Motion commanding, the parameter [A-0-0022](#) immediately indicates the PLCopen state even if the axis still requires time internally to reach the new operation mode.

Thus, use the function block outputs (Done, InVelocity...) of the Motion command function blocks to ensure that this Motion state is really effective.

Structure

Bit	Name/function
0	Axis is in "Error stop"
1	Axis is in "Stopping"
2	Axis is in "Homing"
3	Power on carried out
4	Axis is in "Discrete Motion"
5	Axis is in "Continuous Motion"
6	Axis is in "Synchronized Motion"
7	Axis is in "Standstill"
8	Axis is in "Coordinated Motion"
9	Axis is in "Controlled Motion"
31..10	Reserved

[A-0-0022](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	AT Configuration
IndraDrive/ Control:	AT Configuration
HydraulicDrive/ Drive:	AT Configuration
HydraulicDrive/ Control:	AT Configuration
SercosDrive:	AT Configuration

A-0-0023, Axis diagnostic number

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function If the bit 8 or the bit 9 of the parameter “[A-0-0021](#), Axis status” is set to 1, this parameter shows the actual axis diagnostic number.

A-0-0023 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_HEX, 4BYTE **PLC_data_type:** UDINT
Memory: RAM **Editability:** READ_ONLY
Var.data_type: - **MinMax_check:** -
Var.min/max_value: -

Common: Minimum value Maximum value Default value
 --- --- 0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0390
IndraDrive/ Control: S-0-0390
HydraulicDrive/ Drive: S-0-0390
HydraulicDrive/ Control: S-0-0390
SercosDrive: ---

A-0-0024, Axis state

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Use this parameter to change the axis states.

Possible axis states are:

- Active
- Parked
- Deactivated
- Command value processing switched on/off in the drive

Describing individual parameters, arranged according to types

- Parameterization mode

The following values result for the parameter due to the possible combinations of these states:

Value	Name/function
0	Axis is active (command value calculation in the control + command value processing in the drive)
1	Axis is parked
2	Axis is deactivated
3	Not supported
4	Axis is active without command value processing in the drive
5	Axis is active with command value calculation in the control and the drive is parked
6	Axis is active with command value calculation in the control and the drive is deactivated
7	Not supported
8	Axis is active in parameterization mode
9	Axis in parked in parameterization mode
10	Axis is deactivated in parameterization mode
11	Not supported
12	Axis is enabled in parameterization mode without command value processing in the drive
13	Axis is active in parameterization mode with command value calculation in the control and the drive is parked
14	Axis is active in parameterization mode with command value calculation in the control and drive is deactivated

Setting the parameter affects the state of the connected drive. If the drive is connected to another axis at the same time, the parameter [A-0-0024](#) is adapted in the second axis.

Use Axis deactivated:

If an axis is deactivated, S- and P-parameters cannot be accessed. A-parameters can still be read or written. For a parked axis, all parameters remain accessible.

Axis parked:

If an axis is parked, the command "Parking axis" is triggered in the drive. For its functional description, refer to the drive help.

Command value decoupling:

The command value decoupling allows the execution of traversing commands for a (real) axis with interpolation in the control (command value calculation) but without a motion in the drive (without command value processing in the drive).

The calculated command value of the axis can be retrieved using the interpolated position of the control ([A-0-0151](#)).

In the axis states with command value decoupling, the actual position value of the axis ([A-0-0100](#)) does not follow.

Parameterization mode:

In the parameterization mode, the axis can be parameterized irrespective of the control mode (see below).

Restrictions:

Parked, deactivated axes or axes in parameterization mode cannot be moved by the PLC.

Data in the AxisData structure is not updated.

If the parked or deactivated axis in the parameter "C-0-0703, C2C, configuration of master axes" is configured, its data is marked as invalid in the link.

Special feature of the encoder axis

Axis 1: Real axis connected to drive 1

Axis 2: Encoder axis connected to drive 1

If the parameter A-0-0024 is changed in axis 1, the parameter is set in axis 2 at the same time.



If the command value decoupling is deactivated, the interpolated position of the control (A-0-0151) is set to the current actual value of the drive. This causes a jump in position.



If a slave axis follows a master axis operating in a parked or deactivated state, the error F2220231, "Invalid master axis data", is generated when disabling the command value decoupling. Thus, all slave axes are to be decoupled before deactivating the command value decoupling.

Parameterization level support

Irrespective of the control and communication phase, devices can be configured via the parameterization level.

Thus, axes can be moved further, the I/Os can continue to exchange cyclic data and the PLC program keeps running.

Thus, these devices support two modes:

Parameterization mode

- In the parameterization mode, all device parameters - that are not write-protected - can be changed. This does not apply to communication partners such as configuration, timing or user-defined data containers.
- If a device is in the parameterization mode, it remains irrespective of the communication phase.

Operating mode

- Only parameters without write protection in this mode can be changed in the operating mode.
- The parameter crosscheck is performed when switching from parameterization to operating mode.
- The adjustment of A- to S-/P-parameter is executed.

Switching the modes

- For **one** device, switching between the two modes is controlled using the parameter "A-0-0024, Axis state".
- To switch **multiple** devices, the parameter "C-0-1070, Command: PM/OM switching" executed.

The devices are selected using "A-0-0004 Axis type, bit 15".

- To switch an axis, it has to be in the "Standstill" state.

The real axis has to be in the "Power off" state.

An axis in the parameterization mode cannot be traversed.

Describing individual parameters, arranged according to types

A-0-0024 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	P0, P2, BB, PM
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	6	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0139

IndraDrive/ Control: S-0-0139

HydraulicDrive/ Drive: S-0-0139

HydraulicDrive/ Control: S-0-0139

SercosDrive: ---

A-0-0026, Telegram error counter of the drive

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	+	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter counts all invalid drive bus slave telegrams (AT) in operation mode. If two ATs fail in direct succession, then error "F80B0004, Double AT missing" is generated.

The "AT error counter" only counts up to 65535 and then stands. It takes a while to reach this value, if a transmission has a great deal of interference.

Writing into it, resets the counter.

A-0-0026 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-0027, Error counter of data loss

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	+	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

The parameter is only valid for sercos III. It indicates the number of data losses from a sercos III device to the master detected in the sercos III connection.

The counter stops at a maximum of 65535 and has no overflow.

Writing in this parameter does not influence the subordinate sercos III connection state machine.

A-0-0027 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: RAM **Editability:** P0, P2, BB, PM
Var.data_type: - **MinMax_check:** -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

Describing individual parameters, arranged according to types

A-0-0028, Travel range limit switch

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter defines the signal behavior of the travel range limit switch inputs and the behavior of the drive with regard to exceeded travel ranges.

Structure

Bit	Function
0	Signal behavior travel range limit switch inputs (real axes, only) 0: not inverted, 24 V $\Rightarrow$ travel range is exceeded, 1: inverted, 0 V $\Rightarrow$ travel range is exceeded.
1	Activation of travel range limit switch (real axes, only) 0: no, 1: yes.
2	Handling when travel range exceeded 0: as error (acc. to error reaction), 1: as fatal warning (shutdown).
15..3	reserved

A-0-0028 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x07	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0090
IndraDrive/ Control:	P-0-0090
HydraulicDrive/ Drive:	P-0-0090
HydraulicDrive/ Control:	P-0-0090
SercosDrive:	---

A-0-0029, Position polarities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

For real axes applies:

The first four bits of this parameter can invert the polarities of the specified position data.

The polarities are switched outside the controlled system (that is at the input and output of the controlled system).

The parameter is applied to the parameter S-0-0055 of the drive device.



The position polarity has to be specified upon the first axis commissioning before creating the machine zero point reference for measuring systems, since other actual position values result when changing the polarity.

For rotary (rotating) motors applies:

- Rotation of the motor output shaft in clockwise direction at positive position command value difference and positive polarity.

For linear motors applies:

- Motion of the primary component towards the cable connection at positive position command difference and positive polarity.

See also: [A-0-0048](#) and [A-0-0049](#)

Function

The software position limit values "[A-0-0030](#), Position limit value, positive" or "[A-0-0031](#), Position limit value, negative" are activated or deactivated using bit 4 of this parameter.

Structure

Bit	Name/function
0	Position command value 0: Positive polarity 1: Negative polarity
1	Position command value, additive 0: Positive polarity 1: Negative polarity
2	Actual position value 1 0: Positive polarity 1: Negative polarity

Describing individual parameters, arranged according to types

Bit	Name/function
3	Actual position value 2 0: Positive polarity 1: Negative polarity
4	Position limit value 0: Not active, 1: Active.
15..5	Reserved

A-0-0029 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	S-0-0055		
IndraDrive/ Control:	S-0-0055		
HydraulicDrive/ Drive:	S-0-0055		
HydraulicDrive/ Control:	S-0-0055		
SercosDrive:	---		

A-0-0030, Position limit value, positive

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function A permitted traversing range of an axis can be defined by the position limit values. This parameter limits the maximum allowed positive actual position value (positive traversing direction). The first actual position value, which is not permitted anymore, is entered.

The positive limit value is only active if all position data refers to the axis zero point, i.e. the axis is referenced "[A-0-0021](#), Axis status, bit 10".

Use If "[A-0-2200](#), Command position" of the axis is set on or outside the positive position limit value, the error bit becomes TRUE in "[A-0-0021](#), Axis status, bit 9" TRUE and generates the error "F2112053, Target position outside the traversing range".

If "[A-0-0100](#), Actual position value" reaches or exceeds "[A-0-0030](#), Position limit value, positive" or "[A-0-0031](#), Position limit value, negative", the axis

sets the error bit in "A-0-0021, Axis status, bit 9" and generates the error "F2116029, Positive position limit value exceeded" or "F2116030, Negative position limit value exceeded".

See also "Functional Description": "Position limit values".

A-0-0030 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	36000.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0049
IndraDrive/ Control:	S-0-0049
HydraulicDrive/ Drive:	S-0-0049
HydraulicDrive/ Control:	S-0-0049
SercosDrive:	---

A-0-0031, Position limit value, negative

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function A permitted traversing range of an axis can be defined by the position limit values. This parameter limits the maximum allowed negative actual position value (negative traversing direction). The first actual position value, which is not permitted anymore, is entered.

The negative limit value is only active if all position data refers to the axis zero point, i.e. the axis is referenced "A-0-0021, Axis status, bit 10".

Use If "A-0-2200, Command position" of the axis is set on or outside the negative position limit value, the error bit becomes TRUE in "A-0-0021, Axis status, bit 9" TRUE and generates the error "F2112053, Target position outside the traversing range".

If "A-0-0100, Actual position value" reaches or exceeds "A-0-0030, Position limit value, positive" or "A-0-0031, Position limit value, negative", the axis sets the error bit in "A-0-0021, Axis status, bit 9" and generates the error "F2116029, Positive position limit value exceeded" or "F2116030, Negative position limit value exceeded".

See also "Functional Description": "Position limit values".

Describing individual parameters, arranged according to types

A-0-0031 - Attributes:	Function:	PARAMETER	Unit:	A-0-0059
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	-36000.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0050		
	IndraDrive/ Control:	S-0-0050		
	HydraulicDrive/ Drive:	S-0-0050		
	HydraulicDrive/ Control:	S-0-0050		
	SercosDrive:	---		

A-0-0032, Velocity limit value, positive

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter describes the maximum admissible velocity in positive direction.

Use If the parameter "[A-0-0102](#), Actual velocity value" exceeds the parameter "[A-0-0032](#), Velocity limit value, positive" and if the parameter value is smaller than the content of "[A-0-0035](#), Velocity limit value, bipolar", the axis sets the warning bit "[A-0-0021](#), Axis status, bit 8" and generates the warning "E0112061, Command velocity higher than positive limit value".

A-0-0032 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	2147483647.0	1000.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0038
IndraDrive/ Control:	S-0-0038
HydraulicDrive/ Drive:	S-0-0038
HydraulicDrive/ Control:	S-0-0038
SercosDrive:	---

A-0-0033, Velocity limit value, negative

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter describes the maximum admissible velocity in negative direction.

Use If the parameter "A-0-0102, Actual velocity value" falls below the parameter "A-0-0033, Velocity limit value, negative" and if the parameter value is higher than the content of "A-0-0035, Velocity limit value, bipolar", the axis sets the warning bit "A-0-0021, Axis status, bit 8" and generates the warning "E0112062, Command velocity lower than negative limit value".

A-0-0033 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	0.0	-1000.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0039
IndraDrive/ Control:	S-0-0039
HydraulicDrive/ Drive:	S-0-0039
HydraulicDrive/ Control:	S-0-0039
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0034, Acceleration limit value, bipolar

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter describes the maximum admissible symmetric acceleration in both directions (acceleration and deceleration).

Use If the parameter "[A-0-0103](#), Actual acceleration value" exceeds the parameter "[A-0-0034](#), Acceleration limit value, bipolar", the axis sets the warning bit "[A-0-0021](#), Axis status, bit 8" and generates the warning "E0112039, Maximum acceleration exceeded".

A-0-0034 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	1000.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0138
IndraDrive/ Control:	S-0-0138, P-0-1203, P-0-1213
HydraulicDrive/ Drive:	S-0-0138
HydraulicDrive/ Control:	S-0-0138
SercosDrive:	---

A-0-0035, Velocity limit value, bipolar

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter symmetrically describes the maximum admissible velocity in both directions.

Use If the parameter "[A-0-0102](#), Actual velocity value" exceeds the parameter "[A-0-0035](#), Velocity limit value, bipolar" and if the parameter value is smaller

than the content of "[A-0-0032](#), Velocity limit value, positive", the axis sets the warning bit "[A-0-0021](#), Axis status, bit 8" and generates either the warning "E0112061, Command velocity higher than positive limit value" or "E0112062, Command velocity smaller than negative limit value".

A-0-0035 - Attributes:

Function: PARAMETER **Unit:** [A-0-0056](#)
MLC_data_type: FLOAT, 4BYTE **PLC_data_type:** REAL
Memory: NVRAM **Editability:** P2, BB, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

Common: **Minimum value** **Maximum value** **Default value**
 0.0 2147483647.0 1000.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0091
IndraDrive/ Control: S-0-0091
HydraulicDrive/ Drive: S-0-0091
HydraulicDrive/ Control: S-0-0091
SercosDrive: ---

A-0-0036, Jerk limit value, bipolar

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

The parameter describes the maximum admissible acceleration change for each time interval (jerk) symmetrical in both directions (acceleration and deceleration).

This limit value counteracts the commanded jerk in the parameter "[A-0-0216](#), Jerk".



The parameter limits the acceleration change for each time interval during "Drive hold" and for commands automatically generating position command values for themselves.

A value of "0" switches off the jerk limit value.

It is influenced by the parameter "[A-0-0053](#), Scaling type for acceleration data".

Describing individual parameters, arranged according to types

A-0-0036 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0349		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	S-0-0349		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0038, Torque/force limit value, bipolar

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter can be used to limit the torque/force command value to maximum admissible values to protect mechanical components in the drive train.

The parameter acts in a bipolar way. That means that positive and negative command values are limited to the entered value. The limit affects the total of all torque command values. That is the total of the command value parts of the velocity controller output and the command value parts from the acceleration-dependent feedforwards ("S-0-0348, Acceleration feedforward gain"; velocity control loop: "P-0-1126, Acceleration feedforward").

The unit of "A-0-0038" depends on the scaling set.

See also Parameter Description "A-0-0050, Scaling type for torque/force data"



The effective limit value is displayed in "P-0-0049, Effective torque/force command value". This value can be limited via "A-0-0038" due to a smaller value in "P-0-0109, Peak torque/force limitation" or due to a current limitation by a respective amplifier or motor load.

If the drive should be provided with a lower torque during stationary mode (constant speed) than during accelerations, this can be achieved with the respective values of "S-0-0082, Torque/force limit value, positive" and "S-0-0083, Torque/force limit value, negative" in connection with the acceleration feedforward (S-0-0348 or P-0-1126).

The torque/force limit value, bipolar also affects the "C1300 command: Travel to fixed stop".

The value of "[A-0-0038](#)" is a criterion for acknowledging "C1300".

See also Functional Description "Torque/Force Control".

A-0-0038 - Attributes:	Function:	PARAMETER	Unit:	A-0-0050
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		0.0	2147483647.0	100.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		S-0-0092		
IndraDrive/ Control:		S-0-0092		
HydraulicDrive/ Drive:		S-0-0092		
HydraulicDrive/ Control:		S-0-0092		
SercosDrive:		---		

A-0-0039, Torque/force limit value, positive

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter describes the maximum admissible force/torque in positive direction.



As of drive firmware HDx-20 (hydraulic drive), the parameter "[A-0-0039](#), Torque/force value, positive" is synchronized to "S-0-0550, Torque/force command value, positive 2".

Use If the parameter "[A-0-0110](#), Actual torque/force value" exceeds the parameter "[A-0-0039](#), Torque/force limit value, positive" and if the parameter value is smaller than the content of "[A-0-0038](#), Torque/force limit value, bipolar", the axis sets the warning bit "[A-0-0021](#), Axis status, bit 8" and generates the warning "E0112057, Torque/force limit value positively exceeded".

Describing individual parameters, arranged according to types

A-0-0039 - Attributes:	Function:	PARAMETER	Unit:	A-0-0050
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	2147483647.0	100.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0082		
	IndraDrive/ Control:	S-0-0082		
	HydraulicDrive/ Drive:	S-0-0082, S-0-0550		
	HydraulicDrive/ Control:	S-0-0082, S-0-0550		
	SercosDrive:	---		

A-0-0040, Torque/force limit value, negative

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter describes the maximum admissible force/torque in negative direction.



As of drive firmware HDx-20 (hydraulic drive), the parameter "A-0-0040, Torque/force value, negative" is synchronized to "S-0-0551, Torque/force command value, negative 2".

Use If the parameter "A-0-0110, Actual torque/force value" falls below the parameter "A-0-0040, Torque/force limit value, negative" and if the parameter value is higher than the content of "A-0-0038, Torque/force limit value, bipolar", the axis sets the warning bit "A-0-0021, Axis status, bit 8" and generates the warning "E0112058, Negatively fallen below torque/force limit value".

A-0-0040 - Attributes:	Function:	PARAMETER	Unit:	A-0-0050
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	0.0	-100.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0083
IndraDrive/ Control:	S-0-0083
HydraulicDrive/ Drive:	S-0-0083, S-0-0551
HydraulicDrive/ Control:	S-0-0083, S-0-0551
SercosDrive:	---

A-0-0045, Modulo value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	+	+	+
Direct_access:	RO	RO	--	--	RO	RO	RO	RO	RO
C2C_access:	RO	RO	--	--	RO	RO	RO	RO	RO
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function If the modulo format is set (parameter "[A-0-0059](#), Scaling type for position data, bit 7"), the modulo value specifies the numerical value when the position data overflows on "0".

See also "Functional Description": "Modulo processing".

[A-0-0045](#) - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0001	2147483647.0	360.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0103
IndraDrive/ Control:	S-0-0103
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	S-0-0103
SercosDrive:	S-0-0103

A-0-0046, Feed distance of the slave drive

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	+	+	+
Direct_access:	RO	RO	--	RO	RO	RO	RO	RO	RO
C2C_access:	RO	RO	--	RO	RO	RO	RO	RO	RO
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

For the interpolation in the control (IPO_CONTROL), this parameter is NOT used to calculate the slave axis motion (slave axis).



The function and significance of this parameter depends on the operation mode!



This parameter is also effective for:

- Real slave axis with IPO_DRIVE and absolute rotary scaling
- Master axis with IPO_CONTROL and absolute translatory scaling

In this case, [A-0-0046](#) of the master axis is applied when coupling the slave axis.

Velocity synchronization

The parameter is used in the operation mode "velocity synchronization with translatory velocity scaling" to convert the rotary master axis velocity to the translatory slave axis velocity.

Slave axis velocity = [A-0-2652](#) * [A-0-0046](#)

[A-0-2652](#) - Effective master axis velocity (rpm)

[A-0-0046](#) - Feed distance of the slave drive (mm/rev.)

Slave axis velocity (mm/min)

Synchronous mode with subordinate closed-loop position control (phase synchronization, cam...)

For translatory absolute scaling, it is traversed - from the slave axis of the feed distance parameterized in parameter [A-0-0046](#) - per output revolution of the electronic gear (including fine adjustment).

An output revolution of the electronic gear corresponds to a change of 2^{20} after division by "[A-0-2720](#), ELS, master axis gear, input revolutions ", multiplication with "[A-0-2721](#), ELS, master axis gear, output revolutions " and multiplication by the factor $(1 + \text{"A-0-2722, ELS, gear ratio fine adjustment"})$.

Observe the following restrictions:

- In the "Cam" mode, [A-0-0046](#) is only effective in the linear reduction branch.
- For modulo scaling in synchronous modes with subordinate closed-loop position control, the parameter "[A-0-0045](#), Modulo value" performs the task of [A-0-0046](#) in translatory scaling.

A-0-0046 - Attributes:**Function:**

PARAMETER

Unit:[A-0-0059](#)**MLC_data_type:**

DOUBLE, 8BYTE

PLC_data_type:

LREAL

Memory:

FLASH

Editability:

P2, PM

MinMax_check:

+

Var.data_type:

-

Var.min/max_value:

-

Common:**Minimum value**
0.01**Maximum value**
2147483647.0**Default value**
10.0**HydraulicDrive:**

Parameter_is_copied_to_associated_S-/P-parameters:**IndraDrive/ Drive:** P-0-0159**IndraDrive/ Control:** ---**HydraulicDrive/ Drive:** P-0-0159**HydraulicDrive/ Control:** ---**SercosDrive:** ---**A-0-0048, Velocity polarities**

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

In this parameter, the polarity of the velocity data is switched with regard to the application.

The polarity is not switched within, but outside (at input and output) a controlled system.

Structure

Bit	Name/function
0	Velocity command value 0: Positive polarity 1: Negative polarity
1	Position command value, additive 0: Positive polarity 1: Negative polarity
2	Actual velocity value 0: Positive polarity 1: Negative polarity
15..3	Reserved

Describing individual parameters, arranged according to types



Bit 1 and bit 2 are copies of bit 0.

Changes only apply in bit 0. Different settings of the individual bits are not permitted!

For **rotary (rotating) motors** applies: Rotation of the motor output shaft in clockwise direction causes a positive actual velocity value (positive polarity).

For **linear motors** applies: Motion of the primary component towards the cable connection side causes a positive actual velocity value and (positive polarity).

A-0-0048 - Attributes:

Function: PARAMETER Unit: --
 MLC_data_type: BINARY, 2BYTE PLC_data_type: WORD
 Memory: FLASH Editability: P2, PM
 MinMax_check: +
 Var.data_type: - Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	7	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0043
IndraDrive/ Control:	S-0-0043
HydraulicDrive/ Drive:	S-0-0043
HydraulicDrive/ Control:	S-0-0043
SercosDrive:	---

A-0-0049, Torque-/force polarities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function In this parameter, the polarity of the specified torque/force data is inverted with regard to the application.

The polarity is switched outside the controlled system (that means at the input and the output of the controlled system).

Structure

Bit	Name/function
0	Torque command value 0: Positive polarity 1: Negative polarity
1	Torque command value, additive 0: Positive polarity 1: Negative polarity

Bit	Name/function
2	Actual torque value 0: Positive polarity 1: Negative polarity
15..3	Reserved



Bit 1 and bit 2 are copies of bit 0.

Changes only apply in bit 0. Different settings of the individual bits are not permitted!

For **rotary (rotating) motors** applies: Rotation of the motor output shaft in clockwise direction at positive torque and positive polarity.

For **linear motors** applies: Motion of the primary component towards the cable connection side at positive force and positive polarity.

A-0-0049 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0085
IndraDrive/ Control:	S-0-0085
HydraulicDrive/ Drive:	S-0-0085
HydraulicDrive/ Control:	S-0-0085
SercosDrive:	---

A-0-0050, Scaling type for torque/force data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

The unit and the reference of the torque/force data of a drive are set using this parameter:

- Scaling in percent (% from the reference value, see below)
- Rotary scaling (Nm, inlbf)
- Translatory scaling (N, lbf)

Describing individual parameters, arranged according to types

Structure	Bit	Name/function
	2-0	Scaling type 0 0 0: Scaling in percent (force) 0 0 1: Translatory scaling 0 1 0: Rotary scaling (torque)
	3	Scaling type 0: Preference scaling 1: Parameter scaling
	4	Measuring unit for force 0: Newton [N] 1: pound-force [lbf] Measuring unit for torque 0: Newton meter [Nm] 1: inch pound-force [inlbf]
	6	Data reference 0: At the motor shaft 1: At the load
	15-7	Bit 15 - 7: Reserved

Tab. 4-2: *Scaling type for torque/force data*

The data reference is on load side (bit 6= TRUE).



The parameter scaling is available for the drive firmware versions MPx08/17 and higher.

A-0-0050 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x40
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	S-0-0086		
IndraDrive/ Control:	S-0-0086		
HydraulicDrive/ Drive:	S-0-0086		
HydraulicDrive/ Control:	S-0-0086		
SercosDrive:	S-0-0086		

A-0-0051, Scaling factor for torque/force data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter and "[A-0-0052](#), scaling exponent for torque/force data " are used when specifying the scaling factor and the decimal format (decimal digit) of the torque/force data parameter during parameter scaling ([A-0-0050](#), bit 3 = 1).

If the preference scaling is selected in "[A-0-0050](#), Scaling type for torque/force data, bit 3 = 0", the drive automatically sets the values in [A-0-0051](#) and [A-0-0052](#).

See also "Functional Description" Scaling physical data.



This parameter does not affect the scaling factor. Currently, the value of the scaling factor (irrespective of the set scaling type) is always set to 1.

[A-0-0051](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	1	65535	1
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0093
IndraDrive/ Control:	S-0-0093
HydraulicDrive/ Drive:	S-0-0093
HydraulicDrive/ Control:	S-0-0093
SercosDrive:	---

A-0-0052, Scaling exponent for torque/force data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter and "[A-0-0051](#), Scaling factor for torque/force data " are used to specify the scaling factor and the decimal format (decimal digit) and the unit prefix of the torque/force data parameter during parameter scaling ([A-0-0050](#), bit 3 = 1).
See also "Functional Description" Scaling physical data.



The parameter scaling functionality for torque/force data is only supported from the drive firmware MPX08 or MPx17/HDx17.



The preceding unit prefix depends from the scaling exponent.



The scaling component can only be changed in the parameter scaling ([A-0-0050](#), bit 3 = 1). In the preference scaling ([A-0-0050](#), bit 3 = 0), the scaling exponent is always specified.

Possible scaling exponents

Exponent	Decimal format	Prefix
-15 ... 0	1 ... 10 ⁻¹⁵	--
1	0.01	Kilo [k]
2	0.1	Kilo [k]
3	1	Kilo [k]
4	0.01	Mega [M]
5	0.1	Mega [M]
6	1	Mega [M]

Tab. 4-3: Unit prefix and decimal format for torque/force data parameter

Use MPx und HDx, interpolation in the drive and control:

Parameter scaling ([A-0-0050](#), bit 3 = 1) and scaling in percent ([A-0-0050](#), bit 0 - 2 = 000)

- Scaling exponent is fixedly set to -1, since no unit prefix is used
- All force-scaled parameters get the unit [%] and are displayed in decimal format with one decimal place (exception: [A-0-0064](#), Torque/force reference value)
- [A-0-0064](#), torque/force reference value, does not get a unit prefix

Parameter scaling (A-0-0050, bit 3 = 1) and translatory scaling (A-0-0050, bit 0 - 2 = 001)

- Scaling exponent can be arbitrarily set from -15 to 6. The unit prefix orientates at the set scaling exponent
- All force-scaled parameters get the unit [N] or [lbf]
- A-0-0064, torque/force reference value, does not get a unit prefix
- The decimal format of the forced-scaled parameters orientates at the set scaling exponent

Parameter scaling (A-0-0050, bit 3 = 1) and rotary scaling (A-0-0050, bit 0 - 2 = 010)

- Scaling exponent can be arbitrarily set from -15 to 6. The unit prefix orientates at the set scaling exponent
- All force-scaled parameters get the unit [Nm] or [inlbf]
- The decimal format of the forced-scaled parameters orientates at the set scaling exponent
- A-0-0064, torque/force reference value, does not get a unit prefix

Example:

Parameter scaling, translatory

Initial situation:

A-0-0052 = 0; A-0-0051 = 1 (cannot be changed); A-0-0038 = 1 ⇒ output:
A-0-0038 = 1 N

Adapt scaling exponent:

A-0-0052 = 3; A-0-0051 = 1 (cannot be changed); A-0-0038 = 1 ⇒ output:
A-0-0038 = 1 kN

Adapt scaling exponent:

A-0-0052 = 2; A-0-0051 = 1 (cannot be changed); A-0-0038 = 0.1 ⇒ output:
A-0-0038 = 0.1 kN

Adapt scaling exponent:

A-0-0052 = 1; A-0-0051 = 1 (cannot be changed); A-0-0038 = 0.01 ⇒ output:
A-0-0038 = 0.1 kN

Example:

Parameter scaling, in percent

Initial situation:

A-0-0052 = -1; A-0-0051 = 1 (cannot be changed); A-0-0038 = 1.2 ⇒ output:
A-0-0038 = 1.2%

The scaling exponent cannot be changed! Thus, the decimal format cannot be adapted.

Controller axis:

Parameter scaling (A-0-0050, bit 3 = 1) and scaling in percent (A-0-0050, bit 0 - 2 = 000)

- Scaling exponent can be arbitrarily set from -15 to 6.
- All force-scaled parameters get the unit [%] (exception: A-0-0064, Torque/force reference value)
- The decimal format of the forced-scaled parameters orientates at the set scaling exponent

- Only the parameter [A-0-0064](#) gets a unit prefix with regard to the scaling exponent

Parameter scaling ([A-0-0050](#), bit 3 = 1) and translatory scaling ([A-0-0050](#), bit 0 - 2 = 001)

- Scaling exponent can be arbitrarily set from -15 to 6. The unit prefix orientates at the set scaling exponent
- All force-scaled parameters get the unit [N] or [lbf]
- The decimal format of the forced-scaled parameters orientates at the set scaling exponent

Parameter scaling ([A-0-0050](#), bit 3 = 1) and rotary scaling ([A-0-0050](#), bit 0 - 2 = 010)

- Scaling exponent can be arbitrarily set from -15 to 6. The unit prefix orientates at the set scaling exponent
- All force-scaled parameters get the unit [Nm] or [inlbf]
- The decimal format of the forced-scaled parameters orientates at the set scaling exponent

Example:

Parameter scaling, translatory

Initial situation:

[A-0-0052](#) = 0; [A-0-0051](#) = 1 (cannot be changed); [A-0-0038](#) = 1 ⇒ output:
[A-0-0038](#) = 1 N

Adapt scaling exponent:

[A-0-0052](#) = 3; [A-0-0051](#) = 1 (cannot be changed); [A-0-0038](#) = 1 ⇒ output:
[A-0-0038](#) = 1 kN

Adapt scaling exponent:

[A-0-0052](#) = 2; [A-0-0051](#) = 1 (cannot be changed); [A-0-0038](#) = 0.1 ⇒ output:
[A-0-0038](#) = 0.1 kN

Adapt scaling exponent:

[A-0-0052](#) = 1; [A-0-0051](#) = 1 (cannot be changed); [A-0-0038](#) = 0.01 ⇒ output:
[A-0-0038](#) = 0.1 kN

For the controller axis, the parameter "[A-0-0064](#), Torque/force reference value" is equally adapted.

Example:

Parameter scaling, in percent

Initial situation:

[A-0-0052](#) = 0; [A-0-0051](#) = 1 (cannot be changed); [A-0-0038](#) = 1 ⇒ output:
[A-0-0038](#) = 1 %

[A-0-0052](#) = 0; [A-0-0051](#) = 1 (cannot be changed); [A-0-0064](#) = 1 ⇒ output:
[A-0-0064](#) = 1 N

Adapt scaling exponent:

[A-0-0052](#) = 3; [A-0-0051](#) = 1 (cannot be changed); [A-0-0038](#) = 1 ⇒ output:
[A-0-0038](#) = 1 %

[A-0-0052](#) = 3; [A-0-0051](#) = 1 (cannot be changed); [A-0-0064](#) = 1 ⇒ output:
[A-0-0064](#) = 1 kN

Adapt scaling exponent:

A-0-0052 = 2; A-0-0051 = 1 (cannot be changed); A-0-0038 = 0.1 ⇒ output:
A-0-0038 = 0.1 %

A-0-0052 = 2; A-0-0051 = 1 (cannot be changed); A-0-0064 = 0.1 ⇒ output:
A-0-0064 = 0.1 kN

Adapt scaling exponent:

A-0-0052 = 1; A-0-0051 = 1 (cannot be changed); A-0-0038 = 0.01 ⇒ output:
A-0-0038 = 0.01 %

A-0-0052 = 1; A-0-0051 = 1 (cannot be changed); A-0-0064 = 0.01 ⇒ output:
A-0-0064 = 0.01 kN

A-0-0052 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	INT_DEC, 2BYTE	PLC_data_type:	INT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-15	6	-1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0094
IndraDrive/ Control:	S-0-0094
HydraulicDrive/ Drive:	S-0-0094
HydraulicDrive/ Control:	S-0-0094
SercosDrive:	---

A-0-0053, Scaling type for acceleration data

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The scaling type of the acceleration data determines the format and the relation in which the acceleration and jerk data is exchanged between drive and control or interface.

When acceleration parameters (e.g. "A-0-0034, Acceleration limit value, bipolar") are read, the control indicates them in the selected scaling.

The setting of the scaling is normally specified by the control.



This parameter specifies the jerk data scaling in addition to the acceleration scaling.

Structure The following settings can be made

Describing individual parameters, arranged according to types

Bit	Name/function
2..0	Scaling types 0 0 1: Translatory scaling 0 1 0: Rotary scaling 0 1 1: Ramp time (only in case of interpolation in the drive)
3	Selecting scaling 0: Preferred scaling 1: Parameter scaling
4	Measuring unit for translatory scaling 0: Millimeter [mm] 1: Inch [in] Measuring unit for rotary scaling 0: Radiant [rad] 1: Reserved
5	Unit of time 0: Seconds * seconds [s ²] for acceleration 0: Seconds * seconds * seconds [s ³] for jerk 1: Reserved
6	Data reference 0: At the motor shaft 1: At the load
15..7	Reserved

Use When selecting the **scaling type**, note that the **ramp time** can only be selected if the interpolation takes place in the drive and if it supports this scaling type.

In bit 3, it can be chosen between **preference scaling** and **parameter scaling**

For **preference scaling**, the following parameters are predefined and cannot be changed:

- "A-0-0054, Scaling factor for acceleration data"
- "A-0-0055, Scaling exponent for acceleration data"

Parameter scaling means that these parameters have to be set.

The following parameters are affected when using the **parameter scaling**:

- "A-0-0034, Acceleration limit value, bipolar"
- "A-0-0036, Jerk limit value, bipolar"
- "A-0-0216, Jerk"
- "A-0-0224, Rapid stop deceleration"
- "A-0-0225, Rapid stop jerk Quick stop jerk"
- "A-0-0242, Position control, synchronization acceleration"
- "A-0-2762, Slave axis, additive command velocity, acceleration"
- "A-0-2791, ELS, synchronization acceleration"

A-0-0053 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x42
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive: S-0-0160

IndraDrive/ Control: S-0-0160

HydraulicDrive/ Drive: S-0-0160

HydraulicDrive/ Control: S-0-0160

SercosDrive: S-0-0160

A-0-0054, Scaling factor for acceleration data

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	+	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter and "A-0-0055, Scaling exponent for acceleration data" are used to specify the scaling factor and the decimal format (decimal digit) of the acceleration data parameter during parameter scaling (A-0-0053, bit 3 = 1).

If the preference scaling is selected in "A-0-0053, Scaling type for acceleration data, bit 3 = 0", the values are automatically set in A-0-0054 and A-0-0055.

See also "Functional Description" "Scaling physical data".

Use*Example:*

Parameter scaling (A-0-0053, bit 3 = 1) and translatory scaling (A-0-0053, bit 0 - 2 = 001)

Initial situation:

A-0-0055 = -3; A-0-0054 = 1 $\Rightarrow$ A-0-0034 = 10000

Adapt scaling factor:

A-0-0055 = -3; A-0-0054 = 2 $\Rightarrow$ A-0-0034 = 20000

Describing individual parameters, arranged according to types

A-0-0054 - Attributes:			
Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	1	65535	1
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	S-0-0161		
IndraDrive/ Control:	S-0-0161		
HydraulicDrive/ Drive:	S-0-0161		
HydraulicDrive/ Control:	S-0-0161		
SercosDrive:	---		

A-0-0055, Scaling exponent for acceleration data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	+	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter and "A-0-0054, Scaling factor for acceleration data" are used to specify the scaling factor and the decimal format (decimal digit) of the acceleration data parameter during parameter scaling (A-0-0053, bit 3 = 1).
If the preference scaling is selected in "A-0-0053, Scaling type for acceleration data, bit 3 = 0", the values are automatically set in A-0-0054 and A-0-0055.
See also "Functional Description" "Scaling physical data".

Use *Example:*

Parameter scaling (A-0-0056, bit 3 = 1) and translatory scaling (A-0-0056, bit 0 - 2 = 001)

Initial situation:

A-0-0055 = -3; A-0-0054 = 1 $\Rightarrow$ A-0-0034 = 10000

Adapt scaling exponent:

A-0-0055 = -6; A-0-0054 = 1 $\Rightarrow$ A-0-0034 = 10

A-0-0055 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	INT_DEC, 2BYTE	PLC_data_type:	INT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	-15	0	-3
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	S-0-0162		
IndraDrive/ Control:	S-0-0162		
HydraulicDrive/ Drive:	S-0-0162		
HydraulicDrive/ Control:	S-0-0162		
SercosDrive:	---		

A-0-0056, Scaling type for velocity data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

The scaling type of the velocity data determines the format and the relation in which the velocity data is exchanged between drive and control or user interface.

When velocity parameters (e.g. "A-0-0102, Actual velocity value") are read, the control indicates them in the selected scaling.

The setting of the scaling is normally specified by the control.

Structure

The following settings can be made:

Bit	Name/function
2..0	Scaling types 0 0 1: Translatory scaling, 0 1 0: Rotary scaling.
3	Selecting scaling 0: Preference scaling, 1: Parameter scaling

Describing individual parameters, arranged according to types

Bit	Name/function
4	Measuring unit for translatory scaling 0: Millimeter [mm], 1: Inch [in]. Measuring unit for rotary scaling 0: Revolution, 1: Reserved.
5	Unit of time 0: Minutes [min], 1: Seconds [s].
6	Data reference 0: At the motor shaft, 1: At the load.
15..7	Reserved

Use In bit 3, it can be chosen between **preference scaling** and **parameter scaling**

Preference scaling:

For preference scaling, the following parameters are predefined and cannot be changed:

- "A-0-0057, Scaling factor for velocity data"
- "A-0-0058, Scaling exponent for velocity data"

Parameter scaling means that these parameters have to be set.

The following parameters are affected when using the **parameter scaling**:

- "A-0-0032, Velocity limit value, positive"
- "A-0-0033, Velocity limit value, negative"
- "A-0-0035, Velocity limit value, bipolar"
- "A-0-0204, Velocity threshold, positioning in modulo format"
- "A-0-0222, Standstill window"
- "A-0-0223, Velocity window"
- "A-0-0243, Position control, synchronization velocity"
- "A-0-0623, Synchronization run window, velocity"
- "A-0-2615, ELS, additive velocity command value, process controller"
- "A-0-2790, ELS, synchronization velocity"

See also "Functional Description" "Scaling physical data".

A-0-0056 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x42
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0044
IndraDrive/ Control:	S-0-0044
HydraulicDrive/ Drive:	S-0-0044
HydraulicDrive/ Control:	S-0-0044
SercosDrive:	S-0-0044

A-0-0057, Scaling factor for velocity data

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter and "A-0-0057, Scaling factor for velocity data" are used to specify the scaling factor and the decimal format (decimal digit) of the velocity data parameter during parameter scaling (A-0-0056, bit 3 = 1).

If the preference scaling is selected in "A-0-0056, Scaling type for velocity data, bit 3 = 0", the values in A-0-0057 and A-0-0058 are set automatically.

See also "Functional Description" "Scaling physical data".

Use *Example:*

Parameter scaling (A-0-0056, bit 3 = 1) and translatory scaling (A-0-0056, bit 0 - 2 = 001)

Initial situation:

A-0-0058 = -3; A-0-0057 = 1 $\Rightarrow$ A-0-0032 = 1000

Adapt scaling factor:

A-0-0058 = -3; A-0-0057 = 2 $\Rightarrow$ A-0-0032 = 2000

A-0-0057 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	1	65535	1
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0045
IndraDrive/ Control:	S-0-0045
HydraulicDrive/ Drive:	S-0-0045
HydraulicDrive/ Control:	S-0-0045
SercosDrive:	S-0-0045

A-0-0058, Scaling exponent for velocity data

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter and "A-0-0057, Scaling factor for velocity data" are used to specify the scaling factor and the decimal format (decimal digit) of the velocity data parameter during parameter scaling (A-0-0056, bit 3 = 1).

If the preference scaling is selected in "A-0-0056, Scaling type for velocity data, bit 3 = 0", the values are automatically set in A-0-0057 and A-0-0058.

See also "Functional Description" "Scaling physical data".

Use *Example:*

Parameter scaling (A-0-0056, bit 3 = 1) and translatory scaling (A-0-0056, bit 0 - 2 = 001)

Initial situation:

A-0-0058 = -3; A-0-0057 = 1 $\Rightarrow$ A-0-0032 = 1000

Adapt scaling exponent:

A-0-0058 = -6; A-0-0057 = 1 $\Rightarrow$ A-0-0032 = 1

A-0-0058 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	INT_DEC, 2BYTE	PLC_data_type:	INT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	-15	0	-4
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0046
IndraDrive/ Control:	S-0-0046
HydraulicDrive/ Drive:	S-0-0046
HydraulicDrive/ Control:	S-0-0046
SercosDrive:	S-0-0046

A-0-0059, Scaling type for position data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The scaling type of the position data determines the format and the relation in which the position data is exchanged between drive and control or user interface.

When position parameters (e.g. "A-0-0100, Actual position value") are read, the control indicates them in the selected scaling.

The scaling is normally preset in the control.

Structure The following settings can be made:

Bit	Name/function
2..0	Scaling types 0 0 1: Translatory scaling, 0 1 0: Rotary scaling.
3	Selecting scaling 0: Preference scaling, 1: Parameter scaling
4	Measuring unit for translatory scaling 0: Millimeter [mm], 1: Inch [in]. Measuring unit for rotary scaling 0: Angular degree, 1: Reserved.
5	Reserved
6	Data reference 0: At the motor shaft, 1: At the load.

Describing individual parameters, arranged according to types

Bit	Name/function
7	Processing format 0: Absolute format, 1: Modulo format.
15..8	Reserved

Use In bit 3, it can be chosen between **preference scaling** and **parameter scaling**

Preference scaling:

For preference scaling, the following parameters are predefined and cannot be changed:

- "A-0-0060, Scaling factor for translatory position data"
- "A-0-0061, Scaling exponent for translatory position data"
- "A-0-0062, Position resolution, rotatory"

Parameter scaling means that these parameters have to be set.

The following parameters are affected when using the **parameter scaling**:

- "A-0-0030, Position limit value, positive"
- "A-0-0031, Position limit value, negative"
- "A-0-0045, Modulo value"
- "A-0-0046, Feed distance of the slave drive"
- "A-0-0219, Positioning window for shortest distance"
- "A-0-0622, Synchronization run window, position"
- "A-0-2610, ELS, additive position command value, process controller
ELS, additive position command value, process controller"
- "A-0-2792, ELS, synchronization run window for modulo format"
- "A-0-2795, Positioning window"

See also "Functional Description" "Scaling physical data".



Also refer to the example "A-0-0060" in the "Parameter Description".



In A-0-0059 of an encoder axis, it is not synchronized with S-0-0076 of the drive on which the measurement encoder of the encoder axis is configured.

A-0-0059 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0xC2
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0076
IndraDrive/ Control:	S-0-0076
HydraulicDrive/ Drive:	S-0-0076
HydraulicDrive/ Control:	S-0-0076
SercosDrive:	S-0-0076

A-0-0060, Scaling factor for translatory position data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function If translatory scaling (A-0-0059, bits 2..0 = 001) was selected, the parameter "A-0-0061, Scaling exponent for translatory position data" determines together with "A-0-0060, Scaling factor for translatory position data" and the selected unit "meter" or "inch" in "A-0-0059, Scaling type for position data, bit 4" the display of the position data of the axis.

Use If **preference scaling** is selected in "A-0-0059, Scaling type for position data, bit 3 = 0", the axis automatically sets the values in "A-0-0060, Scaling factor for translatory position data" and "A-0-0061, Scaling exponent for translatory position data".

If **parameter scaling** is selected in "A-0-0059, Scaling type for position data, bit 3 = 1", the values are used in "A-0-0060, Scaling factor for translatory position data" and "A-0-0061, Scaling exponent for translatory position data".

Example:

Parameter scaling (A-0-0059, bit 3 = 1) and translatory scaling (A-0-0059, bit 0 - 2 = 001)

Initial situation:

A-0-0061 = -3; A-0-0060 = 1 $\Rightarrow$ A-0-0030 = 10000

Adapt scaling factor:

A-0-0061 = -3; A-0-0060 = 2 $\Rightarrow$ A-0-0034 = 20000

See also "Functional Description" "Scaling physical data".

A-0-0060 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	1	65535	1
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0077
IndraDrive/ Control:	S-0-0077
HydraulicDrive/ Drive:	S-0-0077
HydraulicDrive/ Control:	S-0-0077
SercosDrive:	S-0-0077

A-0-0061, Scaling exponent for translatory position data

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function If translatory scaling (A-0-0059, bits 2..0 = 001) was selected, the parameter "A-0-0061, Scaling exponent for translatory position data" determines together with "A-0-0060, Scaling factor for translatory position data" and the selected unit "meter" or "inch" in "A-0-0059, Scaling type for position data, bit 4" the display of the position data of the axis.

Use If **preference scaling** is selected in "A-0-0059, Scaling type for position data, bit 3 = 0", the axis automatically sets the values in "A-0-0060, Scaling factor for translatory position data" and "A-0-0061, Scaling exponent for translatory position data".

If **parameter scaling** is selected in "A-0-0059, Scaling type for position data, bit 3 = 1", the values are used in "A-0-0060, Scaling factor for translatory position data" and "A-0-0061, Scaling exponent for translatory position data".

Example:

Parameter scaling (A-0-0059, bit 3 = 1) and translatory scaling (A-0-0059, bit 0 - 2 = 001)

Initial situation:

A-0-0061 = -3; A-0-0060 = 1 $\Rightarrow$ A-0-0030 = 10000

Adapt scaling exponent:

A-0-0061 = -6; A-0-0060 = 1 $\Rightarrow$ A-0-0030 = 10

See also "Functional Description" Scaling physical data.

A-0-0061 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	INT_DEC, 2BYTE	PLC_data_type:	INT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-15	0	-4
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0078
IndraDrive/ Control:	S-0-0078
HydraulicDrive/ Drive:	S-0-0078
HydraulicDrive/ Control:	S-0-0078
SercosDrive:	S-0-0078

A-0-0062, Position resolution, rotatory

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The smallest phase value for the rotary position data parameter is defined for the rotary parameter scaling (see [A-0-0059](#), bit 2..0 = 010) via this parameter.

Smallest phase = 360 degrees / rotary position resolution

The smallest phase value can refer to motor or load ([A-0-0059](#), bit 6).

If the rotary preference scaling is set ([A-0-0059](#)), the value in "[A-0-0062](#), Position resolution, rotatory" is fixed to 3,600,000.

The smallest phase value is therefore set to a phase value of 0.0001 for all rotary position data.

See also "Functional Description" "Scaling physical data".

A-0-0062 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	1	4294967295	3600000
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0079
IndraDrive/ Control:	S-0-0079
HydraulicDrive/ Drive:	S-0-0079
HydraulicDrive/ Control:	S-0-0079
SercosDrive:	S-0-0079

Describing individual parameters, arranged according to types

A-0-0063, Scaling type for temperature data

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used to set the unit of the drive's temperature data in °C (Celsius) or in °F (Fahrenheit).

Structure The values are displayed including the first decimal place.

Bit	Name/function
0	Temperature data in 0: Degree Celsius (°C), 1: Fahrenheit (F).
15..1	Reserved

A-0-0063 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0208
IndraDrive/ Control:	S-0-0208
HydraulicDrive/ Drive:	S-0-0208
HydraulicDrive/ Control:	S-0-0208
SercosDrive:	---

A-0-0064, Torque/Force reference value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function When the torque/force data scaling ([A-0-0050](#)) is set in percent, this value can be used to convert to absolute scaling. The parameter value corresponds to 100%.

$$F_{abs} = F_{ref} * \frac{F_{\%}}{100\%}$$

F_{abs} Absolute value

F_{ref} Torque/force reference value ([A-0-0064](#))

$F_{\%}$ Torque/force value in percentage scaling

Fig. 4-5: Conversion from a percentaged to an absolute torque / force.

Derivation

The torque/force reference value results as follows:

- **HydraulicDrive:** Value from "S-0-0825, Nominal force".
- **IndraDrive:**

$$F_{ref} = I_{still} * K_{MF} * K_{cooling\ type}$$

F_{ref} Torque/force reference value ([A-0-0064](#))

I_{still} Motor current at standstill (S-0-0111)

K_{MF} Torque/force constant (P-0-0051)

$K_{cooling\ type}$ Cooling type factor

Fig. 4-6: Derivation of torque / force reference value for IndraDrive

- **Controller axis:** freely writable.
- **Other axis types:** are not yet supported.

A-0-0064 - Attributes:

Function:	PARAMETER	Unit:	A-0-0050
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.001	2147483647.0	1000.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0111,P-0-0051
IndraDrive/ Control:	S-0-0111,P-0-0051
HydraulicDrive/ Drive:	S-0-0534
HydraulicDrive/ Control:	S-0-0534
SercosDrive:	---

A-0-0066, Scaling type for valve control values

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	+	+	-	-	-	-	+
Direct_access:	--	--	RO	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The scaling type for the valve adjustment value determines the control value format to be entered for the hydraulic valve.

When analog value parameters (e.g. "[A-0-2211](#), Cyclic analog value") are read, the control indicates them in the selected scaling.

Structure The following settings can be made:

Bit	Name/function	Comment
0	Unit 0: Voltage in V 1: Current in mA	10V or 20mA
1	Type 0: Bipolar 1: Unipolar	-10V to 10V / -20 mA to 20 mA or 0V to 10V 0 mA to 20 mA
2	Cable break monitoring 0: No 1: Yes	1: 4 mA to 20mA
15..3	Reserved	

Use The cable break can only be monitored with the unit "current, unipolar".

A-0-0066 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	FLASH	Editability:	P2, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0x00
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	P-0-2882		
	HydraulicDrive/ Control:	P-0-2882		
	SercosDrive:	---		

A-0-0080, Jogging, short distance

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0081, Jogging, long distance

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0082, Jogging, low velocity

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0083, Jogging, high velocity

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0084, Jogging, acceleration

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0085, Jogging, deceleration

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0086, Jogging, acceleration jerk

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0087, Jogging, deceleration jerk

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

Describing individual parameters, arranged according to types

A-0-0100, Actual position value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	+	+	+	+	+	+	+	+	+

Function The parameter indicates the actual position value of the axis. It is valid in all operation modes.

Use It is displayed depending on the axis type:

- **Virtual axis:** The value comes from the position output of the virtual axis.
- **IndraDrive/HydraulicDrive/SercosDrive:** The value comes from the connected drive. It indicates the actual position value of the active encoder ("A-0-0007, Axis configuration, bit 1").
- **Encoder axis:** The value comes from the position output of the encoder axis.
- **Link axis:** The value comes from the position output of the axis addressed in "A-0-0008, Link axis, master axis selection".
 - A-0-0008: Contains the control address of the axis requested and information on whether master axis A or B of this control.
 - The parameter "C-0-0703, C2C, configuration of master axes" is to be evaluated in the control specified in A-0-0008: the first axis number corresponds to master axis A and the second axis number corresponds to master axis B.
- **Controller axis:** The value comes from the position output of the controller axis.

A-0-0100 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:	---	---	---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0386
IndraDrive/ Control:	S-0-0051
HydraulicDrive/ Drive:	S-0-0386
HydraulicDrive/ Control:	S-0-0051
SercosDrive:	S-0-0051

A-0-0101, Actual position value, 8 bytes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the actual position value of the axis. It is valid in all operation modes.

Use *It is displayed depending on the axis type:*

- **Virtual axis:** The value comes from the position output of the virtual axis.
- **IndraDrive/HydraulicDrive/SercosDrive:** The value comes from the connected drive. It indicates the actual position value of the active encoder ("[A-0-0007](#), Axis configuration, bit 1").
- **Encoder axis:** The value comes from the position output of the encoder axis.
- **Link axis:** The value comes from the position output of the axis addressed in "[A-0-0008](#), Link axis, master axis selection".
 - [A-0-0008](#): Contains the control address of the axis requested and information on whether master axis A or B of this control.
 - The parameter "[C-0-0703](#), C2C, configuration of master axes" is to be evaluated in the control specified in [A-0-0008](#):
the first axis number corresponds to master axis A and the second axis number corresponds to master axis B.

A-0-0101 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0386
IndraDrive/ Control:	S-0-0051
HydraulicDrive/ Drive:	S-0-0386
HydraulicDrive/ Control:	S-0-0051
SercosDrive:	S-0-0051

Describing individual parameters, arranged according to types

A-0-0102, Actual velocity value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the actual velocity value of the axis. It is valid for all operation modes of the axis.

- Use**
- **Virtual axis:** the value comes from the velocity output of the virtual axis.
 - **IndraDrive/HydraulicDrive/SercosDrive:** The value comes from the connected drive. It indicates the actual velocity value for the active encoder ("A-0-0007, Axis configuration, bit 1").
 - **Encoder axis:** The value comes from the velocity output of the encoder axis.
 - **Link axis:** The value comes from the velocity calculation for the axis addressed in "A-0-0008, Link axis, master axis selection" based on the data transmitted for the actual position value.
 - A-0-0008: Contains the control address of the axis requested and information on whether master axis A or B of this control.
 - The parameter "C-0-0703, C2C, configuration master axes" is to be evaluated in the control specified in A-0-0008: the first axis number corresponds to master axis A and the second axis number corresponds to master axis B.
 - **Controller axis:** The value comes from the velocity output of the controller axis.

A-0-0102 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0040
IndraDrive/ Control:	S-0-0040
HydraulicDrive/ Drive:	S-0-0040
HydraulicDrive/ Control:	S-0-0040
SercosDrive:	S-0-0040

A-0-0103, Actual acceleration value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter contains the actual acceleration value of the axis.

- Use**
- **Virtual axis:** The value results from the acceleration output of the virtual axis.
 - **IndraDrive/SercosDrive/HydraulicDrive:** The value comes from the connected drive. It indicates the actual acceleration value of the active drive encoder.

This parameter is a differentiated actual velocity value of the motor encoder filtered for 4 ms.



By default, the value for real axis is not cyclically available. For a direct access (direct variable), the linked drive parameter has to be previously configured in one of the user-defined actual value channels (see [A-0-0520](#) - [A-0-0530](#)).

- **Controller axis:** The value results from the acceleration output of the controller axis.

(Also refer to the dialog **Motor encoder - Application type ▶ Optional encoder**).

A-0-0103 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0164
IndraDrive/ Control:	S-0-0164
HydraulicDrive/ Drive:	S-0-0164
HydraulicDrive/ Control:	S-0-0164
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0108, Actual position value, incremental

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the axis's increments converted in "A-0-0100, Actual position value".

Use This parameter is transmitted via the MLC link once an axis is configured as a master axis in the parameter "C-0-0703, C2C, configuration of master axes".

A-0-0108 - Attributes:

Function: PARAMETER
MLC_data_type: UINT_DEC, 4BYTE
Memory: RAM
Unit: --
PLC_data_type: UDINT
Editability: READ_ONLY
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

Common: 0
HydraulicDrive: ---
Minimum value 0
Maximum value 4294967295
Default value 0

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-0110, Actual torque/force value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	+
Direct_access:	RO	RO	RO	RO	RO	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the actual torque/force value of the drive. It is valid for all operation modes.

Use **IndraDrive/HydraulicDrive:** The value comes from the connected drive and indicates the actual torque/force value of the drive.

A-0-0110 - Attributes:	Function:	PARAMETER	Unit:	A-0-0050
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0084		
	IndraDrive/ Control:	S-0-0084		
	HydraulicDrive/ Drive:	S-0-0084		
	HydraulicDrive/ Control:	S-0-0084		
	SercosDrive:	S-0-0084		

A-0-0150, Interpolated position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The position command values are precisely interpolated for a jerk-free motion.

This parameter indicates the value of the interpolated position. It is valid for all operation modes of the axis.

A-0-0150 - Attributes:	Function:	PARAMETER	Unit:	A-0-0059
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0434		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	P-0-0434		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

Describing individual parameters, arranged according to types

A-0-0151, Interpolated position of the control

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the value of the interpolated position of the control. It is valid for all operation modes of the axis.

This parameter is only available for axes for which the interpolation takes place in the control.

A-0-0151 - Attributes:

Function: PARAMETER **Unit:** [A-0-0059](#)
MLC_data_type: DOUBLE, 8BYTE **PLC_data_type:** LREAL
Memory: RAM **Editability:** READ_ONLY
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	---	---	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0152, Interpolated velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The velocity command values are precisely interpolated for a jerk-free motion.

This parameter indicates the value of the interpolated velocity. It is valid for all operation modes of the axis.

A-0-0152 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: [A-0-0056](#)
PLC_data_type: REAL
Editability: READ_ONLY
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

Common: ---
HydraulicDrive: ---
Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: P-0-0048
IndraDrive/ Control: ---
HydraulicDrive/ Drive: P-0-0048
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-0153, Interpolated acceleration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the value of the interpolated acceleration.

A-0-0153 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: [A-0-0053](#)
PLC_data_type: REAL
Editability: READ_ONLY
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

Common: ---
HydraulicDrive: ---
Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

Describing individual parameters, arranged according to types

A-0-0156, Interpolated force

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	-	-	-	-	+
Direct_access:	--	RO	--	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	-	-	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function For a jerk-free movement, the force target values are fine-interpolated.
The parameter shows the "Interpolated force".

A-0-0156 - Attributes:

Function:	PARAMETER	Unit:	A-0-0050
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0158, Interpolated analog control value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	+	+	-	-	-	-	+
Direct_access:	--	--	RO	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	+	+	-	-	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the interpolated analog control value.

The parameter can be influenced with the function blocks ML_OpenCyclicAnalogChannel and ML_WriteCyclicAnalog.

A-0-0158 - Attributes:

Function:	PARAMETER	Unit:	A-0-0066
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0170, Reaction to force limitation

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter defines the scope of influence on the interpolation's command value specification.

Only the following motion commands can be influenced:

- MC_MoveAbsolute
- MC_MoveAdditive
- MC_MoveRelative
- MC_MoveVelocity



This parameter is generally administered by a PLC program using the ML_IPOImpactControl library. For this reason, the override control's concept (see Introduction ML_IPOImpactControl) must be implemented in the PLC program.

This parameter is not intended to be directly manipulated.

Structure

Bit	Designation/function
0	Type of influence, bit 0
1	Type of influence, bit 1
2	reserved

Describing individual parameters, arranged according to types

Bit	Designation/function
3	Direction of influence, bit 0
4	Direction of influence, bit 1
5	Type of the transition after break, bit 0
6	Type of the transition after break, bit 1
7	reserved
8	Applying individual position and velocity values, bit 0
9	Applying individual position and velocity values, bit 1
10... 31	reserved

Use Bit 1...0:

This bit is used to select the influencing type of the interpolation.

- 00 - Neutral: No influence or the existing influence is canceled (movement resumes with the command parameters).
- 01 - Break: The interpolation is stopped, the current position value is kept and the velocity is set to 0.
- 10 - Jump: The interpolation is set to the final value of the active command. (Not possible for MC_MoveVelocity).

Bit 4..0.3:

This bit is used to select the direction of the influence.

- 00 - None: The influence is not taken into account.
- 01 - Forward: The influence is only effective in the forward direction.
- 10 - Backward: The influence is only effective in the backward direction.
- 11 - Both: The influence is effective in the forward and backward direction.

Bit 6..0.5:

This bits is used to set the type of transition in/from the "break" state.

- 00 - Transition with maximum axis-dependent acceleration.
- 01 - Transition with the acceleration of the active command.
- 10 - Transition with individual acceleration ([A-0-0173](#)).

Bit 9...8:

This bit allows individual position or velocity values to be applied in the "break" state or at the end of motion command.

- 00 - No individual values are applied.
- 01 - The individual position values from [A-0-0171](#) are applied.
- 10 - The individual velocity values from [A-0-0172](#) are applied.
- 11 - The individual position and velocity values are applied.

A-0-0170 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0171, Position for interpolation effect

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The individual position value that can be applied during the interpolation influence (see [A-0-0170](#)).



This parameter is generally administered by a PLC program using the ML_IPOImpactControl library. For this reason, the override control's concept (see [A-0-0170](#)) must be implemented in the PLC program.

This parameter is not intended to be directly manipulated.

Use This value is used during the interpolation influence in the "break" state to overwrite the current interpolated position command value ([A-0-0150](#)).

A-0-0171 - Attributes:	Function:	PARAMETER	Unit:	A-0-0059
	MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
	Memory:	RAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-0172, Velocity for interpolation effect

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The individual velocity value that can be applied during the interpolation influence (see [A-0-0170](#)).



This parameter is generally administered by a PLC program using the ML_IPOImpactControl library. For this reason, the override control's concept (see [A-0-0170](#)) must be implemented in the PLC program.

This parameter is not intended to be directly manipulated.

Use This value is used during the interpolation influence in the "break" state to overwrite the current interpolated velocity position value ([A-0-0152](#)).

A-0-0172 - Attributes:

Function: PARAMETER **Unit:** [A-0-0056](#)
MLC_data_type: FLOAT, 4BYTE **PLC_data_type:** REAL
Memory: RAM **Editability:** P2, BB, PM
Var.data_type: - **MinMax_check:** +
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-0173, Acceleration for interpolation effect

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The individual velocity value that is effective during the interpolation influence for the transition in the "break" state (see [A-0-0170](#)).

Use This value is used for the transition to/from the "break" state during the interpolation influence.

A-0-0173 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: [A-0-0053](#)
PLC_data_type: REAL
Editability: P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0200, Default master axis

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter contains the control address and the logical address of the master axis that is transferred to the master axis position of the real axis outside the "Synchronized motion" state ([A-0-0022](#), Extended axis status, bit 6 = 0).

- Example: The content "1 6" means control address 1 and logical address of master axis 6.

Describing individual parameters, arranged according to types

- The content "0 0" disables the function. No master axis is addressed.

The parameter affects the units of the parameters:

- [A-0-0300](#), Master axis, actual position value
- [A-0-0302](#), Master axis, actual velocity value

If the parameter "0 0" is not set, the units are set to "not enabled".



The parameter "Default master axis" can only be changed if none of the axes on the control is in the "AF" state.

A-0-0200 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	NVRAM	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	99	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0201, Interpolator configuration

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RW	RW	RW	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Make the optional configuration of the interpolator in this parameter.

Structure The following bits are available

Bit	Functionality
0	Velocity ramps at interpolation without jerk limitations (only interpolation in the control) 0: Trapezoidal ramps for velocity 1: Sine ² ramps for velocity
1	Dynamic jerk adaptation at velocity overshoot (only interpolation in the control) 0: Dynamic jerk adjustment enabled. 1: Dynamic jerk adjustment disabled.
2	Reference point for the positioning command values (only interpolation in the drive) 0: Current actual value 1: Last effective target position
3...31	Reserved

Use Bit 0:

Velocity ramps at interpolation without jerk limitation

The shape of the velocity ramps at interpolation without jerk limitation ([A-0-0216](#) = 0) can be selected. By setting the bit, the velocity is no longer linear, but based on a sine² progression.

Even without jerk limitation, the use of sine² ramps causes a dynamic motion with significantly less vibration than with trapezoidal ramps.

Describing individual parameters, arranged according to types

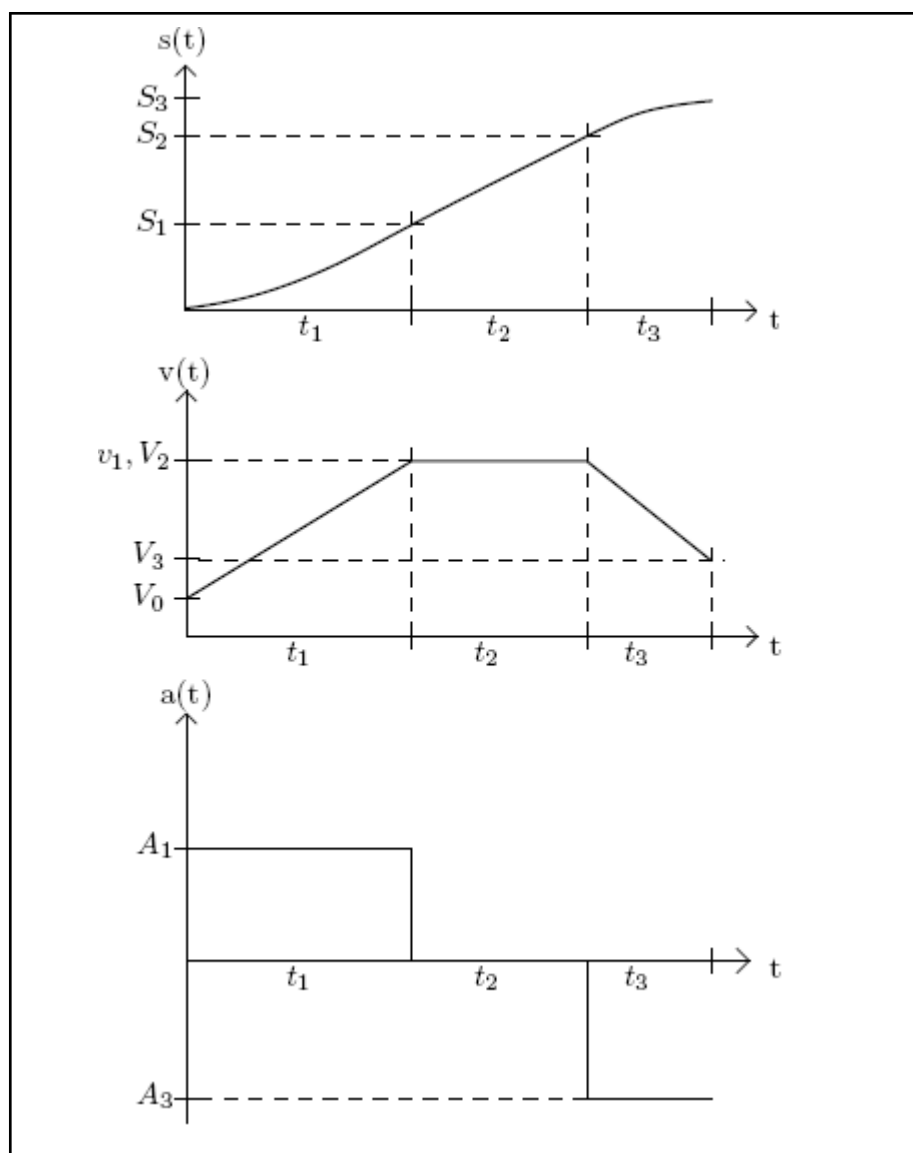


Fig. 4-7: Interpolation with trapezoidal ramps

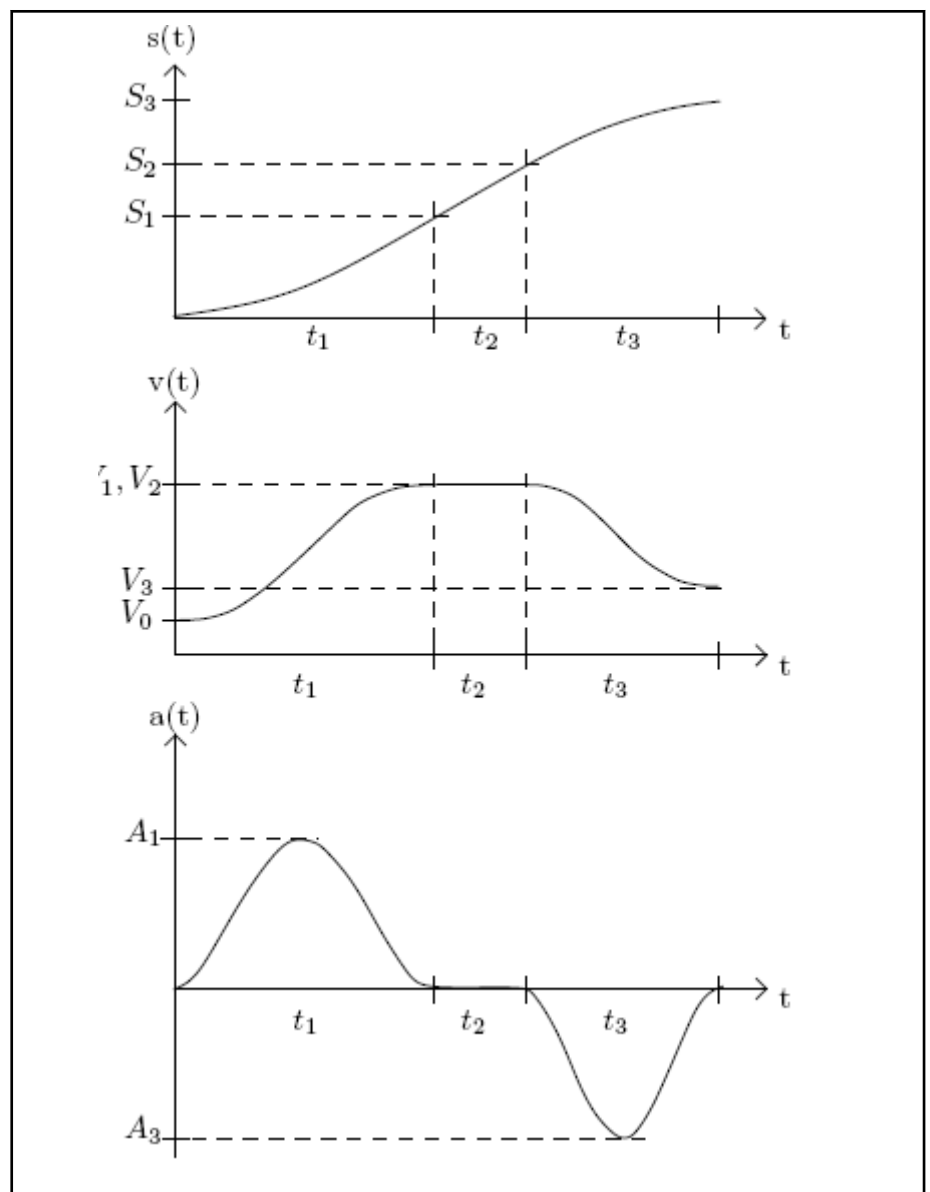


Fig. 4-8: Interpolation with sine² ramps

Bit 1:

Dynamic jerk adjustment at velocity overshoots

With an active jerk limitation ([A-0-0216](#) = 0), an unfortunate commanding can cause high velocity overshoots. This is for example the case if the running motion command is prematurely interrupted by another motion command and the new commanded jerk is significantly lower than the previously commanded jerk. Since using the new, lower commanded jerk to reduce the acceleration already built up requires much longer, it can lead to the velocity being exceeded. During deceleration, such an undesired change in direction can also occur.

The "dynamic jerk adjustment" is intended to prevent exactly this behavior. To do this, the commanded jerk is adjusted (increased) so that the velocity overshoot is limited between two boundaries.

The lower limit is set to 0 (standstill, i.e. no change in direction). The upper limit is set by the velocity limit value in the parameter [A-0-0032](#).

Describing individual parameters, arranged according to types

If the jerk is adjusted, the warning "E113003; Dynamic jerk adjustment active" is displayed.

Bit 2:

This setting determines the reference point of the drive considered during positioning. This can either be the current actual value (bit 2=0, default setting) or the previous target position. It is indirectly specified via bit 4 of the parameter S-0-0346. When enabling the function block MC_MoveAbsolute, bit 4 in S-0-0346 is set with regard to the setting of bit 2 in [A-0-0201](#) by the control (inverted logic).

- Bit 2=0: S-0-0346.4 is set to 1
- Bit 2=1: S-0-0346.4 is set to 0

For more information on the meaning and mode of operation of the S-0-0346 bit 4, refer to the drive help.

A-0-0201 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: BINARY, 4BYTE **PLC_data_type:** DWORD
Memory: NVRAM **Editability:** P0, P2, BB, PM
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0203, Direction of motion

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	-	+	+	-	-	+
Direct_access:	RW	RW	--	--	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	-	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter defines the default jerk value for the axis if the respective function blocks do not support the jerk.

In this case, it is the template for the parameter "[A-0-2207](#), Commanded direction" and provides the value at a positive edge at the "Execute" input of a PLCopen FB instance.

Structure	Bit	Designation/function
	1..0	direction of motion 0 0: shortest distance, 0 1: positive direction, 1 0: negative direction.

- Use**
- **Shortest distance** - The axis is moved to the commanded target position at the shortest distance.
 - **Positive direction** - The target is reached by turning the axis in the positive direction relative to the main direction.
 - **Negative direction** - The target is reached by turning the axis in the negative direction relative to the main direction.

If the shortest distance to the positioning is smaller than "[A-0-0219](#) Positioning window for shortest way", the shortest distance is automatically selected and the preset direction is ignored.

[A-0-0203](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x02	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0145, Bit 4+ 5, after MoveAbs
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0204, Velocity threshold, positioning in modulo format

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function These parameters can be used to set a threshold value for the actual velocity.

When a positioning command is specified and the current velocity of the axis is greater than the threshold value, the axis is positioned without changing the direction of rotation even if the specification in parameter [A-0-0203](#), Change in direction, indicates that the change is required.

Describing individual parameters, arranged according to types

Prerequisite: The position data format has to be "modulo". ([A-0-0059](#), Scaling type for position data)



Entering the value "0" deactivates the velocity threshold, i.e. the target position remains as determined in [A-0-0203](#).

A-0-0204 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	20.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0417
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0216, Jerk

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RW	RO	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter influences all PLCopen function block with positioning and velocity interpolation (MC_Stop, MC_MoveAbsolute, MC_MoveVelocity..).

The parameter does not have any effect on the following PLCopen function blocks:

- Function blocks with master axis coupling (MC_GearIn, MB_GearInPos, MB_MotionProfile, ML_FlexProfile...)
- MC_TorqueControl

The function block defines the commanded jerk of the executed motion.



When changing from a PLCopen function block the parameter does not have any effect on to a PLCopen function block the parameter has an effect on, in particular when enabling the stop functionality (PLCopen function block MC_Stop or using the operation mode "ModeStopping" in the AxisInterface) it has to be ensured that a value is selected in parameter "[A-0-0216, Jerk](#)" to set the axis to standstill with the required deceleration distance (also in case of an interrupted acceleration).

The jerk value "A-0-0216, Jerk" is limited with the parameter "A-0-0036, Jerk limit value, bipolar".



Using a value greater zero, the jerk-limited interpolation is enabled. The jerk-limited interpolation is disabled using the default value zero.

The jerk value "A-0-0216, Jerk" is limited with the parameter "A-0-0053, Scaling type for acceleration data".

With a positive Execute edge at the PLCopen function block, the "A-0-0216, Jerk" is copied to parameter "A-0-2205, Command jerk".

A-0-0216 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0193
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	S-0-0193
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0219, Positioning window for shortest distance

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	-	+	+	-	-	+
Direct_access:	RO	RW	--	--	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	-	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

The parameter defines the positioning window for the shortest way in case the respective function blocks do not support the positioning window for the shortest way.

The target positions are reached on the "shortest way" or in the direction specified by the parameterized value in the "A-0-2207, Command direction".

The effective preferred direction within the limited angle range is deactivated with the positioning window.

If the difference from the current axis position and the new target position is less than the positioning window, the axis is always positioned on the shortest way.

Describing individual parameters, arranged according to types

The parameter is influenced by the parameter "[A-0-0059](#), Scaling type for position data".

A-0-0219 - Attributes:

Function: PARAMETER Unit: [A-0-0059](#)
 MLC_data_type: FLOAT, 4BYTE PLC_data_type: REAL
 Memory: NVRAM Editability: P2, BB, PM
 MinMax_check: +
 Var.data_type: - Var.min/max_value: -

Minimum value Maximum value Default value
 Common: 0.0 2147483647.0 1.0
 HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0418
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-0221, Torque/force window

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The force window refers to the force command value of the axis with regard to the amount.

It the actual force value is in the calculated force window, the axis sets "[A-0-0021](#), Axis status, bit 11" (axis torque value/force command value = actual value).

A-0-0221 - Attributes:

Function: PARAMETER Unit: [A-0-0050](#)
 MLC_data_type: FLOAT, 4BYTE PLC_data_type: REAL
 Memory: NVRAM Editability: P2, BB, PM
 MinMax_check: +
 Var.data_type: - Var.min/max_value: -

Minimum value Maximum value Default value
 Common: 0.0 2147483647.0 10.0
 HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0826
IndraDrive/ Control:	S-0-0826
HydraulicDrive/ Drive:	S-0-0826
HydraulicDrive/ Control:	S-0-0826
SercosDrive:	---

A-0-0222, Standstill window

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

To detect the axis standstill, a threshold value for the velocity is entered into this parameter.

If the velocity value falls below this threshold, the axis detects the standstill.

The following applies:

- For axes with interpolation in the drive, the actual velocity value is considered.
- For axes with interpolation in the control, the current velocity command value is considered.

At standstill, bit 5 of the parameter "[A-0-0021](#), Axis status", "Axis velocity within the standstill window" is set.

A-0-0222 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	10.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0124
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	S-0-0124
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0223, Velocity window

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The velocity window refers to the velocity command value of the axis ([A-0-2202](#)) with regard to the amount.

If the actual velocity value is in the calculated velocity window, the axis sets bit 4 of the parameter "[A-0-0021](#), Axis status" (command velocity = actual velocity).



Due to compatibility reasons (parameter import/export), this parameter also exists for virtual axes. It does not affect the axis behavior.

A-0-0223 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: NVRAM
Unit: [A-0-0056](#)
PLC_data_type: REAL
Editability: P2, BB, PM
MinMax_check: +
Var.min/max_value: -

Var.data_type: -
Minimum value 0.0
Maximum value 2147483647.0
Default value 10.0
Common: 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0157

IndraDrive/ Control: ---

HydraulicDrive/ Drive: S-0-0157

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-0224, Rapid stop deceleration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RW	RO	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function In this parameter, the maximum deceleration value at which the axis is set to standstill at

- Emergency stop with ramp

is set.

The parameter unit is specified by "A-0-0053, Scaling type for acceleration data".

See also Functional Description: "Error Reaction"

A-0-0224 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	500.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0372 after E Stop
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	S-0-0372 after E Stop
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0225, Rapid stop jerk

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function In this parameter, the maximum jerk value at which the axis

- Emergency stop with ramp

is set.

The parameter unit is specified by "A-0-0053, Scaling type for acceleration data".

See also Functional Description: "Error Reaction".



This parameter is only in effect if "Interpolation in the control" was selected for the axis.

Describing individual parameters, arranged according to types

A-0-0225 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0230, Blending distance PTP

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

A-0-0230 - Attributes:	Function:	PARAMETER	Unit:	A-0-0059
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0240, Feedrate override

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RW	RO	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The factor used to modify the axis velocity is set in this parameter.

A value of 100% means no modification.

If the factor is 0%, the warning "E0112055, Feedrate override [A-0-0240](#) = 0" is output.

A-0-0240 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: NVRAM
Unit: %
PLC_data_type: REAL
Editability: P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0.0	600.0	100.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0108, S-0-0036

IndraDrive/ Control: ---

HydraulicDrive/ Drive: S-0-0108, S-0-0036

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-0241, Feedrate override control word

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RW	RO	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter influences the feedrate override without modifying the Feedrate override parameter [A-0-0240](#).

Describing individual parameters, arranged according to types

Structure	Bit	Designation / Function
	0	Reserved
	1	Feedrate override = 0
	15-2	Reserved

Use Bit 1:

When bit 1 is set, a feedrate override of 0 becomes effective without modifying the actual [A-0-0240](#) parameter value.



Feedrate override = 0 means "Halt", but in this case without the warning "E0112055, Feedrate override [A-0-0240](#) = 0"

A-0-0241 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0242, Position control, synchronization acceleration

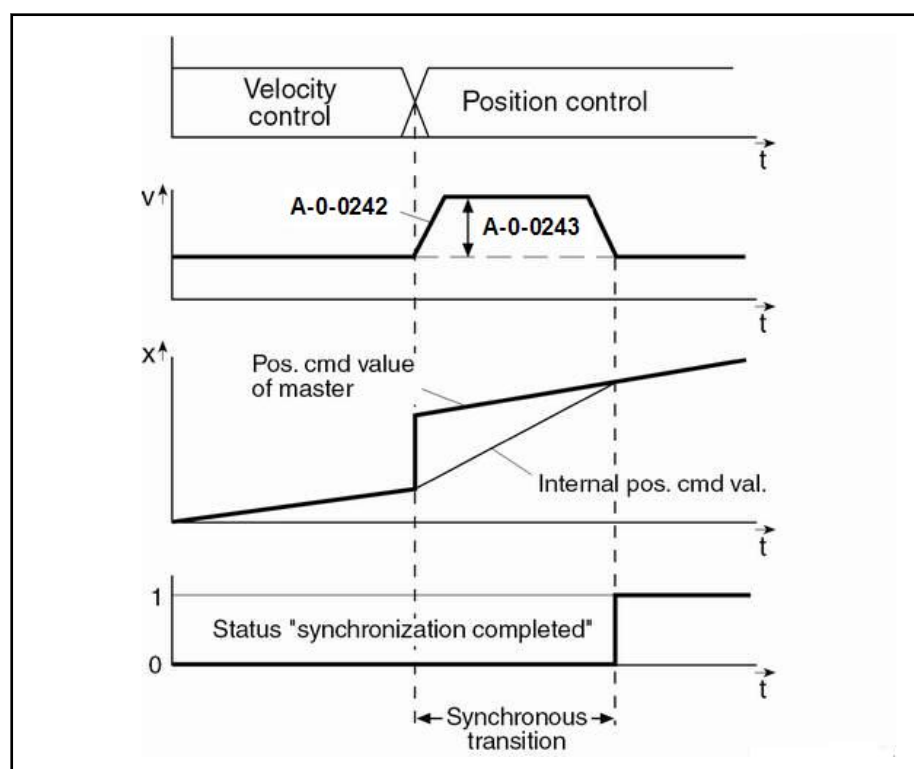
	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	-	-	-	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

The parameter contains the acceleration value considered as drive-controlled when switching the operation mode from velocity control to position control during synchronization.

The drive synchronizes when changing the operation mode to the cyclic position control (that means that it creates a smooth transition of the internal position command value from the actual position to the new command value characteristic specified by the control. This creation is based on internal synchronization parameters ([A-0-0242](#), [A-0-0243](#))). After the synchronization, the drive follows the position command values specified by the master in the Motion cycle

It is ensured drive-internally, that the operation mode is also switched in case of command value changes in jumps.



A-0-0242 Synchronization acceleration

A-0-0243 Synchronization velocity

Fig. 4-9: Time diagram "Drive-controlled operation mode switching"



The value of this parameter corresponds in its default state to the value of the parameter **A-0-0034**, Acceleration limit value, bipolar.

Individual values can be configured if bit 4 is set in the parameter **A-0-0007**, Axis configuration.

Use This value is synchronized to the drive when switching from P2 to BB.

A-0-0242 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	1000.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	P-0-0142
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	P-0-0142
SercosDrive:	---

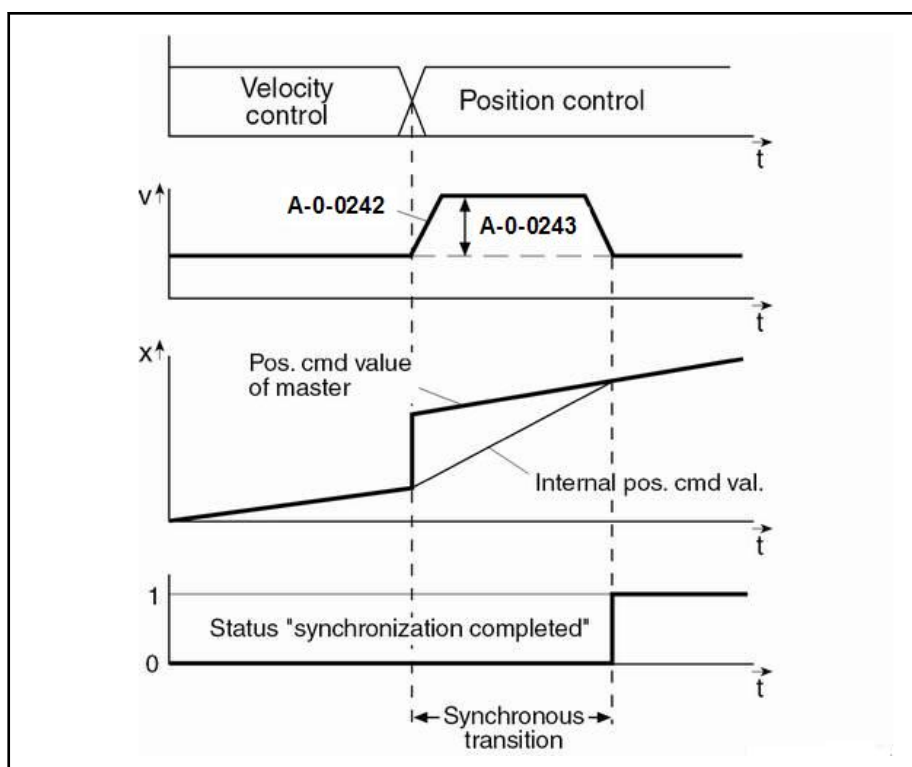
A-0-0243, Position control, synchronization velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	-	-	-	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains the velocity value considered as drive-controlled when switching the operation mode from velocity control to position control during synchronization.

The drive synchronizes when changing the operation mode to the cyclic position control (that means that it creates a smooth transition of the internal position command value from the actual position to the new command value characteristic specified by the control. This creation is based on internal synchronization parameters ([A-0-0242](#), [A-0-0243](#))). After the synchronization, the drive follows the position command values specified by the master in the Motion cycle

It is ensured drive-internally, that the operation mode is also switched in case of command value changes in jumps.



A-0-0242 Synchronization acceleration

A-0-0243 Synchronization velocity

Fig. 4-10: Time diagram "Drive-controlled operation mode switching"



This parameter value corresponds by default to the maximum absolute value of the parameters [A-0-0032/A-0-0033](#), Velocity limit value, positive/negative.

Individual values can be configured if bit 4 is set in the parameter [A-0-0007](#), Axis configuration.

Use This value is synchronized to the drive when switching from P2 to BB.

A-0-0243 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	1000.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	P-0-0143
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	P-0-0143
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0300, Master axis, actual position value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The actual position value of the master axis to the current slave axis is displayed in this parameter.

The master axis is defined by "[A-0-2700](#), ELS, master axis, control number" and "[A-0-2701](#), ELS, master axis, axis number".

The unit is transferred to the axis specified by the parameter "[A-0-0200](#), default master axis".

A-0-0300 - Attributes:	Function:	PARAMETER	Unit:	A-0-2701
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Var.data_type:	-	MinMax_check:	-
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0302, Master axis, actual velocity value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The actual velocity value of the master axis to the current slave axis is displayed in this parameter.

The master axis is defined by "A-0-2700, ELS, master axis, control number" and "A-0-2701, ELS, master axis, axis number".

The unit is transferred to the axis specified by the parameter "A-0-0200, default master axis".

A-0-0302 - Attributes:	Function:	PARAMETER	Unit:	A-0-2701
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

4.1.3 A-0-0500 - A-0-0999

A-0-0500, Configuration of user-defined command value A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis.

This parameter configures a parameter that is cyclically transmitted in container "A" from the control to the drive.

The parameter "A-0-0596, List of freely configurable parameters in the MDT" contains the possible parameters whose values may be transferred.

A-0-0500 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
	Memory:	FLASH	Editability:	P2
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x0	0x100000FFF	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0024
IndraDrive/ Control:	S-0-0024
HydraulicDrive/ Drive:	S-0-0024
HydraulicDrive/ Control:	S-0-0024
SercosDrive:	S-0-0024

A-0-0501, Container of user-defined command value A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RW	RW	RW	RW	RW	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis.

This parameter indicates the value of the parameter configured in the parameter "A-0-0500, Configuration of user-defined command value A".

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

If the value of the parameter is modified, the related value is also modified in the AxisData structure

AxisData [].dwUserCmdDataA_q and vice versa.

If the control is in phase 4, the value is transferred cyclically to the drive.

A-0-0501 - Attributes:	Function:	PARAMETER	Unit:	MasterUnit
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	RAM	Editability:	P2, BB
			MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0502, Configuration of user-defined command value B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis. This parameter configures a parameter that is cyclically transmitted in container "B" from the control to the drive.

The parameter "[A-0-0596](#), List of freely configurable parameters in the MDT" contains the possible parameters whose values may be transferred.

A-0-0502 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: MLC_IDN, 8BYTE **PLC_data_type:** MB_IDN
Memory: FLASH **Editability:** P2
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

Common: Minimum value 0x0 Maximum value 0x100000FFF Default value 0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0024
IndraDrive/ Control: S-0-0024
HydraulicDrive/ Drive: S-0-0024
HydraulicDrive/ Control: S-0-0024
SercosDrive: S-0-0024

A-0-0503, Container of user-defined command value B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RW	RW	RW	RW	RW	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis.

This parameter indicates the value of the parameter configured in the parameter "[A-0-0502](#), Configuration of user-defined command value B".

Describing individual parameters, arranged according to types

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

If the value of the parameter is modified, the related value is also modified in the AxisData structure

AxisData[].dwUserCmdDataB_g and vice versa.

If the control is in phase 4, the value is transferred cyclically to the drive.

A-0-0503 - Attributes:	Function:	PARAMETER	Unit:	MasterUnit
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	RAM	Editability:	P2, BB, PM
			MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0504, Configuration of user-defined command value C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis. This parameter configures a parameter that is cyclically transmitted in container "C" from the control to the drive.

The parameter "A-0-0596, List of freely configurable parameters in the MDT" contains the possible parameters whose values may be transferred.

A-0-0504 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
	Memory:	FLASH	Editability:	P2
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x0	0x100000FFF	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0024
IndraDrive/ Control:	S-0-0024
HydraulicDrive/ Drive:	S-0-0024
HydraulicDrive/ Control:	S-0-0024
SercosDrive:	S-0-0024

A-0-0505, Container of user-defined command value C

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RW	RW	RW	RW	RW	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis.

This parameter indicates the value of the parameter configured in the parameter "A-0-0504, Configuration of user-defined command value C".

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

If the value of the parameter is modified, the related value is also modified in the AxisData structure

`AxisData[] .dwUserCmdDataC_q` and vice versa.

If the control is in phase 4, the value is transferred cyclically to the drive.

A-0-0505 - Attributes:

Function:	PARAMETER	Unit:	MasterUnit
MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0506, Configuration of user-defined command value D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis. This parameter configures a parameter that is cyclically transmitted in container "D" from the control to the drive.

The parameter "[A-0-0596](#), List of freely configurable parameters in the MDT" contains the possible parameters whose values may be transferred.

A-0-0506 - Attributes:

Function: PARAMETER
MLC_data_type: MLC_IDN, 8BYTE
Memory: FLASH
Unit: --
PLC_data_type: MB_IDN
Editability: P2
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

Common: Minimum value 0x0 Maximum value 0x100000FFF Default value 0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0024
IndraDrive/ Control: S-0-0024
HydraulicDrive/ Drive: S-0-0024
HydraulicDrive/ Control: S-0-0024
SercosDrive: S-0-0024

A-0-0507, Container of user-defined command value D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RW	RW	RW	RW	RW	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis.

This parameter indicates the value of the parameter configured in the parameter "[A-0-0506](#), Configuration of user-defined command value D".

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

If the value of the parameter is modified, the related value is also modified in the AxisData structure

AxisData[].dwUserCmdDataD_g and vice versa.

If the control is in phase 4, the value is transferred cyclically to the drive.

A-0-0507 - Attributes:

Function:	PARAMETER	Unit:	MasterUnit
MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0508, Configuration of user-defined command value E

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis. This parameter configures a parameter that is cyclically transmitted in container "E" from the control to the drive.

The parameter "A-0-0596, List of freely configurable parameters in the MDT" contains the possible parameters whose values may be transferred.

A-0-0508 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
Memory:	FLASH	Editability:	P2
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0024
IndraDrive/ Control:	S-0-0024
HydraulicDrive/ Drive:	S-0-0024
HydraulicDrive/ Control:	S-0-0024
SercosDrive:	S-0-0024

A-0-0509, Container of user-defined command value E

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RW	RW	RW	RW	RW	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Five containers (A/B/C/D/E) with four bytes each are reserved in the master data telegram to transmit command values to the corresponding axis.

This parameter indicates the value of the parameter configured in the parameter "A-0-0508, Configuration of user-defined command value E".

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

If the value of the parameter is modified, the related value is also modified in the AxisData structure

`AxisData[] .dwUserCmdDataE_q` and vice versa.

If the control is in phase 4, the value is transferred cyclically to the drive.

A-0-0509 - Attributes:	Function:	PARAMETER	Unit:	MasterUnit
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	RAM	Editability:	P2, BB, PM
			MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0510, Reserved

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

The control can only be switched to phase 4, if this parameter contains the value S-0-0000.

A-0-0510 - Attributes:

Function: PARAMETER
MLC_data_type: MLC_IDN, 8BYTE
Memory: FLASH
Unit: --
PLC_data_type: MB_IDN
Editability: P2
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0024
IndraDrive/ Control:	S-0-0024
HydraulicDrive/ Drive:	S-0-0024
HydraulicDrive/ Control:	S-0-0024
SercosDrive:	S-0-0024

A-0-0511, Reserved

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RW	RW	RW	RW	RW	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is not available anymore in the current firmware version. However, the parameter remains due to compatibility reasons.

Describing individual parameters, arranged according to types

A-0-0511 - Attributes:	Function:	PARAMETER	Unit:	MasterUnit
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	RAM	Editability:	P2, BB, PM
			MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0520, Configuration of actual user-defined value A

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control. This parameter is used to configure a parameter that is cyclically transmitted in container "A" from the axis to the control.

The parameter "[A-0-0597](#), List of freely configurable parameters in the AT" contains the possible parameters whose values may be transferred.

A-0-0520 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
	Memory:	FLASH	Editability:	P2
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x0	0x100000FFF	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0016
IndraDrive/ Control:	S-0-0016
HydraulicDrive/ Drive:	S-0-0016
HydraulicDrive/ Control:	S-0-0016
SercosDrive:	S-0-0016

A-0-0521, Container of actual user-defined value A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	+	+	+	+	+	-	-	-	-

Function

Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control.

This parameter indicates the value of the parameter configured in the parameter "A-0-0520, Configuration of actual user-defined value A".

The value is provided to the PLC in the AxisData structure

`AxisData[].dwUserActualDataA_i.`

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

A-0-0521 - Attributes:

Function:	PARAMETER	Unit:	MasterUnit
MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0522, Configuration of actual user-defined value B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control. This parameter is used to configure a parameter that is cyclically transmitted in container "B" from the axis to the control.

The parameter "[A-0-0597](#), List of freely configurable parameters in the AT" contains the possible parameters whose values may be transferred.

A-0-0522 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: MLC_IDN, 8BYTE **PLC_data_type:** MB_IDN
Memory: FLASH **Editability:** P2, PM
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

Common: Minimum value 0x0 Maximum value 0x100000FFF Default value 0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0016
IndraDrive/ Control: S-0-0016
HydraulicDrive/ Drive: S-0-0016
HydraulicDrive/ Control: S-0-0016
SercosDrive: S-0-0016

A-0-0523, Container of actual user-defined value B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	+	+	+	+	+	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control.

This parameter indicates the value of the parameter configured in the parameter "[A-0-0522](#), Configuration of actual user-defined value B".

The value is provided to the PLC in the AxisData structure

AxisData[].dwUserActualDataB_i.

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

A-0-0523 - Attributes:

Function: PARAMETER
MLC_data_type: INT_DEC, 4BYTE
Memory: RAM
Unit: MasterUnit
PLC_data_type: DINT
Editability: READ_ONLY
MinMax_check: -
Var.data_type: +
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0524, Configuration of actual user-defined value C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control. This parameter is used to configure a parameter that is cyclically transmitted in container "C" from the axis to the control.

The parameter "A-0-0597, List of freely configurable parameters in the AT" contains the possible parameters whose values may be transferred.

A-0-0524 - Attributes:

Function: PARAMETER
MLC_data_type: MLC_IDN, 8BYTE
Memory: FLASH
Unit: --
PLC_data_type: MB_IDN
Editability: P2, PM
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0016
IndraDrive/ Control:	S-0-0016
HydraulicDrive/ Drive:	S-0-0016
HydraulicDrive/ Control:	S-0-0016
SercosDrive:	S-0-0016

A-0-0525, Container of actual user-defined value C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	+	+	+	+	+	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control.

This parameter indicates the value of the parameter configured in the parameter "A-0-0524, Configuration of actual user-defined value C".

The value is provided to the PLC in the AxisData structure

`AxisData[].dwUserActualDataC_i.`

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

A-0-0525 - Attributes:	Function:	PARAMETER	Unit:	MasterUnit
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0526, Configuration of actual user-defined value D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control. This parameter is used to configure a parameter that is cyclically transmitted in container "D" from the axis to the control.

The parameter "[A-0-0597](#), List of freely configurable parameters in the AT" contains the possible parameters whose values may be transferred.

A-0-0526 - Attributes:

Function: PARAMETER
MLC_data_type: MLC_IDN, 8BYTE
Memory: FLASH
Unit: --
PLC_data_type: MB_IDN
Editability: P2, PM
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

Common: Minimum value 0x0 Maximum value 0x100000FFF Default value 0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0016
IndraDrive/ Control: S-0-0016
HydraulicDrive/ Drive: S-0-0016
HydraulicDrive/ Control: S-0-0016
SercosDrive: S-0-0016

A-0-0527, Container of actual user-defined value D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	+	+	+	+	+	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control.

This parameter indicates the value of the parameter configured in the parameter "[A-0-0526](#), Configuration of actual user-defined value D".

Describing individual parameters, arranged according to types

The value is provided to the PLC in the AxisData structure

AxisData[].dwUserActualDataD_i.

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

A-0-0527 - Attributes:	Function:	PARAMETER	Unit:	MasterUnit
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	RAM	Editability:	READ_ONLY
	Var.data_type:	+	MinMax_check:	-
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		S-0-0016		
IndraDrive/ Control:		S-0-0016		
HydraulicDrive/ Drive:		S-0-0016		
HydraulicDrive/ Control:		S-0-0016		
SercosDrive:		---		

A-0-0528, Configuration of actual user-defined value E

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control. This parameter is used to configure a parameter that is cyclically transmitted in container "E" from the axis to the control.

The parameter "[A-0-0597](#), List of freely configurable parameters in the AT" contains the possible parameters whose values may be transferred.

A-0-0528 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
	Memory:	FLASH	Editability:	P2, PM
	Var.data_type:	-	MinMax_check:	-
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		0x0	0x100000FFF	0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				

IndraDrive/ Drive:	S-0-0016
IndraDrive/ Control:	S-0-0016
HydraulicDrive/ Drive:	S-0-0016
HydraulicDrive/ Control:	S-0-0016
SercosDrive:	S-0-0016

A-0-0529, Container of actual user-defined value E

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	+	+	+	+	+	-	-	-	-

Function

Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control.

This parameter indicates the value of the parameter configured in the parameter "A-0-0528, Configuration of actual user-defined value E".

The value is provided to the PLC in the AxisData structure

`AxisData[].dwUserActualDataE_i.`

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

A-0-0529 - Attributes:

Function:	PARAMETER	Unit:	MasterUnit
MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0016
IndraDrive/ Control:	S-0-0016
HydraulicDrive/ Drive:	S-0-0016
HydraulicDrive/ Control:	S-0-0016
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0530, Configuration of actual user-defined value F

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control. This parameter is used to configure a parameter that is cyclically transmitted in container "F" from the axis to the control.

The parameter "[A-0-0597](#), List of freely configurable parameters in the AT" contains the possible parameters whose values may be transferred.

A-0-0530 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: MLC_IDN, 8BYTE **PLC_data_type:** MB_IDN
Memory: FLASH **Editability:** P2, PM
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0016
IndraDrive/ Control:	S-0-0016
HydraulicDrive/ Drive:	S-0-0016
HydraulicDrive/ Control:	S-0-0016
SercosDrive:	S-0-0016

A-0-0531, Container of actual user-defined value F

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	+	+	+	+	+	-	-	-	-

Function Six containers (A/B/C/D/E/F) with four bytes each are reserved in the drive telegram to transmit the actual values from the respective axis to the control.

This parameter indicates the value of the parameter configured in the parameter "[A-0-0530](#), Configuration of actual user-defined value F".

The value is provided to the PLC in the AxisData structure

AxisData[].dwUserActualDataF_i.

The parameter applies the sercos attribute and the unit of the configured S-/P-parameter.

A-0-0531 - Attributes:

Function:	PARAMETER	Unit:	MasterUnit
MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0016
IndraDrive/ Control:	S-0-0016
HydraulicDrive/ Drive:	S-0-0016
HydraulicDrive/ Control:	S-0-0016
SercosDrive:	---

A-0-0540, Configuration of user-defined command value, bit A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0540" defines the parameter of the drive,
- "A-0-0541" defines the bit in the parameter of the drive and
- "A-0-0542" contains the value that should be written in the parameter bit.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

Describing individual parameters, arranged according to types

A-0-0540 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
	Memory:	FLASH	Editability:	P2
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x0	0x100000FFF	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0027		
	IndraDrive/ Control:	S-0-0027		
	HydraulicDrive/ Drive:	S-0-0027		
	HydraulicDrive/ Control:	S-0-0027		
	SercosDrive:	S-0-0027		

A-0-0541, Configuration of user-defined command value, bit number A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0540" defines the parameter of the drive,
- "A-0-0541" defines the bit in the parameter of the drive and
- "A-0-0542" contains the value that should be written in the parameter bit.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0541 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	FLASH	Editability:	P2, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0	31	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	S-0-0329
IndraDrive/ Control:	S-0-0329
HydraulicDrive/ Drive:	S-0-0329
HydraulicDrive/ Control:	S-0-0329
SercosDrive:	Not in PackProfile S-0-0329

A-0-0542, User-defined command value, bit number A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0540" defines the parameter of the drive,
- "A-0-0541" defines the bit in the parameter of the drive and
- "A-0-0542" contains the value that should be written in the parameter bit.

If the bit value is changed in the parameter, the related value is also modified in the AxisData structure

AxisData[].wUserCmdDataBitA_q and vice versa.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0542 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x01	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0145
IndraDrive/ Control:	S-0-0145
HydraulicDrive/ Drive:	S-0-0145
HydraulicDrive/ Control:	S-0-0145
SercosDrive:	Not in PackProfile S-0-0145

A-0-0543, Configuration of user-defined command value, bit B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0543" defines the parameter of the drive,
- "A-0-0544" defines the parameter bit of the drive,
- "A-0-0545" contains the value which should be written in the parameter bit.

Parameter "A-00598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0543 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
Memory:	FLASH	Editability:	P2
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0027
IndraDrive/ Control:	S-0-0027
HydraulicDrive/ Drive:	S-0-0027
HydraulicDrive/ Control:	S-0-0027
SercosDrive:	S-0-0027

A-0-0544, Configuration of user-defined command value, bit number B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0543" defines the parameter of the drive,
- "A-0-0544" defines the parameter bit of the drive,
- "A-0-0545" contains the value which should be written in the parameter bit.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0544 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	31	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0329
IndraDrive/ Control:	S-0-0329
HydraulicDrive/ Drive:	S-0-0329
HydraulicDrive/ Control:	S-0-0329
SercosDrive:	Not in PackProfile S-0-0329

Describing individual parameters, arranged according to types

A-0-0545, User-defined command value, bit number B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0543" defines the parameter of the drive,
- "A-0-0544" defines the parameter bit of the drive,
- "A-0-0545" contains the value which should be written in the parameter bit.

If the bit value is changed in the parameter, the related value is also modified in the AxisData structure

AxisData[].wUserCmdDataBitB_q and vice versa.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0545 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x01	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0145
IndraDrive/ Control:	S-0-0145
HydraulicDrive/ Drive:	S-0-0145
HydraulicDrive/ Control:	S-0-0145
SercosDrive:	Not in PackProfile S-0-0145

A-0-0546, Configuration of user-defined command value, bit C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0546" defines the parameter of the drive,
- "A-0-0547" defines the parameter bit of the drive,
- "A-0-0548" contains the value which should be written in the parameter bit.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0546 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
Memory:	FLASH	Editability:	P2
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0027
IndraDrive/ Control:	S-0-0027
HydraulicDrive/ Drive:	S-0-0027
HydraulicDrive/ Control:	S-0-0027
SercosDrive:	S-0-0027

Describing individual parameters, arranged according to types

A-0-0547, Configuration of user-defined command value, bit number C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0546" defines the parameter of the drive,
- "A-0-0547" defines the parameter bit of the drive,
- "A-0-0548" contains the value which should be written in the parameter bit.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0547 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	31	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0329
IndraDrive/ Control:	S-0-0329
HydraulicDrive/ Drive:	S-0-0329
HydraulicDrive/ Control:	S-0-0329
SercosDrive:	Not in PackProfile S-0-0329

A-0-0548, User-defined command value, bit number C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0546" defines the parameter of the drive,
- "A-0-0547" defines the parameter bit of the drive,
- "A-0-0548" contains the value which should be written in the parameter bit.

If the bit value is changed in the parameter, the related value is also modified in the AxisData structure

AxisData[].wUserCmdDataBitC_q and vice versa.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0548 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0145
IndraDrive/ Control:	S-0-0145
HydraulicDrive/ Drive:	S-0-0145
HydraulicDrive/ Control:	S-0-0145
SercosDrive:	Not in PackProfile S-0-0145

Describing individual parameters, arranged according to types

A-0-0549, Configuration of user-defined command value, bit D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0549" defines the parameter of the drive,
- "A-0-0550" defines the parameter bit of the drive,
- "A-0-0551" contains the value which should be written in the parameter bit.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0549 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
Memory:	FLASH	Editability:	P2
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0027
IndraDrive/ Control:	S-0-0027
HydraulicDrive/ Drive:	S-0-0027
HydraulicDrive/ Control:	S-0-0027
SercosDrive:	S-0-0027

A-0-0550, Configuration of user-defined command value, bit number D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0549" defines the parameter of the drive,
- "A-0-0550" defines the parameter bit of the drive,
- "A-0-0551" contains the value which should be written in the parameter bit.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0550 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	31	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0329
IndraDrive/ Control:	S-0-0329
HydraulicDrive/ Drive:	S-0-0329
HydraulicDrive/ Control:	S-0-0329
SercosDrive:	Not in PackProfile S-0-0329

Describing individual parameters, arranged according to types

A-0-0551, User-defined command value, bit number D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the master data telegram in "S-0-0145, Signal control word" to transmit the command values to the respective axis.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0549" defines the parameter of the drive,
- "A-0-0550" defines the parameter bit of the drive,
- "A-0-0551" contains the value which should be written in the parameter bit.

If the bit value is changed in the parameter, the related value is also modified in the AxisData structure

AxisData[].wUserCmdDataBitD_q and vice versa.

The parameter "A-0-0598, List of configurable parameters in signal control word" contains the possible parameters whose values can be transferred.

A-0-0551 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0145
IndraDrive/ Control:	S-0-0145
HydraulicDrive/ Drive:	S-0-0145
HydraulicDrive/ Control:	S-0-0145
SercosDrive:	Not in PackProfile S-0-0145

A-0-0560, Configuration of actual user-defined value, bit A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-00144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0560" defines the parameter of the drive,
- "A-0-0561" defines the bit in the parameter of the drive and
- "A-0-0562" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0560 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: MLC_IDN, 8BYTE **PLC_data_type:** MB_IDN
Memory: FLASH **Editability:** P2, PM
Var.data_type: - **MinMax_check:** -
Var.min/max_value: -

Common: **Minimum value** **Maximum value** **Default value**
0x0 0x100000FFF 0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0026
IndraDrive/ Control:	S-0-0026
HydraulicDrive/ Drive:	S-0-0026
HydraulicDrive/ Control:	S-0-0026
SercosDrive:	S-0-0026

Describing individual parameters, arranged according to types

A-0-0561, Configuration of actual user-defined value, bit number A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-00144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0560" defines the parameter of the drive,
- "A-0-0561" defines the bit in the parameter of the drive and
- "A-0-0562" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0561 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P2, PM
Var.data_type: - **MinMax_check:** +
 Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	31	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0328
IndraDrive/ Control:	S-0-0328
HydraulicDrive/ Drive:	S-0-0328
HydraulicDrive/ Control:	S-0-0328
SercosDrive:	Not in PackProfile S-0-0328

A-0-0562, Actual user-defined value, bit number A

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-0-0144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0560" defines the parameter of the drive,
- "A-0-0561" defines the parameter bit of the drive.
- "A-0-0562" contains the value read from the parameter bit.

The value of the parameter bit is provided to the PLC in the AxisData structure

AxisData[].wUserActualDataBitA_i.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0562 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0144
IndraDrive/ Control:	S-0-0144
HydraulicDrive/ Drive:	S-0-0144
HydraulicDrive/ Control:	S-0-0144
SercosDrive:	Not in PackProfile S-0-0144

Describing individual parameters, arranged according to types

A-0-0563, Configuration of actual user-defined value, bit B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-0-0144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0563" defines the parameter of the drive,
- "A-0-0564" defines the parameter bit of the drive,
- "A-0-0565" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0563 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: MLC_IDN, 8BYTE **PLC_data_type:** MB_IDN
Memory: FLASH **Editability:** P2, PM
Var.data_type: - **MinMax_check:** -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0026
IndraDrive/ Control:	S-0-0026
HydraulicDrive/ Drive:	S-0-0026
HydraulicDrive/ Control:	S-0-0026
SercosDrive:	S-0-0026

A-0-0564, Configuration of actual user-defined value, bit number B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-0-0144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0563" defines the parameter of the drive,
- "A-0-0564" defines the parameter bit of the drive,
- "A-0-0565" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0564 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P2, PM
Var.data_type: - **MinMax_check:** +
 Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	31	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0328
IndraDrive/ Control:	S-0-0328
HydraulicDrive/ Drive:	S-0-0328
HydraulicDrive/ Control:	S-0-0328
SercosDrive:	Not in PackProfile S-0-0328

Describing individual parameters, arranged according to types

A-0-0565, Actual user-defined value, bit number B

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-00144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0563" defines the parameter of the drive,
- "A-0-0564" defines the parameter bit of the drive,
- "A-0-0565" contains the value read from the parameter bit.

The value of the parameter bit is provided to the PLC in the AxisData structure

AxisData[].wUserActualDataBitB_i.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0565 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0144
IndraDrive/ Control:	S-0-0144
HydraulicDrive/ Drive:	S-0-0144
HydraulicDrive/ Control:	S-0-0144
SercosDrive:	Not in PackProfile S-0-0144

A-0-0566, Configuration of actual user-defined value, bit C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-0-0144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0566" defines the parameter of the drive,
- "A-0-0567" defines the parameter bit of the drive,
- "A-0-0568" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0566 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0026
IndraDrive/ Control:	S-0-0026
HydraulicDrive/ Drive:	S-0-0026
HydraulicDrive/ Control:	S-0-0026
SercosDrive:	S-0-0026

A-0-0567, Configuration of actual user-defined value, bit number C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-0-0144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0566" defines the parameter of the drive,
- "A-0-0567" defines the parameter bit of the drive,
- "A-0-0568" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0567 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P2, PM
Var.data_type: - **MinMax_check:** +
 Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	31	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0328
IndraDrive/ Control:	S-0-0328
HydraulicDrive/ Drive:	S-0-0328
HydraulicDrive/ Control:	S-0-0328
SercosDrive:	Not in PackProfile S-0-0328

A-0-0568, Actual user-defined value, bit number C

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-00144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0566" defines the parameter of the drive,
- "A-0-0567" defines the parameter bit of the drive,
- "A-0-0568" contains the value read from the parameter bit.

The value of the parameter bit is provided to the PLC in the AxisData structure

AxisData[].wUserActualDataBitC_i.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0568 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0144
IndraDrive/ Control:	S-0-0144
HydraulicDrive/ Drive:	S-0-0144
HydraulicDrive/ Control:	S-0-0144
SercosDrive:	Not in PackProfile S-0-0144

Describing individual parameters, arranged according to types

A-0-0569, Configuration of actual user-defined value, bit D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-0-0144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0569" defines the parameter of the drive,
- "A-0-0570" defines the parameter bit of the drive,
- "A-0-0571" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0569 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: MLC_IDN, 8BYTE **PLC_data_type:** MB_IDN
Memory: FLASH **Editability:** P2, PM
Var.data_type: - **MinMax_check:** -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0x0	0x100000FFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0026
IndraDrive/ Control:	S-0-0026
HydraulicDrive/ Drive:	S-0-0026
HydraulicDrive/ Control:	S-0-0026
SercosDrive:	S-0-0026

A-0-0570, Configuration of actual user-defined value, bit number D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in "S-0-0144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transfer.

- "A-0-0569" defines the parameter of the drive,
- "A-0-0570" defines the parameter bit of the drive,
- "A-0-0571" contains the value read from the parameter bit.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0570 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P2, PM
Var.data_type: - **MinMax_check:** +
 Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	31	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0328
IndraDrive/ Control:	S-0-0328
HydraulicDrive/ Drive:	S-0-0328
HydraulicDrive/ Control:	S-0-0328
SercosDrive:	Not in PackProfile S-0-0328

Describing individual parameters, arranged according to types

A-0-0571, Actual user-defined value, bit number D

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	RO	RO	RO	RO	RO	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Four containers (A/B/C/D) with one bit each are reserved in the drive telegram in the parameter "S-00144, Signal status word" to transmit the actual values from the respective axis to the control.

A total of three parameters are required per container for addressing and value transmission.

- "A-0-0569" defines the parameter of the drive,
- "A-0-0570" defines the parameter bit of the drive,
- "A-0-0571" contains the value read from the parameter bit.

The value of the parameter bit is provided to the PLC in the AxisData structure

AxisData[].wUserActualDataBitD_i.

The Parameter "A-0-0599, List of configurable parameters in signal status word" contains the possible parameters whose values may be transferred.

A-0-0571 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0144
IndraDrive/ Control:	S-0-0144
HydraulicDrive/ Drive:	S-0-0144
HydraulicDrive/ Control:	S-0-0144
SercosDrive:	Not in PackProfile S-0-0144

A-0-0596, List of freely configurable parameters in the MDT

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list contains the parameter ID numbers that can be configured in the master data telegram for one of the six 4-byte containers.

Container A	Container B	Container C	Container D	Container E	Container F
A-0-0500	A-0-0502	A-0-0504	A-0-0506	A-0-0508	A-0-0510

Tab. 4-4: Parameters that configure the respective containers

See also Functional Description: "MDT/ AT Configuration".

A-0-0596 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0188
IndraDrive/ Control:	S-0-0188
HydraulicDrive/ Drive:	S-0-0188
HydraulicDrive/ Control:	S-0-0188
SercosDrive:	S-0-0188

A-0-0597, List of freely configurable parameters in the AT

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Describing individual parameters, arranged according to types

Function This list contains the parameter ID numbers that can be configured in the drive telegram for one of the six 4-byte containers.

Container A	Container B	Container C	Container D	Container E	Container F
A-0-0520	A-0-0522	A-0-0524	A-0-0526	A-0-0528	A-0-0530

Tab. 4-5: Parameters that configure the respective containers

See also Functional Description: "MDT/ AT Configuration".

A-0-0597 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0187

IndraDrive/ Control: S-0-0187

HydraulicDrive/ Drive: S-0-0187

HydraulicDrive/ Control: S-0-0187

SercosDrive: S-0-0187

A-0-0598, List of configurable parameters in signal control word

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list contains the parameter ID numbers that can be configured in the master data telegram for one of the four single-bit containers.

	Container A	Container B	Container C	Container D
Parameter	A-0-0540	A-0-0543	A-0-0546	A-0-0549
Bit position	A-0-0541	A-0-0544	A-0-0547	A-0-0550
Value	A-0-0542	A-0-0545	A-0-0548	A-0-0551

Tab. 4-6: Parameters that configure the respective containers

See also Functional Description: "MDT/ AT Configuration".

A-0-0598 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Var.data_type:	-	MinMax_check:	-
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0399		
	IndraDrive/ Control:	S-0-0399		
	HydraulicDrive/ Drive:	S-0-0399		
	HydraulicDrive/ Control:	S-0-0399		
	SercosDrive:	Not in PackProfile S-0-0399		

A-0-0599, List of configurable parameters in signal status word

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	-	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list contains the parameter ID numbers that can be configured in the drive telegram for one of the four single-bit containers.

	Container A	Container B	Container C	Container D
Parameter	A-0-0560	A-0-0563	A-0-0566	A-0-0569
Bit position	A-0-0561	A-0-0564	A-0-0567	A-0-0570
Value	A-0-0562	A-0-0565	A-0-0568	A-0-0571

Tab. 4-7: Parameters that configure the respective containers

See also Functional Description: "MDT/ AT Configuration".

A-0-0599 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Var.data_type:	-	MinMax_check:	-
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0398
IndraDrive/ Control:	S-0-0398
HydraulicDrive/ Drive:	S-0-0398
HydraulicDrive/ Control:	S-0-0398
SercosDrive:	Not in PackProfile S-0-0398

A-0-0606, Drive, Software revision

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	-	+	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the software version of the connected drive.



The software version is read out from the drive during runtime. No buffering by the control. One or more communication cycles can sporadically elapse until the value is available on the control.

An empty character string is displayed if the software version of the drive cannot be determined.

A-0-0606 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0622, Synchronization run window, position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

If, for the "Synchronized Motion" function blocks with subordinate position control (MC_GearInPos, MC_CamIn, MB_MotionProfile, FlexProfile), the difference between the position command value and the actual position value is smaller than the "A-0-0622, Synchronization window, position", bit 7 in parameter "A-0-0021, Axis status" is set.

The following applies:

Bit 7 = 1 if $|X_{\text{synch}} - X_{\text{actual}}| < (A-0-0622)$

with

- X_{synch} : "A-0-2653, ELS, synchronous position command value",
- X_{actual} : "A-0-0100, Actual position value".



For axes with interpolation in the control, the status is exclusively created based on the interpolated values.

For these axes, the parameters are only available due to reasons of compatibility and have thus no effect.

A-0-0622 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	5.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0228
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0623, Synchronization run window, velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

If the difference between the velocity command value and the actual value is smaller than "A-0-0623, Synchronization window, velocity", bit 7 is set in the parameter "A-0-0021, Axis status" for the "Synchronized Motion" function blocks (MC_GearIn).

The following applies:

Bit 7 = 1 if $|dX \text{ Synch} - dX \text{ Actual}| < (A-0-0623)$

with

- dX actual: "A-0-0102, Actual velocity value",
- dX synch: "A-0-2654, Synchronous velocity" created from the current master axis speed.



For axes with interpolation in the control, the status is exclusively created based on the interpolated values.

For these axes, the parameters are only available due to reasons of compatibility and have thus no effect.

A-0-0623 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	20.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0183
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0627, Controller axis, diagnostic number

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function If bit 12 or 13 of the parameter "A-0-0019, Controller status word" is set to 1, this parameter contains the current diagnostic message for the controller axis.

A-0-0627 - Attributes:

Function: PARAMETER
MLC_data_type: UINT_HEX, 4BYTE
Memory: RAM
Unit: --
PLC_data_type: UDINT
Editability: P2, BB, PM
MinMax_check: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:	---	---	---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-0630, Controller axis, controller name

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function A description text for the PLC controller of the controller axis can be saved in this parameter (e.g. synchronous controller). The text does not provide any functional meaning.

Describing individual parameters, arranged according to types

A-0-0630 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"Controller_name"
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0651, Diagnostics, control word

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RW	RW	RW	RW	RW	RW	RW	RW	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function Structure

This parameter is used to set diagnostic options on the control.

Bit	Name/function
0	Reaction from the control on the F2 drive errors
1..7	Reserved
8	Output of the active motion command in the diagnostic logbook
9..31	Reserved

Use Bit 0:

Interpolation	Behavior
In the control	0: F2 drive errors cause the control error F20B0005. There is an error reaction from the control. That is, the drive is decelerated with the deceleration ramp of the parameter A-0-0224 "Rapid stop deceleration". 1: All drive errors of state class 1 (F2) cause the control error F00B0165. There is no error reaction from the control.
In the drive	0: Fxxxx drive errors become F200xxxx errors on the control. There is an error reaction on the side of the control. That is, the control sets bit 13 in S-0-0134 "Master control word" to "FALSE" ("Drive halt" is triggered). 1: F2xxx drive errors become F002xxx errors on the control. Thus, there is no error reaction from the control for these errors.

Tab. 4-8: Using A-0-0651, bit 0



If the error reaction on the control is switched off, the error handling must be programmed in the PLC program.

Bit 8:

Enabling of bit 8 writes the active PLCopen motion command to the diagnostic log of the control. The default message "A0220050, Active motion command:" is generated in the system and supplemented by the issued motion command. The command is entered when it is applied.

A-0-0651 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	NVRAM	Editability:	P0, P2, BB, PM
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x0000
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-0660, Status main command channel

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used for internal diagnostic purposes with regard to the primary command channel.

A-0-0660 - Attributes:

Function: PARAMETER
MLC_data_type: BINARY, 8BYTE
Memory: RAM
Unit: --
PLC_data_type: LWORD
Editability: READ_ONLY
MinMax_check: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-0661, Status secondary command channel 1

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used for internal diagnostic purposes with regard to the secondary command channel 1.

A-0-0661 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 8BYTE	PLC_data_type:	LWORD
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-0662, Status secondary command channel 2

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used for internal diagnostic purposes with regard to the secondary command channel 2.

A-0-0662 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 8BYTE	PLC_data_type:	LWORD
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

Describing individual parameters, arranged according to types

A-0-0663, Status secondary command channel 3

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used for internal diagnostic purposes with regard to the secondary command channel 3.

A-0-0663 - Attributes:

Function: PARAMETER
MLC_data_type: BINARY, 8BYTE
Memory: RAM
Unit: --
PLC_data_type: LWORD
Editability: READ_ONLY
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

4.1.4 A-0-1000 - A-0-1999**A-0-1000, Command: Load basic axis parameters**

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used as a command to load the basic axis parameters.



Before executing the command, back up the parameters

- [A-0-0002](#)
- [A-0-0016](#)
- [A-0-0008](#)
- [A-0-0630](#)

After loading the basic axis parameters, restore these parameters manually. This is the only option to further use the IndraWorks diagnostic functions online.



The command "Load basic parameters" cannot be executed if the oscilloscope is active.

The command is aborted with an error message.

Use *Starting from IndraWorks:*

- Click on the menu item "Load basic parameters" in the **context menu of the axis ► Parameter handling ► Load basic parameters**.

From the field bus:

- Entering the binary value "2#0000 0000 0000 0011" (=16#03) into the parameter ([A-0-1000](#)).

This activates the loading of the basic parameters of the axis.

- After the loading, the control automatically resets the parameter to 16#00.

[A-0-1000](#) - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

Describing individual parameters, arranged according to types

A-0-1030, Command: Clear all axis errors

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter acts as a command to clear all axis errors on the control or in the drive.

Use *Starting from IndraWorks:*

- Use "Clear Error" in the **axis context menu** ► **Diagnostics** ► **Clear Error**.

From the field bus:

- Enter the binary value "0000000000000011" (=16#0003) in the parameter.
This triggers the error deletion process.
- After the error is deleted, the control automatically resets the parameter value back to "0000000000000000".

PLC program:

- Use the MB_Command function block.

A-0-1030 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0099
IndraDrive/ Control:	S-0-0099
HydraulicDrive/ Drive:	S-0-0099
HydraulicDrive/ Control:	S-0-0099
SercosDrive:	S-0-0099

4.1.5 A-0-2000 - A-0-2499

A-0-2100, List of all backup operation A-parameters

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list includes all A-parameters to be considered when backing up parameters. It is entered in the ID number format.

The entries are sorted by description and their relation and not by ID number or alphabetically.

A-parameters are stored in the order of these entries.

Structure The ID number format is as follows:

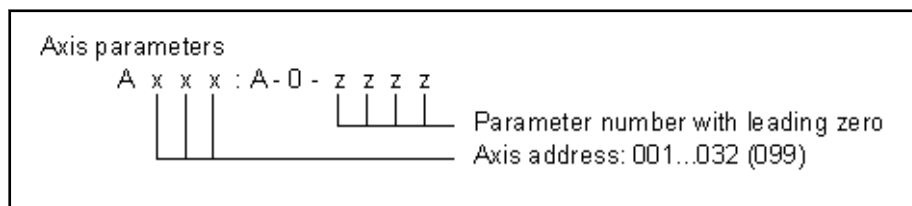


Fig. 4-11: ID number format

Use A001: [A-0-0004](#) - axis 1; parameter [A-0-0004](#).

A-0-2100 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x100000000	0x100000FFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2120, Axis status based on the controlled values

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter describes the current value of the axis status. It is a copy of "A-0-0021, Axis status" and provides the status bits based on the interpolated command values of the control. It does not depend on the settings made in bit 15 of the parameter "A-0-0007, Axis configuration". For a detailed description of the individual bits, refer to the parameter description of "A-0-0021, Axis status".

Structure

Bit	Name/function
0	Active CAM table, bit 0
1	Active CAM table, bit 1
2	Active CAM table, bit 2
3	Cam, distance enabled/applied
4	Axis command velocity = actual velocity
5	Axis velocity lower than/equal to A-0-0222 (standstill)
6	Axis command position = actual position
7	Axis is synchronized
8	Axis indicates a warning
9	Axis indicates an error
10	Actual position value is relative/referenced
11	Axis torque/force command value = actual value
12	Axis is in operating mode (P4)
13	bb - Ready for power on
14	Ab - Control and power section ready
15	AH_AF - "Drive halt", "Drive enabled"
16	Command active
17	Error reaction enabled
18	Cyclic position command value channel open
19	Master phase offset reached

Bit	Name/function
20	Cyclic force command value channel open
21	Cyclic velocity command value channel open
22	Cyclic analog value channel open
23	Communication via Sercos III NRT
24	Command value processing interrupted
25	S-/P-parameters available
26	Reserved
27	Command value specification affected by PLC program
28	Position data in modulo format
29	Position data is rotatorily scaled
30	Cyclic data available
31	Command value decoupling active



Only bit 5 and bit 10 are supported for encoder axes and link axes.

A-0-2120 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2121, Axis status

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	+	+	+
Direct_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
C2C_access:	RO	RO	RO	RO	RO	RO	RO	RO	RO
Oscilloscope:	+	+	+	+	+	+	+	+	+
Probe:	-	-	-	-	-	-	-	-	-

Function Structure

This parameter describes the current value of the axis status.

Bit	Name/function
0..31	Refer to the parameter description A-0-0021
32	Status SIS protocol
33	Status SIP protocol
34..63	Reserved



Only bit 5 and bit 10 are supported for encoder axes and link axes.

Use**Bit 32:**

0 - Corresponding drive is not linked via SIS protocol

1 - Corresponding drive is linked via SIS protocol

Bit 33:

0 - Corresponding drive is not linked via S/IP protocol

1 - Corresponding drive is linked via S/IP protocol

A-0-2121 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 8BYTE	PLC_data_type:	LWORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2200, Command position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter displays the "command position". It is used for the PLCopen FBs supporting the "Discrete Motion" state:

- MC_MoveAbsolute (figure below)
- MC_MoveAdditive
- MC_MoveRelative.

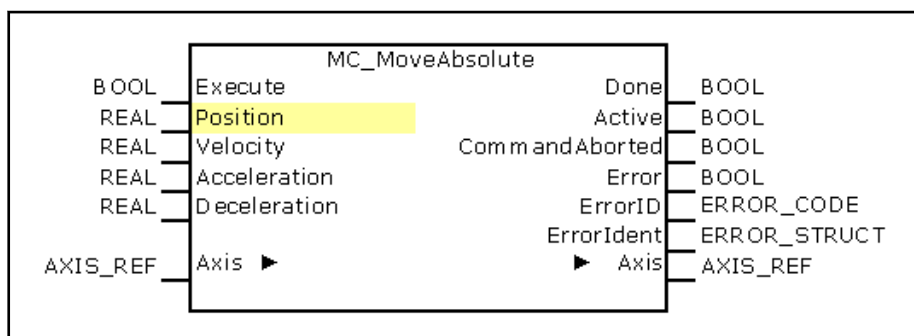


Fig. 4-12: MC_MoveAbsolute with "Position" input

Use At a rising edge at the "Execute" input, the input values at the function block instance are applied to the "command" parameters:

Command variable	Parameters	Used in
Position	A-0-2200 , Command position	MC_MoveAbsolute
Distance	A-0-2200 , Command position	MC_MoveAdditive, MC_MoveRelative
Velocity	A-0-2202 , Command velocity	
Acceleration	A-0-2203 , Command acceleration	
Deceleration	A-0-2204 , Command deceleration	
Jerk	A-0-2205 , Command jerk	

Tab. 4-9: Command values of "Discrete Motion" function blocks

For "Discrete Motion" function blocks, "[A-0-2201](#), target position" is computed from "command" parameters.

Subsequently, the respective motion of the axis with the specified parameters is running.



Since [A-0-2205](#), command jerk, is not supplied by a FB input at the PLCopen FBs, such as "[A-0-2202](#), Command velocity", its value is applied by the parameter "[A-0-0216](#), jerk" (standard jerk) at a positive edge at the "Execute" input of the respective function block.

Describing individual parameters, arranged according to types

A-0-2200 - Attributes:	Function:	PARAMETER	Unit:	A-0-0059
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	S-0-0282, after FB invocation		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	S-0-0282, after FB invocation		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2201, Target position

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the "target position". This position contains the value at which the change in position is completed [["A-0-0021, Axis status"](#) (bit 6 = TRUE)].

The parameter is used for the PLCopen FBs supporting the "Discrete Motion" state:

- MC_MoveAbsolute (figure below)
- MC_MoveAdditive
- MC_MoveRelative.

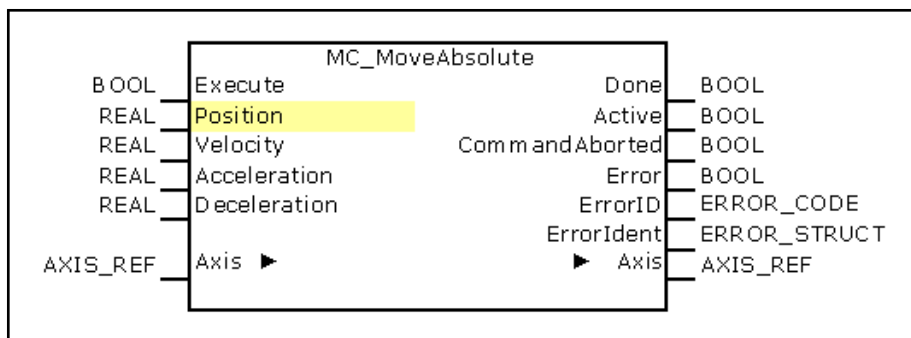


Fig. 4-13: MC_MoveAbsolute with "Position" input

Use At a rising edge at the "Execute" input, the input values at the function block instance are applied to the "command" parameters:

Command variable	Parameters	Used in
Position	A-0-2200 , Command position	MC_MoveAbsolute
Distance	A-0-2200 , Command position	MC_MoveAdditive, MC_MoveRelative
Velocity	A-0-2202 , Command velocity	
Acceleration	A-0-2203 , Command acceleration	
Deceleration	A-0-2204 , Command deceleration	
Jerk	A-0-2205 , Command jerk	

Tab. 4-10: Command values of "Discrete Motion" function blocks

Afterwards, "[A-0-2201](#), Target position" is immediately calculated:

- **MC_MoveAbsolute:** "[A-0-2200](#), Command position" is copied to "[A-0-2201](#), Target position".
- **MC_MoveAdditive:** "[A-0-2200](#), Command position" is added to "[A-0-2201](#), Target position".
- **MC_MoveRelative:** "[A-0-2200](#), Command position" and "[A-0-0100](#), Actual position value" are summed up and saved as "[A-0-2201](#), Target position".

The motion runs until the target position "Done" is reached (or up to the command abort "CommandAborted").



Since [A-0-2205](#), command jerk, is not supplied by a FB input at the PLCopen FBs, such as "[A-0-2202](#), Command velocity", its value is applied by the parameter "[A-0-0216](#), jerk" (standard jerk) at a positive edge at the "Execute" input of the respective function block.

[A-0-2201](#) - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-4294967296.0	4294967296.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0430, after FB invocation
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	S-0-0430, after FB invocation
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2202, Command velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter displays the "command velocity". It is used for the PLCopen FBs supporting the states "Discrete Motion" and "Continuous Motion":

- MC_MoveAbsolute (figure below), MC_MoveAdditive, MC_MoveRelative
- MC_MoveVelocity (figure below).

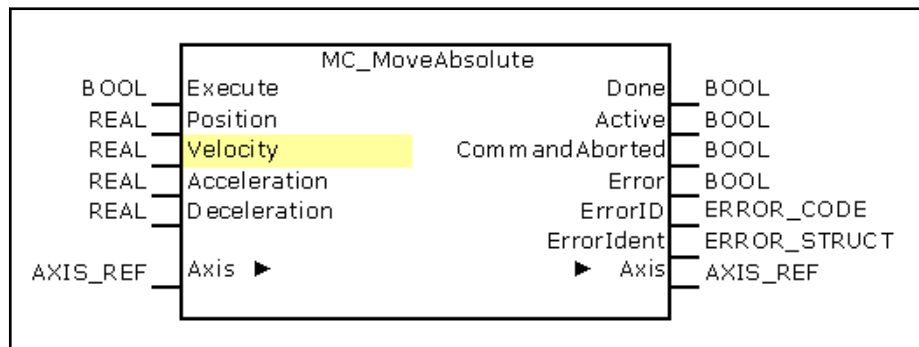


Fig. 4-14: MC_MoveAbsolute with "Velocity" input

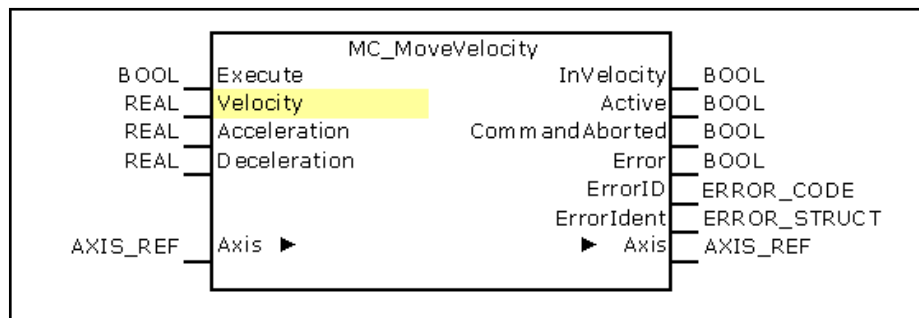


Fig. 4-15: MC_MoveVelocity with "Velocity" input

Use At a rising edge at the "Execute" input, the input values at the function block instance are applied to the "command" parameters:

Command variable	Parameters	Used in
Position	A-0-2200, Command position	MC_MoveAbsolute
Distance	A-0-2200, Command position	MC_MoveAdditive, MC_MoveRelative
Velocity	A-0-2202, Command velocity	
Acceleration	A-0-2203, Command acceleration	
Deceleration	A-0-2204, Command deceleration	
Jerk	A-0-2205, Command jerk	

Tab. 4-11: Command values of "Discrete Motion" function blocks

For "Discrete Motion" function blocks, "A-0-2201, target position" is computed from "command" parameters.

Subsequently, the respective motion of the axis with the specified parameters is running.



Since A-0-2205, command jerk, is not supplied by a FB input at the PLCopen FBs, such as "A-0-2202, Command velocity", its value is applied by the parameter "A-0-0216, jerk" (standard jerk) at a positive edge at the "Execute" input of the respective function block.

A-0-2202 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0259, after FB invocation
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	S-0-0259, after FB invocation
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2203, Command acceleration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

The parameter displays the "command acceleration". It is used for the PLCopen FBs supporting the states "Discrete Motion" and "Continuous Motion":

- MC_MoveAbsolute (figure below), MC_MoveAdditive, MC_MoveRelative
- MC_MoveVelocity (figure below).

Describing individual parameters, arranged according to types

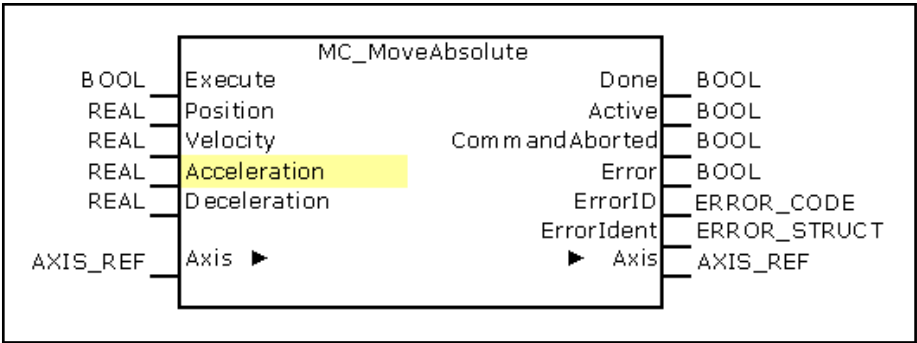


Fig. 4-16: MC_MoveAbsolute with "Acceleration" input

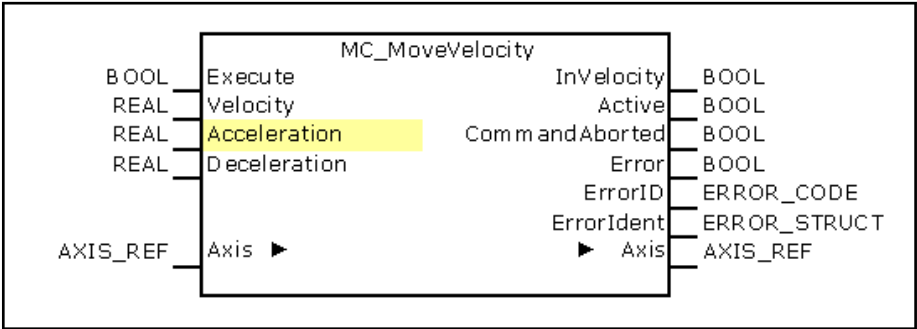


Fig. 4-17: MC_MoveVelocity with "Acceleration" input

Use At a rising edge at the "Execute" input, the input values at the function block instance are applied to the "command" parameters:

Command variable	Parameters	Used in
Position	A-0-2200, Command position	MC_MoveAbsolute
Distance	A-0-2200, Command position	MC_MoveAdditive, MC_MoveRelative
Velocity	A-0-2202, Command velocity	
Acceleration	A-0-2203, Command acceleration	
Deceleration	A-0-2204, Command deceleration	
Jerk	A-0-2205, Command jerk	

Tab. 4-12: Command values of "Discrete Motion" function blocks

For "Discrete Motion" function blocks, "A-0-2201, target position" is computed from "command" parameters.

Subsequently, the respective motion of the axis with the specified parameters is running.



Since A-0-2205, command jerk, is not supplied by a FB input at the PLCopen FBs, such as "A-0-2202, Command velocity", its value is applied by the parameter "A-0-0216, jerk" (standard jerk) at a positive edge at the "Execute" input of the respective function block.

A-0-2203 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0.0000001	2147483647.0	MinPositiveLong
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	S-0-0260, after FB invocation		
IndraDrive/ Control:	---		
HydraulicDrive/ Drive:	S-0-0260, after FB invocation		
HydraulicDrive/ Control:	---		
SercosDrive:	---		

A-0-2204, Command deceleration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

The parameter displays the "command deceleration". It is used for the PLCopen FBs supporting the states "Discrete Motion" and "Continuous Motion":

- MC_MoveAbsolute (figure below), MC_MoveAdditive, MC_MoveRelative
- MC_MoveVelocity (figure below).

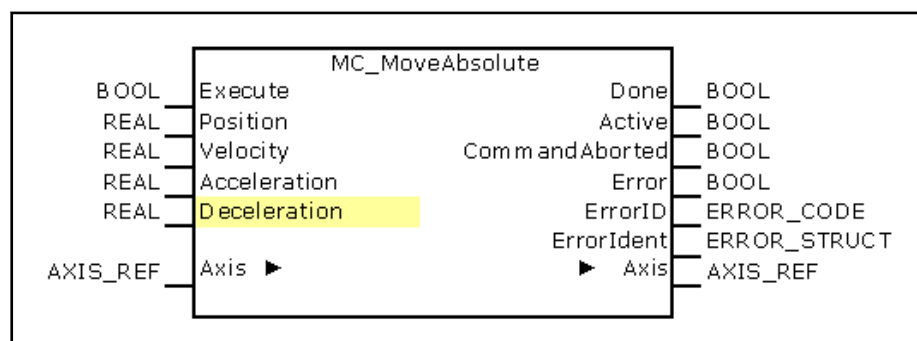


Fig. 4-18: MC_MoveAbsolute with "Deceleration" input

Describing individual parameters, arranged according to types

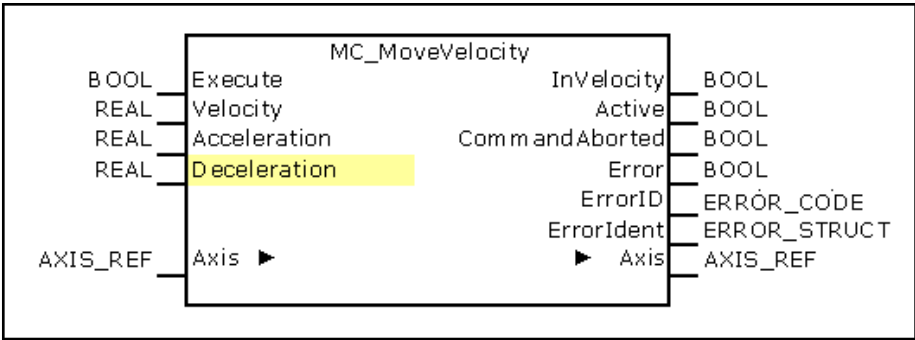


Fig. 4-19: MC_MoveVelocity with "Deceleration" input

Use At a rising edge at the "Execute" input, the input values at the function block instance are applied to the "command" parameters:

Command variable	Parameters	Used in
Position	A-0-2200, Command position	MC_MoveAbsolute
Distance	A-0-2200, Command position	MC_MoveAdditive, MC_MoveRelative
Velocity	A-0-2202, Command velocity	
Acceleration	A-0-2203, Command acceleration	
Deceleration	A-0-2204, Command deceleration	
Jerk	A-0-2205, Command jerk	

Tab. 4-13: Command values of "Discrete Motion" function blocks

For "Discrete Motion" function blocks, "A-0-2201, target position" is computed from "command" parameters.

Subsequently, the respective motion of the axis with the specified parameters is running.

 Since A-0-2205, command jerk, is not supplied by a FB input at the PLCopen FBs, such as "A-0-2202, Command velocity", its value is applied by the parameter "A-0-0216, jerk" (standard jerk) at a positive edge at the "Execute" input of the respective function block.

A-0-2204 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
Common:		Minimum value	Maximum value	Default value
		0.0000001	2147483647.0	MinPositiveLong
HydraulicDrive:				
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		S-0-0359, after FB invocation		
IndraDrive/ Control:		---		
HydraulicDrive/ Drive:		S-0-0359, after FB invocation		
HydraulicDrive/ Control:		---		
SercosDrive:		---		

A-0-2205, Command jerk

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the command jerk for the axis.

Since this parameter is not supplied by one FB input at the PLCopen FBs, such as "A-0-2202, Command velocity", its value is applied by the parameter "A-0-0216, Jerk" (default jerk) at a positive edge at the "Execute" input of the respective function block.

A-0-2205 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0000001	2147483647.0	MinPositiveLong
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0193, after FB invocation
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	S-0-0193, after FB invocation
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2206, Target force

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the target force for the axis.

Use At a rising edge at the "Execute" input, the input values at the function block instance are applied to the "command" parameters:

Describing individual parameters, arranged according to types

Command variable	Parameter	Used in
Torque/force	A-0-2206 , Target force	MC_TorqueControl

A-0-2206 - Attributes:

Function:	PARAMETER	Unit:	A-0-0050
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	-
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0000001	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0080

IndraDrive/ Control: S-0-0080

HydraulicDrive/ Drive: S-0-0080

HydraulicDrive/ Control: S-0-0080

SercosDrive: ---

A-0-2207, Command direction of motion

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	-	+	+	-	-	+
Direct_access:	RO	RO	--	--	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	-	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the command direction for the axis.

Since this parameter is not supplied by a FB input at the PLCopen FBs, such as "[A-0-2202](#), Command velocity", its value is applied by the parameter "[A-0-0203](#), Direction" (default direction) at a positive edge at the "Execute" input of the respective function block.

Structure

Bit	Designation/function
1..0	direction of motion 0 0: shortest distance, 0 1: positive direction, catch up, 1 0: negative direction, slow down.

Use **Shortest distance** - The axis is moved to the command target position at the shortest distance.

Positive direction, catch up - The target is reached by turning the axis in the positive direction with regard to the main direction.

Negative direction, slow down - The target is reached by turning the axis in the negative direction with regard to the main direction.

A-0-2207 - Attributes:

Function: PARAMETER
MLC_data_type: BINARY, 2BYTE
Memory: RAM
Unit: --
PLC_data_type: WORD
Editability: READ_ONLY
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

Common: ---
HydraulicDrive: ---
Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: S-0-0145, Bit 4 + 5, after FB_MoveAbs

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2208, Cyclic command position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

This Parameter displays the "commanded position" written with FB ML_WriteCyclicPosition.

This commanded position only gets active on axis if cyclic position channel is opened.

Cyclic position Channel can be opened with FB ML_OpenCyclicPosition-Channel.

A-0-2208 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: [A-0-0059](#)
PLC_data_type: REAL
Editability: READ_ONLY
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

Common: ---
HydraulicDrive: ---
Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0047, after FB invocation
IndraDrive/ Control:	S-0-0047, after FB invocation
HydraulicDrive/ Drive:	S-0-0047, after FB invocation
HydraulicDrive/ Control:	S-0-0047, after FB invocation
SercosDrive:	S-0-0047, after FB invocation

A-0-2209, Cyclic command torque

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	-	-	-	-	+
Direct_access:	RO	RO	RO	RO	--	--	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	-	-	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter displays the "Cyclic target force" that has been written using the function module ML_WriteCyclicTorque.

This "Cyclic target value" will only become active on the axis if the cyclic target value channel is open.

The cyclic target value channel can be opened using the function module ML_OpenCyclicTorqueChannel.

A-0-2209 - Attributes:

Function:	PARAMETER	Unit:	A-0-0050
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2210, Cyclic command velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter displays the "Cyclic target velocity" that has been written using the function module ML_WriteCyclicVelocity.

This "Cyclic target value" will only become active on the axis if the cyclic target value channel is open.

The cyclic target value channel can be opened using the function module ML_OpenCyclicVelocityChannel.

A-0-2210 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: [A-0-0056](#)
PLC_data_type: REAL
Editability: READ_ONLY
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2211, Cyclic analog value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	+	+	-	-	-	-	-
Direct_access:	--	--	RO	RO	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the "cyclic analog value" written with the ML_WriteCyclicAnalog function block.

Describing individual parameters, arranged according to types

This “cyclic command value” becomes only active on the axis if the cyclic command value channel is open. This channel can only be opened for HydraulicDrive.

The cyclic command value channel can be opened using the function block ML_OpenCyclicAnalogChannel.

A-0-2211 - Attributes:	Function:	PARAMETER	Unit:	A-0-0066
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	P-0-2891, after FB invocation		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2220, Additive position value, process controller

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RW	RW	RW	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	+	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function Use this parameter to add an additional (additive) position command value to the position command value generated by the command value preparation.

This additional command value is neither limited nor changed. Thus, ensure that the amount, characteristics and derived variables are located in the permitted value range!

The parameter applies to all individual axis commands (e.g. MC_MoveAbsolute).



At interpolation in the drive, this parameter is applied to P-0-0059. More information on this causal loop of the parameter can be found in the documentation of the respective drive.



At interpolation in the drive, P-0-0059 is not in the command value telegram by default. [A-0-2220](#) is transferred first via the asynchronous service channel. If the value is to be cyclically transferred, it is recommended to include P-0-0059 in the user-defined command values (see e.g. [A-0-0500](#)).



When the power (MC_Power) is switched on and off, the parameter is reset to "0". This is performed to prevent undesired command value jumps.



The parameter is volatile and not backed up in the remanent data of the control.

A-0-2220 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	P-0-0059
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	P-0-0059
HydraulicDrive/ Control:	---
SercosDrive:	---

4.1.6 A-0-2500 - A-0-2999**A-0-2600, Additive master axis position, process controller**

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

The specified parameter value is smoothed by means of a 1st order filter and is subsequently added to the sum of "[A-0-2710](#), ELS, phasing, additive position command value, velocity" and of "[A-0-0300](#), Master axis, actual position value".

The time constant of the filter is determined by the parameter [A-0-2601](#), ELS, filter constant, additive master axis position".

Describing individual parameters, arranged according to types

A-0-2600 - Attributes:	Function:	PARAMETER	Unit:	A-0-2701
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0692		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2601, ELS, filter constant, additive master axis position

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The time constant of a 1st order filter is determined with the parameter. This filter is used for smoothing the "A-0-2600, Additive master axis position, process controller".

Use A filter time constant of 0 deactivates the filter.



The filter time constant must comply with the sampling theorem according to Shannon. I.e. the entered filter time constant must not be smaller than double the MC cycle time ("C-0-0400, motion, cycle time, command value").

An automatic check is carried out when the respective operation mode is activated. If it fails, a diagnostic message is output.

A-0-2601 - Attributes:	Function:	PARAMETER	Unit:	ms
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	655.35	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive: P-0-0693
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-2605, ELS, Gear ratio fine adjustment process controller

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function By means of the percentage value of this parameter, a factor is created that acts in the "electronic gear".

A-0-2605 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: NVRAM
Unit: %
PLC_data_type: REAL
Editability: P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	-800.0	800.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: P-0-0694
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-2610, ELS, additive position command value, process controller

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Describing individual parameters, arranged according to types

Function In addition to "A-0-2750 ELS, PhasingSlave, additive position command value", the parameter is used to add an additive position command value.

The parameterization of the filter effect for the additive position command value is carried out via "A-0-2611, ELS, filter time constant, additive position command value".

A-0-2610 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0691
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2611, ELS, filter time constant, additive position command value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter is used to parameterize the filter effect for the additive position command value (cf. "A-0-2610, ELS, additive position command value, process controller") filtered by a VZ1 filter (PT1).

Use A filter time constant of 0 deactivates the filter.



The filter time constant must comply with the sampling theorem according to Shannon. I.e. the entered filter time constant must not be smaller than double the MC cycle time ("C-0-0400, motion, cycle time, command value").

An automatic check is carried out when the respective operation mode is activated. If it fails, a diagnostic message is output.

A-0-2611 - Attributes:

Function:	PARAMETER	Unit:	ms
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0.0	655.35	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	P-0-0060		
IndraDrive/ Control:	---		
HydraulicDrive/ Drive:	---		
HydraulicDrive/ Control:	---		
SercosDrive:	---		

A-0-2615, ELS, additive velocity command value, process controller

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

In addition to "A-0-2761 ELS, ELS, PhasingSlaveVel, additive command velocity", the parameter is used to add an additive velocity command value.

A-0-2615 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	P-0-0690		
IndraDrive/ Control:	---		
HydraulicDrive/ Drive:	---		
HydraulicDrive/ Control:	---		
SercosDrive:	---		

Describing individual parameters, arranged according to types

A-0-2620, ELS, phase offset of table beginning, process controller

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

Using this parameter, a phase offset can be carried out cyclically in relation to the beginning of the table in the synchronization modes "Cam" and "Motion-Profile".

As a result, the master axis position behind the electronic gear is reduced by the phase parameterized in this parameter.

A-0-2620 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: NVRAM
Unit: [A-0-2701](#)
PLC_data_type: REAL
Editability: P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0.0	360.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0695
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2621, ELS, filter constant, phase offset of table

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

The time constant of a 1st order filter is determined with this parameter. This filter is used to smooth the parameter "[A-0-2620, ELS, phase offset of table beginning, process controller](#)".

Use

A filter time constant of 0 deactivates the filter.



The filter time constant must comply with the sampling theorem according to Shannon. I.e. the entered filter time constant must not be smaller than double the MC cycle time ("C-0-0400, motion, cycle time, command value").

An automatic check is carried out when the respective operation mode is activated. If it fails, a diagnostic message is output.

A-0-2621 - Attributes:

Function:	PARAMETER	Unit:	ms
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	655.35	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	P-0-0696
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2650, ELS, resulting master axis position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	+	-	+	+	+	-	-	+

Function

The master axis position results from the values of the parameters "A-0-0300, Master axis, actual position value" and "A-0-2710, ELS, phasing, additive position command value".

A-0-2650 - Attributes:

Function:	PARAMETER	Unit:	A-0-2701
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	P-0-0775
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2651, ELS, effective master axis position

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	+	-	+	+	+	-	-	+

Function The effective master axis position is the "A-0-2650 ELS, resulting master axis position" behind the electronic gear "A-0-2721"/"A-0-2720" and the "A-0-2722, ELS, gear ratio fine adjust".

A-0-2651 - Attributes:

Function:	PARAMETER	Unit:	A-0-2701
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0776
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2652, ELS, effective master axis velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The effective master axis velocity is the "[A-0-0302](#), Master axis velocity" after the electronic gear "[A-0-2721/A-0-2720](#)" and the ELS, gear ratio fine adjust "[A-0-2722](#)".

A-0-2652 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: [A-0-0056](#)
PLC_data_type: REAL
Editability: READ_ONLY
MinMax_check: -
Var.min/max_value: -

Common: Minimum value -2147483647.0 Maximum value 2147483647.0 Default value 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: P-0-0777

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2653, ELS, synchronous position command value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	+	-	+	+	+	-	-	+

Function The synchronous position command value is the synchronous position command value of the slave axis derived from "[A-0-0300](#), Master axis, actual position value" and the additive master axis positions.

Describing individual parameters, arranged according to types

A-0-2653 - Attributes:	Function:	PARAMETER	Unit:	A-0-0059
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0778		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2654, ELS, synchronous velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The synchronous velocity is the differentiated "[A-0-2653](#), ELS, synchronous position command value" per motion cycle.

A-0-2654 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0779		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2655, ELS, position command value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	+	-	+	+	+	-	-	+

Function The synchronous position command value is the synchronous position command value of the slave axis resulting from "A-0-0300, Master axis, actual position value" and all additive master axis positions.

A-0-2655 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: [A-0-0059](#)
PLC_data_type: REAL
Editability: READ_ONLY
MinMax_check: -
Var.min/max_value: -

Common: Minimum value -2147483647.0 Maximum value 2147483647.0 Default value 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S/P-parameters:

IndraDrive/ Drive: P-0-0434
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-2656, ELS, cam, access phase

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	+	-	+	+	+	-	-	+

Function In the "Cam" operating mode, this parameter can display the calculated value of the access phase for the current cam table.

The calculation of the table access phase is synchronized with "A-0-2650, ELS, resulting master axis position".

Describing individual parameters, arranged according to types

A-0-2656 - Attributes:	Function:	PARAMETER	Unit:	A-0-2701
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0227		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2657, ELS, effective velocity command value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter can indicate the velocity command value before the summing point of the velocity controller (cf. P-0-0048).



The actual effective velocity value is subtracted from the command velocity value at the summing point. The result (control deviation) is added to the speed controller.

A-0-2657 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive: P-0-0048
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-2658, ELS, master axis, velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

The master axis speed is the sum modification of "A-0-0300, Master axis, actual position value" and "A-0-2710, ELS, phasing, additive position command value".

A-0-2658 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: RAM
Unit: A-0-0056
PLC_data_type: REAL
Editability: READ_ONLY
MinMax_check: -
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: P-0-0764
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

Describing individual parameters, arranged according to types

A-0-2700, ELS, master axis, control number

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the control number of the master axis. The current axis should follow the master axis as slave axis.

Use The parameter is supplemented by "A-0-2701, ELS, master axis, axis number".

Both parameters contain the AXIS_REF information of the master axis related to the FBs

- MC_GearIn
- MB_GearInPos and
- MC_CamIn
- MB_MotionProfile
- ML_FlexProfile

A-0-2700 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2701, ELS, master axis, axis number

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the axis number of the master axis. The current axis should follow the master axis as slave axis.

The parameter is supplemented by "A-0-2700, ELS, master axis, control number".

Use Both parameters contain the AXIS_REF information of the master axis related to the FBs

- MC_GearIn
- MB_GearInPos
- MC_CamIn
- MB_MotionProfile and
- ML_FlexProfile

A-0-2701 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2710, ELS, phasing, additive position command value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

Using this parameter, an additive master axis position can be added to the parameter "[A-0-0300](#), Master axis, actual position value" for "Synchronized Motion" function blocks (MC_GearIn, MB_GearInPos, MC_CamIn, MB_MotionProfile and ML_FlexProfile).

A parameter change is traversed in one MC cycle for a real axis.

The parameter is influenced by "[A-0-0059](#), Scaling type for position data".

A-0-2710 - Attributes:

Function:	PARAMETER	Unit:	A-0-2701
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0054
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2711, ELS, phasing, additive position command value, velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

The parameter contains the maximum position change (= velocity) used to add "[A-0-2710](#), ELS, phasing, additive position command value" to the master axis phase.

A-0-2711 - Attributes:	Function:	PARAMETER	Unit:	A-0-2701
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0000001	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0688		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2712, ELS, phasing, additive position command value, acceleration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains the maximum velocity change (= acceleration) used to add "A-0-2710, phasing, additive position command value" to the master axis phase.

A-0-2712 - Attributes:	Function:	PARAMETER	Unit:	A-0-2701
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0000001	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0689		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2720, ELS, master axis gear, input revolutions

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the number of input revolutions of the electronic gear.

It determines the gear ratio together with parameter "A-0-2721, ELS, master axis gear, output revolutions" and parameter "A-0-2722, ELS, gear ratio fine adjust".

The gear ratio is:

$$Gr = ((A-0-2721) / (A-0-2720)) * (1 + A-0-2722)$$

with "A-0-2721, ELS, master axis gear, output revolutions" and

"A-0-2722, ELS, gear ratio fine adjust".

Use If the axis - coupled via a "Synchronized Motion" FB (MC_GearIn, MB_GearInPos, MC_CamIn, MB_MotionProfile or ML_FlexProfile) - follows its master axis, a master axis position (A-0-0300) sent to the axis is multiplied before further processing with the electronic gear ratio takes place.

A-0-2720 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 4BYTE **PLC_data_type:** UDINT
Memory: RAM **Editability:** READ_ONLY
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	1	65535	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0156
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2721, ELS, master axis gear, output revolutions

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the number of output revolutions of the electronic gear.

It determines the gear ratio together with parameter "[A-0-2720](#), ELS, master axis gear, input revolutions" and parameter "[A-0-2722](#), ELS, gear ratio fine adjust".

The gear ratio is:

$$Gr = ((A-0-2721) / (A-0-2720)) * (1 + A-0-2722)$$

with "[A-0-2720](#), ELS, master axis gear, input revolutions" and

"[A-0-2722](#), ELS, gear ratio fine adjust".

Use If the axis - coupled via a "Synchronized Motion" FB (MC_GearIn, MB_GearInPos, MC_CamIn, MB_MotionProfile, ML_FlexProfile) - follows its master axis, a master axis position ([A-0-0300](#)) sent to the axis is multiplied before further processing with the electronic gear ratio takes place.

A-0-2721 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	1	65535	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0157
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2722, ELS, gear ratio fine adjust

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the fine adjustment of the gear ratio.
This is the percentage the gear ratio of the electronic device changed.
The values can range between - 799.9999% and 799.9999%.
The gear ratio is:

$$Gr = ((A-0-2721) / (A-0-2720)) * (1 + A-0-2722)$$

with "A-0-2721, ELS, master axis gear, output revolutions" and
"A-0-2720, ELS, master axis gear, input revolutions".

Use If the axis - coupled via a "Synchronized Motion" FB (MC_GearIn, MB_GearInPos, MC_CamIn, MB_MotionProfile, ML_FlexProfile) - follows its master axis, a master axis position (A-0-0300) sent to the axis is multiplied before further processing with the electronic gear ratio takes place.

A-0-2722 - Attributes:

Function:	PARAMETER	Unit:	%
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0083
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2730, ELS, PhasingTableAngle, cam table beginning

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the phase at which the access on the cam is negatively displaced compared to "A-0-0300, Master axis, actual position value".

Use The displacement is only used together with the "Synchronized Motion" FB "MC_CamIn", even if there is always one parameter available.

A-0-2730 - Attributes:

Function: PARAMETER **Unit:** A-0-0059
MLC_data_type: FLOAT, 4BYTE **PLC_data_type:** REAL
Memory: RAM **Editability:** P2, BB, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	0.0	360.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0061
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2731, ELS, PhasingTableAngle, change velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the change in velocity of the phase offset for the table access phase parameter "A-0-2730, ELS, PhasingTableAngle, cam table beginning".

If this alteration of the phase offset is to be high, the new value has to be approached slowly if there is an existing gradient in the active table, since each change means a jump in the position command value.

Describing individual parameters, arranged according to types

A new value for the parameter "A-0-2730" does not become effectively immediately. Coming from the current value, the new value is approached in ramp shape. The approach is carried out at the shortest distance.

The gradient of the ramp is determined with this parameter.

If a value of 0 is specified for the parameter, the phase offset is immediately carried out in one step.

Use The parameter is used together with the "Synchronized Motion" FBs MC_CamIn.

A-0-2731 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	655.35	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive: P-0-0158

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2740, ELS, CamIn, cam table preselection

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	-	-	-	-	-	-	-	-
Direct_access:	RO	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The "cam table" defined by the MC_CamIn function block is displayed in this parameter.

Structure

Bit	Name/function
2..0	Enabled cam table 000 - Cam table 1, active, (P-0-0072), 001 - Cam table 2, active, (P-0-0092), 010 - Cam table 3, active, (P-0-0080), 011 - Cam table 4, active, (P-0-0781), 100 - Cam table 5, active, (P-0-0782), 101 - Cam table 6, active, (P-0-0783), 110 - Cam table 7, active, (P-0-0784), 111 - Cam table 8, active, (P-0-0785).
15...3	Reserved



Currently, only the cams 1-4 are supported by the control firmware.

A-0-2740 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	P-0-0088
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2741, ELS, CamIn, cam distance

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	-	-	-	-	-	-	-	-
Direct_access:	RW	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter indicates the distance, a factor, by which the cam profile is multiplied.

Use The hub is used together with the "Synchronized Motion" FB MC_CamIn.

Describing individual parameters, arranged according to types

A-0-2741 - Attributes:	Function:	PARAMETER	Unit:	A-0-0059
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	360.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0093		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2745, ELS, gear reduction

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used to set a phase-synchronous motion to the master axis for the operation modes "Cam", "MotionProfile" and "FlexProfile".

For an endless rotating axis, the forward motion takes place via the linear part, the compensation motion via the cam.



The linear part is switched off with a value of 0.

A-0-2745 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0	32767	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	P-0-0755
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2750, ELS, PhasingSlave, additive position command value

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function If a synchronization mode with subordinated closed-loop position control is selected, the position command value is additively added.

This is used to create a position offset between the master axis encoder and slave axis.

Use Only effective in the synchronization modes:

- Phase synchronization (MB_GearInPos),
- Cam table (MC_CamIn),
- MotionProfile (MB_MotionProfile),
- FlexProfile (ML_FlexProfile).

A-0-2750 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0048
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2751, ELS, PhasingSlave, additive position command value, vel.

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains the velocity value used to travel the distance (parameter offset) to the absolute synchronization (position adaptation) during the dynamic synchronization.

Use Only effective in the synchronization modes:

- Phase synchronization (MB_GearInPos),
- Cam table (MC_CamIn),
- MotionProfile (MB_MotionProfile),
- FlexProfile (ML_FlexProfile).

A-0-2751 - Attributes:

Function: PARAMETER **Unit:** A-0-0056
MLC_data_type: FLOAT, 4BYTE **PLC_data_type:** REAL
Memory: RAM **Editability:** READ_ONLY
Var.data_type: - **MinMax_check:** -
Var.min/max_value: -

Common: Minimum value 0.0 Maximum value 2147483647.0 Default value 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: P-0-0686

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2752, ELS, PhasingSlave, additive position command value, acc.

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains the value of acceleration or deceleration used to apply the synchronized velocity during the dynamic synchronization (velocity adjustment).

A-0-2752 - Attributes:

Function: PARAMETER **Unit:** [A-0-0053](#)
MLC_data_type: FLOAT, 4BYTE **PLC_data_type:** REAL
Memory: RAM **Editability:** READ_ONLY
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

Minimum value **Maximum value** **Default value**
Common: 0.0000001 2147483647.0 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: P-0-0687

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2761, ELS, PhasingSlaveVel, additive command velocity

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The control can cyclically enter an additive command value in this parameter in velocity and position-controlled operating modes if the control provides a respective value.



The actual effective velocity command value (addition of all parts forming the velocity command value) at the input of the velocity controller is displayed in parameter "[A-0-0152](#)".

Also refer to the IndraDrive Functional Descriptions "Operating Modes - Velocity Control".

A-0-2761 - Attributes:

Function: PARAMETER **Unit:** [A-0-0056](#)
MLC_data_type: FLOAT, 4BYTE **PLC_data_type:** REAL
Memory: RAM **Editability:** P2, BB, PM
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

Minimum value **Maximum value** **Default value**
Common: -2147483647.0 2147483647.0 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	S-0-0037
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2762, Slave axis, additive command velocity, acceleration

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains the maximum change in position (= acceleration) used to add "A-0-2761, ELS, PhasingSlaveVel, additive command velocity" to the master axis phase.

A-0-2762 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2765, Slave axis, master axis revolutions per master axis cycle

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	-	-	-	-	-	-	-	-
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter can affect the master axis format transferred in the parameter P-0-0053 to the drive.

The value transferred in the parameter P-0-0053 results in:

$$P-0-0053 = \frac{A-0-0101_{MasterAxis}}{A-0-0045_{MasterAxis}} \cdot 2^{20} \cdot A-0-2765$$



If the parameter [A-0-2765](#) "Slave axis, master axis revolutions per master axis cycle" is set to value higher than 1, the following relation has to be ensured:

$$A-0-0045 = \frac{A-0-0045_{MasterAxis}}{A-0-2765}$$

WARNING

If the ratio of the modulo values ([A-0-0045](#)) described is changed, an (implicit) gear is caused.



The parameter is only available for real axes of type IndraDrive with interpolation in the drive.

Special case: Modulo scaling of the slave axis

If 0 is written to the parameter, write [A-0-0045](#) in such a way that $2^{32} - 2^{P-0-0084}$, Number of bits per master axis revolution master axis revolutions correspond to the modulo range after the master axis gear. Use case: FlyingShear.

Special case: Absolute scaling of the slave axis

For the absolute scaling, write 0 to the parameter. Note that it is not fallen below the master axis range or that the master axis range is not exceeded and that the derived slave axis position is in the maximum traversing range. Otherwise, undesired axis motions are caused.

Example:

Implementing synchronizations in the drive with a synchronization range higher than the modulo range:

Using the parameter "P-0-0155, synchronization mode", a synchronization range (bit 2/3) higher than the modulo range of the slave axis can be set. This synchronization range corresponds to the value range of the parameter P-0-0053 specified using the parameter [A-0-2765](#).

Describing individual parameters, arranged according to types

The following table shows an exemplary implementation of the synchronization across double the modulo range (defined by [A-0-2765](#)). In this case, it corresponds to 720 degrees. That are two load revolutions.

Element	Value
A-0-0045 of the master axis	720 degrees
A-0-2765 of the slave axis	2
Value range of P-0-0053	0 to $2 \cdot 2^{20}$
A-0-0045 of the slave axis	$\frac{720 \text{ deg}}{2} = 360 \text{ deg}$
P-0-0155 bit 2 of the slave axis	1
P-0-0155 bit 3 of the slave axis	0

Tab. 4-14: Relation of the involved parameters

[A-0-2765](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	2047	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0750
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2790, ELS, synchronization velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains the positioning velocity used to travel the distance (parameter offset) to the absolute synchronization during the dynamic synchronization.

Use The following figure shows possible transitions of such a synchronization:

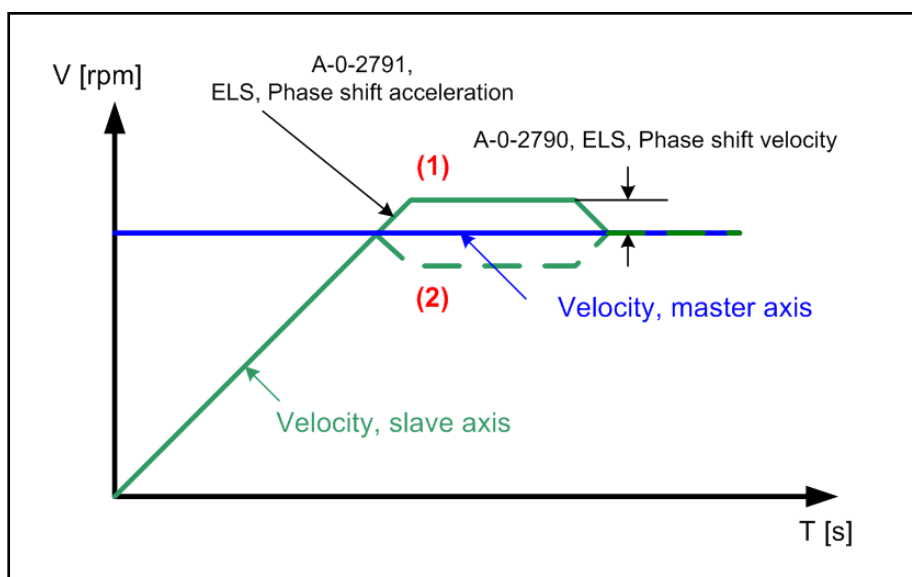


Fig. 4-20: Parameters used for synchronization

A-0-2790 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	214748.3647	10.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0143
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2791, ELS, synchronization acceleration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RW	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter contains the value of acceleration or deceleration used to apply the synchronized velocity during the dynamic synchronization (velocity adjustment).

Use The following figure shows possible transitions of such a synchronization:

Describing individual parameters, arranged according to types

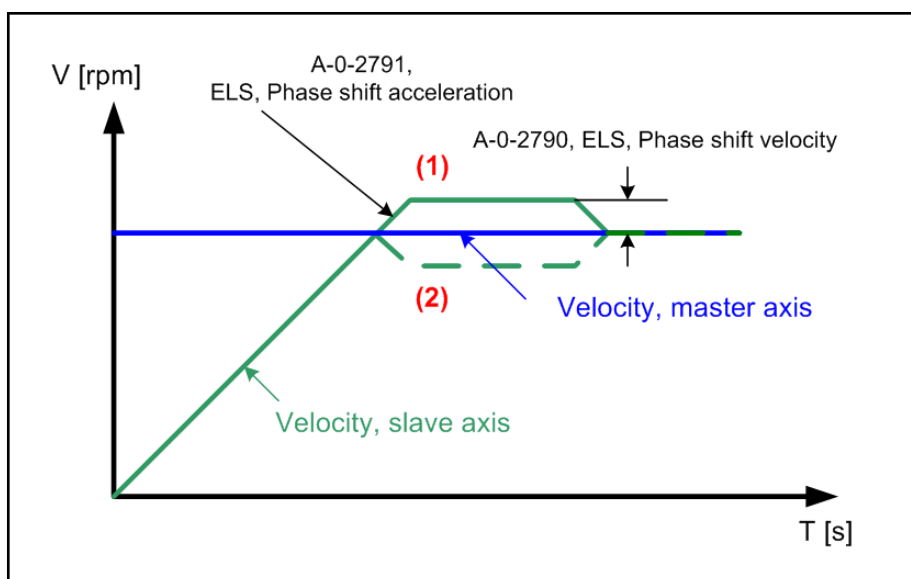


Fig. 4-21: Parameters used for synchronization

A-0-2791 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0000001	4294967.295	10.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	P-0-0142
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2792, ELS, synchronization run window for modulo format

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function A distance to be traveled for transition to the absolute synchronization is determined in the second step of the dynamic synchronization (position adaptation).

If the position difference is greater than "A-0-2792, ELS, synchronization window for modulo format", the direction of synchronization is determined by the parameter "A-0-2793, Synchronization direction".

If the position difference is less than the value of the parameter A-0-2792, the synchronization takes place at the shortest distance.

See also Functional Description: "Synchronization modes".

A-0-2792 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	10.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0151
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2793, ELS, synchronization direction

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function A distance to be traveled for transition to the absolute synchronization is determined in the second step of the dynamic synchronization (position adaptation).

For modulo axes, the motion of the drive can be in the positive or negative direction. The direction of synchronization defines the direction of the drive motion.

Structure

Bit	Designation/function
1..0	direction of motion 0 0: shortest distance, 0 1: positive direction, catch up, 1 0: negative direction, slow down.

Use **Shortest distance** - The axis is moved to the command target position at the shortest distance.

Describing individual parameters, arranged according to types

Positive direction, catch up - The target is reached by turning the axis in the positive direction with regard to the main direction.

Negative direction, slow down - The target is reached by turning the axis in the negative direction with regard to the main direction.

If the shortest distance to the absolute synchronization is less than "A-0-2792, Synchronization window for modulo format", the shortest distance is traveled and the preset direction of synchronization is ignored.

See also Functional Description: "Synchronization Operation Modes".

A-0-2793 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: BINARY, 2BYTE **PLC_data_type:** WORD
Memory: RAM **Editability:** READ_ONLY
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	0x00	0x02	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0154
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2794, ELS, synchronization mode

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function After one of the operating modes "Phase synchronization" or "Cam table" has been activated, the dynamic synchronization is automatically executed by the drive. The drive generates command values (P-0-0434) considering "P-0-0142, Acceleration of synchronization" and "P-0-0143, Velocity of synchronization" until an absolute or relative synchronization is reached.

Structure

Bit	Designation/function
0	Processes the slave axis, A-0-2750, ELS, PhasingSlave, additive position command value) 0: trapezoidal velocity profile, 1: P-0-0060, Filter time constant active.
1	Synchronization 0: absolute synchronization, 1: relative synchronization.
3..2	Synchronization range 0 0: modulo range of the slave axis (load revolutions), 0 1: command value cycle of the slave axis, 1 0: partial range of the command value cycle.
4	Formation of the actual value cycle 0: actual value cycle depends on P-0-0752, 1: actual value cycle = command value cycle.
5	Synchronization in velocity synchronization 0: only when activating the operating mode, 1: always active,

Usage

Bit 0:

Bit 0 = 0 means that a distance is determined for each change in "S-0-0048, Slave axis, position command value, additive" considering the acceleration and velocity of synchronization.

For bit 0 = 1, when reaching the absolute or relative synchronization, the parameters P-0-0143 and P-0-0142 become ineffective.

The following changes in "S-0-0048, Slave axis, position command value, additive" are smoothed by a 1st degree filter. The filter time constant is set via parameter "P-0-0060, Filter time constant, position command value, additive".

Bit 1:

For bit 1 = 0, an absolute position is always established to the master axis.

See also Functional Description: "Dynamic Synchronization" in the operating modes "Phase Synchronization" or "Cam Table".

For bit 1 = 1, only the velocity is adapted.

After activating the operating mode, only step 1 of the synchronization (velocity adjustment) is carried out.

Bit 3..2:

Synchronization can be set in the modulo range, in the command value cycle or in the partial range of the command value cycle. The distance to be traveled is limited to this range. The actual position value used when calculating the distance has to be unambiguous in the range in which the synchronization is to take place. Therefore, the actual value cycle must be determined so that it is a multiple of the synchronization range.

Bit 4:

For bit 4 = 0, the actual value cycle in which the parameter "P-0-0753, Actual position value in actual value cycle" is located, is formed with regard to parameter "P-0-0752, Load revolutions per actual value cycle of the slave axis".

The actual value cycle is set equal to the command value cycle if bit 4 = 1.

Explanation:

If a synchronization is set in the command value cycle, the command value cycle has to be a complete part of the actual value cycle to unambiguously derive the actual position value. To fulfill this constraint by a parameterization of the actual value cycle (P-0-0752), the parameter "A-0-2720, Electronic gear, input revolutions" should be considered when determining the master axis cycle (P-0-0750). If the constraint cannot be fulfilled by the parameterization of the actual value cycle (P-0-0752), bit 4 can be set in the synchronization mode, A-0-2794, to obtain the range of the actual value cycle calculated by the drive. The calculation is carried out as for the command value cycle (P-0-0754). In this case, the actual value cycle parameterized in parameter P-0-0752 is ignored.

The actual value cycle is calculated when switching from phase 3 to phase 4. If a parameter that is used for the calculation of the actual value cycle is changed in phase 4, the command "P-0-0071, Recalculate actual value cycle" can be used to calculate the actual value cycle again in phase 4. Subsequently, the command P12 "Set absolute measuring" has to be executed to reference the actual position values.

Bit 5:

If the velocity is only to be adapted once in the operating mode "Velocity synchronization", bit 5 has to be set to 0. All the following changes in velocity are executed with maximum acceleration.

If bit 5 is set to 1, each change in velocity is limited to "P-0-0142, Acceleration of synchronization" in the operating mode "Velocity synchronization".

The change in velocity can be caused by a change in the master axis velocity (A-0-0302), the electronic gear (A-0-2720, A-0-2721) or the fine adjustment (A-0-2722).

See also Functional Description: "Synchronization Operation Modes".

A-0-2794 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x01	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0155
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2795, Positioning window

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	+	+	+	+	-	-	+
Direct_access:	RO	RO	RO	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	+	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function If an axis is positioned, multiple status messages (A-0-0021) on the positioning behavior of the drive are generated.



Due to compatibility reasons (parameter import/export), this parameter also exists for virtual axes. It does not affect the axis behavior.

Use The parameter is used for the following status messages and functionalities:

- "In Position" (A-0-0021, bit 6 = 1),
- while executing the MB_Home function block, the "DONE" output is affected,
- as hysteresis window for the position limit value monitoring. If the drive traveled across the position limit value, the positioning window also limits the travel range.
- It is always traveled at the shortest distance to the target positions in the positioning window. This is irrespective of the setting in "A-0-2207, Commanded direction".

A-0-2795 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0057
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	S-0-0057
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2796, MotionProfile selection

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The MotionProfile is based on the implementation of the segmented cam table in the IndraDrive.

The master axis position is determined by a real or a virtual master axis source.

The parameter determines which of the slave axis's MotionProfile is to be enabled (MotionProfile 0 or MotionProfile 1).

Structure Among other things, the parameter is used by the "MB_MotionProfile" FB and "SetSelection" input.

A-0-2796 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	1	2	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2797, Relative positioning of MotionProfile

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The MotionProfile (control-based) is based on the implementation of the segmented cam table in the IndraDrive.

The master axis position is determined by a real or a virtual master axis source.

The parameter determines whether the profile's parameterized initial position is to be enabled. In this case, after synchronization, the slave axis is located at the initial position of the master axis when it crosses zero.

Use Among other things, the parameter is used by the "MB_MotionProfile" FB and "RelativePositioning" input.

A-0-2797 - Attributes:

Function: PARAMETER
MLC_data_type: BINARY, 2BYTE
Memory: NVRAM
Unit: --
PLC_data_type: WORD
Editability: P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0x00	0x01	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2798, Polarity of master axis position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	+	+	-	+	+	+	-	-	+
Direct_access:	RO	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter can invert the polarity of the master axis position to realize an electronic gear.

Structure The following settings can be made:

Bit	Functions
0	master axis position 0: positive polarity, 1: negative polarity.
15...1	not assigned

Describing individual parameters, arranged according to types

A-0-2798 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	NVRAM	Editability:	P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0x01	0x00
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	P-0-0108		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2800, Master axis encoder, configuration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	+	+	-
Direct_access:	--	--	--	--	--	--	RW	RW	--
C2C_access:	--	--	--	--	--	--	RW	RW	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function *The parameter has a dual function:*

- It indicates the configuration of the current master axis encoder for link axes (CrossComm Sercos II) and encoder axes. Furthermore, a dead time compensation (0 to 4) can be set as binary for both axis types. The dead time compensation setting is application-specific.
- For consumer axes (CrossComm sercos III), a dead time compensation from 0 to 192 cycles can be set via the structure GV_LinkAxis[].

Structure Configuration of the current master axis encoder for link and encoder axes

Bit	Name/function
1..0	Used encoder 0 1: Reserved, 1 0: Reserved, 1 1: Measuring encoder.
11..2	Reserved
15..12	Dead time compensation 0 0 0 0: No dead time compensation, 0 0 0 1: 1 cycles, 0 0 1 0: 2 cycles, 0 0 1 1: 3 cycles, 0 1 0 0: 4 cycles.

Dead time compensation setting for consumer axes

The parameter can only be written using the PLC:

```
GV_LinkAxis[control address, logical axis address].A_0_2800 := value.
```

With the value = 0...192.

**Write-protected:**

The consumer axis parameter can only be written if

- the master communication of the control is in phase 0 or 2, or
- the bit "Position data of the (external) master axis is valid" = 0 in [A-0-0021](#) of the consumer axis, or
- the bit "Position data of the (external) master axis is valid" = 1 and the bit "Axis velocity less/equal to [A-0-0222](#) (stand-still)" = 1 in [A-0-0021](#) of the consumer axis.

A-0-2800 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	FLASH	Editability:	P2, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0x03	0x4003	0x3003
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	---		
IndraDrive/ Control:	---		
HydraulicDrive/ Drive:	---		
HydraulicDrive/ Control:	---		
SercosDrive:	---		

Describing individual parameters, arranged according to types

A-0-2801, Master axis encoder, status

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	+	+	-
Direct_access:	--	--	--	--	--	--	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	+	+	-
Probe:	-	-	-	-	-	-	-	-	-

Function Structure

This parameter indicates the status of the master axis encoder:

Bit	Name/function
0	Homed 0: No 1: Yes
15..1	Reserved

A-0-2801 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: BINARY, 4BYTE **PLC_data_type:** DWORD
Memory: NVRAM **Editability:** READ_ONLY
MinMax_check: -
Var.data_type: - **Var.min/max_value:** -

Common: --- **Minimum value** **Maximum value** **Default value**
 HydraulicDrive: --- --- --- 0x00
 --- --- --- ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-2802, Master axis encoder, input revolutions

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	+	+	-
Direct_access:	--	--	--	--	--	--	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter operates with the parameter "A-0-2803, Master axis encoder, output revolutions" as gear.

The gear ratio Tr is:

$$Tr = (A02803) / (A02802).$$

A-0-2802 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P2, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	0	65535	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2803, Master axis encoder, output revolutions

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	+	+	-
Direct_access:	--	--	--	--	--	--	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter operates with the parameter "A-0-2802, Master axis encoder, input revolutions" as gear.

The gear ratio Tr is:

$$Tr = (A02803) / (A02802).$$

A-0-2803 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P2, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	1	65535	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2804, Master axis encoder, filter type

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	+	+	-
Direct_access:	--	--	--	--	--	--	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter specifies the filter type for the master axis encoder. It has to be completed with regard to "A-0-2805, Master axis encoder, filter cutoff frequency".

Structure The following assignments are possible:

Value	Filter type
0	Filter deactivated
1	40 ms average value filter
2	1st order low-pass filter
3	2nd order low-pass filter
4	2nd order Butterworth
5	2nd order low-pass filter with velocity feedforward (dead time compensation)
6	3rd order low-pass filter
7	3rd order low-pass filter with velocity and acceleration feedforward (dead time compensation)
8	3rd order Butterworth

A-0-2804 - Attributes:

Function: PARAMETER **Unit:** --

MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT

Memory: FLASH **Editability:** P2, PM

Var.data_type: - **MinMax_check:** +

Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	8	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2805, Master axis encoder, filter cutoff frequency

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	+	+	-
Direct_access:	--	--	--	--	--	--	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter specifies the filter cutoff frequency of the "A-0-2804, Master axis encoder, filter type" used by the encoder.

Use When a filter is selected, the filter cutoff frequency of the filter has to be pre-set.

The filter cutoff frequency is the frequency by which the signal has been reduced by 3db.

If the filter cutoff frequency is set to zero, the filter is switched off.

For a stable system, observe the following calculation method:

filter cutoff frequency < 1 / (2 * sampling rate [s]).

Example:

The filter cut-off frequency for a 2 ms Sercos cycle is calculated as follows:

Filter cutoff frequency < 1 / (2 * 0.002) = 250 Hz.

A-0-2805 - Attributes:

Function:	PARAMETER	Unit:	Hz
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.1	1000.0	25.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2806, Reference position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	+	+	+	-
Direct_access:	--	--	--	--	--	RO	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter contains the reference position, to which the axis is referenced after executing the command "Set absolute position" (A-0-2807, Command: Set absolute position).

A-0-2806 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	+

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2807, Command: Set absolute position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	+	+	+	-
Direct_access:	--	--	--	--	--	RO	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	+	+	+	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used as command to set the absolute measuring of an axis.

When this command is enabled, the value set in the parameter "A-0-2806, Reference position" is applied as starting position of the axis.



When using the command, observe that there is no master or slave axis relation to the referencing axis, as this causes a jump of the master axis position.

Use When using from IndraWorks MLC:

- Use the menu item "Establish dimensional reference" in the dialog window **Motion ► Real axes ► Drives ► Motor, brake, measuring systems ► Motor encoder ► Dimensional reference motor encoder** to execute the command "Set absolute position".

and from the field bus:

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. That triggers the "Set absolute position".
- After the "Set absolute position" is complete, the MLC automatically resets this parameter to "0000000000000000".



To all axes applies that the command can only be executed if the control is in "BB".

For the encoder axis applies additionally that the encoder used in the drive is referenced.

A-0-2807 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2808, Master axis encoder, additive position command value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	-	-	-	-	-	+	+	-
Direct_access:	--	--	--	--	--	--	RO	RO	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	+	+	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter includes the position offset of the master axis encoder.

Describing individual parameters, arranged according to types



It is recommended to set a specified offset via this parameter.

Writing on the parameter cyclically can cause a position offset between the axis and the master axis.

A-0-2808 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+

	Minimum value	Maximum value	Default value
Common:	0.0	360.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2900, MotionProfile, master axis switching position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function When the operation mode "MotionProfile" (electronic MotionProfile) is active, the motion sequence can be changed in the second, inactive data set. The parameter defines the position at which the selected, inactive set is switched. See also Functional Description: "MotionProfile with real/virtual master axis".

Use If all changes are parameterized and the "profile check" for the inactive set is successfully completed, this set can be switched.

Switching takes place when the "[A-0-2656](#), ELS, cam, access phase" matches the switching phase specified in this parameter.

The switching is acknowledged with bit 3 of "[A-0-2931](#), MotionProfile, status word".

A-0-2900 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: NVRAM
Unit: Deg
PLC_data_type: REAL
Editability: P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

Common: Minimum value 0.0 Maximum value 360.0 Default value 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2901, MotionProfile, motion step 1, initial slave axis position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is effective if the input parameter "RelativePositioning" on the "MB_MotionProfile" FB is set to FALSE.

The absolute position processing of the MotionProfile is then set.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use After synchronization, the position command value generated in the operation mode "MotionProfile, synchronization operation modes" corresponds to the position determined with this parameter, if the "A-0-2656, ELS, cam, access phase," is 0. In other words, at the beginning of the first motion step.

A-0-2901 - Attributes:

Function: PARAMETER
MLC_data_type: FLOAT, 4BYTE
Memory: NVRAM
Unit: [A-0-0059](#)
PLC_data_type: REAL
Editability: P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

Common: Minimum value -360.0 Maximum value 360.0 Default value 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2902, MotionProfile 0, diagnostics

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

The motion sequence parameterized in set 0 for the operation mode "Motion-Profile" is checked for plausibility.

If a check finds an inconsistency, a number is displayed in this parameter. The cause of the inconsistency can be derived from this number.

See Diagnostics Description: "F2229235, Error in MotionProfile".

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

A-0-2902 - Attributes:

Function: PARAMETER **Unit:** --

MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT

Memory: RAM **Editability:** READ_ONLY

MinMax_check: +

Var.data_type: - **Var.min/max_value:** -

Minimum value **Maximum value** **Default value**

Common: 0 65535 0

HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2903, MotionProfile 1, diagnostics

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The motion sequence parameterized in set 1 for the operation mode "MotionProfile" is checked for plausibility.

If a check finds an inconsistency, a number is displayed in this parameter. The cause of the inconsistency can be derived from this number.

See Diagnostics Description: "F2229235, Error in MotionProfile".

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

A-0-2903 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	65535	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2904, MotionProfile, basic configuration

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Using this parameter, various general basic settings can be made for the operation mode "MotionProfile".

Describing individual parameters, arranged according to types

Currently, only one selected linear, phase synchronous motion (gear reduction) can be activated as a basic setting.

Structure The following settings can be made:

Bit	Functions
3..0	not assigned
4	Gear reduction path for MotionProfile: 0: the linear, phase synchronous path is inactive, 1: the linear, phase synchronous path is activated.
15..5	not assigned

Use **Bit 4:**

If the gear reduction is activated, the master axis position at the output of the electronic gear is also divided by "A-0-2745, ELS, gear reduction" and multiplied by a scaling-dependent factor. The result is differentiated and added to the position command value.

A-0-2904 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	0x00
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2910, MotionProfile 0, number of motion steps

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines the number of motion steps in the motion sequence, which are processed for each master revolution, for the set 0 in the operation mode "MotionProfile"

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use If a relative actual position value reference is set (the input parameter "RelativePositioning" at the "MB_MotionProfile" FB is FALSE), the motion sequence must comprise at least two steps.

A-0-2910 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P0, P2, BB, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	1	16	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2911, MotionProfile 0, master axis velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates with which constant velocity the master axis moves if MotionProfile 0 is active.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use The information of the master axis velocity is required, if a motion step is used for which a slave axis velocity is determined (standard profile rest-in-velocity, velocity-in-velocity or velocity-in-rest).

The specified value must refer to the electronic gear's output.

A-0-2911 - Attributes:

Function: PARAMETER **Unit:** 1/min
MLC_data_type: FLOAT, 4BYTE **PLC_data_type:** REAL
Memory: FLASH **Editability:** P0, P2, BB, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	0.1	2147483647.0	0.1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2912, MotionProfile 0, list of initial master axis positions

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function The master axis positions (or table access phases) at the which the motion steps begin are determined for MotionProfile with this parameter.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use It is determined that motion step 1 begins with the master axis's initial position "0". The 1st element of this list must therefore be "0".

This list must have at least as many elements as MotionProfile 0 has motion steps ([A-0-2910](#)).

A-0-2912 - Attributes:

Function: PARAMETER **Unit:** Deg

MLC_data_type: FLOAT, 4BYTE_VAR **PLC_data_type:** ARRAY of REAL

Memory: FLASH **Editability:** P0, P2, BB, PM

MinMax_check: +

Var.data_type: - **Var.min/max_value:** -

Minimum value **Maximum value** **Default value**

Common: 0.0 2147483647.0 0.0

HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2913, MotionProfile 0, list of motion laws

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used to determine which properties the individual motion steps have for MotionProfile 0.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Structure

Bit	Designation/function
7...0	Profile BS 0000 0000: Analytical profile 0000 0001: C-0-2001 , ELS, point table 1, 0000 0010: C-0-2002, ELS, point table 2, 0000 0011: C-0-2003, ELS, point table 3, . 0110 0011: C-0-2099, ELS, point table 99.
10...8	Profile type 000: Rest-in-rest, with inclined sine curve, 001: Rest-in-rest, with 5th order polynomial, 010: Rest-in-velocity, 100: Velocity-in-rest, 110: Constant velocity, 111: Velocity-in-velocity.

Tab. 4-15: Motion step mode

Use If the bits 0...7 equal 0, the step's profile is determined by bits 10...8.

If bits 0...7 display a number between 1 and 99, this step's profile is determined by the corresponding ELS point table (no. 1..99). This list must have at least as many elements as MotionProfile 0 has motion steps ([A-0-2910](#)).

A-0-2913 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	65535	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2914, MotionProfile 0, list of distances

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list is used to determine the paths traveled in the individual motion steps for MotionProfile.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use If a standard profile is in the motion step and no cam table is selected, the distance determines the path traveled in the corresponding step.

If a cam table is selected, the traveled path is derived from the product of the distances and the table's last value.

If an absolute position processing is set for this operation mode, the sum of the distances must equal the involved motion step 0 or a multiple of the modulo value.

This list must have at least as many elements as MotionProfile 0 has motion steps ([A-0-2910](#)).

A-0-2914 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-2915, MotionProfile 0, list of slave axis velocities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list is used to determine the slave axis velocities that occur at the beginning or end of the individual motion steps for MotionProfile 0.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use The information of the slave axis velocity is required if one of the standard profiles R-V (rest-in-velocity), V-R (velocity-in-rest) or V-V (velocity-in-velocity) is selected.

Taking into consideration the master axis range, distance and parameterized master axis velocity ([A-0-2911](#)), the coefficients of the 5th order polynomial is calculated so that the parameterized velocity is produced at the end of the slave axis (for R-V) or at the beginning of the motion step (for V-R and V-V).

If constant velocity is selected in a step's mode, the slave axis velocity is calculated from the master axis range, distance and parameterized master axis velocity values and displayed in the respective list element.

This list must have at least as many elements as MotionProfile 0 has motion steps ([A-0-2910](#)).

A-0-2915 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2920, MotionProfile 1, number of motion steps

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines the number of motion steps in the motion sequence, which is processed for each master revolution, for the set 1 in the operation mode "electronic MotionProfile".

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use If a relative actual position value reference is set (the input parameter "RelativePositioning" at the "MB_MotionProfile" FB is FALSE), the motion sequence must comprise at least two steps.

A-0-2920 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT
Memory: FLASH **Editability:** P0, P2, BB, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

	Minimum value	Maximum value	Default value
Common:	1	16	1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-2921, MotionProfile 1, master axis velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates with which constant velocity the master axis moves if MotionProfile 1 is active.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use The information of the master axis velocity is required, if a motion step is used for which a slave axis velocity is determined (standard profile rest-in-velocity, velocity-in-velocity or velocity-in-rest).

The specified value must refer to the electronic gear's output.

A-0-2921 - Attributes:

Function:	PARAMETER	Unit:	1/min
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.1	2147483647.0	0.1
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-2922, MotionProfile 1, list of initial master axis positions

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used to determine the master axis positions (or table access phases) at which the motion steps begin for MotionProfile 1.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use It is determined that motion step 1 begins with the master axis's initial position "0". The 1st element of this list must therefore be "0".

This list must have at least as many elements as MotionProfile 1 has motion steps ([A-0-2920](#)).

Describing individual parameters, arranged according to types

A-0-2922 - Attributes:	Function:	PARAMETER	Unit:	Deg
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-2923, MotionProfile 1, list of motion laws

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter is used to determine which properties the individual motion steps have for MotionProfile 1.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Structure	Bit	Designation/function
	7...0	Profile BS 0000 0000: Analytical profile 0000 0001: C-0-2001 , ELS, point table 1, 0000 0010: C-0-2002, ELS, point table 2, 0000 0011: C-0-2003, ELS, point table 3, . 0110 0011: C-0-2099, ELS, point table 99.
	10...8	Profile type 000: Rest-in-rest, with inclined sine curve, 001: Rest-in-rest, with 5th order polynomial, 010: Rest-in-velocity, 100: Velocity-in-rest, 110: Constant velocity, 111: Velocity-in-velocity.

Tab. 4-16: Motion step mode

Use If the bits 0...7 equal 0, the step's profile is determined by bits 10...8.
 If bits 0...7 display a number between 1 and 99, this step's profile is determined by the corresponding ELS point table (no. 1..99). This list must have at least as many elements as MotionProfile 0 has motion steps ([A-0-2920](#)).

A-0-2923 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	65535	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2924, MotionProfile 1, list of distances

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list is used to determine the paths traveled in the individual motion steps for MotionProfile 1.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use If a standard profile is in the motion step and no cam table is selected, the distance determines the path traveled in the corresponding step.

If a cam table is selected, the traveled path is derived from the product of the distances and the table's last value.

If an absolute position processing is set for this operation mode, the sum of the distances must equal the involved motion step 0 or a multiple of the modulo value.

This list must have at least as many elements as MotionProfile 1 has motion steps ([A-0-2920](#)).

A-0-2924 - Attributes:

Function: PARAMETER **Unit:** [A-0-0059](#)
MLC_data_type: FLOAT, 4BYTE_VAR **PLC_data_type:** ARRAY of REAL
Memory: FLASH **Editability:** P0, P2, BB, PM
MinMax_check: +
Var.data_type: - **Var.min/max_value:** -

Common: Minimum value -2147483647.0 Maximum value 2147483647.0 Default value 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-2925, MotionProfile 1, list of slave axis velocities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list is used to determine the slave axis velocities that occur at the beginning or end of the individual motion steps for MotionProfile 1.

See also Functional Description: "MotionProfile with Real/Virtual Master Axis".

Use The information of the slave axis velocity is required if one of the standard profiles R-V (rest-in-velocity), V-R (velocity-in-rest) or V-V (velocity-in-velocity) is selected.

Taking into consideration the master axis range, distance and parameterized master axis velocity ([A-0-2921](#)), the coefficients of the 5th order polynomial is calculated so that the parameterized velocity is produced at the end of the slave axis (for R-V) or at the beginning of the motion step (for V-R and V-V).

If constant velocity is selected in a step's mode, the slave axis velocity is calculated from the master axis range, distance and parameterized master axis velocity values and displayed in the respective list element.

This list must have at least as many elements as MotionProfile 1 has motion steps ([A-0-2920](#)).

A-0-2925 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-2930, MotionProfile, control word

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function By means of this parameter various functions can be set in the "MotionProfile" mode of operation.

Structure The following settings are possible

Bit	Functions
0	reserved
1	Gear switching 0: immediately effective (standard setting) 1: the change becomes effective on change of MotionProfile of the master axis phase
7..11	reserved
12	Sampling parameter changes: 0: immediately effective, 1: parameter sampling is active, acceptance of the change after resetting of bit 12.
13..15	reserved

Use Bit 1:

With the bit set, switching of the drive relation is not carried out immediately for active mode of operation, but together with the change of the MotionProfile. This happens if the position determined in parameter [A-0-2900](#) "MotionProfile, master axis switching position" is passed.

Bit 12:

This bit defines the processing mode for a modification of parameters. It is effective for the parameters [A-0-2901](#),

[A-0-2910](#), [A-0-2911](#), [A-0-2912](#), [A-0-2913](#), [A-0-2914](#), [A-0-2915](#),

[A-0-2920](#), [A-0-2921](#), [A-0-2922](#), [A-0-2923](#), [A-0-2924](#), [A-0-2925](#).

Bit 12 = 0: Parameter collection is not active. Every modification of parameters is immediately tested and, if the profile is free of errors, accepted.

Bit 12 = 1: Parameter collection is active, every modification of parameters is saved. The modification is accepted in the internal work data and the modified parameters are tested only carried out after bit 12 has been reset.

A-0-2930 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	0x00
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	---		
IndraDrive/ Control:	---		
HydraulicDrive/ Drive:	---		
HydraulicDrive/ Control:	---		
SercosDrive:	---		

A-0-2931, MotionProfile, status word

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter provides status information on the execution of the operation mode "MotionProfile".

Structure The following status bits are available:

Bit	Functions
2..0	not assigned
3	Active set: 0: MotionProfile 0 active, 1: MotionProfile 1 active,
7..4	not assigned
8	Synchronous operation mode in synchronisation: 0: slave axis is not synchronized, 1: slave axis is synchronous.
9	reserved (active synchronous operation mode)
10	reserved (active synchronous operation mode)
11	not assigned

Describing individual parameters, arranged according to types

Bit	Functions
12	MotionProfile 0, version profile check: 0: check is not completed, 1: check is completed.
13	MotionProfile 0, status profile check: 0: profile error detected (or check is not completed), 1: profile is OK.
14	MotionProfile 1, version profile check: 0: check is not completed, 1: check is completed.
15	MotionProfile 1, status profile check: 0: profile error detected (or check is not completed), 1: profile is OK.
23..16	Number of the active cam table
31..24	Number of the active step

Use Bit 12/13:

Bit 12 indicates whether the MotionProfile in MotionProfile 0 has been checked.

Then the result of the test has to be taken from bit 13. For more detailed information on a negative test result, please refer to "[A-0-2902](#), MotionProfile 0, diagnostics".

Bit 14/15:

Bit 14 indicates whether the MotionProfile in MotionProfile 1 has been checked.

Then the result of the test has to be taken from bit 15. For more detailed information on a negative test result, please refer to "[A-0-2903](#), MotionProfile 1, diagnostics".

Bit 23..16:

This byte displays the number of the currently active cam table.

1: [C-0-2001](#), ELS, point table 1, ist active,

2: C-0-2002, ELS, point table 2, ist active,

....,

99: C-0-2099, ELS, point table 99, ist active,

Bit 31..24:

This byte displays the number of the currently active step.

1: Step 1 is active,

2: Step 2 is active,

...

16: Step 16 is active.

A-0-2931 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFFFFFF	0x00
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

4.1.7 A-0-3000 - A-0-3499

A-0-3000, FlexProfile, current set

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which of the four FlexProfiles is currently selected. Whether a FlexProfile is currently active can be checked in the parameter "A-0-3010, FlexProfile, status word".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3000 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0	3	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3001, FlexProfile, current step

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter indicates which motion step of the motion sequence is being processed. Whether a FlexProfile is currently active can be checked in the parameter "[A-0-3010](#), FlexProfile, status word".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3001 - Attributes:

Function: PARAMETER **Unit:** --

MLC_data_type: UINT_DEC, 2BYTE **PLC_data_type:** UINT

Memory: RAM **Editability:** READ_ONLY

Var.data_type: - **MinMax_check:** +

Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	15	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3002, FlexProfile, master axis switching position

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter defines the position at which another selected, inactive set is switched.

Whether the system is currently waiting for a switching position can be checked in the parameter "A-0-3010, FlexProfile, status word".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use When the operation mode "FlexProfile" is active, the motion sequence can be changed in another, inactive data set.

If all changes are parameterized and the "profile check" for the inactive set is successfully completed, this set can be switched.

Switching can be performed so that it occurs when the master axis crosses the position parameterized in parameter "A-0-3002, FlexProfile, master axis switching position".

A-0-3002 - Attributes:

Function:	PARAMETER	Unit:	Deg
MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-3003, FlexProfile, slave axis, additive command position value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the current offset by which the position of the slave axis is shifted.

A-0-3003 - Attributes:

Function: PARAMETER
MLC_data_type: DOUBLE, 8BYTE
Memory: RAM
Unit: Deg
PLC_data_type: LREAL
Editability: READ_ONLY
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

Common: Minimum value -2147483647.0 Maximum value 2147483647.0 Default value 0.0
HydraulicDrive: ---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3004, FlexProfile, master axis, additive command position value

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the current offset by which the position of the slave axis is shifted relative to the master.

A-0-3004 - Attributes:

Function:	PARAMETER	Unit:	Deg
MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3009, FlexProfile, control word

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RW	--	RW	RW	RW	--	--	RW
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter defines control information on the execution of the "FlexProfile".

Structure The following control bits are available:

Bit	Functionality
0	Profile switching 0: Applied immediately 1: Change with the switching phase (default value after restart)
1	Gear switching 0: Applied immediately 1: Change with the switching phase (default value after restart)
6..0	not assigned
7	Warning level check FlexProfile: 0: Warning level normal (default value after restart) 1: Warning level low When checking and applying a FlexProfile set, a low warning level can be specified. This allows the sequence of any laws of motion.

Describing individual parameters, arranged according to types

Bit	Functionality
8	Reserved
31..9	not assigned

Use Bit 0:

If a FlexProfile with the option "Switch to master axis position" is started or switched, this bit can be used to determine whether the switching position is also to be applied to the profile switching. If the bit is set, the profile change is carried out at the given master axis switching position. If the bit is not set, the profile switching is always taking place immediately.

Bit 1:

If a FlexProfile with the option "Switch to master axis position" is started or switched, this bit can be used to determine whether the switching position is also to be applied to the gear settings. If the bit is set, the gear is changed at the switching position and if bit 0 is also set, it is carried out together with the profile switching. If the bit is not set, the gear switching always takes places immediately.



Whether an immediate switching or a switching at the master axis position is to take place can be specified directly when commanding the FlexProfile (ML_FlexProfile). Use these bits to determine whether the switching is to only apply to the gear, but not for the profile or vice versa.

Bit 7:

If a FlexProfile is loaded with the option "Warning level low" and checked, any motion command sequence is valid.

A bit change is not applied to already loaded profiles.



The bit is reset to 0 "Warning level normal" upon control restart.

A-0-3009 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	0x03
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3010, FlexProfile, status word

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter provides status information on the execution of the operation mode "FlexProfile".

Structure The following status bits are available:

Bit	Functions
7..0	not assigned
8	Synchronous operation mode in synchronisation: 0: slave axis not synchronized, 1: slave axis synchronized.
9	FlexProfile active: 0: FlexProfile not active 1: FlexProfile active
10	Waiting on switching position: 0: Profile does not wait for switch-over position 1: Profile waits for switching position
11	Single profile execution completed 0: The profile selected is currently still traveled 1: The profile selected was traveled once and is now completed Note: This status bit is only available if the FlexProfile was started with the option "Single execution". The FlexProfile is executed once. The status bit indicates that the execution is completed. The axis rotates with the profile end velocity.
12..15	not assigned
16	Profile check FlexProfile 0 carried out/ not carried out: 0: not carried out 1: carried out
17	Profile check FlexProfile 0 carried out successfully: 0: not carried out 1: carried out successfully
18	Profile check FlexProfile 1 carried out/ not carried out: 0: not carried out 1: carried out

Describing individual parameters, arranged according to types

Bit	Functions
19	Profile check FlexProfile 1 carried out successfully: 0: not carried out 1: carried out successfully
20	Profile check FlexProfile 2 carried out/ not carried out: 0: not carried out 1: carried out
21	Profile check FlexProfile 2 carried out successfully: 0: not carried out 1: carried out successfully
22	Profile check FlexProfile 3 carried out/ not carried out: 0: not carried out 1: carried out
23	Profile check FlexProfile 3 carried out successfully: 0: not carried out 1: carried out successfully
24	Event check FlexProfile 0 carried out/ not carried out: 0: not carried out 1: carried out
25	Event check FlexProfile 0 carried out successfully: 0: not carried out 1: carried out successfully
26	Event check FlexProfile 1 carried out/ not carried out: 0: not carried out 1: carried out
27	Event check FlexProfile 1 carried out successfully: 0: not carried out 1: carried out successfully
28	Event check FlexProfile 2 carried out/ not carried out: 0: not carried out 1: carried out
29	Event check FlexProfile 2 carried out successfully: 0: not carried out 1: carried out successfully
30	Event check FlexProfile 3 carried out/ not carried out: 0: not carried out 1: carried out
31	Event check FlexProfile 3 carried out successfully: 0: not carried out 1: carried out successfully

A-0-3010 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFFFFFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3011, FlexProfile, conditions: control variables

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter is a bit string in which each bit refers to an event configured in the parameters

- [A-0-3040](#) to [A-0-3044](#), FlexProfile 0,
- [A-0-3070](#) to [A-0-3074](#), FlexProfile 1,
- [A-0-3100](#) to [A-0-3104](#), FlexProfile 2,
- [A-0-3130](#) to [A-0-3134](#), FlexProfile 3.

Structure

Bit	Functions
0	Action triggered, event 0: 0: Action for event 0 only initiated by trigger (A-0-3041 , A-0-3043). 1: Action for event 0 is initiated immediately.
1	Action triggered, event 1: 0: Action for event 1 only initiated by trigger (A-0-3041 , A-0-3043). 1: Action for event 1 is initiated immediately.

Describing individual parameters, arranged according to types

Bit	Functions
...	
15	Action triggered, event 15: 0: Action for event 15 only initiated by trigger (A-0-3041 , A-0-3043). 1: Action for event 15 is initiated immediately.

Use By setting a bit, the action of the respective event can be triggered immediately.

In general, the action is executed as soon as the triggers specified in the parameters

- [A-0-3041](#), FlexProfile 0, events, list of trigger modes and
- [A-0-3043](#), FlexProfile 0, events, list of trigger values

apply (other profiles analog).

A-0-3011 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFFFFFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3012, FlexProfile, conditions: status variables

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function The parameter is a bit string in which - depending on the parameters

- [A-0-3042](#), FlexProfile 0, events, list of trigger modes,
- [A-0-3072](#), FlexProfile 1, events, list of trigger modes,
- [A-0-3102](#), FlexProfile 2, events, list of trigger modes,
- [A-0-3132](#), FlexProfile 3, events, list of trigger modes.

Status bits are applied.

Structure

Bit	Functions
0	Action triggered, event 0: 0: Action for event 0 only initiated by trigger (A-0-3041 , A-0-3043). 1: Action for event 0 is initiated immediately.
1	Action triggered, event 1: 0: Action for event 1 only initiated by trigger (A-0-3041 , A-0-3043). 1: Action for event 1 is initiated immediately.
...	
15	Action triggered, event 15: 0: Action for event 15 only initiated by trigger (A-0-3041 , A-0-3043). 1: Action for event 15 is initiated immediately.



The bits are only available for 1 cycle.

Reading can be carried out from the shared memory or using a direct variable.

Use

If the trigger determined in the parameters

- [A-0-3041](#), FlexProfile 0, events, list of trigger modes and
- [A-0-3043](#), FlexProfile 0, events, list of trigger values

applies, a bit is set in this bit string. This is specified by the parameter

- [A-0-3042](#), FlexProfile 0, events, list of trigger modes.

Querying this bit string allows users to react to this triggered event.

After the event applied, the following actions can be started in the same manner (other FlexProfiles analog).

[A-0-3012](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFFFFFF	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-3013, FlexProfile, value, current time-master

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	RO	--	RO	RO	RO	--	--	RO
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	+	-	+	+	+	-	-	+
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the current time-master position in [ms].
It is the time basis for all time-controlled FlexProfile processes.

A-0-3013 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	4294967295	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3020, FlexProfile 0, master axis velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which constant master axis velocity the required motion step velocities of the FlexProfile refer to.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use The information of the master axis velocity is required, if a motion step is used for which an initial/end slave or travel velocity is determined (standard profile rest-in-velocity, velocity-in-velocity or velocity-in-rest, etc...).

The specified value must refer to the electronic gear's output.

A-0-3020 - Attributes:	Function:	PARAMETER	Unit:	1/min
	MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0.1	2147483647.0	10.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3021, FlexProfile 0, list of master axis sources

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which of the two master axis sources (master axis or time) is to be considered for each motion step if set 0 of the operation mode "FlexProfile" is active.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use The information on the master sources is required if a motion step is used whose time-related motion is determined.

A-0-3021 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0	1	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3022, FlexProfile 0, list of slave axis distances

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines the paths traversed in the individual motion steps for set 0 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use If a standard profile is in the motion step and no cam table is selected, the distance determines the path traveled in the corresponding step.

If a cam table is selected, the traversed path is derived from the product of the distance and the last value of the table.

A-0-3022 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3023, FlexProfile 0, list of master axis ranges

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines the range of the master axis source, which the motion step covers for set 0 of the operation mode "FlexProfile".

If it is a time-related motion step, the information is provided in [ms].

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3023 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		0.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3024, FlexProfile 0, list of master axis ranges, units

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the master axis source for the parameter "A-0-3023, FlexProfile 0, list of master axis ranges" for set 0 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Describing individual parameters, arranged according to types

A-0-3024 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3025, FlexProfile 0, list of motion laws

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines the motion laws of the individual motion steps for FlexProfile 0.

See also Functional Description"FlexProfile with Real/Virtual Master Axis".

Structure

Bit	Name/function
7...0	Profile BS 0x0001: C-0-2001, ELS, point table 1, 0x0002: C-0-2002, ELS, point table 2, 0x0003: C-0-2003, ELS, point table 3, . 0x0063: C-0-2099, ELS, point table 99.
15...8	Profile type 0x0000: Rest-in-rest, inclined sinusoid, 0x0100: Rest-in-rest, polynomial 5th order, 0x0200: Rest-in-velocity, polynomial 5th order, 0x0300: Rest-in-velocity, polynomial 7th order, 0x0400: Velocity-in-rest, polynomial 5th order, 0x0500: Velocity-in-rest, polynomial 7th order, 0x0600: Constant velocity, 0x0700: Velocity-in-velocity, polynomial 5th order 0x0800: Rest-in-rest, standstill, 0x0900: Rest-in-rest, polynomial 7th order, 0x0A00: Rest-in-rest, sinusoid, 0x0B00: Rest-in-rest, Gutman sinusoid, 0x0C00: Rest-in-rest, acceleration-optimum inclined sinusoid, 0x0D00: Rest-in-rest, torque-optimum inclined sinusoid, 0x0E00: Rest-in-rest, modified acceleration trapezoid, 0x0F00: Rest-in-rest, modified sinusoid, 0x1000: Velocity-in-velocity, polynomial 7th order, 0x1100: Velocity-in-velocity, modified sinusoid, 0x2000: Motion-in-motion, polynomial 5th order, 0x2100: Motion-in-motion, polynomial 7th order, 0x4000: General motion, polynomial 5th order, 0x4100: General motion, polynomial 7th order, 0x6000: Extended motion law, velocity-limited polynomial 5th order, 0x6100: Extended motion law, overshoot-free polynomial 5th order, 0x7000: Extended motion law, velocity-limited motion (trapezoid), 0x7100: Extended motion law, velocity-limited motion (sinusoids), 0x7200: Extended motion law, jerk-limited motion (trapezoid).

Describing individual parameters, arranged according to types

A-0-3025 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFFFF	0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3026, FlexProfile 0, list of motion step types

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines whether a Flex or standard element (fix) is used for set 0 of the operation mode "FlexProfile".

The Flex element can be considered as active step. Its motion path results at runtime by inheriting the boundary values of the neighboring step. It corrects and adapts its own path correspondingly to impede velocity jumps. In a Flex element - instead of the distance - an absolute slave axis target position to be reached and - instead of the master axis range - an absolute master axis end position to be reached can be specified (the distance and the master axis range are calculated at runtime if necessary). (The distance and the master axis range are calculated at runtime if necessary.)

The Fix motion step (STEP_FIX) is fixed and cannot be changed at runtime.

Bit	Name/function
0...7	Motion step type
	0x00: STEP_FIX,
	0x01: STEP_FLEX_REL_REL,
	0x02: STEP_FLEX_REL_ABS,
	0x03: STEP_FLEX_ABS_REL,
	0x04: STEP_FLEX_ABS_ABS,

Tab. 4-17: List of motion step types

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Structure Only selected motion laws are flex-capable.

Motion laws	Name
Polynomial 5th order	COMMON_POLY5
Polynomial 7th order	COMMON_POLY7

Tab. 4-18: Table of valid combinations for the Flex elements

A-0-3026 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	0x04	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3027, FlexProfile 0, list of slave axis starting velocities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting velocities occur in the individual motion steps for set 0 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0

Describing individual parameters, arranged according to types

	Start_Velocity
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Vel-in-rest	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-19: Table of valid combinations for initial values

A-0-3027 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
		Parameter_is_copied_to_associated_S-/P-parameters:		

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3028, FlexProfile 0, list of slave axis starting accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting accelerations occur in the individual motion steps for set 0 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0

Describing individual parameters, arranged according to types

	Start_Acceleration
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-20: Table of valid combinations for initial values

A-0-3028 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3029, FlexProfile 0, list of slave axis starting jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting jerks occur in the individual motion steps for set 0 of the operation mode "FlexProfile".
See also Functional Description"FlexProfile with Real/Virtual Master Axis".

Use	Start_Jerk	
Rest-in-rest		
Linear rest	0	
Simple sinusoid	Calculated automatically	
Bestehorn sinusoid	Calculated automatically	
Acceleration-optimum inclined sinusoid	Calculated automatically	
Torque-optimum inclined sinusoid	Calculated automatically	
Gutman sinusoid	Calculated automatically	
Modified sinusoid	Calculated automatically	
Modified acceleration trapezoid	Calculated automatically	
Polynomial 5th order	Calculated automatically	
Polynomial 7th order	0	
Velocity-in-velocity		
Linear interpolation	0	
Polynomial 5th order	Calculated automatically	
Polynomial 7th order	0	
Modified sinusoid	Calculated automatically	
Velocity-limited trapezoid	Calculated automatically	
Rest-in-velocity		
Polynomial 5th order	Calculated automatically	
Polynomial 7th order	0	
Velocity-in-rest		
Polynomial 5th order	Calculated automatically	
Polynomial 7th order	0	
Motion-in-motion		
Polynomial 5th order	Calculated automatically	
Polynomial 7th order	0	
Polynomial 5th order, limited velocity	Calculated automatically	
Interpolation		
Acceleration-limited motion (trapezoid)	Calculated automatically	
Acceleration-limited sinusoid	Calculated automatically	
Jerk-limited motion	Calculated automatically	

Tab. 4-21: Table of valid combinations for initial values

Describing individual parameters, arranged according to types

A-0-3029 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3030, FlexProfile 0, list of slave axis end velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end velocities occur at the end in the individual motion steps for set 0 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	

	End_Velocity
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-22: Table of valid combinations for initial values

A-0-3030 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

Describing individual parameters, arranged according to types

A-0-3031, FlexProfile 0, list of slave axis end accelerations

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end accelerations occur at the end in the individual motion steps for set 0 of the operation mode "FlexProfile".
See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined

	End_Acceleration
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-23: Table of valid combinations for initial values

A-0-3031 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3032, FlexProfile 0, list of slave axis end jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis final jerks occur at the end in the individual motion steps for set 0 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Jerk
Rest-in-rest	
Linear rest	0
Simple sinusoid	Calculated automatically
Bestehorn sinusoid	Calculated automatically
Acceleration-optimum inclined sinusoid	Calculated automatically

Describing individual parameters, arranged according to types

	End_Jerk
Torque-optimum inclined sinusoid	Calculated automatically
Gutman sinusoid	Calculated automatically
Modified sinusoid	Calculated automatically
Modified acceleration trapezoid	Calculated automatically
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Modified sinusoid	Calculated automatically
Velocity-limited trapezoid	Calculated automatically
Rest-in-velocity	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Polynomial 5th order, limited velocity	Calculated automatically
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-24: Table of valid combinations for initial values

A-0-3032 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
	Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3033, FlexProfile 0, list of slave axis travel velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing velocities occur in the individual motion steps for set 0 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered

Describing individual parameters, arranged according to types

Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-25: Table of valid combinations for limit values

A-0-3033 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3034, FlexProfile 0, list of slave axis travel accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing accelerations occur at the end in the individual motion steps for set 0 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-26: Table of valid combinations for limit values

Describing individual parameters, arranged according to types

A-0-3034 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3035, FlexProfile 0, list of slave axis travel jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing jerks occur at the end in the individual motion steps for set 0 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	

Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	Not considered
Acceleration-limited sinusoid	Not considered
Jerk-limited motion	User-defined

Tab. 4-27: Table of valid combinations for limit values

A-0-3035 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-3036, FlexProfile 0, list of turning point displacements

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This list determines at which point the curving behavior changes for a symmetrical motion law for set 0 of the operation mode "FlexProfile". By default, a turning point displacement of 0.5 has to be selected. This provides a turning point in the middle of the motion step.



Only selected motion laws support a turning point displacement.

Rest-in-rest	TPD
Simple sinusoid	0<TPD<1
Bestehorn sinusoid	0<TPD<1
Acceleration-optimum inclined sinusoid	0<TPD<1
Torque-optimum inclined sinusoid	0<TPD<1
Gutman sinusoid	0<TPD<1
Modified acceleration trapezoid	0<TPD<1
Polynomial 5th order	0<TPD<1
Polynomial 7th order	0<TPD<1

Tab. 4-28: Table of valid combinations for initial values

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3036 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	1.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3040, FlexProfile 0, events, list of motion step assignments

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines which motion step the respective event applies to. The event is only taken into consideration for the selected motion step.

A-0-3040 - Attributes:

Function: PARAMETER
MLC_data_type: UINT_DEC, 2BYTE_VAR
Memory: FLASH
Var.data_type: -
Unit: --
PLC_data_type: ARRAY of UINT
Editability: P0, P2, BB, PM
MinMax_check: +
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	63	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-3041, FlexProfile 0, events, list of trigger modes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures triggers for events for set 0 of the operation mode "FlexProfile".

See also Parameter Description "[A-0-3043, FlexProfile 0, events, list of trigger values](#)".

Describing individual parameters, arranged according to types

Structure

Bit	Name/function
7..0	Trigger modes
	0x01: TRIGGER_CONTROLBIT_ONLY
	0x02: TRIGGER_ABS_SLAVE_REACHED
	0x03: TRIGGER_REL_SLAVE_REACHED
	0x04: TRIGGER_ABS_MASTER_REACHED
	0x05: TRIGGER_REL_MASTER_REACHED
	0x06: TRIGGER_REL_TIME_MASTER_REACHED

Tab. 4-29: List of the trigger modes

A-0-3041 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3042, FlexProfile 0, events, list of action modes

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter configures the actions carried out once the triggers determined in the parameters "A-0-3041, FlexProfile 0, events, list of trigger modes" and "A-0-3043, FlexProfile 0, events, list of trigger values" apply.

An action can set or initiate a bit in parameter "A-0-3011, FlexProfile, conditions: control variables". Thus, the current motion step of the active motion sequence ends and continues with the next motion step.

The bit in parameter A-0-3011 can be set:

- immediately,
- after the current motion step is completed or

- after the current motion profile is completed.

Structure

Bit	Name/function
15..0	Action modes
	16#0000, ACTION_STATUSBIT0_INSTANT
	16#0001, ACTION_STATUSBIT1_INSTANT
	16#0002, ACTION_STATUSBIT2_INSTANT
	
	16#000F, ACTION_STATUSBIT15_INSTANT
	16#0100, ACTION_STATUSBIT0_AFTERSTEP
	16#0101, ACTION_STATUSBIT1_AFTERSTEP
	16#0102, ACTION_STATUSBIT2_AFTERSTEP
	
	16#010F, ACTION_STATUSBIT15_AFTERSTEP
	16#0200, ACTION_STATUSBIT0_AFTERPROFILE
	16#0201, ACTION_STATUSBIT1_AFTERPROFILE
	16#0202, ACTION_STATUSBIT2_AFTERPROFILE
	
	16#020F, ACTION_STATUSBIT15_AFTERPROFILE
	16#0300, ACTION_STATUSBIT0_INSTANT_NEXTSTEP
	16#0301, ACTION_STATUSBIT1_INSTANT_NEXTSTEP
	16#0302, ACTION_STATUSBIT2_INSTANT_NEXTSTEP
	...
	16#030F, ACTION_STATUSBIT15_INSTANT_NEXTSTEP

Tab. 4-30: List of motion step types

A-0-3042 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFFFF	---
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:				---
IndraDrive/ Control:				---
HydraulicDrive/ Drive:				---
HydraulicDrive/ Control:				---
SercosDrive:				---

Describing individual parameters, arranged according to types

A-0-3043, FlexProfile 0, events, list of trigger values

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures trigger values.

Depending on the trigger mode selected in parameter "A-0-3041, FlexProfile 0, events, list of trigger modes", a value has to be specified here which is subsequently checked.

A-0-3043 - Attributes:

Function: PARAMETER
MLC_data_type: DOUBLE, 8BYTE_VAR
Memory: FLASH
Var.data_type: -
Unit: --
PLC_data_type: ARRAY of LREAL
Editability: P0, P2, BB, PM
MinMax_check: +
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-3044, FlexProfile 0, events, list of trigger values, units

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the list of values for parameter A-0-3043.

A-0-3044 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3046, FlexProfile 0, command: Check and apply event

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters for FlexProfile 0 for plausibility and applies them internally.

Once the event parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "A-0-3047, FlexProfile 0, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3040](#), FlexProfile 0, events, list of motion step assignments,
- [A-0-3041](#), FlexProfile 0, events, list of trigger modes,
- [A-0-3042](#), FlexProfile 0, events, list of trigger modes and
- [A-0-3043](#), FlexProfile 0, events, list of trigger values.

A-0-3046 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3047, FlexProfile 0, diagnostics

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter indicates inconsistencies in the parameterized and checked profile and event set 0 of the operation mode "FlexProfile".

The motion sequence parameterized in set 0 for the operation mode "Flex-Profile" is checked for plausibility by parameter "A-0-3048, FlexProfile 0, command: Check and apply profile".

The event set parameterized in set 0 for the operation mode "FlexProfile" is checked for plausibility by parameter "A-0-3046, FlexProfile 0, command: Check and apply event".

If one of the checks yields an inconsistency, the error number and the incorrect motion step for this profile are displayed in the first two elements of this parameter. The last two elements display the error number and the incorrect event.

See Diagnostics Description "Errors in FlexProfil".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3047 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0	4294967295	0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3048, FlexProfile 0, command: Check and apply profile

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters that define the motion sequence for FlexProfile 0 for plausibility and applies them internally.

The result of the check can be queried in parameter "[A-0-3010](#), FlexProfile, status word".

A MotionProfile can only be started if it has been declared OK and free of errors.

Once the parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "[A-0-3047](#), FlexProfile 0, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3020](#), FlexProfile 0, master axis velocity,
- [A-0-3021](#), FlexProfile 0, list of master axis sources,
- [A-0-3022](#), FlexProfile 0, list of slave axis distances,
- [A-0-3023](#), FlexProfile 0, list of master axis ranges,
- [A-0-3025](#), FlexProfile 0, list of motion laws,
- [A-0-3026](#), FlexProfile 0, list of motion step types,
- [A-0-3027](#), FlexProfile 0, list of slave axis starting velocities,
- [A-0-3028](#), FlexProfile 0, list of slave axis starting accelerations,
- [A-0-3029](#), FlexProfile 0, list of slave axis starting jerks,
- [A-0-3030](#), FlexProfile 0, list of slave axis end velocities,
- [A-0-3031](#), FlexProfile 0, list of slave axis end accelerations,
- [A-0-3032](#), FlexProfile 0, list of slave axis end jerks,
- [A-0-3033](#), FlexProfile 0, list of slave axis travel velocities,
- [A-0-3034](#), FlexProfile 0, list of slave axis travel accelerations,
- [A-0-3035](#), FlexProfile 0, list of slave axis travel jerks,
- [A-0-3036](#), FlexProfile 0, list of turning point displacements (WPV).

Describing individual parameters, arranged according to types

A-0-3048 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3049, FlexProfile 0, checksum

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the checksum on all parameters of FlexProfile 0. It contains the following parameters:

- [A-0-3020](#), FlexProfile 0, master axis velocity,
- [A-0-3021](#), FlexProfile 0, list of master axis sources,
- [A-0-3022](#), FlexProfile 0, list of slave axis distances,
- [A-0-3023](#), FlexProfile 0, list of master axis ranges,
- [A-0-3025](#), FlexProfile 0, list of motion laws,
- [A-0-3026](#), FlexProfile 0, list of motion step types,
- [A-0-3027](#), FlexProfile 0, list of slave axis starting velocities,
- [A-0-3028](#), FlexProfile 0, list of slave axis starting accelerations,
- [A-0-3029](#), FlexProfile 0, list of slave axis starting jerks,
- [A-0-3030](#), FlexProfile 0, list of slave axis end velocities,
- [A-0-3031](#), FlexProfile 0, list of slave axis end accelerations,
- [A-0-3032](#), FlexProfile 0, list of slave axis end jerks,
- [A-0-3033](#), FlexProfile 0, list of slave axis travel velocities,
- [A-0-3034](#), FlexProfile 0, list of slave axis travel accelerations,
- [A-0-3035](#), FlexProfile 0, list of slave axis travel jerks,
- [A-0-3036](#), FlexProfile 0, list of turning point displacements (WPV),
- [A-0-3040](#), FlexProfile 0, events, list of motion step assignments,

- [A-0-3041](#), FlexProfile 0, events, list of trigger modes,
- [A-0-3042](#), FlexProfile 0, events, list of trigger modes and
- [A-0-3043](#), FlexProfile 0, events, list of trigger values.

A-0-3049 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3050, FlexProfile 1, master axis velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which constant master axis velocity the required motion step velocities of the FlexProfile refer to.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use The information of the master axis velocity is required, if a motion step is used for which an initial/end slave or travel velocity is determined (standard profile rest-in-velocity, velocity-in-velocity or velocity-in-rest, etc...).

The specified value must refer to the electronic gear's output.

A-0-3050 - Attributes:

Function:	PARAMETER	Unit:	1/min
MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.1	2147483647.0	10.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3051, FlexProfile 1, list of master axis sources

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which of the two master axis sources (master axis or time) is to be considered for each motion step if set 1 of the operation mode "FlexProfile" is active.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use The information on the master sources is required if a motion step is used whose time-related motion is determined.

A-0-3051 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	1	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3052, FlexProfile 1, list of slave axis distances

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines the paths traversed in the individual motion steps for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use If a standard profile is in the motion step and no cam table is selected, the distance determines the path traversed in the corresponding step.

If a cam table is selected, the traversed path is derived from the product of the distance and the last value of the table.

A-0-3052 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3053, FlexProfile 1, list of master axis ranges

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Describing individual parameters, arranged according to types

Function This parameter determines the range of the master axis source the motion step covers for set 1 of the operation mode "FlexProfile".

If it is a time-related motion step, the information is provided in [ms].

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3053 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3054, FlexProfile 1, list of master axis ranges, units

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the master axis source for the parameter "A-0-3053, FlexProfile 1, list of master axis ranges" for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3054 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3055, FlexProfile 1, list of motion laws

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines for FlexProfile 1 which motion laws the individual motion steps are provided with.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Structure

Describing individual parameters, arranged according to types

Bit	Name/function
7...0	Profile BS 0x0001: C-0-2001, ELS, point table 1, 0x0002: C-0-2002, ELS, point table 2, 0x0003: C-0-2003, ELS, point table 3, . 0x0063: C-0-2099, ELS, point table 99.
15...8	Profile type 0x0000: Rest-in-rest, inclined sinusoid, 0x0100: Rest-in-rest, polynomial 5th order, 0x0200: Rest-in-velocity, polynomial 5th order, 0x0300: Rest-in-velocity, polynomial 7th order, 0x0400: Velocity-in-rest, polynomial 5th order, 0x0500: Velocity-in-rest, polynomial 7th order, 0x0600: Constant velocity, 0x0700: Velocity-in-velocity, polynomial 5th order 0x0800: Rest-in-rest, standstill, 0x0900: Rest-in-rest, polynomial 7th order, 0x0A00: Rest-in-rest, sinusoid, 0x0B00: Rest-in-rest, Gutman sinusoid, 0x0C00: Rest-in-rest, acceleration-optimum inclined sinusoid, 0x0D00: Rest-in-rest, torque-optimum inclined sinusoid, 0x0E00: Rest-in-rest, modified acceleration trapezoid, 0x0F00: Rest-in-rest, modified sinusoid, 0x1000: Velocity-in-velocity, polynomial 7th order, 0x1100: Velocity-in-velocity, modified sinusoid, 0x2000: Motion-in-motion, polynomial 5th order, 0x2100: Motion-in-motion, polynomial 7th order, 0x4000: General motion, polynomial 5th order, 0x4100: General motion, polynomial 7th order, 0x6000: Extended motion law, velocity-limited polynomial 5th order, 0x6100: Extended motion law, overshoot-free polynomial 5th order, 0x7000: Extended motion law, velocity-limited motion (trapezoid), 0x7100: Extended motion law, velocity-limited motion (sinusoids), 0x7200: Extended motion law, jerk-limited motion (trapezoid).

A-0-3055 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFFFF	0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3056, FlexProfile 1, list of motion step types

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines whether a Flex or standard element (fix) is used for set 1 of the operation mode "FlexProfile".

The Flex element can be considered as active step. Its motion path results at runtime by inheriting the boundary values of the neighboring step. It corrects and adapts its own path correspondingly to impede velocity jumps. In a Flex element - instead of the distance - an absolute slave axis target position to be reached and - instead of the master axis range - an absolute master axis end position to be reached can be specified (the distance and the master axis range are calculated at runtime if necessary). (The distance and the master axis range are calculated at runtime if necessary.)

The Fix motion step (STEP_FIX) is fixed and cannot be changed at runtime.

Bit	Name/function
0...7	Motion step type
	0x00: STEP_FIX,
	0x01: STEP_FLEX_REL_REL,
	0x02: STEP_FLEX_REL_ABS,
	0x03: STEP_FLEX_ABS_REL,
	0x04: STEP_FLEX_ABS_ABS,

Tab. 4-31: List of motion step types

Describing individual parameters, arranged according to types

See also Functional Description "FlexProfile with Real/Virtual Master Axis".
Structure Only selected motion laws are flex-capable.

Motion laws	Name
Polynomial 5th order	COMMON_POLY5
Polynomial 7th order	COMMON_POLY7

Tab. 4-32: Table of valid combinations for the Flex elements

A-0-3056 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	0x04	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3057, FlexProfile 1, list of slave axis starting velocities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting velocities occur in the individual motion steps for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0

Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Vel-in-rest	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-33: Table of valid combinations for initial values

A-0-3057 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3058, FlexProfile 1, list of slave axis starting accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting accelerations occur in the individual motion steps for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0

Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-34: Table of valid combinations for initial values

A-0-3058 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3059, FlexProfile 1, list of slave axis starting jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This list determines which slave axis starting jerks occur in the individual motion steps for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Describing individual parameters, arranged according to types

Use	Start_Jerk
Rest-in-rest	
Linear rest	0
Simple sinusoid	Calculated automatically
Bestehorn sinusoid	Calculated automatically
Acceleration-optimum inclined sinusoid	Calculated automatically
Torque-optimum inclined sinusoid	Calculated automatically
Gutman sinusoid	Calculated automatically
Modified sinusoid	Calculated automatically
Modified acceleration trapezoid	Calculated automatically
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Modified sinusoid	Calculated automatically
Velocity-limited trapezoid	Calculated automatically
Rest-in-velocity	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Polynomial 5th order, limited velocity	Calculated automatically
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-35: Table of valid combinations for initial values

A-0-3059 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		---		
IndraDrive/ Control:		---		
HydraulicDrive/ Drive:		---		
HydraulicDrive/ Control:		---		
SercosDrive:		---		

A-0-3060, FlexProfile 1, list of slave axis end velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end velocities occur at the end in the individual motion steps for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0

Describing individual parameters, arranged according to types

Velocity-in-velocity	
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-36: Table of valid combinations for initial values

A-0-3060 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3061, FlexProfile 1, list of slave axis end accelerations

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end accelerations occur at the end in the individual motion steps for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined

Describing individual parameters, arranged according to types

Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-37: Table of valid combinations for initial values

A-0-3061 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3062, FlexProfile 1, list of slave axis end jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end jerks occur at the end in the individual motion steps for set 1 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Jerk
Rest-in-rest	
Linear rest	0
Simple sinusoid	Calculated automatically
Bestehorn sinusoid	Calculated automatically

Acceleration-optimum inclined sinusoid	Calculated automatically
Torque-optimum inclined sinusoid	Calculated automatically
Gutman sinusoid	Calculated automatically
Modified sinusoid	Calculated automatically
Modified acceleration trapezoid	Calculated automatically
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Modified sinusoid	Calculated automatically
Velocity-limited trapezoid	Calculated automatically
Rest-in-velocity	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Polynomial 5th order, limited velocity	Calculated automatically
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-38: Table of valid combinations for initial values

A-0-3062 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3063, FlexProfile 1, list of slave axis travel velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing velocities occur in the individual motion steps for set 1 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered

Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-39: Table of valid combinations for limit values

A-0-3063 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3064, FlexProfile 1, list of slave axis travel accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing accelerations occur at the end in the individual motion steps for set 1 of the operation mode "FlexProfile".

Describing individual parameters, arranged according to types

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-40: Table of valid combinations for limit values

A-0-3064 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		---		
IndraDrive/ Control:		---		
HydraulicDrive/ Drive:		---		
HydraulicDrive/ Control:		---		
SercosDrive:		---		

A-0-3065, FlexProfile 1, list of slave axis travel jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing jerks occur at the end in the individual motion steps for set 1 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered

Describing individual parameters, arranged according to types

Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	Not considered
Acceleration-limited sinusoid	Not considered
Jerk-limited motion	User-defined

Tab. 4-41: Table of valid combinations for limit values

A-0-3065 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3066, FlexProfile 1, list of turning point displacements

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This list determines at which point the curving behavior changes for a symmetrical motion law for set 1 of the operation mode "FlexProfile". By default, a turning point displacement of 0.5 has to be selected. This provides a turning point in the middle of the motion step.



Only selected motion laws support a turning point displacement.

Rest-in-rest	TPD
Simple sinusoid	0<TPD<1
Bestehorn sinusoid	0<TPD<1
Acceleration-optimum inclined sinusoid	0<TPD<1
Torque-optimum inclined sinusoid	0<TPD<1
Gutman sinusoid	0<TPD<1
Modified acceleration trapezoid	0<TPD<1
Polynomial 5th order	0<TPD<1
Polynomial 7th order	0<TPD<1

Tab. 4-42: Table of valid combinations for initial values

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3066 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	1.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3070, FlexProfile 1, events, list of motion step assignments

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines which motion step the respective event applies to. The event is only taken into consideration for the selected motion step.

A-0-3070 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	15	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3071, FlexProfile 1, events, list of trigger modes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures triggers for events for set 1 of the operation mode "FlexProfile".

See also Parameter Description: "[A-0-3073](#), FlexProfile 1, events, list of trigger values".

Structure

Bit	Name/function
7..0	Trigger modes
	0x01: TRIGGER_CONTROLBIT_ONLY
	0x02: TRIGGER_ABS_SLAVE_REACHED
	0x03: TRIGGER_REL_SLAVE_REACHED
	0x04: TRIGGER_ABS_MASTER_REACHED
	0x05: TRIGGER_REL_MASTER_REACHED
	0x06: TRIGGER_REL_TIME_MASTER_REACHED

Tab. 4-43: List of the trigger modes

A-0-3071 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3072, FlexProfile 1, events, list of action modes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures the actions carried out once the triggers determined in the parameters "[A-0-3071](#), FlexProfile 1, events, list of trigger modes" and "[A-0-3073](#), FlexProfile 1, events, list of trigger values" apply.

An action can set or initiate a bit in parameter "[A-0-3011](#), FlexProfile, conditions: control variables". Thus, the current motion step of the active motion sequence ends and continues with the next motion step.

The bit in parameter [A-0-3011](#) can be set:

- immediately,
- after the current motion step is completed or
- after the current motion profile is completed.

Structure

Bit	Name/function
15..0	Action modes
	16#0000, ACTION_STATUSBIT0_INSTANT
	16#0001, ACTION_STATUSBIT1_INSTANT
	16#0002, ACTION_STATUSBIT2_INSTANT
	
	16#000F, ACTION_STATUSBIT15_INSTANT
	16#0100, ACTION_STATUSBIT0_AFTERSTEP
	16#0101, ACTION_STATUSBIT1_AFTERSTEP
	16#0102, ACTION_STATUSBIT2_AFTERSTEP
	
	16#010F, ACTION_STATUSBIT15_AFTERSTEP
	16#0200, ACTION_STATUSBIT0_AFTERPROFILE
	16#0201, ACTION_STATUSBIT1_AFTERPROFILE
	16#0202, ACTION_STATUSBIT2_AFTERPROFILE
	
	16#020F, ACTION_STATUSBIT15_AFTERPROFILE
	16#0300, ACTION_STATUSBIT0_INSTANT_NEXTSTEP
	16#0301, ACTION_STATUSBIT1_INSTANT_NEXTSTEP
	16#0302, ACTION_STATUSBIT2_INSTANT_NEXTSTEP
	...
	16#030F, ACTION_STATUSBIT15_INSTANT_NEXTSTEP

Tab. 4-44: List of motion step types

A-0-3072 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-3073, FlexProfile 1, events, list of trigger values

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures trigger values.

Depending on the trigger mode selected in parameter "A-0-3071, FlexProfile 1, events, list of trigger modes", a value has to be specified which is subsequently checked.

A-0-3073 - Attributes:

Function: PARAMETER
MLC_data_type: DOUBLE, 8BYTE_VAR
Memory: FLASH
Var.data_type: -
Unit: --
PLC_data_type: ARRAY of LREAL
Editability: P0, P2, BB, PM
MinMax_check: +
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-3074, FlexProfile 1, events, list of trigger values, units

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the list of values for parameter A-0-3073.

A-0-3074 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3076, FlexProfile 1, command: Check and apply event

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters for FlexProfile 1 for plausibility and applies them internally.

Once the event parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "A-0-3077, FlexProfile 1, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3070](#), FlexProfile 1, events, list of motion step assignments,
- [A-0-3071](#), FlexProfile 1, events, list of trigger modes,
- [A-0-3072](#), FlexProfile 1, events, list of trigger modes and
- [A-0-3073](#), FlexProfile 1, events, list of trigger values.

A-0-3076 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3077, FlexProfile 1, diagnostics

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter indicates inconsistencies in the parameterized and checked profile and event set 1 of the operation mode "FlexProfile".

The motion sequence parameterized in set 1 for the operation mode "Flex-Profile" is checked for plausibility by parameter "A-0-3078, FlexProfile 1, command: Check and apply profile".

The event set parameterized in set 1 for the operation mode "FlexProfile" is checked for plausibility by parameter "A-0-3076, FlexProfile 1, command: Check and apply event".

If one of the checks yields an inconsistency, the error number and the incorrect motion step for this profile are displayed in the first two elements of this parameter. The last two elements display the error number and the incorrect event.

See Diagnostics Description: "Error in FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3077 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0	4294967295	0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3078, FlexProfile 1, command: Check and apply profile

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters that define the motion sequence for FlexProfile 1 for plausibility and applies them internally.

The result of the check can be queried in parameter "[A-0-3010](#), FlexProfile, status word".

A MotionProfile can only be started if it has been declared OK and free of errors.

Once the parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "[A-0-3077](#), FlexProfile 1, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3050](#), FlexProfile 1, master axis velocity,
- [A-0-3051](#), FlexProfile 1, list of master axis sources,
- [A-0-3052](#), FlexProfile 1, list of slave axis distances,
- [A-0-3053](#), FlexProfile 1, list of master axis ranges,
- [A-0-3055](#), FlexProfile 1, list of motion laws,
- [A-0-3056](#), FlexProfile 1, list of motion step types,
- [A-0-3057](#), FlexProfile 1, list of slave axis starting velocities,
- [A-0-3058](#), FlexProfile 1, list of slave axis starting accelerations,
- [A-0-3059](#), FlexProfile 1, list of slave axis starting jerks,
- [A-0-3060](#), FlexProfile 1, list of slave axis end velocities,
- [A-0-3061](#), FlexProfile 1, list of slave axis end accelerations,
- [A-0-3062](#), FlexProfile 1, list of slave axis end jerks,
- [A-0-3063](#), FlexProfile 1, list of slave axis travel velocities,
- [A-0-3064](#), FlexProfile 1, list of slave axis travel accelerations,
- [A-0-3065](#), FlexProfile 1, list of slave axis travel jerks,
- [A-0-3066](#), FlexProfile 1, list of turning point displacements (WPV).

Describing individual parameters, arranged according to types

A-0-3078 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3079, FlexProfile 1, checksum

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the checksum on all parameters of FlexProfile 1. It contains the following parameters:

- [A-0-3050](#), FlexProfile 1, master axis velocity,
- [A-0-3051](#), FlexProfile 1, list of master axis sources,
- [A-0-3052](#), FlexProfile 1, list of slave axis distances,
- [A-0-3053](#), FlexProfile 1, list of master axis ranges,
- [A-0-3055](#), FlexProfile 1, list of motion laws,
- [A-0-3056](#), FlexProfile 1, list of motion step types,
- [A-0-3057](#), FlexProfile 1, list of slave axis starting velocities,
- [A-0-3058](#), FlexProfile 1, list of slave axis starting accelerations,
- [A-0-3059](#), FlexProfile 1, list of slave axis starting jerks,
- [A-0-3060](#), FlexProfile 1, list of slave axis end velocities,
- [A-0-3061](#), FlexProfile 1, list of slave axis end accelerations,
- [A-0-3062](#), FlexProfile 1, list of slave axis end jerks,
- [A-0-3063](#), FlexProfile 1, list of slave axis travel velocities,
- [A-0-3064](#), FlexProfile 1, list of slave axis travel accelerations,
- [A-0-3065](#), FlexProfile 1, list of slave axis travel jerks,
- [A-0-3066](#), FlexProfile 1, list of turning point displacements (WPV),
- [A-0-3070](#), FlexProfile 1, events, list of motion step assignments,

- [A-0-3071](#), FlexProfile 1, events, list of trigger modes,
- [A-0-3072](#), FlexProfile 1, events, list of trigger modes and
- [A-0-3073](#), FlexProfile 1, events, list of trigger values.

A-0-3079 - Attributes:

Function: PARAMETER **Unit:** --
MLC_data_type: UINT_DEC, 4BYTE **PLC_data_type:** UDINT
Memory: RAM **Editability:** READ_ONLY
Var.data_type: - **MinMax_check:** -
 Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3080, FlexProfile 2, master axis velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which constant master axis velocity the required motion step velocities of the FlexProfile refer to.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use The information of the master axis velocity is required, if a motion step is used for which an initial/end slave or travel velocity is determined (standard profile rest-in-velocity, velocity-in-velocity or velocity-in-rest, etc...).

The specified value must refer to the electronic gear's output.

A-0-3080 - Attributes:

Function: PARAMETER **Unit:** 1/min
MLC_data_type: DOUBLE, 8BYTE **PLC_data_type:** LREAL
Memory: FLASH **Editability:** P0, P2, BB, PM
Var.data_type: - **MinMax_check:** +
 Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0.1	2147483647.0	10.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3081, FlexProfile 2, list of master axis sources

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which of the two master axis sources (master axis or time) is to be considered for each motion step if set 2 of the operation mode "FlexProfile" is active.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use The information on the master sources is required if a motion step is used whose time-related motion is determined.

A-0-3081 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	1	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3082, FlexProfile 2, list of slave axis distances

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines the paths traversed in the individual motion steps for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use If a standard profile is in the motion step and no cam table is selected, the distance determines the path traversed in the corresponding step.

If a cam table is selected, the traveled path is derived from the product of the distance and the last value of the table.

A-0-3082 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3083, FlexProfile 2, list of master axis ranges

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Describing individual parameters, arranged according to types

Function This parameter determines the range of the master axis source, which the motion step covers for set 2 of the operation mode "FlexProfile".

If it is a time-related motion step, the information is provided in [ms].

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3083 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3084, FlexProfile 2, list of master axis ranges, units

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the master axis source for the parameter "A-0-3083, FlexProfile 2, list of master axis ranges" for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3084 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3085, FlexProfile 2, list of motion laws

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines for FlexProfile 2 which motion laws the individual motion steps are provided with.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Structure

Describing individual parameters, arranged according to types

Bit	Name/function
7...0	Profile BS 0x0001: C-0-2001, ELS, point table 1, 0x0002: C-0-2002, ELS, point table 2, 0x0003: C-0-2003, ELS, point table 3, . 0x0063: C-0-2099, ELS, point table 99.
15...8	Profile type 0x0000: Rest-in-rest, inclined sinusoid, 0x0100: Rest-in-rest, polynomial 5th order, 0x0200: Rest-in-velocity, polynomial 5th order, 0x0300: Rest-in-velocity, polynomial 7th order, 0x0400: Velocity-in-rest, polynomial 5th order, 0x0500: Velocity-in-rest, polynomial 7th order, 0x0600: Constant velocity, 0x0700: Velocity-in-velocity, polynomial 5th order 0x0800: Rest-in-rest, standstill, 0x0900: Rest-in-rest, polynomial 7th order, 0x0A00: Rest-in-rest, sinusoid, 0x0B00: Rest-in-rest, Gutman sinusoid, 0x0C00: Rest-in-rest, acceleration-optimum inclined sinusoid, 0x0D00: Rest-in-rest, torque-optimum inclined sinusoid, 0x0E00: Rest-in-rest, modified acceleration trapezoid, 0x0F00: Rest-in-rest, modified sinusoid, 0x1000: Velocity-in-velocity, polynomial 7th order, 0x1100: Velocity-in-velocity, modified sinusoid, 0x2000: Motion-in-motion, polynomial 5th order, 0x2100: Motion-in-motion, polynomial 7th order, 0x4000: General motion, polynomial 5th order, 0x4100: General motion, polynomial 7th order, 0x6000: Extended motion law, velocity-limited polynomial 5th order, 0x6100: Extended motion law, overshoot-free polynomial 5th order, 0x7000: Extended motion law, velocity-limited motion (trapezoid), 0x7100: Extended motion law, velocity-limited motion (sinusoids), 0x7200: Extended motion law, jerk-limited motion (trapezoid).

A-0-3085 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFFFF	0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3086, FlexProfile 2, list of motion step types

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines whether a Flex or standard element (fix) is used for set 2 of the operation mode "FlexProfile".

The Flex element can be considered as active step. Its motion path results at runtime by inheriting the boundary values of the neighboring step. It corrects and adapts its own path correspondingly to impede velocity jumps. In a Flex element - instead of the distance - an absolute slave axis target position to be reached and - instead of the master axis range - an absolute master axis end position to be reached can be specified (the distance and the master axis range are calculated at runtime if necessary). (The distance and the master axis range are calculated at runtime if necessary.)

The Fix motion step (STEP_FIX) is fixed and cannot be changed at runtime.

Bit	Name/function
0...7	Motion step type
	0x00: STEP_FIX,
	0x01: STEP_FLEX_REL_REL,
	0x02: STEP_FLEX_REL_ABS,
	0x03: STEP_FLEX_ABS_REL,
	0x04: STEP_FLEX_ABS_ABS,

Tab. 4-45: List of motion step types

Describing individual parameters, arranged according to types

See also Functional Description "FlexProfile with Real/Virtual Master Axis".
Structure Only selected motion laws are flex-capable.

Motion laws	Name
Polynomial 5th order	COMMON_POLY5
Polynomial 7th order	COMMON_POLY7

Tab. 4-46: Table of valid combinations for the Flex elements

A-0-3086 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	0x04	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3087, FlexProfile 2, list of slave axis starting velocities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting velocities occur in the individual motion steps for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0

Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Vel-in-rest	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-47: Table of valid combinations for initial values

A-0-3087 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3088, FlexProfile 2, list of slave axis starting accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting accelerations occur in the individual motion steps for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0

Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-48: Table of valid combinations for initial values

A-0-3088 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3089, FlexProfile 2, list of slave axis starting jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting jerks occur in the individual motion steps for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Describing individual parameters, arranged according to types

Use	Start_Jerk
Rest-in-rest	
Linear rest	0
Simple sinusoid	Calculated automatically
Bestehorn sinusoid	Calculated automatically
Acceleration-optimum inclined sinusoid	Calculated automatically
Torque-optimum inclined sinusoid	Calculated automatically
Gutman sinusoid	Calculated automatically
Modified sinusoid	Calculated automatically
Modified acceleration trapezoid	Calculated automatically
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Modified sinusoid	Calculated automatically
Velocity-limited trapezoid	Calculated automatically
Rest-in-velocity	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Polynomial 5th order, limited velocity	Calculated automatically
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-49: Table of valid combinations for initial values

A-0-3089 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		---		
IndraDrive/ Control:		---		
HydraulicDrive/ Drive:		---		
HydraulicDrive/ Control:		---		
SercosDrive:		---		

A-0-3090, FlexProfile 2, list of slave axis end velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end velocities occur at the end in the individual motion steps for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0

Describing individual parameters, arranged according to types

Velocity-in-velocity	
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-50: Table of valid combinations for initial values

A-0-3090 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3091, FlexProfile 2, list of slave axis end accelerations

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end accelerations occur at the end in the individual motion steps for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined

Describing individual parameters, arranged according to types

Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-51: Table of valid combinations for initial values

A-0-3091 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3092, FlexProfile 2, list of slave axis end jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end jerks occur at the end in the individual motion steps for set 2 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Jerk
Rest-in-rest	
Linear rest	0
Simple sinusoid	Calculated automatically
Bestehorn sinusoid	Calculated automatically

Acceleration-optimum inclined sinusoid	Calculated automatically
Torque-optimum inclined sinusoid	Calculated automatically
Gutman sinusoid	Calculated automatically
Modified sinusoid	Calculated automatically
Modified acceleration trapezoid	Calculated automatically
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Modified sinusoid	Calculated automatically
Velocity-limited trapezoid	Calculated automatically
Rest-in-velocity	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Polynomial 5th order, limited velocity	Calculated automatically
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-52: Table of valid combinations for initial values

A-0-3092 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3093, FlexProfile 2, list of slave axis travel velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing velocities occur in the individual motion steps for set 2 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered

Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-53: Table of valid combinations for limit values

A-0-3093 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3094, FlexProfile 2, list of slave axis travel accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing accelerations occur at the end in the individual motion steps for set 2 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-54: Table of valid combinations for limit values

A-0-3094 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		---		
IndraDrive/ Control:		---		
HydraulicDrive/ Drive:		---		
HydraulicDrive/ Control:		---		
SercosDrive:		---		

A-0-3095, FlexProfile 2, list of slave axis travel jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing jerks occur at the end in the individual motion steps for set 2 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered

Describing individual parameters, arranged according to types

Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	Not considered
Acceleration-limited sinusoid	Not considered
Jerk-limited motion	User-defined

Tab. 4-55: Table of valid combinations for limit values

A-0-3095 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3096, FlexProfile 2, list of turning point displacements

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This list determines at which point the curving behavior changes for a symmetrical motion law for set 2 of the operation mode "FlexProfile". By default, a turning point displacement of 0.5 has to be selected. This provides a turning point in the middle of the motion step.



Only selected motion laws support a turning point displacement.

Rest-in-rest	TPD
Simple sinusoid	0<TPD<1
Bestehorn sinusoid	0<TPD<1
Acceleration-optimum inclined sinusoid	0<TPD<1
Torque-optimum inclined sinusoid	0<TPD<1
Gutman sinusoid	0<TPD<1
Modified acceleration trapezoid	0<TPD<1
Polynomial 5th order	0<TPD<1
Polynomial 7th order	0<TPD<1

Tab. 4-56: Table of valid combinations for initial values

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3096 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	1.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3100, FlexProfile 2, events, list of motion step assignments

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines which motion step the respective event applies to. The event is only taken into consideration for the selected motion step.

A-0-3100 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	15	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3101, FlexProfile 2, events, list of trigger modes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures triggers for events for set 2 of the operation mode "FlexProfile".

See also Parameter Description: "[A-0-3103](#), FlexProfile 2, events, list of trigger values".

Structure

Bit	Name/function
7..0	Trigger modes
	0x01: TRIGGER_CONTROLBIT_ONLY
	0x02: TRIGGER_ABS_SLAVE_REACHED
	0x03: TRIGGER_REL_SLAVE_REACHED
	0x04: TRIGGER_ABS_MASTER_REACHED
	0x05: TRIGGER_REL_MASTER_REACHED
	0x06: TRIGGER_REL_TIME_MASTER_REACHED

Tab. 4-57: List of the trigger modes

A-0-3101 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3102, FlexProfile 2, events, list of action modes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures the actions carried out once the triggers determined in the parameters "[A-0-3101](#), FlexProfile 2, events, list of trigger modes" and "[A-0-3103](#), FlexProfile 2, events, list of trigger values" apply.

An action can set or initiate a bit in parameter "[A-0-3011](#), FlexProfile, conditions: control variables". Thus, the current motion step of the active motion sequence ends and continues with the next motion step.

The bit in parameter [A-0-3011](#) can be set:

- immediately,
- after the current motion step is completed or
- after the current motion profile is completed.

Structure	Bit	Name/function
		Action modes
		16#0000, ACTION_STATUSBIT0_INSTANT
		16#0001, ACTION_STATUSBIT1_INSTANT
		16#0002, ACTION_STATUSBIT2_INSTANT
		
		16#000F, ACTION_STATUSBIT15_INSTANT
		16#0100, ACTION_STATUSBIT0_AFTERSTEP
		16#0101, ACTION_STATUSBIT1_AFTERSTEP
		16#0102, ACTION_STATUSBIT2_AFTERSTEP
		
		16#010F, ACTION_STATUSBIT15_AFTERSTEP
		16#0200, ACTION_STATUSBIT0_AFTERPROFILE
		16#0201, ACTION_STATUSBIT1_AFTERPROFILE
		16#0202, ACTION_STATUSBIT2_AFTERPROFILE
		
		16#020F, ACTION_STATUSBIT15_AFTERPROFILE
		16#0300, ACTION_STATUSBIT0_INSTANT_NEXTSTEP
		16#0301, ACTION_STATUSBIT1_INSTANT_NEXTSTEP
		16#0302, ACTION_STATUSBIT2_INSTANT_NEXTSTEP
		...
		16#030F, ACTION_STATUSBIT15_INSTANT_NEXTSTEP

Tab. 4-58: List of motion step types

A-0-3102 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-3103, FlexProfile 2, events, list of trigger values

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures trigger values.

Depending on the trigger mode selected in parameter "A-0-3101, FlexProfile 2, events, list of trigger modes", a value has to be specified here which is subsequently checked.

A-0-3103 - Attributes:

Function: PARAMETER
MLC_data_type: DOUBLE, 8BYTE_VAR
Memory: FLASH
Unit: --
PLC_data_type: ARRAY of LREAL
Editability: P0, P2, BB, PM
MinMax_check: +
Var.data_type: -
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-3104, FlexProfile 2, events, list of trigger values, units

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the list of values for parameter A-0-3103.

A-0-3104 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3106, FlexProfile 2, command: Check and apply event

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters for FlexProfile 2 for plausibility and applies them internally.

Once the event parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "A-0-3107, FlexProfile 2, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3100](#), FlexProfile 2, events, list of motion step assignments,
- [A-0-3101](#), FlexProfile 2, events, list of trigger modes,
- [A-0-3102](#), FlexProfile 2, events, list of trigger modes and
- [A-0-3103](#), FlexProfile 2, events, list of trigger values.

A-0-3106 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3107, FlexProfile 2, diagnostics

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter indicates inconsistencies in the parameterized and checked profile and event set 2 of the operation mode "FlexProfile".

The motion sequence parameterized in set 2 for the operation mode "Flex-Profile" is checked for plausibility by parameter "A-0-3108, FlexProfile 2, command: Check and apply profile".

The event set parameterized in set 2 for the operation mode "FlexProfile" is checked for plausibility by parameter "A-0-3106, FlexProfile 2, command: Check and apply event".

If one of the checks yields an inconsistency, the error number and the incorrect motion step for this profile are displayed in the first two elements of this parameter. The last two elements display the error number and the incorrect event.

See Diagnostics Description: "Error in FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3107 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0	4294967295	0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3108, FlexProfile 2, command: Check and apply profile

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters that define the motion sequence for FlexProfile 2 for plausibility and applies them internally.

The result of the check can be queried in parameter "[A-0-3010](#), FlexProfile, status word".

A MotionProfile can only be started if it has been declared OK and free of errors.

Once the parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "[A-0-3107](#), FlexProfile 2, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3080](#), FlexProfile 2, master axis velocity,
- [A-0-3081](#), FlexProfile 2, list of master axis sources,
- [A-0-3082](#), FlexProfile 2, list of slave axis distances,
- [A-0-3083](#), FlexProfile 2, list of master axis ranges,
- [A-0-3085](#), FlexProfile 2, list of motion laws,
- [A-0-3086](#), FlexProfile 2, list of motion step types,
- [A-0-3087](#), FlexProfile 2, list of slave axis starting velocities,
- [A-0-3088](#), FlexProfile 2, list of slave axis starting accelerations,
- [A-0-3089](#), FlexProfile 2, list of slave axis starting jerks,
- [A-0-3090](#), FlexProfile 2, list of slave axis end velocities,
- [A-0-3091](#), FlexProfile 2, list of slave axis end accelerations,
- [A-0-3092](#), FlexProfile 2, list of slave axis end jerks,
- [A-0-3093](#), FlexProfile 2, list of slave axis travel velocities,
- [A-0-3094](#), FlexProfile 2, list of slave axis travel accelerations,
- [A-0-3095](#), FlexProfile 2, list of slave axis travel jerks,
- [A-0-3096](#), FlexProfile 2, list of turning point displacements (WPV).

Describing individual parameters, arranged according to types

A-0-3108 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3109, FlexProfile 2, checksum

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the checksum on all parameters of FlexProfile 2. It contains the following parameters:

- [A-0-3080](#), FlexProfile 2, master axis velocity,
- [A-0-3081](#), FlexProfile 2, list of master axis sources,
- [A-0-3082](#), FlexProfile 2, list of slave axis distances,
- [A-0-3083](#), FlexProfile 2, list of master axis ranges,
- [A-0-3085](#), FlexProfile 2, list of motion laws,
- [A-0-3086](#), FlexProfile 2, list of motion step types,
- [A-0-3087](#), FlexProfile 2, list of slave axis starting velocities,
- [A-0-3088](#), FlexProfile 2, list of slave axis starting accelerations,
- [A-0-3089](#), FlexProfile 2, list of slave axis starting jerks,
- [A-0-3090](#), FlexProfile 2, list of slave axis end velocities,
- [A-0-3091](#), FlexProfile 2, list of slave axis end accelerations,
- [A-0-3092](#), FlexProfile 2, list of slave axis end jerks,
- [A-0-3093](#), FlexProfile 2, list of slave axis travel velocities,
- [A-0-3094](#), FlexProfile 2, list of slave axis travel accelerations,
- [A-0-3095](#), FlexProfile 2, list of slave axis travel jerks,
- [A-0-3096](#), FlexProfile 2, list of turning point displacements (WPV),
- [A-0-3100](#), FlexProfile 2, events, list of motion step assignments,

- [A-0-3101](#), FlexProfile 2, events, list of trigger modes,
- [A-0-3102](#), FlexProfile 2, events, list of trigger modes and
- [A-0-3103](#), FlexProfile 2, events, list of trigger values.

A-0-3109 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3110, FlexProfile 3, master axis velocity

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which constant master axis velocity the required motion step velocities of the FlexProfile refer to.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use The information of the master axis velocity is required, if a motion step is used for which an initial/end slave or travel velocity is determined (standard profile rest-in-velocity, velocity-in-velocity or velocity-in-rest, etc...).

The specified value must refer to the electronic gear's output.

A-0-3110 - Attributes:

Function:	PARAMETER	Unit:	1/min
MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.1	2147483647.0	10.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3111, FlexProfile 3, list of master axis sources

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates which of the two mater axis sources (master axis or time) is to be considered for each motion step, if set 3 of the operation mode "FlexProfile" is active.

See also Functional Description"FlexProfile with Real/Virtual Master Axis".

Use The information on the master sources is required if a motion step is used whose time-related motion is determined.

A-0-3111 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0	1	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3112, FlexProfile 3, list of distances

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines the paths traversed in the individual motion steps for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use If a standard profile is in the motion step and no cam table is selected, the distance determines the path traveled in the corresponding step.

If a cam table is selected, the traversed path is derived from the product of the distance and the last value of the table.

A-0-3112 - Attributes:

Function:	PARAMETER	Unit:	A-0-0059
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3113, FlexProfile 3, list of master axis ranges

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Describing individual parameters, arranged according to types

Function This parameter determines the range of the master axis source, which the motion step covers for set 3 of the operation mode "FlexProfile".

If it is a time-related motion step, the information is provided in [ms].

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3113 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3114, FlexProfile 3, list of master axis ranges, units

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the master axis source for the parameter "A-0-3113, FlexProfile 3, list of master axis ranges" for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3114 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3115, FlexProfile 3, list of motion laws

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines for FlexProfile 3 which motion laws the individual motion steps are provided with.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Structure

Describing individual parameters, arranged according to types

Bit	Name/function
7...0	Profile BS 0x0001: C-0-2001, ELS, point table 1, 0x0002: C-0-2002, ELS, point table 2, 0x0003: C-0-2003, ELS, point table 3, . 0x0063: C-0-2099, ELS, point table 99.
15...8	Profile type 0x0000: Rest-in-rest, inclined sinusoid, 0x0100: Rest-in-rest, polynomial 5th order, 0x0200: Rest-in-velocity, polynomial 5th order, 0x0300: Rest-in-velocity, polynomial 7th order, 0x0400: Velocity-in-rest, polynomial 5th order, 0x0500: Velocity-in-rest, polynomial 7th order, 0x0600: Constant velocity, 0x0700: Velocity-in-velocity, polynomial 5th order 0x0800: Rest-in-rest, standstill, 0x0900: Rest-in-rest, polynomial 7th order, 0x0A00: Rest-in-rest, sinusoid, 0x0B00: Rest-in-rest, Gutman sinusoid, 0x0C00: Rest-in-rest, acceleration-optimum inclined sinusoid, 0x0D00: Rest-in-rest, torque-optimum inclined sinusoid, 0x0E00: Rest-in-rest, modified acceleration trapezoid, 0x0F00: Rest-in-rest, modified sinusoid, 0x1000: Velocity-in-velocity, polynomial 7th order, 0x1100: Velocity-in-velocity, modified sinusoid, 0x2000: Motion-in-motion, polynomial 5th order, 0x2100: Motion-in-motion, polynomial 7th order, 0x4000: General motion, polynomial 5th order, 0x4100: General motion, polynomial 7th order, 0x6000: Extended motion law, velocity-limited polynomial 5th order, 0x6100: Extended motion law, overshoot-free polynomial 5th order, 0x7000: Extended motion law, velocity-limited motion (trapezoid), 0x7100: Extended motion law, velocity-limited motion (sinusoids), 0x7200: Extended motion law, jerk-limited motion (trapezoid).

A-0-3115 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3116, FlexProfile 3, list of motion step types

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines whether a Flex or standard element (fix) is used for set 3 of the operation mode "FlexProfile".

The Flex element can be considered as active step. Its motion path results at runtime by inheriting the boundary values of the neighboring step. It corrects and adapts its own path correspondingly to impede velocity jumps. In a Flex element - instead of the distance - an absolute slave axis target position to be reached and - instead of the master axis range - an absolute master axis end position to be reached can be specified (the distance and the master axis range are calculated at runtime if necessary). (The distance and the master axis range are calculated at runtime if necessary.)

The Fix motion step (STEP_FIX) is fixed and cannot be changed at runtime.

Bit	Name/function
0...7	Motion step type
	0x00: STEP_FIX,
	0x01: STEP_FLEX_REL_REL,
	0x02: STEP_FLEX_REL_ABS,
	0x03: STEP_FLEX_ABS_REL,
	0x04: STEP_FLEX_ABS_ABS,

Tab. 4-59: List of motion step types

Describing individual parameters, arranged according to types

See also Functional Description "FlexProfile with Real/Virtual Master Axis".
Structure Only selected motion laws are flex-capable.

Motion laws	Name
Polynomial 5th order	COMMON_POLY5
Polynomial 7th order	COMMON_POLY7

Tab. 4-60: Table of valid combinations for the Flex elements

A-0-3116 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x04	0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3117, FlexProfile 3, list of slave axis starting velocities

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting velocities occur in the individual motion steps for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0

Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Vel-in-rest	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-61: Table of valid combinations for initial values

A-0-3117 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3118, FlexProfile 3, list of slave axis starting accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis starting accelerations occur in the individual motion steps for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	Start_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0

Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-62: Table of valid combinations for initial values

A-0-3118 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3119, FlexProfile 3, list of slave axis starting jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This list determines which slave axis starting jerks occur in the individual motion steps for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Describing individual parameters, arranged according to types

Use	Start_Jerk
Rest-in-rest	
Linear rest	0
Simple sinusoid	Calculated automatically
Bestehorn sinusoid	Calculated automatically
Acceleration-optimum inclined sinusoid	Calculated automatically
Torque-optimum inclined sinusoid	Calculated automatically
Gutman sinusoid	Calculated automatically
Modified sinusoid	Calculated automatically
Modified acceleration trapezoid	Calculated automatically
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Modified sinusoid	Calculated automatically
Velocity-limited trapezoid	Calculated automatically
Rest-in-velocity	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Polynomial 5th order, limited velocity	Calculated automatically
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-63: Table of valid combinations for initial values

A-0-3119 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		---		
IndraDrive/ Control:		---		
HydraulicDrive/ Drive:		---		
HydraulicDrive/ Control:		---		
SercosDrive:		---		

A-0-3120, FlexProfile 3, list of slave axis end velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end velocities occur at the end in the individual motion steps for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Velocity
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0

Describing individual parameters, arranged according to types

Velocity-in-velocity	
Linear interpolation	User-defined
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Modified sinusoid	User-defined
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined
Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-64: Table of valid combinations for initial values

A-0-3120 - Attributes:	Function:	PARAMETER	Unit:	A-0-0056
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3121, FlexProfile 3, list of slave axis end accelerations

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end accelerations occur at the end in the individual motion steps for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Acceleration
Rest-in-rest	
Linear rest	0
Simple sinusoid	0
Bestehorn sinusoid	0
Acceleration-optimum inclined sinusoid	0
Torque-optimum inclined sinusoid	0
Gutman sinusoid	0
Modified sinusoid	0
Modified acceleration trapezoid	0
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	0
Polynomial 7th order	0
Modified sinusoid	0
Velocity-limited trapezoid	0
Rest-in-velocity	
Polynomial 5th order	0
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	0
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	User-defined

Describing individual parameters, arranged according to types

Polynomial 7th order	User-defined
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-65: Table of valid combinations for initial values

A-0-3121 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	-2147483647.0	2147483647.0	0.0
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3122, FlexProfile 3, list of slave axis end jerks

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis end jerks occur at the end in the individual motion steps for set 3 of the operation mode "FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

	End_Jerk
Rest-in-rest	
Linear rest	0
Simple sinusoid	Calculated automatically
Bestehorn sinusoid	Calculated automatically

Acceleration-optimum inclined sinusoid	Calculated automatically
Torque-optimum inclined sinusoid	Calculated automatically
Gutman sinusoid	Calculated automatically
Modified sinusoid	Calculated automatically
Modified acceleration trapezoid	Calculated automatically
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-velocity	
Linear interpolation	0
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Modified sinusoid	Calculated automatically
Velocity-limited trapezoid	Calculated automatically
Rest-in-velocity	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Velocity-in-rest	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Motion-in-motion	
Polynomial 5th order	Calculated automatically
Polynomial 7th order	0
Polynomial 5th order, limited velocity	Calculated automatically
Interpolation	
Acceleration-limited motion (trapezoid)	Calculated automatically
Acceleration-limited sinusoid	Calculated automatically
Jerk-limited motion	Calculated automatically

Tab. 4-66: Table of valid combinations for initial values

A-0-3122 - Attributes:

Function:	PARAMETER	Unit:	A-0-0053
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---
 IndraDrive/ Control: ---
 HydraulicDrive/ Drive: ---
 HydraulicDrive/ Control: ---
 SercosDrive: ---

A-0-3123, FlexProfile 3, list of slave axis travel velocities

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing velocities occur in the individual motion steps for set 3 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered

Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	User-defined
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-67: Table of valid combinations for limit values

A-0-3123 - Attributes:

Function:	PARAMETER	Unit:	A-0-0056
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3124, FlexProfile 3, list of slave axis travel accelerations

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing accelerations occur at the end in the individual motion steps for set 3 of the operation mode "FlexProfile".

Describing individual parameters, arranged according to types

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	User-defined
Acceleration-limited sinusoid	User-defined
Jerk-limited motion	User-defined

Tab. 4-68: Table of valid combinations for limit values

A-0-3124 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-
		Minimum value	Maximum value	Default value
Common:		-2147483647.0	2147483647.0	0.0
HydraulicDrive:				---
Parameter_is_copied_to_associated_S-/P-parameters:				
IndraDrive/ Drive:		---		
IndraDrive/ Control:		---		
HydraulicDrive/ Drive:		---		
HydraulicDrive/ Control:		---		
SercosDrive:		---		

A-0-3125, FlexProfile 3, list of slave axis travel jerks

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This list determines which slave axis traversing jerks occur at the end in the individual motion steps for set 3 of the operation mode "FlexProfile".

This setting is only supported by special motion laws.

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

Use

Rest-in-rest	
Linear rest	Not considered
Simple sinusoid	Not considered
Bestehorn sinusoid	Not considered
Acceleration-optimum inclined sinusoid	Not considered
Torque-optimum inclined sinusoid	Not considered
Gutman sinusoid	Not considered
Modified sinusoid	Not considered
Modified acceleration trapezoid	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered

Describing individual parameters, arranged according to types

Velocity-in-velocity	
Linear interpolation	Not considered
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Modified sinusoid	Not considered
Velocity-limited trapezoid	User-defined
Rest-in-velocity	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Velocity-in-rest	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Motion-in-motion	
Polynomial 5th order	Not considered
Polynomial 7th order	Not considered
Polynomial 5th order, limited velocity	Not considered
Interpolation	
Acceleration-limited motion (trapezoid)	Not considered
Acceleration-limited sinusoid	Not considered
Jerk-limited motion	User-defined

Tab. 4-69: Table of valid combinations for limit values

A-0-3125 - Attributes:	Function:	PARAMETER	Unit:	A-0-0053
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Var.data_type:	-	MinMax_check:	+
			Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3126, FlexProfile 3, list of turning point displacements

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This list determines at which point the curving behavior changes for a symmetrical motion law for set 3 of the operation mode "FlexProfile". By default, a turning point displacement of 0.5 has to be selected. This provides a turning point in the middle of the motion step.



Only selected motion laws support a turning point displacement.

Rest-in-rest	TPD
Simple sinusoid	0<TPD<1
Bestehorn sinusoid	0<TPD<1
Acceleration-optimum inclined sinusoid	0<TPD<1
Torque-optimum inclined sinusoid	0<TPD<1
Gutman sinusoid	0<TPD<1
Modified acceleration trapezoid	0<TPD<1
Polynomial 5th order	0<TPD<1
Polynomial 7th order	0<TPD<1

Tab. 4-70: Table of valid combinations for initial values

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3126 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0.0	1.0	0.0
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

Describing individual parameters, arranged according to types

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3130, FlexProfile 3, events, list of motion step assignments

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter determines which motion step the respective event applies to.
The event is only taken into consideration for the selected motion step.

A-0-3130 - Attributes:

Function: PARAMETER **Unit:** --

MLC_data_type: UINT_DEC, **PLC_data_type:** ARRAY of UINT
2BYTE_VAR

Memory: FLASH **Editability:** P0, P2, BB, PM

Var.data_type: - **MinMax_check:** +

Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	0	15	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---

IndraDrive/ Control: ---

HydraulicDrive/ Drive: ---

HydraulicDrive/ Control: ---

SercosDrive: ---

A-0-3131, FlexProfile 3, events, list of trigger modes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures triggers for events for set 3 of the operation mode "FlexProfile".

See also Parameter Description: "[A-0-3133](#), FlexProfile 3, events, list of trigger values".

Structure

Bit	Name/function
7..0	Trigger modes
	0x01: TRIGGER_CONTROLBIT_ONLY
	0x02: TRIGGER_ABS_SLAVE_REACHED
	0x03: TRIGGER_REL_SLAVE_REACHED
	0x04: TRIGGER_ABS_MASTER_REACHED
	0x05: TRIGGER_REL_MASTER_REACHED
	0x06: TRIGGER_REL_TIME_MASTER_REACHED

Tab. 4-71: List of the trigger modes

A-0-3131 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3132, FlexProfile 3, events, list of action modes

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures the actions carried out once the triggers determined in the parameters "[A-0-3131](#), FlexProfile 3, events, list of trigger modes" and "[A-0-3133](#), FlexProfile 3, events, list of trigger values" apply.

An action can set or initiate a bit in parameter "[A-0-3011](#), FlexProfile, conditions: control variables". Thus, the current motion step of the active motion sequence ends and continues with the next motion step.

The bit in parameter [A-0-3011](#) can be set:

- immediately,
- after the current motion step is completed or
- after the current motion profile is completed.

Structure

Bit	Name/function
15..0	Action modes
	16#0000, ACTION_STATUSBIT0_INSTANT
	16#0001, ACTION_STATUSBIT1_INSTANT
	16#0002, ACTION_STATUSBIT2_INSTANT
	
	16#000F, ACTION_STATUSBIT15_INSTANT
	16#0100, ACTION_STATUSBIT0_AFTERSTEP
	16#0101, ACTION_STATUSBIT1_AFTERSTEP
	16#0102, ACTION_STATUSBIT2_AFTERSTEP
	
	16#010F, ACTION_STATUSBIT15_AFTERSTEP
	16#0200, ACTION_STATUSBIT0_AFTERPROFILE
	16#0201, ACTION_STATUSBIT1_AFTERPROFILE
	16#0202, ACTION_STATUSBIT2_AFTERPROFILE
	
	16#020F, ACTION_STATUSBIT15_AFTERPROFILE
	16#0300, ACTION_STATUSBIT0_INSTANT_NEXTSTEP
	16#0301, ACTION_STATUSBIT1_INSTANT_NEXTSTEP
	16#0302, ACTION_STATUSBIT2_INSTANT_NEXTSTEP
	...
	16#030F, ACTION_STATUSBIT15_INSTANT_NEXTSTEP

Tab. 4-72: List of motion step types

A-0-3132 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
		MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFF	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

Describing individual parameters, arranged according to types

A-0-3133, FlexProfile 3, events, list of trigger values

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter configures trigger values.

Depending on the trigger mode selected in parameter "A-0-3131, FlexProfile 3, events, list of trigger modes", a value has to be specified which is subsequently checked.

A-0-3133 - Attributes:

Function: PARAMETER
MLC_data_type: DOUBLE, 8BYTE_VAR
Memory: FLASH
Var.data_type: -
Unit: --
PLC_data_type: ARRAY of LREAL
Editability: P0, P2, BB, PM
MinMax_check: +
Var.min/max_value: -

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive: ---
IndraDrive/ Control: ---
HydraulicDrive/ Drive: ---
HydraulicDrive/ Control: ---
SercosDrive: ---

A-0-3134, FlexProfile 3, events, list of trigger values, units

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the corresponding units of the list of values for parameter A-0-3133.

A-0-3134 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
			MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3136, FlexProfile 3, command: Check and apply event

	IndraDrive		HydraulicDrive		Sercos-Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters for FlexProfile 3 for plausibility and applies them internally.

Once the event parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "A-0-3137, FlexProfile 3, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3130](#), FlexProfile 3, events, list of motion step assignments,
- [A-0-3131](#), FlexProfile 3, events, list of trigger modes,
- [A-0-3132](#), FlexProfile 3, events, list of trigger modes and
- [A-0-3133](#), FlexProfile 3, events, list of trigger values.

A-0-3136 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			

Describing individual parameters, arranged according to types

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3137, FlexProfile 3, diagnostics

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function

This parameter indicates inconsistencies in the parameterized and checked profile and event set 3 of the operation mode "FlexProfile".

The motion sequence parameterized in set 3 for the operation mode "Flex-Profile" is checked for plausibility by parameter "A-0-3138, FlexProfile 3, command: Check and apply profile".

The event set parameterized in set 3 for the operation mode "FlexProfile" is checked for plausibility by parameter "A-0-3136, FlexProfile 3, command: Check and apply event".

If one of the checks yields an inconsistency, the error number and the incorrect motion step for this profile are displayed in the first two elements of this parameter. The last two elements display the error number and the incorrect event.

See Diagnostics Description: "Error in FlexProfile".

See also Functional Description "FlexProfile with Real/Virtual Master Axis".

A-0-3137 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
Memory:	RAM	Editability:	READ_ONLY
Var.data_type:	-	MinMax_check:	+
		Var.min/max_value:	-
	Minimum value	Maximum value	Default value
Common:	0	4294967295	0
HydraulicDrive:			---
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

A-0-3138, FlexProfile 3, command: Check and apply profile

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function Executing the command checks all event parameters that define the motion sequence for FlexProfile 3 for plausibility and applies them internally.

The result of the check can be queried in parameter "[A-0-3010](#), FlexProfile, status word".

A MotionProfile can only be started if it has been declared OK and free of errors.

Once the parameter for the MotionProfile is changed, a check must be reinitiated.

If a check fails, detailed information on the cause can be found in parameter "[A-0-3137](#), FlexProfile 3, diagnostics".

Use When executing the command, the following parameters must be checked:

- [A-0-3110](#), FlexProfile 3, master axis velocity,
- [A-0-3111](#), FlexProfile 3, list of master axis sources,
- [A-0-3112](#), FlexProfile 3, list of slave axis distances,
- [A-0-3113](#), FlexProfile 3, list of master axis ranges,
- [A-0-3115](#), FlexProfile 3, list of motion laws,
- [A-0-3116](#), FlexProfile 3, list of motion step types,
- [A-0-3117](#), FlexProfile 3, list of slave axis starting velocities,
- [A-0-3118](#), FlexProfile 3, list of slave axis starting accelerations,
- [A-0-3119](#), FlexProfile 3, list of slave axis starting jerks,
- [A-0-3120](#), FlexProfile 3, list of slave axis end velocities,
- [A-0-3121](#), FlexProfile 3, list of slave axis end accelerations,
- [A-0-3122](#), FlexProfile 3, list of slave axis end jerks,
- [A-0-3123](#), FlexProfile 3, list of slave axis travel velocities,
- [A-0-3124](#), FlexProfile 3, list of slave axis travel accelerations,
- [A-0-3125](#), FlexProfile 3, list of slave axis travel jerks,
- [A-0-3126](#), FlexProfile 3, list of turning point displacements (WPV).

Describing individual parameters, arranged according to types

A-0-3138 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
			MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFFFF	---
	HydraulicDrive:			---
	Parameter_is_copied_to_associated_S-/P-parameters:			
	IndraDrive/ Drive:	---		
	IndraDrive/ Control:	---		
	HydraulicDrive/ Drive:	---		
	HydraulicDrive/ Control:	---		
	SercosDrive:	---		

A-0-3139, FlexProfile 3, checksum

	IndraDrive		HydraulicDrive		Sercos- Drive	Virtual axis	Encoder axis	Link axis	Control axis
	Drive	Control	Drive	Control					
Supported:	-	+	-	+	+	+	-	-	+
Direct_access:	--	--	--	--	--	--	--	--	--
C2C_access:	--	--	--	--	--	--	--	--	--
Oscilloscope:	-	-	-	-	-	-	-	-	-
Probe:	-	-	-	-	-	-	-	-	-

Function This parameter indicates the checksum on all parameters of FlexProfile 3. It contains the following parameters:

- [A-0-3110](#), FlexProfile 3, master axis velocity,
- [A-0-3111](#), FlexProfile 3, list of master axis sources,
- [A-0-3112](#), FlexProfile 3, list of slave axis distances,
- [A-0-3113](#), FlexProfile 3, list of master axis ranges,
- [A-0-3115](#), FlexProfile 3, list of motion laws,
- [A-0-3116](#), FlexProfile 3, list of motion step types,
- [A-0-3117](#), FlexProfile 3, list of slave axis starting velocities,
- [A-0-3118](#), FlexProfile 3, list of slave axis starting accelerations,
- [A-0-3119](#), FlexProfile 3, list of slave axis starting jerks,
- [A-0-3120](#), FlexProfile 3, list of slave axis end velocities,
- [A-0-3121](#), FlexProfile 3, list of slave axis end accelerations,
- [A-0-3122](#), FlexProfile 3, list of slave axis end jerks,
- [A-0-3123](#), FlexProfile 3, list of slave axis travel velocities,
- [A-0-3124](#), FlexProfile 3, list of slave axis travel accelerations,
- [A-0-3125](#), FlexProfile 3, list of slave axis travel jerks,
- [A-0-3126](#), FlexProfile 3, list of turning point displacements (WPV),
- [A-0-3130](#), FlexProfile 3, events, list of motion step assignments,

- [A-0-3131](#), FlexProfile 3, events, list of trigger modes,
- [A-0-3132](#), FlexProfile 3, events, list of trigger modes and
- [A-0-3133](#), FlexProfile 3, events, list of trigger values.

A-0-3139 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	READ_ONLY
		MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---
HydraulicDrive:			---

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	---
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	---
HydraulicDrive/ Control:	---
SercosDrive:	---

4.2 Control parameters (C-parameters)

4.2.1 Control parameters, general information

The following parameters exist only once for each control:

- IndraLogic XLC L25, L45, L65 with onboard Sercos III bus,
- IndraMotion MLC L25, L45, L65, L75
- IndraMotion MLC XM2*

Only the parameters required for the respective control types are created.



The C-parameters from [C-0-0300](#) to C-0-0396 are used to implement the programmable limit switch function in the MLC 03VRS and MLC 04VRS.

Due to reasons of compatibility, they are also available for the IndraMotion MLC L25, L45, L65.

Use the N-parameters.

4.2.2 C-0-0000 - C-0-0499

C-0-0000, Dummy, C-parameter

Function A-parameter serves as a placeholder; it does not have a function. The parameter can be written and read cyclically.

Use Measure dead time for writing and reading.

C-0-0000 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

Describing individual parameters, arranged according to types

Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0001, Language selection

Function In controls of the type IndraLogic XLC/IndraMotion MLC, all parameter names, units, diagnostics and menu entries of the display are available in several languages.

The language in which the texts are issued is specified via this parameter.

- 0: German,
- 1: English,
- 99: User-defined (parsing and transfer of texts from the files specified in [C-0-0002](#), [C-0-0003](#) and [C-0-0004](#) as language 3).
- 100: Creating the XML files based on the current language set.

C-0-0001 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	100	0

C-0-0002, Name of parameter file

Function Controls of the type IndraLogic XLC/IndraMotion MLC can output parameter names and units in a user-defined language (see [C-0-0001](#)).

The name of the XML file in which parameter names and units are saved is specified by this parameter.

C-0-0002 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFF	"Parameter_EN.xml"

C-0-0003, Name of diagnostic file

Function Controls of the type IndraLogic XLC/IndraMotion MLC can output diagnostics in a user-defined language (see [C-0-0001](#)).

The name of the XML file in which the diagnostics are saved is specified by this parameter.

C-0-0003 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Diagnoses_EN.xml"

C-0-0004, Name of menu file

Function Controls of the type IndraLogic XLC/IndraMotion MLC can show menu items of the display in a user-defined language (see [C-0-0001](#)).

The name of the XML file in which the menu entries are saved is specified by this parameter.

C-0-0004 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Menue_EN.xml"

C-0-0009, Osci: list of all C-parameters that can be oscilloscoped

Function This parameter contains the list of all C-parameters which can be oscilloscoped.

C-0-0009 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0010, Version number, hardware

Function This parameter contains the control's hardware version.

C-0-0010 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"HW_VER- SION_STRING"

C-0-0011, Version number, PLC firmware

Function This parameter contains the firmware version of the PLC card.
Example: "IL-MLC-RUN-01T05.125" or "IL-MLC-RUN 01V07.00"

C-0-0011 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-

Describing individual parameters, arranged according to types

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"PLCFW_VERSION_STRING"

C-0-0012, Version number, firmware

Function This parameter contains the control's firmware version.



Since various firmware versions can be used with an interface version, please specify this version in case of an error.

C-0-0012 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"FW_VERSION_STRING"

C-0-0013, Version number, BSP

Function This parameter contains the version of the control's board support packages (BSP).

C-0-0013 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"BSP_VERSION_STRING"

C-0-0014, Version number, MLPI Server Core

Function This parameter contains the version of the MLPI Server Core.

Example:

1.0.0.0 Build 42

Meaning:

Major:	Major release, changes of interfaces, behavior or significant changes of code may occurs.
Minor:	Minor release, new features or a significant set of bugfixes may occurs.
Bugfix:	Bugfixes of existing features.
Patch:	Patch of an existing release.
Build:	Build number.

C-0-0014 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"MLPI_SERVER_CORE_VERSION_STRING"

C-0-0017, Reserved for internal use

Function This parameter is only intended for internal use.

C-0-0017 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	","

C-0-0018, Maximum number of simultaneous connected users

Function This parameter indicates the maximum number of users that can simultaneously connect to the control with IndraWorks.

C-0-0018 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---

C-0-0020, Hardware, configuration

Function The control displays its internal hardware configuration in this parameter.
This parameter is only intended for internal use.

C-0-0020 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE_VAR	PLC_data_type:	ARRAY of WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x0000	0xFFFF	0x0000

C-0-0021, Hardware, details

Function This parameter displays detailed information on the used hardware:
Example:

Describing individual parameters, arranged according to types

"HWVersion = 0x0; FPGAVersion = 0x104; BlpVerBasis = 0x66012D;
BlpNrBasis = 0x3FC83B2C;"

C-0-0021 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"HW_DE- TAILS_STRING"

C-0-0023, System status**Function
Structure**

This parameter displays the current system status.

Bit	Name/function
3..0	System status 0 0 0 0: undefined 0 0 0 1: Win32 instance of IndraMotion 0 0 1 0: VxWorks instance of IndraMotion 0 1 0 0: VxWin instance of IndraMotion 1 0 0 0: WindowsCE instance of IndraMotion
7..4	Reserved
10..8	PLC status 000: Undefined, 001: PLC in STOP 010: PLC in RUN 100: PLC in READY
15..11	Reserved
16	Download 0: Not possible, since (PLC in stop and Sercos in phase 0) not met 1: Possible, since PLC in stop and Sercos in phase 0
17	Mode switching 0: Not enabled 1: Active, (e.g. when switching from the parameterization mode to the operating mode). The bit remains active after the mode was successfully switched or closed with errors)
18	Reserved
19	Active axes 0: No active axis 1: There is at least one active axis, i.e. real axes have to be in "Power on" or virtual axes may not be in "Standstill". Encoder axes do not have any effect

Bit	Name/function
20	Temperature warning 0: No temperature warning 1: Overtemperature warning, see also diagnostics "E0200002, Temperature warning".
21	Fan 0: Fan off, if installed 1: Fan on, if installed Note: This status applies only to CML controls. "0" is displayed for all other controls.
22	System mode "Debugging" 0: System mode "Debugging" of the control is not active 1: System mode "Debugging" of the control is active. In the OEM workbench, the system mode debugging was enabled for VxWorks 6.9 targets via an SSH connection and for VxWorks 6.3 targets via a telnet connection using the command "enableTargetDebugging()"
23	Booting 0: Control is booting; interaction with control is not yet possible (e.g. communication) 1: Control completed booting, interaction possible (e.g. communication)
24	Messages 0: No message available 1: At least one message occurred since the last "C-0-1030, command: Clear all control errors"
25	Warning 0: No warning 1: At least one warning occurred since the last "C-0-1030, command: Clear all control errors"
26	Error 0: There is no error 1: At least one error occurred since the last "C-0-1030, command: Clear all control errors"
31..27	Control mode 00000: Undefined 00001: Control mode P0 is active 00100: Control mode P2 is active 01000: Control mode P3 is active 10000: Control mode P4 is active

C-0-0023 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0024, Internal system status

Function This parameter is only intended for internal use.

C-0-0024 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0030, Control name

Function A character string can be entered in this parameter, which contains the type or the designation of an application, for example.

However, this parameter does not influence any IndraMotion function.

C-0-0030 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x50	"Control_name"

C-0-0031, Control address

Function An address can be assigned to the control with this parameter. For example, the control is assigned to the control link using this address.

Control link (bit 0 is set in C-0-0701)

- 0: Control is not configured for a link,
- 1..64: Control participates in the link with this address.

Use **Control link (bit 0 is set in C-0-0701)**

The parameter is displayed in the diagnostics dialog for the "Cross communication" function module and can be written or modified in the configuration dialog.

If the link master axes have been configured (C-0-0703), a valid control address must be assigned.

This control address is checked when switching into operating mode.

In the Sercos II link (CFL01.1-Q2), the maximum usable control address depends on the cycle time of the control link.

Link cycle time	Maximum control address
2 ms	16
4 ms	32
8 ms	64

Tab. 4-73: Maximum control address



In the C2C link (Sercos III with CFL01.1-R3), all valid control addresses can be specified irrespective of the cycle time of the control link.



The control address can also (additionally to the control link) be used for a **TCP/IP routing** for all connected Sercos devices.

Refer to the chapter "IP Communication" in

- **IndraMotion MLC 15VRS Functional Description**

DOK-XLCMLC-FUNC****V15-APRS-EN-P, R911393305

C-0-0031 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	64	0

C-0-0032, Serial number of control

Function This parameter contains the control's serial number. The number is unique for each control.

The parameter does not influence the control's function.

C-0-0032 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Serial number"

C-0-0033, Project identification number

Function IndraWorks generates a unique character string in this parameter for the global identification of the project. The character string is unique for each project.

This parameter is only intended for internal use.

C-0-0033 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Project ID number"

C-0-0034, Client, access locking number

Function This parameter is designated for the client access locking number.

Describing individual parameters, arranged according to types

It contents indicate to which user computer the control is currently assigned.
"locked to COMPUTER-123456".

C-0-0034 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Client Access Locking Number"

C-0-0035, C2C, identification number

Function IndraWorks generates a unique character string in this parameter for the global identification of a link ring. The character string is unique for each link ring.

This parameter is only intended for internal use.

C-0-0035 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Link ring ID number"

C-0-0036, Control configuration

Function This parameter configures the control behavior.
Individual bits of this parameter should only be used in coordination with Bosch Rexroth.

Structure

Bit	Name/function
0	0: A-parameters are synchronized with the corresponding S/P-parameters in the drive when switching from Phase2 to Phase4 1: No synchronization of the A-parameters to S/P-parameters in the drive. The switching period from Phase2 to Phase4 is reduced
1	0: Updating the shared memory structure (ProbeData_SM) is disabled. 1: Updating the shared memory structure (ProbeData_SM) enabled.
2	0: Parameters access to S-/P-parameters of a Sercos III device via the IP channel of Sercos III. If this is not possible, parameter accesses are made using the service channel 1: Parameters are accessed to S/P-parameters of a Sercos III device via the service channel
3	0: Errors occurring while reading the Motion command status are not written to the diagnostic log 1: Errors occurring while reading the Motion command status are written to the diagnostic log

Bit	Name/function
4	reserved
5	A bit change is only applied after control restart. 0: Sercos III IP channel is active for the master communication 1: Sercos III IP channel is not active for the master communication
6	A bit change is only applied after control restart. 0: Sercos III IP channel is active for the cross link 1: Sercos III IP channel is not active for the cross link
7..8	reserved
9	A bit change is only applied after control restart. 0: The "Interrupt" mode is used for C2C slaves 1: The "Polling" mode is used for C2C slaves
10	reserved
11	Enables the check (incl. bug fix) of the file system of the OEM partition upon each control startup. 0: It is not checked upon startup 1: It is checked upon each startup
12	Locks the loading of the default procedure of the control (for the command C-0-1019 and via the BOOTSTOP menu). Additionally, deleting PLC applications and PLC configuration is blocked (e.g. via the BOOTSTOP menu). 0: Booting, PLC applications and PLC configuration can be deleted 1: Booting, PLC applications and PLC configuration cannot be deleted
13	For the CML series, it locks the execution of actions via display keys and for the XM/PR series via operation mode switches. This impedes direct access at the control. The operating menu of the control cannot be reached anymore. The applications can only be started/stopped and reset via the user interface. 0: The actions can be executed via the operating medium of the control 1: The actions cannot be executed via the operating medium of the control
14..15	reserved
16	Locks the use of the SIS protocols for parameter access of Sercos devices. 0: SIS protocol can be used for parameter access to Sercos devices 1: SIS protocol is not used for parameter access to Sercos devices
17	Locks the use of the SIP protocols for parameter access of Sercos devices. 0: SIP protocol can be used for parameter access to Sercos devices 1: SIP protocol is not used for parameter access to Sercos devices
18..22	reserved

Describing individual parameters, arranged according to types

Bit	Name/function
23	Configures the distribution of the Motion calculation on multicore controls. 0: Only one kernel only is used to calculate the Motion 1: All available kernels of the controls are used to calculate the Motion Please note: The meaning of the bit changed from 14V22 patch 2 to 14V22 patch 4!
24	Enables recording of Motion kernel activity. 0: Recording of Motion kernel activity disabled. 1: Recording of Motion kernel activity enabled. Enabling the recording extends the Motion kernel runtime
25	Switches off the parallel phase switching. 0: Parallel phase switching enabled 1: Parallel phase switching disabled
26	Switches off the parallel import/export. 0: Parallel import/export enabled 1: Parallel import/export disabled
27..28	reserved
29	Enables recording of list parameters. 0: Recording list parameters not possible 1: Recording list parameters possible
30	0: No recording of the runtime of the parameter accesses to the S-/P-parameters of a controller axis 1: Recording of the runtime of the parameter accesses to the S-/P-parameters of a controller axis
31	0: Stops the recording of the internal runtime of Motion commands in the firmware and saves the result in the "PerfLog.csv" file on the CF card of the control 1: Starts the recording of the internal runtime of Motion commands in the firmware

C-0-0036 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFFFFFF	0x00800040

C-0-0037, Path names of partitions

Function All file system partitions of the control that may be accessed, are listed. The partitions SYSTEM, OEM and USER are output separately. If other partitions are available, they are output under "ADDITIONAL". This refers to partitions of an external SD card or a USB stick for example.

Use **Example 1:**

For an XM21, an external SD card with a partition (XG10 interface) and a USB mass storage device with a partition (XF30 interface) are plugged in additionally to the internal memory.

SYSTEM:/SYSTEM/;OEM:/OEM/;USER:/USER/;ADDITIONAL:/REMOVABLE_SD_A/;REMOVABLE_USB_A/;

Example 2:

A CML65 with plugged-in CF card.

SYSTEM:/ata0/;OEM:/ata0a/;USER:/ata0b/;

C-0-0037 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Path names of partitions"

C-0-0039, sercos local and function module bus, actual configuration

Function The parameter contains the current configuration of the Sercos modules at the local module bus or function module bus.

Structure It is stored as character string and structured as follows:

Entry	Meaning	Prefix	Possible entries
1	Slot address at the PCI bus (that is the internal address for onboard modules or DIP switches on the function modules)	A	CML series: - Onboard modules: 5, 6 (f.l.t.r.) - Function modules: 1 ... 4
			XM, VP and PR series: - Onboard modules: 11 ... 99, 1 (internal) - Function modules and plug-in cards: 101 ... 199
2	Type ID of onboard or function module	F	CML series: - Onboard R3 - CFL01.1-R3 - CFL01.1-Q2
			XM series: - Onboard R3 - XFE01.1-FB-01
			VP and PR series: PFC01.1-FB-01

Describing individual parameters, arranged according to types

Entry	Meaning	Prefix	Possible entries
3	Function mode (that means for which function the module is intended or configured)	P	0x0000.0000: Sercos module configured as master communication 0x0000.0001: Sercos module configured as cross link 0x0000.0010: Sercos module configured as standard Ethernet interface 0x0000.0021: Sercos module is configured as EtherCAT master on port 1 0x0000.0030: Sercos module is configured for an EtherNet/IP scanner 0x0000.0040: Sercos module is configured for a Profinet I/O controller 0xFFFF.FFFF: Module not (yet) configured
4	Configuration of the command/actual comparison	C	0x00000000: Command/actual comparison is active 0x00000001: Command/actual comparison is inactive (currently not available)
5	Module status	S	0x0000.0000: Module is active 0x0000.0002: Module is inactive

Tab. 4-74: *Current configuration of the Sercos modules available at the local and function bus modules*

Use

Example

The control is provided with the following modules:

- Sercos III onboard module as "master communication" on address 6
- Sercos II function module as "cross link" on address 1
- a disabled Sercos II function module without a defined function mode on address 2

A6,FOnboard-R3,P0x00000000,C0x00000000,S0x00000000,
A1,FCFL01.1-Q2,P0x00000001,C0x00000000,S0x00000000,
A2,FCFL01.1-Q2,P0xFFFFFFFF,C0x00000000,S0x00000002

C-0-0039 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0040, sercos local and function module bus, command configuration

Function The parameter contains the command configuration of the Sercos modules at the local module bus or function module bus.

Structure The parameter is stored as character string and structured as follows:

Entry	Meaning	Prefix	Possible entries
1	Slot address at the PCI bus (that is the internal address for onboard modules or DIP switches on the function modules)	A	CML series: - Onboard modules: 5, 6 (f.l.t.r.) - Function modules: 1 ... 4 XM, VP and PR series: - Onboard modules: 11 ... 99, 1 (internal) - Function modules and plug-in cards: 101 ... 199
2	Type ID of onboard or function module	F	CML series: - Onboard R3 - CFL01.1-R3 - CFL01.1-Q2 XM series: - Onboard R3 - XFE01.1-FB-01 VP and PR series: - PFC01.1-FB-01

Describing individual parameters, arranged according to types

Entry	Meaning	Prefix	Possible entries
3	Function mode (that means for which function the module is intended or configured)	P	0x0000.0000: Sercos module configured as master communication 0x0000.0001: Sercos module configured as cross link 0x0000.0010: Sercos module configured as standard Ethernet interface 0x0000.0021: Sercos module is configured as EtherCAT master on port 1 0x0000.0030: Sercos module is configured for an EtherNet/IP scanner 0x0000.0040: Sercos module is configured for a Profinet I/O controller 0xFFFF.FFFF: Module not (yet) configured
4	Configuration of the command/actual comparison	C	0x00000000: Command/actual comparison is active 0x00000001: Command/actual comparison is inactive (currently not available)
5	Module status	S	0x0000.0000: Module is active 0x0000.0002: Module is inactive

Tab. 4-75: Command configuration of the Sercos modules available at the local and at the function module bus

Use Example:

The control is provided with the following modules:

- Sercos III onboard module as "master communication" on address 6
- Sercos II function module as "cross communication" on address 1
- a disabled Sercos II function module without a defined function mode on address 2

A6,FOnboard-R3,P0x00000000,C0x00000000,S0x00000000,
A1,FCFL01.1-Q2,P0x00000001,C0x00000000,S0x00000000,
A2,FCFL01.1-Q2,P0xFFFFFFFF,C0x00000000,S0x00000002

Slot address at the PCI bus, type ID

The addresses of the function modules derive from their DIP switch configuration. The addresses of the onboard modules are fixedly defined. The addressing of their slots starts from left to right with the address 5. Controls with only one onboard interface do not use the first onboard slot. Due to this reason, the existing onboard module gets address 6.

The system supports the Sercos modules listed in the table.

Function mode, module status:

If two or multiple **active** Sercos modules are listed in the command configuration, different functions modes have to be specified for them. The function mode of a module is limited as follows with regard to the configuration options:

- The function mode "master communication" can be configured on a Sercos III onboard module or on a Sercos II function module.
- The function mode "Cross link" can be configured on a Sercos III function module ("cross communication C2C") or on a Sercos II function module.



After changing the current function mode, activating or deactivating a module or removing or adding a new module in this parameter, the control **has to be** switched off and on again. The engineering environment IndraWorks points out this circumstance before writing the new command configuration.

After write-access, the control generates the warning "Changed functionality of the Sercos FM restart" (E0200009). This ensures that if the command configuration is modified using an interface other than IndraWorks, it is informed about a required restart.

Command/actual comparison:

While the connection is established via IndraWorks, a comparison between command and actual value (see also [C-0-0039](#)) is carried out. This fails if function modules and onboard modules that are physically not present are configured. However, function modules may be physically present that are not supported in the command configuration. Deactivating the command/actual comparison is currently not possible.

Resetting to state of delivery:



After deleting the NVRAM, the configuration is reset to the state of delivery.

- First Sercos module: "Master communication"
- Second Sercos module: "Cross communication"
- Other Sercos module(s): Not configured and deactivated

Counting the Sercos modules starts at the onboard modules and then the function modules using addressing via DIP switch.

Due to a changed configuration, unidentifiable errors can occur during startup, e.g. "Sercos ring not closed" or "Axis configuration not supported". Thus, the cross communication ring has to be opened before startup.

Describing individual parameters, arranged according to types

C-0-0040 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

C-0-0041, Local and function module bus, actual configuration

Function Upon control startup, the addresses and types of all modules connected at the local module bus and function module bus are determined and stored in this parameter.

Structure The parameter is stored as character string and structured as follows:

Entry	Meaning	Prefix	Possible entries
1	Slot address at the PCI bus (that is the internal address for onboard modules or DIP switches on the function modules)	SlotNbr =	CML series: - Onboard modules: 5, 6 (f.l.t.r.), 254 (internal) - Function modules: 1 ... 4 XM, VP and PR series: - Onboard modules: 11 ... 99, 1 (internal) - Function modules and plug-in cards: 101 ... 199
2	Type ID of onboard or function module	TypeCode =	CML series: Onboard-NN, onboard-TP, onboard-R3, onboard-Y1, CFL01.1-Y1, CFL01.1-N1, CFL01.1-R3, CFL01.1-Q2, CFL01.1-V1, CFL01.1-P1, CFL01.1-E2, CFL01.1-F1, CFL01.1-Tx, CFL01.1-TP, CFL01.1-TD, CFL01.1-TC XM series: Onboard-NN, Onboard-S20, Onboard-R3, Onboard-TN, XFE01.1-XX-xx (XX: CX, FB, IO, SY, M0; xx: 00-99) VP and PR series: Onboard-NN, PFC01.1-XX-xx (XX: CX, FB, IO, SY, M0; xx: 00-99)
3	Function mode (that means for which function the module is intended or configured)	FuncMode =	0x0000.0000: Sercos module configured as master communication 0x0000.0001: Sercos module configured as cross link 0x00000002: Module is a fixedly defined interface 0xFFFF.FFFF: Module not (yet) configured
4	Module status	Status =	0x0000.0000: Module is active 0x0000.0002: Module is inactive

Entry	Meaning	Prefix	Possible entries
5	Serial number of the module or, for on-board modules, of the device	SN =	- Serial number - Zero or "---" if not available
6	Material index number of the module or, for onboard modules, of the device	MaterialIndexNo =	- Material index number - Zero or "---" if not available
7	Part number of the module or, for on-board modules, of the device	PartNo =	- Part number - Zero or "---" if not available

Tab. 4-76: Local and function module bus, actual configuration

Use Example:

The control is provided with an onboard SRAM on address 254 and the following modules:

- an NextX onboard module (ETH, Profibus) on address 5
- a Sercos III onboard module (Sercos) as "master communication" on address 6
- a Sercos III function module as "cross link (C2C)" on address 1
- a disabled Sercos II function module without a defined function mode on address 2
- a Fast I/O function module on address 3
- a Profibus function module on address 4

SlotNbr = 254; TypeCode = Onboard-Y1; FuncMode = 0x00000002; Status = 0x00000000; SN = 0005660459; MaterialIndexNo = 300; PartNo = R911170899,

SlotNbr = 6; TypeCode = Onboard-R3; FuncMode = 0x00000000; Status = 0x00000000; SN = ---; MaterialIndexNo = 300; PartNo = R911170899,

SlotNbr = 1; TypeCode = CFL01.1-R3; FuncMode = 0x00000001; Status = 0x00000000; SN = 005461491; MaterialIndexNo = 103; PartNo = R911170008,

SlotNbr = 2; TypeCode = CFL01.1-Q2; FuncMode = 0xFFFFFFFF; Status = 0x00000002; SN = not set; MaterialIndexNo = 101; PartNo = R911170009,

SlotNbr = 3; TypeCode = CFL01.1-E2; FuncMode = 0x00000002; Status = 0x00000000; SN = not set; MaterialIndexNo = 100; PartNo = R911170365,

SlotNbr = 4; TypeCode = CFL01.1-P1; FuncMode = 0x00000002; Status = 0x00000000; SN = 006338144; MaterialIndexNo = 106; PartNo = R911170005,

SlotNbr = 5; TypeCode = Onboard-TP; FuncMode = 0x00000002; Status = 0x00000000; SN = ---; MaterialIndexNo = --- PartNo = ---



The function module with the type code "CFL01.1-Tx" is an un-configured netX function module. The function module can apply the following type codes after a configuration in the PLC: "CFL01.1-TP" (Profibus DP), "CFL01.1-TD" (DeviceNet), "CFL01.1-TC" (CANopen). The RT Ethernet interface is freely configurable (Profinet I/O, EtherNet/IP, TCP/IP). During the module configuration, additional type code information (e.g. serial number) is supplemented.

Describing individual parameters, arranged according to types

C-0-0041 - Attributes:			
Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Current Function Module Config"

C-0-0050, System time

Function This parameter includes the hexadecimal-coded control system time.

The system time is a 64 bit value. The first list element contains the lower 32 bits and the second element contains the upper 32 bits. This number is the amount of 100 nanosecond intervals passed since 1st of January 1601.

The value "0x1C984660 0x01BF5458" represents the date "1/1/2000, 12:00:00" in UTC (Coordinated Universal Time), for example.



If multiple controls are operated in the link, the slave controls automatically apply the system time of the master.

The times of the slaves cannot be described in this case.



The system time for the control variant IndraMotion MLC VPB40 is only managed via the parallelly running Windows operating system. The control cannot edit the time. Thus, the time cannot be set via the parameter C-0-0050. Either set the Windows system manually in the device or synchronize this system time via an NTP server (Network Time Protocol).

C-0-0050 - Attributes:			
Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFFFFFF	0x00

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	P-0-0197, MPx04
IndraDrive/ Control:	---
HydraulicDrive/ Drive:	P-0-0197, HydraulicDrive analog MPx04
HydraulicDrive/ Control:	---
SercosDrive:	---

C-0-0051, Operating hour counter

Function This parameter contains the control's operating time in industrial minutes:
e.g. 45 minutes = 0.75 h.

C-0-0051 - Attributes:	Function:	PARAMETER	Unit:	h
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFFFFFFFF	Default value 0x00

C-0-0052, Operating hour counter, fan

Function This parameter contains the fan's operating time in industrial minutes:
e.g. 45 minutes = 0.75 h.



This parameter applies only to CML controls. "0" is displayed for all other controls.

C-0-0052 - Attributes:	Function:	PARAMETER	Unit:	h
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

C-0-0060, Switch-on delay time

Function The control's switch-on procedure is delayed by the time set here.

C-0-0060 - Attributes:	Function:	PARAMETER	Unit:	ms
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0	Maximum value 50000	Default value 0

C-0-0063, Scaling type for temperature data of the control

Function This parameter is used to set the unit of the control's temperature data in °C (Celsius) or in °F (Fahrenheit).

The display is show values in precisely 0.5 degree increments.

Structure

Bit	Name/function
0	Temperature data in 0: degrees Celsius (°C), 1: Fahrenheit (F).
15..1	Reserved

C-0-0063 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	NVRAM	Editability:	P2, BB

Describing individual parameters, arranged according to types

Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x00

C-0-0070, Control temperature

Function This parameter contains the current temperature, which is measured by a sensor in the control. The values are displayed with the first decimal place.

The unit of "C-0-0070" depends on the scaling set.

See also Parameter Description "C-0-0063, Scaling type for temperature data of the control".

C-0-0070 - Attributes:	Function:	PARAMETER	Unit:	C-0-0063
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

C-0-0071, Maximum control temperature

Function This parameter contains the maximum measured temperature of the control since it was last switched on. The values are displayed with the first decimal place.

Its unit depends on the scaling set (C-0-0063, Scaling type for temperature data of the control).

C-0-0071 - Attributes:	Function:	PARAMETER	Unit:	C-0-0063
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0.0

C-0-0080, User-defined decimal number

Function A user-defined decimal number can be entered in this parameter.

This parameter does not affect the control's function.

C-0-0080 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0.0

C-0-0081, User-defined text

Function A user-defined text can be entered in this parameter.
This parameter does not influence the control's function.

C-0-0081 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFF	"User defined Text"

C-0-0110, List of all C-parameters

Function This list includes all C-parameters. The entry is made in ID number format.
The entries are sorted according to meaning and how they related to each other and not according to identity number or alphabetically.
C-parameters are stored in the order of these entries.

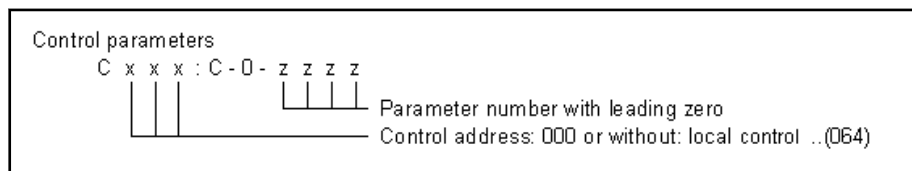


Fig. 4-22: Structure of a C-parameter

Examples:

C000: C-0-0023 - local control; parameter C-0-0023

or

C-0-0023 - local control; parameter C-0-0023.

C-0-0110 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x200000000	0x200000FFF	---

C-0-0111, List of all invalid C-parameters

Function This list displays all invalid C-parameters in the result

- of a checksum test, e.g. after a firmware update, or
- a plausibility test, e.g. in the result of an illegal operation mode.

The entry is made in ID number format.

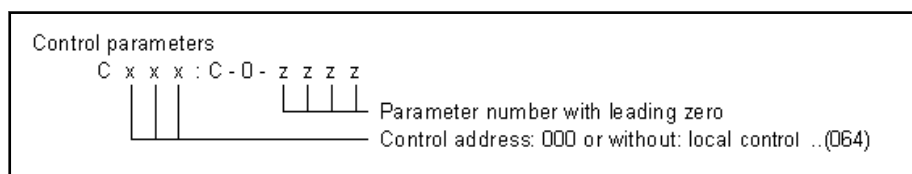


Fig. 4-23: Structure of a C-parameter

Describing individual parameters, arranged according to types

Examples:

C000: C-0-0023 - local control; parameter C-0-0023

or

C-0-0023 - local control; parameter C-0-0023.

C-0-0111 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x200000000	Maximum value 0x200000FFF	Default value ---

C-0-0112, Checksum of all C-parameters

Function When reading this parameter, the checksum on all parameter values is formed and its ID numbers are listed in parameter "C-0-0113, IDN list of the C checksum parameter".

C-0-0112 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

C-0-0113, IDN list of checksum C-parameters

Function The parameter's ident numbers, whose checksum is to be generated are entered in this parameter. The checksum generation is triggered when the "C-0-0112, Checksum of all C-parameters" is read out.

The parameter is empty by default.

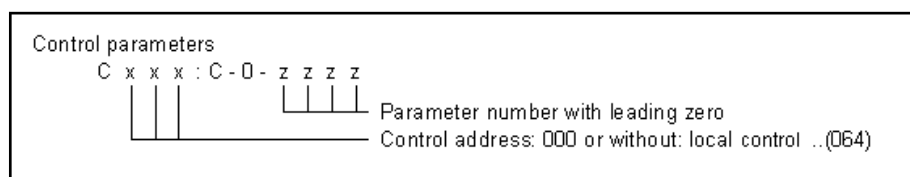


Fig. 4-24: Structure of a C-parameter

Examples:

C000: C-0-0023 - local control; parameter C-0-0023

or

C-0-0023 - local control; parameter C-0-0023.

C-0-0113 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	4095	---

C-0-0114, IDN list of import errors

Function If a parameter cannot be written when the import command (C-0-1011) is executed, it is listed in this parameter.

C-0-0114 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	NVRAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	4095	0

C-0-0120, Maximum number of controls

Function This parameter indicates the maximum number of the controls in the cross link.

C-0-0120 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0121, Maximum number of axes

Function This parameter indicates the maximum number of axes.

C-0-0121 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0122, Maximum number of axes of a producer

Function This parameter indicates the maximum number of the axes, which can set a producer in the cross link.

C-0-0122 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0123, Maximum number of kinematics

Function This parameter indicates the maximum number of kinematics.

C-0-0123 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0124, Maximum number of touch probes

Function This parameter indicates the maximum number of touch probes.

C-0-0124 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0125, Maximum number of programmable limit switches

Function This parameter indicates the maximum number of programmable limit switches.

C-0-0125 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0126, Maximum number of oscilloscope channels

Function This parameter indicates the maximum number of oscilloscope channels.

C-0-0126 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0140, Minimum logic axis number

Function This parameter indicates the smallest logical axis number.

C-0-0140 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0141, Maximum logic axis number

Function This parameter indicates the largest logical axis number.

C-0-0141 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0200, Engineering, IP address

Function This parameter is used to specify the control's IP address for the Ethernet interface.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0200 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFF	"192.168.001.001"

C-0-0201, Engineering, subnet mask

Function This parameter is used to specify the control's subnet mask for the Ethernet interface.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0201 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFF	"255.255.255.0"

Describing individual parameters, arranged according to types

C-0-0202, Engineering, standard gateway

Function This parameter is used to specify the control's standard gateway IP address for the Ethernet interface.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0202 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "192.168.001.001"

C-0-0203, Engineering, user name

Function The name of the current user can be entered in this parameter.

This parameter does not influence the control's function.

C-0-0203 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0205, Engineering, MAC address

Function This parameter indicates the control's MAC address for the Ethernet interface. For the format, see below:

· 00:00:00:00:00:00.

C-0-0205 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0206, TCP, time to live

Function This parameter is used to specify the TCP TimeToLive time.

This is a header field in the Internet protocol (IP) that specifies which delay time a packet is allowed before it is rejected or discarded.

C-0-0206 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	1024	32

C-0-0207, UDP, ports

Function This parameter contains the list of UDP port numbers dealing with cyclic communication.

C-0-0207 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
	Memory:	RAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	65535	---

C-0-0208, TCP, port for acyclic channels

Function This parameter specifies the TCP port numbers for acyclic communication. A client connects to this parameter to establish communication.

C-0-0208 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	65535	5003

C-0-0209, Sender timeout

Function This parameter specifies the waiting time for sending an Ethernet message to an equivalent control.

C-0-0209 - Attributes:	Function:	PARAMETER	Unit:	ms
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	65535	3000

C-0-0210, TCP, max. number of connection

Function This parameter specifies the maximum number of connections, which are allowed for the TCP port numbers.

C-0-0210 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	1	32	15

C-0-0211, Reserved

Function This parameter is only intended for internal use.

C-0-0211 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0212, Drive server, configuration

Function This parameter organizes the drive server configuration for the offline Windows instance.

The client, which is controlled by the WIN-MLC through configuration information, can add, modify and deleted a drive server instance.

The data format below is used:

"N,P,I", with:

N - drive number 1..99.

P - TCP/IP port address.

I - IP address in the dot format.

Use A current drive server configuration is represented in the form of a common character chain.

For two drive servers, it could be called as follows:

"1,5004,127.0.0.1,2,5005,127.0.0.1"

C-0-0212 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0216, Engineering, IP address, actual configuration

Function The Ethernet interface's current IP address is displayed in this parameter. If the interface is not assigned an IP address, 0.0.0.0 is displayed.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0216 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-

Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0xFF	Default value "0.0.0.0"

C-0-0217, Engineering, subnet mask, actual configuration

Function The Ethernet interface's current subnet mask is displayed in this parameter. If the interface is not assigned a subnet mask, 0.0.0.0 is displayed.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0217 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"255.255.255.0"

C-0-0218, List of existing network interfaces

Function This parameter includes the names of the existing network interfaces. The interfaces are separated by commas.

Interface names:

Interface name	Description
fei,0	Communication interface Engineering + HMI X7E3 (CML25 hardware) X7E5 (CML45/65 hardware)
tcei,0	XF5 communication interface Engineering + HMI (for XM2x hardware)
emac,1	XF5 communication interface Engineering + HMI (for XM1x hardware)
gei,0	Communication interface Engineering + HMI X7E5 (CML75 hardware) XF5 (XM4x hardware) XETH2 (VPx hardware)
usbEnd,0	XF31 USB communication interface Engineering (for XM hardware)
vnet,0	Virtual network adapter for RealTimeHypervisor (only VPx hardware)
sIII,0	Sercos III master communication X7E1/2 (CML hardware) XF1/2 (XM hardware) XF01/02 (VPx hardware extension module)

Describing individual parameters, arranged according to types

sIII,1	Sercos III C2C X7S1/2 (CML hardware extension module) XF3/4 (XM2x hardware extension module)
netX,0..4	netX RT-Ethernet communication interface X7E1/2 (CML25 hardware) X7E3/4 (CML45/65/75 hardware) XF3/4 (XM4x hardware) X7E1/2 (CML hardware extension module) XF40/41 (XM/VPx hardware extension module)
mirror,0	Bridge

This is a read-only parameter. Only interfaces existing in the current configuration are displayed.

C-0-0218 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFF	---

C-0-0219, Status of network configuration

Function This 32-bit parameter displays in which subnet of the IP network changes were made bit by bit.

Only changes that are still invalid are displayed.

The command [C-0-1023](#) resets the parameters, since all changes are valid.

Bit	Description of the interfaces for which changes were made.
0	sercos III master communication
1	sercos III C2C
2	netX
3	Bridge
4..30	reserved
31	Other network interfaces

Tab. 4-77: Status of the interfaces

Example:

Changes were made for the sercos III control communication and the sercos III C2C interface

"0000 0000 0000 0000 0000 0000 0000 0011"

C-0-0219 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-

Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0220, sercos master, IP address, command configuration

Function This parameter is used to specify the IP address of the sercos III master communication interface.

The setting becomes effective after the [C-0-1023](#) command.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0220 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Common:	Minimum value 0x00	Maximum value 0xFF	Default value "0.0.0.0"

C-0-0221, sercos master, subnet mask, command configuration

Function This parameter is used to specify the subnet mask of the sercos III master communication interface.

The setting becomes effective after the [C-0-1023](#) command.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0221 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Common:	Minimum value 0x00	Maximum value 0xFF	Default value "255.255.255.0"

C-0-0222, sercos master, IP address, actual configuration

Function The current IP address of the sercos III master communication interface is displayed in this parameter.

If the interface is not assigned an IP address, 0.0.0.0 is displayed.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0222 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0223, sercos master, subnet mask, actual configuration

Function The current subnet mask of the sercos III master communication interface is displayed in this parameter.

If the interface is not assigned a subnet mask, 0.0.0.0 is displayed.

The input format corresponds to the Ethernet specification:
· XXX.XXX.XXX.XXX (.dot format).

C-0-0223 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0224, sercos master, MAC address

Function This parameter indicates the MAC address of the sercos III master communication interface. For the format, see below:
· 00:00:00:00:00:00.

C-0-0224 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0225, C2C, IP address, command configuration

Function This parameter is used to specify the IP address of the sercos III control link interface.

The setting becomes effective after the [C-0-1023](#) command.

The input format corresponds to the Ethernet specification:
· XXX.XXX.XXX.XXX (.dot format).

C-0-0225 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"0.0.0.0"

C-0-0226, C2C, subnet mask, command configuration

Function This parameter is used to specify the subnet mask of the sercos III control link interface.

The setting becomes effective after the [C-0-1023](#) command.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0226 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "255.255.0.0"

C-0-0227, C2C, IP address, actual configuration

Function The current IP address of the sercos III control link interface is displayed in this parameter.

If the interface is not assigned an IP address, 0.0.0.0 is displayed.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0227 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

C-0-0228, C2C, subnet mask, actual configuration

Function The current subnet mask of the sercos III control link interface is displayed in this parameter.

If the interface is not assigned a subnet mask, 0.0.0.0 is displayed.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0228 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

C-0-0229, C2C, MAC address

Function This parameter indicates the MAC address of the sercos III control link interface. For the format, see below:

· 00:00:00:00:00:00.

C-0-0229 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING

Describing individual parameters, arranged according to types

Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0230, Bridge, IP address, command configuration

Function This parameter is used to specify the IP address of the Bridge interface. The setting becomes effective after the [C-0-1023](#) command.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0230 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"0.0.0.0"	

C-0-0231, Bridge, subnet mask, command configuration

Function This parameter is used to specify the subnet mask of the bridge interface. The setting becomes effective after the [C-0-1023](#) command.

The input format corresponds to the Ethernet specification:

· XXX.XXX.XXX.XXX (.dot format).

C-0-0231 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"255.255.0.0"	

C-0-0232, Bridge, command configuration of assigned interfaces

Function This parameter contains the names of the interfaces that are part of the bridge. The interfaces are separated by commas.

Interface names:

Interface name	Description
sIII,0	sercos III master communication
sIII,1	sercos III C2C
netX,4	netX interface

Interfaces that are not available in the current hardware configuration are ignored. The setting becomes effective after the [C-0-1023](#) command.

Example:

Bridging the sercos III control communication and sercos III C2C interface

To merge the two interfaces into one bridge, the parameter must contain the following value:

sIII,0,sIII,1,

C-0-0232 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"sIII,0,sIII,1"

C-0-0233, Bridge, actual configuration of assigned interfaces

Function This parameter contains the names of the interfaces that are actually part of the bridge. The interfaces are separated by commas.

Designation of the interfaces:

Interface name	Description
sIII,0	sercos III master communication
sIII,1	sercos III C2C
netX,4	netX interface

This is a read-only parameter. Only interfaces that are really contained in the bridge are displayed.

Example:

Bridging the sercos III control communication and sercos III C2C interface

If the parameters display the following value

sIII,0,sIII,1,

the sercos III control communication and sercos III C2C are really bridged.

C-0-0233 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0234, Automatic IP address generation, actual configuration

Function This 32-bit parameter displays the current setting of the automatic IP address generation bit by bit.

Describing individual parameters, arranged according to types

Current setting of the automatic IP address generation

Bit	Description of the interfaces for which the automated IP assignment is switched on
0	sercos III control communication and IP address assignment for IP-capable sercos III devices in the ring of the control communication (sIII0; if available; otherwise, it has no effect)
1	sercos III C2C (sIII1 ; if available; otherwise, it has no effect)
2	netX (if available; otherwise, it has no effect)
3	Bridge (if available; otherwise, it has no effect)
4..30	Reserved
31	Other network interfaces (if available; otherwise, it has no effect; except for engineering interface)

In this case, the term "optional" stands for all network interfaces outside of the engineering interface

Example:

Automated IP assignment for bridging, which is switched on the sercos III control communication and sercos III C2C interface

If the automated IP assignment is switched on for the specified interfaces, the parameter contains the following binary value:

"0000 0000 0000 0000 0000 0000 0000 1011"

C-0-0234 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0235, Automatic IP address generation, command configuration

Function This 32-bit parameter controls the automatic IP address generation bit by bit for all optional network interfaces on the control and the bridge and controls the IP address assignment of the IP-capable sercos III devices in the ring of the control communication

Switching on the automatic IP address generation bit by bit

Bit	Description of the interfaces for which the automated IP assignment can be switched on
0	sercos III control communication and IP address assignment for IP-capable sercos III devices in the ring of the control communication (sIII0; if available; otherwise, it has no effect)
1	sercos III C2C (sIII1; if available; otherwise, it has no effect)
2	netX (if available; otherwise, it has no effect)
3	Bridge (if available; otherwise, it has no effect)

4..30	Reserved
31	Other network interfaces (if available; otherwise, it has no effect; except for engineering interface)

In this case, the term "optional" stands for all network interfaces outside of the engineering interface

Example:

Automated IP assignment for bridging, which is switched on the sercos III control communication and sercos III C2C interface

If the automated IP assignment is switched on for the specified interfaces, the parameter contains the following binary values:

"0000 0000 0000 0000 0000 0000 0000 1011"

C-0-0235 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x8000000F	0x0000000B

C-0-0236, Bridge, IP address, actual configuration

Function The bridge interface's current IP address is displayed in this parameter.
If the interface is not assigned an IP address, 0.0.0.0 is displayed.
The input format corresponds to the Ethernet specification:
· XXX.XXX.XXX.XXX (.dot format).

C-0-0236 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0237, Bridge, subnet mask, actual configuration

Function The bridge interface's current subnet mask is displayed in this parameter.
If the interface is not assigned a subnet mask, 0.0.0.0 is displayed.
The input format corresponds to the Ethernet specification:
· XXX.XXX.XXX.XXX (.dot format).

C-0-0237 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0238, Bridge, MAC address

Function This parameter displays the bridge's MAC address. For the format, see below:
· 00:00:00:00:00:00.

C-0-0238 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0242, Onboard RT Ethernet, IP address, actual configuration

Function The onboard real-time Ethernet interface's current IP address is displayed in this parameter.
If the interface is not assigned an IP address, 0.0.0.0 is displayed.
The input format corresponds to the Ethernet specification:
· XXX.XXX.XXX.XXX (.dot format).

C-0-0242 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0243, Onboard RT Ethernet, subnet mask, actual configuration

Function The onboard real-time Ethernet interface's current subnet mask is displayed in this parameter.
If the interface is not assigned a subnet mask, 0.0.0.0 is displayed.
The input format corresponds to the Ethernet specification:
· XXX.XXX.XXX.XXX (.dot format).

C-0-0243 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0244, Onboard RT Ethernet, MAC address, actual configuration

Function This parameter displays the onboard real-time interface's MAC address. For the format, see below:

· 00:00:00:00:00:00.

C-0-0244 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0250, Engineering, DHCP configuration

Function This parameter is reserved for future applications.

C-0-0250 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00000000	Maximum value 0x00000003	Default value 0x00000001

C-0-0251, Engineering, DNS server IP

Function This parameter is reserved for future applications.

C-0-0251 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "0.0.0.0"

C-0-0252, Engineering, DHCP initial address

Function This parameter is reserved for future applications.

C-0-0252 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "192.168.1.2"

C-0-0253, Engineering, DHCP end address

Function This parameter is reserved for future applications.

C-0-0253 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-

Describing individual parameters, arranged according to types

Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0xFF	Default value "192.168.1.254"

C-0-0254, Engineering, DHCP lease time

Function This parameter is reserved for future applications.

C-0-0254 - Attributes:	Function:	PARAMETER	Unit:	s
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	60	4294967295	3600	

C-0-0260, sercos master, DHCP configuration

Function This parameter is reserved for future applications.

C-0-0260 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0x00000000	0x00000003	0x00000002	

C-0-0261, sercos master, DNS server IP

Function This parameter is reserved for future applications.

C-0-0261 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"0.0.0.0"	

C-0-0262, sercos master, DHCP initial address

Function This parameter is reserved for future applications.

C-0-0262 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---	

C-0-0263, sercos master, DHCP end address

Function	This parameter is reserved for future applications.			
C-0-0263 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	---

C-0-0264, sercos master, DHCP lease time

Function	This parameter is reserved for future applications.			
C-0-0264 - Attributes:	Function:	PARAMETER	Unit:	s
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	60	4294967295	3600

C-0-0270, Bridge, DHCP configuration

Function	This parameter is reserved for future applications.			
C-0-0270 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x00000000	0x00000003	0x00000002

C-0-0271, Bridge, DNS server IP

Function	This parameter is reserved for future applications.			
C-0-0271 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0x00	0xFF	"0.0.0.0"

C-0-0272, Bridge, DHCP initial address

Function	This parameter is reserved for future applications.			
C-0-0272 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING

Describing individual parameters, arranged according to types

Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0273, Bridge, DHCP end address

Function This parameter is reserved for future applications.

C-0-0273 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0274, Bridge, DHCP lease time

Function This parameter is reserved for future applications.

C-0-0274 - Attributes:	Function:	PARAMETER	Unit:	s
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 60	Maximum value 4294967295	Default value 3600

C-0-0280, Onboard RT Ethernet, DHCP configuration

Function This parameter is reserved for future applications.

C-0-0280 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00000000	Maximum value 0x00000003	Default value 0x00000002

C-0-0281, Onboard RT Ethernet, DNS server IP

Function This parameter is reserved for future applications.

C-0-0281 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"0.0.0.0"

C-0-0282, Onboard RT Ethernet, DHCP initial address

Function	This parameter is reserved for future applications.		
C-0-0282 - Attributes:	Function:	PARAMETER	Unit: --
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type: STRING
	Memory:	FLASH	Editability: P0, P2
	Direct_access:	--	MinMax_check: -
	Var.data_type:	-	Var.min/max_value: -
	Oscilloscope:	-	Probe: -
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0283, Onboard RT Ethernet, DHCP end address

Function	This parameter is reserved for future applications.		
C-0-0283 - Attributes:	Function:	PARAMETER	Unit: --
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type: STRING
	Memory:	FLASH	Editability: P0, P2
	Direct_access:	--	MinMax_check: -
	Var.data_type:	-	Var.min/max_value: -
	Oscilloscope:	-	Probe: -
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	---

C-0-0284, Onboard RT Ethernet, DHCP lease time

Function	This parameter is reserved for future applications.		
C-0-0284 - Attributes:	Function:	PARAMETER	Unit: s
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type: UDINT
	Memory:	FLASH	Editability: P0, P2
	Direct_access:	--	MinMax_check: +
	Var.data_type:	-	Var.min/max_value: -
	Oscilloscope:	-	Probe: -
	Minimum value	Maximum value	Default value
Common:	60	4294967295	3600

C-0-0290, C2C, DHCP configuration

Function	This parameter is reserved for future applications.		
C-0-0290 - Attributes:	Function:	PARAMETER	Unit: --
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type: DWORD
	Memory:	FLASH	Editability: P0, P2
	Direct_access:	--	MinMax_check: +
	Var.data_type:	-	Var.min/max_value: -
	Oscilloscope:	-	Probe: -
	Minimum value	Maximum value	Default value
Common:	0x00000000	0x00000003	0x00000002

C-0-0291, C2C, DNS server IP

Function	This parameter is reserved for future applications.

Describing individual parameters, arranged according to types

C-0-0291 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "0.0.0.0"

C-0-0292, C2C, DHCP initial address

Function This parameter is reserved for future applications.

C-0-0292 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0293, C2C, DHCP end address

Function This parameter is reserved for future applications.

C-0-0293 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value ---

C-0-0294, C2C, DHCP lease time

Function This parameter is reserved for future applications.

C-0-0294 - Attributes:	Function:	PARAMETER	Unit:	s
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 60	Maximum value 4294967295	Default value 3600

C-0-0300, PLS No.1, control word

Function Control word for the first programmable limit switch module on the control's module bus.

Structure	Bit	Name/function
	1..0	Output monitoring 0 0: Deactivated. 0 1: Activated: An error of error class 'FO' is generated in case of output overload. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	3..2	Voltage monitoring 0 0: Deactivated. 0 1: Activated: In case of undervoltage at the function module, an error of error class 'FO' is generated. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	4	Function module 0: Deactivated, 1: Activated.
	5	Command function C-0-0316 0: Initialize switch track. 1: Initialize and activate switch track.

Tab. 4-78: Relevant bits in control word

Use The control word is checked when switching phases against the parameter "C-0-0041, Local and function module bus, actual configuration". If there is no programmable limit switch module 'CFL01.1-N1' at the module bus and if bit 4 is set in the control word, the error "F0160024, Error in cross-check C-parameters" is generated.

C-0-0300 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	(P2+Stop)
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x05

C-0-0301, PLS No.1, status word

Function Status word for the first programmable limit switch module on the control's module bus.

Structure

Bit	Designation/function
0	Passive switch track group initialized
1	Active switch track group initialized

Tab. 4-79: Relevant bits in the status word

Use Bit 0:

The passive switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch can be activated (see parameter "C-0-0316, PLS No. 1, command: Initialize switch track").

Bit 1:

The active switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch is active (see parameter "C-0-0316, PLS No.1, command: Activate switch track").



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0301 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0302, PLS No.1, signal selection

Function This parameter is used to diagnose the first programmable limit switch. This parameter can be used to read out the bytes "Source_0.y" (low byte, y: bit 0...7) and "Source_1.y" (high byte, y: bit 0...7) from the structure field "PLsData[]" for the first programmable limit switch module.

Structure

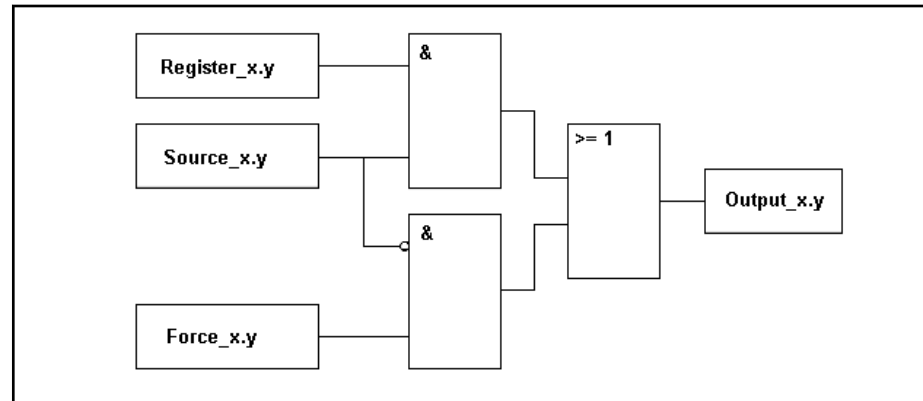


Fig. 4-25: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Source_0.y" and "Source_1.y" are cleared.

These bytes can be used to define the signal source for each of the programmable limit switch's outputs.

C-0-0302 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0303, PLS No.1, control signal

Function This parameter is used to diagnose the first programmable limit switch. This parameter can be used to read out the bytes "Force_0.y" (low byte, y: bit 0...7) and "Force_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the first programmable limit switch module.

Structure

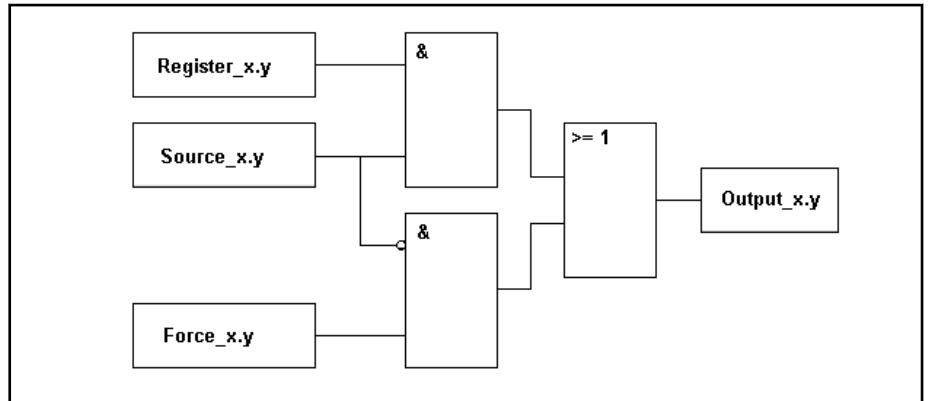


Fig. 4-26: Output control logic

Use The bytes "Force_0.y" and "Force_1.y" in the structure "ML_PLSDATA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Force_0.y" and "Force_1.y" are cleared.

These bytes can be used to override all the programmable limit switch's outputs, depending on the content of the bytes "Source_0.y" and "Source_1.y" - the defined signal source.

C-0-0303 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0304, PLS No.1, outputs

Function This parameter is used to diagnose the first programmable limit switch. This parameter can be used to read out the bytes "Output_0.y" (low byte, y: bit 0...7) and "Output_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the first programmable limit switch module.

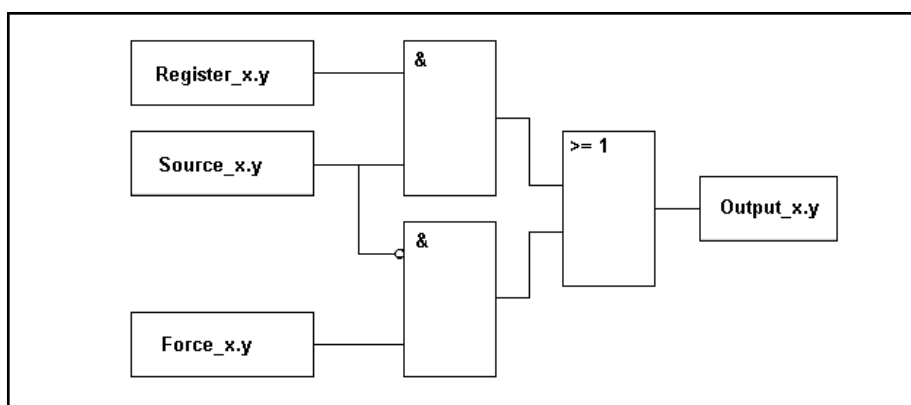
Structure

Fig. 4-27: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The control cyclically updates the bytes in operating mode.

In operation mode, the function module's output signals can be processed in the PLC.

C-0-0304 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0305, PLS No.1, internal registers

Function This parameter is used to diagnose the first programmable limit switch.

This parameter can be used to read out the bytes "Register_0.y" (low byte, y: bit 0...7) and "Register_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the first programmable limit switch module.

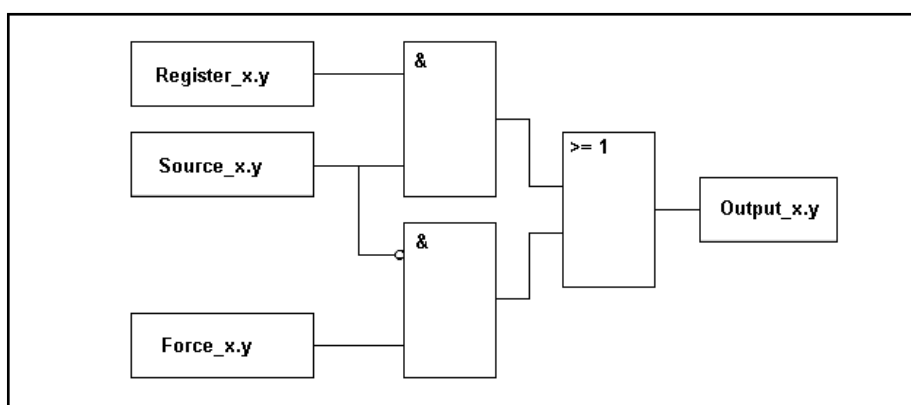
Structure

Fig. 4-28: Output control logic

Use The bytes "Register_0.y" and "Register_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The bytes display the programmable limit switch's internal state and are cyclically updated by the control in operating mode. In operating mode, the programmable limit switch's output signals can be processed in the PLC.

C-0-0305 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0307, PLS No.1, reference axis configuration

Function Of the axes configured and activated in the control, up to eight of them can be selected for the programmable limit switch in this parameter.

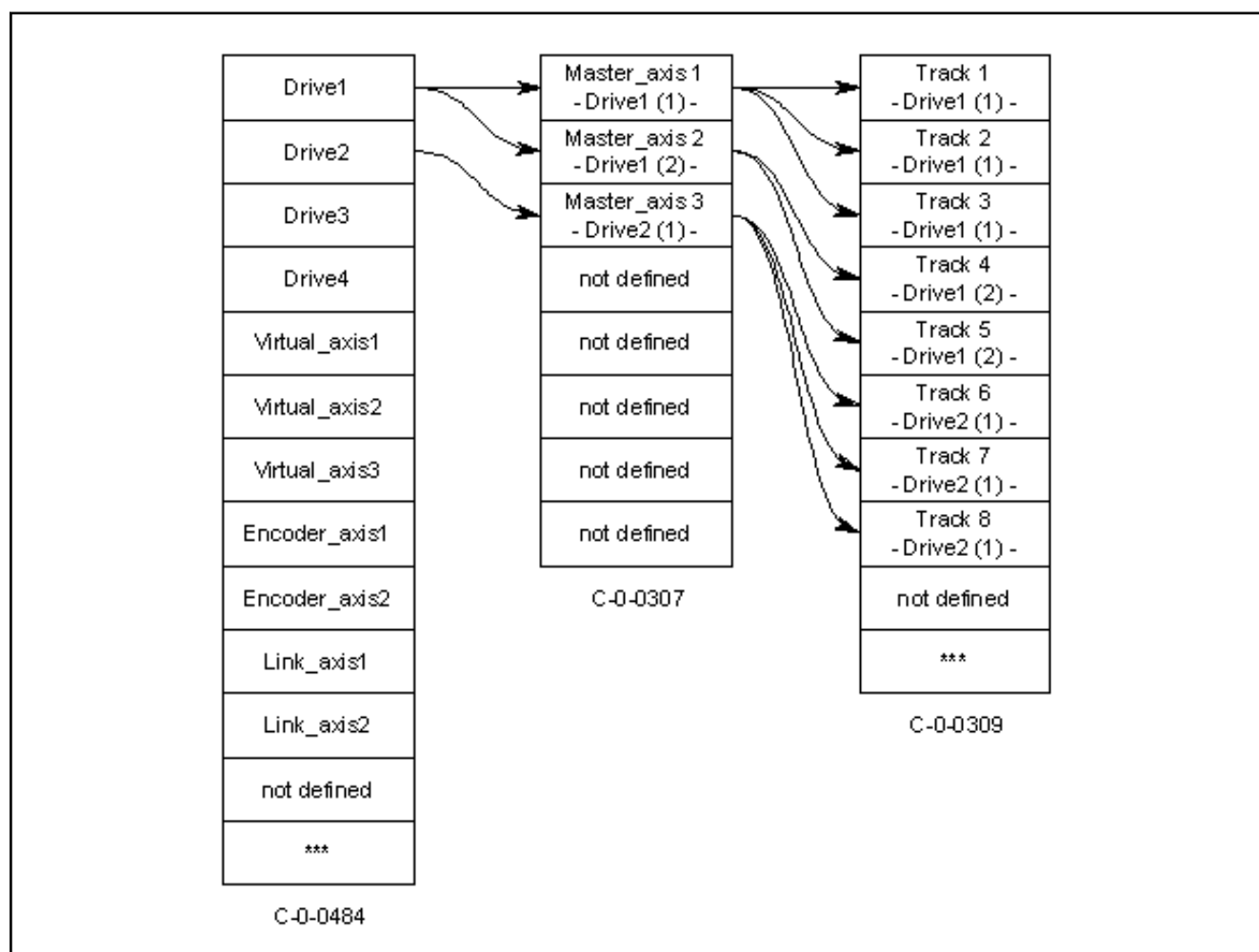


Fig. 4-29: Configuration and definition of reference axes

Structure The position and velocity of the selected axes are cyclically transmitted to the programmable limit switch in operation mode.

The reference axes are configured in parameterization mode. A single axis can be configured as a reference axis more than once. This allows switch tracks with a different position offset to be operated by the same axis.

Describing individual parameters, arranged according to types

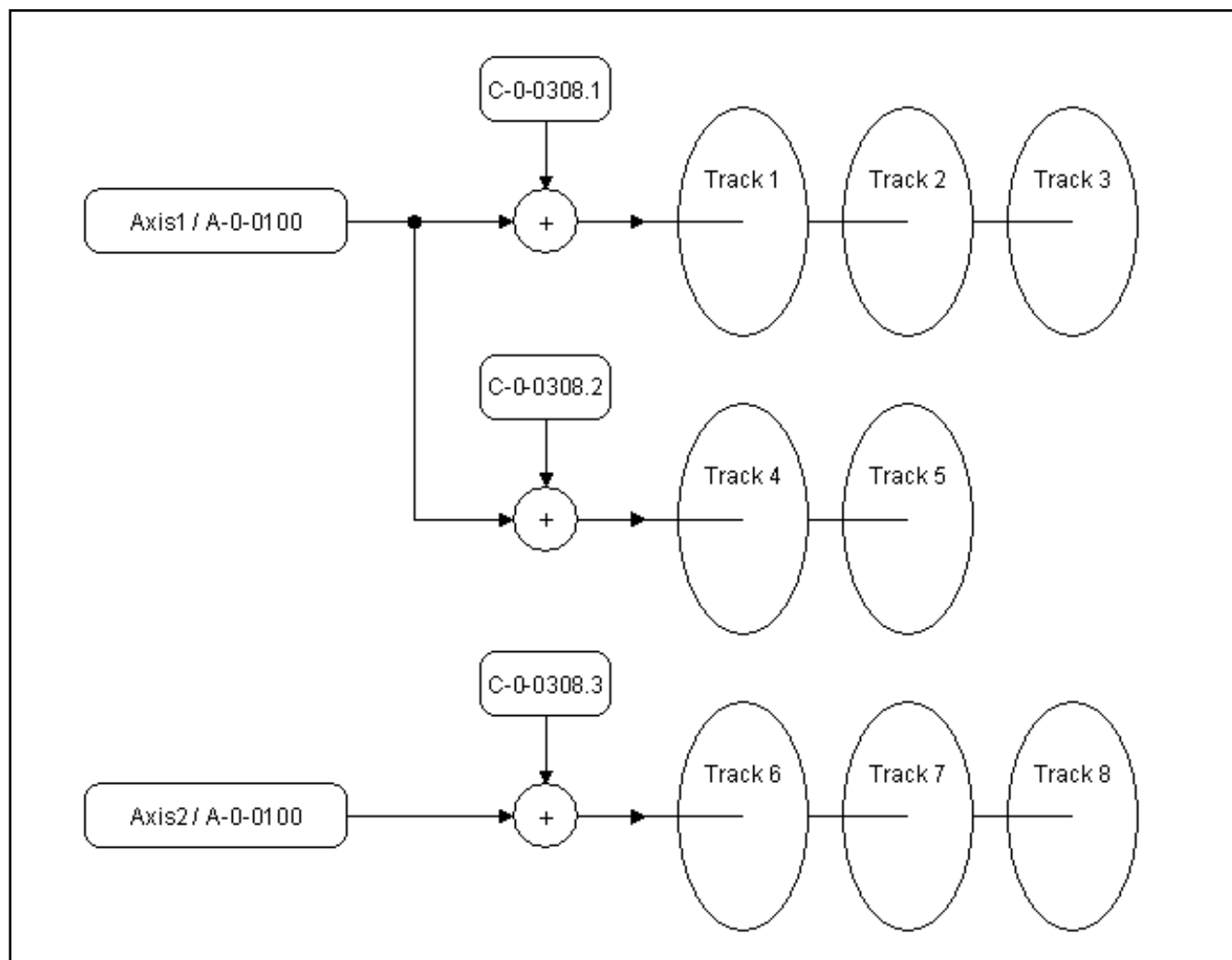


Fig. 4-30: Position offset

Use When switching from a lower to a higher phase, the reference axis configuration is checked against parameter "C-0-0484, Axes configuration list" and parameter "A-0-0024, Axis condition" of the respective axis.

The error "F0160024, Error in cross-check C-parameters" is generated if one of the selected axes is deactivated or not configured.

C-0-0307 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	64	0

C-0-0308, PLS No.1, reference axis position, additive

Function This parameter is used to move the position of the connected switch track relative to the position of the reference axis. The position offset is entered in the input unit of the reference axis.

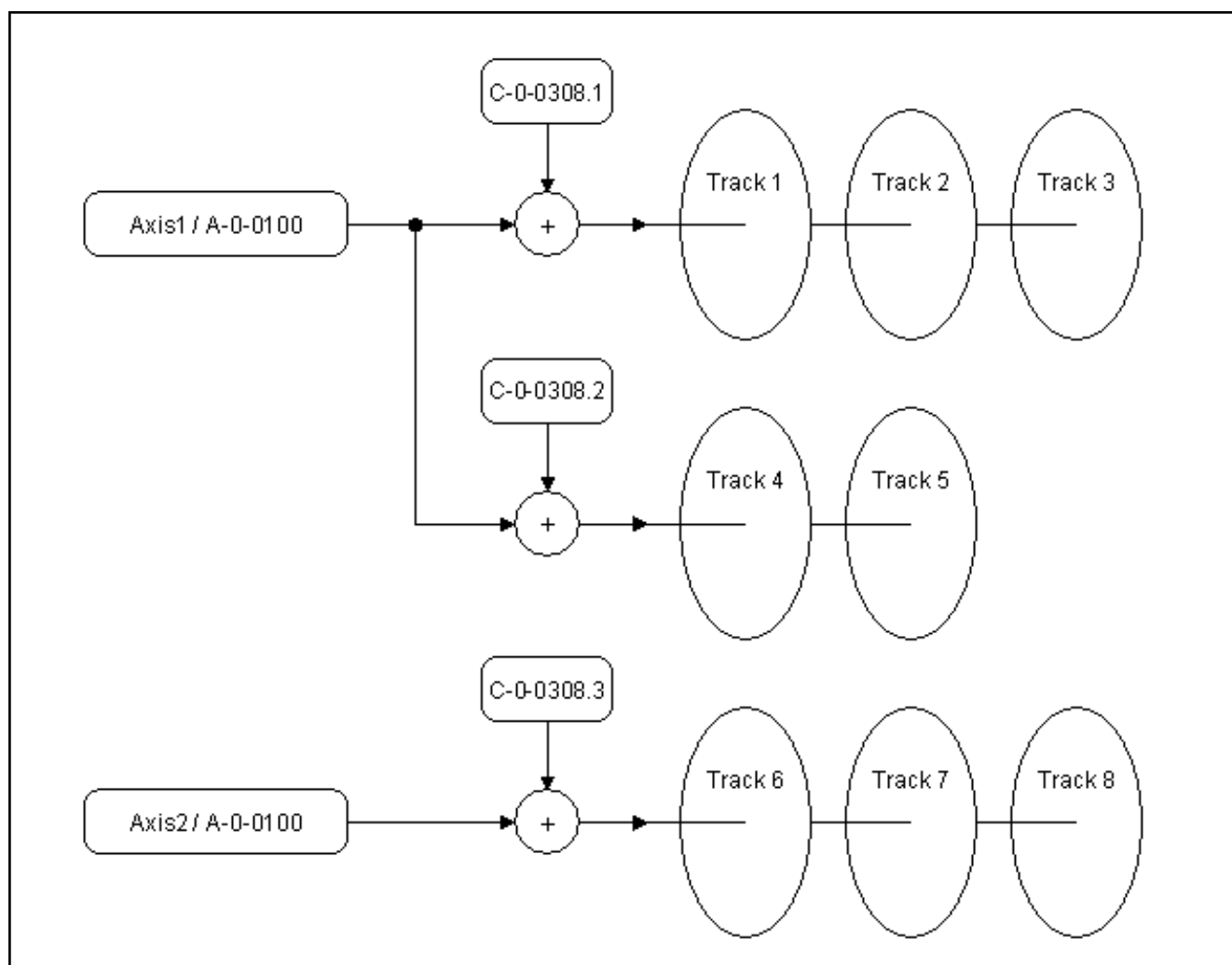


Fig. 4-31: Position offset

Use The position offset is cyclically transmitted to the programmable limit switch module and added to the switch track position after the hysteresis is calculated. As a result, a change to the position offset is active in its unmodified form.

$$X_{PLS} = \frac{(X_{MA} + \langle C-0-0308 \rangle) \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

PLS Programmable limit switch
MA Master axis (reference axis)

Fig. 4-32: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

C-0-0308 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

Describing individual parameters, arranged according to types

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0309, PLS No.1, reference axis definition

Function This parameter is used to define the reference axis for each switch track. All reference axes configured in parameter "C-0-0307, PLS No.1, reference axis configuration" are available for selection. In addition to the position and velocity of the selected reference axis, the position offset, parameter "C-0-0308, PLS No.1, reference axis position, additive", is assigned to the respective switch track

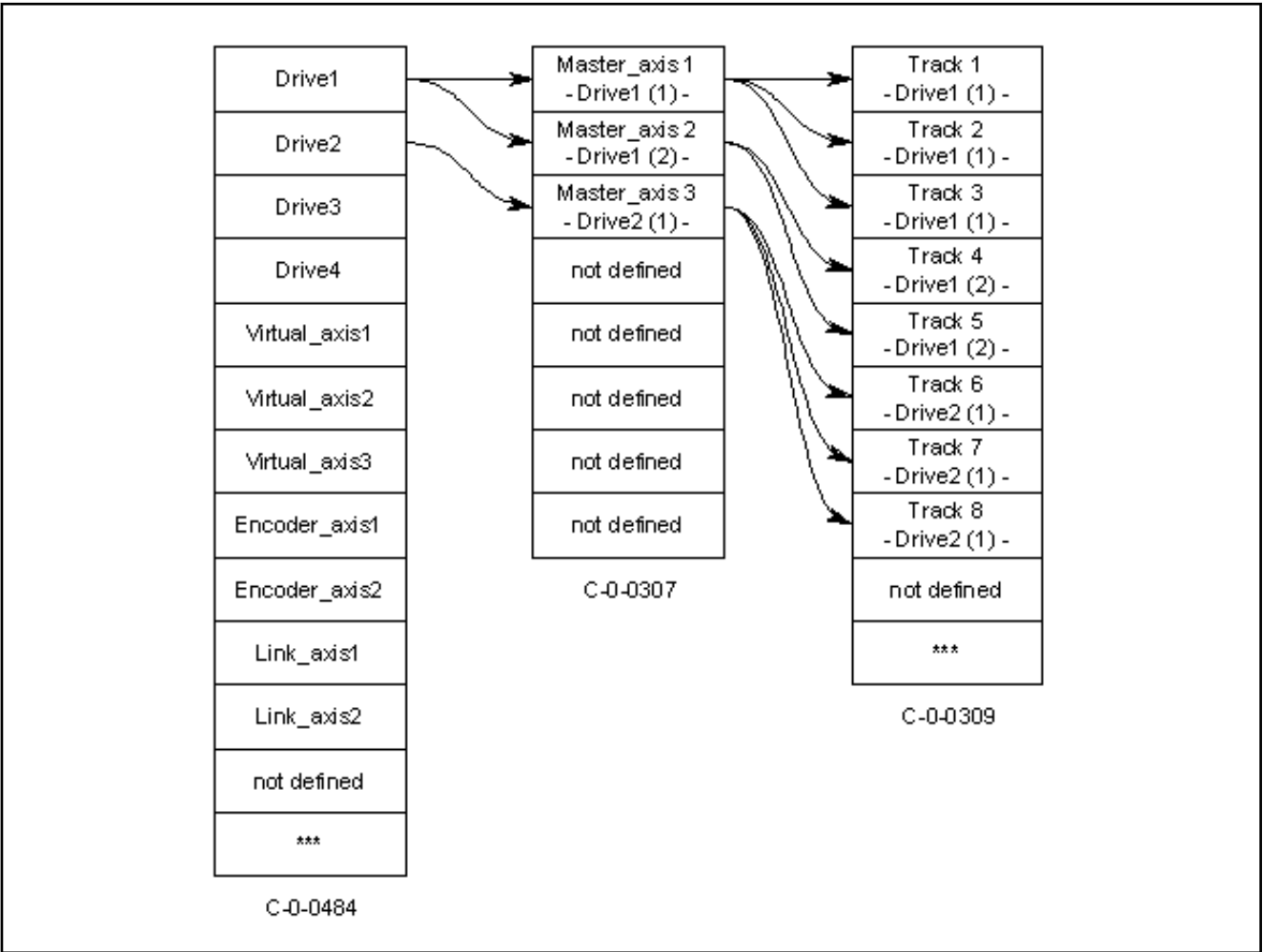


Fig. 4-33: Configuration and definition of reference axes

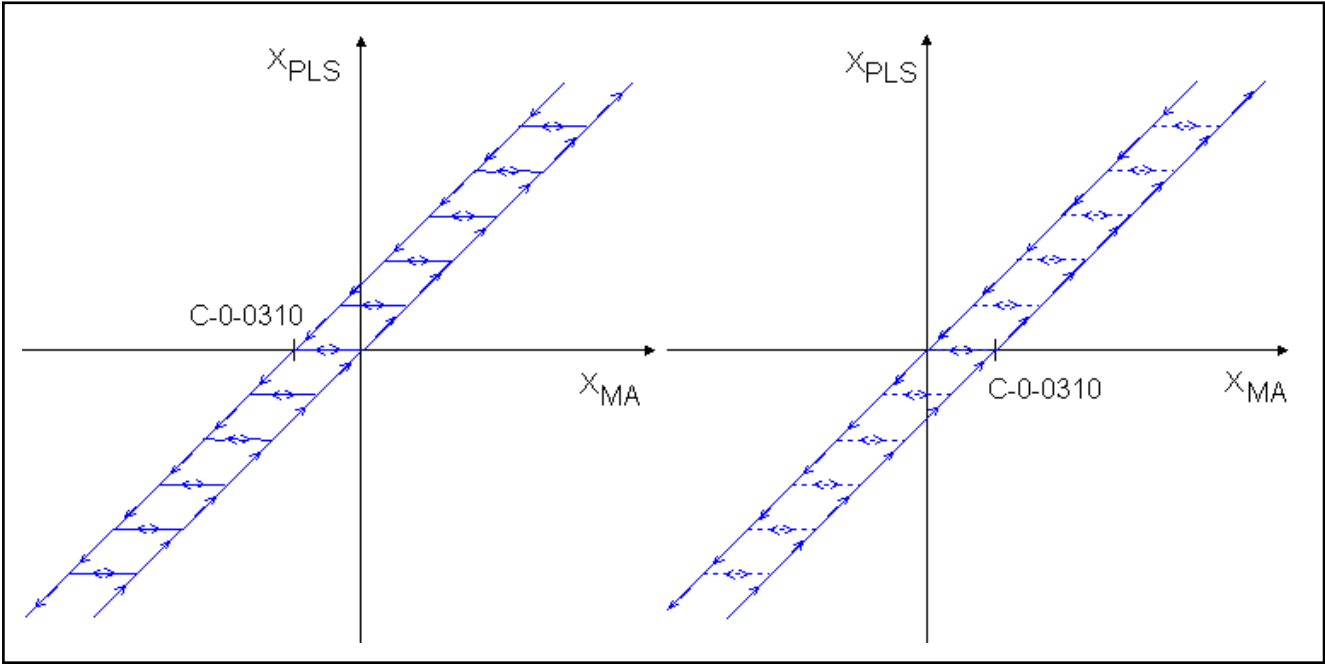
Use When switching from a lower to a higher phase, the reference axis definition is checked against parameter "C-0-0307, PLS No.1, reference axis configuration".
The error "F0160024, Error in cross-check C-parameter" is generated if one of the selected reference axes is deactivated or not configured.

C-0-0309 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2

Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 8	Default value 0

C-0-0310, PLS No.1, hysteresis

Function This list of parameters is used to define a position hysteresis for each switch track. The hysteresis functions direction-dependently, see figure.



X_{MA} Reference axis position
 X_{PLS} Switch track position
Fig. 4-34: Negative and positive hysteresis

Use The position hysteresis is entered in the input unit of the reference axis.
The hysteresis serves to compensate position fluctuations. The fluctuations can cause the output on the programmable limit switch to jitter.
If a real axis comes to a standstill, the position controller moves. The velocity of this movement multiplied by the dead time to be compensated equals the standstill fluctuation.
If there is a delay with an axis, extrapolation errors occur. Half of the delay multiplied by the dead time to be compensated squared equals the extrapolation error.

$$H_{PLS} = \frac{H_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

MA Master axis (reference axis)
PLS Switch track

Fig. 4-35:



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

Describing individual parameters, arranged according to types

C-0-0310 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0.0

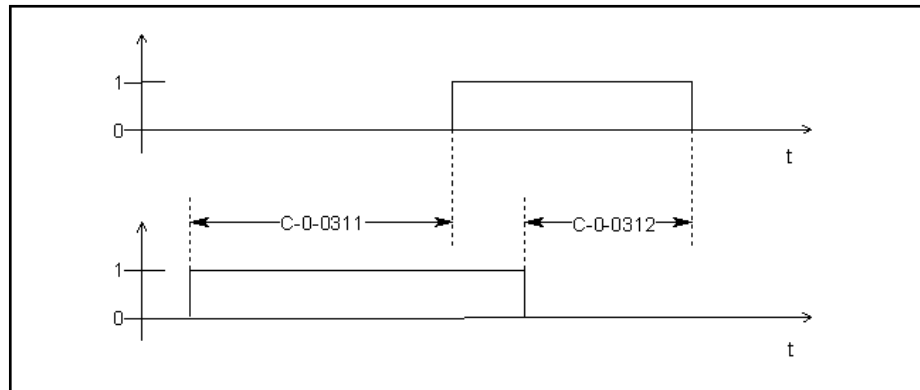
C-0-0311, PLS No.1, lead time when switching on

Function A) For state-controlled outputs

This parameter is used to define the dead time compensation for state-controlled outputs (see "C-0-0318, PLS No.1, output mode") when switching on an output on the programmable limit switch.

The programmable limit switch operates with a cycle time of 125 µs.

The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation

PgDn Extrapolated output signal

Fig. 4-36: Dead time compensation (state-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0311>)) \bmod 2^{16}$$

Fig. 4-37: Extrapolation function for switching on an output

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.

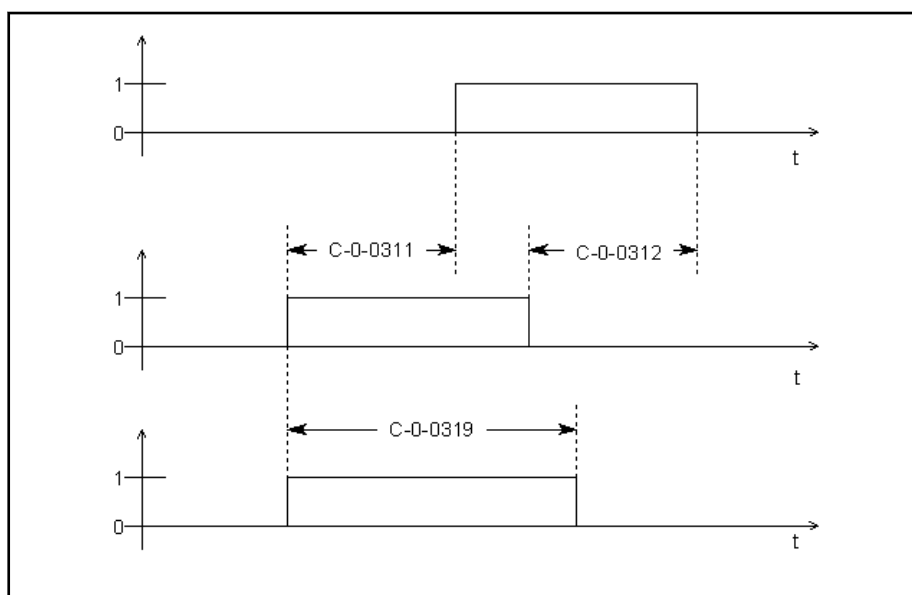


The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

B) For time-controlled outputs

This parameter is used to define the dead time compensation for time-controlled outputs (see "C-0-0318, PLS No.1, output mode") when switching on and off outputs.

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation
Center Extrapolated trigger signal
PgDn Time-controlled output signal

Fig. 4-38: Dead time compensation (time-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity.

Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0311>)) \bmod 2^{16}$$

Fig. 4-39: Extrapolation function for switching on an output



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0311 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

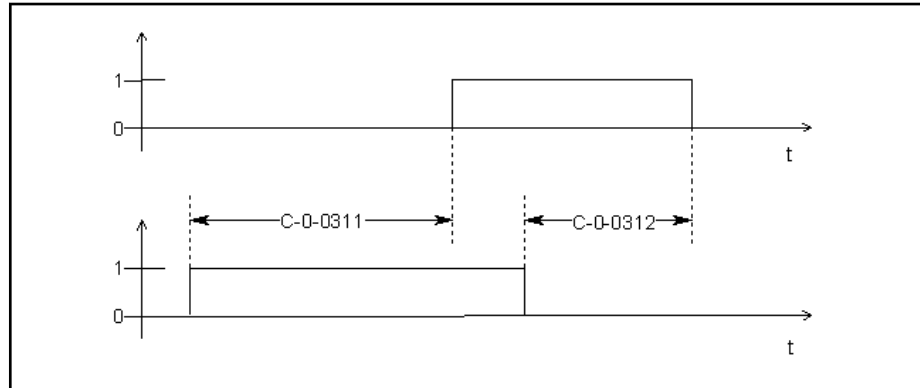
	Minimum value	Maximum value	Default value
Common:	0	1000000	0

C-0-0312, PLS No.1, lead time when switching off

Function This parameter is used to control the dead time compensation when switching off an output at the programmable limit switch.

The parameter is only applied if the output is operated in a state-controlled manner (see C-0-0318, PLS No.1, output mode).

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time slot.



Up Signal before the dead time compensation
Down Extrapolated output signal

Fig. 4-40: Dead time compensation (state-controlled)

Use The dead time compensation extrapolates the switch track position by the current velocity of the switch track. Thus, extrapolation errors occur when the switch track accelerates and decelerates.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0312>)) \bmod 2^{16}$$

Fig. 4-41: Extrapolation function for switch-off

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.



The programmable limit switch only accepts time specifications within the internal time slot of 125 µs.



In case of one time-controlled output, only the parameter **C-0-0311**, PLS No.1, lead time when switching on is applied.
 (Refer to **C-0-0318**, PLS No.1, output mode)

C-0-0312 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 1000000	Default value 0

C-0-0313, PLS No.1, switch track number

- Function** This parameter is used to activate up to 64 switches and assign the 16 switch tracks.
- Structure** The list has 64 possible spots (switches) that are assigned with "0" after initialization (no switch track is assigned).
- If only one switch is activated and assigned one of the 16 switch tracks, the number of the switch track is available in place of "0".

C-0-0313 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	16	0

C-0-0314, PLS No.1, switch-on position of switch track

Function This parameter and parameter "C-0-0315, PLS No.1, switch-off position of switch track" are used to define the a switch's position on the switch track. The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PLS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

Fig. 4-42: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

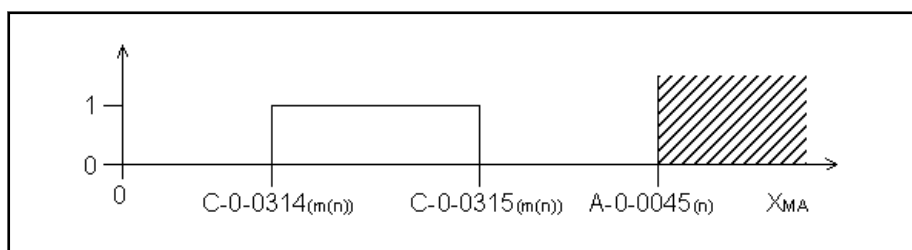


Fig. 4-43: Switch-on position less than switch-off position

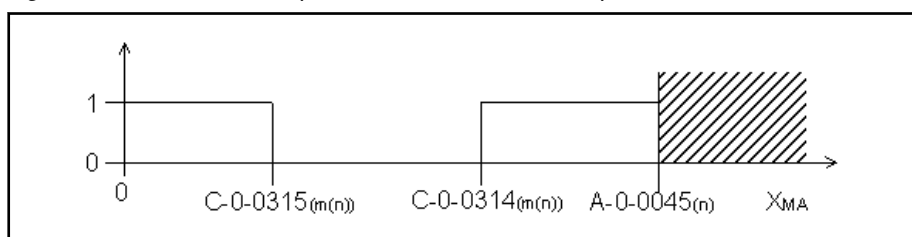


Fig. 4-44: Switch-on position larger than switch-off position

The parameter "C-0-0313, PLS No.1, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

Describing individual parameters, arranged according to types

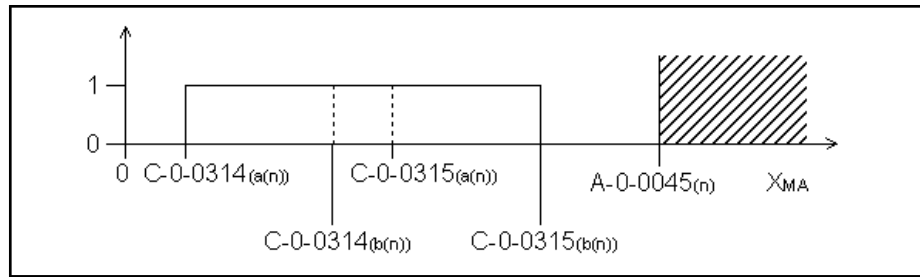


Fig. 4-45: Overlapping switches

C-0-0314 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0315, PLS No.1, switch-off position of switch track

Function This parameter and parameter "C-0-0314, PLS No.1, switch-on position of switch track" are used to define the a switch's position on the switch track.
The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PIS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

Fig. 4-46: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

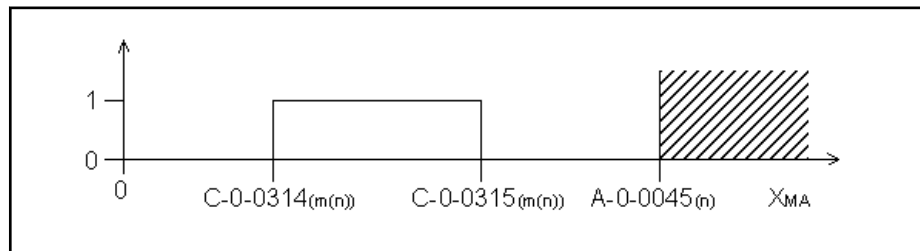


Fig. 4-47: Switch-on position less than switch-off position

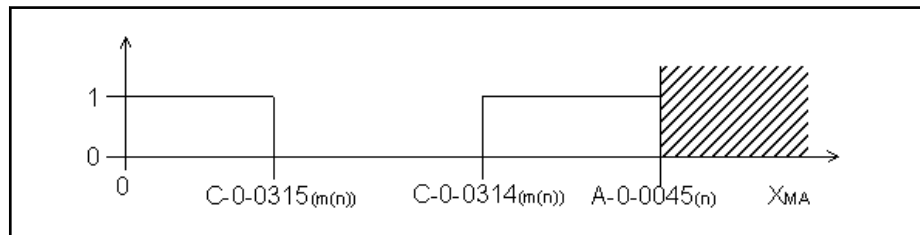


Fig. 4-48: Switch-on position greater than switch-off position

The parameter "C-0-0313, PLS No.1, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

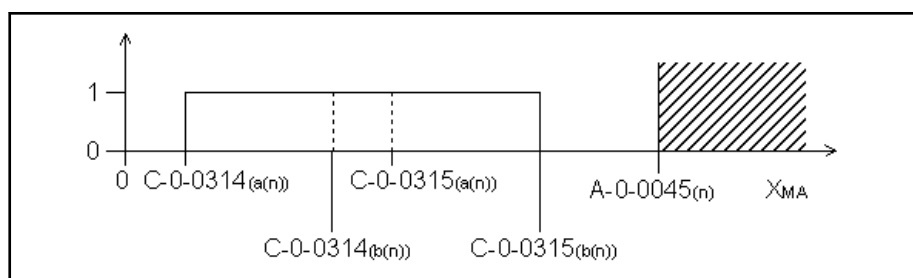


Fig. 4-49: Overlapping switches

C-0-0315 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0.0

C-0-0316, PLS No.1, command: Initialize switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode. Using the command "Initialize switch track", the passive group is reinitialized according to the parameters:

- C-0-0311, PLS No.1, lead time when switching on
- C-0-0312, PLS No.1, lead time when switching off
- C-0-0313, PLS No.1, switch track number
- C-0-0314, PLS No.1, switch-on position of switch track
- C-0-0315, PLS No.1, switch-off position of switch track
- C-0-0318, PLS No.1, output mode
- C-0-0319, PLS No.1, switch-on duration

Use The initialized switch track group is immediately activated, depending on the setting in the control word "C-0-0300, bit 5= 1".

The switch track group can be switched at all times using the command "C-0-0317, PLS No.1, command: Activate switch track".



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0316 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0317, PLS No.1, command: Activate switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode.

The passive group is activated using the command "Activate switch track". The active group is simultaneously deactivated.

The passive switch track group can be subsequently reinitialized using the command "C-0-0316, PLS No.1, command: Initialize switch track".



When the operation mode is switched on, the first switch track group is activated.

C-0-0317 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0318, PLS No.1, output mode

Function When switching from a lower to a higher phase, this parameter is checked against parameter "C-0-0309, PLS No.1, reference axis definition".

If no reference axis was defined for the switch track and the output is activated (direction of motion $\neq$ zero), the error "F0160024, Error in cross-check C-parameters" is generated.

Structure

Bit	Designation/function
1..0	Direction of movement 0 0: deactivated: The internal output is deactivated. 0 1: activated depending on direction: The switch track's sampling signal is used for movement in the positive direction. 1 0: activated depending on direction: The switch track's sampling signal is used for movement in the negative direction. 1 1: activated independent of the direction The switch track's sampling signal is used irrespective of the motion direction.
2	Control mode 0: state-controlled: The switch track's sampling signal controls the register bit of the programmable limit switch. 1: time-controlled: The switch track's sampling signal controls the pulse generator's clock input. The pulse generator controls the register bit of the programmable limit switch.

Tab. 4-80: Relevant bits in the parameter

Use This parameter is used to control the internal register of the programmable limit switch (register_0 and register_1), depending on the direction of movement (forward and/or backward) of the reference axis.

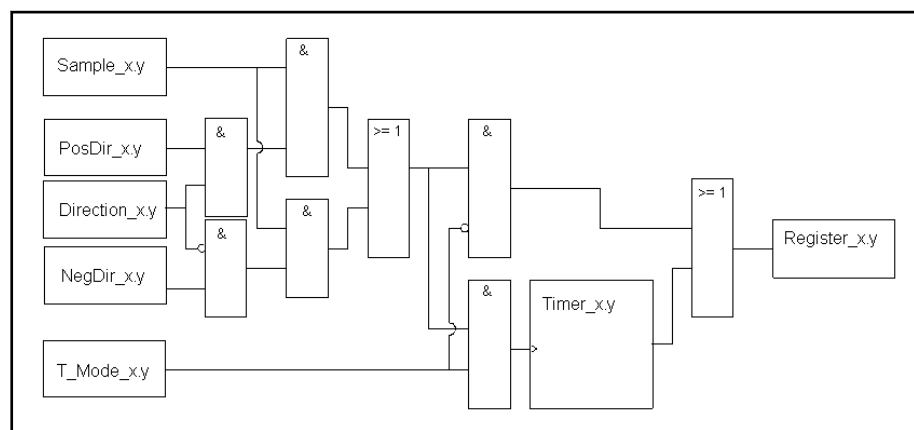
A register bit can be operated directly (state-controlled) or by a pulse generator (time-controlled).

The control mode influences the dead time compensation (see parameter "C-0-0311, PLS No.1, lead time when switching on" and "C-0-0312, PLS No. 1, lead time when switching off").

The pulse duration in time-controlled mode can be defined in parameter "C-0-0319, PLS No.1, switch-on duration".



The physical outputs of the programmable limit switch can be overridden from the PLC program (see parameter "C-0-0303, PLS No.1, control signal").



Sample_x Switch track's sampling signal

PosDir_x Active in positive movement direction

Direction_x Current movement direction

NegDir_x Active in positive movement direction

T_Mode_x Time-controlled mode

Register_x Internal register

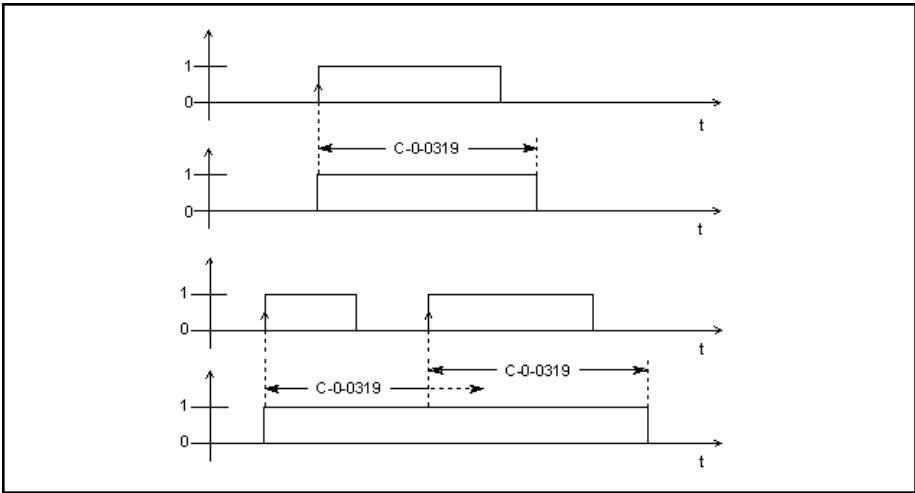
Fig. 4-50: Output control

C-0-0318 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE_VAR	PLC_data_type:	ARRAY of WORD
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0319, PLS No.1, switch-on duration

Function This parameter is used to define the pulse duration in time-controlled mode (see parameter "C-0-0319, PLS No.1, output mode").

The programmable limit switch operates with a cycle time of 125 µs. Within this time period, the programmable limit switch can generate pulses with a maximum duration of one second.



PgUp Single pulse
PgDn Extended pulse

Fig. 4-51: Pulse generator

Use The pulse generator is started by a rising edge at the clock input. The pulse generator is reset and restarted with each additional rising edge. This extends the output pulse for active pulse generators.



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0319 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		125	1000000	125

C-0-0325, PLS No.2, control word

Function Control word for the second programmable limit switch module on the control's module bus.

Structure	Bit	Name/function
	1..0	Output monitoring 0 0: Deactivated. 0 1: Activated: An error of error class 'FO' is generated in case of output overload. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	3..2	Voltage monitoring 0 0: Deactivated. 0 1: Activated: In case of undervoltage at the function module, an error of error class 'FO' is generated. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	4	Function module 0: Deactivated, 1: Activated.
	5	Command function C-0-0341 0: Initialize switch track. 1: Initialize and activate switch track.

Tab. 4-81: Relevant bits in control word

Use The control word is checked when switching phases against the parameter "C-0-0041, Local and function module bus, actual configuration". If there is no programmable limit switch module 'CFL01.1-N1' at the module bus and if bit 4 is set in the control word, the error "F0160024, Error in cross-check C-parameters" is generated.

C-0-0325 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	(P2+Stop)
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x05

C-0-0326, PLS No.2, status word

Function Status word for the second programmable limit switch module on the control's module bus.

Structure

Bit	Designation/function
0	Passive switch track group initialized
1	Active switch track group initialized

Tab. 4-82: Relevant bits in the status word

Use Bit 0:

The passive switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch can be activated (see parameter "C-0-0341, PLS No. 2, command: Initialize switch track").

Bit 1:

The active switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch is active (see parameter "C-0-0342, PLS No.2, command: Activate switch track").



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0326 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0327, PLS No.2, signal selection

Function This parameter is used to diagnose the second programmable limit switch. This parameter can be used to read out the bytes "Source_0.y" (low byte, y: bit 0...7) and "Source_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the second programmable limit switch module.

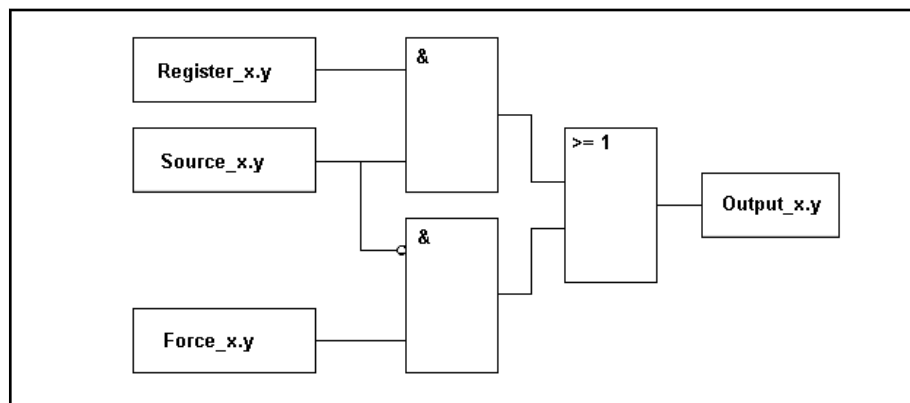
Structure

Fig. 4-52: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Source_0.y" and "Source_1.y" are cleared.

These bytes can be used to define the signal source for each of the programmable limit switch's outputs.

C-0-0327 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0328, PLS No.2, control signal

Function This parameter is used to diagnose the second programmable limit switch. This parameter can be used to read out the bytes "Force_0.y" (low byte, y: bit 0...7) and "Force_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the second programmable limit switch module.

Structure

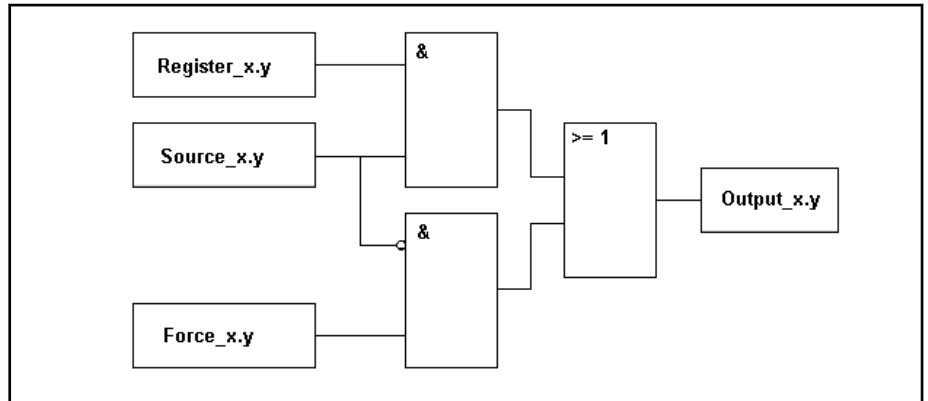


Fig. 4-53: Output control logic

Use The bytes "Force_0.y" and "Force_1.y" in the structure "ML_PLSDATA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Force_0.y" and "Force_1.y" are cleared.

These bytes can be used to override all the programmable limit switch's outputs, depending on the content of the bytes "Source_0.y" and "Source_1.y" - the defined signal source.

C-0-0328 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0329, PLS No.2, outputs

Function This parameter is used to diagnose the second programmable limit switch. This parameter can be used to read out the bytes "Output_0.y" (low byte, y: bit 0...7) and "Output_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the second programmable limit switch module.

Describing individual parameters, arranged according to types

Structure

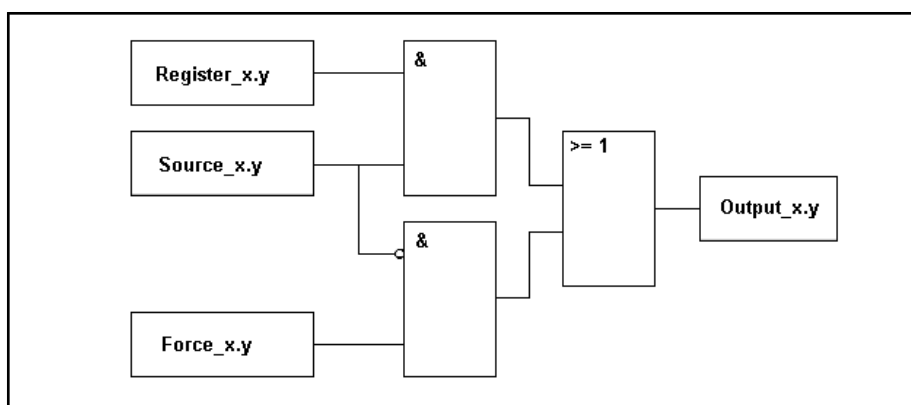


Fig. 4-54: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The control cyclically updates the bytes in operating mode.

In operation mode, the function module's output signals can be processed in the PLC.

C-0-0329 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0330, PLS No.2, internal registers

Function This parameter is used to diagnose the second programmable limit switch.

This parameter can be used to read out the bytes "Register_0.y" (low byte, y: bit 0...7) and "Register_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the second programmable limit switch module.

Structure

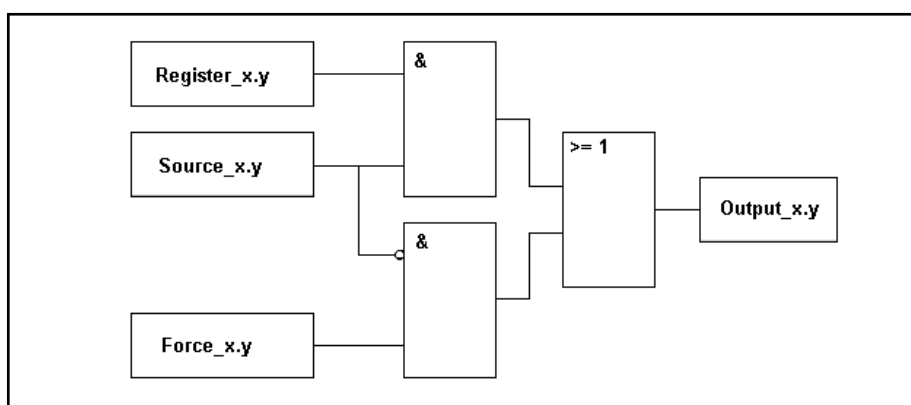


Fig. 4-55: Output control logic

Use The bytes "Register_0.y" and "Register_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The bytes display the programmable limit switch's internal state and are cyclically updated by the control in operating mode. In operating mode, the programmable limit switch's output signals can be processed in the PLC.

C-0-0330 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0332, PLS No.2, reference axis configuration

Function Of the axes configured and activated in the control, up to eight of them can be selected for the programmable limit switch in this parameter.

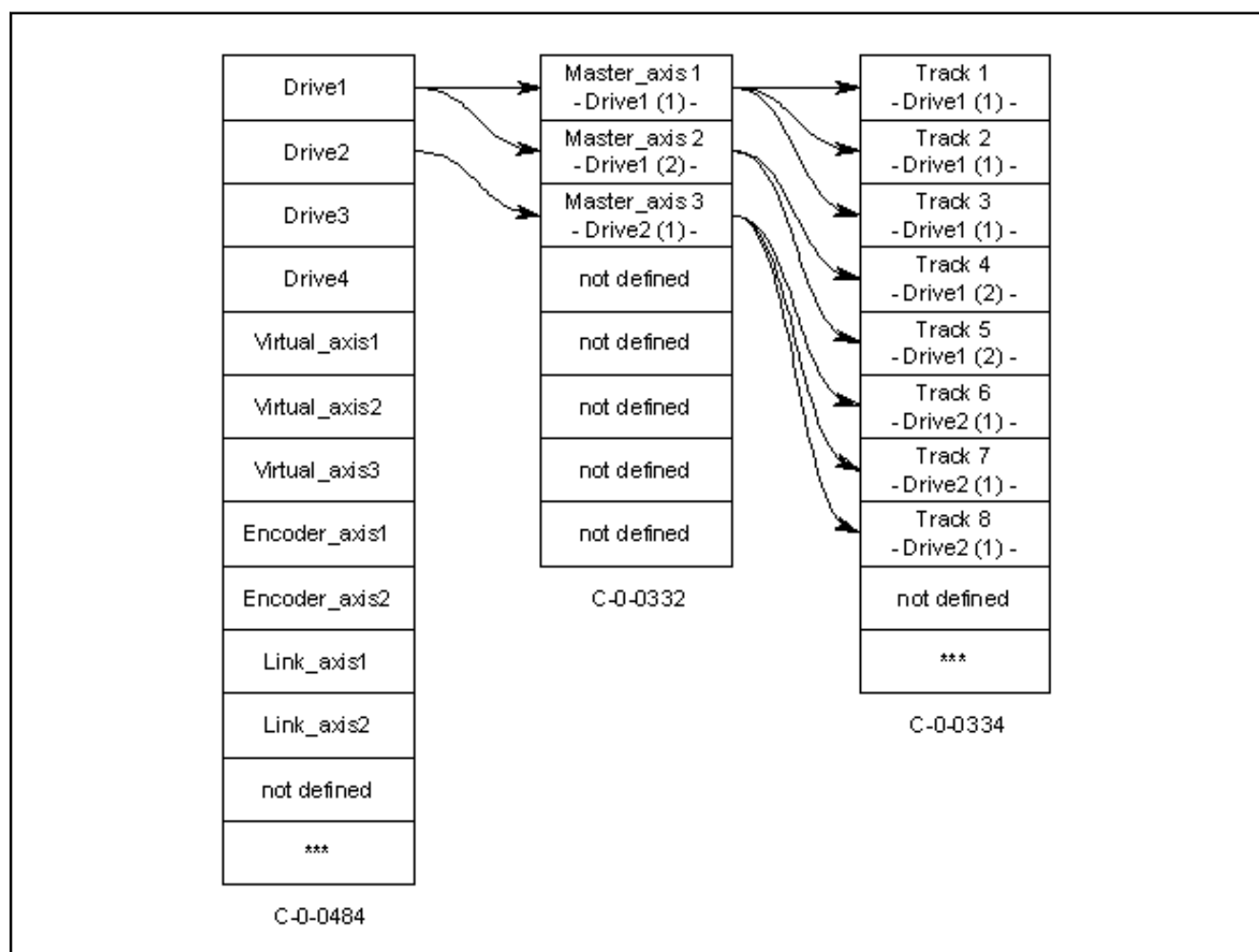


Fig. 4-56: Configuration and definition of reference axes

Structure The position and velocity of the selected axes are cyclically transmitted to the programmable limit switch in operation mode.

The reference axes are configured in parameterization mode. A single axis can be configured as a reference axis more than once. This allows switch tracks with a different position offset to be operated by the same axis.

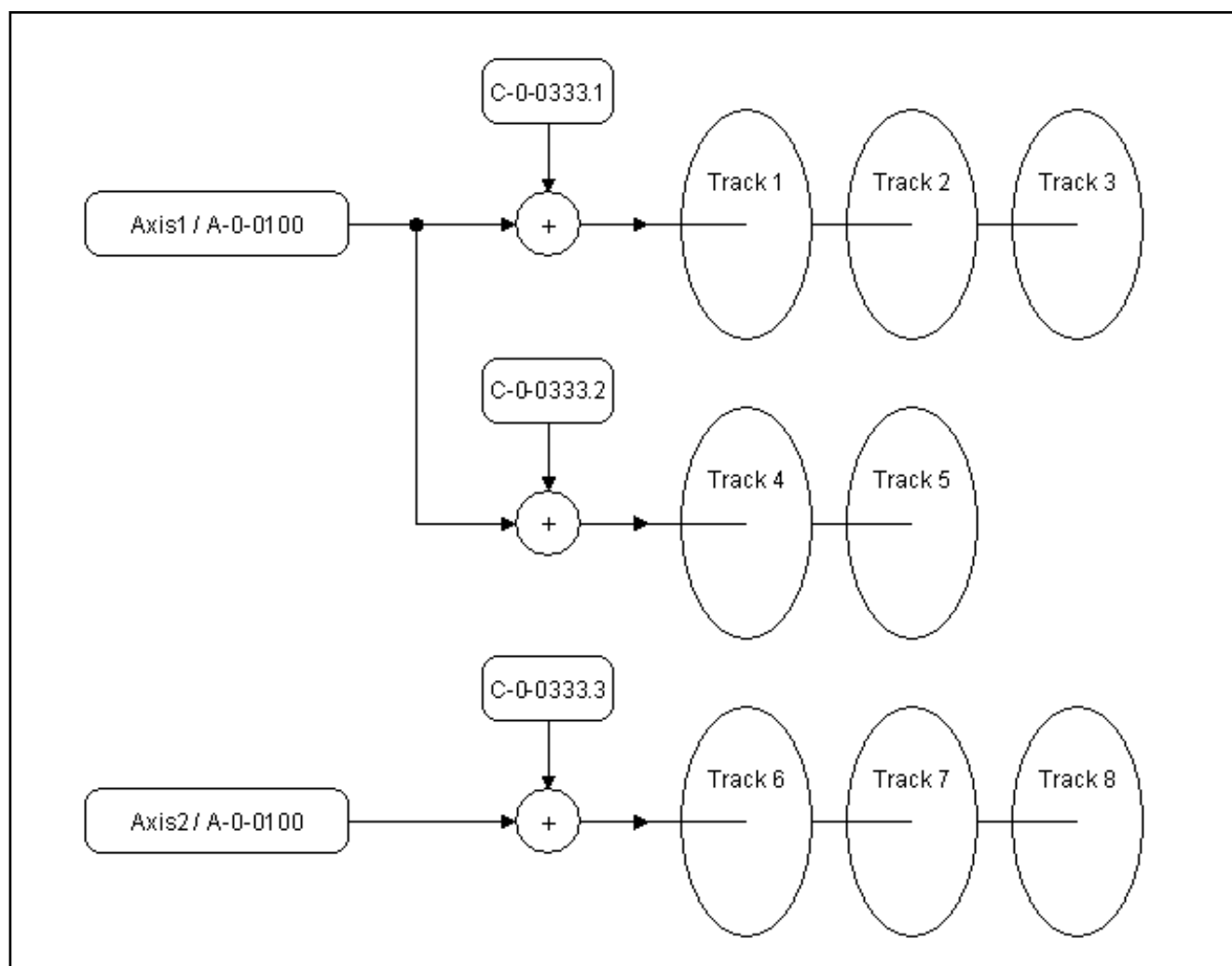


Fig. 4-57: Position offset

Use When switching from a lower to a higher phase, the reference axis configuration is checked against parameter "C-0-0484, Axes configuration list" and parameter "A-0-0024, Axis condition" of the respective axis.

The error "F0160024, Error in cross-check C-parameters" is generated if one of the selected axes is deactivated or not configured.

C-0-0332 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	64	0

C-0-0333, PLS No.2, reference axis position, additive

Function This parameter is used to move the position of the connected switch track relative to the position of the reference axis. The position offset is entered in the input unit of the reference axis.

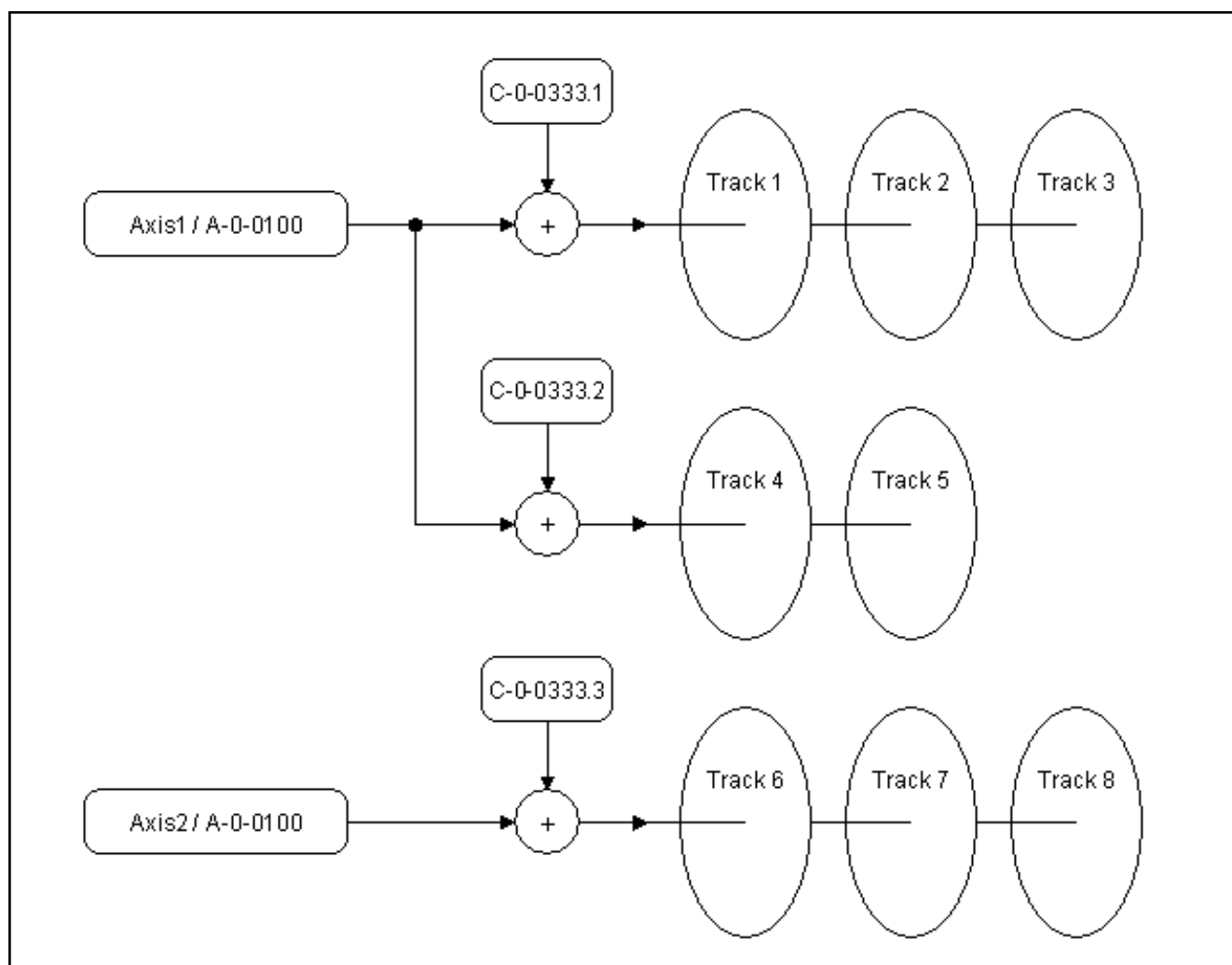


Fig. 4-58: Position offset

Use The position offset is cyclically transmitted to the programmable limit switch module and added to the switch track position after the hysteresis is calculated. As a result, a change to the position offset is active in its unmodified form.

$$X_{PLS} = \frac{(X_{MA} + \langle C-0-0333 \rangle) \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

PLS Programmable limit switch
MA Master axis (reference axis)

Fig. 4-59: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

C-0-0333 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

Describing individual parameters, arranged according to types

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0334, PLS No.2, reference axis definition

Function This parameter is used to define the reference axis for each switch track. All reference axes configured in parameter "C-0-0332, PLS No.2, reference axis configuration" are available for selection. In addition to the position and velocity of the selected reference axis, the position offset, parameter "C-0-0334, PLS No.2, reference axis position, additive", is assigned to the respective switch track.

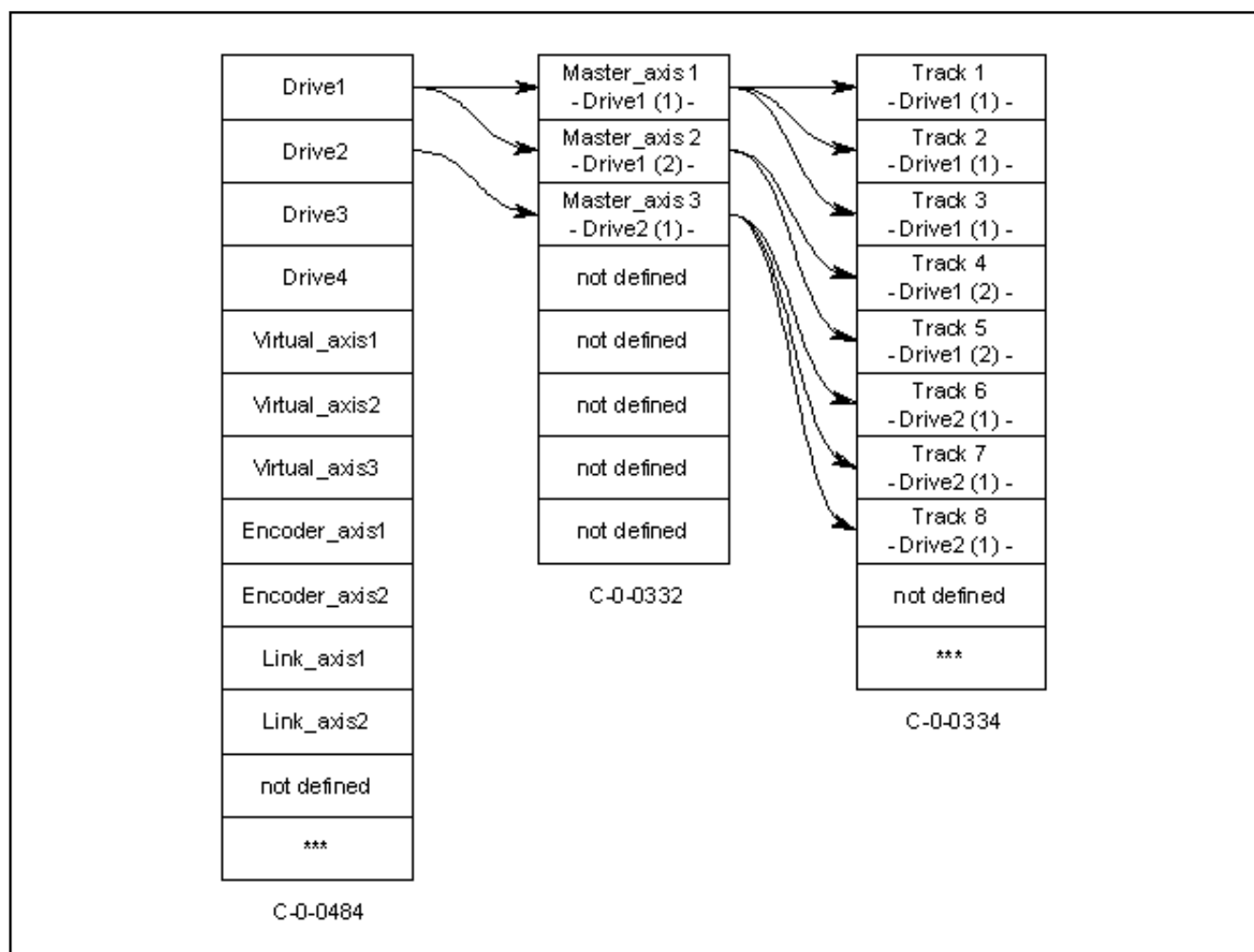


Fig. 4-60: Configuration and definition of reference axes

Use When switching from a lower to a higher phase, the reference axis definition is checked against parameter "C-0-0332, PLS No.2, reference axis configuration".

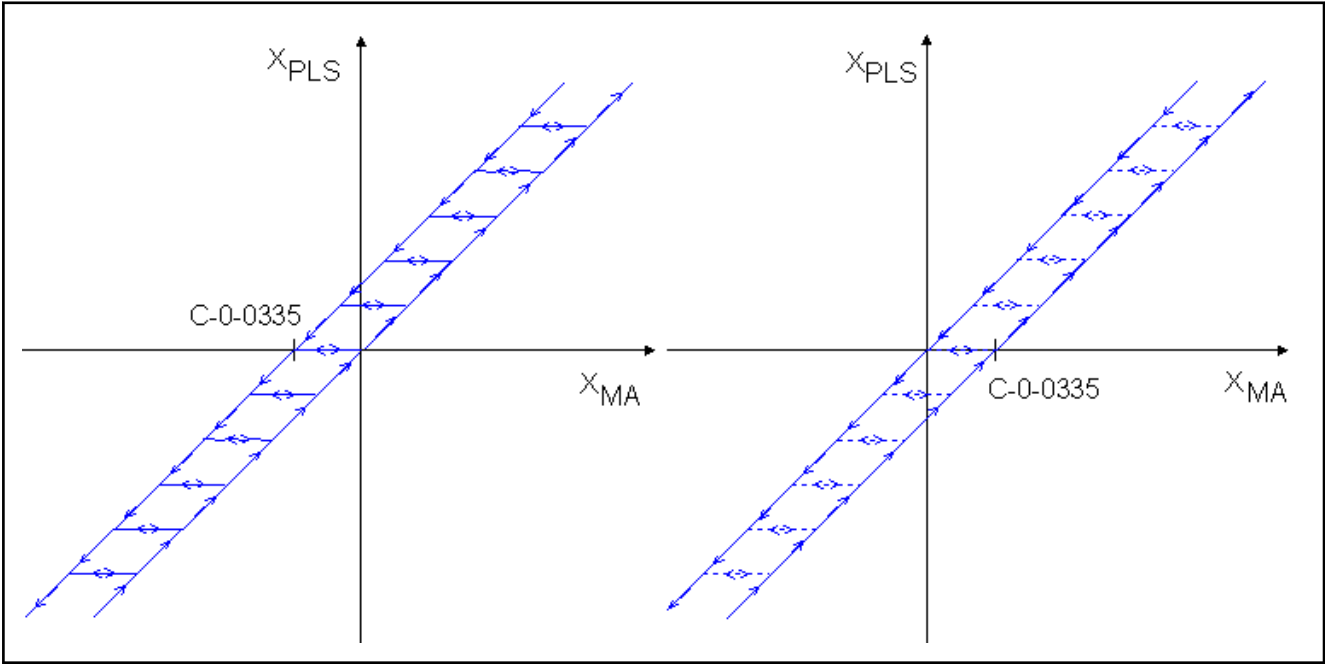
The error "F0160024, Error in cross-check C-parameter" is generated if one of the selected reference axes is deactivated or not configured.

C-0-0334 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2

Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 8	Default value 0

C-0-0335, PLS No.2, hysteresis

Function This list of parameters is used to define a position hysteresis for each switch track. The hysteresis functions direction-dependently, see figure.



X_{MA} Reference axis position
 X_{PLS} Switch track position
Fig. 4-61: Negative and positive hysteresis

Use The position hysteresis is entered in the input unit of the reference axis.
The hysteresis serves to compensate position fluctuations. The fluctuations can cause the output on the programmable limit switch to jitter.
If a real axis comes to a standstill, the position controller moves. The velocity of this movement multiplied by the dead time to be compensated equals the standstill fluctuation.
If there is a delay with an axis, extrapolation errors occur. Half of the delay multiplied by the dead time to be compensated squared equals the extrapolation error.

$$H_{PLS} = \frac{H_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

MA Master axis (reference axis)
PLS Switch track

Fig. 4-62:



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

Describing individual parameters, arranged according to types

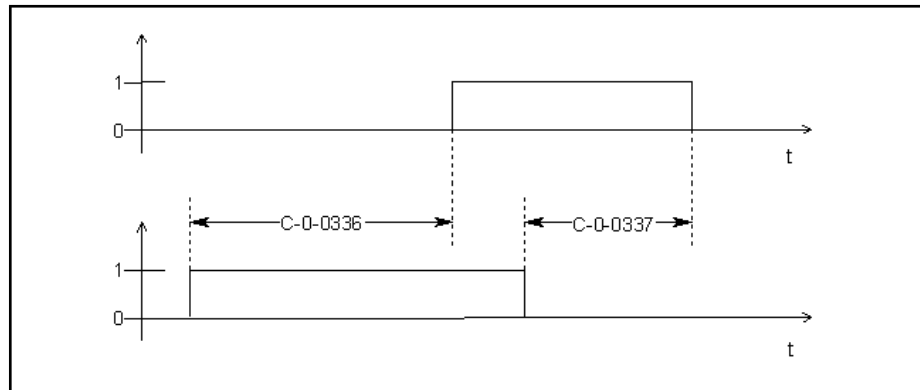
C-0-0335 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0.0

C-0-0336, PLS No.2, lead time when switching on**Function A) For state-controlled outputs**

This parameter is used to define the dead time compensation for state-controlled outputs (see "C-0-0343, PLS No.2, output mode") when switching on an output on the programmable limit switch.

The programmable limit switch operates with a cycle time of 125 µs.

The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation

PgDn Extrapolated output signal

Fig. 4-63: Dead time compensation (state-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0336>)) \bmod 2^{16}$$

Fig. 4-64: Extrapolation function for switching on an output

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.

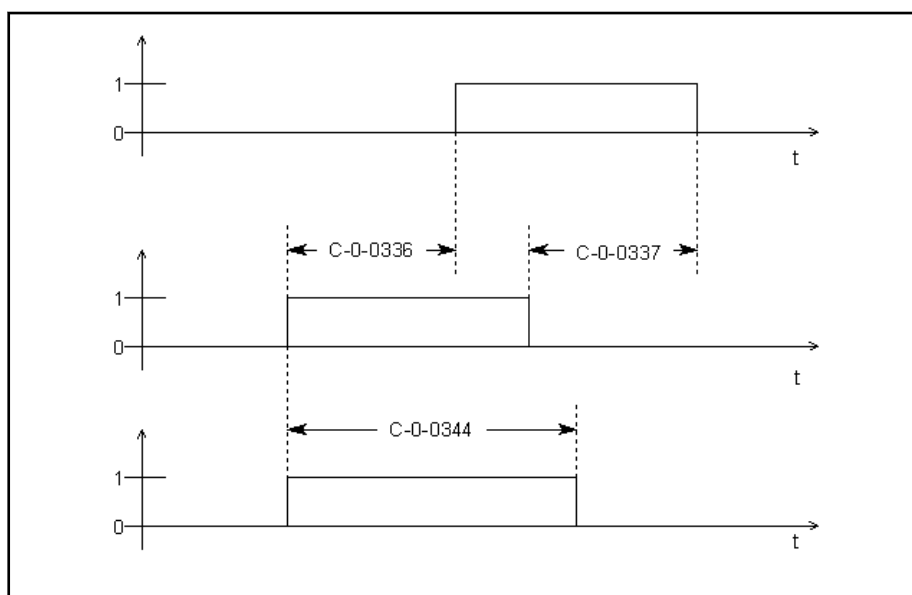


The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

B) For time-controlled outputs

This parameter is used to define the dead time compensation for time-controlled outputs (see "C-0-0343, PLS No.2, output mode") when switching on and off outputs.

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation
Center Extrapolated trigger signal
PgDn Time-controlled output signal

Fig. 4-65: Dead time compensation (time-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0336>)) \bmod 2^{16}$$

Fig. 4-66: Extrapolation function for switching on an output



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0336 - Attributes:

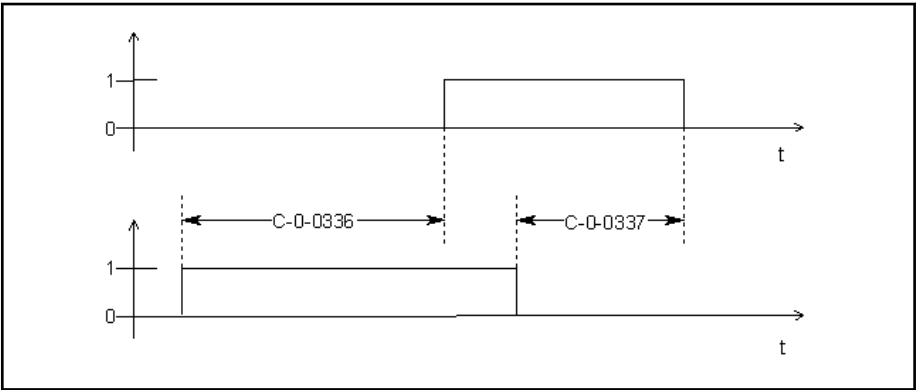
Function:	PARAMETER	Unit:	µs
MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 1000000	Default value 0

C-0-0337, PLS No.2, lead time when switching off

Function This parameter is used to control the dead time compensation when switching off an output at the programmable limit switch.

The parameter is only applied if the output is operated in a state-controlled manner (see C-0-0343, PLS No.2, output mode).

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time slot.



Up Signal before the dead time compensation
Down Extrapolated output signal

Fig. 4-67: Dead time compensation (state-controlled)

Use The dead time compensation extrapolates the switch track position by the current velocity of the switch track. Thus, extrapolation errors occur when the switch track accelerates and decelerates.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0337>)) \bmod 2^{16}$$

Fig. 4-68: Extrapolation function for switch-off

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.

 The programmable limit switch only accepts time specifications within the internal time slot of 125 µs.

 In case of one time-controlled output, only the parameter [C-0-0336](#), PLS No.2, lead time when switching on is applied.
(Refer to [C-0-0343](#), PLS No.2, output mode)

C-0-0337 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
Common:		Minimum value	Maximum value	Default value
		0	1000000	0

C-0-0338, PLS No.2, switch track number

- Function** This parameter is used to activate up to 64 switches and assign the 16 switch tracks.
- Structure** The list has 64 possible spots (switches) that are assigned with "0" after initialization (no switch track is assigned).

If only one switch is activated and assigned one of the 16 switch tracks, the number of the switch track is available in place of "0".

C-0-0338 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	16	0

C-0-0339, PLS No.2, switch-on position of switch track

Function This parameter and parameter "C-0-0340, PLS No.2, switch-off position of switch track" are used to define the a switch's position on the switch track.
The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PLS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

Fig. 4-69: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

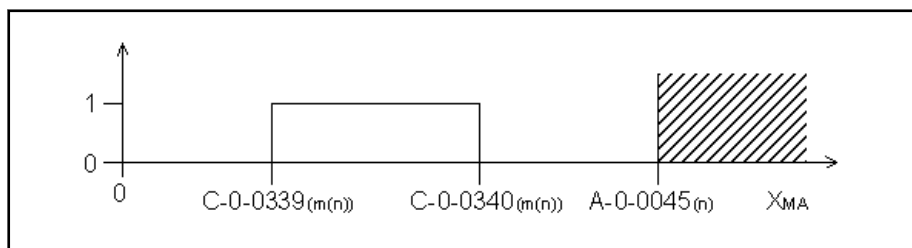


Fig. 4-70: Switch-on position less than switch-off position

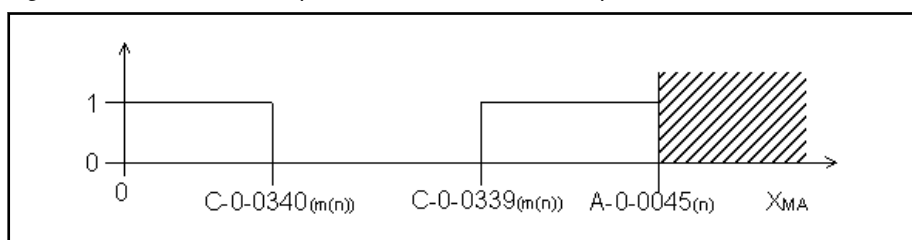


Fig. 4-71: Switch-on position greater than switch-off position

The parameter "C-0-0338, PLS No.1, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

Describing individual parameters, arranged according to types

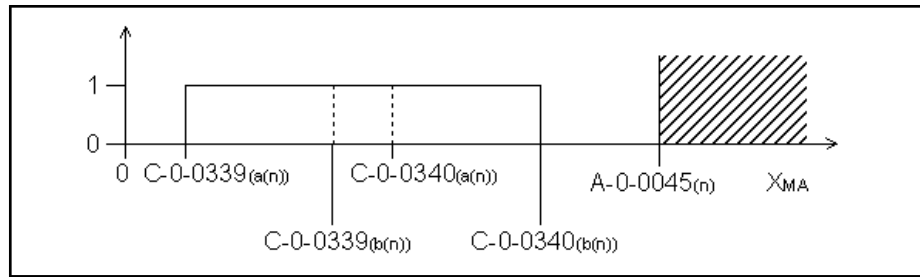


Fig. 4-72: Overlapping switches

C-0-0339 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0340, PLS No.2, switch-off position of switch track

Function This parameter and parameter "C-0-0339, PLS No.2, switch-on position of switch track" are used to define the a switch's position on the switch track.
The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PIS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

Fig. 4-73: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

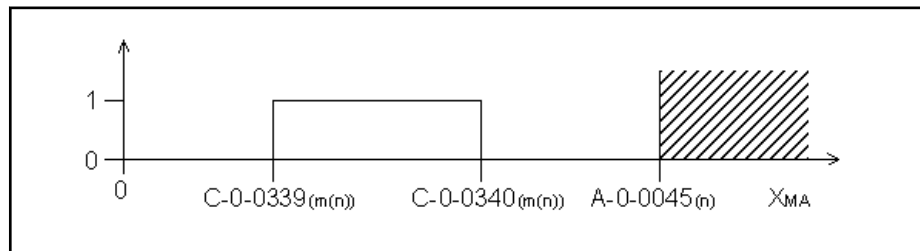


Fig. 4-74: Switch-on position less than switch-off position

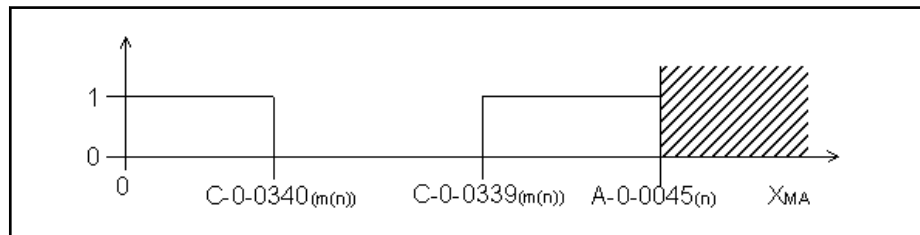


Fig. 4-75: Switch-on position greater than switch-off position

The parameter "C-0-0338, PLS No.2, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

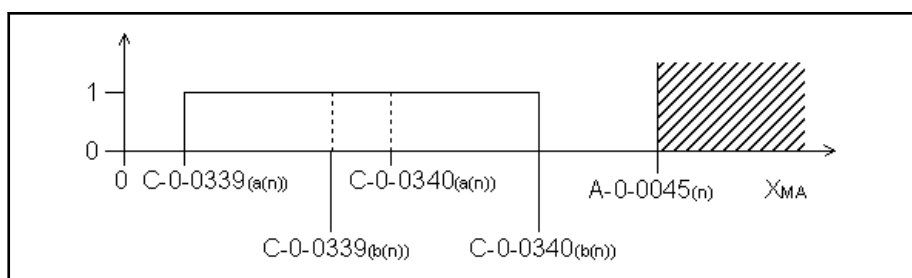


Fig. 4-76: Overlapping switches

C-0-0340 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0.0

C-0-0341, PLS No.2, command: Initialize switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode. Using the command "Initialize switch track", the passive group is reinitialized according to the parameters:

- C-0-0336, PLS No.2, lead time when switching on
- C-0-0337, PLS No.2, lead time when switching off
- C-0-0338, PLS No.2, switch track number
- C-0-0339, PLS No.2, switch-on position of switch track
- C-0-0340, PLS No.2, switch-off position of switch track
- C-0-0343, PLS No.2, output mode
- C-0-0344, PLS No.2, switch-on duration

Use The initialized switch track group is immediately activated, depending on the setting in the control word "C-0-0325, bit 5= 1".

The switch track group can be switched at all times using the command "C-0-0342, PLS No.2, command: Activate switch track".



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0341 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0342, PLS No.2, command: Activate switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode. The passive group is activated using the command "Activate switch track". The active group is simultaneously deactivated.

The passive switch track group can be subsequently reinitialized using the command "C-0-0341, PLS No.2, command: Initialize switch track".



When the operation mode is switched on, the first switch track group is activated.

C-0-0342 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0343, PLS No.2, output mode

Function When switching from a lower to a higher phase, this parameter is checked against parameter "C-0-0334, PLS No.2, reference axis definition".

If no reference axis was defined for the switch track and the output is activated (direction of motion ≠ zero), the error "F0160024, Error in cross-check C-parameters" is generated.

Structure

Bit	Designation/function
1..0	Direction of movement 0 0: deactivated: The internal output is deactivated. 0 1: activated depending on direction: The switch track's sampling signal is used for movement in the positive direction. 1 0: activated depending on direction: The switch track's sampling signal is used for movement in the negative direction. 1 1: activated independent of the direction The switch track's sampling signal is used irrespective of the motion direction.
2	Control mode 0: state-controlled: The switch track's sampling signal controls the register bit of the programmable limit switch. 1: time-controlled: The switch track's sampling signal controls the pulse generator's clock input. The pulse generator controls the register bit of the programmable limit switch.

Tab. 4-83: Relevant bits in the parameter

Use This parameter is used to control the internal register of the programmable limit switch (register_0 and register_1), depending on the direction of movement (forward and/or backward) of the reference axis.

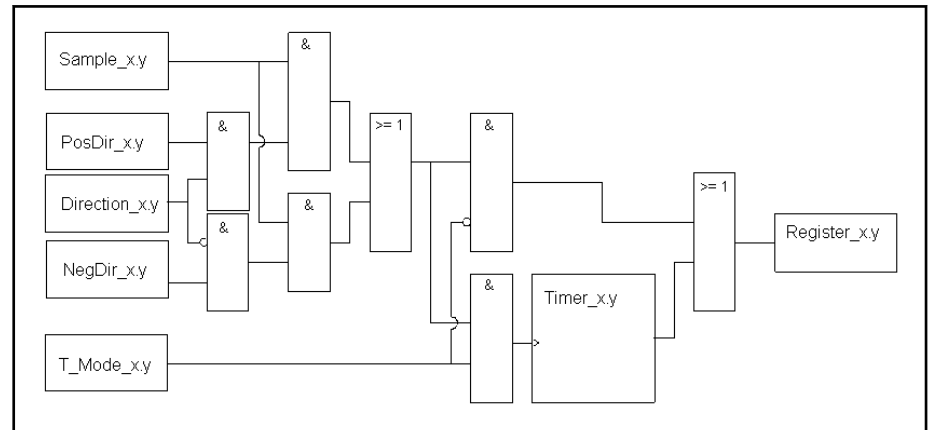
A register bit can be operated directly (state-controlled) or by a pulse generator (time-controlled).

The control mode influences the dead time compensation (see parameter "C-0-0336, PLS No.2, lead time when switching on" and "C-0-0337, PLS No.

2, lead time when switching off"). The pulse duration in time-controlled mode can be defined in parameter "C-0-0344, PLS No.2, switch-on duration".



The physical outputs of the programmable limit switch can be overridden from the PLC program (see parameter "C-0-0328, PLS No.2, control signal").



Sample_x Switch track's sampling signal

PosDir_x Active in positive movement direction

Direction_x Current movement direction

NegDir_x Active in positive movement direction

T_Mode_x Time-controlled mode

Register_x Internal register

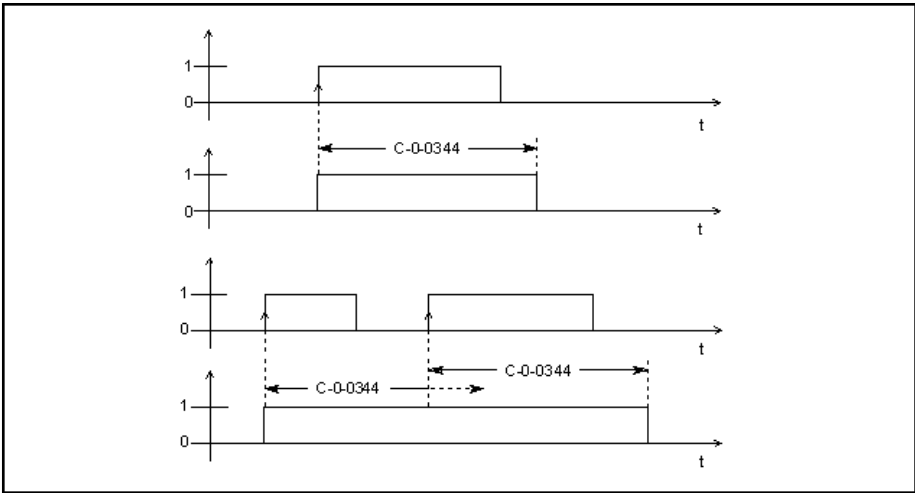
Fig. 4-77: Output control

C-0-0343 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE_VAR	PLC_data_type:	ARRAY of WORD
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0344, PLS No.2, switch-on duration

Function This parameter is used to define the pulse duration in time-controlled mode (see parameter "C-0-0343, PLS No.2, output mode").

The programmable limit switch operates with a cycle time of 125 µs. Within this time period, the programmable limit switch can generate pulses with a maximum duration of one second.



PgUp Single pulse
PgDn Extended pulse

Fig. 4-78: Pulse generator

Use The pulse generator is started by a rising edge at the clock input. The pulse generator is reset and restarted with each additional rising edge. This extends the output pulse for active pulse generators.

 The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0344 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		125	1000000	125

C-0-0350, PLS No.3, control word

Function Control word for the third programmable limit switch module on the control's module bus.

Structure	Bit	Name/function
	1..0	Output monitoring 0 0: Deactivated. 0 1: Activated: An error of error class 'FO' is generated in case of output overload. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	3..2	Voltage monitoring 0 0: Deactivated. 0 1: Activated: In case of undervoltage at the function module, an error of error class 'FO' is generated. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	4	Function module 0: Deactivated, 1: Activated.
	5	Command function C-0-0366 0: Initialize switch track. 1: Initialize and activate switch track.

Tab. 4-84: Relevant bits in control word

Use The control word is checked when switching phases against the parameter "C-0-0041, Local and function module bus, actual configuration". If there is no programmable limit switch module 'CFL01.1-N1' at the module bus and if bit 4 is set in the control word, the error "F0160024, Error in cross-check C-parameters" is generated.

C-0-0350 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	(P2+Stop)
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x05

C-0-0351, PLS No.3, status word

Function Status word for the third programmable limit switch module on the control's module bus.

Structure

Bit	Designation/function
0	Passive switch track group initialized
1	Active switch track group initialized

Tab. 4-85: Relevant bits in the status word

Use Bit 0:

The passive switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch can be activated (see parameter "C-0-0366, PLS No. 3, command: Initialize switch track").

Bit 1:

The active switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch is active (see parameter "C-0-0367, PLS No.3, command: Activate switch track").



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0351 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0352, PLS No.3, signal selection

Function The parameter "signal selection" is used to diagnose the third programmable limit switch.

This parameter can be used to read out the bytes "Source_0.y" (low byte, y: bit 0...7) and "Source_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the third programmable limit switch module.

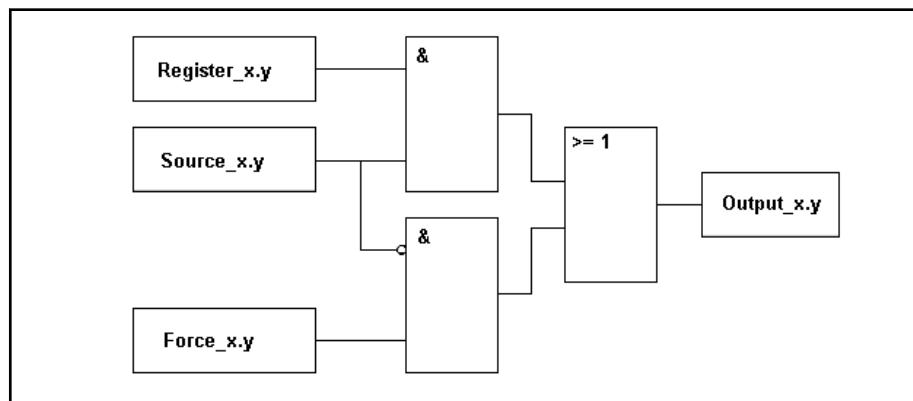
Structure

Fig. 4-79: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Source_0.y" and "Source_1.y" are cleared.

These bytes can be used to define the signal source for each of the programmable limit switch's outputs.

C-0-0352 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0353, PLS No.3, control signal

Function The parameter control signal is used to diagnose the third programmable limit switch.

This parameter can be used to read out the bytes "Force_0.y" (low byte, y: bit 0...7) and "Force_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the third programmable limit switch module.

Structure

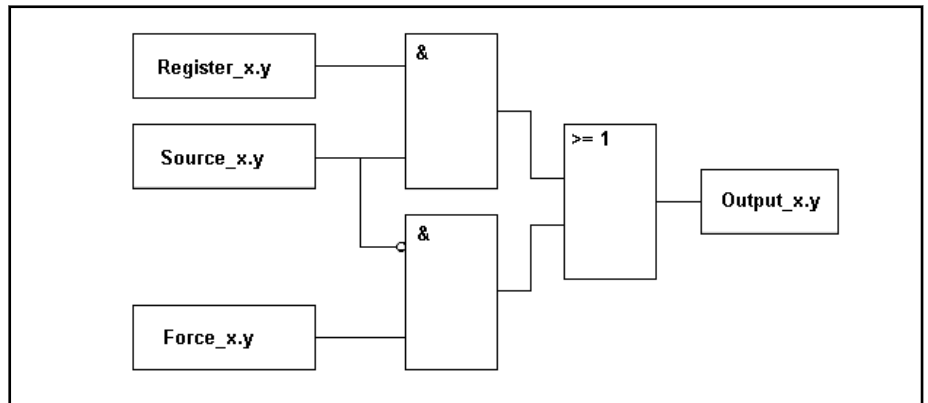


Fig. 4-80: Output control logic

Use The bytes "Force_0.y" and "Force_1.y" in the structure "ML_PLSDATA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Force_0.y" and "Force_1.y" are cleared.

These bytes can be used to override all the programmable limit switch's outputs, depending on the content of the bytes "Source_0.y" and "Source_1.y" - the defined signal source.

C-0-0353 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0354, PLS No.3, outputs

Function This parameter is used to diagnose the third programmable limit switch. This parameter can be used to read out the bytes "Output_0.y" (low byte, y: bit 0...7) and "Output_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the third programmable limit switch module.

Describing individual parameters, arranged according to types

Structure

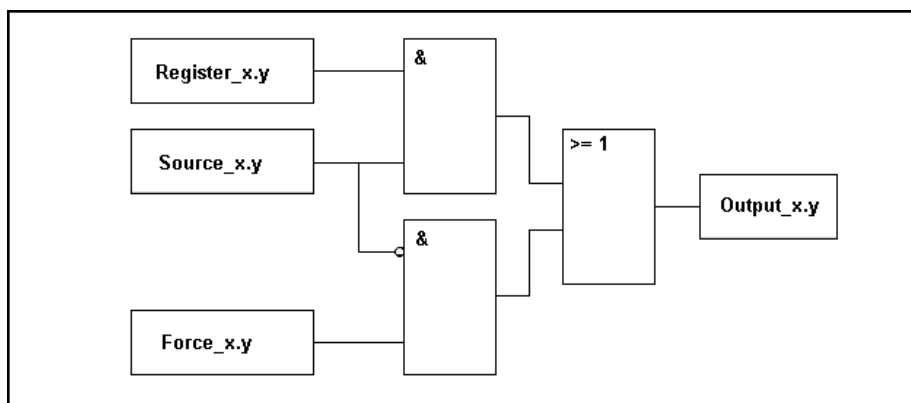


Fig. 4-81: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The control cyclically updates the bytes in operating mode. In operation mode, the function module's output signals can be processed in the PLC.

C-0-0354 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0355, PLS No.3, internal registers

Function This parameter is used to diagnose the third programmable limit switch.

This parameter can be used to read out the bytes "Register_0.y" (low byte, y: bit 0...7) and "Register_1.y" (high byte, y: bit 0...7) from the structure field "PLsData[]" for the third programmable limit switch module.

Structure

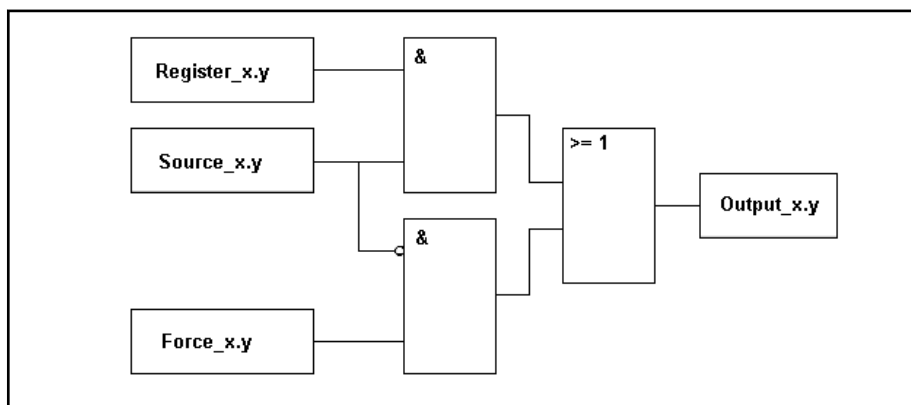


Fig. 4-82: Output control logic

Use The bytes "Register_0.y" and "Register_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The bytes display the programmable limit switch's internal state and are cyclically updated by the control in operating mode. In operating mode, the programmable limit switch's output signals can be processed in the PLC.

C-0-0355 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0357, PLS No.3, reference axis configuration

Function Of the axes configured and activated in the control, up to eight of them can be selected for the programmable limit switch in this parameter.

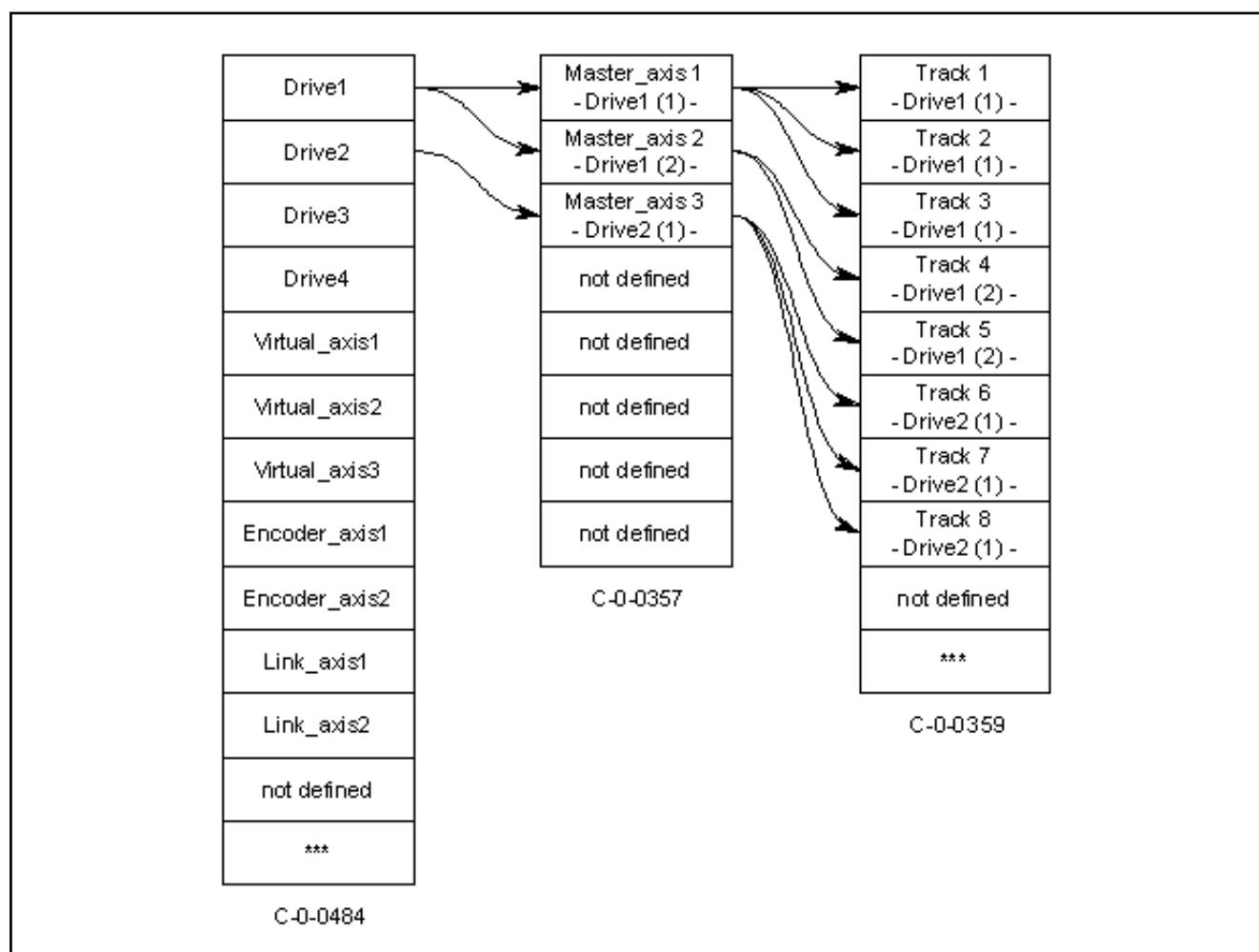


Fig. 4-83: Configuration and definition of reference axes

Structure The position and velocity of the selected axes are cyclically transmitted to the programmable limit switch in operation mode.

The reference axes are configured in parameterization mode. A single axis can be configured as a reference axis more than once. This allows switch tracks with a different position offset to be operated by the same axis.

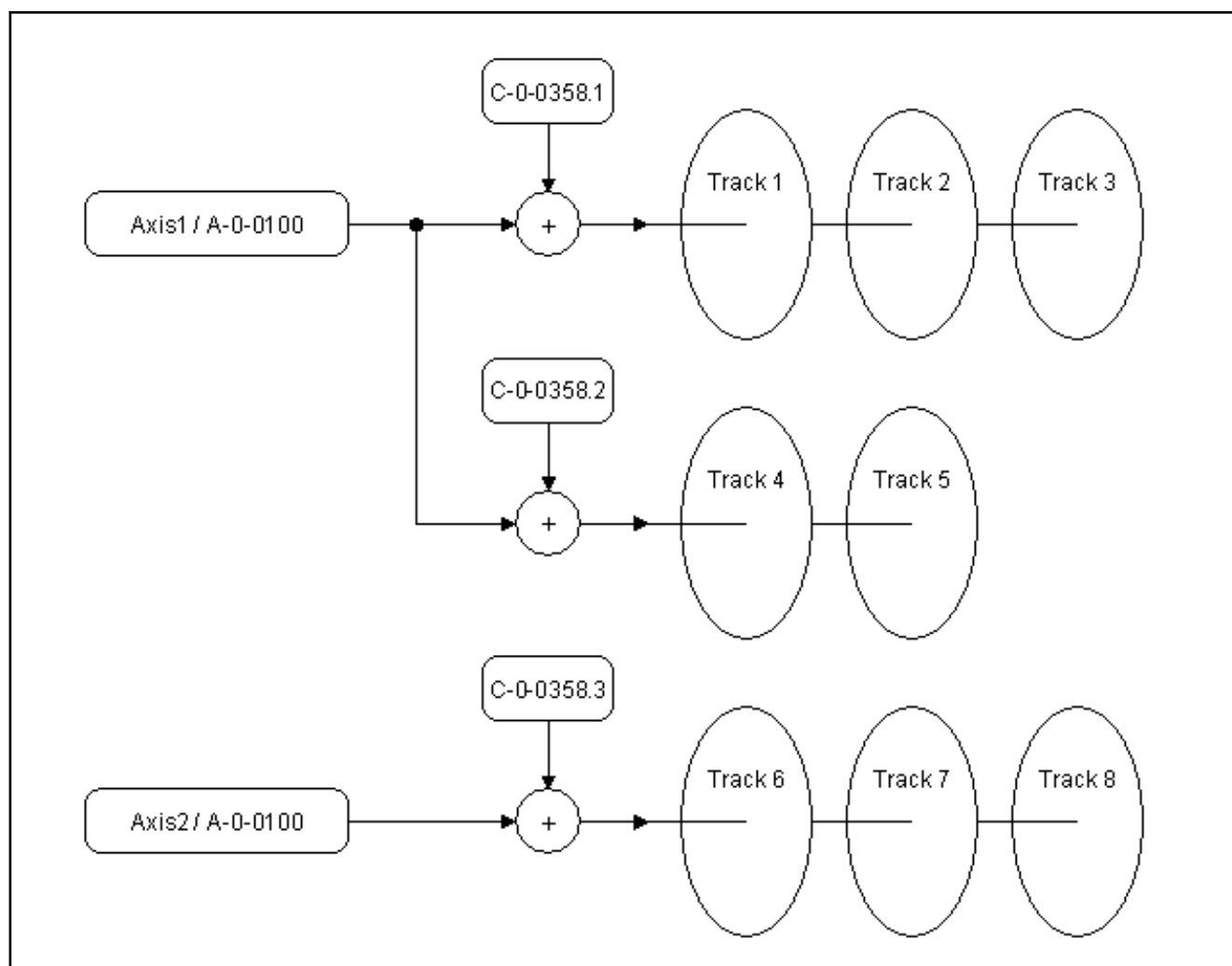


Fig. 4-84: Position offset

Use When switching from a lower to a higher phase, the reference axis configuration is checked against parameter "C-0-0484, Axes configuration list" and parameter "A-0-0024, Axis condition" of the respective axis.

The error "F0160024, Error in cross-check C-parameters" is generated if one of the selected axes is deactivated or not configured.

C-0-0357 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	64	0

C-0-0358, PLS No.3, reference axis position, additive

Function This parameter is used to move the position of the connected switch track relative to the position of the reference axis. The position offset is entered in the input unit of the reference axis.

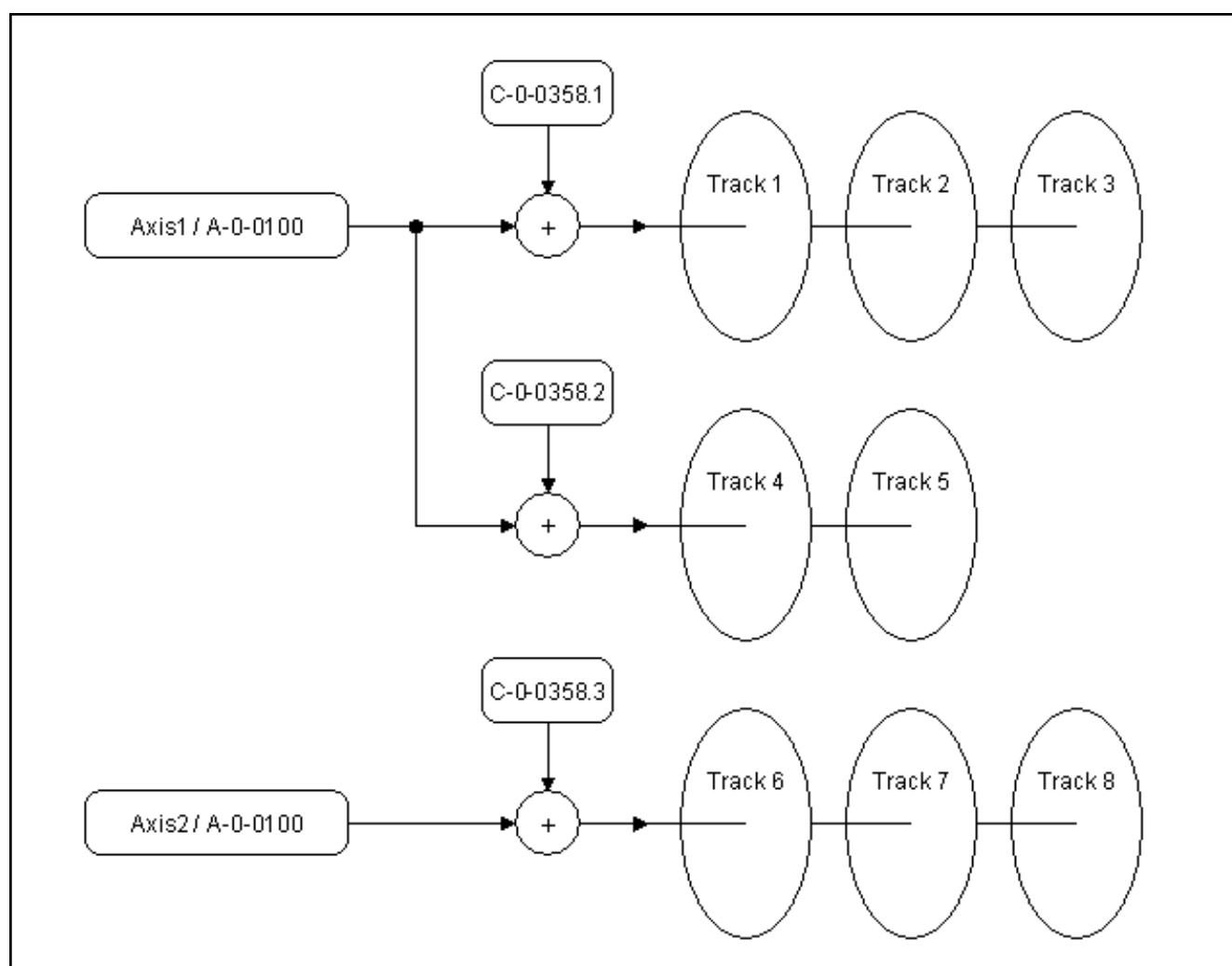


Fig. 4-85: Position offset

Use The position offset is cyclically transmitted to the programmable limit switch module and added to the switch track position after the hysteresis is calculated. As a result, a change to the position offset is active in its unmodified form.

$$X_{PLS} = \frac{(X_{MA} + \langle C-0-0358 \rangle) \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

PLS Programmable limit switch
MA Master axis (reference axis)

Fig. 4-86: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

C-0-0358 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0359, PLS No.3, reference axis definition

Function This parameter is used to define the reference axis for each switch track. All reference axes configured in parameter "C-0-0357, PLS No.3, reference axis configuration" are available for selection. In addition to the position and velocity of the selected reference axis, the position offset, parameter "C-0-0359, PLS No.3, reference axis position, additive", is assigned to the respective switch track.

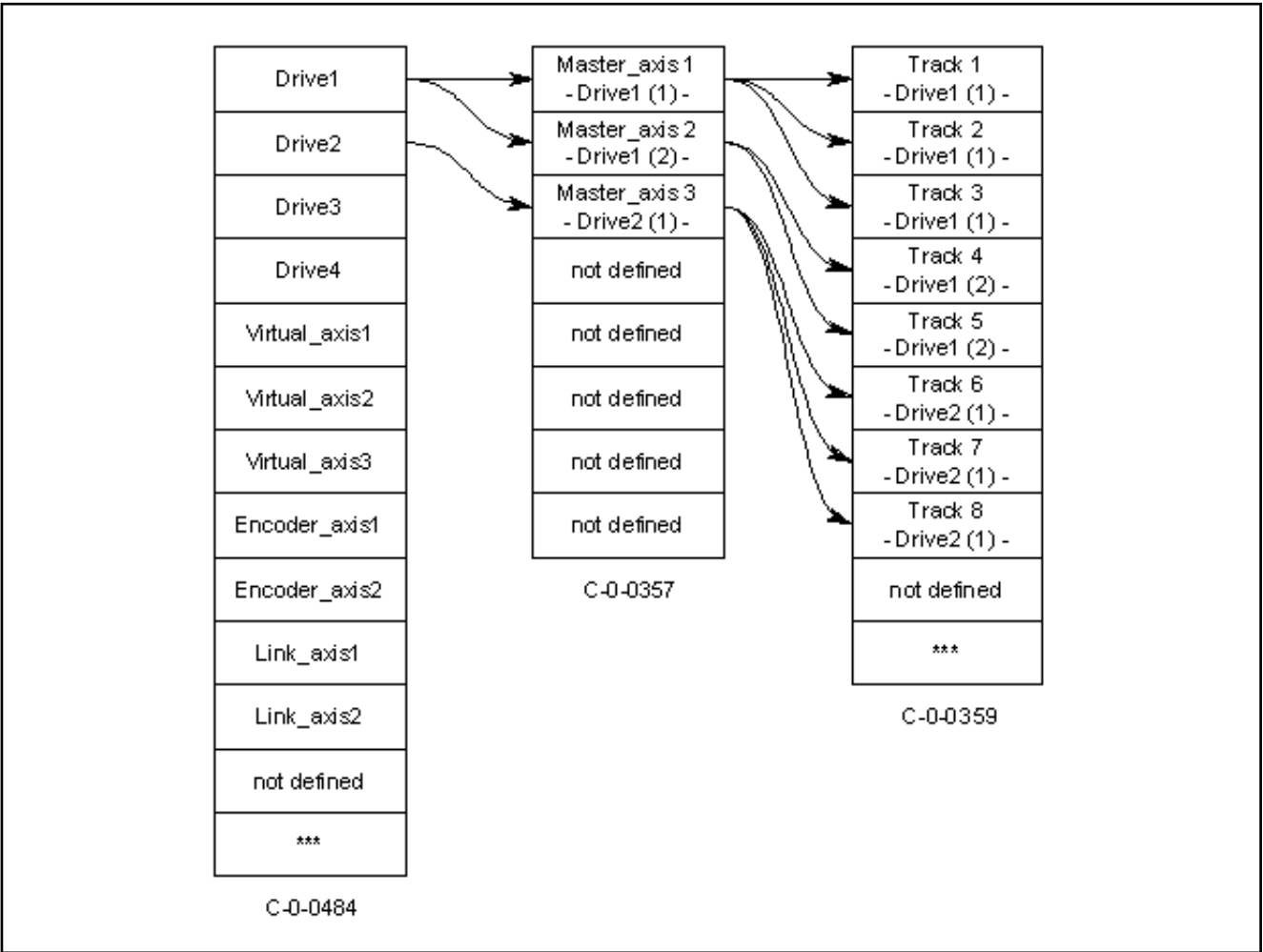


Fig. 4-87: Configuration and definition of reference axes

Use When switching from a lower to a higher phase, the reference axis definition is checked against parameter "C-0-0357, PLS No.3, reference axis configuration".

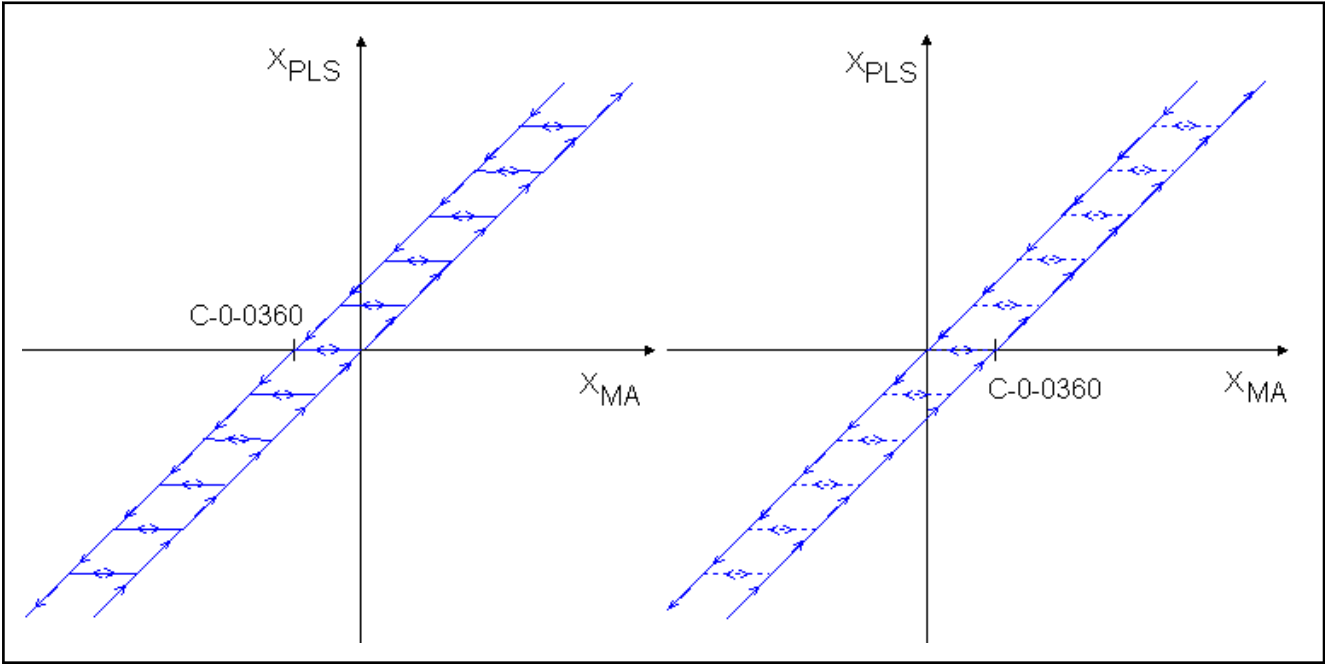
The error "F0160024, Error in cross-check C-parameter" is generated if one of the selected reference axes is deactivated or not configured.

C-0-0359 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2

Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 8	Default value 0

C-0-0360, PLS No.3, hysteresis

Function
 This list of parameters is used to define a position hysteresis for each switch track. The hysteresis functions direction-dependently, see figure.



X_{MA}
 X_{PLS}

Reference axis position
 Switch track position

Fig. 4-88:
 Negative and positive hysteresis

Use
 The position hysteresis is entered in the input unit of the reference axis.
 The hysteresis serves to compensate position fluctuations. The fluctuations can cause the output on the programmable limit switch to jitter.
 If a real axis comes to a standstill, the position controller moves. The velocity of this movement multiplied by the dead time to be compensated equals the standstill fluctuation.
 If there is a delay with an axis, extrapolation errors occur. Half of the delay multiplied by the dead time to be compensated squared equals the extrapolation error.

$$H_{PLS} = \frac{H_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

MA

PLS

Master axis (reference axis)
 Switch track

Fig. 4-89:

The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

Describing individual parameters, arranged according to types

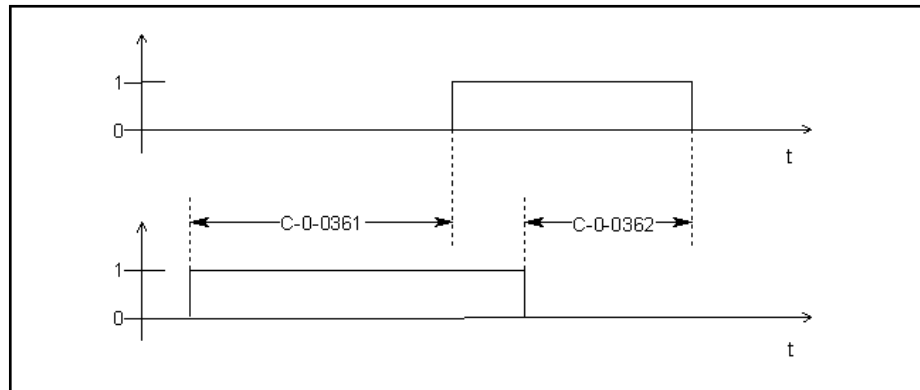
C-0-0360 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0.0

C-0-0361, PLS No.3, lead time when switching on**Function A) For state-controlled outputs**

This parameter is used to define the dead time compensation for state-controlled outputs (see "C-0-0368, PLS No.3, output mode") when switching on an output on the programmable limit switch.

The programmable limit switch operates with a cycle time of 125 µs.

The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation

PgDn Extrapolated output signal

Fig. 4-90: Dead time compensation (state-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0361>)) \bmod 2^{16}$$

Fig. 4-91: Extrapolation function for switching on an output

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.

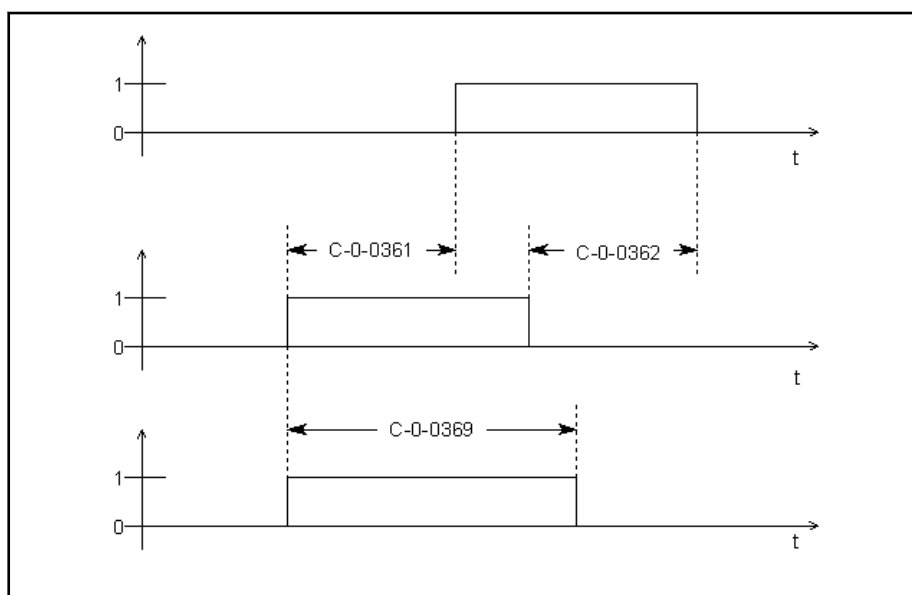


The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

B) For time-controlled outputs

This parameter is used to define the dead time compensation for time-controlled outputs (see "C-0-0368, PLS No.3, output mode") when switching on and off outputs.

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation
Center Extrapolated trigger signal
PgDn Time-controlled output signal

Fig. 4-92: Dead time compensation (time-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0361>)) \bmod 2^{16}$$

Fig. 4-93: Extrapolation function for switching on an output



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0361 - Attributes:

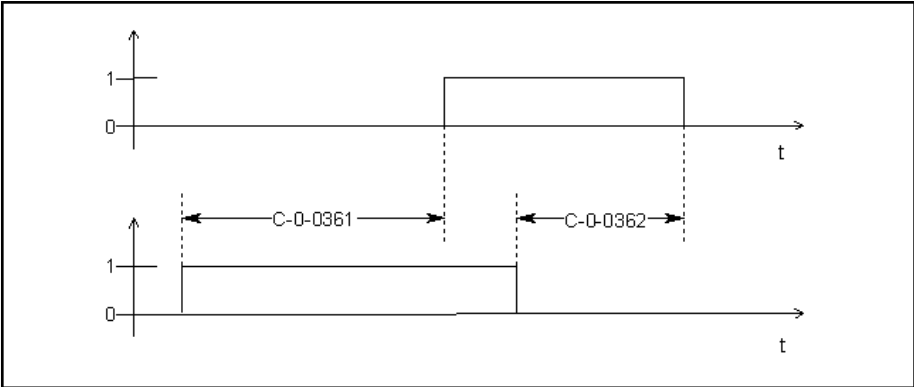
Function:	PARAMETER	Unit:	µs
MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 1000000	Default value 0

C-0-0362, PLS No.3, lead time when switching off

Function This parameter is used to control the dead time compensation when switching off an output at the programmable limit switch.

The parameter is only applied if the output is operated in a state-controlled manner (see C-0-0368, PLS No.3, output mode). The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch

can compensate for the delay or switching time of the connected device within this time slot.



Up Signal before the dead time compensation
Down Extrapolated output signal

Fig. 4-94: Dead time compensation (state-controlled)

Use The dead time compensation extrapolates the switch track position by the current velocity of the switch track. Thus, extrapolation errors occur when the switch track accelerates and decelerates.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0362>)) \bmod 2^{16}$$

Fig. 4-95: Extrapolation function for switch-off

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.

 The programmable limit switch only accepts time specifications within the internal time slot of 125 µs.

 In case of one time-controlled output, only the parameter [C-0-0361](#), PLS No.3, lead time when switching on is applied.
(Refer to [C-0-0368](#), PLS No.3, output mode).

C-0-0362 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
Common:		Minimum value 0	Maximum value 1000000	Default value 0

C-0-0363, PLS No.3, switch track number

- Function** This parameter is used to activate up to 64 switches and assign the 16 switch tracks.
- Structure** The list has 64 possible spots (switches) that are assigned with "0" after initialization (no switch track is assigned).

If only one switch is activated and assigned one of the 16 switch tracks, the number of the switch track is available in place of "0".

C-0-0363 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	16	0

C-0-0364, PLS No.3, switch-on position of switch track

Function This parameter and parameter "C-0-0365, PLS No.3, switch-off position of switch track" are used to define the a switch's position on the switch track.
The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PLS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

Fig. 4-96: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

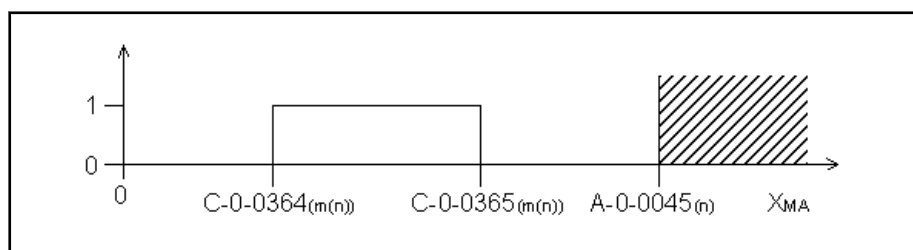


Fig. 4-97: Switch-on position less than switch-off position

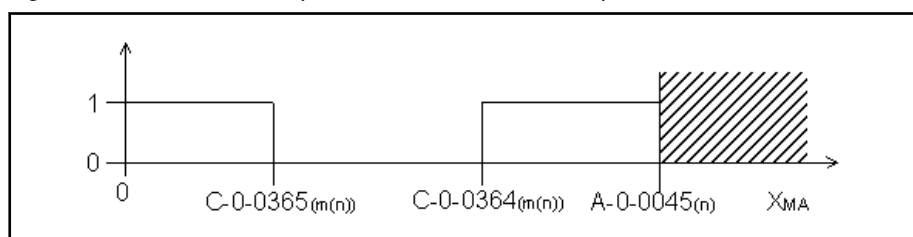


Fig. 4-98: Switch-on position greater than switch-off position

The parameter "C-0-0363, PLS No.3, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

Describing individual parameters, arranged according to types

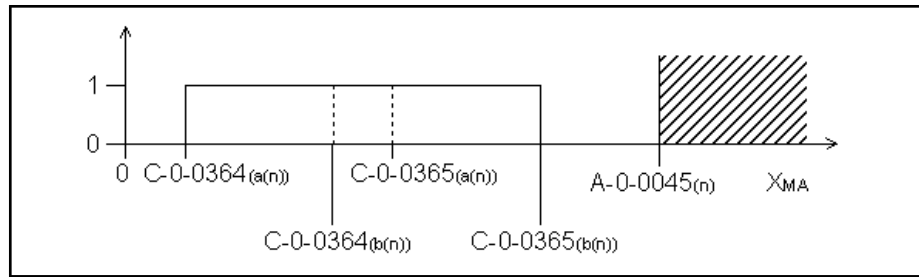


Fig. 4-99: Overlapping switches

C-0-0364 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0365, PLS No.3, switch-off position of switch track

Function This parameter and parameter "C-0-0364, PLS No.3, switch-on position of switch track" are used to define the a switch's position on the switch track. The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PIS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

Fig. 4-100: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

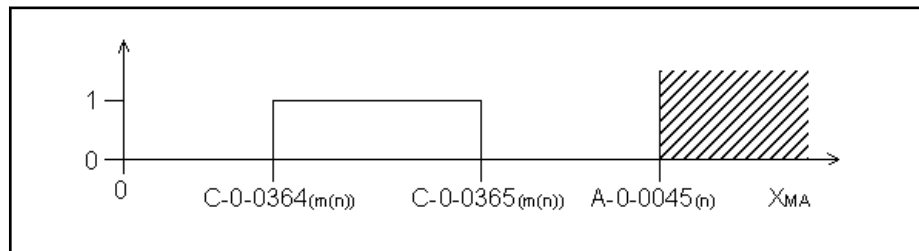


Fig. 4-101: Switch-on position less than switch-off position

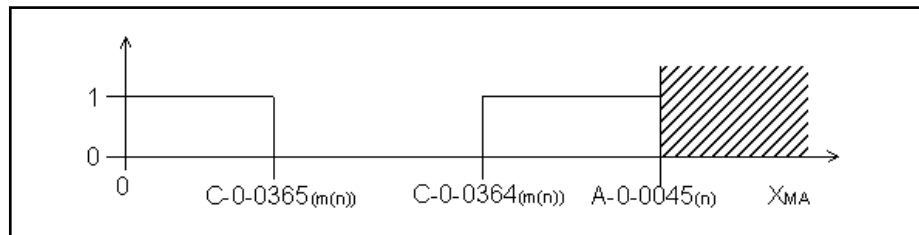


Fig. 4-102: Switch-on position greater than switch-off position

The parameter "C-0-0363, PLS No.3, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

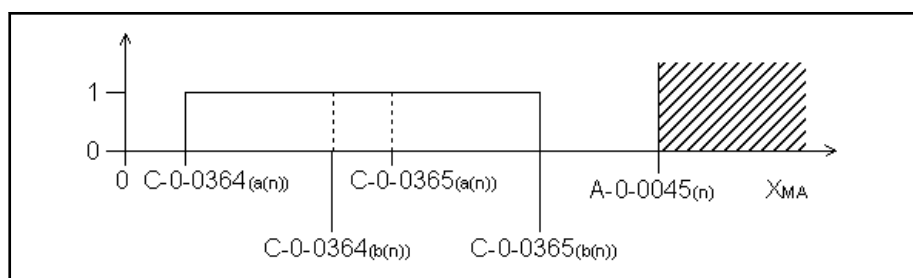


Fig. 4-103: Overlapping switches

C-0-0365 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0.0

C-0-0366, PLS No.3, command: Initialize switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode. Using the command "Initialize switch track", the passive group is reinitialized according to the parameters:

- C-0-0361, PLS No.3, lead time when switching on
- C-0-0362, PLS No.3, lead time when switching off
- C-0-0363, PLS No.3, switch track number
- C-0-0364, PLS No.3, switch-on position of switch track
- C-0-0365, PLS No.3, switch-off position of switch track
- C-0-0368, PLS No.3, output mode
- C-0-0369, PLS No.3, switch-on duration

Use The initialized switch track group is immediately activated, depending on the setting in the control word "C-0-0350, bit 5= 1".

The switch track group can be switched at all times using the command "C-0-0367, PLS No.3, command: Activate switch track".



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0366 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0367, PLS No.3, command: Activate switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode.

The passive group is activated using the command "Activate switch track". The active group is simultaneously deactivated.

The passive switch track group can be subsequently reinitialized using the command "C-0-0366, PLS No.3, command: Initialize switch track".



When the operation mode is switched on, the first switch track group is activated.

C-0-0367 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0368, PLS No.3, output mode

Function When switching from a lower to a higher phase, this parameter is checked against parameter "C-0-0359, PLS No.3, reference axis definition".

If no reference axis was defined for the switch track and the output is activated (direction of motion $\neq$ zero), the error "F0160024, Error in cross-check C-parameters" is generated.

Structure

Bit	Designation/function
1..0	Direction of movement 0 0: deactivated: The internal output is deactivated. 0 1: activated depending on direction: The switch track's sampling signal is used for movement in the positive direction. 1 0: activated depending on direction: The switch track's sampling signal is used for movement in the negative direction. 1 1: activated independent of the direction The switch track's sampling signal is used irrespective of the motion direction.
2	Control mode 0: state-controlled: The switch track's sampling signal controls the register bit of the programmable limit switch. 1: time-controlled: The switch track's sampling signal controls the pulse generator's clock input. The pulse generator controls the register bit of the programmable limit switch.

Tab. 4-86: Relevant bits in the parameter

Use The parameter "output mode" is used to control the internal register of the programmable limit switch (register_0 and register_1), depending on the direction of movement (forward and/or backward) of the reference axis.

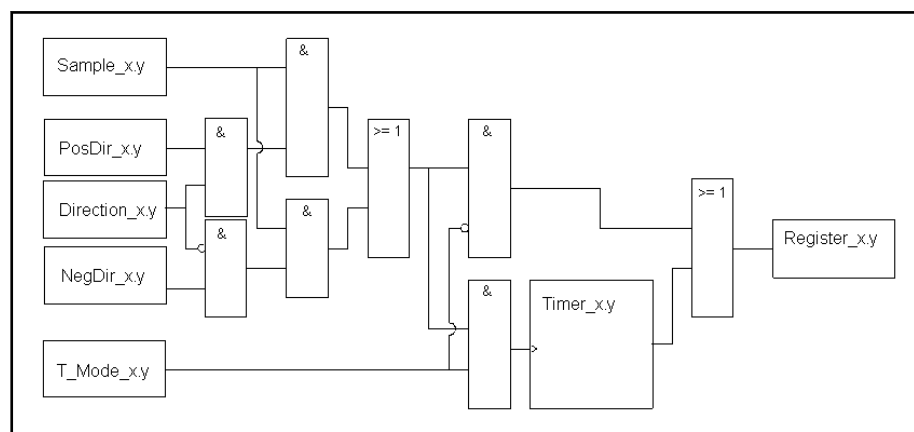
A register bit can be operated directly (state-controlled) or by a pulse generator (time-controlled).

The control mode influences the dead time compensation (see parameter "C-0-0361, PLS No.3, lead time when switching on" and "C-0-0362, PLS Nr.

3, lead time when switching off"). The pulse duration in time-controlled mode can be defined in parameter "C-0-0369, PLS No.3, switch-on duration".



The physical outputs of the programmable limit switch can be overridden from the PLC program (see parameter "C-0-0353, PLS No.3, control signal").



Sample_x Switch track's sampling signal

PosDir_x Active in positive movement direction

Direction_x Current movement direction

NegDir_x Active in positive movement direction

T_Mode_x Time-controlled mode

Register_x Internal register

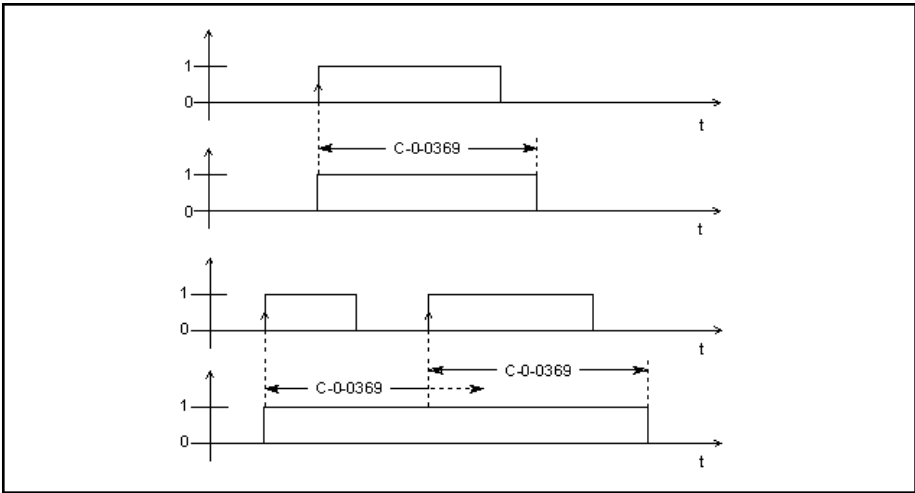
Fig. 4-104: Output control

C-0-0368 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE_VAR	PLC_data_type:	ARRAY of WORD
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0369, PLS No.3, switch-on duration

Function This parameter is used to define the pulse duration in time-controlled mode (see parameter "C-0-0368, PLS No.3, output mode").

The programmable limit switch operates with a cycle time of 125 µs. Within this time period, the programmable limit switch can generate pulses with a maximum duration of one second.



PgUp Single pulse
PgDn Extended pulse

Fig. 4-105: Pulse generator

Use The pulse generator is started by a rising edge at the clock input. The pulse generator is reset and restarted with each additional rising edge. This extends the output pulse for active pulse generators.

 The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0369 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		125	1000000	125

C-0-0375, PLS No.4, control word

Function Control word for the fourth programmable limit switch module on the control's module bus.

Structure	Bit	Name/function
	1..0	Output monitoring 0 0: Deactivated. 0 1: Activated: An error of error class 'FO' is generated in case of output overload. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	3..2	Voltage monitoring 0 0: Deactivated. 0 1: Activated: In case of undervoltage at the function module, an error of error class 'FO' is generated. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	4	Function module 0: Deactivated, 1: Activated.
	5	Command function C-0-0391 0: Initialize switch track. 1: Initialize and activate switch track.

Tab. 4-87: Relevant bits in control word

Use The control word is checked when switching phases against the parameter "C-0-0041, Local and function module bus, actual configuration". If there is no programmable limit switch module 'CFL01.1-N1' at the module bus and if bit 4 is set in the control word, the error "F0160024, Error in cross-check C-parameters" is generated.

C-0-0375 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	(P2+Stop)
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x05

C-0-0376, PLS No.4, status word

Function Status word for the fourth programmable limit switch module on the control's module bus.

Structure	Bit	Designation/function
	0	Passive switch track group initialized
	1	Active switch track group initialized

Tab. 4-88: Relevant bits in the status word

Use Bit 0:

The passive switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch can be activated (see parameter "C-0-0391, PLS No. 4, command: Initialize switch track").

Bit 1:

The active switch track group is initialized with the current parameter set of the programmable limit switch or the parameterization entered for the programmable limit switch is active (see parameter "C-0-0392, PLS No.4, command: Activate switch track").



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0376 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0377, PLS No.4, signal selection

Function This parameter is used to diagnose the fourth programmable limit switch. This parameter can be used to read out the bytes "Source_0.y" (low byte, y: bit 0...7) and "Source_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the fourth programmable limit switch module.

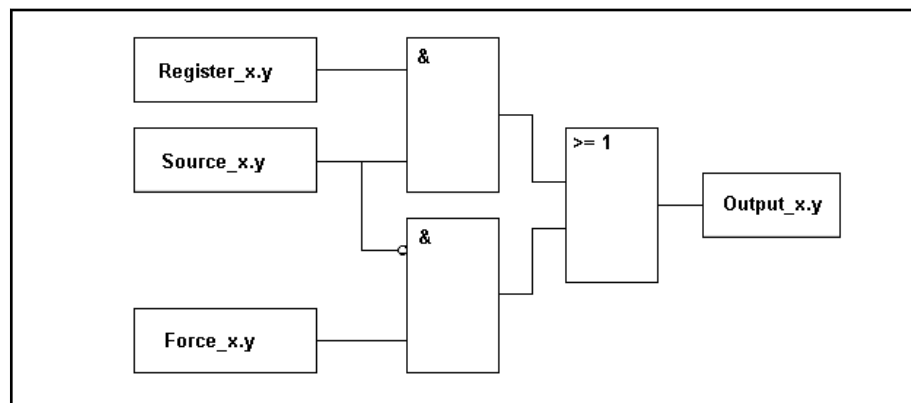
Structure

Fig. 4-106: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Source_0.y" and "Source_1.y" are cleared.

These bytes can be used to define the signal source for each of the programmable limit switch's outputs.

C-0-0377 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0378, PLS No.4, control signal

Function This parameter is used to diagnose the fourth programmable limit switch. This parameter can be used to read out the bytes "Force_0.y" (low byte, y: bit 0...7) and "Force_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the fourth programmable limit switch module.

Structure

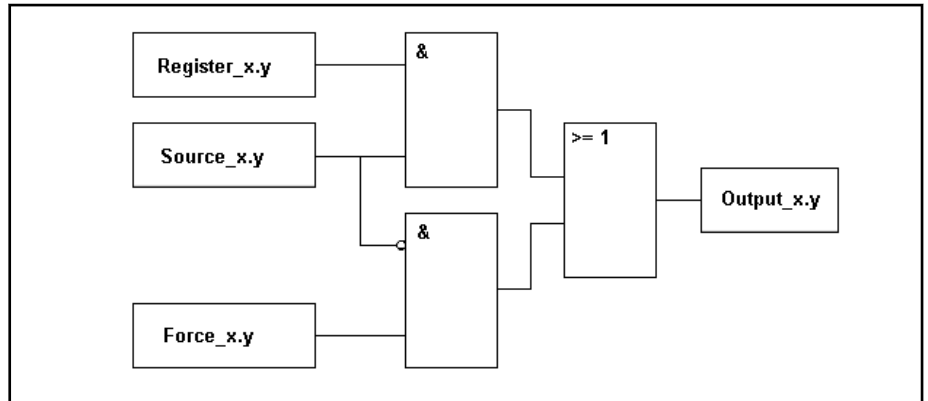


Fig. 4-107: Output control logic

Use The bytes "Force_0.y" and "Force_1.y" in the structure "ML_PLSDATA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Force_0.y" and "Force_1.y" are cleared.

These bytes can be used to override all the programmable limit switch's outputs, depending on the content of the bytes "Source_0.y" and "Source_1.y" - the defined signal source.

C-0-0378 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0379, PLS No.4, outputs

Function This parameter is used to diagnose the fourth programmable limit switch. This parameter can be used to read out the bytes "Output_0.y" (low byte, y: bit 0...7) and "Output_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the fourth programmable limit switch module.

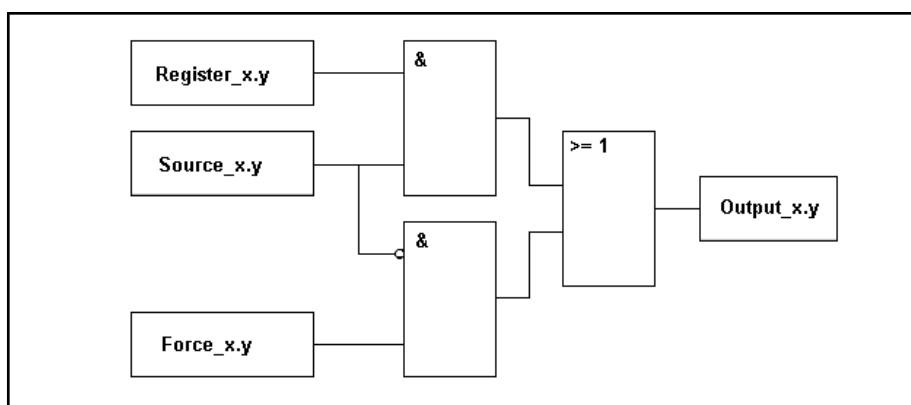
Structure

Fig. 4-108: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The control cyclically updates the bytes in operating mode.

In operation mode, the function module's output signals can be processed in the PLC.

C-0-0379 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0380, PLS No.4, internal registers

Function This parameter is used to diagnose the fourth programmable limit switch.

This parameter can be used to read out the bytes "Register_0.y" (low byte, y: bit 0...7) and "Register_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the fourth programmable limit switch module.

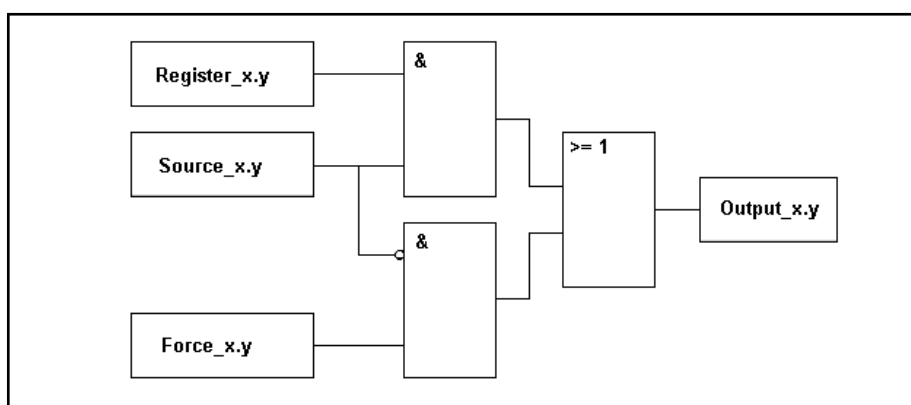
Structure

Fig. 4-109: Output control logic

Use The bytes "Register_0.4" and "Register_1.4" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The bytes display the programmable limit switch's internal state and are cyclically updated by the control in operating mode. In operating mode, the programmable limit switch's output signals can be processed in the PLC.

C-0-0380 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0382, PLS No.4, reference axis configuration

Function Of the axes configured and activated in the control, up to eight of them can be selected for the programmable limit switch in this parameter.

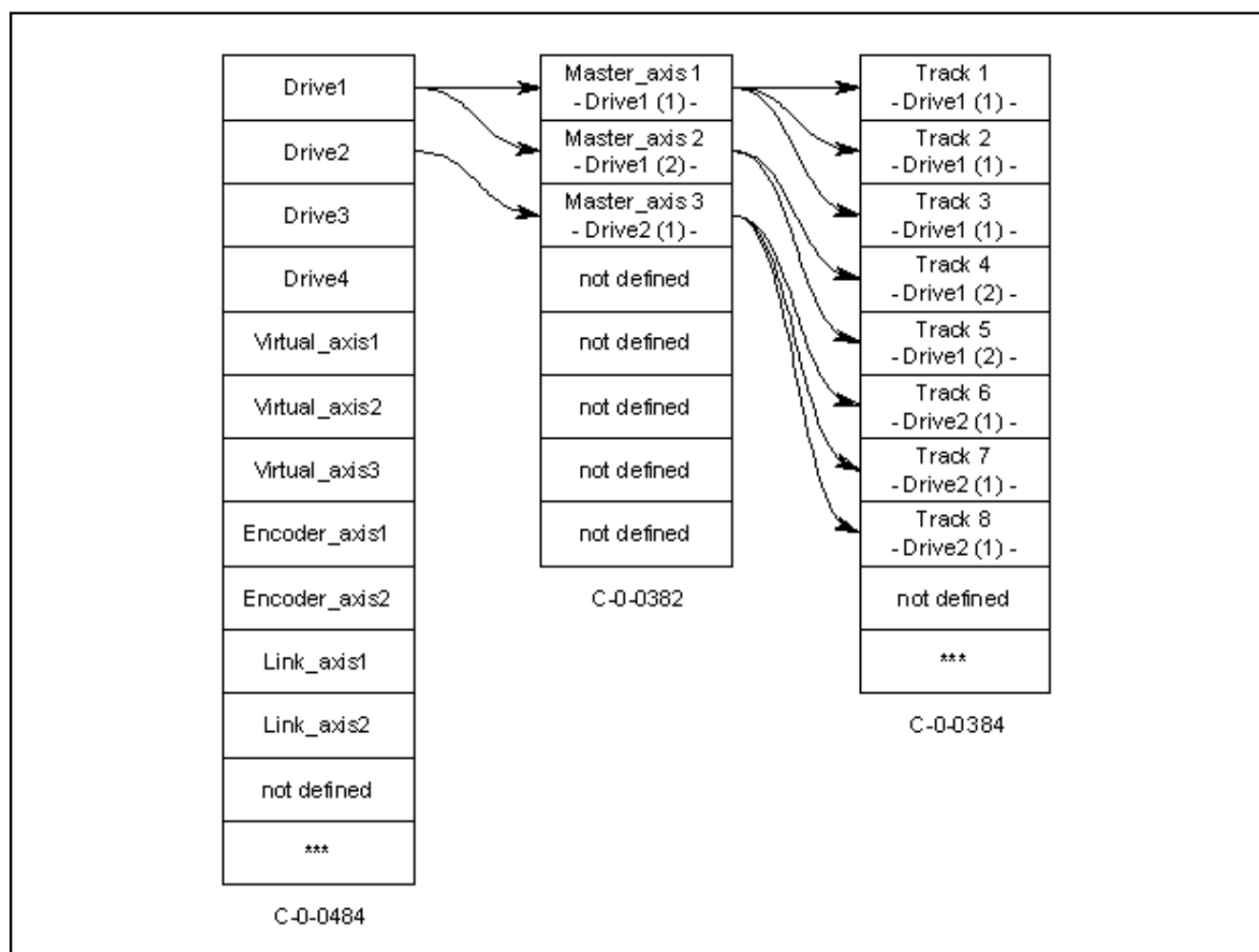


Fig. 4-110: Configuration and definition of reference axes

Structure The position and velocity of the selected axes are cyclically transmitted to the programmable limit switch in operation mode.

The reference axes are configured in parameterization mode. A single axis can be configured as a reference axis more than once. This allows switch tracks with a different position offset to be operated by the same axis.

Describing individual parameters, arranged according to types

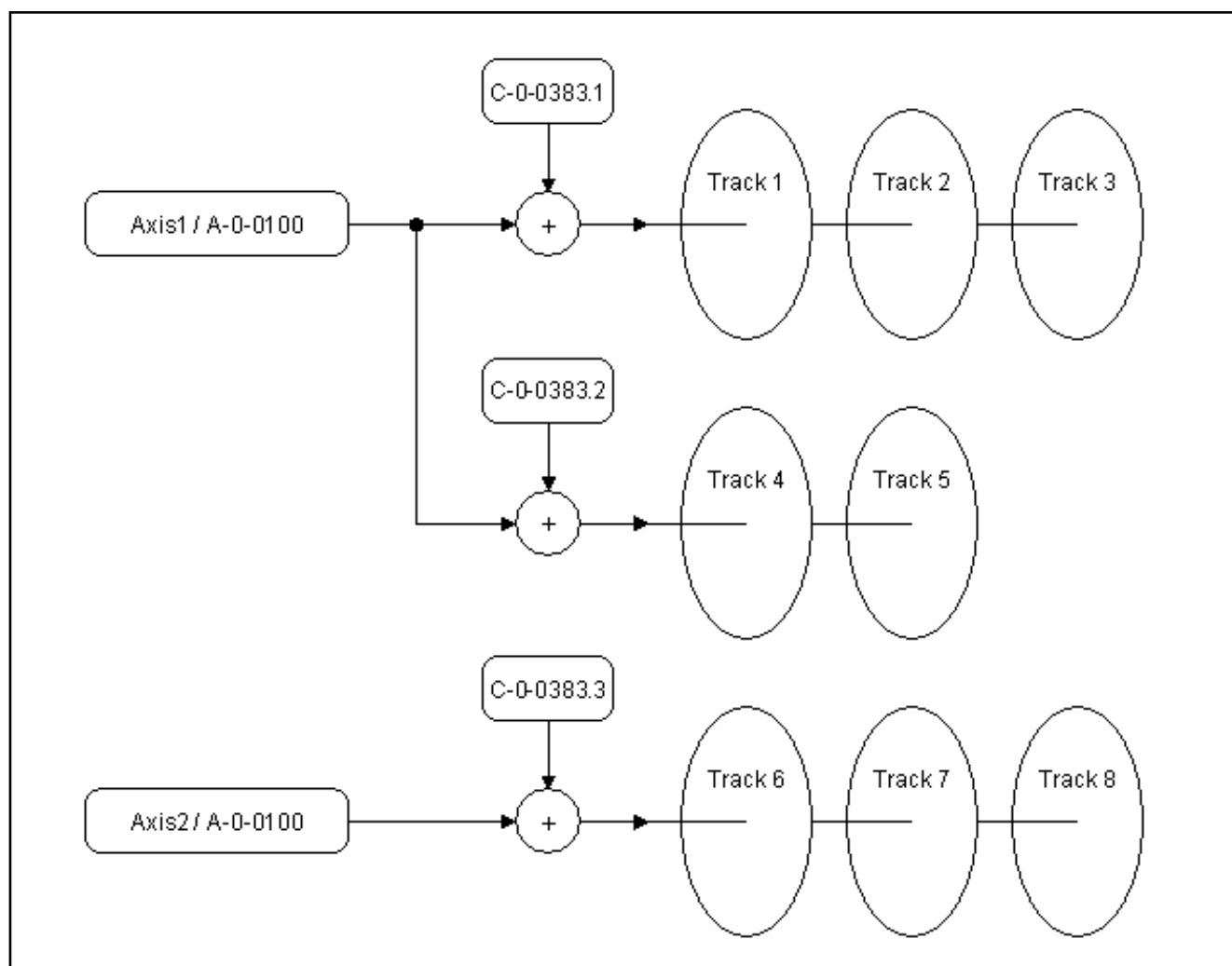


Fig. 4-111: Position offset

Use When switching from a lower to a higher phase, the reference axis configuration is checked against parameter "C-0-0484, Axes configuration list" and parameter "A-0-0024, Axis condition" of the respective axis.

The error "F0160024, Error in cross-check C-parameters" is generated if one of the selected axes is deactivated or not configured.

C-0-0382 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	64	0

C-0-0383, PLS No.4, reference axis position, additive

Function This parameter is used to move the position of the connected switch track relative to the position of the reference axis. The position offset is entered in the input unit of the reference axis.

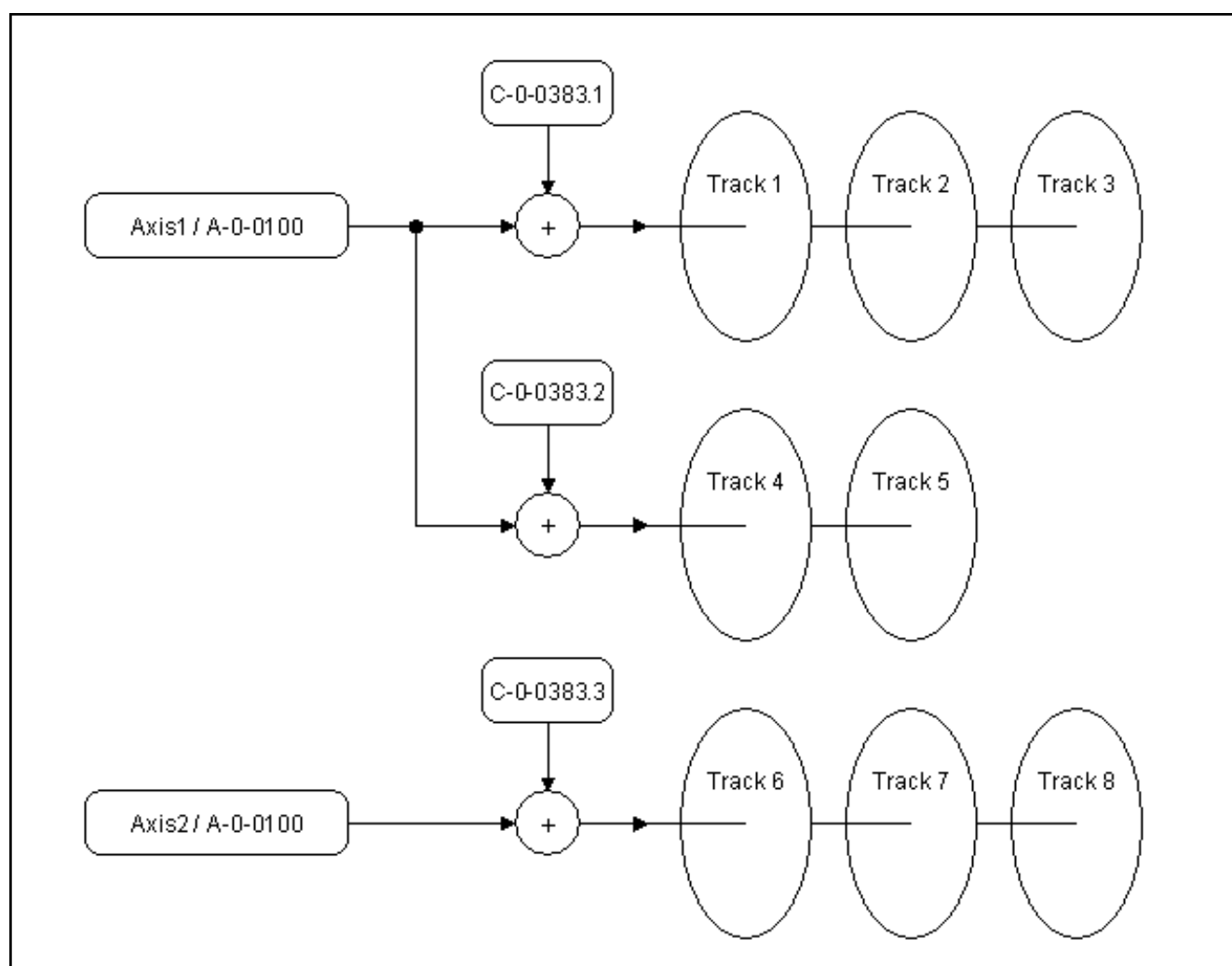


Fig. 4-112: Position offset

Use The position offset is cyclically transmitted to the programmable limit switch module and added to the switch track position after the hysteresis is calculated. As a result, a change to the position offset is active in its unmodified form.

$$X_{PLS} = \frac{(X_{MA} + \langle C-0-0383 \rangle) \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

PLS Programmable limit switch
MA Master axis (reference axis)

Fig. 4-113: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

C-0-0383 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-

Describing individual parameters, arranged according to types

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0384, PLS No.4, reference axis definition

Function This parameter is used to define the reference axis for each switch track. All reference axes configured in parameter "C-0-0382, PLS No.4, reference axis configuration" are available for selection. In addition to the position and velocity of the selected reference axis, the position offset, parameter "C-0-0384, PLS No.4, reference axis position, additive", is assigned to the respective switch track.

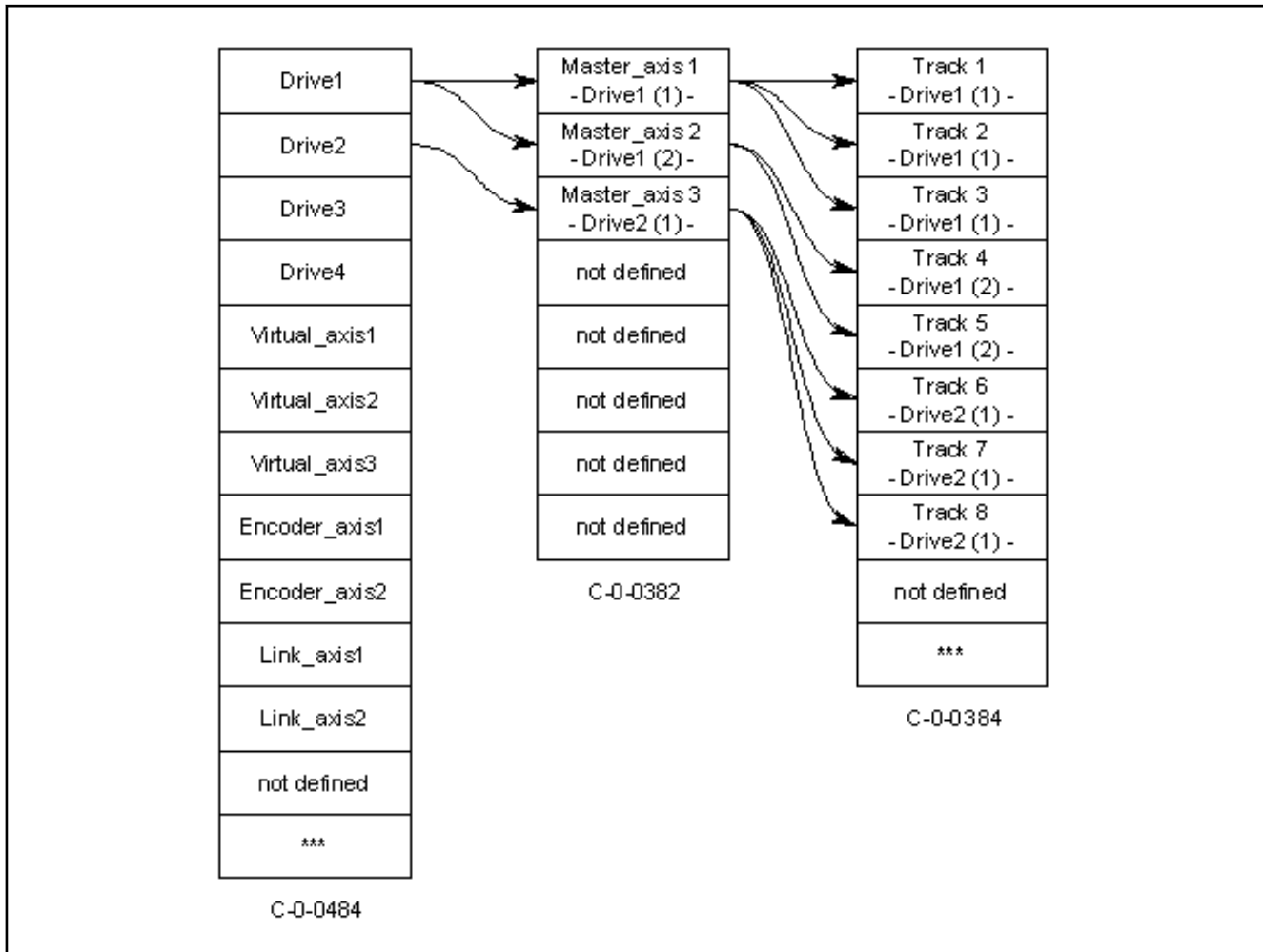


Fig. 4-114: Configuration and definition of reference axes

Use When switching from a lower to a higher phase, the reference axis definition is checked against parameter "C-0-0382, PLS No.4, reference axis configuration".

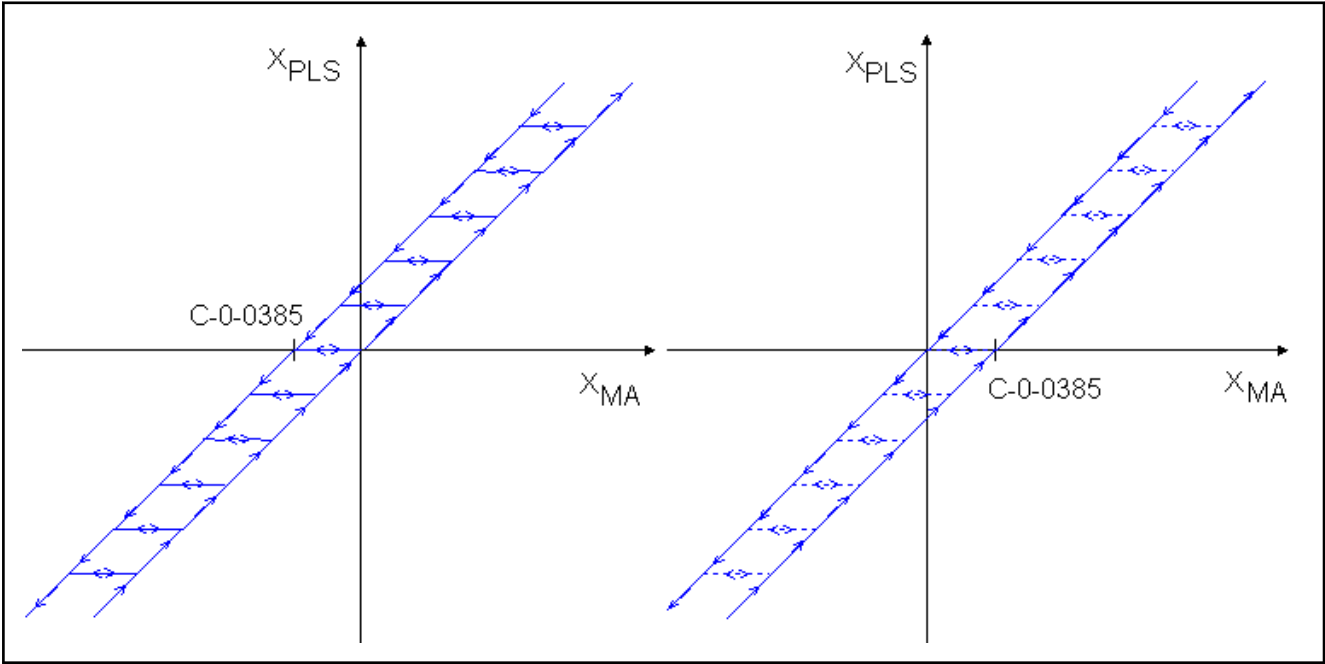
The error "F0160024, Error in cross-check C-parameter" is generated if one of the selected reference axes is deactivated or not configured.

C-0-0384 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2

Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 8	Default value 0

C-0-0385, PLS No.4, hysteresis

Function This list of parameters is used to define a position hysteresis for each switch track. The hysteresis functions direction-dependently, see figure.



XMA Reference axis position
XPLS Switch track position

Fig. 4-115: Negative and positive hysteresis

Use The position hysteresis is entered in the input unit of the reference axis.
The hysteresis serves to compensate position fluctuations. The fluctuations can cause the output on the programmable limit switch to jitter.
If a real axis comes to a standstill, the position controller moves. The velocity of this movement multiplied by the dead time to be compensated equals the standstill fluctuation.
If there is a delay with an axis, extrapolation errors occur. Half of the delay multiplied by the dead time to be compensated squared equals the extrapolation error.

$$H_{PLS} = \frac{H_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

MA Master axis (reference axis)
PLS Switch track

Fig. 4-116:



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

Describing individual parameters, arranged according to types

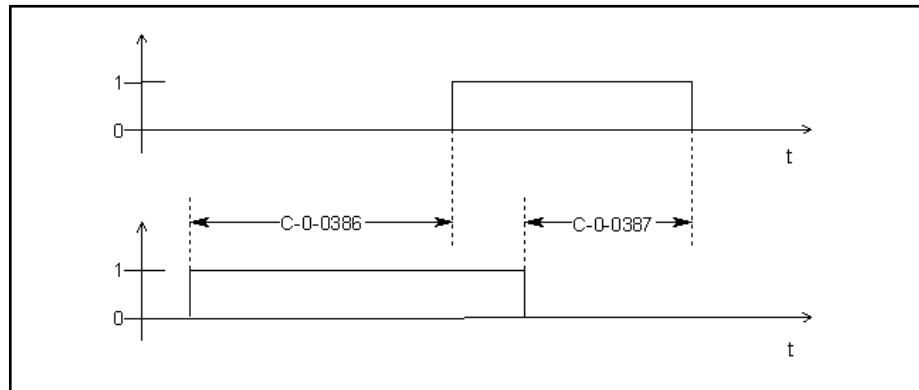
C-0-0385 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0.0

C-0-0386, PLS No.4, lead time when switching on**Function A) For state-controlled outputs**

This parameter is used to define the dead time compensation for state-controlled outputs (see "C-0-0393, PLS No.4, output mode") when switching on an output on the programmable limit switch.

The programmable limit switch operates with a cycle time of 125 µs.

The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation

PgDn Extrapolated output signal

Fig. 4-117: Dead time compensation (state-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0386>)) \bmod 2^{16}$$

Fig. 4-118: Extrapolation function for switching on an output

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.

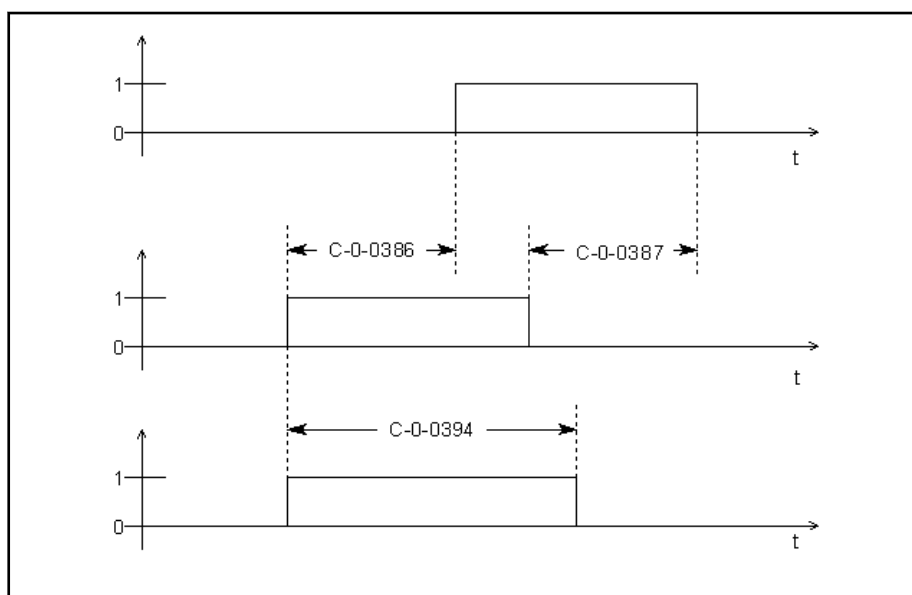


The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

B) For time-controlled outputs

This parameter is used to define the dead time compensation for time-controlled outputs (see "C-0-0393, PLS No.4, output mode") when switching on and off outputs.

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation
Center Extrapolated trigger signal
PgDn Time-controlled output signal

Fig. 4-119: Dead time compensation (time-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0386>)) \bmod 2^{16}$$

Fig. 4-120: Extrapolation function for switching on an output



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0386 - Attributes:

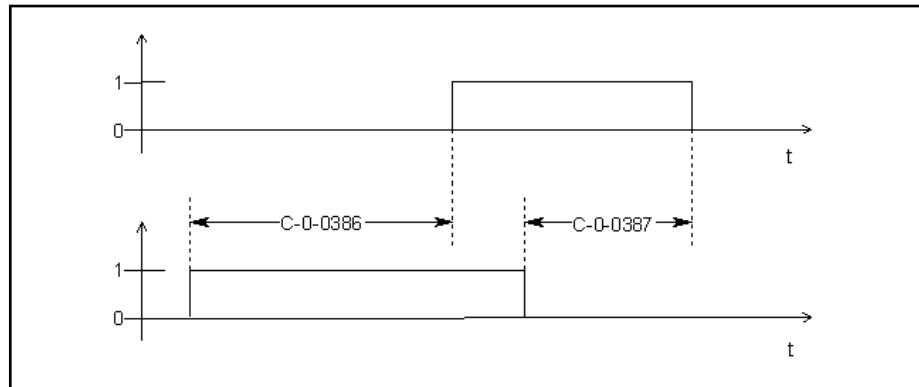
Function:	PARAMETER	Unit:	µs
MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 1000000	Default value 0

C-0-0387, PLS No.4, lead time when switching off

Function This parameter is used to control the dead time compensation when switching off an output at the programmable limit switch.

The parameter is only applied if the output is operated in a state-controlled manner (see C-0-0393, PLS No.4, output mode).

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time slot.



Up Signal before the dead time compensation
Down Extrapolated output signal

Fig. 4-121: Dead time compensation (state-controlled)

Use The dead time compensation extrapolates the switch track position by the current velocity of the switch track. Thus, extrapolation errors occur when the switch track accelerates and decelerates.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * <C-0-0387>)) \bmod 2^{16}$$

Fig. 4-122: Extrapolation function for switch-off

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.



The programmable limit switch only accepts time specifications within the internal time slot of 125 µs.



In case of one time-controlled output, only the parameter **C-0-0386**, PLS No.4, lead time when switching on is applied.
 (Refer to **C-0-0393**, PLS No.4, output mode).

C-0-0387 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	1000000	0

C-0-0388, PLS No.4, switch track number

Function This parameter is used to activate up to 64 switches and assign the 16 switch tracks.

Structure The list has 64 possible spots (switches) that are assigned with "0" after initialization (no switch track is assigned).

If only one switch is activated and assigned one of the 16 switch tracks, the number of the switch track is available in place of "0".

C-0-0388 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	16	0

C-0-0389, PLS No.4, switch-on position of switch track

Function This parameter and parameter "C-0-0390, PLS No.4, switch-off position of switch track" are used to define the a switch's position on the switch track. The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PLS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

Fig. 4-123: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

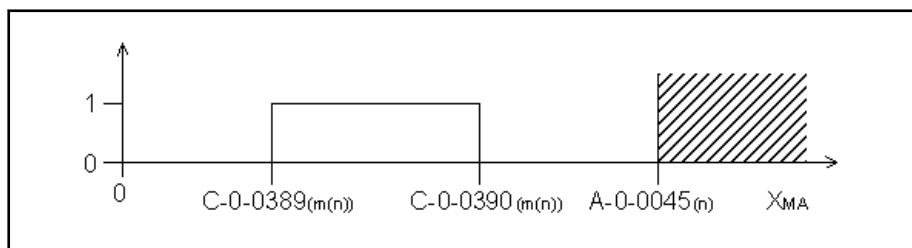


Fig. 4-124: Switch-on position less than switch-off position

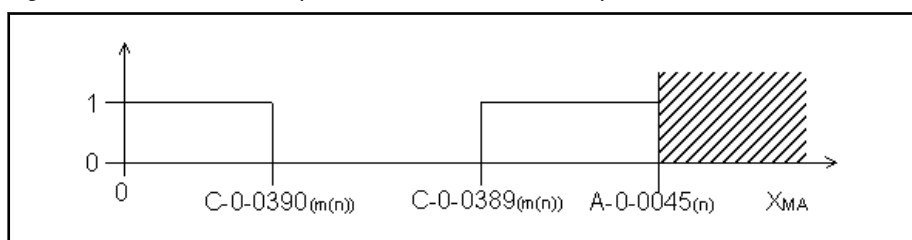


Fig. 4-125: Switch-on position greater than switch-off position

The parameter "C-0-0388, PLS No.4, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

Describing individual parameters, arranged according to types

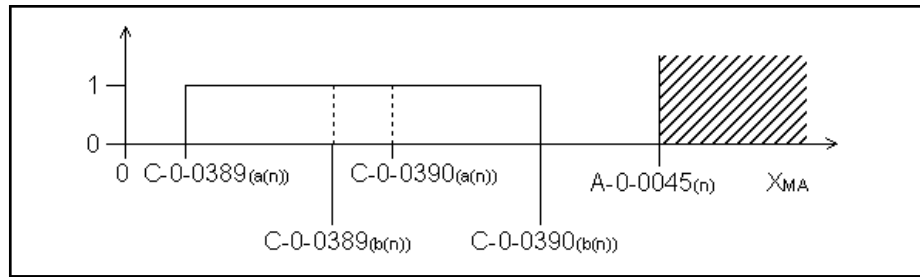


Fig. 4-126: Overlapping switches

C-0-0389 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0

C-0-0390, PLS No.4, switch-off position of switch track

Function This parameter and parameter "C-0-0389, PLS No.4, switch-on position of switch track" are used to define the a switch's position on the switch track.
The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PIS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

Fig. 4-127: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

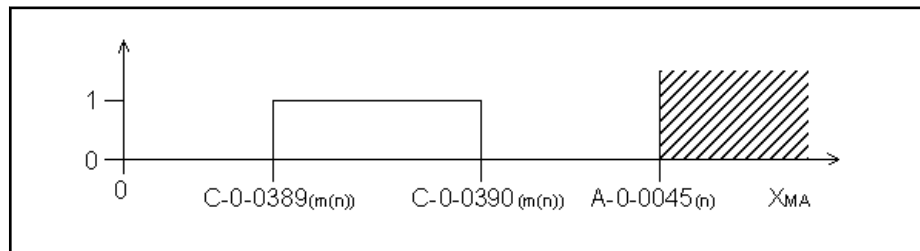


Fig. 4-128: Switch-on position less than switch-off position

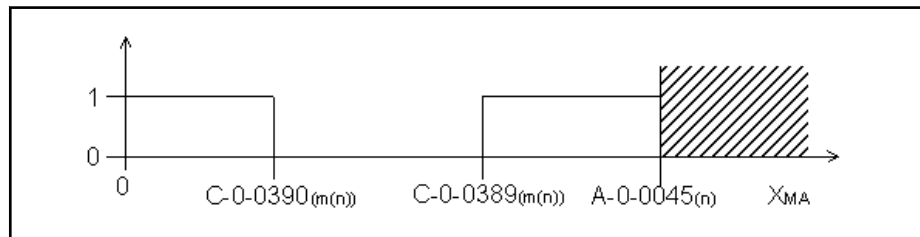


Fig. 4-129: Switch-on position greater than switch-off position

The parameter "C-0-0388, PLS No.4, switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

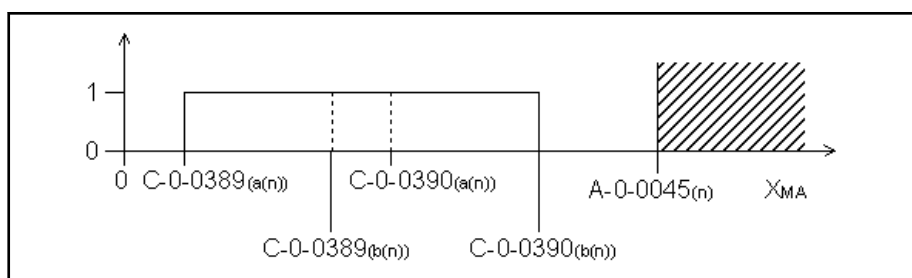


Fig. 4-130: Overlapping switches

C-0-0390 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0.0

C-0-0391, PLS No.4, command: Initialize switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode. Using the command "Initialize switch track", the passive group is reinitialized according to the parameters:

- C-0-0386, PLS No.4, lead time when switching on
- C-0-0387, PLS No.4, lead time when switching off
- C-0-0388, PLS No.4, switch track number
- C-0-0389, PLS No.4, switch-on position of switch track
- C-0-0390, PLS No.4, switch-off position of switch track
- C-0-0393, PLS No.4, output mode
- C-0-0394, PLS No.4, switch-on duration

Use The initialized switch track group is immediately activated, depending on the setting in the control word "C-0-0375, bit 5= 1".

The switch track group can be switched at all times using the command "C-0-0392, PLS No.4, command: Activate switch track".



When switching on the operation mode, the two switch track groups are initialized identically.

C-0-0391 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0392, PLS No.4, command: Activate switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode. The passive group is activated using the command "Activate switch track". The active group is simultaneously deactivated.

The passive switch track group can be subsequently reinitialized using the command "C-0-0391, PLS No.4, command: Initialize switch track".



When the operation mode is switched on, the first switch track group is activated.

C-0-0392 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0393, PLS No.4, output mode

Function When switching from a lower to a higher phase, this parameter is checked against parameter "C-0-0384, PLS No.4, reference axis definition".

If no reference axis was defined for the switch track and the output is activated (direction of motion ≠ zero), the error "F0160024, Error in cross-check C-parameters" is generated.

Structure

Bit	Designation/function
1..0	Direction of movement 0 0: deactivated: The internal output is deactivated. 0 1: activated depending on direction: The switch track's sampling signal is used for movement in the positive direction. 1 0: activated depending on direction: The switch track's sampling signal is used for movement in the negative direction. 1 1: activated independent of the direction The switch track's sampling signal is used irrespective of the motion direction.
2	Control mode 0: state-controlled: The switch track's sampling signal controls the register bit of the programmable limit switch. 1: time-controlled: The switch track's sampling signal controls the pulse generator's clock input. The pulse generator controls the register bit of the programmable limit switch.

Tab. 4-89: Relevant bits in the parameter

Use This parameter is used to control the internal register of the programmable limit switch (register_0 and register_1), depending on the direction of movement (forward and/or backward) of the reference axis.

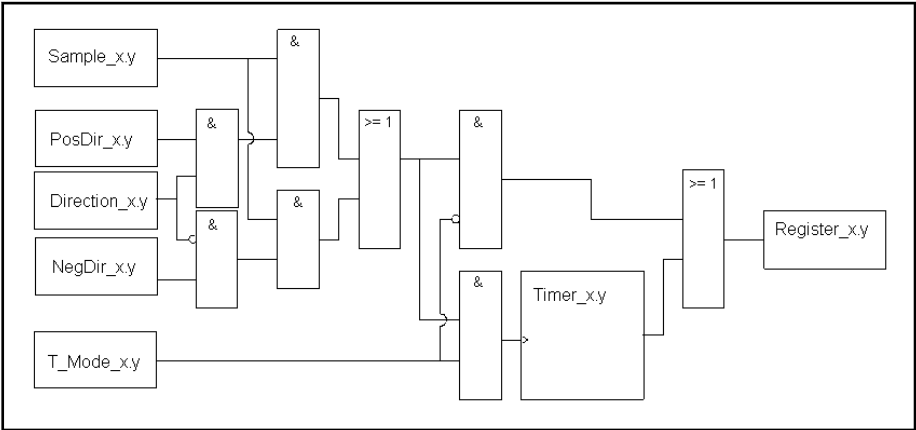
A register bit can be operated directly (state-controlled) or by a pulse generator (time-controlled).

The control mode influences the dead time compensation (see parameter "C-0-0386, PLS No.4, lead time when switching on" and "C-0-0387, PLS Nr. 4, lead time when switching off").

The pulse duration in time-controlled mode can be defined in parameter "C-0-0394, PLS No.4, switch-on duration".



The physical outputs of the programmable limit switch can be overridden from the PLC program (see parameter "C-0-0378, PLS No.4, control signal").



- Sample_x Switch track's sampling signal
- PosDir_x Active in positive movement direction
- Direction_x Current movement direction
- NegDir_x Active in positive movement direction
- T_Mode_x Time-controlled mode
- Register_x Internal register

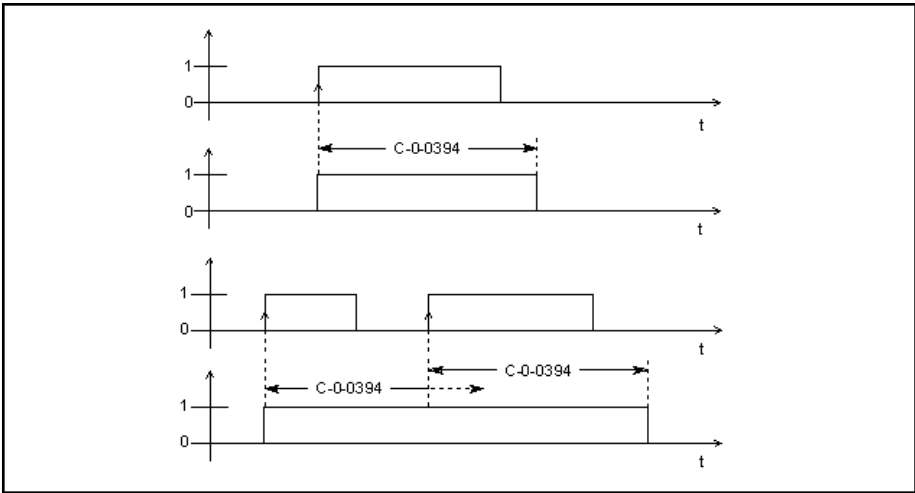
Fig. 4-131: Output control

C-0-0393 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE_VAR	PLC_data_type:	ARRAY of WORD
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0394, PLS No.4, switch-on duration

Function This parameter is used to define the pulse duration in time-controlled mode (see parameter "C-0-0393, PLS No.4, output mode").

The programmable limit switch operates with a cycle time of 125 µs. Within this time period, the programmable limit switch can generate pulses with a maximum duration of one second.



PgUp Single pulse
PgDn Extended pulse

Fig. 4-132: Pulse generator

Use The pulse generator is started by a rising edge at the clock input. The pulse generator is reset and restarted with each additional rising edge. This extends the output pulse for active pulse generators.



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

C-0-0394 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
Common:		Minimum value 125	Maximum value 1000000	Default value 125

C-0-0400, Motion, cycle time, command value

Function This parameter can be used to set the command value for the MC cycle time. The MC cycle time indicates the time intervals at which the Motion control provides new command values. It can be read in the dialog window **Motion ► Cycle times**.

Hardware	Minimum cycle time with Sercos II	Minimum cycle time with Sercos III
L25	-	2.0 ms
L45	1.0 ms	1.0 ms
L65	1.0 ms	0.5 ms
L75	1.0 ms	0.5 ms
XM21	-	2 ms
XM22	-	1 ms

Hardware	Minimum cycle time with Sercos II	Minimum cycle time with Sercos III
XM4	-	0.25 ms
VPB 40.4	-	0.5 ms

Tab. 4-90: Minimum cycle time for different hardware combinations

C-0-0400 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P2
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	500	32000	2000

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0001,S-0-1001
IndraDrive/ Control:	S-0-0001,S-0-1001
HydraulicDrive/ Drive:	S-0-0001,S-0-1001
HydraulicDrive/ Control:	S-0-0001,S-0-1001
SercosDrive:	S-0-0001,S-0-1001

C-0-0401, Time period of the integrated PLC of the MC cycle time

Function This parameter is only intended for internal use.

C-0-0401 - Attributes:

Function:	PARAMETER	Unit:	%
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	FLASH	Editability:	P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	25	75	50

C-0-0402, Motion, startup of cycle time

Function The time provided for the communication with each drive (service data) when booting can be specified in this parameter.

If IndraDrive is used as a drive, the initial value 1000 µs is sufficient. However, for hydraulic axes, the initial value can be a multiple thereof.

C-0-0402 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	1000	32000	1000

C-0-0403, Motion, priority calculation

- Function** The priority for Motion calculation can be set using this parameter.
 The priority for motion calculation expresses how urgent it is for the motion calculation task to be executed.
 The priority can only be changed if no axes are active.



Note:

Reducing the priority for Motion calculation can cause the Motion calculation for high priority tasks to be displaced such that it can no longer be processed in the Motion cycle [C-0-0400](#) specified for it.

C-0-0403 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		1	20	4

C-0-0404, Time slot control

- Function** This parameter configures the temporal sequences in the control and in the TaskViewer.

Structure

Bit	Name/function
0	0: Simple representation of the task response in the TaskViewer 1: Extended representation of the task response in the TaskViewer
1..31	Reserved

C-0-0404 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	NVRAM	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFFFFFFFF	0x00

C-0-0405, PLC, configuration

- Function** The parameter is used to configure the starting behavior of the PLC boot application(s).

Structure	Bit	Name/function
	2,1,0	Starting behavior of the PLC boot application(s) 000: Last state: If the PLC boot application was in RUN when switched off, it starts when the control is booted. Otherwise, it remains in STOP. 001: Starts during booting: The PLC boot application starts when booting, regardless of the last state. 010: Stop: The PLC boot application remains in the STOP state. 011: Start in the operating mode: The PLC boot application automatically starts during the transition to the operating mode. 100: Last status: If the PLC boot application was in RUN when switched off, it starts when the control is booted. Otherwise, it remains in STOP. In addition, the PLC boot application starts if the STOP state was caused by a PLC exception.
	3	Starting behavior of the PLC boot application(s) if an NvRam error (F00C0005, F00C0006) occurs 0: If one of the mentioned NvRam errors occurs, only the configuration of the bits 0-2 applies. 1: If one of the mentioned NvRam errors occurs, the PLC boot application remains in the STOP state, regardless of the configuration of the bits 0-2.

Tab. 4-91: Relevant bits in parameter PLC configuration

**Attention:**

The PLC boot application no longer starts automatically when switching into the operating mode if (in parameterization mode) a new program was previously being loaded, or start/stop or reset was executed.

**Attention:**

After the parameter has been changed, it is recommended to re-start the control to update the parameter completely. When the control is restarted, additionally ensure that the errors "F00C0005: Remanent data error; data deleted" and "F00C0006: Remanent data error; last backup restored" have not occurred.

C-0-0405 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00000000	0x0000000F	0x00000001

C-0-0406, Preset of operating state of all PLC applications

Function This parameter is only intended for internal use.

C-0-0406 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+

Describing individual parameters, arranged according to types

Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 5	Default value 0

C-0-0407, Watchdog, communication

Function This parameter can be used to set the time after which a reaction from the communication watchdog is triggered.

The tasks to control communication are of low priority. Due to this reason, they are displaced by tasks with a higher priority, e.g. PLC tasks.

Displacing communication can be tolerated for a certain period. This tolerable period is set via this parameter.

If the watchdog is triggered, the warning "E0370001; System overloaded" is output.

Setting the parameter to 0, the communication watchdog is deactivated and no warning is output.

C-0-0407 - Attributes:	Function:	PARAMETER	Unit:	ms
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0	1000	500	

C-0-0408, Timeslot, communication

Function The time reserved for the communication with the control can be set via this parameter.

During this time, no tasks with a higher priority such as PLC tasks or the motion calculation can run. The time is reserved at the end of a Motion cycle. By increasing this time, the available calculation time for PLC tasks and for the tasks calculating the motion is reduced.

If a Sercos module is active and the Sercos bus is in phase 4, the percentage specification refers to the MC cycle time (C-0-0400). If the Sercos bus is not in phase 4, the percentage specified refers to a basic value of 4000 µs. If different cycle times are set for Sercos and Motion, the time slot of the communication is reduced until the Sercos-synchronous IEC tasks can be processed.

If no Sercos module is active, the percentage specified refers to a fixedly specified basic value of 4000 µs.

NOTICE

If the parameter is set to 0, no time slot is reserved for the communication.

If the system load is very high in this state, it is possible that the communication to the control becomes very slow or that it is aborted.

Use Example:

- Sercos module active
MC cycle time (C-0-0400) = 2000 µs

Time slot, communication = 5%

The time is reserved for the communication and is 5% of 2000µs. This results in a time span of 100 µs reserved in each Motion cycle.

- Sercos module inactive

Basic value = 4000 µs

Time slot, communication = 5%

The time is reserved for the communication and is 5% of 4000 µs. This results in a reserved time span of 200 µs.

C-0-0408 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	20	5

C-0-0410, Motion, cycle time (Tcyc), actual value

Function This parameter indicates the actual value of the MC cycle time.

The MC cycle time indicates the time intervals at which the Motion control provides new command values.

This can be read in the **Motion ► Cycle Times** dialog window.

C-0-0410 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0

C-0-0412, List of current time slot measurements

Function This parameter includes the current values of the time measurements of the control's task system.

Use The parameter is supplemented by the lists

- [C-0-0413](#), List of maximum time slot measurements,
- [C-0-0414](#), List of minimum time slot measurements.

The list contains eight measured values in total:

The list for the display of the motion times contains eight measured values in total:

- Is not used from MLC 10VRS (null),
- Time for the actual value detection: Time span between start and end of the actual value generation,
- Time for the command value detection: Time span between start and end of the command value generation,
- Total time for the actual value detection and the command value generation,
- is not used from MLC 10VRS (null),

Describing individual parameters, arranged according to types

- Time of the interruption by motion-synchronous PLC tasks,
- Total time for motion calculations: Time span between the actual value detection and the end of the command value generation,
- Time to copy Sercos real-time data.

It can be read in the dialog window **Motion ► Cycle times**.

For an overview on the tasks, whose times are measured, refer to System tasks.

C-0-0412 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0x10	0x00

C-0-0413, List of maximum time slot measurements

Function This parameter includes the maximum values of the time measurements of the control's task system. The maxima are only of collector's value and result from different cycles.

Use The parameter is supplemented by the lists

- [C-0-0412](#), List of current time slot measurements,
- [C-0-0414](#), List of minimum time slot measurements.

The list contains eight measured values in total:

- Is not used from MLC 10VRS (null),
- Maximum time value for the actual value detection: Time span between start and end of the actual value generation,
- Maximum time value for the command value generation: Time span between start and end of the command value generation,
- Maximum value of the total time for the actual value detection and the command value generation,
- Is not used from MLC 10VRS (null),
- Maximum time value for motion-synchronous tasks: Time span between the end of the actual value detection and the start of the command value generation,
- Total time for motion calculations: Time span between the actual value detection and the end of the command value generation,
- Maximum time value to copy Sercos real-time data.

It can be read in the dialog window **Motion ► Cycle times**.

The list in this window can also be reset for new entries ([C-0-1050](#), Command: Reset parameter C-0-0413 and C-0-0414).

For an overview on the tasks, whose times are measured, refer to System tasks.

C-0-0413 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY

Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	0	0

C-0-0414, List of minimum time slot measurements

Function This parameter includes the minimum values of the time measurements of the control's task system. The minima are only of collector's value and result from different cycles.

Use The parameter is supplemented by the lists:

- [C-0-0412](#), List of current time slot measurements,
- [C-0-0413](#), List of maximum time slot measurements,

The list for the display of the motion times contains eight measured values in total:

- Is not used from MLC 10VRS (null),
- Minimum time value for the actual value detection: Time span between start and end of the actual value generation,
- Minimum time value for the command value generation: Time span between start and end of the command value generation,
- Minimum value of the total time for the actual value detection and the command value generation,
- is not used from MLC 10VRS (null),
- Minimum value of the interruption by motion-synchronous PLC tasks,
- Total time for motion calculations: Time span between the actual value detection and the end of the command value generation
- Minimum time value to copy Sercos real-time data.

It can be read in the dialog window **Motion ► Cycle times**.

The list in this window can also be reset for new entries ([C-0-1050](#), Command: Reset parameter C-0-0413 and C-0-0414).

For an overview on the tasks, whose times are measured, refer to System tasks.

C-0-0414 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	0	0	0

C-0-0415, CPU load, current

Function This parameter contains the current CPU load of the control in percent.

This parameter provides a CPU kernel load of 0 on controls with multiple CPUs, as this parameter generally has the highest load of all CPU kernels. The loads separated acc. to the CPU cores are provided by the parameter "[C-0-0465](#), CPU load per core, current".

Describing individual parameters, arranged according to types

C-0-0415 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	100.0	---

C-0-0416, CPU load, maximum

Function This parameter contains the maximum measured percentage of CPU load since it was last switched on or reset.

For controls with multiple CPUs, this value refers to the load of the CPU kernel 0, as it generally has the highest load of all CPU kernels. The parameter "C-0-0466, CPU load per core, maximum" provides the separated maximum values acc. to CPU kernels.

The parameter "C-0-1051, Command: Reset C-0-0416, C-0-0417, C-0-0466, C-0-0467" is used for resetting.

C-0-0416 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	100.0	---

C-0-0417, CPU load, minimum

Function This parameter contains the minimum measured percentage of CPU load since it was last switched on or reset.

For controls with multiple CPUs, this value refers to the load of the CPU kernel 0, as it generally has the highest load of all CPU kernels. The parameter "C-0-0467, CPU load per core, minimum" provides the separated minimum values as per the CPU kernels.

The parameter "C-0-1051, Command: Reset C-0-0416, C-0-0417, C-0-0466, C-0-0467" is used for resetting.

C-0-0417 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	100.0	---

C-0-0418, CPU load, threshold value for warning

Function This parameter contains the threshold value in percent, which, once exceeded, causes a warning due to an excessive CPU load. On all multi-core processors, the threshold value is applied separately to each CPU core.

The current CPU load can be retrieved via the parameter "C-0-0415, CPU load, current". On multi-core processors, the parameter "C-0-0465, CPU load

per core, current" additionally provides the CPU load separated acc. to the CPU cores.

C-0-0418 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	100.0	100.0

C-0-0420, Motion, watchdog sensitivity

Function This parameter is only intended for internal use.

C-0-0420 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		1	1	1

C-0-0421, Motion, absolute error counter

Function This parameter indicates the total number of errors that occurred during Motion calculation.

The following errors can occur:

- F0180008: Motion Kernel Exceeded Control Cycle Time
- F5180005: Motion Kernel Exceeded Control Cycle Time
- F5180006: Cycle time exceeded for actual value detection

This can be read in the Cycle times dialog box.

This parameter can be reset using the command "C-0-1052, Command: Reset Parameter C-0-0421 and C-0-0422".

C-0-0421 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	65535	0

C-0-0422, Motion, number of successive errors

Function This parameter indicates the total number of errors that occurred during Motion calculation.

The following errors can occur:

- F0180008: Motion Kernel Exceeded Control Cycle Time
- F5180005: Motion Kernel Exceeded Control Cycle Time
- F5180006: Cycle time exceeded for actual value detection

Describing individual parameters, arranged according to types

This can be read in the Cycle times dialog box.

This parameter can be reset using the command "C-0-1052, Command: Reset Parameter C-0-0421 and C-0-0422".

C-0-0422 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	65535	0

C-0-0423, Motion, cycle counter

Function The cycle counter is displayed in this parameter. The counter is increased twice in the Motion cycle. One time at the beginning and one time at the end of the cycle. Even parameter values indicate that the Motion kernel is currently not operating and uneven values show that the Motion kernel is operating.

C-0-0423 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	4294967295	0

C-0-0425, TaskViewer, buffer size

Function This parameter can be used to set the size of the TaskViewer buffer. During a TaskViewer recording, the values are saved in the control's usable memory. This size of this buffer in the usable memory can be set using this parameter. The larger the buffer, the longer the runtime behavior of the task can be recorded.

This parameter can be set in the "TaskViewer" dialog window.

C-0-0425 - Attributes:	Function:	PARAMETER	Unit:	KByte
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		128	10240	1024

C-0-0430, External trigger, configuration

Function The external trigger function is configured via this parameter. It is used to enable and disable cyclic events and to configure the external trigger function response.

Events and its execution frequency can be selected via the parameter "C-0-0431, External trigger, signal selection".

Via the parameter "C-0-1045, Command: External trigger", events are triggered.

Activate the first bits of the parameter C-0-0430 and deactivate the cyclic events. The event can only be decoupled from the cyclic operation if all axes are in the "Standstill" state.

Events are called synchronously to its specific cycles. This can be changed via bit 8 "Immediate execution". All events are immediately called one after another and not within their cycles.

The warning "E0370002, External triggering active" is output as long as an event is decoupled from the cyclic operation. Set bit 10 "No warning" to suppress this warning. Only the message "A0370002, External triggering activated" is output.

The command C-0-1045 is executed asynchronously and returns immediately. Select the option "Synchronous command execution", bit 11, to ensure that the command only returns after all triggers have been executed.

If a fatal error occurs, all decoupled events are reset and coupled again with the cyclic operation. This is required to allow an error reaction at the drive. To avoid this, set bit 9 "No error reaction".

NOTICE

"No error reaction" option

Depending on the operation mode of a real drive, a motion can be continued if triggered once.

If the "No error reaction" option is selected, this motion cannot be stopped in case of error.

Use this functionality only for simulation purposes and not in a real machine.

Structure

Bit no.	Name
0	Event Motion
1	Event Sercos
2	Event EtherCAT
3..7	Reserved
8	Immediate execution
9	No error reaction
10	No warning
11	Synchronous command execution
12..31	Reserved

Tab. 4-92: Configuring external trigger

Use

Event Motion

Set this bit to decouple the motion-synchronous tasks from the cyclic operation. This refers to the Motion kernel as well as to the motion-synchronous tasks (e.g. motion-synchronous PLC tasks).

Event Sercos

Set this bit to decouple the sercos-synchronous tasks from the cyclic operation (e.g. sercos-synchronous PLC tasks).

Immediate execution

Describing individual parameters, arranged according to types

Setting this bit immediately calls all events one after another and not within their cycles.

No error reaction

In case of a fatal error, the events decoupled from the cyclic operation are not reset by setting this bit.

No warning

No warning is output by setting this bit as long as an event is decoupled from the cyclic operation.

Synchronous command execution

Setting this bit executes the command "C-0-1045, Command: External trigger" synchronously.

Example:

- **Decoupling the Motion event and synchronous command execution.**
Parameter content: 2#0000.0000.0000.0000.0000.1000.0000.0001
- **Decoupling Sercos event and synchronous command execution.**
Parameter content: 2#0000.0000.0000.0000.0000.0000.0000.0010

C-0-0430 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:		Minimum value	Maximum value
		---	---
		Default value	
		0	

C-0-0431, External trigger, signal selection

- Function** Events can be selected and number of triggers set via this parameter.
- Via the parameter "C-0-1045, Command: External trigger", the selected events are triggered with its number set.
- When executing the command, only events previously decoupled from the cyclic operation via the parameter "C-0-0430, External trigger, configuration" are triggered.

Structure

Bit no.	Name
0	Signal selection: Event Motion
1	Signal selection: Event Sercos
2	Signal selection: Event EtherCAT
3..15	Reserved
16..32	Number of triggers

Tab. 4-93: Signal selection: External trigger

Use Signal selection: Event Motion

Set this bit and the Motion event is triggered the number of times set when executing the command C-0-1045.

Signal selection: Event Sercos

Set this bit and the Sercos event is triggered the number of times set when executing the command [C-0-1045](#).

Number of triggers

These bits represent the number of triggers to be executed for the selected events.

Example:

- **The events Motion and Sercos are to be triggered ten times each.**
Parameter content: 2#0000.0000.0000.1010.0000.0000.0000.0011
- **The Motion event is to be triggered once.**
Parameter content: 2#0000.0000.0000.0001.0000.0000.0000.0001
- **The Sercos event is to be triggered twice.**
Parameter content: 2#0000.0000.0000.0010.0000.0000.0000.0010

[C-0-0431](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:		Minimum value	Maximum value
		---	---
		Default value	
		0	

C-0-0440, Configuration PM/OM switching

Function This parameter configures changing between parameterization and operation mode.

Switching of operating modes is triggered via the [C-0-1070](#), command: Switch PM/OM.

Structure

Bit	Name/function
0	Reserved
1	Execute switching for all axes
2-30	Reserved
31	Preselecting the PM/OM switching

Use

Bit 1:

1: Switching is performed for all configured axes supporting the parameterization level.

Read from the parameter [A-0-0004](#) "Axis type" whether the axis supports the parameterization mode.

Bit 31:

0: Switching to parameterization mode

1: Switching to operating mode

Parameterization level support

Irrespective of the control and communication phase, devices can be configured via the parameterization level.

Thus, axes can be moved further, the I/Os can continue to exchange cyclic data and the PLC program keeps running.

Thus, these devices support two modes:

Parameterization mode

- In the parameterization mode, all device parameters - that are not write-protected - can be changed. This does not apply to communication partners such as configuration, timing or user-defined data containers.
- If a device is in the parameterization mode, it remains irrespective of the communication phase.

Operating mode

- Only parameters without write protection in this mode can be changed in the operating mode.
- The parameter crosscheck is performed when switching from parameterization to operating mode.
- The adjustment of A- to S-/P-parameter is executed.

Switching the modes

- For **one** device, switching between the two modes is controlled using the parameter "A-0-0024, Axis state".
- To switch **multiple** devices, the parameter "C-0-1070, Command: PM/OM switching" executed.
The devices are selected using "A-0-0004 Axis type, bit 15".
- To switch an axis, it has to be in the "Standstill" state.
The real axis has to be in the "Power off" state.

An axis in the parameterization mode cannot be traversed.

C-0-0440 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0x2

C-0-0450, startup target mode of the control

Function After the control voltage is switched on, the control starts up until it reaches a predefined mode.

This mode is defined using this parameter.

Structure

Value	Control mode	Display	What is allowed?
2	Parameterization mode	P2 STOP P2 RUN	The control is in parameterization mode. Almost all parameters can be written.
4	Operating mode	BB STOP BB RUN	The control is in operating mode. Only selected parameters can be written

C-0-0450 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+

Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	4	4

C-0-0451, target mode of the control

Function Structure

This parameter switches the control to the desired target mode:

Value	Motion mode	Display	What is allowed?
2	Parameterization mode	P2 STOP P2 RUN	The control is in parameterization mode. Almost all parameters can be written.
4	Operating mode	BB STOP BB RUN	The control is in operating mode. Only selected parameters can be written.

C-0-0451 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	4	0

C-0-0452, current control mode

Function Structure

This parameter indicates the current control mode of the control.

Value	Motion mode	Display	What is allowed?
2	Parameterization mode	P2 STOP P2 RUN	The control is in parameterization mode. Almost all parameters can be written.
4	Operating mode	BB STOP BB RUN	The control is in operating mode. Only selected parameters can be written.

C-0-0452 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0465, CPU load per core, current

Function

This parameter contains the current CPU load of the control - separated acc. to the CPU cores - in a list in percent.

Describing individual parameters, arranged according to types

C-0-0465 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	100.0	---

C-0-0466, CPU load per core, maximum

Function This parameter contains the maximum measured percentage of CPU load separated acc. to the CPU cores in a list, since it was last switched on or reset.

It can be reset via the parameter "C-0-1051, Command: Resetting C-0-0416, C-0-0417, C-0-0466, C-0-0467".

C-0-0466 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	100.0	---

C-0-0467, CPU load per core, minimum

Function This parameter contains the minimum measured percentage of CPU load separated acc. to the CPU cores in a list, since it was last switched on or reset.

It can be reset via the parameter "C-0-1051, Command: Resetting C-0-0416, C-0-0417, C-0-0466, C-0-0467".

C-0-0467 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	100.0	---

C-0-0476, Configured user tasks

Function This parameter can be used to read out the tasks created by the user.

Tasks that users can create are PLC tasks and user tasks created with the MLPI.

Entry	Meaning	Possible entries
1	Type	Sxxx: PLC task Uxxx: User task
2	Name	Name of the task
3	Priority	Priority of the task

Entry	Meaning	Possible entries
4	Watchdog	Watchdog 0 - not enabled 1 - Active
5	Watchdog sensitivity	Sensitivity of the watchdog
6	Watchdog time	Time after which the watchdog is triggered in μ s.
7	Start condition	Start condition for the task 0 - cyclic 1 - event-controlled 2 - externally controlled 3 - free
8	External event	External event 0 - no external event 1 - Sercos 2 - Motion 3 - Onboard I/O 4 - Onboard S20 5 - Safety Interrupt 6 - EtherCAT 99 - Unknown event

Example:

U001,UserTask,10,0,0,0,0,0,
 S001,PlcTask,5,0,0,0,0,0,
 S002,MotionTask,2,1,1,2000,2,1

C-0-0476 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	255	0

C-0-0477, Command-actual comparison of the sercos devices

Function This parameter is used for diagnostic purposes. It checks which sercos devices were configured in IndraWorks and which are actually connected to the controller.

Structure The parameter is a list parameter with the following structure:

- Element 1: sercos address of the first incorrectly configured device
- Element 2: Error cause of the first incorrectly configured device
- Element 3: sercos address of the second incorrectly configured device
- Element 4: Error cause of the second incorrectly configured device

Describing individual parameters, arranged according to types

- ...
- Element 31: sercos address of the sixteenth incorrectly configured device
- Element 32: Error cause of the sixteenth incorrectly configured device
- ...

Valid values of a sercos address: 1 .. 99

Valid values of an error cause listed in the table.

Value	Description
2	Wrong firmware
4	Wrong function package
6	Wrong firmware and wrong function package
8	Device is disabled in the IndraWorks project or not present, but a device with the corresponding sercos address is still connected with the controller (only sercos III)
16	Device is configured in the IndraWorks project, but there is no device with the applicable firmware and sercos address connected with the controller
32	Wrong type plate information, element L03 (manufacturer code) or L05(device ID) incorrect

Tab. 4-94: Possible error causes

The parameter remains empty if no error was found.

Use



The parameter "**C-0-0477**" is only filled with the correct data when leaving phase 2 (P2) for phase 4 (P4). Data stored in the parameter at an earlier point in time, can be incomplete.

Example A (sercos III)

Two drives are connected to the controller.

MPH-05, sercos address 1, function package 0x22.

MPB-04, sercos address 2, function package 0x22.

Three drives are configured in IndraWorks:

MPB-05, sercos address 1, function package 0x22, FWA comparison active, drive is activated

MPB-04, sercos address 2, function package 0x22, FWA comparison active, drive is deactivated

MPH-05, sercos address 3, function package 0x22, FWA comparison active, drive is activated

C-0-0477 indicates:

Element	Value	Comment
1	1	sercos address of the first defective drive
2	2	Drive has the wrong firmware
3	2	sercos address of the second defective drive

Element	Value	Comment
4	8	Drive is deactivated in the IndraWorks project, but a drive with the same sercos address is still connected with the controller (only sercos III)
5	3	sercos address of the third defective drive
6	16	Drive is configured in the IndraWorks project, but there is no drive with the applicable firmware and sercos address connected with the controller

Example B

Three drives are connected to the controller.

MPH-05, sercos address 1, function package 0x22.

MPB-04, sercos address 2, function package 0x22.

MPH-05, sercos address 3, function package 0x22.

The following are configured in IndraWorks:

MPD-05, sercos address 1, function package 0x22, FWA comparison active, axis is deactivated

MPD-05, sercos address 2, function package 0x22, FWA comparison active, axis is deactivated

MPH-05, sercos address 3, function package 0x22, FWA comparison active, drive is activated

MPH-05, sercos address 4, function package 0x22, FWA comparison active, drive is deactivated

MPB-04, sercos address 5, function package 0x22, FWA comparison active, drive is activated

[C-0-0477](#) indicates:

Element	Value	Comment
1	1	sercos address of the first defective drive
2	8	Drive is deactivated in the IndraWorks project, but a drive with the same sercos address is still connected with the controller (only sercos III)
3	2	sercos address of the second defective drive
4	8	Drive is deactivated in the IndraWorks project, but a drive with the same sercos address is still connected with the controller (only sercos III)
5	5	sercos address of the third defective drive
6	16	Drive is configured in the IndraWorks project, but there is no drive with the applicable firmware and sercos address connected with the controller

[C-0-0477](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	0	255	0

C-0-0478, sercos motion configuration

Function The parameter contains the configuration of the sercos devices assigned to the control (e.g. axes).

Structure It is stored as character string and structured as follows:

Entry	Significance	Prefix	Possible entries
1	sercos address	A	1-253
2	Firmware version	F	MPH-03, others, ...
3	Axis properties	P	<i>Bit 0: Axis without actual value position feedback (open-loop operation)</i> 0 - Inactive 1 - Active <i>Bit 1: Axis with actual value position feedback (closed-loop operation)</i> 0 - Inactive 1 - Active Bit 2: Reserved Bit 3: Reserved <i>Bit 4: Axis with servo functionality</i> 0 - Inactive 1 - Active <i>Bit 5: Axis with synchronous functionality</i> 0 - Inactive 1 - Active
4	Configuration	C	<i>Bit 0: FWA comparison</i> 0 - active 1 - inactive <i>Bit 1: Interpolation</i> 0 - in the drive 1 - in the control <i>Bit 4: Electr. type plate comparison</i> 0 - Inactive 1 - Active
5	Device state (active, parking axis, deactivated)	S	0: Active 1: Parking 2: Deactivated

Entry	Significance	Prefix	Possible entries
6	Available addresses in the sercos device	V	1-253 1-253 (The second entry is optional for double-axis devices)
7 (optional)	Manufacturer code	L03	Device-specific, S-0-1300.0.3
8 (optional)	Device ID	L05	Device-specific, S-0-1300.0.5

Tab. 4-95: Drive configuration

Use

**Example:**

3 drives

A1, FFWA-INDRV*-MPE-17, P0x00000022, C0x00000000, S0x00000000, V1

A2, FFWA-INDRV*-MPD-07, P0x00000022, C0x00000000, S0x00000002, V2|3

A2, FFWA-INDRV*-MPD-07, C0x00000000, S0x00000002, V2|3

A4, FFWA-INDRV*-MPH-06, P0x00000022, C0x00000000, S0x00000000, V1,L03100,L05MPH-06

- If a drive is **deactivated** in [C-0-0478](#), create an axis with this drive. It can be written on all A-parameters of this axis. There is no transfer to the S-/P-parameters. The drive does not have to exist physically.
- If a drive is **parked** in [C-0-0478](#), the command "S-0-0139, C1600 Parking axis" is activated in the drive. The drive has to be in the sercos ring.
- The entries 7 and 8 are optional as long as the comparison of the electronic type plate is not active in the entry 4 (prefix C).

C-0-0478 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Motion Setup"

C-0-0479, Extended sercos device information

Function During the transition from P0 to P2, the sercos bus is scanned and the addresses of all connected sercos devices are determined.

This list is displayed in the parameter "[C-0-0481](#), List of detected sercos devices".

In addition, the command "[C-0-1009](#), Command: Determine extended sercos device information ", can be used to retrieve the device firmware and for drives the enabled function package for all connected devices. The command can only be executed in P2.

Data read is displayed in the parameter "[C-0-0479](#), Extended sercos device information".

Describing individual parameters, arranged according to types

Structure

Entry	Significance	Prefix	Possible entries
1	sercos address	A	0-511
2	Firmware version	F	Device-specific, S-0-1300.0.9 or S-0-0030 or S-0-1300.0.4 accord- ing to availability in the device
3	Function package	P	Content of P-0-2004
4	Available addresses in the sercos de- vice	V	0-511 0-511 (The second entry is optional for double-ax- is devices)
5	Manufacturer code	L03	Device-specific, S-0-1300.0.3
6	Device name	L04	Device-specific, S-0-1300.0.4
7	Device ID	L05	Device-specific, S-0-1300.0.5
8	Function revision	L07	Device-specific, S-0-1300.0.7
9	FSP type and version	T01	sercos-specific, S-0-1302.0.1

Tab. 4-96: Device configuration

Use Example:

1 I/O module + 2 drives

A65,FR-ILB S3 AI12 AO4 SSI-IN4,P0x00000000,V65,L03100,L04R-ILB S3
AI12 AO4 SSI-IN4,L05R911171949,L070,T010x00010001,

A1,FFWA-INDRV*-MPH-07V24-D5-1-SNC-
ML,P0x00000222,V1,L03100,-,L05FWA-INDRV*-MPH-07,-,T010x00020001,

A216,FFWA-INDRV*-MPB-07V18-D5-1-SNC-
TF,P0x00000222,V16,L03100,-,L05FWA-INDRV*-MPB-07,-,T010x00020001



Since not all information is available, the missing entries are la-
beled with a '-'.

C-0-0479 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Current Drive Con- fig"
Parameter_is_copied_to_associated_S-/P-parameters:			

IndraDrive/ Drive:	P-0-2004, S-0-0030, S-0-1300.0.3,, S-0-1302.0.1
IndraDrive/ Control:	S-0-0030, S-0-1300.0.3,, S-0-1302.0.1
HydraulicDrive/ Drive:	P-0-2004, S-0-0030, S-0-1300.0.3,, S-0-1302.0.1
HydraulicDrive/ Control:	S-0-0030, S-0-1300.0.3,, S-0-1302.0.1
SercosDrive:	S-0-0030

C-0-0480, Configured axis number

Function This parameter shows the amount of configured axes.

C-0-0480 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0481, List of detected sercos devices

Function This parameters displays devices found at the sercos bus in the order in which they are found.

Use Example:

3 drives with the addresses 1, 2 and 5 are running at the bus.

C-0-0481 indicates:

Element	Value	Comment
1	1	Drive 1 found
2	5	Drive 5 found
3	2	Drive 2 found

C-0-0481 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0482, List of non-linked sercos devices

Function This list parameter displays the sercos devices found at the sercos bus and not assigned to a real axis.

A drive can only be assigned one real axis, but several encoder axes are possible.

C-0-0482 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	RAM	Editability:	READ_ONLY

Describing individual parameters, arranged according to types

Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 0	Default value 0

C-0-0483, List of configured axes

Function This parameter shows the configured axes of the system. The values represent the logical axis address.

Use Examples:

3 axes (axis 1, 2 and 5) are configured in the system.

This means [C-0-0483](#) looks like:

Element	Value	Comment
1	1	Axis 1 is configured
2	2	Axis 2 is configured
3	5	Axis 5 is configured

C-0-0483 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0	Maximum value 512	Default value 0

C-0-0484, Axis configuration list

Function This parameter defines the axis system. It configures the axes and assigns the drives.

Structure The parameter is a list parameter with the following structure:

- Element 1: Axis configuration of axis 1
- Element 2: Drive assigned to axis 1
- Element 3: Axis configuration of axis 2
- Element 4: Drive assigned to axis 2
- ...
- Element 31: Axis configuration of axis 16
- Element 32: Drive assigned to axis 16
- ...

Value	Comment
0	No axis configured
8	Real axis configured
16	Virtual axis configured
32	Encoder axis configured

Value	Comment
64	Link axis configured
128	Controller axis

Tab. 4-97: Valid values of an axis configuration

Use



If link axes have been configured and not deactivated by parameter "A-0-0024, Axis state", it is checked when switching to phase 4 whether the control participates in the link ("C-0-0701, C2C, configuration of function modes").

If this is not the case, parameter "C-0-0484, Axes configuration list" is entered into parameter "C-0-0111, List of all invalid C-parameters" and an incorrect configuration is displayed ("F0160024, Error in cross-check of C-parameters").

Valid drive values: 1 .. 99

A drive can only be assigned one real axis, but several encoder axes are possible.

Example A

The drive with the address 1 is connected to the control. Two axes are desired:

- Axis 1 is a real axis connected to drive 1,
- Axis 2 is a virtual axis.

C-0-0484 indicates:

Element	Value	Comment
1	8	Axis 1 is a real axis
2	1	Drive with address 1 used for the axis
3	16	Axis 2 is a virtual axis
4	0	No drive used/required
5	0	Axis 3 is not defined
6	0	No drive used/required
....		
31	0	Axis 16 is not defined
32	0	No drive used/required
....		

Example B

Two drives with the addresses 1 and 2 are connected to the control. Three axes are desired:

- Axis 1 is a real axis connected to drive 1
- Axis 2 is an encoder axis connected to drive 1
- Axis 3 is a real axis connected to drive 2,

C-0-0484 indicates:

Describing individual parameters, arranged according to types

Element	Value	Comment
1	8	Axis 1 is a real axis
2	1	Drive with address 1 used for the axis
3	32	Axis 2 is an encoder axis
4	1	Drive with address 1 used for the axis
5	8	Axis 3 is a real axis
6	2	Drive with address 2 used for the axis
7	0	Axis 4 is not defined
8	0	No drive used/required
....		
31	0	Axis 16 is not defined
32	0	No drive used/required
....		

C-0-0484 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	512	0

C-0-0485, logical address mapping

Function This parameter is a write-protected list and documents the illustration of the logic addresses on the Sercos addresses.

The logic addresses can be configured independently from the control as well as from the PLC. Thus, when the address is mapped, the configuration source is also available in the list. Addresses assigned twice (Sercos and logic addresses) can thus be identified.

Structure The list has no gaps, as its length changes dynamically with the respective device configuration. It contains all devices (drives and PLC devices) with three elements each per device. The logic address is in each first element and the corresponding Sercos address in each second element. The configuration source is displayed in each third element. It can either be the control (0x0000) or the PLC (0x8000). 0 in the second and third list element means that it is not a Sercos device - that is a virtual axis, link axis, etc.

The list is structured as follows:

- Element 1: Logic address of device 1
- Element 2: Corresponding Sercos address of device 1
- Element 3: Configuration source of device 1
- Element 4: Logic address of device 2
- Element 5: Corresponding Sercos address of device 2
- Element 6: Configuration source of device 2
- ...

- Element 46: Logic address of device 16
- Element 47: Corresponding Sercos address of device 16
- Element 48: Configuration source of device 16
- ...

Use Example with a unique address mapping.

Example A

In the control, a virtual and a real axis are configured in this logic sequence. A drive with the address 1 is connected to the control.

Two Sercos I/O devices are connected to the PLC with the addresses (logic and Sercos) 101 and 202.

[C-0-0485](#) indicates:

Element	Value	Comment
1	1	Logic address of virtual axis
2	0	Sercos address of virtual axis
3	0	Configuration source of virtual axis: Control
4	2	Logic address of real axis
5	1	Sercos address of the real axis
6	0	Configuration source of real axis: Control
7	101	Logic address of I/O device 1
8	101	Sercos address I/O device 1
9	32768	Configuration source of I/O device 1: PLC
10	202	Logic address of I/O device 2
11	202	Sercos address I/O device 2
12	32768	Configuration source of I/O device 2: PLC

Example with an ambiguous address mapping. Ambiguity can occur in case of a logic **or** a Sercos address as well as in case of a logic **and** a Sercos address.

Example B

Three real axes are configured in the control. Three drives with the Sercos addresses 1...3 are connected one-to-one to the control.

Three Sercos I/O devices with the logic addresses 1, 2, 103 and the corresponding Sercos addresses 1, 202, 3 are connected to the PLC.

[C-0-0485](#) indicates:

Element	Value	Comment
1	1	Logic address of real axis 1
2	1	Sercos address of real axis 1
3	0	Configuration source of the real axis 1: Control
4	2	Logic address of real axis 2
5	2	Sercos address of real axis 2
6	0	Configuration source of the real axis 2: Control

Describing individual parameters, arranged according to types

Element	Value	Comment
7	3	Logic address of real axis 3
8	3	Sercos address of real axis 3
9	0	Configuration source of the real axis 3: Control
10	1	Logic address of I/O device 1
11	1	Sercos address I/O device 1
12	32768	Configuration source of I/O device 1: PLC
13	2	Logic address of I/O device 2
14	202	Sercos address I/O device 2
15	32768	Configuration source of I/O device 2: PLC
16	103	Logic address of I/O device 3
17	3	Sercos address I/O device 3
18	32768	Configuration source of I/O device 3: PLC

Checking the addresses in the elements 1, 4, 7, 10, 13 and 16 indicates that the logic addresses 1 and 2 are assigned twice. Analyzing the configuration sources in the elements 3, 6, 12 and 15 indicates that the devices in the control and the I/O devices in the PLC are configured.

Checking the addresses in the elements 2, 5, 8, 11, 14 and 17 indicates that the Sercos addresses 1 and 3 are assigned twice. Analyzing the configuration sources in the elements 3, 9, 12 and 18 indicates that they are specified for real axes in the control and for I/O devices in the PLC.

For real axis 1 and I/O device 1, the logic address as well as the Sercos address are not uniquely mapped in example B.

C-0-0485 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0	Maximum value 0xFFFF	Default value 0

4.2.3 C-0-0500 - C-0-0999

C-0-0500, sercos master, configuration

Function Structure This parameter configures the drive bus interface.

Parameter value	Configuration
0	sercos bus

C-0-0500 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0501, sercos master, baud rate

Function Structure This parameter configures the baud rate of the drive bus in Mbaud.

Parameter value	Configuration
2	Baud rate is 2 Mbaud
4	Baud rate is 4 Mbaud
8	Baud rate is 8 Mbaud
16	Baud rate is 16 Mbaud

C-0-0501 - Attributes:

Function:	PARAMETER	Unit:	Mbaud
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	2	16	4

C-0-0502, sercos master, OWG length

Function This parameter is used to adjust the control's transmitting power to the length of the optical fiber.

The length specified refers to the optical fiber cable from X7S1 to the first drive.



Generally, it is sufficient to use the default value of 5 m (197 in) to describe the fiber optic length regardless of the actual length of the fiber optic cable.

C-0-0502 - Attributes:

Function:	PARAMETER	Unit:	m
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0.1	50.0	5.0

C-0-0503, sercos master, cycle time

Function The sercos cycle time can be set using this parameter.

The sercos cycle time defines the interval in which the cyclical data is transferred.

C-0-0503 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-

Describing individual parameters, arranged according to types

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	250	65000	2000

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0002,S-0-1002
IndraDrive/ Control:	S-0-0002,S-0-1002
HydraulicDrive/ Drive:	S-0-0002,S-0-1002
HydraulicDrive/ Control:	S-0-0002,S-0-1002
SercosDrive:	S-0-0002,S-0-1002

C-0-0504, sercos master, SVC busy timeout

Function The parameter determines the service channel busy timeout for sercos III.
If the busy bit is present for a longer time at a sercos III slave during a service channel transmission, a service channel error message is generated.
The changed value only becomes active after a successfully completed sercos phase switching. When changing the value in sercos phase 2, phase switching via phase 0 is required to enable the value for phase 2.

C-0-0504 - Attributes:

Function:	PARAMETER	Unit:	ms
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	1000	65000	2000

C-0-0505, sercos master, consumer timeout

Function When CP4 is reached, the controls of all synchronous sercos participants expect active sercos connections. This means that the NewData bit changes cyclically in all sercos connections consumed by the control.
The parameter specifies the period that is waited for the active connections of the sercos participants to the control before the error F80B0019 is output.

C-0-0505 - Attributes:

Function:	PARAMETER	Unit:	ms
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	100	65000	10000

C-0-0506, sercos Master, sercos III, configuration of function modes

Function The configuration bits for the onboard Sercos interface are stored in this parameter. The parameter is only active for Sercos III.



Make this settings in IndraWorks via the "Sercos properties - Settings" dialog (double-click on the Sercos node).

Structure

Bit	Name/function
0	Error reaction F5 error
1	Error reaction F2 error
2...6	Reserved
7	Disable warning E00B0179
8	Enable automatic redundancy restoration
9...31	Reserved

Tab. 4-98: C-0-0506, Sercos master, Sercos III, configuration of the function modes

Use Bits 0 and 1: Setting the error reaction

Bit 0: Error reaction F5 error. If bit 0 is set, an F5 error (e.g. F50B017A, Invalid AT data) is output if a communication error (e.g. Invalid AT data) is detected. This F5 error stops all Motion axes and the corresponding device. The Sercos bus remains in the operating or parameterization mode. PLC devices at the Sercos bus are still ready.

Bit 1: Error reaction F2 error. If bit 1 is set, an F2 error (e.g. F20B017D, Invalid AT data) is output if a communication error (e.g. Invalid AT data) is detected. The respective device is stopped with this F2 error. The Sercos bus remains in operating or parameterization mode. Motion axes and PLC devices at the Sercos bus are still ready.

Bits 0 and 1 not set: Error reaction F8 error. If the bits 0 and 1 are not set and if there are communication errors (e.g. invalid AT data), an F8 error is output (e.g. F80B0016, Invalid AT data) and the Sercos bus is thus stopped with all connected devices.

Bit 0 and bit 1 set: This setting is not permitted.

Parameterizable error function

Setting	Invalid AT data	Consumer connection failure	Producer connection failure
F8 error (bits 0 and 1 not set)	F80B0016	F80B0017	F80B0018
F5 error (bit 0 set)	F50B017A	F50B017B	F50B017C
F2 error (bit 1 set)	F20B017D	F20B017E	F20B017F

Tab. 4-99: Error numbers if error reaction is set



The setting "Error reaction F2 or F5 error" causes a change in behavior when switching from parameterization to operating mode. Even if the configuration does not match, it is tried to reach the operating mode.

- **Missing devices:** Switching is continued even though the error F0140001 "Device command configuration incorrect" occurred. An F5 or F2 error is entered into the diagnostic memory for each missing device.
- **Additional devices:** Unprojected devices obtain a default configuration. F0140001 and for each additional device, an F0 error is entered.
- **Disabled, but physically existing device:** F0140001 and F0140002 "Disabled axis physically available" is reported to the diagnostic memory.

Bits 2...6: Reserved

Bit 7: Disable warning E00B0179

If bit 7 is not set (default setting), the warning E00B0179 is output when detecting redundancy loss. As long as no ring topology is detected, this warning remains active. If the Sercos bus is not to be operated in a ring topology, the warning can be disabled by setting the bit.

Bit 8: Enable automatic redundancy restoration

If bit 8 is set, the automatic redundancy restoration starting from phase 2 is enabled. The control checks the Sercos topology status cyclically every 100 ms.

If a ring topology is detected, the redundancy restoration is automatically triggered.

If the redundancy cannot be restored, an error message is not output. To enable the automatic redundancy restoration, the warning has to be enabled in case of redundancy loss (bit 7 = 0).

C-0-0506 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-0507, sercos master, allowed telegram losses

Function This parameter parameterizes the permitted telegram failures before reporting the error F80B0004. The parameter indicates the number of permitted AT telegram failures that can occur directly one after each other in phase 4.

C-0-0507 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	1	65535	2

C-0-0508, sercos master, calculated Feedback acquisition capture point

Function This parameter shows the measurement time of actual values (TSync) computed during the last Sercos startup. The value depends on the control configuration, the Sercos configuration and the measured values from the Sercos startup.

C-0-0508 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0509, sercos master, predefined feedback acquisition capture point

Function This parameter overwrites the computed measurement time of actual values (TSync). If the value is 0, the internally computed TSync ([C-0-0508](#)) is used.

C-0-0509 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0,000	65000,000	0,000

C-0-0510, sercos master, address configuration

Function This parameter displays the devices found on the sercos bus along with their sercos addresses. These are sorted into the topological sequence of the bus wiring.

If it is written on the parameter in phase 2, the sercos addresses are written in the individual devices.

Use Example:

3 devices with sercos addresses 1, 2 and 5 are connected.

[C-0-0510](#) indicates:

Element	Value	Comment
1	1	Device 1 found at topology position 1
2	5	Device 5 found at topology position 2
3	2	Device 2 found at topology position 3

C-0-0510 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+

Describing individual parameters, arranged according to types

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	1	511	---
Parameter_is_copied_to_associated_S-/P-parameters:			
IndraDrive/ Drive:	S-0-1040		
IndraDrive/ Control:	S-0-1040		
HydraulicDrive/ Drive:	S-0-1040		
HydraulicDrive/ Control:	S-0-1040		
SercosDrive:	S-0-1040		

C-0-0511, sercos master, binary inputs, command values

Function The control bits for the onboard Sercos interface are stored in the parameter. The parameter is only active for Sercos III.

Structure

Bit no.	Name
0...3	Reserved
4	Restore redundancy
5..7	Reserved
8	Creating the Sercos monitor configuration
9...31	Reserved

Tab. 4-100: Status of the onboard Sercos interface

Use**Bits 0...3: Reserved****Bit 4: Restoring redundancy**

If bit 4 is set, the control tries to restore the redundant ring topology after a loss of redundancy in the Sercos ring. This is only possible if the reason for the loss of redundancy is detected and eliminated first. After the function is completed in the control, the control resets the bit to 0. If the redundancy could not be restored, the error message F00B0173 is output.

Bit 8: Creating Sercos monitor configuration

To use the Sercos monitor to perform an analysis in case of Sercos communication problems, the configuration of the Sercos communication is required. This can be created by the Sercos monitor by recording a complete Sercos phase startup from P0 to P4. Alternatively, the MLC can directly generate the configuration in P4 and store it in the MLC file system by setting this bit. The configuration is stored as S3MonitorConfigRing0.xml on the USER partition. After the function is completed in the control, the control resets the bit to 0.

C-0-0511 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0514, sercos master, status

Function The diagnostic bits for the onboard Sercos interface are stored in the parameter.

Structure

Bit no.	Name
0	Reserved
1	Error port 1
2	Error port 2
3	Redundancy error
4	Reserved
5	Phase switching active
6...25	Reserved
26	Sercos phase NRT active
27	Sercos phase 0 active
28	Sercos phase 1 active
29	Sercos phase 2 active
30	Sercos phase 3 active
31	Sercos phase 4 active

Tab. 4-101: Status of the onboard Sercos interface

Use **Bit 0: Reserved**

Bit 1: Error port 1

An interruption between port 1 of the control and the first device was detected in the Sercos ring. The Sercos address of the first device can be read out in [C-0-0517](#).

Bit 2: Error port 2

An interruption between port 2 of the control and the last device was detected in the Sercos ring. The Sercos address of the last device can be read out in [C-0-0517](#).

Bit 3: Redundancy error

An interruption between the two devices was detected in the Sercos ring. The Sercos addresses among which an interruption was detected, can be read out in [C-0-0517](#).

Bit 5: Phase switching active

The bit remains active until the phase is successfully switched or terminated with an error (e.g. when switching from Sercos phase 2 to phase 4).

Bit 26: Sercos phase NRT active

The bit is active during the Sercos phase NRT.

Bit 27: Sercos phase 0 active

The bit is active during Sercos phase 0.

Bit 28: Sercos phase 1 active

The bit is active during Sercos phase 1.

Bit 29: Sercos phase 2 active

The bit is active during Sercos phase 2.

Describing individual parameters, arranged according to types

Bit 30: Sercos phase 3 active

The bit is active during Sercos phase 3.

Bit 31: Sercos phase 4 active

The bit is active during Sercos phase 4.

C-0-0514 - Attributes

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0515, sercos master, sercos III, FPGA, image

Function This parameter is used for an extended diagnostics for sercos III.

C-0-0515 - Attributes

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0516, sercos master, slave identification

Function The parameter commands the identification function of the sercos LEDs to the connected devices. If the identification function is started in one device, the sercos LED flashes with 4 Hz in orange.

The identification function is started in the corresponding device by entering topology positions in these list parameters. The identification function remains active in the other devices until the parameter is changed or the next phase switching takes place. During phase switching, the complete list parameter is deleted and the identification function is closed in all devices.

The maximum number that can be commanded is equal to the number detected at the sercos bus in phase 0.

Topology position 1 is assigned to the first device at master port 1. For further devices, it is increasingly counted along the cabling.

Structure

Element	Value
1	First device for which the identification function is started.
2	Second device for which the identification function is started.
...	Further devices for which the identification function is started.

Tab. 4-102: C-0-0517, sercos master, slave identification

C-0-0516 - Attributes

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	RAM	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	+

Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	512	0

C-0-0517, sercos master, addresses ring break

Function The list parameter contains two list elements filled with the sercos address of the slaves at the end of the lines in a line topology. If the ring is available, the two list elements have the value 0. If no slave is connected to the port of the master, the respective list element displays the value 0. The parameter can be used to diagnose a ring break.

Structure

Element	Value
1	sercos address of the slave at the end of the line at port 1
2	sercos address of the slave at the end of the line at port 2

Tab. 4-103: C-0-0517, sercos master, addresses, ring break

C-0-0517 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value	
	Common:	---	---	---

C-0-0518, sercos master, position ring break

Function The parameter indicates a topology position of a ring interruption. The topology position refers to the connected devices starting at port 1 of the master. The ring interruption is between this device and the closest device seen from the topology.

In case of topology position 0, the interruption takes place directly between the master port 1 of the control and the first slave.

In case of topology position 65535, no ring interruption is detected.

C-0-0518 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value	
	Common:	---	---	0

C-0-0519, sercos master, sercos III, internal connection configuration

Function This parameter specifies all connections managed by IndraWorks. This parameter is checked during the online/offline comparison and updated if required.

The configuration is stored in CSMCfg_bin format.

Describing individual parameters, arranged according to types

C-0-0519 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

C-0-0520, sercos master, sercos III, external connection configuration

Function External applications (e.g. PLC program) can store their connection configuration incrementally in this parameter. When reading the parameter, a summary of all previously incrementally specified connection configurations is returned. If the parameter content is deleted, all previously incrementally stored connection configurations are deleted. This parameter is not checked during the online/offline comparison. An external application is responsible for the management.

The configuration is stored in CSMCcfg_bin format.

In the external connection configurations, only values ≥ 10.000 may be used for the AppID in CSMCcfg_bin format.

C-0-0520 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

C-0-0521, sercos master, sercos III, connection configuration active

Function The parameter contains the complete configuration of sercos III connections. The configuration is stored in CSMCcfg_bin format.

C-0-0521 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

C-0-0535, sercos master, error counter for Port1 and Port2

Function The parameter is the image of the sercos FPGA register "SercosErrorCount" in which all incorrect telegrams (e.g. FCS errors) are displayed related to the port.

The error counters stop at a maximum of 65535. The error register is not automatically deleted in the FPGA. Deletion is only carried out by writing on the parameter.

Structure

Bit	Name/function
15-0	Error counter Port1
31-16	Error counter Port2

Tab. 4-104: C-0-0535, sercos III: Error counters Port1 and Port2

C-0-0535 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0551, sercos master, target phase

Function This parameter switches the onboard Sercos interface to the desired target phase. The Sercos phase can only be changed if the Motion mode (C-0-0452) is 0. Currently, it is only possible to switch from the communication phase CP= to NRT and vice versa. When a new Motion target mode (C-0-0451) is specified, the specification of this parameter is overwritten.

Structure

Value	Sercos phase	Display	What is happening?
-1	NRT	CML: The Sercos phase is not shown in the display XM: The Sercos LED is not active	No Sercos telegrams are sent.
0	CP0	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange.	Sercos telegrams are sent to determine the addresses of all connected Sercos devices. The topology is also determined.
1	CP1	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange and flashes once in green.	The asynchronous data transfer is initialized via the service channel.
2	CP2	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange and flashes twice in green.	The asynchronous data transfer via service channel is available.

Describing individual parameters, arranged according to types

Value	Sercos phase	Display	What is happening?
3	CP3	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange and thrice in green.	The cyclic data transfer is initialized.
4	CP4	CML: The Sercos phase is not shown in the display XM: The Sercos LED is green.	The cyclic data transfer is available.

Tab. 4-105: C2C target mode

Use**Firmware update for Sercos devices**

Switching the Sercos communication to NRT ends sending Sercos telegrams. The complete band width is available for non-Sercos telegrams. For some Sercos devices, a firmware update is only possible in this state.

C-0-0551 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	INT_DEC, 2BYTE	PLC_data_type:	INT
Memory:	RAM	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	-1	4	0

C-0-0552, sercos master, current sercos phase**Function
Structure**

This parameter includes the current phase of the onboard Sercos interface.

Value	Sercos phase	Display	What is happening?
-1	NRT	CML: The Sercos phase is not shown in the display XM: The Sercos LED is not active	No Sercos telegrams are sent.
0	CP0	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange.	Sercos telegrams are sent to determine the addresses of all connected Sercos devices. The topology is also determined.

Value	Sercos phase	Display	What is happening?
1	CP1	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange and flashes once in green.	The asynchronous data transfer is initialized via the service channel.
2	CP2	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange and flashes twice in green.	The asynchronous data transfer via service channel is available.
3	CP3	CML: The Sercos phase is not shown in the display XM: The Sercos LED is orange and thrice in green.	The cyclic data transfer is initialized.
4	CP4	CML: The Sercos phase is not shown in the display XM: The Sercos LED is green.	The cyclic data transfer is available.

Tab. 4-106: C2C target mode

C-0-0552 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	INT_DEC, 2BYTE	PLC_data_type:	INT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	-1	4	0

C-0-0578, sercos device configuration

Function The parameter contains the total command configuration of the Sercos devices assigned to the onboard Sercos interface. The total configuration is generated from the command configurations of the motion system and the PLC during phase startup.

Structure The parameter is stored as character string and structured as follows:

Entry	Description	Prefix	Possible entries
1	Sercos address	A	1-253
2	Firmware version	F	MPH-03, others, ...

Describing individual parameters, arranged according to types

Entry	Description	Prefix	Possible entries
3	Configuration source	O	<i>Bit 3: Device configured by:</i> 0 - Motion system (C-0-0478) 1 - PLC
4	Device state (enabled, disabled)	S	0: Active 2: Disabled
5	Configured device name	N	From IW project
6	Vendor code	L03	Device-specific, S-0-1300.0.3
7	Device ID	L05	Device-specific, S-0-1300.0.5
8	Available addresses in the Sercos device	V	1-253 1-253 (The second entry is optional for double-axis devices)

Tab. 4-107: Command Sercos configuration

Use Example:

3 Sercos devices

A3,L03100,L05FWA-INDRV*-MPB-18,FFWA-INDRV*-
MPB-18,NDrive1,S0x00000000,O0x00000000,V3,

A65,L03100,L05R911170826,FR911170826,NR_ILB_S3_24_DIO16,S0
x00000000,O0x00000008,V65,

A4,L03100,L05HCS0x,FHCS0x,NDrive3,S0x00000000,O0x00000008,V4



Since not all information is available, the missing entries are labeled with a '-'.

C-0-0578 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Device Setup"

C-0-0620, Diagnostic memory index

Function This parameter is used to select an arbitrary entry in the internal control error memory for system diagnostics.

The entries selected in this parameter can be output using parameter "C-0-0621, Diagnostics, indexed message".

The error memory is chronologically sorted.

The possible indexes are created from parameter "C-0-0624, Diagnostics, absolute indices".

This parameter is only intended for internal use.

C-0-0620 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	P0, P2, BB

Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x1	Maximum value 0xFFFFFFFF	Default value 0x1

C-0-0621, Diagnostics, indexed message

Function This parameter is used to display the diagnostic message from the control's diagnostic memory, which were selected using parameter "C-0-0620, Diagnostic memory, index".

The data is displayed in binary form, i.e. it is not legible.



This parameter is only intended for internal use.

C-0-0621 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	INT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of INT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

C-0-0622, Diagnostics, number of messages in the memory

Function This parameter contains the number of messages stored in the diagnostic memory.

C-0-0622 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	INT_DEC, 2BYTE	PLC_data_type:	INT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 1

C-0-0623, Diagnostics, last reset message

Function This parameter is used to display the absolute index of the last reset message from the control's diagnostic memory.

This parameter is only intended for internal use.

C-0-0623 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x01	Maximum value 0xFFFFFFFF	Default value 0x01

C-0-0624, Diagnostics, absolute indices

Function In this case, the absolute indices of the control error memory's continuous numbering are displayed.

This parameter is only intended for internal use.

C-0-0624 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0625, Diagnostics, display message

Function This parameter contains the current display message in binary form.

This parameter is only intended for internal use.

C-0-0625 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	INT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of INT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0626, Diagnostics

Function This parameter contains the current relevant control diagnostic in text form.

The prefix to the text is the respective content from parameter "C-0-0627, Diagnostic number".

Example:

"F0220202, Invalid axis number"

C-0-0626 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFF	---

C-0-0627, Diagnostic number

Function This parameter stores the diagnostic number shown in the display.

This enables the user to generate his own diagnostics using this number (HMI, additional languages).

C-0-0627 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT

Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0650, Diagnostics, status word

Function Structure

This parameter contains the status information of the control.

Bit	Name/function
0	Message 0: There is no message, 1: There is at least one message.
1	Warning 0: There is no warning, 1: There is at least one warning.
2	Class 0 error 0: There is no class 0 error, 1: There is at least one class 0 error.
3	Class 1..9 error 0: There is no class 1..9 error, 1: There is at least one class 1..9 error.
4	System reset
5	Clearing error active
15...6	Reserved
16	System in Phase0
17	System in Phase1
18	System in Phase2
19	System in Phase3
20	System in Phase4
21	Phase switching active
30..22	Reserved
31	Common message 0: There is neither a warning nor an error. 1: There is at least one warning or error of some class. Messages do not affect the bit.

C-0-0650 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	---	---	0x01

C-0-0660, Display, display period of messages

Function The display duration of diagnostic messages on the display can be configured using this parameter.

If this parameter is set to "0", nothing is output on the display.

An entry is still made in the diagnostic memory.

C-0-0660 - Attributes:	Function:	PARAMETER	Unit:	s
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0xFFFFFFFF

C-0-0670, List of active trace modules

Function This parameter contains a list of all activated Trace modules. Adding and removing module names can activate or deactivate modules.

C-0-0670 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	" "

C-0-0671, Trace, storage settings

Function Trigger, saving and file settings are activated by setting individual bits via this parameter.

Structure

Bit	Function
0	Trigger on DSH message
1	Trigger on Trace warning
2	Trigger on Trace error
3-7	Reserved
8	Saving after specified time
9	Saving if buffer is full
10	Saving after trigger signal
11	Reserved
12	Save trace in new file (attaching time)
13-31	Reserved

C-0-0671 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00000000	0xFFFFFFFF	0

C-0-0672, Save trace after this DSH message

Function In this parameter, a DSH message can be saved after the Trace buffers are blocked.

C-0-0672 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00000000	0xFFFFFFFF	0

C-0-0673, Save trace in DSH message mask

Function A DSH message mask can be set using this parameter. That means it can be triggered on error groups, e.g.

C-0-0672 = 0xF12C0492 and

C-0-0673 = 0xFF000000

⇒ It is triggered on all messages starting with 0xF1....

C-0-0673 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00000000	0xFFFFFFFF	0

C-0-0674, Save trace after specified time

Function This parameter can be used to determine a time interval after which all Trace buffers are saved regularly.

C-0-0674 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x0000000A	0xFFFFFFFF	20

C-0-0675, Save trace under this file name

Function A file name can be specified in this parameter. The Trace recordings are saved under this file name.

If no name is specified, the recordings are saved under the respective buffer names.

C-0-0675 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xff	Default value ---

C-0-0676, Percentage of trace data saved after trigger signal

Function The parameter determines the number of measured values (in percent of the buffer size) that should still be recorded after the trigger event.

C-0-0676 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	+	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0	Maximum value 100	Default value 50

C-0-0690, Flash memory, Access counter

Function This parameter indicates the number of write-access on the flash memory.



The counter is reset upon control restart and when loading the basic parameters.



Only write access caused by parameter access are counted. Access caused by FTP transfer or file access from the user program is not counted for example.

C-0-0690 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0	Maximum value 4294967295	Default value 0

C-0-0700, C2C, cycle time (Tcyc), command value

Function In parameterization mode, these parameters can be used to set the command value for the cycle time in the cross link.

Use The control link cycle time indicates the time intervals at which the motion controller makes new command values in the cross connection available.

It is displayed in the diagnostics dialog for the CrossCom (CFL01.1-Q2) and C2C CrossCom (CFL01.1-R3) function modules and can be written or modified in the configuration dialog.

The only valid values are 2000 ms 4000 ms and 8000 ms.

The value set has to match "C-0-0400, Motion, cycle time, command value" and "C-0-0503, Master communication, cycle time".

This is checked when switching into operating mode.



This parameter is write-protected in a C2C slave depending on the configuration. A C2C slave receives its command value for the cycle time via the connection from the C2C master in the C2C start-up.

C-0-0700 - Attributes:

Function:	PARAMETER	Unit:	µs
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	2000	8000	2000

C-0-0701, C2C, configuration of function modes

Function In parameterization mode, it can be specified in this parameter if the control participates in the cross connection and which functionality is used.

Structure

Bit	Name/function
0	Control link via CrossCom (CFL01.1-Q2) or C2C CrossCom (CFL01.1-R3) 0: Control is the only control, 1: Control is a link device.
1	Function as link device 0: Control is a link slave, 1: Control is a link master.
3..2	Reserved
4	Ring structure for CrossCom (CFL01.1-Q2) 0: Single ring, 1: Double ring.

Tab. 4-108: MLC in the link



C2C CrossCom (CFL01.1-R3)

Bit 4: Ring structure for CrossCom (CFL01.1-Q2) is only applied and can only be modified for CrossComm devices.

For a C2C device (CFL01.1-R3), setting this bit is rejected as invalid operating data. For C2C, the physical structure (ring or line/double line) is automatically detected.

Use

**CrossCom (CFL01.1-Q2)**

If link axes were configured, it is checked whether the control is participating in a link ("C-0-0701, C2C - Configuration of function modes") when switching to phase 4.

If this is not the case, the parameter "C-0-0484, Axes configuration list" is entered into parameter "C-0-0111, List of all invalid C-parameters" and an incorrect configuration is displayed ("F0160024, Error in cross-check of C-parameters").

The parameter is displayed in the diagnostic dialog for the CrossCom (CFL01.1-Q2) and C2C CrossCom (CFL01.1-R3) function modules and it can be written on or modified in the configuration dialog.

**For the XM, VP and PR series, the following applies:**

If there is a configuration in the Sercos function module different from the configuration set in the parameter or if a configuration is selected initially, restart the control manually. The following message is output: "E0140001, Control reboot required to activate the new config". Upon control start, a new configuration is loaded to the module.

C-0-0701 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x00

C-0-0702, C2C, OWG length**Function**

In parameterization mode, this parameter can be used to adjust the transmitting power of the CrossCom function module to the length of the optical fiber cable.



Due to the configuration, this parameter is write-protected for sercos III C2C link (no FOC connections).

Use

The first length specified in the list refers to the optical fiber cable from X7S1 to the next device connected in the primary ring.

The second length specified in the list refers to the optical fiber cable from X7S3 to the next device connected in the secondary ring.

Both lengths are displayed in the diagnostics dialog for the CrossCom function module and can be written or modified in the configuration dialog.



Generally it is sufficient to use the default value of 2 m to describe the fiber optic length regardless of the actual length of the fiber optic cable.



The transmitting power is not adjusted in the operating mode until start up.

C-0-0702 - Attributes:	Function:	PARAMETER	Unit:	m
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.1	50.0	5.0

C-0-0703, C2C, configuration of master axes

Function **sercos II link (CFL01.1-Q2):**

Both local axes of the control which are to make their axis positions available in the cross connection can be entered in this parameter in parameterization mode (P2).

The first logical axis address specified in the list determines the first master axis in the cross connection and the second axis address determines the second master axis. To configure a master axis, create the axis in the axis configuration list first (C-0-0484).

Both of these configured axis positions are sent cyclically from each link slave in its link AT as master position A (first axis address) and master position B (second axis address) to the link master.

The link master copies the positions of all link ATs into the link MDT and adds both of its configured axis positions. The position of both axis positions within the link MDT are firmly fixed to the link address.

C2C link (CFL01.1-R3):

This parameter is write-protected in the C2C link and is used only to provide a clear display of the local axes of the control, which are to make their axis positions available in the cross connection. The configuration of these producer axes for C2C is carried out using parameter C-0-0778, "Command configuration of the link".

The first logical axis address specified in the list determines the data for the first master axis in the cross connection and the nth axis address determines it for the nth master axis. To configure a master axis, create the axis in the axis configuration list first (C-0-0484).

These configured axis positions are sent cyclically from each link slave in its link AT as a master position in 'Double' data type to the link master. In addition to the master axis position, each producer axis also makes its current axis status (A-0-0021) and modulo value (A-0-0045) available cyclically in the link.

The link master copies the cyclical data of all link ATs into the link MDT and adds its configured data. The position of the cyclical data within the link MDT is a result of the command configuration in C-0-0778.

Structure **sercos II link (CFL01.1-Q2):**

LinkAdr = 2 * (MlcAdr - 1) + AxisAdr.

LinkPos1	LinkPos2	LinkPos3	LinkPos4	...	LinkPos2N-1	LinkPos2N
MLC1:PosA	MLC1:PosB	MLC2:PosA	MLC2:PosB		MLCN:PosA	MLCN:PosB

Tab. 4-109: Fixed assignment of MDT addresses to MLC and axis addresses

C2C link (CFL01.1-R3):

Example: As the first link device, MLC 4 produces the C2C data for local axes 3, 1 and 6 in the link. The 9 data produced (A-0-0021, A-0-0045 and

Describing individual parameters, arranged according to types

[A-0-0101](#) for axes 1, 3 and 6 respectively) are specified using [C-0-0778](#) as follows:

C2CData1	C2CData2	C2CData3	C2CData4...6	C2CData7	C2CData8	C2CData9
MLC4, A003: A-0-0101	MLC4, A003: A-0-0021	MLC4, A003: A-0-0045	MLC4,A001:..... ..	MLC4, A006: A-0-0045	MLC4, A006: A-0-0101	MLC4, A006: A-0-0021

Tab. 4-110: Configurable assignment of MDT addresses to MLC and axis addresses (see [C-0-0778](#))

Use **sercos II link (CFL01.1-Q2):**

A local link axis can access these axis positions using the parameter "[A-0-0008](#), Link axis, master axis selection".

Both master axes can be selected or written in the settings dialog for the CrossCom (CFL01.1-Q2) function modules.

C2C link (CFL01.1-R3):

In C2C there are no local link axes for access to the link data. With multi-axis function blocks the PLC can access the desired master axis position from the link directly using the master axis structure AXIS_REF. The address of the control (removed or local) and the address of the local axis of this control are entered in AXIS_REF for this purpose.



Due to the configuration, this parameter is write-protected for C2C, as the C2C command configuration is performed using parameter [C-0-0778](#).

Parameter [C-0-0703](#) is only used for C2C for improved diagnostics of the local producer axes.

C-0-0703 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 99	Default value ---

C-0-0704, C2C, binary inputs, command values

Function In operating mode the user can use this parameter to set and delete the binary inputs for the cross connection.



The binary command values in this parameter become only effective if no PLC program is loaded. Otherwise they are cyclically overwritten by the binary PLC command values in the ControlData (Shared Memory) structure.

Use **Bits 0...3: 4 synchronous link inputs**

The synchronous link inputs "Link SYNCn" are used with enabled link devices for simultaneously setting/deleting the binary status bit "Link device m, input link SYNCn enabled" (m = 1..64, n = 1..4).

If the link device m ($m = 1..64$) sets/deletes the input "Link SYNC1" (bit 0), all link devices (including device m) simultaneously set/delete the status "Link device m , input link SYNC1 enabled" (see parameter [C-0-0713](#)).

This mechanism, for example, can be used to start the same PLCopen function blocks or the same processes on all controls simultaneously.

Bit 4: Restore redundancy



Bit 4: Restoring redundancy can only be modified or effective for CrossComm devices (CFL01.1-Q2) and the C2C master (CFL01.1-R3).

For a C2C slave (CFL01.1-R3), setting this bit is rejected as invalid operation data.

When bit 4 is set, after a loss of redundancy in the the link ring, the control tries to restore the redundant link structure with primary and secondary ring (sercos II: double ring) or ring topology (sercos III: ring).

This is only possible if the reason for the loss of redundancy is detected and eliminated first.

Bit 5: Enable hot plug



Bit 5: Enabling the hot plug can only be modified or effective for the C2C master (CFL01.1-R3).

For a C2C slave (CFL01.1-R3) or a CrossComm device (CFL01.1-Q2), setting this bit is rejected as invalid operation data.

Bit 5 is only applied with a C2C master with a sercos III interface (CFL01.1-R3).

If it is set, the C2C master executes the hot plug mechanism. If a new (or rebooted) C2C slave has been physically added to the running link the C2C master will insert it into the link during operation. If no new device exists, the C2C master reports a hot plug error.

After deleting bit 5, the C2C master does not execute the hot plug mechanism, even if a new (or rebooted) C2C slave has been physically added to the running link. If the new or rebooted C2C slave recognizes that the C2C master does not support or execute a hot plug, it generates a corresponding diagnostic message.



If the parameter "[C-0-0031](#), Control address" has the value "0", this parameter cannot be read.

[C-0-0704](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x00

C-0-0705, C2C, calibration of dead time compensation

Function In parameterization mode, the percentage of linear dead time compensation in the cross link for the axes configured in "C-0-0703, C2C, configuration of master axes" can be set in this parameter.

The first value specified in the list refers to the first master axis in the cross connection and the second value adjusts the dead time compensation for the second master axis.



In C2C this parameter is write-protected depending on the configuration. Calibration of dead time compensation is not supported in the C2C link.

The **Adjustment** is in the interval

0: no dead time compensation (0%)

100: linear dead time compensation (100%)

Use The adjustment is displayed in the diagnostics dialog for the CrossCom function module and can be written or modified in the configuration dialog by the PLC and using IndraWorks.

Notes on dimensioning:

Since the consumers receive the producer's position values only after one cycle of the sercos ring, this is referred to as "dead time". The consumer axis lags behind.

To minimize this effect, an automatic compensation for dead time is supported for every link axis. This means that in the position values provided in the link are extrapolated, i.e. precalculated position values are provided to supply the slave axes with position values that are as close to identical as possible.

Very good precalculations are made for the consumers for the continuously changing position values of the producing axes. For non-continuous changes overshoots can occur on the consumer side due to unsuitable precalculations. If such cases are expected, the dead time compensation should be set to values less than 100%, i.e. the precalculation yield corresponding "reductions". However, this causes the consumer to lag behind.

The following dependencies and rules apply for the dead time compensation:

- A value of 100% produces the best possible correlation of the producer and consumer position values.
- The shorter the SERCOS cycle time for the link ring, the better the precalculation functions and the lower the risk of overshooting on the consumer side.
- The risk of overshooting increases with the cascading depth on the consumer side, i.e. if a consumer makes a link axis available in the link again, etc. If overshoot effects occur (e.g. mechanical vibrations/ machine humming or warnings regarding excessive jerk and acceleration at consumer axes or their slave axes), the dead time compensation values can be changed based on the following table:

Cascading depth	Value for dead time compensation
1	50 %
2	33 %
3	25 %
4	20 %

Cascading depth	Value for dead time compensation
5	17 %
6	14 %
7	12 %
8	11 %
9	10 %
10	9 %

Tab. 4-111: Cascading depth and values for dead time compensation

C-0-0705 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	100	100

C-0-0710, C2C, cycle time (Tcyc), actual value

Function This parameter indicates the actual value of the cycle time in the cross connection.

Use The control link cycle time indicates the time intervals at which the motion controller makes new command values in the cross connection available.

This parameter can be read in the diagnostic dialog for the function modules CrossComm (CFL01.1-Q2) or C2C CrossComm (CFL01.1-R3).

C-0-0710 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	4000

C-0-0711, C2C, error counter MDT

Function Every link slave counts all the invalid master data telegrams (MDT). Depending on the link cycle time, a certain maximum number of consecutive MDT failures are permitted (8 ms: 8, 4 ms: 16, 2 ms: 32) and are compensated for by extrapolation of the master axis position.

Use If at least half of the permitted number of MDTs fail consecutively, the control reacts as follows:

- All status bits "Link members' # data valid" (C-0-0712, elements 1 and 2) are set to zero.
- The error message "Control link master axis position incorrect (MDT)" is output.

If at least the permitted number of MDTs fail consecutively, the control continues to react as follows:

Describing individual parameters, arranged according to types

- All drives are disengaged with "P-0-0119, Best possible deceleration".
- All positions on the master axes stop.
- All status bits "Status input link SYNCn, participant m" ([C-0-0713](#), elements 1 and 8) are set to zero.
- The "MDT error counter" stops counting.

The maximum value of the error counter is 65535. When transfer is malfunctioning significantly, this value can be reached after an extended period.

This parameter can be read in the diagnostics dialog for the CrossComm (CFL01.1-Q2) or C2C CrossComm (CFL01.1-R3) function module.



This error counter is not currently supported in a C2C link with the CFL01.1-R3 function module.

C-0-0711 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0

C-0-0712, C2C, link data, status

Function All of the valid bits for the cross connection with a maximum of 64 participants are stored in this list of two 32 bit strips.

Structure

List element	Bit no.	Designation
1	31...0	Status link data, participant 1...Status link data, participant 32
2	31...0	Status link data, participant 33...Status link data, participant 64

Tab. 4-112: Status link data

Use **sercos II link (CFL01.1-Q2):**

The following apply for the status of the link data:

0 = all data for this participant are invalid

1 = all data for this participant are valid

If the data for a participant are invalid, bits 14 and 15 from the control link - status function module ([C-0-0714](#)) can be used to test if the control is already actively participating in the cyclic exchange of link data and is synchronized with the link (PLL is in steady state).

C2C link (CFL01.1-R3):

The following apply for the status of the link participants and data:

0 = the participant does not participate in the link and does not provide valid link data

1 = the participant participates in the link and the link data could be valid

If a control participates in the link, bits 14 and 15 from the control link - status function module ([C-0-0714](#)) can be used to test if the control is already actively participating in the cyclic exchange of link data and is synchronized with

the link (PLL is in steady state). These are the basic requirements for valid link data.

In parameter axis status (A-0-0021), bit 30 (0x4000) indicates whether the data produced in the link for this (external) master axis are valid or not. There are two reasons that the link data for (external) master axes may be invalid:

Either the (removed) control is not located in P4 and all master axes for this participant are affected, or the local axis of the (removed) control is deactivated or parked. Other bits from A-0-0021 give further related information.

This parameter can be read in the diagnostics dialog for the CrossComm (CFL01.1-Q2) or C2C CrossComm (CFL01.1-R3) function module.

C-0-0712 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE_VAR	PLC_data_type:	ARRAY of DWORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0x00

C-0-0713, C2C, binary inputs, status

Function All of the status bits for the binary inputs of the cross connection with a maximum of 64 participants are stored in this list of eight 32 bit strips.

Structure

List element	Bit no.	Designation
1	31...0	Status input link SYNC1, participant 1...Status input link SYNC1, participant 32
2	31...0	Status input link SYNC1, participant 33...Status input link SYNC1, participant 64
3	31...0	Status input link SYNC2, participant 1...Status input link SYNC2, participant 32
4	31...0	Status input link SYNC2, participant 33...Status input link SYNC2, participant 64
5	31...0	Status input link SYNC3, participant 1...Status input link SYNC3, participant 32
6	31...0	Status input link SYNC3, participant 33...Status input link SYNC3, participant 64
7	31...0	Status input link SYNC4, participant 1...Status input link SYNC4, participant 32
8	31...0	Status input link SYNC4, participant 33...Status input link SYNC4, participant 64

Tab. 4-113: Status binary inputs

Use The following apply for the status of the binary inputs 1...4:

0 = the binary input for this participant is not enabled

1 = the binary input for this participant is enabled

This parameter can be read in the diagnostics dialog for the CrossComm (CFL01.1-Q2) or C2C CrossComm (CFL01.1-R3) function module.

Describing individual parameters, arranged according to types

C-0-0713 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE_VAR	PLC_data_type:	ARRAY of DWORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0x00

C-0-0714, C2C, function module, status

Function The diagnostic bits for the function modules CrossComm (CFL01.1-Q2) or C2C CrossComm (CFL01.1-R3) of the link participant are stored in this parameter.

Structure

Bit no.	Designation
0	Control link - Transmission error
1	CFL01.1-Q2 - Error primary ring/CFL01.1-R3 - Error port 1
2	CFL01.1-Q2 - Error secondary ring/CFL01.1-R3 - Error port 2
3	Control link - Redundancy error
4	CFL01.1-R3 - Hot plug error
5	CFL01.1-R3 - Hot plug error bit 0
6	CFL01.1-R3 - Hot plug error bit 1
7	CFL01.1-R3 - Hot plug error bit 2
8	CFL01.1-R3 - Phase switching enabled
9	CFL01.1-Q2/CFL01.1-R3 - Hot plug enabled in running link
10	CFL01.1-R3 - Hot plug in running link aborted
11	CFL01.1-Q2/CFL01.1-R3 - Hot plug status bit 0
12	CFL01.1-Q2/CFL01.1-R3 - Hot plug status bit 1
13	CFL01.1-Q2/CFL01.1-R3 - Hot plug status bit 2
14	CFL01.1-Q2/CFL01.1-R3 - Cyclic exchange of link data enabled
15	CFL01.1-Q2/CFL01.1-R3 - PLL engaged, synchronized with link master
16	CFL01.1-R3 - Acyclically transferred parameters currently adjusted

Tab. 4-114: Status: Function module

Use This parameter can be read in the diagnostic dialog for the function modules CrossComm (CFL01.1-Q2) or C2C CrossComm (CFL01.1-R3).

Bits 5...7: CFL01.1-R3 - Hot plug error bit 0...2

The three hot plug error bits indicate an error offset on the error messages of the C2C hot plug driver. The combination of these three bits result the error offset 0...7 for the basic error messages. In turn, these depend on the C2C functionality. The following error offsets and messages apply:

- C2C master, basic error message F0280060:
0 ... 5 (error message F0280060 ... error message F0280065)
- C2C slave, basic error message F0280080:

0 ... 7 (error message F0280080 ... error message F0280087)

Bit 10: CFL01.1-R3 - Hot plug in running link aborted

This bit indicates that a new link startup was triggered with the parameter [C-0-0751](#) during an active hot plug process. In this case, the hot plug mechanism is aborted. The bit is deleted after a successful C2C startup.

Bits 11...13: CFL01.1-Q2/CFL01.1-R3 - Hot plug status bit 0...2

The three hot plug status bits indicate the current state of the hot plug mechanism. They provide the current hot plug phase (CFL01.1-R3) or status (CFL01.1-Q2). The state machines depend on the hardware. The following phases apply respectively: 0 ... 4:

- CFL01.1-Q2, a state machine replaces the "normal link startup as hot plug:
Status 0 ... Status 4 (0 -> Link ring not closed ... 4 -> Cyclic exchange of link data enabled)
- CFL01.1-R3:
Hot plug phase 0 ... Hot plug phase 4 (HP0 -> Start hot plug ... HP4 -> Hot plug successfully executed)



No link startup executed in the control link with a CFL01.1-Q2 function module. The hot plug state machine simulates a link startup.

The simulated link phases also remain in the status bits after successful hot plug or startup and correspond to the values in the diagnostic parameter [C-0-0752](#).

In a CFL01.1-R3 function module, the hot plug status is deleted after successful hot plug.

Bit 16: CFL01.1-R3 - Acyclically transferred parameters currently adjusted

A part of the link data (modulo value [A-0-0045](#) and feed distance slave drive [A-0-0046](#)) is acyclically transferred via the link. If one of these parameters is changed at an axis produced in the link, these are updated on all link participants via acyclic communication. This bit remains set during the adjustment. At the same time, bit 30 "Position data of (external) master axis is valid" is deleted in the parameter [A-0-0021](#).

[C-0-0714](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x00

C-0-0715, FM, sercos III, FPGA, image

Function This parameter is used for an extended diagnostics for sercos III.

[C-0-0715](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-

Describing individual parameters, arranged according to types

Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0716, C2C, sercos III, error counter for data loss

- Function** The list parameter indicates the number of consumer failures already detected by the link master.
- Each list element corresponds to the counter of failures of a consumer connection of the link master.
- List element 1 is the error counter for the consumer connection of control address 1, list element 2 for the control address 2, etc.
- Each list element stops at a maximum of 65535 and has no overflow. Each individual element is reset by the rising edge of ProducerReady in the connection control word (C-Con) of the respective control.

Structure

Element	Value
1	Error counter for the data of control 1
2	Error counter for the data of control 2
64	Error counter for the data of control 64

Tab. 4-115: C-0-0716, C2C-sercos III connection: Error counter for data loss

C-0-0716 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0717, C2C, addresses ring break

- Function** The list parameter contains two list elements filled with the sercos address of the slaves at the end of the lines in a line topology. If the ring is available, the two list elements have the value 0. If no slave is connected to the port of the master, the respective list element displays the value 0. The parameter can be used to diagnose a ring break.

Structure

Element	Value
1	sercos address of the slave at the end of the line at port 1
2	sercos address of the slave at the end of the line at port 2

Tab. 4-116: C-0-0717, C2C, addresses ring break

C-0-0717 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0735, C2C, error counter for Port1/Port2

Function In an enabled link with the C2C CrossCom function module (CFL01.1-R3), sercos errors at ports 1 and 2 are counted as well.

This parameter contains the current status of the C2C error counter.

Use

Conclusions can be made regarding the stability or quality of the sercos transfer based on the current status and the time modifications of the C2C error counter.

Reasons that the C2C error counter is enabled can include:

- EMC disturbances
- Wiring problems (loose Ethernet plug or defective cable)
- Topology problems

The less often the C2C error counter is enabled, the more stable the C2C connection.



This error counter is not currently supported in a C2C link with the CFL01.1-R3 function module and never in a C2C link with the CFL01.1-R2 function module.

C-0-0735 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0750, C2C, startup target mode

Function After the control voltage is switched on, the C2C master executes a link start up until it reaches a predefined C2C mode.

This parameter determines the C2C mode in the C2C master.

The C2C target mode during startup is specified at the same time as the specification of the Motion target mode in parameter [C-0-0450](#).

Structure

Describing individual parameters, arranged according to types

Value	C2C mode	Display	What happens with C2C?
0	Initialization mode	C2C mode is not included in the display	When being in the target mode, the C2C link is located in the initialization mode. The C2C master checks only the link line.
2	Parameterization mode	C2C mode is not included in the display	When being in the target mode, the C2C link is located in the parameterization mode. The C2C master can transfer its configuration parameters asynchronously to the C2C slaves. No cyclic exchange of C2C data is possible.
4	Operating mode	C2C mode is not included in the display	When being in the target mode, the C2C link has started up successfully and is in operating mode. The cyclic exchange of configured C2C data is enabled.

Tab. 4-117: Startup of C2C target mode

Use

With the default value 4, the C2C link automatically starts up in operating mode. If the C2C master does not find a slave for startup or if the startup cannot be executed without errors with the existing slave, the master aborts the startup and reports a C2C error. The affected slaves also report a C2C error.

By specifying the C2C target mode in [C-0-0751](#), another C2C startup can be initialized.

These error messages can be suppressed if the initialization mode was specified 0. This is useful for example, if no C2C slaves are available a link partner when commissioning the C2C master.

If the entire C2C link was commissioned, the default value can be set again.



The C2C link and the drive ring of the control start up independently of each other.



This parameter is only applied in the C2C master that controls the C2C startup. In the C2C slave or a stand-alone control, it can be written on [C-0-0750](#), but it is not applied.

C-0-0750 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	FLASH	Editability:	P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 4	Default value 4

C-0-0751, C2C, target mode

Function This parameter switches to the desired target mode of the C2C link.
The C2C target mode is specified like the Motion target mode in parameter [C-0-0451](#).

Structure

Value	C2C mode	Display	What happens with C2C?
0	Initialization mode	C2C mode is not included in the display	When being in the target mode, the C2C link is located in the initialization mode. The C2C master checks only the link line.
2	Parameterization mode	C2C mode is not included in the display	When being in the target mode, the C2C link is located in the parameterization mode. The C2C master can transfer its configuration parameters asynchronously to the C2C slaves. No cyclic exchange of C2C data is possible.
4	Operating mode	C2C mode is not included in the display	When being in the target mode, the C2C link has started up successfully and is in operating mode. The cyclic exchange of configured C2C data is enabled.

Tab. 4-118: C2C target mode

Use**Suppression of C2C error messages**

With the default value 4, the C2C link automatically starts up in operating mode. If the C2C master does not find a slave for startup or if the startup cannot be executed without errors with the existing slave, the master aborts the startup and reports a C2C error. The affected slaves also report a C2C error.

These error messages can be suppressed temporarily if the initialization mode 0 is specified. This is useful for example if the C2C master is commissioned for the first time and there is still no C2C slaves available as link partner.

If the entire C2C link was commissioned, the default value can be set again.

Linking C2C devices

If all C2C devices support the hot plug functionality, both failed and returning/new link devices - up to a defined number - can be dynamically linked (again) into the C2C link. This occurs automatically without exiting the C2C operating mode.

However, devices in the C2C link that do not support a hot plug can only be linked if C2C is restarted. The C2C master has to be switched to the parameterization or initialization mode and back and then to the operating mode.



During a new C2C startup for linking (new) devices, a cyclic exchange of configured C2C data for the already active link devices is no longer possible.



The C2C link and the drive ring of the control start up independently of each other.



Writing on this parameter is only possible in the C2C master that controls the C2C startup. In the C2C slave or a stand-alone controller, [C-0-0751](#) is write-protected due to the configuration.

C-0-0751 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT

Describing individual parameters, arranged according to types

Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 4	Default value 0

C-0-0752, C2C, current mode

Function This parameter contains the current C2C mode.

Structure

Value	C2C mode	Display	What happens with C2C?
0	Initialization mode	C2C mode is not included in the display	The C2C link is in initialization mode. The C2C master checks only the link line.
2	Parameterization mode	C2C mode is not included in the display	The C2C link is in the parameterization mode. The C2C master can transfer its configuration parameters asynchronously to the C2C slaves. No cyclic exchange of C2C data is possible.
4	Operating mode	C2C mode is not included in the display	The C2C link has started up successfully and is in operating mode. The cyclic exchange of configured C2C data is enabled.

Tab. 4-119: Current C2C mode

Use



The C2C link and the drive ring of the control start up independently of each other.



This parameter also displays C2C modes 1 and 3 which cannot be set.

C-0-0752 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0

C-0-0778, C2C, command configuration

Function This parameter contains the C2C configuration for the entire link.
Its content is stored as an ASCII string and is automatically generated by IndraWorks using the configuration dialog.
The command configuration of the link can also be created manually. However, the specified syntax must be observed.

Use The syntax for this configuration list provides various terms:

- **MLC:<n>[,]**

- <n> specifies the control address of control as a C2C participant
- [,] the comma as a separator is omitted for the last participant in the list if no additional container data (see below) is expected

Each control that can participate in the C2C link must be entered in [C-0-0778](#), including the C2C master. For controls that do not produce data in the link, this specification is sufficient.

All producing participants must specify their link data more precisely.

- **P:**

This term introduces the specification of the link data for the previously specified control.

Now, the specifications are set for the telegram offsets and parameter IDs for all axis data produced.

- **T:0x<nnnn>:A<mmm>:A-0-<kkkk>[T:0x<nnnn>:A<mmm>:A-0-<kkkk>][,]**

- <nnnn> specifies the four digit telegram offset
- <mmm> specifies the three digit axis address
- <kkkk> specifies the four digit parameter ID
- [.....] Repetition of the term composed for each additional data item produced after entering the pipe character | as a separator
- [,] the comma as a separator is omitted for the last participant in the list if no additional container data (see below) is expected

This specification is used to inform all C2C participants regarding the link data for this producer. Because all of the participants permitted in the C2C link must be listed in the command configuration, all of the data produced in the link is known to all participants. This way, it can be accessed for consumption by every participant.

The valid bits of the data container for the cyclical link data from the control are automatically added at the end of the configuration list.

- **CVB:**

This term introduces the specification of the container valid bits of the data container for list parameters.

Now, the specifications are set for the telegram offsets and parameter EIDNs for the valid bits for all existing container data.

- **T:0x<nnnn>:P-0-<kkkk>.<i>.<j>[T:0x<nnnn>:P-0-<kkkk>.<i>.<j>]**

- <nnnn> specifies the four digit telegram offset
- <kkkk> specifies the four digit parameter EID
- <i> specifies the instance of the EIDN parameter
- <j> specifies the element of the EIDN parameter
- [.....] Repetition of the term composed for each additional valid bit parameter after entering the pipe character | as a separator

This configuration string is parsed by all C2C participants in order to analyze both the local data to be produced and all consumable link data.



At the moment, from each C2C participant only the parameters [A-0-0021](#), [A-0-0045](#) and [A-0-0101](#) for all local axes in the link can be produced. They are automatically written by IndraWorks with the selection of the local axis in the command configuration. Expanding to a free selection of parameter types and IDs is planned.

Example:

The controls with addresses 1, 2, 3, 11, 12 and 23 are participating in the C2C link. The C2C master has control address 1 and produces the data of local axes 1, 3 and 6 in the link. The C2C slave with control address 23 produces the data of local axes 1, 2 and 3 in the link. This ends the entry in the IndraWorks configuration dialog.

All further steps for creating the configuration string are carried out automatically by IndraWorks or the control.

The data for the local axes are predetermined with parameters [A-0-0021](#), [A-0-0045](#) and [A-0-0101](#).

The sequence of controls, local axes and the respective three axis parameters can be as desired. It mainly depends on the entry in the IndraWorks configuration dialog.

In our example, the master is to be entered as the first control and the producing slave as the third control in the link telegram.

The valid bits of the data container are in the first producing link participant (here the master) in P-0-3091.0.4, in the second (here the slave) in P-0-3091.1.4.

The following configuration string is located in parameter [C-0-0778](#), which the C2C master sends to all C2C participants.

MLC:1,

P:

T:0x0000:A003:[A-0-0045](#)|T:0x0004:A003:[A-0-0021](#)|
 T:0x0008:A003:[A-0-0101](#)|T:0x000C:A001:[A-0-0021](#)|
 T:0x0010:A001:[A-0-0101](#)|T:0x0014:A001:[A-0-0045](#)|
 T:0x0018:A006:[A-0-0101](#)|T:0x001C:A006:[A-0-0045](#)|
 T:0x0020:A006:[A-0-0021](#),

MLC:3,

MLC:23,

P:

T:0x0024:A001:[A-0-0045](#)|T:0x0028:A001:[A-0-0021](#)|
 T:0x002C:A001:[A-0-0101](#)| T:0x0030:A002:[A-0-0045](#)|
 T:0x0034:A002:[A-0-0021](#)|T:0x0038:A002:[A-0-0101](#)|
 T:0x003C:A003:[A-0-0045](#)|T:0x0040:A003:[A-0-0021](#)|
 T:0x0044:A003:[A-0-0101](#),

MLC:11,

MLC:12,

MLC:2,

CVB:

T:0x0048:P-0-3091.0.4|T:0x0050:P-0-3091.1.4

The line by line display has been selected here so that individual terms can be read more easily.



This parameter can only be described in the C2C master, which transfers the C2C configuration to all slaves via the service channel. In the C2C slave or a stand-alone controller, [C-0-0778](#) is always write-protected.



The configuration of the local axes of the MLC, which are to make their axis positions available in the cross connection, can be specified using parameter "C-0-0703, C2C, configuration of master axes". In this parameter (write-protected in the C2C link), these producer axes are clearly specified in a list with the logical axis addresses.



The command configuration of the link is not supported in a control link with function module FL01.1-Q2.

The link telegram remains specified as it was previously.

C-0-0778 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0779, C2C, device information

Function The parameter contains the sercos addresses and the firmware versions of the devices connected to the function module CFL01.1-R3.

The parameter provides the device information from link phase 2 onwards.

This information is read out again from each device via the service channel whenever the parameter is read.

Structure

Entry	Meaning	Prefix	Possible entries
1	sercos address	O	1-99
2	Firmware version	F	MPH-06, CML,...

Tab. 4-120: C-0-0779, Device information

Use Example:

3 devices

A1, FCML65s-MLs-10V0x.083,

A2, FMPH-06V08,

A3,FCML65s-MLs-10V0x.079,



This parameter is only available in the C2C master that controls the C2C startup. In the C2C slave or in a stand-alone control, C-0-0779 cannot be used due to the configuration.

C-0-0779 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

Describing individual parameters, arranged according to types

C-0-0800, Oscilloscope, status word

Function The parameter displays the current status of the oscilloscope function.
Use

Bit	Name/function
0	Recording is running 0: Recording is completed 1: Recording is active. Changes to several oscilloscope parameters are disabled. The parameter for creating and deleting axes (C-0-0484) and kinematics (C-0-2484) is also disabled if an axis kinematic parameter is configured in the oscilloscope.
1	Trigger start 0: Trigger function is completed 1: Trigger function is completed. Internal trigger not yet triggered. Comparison continues running.
2	Internal trigger 0: Internal trigger not yet triggered. 1: Internal trigger triggered. Comparison successfully completed.
3	Trigger function completed 1: When triggering using an external trigger signal, an external trigger signal was detected. When triggering using only internal sources, this bit and bit 2 are set.
4	Delay function completed 0: Delay function completed. 1: Delay function is still active New measured values can be read out. Bit 0 is cleared.
7	Trigger error 0: Trigger function correctly initialized at recording start 1: Trigger function not correctly initialized at recording start (e.g. no correct trigger source (C-0-0851)). Therefore, the value cannot be recorded.
9/8	Trigger signal state (displays the current comparison between the trigger signal and trigger threshold) 00: --- 01: Signal > threshold (C-0-0852) 10: Signal < threshold (C-0-0852) 11: Signal = threshold (C-0-0852)

C-0-0800 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0801, Oscilloscope, time resolution

Function This parameter is used to determine the time intervals in which the measured values are recorded (sampling rate).

In this case, the time resolution can be selected in the time period of the control clocking pulse:

$$T_{\text{Osci}} = N * T_{\text{control}}; N = 1, 2, 3, 4, \dots$$

The control's clocking pulse can be read out from parameter "C-0-0400, Motion, cycle time, command value".

Use The time resolution of the oscilloscope function (i.e. the sampling rate) can be defined using parameter "C-0-0801, Oscilloscope, time resolution".

In this case, the signal's maximum rate (= highest sample rate) can be recorded in the control clocking pulse (1 ms up to 4294967 ms (≈ 1.19 h) / default 2 ms).

The following applies when setting the parameter:

- The parameter's input range depends on the hardware and firmware used (or the performance set in "C-0-0400, Motion, cycle time, command value"),
- When entering a new value, it is automatically replaced by a multiple of the minimum value.



"C-0-0801" can only be changed if the oscilloscope is deactivated.

C-0-0801 - Attributes:

Function:	PARAMETER	Unit:	μs
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	500	4294967000	2000

C-0-0802, Oscilloscope, memory depth

Function The memory depth determines the number of measured values to be recorded for each measurement. A maximum of up to 8192 measured values can be recorded per channel.

Use The recording duration along with the time resolution ("C-0-0801, Oscilloscope, time resolution") can be determined using the memory depth.



The minimum recording duration is one control clocking pulse!

Recording duration [μs] = time resolution * memory depth

With:

- "C-0-0801, Oscilloscope, time resolution",
- "C-0-0802, Oscilloscope, memory depth",

In general, the following applies:

Describing individual parameters, arranged according to types

The measured value lists can be adjusted to user requirements (e.g. existing memory or recording duration) using the memory depth. The parameter can only be changed if the oscilloscope is deactivated.

C-0-0802 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		1	8191	8191

C-0-0803, Oscilloscope, signal selection list

Function The parameter contains all parameters suitable as trigger ([C-0-0851](#)) or measuring signal ([O-0-0003](#)).

C-0-0803 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	P0
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0804, Oscilloscope, number of valid values

Function The number of measured values that were recorded can be read out from this parameter.

Use If the oscilloscope function is activated, the signal to be recorded is continuously added to the measured value memory. In this case, the oldest measured value is the first element in the list, the newest is the last element.

If the trigger event occur before the measured memory can be completely filled, this parameter indicates the number of recorded measured values.

C-0-0804 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	8191	0

C-0-0805, Oscilloscope, control word

Function The recording can be started and the parameter import / parameter export executed using this parameter.

Use

Bit	Designation/function
0	Recording start 0: Recording is stopped or completed. 1: Recording is started. Changes to several oscilloscope parameters are disabled. The parameter for creating and deleting axes (C-0-0484) and cinematics (C-0-2484) is also disabled.
14	Parameter import 1: The parameter import is executed. Here, all parameters that are stored on the control are imported. Lists of measured values are also imported.
15	Parameter export 1: All oscilloscope parameters are exported to the control. This also includes the complete measured value lists.

C-0-0805 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0x00

C-0-0806, Oscilloscope, number of channels

Function This parameter indicates the number of existing measuring channels (O-parameters).

Use This is a read-only parameter.

The oscilloscope parameters occur in instances (similar to the axis parameters).

The individual channels can be accessed as follows:

OXXX:O-0-0002.

Here, XXX can lie between "1" and the value stored in this parameter.

The instance is the same channel number.

C-0-0806 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0807, Oscilloscope, sample time stamp

Function This parameter is reserved for future applications.

Describing individual parameters, arranged according to types

C-0-0807 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 8BYTE_VAR	PLC_data_type:	ARRAY of ULINT
	Memory:	RAM	Editability:	P0
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---

C-0-0820, Oscilloscope, sample task selection

Function This parameter is reserved for future applications.

C-0-0820 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---

C-0-0821, Oscilloscope, sample task interval

Function This parameter is reserved for future applications.

C-0-0821 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---

C-0-0822, Oscilloscope, sample task task ID

Function This parameter is reserved for future applications.

C-0-0822 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
	Memory:	RAM	Editability:	P0
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
	Common:	---	---	---

C-0-0825, Oscilloscope, sample task status

Function This parameter is reserved for future applications.

C-0-0825 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE_VAR	PLC_data_type:	ARRAY of WORD
	Memory:	RAM	Editability:	P0
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0830, Oscilloscope, IEC sample task 00

Function This parameter is reserved for future applications.

C-0-0830 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0831, Oscilloscope, IEC sample task 01

Function This parameter is reserved for future applications.

C-0-0831 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0832, Oscilloscope, IEC sample task 02

Function This parameter is reserved for future applications.

C-0-0832 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0833, Oscilloscope, IEC sample task 03

Function This parameter is reserved for future applications.

C-0-0833 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-

Describing individual parameters, arranged according to types

Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value	Maximum value	Default value
	---	---	---

C-0-0834, Oscilloscope, IEC sample task 04

Function This parameter is reserved for future applications.

C-0-0834 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
Common:	Minimum value	Maximum value	Default value	---

C-0-0840, Oscilloscope, system sample task 00

Function This parameter is reserved for future applications.

C-0-0840 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P0
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
Common:	Minimum value	Maximum value	Default value	---

C-0-0841, Oscilloscope, system sample task 01

Function This parameter is reserved for future applications.

C-0-0841 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	P0
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
Common:	Minimum value	Maximum value	Default value	---

C-0-0850, Oscilloscope, trigger mask

Function This parameter is used to set an additional trigger mask using the trigger signal, especially for trigger signals with a "binary" and "hexadecimal" display format (as well as all others) before the comparison is executed.

C-0-0850 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 8BYTE	PLC_data_type:	LWORD
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFFFFFFFFFF FFF	0xFFFFFFFFFFFF FFF

C-0-0851, Oscilloscope, trigger signal

Function The parameter determines the trigger unit and the signal (from "C-0-0803, Oscilloscope: signal selection list") with which the trigger threshold (C-0-0852) is to be compared.

Use



Selecting a trigger signal (C-0-0851) also determines the unit and the format for parameter "C-0-0852, Oscilloscope, trigger threshold".

The parameter can only be modified when the oscilloscope is deactivated (cf. C-0-0800, Oscilloscope: status word).



If S-0-0000 is specified as an ID number, the trigger function is not active.

C-0-0851 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0852, Oscilloscope, trigger threshold

Function The parameter is the comparison value for the trigger function.

Use

Depending on the selected trigger edge (C-0-0853), the bit is set for "internal triggers" (C-0-0857, bit 2) when reaching the trigger condition in the status word.

Bit 8 and bit 9 first indicate whether the value of the selected trigger source is above or below the trigger threshold or the value matches the trigger threshold in the status word (C-0-0800).



The parameter can only be changed if the recording has been started (see also "C-0-08050805, Oscilloscope, control word").

Depending on the selected ID number in "C-0-0851, Oscilloscope, trigger signal", the attribute and unit adjust to the selected signal.

C-0-0852 - Attributes:

Function:	PARAMETER	Unit:	C-0-0860
MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0.0

Describing individual parameters, arranged according to types

C-0-0853, Oscilloscope, trigger edge

Function The parameter determines at which edge the "C-0-0857, Oscilloscope, internal trigger signal, bit 2" is triggered.

Structure

Bit	Designation/function
0	Trigger edge positive 1: Internal trigger is triggered with a positive edge
1	Trigger edge negative 1: Internal trigger is triggered with a negative edge
2	Identical trigger 1: Internal trigger is triggered if the trigger threshold and the value of the trigger source are identical

Several conditions can be combined.

Use



The parameter can only be changed if the recording has been started (see also "C-0-0805, Oscilloscope, control word").

This can activate an undesired triggering of the "internal trigger".

C-0-0853 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x03

C-0-0854, Oscilloscope, number of measured values after trigger event

Function The parameter determines the number of measured values that are still recorded after the trigger events (C-0-0800, bit 3 = 1) have occurred (delay function).

Use After these measured values are recorded, the bit "delay function completed" (bit 4) is set in "C-0-0800, Oscilloscope, status word".

Afterwards, the entire recording is completed and the measured values can be read out.

C-0-0854 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	8191	0

C-0-0855, Oscilloscope, trigger time stamp

Function This parameter contains the hexadecimal coded time of the trigger event.
"09.08.2006, 11:35:55"

When the oscilloscope function starts, this parameter is set to "0".

When the trigger event is triggered, the control's current system time is stored in this parameter.

C-0-0855 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE_VAR	PLC_data_type:	ARRAY of UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFFFFFFFF	Default value 0x00

C-0-0856, Oscilloscope, external trigger signal

Function Describing this parameter ("C-0-0856, Oscilloscope, external trigger signal, bit 0") enables the triggering of the oscilloscope measurement with an external signal.

To do this, the trigger type in parameter "C-0-0805, Oscilloscope, control word, bit 1" must be set to "external trigger with offset measurement".

Structure

Bit	Designation/function
0	0 - No external triggering 1 - Trigger triggered for oscilloscope

C-0-0856 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

C-0-0857, Oscilloscope, internal trigger signal

Function This parameter displays the state of the internal trigger.

When selecting "internal triggers", the external trigger source (C0-0856, bit 0) is not taken into consideration.

Structure

Bit	Designation/function
0	0 - Internal trigger not yet triggered. Comparison still active. 1 - Internal trigger triggered. Comparison successfully completed.

C-0-0857 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	NVRAM	Editability:	P0
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

C-0-0858, Oscilloscope, AUX trigger path

Function This parameter is only intended for internal use.

C-0-0858 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0859, Oscilloscope, AUX trigger

Function This parameter is only intended for internal use.

C-0-0859 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 8BYTE	PLC_data_type:	ULINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0860, Oscilloscope, default trigger

Function This parameter is a substitute trigger signal (placeholder) if no trigger signal was defined by the user. It allows the oscilloscope to be started and stopped without a defined trigger signal.

Structure The parameter is not relevant for the user.

Bit	Designation/function
0	0 - Substitute trigger not yet triggered 1 - Substitute trigger triggered

C-0-0860 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

C-0-0900, Device operating state

Function This parameter displays the operating state of the device. The device's operating state is directly derived from the PLC's operating state.

Value	Description
RUN	The device is in the operating state RUN. At least one valid PLC application is loaded. All valid and loaded PLC applications are in the RUN state.

STOP	The device is in the operating state STOP. At least one valid PLC application is loaded. All valid and loaded PLC applications are in the STOP state or in the DEBUG state.
R/S	The device is in the operating state RUN/STOP. At least two valid PLC applications are loaded, i.e. at least the "DeviceApplication" and one user application. At least one valid and loaded PLC application is in the STOP state or in the DEBUG state and one in the RUN state.
RDY	The device is in operating state READY, i.e. no valid PLC application is loaded.
INIT	The device is in operating state INIT, i.e. the control is booting.

C-0-0900 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	"RUN"

C-0-0915, Number of PLC applications

Function This parameter displays the number of the executable PLC applications.

C-0-0915 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0

C-0-0916, PLC router address

Function This parameter displays the current PLC router address.
This address information is also displayed during the connection test in IndraWorks.

C-0-0916 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	"_"

C-0-0920, Operating states of PLC applications

Function The parameter displays the name and operating state of the PLC application.

Describing individual parameters, arranged according to types

Structure	Value	Description
	RUN	The PLC application is in operating state RUN, i.e. the program code is being executed.
	STOP	The PLC application is in operating state STOP, i.e. the program code is not being executed.
	DEBUG	The PLC application is in operating state DEBUG, i.e. it was stopped because it reached a breakpoint. The program code is not executed further.
	CYCLE	The PLC application is executed in a cycle to stop the running processes.
	NONE	No application is loaded.

C-0-0920 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	"NONE"

C-0-0921, Preset operating states of PLC applications

Function The parameter specifies one or multiple operating states of PLC applications. The name of the application and the specified related operating state are separated by a comma. Multiple applications and their operating states are separated by semicolons.

Structure The parameter is structured as follows:

Entry	Meaning	Possible entries	Notes
1	Name of the application	DeviceApplication, Application, ...	
2	Specified operating state of the application	- RUN - STOP - RESET_WARM - RESET_COLD - RESET_ORIGIN	- RUN - After the parameter has been written successfully, the selected PLC application is in operating state RUN, i.e. the program code is being executed - STOP - After the parameter has been written successfully, the selected PLC application is in operating state STOP, i.e. the program code is not being executed - RESET_WARM - The command resets all variables of the PLC application to their initialization values, except remanent variables (retain, persistent). After the parameter has been written successfully, the selected PLC application is in operating state STOP, i.e. the program code is not being executed - RESET_COLD - The command resets all variables of the PLC application to their initialization values. After the parameter has been written successfully, the selected PLC application is in operating state STOP, i.e. the program code is not being executed - RESET_ORIGIN - The command resets all variables of the PLC application, including the remanent variables, to their initialization values and deletes the application program from the control. After the parameter has been written successfully, the selected PLC application is in operating state STOP, i.e. the program code is not being executed

Tab. 4-121: Name and operating state (specified)

Structure Possible examples of a project with a DeviceApplication and 5 user applications:

- Application01,RUN;Application03,RUN
- DeviceApplication,RUN;Application01,STOP;Application02,RUN;Application03,STOP;Application04,STOP;Application05,RUN
- Application04,RUN
- Application02,RUN;Application01,RUN;DeviceApplication,RUN;Application03,RUN;Application05,RUN;Application04,RUN
- Application03,RESET_COLD;Application04,RESET_ORIGIN;Application01,RESET_WARM

C-0-0921 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Common:	Minimum value	Maximum value	Default value
	0x00	0xFF	"NONE"

C-0-0950, OPC UA, Configuration

Function The parameter configures the OPC UA server.

Structure

Describing individual parameters, arranged according to types

Bit	Name and function
0	0: The OPC UA server is not active. 1: The OPC UA server is active.
31..1	Reserved



From version 14V20, the user can no longer directly edit this parameter for XMxx, CML75 and VPx.

The OPC UA server can only be configured via the "Communication/protocols" dialog in the context menu of the control node, refer to chapter "Disabling unsecure protocols" of the documentation "IndraMotion MLC 15VRS Functional Description".

Depending on the changes in the configuration, it might be necessary to restart the control to apply the changes in the configuration.

C-0-0950 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	FLASH	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	1

C-0-0951, OPC UA, Status**Function
Structure**

The parameter indicates the current status of the OPC UA server.

Bit	Name/function
0	0: The OPC UA server is not available. 1: The OPC UA server is available.
31..1	Reserved

C-0-0951 - Attributes:

Use

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0952, OPC UA, TCP-Port**Function**

This parameter specifies the port number of the OPC UA server. Port number 4840 is standardized for the OPC UA communication.



A value change is only applied after control restart.

C-0-0952 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT

Memory:	FLASH	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	1	65535	4840

C-0-0953, OPC UA, Minimal Publish Interval

Function This parameter specifies the minimum value for the PublishingInterval of the subscriptions and the SamplingInterval of MonitoredItems that can be requested by the client.

Use Possible values are:
1...500 [ms]



The parameter value should not be smaller than the parameter value applied in the parameter [C-0-0954](#). Otherwise, the "PublishingInterval" of the "Subscriptions" and the "SamplingInterval" of the "MonitoredItems" cannot be maintained.

A value change is only applied after control restart.

C-0-0953 - Attributes:	Function:	PARAMETER	Unit:	ms
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value	
Common:	1	500	100	

C-0-0954, OPC UA, Taskdelay

Function This parameter specifies the minimum period the OPC UA server is disabled between it operating cycles.

Use This impedes that the control is completely loaded due to frequent requests of OPC UA clients.

Increasing the parameter value reduces the data throughput and the latency via the OPC UA and releases the control CPU for other low-priority tasks such as communication, file handling, FTP.

If the parameter value is low, more CPU resources are provided for the OPC UA communication improving latency and data throughput and decreasing tasks of lower priority.



The parameter value should not be higher than the parameter value applied in the parameter [C-0-0953](#). Otherwise, the "PublishingInterval" of the "Subscriptions" and the "SamplingInterval" of the "MonitoredItems" cannot be maintained.

A value change is applied immediately.

C-0-0954 - Attributes:	Function:	PARAMETER	Unit:	ms
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM

Describing individual parameters, arranged according to types

Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	100	1

C-0-0955, OPC UA, Discovery URL

Function This parameter specifies the end point URL (Uniform Resource Locator) of the discovery server on which the OPC-UA server of the control has to register.

Use An end point URL consist of the following:

opc.tcp://<ip>:<port>

opc.tcp = binary protocol (UA binary)

ip: IP address of the discovery server

port = Port number of the server, e.g. 4840

Example:

opc.tcp://192.168.0.50:4840



- A value change is only applied after control restart.
- A OPC UA server of the control does not provide an own discovery server.
- To register on a discovery server, a secure connection is required. Normally, reliability of the communication partners is ensured due to exchange and check of certificates. There is no check on the control. The discovery server is seen as reliable. Check on the sites of the discovery server whether the control certificate is to be imported and thus to be labeled as reliable.

C-0-0955 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	FLASH	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

C-0-0956, OPC UA, Discovery Interval

Function This parameter specifies the time interval the OPC UA server of the control registers at the discovery server (URL: refer to parameter [C-0-0955](#)).



A value change is only applied after control restart.

C-0-0956 - Attributes:

Function:	PARAMETER	Unit:	ms
MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
Memory:	FLASH	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	1000	86400000	300000

C-0-0957, OPC UA, interfaces

Function This parameter specifies the interfaces on which the OPC UA server should register.



Restart the IndraLogic XLC/IndraMotion MLC system to apply the change.

Please comply with the correct notation of the parameter (no spaces, upper and lower case, etc.) as no error message is reported.

The following options can be selected:

C-0-0957 content	Meaning
--	The OPC-UA server is registered on the Engineering interface (default setting)
all	The OPC-UA server is registered on all interfaces
fei,0	Communication interface Engineering + HMI X7E3 (CML25 hardware) X7E5 (CML45/65 hardware)
tcei,0	XF5 communication interface Engineering + HMI (for XM2x hardware)
emac,1	XF5 communication interface Engineering + HMI (for XM1x hardware)
gei,0	Communication interface Engineering + HMI X7E5 (CML75 hardware) XF5 (XM4x hardware) XETH2 (VPx hardware)
usbEnd,0	XF31 USB communication interface Engineering (for XM hardware)
vnet,0	Virtual network adapter for RealTimeHypervisor (only VPx hardware)
sIII,0	Sercos III master communication X7E1/2 (CML hardware) XF1/2 (XM hardware) XF01/02 (VPx hardware)
sIII,1	Sercos III C2C X7S1/2 (CML hardware extension module) XF3/4 (XM2x hardware extension module)
mirror,0	Bridge

Describing individual parameters, arranged according to types

C-0-0957 content		Meaning
netX RT-Ethernet communication interface	-	CML25: is not supported
	netX,4	X7E3/4 (CML45/65/75 onboard)
	all	XF3/4 (XM4x onboard)
	all	X7E1/2 (CML45/65/75 function module)
	all	XF40/41 (XM/VPx hardware extension module)

Tab. 4-122: Configuration options C-0-0957

C-0-0957 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value "--"

C-0-0958, OPC UA, ip address NetX interface

Function The parameter includes the IP address for the IP channel field bus (Profinet, EtherNet/IP at an NetX interface), see "tab 'IP channel settings'", IndraWorks 14VRS Field Buses (DOK-IWORKS-FB*****V15-APRS-EN-P), IP channel communication address.

The parameter is active in connection with [C-0-0957](#) OPC UA if "all" or "netX, 4" is specified in [C-0-0957](#).

The setting becomes effective after a control reboot. In [C-0-0951](#) OPC UA, the status can be verified if the OPC-UA server is running with the configuration.

If no IP address is specified, the entry is empty.

The input format corresponds to the Ethernet specification:

XXX.XXX.XXX.XXX (dot format)

C-0-0958 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value "--"

4.2.4 C-0-1000 - C-0-1999

C-0-1000, Command: Load basic parameters

Function This parameter is used as a command for loading the basic parameters in the control.

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading process of the basic parameters.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading process of the basic parameters.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1000 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	(P2+Stop)
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0x03	0x00

C-0-1001, Command: Restore MC- and PLC-Retain-Data

Function This parameter is used as a command to load Motion Control and PLC-RETAIN data from the storage medium (e.g. Compact Flash card) into the NVRAM area of the control.

All data saved in the NVRAM as well as values saved internally, e.g. axis position, are overwritten with values saved when the command "C-0-1002, Command: Back up MC and PLC RETAIN data).

Use This command is executed when restoring a data backup and is exclusively used internally.

Automatic storage on the storage memory is carried out every time the Motion switches from parameterization mode to operating mode (see C-0-1002).

All Motion Control and/or PLC-RETAIN data changed in the NVRAM after the storage are not saved on the storage medium. The command C-0-1002 has to be executed.



After executing the command "C-0-1001 command: Restore MC and PLC retain data", the system restarts automatically to apply the new system data.

This parameter is executed by the system and must never be started manually, since it can cause a total data loss.

C-0-1001 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0x03	0x00

C-0-1002, Command: Save MC- and PLC-Retain-Data

Function This parameter is used as a command to load Motion Control and PLC-RETAIN data from the NVRAM area of the control to the storage medium (e.g. Compact Flash card).

Use The command is executed automatically every time the mode switches from parameterization to operation or if necessary it can also be triggered individually (see below).

Describing individual parameters, arranged according to types

The command can be triggered in each operation mode. However, it is recommended not to write NVRAM or PLC-RETAIN data during the execution to avoid inconsistent data. It is also recommended to stop the PLC and to switch the Motion to P2 (parameterization mode) to impede a parameter access from IndraWorks.

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. This triggers the saving procedure for C-parameters.
- After the saving process is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1002 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0x03	0x00

C-0-1003, Command: Restore PLC-Retain-Data

Function This parameter is used as a command to exclusively load RETAIN/PERSISTENT data from the storage medium to the NVRAM area of the control.

All PLC data saved in the NVRAM saved internally is overwritten with values saved when the command "C-0-1004, Command: Back up PLC RETAIN data) was executed.

Use This command is executed when restoring a data backup and is exclusively used internally.

The command can be triggered in any operation mode. However, it is recommended not to write RETAIN/PERSISTENT data of the PLC during the execution to avoid inconsistent data. It is also recommended that the PLC be stopped and the Motion switched to P2, parameterization mode, to prevent IndraWorks from accessing parameters.

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. This triggers writing back RETAIN/PERSISTENT data of the PLC to the control.
- After the saving process is complete, the control automatically resets the parameter to "0000000000000000".



When executing the command, ensure that RETAIN and PERSISTENT RETAIN data match the PLC application (GUIDE must not have been changed).

This parameter is executed by the system and never should be started manually, since this can cause a total data loss.

C-0-1003 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1004, Command: Save PLC-Retain-Data

Function This parameter is used as a command to save the RETAIN/PERSISTENT data of the PLC from the NVRAM area of the control on the storage medium (e.g. Compact Flash card). The data is saved in the "PlcRetain.save" file.

Use This command is executed when backing up data and is exclusively used internally.

The command "C-0-1003 command: Restore PLC retain data" is used to execute the restoration in the control.

The command can be triggered in any operation mode. However, it is recommended not to backup RETAIN/PERSISTENT data of the PLC during the execution to avoid inconsistent data. It is also recommended that the PLC be stopped and the Motion switched to P2, parameterization mode, to prevent IndraWorks from accessing parameters.

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. This triggers a backup of RETAIN and RETAIN/PERSISTENT data to a file.
- After the saving process is complete, the control automatically resets the parameter to "0000000000000000".



This parameter is executed by the system and never should be started manually, since this can cause a total data loss.

C-0-1004 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1005, Command: Delete files on SYSTEM partition

Function This parameter is not supported anymore.

C-0-1005 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1006, Command: Delete files on OEM partition

Function This parameter is also used as a command for deleting all files and directories on the OEM partition (or in a related OEM directory) on the FW-module.



Subsequently, the OEM partition is deleted completely.

Use The command can be used in any phase of operation. The user of this command must ensure that when it is executed there is no access to files in the OEM partition or OEM directory since these cannot be deleted.

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. This starts deleting files on the OEM partition of the FW module.
- After the files are deleted, the control automatically resets the parameter to "0000000000000000".

C-0-1006 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1007, Command: Delete files on USER partition

Function This parameter is also used as a command for deleting all files and directories on the USER partition (or in a related USER directory) on the FW-module.



Subsequently, the USER partition is completely deleted (with the exception of a few important system files).

Use The command can be used in any phase of operation. The user of this command must ensure that when it is executed there is no access to files in the USER partition or USER directory since these cannot be deleted.

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. This starts deleting files on the USER partition of the FW module.
- After the files are deleted, the control automatically resets the parameter to "0000000000000000".

C-0-1007 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1009, Command: Get extended sercos device information

Function In the transition from phase P0 to P2, the Sercos ring is scanned and the addresses of all the connected Sercos devices are determined.

This list is shown in the parameter "C-0-0481, List of the Sercos devices found".

Use the command "C-0-1009, command: Determine extended Sercos device information" to retrieve the device firmware and for drives the enabled function package for all connected devices. The command can only be executed in Sercos communication phases lower than P3.

The read data is shown in the parameter "C-0-0479, Extended Sercos device information".

C-0-1009 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1010, Command: Export parameter

Function The control parameters can be exported into a file using the command parameter.



The command is only permitted for internal use.

C-0-1010 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1011, Command: Import parameter

Function Parameters from a file can be written to the control using the command parameter.

In this case, potential import errors are listed in parameter "C-0-0114, IDN list of import errors".



The command is only permitted for internal use.

C-0-1011 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	(P2+Stop)
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1018, Command: Restart to Initial-Firmware

Function This parameter triggers an immediate control restart. The initial firmware is started once at next startup.

Use *Execution in the parameter editor:*

- Enter the binary value "2#0000000000000011" (=16#0003) in this parameter. This triggers a control restart. The initial firmware is automatically started at next startup.
- After restart, the control automatically resets the parameter to "16#00".



All communication with the MLC from the field bus, drives, etc. is lost during the restart.

If necessary, restart.

When using the parameter, e.g. from the PLC:

- Enter the binary value "2#0000000000000011" (=16#0003) in this parameter. This triggers a control restart.
- After restart, the control automatically resets the parameter to "16#00".

**The restart is executed even when the PLC is running**

This parameter can be executed from a PLC user program, so the PLC must be in the "RUN" mode.

For this reason, when the command is executed the state of the PLC cannot be checked, i.e. even if the PLC is running, the control is restarted.

Before executing the command ensure that your control, including applications that are running, as well as connected field busses, drives, etc. are in a condition that permits restarting.

C-0-1018 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1019, Command: Restart and reset to default

Function This parameter triggers an immediate restart of the control. During start up the command for reset to the delivery status is then executed and a new warm start of the control is carried out to accept the reset configuration.

The following files are deleted or the data is reset to default values:

- Control parameters located in the NVRAM area
- RETAIN data of the PLC
- PLC boot projects and files associated with the PLC program
- All of the control system files created during runtime (e.g. parameter or logbook files)
- All of the control system files created during runtime (e.g. parameter or logbook files)
- RoCo SRAM data and RoCo files

Those not deleted or influenced:

- All files created by the user or directories on the USER or OEM partition (or a related USER or OEM directory) are **not deleted**.

On the parameter level this is equivalent to the functionality in the section "IndraMotion MLC - Deleting Memory".

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers a restart of the control.
- After rebooting, the control automatically resets the parameter to "0000000000000000".



All communication with the MLC from the fieldbus, drives, etc. is lost during the restart.

If necessary, they must be restarted.

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers a restart of the control.
- After rebooting, the control automatically resets the parameter to "0000000000000000".



The restart is executed even when the PLC is running

This parameter can be executed from a PLC user program, so the PLC must be in the "RUN" mode.

For this reason, when the command is executed the state of the PLC cannot be checked, i.e. even if the PLC is running, the control is restarted.

Before executing the command make sure that your control, including applications that are running, as well as connected fieldbusses, drives, etc. are in a condition that permits restarting.

C-0-1019 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1020, Command: Restart after firmware update

Function The parameter is used as a command to reboot the control after a firmware update and to restart the updated firmware. The parameter is automatically called up after a successful download.



The command may only be used at the end of a firmware update. It may not be used for a standard control reset.

The command is only available on CML controls.

Use *Executing the command:*

- Enter the binary value "0000000000000011" (=0x0003) in the parameter. This activates the reboot in the control after the firmware update.
- After Flash programming has been successfully completed, the control automatically resets the value to "0000000000000000" again.

C-0-1020 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1021, Command: Restart

Function This parameter triggers a command for a restart (PowerCycle) of the control.

Use *Execution in the parameter editor:*

- Enter the binary value 2#0000000000000011 (=16#0003) in this parameter. This triggers a restart of the control.
- After rebooting, the control automatically resets the parameter to 2#0000000000000000.



All communication with the control from the fieldbus, drives, etc. is lost during the restart.

If necessary, they must be restarted.

When using the parameter, e.g. from the PLC:

- Enter the binary value 2#0000000000000011 (=16#0003) in this parameter. This triggers a restart of the control.
- After rebooting, the control automatically resets the parameter to 2#0000000000000000.



The restart is executed even when the PLC is running

This parameter can be executed from a PLC user program, so the PLC must be in the "RUN" mode.

For this reason, when the command is executed the state of the PLC cannot be checked, i.e. even if the PLC is running, the control is restarted.

Before executing the command make sure that your control, including applications that are running, as well as connected fieldbusses, drives, etc. are in a condition that permits restarting.

C-0-1021 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1022, Command: Activate firmware update

Function The parameter is used as a command to update firmware files after a firm-ware update.



The command is only valid for internal use and only available on CML controls.

Use *Executing the command:*

- Enter the binary value "0000000000000011" (=0x0003) in the parameter.

This activates the reboot in the control after the firmware update.

- After Flash programming has been successfully completed, the control automatically resets the value to "0x00" again.

C-0-1022 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1023, Command: Apply IP configuration

Function This parameter is used as a command for importing the network settings. The following parameter values take effect:

- [C-0-0200](#), Engineering, IP address,
- [C-0-0201](#), Engineering, subnet mask,
- [C-0-0202](#), Engineering, standard gateway,
- [C-0-0220](#), sercos III Master communication, IP address, command configuration,
- [C-0-0221](#), sercos III Master communication, subnet mask, command configuration,
- [C-0-0225](#), sercos III C2C, IP address, command configuration,
- [C-0-0226](#), sercos III C2C, subnet mask, command configuration,
- [C-0-0230](#), Bridge, IP address, command configuration,
- [C-0-0231](#), Bridge, subnet mask, command configuration,
- [C-0-0232](#), Bridge, command configuration of assigned interfaces,
- [C-0-0235](#), Automatic IP address generation, command configuration.

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. It activates the network setting import.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

Describing individual parameters, arranged according to types

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. It activates the network setting import.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1023 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1024, Command: Load basic parameter of IP configuration

Function This parameter is used as a command for loading the basic network setting parameters. The following parameter values are reset to their basic values:

- [C-0-0220](#), sercos III Master communication, IP address, command configuration,
- [C-0-0221](#), sercos III Master communication, subnet mask, command configuration,
- [C-0-0225](#), sercos III C2C, IP address, command configuration,
- [C-0-0226](#), sercos III C2C, subnet mask, command configuration,
- [C-0-0230](#), Bridge, IP address, command configuration,
- [C-0-0231](#), Bridge, subnet mask, command configuration,
- [C-0-0232](#), Bridge, command configuration of assigned interfaces,
- [C-0-0235](#), Automatic IP address generation, command configuration.

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading process of the basic parameters.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading process of the basic parameters.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1024 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1030, Command: Clear all control errors

Function This parameter is used as a command for clearing all control and drive errors.

Use *Using the IndraWorks user interface:*

- Use **Diagnostics ► Clear Error** or
- the button "Clear Error" in **Error/diagnostic memory**

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the deletion process.
- After the deletion process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the deletion process.
- After the deletion process is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1030 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

Parameter_is_copied_to_associated_S-/P-parameters:

IndraDrive/ Drive:	S-0-0099
IndraDrive/ Control:	S-0-0099
HydraulicDrive/ Drive:	S-0-0099
HydraulicDrive/ Control:	S-0-0099
SercosDrive:	S-0-0099

C-0-1041, Command: Start task record

Function This parameter is used as a command for starting the TaskViewer recording.

Use When using this feature from IndraWorks:

Using the IndraWorks user interface:

- Use the button in the dialog window **Diagnostics ► Task Execution Viewer**

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the start-up procedure.
- After start-up is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the start-up procedure.

Describing individual parameters, arranged according to types

- After start-up is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1041 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0x03	0x00

C-0-1042, Command: Stop task record

Function This parameter is used as a command for stopping the TaskViewer recording.

Use *Using the IndraWorks user interface:*

- Use the button in the dialog window **Diagnostics ► Task Execution Viewer**

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the stop process.
- After the stop process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the stop process.
- After the stop process is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1042 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0x03	0x00

C-0-1045, Command: External trigger

Function Depending on the parameters "C-0-0430, External trigger, configuration" and "C-0-0431, External trigger, signal selection", this command initiates a triggering of events.

The command is executed asynchronously. Thus, the command returns immediately. The parameter is automatically reset to "0" after all events have been triggered.

To execute a command synchronously, configure it in the parameter C-0-0430. If the command is executed synchronously, it returns only after all events have been triggered.

The events are synchronously triggered with regard to their specific cycles to subsequently execute all events. In this case, the command is always executed synchronously.

NOTICE**Accidental motion continuation**

Depending on the operation mode of a real drive, a motion can be continued if triggered once.

If the drive is for example in the velocity control and the event "Motion" is triggered, the drive keeps the velocity until a new command interrupts this motion.

If the motion is not triggered, no errors can be detected at the drive. An error reaction is thus not possible.

Use this functionality only for simulation purposes and not in a real machine.

Use *When using this feature from the field bus:*

- Enter the binary value "2#0000000000000011" (=16#0003) in this parameter. It initiates the event triggering.
- The parameter is automatically reset to "16#0000" after all events have been triggered.

Example:

- **Motion event triggered five times with synchronous command execution**
 Content of parameter **C-0-0430:**
 2#0000.0000.0000.0000.0000.1000.0000.0001
 Content of parameter **C-0-0431:**
 2#0000.0000.0000.0101.0000.0000.0000.0001
- **Motion event is triggered ten times with asynchronous command execution**
 Content of parameter **C-0-0430:**
 2#0000.0000.0000.0000.0000.0000.0000.0011
 Content of parameter **C-0-0431:**
 2#0000.0000.0000.1010.0000.0000.0000.0011

C-0-1045 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1050, Command: Reset parameter C-0-0413 and C-0-0414

Function This parameter is used as command to delete the parameter values

- **C-0-0413**, List of maximum time slot measurements,
- **C-0-0414**, List of minimum time slot measurements.

After the command is successfully completed, values are collected again.

Use *When using the IndraWorks user interface:*

- Use "Reset minimum/maximum" for clearing the lists in the dialog window **Motion ► Cycle times**.

Describing individual parameters, arranged according to types

Execution in the parameter editor:

- Enter the binary value 2#0000000000000011 (=16#03) into this parameter. This triggers the deletion.
- After deletion, the control resets the parameter automatically to 2#0000000000000000.

When using the parameter, e.g. from the PLC:

- Enter the binary value 2#0000000000000011 (=16#03) into this parameter. This triggers the deletion.
- After deletion, the control resets the parameter automatically to 2#0000000000000000.

C-0-1050 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

C-0-1051, Command: Reset C-0-0416, C-0-0417, C-0-0466, C-0-0467

Function This parameter is used as command to delete the values of the parameters "C-0-0416, CPU load, maximum" , "C-0-0417, CPU load, minimum", "C-0-0466, CPU load per core, maximum" and "C-0-0467, CPU load per core, minimum".

After the command is successfully completed, values are collected again.

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. This triggers the deletion.
- After saving, the control automatically resets the parameter to "0000000000000000".

When using from the field bus:

- Enter the binary value "0000000000000011" (=0x0003) into this parameter. This triggers the deletion.
- After the deletion, the control automatically resets the parameter to "0000000000000000".

C-0-1051 - Attributes:

Function:	COMMAND	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0x03	---

C-0-1052, Command: Reset parameter C-0-0421 and C-0-0422

Function This parameter can be used as a command for deleting the values of the parameters "C-0-0421, Motion, absolute error counter" and "C-0-0422, Motion, number of successive errors".

After the command has been executed successfully, the errors are counted starting from zero again.

Use *Using the IndraWorks user interface:*

- Use "Reset error memory" in the dialog window **Motion ► Cycle Times**.

Execution in the parameter editor:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the deletion process.
- After the deletion process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the deletion process.
- After the deletion process is complete, the control automatically resets the parameter to "0000000000000000".

C-0-1052 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1060, Command: Save all trace recordings

Function This command triggers the saving of all Trace buffers on the Compact Flash card of the control.

C-0-1060 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1061, Command: Unlock all trace buffers

Function This command enables all buffers.
This new data can be written again on the buffers.

C-0-1061 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0x03	Default value 0x00

C-0-1070, Command: Switch PM/OM

Function This command starts or ends the parameterization mode depending on parameter [C-0-0440](#), configuring PM/OM switching.

Use *When using this feature from IndraWorks MLC:*

- Right-click on the "Motion" node
 - Start parameterization mode
 - Exit parameterization mode

and from the field bus:

- Enter the binary value "0000000000000011" (=16x0003) in this parameter. This triggers the start/completion of the parameterization mode.
- After the command is completed, the MLC automatically resets the parameter to "0000000000000000".

Parameterization level support Irrespective of the control and communication phase, devices can be configured via the parameterization level.

Thus, axes can be moved further, the I/Os can continue to exchange cyclic data and the PLC program keeps running.

Thus, these devices support two modes:

Parameterization mode

- In the parameterization mode, all device parameters - that are not write-protected - can be changed. This does not apply to communication partners such as configuration, timing or user-defined data containers.
- If a device is in the parameterization mode, it remains irrespective of the communication phase.

Operating mode

- Only parameters without write protection in this mode can be changed in the operating mode.
- The parameter crosscheck is performed when switching from parameterization to operating mode.
- The adjustment of A- to S-/P-parameter is executed.

Switching the modes

- For **one** device, switching between the two modes is controlled using the parameter "[A-0-0024](#), Axis state".
- To switch **multiple** devices, the parameter "[C-0-1070](#), Command: PM/OM switching" executed.

The devices are selected using "[A-0-0004](#) Axis type, bit 15".

- To switch an axis, it has to be in the "Standstill" state.

The real axis has to be in the "Power off" state.

An axis in the parameterization mode cannot be traversed.

C-0-1070 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

4.2.5 C-0-2000 - C-0-2499

C-0-2001 to C-0-2099, cam tables on the control

Each parameter from [C-0-2001](#)...2099 includes a table with data points for the cam profile.

For a detailed description, please refer to [C-0-2001](#) ELS, point table1.

C-0-2001, ELS, point table1

Function Each parameter from [C-0-2001](#)...2099 contains a table with data points for the cam profile.
The control supports point tables with 3 to 1024 data points.



The table's individual data points are interconnected using a cubic spline interpolation.

Structure Each parameter is structured as follows:

- The data point for $p = 0$ is the first element in the table.
- The data point for $p = 360^\circ$ is the last element in the table.
- The actual cam table values are percentage values. They can range between -799.999999% to 799.999999%.
- A value of 100% provides a position which corresponds to the enabled distance. Using the positioned determined in this manner, the slave axis's position is determined.

Use When using the table for a motion step of the operation modes MotionProfile/ FlexProfile, the table of the master axis's initial phase for this step applies up to the master axis's initial phase for the following step.

C-0-2001 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		-799,999999	799,999999	---

C-0-2100, List of all backup operation C-parameters

Function This list includes all C-parameters to be considered when backing up parameters. It is entered in the ID number format.
The entries are sorted by description and their relation and not by ID number or alphabetically.
C-parameters are stored in the order of these entries.

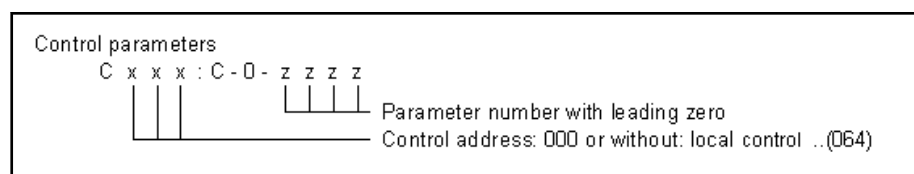


Fig. 4-133: Structure of a C-parameter

Describing individual parameters, arranged according to types

Examples:

C000: [C-0-0023](#) - local control; parameter [C-0-0023](#)

or

[C-0-0023](#) - local control; parameter [C-0-0023](#).

C-0-2100 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x200000000	Maximum value 0x200000FFF	Default value ---

C-0-2480, Configured kinematic number

Function This parameter indicates the number of the currently configured kinematics.

C-0-2480 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-2482, List of non-linked axes

Function This list parameter displays the axes that are not assigned to a kinematics yet.

If no kinematics is configured, this list corresponds to parameter "[C-0-0483](#), List of configured axes".

The axes are assigned to the kinematics using parameter "[K-0-0008](#), Axis configuration list".



An axis can only be assigned to one kinematics.

C-0-2482 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-2483, List of configured kinematics

Function This parameter indicates the configured kinematics of the system.

Use Example:

3 kinematics (kinematics 1, 2 and 3) are configured in the system.

C-0-2483 indicates:

Element	Value	Comment
1	1	Kinematics 1 is configured
2	2	Kinematics 2 is configured
3	3	Kinematics 3 is configured

C-0-2483 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

C-0-2484, Kinematic configuration list

Function This parameter defines the kinematics system. It configures the kinematics. Only K-parameters of kinematics configured in this parameter can be accessed.

The axes are assigned to the kinematics via the parameter "K-0-0008, Axes configuration list" (example K01: K-0-0008).

Structure Valid values of a kinematic configuration:

Value	Comment
0	No kinematic mechanism configured
2	RobotControl V2 kinematics configured

Use Writing on the parameter "C-0-2484, Configuration list of the kinematics" updates the parameters "C-0-2480, Configured number of kinematics" and "C-0-2483, List of the configured kinematics".

Example

Three kinematics with the logic numbers 1, 2 and 4 are to be configured.

C-0-2484 indicates:

Element	Value	Comment
1	2	Kinematics 1 is configured
2	2	Kinematics 2 is configured
3	0	No kinematics 3 configured
4	2	Kinematics 4 configured

C-0-2484 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	FLASH	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	0	2	0

C-0-2499, Touch probe, IDN list signal selection

Function This parameter contains a list of ident numbers of the parameters whose current state variable (measured value) can be stored using the switching signal of a touch probe.

The measured value is saved in a parameter and is thus available for the machine or system control.

C-0-2499 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.3 Kinematic parameters (K-parameters)

4.3.1 Kinematic parameters, general information

The K-parameters describe the kinematic functions supported by the following controls:

- IndraMotion MLC L25, L45, L65, L75, XM2* with Robot Control function package (ROB).

The following parameters exist only once for each kinematics.

4.3.2 K-0-0000 - K-0-0999

K-0-0000, Dummy, K-parameter

Function A parameter serves as a placeholder; it does not have a function. A parameter can be described and read cyclically.

Use Measure down time for writing and reading.

K-0-0000 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFFFFFFFF	0x00

K-0-0001, Logic kinematic number

Function This parameter shows the actual logical kinematics number.

K-0-0001 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-

Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 4	Default value 0

K-0-0002, Kinematic name

Function The name of the kinematics (e.g. Robi_1) is written in this parameter.
A global variable of type AXIS_GROUP_REF is automatically created with this name.



The following restrictions apply:

- A...Z, a...z, 0..9, '_'
- first character must be a letter,
- "Robi_1" is identical to "ROBI_1".

K-0-0002 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0xFF	Default value "Kin"

K-0-0003, Maximum path velocity

Function Maximum programmable path velocity in machine coordinates (MCS) at the Tool Center Point (TCP).

Depending on parameter [K-0-0054](#), the entry is made in mm/s or in/s.

The parameter limits the maximum path velocity of the kinematics in the Linear and Circular motion types.

No limit is set in the Motion type PTP.

When the parameter value is reached, the warning E02C08CF is displayed. It is deleted when the value is undershot.

K-0-0003 - Attributes:

Function:	PARAMETER	Unit:	K-0-0054
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0.0	Maximum value 99999.0	Default value 25.0

K-0-0005, Software limit switch, positive, MCS

Function This parameter determines the values of the positive software limit switch in machine coordinates (MCS).

Depending on the parameter [K-0-0054](#), the entry is made in millimeters [mm] or inches [in] or degrees.

Describing individual parameters, arranged according to types

K-0-0005 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value -999999.0	Maximum value 999999.0	Default value 999999.0

K-0-0006, Software limit switch, negative, MCS

Function This parameter determines the values of the negative software limit switch in machine coordinates (MCS).

Depending on the parameter [K-0-0054](#), the entry is made in millimeters [mm] or inches [in] or degrees.

K-0-0006 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value -999999.0	Maximum value 999999.0	Default value -999999.0

K-0-0007, Axis number of kinematics

Function This parameter contains the actual number of axes of the kinematics.
The value results from "[K-0-0008](#), Axes configuration list".

It contains the sum of all there configured axes and belts.

Parameter "[K-0-0070](#), Belt number of kinematics" contains only the sum of the belts.

K-0-0007 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0	Maximum value 8	Default value 0

K-0-0008, Axis configuration list

Function This parameter configures the axes for the kinematics.

Structure The parameter is a list parameter with the following triple structure:

- Element 1: Axis configuration of kinematic axis 1
- Element 2: Control number
- Element 3: Assigned axis for kinematic axis 1
- Element 4: Axis configuration of kinematic axis 2
- Element 5: Control number
- Element 6: Assigned axis for kinematic axis 2
- ...

The element number must be even.

Value	Comment
0	No axis configured
8	Positioning axis configured
16	Orientation axis configured
32	Belt axis configured

Tab. 4-123: Valid values of an axis configuration

Value	Comment
0	Individual control
1-64	Control number in C2C link

Tab. 4-124: Valid values for the control number

Use Structure of the triple list

The list may not contain any gaps.

One positioning axis has to be at least assigned to a kinematics.

Orientation axes have to be located after the positioning axes.

Belt axes have to be located after positioning axes and orientation axes.

Based on the set parameter "[K-0-0031](#) Transformation scheme," a different minimum number of positioning and orientation axes are required (see desired transformation description).

A maximum of four belt axes may be defined.

The triple list may configure a maximum total of 16 axes.

Assignment assistance

Each axis may be assigned to at most one kinematics as positioning or orientation axis.

Parameter "[C-0-2482](#), List of non-linked axes", lists the axes not yet assigned to a kinematics.

Kinematic axes configured as belt axes do not affect the parameter "[C-0-2482](#), List of non-linked axes."

Belt axes can be selected from "[C-0-0483](#), List of configured axes" and can be assigned to several kinematics.

Influence on other parameters

The number of triple entries in the list determines the parameter "[K-0-0007](#), Axis number of kinematics."

The number of configured belt axes in the list determines the parameter "[K-0-0070](#), Belt number of kinematics."



If "A-0-0059, Scaling type for position data " is set to modulo format for kinematic axes, it is also checked whether the "A-0-0045, Modulo value" is greater than zero and an integer.

With a Robot Control V2 kinematics, the system additionally checks if the scaling of the assigned axes is permissible.

If this is not the case, parameter "K-0-0008, Axis configuration list" is entered into parameter "K-0-0011, List of all invalid K-parameters" and an incorrect configuration is displayed (F0160040, Error in cross-check of K-parameters and/or F22B0024, Axis scaling is incorrect for the transformation).

Example:

The kinematics uses the transformation scheme 10 (SCARA) with four axes.

Axes 1, 2 and 3 are positioning axes.

Axis 4 is an orientation axis.

K-0-0008 displays:

Element	Value	Comment
1	8	Kinematic axis 1: Positioning axis
2	0	Control number 0: Individual control
3	1	Axis with logic axis number 1 assigned
4	8	Kinematic axis 2: Positioning axis
5	0	Control number 0: Individual control
6	2	Axis with logic axis number 2 assigned
7	8	Kinematic axis 3: Positioning axis
8	0	Control number 0: Individual control
9	3	Axis with logic axis number 3 assigned
10	16	Kinematic axis 4: Orientation axis
11	0	Control number 0: Individual control
12	4	Axis with logic axis number 4 assigned

The following axis types are available for positioning and orientation axes (see C-0-0484):

- Real axis
- Virtual axis
- controller axis.

For belt axes, the following are also available:

- encoder axis and
- link axis (cross link sercos II).

K-0-0008 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	253	0

K-0-0009, Osci: list of all K-parameters that can be oscilloscoped

Function This parameter contains the list of all K parameters which can be oscilloscoped.

K-0-0009 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

K-0-0010, List of all K-parameters

Function This list includes all K-parameters. The entry is made in ID number format. The entries are sorted by description and their relation and not by ID number or alphabetically. K-parameters are stored in the order of these entries. The ID number format is as follows:

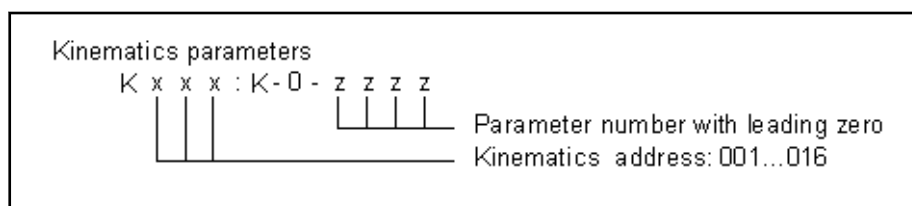


Fig. 4-134: K-parameter structure

Example:

K001: K-0-0002 - Kinematics 1; parameter K-0-0002.

K-0-0010 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x2B00000000	0x2B00000FFF	---

K-0-0011, List of all invalid K-parameters

Function This list displays all invalid K-parameters in the result

- of a checksum test, e.g. after a firmware update, or
- a plausibility test, e.g. in the result of an illegal operation mode.

The entry is made in ID number format.

Describing individual parameters, arranged according to types

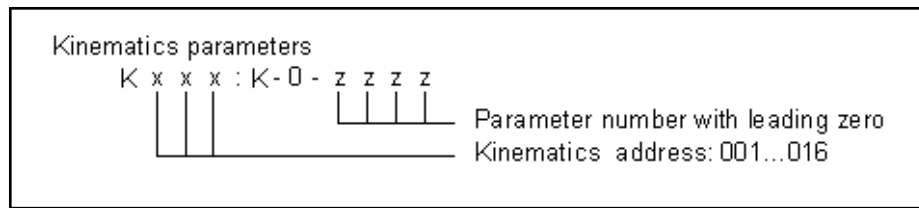


Fig. 4-135: K-parameter structure

Use K001: [K-0-0008](#) - Kinematics 1; parameter [K-0-0008](#).

K-0-0011 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x2B00000000	Maximum value 0x2B00000FFF	Default value ---

K-0-0012, Checksum of all K-parameters

Function When reading this parameter the checksum is generated by all K parameter values the IDNs of which are listed in parameter "[K-0-0013](#), IDN list of checksum K parameter".

K-0-0012 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

K-0-0013, IDN list of checksum K-parameters

Function The parameter's ID numbers whose checksum is to be formed are entered in this parameter.

The checksum formation is triggered when the "[K-0-0012](#), Checksum of all C-parameters" is read out.

In the default state, no ID numbers are entered in [K-0-0013](#).

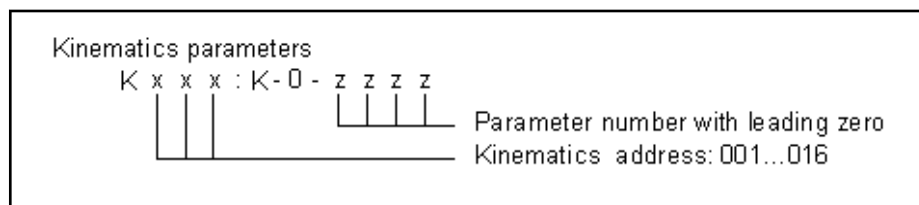


Fig. 4-136: Structure of a K-parameter

Use K001: [K-0-0008](#) - Kinematics 1; parameter [K-0-0008](#).

K-0-0013 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	-

Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 4095	Default value ---

K-0-0016, Project identification number

Function IndraWorks entered a series of unique characters in this parameter to identify worldwide the project.
This series of characters is one to one for each project.
This parameter has no influence on the functions of the Motion Logic Control.



This parameter is for internal purposes only.

K-0-0016 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0xFF	Default value "Project ID number"

K-0-0019, Kinematic type

Function This parameter indicates the kinematic type.
Structure

Bit	Content	Bit name
2..0	001: Robot Control V1 010: Robot Control V2	Kinematic type
31..3	Reserved	

Tab. 4-125: K-0-0019 Kinematic type

K-0-0019 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value ---	Maximum value ---	Default value ---

K-0-0020, Kinematic diagnostic message

Function These parameters contain the current diagnostic message for the kinematic (message, warning or error).
If bit 8 or bit 9 of the "A-0-0021, Kinematic status" parameter is set to 1, this parameter contains either the warning text (bit 8) or the error text (bit 9).
From the perspective of the PLC, this information is available to the kinematic "*" as

- KinData[*].dwKinStatus_i.8= TRUE, diagnostic message in K-0-0020 is a warning text or

Describing individual parameters, arranged according to types

- KinData[*].dwKinStatus_i.9= TRUE, diagnostic message in [K-0-0020](#) is an error text.



If no error or warning has been reported in the kinematics, the current kinematic state is displayed as text.

[K-0-0020](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"No messages now available"

K-0-0021, Kinematic status

Function This parameter describes the current status of the kinematics.

This is internal system information that is triggered via PLC function blocks for example. The information does not include the state of the Kinematic state machine.

Structure

Bit	Content	Bit name
5	All kinematic axes are in standstill. (Belt axes are not considered).	Kin_StandStill
6	Command position = actual position The programmed end position is reached.	Kin_InPosition
7	Belt-synchronous	Kin_BeltSynchronous
8	Warning	Kin_Warning
9	Errors	Kin_Error
10	Homing required; not all axes are referenced.	Kin_NotHomed
11	Blending	Kin_Blending
12	Transformed machine coordinates are invalid	Kin_TrafoValuesInvalid
14	All axes are ready for operation (AH or AF)	Kin_DrivesOn
17	Error reaction enabled	Kin_ErrorReaction
20	Fully belt-synchronous	Kin_FullyBeltSynchronous
21	BeginLength reached	Kin_BeginLengthReached
22	Waiting for belt-synchronous start condition	Kin_WaitBeltStartCondition
28	Spline is calculated for blending motion	
29	Spline is valid	

Tab. 4-126: K-0-0021 Kinematic status

Use **Bit 5: All axes of the kinematics are stopped**

This bit signals that the axes positioned by the kinematics are in standstill ([A-0-0021](#), bit 5). The standstill window A-0-0220 is taken into consideration).

Bit 6: The programmed end position is reached

No active motion command available.

Bit 7: Belt-synchronous

Partially or fully-synchronous traversing to belt.

Bit 8: Warning

A warning is present.

Bit 9: Error

An error is present.

Bit 10: Homing required

At least one kinematic axis is not referenced.

Bit 11: Blending

Blending is active.

Bit 12: Transformed machine coordinates are invalid

The current machine coordinates for the kinematics indicated in KinData are invalid. For example, this is the case if not all of the axes are assigned to the kinematics or if there is an error in the transformation.

Bit 14: All axes are ready for operation

All kinematic axes are ready for operation (AH or AF).

Bit 17: Error reaction active

Currently, an error reaction is active.

Bit 20: Fully belt-synchronous

Fully-synchronous traversing to belt.

Bit 21: BeginLength reached (belt-synchronous)

The kinematics is belt-synchronous and "Begin Length" was exceeded.

Bit 22: Waiting for start condition (belt-synchronous)

Waiting for the belt-synchronous start condition.

Bit 28: Calculating spline for blending motion

Currently, a spline for the blending motion is calculated.

Bit 29: Spline is valid

The spline calculated for the blending motion is valid. The bit remains active until the spline has been travelled.

K-0-0021 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value
Common:	---	---	Default value 0x00

K-0-0022, Extended kinematic status

Function This parameter uses several status bits to describe the current state of the kinematic state machine. Each state is assigned to a status bit combination in the parameter [K-0-0022](#).

Describing individual parameters, arranged according to types

	Kinematic state machine is in
Bit 0: Kis_Errorstop	"Errorstop" or "Errorstop Stopping"
Bit 1: Kis_Stopping	"Errorstop Stopping" or "Stopping"
Bit 3: Kis_Incomplete	"Standstill incomplete"
Bit 7: Kis_StandStill	"Standstill Complete" or "Standstill Incomplete"
Bit 10: Kis_ManualMotion	"Manual Motion"
Bit 12: Kis_GroupMoving	"Group Moving"

Structure

K-0-0022 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0x00

K-0-0023, Kinematic diagnostic number

Function If bits 8 or 9 of parameter "K-0-0021, Kinematic status" are set, the current diagnostic number can be read this parameter.

K-0-0023 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 4BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0

K-0-0028, Velocity limit auxiliary axes

Function An additional limit value for the velocity of each auxiliary axis can be specified in this parameter.

According to the motion type, the parameter has the following effects:

- In the case of Linear and Circular, the minimum is generated from the velocity limit value in this parameter and the single-axis limit value of the auxiliary axis. This minimum is used to limit the axis motion.
- In the case of point to point, only the single-axis limit value of the auxiliary axis is used to limit the axis motion.



Please refer to the transformation scheme for whether an auxiliary axis is used.



Since this parameter is used in the block preparation, a new value only has an effect on commands that have not yet been prepared by the block preparation.

Structure

Element	Comment
1	1st auxiliary axis of the transformation scheme (if available)
2	2nd auxiliary axis of the transformation scheme (if available)
...	...

K-0-0028 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0

K-0-0029, Acceleration limit auxiliary axes

Function

An additional limit value for the acceleration of each auxiliary axis can be specified in this parameter.

According to the motion type, the parameter has the following effects:

- In the case of Linear and Circular, the minimum is generated from the acceleration limit value in this parameter and the single-axis limit value of the auxiliary axis. This minimum is used to limit the axis motion.
- In the case of point to point, only the single-axis limit value of the auxiliary axis is used to limit the axis motion.



Please refer to the transformation scheme for whether an auxiliary axis is used.



Since this parameter is used in the block preparation, a new value only has an effect on commands that have not yet been prepared by the block preparation.

Structure

Element	Comment
1	1st auxiliary axis of the transformation scheme (if available)
2	2nd auxiliary axis of the transformation scheme (if available)
...	...

K-0-0029 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0

K-0-0030, Jerk limit auxiliary axes

Function An additional limit value for the jerk of each auxiliary axis can be specified in this parameter.

According to the motion type, the parameter has the following effects:

- In the case of Linear and Circular, the minimum is generated from the jerk limit value in this parameter and the single-axis limit value of the auxiliary axis. This minimum is used to limit the axis motion.
- In the case of point to point, only the single-axis limit value of the auxiliary axis is used to limit the axis motion.



Please refer to the transformation scheme for whether an auxiliary axis is used.



Since this parameter is used in the block preparation, a new value only has an effect on commands that have not yet been prepared by the block preparation.

Structure

Element	Comment
1	1st auxiliary axis of the transformation scheme (if available)
2	2nd auxiliary axis of the transformation scheme (if available)
...	...

K-0-0030 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	FLASH	Editability:	P0, P2, BB, PM
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	0.0

K-0-0031, Transformation scheme

Function

The transformation scheme is set in this parameter.

More settings for the transformation scheme can be selected in the parameters [K-0-0040](#) and [K-0-0041](#).

K-0-0031 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	NVRAM	Editability:	P2
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	9999	0

K-0-0034, Maximum path acceleration (bipolar)

Function Maximum programmable path acceleration in machine coordinates (MCS) at the Tool Center Point (TCP).

Depending on the parameter [K-0-0054](#), the entry is made in mm/s or in/s.

The parameters limits the maximum path acceleration of the kinematics in the Motion types Linear and Circular.

No limit is set in the Motion type PTP.

If the parameter value is reached, the warning E02C08CE is reported and re-set if fallen below.

K-0-0034 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	2147483647.0	0.0

K-0-0035, Maximum path jerk (bipolar)

Function Maximum programmable path jerk in machine coordinates (MCS) at the Tool Center Point (TCP).

Depending on parameter [K-0-0054](#), the entry is made in mm/s³ or in/s³.

The parameters limits the maximum path jerk of the kinematics in the Motion types Linear and Circular. In Motion type PTP the jerk is not limited by this parameter.

If the parameter value is reached, the warning E02C08CD is reported and re-set if fallen below.

K-0-0035 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0.0	2147483647.0	0.0

K-0-0037, Jerk for move commands during deceleration phase

Function This parameter specifies the jerk for the deceleration phase. The percentage of the programmed jerk is used for the deceleration phase.

K-0-0037 - Attributes:	Function:	PARAMETER	Unit:	%
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		10.0	100.0	100.0

K-0-0040, Transformation, lengths of the mechanics

Function

In this parameters, the lengths for the transformation scheme in parameter [K-0-0031](#) are configured.

The meaning of the individual values depends on the set [K-0-0031](#), Transformation scheme.

K-0-0040 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		-999999.0	999999.0	0.0

K-0-0041, Transformation, factors

Function

This parameter configures the factors for the transformation scheme in parameter [K-0-0031](#).

The meaning of the individual values depends on the transformation scheme set in [K-0-0031](#).

K-0-0041 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		-999999.0	999999.0	0.0

K-0-0042, Offset of BCS system

Function

In this parameter, the offset and the rotation of the basic coordinate system (BCS) with regard to the machine coordinate system (MCS) is selected.

The values are always specified in the machine coordinate system.

Structure

This parameter is a list parameter with six values:

Element	Description
1	Displacement in Cartesian x-direction [in millimeters or inches (see K-0-0054)]
2	Displacement in Cartesian y-direction [in millimeters or inches (see K-0-0054)]
3	Displacement in Cartesian z-direction [in millimeters or inches (see K-0-0054)]
4	Rotation along the Cartesian x-axis [in degrees] (see note)
5	Rotation along the Cartesian y-axis [in degrees] (see note)
6	Rotation along the Cartesian z-axis [in degrees] (see note)

Use The first three values indicate the position of the coordinate system origin from the perspective of the machine coordinate system. The elements 4 to 6 indicate the rotation of the coordinate system.



The rotation of the basic coordinate system is only possible in degrees of freedom supported by the transformation scheme.

For example, the scara transformation scheme only contains the degree of freedom by the Z-axis as orientation. Only a rotation of the basic coordinate system by the Z-axis is possible.

K-0-0042 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		-999999.0	999999.0	0.0

K-0-0050, Distance units MCS

Function The distance and orientation units for each element of a list parameter in the machine coordinate system (MCS) are separated by a command and saved in this text parameter.

- Only legible entries are automatically determined.
- One entry (with comma separator) for each coordinate axis (x, y, z, alpha, beta, gamma),
- depending on the transformation type [K-0-0031](#) and the axes used [K-0-0008](#).
 - For x, y, z-axes: mm or inch (see [K-0-0054](#))
 - For alpha, beta, gamma: Degrees

Use *Examples*

1. Cartesian robot with X, Y, Z, C
[K-0-0050](#) = mm,mm,mm,degree or inch,inch,inch,degree (see [K-0-0054](#))
2. Scara with lifting and rotating spindle (X, Y, Z, C)
[K-0-0050](#) = mm,mm,mm,degree or inch,inch,inch,degree (see [K-0-0054](#))
3. Cartesian robot with X, Y, Z, C, B
[K-0-0050](#) = mm,mm,mm,degree, degree or inch,inch,inch,degree, degree (see [K-0-0054](#))
4. Cartesian robot with X, Y, C
[K-0-0050](#) = mm,mm,degree or inch,inch,degree (see [K-0-0054](#))
5. Delta with C-axis and 2 belts
[K-0-0050](#) = mm,mm,mm,degree or inch,inch,inch,degree (see [K-0-0054](#))



The belts are not included in the lists for the machine coordinate system (MCS).

Describing individual parameters, arranged according to types

K-0-0050 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "not available"

K-0-0051, Velocity units MCS

Function The velocity units for each element of a list parameter in the world coordinate system are separated with a command and saved in this text parameter.

- Only legible entries are automatically determined.
- One entry (with comma separator) for each coordinate axis (x, y, z, alpha, beta, gamma),
- depending on the transformation type [K-0-0031](#) and the axes used [K-0-0008](#).
 - For x, y, z-axes: mm/s or in/s (see [K-0-0054](#))
 - For alpha, beta, gamma: Degree/s

Use *Examples*

1. Cartesian robot with X, Y, Z, C
[K-0-0051](#) = mm/s, mm/s, mm/s, degree/s or inch/s, inch/s, inch/s, degree/s (see [K-0-0054](#))
2. Scara with lifting and rotating spindle (X, Y, Z, C)
[K-0-0051](#) = mm/s, mm/s, mm/s, degree/s or inch/s, inch/s, inch/s, degree/s (see [K-0-0054](#))
3. Cartesian robot with X, Y, Z, C, B
[K-0-0051](#) = mm/s, mm/s, mm/s, degree/s, degree/s or inch/s, inch/s, inch/s, degree/s, degree/s (see [K-0-0054](#))
4. Cartesian robot with X, Y, C
[K-0-0051](#) = mm/s, mm/s, degree/s or inch/s, inch/s, degree/s (see [K-0-0054](#))
5. Delta with C-axis and 2 belts
[K-0-0051](#) = mm/s, mm/s, mm/s, degree/s or inch/s, inch/s, inch/s, degree/s (see [K-0-0054](#))



The belts are not included in the lists for the machine coordinate system (MCS).

K-0-0051 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "not available"

K-0-0052, Acceleration units MCS

Function The acceleration or deceleration units for each element of a list parameter in the world coordinate system are separated with a command and saved in this text parameter.

- Only legible entries are automatically determined.
- One entry (with comma separator) for each coordinate axis (x, y, z, alpha, beta, gamma),
- depending on the transformation type [K-0-0031](#) and the axes used [K-0-0008](#).
 - For x, y, z-axes: mm/s² or inch/s²
 - For alpha, beta, gamma: degree/s²

Use *Examples*

1. Cartesian robot with X, Y, Z, C

[K-0-0052](#) = mm/s², mm/s², mm/s², degree/s² or inch/s², inch/s², inch/s², degree/s²" (see [K-0-0054](#))

2. Scara with lifting and rotating spindle (X, Y, Z, C)

[K-0-0052](#) = mm/s², mm/s², mm/s², degree/s² or inch/s², inch/s², inch/s², degree/s²" (see [K-0-0054](#))

3. Cartesian robot with X, Y, Z, C, B

[K-0-0052](#) = mm/s², mm/s², mm/s², degree/s², degree/s² or inch/s², inch/s², inch/s², degree/s², degree/s² (see [K-0-0054](#))

4. Cartesian robot with X, Y, C

[K-0-0052](#) = mm/s², mm/s², degree/s² or inch/s², inch/s², degree/s² (see [K-0-0054](#))

5. Delta with C-axis and 2 belts

[K-0-0052](#) = mm/s², mm/s², mm/s², degree/s², or inch/s², inch/s², inch/s², degree/s² (see [K-0-0054](#))



The belts are not included in the lists for the machine coordinate system (MCS).

[K-0-0052](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"not available"

K-0-0053, Jerk units MCS

Function The jerk units for each element of a list parameter in the world coordinate system are separated with a command and saved in this text parameter.

- Only legible entries are automatically determined.
- One entry (with comma separator) for each coordinate axis (x, y, z, alpha, beta, gamma),
- depending on the transformation type [K-0-0031](#) and the axes used [K-0-0008](#).

Describing individual parameters, arranged according to types

- For x, y, z-axes: mm/s³ or inch/s³
- For alpha, beta, gamma: degree/s³

Use Examples

1. Cartesian robot with X, Y, Z, C

K-0-0053 = mm/s³, mm/s³, mm/s³, degree/s³ or inch/s³, inch/s³, inch/s³, degree/s³ (see **K-0-0054**)

2. Scara with lifting and rotating spindle (X, Y, Z, C)

K-0-0053 = mm/s³, mm/s³, mm/s³, degree/s³ or inch/s³, inch/s³, inch/s³, degree/s³ (see **K-0-0054**)

3. Cartesian robot with X, Y, Z, C, B

K-0-0053 = mm/s³, mm/s³, mm/s³, degree/s³, degree/s³ or inch/s³, inch/s³, inch/s³, degree/s³, degree/s³ (see **K-0-0054**)

4. Cartesian robot with X, Y, C

K-0-0053 = mm/s³, mm/s³, degree/s³ or inch/s³, inch/s³, degree/s³ (see **K-0-0054**)

5. Delta with C-axis and 2 belts

K-0-0053 = mm/s³, mm/s³, mm/s³, degree/s³ or inch/s³, inch/s³, inch/s³, degree/s³ (see **K-0-0054**)



The belts are not included in the lists for the machine coordinate system (MCS).

K-0-0053 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"not available"

K-0-0054, Measuring unit for kinematic data

Function This parameter determines the scaling unit of the kinematics.

Structure The following settings can be made:

Bit	Name/function
0	Unit 0: millimeter [mm] 1: inch [in]
15..1	Reserved

K-0-0054 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	FLASH	Editability:	P0, P2
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x0000	0xFFFF	0x0000

K-0-0070, Belt number of kinematics

Function This parameter contains the current number of belts of the kinematics.
The value results from "K-0-0008, Axes configuration list". It only contains the sum of there configured belts.
The parameter "K-0-0007, Axis number of kinematics" contains the sum of all axes and belts.

K-0-0070 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	8	0

K-0-0090, Taskpriority preparation

Function This parameter adjusts the priority of block preparation.

Block preparation task priority

- 20 - Block preparation is preferably processed before communication
- 21 - The priority of block preparation is on the level of communication, and block preparation is processed equally with communication (Round Robin)
- 22 - Default: Block preparation is processed after communication



This parameter should only be adjusted by experienced users, since the system behavior has been designed for the default value.

K-0-0090 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	20	22	22

K-0-0095, ID of movement

Function This parameter indicates the current motion identification number (**MoveID**).
The integer part references to the number of the motion instruction.
The decimal part indicates the motion progress in %.
MoveID can manually only be set to an integer value.



MoveID is not increased for Jog.

MoveID should not be tested with the "==" operator.

Describing individual parameters, arranged according to types

K-0-0095 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 8BYTE	PLC_data_type:	UDINT
	Memory:	RAM	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

K-0-0096, Peak value of command buffer size

Function This parameter indicates the maximum value of the command buffer size reached. The value can be reset by writing smaller values.

K-0-0096 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

K-0-0097, Maximum command buffer size

Function This parameter indicates the maximum number of commands that can be simultaneously stored in the block buffer.

K-0-0097 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	FLASH	Editability:	P0, P2
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		1	128	16

K-0-0098, Current command buffer size

Function This parameter indicates the current number of commands in the block buffer.

K-0-0098 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	FLASH	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

K-0-0099, Kinematic configuration

Function This parameter configures the behavior of the kinematics.

Structure

Bit	Name/function
0	Enables automatic switching from CONT_SLOPE to BLOCK_SLOPE
1	Enables the axis modulo of each belt axis as belt modulo
2	Enables the complete radius to blend with BLOCK_SLOPE
3	Enables the option to be synchronous with multiple belts at the same time
4	Enables the option that more than two commands can be active simultaneously in BLOCK_SLOPE
5	Disables all scaling checks of the kinematic axes
6	Enables the adaptive interpolation for belt-synchronous motions
7	Enables the commanding with the complete position vector (X,Y,Z)
8	Enables the commanding with the complete orientation vector (A,B,C)
9..31	Reserved

Use

Bit 0: Enables automatic switching from CONT_SLOPE to BLOCK_SLOPE

If the automatic switching is active, it is switched to the blending method BLOCK_SLOPE if blending with CONT_SLOPE failed.

Bit 1: Enables the axis modulo of each belt axis as belt modulo

If bit 1 is set, the axis modulo of each belt axis is used as belt module value. Ensure that the belt operating range can be max. belt module/2.

Bit 2: Enables the complete radius to blend with BLOCK_SLOPE

If bit 2 is set, the blending radius for BLOCK_SLOPE is not limited anymore to the minimum of radius and path distance/2 of the shorter block.

Bit 3: Enables the option to be synchronous with multiple belts at the same time

If bit 3 is set, simultaneous synchronous operation on several belts is possible. The belts have to be linearly independent, i.e. twisted in an angle of 90 degrees with respect to one another.

Bit 4: Enables the option that more than two commands can be active simultaneously in BLOCK_SLOPE

If bit 4 is set, more than two commands can be active in BLOCK_SLOPE simultaneously. Thus, more than 2 commands are blended. A third command is also started if it is in the blending radius and if the first command has not been completed yet. Please note that the resulting path is undefined due to blending of more than two commands. For example, two blocks working in opposite directions can cancel each other.

Bit 5: Disables all scaling checks of the kinematic axes

If bit 5 is set, all scaling checks of the kinematic axes are disabled. The axis scaling does not have to match the transformation. It is possible to use non-translatory scaled axes for linear belts.

**CAUTION****Unexpected axis motions**

Disabling the scaling check can result in unexpected axis motions.

Bit 6: Enables the adaptive interpolation for belt-synchronous motions

If bit 6 is set, belt-synchronous motions, adaptively interpolated if required (that is waiting and standstill times of the kinematics until the fully synchro-

nous end point of a motion of the belt-synchronous workspace is reached) can be omitted. The fully synchronous end point is reached by the kinematics at the same time as soon as it reached the belt-synchronous workspace. The interpolation of the belt-synchronous motion depends on the fully synchronous end point.

Bit 7: Enables the commanding with the complete position vector (X,Y,Z)

If bit 7 is set, points with all position coordinates can be commanded. In this mode, the vector is not restricted anymore to the coordinates required by the kinematics.

Bit 8: Enables the commanding with the complete orientation vector (A,B,C)

If bit 8 is set, points with all degrees of freedom can be commanded. This allows to twist kinematics in space beyond a transformation.

K-0-0099 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	NVRAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFFFFFFFF	Default value 0x00

K-0-0100, Current position, Cartesian Machine Coordinate System

Function The parameter indicates the current command position of the kinematics in the machine coordinate system (MCS).

The current position consists of a list of Cartesian coordinates, the orientation and the belt counters, depending on the transformation scheme ([K-0-0031](#)) and the axis configuration ([K-0-0008](#)).

K-0-0100 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

K-0-0102, Current path velocity

Function This parameter provides the current path velocity of the kinematics at the TCP.

Only the positioning axes and not the orientation and belt axes are considered.

The unit is mm/s or in/s (see [K-0-0054](#)).

K-0-0102 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

K-0-0103, Current path acceleration

Function This parameter provides the current path acceleration of the kinematics at the TCP.

Only the positioning axes and not the orientation and belt axes are considered.

The unit is mm/s² or in/s².

K-0-0103 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

K-0-0104, Current path jerk

Function This parameter provides the current path jerk of the kinematics at the TCP.

Only the positioning axes and not the orientation and belt axes are considered.

The unit is mm/s³ or in/s³.

K-0-0104 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

K-0-0150, Interpolated command position

Function The parameter indicates the current interpolated command position of the kinematics in the machine coordinate system (MCS).

Depending on the transformation scheme ([K-0-0031](#)) and the axis configuration ([K-0-0008](#)), the current position consists of a list of Cartesian world coordinates, the orientation, and the belt counters.

K-0-0150 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

K-0-0152, Interpolated path velocity

Function This parameter provides the current interpolated path velocity of the kinematics at the TCP.

Describing individual parameters, arranged according to types

Only the positioning axes and not the orientation and belt axes are considered.

The unit is mm/s or in/s (see [K-0-0054](#)).

K-0-0152 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

K-0-0153, Interpolated path acceleration

Function This parameter provides the current interpolated path acceleration of the kinematics at the TCP.

Only the positioning axes and not the orientation and belt axes are considered.

The unit is mm/s² or in/s².

K-0-0153 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

K-0-0154, Interpolated path jerk

Function This parameter provides the current interpolated path jerk of the kinematics at the TCP.

Only the positioning axes and not the orientation and belt axes are considered.

The unit is mm/s³ or in/s³.

K-0-0154 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

K-0-0223, Selection of error reaction

Function This parameter can be used to determine the behavior of the kinematics in case of an error.

Structure	Bit	Name/function
	0	0: The limit values of the active command are used 1: The limit values of the parameters K-0-0224 , Emergency deceleration, and K-0-0225 , Emergency jerk, are used
	1..31	Reserved

Use Bit0= 0: The limit values of the active command are used

In case of an error, the kinematics stops with the limit values of the active command. If a different command becomes active during an error reaction (e.g. by blending), the limit values of the new active command are used.

Bit0= 1: The limit values of the parameters [K-0-0224](#), Emergency deceleration, and [K-0-0225](#), Emergency jerk, are used

In case of an error, the kinematics stops with the limit values of the parameters [K-0-0224](#), Emergency deceleration, and [K-0-0225](#), Emergency jerk. These limit values are only used if they are higher than currently active command. The emergency deceleration and the emergency jerk are considered separately: If the programmed deceleration is lower than the emergency deceleration, the emergency deceleration is used. If the programmed jerk is higher than the emergency jerk, the programmed jerk is used.

K-0-0223 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	NVRAM	Editability:	P0, P2, BB, PM
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0

K-0-0224, Emergency halt deceleration

Function The parameter determines the emergency deceleration. The parameter is only applied if bit 0 is set in the parameter [K-0-0223](#), Selection of error reaction.

K-0-0224 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P0, P2, BB, PM
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	+
		Minimum value	Maximum value	Default value
Common:		0.01	999999.0	1000.0

K-0-0225, Emergency halt jerk

Function The parameter determines the emergency jerk. The parameter is only applied if bit 0 is set in the parameter [K-0-0223](#), Selection of error reaction.

K-0-0225 - Attributes:	Function:	PARAMETER	Unit:	K-0-0054
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	NVRAM	Editability:	P0, P2, BB, PM
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	+
		Minimum value	Maximum value	Default value

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	1.0	999999.0	10000.0

K-0-0240, Feedrate override**Function**

The command velocity at runtime can be changed percentaged to the programmed value using this parameter.

A value of 100% indicates that the programmed velocity is used to traverse the axes.

The percentage value can be set in a range from 0% to 600%.



In case of 0%, the axes stop without changing the state of the kinematic state machine.

K-0-0240 - Attributes:

Function:	PARAMETER	Unit:	%
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0.0	600.0	100.0

K-0-0241, Feedrate override control word**Function Structure**

This parameter controls the feed rate override.

Bit	Name/function
0	Reserved
1	Bit 1 = 0: Feed rate override in K-0-0240 is active Bit 1 = 1: Feed Halt, the value in K-0-0240 is retained.
15..2	Reserved

Use**Bit 1:**

Feed halt becomes active by setting bit 1.

K-0-0241 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

K-0-0242, Acceleration override**Function**

The acceleration at runtime can be changed in percentage to the programmed value using this parameter.

A value of 100% means that the axes travel at the specified (programmed) acceleration.

The percentage can be set at a range from 1% to 600%.



Setting of [K-0-0242](#) if active in the block preparation, thus, not immediately.

K-0-0242 - Attributes:

Function:	PARAMETER	Unit:	%
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0.01	600.0	100.0

K-0-0243, Deceleration override**Function**

The deceleration at runtime can be changed in percentage to the programmed value using this parameter.

A value of 100% means that the axes travel at the specified (programmed) deceleration.

The percentage can be set at a range from 1% to 600%.



Setting of [K-0-0243](#) if active in the block preparation, thus, not immediately.

Smaller values in [K-0-0243](#) result in deceleration distances that are too long.

K-0-0243 - Attributes:

Function:	PARAMETER	Unit:	%
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0.01	600.0	100.0

K-0-0250, Continuous slope lead time**Function**

This parameter specifies the lead time to calculate the blending motion for CONT_SLOPE.

Use

The lead distance results from the lead time and the path velocity.

If late blending is enabled due to a late issuing of a traversing command, the current position is saved.

If the turn off point (lead distance + saved current position) is exceeded at the end of the blending motion calculation, an error is output.

If the turn off point is not exceeded, the blending motion (of the blending radius is big enough) is started at the turn off point.

K-0-0250 - Attributes:

Function:	PARAMETER	Unit:	ms
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	0.0	2147483647.0	100.0

K-0-0815, Odometer

Function This parameter shows the traversed distance of the "Tool Center Points" (TCP) in kilometers.

K-0-0815 - Attributes:	Function:	PARAMETER	Unit:	km
	MLC_data_type:	DOUBLE, 8BYTE	PLC_data_type:	LREAL
	Memory:	NVRAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0,000

4.3.3 K-0-1000 - K-0-1999

K-0-1000, Command: Load basic kinematic parameters

Function This parameter is used as a command to load the basic kinematic parameters.

Use *From IndraWorks MLC:*

- Wizard "initial commissioning" in the **context menu of the kinematics ► Initial Commissioning ► Step 1: Load Basic Parameters...**
- "Load Basic Parameters" button in the **context menu of the kinematics ► Parameter ► Load Basic Parameters....**

From the field bus:

- Enter the binary value "0000000000000011" (=16#0003) into the parameter (**K-0-1000**).

This activates the loading of the basic parameters of the kinematics.

- After the loading , the MLC automatically resets the parameter to "16#00".

K-0-1000 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, PM
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0x03	0x00

4.3.4 K-0-2000 - K-0-2499

K-0-2100, List of all backup operation K-parameters

Function All K-parameters that have to be considering during parameter backup are listed in this list. The entry is made in ID number format.

The entries are sorted by description and their relation and not by ID number or alphabetically.

K-parameters are stored in the order of these entries.

The ID number format is as follows:

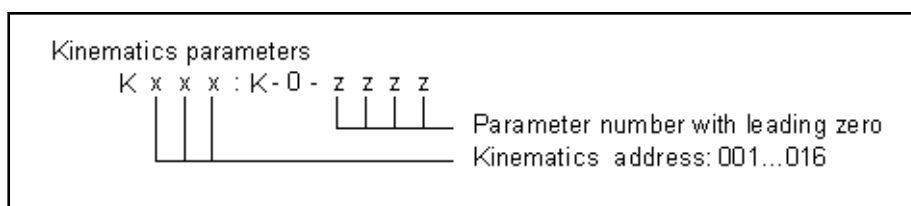


Fig. 4-137: K-parameter structure

Example:K001: **K-0-0002** - Kinematics 1; parameter **K-0-0002**.

K-0-2100 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x2B00000000	Maximum value 0x2B00000FFF	Default value ---

4.4 Touch probe parameters (M-parameters)

4.4.1 Touch probe parameters, general information

The M-parameters represent the data set for one touch probe function.



The following controls support this parameter type:

- IndraLogic XLC L25 with onboard Sercos III bus and Fast I/O (CFL01.1-E2) function module(s)
- IndraLogic XLC L25, L65 with onboard Sercos III bus and onboard inputs / Fast I/O (CFL01.1-E2) function module(s)
- IndraMotion MLC L25 with Fast I/O (CFL01.1-E2) function module(s)
- IndraMotion MLC L25, L45, L65, L75 with onboard inputs / Fast I/O (CFL01.1-E2) function module(s)

Onboard inputs and/or inputs of fast I/O (CFL01.1-E2) function modules can function as data source for the touch probe.

4.4.2 M-0-0000, Dummy, M-parameter

Function A parameter serves as a placeholder; it does not have a function. A parameter can be described and read cyclically.

Use Measure down time for writing and reading.

M-0-0000 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

4.4.3 M-0-0001, Logic touch probe number

Function The logical probe number can be read from this parameter. The number can deviate from the number of the input that is connected to the probe and can have values ranging from 1 to 100.

M-0-0001 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.4.4 M-0-0002, Touch probe name

Function The descriptive text for the instance of the touch probe function can be saved in this parameter.

The text does not provide any functional meaning.

M-0-0002 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x00	0xFF	"TouchProbe\$I"

4.4.5 M-0-0005, Input selection

Function By means of this probe, the digital input is selected that is to deliver the trigger signal for the probe function.

It is possible to assign the same input to various instances of the probe function so that different parameters can be simultaneously registered by means of one trigger signal.

IndraMotion MLC L45/L65/L75 / IndraLogic XLC L45/L65/L75

- Input 1..8 - onboard module
- Input 110..117 (digital inputs), 120..127 (free configurable digital inputs) - fast I/O 1
- Input 210..217 (digital inputs), 220..227 (free configurable digital inputs) - Fast I/O 2
- Input 310..317 (digital inputs), 320..327 (free configurable digital inputs) - Fast I/O 3
- Input 410..417 (digital inputs), 420..427 (free configurable digital inputs) - Fast I/O 4



1xx always represents the fast I/O module first found, not the PSI slot, 2xx represents the second fast I/O module, etc.

M-0-0005 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT

Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	1	427	1

4.4.6 M-0-0006, Signal selection

Function Here, the selection of the parameter is carried out, whose current value for a signal edge is to be stored at the assigned input.

When selecting a parameter, the parameters for the measured values

- [M-0-0130](#), Measured value, positive edge,
- [M-0-0131](#), Measured value, negative edge and
- [M-0-0132](#), Difference value,

as well as the parameters for the expectation window limits

- [M-0-0202](#), Starting position of the expectation window, positive edge,
- [M-0-0203](#), End position of the expectation window, positive edge,
- [M-0-0204](#), Starting position of the expectation window, negative edge and
- [M-0-0205](#), End position of the expectation window, negative edge

automatically adopt the selected parameter's data type and unit.

If the signal selection is changed on applied enable, the enable signal is automatically reset.

Applies to the firmware versions 14V20 patch 4 and 14V22 patch 1 and above:

Due to a successful troubleshooting, the parameter response changed as follows:

If the touch probe is enabled ([M-0-0024](#)), [M-0-0006](#) is write-protected (error message 0xF00A700C "Operating date currently write-protected...").



The IDN of the selectable parameters are listed in "[C-0-2499](#), Touch probe, IDN list signal selection".

Axis parameters can only be selected for axes that are actually provided.

Also refer to the Functional Description "Touch Probe Function".

Use The readability of the selected parameters is only checked when the control unit is in operation mode. IDNs of non-readable parameters are not accepted.

If the control unit is in P0/P2, the IDN is checked only. It cannot be determined, whether the axis the parameter belongs to is actually existing. The reading check is carried out

- with an activated touch probe function if the operation mode is switched or,
- if the control unit is in operation mode - as soon as the touch probe function is activated.

If the selected parameter cannot be read, the signal source is reset.

Applies to the firmware versions 14V20 patch 4 and 14V22 patch 1 and above:

Describing individual parameters, arranged according to types

Due to a successful troubleshooting, the parameter response changed as follows:

The readability of the selected parameter is checked irrespective of the control mode. IDNs of non-readable parameters are not accepted.

It is checked in each phase whether the axis the parameter belongs to actually exists.

In case of incorrectly selected parameters, the signal selection is not reset anymore, as the parameter [M-0-0006](#) cannot be changed anymore after activation ([M-0-0024](#)) and enabling ([M-0-0405](#)).

M-0-0006 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.4.7 M-0-0007, Control word

Function By means of this parameter the probe function can be configured.

The settings affect

- the activation of the signal edges,
- switching the measured value acquisition mode,
- the activation of the time stamp recording,
- the activation of the expectation window,
- the activation of the marker failure monitoring
- and the difference measurement mode.

Structure

Bit	Values/function
0	Activation of positive edge 0: positive edge not activated 1: positive edge activated
1	Activation of negative edge 0: negative edge not activated 1: negative edge activated
2	Enable mode 0: single measurement → after every measurement, the enable signal for the probe must be deleted and reset in order to enable another measurement. The measuring results are maintained until the next enable signal is applied. 1: continuous measurement → the measurements are continuously carried out for as long as the enable signal for the probe is set.
3	Enable time stamp 0: the time stamp is not registered 1: the time stamp is registered

Bit	Values/function
4	Activation of the probe window, positive edge 0: unrestricted range of measurement 1: range of measurement restricted to probe window (reserved)
5	Activation of the probe window, negative edge 0: unrestricted range of measurement 1: range of measurement restricted to probe window
6	Marker monitoring 0: not activated 1: activated
7	Extended difference measurement 0: not activated 1: activated
9, 8	Edge determination for extended difference measurement 00: difference from negative to negative edge 01: difference from positive to negative edge 10: difference from negative to positive edge 11: difference from positive to positive edge
10 - 11	Interpolation of the measured values 00: interpolation is not carried out The measured value corresponds to the current value at the point of time when the edge is at the input. 01: The measured value is interpolated in linear form from the current value and the subsequent value. 10: The measured value is determined from 3 values by means of cubic spline interpolation. 11: The measured value is determined from 4 values by means of cubic spline interpolation.
31 - 12	(reserved)



"Positive edge" means that the level at the probe input moves from 0 V to +24 V.

"Negative edge" means that the level at the probe input moves from +24 V to 0 V.

Even with the expectation window activated, the restriction of the measurement range is only effective if the start and end position of the expectation window are not identical.

See also Functional Description "Touch Probe Function".

M-0-0007 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.4.8 M-0-0009, Osci: list of all M-parameters that can be oscilloscoped

Function This parameter contains the list of all M parameters which can be oscilloscoped.

M-0-0009 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.4.9 M-0-0010, List of all M-parameters

Function This list includes all M parameters. The entry is made in ID number format. The entries are sorted according to identity number in ascending order.

Structure Following is the identity number format:

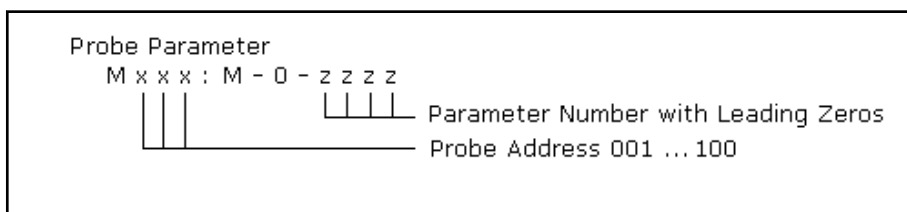


Fig. 4-138: Identity number format

Use M001: [M-0-0002](#) - Probe 1; Parameter [M-0-0002](#).

M-0-0010 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.4.10 M-0-0016, Project identification number

Function IndraWorks entered a series of unique characters in this parameter to identify worldwide the project. This series of characters is one to one for each project. This parameter has no influence on the functions of the Motion Logic Control.



This parameter is for internal purposes only.

M-0-0016 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB

Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0x00	Maximum value 0xFF	Default value "Project ID number"

4.4.11 M-0-0021, Status word

Function This parameter indicates the status of the measured value acquisition in the current cycle.

The status parameter includes information on the

- availability of newly measured values
- exceedance of the marker failure threshold
- and the overflow of touch probe events

The parameter is reset with each touch probe enabling.

Structure

Bit	Name/function
0	Measured value at positive edge 0: no new measured value available 1: a new value was determined
1	Measured value at negative edge 0: no new measured value available 1: a new value was determined
2	Difference value calculation 0: no new difference value available 1: a new difference value was determined
3	Status of the marker failure monitoring 0: marker failure threshold not exceeded 1: marker failure threshold exceeded
4	Event overflow at positive edges 0: all positive edges could be detected 1: Various positive edges were detected in one Sercos cycle, but only the first was processed.
5	Event overflow at negative edges 0: all negative edges were detected 1: Various negative edges were detected in one Sercos cycle, but only the first was processed.
15 - 6	(reserved)



The status of the marker failure monitoring is set in relation to the parameterized limit value for the marker failure "M-0-0224, Number of marker failures, positive edge, touch probe". The status is reset as soon as the expectation window has been passed without marker failure.

If the maximum number of the marker failures is parameterized with "0", exceeding the limit value is not monitored.

Describing individual parameters, arranged according to types

Also refer to the Functional Description "Touch Probe Function".

M-0-0021 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.4.12 M-0-0024, Command: Activation

Function The touch probe function is enabled using this input.



The touch probe function can only be enabled if the touch probe function is activated.

The parameter's data type and unit are only adapted for the measured values and the expectation window limits if the touch probe function is activated.

The touch probe function can only be activated if the values of parameter [C-0-0400](#) and [C-0-0503](#) are identical.



Applies to the firmware versions 14V20 patch 4 and 14V22 patch 1 and above:

Due to a successful troubleshooting, the parameter response changed as follows:

When leaving Sercos phase 4, the touch probe is disabled and enabling is reset (refer to [M-0-0405](#)). The reason is that possibly required data such as modulo and scaling can only be retrieved now in Sercos phase 4.

Up to now, the touch probe was enabled while switching from Sercos phase 3 to Sercos phase 4. The touch probe is not enabled anymore, as possibly required data such as modulo and scaling cannot be retrieved anymore at that point in time. Enable the touch probe manually after going into Sercos phase 4.

If a master axis position ([A-0-2650](#), [A-0-2651](#), [A-0-2656](#)) was configured in the parameter [M-0-0006](#), the touch probe can only be enabled when the slave axis is in a synchronous operation mode (error message 0xE0337008 "Invalid operating date...").

M-0-0024 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.4.13 M-0-0130, Measured value, positive edge

Function In this parameter, the value of the selected parameter ("[M-0-0006](#), signal selection touch probe") is saved at the time of the positive edge at the entrance

of the touch probe. When the release is granted, the measurement value is deleted.

- Use**
- Activating the probe function through parameter "M-0-0024, Command: Activation",
 - Activating the positive edge by setting bit 0 in parameter "M-0-0007, Control word",
 - Apply enable signal by setting "M-0-0405, Enabling".



The counter for the measured values (parameter "M-0-0409, Counter of measured values, positive edge") is incremented in the same cycle in which the measured value is output.

M-0-0130 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0

4.4.14 M-0-0131, Measured value, negative edge

Function In this parameter, the value of the selected parameter ("M-0-0006, Signal selection") is saved at the time of the negative edge at the entrance of the touch probe. When the release is granted, the measurement value is deleted.

- Use**
- Activating the probe function through parameter "M-0-0024, Command: Activation",
 - Activating the negative edge by setting bit 1 in parameter "M1-0007, Control word",
 - Apply enable signal by setting "M-0-0405, Enabling".



The counter for the measured values (parameter "M-0-0410, Counter of measured values, negative edge") is incremented in the same cycle in which the measured value is output.

M-0-0131 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0

4.4.15 M-0-0132, Difference value

Function In this parameter, the difference value of two measured values is saved.
For a normal difference measurement, the difference value is the difference between the last measured value with a positive edge and the last measured value with a negative edge.

If an extended difference measurement is configured, various combinations are possible:

Describing individual parameters, arranged according to types

- Latest measured value at a positive edge - Latest measured value at a negative edge
- Latest measured value at a positive edge - Penultimate measured value at a positive edge
- Latest measured value at a negative edge - Latest measured value at a positive edge
- Latest measured value at a negative edge - Penultimate measured value at a negative edge

Since a difference value is not formed with each new measured value, there is a separate counter "M-0-0411, Counter of difference values" for measuring differences.

The difference value is deleted with each release.

- Use**
- Enabling the touch probe function through parameter "M-0-0024, Command: Activation",
 - Enabling at least one negative edge by setting bit 1 to bit 0 in the parameter "M1-0007, Control word",
 - Enable signal by setting "M-0-0405, Enabling".

M-0-0132 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0

4.4.16 M-0-0133, Time difference

Function The time difference between two probe edges is saved in this parameter in the unit micro seconds.

In case of regular differential measurement, it is the time difference between the last positive and the last negative edge.

If an extended difference measurement is configured, various combinations are possible:

- Time difference between the last positive and the last negative edge
- Time difference between the last positive and the next to last positive edge
- Time difference between the last negative and the last positive edge
- Time difference between the last negative and the next to last negative edge

Since a time difference value is not formed with each new measured value, there is a separate counter "M-0-0411, Counter of difference values probes".

The time difference value is deleted with each release.

- Use**
- Activating the probe function through parameter "M-0-0024, Probe activation"
 - Activating at least one edge by setting bit 1 to bit 0 in parameter "M1-0007, Control parameter probe"
 - Apply enable signal by setting "M-0-0405, Enabling probe"

M-0-0133 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 8BYTE	PLC_data_type:	ULINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.4.17 M-0-0140, Time stamp, positive edge

Function The time stamp of the last positive edge of the probe is saved in this parameter. The time stamp refers to the time interval between the edge and the start of the sercos cycle in which the edge was found. The time interval is represented in micro seconds.

The value is deleted with each release.

- Use**
- Activating the probe function through parameter "M-0-0024, Command: Activation",
 - Activating the positive edge by setting bit 0 in parameter "M-0-0007, Control word",
 - Activating the time stamp recording by setting bit 3 in parameter "M1-0007, Control word",
 - Apply enable signal by setting "M-0-0405, Enabling".

M-0-0140 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 8BYTE	PLC_data_type:	ULINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.4.18 M-0-0141, Time stamp, negative edge

Function The time stamp of the last negative edge of the probe is saved in this parameter. The time stamp refers to the time interval between the edge and the start of the sercos cycle in which the edge was found. The time interval is represented in micro seconds.

The value is deleted with each release.

- Use**
- Activating the probe function through parameter "M-0-0024, Command: Activation",
 - Activating the negative edge by setting bit 1 in parameter "M1-0007, Control word",
 - Activating the time stamp recording by setting bit 3 in parameter "M1-0007, Control word",
 - Apply enable signal by setting "M-0-0405, Enabling".

M-0-0141 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 8BYTE	PLC_data_type:	ULINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-

Describing individual parameters, arranged according to types

Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	---

4.4.19 M-0-0200, Dead-time compensation, positive edge

Function The value of this parameter defines the reaction time to be compensated for the positive edge (output in μs).
Time delays arising through I/Os or through the sensor used can be compensated

 The reaction time can have a maximum value of 128 cycles.

M-0-0200 - Attributes:	Function:	PARAMETER	Unit:	μs
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0	100000	---	

4.4.20 M-0-0201, Dead-time compensation, negative edge

Function The value of this parameter defines the reaction time to be compensated for the negative edge (output in μs).
Time delays arising through I/Os or through the sensor used can be compensated

 The reaction time can have a maximum value of 128 cycles.

M-0-0201 - Attributes:	Function:	PARAMETER	Unit:	μs
	MLC_data_type:	INT_DEC, 4BYTE	PLC_data_type:	DINT
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0	100000	---	

4.4.21 M-0-0202, Starting position of the expectation window, positive edge

Function This parameter determines the lower limit value of the expectation window for the measured value acquisition of the positive edge. The expectation window restricts the range where touch probe signal edges cause a measured value acquisition.

In order to activate the measurement with the expectation window, bit 5 must be set in parameter "M-0-0007, Control word".



If the value of the start position of the expectation window is higher than that of the end position, the expectation window exceeds the modulo value.

The expectation window can only be used if modulo format is parameterized for the selected axis (cf. "A-0-0045, Modulo value").

M-0-0202 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0

4.4.22 M-0-0203, End position of the expectation window, positive edge

Function This parameter determines the upper limit value of the expectation window for the measured value acquisition. The expectation window restricts the range where touch probe signal edges cause a measured value acquisition. In order to activate the measurement with the expectation window, bit 5 must be set in parameter "M-0-0007, Control word".



If the value of the end position of the expectation window is smaller than that of the start position, the expectation window exceeds the modulo value.

The expectation window can only be used if modulo format is parameterized for the selected axis (cf. "A-0-0045, Modulo value").

M-0-0203 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
Memory:	FLASH	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	-
Var.data_type:	+	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	-2147483647.0	2147483647.0	0.0

4.4.23 M-0-0204, Starting position of the expectation window, negative edge

Function This parameter determines the lower limit value of the expectation window for the measured value acquisition of the negative edge. The expectation window restricts the range where touch probe signal edges cause a measured value acquisition.

In order to activate the measurement with the expectation window, bit 5 must be set in parameter "M-0-0007, Control word".



If the value of the start position of the expectation window is higher than that of the end position, the expectation window exceeds the modulo value.

The expectation window can only be used if modulo format is parameterized for the selected axis (cf. "A-0-0045, Modulo value").

Describing individual parameters, arranged according to types

M-0-0204 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value -2147483647.0	Maximum value 2147483647.0	Default value 0.0

4.4.24 M-0-0205, End position of the expectation window, negative edge

Function This parameter determines the upper limit value of the expectation window for measured value acquisition of the negative edge. The expectation window restricts the range where touch probe signal edges cause a measured value acquisition.

In order to activate the measurement with the expectation window, bit 5 must be set in parameter "M-0-0007, Control word".



If the value of the end position of the expectation window is smaller than that of the start position, the expectation window exceeds the modulo value.

The expectation window can only be used if modulo format is parameterized for the selected axis (cf. "A-0-0045, Modulo value").

M-0-0205 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE	PLC_data_type:	REAL
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value -2147483647.0	Maximum value 2147483647.0	Default value 0.0

4.4.25 M-0-0206, Maximum number of marker failures

Function This parameter is used to define the registration threshold for the registered number of marker failures.

If the limit value is set to "0", exceeding the limit value is not monitored.

The number of marker failures completed consecutively is displayed in parameter "M-0-0224, Number of marker failures, positive edge".

If the number of marker failures reaches the specified limit value, bit 3 of "M-0-0021, Status word" is set.

M-0-0206 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0	Maximum value 65535	Default value ---

4.4.26 M-0-0224, Number of marker failures, positive edge

Function There is the option to define an expectation window for the touch probe where the touch probe edges must be located in order to be evaluated.

When the "expectation window" is active, a "marker failure monitoring" can be activated in "M-0-0007, Control word". This marker failure monitoring registers the passing of the expectation window for the positive edge without a marker been registered, and increments the value of "M-0-0224, Number of marker failures, positive edge, touch probe".

The content of the parameter is reset to "0" if

- an edge has been registered when passing the expectation window,
- the marker failure monitoring has been deactivated by resetting bit 6 in "M-0-0007 Control word",
- the touch probe function is enabled in "M-0-0405, Enabling" touch probe 1.



The edges activated in "M-0-0007, Control word" are called markers.

A marker error is present as soon as the expectation window has been passed and an activated edge has not been registered.

Marker failure monitoring is only possible if modulo format is set for the selected axis (cf. "A-0-0045, Modulo value").

See also Functional Description "Touch Probe Function".

M-0-0224 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	65535	---

4.4.27 M-0-0225, Number of marker failures, negative edge

Function There is the option to define an expectation window for the touch probe where the touch probe edges must be located in order to be evaluated.

When the "expectation window" is active, a "marker failure monitoring" can be activated in "M-0-0007, Control word". This marker failure monitoring registers the passing of the expectation window for the negative edge without a marker been registered, and increments the value of "M-0-0224, Number of marker failures, positive edge, touch probe".

The content of the parameter is reset to "0" if

- an edge has been registered when passing the expectation window,
- the marker failure monitoring has been deactivated by resetting bit 6 in "M-0-0007 Control word",
- the touch probe function is enabled in "M-0-0405, Enabling" touch probe 1.



The edges activated in "[M-0-0007](#), Control word" are called markers.

A marker error is present as soon as the expectation window has been passed and an activated edge has not been registered.

Marker failure monitoring is only possible if modulo format is set for the selected axis (cf. "[A-0-0045](#), Modulo value").

See also Functional Description "Touch Probe Function".

M-0-0225 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
	Common:	Minimum value 0	Maximum value 65535	Default value ---

4.4.28 M-0-0401, Input status

Function The switching status of the probe input signal is indicated in this parameter.

M-0-0401 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
	Common:	Minimum value 0	Maximum value 1	Default value 0

4.4.29 M-0-0405, Enabling

Function By means of this parameter the enable signal of the measurement with the probe is applied. From the point of time of the enabling the signal edges are registered at the assigned input and the parameter values are recorded.



The touch probe function can only be enabled if the values of parameter [C-0-0400](#) and [C-0-0503](#) are identical.

Applies to the firmware versions 14V20 patch 4 and 14V22 patch 1 and above:

Due to a successful troubleshooting, the parameter response changed as follows:

When leaving Sercos phase 4, the touch probe is disabled (refer to [M-0-0024](#)) and enabling is reset. The reason is that possibly required data such as modulo and scaling can only be retrieved now in Sercos phase 4.

Structure

Value	Release of the touch probe	Comment
0	No	
1	Yes	

Tab. 4-127: Relevant bits of M-0-0405, Enabling

Use As soon as the enabling signal is applied, the following parameters are deleted:

- [M-0-0021](#), Status word,
- [M-0-0130](#), Measured value, positive edge,
- [M-0-0131](#), Measured value, negative edge,
- [M-0-0132](#), Difference value,
- [M-0-0140](#), Time stamp, positive edge,
- [M-0-0141](#), Timestamp, negative edge,
- [M-0-0224](#), Number of marker failures, positive edge,
- [M-0-0225](#), Number of marker failures, negative edge,
- [M-0-0409](#), Counter of measured values, positive edge,
- [M-0-0410](#), Counter of measured values, negative edge,
- [M-0-0411](#), Counter of difference values.



If single shot measurement is parameterized and no edge is activated, the enable signal is reset immediately, as the condition "every activated edge has been registered once" it is fulfilled.

[M-0-0405](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	1	---

4.4.30 [M-0-0409](#), Counter of measured values, positive edge

Function In this parameter, the number of measurements which were triggered by positive signal edges at the selected entrance is displayed. With every release, the counter is set to "0".

- Use**
- Activating the probe function through parameter "[M-0-0024](#), Command: Activation",
 - Activating the positive edge by setting bit 0 in parameter "[M-0-0007](#), Control word",
 - Apply enable signal by setting "[M-0-0405](#), Enabling".

[M-0-0409](#) - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	65535	---

4.4.31 [M-0-0410](#), Counter of measured values, negative edge

Function In this parameter, the number of measurements which were triggered by negative signal edges at the selected entrance is displayed. With every release, the counter is set to "0".

Describing individual parameters, arranged according to types

- Use**
- Activating the probe function through parameter "M-0-0024, Command: Activation",
 - Activating the negative edge by setting bit 1 in parameter "M1-0007, Control word",
 - Apply enable signal by setting "M-0-0405, Enabling".

M-0-0410 - Attributes:			
Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	65535	---

4.4.32 M-0-0411, Counter of difference values

- Function** This parameter indicates the number of the registered difference values.
- If the extended difference measurement is activated by setting bit 11 of parameter "M-0-0007, Control word", the difference is not calculated each time a measured value is output. Instead, the difference is only calculated if the edge matches the configured "difference to" edge.
- With every release, the counter is set to 0.

- Use**
- Activating the probe function through parameter "M-0-0024, Command: Activation",
 - Activating the negative edge by setting bit 1 in parameter "M1-0007, Control word"
 - Apply enable signal by setting "M-0-0405, Enabling".

M-0-0411 - Attributes:			
Function:	PARAMETER	Unit:	--
MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0	65535	---

4.4.33 M-0-1000, Command: Load basic touch probe parameters

- Function** This parameter is used as a command to load the basic parameters of the touch probe instance.

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading of the basic parameters.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading of the basic parameters.
- When the loading is complete, the control automatically resets the parameter to "0000000000000000".

M-0-1000 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, (P2+Stop)
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0	0x3	0

4.4.34 M-0-2100, List of all backup operation M-parameters

- Function** This list includes all M-parameters to be considered when backing up parameters. It is entered in the ID number format.
- The entries are sorted according to identity number in ascending order.
- Structure** The ID number format is as follows:

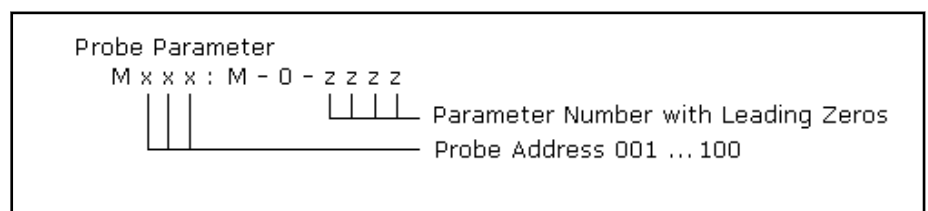


Fig. 4-139: ID number format

Use M0001: **M-0-0002** - Probe 1; Parameter **M-0-0002**.

M-0-2100 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		0x2D00000000	0x2D000000FF	---

4.5 Programmable limit switch parameters (N-parameters)

4.5.1 Overview: Programmable limit switches PLS (CFL01.1-N1), N-parameters



This programmable limit switch can only be used for an IndraControl CML25/45/65/75 with Sercos (Sercos basic cycle provides time basis for the programmable limit switch).

The following table shows the substitution of the C-parameters for up to four possible programmable limit switches via function module PLS (CFL01.1-N1) by N-parameters (for CML25 only PLS01 and PLS02).

The N-parameters display the data set for one programmable limit switch each.

Addressing takes place as for axes and controls:

N001...N004 for the respective programmable limit switch and the desired parameter, instead of

C-0-0325 now **N002: N-0-0300**.

Describing individual parameters, arranged according to types

N-parameters	Previous parameterization using C-parameters			
	PLS01	PLS02	PLS03	PLS04
N-0-0001, Logical switch track number	-	-	-	-
N-0-0002, Switch track name	-	-	-	-
N-0-0009, Osci: list of all N-parameters that can be oscilloscoped	-	-	-	-
N-0-0010, List of all N-parameters	-	-	-	-
N-0-0016, Project identification number	-	-	-	-
N-0-0300, Control word	C-0-0300	C-0-0325	C-0-0350	C-0-0375
N-0-0302, Signal selection	C-0-0302	C-0-0327	C-0-0352	C-0-0377
N-0-0303, Control signals	C-0-0303	C-0-0328	C-0-0353	C-0-0378
N-0-0304, Outputs	C-0-0304	C-0-0329	C-0-0354	C-0-0379
N-0-0305, Internal registers	C-0-0305	C-0-0330	C-0-0355	C-0-0380
N-0-0307, Reference axis configuration	C-0-0307	C-0-0332	C-0-0357	C-0-0382
N-0-0308, Reference axis position, additive	C-0-0308	C-0-0333	C-0-0358	C-0-0383
N-0-0309, Reference axis definition	C-0-0309	C-0-0334	C-0-0359	C-0-0384
N-0-0310, Hysteresis	C-0-0310	C-0-0335	C-0-0360	C-0-0385
N-0-0311, Lead time when switching on	C-0-0311	C-0-0336	C-0-0361	C-0-0386
N-0-0312, Lead time when switching off	C-0-0312	C-0-0337	C-0-0362	C-0-0387
N-0-0313, Switch track number	C-0-0313	C-0-0338	C-0-0363	C-0-0388
N-0-0314, Switch-on position of switch track	C-0-0314	C-0-0339	C-0-0364	C-0-0389
N-0-0315, Switch-off position of switch track	C-0-0315	C-0-0340	C-0-0365	C-0-0390
N-0-0316, Command: Initialize switch track	C-0-0316	C-0-0341	C-0-0366	C-0-0391
N-0-0317, Command: Activate switch track	C-0-0317	C-0-0342	C-0-0367	C-0-0392
N-0-0318, Output mode	C-0-0318	C-0-0343	C-0-0368	C-0-0393
N-0-0319, Switch-on duration	C-0-0319	C-0-0344	C-0-0369	C-0-0394
N-0-1000, Command: Load basic PLS parameters				
N-0-2100, List of all backup operation N-parameters				

Tab. 4-128: Parameter comparison

4.5.2 N-0-0000, Dummy, N-parameter

Function A-parameter serves as a placeholder; it does not have a function. It can be written and read cyclically.

Use Measure dead time for writing and reading.

N-0-0000 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
Memory:	NVRAM	Editability:	P0, P2, BB
Direct_access:	RW	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	+	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.5.3 N-0-0001, Logical switch track number

Function The parameter contains the logical PLS number (programmable limit switch).

N-0-0001 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	4	0

4.5.4 N-0-0002, Switch track name

Function A descriptive text for the instance of the programmable limit switch (PLS) can be saved in this parameter.

The text does not provide any functional meaning.

N-0-0002 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	NVRAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"PLS_name"

4.5.5 N-0-0009, Osci: list of all N-parameters that can be oscilloscoped

Function This parameter contains the list of all N-parameters which can be oscilloscoped.

N-0-0009 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.5.6 N-0-0010, List of all N-parameters

Function This list includes all N-parameters. The entry is made in ID number format. The entries are sorted according to identity number in ascending order.

Structure The ID number format is as follows:

Describing individual parameters, arranged according to types

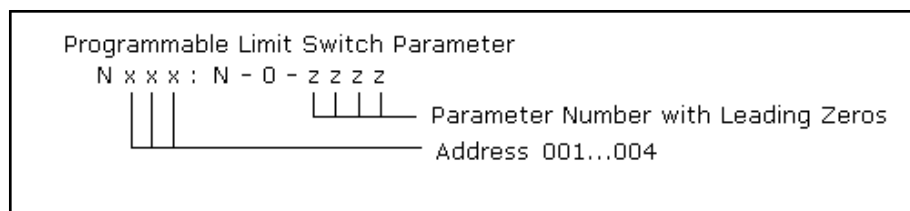


Fig. 4-140: ID number format

Use N001: [N-0-0002](#) - Programmable limit switch 1; Parameter [N-0-0002](#).

N-0-0010 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

4.5.7 N-0-0016, Project identification number

Function IndraWorks generates a unique character string in this parameter for the global identification of the project.

The character string is unique for each project.

This parameter is only intended for internal use.

N-0-0016 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x00	Maximum value 0xFF	Default value "Project ID number"

4.5.8 N-0-0300, Control word

Function Control word for the current programmable limit switch module on the control's module bus.

Structure	Bit	Name/function
	1..0	Output monitoring 0 0: Deactivated. 0 1: Activated: An error of error class 'FO' is generated in case of output overload. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	3..2	Voltage monitoring 0 0: Deactivated. 0 1: Activated: In case of undervoltage at the function module, an error of error class 'FO' is generated. 1 0: Activated: An error of error class 'F5' is generated in case of output overload.
	4	Function module 0: Deactivated, 1: Activated.
	5	Command function N-0-0316 0: Initialize switch track. 1: Initialize and activate switch track.

Tab. 4-129: Relevant bits in control word

Use The control word is checked when switching phases against the parameter "[C-0-0041](#), Local and function module bus, actual configuration". If there is no programmable limit switch module 'CFL01.1-N1' at the module bus and if bit 4 is set in the control word, the error "F0160024, Error in cross-check C-parameters" is generated.

N-0-0300 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	NVRAM	Editability:	(P2+Stop)
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x05

4.5.9 N-0-0302, Signal selection

Function This parameter is used to diagnose the current programmable limit switch. This parameter can be used to read out the bytes "Source_0.y" (low byte, y: bit 0...7) and "Source_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the current programmable limit switch module.

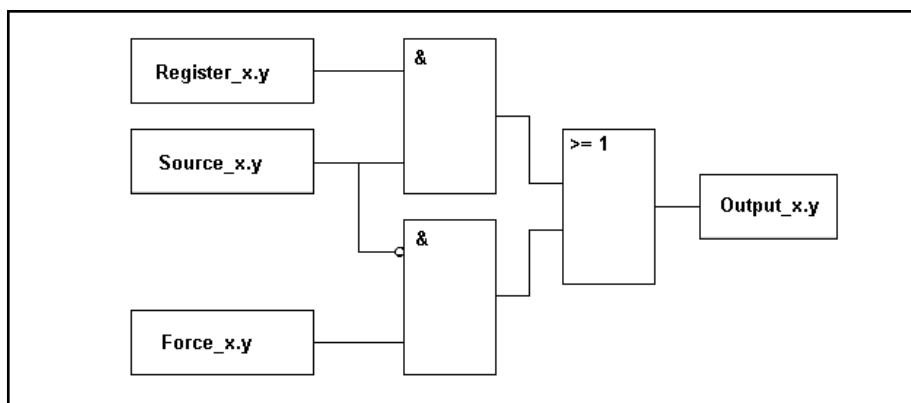
Structure

Fig. 4-141: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDA-TA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Source_0.y" and "Source_1.y" are cleared. These bytes can be used to define the signal source for each of the programmable limit switch's outputs.

N-0-0302 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.5.10 N-0-0303, Control signals

Function The parameter control signal is used to diagnose the current programmable limit switch.

This parameter can be used to read out the bytes "Force_0.y" (low byte, y: bit 0...7) and "Force_1.y" (high byte, y: bit 0...7) from the structure field "PLsData[]" for the current programmable limit switch module.

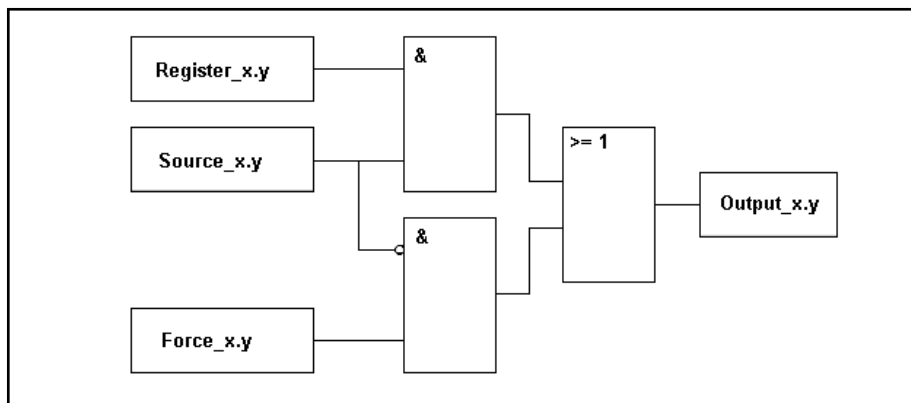
Structure

Fig. 4-142: Output control logic

Use The bytes "Force_0.y" and "Force_1.y" in the structure "ML_PLSDATA_SM" can or must be written in the PLC program.

When switching the control on and when resetting the PLC program, the bytes "Force_0.y" and "Force_1.y" are cleared. These bytes can be used to

override each of the programmable limit switch's outputs, depending on the content of the bytes "Source_0.y" and "Source_1.y" - the defined signal source.

N-0-0303 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.5.11 N-0-0304, Outputs

Function This parameter is used to diagnose the current programmable limit switch. This parameter can be used to read out the bytes "Output_0.y" (low byte, y: bit 0...7) and "Output_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the current programmable limit switch module.

Structure

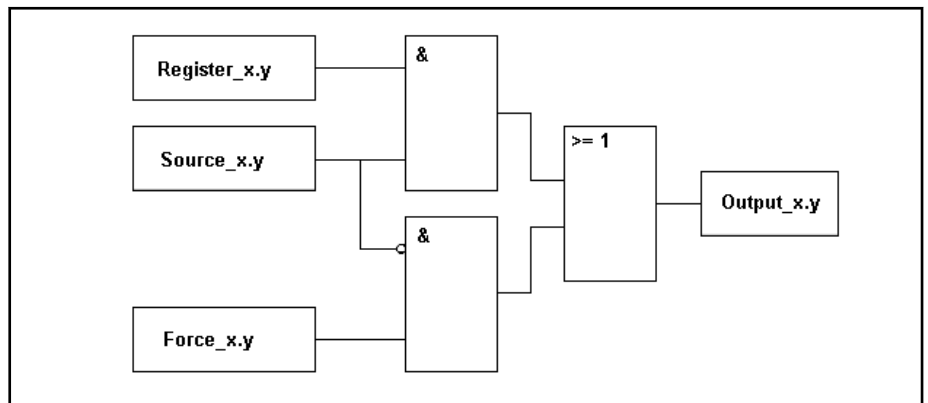


Fig. 4-143: Output control logic

Use The bytes "Source_0.y" and "Source_1.y" in the structure "ML_PLSDATA_SM" can only be read in the PLC program.

The control cyclically updates the bytes in operating mode. In operation mode, the function module's output signals can be processed in the PLC.

N-0-0304 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	---

4.5.12 N-0-0305, Internal registers

Function This parameter is used to diagnose the current programmable limit switch. This parameter can be used to read out the bytes "Register_0.y" (low byte, y: bit 0...7) and "Register_1.y" (high byte, y: bit 0...7) from the structure field "PlsData[]" for the current programmable limit switch module.

Describing individual parameters, arranged according to types

Structure

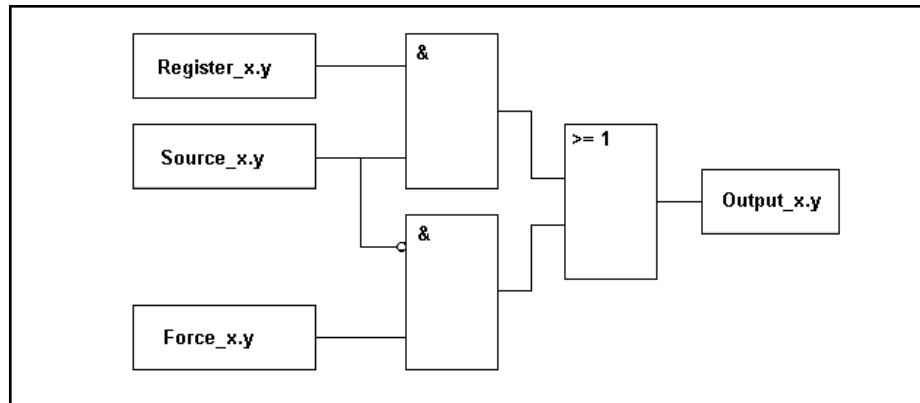


Fig. 4-144: Output control logic

Use The bytes "Register_0.y" and "Register_1.y" in the structure "ML_PLSDA-TA_SM" can only be read in the PLC program.

The bytes display the programmable limit switch's internal state and are cyclically updated by the control in operating mode. In operating mode, the programmable limit switch's output signals can be processed in the PLC.

N-0-0305 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	RO	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	---

4.5.13 N-0-0307, Reference axis configuration

Function Of the axes configured and activated in the control, up to eight of them can be selected for the programmable limit switch in this parameter.

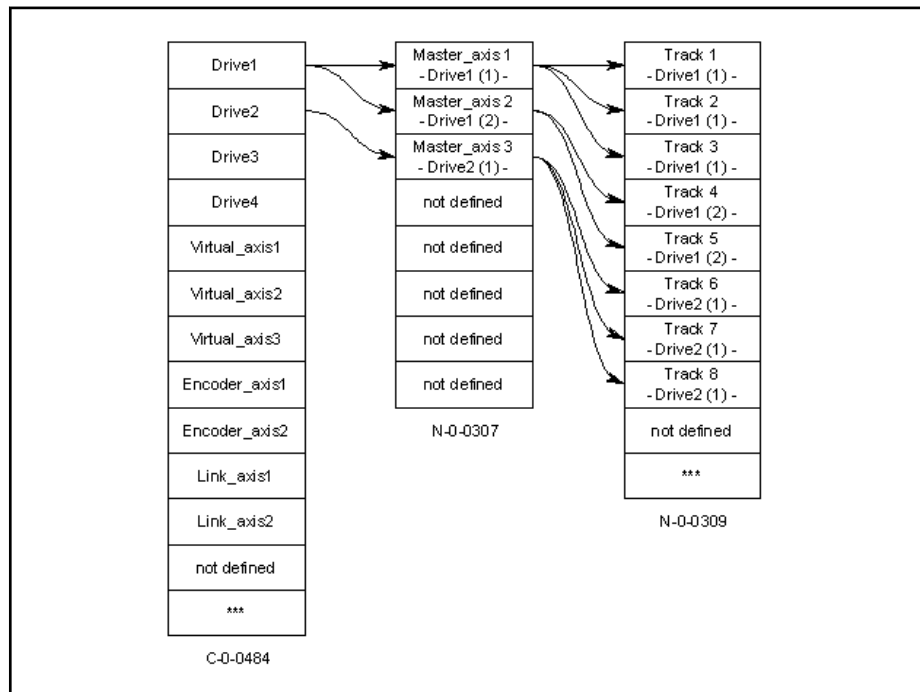


Fig. 4-145: Configuration and definition of reference axes

Structure The position and velocity of the selected axes are cyclically transmitted to the programmable limit switch in operation mode.

The reference axes are configured in parameterization mode. A single axis can be configured as a reference axis more than once. This allows switch tracks with a different position offset to be operated by the same axis.

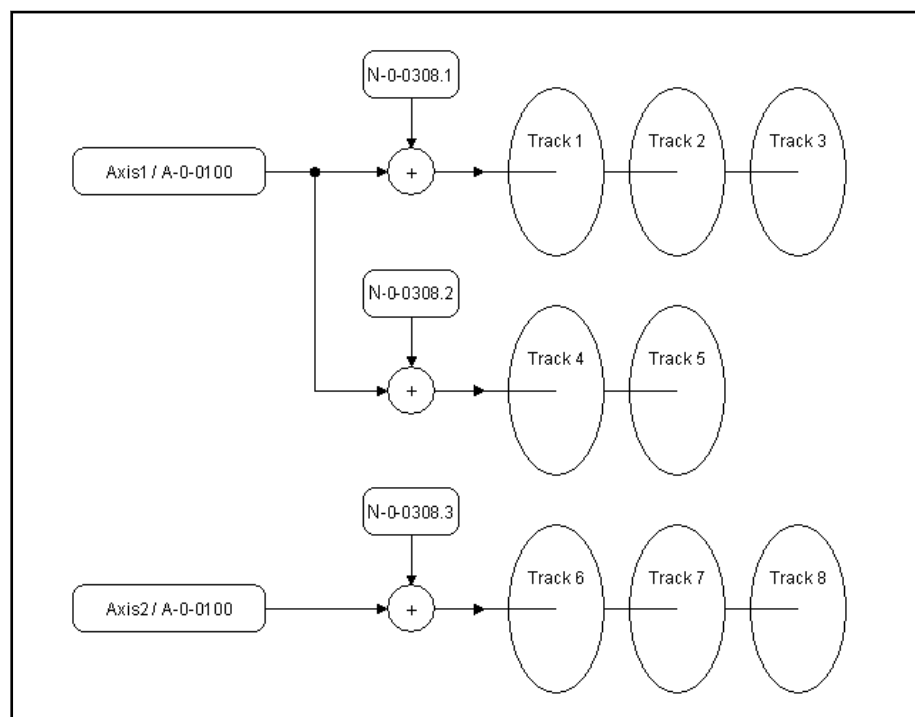


Fig. 4-146: Position offset

Use When switching from a lower to a higher phase, the reference axis configuration is checked against parameter "C-0-0484, Axes configuration list" and parameter "A-0-0024, Axis condition" of the respective axis. The error "F0160024, Error in cross-check C-parameters" is generated if one of the selected axes is deactivated or not configured.

N-0-0307 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
Common:		Minimum value	Maximum value	Default value
		0	64	0

4.5.14 N-0-0308, Reference axis position, additive

Function This parameter is used to move the position of the connected switch track relative to the position of the reference axis.

The position offset is entered in the input unit of the reference axis.

Describing individual parameters, arranged according to types

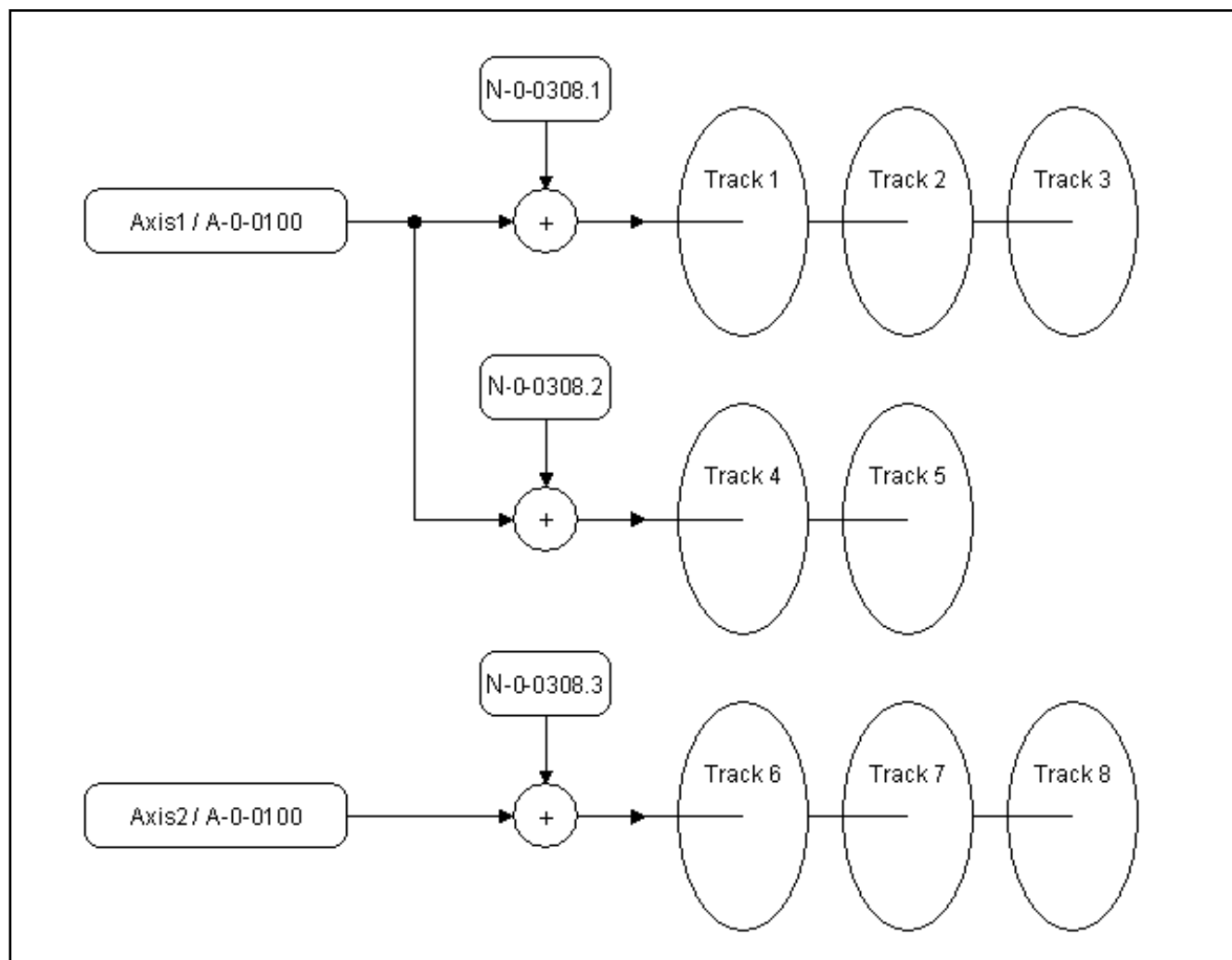


Fig. 4-147: Position offset

Use The position offset is cyclically transmitted to the programmable limit switch module and added to the switch track position after the hysteresis is calculated. As a result, a change to the position offset is active in its unmodified form.

$$X_{PLS} = \frac{(X_{MA} + \langle N-0-0308 \rangle) \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

PLS Programmable limit switch
MA Master axis (reference axis)

Fig. 4-148: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

N-0-0308 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-

Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	---	---	0.0

4.5.15 N-0-0309, Reference axis definition

Function This parameter is used to define the reference axis for each switch track. All reference axes configured in parameter "N-0-0307, Reference axis configuration" are available for selection.

In addition to the position and velocity of the selected reference axis, the position offset, parameter "N-0-0308, Reference axis position, additive", is assigned to the respective switch track.

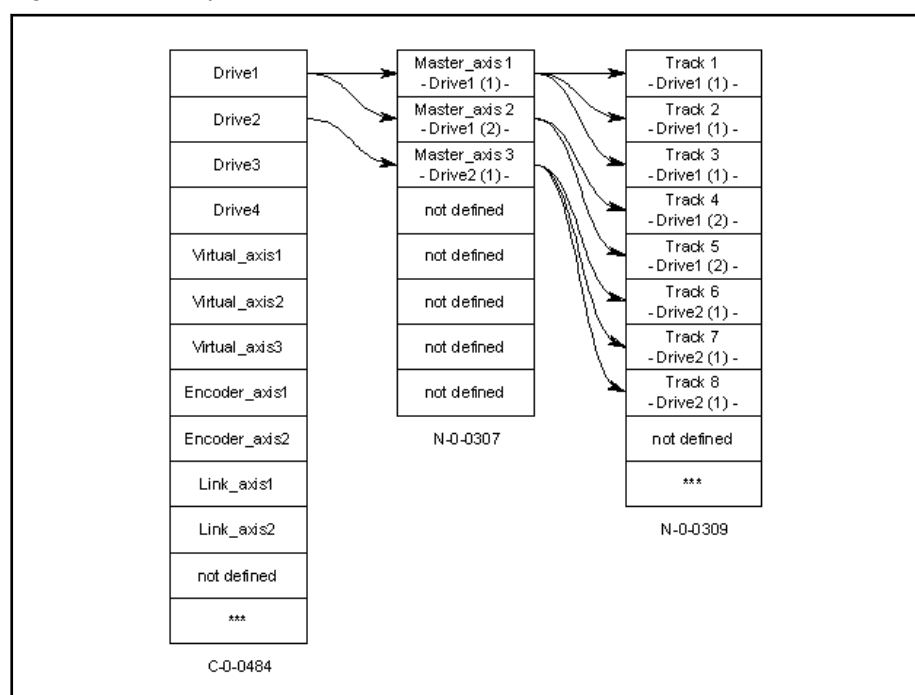


Fig. 4-149: Configuration and definition of reference axes

Use When switching from a lower to a higher phase, the reference axis definition is checked against parameter "N-0-0307, Reference axis configuration".

The error "F0160024, Error in cross-check C-parameter" is generated if one of the selected reference axes is deactivated or not configured.

N-0-0309 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT
	Memory:	NVRAM	Editability:	P2
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-

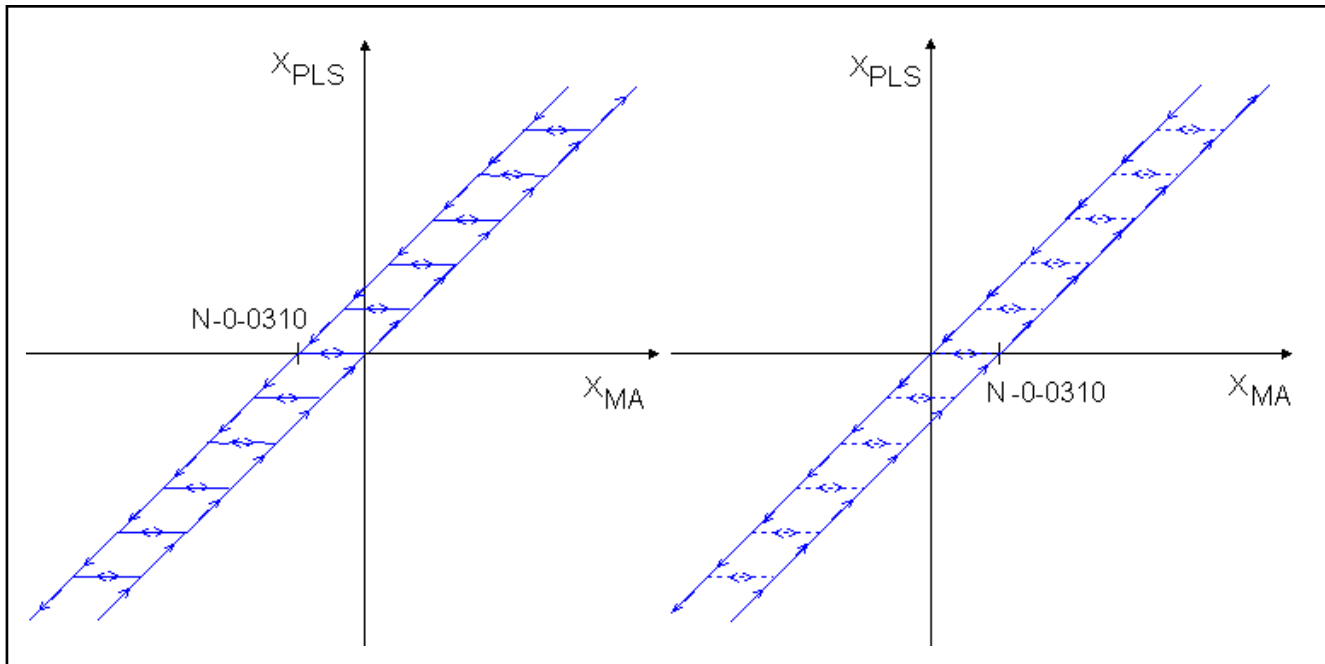
	Minimum value	Maximum value	Default value
Common:	0	8	0

4.5.16 N-0-0310, Hysteresis

Function This list of parameters is used to define a position hysteresis for each switch track.

The hysteresis functions direction-dependently, see figure:

Describing individual parameters, arranged according to types



X_{MA} Reference axis position

X_{PLS} Switch track position

Fig. 4-150: Negative and positive hysteresis

Use The position hysteresis is entered in the input unit of the reference axis.

The hysteresis serves to compensate position fluctuations. The fluctuations can cause the output on the programmable limit switch to jitter.

If a real axis comes to a standstill, the position controller moves. The velocity of this movement multiplied by the dead time to be compensated equals the standstill fluctuation.

If there is a delay with an axis, extrapolation errors occur. Half of the delay multiplied by the dead time to be compensated squared equals the extrapolation error.

$$H_{PLS} = \frac{H_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

MA Master axis (reference axis)

PLS Switch track

Fig. 4-151:



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

N-0-0310 - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
Memory:	NVRAM	Editability:	P2
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-

Common:	Minimum value	Maximum value	Default value
	---	---	0.0

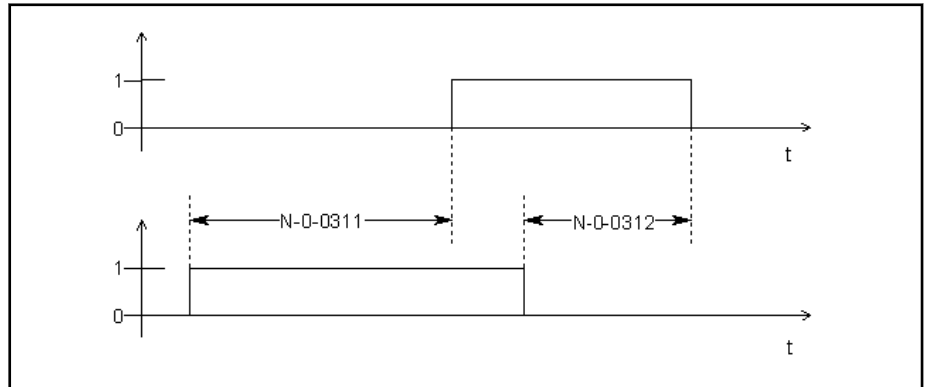
4.5.17 N-0-0311, Lead time when switching on

Function A) For state-controlled outputs

This parameter is used to define the dead time compensation for state-controlled outputs (see "N-0-0318, Output mode") when switching on an output on the programmable limit switch.

The programmable limit switch operates with a cycle time of 125 µs.

The programmable limit switch can compensate for the delay or switching time of the connected device within this time period.



PgUp Signal before the dead time compensation

PgDn Extrapolated output signal

Fig. 4-152: Dead time compensation (state-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * \langle N-0-0311 \rangle)) \bmod 2^{16}$$

Fig. 4-153: Extrapolation function for switching on an output

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

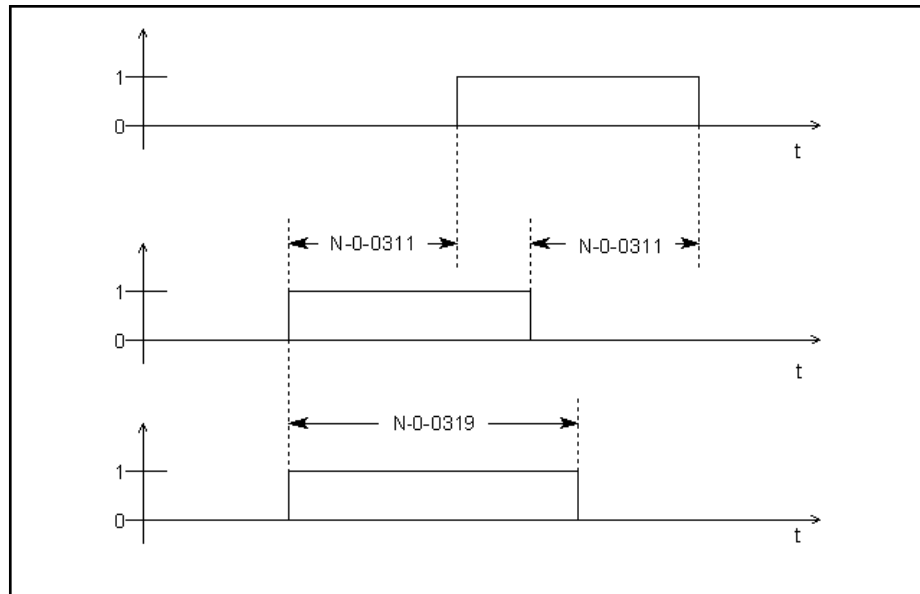
B) For time-controlled outputs

This parameter is used to define the dead time compensation for time-controlled outputs (see "N-0-0318, Output mode") when switching on and off outputs.

The programmable limit switch operates with a cycle time of 125 µs.

The programmable limit switch can compensate for the delay or switching time of the connected device within this time grid.

Describing individual parameters, arranged according to types



PgUp Signal before the dead time compensation
Center Extrapolated trigger signal
PgDn Time-controlled output signal

Fig. 4-154: Dead time compensation (time-controlled)

The dead time compensation extrapolates the switch track position by the switch track's current velocity. Therefore, when the switch track accelerates and has delays, extrapolation errors occur.

$$X_{PLS} = (X_{PLS} + (V_{PLS} * \langle N-0-0311 \rangle)) \bmod 2^{16}$$

Fig. 4-155: Extrapolation function for switching on an output



The programmable limit switch only accepts time specifications within the internal time period of 125 µs.

N-0-0311 - Attributes:

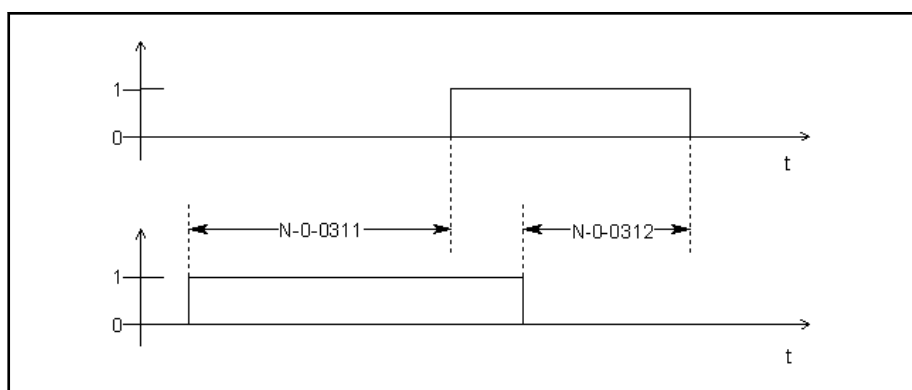
Function:	PARAMETER	Unit:	µs
MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	1000000	0

4.5.18 N-0-0312, Lead time when switching off

Function This parameter is used to control the dead time compensation when switching off an output at the programmable limit switch. The parameter is only applied if the output is operated in a state-controlled manner (see "N-0-0318, Output mode").

The programmable limit switch operates with a cycle time of 125 µs. The programmable limit switch can compensate for the delay or switching time of the connected device within this time slot.



Up Signal before the dead time compensation

Down Extrapolated output signal

Fig. 4-156: Dead time compensation (state-controlled)

Use The dead time compensation extrapolates the switch track position by the current velocity of the switch track. Thus, extrapolation errors occur when the switch track accelerates and decelerates.

$$XC_{PLS} = (X_{PLS} + (V_{PLS} * N-0-0312)) \bmod 2^{16}$$

Fig. 4-157: Extrapolation function for switch-off

The dead time compensation can be set separately for switching on and off an output. As a result, devices can be optimally controlled with various switching times.



The programmable limit switch only accepts time specifications within the internal time slot of 125 µs.



The parameter "N-0-0311, Lead time when switching on" (see "N-0-0318, Output mode").

N-0-0312 - Attributes:	Function:	PARAMETER	Unit:	µs
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
Common:		Minimum value	Maximum value	Default value
		0	1000000	0

4.5.19 N-0-0313, Switch track number

Function This parameter is used to activate up to 64 switches and assign the 16 switch tracks.

Structure The list has 64 possible spots (switches) that are assigned with "0" after initialization (no switch track is assigned).

If only one switch is activated and assigned one of the 16 switch tracks, the number of the switch track is available in place of "0".

N-0-0313 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE_VAR	PLC_data_type:	ARRAY of UINT

Describing individual parameters, arranged according to types

Memory:	NVRAM	Editability:	P2, BB
Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	+
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 16	Default value 0

4.5.20 N-0-0314, Switch-on position of switch track

Function This parameter and parameter "N-0-0315, Switch-off position of switch track" are used to define a switch's position on the switch track.

The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PIS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle * 2^{16}}{\langle A-0-0045 \rangle}$$

Fig. 4-158: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

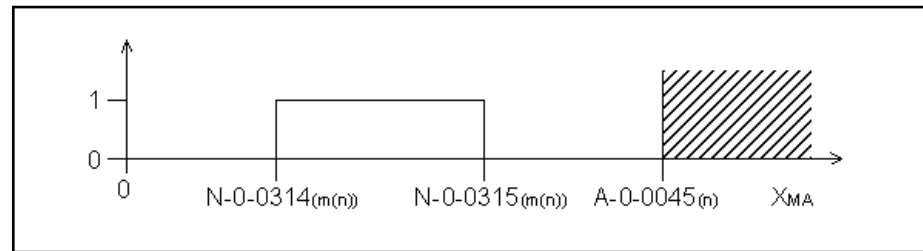


Fig. 4-159: Switch-on position less than switch-off position

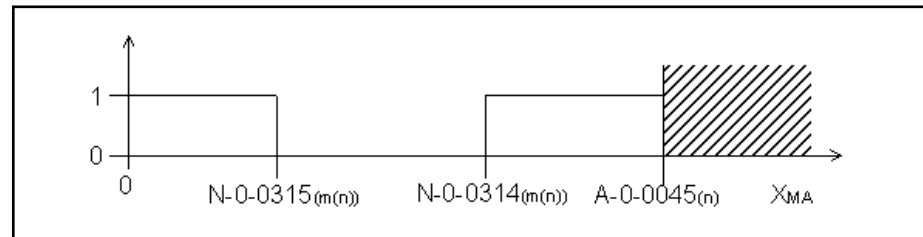


Fig. 4-160: Switch-on position greater than switch-off position

The parameter "N-0-0313, Switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

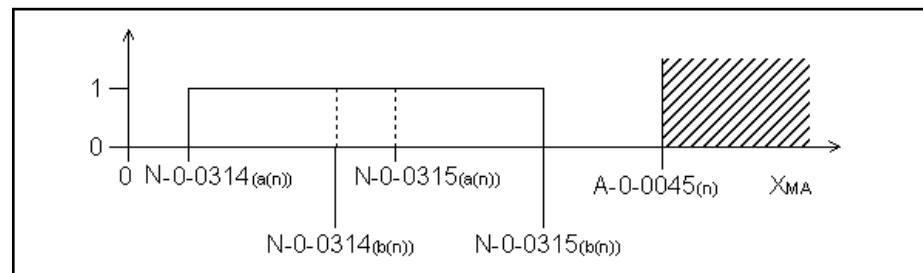


Fig. 4-161: Overlapping switches

N-0-0314 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:		---	---	0.0

4.5.21 N-0-0315, Switch-off position of switch track

Function This parameter and parameter "N-0-0314, Switch-on position of switch track" are used to define a switch's position on the switch track.

The switch-on position of switch track is entered in the input unit of the switch track.

$$X_{PIS} = \frac{X_{MA} \bmod \langle A-0-0045 \rangle}{\langle A-0-0045 \rangle} * 2^{16}$$

Fig. 4-162: Mapping function



The parameter "A-0-0045, Modulo value" is also used for axes with scaling in absolute format in the mapping functions for the programmable limit switch.

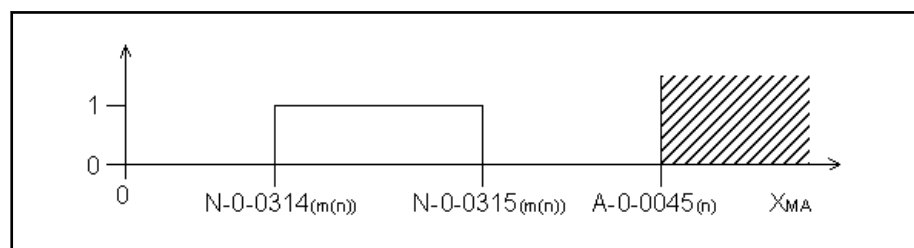


Fig. 4-163: Switch-on position less than switch-off position

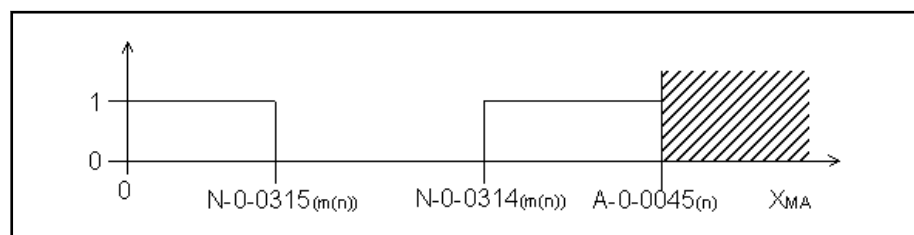


Fig. 4-164: Switch-on position greater than switch-off position

The parameter "N-0-0313, Switch track numbers" is used to assign several switches to one switch track. If the assignments of these switches overlap, an individual switch is established on the switch track.

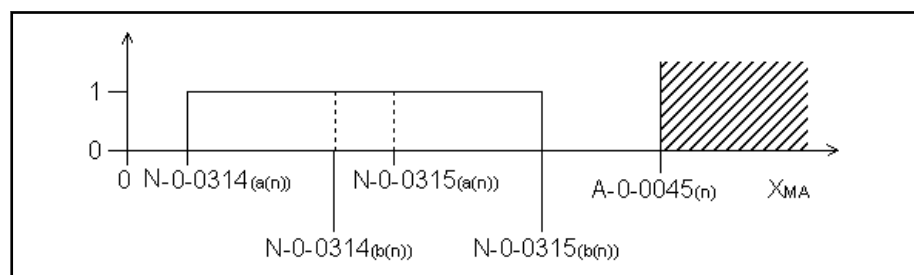


Fig. 4-165: Overlapping switches

Describing individual parameters, arranged according to types

N-0-0315 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	FLOAT, 4BYTE_VAR	PLC_data_type:	ARRAY of REAL
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0.0

4.5.22 N-0-0316, Command: Initialize switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode.

The passive group in the following parameters is reinitialized using this command

- [N-0-0311](#), Lead time when switching on,
- [N-0-0312](#), Lead time when switching off,
- [N-0-0313](#), Switch track number,
- [N-0-0314](#), Switch-on position of switch track,
- [N-0-0315](#), Switch-off position of switch track,
- [N-0-0318](#), Output mode,
- [N-0-0319](#), Switch-on duration.

Use The initialized switch track group is immediately activated, depending on the setting in the "[N-0-0300](#), Control word, bit 5= 1".

The switch track group can be switched at all times using the command "[N-0-0317](#), Command: Activate switch track".



When switching on the operation mode, the two switch track groups are initialized identically.

N-0-0316 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	0

4.5.23 N-0-0317, Command: Activate switch track

Function Two groups of switch tracks are implemented in the programmable limit switch module. One of the two groups is active in the operating mode. The passive group is activated using the command. The active group is simultaneously deactivated.

The passive switch track group can then be reinitialized with "[N-0-0316](#), Command: Initialize switch track".



When the operation mode is switched on, the first switch track group is activated.

N-0-0317 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

4.5.24 N-0-0318, Output mode

Function When switching from a lower to a higher phase, this parameter is checked against parameter "N-0-0309, Reference axis definition".

If no reference axis was defined for the switch track and the output is activated (direction of motion $\neq$ zero), the error "F0160024, Error in cross-check C-parameters" is generated.

Structure

Bit	Designation/function
1..0	Direction of movement 0 0: deactivated: The internal output is deactivated. 0 1: activated depending on direction: The switch track's sampling signal is used for movement in the positive direction. 1 0: activated depending on direction: The switch track's sampling signal is used for movement in the negative direction. 1 1: activated independent of the direction The switch track's sampling signal is used irrespective of the motion direction.
2	Control mode 0: state-controlled: The switch track's sampling signal controls the register bit of the programmable limit switch. 1: time-controlled: The switch track's sampling signal controls the pulse generator's clock input. The pulse generator controls the register bit of the programmable limit switch.

Tab. 4-130: Relevant bits in the parameter

Use This parameter is used to control the internal register of the programmable limit switch (register_0 and register_1), depending on the direction of movement (forward and/or backward) of the reference axis.

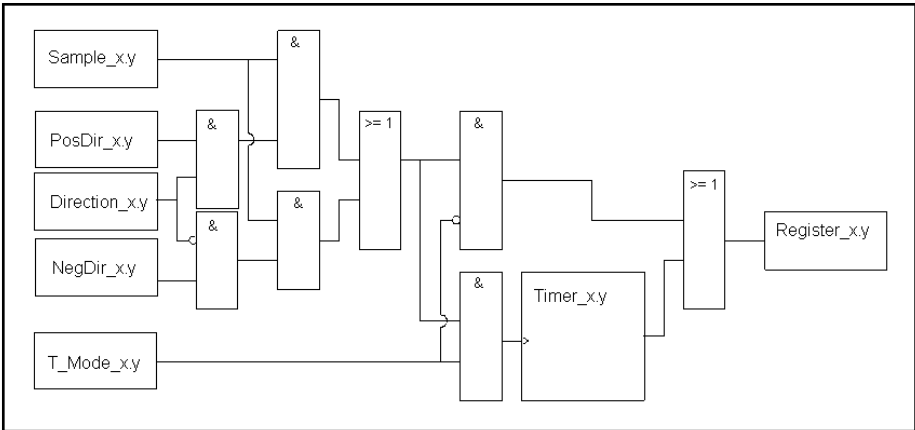
A register bit can be operated directly (state-controlled) or by a pulse generator (time-controlled).

The control mode influences the dead time compensation (see parameter "N-0-0311, Lead time when switching on" and "N-0-0312, Lead time when switching off").

The pulse duration in time-controlled mode can be defined in parameter "N-0-0319, Switch-on duration".



The physical outputs of the programmable limit switch can be overridden from the PLC program (see parameter "N-0-0303, Control signal").



Sample_x Switch track's sampling signal
PosDir_x Active in positive movement direction
Direction_x Current movement direction
NegDir_x Active in positive movement direction
T_Mode_x Time-controlled mode
Register_x Internal register

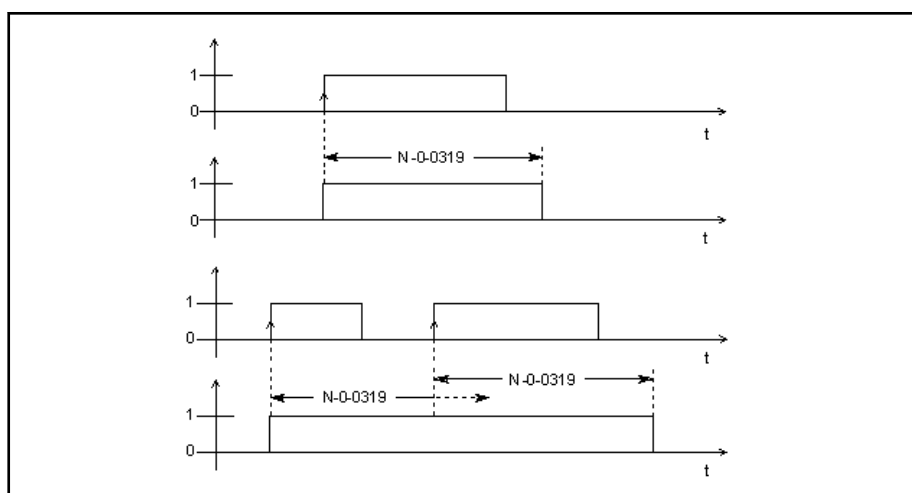
Fig. 4-166: Output control

N-0-0318 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 2BYTE_VAR	PLC_data_type:	ARRAY of WORD
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value 0

4.5.25 N-0-0319, Switch-on duration

Function This parameter is used to define the pulse duration in time-controlled mode (see parameter "N-0-0318, Output mode").

The programmable limit switch operates with a cycle time of 125 µs. Within this time period, the programmable limit switch can generate pulses with a maximum duration of one second.



PgUp Single pulse
PgDn Extended pulse

Fig. 4-167: Pulse generator

Use The pulse generator is started by a rising edge at the clock input. The pulse generator is reset and restarted with each additional rising edge. This extends the output pulse for active pulse generators.



The programmable limit switch only accepts time specifications within the internal time period of 125 μ s.

N-0-0319 - Attributes:	Function:	PARAMETER	Unit:	μ s
	MLC_data_type:	INT_DEC, 4BYTE_VAR	PLC_data_type:	ARRAY of DINT
	Memory:	NVRAM	Editability:	P2, BB
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	+
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 125	Maximum value 1000000	Default value 125

4.5.26 N-0-1000, Command: Load basic PLS parameters

Function This parameter is used as a command to load the basic parameters of the programmable limit switch instance.

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading of the basic parameters.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading of the basic parameters.
- When the loading is complete, the control automatically resets the parameter to "0000000000000000".

N-0-1000 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, (P2+Stop)

Describing individual parameters, arranged according to types

Direct_access:	--	MinMax_check:	+
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
Common:	Minimum value 0	Maximum value 0x3	Default value 0

4.5.27 N-0-2100, List of all backup operation N-parameters

- Function** This list includes all N-parameters to be considered when backing up parameters. It is entered in the ID number format.
The entries are sorted according to identity number in ascending order.
- Structure** The ID number format is as follows:

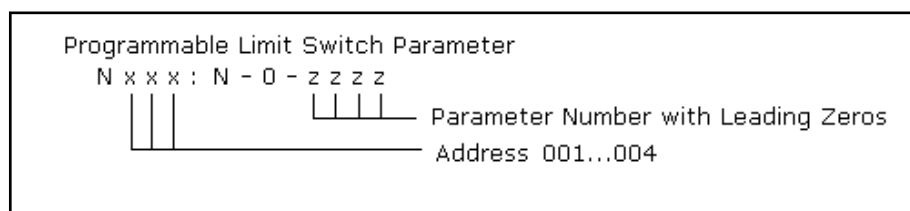


Fig. 4-168: ID number format

Use N001: [N-0-0002](#) - Programmable limit switch 1; Parameter [N-0-0002](#).

N-0-2100 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value 0x2E 0000 0000	Maximum value 0x2E 0000 0FFF	Default value ---

4.6 Oscilloscope parameters (O-parameters)

4.6.1 Oscilloscope parameters, general information

The O-parameters display the data set for each oscilloscope channel.
Addressing takes place as for axes and controls:
O001...O016 for the respective oscilloscope channel
and the desired parameter,
O002: [O-0-0002](#), Channel name, list of all parameters that can be oscilloscoped, channel 2.



The following controls support this parameter type:

- IndraLogic XLC L25, L45, L65 with onboard Sercos III bus,
- IndraMotion MLC L25, L45, L65, L75, XM2*.

4.6.2 O-0-0000, Dummy, O-parameter

- Function** A-parameter serves as a placeholder; it does not have a function. The parameter can be written and read cyclically.
- Use** Measure dead time for writing and reading.

O-0-0000 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	P0, P2, BB
	Direct_access:	RW	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

4.6.3 O-0-0001, Logical channel number

Function The logical channel number of the selected instance can be read from this parameter.

O-0-0001 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 2BYTE	PLC_data_type:	UINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

4.6.4 O-0-0002, Channel name

Function This parameter contains the channel's name.

The name contains

- the channel number,
- the configured IDN and
- names of the configured IDN.

Example:

Channel2: A002:A-0-0100, Actual position value

O-0-0002 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Channel_name"	

4.6.5 O-0-0003, Signal selection

Function The IDN entered in this parameter determines the signal that is to be recorded by the channel.

Use Only IDNs included in the list "C-0-0803, Signal selection list" are allowed.



The measuring channel is deactivated with the entry "0" or "C-0-0000".

After the recording is completed, the recorded measured values are in parameter "O-0-0004, Measured value list".

Describing individual parameters, arranged according to types

O-0-0003 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE	PLC_data_type:	MB_IDN
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

4.6.6 O-0-0004, Measured value list

Function	The measured values from the channel of the oscilloscope function are saved in this parameter in a chronological, consecutive order. The oldest measured value is the first element in the measured value list.
Use	The signal defined by the IDN entered in "O-0-003, Signal selection" is recorded.



Attribute, unit, etc. are automatically adjusted to the selected signal.

O-0-0004 - Attributes:	Function:	PARAMETER	Unit:	O-0-0003
	MLC_data_type:	DOUBLE, 8BYTE_VAR	PLC_data_type:	ARRAY of LREAL
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

4.6.7 O-0-0005, AUX signal path

Function	This parameter is only intended for internal use.

O-0-0005 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

4.6.8 O-0-0006, AUX signal

Function	This parameter is only intended for internal use.

O-0-0006 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_HEX, 8BYTE	PLC_data_type:	ULINT
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	-
	Var.data_type:	+	Var.min/max_value:	-
	Oscilloscope:	+	Probe:	-
		Minimum value	Maximum value	Default value
Common:	---	---	---	---

4.6.9 O-0-0007, List index

Function The number entered into this parameter is used as index for list parameters. The first list element is the index 0.
If no list parameter is entered into the parameter [O-0-0003](#), the parameter [O-0-0007](#) is ignored.

O-0-0007 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	UINT_DEC, 4BYTE	PLC_data_type:	UDINT
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

4.6.10 O-0-0009, Osci: list of all O-parameters that can be oscilloscoped

Function This parameter contains the list of all O-parameters which can be oscilloscoped.

O-0-0009 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

4.6.11 O-0-0010, List of all O-parameters

Function This list includes all O-parameters. The entry is made in ID number format. The entries are sorted by meaning and how they relate to each other and not by ID number or alphabetically.

O-parameters are stored in the order of these entries.

Structure The ID number format is as follows:

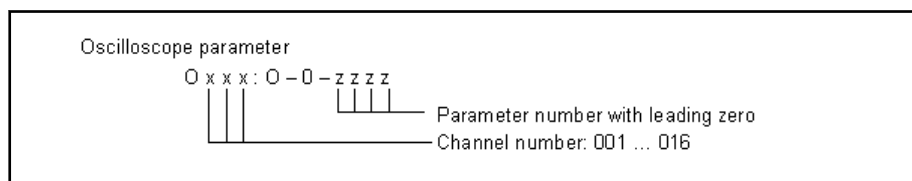


Fig. 4-169: ID number format for an O-parameter

Use 0001:[O-0-0002](#) - Channel 1; Parameter [O-0-0002](#).

O-0-0010 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-
	Common:	Minimum value ---	Maximum value ---	Default value ---

Describing individual parameters, arranged according to types

	Minimum value	Maximum value	Default value
Common:	0x2F00000000	0x2F00000FFF	---

4.6.12 O-0-0016, Project identification number

Function IndraWorks generates a unique character string in this parameter for the global identification of the project.

The character string is unique for each project.

This parameter is only intended for internal use.

O-0-0016 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	TEXT, 1BYTE_VAR	PLC_data_type:	STRING
	Memory:	FLASH	Editability:	P0, P2, BB
	Direct_access:	--	MinMax_check:	-
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0x00	0xFF	"Project ID number"

4.6.13 O-0-0021, Channel status

Function This parameter describes the current value of the channel status.

O-0-0021 - Attributes:	Function:	PARAMETER	Unit:	--
	MLC_data_type:	BINARY, 4BYTE	PLC_data_type:	DWORD
	Memory:	RAM	Editability:	READ_ONLY
	Direct_access:	RO	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	---	---	0x00

4.6.14 O-0-1000, Command: Load basic oscilloscope parameters

Function This parameter is used as a command to load the basic parameters of the oscilloscope channel.

Use *Execution in the parameter editor:*

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading of the basic parameters.
- After the loading process is complete, the control automatically resets the parameter to "0000000000000000".

When using the parameter, e.g. from the PLC:

- Enter the binary value "0000000000000011" (=0x0003) in this parameter. This triggers the loading of the basic parameters.
- After loading, the control automatically resets the parameter to "0000000000000000".

O-0-1000 - Attributes:	Function:	COMMAND	Unit:	--
	MLC_data_type:	BINARY, 2BYTE	PLC_data_type:	WORD
	Memory:	RAM	Editability:	P0, (P2+Stop)
	Direct_access:	--	MinMax_check:	+
	Var.data_type:	-	Var.min/max_value:	-
	Oscilloscope:	-	Probe:	-

	Minimum value	Maximum value	Default value
Common:	0	0x3	0

4.6.15 O-0-2100, List of all backup operation O-parameters

- Function

This list includes all O-parameters to be considered when backing up parameters. It is entered in the ID number format.

The entries are sorted by description and their relation and not by ID number or alphabetically.

O-parameters are stored in the order of these entries.
- Structure

The ID number format is as follows:

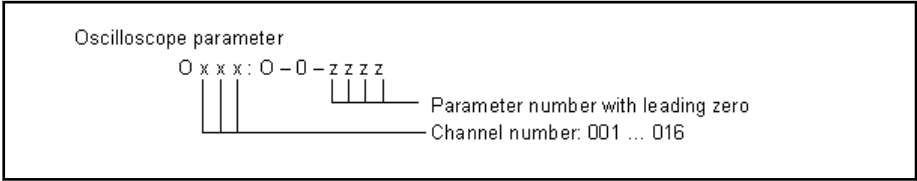


Fig. 4-170: ID number format for an O-parameter

- Use

O001:**O-0-0002** - Channel 1; Parameter **O-0-0002**.
- O-0-2100** - Attributes:

Function:	PARAMETER	Unit:	--
MLC_data_type:	MLC_IDN, 8BYTE_VAR	PLC_data_type:	ARRAY of MB_IDN
Memory:	RAM	Editability:	READ_ONLY
Direct_access:	--	MinMax_check:	-
Var.data_type:	-	Var.min/max_value:	-
Oscilloscope:	-	Probe:	-
	Minimum value	Maximum value	Default value
Common:	0x2F00000000	0x2F00000FFF	---

5 Comparing A-/C- or S-/P-parameters

5.1 IndraDrive: A-/C- ==> S-/P-parameters (calculation in the control)

5.1.1 General information



The information to be transferred from the A- and C-parameters differ for the drive types **IndraDrive**, **SercosDrive** and **HydraulicDrive** with regard to the location of the motion sequence calculation:

- [IndraDrive, calculation in the drive, page 733](#),
- [IndraDrive, calculation in the control, page 729](#),
- [SercosDrive, calculation in the Control, page 738](#),
- [HydraulicDrive, calculation in the drive, page 745](#),
- [HydraulicDrive, calculation in the control, page 742](#),
- **Ident_xyz** means bit-identical copy of the source parameter on the target parameter,
- **Used_xyz** means that at least one bit of the target parameter is affected.



For axes without position feedback (Open Loop), the data transfer is omitted for a part of the A-parameters to the S-/P-parameters, since these are not available.

The parameters are available in the image for the control interpolator and for import and export.

The parameters are highlighted in the following tables and explained in the key.

5.1.2 IndraDrive, calculation in the control, A-0-0000 - A-0-0499

IDN, parameter name	Ident_IDC	Used_IDC
A-0-0002 , Axis name	S-0-0142	S-0-0142 S-0-1302.0.3
A-0-0007 , Axis configuration	-	S-0-0032, S-0-0033, S-0-0034
A-0-0021 , Axis status	-	AT configuration
A-0-0022 , Extended axis status	-	AT configuration
A-0-0023 , Axis diagnostic number	-	S-0-0390
A-0-0024 , Axis state	-	S-0-0139
A-0-0028 , Travel range limit switch	P-0-0090	P-0-0090
A-0-0029 , Position polarities	S-0-0055	S-0-0055
A-0-0030 , Position limit value, positive	S-0-0049	S-0-0049
A-0-0031 , Position limit value, negative	S-0-0050	S-0-0050

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_IDC	Used_IDC
A-0-0032, Velocity limit value, positive	S-0-0038	S-0-0038
A-0-0033, Velocity limit value, negative	S-0-0039	S-0-0039
A-0-0034, Acceleration limit value, bipolar	S-0-0138	S-0-0138, P-0-1203, P-0-1213
A-0-0035, Velocity limit value, bipolar	S-0-0091	S-0-0091
A-0-0038, Torque/force limit value, bipolar	S-0-0092	S-0-0092
A-0-0039, Torque/force limit value, positive	S-0-0082	S-0-0082
A-0-0040, Torque/force limit value, negative	S-0-0083	S-0-0083
A-0-0045, Modulo value	S-0-0103	S-0-0103
A-0-0048, Velocity polarities	S-0-0043	S-0-0043
A-0-0049, Torque-/force polarities	S-0-0085	S-0-0085
A-0-0050, Scaling type for torque/force data	S-0-0086	S-0-0086
A-0-0051, Scaling factor for torque/force data	S-0-0093	S-0-0093
A-0-0052, Scaling exponent for torque/force data	S-0-0094	S-0-0094
A-0-0053, Scaling type for acceleration data	S-0-0160	S-0-0160
A-0-0054, Scaling factor for acceleration data	S-0-0161	S-0-0161
A-0-0055, Scaling exponent for acceleration data	S-0-0162	S-0-0162
A-0-0056, Scaling type for velocity data	S-0-0044	S-0-0044
A-0-0057, Scaling factor for velocity data	S-0-0045	S-0-0045
A-0-0058, Scaling exponent for velocity data	S-0-0046	S-0-0046
A-0-0059, Scaling type for position data ¹⁾	S-0-0076	S-0-0076
A-0-0060, Scaling factor for translatory position data	S-0-0077	S-0-0077
A-0-0061, Scaling exponent for translatory position data	S-0-0078	S-0-0078
A-0-0062, Position resolution, rotatory	S-0-0079	S-0-0079
A-0-0063, Scaling type for temperature data	S-0-0208	S-0-0208
A-0-0064, Torque/Force reference value	S-0-0111, P-0-0051	S-0-0111, P-0-0051
A-0-0100, Actual position value	S-0-0051	S-0-0051
A-0-0101, Actual position value, 8 bytes	S-0-0051	S-0-0051
A-0-0102, Actual velocity value	S-0-0040	S-0-0040
A-0-0103, Actual acceleration value	S-0-0164	S-0-0164
A-0-0110, Actual torque/force value	S-0-0084	S-0-0084
A-0-0221, Torque/force window		S-0-0826
A-0-0242, Position control, synchronization acceleration ²⁾	P-0-0142	P-0-0142
A-0-0243, Position control, synchronization velocity ²⁾	P-0-0143	P-0-0143

¹⁾

In A-0-0059 of an encoder axis, it is not synchronized with S-0-0076 of the drive on which the measurement encoder of the encoder axis is configured.

2)

For an axis without position feedback (open loop), the drive parameter is not available for this axis parameter. Thus, no synchronization is performed.

5.1.3 IndraDrive, calculation in the control, A-0-0500 - A-0-2999

IDN, parameter name	Ident_IDC	Used_IDC
A-0-0500, Configuration of user-defined command value A	S-0-0024	S-0-0024
A-0-0502, Configuration of user-defined command value B	S-0-0024	S-0-0024
A-0-0504, Configuration of user-defined command value C	S-0-0024	S-0-0024
A-0-0506, Configuration of user-defined command value D	S-0-0024	S-0-0024
A-0-0508, Configuration of user-defined command value E	S-0-0024	S-0-0024
A-0-0510, Reserved	S-0-0024	S-0-0024
A-0-0520, Configuration of actual user-defined value A	S-0-0016	S-0-0016
A-0-0522, Configuration of actual user-defined value B	S-0-0016	S-0-0016
A-0-0524, Configuration of actual user-defined value C	S-0-0016	S-0-0016
A-0-0526, Configuration of actual user-defined value D	S-0-0016	S-0-0016
A-0-0527, Container of actual user-defined value D	S-0-0016	S-0-0016
A-0-0528, Configuration of actual user-defined value E	S-0-0016	S-0-0016
A-0-0529, Container of actual user-defined value E	S-0-0016	S-0-0016
A-0-0530, Configuration of actual user-defined value F	S-0-0016	S-0-0016
A-0-0531, Container of actual user-defined value F	S-0-0016	S-0-0016
A-0-0540, Configuration of user-defined command value, bit A	S-0-0027	S-0-0027
A-0-0541, Configuration of user-defined command value, bit number A	S-0-0329	S-0-0329
A-0-0542, User-defined command value, bit number A	S-0-0145	S-0-0145
A-0-0543, Configuration of user-defined command value, bit B	S-0-0027	S-0-0027
A-0-0544, Configuration of user-defined command value, bit number B	S-0-0329	S-0-0329
A-0-0545, User-defined command value, bit number B	S-0-0145	S-0-0145
A-0-0546, Configuration of user-defined command value, bit C	S-0-0027	S-0-0027
A-0-0547, Configuration of user-defined command value, bit number C	S-0-0329	S-0-0329
A-0-0548, User-defined command value, bit number C	S-0-0145	S-0-0145
A-0-0549, Configuration of user-defined command value, bit D	S-0-0027	S-0-0027
A-0-0550, Configuration of user-defined command value, bit number D	S-0-0329	S-0-0329
A-0-0551, User-defined command value, bit number D	S-0-0145	S-0-0145
A-0-0560, Configuration of actual user-defined value, bit A	S-0-0026	S-0-0026
A-0-0561, Configuration of actual user-defined value, bit number A	S-0-0328	S-0-0328
A-0-0562, Actual user-defined value, bit number A	S-0-0144	S-0-0144
A-0-0563, Configuration of actual user-defined value, bit B	S-0-0026	S-0-0026
A-0-0564, Configuration of actual user-defined value, bit number B	S-0-0328	S-0-0328
A-0-0565, Actual user-defined value, bit number B	S-0-0144	S-0-0144

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_IDC	Used_IDC
A-0-0566, Configuration of actual user-defined value, bit C	S-0-0026	S-0-0026
A-0-0567, Configuration of actual user-defined value, bit number C	S-0-0328	S-0-0328
A-0-0568, Actual user-defined value, bit number C	S-0-0144	S-0-0144
A-0-0569, Configuration of actual user-defined value, bit D	S-0-0026	S-0-0026
A-0-0570, Configuration of actual user-defined value, bit number D	S-0-0328	S-0-0328
A-0-0571, Actual user-defined value, bit number D	S-0-0144	S-0-0144
A-0-0596, List of freely configurable parameters in the MDT	S-0-0188	S-0-0188
A-0-0597, List of freely configurable parameters in the AT	S-0-0187	S-0-0187
A-0-0598, List of configurable parameters in signal control word	S-0-0399	S-0-0399
A-0-0599, List of configurable parameters in signal status word	S-0-0398	S-0-0398
A-0-1030, Command: Clear all axis errors	-	S-0-0099
A-0-2206, Target force	S-0-0080	S-0-0080
A-0-2208, Cyclic command position	S-0-0047, after function block call	S-0-0047, after FB call

5.1.4 IndraDrive, calculation in the control, C-0-0000 - End

IDN, parameter name	Ident_IDC	Used_IDC
C-0-0400, Motion, cycle time, command value	S-0-0001, S-0-1001	S-0-0001, S-0-1001
C-0-0479, Extended sercos device information	-	S-0-0030, S-0-1300.0.3,..., S-0-1302.0.1
C-0-0503, sercos master, cycle time	S-0-0002, S-0-1002	S-0-0002, S-0-1002
C-0-0510, sercos master, address configuration	S-0-1040	S-0-1040
C-0-1030, Command: Clear all control errors	-	S-0-0099

5.2 IndraDrive: A-/C- ==> S-/P-parameters (calculation in the drive)

5.2.1 General information



The information to be transferred from the A- and C-parameters differ for the drive types **IndraDrive**, **SercosDrive** and **HydraulicDrive** with regard to the location of the motion sequence calculation:

- [IndraDrive, calculation in the drive, page 733](#),
- [IndraDrive, calculation in the control, page 729](#),
- [SercosDrive, calculation in the Control, page 738](#),
- [HydraulicDrive, calculation in the drive, page 745](#),
- [HydraulicDrive, calculation in the control, page 742](#),
- **Ident_xyz** means bit-identical copy of the source parameter on the target parameter,
- **Used_xyz** means that at least one bit of the target parameter is affected.



For axes without position feedback (Open Loop), the data transfer is omitted for a part of the A-parameters to the S-/P-parameters, since these are not available.

The parameters are available in the image for the control interpolator and for import and export.

The parameters are highlighted in the following tables and explained in the key.

5.2.2 IndraDrive, calculation in the drive, A-0-0000 - A-0-0499

IDN, parameter name	Ident_IDD	Used_IDD
A-0-0002 , Axis name	S-0-0142	S-0-0142 S-0-1302.0.3
A-0-0007 , Axis configuration	-	S-0-0032, S-0-0033, S-0-0034, S-0-0035, S-0-0284, S-0-0285, S-0-0286, S-0-0287
A-0-0021 , Axis status	-	AT configuration
A-0-0022 , Extended axis status	-	AT configuration
A-0-0023 , Axis diagnostic number	-	S-0-0390
A-0-0024 , Axis state	-	S-0-0139
A-0-0028 , Travel range limit switch	P-0-0090	P-0-0090
A-0-0029 , Position polarities	S-0-0055	S-0-0055
A-0-0030 , Position limit value, positive	S-0-0049	S-0-0049
A-0-0031 , Position limit value, negative	S-0-0050	S-0-0050
A-0-0032 , Velocity limit value, positive	S-0-0038, S-0-0091	S-0-0038, S-0-0091

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_IDD	Used_IDD
A-0-0033, Velocity limit value, negative	S-0-0039, S-0-0091	S-0-0039, S-0-0091
A-0-0034, Acceleration limit value, bipolar	S-0-0138	S-0-0138
A-0-0035, Velocity limit value, bipolar	S-0-0091	S-0-0091
A-0-0036, Jerk limit value, bipolar	S-0-0349	S-0-0349
A-0-0038, Torque/force limit value, bipolar	S-0-0092	S-0-0092
A-0-0039, Torque/force limit value, positive	S-0-0082	S-0-0082
A-0-0040, Torque/force limit value, negative	S-0-0083	S-0-0083
A-0-0045, Modulo value	S-0-0103	S-0-0103
A-0-0046, Feed distance of the slave drive	P-0-0159	P-0-0159
A-0-0048, Velocity polarities	S-0-0043	S-0-0043
A-0-0049, Torque-/force polarities	S-0-0085	S-0-0085
A-0-0050, Scaling type for torque/force data	S-0-0086	S-0-0086
A-0-0051, Scaling factor for torque/force data	S-0-0093	S-0-0093
A-0-0052, Scaling exponent for torque/force data	S-0-0094	S-0-0094
A-0-0053, Scaling type for acceleration data	S-0-0160	S-0-0160
A-0-0054, Scaling factor for acceleration data	S-0-0161	S-0-0161
A-0-0055, Scaling exponent for acceleration data	S-0-0162	S-0-0162
A-0-0056, Scaling type for velocity data	S-0-0044	S-0-0044
A-0-0057, Scaling factor for velocity data	S-0-0045	S-0-0045
A-0-0058, Scaling exponent for velocity data	S-0-0046	S-0-0046
A-0-0059, Scaling type for position data ¹⁾	S-0-0076	S-0-0076
A-0-0060, Scaling factor for translatory position data	S-0-0077	S-0-0077
A-0-0061, Scaling exponent for translatory position data	S-0-0078	S-0-0078
A-0-0062, Position resolution, rotatory	S-0-0079	S-0-0079
A-0-0063, Scaling type for temperature data	S-0-0208	S-0-0208
A-0-0064, Torque/Force reference value	S-0-0111, P-0-0051	S-0-0111, P-0-0051
A-0-0100, Actual position value	S-0-0386	S-0-0386
A-0-0101, Actual position value, 8 bytes	S-0-0386	S-0-0386
A-0-0102, Actual velocity value	S-0-0040	S-0-0040
A-0-0103, Actual acceleration value	S-0-0164	S-0-0164
A-0-0110, Actual torque/force value	S-0-0084	S-0-0084
A-0-0150, Interpolated position	P-0-0434	P-0-0434
A-0-0151, Interpolated position of the control	P-0-0434	P-0-0434
A-0-0152, Interpolated velocity	P-0-0048	P-0-0048
A-0-0203, Direction of motion	-	S-0-0145, bit 4 + 5, after MC_MoveAbsolute

IDN, parameter name	Ident_IDD	Used_IDD
A-0-0204 , Velocity threshold, positioning in modulo format	S-0-0417	S-0-0417
A-0-0216 , Jerk ²⁾	S-0-0193	S-0-0193
A-0-0219 , Positioning window for shortest distance	S-0-0418	S-0-0418
A-0-0221 , Torque/force window	S-0-0826	S-0-0826
A-0-0222 , Standstill window	S-0-0124	S-0-0124
A-0-0223 , Velocity window	S-0-0157	S-0-0157
A-0-0224 , Rapid stop deceleration	S-0-0372 after E-stop	S-0-0372 after E-stop
A-0-0240 , Feedrate override ²⁾	S-0-0036, S-0-0108	S-0-0036, S-0-0108

- ¹⁾ In [A-0-0059](#) of an encoder axis, it is not synchronized with S-0-0076 of the drive on which the measurement encoder of the encoder axis is configured.
- ²⁾ For an axis without position feedback (open loop), the drive parameter is not available for this axis parameter. Thus, no synchronization is performed.

5.2.3 IndraDrive, calculation in the drive, A-0-0500 - A-0-0999

IDN, parameter name	Ident_IDD	Used_IDD
A-0-0500 , Configuration of user-defined command value A	S-0-0024	S-0-0024
A-0-0502 , Configuration of user-defined command value B	S-0-0024	S-0-0024
A-0-0504 , Configuration of user-defined command value C	S-0-0024	S-0-0024
A-0-0506 , Configuration of user-defined command value D	S-0-0024	S-0-0024
A-0-0508 , Configuration of user-defined command value E	S-0-0024	S-0-0024
A-0-0510 , Reserved	S-0-0024	S-0-0024
A-0-0520 , Configuration of actual user-defined value A	S-0-0016	S-0-0016
A-0-0522 , Configuration of actual user-defined value B	S-0-0016	S-0-0016
A-0-0524 , Configuration of actual user-defined value C	S-0-0016	S-0-0016
A-0-0526 , Configuration of actual user-defined value D	S-0-0016	S-0-0016
A-0-0527 , Container of actual user-defined value D	S-0-0016	S-0-0016
A-0-0528 , Configuration of actual user-defined value E	S-0-0016	S-0-0016
A-0-0529 , Container of actual user-defined value E	S-0-0016	S-0-0016
A-0-0530 , Configuration of actual user-defined value F	S-0-0016	S-0-0016
A-0-0531 , Container of actual user-defined value F	S-0-0016	S-0-0016
A-0-0540 , Configuration of user-defined command value, bit A	S-0-0027	S-0-0027
A-0-0541 , Configuration of user-defined command value, bit number A	S-0-0329	S-0-0329
A-0-0542 , User-defined command value, bit number A	S-0-0145	S-0-0145
A-0-0543 , Configuration of user-defined command value, bit B	S-0-0027	S-0-0027
A-0-0544 , Configuration of user-defined command value, bit number B	S-0-0329	S-0-0329
A-0-0545 , User-defined command value, bit number B	S-0-0145	S-0-0145

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_IDD	Used_IDD
A-0-0546, Configuration of user-defined command value, bit C	S-0-0027	S-0-0027
A-0-0547, Configuration of user-defined command value, bit number C	S-0-0329	S-0-0329
A-0-0548, User-defined command value, bit number C	S-0-0145	S-0-0145
A-0-0549, Configuration of user-defined command value, bit D	S-0-0027	S-0-0027
A-0-0550, Configuration of user-defined command value, bit number D	S-0-0329	S-0-0329
A-0-0551, User-defined command value, bit number D	S-0-0145	S-0-0145
A-0-0560, Configuration of actual user-defined value, bit A	S-0-0026	S-0-0026
A-0-0561, Configuration of actual user-defined value, bit number A	S-0-0328	S-0-0328
A-0-0562, Actual user-defined value, bit number A	S-0-0144	S-0-0144
A-0-0563, Configuration of actual user-defined value, bit B	S-0-0026	S-0-0026
A-0-0564, Configuration of actual user-defined value, bit number B	S-0-0328	S-0-0328
A-0-0565, Actual user-defined value, bit number B	S-0-0144	S-0-0144
A-0-0566, Configuration of actual user-defined value, bit C	S-0-0026	S-0-0026
A-0-0567, Configuration of actual user-defined value, bit number C	S-0-0328	S-0-0328
A-0-0568, Actual user-defined value, bit number C	S-0-0144	S-0-0144
A-0-0569, Configuration of actual user-defined value, bit D	S-0-0026	S-0-0026
A-0-0570, Configuration of actual user-defined value, bit number D	S-0-0328	S-0-0328
A-0-0571, Actual user-defined value, bit number D	S-0-0144	S-0-0144
A-0-0596, List of freely configurable parameters in the MDT	S-0-0188	S-0-0188
A-0-0597, List of freely configurable parameters in the AT	S-0-0187	S-0-0187
A-0-0598, List of configurable parameters in signal control word	S-0-0399	S-0-0399
A-0-0599, List of configurable parameters in signal status word	S-0-0398	S-0-0398
A-0-0622, Synchronization run window, position ¹⁾	S-0-0228	S-0-0228
A-0-0623, Synchronization run window, velocity	S-0-0183	S-0-0183

¹⁾

For an axis without position feedback (open loop), the drive parameter is not available for this axis parameter. Thus, no synchronization is performed.

5.2.4 IndraDrive, calculation in the drive, A-0-1000 - A-0-2999

IDN, parameter name	Ident_IDD	Used_IDD
A-0-1030, Command: Clear all axis errors	S-0-0099	S-0-0099
A-0-2200, Command position	S-0-0282, after FB call	S-0-0282, after FB call
A-0-2201, Target position	S-0-0430, after FB call	S-0-0430, after FB call
A-0-2202, Command velocity	S-0-0259, after FB call	S-0-0259, after FB call
A-0-2203, Command acceleration	S-0-0260, after FB call	S-0-0260, after FB call

IDN, parameter name	Ident_IDD	Used_IDD
A-0-2204, Command deceleration	S-0-0359, after FB call	S-0-0359, after FB call
A-0-2205, Command jerk	S-0-0193, after FB call	S-0-0193, after FB call
A-0-2206, Target force	S-0-0080	S-0-0080
A-0-2207, Command direction of motion	S-0-0145, bit 4 + 5, after MC_MoveAbsolute	S-0-0145, bit 4 + 5, after MC_MoveAbsolute
A-0-2208, Cyclic command position	S-0-0047, after function block call	S-0-0047, after function block call
A-0-2220, Additive position value, process controller	P-0-0059	P-0-0059
A-0-2600, Additive master axis position, process controller	P-0-0692	P-0-0692
A-0-2601, ELS, filter constant, additive master axis position	P-0-0693	P-0-0693
A-0-2605, ELS, Gear ratio fine adjustment process controller	P-0-0694	P-0-0694
A-0-2610, ELS, additive position command value, process controller ¹⁾	P-0-0691	P-0-0691
A-0-2611, ELS, filter time constant, additive position command value ¹⁾	P-0-0060	P-0-0060
A-0-2615, ELS, additive velocity command value, process controller	P-0-0690	P-0-0690
A-0-2620, ELS, phase offset of table beginning, process controller ¹⁾	P-0-0695	P-0-0695
A-0-2621, ELS, filter constant, phase offset of table ¹⁾	P-0-0696	P-0-0696
A-0-2650, ELS, resulting master axis position	P-0-0775	P-0-0775
A-0-2651, ELS, effective master axis position	P-0-0776	P-0-0776
A-0-2652, ELS, effective master axis velocity	P-0-0777	P-0-0777
A-0-2653, ELS, synchronous position command value	P-0-0778	P-0-0778
A-0-2654, ELS, synchronous velocity	P-0-0779	P-0-0779
A-0-2655, ELS, position command value	P-0-0434	P-0-0434
A-0-2656, ELS, cam, access phase	P-0-0227	P-0-0227
A-0-2657, ELS, effective velocity command value	P-0-0048	P-0-0048
A-0-2658, ELS, master axis, velocity	P-0-0764	P-0-0764
A-0-2710, ELS, phasing, additive position command value		P-0-0054
A-0-2711, ELS, phasing, additive position command value, velocity	P-0-0688	P-0-0688
A-0-2712, ELS, phasing, additive position command value, acceleration	P-0-0689	P-0-0689
A-0-2720, ELS, master axis gear, input revolutions	P-0-0156	P-0-0156
A-0-2721, ELS, master axis gear, output revolutions	P-0-0157	P-0-0157
A-0-2722, ELS, gear ratio fine adjust ¹⁾	P-0-0083	P-0-0083
A-0-2730, ELS, PhasingTableAngle, cam table beginning ¹⁾	P-0-0061	P-0-0061
A-0-2731, ELS, PhasingTableAngle, change velocity ¹⁾	P-0-0158	P-0-0158
A-0-2740, ELS, CamIn, cam table preselection	P-0-0088	P-0-0088

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_IDD	Used_IDD
A-0-2741, ELS, CamIn, cam distance	P-0-0093	P-0-0093
A-0-2745, ELS, gear reduction ¹⁾	P-0-0755	P-0-0755
A-0-2750, ELS, PhasingSlave, additive position command value	S-0-0048	S-0-0048
A-0-2751, ELS, PhasingSlave, additive position command value, vel.	P-0-0686	P-0-0686
A-0-2752, ELS, PhasingSlave, additive position command value, acc.	P-0-0687	P-0-0687
A-0-2761, ELS, PhasingSlaveVel, additive command velocity	S-0-0037	S-0-0037
A-0-2765, Slave axis, master axis revolutions per master axis cycle	P-0-0750	P-0-0750
A-0-2790, ELS, synchronization velocity ¹⁾	P-0-0143	P-0-0143
A-0-2791, ELS, synchronization acceleration	P-0-0142	P-0-0142
A-0-2792, ELS, synchronization run window for modulo format ¹⁾	P-0-0151	P-0-0151
A-0-2793, ELS, synchronization direction	P-0-0154	P-0-0154
A-0-2794, ELS, synchronization mode	P-0-0155	P-0-0155
A-0-2795, Positioning window	S-0-0057	S-0-0057
A-0-2798, Polarity of master axis position	P-0-0108	P-0-0108

¹⁾

For an axis without position feedback (open loop), the drive parameter is not available for this axis parameter. Thus, no synchronization is performed.

5.2.5 IndraDrive, calculation in the drive, C-0-0000 - End

IDN, parameter name	Ident_IDD	Used_IDD
C-0-0050, System time	-	P-0-0197, MPx04 ...
C-0-0400, Motion, cycle time, command value	-	S-0-0001
C-0-0479, Extended sercos device information	-	P-0-2004, S-0-0030
C-0-0503, sercos master, cycle time	-	S-0-0002
C-0-0510, sercos master, address configuration	S-0-1040	S-0-1040
C-0-1030, Command: Clear all control errors	-	S-0-0099

5.3 SercosDrive: A-/C- ==> S-/P-parameters

5.3.1 General information

The motion is always calculated at the SercosDrive on the control.

Command variables are transferred from the control to the drive and the control receives status variables from the drive.

An IndraDrive becomes a SercosDrive as it is the case with the drives of other manufacturers.



The information to be transferred from the A- and C-parameters differ for the drive types **IndraDrive**, **SercosDrive** and **HydraulicDrive** with regard to the location of the motion sequence calculation:

- [IndraDrive, calculation in the drive, page 733](#),
- [IndraDrive, calculation in the control, page 729](#),
- [SercosDrive, calculation in the Control, page 738](#),
- [HydraulicDrive, calculation in the drive, page 745](#),
- [HydraulicDrive, calculation in the control, page 742](#),
- **Ident_xyz** means bit-identical copy of the source parameter on the target parameter,
- **Used_xyz** means that at least one bit of the target parameter is affected.

5.3.2 SercosDrive, A-0-0000 - A-0-2999

IDN, parameter name	Ident_SD	Used_SD
A-0-0002 , Axis name	S-0-0142	S-0-0142 S-0-1302.0.3
A-0-0007 , Axis configuration	-	S-0-0032
A-0-0021 , Axis status	-	AT configuration
A-0-0022 , Extended axis status	-	AT configuration
A-0-0045 , Modulo value	S-0-0103	S-0-0103
A-0-0050 , Scaling type for torque/force data	S-0-0086	S-0-0086
A-0-0053 , Scaling type for acceleration data	S-0-0160	S-0-0160
A-0-0056 , Scaling type for velocity data	S-0-0044	S-0-0044
A-0-0057 , Scaling factor for velocity data	S-0-0045	S-0-0045
A-0-0058 , Scaling exponent for velocity data	S-0-0046	S-0-0046
A-0-0059 , Scaling type for position data ¹⁾	S-0-0076	S-0-0076
A-0-0060 , Scaling factor for translatory position data	S-0-0077	S-0-0077
A-0-0061 , Scaling exponent for translatory position data	S-0-0078	S-0-0078
A-0-0062 , Position resolution, rotatory	S-0-0079	S-0-0079
A-0-0100 , Actual position value	S-0-0051	S-0-0051
A-0-0101 , Actual position value, 8 bytes	S-0-0051	S-0-0051
A-0-0102 , Actual velocity value	S-0-0040	S-0-0040
A-0-0110 , Actual torque/force value	S-0-0084	S-0-0084
A-0-0500 , Configuration of user-defined command value A	S-0-0024	S-0-0024
A-0-0502 , Configuration of user-defined command value B	S-0-0024	S-0-0024
A-0-0504 , Configuration of user-defined command value C	S-0-0024	S-0-0024
A-0-0506 , Configuration of user-defined command value D	S-0-0024	S-0-0024

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_SD	Used_SD
A-0-0508, Configuration of user-defined command value E	S-0-0024	S-0-0024
A-0-0510, Reserved	S-0-0024	S-0-0024
A-0-0520, Configuration of actual user-defined value A	S-0-0016	S-0-0016
A-0-0522, Configuration of actual user-defined value B	S-0-0016	S-0-0016
A-0-0524, Configuration of actual user-defined value C	S-0-0016	S-0-0016
A-0-0526, Configuration of actual user-defined value D	S-0-0016	S-0-0016
A-0-0528, Configuration of actual user-defined value E	S-0-0016	S-0-0016
A-0-0530, Configuration of actual user-defined value F	S-0-0016	S-0-0016
A-0-0540, Configuration of user-defined command value, bit A	S-0-0027	S-0-0027
A-0-0541, Configuration of user-defined command value, bit number A	Not in the PackProfile S-0-0329	Not in the PackProfile S-0-0329
A-0-0542, User-defined command value, bit number A	Not in the PackProfile S-0-0145	Not in the PackProfile S-0-0145
A-0-0543, Configuration of user-defined command value, bit B	S-0-0027	S-0-0027
A-0-0544, Configuration of user-defined command value, bit number B	Not in the PackProfile S-0-0329	Not in the PackProfile S-0-0329
A-0-0545, User-defined command value, bit number B	Not in the PackProfile S-0-0145	Not in the PackProfile S-0-0145
A-0-0546, Configuration of user-defined command value, bit C	S-0-0027	S-0-0027
A-0-0547, Configuration of user-defined command value, bit number C	Not in the PackProfile S-0-0329	Not in the PackProfile S-0-0329
A-0-0548, User-defined command value, bit number C	Not in the PackProfile S-0-0145	Not in the PackProfile S-0-0145
A-0-0549, Configuration of user-defined command value, bit D	S-0-0027	S-0-0027
A-0-0550, Configuration of user-defined command value, bit number D	Not in the PackProfile S-0-0329	Not in the PackProfile S-0-0329
A-0-0551, User-defined command value, bit number D	Not in the PackProfile S-0-0145	Not in the PackProfile S-0-0145
A-0-0560, Configuration of actual user-defined value, bit A	S-0-0026	S-0-0026
A-0-0561, Configuration of actual user-defined value, bit number A	Not in the PackProfile S-0-0328	Not in the PackProfile S-0-0328
A-0-0562, Actual user-defined value, bit number A	Not in the PackProfile S-0-0144	Not in the PackProfile S-0-0144
A-0-0563, Configuration of actual user-defined value, bit B	S-0-0026	S-0-0026
A-0-0564, Configuration of actual user-defined value, bit number B	Not in the PackProfile S-0-0328	Not in the PackProfile S-0-0328
A-0-0565, Actual user-defined value, bit number B	Not in the PackProfile S-0-0144	Not in the PackProfile S-0-0144
A-0-0566, Configuration of actual user-defined value, bit C	S-0-0026	S-0-0026
A-0-0567, Configuration of actual user-defined value, bit number C	Not in the PackProfile S-0-0328	Not in the PackProfile S-0-0328

IDN, parameter name	Ident_SD	Used_SD
A-0-0568 , Actual user-defined value, bit number C	Not in the PackProfile S-0-0144	Not in the PackProfile S-0-0144
A-0-0569 , Configuration of actual user-defined value, bit D	S-0-0026	S-0-0026
A-0-0570 , Configuration of actual user-defined value, bit number D	Not in the PackProfile S-0-0328	Not in the PackProfile S-0-0328
A-0-0571 , Actual user-defined value, bit number D	Not in the PackProfile S-0-0144	Not in the PackProfile S-0-0144
A-0-0596 , List of freely configurable parameters in the MDT	S-0-0188	S-0-0188
A-0-0597 , List of freely configurable parameters in the AT	S-0-0187	S-0-0187
A-0-0598 , List of configurable parameters in signal control word	Not in the PackProfile S-0-0399	Not in the PackProfile S-0-0399
A-0-0599 , List of configurable parameters in signal status word	Not in the PackProfile S-0-0398	Not in the PackProfile S-0-0398
A-0-1030 , Command: Clear all axis errors	-	S-0-0099
A-0-2208 , Cyclic command position	S-0-0047, after func- tion block call	S-0-0047, after FB call

- 1) In [A-0-0059](#) of an encoder axis, it is not synchronized with S-0-0076 of the drive on which the measurement encoder of the encoder axis is configured.

Legend:

- Not in PackProfile ...: Not every PackProfile drive contains the parameter, but an attempt is still made to trigger it.

5.3.3 SercosDrive, C-0-0000 - End

IDN, parameter name	Ident_SD	Used_SD
C-0-0400 , Motion, cycle time, command value	-	S-0-0001
C-0-0479 , Extended sercos device information	-	S-0-0030
C-0-0503 , sercos master, cycle time	-	S-0-0002
C-0-0510 , sercos master, address configuration	S-0-1040	S-0-1040
C-0-1030 , Command: Clear all control errors		S-0-0099

5.4 HydraulicDrive: A-/C- ==> S-/P-parameters (calculation in the control)

5.4.1 General information



The information to be transferred from the A- and C-parameters differ for the drive types **IndraDrive**, **SercosDrive** and **HydraulicDrive** with regard to the location of the motion sequence calculation:

- [IndraDrive, calculation in the drive, page 733](#),
- [IndraDrive, calculation in the control, page 729](#),
- [SercosDrive, calculation in the Control, page 738](#),
- [HydraulicDrive, calculation in the drive, page 745](#),
- [HydraulicDrive, calculation in the control, page 742](#),
- **Ident_xyz** means bit-identical copy of the source parameter on the target parameter,
- **Used_xyz** means that at least one bit of the target parameter is affected.

The following tables provides an overview for hydraulic drives (HydraulicDrive) on how the information of A- or C-parameters of the control are transferred to the S- or P-parameters of the hydraulic drives.

5.4.2 HydraulicDrive, calculation in the control, A-0-0000 - A-0-0499

IDN, parameter name	Ident_HDC	Used_HDC
A-0-0002 , Axis name	S-0-0142	S-0-0142 S-0-1302.0.3
A-0-0007 , Axis configuration	-	S-0-0032, S-0-0033, S-0-0034
A-0-0021 , Axis status	-	AT configuration
A-0-0022 , Extended axis status	-	AT configuration
A-0-0023 , Axis diagnostic number	-	S-0-0390
A-0-0024 , Axis state	-	S-0-0139
A-0-0028 , Travel range limit switch	P-0-0090	P-0-0090
A-0-0029 , Position polarities	S-0-0055	S-0-0055
A-0-0030 , Position limit value, positive	S-0-0049	S-0-0049
A-0-0031 , Position limit value, negative	S-0-0050	S-0-0050
A-0-0032 , Velocity limit value, positive	S-0-0038, S-0-0091	S-0-0038, S-0-0091
A-0-0033 , Velocity limit value, negative	S-0-0039, S-0-0091	S-0-0039, S-0-0091
A-0-0034 , Acceleration limit value, bipolar	S-0-0138	S-0-0138
A-0-0035 , Velocity limit value, bipolar	S-0-0091	S-0-0091
A-0-0038 , Torque/force limit value, bipolar	S-0-0092	S-0-0092
A-0-0039 , Torque/force limit value, positive	S-0-0082, S-0-0550	S-0-0082, S-0-0550

IDN, parameter name	Ident_HDC	Used_HDC
A-0-0040, Torque/force limit value, negative	S-0-0083, S-0-0551	S-0-0083, S-0-0551
A-0-0045, Modulo value	S-0-0103	S-0-0103
A-0-0048, Velocity polarities	S-0-0043	S-0-0043
A-0-0049, Torque-/force polarities	S-0-0085	S-0-0085
A-0-0050, Scaling type for torque/force data	S-0-0086	S-0-0086
A-0-0051, Scaling factor for torque/force data	S-0-0093	S-0-0093
A-0-0052, Scaling exponent for torque/force data	S-0-0094	S-0-0094
A-0-0053, Scaling type for acceleration data	S-0-0160	S-0-0160
A-0-0054, Scaling factor for acceleration data	S-0-0161	S-0-0161
A-0-0055, Scaling exponent for acceleration data	S-0-0162	S-0-0162
A-0-0056, Scaling type for velocity data	S-0-0044	S-0-0044
A-0-0057, Scaling factor for velocity data	S-0-0045	S-0-0045
A-0-0058, Scaling exponent for velocity data	S-0-0046	S-0-0046
A-0-0059, Scaling type for position data ¹⁾	S-0-0076	S-0-0076
A-0-0060, Scaling factor for translatory position data	S-0-0077	S-0-0077
A-0-0061, Scaling exponent for translatory position data	S-0-0078	S-0-0078
A-0-0062, Position resolution, rotatory	S-0-0079	S-0-0079
A-0-0063, Scaling type for temperature data	S-0-0208	S-0-0208
A-0-0064, Torque/Force reference value	S-0-0825	S-0-0534
A-0-0066, Scaling type for valve control values	P-0-2882	P-0-2882
A-0-0100, Actual position value	S-0-0051	S-0-0051
A-0-0101, Actual position value, 8 bytes	S-0-0051	S-0-0051
A-0-0102, Actual velocity value	S-0-0040	S-0-0040
A-0-0103, Actual acceleration value	S-0-0164	S-0-0164
A-0-0110, Actual torque/force value	S-0-0084	S-0-0084
A-0-0221, Torque/force window		S-0-0826
A-0-0242, Position control, synchronization acceleration	P-0-0142	P-0-0142
A-0-0243, Position control, synchronization velocity	P-0-0143	P-0-0143

¹⁾

In A-0-0059 of an encoder axis, it is not synchronized with S-0-0076 of the drive on which the measurement encoder of the encoder axis is configured.

5.4.3 HydraulicDrive, calculation in the control, A-0-0500 - A-0-2999

IDN, parameter name	Ident_HDC	Used_HDC
A-0-0500, Configuration of user-defined command value A	S-0-0024	S-0-0024
A-0-0502, Configuration of user-defined command value B	S-0-0024	S-0-0024
A-0-0504, Configuration of user-defined command value C	S-0-0024	S-0-0024

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_HDC	Used_HDC
A-0-0506, Configuration of user-defined command value D	S-0-0024	S-0-0024
A-0-0508, Configuration of user-defined command value E	S-0-0024	S-0-0024
A-0-0510, Reserved	S-0-0024	S-0-0024
A-0-0520, Configuration of actual user-defined value A	S-0-0016	S-0-0016
A-0-0522, Configuration of actual user-defined value B	S-0-0016	S-0-0016
A-0-0524, Configuration of actual user-defined value C	S-0-0016	S-0-0016
A-0-0526, Configuration of actual user-defined value D	S-0-0016	S-0-0016
A-0-0527, Container of actual user-defined value D	S-0-0016	S-0-0016
A-0-0528, Configuration of actual user-defined value E	S-0-0016	S-0-0016
A-0-0529, Container of actual user-defined value E	S-0-0016	S-0-0016
A-0-0530, Configuration of actual user-defined value F	S-0-0016	S-0-0016
A-0-0531, Container of actual user-defined value F	S-0-0016	S-0-0016
A-0-0540, Configuration of user-defined command value, bit A	S-0-0027	S-0-0027
A-0-0541, Configuration of user-defined command value, bit number A	S-0-0329	S-0-0329
A-0-0542, User-defined command value, bit number A	S-0-0145	S-0-0145
A-0-0543, Configuration of user-defined command value, bit B	S-0-0027	S-0-0027
A-0-0544, Configuration of user-defined command value, bit number B	S-0-0329	S-0-0329
A-0-0545, User-defined command value, bit number B	S-0-0145	S-0-0145
A-0-0546, Configuration of user-defined command value, bit C	S-0-0027	S-0-0027
A-0-0547, Configuration of user-defined command value, bit number C	S-0-0329	S-0-0329
A-0-0548, User-defined command value, bit number C	S-0-0145	S-0-0145
A-0-0549, Configuration of user-defined command value, bit D	S-0-0027	S-0-0027
A-0-0550, Configuration of user-defined command value, bit number D	S-0-0329	S-0-0329
A-0-0551, User-defined command value, bit number D	S-0-0145	S-0-0145
A-0-0560, Configuration of actual user-defined value, bit A	S-0-0026	S-0-0026
A-0-0561, Configuration of actual user-defined value, bit number A	S-0-0328	S-0-0328
A-0-0562, Actual user-defined value, bit number A	S-0-0144	S-0-0144
A-0-0563, Configuration of actual user-defined value, bit B	S-0-0026	S-0-0026
A-0-0564, Configuration of actual user-defined value, bit number B	S-0-0328	S-0-0328
A-0-0565, Actual user-defined value, bit number B	S-0-0144	S-0-0144
A-0-0566, Configuration of actual user-defined value, bit C	S-0-0026	S-0-0026
A-0-0567, Configuration of actual user-defined value, bit number C	S-0-0328	S-0-0328
A-0-0568, Actual user-defined value, bit number C	S-0-0144	S-0-0144
A-0-0569, Configuration of actual user-defined value, bit D	S-0-0026	S-0-0026
A-0-0570, Configuration of actual user-defined value, bit number D	S-0-0328	S-0-0328
A-0-0571, Actual user-defined value, bit number D	S-0-0144	S-0-0144

IDN, parameter name	Ident_HDC	Used_HDC
A-0-0596 , List of freely configurable parameters in the MDT	S-0-0188	S-0-0188
A-0-0597 , List of freely configurable parameters in the AT	S-0-0187	S-0-0187
A-0-0598 , List of configurable parameters in signal control word	S-0-0399	S-0-0399
A-0-0599 , List of configurable parameters in signal status word	S-0-0398	S-0-0398
A-0-1030 , Command: Clear all axis errors	-	S-0-0099
A-0-2206 , Target force	S-0-0080	S-0-0080
A-0-2208 , Cyclic command position	S-0-0047, after function block call	S-0-0047, after FB call

5.4.4 HydraulicDrive, calculation in the control, C-0-0000 - End

IDN, parameter name	Ident_HDC	Used_HDC
C-0-0400 , Motion, cycle time, command value	-	S-0-0001
C-0-0479 , Extended sercos device information	-	S-0-0030, S-0-1300.0.3,..., S-0-1302.0.1
C-0-0503 , sercos master, cycle time	-	S-0-0002
C-0-0510 , sercos master, address configuration	S-0-1040	S-0-1040
C-0-1030 , Command: Clear all control errors	-	S-0-0099

5.5 HydraulicDrive: A-/C- ==> S-/P-parameters (calculation in the drive)

5.5.1 General information



The information to be transferred from the A- and C-parameters differ for the drive types **IndraDrive**, **SercosDrive** and **HydraulicDrive** with regard to the location of the motion sequence calculation:

- [IndraDrive, calculation in the drive, page 733](#),
- [IndraDrive, calculation in the control, page 729](#),
- [SercosDrive, calculation in the Control, page 738](#),
- [HydraulicDrive, calculation in the drive, page 745](#),
- [HydraulicDrive, calculation in the control, page 742](#),
- **Ident_xyz** means bit-identical copy of the source parameter on the target parameter,
- **Used_xyz** means that at least one bit of the target parameter is affected.

The following tables provides an overview for hydraulic drives (HydraulicDrive) on how the information of A- or C-parameters of the control are transferred to the S- or P-parameters of the hydraulic drives.

5.5.2 HydraulicDrive, calculation in the drive, A-0-0000 - A-0-0499

IDN, parameter name	Ident_HDD	Used_HDD
A-0-0002, Axis name	S-0-0142	S-0-0142 S-0-1302.0.3
A-0-0007, Axis configuration	-	S-0-0032, S-0-0033, S-0-0034, S-0-0035, S-0-0284, S-0-0285, S-0-0286, S-0-0287
A-0-0021, Axis status	-	AT configuration
A-0-0022, Extended axis status	-	AT configuration
A-0-0023, Axis diagnostic number	-	S-0-0390
A-0-0024, Axis state	-	S-0-0139
A-0-0028, Travel range limit switch	P-0-0090	P-0-0090
A-0-0029, Position polarities	S-0-0055	S-0-0055
A-0-0030, Position limit value, positive	S-0-0049	S-0-0049
A-0-0031, Position limit value, negative	S-0-0050	S-0-0050
A-0-0032, Velocity limit value, positive	S-0-0038, S-0-0091	S-0-0038, S-0-0091
A-0-0033, Velocity limit value, negative	S-0-0039, S-0-0091	S-0-0039, S-0-0091
A-0-0034, Acceleration limit value, bipolar	S-0-0138	S-0-0138
A-0-0035, Velocity limit value, bipolar	S-0-0091	S-0-0091
A-0-0036, Jerk limit value, bipolar	S-0-0349	S-0-0349
A-0-0038, Torque/force limit value, bipolar	S-0-0092	S-0-0092
A-0-0039, Torque/force limit value, positive	S-0-0082, S-0-0550	S-0-0082, S-0-0550
A-0-0040, Torque/force limit value, negative	S-0-0083, S-0-0551	S-0-0083, S-0-0551
A-0-0046, Feed distance of the slave drive	P-0-0159	P-0-0159
A-0-0048, Velocity polarities	S-0-0043	S-0-0043
A-0-0049, Torque-/force polarities	S-0-0085	S-0-0085
A-0-0050, Scaling type for torque/force data	S-0-0086	S-0-0086
A-0-0051, Scaling factor for torque/force data	S-0-0093	S-0-0093
A-0-0052, Scaling exponent for torque/force data	S-0-0094	S-0-0094
A-0-0053, Scaling type for acceleration data	S-0-0160	S-0-0160
A-0-0054, Scaling factor for acceleration data	S-0-0161	S-0-0161
A-0-0055, Scaling exponent for acceleration data	S-0-0162	S-0-0162
A-0-0056, Scaling type for velocity data	S-0-0044	S-0-0044
A-0-0057, Scaling factor for velocity data	S-0-0045	S-0-0045
A-0-0058, Scaling exponent for velocity data	S-0-0046	S-0-0046
A-0-0059, Scaling type for position data ¹⁾	S-0-0076	S-0-0076
A-0-0060, Scaling factor for translatory position data	S-0-0077	S-0-0077

IDN, parameter name	Ident_HDD	Used_HDD
A-0-0061, Scaling exponent for translatory position data	S-0-0078	S-0-0078
A-0-0062, Position resolution, rotatory	S-0-0079	S-0-0079
A-0-0063, Scaling type for temperature data	S-0-0208	S-0-0208
A-0-0064, Torque/Force reference value	S-0-0825	S-0-0534
A-0-0066, Scaling type for valve control values	P-0-2882	P-0-2882
A-0-0100, Actual position value	S-0-0386	S-0-0386
A-0-0101, Actual position value, 8 bytes	S-0-0386	S-0-0386
A-0-0102, Actual velocity value	S-0-0040	S-0-0040
A-0-0103, Actual acceleration value	S-0-0164	S-0-0164
A-0-0110, Actual torque/force value	S-0-0084	S-0-0084
A-0-0150, Interpolated position	P-0-0434	P-0-0434
A-0-0151, Interpolated position of the control	P-0-0434	P-0-0434
A-0-0152, Interpolated velocity	P-0-0048	P-0-0048
A-0-0216, Jerk	S-0-0193	S-0-0193
A-0-0221, Torque/force window	S-0-0826	S-0-0826
A-0-0222, Standstill window	S-0-0124	S-0-0124
A-0-0223, Velocity window	S-0-0157	S-0-0157
A-0-0224, Rapid stop deceleration	S-0-0372 after E-stop	S-0-0372 after E-stop
A-0-0240, Feedrate override	S-0-0036, S-0-0108	S-0-0036, S-0-0108

1)

In A-0-0059 of an encoder axis, it is not synchronized with S-0-0076 of the drive on which the measurement encoder of the encoder axis is configured.

5.5.3 HydraulicDrive, calculation in the drive, A-0-0500 - A-0-0999

IDN, parameter name	Ident_HDD	Used_HDD
A-0-0500, Configuration of user-defined command value A	S-0-0024	S-0-0024
A-0-0502, Configuration of user-defined command value B	S-0-0024	S-0-0024
A-0-0504, Configuration of user-defined command value C	S-0-0024	S-0-0024
A-0-0506, Configuration of user-defined command value D	S-0-0024	S-0-0024
A-0-0508, Configuration of user-defined command value E	S-0-0024	S-0-0024
A-0-0510, Reserved	S-0-0024	S-0-0024
A-0-0520, Configuration of actual user-defined value A	S-0-0016	S-0-0016
A-0-0522, Configuration of actual user-defined value B	S-0-0016	S-0-0016
A-0-0524, Configuration of actual user-defined value C	S-0-0016	S-0-0016
A-0-0526, Configuration of actual user-defined value D	S-0-0016	S-0-0016
A-0-0527, Container of actual user-defined value D	S-0-0016	S-0-0016
A-0-0528, Configuration of actual user-defined value E	S-0-0016	S-0-0016

Comparing A-/C- or S-/P-parameters

IDN, parameter name	Ident_HDD	Used_HDD
A-0-0529, Container of actual user-defined value E	S-0-0016	S-0-0016
A-0-0530, Configuration of actual user-defined value F	S-0-0016	S-0-0016
A-0-0531, Container of actual user-defined value F	S-0-0016	S-0-0016
A-0-0540, Configuration of user-defined command value, bit A	S-0-0027	S-0-0027
A-0-0541, Configuration of user-defined command value, bit number A	S-0-0329	S-0-0329
A-0-0542, User-defined command value, bit number A	S-0-0145	S-0-0145
A-0-0543, Configuration of user-defined command value, bit B	S-0-0027	S-0-0027
A-0-0544, Configuration of user-defined command value, bit number B	S-0-0329	S-0-0329
A-0-0545, User-defined command value, bit number B	S-0-0145	S-0-0145
A-0-0546, Configuration of user-defined command value, bit C	S-0-0027	S-0-0027
A-0-0547, Configuration of user-defined command value, bit number C	S-0-0329	S-0-0329
A-0-0548, User-defined command value, bit number C	S-0-0145	S-0-0145
A-0-0549, Configuration of user-defined command value, bit D	S-0-0027	S-0-0027
A-0-0550, Configuration of user-defined command value, bit number D	S-0-0329	S-0-0329
A-0-0551, User-defined command value, bit number D	S-0-0145	S-0-0145
A-0-0560, Configuration of actual user-defined value, bit A	S-0-0026	S-0-0026
A-0-0561, Configuration of actual user-defined value, bit number A	S-0-0328	S-0-0328
A-0-0562, Actual user-defined value, bit number A	S-0-0144	S-0-0144
A-0-0563, Configuration of actual user-defined value, bit B	S-0-0026	S-0-0026
A-0-0564, Configuration of actual user-defined value, bit number B	S-0-0328	S-0-0328
A-0-0565, Actual user-defined value, bit number B	S-0-0144	S-0-0144
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A-0-0598, List of configurable parameters in signal control word	S-0-0399	S-0-0399
A-0-0599, List of configurable parameters in signal status word	S-0-0398	S-0-0398

5.5.4 HydraulicDrive, calculation in the drive, A-0-1000 - A-0-2999

IDN, parameter name	Ident_HDD	Used_HDD
A-0-1030, Command: Clear all axis errors	S-0-0099	S-0-0099
A-0-2200, Command position	S-0-0282, after FB call	S-0-0282, after FB call

IDN, parameter name	Ident_HDD	Used_HDD
A-0-2201, Target position	S-0-0430, after FB call	S-0-0430, after FB call
A-0-2202, Command velocity	S-0-0259, after FB call	S-0-0259, after FB call
A-0-2203, Command acceleration	S-0-0260, after FB call	S-0-0260, after FB call
A-0-2204, Command deceleration	S-0-0359, after FB call	S-0-0359, after FB call
A-0-2205, Command jerk	S-0-0193, after FB call	S-0-0193, after FB call
A-0-2206, Target force	S-0-0080	S-0-0080
A-0-2208, Cyclic command position	S-0-0047, after function block call	S-0-0047, after function block call
A-0-2211, Cyclic analog value	P-0-2891, after FB call	P-0-2891, after FB call
A-0-2220, Additive position value, process controller	P-0-0059	P-0-0059
A-0-2795, Positioning window	S-0-0057	S-0-0057

5.5.5 HydraulicDrive, calculation in the drive, C-0-0000 - End

IDN, parameter name	Ident_HDD	Used_HDD
C-0-0050, System time	-	P-0-0197, Hydraulic-Drive analog MPx04
C-0-0400, Motion, cycle time, command value	-	S-0-0001
C-0-0479, Extended sercos device information	-	P-0-2004, S-0-0030, S-0-1300.0.3,..., S-0-1302.0.1
C-0-0503, sercos master, cycle time	-	S-0-0002
C-0-0510, sercos master, address configuration	S-0-1040	S-0-1040
C-0-1030, Command: Clear all control errors	-	S-0-0099

6 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts offer you advice and assistance should you have any queries. You can contact us **24/7**.

Service Germany Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

Phone:	+49 9352 40 5060
Fax:	+49 9352 18 4941
E-mail:	service.svc@boschrexroth.de
Internet:	http://www.boschrexroth.com

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

Explaining parameter attributes

C2C_access:

Access the **operating data synchronized in the C2C link** via the simplified, blocking instruction "function variable access" (alias "direct variable").

A function variable call is executed as blocking and can require different periods according to its characteristics, for example, its axis type.

The indexed, blocking access is executed with the instruction:

```
UserVariable:= GV_LinkAxis[CtrlNo, AxisNo].A_0_0021;
```

The indexed, blocking access with CtrlNo equal to LOCAL_CTRL accesses the synchronized operating data of the local control in the C2C link.

This access is equivalent to the indexed, blocking access with CtrlNo equal to [C-0-0031](#).

RO: Read-only access

RW: Read and write access

- -: No access

Common:

Initial value general:

The initial value is loaded to the respective parameter by the firmware before modifications are made by the running program or the following commands.

Initial value HydraulicDrive:

The initial value for the HydraulicDrive is loaded to the respective parameter by the firmware before modifications are made by the running program or the following commands.

Direct_access:

Access the **operating data of this parameter** via the simplified, blocking instruction "function variable access" (alias "direct variable").

A function variable call is executed as blocking and can require different periods according to its characteristics, for example, its axis type.

The indexed, blocking access is executed with the instruction:

```
UserVariable:= DV_Axis[AxisNo].A_0_0000;
```

or

```
DV_Axis[AxisNo].A_0_0000:= UserVariable;
```

RO: Read-only access

RW: Read and write access

- -: No access

Editability:

The operating date can be edited:

READ_ONLY: The data cannot be edited

PM: Can only be changed in the respective device in parameterization mode

P0: Can only be changed in the "P0" mode of the Motion component

P2: Only in the operation mode "P2" - Parameterization mode of the Motion component can be changed

(P2 + Stop): Only in the operation mode "P2" - Parameterization mode of the Motion component can be changed. The PLC component has to be in the "Stop" state additionally

BB: Only in the operation mode "BB" - Operating mode of the Motion component can be changed

P0, P2, BB: Can always be changed.

Function:

PARAMETER: The parameter displays, sets and configures values.

COMMAND: The parameter executes commands.

Memory:

Memory location. This parameter attribute specifies the storage location of the parameter.

RAM : The data is located in the RAM; it is not saved when the power is switched off

NVRAM: The data is saved automatically in the NVRAM

FLASH : The data is kept in the FLASH of the control

MinMax_check:

-: No check

+: The data is checked on its minimum and maximum values allowed during writing

MLC_data_type:

Data type from the Motion point of view, consists of "data length" and "format"

Typical PLC equivalents of the Motion data formats, page 13

Data length:

2BYTE: The data length is 2 bytes

4BYTE: The data length is 4 bytes

8BYTE: The data length is 8 bytes

1BYTE_VAR: List of data elements. One data has a length of 1 byte

2BYTE_VAR: List of data elements. One data has a length of 2 bytes

4BYTE_VAR: List of data elements. One data has a length of 4 bytes

8BYTE_VAR: List of data elements. One data has a length of 8 bytes

Format:

BINARY: Binary display format

UINT_HEX: Hexadecimal display format

UINT_DEC: Unsigned decimal display format

INT_DEC: Signed decimal display format

TEXT: The data is a text (8 bits - ANSI characters)

UINT_IDN: The data is a Sercos ID number (IDN) of 2 bytes

MLC_IDN: The data is an ID number (IDN) of 8 bytes. It contains the coded parameter name (e.g. [A-0-0100](#)) and its reference (e.g. axis A001). The information is encapsulated. Read the information or the corresponding content and change it, if necessary. Use the parameter editor or the IndraWorks interface dialog.

MB_IDN: The data is an ID number (IDN) of 8 bytes. It contains the coded parameter name (e.g. [A-0-0100](#) ==> FP_A_0_0100) as a low-order 32-bit value. The higher-order 32-bit values are not used. The data is used as a parameter address on the PLCopen function blocks. The reference (e.g. axis A001 of the local control) is transferred via the AXIS_REF input (similar to AXIS_GROUP_REF for K-parameters or other object or device references).

NVRAM: The data is a floating point number (4 bytes)

DOUBLE: The data is a floating point number (8 bytes)

Oscilloscope:

-: No

+: Parameter is in "[C-0-0803](#), Oscilloscope, signal selection list"

Parameter_is_copied_to_associated_S-/P-parameters:

The parameter affects the following parameters in case of the boundary condition "axis type" or "axis type with calculation in the control or in the drive".

PLC_data_type:

Data type of the parameter from the PLC point of view acc. to EN 6 1131-3.

[Typical PLC equivalents of the Motion data formats, page 13](#)

Probe:

-: No

+: Parameter is in "[C-0-2499](#), Touch probe, IDN list signal selection"

Supported:

-: No

+: The parameter is supported by the axis above/axis with calculation in the drive/axis with calculation in the control.

Unit:

If available, the respective measuring unit of the parameter is specified.

Var.data_type:

-: No

+: Type can be edited online by the firmware

Var.min/max_value:

-: No

+: MinMax values can be edited online by the firmware

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Notes

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