

MTX 14VRS

Unlock Function

Commissioning Manual
R911372266

Edition 02



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1 About this documentation

Editions of this documentation

Edition	Release Date	Note
01	2015-07	First edition
02	2019-11	Document completely revised and supplemented (WP-00077291)

Tab. 1-1: Change Record

1.1 Validity of the documentation

General information

This documentation describes the unlock function of the Rexroth IndraMotion MTX and Rexroth IndraMotion MTX micro.

Overview on target groups and product phases

The following graphic refers to the bordered activities, product phases and target groups of the present documentation.

Example: The target group “Commissioning engineer” can configure in the product phase “Engineering” using this documentation.

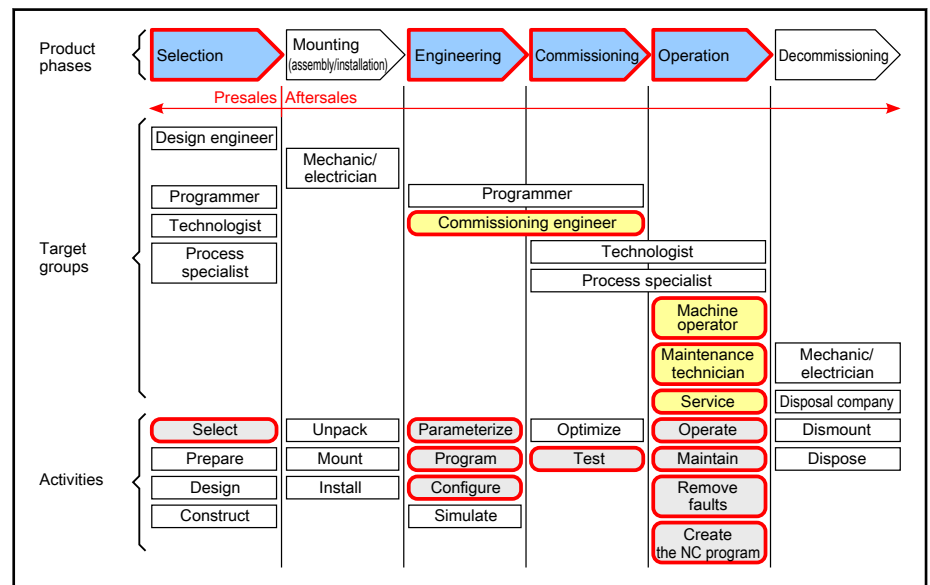


Fig. 1-1: Assigning this documentation to the target groups, product phases and target group activities

1.2 Required and supplementing documentation MTX

1.2.1 Selection/compilation

Documentation titles with type codes and part numbers

MTX 14VRS System Description DOK-MTX***-SYS*DES*V14-PRRS-EN-P, R911342640 This documentation describes the MTX control. It includes the designs, technical data, interfaces as well as the configuration of the control components.
MTX 14VRS SafeLogic System Overview DOK-MTX***-SL**SYS*V14-PRRS-EN-P, R911341698 This documentation describes the use of the safety control SafeLogic in the MTX.

Tab. 1-2: MTX documentation overview - Selecting/composing

1.2.2 Configuration

Documentation titles with type codes and part numbers

MTX 14VRS Machine Parameters DOK-MTX***-MA*PAR*V14-RERS-EN-P, R911342630 This documentation describes structure and the adjustment of available parameters of the MTX. It also includes the functions of the NC configurator and its operation.
MTX 14VRS PLC interface DOK-MTX***-PLC*INT*V14-PRRS-EN-P, R911342622 This documentation describes the interface signals and the program function blocks for the integrated PLC.
MTX 14VRS Functional Description - Basics DOK-MTX***-NC*F*BA*V14-RERS-EN-P, R911342626 This documentation describes the basic functions of the MTX. The basic commissioning steps and the control functions are provided as description and handling instruction.
MTX 14VRS Functional Description - Extension DOK-MTX***-NC*F*EX*V14-RERS-EN-P, R911342628 This documentation describes the extended functions of the MTX. The basic commissioning steps and the control functions are provided as description and handling instruction.
MTX 14VRS Functional Description - Special Functions DOK-MTX***-NC*F*SP*V14-RERS-EN-P, R911342624 This documentation describes the special functions of the MTX. The basic commissioning steps and the control functions are provided as description and handling instruction.
MTX Free Form Surface Milling DOK-MTX***-FREEFORM***-APRS-EN-P, R911341435 This documentation describes the free form surface milling process with the MTX control. CNC programs generated by a CAD/CAM system are used as basis for the entire process. Overview over the following topics: Description of the MTX or CNC function for freeform surface milling, strategy during the NC parameterization process, boundary conditions when generating CNC programs with CAM software.
MTX Conversion of MTX Projects DOK-MTX***-PROCONV****-PRRS-EN-P, R911342484 This documentation provides support during the conversion of MTX 1.x projects to MTX 2G. This project planning manual provides information on how to convert a project and identifies potential difficulties during the conversion.

Tab. 1-3: MTX documentation overview - Configuring

1.2.3 Commissioning

Documentation titles with type codes and part numbers

IndraWorks 13VRS Simulation DOK-IWORKS-SIMU****V13-APRS-EN-P, R911339256 This documentation describes the functions of the simulation components View3D, virtual control panel, virtual control and its operation in IndraWorks.
MTX 14VRS Commissioning DOK-MTX***-STARTUP*V14-CORS-EN-P, R911342620 This documentation describes the commissioning of the MTX control. Apart from a complete overview, commissioning and configuration of the axes and the user interface as well as the PLC data are described.
IndraWorks 14VRS Basis Libraries IndraLogic 2G DOK-IL*2G*-BASLIB**V14-LIRS-EN-P, R911343920 This documentation describes the system-comprehensive PLC libraries.
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 XLC, MLC and MTX systems. The focus of this documentation lies in the configuration, parameterization, commissioning and diagnostics of different periphery connections. It is the basis for the online help.
IndraWorks 14VRS WinStudio 7.4 DOK-IWORKS-WINSTUD*V14-APRS-EN-P, R911341585 This "User Manual and Technical Reference Book" supports the user in achieving the best results with the "Rexroth WinStudio"™ software. The document provides technical information and step-by-step instructions to create web-enabled HMI/SCADA programs.
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 use of IndraWorks in which the engineering tools are integrated. It includes instructions on how to work with IndraWorks and how to operate the oscilloscope function.
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.
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 use. The documentation includes the basic use, first steps, visualization, menu items and editors.
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.

Tab. 1-4: MTX documentation overview - Commissioning

1.2.4 Operation

Documentation titles with type codes and part numbers

MTX 09VRS Shop Floor Programming Turning and Milling DOK-MTX***-SF*PROG*V09-AWxx-EN-P, R911324377 This documentation describes the operation and programming of the graphic NC programming of turning and milling as well as the workpiece simulation.
MTX 12VRS Block Pre-Run DOK-MTX***-BLK*RUN*V12-APRS-EN-P, R911334379 This documentation explains to the machine manufacturer how to setup the "Block pre-run" function at the machine for the end user.
MTX 14VRS Programming Manual DOK-MTX***-NC**PRO*V14-RERS-EN-P, R911342634 This documentation describes the standard programming of the MTX control. Apart from the basics of NC programming, the use of NC functions according to DIN 66025 as well as the NC functions with high-level language syntax and CPL functions are described.
MTX 14VRS Standard NC Operation DOK-MTX***-NC*OP***V14-APRS-EN-P, R911342632 This documentation describes the operation of the standard user interface of the NC control of the MTX. It includes the operation of the interface, the NC program development as well as the tool management.
MTX 14VRS Multitouch DOK-MTX***-MULTI***V14-APRS-EN-P, R911384735 The Multitouch user interface of the NC control MTX is described in this documentation.
MTX 14VRS Standard NC Cycles DOK-MTX***-NC*CYC**V14-PRRS-EN-P, R911342638 This documentation describes the application of the standard cycles of the different technologies for the MTX control.
MTX 14VRS NC Simulation DOK-MTX***-NC*SIM**V14-APRS-EN-P, R911379629 This documentation describes the NC simulation for the MTX control.

xx Corresponding edition

Tab. 1-5: MTX documentation overview - Operating

1.2.5 OEM Engineering

Documentation titles with type codes and part numbers

MTX 13VRS Automation Interface DOK-MTX***-AUT*INT*V13-APRS-EN-P, R911337274 This documentation describes the script-based access to IndraWorks project data via the interface of the Automation Interface. Different objects including code examples are described. The Automation Builder is also described in this manual.
MTX 14VRS OPC Communication DOK-MTX***-OPC*COM*V14-PRRS-EN-P, R911342636 This documentation describes the syntax and the structure of the items for the communication with Bosch Rexroth devices.
IndraWorks OPC UA Communication DOK-IWORKS-OPC*UA*****-APRS-EN-P, R911379309 This documentation describes the OPC UA communication of the MLC and MTX control systems.

Tab. 1-6: MTX documentation overview - OEM engineering

1.2.6 AddOns

Documentation titles with type codes and part numbers

MTX 11VRS Action Recorder DOK-MTX***-ACR*****V11-APxx-EN-P, R911329943 This documentation describes the MTX action recorder. It includes the installation and commissioning as well as interface signals, application and operation.
MTX 14VRS Efficiency Workbench MTX cta, MTX ega DOK-MTX***-EWB*****V14-APRS-EN-P, R911343916 This documentation describes the mode of operation and the area of application of the analysis tool MTX cta and MTX ega.
MTX Remote Condition Monitoring DOK-MTX***-RCM*****V01-APRS-EN-P, R911334383 This documentation describes the operation of the Remote Condition Monitoring System.
MTX visIREC User Documentation DOK-MTX***-VISIREC*V01-APRS-EN-P, R911344242 This documentation describes the analysis tool visIREC used to optimize the free form surface milling process. 2D or 4D display of path-related data. 2D or 4D display of coordinate-related data. Analysis of critical areas (path and orientation deviation). Comparing the programmed NC blocks to the interpolated NC blocks.

xx Corresponding edition
Tab. 1-7: MTX documentation overview - AddOns

1.3 Information representation

1.3.1 Safety instructions

If there are safety instructions in the documentation, they contain certain signal words (Danger, Warning, Caution, Notice) and sometimes 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 signal graphics (warning triangle with exclamation mark), added in front of the signal words Danger, Warning and Caution refers to hazards to 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 **may** 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 or property damage may occur.

1.3.2 Symbols used

Note Notes are represented as follows:



This is a note for the user.

Tip Tips are represented as follows:



This is a tip for the user.

1.3.3 Names and abbreviations

Term	Explanation
Zeroing	Setting the value to 0
CANopen	Field bus
CNC	Computerized Numerical Control
CPL	Customer Programming Language
DeviceNet	Field bus
Ethernet	Communication interface
GNP	Graphical NC programming
IWE	IndraWorks Engineering
IWO	IndraWorks Operation
OWG	Optical waveguide
NC	Numerical Control
OEM	Original Equipment Manufacturer
PROFIBUS-DP	Field bus
Sercos	Field bus

Tab. 1-8: Terms and abbreviations

1.3.4 Customer feedback

Customer requests, comments or suggestions for improvement are of great importance to us. Please email your feedback on the documentations to Feedback.Documentation@boschrexroth.de. Directly insert comments in the electronic PDF document and send the PDF file to Bosch Rexroth.

2 Important instructions on use

2.1 Intended use

2.1.1 Introduction

Bosch Rexroth products are developed and manufactured according to the state-of-the-art. The products are tested prior to delivery to ensure operating safety and reliability.

The products may only be used as intended. If they are not used as intended, situations occur that result in damage to property or injury to persons.



Bosch Rexroth shall not assume any warranty, liability or payment of damages in case of damage resulting from a non-intended use of the products; the use shall solely bear all risks from unintended use of the products.

Before using Bosch Rexroth products, the following requirements have to be met to guarantee the intended use of the products:

- Anybody handling Bosch Rexroth products in any way is obliged to read and consent to the relevant safety instructions and the intended use.
- Hardware products may not be altered and have to remain in their original state; i.e. no structural changes are permitted. It is not permitted to decompile software products or alter source codes.
- Do not install damaged or defective products or use them in operation.
- It has to be ensured that the products have been installed as described in the relevant documentation.



Ensure that the data present in the control or entered or read in by the user is correct before applying it to exclude unwanted axis motion. It can be the following invalid or old data:

- Part programs
- ZO tables
- Compensation tables
- Tool tables
- Permanent CPL variables
- Remanent PLC data
- Permanent system data

2.1.2 Areas of use and application

The Rexroth MTX control is used to

- program contour and machining technology (path feed, spindle speed, tool change) of a workpiece.
- guide a machining tool along a programmed path.

Feed drives, spindles and auxiliary axes of a machine tool are activated via Sercos interface.



This additionally requires I/O components for the integrated PLC which - together with the actual CNC - control the machining process as a whole and also monitors this process with regard to technical safety.

It may only be operated with the explicitly specified hardware component configurations and combinations and only with the software and firmware specified in the appropriate documents and functional descriptions.

The Rexroth CNC system MTX provides the perfect CNC system solution for cutting and forming for the following technologies:

- Rotate
- Milling
- Drilling
- Grinding
- Bending
- Nibbling
- Punching
- Contour cutting
- Handling

2.2 Unintended use

Using the Rexroth CNC system MTX outside the above-referenced areas of application or under operating conditions other than the conditions described in the documentation and the specified technical data, is defined as "unintended use".

The Rexroth CNC system MTX must not be used if ...

- it is subjected to operating conditions not corresponding to the specified ambient conditions. Operation under water, under extreme temperature fluctuations or under extreme maximum temperatures is prohibited.
- Furthermore, the Rexroth CNC system MTX shall not be used for applications not expressly approved of by Bosch Rexroth. Therefore, please read the information given the general safety instructions!
- The Rexroth CNC system MTX may not be used in systems or machines connected to the internet via an unsecure network connection. Otherwise, malfunctions or a control failure can result due to unauthorized access.

3 Secure CNC lock/unlock function for machine manufacturers

3.1 General information

3.1.1 Objective

The lock function is used to lock a control after a specified time or at the target date.

If the control is locked, no NC program can be started anymore. All other operating functions are still available.

The OEM of a machine can enable this functionality. The initially unlocked time then elapses in the control. If the end of the time is reached, the lock is activated.

The machine user can request an unlock code from the OEM. The "Unlock-CodeGenerator" program in the IndraWorks installation package generates this code. The amount of additional time for the control use is specified in the unlock code. A target date (until when the control is unlocked) can also be specified. The lock function can also be disabled with the unlock code.

The time counter is the operating hours counter. If the control is switched off, the time does not elapse. If the control is switched on, the time elapses irrespective of whether the machine produces.



This function is not available in an emulation and thus not in the MTX micro Trainer.

3.1.2 Important terms

OEM	This is the tool manufacturer or reseller of the machine. He enables the lock function at the machine and can subsequently generate the unlock codes using the code generator.
OEM password	The OEM specifies a password when enabling the lock function. This password is required to generate the unlock codes for this machine.
Users	This is a company/person owning/using the machine. The machine is used to machine parts. Due to the lock function, the user cannot use the machine without restrictions. The user provides the unlock data to the OEM and gets the unlock code in return. The user enters the code into the control and the control is again unlocked.
Unlock code	This is a code with different machine data and a time that can be unlocked additionally. The unlock code is encrypted. Only the control - from which the unlock data results - can read the unlock code. One unlock code can only be used once. An unlock code is only valid for 48 hours.
Code generator	It is either a Windows program or an Android app. The OEM can enter his unlock data as well as the OEM password. An additional unlock period or target date can then be specified. The program uses this data to generate the unlock code.
Unlock data	This is machine-specific data to generate the unlock code. This data ensures that the unlock code matches only this control.
Unlock screen	It is a specific user screen. The OEM has to set up this screen at the machine. He can for example provide context data. This screen includes a display of the remaining time, the unlock data and an input field for the unlock code.

Operating hours counter The operating hours counter counts the time of the enabled control.

3.1.3 Locking

A warning is generated before the unlocked time elapses. When the OEM enables the lock function, it can be determined how long before this warning is generated for the first time (see ["Activating the lock/unlock function" on page 12](#)). The warning has no effect and can be deleted with "Clear warning". It is displayed again after 10 minutes. The warning text provides the remaining time until the locking.

The control is locked when the unlocked time elapses. A locked control does not allow any NC start. This means that an active part program continues running if a control is locked. Axes can also still be jogged. However, new programs can neither be started nor manual data inputs can be executed.

A warning is generated at a locked control. The warning has no effect and can be deleted with "Clear warning". It is displayed again after 10 Minutes. The warning text provides the remaining time until the complete lock.

If a control has already been locked for 24 hours, a complete lock is triggered. The running programs of all channels are canceled.

CAUTION

A complete machine lock aborts all running NC programs which can damage the machine.

The user should unlock or deactivate the machine before on time.

3.1.4 Unlocking

If a machine is locked, enter an unlock code to unlock it. The user can also enter the unlock code if the machine is not locked and thus increase the unlock period without consequences. (An additional balance is added)

The user has to open the unlock screen. Unlock data is shown in the unlock screen.



Unlock data is machine-specific and changes with every accepted unlock code.

The user contacts the OEM and provides him with the unlock code. The unlock code can either be told on the phone or via a text file in an email.

The OEM enters this unlock data as well as his OEM password into the code generator (refer to "Generating the unlock code"). The OEM can then select whether the unlock code should include additional operating hours or a target date. He can also completely deactivate the lock function using an unlock code. The code generator then generates the unlock code.

The user is now provided with the unlock code. The unlock code can either be told on the phone or via a text file in an email.



One unlock code can only be used once. An unlock code is only valid for 48 hours.

The user enters the unlock code into the unlock screen. If the entered unlock code is correct and matches the unlock data, it is accepted. The machine is unlocked. The new unlock screen shows the remaining time as well as new unlock data.

3.2 Project planning

Configuring system data

1. Copy the file "/feprom/schemas/sdlock.xsd_" to "/schemas/sdlock.xsd" or to "/usrfep/schemas/sdlock.xsd".
2. Copy the file "/feprom/SDDefLock.xml_" to "/SDDefLock.xml" or to "/usrfep/SDDefLock.xml".
3. Restart the NC.

If the lock function is active, the system data variable is cyclically filled with current values (every 10 minutes).

Creating a user screen to enter the unlock data for the MTX (MTX unlock screen)

The OEM has to create the screen to enter the unlock code by specifying the connection data.

The screen presented in this manual to enter the unlock data is only a sample application that can be used as template.

There is the .zip archive "Unlock_MTX.zip" on the IndraWorks installation data carrier. It contains the required project data to create an unlock screen.

1. Unzip the archive "Unlock_MTX.zip" on the local hard disk.
2. Copy the image file "background1024x768.jpg" to the directory to be created "C:\Archive".
3. Import the archive "VPP40-2015-03-12-16-29-30.iwx" to the node of the visualization device.
4. Add a key to call the unlock function within any operating area (e.g. "Maintenance").
5. If required, adjust the device name in the OPC node within the WinStudio application.
6. Transmit the visualization data to the operating PC.
7. Open the unlock screen.

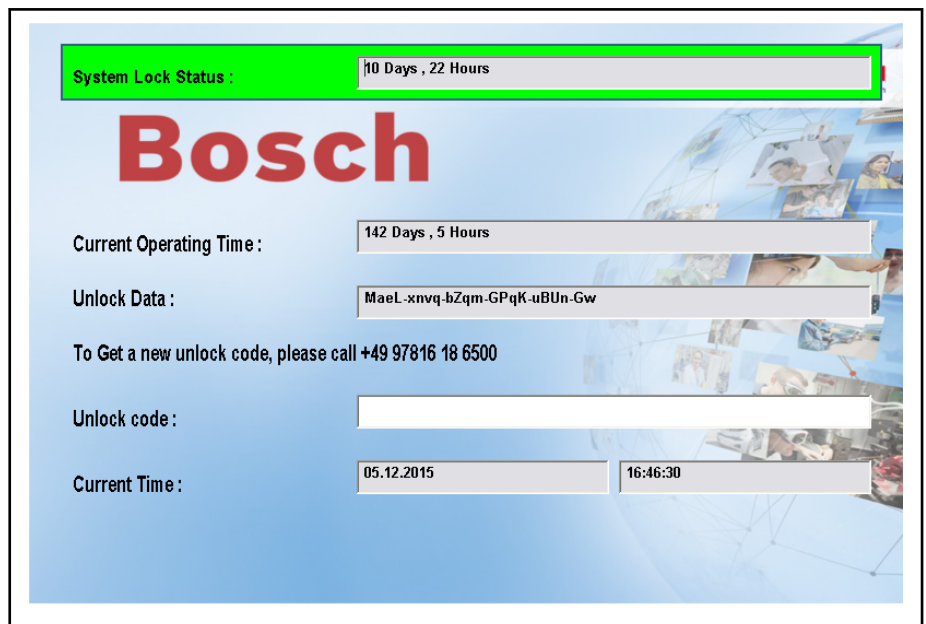


Fig. 3-1: Example of an unlock screen for the MTX created with WinStudio

Creating a user screen to enter the unlock data for the MTX micro (unlock screen of the MTX micro)

The OEM has to create the screen to enter the unlock code by specifying the connection data.

The user screen in this manual to enter the unlock data is only a sample application that can be used as a template.

For a code example, refer to [chapter 3.5 "Appendix" on page 15](#).

For more information on the individual elements, refer to the official MTX micro documentation.

1. Copy the user screen to the "/usrfep/OEM" directory.
2. Select the "Machine" operating area.
3. Press <F9>"Next" to switch to the second F-key level.
4. Press <F8> "OEM" and open the lock screen.

The screenshot shows a software interface for a machine's lock/unlock function. At the top, there's a header bar with 'Machine', 'Continue', 'Inactive', and a status icon with '\$1'. Below this, the date and time '2014/07/08 15:46:11' are displayed. The main area contains several sections: 'System lock status' with a red bar indicating '0 days , 0 hours operating time left'; 'Current operating time' showing '0 months , 0 days , 0 hours'; 'Unlock data' with a greyed-out field; a text prompt 'To get a new unlock code, please call: +86 138 8888 8888.'; an 'Unlock code' input field with a blue bar; and a numeric keypad with eight buttons. At the bottom, there's a 'Current time' display showing '2014/7/8 15:46:11' and a row of buttons: 'Unlock', 'WriteUSB', 'ReadUSB', and 'Exit'.

Fig. 3-2: Example of an unlock screen

3.3 Application

Activating the lock/unlock function

The "enableLock.xml" file is required to activate the lock function. For a file template, go to the "/feprom/enableLock.xml" directory or generate a file using the "UnlockCodeGenerator" program.

The screenshot shows a dialog box titled 'Create EnableLock.xml'. It has three input fields: 'Starting time (days):' with the value '1', 'Warning time (hours):' with the value '8', and 'Password:' with the value '123456'. Below these fields are two buttons: 'Close' and 'Save'.

Fig. 3-3: Creating the EnableLock.xml in the UnlockCodeGenerator

Program:

```

<EnableLock>
  <!-- How many days operation time should be initial allowed? -->
  <InitialTime>4</InitialTime>

  <!-- How many hours before the time runs up, the warning should be shown? -->
  <WarnTime>24</WarnTime>

  <!-- What is the password to create unlock codes for this machine? You should change this! -->
  <Password>Rexroth    </Password>
</EnableLock>

```

Starting time	Number of days initially unlocked
Warning time	How many hours before the unlock time elapses should a warning message be output
Password	Password of the machine manufacturer An individual password is assigned to each machine. This password is required to generate the unlock codes for this machine.

If the file has been generated, copy the file to "/EnableLock.xml" (root directory).

Upon the next control restart, the file is read and activated. The "/EnableLock.xml" file is deleted when activating the function to ensure that the password cannot be read anymore by the end customer.



Upon the activation, the control creates the "/usr/mtb/unlock.dat" file with an encrypted lock password.

Back up this file!

Please note that each machine generates an individual file. This file cannot be used by another machine.



Back up your current data after the activation.

The lock function is active after the activation. To change the unlock period, use the unlock screen of the HMI. To generate a new unlock code, use the "UnlockCodeGenerator" program.

⚠ WARNING

The function cannot be undone after the activation!

If this function should not be applicable anymore, explicitly disable this function using a newly generated unlock code from UnlockCodeGenerator with the setting **Deactivate lock function**.

⚠ CAUTION

If the OEM password is lost and the set useful life elapsed, the control remains locked and has to be reset by the control manufacturer.

Secure your password!

3.4 Using the UnlockCodeGenerator

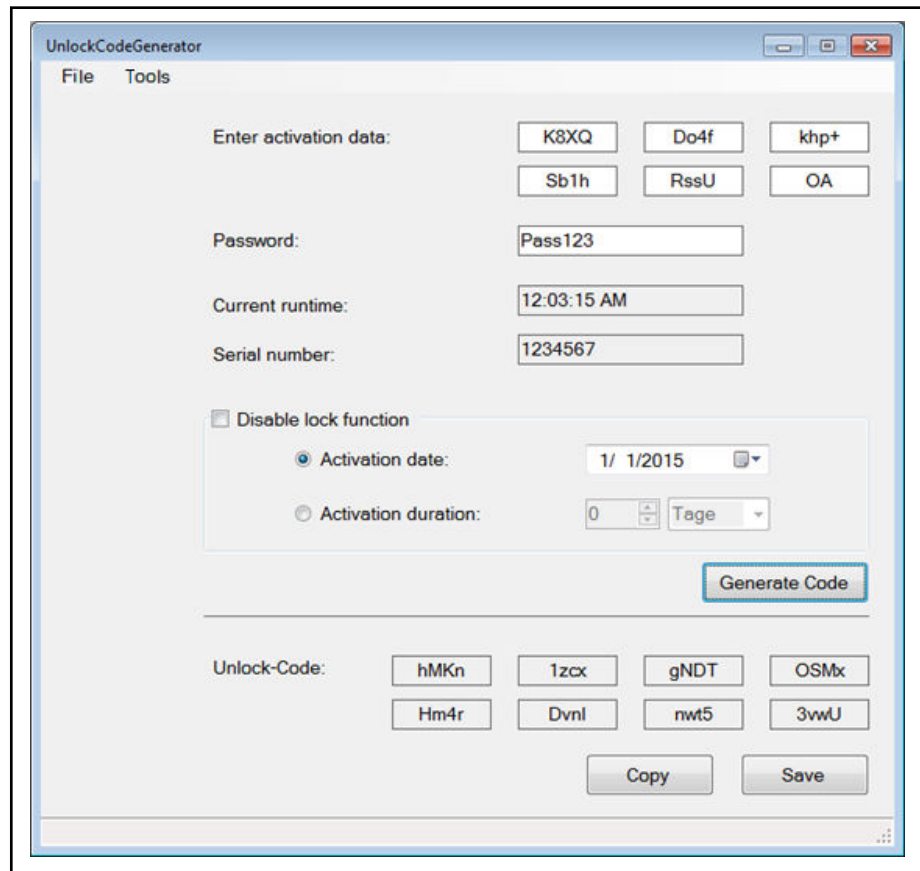


Fig. 3-4: *UnlockCodeGenerator*

1. Install the UnlockCodeGenerator.
2. Start the UnlockCodeGenerator via "All Programs\Rexroth/IndraWorks_xx.yy.zzz.a\MTX Tools".
3. Generate an "unlock_data.xml" file on the data carrier in the unlock screen. Press <writeUSB>. Connect the USB flash drive to the PC on which the UnlockCodeGenerator is running. Open this file in the UnlockCodeGenerator.
Optionally: Save the "Unlock data" displayed on the unlock screen.
4. Enter the lock password for the machine.



If the "Unlock data" and the password are correct, the current operating hour time as well as the serial number of the machine is displayed.

5. Enter a new unlock date (e.g. activate until 01/01/2015).
6. To generate an unlock code, press <Generate unlock Code>.
7. To save the unlock code in the "Unlock_code.txt" file on the USB flash drive, press <WriteUSB> (<F5> in the MTX micro or <F2> in the MTX).
Optionally: Note down the unlock code.
8. Plug the USB stick again into the USB port of the HMI. To read the unlock code in the unlock screen, press <ReadUSB> (<F6> in the MTX micro or <F3> in the MTX). The unlock code is displayed on the screen.

9. To activate the unlock code in the unlock screen, press <Unlock> (<F2> in the MTX micro or <F4> in the MTX).
10. The unlocking period of the machine is specified in the "System lock status" field.



The user does not have to wait until the activated time elapses. If the unlock code is entered earlier, the activated time is increased by the duration of the unlock code.

3.5 Appendix

Sample application of the unlock screen in the MTX micro

Program:

```

UsrScr_Lock.xml
<Screen>
  <ScrName></ScrName>
  <BackGround>
    <xpos>0</xpos>
    <ypos>0</ypos>
    <width>577</width>
    <height>365</height>
    <path></path>
    <color></color>
  </BackGround>
  <Msg>
    <var>13</var>
    <xpos>577</xpos>
    <ypos>220</ypos>
    <width>70</width>
    <height>30</height>
    <src>cal_year(time)+1900</src>
    <format></format>
  </Msg>
  <Msg>
    <var>16</var>
    <xpos>577</xpos>
    <ypos>250</ypos>
    <width>70</width>
    <height>30</height>
    <src>cal_month(time)+1</src>
    <format></format>
  </Msg>
  <Msg>
    <var>17</var>
    <xpos>577</xpos>
    <ypos>280</ypos>
    <width>70</width>
    <height>30</height>
    <src>cal_day(time)</src>
    <format></format>
  </Msg>
  <Msg>
    <var>18</var>
    <xpos>577</xpos>
    <ypos>310</ypos>
    <width>70</width>
    <height>30</height>
    <src>cal_hour(time)</src>
    <format></format>
  </Msg>
  <Msg>
    <var>19</var>
    <xpos>577</xpos>
    <ypos>170</ypos>
    <width>70</width>
    <height>30</height>
    <src>cal_minute(time)</src>
    <format></format>
  </Msg>
  <Msg>
    <var>20</var>
    <xpos>577</xpos>
    <ypos>200</ypos>
    <width>70</width>
    <height>30</height>

```

Secure CNC lock/unlock function for machine manufacturers

```

        <src>cal second(time)</src>
        <format></format>
    </Msg>
    <Msg>
        <var>11</var>
        <xpos>-155</xpos>
        <ypos>32</ypos>
        <width>151</width>
        <height>30</height>
        <src>SD /SysCtrlLock/OpTimeLeft</src>
        <format></format>
    </Msg>
    <Msg>
        <var>21</var>
        <xpos>-155</xpos>
        <ypos>62</ypos>
        <width>151</width>
        <height>30</height>
        <src>SD /SysCtrlLock/CurOpTime</src>
        <format></format>
    </Msg>
    <Msg>
        <var>22</var>
        <xpos>-65</xpos>
        <ypos>92</ypos>
        <width>61</width>
        <height>30</height>
        <src>cal int (var (21) /86400) </src>
        <format></format>
    </Msg>
    <Msg>
        <var>23</var>
        <xpos>-65</xpos>
        <ypos>142</ypos>
        <width>61</width>
        <height>30</height>
        <src>cal int (var (22) /30) </src>
        <format></format>
    </Msg>
    <Status>
        <var>10</var>
        <xpos>190</xpos>
        <ypos>33</ypos>
        <width>331</width>
        <height>30</height>
        <src>var 11</src>
        <state>
            <path></path>
            <color>#FF0000</color>
            <text> [cal int (var(11)/86400)] days, [cal var(11)/3600%24] hours operating time left</text>
            <value>
                <path></path>
                <color>#78FF28</color>
                <text> [cal int (var(11)/86400)] days, [cal var(11)/3600%24] hours operating time left</text>
                <max>10000000</max>
                <min>1</min>
            </value>
        </state>
    </Status>
    <Status>
        <var>14</var>
        <xpos>190</xpos>
        <ypos>72</ypos>
        <width>331</width>
        <height>30</height>
        <src>var 21</src>
        <state>
            <path></path>
            <color>#FFFFFF</color>
            <text>[cal var(23)] months, [cal var(22)-var(23)*30] days, [cal var(21)-int (var(21)/24)*24]hours</text>
        </state>
    </Status>
    <Status>
        <var>15</var>
        <xpos>190</xpos>
        <ypos>315</ypos>
        <width>331</width>
        <height>30</height>
        <src>cal time</src>
        <state>
            <path></path>
            <color></color>
            <text>[cal V(13)]/[cal V(16)]/[cal V(17)] [cal V(18)]:[cal V(19)]:[cal v(20)]</text>

```

```

        </state>
</Status>
<Label>
    <xpos>40</xpos>
    <ypos>202</ypos>
    <width>121</width>
    <height>30</height>
    <bigfont>0</bigfont>
    <text>Unlock code</text>
</Label>
<Label>
    <xpos>40</xpos>
    <ypos>162</ypos>
    <width>461</width>
    <height>30</height>
    <bigfont>0</bigfont>
    <text>To get a new unlock code, please call:+86 138 8888 8888.</text>
</Label>
<Label>
    <xpos>40</xpos>
    <ypos>112</ypos>
    <width>141</width>
    <height>30</height>
    <bigfont>0</bigfont>
    <text>Unlock data</text>
</Label>
<Label>
    <xpos>40</xpos>
    <ypos>72</ypos>
    <width>151</width>
    <height>30</height>
    <bigfont>0</bigfont>
    <text>Current operating time</text>
</Label>
<Label>
    <xpos>40</xpos>
    <ypos>32</ypos>
    <width>151</width>
    <height>30</height>
    <bigfont>0</bigfont>
    <text>System lock status</text>
</Label>
<Label>
    <xpos>33</xpos>
    <ypos>314</ypos>
    <width>151</width>
    <height>30</height>
    <bigfont>0</bigfont>
    <text>Current time</text>
</Label>
<Edit>
    <var>1</var>
    <xpos>190</xpos>
    <ypos>202</ypos>
    <width>331</width>
    <height>30</height>
    <src>hmi 220</src>
    <format></format>
</Edit>
<Edit>
    <var>2</var>
    <xpos>190</xpos>
    <ypos>235</ypos>
    <width>70</width>
    <height>30</height>
    <src>hmi 221</src>
    <format></format>
</Edit>
<Edit>
    <var>3</var>
    <xpos>350</xpos>
    <ypos>235</ypos>
    <width>70</width>
    <height>30</height>
    <src>hmi 223</src>
    <format></format>
</Edit>
<Edit>
    <var>4</var>
    <xpos>190</xpos>
    <ypos>270</ypos>
    <width>70</width>
    <height>30</height>

```

Secure CNC lock/unlock function for machine manufacturers

```

        <src>hmi 225</src>
        <format></format>
    </Edit>
    <Edit>
        <var>5</var>
        <xpos>350</xpos>
        <ypos>270</ypos>
        <width>70</width>
        <height>30</height>
        <src>hmi 227</src>
        <format></format>
    </Edit>
    <Edit>
        <var>6</var>
        <xpos>270</xpos>
        <ypos>235</ypos>
        <width>70</width>
        <height>30</height>
        <src>hmi 222</src>
        <format></format>
    </Edit>
    <Edit>
        <var>7</var>
        <xpos>430</xpos>
        <ypos>235</ypos>
        <width>70</width>
        <height>30</height>
        <src>hmi 224</src>
        <format></format>
    </Edit>
    <Edit>
        <var>8</var>
        <xpos>270</xpos>
        <ypos>270</ypos>
        <width>70</width>
        <height>30</height>
        <src>hmi 226</src>
        <format></format>
    </Edit>
    <Edit>
        <var>9</var>
        <xpos>430</xpos>
        <ypos>270</ypos>
        <width>70</width>
        <height>30</height>
        <src>hmi 228</src>
        <format></format>
    </Edit>
    <Msg>
        <var>12</var>
        <xpos>190</xpos>
        <ypos>112</ypos>
        <width>331</width>
        <height>30</height>
        <src>SD /SysCtrlLock/UnlockData</src>
        <format></format>
    </Msg>
    <FKey>
        <index>8</index>
        <layer>1</layer>
        <name>Exit</name>
        <function>
            <action>cmd exit</action>
        </function>
    </FKey>
    <FKey>
        <index>1</index>
        <layer>1</layer>
        <name>Unlock</name>
        <function>
            <action>cmd unlock</action>
        </function>
    </FKey>
    <FKey>
        <index>4</index>
        <layer>1</layer>
        <name>WriteUSB</name>
        <function>
            <action>write 1 null</action>
            <action>get SD /SysCtrlLock/UnlockData 1</action>
            <action>file write /usb/unlock_data.txt 1</action>
        </function>
    </FKey>

```

```
<FKey>
  <index>5</index>
  <layer>1</layer>
  <name>ReadUSB</name>
  <function>
    <action>write 1 null</action>
    <action>file read /usb/unlock_code.txt 1</action>
    <action>set hmi 220 1</action>
  </function>
</FKey>
</Screen>
```

4 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)

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Notes

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