



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAA00000BG**  
Revision No:  
**3**

## This is to certify:

**That the Programmable Controller**

with type designation(s)  
**IndraControl XM22**

Issued to

**Bosch Rexroth AG**  
**Lohr a. Main, Bayern, Germany**

is found to comply with  
**DNV GL rules for classification – Ships**

## Application :

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

|                    |                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------|
| <b>Temperature</b> | <b>D</b>                                                                                        |
| <b>Humidity</b>    | <b>B</b>                                                                                        |
| <b>Vibration</b>   | <b>B</b>                                                                                        |
| <b>EMC</b>         | <b>B</b>                                                                                        |
| <b>Enclosure</b>   | <b>Required protection according to the Rules shall be provided upon installation on board.</b> |

Issued at **Hamburg** on **2021-09-27**

for **DNV**

This Certificate is valid until **2026-05-16**.

DNV local station: **Augsburg**

Approval Engineer: **Holger Jansen**

.....  
**Joannis Papanuskas**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

www.dnv.com

Page 1 of 3

## Product description

The IndraControl XM 22 is a control platform for different applications preferably motion logic applications. Local connection of the modules from the IndraControl S20 I/O family and extension modules expands the control system.

Processor: Intel E660T 1300 MHz (CPU frequency)  
RAM for Application: 512 MByte DRAM

S20 bus parameters:

- Transmission rate: 100 MBit/s
- Number of connectable modules: Max. 63 (per station)
- Max. current for S20 bus (UBus): 2 A

Connection for S20 I/O via control bus base module:

- XA-BS01 connects the IndraControl XM21/XM22 with the S20 modules on the right control side
- XA-BS02 connects the IndraControl XM21/XM22 with the S20 modules on the right control side and the extension modules on the left control side

Fieldbus:

- Sercos
- PROFINET (via Extension Module)
- EtherNet/IP (via Extension Module)
- PROFIBUS (via Extension Module)

Communication interfaces:

- 1 x Ethernet connection (RJ45) (1 GB)
- USB ports:
  - o 1 x USB host (for the functionality, refer to the system description of the respective system)
  - o 1 x USB device (for the functionality, refer to the system description of the respective system)
- 1 x Slot for SD card (serial)

S20 modul via the control bus base module XA-BS01 or XA-BS02:

- S20-AI6-AO2-SSI2
  - o 6 analog inputs (single-ended)
  - o 2 analog outputs
  - o 2 SSI channels

Extension modules via the control bus base module XA-BS02:

- XFE01.1-FB-03
  - o RT-Ethernet (PROFINET) connection
- XFE01.1-FB-20
  - o CAN bus connection

## Application/Limitation

To fulfill the EMC limits for bridge and open deck zone, filter ME-MAX/NEF/QUINT20A or equivalent must be connected in the power line.

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

## Product certificate

If specified in the DNV Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After the certification the clause for application software control will be put into force.

## Type Approval documentation

Test Reports: E181152E1; U181561E1; U153890E1; E153890E1; S153890E1; E161125E1; U161125E1; S153890E1; E210929E1; BSH certificate No. 934a; Erprobungsplan\_XM2x\_01V06; Erprobungsplan\_XFE01.1-FB-20, Erprobungsplan\_S20-AI6-AO2-SSI2\_03V01; Erprobungsplan\_EM\_XFE01-FB-xx\_01V04.

Documents: XM22\_Operating Instructions R911340667-02; Brochures BR\_XM22\_p650746\_en; Variants DCCS-42053-001\_NOR\_N\_EN\_2016-04-28; XFE01.1xxx\_Operating-Instructions\_EN\_R911345570\_02; S20-AI6-AO2-SSI2\_DataSheet\_EN\_R911342258\_04.

Type Approval Assessment Report 2021-08-18

## Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

For the bridge mounted components, the 'Compass safe distance' was measured according to section 11.2 of IEC 60945 4<sup>th</sup> edition (2002).

## Marking of product

The products to be marked with:

- Model name
- Manufacturer name
- Serial number

## Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE