

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Controller

with type designation(s)
IndraControl XM22

Issued to

Bosch Rexroth AG
Lohr am Main, 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.

Temperature	D
Humidity	B
Vibration	B
EMC	B
Enclosure	Required protection according to the Rules shall be provided upon installation on board

This Certificate is valid until **2021-05-09**.

Issued at **Hamburg** on **2016-05-10**

for **DNV GL**

DNV GL local station: **Magdeburg**

Approval Engineer: **Heinz Scheffler**

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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.

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 module: Max. 63 (per station)
- Max. current for S20 bus (UBus): 2 A

Connection for S20 I/O via control bus base module XA-BS01 or XA-BS02

Fieldbus:

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

Connection for extension modules via the control bus base module XA-BS02

Communication interfaces

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

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 GL, 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 GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Product certificate

If specified in the 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: U153890E1; E153890E1; S153890E1; BSH certificate No. 934;
Erprobungsplan_XM2x_01V06_Ergebnisse.doc, dated 06.04.2016

Documents: XM22_Operating Instructions R911340667-02; Brochures BR_XM22_p650746_en; Variants DCCS-42053-001_NOR_N_EN_2016-04-28.

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2015.

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

Marking of product

The products to be marked with:

- Model name:
 - XM2201.01-01-31-31-001-NN-xxxxxxx XM22 with On-Board-Fieldbus "Sercos Master"
- 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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE