DNV·GL

Certificate No:
TAA00000SY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
IndraControl S20

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 **2019-04-13**.

Issued at **Hamburg** on **2016-09-28**

DNV GL local station: **Magdeburg** for **DNV GL**

Approval Engineer: **Heinz Scheffler**

Duy Nam Le
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.

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Product description

Article	Type	Description
R911172536	S20-AI-8	Analog input module, 8 inputs, 2-wire connection method
R911172538	S20-AO-8	Analog output module, 8 outputs, 2-wire connection method
R911172532	S20-DI-16/4	Digital input module, 16 inputs, 24 V DC, 2, 3 or 4- wire connection method
R911172534	S20-DO-16/3	Digital output module, 16 outputs, 24 V DC, 500 mA, 2-, 3-wire connection method
R911172537	S20-AI-8-RTD	Temperature module, 8 inputs for the connection of resistance temperature detectors (RTD)
R911173343	S20 RS-UNI	Communication module for serial data transmission, 1 interface can be parameterized as RS-485/RS-422 or RS-232
R911172539	S20-CNT/INC 2/2	Special function module, 2 counter inputs, 2 incremental encoder inputs
R911173318	S20-S3-BK+	Bus coupler for Sercos

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 DNVGL, 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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

Type Approval documentation

Test Reports: E132617E1; E132617E2; U132617E1 2nd version; U132617E2 2nd version; ADR150085; ADR150098; N11-09071 Rev.2; Certificate no. 840.

Documents: R911335980_02, R911335984_02, R911335972_01, R911335976_01, R911335982_02, R911342772_01, R911335986_03, R911342782_01

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
- 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