

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	NORIS Automation GmbH
Address	Friedrich-Barnewitz-Strasse 10, Rostock, 18109, Germany
Type	Control Units
Description	Programmable Logic Controller System NORISYS 4 CPU* Extension modules: NORISYS 4 24DIO* Software Version: 1.5.0 NORISYS 4 UNIO 4AI/4AO* NORISYS 4 UNIO 4AI* NORISYS 4 UNIO 8AI* NORISYS 4 UNIO 4AO* NORISYS 4 UNIO 8AO* NORISYS 4 UNIO 8PT100* NORISYS 4 UNIO 6AI/2AO* NORISYS 4 UNIO 2AI/6AO* NORISYS 4 UNIO 2AI/2AO* Software Version: 1.9.1 NORISYS 4 IOeco 32DI NORISYS 4 IOeco 16DI8R NORISYS 4 IOeco 16DI4AI4AO NORISYS 4 IOeco 16AI Software Version: 1.1.3

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Trade Name	NORISYS 4
Application	Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2 and ENV3 (modules marked with "*" also ENV4) as defined in Lloyd's Register Type Approval System, Test Specification Number 1 – 2013.
Specified Standard	Manufacturer's specification
Ratings	<p>Power Supply: 24 VDC (18 to 32 VDC), galvanic isolated</p> <p>CPU: 400 MHz, 64 MB RAM, 32 MB Flash 4x Digital IN, galvanic isolated 4x Digital OUT, change over relay 1x EIA-485 NORISYS 4 ExtBus, 1x EIA-232/422/485, 2x CANbus, 2x Ethernet, 1x USB1.1 Host, 1x SDHC card slot</p> <p>UNIO/24DIO: 1xEIA-485 NORISYS 4 ExtBus</p> <p>UNIO AI/AO: 4, 6 or 8 x analogue IN/ OUT; 0 to 20 mA or 4 to 20 mA and 0 to 5V, -5 to 5V, 0 to 10V or -10 to 10V, 2-wire technology, galvanic isolated</p> <p>24DIO: 24x digital IN/ OUT; 1-wire technology; in-/outputs selectable by software</p> <p>UNIO 8PT100: 8 channel inputs in 3-wire technology; wire break and earth fault detection, short circuit proof</p> <p>32DI/16DI8R/16DI4AI4AO/16AI: 2x EIA-485 NORISYS 4 ExtBus; earth fault detection</p> <p>32DI: 32x digital IN, 2-wire & 3-wire technology</p>

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16DI8R: 16x digital IN, 8x relay OUT, 2-wire & 3-wire technology

16DI4AI4AO: 16x digital IN, 2x relay OUT, 2-wire & 3-wire technology; 4x analogue IN, 0 to 5V, -5 to 5V, 0 to 10V, -10 to 10V, 0 to 20mA, 4 to 20mA, PT100, PT1000, Thermocouple, Resistance; selectable by software, 2-wire & 3-wire technology; 4x analogue OUT, 0 to 5V, -5 to 5V, 0 to 10V, -10 to 10V, 0 to 20mA, 4 to 20mA, selectable by software, 2-wire technology, galvanic isolated in pairs

16AI: 16x analogue IN; 0 to 5V, -5 to 5V, 0 to 10V, -10 to 10V, 0 to 20mA, 4 to 20mA, PT100, PT1000, Thermocouple, Resistance; selectable by software, 2-wire & 3-wire technology

Additional Tests

Low temperature test: -25°C/16h

For modules marked with "*":

Mechanical shock test: half sine, 15g, 11ms

Number of load planes: 6 ($\pm X$, $\pm Y$ and $\pm Z$)

Number of shocks per load plane: 3 (in total 18)

Other Conditions

Final functional arrangements are to comply with appropriate Lloyd's Register Rules and will be subject of the Plan Approval process, if applicable.

LR Software Conformity Assessment is not a part of this Type Approval and therefore every application of NORISYS 4 is to be examined for compliance with LR requirements for programmable electronic systems implementing emergency stop or safety critical functions.

Equipment has to comply with IACS E10 Rev.7 when intended to be installed on ships contracted for construction on or after 1 January 2022.

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This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: 12/20012 (E1)

The Design Appraisal Document HTS/ETS 40937-21/TW and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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