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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	Muggenhofer Strasse 95, Nuernberg, 90429, Germany
Туре	Transmitters/Transducers
Description	Thermocouples for diesel exhaust gas and Resistance thermometers PT100, PT1000 (with single resistance or double resistance)
	Refer to the Appendix for details.
Trade Name	TF48, TN48, TP43, TP430, 2TP43, 2TP430, MX8
Application	Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2 and ENV4 as defined in Lloyd's Register Type Approval System, Test Specification Number 1 – 1996.
Specified Standard	IEC 60584-1 (2013) IEC 60751 (2008)
Ratings	Refer to the Appendix for details.
Additional Tests	Dry heat test +80°C/16 hours

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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.

The Design Appraisal Document No. HTS/ETS 40604-20/TW and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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Appendix

DESCRIPTION	Thermocouples for diesel exhaust gas
ТҮРЕ	TF48-0-①, TF48-0-①-②, TF48-1-①, TF48-1-①-②, TN48-0-①, TN48-0-①-②, TN48-1-①, TN48-1-①-②, TN48-4-①, TN48-4-①-②, TN48-5-①, TN48-5-①-②, MX8-③-① (protection tube) ① = insertion length (max. 250mm) ②= cable length ③= thread
Technical Details	Type: NiCr/Ni Tolerance: IEC 60584-1, type K class 2 Type: Fe-CuNi Tolerance: IEC 60584-1, type J class 2 Temperature range (°C): ≤ 600 for type J ≤ 800 for type K Insertion length (mm): ≤ 250 Material of protection tube: Steel 1.4541
DESCRIPTION	Resistance thermometers PT100, PT1000 (with single resistance or double resistance)
ТҮРЕ	TP43-3-①, TP43-3-①-3, TP430-2-①, 2TP43-2-①, 2TP43-3-①, 2TP43-3-①-44, 2TP430-3-① MX8-②-① (protection tube)
Technical Details	 ① = insertion length ② = thread Tolerance: PT100 and PT1000: DIN IEC 60751 (2008) Class B Temperature Range: max. 200°C -50°C to +200°C (all types) Material of protection tube: Steel 1.4541

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