

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 **Endress+Hauser SICK GmbH+Co. KG**

Address Bergener Ring 27, Ottendorf-Okrilla, 01458, Germany

Place of Production Endress+Hauser SICK GmbH+Co. KG

Poppenbütteler Bogen 9B, Hamburg, 22399, Germany

Place of Production Endress+Hauser SICK GmbH+Co. KG

Rengoldshauser Strasse 17a, Ueberling, 88662, Germany

Type Exhaust Gas Systems

Description Measuring and monitoring device of exhaust gas concentration of diesel engines of the following gas components: SO₂, CO₂, NO, NO₂, O₂, H₂O, CO, NH₃ and CH₄.

The MARSIC300 can use the internal calibration filters for the components as listed above.

Trade Name MARSIC300

Application Marine and offshore applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register Type Approval System, Test Specification Number 1, July 2013. Components with Identification No. 20xxxx are also suitable for use in category ENV4.

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Specified Standard	Emission measurement according to chapter 5, 6.3 and 6.4 of NOx Technical Code 2008 Emission measurement of NOx at SCR- installations according to MEPC.198(62) Continues monitoring of SOx emissions according to MEPC.259(68)/ MEPC.340(77) IACS unified requirements E10 (Rev.8 Feb 2021)
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Ratings	Refer to the Appendix for further details.
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Other Conditions	In order to completely fulfill the requirements for NOx- and/or SOx monitoring additional equipment (e.g. data recording, engine performance measurements) have to be installed. The MARSIC300 fulfills the requirements to be using the internal calibration filters for commissioning without calibration/span gases.
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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:	This certificate supersedes certificate number LR23309097TA-02 issued on 14 August 2023 which is hereby cancelled.
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The Design Appraisal Document TSO-24-024992/TW and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Appendix

TYPES

MARSIC300

	Identification No.	Description
Sample tube	2058125	Unheated 0.25m
	2083525	Unheated 0.5m
	2083527	Unheated 0.8m
	2142889	Unheated 0.8m (SFU100/150)
	2142888	Unheated 0.5m (SFU100/150)
	2071307	Heated 0.5m 230V AC
	2071577	Heated 0.5m 115V AC
	2025125	Heated 0.8m 230V AC
	2028706	Heated 0.8m 115V AC
Gas sample probe	2058208	SFU-BF NI GL
	2121888	SFU100
	2137834	SFU150
Bundle of pipes	6058993	Up to 40m
Heated sample line	Type AW 6031101 to 6031135	Heiz.-SHL. 230 ELH/AW 6/8 1H 1M N.LSP (1m) to 35M N.LSP (35m)
	Type AW 6061201 to 6061270	Heiz.-SHL. 230 ELH/AW-LC 6/8 1M N.LSP (1m) to 35M N.LSP (35m)
	Type AD 6028701 to 6028735	Heiz.-SHL. 230 ELH/ADW 6/8 1H 1M N.LSP (1m) to 35M N.LSP (35m)
Analyser	1076531	DeSOx (SO ₂ , CO ₂)
	1076532	DeNOx (NO, NO ₂)
	1076530	Emission complete (SO ₂ , CO ₂ , NO, NO ₂ , O ₂ , H ₂ O, CH ₄ , NH ₃ , CO)

RATINGS

Power supply: 230V AC (50/60Hz)
 115V AC (50/60Hz)

Firmware version: 1.1.xx (Id-No. 9220790)

Component / Sensor type	Smallest range	Highest range
SO ₂ / NDIR	0 - 30 ppm	0 - 2000 ppm
CO ₂ / NDIR	-/-	0 - 25 vol.-%
NO ₂ / NDIR	0 - 200 ppm	0 - 500 ppm
NO / NDIR	0 - 300 ppm	0 - 2000 ppm
O ₂ / ZrO ₂	-/-	0 - 21 vol.-%
CO / NDIR	0 - 200 ppm	0 - 2000 ppm
NH ₃ / NDIR	0 - 50 ppm	0 - 500 ppm
CH ₄ / NDIR	0 - 500 ppm	0 - 10000 ppm