



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	Jiangsu SICK Sensor Co., Ltd. Wujin National Hi-Tech Industrial Zone (WIZ) Fengxiang, Industrial Park Fengxiang Road No. 31, Changzhou, China
Place of Production	Endress+Hauser SICK GmbH+Co. KG Poppenbütteler Bogen 9B, Hamburg, 22399, Germany
Type	Exhaust Gas Systems
Description	Measuring and monitoring device of exhaust gas concentration of diesel engines of gas components: SO ₂ and CO ₂ comprising the following components: Gas sampling unit SFU-BF-NI GL(optional 2) Gas sampling unit SFU100 (indoor, optional 2) Gas sampling unit SFU150 (outdoor, optional 2) Heated sample gas line HSL(optional 2) Bundle of pipes(optional 2) Sample gas conditioning device (SCD) Analyzer unit containing the following analyzers: -SO ₂ : DEFOR (UVRAS) -CO ₂ : FINOR (NDIR)

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Thorsten Wolff

Electrical & Control - Senior Specialist to
Lloyd's Register EMEA
A member of the Lloyd's Register group

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Trade Name	MARSIC280
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, 2021. Gas sampling unit SFU is also suitable for use in category ENV4.
Specified Standard	Emission measurement according to chapter 5, 6.3 and 6.4 of NOx Technical Code 2008 Continues monitoring of SOx emissions according to MEPC.259(68) / MEPC.340(77) IACS unified requirements E10 (Rev.8 Feb 2021)
Ratings	Measuring range: CO2 0 ... 25 Vol. % SO2 0 ... 100 ppm; 0 ... 500 ppm Power supply: 115V or 230V, 50Hz / 60 Hz Degree of protection: IP 54 (Gas sampling unit: IP 23) Software version: 4.0.XX
Other Conditions	The measuring and monitoring device is to be installed, calibrated and operated in compliance with manufacturer's Operation Instructions. 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.

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 LR23159074TA issued on 22 May



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2023 which is hereby cancelled.

The Design Appraisal Document TSO-24-024995/TW and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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