



Marine & Offshore

Certificate number: 49106/B1 BV

File number: MPA1700467

Product code: 3926H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Endress+Hauser SICK GmbH+Co. KG

Ottendorf-Okrilla - GERMANY

for the type of product

EXHAUST GAS MONITORING AND RECORDING DEVICE

Exhaust gas measuring and monitoring device

MARSIC300

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

Emission measurement according to chapter 5, 6.3 and 6.4 of NOx Technical Code 2008

Emission measurement of NOx at SCR-fitted engines acc. to MEPC.198(62)

Continues monitoring of SOx emissions according to MEPC.340(77)

EC: 31

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 12 Sep 2027

For Bureau Veritas Marine & Offshore,

At BV HAMBURG, on 20 Mar 2025,

Dirk Hoepfner

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

- Product model or type designation :
MARSIC300

-Product description:

MARSIC300 is an analyser system developed by **Endress+Hauser SICK GmbH+Co. KG** for the measurement of certain exhaust gas components of diesel engines to be installed on marine vessels.

The calibration of the “MARSIC300” can use the internal calibration filters for the components as listed above (except O₂, which is calibrated with instrument air).

The calibration interval is defined as follows:

- Zero point calibration will be done on daily base with instrument air automatically.

- End point calibration will be done with internal filters on a monthly base automatically.

The calibration needs to be checked with calibration gas latest after measurement relevant parts of the “MARSIC 300” have been replaced.

The MARSIC300 fulfills the requirements to be using the internal calibration filters for commissioning without calibration/span gases

1.1 - Technical Specifications:

Main Components	• Sampling filter unit including sample probe • Bundle of pipes • Heated sample line • Analyser unit
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Power Supply	: 230VAC and 115VAC at 50/60 Hz
Firmware version	: 1.1.xx
Primary gases	: SO ₂ , CO ₂ , NO, NO ₂ , O ₂ , H ₂ O, CO, NH ₃ and CH ₄

1.2 - Approved Variants of Main Components:

Type	Identification number	Description
Sample probe	2058125	Unheated gas probe 0.25 M
	2142889	Unheated 0.8m(SFU100/150)
	2142888	Unheated 0.5m(SFU100/150)
	2071307	Heated gas probe 0.5M 230 V
	2071577	Heated gas probe 0.5M 115V
	2025125	Heated gas probe 0.8M 230V
	2028706	Heated gas probe 0.8M 115V
Sampling filter unit	2058208	Gas extraction filter SFU-BF-NI GL
	2121888	SFU100 (indoor) - IP54
	2137834	SFU150 (outdoor) - IP66
Bundle of pipes	6025049	bundle tube up to 40m
Heated sample line	Type AW 6031101 to 6031135	HEIZ-SHL 230V ELH/AW 6/8 1H 1M N.LSP (1m) to 230V ELH/AW 6/8 1H 35M N.LSP (35m)
	Type AD 6028701 to 6028735	HEIZ-SHL. 230V ELH/ADW 6/8 1H 1M N.LSP (1m) to 230V ELH/ADW 6/8 1H 35M N.LSP (35m)
Analyser unit	1076531	DeSO _x (SO ₂ , CO ₂)
	1076532	DeNO _x (NO, NO ₂)
	1076530	Emi-Complete (SO ₂ , CO ₂ , NO, NO ₂ , H ₂ O, CH ₄ , NH ₃ , CO)

2. DOCUMENTS AND DRAWINGS :

- 2017-02-01 Part1 (MARPOL) M300
- 2016-05-30 Part2 (BAUMUSTER) M300
- 8017316 OI MARSIC300 en V2-0_2015-08
- 8017585 TI MARSIC300 en V2-0_2015-09
- 8017965 PI MARSIC en V2-0_2015-03 WEB
- BAUMUSTER [1] MARSIC300 Systemaufbau
- BAUMUSTER [2] 8017316 OI MARSIC300 en V2-0_2015-08
- BAUMUSTER [3] Wiring MARSIC300

- BAUMUSTER [4] Type Approval Certificate 12764-10 HH
- BAUMUSTER [5] Marsic 300 - Abstract
- BAUMUSTER [6] Technical Information - Installation and Initial Start-up 8017585/YXD9/V3-1/2017-05
- BAUMUSTER [7] Beheizte Leitungen für die Analysetechnik (E-859341)
- BAUMUSTER [8] Datenblatt Rohrtype Datasheet Corr Tubing PARNGB- NW07 - NW95
- BAUMUSTER [9] SAB Broecjker 6400-9008-2
- BAUMUSTER [19] Druckregelventile MS-LR LRB LRP LRPB LRE Baureihe MS
- BAUMUSTER [20] Mar300 13 001_Ermittlung des Isolationswiderstand
- BAUMUSTER [21] SICK AG Mar300_14_001_High Voltage Test Report 2016
- BAUMUSTER [22] MARSIC300 Short Presentation S1en 2015-02-23 Extract G
- BAUMUSTER [23] X Gasflussplan Flowplan Druckluft
- BAUMUSTER [24] Technical Drawing LSP-HEIZ-SHL_ELH2ASBW 120G
- BAUMUSTER [26] Ermittlung der Schwingungsfestigkeit der Gassonde GL 0,25 m gemäß Anforderungen GL
- BAUMUSTER [27] Ermittlung der Schwingungsfestigkeit der Filtereinheit SFU-BF Ni GL gemäß Anforderungen GL
- Wiring MARSIC300
- 2017-02-01 Part1 (MARPOL) M300
- 2016-05-30 Part2 (BAUMUSTER) M300
- 8017316_1750_OI MARSIC300 en V4-0_2020-03
- 8029898_1750_OI MARSIC300 en V4-0_2020-03_EHS
- 8017965 PI MARSIC en V2-0 2015-03 WEB
- Operation, Maintenance, Troubleshooting instructions 8017316/1750/V4-0/2020-03
- Product information leaflet 8017965/2021-07
- Acceptance of software changes in series GBC03 dated 28 Apr 2022
- Guideline for software development dated 28 Apr 2022
- System Design Requirement Specification SFU1X0, No. E398135 Ver00 dated 13 Mar 2024
- Gas Sampling Unit SFU100, SFU150 Operating Instructions No. 8029374/AE00/V1-0 dated Sep 2024

3. TEST REPORTS :

- BAUMUSTER [11] EADS Deutschland GmbH 917_80_14_Vibrations Test Report Marsic300
- BAUMUSTER [12] Vibration Test Report - 2014
- BAUMUSTER [13] E135389 00 EMV - Prüfprotokoll
- BAUMUSTER [14] Mar300 05 001 Cold Test Report
- BAUMUSTER [15] Mar300 06 001 Dry Heat Test Report
- BAUMUSTER [16] Mar300 07 001 Damp Heat Test Report
- BAUMUSTER [17] EADS Deutschland 917 110 14 Vibrations Test Report Marsic300 EADS
- BAUMUSTER [18] Vibration Test Report 2015-02-06
- BAUMUSTER [25] Vibration Test Report 2015
- Sick test report E330982 dated 15 Dec 2021
- Sick test report E406543 dated 30 Jul 2024
- TREO test report No. 207-24, dated 12 Jul 2024

4. APPLICATION / LIMITATION :

- 4.1 - BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships.
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31**
- 4.4 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zones
- 4.5 - Use of the Exhaust Emissions Monitoring System must be included in the engine's technical file and detailed in the ship's on-board monitoring manual, which must be approved by the Administration.
- 4.6 - The Exhaust Emissions Monitoring System is in accordance with Notation **CLEANSHIP SUPER.**
- 4.7 - The Gas analysers must be operated and calibrated in accordance with the manufacturer's recommendations.
- 4.8 - Emission measurement according to chapter 5, 6.3 and 6.4 of NOx Technical Code 2008
- 4.9 - Emission measurement of NOx at SCR-fitted engines acc. to MEPC.198(62)
- 4.10 - Continuous monitoring of SOx emissions according to MEPC.340(77)
- 4.11 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev9.
- 4.12 - Only Hardware and Firmware / Software successfully tested together in compliance with the regulations as referred to in cover page, according to the declaration of the manufacturer are covered by this certificate.
- 4.13 - Any modification of the hardware, firmware or software having an impact on the product performance or functionality has to be validated with type testing.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **Endress+Hauser SICK GmbH+Co. KG** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **Endress+Hauser SICK GmbH+Co. KG** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **Endress+Hauser SICK GmbH+Co. KG** has declared to Bureau Veritas the following production sites :

Endress+Hauser SICK GmbH+Co. KG
Rengoldshauser Str. 17a
88662 Überlingen
GERMANY

Endress+Hauser SICK GmbH+Co. KG
Poppenbütteler Bogen 9B
22399 Hamburg
GERMANY

6. MARKING OF PRODUCT:

- Maker's name or trade mark.
- Serial number of the units.
- Equipment type number or model identification under which it was type-tested.

7. OTHERS:

7.1 - It is **Endress+Hauser SICK GmbH+Co. KG's** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate N° 49106/B0 BV issued by the Society.

*** END OF CERTIFICATE ***