



Marine & Offshore

Certificate number: 20519/D0 BV

File number: AP 3909

Product code: 4410H

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

AUTO-MASKIN A/S

Skjetten - NORWAY

for the type of product

INTERNAL COMBUSTION ENGINE LOCAL MONITORING PANEL

400 system

(DCU 410(E)/408(E), SDU 404/410/420, RIO 410, RP 410(E), RP 480i & RPS Units)

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships.

EC Code: 21 for Remote Panel (RP 410)

31/41 for SDU 420/RP 480i

31 for other Units

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: 22 Nov 2028

For Bureau Veritas Marine & Offshore,

At BV OSLO, on 22 Nov 2023,

Rune MARSTEIN

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 5 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

- Product model or type designation :

400 Series

- Product description:

The 400 Series is designed to be integrated with independently approved Propulsion and Auxiliary Marine Engines.

DCU 410(E)/408(E) is able to read engine data coming either from ECM (via a communication bus) or from sensors and switches.

SDU 420/410/404 shall be connected to independent sensors.

The **400 Series** comprises the following Units:

DCU 410/408 - Engine Controller

- Power Supply : 2 x 24 VDC (Primary and Secondary)
- Input : 4 x 4-20 mA, 4 x 3-wire Pt100, 2 wire Pick up, 20 x Switch
- Output : 3 x Relay, 14 x Relay Control, 13 x Solid-state (FET - 24 V)
- Communication : J1939, CANopen, Modbus RTU / RS-485, Modbus TCP / Ethernet
- Protection : IP 44 (Front)
- Firmware : Ver. 2.xx

DCU 410E/408E - Engine Controller

- Power Supply : 2 x 24 VDC (Primary and Secondary)
- Input : 4 x 4-20 mA, 4 x 3-wire Pt100, 2 wire Pick up, 20 x Switch
- Output : 3 x Relay, 14 x Relay Control, 13 x Solid-state (FET - 24 V)
- Communication : J1939, CANopen, Modbus RTU / RS-485, Modbus TCP / Ethernet
- Protection : IP 56 (Front)
- Firmware : Ver. 3.xx

SDU 404: Safety Shutdown Unit

- Power Supply : 24 VDC
- Input : 1 x Speed, 4 x Switch
- Output : 2 x Relay
- Communication : 1 x SDU link connection
- Firmware : Ver. 1.xx

SDU 410: Safety Shutdown Unit

- Power Supply : 24 VDC
- Input : 2 x Speed, 8 x Switch
- Output : 5 x Relay
- Communication : 2 x Modbus RTU / RS-485, 1 x Modbus TCP / Ethernet or TCP/IP as local port only
- Firmware : Ver. 1.xx

SDU 420: Safety Shutdown Unit

- Power Supply : 24 VDC
- Input : 1 x Speed, 12 Switch, 2 Analog (4-20 mA) and 1 PT 100
- Output : 5 x Relay, 1 Config out
- Communication : Modbus RTU/RS-485
- Firmware : Ver. 1.xx

RIO 410: Remote I/O Unit

- Power Supply : 24 VDC
- Input : 4 x Switch, 9 x 4-20 mA, 8 x 3-wire Pt 100, 2 x TC (K type)
- Output : 2 x Relay, 2 x Solid-state (FET - 24 V)
- Communication : 1 x RS-485 (Modbus)
- Firmware : Ver. 1.xx

1. PRODUCT DESCRIPTION (to be continued):

The **400 Series** comprises the following Units (to be continued):

RP 410: Remote Panel

- Power Supply : 24 VDC
- Input : 4 x Switch
- Output : 4 x Relay
- Communication : Ethernet
- Protection : IP 44 (Front)
- Firmware : Ver. 2.xx

RP 410E: Remote Panel

- Power Supply : 24 VDC
- Input : 4 x Switch
- Output : 4 x Relay
- Communication : Ethernet
- Protection : IP 56 (Front)
- Firmware : Ver. 3.xx

RP 480i: Remote Panel

- Power Supply : 24 VDC
- Input : 0-8 Flexible (Switch, Voltage or 4-20 mA)
- Output : 1 Relay, 0-8 Digital/Voltage
- Communication : Ethernet
- Protection : IP 56 (Front)
- Firmware : Ver. 3.xx

RPS: Redundant Power Selector

- Primary Supply : 24 VDC
- Secondary Supply : 24 VDC
- Output current : 8A continuous at 70°C ambient temperature
- Output current : 16A continuous at 55°C ambient temperature
- Change over duration : 5 ms

2. DOCUMENTS AND DRAWINGS:**AUTO-MASKIN:**Manuals:

DCU 408E Quick Installation Guide No. 1100651, dated 26.3.2018
 DCU 410E Quick Installation Guide No. 1100426, dated 26.3.2018
 RP 410E Quick Installation Guide No. 1100419, dated 26.3.2018
 RP 480i Quick Installation Guide No. 1500668, dated 20.01.2022
 SDU 404 Quick Installation Guide No. 1100406, dated 30.11.2017
 SDU 410 Quick Installation Guide No. 1100274, dated 30.11.2017
 SDU 420 Quick Installation Guide No. 1500159, dated 21.01.2022
 RIO 410 Quick Installation Guide No. 1100275, dated 14.05.2020
 RPS Quick Installation Guide No. 1100653, dated 29.11.2017

Other Documents:

RP 480i Datasheet dated 28 Jun 2022.
 SDU 404/420 Datasheet dated 18 Mar 2022.
 FAT - 400 System No.1006450 Rev.C, dated 11.9.2018
 Software quality plan No. 2/1201-AMS015, rev.C, dated 29.09.2021

Firmware Revision:

Description	Number	Date
DCU 410(E)/408(E)	No.:5005,	dated 2023-01-26
SDU 404/420	No.:5022,	dated 2023-01-16
SDU 410	No.:5008,	dated 2020-09-29
RIO 410	No.:5005,	dated 2010-10-14
RP 410/410E/480i	No.:5011,	dated 2023-01-26

3. TEST REPORTS:**DNV:**

- EMC and Environmental Testing of 400 Engine Control System, Test Report No. 2007-3495, Rev. 3 dated 2008-01-15.

Nemko:

- EMC Testing of SDU 410, Test Report No. 91130/8 Ver. 2 dated 03.09.2007.

- EMC Test Report DCU 410E No. E14070.00, dated Apr 9, 2014.

AUTO-MASKIN:

- EMC and Environmental Validation Report DCU 410E No. 1/2919-HMP531/1, dated May 5, 2014

SP:

- EMC test of DCU 410E No. 4P01832E1, dated Apr 14 2014

- Environmental test on DCU 410E, SDU404 and RPS No. 4P02266:A_Rev 1, dated Apr 30 2014

- Cold test on DCU 410E, SDU404 and RPS No. 5P08871, dated Nov 17, 2015

- Ingress Protection on RP 410E No. 5F014051, dated Sep 10, 2015

- EMC test of RP 410E No. 45P02252-E, dated Mar 25, 2015

- Environmental test on RP 410E No. 5P06927, dated Oct 16, 2015

- Sound Measurement of Marine Surveillance unit RP 410E according to SS-EN 60945 No. 5P07769, dated Oct 14, 2015

RI.SE - Research Institutes of Sweden:

- Environmental test on RP 480i No. 9P04380, dated Oct 22, 2019

- Environmental test on SDU 420 No. 2P03725, dated Nov 25, 2020

- Environmental test on SDU 420 No. P113225, dated 18 Jan 2022

- IP test on RP 480i No. O156095 Rev.1, dated 10 Jun 2021.

- EMC test on RP 480i No. 9P06118 Rev.B, dated Dec 09 2019

- EMC test on SDU 420 No. P111935 Rev.B, dated Nov 25, 2021

NEMKO:

- Compass Safe Distance and Acoustic Noise and Signals on RP 480i No. E21093.00, dated May 21, 2021

4. APPLICATION / LIMITATION:

4.1 - BUREAU VERITAS Rules 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: 21** for Remote Panel (RP 410), **31/41** for SDU 420/RP 480i and **31** for other Units.

4.4 - The DCU 410(E), RIO 410 and SDU 420 Units installed within metallic cabinet fulfil the EMC requirements for installation in General power Distribution Zones. RP 410/RP410E/RP480i fulfils the EMC requirements for installation on the Bridge and Deck Zones.

4.5 - Communication Interfaces other than those specified in § 1 are not to be used.

4.6 - The equipment, once installed on board ship, is to be tested in accordance with the above referred Regulations under the supervision of a Society's Surveyor.

4.7 - Only Hardware and Firmware / Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.

4.8 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev 8.

4.9 - The marine panel RP 480i is to be equipped with an external buzzer when installed in a bridge location

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **AUTO-MASKIN A/S** 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 - **AUTO-MASKIN A/S** 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, **AUTO-MASKIN A/S** has declared to Bureau Veritas the following production site:

AUTO-MASKIN A/S
Hvamsvingen 22
2013 Skjetten
NORWAY

6. MARKING OF PRODUCT:

- Trade name
- Date of manufacture and serial number
- Equipment type or model identification under which it was type-tested

7. OTHERS:

7.1 - It is **AUTO-MASKIN A/S**'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 No. 20519/C0 BV issued on 26 Oct 2018 by the Society.

***** END OF CERTIFICATE *****