



TYPE APPROVAL CERTIFICATE



N. ELE315619CS

This is to certify that the product below is found to be in compliance with the applicable requirements of the RINA Type Approval system.

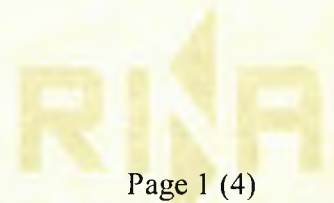
Description	Distributed I/O Modules for Monitoring and Control
Type	OM-xxx Series
Applicant	ONYX Marine Automation S.r.l. Via della Giustizia, 10 61032 Fano (PU) Italy
Manufacturer	SYSTEM S.p.A. Via Ghiarola Vecchia, 73 41042 Fiorano (MO) Italy
Reference Standards	RINA Rules for the Classification of Ships - Part C – Machinery, Systems and Fire Protection, Ch.3, Sect. 6, Tab.1

Issued in Genova on October 22, 2019.

This certificate is valid until October 22, 2024

RINA Services S.p.A.

Carratino Giovanni





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Model	Main Features
OM-110B	8 ch. PNP / NPN opto-isolated digital inputs 8 ch. 24V 0.5A PNP digital outputs, short circuit protected Full CAN 2.0 A and B interfaces, CANOpen protocol / RS 232 Interface
OM-115B	Specific firmware for handling the switching of up to 8 cabin lights, pushbuttons input, step by step relay output. 8 ch. NPN / PNP digital Inputs and 8 ch. 24Vdc 0.5A PNP output Full CAN 2.0 A and B interfaces, CANOpen; RS 232 Interface
OM-120B	16 ch. 24Vdc PNP / NPN opto-isolated configurable digital inputs 16 ch. 24Vdc PNP digital outputs, short circuit protected. Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-130B	16 ch. 24Vdc PNP opto-isolated digital inputs with diodes against reverse current. Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-140B	16 ch. 24Vdc NPN opto-isolated digital inputs with diodes against reverse current. Full CAN 2.0 A and B Interface CANOpen protocol; RS 232 Interface
OM-135B	16 ch. 24Vdc PNP opto-isolated digital inputs with diodes against reverse current 16 ch. 24Vdc PNP digital outputs, short-circuit protected Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-145B	16 ch. 24Vdc NPN opto-isolated digital input with diodes against reverse current 16 ch. 24Vdc PNP digital outputs, short circuit protected Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-145B-AL01	Remote I/O module featuring ISA -1 alarm sequence 16 NPN opto-isolated digital inputs 16 PNP digital outputs protected against short circuit Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-150B	16 ch. 24Vdc 0.5A PNP digital outputs, short circuit protected Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-160B	16 ch. 24Vdc 1A dry contacts; three groups of independent relays are available Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-170B	16 ch. 230Vac opto-isolated digital inputs; it can be used to detect the presence of mains voltage on power supply sources or get the feedback signals coming from 230Vac devices Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-210B	8 ch. Programmable differential inputs including digital filter: 4-20 mA, 0-200 mV, 0-40V; (12bit) 2 ch. 0-40V frequency input: 2.5 / 3.5V switching threshold; bandwidth: 6 kHz; res. 0.1Hz Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-215B	Same of OM-210B but with analog input 0-2.5V
OM-220B	4 ch. Programmable, differential Inputs (0-10 Hz bandwidth) ; 16 bit Thermocouple type: J (0-850°C); K (0-1200°C); T (0-450°C); R (0-1500°C); S (0-1700°C) Temperature resistors: Pt 100 – Pt 200 – Pt 500 – Pt 1000; 0-10 KOhms Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-230B	4 ch. Analog output channels, single or dual output signals: 0...5V, 0...10V, -5...+5V, -10...+10V ; (12bit) 0,1 Ohm output impedance, 2mA output current Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface.
OM-320B	8 ch. 24Vdc, PNP outputs for switching 4, 8, 12, 16 A loads. Each channel is provided with a traditional thermal fuse, as a back-up protection. Measuring of the current drained by the load, opening the circuit if the currents exceeds the threshold set. ON / OFF , overload and low current detection. Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-320B-NL01	Module for navigation light monitoring with 7 ch. For driving LED or traditional lamps (max 60W) and reading current consumption. Built-in fuses. The module can be operated locally in stand-alone mode. Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface.
OM-405B	Serial- CANbus bridge based on a powerful CPU designed to manage different communication protocols at a time. Featuring one full CAN 2.0A and 2.0B bus ports, one Ethernet 10/100 Mbps port and two RS232/RS422/RS485 serial ports. Runs and processes any serial protocol locally, and then send the processed data to the main CPU unit. This way, the computing load is distributed among the different units present in the system, reducing the workload of the main CPU. Data can even be accessed through the Ethernet port in Modbus / TCP mode.



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OM-410B	<p>Computing module 120MHz microprocessor , x86 compatible, 24 bits address space. Optional dry contact output for network / CPU failure. 1 Ethernet port 10 / 100 MBPS – 2 Full CAN 2.0 A and 2.0 B Interfaces, CANOpen protocol; RS 232 Interface. (J1939 protocol supported on the second CAN port); 2 RS232 / RS422 / RS485 Serial ports</p>
OM-420B	<p>Computing module 120MHz microprocessor , x86 compatible, 24 bits address space. Optional dry contact output for network / CPU failure. 2 Ethernet port 10 / 100 MBPS – 2 Full CAN 2.0 A and 2.0 B Interfaces, CANOpen protocol; RS 232 Interface. (J1939 protocol supported on the second CAN port) 2 RS232 / RS422 / RS485 Serial ports; 1 Expansion slot for an additional RS-232 or RS 485 serial ports</p>
OM-430B	<p>Computing module 120MHz microprocessor , x86 compatible, 24 bits address space. Optional dry contact output for network / CPU failure. 2 Ethernet port 10 / 100 MBPS – 2 Full CAN 2.0 A and 2.0 B Interfaces, CANOpen protocol; RS 232 Interface. (J1939 protocol supported on the second CAN port) 2 RS232 / RS422 / RS485 Serial ports ; 1 Expansion slot for an additional RS-232 or RS 485 serial ports</p>
OM-961M OM-961S	<p>OM-961M Master module: up to 12 CANbus slots, 4 connectors for redundant CANbus network; Full interface with two OM-430B controllers and the double CANbus network, it handles the switchover between Master and backup controller, as well as primary and backup CANbus paths</p> <p>OM-961 Slave module: up to 8 CANbus slot, 4 connectors for redundant CANbus network; Used to handle the switchover between primary and secondary CANbus path at board or switchboard level. Both modules feature fail-to-safe design, redundant power supply and a number of I/O lines used for diagnostic purpose.</p>
OM-220B (*) V.2018	<p>4 diff. (8 S.E.) analog inputs that can be individually programmed and interfaced with temperature sensors (T.C. T.R. PT100) Inputs: J, K, T, R and S thermocouple; 2 or 3 wire Pt100 –Pt1000; 0 to10 kOhm resistors; Conversion 16 bit; Bandwidth 0-10Hz ; Resolution: 0,1°C ; Accuracy < 0.2% FS @25°C Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface</p>
OM-230B (*) V.2018	<p>4 analog output channels that can be used to control the devices by means of voltage modulated analog signals. The single or dual output signal ranging from 0-5V to 0-10V can be selected by jumpers. - Outputs: Output impedance: 0.1 ohm; ranges: 0...5V, 0...10V, -5...5V, -10...10V; Max out. Current: 2mA; Conversion 12bit Max output update frequency: 1 kHz; Accuracy: 1% FS ___ Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface</p>
OM-240B (*) V.2018	<p>Offers the characteristics of both module above , featuring 4 analog inputs and 4 analog outputs, with the same performance of the OM-220B and OM-230B modules. - Inputs: J, K, T, R and S thermocouple; 2 or 3 wire Pt100 –Pt1000; 0 to10 kOhm resistors; Conversion 16 bit; Bandwidth 0-10Hz ; Resolution: 0,1°C ; Accuracy < 0.2% FS @25°C - Outputs: ranges: single / dual 0...5V, 0...10V, -5...5V, -10...10V; Max out. Current : 2mA; Conversion 12bit Max output update frequency: 1 kHz; Accuracy: 1% FS ; Outputs: Output impedance: 0.1 ohm Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface</p>
OM-275B	<p>Generating 0-10V or 4-20 mA signals (software selectable) Full CAN 2.0 A and B Interfaces</p>
OM-320B (*) V.2018	<p>8 ch. 24Vdc, PNP outputs for switching 4, 8, 12, 16 A loads. ; 8 ch. digital Input NPN/PNP Each channel is provided with a traditional thermal fuse, as a backup protection. Measuring of the current drained by the load, opening the circuit if the currents exceeds the threshold set. ON / OFF , overload and low current detection. Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface</p>
OM-320B-NL01 V.2018 (*)	<p>Monitoring and control of the LED – based navigation lights The module learn the current consumption under normal operating condition , giving an alarm whenever the current drawn goes below a predefined threshold, The module features 7 channels , each of them can drive a LED lights or even a traditional bulb (60W max). (8 PNP 2.5 A @24V output) . Built-in fuses provide independent protection The module can operate in stand-alone mode, or integrated with the monitoring system Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface</p>
OM-320B-DM01 V.2018 (*)	<p>The module features 8 output channels , each of them can switch on/off and dim any PWM dimmable light, both traditional and LED type. Non dimmable lights can be controlled in on/off mode. Each channel can output up to 16A @24V can be programmed either in on / off or dimmer mode, is electronically protected with current limitation and overheating protection, and features built-in fuses for additional protection. The module can drive an external fan for ventilating the heat sink , and in case of overheating would derate the current output in order to reduce heating, before shut-down. 8 NPN /PNP opto-isolated inputs are also provided . The module can operate in stand-alone mode, or integrated with the monitoring system. Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface</p>



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OM-321C	Optional slave module offers 32 additional I/O ch.; 8 +8 optoisolated NPN / PNP digital inputs ; 8 +8 PNP 24V 500mA outputs Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-440B (**)	CPU main controller ; 2 full CAN bus 2.0 A and 2.0B ports, CAN Open protocol , 2 Ethernet 10/100 Mbps ports; 1 RS 232 serial port; 2 RS232/RS422/RS485 serial ports ; 1 expansion slot for an additional RS-232 or RS 485 port This module can interface with a standard operator panel or a PC-based network via ModBus / TCP protocol
OM-125B	Features 16 NPN / PNP selectable opto-isolated digital inputs and 16 PNP digital outputs protected against short circuit, each with maximum current output of 3A . Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface
OM-125B-WD01	Feature 16 24V PNP digital inputs; 16 24V 3A PNP digital outputs Equipped with a special version of the firmware, featuring the watchdog functionality when used in conjunction with an OM-320B-NL01 Navigation light Controller . Full CAN 2.0 A and B Interfaces, CANOpen protocol; RS 232 Interface

(*) CPU ARM Cortex M4 144MHz 32 bit

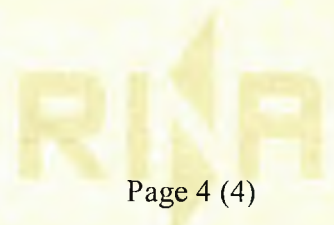
(**) CPU 500MHz 32bits ARM7 RISC Cortex A8

Test Reports:

Onyx E10 Test Specification YR 2018 Electronic modules doc. C122.04.TST01; C162.MSC22; C119.MSC22
 Onyx E10 Test Tool wiring diagram Dwg. C122.04.ELE01.R02.vsd
 TesLab doc. n. 184082F (2018/06/20); n. 184083F (2018/06/20); n. 184084F (2018/06/20); n. 184081F (2018/06/20)
 TesLab doc. n. 092011A-1 (2018/02/2009); 092011A-2 (2018/02/2009)
 GSD Laboratory doc. n. 29117 (26/01/2009); n. 27707A (16/06/2007); n. 27707B (16/06/2007);
 n. 27707C (16/06/2007); n. 27707D (16/06/2007); n. 27707E (16/06/2007); n. 27707F (16/06/2007)
 System Electronics doc. n. R01-07 (01/03/2007); R02-07 (01/03/2007); R03-07 (01/03/2007); R04-07 (01/03/2007)
 n. R05-07 (01/03/2007);

Remark:

Installation on board of Navigation Lights controller is subject to the previous examination of each specific system configuration and relevant F.M.E.A. Fail to Safe condition to be complied with.





Lloyd's Register

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.

This certificate is issued to:

PRODUCER Onyx Marine Automation srl
Via della Giustizia 10
61032 Fano (PU)
Italy

PLACE OF PRODUCTION System S.P.A.
Via Ghirarola Vecchia, 73
Fiorano Modenese (MO)
Italy

DESCRIPTION Distributed I/O modules and CPU for monitoring and control

TYPES OM-xxxB CPU MODULES

xxx: 110, 115, 120, 130, 135, 140, 145, 150, 160, 170, 320

CPU T89C51CC02 40MHz
Memory 2kbyte EEPROM
512 byte RAM
16+2 kbyte EPROM Flash

xxx: 210

CPU 32bit, 60MHz μ -processor ARM7
Memory 2kbyte EEPROM
16kbyte RAM
128kbyte Flash

Certificate No. 15/00076

Issue Date 2 September 2015

Expiry Date 1 September 2020

Sheet 1 of 3

Luigi Benedetti - Senior specialist
02 September 2015

Trieste Technical Support Office
Electrotechnical Systems

L. Benedetti
Trieste Technical Support Office
Lloyd's Register EMEA

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Southampton Boldrewood Innovation Campus, Burgess Road, Southampton, SO16 7QF

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TYPES (cont.)

xxx: 220, 230

CPU T89C51CC01 40MHz
Memory 2kbyte EEPROM
1280 byte RAM
32kbyte Flash, 2kbyte Bootloader

xxx: 410, 420

CPU DSTni-EX 120 MHz μ -processor
X86 compatible, 24-bits address space
Memory 2x 1kbyte EEPROM
2MB RAM
1MB RAM back up, 2MB Flash

xxx: 430

CPU DSTni-EX 120 MHz μ -processor
X86 compatible, 24-bits address space
Memory 2x 1kbyte EEPROM
4MB RAM
2MB RAM back up, 4MB Flash

xxx: 405

CPU DSTni-EX 120 MHz μ -processor
X86 compatible, 24-bits address space
Memory 2x 1kbyte EEPROM
4MB RAM
4MB Flash

OM-320BNL01 LED BASED NAVIGATION LIGHT CONTROLLER

CPU 40MHz T89C51CC02 CPU
Memory 2Kbyte EEPROM
512 byte RAM
16 + 2 Kbyte EPROM FLASH

OM-961M, OM-961S MASTER AND SLAVE CONTROL MODULES

Master 12 CANbus slots
4 connectors for redundant CANbus
Slave 8 CANbus slots
4 connectors for redundant CANbus

Certificate No.

15/00076

Issue Date

2 September 2015

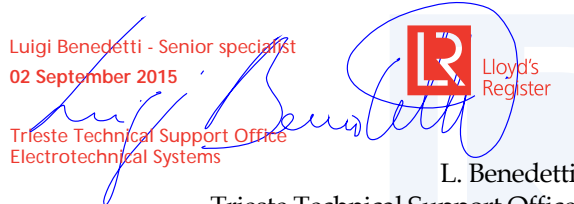

Expiry Date

1 September 2020

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Luigi Benedetti - Senior specialist
02 September 2015

Trieste Technical Support Office
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LR032.2013.12

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TYPES (cont.)

OM-145B-AL01, SIGNAL ANNUNCIATOR
CPU T89C51CC02 40MHz CPU
Memory 2Kbyte EEPROM
512 byte RAM
16 + 2 Kbyte EPROM FLASH

APPLICATION

Marine, offshore and industrial applications for use in environmental categories ENV1 and ENV2 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 - 2013.

RATING

Power supply: +24V (18...32V)

ADDITIONAL TESTS

Low Temperature test (0°C/2hrs)

STANDARD

Manufacturer's Specification.

OTHER CONDITIONS

Final arrangements of the components in dedicated systems are to be in compliance with applicable Lloyd's Register Rules and Regulations and are subject to the Lloyd's Register Plan Approval Process.

Type Approval of Products according to Test Specification No. 1 is essentially Type Approval of hardware. Examination of software aspects is restricted to functional operation as demonstrated in the Performance Test.

"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. 15/00076 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No. 15/00076
Issue Date 2 September 2015
Expiry Date 1 September 2020
Sheet 3 of 3

Luigi Benedetti - Senior specialist
02 September 2015
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Confirmation of Product Type Approval

Company Name: SYSTEM CERAMICS S.R.L.

Address: VIA GHIAROLA VECCHIA, 73-I 41042 Italy

Product: Monitoring & Control Modules

Model(s): OM-xxxB Series

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	19-GE1815107-PDA-DUP	03-OCT-2019	07-JAN-2024
Manufacturing Assessment (MA)	19-GE3646971	28-MAR-2019	27-MAR-2024
Product Quality Assurance (PQA)	NA	NA	NA

Tier

3

Intended Service

Shipboard Marine Distributed I/O Modules and CPU for Monitoring and Control Systems.

Description

OM-110B (8 digital inputs + 8 digital outputs)

OM-115B (8 digital inputs + 8 digital outputs Lights controller)

OM-120B, OM-135B and OM-145B (16 digital inputs + 16 digital outputs)

OM-145B-AL01 (16 digital inputs + 16 digital outputs ISA-1 alarm sequence annunciator)

OM-130B and OM-140B (16 digital inputs)

OM-150B (16 digital outputs)

OM-160B (16 digital outputs)

OM-170B (16 digital inputs)

OM-210B (8 analog inputs)

OM-220B (4 analogue inputs)

OM-230B (8 analogue outputs)

OM-320B (8 power outputs)

OM-320B-NL01 (8 power outputs LED navigation lights controller)

OM-405B (Serial/CAN bridge module)

OM-410B and OM-420B (CPU main controller)

OM-430B (CPU main controller)

OM-961M (Dual CAN redundant controller, master)

OM-961S (Dual CAN redundant controller, slave)

OM-220B v.2018 (4 analog inputs I/O module, same as OM-280B without the output stage)

OM-230B v.2018 (4 analog outputs I/O module, same as OM-280B without the input stage)

OM-240B v.2018 (4 analog inputs + 4 analog outputs I/O module, same as OM-280B)

OM-275B (4 analog outputs I/O module)

OM-320B v.2018 (8 power outputs I/O module)

OM-320B-NL01 v.2018 (8 power outputs LED navigation lights controller)

OM-320B-DM01 v.2018 (8 power outputs Ambient lights controller)

OM-321C (16 digital inputs + 16 digital outputs)

OM-440B (CPU main controller)

Additional information is included in the attachment.

Ratings

Power supply: +24Vdc (18-32V)

Ambient Temperature Rating: + 5 °C to + 70 °C

RS232 Interface

DIN rail mount

Additional information is included in the attachment.

Service Restrictions

- Unit Certification is not required for this product.

- Tests and Approval are for hardware only.

- Each vessel installation is to be specifically approved through vessel specific drawings showing location, wiring, power supplies, etc. of all devices associated with the system.

- Modules and CPU can not be installed in enclosed spaces subject to generated heat from other equipment.

- No parts of the modules are to be accessed by the operator during the normal use.

- Unit certification for Software is required by the final user in accordance with 4-9-3/Table 2 of the ABS Steel Vessels Rules. In particular the following tests are required in the presence of the attending Surveyor: Integration, Fault Simulation, Factory Acceptance, On-board complete system, On-board integration, Software Version Record and Tests after modifications, if any.

- The scope of Type Approval is to comply with MSC.1/Circ.1221 dated 11 December 2006.

Comments

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes, Drawings and Documentation

Drawing No. C162.MSC09.R05 Data Sheet Onyx Marine Automation - Technical Data OM-xxxB

Drawing No. Datasheet for OM-xxx Revision 13 dated Sept.2018

Drawing No. C122.04.TST01.R03 Test specification dated 30.06.2018

Drawing No. C162.MSC20.R02 Product reference table dated 12.11.2018

Drawing No. C128.MSC03.R02 Hardware Layout dated 20 February 2009

Drawing No. C162.MSC21.R01 Hardware layout dated 02.07.2018

Drawing No. C128.MSC01.R01 Test Program dated 20.08.2007

Drawing No. C162.MSC22.R02 Test program dated 09.11.2018

Drawing No. C000.USR02.R04 Installation Guide dated 18.05.2008

Drawing No. C162.MSC12.R01 Declaration Manufacturers Declaration with reference to EMI tests dated 18.07.2007

Drawing No. C162.MSC11.R01 Statement from System Electronics dated 14 August 2009

Test Report TesLab No. 27707A EMC for OM-120B dated 16.06.2007

Test Report TesLab No. R01-07 Environmental (without vibration) for OM-120B dated 01.03.2007

Test Report TesLab No. 092011A-2 Vibration for OM-160B dated 18.02.2009

Test Report TesLab No. 27707B EMC for OM-210B dated 16.06.2007

Test Report TesLab No. R02-07 Environmental (without vibration) for OM210-B dated 01.03.2007

Test Report TesLab No. 27707C EMC for OM-220B dated 16.06.2007

Test Report TesLab No. R03-07 Environmental (without vibration) for OM-220B dated 01.03.2007

Test Report TesLab No. 27707D EMC for OM-320B dated 16.06.2007

Test Report TesLab No. R04-07 Environmental (without vibration) for OM-320B dated 01.03.2007

Test Report TesLab No. 27707E EMC for OM-420B dated 16.06.2007

Test Report TesLab No. 092011A-1 Vibration for OM-420B dated 18.02.2009

Test Report TesLab No. R05-07 Environmental (without vibration) for OM-420B dated 01.03.2007

Test Report TesLab No. 29117 EMC Conducted radio frequency interferences for OM-120B, OM-210B, OM-220B, OM-320B and OM-410B dated 26.01.2009

Test Report TesLab No. 12A191F for OM-430B, OM-405B, OM-961S and OM-961M dated 07.12.2012

Test Report TesLab No. 184081F for OM-440B dated 20.06.2018

Test Report TesLab No. 184082F for OM-280B dated 20.06.2018

Test Report TesLab No. 184083F for OM-275B dated 20.06.2018

Test Report TesLab No. 184084F for OM-340B+OM-321B dated 20.06.2018

Term of Validity

This Product Design Assessment (PDA) Certificate remains valid until 07/Jan/2024 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

ABS Rules

2018 Rules for Conditions of Classification, 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

2018 Steel Vessel Rules, 4-9-8/13

2018 Offshore Support Vessels Rules, 4-9-8/13

2018 Steel Vessels Under 90 Meters (295 Feet) in Length Rules, 4-7-4/3.9 (4-7-2/Table 1)

2018 Guide for Yachts, 4-7-4/3.9 (4-7-2/Table 1)

International Standards

NA

EU-MED Standards

NA

National Standards

NA

Government Standards

NA

Other Standards

NA



Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 03-Oct-2019 10:30

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and

Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.