

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Personal Computer**

with type designation(s)

Maritime Panel PC M2-PPC, Maritime Monitor M2-M

Issued to

Sonove GmbH**Sonthofen, Bayern, Germany**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Maritime Panel PC M2-PPC	D	B	A	B	*
Maritime Monitor M2-M	D	B	A	B	*

***Required protection according to DNV GL Rules shall be provided upon installation on board**Issued at **Hamburg** on **2019-05-28**This Certificate is valid until **2024-05-27**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Jens Dietrich**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

<u>Product Name</u>	<u>Part no.</u>	<u>Description</u>
M2-PPC-24	482.0cx.yyyy	Maritime Panel PC, 24inch
M2-PPC-24 FM	483.0cx.yyyy	Maritime Panel PC, 24inch, flush mount
M2-PPC-24 CT	487.0cx.yyyy	Maritime Panel PC, 24inch, capacitive multi-touch
M2-PPC-24 FM CT	488.0cx.yyyy	Maritime Panel PC, 24inch, flush mount, capacitive multi-touch
M2-PPC-24HB	482.1cx.yyyy	Maritime Panel PC, 24inch, High Bright
M2-PPC-24HB FM	483.1cx.yyyy	Maritime Panel PC, 24inch, High Bright, flush mount
M2-PPC-24HB CT	487.1cx.yyyy	Maritime Panel PC, 24inch, High Bright, capacitive multi-touch
M2-PPC-24HB FM CT	488.1cx.yyyy	Maritime Panel PC, 24inch, High Bright, flush mount, capacitive multi-touch
M2-PPC-27	491.0cx.yyyy	Maritime Panel PC, 27inch
M2-PPC-27 FM	492.0cx.yyyy	Maritime Panel PC, 27inch, flush mount
M2-PPC-27 CT	496.0cx.yyyy	Maritime Panel PC, 27inch, capacitive multi-touch
M2-PPC-27 FM CT	497.0cx.yyyy	Maritime Panel PC, 27inch, flush mount, capacitive multi-touch
M2-M-24	582.00x.yyyy	Maritime Monitor 24inch,
M2-M-24 FM	583.00x.yyyy	Maritime Monitor 24inch, flush mount
M2-M-24 CT	587.00x.yyyy	Maritime Monitor 24inch, capacitive multi-touch
M2-M-24 FM CT	588.00x.yyyy	Maritime Monitor 24inch, flush mount, capacitive multi-touch
M2-M-24HB	582.10x.yyyy	Maritime Monitor 24inch, High Bright
M2-M-24HB FM	583.10x.yyyy	Maritime Monitor 24inch, High Bright, flush mount
M2-M-24HB CT	587.10x.yyyy	Maritime Monitor 24inch, High Bright, capacitive multi-touch
M2-M-24HB FM CT	588.10x.yyyy	Maritime Monitor 24inch, High Bright, flush mount, capacitive multi-touch
M2-M-27	591.00x.yyyy	Maritime Monitor 27inch,
M2-M-27 FM	592.00x.yyyy	Maritime Monitor 27inch, flush mount
M2-M-27 CT	596.00x.yyyy	Maritime Monitor 27inch, capacitive multi-touch
M2-M-27 FM CT	597.00x.yyyy	Maritime Monitor 27inch, flush mount, capacitive multi-touch

Features/Options:

Power supply:

AC: widerange AC, 115/230 VAC, 50/60 Hz

DC: widerange DC, 24VDC (18 - 32 VDC)

DCAC redundant: 24VDC (18 - 32 VDC), 115/230 VAC, 50/60 Hz

External Control:

ext. Buzzer: 4 Pin Connector, galv. Isolated, 24V 0,5A

Potentiometer: 3 Pin Potentiometer connector

Power Button: dig. Input for external Power Button

+/- Button: 2 x digital Input for two Buttons for Dimming

Additional for Panel PCs:

CPUs:

i7(K) Intel® Core™ i7-7600U i5(K) Intel® Core™ i5-7300U

i5(S) Intel® Core™ i5-6300U

Cel(K) Intel® Celeron 3965U

RAM (Memory):

4 GB DDR3/DDR4

8 GB DDR3/DDR4

16 GB DDR3/DDR4

32 GB DDR3/DDR4

SATA (Flash Memory):

64 GB SSD SATA, MLC
128 GB SSD SATA, MLC
256 GB SSD SATA, MLC
512 GB SSD SATA, MLC
up to 2 SSDs per system, optional RAID

M.2 (Flash Memory):

64 GB SSD M.2
128 GB SSD M.2
256 GB SSD M.2

Interfaces:

Serial 1: 4 x RS232/422/485, galv. isolated (PCIe card)
Serial 2: 1/2/4 x RS232/422/485, galv. isolated (mini PCIe)
Serial 3: 2 x RS232/RS485
CAN Bus: 2 x CAN Interface (PCIe card)
CAN Bus: 2 x CAN Interface 2 x MCP2515
LAN 1Gbit/s: 2/4 additional LAN 1 Gbit/s, via PCIe slot
USB 2.0: 2 additional USB 2.0

Compass Safe distances:

	Standard compass	Steering compass
M2-M-24	110cm	75cm
M2-M-27	100cm	80cm
M2-PPC-24	83cm	57cm
M2-PPC-27	106cm	68cm

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program.

Tests carried out

Applicable tests according to DNV GL CG-0339, November 2016.

Tests as applicable according to IEC60945, ed.2002, cl.7.1; cl.7.3; cl.8 (protected), except 8.12; cl.9; cl.10 (protected); cl.11.2.

Marking of product

Manufacturer name, type designation, part number, serial number, power supply.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)

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- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of this certificate.

END OF CERTIFICATE