TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00000N2
Revision No:
4

This is to certify:

that the Control and Monitoring System

with type designation(s)
MEGA-GUARD – VMS/AMS/PMS/EAS/BMS/PCS/AHS - OWS/PCU/UPS/BNWAS

issued to
Praxis Automation Technology B.V.
Leiderdorp, Zuid-Holland, Netherlands

is found to comply with
DNV 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.

Location classes:

Temperature	**B /D see Application / Limitation.**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**Required protection according to the Rules to be provided upon installation on board.**

Issued at **Høvik** on **2025-10-06**
This Certificate is valid until **2027-09-17**.
DNV local unit: **Netherlands CMC**

for **DNV**

Approval Engineer: **Sergey Gilmiyarov**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Mega-Guard Control and Monitoring System, consisting of:

1. Operator Work Station (OWS) comprises the following components:
   - Model 6001 Marine Personal Computer; including redundant network i/f (98.6.001.8xx)
   - 8-port NMEA interface (98.6.040.804) (temp. class D)
   - Panel PC 10" (98.6.022.84X.X) (temp. class D)
   - Panel PC 15.6'' (98.6.022.860.X) (temp. class B)
   - Panel PC 17" (98.6.022.87X.X) (temp. class D)
   - Panel PC 19" (98.6.022.82X.X) (temp. class D)
   - Panel PC 22" (98.6.022.88X.X) (temp. class D)
   - Panel PC 24'' (98.6.022.885.X) (temp. class B)
   - Panel PC 26" (98.6.022.89X.X) (temp. class D)
   - TFT colour Graphic screen (98.6.02x.6xxx)
   - Operator Keyboard (93.6.02x.00x)
   - Engineering Keyboard (76.0.200)
   - Keyboard/Tracker ball (93.6.02x.x0x)
   - Tracker ball controller (98.6.022.632) (temp. class D)
   - Ethernet HUB/Router (76.0.81x)
   - Ethernet switch 24-port (76.0.84x)
   - Ethernet switch 8-port (76.0.85x)
   - Ethernet switch 8-port (98.6.040.802) (temp. class D, compass safe dist. 41cm)
   - Ethernet switch 18-port (98.6.040.803) (temp. class D, compass safe dist. 32cm)
   - DIN module media converter RJ45/Fiber ST (98.6.040.806) (temp. class D)
   - 6010 Fieldbus Driver Board (98.6.010.7xx)
   - 8-port NMEA Interface (98.6.040.804)

   The OWS is intended used for control and graphic presentation of the below typical applications, subject to product certification:
   - Alarm, control and monitoring
   - Electrical power management
   - Main engine control
   - Pump and valve control
   - Duty alarm system
   - Patrol alarm system
   - PID control
   - Graphic presentation of ship's data
   - Dynamic positioning (Note 1)

2. Extension Alarm System (EAS) for the remote alarm indication consisting of:
   - Local Operator Panel (98.6.02x.6xx)
   - Local Operator Panel (93.0.96x)
   - TFT 5.7" Touch Operator Panel (93.0.98x.x)
   - Fire Alarm Panel (98.6.021.60x)
   - Watch Entrance Box (93.0.35x, 93.0.36x and 93.0.373)
   - Reset + Buzzer Box (type 93.0.372)
   - Audible Alarm Box (93.0.35x)

3. Process Control Units (PCU/DPU) Maxi-Guard/Mega-Guard DIN Rail Model (also called SAU) for processing of inputs, outputs, alarms and control loops, consisting of:
   - Model 6030, 18 x Digital input / 18 x Digital output, DIN rail model (98.6.030.8xx)
   - Model 6032, 36 x Digital Input unit, DIN rail model (98.6.032.8xx)
   - Model 6034, 24x Analog input /mixed input output, DIN rail model (98.6.034.8xx)
   - Model 6049, Control Processor redundant network i/f, DIN rail model (98.6.049.8xx)
   - Display Panel (98.6.02x.6xx)
   - Serial Interface Converter (91.6.040.80x)
   - USB to NMEA Interface (98.6.040.80x) (temperature class D)
   - Sensor Supply Module (98.6.010.7xx)
   - Alarm Panel 16 Ch. (93.0.92x)
   - Window Wiper Panel (93.0.95x)
   - Window Wiper I/O Module (98.6.030.80x)
   - LCD Operator Panel (93.0.96x.x)

- Navigation Lights Panel (type 93.0.93x)
- DIN I/O-module 24ssdo(nav.lights bulb/LED) (98.6.030.804)
- 5,7" TFT Operator Panel (93.0.980/981) (temp. class D)
- HCS Operator Control Panel (93.0.99X)
- DP Thruster Controller (type 98.6.049.801)

4. Bridge Manoeuvring system (BMS/PCS) consisting of:
   - All models mentioned under PCU
   - Bridge/Control Room control Lever and Telegraph Panel (98.6.02x.62x)
   - BMS Telegraph Panel (98.6.02x.62x)
   - Telegraph and Safety Panel (98.6.02x.63x)
   - Emergency Stop DIN Module (98.6.034.7xx)
   - Electronic Drive Unit (98.6.010.7xx)
   - Electronic Actuator (98.0.3xx)
   - 5,7" TFT Operator Panel (93.0.980/981) (temp. class D)
   - 8.4" TFT Operator Panel (98.6.02x.64x) (temperature class D)
   - BMS Indication/Command Panel (98.6.02x.62x)
   - BMS Command Panel (98.6.02x.64x)
   - PCS Control lever (98.6.022.621x) (temperature class D)
   - Control lever (98.6.022.623x) (temp. class D, compass safe dist. 43cm)
   - Joystick controller (98.6.022.631) (temp. class D)
   - PCS Azimuth control lever (98.6.022.622x) (temp. class D)
   - Azimuth control lever (98.6.022.624x) (temp. class D, compass safe dist. 53cm)
   - Joystick controller (98.6.022.631)

5. UPS module comprising of:
   - UPS input module (93.4.504/505) (temp. class D, compass safe dis. 23cm)
   - UPS distribution module (93.4.503) (temp. class D, compass safe dist. 28cm)

6. AHS: Anti Heeling System (AHS) comprising of:
   - All models mentioned under OWS
   - All modules referenced under PCU
   - Inclinometer (98.0.23x)

7. PMS: Power Management System comprising of:
   - All models referenced under PCU
   - PMS input/output module, DIN rail module (98.6.034.8xx)
   - Local operator panel as referenced under EAS
   - 5,7" TFT Operator Panel (93.0.98x.x)
   - 8.4" TFT Operator Panel (98.6.02x.64x) (temperature class D)

   If only PMS is delivered (without Control and Monitoring System), and PMS is intended to be used for the below power management functions, then the PMS is subject to product certification:
   - Standby start
   - Synchronizing
   - Preferential trip
   - Overload trip
   - Reverse Power trip
   - Low/High Frequency trip
   - Low/High Voltage trip
   - Load sharing
   - Low load stop
   - Manual start/stop
   - Safety system

8. BNWAS: Bridge Navigational Warning & Alarm System comprising of:
   - Local Operator Panel (98.6.02x.6xx and 93.0.96x)
   - TFT 5.7” Touch Operator Panel (93.0.98x)
   - DIN IO-Module BNWAS (98.6.030.805)

   Any protection functions are to be implemented in dedicated units for each equipment being protected and which are independent of corresponding control/alarm functions.

9. Basic software/firmware:

Device	Pro-series	E-series	Description
MPC	CAMMAN.EXE (rev.4.xx, 5.xx) MEGA-GUARD.EXE (rev.6.xx)	MEGA-GUARD (rev.6.xx)	Marine Personal Computer, data collection, central visualization and HMI
XP, TCP	60XX_xxx.HEX (rev.1.xx, 2.xx, 3.xx, 4.xx)	app-xxx; loader-xxx (rev2.x)	Data processing
Local Operator Panel /LCD Panel	LOP_xxx.HEX (rev. 1.xx)	app-xxx; loader-xxx (rev2.x)	Data processing, Local data visualization and local HMI
Functional keyboard	Functional keyboard (rev. 2.xx, 3.xx)	Functional keyboard (rev. 2.xx, 3.xx)	Dedicated (limited) operator keyboard
I/O Modules (DIN, DIN/DOUT, AIN, MIXED)	-	IO Module (rev. 2.x)	Data acquisition
Stand-alone Panels		PANEL (rev.1.x)	Stand-alone panels (Alarm Panel and Window Wiper) data processing and visualization

Application/Limitation

The Type Approval covers hardware and basic software/firmware listed above.

Software update notification

When the type approved software is revised (affecting all future deliveries) DNV is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Note 1: Application software for dynamic positioning is not included in this Type Approval Certificate.

Plan approval

The following documentation is to be submitted for approval for each application:

- Reference to this Type Approval Certificate
- System block diagram/topology drawing
- Power supply arrangement (may be part of the block diagram)
- Functional description of application software
- List of controlled and monitored points including data transferred on communication links/network
- Functional failure analysis of integrated system including network (applies to deliveries required to comply with DNV rules issued January 2016 and later)
- Test program for manufacturing survey

Product certification

Each delivery of the application system is to be certified according to DNV rules Pt.4 Ch.9 Sec.1. The certification test shall be performed at the manufacturer of the application system before the system is shipped to the yard. After certification all changes are to be managed and recorded in accordance with DNV rules Pt.4 Ch.9 and Pt.7 Ch.1.

Clause for application software control

All changes in software are to be recorded as long as the system is in use on board. The records of all major changes are to be forwarded to DNV for evaluation and approval. Major changes in the software are to be approved before being installed in the computer. A Certification of Application Functions may be required for the particular vessel.

The following devices are tested to temperature location class D:

- Marine PC, Compass max safe distance 56 cm
- Control Processor E-series 4xLAN, Compass max safe distance 44 cm
- HCS Operator Control Panel, Compass max safe distance 50 cm
- DIN IO-module (nav.lights bulb-LED), Compass max safe distance 46 cm
- TFT 5.7 Touch Operator Panel, Compass max safe distance 24 cm

Type Approval documentation

Tests carried out

- Applicable tests according to DNV-CG-0339 (rev. August 2021)

Marking of product

Each component is marked/labelled with model number (indicated as “P/N”)

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)
- 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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE