DNV·GL

Certificate No:
**TAA00002NC**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Programmable Controller**

with type designation(s)
**GU1001**

Issued to
**MarineProp Sweden AB**
**Öckerö, Västra Götalands Län, Sweden**

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.**

**Location classes:**

| | |
|---|---|
| **Temperature** | **B** |
| **Humidity** | **B** |
| **Vibration** | **A** |
| **EMC** | **B** |
| **Enclosure** | **A / IP20** |

Issued at **Høvik** on **2020-04-27**
This Certificate is valid until **2025-04-26**.
DNV GL local station: **Sweden CMC**

Approval Engineer: **Ståle Sneen**

for **DNV GL**

**Marta Alonso Pontes**
**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.



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Job Id: **262.1-032974-1**
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## Product description

The GU1001 controller is a microprocessor based controller unit for marine use. It is mainly intended for use in CPP propulsion systems, but can be used as a general logic unit for any automation purpose. The controller can be used as a stand-alone unit, or it can be interconnected in a network with up to 5 controllers, communicating over a double or single CANopen network.

The controller has a 4 x 20 character alphanumeric display and push buttons. All signals are connected to the enclosure through detachable connectors with screw terminations.

Physical and logical interfaces

16 pcs. Digital Inputs 0 – 24 V
8 pcs. Analog Inputs 0 – 10V or 0 – 20 mA
8 pcs. Outputs 10.0 V for potentiometer, with open circuit supervision
8 pcs. Digital Outputs 0 – 24V
8 pcs PWM Outputs 0 – 24V
2 pcs. CAN bus (Free of external potential, common potential for the 2 buses.)
2 pcs. RS485 port (Free of potential) Modbus or NMEA 0183 Format
2 pcs. Analog Output 4 – 20 mA (free of potential)

Electrical characteristics

| | |
|---|---|
| Supply voltage: | 24 V DC -25% + 30% |
| Supply current, intrinsic: | Max 0.5 A |
| Digital Inputs: | -0.5 to +33.0 V |
| Analog Inputs: | -0.5 to +33.0 V |
| Analog Outputs: | 4 – 20 mA Max 16 V @ 24V Supply, short circuit protected |
| PWM Outputs: | Max 2.0 A, short circuit protected |
| Digital Outputs: | Max 2.0 A, short circuit protected |

## Approval conditions

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 classification of 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. After certification the clause for software control will be put into force.

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

## Application/Limitation

EMC in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.

The GU1001 unit was tested without any special requirements on the cabling.
According to makers instructions, the following requirements for the cable apply:
- Inside cubicles and units: No special requirements
- Between cubicles, units and sensors. Data communication cables: Shielded pair twisted cable
- Between cubicles, units and sensors. All other signals: Shielded cable

## Type Approval documentation

## Tests carried out
Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

## Marking of product
The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

## 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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE