DNV·GL

Certificate No:
TAA00000K2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Controller

with type designation(s)
Versatile Control Unit (VCU)

Issued to
Kwant Controls B.V.
Sneek, Netherlands

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	**D**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**A**

This Certificate is valid until **2021-10-12**.

Issued at **Høvik** on **2016-10-13**

for **DNV GL**

DNV GL local station: **Rotterdam**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
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.

Job Id: **262.1-023155-1**
Certificate No: **TAA00000K2**

Product description

Versatile Control Unit (VCU) by Kwant Controls B.V. The VCU is designed for high performance control in demanding maritime environments. The integrated I/O features are tailored for maritime applications and reduce the need for I/O expanders or additional I/O conversion equipment.

The configurable/programmable basic functionalities* of the VCU incorporates Propulsion and Steering Control in terms of:

- Telegraph communication including optional Lever Line-up and Station in Control selection
- Controllable/Fixed Pitch Propeller control
- Rudder control
- Azimuth control
- Water- and Linear-jet control
- Engine control
- Clutch control
- Indication duties

The VCU family consists of the following products:

Article No	HW rev.	Description
11201001	1.0	VCU with mode switch and display switch
11201002	1.0	VCU
11201003	1.0	VCU with mode switch and display switch
11201004	1.0	VCU

Technical data

Mounting:	DIN-rail
Power supply:	24 VDC
Connections:	8xDI, 8xDO, 4xAI, 4xAO, 5xCOM, 3xCAN, 1xEthernet, 1xMicroSD slot
AI/AO rating:	4-20 mA
DI/DO rating:	0-24 V
COM rating:	COM1/2 RS422 non-isolated, COM3 TTY, COM4/5 RS422 galvanically isolated to 2.5kV
CAN rating:	CAN1/2 galvanically isolated to 2.5kV, CAN3 non-isolated
Eth. rating:	10/100Base-T Ethernet. RJ-45 connector. CAT5 type cable. For service use only.

* The basic functions have not been assessed in this type approval.

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 the certification the clause for application software control will be put into force.

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 changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Application/Limitation

The Ethernet port is approved for service use only. Ethernet cable does not need to be shielded, but all other communication cables must be of shielded type.

Type Approval documentation

Tests carried out
Applicable tests according to class guideline DNVGL-CG-0339, November 2015.

Marking of product
Kwant Controls B.V.
Type: Versatile Control Unit
Serial Number
Rev. 1.0
Power supply: 24 VDC

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