

TYPE APPROVAL CERTIFICATE

This is to certify:**That the General Control System**

with type designation(s)

**RSCU-Mk3/3.3/4/4.2, "Star", Co-Pilot 3, Electric Shaft System Elas-4,
BUK-G, PMA-1 / -2 / -E2 / -96 Elas, RSG-1/1 / -1/2, ASG-1/1 / -1/2, Steering wheels**

Issued to

**Kwant Controls B.V.
Sneek, Netherlands**

is found to comply with

DNV GL rules for classification – Ships and offshore units**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	C (front only of components for panel mounting)

This Certificate is valid until **2018-06-30**.Issued at **Høvik** on **2016-07-05**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: **262.1-005394-5**
Certificate No: **TAA00000J6**

Product description

Rotation- and Speed Control Units: Mk3, Mk3.3, Mk3.3"Star", Mk4, Mk4.2, Co-Pilot 3
Electric shaft system type Elas-4 with software version V1.1.0
Control unit: BUK-G
Potentiometer drives: PMA-1, PMA-2, PMA-E2, PMA-96 Elas
Angle transmitters: RSG-1/1, RSG-1/2, ASG-1/1, ASG-1/2
Steering wheels

Application/Limitation

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- System block diagram
- Power supply arrangement (may be part of the System block diagram)

The Type Approval covers hardware and software listed under Product description.

As long as the units are covered by the Type Approval, a product certificate according to Pt.4 Ch.9 Sec.1 [1.2.3] will not be required. Correct configuration and set up for each delivery to be tested during commissioning after installation.

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.

A Certification of Application Functions may be required for the particular vessel.

Type Approval documentation

Tests carried out

Applicable tests according to DNV Standard for Certification No. 2.4.

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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