DNV·GL

Certificate No:
**TAA00000ZY**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the General Control System**

with type designation(s)
**ELAS-5 electric shaft system, telegraph system, CUBI(x), joystick, levers**

Issued to
## Kwant Controls B.V.
**Sneek, Netherlands**

is found to comply with
**DNV GL rules for classification – High speed and light craft**

## Application :

**Location classes:**

| Type | Temperature | Humidity | Vibration | EMC | Enclosure |
|---|---|---|---|---|---|
| **ELAS-5 electric shaft system, telegraph system** | | | | | |
| **CUBI(x), joystick** | **A** | **B** | **A** | **B** | **A** |
| **levers** | **D** | **B** | **A** | **B** | **C*** |

*** BUK B may be class A**

This Certificate is valid until **2018-12-31**.

Issued at **Høvik** on **2017-01-04**

for **DNV GL**

DNV GL local station: **Rotterdam**

Approval Engineer: **Jabber Abbas**

**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.


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## Product description

An ELAS-5 remote control system is based on the Control Unit to Bus Interface module (CUBI(x)). The CUBI(x) can be used as an interface between a remote control panel and the CAN-bus. For this purpose, the module is equipped with a number of digital – and analog inputs and outputs and two CAN-bus transceivers. The integrated servomotor controllers can function autonomously. The basis for the communication with the module is according to the CANopen protocol.

An autonomous ELAS-5 system can perform all functions of an engine room telegraph.
When used for remote control of propulsion or thruster machinery additional control module(s) to interface machinery control system(s) is needed. This Type Approval does not cover these additional interface/control modules.

The ELAS-5 remote control system can also consist of a Versatile Control Unit (VCU), type approval certificate TAA00000K2 (valid at the date of issuance).

The following operation modules (levers with "electric shaft", etc.) are covered:
BUK B, BUK C, BUK G , BUK H, RSCU-3.4, RSCU-V, RSCU-H96, CO-PILOT 3E, PMA 96, JOYSTICK and TELEGRAPH WD. The RCSU H96 may be a variant with embedded electronics interfacing the system through a CAN bridge and a CAN RC transmitter module.

## Approval conditions

The Type Approval covers hardware listed under Product description and software for the telegraph function.

The following documentation of the actual application is to be submitted for approval in each case (responsible for submittal may be yard, equipment supplier or propulsion/manoeuvring control system supplier):

- Reference to relevant Type Approval Certificates, at least this
- Functional description (not if only ER telegraph)
- System block diagram
- User interface description (not if only ER telegraph)
- Power supply arrangement (may be part of the System block diagram)
- List of control & monitored points (not if only ER telegraph)
- Test program for certification test (not if only ER telegraph)

Product certificate
Each delivery where the system is used for remote control of either propulsion or dynamic positioning thruster is to be certified according to Pt.4 Ch.9 Sec.1. The Certification of Application Functions is to be performed before the system is shipped to the yard, typically at the manufacturer of the application system but other alternative locations such as at the maker of the propulsion control system may be chosen if agreed and adequate knowledge and test facilities exist here. 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.
A new Certification of Application Functions may be required for the particular vessel.

## Application/limitations

An ER telegraph system must be supplied from the emergency switchboard.

For vessels with additional notation E0 (unattended machinery spaces) and a single propulsion line the remote control panel on the centre bridge must be supplied from two distribution systems and each supply must be monitored with alarm. With two or more propulsion lines either each centre panel must be supplied in the same way or different panels must be supplied from at least two different distribution systems.

## Type Approval documentation

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## Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

## 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 renewal of this certificate.

END OF CERTIFICATE