DNV·GL

Certificate No:
TAA00000FY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
Operation Panel/HMI LDU-30

Issued to
Kontron Europe GmbH
Augsburg, Bayern, Germany

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	**B**
EMC	**B**
Enclosure	**C**

This Certificate is valid until **2021-05-30**.

Issued at **Høvik** on **2016-05-31**

for **DNV GL**

DNV GL local station: **Augsburg**

Approval Engineer: **Nils Jarem**

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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

LDU-30 Local Display Unit is designed to indicate the status of the marine internal combustion engines.

General Device Information:
The LDU30 is an intelligent display based on a SMARC processor module with an ARM processor, 1GB of RAM and 4GB memory.

It comes with a pre-installed Yocto Linux image and a Bootloader (U-Boot) in FLASH memory. A comprehensive update strategy provides simple update and recovery procedure. Updates can be performed by using a dedicated USB stick on the water protected USB connector at the front.

The graphical user interface is based on Qt and operated by using a projected capacitance touch screen and four physical buttons with RGB illumination.

The following interfaces are provided via the back-panel on the rear side of the device:

- Two CAN interfaces
- An Ethernet interface
- An RS485 interface
- Two independent 24V power inputs
- An RS232 debug interface for commissioning (covered by label)
- A connector for selecting the LDU30s' device ID

The LDU-30 is to be used with Wärtsilä equipment and machinery only.

Nominal voltage:

- 24V DC

SW Used during testing:

- Linux Kernel 3.10.17

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.

Type Approval documentation

Tests carried out

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

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number

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