DNV·GL

Certificate No:
TAA00000M0

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
MIS-Modular Interfacing System Type DCU5: MCU5x.., DIM8, DOM230_4, ADRM8, AIM 1..., AOM 12_1, DOMOC 8, DKM, xNMEA to 1.., VL-SDN, VL-66.., VC-160, SO120, STEP-PS..., CDDisplay 5.7"

Issued to
Veinland GmbH
Seddiner See, Germany

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.

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**Required protection according to theRequired protection according to the Rules to be provided upon installation on board.**

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

Issued at **Hamburg** on **2016-10-13**
DNV GL local station: **Magdeburg** for **DNV GL**

Approval Engineer: **Andrea Grün**

Duy Nam Le
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

MIS-Modular Interfacing System
DCU5: MCU5x.., DIM8, DOM230_4, ADRM8, AIM 1..., AOM 12_1, DOMOC 8, DKM, xNMEA to 1.., VL-SDN, VL-66.., VC-160, SO120, STEP-PS..., CDDisplay 5.7"

DCU5 Data Control Unit - Modular System consisting of:
- MCU5 Revision 5.6
- DIM8 Revision 5.3
- DOM230_4 Revision 5.21 / 5.3
- ADRM8 Revision 5.1
- AIM 12_2 Revision 5.0
- AIM 10_8 Revision 1.0
- AOM 12_1 Revision 5.0
- DOMOC 8 Revision 5.1
- DKM Revision 1.1
  - Hardware : Rev. 5.x; Software Version: Rev. 3.x

Operating Voltage: UB= +12..32V /Pv approx. 2.4 W externally; Polarity Protection and self-resetting fuse 1.5A
Bus Connection: 8 Bit parallel bus with control signals and power supply

DCU 5/MCU5.6/DIMPT
- Microcontroller: P89V664FA 64 Kbyte Flash Rom and 2 Kbyte SRAM on Chip, Watchdog; 1x full duplex UART

MCU5E Rev.5.6.3 Micro controller Unit
- 8NMEA to 1-E Revision 3.3 Software Rev. 1.3.x
- Power supply: 24V (9-32V) max. 120 mA
- Input: 8 x NMEA up to 38400 Baud (CH1.. CH8) and 1 x RS 422 up to 115200 Baud (CH 0)
- Output: 1x Ethernet UDP / TCP/IP 10 / 100 Mbit/s
- 1NMEA to 4RG NMEA Expander 1to4 Revision 1.1
- 1NMEA to 8RG NMEA Expander 1to8 Revision 1.1
- 4NMEA to1RG 4to1 NMEA Multiplexer Revision 1.1
- 8NMEA to1RG 8to1 NMEA Multiplexer Revision 1.1

VL-SDN Revision 1.0
- Power Supply: 24V (9-36V) / max. 400mA
- 2 x Inputs RS422/NMEA (galv. isolated)
- 12 x Outputs RS422/NMEA
- 2 x Outputs RS232

DVI System 1
- VL-66112 DVI-KVMA Switch
- VL-66200 PS/2 Extender via CAT
- VL-66202 DVI-PS/2 Extender via CAT
- VL-66203 DVI-USB Extender via CAT

DVI System 2
- VL-66005 DVI-Distributor
- VL-66062 DVI-AV Switch
- VC-160 VGA to DVI-Converter
- VL-85114 LWL-System

STEP-PS/1AC/24DC/1,75 Rail-Power Supply 24V DC/1,75A
S0121 Dimmer Module
IT5 LCD Display 5,7" Modular Data Display
MDD- Software Version: V1.34

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

8NMEA to 1-E: tested according IEC 61 162-1 Edition 4 and IEC 61 162-2

Type Approval documentation

Test report : GOM21012-3958-E_Rev04 dated 14-04-2011
GOM21101-4117-L dated 18-02-201
V_3_569-1 dated 03-09-2008
GOM-1106-1215-E-16 dated 23-08-2011
GOM-1106-1215-L-11 dated 14-09-2011
GOM20804-1749-E-16 dated 10-09-2008
GOM20810-2044-E-16 dated 28-10-2008
410.154.1 dated 20-10-2010
TESEQ D/12/3938/01dated 22-06-2012
9314/12 dated 02-08-2012 and 24-08-2012 (Revision 1)
9355/12 dated 24-08-2012
GOM20710-0192-E16 dated 22-11-2007
9401 / 12 and 9401.01 / 12 dated 25-09-2012
D/13/4112/05 dated 15-08-2014
Test specification : Paw_IEC 61162-1Test_8NMEAto1E_0.5_deu 17.07.2014

List of Modules dated 24-10-2011
Technical Dokumentation: 8NMEA to 1- E Version 2.x
VL-SDN dated 6/2008
DCU 5 Version 2.6.x
User Manual Modular Data Display (IT5) Revision 1.0 dated 17-107-2012

Tests carried out

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

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 2.5 year and at renewal of this certificate.

END OF CERTIFICATE