DNV·GL

Certificate No:
TAA00001FM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Control and Monitoring System

with type designation(s)
PCL (Pleiger Control Loop)

Issued to
Pleiger Maschinenbau GmbH & Co. KG
Witten, 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 relevant rules shall be provided upon installation on board**

Issued at **Hamburg** on **2017-12-01**
This Certificate is valid until **2020-12-21**.
DNV GL local station: **Essen**

Approval Engineer: **Dariusz Lesniewski**

for **DNV GL**

Joannis Papanuskas
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.

Approval conditions

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
- Wiring diagrams

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.

Software control
All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Product description

EHS Data and Power Bus System.

Applicable for control, monitoring and power supply of Pleiger electro-hydraulic actuators (EHS-Actuators).

The PCL System consists of:
BUS Master A/B PMC 2000 with following components:

- dc3, mc3, dea8, si2 (1…4) for data control an power supply
- PCL-PC power control modules
- Operator terminal PPC-PLD-7 for local operation
  Other DNV GL type approved operator panel possible
- Ethernet switch – DNV GL type approved (e. g. MOXA EDS-205A)

PCL-VCI Units (Valve Control Interface): model Pleiger PCL-VCI-V2 or Pleiger PLC-VCI-V3:

- Data and output interface for actuators and drive control with optional digital/analogue inputs and digital outputs (mounting inside actuator housing, in cabinet or in bus-box)

PCL-IO units (input/output):

- Analogue/digital inputs, digital relay outputs

Common power/communication cable (Ring-Bus) marine type approved according to Pleiger specification (see user manual):

- 230VAC, max 16 A power supply

Software:
Project related software approval is not required. System settings to be done by configuration files for each application.

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

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

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