

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Measurement Converter**

with type designation(s)

DC/DC insulation amplifier model TDG-210DG

Issued to

DEIF A/S**SKIVE, Denmark**

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.****Location classes:**

Temperature	B
Humidity	B
Vibration	A
EMC	B
Enclosure	Required protection according to relevant rules shall be provided upon installation on board.

This Certificate is valid until **2021-11-07**.Issued at **Høvik** on **2016-11-15**DNV GL local station: **Aalborg**Approval Engineer: **Ståle Sneen**for **DNV GL**

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:
Certificate No: **TAA00000UA**

Product description

TDG-210DG is a DC/DC insulation amplifier that provides galvanic insulation between an analog input signal and an analog output signal. Conversion of type/range of analog signal with following characteristics:

Accuracy class:	0.5 (according to IEC 60688)
Current standard input:	within the limit of $\pm 1..50\text{mA}$
Voltage input:	within the limit of $\pm 60\text{mV}..400\text{V}$
Output (0..100%):	0..1mA, 0..5mA, 0..10mA, 0..20mA, 0..1V, 0..10V
Output (20..100%):	0.2..1mA, 1..5mA, 2..10mA, 4..20mA, 0.2..1V, 2..10V
Output (-100..0..100%):	$\pm 1\text{mA}$, $\pm 5\text{mA}$, $\pm 10\text{mA}$, $\pm 20\text{mA}$, $\pm 1\text{V}$, $\pm 10\text{V}$

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 Guidelines for the Performance of Type Approvals Part 2, Edition 2003

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