DNV·GL

Certificate No:
TAA00002J8

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Misc. detector

with type designation(s)
Inclination Sensors F99 Series

Issued to
Pepperl+Fuchs AG
Mannheim, Baden-Württemberg, 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	**D**
EMC	**B**
Enclosure	**D**

*** see Application/Limitation**

Issued at **Hamburg** on **2019-12-19**
This Certificate is valid until **2024-12-18**.
DNV GL local station: **Essen**

Approval Engineer: **Heinz Scheffler**

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.

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Product description

Inclination sensor
#222356 Sensor INY030D-F99-2I2E2-V17

- Type Inclination sensor: 2-axis
- Measurement range: -15 ... 15 °
- Operating voltage UB: 10 ... 30 V DC
- Analog output type: 2 current outputs 4 ... 20 mA (one output for each axis)
- Switching output: 2 switch outputs PNP, NO , reverse polarity protected , short-circuit protected
- Connection type: 8-pin, M12 x 1 connector
- Housing material: PA
- Degree of protection: IP68 / IP69K

Inclination sensor
#222357 Sensor INY030D-F99-2I2E2-5M

- Type Inclination sensor: 2-axis
- Measurement range: -15 ... 15 °
- Operating voltage UB: 10 ... 30 V DC
- Analog output type: 2 current outputs 4 ... 20 mA (one output for each axis)
- Switching output2: switch outputs PNP, NO , reverse polarity protected , short-circuit protected
- Connection type: 5 m, PUR cable 7 x 0.5 mm2
- Housing material: PA
- Degree of protection: IP68 / IP69K

Application/Limitation

The operating voltage of the sensors must be well protected against surge caused by lightning, for example by operating at SELV/PELV power supplies.

Measures for limitation of the propagation of fire along cable bundles are required (fire stops).
Halogen free properties of the cable are not tested.

EMC in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.

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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

Type Approval documentation

Test reports: 16-1532GL-13 (06.07.2020)
Documents: 16-1532GL (06.07.2020), 16-1532GL-01 (06.07.2020), 16-1532GL-02 (06.07.2020), 16-1532GL-07 (06.07.2020), 16-1532GL-00 (06.07.2020)

Tests carried out

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

Marking of product

The products to be marked with:

- Model name
- Manufacturer 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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE