DNV·GL

Certificate No:
TAA00000A8

TYPE APPROVAL CERTIFICATE

This is to certify:

That the RPM sensor

with type designation(s)
INDUCTIVE SENSORS KJ4-M12EB130/85-DPSNÖ-T-X0243/X253

Issued to
Pulsotronic GmbH & Co. KG
Niedersdorf, Germany

is found to comply with
DNV GL rules for classification – Ships

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Temperature	**B**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**D**

*** See Application/Limitation**

This Certificate is valid until **2021-02-21**.

Issued at **Hamburg** on **2016-02-22**

for **DNV GL**

DNV GL local station: **Magdeburg**

Approval Engineer: **Heinz Scheffler**

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.

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

Job Id: **262.1-020708-1**
Certificate No: **TAA00000A8**

Product description

INDUCTIVE SENSORS
Operating Voltage UB 24 V DC, max ripple≤ 10 %
Output: 3-wire PNP N.O. / NPN N.C.
max. Load Current ≤ 250 mA
max. Switching Frequency ≤ 2000 Hz
Time Delay before Availability ≤ 300 ms
Short Circuit / Reverse Polarity Protection
Hysteresis ≤ 15 %
Assured Operating Distance 3.24 mm
Temperature Drift ≤ 10 %
Repeat Accuracy ≤ 5 %
Indication of the Switching State.via LED
Design: M12x1x130 mm (KJ4-M12EB130-DPSNÖ-T-X0243 & KJ4-M12EB130-DPSNÖ-T-X0253)
M12x1x85 mm (KJ4-M12EB85-DPSNÖ-T- X0243 & KJ4-M12EB85-DPSNÖ-T- X0253)
Termination cable: 12m (KJ4-M12EB130-DPSNÖ-T-X0243 & KJ4-M12EB85-DPSNÖ-T- X0243)
6m (KJ4-M12EB130-DPSNÖ-T-X0253 & KJ4-M12EB85-DPSNÖ-T- X0253)

Application/Limitation

Temperature location class B: Devices were tested up to 85°C.

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.

Tests carried out

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

Marking of product

The products to be marked with:

- model name
- manufacturer name
- serial number
- Pulsotronic model's also offered from Wärtsilä, see tables below:

Device type Variants	Variants from Wärtsilä
KJ4-M12EB85-DPSNÖ-T- X0243	PAAF225979
KJ4-M12EB130-DPSNÖ-T-X0243	PAAF225977
KJ4-M12EB130-DPSNÖ-T-X0253	PAAF225976
KJ4-M12EB85-DPSNÖ-T- X0253	PAAF225978

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 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 components and/or materials used comply with type approved documents and/or referenced component and material specifications
- Review of possible changes in design of 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