



TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001AU
Revision No:
2

This is to certify:

That the **Position Switch**

with type designation(s)

IR12.P04S-11158406, IR12.P04S-11158411, IR18.P10S-11158437, IR18.P10S-11174188

Issued to

Baumer Electric AG
Frauenfeld, TG, Switzerland

is found to comply with

DNV 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.

Type	Temperature	Humidity	Vibration	EMC	Enclosure
IR12.P04S-11158406	D	B	A, B & C	B	C
IR12.P04S-11158411	D	B	A, B & C	B	C
IR18.P10S-11158437	D	B	A, B & C	B	C
IR18.P10S-11174188	D	B	A, B & C	B	C

Issued at **Hamburg** on **2023-02-06**

for **DNV**

This Certificate is valid until **2028-02-05**.

DNV local unit: **Augsburg**

Approval Engineer: **Didier Girardin**

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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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Inductive proximity sensor in M12 stainless steel housing with 4mm sensing distance and M12 connector:

- **IR12.P04S-11158406** (Output: PNP, normally open)
- **IR12.P04S-11158411** (Output: PNP, normally closed)

Inductive proximity sensor in M18 housing with 10mm sensing distance:

- **IR18.P10S-11158437** (Output: PNP, normally open)
- **IR18.P10S-11174188** (Output: PNP, normally open, dedicated diagnose input)

Application/Limitation

The Type Approval covers hardware listed under Product description.

When the hardware is used in applications to be classed by DNV, 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 Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

M12 and M18 proximity sensors valid for all locations except

- Installation on the exhausted gas pipes of diesel engines
- Submerged application and bilges

Documentation

See Annex

Tests carried out

Applicable tests according to Class Guidance DNV-CG-0339, August 2021

Vibration tests exceeding the DNV requirements:

- Sweeping vibration test: Frequency range: 10Hz...2000Hz; displacement/acceleration: $\pm 1.5\text{mm}/10\text{g}$; duration: 150min per axis; Sweep rate 1 octave/minute
- Random vibration test: 10Hz...2kHz; displacement: 6mm peak-to-peak; duration: 5 hours
- Shock test

Marking of product

The products to be marked with:

- manufacturer name or manufacturer logo
- product name and part no.

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

ANNEX

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Reports	dated	Sensor types
220186-02-01-A-01-e	2023-01-10	IR12.P04S-11158406 / IR18.P10S-11174188
220186-01-01-A-01-e	2022-07-14	IR12.P04S-11158406 / IR18.P10S-11174188
220187-AU01+BMT01	2022-08-18	IR12.P04S-11158406 / IR18.P10S-11174188
220187-AU01+UMS01 (rev.01.00)	2022-08-17	IR12.P04S-11158406 / IR18.P10S-11174188
DNV_GL_V1_06_test_report.docx	2017.08.24	IR12.P04S-11158406 / IR12.P04S-11158411 IR18.P10S-11158437 / IR18.P10S-11174188

Reports filed under 262.1-023327-1 Journal N° 10 (Initial environmental and EMC reports)

Technical Documentation

R18.P10S-F60.PO1Z.7CF/Z001_E015	IR18.P10S-11174188
IR18.P10S-F60.PO1Z.7CO/Z001_E009	IR12.P04S-11158411
IR12.P04S-F50.PO1Z.7VO/Z001_E009	IR12.P04S-11158406

Note:

Differences between IR12.P04S-11158406 and IR12.P04S-11158411:

The ASIC's output behaviour flag is set "normally open" (i.e. output is HIGH when target is within sensing range) for one, and "normally closed" (i.e. output is HIGH when no target is within sensing range) for the other sensor type during the end-of-line programming.

Differences between IR18.P10S-11158437 and IR18.P10S-11174188:

The PCB of the IR18.P10S-11174188 is equipped with a microcontroller and the 5-pin connector version. This is needed for the diagnose feature. As long as pin2 is pulled HIGH by the PLC, a square-wave signal will be generated by the microcontroller and fed to the output pin (pin4) instead of the normal output signal.