

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Temperature Sensor

with type designation(s)

TS502A, TS2452, TS2256, TS2089, TS325A, TS2289, TS2454, TS2056, TS2229, TS2759, TS2659, TS2789, TS2451, TS2453, TS2689

Issued to

IFM Electronic GmbH
Essen, 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	D
Humidity	B
Vibration	B
EMC	N/A
Enclosure	D

Issued at **Hamburg** on **2018-11-21**

This Certificate is valid until **2023-10-24**.

DNV GL local station: **Essen**

for **DNV GL**

Approval Engineer: **Holger Jansen**

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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.



Product description

Base Type (Family certificate): TP1182

Resistance temperature sensors
Sensor type: Pt100, Pt1000

Type	Type according to base certificate (TP1182)	Housing	Sensorelement (Tolerance: DIN EN 60751 Class A)	Connection wire length	Sensor connection	Material cable sheath
TS502A	TP1182-A4B2C2D1E3	housing stainless steel U	Pt1000, -50°C to 300°C	5000mm	open wire ends	Silicone
TS2452	TP1182-A6B0C1D0E1	sleeve D6xEL; EL to be defined by customer; *)	Pt100, -200°C to 600°C	2000mm	M12 connector	PFA
TS2256	TP1182-A6B0C1D0E1	sleeve D6xEL; EL to be defined by customer; *)	Pt100, -200°C to 600°C	2000mm	M12 connector	PFA
TS2089	TP1182-A1B1C1D0E2	stainless steel housing D7 D10	Pt100, -70°C to 500°C	2000mm	M12 connector	PUR
TS325A	TP1182-A5B1C3D1E3	sleeve stainless steel D6 to D5mm	Pt100, -70°C to 500°C	3000mm	open wire ends	Silicone
TS2289	TP1182-A6B1C1D0E2	sleeve D6xEL; EL to be defined by customer; *)	Pt100, -70°C to 500°C	2000mm	M12 connector	PUR
TS2454	TP1182-A6B0C1D0E1	sleeve D6xEL; EL to be defined by customer; *)	Pt100, -200°C to 600°C	2000mm	M12 connector	PFA
TS2056	TP1182-A1B0C1D0E1	stainless steel housing D7 D10	Pt100, -200°C to 600°C	2000mm	M12 connector	PFA
TS2229	TP1182-A0B1C1D0E2	housing for screw-mounting M6	Pt100, -70°C to 500°C	2000mm	M12 connector	PUR
TS2759	TP1182-A2B1C1D0E3	screw-in-thread M5, AF8	Pt100, -70°C to 500°C	2000mm	M12 connector	Silicone
TS2659	TP1182-A3B1C1D0E3	screw-in-thread M6, AF13; **)	Pt100, -70°C to 500°C	2000mm	M12 connector	Silicone
TS2789	TP1182-A2B1C1D0E2	screw-in-thread M5, AF8	Pt100, -70°C to 500°C	2000mm	M12 connector	PUR
TS2451	TP1182-A6B0C1D0E1	sleeve D6xEL; EL to be defined by customer; *)	Pt100, -200°C to 600°C	2000mm	M12 connector	PFA
TS2453	TP1182-A6B0C1D0E1	sleeve D6xEL; EL to be defined by customer; *)	Pt100, -200°C to 600°C	2000mm	M12 connector	PFA
TS2959	TP1182-A0B1C0D1E2	screw-in-thread M6, AF13; Material: **)	Pt100, -70°C to 500°C	2000mm	M12 connector	PUR

*) material: 1.4571/1.4404/316

**) material: stainless steel 1.4404/316L

Job Id: **262.1-025460-2**
Certificate No: **TAA000022Y**

Application/Limitation

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.

Degree of protection: IP68 (1 week/1m)

Type Approval documentation

Tests carried out

Applicable tests according to Class Guideline DNVGL-CG-0339, Edition November 2016.

Marking of product

The products to be marked with:

- ifm electronic GmbH
- type name

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and 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