Frode Pedersen temperature sensors

Resistance Thermometer MM

Mineral insulated

Data Sheet 1600

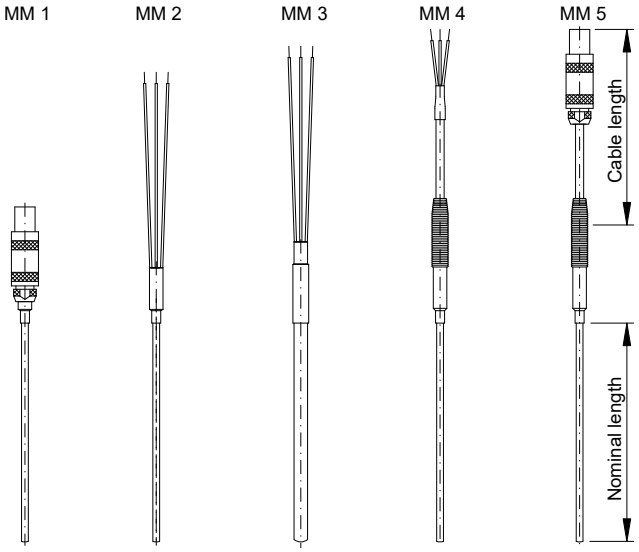
Application

- Mineral insulated resistance thermometer are used for measuring temperature where a flexible, rugged, corrosive resistant, and fast sensor is needed
- Operating range is in solid, fluid and gaseous medias up to 600°C
- Fields of application
  - Containers, pipelines, chemical apparatus
  - Process industry - f.inst. petrochemical and small furnaces
  - Machinery, in laboratories and experimental plants

Technical features

- Pt100 resistance thermometer acc. to IEC 751 (EN60751)
- 3-wire connection is standard
- A mineral resistance thermometer with 2, 3, 6 or 8 wires are housed in a thinwalled metal tube. The wires are insulated in firmly compacted ceramic powder. The resistance element (single or duplex) is connected to the inner wires, embedded in ceramic powder and closed with a steel cap
- Connected to the process by brazing, adjustable fittings or other mechanical brackets

Type



Ordering

The requested sensor is selected from the table below
The colour code means:

Standard: Built of standard modules (short delivery time)

Variant: Modified standard modules

We are specialist intemperature measurement.

Please contact us and we will do our best to solve your specific measuring task

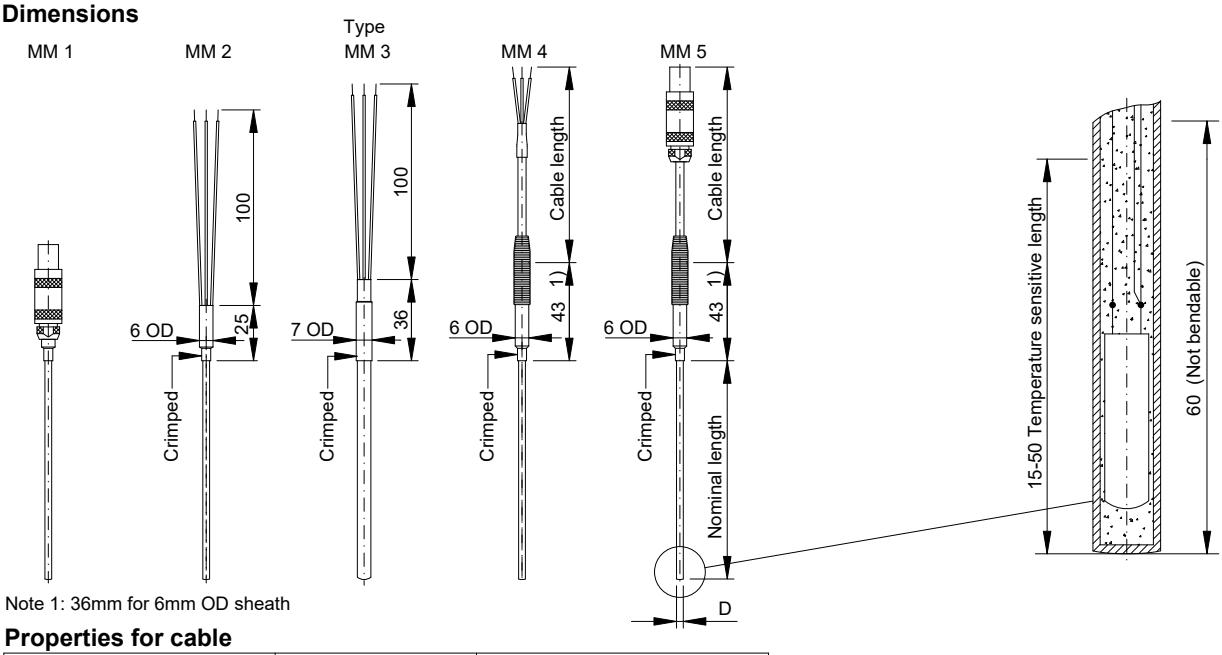
Ordering information

Specification number 1600- | | |

TECHNICAL DATA

All dimensions in mm

Dimensions



Note 1: 36mm for 6mm OD sheath

Properties for cable

Insulation	Temperature range	Application
PVC	- 5 + 70°C	General use
Silicone	-100 +180°C	Flexible, heat resistance
Teflon (FEP)	-100 +200°C	Corrosion and heat resistance
GLGLO, Fibreglass+steel braid	-20 +400°C	High temperature, not water tight

Properties for mineral insualated cable

Used in	W.no. 1.4571 max. 800°C
Liquids	Recommended
Acid	Recommended
Sulphur atmospheres	Suitable
Clorine atmospheres	Suitable
Oxidizing atmospheres	Recommended
Reducing atmospheres	Not recommended
Carburizing atmospheres	Not recommended

Bending radius
Min. bending is
5 x D @ repeatable bendings
2 x D @ stationary bending

Insulation resistance

Depending of temperature, length and diameter

Diameter mm	U Voltage	Rmin M ohm x m
3 - 6	100	100

Note:
The insulation resistance is dependent upon the length of the cable.
Therfore, it is listed as a length related resistance in Mohm x m for length > 1 meter and Mohm for length <1 meter. Values apply at room temperature.

Thermoelectric influence

Thermoelectric voltage < 10 µV @ 200°C

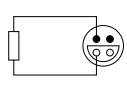
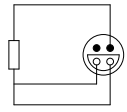
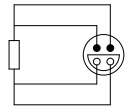
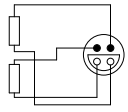
Response time

Sheath diameter	Response time in seconds (guidelines)			
	In water @ 0.4m/sec.		In air @ 2m/sec.	
	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
3.0	2	7	36	94
4.5	4	12	42	126
6.0	7	20	48	151

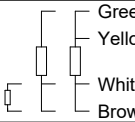
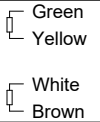
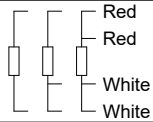
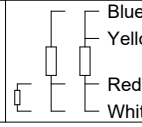
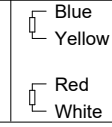
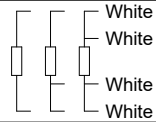
Note:

The 0.5/0.9 time is the time that it takes the sensor to reach 50%/90% of the final value of a temperature change of a medium.
If media and velocity are different from the ones stated, the time can change significantly.

Connection diagram - connector

1xPt100			2xPt100
2-wire	3-wire	4-wire	2-wire
			

Connection diagram - cable

PVC w/screen Screen connected to outer sheath		Teflon w/screen Screen connected to outer sheath		Silicone		GLGLO	
1xPt100 2- 3- 4-wire	2xPt100 2-wire	1xPt100 2- 3- 4-wire	2xPt100 2-wire	1xPt100 2- 3- 4-wire	2xPt100 2-wire	1xPt100 2- 3- 4-wire	2xPt100 2-wire
							

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