Frode Pedersen temperature sensors

Thermocouple assembly UHT

handheld, for general purpose

Data sheet 2101

Application

- For measuring temperature where a portable, flexible, rugged, corrosive resistant, and fast responsing sensor is needed.
- Used in solid, fluid and gas medias up to 1000°C
- Fields of application
  - With handheld digital thermometers
  - Process industry - f.inst petrochemical, combustion, furnaces and heat treatment
  - Heating and ventilation (HVAC)

Technical features

- Thermocouple type T and K according to IEC 584-1 (EN50584-1)
- UHT is a mineral insulated thermocouple consisting of thermocouple wires housed in a thin-walled flexible metal tube, firmly embedded in ceramic powder (MgO - purity >96%)
- Mounted with mini compensation plug and curly leads

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

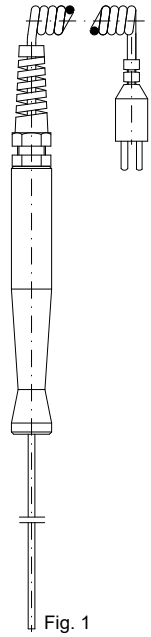


Fig. 1

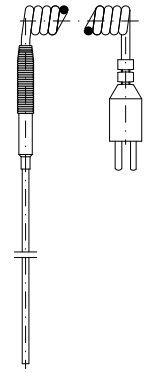


Fig. 2

Ordering information

Sensor

Specification number 2101- | | | | | | | | | | | |

Type

Fig. 1 With handle . . . 0
Fig. 2 Without handle . . . 1

Plug

0 With mini compensation plug
1 Without mini compensation plug

Cable type

0 . . . XPP 2x0,08mm, curled , PVC insulated, 70°C, 1500mm (straight)
1 . . . 2000 mm XPP 2x0,22mm^2. PVC insulated, 105°C
2 . . . 1000 mm XGLGLO= 2x0,25mm^2. Fibreglass +steel braid, 200°C 4)
3 . . . 2000 mm XGLGLO= 2x0,25mm^2. Fibreglass +steel braid, 200°C 4)

Note 4: Only type K

Thermocouple / Sheath

Type	Diam. mm	Temperature °C Max. recomended	Material W.no.	Max. temp. °C	
T	1.0	260	AiSi 316	800	0
T	3.0	315	1.4541	800	1
K	1.5	920	1.4841	1150	2
K	3.0	1000	1.4841	1150	3
K	6.0	1050	1.4841	1150	4
K	1.5	800	1.4571	800	5
K	3.0	800	1.4571	800	6

Tolerance acc. to IEC 584-1 (EN60584-1)

	Class	TC	Value 2)	Apply in range
0	Class 2	K	2,5°C ell.0,0075 x t_{actual} (°C)	-40+1200°C
1	Class 2	T	1,0°C ell.0,0075 x t_{actual} (°C)	-40+350°C
2	Class 1	K	1,5°C ell.0,0004 x t_{actual} (°C)	-40+1000°C
3	Class 1	T	0,5°C ell.0,004 x t_{actual} (°C)	-40+350°C 3)

Note 2: The highest value apply Note 3: Only for 1 OD mm sheath

Nominal length (mm)

150	0	1	5	0	
300	0	3	0	0	
500	0	5	0	0	
1000	1	0	0	0	
Interim lengths (Min. 50, max. 9.999)	x	x	x	x	

Hot Junction

0 . . . Insulated from outer sheath
1 . . . Grounded (thermocouple bonded to outer sheath)

Accessories

AMETEK®
SENSORS, TEST & CALIBRATION

TECHNICAL DATA

All dimensions in mm

Dimensions

Fig. 1

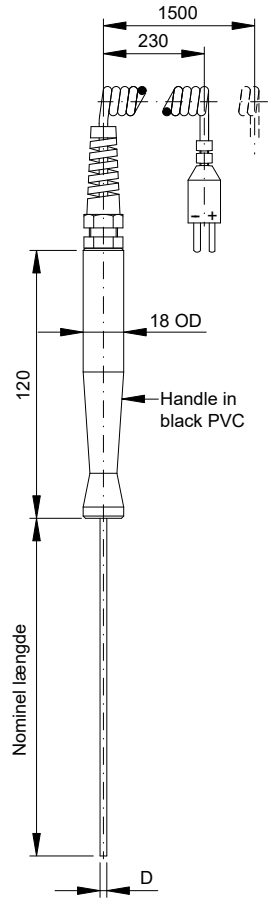
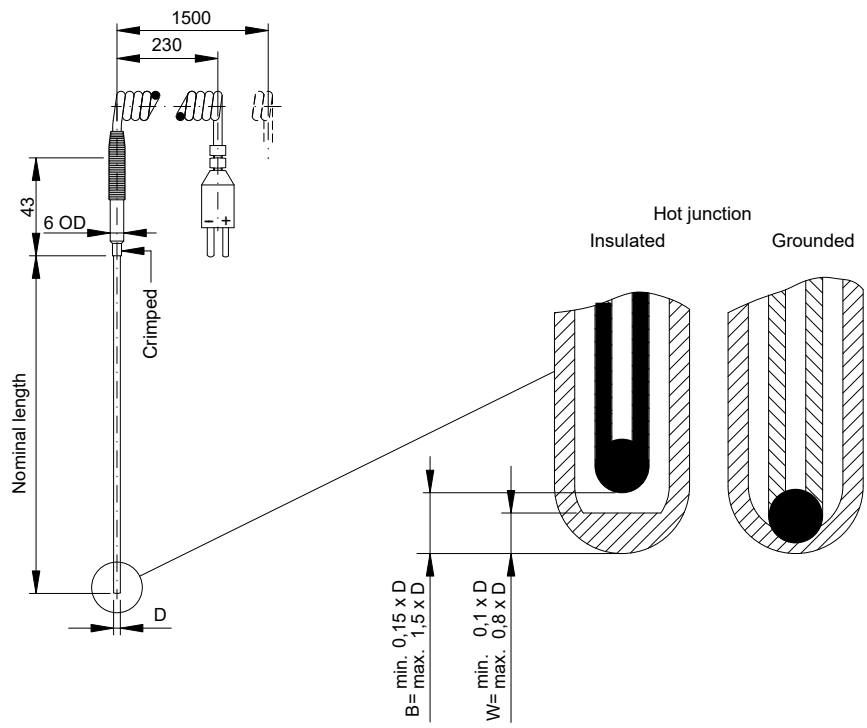


Fig. 2



Properties for MI sheath material

Application	W.no. 1.4571 AISI 316Ti max. 800°C	W.no. 1.4841 AISI 314 max. 1150°C
Liquids	Recommended	Suitable
Acid	Recommended	Not recommended
Sulphur atmospheres	Suitable	Not recommended
Clorine atmospheres	Suitable	Suitable
Oxidising atmospheres	Recommended	Recommended
Reducing atmospheres	Not recommended	Not recommended
Carburizing atmospheres	Not recommended	Suitable

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

Insulation resistance and test voltage acc. to IEC 1515 (EN61515)

Depending of elevated temperature and diam. D (mm).

Thermo-couple	Test temperature	Insulation resistance [M ohm x m] minimum		
		0,5<D≤1,6	1,6<D≤3,2	3,2<D
	°C	U test 50VDc	U test 100VDc	U test 100VDc
T, J, K, N	300 ±15	250	500	1000
J, K, N	500 ±15	25	50	100
K, N	800 ±15	0,25	0,5	1
K, N	1000 ±15	-	0,01	0,02

At T: 20 ±15°C. (ambient temp.)

Diameter	Number of thermocouple			
	1		2	
	U	Rmin	U	Rmin
mm	Volt	M ohm x m	Volt	M ohm x m
< 1	75 ±25	100		
1 - 1.5	75 ±25	500		
2 - 6	500 ±50	1000	250 ±50	1000

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

Response time Hot junction insulated Hot junction grounded

Sheath diameter	Response time in seconds (guidelines)				Response time in seconds (guidelines)			
	In water @ 0.2m/sec.		In air @ 2m/sec.		In water @ 0.2m/sec.		In air @ 2m/sec.	
	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
0.5	0.06	0.13	1.8	5.52	0.03	0.10	1,8	5,85
1.0	0.15	0.5	3	10	0.06	0.18	3	10
1.5	0.21	0.6	8	25	0.13	0.4	8	25
3.0	1.2	2.9	23	80	0.22	0.75	23	80
6.0	4	9.6	60	200	0.55	2.6	55	185

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.

AMETEK DENMARK A/S Gydevang 32-34, 3450 Allerød, DK, Tlf: 48168000, E-mail: jofra@ametek.com,
Web: www.jofra.com

SS-FP-UHT2101-UK. Version 202401