Thermocouple assembly D

for welding with interchangeable insert

Data sheet 1306

FRODE PEDERSEN

Application

- Temperature measurement in pipe systems and tanks with gasses and fluid medias such as air, steam and water at high pressure and flow velocity
- Operating range is up to 600°C, max. 450 bar (water) and 60 m/sec. (steam)
- Fields of application
  - Boilers
  - Power plants
  - Chemical process engineering

Technical features

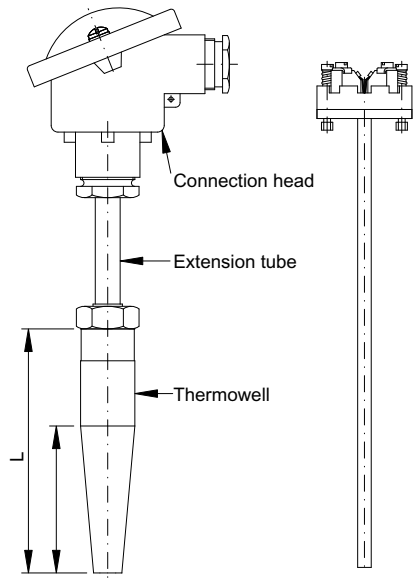
- Thermocouple type J, K or N acc. to IEC 584-1
- Permissible mechanical and thermal stress acc. to DIN 43763
- Installed to the process by welding
- The measuring insert can be exchanged or calibrated without closing down the process
- Measuring insert is a mineral insulated type, vibrationproof
- Thermowell drilled from bar stock
- Optionally, can be supplied with head mounted transmitter

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
Special:	Special versions and material. We are specialist in temperature measurement. Please contact us and we shall do our utmost to solve your specific measuring task

Assembly **Measuring insert**



Ordering information

Sensor **Transmitter**

Specification number	1306-											4mA: °C	20mA: °C	4)

Thermowell

Type:

D1	Length L=140	Conus K= 65	0
D2	Length L=200	Conus K=125	1
D4	Length L=200	Conus K= 65	2
D5	Length L=260	Conus K=125	3
Special:			s
None.	Insert for D1 (140)		a
None.	Insert for D2 (200)		b
None.	Insert for D4 (200)		c
None.	Insert for D5 (260)		d
None.	Insert for special		ss

Material:

None		0
W.no. 1.5415	15Mo3	1
W.no. 1.7335	13CrMo44	2
W.no. 1.7380	10CrMo910	3
W.no. 1.4571	XCrNiMoTi17122	4
Special:		s

Extension tube (mm)

52	0	5	2
102	1	0	2
152	1	5	2
202	2	0	2
Special (Min. 52, max. 502)	x	x	x

Connection head

B:	Degree of protection IP 65	0
BHS:	Degree of protection IP 65	1
BHSH:	Degree of protection IP 65, high cap for transmitter	2
Special:		s

Transmitter, 2-wire, 4-20mA output

0	None
1	FPTU Standard version. As terminal block
2	FPTU Standard version. In high cap (B-head)
3	FPTU galvanic isolated. As terminal block
4	FPTU galvanic isolated. In high cap (B-head)
5	FPTU galvanic isolated. EEXiallCT4/6. As terminal block
6	FPTU galvanic isolated. EEXiallCT4/6. In high cap (B-head)
a	FPTT galvanic isolated. As terminal block
b	FPTT galvanic isolated. In high cap (B-head)
c	FPTT galvanic isolated. EEXiallCT4/6. As terminal block
d	FPTT galvanic isolated. EEXiallCT4/6. In high cap (B-head)
s	Special

Note 4: Please specify measuring range

Tolerance acc to IEC 584-2

0	Class 2, for J, K and N, i.e. ±2.5°C or 0.0075 x t_{actual} (°C)	3)
1	Class 1, for J, K and N, i.e. ±1.5°C or 0.0040 x t_{actual} (°C)	3)

Note 3: The highest value apply

Number of thermocouples

0	1
1	2

Measuring insert

Model	Thermocouple	Type	Diam./type	Max. temperature Continuous	Shortly	
TK80	Fe-CuNi	J	6 MI 2)	800°C	850°C	0
TK115	NiCr-Ni	K	6 MI 2)	1000°C	1150°C	1
TK125	Nicrosil-Nisil	N	6 MI 2)	1100°C	1250°C	2
Special:						s

Note 1: The values apply for the thermocouple.
Note 2: MI= Mineral insulated.

Accessesories

Measuring insert	See data sheet 9108-01	Thermowell:	See data sheet 9111
Transmitter:	See data sheet 9168	Extension:	See data sheet 9111

Customer information

Name:
Tel.:

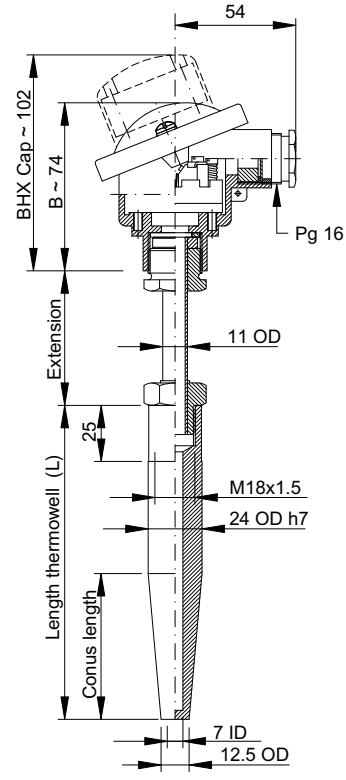
TECHNICAL DATA

All dimensions in mm

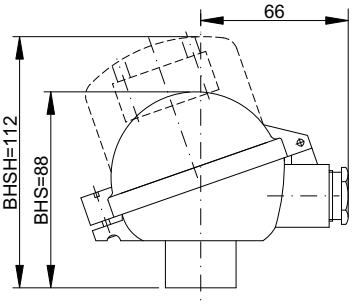
Dimensioner

Assembly
Connection head

Type B / B+BHX Cap (for transmitter)

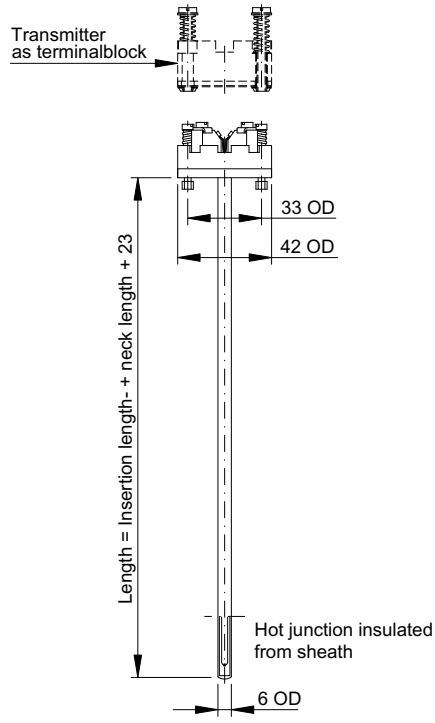


Type BHS / BHSH (for transmitter)



Measuring insert

Type TK, mineral insulated



Stress diagram for thermowell acc. to DIN 43763

Fig.1

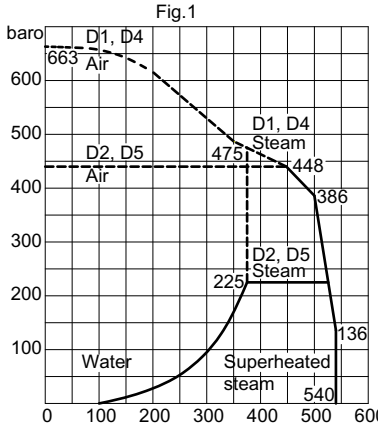


Fig.2

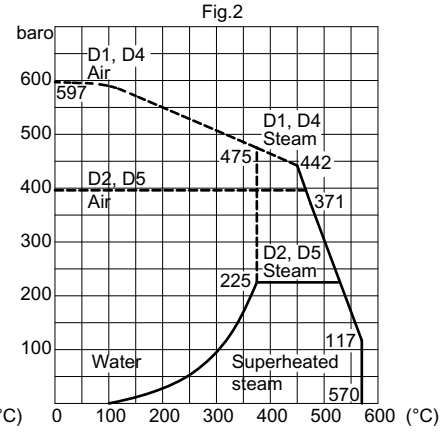
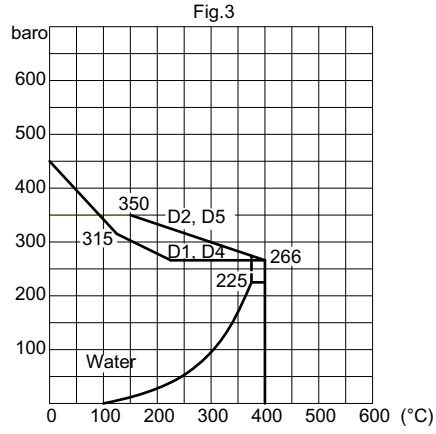


Fig.3



Permissible stress diagram		Fig. 1	Fig. 2	Fig. 3	
Material		1.7335	1.7380	1.4571	
Type DIN 43767		D1/2/4/5	D1/2/4/5	D1, D4	D2, D5
Maximum flow velocity (m/s)	Air	60	60	60	60
	Superheated steam	60	60	60	30
	Water	5	5	5	5

Response time

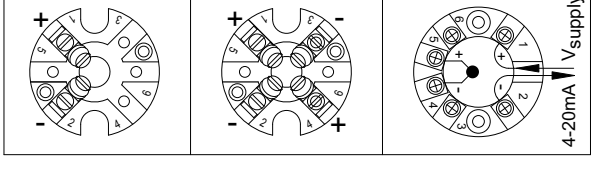
Thermowell	Response time in seconds (guidelines)					
	In water @ 0.4m/sec.		In air @ 1m/sec		In steam @ 40m/sec.	
	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
D1, D4	8	32	260	1000	20	49
D2 D5	6	27	225	800	10	29

Note: Measuring insert

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

Thermocouple		Transmitter FPTU/FPTT
Single TC	Duplex TC	



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