Thermocouple assembly DS

for welding with interchangeable insert

Data sheet 1307

FRODE PEDERSEN

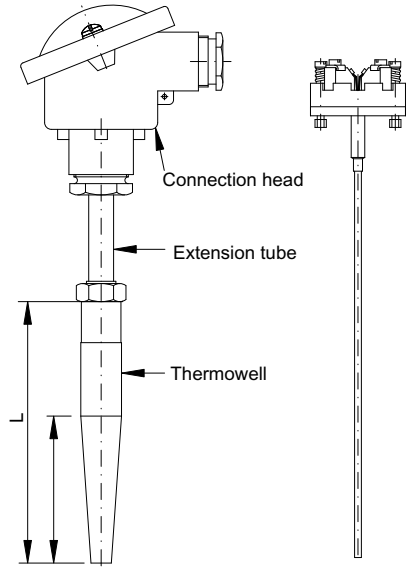
Application

- 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. Fast response time
- Optionally, can be supplied with head mounted transmitter

Assembly **Measuring insert**



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

Ordering information **Sensor** **Transmitter**

Specification number 1307- | | | | | | | | | | | | **4mA: °C 20mA: °C** 4)

Thermowell

Type:

D5S	Length L=115	Conus K=40		0
D4S	Length L=140	Conus K=65		1
D4SS	Length L=200	Conus K=65		2
Special:				s
None.	Insert for D5S (115)			a
None.	Insert for D4S (140)			b
None.	Insert for D4SS (200)			c
None.	Insert for special			ss

Material:

None	0
W.no. 1.7335 13CrMo44	1
W.no. 1.7380 10CrMo910	2
W.no. 1.4571 XCrNiMoTi17122	3
W.no. 1.5415 15Mo3	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. EEXiaIICT4/6. As terminal block
6	FPTU galvanic isolated. EEXiaIICT4/6. 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. EEXiaIICT4/6. As terminal block
d	FPTT galvanic isolated. EEXiaIICT4/6. 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 1) Continuously	Shortly
TK80	Fe-CuNi	J	3 MI 2)	800°C	850°C
TK115	NiCr-Ni	K	3 MI 2)	1000°C	1150°C
TK125	Nicrosil-Nisil	N	3 MI 2)	1100°C	1250°C
Special:					

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.:

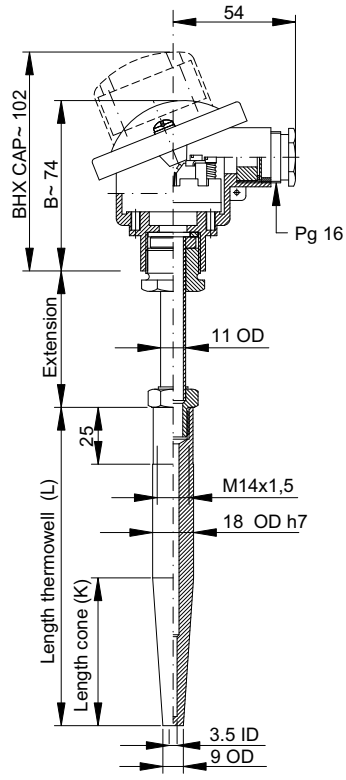
TECHNICAL DATA

All dimensions in mm

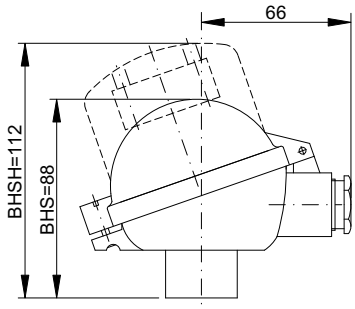
Dimensions

Assembly
Connection head

Type B / B+BHX CAP (for transmitter)

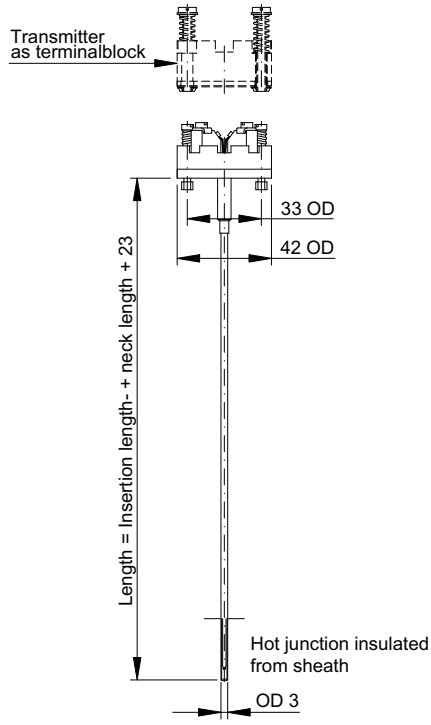


Type BHS / BHSH (for transmitter)



Measuring insert

Type TK, mineral insulated



Stress diagram for thermowell acc. to DIN 43763

Fig.1

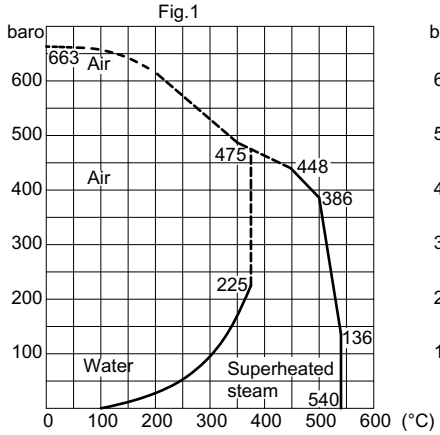


Fig.2

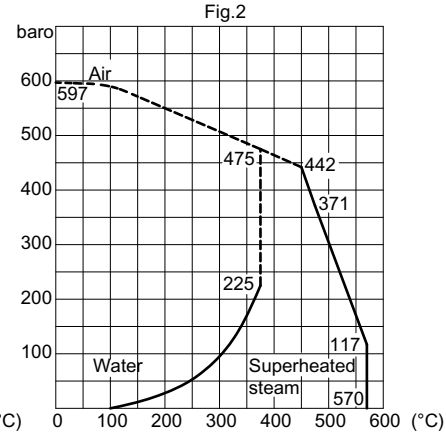
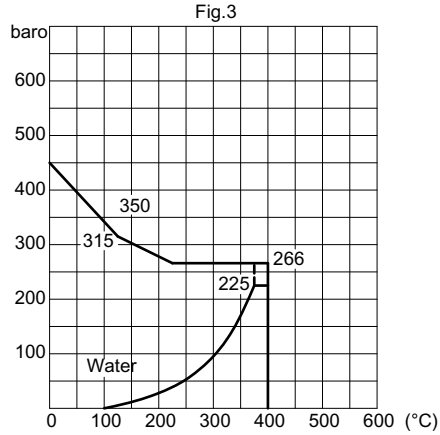


Fig.3



Permissible stress diagram		Fig. 1	Fig. 2	Fig. 3	
Material (W.No.)		1.7335	1.7380	1.4571	
Maximum flow velocity (m/s)	Air	60	60	60	60
	Superheated steam	60	60	60	30
	Water	5	5	5	5

Response time

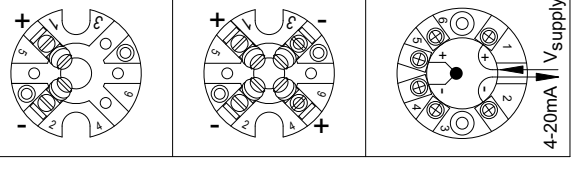
Thermowell	Response time in seconds (guidelines)					
	In water @ 0.4m/sec.		In air @ 1m/sec.		In steam @ 40m/sec.	
	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
DS/DSS	2	6	200	950	4	8

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

Thermocouple		Transmitter FPTU/FPTT
Single TC	Duplex TC	



L-DS1307-200603-UK

AMETEK DENMARK A/S GYDEVANG 32-34, DK-3450 ALLERØD TEL.: +45 48168000 FAX: + 4548168080