

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
 - Chemical process engineering
 - Power plants, boilers
 - Heat distribution (district heating)

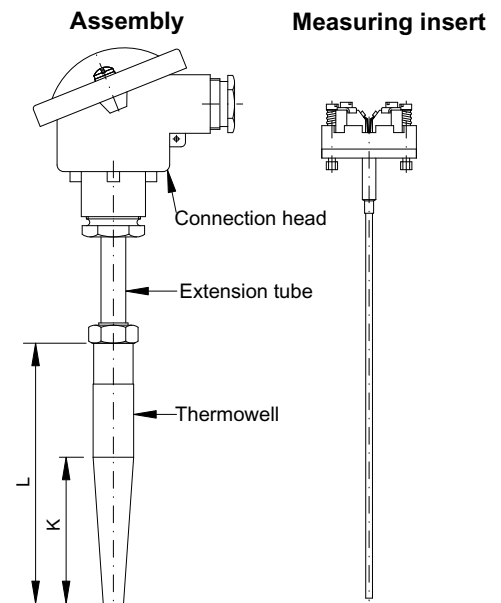
Technical features

- Pt100 resistance thermometer acc. to IEC 751
- Permissible mechanical and thermal stress acc. to DIN 43763
- 3-wire connection is standard
- Connected to the process by welding
- The measuring insert can be exchanged or calibrated without closing down the process
- Thermowell drilled from bar stock. Quick response time
- Measuring insert is a mineral insulated type MK40/60, vibrationproof
- 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 will do our best to solve your specific measuring task



Ordering information

Specification number	1406-	Sensor										4mA:	°C	20mA:	°C	1)
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Thermowell

Type:

D5S Length L=115 Cone K= 40	0
D4S Length L=140 Cone K= 65	1
D4SS Length L=200 Cone K= 65	2

Special:

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
Interim lengths (Min. 52, max. 502)	x	x	x

Connection head

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

Transmitter, 2-wire, 4-20mA output

0	None
1	FPTM as terminal block (Sensor only 3-wire)
2	FPTM in high cap, B-head. (Sensor only 3-wire)
3	FPTU standard version. As terminal block
4	FPTU standard version. In high cap, B-head
5	FPTU galvanic isolated. As terminal block
6	FPTU galvanic isolated. In high cap, B-head
7	FPTU galvanic isolated. EEXiallCT4/6. As terminal block
8	FPTU galvanic isolated. EEXiallCT4/6. In high cap, B-head
s	Special:

Note 1: Please specify measuring range in °C

Connection. Wiring configuration

0	3-wire
1	4-wire
2	2-wire

Tolerance acc. to IEC 751

0	Class B, i.e. $\pm (0.3^\circ\text{C} + 0.005 \times t_{\text{actual}})^\circ\text{C}$
1	Class A, i.e. $\pm (0.15^\circ\text{C} + 0.002 \times t_{\text{actual}})^\circ\text{C}$
2	1/3 Class B @ 0°C, i.e. $\pm (0.10^\circ\text{C} + 0.005 \times t_{\text{actual}})^\circ\text{C}$
3	1/6 Class B @ 0°C, i.e. $\pm (0.05^\circ\text{C} + 0.005 \times t_{\text{actual}})^\circ\text{C}$
4	Paired in groups, deviation $\pm 0.1^\circ\text{C}$ @ 0°C og 100°C
5	Special, i.e. $\pm (0.045^\circ\text{C} + 0.001 \times t_{\text{actual}})^\circ\text{C}$ (Max 400 °C)
s	Special:

Resistance value (ohm) acc. to IEC 751

0	1xPt100
1	2xPt100
2	1xPt1000
s	Special:

Measuring insert: Type and measuring range

MK60: -50 +600°C	Mineral insulated, vibration proof
MK40: -50 +400°C	Mineral insulated. (Only for tolerance 3, 4 og 5)
Special:	

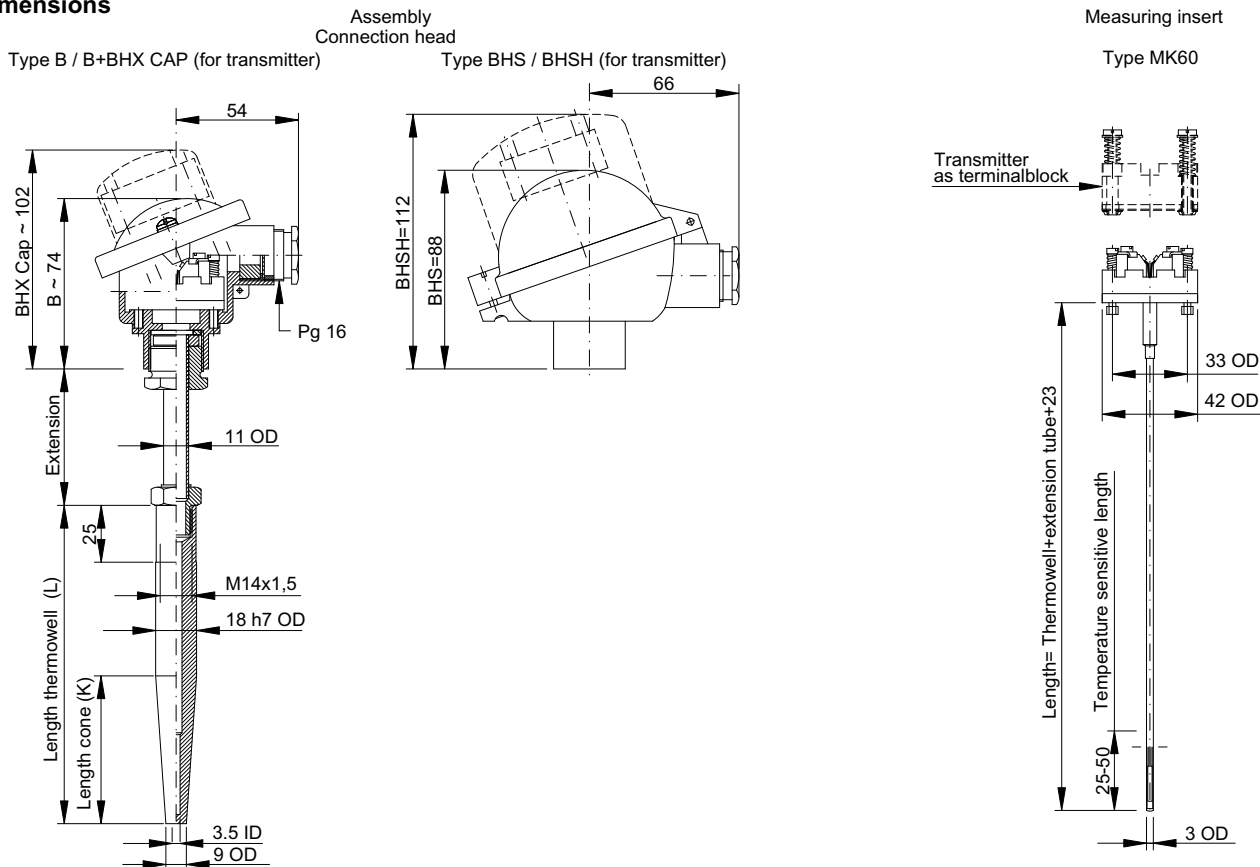
Accessories

Measuring insert See data sheet 9108-02
Transmitter: See data sheet 9168

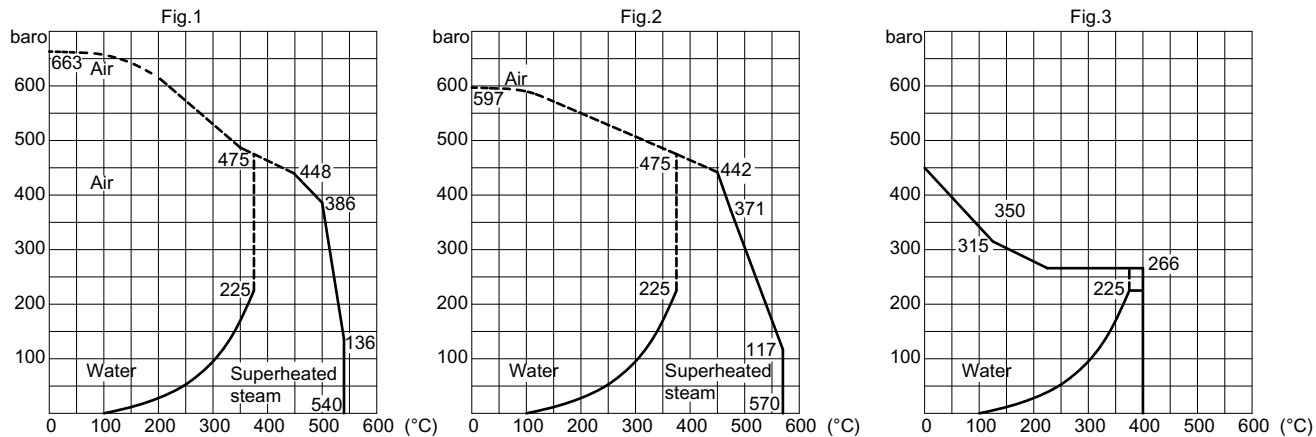
Customer information

Name:
Tel.:

Dimensions



Stress diagram for thermowell acc. to DIN 43763



Permissible stress diagram		Fig. 1	Fig. 2	Fig. 3	
Material		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	10	27	300	1035	5	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

