

TW85 Weld in Resistance Thermometer

TW85 # # # # # 0 # #

**For Assignment in
Explosion-hazardous Areas**

Resistance thermometers TW85 are applied as intrinsically safe equipment to measure temperature in fluids and gases as well as dusts. These thermometers consist of a protective sleeve with various process connections, a terminal head and - depending on model - an exchangeable gauge slide. All components in touch with process media are leak tested. Pt 100 temperature sensors acc. to DIN EN 60 751 in tolerance classes A or B in 2, 3 or 4-wire circuit are used inside the protective sleeve. Models with 2 measuring circuits are possible. To transfer measurement as standard signal (e.g. 4...20mA) a transmitter can be integrated into the terminal head.

These resistance thermometers meet demands of equipment-group II categories 1/2G and 1/2D and/or 2G and 2D. They are suitable for usage in explosion-hazardous areas zone 1 (gas) and zone 21 (dust). The protective sleeve may extend into zone 0 resp. 20 if the wall thickness is $\geq 1\text{mm}$ (separation of zones).

Depending on usage and measuring task resistance thermometers can be delivered with various terminal heads. The instruments are solely to be used with provided protective sleeve. See instruction manual for thermometer specific features.

These resistance thermometers with intrinsic safety Ex "i" are certified for electrical connection to intrinsically safe circuits category ib (for usage in zone 1 and 2; with a separative element in zone 0) as well as category ia (for usage of sensing probe in zone 0, 1 and 2).

When connecting to intrinsically safe circuits the user needs to ensure by limiting of power output that heating of surface does not exceed max. permissible value acc. to temperature class minus safety margin!



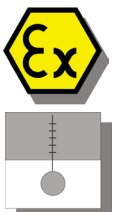
Conformity of Norms

These resistance thermometers meet demands of

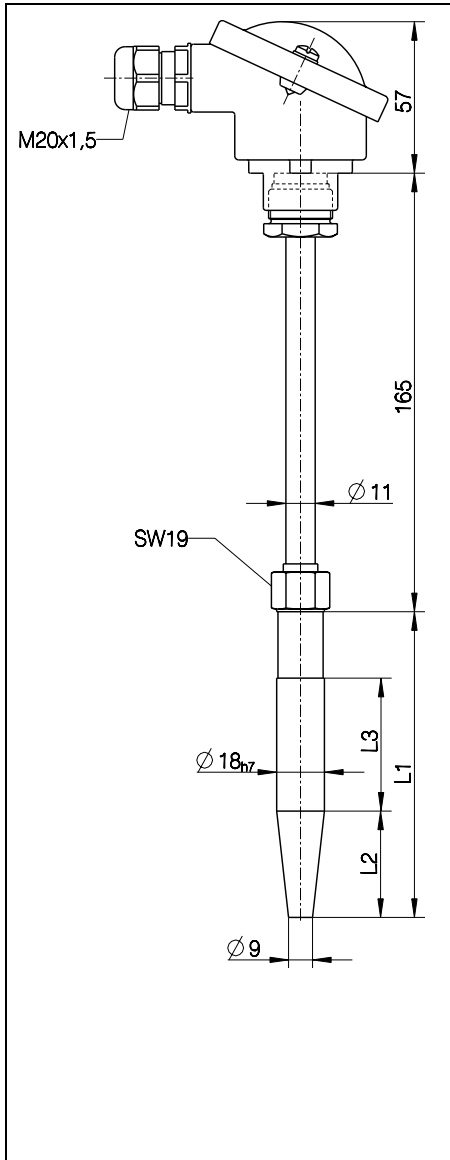
- EN 50014 2002 +A1+A2 1999
- EN 50020 2002
- EN 50281-1-1 1998
- EN 50284 1999
- EN 1127-1 1997

Declaration TW85

 II 1/2G EEx ia IIC T6
 II 1/2D IP65 Tx °C



Specifications



Weld in Resistance Thermometer TW85

like configuration D DIN 43767, for high pressure and flow forces

Measuring element: Gauge slide acc. to DIN 43762
 Insertion tube stainless steel 1.4571
 Resistance 1 or 2 Pt100 acc. to DIN EN 60751

Protective sleeve: SD1/SD2/SD7 like DIN 46763 form D
 Materials: 1.4571 (X6CrNiMoTi17122)
 1.0460 (C22.8)

chart 1	Type protective sleeve		
	SD1	SD2	SD7
L1 [mm]	140	200	115
L2 [mm]	65	125	40
L3 [mm]	50	50	50

Insertion tube: Mechanical force like diagram 1
 (for C22.8 max. pressure 250 bar, max. 450°C)
 Ø 11mm; 165mm long
 Material 1.4571

Connection: Terminal head type BUZ IP65 EN 60529 diecasted Al
 Terminal head type BUZH IP65 EN 60529 diecasted Al
 Max. ambient temperature at terminal head 65°C
 (please follow instruction manual point 9)

Max. media temperature : 450°C (please follow instruction manual point 9)*

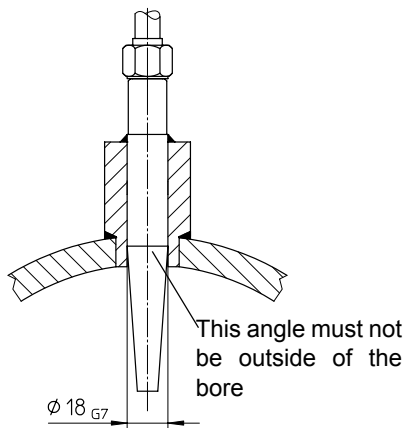
Characteristics for certified intrinsically safe circuit:

Application **without** transmitter in terminal head
 $P_i \leq 750\text{mW}$ $U_i \leq 30\text{V}$ $I_i \leq 400\text{mA}$ $C_i = 0$ $L_i = 0$

Application **with** transmitter in terminal head
 $P_i \leq 750\text{mW}$ $U_i \leq 30\text{V}$ $I_i \leq 100\text{mA}$ $C_i = 0$ $L_i = 0$
 (for additional data see appendix of instruction manual)

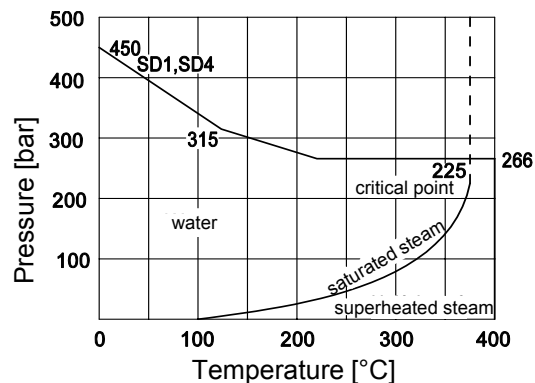
Protective sleeve constants $S_D = 17 \text{ K/W}$ / $S_G = 78 \text{ K/W}$

Mounting Instruction



Mechanical and Thermal Forces of the Protective Sleeves Type SD Like DIN 43763

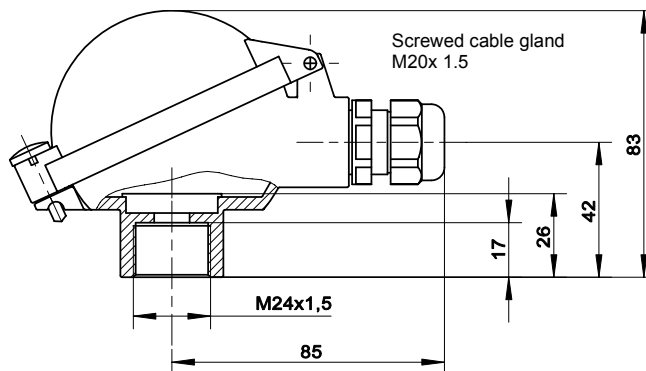
Diagram 1
 Material 1.4571 (X6CrNiMoTi17122)
 Permissible flow rate : air, superheated steam 60m/s; water 5m/s



Terminal Heads (all units in mm unless stated otherwise)

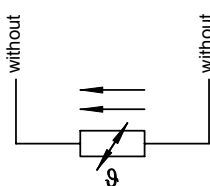
Terminal Head Type BUZ

Material: diecasted aluminium (varnished)
Protection class: IP65 EN60529

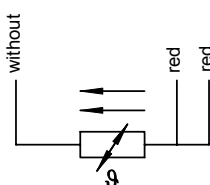


Connection Diagram TW85 with Terminal Socket

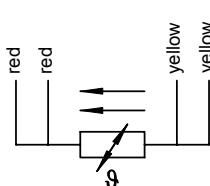
1 x 2-wire connection



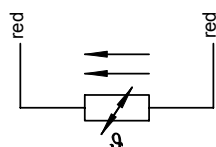
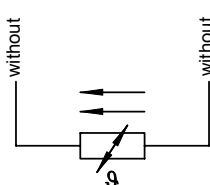
1 x 3-wire connection



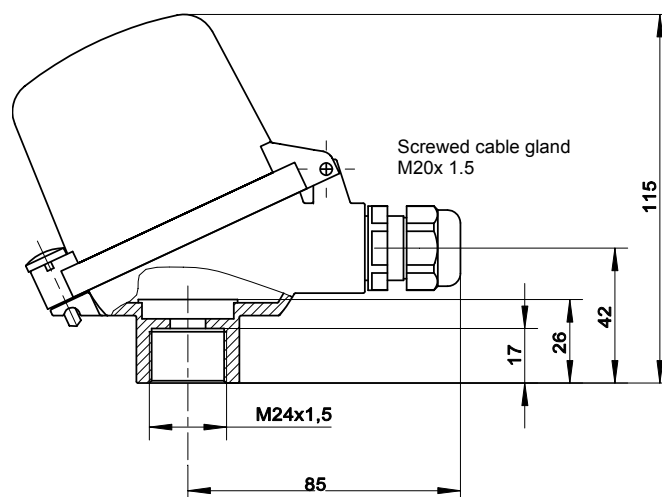
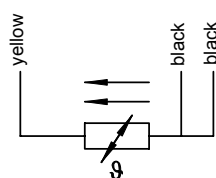
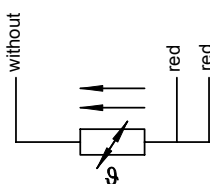
1 x 4-wire connection



2 x 2-wire connection



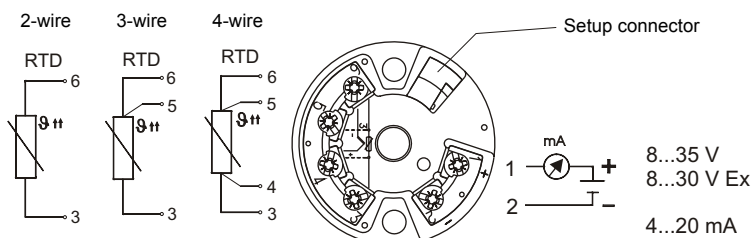
2 x 3-wire connection



Terminal Head Type BUZH

Material: diecasted aluminium (varnished)
Protection class: IP65 EN60529

Connection Diagram TW85 with Transmitter TE4111 (Endress+Hauser Brand Type TMT181)



Ordering Code

Weld in Resistance Thermometer		TW85							
		□	□	□	□	□	0	□	□
Type		↑	↑	↑	↑	↑			↑
Gauge slide with 1xPt100/2-wire.....>	A								
Gauge slide with 1xPt100/3-wire.....>	B								
Gauge slide with 1xPt100/4-wire.....>	C								
Gauge slide with 2xPt100/2-wire.....>	D								
Gauge slide with 2xPt100/3-wire.....>	E								
Terminal Head									
Type BUZH.....>	4								
Type BUZ.....>	5								
Protective Sleeve According to Chart									
SD1.....>	1								
SD2.....>	2								
SD7.....>	7								
Material									
1.4571 (X6CrNiMoTi7122).....>	3								
1.0460 (C22.8).....>	4								
Output									
Resistance output on terminal.....>	K								
Subsequent only possible with "gauge slide with 1xPT100" with 2-wire transmitter 4-20 mA.....>	L								
Measuring Range Transmitter (°C)									
Without transmitter in terminal head.....>	0	0							
- 50 - 0.....>	1	0							
- 50 - +50.....>	2	0							
0 - 50.....>	3	0							
0 - 100.....>	4	0							
0 - 150.....>	5	0							
0 - 200.....>	6	0							
0 - 300.....>	7	0							
0 - 400.....>	8	0							

Other ranges on request.