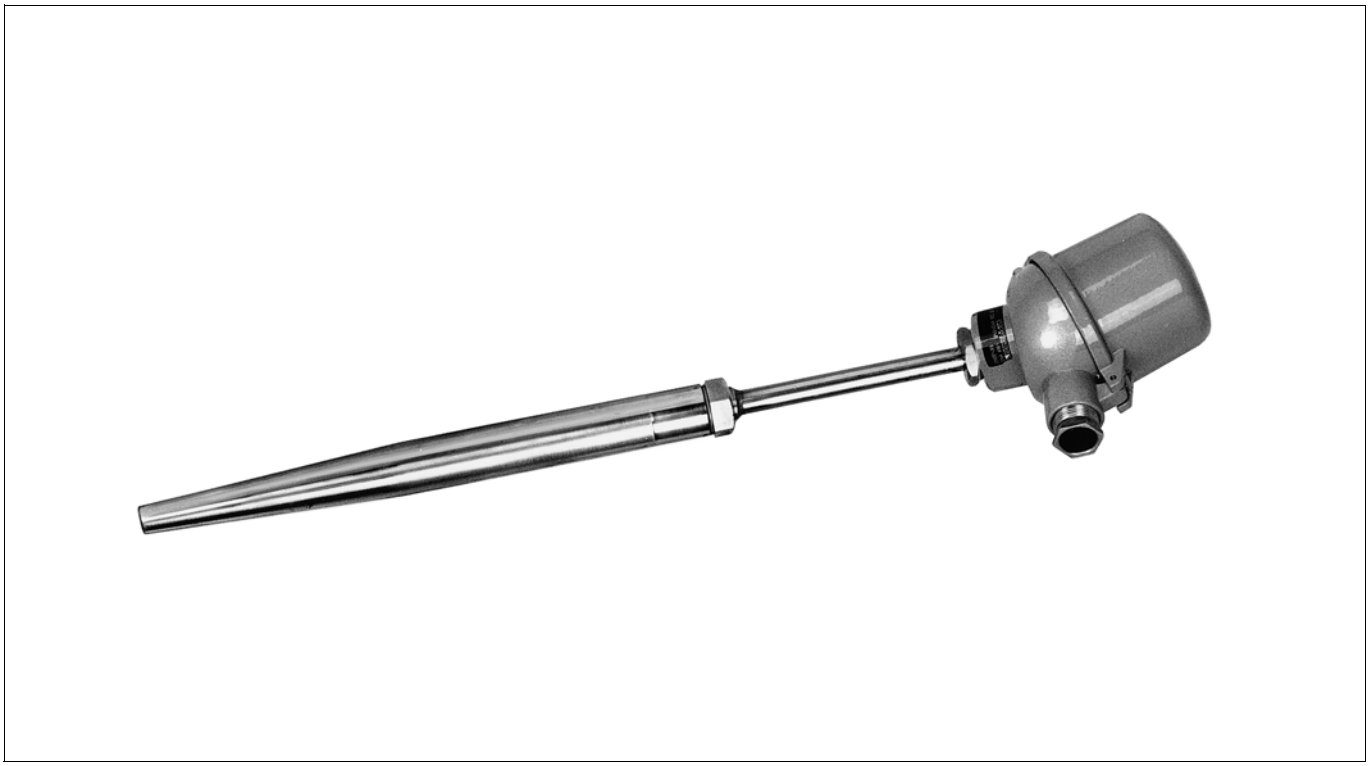
TSTW (SensyTemp TW R)

Resistance thermometers with drilled thermowell and measuring inset

10/10-3.23 EN



■ **Essential components**
- Standardized components that can be combined to form company-standard designs
- Measuring insets can be replaced during operation
- No welding seams coming into contact with media

■ **Technical features**
- Approvals acc. to CENELEC for Ex i installation with thermowell in Zone 0
- Thermowell materials and designs adapted to operating conditions
- Installation of a transmitter in the connection head obviates the need for multi-wire circuit

■ **Fields of application**
- Power generation and heat distribution
- Chemical process engineering
- Oil/gas conveyance
- Machine and system construction

Description

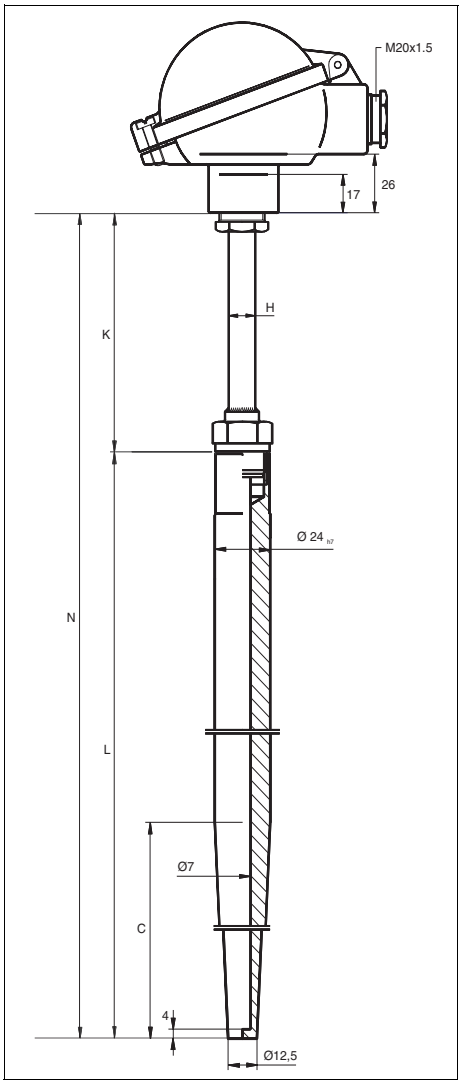
The resistance thermometers with welded protection tube are used primarily for measuring temperatures in process systems which have corrosive media in the operating range up to 400 °C or 660 bar.

They are composed of a thermowell made from bar stock material, with an extension tube and a connection head with an installed exchangeable measuring inset. The design of the thermowell allows it to be optimised to match the mechanical requirements in both measurement and mechanical terms, thus enabling it to withstand high levels of stress caused by pressure, flow and vibration.

This design considerably facilitates the operational checks mandated, since the measuring inset
- can be removed while the system is running without dismantling the entire sensor,
- can be calibrated in the standard test facilities,
- can be stocked as a universal standard component in order to assure availability of the system during replacement.

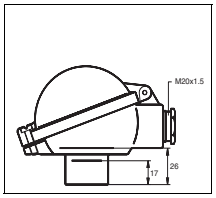
Sensor design

Example

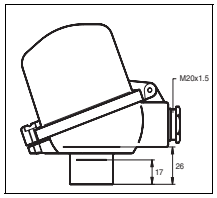


Connection heads

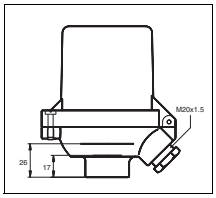
BUZ type**,** aluminium



BUZH type, aluminium
for install. of transmitter

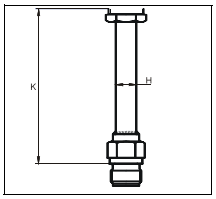


BUKH type polyamide
for install. of transmitter



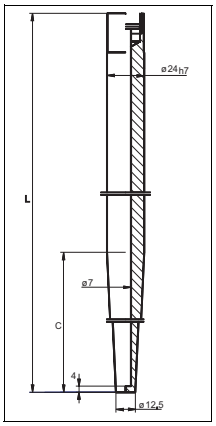
Extension tube

Welded mounting
thread M18 × 1,5



Thermowell

Type 4, DIN 43772 (replacement for Type D, DIN 43763)

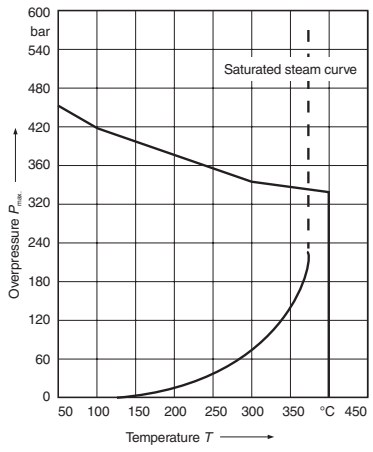


Captions

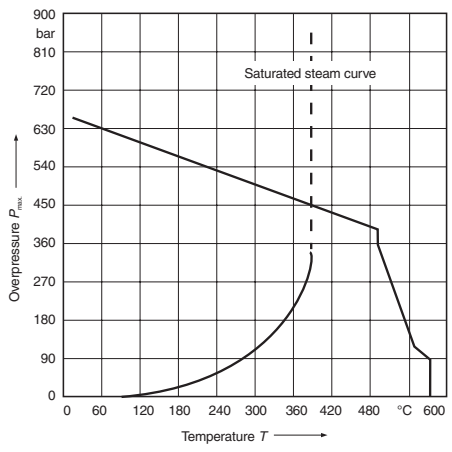
N = Nominal length
L = Thermowell length
K = Extension tube length
H = Extension tube diameter
C = Cone length

Stress capacity of the thermowells type 4 conforming to DIN 43772 (replacement for type D conforming to DIN 43763)

Material: 1.4571



Material: 1.7335



Type 4 (D2, D5)

Thermowells c = 125 mm:
Bend, stream length = 125 mm
Thermowell diameter = 24 mm
Thermowell inside diameter = 7 mm
Flow velocity
Water = 5 m/s
Steam = 60 m/s
Air = 60 m/s

Ordering information

					Catalog No.							Code		
Resistance thermometer TSTW (SensyTemp TW R)					**V10514-**		**0**							
Thermowell														
Type			Material											
4 (D1)	L = 140 mm	C = 65 mm	1.4571 (AISI 316-Ti)			A								
	L = 140 mm	C = 65 mm	1.7335 (AISI A 182-F11)			C								
4 (D2)	L = 200 mm	C = 125 mm	1.4571 (AISI 316-Ti)			E								
	L = 200 mm	C = 125 mm	1.7335 (AISI A 182-F11)			G								
4 (D4)	L = 200 mm	C = 65 mm	1.4571 (AISI 316-Ti)			I								
	L = 200 mm	C = 65 mm	1.7335 (AISI A 182-F11)			L								
	L = 200 mm	C = 65 mm	1.5415 (AISI A 204-Gr. A)			K								
4 (D5)	L = 260 mm	C = 125 mm	1.4571 (AISI 316-Ti)			N								
	L = 260 mm	C = 125 mm	1.7335 (AISI A 182-F11)			Q								
Extension tube														
Thread	Diameter	Length	Material					Y						
M18 x 1,5	H = 11 mm	K = 150 mm	1.4571 (AISI 316-Ti)					D						
M18 x 1,5	H = 14 mm	K = 150 mm	1.4571 (AISI 316-Ti)											
Connection head														
Type	Material	Cable entry	Surface	prot. degr./-class					1					
BUZ	aluminium	M20 x 1.5	painted	IP 66 / NEMA 4 X					5					
BUZH	aluminium	M20 x 1.5	painted	IP 66 / NEMA 4 X					F					
BUKH	polyamide	M20 x 1.5	black	IP 66 / NEMA 4 X										
Measuring inset										1				
1 x Pt 100, 2-wire		Non-explosion protected								2				
1 x Pt 100, 3-wire		Non-explosion protected								3				
1 x Pt 100, 4-wire		Non-explosion protected								4				
2 x Pt 100, 2-wire		Non-explosion protected								5				
2 x Pt 100, 3-wire		Non-explosion protected						1)		6				
1 x Pt 100, 2-wire		II 1 G EEx ia IIC T6	PTB 01 ATEX 2200 X							7				
1 x Pt 100, 3-wire		II 1 G EEx ia IIC T6	PTB 01 ATEX 2200 X							8				
1 x Pt 100, 4-wire		II 1 G EEx ia IIC T6	PTB 01 ATEX 2200 X							9				
2 x Pt 100, 2-wire		II 1 G EEx ia IIC T6	PTB 01 ATEX 2200 X					1)		0				
2 x Pt 100, 3-wire		II 1 G EEx ia IIC T6	PTB 01 ATEX 2200 X					1)						
Error limit											A			
Class B		EN 60751 (IEC 60751)									F			
Class A (from -30...350 °C)		EN 60751 (IEC 60751)						1)						
Head mounted transmitter								2)						
without												0		
TR04	fixed measuring range			Standard: 2 or 3-wire circuit				3) 4)				1		
TS02	programmable							3)				6		
TH02	programmable, HART protocol							3)				9		
TF12	PROFIBUS-PA							3)				K		
TR04-Ex	fixed measuring range			Standard: 2 or 3-wire circuit				4) 5)				A		
TS02-Ex	programmable							5)				F		
TH02-Ex	programmable, HART protocol							5)				J		
TF12-Ex	PROFIBUS-PA							5)				L		

1) not for 2-wire
2) Transmitter TS02/TS02-Ex, TH02/TH02-Ex, TF12/TF12-Ex incl. parameterization (measuring range in clear text)
Transmitter TR04/TR04-Ex incl. standard measuring range (clear text) as standard in connection head BUZH and BUKH only
3) only for measuring inset in non-explosion protected version
4) standard measuring ranges in °C: -30/60, 0/60, 0/100 0/120, 0/150, 0/200, 0/250, 0/300, 0/400, 0/600
5) only for measuring inset with (PTB) EEx ia IIC T6

Other options:
- other thermowell material
- other thermowell design
- other thermowell fixing
- other cable entry
- other head painting
- Tests (see Data Sheet 10/10-3.81 EN)

Other versions on request

Additional ordering information			
	Code		
Options			
Measruing range = (start value...final value °C)	680		
TAG-No. on stainless steel label	490		
4-wire circuit TR04 / TR04-Ex	TMP		

Basic values, deviations of platinum resistance elements acc. to EN 60751 (IEC 60751)								
Temperature		0 °C	100 °C	200 °C	300 °C	400 °C	500 °C	600 °C
Basic value (Ω)		100.00	138.51	175.86	212.05	247.09	280.98	313.71
Tolerance (K)	Class B	0.30	0.80	1.30	1.80	2.30	2.80	3.30
	Class A	0.15	0.35	0.55	0.75	0.95	1.15	–

Accessories, components

Many of the components of the models listed in the catalog may be ordered as separate components or as modules. In this respect you should refer to Data Sheet 10-3.45 EN (Exchangeable measuring inserts for resistance thermometers) and 10-3.91 EN (Components for temperature sensors with exchangeable measuring inset).

Other models

This Data Sheet contains only a small selection of our range of resistance thermometers with drilled thermowell and measuring inset. See Data Sheet 10-3.03 EN for technical data. Other models can be supplied on request.

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