

TSWT (SensyTemp WT R)

Resistance thermometers
with welded protection tube
and measuring inset

10/10-3.22 EN



■ Essential modules

- Can be combined from standardized components
- Standard lengths means that few spare parts need to be kept in stock
- Insertion lengths can be selected individually
- Measuring insets can be replaced during operation

■ Technical features

- Approvals acc. to CENELEC for Ex i installation with protection tube in zone 0
- Prot. tube mat. and designs adapted to operating conditions
- Installation of a transmitter in the connection head obviates the need for multi-wire circuit
- Interfaces to all current process control systems

■ Applications

- Chemical process engineering
- Petroleum/natural gas supply and processing
- Power generation and heat distribution
- Food and beverages industries
- General machinery and apparatus engineering

Description

The resistance thermometers with welded protection tube are used primarily for measuring temperatures in the operating range up to 600°C, 40 bar, 20 m/s in vessels and pipelines.

They are assembled from a welded protection tube featuring a connection head, into which an exchangeable measuring inset is fitted, and are used chiefly in liquid and gaseous media where moderate mechanical stress and low chemical aggressivity levels prevail.

This design considerably facilitates the operational checks, since the measuring module

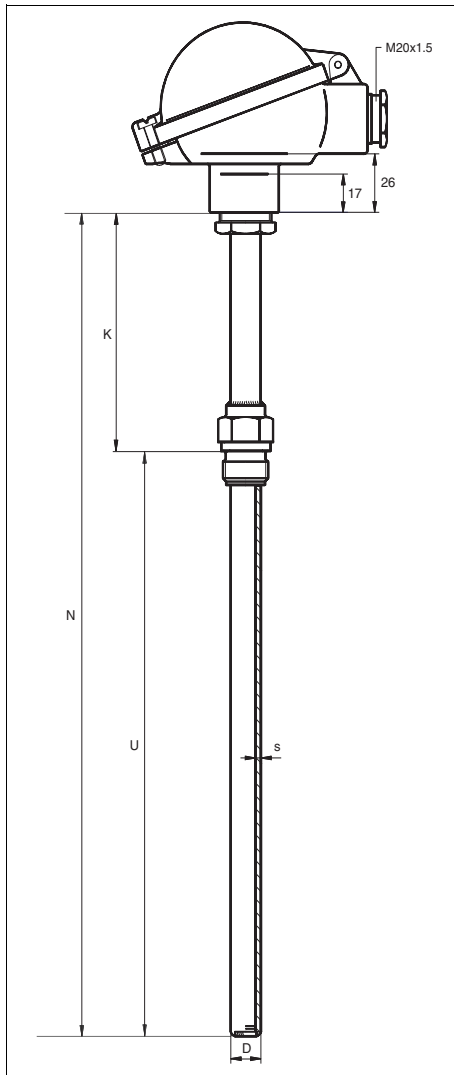
- can be removed while the system is running without dismantling the entire sensor,
- can be calibrated in the standard test facilities,
- can be stocked as a universal standard module in order to assure availability of the system during replacement.

In most cases, replacement by a new measuring inset is more reliable and less expensive than recalibration.

ABB

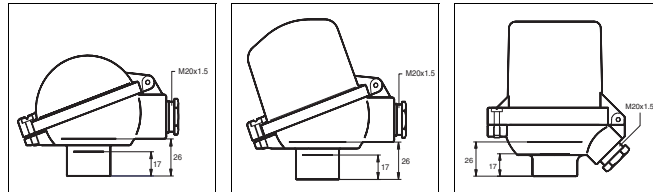
Sensor design

Example



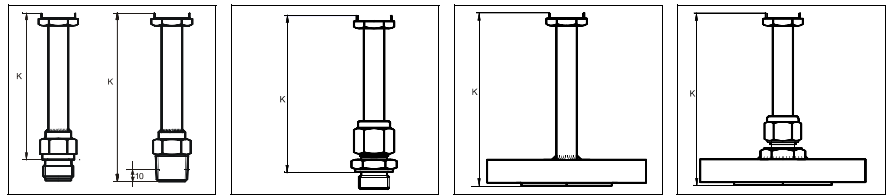
Connection heads

BUZ type, aluminium **BUZH** type, aluminium, for install. of transmitter **BUKH** type, polyamide, for install. of transmitter



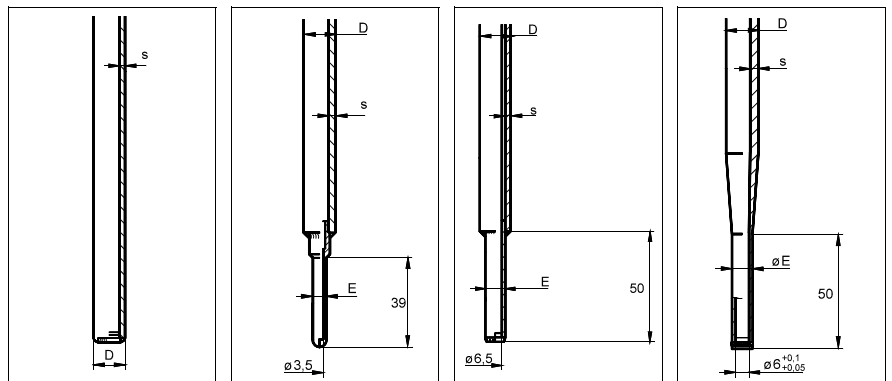
Process connection

Welded mounting thread Adjustable compression fitting Welded flange Adjustable flange
cylindr. (G) conical (NPT)



Protection tubes

Type C2, K2, K3, B3 Type C2S, K2S Type K3S Type E1



Captions

- N = Nominal lengths
- K = Extension tube length
- U = Insertion length
- D = Protection tube diameter
- E = Diameter of the protection tube tip
- S = Wall thickness

Ordering information									
					Catalog No.			Code	
Resistance thermometer TSWT (SensyTemp WT R)					V10513-				
Protection tube									
Type	D x S	Material	E						
C2	11 x 2 mm	1.4571 (AISI 316-Ti)	–		D				
K2	12 x 2.5 mm	1.4571 (AISI 316-Ti)	–		J				
K3	14 x 2.5 mm	1.4571 (AISI 316-Ti)	–		K				
K3S	14 x 2.5 mm	1.4571 (AISI 316-Ti)	9 mm		T				
B3	9 x 1 mm	1.4571 (AISI 316-Ti)	–		C				
E1	12 x 2.5 mm	1.4571 (AISI 316-Ti)	9 mm		G				
Nominal length									
N = 290 mm						1			
N = 380 mm						2			
N = 530 mm						3			
Connection head									
Type	Material	Cable entry	Surface	prot. degr./-class					
BUZ	aluminium	M20 x 1.5	painted	IP 66 / NEMA 4 X		1			
BUZH	aluminium	M20 x 1.5	painted	IP 66 / NEMA 4 X		5			
BUKH	polyamide	M20 x 1.5	black	IP 66 / NEMA 4 X		F			
Measuring inset									
1 x Pt 100, 2-wire		Non-explosion protected				1			
1 x Pt 100, 3-wire		Non-explosion protected				2			
1 x Pt 100, 4-wire		Non-explosion protected				3			
2 x Pt 100, 2-wire		Non-explosion protected				4			
2 x Pt 100, 3-wire		Non-explosion protected			1)	5			
1 x Pt 100, 2-wire		II 1 G EEx ia IIC T6 PTB 01 ATEX 2200 X				6			
1 x Pt 100, 3-wire		II 1 G EEx ia IIC T6 PTB 01 ATEX 2200 X				7			
1 x Pt 100, 4-wire		II 1 G EEx ia IIC T6 PTB 01 ATEX 2200 X				8			
2 x Pt 100, 2-wire		II 1 G EEx ia IIC T6 PTB 01 ATEX 2200 X			1)	9			
2 x Pt 100, 3-wire		II 1 G EEx ia IIC T6 PTB 01 ATEX 2200 X			1)	0			
Error limit									
Class B		EN 60751 (IEC 60751)				A			
Class A (from -30...350 °C)		EN 60751 (IEC 60751)			2)	F			
Head mounted transmitter									
without					3)				
TR04	fixed measuring range	Standard: 2 or 3-wire circuit		4) 5)		0			
TS02	programmable			4)		1			
TH02	programmable, HART protocol			4)		6			
TF12	PROFIBUS-PA			4)		9			
TR04-Ex	fixed measuring range	Standard: 2 or 3-wire circuit		5) 6)		K			
TS02-Ex	programmable			6)		A			
TH02-Ex	programmable, HART protocol			6)		F			
TF12-Ex	PROFIBUS-PA			6)		J			
						L			

- 1) not for protection tube Type C2S and K2S
- 2) not for 2-wire
- 3) 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
- 4) only for measuring inset in non-explosion protected version
- 5) 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
- 6) only for measuring inset with (PTB) EEx ia IIC T6

Other versions on request

Additional ordering information							
					Code		
Process connection							
Mounting thread	G½", welded-on	Mat. 1.4571 (AISI 316-Ti)	Type A DIN 3852	1)	RB1		
Mounting thread	G¾", welded-on	Mat. 1.4571 (AISI 316-Ti)	Type A DIN 3852	1)	RB2		
Mounting thread	G1", welded-on	Mat. 1.4571 (AISI 316-Ti)	Type A DIN 3852	1)	RB3		
Mounting thread	½" NPT, welded-on	Mat. 1.4571 (AISI 316-Ti)		1)	RB4		
Mounting thread	¾" NPT, welded-on	Mat. 1.4571 (AISI 316-Ti)		1)	RB5		
Compression fitting	G½", adjustable	Mat. 1.4571 (AISI 316-Ti)		2)	SB1		
Welded flange	DN 25, PN 40, Type B1	Mat. 1.4571 (AISI 316-Ti)	DIN EN 1092-1	1)	F06		
Welded flange	DN 50, PN 40, Type B1	Mat. 1.4571 (AISI 316-Ti)	DIN EN 1092-1	1)	F11		
Welded flange	1" 300 lbs. RF	Mat. 1.4571 (AISI 316-Ti)		1)	F18		
Adjustable flange	DN 25, PN 40, Type B1	Mat. 1.4571 (AISI 316-Ti)	DIN EN 1092-1	2)	F42		
Options							
Measuring range = (start value...final value °C)						680	
Insertion length U = ...mm					1)	468	
TAG-No. on stainless steel label						490	
4-wire circuit TR04 / TR04-Ex						TMP	

1) Specify insertion length U. Standard U = 160 for N = 290,

U = 250 for N = 380, U = 400 for N = 530

2) not for protection tube Type C2, C2S and B3

Other versions on request

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 insets for resistance thermometers) and 10-3.91 (Components for temperature sensors with exchangeable measuring inset).

Other versions

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

Other options:

- other nominal lengths
- other process connection
- other protection tube material
- other protection tube type
- other cable entry
- other head painting
- Tests (see Data Sheet 10-3.81 EN)

Delivery time 3 weeks. Other models on request.



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