

Thermocouples with Fabricated Thermowell

According to DIN 43 772, replaceable measuring insert

TTeSrA
TTeSrAT

Application

The thermocouple models TTeSrA and TTeSrAT are equipped with a fabricated thermowell and can be mounted directly into the process. The measuring insert can be replaced as separate component during operation.

For both models, we offer various connection heads and thermocouple materials according to DIN EN 60 584. In addition, model TTeSrAT is available with several fitted transmitters with analogue or digital output.

Standard Versions

Measuring Element

Thermocouple types K, N, J and S according to DIN EN 60 584 as single or dual element

Operating Temperature Ranges

Type K (NiCr-Ni): -40 °C to +800 °C (-40 °F to +1472 °F)¹⁾
Type N (NiCrSi-NiSi): -40 °C to +800 °C (-40 °F to +1472 °F)¹⁾
Type J (Fe-CuNi): -40 °C to +750 °C (-40 °F to +1382 °F)
Type S (Pt10Rh-Pt): 0 °C to +800 °C (+32 °F to +1472 °F)¹⁾

Ambient Temperature Ranges²⁾

Model TTeSrA: -40 °C to +100 °C (-40 °F to +212 °F)
Model TTeSrAT: -40 °C to +85 °C (-40 °F to +185 °F)

Accuracy

Class 1 according to DIN EN 60 584

Tolerance value³⁾ J, K, N: +1.5 °C or 0.004 · |t|

for type J in the range: -40 °C to +750 °C (-40 °F to +1382 °F)

for type K, N in the range: -40 °C to +1000 °C (-40 °F to +1832 °F)

Tolerance value³⁾ S: +1.0 °C or (1+(t-1100)·0.003) °C

in the entire operating temperature range

Measuring Insert

According to DIN 43 735

Spring-loaded in the connection head

Spring travel approximately 7 mm (0.28")

Insertion tube made of sheathed, mineral insulated cable

Sheath Material

Material: Inconel 600 (2.4816) for type K, N, S
1.4401 for type J

Insulation: MgO

Measuring Insert Diameter

Depending on the diameter of the thermowell

Thermowell

Form 2, 2F or 2G according to DIN 43 772

Material stainless steel 316Ti (1.4571)

Connection Heads

Types B, BUZ, BUZ-H, BUZ-H-W, BEG, NS or GG

Degree of Protection (DIN EN 60 529)

IP65



Output Signal

Model TTeSrA:

thermoelectric voltage according to
DIN EN 60 584

Model TTeSrAT:

4...20 mA, HART® or PROFIBUS® PA/
FOUNDATION™ Fieldbus

Ordering Information

See pages 4

Special Versions (Upon Request)

- Other thermocouples
- Special thermowell materials
- Other head-mount transmitters, also with voltage output
- Version for the subsequent mounting of transmitters
- Other connection heads
- Higher degree of protection up to IP68
- Deviating thermowell diameters, connection threads or flanges

Accessories

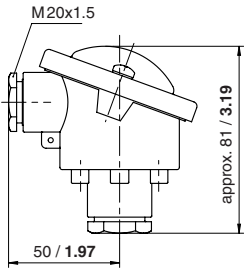
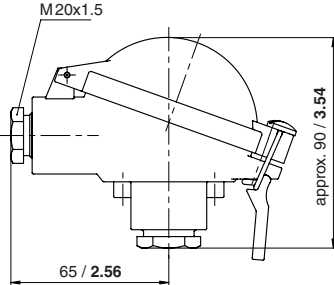
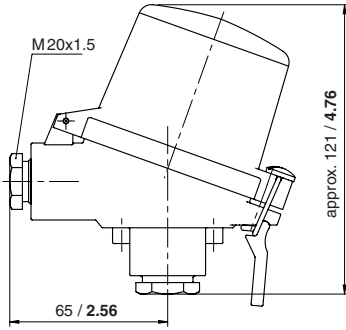
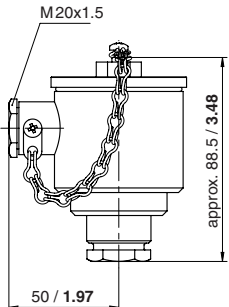
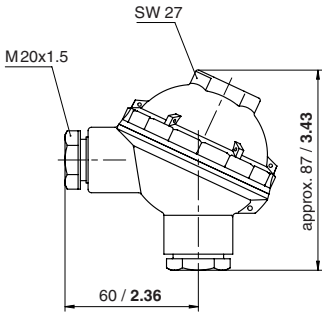
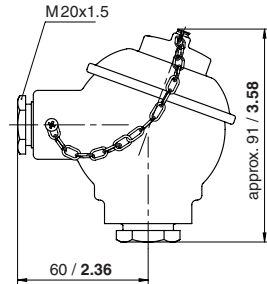
- Transmitters for rail mounting
- Digital displays for switch panel mounting or wall mounting
- Compensating cables and extension cables
- Compression fittings for thermowell form 2

¹⁾ application range limited due to the thermowell material stainless steel 316Ti (1.4571)

²⁾ permissible operating and storage temperature at the connection head

³⁾ whichever value is higher

Connection Heads, Dimensional Data (mm/inches)

Connection Heads			
	Head B	Head BUZ	Head BUZ-H ¹⁾ , BUZ-H-W
Material:	die-cast aluminum	die-cast aluminum	die-cast aluminum
Lid:	flanged lid with screws	hinged lid	BUZ-H: high lid, hinged BUZ-H-W: high lid with LED display
Degree of protection:	IP65	IP65	IP65
No. of transmitters:	1	1	2
Max. installation dimensions:	Ø 44 x 21 mm (1.73 x 0.82")	Ø 45 x 40 mm (1.77 x 1.57")	lid Ø 60 x 40 mm (2.36 x 1.57") base Ø 45 x 16 mm (1.77 x 0.63")
			
	Head BEG	Head NS	Head GG
Material:	stainless steel 1.4401	plastic polyphenylene oxide	grey cast iron
Lid:	screw-on lid	screw-on lid	screw-on lid
Degree of protection:	IP65	IP65	IP65
No. of transmitters:	1	1	1
Max. installation dimensions:	Ø 45 x 20 mm (1.77 x 0.79")	Ø 42 x 14 mm (1.65 x 0.55")	Ø 42 x 20 mm (1.65 x 0.79")
			

¹⁾ For connection head BUZ-H, the transmitter is fitted in the lid and the measuring insert is assembled with ceramic terminal block. Moreover, the head BUZ-H offers the possibility of installing two transmitters.

Process Connections, Dimensional Data (mm/inches)

Dimensional Data

Process connections: Without thread

Form acc. to DIN 43 772: form 2

Installation length $U1^{1)}$: 280, 370, 520 mm (11.02, 14.57, 20.47")

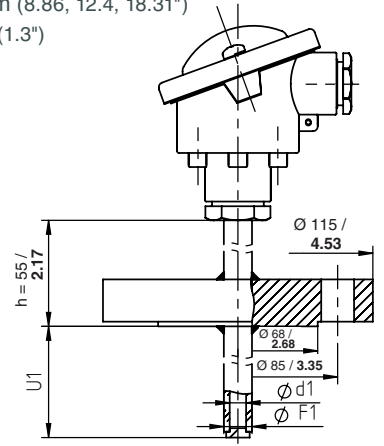
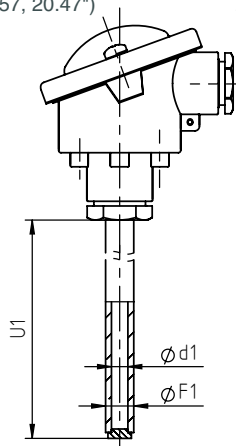
Measuring insert length: $U1 + 33$ mm (1.3")

Blind flange acc. to DIN 2527, DN 25 PN 40, form C form 2F

225, 315, 465 mm (8.86, 12.4, 18.31")

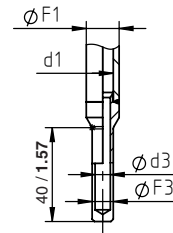
$U1 + h + 33$ mm (1.3")

F1	d1	Measuring insert Ø
6 / 0.24 ²⁾	4 / 0.16 ²⁾	3 / 0.12
9 / 0.35	7 / 0.28	6 / 0.24
11 / 0.43	7 / 0.28	6 / 0.24
12 / 0.47	7 / 0.28	6 / 0.24
14 / 0.55	9 / 0.35	6 / 0.24 ³⁾



Tapered measuring tip²⁾

F1	d1	F3	d3	Measuring insert Ø
9 / 0.35	7 / 0.28	6 / 0.24	3.5 / 0.14	3 / 0.12
11 / 0.43	7 / 0.28	6 / 0.24	3.5 / 0.14	3 / 0.12
12 / 0.47	7 / 0.28	6 / 0.24	3.5 / 0.14	3 / 0.12
14 / 0.55	9 / 0.35	9 / 0.35	6.5 / 0.26	6 / 0.24



Process connection: Thread spigot

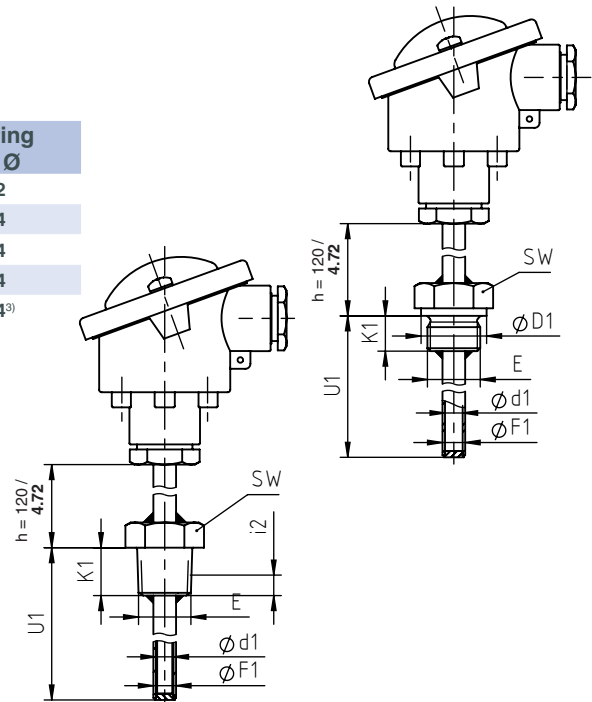
Form acc. to DIN 43 772: form 2G

Installation length $U1^{1)}$: 160, 250, 400 mm (6.3, 9.84, 15.75")

Measuring insert length: $U1 + h + 33$ mm (1.3")

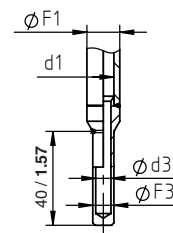
E		F1	d1	Measuring insert Ø
G ½ B (½" BSP) ½" NPT ²⁾ M20x1.5 ²⁾	G ¼ B (¼" BSP) ²⁾	6 / 0.24 ²⁾	4 / 0.16 ²⁾	3 / 0.12
	¼" NPT ²⁾	9 / 0.35	7 / 0.28	6 / 0.24
	M14x1.5 ²⁾	11 / 0.43	7 / 0.28	6 / 0.24
	–	12 / 0.47	7 / 0.28	6 / 0.24
	G ¾ B (¾" BSP) ²⁾ G 1 B (1" BSP)	14 / 0.55	9 / 0.35	6 / 0.24 ³⁾

E	K1	i2	D1	SW
G ¼ B (¼" BSP)	12 / 0.47	–	18 / 0.71	19 / 0.75
¼" NPT	13 / 0.51	5.79 / 0.23	–	19 / 0.75
M14x1.5	12 / 0.47	–	19 / 0.75	19 / 0.75
G ½ B (½" BSP)	14 / 0.55 ⁴⁾	–	26 / 1.02	27 / 1.06
½" NPT	19 / 0.75	8.13 / 0.32	–	27 / 1.06
M20x1.5	14 / 0.55	–	25 / 0.98	27 / 1.06
G ¾ B (¾" BSP)	16 / 0.63	–	27 / 1.06	32 / 1.26
G 1 B (1" BSP)	18 / 0.71 ⁴⁾	–	39 / 1.54	41 / 1.61



Tapered measuring tip²⁾

F1	d1	F3	d3	Measuring insert Ø
9 / 0.35	7 / 0.28	6 / 0.24	3.5 / 0.14	3 / 0.12
11 / 0.43	7 / 0.28	6 / 0.24	3.5 / 0.14	3 / 0.12
12 / 0.47	7 / 0.28	6 / 0.24	3.5 / 0.14	3 / 0.12
14 / 0.55	9 / 0.35	9 / 0.35	6.5 / 0.26	6 / 0.24



¹⁾ Deviating lengths available – please specify when ordering.

²⁾ No version according to DIN 43 772.

³⁾ With crimped-on sleeve Ø 8 x 50 mm (0.31 x 1.97") in the sensor range. Measuring insert with a consistent diameter of 8 mm (0.31") upon request.

⁴⁾ Deviating from DIN 43 772, we manufacture the length of the thread spigot according to DIN 3852-2.

Ordering Information

Basic Model:		Thermocouple with Fabricated Thermowell	TTeSrA
Transmitter:	without		without code letter
	with fitted transmitter		T
Thermocouple:	type K, NiCr-Ni		K
	type N, NiCrSi-NiSi		N
	type J, Fe-CuNi		J
	type S, Pt10Rh-Pt		S
No. of thermocouples:	1		1
	2		2
Thermowell Ø F1:	6 x 1 mm (0.24 x 0.04")		F1 = 6 mm
	9 x 1 mm (0.35 x 0.04")		F1 = 9 mm
	11 x 2 mm (0.43 x 0.08")		F1 = 11 mm
	12 x 2.5 mm (0.47 x 0.1")		F1 = 12 mm
	14 x 2.5 mm (0.55 x 0.1")		F1 = 14 mm
Connection head:	type B, aluminum, with screws		B
	type BUZ, aluminum, hinged lid		BUZ
	type BUZ-H, aluminum, high lid		BUZ-H
	type BUZ-H-W, aluminum, high lid with LED display		BUZ-H-W
	type BEG, stainless steel, screw-on lid		BEG
	type NS, polyphenylene oxide, screw-on lid		NS
	type GG, grey cast iron, screw-on lid		GG
Process connection:	form 2, without thread (plain)		2
	form 2F, blind flange according to DIN 2527, DN 25 PN 40		2F
	form 2G, thread spigot		2G
Tapered measuring tip:	without		without code letter
	with tapered measuring tip		S
Connection thread:	see page 3	e.g.	G ½ B
Installation length U1:	form according to DIN 43 772 (other lengths upon request)	2 280, 370, 520 mm (11.02, 14.57, 20.47")	
		2F 225, 315, 465 mm (8.86, 12.4, 18.31")	
		2G 160, 250, 400 mm (6.3, 9.84, 15.75")	e.g.
With fitted transmitter:	TT5334: 4...20 mA		5334-A, 5334-B
	TT5337: 4...20 mA + HART 7		5337-A, 5337-D
	TT5350: PROFIBUS® PA/FOUNDATION™ Fieldbus		5350-A, 5350-B
Measuring range:	scaling of the 4...20 mA signal to the temperature range	e.g.	0 °C to +250 °C
Options:	neck tube length h	other lengths, min. 20 mm (0.79")	
	instrument tag	stainless steel plate 12 x 55 mm (0.47 x 2.17") sticker on the case	
Example:	TTeSrAT, K, 1, F1 = 9 mm, BUZ, 2G, G ½ B, U1 = 400 mm, 5334-A, 0 °C to +500 °C		
Special Versions: Please describe your requirements in cleartext!			