

# Intrinsically Safe Resistance Thermometers with Fabricated Thermowell

According to DIN 43 772, replaceable measuring insert

TPtSrXiA  
TPtSrXiAT



## Application

The resistance thermometer models TPtSrXiA and TPtSrXiAT with fabricated thermowells form 2, 2G and 2F according to DIN 43 772 have an EU Type Examination Certificate for the ignition protection type "intrinsic safety". Both models meet the requirements of the directive 2014/34/EU for the application in potentially explosive atmospheres due to gases and dusts. The resistance thermometers can be mounted directly into the process. The measuring insert can be replaced as separate component.

For both models, we offer various measuring resistors according to DIN EN 60 751. In addition, model TPtSrXiAT is available with several fitted transmitters with analogue or digital output.

## Standard Versions

### Measuring Element

Platinum thin-film measuring resistor Pt100 according to DIN EN 60 751 in 2-, 3- or 4-wire connection as single or dual measuring resistor

### Operating Temperature Range<sup>1)</sup>

-200 °C to +600 °C (-328 °F to +1112 °F)

### Ambient Temperature Ranges<sup>2)</sup>

-40 °C to +85 °C (-40 °F to +185 °F)

Please refer to operating instruction B71 for the precise conditions.

### Accuracy

Class AA, A or B according to DIN EN 60 751

### Measuring Insert

According to DIN 43 735

The measuring insert shall only be replaced by an original spare part.

Spring-loaded in the connection head

Insertion tube made of sheathed, mineral insulated cable

Sheath material: stainless steel 316L (1.4404)

Insulation: MgO

Diameter (dF):  $3 \pm 0.05$  or  $6 \pm 0.06$  mm ( $0.12 \pm 0.002$  or  $0.24 \pm 0.0024$  ")

Spring travel: approximately 7 mm (0.28")

### Neck Tube

Material: stainless steel 316Ti (1.4571)

Standard length h: 120 mm (4.7")

### Thermowell

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

Material stainless steel 316Ti (1.4571)

### Connection Heads

Types XE-BUZ, XE-BUZ-H, XI-BUZ or XI-BUZ-H

### Degree of Protection (DIN EN 60 529)

IP67 with screwed cable gland (PAN, PAR, MAN or MAR)



### Approvals

II 1G Ex ia IIC T6...T1 Ga

II 1/2G Ex ia IIC T6...T1 Ga/Gb

II 2G Ex ia IIC T6...T1 Gb

II 1D Ex ia IIIC T80 °C...T440 °C Da

II 1/2D Ex ia IIIC T80 °C...T440 °C Da/Db

II 2D Ex ia IIIC T80 °C...T440 °C Db

### Application in Explosion Hazardous Areas

Zones 0, 1, 2, 20, 21, 22

### Output Signal

Model TPtSrXiA: resistance according to DIN EN 60 751

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

### Electrical Connection Values

For the electrical connection values, please refer to operating instruction B71.

## Ordering Information

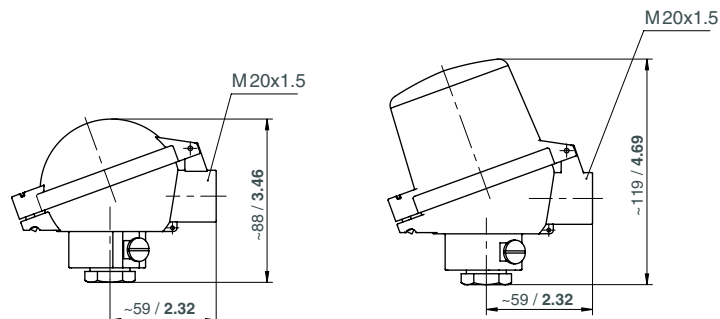
See page 4

<sup>1)</sup> for accuracy class AA, the operating temperature range is reduced to -70 °C to +550 °C (-94 °F to +1022 °F)

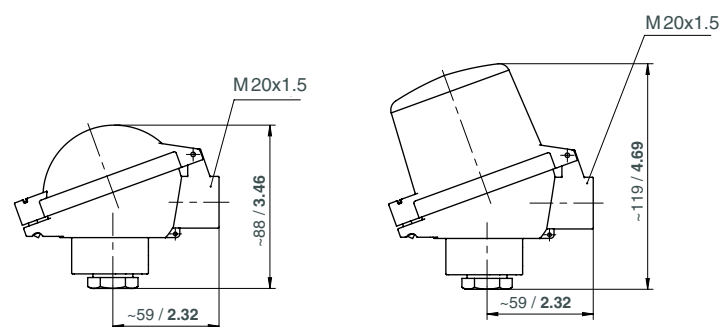
<sup>2)</sup> permissible storage temperature at the connection head

## Connection Heads, Dimensional Data (mm/inches)

Connection Heads		
	Head XE-BUZ	Head XE-BUZ-H <sup>1)</sup>
<b>Material:</b>	die-cast aluminum	die-cast aluminum
<b>Lid:</b>	hinged lid	high lid, hinged
<b>Degree of protection:</b>	IP67 <sup>2)</sup>	IP67 <sup>2)</sup>
<b>No. of transmitters:</b>	1	2
<b>Max. installation dimensions:</b>	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 XI-BUZ	Head XI-BUZ-H <sup>1)</sup>
<b>Material:</b>	polyamide PA12	polyamide PA12
<b>Lid:</b>	hinged lid	high lid, hinged
<b>Degree of protection:</b>	IP67 <sup>2)</sup>	IP67 <sup>2)</sup>
<b>No. of transmitters:</b>	1	2
<b>Max. installation dimensions:</b>	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")



Options Screwed Cable Gland			
Type code	Type	Material	Clamping range
PAN	screwed cable gland	polyamide, blue	5 – 10 mm (0.2 – 0.39")
PAR	screwed cable gland	polyamide, blue	7 – 13 mm (0.28 – 0.51")
MAN	screwed cable gland	brass, nickelplated	5 – 10 mm (0.2 – 0.39")
MAR	screwed cable gland	brass, nickelplated	7 – 13 mm (0.28 – 0.51")
GWO	open thread <sup>3)</sup>	–	–

<sup>1)</sup> For connection heads XE-BUZ-H and XI-BUZ-H, the transmitter is fitted in the lid and the measuring insert is assembled with ceramic terminal block. Moreover, the heads XE-BUZ-H and XI-BUZ-H offer the possibility of installing two transmitters.

<sup>2)</sup> depending on the screwed cable gland used

<sup>3)</sup> For mounting of the cable gland by the customer. Operation without suitable screwed cable gland is not permissible.

# Process Connections, Dimensional Data (mm/inches)

## Dimensional Data

Process connections: Without thread

Form acc. to DIN 43 772: form 2

Installation length U1<sup>1)</sup>: 280, 370, 520 mm (11.02, 14.57, 20.47")

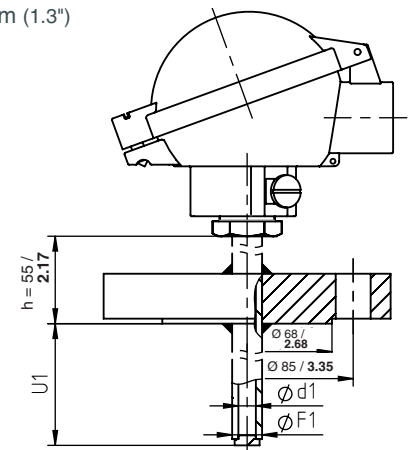
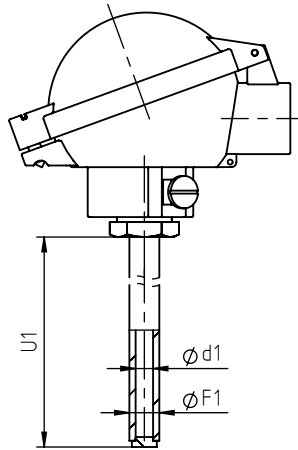
Measuring insert length: U1 + 33 mm (1.3")

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

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

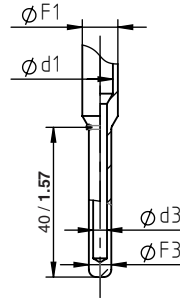
U1 + h + 33 mm (1.3")

F1	d1	Measuring insert Ø
6 / 0.24 <sup>2)</sup>	4 / 0.16 <sup>2)</sup>	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 <sup>3)</sup>



### Tapered measuring tip<sup>2)</sup>

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

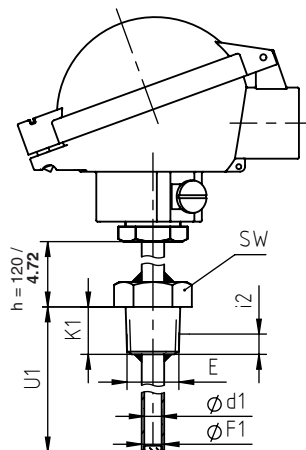
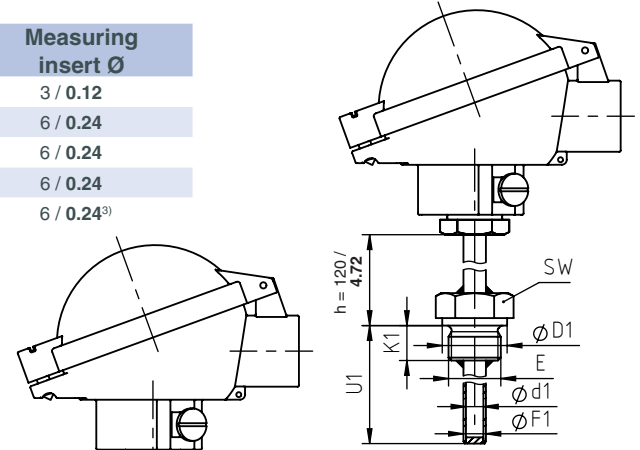
Form acc. to DIN 43 772: form 2G

Installation length U1<sup>1)</sup>: 160, 250, 400 mm (6.3, 9.84, 15.75")

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

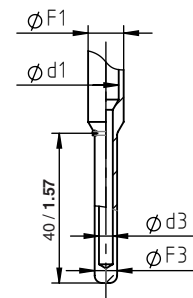
E		F1	d1	Measuring insert Ø
G ½ B (½" BSP) ½" NPT <sup>2)</sup> M20x1.5 <sup>2)</sup>	G ¼ B (¼" BSP) <sup>2)</sup>	6 / 0.24 <sup>2)</sup>	4 / 0.16 <sup>2)</sup>	3 / 0.12
	¼" NPT <sup>2)</sup>	9 / 0.35	7 / 0.28	6 / 0.24
	–	11 / 0.43	7 / 0.28	6 / 0.24
	G ¾ B (¾" BSP) <sup>2)</sup>	12 / 0.47	7 / 0.28	6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

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)	15 / 0.59	–	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)	30 / 1.18	–	39 / 1.54	41 / 1.61



### Tapered measuring tip<sup>2)</sup>

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



<sup>1)</sup> Deviating lengths available – please specify when ordering.

<sup>2)</sup> No version according to DIN 43 772.

<sup>3)</sup> 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.

## Ordering Information

Basic Model:		Intrinsically Safe Resistance Thermometer with Fabricated Thermowell	TPtSrXiA
<b>Transmitter:</b>	without		without code letter
	with fitted transmitter		<b>T</b>
<b>Measuring resistor:</b>	Pt100 DIN EN 60 751, class AA		<b>AA</b>
	Pt100 DIN EN 60 751, class A		<b>A</b>
	Pt100 DIN EN 60 751, class B		<b>B</b>
<b>No. of measuring resistors:</b>	1		<b>1</b>
	2 <sup>1)</sup>		<b>2</b>
<b>Connection method:</b>	2-wire connection <sup>2)</sup>		<b>2L</b>
	3-wire connection		<b>3L</b>
	4-wire connection <sup>1)</sup>		<b>4L</b>
<b>Thermowell Ø F1:</b>	6 x 1 mm (0.24 x 0.04")		<b>F1 = 6 mm</b>
	9 x 1 mm (0.35 x 0.04")		<b>F1 = 9 mm</b>
	11 x 2 mm (0.43 x 0.08")		<b>F1 = 11 mm</b>
	12 x 2.5 mm (0.47 x 0.1")		<b>F1 = 12 mm</b>
	14 x 2.5 mm (0.55 x 0.1")		<b>F1 = 14 mm</b>
<b>Connection head:</b>	type XE-BUZ, aluminum, hinged lid		<b>XE-BUZ</b>
	type XE-BUZ-H, aluminum, high lid		<b>XE-BUZ-H</b>
	type XI-BUZ, polyamide, hinged lid		<b>XI-BUZ</b>
	type XI-BUZ-H, polyamide, high lid		<b>XI-BUZ-H</b>
<b>Screwed cable gland:</b>	polyamide, blue	5 – 10 mm (0.2 – 0.39")	<b>PAN</b>
	polyamide, blue	7 – 13 mm (0.28 – 0.51")	<b>PAR</b>
	brass, nickelplated	5 – 10 mm (0.2 – 0.39")	<b>MAN</b>
	brass, nickelplated	7 – 13 mm (0.28 – 0.51")	<b>MAR</b>
	open thread		<b>GWO</b>
<b>Process connection:</b>	form 2, without thread (plain)		<b>2</b>
	form 2F, blind flange according to DIN 2527, DN 25 PN 40		<b>2F</b>
	form 2G, thread spigot		<b>2G</b>
<b>Tapered measuring tip:</b>	without		without code letter
	with tapered measuring tip		<b>S</b>
<b>Connection thread:</b>	see page 3	e.g.	<b>G ½ B</b>
<b>Installation length:</b>	U1 in mm	e.g.	<b>U1 = 250 mm</b>
<b>With fitted transmitter:</b>	TT5331: 4...20 mA		<b>5331-D</b>
	TT5333: 4...20 mA <sup>3)</sup>		<b>5333-D</b>
	TT5337: 4...20 mA + HART 7		<b>5337-D</b>
	TT5350: PROFIBUS® PA/FOUNDATION™ Fieldbus		<b>5350-B</b>
<b>Measuring range:</b>	scaling of the 4...20 mA signal to the temperature range	e.g.	<b>0 °C to +250 °C</b>
<b>Options:</b>	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	
<b>Example:</b>	<b>TPtSrXiAT, B, 1, 2L, F1 = 9 mm, XE-BUZ, PAN, 2G, G ½ B, U1 = 400 mm, 5333-D, 0 °C to +250 °C, h = 120 mm</b>		
<b>Special Versions: Please describe your requirements in cleartext!</b>			

<sup>1)</sup> For the dual measuring resistor, a 4-wire connection is not applicable.

<sup>2)</sup> Only applicable for accuracy class B.

<sup>3)</sup> Only 3-wire connection applicable.