

Thermocouples with Flameproof Enclosure for the Installation into Thermowells

With neck tube, replaceable measuring insert

TTeHrXdA
TTeHrXdAT



Application

The thermocouple models TTeHrXdA and TTeHrXdAT are designed for the installation into solid drilled or fabricated thermometer thermowells (e.g. according to DIN 43 772). Without thermowell, this version must not be applied in pressurised media.

They have an EU Type Examination Certificate for the ignition protection type "flameproof enclosure" and meet the requirements of the directive 2014/34/EU for the application in potentially explosive atmospheres due to gases and dusts.

For both models, we offer various thermocouple materials according to DIN EN 60 584. In addition, model TTeHrXdAT 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 +1175 °C (-40 °F to +2147 °F)¹⁾
Type N (NiCrSi-NiSi): -40 °C to +1175 °C (-40 °F to +2147 °F)¹⁾
Type J (Fe-CuNi): -40 °C to +750 °C (-40 °F to +1382 °F)
Type S (Pt10Rh-Pt): 0 °C to +1175 °C (+32 °F to +2147 °F)¹⁾

Ambient Temperature Ranges²⁾

-40 °C to +85 °C (-40 °F to +185 °F)

Please refer to operating instruction B71 for the precise conditions.

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

Special measuring insert with sleeve, which forms, in combination with a socket, a flame arrester in the connection head. 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: Inconel 600 (2.4816) for type K, N, S
1.4401 for type J

Insulation: MgO

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

Spring travel: approximately 7 mm (0.28")

Neck Tube

Material: stainless steel 316Ti (1.4571)

Standard length h: 120 mm (4.7")

Process Connection

Various thread spigots (E4.1)



Connection Heads

Types XD-AD, XD-AD-W, XD-SD or XD-SD-W

Degree of Protection (DIN EN 60 529)

IP66 – 68⁴⁾ (when mounted in a thermowell)

Approvals

II 1G Ex ia db IIC T6...T1 Ga⁵⁾⁷⁾

II 1/2G Ex db IIC T6...T1 Ga/Gb⁶⁾

II 1/2G Ex ia/db IIC T6...T1 Ga/Gb⁵⁾⁶⁾⁷⁾

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

II 1D Ex ia tb IIIC T80 °C...T440 °C Da⁵⁾⁷⁾

II 1/2D Ex ia/tb IIIC T80°C...T440 °C Da/Db⁵⁾⁶⁾⁷⁾

II 2D Ex tb IIIC T80 °C...T440 °C Db

Application in Explosion Hazardous Areas

Zones 1, 2, 21, 22

Zones 0, 20:

applicable with measuring insert with ignition protection type Ex ia

Output Signal

Model TTeHrXdA: thermoelectric voltage according to DIN EN 60 584

Model TTeHrXdAT: 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

¹⁾ application range limited due to the sheath material Inconel 600

²⁾ permissible storage temperature at the connection head

³⁾ whichever value is higher

⁴⁾ depending on the screwed cable gland used

⁵⁾ only with intrinsically safe TTeMiXiAoT/TTeMiXiAoT – measuring insert

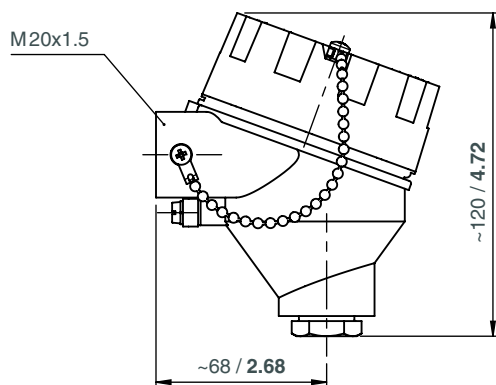
⁶⁾ only with thermowell suitable for zone separation – see operating instructions B71

⁷⁾ not with display in the connection head

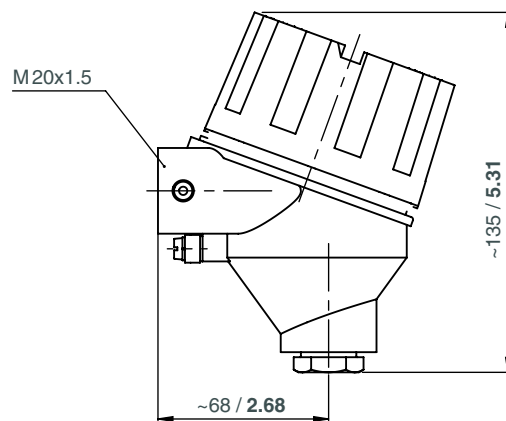
Connection Heads, Dimensional Data (mm/inches)

Connection Heads

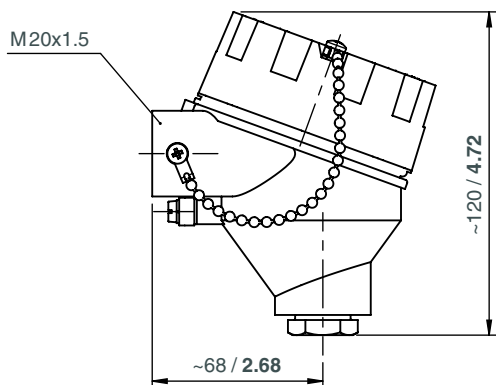
	Head XD-AD
Material:	die-cast aluminum
Lid:	screw-on lid
No. of transmitters:	1
Max. installation dimensions:	Ø 62 x 40 mm (2.44 x 1.57")
Specifics:	–



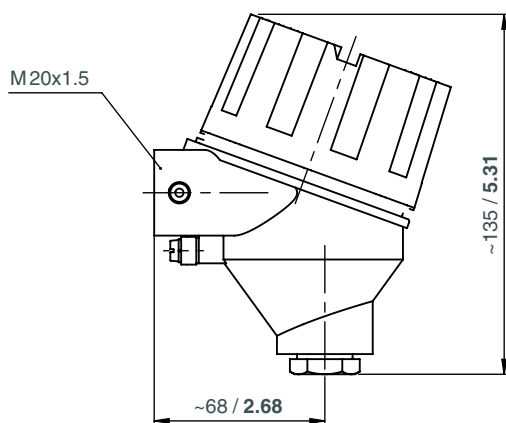
	Head XD-AD-W
Material:	die-cast aluminum
Lid:	screw-on lid with window
No. of transmitters:	1
Max. installation dimensions:	Ø 62 x 40 mm (2.44 x 1.57")
Specifics:	with display in the high lid



	Head XD-SD
Material:	stainless steel 316 (1.4401)
Lid:	screw-on lid
No. of transmitters:	1
Max. installation dimensions:	Ø 62 x 40 mm (2.44 x 1.57")
Specifics:	–



	Head XD-SD-W
Material:	stainless steel 316 (1.4401)
Lid:	screw-on lid with window
No. of transmitters:	1
Max. installation dimensions:	Ø 62 x 40 mm (2.44 x 1.57")
Specifics:	with display in the high lid



Process Connections, Dimensional Data (mm/inches)

Dimensional Data

Process connections: Thread spigot (E4.1)

Measuring insert \varnothing dF: 3 or 6 mm (0.12 or 0.24")¹⁾
Installation length L: 30 – 2000 mm (1.18 – 78.74")¹⁾
Neck tube length h: 120 mm (4.72")²⁾
Measuring insert length: L + h + 50 mm (1.97")³⁾

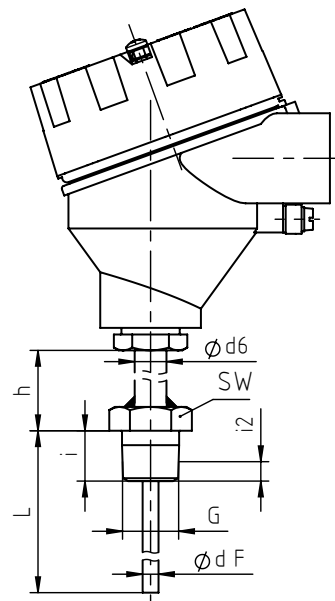
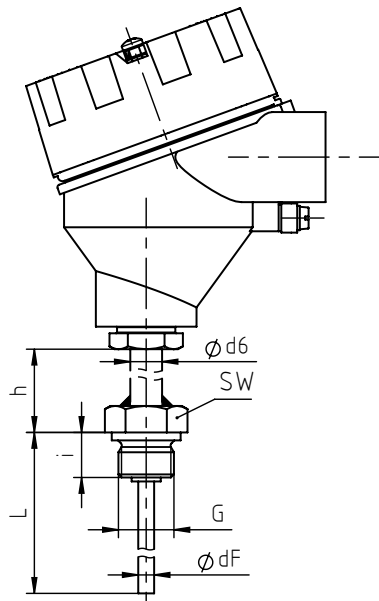
Connection thread:

G	SW	i	d6
G 1/2 B (1/2" BSP)	27 1.06	14 0.55	12 0.47
G 3/4 B 3/4" BSP	32 1.26	16 0.63	12 0.47
M 14x1.5	19 0.75	12 0.47	12 0.47
M 18x1.5	24 0.94	14 0.55	12 0.47
M 20x1.5	27 1.06	14 0.55	12 0.47

Thread spigot conical (E4.1)

Measuring insert \varnothing dF: 3 or 6 mm (0.12 or 0.24")
Installation length L: 30 – 2000 mm (1.18 – 78.74")¹⁾
Neck tube length h: 120 mm (4.72")²⁾
Measuring insert length: L + h + 50 mm (1.97")⁴⁾

G	SW	i	d6	i2
1/2" NPT	27 1.06	19 0.75	12 0.47	8.13 0.32
3/4" NPT	27 1.06	19 0.75	12 0.47	8.61 0.34



¹⁾ For lengths exceeding 2000 mm, the measuring insert is supplied as coil.

²⁾ Other lengths are available upon request. The minimum length is 20 mm.

³⁾ The measuring insert length should be selected according to DIN 43 735 so that the installation dimension (L) is 3 ± 1 mm longer than the drilling depth of the thermowell.

⁴⁾ The measuring insert length should be selected according to DIN 43 735 so that the installation dimension (L - i + i2) is 3 ± 1 mm longer than the drilling depth of the thermowell. Please also note our technical information sheet T08-000-032.

Ordering Information

Basic Model: Thermocouple with Flameproof Enclosure		TTeHrXdA
Transmitter:	without with fitted transmitter	without code letter T
Thermocouple:	type K, NiCr-Ni type N, NiCrSi-NiSi type J, Fe-CuNi type S, Pt10Rh-Pt	K N J S
No. of thermocouples:	1 2	1 2
Measuring insert Ø dF:	3 mm (0.12") 6 mm (0.24")	dF = 3 mm dF = 6 mm
Connection head:	type XD-AD type XD-AD-W (with display in the high lid) type XD-SD type XD-SD-W (with display in the high lid)	XD-AD XD-AD-W XD-SD XD-SD-W
Connection thread:	see page 3	e.g. G ½ B
Installation length:	L in mm	e.g. L = 200 mm
With fitted transmitter:	TT5334: 4...20 mA TT5337: 4...20 mA + HART 7 TT5350: PROFIBUS® PA/FOUNDATION™ Fieldbus	5334-A, 5334-B 5337-A, 5337-D 5350-A, 5350-B
Measuring range:	scaling of the 4...20 mA signal to the temperature range	e.g. 0 °C to +300 °C
Options:	crimped-on tube sleeve 50 mm Ø 8 mm (0.31") (1.97") for alignment to the internal thermowell diameter	

Example: TTeHrXdAT, K, 1, dF = 6 mm, XD-AD, G ½ B, L = 200 mm, 5333A, 0 °C to +300 °C

Special Versions: Please describe your requirements in cleartext!