Thermocouples – Measuring Insert Intrinsically Safe

Replacement part for the installation into connection heads

TTeMiXiAo
TTeMiXiAoT

Application

The measuring inserts TTeMiXiAo and TTeMiXiAoT according to DIN 43 735 are solely intended for installation into protective fittings for electrical thermometers with connection heads form B according to DIN EN 50 446 and 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.

For the operation in connection heads with flameproof enclosure (types XD-AD and XD-SD), the measuring inserts are optionally available with a sleeve, which forms, in combination with a socket, a flameproof gap in the connection head.

For both models, we offer various thermocouples according to DIN EN 60 584. In addition, model TTeMiXiAoT is available with several fitted transmitters with analogue or digital output.

The measuring inserts shall only be used in a suitable housing.

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 Range[2]
–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 value[3] 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 value[3] S:	+1.0 °C or (1+(t–1100)·0.003) °C

in the entire operating temperature range

Temperature Sensor
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 (d):	$3^{\pm 0.05}$ or $6^{\pm 0.06}$ mm ($0.12^{\pm 0.002}$ or $0.24^{\pm 0.0024}$ ")	
Min. bending radius[2]:	5-fold diameter (d)	
Spring travel:	approximately 7 mm (0.28")	

Degree of Protection (DIN EN 60 529)
IP00[4]

Hot Junction
Hot junction insulated

Approvals
II 1G Ex ia IIC T6…T1 Ga[5]
II 2G Ex ia IIC T6…T1 Gb[5]
II 1D Ex ia IIIC T80 °C…T440 °C Ga[5]
II 2D Ex ia IIIC T80 °C…T440 °C Gb[5]

Application in Explosion Hazardous Areas

Zones 0, 1, 2:	applicable with protective fitting with degree of protection of at least IP54
Zones 20, 21, 22:	applicable with mounting part with degree of protection of at least IP6X

Output Signal

Model TTeMiXiAo:	thermoelectric voltage according to DIN EN 60 584
Model TTeMiXiAoT:	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 3

Special Versions (Upon Request)

- Other thermocouples
- Hot junction welded to sheath
- Special sheath materials
- Other head-mount transmitters, also with voltage output

[1] application range limited due to the sheath material Inconel 600
[2] max. permissible temperature at the ceramic terminal block or the transmitter
[3] whichever value is higher
[4] measuring inserts are intended for the installation into protective fittings for electrical thermometers, which are equipped with an appropriate degree of protection for safe operation
[5] only with suitable protective fitting

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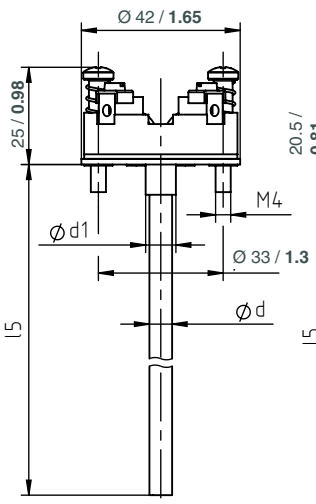
Dimensional Data (mm/inches) and Weight (kg/lb), Electrical Connection

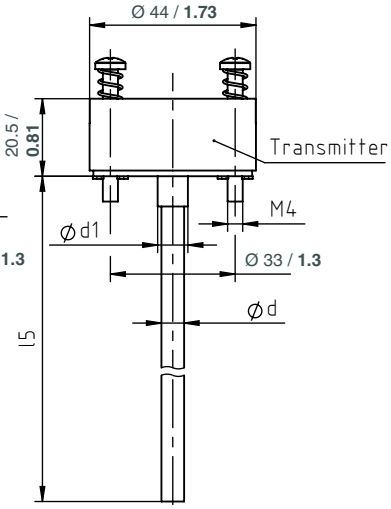
Dimensional Data

Standard version

TTeMiXiAo

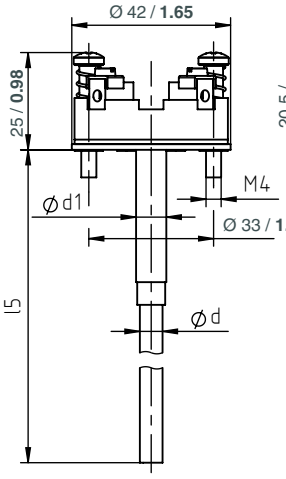


TTeMiXiAoT

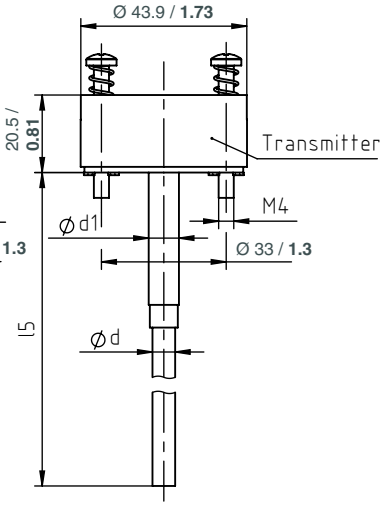


Version with sleeve

TTeMiXiAo



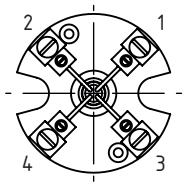
TTeMiXiAoT

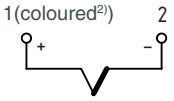


Dimensional Data and Weights

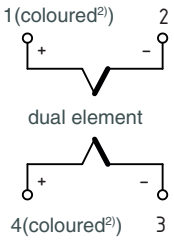
Ø d	Ø d1		approx. weight[1]	
	standard	sleeve	TTeMiXiAo	TTeMiXiAoT
3 / **0.12**	6 / **0.24**	8 / **0.31**	0.13 / **0.29**	0.12 / **0.26**
6 / **0.24**	8 / **0.31**	8 / **0.31**	0.15 / **0.33**	0.15 / **0.33**

Electrical Connection





single element



dual element

[1] based on an installation length (l5) of 150 mm (5.91")
[2] colour coding according to DIN EN 60 584-3

Ordering Information

Basic Model:	Thermocouple – Measuring Insert Intrinsically Safe		TTeMiXiAo
Transmitter:	without		without code letter
	with fitted transmitter		**T**
Version:	standard		**S**
	with fitting sleeve for connection heads with flameproof enclosure		**D**
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**
Measuring insert Ø d:	3 mm (0.12")		**d = 3 mm**
	6 mm (0.24")		**d = 6 mm**
Installation length:	l5 in mm	e.g.	**l5 = 200 mm**
With fitted transmitter:	TT5334: 4…20 mA		**5334-B**
	TT5337: 4…20 mA + HART 7		**5337-D**
	TT5350: PROFIBUS® PA / FOUNDATION™ Fieldbus		**5350-B**
Measuring range:	scaling of the 4…20 mA signal to the temperature range	e.g.	**0 °C to +250 °C**
Options:	crimped-on tube sleeve 50 mm (1.97") for alignment to the internal thermowell diameter	Ø 8 mm (0.31")	
Example:			**TTeMiXiAoT, D, N, 1, d = 6 mm, l5 = 150 mm, 5334B, 0 °C to +300 °C**

Special Versions: Please describe your requirements in cleartext!