



# GÜNTHER<sup>GmbH</sup>

Temperaturmesstechnik



**Product category 10-TMM  
Thermocouples with Metal Protection Tube and  
Sheathed Mineral-Insulated Gauge Slide**

## 10-TMM

# Thermocouple Assemblies with Metal Protection Tube and Sheathed Mineral-Insulated Gauge Slide



### 10-TMM

#### Thermocouple Assemblies with Metal Protection Tube and Sheathed Mineral-Insulated Gauge Slide

Straight line thermocouples with metal protection tubes and sheathed mineral-insulated gauge slide (10-TMM) are used for general temperature measurement in liquid, gaseous and plastic media up to 1200°C.

The main difference to thermocouples with ceramic protection tubes (00-TMT) lies in the use of a sheathed mineral-insulated gauge slide. The thermocouple wires are fully embedded in a highly pure magnesium oxide with an additional metallic sheath. The advantages compared to thermocouples with ceramic protection tubes include:

- Ease of Replacement
- Vibration and Impact Resistance
- Increased Holding Time
- Possibility for Test Bores

In order to achieve extra speed in measuring temperature changes, we also offer these temperature sensors with tapered sensor tip.

The thermoelectric voltages and tolerances of our mineral insulated sensor inserts are pursuant to standard DIN EN 60584, Class 1.

**Further technical information for this product line is available on our website:**

**<http://www.guenther.eu/en/products/thermocouples/10-tmm/smallest-and-laboratory-thermocouples>**

#### Application Examples for Thermocouple Assemblies with Metal Protection Tube and Sheathed Mineral-Insulated Gauge Slide

-  Waste Recycling / Incineration
-  Glass Industry
-  Plant and Machine Construction
-  Steel and Iron Industry
-  Automobile Industry
-  Laboratories
-  Industrial Furnace Construction
-  Aluminium and Nonferrous Metal Industry
-  Cement and Building Material Industry
-  Energy Production





① Connection Head

A	B
AUS	BUS
AUZ	BUZ
AUZH	BUZH
AUSH	BBK

② Protective Tube (Materials)

St. 35.8	Mat. No. 1.0305
Kanthal AF	
Stainless Steel	Mat. No. 1.4301
Stainless Steel	Mat. No. 1.4571
X18Cr N 28	Mat. No. 1.4749
X10Cr Al 24	Mat. No. 1.4762
X15CrNi Si 25 20	Mat. No. 1.4841
Inconel	Mat. No. 2.4816
Heat-Resistant Steel	Mat. No. 1.4893

③ Process Connector (Detachable)

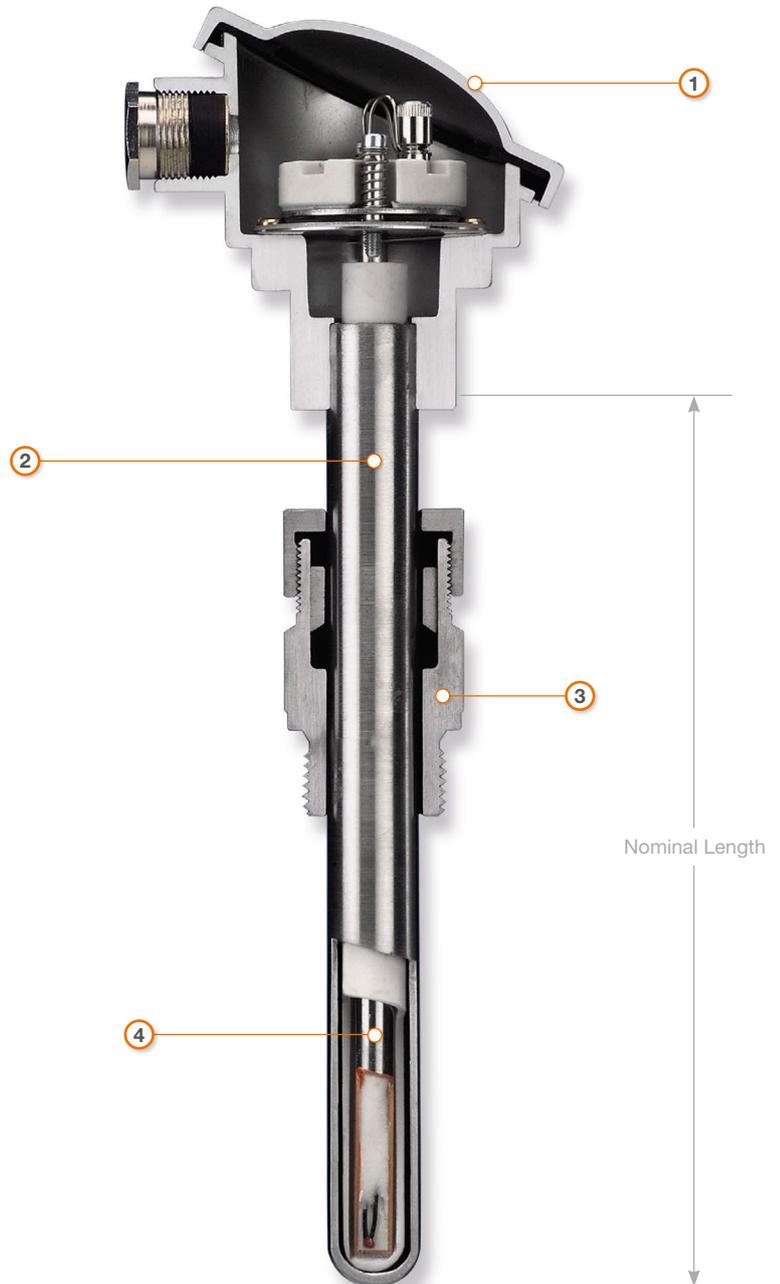
Flange
Threaded Socket
Flange / Counter Flange

④ Mineral-Insulated Gauge Slide

Sheath Material:	Inconel 2.4816
	Mat. No. 1.4541
Thermocouple:	NiCr-Ni / K
	Fe-CuNi / L
	Fe-CuNi / J
	Nicrosil-Nisil / N
Diameter:	1,5 - 8 mm

The sheathed mineral-insulated gauge slide is available as required, in single, double or triple version and may be fitted, optionally, with a parallel test bore for inserting a reference thermometer.

Example of a common implementation in this product line



Individual Solutions such as, for example materials, process connectors, accessories, etc. not listed here, are often viable.

Please contact us for further information!



# 10-TMM

## Product Number Code

### 10 - TMM // Thermocouples with a metal protection tube and a built-in sheath measurement insert

Metal protection tube + sheath 1 0 -         -

Protection tube (dimensions)				
Special sizes:				
15 x 2	mm	<b>1</b>	12 x 1.5	mm <b>5</b>
22 x 2	mm	<b>2</b>	15 x 1.3	mm <b>6</b>
24 x 3	mm	<b>3</b>	11 x 1.5	mm <b>7</b>
26 x 4	mm	<b>4</b>	10 x 1.5	mm <b>8</b>
			9 x 1	mm <b>9</b>

Protection tube (Material)		Mat. no.		
St 35.8		1.0305		<b>1</b>
Kanthal AF				<b>2</b>
Stainless steel		1.4301		<b>3</b>
Stainless steel		1.4571		<b>4</b>
X18CrN 28		1.4749		<b>5</b>
X10CrAl 24		1.4762		<b>6</b>
X15CrNiSi 25 20		1.4841		<b>7</b>
Alloy 600		2.4816		<b>8</b>
Heat-res. steel		1.4893		<b>9</b>

Inner tube				
None				<b>0</b>
C530		Porous ceramic material		<b>1</b>
C610		Porcelain		<b>2</b>
C799		Aluminium oxide		<b>3</b>

Sensor point				
Not tapered		<b>0</b>	Tapered to 10 mm	<b>5</b>
Tapered to 15 mm		<b>1</b>	Tapered to 8 mm	<b>6</b>
Tapered to 12 mm		<b>2</b>		
Tapered to 9 mm		<b>3</b>		
Tapered to 6 mm		<b>4</b>	Tapered other	<b>9</b>

Head				
A		<b>1</b>	B	<b>6</b>
AUS		<b>2</b>	BUS	<b>7</b>
AUZ		<b>3</b>	BUZ	<b>8</b>
AUZH		<b>4</b>	BUZH	<b>9</b>
AUSH		<b>5</b>	BBK	<b>0</b>

**Sheath element (type/number of thermocouples/sheath material/diameter/verifiability)**

ø / mm	NiCr-Ni /K Alloy 600 2.4816					Fe-CuNi/L 1.4541				Fe-CuNi/J 1.4541				Nicrosil-Nisil/N 2.4816			
	Standard, testable	Double, testable	Standard	Double	Triple	Standard, testable	Double, testable	Standard	Double	Standard, testable	Double, testable	Standard	Double	Standard, testable	Double, testable	Standard	Double
1.5	25	26	27	28	-	29	30	31	32	33	34	35	36	10	11	12	13
2	37	38	39	40	-	41	42	43	44	45	46	47	48	14	15	16	17
3	49	50	51	52	90	53	54	55	56	57	58	59	60	18	19	20	21
4.5	61	62	63	64	91	65	66	67	68	69	70	71	72	22	23	24	94
6	73	74	75	76	92	77	78	79	80	81	82	83	84	95	96	97	98
8	85	86	87	88	93	-	-	-	-	-	-	-	-	-	-	-	-

Fastening				
None				<b>0</b>
Stop flange				<b>1</b>
Mounting thread				<b>2</b>
Flange/counter flange				<b>3</b>

Custom designs: 1 0 - 9 9 1 0 x x x x -         -

Consecutive no. Nominal length / mm

