



# GÜNTHER<sup>GmbH</sup>

Temperaturmesstechnik



**Product category 20-TOM**  
**Sheathed Thermocouple Assemblies**  
**without Protection Tube**



#### Application Examples for Sheathed Thermocouple Assemblies without Protection Tube:



Waste Recycling / Incineration



Glass Industry



Plant and Machine Construction



Automobile Industry



Heat Treatment



Laboratories



Industrial Furnace Construction



Aluminium and Nonferrous Metal Industry



Cement and Building Material Industry



Energy Production



Plastic Industry

#### 20-TOM

#### Sheathed Thermocouple Assemblies without Protection Tube

Sheathed thermocouple assemblies without protection tube (20-TOM) are used in almost every branch of industry up to a temperature of 1100°C, with a platinum-rhodium-mantle up to 1300°C. Sheathed thermocouple assemblies essentially consist of thermowires (inner conductors) insulated with high-purity, condensed magnesium oxide powder and an external mantle (sheath) of heat-resistant high-grade steel or nickel alloy (e.g. Inconel 600®). Sheathed thermocouple assemblies are available in single, double or triple element version. The outer diameter lies somewhere between 0,25 mm and 8,0 mm depending on technical assembly and customer preference. As a result of their structure, sheathed thermocouple assemblies offer numerous advantages when compared to their conventional counterparts.

- Small dimensions for temperature measurements at measuring sites with difficult accessibility (any desired length available)
- Short response time for exact measurements of temperature fluctuations
- Vibration and pressure resistant
- Optimal protection of inner conductors against corrosion, oxidation, mechanical damage and chemical contamination
- Increased stability of electric insulation compared to ceramic insulated thermocouples
- Simple and sealed assembly

#### Availability

We are able to deliver every current design and diameter of sheathed thermocouple assemblies with mounted sockets, connection heads, compensation cables, as well as accessories and mounting structures of every type.

For specialised requirements and standards (such as AMS, CQI-9, etc.), we offer sheathed thermocouple assemblies available with exceptionally narrow tolerances, often referred to as “better class 1”. Thermoelectric voltages and tolerances of our mineral-insulated gauge slides are pursuant to DIN EN 60584, class 1.





### 1 Connectors (Plug/Socket)

LEMO Size 0 - 3

Standard

Miniature

High-Temp.-Standard

High-Temp.-Miniature

Ceramic-Standard

Ceramic-Miniature

### 2 Connection Head

With connecting thread

B (M24 x 1,5)

BUS (M24 x 1,5)

BUZ (M24 x 1,5)

BUZH (M24 x 1,5)

BBK (M24 x 1,5)

DL (MA) (M10 x 1)

or with thread diameter of 15,3 mm

### 3 Process Connector (Detachable)

Clamp Connectors Steel/High-Grade Steel

Pressure Ring Teflon

Cutting Ring High-Grade Steel

M 8x1 for Mantle Diameter 1,0-3,0 mm

G 1/8 A for Mantle Diameter 1,0-3,0 mm

G 1/4 A for Mantle Diameter 4,5-8,0 mm

G 1/2 A for Mantle Diameter 4,5-8,0 mm

### 4 Sheathed Thermocouple

(Thermocouple/Mantle Materials)

NiCr-Ni/K Inconel 2.4816

Fe-CuNi/L 1.4541/2.4816

Fe-CuNi/J 1.4541/2.4816

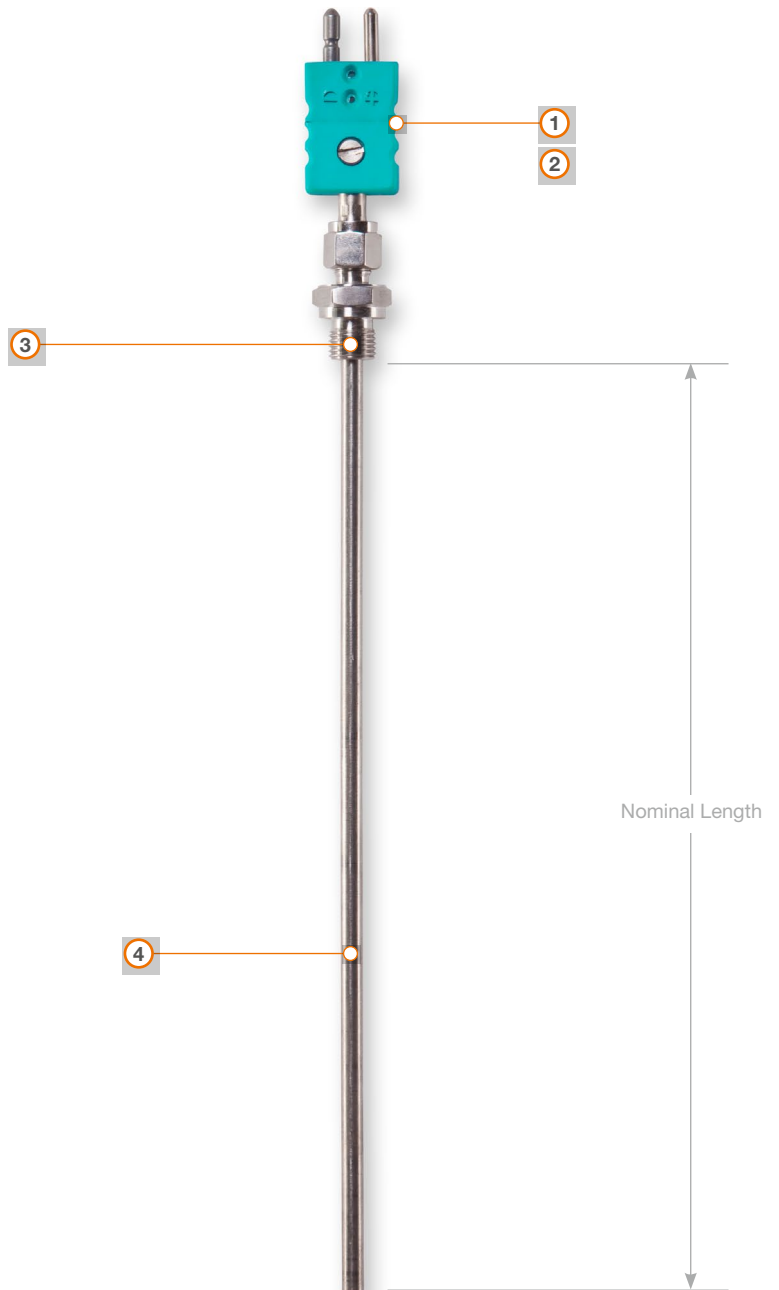
PtRh-Pt/S Inconel 2.4816

Nicrosil-Nisil/N Inconel 2.4816

Mantle Diameter: 0,5 - 8 mm

Single, Double or Triple

Example of a common implementation in this product line



## 20 - TOM // Sheath thermocouples without protection tube

Sheath thermocouple

2	0	-											
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Connection head				with a connection diameter of 15.3 mm			
with a connection thread							
B	(M24 x 1.5)	20 10		B		25 10	
BUS	(M24 x 1.5)	20 15		BUS		25 15	
BUSH	(M24 x 1.5)	20 20		BUSH		25 20	
BUZ	(M24 x 1.5)	20 25		BUZ		25 25	
BUZH	(M24 x 1.5)	20 30		BUZH		25 30	
BBK	(M24 x 1.5)	20 35		BBK		25 35	
DL (MA)	(M10 x1)	20 40		DL (MA)		25 40	

Nominal length / mm

Joining elements					
Plug			Coupler		
Lemo	Size 0	30 10	Lemo	Size 0	35 10
Lemo	Size 1	30 15	Lemo	Size 1	35 15
Lemo	Size 2	30 20	Lemo	Size 2	35 20
Lemo	Size 3	30 25	Lemo	Size 3	35 25
Standard		30 30	Standard		35 30
Miniature		30 35	Miniature		35 35
High-temp standard		30 40	High-temp standard		35 40
High-temp miniature		30 45	High-temp miniature		35 45
Ceramic standard		30 50	Ceramic standard		35 50
Ceramic miniature		30 55	Ceramic miniature		35 55

**Cable transition sleeve + compensation cable** **4X XX**  
(XXX = length of the compensation cable in XX.X m)

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

Thermocouple	NiCr-Ni /K			Fe-CuNi/L		Fe-CuNi/J		PtRh-Pt/S		Nicrosil-Nisil/N	
Sheath material	Alloy 600 2.4816			1.4541/2.4816		1.4541/2.4816		Alloy 600 2.4816		Alloy 600 2.4816	
	Standard	Double	Triple	Standard	Double	Standard	Double	Standard	Double	Standard	Double
Sheath ø / mm											
0.5	01	-	-	-	-	-	-	-	-	-	-
1	02	-	-	22	-	42	-	62	-	82	-
1.5	03	13	-	23	33	43	53	63	73	83	93
2	04	14	-	24	34	44	54	64	74	84	94
3	05	15	69	25	35	45	55	65	75	85	95
4.5	06	16	79	26	36	46	56	66	76	86	96
6	07	17	89	27	37	47	57	67	77	87	97
8	08	18	99	-	-	-	-	-	-	-	-
3.2	09	19	-	-	-	-	-	-	-	-	-

Special size / Special material

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### Fastening:

**Attachment screw joint: Material** **Steel / Stainless steel**

#### (Tapered ring unit, mat. no. 1.4541)

M 8 x 1 for sheath ø 1.0-3.0 mm	11	21
G 1/8 A for sheath ø 1.0-3.0 mm	12	22
G 1/4 A for sheath ø 4.5-8.0 mm	13	23
G 1/2 A for sheath ø 4.5-8.0 mm	14	24

#### (Tapered ring unit St. 35.8)

M 8 x 1 for sheath ø 1.0-3.0 mm	51	31
G 1/8 A for sheath ø 1.0-3.0 mm	52	32
G 1/4 A for sheath ø 4.5-8.0 mm	53	33
G 1/2 A for sheath ø 4.5-8.0 mm	54	34

#### Screw joint

G 1/4 A	80
G 3/8 A	81
G 1/2 A	82
G 1 A	83
M 20 x 1.5	84
M 18 x 1.5	85
M 14 x 1.5	86

#### (Teflon thrust collar)

M 8 x 1 for sheath ø 1.0-3.0 mm	61	41
G 1/8 A for sheath ø 1.0-3.0 mm	62	42
G 1/4 A for sheath ø 4.5-8.0 mm	63	43
G 1/2 A for sheath ø 4.5-8.0 mm	64	44

No fastening	99
Other	88

Custom designs:

2	0	-	9	9	2	0	x	x	x	x				
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Consecutive no.

Nominal length / mm