

# hotcontrol

## Thermocouples – RTDs

### General information for all thermocouples and RTDs

- All dimensions are subject to general tolerances according to DIN 2768-m. Our tolerances in most cases exceed DIN 2768-m standards. Exact tolerances for your item are available on request.
- All thermocouples can be produced with ANSI color code. Other standards are available on request.
- All dimensions for mineral insulated thermocouples are subject to tolerances according to EN 61515.

### Mineral Insulated Thermocouples

#### Technical key features

Lead cross-section	0.22 mm <sup>2</sup>
Minimum bending radius	5.0 x sheath diameter
Classification tolerance	Class 1 or 2 (DIN 60584) Standard, Special (ANSI 96.1)

#### Performance Range

Dia-meter [mm]	Types	Connection head [mm]	Lead Options	Number of thermocouples
0.5	J, K, L	Ø 6 x 30	GLS/GLS/MB	1 x
0.75	J, K, L	Ø 6 x 30	GLS/GLS/MB	1 x
1.0	J, K, L	Ø 3.2 x 23	Kapton/Kapton GLS/Kapton GLS/GLS	1 x
1.0	J, K, L	Ø 4 x 22	any	1 x
1.5	J, K, L	Ø 3.2 x 23	Kapton/Kapton GLS/Kapton GLS/GLS	1 x
1.5	J, K, L	Ø 4 x 22	any	1 x
2.0	J, K, L	Ø 4 x 22	any	1 x
2.0	J, K, L	Ø 6 x 30	GLS/GLS/MB PFA/PFA	2 x
3.0	J, K, L	Ø 6 x 30	any	1 x or 2 x
4.5	J, K, L	Ø 6 x 30	any	1 x or 2 x
6.0	J, K, L	Ø 8 x 50	GLS/GLS/MB	1 x or 2 x

#### Options

- Measuring point grounded or ungrounded (grounded just possible for MIT < 3.0 mm)
- Bend protection spring



#### Lead Types

Lead Types	Max. Temperature	
PFA/PFA	260 °C	500 °F
GLS/GLS (MB*)	400 °C	750 °F
Kapton/Kapton	350 °C	600 °F
GLS/Kapton	350 °C	600 °F
PFA/Kapton	260 °C	500 °F
PFA/PFA/MB	260 °C	500 °F

Material information from the inside to the outside.  
Duplex MIT available with MB/GLS/GLS and PFA/PFA.

\* Glass silk insulated leads with glass silk insulated casing and metal braided protection sleeve.

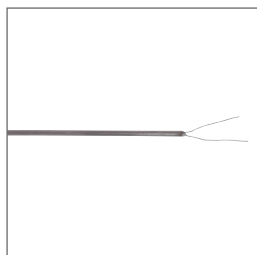
### Thermocouple Type Specifications

Type	Material	Standard	Lead Colors [+/-]	Sheath Material	Measurement Range	
J	Fe-CuNi	IEC 60584	black/white	1.4541/AISI 321	-40 to +750 °C	-40 to 1380 °F
L*	Fe-CuNi	DIN 43710*	red/blue	1.4541	-40 to +750 °C	-40 to 1380 °F
K	NiCr-Ni	IEC 60584	green/white	2.4816/Alloy 600	-40 to +1100 °C	-40 to 2010 °F
K*	NiCr-Ni	DIN 43710*	red/green	2.4816	-40 to +1100 °C	-40 to 2010 °F
J	Fe-CuNi	ANSI MC 96.1	white/red	1.4541	-40 to +750 °C	-40 to 1380 °F
K	NiCr-Ni	ANSI MC 96.1	yellow/red	2.4816	-40 to +1100 °C	-40 to 2010 °F

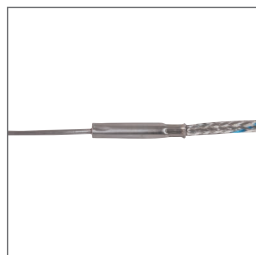
\* Obsolete standard, usually for existing installations.

Other materials on request.

### Connection Type Range



BLANK  
Open ends



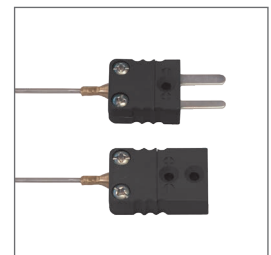
LEAD  
Connection head  
(260 or 400 °C / 500  
or 750 °F) and cable



LEMO  
LEMO connector (female)  
max. 250 °C / 480 °F



Standard  
male/female connector,  
max. 200 °C / 390 °F



Mini  
male/female connector,  
max. 200 °C / 390 °F

## Mineral Insulated Thermocouples

### Stock range

All with bend protection spring, lead length 2000 mm, measuring point ungrounded, Connection type LEAD

Stock ID	Type	Dimensions [mm]	Connection head (260 °C / 500 °F) [mm]	Lead Type
8512090	J	Ø 1.0 x 90	Ø 4 x 22	GLS/GLS MB
8512091	L	Ø 1.0 x 90	Ø 4 x 22	GLS/GLS MB
8512150	J	Ø 1.0 x 150	Ø 4 x 22	GLS/GLS MB
8512151	L	Ø 1.0 x 150	Ø 4 x 22	GLS/GLS MB
8501090	J	Ø 1.5 x 90	Ø 4 x 22	GLS/GLS MB
8501091	L	Ø 1.5 x 90	Ø 4 x 22	GLS/GLS MB
8501150	L	Ø 1.5 x 150	Ø 4 x 22	GLS/GLS MB
8501151	J	Ø 1.5 x 150	Ø 4 x 22	GLS/GLS MB
8501240	J	Ø 1.5 x 240	Ø 4 x 22	GLS/GLS MB
8501241	L	Ø 1.5 x 240	Ø 4 x 22	GLS/GLS MB
8511091	K	Ø 1.5 x 90	Ø 4 x 22	GLS/GLS MB
8511150	K	Ø 1.5 x 150	Ø 4 x 22	GLS/GLS MB

# hotcontrol

Thermocouples – RTDs

## Mineral Insulated RTDs

### Technical key features

Lead cross-section	0.22 mm <sup>2</sup>
Minimum bending radius	5.0 x sheath diameter
Classification tolerance	Class A or B
Wire circuit	2-wire-circuit: class B 3- and 4-wire-circuit: class A or B



### Options

- Bend protection spring

### Performance Range

Diameter [mm]	Types	Connection head [mm]	Lead Options	Number of RTDs
2.0	Pt 100 Pt 1000	Ø 6 x 30	any	1 x
3.0				
4.5				
6.0		Ø 8 x 50		

### Lead Types

Lead Types	Max. Temperature	
PFA/PFA	260 °C	500 °F
GLS/GLS (MB*)	400 °C	750 °F
Silicone/Silicone	180 °C	355 °F

Material information from the inside to the outside.

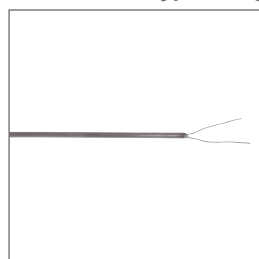
\* Glass silk insulated leads with glass silk insulated casing and metal braided protection sleeve.

### Type Specifications

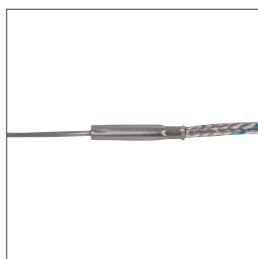
Type	Material	Standard	Lead Colors [+/-]	Sheath Material	Measurement Range
Pt 100	Platinum	DIN EN 60751	red/white	1.4404	-50 to +600 °C -50 to 1120 °F
Pt 1000	Platinum	DIN EN 60751	red/white	1.4404	-50 to +600 °C -50 to 1120 °F

Other materials on request.

### Connection Type Range



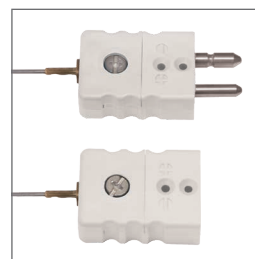
BLANK  
Open ends



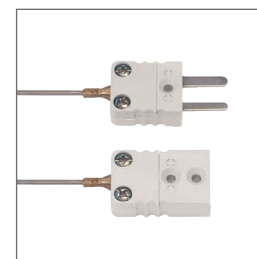
LEAD  
Connection head  
(260 or 400 °C / 500 or 750 °F) and cable



LEMO  
LEMO connector (female)  
max. 250 °C / 480 °F



Standard  
male/female connector  
max. 200 °C / 390 °F



Mini  
male/female connector  
max. 200 °C / 390 °F

## Compression Fittings for Mineral Insulated Thermocouples and RTDs

### PTFE Clamping ring

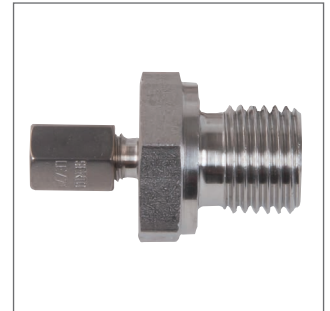
max 200 °C / 390 °F  
max pressure 10 bar  
removable

### Stainless Steel Clamping ring

max. 500 °C / 930 °F  
max. pressure 40 bar  
not removable after tightening

### Stock Range

Stock ID	Applicable for sheath diameter [mm]	Clamping ring material	Screw thread
8531010	1.0	PTFE	M8 x 1
8531015	1.5	PTFE	M8 x 1
8531020	2.0	PTFE	M8 x 1
8531030	3.0	PTFE	M8 x 1
8531045	4.5	PTFE	G 1/4 inch
8531060	6.0	PTFE	G 1/4 inch
8532010	1.0	Stainless steel	M8 x 1
8532015	1.5	Stainless steel	M8 x 1
8532020	2.0	Stainless steel	M8 x 1
8532030	3.0	Stainless steel	M8 x 1
8532045	4.5	Stainless steel	G 1/4 inch
8532060	6.0	Stainless steel	G 1/4 inch



## Male and female connectors (single part)

### Available on request:

- Standard/Mini connectors for single or duplex thermocouples (J, K), 200 °C / 390 °F
- High temperature male/female connectors, 350 °C / 660 °F
- Ceramic male/female connectors, 425 °C / 795 °F
- Standard/Mini connectors for RTDs (2, 3, 4-wire-circuit), 200 °C / 390 °F
- LEMO according to customer request

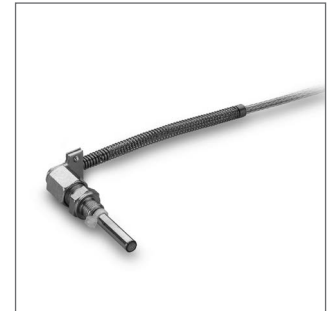


## Angle RTD

PWF 1

### Technical key features

Temperature range	0 to 350 °C / 32 to 660 °F
Sensor structure	Ermeto-fitting M10x1, rectangular exit, bend protection spring, immersion depth 10 to 35 mm / 0.39 to 1.38 inch
Sensor type	Pt 100 with 2-wire-circuit
Lead structure	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>
Measuring point	at bottom
Classification tolerance	Class B



### Stock range

Lead length 2000 mm

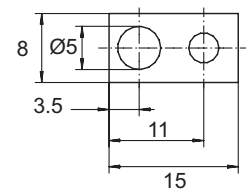
Stock ID	type	standard	dimension [mm]	leads
8700203	Pt 100	DIN EN 60751	Ø 6,0 x 60	red/white

## Insert Surface Thermocouple Insert Surface RTD

TEF 2  
PWF 2

### Technical key features

	TEF 2	PWF 2
Temperature range	0 to 400 °C / 32 to 750 °F	0 to 400 °C / 32 to 750 °F
Diameter	3, 3.5, 4, 5, 6 mm	3, 3.5, 4, 5, 6 mm
Length	max. 500 mm	max. 500 mm
Sensor type	type J, K, L	Pt 100 with 2-, 3- or 4-wire-circuit*
Lead options	GLS/GLS, GLS/GLS/MB*, PFA/PFA	GLS/GLS, GLS/GLS/MB*, PFA/PFA, silicone/silicone*
Lead cross-section	0.22 mm <sup>2</sup>	0.22 mm <sup>2</sup>
Measuring point	at bottom, grounded or ungrounded	at bottom
Classification tolerance	Class 2 (DIN), Standard (ANSI)	Class A or B, B is standard
Material also available in ANSI.		* Depending on diameter of the tube.



### Stock range

Lead length 2000 mm, GLS/GLS, with GLS sleeving, TEF: Measuring point grounded, PWF: 2-wire-circuit

Stock ID	Type	Standard	Dimension [mm]	Leads	Mounting plate
8600200	L Fe-CuNi	DIN 43710	Ø 3.5 x 30	red/blue	
8600210	J Fe-CuNi	IEC 60584	Ø 3.5 x 30	black/white	
8600201	L Fe-CuNi	DIN 43710	Ø 3.5 x 30	red/blue	yes
8600211	J Fe-CuNi	IEC 60584	Ø 3.5 x 30	black/white	yes
8600202	L Fe-CuNi	DIN 43710	Ø 3.5 x 40	red/blue	yes
8600212	J Fe-CuNi	IEC 60584	Ø 3.5 x 40	black/white	yes
8600203	L Fe-CuNi	DIN 43710	Ø 3.5 x 40	red/blue	
8600213	J Fe-CuNi	IEC 60584	Ø 3.5 x 40	black/white	
8600204	K NiCr-Ni	DIN 43710	Ø 3.5 x 30	red/green	
8600214	K NiCr-Ni	IEC 60584	Ø 3.5 x 30	green/white	
8600207	K NiCr-Ni	DIN 43710	Ø 3.5 x 30	red/green	yes
8600217	K NiCr-Ni	IEC 60584	Ø 3.5 x 30	green/white	yes
8700200	Pt 100	DIN EN 60751	Ø 3.5 x 30	red/white	
8700201	Pt 100	DIN EN 60751	Ø 3.5 x 30	red/white	yes

Thermocouple with Bayonet Cap  
RTD with Bayonet Cap

TEF 4  
PWF 4

**Technical key features**

	TEF 4	PWF 4
Temperature range	0 to 400 °C / 32 to 750 °F	0 to 400 °C / 32 to 750 °F
Sensor structure	bayonet cap Ø i = 14.2 mm, compression spring 200 mm / 7.87 inch immersion depth 25 to 200 mm / 0.98 to 7.87 inch	bayonet cap Ø i = 14.2 mm, compression spring 200 mm / 7.87 inch immersion depth 25 to 200 mm / 0.98 to 7.87 inch
Sensor type	type J, K, L	Pt 100 2-, 3- or 4-wire-circuit
Lead structure	GLS/GLS/MB	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>	0.22 mm <sup>2</sup>
Measuring point	bottom, grounded/ungrounded	bottom
Classification tolerance	Class 2 (DIN), Standard (ANSI)	Class A or B, B is standard

Material also available in ANSI.



**Stock range**

Lead length 2000 mm, TEF: Measuring point grounded, PWF: 3-wire-circuit

Stock ID	type	standard	dimension [mm]	leads
8600400	L Fe-CuNi	DIN 43710	Ø 8.0 x 12 118°	red/blue
8600401	J Fe-CuNi	IEC 60584	Ø 8.0 x 12 118°	black/white
8700205	Pt 100	DIN EN 60751	Ø 8.0 x 10.5 118°	red/red/white

Thermocouple with Bayonet Cap  
RTD with Bayonet Cap

TEF 16  
PWF 16

**Technical key features**

	TEF 16	PWF 16
Temperature range	0 to 400 °C / 32 to 750 °F	0 to 400 °C / 32 to 750 °F
Sensor structure	bayonet cap Ø i = 12.2 mm, compression spring 200 mm / 7.87 inch immersion depth 25 to 200 mm / 0.98 to 7.87 inch	bayonet cap Ø i = 12.2 mm, compression spring 200 mm / 7.87 inch immersion depth 25 to 200 mm / 0.98 to 7.87 inch
Sensor type	type J, K, L	Pt 100 2-, 3- or 4-wire-circuit
Lead structure	GLS/GLS/MB	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>	0.22 m <sup>2</sup>
Measuring point	bottom, grounded/ungrounded	bottom
Classification tolerance	Class 2 (DIN), Standard (ANSI)	Class A or B, B is standard

Material also available in ANSI.



**Stock range**

Lead length 2000 mm, TEF: Measuring point grounded, PWF: 2-wire-circuit

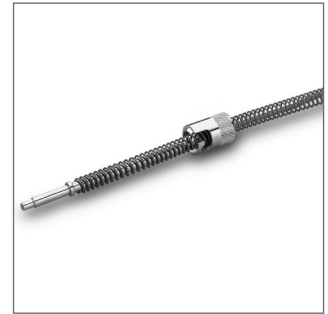
Stock ID	type	standard	dimension [mm]	leads
8601600	L Fe-CuNi	DIN 43710	Ø 8.0 x 12 118°	red/blue
8601601	J Fe-CuNi	IEC 60584	Ø 8.0 x 12 118°	black/white
8700209	Pt 100	DIN EN 60751	Ø 8.0 x 12 118°	red/white
8701216	K NiCr-Ni	DIN 43710	Ø 8.0 x 12 118°	red/green
8701233	K NiCr-Ni	IEC 60584	Ø 8.0 x 12 118°	green/white

## Thermocouple with Bayonet Cap RTD with Bayonet Cap

TEF 20  
PWF 20

### Technical key features

	TEF 20	PWF 20
Temperature range	0 to 400 °C / 32 to 750 °F	0 to 400 °C / 32 to 750 °F
Sensor structure	bayonet cap Ø i = 12.2 mm, comp. spring 200 mm / 7.87 inch immersion depth 25 to 200 mm / 0.98 to 7.87 inch	bayonet cap Ø i = 12.2 mm, comp. spring 200 mm / 7.87 inch immersion depth 25 to 200 mm / 0.98 to 7.87 inch
Sensor type	type J, K, L	Pt 100 2-, 3- or 4-wire-circuit
Lead structure	GLS/GLS/MB	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>	0.22 mm <sup>2</sup>
Measuring point	bottom, grounded/ungrounded	bottom
Classification tolerance	Class 2 (DIN), Standard (ANSI)	Class A or B, B is standard
Material also available in ANSI.		



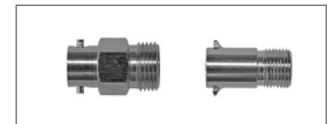
### Stock range

Lead length 2000 mm, TEF: Measuring point grounded, PWF: 2-wire-circuit

Stock ID	type		standard	Sensor cylinder		leads
				upper part	lower part	
8602000	L	Fe-CuNi	DIN 43710	Ø 5.0 x 19 mm	Ø 4.0 x 6.0 mm	red/blue
8602001	J	Fe-CuNi	IEC 60584	Ø 5.0 x 19 mm	Ø 4.0 x 6.0 mm	black/white
8700207	Pt 100		DIN EN 60751	Ø 5.0 x 19 mm	Ø 4.0 x 6.0 mm	red/white

## Screw-in Adaptors

for Thermocouples and RTDs with Bayonet Cap



### Stock range

Stock ID	TEF		PWF		TEF		Screw Thread	Thread Length	Bayonet Cap	Total Length	Outside Hexagon
	4	4	16	16	20	20					
8700400	x	x					R 3/8 inch	10 mm	14 mm	30 mm	x
8700401	x	x					R 1/4 inch	10 mm	14 mm	30 mm	x
8700402	x	x					M14 x 1,5	10 mm	14 mm	30 mm	x
8700410	x	x					M12 x 1	8 mm	14 mm	40 mm	
8700404			x	x	x	x	M12 x 1	10 mm	12 mm	25 mm	
8700408			x	x	x	x	M12 x 1	10 mm	12 mm	40 mm	
8700411			x	x	x	x	M12 x 1	10 mm	12 mm	60 mm	

## Angle Thermocouple

TEF 12

### Technical key features

Temperature range	0 to 400 °C / 32 to 750 °F
Sensor structure	semicircular probe with screw-in fitting M8 x 1, bend protection spring
	immersion depth 10 to 15 mm / 0.39 to 0.59 inch
Sensor type	type J, K, L
Lead structure	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>
Measuring point	at bottom, grounded or ungrounded
Classification tolerance	Class 2 (DIN), Standard (ANSI)

Material also available in ANSI.



### Stock range

Lead length 2000 mm, Measuring point grounded

Stock ID	type	standard	dimension [mm]	leads
8601200	L Fe-CuNi	DIN 43710	Ø 6.0 x 10	red/blue
8601201	J Fe-CuNi	IEC 60584	Ø 6.0 x 10	black/white

## Ring Thermocouple

TEF 13

### Technical key features

Temperature range	350 °C / 660 °F
Sensor structure	washer Ø 14 mm with bore hole M4, GLS sleeve
Sensor type	type J, K, L
Lead structure	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>
Measuring point	at washer, grounded
Classification tolerance	Class 2 (DIN), Standard (ANSI)

Material also available in ANSI.



### Stock range

Lead length 2000 mm, Measuring point grounded, ferrules uninsulated

Stock ID	type	standard	dimension [mm]	leads
8601300	L Fe-CuNi	DIN 43710	14 x 10	red/blue
8601301	J Fe-CuNi	IEC 60584	14 x 10	black/white
8701213	K NiCr-Ni	DIN 43710	14 x 10	red/green
8701232	K NiCr-Ni	IEC 60584	14 x 10	green/white



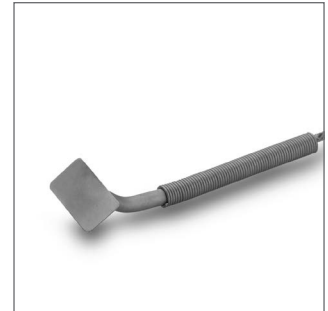
## Surface Thermocouple

TEF A

### Technical key features

Temperature range	0 to 400 °C / 32 to 750 °F
Sensor structure	15 x 30 x 0.5 mm, bent Ø 100 mm ±5 mm, bend protection spring
Sensor type	type J, L
Lead structure	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>
Measuring point	at bottom, grounded or ungrounded
Classification tolerance	Class 2 (DIN), Standard (ANSI)

Material also available in ANSI.



### Stock range

Lead length 2000 mm, Measuring point grounded

Stock ID	type	standard	dimension [mm]	leads
8608815	L Fe-CuNi	DIN 43710	Ø 6.0 x 40	red/blue
8608816	J Fe-CuNi	IEC 60584	Ø 6.0 x 40	black/white

## Clamping Band Thermocouple

TEF SP

### Technical key features

Temperature range	0 to 350 °C / 32 to 660 °F
Sensor structure	with clamping band, width 9 mm, bend protection spring
Sensor type	type J, L
Lead structure	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>
Measuring point	grounded or ungrounded
Classification tolerance	Class 2 (DIN), Standard (ANSI)

Material also available in ANSI.



### Stock range

Lead length 2000 mm, Measuring point grounded

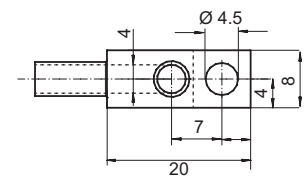
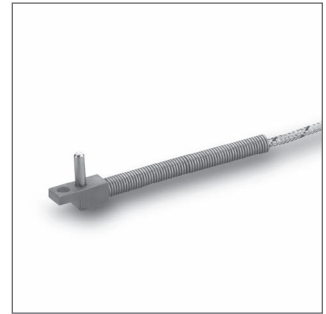
Stock ID	type	standard	Clamping range [mm]	leads
8609925	L Fe-CuNi	DIN 43710	25 to 40	red/blue
8609926	J Fe-CuNi	IEC 60584	25 to 40	black/white
8609940	L Fe-CuNi	DIN 43710	40 to 60	red/blue
8609941	J Fe-CuNi	IEC 60584	40 to 60	black/white

## Flange Mounted Thermocouple

TEF 68

### Technical key features

Temperature range	0 to 400 °C / 32 to 750 °F
Diameter	4 mm
Length	12, 20, 35, 80 mm
Sensor structure	tip: conical (standard for grounded) and round (standard for ungrounded) are possible, mounting probe 90° to the block 8 x 8 mm, bend protection spring
Sensor type	type J, K, L
Lead structure	GLS/GLS/MB
Lead cross-section	0.22 mm <sup>2</sup>
Measuring point	at bottom, grounded or ungrounded
Classification tolerance	Class 2 (DIN), Standard (ANSI)
Material also available in ANSI.	



### Stock range

Lead length 2000 mm, Measuring point ungrounded

Stock ID	type	standard	Sensor dimension [mm]	leads
8606800	L Fe-CuNi	DIN 43710	Ø 4.0 x 12	red/blue
8606801	J Fe-CuNi	IEC 60584	Ø 4.0 x 12	black/white
8701223	K NiCr-Ni	DIN 43710	Ø 4.0 x 12	red/green
8701234	K NiCr-Ni	IEC 60584	Ø 4.0 x 12	green/white

## Ring Thermocouple

TEF 30

### Technical key features

Temperature range	0 to 260 °C / 32 to 500 °F
Sensor structure	ring
Sensor type	type J, K, L
Lead structure	PFA/PFA/MB
Lead cross-section	0.22 mm <sup>2</sup>
Measuring point	at washer, grounded or ungrounded
Classification tolerance	Class 2 (DIN), Standard (ANSI)
Material also available in ANSI.	



### Stock range

Lead length 1000 mm, Measuring point ungrounded, ferrules uninsulated

Stock ID	type	standard	dimension [mm]	bore hole	leads
8603080	L Fe-CuNi	DIN 43710	Ø 14.0 x 8.0	M4	red/blue
8603081	J Fe-CuNi	IEC 60584	Ø 14.0 x 8.0	M4	black/white
8603082	J Fe-CuNi	ANSI MC 96.1	Ø 14.0 x 8.0	M4	white/red



