

# Датчики температуры на базе PT100, PT1000 и термопары GHM MESSTECHNIK



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# Temperature




## Characteristics

- System
  - Temperature probes
  - Temperature probes with integrated transmitter
  - Temperature probes with data logger
- Transmitter
- Temperature monitors
- Displays

## Function and advantages

The measuring and monitoring of temperature with resistance ther-

## Applications

- Industrial measurement and control technology
- Process measurement
- Pipeline and tank construction
- Furnace construction
- Plastics industry
- Food industry
- Surface measurements
- Plant and machine construction
- Room temperature measurement
-  - applications
- SIL 2 - applications

mometers or thermocouples is the most common method to watch and control processes. Here the temperature gets a electrical unit by using the thermoelectric effect (thermocouple) or a resistance

change. This measuring value can be converted to standard signals by our transmitter for further usage.

## Technical data

### Temperature probes

Measuring input – sensor element

- Resistance thermometer Pt100 / Pt1000
- Thermocouple type K (NiCr-Ni), type J (FeCuNi), type N (NiCrSi-NiSi)

Particular features

- Multitude of probes suitable for each application
- Temperature probes customized according to customer requirements
- ATEX protection

**Accuracy:**

#### Pt100 / Pt1000:

Sensor accuracy according to DIN EN 60751

DIN class	Scope	Accuracy
DIN cl. B	-50..+500 °C	±0.3 °C at 0 °C
DIN cl. A	-30..+300 °C	±0.15 °C at 0 °C
1/3 DIN cl. B = DIN cl. AA	0..150 °C	±0.1 °C at 0 °C
1/10 DIN cl. B		±0.03 °C at 0 °C

#### Thermocouple:

Sensor accuracy according to DIN EN 60584-2

Thermocouple	Class	Scope	Accuracy
Type K	class 1	-40..+375 °C	±1.5 °C
Type N	class 1	-40..+375 °C	±1.5 °C
Type S	class 1	0..1100 °C	±1 °C

### Temperature probes with data logger

Measuring input – sensor element

- Resistance thermometer Pt1000

Particular features

- Battery supply (service life approx. 6 years)
- Temperature probe with integrated transmitter and data logger with memory for up to 48,000 measuring values
- Integrated display

### Temperature probes with integrated transmitter

Measuring input – sensor element

- Resistance thermometer Pt100 / Pt1000

- Thermocouple type K
- Infrared
- Radio

Particular features

- Multitude of probes / transmitter, suitable for each application
- Probes / transmitters customized according to customer requirements
- Integrated or optional display

### Transmitters

Measuring input

- Resistance thermometer Pt100 / Pt500 / Pt1000, Resistance thermometer Ni100 / Ni500 / Ni1000
- Thermocouple type B, type C, type D, type E, type J, type K, type L, type N, type R, type S, type T, type U

Particular features

- Multitude of transmitter, suitable for each application
- Transmitters customized according to customer requirements
- Integrated or optional display
- ATEX protection
- SIL2 application

### Temperature monitors

Measuring input – sensor element

- Resistance thermometer Pt100 / Pt1000,
- Thermocouple type J, type K, type N, type S
- Bimetal
- Micro switch

Particular features

- Multitude of monitors, suitable for each application
- Temperature monitors customized according to customer requirements
- Integrated display
- ATEX protection

### Displays

Measuring input – sensor element

- Resistance thermometer Pt100 / Pt1000
- Thermocouple type J, type K, type S

Particular features

- Temperature measuring device with display
- Field housing or housing for control cabinet mounting

Product Information

# Device Overview

Temperature probes	Description	Measuring element					Page
		Pt100	Pt1000	Type J Fe-CuNi	Type K NiCr-Ni	Type N NiCrSi-NiSi	
<b>GTF 300</b>	Wire probe				•		6
<b>GMF 250</b>	Magnetic surface probe				•		6
<b>GMF 200</b>	Magnetic surface probe				•		7
<b>GRO 200</b>	Tube surface probe	•	•		•		8
<b>7122</b>	Tube surface probe			•	•		9
<b>7131</b>	Surface probe	•					10
<b>GTT</b>	Sheathed thermocouple				•		11
<b>GTF 101 P ..</b>	Temperature probe	•	•				12
<b>GTF 101 K ..</b>	Temperature probe				•		14
<b>7132</b>	Temperature probe	•		•	•		16
<b>7024 / 7124</b>	Temperature probe	•		•	•		17
<b>7012 / 7112</b>	Temperature probe with thread spring	•		•	•		18
<b>GES 21</b>	Penetration probe	•	•				19
<b>GTF 102</b>	Screw-in probe	•	•		•		20
<b>8100 A / 8100 C</b>	Installation temperature probe	•	•	•	•		21
<b>8101 A</b>	Installation temperature probe	•	•	•	•		22
<b>8105</b>	Duct temperature probe	•		•	•		23
<b>GTF 101-Ex</b>	EX temperature probe without process connection	•	•		•	•	24
<b>GTF 102-Ex</b>	EX temperature probe with process connection	•	•		•	•	25
<b>GTF 103-Ex</b>	EX temperature probe with process connection, with sensor head	•	•		•	•	27
<b>TC293</b>	Safety thermocouple probe			•	•	•	29
<b>TR293</b>	Safety temperature probe	•					30
<b>TC296</b>	Safety thermocouple probe			•	•	•	31
<b>TR296</b>	Safety temperature probe	•					32
<b>7134 / 7135</b>	Surface-mounted probe)	•					33
<b>GTMU-OMU</b>	Surface-mounted probe)	•			•		34

**Product Information**

**Wire Probe GTF 300**



- NiCr-Ni wire probe (type K)
- Quick-response measurements in air, gases, liquids
- For very small surfaces

**Characteristics**

The GTF 300 is a NiCr-Ni (type K) wire probe for quick-response measurements in air, gases or liquids. The GTF 300 with option "UV" can be also used for measurements of very small surfaces. For option "UV" (untwisted welded) the measuring point is placed at the sensor tip.

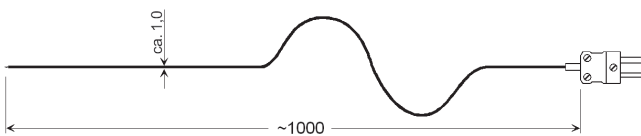
The thermocouple consists of two electric lines made of different materials (NiCr and Ni). The measuring principle of temperature measurement with thermocouples is based on the existence of thermovoltage when two wires made of different materials are connected.

The probe is delivered with ready-to-use, thermovoltage-free miniature flat-pin plug NST1200.

**Technical Data**

- Thermocouple : NiCr-Ni (type K)
- Measuring range : -65..+300 °C
- Response time (T<sub>90</sub>) : approx. 0.3 s
- Accuracy : class 1
- Thermocouples wires : 1 m Teflon insulated twisted wires (max. 250 °C), very flexible diameter approx. 1.0 mm
- Measuring point : connection point of wires measuring tip (twisted welded)
- Connection : miniature flat-pin plug NST1200

**Dimensions**



**Ordering code**

GTF300 -  1. -  2.

<b>1. Wire length</b>	
01	1 m (standard)
xx	desired length in m (up to 50 m) e.g. 25 = 25 m
<b>2. Option</b>	
00	without option
UV	measuring tip untwisted welded

**Magnetic Surface Probe GMF 250**



- NiCr-Ni-probe (type K)
- Self-adhesive on magnetic surfaces
- Resilient measuring sensor

**Characteristics**

The GMF 250 is a NiCr-Ni (type K) magnetic surface probe for surface temperature measurements. The GMF 250 is used exclusively for magnetic materials, because of its self-adhesive measuring sensor with Cu-plate. The probe is not appropriate for use at induction furnace, etc.

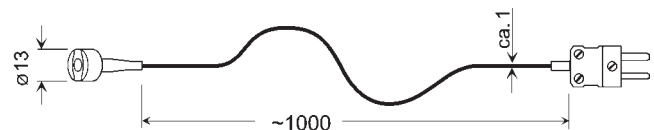
The thermocouple consists of two electric lines made of different materials (NiCr and Ni). The measuring principle of temperature measurement with thermocouples is based on the existence of thermovoltage when two wires made of different materials are connected.

The probe is delivered with ready-to-use, thermovoltage-free miniature flat-pin plug NST1200.

**Technical Data**

- Thermocouple : NiCr-Ni (type K)
- Measuring range : -65..+250 °C
- Response time (T<sub>90</sub>) : approx. 5 s
- Accuracy : class 1
- Thermocouples wires : 1 m Teflon insulated twisted wires (max. 250 °C), very flexible diameter approx. 1.0 mm
- Measuring point : magnetic, resilient measuring sensor with Cu-plate Ø 5 mm
- Connection : miniature flat-pin plug NST1200

**Dimensions**



**Ordering code**

GMF250 -  1.

<b>1. Wire length</b>	
01	1 m (standard)
xx	desired length in m (up to 50 m) e.g. 25 = 25 m

**Product Information**

# Magnetic Surface Probe GMF 200



- NiCr-Ni-probe (type K)
- Self-adhesive on magnetic surfaces (reinforced design)
- Resilient measuring sensor

## Characteristics

The GMF 200 is a NiCr-Ni (type K) magnetic surface probe for surface temperature measurements. The GMF 200 is used exclusively for magnetic materials, because of its self-adhesive measuring sensor with Cu-plate. The probe is not appropriate for use at induction furnace, etc.

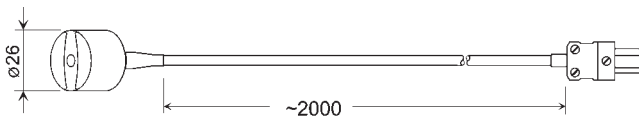
The thermocouple consists of two electric lines made of different materials (NiCr and Ni). The measuring principle of temperature measurement with thermocouples is based on the existence of thermovoltage when two wires made of different materials are connected.

The probe is delivered with ready-to-use, thermovoltage-free miniature flat-pin plug NST1200.

## Technical Data

Thermocouple	: NiCr-Ni (type K)
Measuring range	: -65..+200 °C
Response time (T <sub>90</sub> )	: approx. 5 s
Accuracy	: class 1
Thermocouples wires	: 2 m silicone cable (max. 200 °C) flexible and robust
Measuring point	: strong magnetic, resilient measuring sensor with Cu-plate Ø 5 mm
Connection	: miniature flat-pin plug NST1200

## Dimensions



## Ordering code

1.  
GMF200 -

1. Wire length	
02	2 m (standard)
xx	desired length in m (up to 50 m) e.g. 25 = 25 m

**Product Information**

**Tube Surface Probe  
GRO 200**



- For round surfaces
- Pt100, Pt1000, NiCr-Ni
- Aluminum probe

**Characteristics**

The GRO is a temperature probe especially designed for round surfaces (e.g. tubes). The probe body is made of aluminum.

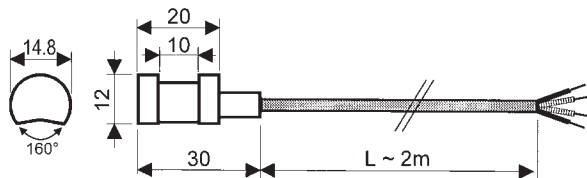
The measurement is done by means of a resistive temperature sensor (Pt100 / Pt 1000) or thermocouple (type K, NiCr-Ni).

The probe is delivered with 2 m silicone cable with loose ends and end sleeves by default. The probe can be mounted by for example the cable clip GWL5g. We strongly recommend to use heat conducting paste for better heat transfer.

**Technical data**

- Sensor element : Pt100 (4-wire)  
Pt1000 (4-wire)  
NiCr-Ni
- Measuring range : -50..+200 °C
- Accuracy : Pt100 / Pt1000: DIN class B  
NiCr-Ni: class 1
- Probe material : aluminum
- Connection cable : silicone cable or silicone compensation line, loose ends  
length: 2 m (up to max. 200 °C)

**Dimensions**



**Ordering code**

GRO200 -  1. -  2.

<b>1. Sensor element</b>	
P	Pt100 (4-wire)
T	Pt1000 (4-wire)
K	NiCr-Ni
<b>2. Cable length L</b>	
L02	2 m (standard)
Lxx	desired length in m (e.g. L04 = 4 m)

Produktinformation

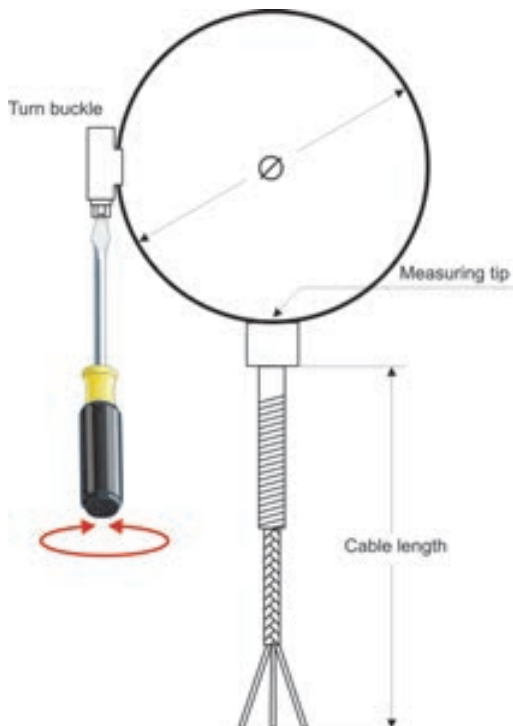
# Temperature Sensor 7122



## Characteristics

- Thermocouple Fe-CuNi (type J); NiCr-Ni (type K)
- RTD Pt100, class B
- Pipe clamp, protection spring stainless steel 1.4541 protection sheath silver, thermal isolated
- Cable type flexible fiberglass insulation with steel wire braiding or Teflon-Silicon-insulation

## Dimensions



## Ordering code

1.	2.	3.	4.	5.	6.	7.
	-	-	-			

<b>1. Measuring element</b>	7122	Pt100 class B
<b>2. Number of elements</b>	1	
	2	
<b>3. Connection type</b>	2L	2-wire
	3L	3-wire
	4L	4-wire
<b>4. Clamp range of pipe clamp</b>	68	Ø 16-25 mm
	69	Ø 20-32 mm
	70	Ø 32-50 mm
	71	Ø 50-70 mm
	72	Ø 70-90 mm
	73	Ø 90-110 mm
	74	Ø 110-130 mm
<b>5. Cable length (please state in clear text)</b>	2000	Cable length in mm standard
	XXXX	custom length in mm; price/m
<b>6. Operating temperature</b>	250°C	in glass silk – stainless conduction

## Stock

- 7122-1-3L-68-2000-250°C
- 7122-1-3L-69-2000-250°C
- 7122-1-3L-70-2000-250°C
- 7122-1-3L-71-2000-250°C
- 7122-1-3L-72-2000-250°C
- 7122-1-3L-73-2000-250°C
- 7122-1-3L-74-2000-250°C



Produktinformation

# Temperature Sensor 7131



## Ordering code

1.  2.  3.  4.  5.  6.   
 -  -

<b>1. Measuring element</b>	
7131	Pt100 class B
<b>2. Number of elements</b>	
1	
2	
<b>3. Connection type</b>	
2L	2-wire (standard)
3L	3-wire
4L	4-wire
<b>4. Cable length (please state in clear text)</b>	
2000	cable length in mm standard
XXXX	custom length in mm; price/m
<b>5. Operating temperature</b>	
400°C	fiberglass insulation

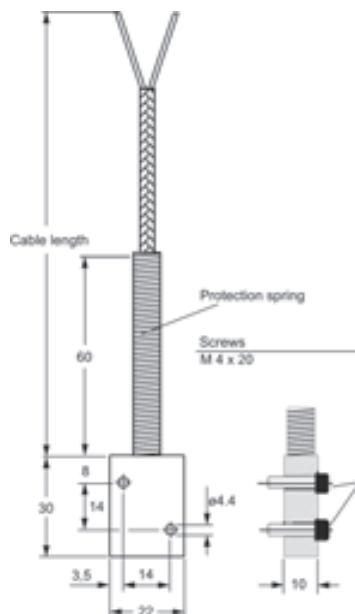
## Characteristics

- Thermocouple Fe-CuNi (type J); NiCr-Ni (type K)
- RTD Pt100, class B
- Surface sensor
- Sensor case brass nickel plated
- Cable type flexible fiberglass insulation with steel wire braiding or Teflon-Silicon-insulation

## Stock

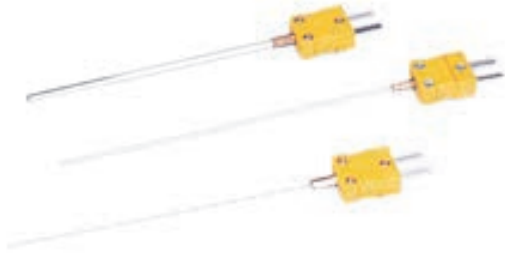
7131-1-2L-2000-400°C

## Dimensions



**Product Information**

**Sheathed Thermocouple  
GTT**



- NiCr-Ni thermocouple (type K)
- With thermovoltage-free miniature flat-pin plug

**Characteristics**

The GTT is a NiCr-Ni (type K) sheathed thermocouple for temperature measurement. Its compact design allows application at measuring points with difficult access.

The thermocouple consists of two electric lines made of different materials (NiCr and Ni). The measuring principle of temperature measurement with thermocouples is based on the existence of thermovoltage when two wires made of different materials are connected.

The probe is delivered with ready-to-use, thermovoltage-free miniature flat-pin plug NST1200. Measuring errors due to different materials are prevented by the thermovoltage-free miniature flat-pin plug. Additionally the DIN plug can be connected to a lot of different handheld measuring devices.

**Technical data**

Sensor element	: NiCr-Ni (type K)
Measuring range	: -200..+1150 °C
Accuracy	: class 1
Sheath material	: Inconel 600, bendable
Isolation	: highly compressed pure MgO
Thermocouple	: wires made of NiCr-Ni, DIN IEC 584, isolated, welded (potential-free)
Connection	: miniature flat-pin plug NST1200

**Dimensions**



**Ordering code**

GTT -  1. -  2.

1. Probe diameter D		
D05	0.5 mm	up to max. 600 °C
D10	1.0 mm	up to max. 600 °C
D15	1.5 mm	up to max. 600 °C
D30	3.0 mm	
D60	6.0 mm	
2. Fitting length EL (±10mm)		
0150	150 mm	
0250	250 mm	
0500	500 mm	
1000	1000 mm	
1500	1500 mm	

Product Information

# Temperature Probe GTF 101 P



- Pt100, Pt1000
- With cable sleeve and cable (loose ends)
- Very robust

## Characteristics

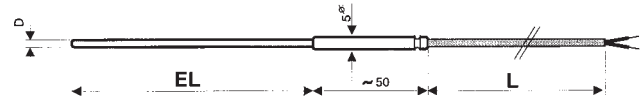
The GTF 101 is a temperature probe modified completely according to customer specifications. The GTF 101 is very robust and therefore especially suited for application at high permanent temperatures in air, gases liquids or aggressive environments.

The measurement is done by means of resistance temperature sensors (Pt100 or Pt1000)

## Technical data

<b>Sensor element</b>	: Pt100 (2- / 3- or 4-wire) Pt1000 (2- / 3- or 4-wire)
<b>Measuring range MB</b>	
MB 1	: -50..+400 °C
MB 2	: -200..+400 °C
MB 3	: -200..+600 °C
MB 4	: -50..+850 °C
<b>Probe diameter D</b>	: 3 mm, 4 mm, 5 mm, 6 mm, 8 mm other diameters (e.g. 1.6 mm, 2.2 mm) upon request
<b>Fitting length EL</b>	: 50 mm, 100 mm, 150 mm, 250 mm, 500 mm, 1000 mm, 1500 mm other fitting lengths possible
<b>Cable sleeve</b>	: <b>for probe diameter D 3 mm, 4 mm, 5 mm, 6 mm, 8 mm:</b> cable sleeve Ø 5 mm x 50 mm additional to fitting length <b>for probe diameter D 6 mm and MB3 or MB4:</b> cable sleeve Ø 8 mm x 35 mm and diminution Ø 5 mm x 17 mm additional to fitting length
<b>Note:</b>	: The temperature of the cable sleeve must not exceed the permitted temperature of the cable
<b>Accuracy</b>	: DIN class B, DIN class A, 1/3 DIN class B, 1/10 DIN class B
<b>Tube material</b>	: V4A
<b>Cable</b>	: 1 m (standard), loose ends
PVC cable	: up to max. 105 °C
Silicone cable	: up to max. 200 °C (standard)
Teflon cable	: up to max. 250 °C
Glass silk cable	: up to max. 400 °C

## Dimensions



## Ordering code

GTF101P -  -  -  -  -  -  -  -

<b>1. Sensor element</b>		
P	Pt100	
T	Pt1000	
<b>2. Connection of sensor element</b>		
2L	2-wire	
3L	3-wire	
4L	4-wire	
<b>3. Accuracy</b>		
A	DIN class A	<i>only with MB1</i>
B	DIN class B (Standard)	
D	1/3 DIN class B	<i>only with MB1, MB2, MB3</i>
Z	1/10 DIN class B	<i>only with MB1 and Pt100</i>
<b>4. Measuring range MB</b>		
MB1	-50..+400 °C	
MB2	-200..+400 °C	
MB3	-70..+600 °C	
MB4	-50..+850 °C	<i>only with Pt100</i>
<b>5. Probe diameter D</b>		
D30	3.0 mm	
D40	4.0 mm	
D50	5.0 mm	
D60	6.0 mm	
D80	8.0 mm	<i>not with MB4</i>
Dxx	other Ø in mm (upon request)	
<b>6. Fitting length EL</b>		
0050	50 mm	
0100	100 mm	
0150	150 mm	
0250	250 mm	
0500	500 mm	
1000	1000 mm	
1500	1500 mm	
xxxx	any EL in mm (e.g.: 0700 = 700 mm)	
<b>7. Cable length L</b>		
L01	1 m (standard)	
Lxx	desired length in m (e.g. L03 = 3 m)	
<b>8. Cable material</b>		
P	PVC cable up to max. 105 °C	
S	silicone cable up to max. 200 °C (standard)	
T	Teflon cable up to max. 250 °C	
G	glass silk cable up to max. 400 °C	

**Product Information**

# Temperatur Probe GTF 101 P-OKH



- Pt100, Pt1000
- With cable (loose ends)
- Very robust

**Characteristics**

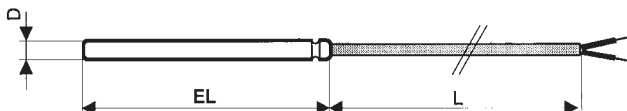
The GTF 101 is a temperature probe modified completely according to customer specifications. The GTF 101 is very robust and therefore especially suited for application at high permanent temperatures in air, gases liquids or aggressive environments.

The measurement is done by means of resistance temperature sensors (Pt100 or Pt1000)

**Technical data**

- Sensor element** : Pt100 (2- / 3- or 4-wire)  
Pt1000 (2- / 3- or 4-wire)
- Measuring range MB**
  - MB 1 : -50..+200 °C
  - MB 2 : -50..+250 °C
  - MB 3 : -50..+400 °C
  - MB 4 : -200..+250 °C
- Probe diameter D** : 3 mm, 4 mm, 5 mm, 6 mm, 8 mm  
other diameters upon request
- Fitting length EL** : 50 mm, 100 mm, 150 mm, 250 mm,  
500 mm, 1000 mm, 1500 mm  
other fitting lengths possible
- Accuracy** : DIN class B, DIN class A,  
1/3 DIN class B, 1/10 DIN class B
- Tube material** : V4A
- Cable** : 1 m (standard), loose ends
  - Silicone cable : up to max. 200 °C (standard)
  - Teflon cable : up to max. 250 °C
  - Glass silk cable : up to max. 400 °C

**Dimensions**



**Ordering code**

GTF101P-OKH -  1. -  2. -  3. -  4. -  5. -  6. -  7. -  8.

<b>1. Sensor element</b>	
P	Pt100
T	Pt1000
<b>2. Connection of sensor element</b>	
2L	2-wire
3L	3-wire
4L	4-wire
<b>3. Accuracy</b>	
A	DIN class A
B	DIN class B (Standard)
D	1/3 DIN class B
Z	1/10 DIN class B <i>only with Pt100</i>
<b>4. Measuring range MB</b>	
MB1	-50..+200 °C
MB2	-50..+250 °C <i>only with Teflon or glass silk cable</i>
MB3	-50..+400 °C <i>only with glass silk cable</i>
MB4	-200..+250 °C <i>only with Teflon cable</i>
<b>5. Probe diameter D</b>	
D30	3.0 mm <i>only with Teflon cable</i>
D40	4.0 mm <i>only with Teflon cable</i>
D50	5.0 mm
D60	6.0 mm
D80	8.0 mm
Dxx	other Ø in mm (upon request)
<b>6. Fitting length EL</b>	
0050	50 mm
0100	100 mm
0150	150 mm
0250	250 mm
0500	500 mm
1000	1000 mm
1500	1500 mm
xxxx	any EL in mm (e.g.: 0700 = 700 mm)
<b>7. Cable length L</b>	
L01	1 m (standard)
Lxx	desired length in m (e.g. L03 = 3 m)
<b>8. Cable material</b>	
S	silicone cable up to max. 200 °C (standard)
T	Teflon cable up to max. 250 °C
G	glass silk cable up to max. 400 °C

Product Information

# Temperature Probe GTF 101 K



- NiCr-Ni (type K)
- With cable sleeve and cable (loose ends)
- Very robust

## Characteristics

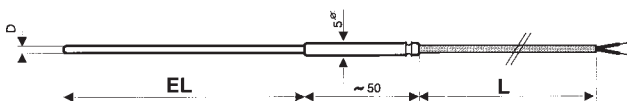
The GTF 101 is a temperature probe modified completely according to customer specifications. The GTF 101 is very robust and therefore especially suited for application at high permanent temperatures in air, gases liquids or aggressive environments.

The measurement is done by means of thermocouple wires (NiCr-Ni).

## Technical data

<b>Sensor element</b>	: NiCr-Ni (type K)
<b>Measuring range</b>	: -200..+1150 °C
<b>Probe diameter D</b>	: 0.5 mm, 1 mm, 1.5 mm, 3 mm, 6 mm other diameters upon request
<b>Fitting length EL</b>	: 150 mm, 250 mm, 500 mm, 1000 mm, 1500 mm, other fitting lengths possible
<b>Cable sleeve</b>	: <b>for probe diameter D 0.5 mm, 1 mm, 1.5 mm, 3 mm:</b> cable sleeve Ø 5 mm x 50 mm additional to fitting length <b>for probe diameter D 6 mm:</b> cable sleeve Ø 8 mm x 35 mm and diminution Ø 5 mm x 17 mm additional to fitting length
<b>Note:</b>	: The temperature of the cable sleeve must not exceed the permitted temperature of the cable
<b>Accuracy</b>	: class 1
<b>Tube material</b>	: cable sleeve: V4A probe tube: Inconel 600
<b>Cable</b>	: 1 m silicone compensation line (std), loose ends
PVC cable	: up to max. 105 °C
Silicone cable	: up to max. 200 °C (standard)
Teflon cable	: up to max. 250 °C
Glass silk cable	: up to max. 400 °C

## Dimensions



## Ordering code

GTF101K -  -  -  -

<b>1. Probe diameter D</b>	
D05	0.5 mm
D10	1.0 mm
D15	1.5 mm
D30	3.0 mm
D60	6.0 mm
Dxx	other Ø in mm (upon request)
<b>2. Fitting length EL</b>	
0150	150 mm
0250	250 mm
0500	500 mm
1000	1000 mm
1500	1500 mm
xxxx	any EL in mm (e.g.: 0100 = 100 mm)
<b>3. Cable length L</b>	
L01	1 m (standard)
Lxx	desired length in m (e.g. L03 = 3 m)
<b>4. Cable material (compensation line)</b>	
P	PVC cable up to max. 105 °C
S	silicone cable up to max. 200 °C (standard)
T	Teflon cable up to max. 250 °C
G	glass silk cable up to max. 400 °C

**Product Information**

**Temperatur Probe  
GTF 101 K-OKH**



- NiCr-Ni (type K)
- With cable (loose ends)
- Very robust

**Characteristics**

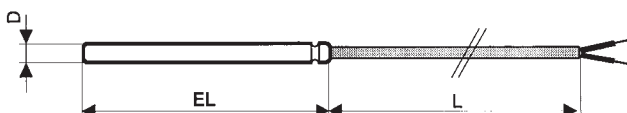
The GTF 101 is a temperature probe modified completely according to customer specifications. The GTF 101 is very robust and therefore especially suited for application at high permanent temperatures in air, gases liquids or aggressive environments.

The measurement is done by means of thermocouple wires (NiCr-Ni).

**Technical data**

- Sensor element** : NiCr-Ni (type K)
- Measuring range MB**
  - MB 1 : -50..+200 °C
  - MB 2 : -50..+250 °C
  - MB 3 : -50..+400 °C
- Probe diameter D** : 3 mm, 4 mm, 5 mm, 6 mm, 8 mm  
other diameters upon request
- Fitting length EL** : 50 mm, 100 mm (standard), 150 mm, 250 mm, 500 mm, 1000 mm, 1500 mm  
other fitting lengths possible
- Accuracy** : class 1
- Tube material** : V4A
- Cable** : 1 m silicone compensation line (std), loose ends
  - Silicone cable : up to max. 200 °C (standard)
  - Teflon cable : up to max. 250 °C
  - Glass silk cable : up to max. 400 °C

**Dimensions**



**Ordering code**

GTF101K-OKH -  -  -  -  -

<b>1. Measuring range</b>		
MB1	-50..+200 °C	
MB2	-50..+250 °C	only with Teflon or glass silk cable
MB3	-50..+400 °C	only with glass silk cable
<b>2. Probe diameter D</b>		
D30	3.0 mm	only with Teflon cable
D40	4.0 mm	only with Teflon cable
D50	5.0 mm	
D60	6.0 mm	
D80	8.0 mm	
Dxx	other Ø in mm (upon request)	
<b>3. Fitting length EL</b>		
0150	150 mm	
0250	250 mm	
0500	500 mm	
1000	1000 mm	
1500	1500 mm	
xxxx	any EL in mm (e.g.: 0100 = 100 mm)	
<b>4. Cable length L</b>		
L01	1 m (standard)	
Lxx	desired length in m (e.g. L03 = 3 m)	
<b>5. Cable material</b>		
S	silicone cable up to max. 200 °C (standard)	
T	Teflon cable up to max. 250 °C	
G	glass silk cable up to max. 400 °C	

Produktinformation

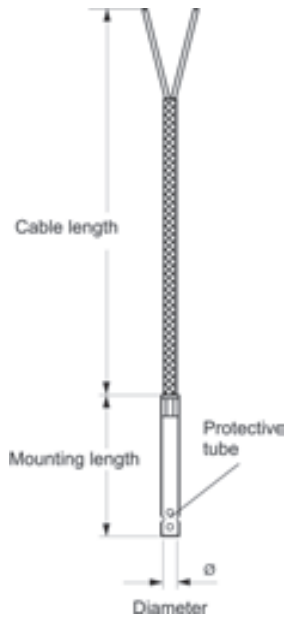
# Temperature Sensor 7132



## Characteristics

- Thermocouple Fe-CuNi (type J); NiCr-Ni (type K)
- RTD Pt100, class B
- Protective tube stainless steel 1.4571 perforated
- Measuring tip plane
- Cable type flexible fiberglass insulation with steel wire braiding or Teflon-Silicon-insulation

## Dimensions



## Accessories

**Description**  
Displacement adapter G 1/8  
incl. nut suitable for  
protective tube diameter 5 mm

**Ordering code**  
SV1805

## Ordering code

1. 2. 3. 4. 5. 6. 7. 8. 9.  
□ - □ - □ - □ - □ - □ - □ □ - □

<b>1. Measuring element</b>	7132	Pt100 class B
<b>2. Number of elements</b>	1	
<b>3. Connection type</b>	2L	2-wire
<b>4. Probe diameter</b>	5	5 mm
<b>5. Fitting length EL</b>	50	50 mm
	100	100 mm
	xx	custom length; specify the length in mm in the plain text
<b>6. Cable length (please state in clear text)</b>	2000	Cable length in mm standard
	XXXX	custom length in mm; price/m
<b>7. Operating temperature</b>	400°C	Fiberglass insulation

## Stock

7132-1-2L-5-50-2000-400°C  
7132-1-2L-5-100-2000-400°C

Produktinformation

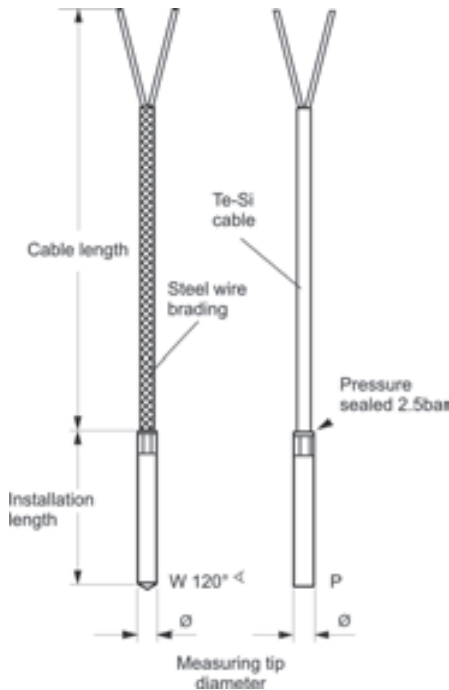
# Temperature Sensor 7024 / 7124



### Characteristics

- Thermocouple Fe-CuNi (type J); NiCr-Ni (type K)
- RTD Pt100, class B
- Thermowell material stainless steel 1.4571
- Measuring tip plane or angle 120°
- Cable type flexible fiberglass insulation with steel wire braiding or Teflon-Silicon-insulation

### Dimensions



### Ordering code

1. 2. 3. 4. 5. 6. 7. 8. 9.  
 -  -  -

<b>1. Measuring element</b>	
7024/J	thermocouple Fe-CuNi (type J)
7024/K	thermocouple NiCr-Ni (type K)
7124	Pt100 class B
<b>2. Number of elements</b>	
1	
2	
<b>3. Connection type</b>	
2L	2-wire
3L	3-wire (only 7124, Pt100 )
4L	4-wire (only 7124, Pt100 )
<b>4. Measuring tip diameter</b>	
3	3 mm
4	4 mm
5	5 mm
6	6 mm
<b>5. Measuring tip type</b>	
P	plane (flat tip)
W	angle 120°
<b>6. Installation length</b>	
30	30 mm
40	40 mm
60	60 mm
xx	custom length [mm]
<b>7. Cable type insulation</b>	
EGL	flexible fiberglass with steel wire braiding
<b>8. Cable length (please state in clear text)</b>	
X	length in mm
<b>9. Operating temperature</b>	
180°C	Teflon-Silicon-insulation
400°C	Fiberglass insulation

(other versions on request)

### Stock

- 7024/J-1-2L-3-P-30-EGL-2000-400°C
- 7024/J-1-2L-4-W-40-EGL-2000-400°C
- 7024/J-1-2L-6-W-60-EGL-2000-400°C
- 7124-1-2L-4-W-40-EGL-2000-400°C
- 7124-1-2L-6-P-60-EGL-2000-400°C
- 7124-1-2L-6-P-60-Te-Si-3000-180°C



## Produktinformation

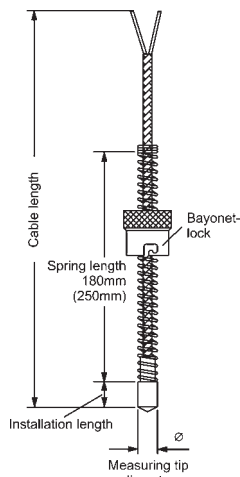
# Temperature Sensor 7012 / 7112



## Characteristics

- Thermocouple Fe-CuNi (type J); NiCr-Ni (type K)
- RTD Pt100, class B
- Thermowell material stainless steel 1.4571
- Measuring tip plane or angle 120°
- Cable type flexible fiberglass insulation with steel wire braiding or Teflon-Silicon-insulation

## Dimensions



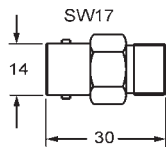
## Accessories

### Description

Thread adapter M10x1  
 Thread adapter M12x1  
 Thread adapter M12x1.75

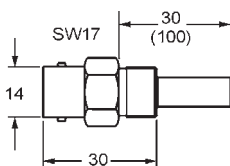
### Ordering code

GN-40  
 GN-41  
 GN-49 (standard)



Thermowell R ¼ 30 mm length  
 Thermowell R ¼ 100 mm length

THR ¼ -SW17  
 THR ¼ -SW17-100



## Ordering code

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.  
 -  -     -  -    -

|  |  |
|--|--|
| <b>1. Measuring element</b>                          |  |
| 7012/J   | thermocouple Fe-CuNi (type J)                |
| 7012/K   | thermocouple NiCr-Ni (type K)                |
| 7112   | Pt100 class B                                |
| <b>2. Number of elements</b>                         |  |
| 1  |  |
| 2  |  |
| <b>3. Connection type</b>                            |  |
| 2L   | 2-wire                                       |
| 3L   | 3-wire (only 7112, Pt100)                    |
| 4L   | 4-wire (only 7112, Pt100)                    |
| <b>4. Measuring tip diameter</b>                     |  |
| 6  | 6 mm   |
| 8  | 8 mm   |
| <b>5. Measuring tip type</b>                         |  |
| P  | plane (flat tip)                             |
| W  | angle 120°                                   |
| <b>6. Installation length</b>                        |  |
| 15   | 15mm   |
| <b>7. Spring length</b>                              |  |
| -  | without                                      |
| 180  | 180mm  |
| 250  | 250mm  |
| <b>8. Bayonet lock type</b>                          |  |
| VK14   | inner diameter 12.2mm                        |
| VK17   | inner diameter 14.5mm                        |
| <b>9. Cable type insulation</b>                      |  |
| EGL  | flexible fiberglass with steel wire braiding |
| Te-Si  | Teflon-Silicon up to 180°C                   |
| <b>10. Cable length (please state in clear text)</b> |  |
| X  | length in mm                                 |
| <b>11. Operating temperature</b>                     |  |
| 180°C  | Teflon-Silicon-insulation                    |
| 400°C  | Fiberglass insulation                        |

(other versions on request)

## Stock

7012/J-1-2L-6-W-15-180-VK17-EGL-2000-400°C  
 7012/J-1-2L-8-W-15-180-VK17-EGL-2000-400°C  
 7112-1-2L-6-P-15-180-VK17-EGL-2000-400°C  
 7112-1-2L-6-W-15-180-VK17-EGL-2000-400°C  
 7112-1-2L-8-P-15-180-VK17-EGL-2000-400°C  
 7112-1-2L-8-W-15-180-VK17-EGL-2000-400°C  
 7112-2-2L-6-W-15-180-VK17-EGL-2000-400°C  
 7112-2-2L-8-W-15-180-VK17-EGL-2000-400°C

**Product Information**

**Penetration Probe  
GES 21**



- Core temperature / food probe
- With Teflon handle and Teflon cable, up to 250 °C

**Characteristics**

The GES 21 is a penetration probe with slim insertion tip and is suitable for core temperature measurements in foods or other soft and plastic media. The GES 21 can be used in canteen kitchens, bakeries, butcher's shops etc. Both handle and cable are made of Teflon and can resist air temperatures up to 250 °C.

The measurement is done by means of a resistive temperature sensor (Pt100 / Pt 1000) or thermocouple (NiCr-Ni).

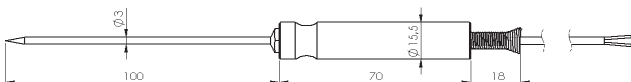
The probe is delivered with 1 m Teflon cable with loose ends and end sleeves for universal appliance.

**Technical data**

|                  |   |
|------------------|---|
| Sensor element   | : Pt100 (2-wire)<br>Pt1000 (2-wire)<br>NiCr-Ni  |
| Measuring range  | : -200..+250 °C   |
| Accuracy         |   |
| Pt100 / Pt1000   | : DIN class B   |
| NiCr-Ni          | : class 1   |
| Probe material   | : V4A-tube  |
| Handle           | : Teflon (up to 250 °C)   |
| Connection cable | : 1m Teflon cable (up to 250 °C)<br>with stainless steel kink protection,<br>loose ends |

**Dimensions**

|                |        |
|----------------|--------|
| Probe diameter | Ø 3 mm |
| Probe length   | 100 mm |
| Handle         | 70 mm  |



**Ordering code**

GES21 -  1. -  2.

|                          |                                      |
|--------------------------|--------------------------------------|
| <b>1. Sensor element</b> |                                      |
| P                        | Pt100 (2-wire)                       |
| T                        | Pt1000 (2-wire)                      |
| K                        | NiCr-Ni                              |
| <b>2. Cable length L</b> |                                      |
| L01                      | 1 m (standard)                       |
| Lxx                      | desired length in m (e.g. L04 = 4 m) |

Product Information

# Screw-In Probe GTF 102



- Pt100, Pt1000, NiCr-Ni (type K)
- with thread and cable (loose ends)
- Very robust

### Characteristics

The GTF 102 is a temperature probe modified completely according to customer specifications. The GTF 102 is very robust and therefore especially suited for application at high permanent temperatures in air, gases liquids or aggressive environments.

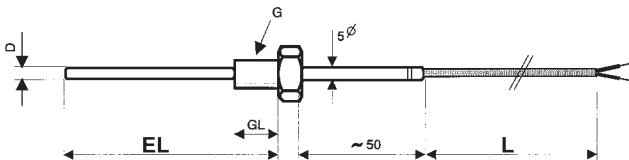
The measurement is done by means of a resistive temperature sensor (Pt100 / Pt 1000) or thermocouple (type K, NiCr-Ni).

The probe is delivered with thread, cable sleeve and 1 m silicone cable (compensation line with loose ends) by default.

### Technical data

|                        |   |
|------------------------|---|
| Sensor element         | : Pt100 (2- / 3- or 4-wire)<br>Pt1000 (2-wire)<br>NiCr-Ni                                   |
| <b>Measuring range</b> |   |
| NiCr-Ni                | : -200..+1000 °C  |
| Pt100 / Pt1000         | : -50..+400 °C  |
| Accuracy               | : Pt100 / Pt1000: DIN class B<br>NiCr-Ni: class 1   |
| Tube material          | : V4A   |
| Thread material        | : stainless steel   |
| Connection cable       | : standard: silicone compensation line,<br>loose ends, length: 1 m long<br>(up to max. 200) |

### Dimensions



### Ordering code

GTF102 -  1. -  2. -  3. -  4. -  5. -  6. -  7. -  8.

|                                     |   |                                      |
|-------------------------------------|---|--------------------------------------|
| <b>1. Sensor element</b>            |   |                                      |
| P2                                  | Pt100 (2-wire)                              |                                      |
| P3                                  | Pt100 (3-wire)                              |                                      |
| P4                                  | Pt100 (4-wire)                              |                                      |
| T2                                  | Pt1000 (2-wire)                             |                                      |
| K                                   | NiCr-Ni                                     |                                      |
| <b>2. Accuracy</b>                  |   |                                      |
| 1                                   | class 1                                     | only NiCr-Ni                         |
| A                                   | DIN class A                                 | only Pt100 / Pt1000                  |
| B                                   | DIN class B (Standard)                      | only Pt100 / Pt1000                  |
| D                                   | 1/3 DIN class B                             | only Pt100 / Pt1000                  |
| Z                                   | 1/10 DIN class B                            | only Pt100                           |
| <b>3. Measuring range MB</b>        |   |                                      |
| MB0                                 | standard measuring range                    |                                      |
| MBX                                 | other measuring range upon request          |                                      |
| <b>4. Probe diameter D</b>          |   |                                      |
| 22                                  | 2.2 mm                                      | only with sensor element NiCr-Ni (K) |
| 30                                  | 3.0 mm (standard)                           |                                      |
| 40                                  | 4.0 mm                                      |                                      |
| 50                                  | 5.0 mm                                      |                                      |
| 60                                  | 6.0 mm                                      |                                      |
| 80                                  | 8.0 mm                                      |                                      |
| <b>5. Fitting length EL (±10mm)</b> |   |                                      |
| 0100                                | 100 mm (standard)                           |                                      |
| 0150                                | 150 mm                                      |                                      |
| 0250                                | 250 mm                                      |                                      |
| 0500                                | 500 mm                                      |                                      |
| 1000                                | 1000 mm                                     |                                      |
| 1500                                | 1500 mm                                     |                                      |
| xxxx                                | any EL in mm (e.g.: 0700 = 700 mm)          |                                      |
| <b>6. Thread</b>                    |   |                                      |
| G1                                  | G ½ (standard)                              |                                      |
| G2                                  | G ¼   |                                      |
| G3                                  | G ¾   |                                      |
| G5                                  | G ⅜   |                                      |
| M5                                  | M5  |                                      |
| M6                                  | M6  |                                      |
| M8                                  | M8  |                                      |
| M0                                  | M10   |                                      |
| M2                                  | M12   |                                      |
| M4                                  | M14   |                                      |
| <b>7. Cable length L</b>            |   |                                      |
| L01                                 | 1 m (standard)                              |                                      |
| Lxx                                 | desired length in m (e.g. L03 = 3 m)        |                                      |
| <b>8. Cable material</b>            |   |                                      |
| P                                   | PVC cable up to max. 105 °C                 |                                      |
| S                                   | silicone cable up to max. 200 °C (standard) |                                      |
| T                                   | Teflon cable up to max. 250 °C              |                                      |
| G                                   | glass silk cable up to max. 400 °C          |                                      |

## Produktinformation

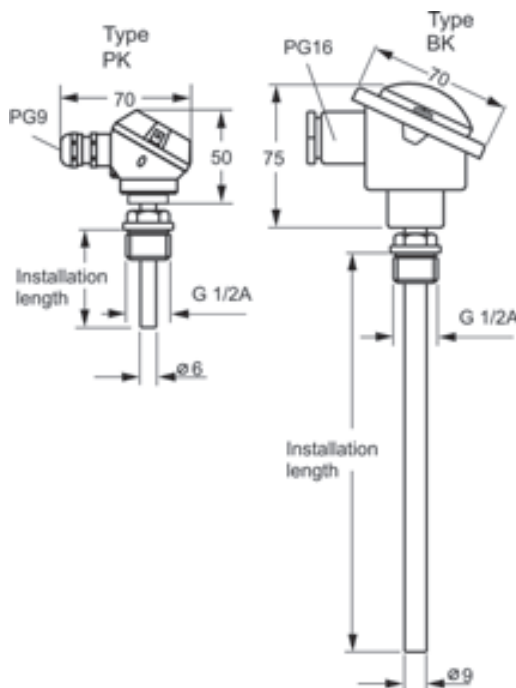
# Temperature Sensor 8100/A, 8100/C



## Characteristics

- Thermocouple Fe-CuNi (type J); NiCr-Ni (type K)
- RTD Pt100/Pt1000 class B,
- Protective tube, stainless steel 1.4571
- Connection head form BK/PK, DIN 43729, IP65
- Head transmitter optional

## Dimensions



## Ordering code

 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.  
 -  -     -  -   

|                                    |   |
|------------------------------------|---|
| <b>1. Measuring element</b>        |   |
| 8100/A                             | Pt100 class B                                       |
| 8100/C                             | Pt1000 class B                                      |
| <b>2. Number of elements</b>       |   |
| 1                                  | 1 measuring element                                 |
| 2                                  | 2 measuring elements                                |
| <b>3. Connection type</b>          |   |
| 2L                                 | 2-wire (as 3- and 4-wire applicable)                |
| <b>4. Measuring tip diameter</b>   |   |
| 6                                  | 6 mm  |
| 8                                  | 8 mm  |
| 9                                  | 9 mm  |
| <b>5. Installation length [mm]</b> |   |
| 40                                 | 40 mm   |
| 100                                | 100 mm  |
| 160                                | 160 mm  |
| 250                                | 250 mm  |
| 400                                | 400 mm  |
| 600                                | 600 mm  |
| xx                                 | custom length; specify the length in the plain text |
| <b>6. Neck pipe length [mm]</b>    |   |
| 0                                  | without   |
| 50                                 | 50 mm   |
| 100                                | 100 mm  |
| xx                                 | custom length; specify the length in the plain text |
| <b>7. Process connection</b>       |   |
| G 1/2                              | fixed gland 1/2"                                    |
| G 3/4                              | fixed gland 3/4"                                    |
| G1                                 | fixed gland 1"                                      |
| <b>8. Connection head</b>          |   |
| PK                                 | form P (miniature head) IP65                        |
| BK                                 | form B (standard) IP65                              |
| <b>9. Operating temperature</b>    |   |
| 300 or rather                      | 6mm 300 °C  |
| 400 °C                             | 6mm > 400 °C  |
| <b>10. Options</b>                 |   |
| 00                                 | without option                                      |
| T4                                 | integrated head transmitter 4..20mA (only head BK)  |

## Stock

8100/A-1-6-40-0-G1/2-PK-300°C  
 8100/A-1-9-100-0-G1/2-BK-400°C  
 8100/A-1-9-160-0-G1/2-BK-400°C  
 8100/A-1-9-250-0-G1/2-BK-400°C  
 8100/A-1-9-400-0-G1/2-BK-400°C  
 8100/A-1-9-600-0-G1/2-BK-400°C  
 8100/A-2-9-100-0-G1/2-BK-400°C  
 8100/A-2-9-160-0-G1/2-BK-400°C  
 8100/A-2-9-250-0-G1/2-BK-400°C  
 8100/C-1-6-40-0-G1/2-PK-300°C  
 8100/C-1-6-80-0-G1/2-PK-300°C

Produktinformation

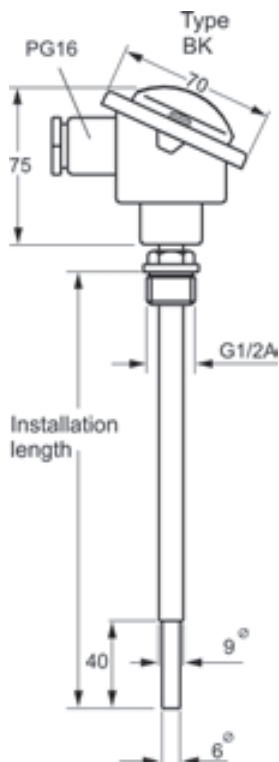
# Temperature Sensor 8101/A



### Characteristics

- Thermocouple Fe-CuNi (type J); NiCr-Ni (type K)
- RTD Pt100/Pt1000 class B,
- Protective tube, stainless steel 1.4571
- Connection head form BK/PK, DIN 43729, IP65
- Head transmitter optional

### Dimensions



### Ordering code

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.  
 -  -  -  -  -     -

|                                  |  |
|----------------------------------|--|
| <b>1. Measuring element</b>      | 8101/A Pt100 class B   |
| <b>2. Number of elements</b>     | 1 1 measuring element<br>2 2 measuring elements  |
| <b>3. Connection type</b>        | 2L 2-wire (as 3- and 4-wire applicable)  |
| <b>4. Measuring tip diameter</b> | 9/6 Ø 9mm, sensor tip 40mm reduced to Ø 6mm  |
| <b>5. Fitting length (mm)</b>    | 40 40 mm<br>100 100 mm<br>160 160 mm<br>250 250 mm<br>400 400 mm<br>600 600 mm<br>xx custom length; specify the length in the plain text |
| <b>6. Neck pipe length (mm)</b>  | 0 without<br>50 50 mm<br>100 100 mm<br>xx custom length; specify the length in the plain text  |
| <b>7. Process connection</b>     | G ½ fixed gland ½ "<br>G ¾ fixed gland ¾ "<br>G1 fixed gland 1"  |
| <b>8. Connection head</b>        | PK form P (miniature head) IP65<br>BK form B (standard) IP65   |
| <b>9. Operating temperature</b>  | 400 °C   |
| <b>10. Options</b>               | 00 without option<br>T4 integrated head transmitter 4...20mA (only head BK)  |

### Stock

- 8101/A-1-9/6-160-0-G1/2A-BK-500 °C
- 8101/A-1-9/6-250-0-G1/2A-BK-500 °C
- 8101/A-1-9/6-400-0-G1/2A-BK-500 °C
- 8101/A-1-9/6-600-0-G1/2A-BK-500 °C
- 8101/A-2-9/6-160-0-G1/2A-BK-500 °C

Produktinformation

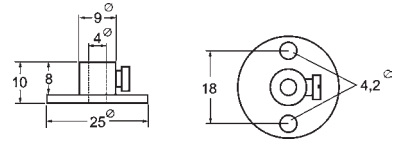
# Duct Temperature Sensor 8105



## Accessories

Description  
Mounting flange

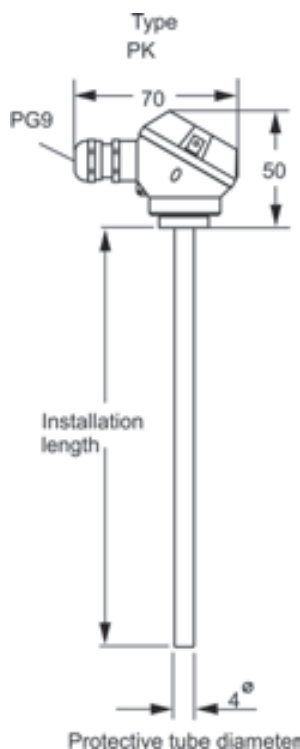
Ordering code  
MF4



## Characteristics

- RTD Pt100 Kl. B, fast response, 2-wire; usable as 3-wire sensor
- Protective tube  $\varnothing 4$  mm, stainless steel 1.4571
- Connection head form P, DIN 43729, IP65
- Flange mounting

## Dimensions



## Ordering code

1. 2. 3. 4. 5. 6. 7. 8.  
 -  -  -  -  -    |

|                                 |       |   |
|---------------------------------|-------|---|
| <b>1. Measuring element</b>     | 8105  | Pt100 class B                                       |
| <b>2. Number of elements</b>    | 1     | 1 measuring element                                 |
|                                 | 2     | 2 measuring elements                                |
| <b>3. Connection type</b>       | 2L    | 2-wire (as 3- and 4-wire applicable)                |
| <b>4. Sensor diameter</b>       | 4     | 4 mm  |
| <b>5. Fitting length [mm]</b>   | 140   | 140 mm  |
|                                 | 300   | 300 mm  |
|                                 | xx    | custom length; specify the length in the plain text |
| <b>6. Connection head</b>       | PK    | form P (miniature head) IP65                        |
|                                 | BK    | form B (standard) IP65                              |
| <b>7. Operating temperature</b> | 250°C |   |
| <b>8. Options</b>               | 00    | without option                                      |
|                                 | T4    | integrated head transmitter 4...20mA (only head BK) |
| <b>Accessories</b>              |       |   |
|                                 | MF4   | Mounting flange                                     |

## Stock

8105-1-4-140-PK-250°C  
8105-1-4-300-PK-250°C

**Product Information**

# Ex Temperature Probe GTF 101-Ex



- For use in potentially explosive gaseous or dust mixtures
- Potential-free temperature probe made of stainless steel
- Assembled according to customer preferences

### Characteristics

The temperature probe GTF 101-Ex is a mounting probe for usage in potentially explosive atmospheres. The modular build up ensures greatest flexibility and the possibility to fit it to the existing conditions. Therefore parameters like length, diameter, cable or type of protection ("i" or "e") can be adjusted.

There are 2 different sensor types available for the measuring unit of GTF 101-Ex: resistance thermometer Pt100, Pt1000 or thermocouple type K, type N (standard). Only sheathed resistance thermometer or sheathed thermocouple are used.

The probes can be customized according to customer requirements.

### Technical data

Sensor element : Pt100, PT1000 (sheathed element), 4-wire;  
type K (NiCr-Ni) or type N (NiCrSi-NiSi) sheathed thermocouple

**Measuring range**  
Pt100 / Pt1000 : -200..+100 °C (600 °C with neck tube)  
Type K / type N : -200..+100 °C (900 °C with neck tube)

**Accuracy**  
Pt100 / Pt1000 : DIN class B  
Type K / type N : class 1  
Type of protection : "i" intrinsic safe  
"e" increased safety

Ambient temperature : -20..+60 °C (protection type "e")  
-20..+80 °C (protection type "i")

|  |   |
|--|---|
| Process connection                             | no process connection   |
| Length of neck tube                            | no neck tube (for T ≤ 100 °C)<br>with neck tube (for T >100 °C) |
| Electrical connection                          | silicone cable, standard length 1m                              |
| Mounting                                       | by separate clamping ring screw connection                      |
| Suitable for potentially explosive atmospheres | zone 1, zone 2, zone 21, zone 22                                |

### Dimensions

Head / capsule Ø = approx. 15 mm, L = approx. 53 mm

### Ordering code

GTF101-Ex  1.  2.  3.  4.  5.  6.  -  -  -  -  -  -  -  7.  8.  9.  10.   -  -

|   |  |
|---|--|
| <b>1. Sensor element</b>                    |  |
| P   | Pt100  |
| S   | Pt1000   |
| T   | thermocouple type K  |
| U   | thermocouple type N  |
| <b>2. Neck tube</b>                         |  |
| K   | no neck tube (for T ≤ 100 °C)  |
| M   | with neck tube (for T >100 °C)   |
| <b>3. Ambient temperature</b>               |  |
| A   | standard range -20..+60 °C   |
| H   | higher ambient temperature -20..+80 °C<br>(only available in combination with protection type "i")   |
| <b>4. Length of neck tube HL</b>            |  |
| xxx   | length in mm (e.g. 050 = 50 mm)  |
| <b>5. Probe diameter D</b>                  |  |
| Dx  | Ø 3 mm, 4 mm, 5 mm, 6 mm, 8 mm<br>(e.g. 8 = 8 mm)<br><b>Note:</b><br>Ø 3 mm only for Pt100 / Pt1000 possible.<br>• the min. length is then 60 mm.<br>• the probe tip is Ø 3 mm (for first approx. 30 mm) and then Ø = 6 mm |
| <b>6. Fitting length EL</b>                 |  |
| xxxx  | length in mm (e.g. 0100 = 100 mm)  |
| <b>7. Cable length (4-wire)</b>             |  |
| x   | length in m (e.g. 1 = 1 m)   |
| <b>8. Type of protection</b>                |  |
| e   | increased safety due to potting of encapsulation   |
| i   | intrinsic safe   |
| <b>9. Potentially explosive atmospheres</b> |  |
| 01  | gaseous mixture, zone 1  |
| 02  | gaseous mixture, zone 2  |
| 21  | dust, zone 21  |
| 22  | dust, zone 22  |
| <b>10. Measuring range</b>                  |  |
| xxx   | desired measuring range (e.g. -50..+100 °C)  |

## Product Information

# Ex temperature probe GTF 102-Ex



|  |   |
|--|---|
| Length of neck tube                            | no neck tube (for $T \leq 100\text{ °C}$ )<br>with neck tube (for $T > 100\text{ °C}$ ) |
| Electrical connection                          | silicone cable, standard length 1m  |
| Mounting                                       | by process connection   |
| Suitable for potentially explosive atmospheres | zone 0/1, zone 1, zone 2, zone 20/21<br>zone 21, zone 22                                |

## Dimensions

|                |   |
|----------------|---|
| Head / capsule | $\varnothing = \text{approx. } 15\text{ mm}$ , $L = \text{approx. } 53\text{ mm}$ |
|----------------|---|

- For use in potentially explosive gaseous or dust mixtures
- Potential-free temperature probe made of stainless steel
- Assembled according to customer preferences

## Characteristics

The screw-in temperature probe GTF 102-Ex is a mounting probe for usage in potentially explosive atmospheres. The modular build up ensures greatest flexibility and the possibility to fit it to the existing conditions. Therefore parameters like length, diameter, cable or type of protection ("i" or "e") can be adjusted.

There are 2 different sensor types available for the measuring unit of GTF 102-Ex: resistance thermometer Pt100, Pt1000 or thermocouple type K, type N (standard). Only sheathed resistance thermometer or sheathed thermocouple are used.

The probes can be customized according to customer requirements.

## Technical data

Sensor element : Pt100, PT1000 (sheathed element),  
4-wire;  
type K (NiCr-Ni) or type N (NiCrSi-NiSi)  
sheathed thermocouple

### Measuring range

Pt100 / Pt1000 :  $-200..+100\text{ °C}$  ( $600\text{ °C}$  with neck tube)  
Type K / type N :  $-200..+100\text{ °C}$  ( $900\text{ °C}$  with neck tube)

### Accuracy

Pt100 / Pt1000 : DIN class B

Type K / type N : class 1

Type of protection : "i" intrinsic safe

"e" increased safety

Ambient temperature :  $-20..+60\text{ °C}$  (protection type "e")

$-20..+80\text{ °C}$  (protection type "i")

continued on next page

|                    |                              |
|--------------------|------------------------------|
| Process connection | cylindrical or metric thread |
|--------------------|------------------------------|



## Ordering code

GTF102-Ex  1. -  2. -  3. -  4. -  5. -  6. -  7. -  8. -  9. -  10. -  11. -  12.

|  |  |
|--|--|
| <b>1. Sensor element</b>                     |  |
| P  | Pt100  |
| S  | Pt1000   |
| T  | thermocouple type K  |
| U  | thermocouple type N  |
| <b>2. Neck tube</b>                          |  |
| K  | no neck tube (for T ≤ 100 °C)  |
| M  | with neck tube (fr T >100 °C)  |
| <b>3. Ambient temperature</b>                |  |
| A  | standard range -20..+60 °C   |
| H  | higher ambient temperature -20..+80 °C<br>(only available in combination with protection type "I")   |
| <b>4. Type of process connection</b>         |  |
| 1  | G-thread (cylindrical thread)  |
| 2  | M-thread (metric thread)   |
| <b>5. Size of process connection</b>         |  |
| 1  | 1/8" (for G-thread) <i>not possible for zone 0/1 and zone 20/21</i>  |
| 2  | 1/4" (for G-thread) <i>not possible for zone 0/1 and zone 20/21</i>  |
| 3  | 3/8" (for G-thread)  |
| 4  | 1/2" (for G-thread)  |
| 5  | 3/4" (for G-thread)  |
| 6  | 8x1 (for M-thread) <i>not possible for zone 0/1 and zone 20/21</i>   |
| 7  | 10x1 (for M-thread) <i>not possible for zone 0/1 and zone 20/21</i>  |
| 8  | 14x1 (for M-thread) <i>not possible for zone 0/1 and zone 20/21</i>  |
| <b>6. Length of neck tube HL</b>             |  |
| xxx  | length in mm (e.g. 050 = 50 mm)  |
| <b>7. Probe diameter Ø</b>                   |  |
| x  | 3 mm, 4 mm, 5 mm, 6 mm, 8 mm<br>(e.g. 8 = 8 mm)<br><b>Note:</b><br>• Ø 3 mm only for Pt100 / Pt1000 possible<br>• the min. length is then 60 mm<br>• the probe tip is Ø 3 mm (for first approx. 30 mm) and then Ø = 6 mm<br>• for zone 0/1, 20/21 only Ø 6/8 mm possible |
| <b>8. Fitting length EL</b>                  |  |
| xxxx   | length in mm (e.g. 0100 = 100 mm)  |
| <b>9. Cable length (4-wire)</b>              |  |
| x  | length in m (e.g. 1 = 1 m)   |
| <b>10. Type of protection</b>                |  |
| e  | increased safety due to potting of encapsulation<br>(only permissible for zone 1 and 2 or zone 21 and 22)  |
| i  | intrinsic safe   |
| <b>11. Potentially explosive atmospheres</b> |  |
| 00   | gaseous mixture, zone 0/1<br>(sensor tube in zone 0 / cable sleeve in zone 1)  |
| 01   | gaseous mixture, zone 1  |
| 02   | gaseous mixture, zone 2  |
| 20   | dust, zone 20/21<br>(sensor tube in zone 20 / cable sleeve in zone 21)   |
| 21   | dust, zone 21  |
| 22   | dust, zone 22  |
| <b>12. Measuring range</b>                   |  |
| xxx  | desired measuring range (e.g. -50..+100 °C)  |

**Product Information**

**Ex temperature probe  
GTF 103-Ex**



- For use in potentially explosive gaseous or dust mixtures
- Potential-free temperature probe made of stainless steel
- Assembled according to customer preferences

**Characteristics**

The DIN-B-head temperature probe GTF 103-Ex is a mounting probe for usage in potentially explosive atmospheres. The modular build up ensures greatest flexibility and the possibility to fit it to the existing conditions. Therefore parameters like length, diameter, cable or type of protection ("i" or "e") can be adjusted.

There are 2 different sensor types available for the measuring unit of GTF 103-Ex: resistance thermometer Pt100, Pt1000 or thermocouple type K, type N (standard). Only sheathed resistance thermometer or sheathed thermocouple are used.

The probe has a DIN-B-head with clamp socket allowing the comfortable connection of your own connection cable. The probes can be customized according to customer requirements. The measuring units of the GTF 103-Ex series (with the exception of D = 3 mm) are exchangeable. The GTF 103-Ex is also available with integrated transmitter.

**Technical data**

Sensor element : Pt100, PT1000 (sheathed element), 4-wire; type K (NiCr-Ni) or type N (NiCrSi-NiSi) sheathed thermocouple

**Measuring range**

Pt100 / Pt1000 : -200..+100 °C (600 °C with neck tube)  
Type K / type N : -200..+100 °C (900 °C with neck tube)

**Accuracy**

Pt100 / Pt1000 : DIN class B  
Type K / type N : class 1

Type of protection : "i" intrinsic safe  
"e" increased safety  
Ambient temperature : -20..+60 °C (protection type "e")  
-20..+80 °C (protection type "i")

|  |  |
|--|--|
| Process connection                             | cylindrical or metric thread or without thread                           |
| Length of neck tube                            | no neck tube (for T ≤ 100 °C)<br>with neck tube (for T >100 °C)          |
| Electrical connection                          | cable entry via pressure screw   |
| Mounting                                       | by process connection or by separate clamping ring screw connection      |
| Suitable for potentially explosive atmospheres | zone 0, zone 0/1, zone 1, zone 2,<br>zone 20 zone 20/21 zone 21, zone 22 |

**Options**

The GTF 103-Ex is optionally available with GITT 01-Ex, output signal 4..20 mA, custom-made measuring range. Useable only in protection type "i".

**Dimensions**

|                |  |
|----------------|--|
| Head / capsule | Ø = approx. 63 mm, L = approx. 117 mm, H = approx. 78 mm |
|----------------|--|

continued on next page

## Sensors

### Ordering code

GTF103-Ex -  -  -  -  -  -  -   
                   8.      9.      10.     11.     12.     13.  
                   -  -  -  -  -

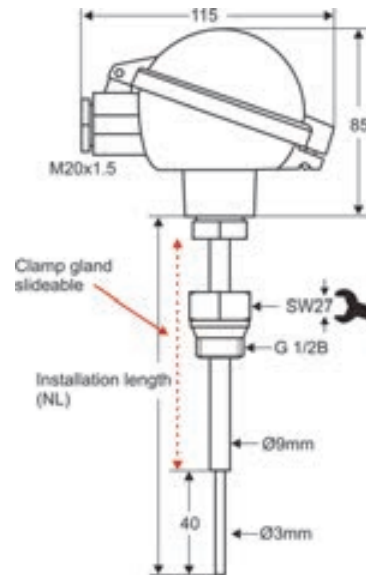
|                                      |  |  |
|--------------------------------------|--|--|
| <b>1. Standard signal</b>            |  |  |
| O                                    | without output signal  |  |
| G                                    | with output signal 4..20 mA (GITT 01-Ex)   |  |
| <b>2. Sensor element</b>             |  |  |
| P                                    | Pt100  |  |
| S                                    | Pt1000   |  |
| T                                    | thermocouple type K  |  |
| U                                    | thermocouple type N  |  |
| <b>3. Process connection</b>         |  |  |
| J                                    | with process connection  |  |
| N                                    | without process connection<br>(only for zone 1, 2, 21, 22)   |  |
| <b>4. Neck tube</b>                  |  |  |
| K                                    | no neck tube (for T ≤ 100 °C)  |  |
| M                                    | with neck tube (for T >100 °C)   |  |
| <b>5. Ambient temperature</b>        |  |  |
| A                                    | standard range   |  |
|                                      | zone 0, 20   | -20..+40 °C                                    |
|                                      | zone 0/1, 1, 2, 21, 22   | -20..+50 °C (with output signal)               |
| H                                    | higher ambient temperature   |  |
|                                      | zone 0, 20   | -20..+60 °C                                    |
|                                      | zone 0/1, 1, 2, 21, 22   | -20..+60 °C (without output)                   |
| zone 0/1, 1, 2, 21, 22               | -20..+80 °C (only in combination with protection type "i", only possible for types without output signal)  |  |
| <b>6. Type of process connection</b> |  |  |
| 0                                    | without thread   |  |
| 1                                    | G-thread (cylindrical thread)  |  |
| 2                                    | M-thread (metric thread)   |  |
| <b>7. Size of process connection</b> |  |  |
| 0                                    | kein Gewinde   |  |
| 1                                    | 1/8 (for G-thread)   | <i>not possible for zone 0, 0/1, 20, 20/21</i> |
| 2                                    | 1/4 (for G-thread)   |  |
| 3                                    | 3/8 (for G-thread)   |  |
| 4                                    | 1/2 (for G-thread)   |  |
| 5                                    | 3/4 (for G-thread)   |  |
| 6                                    | 8x1 (for M-thread)   |  |
| 7                                    | 10x1 (for M-thread)  | <i>not possible for zone 0, 0/1, 20, 20/21</i> |
| 8                                    | 14x1 (for M-thread)  |  |
| <b>8. Length of neck tube HL</b>     |  |  |
| xxx                                  | length in mm (e.g. 050 = 50 mm)  |  |
| <b>9. Probe diameter Ø</b>           |  |  |
| x                                    | 3 mm, 4 mm, 5 mm, 6 mm, 8 mm<br>(e.g. 8 = 8 mm)<br><b>Note:</b><br><ul style="list-style-type: none"> <li>• Ø 3 mm only for Pt100 / Pt1000 possible <ul style="list-style-type: none"> <li>• the min. length is then 60 mm</li> <li>• the probe tip is Ø 3 mm (for first approx. 30 mm) and then Ø = 6 mm</li> </ul> </li> <li>• for zone 0, 0/1, 20/21 only Ø 6/8mm possible</li> </ul> |  |

|  |   |
|--|---|
| <b>10. Fitting length EL</b>                 |   |
| xxxx   | length in mm (e.g. 0100 = 100 mm)   |
| <b>11. Type of protection</b>                |   |
| e  | increased safety due to potting of encapsulation<br>(only permissible for zone 1 and 2 or zone 21 and 22) |
| i  | intrinsic safe  |
| <b>12. Potentially explosive atmospheres</b> |   |
| 00   | gaseous mixture, Zone 0   |
| 0A   | gaseous mixture, Zone 0/1<br>(sensor tube in zone 0 / head in zone 1)                                     |
| 01   | gaseous mixture, Zone 1   |
| 02   | gaseous mixture, Zone 2   |
| 20   | dust, Zone 20   |
| 2A   | dust, Zone 20/21<br>(sensor tube in zone 20 / head in zone 21)  |
| 21   | dust, Zone 21   |
| 22   | dust, Zone 22   |
| <b>13. Measuring range</b>                   |   |
| xxx  | desired measuring range (e.g. -50..+100 °C)   |

# Safety Thermocouple Sensor TC293



## Dimensions



## Characteristics

- Fast response sensor for measurement in exhaust gas and air
- Certified as Sensor for Safety Temperature Limiters **STL50** for gaseous media acc. to SIL 2 (DIN EN 61508) and DIN EN 14597 (substitute DIN 3440)
- Ex certified to ATEX Ex-i GD for gases and dust
- Sensor with 2 x thermocouples J, K or N, isolated
- Max. operating temperature depends to the thermocouple
- Process pressure 25 bar
- Protection tube D = 9/3 mm, Inconel 600 W-No. 2.4816
- Process connection clamp gland G 1/2 B
- Terminal head BSZ (Aluminum) IP65 with snap-lid

## Temperature equalization

The 63.2 % step-response time of temperature variation at the probe tip will be:

|               |               |
|---------------|---------------|
| <b>Medium</b> | <b>T63.2%</b> |
| Exhaust       | typical 20 s  |
| Air           | typical 22 s  |

## Ordering code

1. 2. 3. 4. 5. 6. 7. 8.  
 -  -  -    -  -

|                                      |  |
|--------------------------------------|--|
| <b>1. Type</b>                       | TC293  |
| <b>2. Variation</b>                  | 00 Standard<br>Ex Ex certified acc. to ATEX Ex-i GD  |
| <b>3. Double-thermocouple</b>        | 2J type J (Fe-CuNi)<br>operating temperature -100..+600 °C<br>cable color black(+), white(-)<br>2K type K (NiCr-Ni)<br>operating temperature -100..+900 °C<br>cable color green(+), white(-)<br>2N type N (NiCrSi-NiSi)<br>operating temperature -100..+1000 °C<br>cable color pink(+), white(-) |
| <b>4. Protection tube diameter</b>   | 9/3 9mm to 3mm reduced   |
| <b>5. Installation length NL</b>     | 100 100 mm<br>160 160 mm<br>250 250 mm<br>400 400 mm<br>600 600 mm<br>XX custom length   |
| <b>6. Process connection</b>         | KV 1/2 B clamping sleeve slide-able 1/2 "  |
| <b>7. Terminal head</b>              | BSZ with snap-lid (Aluminum)   |
| <b>8. Max. operating temperature</b> | see thermocouple type  |

(Custom variation on request)

Produktinformation

# Safety RTD Sensor TR293



## Characteristics

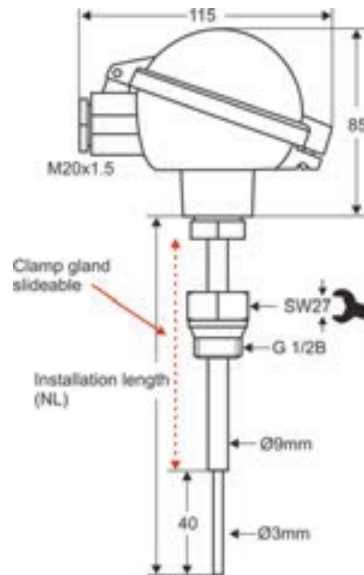
- Fast response sensor for measurement in exhaust gas and air
- Certified as Sensor for Safety Temperature Limiters STL50 for gaseous media acc. to SIL 2 (DIN EN 61508) and DIN EN 14597 (substitute DIN 3440)
- Ex certified to ATEX Ex-i GD for gases and dust
- Sensor with 2 x Pt100 class A, 3-wire
- Max. operating temperature -100..+600 °C
- Process pressure 25 bar
- Protection tube D = 9/3 mm, stainless steel 1.4571
- Process connection clamp gland G 1/2 B
- Terminal head BSZ (Aluminum) IP65 with snap-lid

## Temperature equalization

The 63.2 % step-response time of temperature variation at the probe tip will be:

|               |               |
|---------------|---------------|
| <b>Medium</b> | <b>T63.2%</b> |
| Exhaust       | typical 20 s  |
| Air           | typical 22 s  |

## Dimensions



## Ordering code

1. 2. 3. 4. 5. 6. 7. 8.  
 -  -  -    -  -

|                                      |  |
|--------------------------------------|--|
| <b>1. Type</b>                       | TR293  |
| <b>2. Variation</b>                  | 00 standard<br>Ex Ex certified acc. to ATEX Ex-i GD                                    |
| <b>3. Measuring elements</b>         | 2 2 elements Pt100 class A, 3-wire   |
| <b>4. Protection tube diameter</b>   | 9/3 9mm to 3mm reduced   |
| <b>5. Installation length NL</b>     | 100 100 mm<br>160 160 mm<br>250 250 mm<br>400 400 mm<br>600 600 mm<br>XX custom length |
| <b>6. Process connection</b>         | KV 1/2 B clamp gland, slide-able 1/2 "   |
| <b>7. Terminal head</b>              | BSZ with snap-lid (Aluminum)   |
| <b>8. Max. operating temperature</b> | 600°C  |

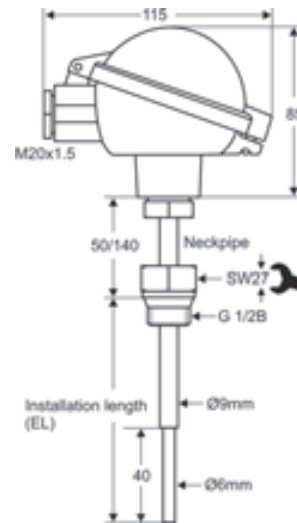
(Custom variation on request)

Produktinformation

# Safety Thermocouple Sensor TC296



## Dimensions



## Characteristics

- Fast response sensor for measurement in water, oil and air
- **Certified as Sensor for Safety Temperature Limiters STL50** (exhaust gas excluded), acc. to DIN EN 14597 (substitute DIN 3440)
- Ex certified to ATEX Ex-i GD for gases and dust
- Sensor with 2 x thermocouples J, K or N, isolated and replaceable
- Max. operating temperature depends to the thermocouple
- Process pressure 40 bar
- Protection tube D = 9/6mm, Inconel 600 W-No. 2.4816
- Process connection G 1/2 B
- Terminal head BSZ (Aluminum) IP65 with snap-lid

## Temperature equalization

The 63.2 % step-response time of temperature variation at the probe tip will be:

| Medium | T63.2%       |
|--------|--------------|
| Water  | typical 20 s |
| Oil    | typical 30 s |
| Air    | typical 85 s |

## Ordering code

1. 2. 3. 4. 5. 6. 7. 8. 9.  
 -  -  -

|                                      |  |
|--------------------------------------|--|
| <b>1. Type</b>                       | TC296  |
| <b>2. Variation</b>                  | 00 Standard<br>Ex Ex certified acc. to ATEX Ex-i GD  |
| <b>3. Double-thermocouple</b>        | 2J type J (Fe-CuNi)<br>operating temperature -100..+600 °C<br>cable color black(+), white(-)<br>2K type K (NiCr-Ni)<br>operating temperature -100..+900 °C<br>cable color green(+), white(-)<br>2N type N (NiCrSi-NiSi)<br>operating temperature -100..+1000 °C<br>cable color pink(+), white(-) |
| <b>4. Protection tube diameter</b>   | 9/6 9mm to 6mm reduced   |
| <b>5. Neck pipe length</b>           | 50 50 mm<br>140 140 mm<br>XX custom neck pipe  |
| <b>6. Installation length NL</b>     | 100 100 mm<br>160 160 mm<br>250 250 mm<br>400 400 mm<br>600 600 mm<br>XX custom length   |
| <b>7. Process connection</b>         | G 1/2 B  |
| <b>8. Terminal head</b>              | BSZ with snap-lid (Aluminum)   |
| <b>9. Max. operating temperature</b> | see Thermocouple   |

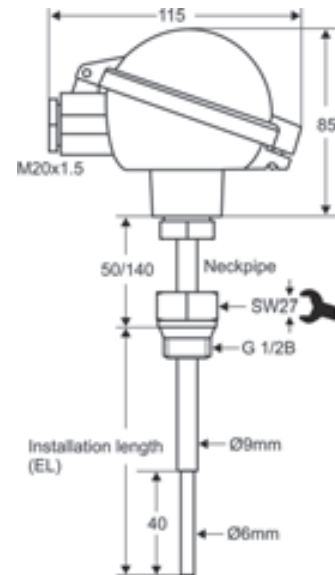
(Custom variation on request)

Produktinformation

# Safety RTD Sensor TR296



## Dimensions



## Characteristics

- Fast response sensor for measurement in exhaust gas and air
- Certified as Sensor for Safety Temperature Limiters STL50 for gaseous media acc. to SIL 2 (DIN EN 61508) and DIN EN 14597 (substitute DIN 3440)
- Ex certified to ATEX Ex-i GD for gases and dust
- Sensor with 2 x Pt100 class A, 3-wire
- Max. operating temperature -100..+600 °C
- Process pressure 40 bar
- Protection tube D = 9/6mm, stainless steel 1.4571
- Process connection G ½ B
- Terminal head BSZ (Aluminum) IP65 with snap-lid

## Temperature equalization

The 63.2 % step-response time of temperature variation at the probe tip will be:

|               |               |
|---------------|---------------|
| <b>Medium</b> | <b>T63.2%</b> |
| Water         | typical 20 s  |
| Oil           | typical 30 s  |
| Air           | typical 85 s  |

## Ordering code

1.  2.  3.  4.  5.  6.  7.  8.  9.

|                                      |  |
|--------------------------------------|--|
| <b>1. Type</b>                       | TR296  |
| <b>2. Variation</b>                  | 00 standard<br>Ex Ex certified acc. to ATEX Ex-i GD                                    |
| <b>3. Measuring elements</b>         | 2 2 elements Pt100 class A, 3-wire   |
| <b>4. Protection tube diameter</b>   | 9/6 9mm to 6mm reduced   |
| <b>5. Neck pipe length</b>           | 50 50 mm<br>140 140 mm<br>XX custom neck pipe  |
| <b>6. Installation length NL</b>     | 100 100 mm<br>160 160 mm<br>250 250 mm<br>400 400 mm<br>600 600 mm<br>XX custom length |
| <b>7. Process connection</b>         | G ½ B  |
| <b>8. Terminal head</b>              | BSZ with snap-lid (Aluminum)   |
| <b>9. Max. operating temperature</b> | 600°C  |

(Custom variation on request)

# Ambient Temperature Sensor 7134 / 7135



## Characteristics 7134

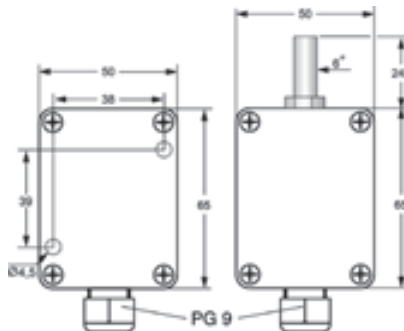
- RTD Pt100
- Operating temperature -50 °C..+90 °C
- Measuring element inside- or outside
- Plastic case Polycarbonate, white
- Protection class IP65
- Screw terminals

## Characteristics 7135

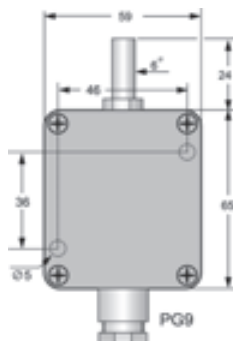
- RTD Pt100
- Operating temperature -40 °C..+120 °C
- Measuring element outside
- Aluminum case RAL7001, Lid with Silicon sealing
- Protection class IP65
- Screw terminals

## Dimensions

7134-x-x-x



7135-x-x-x



## Ordering code

1. 2. 3. 4.  
□ - □ - □ - □

|                              |                    |
|------------------------------|--------------------|
| <b>1. Type</b>               |                    |
| 7134                         | case Polycarbonate |
| 7135                         | case Aluminum      |
| <b>2. Number of elements</b> |                    |
| 1                            |                    |
| <b>3. Measuring element</b>  |                    |
| 0                            | inside             |
| 1                            | outside            |
| <b>4. Accuracy</b>           |                    |
| A                            | class A            |
| B                            | class B            |

(other versions on request)

## Stock

7134-1-0-B  
7134-1-0-A  
7134-1-1-B  
7134-1-1-A



**Product Information**

**Sensors**

**Temperature Probe  
(Surface-Mounted Type)  
GTMU-OMU**



- Optimal adaptability due to 4 different design types
- Ready for assembly

**Characteristics**

The GTMU-OMU is a temperature probe with integrated transmitter. There are 4 basic design types and 3 sensor types. This ensures optimal adaptability to different conditions like higher temperatures, outdoor usage or wall mounting.

The measurement is done by means of a resistive temperature sensor (Pt100 / Pt1000, 2-, 3- or 4- wire) or thermocouple (NiCr-Ni).

The transmitter is completely customized according to customer requirements.

**Technical data**

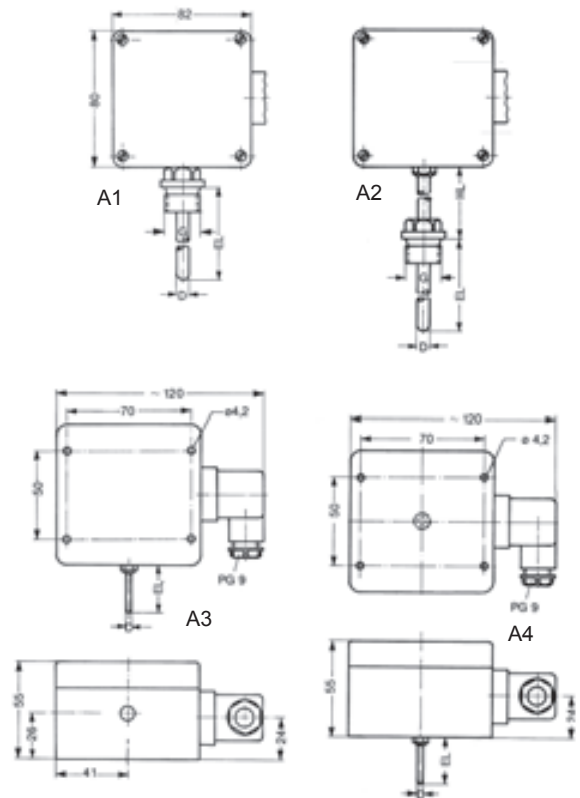
- Sensor element : Pt100 (2-, 3- or 4- wire)  
Pt1000 (2-, 3- or 4- wire)  
NiCr-Ni
- Standard measuring ranges**  
Pt100 / Pt1000 : 0..100 °C, 0..200 °C, -50..+50 °C,  
-50..+150 °C  
NiCr-Ni : 0..100 °C, -50..+150 °C, -200..+300 °C,  
0..600 °C, 0..1150 °C  
other measuring ranges upon request
- Max. possible measuring range**  
Pt100 / Pt1000 : -200..+800 °C  
NiCr-Ni : -40..+1150 °C
- Accuracy**  
Pt100 / Pt1000 : DIN class B  
NiCr-Ni : class 1
- Working temperature : 0..70 °C (housing and elbow-type plug)  
Housing material : ABS  
Probe material : stainless steel  
Sensor installation : sensors are isolated  
Mounting : with fastening holes for wall mounting  
Electrical connection : elbow-type plug (EN 175301-803/A)  
Protection class : IP65

|                                      | A1          | A2          | A3         | A4          |
|--------------------------------------|-------------|-------------|------------|-------------|
| <b>Process connection (standard)</b> | G ½         |             | —          | —           |
| <b>Fitting length (standard)</b>     | EL = 100 mm | EL = 100 mm | EL = 50 mm | EL = 100 mm |
| <b>Neck tube length (standard)</b>   | —           | HL = 50 mm  | —          | —           |
| <b>Diameter (standard)</b>           | D = 6 mm    | D = 6 mm    | D = 3 mm   | D = 6 mm    |

**Design types**

|           |   |
|-----------|---|
| <b>A1</b> | with process connection G ½ for screw-in  |
| <b>A2</b> | for higher temperatures, process connection G ½ in distance to housing, HL = length of neck tube              |
| <b>A3</b> | indoor / outdoor probe for wall mounting<br><i>(potting of electronics necessary for outdoor application)</i> |
| <b>A4</b> | duct probe with centrally mounted sensor tube pointing downwards  |

**Dimensions**



continued on next page

### Ordering code

GTMU-OMU -  1. -  2. -  3. -  4. -  5. -  6. -  7.

|  |   |                        |
|--|---|------------------------|
| <b>1. Design type</b>  |   |                        |
| A1   | as per description  |                        |
| A2   | as per description  |                        |
| A3   | as per description  |                        |
| A4   | as per description  |                        |
| <b>2. Sensor element</b>                                       |   |                        |
| P  | resistance thermometer Pt100  |                        |
| T  | resistance thermometer Pt1000   |                        |
| K  | thermocouple NiCr-Ni  |                        |
| <b>3. Measuring range (MB)</b>                                 |   |                        |
| MB1  | 0..100 °C   | P / T / K              |
| MB2  | -50..+150 °C  | P / T / K              |
| MB3  | 0..200 °C   | only P / T             |
| MB4  | -50..+50 °C   | only P / T             |
| MB5  | -200..+300 °C   | only K                 |
| MB6  | 0..600 °C   | only K                 |
| MB7  | 0..1150 °C  | only K                 |
| MBx  | desired measuring range (e.g. -50..+400 °C)<br>max. possible measuring range:<br>Pt100: -200..+800 °C / NiCr-Ni: -200..+1150 °C |                        |
| <b>4. Fitting length EL</b>                                    |   |                        |
| 050  | 50 mm (standard A3)   |                        |
| 100  | 100 mm (standard A1, A2, A3)  |                        |
| xxx  | any EL in mm (e.g.: 200 = 200 mm)   |                        |
| <b>5. Probe diameter D</b>                                     |   |                        |
| 3  | Ø 3 mm (standard A3)  |                        |
| 4  | Ø 4 mm  |                        |
| 5  | Ø 5 mm  |                        |
| 6  | Ø 6 mm (standard A1, A2, A4)  |                        |
| 8  | Ø 8 mm  |                        |
| <b>6. Process connection G (only at design type A1 and A2)</b> |   |                        |
| G1   | G ½, V4A (Standard)   |                        |
| G2   | G ¼, V4A  |                        |
| G3   | G ¾, V4A  |                        |
| G5   | G ⅝, V4A  |                        |
| M5   | M5, V4A   | only D = 3 mm possible |
| M6   | M6, V4A   | only D = 3 mm possible |
| M8   | M8, V4A   | max D = 5 mm possible  |
| M0   | M10, V4A  | max D = 6 mm possible  |
| M2   | M12, V4A  |                        |
| <b>7. Length of neck tube HL (only at design type A2)</b>      |   |                        |
| 050  | 50 mm (standard)  |                        |
| xxx  | any HL in mm (e.g.: 100 = 100 mm)   |                        |

|                             |                            |                                 |                                |                           |
|-----------------------------|----------------------------|---------------------------------|--------------------------------|---------------------------|
| Архангельск (8182)63-90-72  | Иваново (4932)77-34-06     | Липецк (4742)52-20-81           | Пенза (8412)22-31-16           | Ставрополь (8652)20-65-13 |
| Астана (7172)727-132        | Ижевск (3412)26-03-58      | Магнитогорск (3519)55-03-13     | Пермь (342)205-81-47           | Сурут (3462)77-98-35      |
| Астрахань (8512)99-46-04    | Иркутск (395)279-98-46     | Москва (495)268-04-70           | Ростов-на-Дону (863)308-18-15  | Тверь (4822)63-31-35      |
| Барнаул (3852)73-04-60      | Казань (843)206-01-48      | Мурманск (8152)59-64-93         | Рязань (4912)46-61-64          | Томск (3822)98-41-53      |
| Белгород (4722)40-23-64     | Калининград (4012)72-03-81 | Набережные Челны (8552)20-53-41 | Самара (846)206-03-16          | Тула (4872)74-02-29       |
| Брянск (4832)59-03-52       | Калуга (4842)92-23-67      | Нижний Новгород (831)429-08-12  | Санкт-Петербург (812)309-46-40 | Тюмень (3452)66-21-18     |
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| Волгоград (844)278-03-48    | Киров (8332)68-02-04       | Новосибирск (383)227-86-73      | Севастополь (8692)22-31-93     | Уфа (347)229-48-12        |
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| Екатеринбург (343)384-55-89 | Курск (4712)77-13-04       | Оренбург (3532)37-68-04         | Сочи (862)225-72-31            | Череповец (8202)49-02-64  |
|                             |                            |                                 |                                | Ярославль (4852)69-52-93  |

Киргизия (996)312-96-26-47    Казахстан (772)734-952-31    Таджикистан (992)427-82-92-69