

### Application

- For technical temperature measurements in combustion processes and hot-gas environments, primarily in all types of furnaces up to 1200°C (shortly 1300°C)
- The sensor is special developed for use in
  - Refuse and hazardous waste incinerations plants.
 The combination of high temperature, corrosive gasses and particles demands special features in relation to life-time for the sensor and minimize process down-time

### Technical features

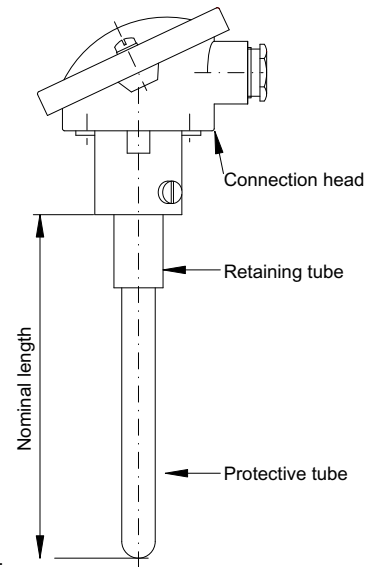
- Thermocouple type N and K acc to IEC584-1
- Interchangeable measuring insert, mineral insulated with high heat and corrosive resistance sheath
- Connected to the process by adjustable flange, gas-tight flange or compression fitting
- Gas-tight ceramic protective tube in KER 610 or KER 710
- Modular design and standard length minimize the necessary numbers of spares
- Optionally, can be supplied with head mounted transmitter

### Ordering

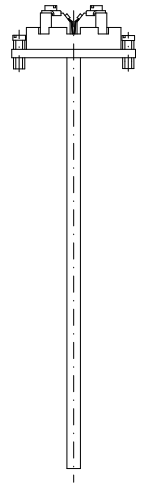
The requested sensor is selected from the table below  
The colour code means:

- Standard:** Built of standard modules (short delivery time)
- Variants:** Modified standard modules
- Special:** Special versions and material. We are specialist in temperature measurement. Please contact us and we will to our best do solve your specific measuring task.

### Complete assembly



### Measuring insert



### Ordering information

Specifications number	1106-	Sensor										4mA:	°C	20mA:	°C 4)
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#### Protective tube, ceramic

- KER 610. Al<sub>2</sub>O<sub>3</sub>>60% max. 1400°C  
KER 710. Al<sub>2</sub>O<sub>3</sub>>99.7% max. 1700°C  
15mm OD. 2mm wall. KER 610 .....  0  
15mm OD. 2.5mm wall. KER 710 .....  1  
Special: .....  s

#### Transmitter, 2-wire, 4-20mA output

- 0 None  
 1 FPTU galvanic isolated. As terminal block  
 2 FPTU galvanic isolated. EEXiallCT4/6. As terminal block  
 a FPTT galvanic isolated. As terminal block  
 b FPTT galvanic isolated. EEXiallCT4/6. As terminal block  
 9 None. Without terminal block. Long flying leads for transmitter  
 s Special:

#### Nominal length (mm)

500	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 5	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0
710	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 7	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 1	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0
1000	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 1	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0
1400	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 1	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 4	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0
2000	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 2	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0
Interim lengths (Min. 250, max. 2000)	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> x	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> x	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> x	<span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> x

#### Tolerance acc. to IEC 584-2

- 0 Class 2, for K and N, i.e. ± 2.5°C or 0.0075 x t<sub>actual</sub> (°C) 3)  
 1 Class 1, for K and N, i.e. ± 1.5°C or 0.0040 x t<sub>actual</sub> (°C) 3)  
Note 3: The highest value apply

#### Retaining tube

- |                           |  |                              |  |
|---------------------------|--|------------------------------|--|
| 22 OD. L=150 mm steel 35  | <span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0  | 22 OD. L=150mm steel 1.4762  | <span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 3  |
| 22 OD. L=500 mm steel 35  | <span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 1  | 22 OD. L=500mm steel 1.4762  | <span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 4  |
| 22 OD. L=1000 mm steel 35 | <span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 2  | 22 OD. L=1000mm steel 1.4762 | <span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 5  |
| 22 OD. L=xxxx mm steel 35 | <span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 9a | 22 OD. L=xxxxmm steel 1.4762 | <span style="background-color: #FFFF99; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 9h |
| Special: .....            | <span style="background-color: #FF0000; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> s  | Special: .....               | <span style="background-color: #FF0000; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> s  |
- Note 1: Heat resistance steel

#### Number of thermocouples

- 0 ..... 1  
 s ..... Special

#### Process connection (see page 2)

- None .....  0  
Fig. 1 Adjustable flange .....  1  
Fig. 1+2 Adjustable flange (for metallic tube)+counter fla. (ceramic tube) .....  2  
Fig. 3 1" BSP Compression fitting for 22mm OD retaining tube .....  3  
Special: .....  s

#### Measuring insert

Thermocouple	Type	Diameter	Sheath material	Max. temp. 2)
<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 0	Nicrosil-Nisil	N	6.0mm	Nicrobell C 1200°C
<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> 1	NiCr-Ni	K	6.0mm	W.no.1.4841 1000°C
<span style="background-color: #FF0000; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span> s	Special			

Note 2: The values apply for the thermocouple

#### Connection head

- A: Degree of protection IP 53 .....  0  
AHS: Degree of protection IP 53, high cap for transmitter .....  1  
Special: .....  s

### Accessories

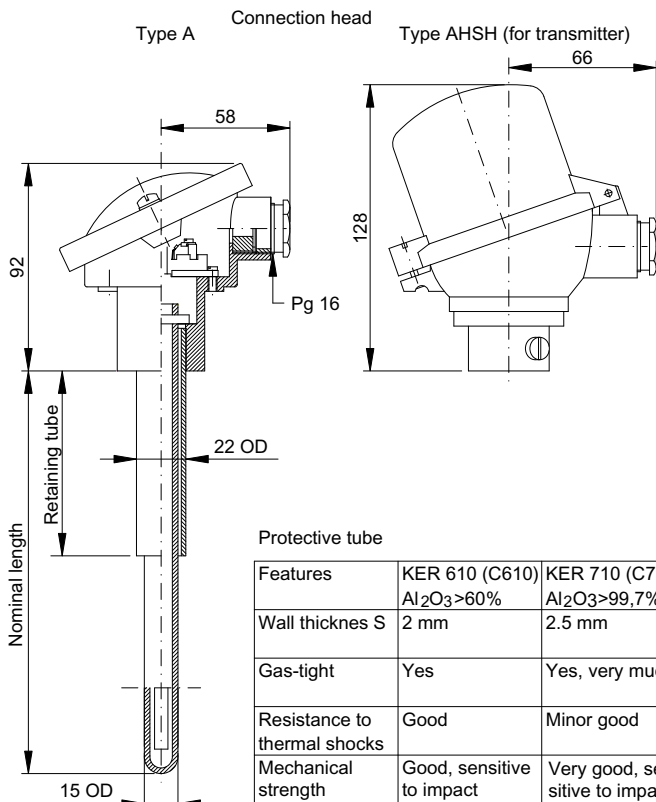
- Process connection: See data sheet 9113  
Transmitter: See data sheet 9168

### Customer information

- Name:  
Tel.:

**Dimensions**

Complete thermocouple assembly AKT

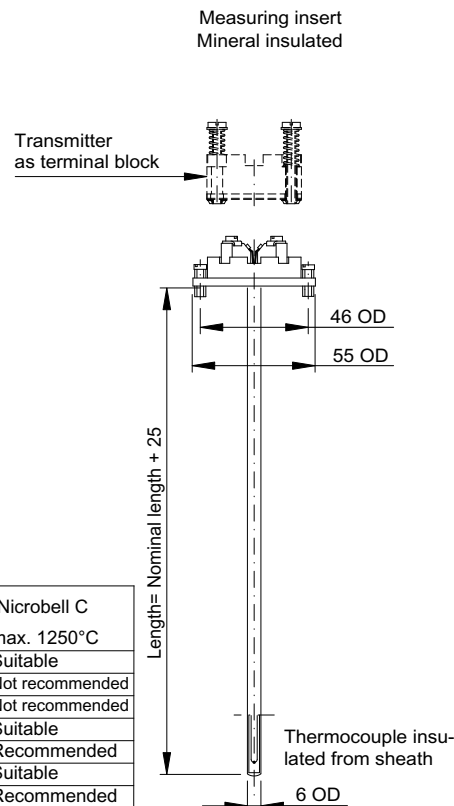


**Protective tube**

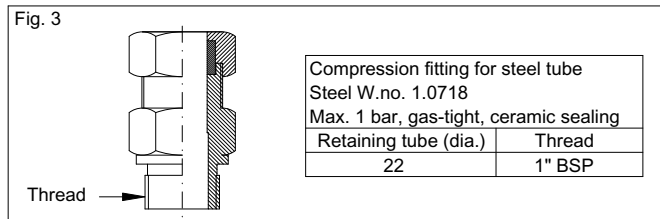
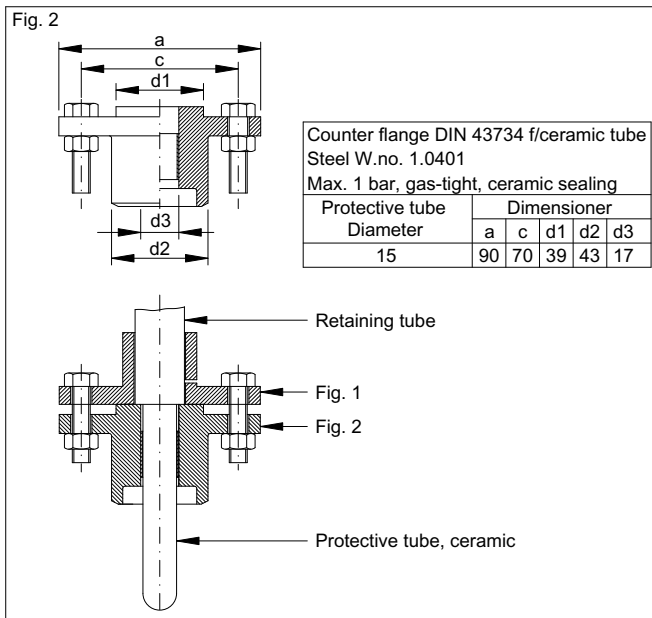
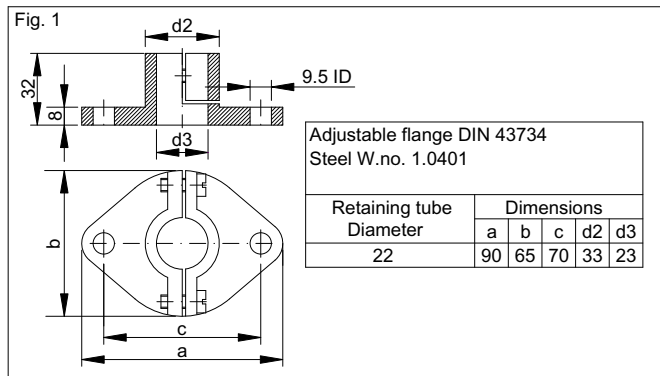
Features	KER 610 (C610) Al <sub>2</sub> O <sub>3</sub> >60%	KER 710 (C799) Al <sub>2</sub> O <sub>3</sub> >99,7%
Wall thickness S	2 mm	2.5 mm
Gas-tight	Yes	Yes, very much
Resistance to thermal shocks	Good	Minor good
Mechanical strength	Good, sensitive to impact	Very good, sensitive to impact

**Properties for MI sheath**

Application	Nicrobell C max. 1250°C
Liquids	Suitable
Acid	Not recommended
Sulphur atmospheres	Not recommended
Chlorine atmospheres	Suitable
Oxidizing atmospheres	Recommended
Reducing atmospheres	Suitable
Carburising atmospheres	Recommended



**Process connection**



**Response time**

Protective tube Diameter	Response times in seconds (guidelines)			
	In water @ 0.4m/sec.		In air @ 3m/sec.	
	t <sub>0.5</sub>	t <sub>0.9</sub>	t <sub>0.5</sub>	t <sub>0.9</sub>
15	-	-	250	700

**Note:**  
The 0.5/0.9 time is the time that it takes the sensor to reach 50%/90% of the final value of a temperature change of a medium. If media and velocity are different from the ones stated, the time can change significantly.

**Connection diagram**

