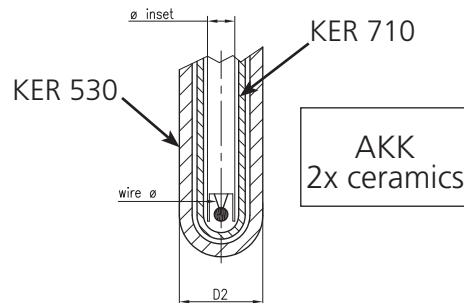
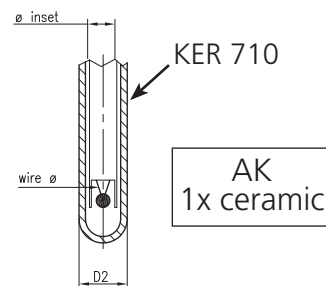
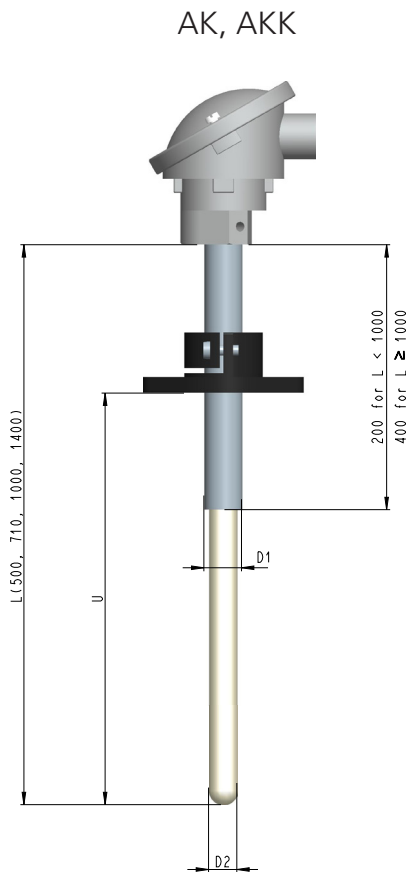


Thermocouples probes types R, S or B for temperatures up to maximal 1800°C, with precious metal sensors in ceramic insets, and with ceramic thermowells (AKK, AK) according to DIN EN 50446.

Type **S 41**



Applications

- Industrial ovens (heat treatment, incineration).
- Power engineering, reactors.
- Chimneys (combustion gases).
- Annealing and heat treatment process.
- Fusion baths for metal and glass.
- Special executions for explosive environments certified.



Description

These RÜEGER "Thermo-Sensor" probes are designed specially for measurement of temperatures up to + 1600°C but under low pressures only, for high pressure on request. They comprise a ceramic thermowell

(in contact with the medium) which houses a ceramic inset containing either one or two thermocouple sensor(s) in precious metal. Each probe also comprises a process connection (adjustable flange or welded flange) and a connection head.

The insets can be replaced without removing the thermowell (provided this is undamaged) and without any process interruption.

Two types of thermowell are available:

AK = thermowell consisting of one single ceramic tube and a metal process connection tube.

AKK = thermowell consisting of two ceramic tubes and a metal process connection tube

Special executions for explosive environments, executions meeting the requirements EN / IEC 60079-0: «electrical apparatus for potentially explosive atmospheres (general requirements)»

EN / IEC 60079-11: «intrinsic safety (i)».

Technical data

1. Limiting temperatures (°C) for thermocouples according to wire diameters:

The permissible temperatures given below are for exposure to gases. The operating temperature is generally the maximum temperature permitted for the thermowell.

Type of sensor	S	R	B
Temperature (°C)			
for 0.35 mm dia. wire	1300	1300	1500
for 0.5 mm dia. wire	1600	1600	1800

2. Precision classes:

TC according to IEC 60584-2
class 1

S: 0 ... + 1600 [°C] ±1°C or ±[1+0.003x(t-1100)]°C (1)

R: 0 ... + 1600 [°C] ±1°C or ±[1+0.003x(t-1100)]°C (1)

B: n/a

class 2

S: -40 ... + 1600 [°C] ±1,5°C or ± 0.0025•|t|°C (1)

R: -40 ... + 1600 [°C] ±1,5°C or ± 0.0025•|t|°C (1)

B: +600 ... + 1700 [°C] ±1,5°C or ± 0.0025•|t|°C (1)

class 3

S: n/a

R: n/a

B: +600 ... + 1700 [°C] ±4°C or 0.005•|t|°C (1)

Itl = absolute value of measuring range

ISA MC 96.1 on request.

(1) Highest of the two values applicable.

3. Identification of measurements circuits:

Colors for thermocouples IEC 60584-2:

Type of thermocouple is identified by color code.

Type	conductor "+"	conductor "-"
S	orange	white
R	orange	white
B	grey	white

on request according to ISA MC 96.1.

4. Maximum operating temperatures for thermowells:

Consult also DIN EN 50446.

Material of thermowell	Temperature of gas (°C)	Applications	Critical Conditions
KER 710 (C799)	1600	Fusion baths For glass	Temperature shocks medium
KER 530 (C530)	1600	Furnace Oven	Temperature shocks good

Materials for ceramic thermowells:

Ceramic KER 530 (C530) not gastight, fine-pored highly-resistant to changes in temperature, usable up to 1600°C, not attacked by gases. Used as outer thermowell in combination with gastight inner thermowell.

Ceramic KER 710 (C799) gastight, high-purity up to 1600°C, however only partially resistant to changes in temperature, not resistant to alkali vapours, other materials on request.

5. Connection head:

Form A or equivalent, according to DIN EN 50446.

For ambient temperatures: -40+85°C, -50 on request.

Degree of protection: IP 54.

Thermowell and process connection tube fixed by two screws.

Cable gland with PG 16 thread or M20 x 1.5, to be chosen according to the cable entry.

Terminal block: ceramic, with 2 or 4 screw terminals.

6. Mounting instruction:

Because these probes are used for high temperatures which may also cover a wide range, it is advisable to mount them vertically, or at an angle not exceeding 30° from the vertical.

The connection head should be located as far as possible from the hot medium.

7. Process connection tube:

The process connection metallic tube can be fitted either with an adjustable flange or a compression fitting, and gives extra protection for the ceramic thermowell.

The flange according to DIN EN 50446 cannot fulfil any sealing requirements. In the case that sealing is required, a compression fitting must be used, and the space between the process connection tube and the thermowell must be sealed with an appropriate material on request.

8. Nominal length "L":

500 mm

710 mm

1000 mm

1400 mm

9. Transmitters:

Because this type of probe is used for high temperatures, it is preferable to install transmitters outside the connection head. For the AUZH head however, which has a raised cover, a transmitter may be placed inside, provided that the temperature attained by the connection head does not exceed the 85°C mentioned in point 5 above. The advantage of transmitter is an increased reliability of the signal. No need of extension or compensating cable. The cold junction compensation is included in all universal transmitter.

10. Important:

The ceramic thermowells are sensitive to knocks, so should be handled with the greatest of care. For temperatures higher than 1200°C only precious metal thermocouples can be used. With such thermocouples there is a risk of poisoning with foreign substances. Therefore only gastight ceramics of high purity KER 710 (C799) should be used. Special executions for operating pressure higher than 1 bar could be made to avoid any leakage of the medium to the outside from the connection head on request.

**Modifications reserved,
All technical data serves as a guideline
and does not guarantee particular
properties to any products.**

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