Thermo-Sensor

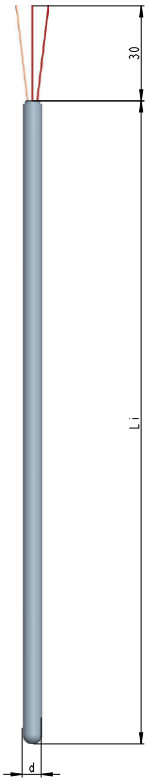
FT S 81-E-1.14

RÜEGER
www.rueger.com

RTD probes with mineral insulation, with or without extension cables, with wires terminations or connectors.

Type **S 81**

Inset



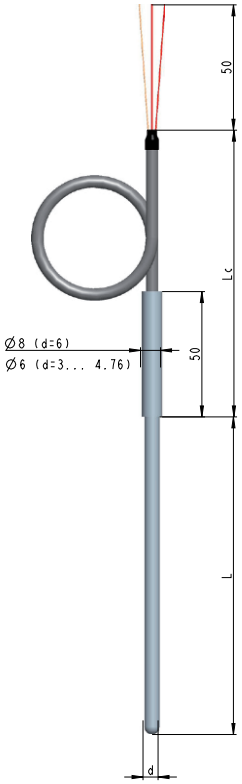
round Pin

compression fitting

connector

protection spring

Inset with extension cable



Applications

- Flexible small size probes for machines, chemical plants etc.
- For low-pressure, low-speed fluids and measurements requiring short response time.
- For a wide range of media: vapors, gases, liquids and non-abrasive substances, provided that these are compatible with the sheath material.
- May also be fixed on solid surfaces or inserted into cavities.
- Special executions for explosive environments certified.

Description

These RÜEGER "Thermo-Sensor" probes may be supplied with either one or two RTD sensors. The sensor(s) is (are) placed inside a flexible metal sheath. With or without extension cable, process connection on request.

If fitted, the extension cable (with or without protective spring and/or electromagnetic shielding) can be provided with PVC, silicone, teflon or fiberglass insulation. The soldering between the extension cable and the sheathed cable is enclosed in a sleeve.

Special executions for explosive environments, executions meeting the requirements of EN / IEC 60079-0: «electrical apparatus for potentially explosive atmospheres (general requirements)»
EN / IEC 60079-11: «intrinsic safety (i)»
EN 60079-7: «increased safety (e)».

Technical data

1. Operating conditions:
Permissible temperatures (°C) at measurement point

Sensors	ø 3 mm	ø 4.5 to 12.7 mm	Exi, Exe all dia.
Pt 100 *	- 200...+ 550	- 200...+ 600	- 200...+ 500
Pt 1000	- 40...+ 400	- 40...+ 600	-

** RTD -200+850°C, class B, as option*
Other sensors diameters on request

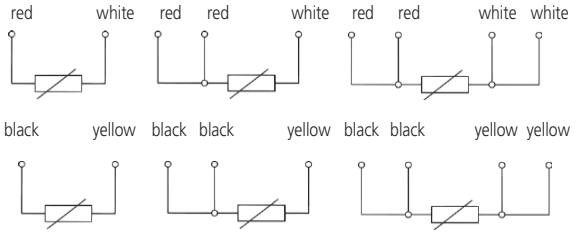
2. Precision classes:

RTD	according to IEC 60751
class A	+/- (0.15 + 0.002 ItI)
class B	+/- (0.3 + 0.005 ItI)
class AA	+/- (0.1 + 0.0017 ItI)

ItI = absolute value of measuring range

3. Mounting position:
Unrestricted. Usual mounting by means of a compression fitting.

4. Identification of measurement circuits:
RTD is identified by a color code, according to IEC 60751.



Remark: "yellow" and "black" are used for double element.

5. Resistance of insulation at +15 to +35°C:
For RTD ≥ 100 M Ω with U = 250 VDC

6. Inset sheath:
The RTD sensor within the probe is embedded in a compacted MgO powder of purity over 99% and protected by a metal sheath. This sheath is poreless, and can be bent to a limited radius (see below).
Important: avoid bending the metal sheath anywhere along the first 50 mm measured from the tip. Other executions on request.

Minimum bending radius (r) of the inset sheath
r = 5 x d (bending once only).

7. Immersion length:
This is the length of probe immersed in the medium, measured from the tip.
To minimize possible errors, the following minimum immersion lengths are recommended:
in liquids 40 mm + 4 x d
in gases/vapors 40 mm + 7 x d.

8. Response time:
The values given are for insets only. This is the time by which the reaction of the inset change in temperature;
t0,5 time to reach 50% of its total temperature value.
t0,9 time to reach 90% of its total temperature value.
The response times given below are indicative only.

Response time:

Sensor RTD	in water approx. 0.2 m/s		in air approx. 1 m/s	
	t0.5	t0.9	t0.5	t0.9
3 mm dia.	1.6 s	5.5 s	25 s	86 s
4.5 mm dia.	3 s	10 s	40 s	130 s
6 mm dia.	5 s	16 s	60 s	200 s

9. Wire termination:
Permissible temperatures at joint with extension cable
(all insulation materials except PVC)
-30 ...+130 °C

10. Permissible ambient temperatures for extension cable:

PVC	-20 ...+105 °C
Silicone	-60 ...+180 °C
PFA (teflon)	-75 ...+240 °C
Fiberglass	-60 ...+400 °C

11. Temperature probes for explosive environments:

Type of protection "intrinsic safety", for Exi execution: Ex ia IIC T6.
The temperature sensor is fitted with one or two measuring circuits. These are tested for dielectric strength by applying 500 VAC between the circuit(s) and ground and between the measuring circuits themselves. The sensor marking plate gives information on use of the probes in intrinsic safety measuring circuits. Equipment connected on the output side of probes shall be appropriately type-approved; its power and heat loss shall meet the requirements of EN/ IEC 60079-11. Execution will be Exi only with enclosure of minimum IP20.

Type of protection "increased safety", for Exe execution: Ex e IIC T6.
The temperature sensor is fitted with one or two measuring circuits. These are tested for dielectric strength by applying 500 VAC between the circuit(s) and ground and between the measuring circuits themselves. The system is designed according to EN 60079-7. Execution will be Exe only with enclosure of minimum IP54.

RÜEGER S.A. shall not be responsible for the consequences of any application not conforming to the regulations or recommendations concerning explosive environments.

RÜEGER

www.rueger.com

Manufacturer of Sensors and Gauges for Temperature & Pressure

RÜEGER SA
Ch. de Mongevon 9
P.O.Box 98
1023 CRISSIER 1
SWITZERLAND
Tel + 41 (0)21 637 32 32
Fax + 41 (0)21 637 32 00
E-mail info@rueger.ch

RÜEGER GmbH
Plieninger Strasse 58
70567 STUTTGART
GERMANY
Tel + 49 (0)711 16-163-0
Fax + 49 (0)711 16-16333
E-mail rgmbh@rueger.com

RÜEGER Sdn Bhd
No 22-5, Jalan Wangsa Delima 10
D'Wangsa, Wangsa Maju
53300 KUALA LUMPUR
MALAYSIA
Tel + 603 - 4142 3808
Fax + 603 - 4142 3909
E-mail sales@rueger.com.my

BEIJING RÜEGER PRECISION INSTRUMENT Co. Ltd
No. A135 Chengshousi Road
Nansanhuan, Chaoyang District
100164 BEIJING, P.R. CHINA
Tel + 86 10 8767 7502 / 3379
Fax + 86 10 8761 3727
E-mail sales@bjrueger.com