

Bayonet resistance thermometer Model TR53

WIKA data sheet TE 60.53



Applications

- Plastics processing machinery
- Injection moulding machinery
- Cylinder heads and oil sumps in engines
- Bearings
- Pipelines and vessels

Special features

- Application ranges up to max. 400 °C
- Single and duplex resistance thermometers
- Good heat transfer through adjustable spring-loading
- Easy installation and removal, no tools needed
- Explosion-protected versions Ex-i, Ex-n and NAMUR NE24



Bayonet resistance thermometer model TR53 with threaded nipple

Description

Probe

These cable resistance thermometers feature a bayonet-type probe connection.

TR53 series resistance thermometers can be mounted into drilled holes without thermowells, e.g. into machine components.

Cable

There are various insulating materials available to match different environmental conditions.

The free ends of the cable are made up ready for connection, or can be fitted with plugs or sockets as optional extras.

Sensor

Application range

The application range of the sensor is limited by the permissible temperature for the cable insulation.

Sensor connection method

- 2-wire The lead resistance is recorded as an error in the measurement.
- 3-wire With a cable length of approx. 30 m or longer, measuring errors can occur.
- 4-wire The internal lead resistance of the connecting wires is negligible.

Sensor tolerance value per DIN EN 60751

- Class B
- Class A
- Class AA

The combination of a 2-wire connection with Class A / Class AA is not permissible, since the lead resistance of the measuring insert negates the higher sensor accuracy.

For detailed specifications for Pt100 sensors, see Technical Information IN 00.17 at www.wika.com.

Probe

Design: rigid tube
 Material: stainless steel
 Diameter: 6 mm or 8 mm
 Length: 10 mm
 Other versions on request

For temperature measurement in a solid body, the diameter of the bore into which the sensor should be inserted must be no more than 1 mm larger than the sensor diameter.

Transition (TR53-1 and TR53-2)

The junction between the metal part of the resistance thermometer and the connecting cable or wire is either crimped, rolled or potted, depending on the design. This area should not be immersed in the process and must not be bent. Compression fittings should not be attached to the transition. The type and dimensions of the transition depend largely on the jointing between the input leads and the metal sensor and on the sealing requirements.

Dimension T denotes the length of the transition.

Criterion	Dimension T in mm	Ø transition in mm
Probe Ø = transition Ø	n/a	identical to probe
Ø 6 mm with crimped transition	45	7
Ø 6 mm with crimped transition ¹⁾	45	8
Ø 8 mm with crimped transition	45	10

¹⁾ With a large number of wires (e. g. 2 x 3-wire and shielding)

Connection cable

Wire material: Cu (wire)
 Wire cross-section: approx. 0.22 mm²
 Number of wires: according to the number of sensors and the sensor connection method
 Wire ends: blank

Probe diameter d in mm	Cable sheath (insulation) silicone		Cable sheath (insulation) PTFE		
	Working temperature standard	Working temperature -50 ... +200 °C shielded	Working temperature standard	Working temperature shielded -50 ... +200 °C	Working temperature with stainless steel braiding -50 ... +200 °C
6	1 x 2-wire	-	1 x 2-wire	1 x 2-wire	1 x 2-wire
			1 x 3-wire	1 x 3-wire	1 x 3-wire
			1 x 4-wire	1 x 4-wire	1 x 4-wire
			2 x 2-wire	2 x 2-wire	2 x 2-wire
8	1 x 2-wire	1 x 2-wire	1 x 2-wire	1 x 2-wire	1 x 2-wire
	1 x 3-wire	1 x 3-wire	1 x 3-wire	1 x 3-wire	1 x 3-wire
	1 x 4-wire	1 x 4-wire	1 x 4-wire	1 x 4-wire	1 x 4-wire
	2 x 2-wire	2 x 2-wire	2 x 2-wire	2 x 2-wire	2 x 2-wire
	2 x 3-wire	-	-	2 x 3-wire	2 x 3-wire

Connecting cable

There are various insulating materials available to match different environmental conditions. The free ends of the cable are made up ready for connection, or can be fitted with plugs or sockets as optional extras.

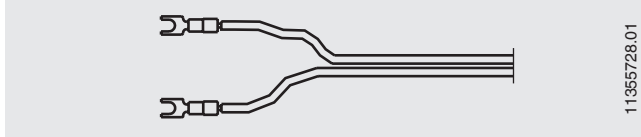
Plug (option)

Cable resistance thermometers can be supplied with plugs fitted.

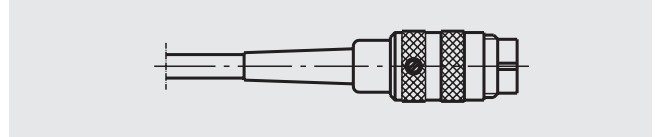
The following options are available:

■ Spade lugs

(not suitable for versions with bare connecting wires)

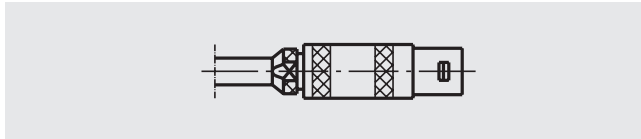


■ Screw-in-plug, Binder (male)

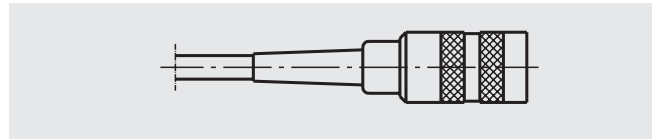


■ Lemoso plug size 1 S (male)

■ Lemoso plug size 2 S (male)

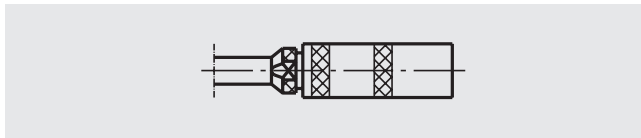


■ Screw-in-plug, Binder (female)



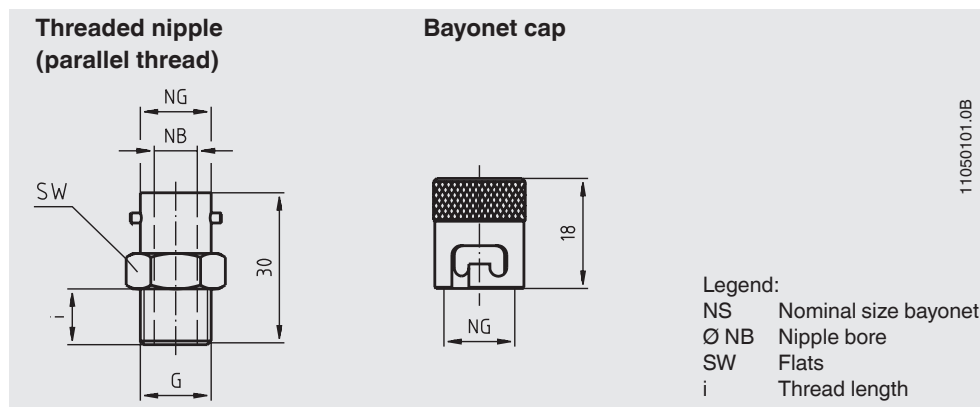
■ Lemoso plug size 1 S (female)

■ Lemoso plug size 2 S (female)



Process connection

Bayonet cap on the probe, with matching threaded nipple for screw-fitting to a solid body (process).



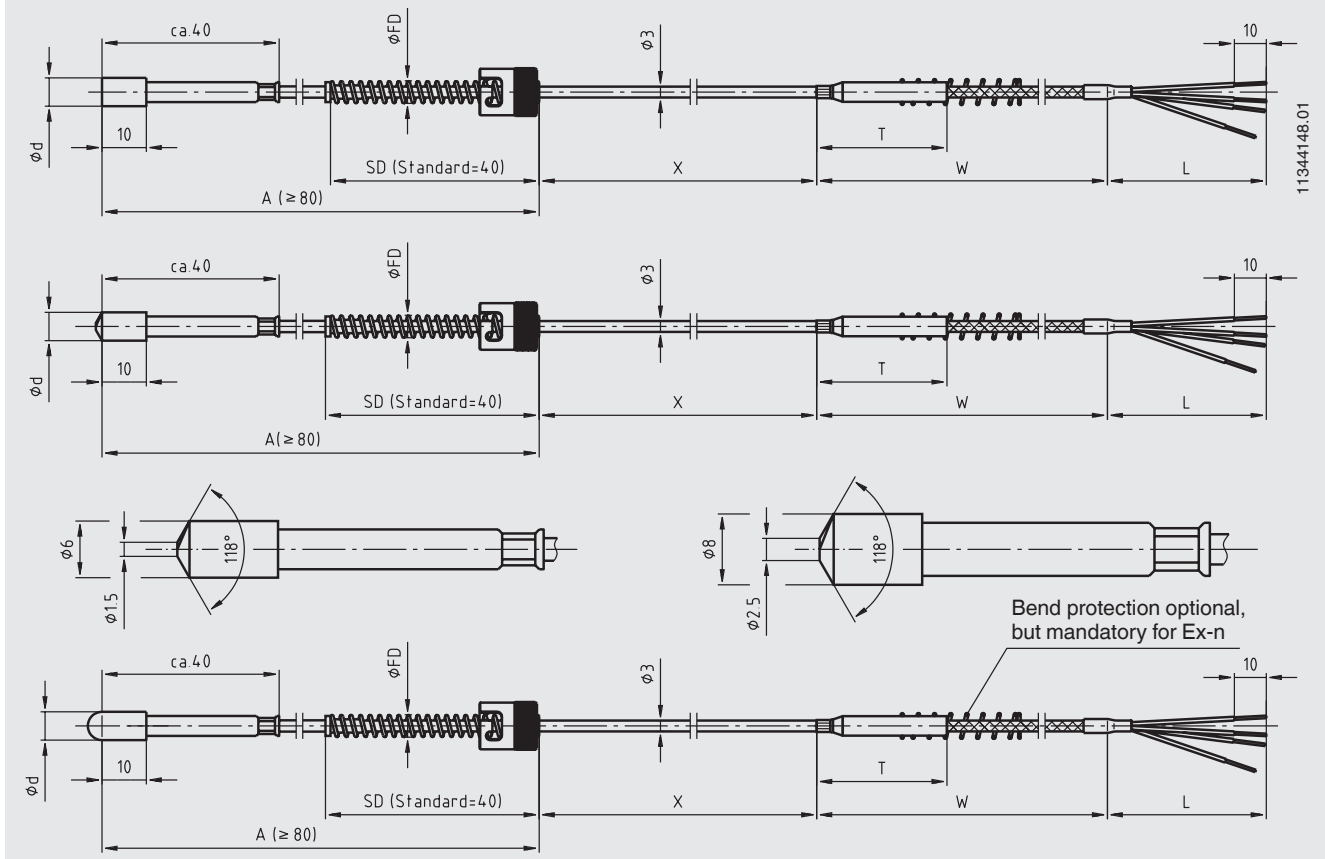
Dimensions in mm

Probe diameter d	Process connection	Nominal size NS	Nipple bore Ø NB	Spring diameter Ø FD	Flats SW	Thread length i
6	M10 x 1	12	6.4	6	14	10
	M14 x 1.5	14	8.4	6	17	10
	G ¼ B	14	8.4	6	17	10
	G ⅜ B	14	8.4	6	17	11
8	M14 x 1.5	14	8.4	7	17	10
	G ¼ B	14	8.4	7	17	10
	G ⅜ B	14	8.4	7	17	11

Dimensions in mm

Model TR53-1

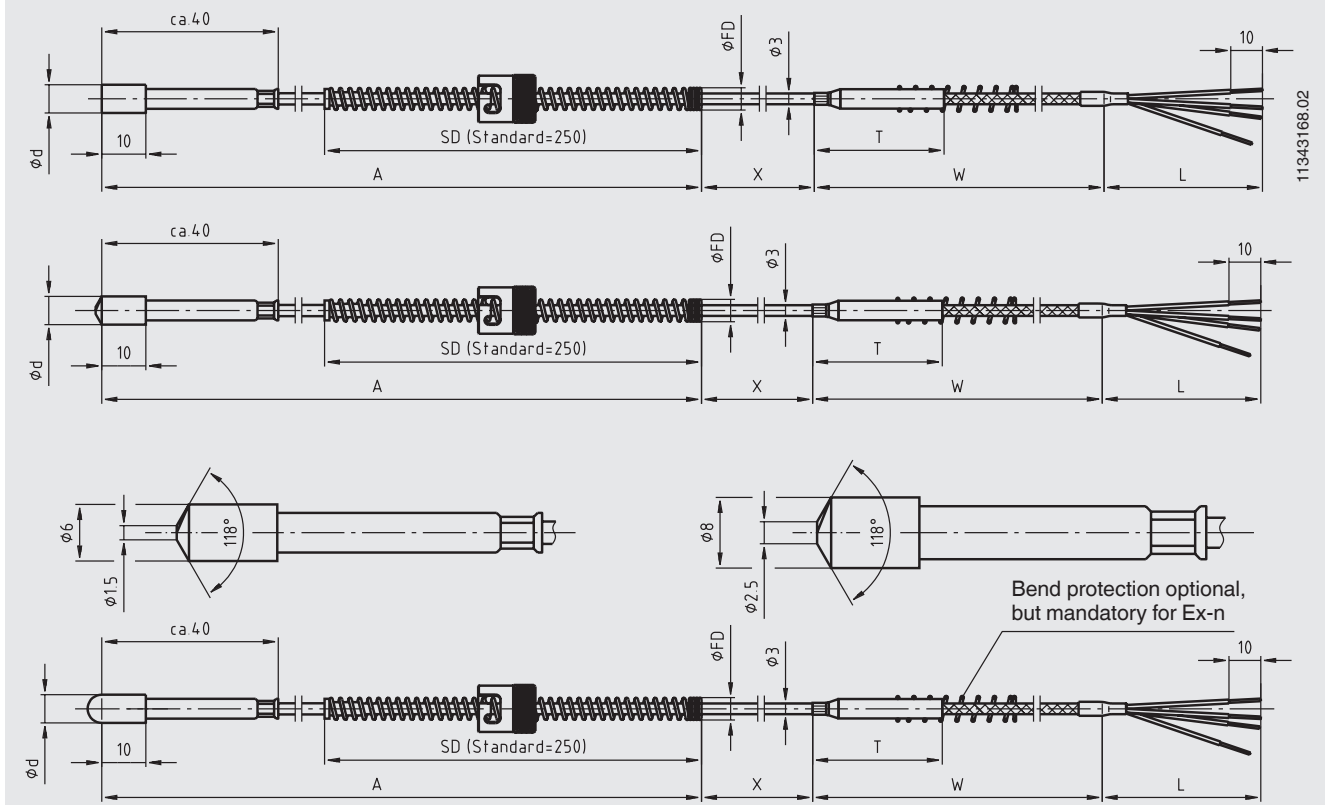
Bayonet cap fixed to the end of the spring (sheathed cable design)



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Model TR53-2

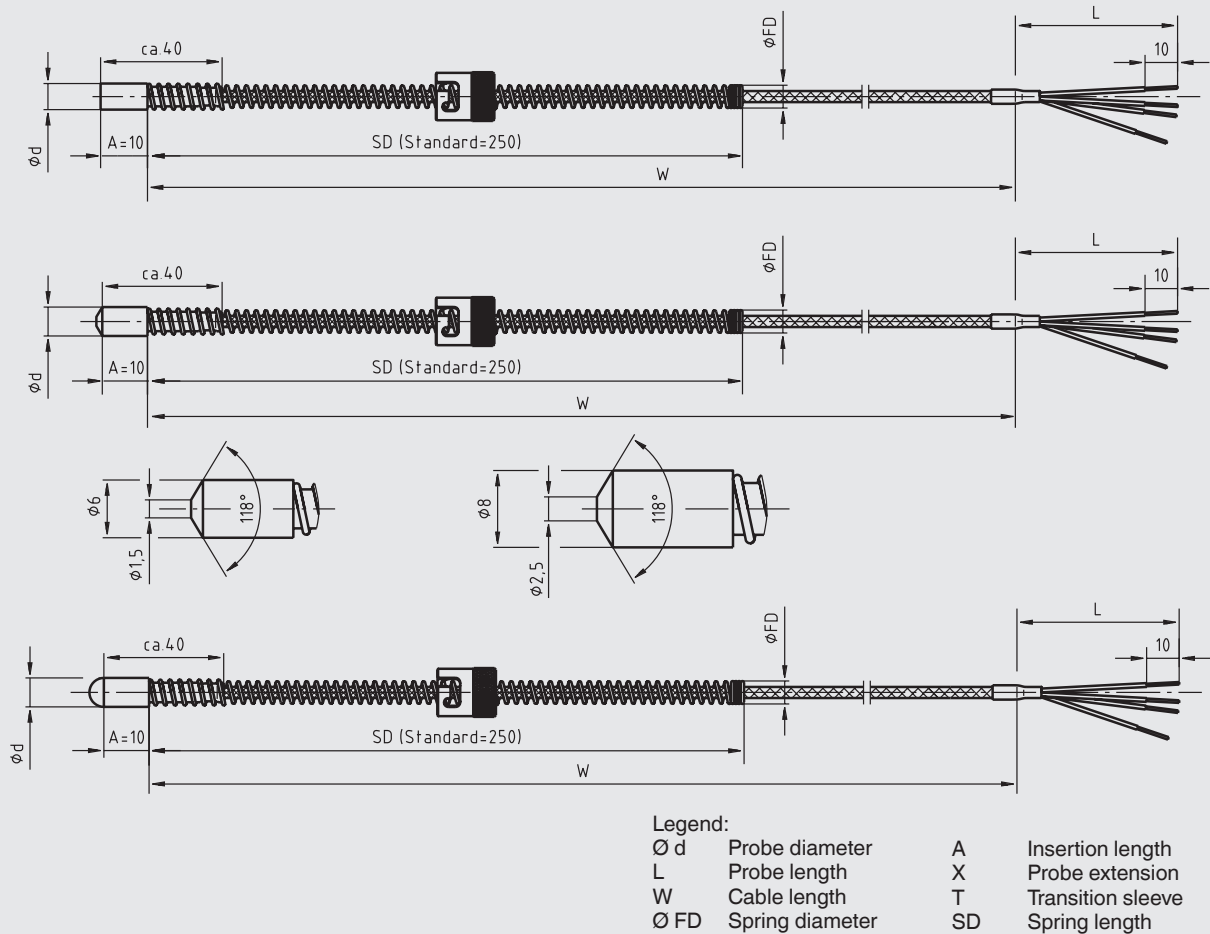
Bayonet cap adjustable on the spring (sheathed cable design)



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Model TR53-4

Bayonet cap adjustable on the spring (cable through to the sensor tip)



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Explosion protection (option)

TR53 series cable resistance thermometers are available with a type-examination certificate for "intrinsically safe", Ex-i, ignition protection.

These instruments comply with the requirements of 94/9/EC (ATEX) directive for gas and dust. Manufacturer's declarations in accordance with NAMUR NE24 are also available

The classification/suitability of the instrument (permissible power, $P_{max.}$, the minimum neck length and the permissible ambient temperature) for the respective category can be seen on the type-examination certificate and in the operating instructions.

The internal inductance (Li) and capacitance (Ci) for cable probes is stated on the product label and they should be taken into account when connecting to an intrinsically-safe power supply.

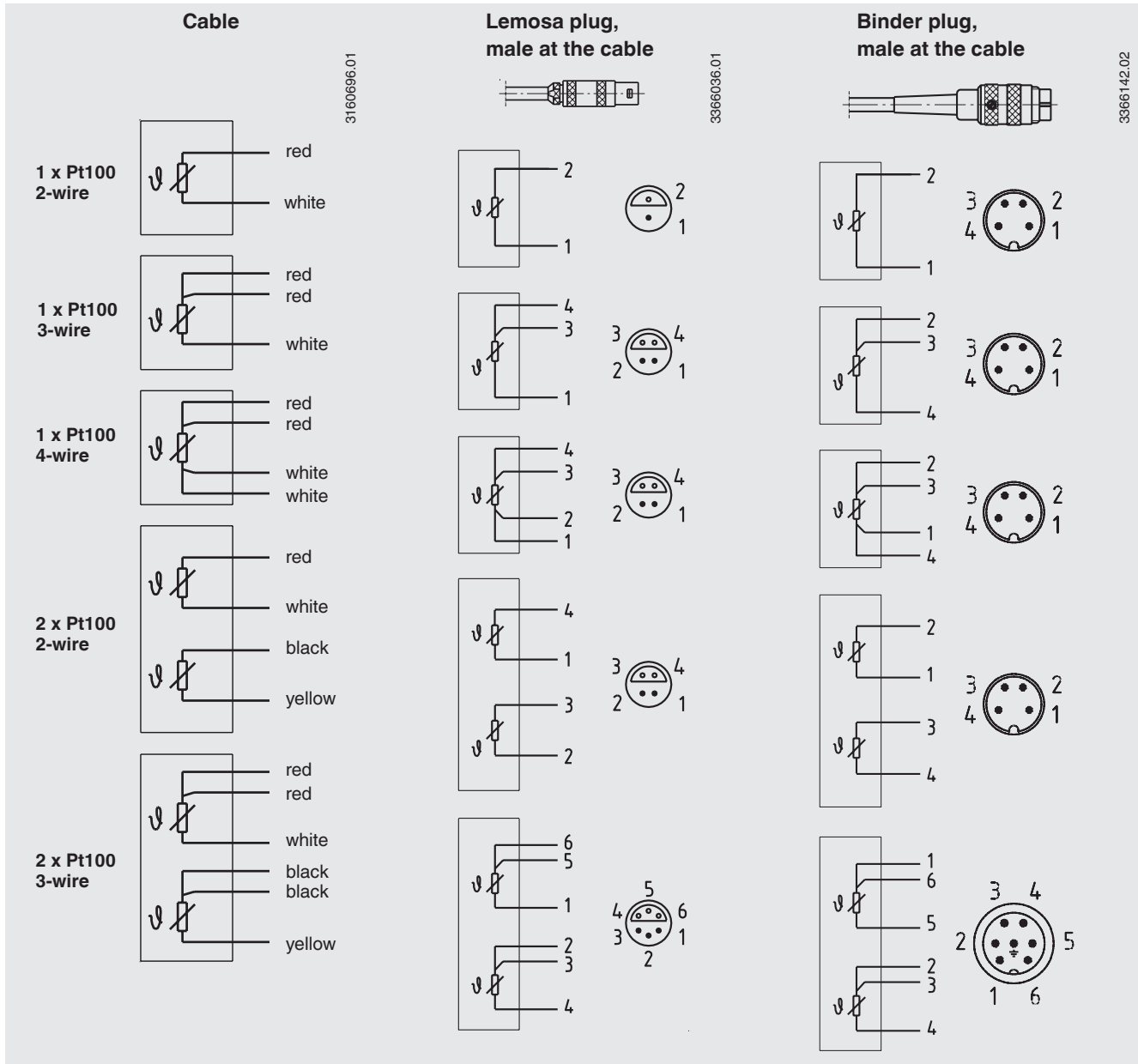
Note:

When mounting thermometers with flying leads, installation personnel must ensure that installation is carried out properly and in compliance with the appropriate regulations. If the cable ends of the thermometer are within the hazardous area, suitable adapters / connectors must be used. Flying leads must be connected outside the hazardous area or, when operated in a dust explosive atmosphere, within an enclosure which is certified in accordance with the 94/9/EC and EN 60079-0 (2010) directives and provides an ingress protection of at least IP 65.

A minimum air gap and leakage path of 2 mm must be ensured.

The connection of a resistance thermometer (e.g. Pt100) or thermocouple to a transmitter must be made with shielded cable. The shield must be electrically connected to the housing of the grounded thermometer. It should be ensured that there is equipotential bonding on installation, so that no balancing current can flow via the shield. Here, in particular, the installation regulations for hazardous areas should be followed!

Electrical connection



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