



Pipe Contact Temperature Sensor

Application

- temperature measurement on pipe surfaces
- for pipe diameters from DN10 to DN250
- no contact to the product of the sensor
- additional mounting with opening the process

Application Examples

- measurement monitoring on pipes with diameter DN10
- measurement on pipes which were cleaned mechanically

Hygienic Design / Process Connection

- food compatible materials according to FDA
- CIP-/SIP-cleaning up to 150°C

Options / Accessories TFP-RA

- with or without clamp fitting available
- other cable length
- 2-wire transducer in plastic housing

Options / Accessories TFP-RK

- ex-factory cable with M12-plug
- 2-wire transducer in plastic housing
- fixed cable connections PVC, PTFE



TFP-RK

TFP-RA

Specification TFP-RA

Materials	stainless steel	303 (1.4305)
Temperature range		-50...250°C
Sensing resistor	acc. to DIN ITS 90	1xPt100 class A
Electr. connection	fixed cable 3m	PTFE 4x0,14mm ²
Type of protection		IP69K

Specification TFP-RK

Materials	sensor	platinum-chip
	sensor housing	PVDF
Temperature range		-30...150°C
Sensing resistor	acc. to DIN ITS 90	1xPt100 class A
Electr. connection	cable junction	M12-plug-in
Type of protection		303 (1.4305) 4pol. IP69K

Transmitter in separate housing

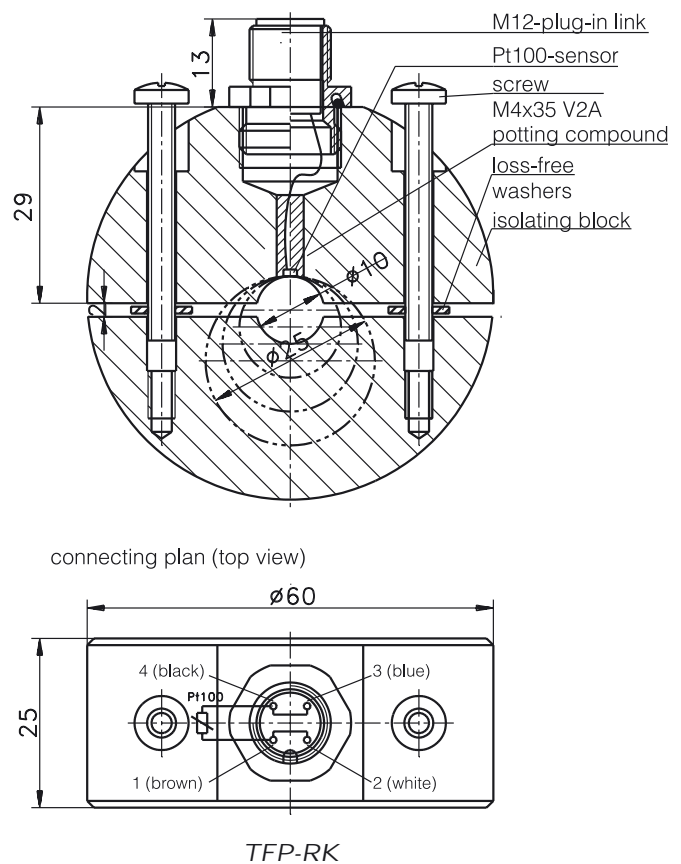
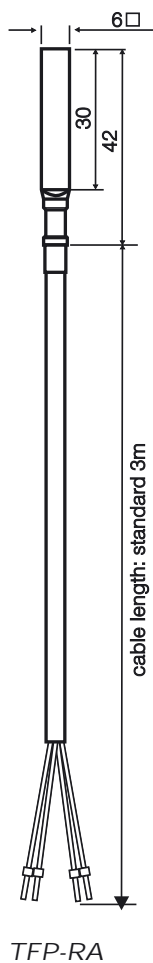
mpu-4g, -4pg, -10g, -4exg, -Hg

Material	housing	polyamide PA6
	fiber glass reinforced	30%
Temperature ranges	Standard	-10...+40, 0...50°C
		0...100 / 150 / 200°C
Accuracy		<±0,1% of full scale
Temperature drift	zero, span	<0,01% of f. scale/K
Electr. connection	power supply	8...35VDC
Output	analog	4-20mA, 2-wire
Temperature ranges	ambient	-40...85°C
	storage	-40...120°C
Humidity	without condensate	0...98%

Order Code

Temperature sensor	Pipe clip up to DN/nominal width in mm	Transducer in separate housing	Ranges	Electrical connection	Other options
TFP-RA	without*, 100, 250	without* mpu-4g mpu-4gp (programmable)	-10...+40°C 0...50°C 0...100°C	3m Tefloncable*	
TFP-RK	10...28mm must be declared!	mpu-10g (Profibus PA) mpu-4-exg (EX-zone) mpu-Hg (HART protocoll)	0...150°C 0...200°C	M12* fixed cable	M12-PVC/4-5m M12-PVC/4-10m
Order example:	TFP-RA / 100 / mpu-4g / 0...150°C				*Standard, no declaration needed.

Dimensioned Drawing



Informations about Pipe Contact Measurements
 When mounting a temperature sensor to the side of a pipe or a vessel, this temperature sensor will measure the temperature of the surface. However, this temperature is a mixed temperature of medium and ambient. From the middle of the pipe to the side there exists a temperature gradient, which depends of a lot of factors and can not be specified exactly. When the medium temperature is about 100°C a difference of several Kelvin can be the result of this effect (see diagram).

Factors affecting the temperature gradient:

- quality of coupling sensor to pipe (coupling paste)
- temperature of the medium
- flow speed of the medium
- parameters of medium (heat conductivity, calorific capacity)
- ambient temperature
- flow speed of ambient air
- pipe thickness
- pipe material
- isolation of pipe and sensor

To get the best measurement that is possible it is absolutely necessary to put *coupling paste* between sensor element and pipe!

