

Temperature Sensor TFP-159

Application / Specified Usage

- Safe temperature measuring in pipes and vessels without opening the process with prefabricated thermowells and build-in systems
- Demounting the sensor without opening the process and without electrical disconnection -> avoiding downtime of the equipment at calibration and maintenance!
- Perfectly suitable at small pipe diameters with build-in system ESF-G (available for pipes DN25...DN100)

Application Examples

- Flexible applicable for nearly every temperature measuring task in pipes and vessels
- Safe temperature measuring in hotsteam- and pressure pipes (enclosed process)
- Monitoring of CIP- / SIP-cleaning

Hygienic Design / Process Connection

- CIP-/ SIP-cleaning up to 140 °C
- All product contacting materials compliant to FDA
- Sensor completely made of stainless steel

Features

- Short reaction time, very compact measure point
- Available with and without integrated transmitter
- Electrical connection via M12-plug (TFP-159)
- Temperature sensors and build-in systems with pre-defined, concerted standard lengths, reducing the variety and economize costs for storage and simplify the maintenance.

Options / Accessories

- Programmable transmitter MPU-M
- Pt100-chip with other classes of accuracy, e. g. 1/3 DIN B, 1/10 DIN B

Accessories

PVC-cable with M12-connection made of 1.4305, IP 69 K, unshielded

M12-PVC / 4-5 m	PVC-cable 4-pin, length 5 m
M12-PVC / 4-10 m	PVC-cable 4-pin, length 10 m
M12-PVC / 4-25 m	PVC-cable 4-pin, length 25 m

Programming adapter

MPU-P 9701	Programming adapter for MPU-4, MPU-H and MPU-M
-------------------	--

Authorisations



TFP-159 / ... / MPU-M



PVC-cable with M12-connection



Programming adapter MPU-P 9701



Temperature Sensor		
Process Connection	thermowell	with G3/8" external thread
Insertion Length	standard	68, 148, 198, 234, 238, 249 mm ± 0,2 mm
Materials	connection head protection tube cap nut spacer	stainless steel 1.4305 stainless steel 1.4404 stainless steel 1.4571 stainless steel 1.4301, Ø 10 mm
Temperature Ranges	ambient sensor tip	-50...+80 °C -50...+250 °C
Operating Pressure	with thermowell	40 bar max.
Protection Type		IP 69 K (with electrical connection M12-plug)
Sensing Resistor	acc. to DIN IEC 751	1 x Pt100 class A / 1/3 B / 1/10 B
Electrical Connection	TFP-159 TFP-159 /... / PG TFP-159/249/MPU-M/PG	M12-plug 1.4305 fixed cable (PVC), standard: 2,5 m fixed cable (PVC), standard: 150 mm

Transmitter MPU-M		
Temperature ranges	ambient storage	-40...+85 °C -55...+90 °C
Measuring ranges	standard	0...100 / 0...150 / 0...200 °C special ranges free programmable
Accuracy	input	< ±0,25 °C
Temperature drift	zero, span	< 0,01 % / K
Electrical connection	supply	8...35 V DC
Output	signal accuracy	analog 4...20 mA (not for MPU-10) < ±0,1 % of measurement range
Burden Calculation		$R_L = (U_B - 8) / 23 \text{ k}\Omega$
Humidity	without condensation	0...98 %

Conventional Usage



- Not suitable for applications in explosive areas.
- Not suitable for applications in security-relevant equipments (SIL).

Advice to EMC

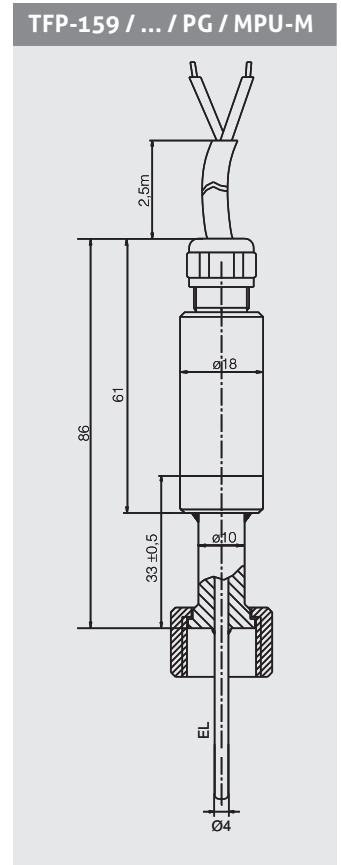
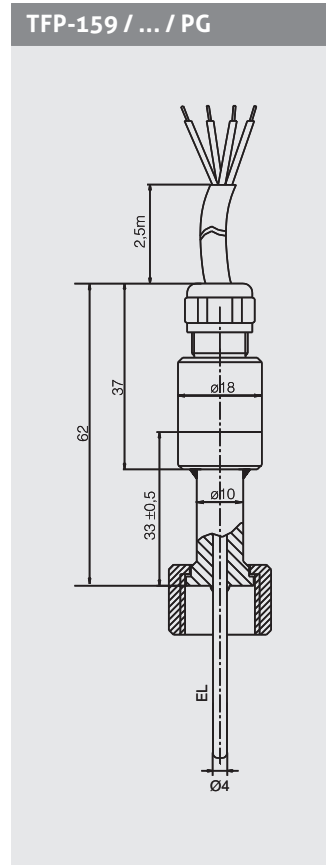
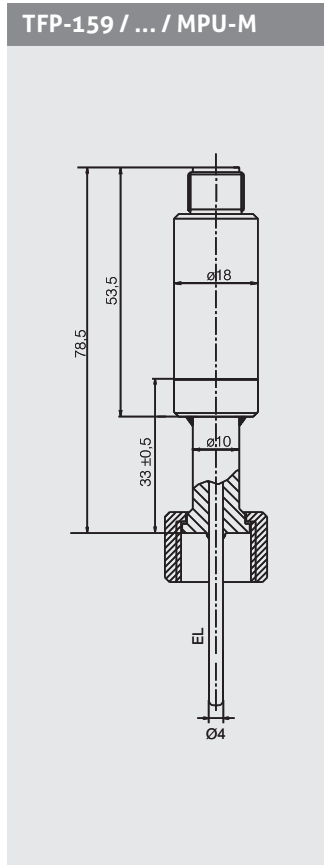
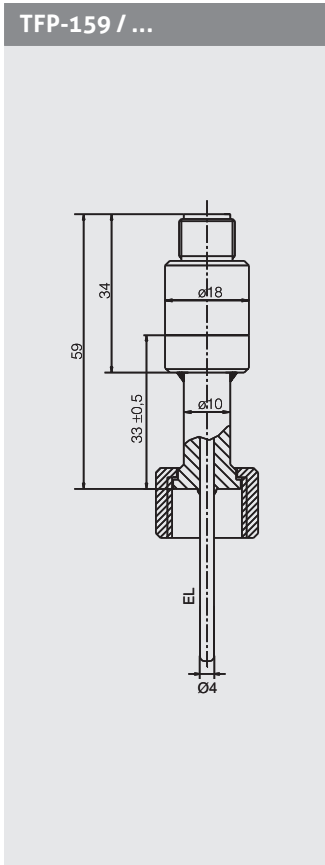


- The device agrees to following standards: EMC directive 2004/108/EC.
- The accordance with applicable EU-guidelines is confirmed with CE-labeling of the device.
- You have to guarantee the EMC directives for the entire equipment.

Cleaning / Maintenance



- In case of using pressure washers, don't point nozzle directly to electrical connections!



Advice to TFP-159 / ... / PG / MPU-M



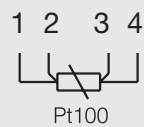
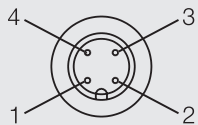
This is a customer specific version, available only on request!

Electrical connection without transmitter

Electrical connection with transmitter

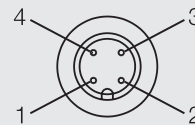
M12 plug

Configuration M12 plug



M12 plug

Configuration M12 plug



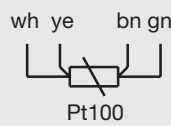
- 1. + supply
- 2. - supply
- 4...20 mA
- 3. not connected
- 4. not connected

Fixed cable PVC (0...90 °C)

Fixed cable PVC (0...90 °C)



Configuration cable



Configuration cable

- bk: + supply
- bu: - supply 4...20 mA

Order Code

TFP-159 Temperature sensor with head Ø 18 mm, electrical connection via M12-plug or 2,5 m PVC-cable

Sensor Length EL ± 0,2 mm

068	(length 68 mm)
148	(length 148 mm)
198	(length 198 mm)
234	(length 234 mm)
238	(length 238 mm)
249	(length 249 mm)

Diameter thermowell in mm

4

Diameter Sensor Tip in mm

4

Accuracy Class

A
1/3B
1/10B

Electrical Connection

PG (fixed PVC-cable 2,5 m)
M12 (M12-plug 1.4305)

Transmitter

X (without)
MPU-M

Measurement Range (only for types with transmitter)

0...100 (measuring range 0...+100 °C)
0...150 (measuring range 0...+150 °C)
0...200 (measuring range 0...+200 °C)
xx...yy (special range)

TFP-159 / 068 / 4 / 4 / A / M12 / MPU-M / 0...100

Advice to TFP-159 / ... / MPU-M / PG



This is a customer specific version, available only on request!

Transport / Storage



- No outdoor storage
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage temperature -55...+90 °C
- Relative humidity max. 98 %

Reshipment



- Sensors shall be clean and must not be contaminated with dangerous media!
- Use suitable transport packaging only to avoid damage of the equipment!