

Product Information TFP-414, -614, -814 FOOD

Temperature Sensor with Thread G1/4" FLEXadapt



Application/Specified usage

- Temperature measurement in weld-in thermowells and adapter

Application examples

- For mounting in existing weld-in thermowells and adapter with cap nut G1/4"

Features

- Sensor made of stainless steel
- Sensor tip spring-loaded at TFP-414, -414.2 and TFP-614, -614.2
- Changing or demounting without opening the process and electrical disconnecting

Options/Accessories

- 2 x Pt100 (not retrofittable)
- Programmable transmitter
- Programming adapter MPU-P 9701
- Integrated transmitter for Profibus PA MPU-10 and HART-Protocol MPU-H
- Integrated transmitter MPU-LCD with display in connecting head
- Pt100-chip with other classes of accuracy, (1/3 B, 1/10 B)
- Electrical connection via M12-plug (standard at TFP-614, option for TFP-414)
- Pre-assembled connecting cable for M12-plug
- Fixed cable in other lengths and other materials available

Build-In systems

Suitable build-in systems for temperature sensors TFP-414, -614, -814 you will find in product information **Process Connection FLEXadapt ESF**.

Authorisations



Temperature sensor TFP-414



Temperature sensor TFP-614 with transmitter MPU-M



Temperature sensor		
Process connection	thread G1/4" standard	weld-in thermowell / screw-in thermowell e. g. Hengesbach Quicktemp-Hülse zeh / TP136 – T500
Insertion length EL	TFP-414, TFP-414.2, TFP-614 TFP-814	61 mm, 115 mm + 2 mm spring travel 61 mm, 115 mm
Materials	connection head pipe	stainless steel 1.4305 stainless steel 1.4404
Operating pressure		acc. to manufacturer information of the thermowell
Temperature ranges	ambient sensor tip	-50...+80 °C -50...+250 °C
Measurement resistor	acc. to DIN EN 60751	Pt100
Electrical connection	TFP-414, TFP-414.2 TFP-614 TFP-814	cable gland M16x1,5 M12-plug 1.4305 M12-plug 1.4305 fixed cable (LIYY 4 x 0,25 mm ²) standard 2,5 m
Protection class		IP 69 K (with electrical connection M12-plug)

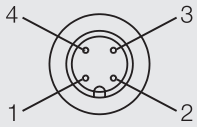
Transmitter MPU-4, MPU-10, MPU-H, MPU-M		
Temperature ranges	ambient storage	-40...+85 °C -55...+90 °C
Measuring ranges	MPU-4, MPU-H, MPU-M MPU-10	standard: -10...40 °C, 0...50 / 100 / 150 / 200 °C special ranges free programable standard: -200...850 °C configuration occurs with Profibus
Accuracy	input	< ±0.25 °C
Temperature drift	zero, span	< 0.01 % / K
Supply	MPU-M, MPU-4 MPU-10 accuracy	8...35 V DC 9...32 V DC 0.01 % / V (reference: 12 V DC)
Output	signal accuracy burden	analog 4...20 mA (not for MPU-10) < ±0.1 % of measurement range < 600 Ω (at U _B = 24 V)
Humidity	without condensation	0...98 %

Accuracy classes of temperature sensors | Tolerances for Pt100 acc. to DIN EN 60751

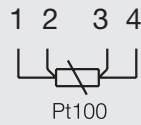
Pt100	A	1/3 B	1/10 B
0 °C / 100 Ω	±0.15 K / ±0.06 Ω	±0.10 K / ±0.04 Ω	±0.03 K / ±0.01 Ω
100 °C / 138.5 Ω	±0.35 K / ±0.13 Ω	±0.27 K / ±0.10 Ω	±0.08 K / ±0.03 Ω

Electrical connection without transmitter

With 1 x M12 plug

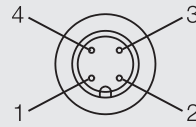


Configuration 1st M12 plug



Electrical connection with transmitter

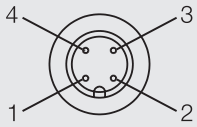
With M12 plug



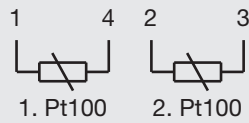
Configuration M12 plug

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

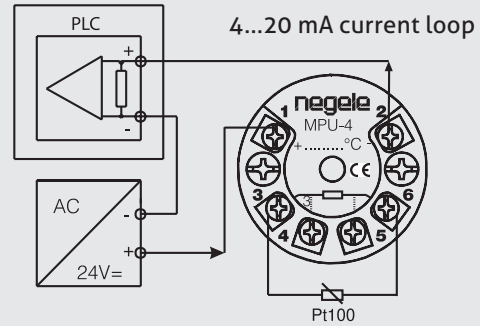
With 1 x M12 plug and 2 x Pt100



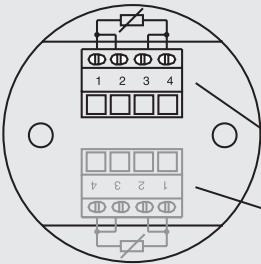
Configuration 2nd M12 plug



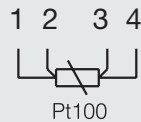
With cable gland



With cable gland



Configuration strip terminal



clamps for 1st Pt100

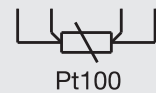
clamps for 2nd Pt100
(at version 2 x Pt100)

With fixed cable



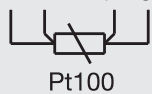
Fixed cable connection with 1 x Pt100

wh ye bn gn standard
rd rd wh wh PTFE



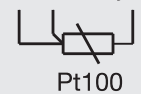
Fixed cable connection with 2 x Pt100 (LIYY)

wh ye bn gn 1st Pt100
rd bu pk gy 2nd Pt100

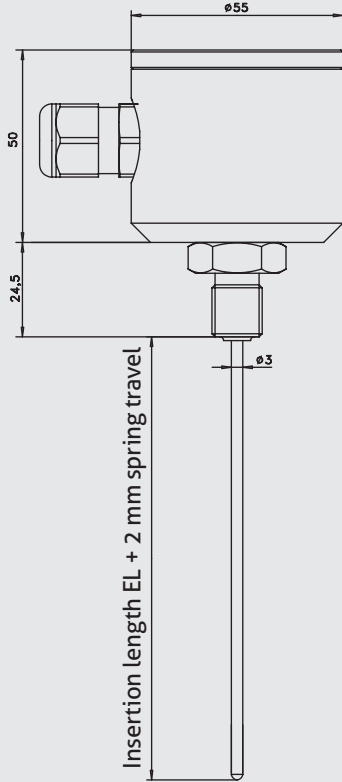


Fixed cable connection with 2 x Pt100 (PTFE)

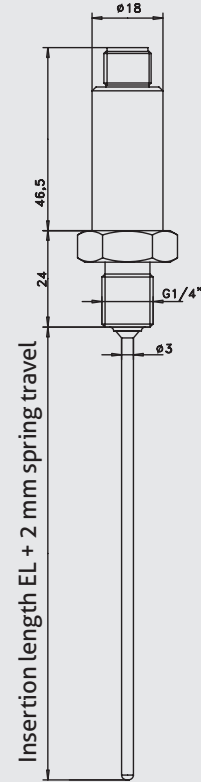
rd rd wh 1st Pt100
vt vt ye 2nd Pt100



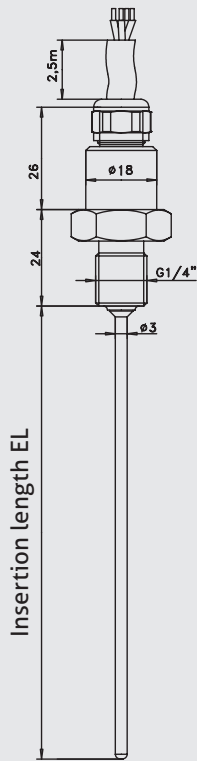
TFP-414 | TFP-414.2



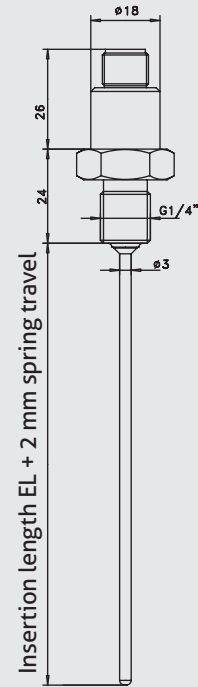
TFP-614 with MPU-M



TFP-814



TFP-614 | TFP-624



Mechanical connection/Installation

- Check the compatibility of the sensor to the used immersion sleeve.

Conventional usage

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

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 °C...+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!

Cleaning/Maintenance

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

Standards and guidelines

- You have to comply with applicable regulations and directives.

Advice to EMC

- The device agrees to following standards: EMC directive 2004/108/EC.
- You have to guarantee the EMC directives for the entire equipment.

Disposal

- This instrument is not subject to the WEEE directive 2002/96/EC and the respective national laws.
- Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points.

Temperature Transmitter MPU-LCD with Display

Application/Specified usage

- 4...20 mA transmitter with LCD for Pt100 temperature sensor
- For installation in temperature sensor
- Sensor monitoring

Features

- 4-digit display with green backlight
- Temperature measurement in °C and °F
- Easy range select by one button
- Lower costs for wiring because of 2-wire technology

Note

See product information „MPU-LCD“ for details.



Option MPU-LCD (display in the connection head)



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

PVC-cable with M12-connection, brass nickel-plated, IP 67, shielded

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

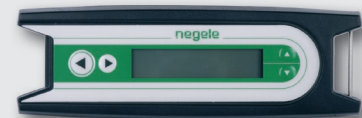
Programming adapter MPU-P 9701

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

PVC-cable with M12-connection



Programming adapter MPU-P 9701



Order code for version with 1 x Pt100

TFP-414 (connection head Ø 55 mm and spring-loaded sensor tip)
 TFP-614 (connection head Ø 18 mm and spring-loaded sensor tip, electrical connection via M12-plug)
 TFP-814 (connection head Ø 18 mm, electrical connection 2,5 m PVC-cable)

Sensor length EL

61 (length 61 mm)
115 (length 115 mm)
xxx (special length)

Diameter thermowell in mm

3

Diameter sensor tip in mm

3

Accuracy class Pt100

A
1/3B
1/10B

Electrical connection (only selectable for TFP-414)

PG (cable gland M16x1,5)
M12 (M12-plug 1.4305, standard with MPU-LCD)

Transmitter only for TFP-414

X (without)
MPU-4 (programmable)
MPU-10 (Profibus PA)
MPU-H (HART-protocol)
MPU-LCD (with display)

Transmitter only for TFP-614

X (without)
MPU-M (programmable)

Measurement range (only for types with transmitter; not at MPU-LCD)

-10...40 (measurement range -10...+40 °C)
0...50 (measurement range 0...+50 °C)
0...100 (measurement range 0...+100 °C)
0...150 (measurement range 0...+150 °C)
0...200 (measurement range 0...+200 °C)
xx...yy (special range)

TFP-414 /

115 /

3 /

3 /

A /

M12 /

MPU-4 /

0...150

Order code for version with 2 x Pt100

TFP-414.2

(connection head Ø 55 mm and spring-loaded sensor tip, no transmitter possible!)

TFP-614.2

(connection head Ø 18 mm and spring-loaded sensor tip, electrical connection via M12-plug, no transmitter possible!)

Sensor length EL

61 (length 61 mm)

115 (length 115 mm)

xxx (special length)

Diameter thermowell in mm

3

Diameter sensor tip in mm

3

Accuracy class Pt100

A

1/3B

1/10B

Electrical connection (only selectable for TFP-414.2)

PG (cable gland M16x1,5)

M12 (M12-plug 1.4305)

TFP-414.2 /

115 /

3 /

3 /

A /

M12