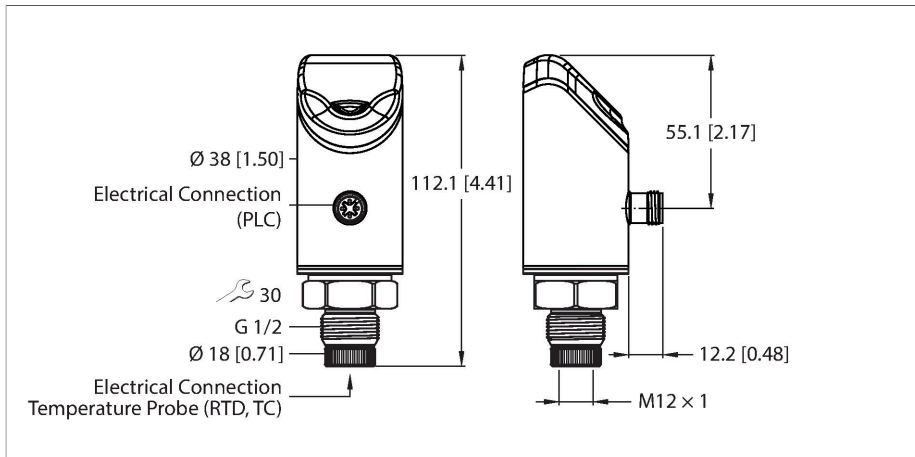


# TS720-2UPN8-H1141

## Temperature Detection – With 2 PNP/NPN Transistor Switching Outputs



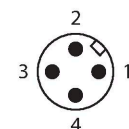
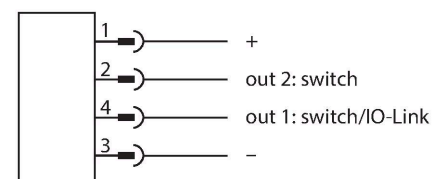
### Technical data

Type	TS720-2UPN8-H1141
ID	100003633
<b>Temperature range</b>	
Measuring element	For connection to probes of the TP series
Response time	100 ms
Operating voltage	10...33 VDC
Protective measure	SELV, PELV according to DIN EN 61140
Short-circuit/reverse polarity protection	yes / yes
Insulation class	III
<b>Outputs</b>	
Output 1	Switching output or IO-Link mode
Output 2	Switching output
<b>Switching output</b>	
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN
Switching point accuracy	± 0.2 K
Rated operational current	0.25 A
Switching point distance	≥ 0.2 K
Switch point:	Probe dependent: (min. measuring range)...(max. measuring range — 0.2 K)
Release point(s)	Probe dependent: (min. measuring range — 0.2 K) ... (max. measuring range)
Switching cycles	≥ 100 mil.
Repeatability	0.1 K
<b>IO-Link</b>	
IO-Link specification	V 1.1

### Features

- Processor unit for connecting sensors from the TP product series
- Automatic probe detection
- 4-digit, two-colored, 12-segment display, rotatable by 180°
- Upper part of housing can be rotated up to 340°
- 10...33 VDC
- NO/NC contact, PNP/NPN output, IO-Link
- Various IO-Link mapping profiles can be selected

### Wiring diagram



### Functional principle

The TS+ product series is a compact processing unit with a 4-digit, 12-segment display that can be freely rotated by 340°. Compact units with (TS700) and without (TS720) temperature sensors as well as different output variants are available.

## Technical data

Transmission physics	corresponds to 3-wire physics (PHY2)
Frame type	2.2
Transmission rate	COM 2 (38.4 kBaud)
Programming	FDT/DTM/selection of various mapping profiles
Genauigkeit	± 0.1 K
Included in the SIDI GSDML	Yes
<b>Programming</b>	
Programming options	Switching logic (PNP, NPN, Auto*), switching/release point; hysteresis/window mode; NO/NC; unit; IO-Link mapping profile; factory settings
Housing material	Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV
Electrical connection	Connector, M12 × 1
Protection class	IP66 IP67 IP69K
Ambient temperature	-40...+80 °C
Storage temperature	-40...+85 °C
Shock resistance	50 g (11 ms) , DIN EN 60068-2-27
Vibration resistance	20 g (10...3000 Hz), DIN EN 60068-2-6
<b>Tests/approvals</b>	
UL registration number	E516036
<b>Reference conditions acc. to IEC 61298-1</b>	
Temperature	15...+25 °C
Atmospheric pressure	860...1060 hPa abs.
Humidity	10...95 % rel.
Auxiliary power	24 VDC
<b>Display</b>	
Display	4-digit, two-colored (green/red), 12-segment display, rotatable by 180°
Switching state	2 × LEDs, Yellow
Unit display	4 x green LED (°C, °F, K, Ohm)

## Technical data

Type	TS720-2UPN8-H1141
ID	100003633
<b>Temperature range</b>	
Measuring element	For connection to probes of the TP series
Response time	100 ms
Operating voltage	10...33 VDC
Voltage drop at I <sub>0</sub>	≤ 2 V
Protective measure	SELV, PELV according to DIN EN 61140

## Technical data

Short-circuit/reverse polarity protection	yes / yes
Protection type and class	IP66 IP67 IP69K / III
<b>Outputs</b>	
Output 1	Switching output or IO-Link mode
Output 2	Switching output
<b>Switching output</b>	
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN
Switching point accuracy	± 0.2 K
Rated operational current	0.25 A
Switching current	≤ 250 mA
Switching point distance	≥ 0.2 K
Switch point:	Probe dependent: (min. measuring range)...(max. measuring range — 0.2 K)
Release point(s)	Probe dependent: (min. measuring range — 0.2 K ) ... (max. measuring range)
Switching cycles	≥ 100 mil.
Repeatability	0.1 K
<b>IO-Link</b>	
IO-Link specification	V 1.1
Programming	FDT/DTM/selection of various mapping profiles
Transmission physics	corresponds to 3-wire physics (PHY2)
Transmission rate	COM 2 (38.4 kBaud)
Frame type	2.2
Genauigkeit	± 0.1 K
Included in the SIDI GSDML	Yes
Ambient temperature	-40...+80 °C
Storage temperature	-40...+85 °C
Vibration resistance	20 g (10...3000 Hz), DIN EN 60068-2-6
Shock resistance	50 g (11 ms) , DIN EN 60068-2-27
Housing material	Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV
Electrical connection	Connector, M12 × 1
<b>Reference conditions acc. to IEC 61298-1</b>	
Temperature	15...+25 °C
Atmospheric pressure	860...1060 hPa abs.
Humidity	10...95 % rel.
Auxiliary power	24 VDC

## Technical data

Display	
Display	4-digit, two-colored (green/red), 12-segment display, rotatable by 180°
Switching state	2 × LEDs, Yellow
Unit display	4 x green LED (°C, °F, K, Ohm)
Programming	
Programming options	Switching logic (PNP, NPN, Auto*), switching/release point; hysteresis/window mode; NO/NC; unit; IO-Link mapping profile; factory settings
Tests/approvals	
Approvals	cULus
UL registration number	E516036

**Status LEDs**

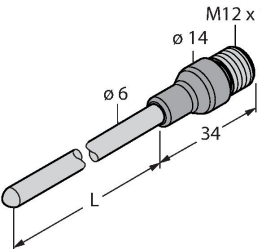
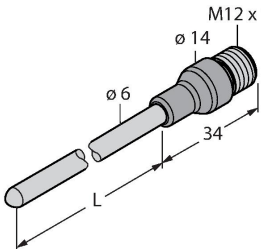
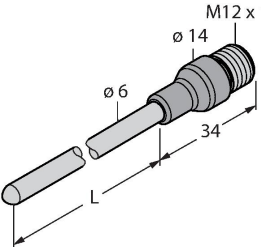
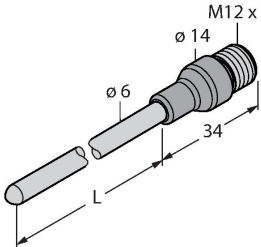


LED	Color	Status	Description
PWR	Green	On	Operating voltage applied Device is operational
		Flashing	Operating voltage applied IO-Link communication active (inverted flash with T on 900 ms and T off 100 ms)
FLT	Red	On	Error displayed (For error pattern in combination with LEDs see manual)
		Off	No errors displayed
°C	Green	On	Temperature in °C
°F	Green	On	Temperature in °F
K	Green	On	Temperature in K
Ω	Green	On	Resistance in Ω
LOC	Yellow	On	Device locked
		Flashing	"Lock/unlock" process is active
		Off	Device unlocked
I and II (switching point of LEDs)	Yellow	On	Switching output -NO: switching point exceeded/within window (active output) -NC: switching point undershot/outside window (active output)
		Off	Switching output -NO: switching point undershot/outside window (inactive output) -NC: switching point exceeded/within window (inactive output)

For detailed description of the display patterns and flashing codes, see manual

**IO-Link process data image**

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Byte n	14 Bit Process Value (TEMP)														State Out 2	State Out 1

**Accessories**

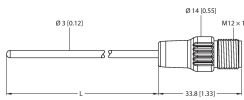
	<p><b>TP-206A-CF-H1141-L100</b></p> <p>9910475</p> <p>temperature detector for liquid and gaseous media</p>		<p><b>TP-206A-CF-H1141-L150</b></p> <p>9910476</p> <p>temperature detector for liquid and gaseous media</p>
	<p><b>TP-206A-CF-H1141-L200</b></p> <p>9910477</p> <p>temperature detector for liquid and gaseous media</p>		<p><b>TP-206A-CF-H1141-L300</b></p> <p>9910478</p> <p>temperature detector for liquid and gaseous media</p>
	<p><b>TP-203A-CF-H1141-L100</b></p> <p>9910402</p> <p>temperature detector for liquid and gaseous media</p>		<p><b>TP-203A-CF-H1141-L150</b></p> <p>9910403</p> <p>temperature detector for liquid and gaseous media</p>

TS720-2UPN8-H1141 | 20-12-2022 01-39 | Technical modifications reserved

TP-203A-CF-H1141-L200

9910482

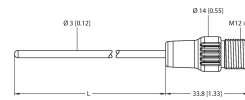
temperature detector for liquid and gaseous media



TP-203A-CF-H1141-L300

9910474

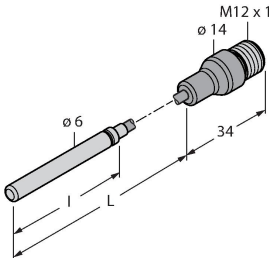
temperature detector for liquid and gaseous media



TP-306A-CF-H1141-L1000

9910479

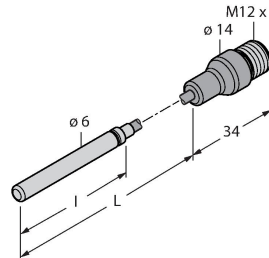
temperature detector for liquid and gaseous media



TP-306A-CF-H1141-L2000

9910480

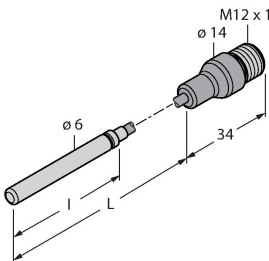
temperature detector for liquid and gaseous media



TP-306A-CF-H1141-L5000

9910481

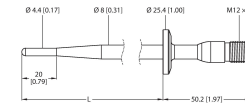
temperature detector for liquid and gaseous media



TP-504A-TRI3/4-H1141-L035

9910429

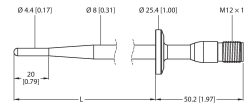
temperature detector for liquid and gaseous media



TP-504A-TRI3/4-H1141-L100

9910430

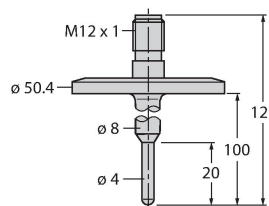
temperature detector for liquid and gaseous media



TP-504A-TRI1.5-H1141-L100

9910860

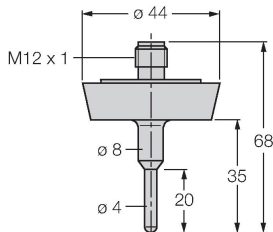
temperature detector for liquid and gaseous media



TP-504A-DN25K-H1141-L035

9910431

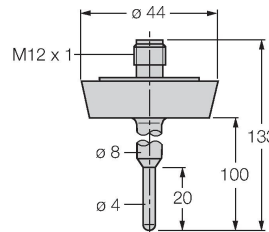
temperature detector for liquid and gaseous media



TP-504A-DN25K-H1141-L100

9910432

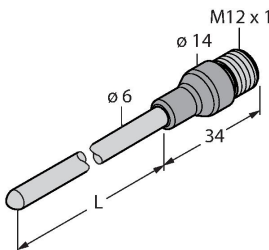
temperature detector for liquid and gaseous media



TP-206KK1-CF-H1141-L100

100017085

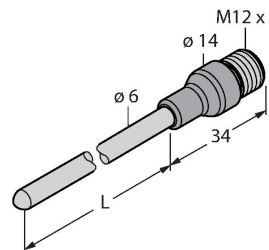
temperature detector for liquid and gaseous media



TP-206KK1-CF-H1141-L150

100017084

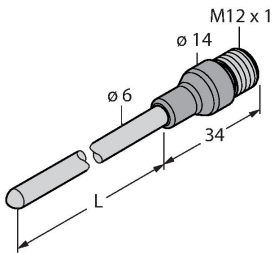
temperature detector for liquid and gaseous media



TP-206KK1-CF-H1141-L200

100017083

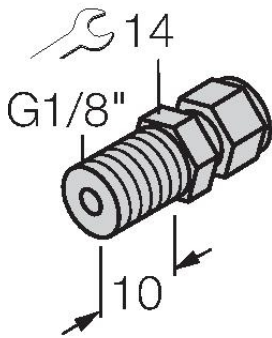
temperature detector for liquid and gaseous media



CF-M-3-G1/8-A4

9910405

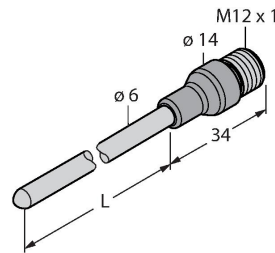
Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection G1/8" male thread



TP-206KK1-CF-H1141-L500

100017082

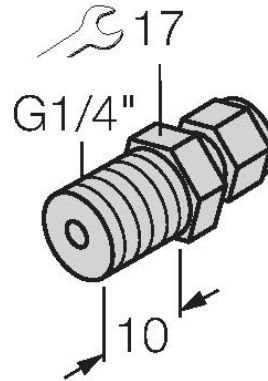
temperature detector for liquid and gaseous media



CF-M-3-G1/4-A4

9910407

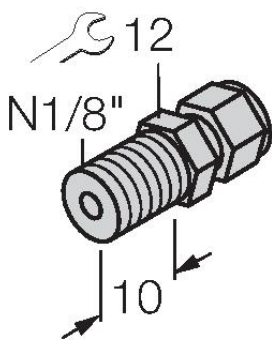
Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection G1/4" male thread



CF-M-3-N1/8-A4

9910406

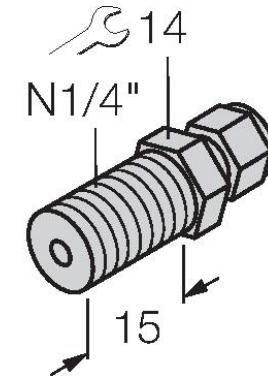
Compression fitting for direct mounting of temperature sensors; sensor diameter 6 mm; process connection 1/8" NPT male thread



CF-M-3-N1/4-A4

9910408

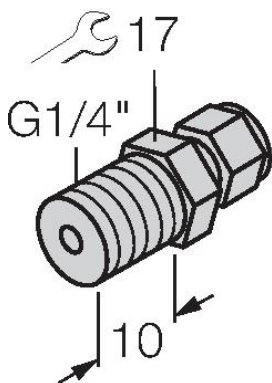
Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection 1/4" NPT male thread



CF-M-6-G1/4-A4

9910483

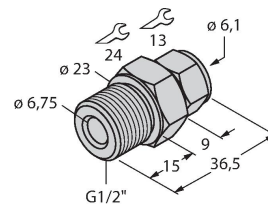
Compression fitting for direct mounting of temperature sensors; sensor diameter 6 mm; process connection G1/4" male thread



CF-M-6-G1/2-A4

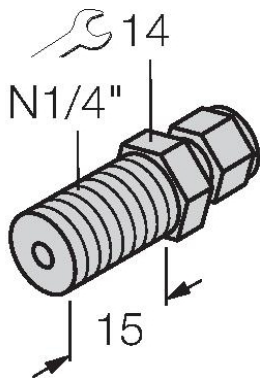
9910530

Compression fitting for direct mounting of temperature sensors; sensor diameter 6 mm; process connection G1/2" male thread



CF-M-6-N1/4-A4

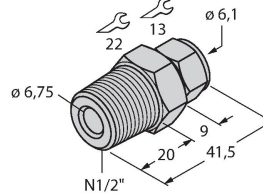
9910484



Compression fitting for direct mounting of temperature sensors; sensor diameter 6 mm; process connection 1/4" NPT male thread

CF-M-6-N1/2-A4

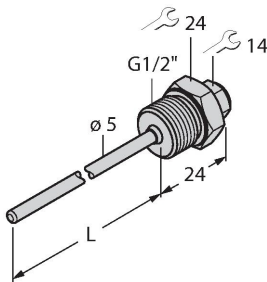
9910529



Compression fitting for direct mounting of temperature sensors; sensor diameter 6 mm; process connection 1/2" NPT male thread

THW-3-G1/2-A4-L050

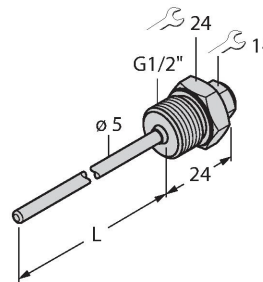
9910443



Protective tube for mounting temperature sensors; sensor diameter 3 mm; process connection G1/2" external thread; immersion depth 50 mm

THW-3-G1/2-A4-L100

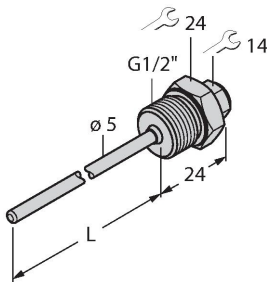
9910444



Protective tube for mounting temperature sensors; sensor diameter 3 mm; process connection G1/2" external thread; immersion depth 100 mm

THW-3-G1/2-A4-L200

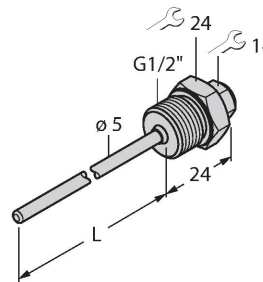
9910487



Protective tube for mounting temperature sensors; sensor diameter 3 mm; process connection G1/2" external thread; immersion depth 200 mm

THW-3-G1/2-A4-L250

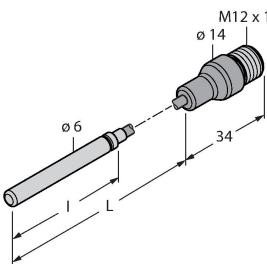
9910446



Protective tube for mounting temperature sensors; sensor diameter 3 mm; process connection G1/2" external thread; immersion depth 250 mm

TP-306A-CF-H1141-L5500

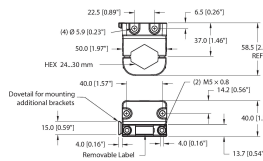
100024018



temperature detector for liquid and gaseous media

FAM-30-PA66

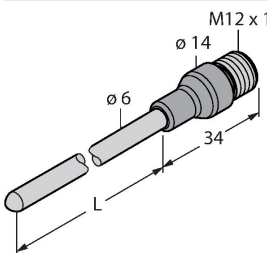
100018384



Mounting bracket; variable wrench size 24–30 mm; removable labeling plate 20 × 9 mm

TP-206KK1-CF-H1141-L1000

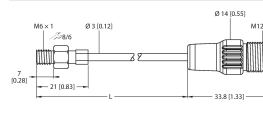
100034627



temperature detector for liquid and gaseous media

TP-203A-M6-H1141-L100-I7

100041106



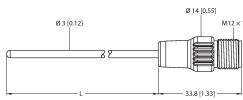
temperature detector for liquid and gaseous media



TP-203KK1-CF-H1141-L150

100045292

temperature detector for liquid and gaseous media



mm 1/16

## Accessories

Dimension drawing	Type	ID	
	RKC4.4T-2-RSC4.4T/TEL	6625208	Connection cable, M12 female plug, straight, 4-pin, cable length: 2 m, sheath material: PVC, black; cULus approval; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>
	RKC4.4T-2-RSC4.4T/TXL	6625608	Extension cable, M12 female connector, straight, 4-pin to M12 male connector, straight, 4-pin; cable length: 2 m, jacket material: PUR, black; cULus approval; other cable lengths and versions available, see <a href="http://www.turck.com">www.turck.com</a>
	HT-WAK4-2-HT-WAS4/S2430	8038668	High-temperature-resistant extension cable, M12 female, straight, 4-pin to M12 male, straight, 4-pin; cable length: 2 m, jacket material: PTFE, white; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>
	RKH4.4-2-RSH4.4/TFG	6933472	Food and Beverage extension cable, M12 female, straight, 4-pin to M12 male, straight, 4-pin; cable length: 2 m, jacket material: TPE, gray; approval: Ecolab, FDA; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>