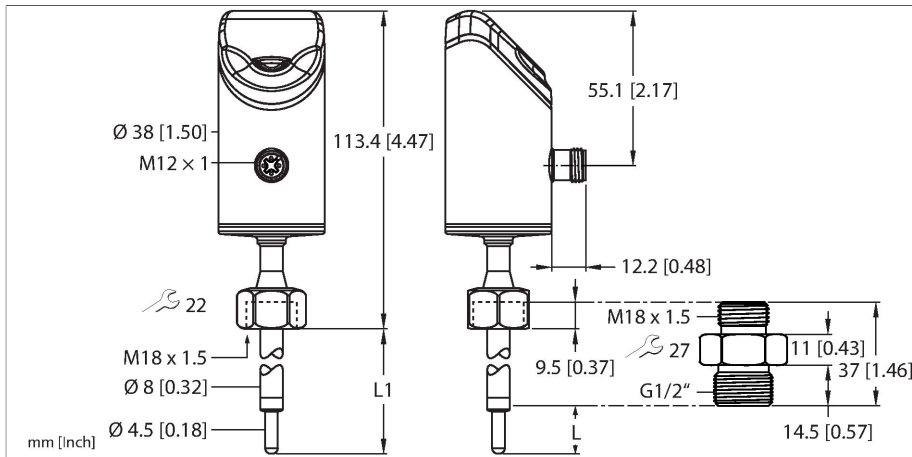


TS700-L050-30-LI2UPN8-H1141

Temperature Detection – With Current or Voltage Output and PNP/NPN Transistor Switching Output



Technical data

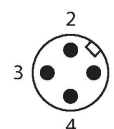
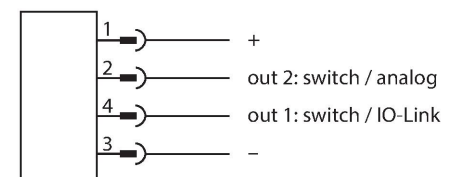
Type	TS700-L050-30-LI2UPN8-H1141
Ident. no.	100004381
Temperature range	
Measuring range	-50...150 °C
Temperature operating range	-58...302 °F
Accuracy	± (0.15 °C + 0.002 • t) [-30...300 °C]
Measuring element	Pt-1000 probe, DIN EN 60751, class A
Response time	t0.5 = 3.5 s/t0.9 = 9.5 s in water at 0.2 m/s
Immersion depth (L)	50 mm
Pressure resistance	300 bar
Operating voltage	17...33 VDC
Protective measure	SELV, PELV according to DIN EN 61140
Short-circuit/reverse polarity protection	yes / yes
Insulation class	III
Output 1	Switching output or IO-Link mode
Output 2	analog or switching output
Switching output	
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN
Switching point accuracy	± 0.2 K
Rated operational current	0.25 A
Release position	-50...+149.8 °C
Switching point	-49.8...+150 °C
Switching point distance	≥ 0.2 K
Switching cycles	≥ 100 mil.



Features

- Screw-in adapter with process connection G1/2" male thread included in delivery
- 4-digit, two-colored, 12-segment display, rotatable by 180°
- Upper part of housing can be rotated up to 340°
- Materials in contact with media: 1.4404 (316L), CR O-ring, AFM34 flat seal
- Immersion length: 50 mm
- 17...33 VDC
- NO/NC contact, PNP/NPN output, analog output (current/voltage), 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 versions with (TS700) and without (TS720) temperature sensors as well as different output options are available.

Technical data

Analog output	
Current output	4...20 mA
Alternative current output	0...20 mA
Current output note	Each invertible
Voltage output	0...10 V
Alternative voltage output	0... 5 V
Alternative voltage output	1... 6 V
Alternative voltage output	0.5...4.5 V
Voltage output note	Each invertible
Accuracy (Lin. + Hys. + Rep.)	± 0.3 K
Remark	0.1% of full scale applies to temperatures > 200 °C
Repeatability	0.1 K
IO-Link	
IO-Link specification	V 1.1
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
Programming	
Programming options	Switching logic (PNP, NPN, Auto*), switching/release point; hysteresis/window mode; NO/NC; unit; IO-Link mapping profile; analog output (U, I, Auto*); 0 (4)... 20 mA, 0...(5) 10 VDC, 1...6 VDC, 0.5... 4.5 VDC; * factory settings
Housing material	Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV
Process connection	G 1/2" male thread
Electrical connection	Connectors, M12 × 1
Protection class	IP6K6K / 6K7 / 6K9K
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
Reference conditions acc. to IEC 61298-1	
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)
Included in delivery	Screw-in adapter with process connection G 1/2" male thread, 2 × AFM flat seal

Technical data

Type	TS700-L050-30-LI2UPN8-H1141
Ident. no.	100004381
Temperature range	
Measuring range	-50...150 °C
Temperature operating range	-58...302 °F
Accuracy	(0.15 °C + 0.002 • t) [-30...300 °C]
Measuring element	Pt-1000 probe, DIN EN 60751, class A
Response time	t0.5 = 3.5 s/t0.9 = 9.5 s in water at 0.2 m/s
Immersion depth (L)	50 mm
Operating voltage	17...33 VDC
Voltage drop at I _o	≤ 2 V
Protective measure	SELV, PELV according to DIN EN 61140
Short-circuit/reverse polarity protection	yes / yes
Protection type and class	IP6K6K / 6K7 / 6K9K / III
Output 1	Switching output or IO-Link mode
Output 2	analog or switching output
Switching output	
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
Switching cycles	≥ 100 mil.
Release position	-50...+149.8 °C
Switching point	-49.8...+150 °C
Analog output	
Current output	4...20 mA
Alternative current output	20...0 mA
Current output note	Each invertible
Voltage output	0...10 V
Alternative voltage output	0... 5 V
Alternative voltage output	1... 6 V

Technical data

Alternative voltage output	0.5...4.5 V
Voltage output note	Each invertible
Accuracy (Lin. + Hys. + Rep.)	± 0.3 K
Remark	0.1% of full scale applies to temperatures > 200 °C
Repeatability	0.1 K
IO-Link	
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
Process connection	G 1/2" male thread
Pressure resistance	300 bar
Electrical connection	Connectors, M12 × 1
Reference conditions acc. to IEC 61298-1	
Temperature	15...+25 °C
Atmospheric pressure	860...1060 hPa abs.
Humidity	10...95 % rel.
Auxiliary power	24 VDC
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; analog output (U, I, Auto*); 0 (4)... 20 mA, 0...(5) 10 VDC, 1...6 VDC, 0.5... 4.5 VDC; * factory settings
Included in delivery	Screw-in adapter with process connection G 1/2" male thread, 2 × AFM flat seal

Status LEDs

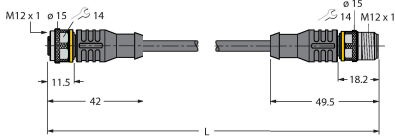
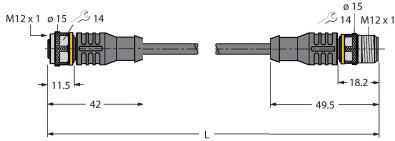
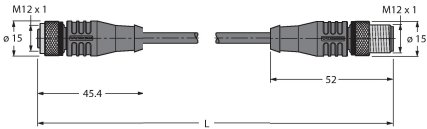
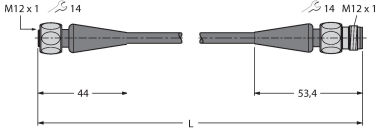
LED	Color	Status	Description
PWR	Green	On	Operating voltage applied Device is operational
		Flashing	Operating voltage applied IO-Link communication active (inverted flash with T on 900 ms and T off 100 ms)
FLT	Red	On	Error displayed (For error pattern in combination with LEDs see manual)
		Off	No errors 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

Dimension drawing	Type	Ident. no.	
	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 www.turck.com
	RKC4.4T-2-RSC4.4T/TXL	6625608	Extension cable, M12 female, straight, 4-pin to M12 male, straight, 4-pin; cable length: 2 m, jacket material: PUR, black; cULus approval; other cable lengths and qualities available, see www.turck.com
	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 www.turck.com
	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 www.turck.com