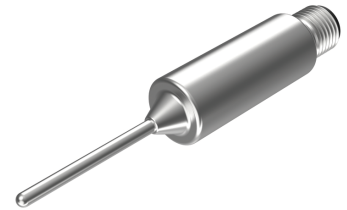
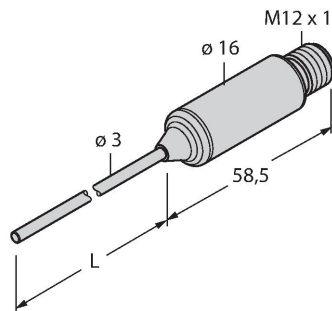


TTMS-203A-CF-LIUPN-H1140-L100

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



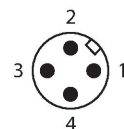
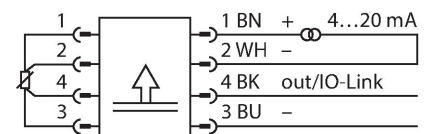
Technical data

Type	TTMS-203A-CF-LIUPN-H1140-L100
ID	9910656
Temperature range	
Measuring range	-70...500 °C -94...662 °F
Factory setting	0...150 °C 32...302 °F
Note	Max. temperature of electronics: 80 °C/176 °F
Accuracy	$\pm 0.15 \text{ K} + 0.002 \cdot t $ (-30...300 °C)
Measuring element	Pt100, DIN EN 60751, class A
Response time	$t_{05} = 1.5 \text{ s} / t_{09} = 6.0 \text{ s}$ in water @ 0.2 m/s
Immersion depth L	100 mm
Outer diameter	3 mm
Power supply	
Operating voltage U_B	18...32 VDC (UL: Class 2)
Current consumption	$\leq 20 \text{ mA}$
Voltage drop at I_B	$\leq 2 \text{ V}$
Short-circuit/reverse polarity protection	yes / yes
Protection class	IP67
Insulation class	III
Outputs	
Output 1	Switching output or IO-Link mode
Output 2	Analog output

Features

- Miniature design
- Factory setting 0...150 °C
- Parameterizable via IO-Link
- Analog output 4...20 mA (2-wire)
- Switching output
- Compression fitting process connection
- Bendable probe (min. bending radius: 3x outer diameter; excluding 30-mm probe tip)

Wiring diagram



Functional principle

All devices of the miniature transmitter series TTMS are made of stainless steel 1.4404 (AISI 316L). They are available with integrated probe or with M12 probe connection. Due to the integrated electronics, the limited temperature range must be observed, especially in the area of the M12 connector. Furthermore, the devices feature a current output (2-wire, 4...20 mA), a switching output and communication via IO-Link.

Technical data

Switching output	
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN
Note	Connection to PIN 1+3+4. Please use a 3-wire cable for operation on a Turck TBEN IO-Link master.
Switching point accuracy	$\pm 0.3 \text{ K}$
Rated operational current	0.15 A
Switching cycles	$\geq 100 \text{ mil.}$
Release position	-210...+640 °C
Switching point	-200...+650 °C
Analog output	
Current output	4...20 mA
Note	Connection to PIN 1+2
Load	$\leq [(V_{\text{supply}} - 10 \text{ V})/21 \text{ mA}] \text{ k}\Omega$
Accuracy (Lin. + Hys. + Rep.)	$\pm 0.3 \text{ K}$
Remark	0.1 % of full scale applies to values > +300 °C
Repeatability	0.1 K
IO-Link	
IO-Link specification	V 1.1
Programming	FDT / DTM
Transmission physics	corresponds to 3-wire physics (PHY2)
Transmission rate	COM 2 / 38.4 kbps
Process data width	16 bit
Measured value information	15 bit
Switchpoint information	1 bit
Frame type	2.2
Genauigkeit	$\pm 0.2 \text{ K}$
Included in the SIDI GSDML	Yes
Temperature behaviour	
Temperature coefficient zero point TK_0	$\pm 0.1 \text{ \% of full scale/10 K}$
Temperature coefficient range TK_s	$\pm 0.1 \text{ \% of full scale/10 K}$
Environmental conditions	
Ambient temperature	-40...+80 °C
Storage temperature	-40...+80 °C
Mechanical data	
Housing material	Stainless steel, 1.4404 (AISI 316L)
Sensor material	Stainless steel, 1.4404 (AISI 316L)
Process connection	For compression fittings, thermowell or direct mounting
Pressure resistance	100 bar

Technical data

Electrical connection	Connector, M12 × 1
Reference conditions acc. to IEC 61298-1	
Temperature	15...+25 °C
Atmospheric pressure	860...1060 hPa abs.
Humidity	45...75 % rel.
Auxiliary power	24 VDC
Tests/approvals	
Approvals	cULus
UL registration number	E345414
MTTF	541 years acc. to SN 29500 (Ed. 99) 40 °C

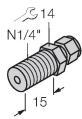
Accessories

CF-M-3-G1/8-A4	9910405	CF-M-3-G1/4-A4	9910407
			
Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection G1/8" male thread		Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection G1/4" male thread	
CF-M-3-N1/4-A4	9910408	CF-P-3-G1/8-A4	9910409
			
Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection 1/4" NPT male thread		Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection G1/8" male thread	
CF-P-3-G1/4-A4	9910411	CF-P-3-N1/8-A4	9910410
			
Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection G1/4" male thread		Compression fitting for direct mounting of temperature sensors; sensor diameter 3 mm; process connection 1/8" NPT male thread	

CF-P-3-N1/4-A4

9910412

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



Accessories

Dimension drawing	Type	ID	
	WKC4.4T-2/TEL	6625025	Connection cable, M12 female connector, angled, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval
	RKC4.4T-2/TEL	6625013	Connection cable, M12 female connector, straight, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval
	RKC4.4T-2/TXL	6625503	Connection cable, M12 female connector, straight, 4-pin, cable length: 2 m, jacket material: PUR, black; cULus approval
	WKC4.4T-2/TXL	6625515	Connection cable, M12 female connector, angled, 4-pin, cable length: 2 m, jacket material: PUR, black; cULus approval
	RKC4.4T-P7X2-10/TXL	6626184	Connection cable, M12 female connector, straight, 4-pin, LED, cable length: 10 m, jacket material: PUR, black; cULus approval