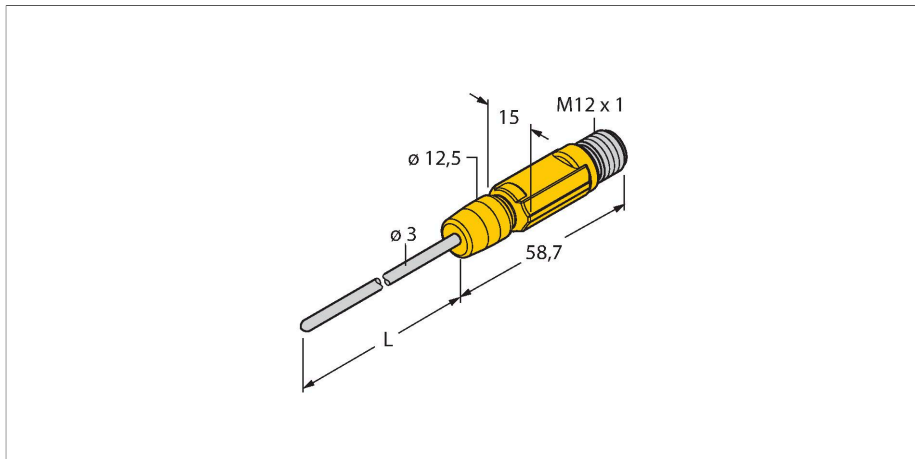


# TTM-203A-CF-LIUPN-H1140-L150

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



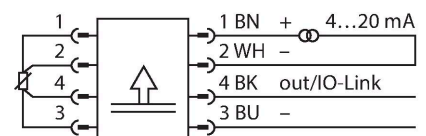
### Technical data

Type	TTM-203A-CF-LIUPN-H1140-L150
ID no.	9910622
<b>Temperature range</b>	
Measuring range	-210...650 °C
Temperature operating range	-346...1202 °F
Factory setting	0...150 °C
	32...302 °F
Accuracy	± 0.15 °C + 0.002 • t  (-30...350 °C)
Measuring element	Pt-100 probe, DIN EN 60751, class A
Response time	t 0.5 = 1.5 s / t 0.9 = 6.0 s in water at 0.2 m/s
Immersion depth (L)	150 mm
Pressure resistance	100 bar
<b>Power supply</b>	
Operating voltage	15...30 VDC
Current consumption	≤ 20 mA
Short-circuit/reverse polarity protection	yes / yes
Insulation class	III
Output 1	Switching output or IO-Link mode
Output 2	analog output
<b>Switching output</b>	
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN
Switching point accuracy	± 0.3 K
Rated operational current	0.15 A
Release position	-210...+640 °C

### Features

- Miniature design
- 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

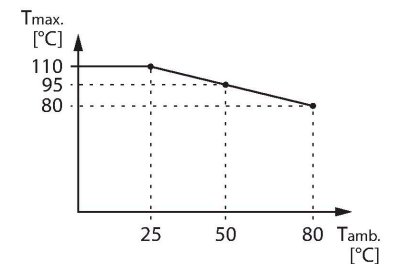


### Functional principle

The TTM miniature transmitters are available with integrated probe. Due to the integrated electronics, the limited temperature range must be observed, especially in the area of the M12 connector.

## Technical data

Switching point	-200...+650 °C
Switching cycles	≥ 100 mil.
<b>Analog output</b>	
Current output	4...20 mA
Load	≤ [(Vsupply - 10 V)/21 mA] kΩ
Accuracy (Lin. + Hys. + Rep.)	± 0.3 K
Remark	0.1 % of full scale applies to temperatures > +300 °C
Repeatability	0.1 K
<b>IO-Link</b>	
IO-Link specification	Specified acc. to version 1.1
Transmission physics	corresponds to 3-wire physics (PHY2)
Frame type	2.2
Transmission rate	COM 2 / 38.4 kbps
Process data width	16 bit
Measured value information	15 bit
Switchpoint information	1 bit
Programming	FDT / DTM
Genauigkeit	± 0.2 K
Included in the SIDI GSDML	Yes
Housing material	Stainless-steel/Plastic, 1.4404 (AISI 316L)
Process connection	For compression fittings, thermowell or direct mounting
Electrical connection	Connectors, M12 × 1
Protection class	IP67
Ambient temperature	-40...+80 °C
Storage temperature	-40...+80 °C
<b>Reference conditions acc. to IEC 61298-1</b>	
Temperature	15...+25 °C
Atmospheric pressure	860...1060 hPa abs.
Humidity	45...75 % rel.
Auxiliary power	24 VDC
<b>Temperature behaviour</b>	
Temperature coefficient span $T_{KS}$	± 0.1 % of full scale/10 K
Temperature coefficient zero point $T_{K0}$	± 0.1 % of full scale/10 K
MTTF	541 years acc. to SN 29500 (Ed. 99) 40 °C



## Technical data

Type	TTM-203A-CF-LIUPN-H1140-L150
ID no.	9910622

## Technical data

<b>Temperature range</b>	
Measuring range	-210...650 °C
Temperature operating range	-346...1202 °F
Factory setting	0...150 °C
	32...302 °F
Note	Max. temperature of electronics: 80 °C/176 °F
Accuracy	0.15 °C + 0.002 • t  (-30...350 °C)
Measuring element	Pt-100 probe, DIN EN 60751, class A
Response time	t 0.5 = 1.5 s / t 0.9 = 6.0 s in water at 0.2 m/s
Immersion depth (L)	150 mm
<b>Power supply</b>	
Operating voltage	15...30 VDC
Current consumption	≤ 20 mA
Voltage drop at I <sub>e</sub>	≤ 2 V
Short-circuit/reverse polarity protection	yes / yes
Protection type and class	IP67 / III
<b>Outputs</b>	
Output 1	Switching output or IO-Link mode
Output 2	analog output
<b>Switching output</b>	
Communication protocol	IO-Link
Output function	NO/NC programmable, PNP/NPN
Switching point accuracy	± 0.3 K
Rated operational current	0.15 A
Switching cycles	≥ 100 mil.
Release position	-210...+640 °C
Switching point	-200...+650 °C
<b>Analog output</b>	
Current output	4...20 mA
Load	≤ [(V <sub>supply</sub> - 10 V)/21 mA] kΩ
Accuracy (Lin. + Hys. + Rep.)	± 0.3 K
Remark	0.1 % of full scale applies to temperatures > +300 °C
Repeatability	0.1 K
<b>IO-Link</b>	
IO-Link specification	Specified acc. to version 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

## Technical data

Measured value information	15 bit
Switchpoint information	1 bit
Frame type	2.2
Genauigkeit	± 0.2 K
Included in the SIDI GSDML	Yes
<b>Temperature behaviour</b>	
Temperature coefficient zero point $T_{k0}$	± 0.1 % of full scale/10 K
Temperature coefficient span $T_{ks}$	± 0.1 % of full scale/10 K
<b>Ambient conditions</b>	
Ambient temperature	-40...+80 °C
Storage temperature	-40...+80 °C
<b>Housing</b>	
Housing material	Stainless-steel/Plastic, 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
Electrical connection	Connectors, M12 × 1
<b>Reference conditions acc. to IEC 61298-1</b>	
Temperature	15...+25 °C
Atmospheric pressure	860...1060 hPa abs.
Humidity	45...75 % rel.
Auxiliary power	24 VDC
MTTF	541 years acc. to SN 29500 (Ed. 99) 40 °C

## Accessories

Dimension drawing	Type	ID no.	
	WKC4.4T-2/TEL	6625025	Connection cable, female M12, angled, 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/TEL	6625013	Connection cable, female M12, 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/TXL	6625503	Connection cable, female M12, straight, 4-pin, cable length: 2 m, sheath material: PUR, black; cULus approval; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>
	WKC4.4T-2/TXL	6625515	Connection cable, female M12, angled, 4-pin, cable length: 2 m, sheath material: PUR, black; cULus approval; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>
	RKC4.4T-P7X2-10/TXL	6626184	Connection cable, female M12, angled, 4-pin, cable length: 10m, sheath material: PUR, black; cULus approval; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>