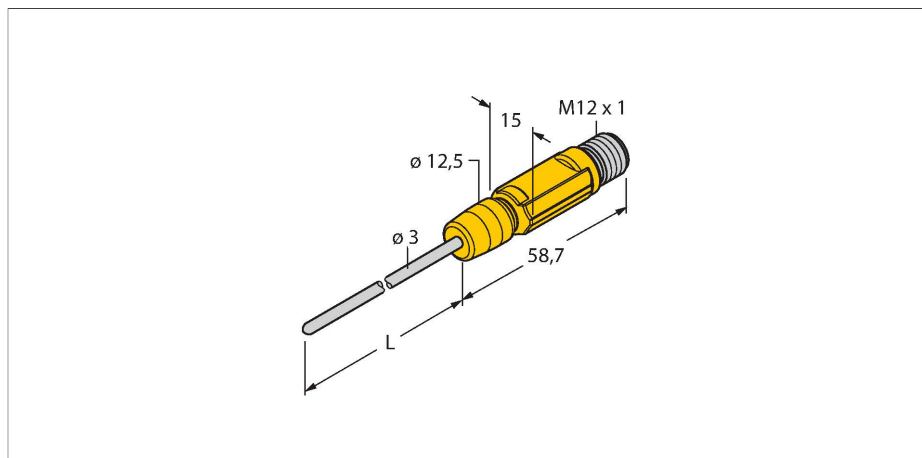


# TTM-203A-CF-LIUPN-H1140-L100

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



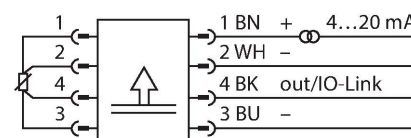
### Technical data

|                                           |                                                                         |
|-------------------------------------------|-------------------------------------------------------------------------|
| Type                                      | TTM-203A-CF-LIUPN-H1140-L100                                            |
| ID no.                                    | 9910620                                                                 |
| <b>Temperature range</b>                  |                                                                         |
| Measuring range                           | -210...650 °C                                                           |
| Temperature operating range               | -346...1202 °F                                                          |
| Factory setting                           | 0...150 °C                                                              |
|                                           | 32...302 °F                                                             |
| Accuracy                                  | $\pm 0.15\text{ °C} + 0.002 \cdot  t $ (-30...350 °C)                   |
| Measuring element                         | Pt-100 probe, DIN EN 60751, class A                                     |
| Response time                             | $t_{0.5} = 1.5\text{ s}$ / $t_{0.9} = 6.0\text{ s}$ in water at 0.2 m/s |
| Immersion depth (L)                       | 100 mm                                                                  |
| Process Pressure                          | 100 bar                                                                 |
| <b>Power supply</b>                       |                                                                         |
| Operating voltage                         | 15...30 VDC                                                             |
| Current consumption                       | $\leq 20\text{ mA}$                                                     |
| 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                                             |

### 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

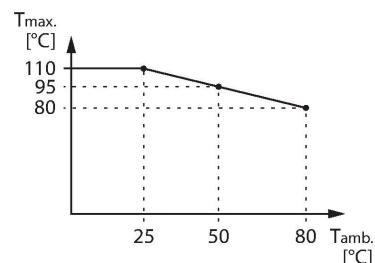


### Functional principle

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 accuracy                        | ± 0.3 K                                                 |
| Rated operational current                       | 0.15 A                                                  |
| Release position                                | -210...+640 °C                                          |
| 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                           | Connector, 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 <sub>KS</sub>    | ± 0.1 % of full scale/10 K                              |



## Technical data

|                                        |                                           |
|----------------------------------------|-------------------------------------------|
| Temperature coefficient zero point Tk0 | ± 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-L100                      |
| ID no.                                    | 9910620                                           |
| <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:<br>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)                       | 100 mm                                            |
| <b>Power supply</b>                       |                                                   |
| Operating voltage                         | 15...30 VDC                                       |
| Current consumption                       | ≤ 20 mA                                           |
| Voltage drop at I <sub>o</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         |

## Technical data

|                                                 |                                                         |
|-------------------------------------------------|---------------------------------------------------------|
| 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                                                  |
| 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 Tk0          | ± 0.1 % of full scale/10 K                              |
| Temperature coefficient span T <sub>ks</sub>    | ± 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 |
| Process Pressure                                | 100 bar                                                 |
| 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                                        | 45...75 % rel.                                          |
| Auxiliary power                                 | 24 VDC                                                  |
| MTTF                                            | 541 years acc. to SN 29500 (Ed. 99) 40 °C               |