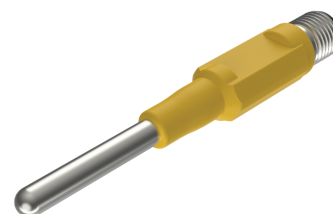
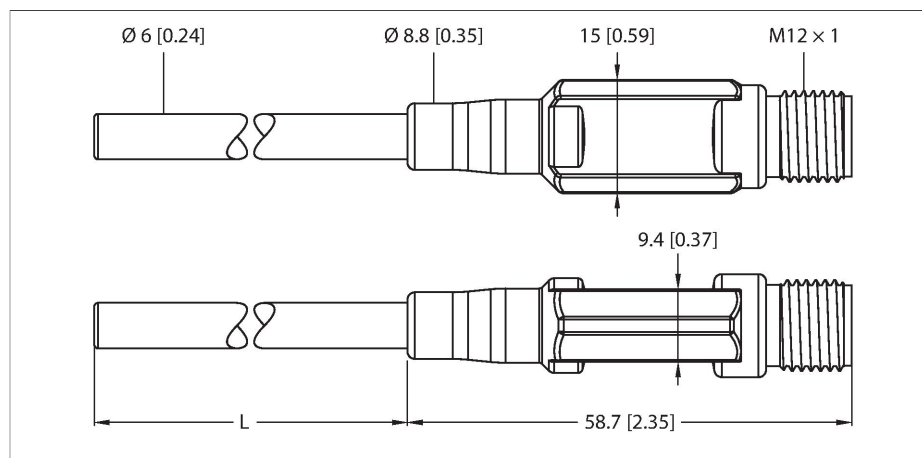


# TTM-206A-CF-LIUPN-H1140-L200

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



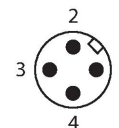
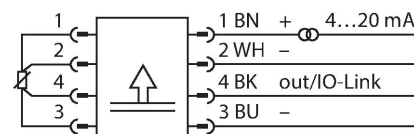
### Technical data

|                                           |                                                                      |
|-------------------------------------------|----------------------------------------------------------------------|
| Type                                      | TTM-206A-CF-LIUPN-H1140-L200                                         |
| ID                                        | 9910670                                                              |
| <b>Temperature range</b>                  |                                                                      |
| Measuring range                           | -50...350 °C                                                         |
|                                           | -58...662 °F                                                         |
| Factory setting                           | 0...150 °C                                                           |
|                                           | 32...302 °F                                                          |
| Accuracy                                  | ±0.15 K + 0.002 •  t  (-30...300 °C)                                 |
| Measuring element                         | Pt100, DIN EN 60751, class A                                         |
| Response time                             | t <sub>05</sub> = 1.5 s / t <sub>09</sub> = 6.0 s in water @ 0.2 m/s |
| Immersion depth (L)                       | 200 mm                                                               |
| Process Pressure                          | 100 bar                                                              |
| <b>Power supply</b>                       |                                                                      |
| Operating voltage U <sub>B</sub>          | 8...32 VDC                                                           |
| Current consumption                       | ≤ 20 mA                                                              |
| Short-circuit/reverse polarity protection | yes / yes                                                            |
| Insulation class                          | 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                                          |

### 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

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                                            | ≤ [(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                           | V 1.1                                                   |
| 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                                                  |
| Switching point information                     | 1 bit                                                   |
| Frame type                                      | 2.2                                                     |
| Programming                                     | FDT / DTM                                               |
| Genauigkeit                                     | ± 0.2 K                                                 |
| Included in the SIDI GSDML                      | Yes                                                     |
| <b>Mechanical data</b>                          |                                                         |
| 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                                                    |
| <b>Environmental conditions</b>                 |                                                         |
| Ambient temperature                             | -40...+80 °C                                            |
| Storage temperature                             | -40...+80 °C                                            |
| <b>Tests/approvals</b>                          |                                                         |
| UL registration number                          | E345414                                                 |
| <b>Reference conditions acc. to IEC 61298-1</b> |                                                         |
| Temperature                                     | 15...+25 °C                                             |
| Atmospheric pressure                            | 860...1060 hPa abs.                                     |

## Technical data

|                                           |                                           |
|-------------------------------------------|-------------------------------------------|
| Humidity                                  | 45...75 % rel.                            |
| Auxiliary power                           | 24 VDC                                    |
| <b>Temperature behaviour</b>              |                                           |
| Temperature coefficient range $TK_s$      | $\pm 0.1$ % of full scale/10 K            |
| Temperature coefficient zero point $TK_0$ | $\pm 0.1$ % of full scale/10 K            |
| MTTF                                      | 541 years acc. to SN 29500 (Ed. 99) 40 °C |

## Technical data

|                                           |                                                                        |
|-------------------------------------------|------------------------------------------------------------------------|
| Type                                      | TTM-206A-CF-LIUPN-H1140-L200                                           |
| ID                                        | 9910670                                                                |
| <b>Temperature range</b>                  |                                                                        |
| Measuring range                           | -50...350 °C                                                           |
|                                           | -58...662 °F                                                           |
| Factory setting                           | 0...150 °C                                                             |
|                                           | 32...302 °F                                                            |
| Note                                      | Max. temperature of electronics:<br>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                         | 200 mm                                                                 |
| Outer diameter                            | 6 mm                                                                   |
| <b>Power supply</b>                       |                                                                        |
| Operating voltage $U_B$                   | 8...32 VDC                                                             |
|                                           | (UL: Class 2)                                                          |
|                                           | 18...32 VDC                                                            |
| Current consumption                       | $\leq 20 \text{ mA}$                                                   |
| Voltage drop at $I_a$                     | $\leq 2 \text{ V}$                                                     |
| Short-circuit/reverse polarity protection | yes / yes                                                              |
| Protection class                          | IP67                                                                   |
| Insulation class                          | 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                                            |

## Technical data

|                                                    |                                                                                                  |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 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                           | ± 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                                                                                        |
| Note                                               | Connection to PIN 1+2                                                                            |
| 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                              | 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                                        | ± 0.2 K                                                                                          |
| Included in the SIDI GSDML                         | Yes                                                                                              |
| <b>Temperature behaviour</b>                       |                                                                                                  |
| Temperature coefficient zero point TK <sub>0</sub> | ± 0.1 % of full scale/10 K                                                                       |
| Temperature coefficient range TK <sub>s</sub>      | ± 0.1 % of full scale/10 K                                                                       |
| <b>Environmental conditions</b>                    |                                                                                                  |
| Ambient temperature                                | -40...+80 °C                                                                                     |
| Storage temperature                                | -40...+80 °C                                                                                     |
| <b>Mechanical data</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                                                                                          |

## 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 |