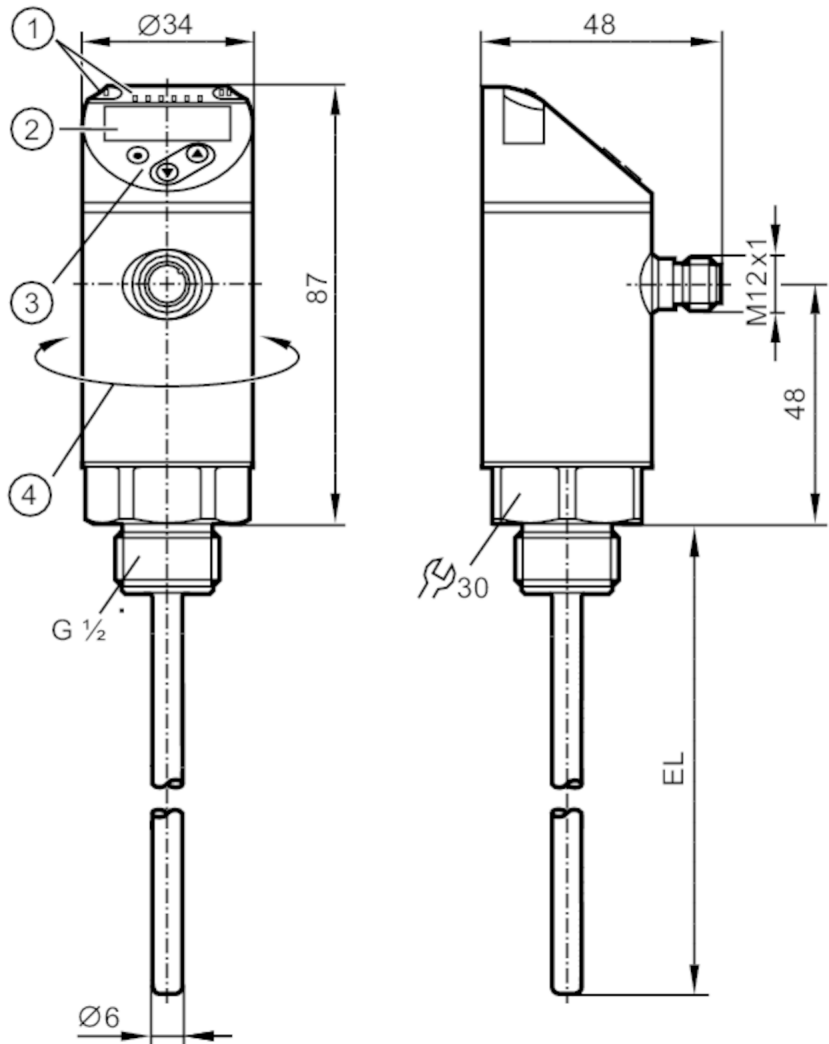


# TN2445



## Temperature sensor with display

TN-150KLBM12-MFRKG/US/ IV



- 1 LEDs Display unit / Switching status
- 2 alphanumeric display 4-digit red/green
- 3 Programming buttons
- 4 upper part of the housing can be rotated 345°



### Product characteristics

|                              |                                                           |              |
|------------------------------|-----------------------------------------------------------|--------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analog outputs: 1 |              |
| Measuring range              | -50...150 °C                                              | -58...302 °F |
| Communication interface      | IO-Link                                                   |              |
| Process connection           | threaded connection G 1/2 external thread                 |              |
| Installation length EL [mm]  | 150                                                       |              |

### Application

|                   |                                         |        |
|-------------------|-----------------------------------------|--------|
| Special feature   | gold-plated contacts                    |        |
| Measuring element | 1 x Pt 1000; (to DIN EN 60751, class A) |        |
| Media             | liquids and gases                       |        |
| Pressure rating   | 250 bar                                 | 25 MPa |

# TN2445



## Temperature sensor with display

TN-150KLBM12-MFRKG/US/ IV

| Electrical data                                 |      |                                                           |
|-------------------------------------------------|------|-----------------------------------------------------------|
| Operating voltage                               | [V]  | 18...32 DC; (cULus - Class 2 source required)             |
| Current consumption                             | [mA] | < 50                                                      |
| Protection class                                |      | III                                                       |
| Reverse polarity protection                     |      | yes                                                       |
| Power-on delay time                             | [s]  | 1                                                         |
| Integrated watchdog                             |      | yes                                                       |
| Inputs / outputs                                |      |                                                           |
| Number of inputs and outputs                    |      | Number of digital outputs: 2; Number of analog outputs: 1 |
| Outputs                                         |      |                                                           |
| Total number of outputs                         |      | 2                                                         |
| Output signal                                   |      | switching signal; analog signal; IO-Link; (configurable)  |
| Electrical design                               |      | PNP/NPN                                                   |
| Number of digital outputs                       |      | 2                                                         |
| Output function                                 |      | normally open / closed; (configurable)                    |
| Max. voltage drop switching output DC           | [V]  | 2.5                                                       |
| Permanent current rating of switching output DC | [mA] | 250                                                       |
| Number of analog outputs                        |      | 1                                                         |
| Analog current output                           | [mA] | 4...20                                                    |
| Max. load                                       | [Ω]  | 500                                                       |
| Analog voltage output                           | [V]  | 0...10                                                    |
| Min. load resistance                            | [Ω]  | 2000                                                      |
| Short-circuit protection                        |      | yes                                                       |
| Type of short-circuit protection                |      | yes (non-latching)                                        |
| Overload protection                             |      | yes                                                       |
| Measuring/setting range                         |      |                                                           |
| Probe length L                                  | [mm] | 133.2                                                     |
| Measuring range                                 |      | -50...150 °C -58...302 °F                                 |
| Factory setting                                 |      | -50...150 °C                                              |
| Set point SP                                    |      | -49.8...150 °C -57.6...302 °F                             |
| Reset point rP                                  |      | -50...149.8 °C -58...301.6 °F                             |
| Analog start point                              |      | -50...145 °C -58...293 °F                                 |
| Analog end point                                |      | -45...150 °C -49...302 °F                                 |
| In steps of                                     |      | 0.1 °C 0.1 °F                                             |
| Resolution                                      |      |                                                           |
| Resolution of switching output                  | [K]  | 0.1                                                       |
| Resolution of analog output                     | [K]  | current output: MS / 4096; voltage output: MS / 3561      |
| Resolution of display                           | [K]  | 0.1                                                       |
| Accuracy / deviations                           |      |                                                           |
| Switch point accuracy                           | [K]  | ± 0,3 + (± 0,1 % MS)                                      |
| Precision analog output                         | [K]  | ± 0,3 + (± 0,1 % MS)                                      |

# TN2445



## Temperature sensor with display

TN-150KLBM12-MFRKG/US/ IV

|                                                   |                      |                                                                                                                                         |  |
|---------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--|
| Display accuracy                                  | [K]                  | ± 0,3 + (± 0,1 % MS)                                                                                                                    |  |
| Temperature coefficient<br>[% of the span / 10 K] |                      | 0,1; (In case of deviation from the reference condition 25 ± 5 °C)                                                                      |  |
| Reaction times                                    |                      |                                                                                                                                         |  |
| Dynamic response T05 / T09                        | [s]                  | 1 / 3; (according to DIN EN 60751)                                                                                                      |  |
| Software / programming                            |                      |                                                                                                                                         |  |
| Parameter setting options                         |                      | hysteresis / window; normally open / closed; switching logic; switch-on/switch-off delay; Damping; Display unit; current/voltage output |  |
| Interfaces                                        |                      |                                                                                                                                         |  |
| Communication interface                           |                      | IO-Link                                                                                                                                 |  |
| Transmission type                                 |                      | COM2 (38,4 kBaud)                                                                                                                       |  |
| IO-Link revision                                  |                      | 1.1                                                                                                                                     |  |
| Profiles                                          | Smart Sensor - SSP 0 | Generic Profiled Sensor                                                                                                                 |  |
|                                                   | Function             | Device identification                                                                                                                   |  |
|                                                   | Function             | Process data variable                                                                                                                   |  |
|                                                   | Function             | Device diagnosis                                                                                                                        |  |
| Min. process cycle time                           | [ms]                 | 2.3                                                                                                                                     |  |
| Supported DeviceIDs                               | Type of operation    | DeviceID                                                                                                                                |  |
|                                                   | default              | 706                                                                                                                                     |  |
| Operating conditions                              |                      |                                                                                                                                         |  |
| Ambient temperature                               | [°C]                 | -25...80                                                                                                                                |  |
| Storage temperature                               | [°C]                 | -40...100                                                                                                                               |  |
| Protection                                        |                      | IP 67                                                                                                                                   |  |
| Tests / approvals                                 |                      |                                                                                                                                         |  |
| EMC                                               | DIN EN 61000-6-2     |                                                                                                                                         |  |
|                                                   | DIN EN 61000-6-3     |                                                                                                                                         |  |
| Shock resistance                                  | DIN IEC 68-2-27      | 50 g (11 ms)                                                                                                                            |  |
| Vibration resistance                              | DIN EN 60068-2-6     | 20 g (10...2000 Hz)                                                                                                                     |  |
| MTTF                                              | [years]              | 207                                                                                                                                     |  |
| UL approval                                       | UL approval number   | K015                                                                                                                                    |  |
| Mechanical data                                   |                      |                                                                                                                                         |  |
| Weight                                            | [g]                  | 311                                                                                                                                     |  |
| Housing                                           |                      | tubular                                                                                                                                 |  |
| Dimensions                                        | [mm]                 | Ø 34 / L = 237                                                                                                                          |  |
| Material                                          |                      | stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC                                                                              |  |
| Materials (wetted parts)                          |                      | stainless steel (1.4404 / 316L); O-ring: FKM                                                                                            |  |
| Tightening torque                                 | [Nm]                 | 45                                                                                                                                      |  |
| Process connection                                |                      | threaded connection G 1/2 external thread                                                                                               |  |
| Probe diameter                                    | [mm]                 | 6                                                                                                                                       |  |
| Installation length EL                            | [mm]                 | 150                                                                                                                                     |  |
| Displays / operating elements                     |                      |                                                                                                                                         |  |
| Display                                           | Display unit         | 2 x LED, green                                                                                                                          |  |
|                                                   | Switching status     | 2 x LED, yellow                                                                                                                         |  |
|                                                   | Measured values      | alphanumeric display, red/green 4-digit                                                                                                 |  |

TN2445



Temperature sensor with display

TN-150KLBM12-MFRKG/US/ /V

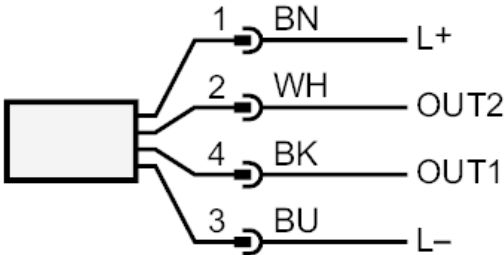
| Remarks       |                                                 |
|---------------|-------------------------------------------------|
| Remarks       | MS = set measuring span                         |
|               | The values for accuracy apply to flowing water. |
| Pack quantity | 1 pcs.                                          |

Electrical connection

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated



Connection



OUT1: Switching output / IO-Link  
OUT2: Switching output / analog output  
Colors to DIN EN 60947-5-2  
Core colors :  
BK = black  
BN = brown  
BU = blue  
WH = white