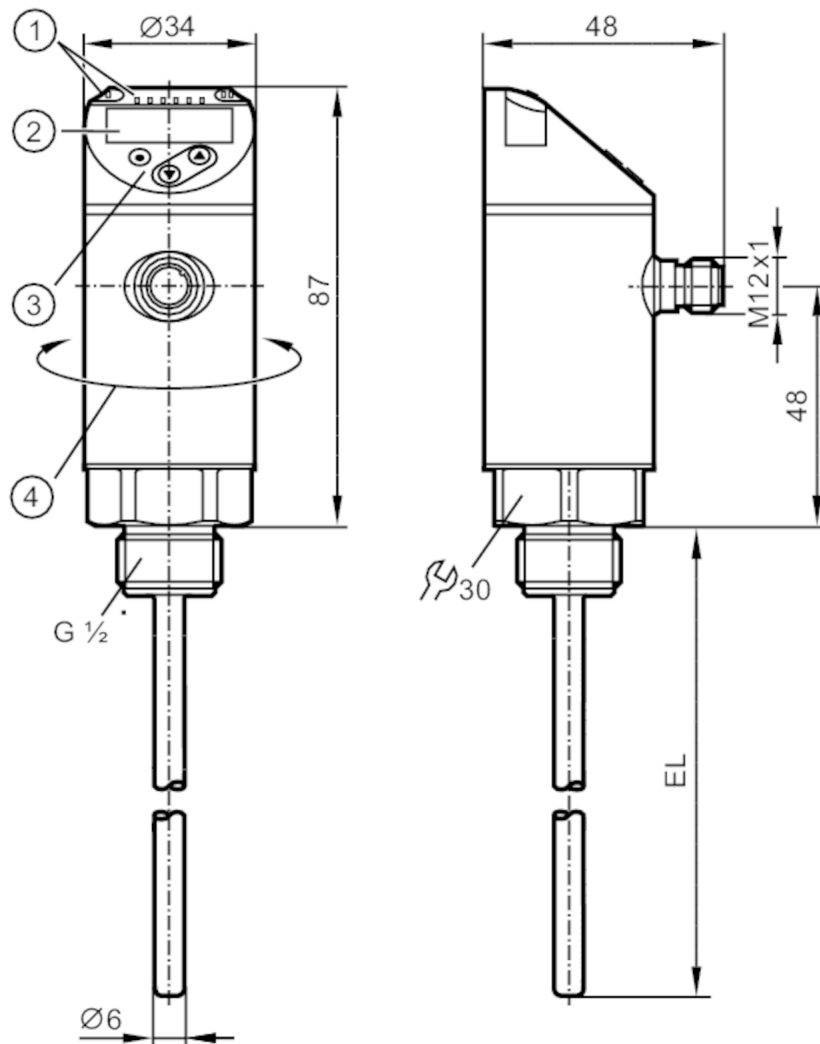


# TN2445



## 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°



### Application

|                       |                                         |
|-----------------------|-----------------------------------------|
| Measuring element     | 1 x Pt 1000; (to DIN EN 60751, class A) |
| Media                 | liquids and gases                       |
| Pressure rating [bar] | 250                                     |

### Electrical data

|                             |                                         |
|-----------------------------|-----------------------------------------|
| Operating voltage [V]       | 18...32 DC; ("supply class 2" to cULus) |
| Current consumption [mA]    | < 50                                    |
| Protection class            | III                                     |
| Reverse polarity protection | yes                                     |
| Power-on delay time [s]     | 1                                       |
| Integrated watchdog         | yes                                     |



## Temperature sensor with display

TN-150KLB12-MFRKG/US/ IV

| Outputs                                              |                                                                                                                                                  |                |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Total number of outputs                              | 2                                                                                                                                                |                |
| Output signal                                        | switching signal; analogue signal; IO-Link; (configurable)                                                                                       |                |
| Electrical design                                    | PNP/NPN                                                                                                                                          |                |
| Number of digital outputs                            | 2                                                                                                                                                |                |
| Output function                                      | normally open / normally closed; (parameterisable)                                                                                               |                |
| Max. voltage drop switching output DC [V]            | 2.5                                                                                                                                              |                |
| Permanent current rating of switching output DC [mA] | 250                                                                                                                                              |                |
| Number of analogue outputs                           | 1                                                                                                                                                |                |
| Analogue current output [mA]                         | 4...20                                                                                                                                           |                |
| Max. load [Ω]                                        | 500                                                                                                                                              |                |
| Analogue voltage output [V]                          | 0...10                                                                                                                                           |                |
| Min. load resistance [Ω]                             | 2000                                                                                                                                             |                |
| Short-circuit protection                             | yes                                                                                                                                              |                |
| Type of short-circuit protection                     | pulsed                                                                                                                                           |                |
| Overload protection                                  | yes                                                                                                                                              |                |
| Measuring/setting range                              |                                                                                                                                                  |                |
| 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 |
| Analogue start point                                 | -50...145 °C                                                                                                                                     | -58...293 °F   |
| Analogue 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 analogue 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 analogue output [K]                        | ± 0,3 + (± 0,1 % MS)                                                                                                                             |                |
| Display accuracy [K]                                 | ± 0,3 + (± 0,1 % MS)                                                                                                                             |                |
| Temperature coefficient [% of the span / 10 K]       | 0,1; (in case of deviation from the reference condition 25 ± 5 °C)                                                                               |                |
| Response times                                       |                                                                                                                                                  |                |
| Dynamic response T05 / T09 [s]                       | 1 / 3; (to DIN EN 60751)                                                                                                                         |                |
| Software / programming                               |                                                                                                                                                  |                |
| Parameter setting options                            | hysteresis / window; normally open / normally closed; switching logic; switch-on/switch-off delay; Damping; Display unit; current/voltage output |                |

# TN2445



## Temperature sensor with display

TN-150KLBM12-MFRKG/US/ IV

| Interfaces                                                                                     |                                                            |                                         |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------|
| Communication interface                                                                        | IO-Link                                                    |                                         |
| Transmission type                                                                              | COM2 (38,4 kBaud)                                          |                                         |
| IO-Link revision                                                                               | 1.1                                                        |                                         |
| 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 no.                                            | K015                                    |
| Mechanical data                                                                                |                                                            |                                         |
| Weight                                                                                         | [g]                                                        | 320                                     |
| Materials                                                                                      | stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC |                                         |
| Materials (wetted parts)                                                                       | stainless steel (1.4404 / 316L); O-ring: FKM               |                                         |
| Process connection                                                                             | threaded connection G 1/2                                  |                                         |
| 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 |
| Remarks                                                                                        |                                                            |                                         |
| Remarks                                                                                        | MS = set measuring span                                    |                                         |
|                                                                                                | The values for accuracy apply to flowing water.            |                                         |
| Pack quantity                                                                                  | 1 pcs.                                                     |                                         |
| Electrical connection                                                                          |                                                            |                                         |
| Connector: 1 x M12; Contacts: gold-plated                                                      |                                                            |                                         |
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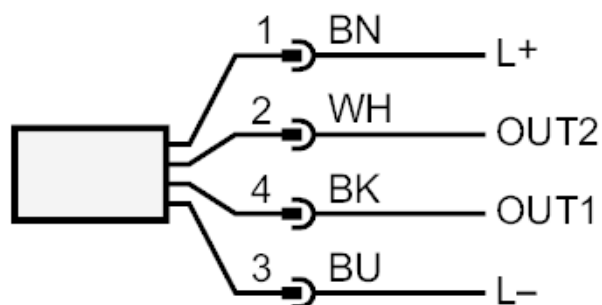
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## Temperature sensor with display

TN-150KLBM12-MFRKG/US/ IV

### Connection



OUT1: switching output / IO-Link

OUT2: switching output / analogue output

colours to DIN EN 60947-5-2

Core colours :

BK = black

BN = brown

BU = blue

WH = white