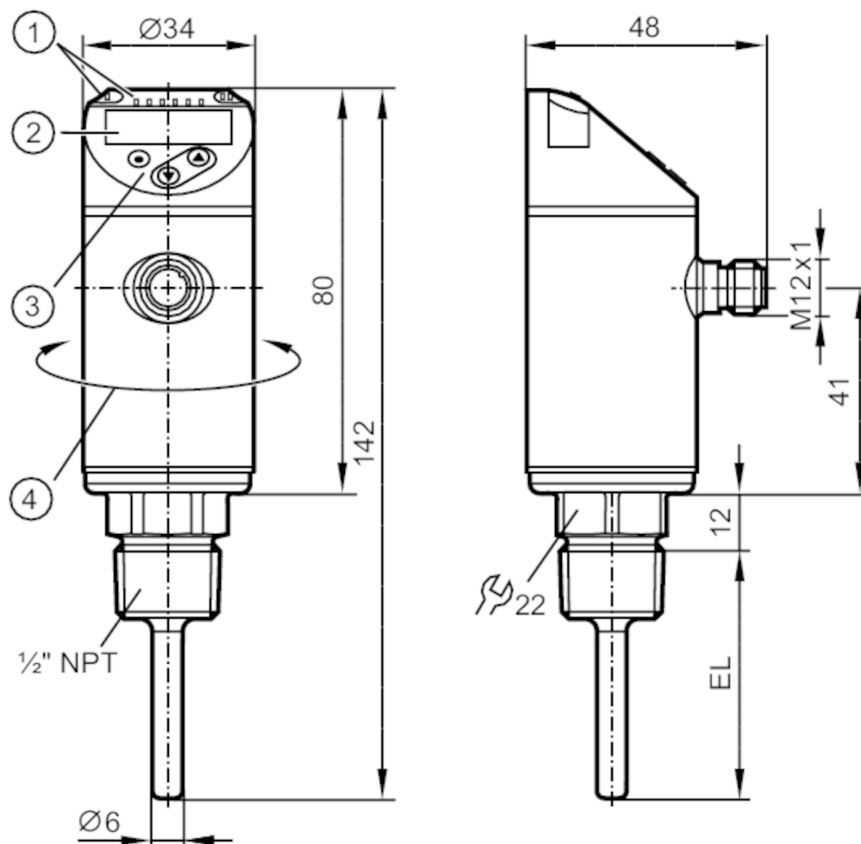


## Temperature sensor with display

TN-050KLBN12-MFRKG/US/



- 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 analogue outputs: 1 |              |
| Measuring range              | -50...150 °C                                                | -58...302 °F |
| Communication interface      | IO-Link                                                     |              |
| Process connection           | threaded connection 1/2" NPT external thread                |              |
| Installation length EL [mm]  | 50                                                          |              |

### Application

|                       |                                         |
|-----------------------|-----------------------------------------|
| Special feature       | Gold-plated contacts                    |
| Measuring element     | 1 x Pt 1000; (to DIN EN 60751, class A) |
| Media                 | liquids and gases                       |
| Pressure rating [bar] | 300                                     |

### 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                                       |



## Temperature sensor with display

TN-050KLBN12-MFRKG/US/

|                                                      |                                                                    |
|------------------------------------------------------|--------------------------------------------------------------------|
| Integrated watchdog                                  | yes                                                                |
| <b>Inputs / outputs</b>                              |                                                                    |
| Number of inputs and outputs                         | Number of digital outputs: 2; Number of analogue outputs: 1        |
| <b>Outputs</b>                                       |                                                                    |
| 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                                                                |
| <b>Measuring/setting range</b>                       |                                                                    |
| Probe length L [mm]                                  | 34.4                                                               |
| Measuring range                                      | -50...150 °C      -58...302 °F                                     |
| Factory setting                                      | 0...300 °F                                                         |
| 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                                                 |
| <b>Resolution</b>                                    |                                                                    |
| 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                                                                |
| <b>Accuracy / deviations</b>                         |                                                                    |
| 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) |
| <b>Response times</b>                                |                                                                    |
| Dynamic response T05 / T09 [s]                       | 1 / 3; (to DIN EN 60751)                                           |



## Temperature sensor with display

TN-050KLBN12-MFRKG/US/

| Software / programming                                                                         |                                                                                                                                                  |                                         |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Parameter setting options                                                                      | hysteresis / window; normally open / normally 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                                                                                                                                              |                                         |
| 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]                                                                                                                                              | 226.5                                   |
| Housing                                                                                        | cylindrical                                                                                                                                      |                                         |
| Dimensions                                                                                     | [mm]                                                                                                                                             | Ø 34 / L = 142                          |
| Materials                                                                                      | stainless steel (316L/1.4404); PBT+PC-GF30; PBT-GF20; PC                                                                                         |                                         |
| Materials (wetted parts)                                                                       | stainless steel (316L/1.4404)                                                                                                                    |                                         |
| Process connection                                                                             | threaded connection 1/2" NPT external thread                                                                                                     |                                         |
| Probe diameter                                                                                 | [mm]                                                                                                                                             | 6                                       |
| Installation length EL                                                                         | [mm]                                                                                                                                             | 50                                      |
| 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; coding: A; Contacts: gold-plated                                           |                                                                                                                                                  |                                         |
| <div></div> |                                                                                                                                                  |                                         |

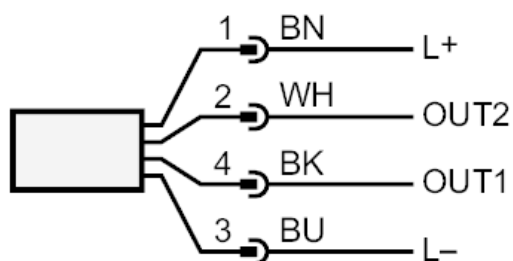
# TN2313



## Temperature sensor with display

TN-050KLBN12-MFRKG/US/

### 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