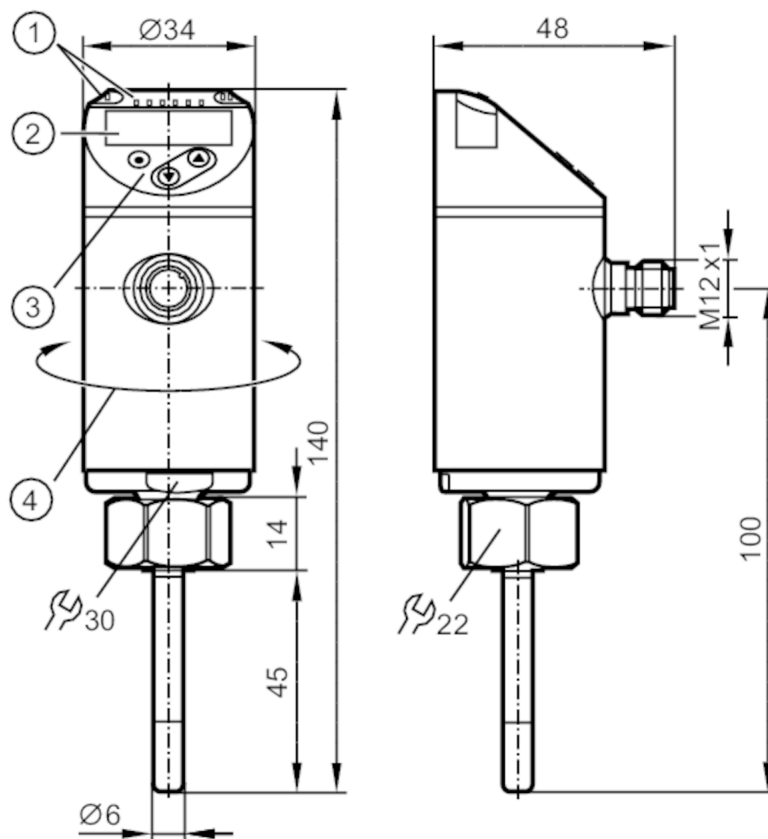


# TN2511



## Temperature sensor with display

TN-045KCB18-MFPKG/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: 1; Number of analog outputs: 1 |              |
| Measuring range              | -50...150 °C                                              | -58...302 °F |
| Process connection           | threaded connection M18 x 1,5 Internal thread             |              |
| Installation length EL [mm]  | 45                                                        |              |

### Application

|                                 |                                         |  |
|---------------------------------|-----------------------------------------|--|
| System                          | gold-plated contacts                    |  |
| Measuring element               | 1 x Pt 1000; (to DIN EN 60751, class A) |  |
| Media                           | liquids and gases                       |  |
| Pressure rating [bar]           | 300                                     |  |
| Minimum installation depth [mm] | 12                                      |  |

# TN2511



## Temperature sensor with display

TN-045KCB18-MFPKG/US/

| 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: 1; 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                       |      | 1                                                         |
| 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] | 45                                                        |
| Measuring range                                 |      | -50...150 °C      -58...302 °F                            |
| Factory setting                                 |      | -40...150 °C / -40...302 °F                               |
| 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                                                       |

# TN2511



## Temperature sensor with display

TN-045KCB18-MFPKG/US/

| Accuracy / deviations                                |                        |                                                                                                                 |
|------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------|
| Switch point accuracy                                | [K]                    | $\pm 0,3 + (\pm 0,1 \% \text{ MS})$                                                                             |
| Precision analog output                              | [K]                    | $\pm 0,3 + (\pm 0,1 \% \text{ MS})$                                                                             |
| Display accuracy                                     | [K]                    | $\pm 0,3 + (\pm 0,1 \% \text{ MS})$                                                                             |
| Temperature coefficient<br>[% of the span / 10 K]    |                        | 0,1; (In case of deviation from the reference condition $25 \pm 5 \text{ }^{\circ}\text{C}$ )                   |
| 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 |
| Interfaces                                           |                        |                                                                                                                 |
| Communication interface                              |                        | IO-Link                                                                                                         |
| Transmission type                                    |                        | COM2 (38,4 kBaud)                                                                                               |
| IO-Link revision                                     |                        | 1.1                                                                                                             |
| Operating conditions                                 |                        |                                                                                                                 |
| Ambient temperature                                  | [ $^{\circ}\text{C}$ ] | -25...80                                                                                                        |
| Storage temperature                                  | [ $^{\circ}\text{C}$ ] | -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]                | 470                                                                                                             |
| UL approval                                          | UL approval number     | K013                                                                                                            |
| Mechanical data                                      |                        |                                                                                                                 |
| Weight                                               | [g]                    | 207                                                                                                             |
| Housing                                              |                        | Compact type for adapter                                                                                        |
| Material                                             |                        | stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC                                                      |
| Materials (wetted parts)                             |                        | stainless steel (1.4404 / 316L); O-ring: FKM 80 Shore A                                                         |
| Process connection                                   |                        | threaded connection M18 x 1,5 Internal thread                                                                   |
| Installation length EL                               | [mm]                   | 45                                                                                                              |
| Displays / operating elements                        |                        |                                                                                                                 |
| Display                                              | Display unit           | 2 x LED, green                                                                                                  |
|                                                      | Switching status       | LED, yellow                                                                                                     |
|                                                      | Measured values        | alphanumeric display, red/green 4-digit                                                                         |
| Remarks                                              |                        |                                                                                                                 |
| Remarks                                              |                        | MS = set measuring span<br>The values for accuracy apply to flowing water.                                      |
| Pack quantity                                        |                        | 1 pcs.                                                                                                          |
| Electrical connection                                |                        |                                                                                                                 |
| Connector: 1 x M12; coding: A; Contacts: gold-plated |                        |                                                                                                                 |

# TN2511

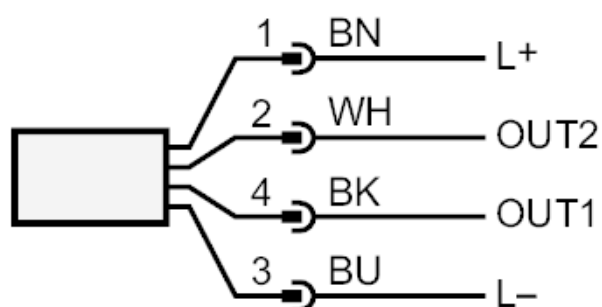


## Temperature sensor with display

TN-045KCBD18-MFPKG/US/



### Connection



OUT1: Switching output / IO-Link

OUT2: analog output

Colors to DIN EN 60947-5-2

Core colors :

BK = black

BN = brown

BU = blue

WH = white