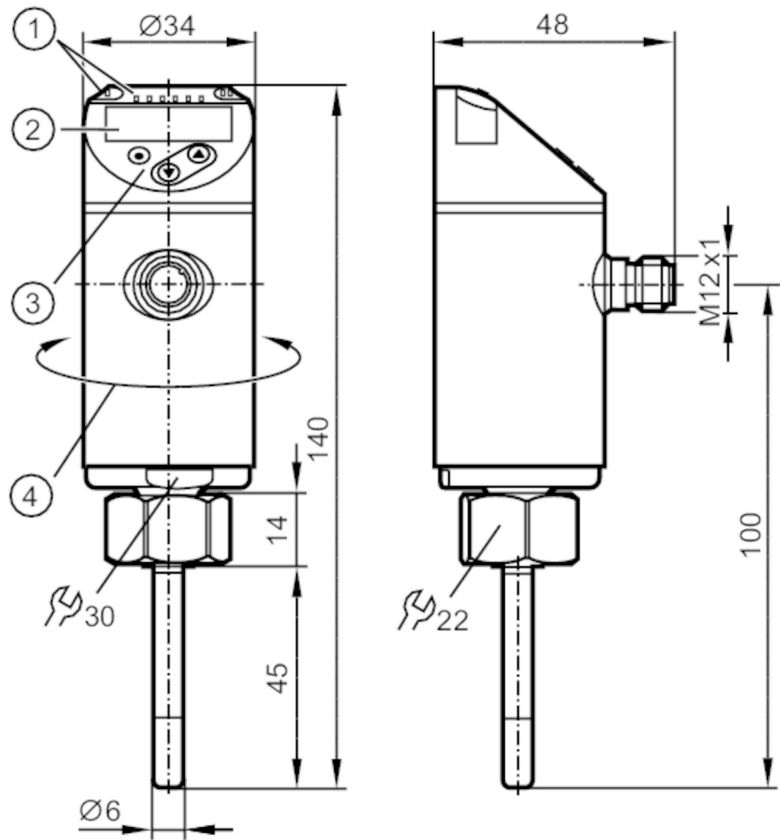


TN2511



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 analogue outputs: 1 |              |
| Measuring range              | -50...150 °C                                                | -58...302 °F |
| Communication interface      | IO-Link                                                     |              |
| Process connection           | threaded connection M18 x 1,5 internal thread               |              |
| Installation length EL [mm]  | 45                                                          |              |

Application

|                                 |                                         |        |
|---------------------------------|-----------------------------------------|--------|
| Special feature                 | Gold-plated contacts                    |        |
| Measuring element               | 1 x Pt 1000; (to DIN EN 60751, class A) |        |
| Media                           | liquids and gases                       |        |
| Pressure rating                 | 300 bar                                 | 30 MPa |
| Minimum installation depth [mm] | 12                                      |        |

Electrical data

|                             |                                         |  |
|-----------------------------|-----------------------------------------|--|
| Operating voltage [V]       | 18...32 DC; ("supply class 2" to cULus) |  |
| Current consumption [mA]    | < 50                                    |  |
| Protection class            | III                                     |  |
| Reverse polarity protection | yes                                     |  |



## Temperature sensor with display

TN-045KCB18-MFPKG/US/

|                                                   |      |                                                                    |
|---------------------------------------------------|------|--------------------------------------------------------------------|
| Power-on delay time                               | [s]  | 1                                                                  |
| Integrated watchdog                               |      | yes                                                                |
| <b>Inputs / outputs</b>                           |      |                                                                    |
| Number of inputs and outputs                      |      | Number of digital outputs: 1; 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                         |      | 1                                                                  |
| 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] | 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                                 |
| 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<br>[% 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-045KCB18-MFPKG/US/

| Software / programming        |                                                                                                                          |                                                          |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Parameter setting options     | hysteresis / window; normally open / normally 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                                                                                                                      |                                                          |
| 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                                                                                                                  | 582                                                      |
| 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]                                                                                                                  | 470                                                      |
| UL approval                   | UL approval no.                                                                                                          | K013                                                     |
| Mechanical data               |                                                                                                                          |                                                          |
| Weight                        | [g]                                                                                                                      | 207                                                      |
| Housing                       |                                                                                                                          | cylindrical                                              |
| Dimensions                    | [mm]                                                                                                                     | Ø 34 / L = 140                                           |
| Materials                     |                                                                                                                          | stainless steel (316L/1.4404); PBT+PC-GF30; PBT-GF20; PC |
| Materials (wetted parts)      |                                                                                                                          | stainless steel (316L/1.4404); O-ring: FKM 80 Shore A    |
| Process connection            |                                                                                                                          | threaded connection M18 x 1,5 internal thread            |
| Probe diameter                | [mm]                                                                                                                     | 6                                                        |
| 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                                                                                                  |                                                          |
|                               | The values for accuracy apply to flowing water.                                                                          |                                                          |
| Pack quantity                 | 1 pcs.                                                                                                                   |                                                          |

# TN2511



## Temperature sensor with display

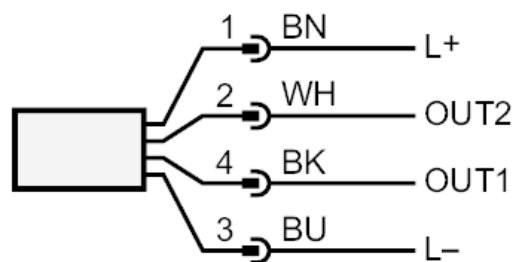
TN-045KCB18-MFPKG/US/

### Electrical connection

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



### Connection



OUT1: switching output / IO-Link  
OUT2: analogue output  
colours to DIN EN 60947-5-2

Core colours :

BK = black  
BN = brown  
BU = blue  
WH = white