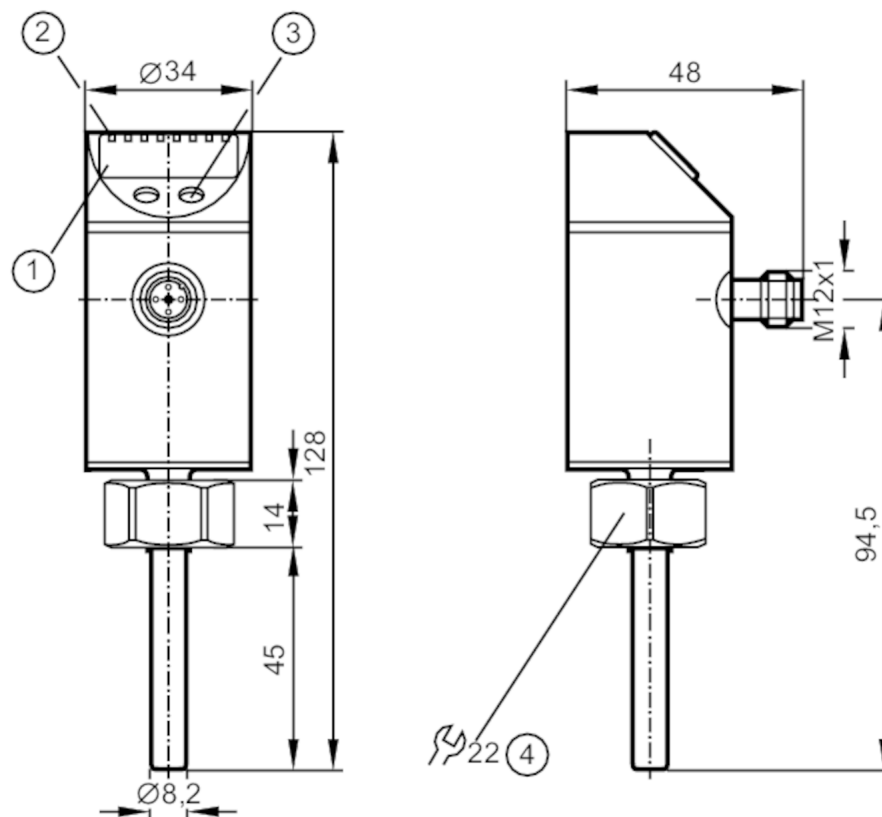


# TN2531



## Temperature sensor with display

TN-013KCBD10-MFRKG/US/ IV



- 1 alphanumeric display 4-digit
- 2 status LEDs
- 3 programming button
- 4 internal thread M18 x 1.5



### Application

|                                 |                                         |
|---------------------------------|-----------------------------------------|
| Measuring element               | 1 x Pt 1000; (to DIN EN 60751, class B) |
| Media                           | liquids and gases                       |
| Pressure rating [bar]           | 300                                     |
| 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                                     |
| Power-on delay time [s]     | 1                                       |
| Integrated watchdog         | yes                                     |



## Temperature sensor with display

TN-013K CBD10-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                            | 1                                                          |              |
| Output function                                      | normally open / normally closed; (parameterisable)         |              |
| Max. voltage drop switching output DC [V]            | 2                                                          |              |
| Permanent current rating of switching output DC [mA] | 250                                                        |              |
| Number of analogue outputs                           | 1                                                          |              |
| Analogue current output [mA]                         | 4...20                                                     |              |
| Max. load [Ω]                                        | (U <sub>b</sub> - 10 V) x 50                               |              |
| 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                              |                                                            |              |
| Probe length L [mm]                                  | 45                                                         |              |
| Measuring range                                      | -40...150 °C                                               | -40...302 °F |
| Set point SP                                         | -39.5...150 °C                                             | -39...302 °F |
| Reset point rP                                       | -40...149.5 °C                                             | -40...301 °F |
| Analogue start point                                 | -40...145 °C                                               | -40...293 °F |
| Analogue end point                                   | -35...150 °C                                               | -31...302 °F |
| In steps of                                          | 0.1 °C                                                     | 0.1 °F       |
| Resolution                                           |                                                            |              |
| Resolution of switching output [K]                   | 0.1                                                        |              |
| Resolution of analogue output [K]                    | 0.1                                                        |              |
| Resolution of display [K]                            | 0.1                                                        |              |
| Accuracy / deviations                                |                                                            |              |
| Switch point accuracy [K]                            | ± 0,3                                                      |              |
| Precision analogue output [K]                        | ± 0,3                                                      |              |
| Display accuracy [K]                                 | ± 0,3                                                      |              |
| Temperature drift per 10 K [K]                       | 0.1                                                        |              |
| Response times                                       |                                                            |              |
| Dynamic response T05 / T09 [s]                       | 1 / 3; (to DIN EN 60751)                                   |              |
| Max. measuring/display cycle [ms]                    | 200                                                        |              |
| Software / programming                               |                                                            |              |
| Adjustment of the switch point                       | programming button                                         |              |

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| Interfaces                                                                          |                                                         |                               |
|-------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------|
| Transmission type                                                                   | COM2 (38,4 kBaud)                                       |                               |
| IO-Link revision                                                                    | 1.0                                                     |                               |
| Operating conditions                                                                |                                                         |                               |
| Ambient temperature                                                                 | [°C]                                                    | -25...70                      |
| Storage temperature                                                                 | [°C]                                                    | -40...100                     |
| Protection                                                                          | IP 67                                                   |                               |
| Tests / approvals                                                                   |                                                         |                               |
| EMC                                                                                 | DIN EN 61000-4-2 ESD                                    | 4 kV CD / 8 kV AD             |
|                                                                                     | EN 61000-4-3 HF radiated                                | 10 V/m                        |
|                                                                                     | DIN EN 61000-4-4 Burst                                  | 2 kV                          |
|                                                                                     | DIN EN 61000-4-5 Surge                                  | 1 kV                          |
|                                                                                     | EN 61000-4-6 HF conducted                               | 10 V                          |
| 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]                                                 | 209                           |
| Mechanical data                                                                     |                                                         |                               |
| Weight                                                                              | [g]                                                     | 202.8                         |
| Housing                                                                             | compact type for adapter                                |                               |
| Materials                                                                           | stainless steel (1.4301 / 304); PBT; PC; EPDM/X; FKM    |                               |
| 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, 4-digit |
|                                                                                     | programming                                             | alphanumeric display, 4-digit |
| Remarks                                                                             |                                                         |                               |
| Remarks                                                                             | The values for accuracy apply to flowing water.         |                               |
| Notes                                                                               | discontinued article                                    |                               |
| Pack quantity                                                                       | 1 pcs.                                                  |                               |
| Electrical connection                                                               |                                                         |                               |
| Connector: 1 x M12; Contacts: gold-plated                                           |                                                         |                               |
|  |                                                         |                               |

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### Connection

