# TCC931
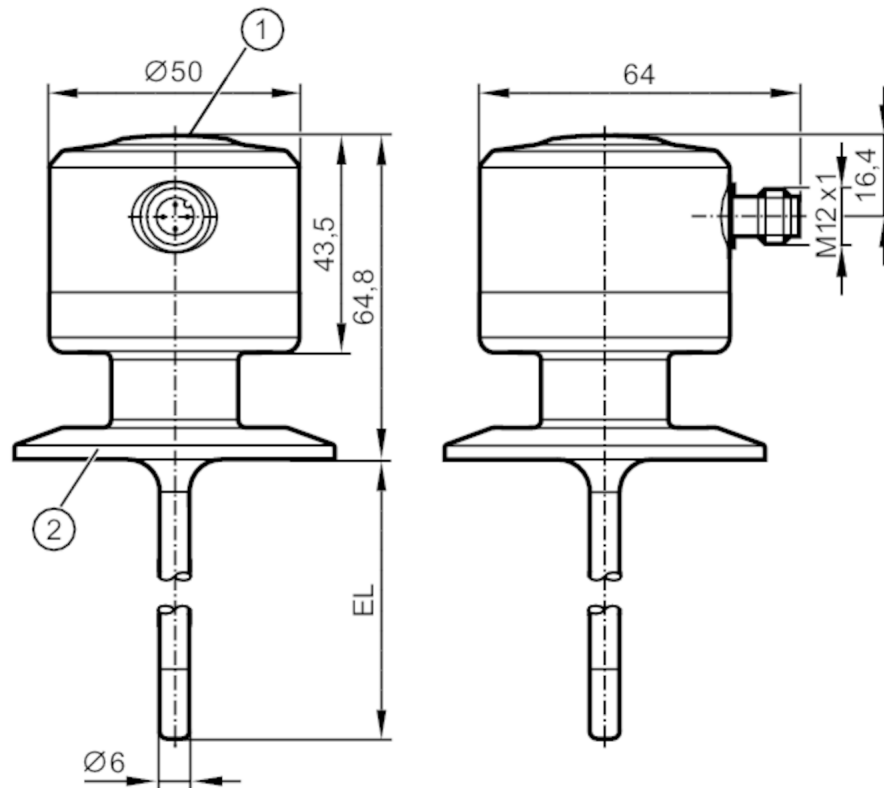
### Temperature transmitter

TCC100K1EC02-A-DKG/US



1    LED
2    Process connection

## Product characteristics

| Number of inputs and outputs | | Number of digital outputs: 1; Number of analog outputs: 1 | |
|---|---|---|---|
| Measuring range | | -25...160 °C | -13...320 °F |
| Process connection | | Clamp DN50 (2") DIN 32676 (ISO 2852) | |
| Installation length EL | [mm] | 100 | |

## Application

| System | gold-plated contacts |
|---|---|
| Measuring element | 1 x Pt 1000 |
| Reference element | 1 x NTC |
| Media | liquids and gases |
| Pressure rating | [bar] | 160 |

## Electrical data

| Operating voltage | [V] | 18...32 DC;  (cULus - Class 2 source required) |
|---|---|---|
| Current consumption | [mA] | 10;  (24 V) |
| Protection class | | III |
| Reverse polarity protection | | yes |
| Power-on delay time | [s] | 6 |
| Integrated watchdog | | yes |

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**Temperature transmitter**

TCC100K1EC02-A-DKG/US

| 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 | | analog signal; IO-Link; calibration check status |
| Electrical design | | PNP/NPN |
| Number of digital outputs | | 1 |
| Output function | | normally open;  (diagnostic signal) |
| Max. voltage drop switching output DC | [V] | 2 |
| Permanent current rating of switching output DC | [mA] | 100 |
| Diagnostic output | | calibration check status and error diagnostics |
| Number of analog outputs | | 1 |
| Analog current output | [mA] | 4...20 |
| Max. load | [Ω] | (Ub - 15 V) x 50 |
| Short-circuit protection | | yes |
| Type of short-circuit protection | | yes (non-latching) |
| Overload protection | | yes |

| Measuring/setting range | | | |
|---|---|---|---|
| Measuring range | | -25...160 °C | -13...320 °F |
| Note on measuring range | | scalable | |
| Factory setting | | -10...150 °C / 14...302 °F | |
| Calibration check limit | [K] | 0.5...3 | |
| In steps of | [K] | 0.05 | |

| Resolution | | |
|---|---|---|
| Resolution of analog output | [K] | 0.05 |

| Accuracy / deviations | | |
|---|---|---|
| Precision analog output | [K] | ± 0,2 |
| Precision IO-Link | [K] | ± 0,2 |
| Temperature coefficient analog output [% of the span / 10 K] | | < ± 0,02;  (In case of deviation from the reference condition 25 ± 5 °C) |
| Temperature coefficient IO-Link [% of the span / 10 K] | | < ± 0,01;  (In case of deviation from the reference condition 25 ± 5 °C) |

| Reaction times | | |
|---|---|---|
| Dynamic response T05 / T09 | [s] | 1,5 / 4 |

| Software / programming | | |
|---|---|---|
| Parameter setting options | | Display unit; scaling of the analog output; calibration check limit; switching logic diagnostic output; simulation mode |

# TCC931

### Temperature transmitter

## Interfaces

| | |
|---|---|
| Communication interface | IO-Link |
| Transmission type | COM2 (38,4 kBaud) |
| IO-Link revision | 1.1 |
| SDCI standard | IEC 61131-9 CDV |
| IO-Link device ID | 1129 d / 00 04 69 h |
| Profiles | Digital Measuring Sensor, Common Profile, Blob Transfer |
| SIO mode | yes |
| Required master port class | A |
| Process data analogue | 1 |
| Process data binary | 1 |
| Min. process cycle time            [ms] | 4.4 |
| IO-Link resolution temperature            [K] | 0.01 |

## Operating conditions

| | |
|---|---|
| Ambient temperature            [°C] | -25...70 |
| Note on ambient temperature | max. internal device temperature: 125 °C |
| Storage temperature            [°C] | -40...100 |
| Protection | IP 68; IP 69K |

## Tests / approvals

| | | |
|---|---|---|
| EMC | DIN EN 61000-6-2 | |
| | DIN EN 61000-6-3 | |
| Shock resistance | DIN EN 68000-2-27 | 50 g (11 ms) |
| Vibration resistance | DIN EN 60068-2-6 | 35 g (10...2000 Hz) |
| MTTF            [years] | 329 | |
| Note on approval | Factory certificate available as download at www.factory-certificate.ifm | |
| UL approval | UL approval number | K021 |
| | File number UL | E217884 |

## Mechanical data

| | |
|---|---|
| Weight            [g] | 416 |
| Dimensions            [mm] | Ø 50 / L = 164.8 |
| Material | stainless steel (1.4404 / 316L); PEI; FKM; PFA |
| Materials (wetted parts) | stainless steel (1.4404 / 316L); PEEK |
| Process connection | Clamp DN50 (2") DIN 32676 (ISO 2852) |
| Surface characteristics Ra/Rz of the wetted parts | Ra: < 0.8 |
| Probe diameter            [mm] | 6 |
| Installation length EL            [mm] | 100 |

## Remarks

| | |
|---|---|
| Remarks | MS = set measuring span |
| | cULus - Class 2 source required |
| Pack quantity | 1 pcs. |

## Electrical connection
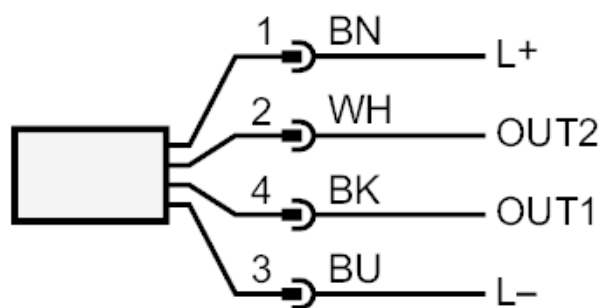
Connector: 1 x M12; Contacts: gold-plated

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### Connection



| OUT2: | analog output |
| OUT1: | Diagnostic output / IO-Link |