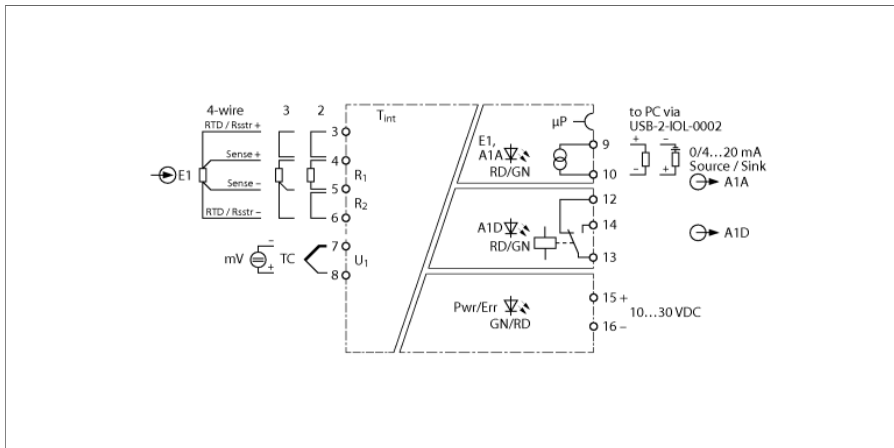


# Temperature measuring amplifier

## 1-channel

### IM12-TI02-1TCURTDR-1I1R-C0/24VDC



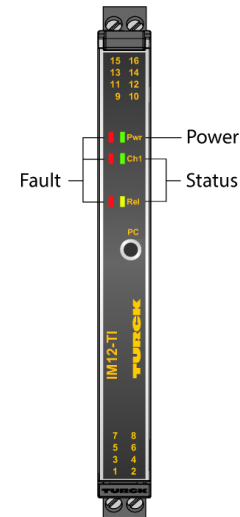
The 1-channel temperature measuring amplifier IM12-TI02-1TCURTDR-1I1R-C0/24VDC has inputs for: Thermocouples acc. to IEC 60584, DIN 43710, GOST R 8.585-2001, low voltages (-150 ... +150 mV), RTDs acc. to IEC 60751, DIN 43760, GOST 6651-94 (2, 3 and 4-wire) and resistors 0...5 kΩ (2, 3 and 4-wire).

The device is parameterized via FDT and IODD with a PC. The cold junction compensation can be set to internal, external, or to a constant value. The current output can be set to 0/4...20 mA (source or sink optional). In accordance with the parameterization, the input signals are provided as a 0/4...20 mA standard current signal. With the changeover relay, either a limit value can be monitored for excess or undershooting or a range can be monitored.

The devices have a green power LED (Pwr) and a red LED to indicate internal faults. For each input circuit there is a yellow and a red status LED. A fault in the input circuit leads to a flashing red LED according to NE44, an internal error to a steady red LED. The fault current can be adjusted to < 3.5 mA or > 21.5 mA.

The device can be used in safety circuits up to SIL2 (high and low demand according to IEC 61508) and meets the requirements of the NE21. It is equipped with removable screw terminals.

The device is equipped with removable screw terminals.



- Input circuits monitored for wire-break and short-circuit
- Parameterized via PC
- Complete galvanic isolation
- Removable screw terminals
- ATEX use in Zone 2, cUL
- SIL 2

## Dimensions



## Output relay – Load curve



|      |                                   |
|------|-----------------------------------|
| Type | IM12-TI02-1TCURTD R-111R-C0/24VDC |
| ID   | 7580527                           |

|                            |              |
|----------------------------|--------------|
| Nominal voltage            | 24 VDC       |
| Operating voltage $U_s$    | 10...30 VDC  |
| Power consumption          | $\leq 2$ W   |
| Power dissipation, typical | $\leq 1.6$ W |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input circuits        | RTD Type DIN EN 60751 Pt50, Pt100, Pt 500, Pt1000<br>RTD Type DIN EN 43760 Ni50, Ni100, Ni500, Ni1000<br>RTD Type Gost 6651-94 Pt50, Pt100, Pt 500, Pt1000, CU50, Cu53, Cu100, CU500, CuZn100<br>TC Type DIN EN 60584 Type A, Type B, Type C, Type E, Type J, Type K, Type N, Type R, Type S, Type T<br>TC Type DIN 43710 Type L<br>TC Type Gost 8.585-2001 Type A1, Type A2, Type A3, Type L, Type M<br>Low voltage input -150...150 mV<br>Resistance input 0...5000 ohms |
| Reference temperature | 23 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                |                                     |
|--------------------------------|-------------------------------------|
| Output circuits                |                                     |
| Output current                 | Source/sink (10...30 V) 0/4...20 mA |
| Load resistance current output | $\leq 0.8$ k $\Omega$               |
| Output circuits (digital)      | 1 x relay (change-over)             |
| Output switching voltage relay | $\leq 30$ VDC / $\leq 250$ VAC      |
| Switching current per output   | $\leq 2$ A                          |
| Switching capacity per output  | $\leq 500$ VA/60 W                  |
| Switching frequency            | $\leq 15$ Hz                        |
| Contact quality                | AgNi                                |

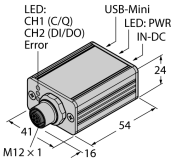
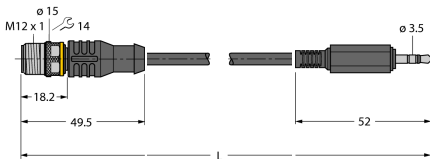
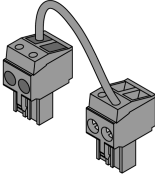
|                                                                                       |                                             |
|---------------------------------------------------------------------------------------|---------------------------------------------|
| Response characteristic                                                               |                                             |
| Reference temperature                                                                 | 23 °C                                       |
| Measuring accuracy current output (including linearity, hysteresis and repeatability) | $\pm 10$ $\mu$ A                            |
| Temperature drift analog output                                                       | 0.0025 %/K                                  |
| Accuracy, RTD input, 0...500 ohm                                                      | $\pm 50$ m $\Omega$                         |
| Temperature drift, RTD input, 0...500 ohm                                             | $\pm 5$ m $\Omega$ /K                       |
| Accuracy, RTD input, 500...5000 ohm                                                   | $\pm 500$ m $\Omega$                        |
| Temperature drift, RTD input, 500...5000 ohm                                          | $\pm 30$ m $\Omega$ /K                      |
| Measuring accuracy TC input (including linearity, hysteresis and repeatability)       | $\pm 15$ $\mu$ V                            |
| Temperature drift, TC input                                                           | $\pm 3.2$ $\mu$ V/K                         |
| Cold junction compensation error                                                      | with cold junction compensation $< 2$ K     |
| Note                                                                                  | With a 3-wire connection, the errors double |

|                     |                                                |
|---------------------|------------------------------------------------|
| Galvanic isolation  |                                                |
| Test voltage        | 2.5 kV RMS                                     |
| Input 1 to output 1 | 375 V peak value acc. to EN 60079-11           |
| Input 1 to supply   | 300 V RMS according to EN 50178 and EN 61010-1 |
| A1A supply voltage  | 300 V RMS acc. to EN 50178 and EN 61010-1      |
| A1D supply voltage  | 300 V RMS acc. to EN 50178 and EN 61010-1      |
| A1A-A1D             | 300 V RMS acc. to EN 50178 and EN 61010-1      |

|                             |                                                                                                                                                                                               |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Important note              | For Ex-applications the values specified in the corresponding Ex certificates (ATEX, IECEx, UL, etc.) apply.                                                                                  |
| Important note              | If the device is used in applications to achieve functional safety according to IEC 61508, the safety manual must be used. Information in the data sheet are not valid for functional safety. |
| Use in SIL safety circuits  | SIL 2 acc. to IEC 61508                                                                                                                                                                       |
| Displays/Operating elements |                                                                                                                                                                                               |
| Operational readiness       | Green                                                                                                                                                                                         |
| Switching state             | Yellow                                                                                                                                                                                        |
| Error indication            | red                                                                                                                                                                                           |

|                                  |                                   |                              |
|----------------------------------|-----------------------------------|------------------------------|
| Mechanical data                  |                                   |                              |
| Protection class                 | IP20                              |                              |
| Flammability class acc. to UL 94 | V-0                               |                              |
| Ambient temperature              | -25...+70 °C                      |                              |
| Storage temperature              | -40...+80 °C                      |                              |
| Dimensions                       | 120 x 12.5 x 117 mm               |                              |
| Weight                           | 167 g                             |                              |
| Mounting instructions            | DIN rail (NS35)                   |                              |
| Housing material                 | Plastic, Polycarbonate/ABS        |                              |
| Electrical connection            | Removable screw terminals, 2-pin  |                              |
| Terminal cross-section           | 0.2...2.5 mm² (AWG: 24...14)      |                              |
| Tightening torque                | 0.5 Nm                            |                              |
| Tightening torque                | 4.43 LBS-Inch                     |                              |
| Environmental conditions         | Operating height                  | Up to 2000 m above sea level |
|                                  | Pollution degree                  | II                           |
|                                  | Surge/Overvoltage category        | II (EN 61010-1)              |
|                                  | Standards used                    |                              |
|                                  | Voltage resistance and insulation |                              |
|                                  |                                   | EN 50178                     |
|                                  |                                   | EN 61010-1                   |
|                                  |                                   | EN 50155                     |
|                                  |                                   | GL VI-7-2                    |
|                                  | Shock                             |                              |
|                                  |                                   | EN 61373 class B             |
|                                  |                                   | EN 50155                     |
|                                  |                                   | GL VI-7-2                    |
|                                  |                                   | EN 60068-2-6                 |
|                                  |                                   | EN 60068-2-27                |
|                                  | Temperature                       |                              |
|                                  |                                   | EN 60068-2-1 Ad              |
|                                  |                                   | EN 50155                     |
|                                  |                                   | GL VI-7-2                    |
|                                  |                                   | EN 60068-2-2 Bd              |
|                                  |                                   | EN 60068-2-1                 |
|                                  | Air humidity                      |                              |
|                                  |                                   | EN 60068-2-38                |
|                                  | EMC                               |                              |
|                                  |                                   | EN 50155                     |
|                                  |                                   | GL VI-7-2                    |
|                                  |                                   | NE21                         |
|                                  |                                   | EN 61326-1                   |
|                                  |                                   | EN 61326-3-1                 |
|                                  |                                   | EN 61000-4-2                 |
|                                  |                                   | EN 61000-4-3                 |
|                                  |                                   | EN 61000-4-4                 |
|                                  |                                   | EN 61000-4-5                 |
|                                  |                                   | EN 61000-4-6                 |
|                                  |                                   | EN 61000-4-11                |
|                                  |                                   | EN 61000-4-29                |
|                                  |                                   | EN 55011                     |
|                                  |                                   | EN 55016                     |
|                                  |                                   | EN 50121-3-2                 |
|                                  |                                   | EN 61000-6-2                 |

Accessories

| Type code       | Ident no. |                                                                                                       | Dimension drawing                                                                                                                                                                                             |
|-----------------|-----------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USB-2-IOL-0002  | 6825482   | IO-Link Master with integrated USB port                                                               |  <p>LED-CH1 (C/Q)<br/>CH2 (DI/DO)<br/>Error<br/>USB-Mini<br/>LED-PWR<br/>IN-DC<br/>41<br/>54<br/>24<br/>16<br/>M12 x 1</p> |
| IOL-COM/3M      | 7525110   | IO-Link communication line for connecting IO-Link devices to an IO-link master via a 3.5-mm jack plug |  <p>ø 15<br/>14<br/>18.2<br/>49.5<br/>L<br/>52<br/>ø 3.5<br/>M12 x 1</p>                                                   |
| IMX12-SC-2X-4BK | 7580940   | Screw terminals for IM(X)12 modules; included in delivery: 4 pcs. of 2-pin black terminals            |                                                                                                                          |
| IMX12-CC-2X-4BK | 7580942   | Spring terminals for IM(X)12 modules; included in delivery: 4 pcs. black terminals, 2-pin             |                                                                                                                                                                                                               |
| IMX12-2-CJT     | 100003646 |                                                                                                       |                                                                                                                                                                                                               |