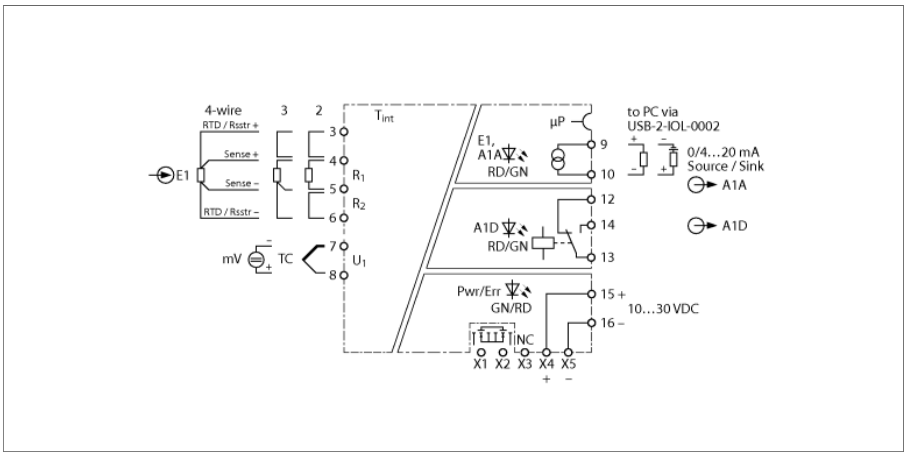
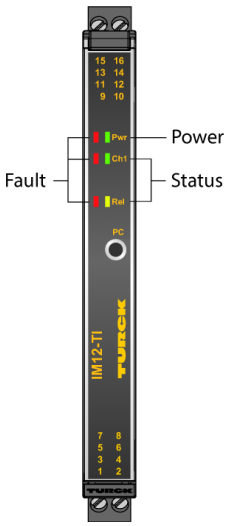
Temperature measuring amplifier
1-channel
IM12-TI02-1TCURTDR-1I1R-CPR/24VDC





The temperature transducer IM12-TI02-1TCURDR-1I1R-CPR/24VDC transmits temperature-dependent measured values galvanically isolated. The devices are suitable for operation in zone 2.

The 1-channel device has an input 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). A current output, 0/4…20 mA, and a 2-way relay are available on the output side. The device can be powered from a power bridge that also transmits a collective fault signal.

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 on over- or undershoot or a window.

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 and an internal fault to a steady read 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.

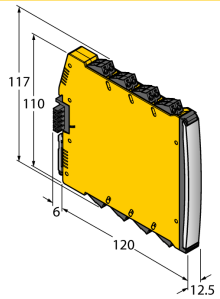
The device is equipped with removable screw terminals.

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

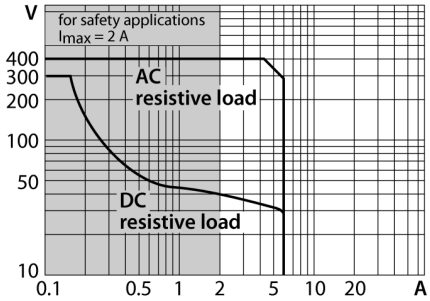
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ID	7580525
Nominal voltage	24 VDC
Operating voltage U_B	10…30 VDC
Power consumption	≤ 2 W
Power dissipation, typical	≤ 1.6 W
Input circuits	RTD Type DIN EN 60751 Pt50, Pt100, Pt 500, Pt1000 RTD Type DIN EN 43760 Ni50, Ni100, Ni500, Ni1000 RTD Type Gost 6651-94 Pt50, Pt100, Pt 500, Pt1000, CU50, Cu53, Cu100, CU500, CuZn100 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 TC Type DIN 43710 Type L TC Type Gost 8.585-2001Type A1, Type A2, Type A3, Type L, Type M Low voltage input -150…150 mV Resistance input 0…5000 ohms
Thermocouples	-50…200°C; 0…400°C; 0…600°C
Reference temperature	23 °C
Output circuits	
Output current	Source/sink (10…30 V) 0/4…20 mA
Load resistance current output	≤ 0.8 kΩ
Output circuits (digital)	1 x relay (change-over)
Output switching voltage relay	≤ 30 VDC / ≤ 250 VAC
Switching current per output	≤ 2 A
Switching capacity per output	≤ 500 VA/60 W
Switching frequency	≤ 15 Hz
Contact quality	AgNi
Power-Bridge common alarm output	MOSFET, Umax = 30 V, Imax = 100 mA
Response characteristic	
Reference temperature	23 °C
Measuring accuracy current output (including linearity, hysteresis and repeatability)	± 10 µA
Temperature drift analog output	0.0025 %/K
Accuracy, RTD input, 0…500 ohm	± 50 mΩ
Temperature drift, RTD input, 0…500 ohm	± 5 mΩ/K
Accuracy, RTD input, 500…5000 ohm	± 500 mΩ
Temperature drift, RTD input, 500…5000 ohm	± 30 mΩ/K
Measuring accuracy TC input (including linearity, hysteresis and repeatability)	± 15 µV
Temperature drift, TC input	± 3.2 µV/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

Dimensions



Output relay – Load curve



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Important note	The values provided below indicate the relevant markings associated with the product's Ex certificates.
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

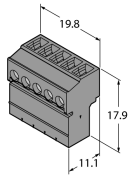
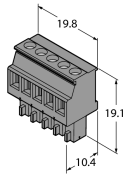
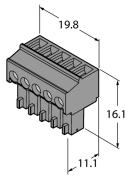
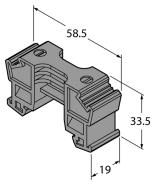
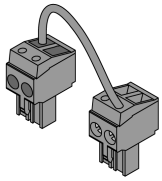
Displays/Operating elements	
Operational readiness	Green
Switching state	Yellow
Error indication	red

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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	1.1 g	
Mounting instructions	DIN rail (NS35)	
Housing material	Plastic, Polycarbonate/ABS	
Electrical connection	Removable screw terminals, 2-pin	
Connection variant	Power bridge with collective fault signal	
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

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Accessories

Type code	Ident-No.		Dimension drawing
IMC 1.5/ 5-ST-3.81 BK	7580954	Power Bridge Connection Terminal	
MCVR 1.5/ 5-ST-3.81 BK	7580955	Power Bridge Connection Terminal	
MC 1.5/ 5-ST-3.81 BK	7580956	Power Bridge Connection Terminal	
E/ME TBUS NS35 BK	7580957	Power Bridge Connection Terminal	
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		

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