

# Temperature Measuring Amplifier IM34-11Ex-Ci/K60 1-channel



- **1-channel temperature measuring amplifier with removable terminal blocks**
- **Intrinsically safe input circuit EEx ia with wire-break monitoring function**
- **Area of application according to ATEX: II (1) GD, II 3 G**
- **Approved for installation in zone 2, however the device must be installed in a housing which complies with the requirements of EN 60079-15 with a minimum protection degree of IP54**
- **Input for resistance temperature detectors (RTD), thermoelements (TC) and millivolt signals**
- **Parameterisation and configuration with the software tool „Device Type Manager“ (DTM) via personal computer**
- **Current output 0/4...20 mA**
- **Complete galvanic isolation**
- **Adjustable analogue output performance in case of errors in the input circuit**
- **Universal supply voltage (20...250 VAC/20...125 VDC)**

variations of Ni100/Pt100 resistance temperature detectors (RTD), thermo-element (TC) types B, E, J, K, L, N, R, S and T or low voltages in a range of -160...+160 mV and to reproduce these values as temperature-linear current signals of 0/4...20 mA. The input circuit of the measuring amplifier is also suited for connection of 2-, 3- or 4-wire RTDs. The RTD input may be used for external cold junction compensation for the thermoelements or as an independent measuring input. If the cables of the thermoelements are routed up to the tempera-

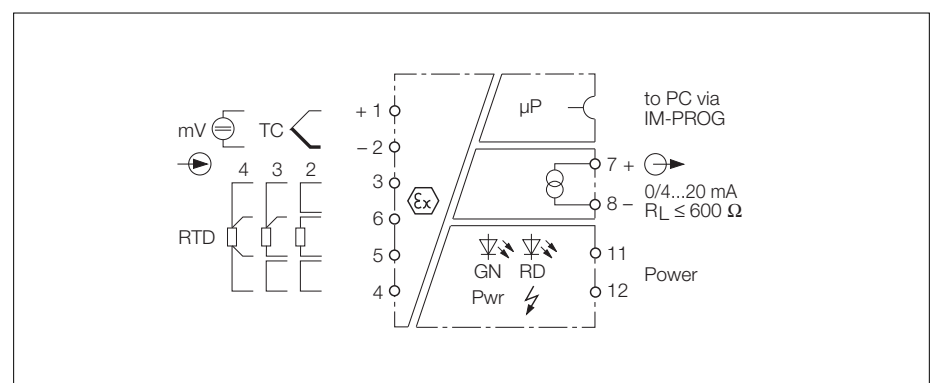
ture measuring amplifier, TURCK suggests the application of a cold junction compensation module IM-3-CJT (Ident-no.: 6900524). This ensures a best possible accuracy.

In order to increase the measurement speed with fast temperature changes on thermoelements, the device switches into the "Fast Mode" after 200 ms at the very latest after a gradient of 200 µV/s has been exceeded.

Thereafter the cycle time of the thermal voltage measurement is < 80 ms.

Thermo-element	„Fast Mode“ 200 µV/s	„Normal Mode“ 80 µV/s	Temperature range
Typ B	20 K/s	8 K/s	1100 °C
Typ E	2,6 K/s	1 K/s	0...1000 °C
Typ J	3,5 K/s	1,5 K/s	0...1200 °C
Typ K	5 K/s	1,6 K/s	0...1372 °C
Typ L	3,5 K/s	1,5 K/s	0...900 °C
Typ N	5,7 K/s	2,3 K/s	100...1300 °C
Typ R	20 K/s	8 K/s	400 °C
Typ S	18 K/s	7 K/s	400...1768 °C
Typ T	4 K/s	1,5 K/s	150 °C

The single-channel temperature measuring amplifier IM34-11Ex-Ci/K60 is designed to evaluate the temperature-dependent



## Temperature Measuring Amplifier IM34-11Ex-Ci/K60

This will mean that no wire-break monitoring and no measurement of the cold junction temperature will occur. After the gradient drops below 80  $\mu\text{V/s}$  the device will switch back to "Normal Mode". In the previous table the approximate temperature gradients for the corresponding thermal elements (thermo-couples) are stated.

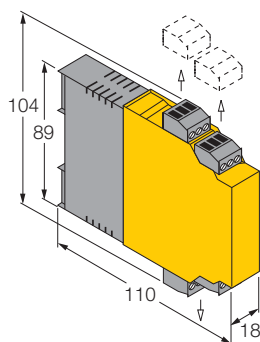
### NOTE:

The temperature gradients in the table are only approximate values which apply for the predefined temperature ranges. Exact determination of the temperature gradient is only possible when the characteristic of the respective sensor is used at the corresponding operating point. The software tool „Device Type Manager - DTM“ is needed to configure and parameterise the devices via PC. For this, the temperature measuring amplifier is connected to the PC via the 3.5 mm front panel jack. The premoulded transmission cable can be ordered with TURCK under the type name IM-PROG (ident-no. 6890422).

The following settings can be made via the DTM:

- Measurement mode (RTD, TC, low-voltage, junction compensation)
- Tag number designation (32 freely selectable characters)
- Unit of temperature ( $^{\circ}\text{C}$  or  $^{\circ}\text{F}$ )
- RTD connection mode (2, 3 and 4-wire technology)
- Cold junction compensation (internal or with external RTD)
- Measurement range mapped to current source
- Output current (0/4...20 mA)
- Current output performance in case of errors in the input circuit: 0 or > 22 mA

The signals are transformed according to ITS90 IEC 584 for thermoelements and IEC 751 for PT100 RTDs and provided as temperature-linear signals at the current output.



<b>Type</b>	IM34-11Ex-Ci/K60	
Ident-no.	7506636	
<b>Supply voltage</b> $U_B$	20...250 VAC/20...125 VDC	
Line frequency (AC)	40...70 Hz	
Power consumption	$\leq 3$ W	
Galvanic isolation	between input and output circuit and supply voltage for 250 V <sub>rms</sub> , test voltage 2.5 kV <sub>rms</sub>	
<b>Input circuit</b>	intrinsically safe according to EN 50020	
Version	RTD: Ni100 and Pt100 (IEC 751), 2, 3 and 4-wire technology, measuring span: Pt100: -200...800 $^{\circ}\text{C}$ , Ni100:-60...250 $^{\circ}\text{C}$ TC: B, E, J, K, N, R, S, T (ITS 90/IEC 584), L (DIN 43710), measuring span: B: 400...1750 $^{\circ}\text{C}$ , E: -100...1000 $^{\circ}\text{C}$ , J: -100...1200 $^{\circ}\text{C}$ , K: -180...1372 $^{\circ}\text{C}$ , N: -180...1300 $^{\circ}\text{C}$ , R: -50...1750 $^{\circ}\text{C}$ , S: -50...1750 $^{\circ}\text{C}$ , T: -200 ... 400 $^{\circ}\text{C}$ , L: -200 ... 900 $^{\circ}\text{C}$ , extra-low volt., measuring span: -160...+160 mV Resistor current Pt100/Ni100approx. 200 $\mu\text{A}$	
<b>Output circuit</b>	0/4...20 mA (load $\leq 600 \Omega$ )	
<b>Ex-approvals acc. to certificate of conformity</b>	TÜV 02 ATEX 1898 / TÜV 06 ATEX 552978 X	
Input circuit		
- No-load voltage $U_0$	5 V	
- Short-circuit current $I_0$	2 mA	
- Power $P_0$	2.6 mW	
Internal inductances/capacitances $L_i/C_i$	0.2 mH/-	
Max. external inductances/capacitances $L_e/C_e$		
- [EEx ia] IIC	1000 mH/100 $\mu\text{F}$	
- [EEx ia] IIB	1000 mH/1000 $\mu\text{F}$	
- Ex nL IIC	100 mH/3,6 $\mu\text{F}$	
- Ex nL IIB	100 mH/18 $\mu\text{F}$	
Marking of the Device	Ⓢ II (1) GD [EEx ia] IIC II 3 G Ex nA nC [nL] IIC/IIB T4	
<b>Transfer characteristics</b>		
Accuracy	see page 3 – 67	
Total error	see from page 3 – 68 on	
Rise time (10...90 %), Release time (90...10 %),		
Response time	„Normal Mode“	„Fast Mode“
- RTDs	< 1,2 s	-
- TCs	< 200 ms	< 80 ms
<b>LED indications</b>		
- Power	green	
- Error	red	
<b>Housing</b>	12 poles, 18 mm wide, Polycarbonatet/ABS, flammability class V-0 per UL94	
Mounting	snap-on hat rail (DIN 50022) or panel screw mounting	
Connection	removable terminal blocks, polarity protected screw connection, self-lifting	
Connection profile	$\leq 1 \times 2.5 \text{ mm}^2$ , $2 \times 1.5 \text{ mm}^2$ or $2 \times 1.0 \text{ mm}^2$ with wire sleeves	
Degree of protection (IEC 60529/EN 60529)	IP20	
Operating temperature	-25...+70 $^{\circ}\text{C}$	