

## Features

- 1-channel
- Input Ex ia IIC
- Device installation in Zone 2
- 24 V DC supply voltage
- Connection of resistance thermometers Pt100 or Ni100 in 2-, 3- or 4-wire connection
- Connection of thermocouples, type B, E, J, K, L, N, R, S or T
- Connection of other resistive sensors, mV sources or thermocouples possible. Linearization adjustable via software
- 4 limit values
- Power Rail bus
- EMC acc. to NAMUR NE 21

## Function

The KSD2-TI-Ex is designed for the connection of RTDs and thermocouples. The input signal of the temperature sensor is linearised. The configuration may be over the internal Power Rail bus. A red flashing LED and a signal through the bus indicates burnout detection.

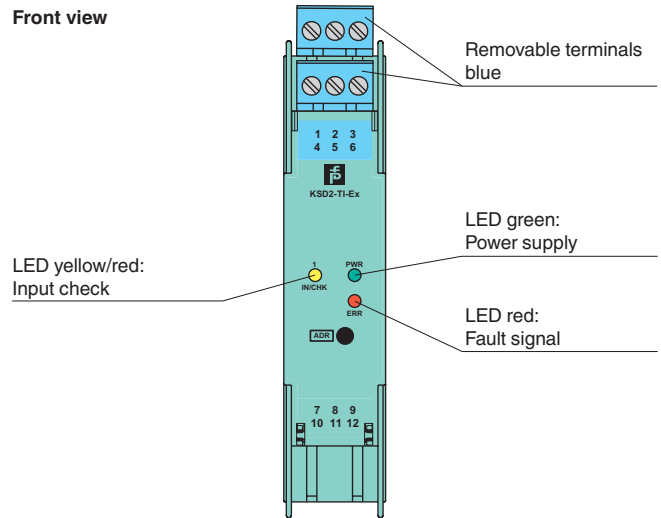
RTDs can be connected in 2-, 3- or 4-wire mode. Internal cold junction compensation can be selected for thermocouples. For this purpose, a RTD is integrated in the K-CJC terminal block (available as an accessory). Cold junction compensation is also possible externally.

All parameters and configurations are transferred over the internal Power Rail bus.

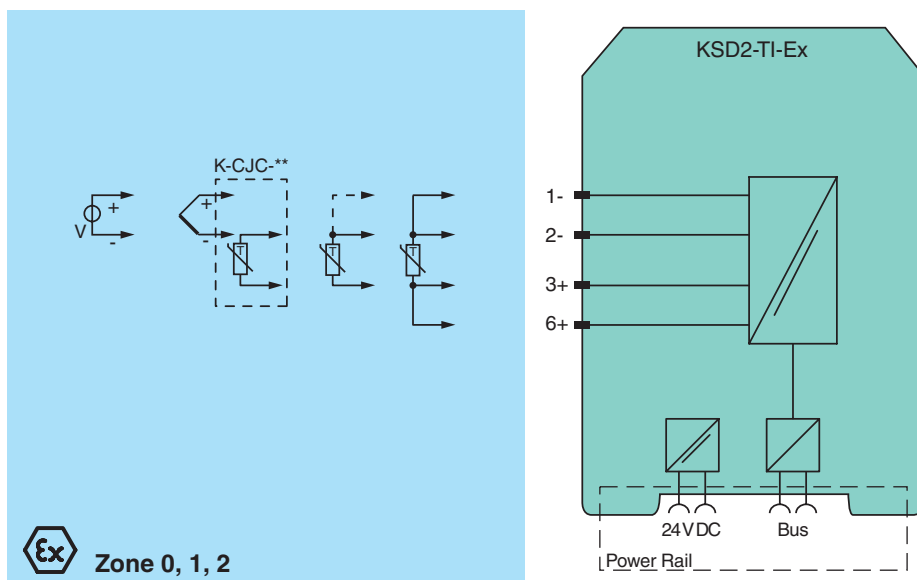
## Application

- Temperature measurement is performed by resistance temperature sensors or thermocouples.
- Detection of position through low ohmic potentiometric repeater.
- Detection of mV signals.

## Assembly



## Connection



<b>Supply</b>	
Connection	Power Rail
Rated voltage	20 ... 30 V DC
Ripple	< 10 %
Power loss	1.5 W
Power consumption	1.5 W
<b>Input</b>	
Connection	terminals 1, 2, 3, 6 suitable for Pt100, Ni100, other resistive sensors, thermocouples type B, E, J, K, L, N, R, S, T and mV sources
Lead resistance	per lead $\leq 50 \Omega$
Current for sensor burnout detection	approx. 48 nA
Measuring current	approx. 400 $\mu$ A with resistance measuring sensor
Line fault detection	<u>resistive sensors, Pt100, Ni100</u> : lead breakage and short-circuit detection for all leads;(4-leads: lead breakage at terminal 3 is detected as short-circuit); threshold for short-circuit detection $\leq 10 \Omega$ <u>mV sources, thermocouples</u> : lead breakage detection; sensor burnout and short-circuit detection for cold junction compensation K-CJC
<b>Output</b>	
Interface	CAN protocol via Power Rail bus
Connection	Power Rail
<b>Transfer characteristics</b>	
<b>Deviation</b>	
Pt100, Ni100	2- and 3-wire: $\pm 0.4 \text{ K}$ 4-wire: $\pm 0.35 \text{ K}$
Thermocouples, except type B	$\pm 1 \text{ K}$ , $\pm 0.5 \text{ K}$ deviation on the cold junction compensation in addition
Thermocouple B	$\pm 1 \text{ K}$ in the range $> 600 \text{ }^{\circ}\text{C}$ $\pm 3 \text{ K}$ in the remaining area $\pm 0.5 \text{ K}$ deviation of the cold junction compensation in addition
Resistance type sensor, mV sensor	$\pm 0.1 \%$ of the measurement range
Influence of ambient temperature	<sup>*)</sup> $\Delta T_{\text{amb}}$ = ambient temperature change referenced to $23 \text{ }^{\circ}\text{C}$ (296 K)
Pt100, Ni100	$\pm (0.0015 \%$ of the measured value in K $+ 0.006 \%$ of the measurement range)/K $\Delta T_{\text{amb}}$ <sup>*)</sup>
Thermocouples	$\pm (0.2 \text{ K} + 0.004 \%$ of the measured value in $^{\circ}\text{C}$ $+ 0.006 \%$ of the measurement range)/K $\Delta T_{\text{amb}}$ <sup>*)</sup>
Resistance type sensor, mV sensor	$\pm 0.01 \%$ of measuring range/K $\Delta T_{\text{amb}}$ <sup>*)</sup>
Influence of the power supply	$\pm 0.1 \%$ of the measurement range
<b>Electrical isolation</b>	
Input/power supply, internal bus	safe electrical isolation acc. to IEC 60079-11:2007, voltage peak value 375 V
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Explosion protection	
Directive 94/9/EC	EN 60079-0: 2006, EN 60079-11: 2007, EN 60079-15:2005 , EN 61241-0: 2006, EN 61241-11: 2006
<b>Standard conformity</b>	
Electrical isolation	EN 60079-11:2007
Electromagnetic compatibility	NE 21:2006
Protection degree	IEC 60529
Climatic conditions	IEC 60721
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 $^{\circ}\text{C}$ (-4 ... 140 $^{\circ}\text{F}$ )
Damaging gas	acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>	
Protection degree	IP20
Connection	terminal connection $\leq 2.5 \text{ mm}^2$
Mass	approx. 100 g
Dimensions	20 x 100 x 115 mm (0.8 x 3.9 x 4.5 in)
Mounting	DIN rail mounting
<b>Data for application in connection with Ex-areas</b>	
EC-Type Examination Certificate	BAS 99 ATEX 7187 , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a>
Group, category, type of protection	 II (1)GD [Ex ia] IIC [Ex iaD] ( $T_{\text{amb}} = -20 \text{ }^{\circ}\text{C}$ to $+60 \text{ }^{\circ}\text{C}$ )
Voltage $U_o$	11 V
Current $I_o$	33 mA
Power $P_o$	90 mW
Statement of conformity	TÜV 00 ATEX 1617 X , observe statement of conformity
Group, category, type of protection, temperature class	 II 3G Ex nA IIC T4
Electrical isolation	

Input/power supply, internal bus	safe electrical isolation acc. to IEC 60079-11:2007, voltage peak value 375 V
<b>General information</b>	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

## Notes

Sensor type	in accordance with the standard	Measurement range	
		Start	End
Resistance type (resistance-linear or freely linearisable)		0 $\Omega$	500 $\Omega$
Pt100	IEC 60751/July 95	-200 °C	+850 °C
Ni100	DIN 43760	-60 °C	+220 °C
mV-source (voltage-linear or freely linearisable)		-0.2 V	+2 V
Thermocouples			
K	IEC 60584-1/Sept. 95	-100 °C	+1300 °C
T	IEC 60584-1/Sept. 95	-200 °C	+400 °C
E	IEC 60584-1/Sept. 95	-100 °C	+1000 °C
J	IEC 60584-1/Sept. 95	-200 °C	+1200 °C
N	IEC 60584-1/Sept. 95	-100 °C	+1300 °C
R	IEC 60584-1/Sept. 95	0 °C	+1600 °C
S	IEC 60584-1/Sept. 95	-22 °C	+1600 °C
L	DIN 43710	-200 °C	+900 °C
B	IEC 60584-1/Sept. 95	+100 °C	+1800 °C

## Software functions

Adjustable by the **PACTware™** human machine interface:

- TAG numbers, 28 alphanumeric characters, can be programmed into device
- Commentary, may be saved in PC memory
- Information on devices may be saved in PC memory
- Physical units are adjustable
  - input for potentiometric recorder: °C, °F, K,  $\Omega$ , none
  - input for thermocouple and mV-source: °C, °F, K, mV, none
- Lead monitoring selectable
- Separate detection and indication of lead breakage and lead short circuit
- 4 limit values
  - upper alarm level limit
  - upper warn level limit
  - lower alarm level limit
  - lower warn level limit
  - hysteresis adjustable
- Lower scale value and upper scale value of the measurement range
  - for the determination of the overflow and underflow range
  - for the configuration of the analogue monitor of the human machine interface
- Overrange and underrange alarm
- Malfunction output status
  - user defined
  - min.
  - max.
  - hold last value
- Simulation
  - of the input value
  - of the device diagnosis
  - of the process channel diagnosis

## Accessories

Cold junction compensation K-CJC-BU for thermocouples, pluggable