

**Features**

- 1-channel isolated barrier
- 24 V DC supply (loop powered)
- Thermocouple input
- Output 4 mA ... 20 mA
- Internal cold junction compensation
- Sensor breakage detection
- DIP switch selectable ranges

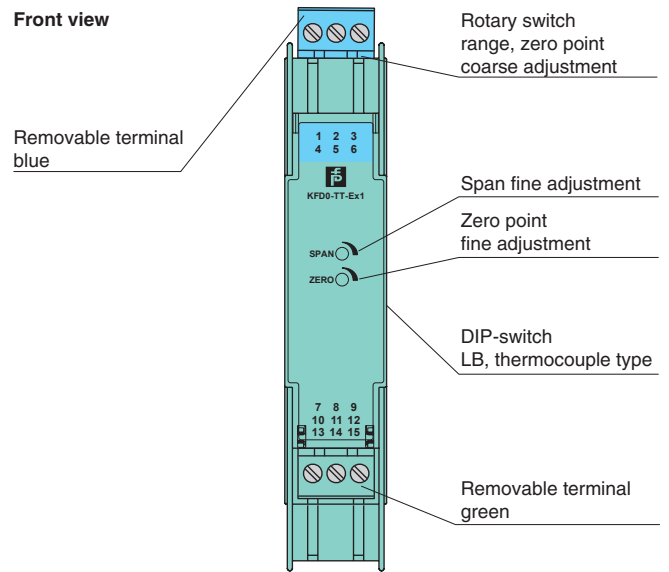
**Function**

This isolated barrier is used for intrinsic safety applications. It is a loop-powered isolator that converts thermocouple inputs in the hazardous area to a 4 mA ... 20 mA signal in the safe area.

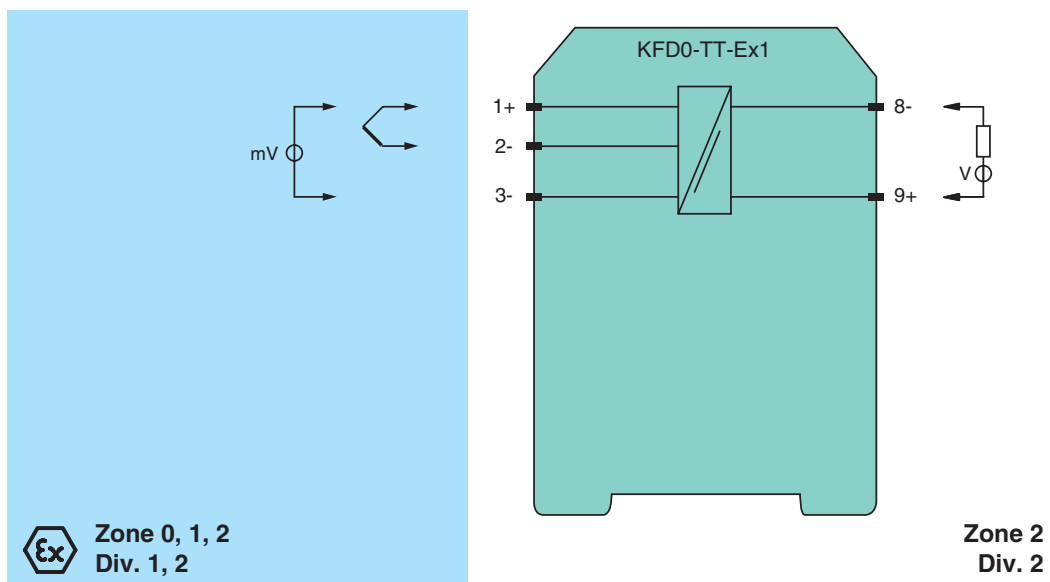
The internal cold junction compensation can be bypassed by using terminals 1 and 3.

The output current is linear to input voltage, not proportional to temperature. Zero, span, and burnout detection are field-configurable.

**Assembly**



**Connection**



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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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<b>General specifications</b>		
Signal type		Analog input
<b>Supply</b>		
Rated voltage	$U_r$	12 ... 35 V DC loop powered
Power dissipation		0.4 W
<b>Input</b>		
Connection side		field side
Connection		terminals 1+, 2-, 3- thermocouple E, J, K, N, R, S or T, cold junction referenced to 0 °C (32 °F)
Lead resistance		≤ 100 Ω per line
Current		lead monitoring ON: ≤ 15 nA; OFF: ≤ 1 nA
<b>Output</b>		
Connection side		control side
Connection		terminals 9+, 8-
Load		(U -12 V) / 0.02 A
Current output		4 ... 20 mA , limited to ≤ 35 mA
Fault signal		downscaling ≤ 3 mA , upscaling ≥ 22 mA
<b>Transfer characteristics</b>		
Measurement range	$f_n$	span 4 ... 100 mV, zero point -12 ... 60 mV , both adjustable
<b>Deviation</b>		
After calibration		0.1 % of full-scale value ± 1 K for the cold junction
Temperature effect		temperature deviation 0.015 % of the span/K or 1.5 μV/K cold junction ± 2 K (calibrated at $T_{amb} = 20 °C$ (68 °F))
Influence of supply voltage		6.5 ppm/V
Characteristic curve		the output voltage is linearly proportionate to the input voltage (not to temperature)
Rise time		250 ms
<b>Galvanic isolation</b>		
Input/Output		safe isolation according to EN 50178, rated insulation voltage 253 $V_{eff}$
<b>Indicators/settings</b>		
Control elements		DIP-switch rotary switch
Configuration		via DIP switches via rotary switch
Labeling		space for labeling at the front
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
<b>Conformity</b>		
Insulation coordination		EN 50178
Galvanic isolation		EN 50178
Electromagnetic compatibility		NE 21
Degree of protection		IEC 60529
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 150 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 inch) , housing type B2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>Data for application in connection with hazardous areas</b>		
EU-Type Examination Certificate		ZELM 00 ATEX 0035
Marking		⊕ II (1)GD [EEx ia] IIC
Voltage	$U_o$	16.1 V
Current	$I_o$	0.8 mA
Power	$P_o$	3.2 mW
Type of protection [EEx ia and EEx ib]		
<b>Output</b>		
Maximum safe voltage	$U_m$	60 V (Attention! The rated voltage can be lower.)
Certificate		TÜV 01 ATEX 1777 X
Marking		⊕ II 3G Ex nA II T4
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010

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<b>International approvals</b>	
CSA approval	
Control drawing	116-0132
<b>General information</b>	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

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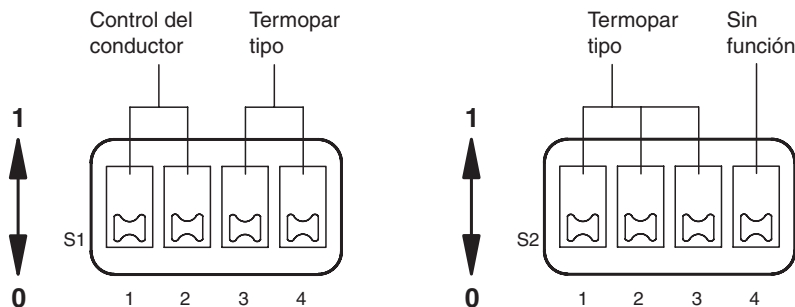
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**Configuration**

**DIP switches function**

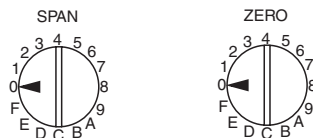


Switch	Position	Function
S1.1/S1.2	1/0	LB UP-upscaled
S1.1/S1.2	0/1	LB DOWN-downscaled
S1.3	1	Thermocouple type E
S1.4	1	Thermocouple type J
S2.1	1	Thermocouple type K, T
S2.2	1	Thermocouple type N
S2.3	1	Thermocouple type R, S

\* other combinations not allowed/defined

**Note:** A new adjustment is necessary in the case of modified configuration (e. g. LB from upscaled to downscaled).

**Rotary switches function**



Please consider that the values of the Zero-table are only valid for the span range Pos. 0 and that both tables contain typical values, which can be used as an adjustment help.

Switch SPAN coarse adjustment	Span (mV)	Switch ZERO coarse adjustment	Zero point (mV) for max. span (potentiometer right-hand stop)	Zero point (mV) for min. span (potentiometer left-hand stop)
0	100.0 ... 53.0	0	-12.0 ... -8.0	-13.6 ... -8.5
1	55.0 ... 30.0	1	-8.3 ... -3.7	-9.0 ... -4.0
2	32.0 ... 20.0	2	-4.0 ... 1.0	-4.3 ... 1.1
3	22.0 ... 5.0	3	0.5 ... 5.6	0.5 ... 6.1
4	17.0 ... 12.0	4	4.6 ... 10.2	5.2 ... 11.2
5	14.0 ... 11.0	5	9.3 ... 14.9	10.2 ... 16.2
6	13.0 ... 9.0	6	13.9 ... 19.5	15.2 ... 21.1
7	11.0 ... 8.0	7	18.3 ... 23.9	20.1 ... 25.6
8	10.0 ... 7.0	8	23.0 ... 28.6	24.7 ... 31.0
9	9.0 ... 6.0	9	27.6 ... 33.1	30.0 ... 36.0
A	8.0 ... 5.5	A	32.1 ... 37.6	35.0 ... 40.5
B	7.5 ... 5.0	B	36.6 ... 42.1	39.4 ... 46.0
C	7.0 ... 4.5	C	41.1 ... 46.6	45.1 ... 51.0
D	6.5 ... 4.2	D	45.5 ... 51.0	50.1 ... 56.0
E	6.2 ... 4.1	E	50.0 ... 55.5	55.0 ... 61.0
F	6.1 ... 4.0	F	54.4 ... 60.0	60.0 ... 62.0

**Recommendation for adjustment:**

1. Span determination (in mV).
2. "Span coarse adjustment" in accordance with the table.
3. Minimum value adjustment (in mV or °C) at the input.
4. "Zero point coarse adjustment", to approach to 4 mA.
5. "Zero point fine adjustment" to exactly 4 mA.
6. Maximum value adjustment (in mV or °C) at the input.
7. "Span fine adjustment" to exactly 20 mA.
8. If necessary repeat fine adjustment for 4 mA and 20 mA.

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