

**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

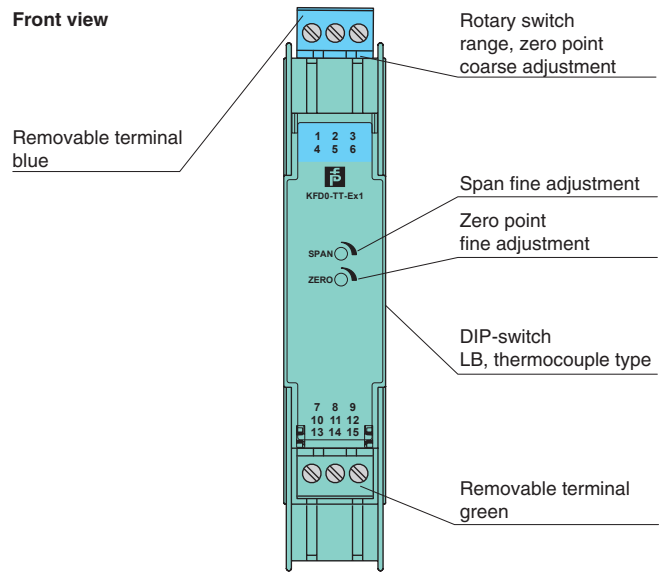
**Function**

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.

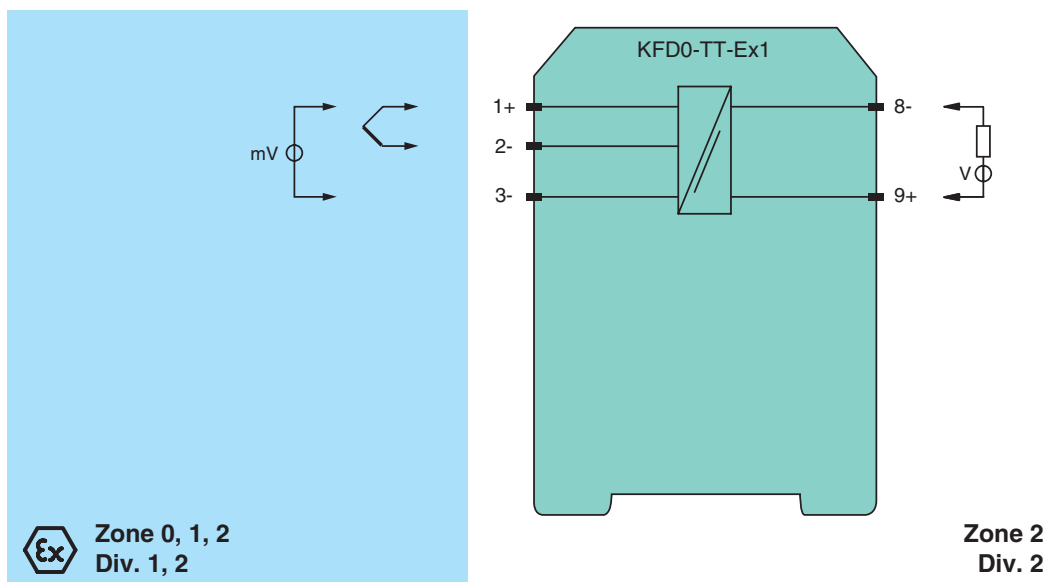
The internal cold junction compensation can be bypassed by using terminals 1 and 3.

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

**Assembly**



**Connection**



Release date 2010-02-02 14:10 Date of issue 2015-02-16 043692\_eng.xml



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

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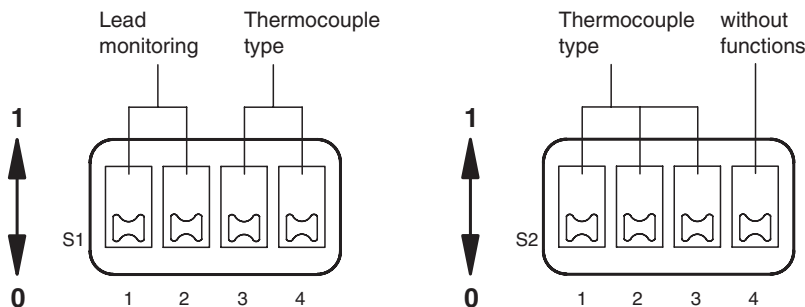
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<b>General specifications</b>		
Signal type		Analog input
<b>Supply</b>		
Rated voltage	$U_n$	12 ... 35 V DC loop powered
Power loss		0.4 W
<b>Input</b>		
Connection		terminals 1+, 2-, 3- thermocouple E, J, K, N, R, S or T, cold junction referenced to 0 °C (32 °F)
Lead resistance		≤ 100 Ω per lead
Current		lead monitoring ON: ≤ 15 nA; OFF: ≤ 1 nA
<b>Output</b>		
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
Deviation		
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>Electrical isolation</b>		
Input/Output		safe isolation according to EN 50178, rated insulation voltage 253 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2004/108/EC		EN 61326-1:2006
<b>Conformity</b>		
Insulation coordination		EN 50178
Electrical 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
Mass		approx. 150 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in) , housing type B2
<b>Data for application in connection with Ex-areas</b>		
EC-Type Examination Certificate		ZELM 00 ATEX 0035 , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a>
Group, category, type of protection		 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]		
Output		
Maximum safe voltage	$U_m$	60 V (Attention! The rated voltage can be lower.)
Statement of conformity		
Group, category, type of protection, temperature class		 II 3G Ex nA II T4
Electrical isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 94/9/EC		EN 50014, EN 50020 , EN 60079-0:2006, EN 60079-15:2005
<b>International approvals</b>		
CSA approval		
Control drawing		116-0132
<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> .

Release date 2010-02-02 14:10 Date of issue 2015-02-16 043692\_eng.xml

**Configuration**

**DIP switches function**

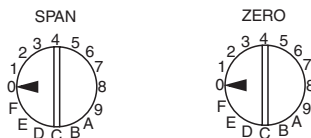


Switch	Position	Function
S1.1/S1.2	1/0	LB UP-upscaled
S1.1/S1.2	0/1	LB DOWN-downscaled
S1.3	1	Thermocouple type E
S1.4	1	Thermocouple type J
S2.1	1	Thermocouple type K, T
S2.2	1	Thermocouple type N
S2.3	1	Thermocouple type R, S

\* 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.

Release date 2010-02-02 14:10 Date of issue 2015-02-16 043692\_eng.xml