

## RTD Converter KFD0-TR-Ex1

- 1-channel isolated barrier
- 24 V DC supply (loop powered)
- 2- or 3-wire Pt100 RTD input
- Output 4 mA ... 20 mA, temperature linearization selectable
- DIP switch selectable ranges
- Sensor breakage detection



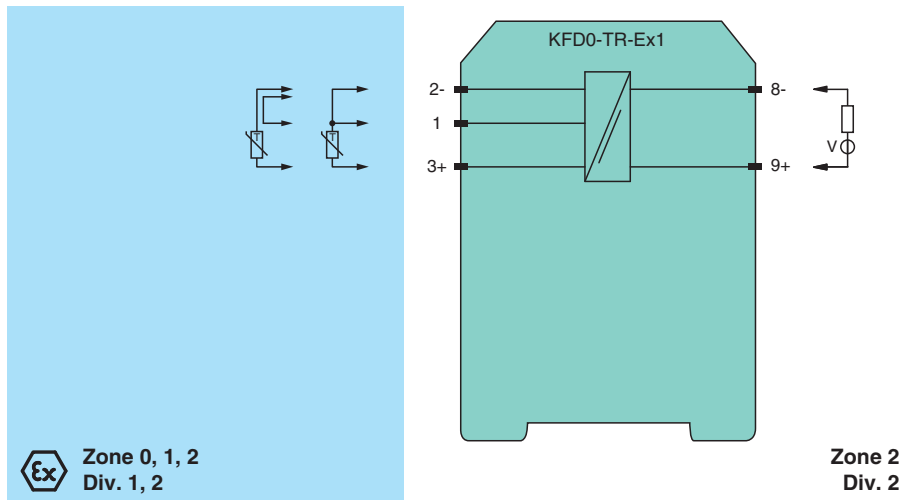
### Function

This isolated barrier is used for intrinsic safety applications. It is a loop-powered isolator that converts the resistance from a 3-wire RTD in the hazardous area to a 4 mA ... 20mA signal in the safe area.

A selectable analog linearization ensures a temperature linear 4 mA ... 20mA output between 25 °C ... 375 °C.

It also features conveniently located DIP switches, rotary switches and potentiometers to make field calibration easy.

### Connection



### Technical Data

#### General specifications

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+ suitable for Pt100, 2- and 3-wire connection		
Lead resistance	max. 100 $\Omega$ per line		
Measuring current	approx. 1 mA		
<b>Output</b>			
Connection side	control side		

Release date: 2020-09-23 Date of issue: 2020-09-23 Filename: 043691\_eng.pdf

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0002  
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222  
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
pa-info@sg.pepperl-fuchs.com

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## Technical Data

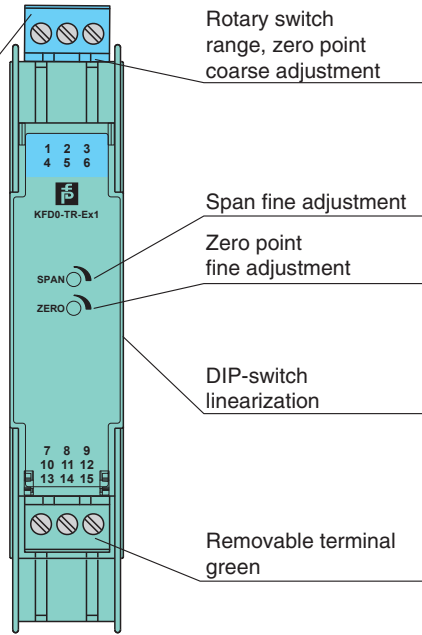
Connection		terminals 9+, 8-
Load		(U -12 V) / 0.02 A
Current output		4 ... 20 mA , limited to ≤ 35 mA
Fault signal		upscaling ≥ 22 mA (limited to 35 mA)
<b>Transfer characteristics</b>		
Measurement range	$f_n$	span without linearization 25 ... 800 °C (77 ... 1472 °F)/with linearization 25 ... 375 °C (77 ... 707 °F), both adjustable zero point without linearization -200 ... 400 °C (-328 ... 752 °F)/with linearization -30 ... 375 °C (-22 ... 707 °F), both adjustable
Deviation		
After calibration		0.1 % of full-scale value incl. linearity and hysteresis
Influence of ambient temperature		span and zero point 0.015 % / K or ± 10 mΩ / K
Influence of supply voltage		6.5 ppm/V
Rise time		250 ms
<b>Galvanic isolation</b>		
Input/Output		available
<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
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 0036
Marking		⊕ II (1)GD [EEx ia] IIC
Voltage	$U_o$	16.1 V
Current	$I_o$	33 mA
Power	$P_o$	131 mW
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
<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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Assembly

Front view

Removable terminal blue



Rotary switch range, zero point coarse adjustment

Span fine adjustment

Zero point fine adjustment

DIP-switch linearization

Removable terminal green

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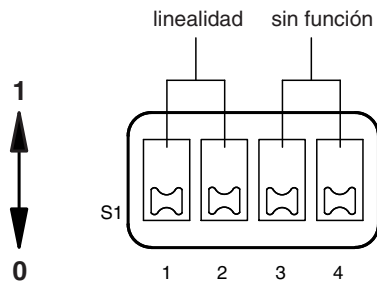
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**Configuration**

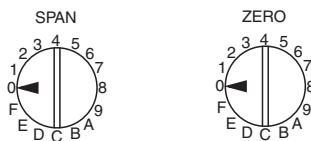
**DIP switches function**



Switch	Position	Function
S1.1	1	Pt100 with linearisation
S1.2	0	(-30 °C ... 375 °C)
S1.1	0	Pt100 without linearisation
S1.2	1	(-200 °C ... 800 °C)

Other combinations of S1.1 and S1.2 are not allowed.

**Rotary switches function**



Please consider that both tables contain typical values, which can be used as an adjustment help.

Adjustment range with linearisation					
Switch SPAN (°C) coarse adjustment	D	6	2	1	0
	20 ... 60	35 ... 100	75 ... 220	120 ... 340	260 ... 375
Switch ZERO (°C) coarse adjustment					
0	-	-	-	-	-
1	-	-	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-19 ... 50	-22 ... 45	-30 ... 29	-30 ... 13	-
6	35 ... 103	30 ... 97	16 ... 78	2 ... 61	-30 ... 0
7	87 ... 155	82 ... 148	65 ... 127	48 ... 107	-10 ... 38
8	142 ... 207	134 ... 200	115 ... 177	96 ... 154	28 ... 76
9	192 ... 257	185 ... 249	162 ... 223	141 ... 198	65 ... 111
A	245 ... 306	234 ... 297	209 ... 269	185 ... 242	-
B	290 ... 355	282 ... 344	254 ... 315	-	-
C	338 ... 375	329 ... 375	-	-	-
D	-	-	-	-	-
E	-	-	-	-	-
F	-	-	-	-	-

Adjustment range without linearisation					
Switch SPAN (°C) coarse adjustment	D	6	2	1	0
	25 ... 60	40 ... 100	90 ... 230	140 ... 360	320 ... 800
Switch ZERO (°C) coarse adjustment					
0	-	-	-	-	-
1	-200 ... -171	-200 ... -172	-200 ... -176	-200 ... -179	-
2	-183 ... -112	-184 ... -115	-188 ... -122	-191 ... -129	-200 ... -153
3	-126 ... -54	-127 ... -54	-134 ... -67	-140 ... -77	-163 ... -111
4	-68 ... -6	-71 ... 1	-80 ... -12	-90 ... -24	-122 ... -70
5	-9 ... 65	-14 ... 59	-26 ... 42	-38 ... 27	-80 ... -29
6	48 ... 123	43 ... 116	28 ... 97	14 ... 78	-40 ... 12
7	107 ... 182	101 ... 175	82 ... 151	65 ... 130	1 ... 53
8	168 ... 243	160 ... 234	138 ... 208	117 ... 183	43 ... 95
9	226 ... 302	217 ... 292	192 ... 262	168 ... 234	82 ... 135
A	284 ... 361	274 ... 350	246 ... 317	219 ... 285	122 ... 174
B	343 ... 400	331 ... 400	300 ... 372	270 ... 337	162 ... 215
C	-	-	353 ... 400	320 ... 388	201 ... 254
D	-	-	-	37 ... 400	241 ... 293
E	-	-	-	-	279 ... 333
F	-	-	-	-	318 ... 372

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**Recommendation for adjustment:**

1. Span determination.
2. "Span coarse adjustment" in accordance with the table (for mode of operation "without linearisation" considering the approx. measurement range start).
3. Minimum value adjustment (in °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 °C) at the input.
7. "Span fine adjustment" to exactly 20 mA.
8. If necessary repeat fine adjustment for 4 mA and 20 mA