

Potentiometer Converter

KFD2-PT2-Ex1-5

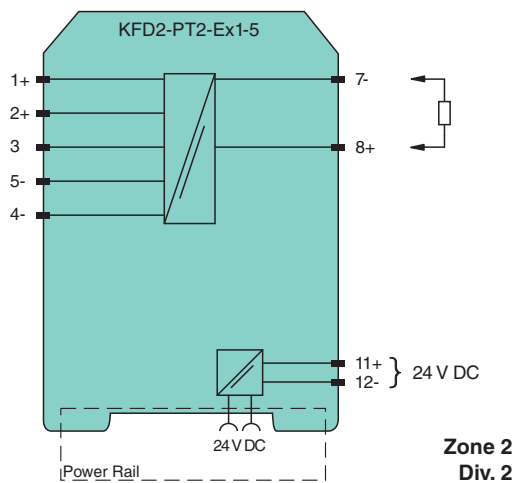
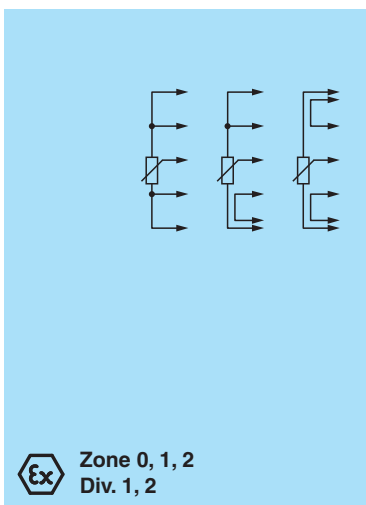
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Potentiometer input
- Current output 4 mA ... 20 mA
- Lead resistance compensation adjustment
- Accuracy 0.05 %
- Up to SIL 2 acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications. It provides the source voltage to a potentiometer and transfers its wiper position from hazardous areas to safe areas. It then converts the signal to a 4 mA ... 20mA current output. The unit can be used in a 3-, 4-, or 5-wire configuration depending on the required measurement accuracy. Terminals 2 and 5 are used as the sense line for the potentiometer lead resistance compensation in a 5-wire configuration. The barrier's potentiometer can be used to compensate for lead resistance up to 5 % of the hazardous area potentiometer value.

Connection



Technical Data

General specifications

Signal type Analog input

Functional safety related parameters

Safety Integrity Level (SIL) SIL 2

Supply

Connection Power Rail or terminals 11+, 12-

Rated voltage U_r 20 ... 35 V DC

Ripple within the supply tolerance

Power dissipation 1 W

Power consumption 1.3 W

Input

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

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Technical Data

Connection side		field side	
Connection		terminals 4-, 5-, 3+, 2+, 1+	
Potentiometer			
Types of measuring		3-, 4-, 5-wire technology	
Nominal resistance		800 Ω to 100 kΩ	
Supply voltage		approx. 4.7 V	
Lead resistance		5 % of the potentiometer resistance (adjustable)	
Output			
Connection side		control side	
Connection		terminals 7-, 8+	
Current output		4 ... 20 mA, load ≤1 kΩ	
Transfer characteristics			
Accuracy		0.05 %	
Deviation			
Linearity		± 10 μA	
Influence of ambient temperature		≤ 1 μA/K	
Rise time		10 to 90 % ≤ 8 ms; 10 to 90 % within 1 % of span ≤ 25 ms	
Galvanic isolation			
Output/power supply		functional insulation, rated insulation voltage 50 V AC	
Indicators/settings			
Control elements		potentiometer	
Configuration		via potentiometer	
Directive conformity			
Electromagnetic compatibility			
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)	
Conformity			
Electromagnetic compatibility		NE 21:2006	
Degree of protection		IEC 60529:2001	
Protection against electrical shock		UL 61010-1	
Ambient conditions			
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)	
Mechanical specifications			
Degree of protection		IP20	
Connection		screw terminals	
Mass		approx. 120 g	
Dimensions		20 x 107 x 115 mm (0.8 x 4.2 x 4.5 inch) (W x H x D) , housing type B1	
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001	
Data for application in connection with hazardous areas			
EU-type examination certificate		BAS 00 ATEX 7171	
Marking		⊕ II (1)G [Ex ia Ga] IIC , ⊕ II (1)D [Ex ia Da] IIIC , ⊕ I (M1) [Ex ia Ma] I (-20 °C ≤ T _{amb} ≤ 60 °C)	
Voltage	U _o	10.4 V DC	
Current	I _o	31.4 mA	
Power	P _o	82 mW	
Supply			
Maximum safe voltage	U _m	250 V (Attention! The rated voltage can be lower.)	
Output			
Maximum safe voltage	U _m	250 V (Attention! The rated voltage can be lower.)	
Certificate		TÜV 02 ATEX 1797 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	
Input/power supply		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	

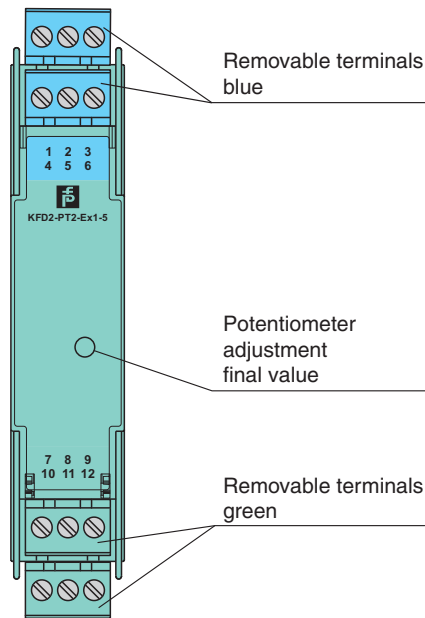
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Technical Data

Directive conformity	
Directive 2014/34/EU	EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010
International approvals	
FM approval	
Control drawing	116-0129
UL approval	
Control drawing	116-0173 (cULus)
IECEX approval	
IECEX certificate	IECEX BAS 10.0060 IECEX BAS 10.0061X
IECEX marking	[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I Ex ec IIC T4 Gc
General information	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Assembly

Front view





Matching System Components

	KFD2-EB2	Power Feed Module
	UPR-03	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	UPR-03-M	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	UPR-03-S	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m






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Matching System Components

	K-DUCT-BU	Profile rail, wiring comb field side, blue
	K-DUCT-BU-UPR-03	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue

Accessories

	K-250R	Measuring resistor
	K-500R0%1	Measuring resistor
	KF-ST-5GN	Terminal block for KF modules, 3-pin screw terminal, green
	KF-ST-5BU	Terminal block for KF modules, 3-pin screw terminal, blue
	KF-CP	Red coding pins, packaging unit: 20 x 6

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Application

Jumpers must be used on terminals 1, 2 and 4, 5 in 3-wire configurations. A jumper must be used between terminals 4 and 5 in 4-wire connections. In the 5-wire mode of operation, the potentiometer voltage is measured at terminals 2 and 5 and automatically readjusted.

The front side potentiometer can be used to compensate for lead resistances up to 5 % of the potentiometer value. During adjustment, the potentiometer is set to 100 % of its value and the output signal is adjusted to 100 % of the required value. This adjustment can be repeated setting the potentiometer to 0 %.