



# Potentiometer Converter

## KFD2-PT2-Ex1

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Potentiometer input
- Voltage output 0 V ... 10 V
- Lead resistance compensation adjustment
- Accuracy 0.05 %



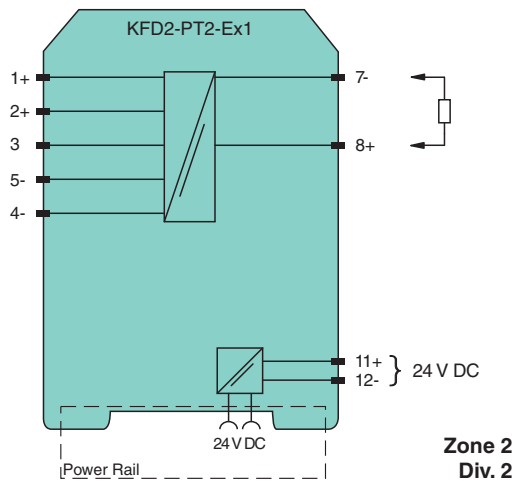
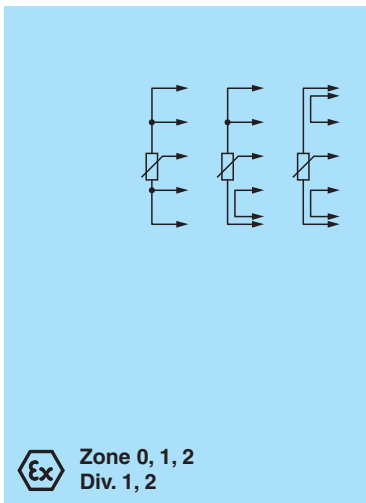
### Function

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 0 V ... 10 V voltage output (consistent with 0 mA ... 20mA current output, see for example KFD2-PT2-Ex1-4).

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
<b>Supply</b>	
Connection	Power Rail or terminals 11+, 12-
Rated voltage	$U_r$ 20 ... 35 V DC
Ripple	within the supply tolerance
Power dissipation	0.5 W
Power consumption	0.6 W
<b>Input</b>	
Connection side	field side
Connection	terminals 4-, 5-, 3+, 2+, 1+

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## Technical Data

<b>Potentiometer</b>		
Types of measuring		3-, 4-, 5-wire technology
Nominal resistance		800 $\Omega$ to 100 k $\Omega$
Supply voltage		approx. 4.7 V
Lead resistance		5 % of the potentiometer resistance (adjustable)
<b>Output</b>		
Connection side		control side
Connection		terminals 7-, 8+
Voltage output		0 ... 10 V
Output resistance		max. 30 $\Omega$
<b>Transfer characteristics</b>		
Accuracy		0.05 %
Deviation		
Linearity		$\leq \pm 5$ mV
Influence of ambient temperature		$\leq 0.5$ mV/K
Rise time		10 to 90 % $\leq 8$ ms; 10 to 90 % within 1 % of span $\leq 25$ ms
<b>Galvanic isolation</b>		
Output/power supply		functional insulation, rated insulation voltage 50 V AC
<b>Indicators/settings</b>		
Control elements		potentiometer
Configuration		via potentiometer
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
<b>Conformity</b>		
Electromagnetic compatibility		
Degree of protection		NE 21:2012
Protection against electrical shock		IEC 60529:2001
		UL 61010-1
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 60 $^{\circ}$ C (-4 ... 140 $^{\circ}$ F)
<b>Mechanical specifications</b>		
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
<b>Data for application in connection with hazardous areas</b>		
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
Voltage	U <sub>o</sub>	10.4 V
Current	I <sub>o</sub>	31.4 mA
Power	P <sub>o</sub>	82 mW
Supply		
Maximum safe voltage	U <sub>m</sub>	250 V (Attention! The rated voltage can be lower.)
Output		
Maximum safe voltage	U <sub>m</sub>	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
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010

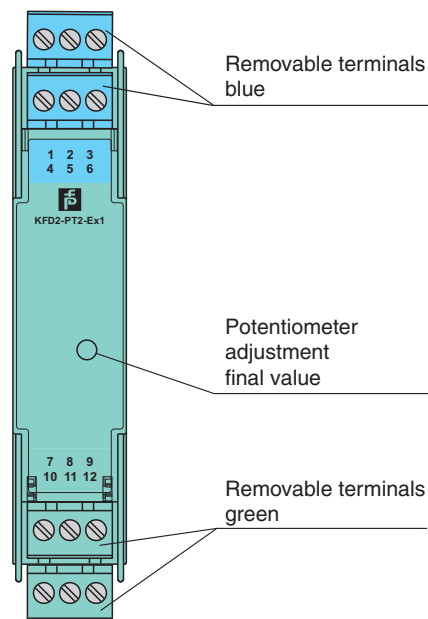
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## Technical Data

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] IIC, [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 <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

## Assembly

Front view



## 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 %.