

Potentiometer Converter

KFD2-PT2-Ex1

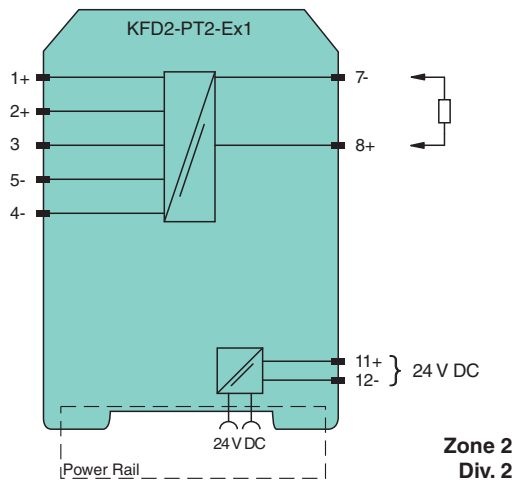
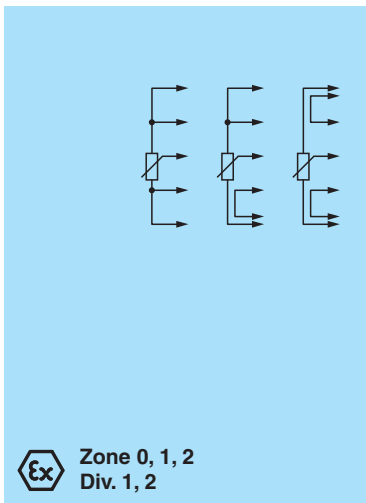
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Potentiometer input
- Voltage output 0 V ... 10 V
- Lead resistance compensation adjustment
- Accuracy 0.05 %
- Up to SIL 2 acc. to IEC/EN 61508



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 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

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 0.5 W

Power consumption 0.6 W

Input

Release date: 2023-04-06 Date of issue: 2023-04-06 Filename: 072018_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

PF PEPPERL+FUCHS

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 k Ω | |
| Supply voltage | approx. 4.7 V | |
| Lead resistance | 5 % of the potentiometer resistance (adjustable) | |
| Output | | |
| Connection side | control side | |
| Connection | terminals 7-, 8+ | |
| Voltage output | 0 ... 10 V | |
| Output resistance | max. 30 Ω | |
| Transfer characteristics | | |
| Accuracy | 0.05 % | |
| Deviation | | |
| Linearity | $\leq \pm 5$ mV | |
| Influence of ambient temperature | ≤ 0.5 mV/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 $^{\circ}$ C (-4 ... 140 $^{\circ}$ 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 | |
| Voltage | U _o | 10.4 V |
| 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 | | |
| 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 | |

Release date: 2023-04-06 Date of issue: 2023-04-06 Filename: 072018_eng.pdf

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

Pepperl+Fuchs Group
www.pepperl-fuchs.comUSA: +1 330 486 0002
pa-info@us.pepperl-fuchs.comGermany: +49 621 776 2222
pa-info@de.pepperl-fuchs.comSingapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

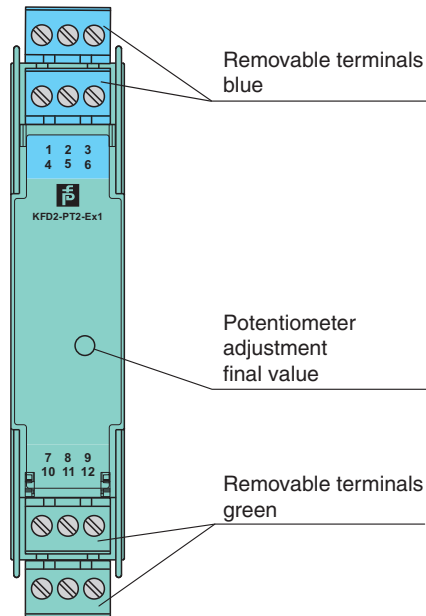
PEPPERL+FUCHS

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 |




Release date: 2023-04-06 Date of issue: 2023-04-06 Filename: 072018_eng.pdf

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

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

| | | |
|---|------------------|--|
|  | 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 |

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 %.