Transformer isolated barriers for potentiometer

- 1-channel
- Input EEx ia IIC
- 24 V DC nominal supply voltage
- Current or voltage output
- Accuracy 0.05 %
- EMC acc. to NAMUR NE 21

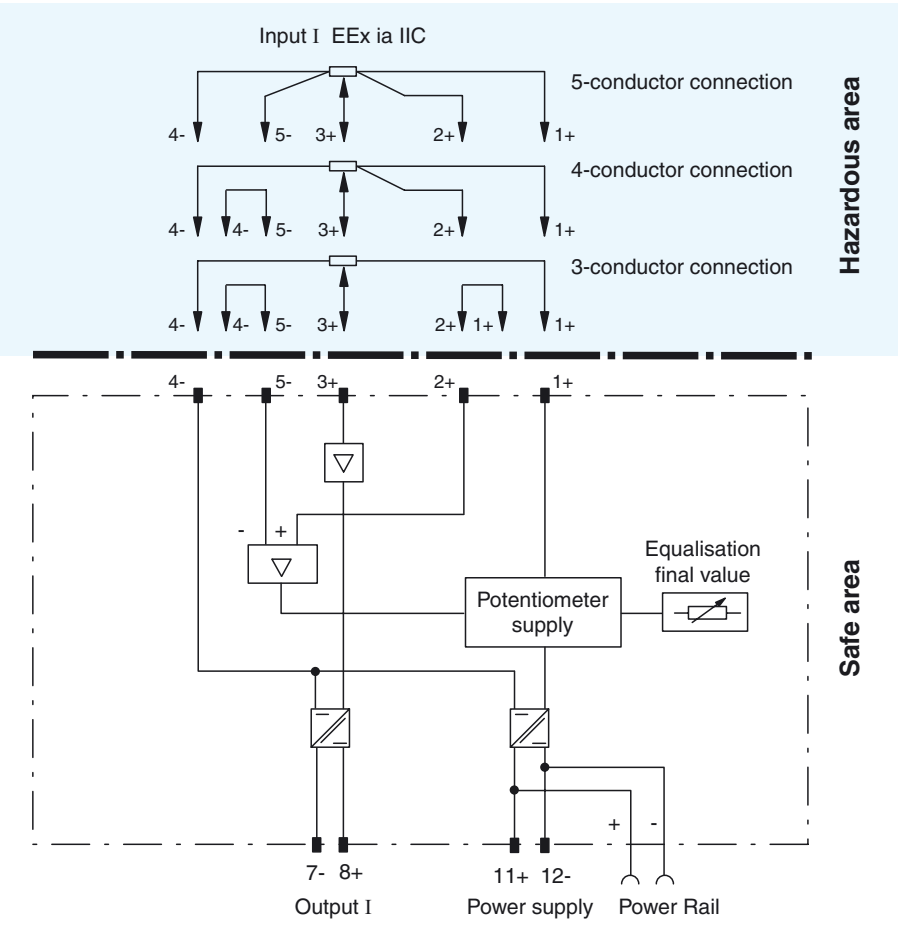
Replacement device for KFD2-PT-Ex1
Attention: output polarity now 7-, 8+

Function

The KFD2-PT2-Ex1 supplies power to the potentiometers in the hazardous area.
The loop voltages are transmitted.
The KFD2-PT2-Ex1 is available with current and voltage outputs (terminals 7 and 8).
It can be operated in the 3-, 4- or 5-wire mode with the potentiometer.
In the 5-wire mode of operation, the potentiometer voltage is measured at terminals 2 and 5 and automatically readjusted. For a 4-wire connection on the KFD2-PT2-Ex1, terminals 4- and 5- are bridged. With the resistance adjustment on the front housing panel, it is possible to adjust the final value.
For potentiometer resistances greater than 1 kOhm, the potentiometer can be used to compensate for lead resistances up to 5 % of the potentiometer value. For potentiometer values in a range of 800 Ohm up to 1 kOhm the adjustment value is 50 Ohm. 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 %.
Terminals 4 and 5 as well as 1 and 2 must be bridged for a 3-wire connection to the potentiometer.

Application

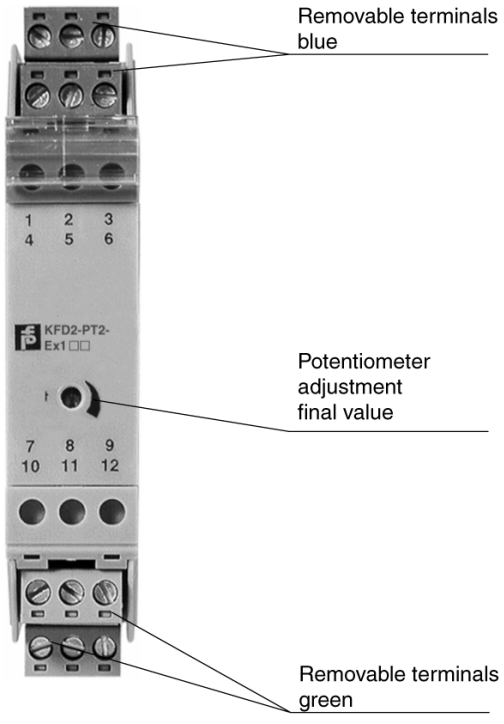
Because of the high transfer accuracy, the unit is well suited for precise path or positioning requirements per potentiometer, reference element, etc.



Composition

Front View

Housing type A4
(see system description)



072018_ENG.xml 2003-10-01

Supply		
Connection		Power Rail or terminals 11+, 12-
Rated voltage		20 ... 35 V DC
Ripple		within the supply tolerance
Power loss		0,5 W
Power consumption		0,6 W for voltage output; 1,3 W
Input		
Connection		terminals 4-, 5-, 3+, 2+, 1+
Lead resistance		≤ 50 Ohm at potentiometer resistance ≤ 1 kOhm; 5 % of the potentiometer resistance at ≥ 1 kOhm (can be equalised by user)
Potentiometer resistance		≥ 800 Ohm
Potentiometer voltage		approx. 4,7 V
Output		
Voltage output		0/1 ... 5 V or 0/2 ... 10 V
Connection		terminals 7-, 8+
Current output		0/4 ... 20 mA ; load ≤1 kOhm
Safety maximum voltage U_m		250 V
Output resistance		≤ 30 Ω
Transfer characteristics		
Deviation		
Linearity		≤ ± 5 mV in case of voltage output / ≤ ± 10 µA in case of current output
Temperature		≤ 5 mV / K in case of voltage output / ≤ 1 µA in case of current output
Rise time		10 to 90 % ≤ 8 ms; 10 to 90 % within 1 % of span ≤ 25 ms
Electrical isolation		
Input/Output		safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Input/Power supply		safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Output/Power supply		basic insulation acc. to DIN EN 50178, rated insulation voltage of AC 50 V
Directive conformity		
Electromagnetic compatibility		standards
Directive 89/336/EEC		on request
Standard conformity		
Coordination of insulation		acc. to DIN EN 50178
Electrical isolation		acc. to DIN EN 50178
Electromagnetic compatibility		acc. to EN 50081-2 / EN 50082-2, NAMUR NE 21, DIN IEC 801-6 intensity level 2
Climatic conditions		acc. to DIN IEC 721
Ambient conditions		
Ambient temperature		-20 ... 60 °C (253 ... 333 K)
Mechanical specifications		
Protection degree		IP20
Mass		approx. 120 g
Data for application in conjunction with hazardous areas		
EC-Type Examination Certificate		BAS 00 ATEX 7171X ; for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection		⟨Ex⟩ II (1) G D [EEx ia] IIC (-20 °C ≤ T_a ≤ 60 °C)
Voltage	U_0	10,4 V
Current	I_0	31,4 mA
Power	P_0	82 mW
Supply		
Safety maximum voltage	U_m	250 V
Type of protection [EEx ia]		
Explosion group		IIA IIB IIC
External capacitance		79 µF 17,4 µF 2,53 µF
External inductance		273,55 mH 132,57 mH 36,07 mH
Electrical isolation		
Input/Output		safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Directive conformity		standards
Directive 94/9 EC		on request
Entity parameter		
Certification number		4Z6A5.AX
FM control drawing		No. 116-0129
Suitable for installation in division 2		yes
Connection		terminals 1, 2, 3, 4, 5
Input I		
Current	I_t	33 mA
Voltage	V_t	10,5 V
Explosion group		A&B C&E D, F&G

Max. external capacitance C_a		2,66 µF	7,99 µF	21,33 µF
Max. external inductance L_a		31,9 mH	95,7 mH	272,2 mH
Safety parameter				
CSA control drawing		LR 65756-13		
Control drawing		No. 116-0132		
Connection		terminals 1, 2, 3, 4, 5		
Input I				
Voltage	V_{OC}	10,6 V		
Current	I_{SC}	31,7 mA		
Explosion group		A&B	C&E	D, F&G
Max. external capacitance C_a		2,6 µF	7,8 µF	20,8 µF
Max. external inductance L_a		34 mH	121 mH	291 mH

Notes

The KFD2-PT2-Ex1 is available with various output options.

Model number	Output	Model number	Output	Model number	Output
KFD2-PT2-Ex1	0 V ... 10 V	KFD2-PT2-Ex1-2	2 V ... 10 V	KFD2-PT2-Ex1-4	0 mA ... 20 mA
KFD2-PT2-Ex1-1	0 V ... 5 V	KFD2-PT2-Ex1-3	1 V ... 5 V	KFD2-PT2-Ex1-5	4 mA ... 20 mA

Supplementary information

EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity and instructions have to be observed. This information can be found under www.pepperl-fuchs.com.

Accessories

PR-03 Power Rail
UPR-03 Power Rail
KFD2-EB2 power feed module
The devices are supplied with 24 V DC through the KFD2-EB2 power feed module and the PR-03 or the UPR-03 Power Rail. Each power feed module monitors and provides protection for groups of as many as 100 individual devices. The PR-03 Power Rail is an insert component for the DIN rail. The UPR-03 Power Rail is a complete unit consisting of an electrical insert and an aluminium DIN rail measuring 35 mm x 15 mm x 2000 mm. The devices are simply snapped in place to make electrical contact.
If a Power Rail is not being used, power can be supplied to the devices directly through the device terminals.

072018_ENG.xml 2003-10-01