Transmitter Power Supply

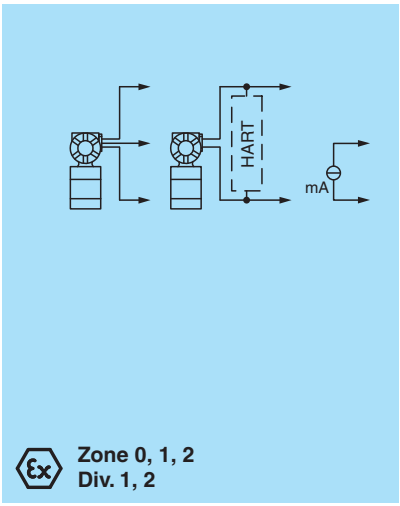
KFD2-CRG2-Ex1.D

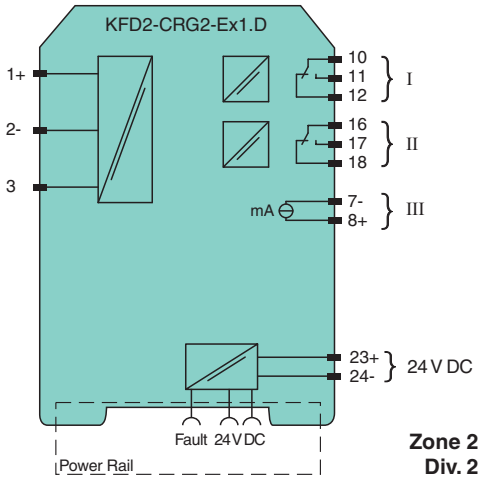
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire transmitters and 2-wire current sources
- Output 0/4 mA ... 20 mA
- 2 relay contact outputs
- Adjustable energized/de-energized delay
- Programmable high/low alarm
- Linearization function (max 20 points)
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC/EN 61508 / IEC/EN 61511

Function

This isolated barrier is used for intrinsic safety applications.
The device supplies 2-wire and 3-wire transmitters, and can also be used with current sources.
Two relays and an active 0/4 mA to 20 mA current source are available as outputs. The relay contacts and the current output can be integrated in safety-relevant circuits. The current output is easily scaled.
On the display the measured value can be indicated in various physical units.
The device is easily configured by the use of keypad or with the PACTware configuration software.
The input has a line fault detection.
A fault is signalized by LEDs and a separate collective error message output.
For additional information, refer to the manual and www.pepperl-fuchs.com.

Wiring Diagram





Technical Data

General specifications		
Signal type		Analog input
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		Power Rail or terminals 23+, 24-
Rated voltage	U_r	20 ... 30 V DC
Rated current	I_r	approx. 130 mA
Power dissipation		2 W

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Power consumption	2.5 W
Interface	
Programming interface	programming socket
Input	
Connection side	field side
Connection	terminals 1, 2, 3
Input I	
Input signal	0/4 ... 20 mA
Available voltage	≥ 15 V at 20 mA
Open circuit voltage/short-circuit current	24 V / 33 mA
Input resistance	45 Ω (terminals 2, 3)
Line fault detection	breakage I < 0.2 mA; short-circuit I > 22 mA
Output	
Connection side	control side
Connection	output I: terminals 10, 11, 12 output II: terminals 16, 17, 18 output III: terminals 8+, 7-
Output signal	0 ... 20 mA or 4 ... 20 mA
Output I, II	signal, relay
Contact loading	253 V AC / 2 A / cos ϕ ≥ 0.7 ; 40 V DC / 2 A
Mechanical life	5 x 10^7 switching cycles
Output III	Signal, analog
Current range	0 ... 20 mA or 4 ... 20 mA
Open loop voltage	max. 24 V DC
Load	max. 650 Ω
Fault signal	downscale I ≤ 3.6 mA, upscale I ≥ 21 mA (acc. NAMUR NE43)
Energized/De-energized delay	0 ... 250 s , adjustable
Transfer characteristics	
Input I	
Accuracy	< 30 µA
Influence of ambient temperature	0.003 %/K (30 ppm)
Output I, II	
Response delay	≤ 200 ms at bounce from 0 ... 20 mA
Output III	
Resolution	≤ 10 µA
Accuracy	< 20 µA
Influence of ambient temperature	0.005 %/K (50 ppm)
Reaction time	< 650 ms at bounce from 0 ... 20 mA at the input, 90 % of output full-scale value
Galvanic isolation	
Input/Other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output I, II/other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Mutual output I, II, III	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output III/power supply and collective error	functional insulation acc. to IEC 62103, rated insulation voltage 50 V_{eff}
Interface/power supply and collective error	functional insulation acc. to IEC 62103, rated insulation voltage 50 V_{eff}
Indicators/settings	
Display elements	LEDs , display
Control elements	Control panel
Configuration	via operating buttons via PACTware
Labeling	space for labeling at the front
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)
Low voltage	

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Directive 2014/35/EU		EN 61010-1:2010
Conformity		
Electromagnetic compatibility		NE 21:2006
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		300 g
Dimensions		40 x 119 x 115 mm (1.6 x 4.7 x 4.5 inch) (W x H x D) , housing type C2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas		
EU-type examination certificate		TÜV 01 ATEX 1701
Marking		⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I
Input		Ex ia
Supply		
Maximum safe voltage	U_m	40 V DC (Attention! The rated voltage can be lower.)
Equipment		terminals 1+, 3-
Voltage	U_o	25.8 V
Current	I_o	93 mA
Power	P_o	0.603 W
Equipment		terminals 2-, 3
Voltage	U_i	< 30 V
Current	I_i	115 mA
Voltage	U_o	5 V
Current	I_o	0.3 mA
Power	P_o	0.3 mW
Equipment		terminals 1+, 2 / 3-
Voltage	U_o	25.8 V
Current	I_o	112 mA
Power	P_o	720 mW
Output I, II		terminals 10, 11, 12; 16, 17, 18 non-intrinsically safe
Maximum safe voltage	U_m	253 V AC / 40 V DC (Attention! U_m is no rated voltage.)
Contact loading		253 V AC/2 A/cos ϕ > 0.7; 40 V DC/2 A resistive load
Output III		terminals 8+, 7- non-intrinsically safe
Maximum safe voltage U_m	U_m	40 V (Attention! The rated voltage can be lower.)
Interface		RS 232
Maximum safe voltage	U_m	40 V (Attention! The rated voltage can be lower.) , RS 232
Certificate		TÜV 02 ATEX 1885 X
Marking		⟨Ex⟩ II 3G Ex nA nC IIC T4
Output I, II		
Contact loading		50 V AC/2 A/cos ϕ > 0.7; 40 V DC/2 A resistive load
Galvanic isolation		
Input/Other circuits		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
International approvals		
FM approval		
Control drawing		16-554FM-12 (cFMus)
UL approval		E223772

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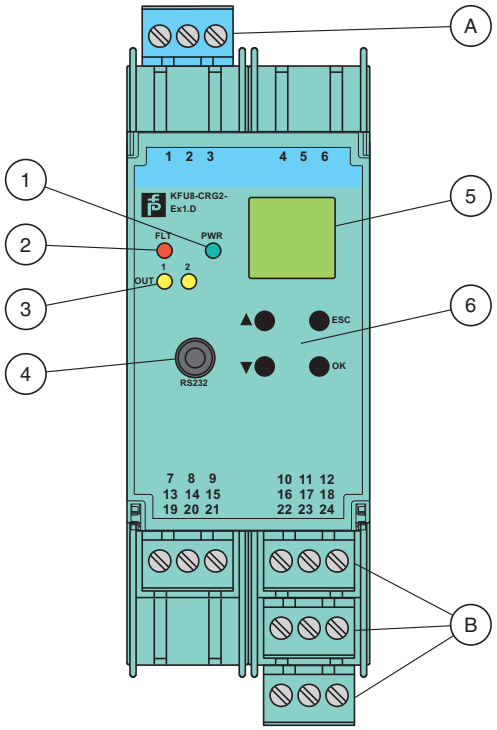
IECEx approval		
IECEx certificate		IECEx TUN 09.0007 IECEx TSA 18.0007X
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I Ex ec nC IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com.

Assembly



1	LED green: Power supply
2	LED red: Fault signal
3	LED yellow: Output I, II
4	Programming socket
5	LCD display
6	Keypad
A	Removable terminal, blue
B	Removable terminals, green

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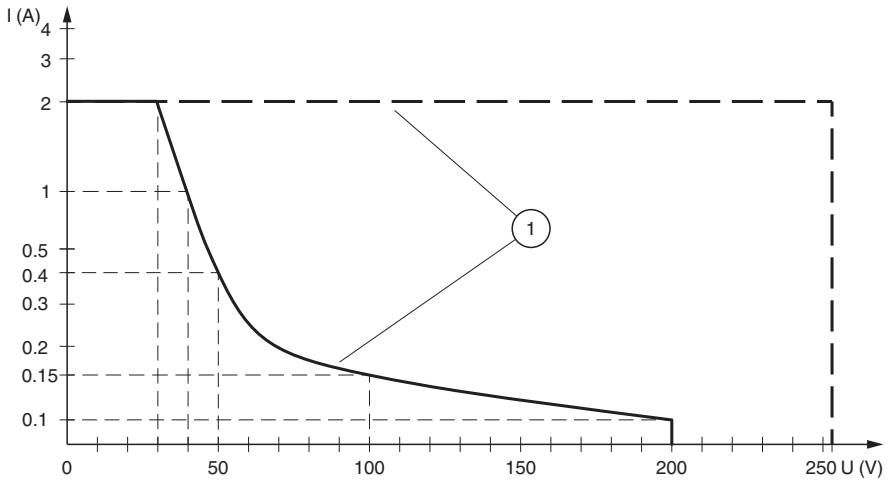
Characteristic Curve



Maximum Switching Power of Output Contacts

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- - - - -	Resistive load AC
1	max. 10^5 switching cycles

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