

Switch Amplifier, Timer Relay KFD2-DU-Ex1.D

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Relay contact and transistor output
- Adjustable output timer functions from 10 ms ... 60 min
- Input frequency up to 80 Hz; pulse divider up to 1 kHz
- Reset function
- Configurable by keypad
- Line fault detection (LFD)



Function

This isolated barrier is used for intrinsic safety applications. It is a highly configurable timer that accepts a digital signal (NAMUR sensor/mechanical contact) from a hazardous area and is commonly used in applications requiring on-delay, off-delay, one-shot, or pulse lengthening. The output relay switch duration is easily adjusted, and a pulse divider function allows step-down ratios from 1:1 to 9999:1. The unit is easily programmed by the use of a keypad located on the front of the unit. Line fault detection of the field circuit is indicated by a red LED and through the collective error output via Power Rail. For additional information, refer to the manual and www.pepperl-fuchs.com.

Technical Data

General specifications			
Signal type		Digital Input	
Supply			
Connection		Power Rail or terminals 23+, 24-	
Rated voltage	U _r	20 ... 30 V DC	
Rated current	I _r	approx. 100 mA	
Power consumption		1.8 W	
Input			
Connection side		field side	
Connection		Input I: terminals 1+, 3- ; input II: terminals 13+, 14-	
Input I		acc. to EN 60947-5-6 (NAMUR), see manual for electrical data	
Open circuit voltage/short-circuit current		8.2 V / 10 mA	
Switching point/switching hysteresis		1.2 ... 2.1 mA / approx. 0.2 mA	
Pulse duration		min. 75 μs / 1 ms see instruction manuals; the maximum input frequency has to be observed.	
Input frequency		0 ... 80 Hz , pulse divider 0 ... 1 kHz	
Line fault detection		breakage I ≤ 0.15 mA; short-circuit I > 6.5 mA	
Input II		reset	
Active/Passive		I > 4 mA/I < 1.5 mA	
Open circuit voltage/short-circuit current		18 V / 5 mA	
Pulse duration		min. 10 ms	
Output			
Connection side		control side	
Connection		output I: terminals 10, 11, 12 ; output II: terminals 19+, 20-	
Output I		signal , Relay output	
Contact loading		253 V AC/ 2 A / cos φ ≥ 0.7 ; 40 V DC/ 2 A	

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

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Technical Data

Mechanical life	5 x 10 ⁷ switching cycles
Energized/De-energized delay	approx. 20 ms / approx. 20 ms
Output II	signal , electronic unit, isolated
Contact loading	40 V / 50 mA
Energized/De-energized delay	after rising input flank 3 ms ; after falling input flank 2 ms
Signal level	1-signal: (L+) -2.5 V (50 mA, short-circuit/overload proof) 0-signal: blocked output (off-state current ≤ 10 µA)
Transfer characteristics	
Input I	
Resolution	< 0.1 % of the set value, min. 10 ms
Accuracy	2 ms
Influence of ambient temperature	0.003 %/K (50 ppm)
Galvanic isolation	
Input I/other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output I/power supply and reset	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output I, II against each other	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output II/power supply and collective error	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff}
Output II/reset	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff}
Reset/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
Labeling	space for labeling at the front
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)
Low voltage	
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	approx. 300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 inch) , housing type C3
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 99 ATEX 1408
Marking	Ⓔ II (1)G [Ex ia Ga] IIC Ⓔ II (1)D [Ex ia Da] IIIC Ⓔ I (M1) [Ex ia Ma] I
Supply	
Maximum safe voltage	U _m 40 V DC (Attention! The rated voltage can be lower.)
Input I	
Voltage U _o	10.1 V
Current I _o	13.5 mA
Power P _o	34 mW (linear characteristic)
Input II	
Maximum safe voltage U _m	40 V (Attention! The rated voltage can be lower.)
Output I	
	terminals 10, 11, 12 non-intrinsically safe

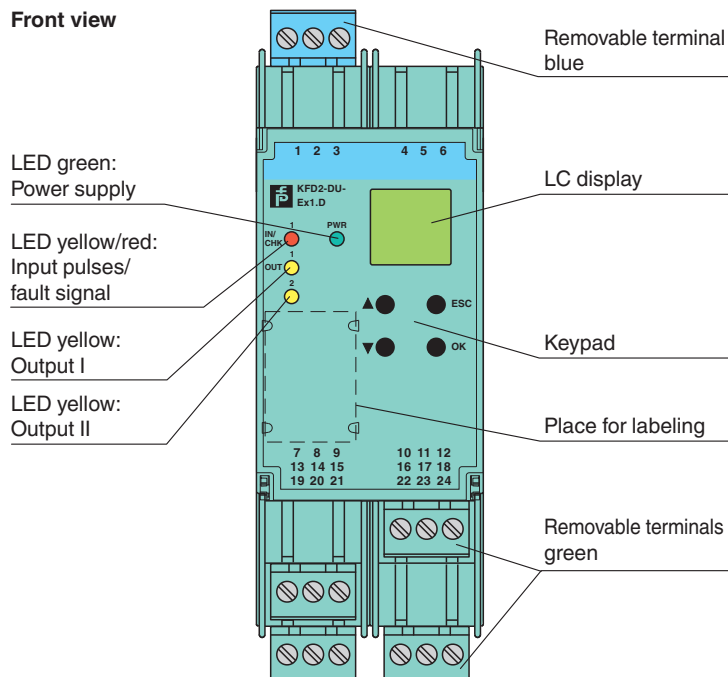
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Technical Data

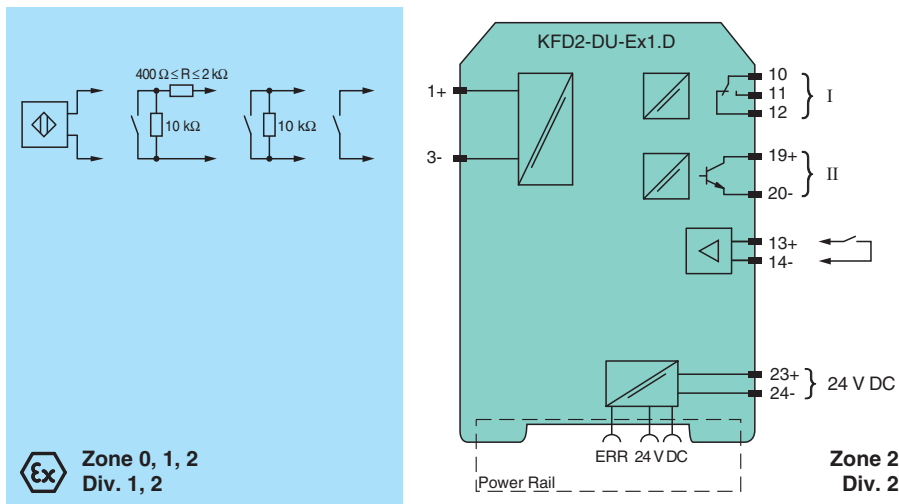
Contact loading		253 V AC/2 A/cos ϕ > 0.7; 40 V DC/2 A resistive load (TÜV 99 ATEX 1408) 50 V AC/2 A/cos ϕ > 0.7; 40 V DC/2 A resistive load (TÜV 02 ATEX 1885 X)
Maximum safe voltage	U _m	253 V (Attention! The rated voltage can be lower.)
Output II		terminals 19+, 20- non-intrinsically safe
Maximum safe voltage	U _m	40 V (Attention! The rated voltage can be lower.)
Certificate		TÜV 02 ATEX 1885 X
Marking		Ⓔ II 3G Ex nA nC IIC T4 Gc
Output I		
Contact loading		50 V AC/2 A/cos ϕ > 0.7; 40 V DC/1 A resistive load
Galvanic isolation		
Input I/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		116-0305
UL approval		E223772
IECEX approval		IECEX TUN 03.0000
Approved for		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
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



Connection

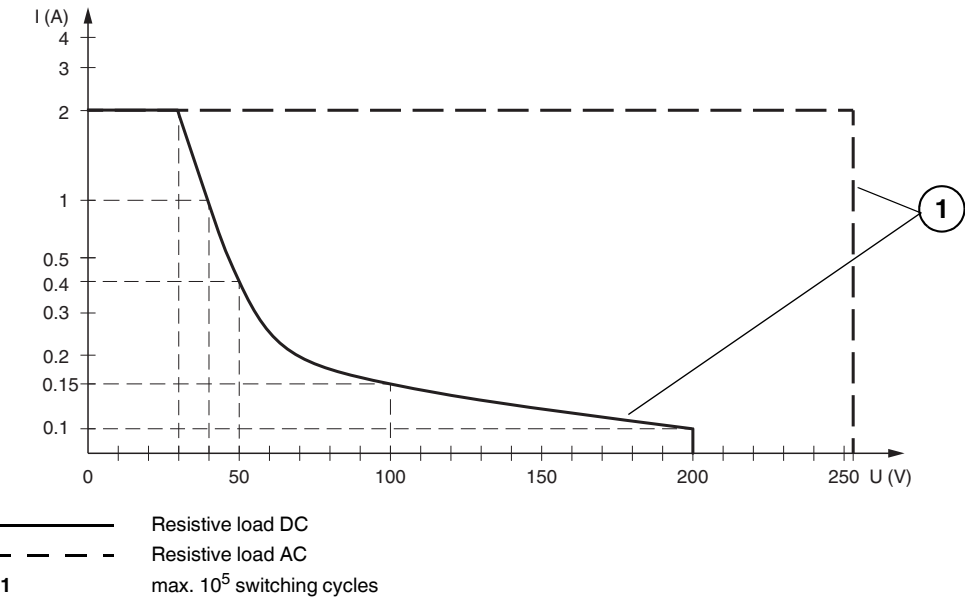


Accessories

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

Characteristic Curve

Maximum Switching Power of Output Contacts



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