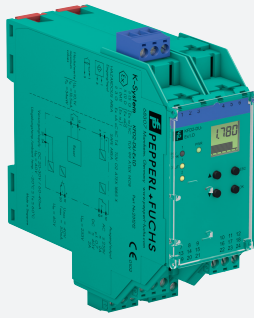


# Switch Amplifier, Timer Relay

## KFD2-DU-Ex1.D



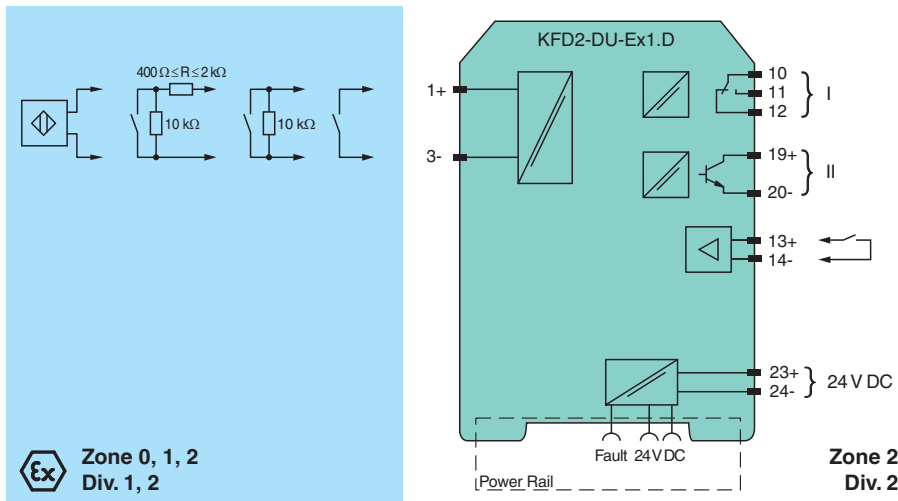
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Relay contact and transistor output
- Adjustable output timer functions from 10 ms ... 60 min
- Input frequency up to 80 Hz; pulse divider up to 1 kHz
- Reset function
- Configurable by keypad
- Line fault detection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

### Connection



### Technical Data

General specifications	
Signal type	Digital Input
<b>Supply</b>	
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
<b>Input</b>	
Connection side	field side
Connection	Input I: terminals 1+, 3- ; input II: terminals 13+, 14-

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

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## Technical Data

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
<b>Output</b>	
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 / $\cos \phi \geq 0.7$ ; 40 V DC/ 2 A
Mechanical life	5 x 10 <sup>7</sup> 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)
<b>Transfer characteristics</b>	
Input I	
Resolution	< 0.1 % of the set value, min. 10 ms
Accuracy	2 ms
Influence of ambient temperature	0.003 %/K (50 ppm)
<b>Galvanic isolation</b>	
Input I/other circuits	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I/power supply and reset	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I, II against each other	reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output II/power supply and collective error	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
Output II/reset	basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V <sub>eff</sub>
Reset/power supply and collective error	functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
<b>Indicators/settings</b>	
Display elements	LEDs , display
Control elements	Control panel
Configuration	via operating buttons
Labeling	space for labeling at the front
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)
Low voltage	
Directive 2014/35/EU	EN 61010-1:2010
<b>Conformity</b>	
Electromagnetic compatibility	NE 21:2006
Degree of protection	IEC 60529:2001
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Degree of protection	IP20
Connection	screw terminals
Mass	approx. 300 g

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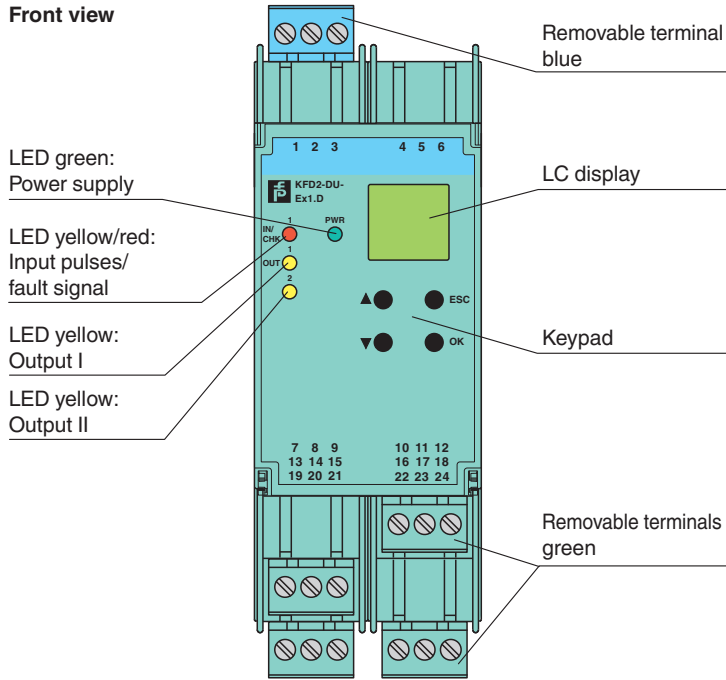
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## Technical Data

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
<b>Data for application in connection with hazardous areas</b>		
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
<b>Supply</b>		
Maximum safe voltage	$U_m$	40 V DC (Attention! The rated voltage can be lower.)
Input I		terminals 1+, 3-: Ex ia
Voltage $U_o$		10.1 V
Current $I_o$		13.5 mA
Power $P_o$		34 mW (linear characteristic)
Input II		terminals 13+, 14- non-intrinsically safe
Maximum safe voltage $U_m$		40 V (Attention! The rated voltage can be lower.)
Output I		terminals 10, 11, 12 non-intrinsically safe
Contact loading		253 V AC/2 A/cos $\phi > 0.7$ ; 40 V DC/2 A resistive load
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 $\phi > 0.7$ ; 40 V DC/2 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
<b>International approvals</b>		
FM approval		
Control drawing		16-538FM-12
UL approval		E223772
IECEx approval		
IECEx certificate		IECEx TUN 03.0000 IECEx TSA 18.0007X
IECEx marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I Ex ec nC IIC T4 Gc
<b>General information</b>		
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



## Matching System Components

	<b>KFD2-EB2</b>	Power Feed Module
	<b>UPR-03</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	<b>UPR-03-S</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m
	<b>UPR-03-M</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	<b>K-DUCT-BU</b>	Profile rail, wiring comb field side, blue
	<b>K-DUCT-BU-UPR-03</b>	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue

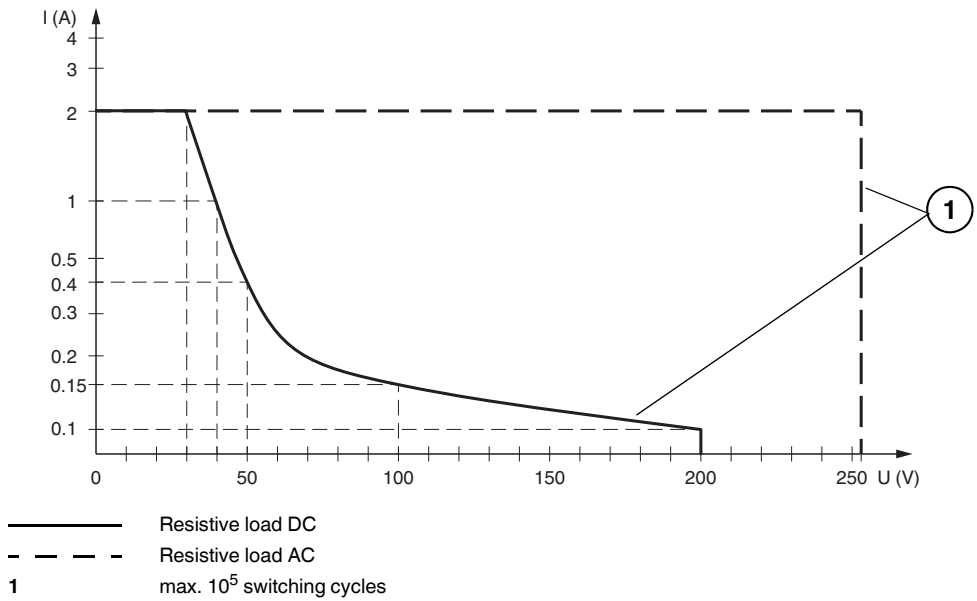
## Accessories

	<b>F-NR3-Ex1</b>	NAMUR Resistor Network
	<b>KF-ST-5GN</b>	Terminal block for KF modules, 3-pin screw terminal, green
	<b>KF-ST-5BU</b>	Terminal block for KF modules, 3-pin screw terminal, blue
	<b>KF-CP</b>	Red coding pins, packaging unit: 20 x 6

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**Characteristic Curve**

**Maximum Switching Power of Output Contacts**



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