



- 1-channel
- Control circuit EEx ia IIC
- Switching amplifier with timing
- Maximum input frequency 80 Hz
- 1 relay output, 1 potential-free electronic output
- Pulse divider up to 1 kHz
- Time function: one shot output, one shot output retrigger, pulse extension, pulse limitation, on-delay, off-delay, auxiliary switch
- Time range of the output function from 10 ms ... 60 min
- Reset function
- Lead breakage (LB) monitoring and short-circuit (SC) monitoring

**115 V AC
KFA5-DU-Ex1.D**

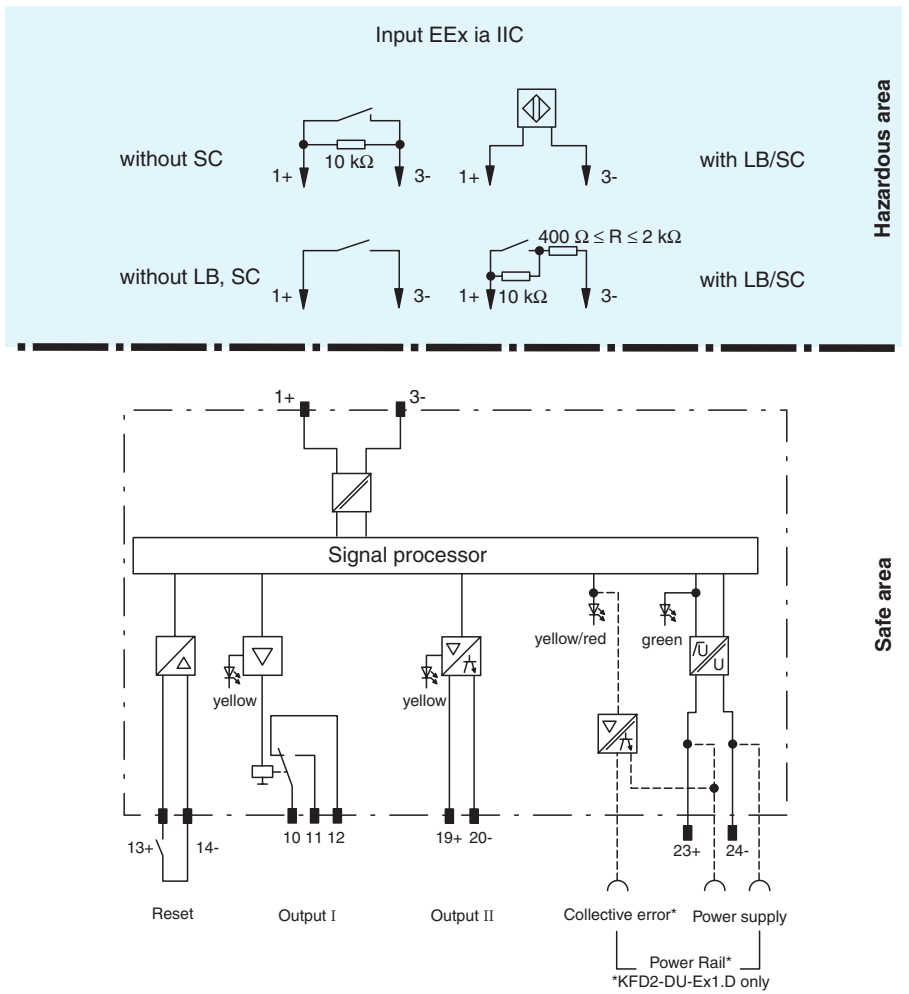
Function

The time relay offers the capability of switching input signals to outputs with a delay and extending the output signal. The switching duration is freely adjustable. In the case of rapid output signals, the relay can be turned off. A reset function that can be activated externally is used to terminate a time function once it has been started. The maximum input frequency is 80 Hz. Parameters can be entered using the control panel on the front of the device. By means of the pulse separator function integral or fractional step down ratios in a range of 1:1 to 9999:1 can be realized. When using the pulse separator function the max. input frequency is 1 kHz. The input and output circuits are separated galvanically. Power can be supplied to the KFD2-DU-Ex1.D through the Power Rail. The Power Rail also transfers the collective error message.

Range of application:

Extension of very short pulses to adjust to slow PLC inputs, for example, or to suppress very short input pulses, etc.

Connection

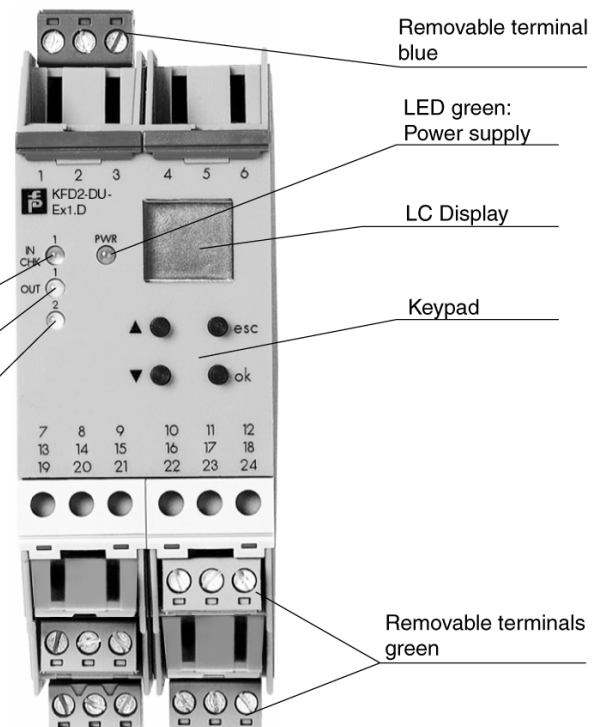


Composition

Front View

Housing type B2 (see system description)

- LED yellow/red: Input pulses/ Fault signal
- LED yellow: Output I
- LED yellow: Output II



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Supply	
Connection	terminals 23, 24
Rated voltage	115 V AC +/- 10 %
Rated current	-
Power consumption	4 VA
Input	
Connection	Input I: terminals 1+, 3- ; input II: terminals 13+, 14-
Input I	acc. to EN 60947-5-6 (NAMUR), see system description 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	≥ 50 μs / 1 ms see instruction manuals; the maximum input frequency has to be observed.
Input frequency	0 ... 80 Hz pulse divider 0 ... 1 kHz
Lead monitoring	breakage I ≤ 0.15 mA; short-circuit I > 6.5 mA
Input II	reset
Active/passive	I > 3 mA / I < 1,5 mA
Open-circuit voltage/short-circuit current	12 V / 3.5 mA
Pulse duration	≥ 10 ms
Output	
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
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 %/°C (50 ppm)
Electrical isolation	
Output I/power supply and reset	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V _{eff}
Output I and II:	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V _{eff}
Output II/power supply	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V _{eff}
Output II/Reset	function insulation acc. to EN 50178, rated insulation voltage 300 V _{eff}
Reset/power supply and collective error	reinforced insulation acc. to IEC 61140, rated insulation voltage 300 V _{eff}
Directive conformity	
Electromagnetic compatibility	
Directive 89/336/EC	EN 61326, EN 61000-6-4, NE 21
Low voltage	
Directive 73/23/EEC	EN 50178
Conformity	
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Protection against electric shock	IEC 61140
Ambient conditions	
Ambient temperature	-20 ... 50 °C (253 ... 323 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 300 g
Dimensions	40 x 100 x 115 mm (1.6 x 3.9 x 4.5 in)
Data for application in conjunction with hazardous areas	
EC-Type Examination Certificate	TÜV 99 ATEX 1408 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection	⊕ II (1) G [EEx ia] IIC [circuit(s) in zone 0/1/2]
Supply	
Safety maximum voltage U _m	253 V AC (Attention! The rated voltage can be lower.)
Input I	terminals 1+, 3- EEx ia IIC
Voltage U _o	10.1 V
Current I _o	13 mA

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Power	P_o	34 mW (linear characteristic)		
Input II		terminals 13+, 14- non-intrinsically safe		
Safety maximum voltage	U_m	40 V DC (Attention! The rated voltage can be lower.)		
Output I		terminals 10, 11, 12 non-intrinsically safe		
Contact loading		253 V AC / 2 A / $\cos \varphi > 0.7$; 40 V DC / 2 A resistive load		
Safety maximum voltage	U_m	253 V AC (Attention! The rated voltage can be lower.)		
Output II		terminals 19+, 20- non-intrinsically safe		
Safety maximum voltage	U_m	40 V DC (Attention! The rated voltage can be lower.)		
Electrical isolation				
Input/other circuits		safe electrical isolation acc. to EN 50020, voltage peak value 375 V		
Directive conformity				
Directive 94/9 EC		EN 50014, EN 50020		
Entity parameter				
FM control drawing		No. 116-0200		
Suitable for installation in division 2		yes		
Connection		terminals 1+, 3-		
Input I				
Voltage	V_{OC}	10.15 V		
Current	I_t	13.6 mA		
Explosion group		A&B	C&E	D, F&G
Max. external capacitance	C_a	2.75 μ F	8.25 μ F	22 μ F
Max. external inductance	L_a	180 mH	540 mH	1440 mH
Safety parameter				
CSA control drawing		1206036		
Control drawing		No. 116-0202		
Connection		terminals 1+, 3-		
Input I				
Voltage	V_{OC}	10.15 V		
Current	I_{SC}	13.6 mA		
Explosion group		A&B	C&E	D, F&G
Max. external capacitance	C_a	2.75 μ F	8.25 μ F	22 μ F
Max. external inductance	L_a	180 mH	540 mH	1440 mH

Supplementary information

EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity and instructions have to be observed. For information see www.pepperl-fuchs.com.