

Switch Amplifier, Timer Relay

KFA5-DU-Ex1.D

- 1-channel isolated barrier
- 115 V AC supply
- 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)



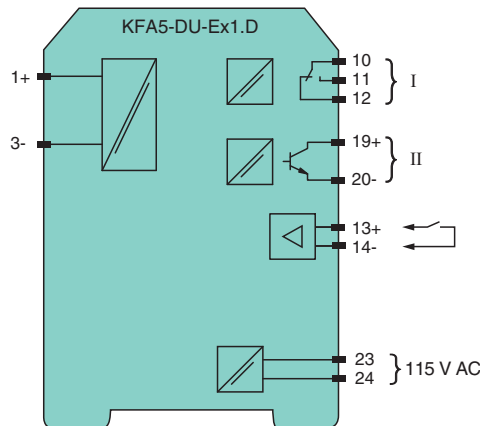
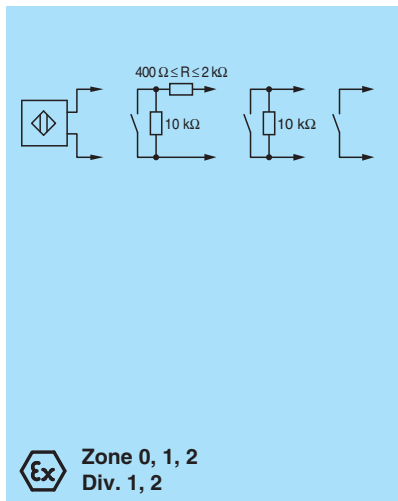
Function

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.

A reset can be activated via dry contact switch and used to terminate a particular time function. 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. For additional information, refer to the manual and www.pepperl-fuchs.com.

Connection



Technical Data

General specifications

| | | |
|-------------------|--|---------------------|
| Signal type | Digital Input | |
| Supply | | |
| Connection | terminals 23, 24 | |
| Rated voltage | U_r | 115 V AC \pm 10 % |
| Rated current | I_r | 35 mA |
| Power consumption | 4 VA | |
| Input | | |
| 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 μ s / 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 \leq 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 | 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 / $\cos \phi \geq 0.7$; 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 \leq 10 μ A) |
| 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 | reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff} |
| Output II/reset | basic insulation according to IEC/EN 61010-1, rated insulation voltage 50 V _{eff} |
| Reset/power supply | reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 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 |

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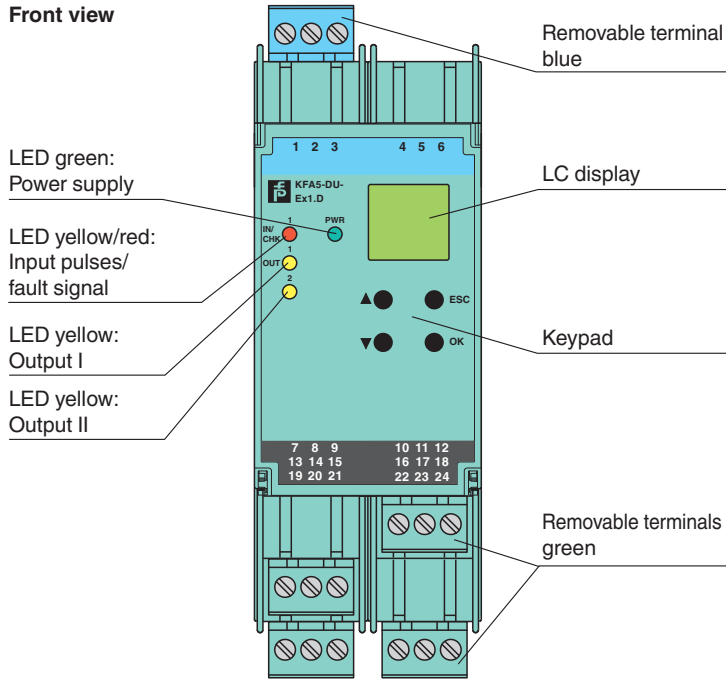
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
Technical Data

| | | |
|--|-------|---|
| 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 |
| 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 | 253 V AC (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 |
| International approvals | | |
| FM approval | | |
| Control drawing | | 16-538FM-12 |
| UL approval | | E223772 |
| IECEx approval | | |
| IECEx certificate | | IECEx TUN 03.0000 |
| IECEx marking | | [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



Matching System Components

| | | |
|---|------------------|--|
|  | K-DUCT-BU | Profile rail, wiring comb field side, blue |
|---|------------------|--|

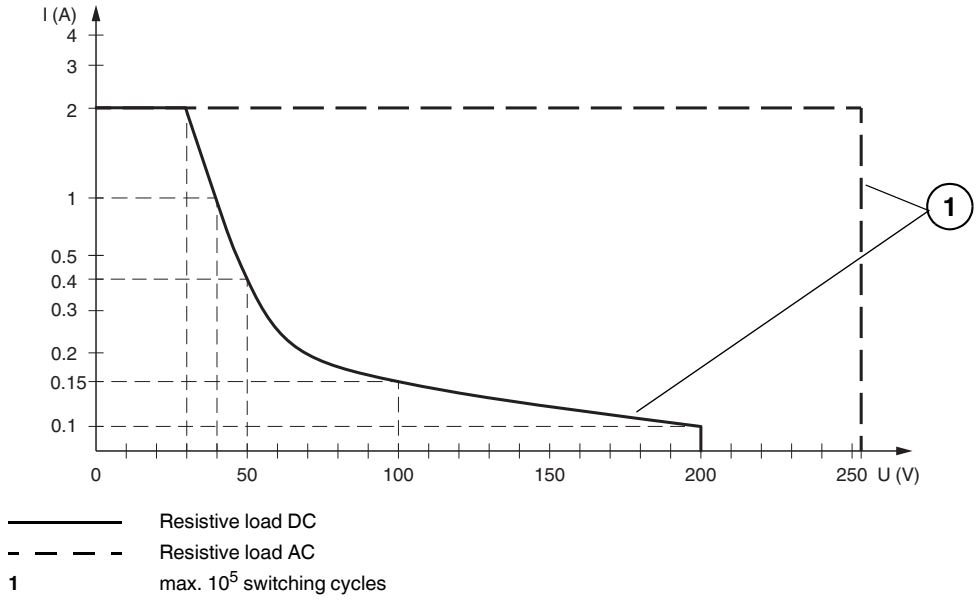
Accessories

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

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Characteristic Curve

Maximum Switching Power of Output Contacts



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