



- Control circuit EEx ia IIC
- Lead breakage (LB) monitoring and short-circuit (SC) monitoring
- 1 electronic output, frequency-split
- 1 relay output, frequency-split
- Adjustable output pulse length
- 1 passive electronic output, serially switched
- 1 passive electronic output, error message

**230 V AC:  
KHA6-IT-Ex1**

Successor KFU8-UFC-Ex1.D

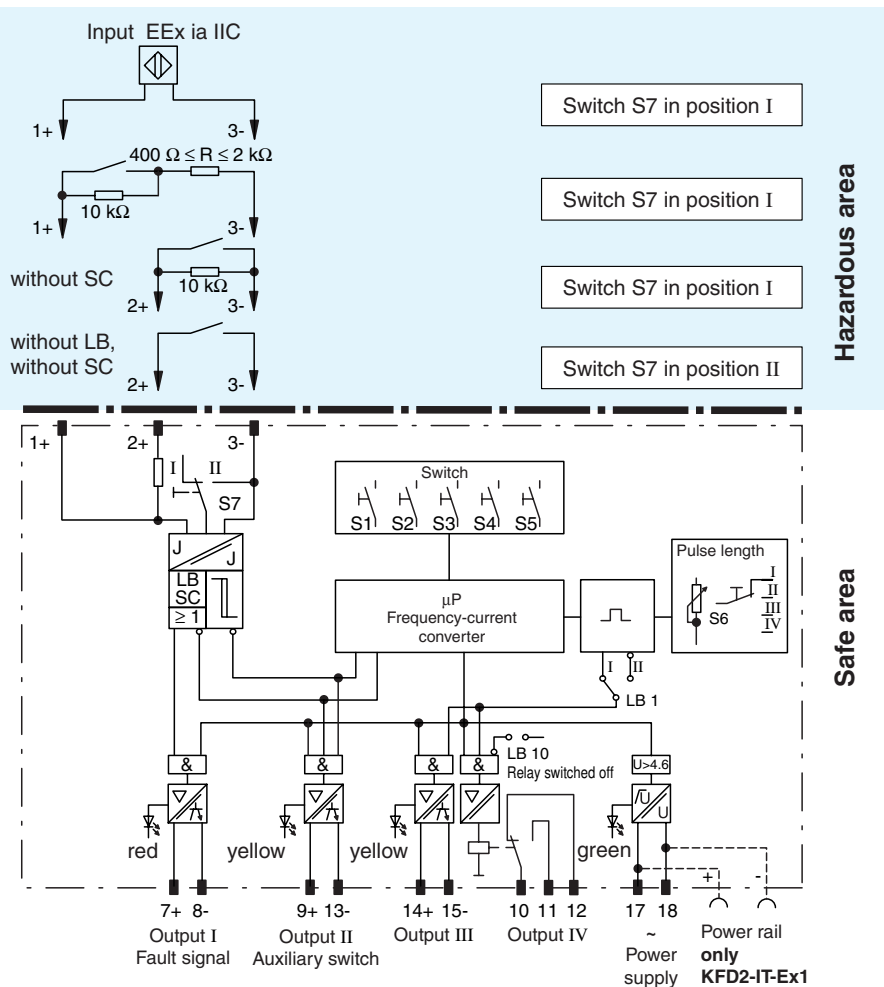
**Function**

Integers or broken reduction ratios can be realized in a total range of 1:1 and  $9.999 \times 10^4:1$  with the logic control unit. It can be controlled with a sensor per DIN EN 60947-5-6 or NAMUR, a non-rebounding mechanical switch or preferably an electronic switch.

**Lead breakage and short circuit monitoring**

The frequency separated outputs and the serially switched output are cut off when the current in the control circuit is  $J < 0.1 \text{ mA}$  (lead breakage monitoring response) or  $J > 6 \text{ mA}$  (short circuit monitoring response); the fault signal output is switched and indicates a fault through the illumination of LED 3 (red). In addition, the microprocessor is reset.

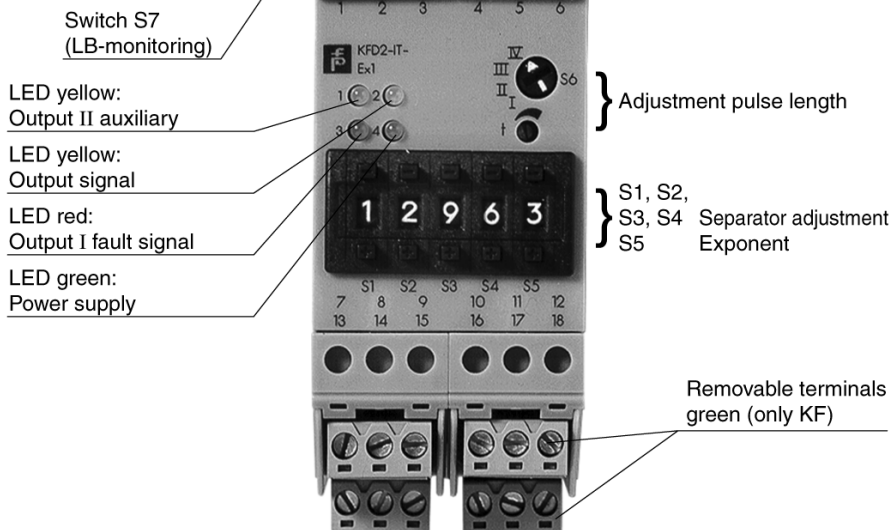
**Connection**



**Composition**

**Front View**

Housing type B2 = KFD2...  
Housing type E = KHA6...  
(see system description)



<b>Supply</b>	
Connection	terminals 17, 18
Rated voltage	85 ... 253 V AC , 45 ... 65 Hz
Power consumption	approx. 1,8 W
<b>Input</b>	
Connection	terminals 1+, 2+, 3-
Rated values	acc. to EN60947-5-6 (NAMUR), see system description for electrical data
Open circuit voltage/Short-circuit current	approx. 8 V DC / approx. 8 mA
Switching point/Switching hysteresis	1,2 ... 2,1 mA / approx. 0,2 mA
Pulse/Pause ratio	≥ 0,1 ms / ≥ 0,1 ms
Lead monitoring	breakage I = 0,05 ... 0,15 mA , short-circuit 6,2 ... 7,4 mA
<b>Output</b>	
Connection	output I: terminals 7+, 8- ; output II: terminals 9+, 13- ; output III: terminals 14+, 15- ; output IV: terminals 10, 11, 12
Output I	fault signal ; electronic output, passive
Output I and II	
Signal level	1-signal: (L+) -2.5 V (100 mA, short-circuit proof) 0-signal: blocked output (off-state current ≤ 10 µA)
Output II	serial switching ; electronic output, passive
Output III	signal ; electronic output, passive
Output III and IV	
Pulse length	adjustable 0,05 ... 500 ms
Output IV	signal ; Relay
Contact loading	250 V AC / 2 A / cos φ ≥ 0,7 ; 40 V DC / 2 A resistive load
Mechanical life	5 x 10 <sup>7</sup> switching cycles
Energised/De-energised delay	approx. 20 ms / approx. 20 ms
<b>Transfer characteristics</b>	
Redundancy	
Output I	≤ 5 kHz
Output II	≤ 10 Hz
<b>Electrical isolation</b>	
Input/Output	safe electrical isolation acc. to EN 50020
Input/power supply	safe electrical isolation acc. to EN 50020
Output/power supply	according to EN 50178, rated insulation voltage 253 V AC
Output/Output	according to EN 50178, rated insulation voltage 253 V AC
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 89/336/EC	on request
<b>Conformity</b>	
Insulation coordination	EN 50178
Electrical isolation	EN 50178
Input	EN 60947-5-6 (NAMUR), see system description for electrical data
<b>Ambient conditions</b>	
Ambient temperature	-25 ... 65 °C (248 ... 338 K)
<b>Mechanical specifications</b>	
Protection degree	IP20
Mass	approx. 275 g
Dimensions	40 x 93 x 115 mm (1.6 x 3.7 x 4.5 in)
<b>Data for application in conjunction with hazardous areas</b>	
EC-Type Examination Certificate	PTB No. Ex-89.C.2145 , for additional certificates refer to the approval list
Group, category, type of protection	[EEx ia] IIC resp. [EEx ia] IIB
Voltage U <sub>0</sub>	12,7 V
Current I <sub>0</sub>	17,3 mA
Power P <sub>0</sub>	55 mW
<b>Supply</b>	
Safety maximum voltage U <sub>m</sub>	40 V DC (Attention! The rated voltage can be lower.)
Type of protection [EEx ia]	
Explosion group	IIB      IIC
External capacitance	1,1 µF    0,45 µF
External inductance	5 mH     2 mH
Type of protection [EEx ib]	
Explosion group	IIB      IIC
External capacitance	5 µF     1,2 µF

External inductance	410 mH 114 mH
Outputs	
Safety maximum voltage $U_m$	40 V DC (Attention! The rated voltage can be lower.)
Electrical isolation	
Input/Output	safe electrical isolation acc. to EN 50020
Input/power supply	safe electrical isolation acc. to EN 50020
Directive conformity	
Directive 94/9 EC	on request
<b>Safety parameter</b>	
CSA control drawing	LR 36087-8

**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](http://www.pepperl-fuchs.com).

**Notes**

**Divider ratio adjustment**

By means of the thumbwheel switch S1 ... S4 any speed reducing ratio between 1 : 1 and 9,999 : 1 can be adjusted.

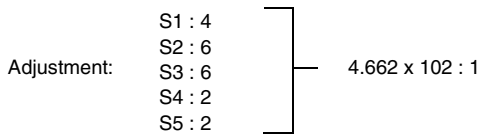
By means of the thumbwheel switch S5 the exponent for the basis 10 is set, i.e. the figure that is set by means of S1 to S4 is multiplied by 1, 10, 100, 1000 or 10000 depending on the figure that is set at S5.

Example:

For a volumetric counter the following data are given: Desired indication in m<sup>3</sup>

- 1 rotation corresp. 2.145 l
- 1 rotation corresp. 1 pulse
- 1 m<sup>3</sup> corresp. = 466.2 pulses

The reduction ratio is 466.2 : 1



**Adjustment of the jumpers LB1 and LB10:**

After removal of the cover and of the left side part the jumpers are visible on the printed circuit board.

