

# Rotation Speed Monitor

## KFA5-DWB-Ex1.D

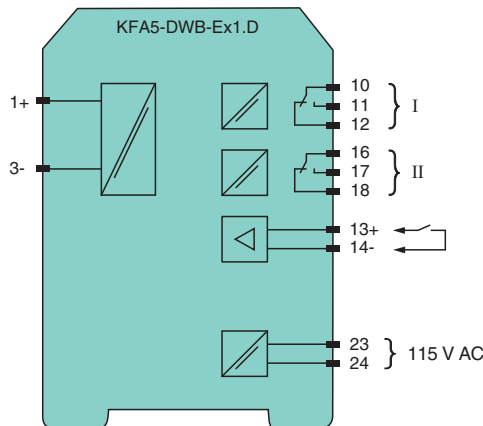
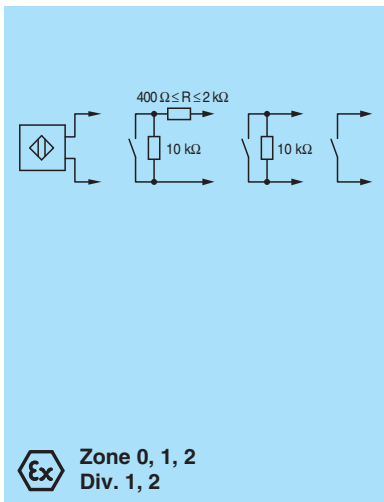
- 1-channel isolated barrier
- 115 V AC supply
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 5 kHz
- 2 relay contact outputs
- Start-up override
- Configurable by keypad
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC 61508/IEC 61511



### Function

This isolated barrier is used for intrinsic safety applications. It monitors for an overspeed or underspeed condition of a discrete signal (NAMUR sensor/ mechanical contact) from a hazardous area by comparing the input frequency to the user programmed reference frequency. An overspeed or underspeed condition is signaled via the relay outputs. Line fault detection of the field circuit is indicated by a red LED and relay. The start-up override feature sets relay outputs to default conditions programmed by the user for up to 1,000 seconds. The unit is easily programmed by the use of a keypad located on the front of the unit. For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

### Connection



### Technical Data

<b>General specifications</b>	
Signal type	Digital Input
<b>Functional safety related parameters</b>	
Safety Integrity Level (SIL)	SIL 2
<b>Supply</b>	
Connection	terminals 23, 24
Rated voltage	$U_r$ 115 V AC +/- 10 %
Rated current	$I_r$ 30 mA
Power dissipation/power consumption	≤ 2 VA / 2 VA
<b>Input</b>	

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

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## Technical Data

Connection side		field side
Connection		Input I: intrinsically safe: terminals 1+, 3- Input II: non-intrinsically safe: terminals 13+, 14-
Input I		acc. to EN 60947-5-6 (NAMUR), see manual for electrical data
Pulse duration		> 50 $\mu$ s
Input frequency		0.001 ... 5000 Hz
Line fault detection		breakage I $\leq$ 0.15 mA; short-circuit I > 6.5 mA
Input II		startup override: 1 ... 1000 s, adjustable in steps of 1 s
Active/Passive		I > 4 mA (for min. 100 ms)/ I < 1 mA
Open circuit voltage/short-circuit current		18 V / 5 mA
<b>Output</b>		
Connection side		control side
Connection		output I: terminals 10, 11, 12 output II: terminals 16, 17, 18
Output I, II		signal, relay
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
<b>Transfer characteristics</b>		
Input I		
Measurement range		0.001 ... 5000 Hz
Resolution		0.1 % of the measurement value , $\geq$ 0.001 Hz
Accuracy		0.1 % of the measurement value , > 0.001 Hz
Measuring time		< 100 ms
Influence of ambient temperature		0.003 %/K (30 ppm)
Output I, II		
Response delay		$\leq$ 200 ms
<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, II against eachother		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I, II/other circuits		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Start-up override/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 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		300 g
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>		

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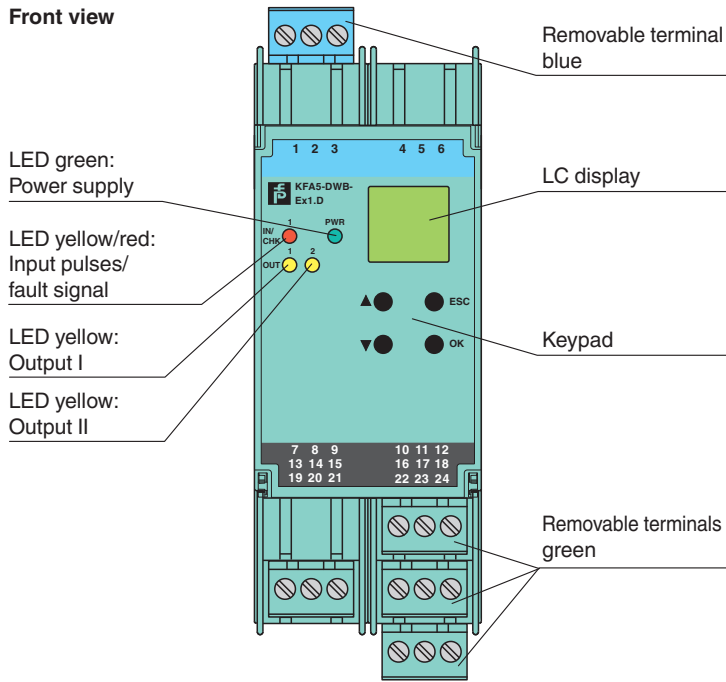
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## Technical Data

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! $U_m$ is no rated voltage.)
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, II		terminals 10, 11, 12; 16, 17, 18 non-intrinsically safe
Maximum safe voltage	$U_m$	253 V (Attention! The rated voltage can be lower.)
Contact loading		253 V AC/2 A/cos $\phi > 0.7$ ; 40 V DC/2 A resistive load
Certificate		TÜV 02 ATEX 1885 X
Marking		⊕ II 3G Ex nA nC IIC T4 Gc
Output I, II		
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 marking		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
<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>K-DUCT-BU</b>	Profile rail, wiring comb field side, blue
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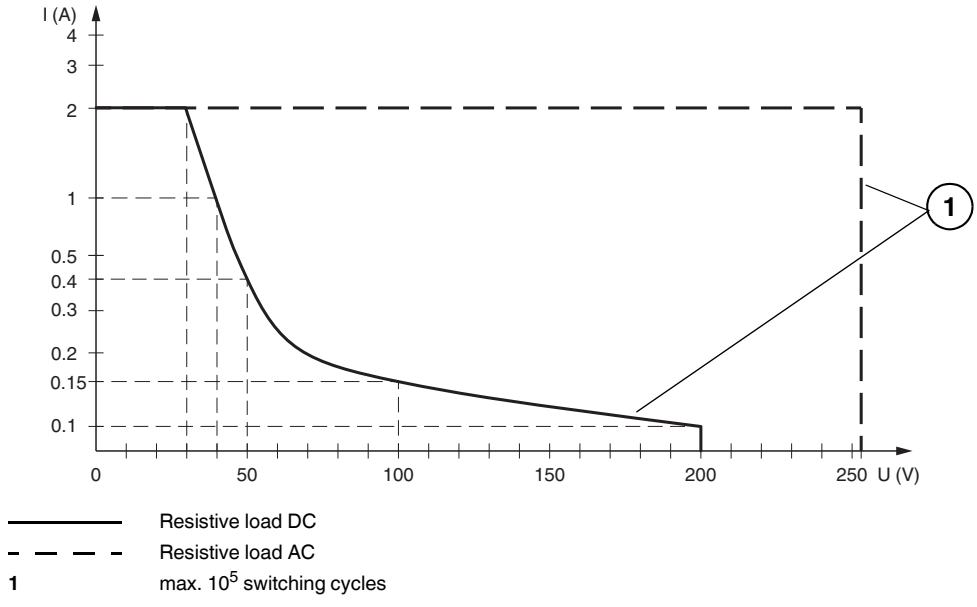
## Accessories

	<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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