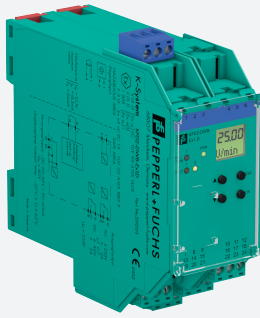


# Rotation Speed Monitor

## KFD2-DWB-Ex1.D

SIL 2



- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- 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

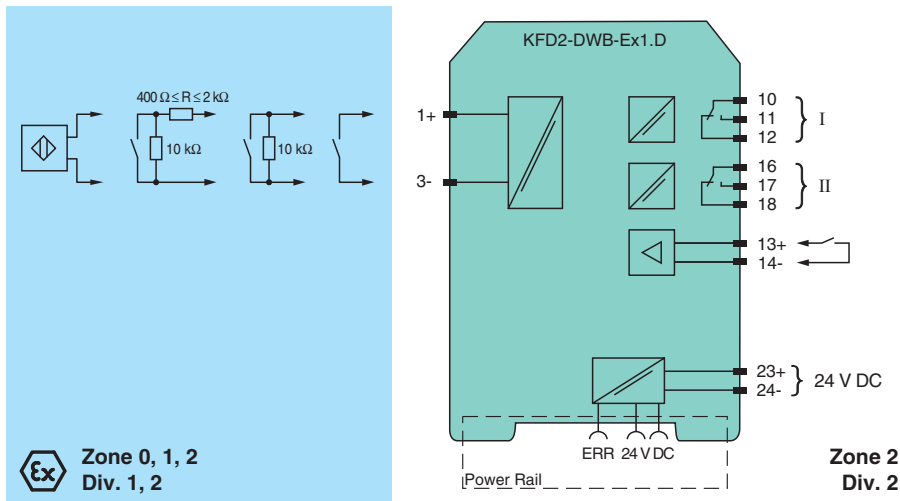
24 V DC



### Function

This isolated barrier is used for intrinsic safety applications. It monitors for an overspeed or underspeed condition of a digital 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, Power Rail 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. A unique collective error messaging feature is available when used with the Power Rail system. For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

### Connection



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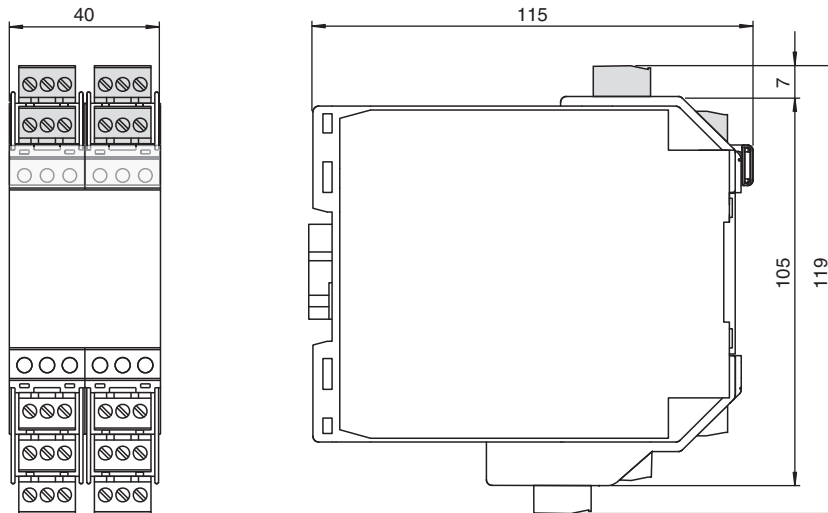
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**Dimensions**



**Technical Data**

**General specifications**

Signal type	Digital Input
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**Functional safety related parameters**

Safety Integrity Level (SIL)	SIL 2
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**Supply**

Connection	terminals 23+, 24- or power feed module/Power Rail
Rated voltage	$U_r$ 20 ... 30 V DC
Rated current	$I_r$ approx. 100 mA
Power dissipation/power consumption	$\leq 1.8$ W / 1.8 W

**Input**

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) / $I < 1.5$ mA
Open circuit voltage/short-circuit current	18 V / 5 mA

**Output**

Connection side	control side
Connection	output I: terminals 10, 11, 12 output II: terminals 16, 17, 18
Output I, II	signal, relay
Contact loading	250 V AC / 2 A / $\cos \phi \geq 0.7$ ; 40 V DC / 2 A
Mechanical life	$5 \times 10^7$ switching cycles
Energized/De-energized delay	approx. 20 ms / approx. 20 ms
Collective error message	Power Rail

**Transfer characteristics**

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## Technical Data

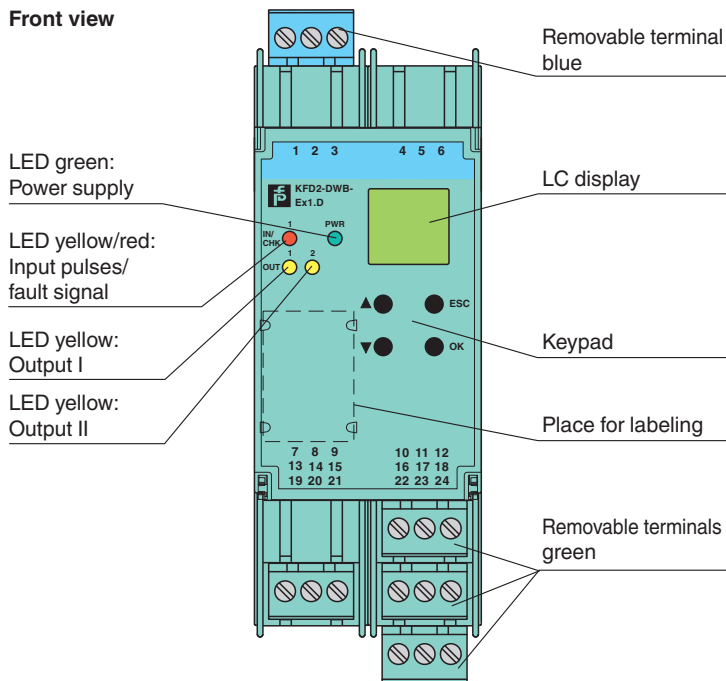
Input I		
Measurement range		0.001 ... 5000 Hz
Resolution		0.1 % of measured value , $\geq 0.001$ Hz
Accuracy		0.1 % of measured value , $> 0.001$ Hz
Measuring time		$< 100$ ms
Influence of ambient temperature		0.003 %/K (30 ppm)
Output I, II		
Response delay		$\leq 200$ ms
<b>Galvanic isolation</b>		
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 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		300 g
Dimensions		40 x 119 x 115 mm (1.6 x 4.7 x 4.5 inch) , housing type C3
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
Supply		
Maximum safe voltage	U <sub>m</sub>	40 V DC (Attention! U <sub>m</sub> is no rated voltage.)
Input I		
Voltage U <sub>o</sub>		10.1 V
Current I <sub>o</sub>		13.5 mA
Power P <sub>o</sub>		34 mW (linear characteristic)
Input II		
Maximum safe voltage U <sub>m</sub>		40 V (Attention! The rated voltage can be lower.)
Output I, II		
Maximum safe voltage	U <sub>m</sub>	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 (TÜV 99 ATEX 1471)
Certificate		
Marking		TÜV 02 ATEX 1885 X ⊕ II 3G Ex nA nC IIC T4 Gc

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


## Technical Data

<b>Output I, II</b>	
Contact loading	50 V AC/2 A/cos φ > 0.7; 40 V DC/1 A resistive load
<b>Galvanic isolation</b>	
Input I/other circuits	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
<b>Directive conformity</b>	
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 TUN 03.0000
Approved for	[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



## Accessories

	<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-M</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	<b>UPR-03-S</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m

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**Accessories**

	<p><b>K-DUCT-BU</b></p>	
	<p><b>K-DUCT-BU-UPR-03</b></p>	<p>Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side blue</p>

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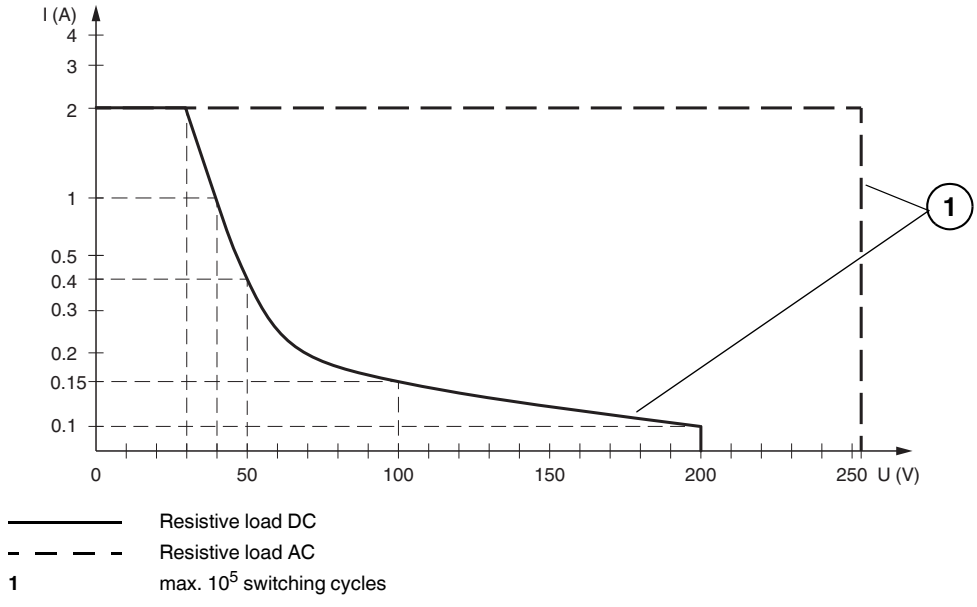
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**Characteristic Curve**

**Maximum Switching Power of Output Contacts**



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