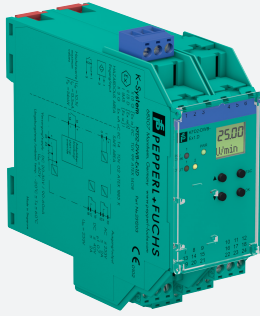


# Rotation Speed Monitor

## KFD2-DWB-Ex1.D



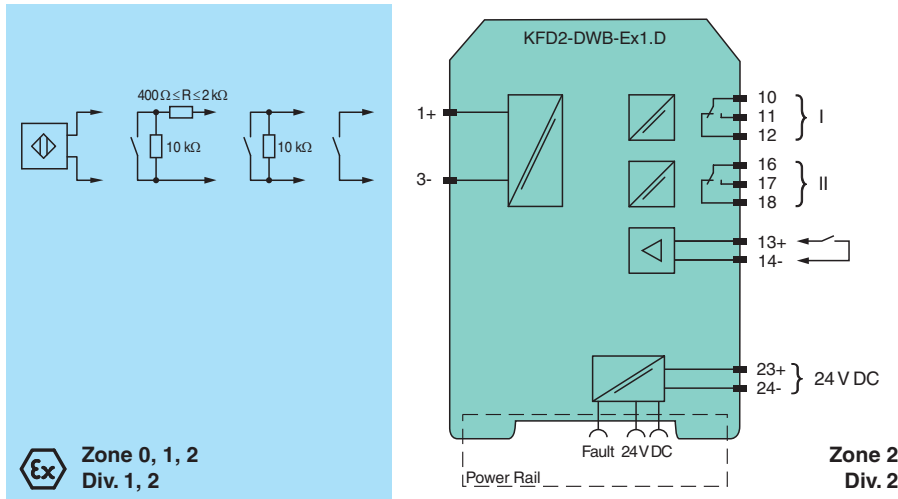
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Dry contact or NAMUR inputs
- Input frequency 1 mHz ... 5 kHz
- 2 relay contact outputs
- Start-up override
- Configurable by keypad
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC 61508/IEC 61511



### 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



### Technical Data

#### General specifications

Signal type Digital Input

#### Functional safety related parameters

Safety Integrity Level (SIL) SIL 2

#### 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  $\leq 1.8 \text{ W} / 1.8 \text{ W}$

#### Input

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

Pepperl+Fuchs Group  
[www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

USA: +1 330 486 0002  
[pa-info@us.pepperl-fuchs.com](mailto:pa-info@us.pepperl-fuchs.com)

Germany: +49 621 776 2222  
[pa-info@de.pepperl-fuchs.com](mailto:pa-info@de.pepperl-fuchs.com)

Singapore: +65 6779 9091  
[pa-info@sg.pepperl-fuchs.com](mailto:pa-info@sg.pepperl-fuchs.com)

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## Technical Data

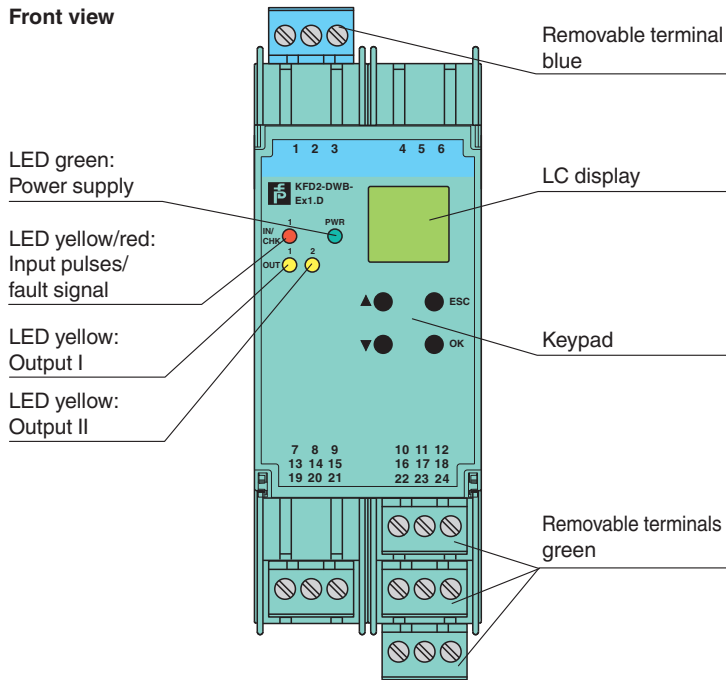
Connection side		field side
Connection		Input I: intrinsically safe: terminals 1+, 3- Input II: non-intrinsically safe: terminals 13+, 14-
Input I		acc. to EN 60947-5-6 (NAMUR), see manual for electrical data
Pulse duration		> 50 $\mu$ s
Input frequency		0.001 ... 5000 Hz
Line fault detection		breakage 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 < 1.5 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
Collective error message		Power Rail
<b>Transfer characteristics</b>		
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 each other		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) (W x H x D) , housing type C2

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




## Technical Data

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	
<b>Supply</b>		
Maximum safe voltage	$U_m$	40 V DC (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 TSA 18.0007X	
IECEX marking	[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I Ex ec nC IIC T4 Gc	
<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>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
	<b>K-DUCT-BU</b>	Profile rail, wiring comb field side, blue
	<b>K-DUCT-BU-UPR-03</b>	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue

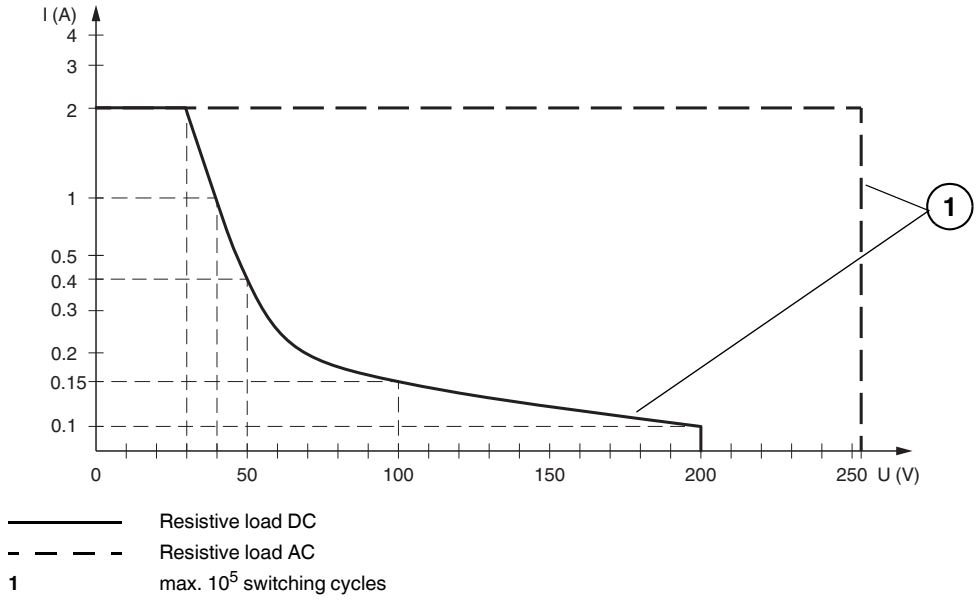
## Accessories

	<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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