Voltage Repeater

KFD2-VR2-Ex1.50M

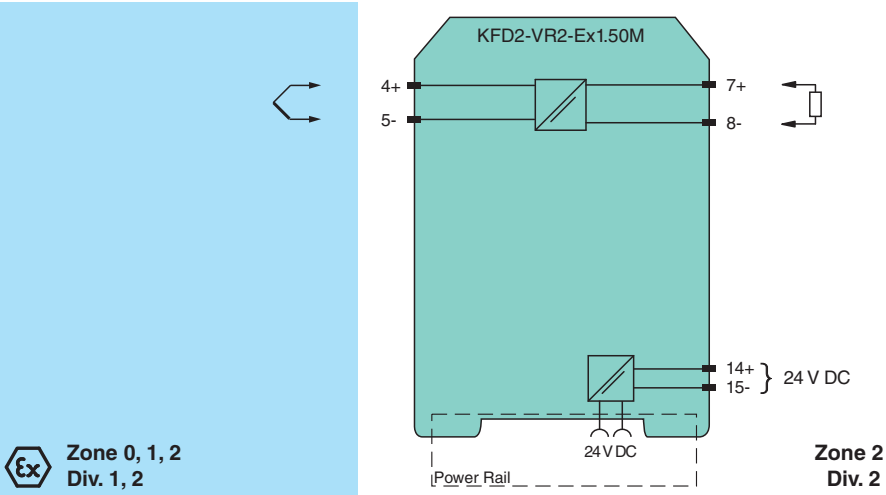
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Voltage input 0 mV ... ± 50 mV
- Voltage output 0 mV ... ± 50 mV
- Selectable up/downscale sensor breakage detection

Function

This isolated barrier is used for intrinsic safety applications.
It transfers low voltage signals from load cells, strain gauges, operational amplifiers, and inductive oscillation sensors located in hazardous areas to safe areas.
The input voltage of the terminals 4 and 5 is transferred to the terminals 7 and 8.
The input, output, and power supply are galvanically isolated from each other. Upscale or downscale lead breakage monitoring is selectable via switches located on the front panel of the device.

Note: This unit requires three minutes after power-up to reach the accuracy cited in the technical data.

Connection



Technical Data

General specifications		
Signal type		Analog input
Supply		
Connection		Power Rail or terminals 14+, 15-
Rated voltage	U_r	19 ... 30 V DC
Ripple		within the supply tolerance
Rated current	I_r	≤ 11 mA
Power dissipation/power consumption		0.3 W max.
Input		
Connection side		field side

Release date: 2023-04-18 Date of issue: 2023-04-18 Filename: 181951_eng.pdf

Technical Data

Connection		terminals 4+, 5-
Input resistance		min. 20 MΩ
Transmission range		-50 ... 50 mV
Offset voltage/current		≤ 5 µV / ≤ 5 nA
Line fault detection		100 nA
Output		
Connection side		control side
Connection		terminals 7+, 8-
Voltage		-50 ... 50 mV
Load		Accuracy figures for infinite load impedance. Additional 0.03 % of span for a load resistance of 10 kΩ
Fault signal		sensor breakage: > +100 mV (upscale), < -100 mV (downscale)
Output resistance		max. 3 Ω
Transfer characteristics		
Cut-off frequency		350 Hz (-3 dB)
Deviation		
After calibration		at 20 °C (68 °F): ± 3 µV up to ± 10 mV/± 0.03 % of the span up to +50 mV/± 0.05 % of the span up to -50 mV
Influence of ambient temperature		± 1 µV/K (typical ± 0.25 µV/K)
Absolute		< 0.25 K at 30 V voltage supply
Rise time		≤ 1 ms
Galvanic isolation		
Output/power supply		functional insulation, rated insulation voltage 50 V AC
Indicators/settings		
Display elements		LED
Control elements		DIP switch
Configuration		via DIP switches
Labeling		space for labeling at the front
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Conformity		
Electromagnetic compatibility		NE 21:2006
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1
Ambient conditions		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F) extended ambient temperature range up to 70 °C (158 °F), refer to manual for necessary mounting conditions
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 125 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 inch) (W x H x D) , housing type B2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas		
EU-type examination certificate		BASEEFA 06 ATEX 0040
Marking		⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I
Voltage	U_o	5.5 V DC
Current	I_o	2.4 mA
Power	P_o	3.3 mW
Supply		
Maximum safe voltage	U_m	250 V (Attention! The rated voltage can be lower.)

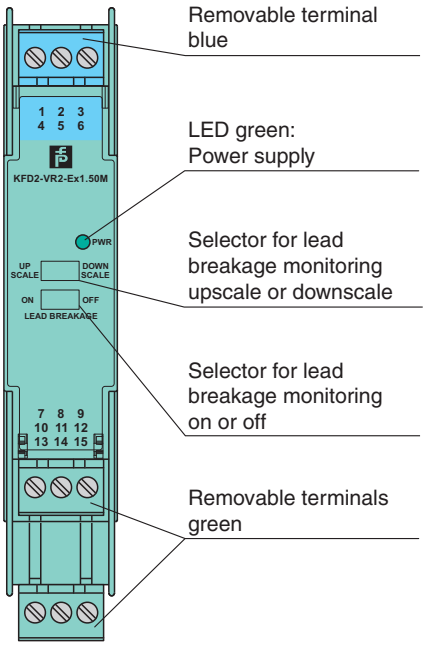
Release date: 2023-04-18 Date of issue: 2023-04-18 Filename: 181951_eng.pdf

Technical Data

Certificate	BASEEFA 09 ATEX 0219X
Marking	⟨Ex⟩ II 3G Ex ec IIC T4 Gc
Galvanic isolation	
Input/Output	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Input/power supply	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity	
Directive 2014/34/EU	EN IEC 60079-0:2018+AC:2020 , EN IEC 60079-7:2015+A1:2018 , EN 60079-11:2012
International approvals	
UL approval	E106378
Control drawing	116-0334 (cULus)
IECEx approval	
IECEx certificate	IECEx BAS 06.0011 IECEx BAS 09.0103X
IECEx marking	[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc
General information	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com.

Assembly

Front view



Matching System Components

	**KFD2-EB2**	Power Feed Module
	**UPR-03**	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	**UPR-03-M**	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m

Release date: 2023-04-18 Date of issue: 2023-04-18 Filename: 181951_eng.pdf

Matching System Components

	**UPR-03-S**	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m
	**K-DUCT-BU**	Profile rail, wiring comb field side, blue
	**K-DUCT-BU-UPR-03**	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue

Accessories

	**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

Release date: 2023-04-18 Date of issue: 2023-04-18 Filename: 181951_eng.pdf