

# Voltage Repeater

## KFD2-VR2-Ex1.500M

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Voltage input 0 mV ...  $\pm 500$  mV
- Voltage output 0 mV ...  $\pm 500$  mV
- Selectable up/downscale sensor breakage detection

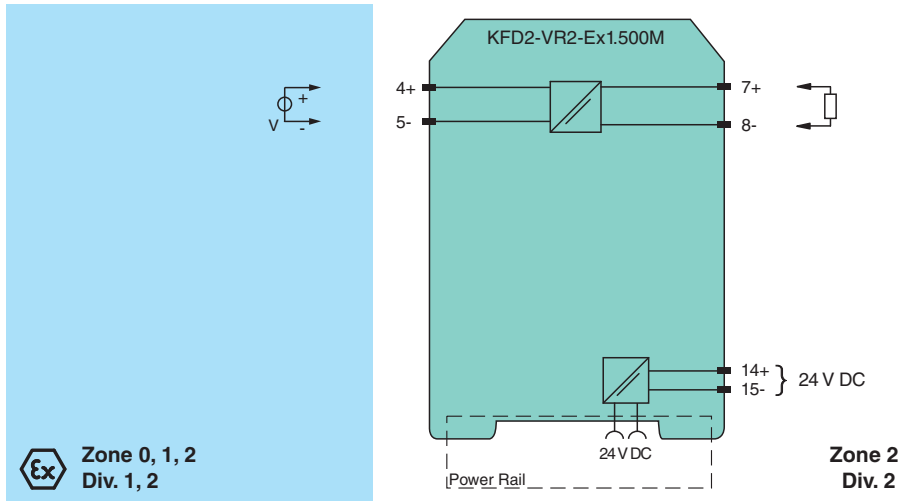


### Function

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
<b>Supply</b>	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	$U_r$ 19 ... 30 V DC
Ripple	within the supply tolerance
Rated current	$I_r$ $\leq 11$ mA
Power dissipation/power consumption	0.3 W max.
<b>Input</b>	
Connection side	field side

Release date: 2023-04-18 Date of issue: 2023-04-18 Filename: 208393\_eng.pdf

## Technical Data

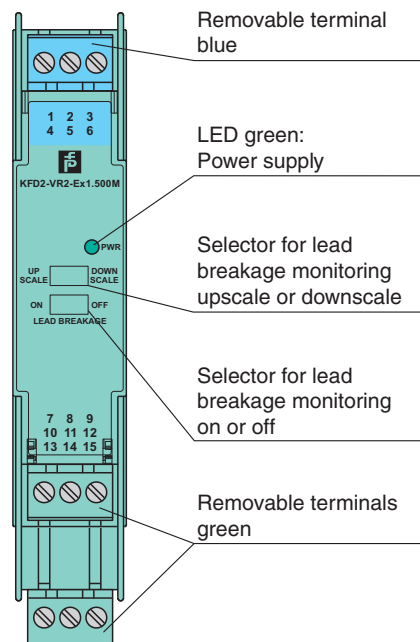
Connection		terminals 4+, 5-
Input resistance		min. 20 M $\Omega$
Transmission range		-500 ... 500 mV
Offset voltage/current		$\leq 5 \mu\text{V} / \leq 5 \text{nA}$
Line fault detection		1.3 $\mu\text{A}$
<b>Output</b>		
Connection side		control side
Connection		terminals 7+, 8-
Voltage		-500 ... 500 mV
Load		Accuracy figures for infinite load impedance. Additional 0.03 % of span for a load resistance of 10 k $\Omega$
Fault signal		sensor breakage: > +500 mV (upscale), < -500 mV (downscale)
Output resistance		max. 3 $\Omega$
<b>Transfer characteristics</b>		
Cut-off frequency		350 Hz (-3 dB)
Deviation		
After calibration		at 20 °C (68 °F): $\pm 30 \mu\text{V}$ up to $\pm 100\text{mV} \pm 0.03 \%$ of the span up to +500 mV/ $\pm 0.03 \%$ of the span up to -500 mV
Influence of ambient temperature		$\pm 10 \mu\text{V/K}$ (typical $\pm 5 \mu\text{V/K}$ )
Absolute		< 0.25 K at 30 V voltage supply
Rise time		$\leq 1 \text{ms}$
<b>Galvanic isolation</b>		
Output/power supply		functional insulation, rated insulation voltage 50 V AC
<b>Indicators/settings</b>		
Display elements		LED
Control elements		DIP switch
Configuration		via DIP switches
Labeling		space for labeling at the front
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
<b>Conformity</b>		
Electromagnetic compatibility		NE 21:2006
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1
<b>Ambient conditions</b>		
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
<b>Mechanical specifications</b>		
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
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		BASEEFA 06 ATEX 0040
Marking		Ⓢ II (1)G [Ex ia Ga] IIC Ⓢ II (1)D [Ex ia Da] IIIC Ⓢ I (M1) [Ex ia Ma] I
Voltage	U <sub>o</sub>	5.5 V DC
Current	I <sub>o</sub>	2.4 mA
Power	P <sub>o</sub>	3.3 mW
<b>Supply</b>		
Maximum safe voltage	U <sub>m</sub>	250 V (Attention! The rated voltage can be lower.)

## Technical Data




Certificate	BASEEFA 09 ATEX 0219X
Marking	Ⓜ 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
<b>International approvals</b>	
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
<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




### Front view






## 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

## Matching System Components

	<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>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