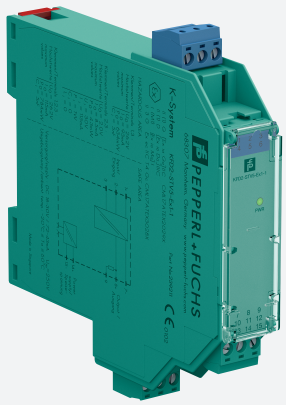


SMART Transmitter Power Supply

KFD2-STV5-Ex1-1

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Output 1 V ... 5 V
- Terminals with test points
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508

Function

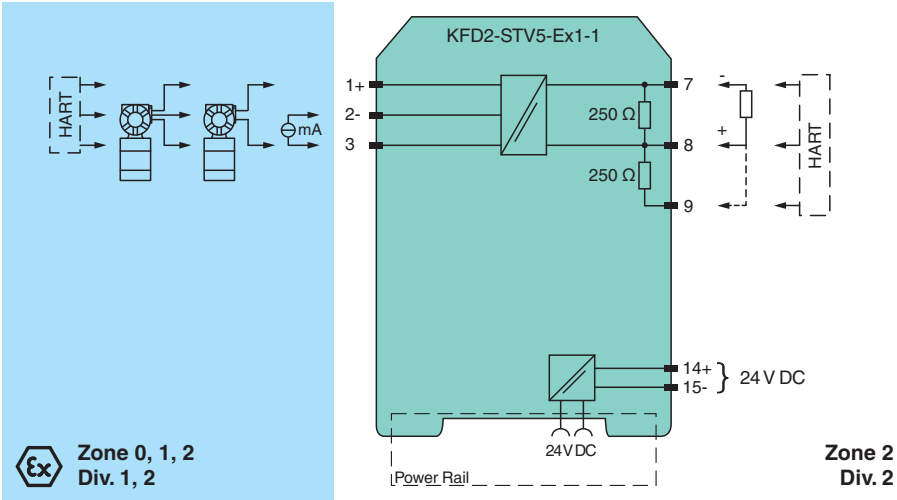
This isolated barrier is used for intrinsic safety applications.
The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources.
It transfers the analog input signal to the safe area as an isolated current value.
Digital signals may be superimposed on the input signal in the hazardous or non-hazardous area and are transferred bi-directionally.
If the HART communication resistance in the loop is too low, the internal resistance can be used.
Test sockets for the connection of HART communicators are integrated into the terminals of the device.

Application

The device supports the following SMART protocols:

- HART
- BRAIN
- Foxboro

Connection



Technical Data

General specifications	
Signal type	Analog input
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 2
Systematic capability (SC)	SC 3

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Technical Data

Supply		
Connection		Power Rail or terminals 14+, 15-
Rated voltage	U_r	18 ... 30 V DC
Ripple		within the supply tolerance
Power dissipation		≤ 1 W at maximum load
Power consumption		≤ 1.6 W at maximum load
Input		
Connection side		field side
Connection		terminals 1+, 2-, 3
Input signal		4 ... 20 mA
Open circuit voltage/short-circuit current		terminals 1+, 3: 23 V / 25 mA
Input resistance		max. 265 Ω terminals 2-, 3 , max. 330 Ω terminals 1+, 3
Available voltage		≥ 16 V at 20 mA ; ≥ 20 V at 4 mA , terminals 1+, 3
Output		
Connection side		control side
Connection		terminals 7-, 8+, 9+
Output signal		1 ... 5 V
Ripple		max. 12.5 mV
Output resistance		250 Ω
Transfer characteristics		
Deviation		at 20 °C (68 °F) ≤ 5 mV incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature		≤ 20 ppm/K
Frequency range		field side into the control side: bandwidth with 0.5 V_{pp} signal 0 ... 7.5 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V_{pp} signal 0.3 ... 7.5 kHz (-3 dB)
Settling time		200 µs
Rise time/fall time		100 µs
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
Output/power supply		functional insulation, rated insulation voltage 50 V AC
Indicators/settings		
Display elements		LED
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 21:2012 EN 61326-3-2:2008
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-20 ... 70 °C (-4 ... 158 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 150 g
Dimensions		20 x 124 x 115 mm (0.8 x 4.9 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		CML 17 ATEX 2029X
Marking		⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I

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Technical Data

Input		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
Supply		
Maximum safe voltage	U_m	250 V (Attention! The rated voltage can be lower.)
Equipment		terminals 1+, 3-
Voltage	U_o	26.2 V
Voltage	U_q	27.25 V
Current	I_o	93 mA
Power	P_o	634 mW
Equipment		terminals 2-, 3
Voltage	U_i	30 V
Current	I_i	115 mA
Power	P_i	max 1 W
Voltage	U_o	2 V
Current	I_o	8.5 mA
Power	P_o	4.3 mW
Equipment		terminals 1+, 2 / 3-
Voltage	U_o	26.2 V
Voltage	U_q	27.25 V
Current	I_o	115 mA
Power	P_o	784 mW
Certificate		CML 17 ATEX 3028X
Marking		Ⓔx II 3G Ex ec IIC T4 Gc
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11:2007, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to IEC/EN 60079-11:2007, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018 , EN 60079-7:2015+A1:2018 , EN 60079-11:2012
International approvals		
UL approval		E106378
Control drawing		116-0439 (cULus)
IECEx approval		
IECEx certificate		IECEx CML 17.0015X
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.

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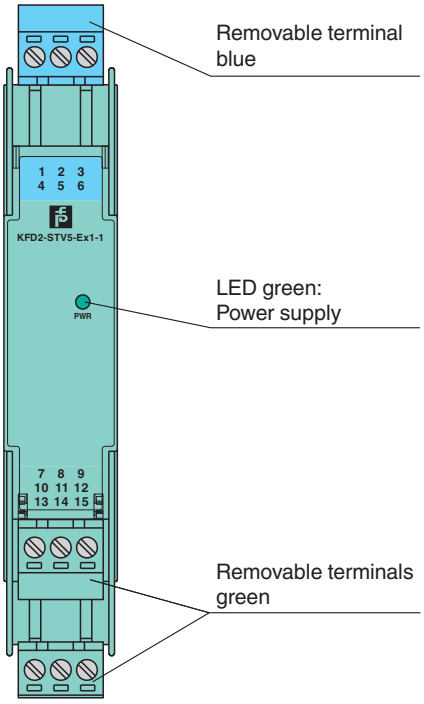
Assembly

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
	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-STP-5GN	Terminal block for KF modules, 3-pin screw terminal, with test sockets, green
	KF-STP-5BU	Terminal block for KF modules, 3-pin screw terminal, with test sockets, blue
	KF-CP	Red coding pins, packaging unit: 20 x 6

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