



SMART Transmitter Power Supply KFD2-STC5-Ex1.H

- 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 4 mA ... 20 mA current sink/current source
- Terminals with test points
- High field voltage 17 V DC
- SIL 2 (SC 3) acc. to IEC/EN 61508



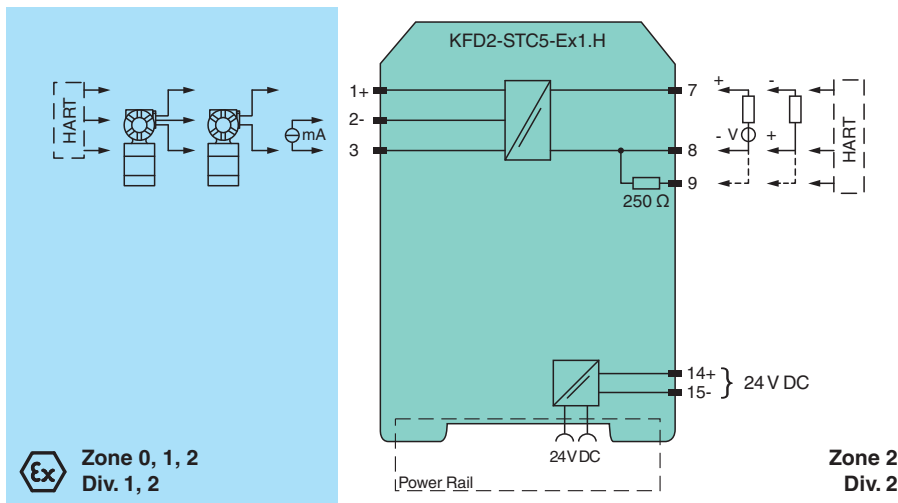
SIL 2



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. The device provides a sink mode or a source mode output on the safe area terminals. The device has an internal resistor. Use this resistor if the HART communication resistance in the control circuit is too low. Test sockets for the connection of HART communicators are integrated into the terminals of the device.

Connection



Technical Data

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

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Technical Data

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: 24 V / 25 mA
Input resistance	max. 265 Ω terminals 2-, 3 , max. 330 Ω terminals 1+, 3
Available voltage	≥ 17 V at 20 mA ; ≥ 21 V at 4 mA , terminals 1+, 3
Output	
Connection side	control side
Connection	terminals 7+, 8-, 9- (sink) terminals 7-, 8+, 9+ (source) see additional information
Load	0 ... 800 Ω
Output signal	4 ... 20 mA (overload > 25 mA)
Ripple	max. 50 μA _{rms}
External supply (loop)	2 ... 30 V DC If the external voltage is > 19 V, a load ≥ ((V - 19) / 0.02) Ω is required. V represents the value of the external voltage. The internal 250 Ω resistor at terminal 9 can be used as a load.
Transfer characteristics	
Deviation	at 20 °C (68 °F), 4 ... 20 mA ≤ 10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	≤ 0.25 μA/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	
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 ... 60 °C (-4 ... 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. 200 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	⊕ II (1)G [Ex ia Ga] IIC ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I
Input	[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I

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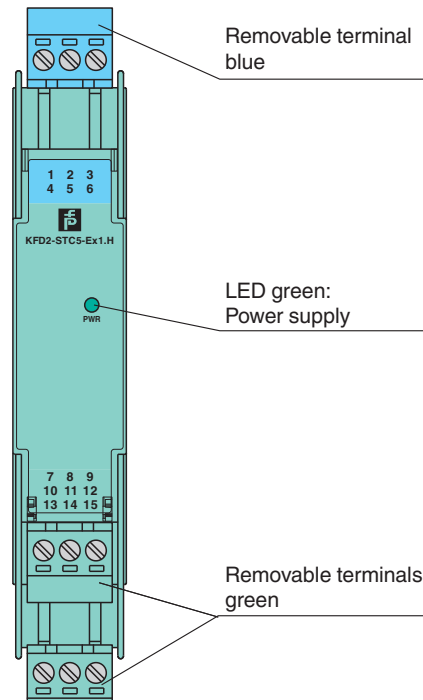
Technical Data

Supply			
Maximum safe voltage	U_m	250 V (Attention! The rated voltage can be lower.)	
Equipment		terminals 1+, 3-	
Voltage	U_o	27.2 V	
Current	I_o	93 mA	
Power	P_o	633 mW	
Internal capacitance	C_i	12 nF	
Internal inductance	L_i	0 mH	
Equipment		terminals 2-, 3	
Voltage	U_i	30 V	
Current	I_i	115 mA	
Power	P_i	1 mW	
Voltage	U_o	2 V	
Current	I_o	8.5 mA	
Power	P_o	1.1 mW	
Equipment		terminals 1+, 2 / 3-	
Voltage	U_o	27.2 V	
Current	I_o	115 mA	
Power	P_o	784 mW	
Internal capacitance	C_i	12 nF	
Internal inductance	L_i	0 mH	
Output			
Maximum safe voltage	U_m	250 V (Attention! The rated voltage can be lower.)	
Certificate		CML 17 ATEX 3028X	
Marking		Ⓜ 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

	K-250R	Measuring resistor
	K-500R0%1	Measuring resistor
	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

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Accessories

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

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Application

The device supports the following SMART protocols:

- HART
- BRAIN
- Foxboro

Connection

The device provides an output on the control side terminals. This output can be operated in the current sink operating mode or current source operating mode. Please refer to the following diagram for connection.

