

SMART Transmitter Power Supply KFD2-STC4-Ex1.20.H

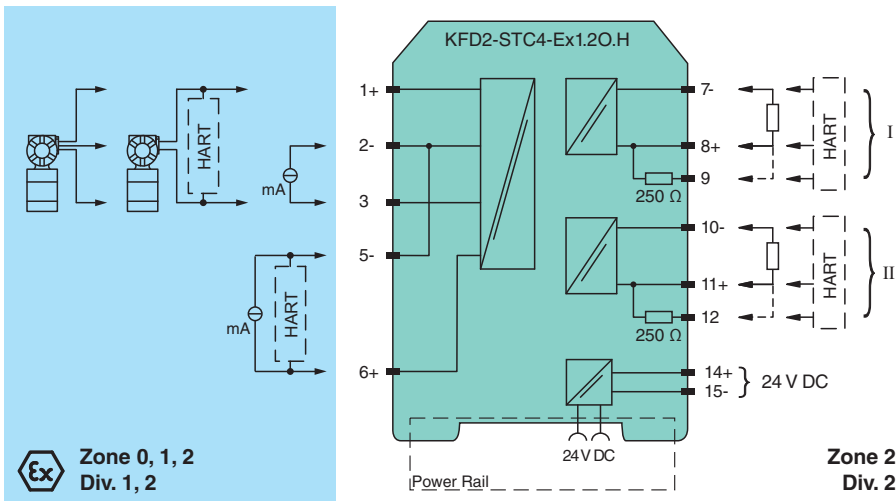
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Signal splitter (1 input and 2 outputs)
- Dual output 0/4 mA ... 20 mA
- Terminal blocks with test sockets
- High field voltage 17.6 V DC
- Up to SIL 3 acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire and 3-wire SMART transmitters with higher output voltage in a hazardous area, and can also be used with 2-wire SMART current sources. It transfers the analog input signal to the safe area as two isolated current values. Digital signals may be superimposed on the input signal in the hazardous or safe area and are transferred bi-directionally. If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 8 and 9 can be used. 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 3

Supply

Connection Power Rail or terminals 14+, 15-

Rated voltage U_r 20 ... 35 V DC

Ripple within the supply tolerance

Power dissipation 1.9 W

Power consumption 2.5 W

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

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0002
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

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Technical Data

Input	
Connection side	field side
Connection	terminals 1+, 2-, 3 or 5-, 6+
Input signal	0/4 ... 20 mA
Open circuit voltage/short-circuit current	terminals 1+, 3-: 24.2 V / 38 mA
Voltage drop	terminals 5, 6 : ≤ 2.4 V at 20 mA
Input resistance	terminals 2-, 3: max. 76 Ω terminals 1+, 3: max. 500 Ω (250 Ω load)
Available voltage	terminals 1+, 3: ≥ 17.6 V at 20 mA
Output	
Connection side	control side
Connection	terminals 7-, 8+,9; 10-, 11+,12
Load	0 ... 550 Ω at 20 mA
Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	max. 50 μA_{rms}
Transfer characteristics	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	0.25 $\mu\text{A}/\text{K}$
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	20 μs
Galvanic isolation	
Output/power supply	functional insulation, rated insulation voltage 50 V AC
Output/Output	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 21:2011
Degree of protection	IEC 60529:2001
Protection against electrical shock	UL 61010-1:2012
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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	BAS 99 ATEX 7060 X
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
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	632 mW

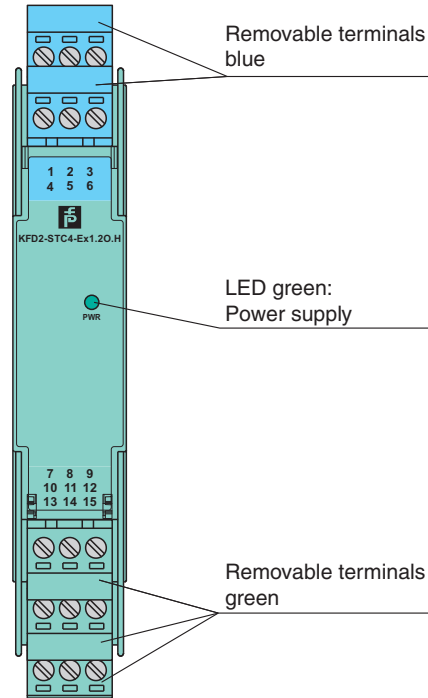
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Technical Data







Internal capacitance C_i		12 nF
Internal inductance L_i		0 mH
Equipment		terminals 2-, 3
Voltage U_i		30 V
Current I_i		117 mA
Voltage U_o		3.5 V
Current I_o		73 mA
Power P_o		64 mW
Equipment		terminals 1+, 2 / 3-
Voltage U_o		27.2 V
Current I_o		117 mA
Power P_o		639 mW
Internal capacitance C_i		12 nF
Internal inductance L_i		0 mH
Equipment		terminals 5-, 6+
Voltage U_i		30 V
Current I_i		117 mA
Voltage U_o		8.7 V
Current I_o		0 mA
Internal capacitance C_i		0 nF
Internal inductance L_i		0 mH
Output		
Maximum safe voltage	U_m	250 V (Attention! The rated voltage can be lower.)
Certificate		TÜV 99 ATEX 1499 X
Marking		Ⓜ II 3G Ex nA II T4 [device in zone 2]
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 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
UL approval		
Control drawing		116-0428 (cULus)
IECEX approval		
IECEX certificate		IECEX BAS 04.0016X IECEX CML 15.0055X
IECEX marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex nA IIC T4 Gc
General information		
Note		Both output loads must be connected to ensure complete and correct operation within the technical specification. Open circuit of one of the two outputs will not affect the connected output, but would result in a loss of transmitter supply voltage of up to 0.7 Volt.
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
	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-STP-5BU	Terminal block for KF modules, 3-pin screw terminal, with test sockets, blue
	KF-STP-5GN	Terminal block for KF modules, 3-pin screw terminal, with test sockets, green
	KF-ST-5GN	Terminal block for KF modules, 3-pin screw terminal, green
	KF-CP	Red coding pins, packaging unit: 20 x 6

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Application

The device supports the following SMART protocols:

- HART
- BRAIN
- Foxboro

Configuration

Configuration active output (source)

If only one output of the two outputs is used, a plug-in jumper have to be set as follows.

