



SMART Transmitter Power Supply

KFD2-STC5-Ex1.2O.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 4 mA ... 20 mA current sink/current source
- Terminals with test points
- High field voltage 17 V DC
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



SIL 2



HART[®]

COMMUNICATION PROTOCOL

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 two isolated output signals.

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.

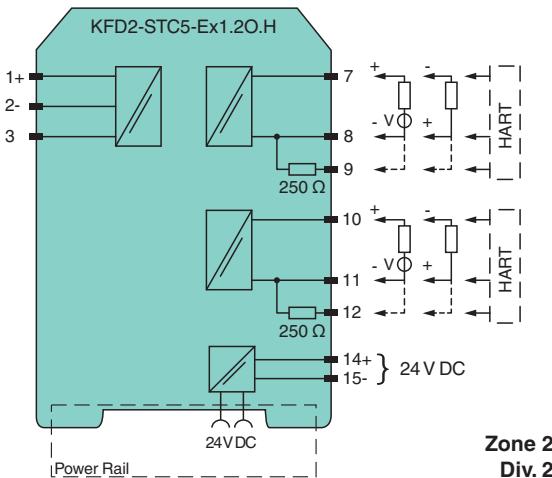
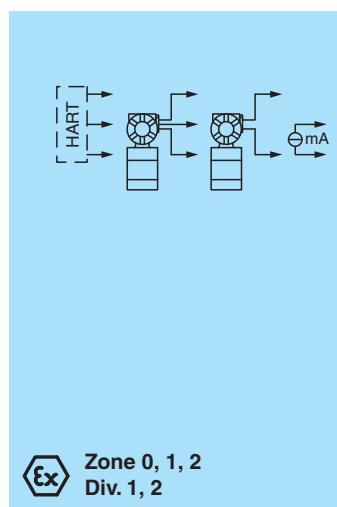
Test sockets for the connection of HART communicators are integrated into the terminals of the device.

Application

The device supports the following SMART protocols:

- HART
- BRAIN
- Foxboro

Connection



Short circuit unused outputs decreases the internal power dissipation by up to 100 mW per channel.

Technical Data

General specifications

Signal type Analog input

Functional safety related parameters

Safety Integrity Level (SIL) SIL 2

Technical Data

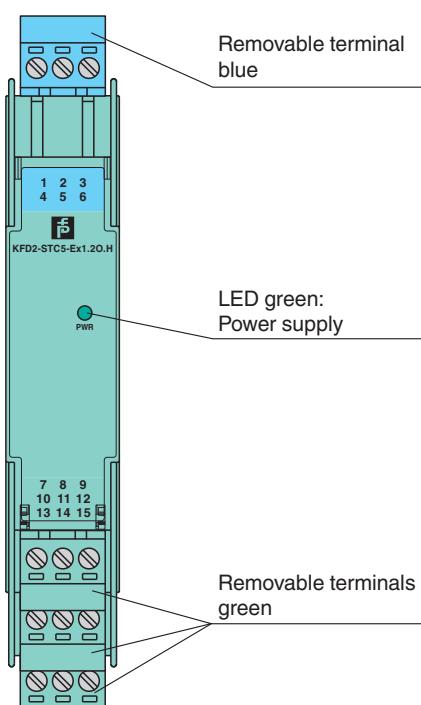
Systematic capability (SC)	SC 3
Supply	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	U_r 18 ... 30 V DC
Ripple	within the supply tolerance
Power dissipation	≤ 1 W at maximum load
Power consumption	≤ 1.7 W at maximum load
Input	
Connection side	field side
Connection	terminals 1+, 2-, 3
Input 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-, 10+, 11-, 12- (sink) terminals 7-, 8+, 9+; 10-, 11+, 12+ (source) see additional information
Load	0 ... 600 Ω
Output signal	4 ... 20 mA (overload > 25 mA)
Ripple	max. 50 μ A _{rms}
External supply (loop)	2 ... 30 V DC If the external voltage is > 19 V, a load $\geq ((V - 19) / 0.02)$ Ω is required. V represents the value of the external voltage. The internal 250 Ω resistor at terminals 9 and 12 can be used as a load.
Transfer characteristics	
Deviation	at 20 °C (68 °F), 4 ... 20 mA $\leq 10 \mu$ A incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	$\leq 0.25 \mu$ A/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 μ s
Rise time/fall time	100 μ s
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 21:2012 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

Technical Data

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 2031X	
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	633 mW
Internal capacitance	C_i	5 nF
Internal inductance	L_i	0 mH
Equipment	terminals 2-, 3	
Voltage	U_i	30 V
Current	I_i	115 mA
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	27.2 V
Current	I_o	115 mA
Power	P_o	782 mW
Internal capacitance	C_i	5 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 3030X	
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+AC:2020 , 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 17.0016X	
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
	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

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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

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

Connection

The device provides 2 outputs on the control side terminals. These outputs can be operated in any combination of the current sink operating mode and current source operating mode. Please refer to the following diagram for connection.

