



# SMART Transmitter Power Supply

## KFD2-STC5-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 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



### Function

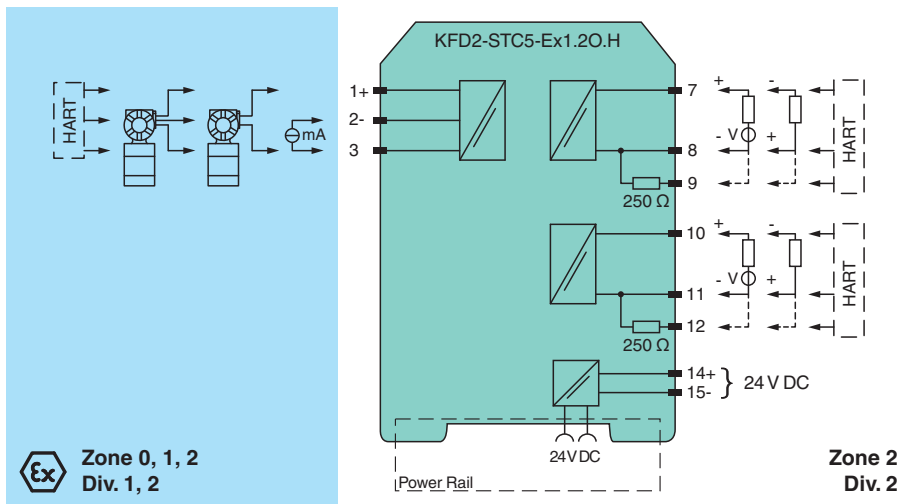
This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources. It transfers the analog input signal to the safe area as two isolated output signals. Digital signals may be superimposed 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

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## Technical Data

Systematic capability (SC)		SC 3
<b>Supply</b>		
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
<b>Input</b>		
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
<b>Output</b>		
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 μA <sub>rms</sub>
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 terminals 9 and 12 can be used as a load.
<b>Transfer characteristics</b>		
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 <sub>pp</sub> signal 0 ... 7.5 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V <sub>pp</sub> signal 0.3 ... 7.5 kHz (-3 dB)
Settling time		200 μs
Rise time/fall time		100 μs
<b>Galvanic isolation</b>		
Output/power supply		functional insulation, rated insulation voltage 50 V AC
Output/Output		functional insulation, rated insulation voltage 50 V AC
<b>Indicators/settings</b>		
Display elements		LED
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 21:2012 EN 61326-3-2:2008
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
<b>Ambient conditions</b>		
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
<b>Mechanical specifications</b>		
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

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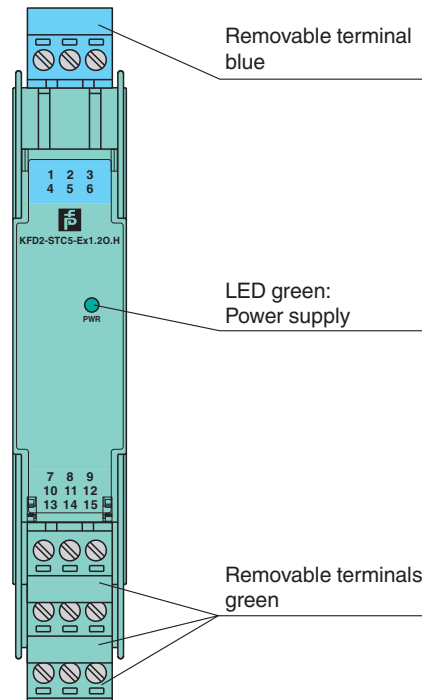
**Technical Data**

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	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 <sub>m</sub>	250 V (Attention! The rated voltage can be lower.)
Equipment	terminals 1+, 3-	
Voltage	U <sub>o</sub>	27.2 V
Current	I <sub>o</sub>	93 mA
Power	P <sub>o</sub>	633 mW
Internal capacitance	C <sub>i</sub>	5 nF
Internal inductance	L <sub>i</sub>	0 mH
Equipment	terminals 2-, 3	
Voltage	U <sub>i</sub>	30 V
Current	I <sub>i</sub>	115 mA
Voltage	U <sub>o</sub>	2 V
Current	I <sub>o</sub>	8.5 mA
Power	P <sub>o</sub>	4.3 mW
Equipment	terminals 1+, 2 / 3-	
Voltage	U <sub>o</sub>	27.2 V
Current	I <sub>o</sub>	115 mA
Power	P <sub>o</sub>	782 mW
Internal capacitance	C <sub>i</sub>	5 nF
Internal inductance	L <sub>i</sub>	0 mH
Output		
Maximum safe voltage	U <sub>m</sub>	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	
<b>Directive conformity</b>		
Directive 2014/34/EU	EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018 , EN 60079-11:2012	
<b>International approvals</b>		
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	
<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> .	







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## 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
	<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

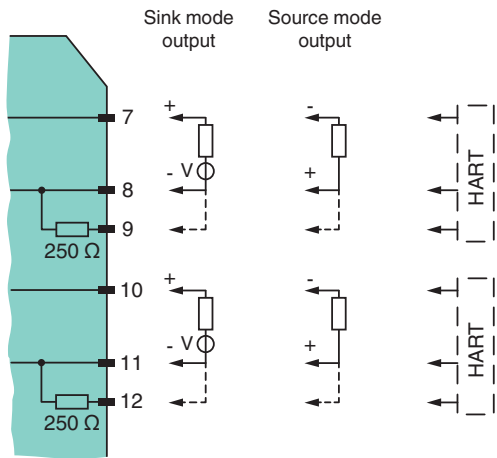
## Accessories

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

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**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.



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