

# SMART Transmitter Power Supply

## KFD2-STC5-Ex2

SIL 2

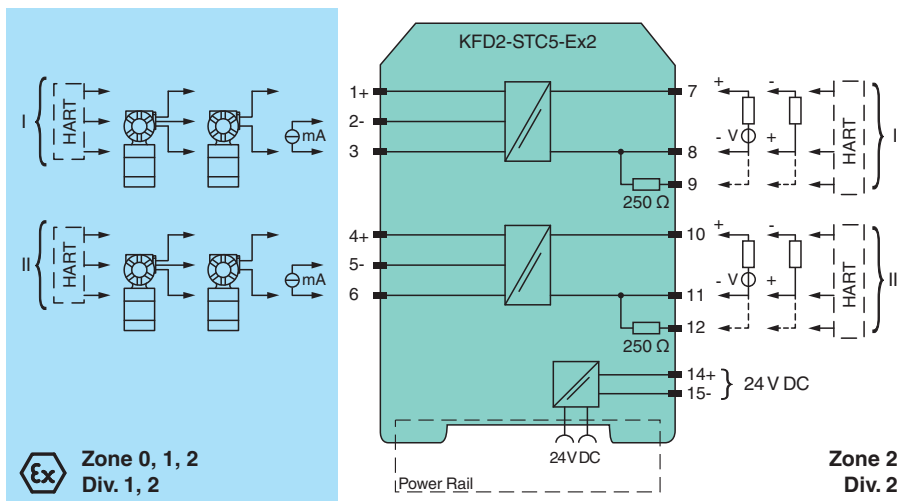
- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Output 0/4 mA ... 20 mA current sink/current source
- Terminals with test points
- Up to SIL 2 acc. to IEC 61508



### 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. 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



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### Technical Data

<b>General specifications</b>	
Signal type	Analog input
<b>Functional safety related parameters</b>	
Safety Integrity Level (SIL)	SIL 2
<b>Supply</b>	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	U <sub>r</sub> 18 ... 30 V DC
Ripple	within the supply tolerance
Power dissipation	≤ 1.4 W at maximum load
Power consumption	≤ 2.6 W at maximum load

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

## Technical Data

Input	
Connection side	field side
Connection	terminals 1+, 2-, 3; 4+, 5-, 6
Input signal	0/4 ... 20 mA
Open circuit voltage/short-circuit current	terminals 1+, 3; 4+, 6: 23 V / 25 mA
Input resistance	max. 265 $\Omega$ terminals 2-, 3; 5-, 6, max. 330 $\Omega$ terminals 1+, 3; 4+, 6
Available voltage	$\geq 16$ V at 20 mA ; $\geq 20$ V at 4 mA, terminals 1+, 3; 4+, 6
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 $\Omega$
Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	max. 50 $\mu$ A <sub>rms</sub>
External supply (loop)	2 ... 30 V DC
Transfer characteristics	
Deviation	at 20 °C (68 °F), 0/4 ... 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: band width with 1 V <sub>pp</sub> signal 0 ... 7.5 kHz (-3 dB) safe area to hazardous area: band width with 1 V <sub>SS</sub> signal 0.3 ... 7.5 kHz (-3 dB)
Settling time	200 $\mu$ s
Rise time/fall time	100 $\mu$ 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)
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), 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 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-; 4+, 6-
Voltage U <sub>o</sub>	26.2 V

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

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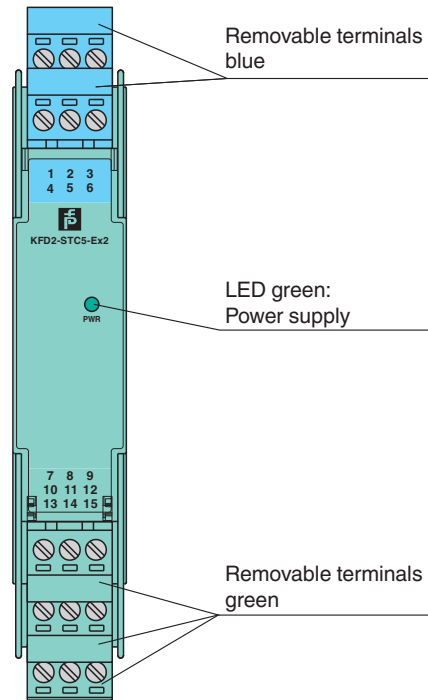
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## Technical Data










Voltage $U_q$	27.25 V
Current $I_o$	93 mA
Power $P_o$	634 mW
Equipment	terminals 2-, 3+; 5-, 6+
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-; 4+, 5/6-
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 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 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-7:2015
<b>International approvals</b>	
UL approval	
Control drawing	116-0439 (cULus)
IECEx approval	IECEx CML 17.0016X
Approved for	[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> .
<b>Accessories</b>	
Optional accessories	<ul style="list-style-type: none"> <li>- power feed module KFD2-EB2(.R4A.B)(.SP)</li> <li>- universal power rail UPR-03(-M)(-S)</li> <li>- profile rail K-DUCT-BU(-UPR-03)</li> </ul>

**Assembly**

Front view



**Accessories**

	<b>KFD2-EB2</b>	Power Feed Module
	<b>KFD2-EB2.R4A.B</b>	Power feed module, redundant supply
	<b>KFD2-EB2.R4A.B.SP</b>	Power feed module with spring terminals, redundant supply
	<b>KFD2-EB2.SP</b>	Power feed module with spring terminals
	<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>	
	<b>K-DUCT-BU-UPR-03</b>	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side blue

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## Application

The device supports the following SMART protocols:

- HART
- BRAIN
- Foxboro

## 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.

