

# SMART Transmitter Power Supply KFD2-STC5-Ex1

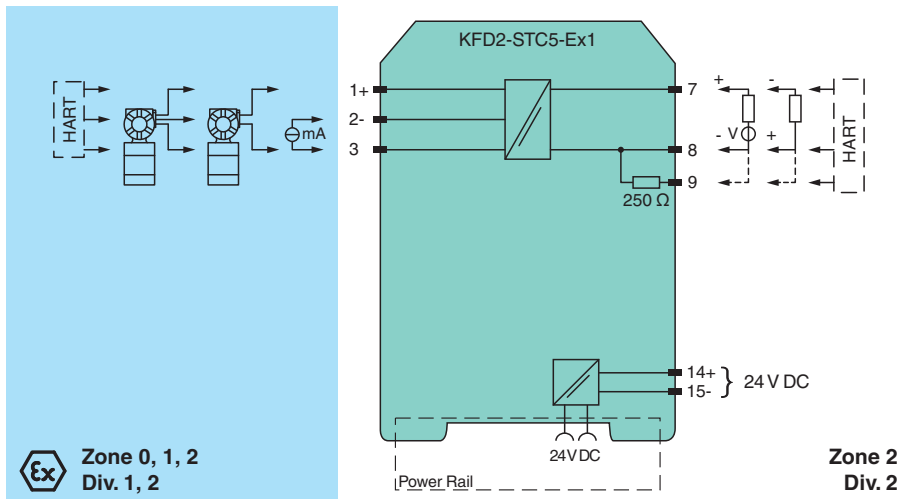
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Output 0/4 mA ... 20 mA current sink/current source
- Terminals with test points
- Up to SIL 2 acc. to IEC/EN 61508



## 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 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

### Supply

Connection Power Rail or terminals 14+, 15-

Rated voltage  $U_r$  18 ... 30 V DC

Ripple within the supply tolerance

Power dissipation  $\leq 1$  W at maximum load

Power consumption  $\leq 1.6$  W at maximum load

Release date: 2021-11-29 Date of issue: 2021-11-29 Filename: 70124109\_eng.pdf

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

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## Technical Data

<b>Input</b>	
Connection side	field side
Connection	terminals 1+, 2-, 3
Input signal	0/4 ... 20 mA
Open circuit voltage/short-circuit current	terminals 1+, 3: 23 V / 25 mA
Input resistance	max. 265 $\Omega$ terminals 2-, 3 , max. 330 $\Omega$ terminals 1+, 3
Available voltage	$\geq 16$ V at 20 mA ; $\geq 20$ V at 4 mA , terminals 1+, 3
<b>Output</b>	
Connection side	control side
Connection	terminals 7+, 8-, 9- (sink) terminals 7-, 8+, 9+ (source) see additional information
Load	0 ... 800 $\Omega$
Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	max. 50 $\mu\text{A}_{\text{rms}}$
External supply (loop)	2 ... 30 V DC
<b>Transfer characteristics</b>	
Deviation	at 20 °C (68 °F), 0/4 ... 20 mA $\leq 10 \mu\text{A}$ incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature	$\leq 0.25 \mu\text{A/K}$
Frequency range	field side into the control side: bandwidth with 0.5 $V_{\text{pp}}$ signal 0 ... 7.5 kHz (-3 dB) control side into the field side: bandwidth with 0.5 $V_{\text{pp}}$ signal 0.3 ... 7.5 kHz (-3 dB)
Settling time	200 $\mu\text{s}$
Rise time/fall time	100 $\mu\text{s}$
<b>Galvanic isolation</b>	
Output/power supply	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 ... 70 °C (-4 ... 158 °F)
<b>Mechanical specifications</b>	
Degree of protection	IP20
Connection	screw terminals
Mass	approx. 150 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
<b>Data for application in connection with hazardous areas</b>	
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
Supply	
Maximum safe voltage	$U_m$ 250 V (Attention! The rated voltage can be lower.)
Equipment	terminals 1+, 3-
Voltage $U_o$	26.2 V
Voltage $U_q$	27.25 V

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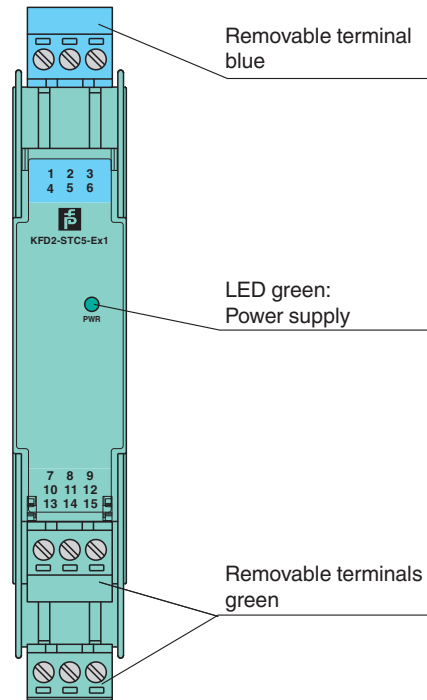
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## Technical Data

Current $I_o$	93 mA
Power $P_o$	634 mW
Equipment	terminals 2-, 3
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-
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 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
<b>International approvals</b>	
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
<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> .

**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>K-250R</b>	Measuring resistor
	<b>K-500R0%1</b>	Measuring resistor
	<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

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**Accessories**

	<p><b>KF-STP-5BU</b></p>	<p>Terminal block for KF modules, 3-pin screw terminal, with test sockets, blue</p>
	<p><b>KF-CP</b></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.

