

# SMART Transmitter Power Supply

## KFD2-STC4-Ex1.20.H

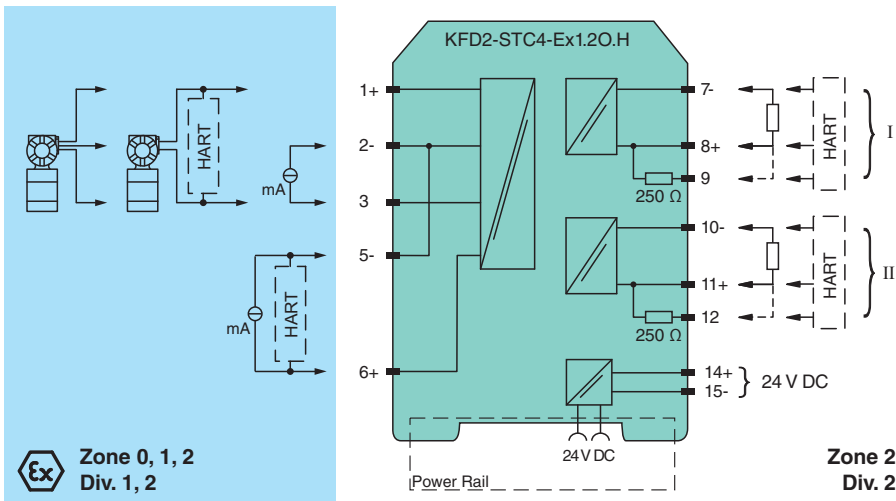
- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Signal splitter (1 input and 2 outputs)
- Dual output 0/4 mA ... 20 mA
- Terminal blocks with test sockets
- High field voltage 17.6 V DC
- Up to SIL 3 acc. to IEC/EN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

Release date: 2021-12-20 Date of issue: 2021-12-20 Filename: 283698\_eng.pdf

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

**PEPPERL+FUCHS**

## Technical Data

<b>Input</b>	
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 : $\leq 2.4$ V at 20 mA
Input resistance	terminals 2-, 3: max. 76 $\Omega$ terminals 1+, 3: max. 500 $\Omega$ (250 $\Omega$ load)
Available voltage	terminals 1+, 3: $\geq 17.6$ V at 20 mA
<b>Output</b>	
Connection side	control side
Connection	terminals 7-, 8+,9; 10-, 11+,12
Load	0 ... 550 $\Omega$ at 20 mA
Output signal	0/4 ... 20 mA (overload > 25 mA)
Ripple	max. 50 $\mu\text{A}_{\text{rms}}$
<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	0.25 $\mu\text{A}/\text{K}$
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	20 $\mu\text{s}$
<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 21:2011
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)
<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
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	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

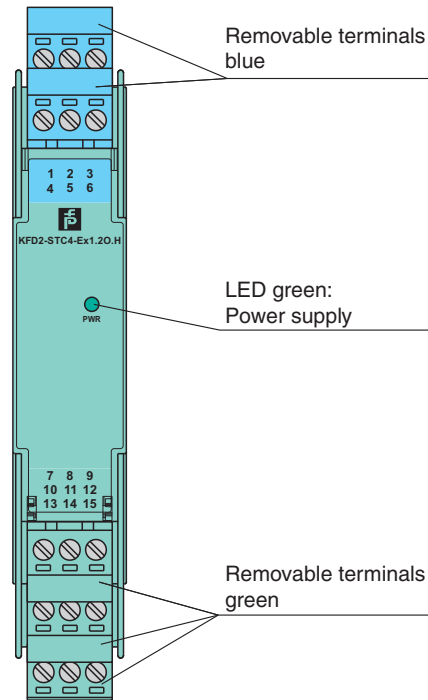
Release date: 2021-12-20 Date of issue: 2021-12-20 Filename: 283698\_eng.pdf

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

Release date: 2021-12-20 Date of issue: 2021-12-20 Filename: 283698\_eng.pdf

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

## 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.

