

SMART Transmitter Power Supply KCD2-STC-Ex1.SP

SIL 2

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input for 2-wire SMART transmitters and current sources
- Output for 4 mA ... 20 mA or 1 V ... 5 V
- Housing width 12.5 mm
- Connection via spring terminals with push-in connection technology
- Up to SIL 2 acc. to IEC 61508

Input 4 mA ... 20 mA Output 4 mA ... 20 mA



Function

This isolated barrier is used for intrinsic safety applications.

The device supplies 2-wire SMART transmitters 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 an isolated current value.

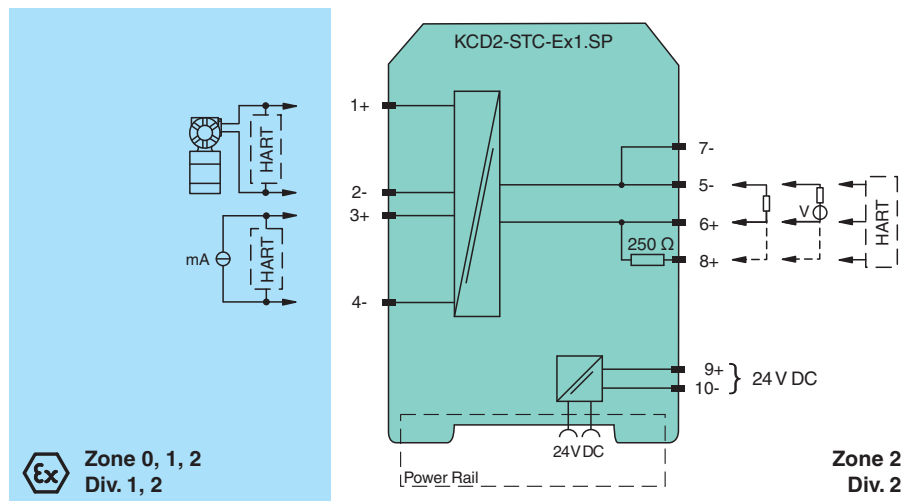
Digital signals may be superimposed on the input signal in the hazardous or safe area and are transferred bi-directionally.

Selectable output of current source, sink mode, or voltage output is available via DIP switches.

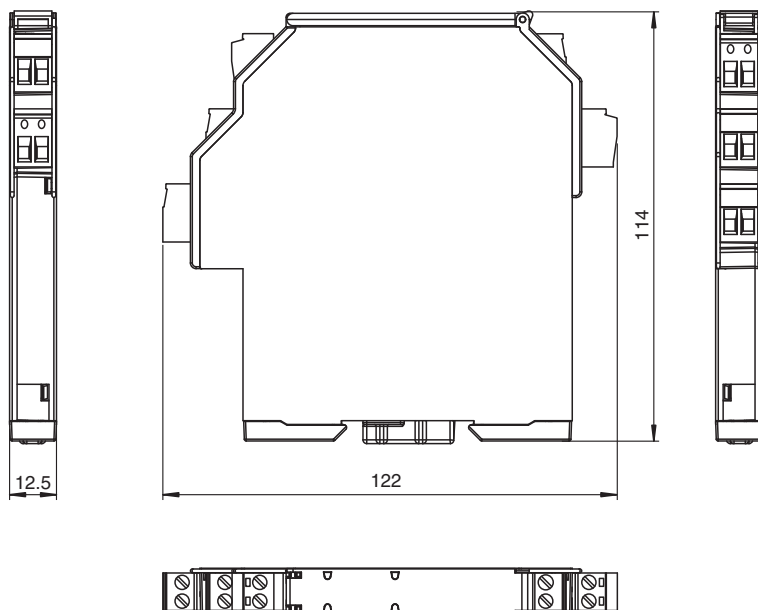
If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 6 and 8 can be used.

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

Connection



Dimensions



Technical Data

General specifications

Signal type	Analog input
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Functional safety related parameters

Safety Integrity Level (SIL)	SIL 2
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Supply

Connection	Power Rail or terminals 9+, 10-
Rated voltage	U_r 19 ... 30 V DC
Ripple	$\leq 10 \%$
Rated current	I_r ≤ 45 mA at 24 V and 20 mA source mode output
Power dissipation	≤ 800 mW
Power consumption	≤ 1.1 W

Input

Connection side	field side
Connection	terminals 1+, 2-; 3+, 4-
Input signal	4 ... 20 mA limited to approx. 26 mA
Open circuit voltage/short-circuit current	terminals 1+, 2-: 22 V / 26 mA
Voltage drop	terminals 3+, 4- : approx. 5 V
Available voltage	terminals 1+, 2-: ≥ 15 V at 20 mA ; ≥ 18 V at 4 mA

Output

Connection side	control side
Connection	terminals 5-, 6+ terminals 5-, 8+ for HART resistor
Load	0 ... 350 Ω (source mode)
Output signal	4 ... 20 mA or 1 ... 5 V (on 250 Ω , 0.1 % internal shunt) 4 ... 20 mA (sink mode), operating voltage 10 ... 30 V
Ripple	20 mV _{rms}

Transfer characteristics

Deviation	at 20 °C (68 °F) $< 0.1 \%$ of full scale, incl. non-linearity and hysteresis (source mode and sink mode 4 ... 20 mA) $\leq \pm 0.2 \%$ incl. non-linearity and hysteresis (source mode 1 ... 5 V)
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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

Technical Data

Influence of ambient temperature		< 2 $\mu\text{A/K}$ (-20 ... 70 °C (-4 ... 158 °F)); < 4 $\mu\text{A/K}$ (-40 ... -20 °C (-40 ... -4 °F)) (source mode and sink mode 4 ... 20mA) < 0.5 mV/K (-20 ... 70 °C (-4 ... 158 °F)); < 1 mV/K (-40 ... -20 °C (-40 ... -4 °F)) (source mode 1...5 V)
Frequency range		field side into the control side: bandwidth with 0.5 V_{pp} signal 0 ... 3 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V_{pp} signal 0 ... 3 kHz (-3 dB)
Settling time		≤ 50 ms
Rise time/fall time		≤ 10 ms
Galvanic isolation		
Input/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Input/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V_{eff}
Indicators/settings		
Display elements		LED
Control elements		DIP-switch
Configuration		via DIP switches
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 21:2017 EN 61326-3-2:2018
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		spring terminals
Mass		approx. 100 g
Dimensions		12.5 x 114 x 124 mm (0.5 x 4.5 x 4.9 inch) , housing type A2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas		
EU-type examination certificate		CESI 06 ATEX 021
Marking		⊕ II (1)G [Ex ia Ga] IIC ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I
Input		Ex ia
Supply		
Maximum safe voltage	U_m	250 V AC (Attention! U_m is no rated voltage.)
Equipment		terminals 1+, 2-
Voltage U_o		25.2 V
Current I_o		100 mA
Power P_o		630 mW
Internal capacitance C_i		5.7 nF
Internal inductance L_i		negligible
Equipment		terminals 3+, 4-
Voltage U_i		30 V
Current I_i		128 mA
Voltage U_o		7.2 V
Current I_o		100 mA
Power P_o		25 mW
Internal capacitance C_i		5.7 nF
Internal inductance L_i		negligible

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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

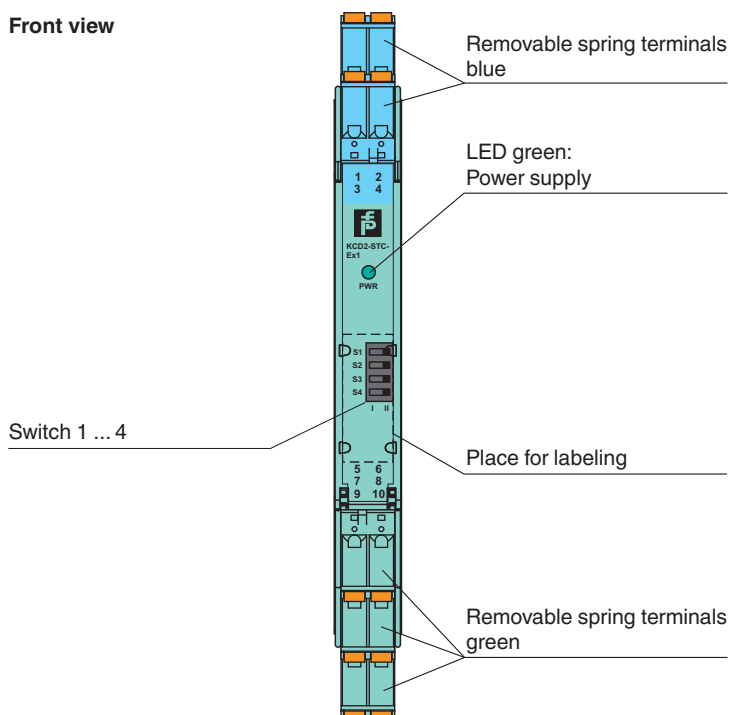
 **PEPPERL+FUCHS**

Technical Data


Certificate	CESI 19 ATEX 021 X
Marking	II 3G Ex ec IIC T4 Gc
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 60079-7:2015
International approvals	
FM approval	
FM certificate	FM 18 CA 0116 X , FM 19 US 0117 X
Control drawing	116-0469 (cFMus)
UL approval	E106378
Control drawing	116-0459 (cULus)
IECEX approval	
IECEX certificate	IECEX CES 06.0001X
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 .
Accessories	
Optional accessories	<ul style="list-style-type: none"> - power feed module KFD2-EB2(.R4A.B)(.SP) - universal power rail UPR-03(-M)(-S) - profile rail K-DUCT-BU(-UPR-03)

Assembly









Front view



Accessories

	KFD2-EB2.R4A.B	Power feed module, redundant supply
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Accessories

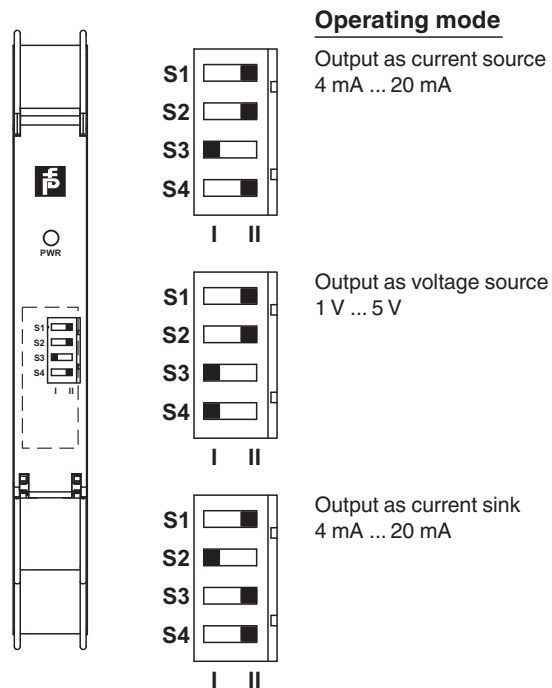
	KFD2-EB2	Power Feed Module
	KFD2-EB2.R4A.B.SP	Power feed module with spring terminals, redundant supply
	KFD2-EB2.SP	Power feed module with spring terminals
	UPR-03	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	UPR-03-M	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	UPR-03-S	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m
	K-DUCT-BU	
	K-DUCT-BU-UPR-03	Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side blue

Application

The device supports the following SMART protocols:

- HART
- BRAIN

Configuration



Factory settings: output as current source 4 mA ... 20 mA