

# SMART Transmitter Power Supply KCD2-STC-Ex1.SP

- 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 (SC 3) acc. to IEC/EN 61508



## Function

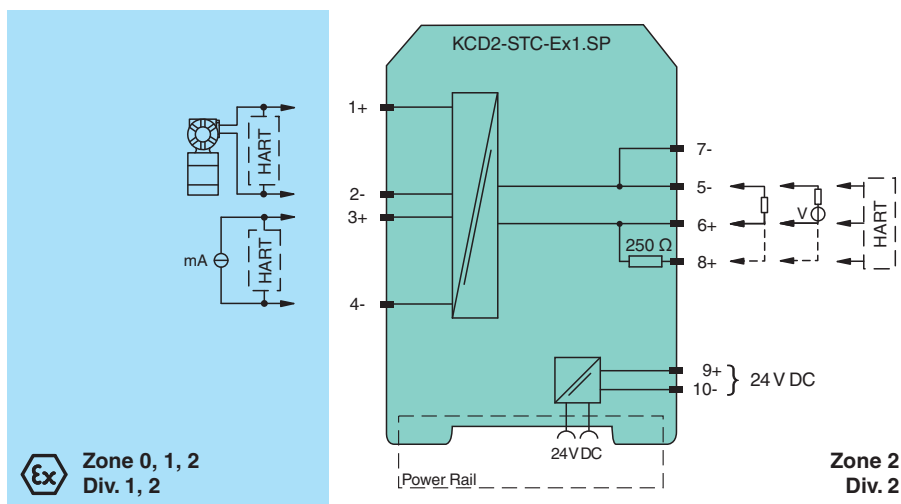
This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire SMART transmitters in a hazardous area, and can also be used with 2-wire SMART current sources. It transfers the analog input signal to the safe area as an isolated current value. Digital signals may be superimposed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

## Application

The device supports the following SMART protocols:

- HART
- BRAIN

## Connection



## Technical Data

### General specifications

Signal type	Analog input
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## Technical Data

Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Systematic capability (SC)		SC 3
Supply		
Connection		Power Rail or terminals 9+, 10-
Rated voltage	$U_r$	19 ... 30 V DC
Ripple		$\leq 10 \%$
Rated current	$I_r$	$\leq 45 \text{ mA}$ at 24 V and 20 mA source mode output
Power dissipation		$\leq 800 \text{ mW}$
Power consumption		$\leq 1.1 \text{ W}$
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-: $\geq 15 \text{ V}$ at 20 mA ; $\geq 18 \text{ V}$ at 4 mA
Output		
Connection side		control side
Connection		terminals 5-, 6+ terminals 5-, 8+ for HART resistor
Load		0 ... 350 $\Omega$ (source mode)
Output signal		source mode: 4 ... 20 mA or 1 ... 5 V (internal resistor: 250 $\Omega$ , 0.1 %) sink mode: 4 ... 20 mA, operating voltage 10 ... 30 V For additional internal or external loads (e. g. terminal +8) the voltage drop has to be considered, e. g. 250 $\Omega$ x 20 mA = 5 V.
Ripple		20 mV <sub>rms</sub>
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)
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) $< 0.5 \text{ mV/K}$ (-20 ... 70 °C (-4 ... 158 °F)); $< 1 \text{ mV/K}$ (-40 ... -20 °C (-40 ... -4 °F)) (source mode 1...5 V)
Frequency range		field side into the control side: bandwidth with 0.5 V <sub>pp</sub> signal 0 ... 3 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V <sub>pp</sub> signal 0 ... 3 kHz (-3 dB)
Settling time		$\leq 50 \text{ ms}$
Rise time/fall time		$\leq 10 \text{ ms}$
Galvanic isolation		
Input/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Input/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
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

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## Technical Data

<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
<b>Mechanical specifications</b>		
Degree of protection		IP20
Connection		spring terminals
Mass		approx. 100 g
Dimensions		12.5 x 119 x 114 mm (0.5 x 4.7 x 4.5 inch) (W x H x D) , housing type A2
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		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
<b>Supply</b>		
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
Certificate		CESI 19 ATEX 021 X
Marking		Ⓜ II 3G Ex ec IIC T4 Gc
<b>Galvanic isolation</b>		
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
<b>International approvals</b>		
<b>FM approval</b>		
FM certificate		FM 18 CA 0116 X , FM 19 US 0117 X
Control drawing		116-0469 (cFMus)
<b>UL approval</b>		
Control drawing		116-0459 (cULus)
<b>IECEx approval</b>		
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
<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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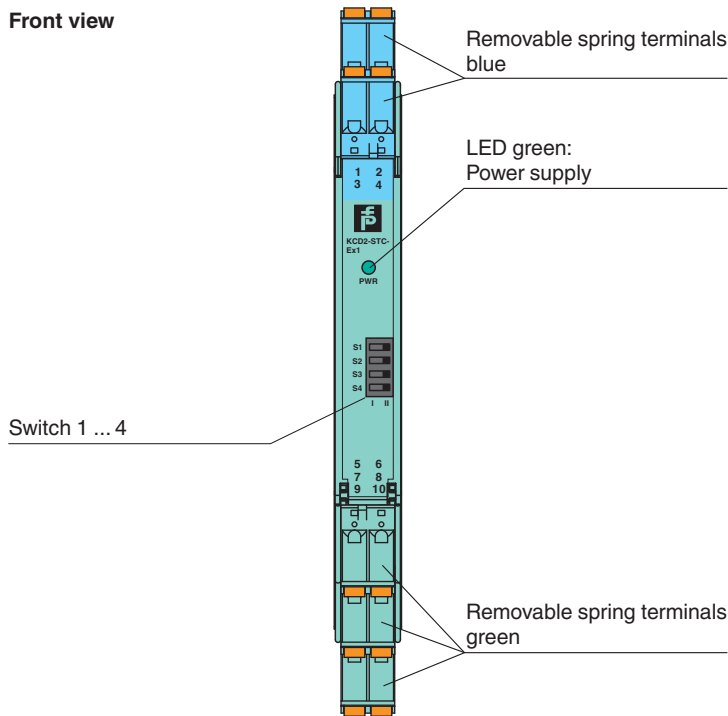
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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




**PEPPERL+FUCHS**

## Assembly





Front view



## Matching System Components

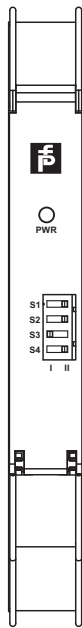
	<b>KFD2-EB2</b>	Power Feed Module
	<b>UPR-03</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	<b>UPR-03-M</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	<b>UPR-03-S</b>	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 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>KC-CTT-3GN2BU</b>	Terminal block for KC modules, 2-pin spring terminal, with test sockets
	<b>KC-CTT-5BU</b>	Terminal block for KC modules, 2-pin spring terminal, with test sockets, blue
	<b>KC-CTT-5GN</b>	Terminal block for KC modules, 2-pin spring terminal, with test sockets, green
	<b>KF-CP</b>	Red coding pins, packaging unit: 20 x 6

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**Configuration**



**Output switch settings**

Mode of operation	S1	S2	S3	S4
Current source output 4 ... 20 mA	II	II	I	II
Voltage source output 1 ... 5 V	II	II	I	I
Current sink output 4 ... 20 mA	II	I	II	II

Factory setting: current source output 4 ... 20 mA

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