

SMART Transmitter Power Supply KCD2-STC-Ex1

- 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
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508



SIL 2



Function

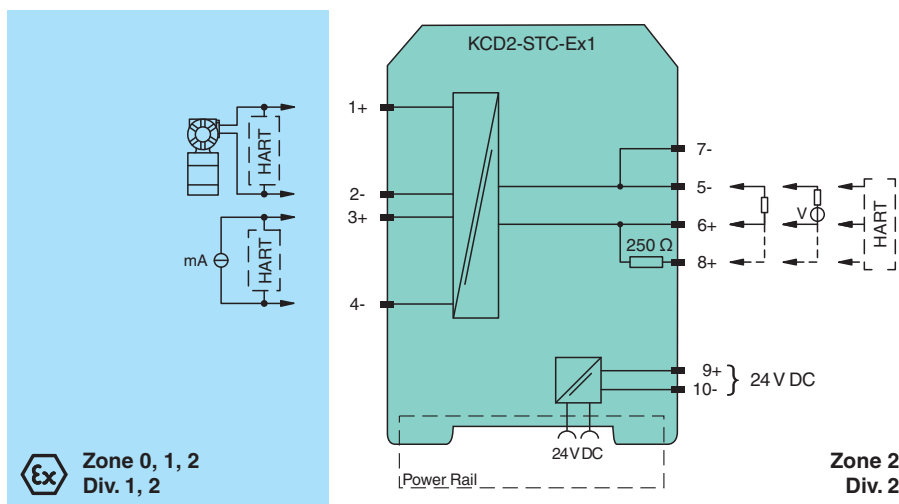
This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire SMART transmitters in a hazardous area, and can also be used with 2-wire SMART current sources. It transfers the analog input signal to the safe area as an isolated current value. Digital signals may be superimposed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

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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 Ω (source mode)
Output signal		source mode: 4 ... 20 mA or 1 ... 5 V (internal resistor: 250 Ω , 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 Ω x 20 mA = 5 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)
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 _{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		$\leq 50 \text{ ms}$
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 _{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 61010-1:2019

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Technical Data

Ambient conditions

Ambient temperature	-40 ... 70 °C (-40 ... 158 °F)
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Mechanical specifications

Degree of protection	IP20
Connection	screw 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

Data for application in connection with hazardous areas

EU-type examination certificate	CESI 06 ATEX 021 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

Supply

Maximum safe voltage	U _m	250 V AC (Attention! U _m is no rated voltage.)
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Equipment	terminals 1+, 2-
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Voltage	U _o	25.2 V
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Current	I _o	100 mA
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Power	P _o	630 mW
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Internal capacitance	C _i	5.7 nF
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Internal inductance	L _i	negligible
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Equipment	terminals 3+, 4-
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Voltage	U _i	30 V
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Current	I _i	128 mA
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Power	P _i	1000 mW
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Voltage	U _o	7.2 V
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Current	I _o	100 mA
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Power	P _o	25 mW
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Internal capacitance	C _i	5.7 nF
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Internal inductance	L _i	negligible
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Certificate	CESI 19 ATEX 021 X
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Marking	Ⓜ II 3G Ex ec IIC T4 Gc
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Galvanic isolation

Input/Output	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
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Input/power supply	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
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Directive conformity

Directive 2014/34/EU	EN IEC 60079-0:2018 , EN 60079-11:2012 , EN IEC 60079-7:2015+A1:2018
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International approvals

FM approval	
FM certificate	FM 18 CA 0116 X , FM 19 US 0117 X

Control drawing	116-0469 (cFMus)
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UL approval	E106378
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Control drawing	116-0459 (cULus)
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IECEx approval

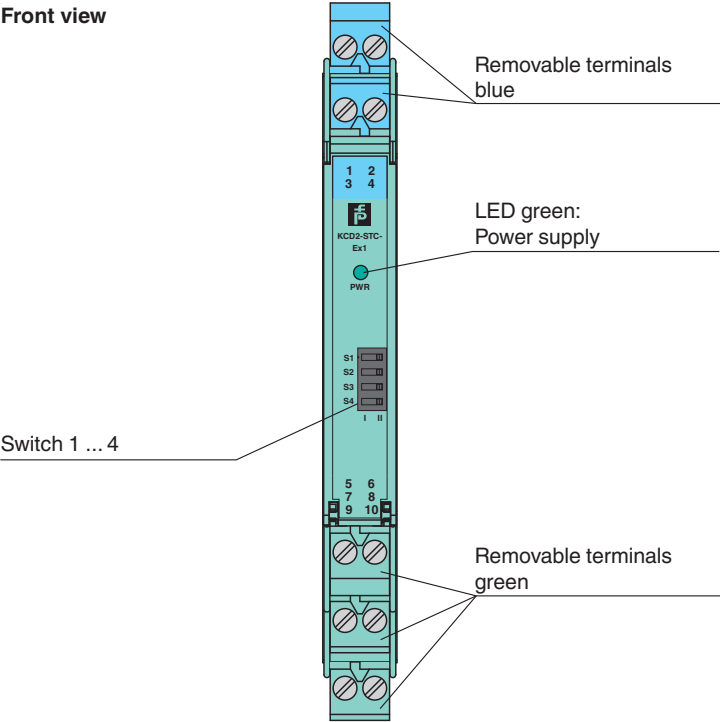
IECEx certificate	IECEx CES 06.0001X
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IECEx marking	[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc
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General information

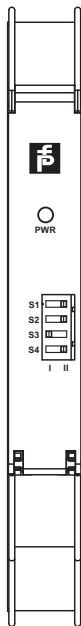
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .
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Assembly



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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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