



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

- 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
- Sink or source mode
- Line fault detection (LFD)
- Housing width 12.5 mm
- Up to SIL 3 acc. to IEC/EN 61508



## Function

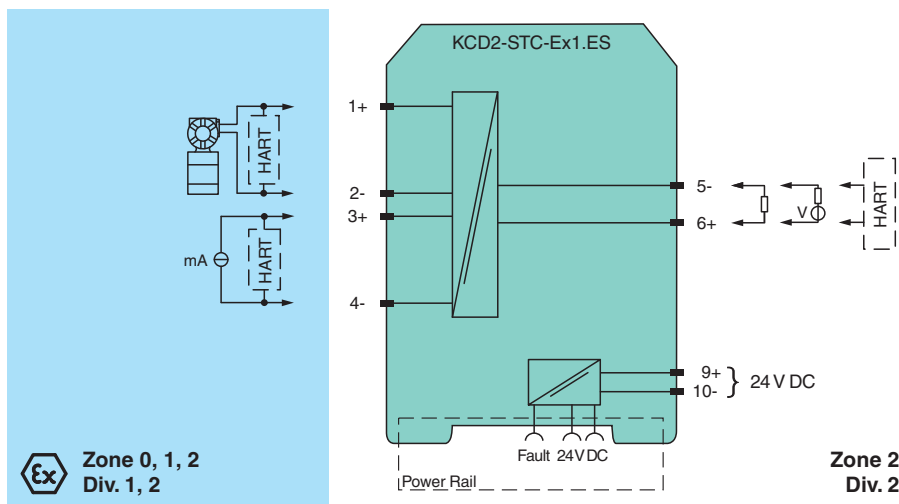
This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire transmitters in the hazardous area, and can also be used with current sources. The device transfers the analog input signal to the non-hazardous area as an isolated current value. Bi-directional communication is supported for SMART transmitters that use current modulation to transmit data and voltage modulation to receive data. The output is selected as a current source, current sink, or voltage source via DIP switches. A fault is signaled by LEDs and a separate collective error message output. 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

## Connection



## Technical Data

<b>General specifications</b>	
Signal type	Analog input
<b>Functional safety related parameters</b>	
Safety Integrity Level (SIL)	SIL 3
Systematic capability (SC)	SC 3
<b>Supply</b>	

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## Technical Data

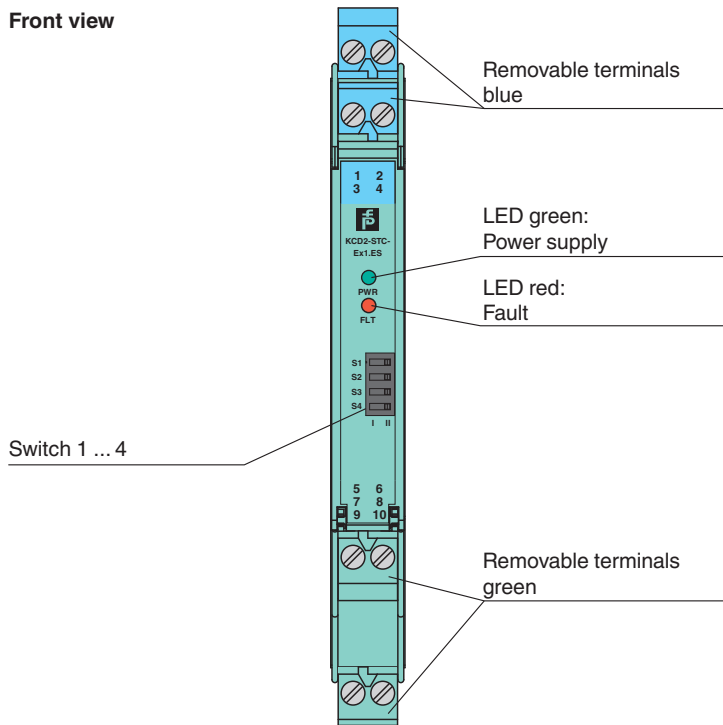
Connection		Power Rail or terminals 9+, 10-
Rated voltage	$U_r$	19 ... 30 V DC
Ripple		$\leq 10 \%$
Rated current	$I_r$	$\leq 50 \text{ mA}$
Power dissipation		$\leq 800 \text{ mW}$
Power consumption		$\leq 1.2 \text{ W}$
<b>Input</b>		
Connection side		field side
Connection		terminals 1+, 2-; 3+, 4-
Input signal		4 ... 20 mA , limited to approx. 27 mA reverse polarity protected
Line fault detection		downscaling $\leq 3 \text{ mA}$ ; upscaling $\geq 22 \text{ mA}$
Voltage drop		approx. 5 V on terminals 3+, 4-
Available voltage		$\geq 15 \text{ V}$ at 20 mA terminals 1+, 2-
<b>Output</b>		
Connection side		control side
Connection		terminals 5-, 6+
Load		0 ... 300 $\Omega$ (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 16 ... 28 V For additional internal or external loads the voltage drop has to be considered, e. g. 250 $\Omega$ x 20 mA = 5 V.
Ripple		20 mV <sub>rms</sub>
<b>Fault indication output</b>		
Output type		fault bus signal , open collector transistor
<b>Transfer characteristics</b>		
Deviation		at 20 °C (68 °F) $\leq \pm 20 \mu\text{A}$ incl. calibration, linearity, hysteresis, loads and supply voltage fluctuations (source mode and sink mode 4 ... 20 mA) $\leq 10 \text{ mV}$ incl. calibration, linearity, hysteresis and fluctuations of supply voltage (source mode 1 ... 5 V)
Influence of ambient temperature		$< 2 \mu\text{A/K}$ (0 ... 70 °C (32 ... 158 °F)); $< 4 \mu\text{A/K}$ (-20 ... 0 °C (-4 ... 32 °F)) (source mode and sink mode 4 ... 20 mA) $< 0.5 \text{ mV/K}$ (0 ... 70 °C (32 ... 158 °F)); $< 1 \text{ mV/K}$ (-20 ... 0 °C (-4 ... 32 °F)) (source mode 1 ... 5 V)
Frequency range		field side into the control side: bandwidth with 1 mA <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		$\leq 200 \text{ ms}$
Rise time/fall time		$\leq 20 \text{ ms}$
<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
Output/power supply		Basic isolation acc. to EN 61010-1 rated insulation voltage $\leq 50 \text{ V}$
<b>Indicators/settings</b>		
Display elements		LEDs
Control elements		DIP switch
Configuration		via DIP switches
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 21:2017 For further information see system description.
Degree of protection		IEC 60529:2001
<b>Ambient conditions</b>		
Ambient temperature		-20 ... 70 °C (-4 ... 158 °F)
<b>Mechanical specifications</b>		

## Technical Data







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	
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate	CESI 10 ATEX 071	
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 <sub>m</sub>	253 V AC (Attention! U <sub>m</sub> is no rated voltage.)
Equipment	terminals 1+, 2-	
Voltage	U <sub>o</sub>	25.2 V
Current	I <sub>o</sub>	100 mA
Power	P <sub>o</sub>	630 mW
Internal capacitance	C <sub>i</sub>	5.7 nF
Internal inductance	L <sub>i</sub>	negligible
Equipment	terminals 3+, 4-	
Voltage	U <sub>i</sub>	< 30 V
Current	I <sub>i</sub>	< 128 mA
Voltage	U <sub>o</sub>	7.2 V
Current	I <sub>o</sub>	100 mA
Power	P <sub>o</sub>	25 mW
Internal capacitance	C <sub>i</sub>	5.7 nF
Internal inductance	L <sub>i</sub>	negligible
Certificate	CESI 19 ATEX 005 X	
Marking	Ⓜ II 3G Ex ec IIC T4 Gc	
Directive conformity		
Directive 2014/34/EU	EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-7:2015	
<b>International approvals</b>		
UL approval	E106378	
Control drawing	116-0378 (cULus)	
IECEx approval		
IECEx certificate	IECEx CES 11.0001X	
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> .	

## 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

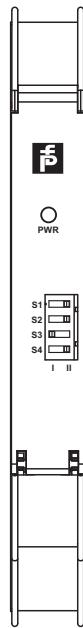
	<b>KC-ST-5GN</b>	Terminal block for KC modules, 2-pin screw terminal, green
	<b>KC-STP-5GN</b>	Terminal block for KC modules, 2-pin screw terminal, with test sockets, green
	<b>KC-STP-5BU</b>	Terminal block for KC modules, 2-pin screw terminal, with test sockets, blue
	<b>KF-CP</b>	Red coding pins, packaging unit: 20 x 6

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**Accessories****KC-ST-5BU**

Terminal block for KC modules, 2-pin screw terminal, blue

**Configuration**



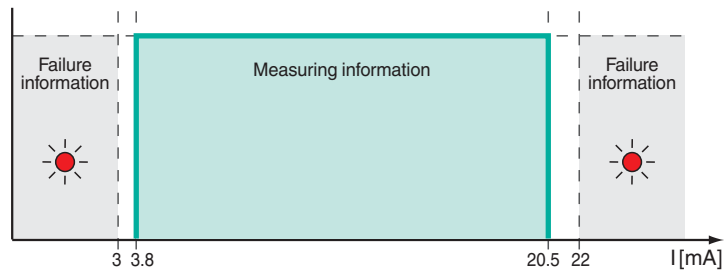
**Output switch settings**

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

**Characteristic Curve**

**Transfer characteristic**



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