

Features

- 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 SIL3 acc. to IEC 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.

It transfers the analog input signal to the safe 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 acc. to NAMUR NE44 and a separate collective error message output.

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

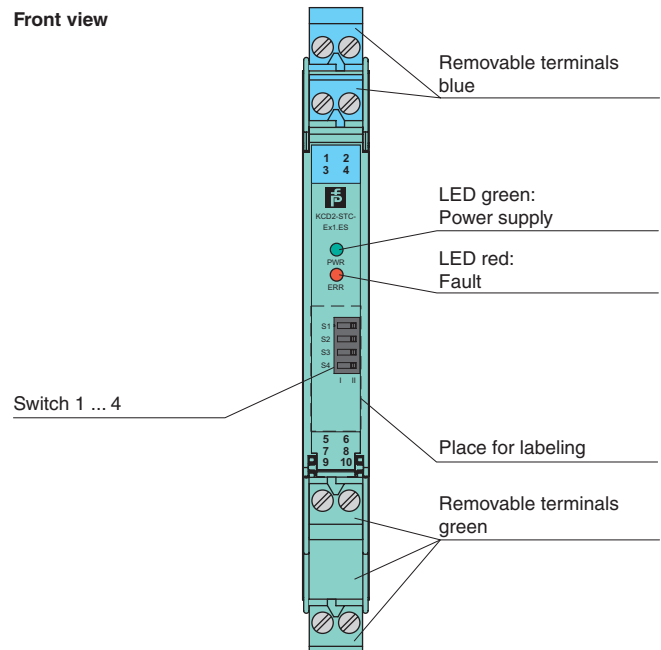
Application

The device supports the following SMART protocol:

- HART

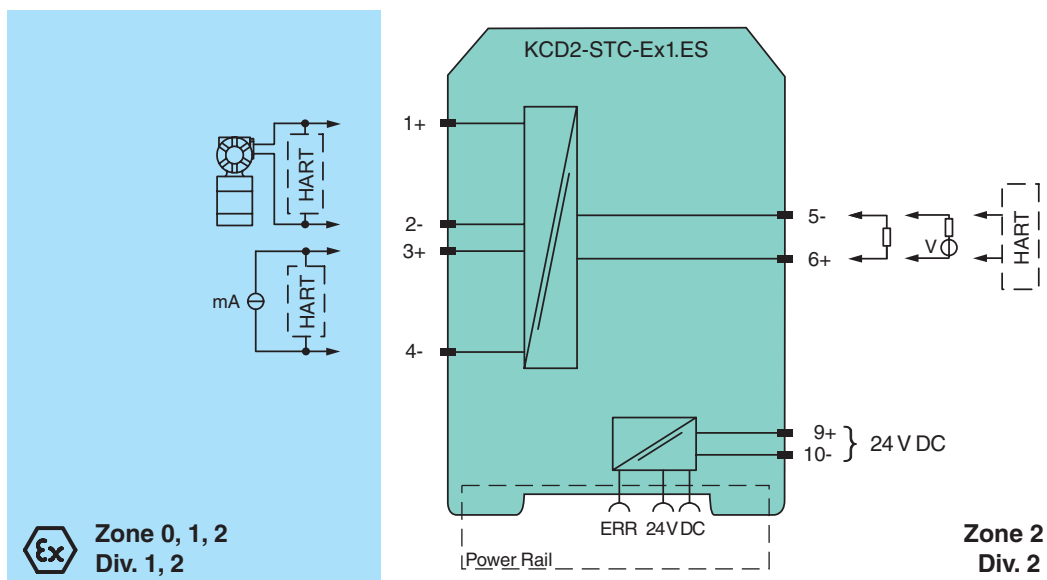
Assembly

Front view



SIL 3

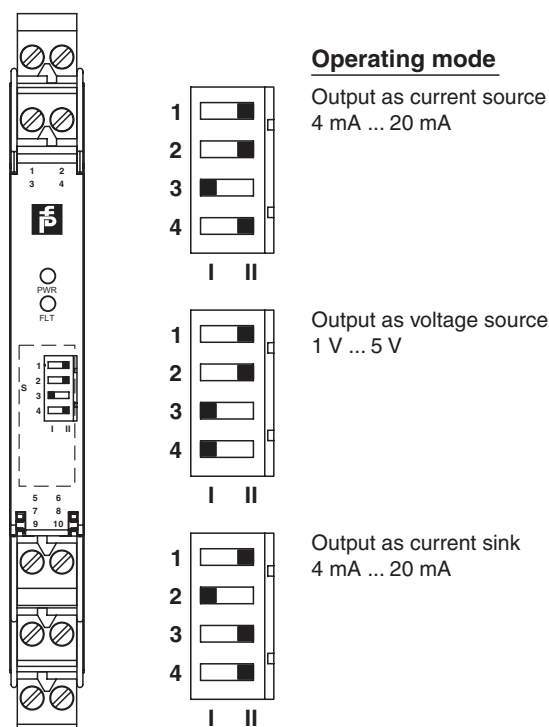
Connection



General specifications		
Signal type		Analog input
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 3
Supply		
Connection		Power Rail or terminals 9+, 10-
Rated voltage	U_r	19 ... 30 V DC
Ripple		$\leq 10 \%$
Rated current	I_r	$\leq 50 \text{ mA}$
Power dissipation		$\leq 800 \text{ mW}$
Power consumption		$\leq 1.2 \text{ W}$
Input		
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-
Output		
Connection side		control side
Connection		terminals 5-, 6+
Load		0 ... 300 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 16 ... 28 V
Ripple		20 mV _{rms}
Fault indication output		
Output type		fault bus signal , open collector transistor
Transfer characteristics		
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 _{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		$\leq 200 \text{ ms}$
Rise time/fall time		$\leq 20 \text{ ms}$
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
Output/power supply		Basic isolation acc. to EN 61010-1 rated insulation voltage $\leq 50 \text{ V}$
Indicators/settings		
Display elements		LEDs
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 21:2006
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 ... 70 °C (-4 ... 158 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		screw 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 10 ATEX 071

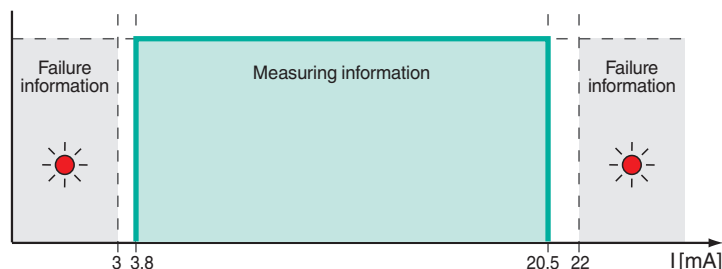
Marking		<div> <div>Ex</div> <div>II (1)G [Ex ia Ga] IIC</div> </div> <div> <div>Ex</div> <div>II (1)D [Ex ia Da] IIIC</div> </div> <div> <div>Ex</div> <div>I (M1) [Ex ia Ma] I</div> </div>
Input		Ex ia, Ex iaD
Supply		
Maximum safe voltage	U_m	253 V AC (Attention! U_m is no rated voltage.)
Equipment		terminals 1+, 2-
Voltage	U_o	25.2 V
Current	I_o	100 mA
Power	P_o	630 mW
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
Certificate		PF 10 CERT 1749 X
Marking		<div> <div>Ex</div> <div>II 3G Ex nA IIC T4 Gc</div> </div>
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 , EN 50303:2000
International approvals		
UL approval		
Control drawing		116-0378 (cULus)
IECEX approval		IECEX CES 11.0001
Approved for		[Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Configuration



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

Transfer characteristic



Accessories

Power feed module KFD2-EB2

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 150 individual devices depending on the power consumption of the devices. Collective error messages received from the Power Rail activate a galvanically-isolated mechanical contact.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical insert and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

Profile Rail K-DUCT with Power Rail

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.



Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!