

SMART Current Driver/Repeater

KFD0-SCS-Ex1.55

- 1-channel isolated barrier
- 24 V DC supply (loop powered)
- Current input/output 4 mA ... 20 mA
- HART-IP or transmitter power supply
- Low voltage drop
- Line fault detection (LFD)
- Up to SIL 2 acc. to IEC/EN 61508

CE  **SIL 2**

Function

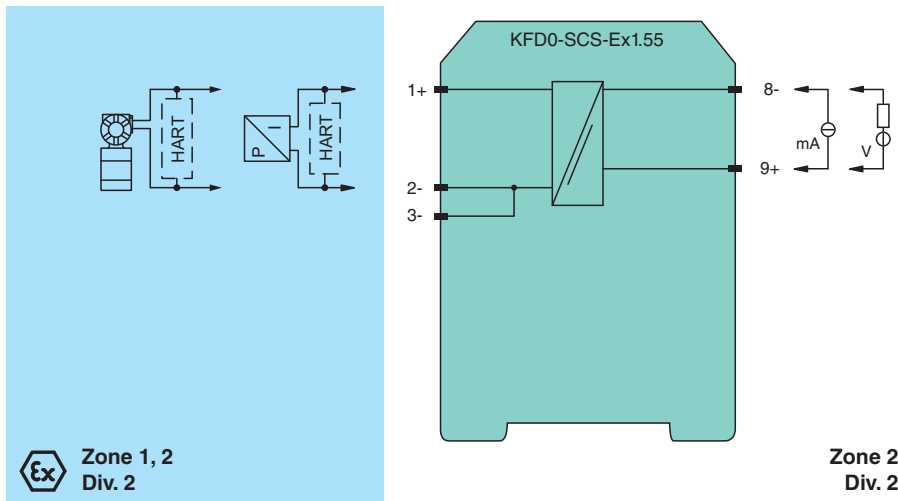
This isolated barrier is used for intrinsic safety applications. It is loop powered and isolates a 4 mA ... 20mA signal for transmitters and positioners and is HART compatible.

With a noticeably lower power loss compared to active isolator modules, the barrier's 5 V drop makes it suitable for transmitter applications with unstable power sources between 20 V DC ... 30 V DC.

Line fault detection of the field circuit is possible if the control loop in the safe area is monitored for overscale or underscale conditions of the 4 mA ... 20mA range.

The module can also be used for controlling solenoid valves and discrete outputs, such as LEDs. In this case, terminals 8- and 9+ are driven with a 24 V signal.

Connection



Technical Data

General specifications

Signal type Analog input/analog output

Functional safety related parameters

Safety Integrity Level (SIL) SIL 2

Supply

Rated voltage U_r < 30 V DC , loop powered

Power dissipation 0.2 W

Control circuit

Connection terminals 8-, 9+

Voltage max. 30 V DC

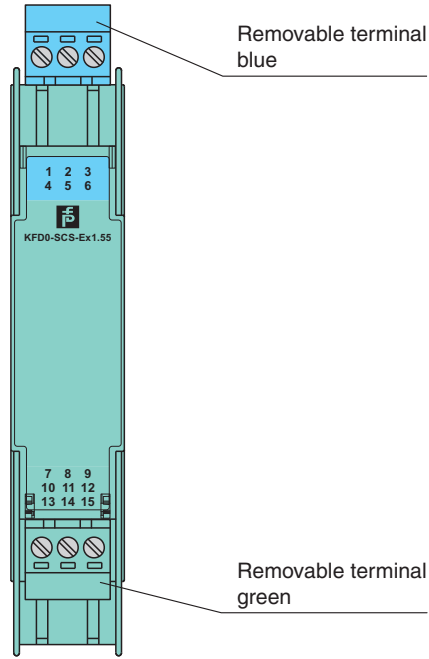
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Technical Data

Current		4 ... 20 mA (quiescent current < 0.5 mA)
Power dissipation		150 mW at 20 mA and $U_{in} < 24$ V
Field circuit		
Connection		terminals 1+, 2 / 3-
Voltage		≥ 16 V for supply voltage > 21 V
Current		4 ... 20 mA (linear transmission 1 ... 22 mA)
Load		$\leq 800 \Omega$ (at 20 mA)
Transfer characteristics		
Voltage drop		see note
Deviation		
After calibration		$\leq \pm 80 \mu\text{A}$ linearity, load and voltage dependence at 20 °C (68 °F)
Influence of ambient temperature		< 0.5 $\mu\text{A/K}$
Damping		approx. 3 dB
Rise time		$\leq 20 \mu\text{s}$ at 0 Ω , $\leq 600 \mu\text{s}$ with 800 Ω load
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Indicators/settings		
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 21:2007
Degree of protection		IEC 60529:2001
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 120 g
Dimensions		20 x 124 x 115 mm (0.8 x 4.9 x 4.5 inch) (W x H x D) , housing type B2
Height		112 mm
Width		20 mm
Depth		115 mm
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas		
EU-type examination certificate		PTB 02 ATEX 2064
Marking		Ⓜ II (2)G [Ex ib Gb] IIC
Voltage	U_o	23.1 V DC
Current	I_o	28 mA
Power	P_o	0.647 W
Supply		
Maximum safe voltage	U_m	253 V (Attention! The rated voltage can be lower.)
Certificate		
Marking		Ⓜ II 3G Ex nA IIC T4 Gc
Galvanic isolation		
Input/Output		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Assembly

Front view



Connection

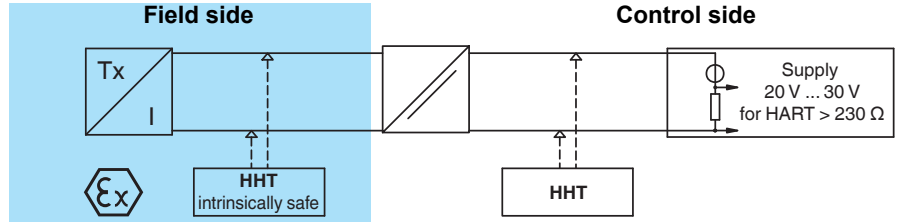
In addition, the voltage drop across the resistance (load) of the active measurement input must be considered when calculating the field voltage (terminals 1+ and 2-).

Lead breakage monitoring is possible by means of the reaction of the field current signal to the control side, which means the control system must monitor whether the 4 mA ... 20 mA range was exceeded or fallen short of.

SMART repeater supply isolator for **active** interfaces

Transmitters with or without HART

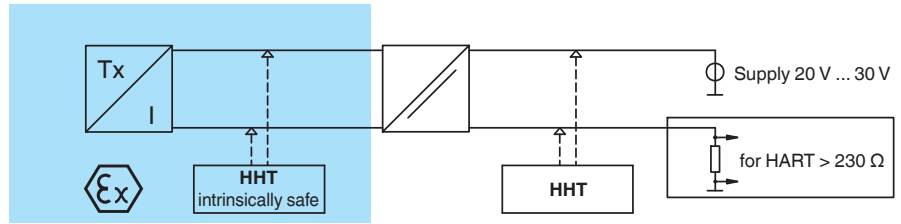
Voltage drop in case of 20 mA:
max. 5 V



SMART repeater for **passive** interfaces

Transmitters with or without HART

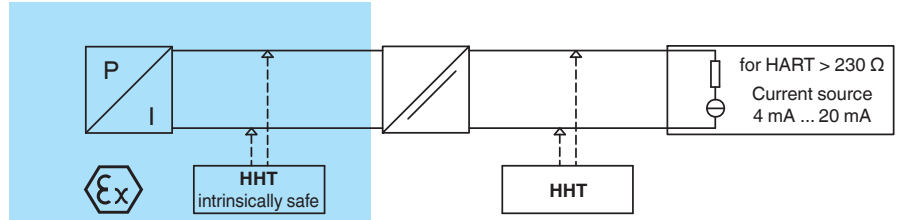
Voltage drop in case of 20 mA:
max. 5 V



Current driver for positioners, I/P converters

Positioners with or without HART

Voltage drop in case of 20 mA:
5 V, 500 Ω ... 800 Ω load
6 V, 250 Ω load
8 V, 50 Ω load



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