

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



Function

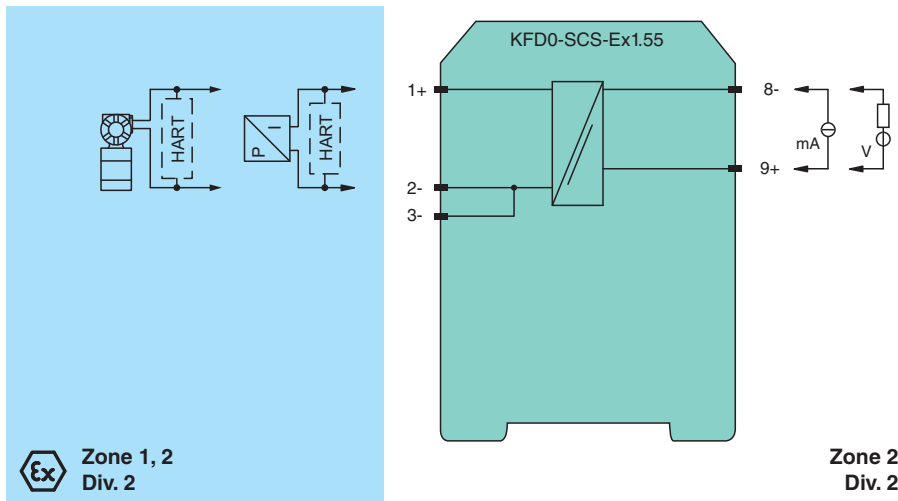
This isolated barrier is used for intrinsic safety applications. It is loop powered and isolates a 4 mA ... 20mA signal for transmitters and positioners and is HART compatible.

With a noticeably lower power loss compared to active isolator modules, the barriers 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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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0002
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

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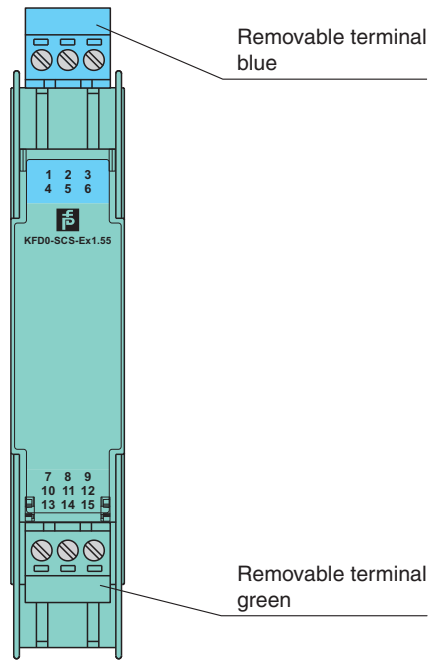
Technical Data

| | | |
|--|-------|---|
| 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 |
| 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 [EEx ib] 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 | | PF 11 CERT 0902 X |
| 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 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-15:2010 |
| International approvals | | |
| FM approval | | device with FM approval on request |
| 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





Front view



Matching System Components

| | | |
|---|------------------|--|
|  | K-DUCT-BU | Profile rail, wiring comb field side, blue |
|---|------------------|--|

Accessories

| | | |
|---|-------------------|---|
|  | KF-ST-5GN | Terminal block for KF modules, 3-pin screw terminal, green |
|  | KF-STP-5GN | Terminal block for KF modules, 3-pin screw terminal, with test sockets, green |
|  | KF-STP-5BU | Terminal block for KF modules, 3-pin screw terminal, with test sockets, blue |
|  | KF-CP | Red coding pins, packaging unit: 20 x 6 |

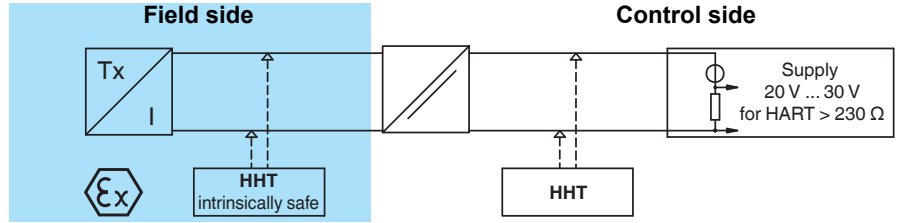
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Connection

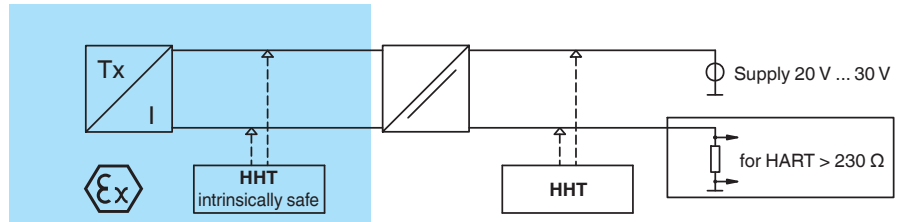
In addition, the voltage drop across the resistance (load) of the active measurement input must be considered when calculating the field voltage (terminals 1+ and 2-).

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.

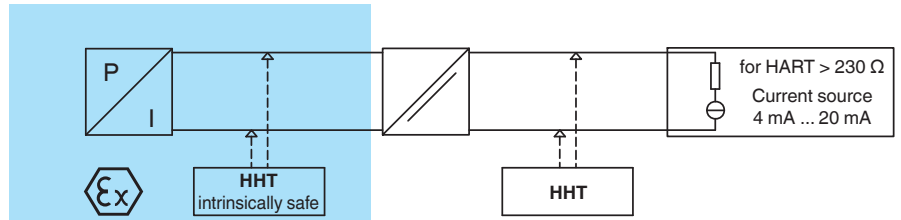
SMART repeater supply isolator for **active** interfaces
 Transmitters with or without HART
 Voltage drop in case of 20 mA:
 max. 5 V



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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