

SMART Transmitter Power Supply

KFD2-STC4-Ex1

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Output 0/4 mA ... 20 mA
- Terminals with test points
- Up to SIL 2 acc. to IEC/EN 61508



Function

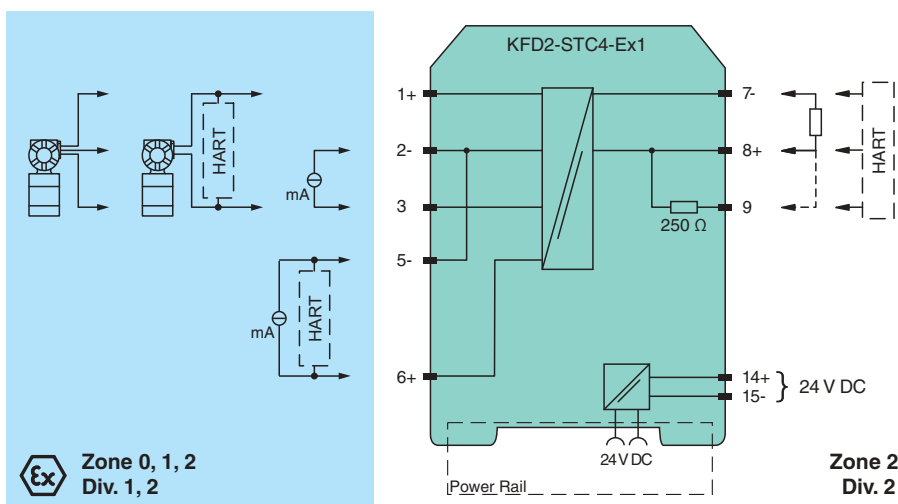
This isolated barrier is used for intrinsic safety applications. The device supplies 2-wire and 3-wire SMART transmitters in a hazardous area, and can also be used with 2-wire SMART current sources. It transfers the analog input signal to the safe area as an isolated current value. Digital signals may be superimposed on the input signal in the hazardous or safe area and are transferred bi-directionally. If the HART communication resistance in the loop is too low, the internal resistance of 250 Ω between terminals 8 and 9 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
- Foxboro

Connection



Technical Data

General specifications

Signal type Analog input

Functional safety related parameters

Safety Integrity Level (SIL) SIL 2

Supply

Release date: 2023-06-05 Date of issue: 2023-06-05 Filename: 283672_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Technical Data

| | | |
|--|-------|--|
| Connection | | Power Rail or terminals 14+, 15- |
| Rated voltage | U_r | 20 ... 35 V DC |
| Ripple | | within the supply tolerance |
| Power dissipation | | 1.4 W |
| Power consumption | | 1.8 W |
| Input | | |
| Connection side | | field side |
| Connection | | terminals 1+, 2-, 3 or 5-, 6+ |
| Input signal | | 0/4 ... 20 mA |
| Voltage drop | | ≤ 2.4 V at 20 mA (terminals 5, 6) |
| Input resistance | | ≤ 64 Ω terminals 2-, 3 ; ≤ 500 Ω terminals 1+, 3 (250 Ω load) |
| Available voltage | | ≥ 16 V at 20 mA terminals 1+, 3 |
| Output | | |
| Connection side | | control side |
| Connection | | terminals 7-, 8+, 9 |
| Load | | 0 ... 800 Ω at 20 mA |
| Output signal | | 0/4 ... 20 mA (overload > 25 mA) |
| Ripple | | max. 50 μA _{rms} |
| Transfer characteristics | | |
| Deviation | | at 20 °C (68 °F), 0/4 ... 20 mA ≤ 10 μA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage |
| Influence of ambient temperature | | 0.25 μA/K |
| Frequency range | | field side into the control side: bandwidth with 0.5 V _{pp} signal 0 ... 7.5 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V _{pp} signal 0.3 ... 7.5 kHz (-3 dB) |
| Settling time | | 200 μs |
| Rise time/fall time | | 20 μs |
| Galvanic isolation | | |
| Output/power supply | | functional insulation, rated insulation voltage 50 V AC |
| Indicators/settings | | |
| Display elements | | LED |
| 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 21:2011 |
| Degree of protection | | IEC 60529:2001 |
| Protection against electrical shock | | UL 61010-1:2012 |
| Ambient conditions | | |
| Ambient temperature | | -20 ... 60 °C (-4 ... 140 °F) |
| Mechanical specifications | | |
| Degree of protection | | IP20 |
| Connection | | screw terminals |
| Mass | | approx. 200 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 | | BAS 99 ATEX 7060 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 Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I |
| Supply | | |
| Maximum safe voltage | U_m | 250 V (Attention! The rated voltage can be lower.) |
| Equipment | | terminals 1+, 3- |
| Voltage | U_o | 25.4 V |

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| | | |
|--------------------------------|--------------------|---|
| Current | I_o | 86.8 mA |
| Power | P_o | 551 mW |
| Internal capacitance | C_i | 12 nF |
| Internal inductance | L_i | 0 mH |
| Equipment | | terminals 2-, 3 |
| Current | I_o /Strom I_i | 74 mA / 115 mA |
| Current | I_i | 115 mA |
| Voltage | U_o | 3.5 V |
| Current | I_o | 74 mA |
| Power | P_o | 64 mW |
| Equipment | | terminals 1+, 2 / 3- |
| Voltage | U_i | 30 V |
| Current | I_i | 115 mA |
| Voltage | U_o | 25.4 V |
| Current | I_o | 115 mA |
| Power | P_o | 584 mW |
| Equipment | | terminals 5-, 6+ |
| Voltage | U_i | 30 V |
| Current | I_i | 115 mA |
| Voltage | U_o | 8.7 V |
| Current | I_o | 0 mA |
| Output | | |
| Maximum safe voltage | U_m | 250 V (Attention! The rated voltage can be lower.) |
| Certificate | | TÜV 99 ATEX 1499 X |
| Marking | | Ⓜ II 3G Ex nA II T4 [device in zone 2] |
| 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 |
| Directive conformity | | |
| Directive 2014/34/EU | | EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 |
| International approvals | | |
| UL approval | | |
| Control drawing | | 116-0428 (cULus) |
| IECEX approval | | |
| IECEX certificate | | IECEX BAS 04.0016X IECEX CML 15.0055X |
| IECEX marking | | [Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex nA IIC T4 Gc |
| 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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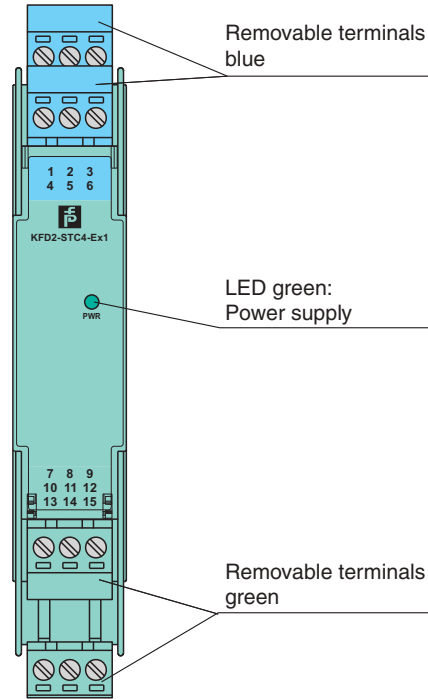
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Assembly





Front view



Matching System Components



| | | |
|---|-------------------------|--|
|  | KFD2-EB2 | Power Feed Module |
|  | UPR-03 | Universal Power Rail with end caps and cover, 3 conductors, length: 2 m |
|  | UPR-03-M | Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m |
|  | UPR-03-S | Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m |
|  | K-DUCT-BU | Profile rail, wiring comb field side, blue |
|  | K-DUCT-BU-UPR-03 | Profile rail with UPR-03- * insert, 3 conductors, wiring comb field side, blue |

Accessories

| | | |
|---|-------------------|---|
|  | K-500R0%1 | Measuring resistor |
|  | K-250R | Measuring resistor |
|  | KF-STP-5BU | Terminal block for KF modules, 3-pin screw terminal, with test sockets, blue |
|  | KF-STP-5GN | Terminal block for KF modules, 3-pin screw terminal, with test sockets, green |

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Accessories

| | | |
|---|-------------------------|---|
|  | <p>KF-ST-5GN</p> | <p>Terminal block for KF modules, 3-pin screw terminal, green</p> |
|  | <p>KF-CP</p> | <p>Red coding pins, packaging unit: 20 x 6</p> |

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