



# SMART Transmitter Power Supply KCD2-STC-Ex1.2O.DE

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input for 2-wire SMART transmitters and current sources
- Signal splitter (1 input and 2 outputs)
- Dual output 0/4 mA ... 20 mA or 0/1 V ... 5 V
- Terminal blocks with test sockets
- Up to SIL 2 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.

It transfers the analog input signal to the safe area as two isolated output signals.

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 switches.

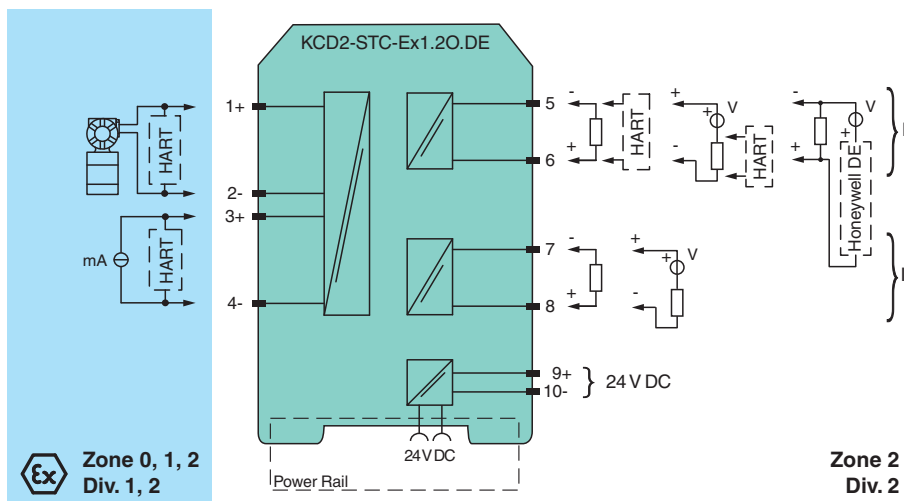
Test sockets for the connection of HART communicators are integrated into the terminals of the device.

## Application

The device supports the following SMART protocols:

- HART
- BRAIN
- Honeywell DE

## Connection



## Technical Data

|                                             |              |
|---------------------------------------------|--------------|
| <b>General specifications</b>               |              |
| Signal type                                 | Analog input |
| <b>Functional safety related parameters</b> |              |
| Safety Integrity Level (SIL)                | SIL 2        |
| <b>Supply</b>                               |              |

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

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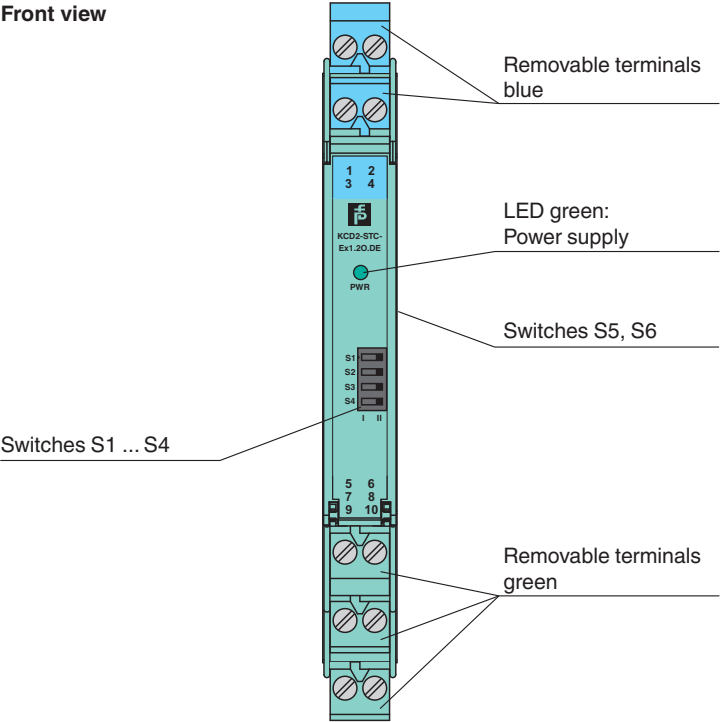
## Technical Data

|                                     |       |                                                                                                                                                                                                           |
|-------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection                          |       | Power Rail or terminals 9+, 10-                                                                                                                                                                           |
| Rated voltage                       | $U_r$ | 19 ... 30 V DC                                                                                                                                                                                            |
| Ripple                              |       | within the supply tolerance                                                                                                                                                                               |
| Power dissipation                   |       | approx. 1.4 W at 20 mA transfer current, 250 $\Omega$ in both outputs                                                                                                                                     |
| Power consumption                   |       | 2 W                                                                                                                                                                                                       |
| <b>Interface</b>                    |       |                                                                                                                                                                                                           |
| Protocol                            |       | Honeywell DE                                                                                                                                                                                              |
| <b>Input</b>                        |       |                                                                                                                                                                                                           |
| Connection side                     |       | field side                                                                                                                                                                                                |
| Connection                          |       | terminals 1+, 2- (sink); 3+, 4- (source)                                                                                                                                                                  |
| Input signal                        |       | 0/4 ... 20 mA                                                                                                                                                                                             |
| Voltage drop                        |       | terminals 3, 4: $\leq 6.1$ V at 20 mA                                                                                                                                                                     |
| Short-circuit current               |       | terminals 1+, 2-: 25 mA, wake up pulse: 36 mA, 20 ms (Honeywell DE)                                                                                                                                       |
| Input resistance                    |       | terminals 1+, 2-: max. 500 $\Omega$ (BRAIN)<br>(250 $\Omega$ load)                                                                                                                                        |
| Available voltage                   |       | terminals 1+, 2-: $\geq 16$ V at 20 mA, $\geq 18.5$ V at 4 mA                                                                                                                                             |
| <b>Output</b>                       |       |                                                                                                                                                                                                           |
| Connection side                     |       | control side                                                                                                                                                                                              |
| Connection                          |       | source: terminals 5-, 6+; 7-, 8+<br>sink: terminals 5+, 6-, 7+, 8-                                                                                                                                        |
| Load                                |       | channel 1: 0 ... 500 $\Omega$ (20 mA)/ $> 1$ M $\Omega$ (5 V)<br>channel 2: 0 ... 500 $\Omega$ (20 mA)/ $> 1$ M $\Omega$ (5 V)                                                                            |
| Output signal                       |       | 0/4 ... 20 mA or 0/1 ... 5 V                                                                                                                                                                              |
| Ripple                              |       | max. 50 $\mu$ A <sub>rms</sub>                                                                                                                                                                            |
| <b>Transfer characteristics</b>     |       |                                                                                                                                                                                                           |
| Deviation                           |       | $I_{out} < 20$ $\mu$ A (0.1 %); $V_{out} < 10$ mV (0.2 %) incl. calibration, linearity, hysteresis and fluctuation of supply voltage, at 20 °C (68 °F), 0/4 ... 20 mA, 0/1 ... 5 V                        |
| Influence of ambient temperature    |       | current output: 0.25 $\mu$ A/K<br>voltage output: 80 $\mu$ V/K                                                                                                                                            |
| Frequency range                     |       | field side into the control side: bandwidth with 0.5 $V_{pp}$ signal 0 ... 6 kHz (-3 dB)<br>control side into the field side: bandwidth with 0.5 $V_{pp}$ signal 0.3 ... 6 kHz (-3 dB) [DE 1 kHz (-3 dB)] |
| Settling time                       |       | 6 ms                                                                                                                                                                                                      |
| Rise time/fall time                 |       | 2 ms                                                                                                                                                                                                      |
| <b>Galvanic isolation</b>           |       |                                                                                                                                                                                                           |
| Output/power supply                 |       | functional insulation, rated insulation voltage 50 V AC                                                                                                                                                   |
| Output/Output                       |       | functional insulation, rated insulation voltage 50 V AC                                                                                                                                                   |
| <b>Indicators/settings</b>          |       |                                                                                                                                                                                                           |
| Display elements                    |       | LED                                                                                                                                                                                                       |
| 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 21:2012<br>EN 61326-3-2:2008                                                                                                                                                                           |
| Degree of protection                |       | IEC 60529:2001                                                                                                                                                                                            |
| Protection against electrical shock |       | UL 61010-1:2012                                                                                                                                                                                           |
| <b>Ambient conditions</b>           |       |                                                                                                                                                                                                           |
| Ambient temperature                 |       | -20 ... 60 °C (-4 ... 140 °F)<br>extended ambient temperature range up to 70 °C (158 °F), refer to manual for necessary mounting conditions                                                               |
| <b>Mechanical specifications</b>    |       |                                                                                                                                                                                                           |
| Degree of protection                |       | IP20                                                                                                                                                                                                      |
| Connection                          |       | screw terminals                                                                                                                                                                                           |

## Technical Data

|                                                                |       |                                                                                                                                                                                                 |
|----------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mass                                                           |       | approx. 100 g                                                                                                                                                                                   |
| Dimensions                                                     |       | 12.5 x 124 x 114 mm (0.5 x 4.9 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                                |       | BASEEFA 13 ATEX 0077 X                                                                                                                                                                          |
| Marking                                                        |       | Ⓜ II (1)G [Ex ia Ga] IIC<br>Ⓜ II (1)D [Ex ia Da] IIIC<br>Ⓜ I (M1) [Ex ia Ma] I                                                                                                                  |
| Input                                                          |       | [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I                                                                                                                                                   |
| <b>Supply</b>                                                  |       |                                                                                                                                                                                                 |
| Maximum safe voltage                                           | $U_m$ | 250 V (Attention! The rated voltage can be lower.)                                                                                                                                              |
| Equipment                                                      |       | terminals 1+, 2-                                                                                                                                                                                |
| Voltage                                                        | $U_o$ | 25.2 V                                                                                                                                                                                          |
| Voltage                                                        | $U_q$ | 28.2 V                                                                                                                                                                                          |
| Current                                                        | $I_o$ | 93 mA                                                                                                                                                                                           |
| Power                                                          | $P_o$ | 656 mW                                                                                                                                                                                          |
| Internal capacitance                                           | $C_i$ | 10 nF                                                                                                                                                                                           |
| Internal inductance                                            | $L_i$ | 0 mH                                                                                                                                                                                            |
| Equipment                                                      |       | terminals 3+, 4-                                                                                                                                                                                |
| Voltage                                                        | $U_i$ | 30 V                                                                                                                                                                                            |
| Current                                                        | $I_i$ | 115 mA                                                                                                                                                                                          |
| Power                                                          | $P_i$ | 700 mW                                                                                                                                                                                          |
| Voltage                                                        | $U_o$ | 5 V                                                                                                                                                                                             |
| Current                                                        | $I_o$ | 6.8 mA                                                                                                                                                                                          |
| Power                                                          | $P_o$ | 1.6 mW                                                                                                                                                                                          |
| <b>Output</b>                                                  |       |                                                                                                                                                                                                 |
| Maximum safe voltage                                           | $U_m$ | 250 V (Attention! The rated voltage can be lower.)                                                                                                                                              |
| Certificate                                                    |       | BASEEFA 13 ATEX 0078 X                                                                                                                                                                          |
| Marking                                                        |       | Ⓜ II 3G Ex nA IIC T4 Gc                                                                                                                                                                         |
| <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                                                                                                                     |
| <b>Directive conformity</b>                                    |       |                                                                                                                                                                                                 |
| Directive 2014/34/EU                                           |       | EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010                                                                                                                               |
| <b>International approvals</b>                                 |       |                                                                                                                                                                                                 |
| <b>UL approval</b>                                             |       |                                                                                                                                                                                                 |
| Control drawing                                                |       | 116-0380 (cULus)                                                                                                                                                                                |
| <b>IECEX approval</b>                                          |       |                                                                                                                                                                                                 |
| IECEX certificate                                              |       | IECEX BAS 13.0043X                                                                                                                                                                              |
| IECEX marking                                                  |       | [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I                                                                                                                                                   |
| <b>General information</b>                                     |       |                                                                                                                                                                                                 |
| Note                                                           |       | Both output loads must be connected to ensure complete and correct operation within the technical specification.                                                                                |
| 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



Matching System Components

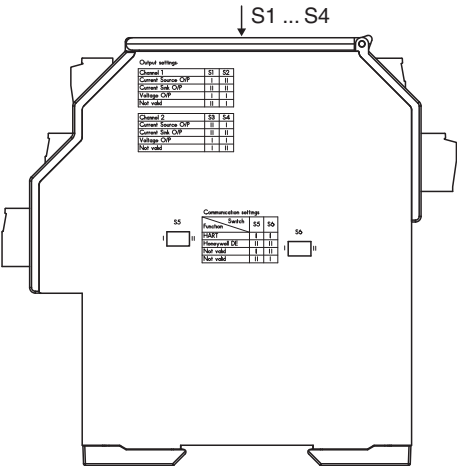
|                                                                                     |                         |                                                                                |
|-------------------------------------------------------------------------------------|-------------------------|--------------------------------------------------------------------------------|
|  | <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-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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Configuration



Output switch settings

| Channel 1             | S1 | S2 |
|-----------------------|----|----|
| Current source output | I  | II |
| Current sink output   | II | II |
| Voltage output        | I  | I  |
| Not valid             | II | I  |

| Channel 2             | S3 | S4 |
|-----------------------|----|----|
| Current source output | II | I  |
| Current sink output   | II | II |
| Voltage output        | I  | I  |
| Not valid             | I  | II |

Communication switch settings

| Function                  | S5 | S6 |
|---------------------------|----|----|
| HART transparency         | I  | I  |
| Honeywell DE transparency | II | II |
| Not valid                 | I  | II |
| Not valid                 | II | I  |

Factory settings: current source output, for both channels with HART transparency.