

# Преобразователи сигналов SC-System

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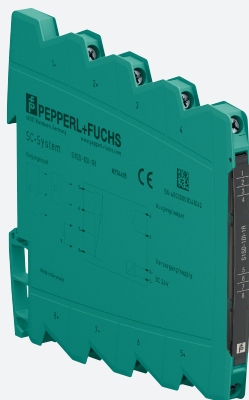
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# Switch Amplifier S1SD-1DI-1R

- 1-channel signal conditioner
- 24 V DC supply
- Input for 2- or 3-wire sensors or AC/DC voltage sources
- Relay contact output
- Timer function
- Configurable by DIP switches
- Connection via screw terminals



## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits.

The device transmits the status of 2- and 3-wire sensors to the relay output.

The device has an input for the following digital signals:

- Mechanical contacts
- 2-wire sensors (NAMUR, SN, DC, S0)
- 3-wire sensors (NPN, PNP, push-pull)
- AC/DC voltage sources

The input is reverse polarity protected and short-circuit proofed.

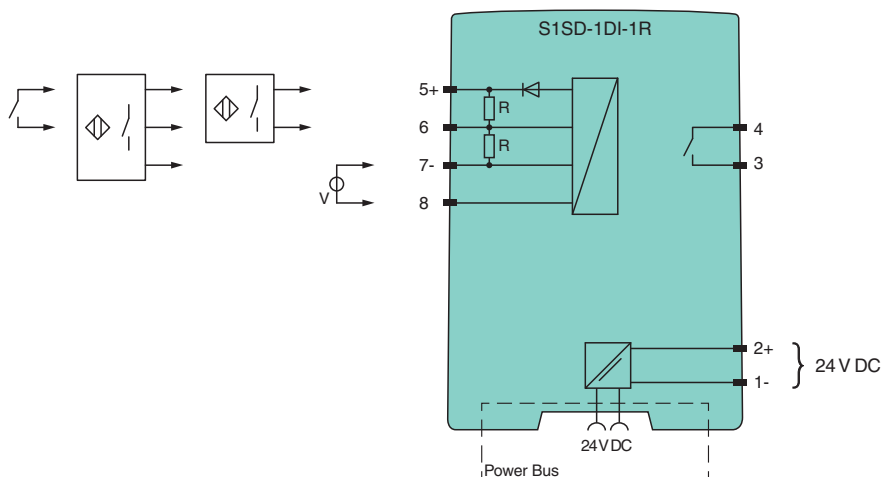
The connected sensors can also be supplied externally.

The device has an adjustable on delay, an off delay, or an one-shot function for the relay contact output.

The device is easily configured by the use of DIP switches.

The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

### General specifications

|                   |                               |                    |
|-------------------|-------------------------------|--------------------|
| Signal type       | Digital Input                 |                    |
| <b>Supply</b>     |                               |                    |
| Connection        | Power Bus or terminals 1-, 2+ |                    |
| Rated voltage     | U <sub>r</sub>                | 16.8 ... 31.2 V DC |
| Power dissipation | 0.6 W                         |                    |

## Technical Data

|                           |                                        |
|---------------------------|----------------------------------------|
| Power consumption         | 1.1 W                                  |
| <b>Input</b>              |                                        |
| Connection side           | field side                             |
| <b>NAMUR sensor</b>       |                                        |
| Type                      | 2-wire                                 |
| Connection                | terminals 5+, 6                        |
| Signal                    | acc. to EN 60947-5-6 (NAMUR)           |
| Sensor supply             | 8 V                                    |
| Open-circuit              | < 0.1 mA                               |
| Switching point           | 1.2 ... 2.1 mA                         |
| Short-circuit             | > 6 mA                                 |
| Input impedance           | 1 kΩ                                   |
| <b>Mechanical contact</b> |                                        |
| Type                      | 2-wire                                 |
| Connection                | terminals 5+, 6                        |
| Sensor supply             | 15 V                                   |
| External supply           | ≤ 32 V                                 |
| Switching point           | 8 ... 10 V / 1.2 ... 2.1 mA            |
| Input impedance           | 4 kΩ                                   |
| <b>SN sensor</b>          |                                        |
| Type                      | 2-wire                                 |
| Connection                | terminals 5+, 6                        |
| Sensor supply             | 8 V                                    |
| Open-circuit              | < 0.1 mA                               |
| Switching point           | 1.2 ... 2.1 mA                         |
| Short-circuit             | > 6 mA                                 |
| Input impedance           | 1 kΩ                                   |
| <b>2-wire DC sensor</b>   |                                        |
| Type                      | 2-wire                                 |
| Connection                | terminals 5+, 6                        |
| Signal                    | acc. to EN 60947-5-2                   |
| Sensor supply             | 16 V / 25 mA , short-circuit protected |
| External supply           | ≤ 32 V                                 |
| Switching point           | 2 ... 5 mA                             |
| Input impedance           | 1 kΩ                                   |
| <b>S0 sensor</b>          |                                        |
| Type                      | 2-wire                                 |
| Connection                | terminals 5+, 6                        |
| Signal                    | acc. to EN 62053-31 , Type B           |
| Sensor supply             | 15 V                                   |
| Switching point           | 0.15 ... 2 mA                          |
| Input impedance           | 4 kΩ                                   |
| <b>NPN sensor</b>         |                                        |
| Type                      | 3-wire                                 |
| Connection                | terminals 5+, 6, 7-                    |
| Signal                    | acc. to EN 60947-5-2                   |
| Sensor supply             | 16 V / 25 mA , short-circuit protected |
| External supply           | ≤ 32 V                                 |
| Switching point           | 3 ... 5 V                              |
| Input impedance           | 4 kΩ                                   |
| <b>PNP sensor</b>         |                                        |
| Type                      | 3-wire                                 |
| Connection                | terminals 5+, 6, 7-                    |

## Technical Data

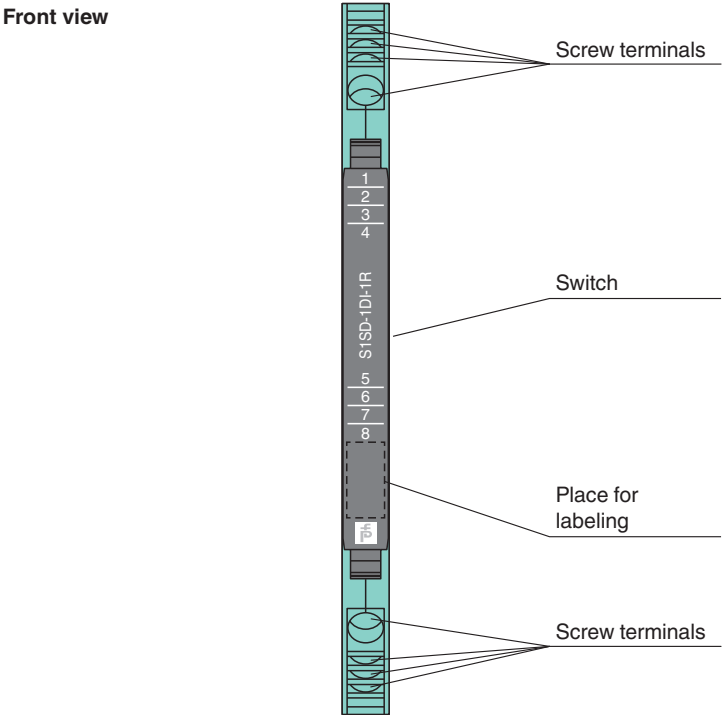
|                                     |                                                                                                                                                               |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal                              | acc. to EN 60947-5-2                                                                                                                                          |
| Sensor supply                       | 16 V / 25 mA , short-circuit protected                                                                                                                        |
| External supply                     | ≤ 32 V                                                                                                                                                        |
| Switching point                     | 8 ... 10 V                                                                                                                                                    |
| Input impedance                     | 4 kΩ                                                                                                                                                          |
| AC/DC voltage source                |                                                                                                                                                               |
| Connection                          | terminals 7, 8                                                                                                                                                |
| Signal                              | 24 V AC/DC                                                                                                                                                    |
| Switching point                     | 10 ... 15 V                                                                                                                                                   |
| Input impedance                     | > 680 kΩ                                                                                                                                                      |
| AC/DC voltage source                |                                                                                                                                                               |
| Connection                          | terminals 7, 8                                                                                                                                                |
| Signal                              | 115 V AC/DC                                                                                                                                                   |
| Switching point                     | 40 ... 60 V                                                                                                                                                   |
| Input impedance                     | > 680 kΩ                                                                                                                                                      |
| AC/DC voltage source                |                                                                                                                                                               |
| Connection                          | terminals 7, 8                                                                                                                                                |
| Signal                              | 230 V AC/DC                                                                                                                                                   |
| Switching point                     | 80 ... 115 V                                                                                                                                                  |
| Input impedance                     | > 680 kΩ                                                                                                                                                      |
| <b>Output</b>                       |                                                                                                                                                               |
| Connection side                     | control side                                                                                                                                                  |
| Connection                          | terminals 3, 4:                                                                                                                                               |
| Output                              | signal, relay                                                                                                                                                 |
| Contact loading                     | 253 V AC/2 A/cos φ > 0.7; 126.5 V AC/2 A/cos φ > 0.7; 30 V DC/2 A resistive load                                                                              |
| Minimum switch current              | 2 mA / 24 V DC                                                                                                                                                |
| Energized/De-energized delay        | ≤ 20 ms / ≤ 20 ms                                                                                                                                             |
| Mechanical life                     | 10 <sup>7</sup> switching cycles                                                                                                                              |
| <b>Transfer characteristics</b>     |                                                                                                                                                               |
| Switching frequency                 | ≤ 10 Hz                                                                                                                                                       |
| <b>Galvanic isolation</b>           |                                                                                                                                                               |
| Output/power supply                 | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>          |                                                                                                                                                               |
| 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)                                                                                                                        |
| Low voltage                         |                                                                                                                                                               |
| Directive 2014/35/EU                | EN 61010-1:2010                                                                                                                                               |
| <b>Conformity</b>                   |                                                                                                                                                               |
| Degree of protection                | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>           |                                                                                                                                                               |
| Ambient temperature                 | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                 | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                        | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| <b>Mechanical specifications</b>    |                                                                                                                                                               |
| Degree of protection                | IP20                                                                                                                                                          |



Technical Data

|                     |                                                                           |
|---------------------|---------------------------------------------------------------------------|
| Connection          | screw terminals                                                           |
| Core cross section  | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                               |
| Mass                | approx. 60 g                                                              |
| Dimensions          | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1 |
| Mounting            | on 35 mm DIN mounting rail acc. to EN 60715:2001                          |
| General information |                                                                           |

Assembly








Configuration

| Switch settings                         |        |    |    |    |    |    |    |    |    |     |  |
|-----------------------------------------|--------|----|----|----|----|----|----|----|----|-----|--|
| Function                                | Switch |    |    |    |    |    |    |    |    |     |  |
|                                         | S1     | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 |  |
| Sensor                                  |        |    |    |    |    |    |    |    |    |     |  |
| NAMUR/SN sensor                         |        |    |    |    |    |    |    |    |    |     |  |
| PNP sensor/mechanical contact/push-pull | ON     |    |    |    |    |    |    |    |    |     |  |
| 2-wire DC sensor                        |        | ON |    |    |    |    |    |    |    |     |  |
| NPN sensor                              | ON     | ON |    |    |    |    |    |    |    |     |  |
| S0 sensor                               |        |    | ON |    |    |    |    |    |    |     |  |
| AC sources                              |        |    |    |    |    |    |    |    |    |     |  |
| 24 V                                    | ON     |    | ON |    |    |    |    |    |    |     |  |
| 120 V                                   |        | ON | ON |    |    |    |    |    |    |     |  |
| 230 V                                   | ON     | ON | ON |    |    |    |    |    |    |     |  |
| Output                                  |        |    |    |    |    |    |    |    |    |     |  |
| Not inverted                            |        |    |    |    |    |    |    |    |    |     |  |
| Inverted                                |        |    |    | ON |    |    |    |    |    |     |  |
| Timer                                   |        |    |    |    |    |    |    |    |    |     |  |
| Timer off                               |        |    |    |    |    |    |    |    |    |     |  |
| On delay                                |        |    |    |    |    | ON |    |    |    |     |  |
| Off delay                               |        |    |    |    | ON |    |    |    |    |     |  |
| One-shot                                |        |    |    |    | ON | ON |    |    |    |     |  |
| Time T                                  |        |    |    |    |    |    |    |    |    |     |  |
| 0.5 s                                   |        |    |    |    |    |    |    |    |    |     |  |

Configuration

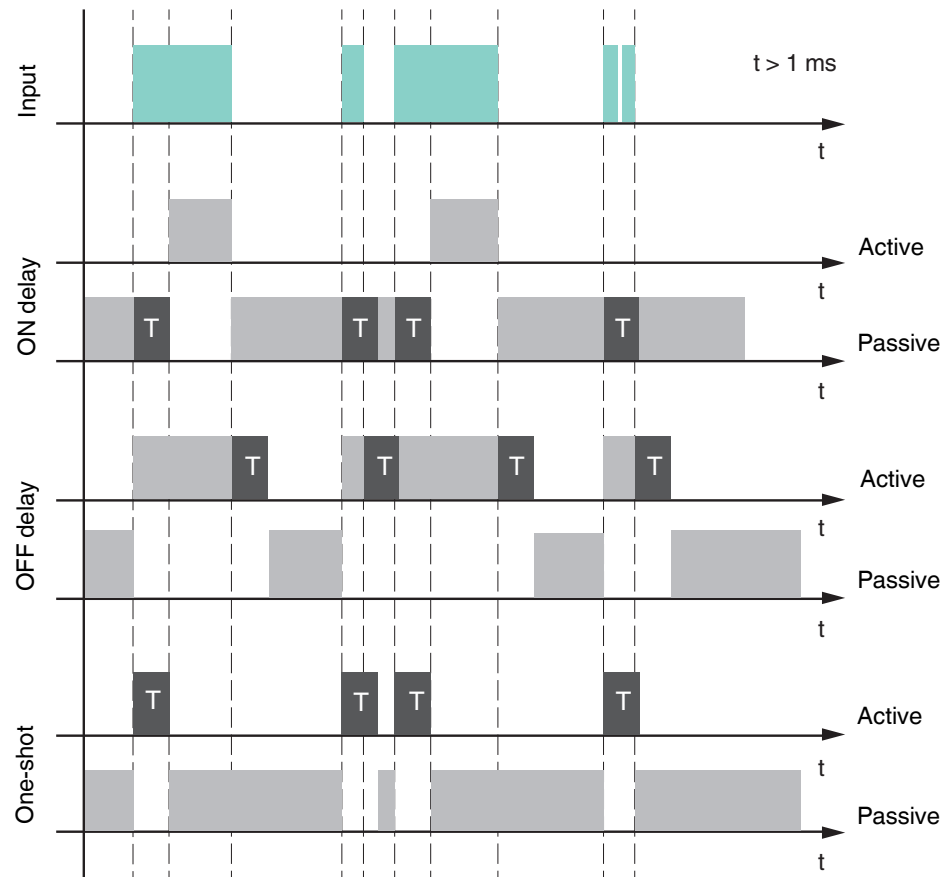
| Function | Switch |    |    |    |    |    |    |    |    |     |
|----------|--------|----|----|----|----|----|----|----|----|-----|
|          | S1     | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 |
| 1 s      |        |    |    |    |    |    | ON |    |    |     |
| 5 s      |        |    |    |    |    |    |    | ON |    |     |
| 10 s     |        |    |    |    |    |    | ON | ON |    |     |

Matching System Components

|                                                                                   |                           |                                                                       |
|-----------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |

Characteristic Curve

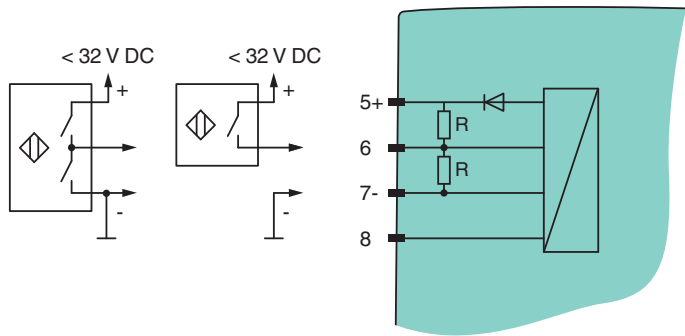
Timer Function



Connection

External Supply

For mechanical contacts, 2-wire DC sensors and 3-wire sensors





# Isolating Amplifier/Splitter S1SD-1AI-2U

- 1-channel signal conditioner
- 24 V DC supply
- Input 2-wire transmitters
- Input current and voltage sources
- Dual output 0/4 mA ... 20 mA, 0/1 V ... 5 V or 0/2 V ... 10 V
- Signal splitter (1 input and 2 outputs)
- Accuracy 0.1 %
- Connection via screw terminals



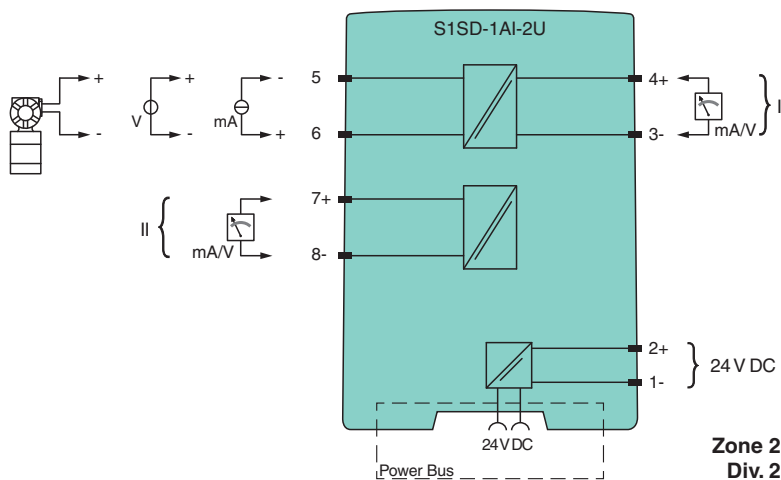
## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device supplies 2-wire transmitters, and can also be used with current and voltage sources. The device provides the following standard signals at the output:

- 0/4 mA ... 20 mA signal
- 0/1 V ... 5 V signal
- 0/2 V ... 10 V signal

The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

### General specifications

|                   |              |                                                                                                             |
|-------------------|--------------|-------------------------------------------------------------------------------------------------------------|
| Signal type       | Analog input |                                                                                                             |
| Operation time    |              | MTBF: 272 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |
| <b>Supply</b>     |              |                                                                                                             |
| Connection        |              | Power Bus or terminals 1-, 2+                                                                               |
| Rated voltage     | $U_r$        | 16.8 ... 31.2 V DC                                                                                          |
| Power dissipation |              | 0.8 W                                                                                                       |
| Power consumption |              | 1.4 W                                                                                                       |
| <b>Input</b>      |              |                                                                                                             |
| Connection side   | field side   |                                                                                                             |

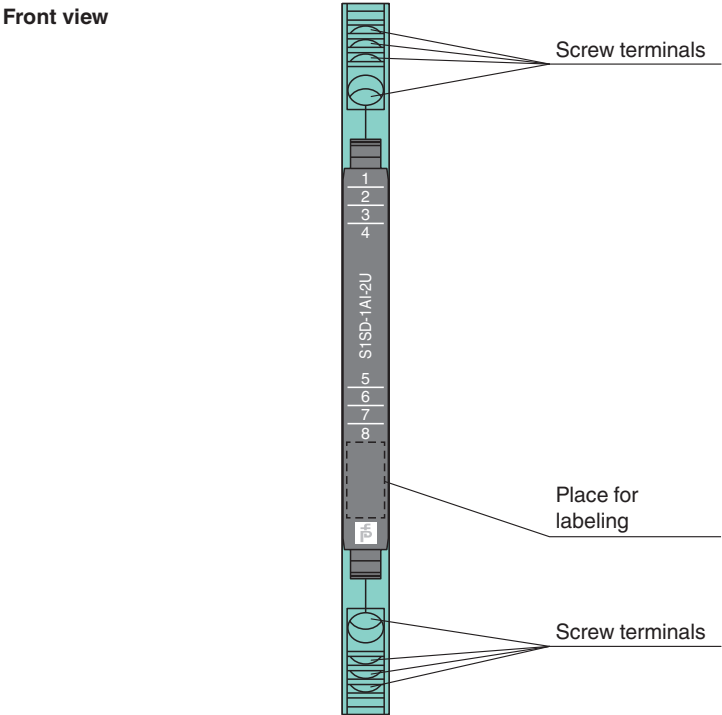
## Technical Data

|                                                                |  |                                                                                                                                                               |
|----------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection                                                     |  | terminals 5+, 6-                                                                                                                                              |
| Input signal                                                   |  | 0/4 ... 20 mA<br>0/2 ... 10 V                                                                                                                                 |
| Open circuit voltage/short-circuit current                     |  | ≤ 22 V / 35 mA                                                                                                                                                |
| Input resistance                                               |  | ≤ 25 Ω                                                                                                                                                        |
| Transmission range                                             |  | linearity range: -1 ... 110 %                                                                                                                                 |
| Available voltage                                              |  | 16 V at 20 mA                                                                                                                                                 |
| <b>Output</b>                                                  |  |                                                                                                                                                               |
| Connection side                                                |  | control side                                                                                                                                                  |
| Ripple                                                         |  | ≤ 10 mV <sub>eff</sub>                                                                                                                                        |
| Output I                                                       |  |                                                                                                                                                               |
| Connection                                                     |  | terminals 3-, 4+                                                                                                                                              |
| Output signal                                                  |  | 0/1 ... 5 V, 0/2 ... 10 V, load ≥ 5 kΩ<br>0/4 ... 20 mA, load ≤ 300 Ω                                                                                         |
| Output II                                                      |  |                                                                                                                                                               |
| Connection                                                     |  | terminals 7+, 8-                                                                                                                                              |
| Output signal                                                  |  | 0/1 ... 5 V, 0/2 ... 10 V, load ≥ 5 kΩ<br>0/4 ... 20 mA, load ≤ 300 Ω                                                                                         |
| <b>Transfer characteristics</b>                                |  |                                                                                                                                                               |
| Accuracy                                                       |  | max. 0.1 % of full-scale value                                                                                                                                |
| Influence of ambient temperature                               |  | < 100 ppm/K of full-scale value                                                                                                                               |
| Frequency range                                                |  | 0 ... 100 Hz                                                                                                                                                  |
| Rise time/fall time                                            |  | ≤ 3.5 ms                                                                                                                                                      |
| <b>Galvanic isolation</b>                                      |  |                                                                                                                                                               |
| Output/power supply                                            |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                                           |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Output I/II                                                    |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>                                     |  |                                                                                                                                                               |
| 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>                                              |  |                                                                                                                                                               |
| Degree of protection                                           |  | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                            |  | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>                                      |  |                                                                                                                                                               |
| Ambient temperature                                            |  | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                                            |  | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                                   |  | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| <b>Mechanical specifications</b>                               |  |                                                                                                                                                               |
| Degree of protection                                           |  | IP20                                                                                                                                                          |
| Connection                                                     |  | screw terminals                                                                                                                                               |
| Core cross section                                             |  | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |
| Mass                                                           |  | approx. 70 g                                                                                                                                                  |
| Dimensions                                                     |  | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D), housing type S1                                                                                      |
| Mounting                                                       |  | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| <b>Data for application in connection with hazardous areas</b> |  |                                                                                                                                                               |
| Certificate                                                    |  | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                        |  | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |
| Directive conformity                                           |  |                                                                                                                                                               |
| Directive 2014/34/EU                                           |  | EN 60079-0:2012+A11:2013, EN 60079-15:2010                                                                                                                    |

Technical Data

|                         |  |                   |
|-------------------------|--|-------------------|
| International approvals |  |                   |
| UL approval             |  | E106378           |
| IECEX approval          |  |                   |
| IECEX certificate       |  | IECEX UL 16.0116X |
| IECEX marking           |  | Ex nA IIC T4 Gc   |
| General information     |  |                   |

Assembly



Configuration




| Switch settings |             |       |    |    |    |          |    |    |          |    |
|-----------------|-------------|-------|----|----|----|----------|----|----|----------|----|
| Signal          |             | Input |    |    |    | Output 1 |    |    | Output 2 |    |
|                 |             | 1     | 2  | 3  | 4  | 5        | 6  | 7  | 8        | 9  |
| 0 ... 20 mA     |             |       |    |    |    |          |    |    |          |    |
| 4 ... 20 mA     |             |       |    |    | ON |          |    | ON |          | ON |
| 0 ... 10 V      |             |       | ON | ON |    | ON       |    |    | ON       |    |
| 2 ... 10 V      |             |       | ON | ON | ON | ON       |    | ON | ON       | ON |
| 0 ... 5 V       |             |       | ON |    |    | ON       | ON |    | ON       | ON |
| 1 ... 5 V       |             |       | ON |    | ON | ON       | ON | ON | ON       | ON |
| Circuit supply  | 0 ... 20 mA | ON    |    |    |    |          |    |    |          |    |
|                 | 4 ... 20 mA | ON    |    |    | ON |          |    |    |          |    |

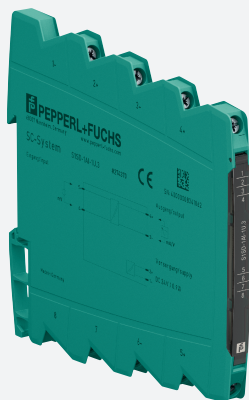
Factory settings: all switches in position OFF

Matching System Components

|  |                    |                                                                       |
|--|--------------------|-----------------------------------------------------------------------|
|  | S1SD-2PF           | Power Feed Module                                                     |
|  | POWERBUS-SETL5.250 | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |

Matching System Components

|                                                                                   |                           |                                                                      |
|-----------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------|
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                    |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                |



## Millivolt Converter

### S1SD-1AI-1U.3

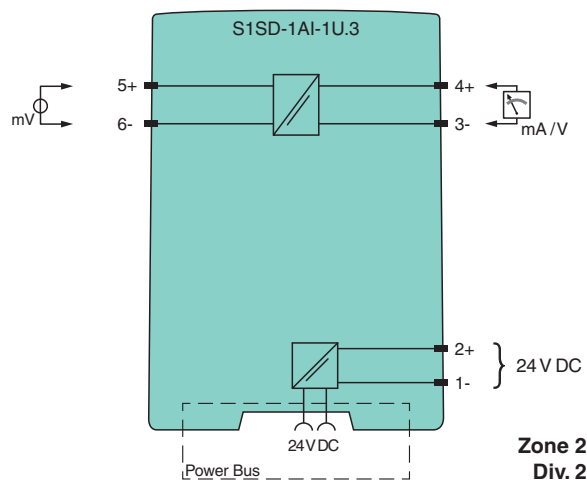
- 1-channel signal conditioner
- 24 V DC supply
- Input bipolar millivolt sources
- Output bipolar current and voltage sources
- Accuracy 0.1 %
- Configurable via DIP switches and potentiometer
- Connection via screw terminals



## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device has an input for bipolar millivolt sources. At the output the signals are available as bipolar current and voltage sources. The device is easily configured by the use of DIP switches and potentiometers. The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

### General specifications

|                   |              |                                                                                                             |
|-------------------|--------------|-------------------------------------------------------------------------------------------------------------|
| Signal type       | Analog input |                                                                                                             |
| Operation time    |              | MTBF: 495 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |
| <b>Supply</b>     |              |                                                                                                             |
| Connection        |              | Power Bus or terminals 1-, 2+                                                                               |
| Rated voltage     | $U_r$        | 16.8 ... 31.2 V DC                                                                                          |
| Power dissipation |              | 0.6 W                                                                                                       |
| Power consumption |              | 0.8 W                                                                                                       |
| <b>Input</b>      |              |                                                                                                             |
| Connection side   |              | field side                                                                                                  |
| Connection        |              | terminals 5+, 6-                                                                                            |



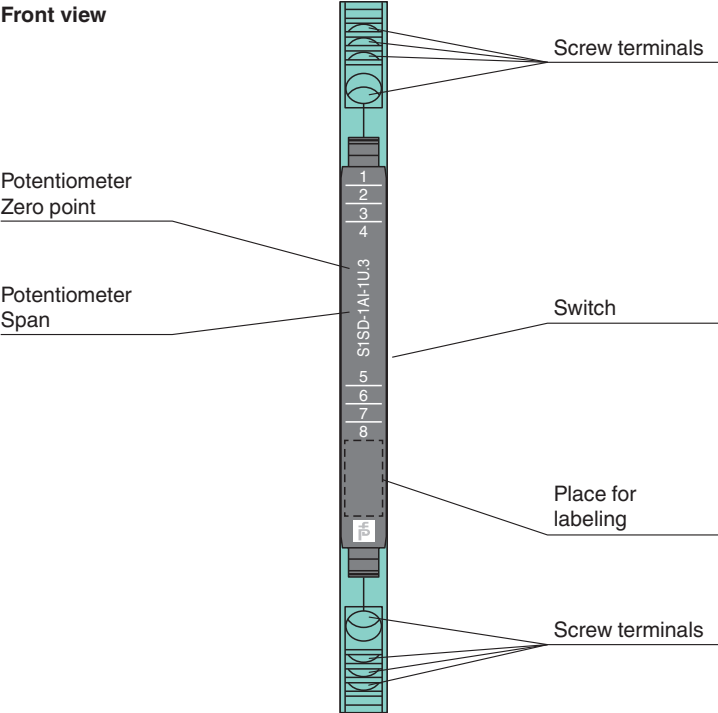
## Technical Data

|                                                         |                                                                                                                                                               |                                                                                                                                                               |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input signal                                            | ±60 mV, ±100 mV, ±150 mV, ±250 mV, ±300 mV, ±500 mV                                                                                                           |                                                                                                                                                               |
| Input resistance                                        |                                                                                                                                                               | ≥ 100 kΩ                                                                                                                                                      |
| Transmission range                                      | linearity range:<br>unipolar -1 ... 110 %<br>bipolar -110 ... 110 %                                                                                           |                                                                                                                                                               |
| Output                                                  |                                                                                                                                                               |                                                                                                                                                               |
| Connection side                                         | control side                                                                                                                                                  |                                                                                                                                                               |
| Connection                                              |                                                                                                                                                               | terminals 3-, 4+                                                                                                                                              |
| Analog voltage output                                   | 0/1 ... 5 V , 0/2 ... 10 V , ± 5 V , ± 10 V , load ≥ 2 kΩ                                                                                                     |                                                                                                                                                               |
| Analog current output                                   |                                                                                                                                                               | 0/4 ... 20 mA, ± 10 mA, ± 20 mA, load ≤ 600 Ω                                                                                                                 |
| Ripple                                                  | ≤ 10 mV <sub>eff</sub>                                                                                                                                        |                                                                                                                                                               |
| Transfer characteristics                                |                                                                                                                                                               |                                                                                                                                                               |
| Accuracy                                                | max. 0.1 % of full-scale value                                                                                                                                |                                                                                                                                                               |
| Influence of ambient temperature                        |                                                                                                                                                               | < 100 ppm/K of full-scale value                                                                                                                               |
| Frequency range                                         | 0 ... 100 Hz , 0 ... 8 kHz                                                                                                                                    |                                                                                                                                                               |
| Settling time                                           |                                                                                                                                                               | 7 ms , 150 μs                                                                                                                                                 |
| Galvanic isolation                                      |                                                                                                                                                               |                                                                                                                                                               |
| Output/power supply                                     |                                                                                                                                                               | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                                    | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |                                                                                                                                                               |
| Indicators/settings                                     |                                                                                                                                                               |                                                                                                                                                               |
| Control elements                                        | DIP switch<br>potentiometer                                                                                                                                   |                                                                                                                                                               |
| Configuration                                           |                                                                                                                                                               | via DIP switches<br>via potentiometer                                                                                                                         |
| Labeling                                                | space for labeling at the front                                                                                                                               |                                                                                                                                                               |
| Directive conformity                                    |                                                                                                                                                               |                                                                                                                                                               |
| Electromagnetic compatibility                           |                                                                                                                                                               |                                                                                                                                                               |
| Directive 2014/30/EU                                    |                                                                                                                                                               | EN 61326-1:2013 (industrial locations)                                                                                                                        |
| Conformity                                              |                                                                                                                                                               |                                                                                                                                                               |
| Degree of protection                                    |                                                                                                                                                               | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                     | EN 61010-1:2010                                                                                                                                               |                                                                                                                                                               |
| Ambient conditions                                      |                                                                                                                                                               |                                                                                                                                                               |
| Ambient temperature                                     | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |                                                                                                                                                               |
| Storage temperature                                     |                                                                                                                                                               | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                            | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |                                                                                                                                                               |
| Mechanical specifications                               |                                                                                                                                                               |                                                                                                                                                               |
| Degree of protection                                    | IP20                                                                                                                                                          |                                                                                                                                                               |
| Connection                                              |                                                                                                                                                               | screw terminals                                                                                                                                               |
| Core cross section                                      | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |                                                                                                                                                               |
| Mass                                                    |                                                                                                                                                               | approx. 70 g                                                                                                                                                  |
| Dimensions                                              | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                                                                                     |                                                                                                                                                               |
| Mounting                                                |                                                                                                                                                               | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| Data for application in connection with hazardous areas |                                                                                                                                                               |                                                                                                                                                               |
| Certificate                                             |                                                                                                                                                               | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                 | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |                                                                                                                                                               |
| Directive conformity                                    |                                                                                                                                                               |                                                                                                                                                               |
| Directive 2014/34/EU                                    | EN 60079-0:2012+A11:2013 , EN 60079-15:2010                                                                                                                   |                                                                                                                                                               |
| International approvals                                 |                                                                                                                                                               |                                                                                                                                                               |
| UL approval                                             | E106378                                                                                                                                                       |                                                                                                                                                               |
| IECEX approval                                          |                                                                                                                                                               |                                                                                                                                                               |
| IECEX certificate                                       | IECEX UL 16.0116X                                                                                                                                             |                                                                                                                                                               |
| IECEX marking                                           |                                                                                                                                                               | Ex nA IIC T4 Gc                                                                                                                                               |

Technical Data

General information

Assembly





Configuration

Switch settings




| Input                     | Switch S1 |    |    |    |    |    | Output         | Switch S2 |    |    |    |    |    |
|---------------------------|-----------|----|----|----|----|----|----------------|-----------|----|----|----|----|----|
|                           | 1         | 2  | 3  | 4  | 5  | 6  |                | 1         | 2  | 3  | 4  | 5  | 6  |
| ± 60 mV                   | ON        |    | ON |    |    |    | ± 10 V         | ON        | ON |    | ON |    |    |
| 0 ... 60 mV               |           |    | ON |    |    |    | 0 ... 10 V     | ON        | ON |    |    |    |    |
| ± 100 mV                  | ON        |    | ON | ON |    |    | 2 ... 10 V     | ON        | ON |    |    | ON |    |
| 0 ... 100 mV              |           |    | ON | ON |    |    | ± 5 V          | ON        | ON | ON | ON |    |    |
| ± 150 mV                  | ON        | ON |    |    |    |    | 0 ... 5 V      | ON        | ON | ON |    |    |    |
| 0 ... 150 mV              |           | ON |    |    |    |    | 1 ... 5 V      | ON        | ON | ON |    | ON |    |
| ± 250 mV                  | ON        | ON |    | ON |    |    | ± 20 mA        |           |    |    | ON |    |    |
| 0 ... 250 mV              |           | ON |    | ON |    |    | 0 ... 20 mA    |           |    |    |    |    |    |
| ± 300 mV                  | ON        |    |    |    |    |    | 4 ... 20 mA    |           |    |    |    | ON |    |
| 0 ... 300 mV              |           |    |    |    |    |    | ± 10 mA        |           |    | ON | ON |    |    |
| ± 500 mV                  | ON        |    |    | ON |    |    | 0 ... 10 mA    |           |    | ON |    |    |    |
| 0 ... 500 mV              |           |    |    | ON |    |    | 2 ... 10 mA    |           |    | ON |    | ON |    |
| Zero potentiometer active |           |    |    |    | ON |    | Filter 8 kHz   |           |    |    |    |    |    |
| Span potentiometer active |           |    |    |    |    | ON | Filter 100 kHz |           |    |    |    |    | ON |

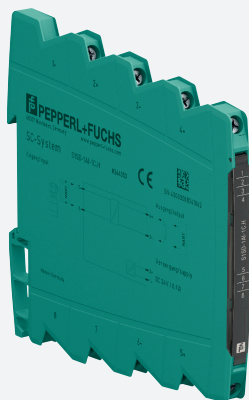
Factory settings: all switches in position OFF

Matching System Components

|                                                                                     |                           |                                                                       |
|-------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |

Matching System Components

|                                                                                   |                           |                                                                      |
|-----------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------|
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                    |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                |



# SMART Transmitter Power Supply

## S1SD-1AI-1C.H

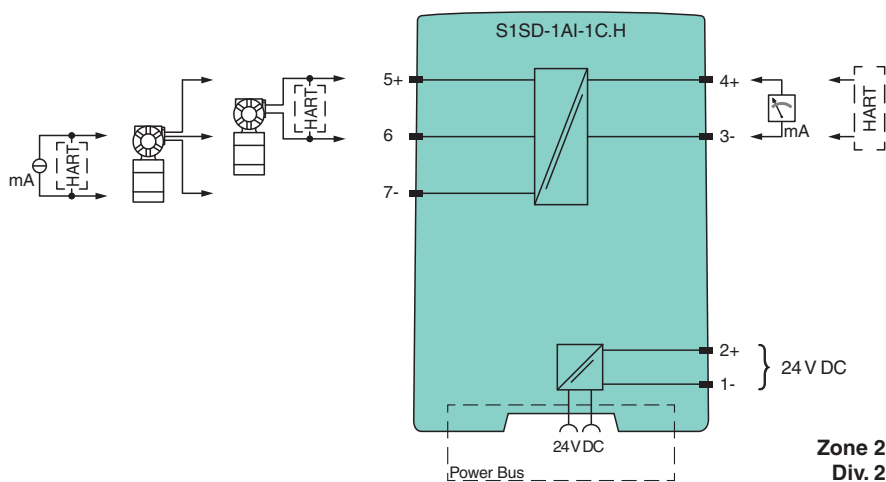
- 1-channel signal conditioner
- 24 V DC supply
- Input 2-wire and 3-wire SMART transmitters and current sources
- Output 0/4 mA ... 20 mA
- Accuracy 0.1 %
- Connection via screw terminals



## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with current sources. At the output the signal is available as active 0/4 mA ... 20 mA signal. The device has no internal resistor for HART communication. Digital signals may be superimposed on the input signal and are transferred bi-directionally. The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

### General specifications

|                |                                                                                                             |
|----------------|-------------------------------------------------------------------------------------------------------------|
| Signal type    | Analog input                                                                                                |
| Operation time | MTBF: 339 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |

### Supply

|                   |                               |
|-------------------|-------------------------------|
| Connection        | Power Bus or terminals 1-, 2+ |
| Rated voltage     | $U_r$ 16.8 ... 31.2 V DC      |
| Power dissipation | 0.9 W                         |
| Power consumption | 1.3 W                         |

### Input

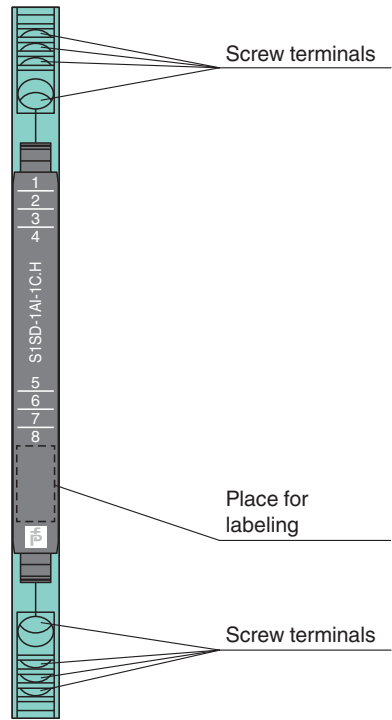
|                 |            |
|-----------------|------------|
| Connection side | field side |
|-----------------|------------|

## Technical Data






|                                                                |                                                                                                                                                               |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection                                                     | terminals 5+, 6, 7-                                                                                                                                           |
| Input signal                                                   | 0/4 ... 20 mA                                                                                                                                                 |
| Open circuit voltage/short-circuit current                     | ≤ 22 V / 30 mA                                                                                                                                                |
| Input resistance                                               | max. 50 Ω                                                                                                                                                     |
| Transmission range                                             | linearity range: -1 ... 110 %                                                                                                                                 |
| Available voltage                                              | 16 V at 20 mA                                                                                                                                                 |
| <b>Output</b>                                                  |                                                                                                                                                               |
| Connection side                                                | control side                                                                                                                                                  |
| Connection                                                     | terminals 3-, 4+                                                                                                                                              |
| Analog current output                                          | 0/4 ... 20 mA, load ≤ 600 Ω                                                                                                                                   |
| Ripple                                                         | ≤ 10 mV <sub>eff</sub>                                                                                                                                        |
| <b>Transfer characteristics</b>                                |                                                                                                                                                               |
| Accuracy                                                       | max. 0.1 % of full-scale value                                                                                                                                |
| Influence of ambient temperature                               | < 100 ppm/K of full-scale value                                                                                                                               |
| Rise time/fall time                                            | ≤ 3.5 ms                                                                                                                                                      |
| <b>Galvanic isolation</b>                                      |                                                                                                                                                               |
| Output/power supply                                            | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                                           | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>                                     |                                                                                                                                                               |
| 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>                                              |                                                                                                                                                               |
| Degree of protection                                           | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                            | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>                                      |                                                                                                                                                               |
| Ambient temperature                                            | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                                            | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                                   | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| <b>Mechanical specifications</b>                               |                                                                                                                                                               |
| Degree of protection                                           | IP20                                                                                                                                                          |
| Connection                                                     | screw terminals                                                                                                                                               |
| Core cross section                                             | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |
| Mass                                                           | approx. 70 g                                                                                                                                                  |
| Dimensions                                                     | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                                                                                     |
| Mounting                                                       | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| <b>Data for application in connection with hazardous areas</b> |                                                                                                                                                               |
| Certificate                                                    | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                        | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |
| Directive conformity                                           |                                                                                                                                                               |
| Directive 2014/34/EU                                           | EN 60079-0:2012+A11:2013 , EN 60079-15:2010                                                                                                                   |
| <b>International approvals</b>                                 |                                                                                                                                                               |
| UL approval                                                    | E106378                                                                                                                                                       |
| IECEX approval                                                 |                                                                                                                                                               |
| IECEX certificate                                              | IECEX UL 16.0116X                                                                                                                                             |
| IECEX marking                                                  | Ex nA IIC T4 Gc                                                                                                                                               |
| <b>General information</b>                                     |                                                                                                                                                               |

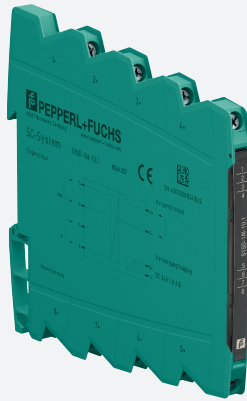
Assembly

Front view



Matching System Components

|                                                                                     |                           |                                                                       |
|-------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power feed module with screw terminals                                |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |



# Isolating Amplifier S1SD-1AI-1U.1

- 1-channel signal conditioner
- 24 V DC supply
- Input current and voltage sources
- Current and voltage output
- Accuracy 0.1 %
- Configurable by DIP switches
- Connection via screw terminals



## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits.

The device has an input for the following signals:

- 0/4 mA ... 20 mA signal
- 0/2 V ... 10 V signal

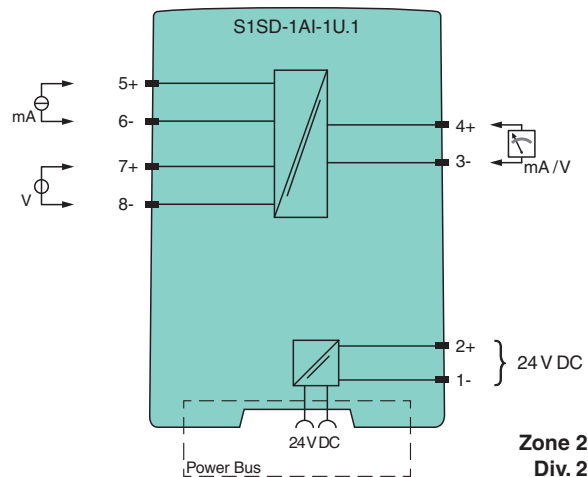
The device provides the following standard signals at the output:

- 0/4 mA ... 20 mA signal
- 0/2 V ... 10 V signal

The device is easily configured by the use of DIP switches.

The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

| General specifications |              |                                                                                                             |
|------------------------|--------------|-------------------------------------------------------------------------------------------------------------|
| Signal type            | Analog input |                                                                                                             |
| Operation time         |              | MTBF: 536 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |
| Supply                 |              |                                                                                                             |
| Connection             |              | Power Bus or terminals 1-, 2+                                                                               |
| Rated voltage          | $U_r$        | 16.8 ... 31.2 V DC                                                                                          |
| Power dissipation      |              | 0.6 W                                                                                                       |
| Power consumption      |              | 0.7 W                                                                                                       |

## Technical Data

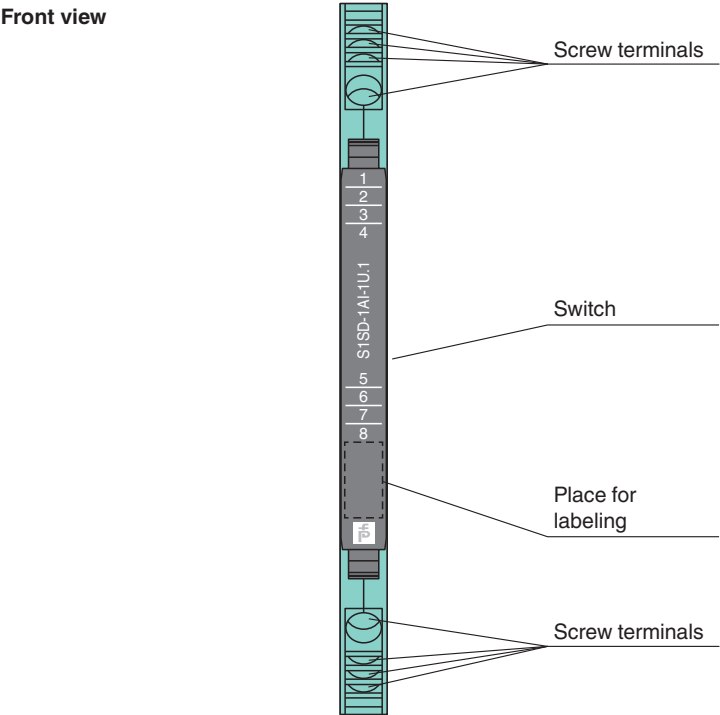
|                                                                |  |                                                                                                                                                               |
|----------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Input</b>                                                   |  |                                                                                                                                                               |
| Connection side                                                |  | field side                                                                                                                                                    |
| Transmission range                                             |  | linearity range: -1 ... 110 %                                                                                                                                 |
| <b>Input I</b>                                                 |  |                                                                                                                                                               |
| Connection                                                     |  | terminals 5+, 6-                                                                                                                                              |
| Input signal                                                   |  | 0/4 ... 20 mA , max. 50 mA                                                                                                                                    |
| Input resistance                                               |  | ≤ 25 Ω                                                                                                                                                        |
| <b>Input II</b>                                                |  |                                                                                                                                                               |
| Connection                                                     |  | terminals 7+, 8-                                                                                                                                              |
| Input signal                                                   |  | 0/2 ... 10 V , max. 30 V                                                                                                                                      |
| Input resistance                                               |  | > 100 kΩ                                                                                                                                                      |
| <b>Output</b>                                                  |  |                                                                                                                                                               |
| Connection side                                                |  | control side                                                                                                                                                  |
| Connection                                                     |  | terminals 3-, 4+                                                                                                                                              |
| Analog voltage output                                          |  | 0/2 ... 10 V , load ≥ 2 kΩ                                                                                                                                    |
| Analog current output                                          |  | 0/4 ... 20 mA, load ≤ 600 Ω                                                                                                                                   |
| Ripple                                                         |  | ≤ 10 mV <sub>eff</sub>                                                                                                                                        |
| <b>Transfer characteristics</b>                                |  |                                                                                                                                                               |
| Accuracy                                                       |  | max. 0.1 % of full-scale value                                                                                                                                |
| Influence of ambient temperature                               |  | < 100 ppm/K of full-scale value                                                                                                                               |
| Frequency range                                                |  | 0 ... 10 Hz , 0 ... 100 Hz , 0 ... 5 kHz                                                                                                                      |
| Settling time                                                  |  | 70 ms , 7 ms , 150 μs                                                                                                                                         |
| <b>Galvanic isolation</b>                                      |  |                                                                                                                                                               |
| Output/power supply                                            |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                                           |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>                                     |  |                                                                                                                                                               |
| 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>                                              |  |                                                                                                                                                               |
| Degree of protection                                           |  | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                            |  | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>                                      |  |                                                                                                                                                               |
| Ambient temperature                                            |  | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                                            |  | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                                   |  | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| <b>Mechanical specifications</b>                               |  |                                                                                                                                                               |
| Degree of protection                                           |  | IP20                                                                                                                                                          |
| Connection                                                     |  | screw terminals                                                                                                                                               |
| Core cross section                                             |  | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |
| Mass                                                           |  | approx. 70 g                                                                                                                                                  |
| Dimensions                                                     |  | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                                                                                     |
| Mounting                                                       |  | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| <b>Data for application in connection with hazardous areas</b> |  |                                                                                                                                                               |
| Certificate                                                    |  | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                        |  | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |
| <b>Directive conformity</b>                                    |  |                                                                                                                                                               |
| Directive 2014/34/EU                                           |  | EN 60079-0:2012+A11:2013 , EN 60079-15:2010                                                                                                                   |



Technical Data

|                         |  |                   |
|-------------------------|--|-------------------|
| International approvals |  |                   |
| UL approval             |  | E106378           |
| IECEX approval          |  |                   |
| IECEX certificate       |  | IECEX UL 16.0116X |
| IECEX marking           |  | Ex nA IIC T4 Gc   |
| General information     |  |                   |

Assembly








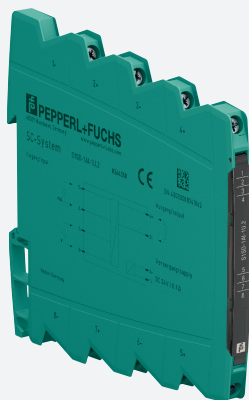
Configuration

| Switch Settings |             |        |    |    |    |    |    |
|-----------------|-------------|--------|----|----|----|----|----|
| Input           | Output      | Switch |    |    |    |    |    |
|                 |             | S1     | S2 | S3 | S4 | S5 | S6 |
| 0 ... 20 mA     | 0 ... 20 mA |        |    |    |    |    |    |
| 4 ... 20 mA     |             |        |    |    | ON |    |    |
| 0 ... 10 V      |             |        |    |    |    |    |    |
| 2 ... 10 V      |             |        |    |    | ON |    |    |
| 0 ... 20 mA     | 4 ... 20 mA |        |    | ON |    |    |    |
| 4 ... 20 mA     |             |        |    |    |    |    |    |
| 0 ... 10 V      |             |        |    | ON |    |    |    |
| 2 ... 10 V      |             |        |    |    |    |    |    |
| 0 ... 20 mA     | 0 ... 10 V  | ON     | ON |    |    |    |    |
| 4 ... 20 mA     |             | ON     | ON |    | ON |    |    |
| 0 ... 10 V      |             | ON     | ON |    |    |    |    |
| 2 ... 10 V      |             | ON     | ON |    | ON |    |    |
| 0 ... 20 mA     | 2 ... 10 V  | ON     | ON | ON |    |    |    |
| 4 ... 20 mA     |             | ON     | ON |    |    |    |    |
| 0 ... 10 V      |             | ON     | ON | ON |    |    |    |
| 2 ... 10 V      |             | ON     | ON |    |    |    |    |
| Filter 5 kHz    |             |        |    |    |    |    |    |
| Filter 100 Hz   |             |        |    |    |    | ON |    |
| Filter 10 Hz    |             |        |    |    |    |    | ON |

Factory settings: all switches in position OFF

Matching System Components

|                                                                                   |                           |                                                                       |
|-----------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |



# Isolating Amplifier S1SD-1AI-1U.2

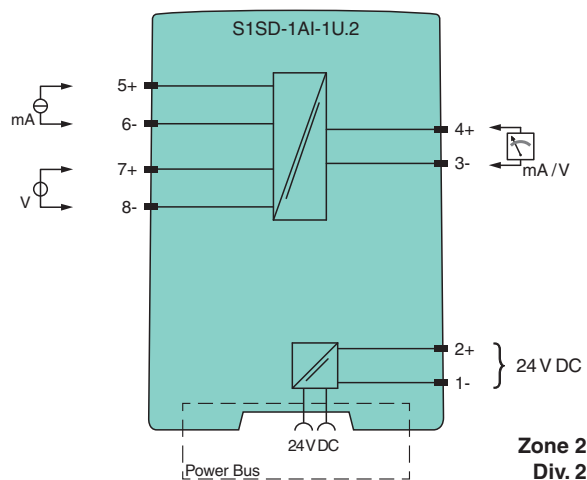
- 1-channel signal conditioner
- 24 V DC supply
- Input bipolar current and voltage sources
- Output bipolar current and voltage sources
- Accuracy 0.1 %
- Configurable via DIP switches and potentiometer
- Connection via screw terminals



## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device has an input for bipolar current and voltage sources. At the output the signals are available as bipolar current and voltage sources. The device is easily configured by the use of DIP switches and potentiometers. The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

### General specifications

|                   |              |                                                                                                             |
|-------------------|--------------|-------------------------------------------------------------------------------------------------------------|
| Signal type       | Analog input |                                                                                                             |
| Operation time    |              | MTBF: 490 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |
| <b>Supply</b>     |              |                                                                                                             |
| Connection        |              | Power Bus or terminals 1-, 2+                                                                               |
| Rated voltage     | $U_r$        | 16.8 ... 31.2 V DC                                                                                          |
| Power dissipation |              | 0.6 W                                                                                                       |
| Power consumption |              | 0.8 W                                                                                                       |
| <b>Input</b>      |              |                                                                                                             |
| Connection side   |              | field side                                                                                                  |

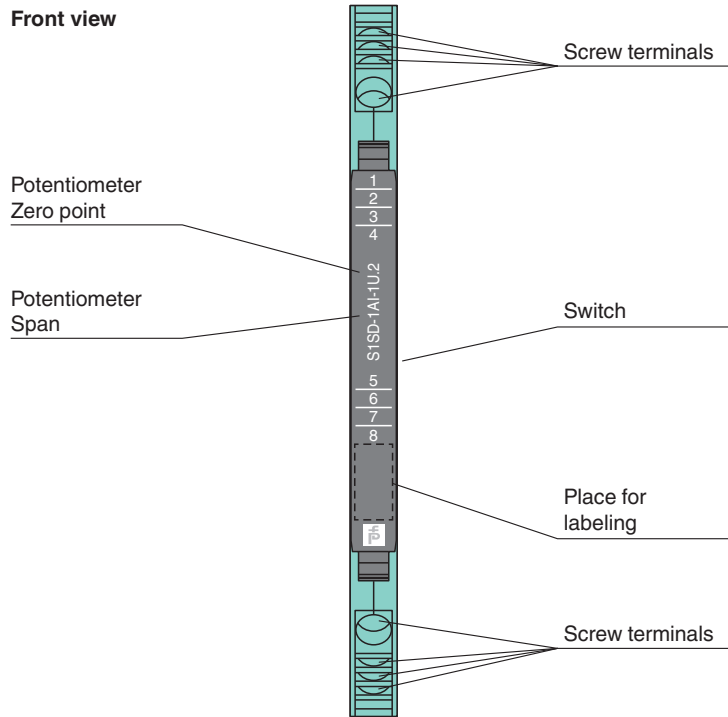
## Technical Data

|                                                         |  |                                                                                                                                                               |
|---------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transmission range                                      |  | linearity range:<br>unipolar -1 ... 110 %<br>bipolar -110 ... 110 %                                                                                           |
| Input I                                                 |  |                                                                                                                                                               |
| Connection                                              |  | terminals 5+, 6-                                                                                                                                              |
| Input signal                                            |  | 0/4 ... 20 mA , 0/2 ... 10 mA , $\pm 10$ mA , $\pm 20$ mA , max. 50 mA                                                                                        |
| Input resistance                                        |  | $\leq 25 \Omega$                                                                                                                                              |
| Input II                                                |  |                                                                                                                                                               |
| Connection                                              |  | terminals 7+, 8-                                                                                                                                              |
| Input signal                                            |  | 0/1 ... 5 V , 0/2 ... 10 V , $\pm 5$ V , $\pm 10$ V , max. 30 V                                                                                               |
| Input resistance                                        |  | $> 1 \text{ M}\Omega$                                                                                                                                         |
| Output                                                  |  |                                                                                                                                                               |
| Connection side                                         |  | control side                                                                                                                                                  |
| Connection                                              |  | terminals 3-, 4+                                                                                                                                              |
| Analog voltage output                                   |  | 0/1 ... 5 V , 0/2 ... 10 V , $\pm 5$ V , $\pm 10$ V , load $\geq 2 \text{ k}\Omega$                                                                           |
| Analog current output                                   |  | 0/4 ... 20 mA , $\pm 10$ mA , $\pm 20$ mA , load $\leq 600 \Omega$                                                                                            |
| Ripple                                                  |  | $\leq 10 \text{ mV}_{\text{eff}}$                                                                                                                             |
| Transfer characteristics                                |  |                                                                                                                                                               |
| Accuracy                                                |  | max. 0.1 % of full-scale value                                                                                                                                |
| Influence of ambient temperature                        |  | $< 100 \text{ ppm/K}$ of full-scale value                                                                                                                     |
| Frequency range                                         |  | 0 ... 100 Hz , 0 ... 8 kHz                                                                                                                                    |
| Settling time                                           |  | 7 ms , 100 $\mu\text{s}$                                                                                                                                      |
| Galvanic isolation                                      |  |                                                                                                                                                               |
| Output/power supply                                     |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                                    |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Indicators/settings                                     |  |                                                                                                                                                               |
| Control elements                                        |  | DIP switch<br>potentiometer                                                                                                                                   |
| Configuration                                           |  | via DIP switches<br>via potentiometer                                                                                                                         |
| Labeling                                                |  | space for labeling at the front                                                                                                                               |
| Directive conformity                                    |  |                                                                                                                                                               |
| Electromagnetic compatibility                           |  |                                                                                                                                                               |
| Directive 2014/30/EU                                    |  | EN 61326-1:2013 (industrial locations)                                                                                                                        |
| Conformity                                              |  |                                                                                                                                                               |
| Degree of protection                                    |  | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                     |  | EN 61010-1:2010                                                                                                                                               |
| Ambient conditions                                      |  |                                                                                                                                                               |
| Ambient temperature                                     |  | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                                     |  | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                            |  | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| Mechanical specifications                               |  |                                                                                                                                                               |
| Degree of protection                                    |  | IP20                                                                                                                                                          |
| Connection                                              |  | screw terminals                                                                                                                                               |
| Core cross section                                      |  | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |
| Mass                                                    |  | approx. 70 g                                                                                                                                                  |
| Dimensions                                              |  | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                                                                                     |
| Mounting                                                |  | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| Data for application in connection with hazardous areas |  |                                                                                                                                                               |
| Certificate                                             |  | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                 |  | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |
| Directive conformity                                    |  |                                                                                                                                                               |
| Directive 2014/34/EU                                    |  | EN 60079-0:2012+A11:2013 , EN 60079-15:2010                                                                                                                   |

Technical Data

| International approvals |                 |                   |
|-------------------------|-----------------|-------------------|
| UL approval             |                 | E106378           |
| IECEX approval          |                 |                   |
| IECEX certificate       |                 | IECEX UL 16.0116X |
| IECEX marking           | Ex nA IIC T4 Gc |                   |
| General information     |                 |                   |

Assembly








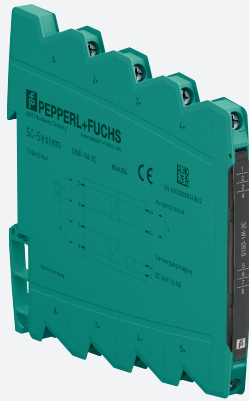
Configuration

|                   |    |    |   |   |   |                           |                    |    |    |    |    |   |
|-------------------|----|----|---|---|---|---------------------------|--------------------|----|----|----|----|---|
| Input – switch S1 |    |    |   |   |   | Signal                    | Output – switch S2 |    |    |    |    |   |
| 1                 | 2  | 3  | 4 | 5 | 6 |                           | 1                  | 2  | 3  | 4  | 5  | 6 |
| ON                |    |    |   |   |   | ± 10 V                    | ON                 | ON |    | ON |    |   |
|                   |    |    |   |   |   | 0 ... 10 V                | ON                 | ON |    |    |    |   |
|                   |    | ON |   |   |   | 2 ... 10 V                | ON                 | ON |    |    | ON |   |
| ON                | ON |    |   |   |   | ± 5 V                     | ON                 | ON | ON | ON |    |   |
|                   | ON |    |   |   |   | 0 ... 5 V                 | ON                 | ON | ON |    |    |   |
|                   | ON | ON |   |   |   | 1 ... 5 V                 | ON                 | ON | ON |    | ON |   |
| ON                |    |    |   |   |   | ± 20 mA                   |                    |    |    | ON |    |   |
|                   |    |    |   |   |   | 0 ... 20 mA               |                    |    |    |    |    |   |
|                   |    | ON |   |   |   | 4 ... 20 mA               |                    |    |    |    | ON |   |
| ON                | ON |    |   |   |   | ± 10 mA                   |                    |    | ON | ON |    |   |
|                   | ON |    |   |   |   | 0 ... 10 mA               |                    |    | ON |    |    |   |
|                   | ON | ON |   |   |   | 2 ... 10 mA               |                    |    | ON |    | ON |   |
|                   |    |    |   |   |   | Filter 8 kHz              |                    |    |    |    |    |   |
|                   |    |    |   |   |   | Filter 100 Hz             |                    |    |    |    |    |   |
|                   |    |    |   |   |   | Zero potentiometer active |                    |    |    |    |    |   |
|                   |    |    |   |   |   | Span potentiometer active |                    |    |    |    |    |   |

Factory settings: all switches in position OFF

Matching System Components

|                                                                                   |                           |                                                                       |
|-----------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |



# Transmitter Power Supply/Signal Splitter

## S1SD-1AI-2C

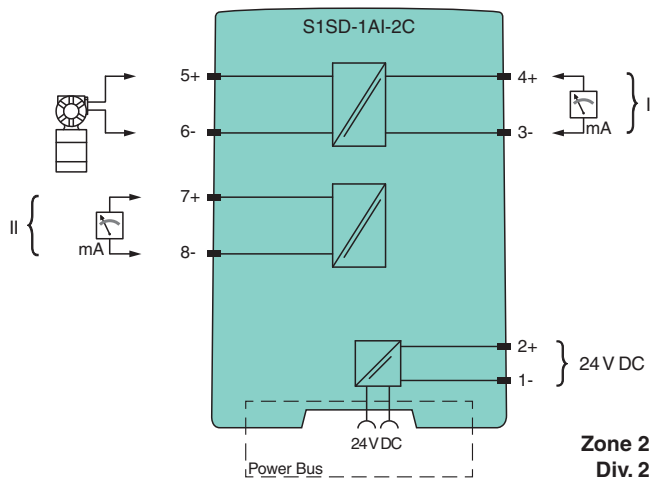
- 1-channel signal conditioner
- 24 V DC supply
- Input 2-wire transmitters
- Dual output 0/4 mA ... 20 mA
- Signal splitter (1 input and 2 outputs)
- Accuracy 0.1 %
- Connection via screw terminals



### Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits.  
The device supplies 2-wire transmitter.  
At the output the signal is available as two 0/4 mA ... 20 mA signals.  
The device can be powered via terminals or Power Bus.

### Connection



### Technical Data

#### General specifications

|                   |                |                                                                                                             |
|-------------------|----------------|-------------------------------------------------------------------------------------------------------------|
| Signal type       |                | Analog input                                                                                                |
| Operation time    |                | MTBF: 313 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |
| Supply            |                |                                                                                                             |
| Connection        |                | Power Bus or terminals 1-, 2+                                                                               |
| Rated voltage     | U <sub>r</sub> | 16.8 ... 31.2 V DC                                                                                          |
| Power dissipation |                | 0.8 W                                                                                                       |
| Power consumption |                | 1.4 W                                                                                                       |
| Input             |                |                                                                                                             |
| Connection side   |                | field side                                                                                                  |
| Connection        |                | terminals 5+, 6-                                                                                            |

## Technical Data

|                                                                |                                                                                                                                                               |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input signal                                                   | 0/4 ... 20 mA                                                                                                                                                 |
| Open circuit voltage/short-circuit current                     | $\leq 22 \text{ V} / 35 \text{ mA}$                                                                                                                           |
| Input resistance                                               | $\leq 25 \Omega$                                                                                                                                              |
| Transmission range                                             | linearity range: -1 ... 110 %                                                                                                                                 |
| Available voltage                                              | 16 V at 20 mA                                                                                                                                                 |
| <b>Output</b>                                                  |                                                                                                                                                               |
| Connection side                                                | control side                                                                                                                                                  |
| Ripple                                                         | $\leq 10 \text{ mV}_{\text{eff}}$                                                                                                                             |
| <b>Output I</b>                                                |                                                                                                                                                               |
| Connection                                                     | terminals 3-, 4+                                                                                                                                              |
| Output signal                                                  | 0/4 ... 20 mA, load $\leq 300 \Omega$                                                                                                                         |
| <b>Output II</b>                                               |                                                                                                                                                               |
| Connection                                                     | terminals 7+, 8-                                                                                                                                              |
| Output signal                                                  | 0/4 ... 20 mA, load $\leq 300 \Omega$                                                                                                                         |
| <b>Transfer characteristics</b>                                |                                                                                                                                                               |
| Accuracy                                                       | max. 0.1 % of full-scale value                                                                                                                                |
| Influence of ambient temperature                               | $< 100 \text{ ppm/K}$ of full-scale value                                                                                                                     |
| Frequency range                                                | 0 ... 100 Hz                                                                                                                                                  |
| Rise time/fall time                                            | $\leq 3.5 \text{ ms}$                                                                                                                                         |
| <b>Galvanic isolation</b>                                      |                                                                                                                                                               |
| Output/power supply                                            | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                                           | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Output I/II                                                    | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>                                     |                                                                                                                                                               |
| 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>                                              |                                                                                                                                                               |
| Degree of protection                                           | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                            | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>                                      |                                                                                                                                                               |
| Ambient temperature                                            | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                                            | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                                   | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| <b>Mechanical specifications</b>                               |                                                                                                                                                               |
| Degree of protection                                           | IP20                                                                                                                                                          |
| Connection                                                     | screw terminals                                                                                                                                               |
| Core cross section                                             | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |
| Mass                                                           | approx. 70 g                                                                                                                                                  |
| Dimensions                                                     | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                                                                                     |
| Mounting                                                       | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| <b>Data for application in connection with hazardous areas</b> |                                                                                                                                                               |
| Certificate                                                    | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                        | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |
| <b>Directive conformity</b>                                    |                                                                                                                                                               |
| Directive 2014/34/EU                                           | EN 60079-0:2012+A11:2013 , EN 60079-15:2010                                                                                                                   |
| <b>International approvals</b>                                 |                                                                                                                                                               |
| UL approval                                                    | E106378                                                                                                                                                       |
| IECEx approval                                                 |                                                                                                                                                               |

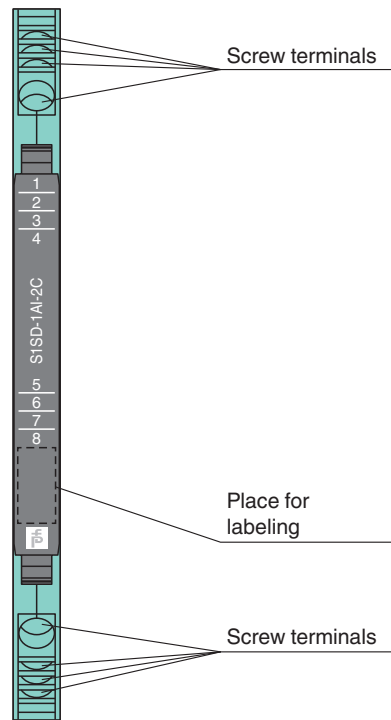


Technical Data

|                     |                   |                 |
|---------------------|-------------------|-----------------|
| IECEx certificate   | IECEx UL 16.0116X |                 |
| IECEx marking       |                   | Ex nA IIC T4 Gc |
| General information |                   |                 |
|                     |                   |                 |

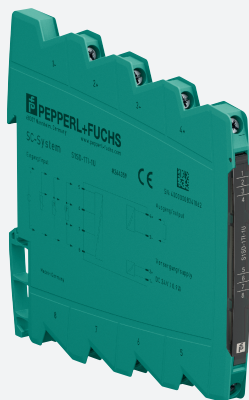
Assembly

Front view



Matching System Components

|  |                           |                                                                       |
|--|---------------------------|-----------------------------------------------------------------------|
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |



# Temperature Converter S1SD-1TI-1U

- 1-channel signal conditioner
- 24 V DC supply
- Thermocouple, RTD, potentiometer or mV input
- Input for PTC thermistor
- Current and voltage output
- Line fault (LFD) and sensor burnout detection
- Accuracy 0.1 %
- Connection via screw terminals



## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits.

The device has an input for signals of the following field devices:

- resistance thermometers
- thermocouples
- PTC thermistors
- potentiometers
- voltage sources
- field device with its own characteristic

The device provides the following standard signals at the output:

- 0/2 mA ... 10 mA signal
- 0/4 mA ... 20 mA signal
- 0/1 V ... 5 V signal
- 0/2 V ... 10 V signal

This device has an integrated cold junction compensation. You can also implement external cold junction compensation.

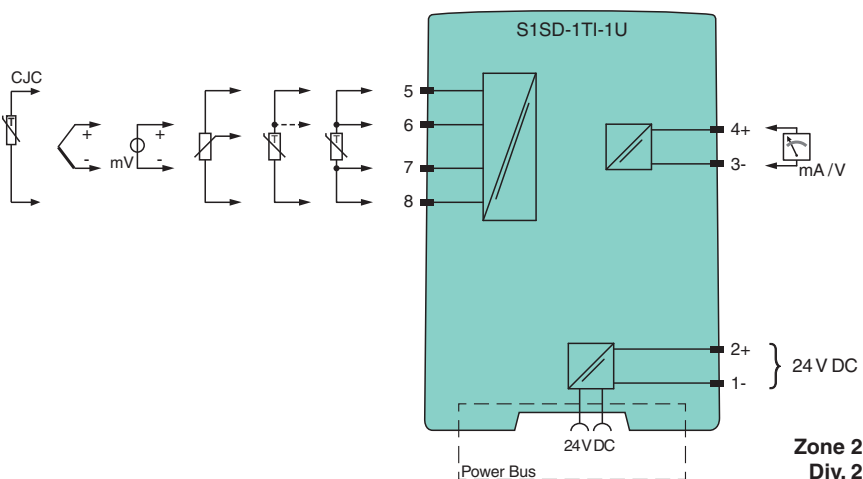
A fault is signalized by LEDs.

The device is easily configured by the use of DIP switches.

The Teach-In function can be used to teach in the potentiometer start value and end value.

The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

### General specifications

Signal type

Analog input

Operation time

MTBF: 353 a acc. to SN 29500  
stationary continuous operating, average ambient temperature 40 °C (104 °F)

## Technical Data

### Supply

|                   |       |                               |
|-------------------|-------|-------------------------------|
| Connection        |       | Power Bus or terminals 1-, 2+ |
| Rated voltage     | $U_r$ | 16.8 ... 31.2 V DC            |
| Power dissipation |       | 0.7 W                         |
| Power consumption |       | 0.8 W                         |

### Interface

|                       |                    |
|-----------------------|--------------------|
| Programming interface | programming socket |
|-----------------------|--------------------|

### Input

|                             |                                                                                                  |
|-----------------------------|--------------------------------------------------------------------------------------------------|
| Connection side             | field side                                                                                       |
| Connection                  | terminals 5, 6, 7, 8                                                                             |
| PTC                         | type KT, KTY, ST                                                                                 |
| Measuring current           | approx. 200 $\mu$ A                                                                              |
| Types of measuring          | 2-, 3-, 4-wire connection                                                                        |
| Lead resistance             | $\leq 100 \Omega$ per line                                                                       |
| Measurement loop monitoring | sensor breakage, lead breakage, short circuit                                                    |
| RTD                         | type Pt100, Pt200, Pt500, Pt1000 (EN 60751:1995)<br>type Ni100, Ni200, Ni500, Ni1000 (DIN 43760) |
| Measuring current           | approx. 200 $\mu$ A                                                                              |
| Types of measuring          | 2-, 3-, 4-wire connection                                                                        |
| Lead resistance             | max. 100 $\Omega$ per line                                                                       |
| Measurement loop monitoring | sensor breakage, lead breakage, short circuit                                                    |
| Thermocouples               | type B, E, J, K, N, S, T (IEC 584-1:1995)<br>type L, U (DIN 43710:1985)<br>type C, D (ASTM E988) |
| Cold junction compensation  | external (Pt100) and internal, manually                                                          |
| Lead resistance             | max. 10 k $\Omega$                                                                               |
| Measurement loop monitoring | sensor breakage, lead breakage                                                                   |
| Resistor                    |                                                                                                  |
| Measurement range           | 0 ... 5 k $\Omega$                                                                               |
| Potentiometer               | 0.2 ... 50 k $\Omega$                                                                            |
| Types of measuring          | 3-wire connection                                                                                |
| Voltage                     | -100 ... 100 mV<br>-1000 ... 1000 mV                                                             |
| Input resistance            | $\geq 1 M\Omega$                                                                                 |

### Output

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| Connection side       | control side                                         |
| Connection            | terminals 3-, 4+                                     |
| Analog voltage output | 0/1 ... 5 V, 0/2 ... 10 V, load $\geq 2 k\Omega$     |
| Analog current output | 0/2 ... 10 mA, 0/4 ... 20 mA, load $\leq 600 \Omega$ |
| Ripple                | $\leq 10 mV_{eff}$                                   |
| Fault signal          | downscale or upscale                                 |

### Transfer characteristics

|                                  |                                         |
|----------------------------------|-----------------------------------------|
| Accuracy                         | max. 0.1 % of full-scale value          |
| Measuring time                   | $\leq 300 ms$                           |
| Deviation                        |                                         |
| RTD                              | $< 0.1 K/0.05 \%$ of the measured value |
| Thermocouples                    | $< 0.3 K/0.1 \%$ of the measured value  |
| Voltage                          | $< 0.1 \%$ of the measured value        |
| Potentiometer                    | $< 0.02 \%$ of the measured value       |
| Influence of ambient temperature | $< 100 ppm/K$ of full-scale value       |

### Galvanic isolation

|                      |                                                                                                                                                        |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output/power supply  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 $V_{eff}$ test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 $V_{eff}$ test voltage 3 kV, 50 Hz, 1 min |

## Technical Data

### Indicators/settings

|                  |                                              |
|------------------|----------------------------------------------|
| Control elements | DIP switch<br>keys                           |
| Configuration    | via DIP switches<br>via keys<br>via software |
| Labeling         | space for labeling at the front              |

### Directive conformity

|                               |                                        |
|-------------------------------|----------------------------------------|
| Electromagnetic compatibility |                                        |
| Directive 2014/30/EU          | EN 61326-1:2013 (industrial locations) |

### Conformity

|                                     |                 |
|-------------------------------------|-----------------|
| Degree of protection                | IEC 60529:2001  |
| Protection against electrical shock | EN 61010-1:2010 |

### Ambient conditions

|                     |                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------|
| Ambient temperature | -25 ... 70 °C (-13 ... 158 °F)                                                                |
| Storage temperature | -40 ... 85 °C (-40 ... 185 °F)                                                                |
| Damaging gas        | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3 |

### Mechanical specifications

|                      |                                                                           |
|----------------------|---------------------------------------------------------------------------|
| Degree of protection | IP20                                                                      |
| Connection           | screw terminals                                                           |
| Core cross section   | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                               |
| Mass                 | approx. 70 g                                                              |
| Dimensions           | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1 |
| Mounting             | on 35 mm DIN mounting rail acc. to EN 60715:2001                          |

### Data for application in connection with hazardous areas

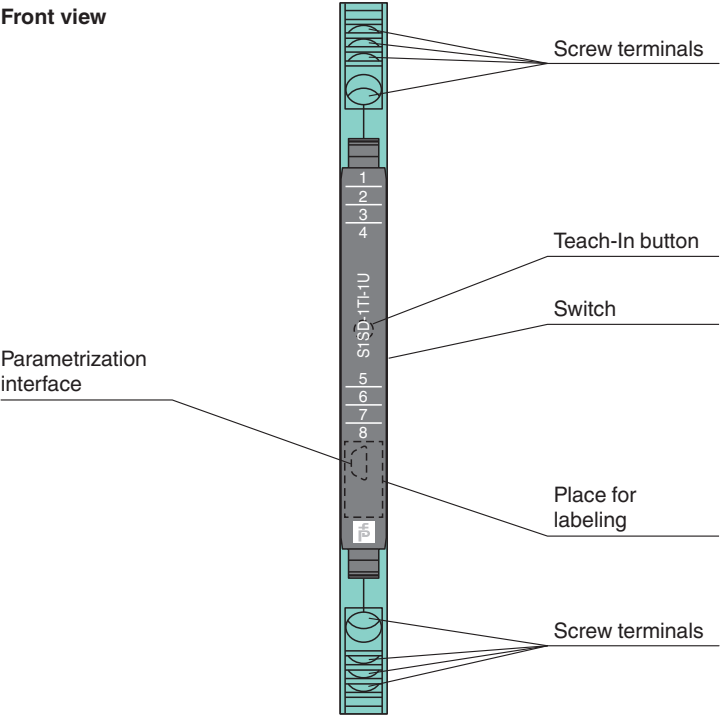
|                      |                                             |
|----------------------|---------------------------------------------|
| Certificate          | DEMKO 16 ATEX 1750X                         |
| Marking              | Ⓔ II 3G Ex nA IIC T4 Gc                     |
| Directive conformity |                                             |
| Directive 2014/34/EU | EN 60079-0:2012+A11:2013 , EN 60079-15:2010 |

### International approvals









|                   |                   |
|-------------------|-------------------|
| UL approval       | E106378           |
| IECEx approval    |                   |
| IECEx certificate | IECEx UL 16.0116X |
| IECEx marking     | Ex nA IIC T4 Gc   |

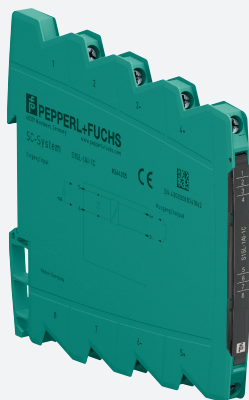
### General information

Assembly



Matching System Components

|                                                                                     |                           |                                                                       |
|-------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>SC-Config</b>          | Configuration software                                                |
|  | <b>S-ADP-USB</b>          | Adapter with USB Interface                                            |
|  | <b>PACTware 5.0</b>       | FDT Framework                                                         |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |



## Passive Isolator S1SL-1AI-1C

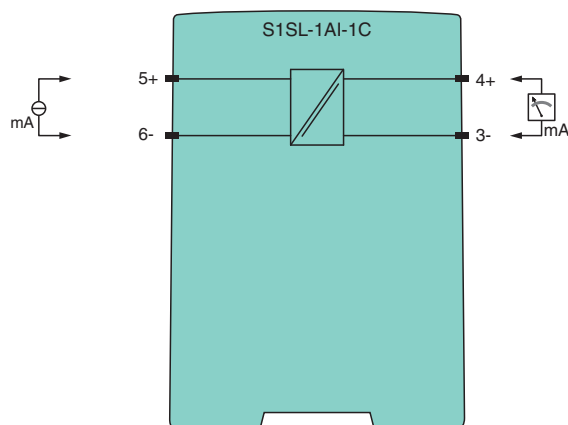
- 1-channel signal conditioner
- Field side loop powered
- Current input/output 0/4 mA ... 20 mA
- Accuracy 0.1 %
- Reverse polarity protection
- Connection via screw terminals



### Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device transfers a 0/4 mA ... 20 mA signal of a current source from the field side to the control side. This device is loop powered. No additional power supply has to be connected.

### Connection



Zone 2  
Div. 2

### Technical Data

#### General specifications

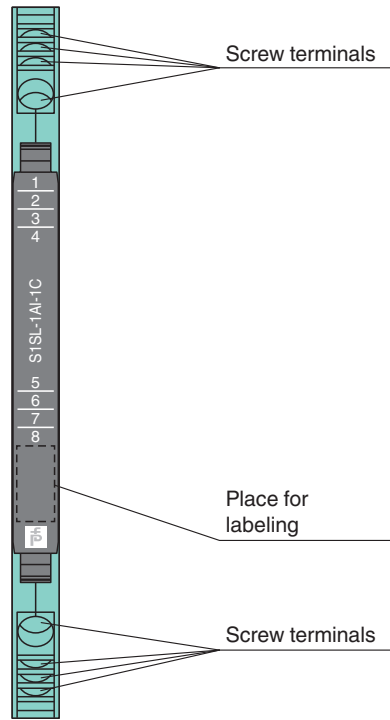
|                   |                |                                                                                                              |
|-------------------|----------------|--------------------------------------------------------------------------------------------------------------|
| Signal type       |                | Analog input                                                                                                 |
| Operation time    |                | MTBF: 2865 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |
| Supply            |                |                                                                                                              |
| Rated voltage     | U <sub>r</sub> | 2.2 ... 30 V DC , loop powered                                                                               |
| Power dissipation |                | 0.05 W                                                                                                       |
| Power consumption |                | 0.3 W                                                                                                        |
| Input             |                |                                                                                                              |
| Connection side   |                | field side                                                                                                   |
| Connection        |                | terminals 5+, 6-                                                                                             |
| Input signal      |                | 0/4 ... 20 mA , max. 50 mA                                                                                   |

## Technical Data






|                                                                |                                                                                                                                                               |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input voltage                                                  | ≥ 2.3 V + I x load , max. 30 V                                                                                                                                |
| Voltage drop                                                   | ≤ 2.3 V                                                                                                                                                       |
| <b>Output</b>                                                  |                                                                                                                                                               |
| Connection side                                                | control side                                                                                                                                                  |
| Connection                                                     | terminals 3-, 4+                                                                                                                                              |
| Analog current output                                          | 0/4 ... 20 mA, load ≤ 600 Ω                                                                                                                                   |
| Ripple                                                         | ≤ 10 mV <sub>eff</sub>                                                                                                                                        |
| <b>Transfer characteristics</b>                                |                                                                                                                                                               |
| Accuracy                                                       | max. 0.1 % of full-scale value                                                                                                                                |
| Deviation                                                      |                                                                                                                                                               |
| Influence of load                                              | 0.05 % of the measured value per 100 Ω                                                                                                                        |
| Influence of ambient temperature                               | < 100 ppm/K of full-scale value                                                                                                                               |
| Frequency range                                                | 0 ... 100 Hz                                                                                                                                                  |
| Rise time/fall time                                            | ≤ 3.5 ms                                                                                                                                                      |
| <b>Galvanic isolation</b>                                      |                                                                                                                                                               |
| Field circuit/control circuit                                  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>                                     |                                                                                                                                                               |
| 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>                                              |                                                                                                                                                               |
| Degree of protection                                           | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                            | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>                                      |                                                                                                                                                               |
| Ambient temperature                                            | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                                            | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                                   | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| <b>Mechanical specifications</b>                               |                                                                                                                                                               |
| Degree of protection                                           | IP20                                                                                                                                                          |
| Connection                                                     | screw terminals                                                                                                                                               |
| Core cross section                                             | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |
| Mass                                                           | approx. 70 g                                                                                                                                                  |
| Dimensions                                                     | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                                                                                     |
| Mounting                                                       | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| <b>Data for application in connection with hazardous areas</b> |                                                                                                                                                               |
| Certificate                                                    | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                        | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |
| Directive conformity                                           |                                                                                                                                                               |
| Directive 2014/34/EU                                           | EN 60079-0:2012+A11:2013 , EN 60079-15:2010                                                                                                                   |
| <b>International approvals</b>                                 |                                                                                                                                                               |
| UL approval                                                    | E106378                                                                                                                                                       |
| IECEx approval                                                 |                                                                                                                                                               |
| IECEx certificate                                              | IECEx UL 16.0116X                                                                                                                                             |
| IECEx marking                                                  | Ex nA IIC T4 Gc                                                                                                                                               |
| <b>General information</b>                                     |                                                                                                                                                               |

Assembly

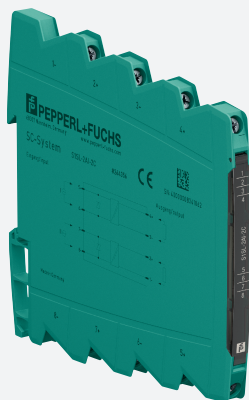
Front view



Matching System Components

|                                                                                     |                           |                                                                       |
|-------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |





## Passive Isolator S1SL-2AI-2C

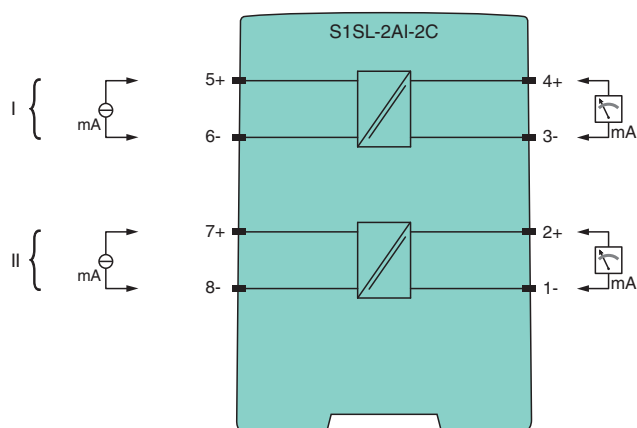
- 2-channel signal conditioner
- Field side loop powered
- Current input/output 0/4 mA ... 20 mA
- Accuracy 0.1 %
- Reverse polarity protection
- Connection via screw terminals



### Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device transfers a 0/4 mA ... 20 mA signal of a current source from the field side to the control side. This device is loop powered. No additional power supply has to be connected.

### Connection



Zone 2  
Div. 2

### Technical Data

#### General specifications

|                |              |                                                                                                              |
|----------------|--------------|--------------------------------------------------------------------------------------------------------------|
| Signal type    | Analog input |                                                                                                              |
| Operation time |              | MTBF: 1508 a acc. to SN 29500<br>stationary continuous operating, average ambient temperature 40 °C (104 °F) |

#### Supply

|                   |       |                                |
|-------------------|-------|--------------------------------|
| Rated voltage     | $U_r$ | 2.2 ... 30 V DC , loop powered |
| Power dissipation |       | 0.1 W                          |
| Power consumption |       | 0.6 W                          |

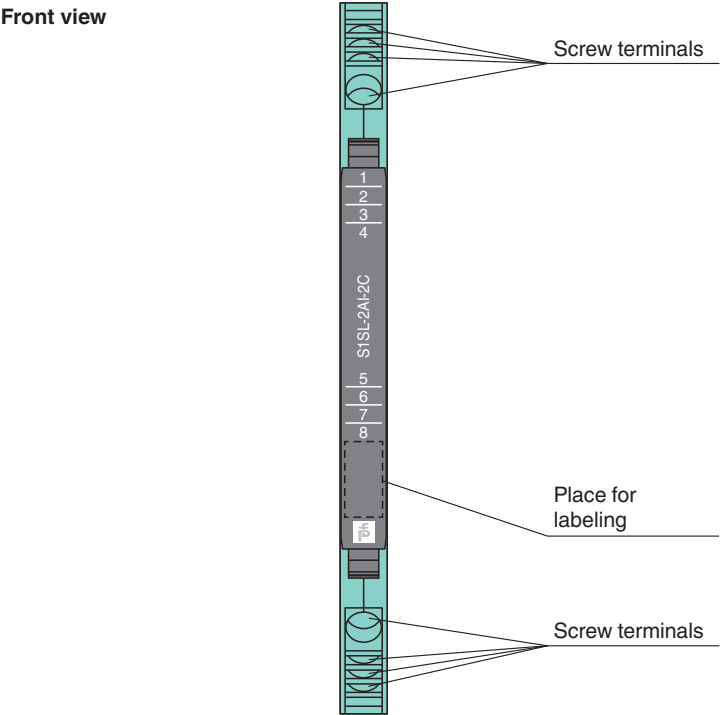
#### Input

|                 |  |                                                         |
|-----------------|--|---------------------------------------------------------|
| Connection side |  | field side                                              |
| Connection      |  | terminals 5+, 6-; 7+, 8-                                |
| Input signal    |  | 0/4 ... 20 mA , max. 50 mA                              |
| Input voltage   |  | $\geq 2.3 \text{ V} + I \times \text{load}$ , max. 30 V |






## Technical Data

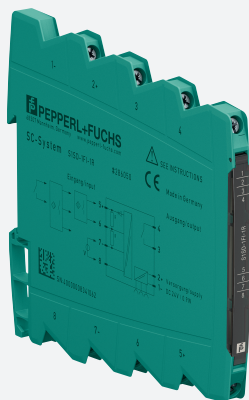
|                                                                |  |                                                                                                                                                               |
|----------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voltage drop                                                   |  | ≤ 2.3 V                                                                                                                                                       |
| <b>Output</b>                                                  |  |                                                                                                                                                               |
| Connection side                                                |  | control side                                                                                                                                                  |
| Connection                                                     |  | terminals 1-, 2+; 3-, 4+                                                                                                                                      |
| Analog current output                                          |  | 0/4 ... 20 mA, load ≤ 600 Ω                                                                                                                                   |
| Ripple                                                         |  | ≤ 10 mV <sub>eff</sub>                                                                                                                                        |
| <b>Transfer characteristics</b>                                |  |                                                                                                                                                               |
| Accuracy                                                       |  | max. 0.1 % of full-scale value                                                                                                                                |
| Deviation                                                      |  |                                                                                                                                                               |
| Influence of load                                              |  | 0.05 % of the measured value per 100 Ω                                                                                                                        |
| Influence of ambient temperature                               |  | < 100 ppm/K of full-scale value                                                                                                                               |
| Frequency range                                                |  | 0 ... 100 Hz                                                                                                                                                  |
| Rise time/fall time                                            |  | ≤ 3.5 ms                                                                                                                                                      |
| <b>Galvanic isolation</b>                                      |  |                                                                                                                                                               |
| Field circuit/control circuit                                  |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>                                     |  |                                                                                                                                                               |
| 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>                                              |  |                                                                                                                                                               |
| Degree of protection                                           |  | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock                            |  | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>                                      |  |                                                                                                                                                               |
| Ambient temperature                                            |  | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                                            |  | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |
| Damaging gas                                                   |  | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3                                                                 |
| <b>Mechanical specifications</b>                               |  |                                                                                                                                                               |
| Degree of protection                                           |  | IP20                                                                                                                                                          |
| Connection                                                     |  | screw terminals                                                                                                                                               |
| Core cross section                                             |  | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                                                                                   |
| Mass                                                           |  | approx. 70 g                                                                                                                                                  |
| Dimensions                                                     |  | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                                                                                     |
| Mounting                                                       |  | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                              |
| <b>Data for application in connection with hazardous areas</b> |  |                                                                                                                                                               |
| Certificate                                                    |  | DEMKO 16 ATEX 1750X                                                                                                                                           |
| Marking                                                        |  | Ⓔ II 3G Ex nA IIC T4 Gc                                                                                                                                       |
| Directive conformity                                           |  |                                                                                                                                                               |
| Directive 2014/34/EU                                           |  | EN 60079-0:2012+A11:2013 , EN 60079-15:2010                                                                                                                   |
| <b>International approvals</b>                                 |  |                                                                                                                                                               |
| UL approval                                                    |  | E106378                                                                                                                                                       |
| IECEx approval                                                 |  |                                                                                                                                                               |
| IECEx certificate                                              |  | IECEx UL 16.0116X                                                                                                                                             |
| IECEx marking                                                  |  | Ex nA IIC T4 Gc                                                                                                                                               |
| <b>General information</b>                                     |  |                                                                                                                                                               |

Assembly



Matching System Components

|                                                                                     |                           |                                                                       |
|-------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |
|  | <b>POWERBUS-SETH5.250</b> | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>   | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>       | End Cap for Power Bus                                                 |



# Rotation Speed Monitor S1SD-1FI-1R

- 1-channel signal conditioner
- 24 V DC supply
- Input for 2- or 3-wire sensors
- Input frequency 10 mHz ... 50 kHz
- Relay contact output
- Start-up override and restart inhibit
- Configurable by DIP switches and software
- Connection via screw terminals



## Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits.

The device monitors the overspeed condition and the underspeed condition of a digital signal.

The device has an input for the following digital signals:

- Mechanical contacts
- 2-wire sensors (NAMUR, SN, DC, S0)
- 3-wire sensors (NPN, PNP)
- AC/DC voltage sources (magnetic sensors)
- custom-specific setting

The input is reverse polarity protected and short-circuit proofed.

The connected sensors can also be supplied externally.

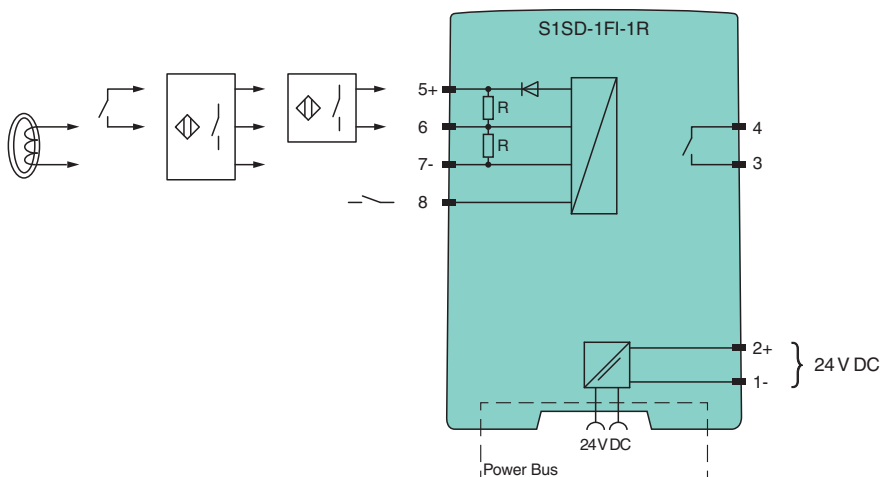
The device compares the input frequency with a user-specified reference frequency. An overspeed condition or an underspeed condition is signaled via the relay contact outputs.

A fault is indicated by a red LED.

The device is easily configured by the use of DIP switches or software.

The device can be powered via terminals or Power Bus.

## Connection



## Technical Data

### General specifications

Signal type

Digital Input

### Supply

Connection

Power Bus or terminals 1-, 2+

## Technical Data

|                           |                |                                        |
|---------------------------|----------------|----------------------------------------|
| Rated voltage             | U <sub>r</sub> | 16.8 ... 31.2 V DC                     |
| Power dissipation         |                | 0.6 W                                  |
| Power consumption         |                | 1.1 W                                  |
| <b>Interface</b>          |                |                                        |
| Programming interface     |                | programming socket                     |
| <b>Input</b>              |                |                                        |
| Connection side           |                | field side                             |
| <b>NAMUR sensor</b>       |                |                                        |
| Type                      |                | 2-wire                                 |
| Connection                |                | terminals 5+, 6                        |
| Signal                    |                | acc. to EN 60947-5-6 (NAMUR)           |
| Sensor supply             |                | 8 V                                    |
| Open-circuit              |                | < 0.1 mA                               |
| Switching point           |                | 1.2 ... 2.1 mA                         |
| Short-circuit             |                | > 6 mA                                 |
| Input impedance           |                | 1 kΩ                                   |
| <b>Mechanical contact</b> |                |                                        |
| Type                      |                | 2-wire                                 |
| Connection                |                | terminals 5+, 6                        |
| Sensor supply             |                | 15 V                                   |
| External supply           |                | ≤ 32 V                                 |
| Switching point           |                | 8 ... 10 V / 1.2 ... 2.1 mA            |
| Frequency                 |                | 0 ... 50 Hz , debounce filter          |
| Input impedance           |                | 4 kΩ                                   |
| <b>SN sensor</b>          |                |                                        |
| Type                      |                | 2-wire                                 |
| Connection                |                | terminals 5+, 6                        |
| Sensor supply             |                | 8 V                                    |
| Open-circuit              |                | < 0.1 mA                               |
| Switching point           |                | 1.2 ... 2.1 mA                         |
| Short-circuit             |                | > 6 mA                                 |
| Input impedance           |                | 1 kΩ                                   |
| <b>2-wire DC sensor</b>   |                |                                        |
| Type                      |                | 2-wire                                 |
| Connection                |                | terminals 5+, 6                        |
| Signal                    |                | acc. to EN 60947-5-2                   |
| Sensor supply             |                | 16 V / 25 mA , short-circuit protected |
| External supply           |                | ≤ 32 V                                 |
| Switching point           |                | 2 ... 5 mA                             |
| Input impedance           |                | 1 kΩ                                   |
| <b>S0 sensor</b>          |                |                                        |
| Type                      |                | 2-wire                                 |
| Connection                |                | terminals 5+, 6                        |
| Signal                    |                | acc. to EN 62053-31 , Type B           |
| Sensor supply             |                | 15 V                                   |
| Switching point           |                | 0.15 ... 2 mA                          |
| Input impedance           |                | 4 kΩ                                   |
| <b>NPN sensor</b>         |                |                                        |
| Type                      |                | 3-wire                                 |
| Connection                |                | terminals 5+, 6, 7-                    |
| Signal                    |                | acc. to EN 60947-5-2                   |
| Sensor supply             |                | 16 V / 25 mA , short-circuit protected |
| External supply           |                | ≤ 32 V                                 |

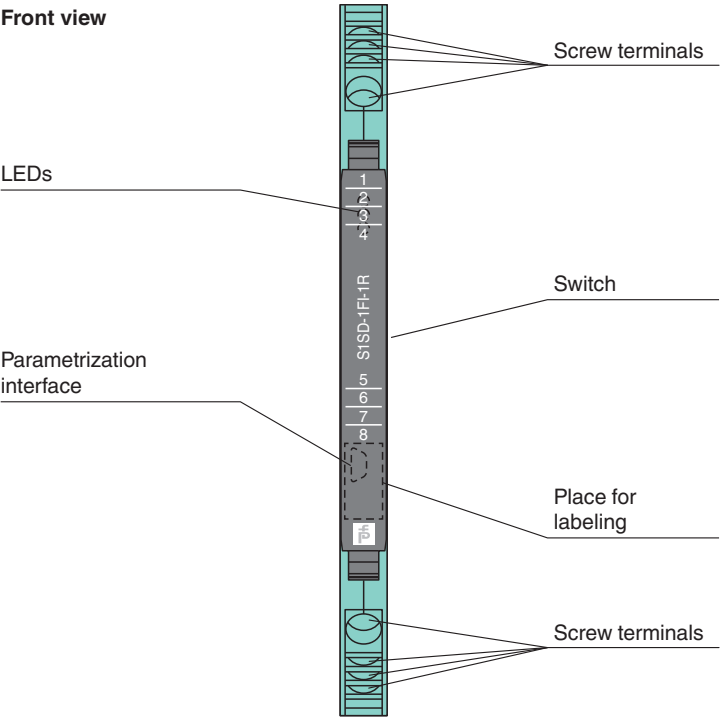
## Technical Data

|                                  |                                                                                                                                                               |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switching point                  | 3 ... 5 V                                                                                                                                                     |
| Input impedance                  | 4 k $\Omega$                                                                                                                                                  |
| PNP sensor                       |                                                                                                                                                               |
| Type                             | 3-wire                                                                                                                                                        |
| Connection                       | terminals 5+, 6, 7-                                                                                                                                           |
| Signal                           | acc. to EN 60947-5-2                                                                                                                                          |
| Sensor supply                    | 16 V / 25 mA , short-circuit protected                                                                                                                        |
| External supply                  | $\leq 32$ V                                                                                                                                                   |
| Switching point                  | 8 ... 10 V                                                                                                                                                    |
| Input impedance                  | 4 k $\Omega$                                                                                                                                                  |
| AC/DC voltage source             |                                                                                                                                                               |
| Connection                       | terminals 6, 7-                                                                                                                                               |
| Signal                           | max. $\pm 30$ V                                                                                                                                               |
| Switching point                  | 150 ... 400 mV                                                                                                                                                |
| Input impedance                  | 4 k $\Omega$                                                                                                                                                  |
| Function input                   |                                                                                                                                                               |
| Connection                       | terminal 8                                                                                                                                                    |
| Open loop voltage                | 7.5 V                                                                                                                                                         |
| Input impedance                  | approx. 50 k $\Omega$                                                                                                                                         |
| Function 1                       | activation start-up override                                                                                                                                  |
| Switching point                  | < 3 V , edge triggered                                                                                                                                        |
| Adjustment range                 | 1 ... 6500 s                                                                                                                                                  |
| Function 2                       | reset restart inhibit                                                                                                                                         |
| Switching point                  | > 12 V , edge triggered                                                                                                                                       |
| <b>Output</b>                    |                                                                                                                                                               |
| Connection side                  | control side                                                                                                                                                  |
| Connection                       | terminals 3, 4:                                                                                                                                               |
| Output                           | signal, relay                                                                                                                                                 |
| Contact loading                  | 253 V AC/2 A/cos $\phi > 0.7$ ; 126.5 V AC/4 A/cos $\phi > 0.7$ ; 30 V DC/2 A resistive load                                                                  |
| Minimum switch current           | 2 mA / 24 V DC                                                                                                                                                |
| Energized/De-energized delay     | $\leq 20$ ms / $\leq 20$ ms                                                                                                                                   |
| Mechanical life                  | 10 <sup>7</sup> switching cycles                                                                                                                              |
| <b>Transfer characteristics</b>  |                                                                                                                                                               |
| Accuracy                         | max. 0.1 % of the measurement value                                                                                                                           |
| Measuring time                   | $\leq 100$ ms                                                                                                                                                 |
| Influence of ambient temperature | < 100 ppm/K of the measured value                                                                                                                             |
| Frequency range                  | 0.01 ... 50000 Hz                                                                                                                                             |
| <b>Galvanic isolation</b>        |                                                                                                                                                               |
| Output/power supply              | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits             | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>       |                                                                                                                                                               |
| Display elements                 | LEDs                                                                                                                                                          |
| Control elements                 | DIP switch                                                                                                                                                    |
| Configuration                    | via DIP switches<br>via software                                                                                                                              |
| Labeling                         | space for labeling at the front                                                                                                                               |
| <b>Directive conformity</b>      |                                                                                                                                                               |
| Electromagnetic compatibility    |                                                                                                                                                               |
| Directive 2014/30/EU             | EN 61326-1:2013 (industrial locations)                                                                                                                        |
| Low voltage                      |                                                                                                                                                               |
| Directive 2014/35/EU             | EN 61010-1:2010                                                                                                                                               |
| <b>Conformity</b>                |                                                                                                                                                               |




Technical Data

|                                     |                                                                                               |
|-------------------------------------|-----------------------------------------------------------------------------------------------|
| Degree of protection                | IEC 60529:2001                                                                                |
| Protection against electrical shock | EN 61010-1:2010                                                                               |
| <b>Ambient conditions</b>           |                                                                                               |
| Ambient temperature                 | -25 ... 70 °C (-13 ... 158 °F)                                                                |
| Storage temperature                 | -40 ... 85 °C (-40 ... 185 °F)                                                                |
| Damaging gas                        | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3 |
| <b>Mechanical specifications</b>    |                                                                                               |
| Degree of protection                | IP20                                                                                          |
| Connection                          | screw terminals                                                                               |
| Core cross section                  | 0.5 ... 2.5 mm² (20 ... 14 AWG)                                                               |
| Mass                                | approx. 60 g                                                                                  |
| Dimensions                          | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                     |
| Mounting                            | on 35 mm DIN mounting rail acc. to EN 60715:2001                                              |
| <b>General information</b>          |                                                                                               |





Assembly



Matching System Components

|                                                                                     |                           |                                                                       |
|-------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------|
|  | <b>S1SD-2PF</b>           | Power Feed Module                                                     |
|  | <b>S-ADP-USB</b>          | Adapter with USB Interface                                            |
|  | <b>POWERBUS-SETL5.250</b> | Power bus for 35 mm DIN mounting rail, height: 7.5 mm, length: 250 mm |

Matching System Components

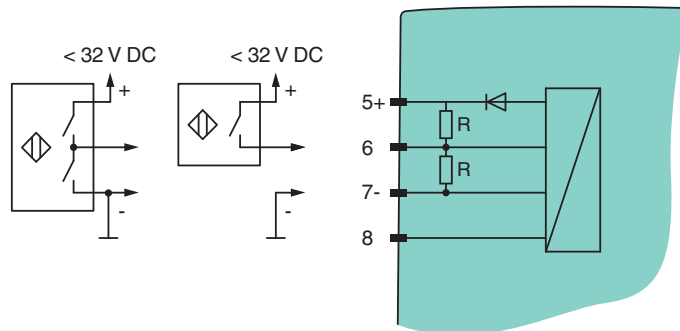
|                                                                                   |                                   |                                                                       |
|-----------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------|
|  | <b>POWERBUS-SETH5.250</b>         | Power bus for 35 mm DIN mounting rail, height: 15 mm, length: 250 mm  |
|  | <b>POWERBUS-COV.250</b>           | Cover for 35 mm DIN mounting rail, length: 250 mm                     |
|  | <b>POWERBUS-CAP</b>               | End Cap for Power Bus                                                 |
|  | <b>VAZ-CHAIN-BU/BN70MM/1,0-25</b> | 25-point wiring link for control cabinet modules with screw terminals |



## Connection

### External Supply

For mechanical contacts, 2-wire DC sensors and 3-wire sensors

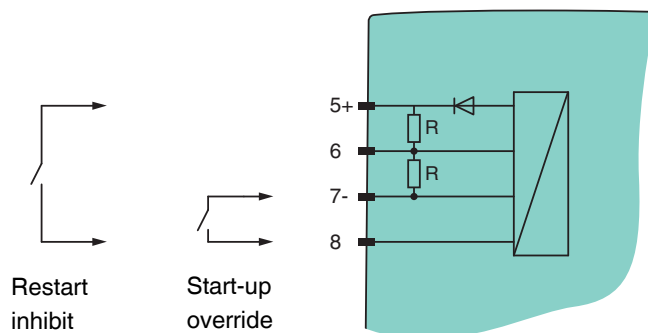


## Connection

### Function Input

The function input has two functions: resetting the restart inhibit and starting the start-up override.

Connect each function as shown in the diagram. Be aware that the functions can never be used at the same time. The input is edge triggered. The signal must be present for a minimum of 100 ms.



### Start-up Override

The start-up override affects the trip mode MIN alarm. If the relay is in the active operating mode, it remains de-energized during the bridging delay. If the relay is in the passive operating mode, it is inevitably energized during the bridging delay.

When the start-up override is bridged, the start-up override is activated once when the device is started. Do not use the restart inhibit function with a bridged input.

### Restart inhibit

The restart inhibit is used to prevent the momentary exceedance of a switch point or faults from not being noticed by operating personnel. Faults can be caused by a lead breakage, lead short circuit, or insufficient supply voltage.

If the restart inhibit is active, the new status is retained after an output has been switched until one of the following events occurs.

- The device is restarted
- There is a reset signal on terminals 8 and 5

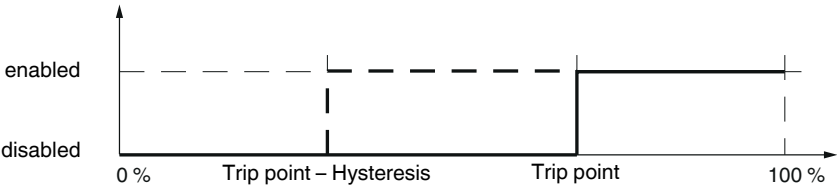
If one of these events occurs, the output is reset. The status is retained only in the following exceptional cases:

- The switch point continues to be exceeded.
- The fault continues to be present.

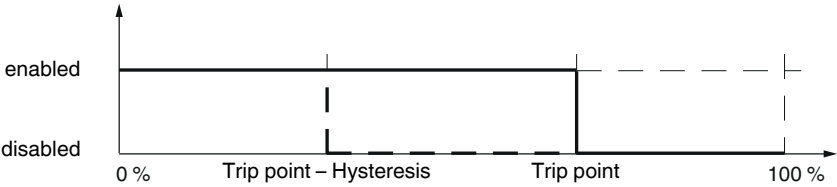
If you have chosen the restart inhibit for an output with a trip mode MIN alarm, the restart inhibit is inevitably triggered when the device starts, as the device starts with a measured value of 0. This means a MIN alarm is triggered immediately.

Without the start-up override, the output would then be blocked by the restart inhibit.

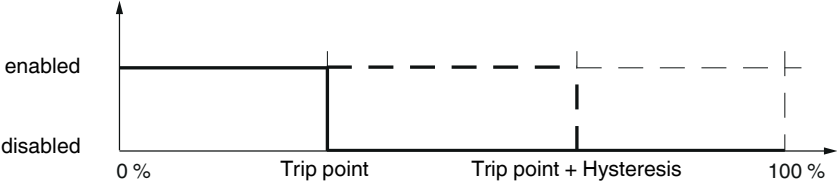
Trip mode MAX alarm, mode of operation active



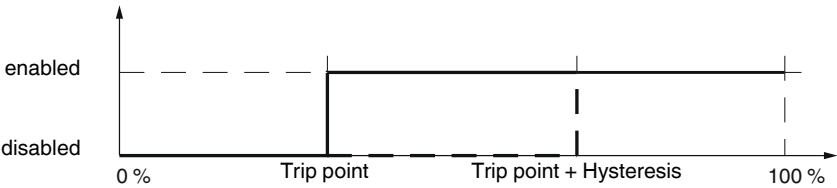
Trip mode MAX alarm, mode of operation passive

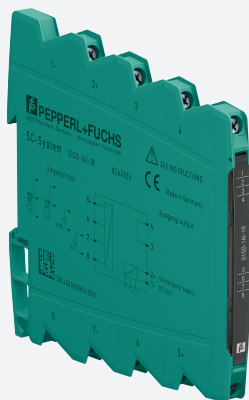


Trip mode MIN alarm, mode of operation active



Trip mode MIN alarm, mode of operation passive





## Trip amplifier S1SD-1AI-1R

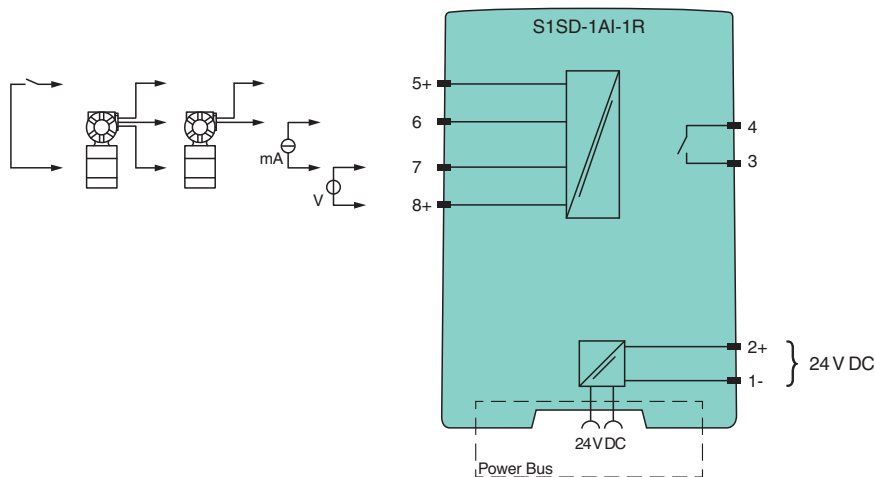
- 1-channel signal conditioner
- 24 V DC supply
- Input bipolar current and voltage sources
- Input 2-wire and 3-wire transmitters
- Relay contact output
- Restart inhibit
- One-shot function
- Configurable by DIP switches and software
- Connection via screw terminals



### Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits.  
 The device supplies 2-wire and 3-wire transmitters.  
 The device has an input for bipolar current and voltage sources.  
 The device actuates a relay contact output when it reaches the adjusted limit value.  
 The device is easily configured by the use of DIP switches or software.  
 The device has an adjustable on delay, an off delay, or an one-shot function for the relay contact output.  
 The teach-in function can be used to teach in the limit value.  
 The device can be powered via terminals or Power Bus.

### Connection



### Technical Data

#### General specifications

|                       |                |                               |  |
|-----------------------|----------------|-------------------------------|--|
| Signal type           |                | Analog input                  |  |
| Supply                |                |                               |  |
| Connection            |                | Power Bus or terminals 1-, 2+ |  |
| Rated voltage         | U <sub>r</sub> | 16.8 ... 31.2 V DC            |  |
| Power dissipation     |                | 0.6 W                         |  |
| Power consumption     |                | 0.8 W                         |  |
| Interface             |                |                               |  |
| Programming interface |                | programming socket            |  |
| Input                 |                |                               |  |

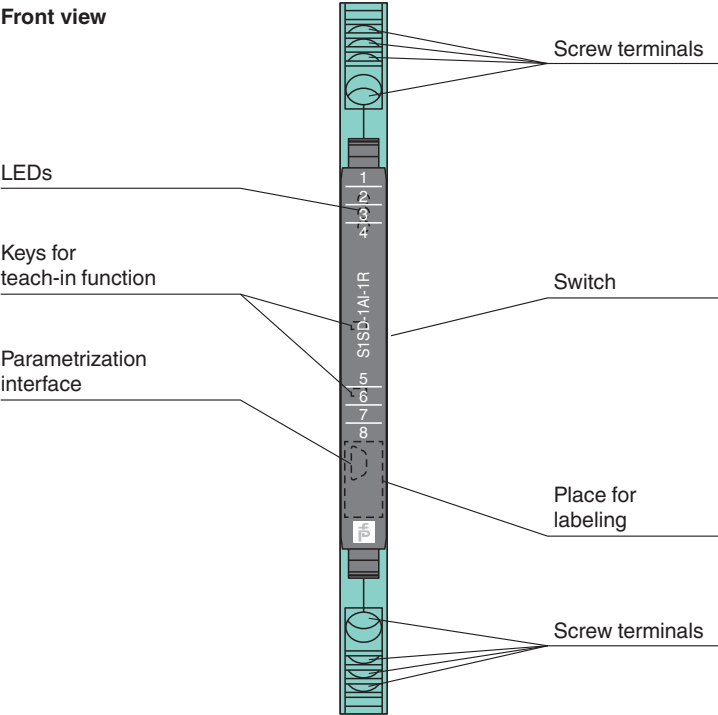
## Technical Data

|                                            |  |                                                                                                                                                               |
|--------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection side                            |  | field side                                                                                                                                                    |
| Transmission range                         |  | linearity range:<br>unipolar -1 ... 110 %<br>bipolar -110 ... 110 %                                                                                           |
| Input I                                    |  |                                                                                                                                                               |
| Connection                                 |  | terminals 5, 6, 7-                                                                                                                                            |
| Input signal                               |  | 0/4 ... 20 mA , 0/2 ... 10 mA , $\pm 10$ mA , $\pm 20$ mA , max. 50 mA                                                                                        |
| Input resistance                           |  | $\leq 25 \Omega$                                                                                                                                              |
| Input II                                   |  |                                                                                                                                                               |
| Connection                                 |  | terminals 7-, 8+                                                                                                                                              |
| Input signal                               |  | 0/1 ... 5 V , 0/2 ... 10 V , $\pm 5$ V , $\pm 10$ V , max. 30 V                                                                                               |
| Input resistance                           |  | $> 1 \text{ M}\Omega$                                                                                                                                         |
| Input III                                  |  |                                                                                                                                                               |
| Connection                                 |  | terminals 5+, 6-                                                                                                                                              |
| Input signal                               |  | 0/4 ... 20 mA                                                                                                                                                 |
| Available voltage                          |  | 16 V at 20 mA                                                                                                                                                 |
| Open circuit voltage/short-circuit current |  | $\leq 22 \text{ V} / 30 \text{ mA}$                                                                                                                           |
| Input IV                                   |  |                                                                                                                                                               |
| Connection                                 |  | terminals 5, 7                                                                                                                                                |
| Input type                                 |  | reset restart inhibit                                                                                                                                         |
| <b>Output</b>                              |  |                                                                                                                                                               |
| Connection side                            |  | control side                                                                                                                                                  |
| Connection                                 |  | terminals 3, 4:                                                                                                                                               |
| Output                                     |  | signal, relay                                                                                                                                                 |
| Contact loading                            |  | 253 V AC/2 A/cos $\phi > 0.7$ ; 126.5 V AC/2 A/cos $\phi > 0.7$ ; 30 V DC/2 A resistive load                                                                  |
| Minimum switch current                     |  | 2 mA / 24 V DC                                                                                                                                                |
| Energized/De-energized delay               |  | $\leq 20 \text{ ms} / \leq 20 \text{ ms}$                                                                                                                     |
| Mechanical life                            |  | $10^7$ switching cycles                                                                                                                                       |
| <b>Transfer characteristics</b>            |  |                                                                                                                                                               |
| Accuracy                                   |  | max. 0.1 % of full-scale value                                                                                                                                |
| Influence of ambient temperature           |  | $< 100 \text{ ppm/K}$ of full-scale value                                                                                                                     |
| <b>Galvanic isolation</b>                  |  |                                                                                                                                                               |
| Output/power supply                        |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| Input/Other circuits                       |  | safe electrical isolation by reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub> test voltage 3 kV, 50 Hz, 1 min |
| <b>Indicators/settings</b>                 |  |                                                                                                                                                               |
| Display elements                           |  | LEDs                                                                                                                                                          |
| Control elements                           |  | DIP switch<br>keys                                                                                                                                            |
| Configuration                              |  | via DIP switches<br>via keys<br>via software                                                                                                                  |
| Labeling                                   |  | space for labeling at the front                                                                                                                               |
| <b>Directive conformity</b>                |  |                                                                                                                                                               |
| Electromagnetic compatibility              |  |                                                                                                                                                               |
| Directive 2014/30/EU                       |  | EN 61326-1:2013 (industrial locations)                                                                                                                        |
| Low voltage                                |  |                                                                                                                                                               |
| Directive 2014/35/EU                       |  | EN 61010-1:2010                                                                                                                                               |
| <b>Conformity</b>                          |  |                                                                                                                                                               |
| Degree of protection                       |  | IEC 60529:2001                                                                                                                                                |
| Protection against electrical shock        |  | EN 61010-1:2010                                                                                                                                               |
| <b>Ambient conditions</b>                  |  |                                                                                                                                                               |
| Ambient temperature                        |  | -25 ... 70 °C (-13 ... 158 °F)                                                                                                                                |
| Storage temperature                        |  | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                |

Technical Data

|                           |  |                                                                                               |
|---------------------------|--|-----------------------------------------------------------------------------------------------|
| Damaging gas              |  | designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3 |
| Mechanical specifications |  |                                                                                               |
| Degree of protection      |  | IP20                                                                                          |
| Connection                |  | screw terminals                                                                               |
| Core cross section        |  | 0.5 ... 2.5 mm <sup>2</sup> (20 ... 14 AWG)                                                   |
| Mass                      |  | approx. 70 g                                                                                  |
| Dimensions                |  | 6.2 x 97 x 107 mm (0.24 x 3.82 x 4.21 inch) (W x H x D) , housing type S1                     |
| Mounting                  |  | on 35 mm DIN mounting rail acc. to EN 60715:2001                                              |
| General information       |  |                                                                                               |
| Supplementary information |  | Observe the certificates, declarations of conformity, instruction manuals, and manuals        |

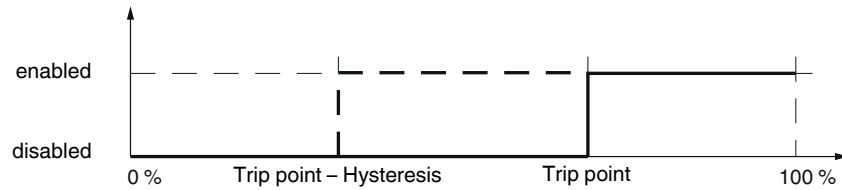
Assembly



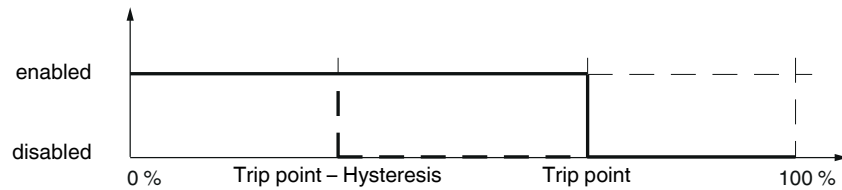
## Operation

### Modes of operation

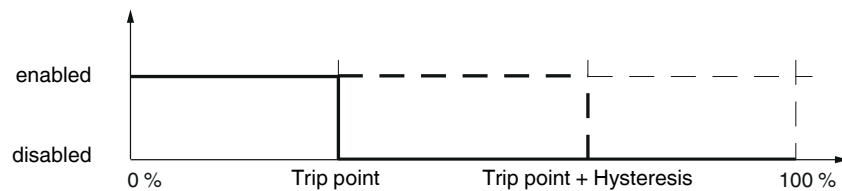
Trip mode MAX alarm, mode of operation active



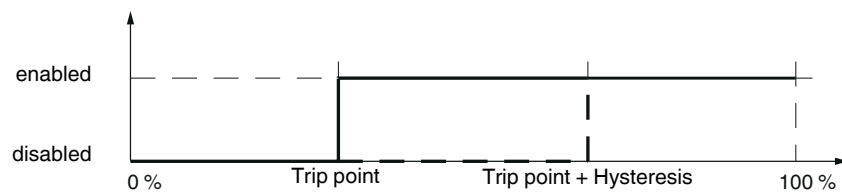
Trip mode MAX alarm, mode of operation passive



Trip mode MIN alarm, mode of operation active



Trip mode MIN alarm, mode of operation passive

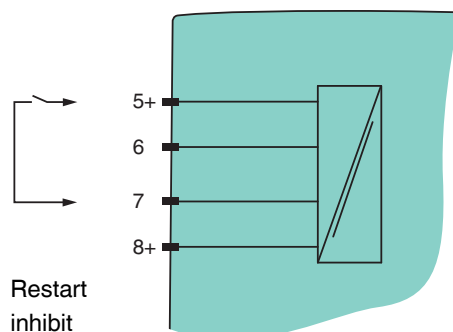


## Connection

### Function Input

The function input has the following function: resetting the restart inhibit. The restart inhibit only works if you have connected active current and voltage sources. The restart inhibit does not work if transmitters are connected.

Connect the function as shown in the diagram. The input is edge triggered. The signal must be present for a minimum of 100 ms.



**Restart inhibit**

The restart inhibit is used to prevent the momentary exceedance of a switch point or faults from not being noticed by operating personnel. Faults can be caused by a lead breakage, lead short circuit, or insufficient supply voltage.

If the restart inhibit is active, the new status is retained after an output has been switched until one of the following events occurs.

- The device is restarted
- There is a reset signal on terminals 5 and 7

If one of these events occurs, the output is reset. The status is retained only in the following exceptional cases:

- The switch point continues to be exceeded.
- The fault continues to be present.

If you have chosen the restart inhibit for an output with a trip mode MIN alarm, the restart inhibit is inevitably triggered when the device starts, as the device starts with a measured value of 0. This means a MIN alarm is triggered immediately.

Without the start-up override, the output would then be blocked by the restart inhibit.

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