

## Features

- 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 output.

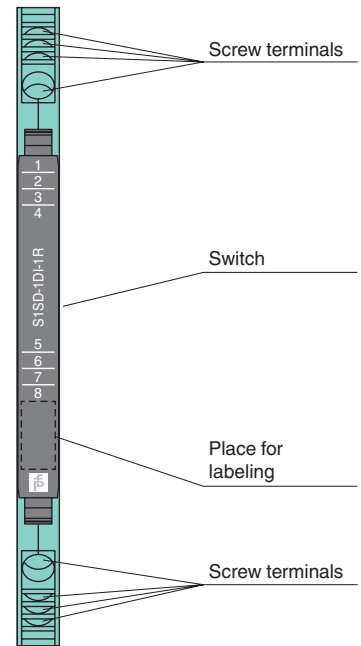
The device is easily configured by the use of DIP switches.

The device can be powered via terminals or Power Bus.

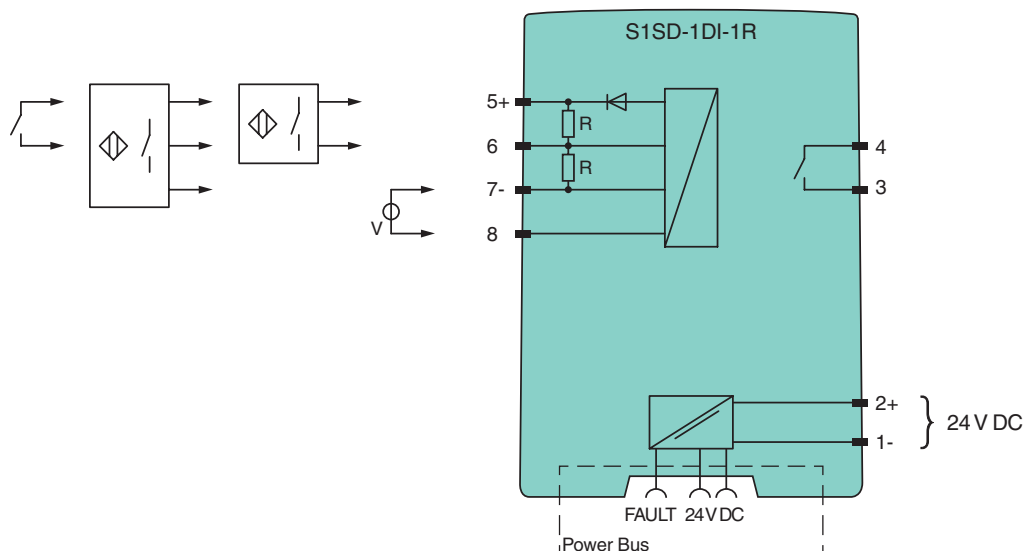
If used the device with Power Bus, a collective error messaging feature is available.

## Assembly

Front view



## Connection



|                               |       |                                        |
|-------------------------------|-------|----------------------------------------|
| <b>General specifications</b> |       |                                        |
| Signal type                   |       | Digital Input                          |
| <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             |       | 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 k $\Omega$                           |
| <b>Mechanical contact</b>     |       |                                        |
| Type                          |       | 2-wire                                 |
| Connection                    |       | terminals 5+, 6                        |
| Sensor supply                 |       | 15 V                                   |
| External supply               |       | $\leq 32$ V                            |
| Switching point               |       | 8 ... 10 V / 1.2 ... 2.1 mA            |
| Input impedance               |       | 4 k $\Omega$                           |
| <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 k $\Omega$                           |
| <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               |       | $\leq 32$ V                            |
| Switching point               |       | 2 ... 5 mA                             |
| Input impedance               |       | 1 k $\Omega$                           |
| <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 k $\Omega$                           |
| <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               |       | $\leq 32$ V                            |
| Switching point               |       | 3 ... 5 V                              |
| Input impedance               |       | 4 k $\Omega$                           |
| <b>PNP 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               |       | $\leq 32$ V                            |
| Switching point               |       | 8 ... 10 V                             |
| Input impedance               |       | 4 k $\Omega$                           |

|                                     |                                                                                                                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AC/DC voltage source</b>         |                                                                                                                                                                                                 |
| Connection                          | terminals 7, 8                                                                                                                                                                                  |
| Signal                              | 24 V AC/DC                                                                                                                                                                                      |
| Switching point                     | 10 ... 15 V                                                                                                                                                                                     |
| Input impedance                     | > 680 kΩ                                                                                                                                                                                        |
| <b>AC/DC voltage source</b>         |                                                                                                                                                                                                 |
| Connection                          | terminals 7, 8                                                                                                                                                                                  |
| Signal                              | 115 V AC/DC                                                                                                                                                                                     |
| Switching point                     | 40 ... 60 V                                                                                                                                                                                     |
| Input impedance                     | > 680 kΩ                                                                                                                                                                                        |
| <b>AC/DC voltage source</b>         |                                                                                                                                                                                                 |
| 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><br>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><br>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                                                                                                                                                                                            |
| 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) , housing type S1                                                                                                                                   |
| Mounting                            | on 35 mm DIN mounting rail acc. to EN 60715:2001                                                                                                                                                |
| <b>General information</b>          |                                                                                                                                                                                                 |
| Supplementary information           | Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> . |
| <b>Accessories</b>                  |                                                                                                                                                                                                 |
| Optional accessories                | power feed module S1SD-2PF<br>Power Bus POWERBUS-SETL5.***<br>Power Bus POWERBUS-SETH5.***<br>cover for DIN mounting rail POWERBUS-COV.250<br>end cap POWERBUS-CAP                              |

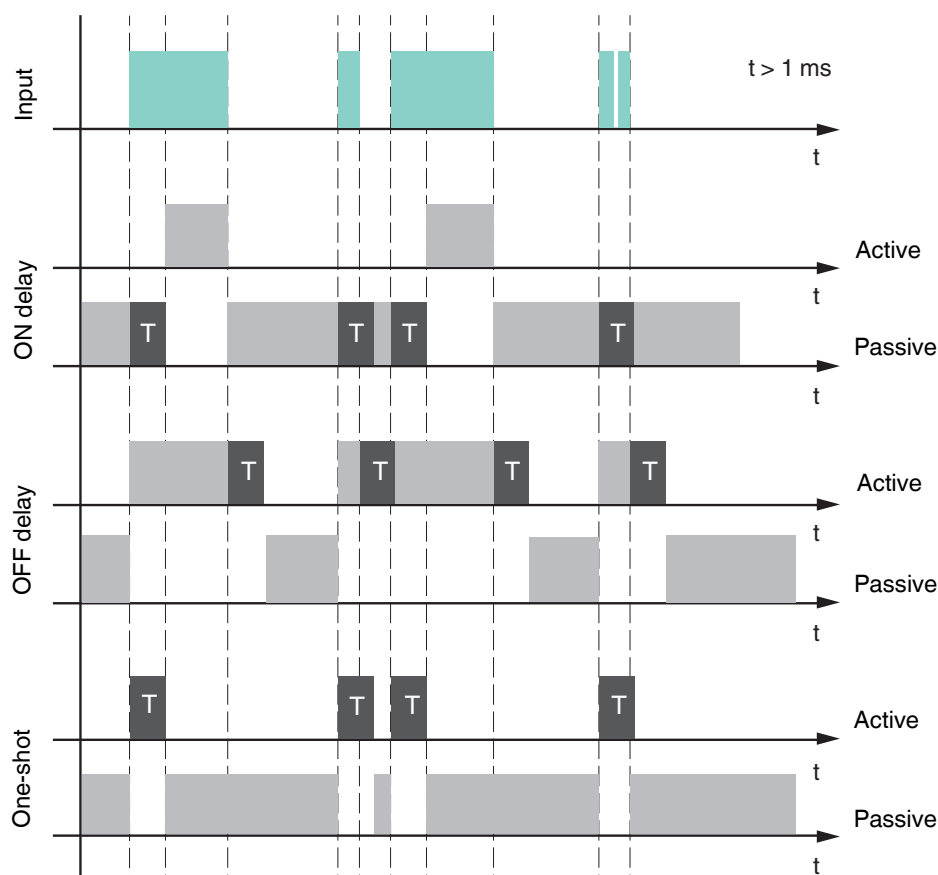
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## Configuration

### Switch settings

| Switch                                  | S  |    |    |    |    |    |    |    |   |    |
|-----------------------------------------|----|----|----|----|----|----|----|----|---|----|
|                                         | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9 | 10 |
| Sensor                                  |    |    |    |    |    |    |    |    |   |    |
| NAMUR/SN sensor                         |    |    |    |    |    |    |    |    |   |    |
| PNP sensor/mechanical contact/push-pull | ON |    |    |    |    |    |    |    |   |    |
| 2-wire DC sensor                        |    | ON |    |    |    |    |    |    |   |    |
| NPN sensor                              | ON | ON |    |    |    |    |    |    |   |    |
| S0 senosr                               |    |    | ON |    |    |    |    |    |   |    |
| AC sources                              |    |    |    |    |    |    |    |    |   |    |
| 24 V                                    | ON |    | ON |    |    |    |    |    |   |    |
| 120 V                                   |    | ON | ON |    |    |    |    |    |   |    |
| 230 V                                   | ON | ON | ON |    |    |    |    |    |   |    |
| Output                                  |    |    |    |    |    |    |    |    |   |    |
| Not inverted                            |    |    |    |    |    |    |    |    |   |    |
| Inverted ON                             |    |    |    | ON |    |    |    |    |   |    |
| Timer                                   |    |    |    |    |    |    |    |    |   |    |
| Timer off                               |    |    |    |    |    |    |    |    |   |    |
| On delay                                |    |    |    |    |    | ON |    |    |   |    |
| Off delay                               |    |    |    |    | ON |    |    |    |   |    |
| One-shot                                |    |    |    |    | ON | ON |    |    |   |    |
| Time T                                  |    |    |    |    |    |    |    |    |   |    |
| 0.5 s                                   |    |    |    |    |    |    |    |    |   |    |
| 1 s                                     |    |    |    |    |    |    | ON |    |   |    |
| 5 s                                     |    |    |    |    |    |    |    | ON |   |    |
| 10 s                                    |    |    |    |    |    |    | ON | ON |   |    |

### Timer function



## Connection

### External Supply

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

