

# 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.

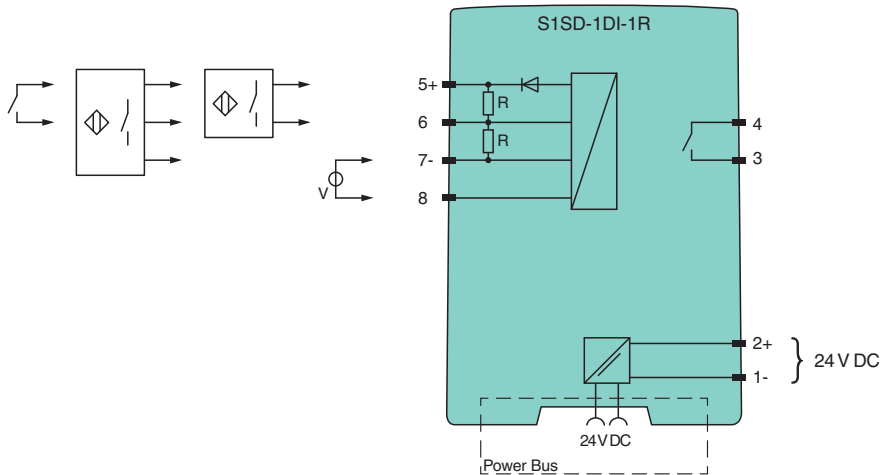
The connected sensors can also be supplied externally.

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	$U_r$	16.8 ... 31.2 V DC
Power dissipation	0.6 W	

Release date: 2023-06-05 Date of issue: 2023-06-05 Filename: 276405\_eng.pdf

## 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 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-

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## Technical Data

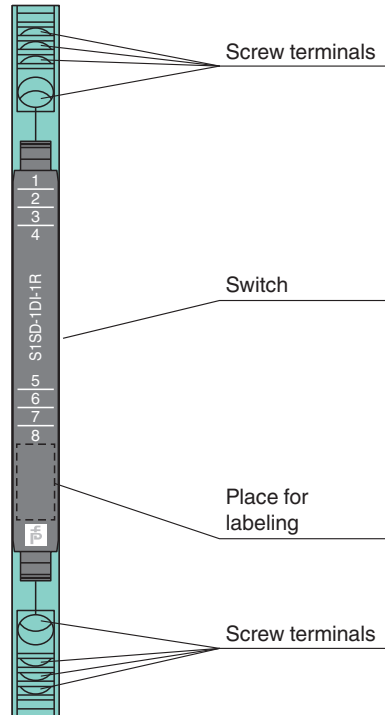
Signal	acc. to EN 60947-5-2
Sensor supply	16 V / 25 mA , short-circuit protected
External supply	≤ 32 V
Switching point	8 ... 10 V
Input impedance	4 kΩ
AC/DC voltage source	
Connection	terminals 7, 8
Signal	24 V AC/DC
Switching point	10 ... 15 V
Input impedance	> 680 kΩ
AC/DC voltage source	
Connection	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
<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> .

**Assembly**

Front view



**Configuration**

**Switch settings**






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

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## Configuration

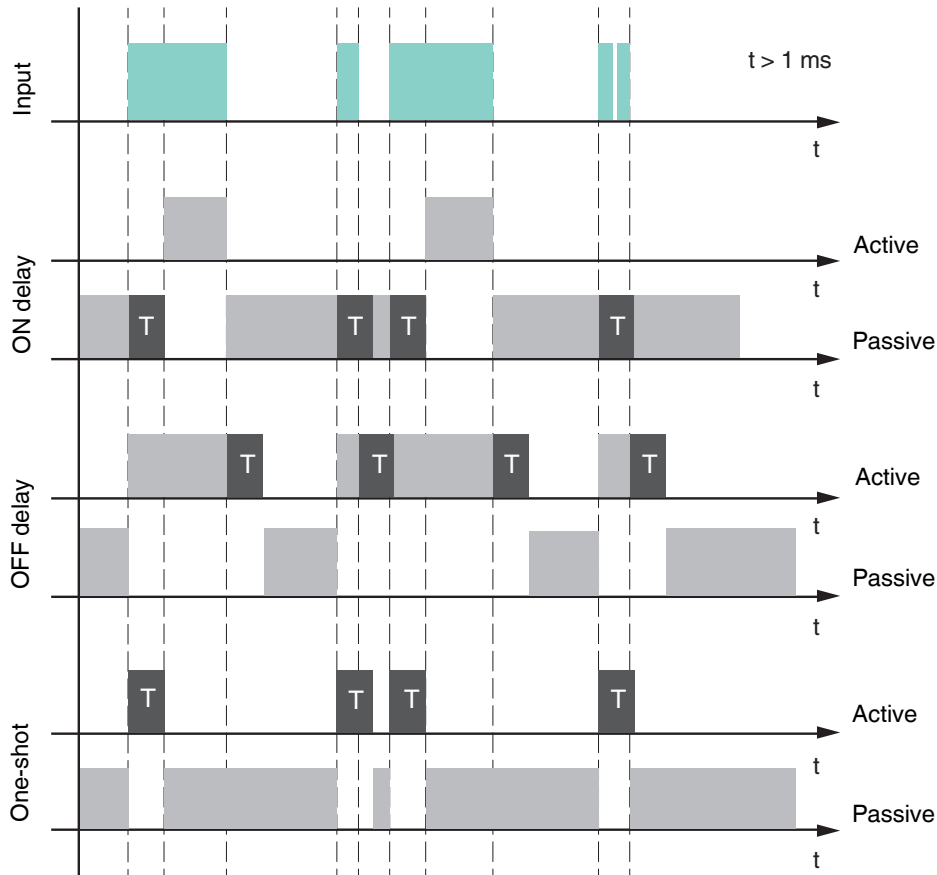
Function	Switch									
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
1 s							ON			
5 s								ON		
10 s							ON	ON		

## 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**

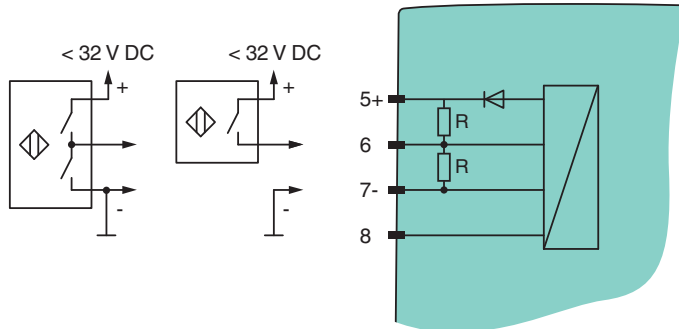
**Timer Function**



**Connection**

**External Supply**

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



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