Threshold value switch

1. Safety notes

1.1 Installation notes

• Installation, operation, and maintenance may only be carried out by qualified electricians. Follow the installation instructions as described. When installing and operating the device, the applicable regulations and safety directives (including national safety directives), as well as generally approved technical regulations, must be observed. The safety data is provided in this package slip and on the certificates (conformity assessment, additional approvals where applicable).

• The device must not be opened or modified. Do not repair the device yourself, replace it with an equivalent device. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage resulting from violation.

• The IP20 protection (IEC 60529/EN 60529) of the device is intended for use in a clean and dry environment. The device must not be subject to mechanical strain and/or thermal loads, which exceed the limits described.

• This device is not designed for use in potentially explosive atmospheres.

• When installing the device, use an appropriate housing with a minimum protection of IP54.

• Only snap the device onto or off the DIN rail connectors and connect/disconnect cables when the power is disconnected.

• The device must be stopped if it is damaged, has been subjected to an impermissible load, stored incorrectly, or if it malfunctions.

2. Short description

The configurable threshold value switch is used to control and monitor analog standard signals. On the input side, the 0...10 V or 0...20 mA standards signals canbe selected.
A high-quality PDT relay with a gold layer is located on the output side. It can be operated in both operating current and closed circuit current behavior.
The DIP switches are accessible on the side of the housing and allow the following parameters to be configured:
Input signal, switching hysteresis, operating direction (operating current and closed circuit current behavior), relay pickup/relay dropout delays.

3. Connection notes

3.1 Operating elements (1)

1 Relay output

2 Cover

3 Yellow LED: Status indication

4 Red LED: Error messages

5 Potentiometer for setting the switching thresholds

6 Groove for ZBF 6 zack marker strip

7 Input: Standard signals

8 Supply voltage

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9 Universal snap-on foot for EN DIN rails
10 DIP switch S1

3.2 Installation

The assignment of the connection terminal blocks is shown in the block diagram. (3)

The device can be snapped onto all 35 mm DIN rails according to EN 60715. (4)

4. Configuration (   )

4.1 DIP switch S1

DIP switch S1 can be used to specify the input signal range, the switching hysteresis, and the relay pickup/relay dropout delay, and to switch the operating direction (see the table).
– With the setting "High Limit Active" (operating current behavior), the delay time takes effect following the exceedance of the switching threshold. There is no delay time for the undershooting of the threshold.
– With the setting "Low Limit Active" (closed circuit current behavior), the delay time takes effect following the undershooting of the switching threshold. There is no delay time for the exceeding of the threshold.

4.2 Setting the switching thresholds

A potentiometer which is used to set the switching thresholds is located underneath the cover.
• Apply the analog threshold to the signal input using, for example, a calibration source.
• First, set the hysteresis and the delay time to "0" (delivery state) using DIP switch S1.
• Adjust the potentiometer until the yellow LED lights up or extinguishes.
• Now activate a hysteresis or delay time using DIP switch S1, if required.

5. Diagnostic indicator

The yellow LED on the front of the device indicates that voltage is being applied to the PDT relay coil, i.e., that the relay has switched.
The red LED which is visible on the front displays the following faults:
– LED ON: Measured value (overrange) > 102.5%
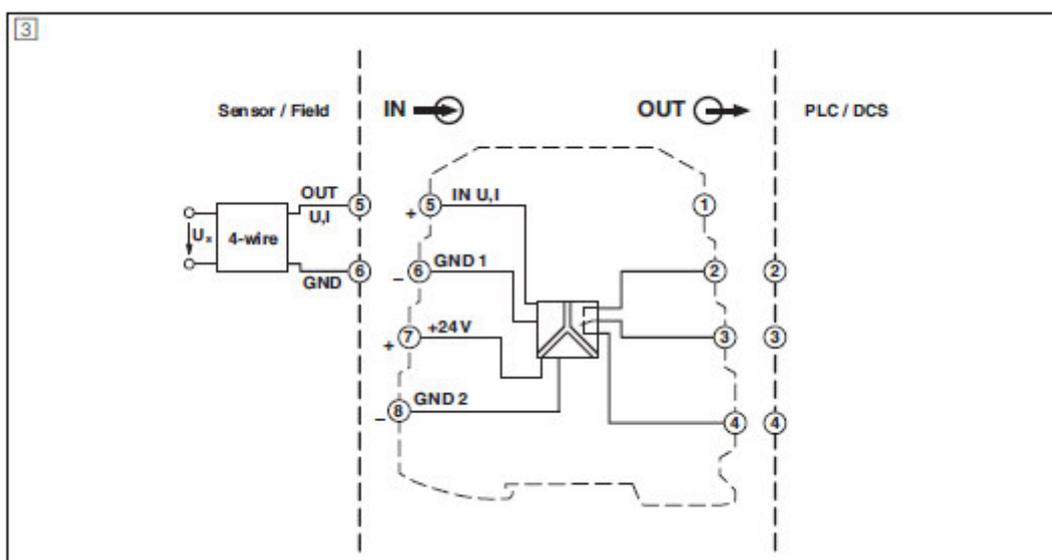– LED flashing: Module faulty

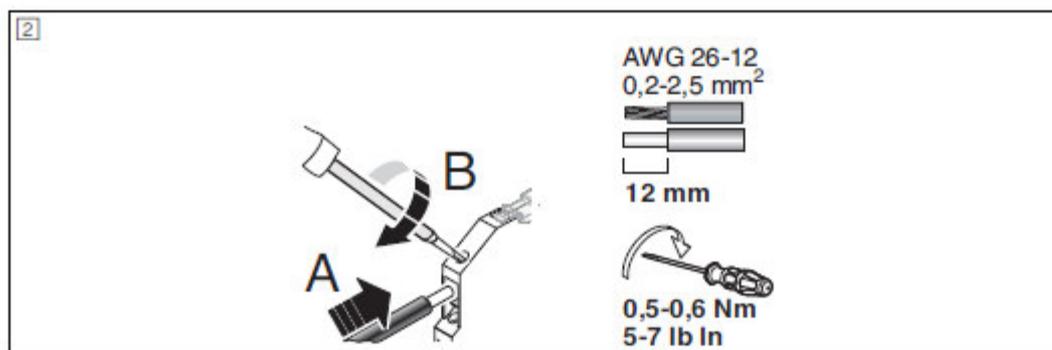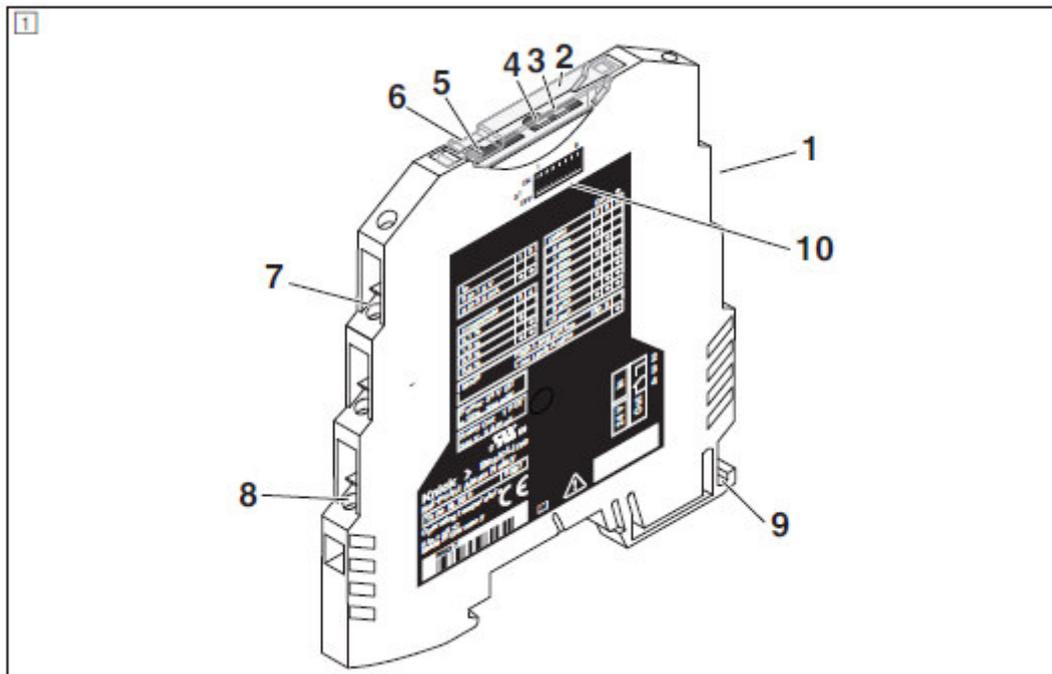### 6. Warranty
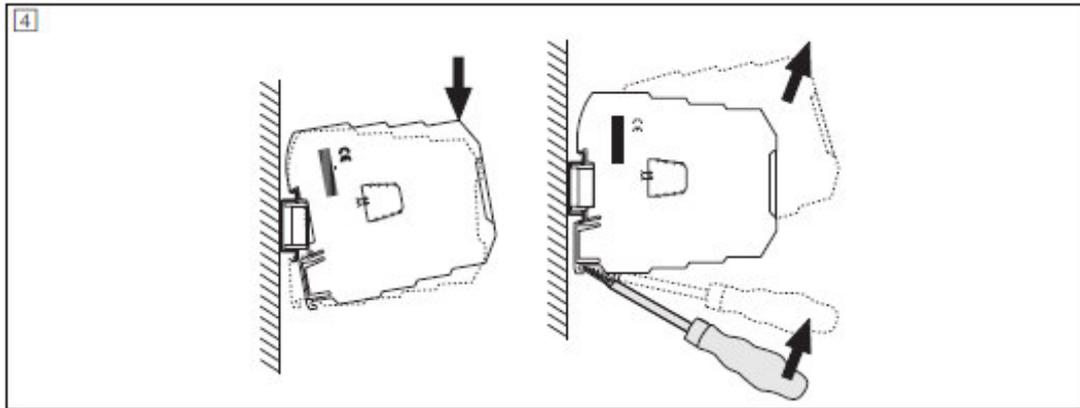
Defects that occur within three (3) years are rectified at the factory in the case of goods delivered to the factory.

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Technical data

Connection method

Input data		Set-Point Alarm Relay BasicLine BL 550	86637
		I	U
Input signal		0 mA ... 20 mA	0 V ... 10 V
Maximum input signal		100 mA	30 V
Input resistance		50 Ω	100 kΩ
Switching output	Relay output		
Contact type	1 PDT		
Contact material	$AgSnO_2$, hard gold-plated		
Max. switching voltage		240 V AC	
Max. switching current			
Max. switching current		2 A	
Internal hysteresis (configurable using the DIP switch)		(0,1 %; 1 %; 2,5 %; 5 %)	
Setting range of the response delay (configurable using the DIP switch)		0 s ... 10 s (0 s; 1 s; 2 s; 3 s; 4 s; 6 s; 8 s; 10 s)	
Operating direction (Operating and closed circuit current behavior)	Switchable using DIP switch		

General data			
Supply voltage U_B		24 V DC ± 15 %	
Current consumption	at 24 V DC	< 14 mA	
Power consumption	at 24 V DC	< 330 mW	
Maximum temperature coefficient		< 0,02 %/K	
Switching point accuracy	Repeat accuracy	< 0,2 %	
Step response (0–99%)		< 35 ms	
Degree of protection		IP20	
Ambient temperature range	Operation	0 °C ... 55 °C	
	Storage/transport	-40 °C ... 85 °C	
Dimensions W / H / D		6,2 mm / 93,1 mm / 102,5 mm	
Electrical isolation			
	Basic insulation according to EN 61010		
Surge voltage category		II	
Pollution degree		2	
Rated insulation voltage		50 V AC/DC	
Test voltage input/power supply		1,5 kV AC (50 Hz, 1 min.)	
Conformance / approvals			
	UL, USA / Canada	UL 508 Recognized	
Conformance with EMC Directive 2004/108/EC			
Noise emission	according to	EN 61000-6-4	
Noise immunityWhen being exposed to interference, there may be minimal deviations.		EN 61000-6-2	

Installation notes for electricians
Set-Point Alarm Relay BasicLine BL 550

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					DIP S1						
		ON ≙ •	1	2	3	4	5	6	7	8
IN	0 … 10 V									
	0 … 20 mA		•	•						
Hysteresis	0.1 %									
	1.0 %					•				
	2.5 %						•			
	5.0 %					•	•			
Delay	0 sec									
	1 sec							•		
	2 sec								•	
	3 sec							•	•	
	4 sec									•
	6 sec							•		•
	8 sec								•	•
	10 sec							•	•	•
Mode	High limit active									
	Low limit active									•