

Level Sensors Amplifier, Conductive Types S195, S196 (Charging/Discharging)

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- Level control for conductive liquids
- Max.-min. control of charging/discharging
- Selection of charging or discharging by a switch at the front of the system
- S195: Fixed sensitivity
- S196: Adjustable sensitivity
- 10 A SPDT or 8 A DPDT output relay
- LED-indications: Power supply and relay ON
- AC power supply

Product Description

Level control relays for conductive liquids which can control two levels of charging or discharging. When the

relays are used for registering only one level, the sensitivity is half as large.

Ordering Key

S 195 156 024

Housing _____
Type/function _____
Output _____
Power supply _____

Type Selection

Plug	Output	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC
Circular	SPDT	S 195 156 024	S 195 156 115	S 195 156 230
Circular	DPDT	S 195 166 024	S 195 166 115	S 195 166 230
Circular	SPDT	S 196 156 024	S 196 156 115	S 196 156 230
Circular	DPDT	S 196 166 024	S 196 166 115	S 196 166 230

Input Specifications

Level probe supply	Max. 24 VAC
Level probe current	Max. 2.5 mA
Sensitivity	
ON	
S195 (pin 5-6 and 7)	< 25 kΩ (approx.)
S196 (pin 5-6 and 7)	3.5 - 30 kΩ (approx.)
OFF	
S195 (pin 5-6 and 7)	> 50 kΩ (approx.)
S196 (pin 5-6 and 7)	15-60 kΩ (approx.)

Supply Specifications

Power supply	Overvoltage cat. II (IEC 60664)
Rated operational voltage through pin 2 & 10	230 115 024
Rated insulation voltage	≥ 2.0 kVAC (rms)
Rated impulse withstand voltage	4 kV (1.2/50 μs) (line/neutral)

General Specifications

Indication for	
Power supply ON	LED, green
Output ON	LED, red
Environment	
Degree of protection	IP 20 B
Pollution degree	3 (IEC 60664)
Operating temperature	-20 to +50°C (-4 to +122°F)
Storage temperature	-50 to +85°C (-58 to +185°F)
Approvals	UL, CSA
CE-marking	Yes



Output Specifications

		S 19x 156	S19x 166
Output		SPDT relay	DPDT relay
Rated insulation voltage		250 VAC (rms) (cont./elec.)	250 VAC (rms) (cont./elec., cont./cont.)
Contact ratings (Ag-Cd0)		μ (micro gap)	μ (micro gap)
Resistive loads	AC 1	10 A/250 VAC (2500 VA)	8 A/250 VAC (2000 VA)
	DC 1	1 A/250 VDC (250 W)	0.4 A/250 VDC (100 W)
Small inductive loads	or	10 A/25 VDC (250 W)	4 A/25 VDC (100 W)
	AC 13	2.5 A/230 VAC	2.5 A/230 VAC
	DC 15	5 A/24 VDC	5 A/24 VDC
Mechanical life		≥ 30 x 10 ⁶ operations	≥ 30 x 10 ⁶ operations
Electrical life AC 1		≥ 2.5 x 10 ⁵ operations (at max. load)	≥ 2.5 x 10 ⁵ operations (at max. load)
Operating frequency		≤ 7200 operations/h	≤ 7200 operations/h
Insulation voltages		≥ 2.0 kVAC (rms) (cont./elec.)	≥ 2.0 kVAC (rms) (cont./elec.)
Rated insulation voltage		4 kV (1.2/50 μs) (cont./elec.)	4 kV (1.2/50 μs) (cont./elec.)
Rated transient protection voltage		(IEC 60664)	(IEC 60664)

Mode of Operation

The switch at the front is set in the desired mode IN (charging) or OUT (discharging).

Connection cable

2 or 3 core PVC cable, normally unscreened. Cable length: max. 100 m. The resistance between the cores and the ground must be at least 220 kΩ. In certain cases it is recommended to use screened cable between sensor and amplifier, e.g. where the cable is placed in parallel

to the load cables (mains). The screen is connected to pin 7.

Example 1 and 3

The diagram shows the level control connected as max. and min. control, i.e. registration of 2 levels. The relay operates (OUT)/releases (IN) when the liquid reaches the max. electrode (pin 5), provided that the min. electrode (pin 6) is in contact with the liquid.

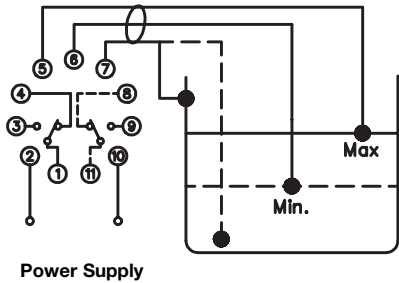
The relay releases (OUT)/operates (IN) when the min. electrode is no longer in contact with the liquid. Pin 7 must be connected to the container. If the container consists of a non-conductive material, an additional electrode must be used. (To be connected to pin 7. In the diagram this electrode is shown by the dotted line.

Example 2 and 4

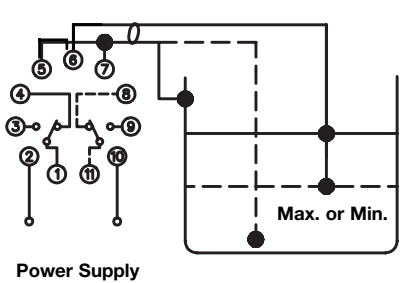
The diagram shows the level control connected as max. or min. control, i.e. registration of 1 level. The relay operates (OUT)/releases (IN) when the electrode (pin 6) is in contact with the liquid. An additional electrode must be used if the container consists of a non-conductive material. Interconnect pins 5 and 6 directly on the base.

Wiring Diagrams

Example 1 and 3



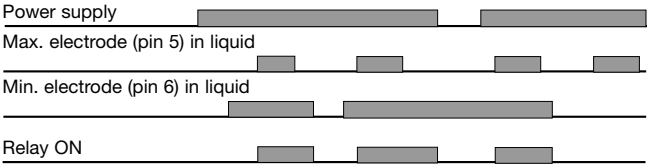
Example 2 and 4



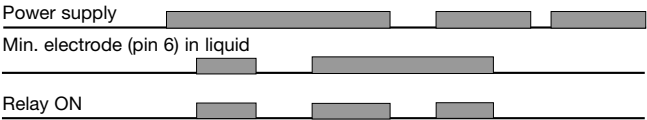


Operation Diagrams

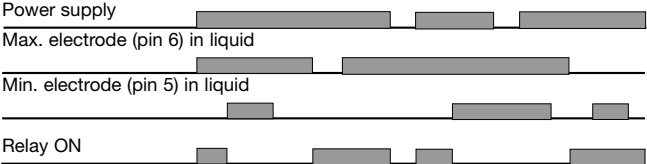
Example 1 OUT (Discharging)



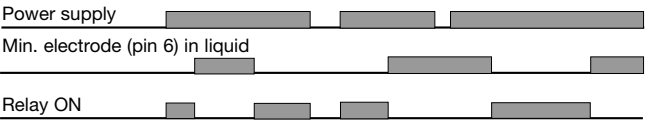
Example 2 OUT (Discharging)



Example 3 IN (Charging)



Example 4 IN (Charging)



Accessories

Conductive level probe:

- | | |
|--------------|---------------------------|
| VH | Base S411 |
| VPC, VPP | Hold down spring HF |
| VN, VNY, VNI | Base covers BBα4 |
| VT, VTI | Front mounting bezel FRS2 |
| VS | |

Settings

Knob adjustable sensitivity on relative scale (S 196).

- ON: From 3.5 to 30 kΩ
OFF: From 15 to 60 kΩ

When S 196 is used for registering only one level, the sensitivity is half as large