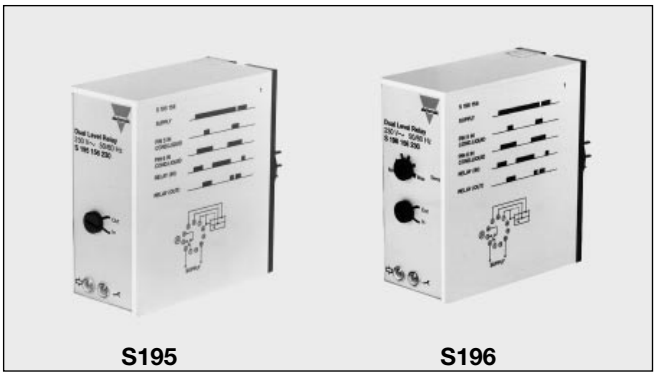
Level Sensors
Amplifier, Conductive
Types S195, S196 (Charging/Discharging)



S195 S196

- **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	230 VAC ± 15%
	115	115 VAC ± 15%
	024	24 VAC ± 15%
Rated insulation voltage		≥ 2.0 kVAC (rms)
Rated impulse withstand voltage		4 kV (1.2/50 µs) (line/nautral)

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

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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)
	or	10 A/25 VDC (250 W)	4 A/25 VDC (100 W)
Small inductive loads	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			
Rated insulation voltage		≥ 2.0 kVAC (rms) (cont./elec.)	≥ 2.0 kVAC (rms) (cont./elec.)
Rated transient protection voltage		4 kV (1.2/50 µs) (cont./elec.) (IEC 60664)	4 kV (1.2/50 µs) (cont./elec.) (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.

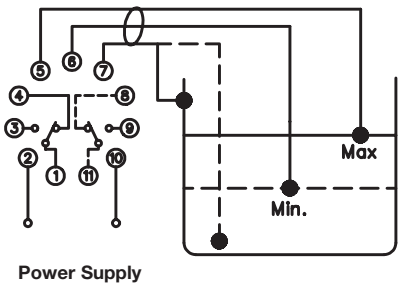
Example 1 and 3
The diagram shows the level control connected as max. and min. control, i.e. registration of 2 levels. The relay operates (OUT)/releases (IN) when the liquid reaches the max. electrode (pin 5), provided that the min. electrode (pin 6) is in contact with the liquid.

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.

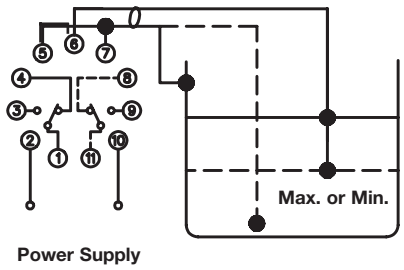
Example 2 and 4
The diagram shows the level control connected as max. or min. control, i.e. registration of 1 level. The relay operates (OUT)/releases (IN) when the electrode (pin 6) is in contact with the liquid. An additional electrode must be used if the container consists of a non-conductive material. Interconnect pins 5 and 6 directly on the base.

Wiring Diagrams

Example 1 and 3



Example 2 and 4



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Accessories

Conductive level probe:

VH	Base S411
VPC, VPP	Hold down spring HF
VN, VNY, VNI	Base covers BB¤4
VT, VTI	Front mounting bezel FRS2
VS	

Settings

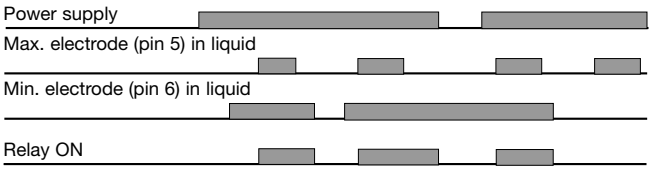
Knob adjustable sensitivity on relative scale (S 196).

ON: From 3.5 to 30 kΩ
OFF: From15 to 60 kΩ

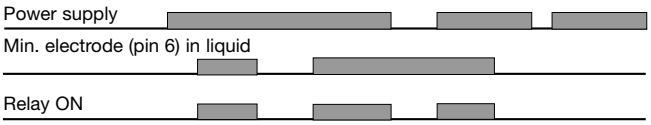
When S 196 is used for registering only one level, the sensitivity is half as large

Operation Diagrams

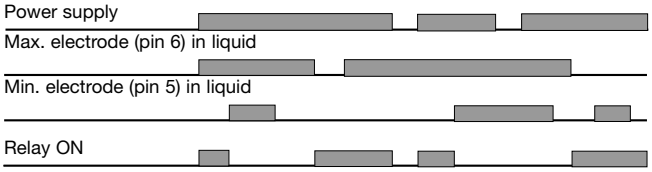
Example 1 OUT (Discharging)



Example 2 OUT (Discharging)



Example 3 IN (Charging)



Example 4 IN (Charging)