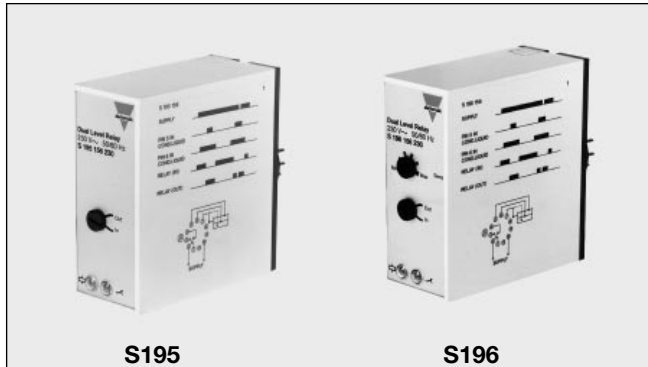


# Level Sensors Amplifier, Conductive Types S195, S196 (Charging/Discharging)

CARLO GAVAZZI



- 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	<b>S 195 156 024</b>	<b>S 195 156 115</b>	<b>S 195 156 230</b>
Circular	DPDT	<b>S 195 166 024</b>	<b>S 195 166 115</b>	<b>S 195 166 230</b>
Circular	SPDT	<b>S 196 156 024</b>	<b>S 196 156 115</b>	<b>S 196 156 230</b>
Circular	DPDT	<b>S 196 166 024</b>	<b>S 196 166 115</b>	<b>S 196 166 230</b>

## Input Specifications

<b>Level probe supply</b>	Max. 24 VAC
<b>Level probe current</b>	Max. 2.5 mA
<b>Sensitivity</b>	
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

<b>Power supply</b>	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

<b>Indication for</b>	
Power supply ON	LED, green
Output ON	LED, red
<b>Environment</b>	
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)
<b>Approvals</b>	UL, CSA
<b>CE-marking</b>	Yes

## Output Specifications

		S 19x 156	S19x 166
<b>Output</b>		SPDT relay	DPDT relay
Rated insulation voltage		250 VAC (rms) (cont./elec.)	250 VAC (rms) (cont./elec., cont./cont.)
<b>Contact ratings (Ag-Cd0)</b>		$\mu$ (micro gap)	$\mu$ (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
<b>Mechanical life</b>		$\geq 30 \times 10^6$ operations	$\geq 30 \times 10^6$ operations
<b>Electrical life</b>		$\geq 2.5 \times 10^5$ operations (at max. load)	$\geq 2.5 \times 10^5$ operations (at max. load)
<b>Operating frequency</b>		$\leq 7200$ operations/h	$\leq 7200$ operations/h
<b>Insulation voltages</b>			
Rated insulation voltage		$\geq 2.0$ kVAC (rms) (cont./elec.)	$\geq 2.0$ kVAC (rms) (cont./elec.)
Rated transient protection voltage		4 kV (1.2/50 $\mu$ s) (cont./elec.) (IEC 60664)	4 kV (1.2/50 $\mu$ s) (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 k $\Omega$ . 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

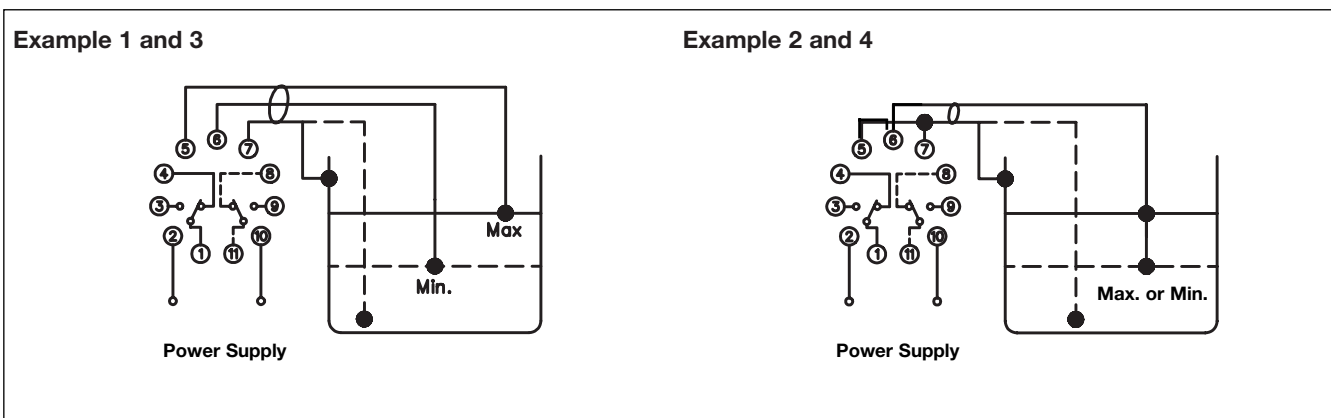
The diagram shows the level control connected as max. and min. control, i.e. registration of 2 levels. The relay operates (OUT)/releases (IN) when the liquid reaches the max. electrode (pin 5), provided that the min. electrode (pin 6) is in contact with the liquid.

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

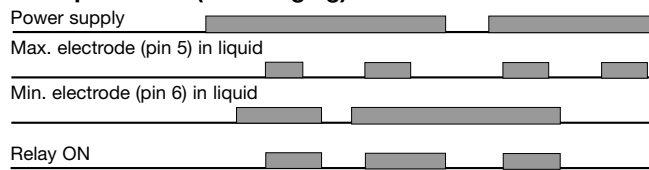
The diagram shows the level control connected as max. or min. control, i.e. registration of 1 level. The relay operates (OUT)/releases (IN) when the electrode (pin 6) is in contact with the liquid. An additional electrode must be used if the container consists of a non-conductive material. Interconnect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

## Wiring Diagrams

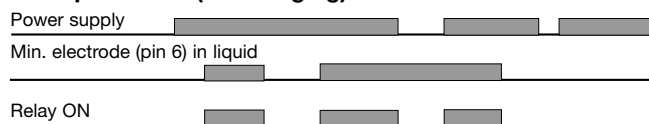


## Operation Diagrams

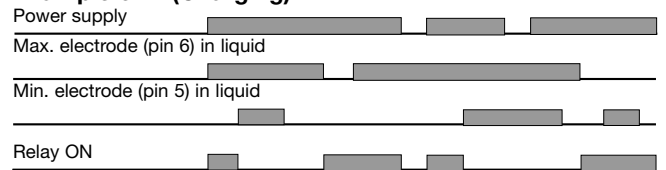
### Example 1 OUT (Discharging)



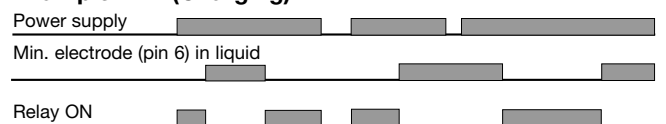
### Example 2 OUT (Discharging)



### 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 BB <sup>α</sup> 4
VT, VTI	Front mounting bezel FRS2
VS	

## Settings

Knob adjustable sensitivity on relative scale (S 196).

ON:	From 3.5 to 30 k $\Omega$
OFF:	From 15 to 60 k $\Omega$

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