

# SV

## Технические характеристики

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# Level Sensors Amplifier, Capacitive Types SV 150/250, SV 160/260

CARLO GAVAZZI



SV 150/250



SV 160/260

- Level control for solid, fluid, or granulated substances
- SV 150/250: Max./min. control of DISCHARGING
- SV 160/260: Max./min. control of CHARGING
- Factory-set sensitivity
- For capacitive sensors VR.. and VRY..
- 10 A SPDT or 8 A DPDT output relay
- LED-indication: SV 150/250: Power supply and relay ON
- SV 160/260: Relay ON
- AC or DC power supply

## Product Description

Level control relays for capacitive sensors, types VR and VRY. The relays can control one or two levels of charging (SV 160/260) or discharging (SV 150/250).

## Ordering Key

**SV 150 024**

Housing \_\_\_\_\_  
Output \_\_\_\_\_  
Power supply \_\_\_\_\_

## Type Selection

Plug	Output	Function	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
Circular	SPDT	Discharging	SV 150 024	SV 150 115	SV 150 230	SV 150 724
	DPDT	Discharging	SV 250 024	SV 250 115	SV 250 230	SV 250 724
	SPDT	Charging	SV 160 024	SV 160 115	SV 160 230	SV 160 724
	DPDT	Charging	SV 260 024	SV 260 115	SV 260 230	SV 260 724

## Input Specifications

<b>Sensitivity</b>	Depends on sensor type and material
<b>Sensor voltage</b>	Max. 24 VDC Terminal 6 is negative
<b>Sensor current</b>	Activated: Min. 15 mA, max. 20 mA Not activated: Max. < 5 mA
<b>Sensor short-circuit current</b>	Max. 45 mA

## General Specifications

<b>Indication for</b>	
Output ON	LED, red
Power supply	LED, green (only SV 150/250)
<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

## Supply Specifications

<b>Power supply AC-types</b>	Overvoltage cat. II (IEC 60664)
Rated operational voltage through pin 2 & 10	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/neutral)
<b>Power supply DC-types</b>	Installation cat. II (IEC 60664)
Rated operational voltage	24 VDC ± 15% (pin 2 pos.)
Rated insulation voltage	None
Rated transient protection volt.	800 V (1.2/50 μs)

## Output Specifications

			SV150/SV160	SV250/SV260
<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-CdO)</b>			μ (micro gap)	μ (micro gap)
Resistive loads	AC 1		10 A/250 VAC (2500 VAC)	8 A/250 VAC (200 VA)
	DC 1		1 A/250 VAC (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 15		2.5 A/230 VAC	2.5 A/230 VAC
	DC 13		5 A/24 VDC	5 A/24 VDC
<b>Mechanical life</b>			≥ 5 x 10 <sup>7</sup> operations	≥ 5 x 10 <sup>7</sup> operations
<b>Electrical life</b>			≥ 10 <sup>5</sup> operations	≥ 10 <sup>5</sup> operations
<b>Operation frequency</b>			≤ 7200 operations/h	≤ 7200 operations/h
<b>Insulation voltages</b>				
Rated insulation voltage	AC		≥ 2.0 kVAC (rms) (cont./elect.)	≥ 2.0 kVAC (rms) (cont./elect.)
	DC		None	None
Rated impulse withstand voltage	AC		4 kV (1.2/50 μs) (cont./elect.) (IEC 60664)	4 kV (1.2/50 μs) (cont./elect.) (IEC 60664)
	DC		800 V	800 V

## Mode of Operation

**Max. and/or min. control of solid, fluid or granulated substances, e.g. sand, gravel, sugar or chemicals.**

**SV 150/250: Relay control of DISCHARGING**

**SV 160/260: Relay control of CHARGING**

### Example 1

The diagram shows the level control connected as max. and min. control, i.e. registration of 2 levels during charging (discharging).

The relay releases (operates) when the max. sensor is in contact with the substance,

provided that the min. sensor is immersed. The relay operates (releases) when the min. sensor is no longer in contact with the substance.

### Example 1

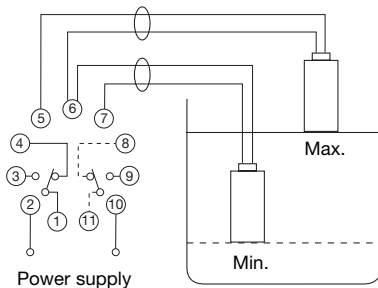
The diagram shows the level control connected as max. or min. control, i.e. registration

of 1 level during charging (discharging).

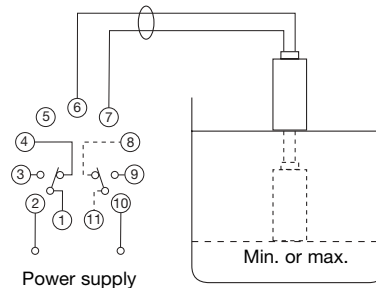
The relay releases (operates) when the sensor is in contact with the substance.

## Wiring Diagrams

**Example 1: Two levels max./min.**



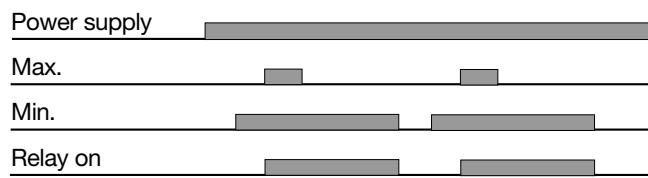
**Example 2: One level**



## Operation Diagrams

### SV 150/250 DISCHARGING

#### Example 1

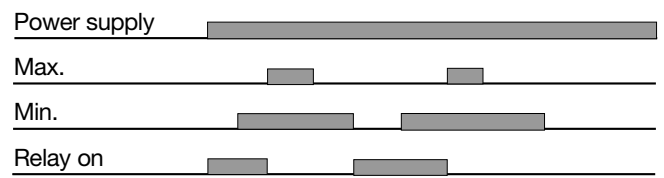


#### Example 2



### SV 160/260 CHARGING

#### Example 1



#### Example 2



## Accessories

Sensors: Types VR and VRY

Bases  
 Hold down spring  
 Base covers  
 Front mounting bezel  
 Optical: VP  
 Capacitive: DR, EC

# Proximity Sensors Capacitive Amplifier, Capacitive, Optical Type SV 190 (Charging/Discharging)

CARLO GAVAZZI



- Level control relay
- Max.-min. control of charging/discharging
- For use with refractive optical sensors or capacitive sensors
- Controls liquid/granulate presence or absence with one sensor, or liquid/granulate level within max./min. limits with two sensors
- Normal or inverted function selectable
- 10 A SPDT output relay
- LED-indication: relay ON
- AC or DC power supply

## Product Description

Level control relay for transparent liquids or granulates which can control one or two levels of charging or discharging. For use with opti-

cal sensors (VP.) or capacitive sensors (DR. or EC.). Open collector NPN-types only.

## Ordering Key

**SV 190 230**

Type \_\_\_\_\_  
Power supply \_\_\_\_\_

## Type Selection

Plug	Output	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
Circular	SPDT	SV 190 024	SV 190 115	SV 190 230	SV 190 724

## Input Specifications

<b>Sensor supply</b> through pins 7 and 9 (+)	12 VDC, stabilized max. 60 mA
Short-circuit protection	Yes
<b>Sensor input</b> One level	Pin 5
Two levels	Pin 5 and 6
<b>Operating frequency</b>	Max. 5 Hz.
<b>Input resistance</b>	25 kΩ
<b>Cable resistance</b>	Max. 100 Ω

## Supply Specifications

<b>Power supply AC-types</b>	Overvoltage cat. II (IEC 60664)
Rated operational voltage through pin 2 & 10	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/neutral)
<b>Power supply DC-types</b>	Installation cat. II (IEC 60664)
Rated operational voltage	24 VDC ±15% (pin 2 pos.)
Rated insulation voltage	None
Rated transient protection volt.	800 V (1.2/50 μs)

## General Specifications

<b>Time delay before availability</b>	0.5 s
<b>Indication for Output ON</b>	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

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

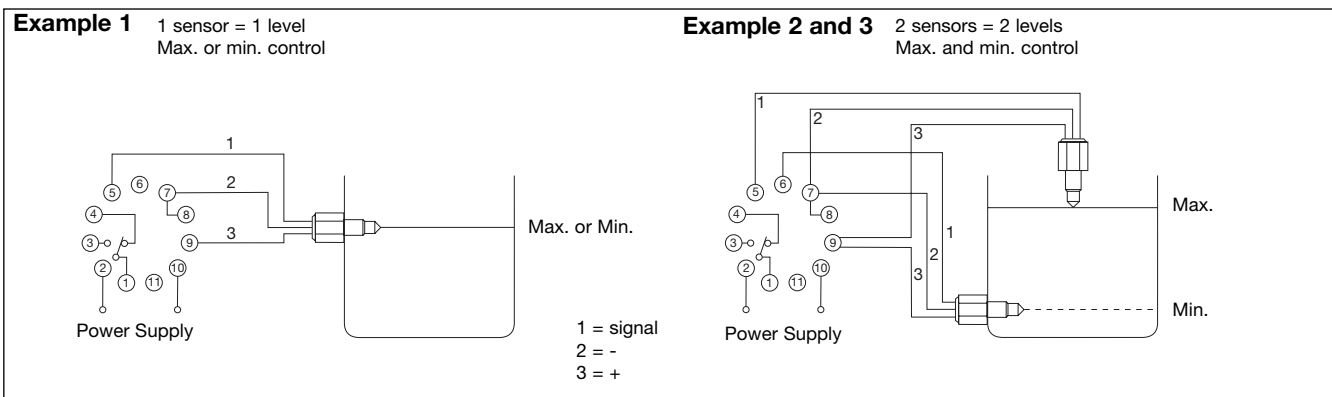
## Accessories

Sensors, open collector NPN-types:

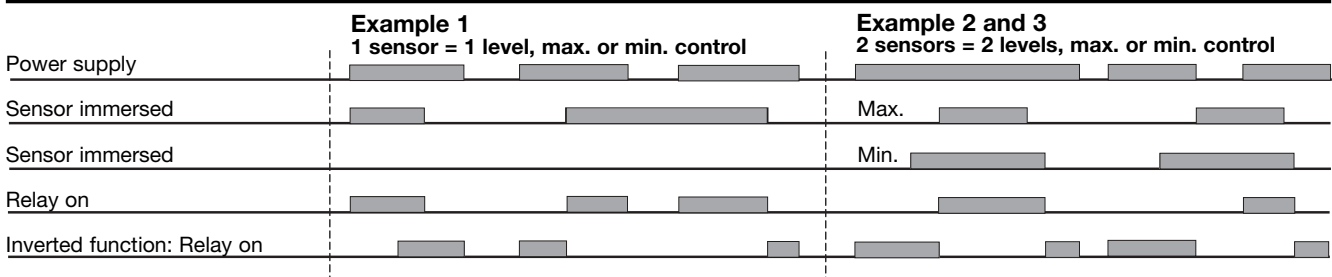
Optical: VP  
Capacitive: DR, EC

Bases  
Hold down spring  
Base covers  
Front mounting bezel

## Wiring Diagrams



## Operation Diagrams



## Mode of Operation

### Example 1

#### One sensor/one level

The relay operates when the sensor is immersed and releases when the sensor is no longer immersed. When pins 7 and 8 are interconnected (dotted line), the relay is inverted.

The relays releases at desired max. level making the pump stop. In case of power supply interruptions, the relay releases and the pump stops, thus overflow is prevented.

#### Sensor characteristics

The optical sensors VP for liquids must not be exposed to more than 100 lux from ambient light sources.

### Example 2: Discharging

#### Two sensors/two levels

The relay operates when the upper sensor (max. level) is immersed and releases when the lower sensor (min. level) is no longer immersed. When pins 7 and 8 are interconnected (dotted line), the relay is inverted.

The capacitive sensors DR and EC are for solid, fluid or granulated substances. The activating distance depends on the physical and electrical characteristics of the object to be detected.

### Example 3: Charging.

#### Two sensors/ two levels

In fill-up applications inverted function (pins 7 and 8 connected) should always be used and the pump always be supplied through pin 3 (relay ON).

Note: Solid or fluid conductors are detected at a greater distance than light or porous insulators.

**По вопросам продаж и поддержки обращайтесь:**

Алматы (7273)495-231  
Архангельск (8182)63-90-72  
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Курск (4712)77-13-04  
Липецк (4742)52-20-81  
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Ульяновск (8422)24-23-59  
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