Conductive Sensors
Amplifier, Charging or Discharging
Type S 1961

CARLO GAVAZZI

- **Level control for conductive liquids**
- **Max.- min. control of charging/discharging**
- **Selection of charging or discharging by interconnection of the pins**
- **3 sensitivity ranges, from 200 Ω to 220 kΩ, selectable by switch in the front**
- **Adjustable sensitivity**
- **Possibility of parallel connection**
- **Level probe supply max. 6 V_{pp}, 1.5 mA, according to IEC 60364-4-41, FELV**
- **Output: 10 A SPDT relay**
- **LED-indication for relay and power supply ON**
- **AC or DC power supply**

Product Description

Level control relay for conductive liquids which can control two levels of charging or discharging. The relay features sensitivity ranges from 200 Ω to 220 kΩ (5 m Siemens to 4.5 µ Siemens). If more than two levels are required, more relays can be cascaded.

Ordering Key

S 1961 156 230

Housing
Type/function
Output
Power supply

Type Selection

Plug	Output	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
Circular	SPDT	**S 1961 156 024**	**S 1961 156 115**	**S 1961 156 230**	**S 1961 156 724**

Input Specifications

Level probe supply	6 V_{pp} (IEC 60364-4-41, FELV)
Level probe current	
Range 1: 200 Ω - 2.2 kΩ	1.5 mA
Range 2: 2.0 kΩ - 22 kΩ	150 µA
Range 3: 20 kΩ - 220 kΩ	15 µA
Clock in/clock out	Clock in: pin 9 Clock out: pin 8 Approx. 100 Hz ±15 Hz square wave Duty cycle typically 60-40 For cascading of more amplifiers Always use screened cable to avoid ambient noise Screen must be connected to pin 7
Reaction time	Approx. 1 s

Output Specifications

Output		SPDT relay
Rated insulation voltage		250 VAC (rms) (cont./elect.)
Contact ratings (Ag-CdO)		(IEC 60947-5-1/IEC 60337)
Resistive loads	AC 1	10 A/250 VAC (2500 VA)
	DC 1	1 A/250 VDC (250 VA)
	or	10 A/25 VDC (250 VA)
Small inductive loads	AC 15	2.5 A/230 VAC
	DC 13	5 A/24 VDC
Mechanical life		≥ 30 x 10^6 operations
Electrical life	AC 1	≥ 2.5 x 10^5 operations (at max. load)
Operating frequency		≤ 7200 operations/h
Insulation voltages		
Rated insulation voltage		≥ 2.0 kVAC (rms) (cont./elect.)
Rated impulse withstand voltage		4 kV (1.2/50 µs) (cont./elect.) (IEC 60664)

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Supply Specifications

Power supply AC types		Overvoltage cat. III (IEC 60664)
Rated operational voltage through pins 2 & 10	230	230 VAC ±15%, 50/60 Hz, -5/+5 Hz
	115	115 VAC ±15% 50/60 Hz, -5/+5 Hz
	024	24 VAC ±15% 50/60 Hz, -5/+5 Hz
Voltage interruption		≤ 40 ms
Rated insulation voltage		≥ 2.0 kVAC (rms)
Rated impulse withstand voltage		4 kV (1.2/50 µs) (line/neutral)
Power supply DC type		Overvoltage cat. III (IEC 60664)
Rated operational volt. 724		24 VDC ±15% (pin 2 pos.)
Rated insulation voltage		None
Rated impulse withstand voltage		800 V (1.2/50 µs) (line/neutral)
Rated operational power		
AC supply		2.5 VA
DC supply		1.5 W

General Specifications

Indication for		
Power supply ON		LED, green
Output ON		LED, red
Environment		
Degree of protection		IP 20 B
Pollution degree		2 (IEC 60664)
Operating temperature		-20° to +50°C (-4° to +122°F)
Storage temperature		-50° to +85°C (-58° to +185°F)
Scale accuracy		+/- 20%
Hysteresis		100% of set value
Weight	AC-Types	200 g
	DC-Type	125 g
Approvals		UL, CSA
CE-marking		Yes

Mode of Operation

Max., min. control of charging/discharging.

Example 1
The diagram shows the level control connected as max. and min. control, i.e. detection 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.

By use of a container of a conductive material pin 7 can be connected to the container. If the container is made of a non-conductive material, an additional electrode is needed, indicated by the dotted line in the diagram.
If only one level is required, pins 5 and 6 must be interconnected, to select either max. or min. control.

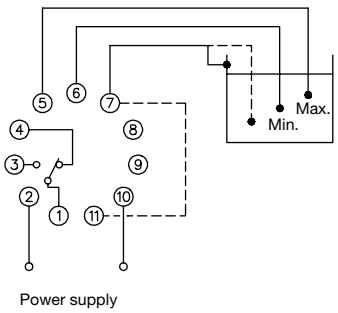
Example 2
If more than 2 levels are required, two or more amplifiers can be cascaded, as shown in example 2.

Pin 8 (clock out) and pin 9 (clock in) are connected to synchronize the clock in all systems - otherwise interference may occur. This means that one system determines the clock for all systems cascaded.

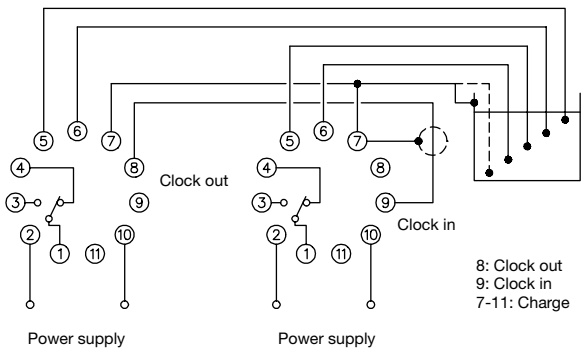
The clock in/clock out connection must be screened cable. In some cases screened cable must be used to achieve perfect operation, e.g. in cable pits or trays where the sensor cable is close to power cables. Connect the screen to pin 7.

Wiring Diagrams

Example 1



Example 2



PE=Pin 7

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Operation Diagram

Accessories

Conductive level probes:
VN..., VNI..., VNY..., VNYI..., VT..., VTI..., VPP..., VPC..., VH...

Socket◊	S 411
Hold down spring◊	HF
Mounting rack	SM 13
Socket cover	BB 4
Front mounting bezel	FRS 2

Settings

Upper knob: Sensitivity

Lower knob: Range selection