

Conductive Sensors

1-point Basic Level Controller

Type CL with Potentiometer and Time Control

CARLO GAVAZZI



- Conductive level controller
- Sensitivity adjustment 5 K Ω to 150 K Ω
- For filling or emptying applications
- Low-voltage AC electrodes
- Easy installation on DIN rails 17.5 mm
- Rated operational voltage: 24 VAC/DC
- Output 8A/250 VAC SPST relay
- LED indication for: Output ON, Power ON



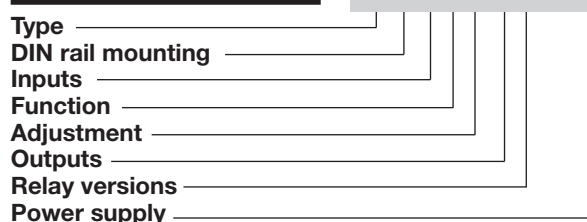
Product Description

μ -Processor based level controller for liquids with a wide sensitivity range from 5 K Ω to 150 K Ω .

One probe level control with built in ON or OFF time delay for filling or emptying applications. The time delay can be set from 1 to 30 seconds.

Ordering Key

CLD1EA1CM24



Type Selection

Mounting

DIN-rail

Ordering no.

Supply: 24 VAC/DC

CLD1EA1CM24

Specifications

Rated operational voltage (U_B)				Dielectric voltage	>2.0 KVAC (rms) (contacts / electronics)
Supply class 2				Rated impulse withstand volt.	4 kV (1.2/50 μ S) (contacts / electronics) (IEC 664)
Pin A1 & A2	24	19.2 to 28.8 VAC/DC		Operating frequency (f) max	Relay output
Rated insulation voltage		<2.0 kVAC (rms)			0.5 Hz
Rated impulse withstand voltage		4 kV (1.2/50 μ s) (line/neutral)		Response time	
Rated operational power				OFF-ON (t _{on})	1 sec to 30 sec adjustable
AC/DC supply		5 VA / 5 W		ON-OFF (t _{off})	1 sec to 30 sec adjustable
Delay on operate (t_v)		< 300 mS		Environment	
Outputs				Overvoltage category	III (IEC 60664)
Rated insulation voltage		250 VAC (rms) (cont./elec.)		Degree of protection	IP 20 /IEC 60529, 60947-1)
Relay Rating (AgCdO)				Pollution degree	2 (IEC 60664/60664A, 60947-1)
Resistive loads	AC1	μ (micro gap)		Temperature	
	DC1	8 A / 250 VAC (2500 VA)		Operating	-20° to +50°C (-4° to + 122°)
		1 A / 250 VDC (250 W)		Storage	-50° to +85°C (-58° to +185°F)
		or 10 A 25 VDC (250 W)		Housing material	ABS VO, light grey
Small induc. Loads	AC15	0,4 A 250 VAC		Weight	
	DC13	0,4 A / 30 VDC		AC/DC supply	125 g
Mechanical life (typical)		$\geq 30 \times 10^6$ operations		Approvals	
		@ 18'000 imp/h		UL	cULus UL508, UL325, CSA-C22.2 No.247
Electrical life (typical)	AC1	> 250'000 operations		CSA	Yes
Level probe supply		Max. 5 VAC		CE marking	Yes
Level probe current		Max. 2 mA			
Sensitivity		5 K Ω to 150 K Ω , C _F = 2.2 nF* Factory preset 150 K Ω			

*C_F = maximum Cable Capacitance

Mode of Operation

Connection cable

2 conductor PVC cable, normally screened. Cable length: max. 100 m. The resistance between the cores and the ground must be at least 150K. Normally, it is recommended to use a screened cable between probe and controller, e.g. where the cable is placed in parallel to the load cables (mains). The screen has to be connected to Y2 (reference).

The filling or emptying process operate around one single electrode and a time control circuit.

Cautions

Overrunning of tank filling

Cautions must be taken to assure that the tank cannot

overrun. Factors that have to be considered are the pump performance, the rate of discharge from the tank, the position of the single level electrode and the time delay.

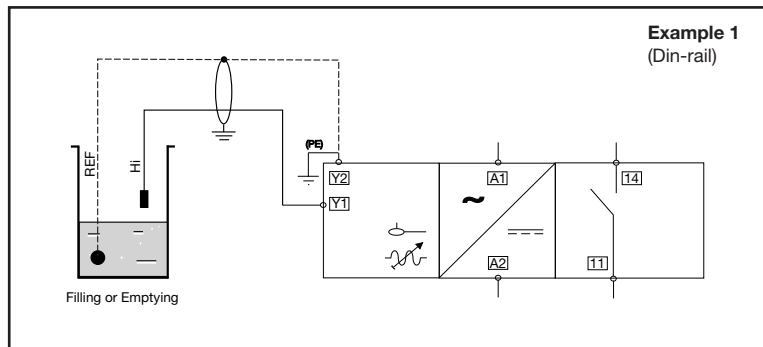
Prevent dry running of pump on emptying

Care must be taken to ensure that the pump cannot run dry. Similar considerations must be given as mentioned above. Specifically keeping the time delay to a minimum will minimize this risk, but again, it will increase the switching rate.

Example 1

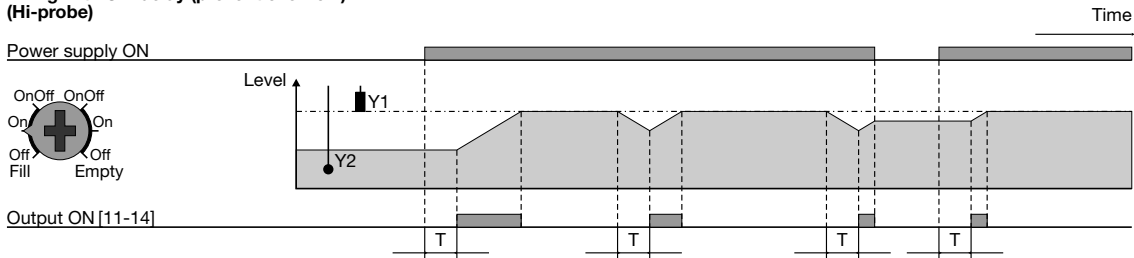
The diagram shows the level control connected as filling or emptying control. The relay react to the low alternating current created when the electrodes are in contact with the liquid.

The reference (Ref) must be connected to the container or if the container consists of a non-conductive material, to an additional electrode. (To be connected to pin Y2). (In the diagram this electrode is shown by the dotted line).

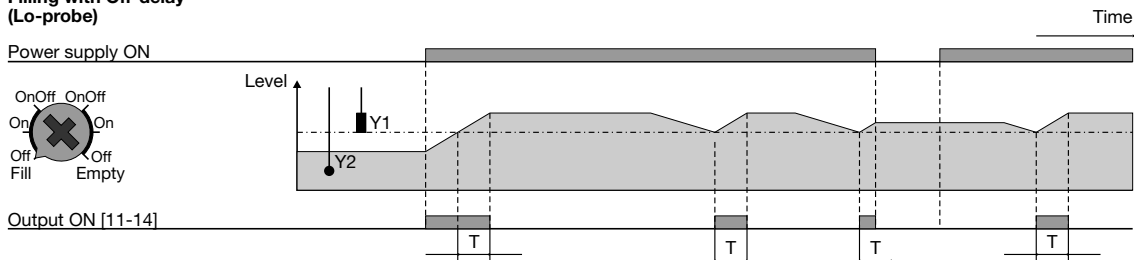


Operation Diagram

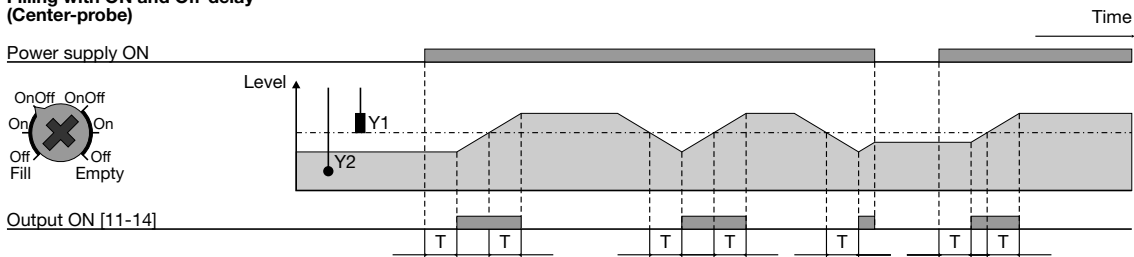
Filling with ON-delay (prevent overflow) (Hi-probe)



Filling with Off-delay (Lo-probe)

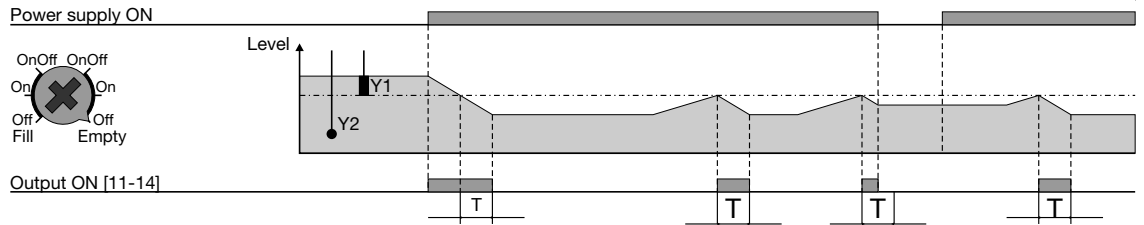


Filling with ON and Off-delay (Center-probe)

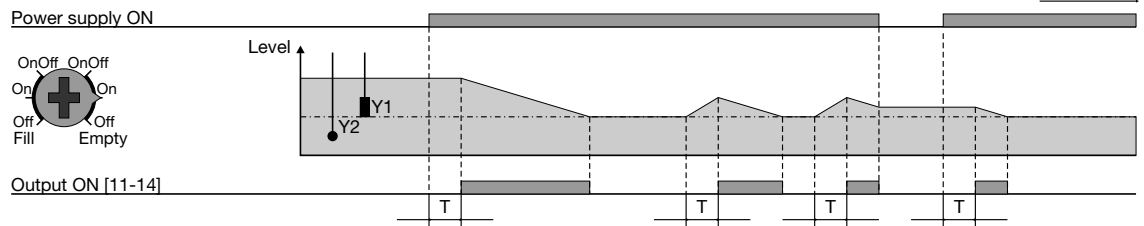


Operation Diagram

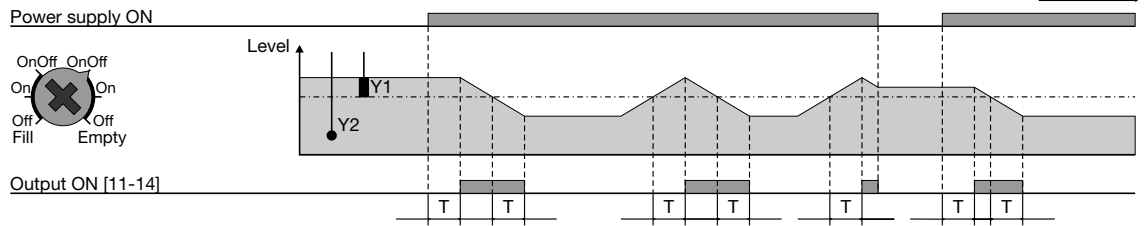
Emptying with Off-delay (Hi-probe)



Emptying with ON-delay (Prevent dry run) (Lo-probe)

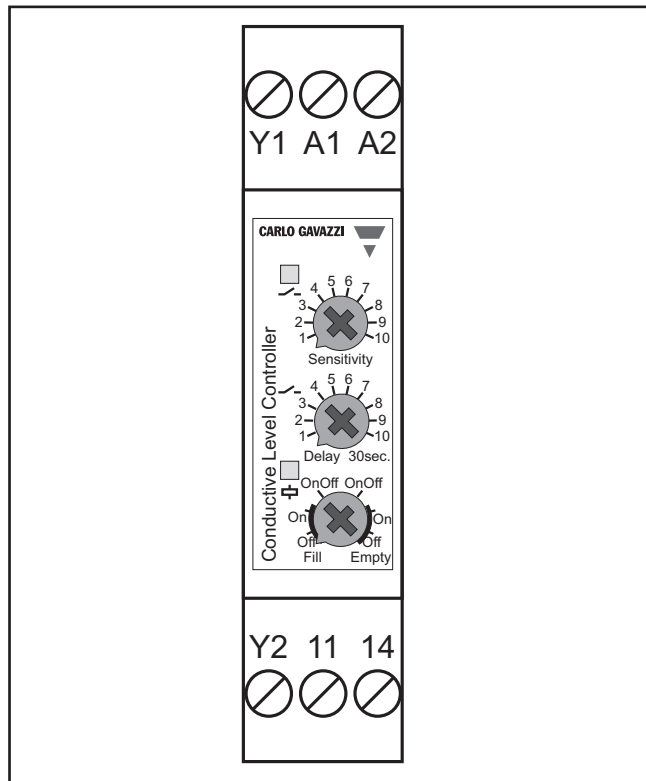


Emptying with ON and Off-delay (Center-probe)

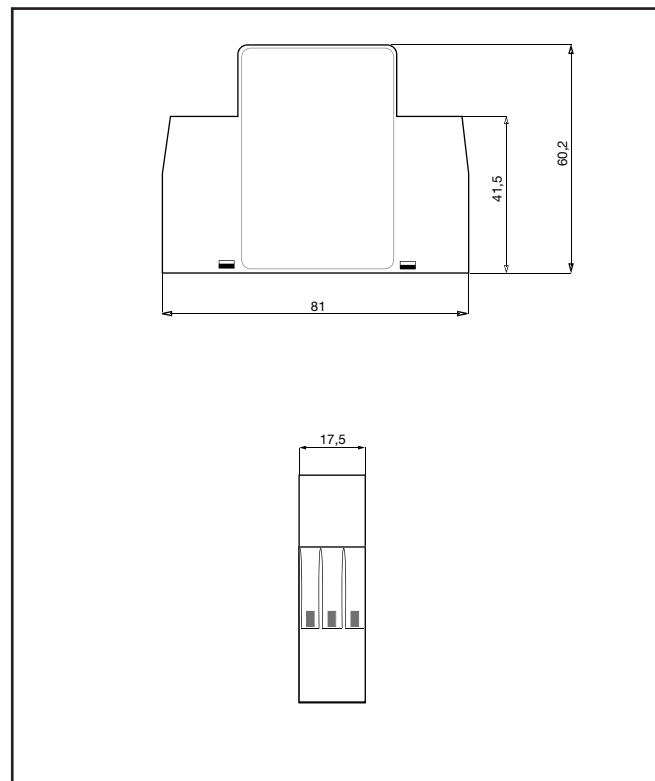




Wiring Diagram



Dimension Drawings



Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual