

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



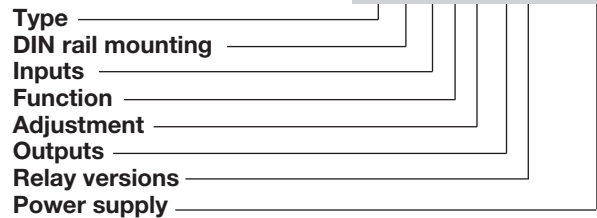
Product Description

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)		Rated impulse withstand volt.	4 kV (1.2/50 μ s) (contacts / electronics) (IEC 664)
Supply class	2	Operating frequency (f) max	Relay output 0.5 HZ
Pin A1 & A2	24		
Rated insulation voltage	19.2 to 28.8 VAC/DC	Response time	
Rated impulse withstand voltage	<2.0 kVAC (rms)	OFF-ON (t _{on})	1 sec to 30 sec adjustable
		ON-OFF (t _{off})	1 sec to 30 sec adjustable
	4 kV (1.2/50 μ s) (line/neutral)	Environment	
Rated operational power		Overvoltage category	III (IEC 60664)
AC/DC supply	5 VA / 5 W	Degree of protection	IP 20 (IEC 60529, 60947-1)
Delay on operate (t_v)	< 300 mS	Pollution degree	2 (IEC 60664/60664A, 60947-1)
Outputs		Temperature	
Rated insulation voltage	250 VAC (rms) (cont./elec.)	Operating	-20° to +50°C (-4° to + 122°)
Relay Rating (AgCdO)		Storage	-50° to +85°C (-58° to +185°F)
Resistive loads	AC1	Housing material	ABS VO, light grey
	μ (micro gap)	Screw type	M3
	8 A / 250 VAC (2500 VA)	Tightening torque min/max	0.4Nm/0.8Nm
	DC1 1 A / 250 VDC (250 W)	Weight	
	or 10 A / 25 VDC (250 W)	AC/DC supply	125 g
Small induc. Loads	AC15	Approvals	
	0,4 A 250 VAC	UL	cURus UL508, UL325, CSA-C22.2 No.247
	DC13 0,4 A / 30 VDC	CSA	
Mechanical life (typical)		CE marking	Yes
	$\geq 30 \times 10^6$ operations		
	@ 18'000 imp/h		
Electrical life (typical)	AC1		
	> 250'000 operations		
Level probe supply	Max. 5 VAC		
Level probe current	Max. 2 mA		
Sensitivity	5 K Ω to 150 K Ω , C _F * = 2.2 nF		
	Factory preset 150 K Ω		
Dielectric voltage	>2.0 KVAC (rms) (contacts / electronics)		

*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.

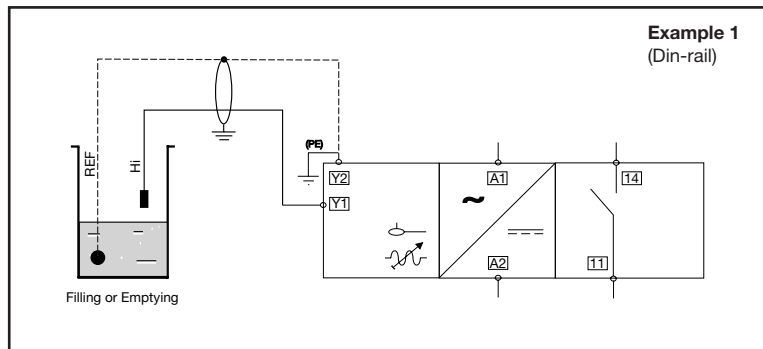
Prevent dry running of pump on emptying

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

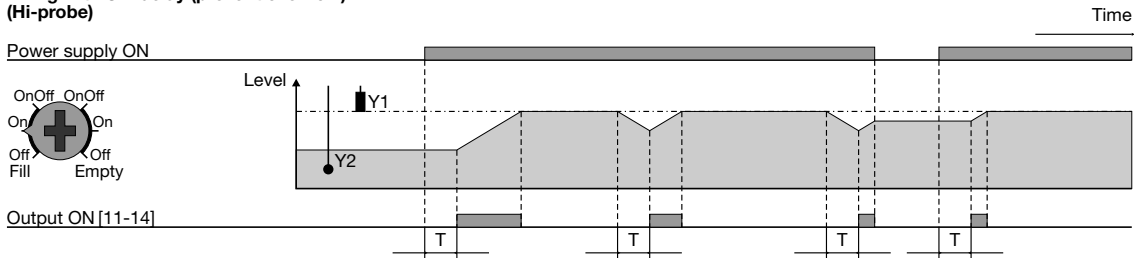
The diagram shows the level control connected as filling or emptying control. The relay react to the low alternating current created when the electrodes are in contact with the liquid.

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).

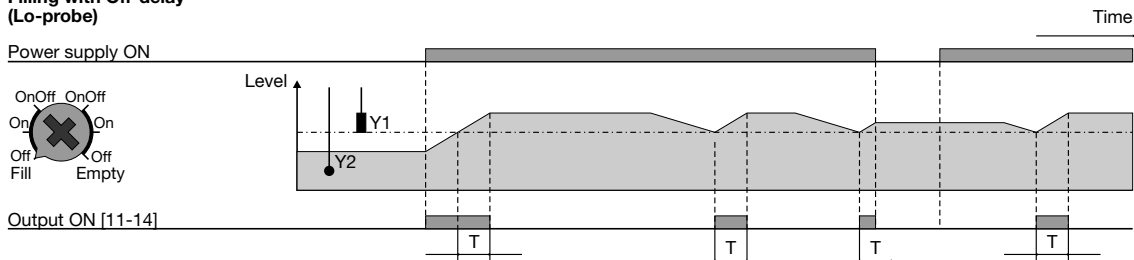


Operation Diagram

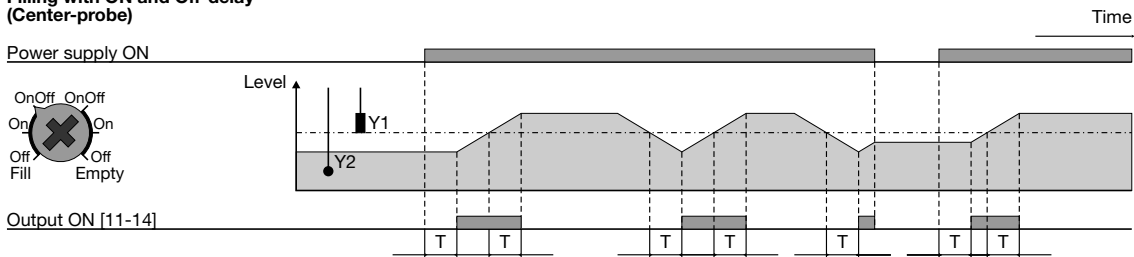
Filling with ON-delay (prevent overflow) (Hi-probe)



Filling with Off-delay (Lo-probe)

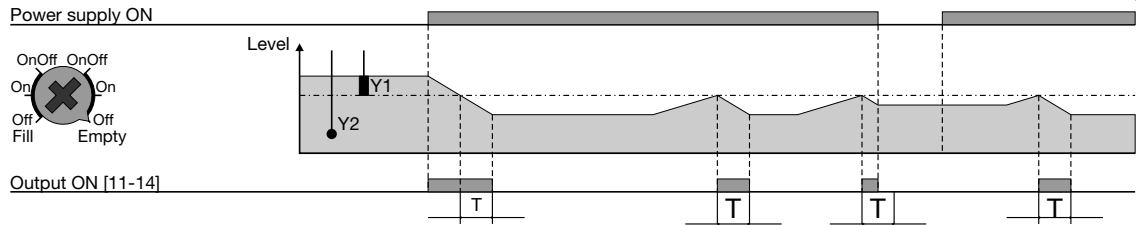


Filling with ON and Off-delay (Center-probe)

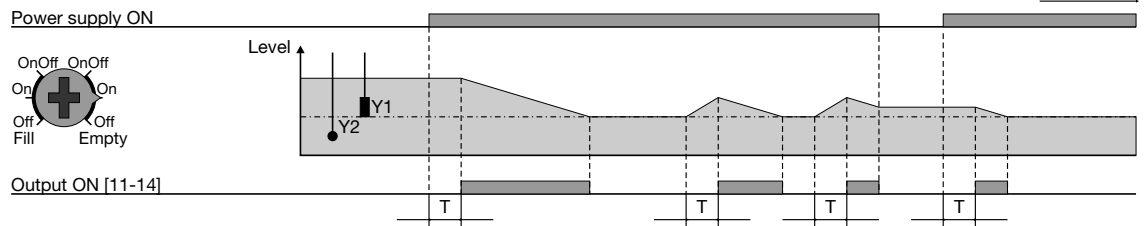


Operation Diagram

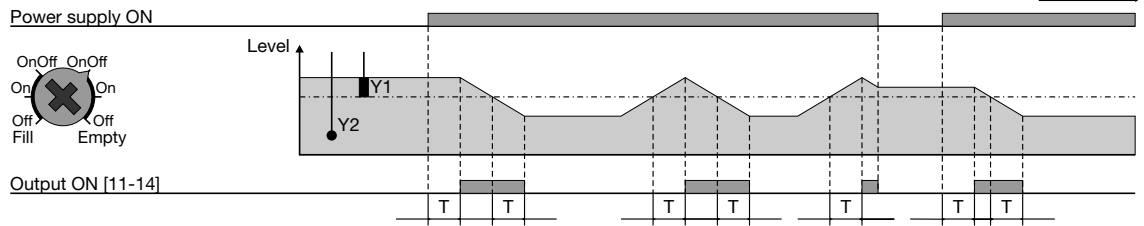
Emptying with Off-delay (Hi-probe)



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

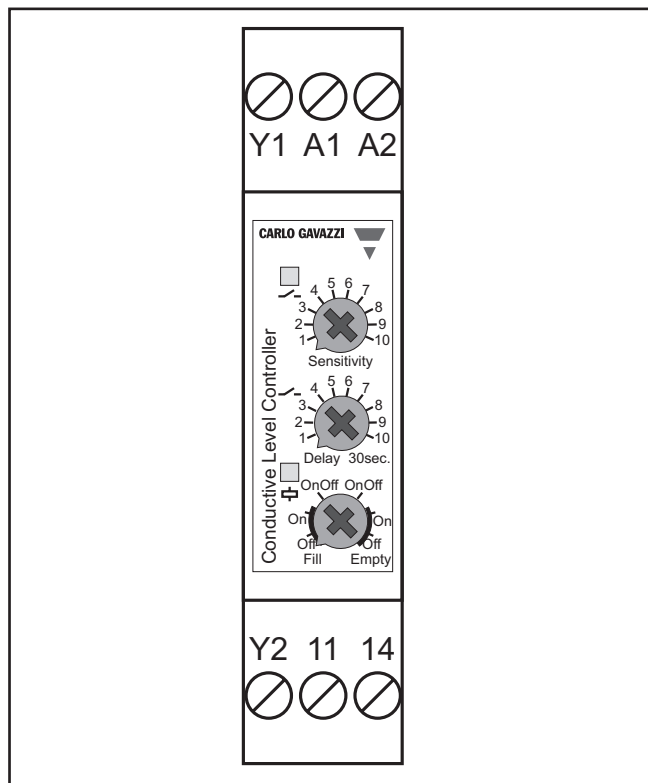


Emptying with ON and Off-delay (Center-probe)

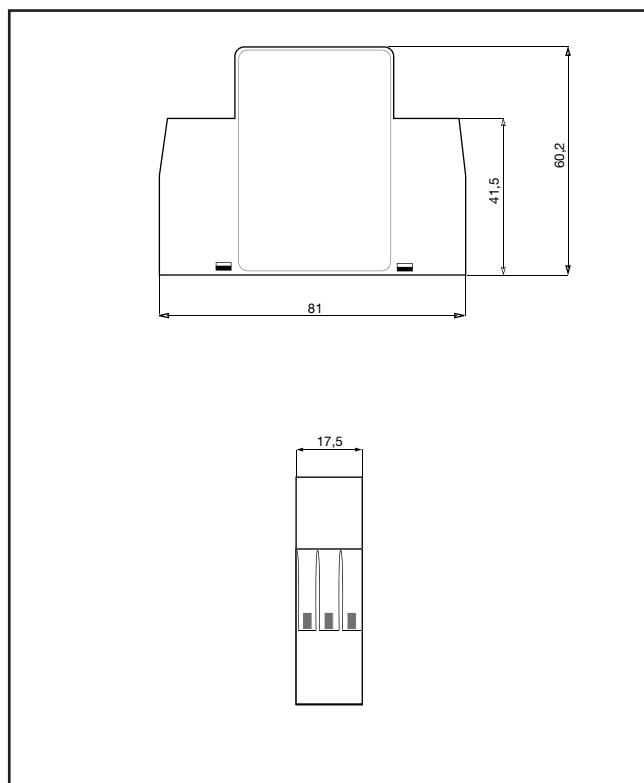




Wiring Diagram



Dimension Drawings



Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual