

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 _____
DIN rail mounting _____
Inputs _____
Function _____
Adjustment _____
Outputs _____
Relay versions _____
Power supply _____

Type Selection

Mounting

DIN-rail

Ordering no.

Supply: 24 VAC/DC

CLD1EA1CM24

Specifications

Rated operational voltage (U_B)		Rated impulse withstand volt.	
Supply class	2	4 kV (1.2/50 μ S) (contacts / electronics) (IEC 664)	
Pin A1 & A2	24	Operating frequency (f) max	
Rated insulation voltage	19.2 to 28.8 VAC/DC	Relay output	
Rated impulse withstand voltage	<2.0 kVAC (rms)	0.5 HZ	
	4 kV (1.2/50 μ S) (line/neutral)	Response time	
Rated operational power		OFF-ON (t_{on})	
AC/DC supply	5 VA / 5 W	ON-OFF (t_{off})	
Delay on operate (t_v)	< 300 mS	Environment	
Outputs		Overvoltage category	
Rated insulation voltage	250 VAC (rms) (cont./elec.)	Degree of protection	
Relay Rating (AgCdO)		Pollution degree	
Resistive loads	AC1	III (IEC 60664)	
	μ (micro gap)	IP 20 (IEC 60529, 60947-1)	
	8 A / 250 VAC (2500 VA)	2 (IEC 60664/60664A, 60947-1)	
	DC1 1 A / 250 VDC (250 W)	Temperature	
	or 10 A / 25 VDC (250 W)	Operating	
Small induc. Loads	AC15	Storage	
	0,4 A 250 VAC	-20° to +50°C (-4° to + 122°)	
	DC13 0,4 A / 30 VDC	-50° to +85°C (-58° to +185°F)	
Mechanical life (typical)		Housing material	
	$\geq 30 \times 10^6$ operations	ABS VO, light grey	
	@ 18'000 imp/h	Screw type	
Electrical life (typical)	AC1	M3	
	> 250'000 operations	Tightening torque min/max	
Level probe supply	Max. 5 VAC	0.4Nm/0.8Nm	
Level probe current	Max. 2 mA	Weight	
Sensitivity	5 K Ω to 150 K Ω , C_F^* = 2.2 nF	AC/DC supply	
	Factory preset 150 K Ω	125 g	
Dielectric voltage	>2.0 KVAC (rms) (contacts / electronics)	Approvals	
		UL	
		CSA	
		cURus	
		UL508	
		CSA-C22.2 No.247	
		CE marking	
		Yes	

* 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

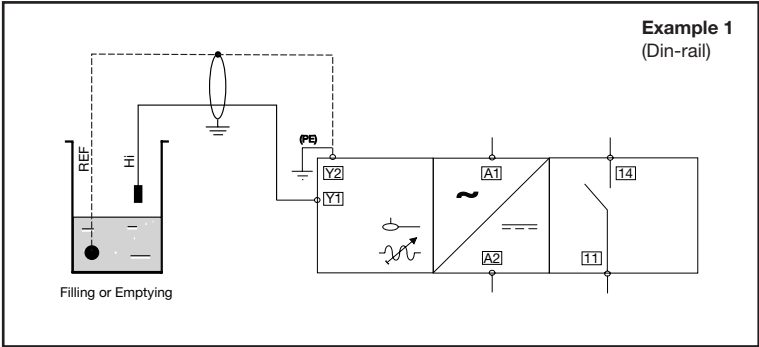
overrun. Factors that have to be considered are the pump performance, the rate of discharge from the tank, the position of the single level electrode and the time delay.

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.

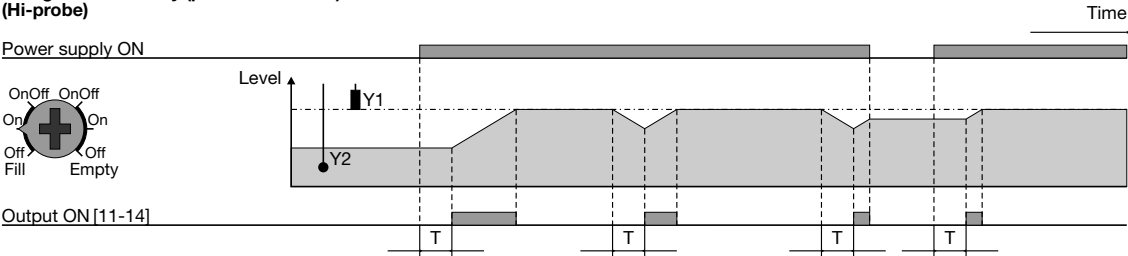
Example 1
The diagram shows the level control connected as filling or emptying control. The relay react to the low alternating current created when the electrodes are in contact with the liquid.

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).

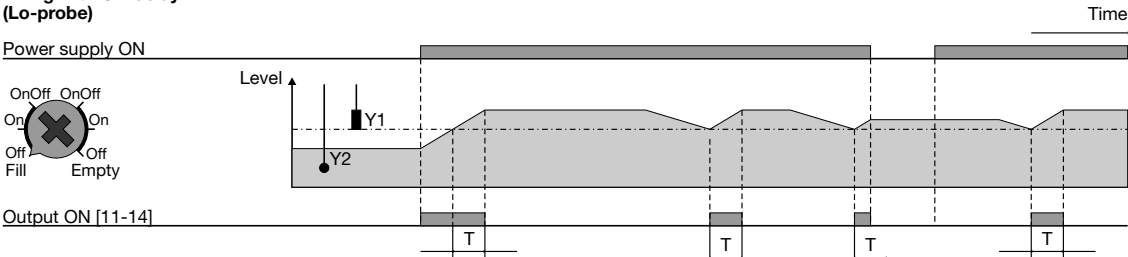


Operation Diagram

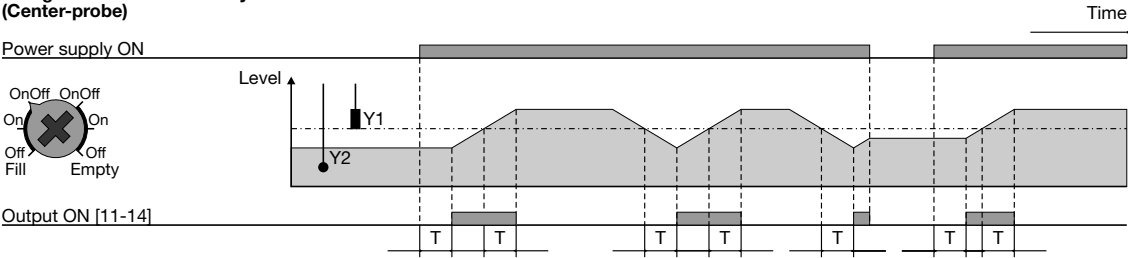
Filling with ON-delay (prevent overflow) (Hi-probe)



Filling with Off-delay (Lo-probe)

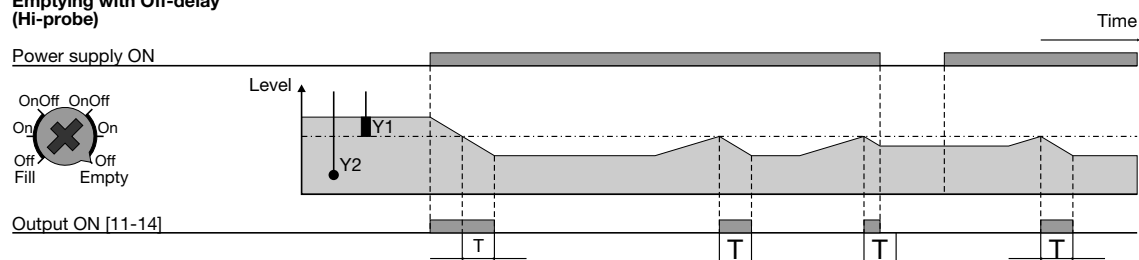


Filling with ON and Off-delay (Center-probe)

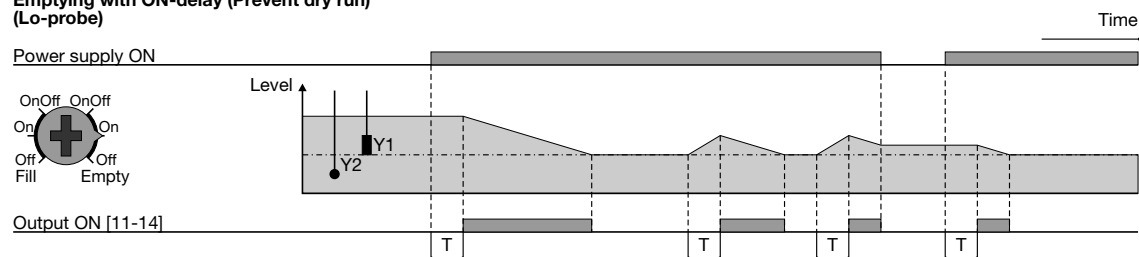


Operation Diagram

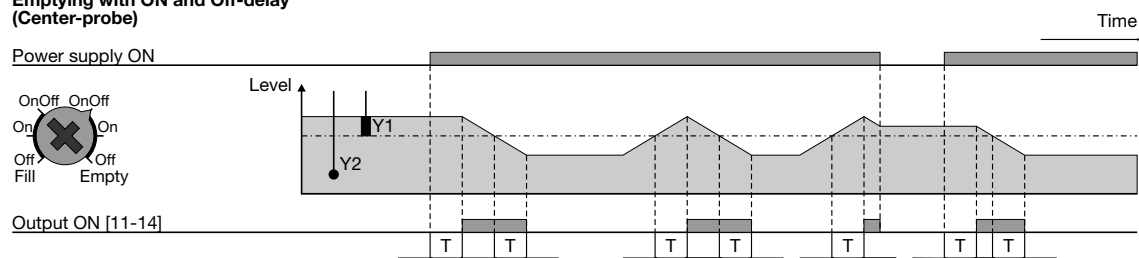
Emptying with Off-delay (Hi-probe)



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

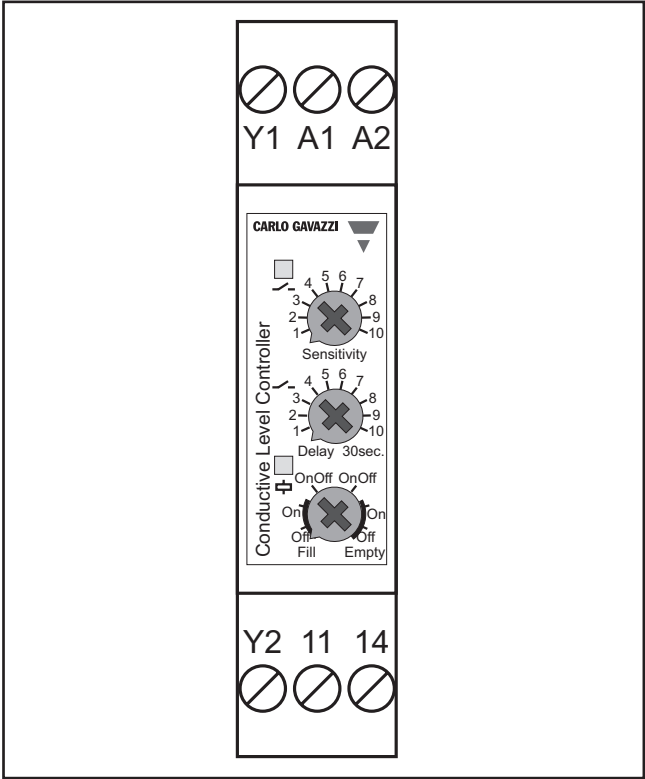


Emptying with ON and Off-delay (Center-probe)

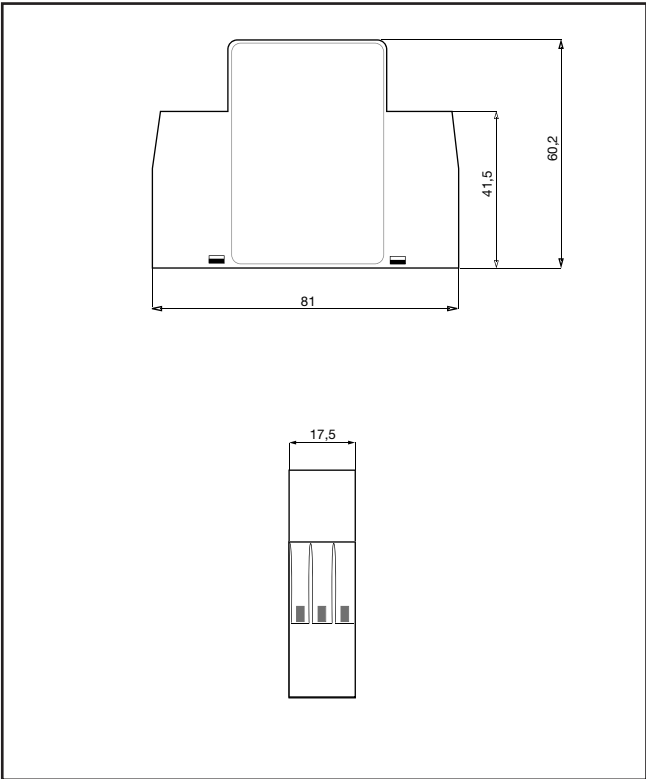




Wiring Diagram



Dimension Drawings



Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual