Conductive Sensors
1-point Basic Level Controller
Type CL with Potentiometer and Time Control

- **Conductive level controller**
- **Sensitivity adjustment 5 KΩ to 150 KΩ**
- **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 KΩ to 150 KΩ.

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	Ordering no. Supply: 24 VAC/DC
DIN-rail	**CLD1EA1CM24**

Specifications

Rated operational voltage (U_B)		
Supply class		2
Pin A1 & A2	24	19.2 to 28.8 VAC/DC
Rated insulation voltage		<2.0 kVAC (rms)
Rated impulse withstand voltage		4 kV (1.2/50 µs) (line/neutral)
Rated operational power		
AC/DC supply		5 VA / 5 W
Delay on operate (t_v)		< 300 mS
Outputs		
Rated insulation voltage		250 VAC (rms) (cont./elec.)
Relay Rating (AgCdO)		µ (micro gap)
Resistive loads	AC1	8 A / 250 VAC (2500 VA)
		DC1 1 A / 250 VDC (250 W)
		or 10 A / 25 VDC (250 W)
Small induc. Loads	AC15	0,4 A 250 VAC
		DC13 0,4 A / 30 VDC
Mechanical life (typical)		≥ 30 x 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 KΩ to 150 KΩ, C_F* = 2.2 nF
		Factory preset 150 KΩ
Dielectric voltage		>2.0 KVAC (rms) (contacts / electronics)

Rated impulse withstand volt.		4 kV (1.2/50 µS) (contacts / electronics) (IEC 664)
Operating frequency (f) max		
Relay output		0.5 HZ
Response time		
OFF-ON (t_{on})		1 sec to 30 sec adjustable
ON-OFF (t_{off})		1 sec to 30 sec adjustable
Environment		
Overvoltage category		III (IEC 60664)
Degree of protection		IP 20 (IEC 60529, 60947-1)
Pollution degree		2 (IEC 60664/60664A, 60947-1)
Temperature		
Operating		-20° to +50°C (-4° to + 122°)
Storage		-50° to +85°C (-58° to +185°F)
Housing material		ABS VO, light grey
Screw type		M3
Tightening tourque min/max		0.4Nm/0.8Nm
Weight		
AC/DC supply		125 g
Approvals		
UL	cURus	UL508, UL325,
CSA		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

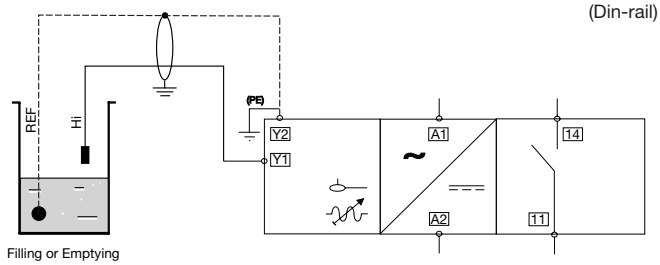
Overrunning of tank filling
Cautions must be taken to assure that the tank cannot overrun. Factors that have to be considered are the pump performance, the rate of discharge from the tank, the position of the single level electrode and the time delay.

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.

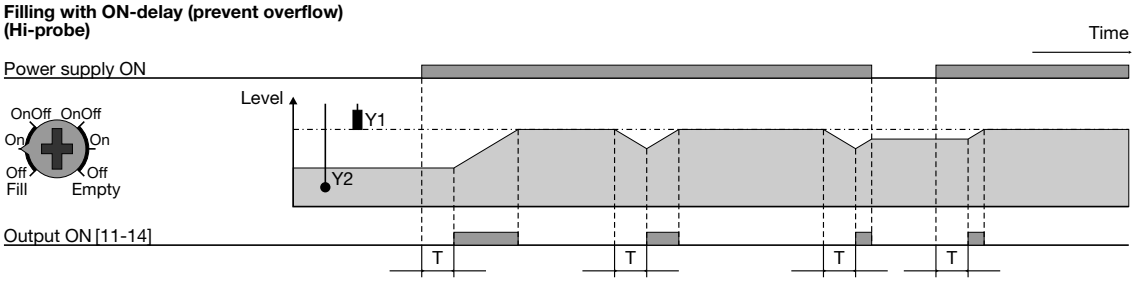
The reference (Ref) must be connected to the container or if the container consists of a non-conductive material, to an additional electrode. (To be connected to pin Y2). (In the diagram this electrode is shown by the dotted line).

Example 1
(Din-rail)

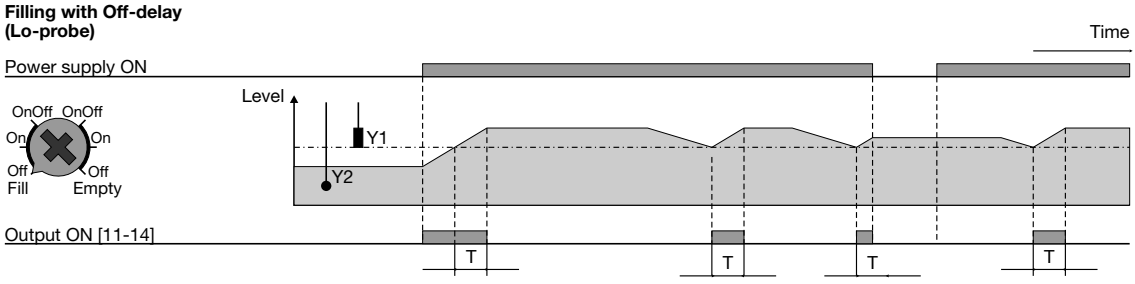


Operation Diagram

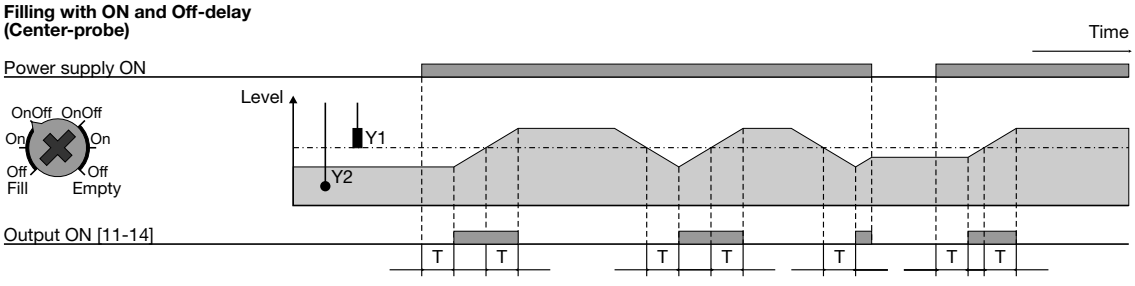
Filling with ON-delay (prevent overflow)
(Hi-probe)



Filling with Off-delay
(Lo-probe)



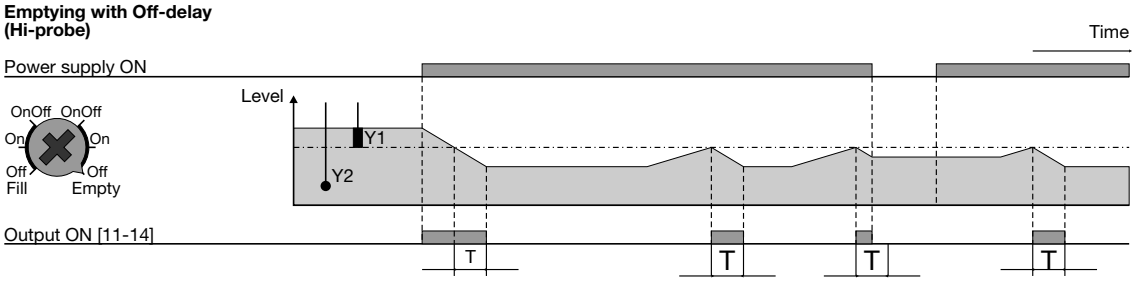
Filling with ON and Off-delay
(Center-probe)



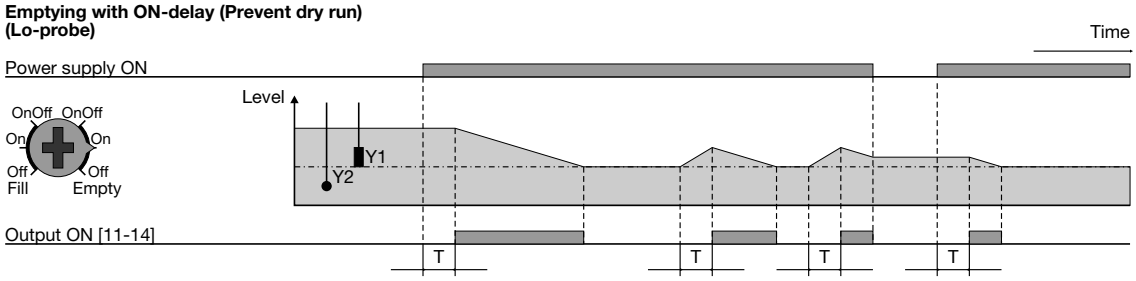
CARLO GAVAZZI

Operation Diagram

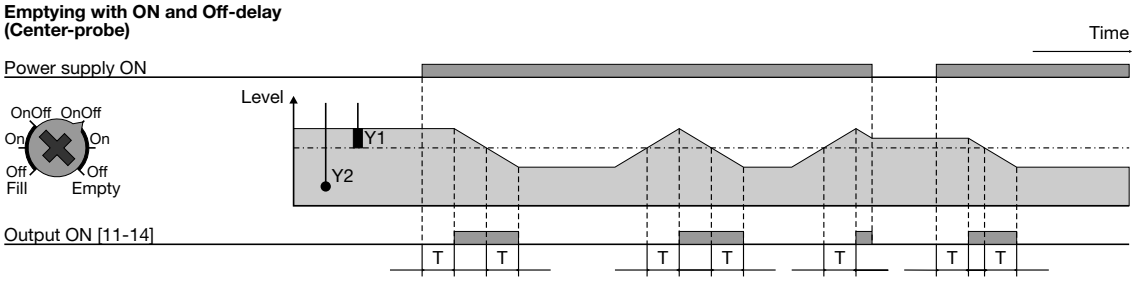
Emptying with Off-delay (Hi-probe)



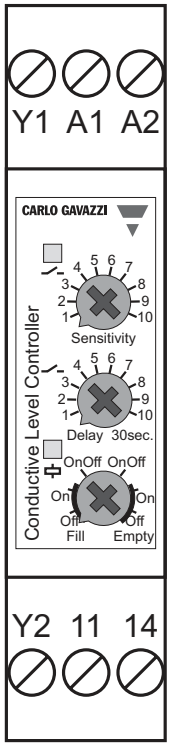
Emptying with ON-delay (Prevent dry run) (Lo-probe)



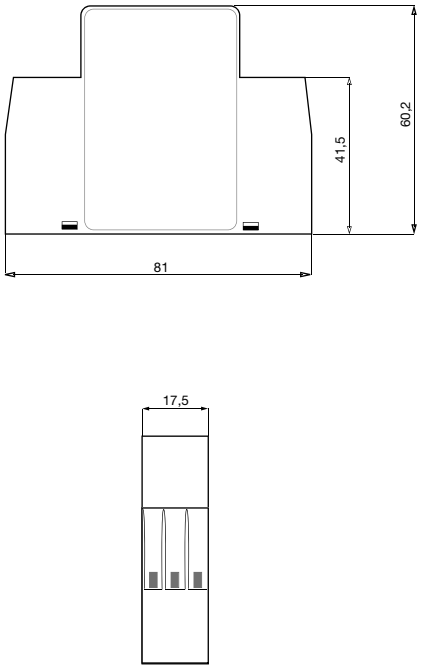
Emptying with ON and Off-delay (Center-probe)



Wiring Diagram



Dimension Drawings



Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual