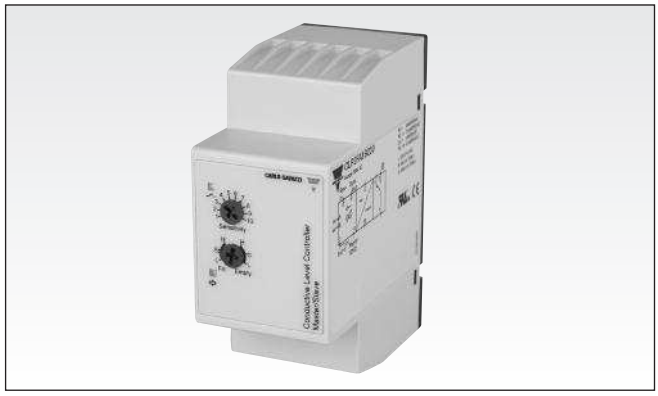
Conductive Sensors
2-point Level Controller, Cascade Coupling
Type CL with Potentiometer

CARLO GAVAZZI



- **Conductive level controller**
- **Adjustment sensitivity – operating resistance from 250Ω to 500 KΩ**
- **For filling or emptying applications**
- **Low-voltage AC electrodes**
- **Easy installation with 11 pin circular plug**
- **Rated operational voltage: 24 VAC/DC, 115 VAC or 230 VAC**
- **Output 8A/250 VAC SPDT relay**
- **LED indication for: Output ON, Power ON**
- **Possibility of serial connection**

Product Description

Level control relay for conductive liquids which can control two levels of filling or emptying.
The relay features a sensitivity range from 250Ω to 500kΩ corresponding to 4m siemens to 2µ siemens.
If more than two levels are required more systems can be added.

Ordering Key

CLP2FA1BM24

- **Type**
- **DIN rail mounting**
- **Inputs**
- **Function**
- **Adjustment**
- **Outputs**
- **Relay versions**
- **Power supply**

Type Selection

Mounting	Ordering no. Supply: 24 VAC/DC	Ordering no. Supply: 115 VAC	Ordering no. Supply: 230 VAC
11-p circular plug	**CLP2FA1BM24**	**CLP2FA1B115**	**CLP2FA1B230**

Specifications

Rated operational voltage (U_B)		
Pin 2 & 10	230	195 to 265 VAC, 45 to 65 Hz
	115	98 to 132 VAC, 45 to 65 Hz
Supply class 2	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 supply		5 VA
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		250Ω to 500KΩ Factory settings standard range "S" 100KΩ
Ranges L (Low sensitivity)		250Ω to 5KΩ, C_F = 4.7 nF*
Ranges S (Standard sensitivity)		5KΩ to 100KΩ, C_F = 2.2 nF*
Ranges H (High sensitivity)		50KΩ to 500KΩ, C_F = 1.0 nF*
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)		
Relay output		0.5 HZ
Response time		
OFF-ON (t_{on})		1 s
ON-OFF (t_{off})		1 s
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		Noryl PPO, light grey
Weight		
AC supply		200 g
AC/DC supply		125 g
Approvals		
UL	cULus	UL508, UL325
CSA	No.247	CSA-C22.2
CE marking		Yes

*C_F = maximum Cable Capacitance

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Mode of Operation

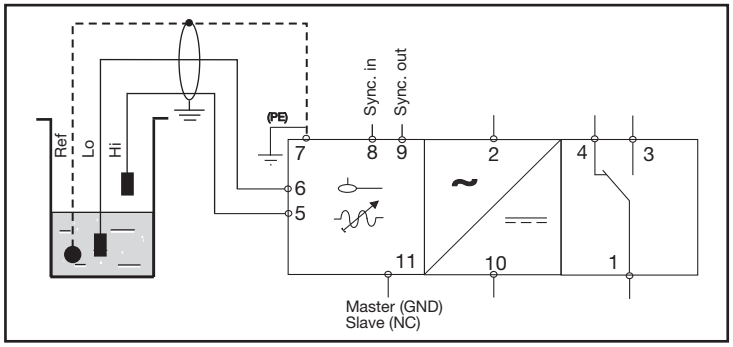
Connection cable
2 or 3 conductor PVC cable, normally screened. Cable length: max. 100 m. The resistance between the cores and the ground must be at least 500k. Normally, it is recommended to use a screened cable between probe and controller, e.g. where the cable is placed in parallel to the load cables (mains). The screen has to be connected to pin 7 (reference).

Cascade
If more than 2 levels are required, up to 7 amplifiers can be cascaded, as shown in the example below.
Connect pin 11 of the master controller to ground and pin 9 of the master controller to pin 8 of the next controller, the slave controllers (see drawing). Pin 11 of the slave controller must be left open! Pin 9 of the first slave must be connected to pin 8 of the second. Pin 9 of the last slave should be connected to pin 8 of Master.
The connections must be made by screened cable to achieve optimal operation, e.g. in cable pits or trays where the cable is close to power cables. Connect the screen to pin 7, and be sure that the distance between two systems is max 3m.
Adjust the connected system sensitivity and the systems are ready to work.

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

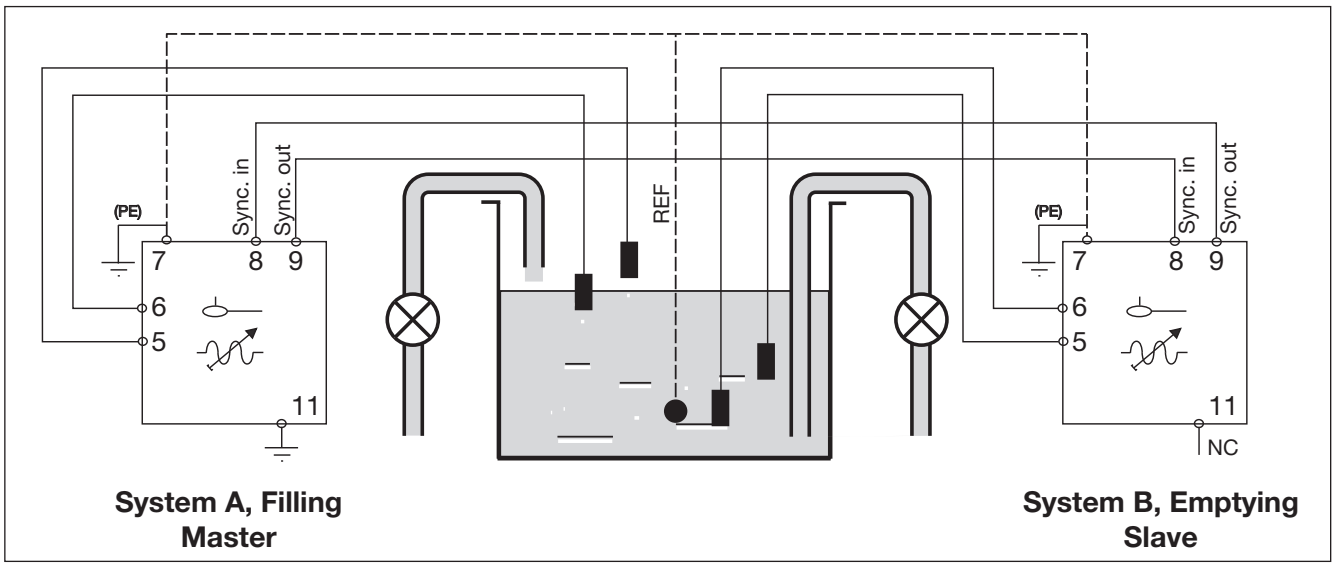
The reference (Ref) must be connected to the container or if the container consists of a non-conductive material, to an additional electrode. (To be connected to pin 7).
(In the diagram this electrode is shown by the dotted line)..

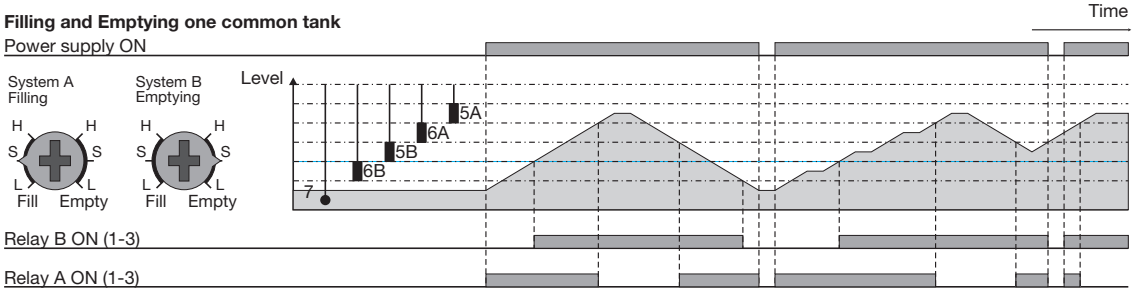
NB!
If only one level detection is required - interconnect the two inputs 5 and 6.



Operation Diagram

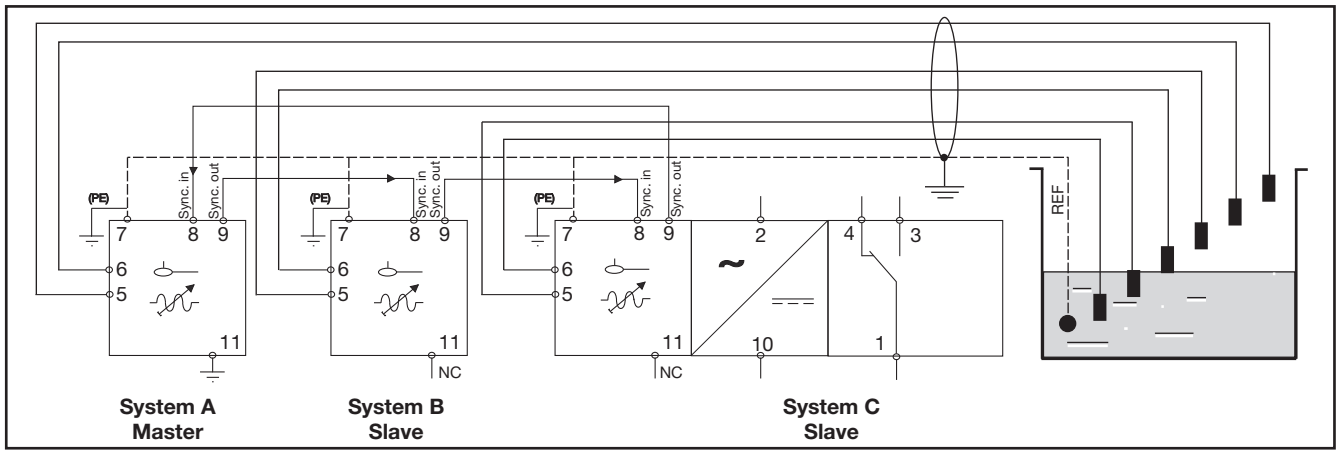
Filling and Emptying one common tank

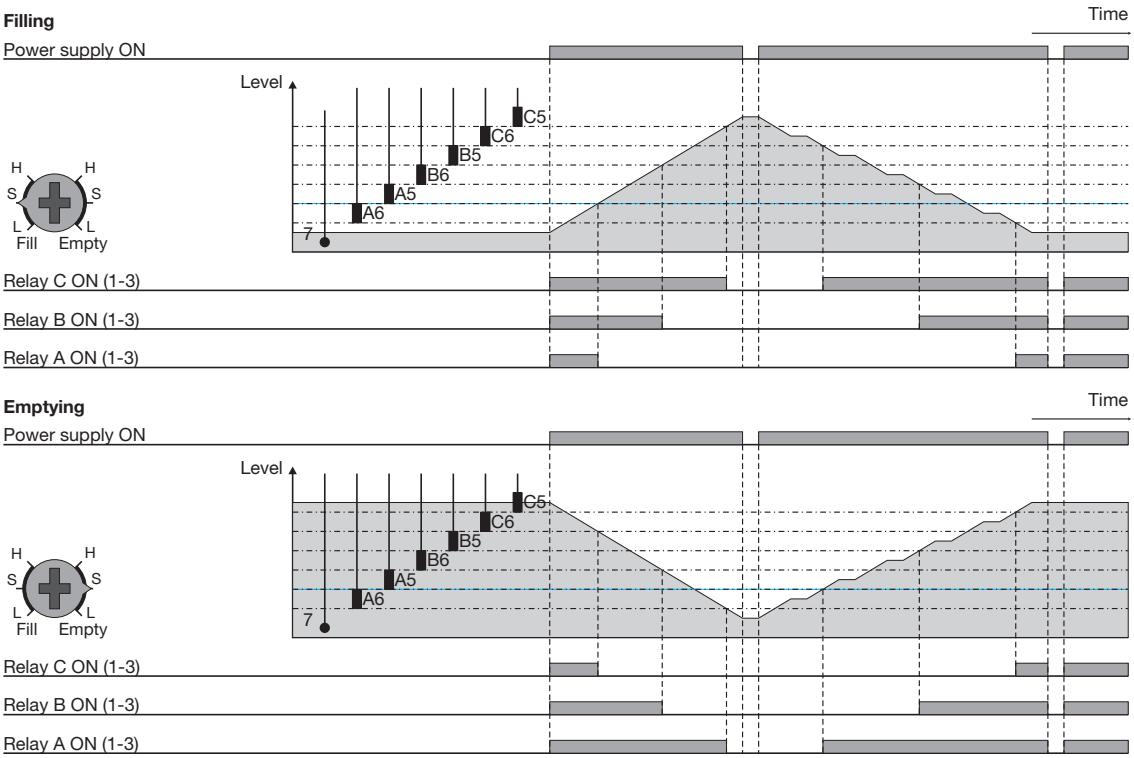




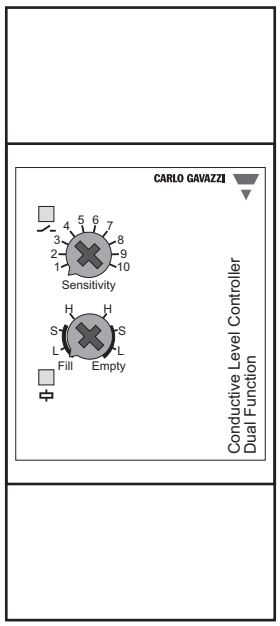
Operation Diagram

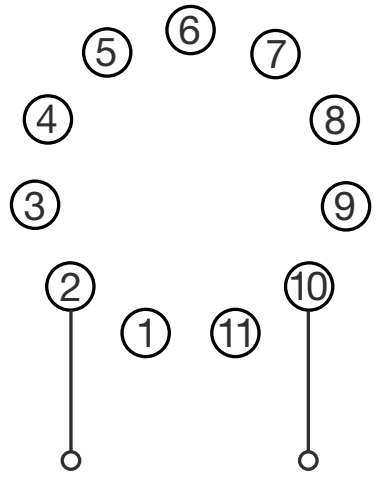
Multilevel application in one tank





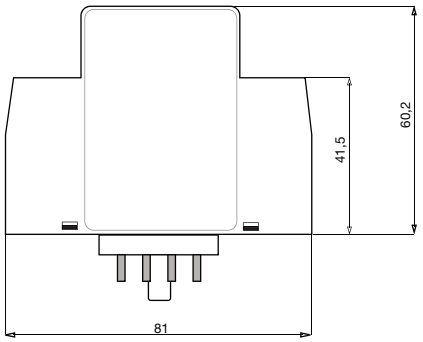
Wiring Diagram

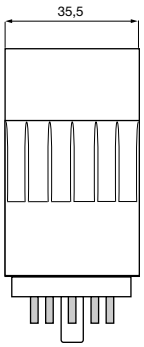




Bottom view

Dimension Drawings





Accessories

• 11 pole circular socket	ZPD11
• Holding spring	HF

Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual