

CLP

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Conductive Sensors 2-point level controller Type CL with potentiometer

CARLO GAVAZZI



- Conductive level controller
- Sensitivity adjustment from 5 kΩ to 150 kΩ
- For filling or emptying applications
- Low-voltage AC electrodes
- Easy installation with 11 pin circular plug
- Rated operational voltage:
24 VDC, 24 VAC, 115 VAC or 230 VAC
- Output 1 x 8A/250 VAC SPDT relay
- LED indication for: Output ON and Power ON



Product Description

μ-Processor based level controller for liquids with a wide sensitivity range (like sewage water, chemicals, salt water etc.).

Max./min. control of charging/discharging. The sensitivity is adjustable by means of the potentiometer.
1 x 8A SPDT relay output.

Ordering Key

CLP2EB1B230

Conductive level _____
 Plug mounting _____
 No of inputs _____
 Charge/discharge _____
 Basic with potentiometer _____
 1 relay output _____
 Relay SPDT _____
 Power supply _____

Type Selection

Mounting	Relay	Ordering no. Supply: 24 VDC	Ordering no. Supply: 24 VAC	Ordering no. Supply: 115 VAC	Ordering no. Supply: 230 VAC
11-p circular plug	SPDT	CLP2EB1B724	CLP2EB1B024	CLP2EB1B115	CLP2EB1B230

Specifications

Rated operational voltage (U_B) Pin 2 & 10	230 115 024	195 to 265 VAC, 45 to 65 Hz 98 to 132 VAC, 45 to 65 Hz 20.4 to 27.6 VAC, 45 to 65 Hz	Rated impulse withstand volt.	4 kV (1.2/50 μS) (contacts / electronics) (IEC 664)
Supply class 2	724	20.4 to 27.6 VDC	Operating frequency (f) Relay output	1 Hz
Rated insulation voltage		<2.0 kVAC (rms)	Response time OFF-ON (t _{on}) ON-OFF (t _{off})	1 s 1 s
Rated impulse withstand voltage		4 kV (1.2/50 μS) (line/neutral)	Environment Overvoltage category Degree of protection Pollution degree	III (IEC 60664) IP 20 (IEC 60529, 60947-1) 2 (IEC 60664/60664A, 60947-1)
Rated operational power AC supply DC supply		5 VA 1 W	Temperature Operating Storage	-20° to +50°C (-4° to +122°F) -40° to +85°C (-40° to +185°F)
Delay on operate (t_v)		< 2 s	Housing material	NORYL PPO, light grey
Outputs Rated insulation voltage		250 VAC (rms) (cont./elec.)	Screw type	M3
Relay Rating (AgCdO) Resistive loads	AC1 DC1	μ (micro gap) 8 A / 250 VAC (2500 VA) 1 A / 250 VDC (250 W) or 10 A / 25 VDC (250 W)	Tightening torque min/max	0.4Nm/0.8Nm
Small induc. Loads	AC15 DC13	0,4 A / 250 VAC 0,4 A / 30 VDC	Weight AC supply DC supply	180 g 70 g
Mechanical life (typical)		≥ 30 x 10 ⁶ operations @ 18'000 imp/h	Approvals UL CSA	cURus UL508, CSA C22.2 CSA C22.2
Electrical life (typical)	AC1	> 250'000 operations	CE marking	Yes
Level probe supply		Max. 5 VAC		
Level probe current		Max. 2 mA		
Sensitivity		5 kΩ to 150 kΩ, C _F * = 2.2 nF		
Dielectric voltage		>2.0 KVAC (rms) (contacts / electronics)		

*C_F = maximum Cable Capacitance

Mode of Operation

Connection cable

2, 3, or 4 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 the reference (Ref). The reference port (Ref) must be connected to protective Earth (PE).

current created when the electrodes are in contact with the liquid.

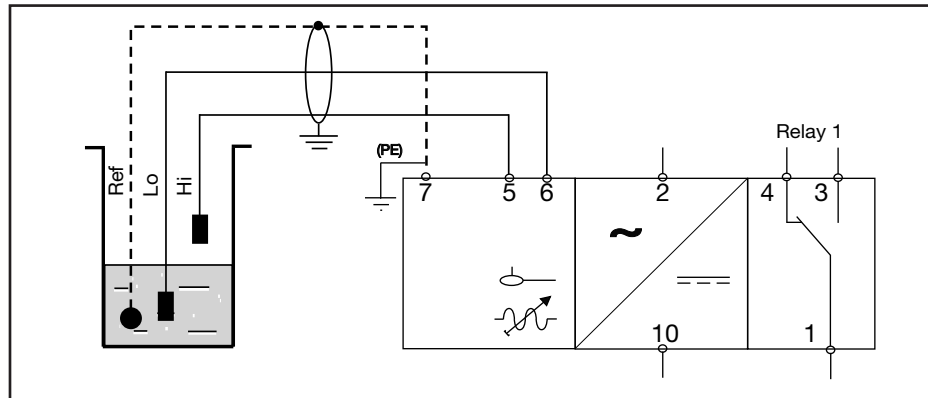
The reference (Ref) must be connected to the container or if the container consists

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).

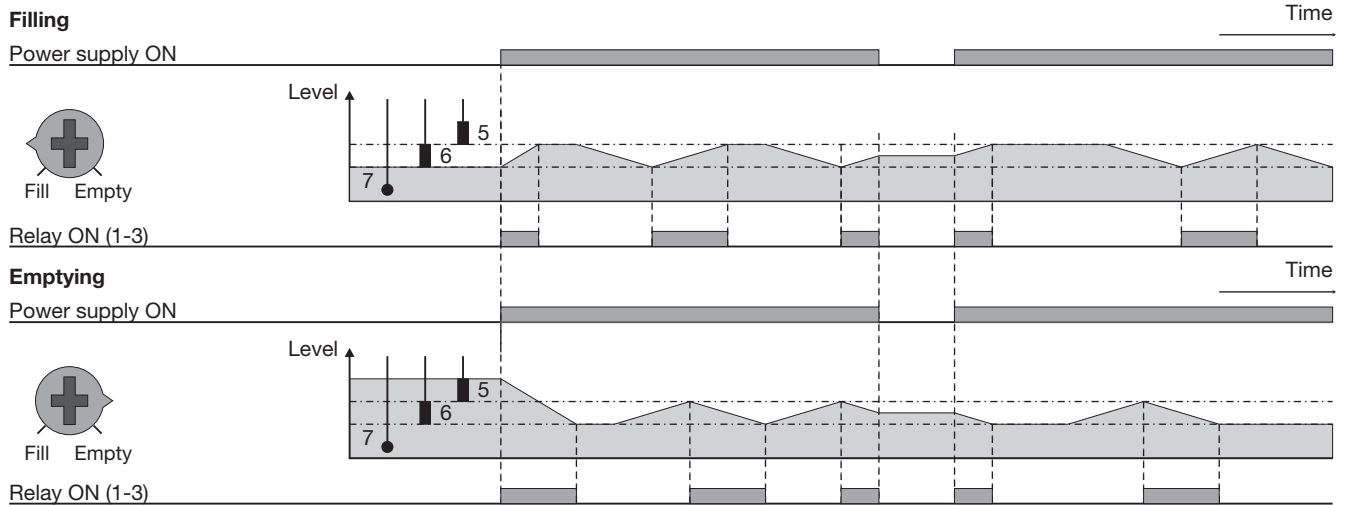
NB!

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

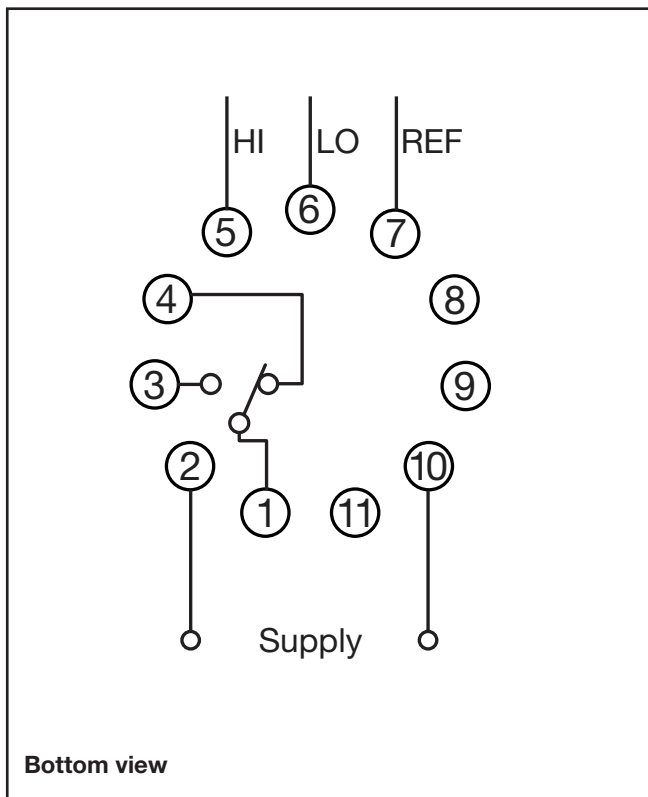


Example 1

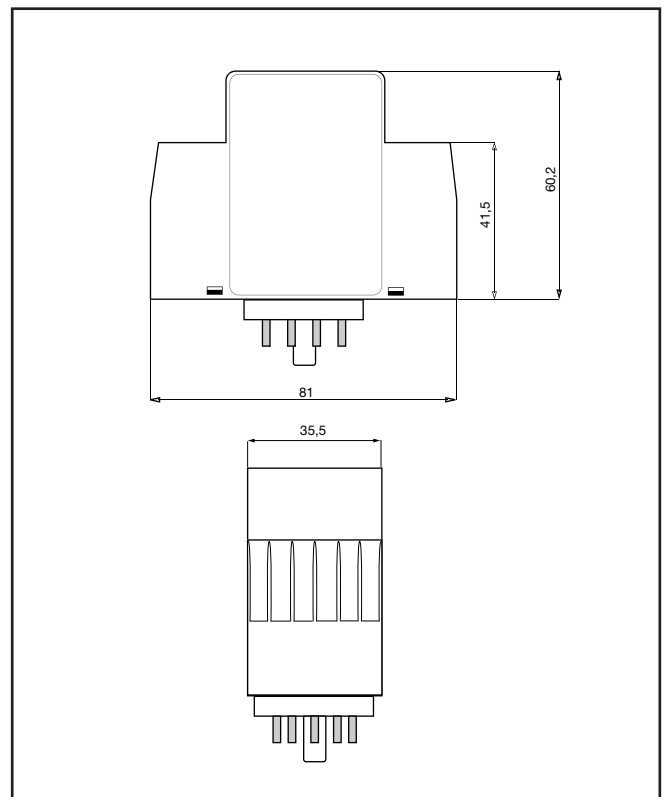
The diagram shows the level control connected as max. and min. control. The relays react to the low alternating



Wiring Diagram



Dimension Drawings



Accessories

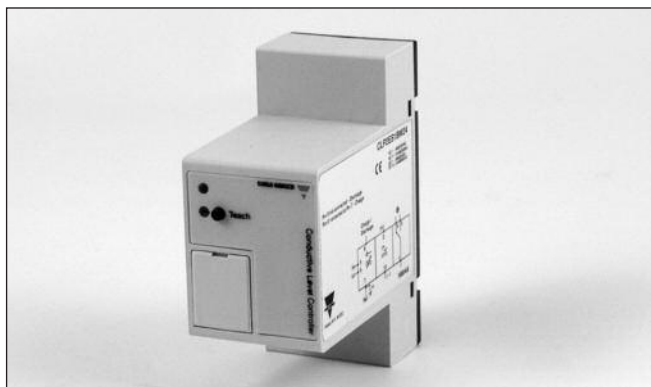
- 11 pole circular socket ZPD11
- Retaining spring HF

Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual

Conductive Sensors 2-point Basic Level Controller Type CL with Teach-in

CARLO GAVAZZI



- Conductive level controller
- Teach-in of sensitivity – operating resistance from 3.5KΩ to 50 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: Calibration, faulty operation and relay status
- Possibility of serial connection

Product Description

μ-Processor based level sensitivity is adjustable by controller. means of the teach-in function. Max./min. control of charging/ discharging of liquids. The

Ordering Key

CLP2ES1BM24

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	CLP2ES1BM24	CLP2ES1B115	CLP2ES1B230

Specifications

Rated operational voltage (U_B)		Dielectric voltage	>2.0 KVAC (rms) (contacts / electronics)
Pin 2 & 10	230	Rated impulse withstand volt.	4 kV (1.2/50 μS) (contacts / electronics) (IEC 664)
	115	Operating frequency (f)	
	24	Relay output	2 HZ
Rated insulation voltage	195 to 265 VAC, 45 to 65 Hz	Response time	
Rated impulse withstand voltage	98 to 132 VAC, 45 to 65 Hz	OFF-ON (t _{on})	1,5 s
	19.2 to 28.8 VAC/DC	OFF-ON (t _{off})	1,5 s
	<2.0 kVAC (rms)	Environment	
	4 kV (1.2/50 μs) (line/neutral)	Overvoltage category	III (IEC 60664)
Rated operational power		Degree of protection	IP 20 / IEC 60529, 60947-1)
AC supply	5 VA	Pollution degree	2 (IEC 60664/60664A, 60947-1)
AC/DC supply	5 VA / 5 W	Temperature	
Delay on operate (t_v)	< 300 mS	Operating	-20° to +50°C (-4° to + 122°)
Outputs		Storage	-50° to +85°C (-58° to +185°F)
Rated insulation voltage	250 VAC (rms) (cont./elec.)	Weight	
Relay Rating (AgCdO)		AC supply	200 g
Resistive loads	μ (micro gap)	AC/DC supply	125 g
	8 A / 250 VAC (2500 VA)	Approvals	UL508, cULus
	8 A / 30 VDC (24 W)	CE marking	Yes
	8 A 25 VDC (250 W)		
Small induct. Loads	AC11		
	0,4 A 200 VAC		
	DC13		
	0,4 A / 30 VDC		
Mechanical life (typical)	≥ 30 x 10 ⁶ operations		
	@ 18'000 imp/h		
Electrical life (typical)	> 250'000 operations		
Level probe supply	Max. 5 VAC		
Level probe current	Max. 1.5 mA		
Sensitivity	3,5KΩ to 50KΩ		
Factory preset	47KΩ		

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 50k. 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).

Teach-in:

Make sure that the reference electrode and one of the other electrodes are in contact with the liquid – approximately 1 cm. Press the “teach” pushbutton at the front of the controller for approximately 2 seconds, until the green LED turns OFF. The controller will now auto-adjust itself according to the resistance of the

measuring liquid. If the resistance of the liquid is outside the maximum range handled by the controller, the green LED will flash quickly for a period of 2 seconds, indicating a wrong teach-in.

Function setting

The controller works per default as discharge. Connect pin 7 to pin 8 for charge.

Cascade

If more than 2 levels are required, up to 7 amplifiers can be cascaded, as shown in the example below. Connect pin 9 of the master controller to ground and pin 11 of the master controller to pin 11 of the next controllers, the slave controllers (see drawing). Pin 9 of the slave controllers must be left open! 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. Fill the tank with the liquid to be measured and teach in the master controller. If the teach in is performed correctly, the green power LED of the slave controller(s) will switch off and indicate: ready for teach in.

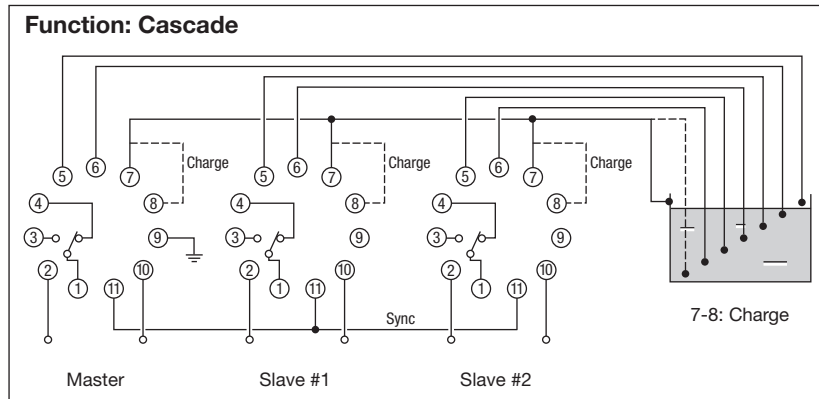
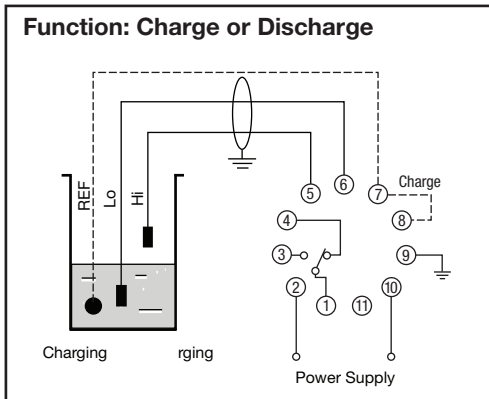
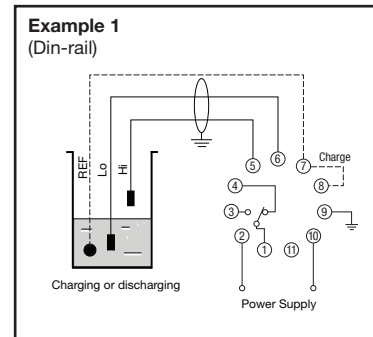
Teach in the slave controllers one by one, until all the green power LED's are on again. The system is now in run-mode.

Example 1

The diagram shows the level control connected as max. and min. control. The relay react to the low alternating cur-

rent 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)..



Charging

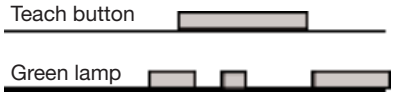



Discharging

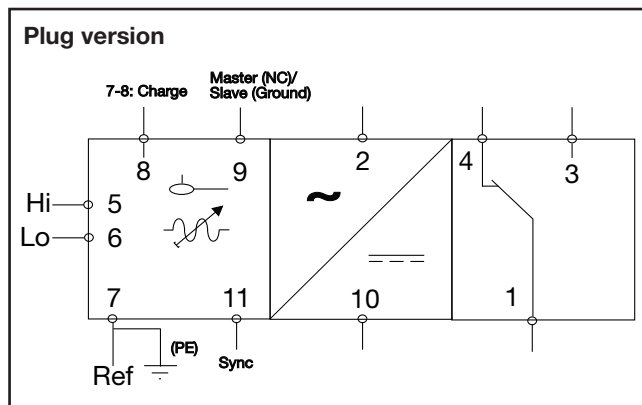


Operating Schedule

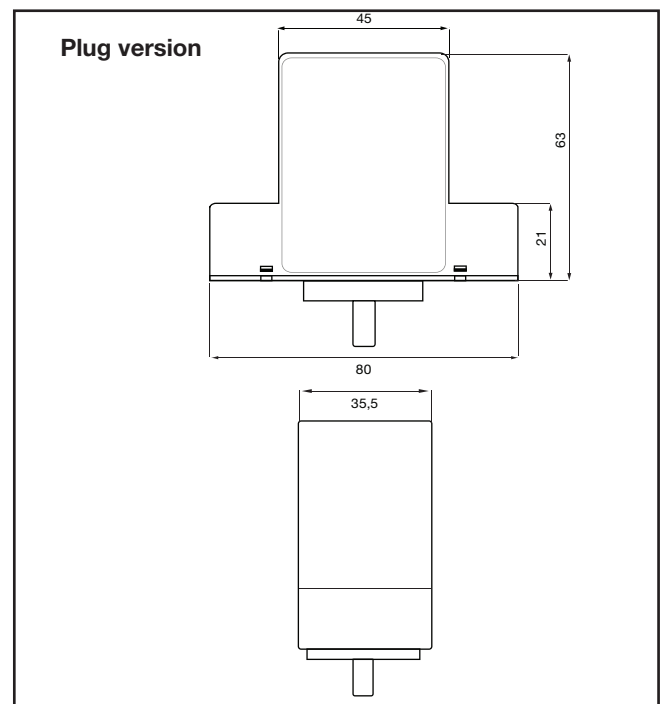
The following schedule provides an overview of the setup and failure situations

Situation	Condition	Action	Green Control lamp
Teach-in	Fill the tank with the liquid to be measured until the second longest electrode is immersed approx. 1cm	Press the Teach button in front of the controller for approx. 2 seconds until the green control lamp turn off continuously. Release the teach button	
Failure indication	The Green lamp is flashing fast for approx. 2 seconds after a teach-in operation	Control the electrode for short-cut connections. Control that the resistance of the measured liquid is within the specified range	

Wiring Diagram



Dimension Drawings



Accessories

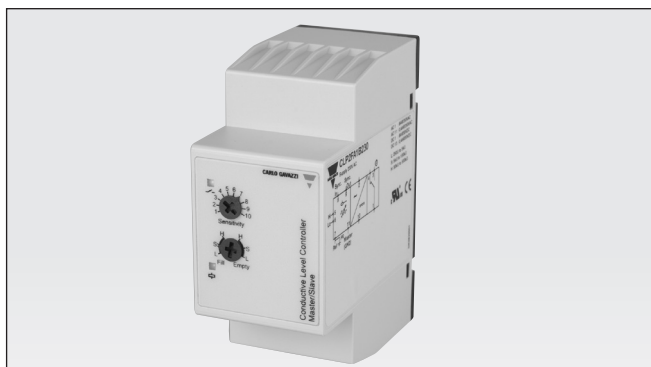
- 11 pole corcular socket ZVD11
- Mounting rack SM13

Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual

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

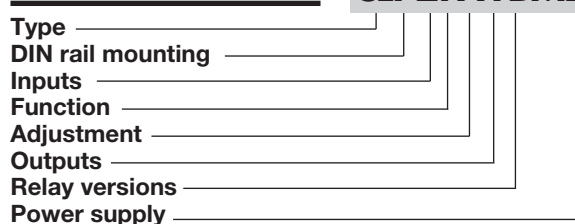
Level control relay for conductive liquids which can control two levels of filling or emptying.

The relay features a sensitivity range from 250Ω to 500kΩ corresponding to 4m sie-

mens to 2μ siemens. If more than two levels are required more systems can be added.

Ordering Key

CLP2FA1BM24



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)		Dielectric voltage	>2.0 KVAC (rms) (contacts / electronics)
Pin 2 & 10	230		
	115	Rated impulse withstand volt.	4 kV (1.2/50 μs) (contacts / electronics) (IEC 664)
Supply class 2	24		
Rated insulation voltage		Operating frequency (f)	
Rated impulse withstand voltage		Relay output	0.5 HZ
Rated operational power		Response time	
AC supply	5 VA	OFF-ON (t _{on})	1 s
AC/DC supply	5 VA / 5 W	ON-OFF (t _{off})	1 s
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 DC1		
		Temperature	
		Operating	-20° to +50°C (-4° to + 122°)
Small induc. Loads	AC15 DC13	Storage	-50° to +85°C (-58° to +185°F)
		Housing material	Noryl PPO, light grey
Mechanical life (typical)	≥ 30 x 10 ⁶ operations @ 18'000 imp/h	Screw type	M3
Electrical life (typical)	> 250'000 operations	Tightening torque min/max	0.4Nm/0.8Nm
Level probe supply	Max. 5 VAC	Weight	
Level probe current	Max. 2 mA	AC supply	200 g
Sensitivity	250Ω to 500KΩ Factory settings standard range "S" 100KΩ 250Ω to 5KΩ, C _F * = 4.7 nF 5KΩ to 100KΩ, C _F * = 2.2 nF 50KΩ to 500KΩ, C _F * = 1.0 nF	AC/DC supply	125 g
Ranges L (Low sensitivity)		Approvals	
Ranges S (Standard sensitivity)		UL	UL508
Ranges H (High sensitivity)		CSA	CSA-C22.2 No.247
		CE marking	Yes

*C_F = maximum Cable Capacitance

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 con-

troller, 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

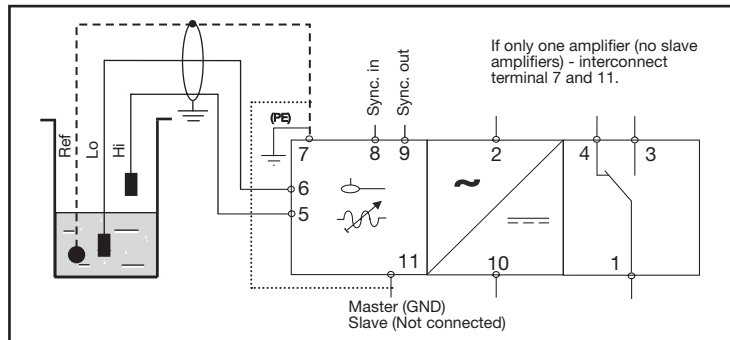
The diagram shows the level control connected as max. and min. control. The relay react to the low alternating current created when the electrodes are in contact with the liquid.

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)..

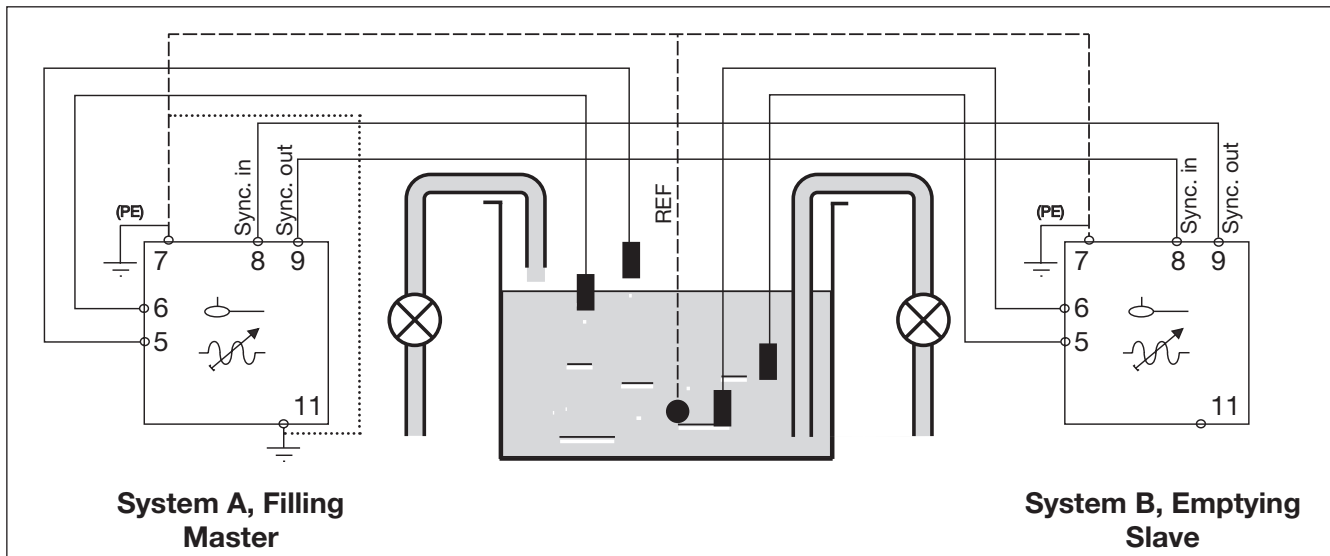
NB!

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



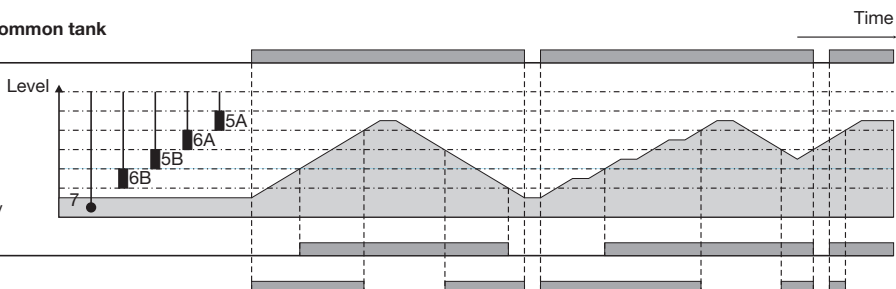
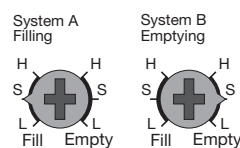
Operation Diagram

Filling and Emptying one common tank



Filling and Emptying one common tank

Power supply ON

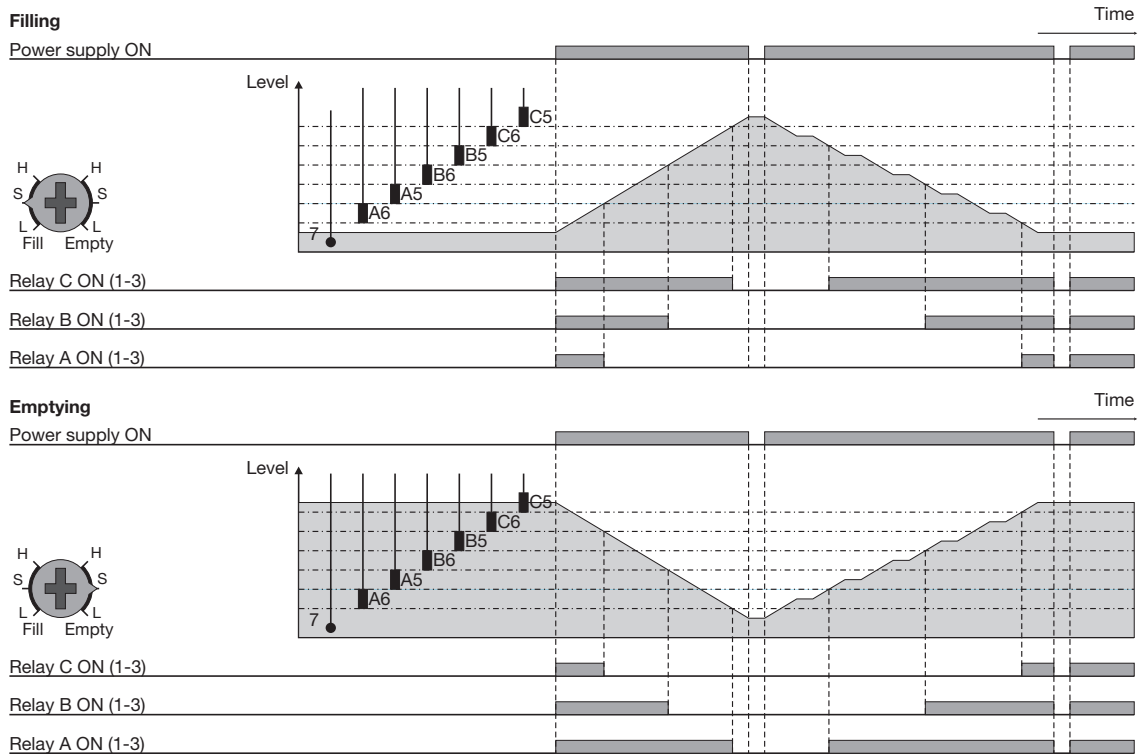
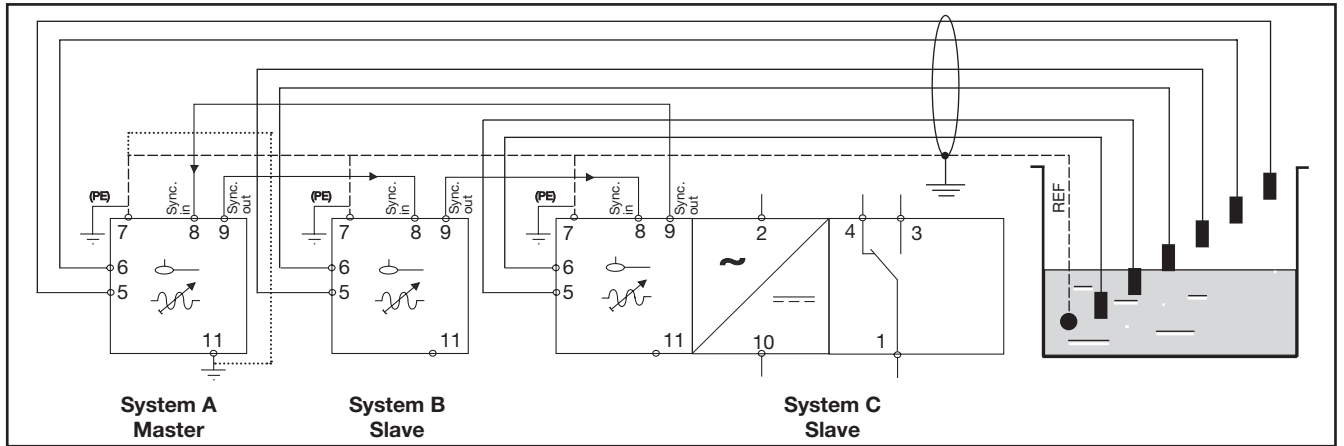


Relay B ON (1-3)

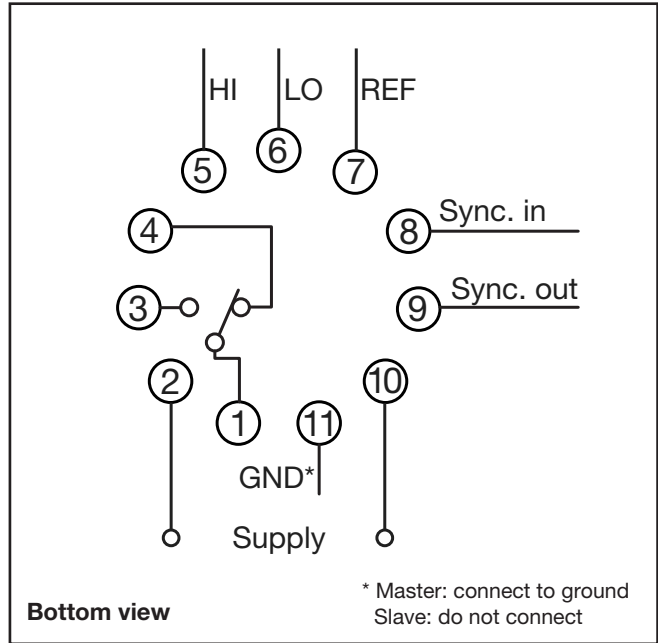
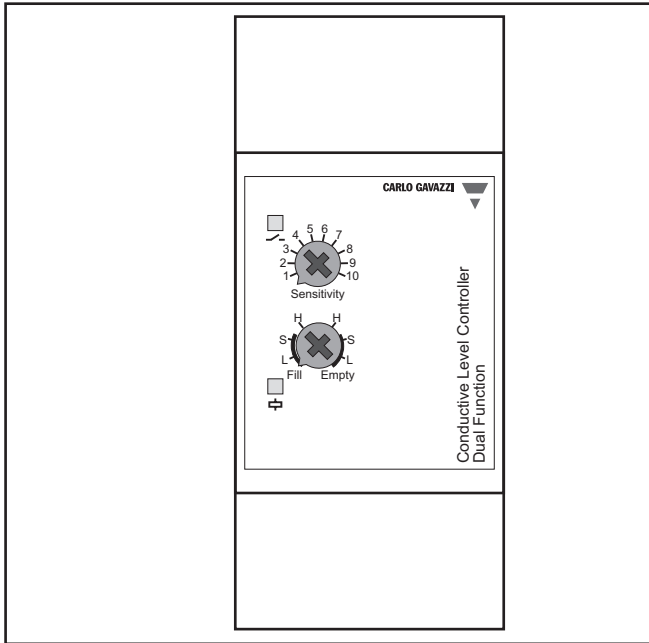
Relay A ON (1-3)

Operation Diagram

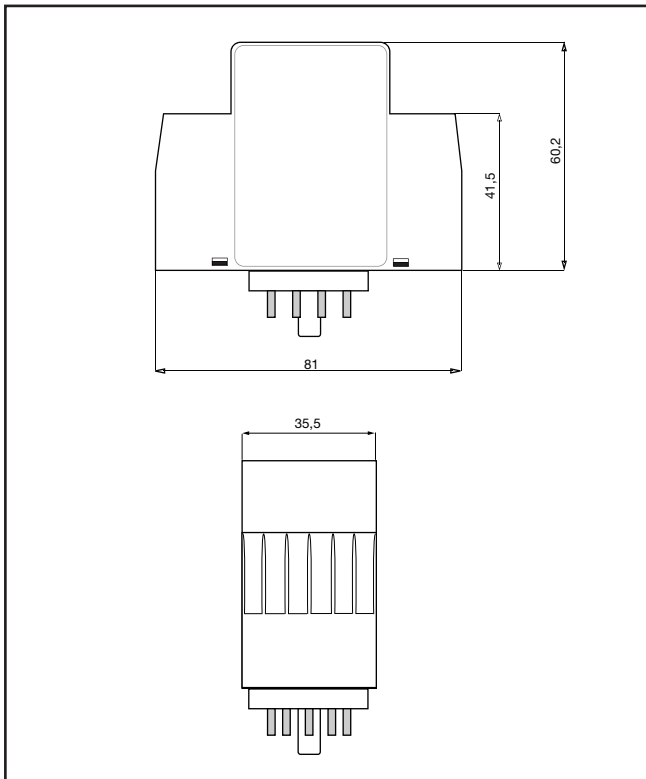
Multilevel application in one tank



Wiring Diagram



Dimension Drawings



Accessories

- 11 pole circular socket ZPD11
- Holding spring HF

Delivery Contents

- Amplifier
- Packaging: Carton box
- Manual

По вопросам продаж и поддержки обращайтесь:

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