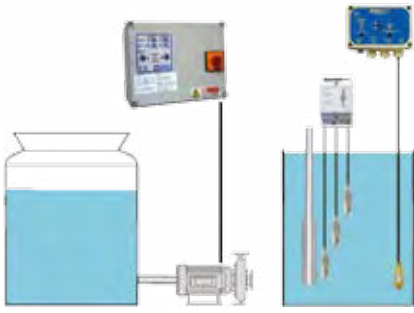


# ELECTRONIC LEVEL CONTROLLERS





## OUR PRODUCTS TO MANAGE AND PROTECT WATER SYSTEMS

The use of control panels is very common in water systems. Mac3 has developed control panels specifically projected for water systems and moreover makes available a wide range of products that can be used and integrated in control panels by the installer. Mac3's range is:

### PUMPS CONTROL PANEL

**Device:** control panels to manage and protect 1 or 2 pumps.

**Application:** mostly used for boosting and drainage, clear or waste water, cistern or well.



### ELECTROMECHANICAL

DOL start , thermal protection, for boosting.

### ELECTRONIC

DOL start, ammetric protection, with electronic board inside, multifunction.

### COS φ

DOL start, ammetric protection, with electronic board inside, for deep well. Integrated dry running protection, no need of probes.

### SEQUENCER

Din Rail exchanger to realize control panel for 2 or 3 pumps.

### LEVEL CONTROLLER

**Device:** electronic device for level controlling.

**Application:** level control and measurement in storage tanks or well.



### ELETTROSONDE

A wide range of probes both DIN Rail and base mounting.

### SENSOPRESS

Level regulator and gauge device with LCD display.

### RAIN CONTROL SYSTEMS

**Device:** electronic system for automatic switching between rain water in place of potable water.

**Application:** systems to recycle rain water.



### RAINCONTROL

Electronic device for DIN rail with pressure sensor and display LCD.

### MWRC

IP 65 device with level regulation by float switch or pressure sensor.

# CONTROL PANEL FOR PUMPS

## Control Panels and electrical devices for managing water systems.

Electronic development has introduced new products in several markets, so also in control panels for pumps. Moreover traditional electromechanical control panels have developed new products; these products are supplied with electronic boards that integrate all functionalities, usually performed by electromechanical components.

Mac3 offers a wide range of control panel for 1 or 2 pumps. The categories are:

- Electromechanical control panels
- Electronic control panels
- Check Cos control panels

All the models are available for single and three phase pumps.

## ELECTROMECHANICAL



General Technical Features	
Power supply	Single-phase 230V $\pm$ 20% 50-60Hz 3-phase 380V $\pm$ 10% 50 o 60Hz
Range current	4-18A (single-phase) 1,6-20A (3-phase)
Motor protection	Thermal
Interface	Flashing leds Buttons for Automartic-off-manual
Inputs	2 In for level regulator or floating 2 In for pressure switches
Approval	CE
Protection rating	IP55
Operating Temp	- 5° ÷ + 40 °C
Storage temp.	- 20° ÷ + 80 °C
Housing box	Thermoplastic material
Dimensions	19x9x24 cm (single-phase) 22x12x30 cm (3-phase)
Weight	1,8 kg (single-phase) 3,2 kg. (3-phase)
Trimmer to regulate probes sensitivity from 0-100Kohm (only mod. 1 pump)	
General disconnecting switch with door lock	
Output with cable holder	
Contactor (3-phase model)	
Auxiliary circuit protection fuse	

## Electromechanical

Control Panel for 1 or 2 pumps, both single and three phase, boosting model. Available for Europe (230/380V 50Hz) and America (110/230V 60Hz).

The device controls pumps and guarantees thermal protection, internal recoverable for 3-phase model and externally for single phase model. The exchange of the pumps is ensured by an electronic circuit. The automatic start is driven by the inputs of the floats or pressure switch. In case of need are activated both pumps.

## ELECTRONICS



General Technical Features	
Power supply	Single-phase 230V±20% 50-60Hz 3-phase 380V±10% 50 o 60Hz
Range current	2-18A (single-phase) 0,8-14A (3-phase)
Motor protection	Ammetric
Interface	Slashing leds Buttons for Automartic-off-manual
Inputs	2 In for level regulator or floating 2 In for pressure switches
Approval	CE
Protection rating	IP55
Operating Temp	- 5° ÷ + 40 °C
Storage temp.	- 20° ÷ + 80 °C
Housing box	Thermoplastic material
Dimensions	19x9x24 cm (single-phase) 22x12x30 cm (3-phase)
Weight	1,8 kg (single-phase) 2,6 kg. (3-phase)
Trimmer to regulate probes sensitivity from 0-100Kohm (only mod. 1 pump) Trimmer to regulate current max General disconnecting switch with door lock Output with cable holder Contactor (trifase) Auxiliary circuit protection fuse	

### Electronics

Control Panel runs the pumps and guarantees ammetric protection that can be regulated directly on electronic board, by the installer. The automatic start is driven by the inputs of the floats or pressure switch.

Control panels for 1 pump: both single and 3-phase, only boosting version. Available for Europe (230/380V 50Hz) and America (110/230V 60Hz).

Control Panel for 2 pumps: both single and 3-phase, multifunction. Function mode settable for boosting, sewage and storage. The Exchange of the pumps is integrated and in case of need are activated both pumps.

European Version 230/380V 50Hz supplied pre-wired in plastic box

American Version 110/230V 60Hz dual voltage. Multi voltage power supply and an additional input for storage function.

Supplied only electronic board with front panel electronic board that could be mounted on the cover con control panel.

### Functions

**Sewage:** input for 4 level regulators for managing boosting and sewage systems. Identification of minimum and maximum level for 1 pump, maximum level for assistance of second pump, alarm level.

**Boosting:** input level for 2 level regulators or 3 probes (1 common + 2 levels) and 2 pressure switches. Identification of minimum and maximum level of tank, start and emergency pressure switches.

**Storage:** input for 2 level regulators (1 for European version) and 3 probes (1 common + 2 levels). Identification of minimum and maximum level for cistern1 (only minimum level for European version) and minimum and maximum level for cirsten2

### Scheda Dual Voltage



General Technical Features	
Dual voltage power supply	Single-phase 110-230V±20% 50-60Hz 3-phase 230VV±20% 50-60Hz
Range current	2-20A
Motor protection	Ammetric
Interface	Slashing leds Buttons for Automartic-off-manual
Inputs	6 IN for pressure switches and level regulator
Output	Alarm output relay (max 6A)
Approval	CE
Operating Temp	- 5° ÷ + 40 °C
Storage temp.	- 20° ÷ + 80 °C
Mounting	din rail
Dimensions	13x8x13 cm
Weight	0,45 Kg
Trimmer to regulate current Dip switch for setting the functioning programme Auxiliary circuit protection fuse	

## CHECK COS $\phi$ ELETTRONICS



### Display model

General Technical Features	
Power supply	single-phase 230V $\pm$ 20% 50-60Hz 3-phase 380V $\pm$ 10% 50 o 60Hz
Range current	2-18A (single-phase) 0.8-14A (3-phase)
Motor protection	Ammetric
Interface	Display for viewing of voltmeter, ammeter and motor cos $\phi$ Buttons for Automartic-off-manual
Inputs	Pressure switch or gelleggiante
Approval	CE
Protection rating	IP55
Operating Temp	- 5° ÷ + 40 °C
Storage temp	- 20° ÷ + 80 °C
Housing box	Material Thermoplastic
Dimensions	19x9x24 cm (single-phase) 22x12x30 cm (3-phase)
Weight	1.6 kg (single-phase) 2.5 kg. (3-phase)
Multilanguage	
Self learning motor cos $\phi$	
Hold timer filling	
Sequence and phase failure protection (3-phase)	
General disconnecting switch with door lock	
Output with cable holder	
Contactore (3-phase model)	
Auxiliary circuit protection fuse	

### Led model

General Technical Features	
Power supply	single-phase 230V $\pm$ 20% 50-60Hz 3-phase 380V $\pm$ 10% 50 o 60Hz
Range current	2-18A (single-phase) 0.8-14A (3-phase)
Motor protection	Ammetric flashing leds
Interface	Buttons for Automartic-off-manual
Inputs	pressure switche or floating
Approval	CE
Protection rating	IP55
Operating Temp	- 5° ÷ + 40 °C
Storage temp.	- 20° ÷ + 80 °C
Housing box	Material Thermoplastic
Dimensions	14x7x19 cm (single-phase) 22x12x30 cm (3-phase)
Weight	1.6 kg (single-phase) 2.5 kg. (3-phase)
Self learning motor cos $\phi$	
Trimmer for adjusting the timer standby filling (0 - 100 minutes)	
Dip switch for setting hold timer filling Automartic manual	
Sequence and phase failure protection (3-phase)	
Disconnecting switch with door lock (3-phase)	
Output with cable holder	
Contactore (3-phase model)	
Auxiliary circuit protection fuse	

Control panel for 1 pump both single and 3-phase.

Control Panel pilots the pumps and guarantees ammetric protection, that can be regulated.

It is also integrated dry running protection through the variation check of pump's cos $\phi$ . No need of probes, particularly suitable for applications with deep wells.

Auxiliary input for float or pressure switch.

## SEQUENCER

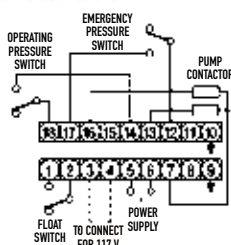
### Sequencer



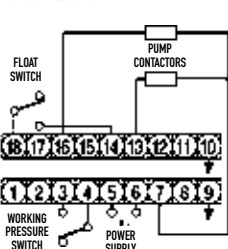
#### General Technical Features

Power supply	117 ÷ 230 V~ 50 ÷ 60 Hz    24 V~ 50 ÷ 60 Hz
Consumption	8 VA max
Mounting	on din rail
Contact rating	250 V~ 5A max
	AC 1250 VA inductive $\text{Cos}\phi = 1$
	AC 900 VA inductive $\text{Cos}\phi = 0,4$ DC 150 W resistive
N. max operation	30 operazioni/minuto
Lifetime relay	mechanical: 2 million operations
	Electrical: 100.000 operations with rated load
Operating Temp.	- 10° ÷ + 60 °C
Storage temp.	- 30° ÷ + 80 °C
Housing box	Noryl (PP0) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x54x59 mm
Weight	120 gr.

Connections with 2 pressure switches and 1 float switch



Connections with pressure switch and 1 float switch



### Pump exchanger relays

This device, permits the control and inversion of the 2 pumps in the autoclave systems thanks to the interaction with the pressure switch inserted in the circuit. The system depends on the state of a float, which prevents its function in the absence of water. It is also possible to insert a second pressure switch (or emergency pressure switch) that allows for both pumps to operate when one is insufficient to maintain the pressure of the system in the required supply conditions.

Thanks to this device, it is possible to realize the control of the conventional autoclave system, with the sole addition of the contactor and the thermal part, at greatly reduced costs.

## SEQUENCER 2



Sequencer

### Pump exchanger relays with status leds

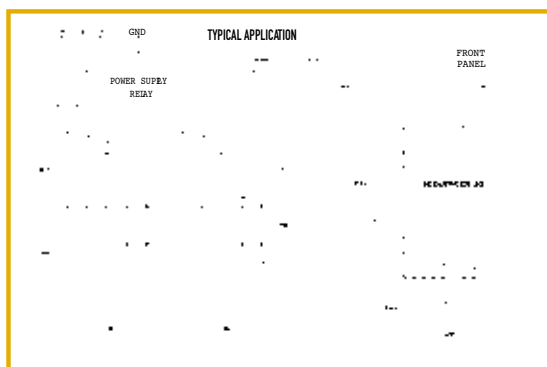
The device Sequencer 2 has the same characteristics and functionalities of Sequecer. It also permits to monitor the status of the devices by flashing leds.

- led fo power supply
- led for Pump N. 1 in ON
- led for pump N. 2 in ON

## SEQUENCER 2Q



Sequencer



General Technical Features	
Power supply	24 V~ 50 ÷ 60 Hz
Consumption	3 W
Mounting	on din rail
Lighting led	operating motors protected motor - main presence alarm floating working pressure switch
Inputs	dry running floating emergency and working pressure switch
Panel with	selectors for automatic off manual lighting led: n.2 operating motor protected motor - main presence  alarm floating working pressure switch
Operating Temp	- 5° ÷ + 40 °C
Storage temp.	- 30° ÷ + 80 °C
Housing box	material Thermoplastic
Protection rating	IP20
Approval	CE
Dimensions	71 x 87 x 20 mm
Weight	120 gr.

### Electronic module for control panel. Control and exchanger for 2 electro-pumps

This device allows to make a control panel for autoclave by only adding contactors and thermic relays.

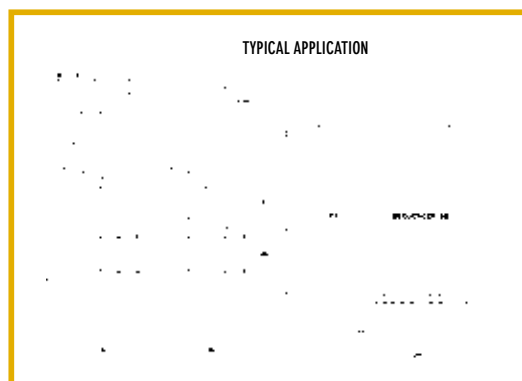
It consists of a base unit suitable for din guide and of a panel containing two switches for pump operation and seven led diodes that always show the autoclave status.

## SEQUENCER3



Sequencer3

Available model for 2 or 3 pumps.



## ELETTROSONDA Q



Elettrosonda

Models in DC and AC	
Power supply	24 - 117 - 230 - 380-415 V~ 50 ÷ 60 Hz
Inter electrode voltages	10 V~
Consumption	Max 4 VA
Power supply	12/24 Vcc
Consumption	2 watt max
Inter electrode voltages	1,5 V pp
General Technical Features	
Operating resistance	5,6 KΩ (NS) 68 KΩ (AS) 0 ÷ 100 KΩ (SR)
Mounting	on din rail
Contact rating	AC1 resistive 5A a 250 V~
	AC inductive Cosφ 0.4 2A a 250 V~
	DC inductive 5A a 30 V~
Dielectric strenght	2000 V
Response time	100 ms
Operating Temp	- 10° ÷ + 50 °C
Storage temp.	- 20° ÷ + 80 °C
Housing box	Noryl (PPD) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x54x59 mm
Weight	200 gr.
Max cable leght of probes	m 70 ÷ 80 (AS-SR) m 1000 (NS)

On request available 2 module DIN rail for supply voltage

### At high, low and variable sensitivity for DIN rail.

The electroprobes of the Q, series, produced by MAC 3, are regulators of conductive fluid suitable for the minimum and maximum level control of deep well, tanks, cisterns etc. The operating principle is based on the detection of the fluid resistance on the part of the control box, the level being controlled by means of special probes immersed in the liquid with the longest acting as a common element.

When the level of the liquid inside the container or the well wets all three probes a relay is activated and subsequently deactivated only when the level descends, uncovering the lower probe.

### Models NS (the best for waters)

In the case of wells with a diameter max of 100 mm the NS model probes should be positioned in such a way that there is not more than mt 2,0 between the lowest and the highest (sufficient to protect the pump). For wells with a larger diameter, the probes can be set at a greater distance, there are no limits for tanks. To conclude, liquids with a total resistance of 5,6 Kohm max can be well controlled.

The control box can be placed at a distance of up to 1,000 mt, from the probes.

### Models AS

To control liquids with low conductivity, rainwater for example the AS type is particularly suitable. These models permit liquids with a very high total resistance up to 70 Kohm, to be controlled.

### Models SR

For the control of conductive liquids with unknown conductivity this model is essential which controls up to 100 Kohm.

## ELETTROSONDA EV



Elettrosonda

General Technical Features	
Power supply	24 - 117 - 230 - 380-415 V~ 50 ÷ 60 Hz
Inter electrode voltages	10 V~
Consumption	Max 4 VA
Operating resistance	0 ÷ 100 KΩ
Mounting	on din rail
Contact rating	AC1 resistive 5A a 250 V~ AC inductive Cosφ 0.4 2A a 250 V~ DC inductive 5A a 30 V~
Dielectric strenght	2000 V
Adjustable start time delay	0 - 16 sec.
Operating Temp	- 10° ÷ + 50 °C
Storage temp.	- 20° ÷ + 80 °C
Housing box	Noryl (PPO) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x54x59 mm
Weight	200 gr.
Max cable leght of probes	m 1000
Supply	connection
pin 5	power supply 24 V~
pin 6	
pin 5	power supply 117 V~
pin 7	
pin 5	power supply 230 V~
pin 8	

On request available 2 module DIN rail for supply voltage

### Micro controlled, variable sensitivity and relay start time adjustable for DIN rail multi-voltage power supply

The electroprobes of the EV, series, produced by MAC 3, are regulators of conductive fluid suitable for the minimum and maximum level control of deep well, tanks, cisterns etc. The operating principle is based on the detection, on the part of the control box, of the fluid resistance the level being controlled by means of special probes immersed in the liquid with the longest acting as a common element.

When the level of the liquid inside the container or the well wets all three probes a relay is activated and subsequently deactivated only when the level descends, uncovering the lower probe.

EV type guarantee the SR type flexibility, the NS type performance and , moreover, it also allows to:-  
- set the relay start time delay 0÷16s  
- select the filling or emptying function.

- request a relay output with 2 change over contacts in 3 DIN rail version.

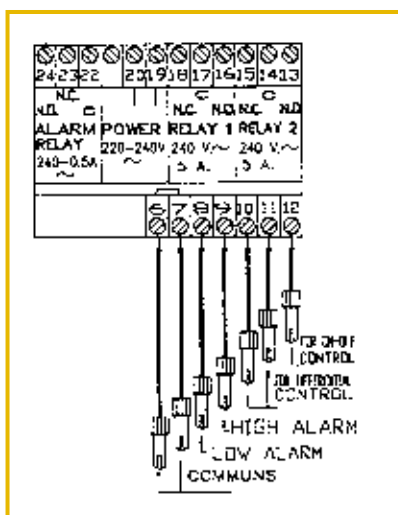
## ELETTROSONDE DB



### Elettrosonda DB

#### General Technical Features

Power supply	230 V ~ 50 ÷ 60 Hz
Inter electrode voltages	24 V ~
Consumption	Max 10 VA
Operating resistance	0 - 20 K $\Omega$
Release resistance	> 20 K $\Omega$
Mounting	din rail
Contact rating	AC1 resistive 5A a 250 V ~
Relay 1 and 2	AC inductive Cos $\phi$ = 0.4 2A a 250 V ~ DC 5A a 30 V ~
Contact rating alarm relay	AC1 resistive 0,5A 250 V ~
Response time	100 ms
Operating Temp	- 10° ÷ + 50 °C
Storage temp.	- 20° ÷ + 80 °C
Housing box	Noryl (PPD) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x72x60 mm
Weight	320 gr.
Max cable length of probes	m 1000
Power supplies	24 V ~ - 117 V ~



### Electro-probe with 5 control points

The DB Electroprobe intended for use in the sector of level control instruments, open up a whole new field of multifunctional equipment. MAC 3 once again offers an extremely innovative product which unites a series of functions in a very small space (4 DIN modules).

List of functions:

ON-OFF electroprobe (operating in one single point): acts on relay 2 - use probes 6 and 12.

Differential electroprobe (operates between two probes positioned by installer): acts on relay 1 - use probes 10 and 11, always together with 6 and/or 7 as common.

High alarm - use probes 9 and 6.

Low alarm - use probes 8 and 7.

Internal Buzzer - For high and low alarms.

Control for external alarm (buzzer or light).

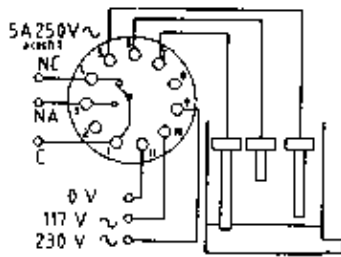
## ELETTROSONDE Z8-Z11



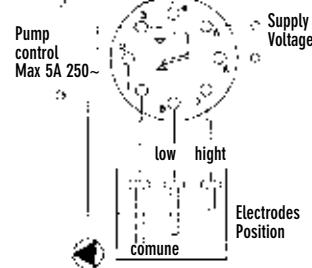
General Technical Features	
Power supply	24 - 117 - 230 - 380-415 V~ 50 ÷ 60 Hz
Inter electrode voltages	10 V~
Consumption	Max 5 VA
Operating resistance	5,6 KΩ (NS) 70 KΩ (AS) 0÷100KΩ (SR)
Mounting	base
Contact rating	AC1 resistive 5A a 250 V~ AC inductive Cosφ 0.4 2A a 250 V~ DC inductive 5A a 30 V~
Dielectric strenght	2000 V
Response time	100 ms
Operating Temp	- 10° ÷ + 50 °C
Storage temp.	- 20° ÷ + 80 °C
Housing box	Noryl (PPO) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	79x35x88 mm
Weight	200 gr.
Max cable leght of probes	m 70 ÷ 80 (AS-SR) m 1000 (NS)

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Wiring diagram Z11



Wiring diagram Z8



**Electro-probes with high, low and variable sensitivity for base mounting. DC and AC power supply, single and dual supply voltage.**

The electroprobes of the Z series are particularly interesting for their reduced size. The Z11 model has a double voltage supply. Both the Z8 and Z11 models are available in the three versions: normal sensitivity (NS), high sensitivity (AS) and adjustable sensitivity (SR).

## ACCESSORIES ELECTRO-PROBES

The accessories manufactured by Mac 3 are to complete its range of level regulation devices.



Socket octal

Type	Octal socket	8 pin
Code	TZ08000000	
Mounting	Barra DIN/Superficiale	
Material	ABS	
Weight	gr. 45	
Dimensions	mm 60x40x23	
Operating Temp	80 °C max	



Zoccolo undecal

Type	Socket undecal	11 pin
Code	TZ11000000	
Mounting	Din rail or Surface mounting	
Material	Noryl UL 94 V1	
Weight	gr. 55	
Dimensions	mm 60x40x23	
Operating Temp	80 °C max	

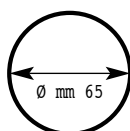


Probe

Type	probe	
Code	TS0ND00000	
Mounting	Directly into liquid	
Material	ABS + AISI 316	
Weight	gr. 45	
Dimensions	Ø mm 22x85	
Operating Temp	80 °C max	



Triple probe holder



Type	Triple probe holders	
Code	TP00000000	
Mounting	Hole Ø mm 65/	
Material	Thermosetting resin	
Weight	gr. 190	
Dimensions	Ø mm 80x72	
Operating Temp	80 °C max	
Notes	Electrodes mm 5 not included protective terminal cover	