Control panels are very commonly used in water systems. MAC3 has developed control panels specifically designed for water systems and moreover, offers a wide range of products that can be used and integrated in previously installed control panels.

Our products include:

Control Panel Pumps

Device:
Control panels that manage and protect 1 or 2 pumps.
Application:
Mostly used for boosting and drainage of clear or waste water from a cistern or well.

Products for Control Panels

Device:
A wide range of products for assembling control panels for pumps.
Application:
Automation of boosters through control panels, designed and assembled by qualified personnel.

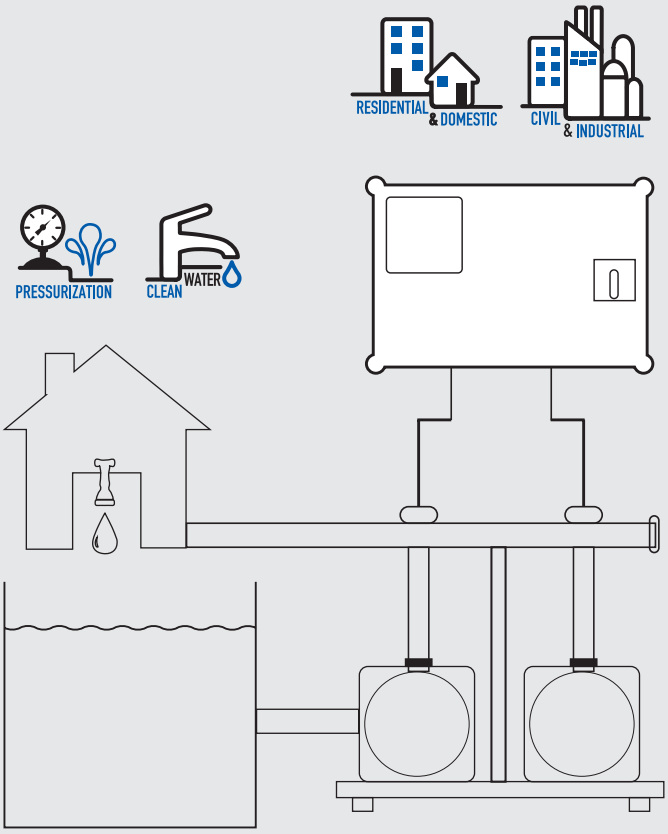
Level Controller

Device:
Electronic device for controlling levels.
Application:
Level control and measurement in storage tanks or wells.

Rain Control System

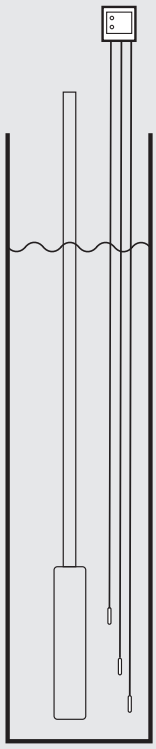
Device:
Electronic system for automatic selection between rain water and main supply water.
Application:
Systems to recycle rain water.

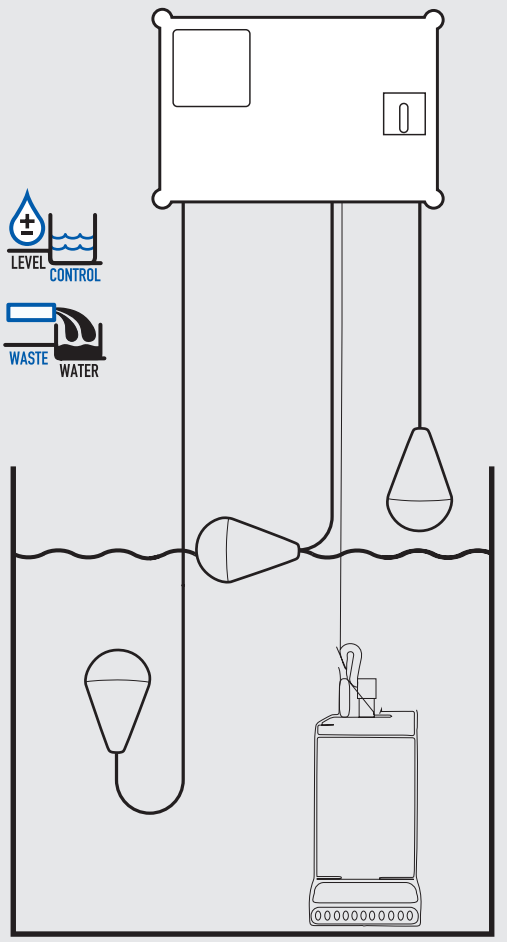
Control Panels & Level controllers



Boosting system with 2 alternating pumps with a control panel.

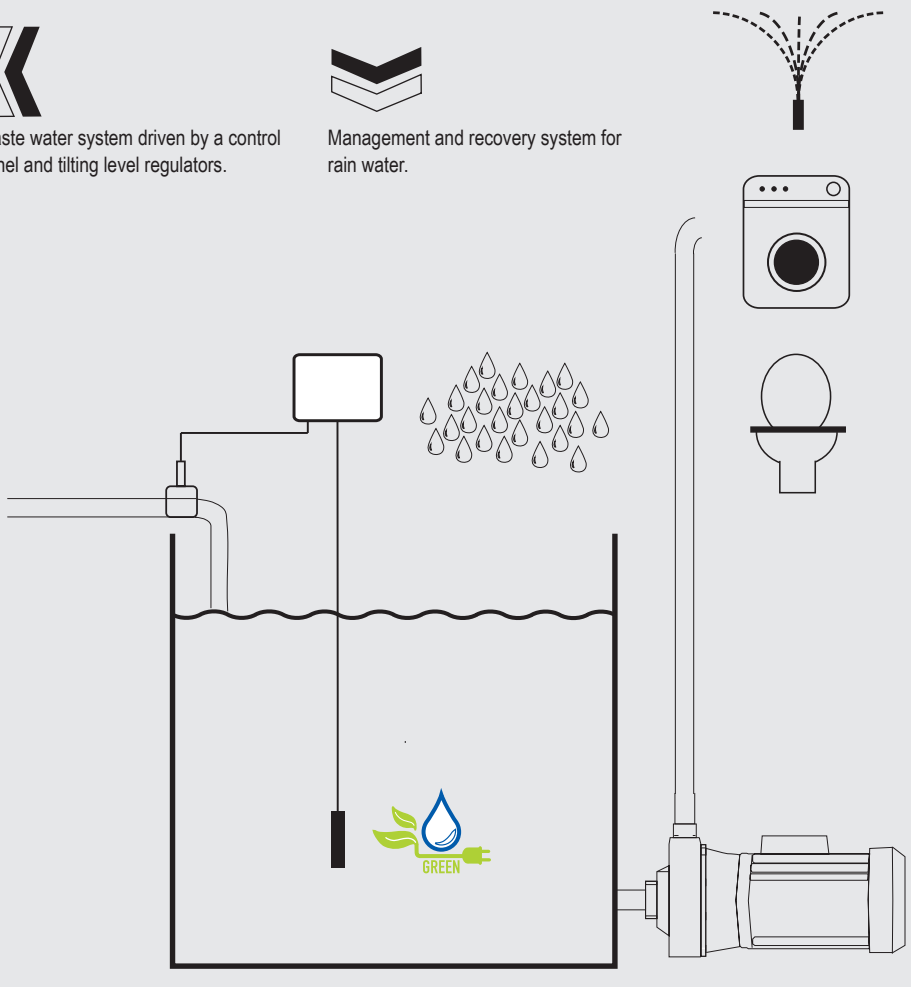
Level control by probes for dry running protection.





Waste water system driven by a control panel and tilting level regulators.

Management and recovery system for rain water.



Control Panels for pumps

Control panels and electrical devices for managing water systems.

The development of electronics has brought about new products in several markets, including the market of control panels for pumps; so that control panels, in the electronic version, are integrated into one single electronic board, instead of being traditionally actualized by several electromechanical components.
MAC3 offers a wide range of control panels for 1 or 2 pumps. The categories are divided into:
- Electronic control panels
- Check cosφ control panels

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

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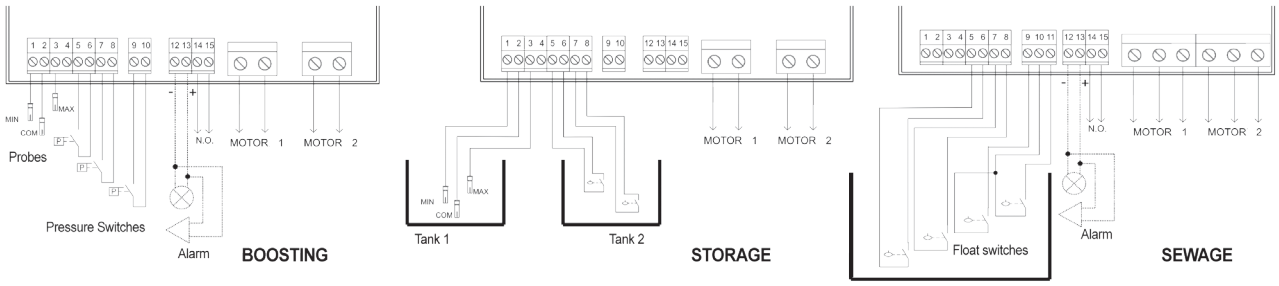
WASTE WATER

Application: Control panels for 1 pump: both single and 3-phase, only for boosting version. Control Panel for 2 pumps: both single and 3-phase, multifunction. Function mode can be set for boosting, sewage and storage.
Advantages: Available for Europe (230/380V 50Hz) and America (115/230V 60Hz). American Version, for 2 pumps is dual voltage: multi voltage power supply (115/230V) and an additional input for the storage function. Only one electronic board can be supplied or pre-wired within a plastic box.
Benefits: Control Panel runs the pumps and guarantees ammetric protection that can be adjusted directly on the electronic board, by the installer. The automatic start is driven by the inputs of the floats or pressure switch. The Exchange of the pumps is integrated and in case of need, are activated both pumps.

Power supply	single phase 230V±10% 50-60Hz three-phase 380V±10% 50-60Hz
Range current	2-18A (single phase) 0,8-16A (three-phase)
Motor protection	Ammetric
Interface	Flashing Led Buttons for Automatic - off -manual
Inputs	IN for level regulator or float IN for pressure switches
Outputs	OUT Alarm output relay
Approval	CE
Protection rating	IP55
Storage temp.	- 5°C ÷ + 40 °C
Operating temp.	- 20°C ÷ + 80 °C
Container	Thermoplastic material
Dimensions	285X245X140 mm (single phase) 285X245X140 mm (three-phase 1 pump) 345X285X165 mm (three-phase 2 pumps)
Weight	2,2 kg (single phase) 2,6 kg (three-phase 1 pump) 3,3 kg (three-phase 2 pumps)
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 (3-phase model) Auxiliary and motor circuit protection fuse	



Installation Diagram

Multifunction

Sewage: input of 4 level regulators for managing sewage systems; the first for identification of minimum level, the 2nd for maximum level (to activate 1 pump), the 3rd overflow level with assistance of the 2nd pump and the 4th is the alarm level.
Boosting: input of 1 level regulator or 3 probes (1 common + 2 levels) and 3 pressure switches. Identification of minimum and maximum levels of a tank, pressure switches for start, emergency and alarm.
Storage: input of 2 level regulators (1 for European version) or 3 probes (1 common + 2 levels). Identification of minimum and maximum levels of cistern n.1 well (only minimum levels for European version) and minimum and maximum level for cistern n.2.

Dual Voltage

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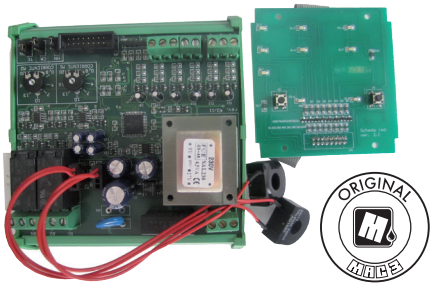
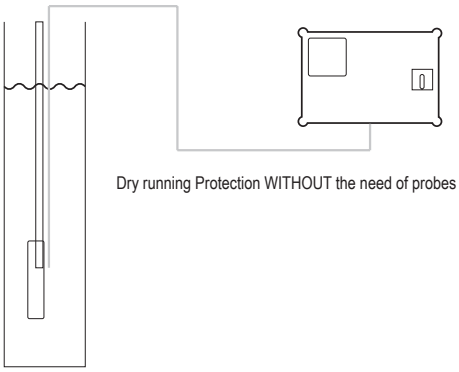


Power supply DUAL VOLTAGE	single phase 115-230V±20% 50-60Hz three-phase 230V±20% 50-60Hz
Range current	2-20A 2-40A
Motor protection	Ammetric
Interface	Flashing led, Buttons for Automatic -off - manual
Inputs	IN for pressure switches and level regulators
Outputs	Alarm output relay (max 6A)
Approval	CE
Protection rating	- 5°C ÷ + 40 °C
Operating temp.	- 20°C ÷ + 80 °C
Mounting	DIN Rail
Dimensions	13x8x13 cm
Weight	0,45 Kg
Trimmer to regulate current Dip switch for setting the functioning program. Auxiliary circuit protection fuse	

Application: Piloting and protection of 1 submersible pump, for both single and 3-phase.
Advantages: Control Panel pilots/drives the pumps and guarantees an ammetric protection, that can be adjusted. Moreover, a dry running protection is integrated through the variation check of the pump's cosφ.
Benefits: No need of probes, particularly suitable for applications with deep wells. Auxiliary input for float or pressure switch.

Display Model

Power supply	single phase 230V±10% 50-60Hz three-phase 380V±10% 50 o 60Hz
Range current	2-18A (single phase) 0,8-16A (three-phase)
Motor protection	Ammetric
Interface	Display for viewing voltmeter, amperometer, cosφ motor.
Inputs	Pressure switch or float
Approval	CE
Protection rating	IP55
Protection rating	- 5°C ÷ + 40 °C
Operating temp.	- 20°C ÷ + 80 °C
Container	Thermoplastic material
Dimensions	285X245X140 mm (single phase) 285X245X140 mm (three-phase)
Weight	2,2 kg (single phase) 2,7 kg (three-phase)
Multilanguage Self learning Cosφ motor Hold timer filing (0-250 minutes) Sequence and phase failure protection (3-phase) General disconnecting switch with door lock Output with cable holder Contactor (3-pahase model) Auxiliary circuit protection fuse	



Dry running Protection WITHOUT the need of probes

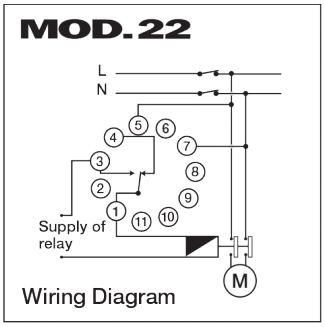
Mod. 22 Single Phase

This device, for motor protection, controls that the drop voltage doesn't exceed the established value, by turning off the relay when it happens. The relay is delayed to prevent any brief and temporary breaking.

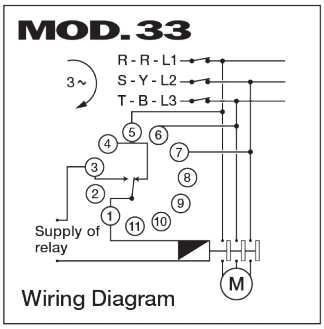
Mod. 33 Three-phase

This unit is designed to monitor the correct functioning of a three-phase supply, the failure of a phase and the lowering of power supply. If the proper conditions are met, the relay allows the motor start up.
The relay is delayed to prevent brief or temporary interruptions.

mod22	
Supply voltage	180 ÷ 260 V~
	50 - 60 Hz
	directly from single-phase
Power consumption	5 VA max
Monitoring range	180 ÷ 260 V~
Mounting	Socket undecal
Response time	2 sec. Max with voltage 2,5% drop voltage
Contact rating/output characteristics	AC 2500 VA resistive load Cosφ = 1 AC 1875 VA resistive load Cosφ = 0,4 DC 300 W resistive load
Number of operations	30 operations/minute. max
Operating Temperature	- 10 °C ÷ + 50 °C
Storage temperature	- 10 °C ÷ + 80 °C
Container	Noryl (PPO) UL 94 V0
Accessories included	Socket undecal
Dimensions	mm 79x35x88
Weight	gr. 116
Power supplies Mod. 22 90 ÷ 130 V~ codice T40B000000 Mod. 33 180 ÷ 250 V~ codice T50B000000	



mod33	
Supply voltage	300 ÷ 500 V~
	50 - 60 Hz
	line directly from 3phase line
Power consumption	5 VA max
Monitoring range	300 ÷ 500 V~
Mounting	Socket undecal
Response time	2 sec. Max with voltage 2,5% drop voltage
Contact rating/output characteristics	AC 2500 VA resistive load Cosφ = 1 AC 1875 VA resistive load Cosφ = 0,4 DC 300 W resistive load
Number of operations	30 operations/minute. max
Operating Temperature	- 10 °C ÷ + 50 °C
Storage temperature	- 10 °C ÷ + 80 °C
Container	Noryl (PPO) UL 94 V0
Accessories included	Socketundecal
Dimensions	mm 79x35x88
Weight	gr. 116
Power supplies Mod. 22 90 ÷ 130 V~ codice T40B000000 Mod. 33 180 ÷ 250 V~ codice T50B000000	

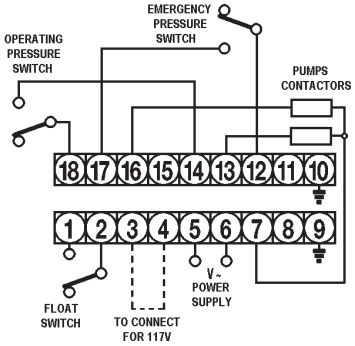


Sequencer

Application: Realization of Pump control panels. Thanks to this device, it is possible to control a traditional pressure boosting system autoclave by only adding a contactor and thermal protection.
Advantages: Allows the pilot and exchange of two pumps, has an input for the pressure switch and one for the emergency pressure switch that makes both pumps operate if needed. The input of the float switch stops the pump for dry running protection.
Benefits: Several models are available in order to produce systems which greatly reduce assembling costs.

Power supply	117 ÷ 230 V~ 50 ÷ 60 Hz || 24 V~ 50 ÷ 60 Hz
Power consumption	15 VA max
Mounting	on DIN rail
Output characteristics	5(2)A
N° max operazioni	30 operations/minute. max
Lifetime relay	Mechanical: 2 million operations Electrical: 100.000 operations with a nominal load
Protection rating	- 10°C ÷ + 60 °C
Operating temp.	- 30°C ÷ + 80 °C
Container	Noryl (PPO) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x54x59 mm
Weight	120 gr.

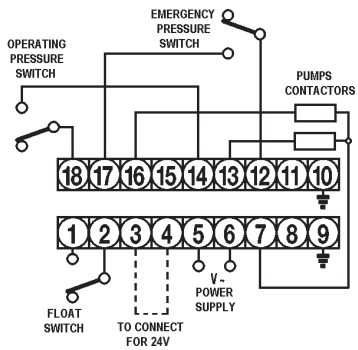
CONNECTIONS WITH 2 PRESSURE SWITCHES AND 1 FLOAT SWITCH



Sequencer 2

Pump exchanger relays with status leds. The device Sequencer 2 has the same characteristics and functionalities of Sequencer.
It monitors 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

CONNECTIONS WITH 2 PRESSURE SWITCHES AND 1 FLOAT SWITCH



Sequencer 2q

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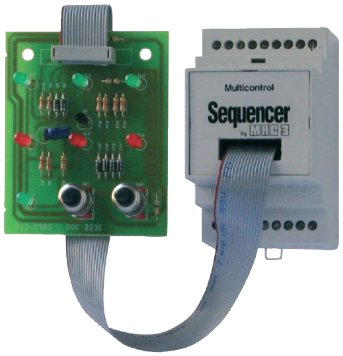
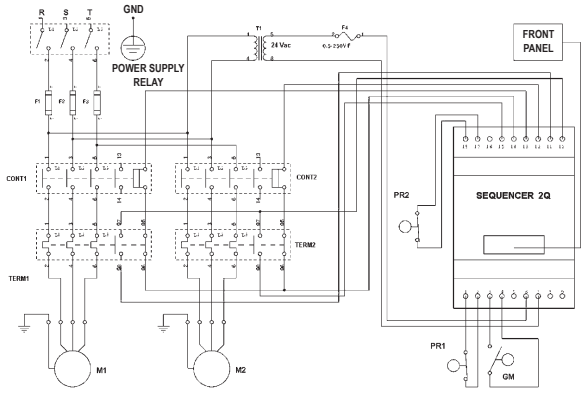
LEVEL CONTROL
WASTE WATER



Pump exchanger relays with front panel. The device Sequencer 2Q has the same characteristics and functions of Sequencer with the addition of a panel containing two switches for pump operation and seven led diodes that always show the autoclave status.

Panel with	Selectors for automatic off-manual Lighting led: n.2 operating motor n.2 protected motor n.1 main presence n.1 alarm float switch n.1 working pressure switch
Protection rating	- 5°C ÷ + 40 °C
Operating temp.	- 30°C ÷ + 80 °C
Container	Thermoplastic material
Protection rating	IP20
Approval	CE
Dimensions	71 x 87 x 20 mm
Weight	120 gr.

TYPICAL APPLICATION



Sequencer 3

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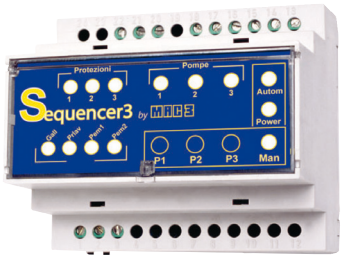
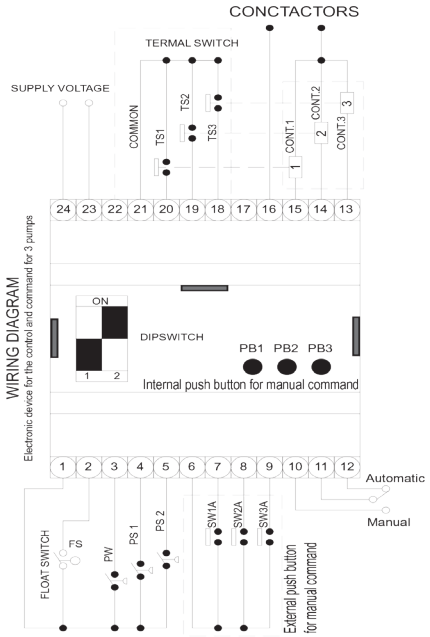
CLEAN WATER
PRESSURIZATION
LEVEL CONTROL
WASTE WATER



Advanced version of Sequencer that drives groups up to 3 pumps. Interface with status LEDs and control buttons.



Level Controller

In some applications, there is not enough space for a float switch to control the water level. A suitable solution for this problem are the level probes.
The electro probes, produced by MAC3, are regulators of conductive fluid that control minimum and maximum levels of deep well, tanks, cisterns, etc.
The operating principle is based on the detection of fluid resistance on the part of the control unit, 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 submersed probes a relay is activated and subsequently deactivated only when the level descends, uncovering the lower probe.

Electroprobe Q

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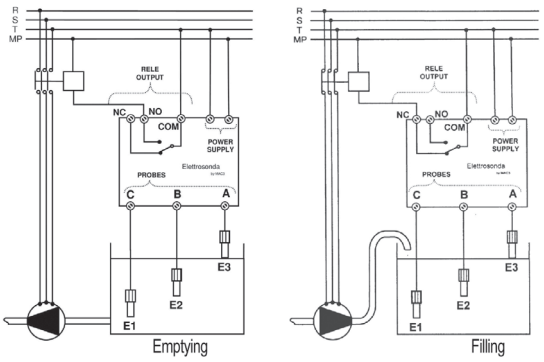
Power supply	24 - 117 - 230 - 380-415 V~ 50 ÷ 60 Hz
Inter electrode voltages	10 V~
Power consumption	Max 4 VA
Operating resistance	5,6 KΩ (NS) 70 KΩ (AS) 0÷100KΩ (SR)
Mounting	on DIN rail
Output characteristics	250V 5(2)A
Dielectric strength	2000 V
Adjustable start time delay	- 10°C ÷ + 50 °C
Operating temp.	- 20°C ÷ + 80 °C
Container	Noryl (PPO) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x54x59 mm
Weight	200 gr.
Max cable length of probes	70 ÷80(AS-SR) m 1000(NS)
Upon request 2 DIN modules are available DIN rail for supply voltage from 24V - 117V - 230V	

Application: Level controller with DIN rail mounting.
Advantages: A wide range for every need.
Models NS [standard sensitivity]
Particularly suitable to control water and liquids for a total resistance of 5.6 ohm max. The control unit can have a 1000 m. distance from the probes The use of NS provides an outstanding operational reliability, being insensitive to humidity which is very common in wells and tanks.
Models AS [high sensitivity]
To control liquids with low conductivity, for example rainwater, the AS type is particularly suitable. These models allow liquids with a very high total resistance up to 70 Kohm, to be controlled.
Models SR [adjustable sensitivity]
For the control of conductive liquids with unknown conductivity this model is essential which controls up to 100 Kohm.
Benefits: Easy to install and the experience of MAC3ensures ideal operation for use in water systems.



Electroprobe EV

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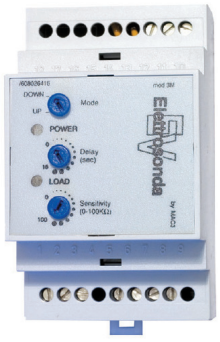
CLEAN WATER
LEVEL CONTROL
AGRICULTURE & IRRIGATION



Power supply	24 - 117 - 230 - 380-415 V~ 50 ÷ 60 Hz
Inter electrode voltages	10 V~
Power consumption	Max 4 VA
Operating resistance	0 ÷ 100 KΩ
Mounting	on DIN rail
Output characteristics	250V 5(2)A
Dielectric strength	2000 V
Adjustable start time delay	0 - 16 sec.
Protection rating	- 10°C ÷ + 50 °C
Operating temp.	- 20°C ÷ + 80 °C
Container	Noryl (PPO) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x54x59 mm
Weight	200 gr.
Max cable length of probes	m 1000
Upon request 2 DIN modules are available DIN rail for supply voltage from 24V - 117V - 230V	

Application: Level controller with DIN rail mounting.
Advantages: The EV model guarantees the SR model flexibility, the NS model performance and moreover, it also allows one to:
- set a delay in the activation of the relay from 0÷16s
- select the kind of intervention to the relay (filling or emptying function).
- request a relay output with 2 exchange contacts in 3 module DIN version.

Benefits: High tech device with a micro controller and an adjustable sensitivity that permits the setting of an adjustable start time delay and has a multi-voltage power supply.

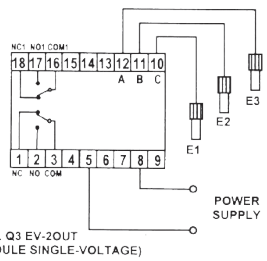


Fig. 7 MOD. Q3 EV-2OUT
(3 DIN MODULE SINGLE-VOLTAGE)

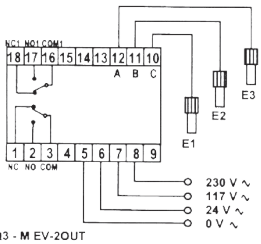


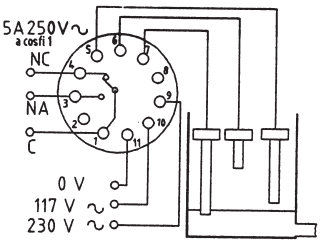
Fig. 8 MOD. Q3 - M EV-2OUT
(3 DIN MODULE MULTI-VOLTAGE)

Electroprobe Z8-Z11

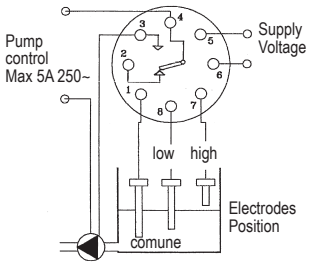
Application: Level controller with base DIN socket mounting.
Advantages: A wide range of models for every need. Both the Z8 and Z11 models are available in the three versions: normal sensitivity (NS), high sensitivity (AS) and adjustable sensitivity (SR).
Benefits: The electroprobes of the Z series are particularly interesting because of their reduced size. The Z11 model has a double voltage supply.

Power supply	24 - 117 - 230 - 380-415 V~ 50 ÷ 60 Hz
Inter electrode voltages	10 V~
Power consumption	Max 5 VA
Operating resistance	5,6 KΩ (NS) 70 KΩ (AS) 0÷100KΩ (SR)
Mounting	on socket
Output characteristics	250 V5(2)A
Dielectric strength	2000 V
Response time	100 ms
Protection rating	- 10°C ÷ + 50 °C
Operating temp.	- 20°C ÷ + 80 °C
Container	Noryl (PPO) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	79x35x88 mm
Weight	200 gr.
Max cable length of probes	m 70 ÷ 80 (AS-SR) m 1000 (NS)

WIRING DIAGRAM Z11



WIRING DIAGRAM Z8

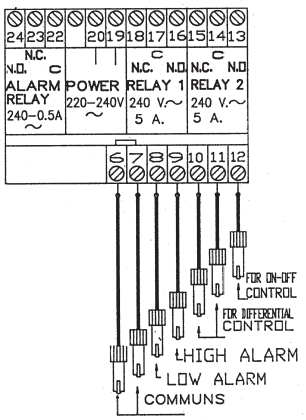


Electroprobe DB

Application: A multifunctional device used in the field of level control instruments.
Advantages: A multifunctional innovative product which unites a series of functions in a very small space (4 DIN modules):
- ON-OFF electroprobe (operating in one single point/area): acts on relay 2 using probes 6 and 12.
- Differential electroprobe (operates between two probes positioned by the installer): acts on relay 1 using probes 10 and 11, always together with 6 and/or 7 as is 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).

Benefits: Easy to use with the possibility of activating or deactivating controls by means of dipswitch. The installation of 4 standard electroprobes would be necessary to obtain the same functions.

Power supply	230 V~ 50 ÷ 60 Hz
Inter electrode voltages	24 V~
Power consumption	Max 10 VA
Operating resistance	0 - 20 KΩ
Release resistance	> 20 KΩ
Mounting	DIN bar
Output characteristics	5(2)A 250V
Contact rating alarm relay	AC1 0,5A 250 V ~ resistivo
Response time	100 ms
Protection rating	- 10°C ÷ + 50 °C
Operating temp.	- 20°C ÷ + 80 °C
Container	Noryl (PPO) UL 94 V0
Protection rating	IP20
Approval	CE
Dimensions	90x72x60 mm
Weight	320 gr.
Max cable length of probes	m 20
Power Available	24 V~ - 117 V~



SensorPress LCD

Application: Sensopress is a high technology gauge and electronic level regulator that can be used in sandy drinking water, in liquid foodstuffs.
Advantages: Measurement is made by a very sensitive pressure sensor, whose signal is transformed and processed by a microcontroller and then converted into "water column height", measured in centimeters.*
Benefits: User friendly with a LCD display, on which all the information, relative to the device, is visualized, as well as three function keys for interaction and parameter modification.

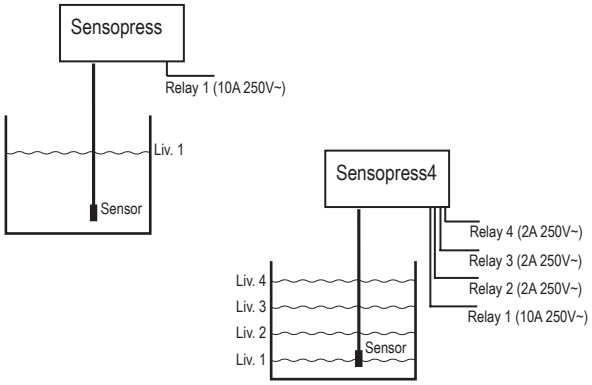
*upon request pressure transducer 10 bar is available up to 90 meters, measured in decimeters.

General Technical Data sheet

Power supply	117 V~/ 50÷60Hz 230 V~/ 50÷60Hz
Power consumption	5,5 VA
Monitoring	LCD 2x16
Field of measurement	0 ÷ 9 m H2O
Max overpressure	20 m H2O
Measuring accuracy	± 1% f.s.
Resolution	1 cm H2O
Minimum obtainable differential	2 cm
Output relay	n°1 (10A 250 V~) + n°3 (2A 250 V~)
Channels	Sensopress n°1 Sensopress4 n°4
Operating temperature	0 °C ÷ + 50 °C
Storage temperature	-10 °C ÷ + 60 °C
Container	NORYL UL 94 VO
Approval	CE
Protection rating	IP 20
Dimensions	mm 105x90x73
Weight	gr. 450
Weight with sensor	gr. 1900

Pressure transducer general technical data sheet for Sensopress LCD

Container	Steel
Operating principales	Monolithic piezoresistive transducer calibrated and temperated
Dimensions	mm 31x120
Weight	gr 1450
Cable	PVC (2 wires + compensation tube)
Cable length	20 mt (as standard)
Installation	Submersible and external
Measurable pressure	0 ÷ 1 bar
Max overpressure	2 bar
Power supply	15 ÷ 30 V 20mA max (from Sensopress device)
Output	4 ÷ 20 mA
It can be used with all types of water with PH between 5÷9. For use with other liquids please consult the factory.	

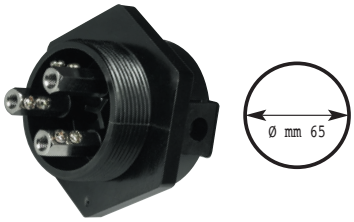


Electroprobe Accessories

Socket octal

Mounting	DIN bar
Material	ABS
Weight	gr 45
Dimensions	mm 65x40x23
Operating temperature	80 °C max

Triple probe holder



Mounting	Foro Ø mm 65Ø mm 65
Material	Thermosetting resin
Weight	gr. 190
Dimensions	Ø mm 80x72
Operating temperature	80 °C max
Electrodes mm Ø 3 not included. Protective terminal cover.	

Socket undecal

Mounting	DIN bar
Material	Noryl UL 94 V1
Weight	gr 55
Dimensions	mm 65x40x23
Operating temperature	80 °C max

Probe

Mounting	direttamente nel liquido
Material	ABS + AISI 316
Weight	gr 45
Dimensions	Ø mm 22x85
Operating temperature	80 °C max

Electronic level Monitors

Devices used in automatic system form managing rain water.

Raincontrol LCD

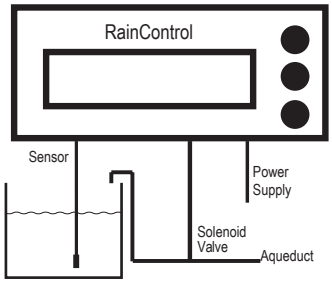
Application: Device with a DIN rail mounting and LCD Display, for automatic management and control of the use of rain water that substitutes a main supply water.
Advantages: Measurement is achieved by a very sensitive pressure sensor.
Benefits: User friendly with a LCD display, on which all the information relative to the device is visualized.

General Technical Data sheet

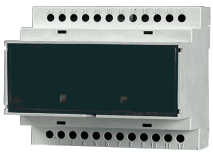
Power supply	117 V~/ 50÷60Hz 230 V~/ 50÷60Hz
Power consumption	5,5 VA
Monitoring	LCD 2x16
Field of measurement	0 ÷ 9 m H2O
Max overpressure	20 m H2O
Measuring accuracy	± 1% f.s.
Resolution	1 cm H2O
Minimum obtainable differential	2 cm H2O
Output relay	10A 250 V~
Channels	n° 1
Operating temperature	0 °C ÷ + 50 °C
Storage temperature	-10°C ÷ + 60 °C
Container	NORYL UL 94 VO
Approval	CE
Protection rating	IP 20
Dimensions	mm 105x90x73
Weight	gr. 450
Weight with sensor	gr. 1290

Pressure transducer general technical data sheet for RainControl LCD

Container	Steel
Operating principales	Monolithic piezoresistive transducer calibrated and temperated
Dimensions	mm 32x76
Weight	gr 840
Cable	PVC (2 wires + compensation tube)
Cable length	5 o 20 mt. (as standard)
Installation	Submersible and external
Measurable pressure	0 ÷ 1 bar
Max overpressure	2 bar
Power supply	15 ÷ 30 V 20mA max (from RainControl device)
Output	4 ÷ 20 mA
It can be used with all types of water with PH between 5÷9. For use with other liquids please consult the factory.	



Containers

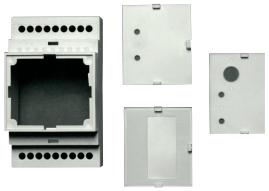


Container for 6 modules

Container for electronic equipment that can be connected to DIN EN 50022 rails according to DIN 43880 regulations. It is available with a 7.5 mm pitch terminal block. It is also available with a hinged front panel in tinted polycarbonate or in PPO RAL 7035.

Container for 2 modules

Container for electronic equipment with input and output terminals on an octal or undecal socket. It can contain one or two printed circuits that can be inserted from the underneath. The front panel can hold leds/lights or displays.



Container for 3 modules

Container for electronic equipment that can be connected to DIN EN 50022 rails. It can contain up to 3 printed circuits. The front panel can hold leds/ lights or displays.