AES
Automated Environmental Systems

MADE IN ITALY

ENGLISH

EPIC 3D

RANGE 0,37÷15 kW
0,50÷20 Hp

Installation ad use manual

Index

EPIC 3D

1.1 PRESENTATION

The purpose of this manual is to provide the necessary information for the proper installation, use and maintenance of EPIC 3D.
The user should read this manual before operating the unit. Improper use may cause damage to the machine and lead to the forfeiture of the warranty coverage. Always specify the model identification code and the construction number when requesting technical information or spare parts from our Sales and Service department. The instruction and warnings given below concern the standard version; refer to the sale contract documentation for modifications and special version characteristics. For instructions, situations and events not considered in this manual or in the sale documents, please contact our customer service.

Our units must be installed in sheltered, well-ventilated, non-hazardous environments and must be used at a maximum temperature of +40°C and minimum of -5°C.

1.2 DESCRIPTION

These control panels are designed for controlling 3 motors or electric pumps used in pressurization systems or in applications for emptying wells or water tanks. In case of any failure of the main pump, the reserve pump start automatically.

Atlantic S.r.l.s shall not be liable for any damage caused or suffered by the unit as a result of its unauthorised or improper use.

TECHNICAL FEATURES

Self learning of the motor data; min-max amperage protection (A); dry running protection made by cosφ amd min Amperage; min and max voltage protection (V); phase failure protection; start and stop delay; delay network restore, protection delay, frequency 50-60Hz.

OUTPUT ALARMS AND PROTECTIONS

Acoustic alarm; light alarm, alarm output Relais 220V CA, alarm output Relais 12 V CC, alarm output with Buzzer 12 V; min-max water level; min-max Voltage; phase failure; frequency failure alarm; min-max motor Amperage; min cosφ; motor klixon alarm; water in oil chamber alarm.

1.3 HANDLING

The control panel must be handled with care, as falls and knocks can cause damage without any visible external signs.

PRELIMINARY INSPECTION

After you have removed the external packaging, visually inspect the control panel to make sure it has suffered no damage during shipping.
If any damage is visible, inform an Atlantic dealer as soon as possible, no later then five days from the delivery date.

STORED

If for any reason the unit is not installed and starter immediately after it has reached its destination it must be stored properly. The external packaging and the separately packed accessories must remain intact, and the whole must be protected from the weather, especially from freezing temperatures, and from any knocks or falls.

2.1 SAFETY INFORMATION

RISK OF ELECTRIC SHOCK
Failure to follow the instructions in this manual, carries a risk of electric shock.

RISK FOR PEOPLE AND PROPERTY
Failure to follow the prescriptions in this manual, carries a risk of damage to persons and/or property.

WARNING
Failure to observe the prescriptions in this manual, cause damage to the pump, the unit or the system.

2.2 CAUTION

ATTENTION: PUMPS
- Make sure the pumps are fully primed before you start it.
- Make sure the pumps are running with the correct rotation.
- The electric pumps or the motors can start up automatically.

ATTENTION: ELECTRICAL CONNECTION
- The control panel must be connected by a qualified electrician in compliance with the electrical regulations in force.
- The electric pumps or the motors and the panel must be connected to an efficient grounding system in compliance with the electrical regulations locally in force.
- Ground the unit before carrying out any other operation.

ATTENTION: SERVICE
As a general rule, always disconnect the power supply before proceeding to carry out any operation on the electrical or mechanical components of the unit or system.

LINE OF SUPPLY CURRENT

Connect the unit at ground before carrying out any other operation.
The voltage input corresponds to the data written on the panel and on the pump:
- (400V ± 10% 50/60Hz x il EPIC 3D -400/...)
- (230V ± 10% 50/60Hz x il EPIC 3D -230)

Make sure that the power-supply-cable can bear the nominal current and connect it to the terminals of the general switch of the control panel. If the cables are exposed, they must be appropriately protected. The line must be protected with an Earth leackage and magnetic switch measured in accordance with the regulations locally in force.

LINE OF MOTOR POWER SUPPLY

The voltage input corresponds to the data written on the motor:
- (400V±10% 50/60Hz three-phase)
- (230V±10% 50/60Hz single-phase)

Doing some starting make sure that the motor respects the right direction of rotation usually indicated by an arrow printed on the motor.

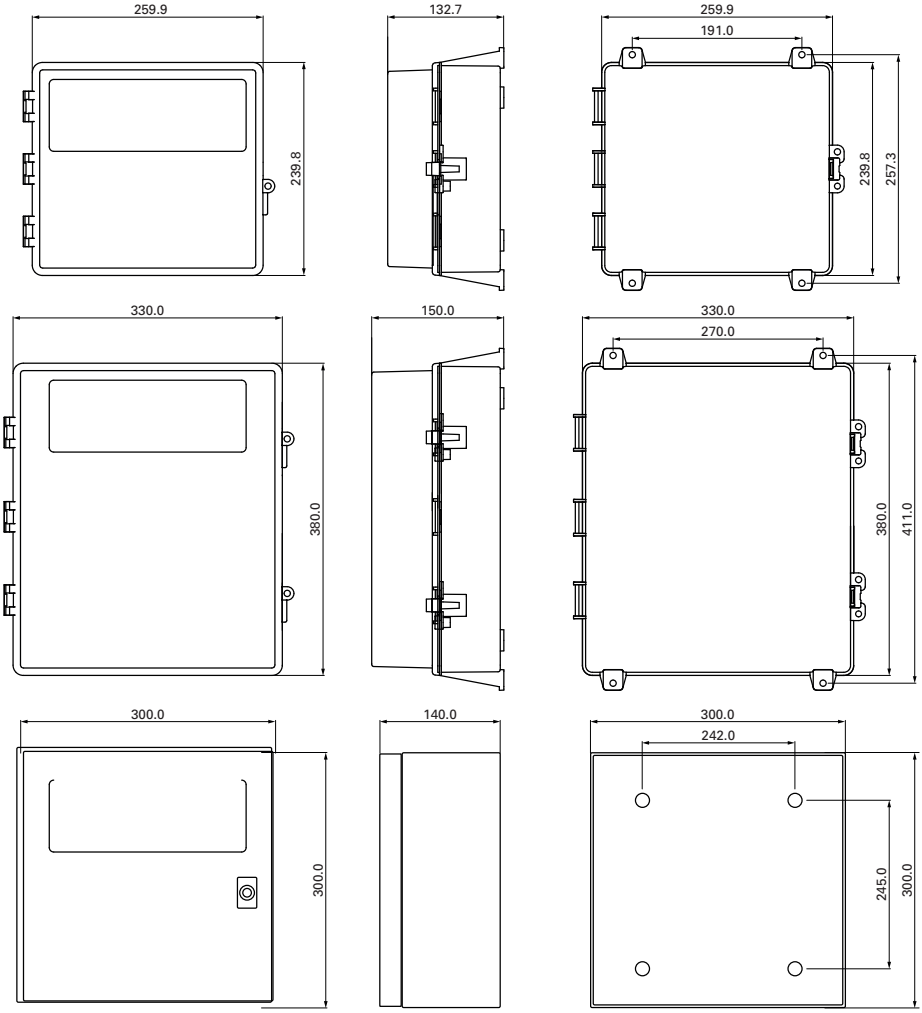
3.1 ASSEMBLING

Fix the control panel for a stable support with screws and screw anchor using the holes arranged in the box.

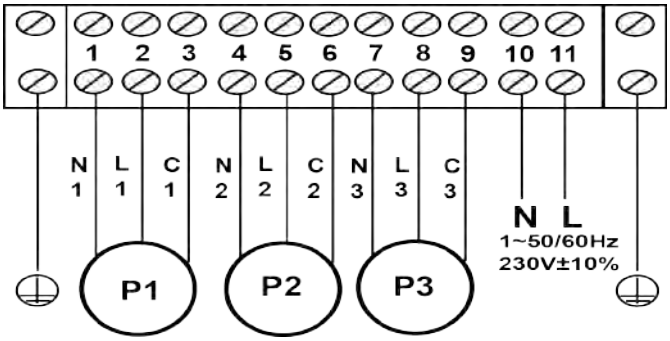
To fix the cables in their terminals use a tool of the proper sizeto avoid the damaging of the screws or of their seat.

If use an electric screwier pay attention not to spoil the thread or the screws.

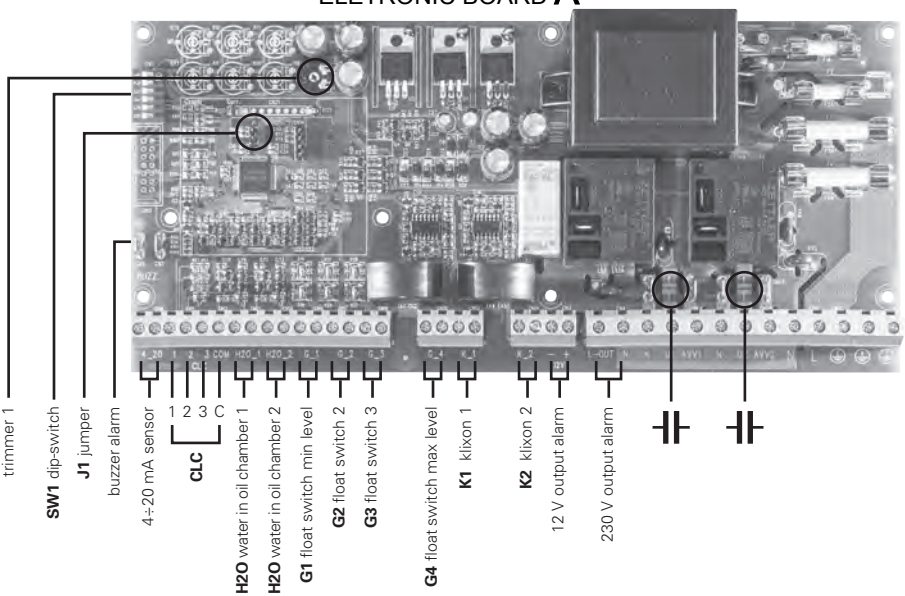
After the fixing, remove every plastic or metallic surplus (ex. pieces of copper of the cables or plastic shavings of the box) inside the box before suppling power.



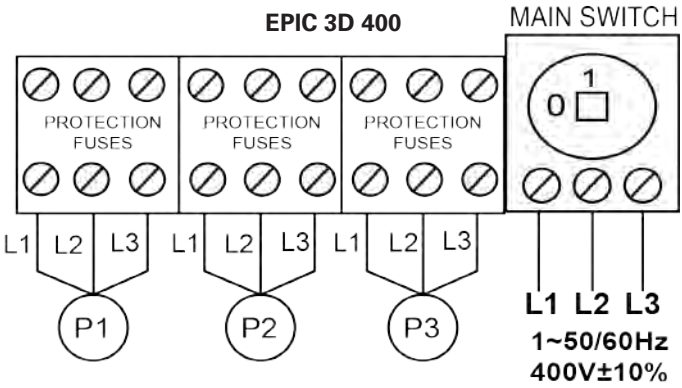
3.2 ELECTRICAL CONNECTIONS EPIC 3D 230



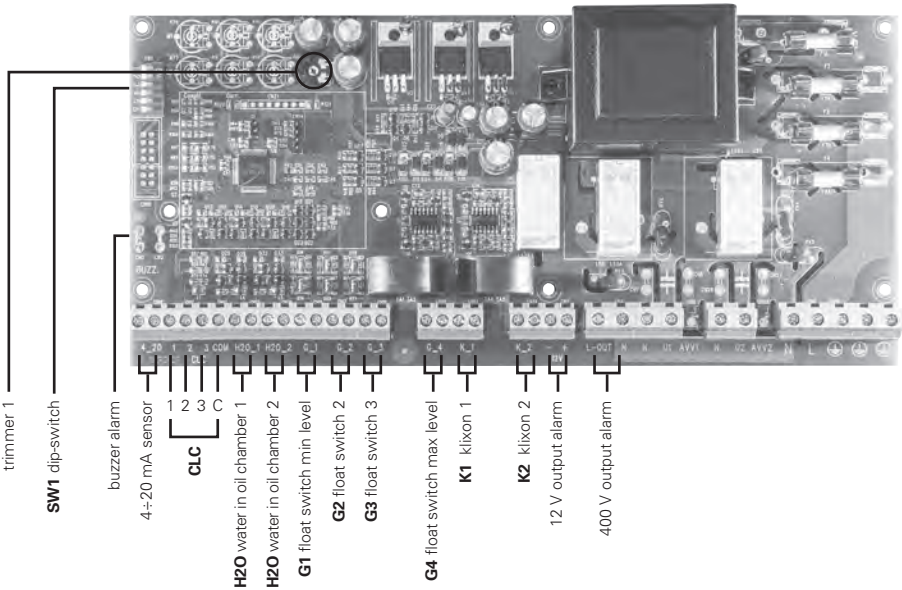
ELETRONIC BOARD A



ELETRONIC BOARD B



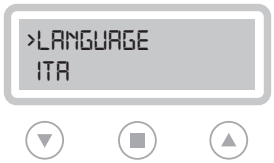
ELETRONIC BOARD **A**



ELETRONIC BOARD **B**

3.3 ADJUSTMENTS AND SETTINGS (INITIALIZATION)

CONTROL PANEL TURN ON



After making all the electrical connections, switch on the control panel and wait for the initial message to appear on the display.

LANGUAGE SETTING (OBLIGATORY)

Select the display language by scrolling the menu with the appropriate arrows (step 1 and 2).

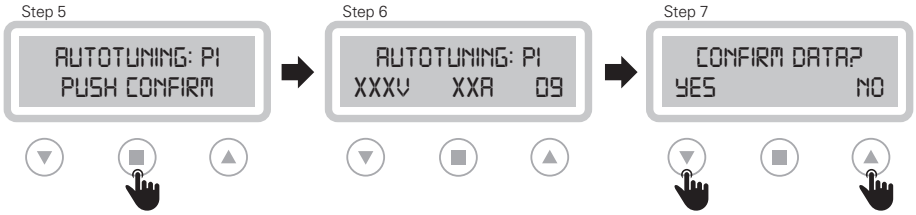
When completed, press the confirm button (step 3) to continue.

PUMPS TRIGGER

To proceed with self-learning procedure, the pumps must first be triggered.

Do not press confirm, but start the pumps, keeping the "MAN" button pressed (for 3 sec.) for P1, P2 and P3.

AUTOTUNING (OBLIGATORY)



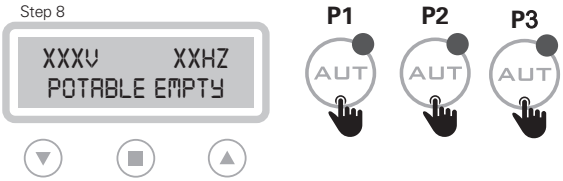
To start the self-learning of the pump 1 data, type reply (step 5).

For the final confirmation of the data (step 7) type "YES" to go to pump 2, or enter "NO" to go back (to step 5).

Before starting the self-learning procedure, it is necessary to check with a tester that the mains voltage corresponds to the nominal one or at least to the mains voltage.

IMPORTANT!
For each pump, after pressing the final confirmation button, self-learning is no longer possible. To perform the self-learning again it is necessary to access the advanced menu (3.4).

CONTROL PANEL OPERATIVITY



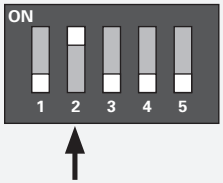
Once the self-learning phase is completed, the display of the panel displays the data learned.

By pressing the "AUT" button P1 / P2 /P3 the panel becomes operational.

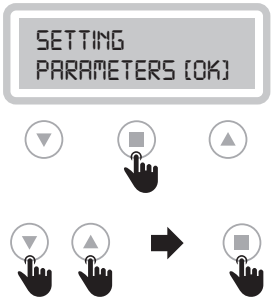
PRESET PARAMETERS	
LANGUAGE: selected	**ALTERNATION P1/P2/P3:** on
TURN ON DELAY: 2 sec.	**OPERATION:** emptying
MANUAL KEY: unstable	**TYPE:** potable
START DELAY: 4 sec.	**SELF HOLDING:** on
STOP DELAY: 1 sec.	

3.4 ADJUSTMENTS AND SETTINGS (ADVANCED MENU)

ACCESS TO ADVANCED MENU



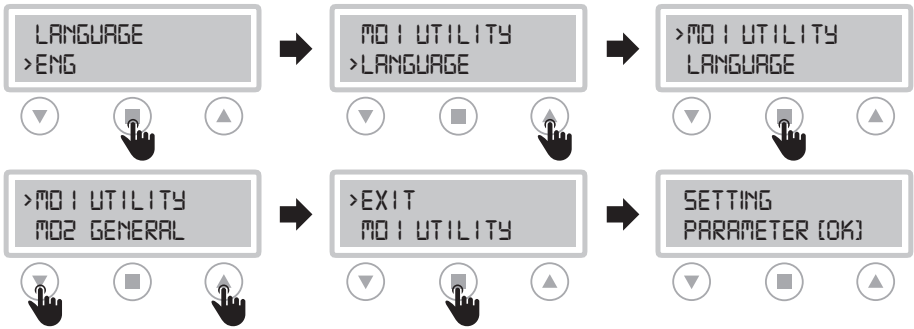
DIP-SWITCH 2
The control panel is set as standard with the dip-switch 2 in the "OFF" position. To access the "ADVANCED MENU" and modify the various parameters, **switch off the control panel and set dip-switch 2 to "ON"**. Then turn the control panel back on to display the message on the "ADVANCED MENU" on the display.

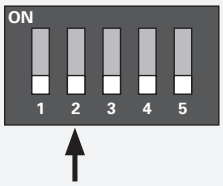


SETTING PARAMETERS
To access the advanced menu and set the various parameters, enter confirmation. On the display will appear in cascade all the fuctions. To enter each individual function, select it with the arrows and enter the confirmation button.

M01 UTILITY
M02 GENERAL
M03 NET CONTROL
M04 PUMP 1
M05 PUMP 2
M06 PROGRAM
M07 SENSOR
M08 TIMER
M09 PUMP 3
EXIT

CONFIRM MODIFICATIONS AND EXIT FROM ADVANCED MENU (EXAMPLE)



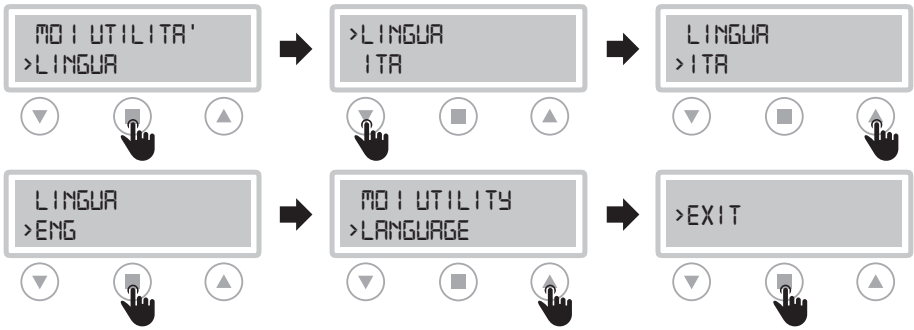


DIP-SWITCH 2
Once the setting of the various parameters has been confirmed (for example the LANGUAGE parameter), to exit the "ADVANCED MENU" **bring the dip-switch 2 back to the "OFF" position**.

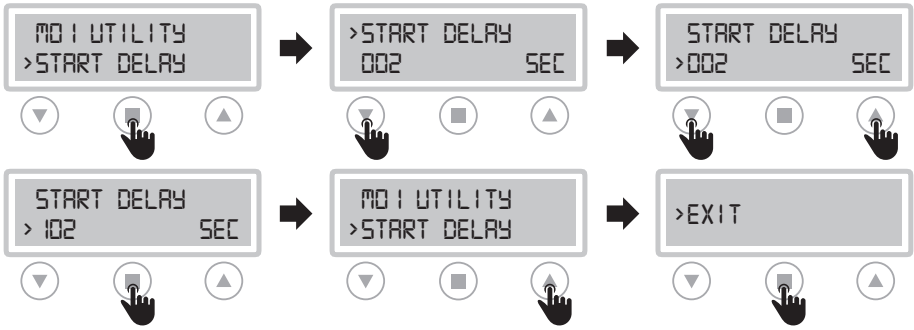
M01 UTILITY

ACCESS TO FUNCTION	MODIFIED PARAMETERS
	**LANGUAGE** Language selection **START DELAY** Control panel switch-on delay after restart (in sec.) **MANUAL KEYPAD** Possibility of operating the "MAN" button in stable or unstable mode (ON: stable / OFF: unstable) **MAX LEVEL ALARM DELAY** Possibility to delay 15 minutes. (not modifiable) the maximum level alarm. The display will show the alarm and the pumps will start (if availables), only the alarm relay and the buzzer will be delayed.

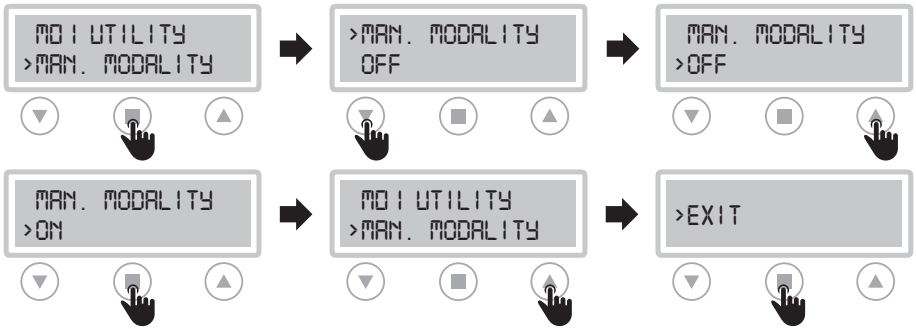
CHANGE LANGUAGE



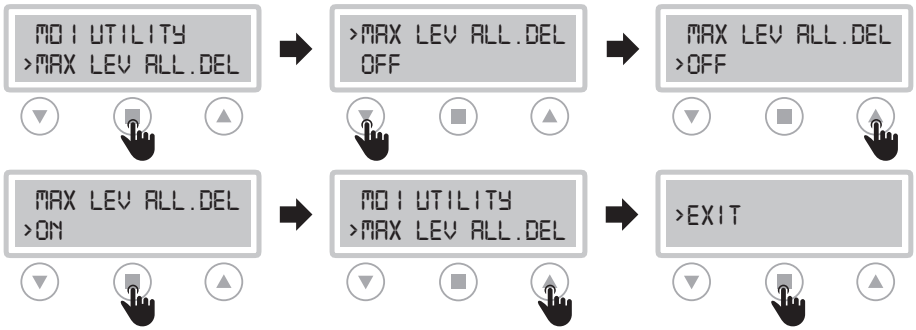
CHANGE START DELAY



CHANGE “MAN” BUTTON (STABLE/UNSTABILE)



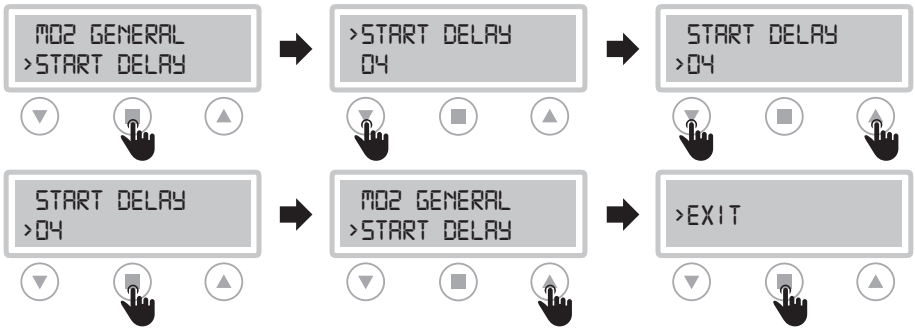
CHANGE MAX LEVEL ALARM DELAY



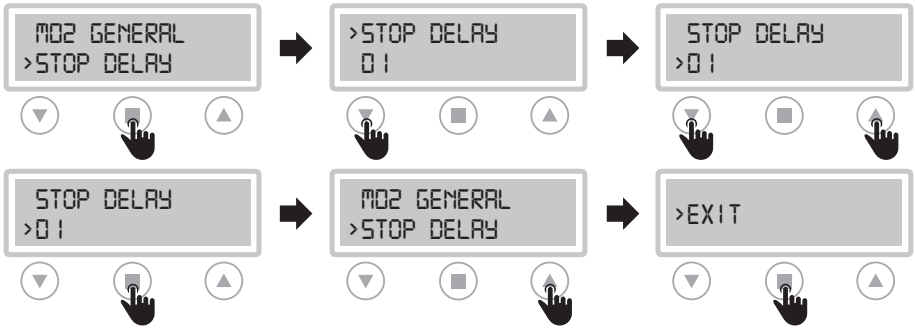
M02 GENERAL

ACCESS TO FUNCTION	MODIFIED PARAMETERS
	**PUMP START DELAY** Set the pump start delay **PUMP STOP DELAY** Set the pump stop delay **PUMPS ALTERNATION** Set the pumps alternation **TIME ON MAX** Max continuous operation of the pump. Received consent from the level control, the pump switches on and operates for a maximum duration set by the user (in min.) The parameter is not active if the value is 0 min.

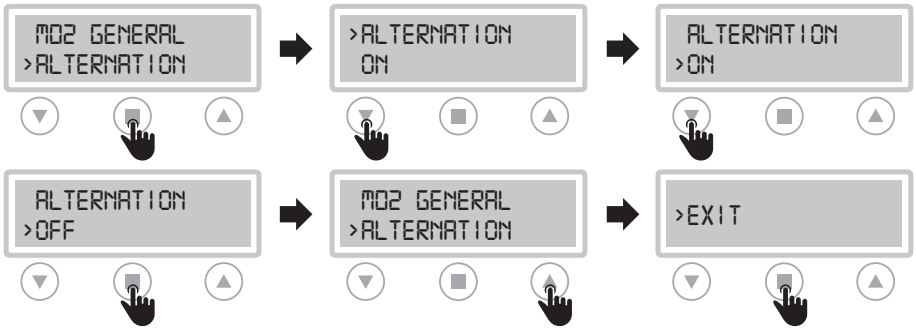
CHANGE START DELAY



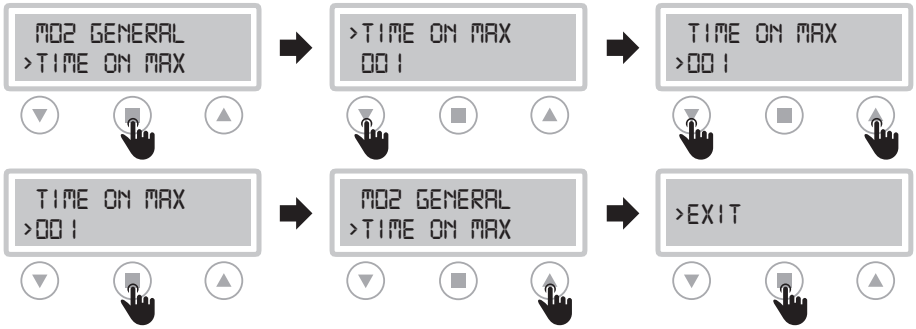
CHANGE STOP DELAY



CHANGE PUMPS ALTERNATION



CHANGE TIME ON MAX



"TIME ON MAX" PROCEDURE

For a correct functioning of this parameter, perform the following procedure:

- set the pump alternation in "ON"
- set the "STARTING FOR HOURS" parameter from the M04 PUMP 1 menu and then M05 PUMP 2 and then M09 PUMP 3 (see page 18), by entering the maximum number of starts allowed for each pump.

ATTENTION!

Refer to chapter 4.2 ALARMS for displaying and managing alarms and reset for this parameter.

EXAMPLE OF OPERATION

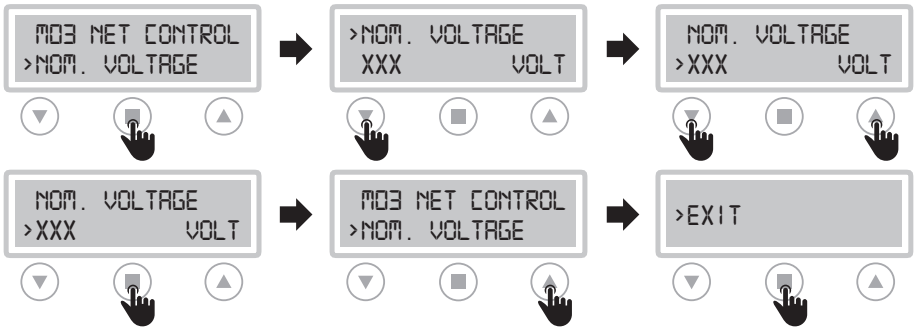
Operation of the control panel with "TIME ON MAX" active:

- the pump 1 activates after the buoyant consent, operates continuously and exceeds the max limit of min. set by the user.
- the control panel stops the pump 1 and starts the pump 3 automatically.
- when the same condition occurs again, the control panel stops the pump 3 and starts the pump 2
- after a certain number of restarts, the control panel blocks all the pumps

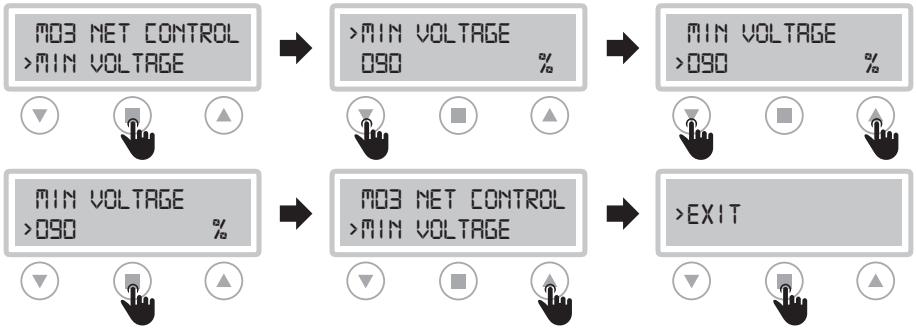
M03 NET CONTROL

ACCESS TO FUNCTION	MODIFIED PARAMETERS
	**NOMINAL VOLTAGE** Set the nominal voltage **MINIMUM VOLTAGE** Set the minimum voltage **MAXIMUM VOLTAGE** Set the maximum voltage **NOMINAL FREQUENCY** Set the nominal frequency **FREQUENCY RANGE** Set the frequency range

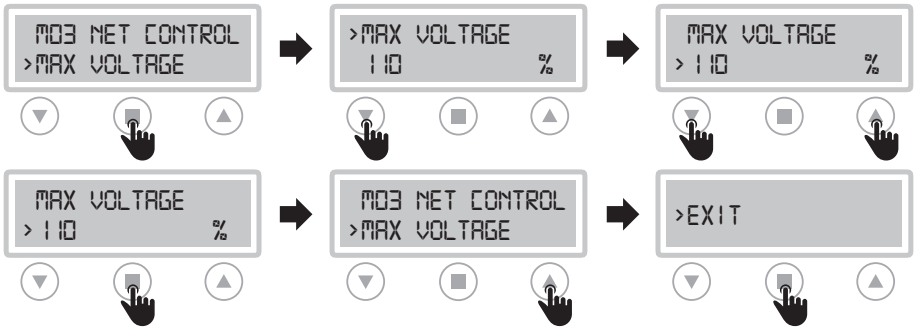
CHANGE NOMINAL VOLTAGE



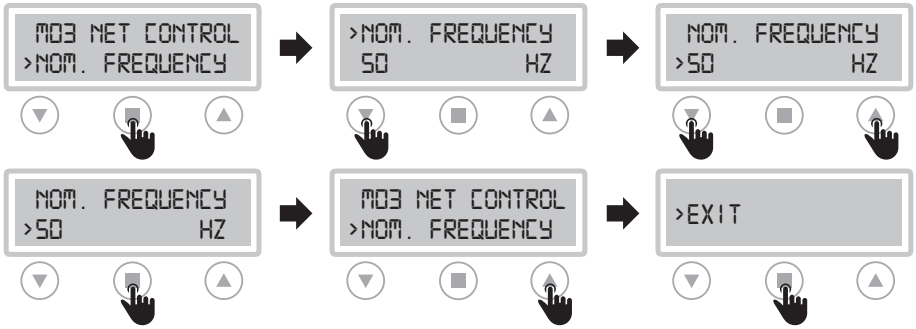
CHANGE MINIMUM VOLTAGE



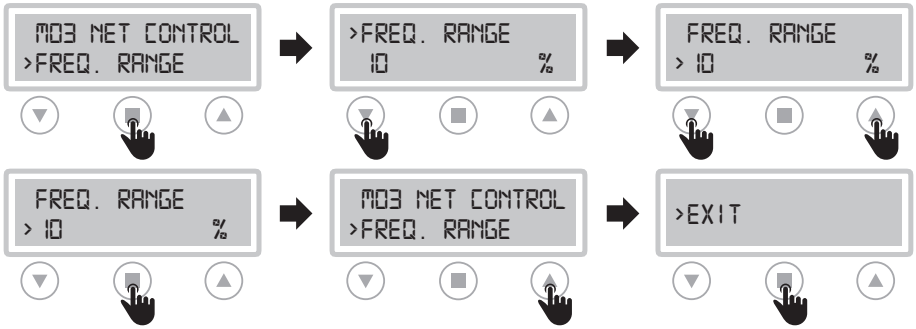
CHANGE MAXIMUM VOLTAGE



CHANGE NOMINAL FREQUENCY



CHANGE FREQUENCY RANGE

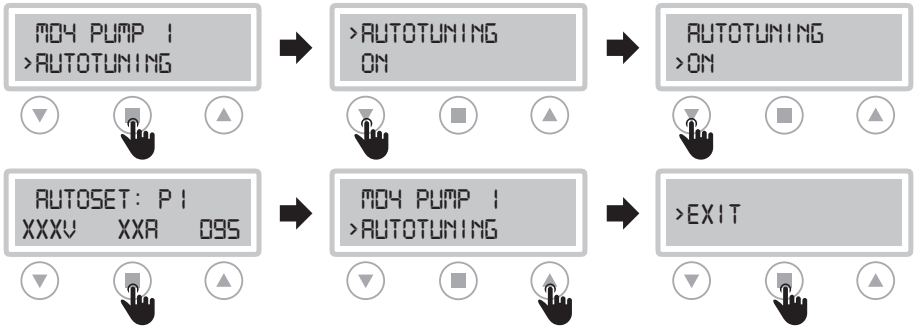


M04 PUMP 1 / M05 PUMP 2 / M09 PUMP 3

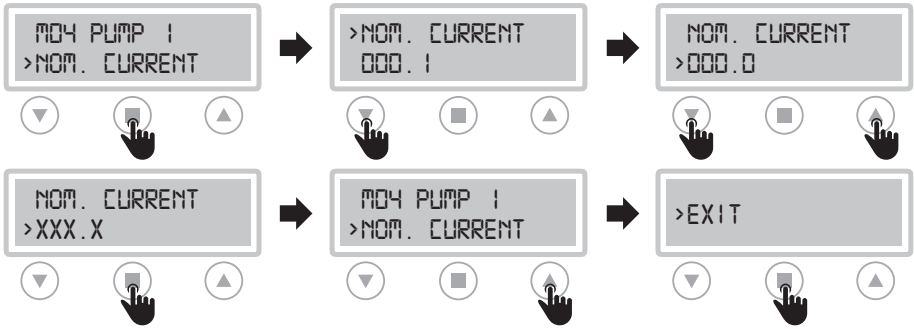
ACCESS TO FUNCTION	MODIFIED PARAMETERS
	**AUTOTUNING** It allows the self-learning of the data to be carried out again **NOMINAL CURRENT** Set nominal/operating current of the pump **MINIMUM AMPERAGE** Current setting min. for dry running protection **MAXIMUM AMPERAGE** Max current setting for overcurrent protection **START PER HOUR** Set max number of pump starts per hour **MIN COSφ** (default 75% of the value read in autotuning) Set min. cosφ for dry running protection

The amperage and COS φ value shown on the display may differ ± 5% from the nominal value of the pump (nameplate data) since the control panel is not a measuring instrument . The same value may differ depending on the operating conditions of the installation.

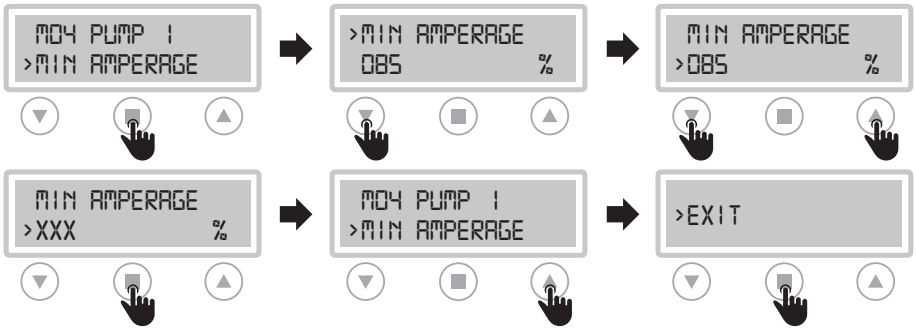
AUTOTUNING



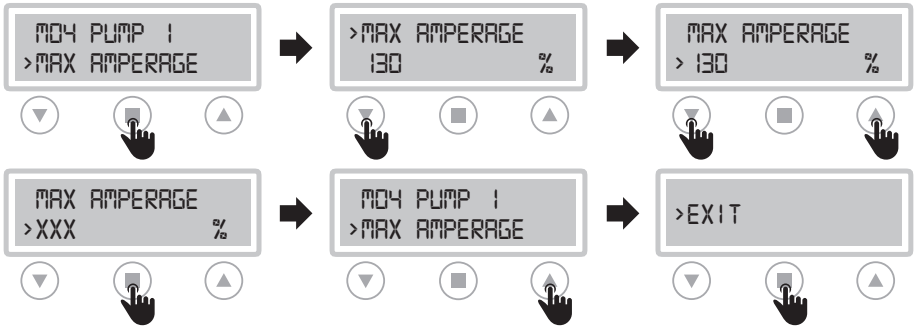
CHANGE NOMINAL CURRENT



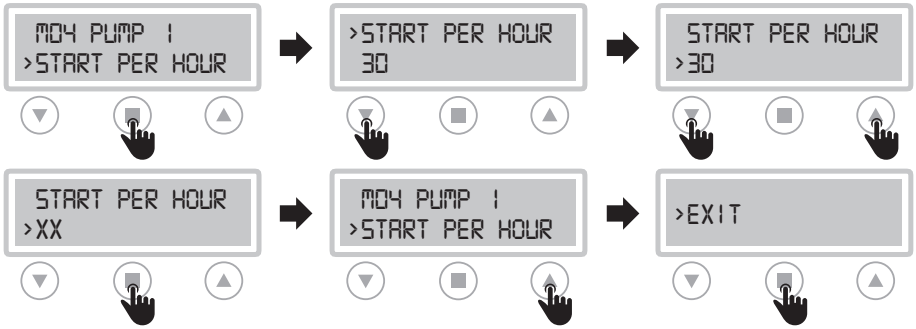
CHANGE MINIMUM AMPERAGE



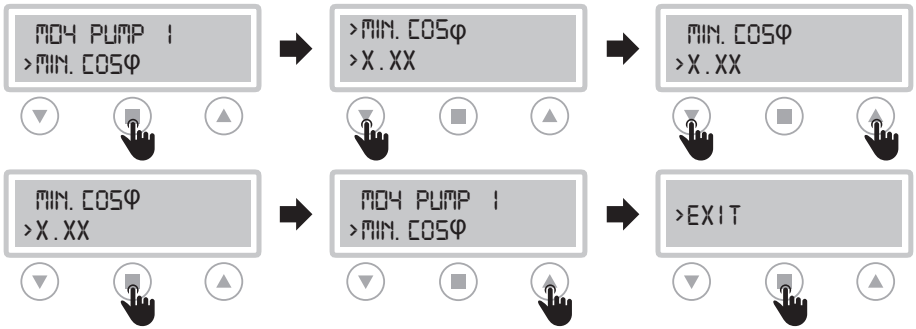
CHANGE MAXIMUM AMPERAGE



CHANGE START PER HOUR

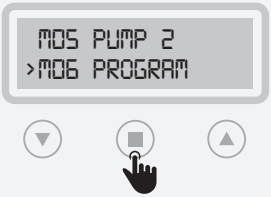


CHANGE MIN COSφ



M06 PROGRAM

ACCESS TO FUNCTION	MODIFIED PARAMETERS



SELF HOLDING OPERATION
If the self holding is ON and the water level is going up, G1 is up, G2 goes up and starts pump 1, G3 goes up and starts pump 2, G5 goes up and starts pump 3. If the water level is going down, G5 goes down but does not stop pump 3, G3 goes down but does not stop pump 2, G2 goes down and stop all the pumps.

*for WASTE type only EMPTY operation is possible

OPERATION
Emptying selection "EMPTY" or filling "FILL"

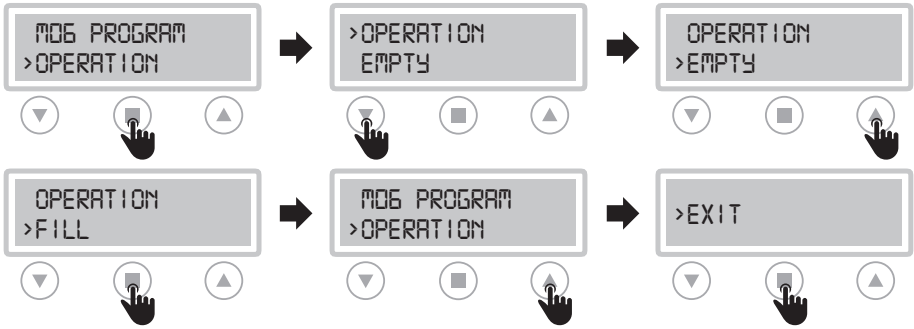
TYPE
Selection of clear or dirty* water types

SELF HOLDING
Mostly used for waste water applications: 4 floating switches has been used (G1 stop the pump, G2 start pump 1, G4 max level alarm and start the pump)

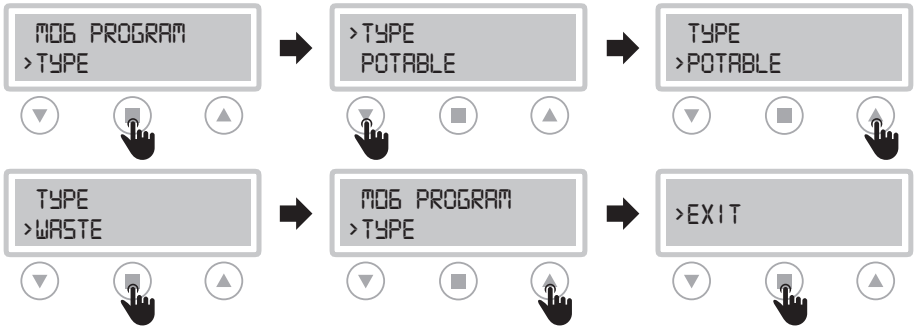
BMS (remote emergency start/stop) Possibility to start/stop the control panel by remote button
The use of the "BMS" function takes place throught the G4 input
(contact closed: pumps enabled / open contact: pumps disabled)

MULTI TANK
Possibility of use with 2 pumps in separate tanks (P1 and P2 only)

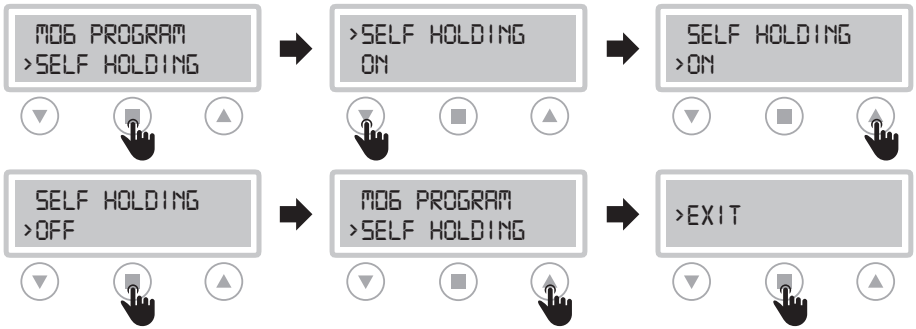
OPERATION (EMPTY/FILL)



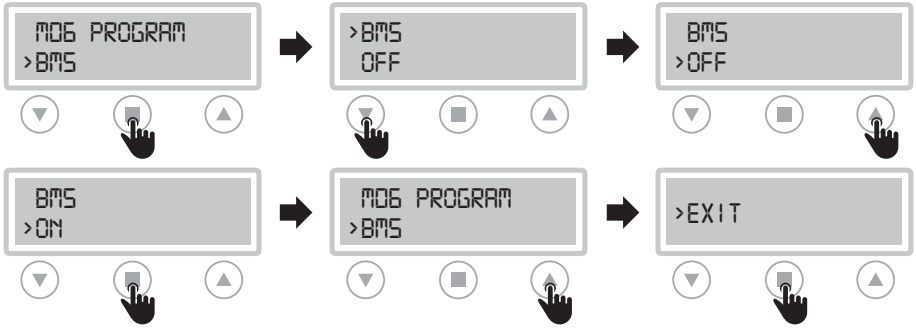
TYPE (POTABLE/WASTE WATER)



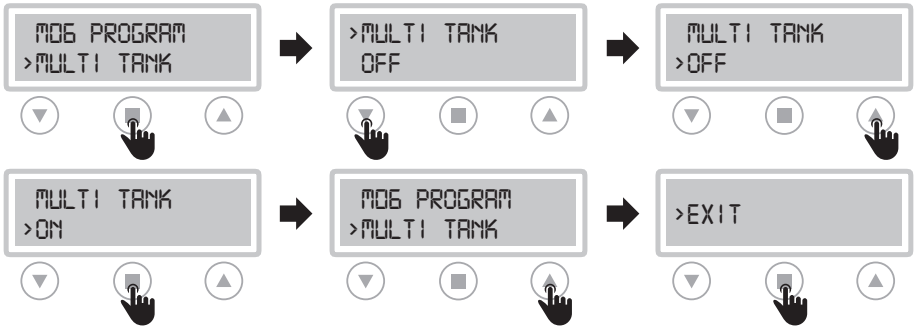
SELF HOLDING



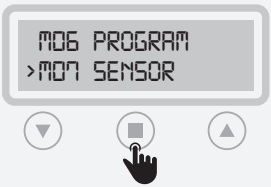
BMS SETTING



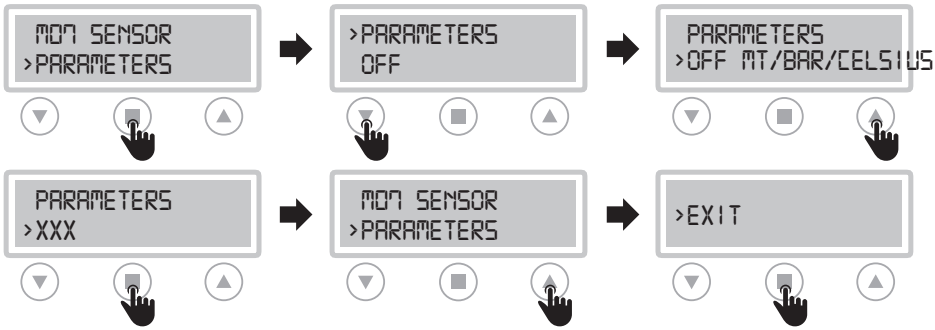
MULTI TANK SETTING



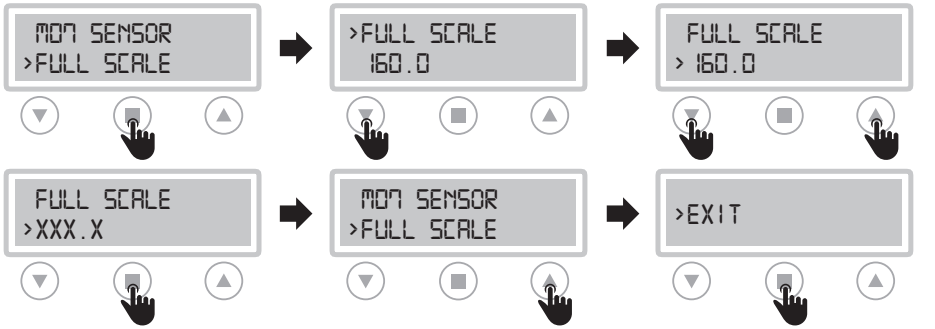
M07 SENSOR (sensor/trasducer 4÷20 mA)

ACCESS TO FUNCTION	MODIFIED PARAMETERS
	**PARAMETERS** Setting unit of measure (mt*/bar/celsius) **FULL SCALE** Set the full scale value specified by the manufacturer of the sensor used (serial value 160.0) **MINIMUM LEVEL** Parameter active only with unit of measure in mt **MAXIMUM LEVEL** Parameter active only with unit of measure in mt **START P1 and STOP P1** **START P2 and STOP P2** **START P3 and STOP P3**
The "SENSOR" function allows to use the control panel with piezoresistive , piezocapacitive level sensors or pressure/temperature transducers (logic 4÷20 mA). **ATTENTION: Switch off the control panel before connecting the sensor.** ***Only for level sensor: to make level 0mt, autotuning pump 1 is required (see page 17), with sensor out of water.**	

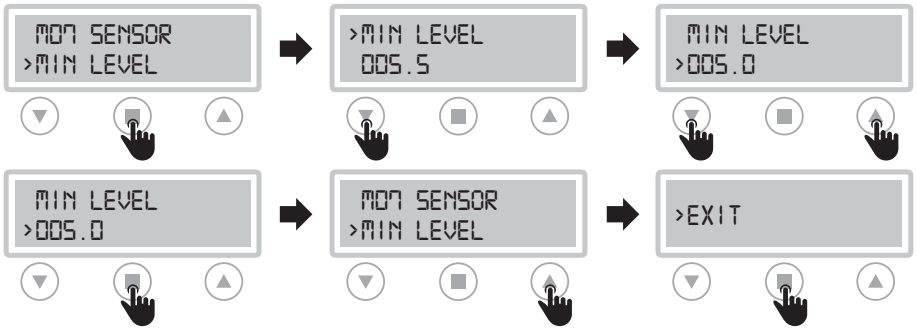
SET PARAMETERS



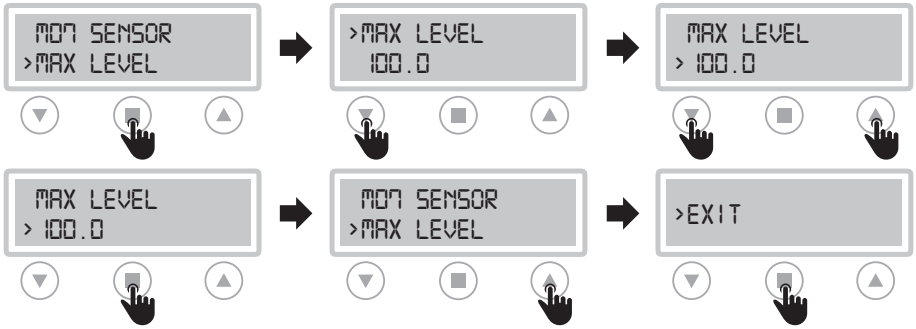
SET FULL SCALE



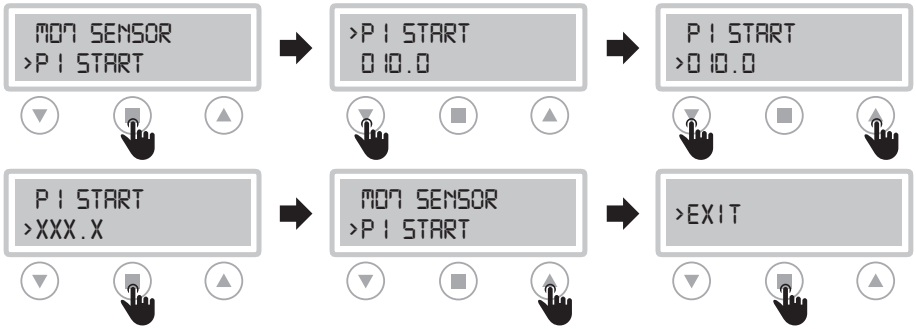
SET MINIMUM LEVEL



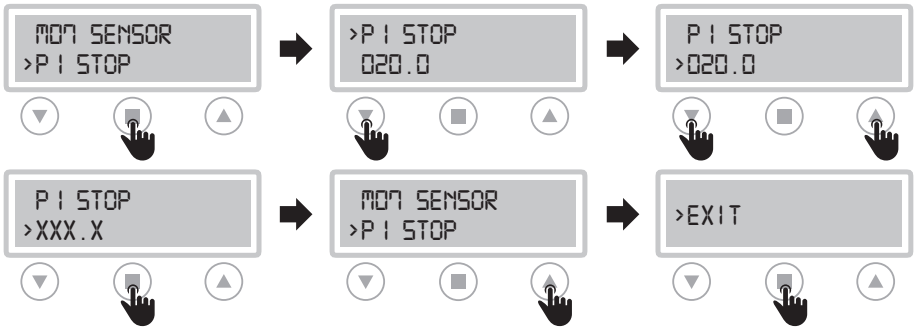
SET MAXIMUM LEVEL



PUMP 1 START



PUMP 1 STOP

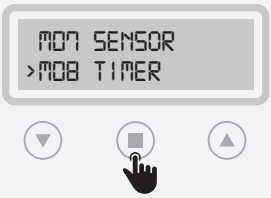


PUMP START / STOP PUMPS 2, 3
It is necessary to carry out the same procedure to set the values of the "START PUMP 2 / PUMP3" and "STOP PUMP 2 / PUMP3" parameters.

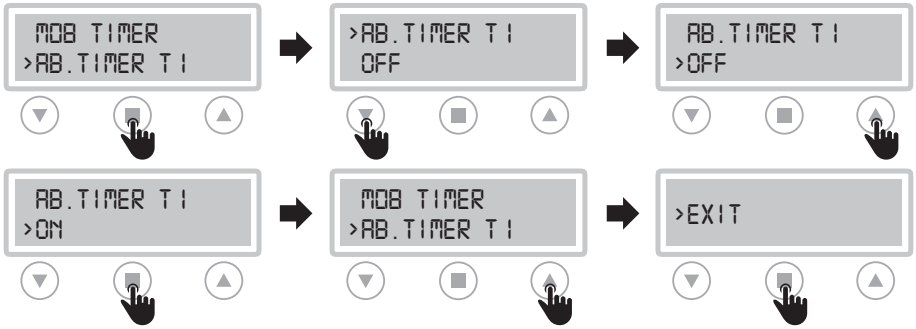
For mt and celsius parameters **FILL** and **EMPTY** programs are possible (see **OPERATIONS** pag. 20):
- **FILL:** START value < STOP value
- **EMPTY:** START value > STOP value

For bar parameter just **EMPTY** program is possible:
- **EMPTY:** START value < STOP value

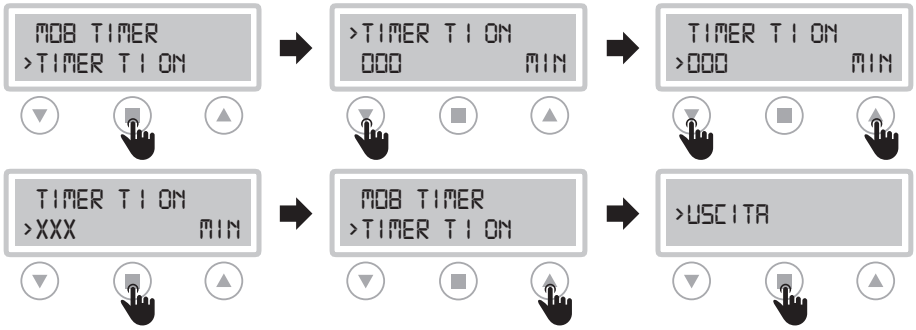
M08 TIMER

ACCESS TO FUNCTION	MODIFIED PARAMETERS
	**ENGAGE TIMER T1** **TIMER T1 ON** Setting the working minutes of the pump 1 **TIMER T1 OFF** Setting the pause minutes of the pump 1 **ENGAGE TIMER T2** **TIMER T2 ON** Setting the working minutes of the pump 2 **TIMER T2 OFF** Setting the pause minutes of the pump 2 **ENGAGE TIMER T3** **TIMER T3 ON** Setting the working minutes of the pump 3 **TIMER T3 OFF** Setting the pause minutes of pump 3

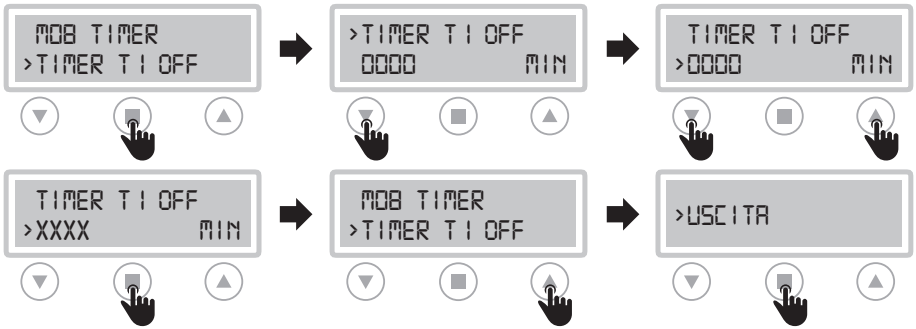
SET DUTY/STAND-BY



TIMER T1 ON



TIMER T1 OFF

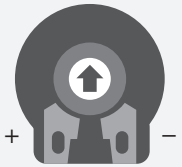


TIMER SETTING T2/T3 ON / TIMER T2/T3 OFF
The same procedure must be followed to set the values of the "TIMER T2/T3 ON" and "TIMER T2/T3 OFF" parameters.

3.5 TRIMMER SETTINGS

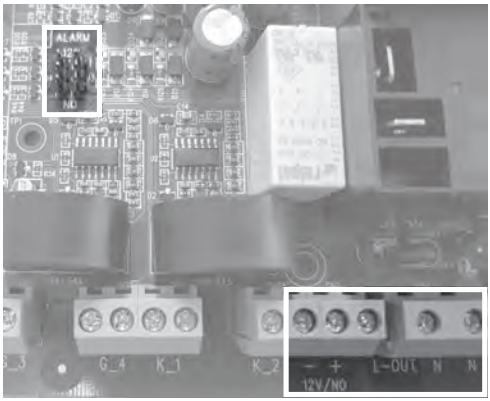
To change manually the threshold protections, **interrupt the power supply to the control panel** and work on the trimmers, please following the below instructions:

PROTECTION DELAY
The pump protection switching delay has been set at **5 sec**.

TRIMMER SETTING	
	**TRIMMER 1: PROBE SENSITIVITY CHANGE** Probe sensivity (CLC) and water in oil chamber sensor trimmer regulation. It is possible to change the sensitivity of the CLC probes and the water sensor in the oil chamber, **interrupting the power supply to the control panel** and acting on trimmer 1 (clockwise to increase and counterclockwise to decrease sensitivity).

3.6 ALARM CONTACT OUTPUTS

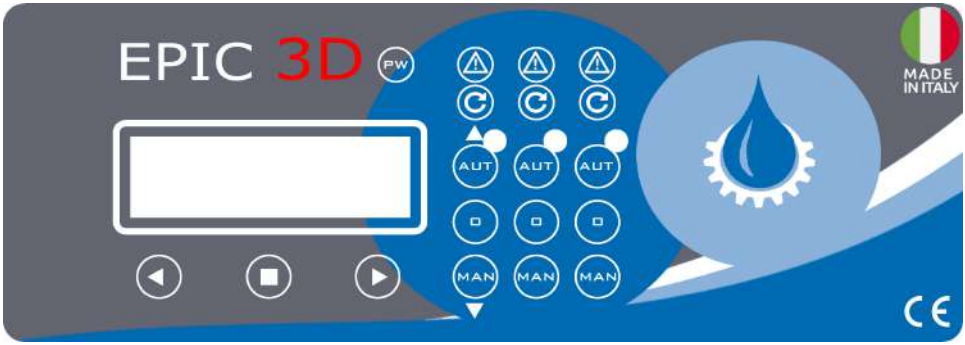
SINGLE PHASE VERSION	TREE PHASE VERSION
Alarm outputs: • L-OUT / N = 230 V a.c. +/- 10% • + -12 / NO = 12V c.c. or contact NO	Alarm outputs: • L-OUT / N = 400 V a.c. +/- 10% • + -12 / NO = 12V c.c. or contact NO



12 V c.c. output

free contact NO

4.1 KEYPAD AND LIGHTS INDICATIONS



CONTROL PANEL	
PW	**PW** blue light indicating power network presence and powered panel.
⚠	**ALARM** red light to indicate a general alarm and pump stop. (min e max Amp, min e max V, min e max level, motor klixon, water in oil chamber, phase failure).
↻	**START** green light to indicate pump start; fixed on to indicate pump running, flashing to indicate auto-setting mode.
AUT	**AUT** the button activates the auto-setting mode and automatic pump (if the green light is on, the automatic mode is active).
□	**0** pump stop button and reset alarms, sound alarm turn-off.
MAN	**MAN** activation of manual pump; holding it down, the engine is operated in by-pass mode, bypassing all the protections.

4.2 ALARMS

The control panel signals a series of alarms that may occur during operation. Some of these stop the pumps, while others are only displayed.

All alarms are displayed on the panel (red LED flashing), while the display shows the code/alarms occurred until the cancellation by the operator.

ALARM CODE	ALARM DESCRIPTION	PUMP STOP	RELAY ON	LED SIGNAL
AL 1	MIN VOLTAGE	**YES**	**YES**	
AL 2	MAX VOLTAGE	**YES**	**YES**	
AL 3	LOW FREQUENCY	**NO**	**YES**	
AL 4	HIGH FREQUENCY	**NO**	**YES**	
AL 5	DRY RUNNING P1/P2/P3	**YES**	**YES**	
AL 6	MAX AMPERAGE P1/P2/P3	**YES**	**YES**	
AL 7	MAX STAR PER HOUR	**NO**	**YES**	
AL 7	TIME ON MAX + MAX START PER HOUR	**YES**	**YES**	
AL 8	WATER IN OIL CHAMBER P1/P2/P3	**NO**	**YES**	
AL 9	KLIXON P1/P2/P3	**YES**	**YES**	
AL 10	MIN LEVEL	**YES**	**YES**	
AL 11	MAX LEVEL	**NO**	**YES**	

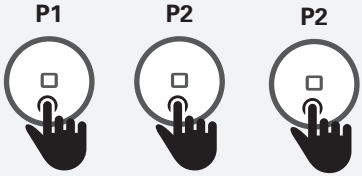
The alarm "AL 11" starts all the available pumps.

ALARM WITH STOP PUMP

Following the detection of an alarm and the consequent blocking of the pump, the control panel provides the following operations:

- Try the first restart after 5 min.
- In case of a negative result, make another attempt after 30 min. and 3 other attempts with intervals of 60 min.
- After 5 attempts if the alarm persists, the control panel permanently blocks the pump and the alarm remains active until the user intervenes.

DELETE ALARM



To delete an alarm (for example dry run), press the pump (P1, P2 or P3) button "0" as follows:

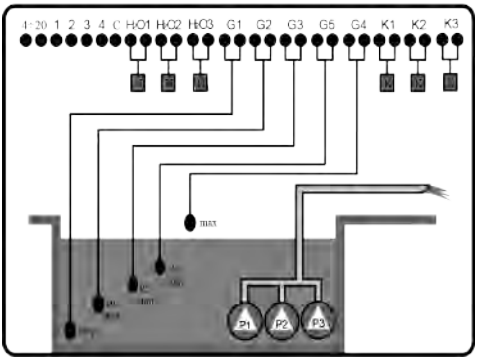
- the first press of the "0" button removes only the voltage from the buzzer terminals ("mute" function)
- the second press of the "0" button reset the alarm.

If the alarm is not reset (by pressing the "0" key twice), at the next alarm signal, the panel will remain in "mute" mode.

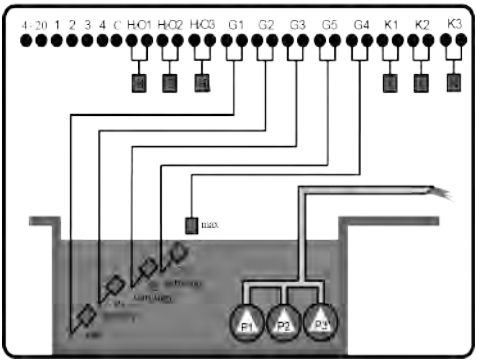
IMPORTANT!
If after having canceled the alarm, the same occurs again, an intervention on the cause is necessary.

4.3 TYPICAL INSTALLATIONS

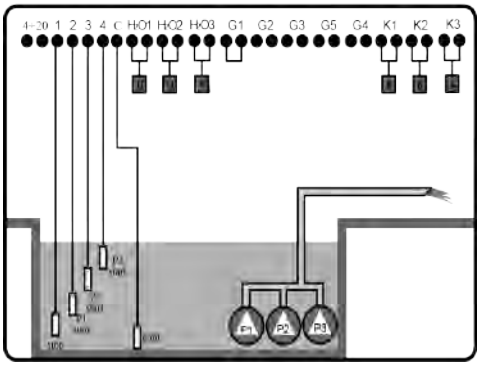
Picture 1



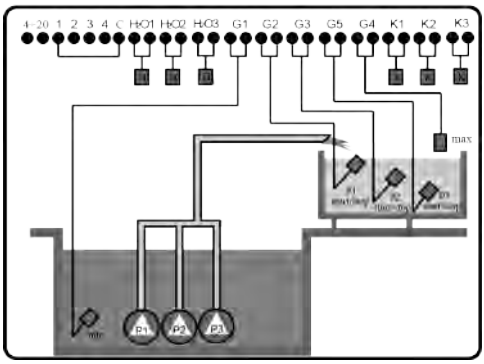
Picture 2



Picture 3



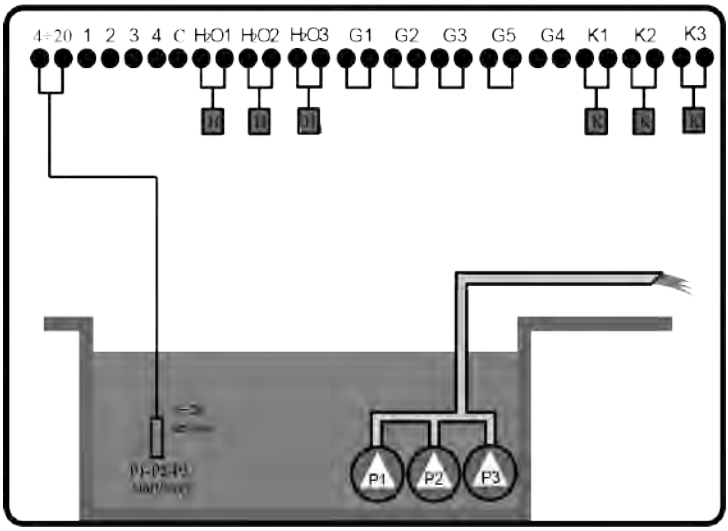
Picture 4



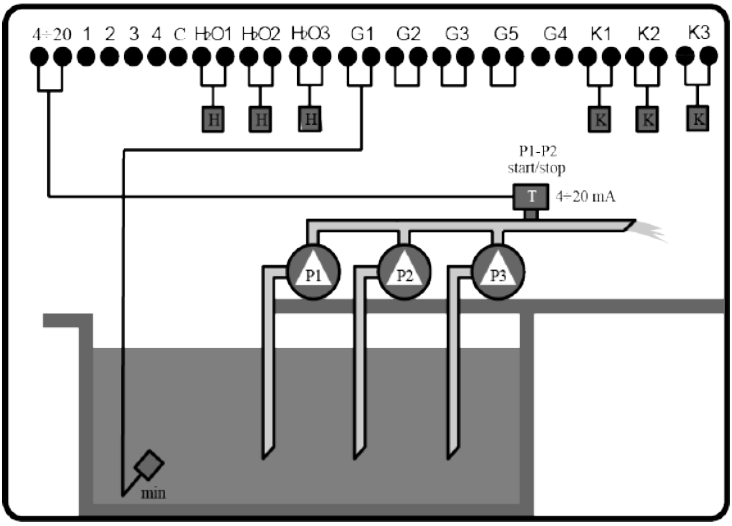
4÷20	input for 4÷20 mA sensor or pressure transducer		
2/3/C	input for level probes		
H	input for water in oil chamber sensor/water leakage		
K	input for motor klixon		
Pr	pressure switch	**P**	pump

T	pressure transducer
	float switch for clear water
	float switch for waste water
	level probes
	4÷20 mA piezoresistive sensor

Picture 6



Picture 7



4÷20	input for 4÷20 mA sensor or pressure transducer		
2/3/C	input for level probes		
H	input for water in oil chamber sensor/water leakage		
K	input for motor klixon		
Pr	pressure switch	**P**	pump

T	pressure transducer
	float switch for clear water
	float switch for waste water
	level probes
	4÷20 mA piezoresistive sensor

5.1 PUMPS STOP

MODE	BUTTON	STOP
MANUAL		The motor stops when the "MANUAL" button is released or once you digit the 0 button.
AUTOMATIC		When the input commands are disable/non active once you digit the 0 button.
OFF		Turning the main switch interlocking door in "OFF" position.

5.2 SERVICE

EPIC 3 D does not require any routine maintenance provided that their working limits are observed . Any maintenance operations must be performed by qualified and experienced personnel , in compliance withthe safety regulations in force.

DANGER!
Make sure that EPIC 3D is disconnected from the power supply before performing any maintenance operations.

5.3 SPARE PARTS

Always state the exact model identification number and construction number when requesting technical information or spare parts from our sales and service centre.

Use only original spare parts when replacing any faulty components. The use of unsuitable spare parts can cause malfunctions, personal injury and damage to property.

5.4 WASTE DISPOSAL

After the control panel has been installed and started, the customer must provide for the appropriate elimination/disposal of the waste materials according to the legislation locally in force. If the control panel or parts of it must betaken out of service and dismantled, follow local regulations regarding sorted waste disposal. Refer to the appropriate recycling centres.

CAUTION!
Contamination of the environment with hazardous substances such as battery acid, fuel, oil, plastic, copper, etc., may cause serious damage to the environment and endanger people's health.

6.1 CERTIFICATE OF CONFORMITY

The Manufacturer:

Atlantic Power Control S.r.l.s

Via E. Fermi, 10 - 35020 Polverara (PD) - ITALIA

DECLARES UNDER IS OWN RESPONSIBILITY THAT THE FOLLOWINGS CONTROL PANELS:

EPIC 3D -230 e EPIC 3D -400

ARE IN CONFORMITY WITH COMMUNITY DIRECTIVES REGARDING:

- European directive 2006/95/CE
- Electromagnetic compatibility directive 2004/108/CE

CE

AND AS APPLICABLE TO HARMONIZED STANDARDS:

- EN 61439-1
- EN 61439-2
- EN 60204-1
- EN 55014-1
- EN 55014-2
- EN 61000-3-2
- EN 61000-3-3

Moreover Mr. Giuseppe Franchin, as the legal representative of the company, is the person authorized to compile the technical documentation file.

Polverara - Italy, 10/01/2018

Technical Manager
(Giuseppe Franchin)

AES
Automated Environmental Systems

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