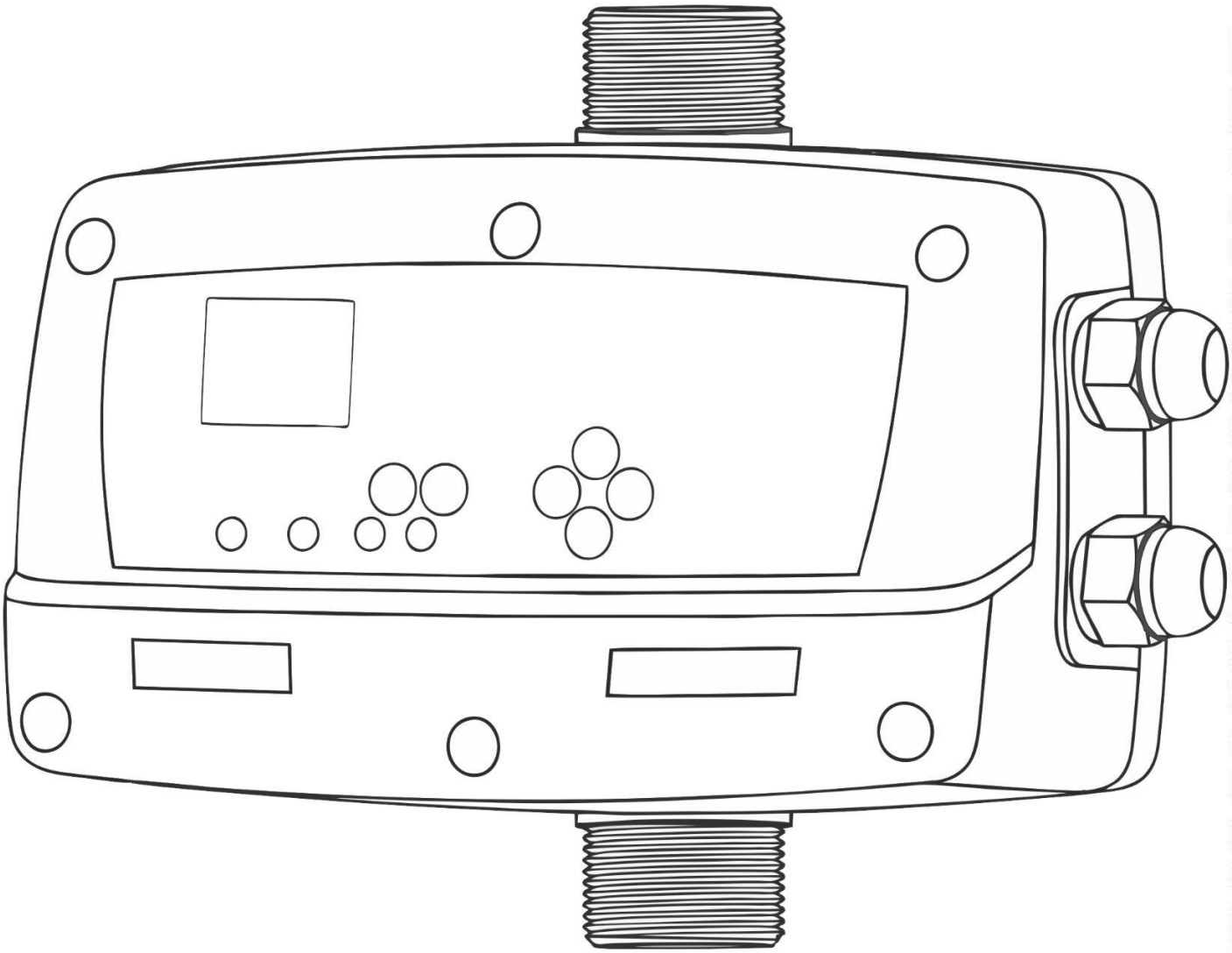
EN INSTALLATION AND OPERATING INSTRUCTIONS



ECODRIVE

WARRANTY AND RECOMMENDATIONS

The product is guaranteed the first 2 years after its production date.
This guarantee does not include damages in case of an inadequate installation or manipulation.
Read carefully this instructions manual before installation.
Do not throw away this manual afer installation, it can be usefull for later modifications or for solving the different types of alarms.
Hydraulic and electrical installations must be set up by qualified personnel according to the safety prescriptions as well as the standards and legislation of every country.When carrying out the electrical connection it is recommended to use a differential switch of high sensitivity: IΔn = 30 mA (clase B). It is recommended to use a magnetothermic switch of 10A. It is recommended to use an independent electrical line, with the purpose of avoiding electromagnetic interferences that could create nonwished alterations in household electronic devices.
The device must operate with a clean water flow, if there is risk of presence of gravel or small particles (facilities with submersible pumps) is recommended to use a filter to avoid the possibility of blocking the flow sensor.
The device should be used only for vehiculation of clean water, it cannot be used for transport of another kind of liquids.
It is recommended to use an expansion tank in order to avoid continuous start-stops due to the deterioration of taps, valves, ... and also to prevent "water hammer" in installations with valves of wide diameter.
WARNING, before doing any maintenance inside the device, it must be unplugged from the electric supply and wait a minimum of 2 minutes after the disconnection to avoid electrical discharges.

Warning symbols contained in this service manual



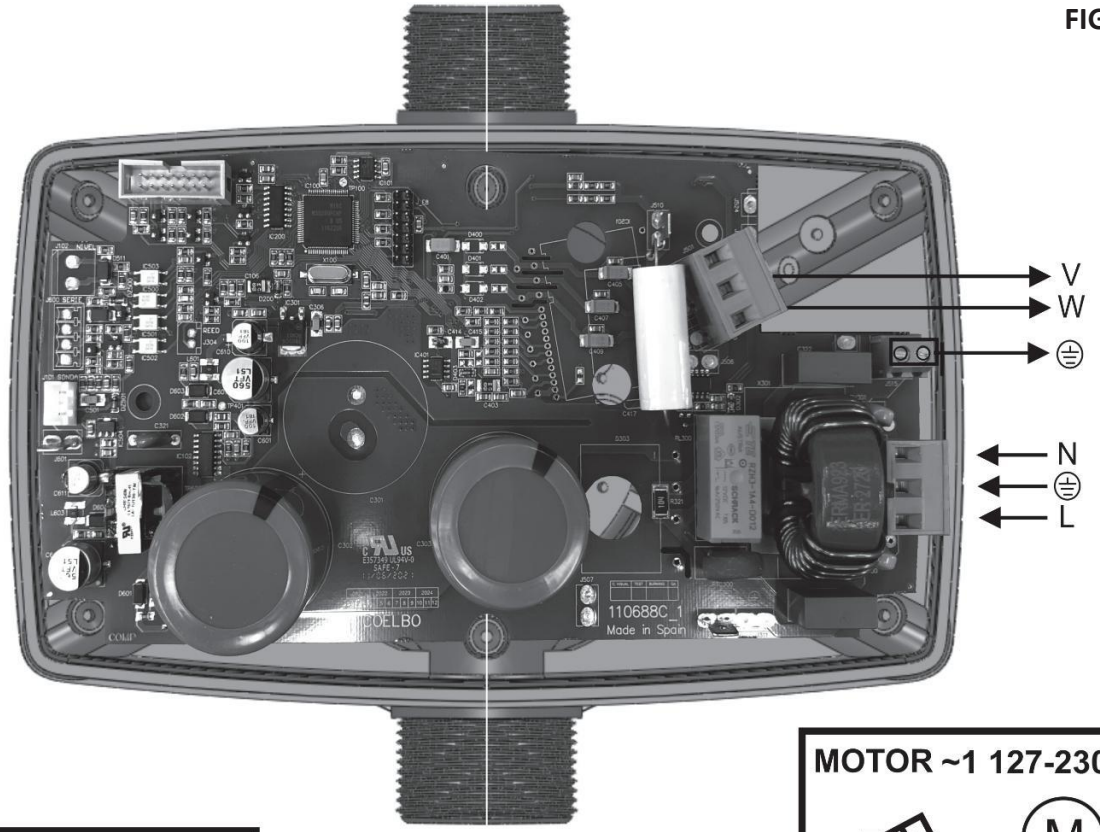
Risk by electric shock.

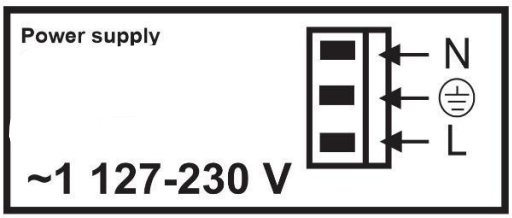


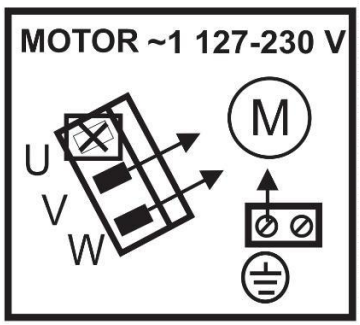
Risk for people and/or objects.

BODY CONNECTIONS

FIG. 1

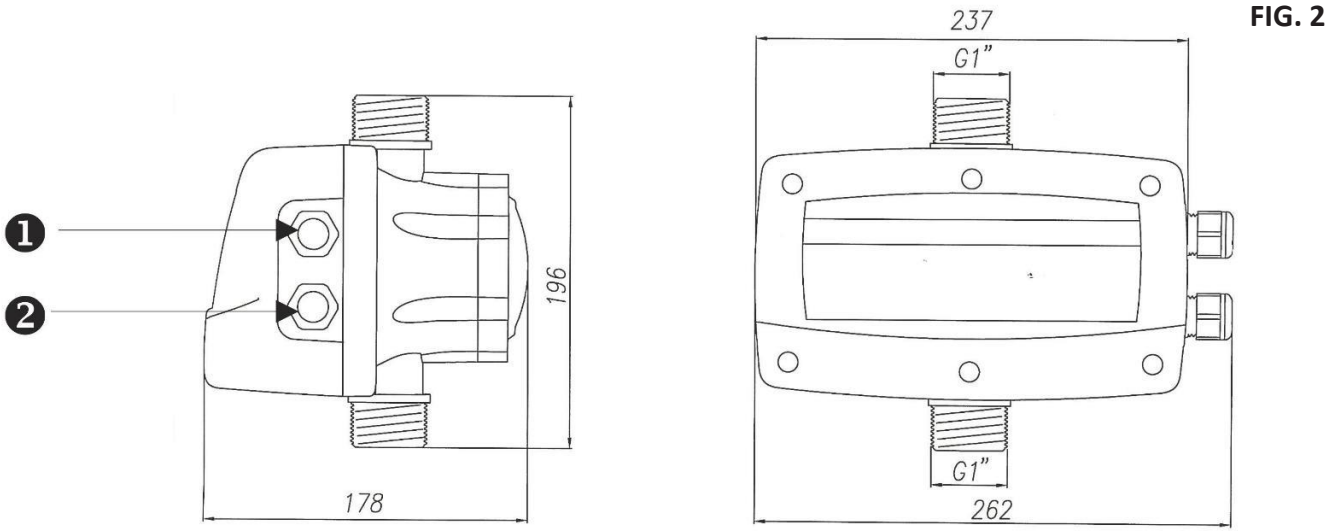






LATERAL CONNECTION

FIG. 2



L (m)	S (mm^2)
1 ÷ 5	1
5 ÷ 25	2.5
25 ÷ 50	4

1 Pump
2 Power supply

INSTALLATION SCHEME

OBSERVATIONS:
A) Accessories 3, 4, 5 and 8 are recommendable but nonessential.
B) In the case of the expansion tank 7, its use in facilities is recommended when it is tried to avoid the water hammer.

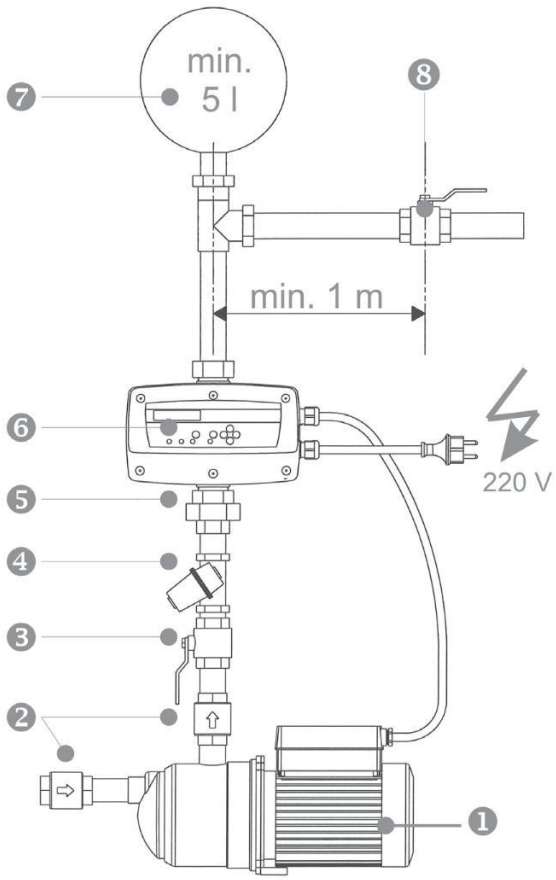


FIG. 3

1.- Pump
2.- Check valve
3.- Ball valve
4.- Filter
5.- Quick release coupling

6.- Device
7.- Expansion tank
8.- Ball valve

ENGLISH

BEFORE INSTALLATION AND USE READ THE FOLLOWING INSTRUCTIONS CAREFULLY. THE MANUFACTURER DECLINES ALL RESPONSABILITY IN THE EVENT OF ACCIDENT OR DAMAGE DUE TO NEGLIGENCE OR FAILURE TO OBSERVE THE INSTRUCTIONS DESCRIBED IN THIS MANUAL OR IN CONDITIONS THAT DIFFER FROM THOSE INDICATED ON THE DEVICE.

1. OPERATION

Is a compact automatic control device designed for the single-phase pumps automation, with an electronic system managed by a software responding to the rigorous requirements of efficiency and safety of the most important builders of pumps. It includes a frequency inverter that regulates the speed of the pump in order to keep constant the pressure independently of the flow given.
The system incorporates a LCD screen where the parameters configuration is very easy and intuitive. Once the configuration parameters are introduced, the device manages the start-up of the pump and the frequency inverter. It assures a constant pressure and an important costs reduction because at any time the control will feed the system with the right and necessary output, obtaining a maximum energetic efficiency. In order to establish the ideal pressure in the installation is suitable to consider following criteria:

Hm:Max. water column height in m. It depends on the number of floors and it corresponds to the height from the pump to the last floor. Every 10 m of height corresponds approximately to 1 bar (0.98) bar.
Pw:Available minimum pressure in last floor (usually 1.5 bar).
Pc: Pressure drop. It can be considered with a simplified criteria as 0.033 bar/m.
Prmin: Minimum resultant pressure. It is the sum of the previous pressures and it will be the operating pressure of the pump.
Example for a 5 floors building (15 m) with pump placed at level 0:
Hm =15 m ≈ 1.5 bar Pw = 1,5 bar Pc=15 x 0,033 bar ≈ 0,5 bar Prmin = 1,5 + 1,5 + 0,5 = 3,5 bar

2. CLASSIFICATION AND TYPE.

According to EN-60730-1 this product is a device of independent assembly, type 1B with software of class A. Control circuit for alternating current motor with power factor cosϕ ≥ 0,6. Pollution Degree 2. Rated impulse voltage: 2500V/CATII. Class of disconnection 1Y (electronic disconnection).

3. TRANSPORTATION AND STORAGE

3.1 Inspect the delivery

Check the outside of the package.
Notify our distributor within eight days of the delivery date, if the product bears visible signs of damage.
Open the carton.
Remove packing materials from the product. Dispose of all packing materials in accordance with local regulations.
Inspect the product to determine if any parts have been damaged or are missing.
Contact the seller if anything is out of order.

3.2 Transportation guidelines

Observe accident prevention regulations in force.
Crush hazard. The unit and the components can be heavy. Use proper lifting methods and wear steel-toed shoes at all times.
Check the gross weight that is indicated on the package in order to select proper lifting equipment.
Position and fastening
The unit must be transported only in its horizontal position as indicated on the package. Make sure that the unit is securely fastened during transportation and cannot roll or fall over. The product must be transported at an ambient temperature from 10°C to 70°C (14°F to 158°F) with a non-condensing humidity of <95% and protected against dirt, heat source, and mechanical damage.

3.3 Storage guidelines

Protect the product against humidity, dirt, heat sources, and mechanical damage.
The product must be stored at an ambient temperature between 10°C and 70°C (14°F and 158°F) and a non-condensing humidity below 95%.
The converter uses electrolytic capacitors which can deteriorate when not used for a long period of time. If storing for a year or more, make sure to run them occasionally to prevent deterioration.

4. MAIN CHARACTERISTICS.

- Inlet port G1" male ISO 228.
- Outlet port G1" male ISO 228.
- Frequency inverter for the pump control.
- Control and safety system against over-intensities.
- Control and safety system against dry operation.
- **ART** function (Automatic Reset Test). If the device has been stopped due to the action of the safety system against over-intensities, the ART tries to connect the pump, with a programmed periodicity because the water supply could have been restored
- Automatic restore system after an interruption of power supply. System is activated in **AUTOMATIC** mode keeping the configurationparameters (see chapter 10).
- Inner pressure transducer with digital indicator,
- Inner current sensor with instantaneus digital reading.
- Control panel (see chapter 8): 2 digits display, pushbuttons, led lights and digital gauge providing instantaneous lecture of pressure.
- Register of operational controls: infomation about operating hours, counter of starts, counter of connections to the power supply.
- Register of alarms: information about type and number of alarms since the starting up of the device.

5. TECHNICAL CHARACTERISTICS.

• Power supply voltage	1x127-230~V +10% -20% V
• Frequency	50/60 Hz
• Max. current each phase	7.5A
• Max. peak of current	10% during 10"
• Max. operating pressure	15 bar
• Max. set pressure	0.5÷8 bar
• Protection index	IP55
• Max. water temperature	40ºC
• Max. environment temperature	0-50ºC
• Max. flow	8.000 l/h

Video Youtube

6. HYDRAULIC CONNECTIONS (FIG.3)

Before proceeding with hydraulic connection it is essential to install a non-return valve in the pump´s inlet or outlet.
The device must be connected in vertical position (FIG.3), the inlet port (G1” male) directly to the main pump discharge and the outlet port (G 1” male) at the main network.
It is compulsory to use an hydropneumatic tank in order to avoid continuous start-stops due to the deterioration of taps, valves, ... and also to prevent "water hammer" in installations with valves of wide diameter.

7. ELECTRIC CONNECTION (FIG.1 - FIG.2)

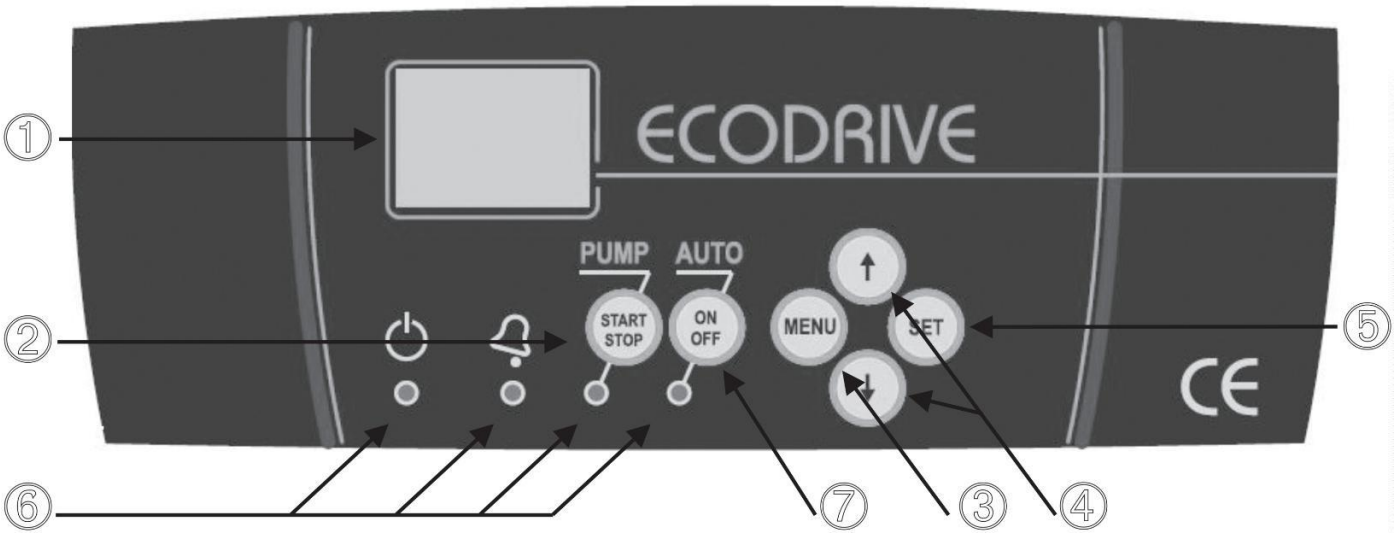
Before doing manipulations inside the device, it must be disconnected of the electric supply and after disabling, wait for 2 minutes in order to avoid electrical discharges.
Use cables type H07RN-F with section enough to the power installed:

- Power supply: s ≥ 1,0 mm²(max.2,5 mm²).
- Motor supply: s ≥ 1 mm² (max.2,5 mm²) depending on the cable length (FIG.2).

Verify if the power supply is 127-230 V. Dismount the front cover and carry out the connections according to the indications of FIG.1.
Do the power supply connection (being sure there is a good earth connection): N ⏚ L
Do the connection by mean of magnetothermic switch in OFF mode.
The earth conductor must be longer than the others. It will be the first one to be mounted during the assembly and the last one The earth conductor must be longer than the others. It will be the first one to be mounted during the assembly and the last one to disconnect during disassembling.
Do the pump connection: V W ⏚.

WARNING! Wrong connections could spoil the electronic circuit. The manufacturer declines all responsability in damages caused by wrong connection.

8. CONTROL PANEL .



1 - **DIGIT DISPLAY** . In **AUTOMATIC** mode it shows instantaneous pressure (bar), instantaneous current consumptions (A) and minimum speed (Hz).
2 - **MANUAL START-STOP** pushbutton. It allows to start and stop manually the pump.
3 - Pushbutton **MENU** for enter or quit the menu.
4 - With the ↑↓ pushbuttons we can increase or dicrease programming values showed in the screen.
5 - **SET** for saving programmed values. Every pulsation is succeeded by a new field of the **CONFIGURATION MENU**. Whenever we want to quit the configuration sequence press **MENU**.
6 - Led lights:
• **LINE** green: Electric supply. Bright when it is connected.
• **FAILURE** red: Bright or flashing depending on type of failure.
• **PUMP** yellow: When it is bright means pump working. It is lit with the pump stopped or when the device is not connected.
• **AUTOMATIC** green: it is bright in **AUTOMATIC** mode.
7 - Pushbutton **ON/OFF**: It allows to change from **AUTOMATIC** to **MANUAL** mode or vice versa.

9. START UP (plug&play). ⚠

Be sure that the pump is correctly primed.
Connect the device to the electric supply with the magnetothermic switch, all the led lights will flash instantaneously for a second. Screen will show **SP** (Set Pressure) and then its default value 2,0 bar, both displays are alternated in time periods of 1"/5". The device is plug&play following the next steps:

1. Set the nominal current of the pump following the instructions on chapter 10

2. Set the desired set pressure by mean of ↑↓

3. Press the push-button **AUTO**

The device will start to operate and led light **AUTO ON/OFF** will light. The screen will show the instantaneous pressure. Being in automatic mode and using the push-button **SET** we can change the display:

P: instantaneous pressure (bar).
Fr: instantaneous speed (Hz)
A: instantaneous current consumption (A)
ºC: instantaneous power module temperature (ºC)

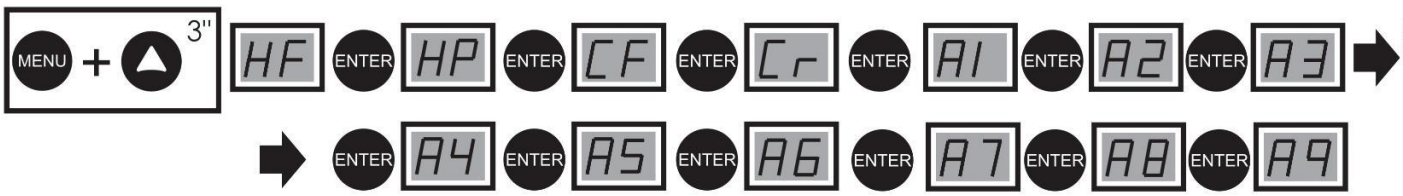
10. CONFIGURATION.

In the configuration menu we can adjust either maximum current (A) and minimum pump speed (FL).
Next steps shoud be followed:

SP	1. Press push-button **MENU** during 3 seconds to start the configuration sequence.	MENU
A	2. Set the nominal current of the pump in Amps using ↑↓ enabling the thermal protection. For the device must be within 0 and 7.5 A. This value is located over the characteristics plate of the motor. Press **ENTER** for validation.	ENTER
FL	3. Using ↑ can be increased the lower limit of the speed of rotation. The value must be within 30 and 35 Hz. Default value is 30 Hz. Press push-button **ENTER**, for validation and quit this menu.	ENTER
SP	4. System is ready. By mean of **AUTO ON/OFF** quit the manual operating mode.	ON OFF

11. REGISTER OF OPERATION DATA AND ALARMS.

By using simultaneously **MENU + ↑** during 3" is acceded to register of operation data and alarms, by mean of **ENTER** we can advance through the sequence, once finished the sequence we come back to the main display. This is all the sequence:



REGISTER HOURS (HF). Counter of total time that the device has been operating.
REGISTER PUMP HOURS (HP). Counter of total time that the pump has been operating.
REGISTER STARTS (CF). Number of cycles of operation, a cycle is a start and a stop.
REGISTER SWITCH (Cr). Number of connections to the electric supply.
ALARM COUNT DRY RUN (A1). Number of dry-running alarms.
ALARM COUNT I MAX (A2). Number of overcurrent alarms.
ALARM COUNT. DISCONNECTED PUMP (A3). Number of disconnected pump alarms.
ALARM COUNT. LEVEL (A4). Not available on this model.
ALARM COUNT. PRESSURE SENSOR (A5). Number of pressure sensor faults.
ALARM COUNT. TEMP (A6). Number of alarms by excessive temperature.
ALARM COUNT. SHORTCIRCUIT (A7). Number of short circuit alarms.
ALARM COUNT. OVERVOLTAGE (A8). Number of overvoltage alarms.
ALARM COUNT. UNDERVOLTAGE (A9). Number of undervoltage alarms.

All the records are saved even if the device has been disconnected from the electric supply.
Note: For quantities with more than 2 figures they will appear in consecutive screens after each ENTER. For example, to indicate 10234 overcurrent alarms:



12. ALARMS

In case of simultaneous alarms, quit the automatic mode and go to manual mode, pressing the pushbutton **AUTOMATIC ON/OFF** (led light PUMP will turn off). Using keys ↑↓ will be displayed the succesive alarms. Once visualized, for leaving the menu, press **ENTER** returning to **MANUAL** mode.

A1 DRY RUNNING (✹ Failure verification - ● Final failure)
DESCRIPTION: if the system detects dry running during more than 10 seconds, it will stop the pump and the ART (Automatic ResetTest) will be activated.
SYSTEM REACTION: after 5 minutes ART system will start again the pump during 30 seconds, trying to restore the system. In case of persistent lack of water, it will try it again every 30 minutes for 24 hours. If after all these cycles , the system still detects lack of water, the pump will remain permanently out of order until the damage will be repaired.
SOLUTION:
Dry running: you should verify the feeding of the hydraulic network. The pumps can be primed using the push-button **START/STOP** (the led light **AUTOMATIC** should be off, if it is not, press the push-button to disable it).
Special case: if the pump cannot provide the programmed pressure (configuration mistake) the device reacts as it was dry-running.
Special Case 2: this device manages the dry running control through the nominal current consumption of the pump. It must be verified the introduced current consumption in the setup menu (see paragraph 10).

A2 OVERCURRENT(✹ Failure verification - ● Final failure)
DESCRIPTION: the pump is protected against over currents by mean of the intensity value established in the installation menu. These over currents are produced generally by dysfunctions in the pump or in the electric supply.
SYSTEM REACTION: when detecting the thermal failure, the pump will be automatically stopped. The system will try again to restart the pump when the demand of consumption require it. The control system will carry out 4 attempts in this circumstances. If the system remain locked after the 4th attempt, the pump will remain definitively out of order.
SOLUTION: verify the state of the pump, for example the impeller could be blocked. Verify intensity values introduced in the configuration menu. Once the problem have been solved the operation will be restored going to the configuration menu (see chapter 10) and configuring the adequated current value.

A3 DISCONNECTED P. (● Final failure)
DESCRIPTION: the device has an electronic safety system in case of no load detection.
SYSTEM REACTION: the device is disconnected.
SOLUTION: the wound of the motor and the pump consumption should be verified. Once the problem has been solved the operation will be restored going to the configuration menu (see chapter 10) and introducing the adequate intensity value.

A5 TRANSDUCER (● Final failure)
DESCRIPTION: the transducer damages are showed in the device LCD screen.
SYSTEM REACTION: the device operation is interrupted.
SOLUTION: contact with technical service.

A6 EXCESSIVE TEMP. (● Final failure)
DESCRIPTION: the system has a cooling device to keep the INVERTER in optimum working conditions.
SYSTEM REACTION: if an excessive temperature is reached the own system leaves the inverter out of service and as consequence the pump too.
SOLUTION: verify the temperature of the water, it should be under 40 ºC and the temperature environment should be under 50 ºC. Contact with technical service.

A7 SHORTCIRCUIT (● Final failure)
DESCRIPTION: the device has an electronic system for protection against short circuits as well as peaks of current.
SYSTEM REACTION: the pump remains stopped for 10". Then it starts again - 4 attempts. If the problem is not solved, the pump will remain definitively out of order.
SOLUTION: check the pump, if the problem persists, contact the technical service.

A8 OVERVOLTAGE - A9 UNDERVOLTAGE (✹ Failure verification)
DESCRIPTION: the device has an electronic safety system against overvoltages and too low supply voltages.
SYSTEM REACTION: in case of overvoltage or undervoltage the system remains stopped until an adequate value of voltage is reached. In this case, the system is automatically restored.
SOLUTION: check the electric supply.

DESCRIPTION: blank screen.
SOLUTION: check the electric supply 127-230 V.