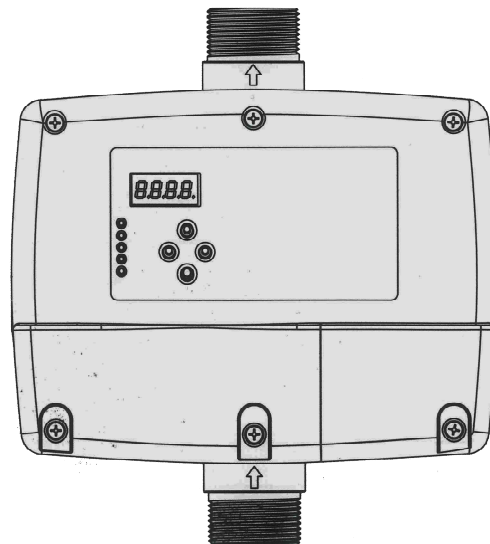


**Data sheet**  
**Water pump inverter systems**  
**REGOLO**  
**REGOLINO**





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# 1. LEGEND

In this manual the following symbols will be expressed:



**General danger situation.** Failure to comply with the requirements that follow can cause damage to persons and property.



**Electric Shock Hazards.** Failure to comply with the requirements that follow can cause a situation of serious risk for the safety of persons.



**Note**

# 2. WARNINGS

This manual refers to the products:

INVERTER REGOLINO MM 0,8kW 8Ampere (used for the control of an electric pump)

INVERTER REGOLO MM 1,5Kw 12Ampere (used for the control of one or more electric pumps)

The above mentioned inverters can be classified for the type of power supply and for the power they can support, as shown as follows:

**TABLE 1**

Model	Inverter power supply	Electric pump power supply	Power	Max Ampere
REGOLINO	220/230Vac	220/230Vac	0,8kW - 1,10Hp	8 A
REGOLO			1,5kW - 2,00Hp	12 A

In the following discussion the term "inverter" will be used when the characteristics are common to both models. If the characteristics differ, specific models will be specified.



**Read this documentation carefully before proceeding with the installation.**

Installation and operation must comply with the safety regulations of the country where the product will be installed. The whole operation must be performed to perfection. Failure to comply with the safety regulations, as well as creating a danger to the safety of persons and damage to the equipment, will void any warranty claims.



**Specialised personnel**

The installation must be carried out by competent and qualified professional, to avoid any possible danger (Definition for IEC 364 technical staff). The appliance is not intended for use by persons (including children) whose sensory and mental physical abilities are reduced, or by persons with a lack of experience or knowledge, unless they have been able to benefit from surveillance or instructions concerning use of the appliance.

**Keep out of reach of children.**



**Security:** The use of the device is allowed only if the electrical system is marked by safety measures according to the Regulations in force (for Italy CEI64 / 2).

**Pumped Liquids:** The machine is designed and built to pump water, free from explosive substances and solids or fibers, with a density equal to 1000 Kg/m<sup>3</sup> and kinematic viscosity equal to 1mm<sup>2</sup> / s and non-chemically aggressive liquids.



The power cord must never be used to transport or move the pump.

Never unplug the power cord by pulling the cord.



If the power supply cable is damaged, it must be replaced by the manufacturer or by its authorized service center, in order to prevent any risk.



**Always remove the mains voltage before working on the electrical or mechanical part of the system. Wait at least five minutes after the item has been disconnected from the power supply before opening the device. Only tightly wired network connections are permissible.** The appliance must be earthed (IEC 536 class 1, NEC and other standards in this regard).

### 3. RESPONSIBILITY

**The manufacturer is not responsible for the correct functioning of the electric pumps or for any damage caused, if they are tampered with, modified and/or operated outside the recommended working range or in contrast with other provisions contained in this manual.**

It also declines all responsibility for possible inaccuracies contained in this instruction manual, if due to printing or transcription errors.

It reserves the right to make any modifications to the products it deems necessary or useful, without compromising their essential characteristics.

### 4. DETAILS

Inverter for electric pumps designed for the pressurization of hydraulic systems, by measuring pressure and flow.

The inverter is able to maintain constant hydraulic pressure by varying the number of revolutions / minutes of the electric pump; by means of sensors it switches on and off automatically according to the hydraulic necessity.

The operating modes and accessory options are varied. Through the various possible settings and the availability of configurable input and output contacts, it is possible to adapt the operation of the inverter to the requirements of various systems.

In chapter 6 "MEANING OF INDIVIDUAL PARAMETERS" the functions that can be displayed by the user are illustrated. Actual pressure or user settable pressures (working pressure).

#### 4.1 APPLICATIONS OF THE INVERTER

- Boosting water pressure for homes (single and / or multiple houses)
- Increased water pressure for condominiums/ apartment buildings
- Boosting water pressure in camping and swimming pools
- Increased water pressure within farms
- Water pressurization from wells
- Irrigation: greenhouses, gardens, lawns, agriculture
- Rainwater reuse
- Industrial and technological plants

## 4.2 TECHNICAL CHARACTERISTICS

TABLE 2

		REGOLINO 0,8kW	REGOLO KW1,5
Power supply	Number of phases	1	1
	Voltage (Vac)	1x220/240	1x220/240
	Frequency (Hz)	50/60	50/60
	Earth leakage current (mA)	< 2	< 2
Pump output	Number of phases	1	1
	Voltage (Vac)	1x220/240	1x220/240
	Frequency (Hz)	50/60 Hz	50/60
	Earth leakage current (Arms)	8 A	12 A
Construction features	Dimensions (mm) (Width x Height x Depth)	220x244x158	220x244x158
	Packaging weight excluded (kg)	3,2 kg	3,5 kg
	Protection class (IP)	IP54	IP54
Hydraulic performance	Max pressure (Bar)	PN10	PN10
	Minimum and maximum settings (Bar)	1-6	1,9
	Maximum capacity (l/min')	130 l/min'	250 l/min'
Work Conditions	Working position	Vertical	Vertical
	Maximum temperature of the liquid (°C)	50°C	50°C
	Maximum temperature of the environment (°C)	50°C	50°C
Hydraulic connections	Inverter input	1" Male	1"1/4 Male
	Inverter output	1" Male	1"1/4 Male
Functions and protections	Dry running protection	YES	YES
	Protection against pump blocking	YES	YES
	Over-temperature protection	YES	YES
	Overvoltage protection	YES	YES
	Short circuit protection	YES	YES
Output for auxiliary electric pump	Constant speed output for the second electric pump	NO	YES

## 4.3 INSTALLATION



The REGOLO and REGOLINO inverter systems are designed to work in environments with a temperature between 0 °C and 50 °C.

These systems are suitable for the conveyance of drinking water.

The REGOLO and REGOLINO inverters can not be used to pump sewage, flammable, corrosive or explosive liquids (eg oil, petrol, thinners), fats, oils or food products.

N.B. In domestic water supply, comply with the local regulations of the authorities responsible for the management of water resources.



By choosing the place of installation for the REGOLO and REGOLINO inverters, please check that:

- The voltage and frequency on the pump data-plate correspond to the data of the REGOLO and REGOLINO inverters.
- The electrical connection of the REGOLO and REGOLINO inverter devices takes place in a dry place, away from possible flooding.
- The electrical system that serves the inverter is equipped with a differential switch sized according to the characteristics indicated in Table 2.
- REGOLO and REGOLINO need to be connected to the ground.  
If you are not sure of the total absence of solids in the water to be pumped, please provide the installation of an inlet filter to the system that is suitable to stop impurities. The installation of a suction filter involves a reduction of the hydraulic performance of the system (the greater the filtering power of the filter, the greater the loss of performance ).



The inverter works at constant pressure. **This adjustment is appreciated if the hydraulic system is appropriately sized.**

Narrow pipes have large impact on pump performance. The pressure will be constant on the device but not at home.



**RISK OF FREEZING:** pay attention to the installation location of the inverter! Please take the following precautions:

If the inverter is in a cold place, it is absolutely necessary to protect it from freezing, leaving it constantly powered. If the inverter is not running, it is necessary to switch off the power supply, unhook the appliance from the piping and empty it completely. Always install a check valve on the pipe upstream of the inverter. For the correct operation of the inverter it is indifferent to install the valve on the suction pipe or on the discharge side of the electric pump. The hydraulic connection between the inverter and the electric pump must be direct. The piping must be of adequate size for the installed electric pump.

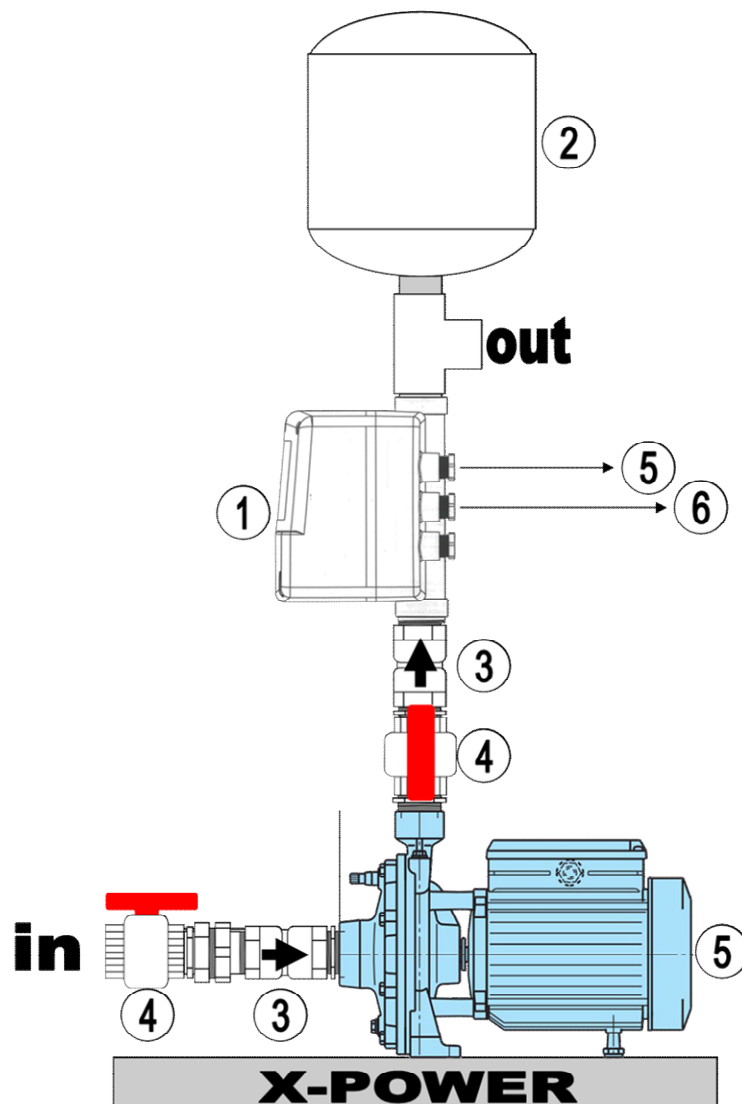


## 4.4 INSTALLATION WITH ONE PUMP

The figure below shows the installation of an electric pump with inverter

System components

- 1 REGOLO / REGOLINO inverter
- 2 Tank
- 3 Non-return valve
- 4 Ball valve
- 5 Power supply
- 6 Output of the electric pump



## 4.5 INSTALLATION WITH TWO PUMPS

The figure below shows the installation of two electric pumps with the **REGOLO pump inverter**

Components of the system

- 1 Regolo Inverter
- 2 Tank
- 3 Non-return valve
- 4 Ball valve
- 5 Power supply
- 6 Electric pump output
- 7 Output of the auxiliary electric pump with fixed speed
- 8 Suction collector
- 9 Delivery collector

### **TWO ELECTRIC PUMPS SYSTEM (MULTI PUMP SYSTEM)**

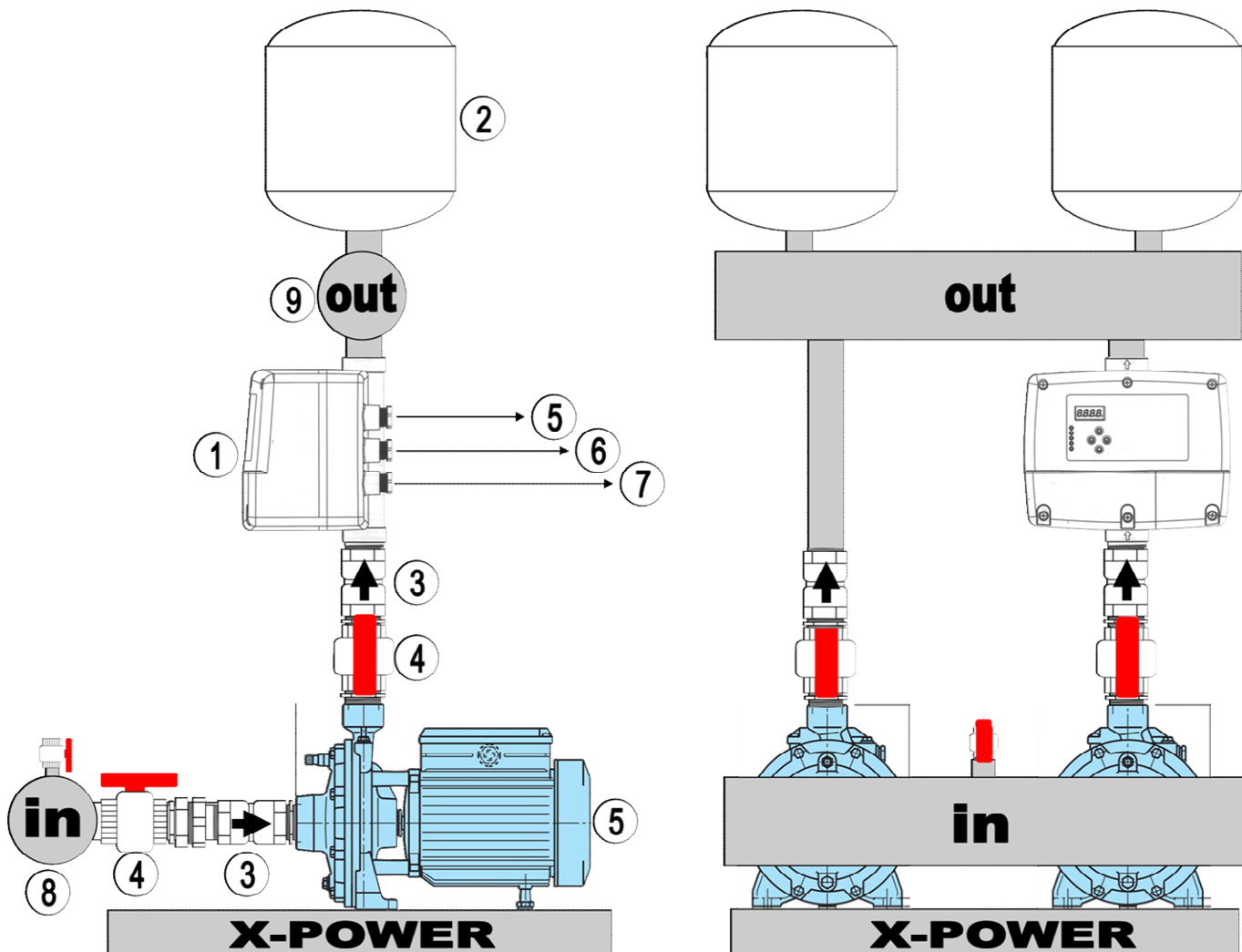
The REGOLO inverter system allows the construction of a pressure increase system consisting of:

- 01 Electric pump with variable frequency
- 01 Electric pump with fixed frequency

This type of system increases the flow rate of the system by using a second fixed speed electric pump.

### **OPERATION**

When the system needs water, REGOLO activates the first electric pump with variable speed. In this way the engagement of the activated power is proportional to the water request. When the water requirement is higher than the water supplied by an only electric pump, REGOLO activates the second electropump with a fixed speed. With the operation of the second pump, the first reduces its power. If required, both pumps operate at maximum power.



## 4.6 ELECTRICAL CONNECTIONS OF THE INVERTER

The REGOLO and REGOLINO are equipped with pump and device electric cables.

The internal electrical connections can be accessed by removing the 6 screws on the cover.

To connect the second electric pump (only for REGOLO inverters), a three-wire electric cable (neutral phase + earth) with a suitable section must be used.



Before carrying out any installation or maintenance operation, disconnect the inverter from the power supply and wait at least 15 minutes before touching the internal parts. Make sure that the voltage and frequency of the inverter's plate correspond to those of the mains supply.

To avoid possible interference towards other devices it is advisable to use a separate electrical conduit for powering the inverter.

It is the responsibility of the technician to make sure that the power supply system is equipped with an efficient earth system according to the regulations in force. Make sure that all the clamps are fully tightened, paying particular attention to the ground one. Make sure that the cable glands are stable enough to maintain the IP54 protection class. Check that all connecting cables are in good condition and with the outer sheath intact.

The motor of the installed electric pump must respect the data in Table 2.



The incorrect connection of the earth causes irreparable damages to the whole system!  
The incorrect connection of the power supply line to the output terminals can irreparable damages the whole system!

#### 2.2.1 Pump connection for M/T (single-phase/three-phase) and T/T (three-phase/three-phase) models.

The output for the electric pump is available on the three-phase + ground cable.

The motor of the electric pump must be **three-phase - 220-240V** for the **M/T** type, and **three-phase - 380- 480V** for the **T/T** type.

In order to achieve the correct connection of the motor windings, please note the information written on the type nameplate or on the terminal board of the electric pump.

#### 2.2.2 Pump connection for M/M (single-phase/single-phase) models

The output for the electric pump is available on the single-phase + ground cable.

The DV type inverters can be connected to motors with 110-127V or 220-240V power supply. In order to use a voltage of 220-240V for motor control in a DV inverter, it is necessary to use a power supply of the same value.

## 4.7 CONNECTION TO THE POWER SUPPLY LINE



**ATTENTION: The voltage can change when the electric pump is activated by the inverter. The voltage on the line may change according to other devices connected on it and to the quality of the power line itself.**

N.B. The magneto thermal protection switch and the power cables must be sized according to the system.

The differential switch used as pump protection, must be sized according the Table 2 characteristics. For the types of M/T and M/M inverter we recommend the F Type differential switch, to preventing current untimely tripping; for the T/T types it is recommended the type B to avoid current untimely tripping.

In case of prolongation of the inverter cables (for example in the submerged electropumps power supply) if there are electromagnetic disturbances, it is advisable to:

- Check the grounding and if necessary add a earth plate near the inverter.
- Ground the electrical cables.
- Use shielded cables.
- Install a network filter device



**A network filter eliminates any electrical noise. The filter must be installed very close to the inverter.**

## The M/M and M/T inverter:

The characteristics of the power supply must be able to satisfy what is indicated in Table 2.

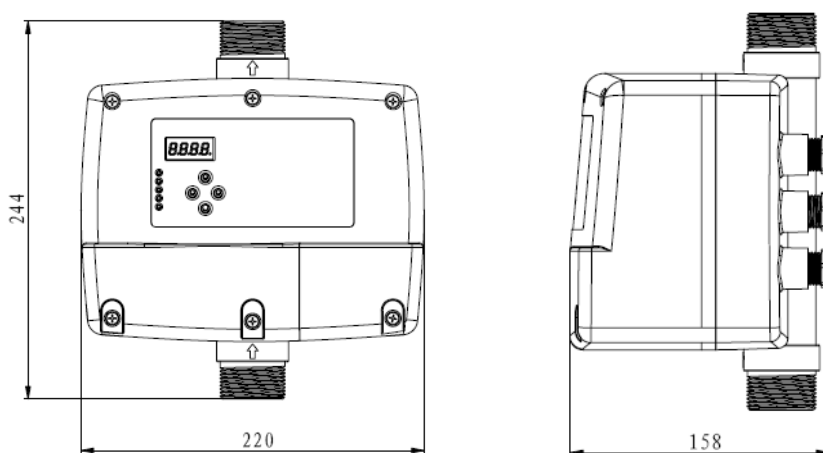
The section, type and laying of the cables for powering the inverter must be chosen according to the regulations in force. Table 3 gives an indication of the most appropriate cable section. The table refers to PVC cables with 3 conductors (neutral phase + earth) and expresses the minimum recommended section according to the current and the length of the cable.

**TABLE 3**

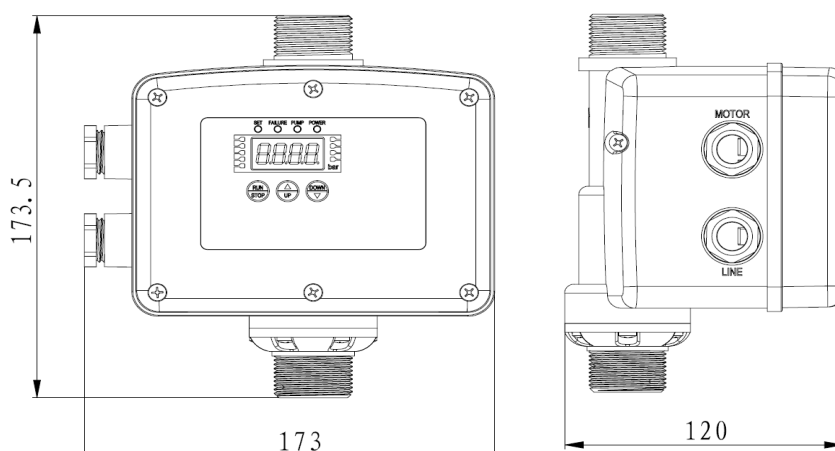
Section of the power cable in mm <sup>2</sup> - Data on PVC cables with 3 conductors (neutral phase + earth)															
	10 m	20 m	30 m	40 m	50 m	60 m	70 m	80 m	90 m	100 m	120 m	140 m	160 m	180 m	200 m
4 A	1,5	1,5	1,5	1,5	2,5	2,5	2,5	2,5	4	4	4	6	6	6	10
8 A	1,5	1,5	2,5	2,5	4	4	6	6	6	10	10	10	10	16	16
12 A	1,5	2,5	4	4	6	6	10	10	10	10	16	16	16		
16 A	2,5	2,5	4	6	10	10	10	10	16	16	16				
20 A	4	4	6	10	10	10	16	16	16	16					
24 A	4	4	6	10	10	16	16	16							
28 A	6	6	10	10	16	16	16								

## 5. DIMENSIONS IN MM

### REGOLO



### REGOLINO



# 6. REGOLINO DISPLAY

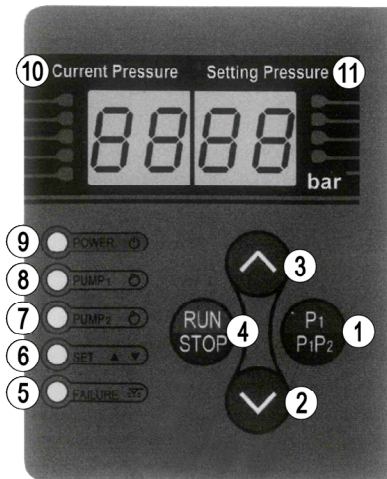
Keyboard with luminous LEDs - simple and intuitive programming



1	INDICATOR ▼	Pressing the button reduces the pressure in steps of 0.1bar. Holding it down, the pressure is reduced rapidly.
2	INDICATOR ▲	Pressing the button increases the pressure in steps of 0.1bar. Holding it down, the pressure is increases rapidly.
3	RUN/STOP	It is possible to start or stop the pump manually. Press this button in case of lack of water.
4	Current Pressure	The displayed value indicates the current pressure value of the water network. Unit: bar
5	POWER	The indicator lights up when the inverter is powered
6	PUMP	When the motor is in "fast mode", the LED flashes quickly. When the motor is operating at a constant frequency or with there is a lack of water, the LED flashes slowly. When it stops automatically, the LED is on. When it is manually stopped, the LED turs
7	SET	Flashes when "REGOLINO" is being programmed
8	FAILURE	If the indicator flashes, it means that there is no water in the suction circuit. "REGOLINO" will try to reset the system by performing a timed reboot attempt: 8S, 1min, 10min, 30min, 1h, 2h for 24 hours.
9	Setting Pressure	The value indicated in this section indicates the value of the set pressure. Factory setting: 3 bar

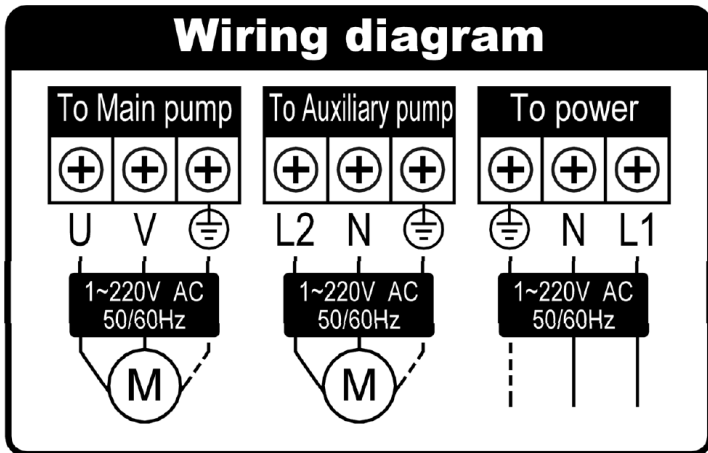
# 7. REGOLO DISPLAY

Keyboard with luminous LEDs and simple and intuitive programming

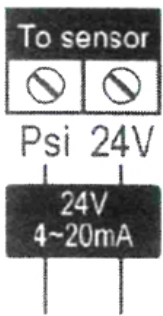


POS.	FUNCTION	INSTRUCTION
1	Auxiliary pump Start/Stop	Adjusts the start of the second electric pump
2	Decremental cursor	Decreases the pressure value set by the user
3	Incremental cursor	Increases the pressure value set by the user
4	RUN/STOP	If pressed, activates the pump in manual mode. If released in the "RUN" position, the operation remains automatic with frequency modulation
5	FAILURE	When it flashes it indicates that there is a lack of water, REGOLO will block the operation of the electric pump. Automatic restart attempts will be made at intervals of: 8SEC. / 1min. / 10min. / 30min. / 1 hour / 2 hours for 24 hours
6	SET	Flashes when maintaining pressure is set
7	PUMP2	Indicates the operation of the second electric pump
8	PUMP1	When the indicator: Flashes fast: The pump is in modulation or in standby. When it flashes slowly: The pump is at constant speed (constant pressure). If it does not flash: The pump is at rest.
9	POWER	The indicator is lit when REGOLO is connected to the network.
10	Current Pressure	Digital indicator of the instantaneous system pressure
11	Setting Pressure	Digital pressure indicator set by the user

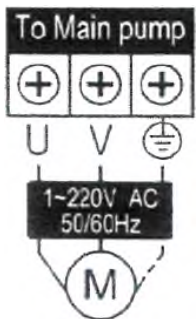
# 8. TERMINALS



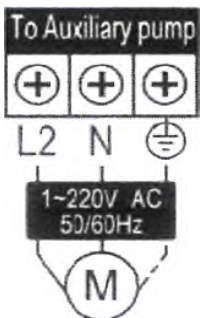
The wiring diagram shown is related to the connection of the REGOLO inverter. On request also to the REGOLINO inverter it is possible to connect an auxiliary electric pump;



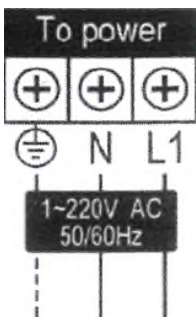
Connection with external transducer (optional)



Pump connection with variable speed



Connection to the fixed speed pump (REGOLO inverter only)

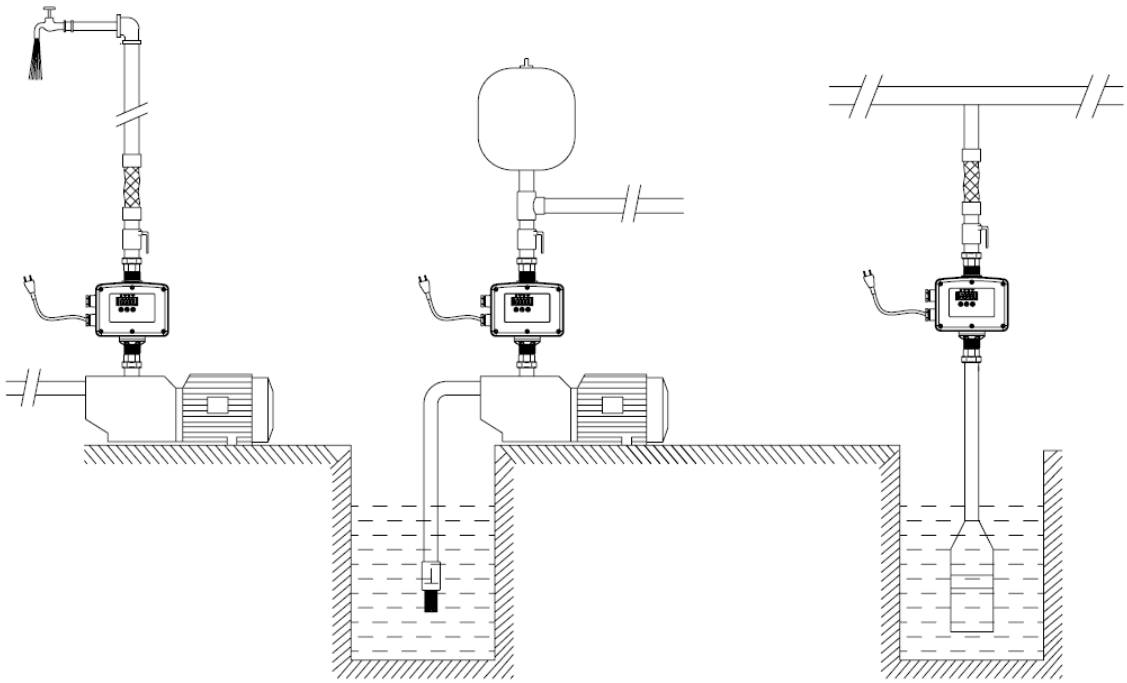


Connection to the electricity grid

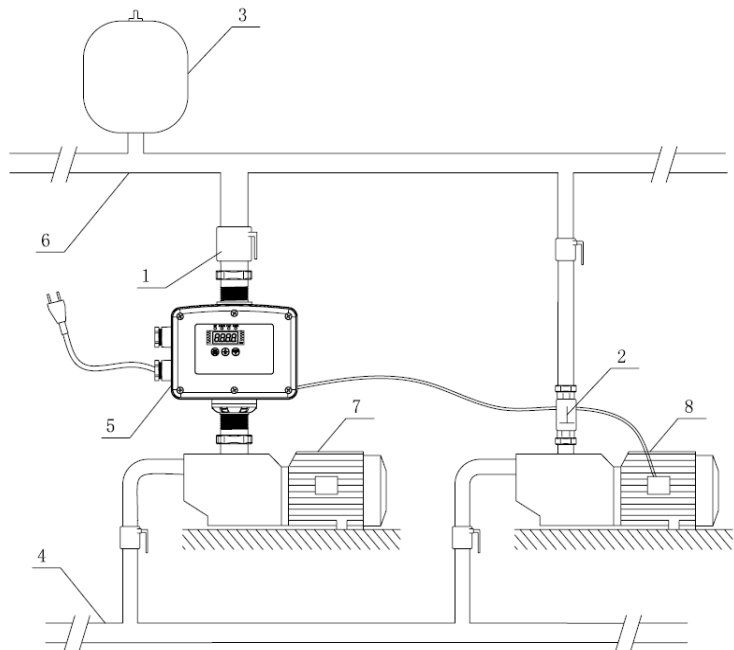




# 9. REGOLINO INSTALLATION

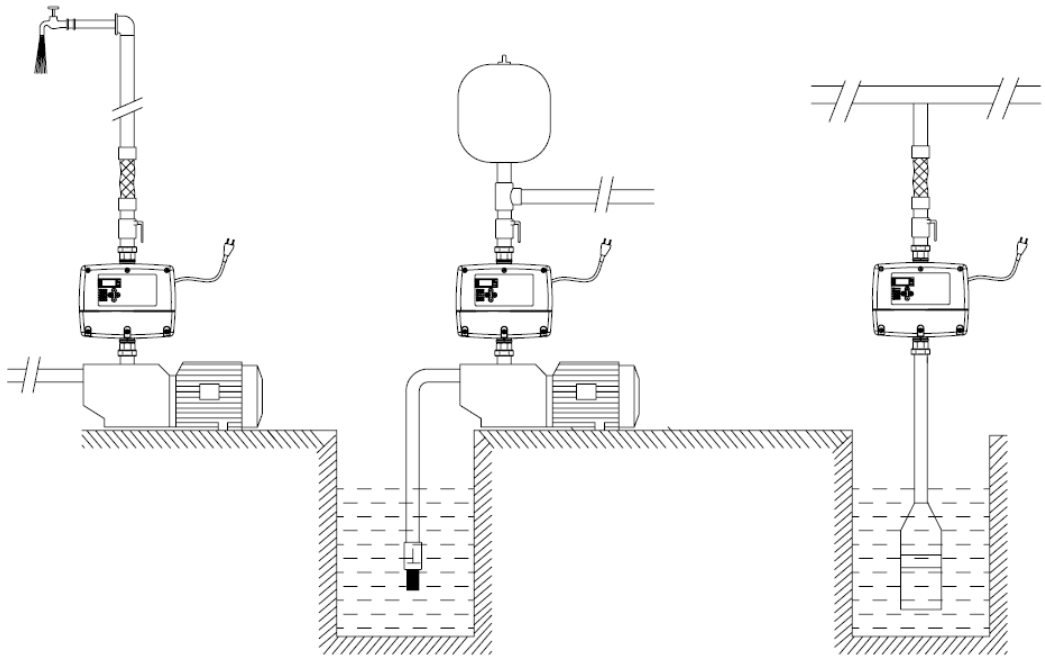


Components	
Num.	Name
1	ball valve
2	check valve
3	tank
4	suction tube
5	inverter
6	delivery pipe
7	primary pump
8	auxiliary pump

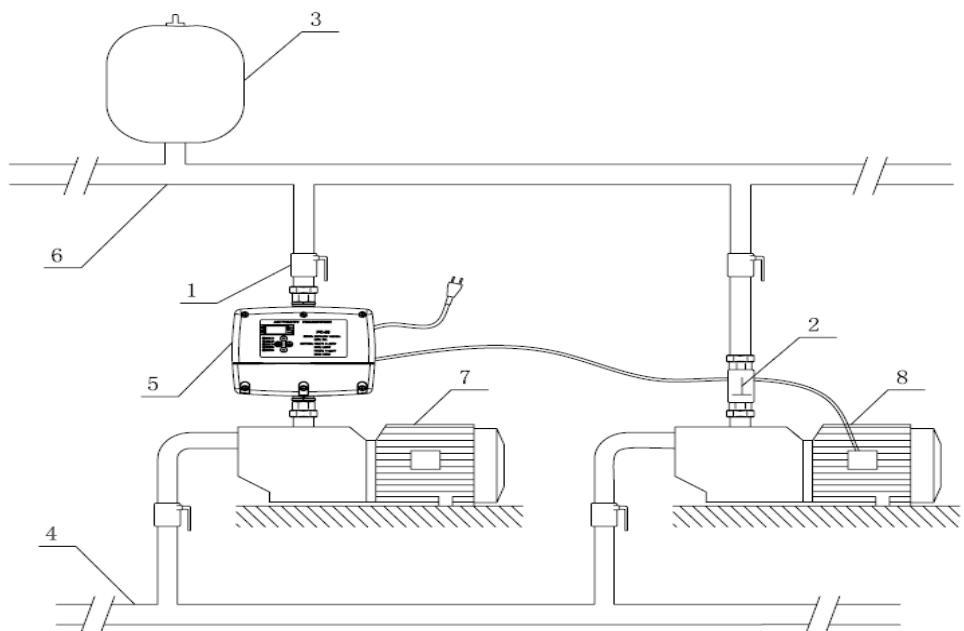


2 PUMPS INSTALLATION (ONLY ON REQUEST)

# 10 INSTALLAZIONI REGOLO



Components	
Num.	Name
1	ball valve
2	check valve
3	tank
4	suction tube
5	Inverter
6	delivery pipe
7	primary pump (with inverter)
8	auxiliary pump (fixed frequency)



**2 PUMPS INSTALLATION (STANDARD)**

Distributor for Italy:

**[www.xpowerwaterpumps.com](http://www.xpowerwaterpumps.com)**

