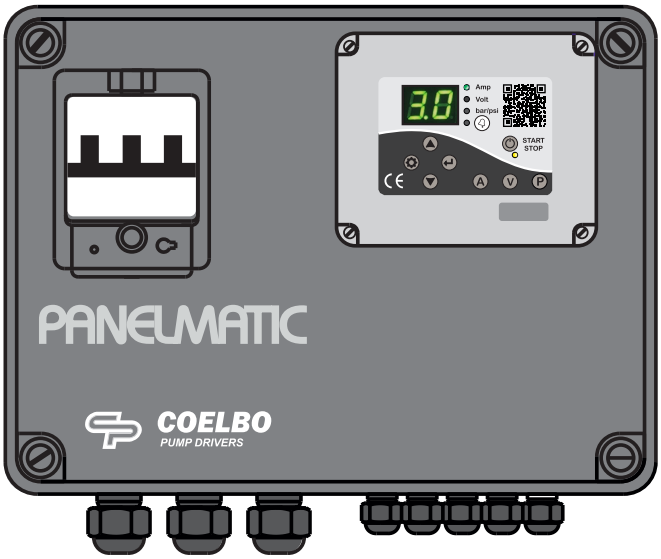
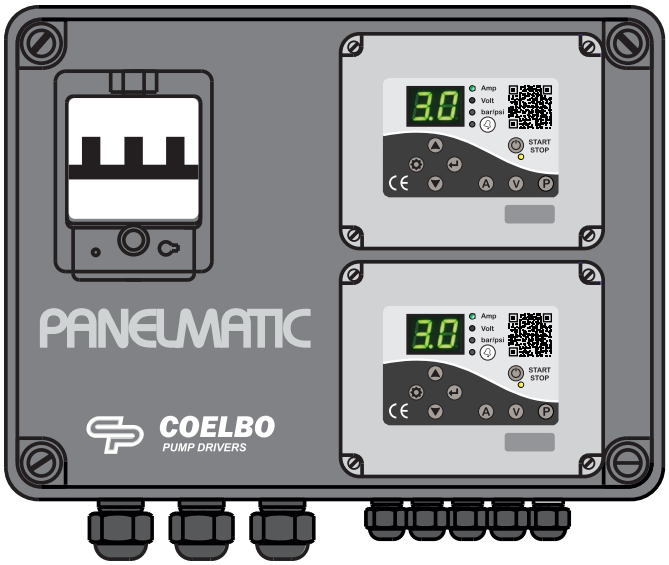
PANELMATIC

CE

Multipurpose electronic control panel for pumping applications



easy M
easy T
uno M
uno T



duo M
duo T

USER MANUAL

SAFETY RULES

Please read carefully this manual before installing the product.
Do not discard the manual after the installation, it can be useful for any later modification, as well as to solve any subsequent problem such as security alarms, alarms due to dry-run operation, etc.
The installation must be carried out by qualified technicians, respecting the safety prescriptions as well as the regulations in force in each country.
ATTENTION, before carrying out any manipulation inside the device, it must be disconnected from the electrical network.

 Risk by electric shock

 Risk for people and/or objects

Information and technical data contained in this manual can be changed without previous notice.

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1. GENERAL
Read carefully the instructions before installing this unit. Verify the technical characteristics of the motor in order to assure the compatibility with the device.

2. DIMENSIONS AND WEIGHTS

315 x 250 x 160 mm

Type	Weight
Easy M	1,8 kg
Easy T	2 kg
Uno M	1,9 kg
Uno T	2,2 kg
Duo M	2,2 kg
Duo T	2,5 kg

3. TRANSPORT AND STORAGE
This device must be transported carefully, avoiding knocks and falls that could damage the equipment without visible external signs.
Store in the original packaging, in a covered, dry place.
If required, use lifting mechanism with enough load capacity.
Protect the device from moisture and mechanical loads.
Temperature range: -10 °C to +70 °C
Relative air humidity: 5 – 95%
After removing the product from the packaging, dirt and contamination must be avoided.

4. CLASSIFICATION AND TYPE
According to IEC 60730-1 and EN 60730-1 this unit is a control sensor device, electronic, independent assembly, with action type 1B (microdisconnection). Operating value: I <20% I learned. Pollution degree 2 (clean environment) or flow>2,5 l/min. Rated impulse voltage: cat II / 2500V. Temperatures for ball test: enclousure (75) and PCB (125).

5. GENERAL DESCRIPTION
PANELMATIC range includes a series of electronic panels for the control and protection of an individual pump or two pumps systems, 3-phase or single-phase suppplied.
All of them integrate electronic protection through software of dry-run operation, overcurrent or fast-cycling (hammering). They also include a user interface with a 3-digit display, indication LED lights and control push-buttons, as well as an integrated circuit breaker.
Its modular design makes easy to expand features or to be repaired.
This family of electronic panels adopts the philosophy user friendly. Choice of various operating modes with predefined settings allow for any pressurization, drainage, filling or irrigation application. The connection of the control elements - level probes, pressure switches, transducers or float switches - is simple and intuitive.

5.1. Description of models
Use following table in order to identify the different models

Model	PUMPS Nº		POWER SUPPLY		"HUB" ELECTRONIC BOARD (*)	
	1	2	~1	~3	YES	NO
Easy M	x		x			x
Easy T	x			x		x
Uno M	x		x		x	
Uno T	x			x	x	
Duo M		x	x		x	
Duo T		x		x	x	

(*) The "HUB" electronic board is the auxiliary circuit that allows: communication between two pumps, connection of level probes, connection of an external pressure transducer or an alarm output.
Therefore, the Easy models do not have these options.

Model	Float switch	Pressure switch	Level probe	Pressure transducer 4-20 mA	Alarms output	Communic. 2 pumps
Easy M	✓	✓				
Easy T	✓	✓				
Uno M	✓	✓	✓	✓	✓	
Uno T	✓	✓	✓	✓	✓	
Duo M	✓	✓	✓	✓	✓	✓
Duo T	✓	✓	✓	✓	✓	✓

5.1.1. *Models Easy M / Easy T*
Electronic panel for the control of a single-phase (Easy M) or 3-phase (Easy T) pump.
It has two auxiliary inputs:
- Start-stop by pressure/float switch.
- Enable-disable by low level.

It can operate in mode 2 and mode 6.

5.1.2. *Models Uno M / Uno T*
Electronic panel for the control of a single-phase (Uno M) or three-phase (Uno T) pump. It is provided with:
- 4 auxiliary inputs for level probes or pressure/ float switches.
- Input for a 4-20 mA pressure transducer.
- Volt-free contact output to monitor alarms.

It can operate in mode 1, 2, 3, 4, 5 and 6.

5.1.3. *Models Duo M / Duo T*
Electronic panel for the control of two single-phase (Duo M) or three-phase (Duo T) pumps. They can operate in cascade with alternation (duty-assist), in pure alternation (duty-standby) or independently. They are provided with:
- 4 auxiliary inputs for level probes or pressure/ flow switches.
- Input for 4-20 mA pressure transducer.
- Volt-free contact output to monitor alarms.

They can operate in mode 1, 2, 3, 4 and 5.

5.2. Operating modes

In the second step of the CONFIGURATION MODE is selected the operation mode beetween 6 options:

Model	Possible operation modes					
	1	2	3	4	5	6
Easy M	x	x		x	x	x
Easy T	x	x		x	x	x
Uno M	x	x	x	x	x	x
Uno T	x	x	x	x	x	x
Duo M	x	x	x	x	x	
Duo T	x	x	x	x	x	

5.2.1. Mode 1 (probe mode or simultaneous stop mode)

Drainage applications. The pump/pumps, once activated by their probe, remains running until the STOP probe disconnects them (simultaneously in the case of two pumps) without activating the low level alarm (A21). Optionally, it can be installed a high-level alarm probe (overflow-A20).

5.2.2. Mode 2 (flow switch mode or sequential stop mode)

In this mode it must permanently enabled the ***minimum level*** input by means of a jumper and the pump/pumps operate controlled by their float or pressure switch. Therefore this mode is valid for drainage or pressurization systems for individual pumps or systems of two pumps.

It is also possible to use the minimum input to add redundant protection against dry-run operation (A21). There is the possibility of installing a maximum level alarm float (overflow-A20.

5.2.3. Mode 3 (pressure transmitter mode)

Non available in Easy models.

In this mode, a 4-20 mA pressure transmitter is connected to the HUB electronic board, working with pressure instead of levels. The minimum level input must be permanently enabled by means of a jumper.

5.2.4. Mode 4 (filling mode with flow switches)

To fill a tank, the floats act in reverse logic to mode 2. When the level of the transfer tank or tank drops, the pump or pumps located in the suction tank or well, are started. The pump stops when the float switch linked to each pump in the transfer tank reaches the maximum level, in the case of two pumps they are stopped in cascade.

It can be installed a minimum level float switch in the suction tank to prevent against dry-run operation (A21). There is also the possibility of mounting a float switch in the transfer tank to activate an overflow alarm (A20).

5.2.5. Mode 5 (filling mode with probes)

To fill a tank, the probes act in reverse logic to mode 1. When the level of the transfer tank or tank drops, the pump or pumps, located in the suction tank or well, are started. The pump stops when the transfer tank reaches a maximum level, in case of two pumps they are sequentially stopped.

It can be installed a minimum level float switch in the suction tank to prevent against dry-run operation (A21).

5.2.6. Mode 6 (timed mode)

Suitable for a single pump.

In this mode, once the pump is started by order of the START probe, it will stop when:

- After a previously set time, in minutes, on the CONFIGURATION MENU (**t01-t99**).
- After a time recorded in memory and decreased by 10% when is selected "automatic learning" in the SETUP MENU (**tAu**).
  In this case is necessary a first self-learning operation cycle.
- After detecting a current consumption below the nominal, regardless of time when is selected in the CONFIGURATION MENU (**t00)**. A01 alarm is not activated.

6. TECHNICAL CHARACTERISTICS.

CHARACTERISTICS/MODELS	Easy M Uno M Duo M	Easy T Uno T Duo T
Max. power of the pump	2,2 kW	5,5 kW
Power supply	~1 x 110 Vac ~1 x 230 Vac	~3 x 220 Vac ~3 x 230 Vac ~3 x 380 Vac ~3 x 400 Vac ~3 x 440 Vac
Frequency	50/60Hz	
Max. current intensity	16A cos fi ≥ 0.6	10A cos fi ≥ 0.8
Environment T° range	0T50 °C	
IP rating	IP65*	

(*) In case of outdoor mounting it is essential to use a cover in order to avoid direct exposure to solar radiation and rain.

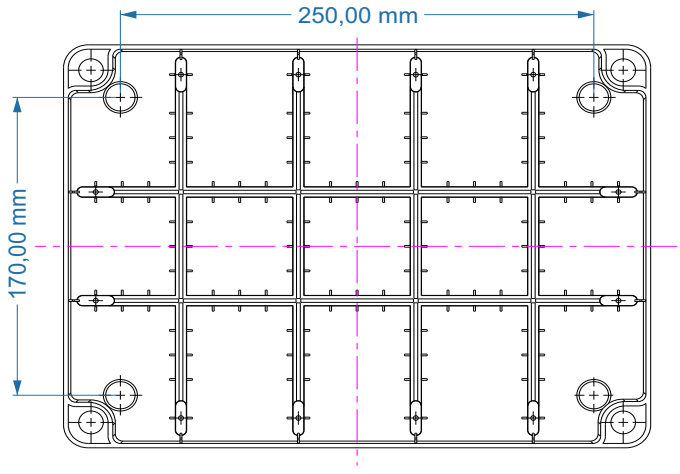
7. INSTALLATION

7.1 Location and assembly

Before installing this device, the following requirements must be considered:

- Place it away from possible flooding.
- The environment temperature must be within the established limits.
- It should be located away from direct solar radiation and rain.
- Avoid access to childs and/or people with diminished mental faculties.

For wall mounting assembly, the holes indicated in the drawing must be drilled with a drilling machine:



The hole should be clean and free of burrs. Use the provided screws and gaskets in order to keep the IP rating.

7.2 Electrical connections

⚠ Electrical connections must be performed by qualified technicians in compliance with regulations of each country. Before doing manipulations inside the device, it must be disconnected from the electric supply.
Wrong connections could damage the electronic circuits.
The manufacturer declines all responsability in damages caused by wrong connections.

7.2.1 Main connection.
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 be disconnected during dismantling.

Single-phase models (see 14.1)
Check if power supply is between 110-230V for single-phase supplied models (Easy M, Uno M and Duo M).

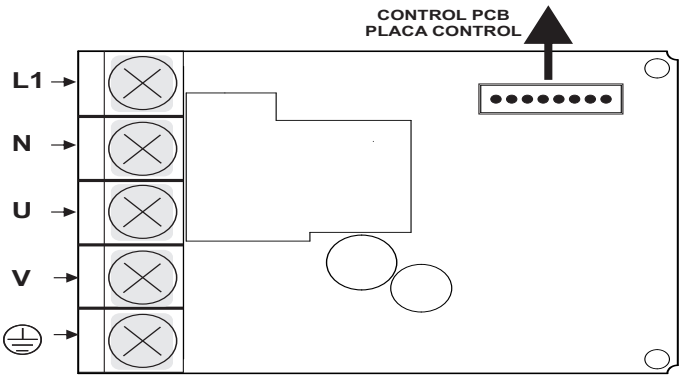
- Use cables H07RN-F 3G1 or 3G1,5 with section enough to the power installed. For cable lengths higher than 2 m it will be necessary to adapt the section taking in consideration the voltage drop.
- Do the pump connection to U, V and ⏚ (in case of motors with buil-in capacitor).
- Do the pump connection to U, V, C-out and ⏚ (in case of motors with external capacitor).
- Proceed in the same way for motor 2 on the Duo M model.
- Do the power supply connection to L1, L2 and ⏚.

3-phase models (see 14.2)
Check if power supply is between 220-400V for 3-phase supplied models (Easy T, Uno T and Duo T).

- Use cables H07RN-F 4G1,5. For cable lengths higher than 2 m it will be necessary to adapt the section taking in consideration the voltage drop.
- Do the pump connection to U, V, W and ⏚.
- Do the pump 2 connection to U, V, W and ⏚ at motor 2 in modelo Duo T.
- Do the power supply connection to L1, L2, L3 and ⏚.

7.2.2. Auxiliary connections

7.2.2.1 Control circuit board.
The control circuit board has two connectors for contact type inputs (float or pressure switches). In ADVANCED MENU (see 11) they can be unabled or disabled. In the present manual the inputs of the control circuit board are called ***LOCAL INPUTS (P_L)***.



Tensión máxima en terminales 24 V DC

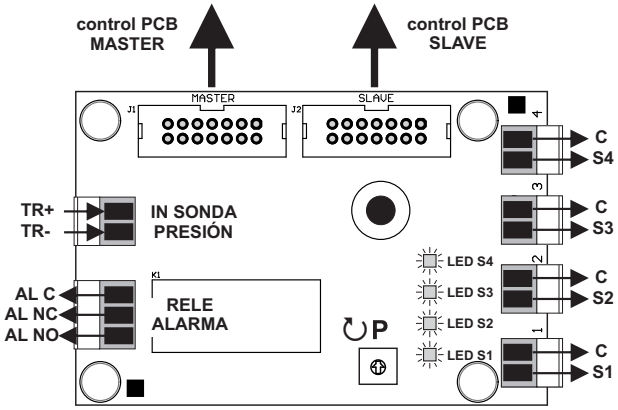
Function	Ref.		Sensing element
Mínima (minimum)	A1	A2	Microswitch (float switch/pressure switch)
Marcha / Paro (Start/stop)	A3	A4	Microswitch (float switch/pressure switch)

7.2.2.2 "HUB" circuit board.
The "HUB" circuit board has the following main functions/features:

- It is necessary to manage the communication of two pumps (MASTER and SLAVE connectors).
- It has a 4-20 mA input for operation with a pressure transducer in Mode 3 (TR+TR-).
- It is necessary for operation with electronic probes (Mode 1 or Mode 4).
- It has 4 double connectors for electronic probes or contacts (C-S1 ... C-S4). In the ADVANCED PROGRAMMING MENU (see 11) they can be disabled or enabled and are called ***REMOTE PROBES (P_r)***.
- It has a 3-ways connector for alarm output (AL C - AL NC - AL NO). The device has a volt free contact for the activation of different types of alarm signals when it detects a fault.
  - Maximum switching voltage: 250VAC/220VDC.
  - Maximum switching power: 62.5VA/30W.
- It has a potentiometer (P) to adjust the sensitivity of the probes.
- It includes leds indicating the operation of the probes (LED S1 ... LED S4) and a led indicating the status of the microcontroller (LED S5).

Function	Ref.			Sensing element
Pressure transmitter input	TR+	TR -		Pressure transmitter 4-20 mA
Alarms output	AL C	AL NC	AL NO	Buzzer Accoustic signal Pilot light
Minimum level (MIN)	C (*)	S1		Electronic probe Microswitch (flow switch)
Pump 1 (P1)	C (*)	S2		Electronic probe Microswitch (flowswitch/pressure switch)
Pump 2 (P2)	C (*)	S3		Electronic probe Microswitch (flowswitch/pressure switch)
Alarm max level (overflow)	C (*)	S4		Electronic probe Microswitch (flow switch)

(*) C is the common for the electronic probes, it can be connected in any of the four connectors.



7.2.2.3 Power electronic circuit for 1-phase models.

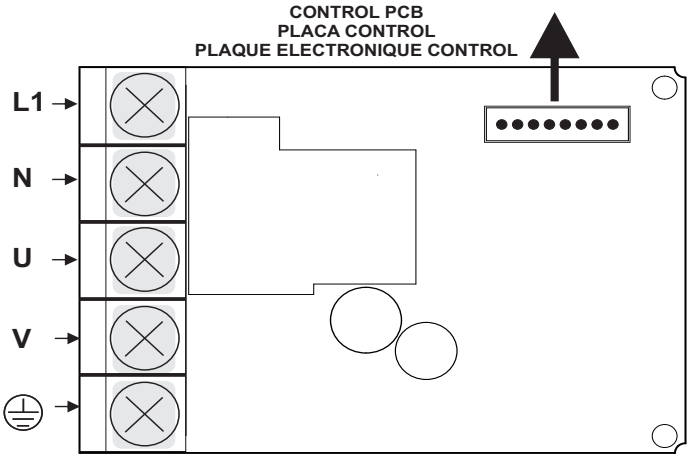
These circuits has been already cabled in factory, this section is only useful in case of assembling an spare circuit board.

It must be verified the power supply to be between 110-230V for single-phase models (Easy M, Uno M and Duo M).

Carry out the connection according to the following diagram.

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 be disconnected during the dismantling. The earth conductors connections are compulsory!

Function	Ref.			Voltage range
Power supply	L1	N	⏚	110-230 V
Pump	U	V	⏚	110-230 V



7.2.2.4 Power electronic circuit for 3-phase models.

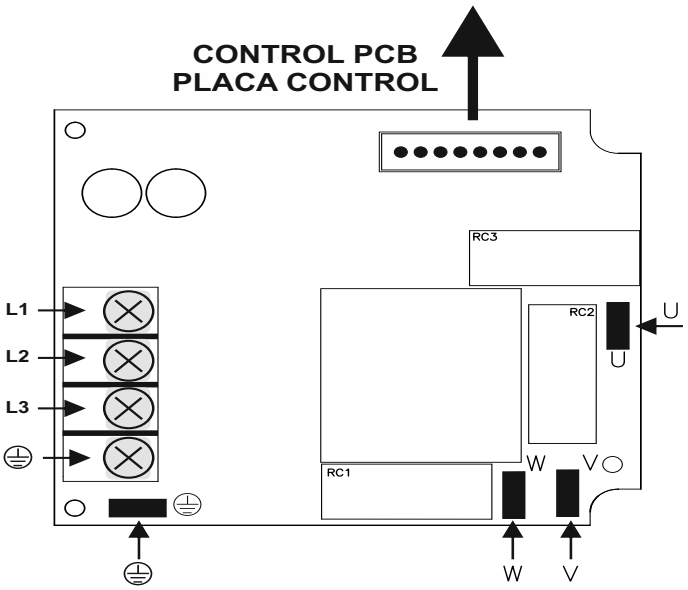
These circuits has been already cabled in factory, this section is only useful in case of assembling an spare circuit board.

It must be verified the power supply to be between 220-400V for 3-phase models (Easy T, Uno T and Duo T).

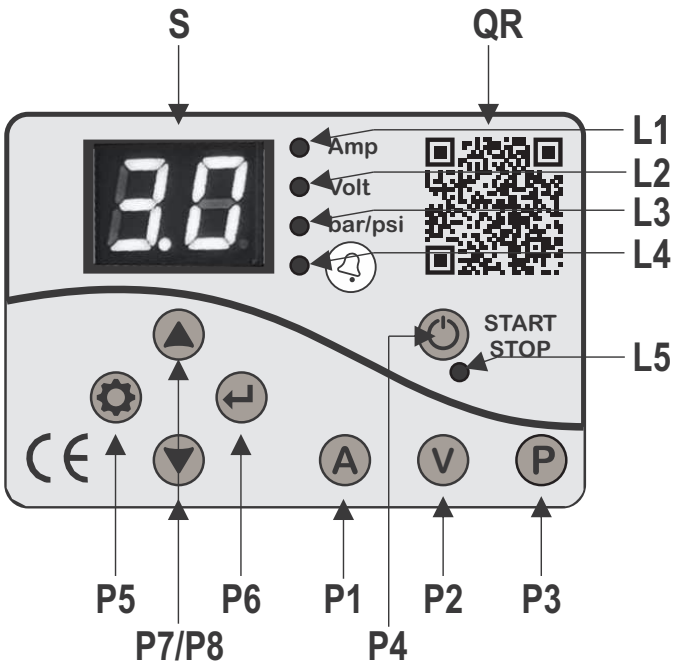
Carry out the connection according to the following diagram.

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 be disconnected during the dismantling. The earth conductors connections are compulsory!

Function	Ref.				Voltage range
Power suply	L1	L2	L3	⏚	220-400 V
Pump	U	V	W	⏚	220-400 V



8. CONTROL PANEL



- **QR Code** is a direct access to the instructions manual.

- LED indicator lights:

Following table summarizes the meaning of the LED lights, where:

- O means LED light lit.
- ((O)) means blinking LED.

REF.	LEDS	STATE	MEANING
L1	Amp	O	On the screen is displayed the instantaneous current consumption in Amps or, when the screen is flashing, the user is configuring the nominal current of the pump.
L2	Volt	O	On the screen is displayed the instantaneous voltage in Volts or, if the screen is flashing, the user is configuring the nominal voltage to be able to detect undervoltage and overvoltage alarms.
L3	bar/psi	O	Is displayed on screen instantaneous pressure in bar or psi. Mode 3.
L4	alarm	O	Final alarm. Need of manual intervention to be restored.
		((O))	Active alarm with automatic restore system in process.
L5	start stop	O	Pump operating manual mode.
		((O))	Pump operating auto mode.

- **Display** (**S**) with 3 digits that can show:

- State:
  - *OFF*: inactive.
  - *ON*: active and with nominal current already configured.
  - *ON + blinking segment*: pump on.
  - *XX.X*: instantaneous pressure (bar or psi) only in operation mode 3.
- Instantaneous current drawn by the pump in Amps after short press on button A (**P1**).
- Instantaneous voltage after short press on button V (**P2**).
- Configuration parameters of the PROGRAMMATION MENU.
- Alarm code.

- Push-buttons:

The following table summarizes the meaning and operation of the push-buttons.

REF.	SYMB.	PULSATION	ACTION
P1	A	click!	On the screen is displayed the instantaneous current consumed. If we are already watching it, we return to pressure visualization.
		3″	Configuration of the rated current of the pump.
P2	V	click!	On the screen is displayed the voltage supplied.
		3″	Configuration of the installation voltage, to be able to detect low voltage and overvoltage alarms. Using the arrows will be selected between the range of values. [OFF, 110, 220, 230, 380, 400]V. Confirm with ↵ .
P3	P	3″	To switch pressure units from bar to PSI and vice versa. Hold for 3 seconds, select with the arrows and confirm with ↵ .
P4	⏻	click!	It switches from state ON to OFF and viceversa.
		3″	Manual start: it will start the pump and it will keep running until the end of the pulsation. WARNING: in this condition are not considered external activations of start/stop.
P5	⚙	3″	To enter the PROGRAMMING MENU.
		click!	Once inside the PROGRAMMING MENU it allows to save and quit at any level of the configuration sequence.
P6	↵	click!	To confirm the value of the different programming parameters as well as restore alarms on the screen.
P7	▲	click!	To increase and decrease the value of the different parameters.
P8	▼		

9. STARTUP

Before starting this device, read the previous sections, especially “Operating modes” and “Electrical connections”.
Follow this basic commissioning steps:

1. Turn on the power supply using the integrated MCB.

2. Set the rated current of each pump:
- Hold **A** for 3 seconds.
- Screen will display the current value of intensity blinkng and **A led-light** will shine.
- By mean of ▲ and ▼ will be adjusted the rated current indicated on the nameplate of the pump. See Note 1.
- Confirm with ↵ (**P6**).

3. Configuration of the installation voltage (optional). PANELMATIC is constantly reading the installation voltage but, it is necessary to set the desired value, in order to activate low-voltage and over-voltage alarms.
- Hold **V** for 3 seconds.
- Choose the value between the range [OFF, 110, 220, 230, 380, 400]V.
- Confirm with ↵ (**P6**).

4. Choose the operation MODE inside the BASIC PROGRAMMATION MENU (10). The unit is ready to be programmed. There are multiple adjustment options to be made through the basic and advanced programming menus. See the next chapter.

5. Finally, press the **START/STOP** push-button in order to start the unit.

Note 1: it is important to introduce exactly the rated current specified on the pump nameplate. If a new pump is installed, this process should be repeated.

Note 2: for 2 pumps models:
- A value in Amps will be set in both pumps.
- V and all the other parameters will be set in the master unit.

10. BASIC PROGRAMMATION MENU

- Hold ⚙ for 3 seconds.
- By mean of ▲ or ▼ values can be changed.
- Confirm with ↵ and go to next step.
- Save and quit the MENU, at any time, with ⚙.
- This is the parameters sequence (**in bold default values**):

TYPE		DESCRIPTION
MF1	MF5	Operation mode (see 5.2): - MF1: probe mode or simultaneous stop mode. - MF2: flow switch mode or sequential stop mode. - MF3: pressure transmitter mode. - MF4: filling mode with flow switches - MF5: filling mode with probes. - MF6: timed mode (only in stand-alone operation)

(*) When choosing P02 (2 pumps) the operation mode must be set only in the MASTER unit.

When choosing MF3 (pressure transmitter mode):
Non available on Easy models

It.	TYPE		DESCRIPTION	
3	1 (14.5)	16.0 (230)	Stop pressure (bar/psi).	**3.0 (43)**
4	0.5 (7)	15.5	Start pressure (bar/psi).	**1.0 (14.5)**
5	d0.5	d1.0	In case of 2-pumps set operation, it must be set a gap between start pressures (Pstart1-Pstart2) or stop pressures (Pstop1-Pstop2).	**d0.5**
6	ct0	ct9	Sets a time delay between 0 and 9 seconds to the start.	**ct0**
7	dt0	dt9	Sets a time delay between 0 and 9 seconds to the stop.	**dt0**
8	PSI	bar	Can be selected the pressure units displayed, bar or psi.	**bar**
9	t10	t16	Can be choosen the pressur transmitter range, 0-10 bar or 0-16 bar.	**t10**
10	P0.0	P16	With P_xx is activated a minimum operating pressure. Under this pressure it trips alarm (A11).	**P0.0**
11	t01	t99	Time, in seconds, under minimal pressure necessary to activate A11.	**t20**
12	rs0	rs1	rs0: end. rs1: Restore factory settings (rs1).	**rs1**

In case of having selected MF6 -timed mode- (ver 5.2.6):

It.	TYPE			DESCRIPTION
3	**tAu**	t00	t99	tAu: auto learning. The pump will start at the end of the configuration process and after pressing **START/STOP.** In the first operation cycle it will stop by reading the absorbed current. It will save the elapsed time in memory. From this moment, this time will be applied, decreased by 10%, for the automatic stop of the pump. txx: time in minutes that the pump will keep running. t00: pump will stop when detecting low current consumption but it will not trip A01 ALARM.
4	**rs0**		rs1	rs0: Exit saving data. rs1: Restore factory settings (rs1).

These operation mode applies only for single pump.

When choosing MF1, MF2 and MF4:

It.	TYPE		DESCRIPTION
3	**rs0**	rs1	rs0: final. rs1: restore factory settings.

11. ADVANCED PROGRAMMATION MENU

- Hold ⚙ + ↵ for 3 seconds.
- By mean of ▲ or ▼ values can be changed.
- Confirm with ↵ and go to next step.
- Save and quit the MENU, at any time, with ⚙.
- This is the parameters sequence (**in bold default values**):

		REACCIÓN DEL SISTEMA
P01	P02	P01: stand-alone operation P02: 2-pumps set.
d_S	d_A	Only in case of P02: d_S: duty/stand-by operation. Pumps never run simultaneously. d_A: duty/assist operation with alternated starting sequence.
P_L	P_r	Select LOCAL INPUTS (P_L) or REMOTE PROBES (P_R). See 7.2.2.
AR0	AR1	Activation of the automatic restore system ART (Ar1) o disable (Ar0). See description (*)
n01	**n48**	In case of enabled ART, it can be set the number of restore attempts, between 1 and 48.
t05	**t20**	It can be set the span of the attempt between 10 and 40 seconds.
C10	C30	It can be set the overcurrent coefficient in %. This is the percentage above the rated current that is considered an overcurrent. Factory setting is a 20% (**C20**).
H00	H99	This is the setting of the "continuous operation" timer, very useful, for example, to prevent flooding. The pump stops when the previously configured continuous operation time (in minutes) is exceeded, showing the alarm code A30 on the screen. Off (H00), 1 min (H01), ... 24 min (H24).
rs0	rs1	Restore factory setting.

(*) *ART FUNCTION (Automatic Reset Test)*
When the device has stopped the pump by the intervention of the dry-running protection system (A01 ALARM) or minium pressure alarm (A11), the ART tries, after 5 minutes, to start AGAIN the pump in order to restore the water supply.
After this first attempt, are performed consecutive attempts every 30 minutes.
This function can be activated in the ADVANCED MENU. It can also be set the number of attempts (1-48) and the span of the attempt (10-40 seconds).

12. WARNINGS AND ALARMS

CODE	LED	DESCRIPTION
A01	O / ((O))	DRY RUN
A02	O / ((O))	OVERCURRENT
A03	O	PUMP DISCONNECTION
A04	((O))	FAST CYCLING
A05	O	DAMAGED PRESSURE TRANSMITTER
A08	O	OVER VOLTAGE
A09	O	LOW VOLTAGE
A11	((O))	MINIMUM PRESSURE (only in Mode 3)
A20	((O))	OVERFLOW
A21	O	LOW LEVEL (non-available in Easy models)
A27	((O))	SHORTCIRCUIT / PHASE-LACK
A30	O	ANTI-FLOODING

12.1. Dry run (A01)

Description.
Pump operation without water has been detected due to consumption below the rated current of the pump.
When a dry run operation is detected with the Automatic Reset (ART) system activated, the ALARM led blinks until the reset attempts are finished. If the problem persists, ALARM led light remains lit, and the system must be manually restored using ↵.

Cause	Solution
It has been set a value of current intensity higher than the real current consumption of the pump.	Modify the set value. See step 9.
There is no water.	Analyze possible causes.

12.2. Overcurrent (A02)

Description.
A02 alarm trips when the consumption limit **CXX,** established in the ADVANCED PROGRAMMING MENU, is exceeded. 4 automatic reset attempts are made (blinking ALARM led) before proceeding to the definitive alarm (ALARM led light will remain lit).
Normal operation can be restored manually using ↵.

Cause	Solution
It has been set a value of current intensity higher than the real current consumption of the pump.	Modify the set value. See step 9.
Pump´s motor is damaged.	Consult with the pump manufacturer.

12.3. Pump disconnection (A03)

Description.
The system is in "pump run" condition but no consumption is detected. The display will show "A03" but Panelmatic will continue to provide voltage to the pump, in the case the float/buoy integrated closes the circuit again.

Cause	Solution
The pump is not connected.	Analyze the power supply
The pump has an integrated float and it has opened the circuit.	Check pump operation

12.5. Damaged pressure transducer (A05)

Description.
Only in operation mode 3. Is displayed A05, is stopped the operation and ALARM led lights up .

Cause	Solution
The pressure transducer has not been connected or has been wrongly connected.	RVerify connections according to 7.2.2.2
Damaged pressure transmitter	Replace it.

12.6. Overvoltage (A08)

Description.
Overvoltage alarm occurs if the voltage value, previously set by the user, is exceeded by 10% for 10 seconds. The device is locked and will automatically reset when the voltage returns to the selected voltage range.
The activation of this alarm is optional, by default it is OFF.
Normal operation can be restored manually using ↵.

Cause	Solution
It has been selected a wrong value of voltage.	Set the right voltage within the range [OFF, 110, 220, 230, 380, 400]V. Chapter 9.
Problems of power supply.	Consult supplier company.

12.7. Undervoltage (A09)

Description.
Low-voltage alarm occurs if a voltage is recorded 20% below the voltage previously set by the user for 10 seconds. The device is locked and will automatically reset when the voltage returns to the selected voltage range.
The activation of this alarm is optional, by default it is OFF
El funcionamiento normal también puede ser restaurado manualmente pulsando ↵.

Cause	Solution
Has been choosen a wrong value of voltage.	Set the right value within the range [OFF, 110, 220, 230, 380, 400]V. chapter 9.
Wrong cable section	The greater the cable length, the section must be increased to avoid voltage drops. Increase the section appropriately.
Problems with the power supply	Check with the supplier.

12.8. Low pressure (A11)

Description.
In Mode 3 inside the CONFIGURATION MENU can be set a minimum working pressure, below which and for a pre-set time, the alarm is activated (A11).
The minimum pressure allows to detectdry-run operation or pumps working out of curve.
This alarm is automatically reset as soon as the pressure exceeds the limit value or by pressing ↵.

Cause	Solution
Broken pipes Pump operating out of its curve. lack of water on suction side.	Check hydraulic net.
Wrong configuration.	Check in BASIC PROGRAMMATION MENU values PX.X and TX.X.

12.9. Overflow (A20)

Description.
Triggered when an overflow occurs during draining. The pump/pumps will continue to run.
It automatically disappears if the water level drops.

Cause	Solution
Not enough power of drainage pumps.	Install higher power pumps.
Wrong operation of the float switch or the level probe.	Check the probe or float connected to S4 of the HUB board.

12.10. Low level (A21)

Description.
It is activated when the level drops below the minimum level float switch, provided it is installed. It will act just before the A01 alarm, preventing the pump from working without water. It disappears automatically if the water level rises.

Cause	Solution
Drainage group with stop float switch and redundant minimum level float switch. Malfunction of the stop float switch that has not been activated.	Check the stop float switch.
Booster sets with redundant pressure switch and minimum float switch for dry-running protection. It has triggered because the tank is empty.	The alarm has worked correctly. Check the reason because the tank or suction tank does not have water,
Booster applications with minimum level float switch for redundant dry-running protection. It is activated because the tank is empty.	The alarm has worked correctly. Check the reason because the tank or suction tank does not have water

12.11. Shortcircuit or phase-lack (A27)

Description.
This alarm has been activated because a very high electrical consumption has been detected, caused by a short circuit or the lack phase. Alarm A27 will be activated and the system will attempt up to 4 reset attempts.

Cause	Solution
Phase-lack	Check the 3 power supply phases and the connection to the power supply terminals.
Motor winding communicated	Check the motor winding.

12.12. Continuous operation (A30)

Description.
The alarm against uninterrupted operation has been activated because the pump has been running continuously for a period of time equal to the limit set in the ADVANCED MENU. In our factory settings this alarm is disabled (H00).
This alarm is very useful to prevent flooding or other applications.
It is manually reset by pressing ↵

L

Cause	Solution
Filling a large capacity tank or a swimming pool.	Deactivate the alarm in the ADVANCED MENU.
Wrong configuration.	Verify parameyter HXX in the ADVANCED MENU.

13. EC DECLARATION OF CONFORMITY

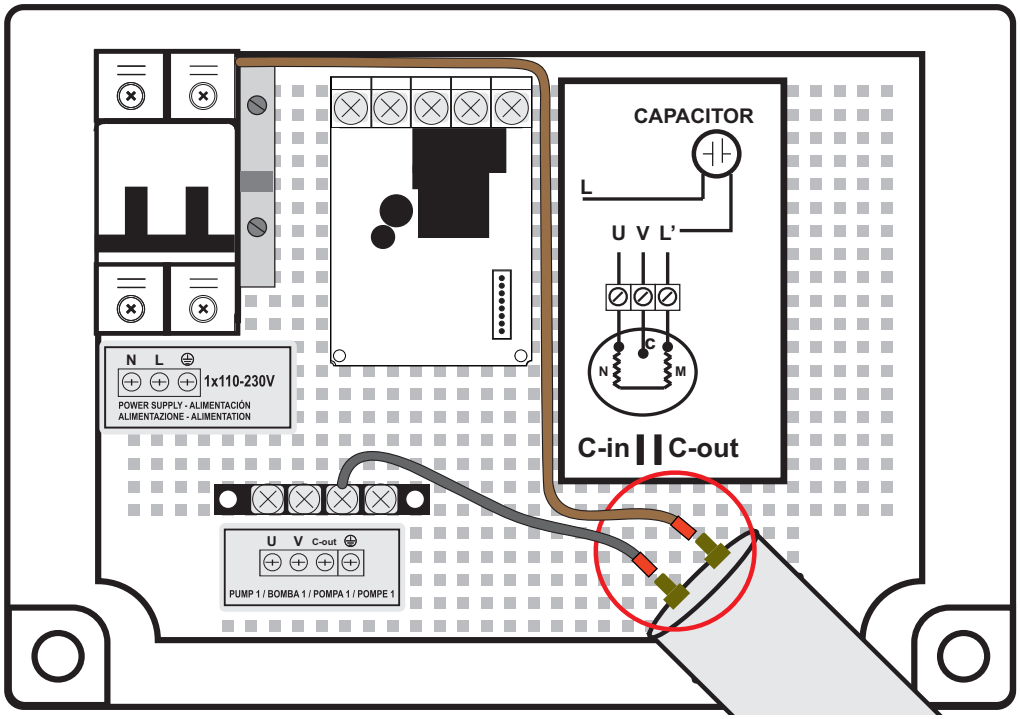
14. CONNECTION DIAGRAM

14.1. Single-phase pumps connection.

D1.1. Single phase pump with capacitor and without HUB electronic board.

- Connect the power supply to L and N through a circuit breaker and earth to a differential switch.
- Connect the pump to U (blue-neutral), V (black-line) and earth.
- Connect both terminals of the capacitor to the fast-on connectors C-in (brown) and C-out (grey) located in the capacitor housing.

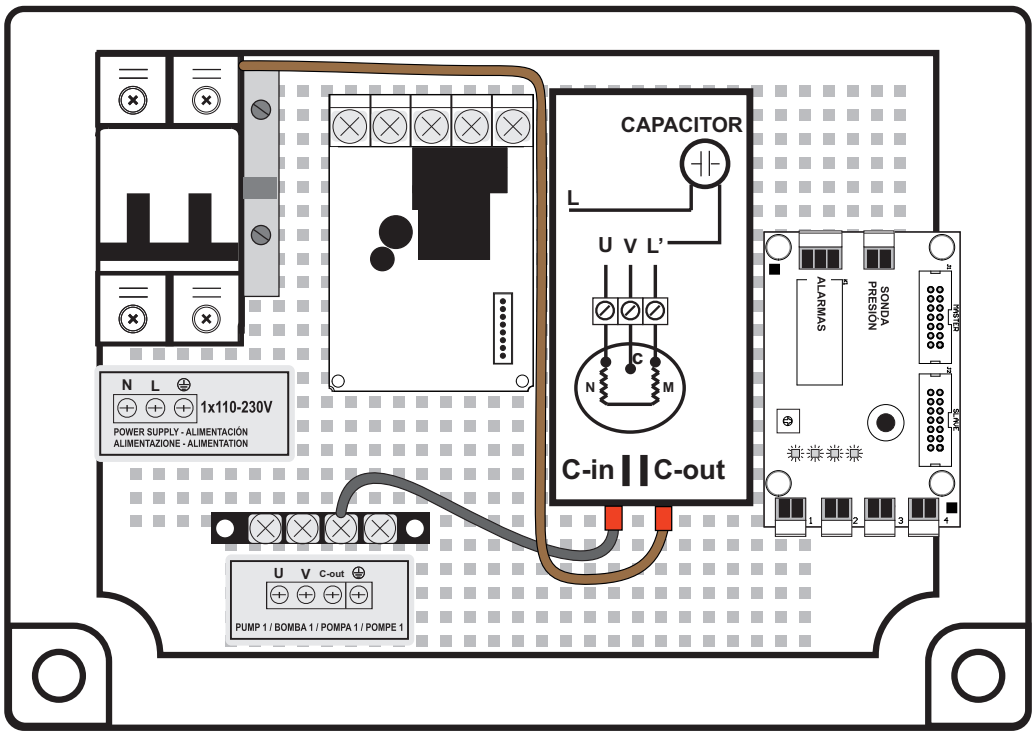
Connections of the float or pressure switches at the control board will be done according to chapter 7.2.2.



D1.2. Single-phase pump with capacitor and with HUB electronic board.

- Connect the power supply to L and N through the MCB and earth to the differential switch.
- Connect the pump to U (blue-neutral), V (black-line), C-out (grey) and earth.
- Connect both terminals of the capacitor to the fast-on connectors C-in (brown) and C-out (grey) located in the capacitor housing.

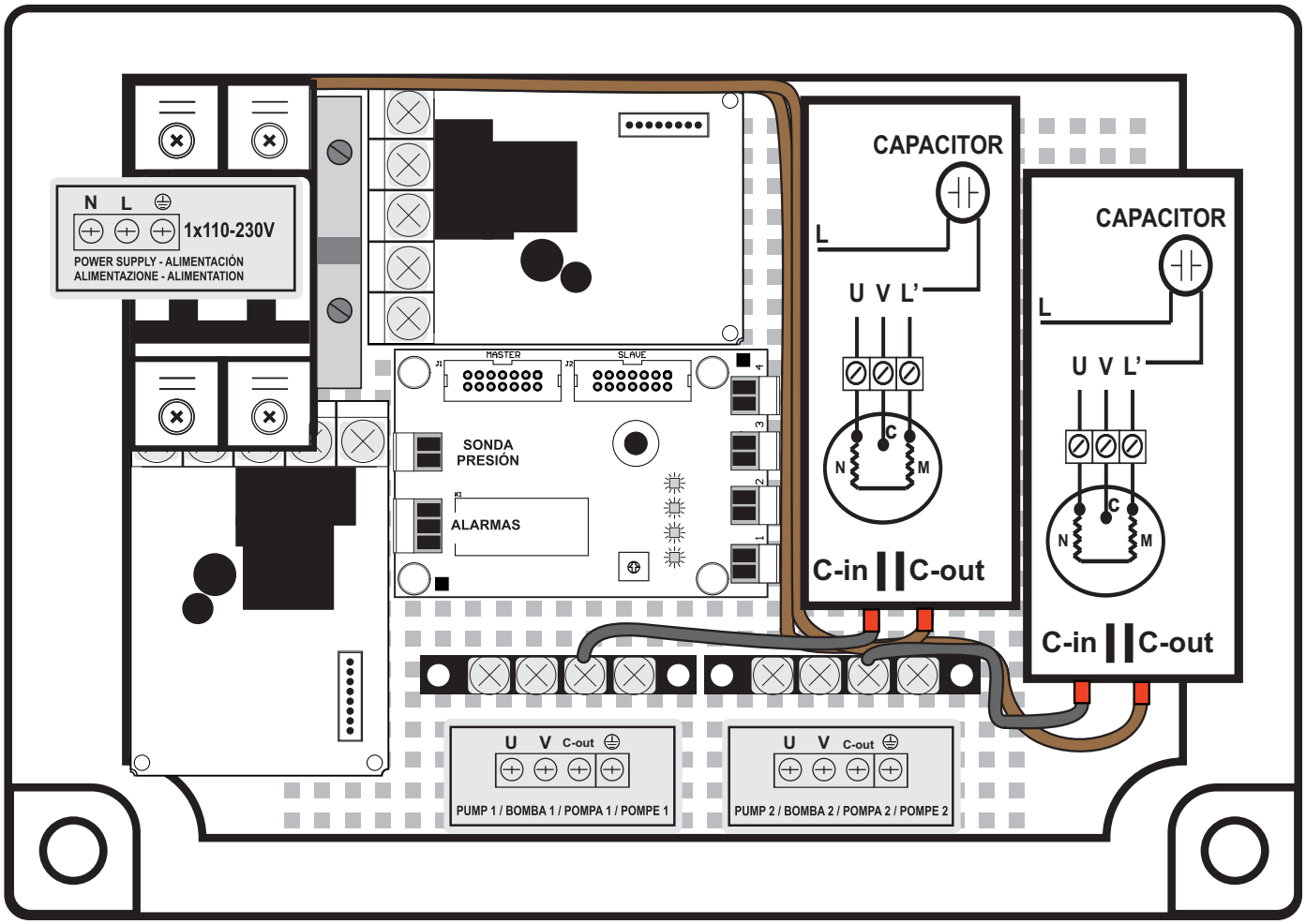
Connections at the HUB electronic board will be done as indicated in chapter 7.2.2.



D1.3. Two single-phase pumps

- Connect the power supply to L and N through the MCB and earth to the differential switch.
- Connect the pumps to U (blue-neutral), V (black-line), C-out (grey) and earth.
- Connect both terminals of the capacitor to the fast-on connectors C-in (brown) and C-out (grey) located in the capacitors housings.

Connections at the HUB electronic board will be done as indicated in chapter 7.2.2.

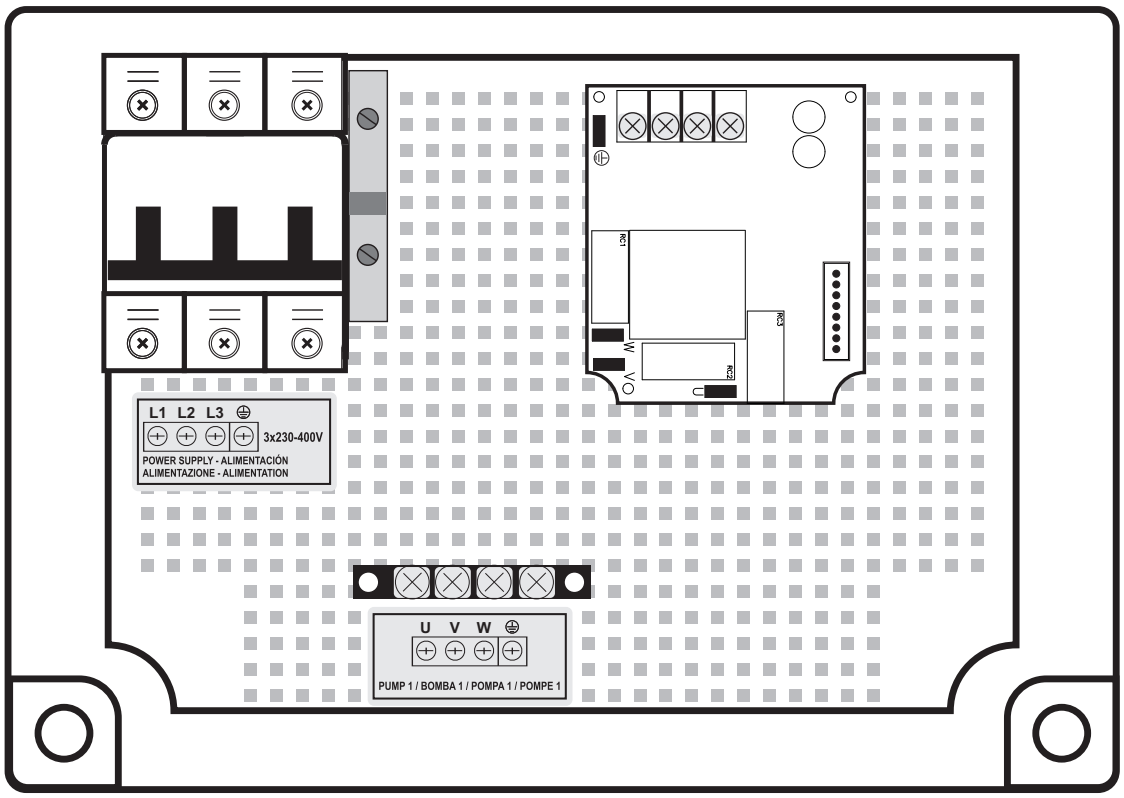


14.2. 3-phase pumps connections.

D2.1. 3-phase pump with or without HUB electronic board.

- Connect the power supply to L1, L2 and L3 through the MCB and earth to the differential switch.
- Connect the pump to U, V, W and earth.

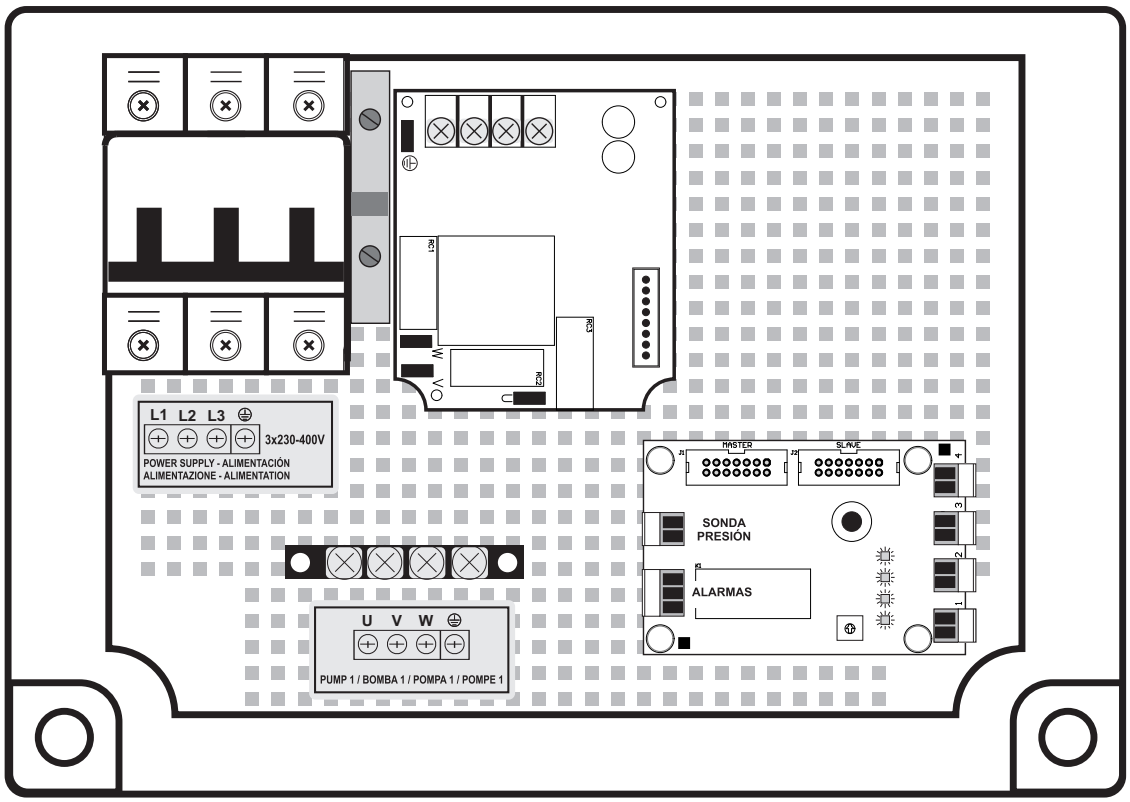
Connections of the float/pressure switches at the control board will be done according to chapter 7.2.2.



D2.2. 3-phase pump with HUB electronic board

- Connect the power supply to L1, L2 and L3 through the MCB and earth to the differential switch.
- Connect the pump to U, V, W and earth.

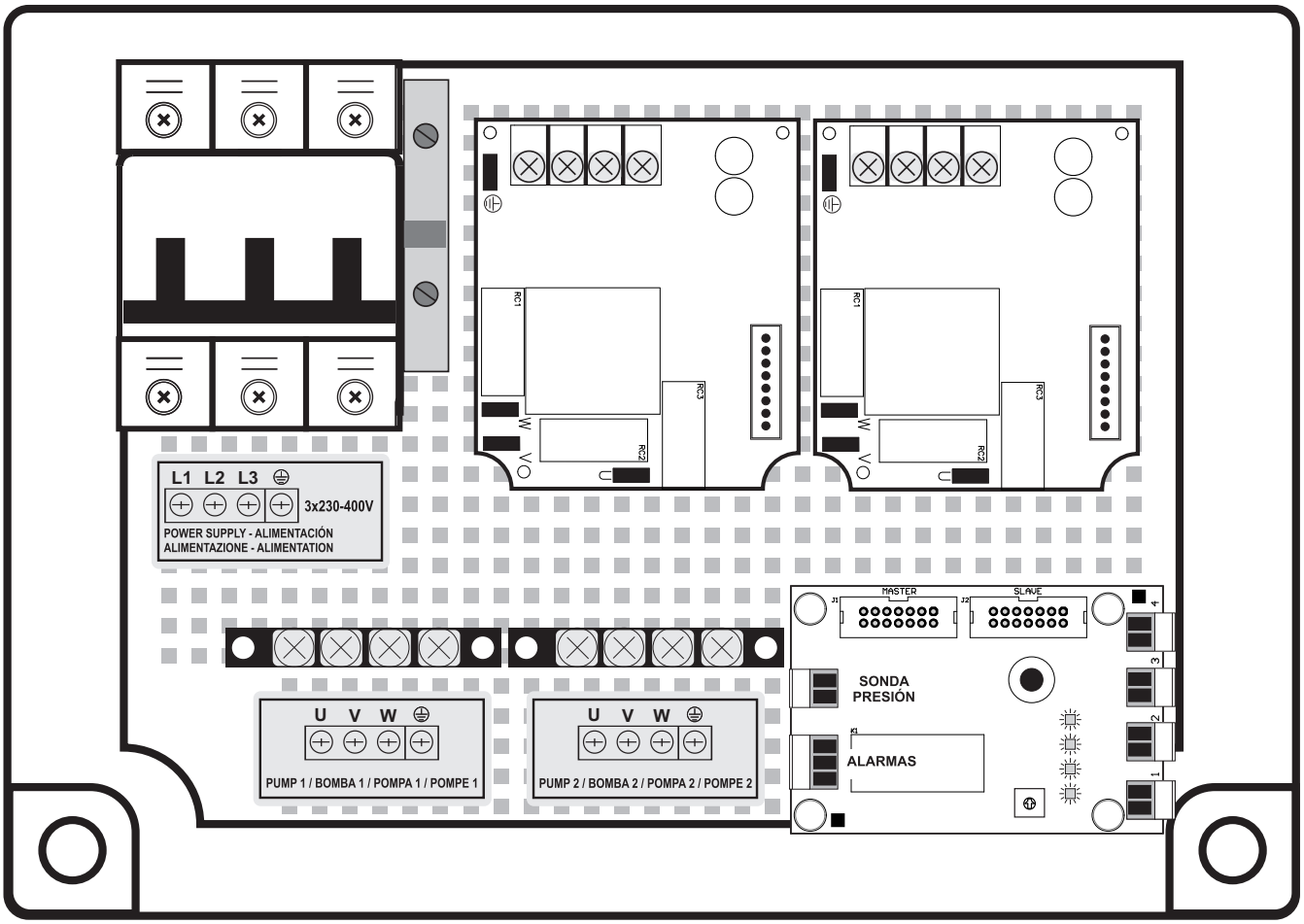
Connections at the HUB electronic board will be done as indicated in chapter 7.2.2.



D2.2. Two 3-phase pumps.

- Connect the power supply to L1, L2 and L3 through the MCB and earth to the differential switch.
- Connect the pump to U, V, W and earth.

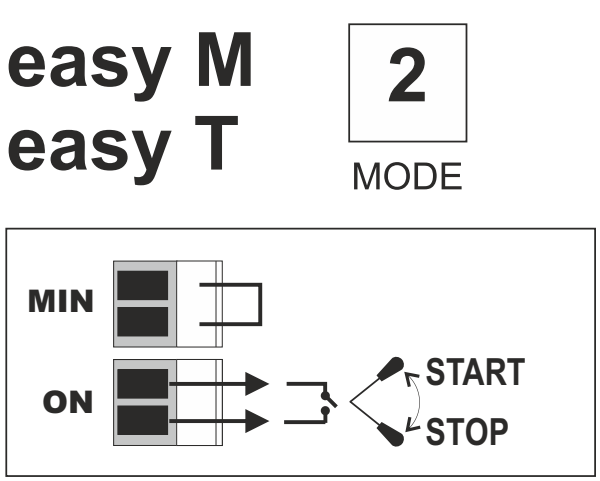
Connections to the HUB electronic board will be done according to chapter 7.2.2.

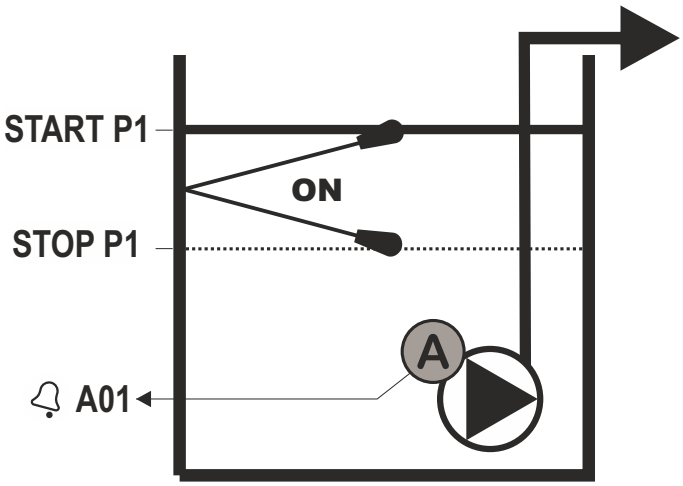


15. INSTALLATION DIAGRAMS.

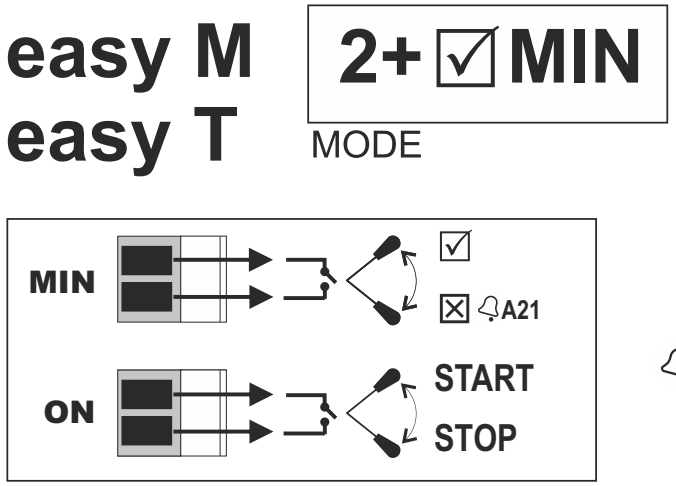
15.1. Examples of drainage applications.

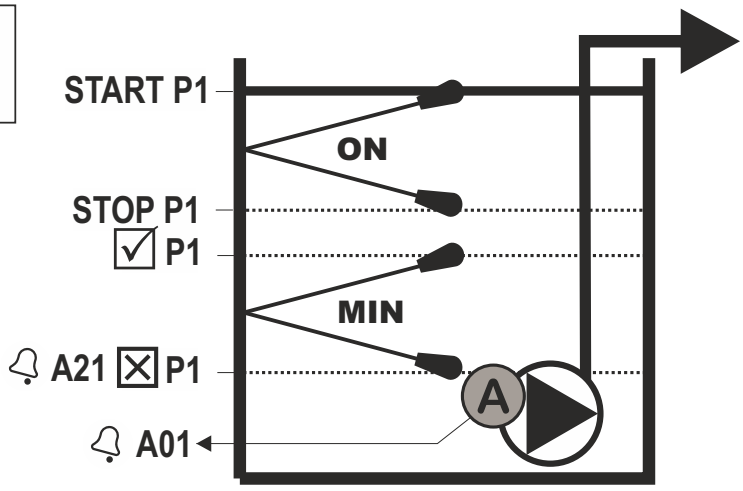
15.1.1. Start/stop by float switch and dry-run protection by instantaneous current reading.
The connections will be carried out on the control board, the MINIMUM connector must be jumpered.
Mode 2.



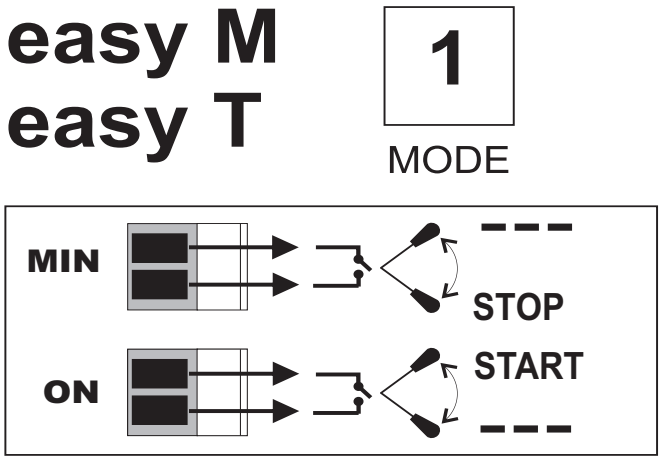


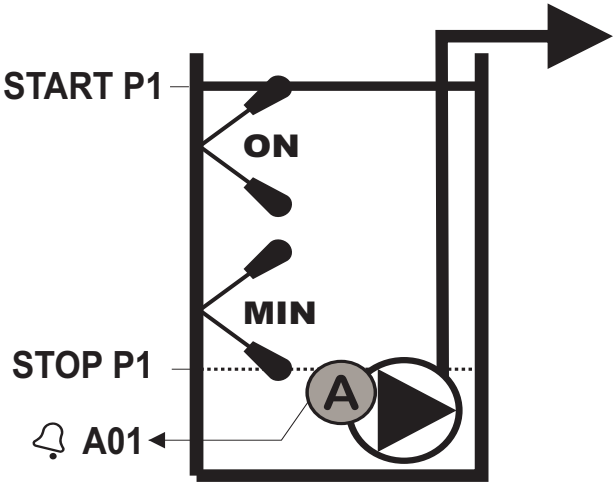
15.1.2. Start/stop by float switch and dry-run protection also by float switch. Redundant dry-run protection by instantaneous power reading. The connections will be carried out on the control board. **Mode 2.**





15.1.3. For narrow wells. Start and stop float switches.
The connections will be made on the control board. **Mode 1**.

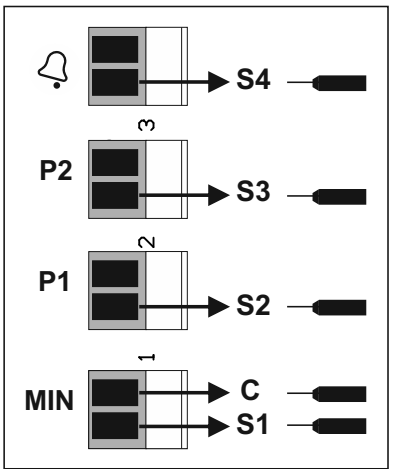


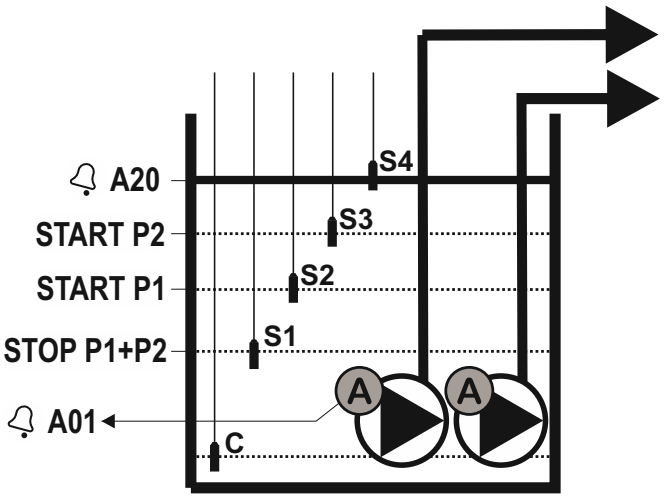


15.1.4. Drainage with probes, 1 or 2 pumps. Connetions in the HUB electronic board. **Mode 1.**

Duo M
Duo T

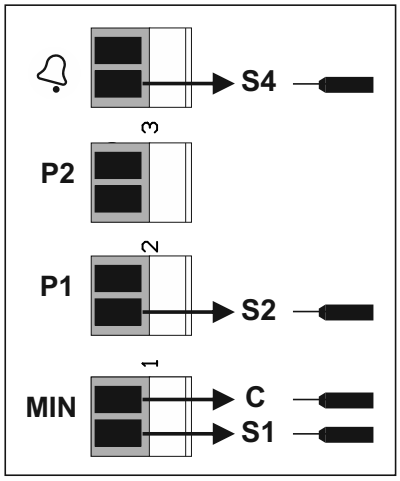
1
MODE

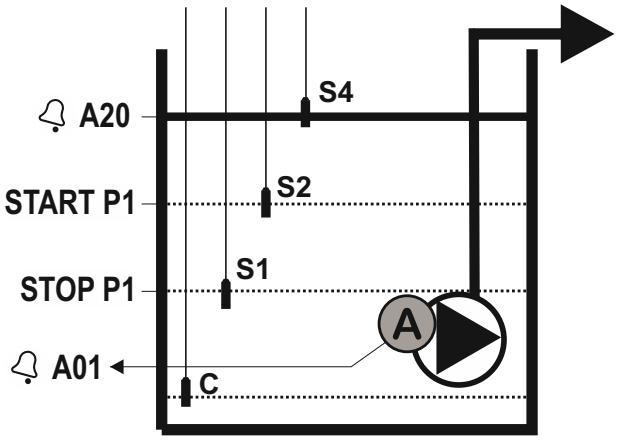




Uno M
Uno T

1
MODE



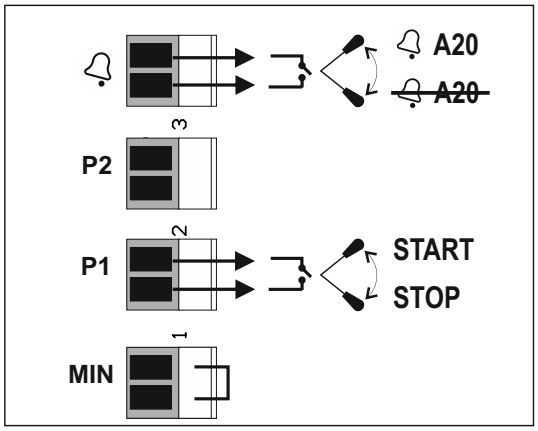


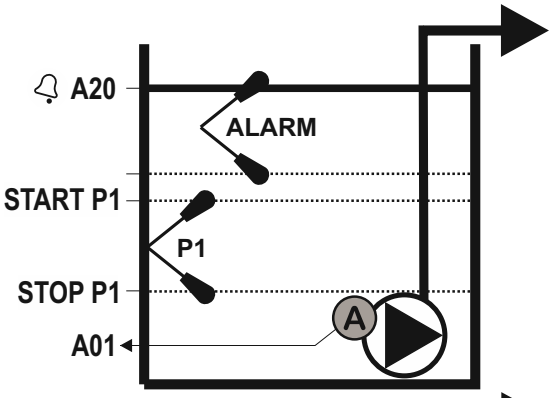
(*) C is the common terminal for the electronic probes. It can be connected in anyone of the connectors.

15.1.5. Drainage with float switches, 1 or 2 pumps. Connections on the HUB board. **Mode 2**.

Uno M
Uno T

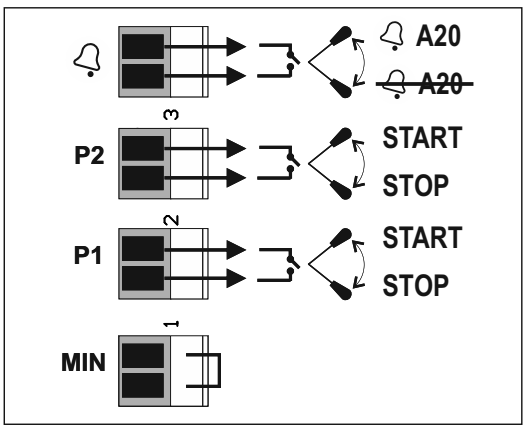
2
MODE

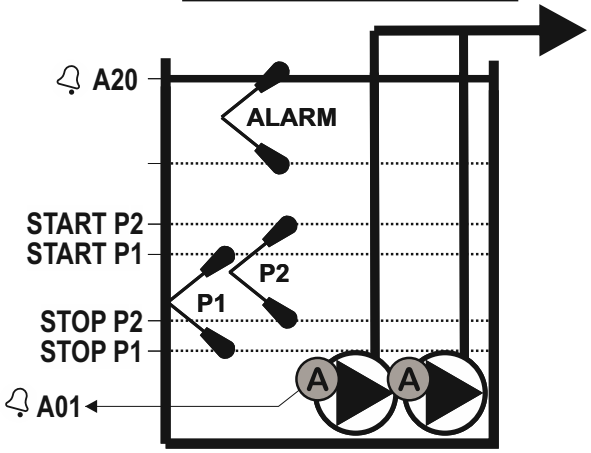




Duo M
Duo T

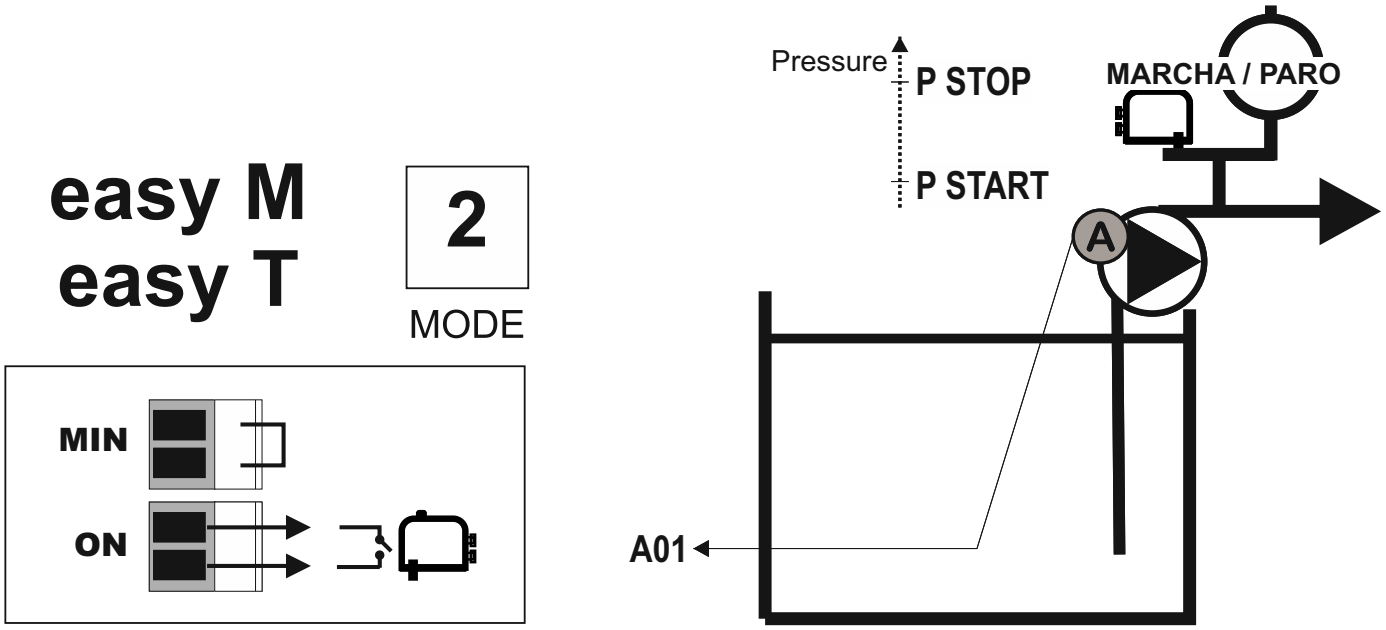
2
MODE



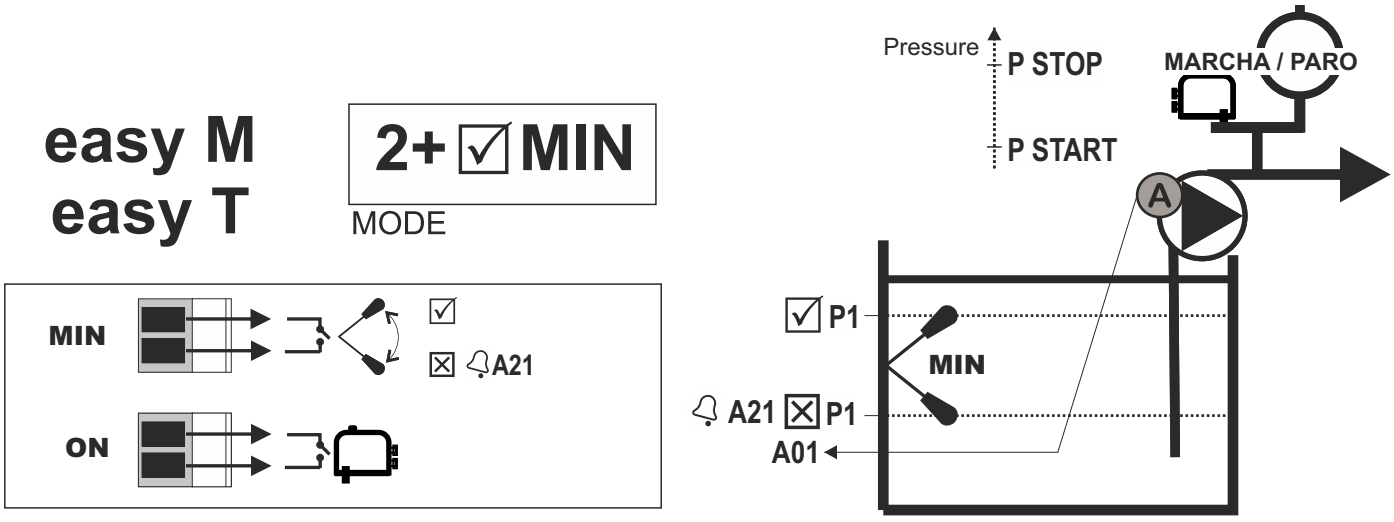


15.2. Examples of pressure booster systems with pressure switches.

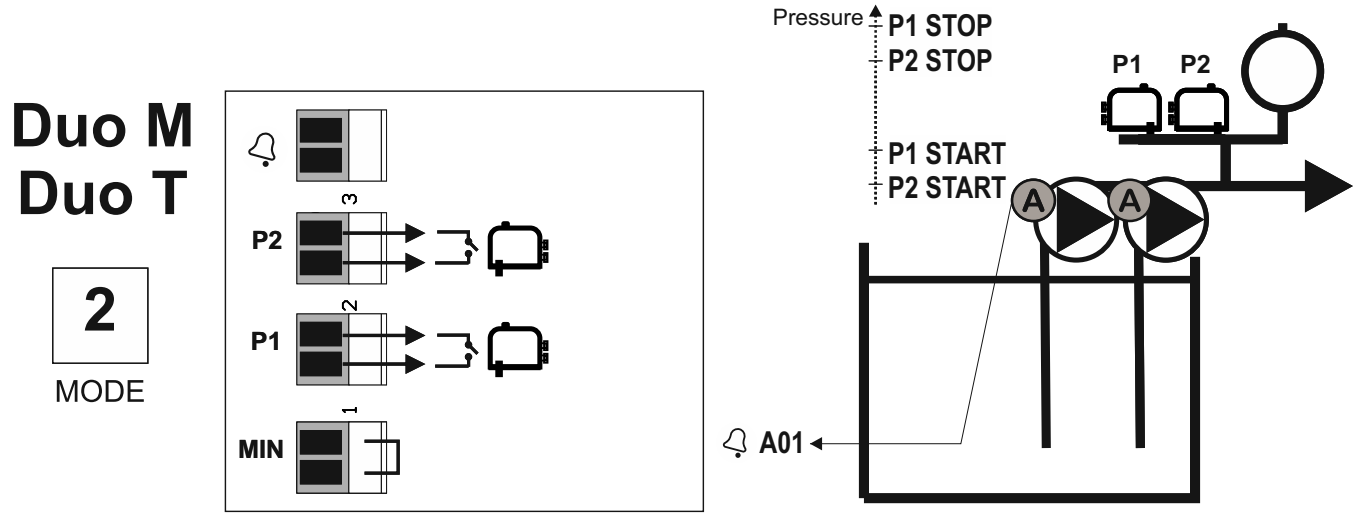
15.2.1. Start/stop by pressure switch and dry-run protection by instantaneous power consumption reading. Connections will be carried out on the control board, the connector "MIN" must be jumpered. **Operation mode 2.**



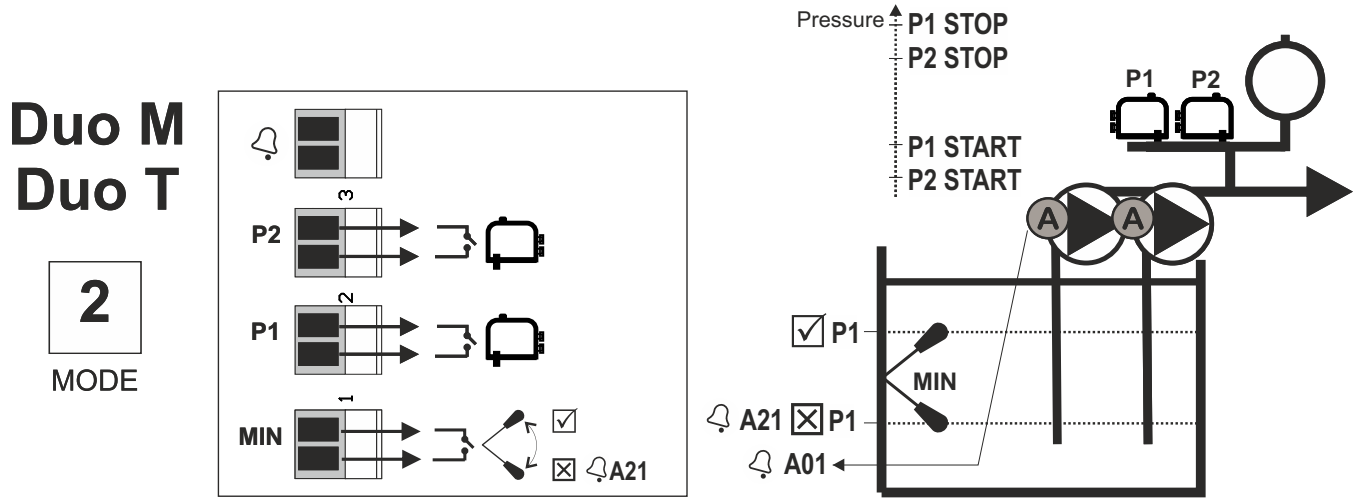
15.2.2. Start/stop by pressure switch and minimum level protection by float switch. Redundant dry-run protection by instantaneous power consumption reading. **Operation mode 2.**



15.2.3. System of 2 pumps. Start/stop in sequence (one after one) with pressure switches and dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the HUB electronic board, the connector "MIN" must be jumpered.
Operation mode 2.



15.2.4. System of 2 pumps. Start/stop in sequence (one after one) with pressure switches and dry-run protection through a minimum level float switch. Redundant dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the HUB electronic board. **Operation mode 2.**



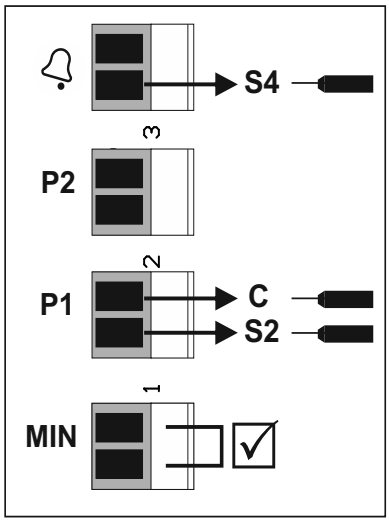
15.3. Examples of timed drainage.

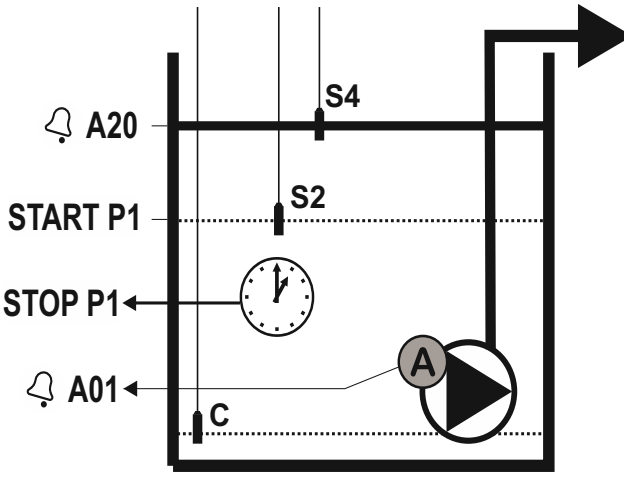
15.3.1. Start by mean of an electronic probe and stop after a previously set time period. Redundant dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the HUB electronic board, the connector "MIN" must be jumpered.
Operation mode 6.

Uno M
Uno T

6

MODE





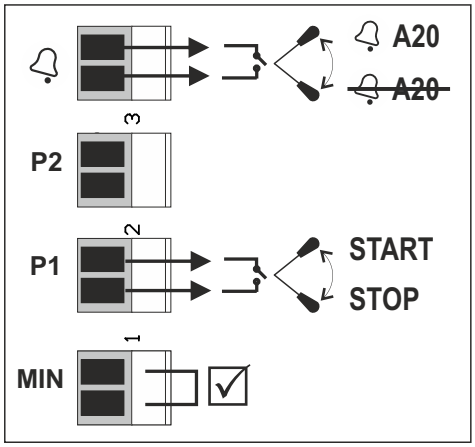
(*) C is the common terminal for the electronic probes. It can be connected in anyone of the connectors.

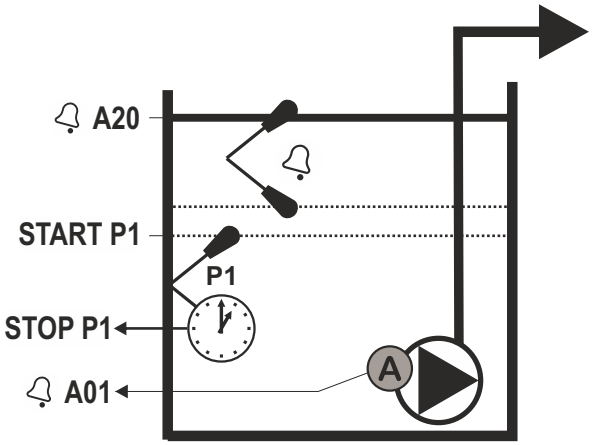
15.3.2. Start by mean of a float switch and stop after a previously set time period. Redundant dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the HUB electronic board, the connector "MIN" must be jumpered.
Operation mode 6.

Uno M
Uno T

6

MODE



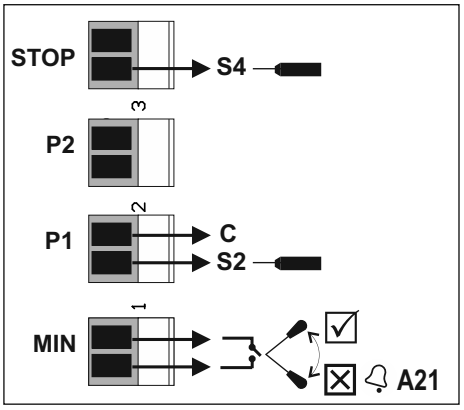


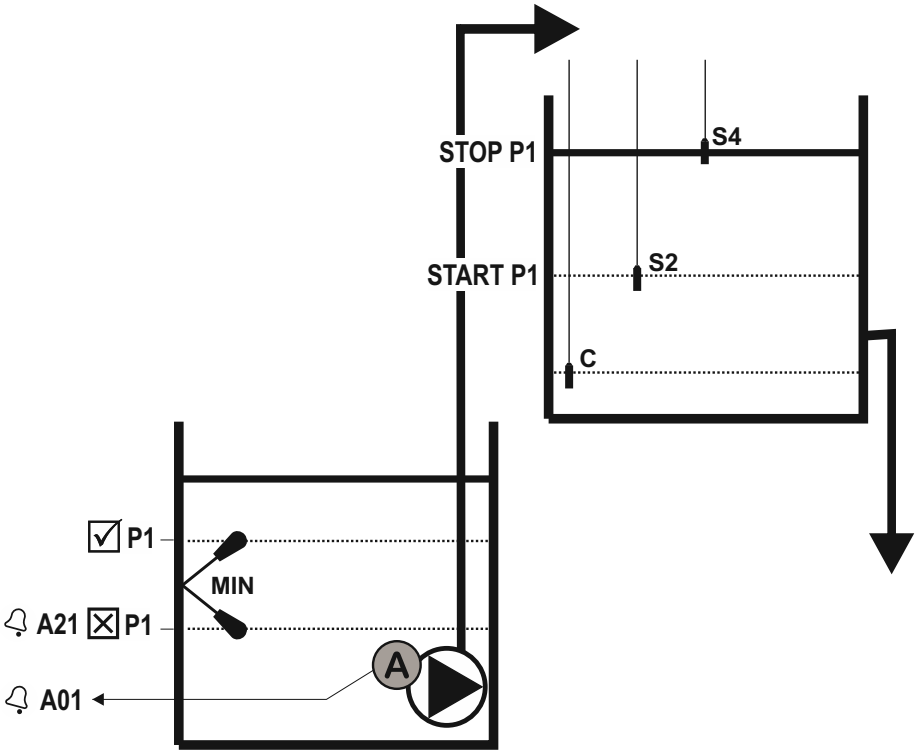
15.4. Examples of filling an elevated tank from a well, cistern or surface pump.

15.4.1. Electronic probes to start 1 or 2 pumps and another electronic probe to manage the STOP (simultaneous in case of 2 pumps).
Float switch to activate/disable the pump in case of minimum liquid level on the well or cistern.
Redundant dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the HUB electronic board. **Operation mode 5.**

Uno M
Uno T

5
MODE

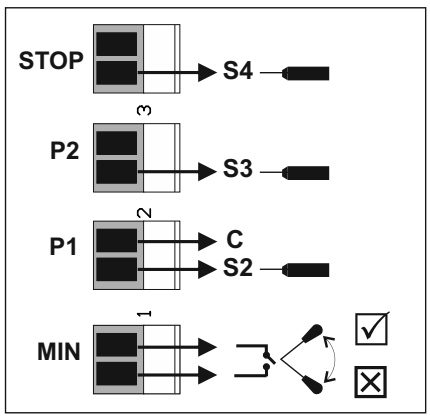


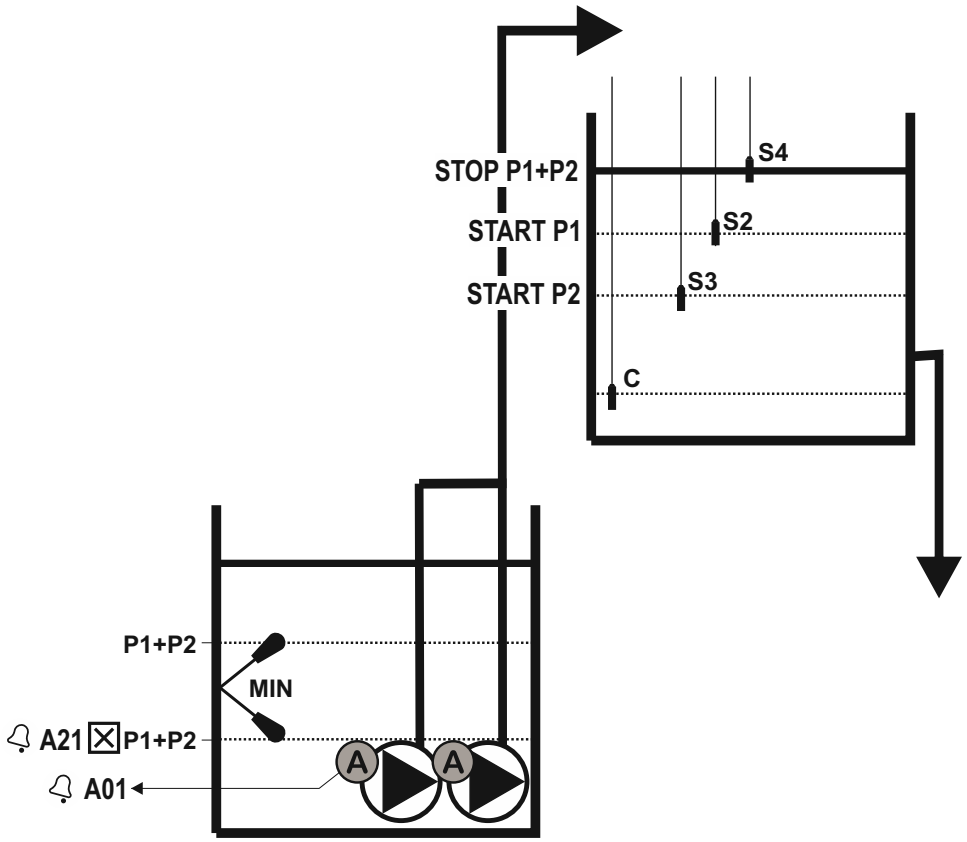


(*) C is the common terminal for the electronic probes. It can be connected in anyone of the connectors.

Duo M
Duo T

5
MODE

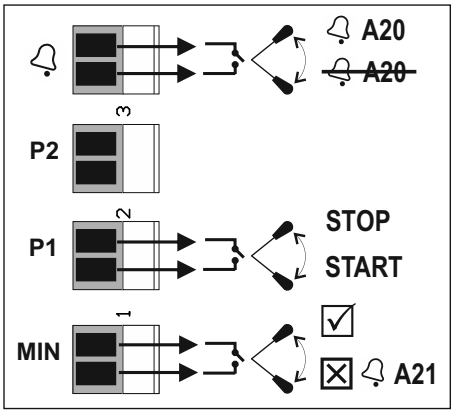


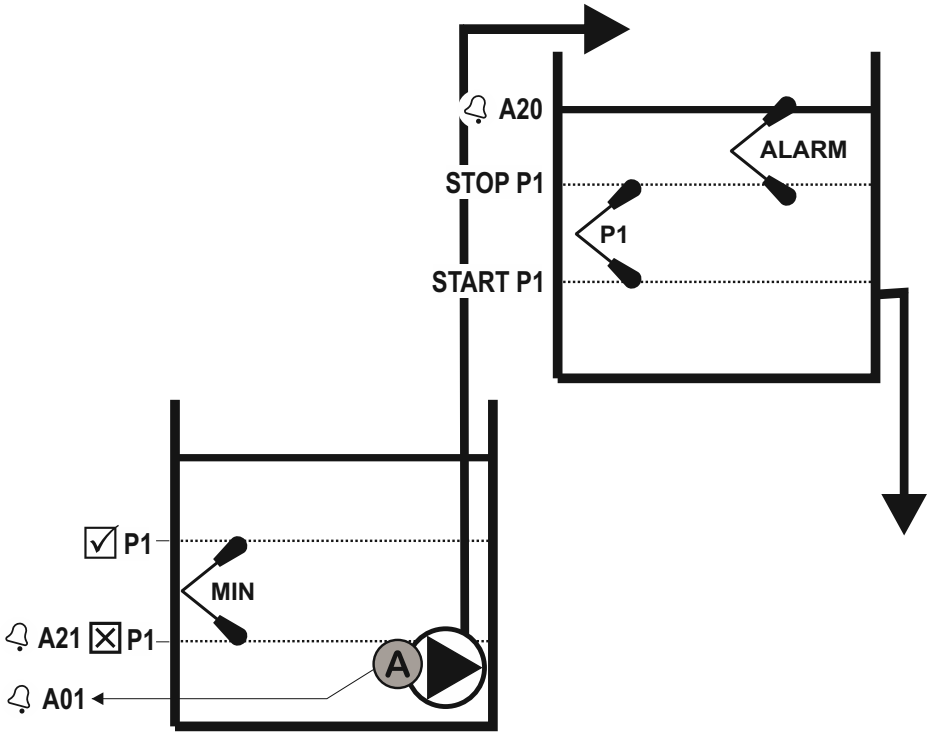


15.4.2. Start and stop managed by float switches. Float switch to activate/disable the pump in case of minimum liquid level on the well or cistern.
Redundant dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the HUB electronic board. **Operation mode 4.**

Uno M
Uno T

4
MODE

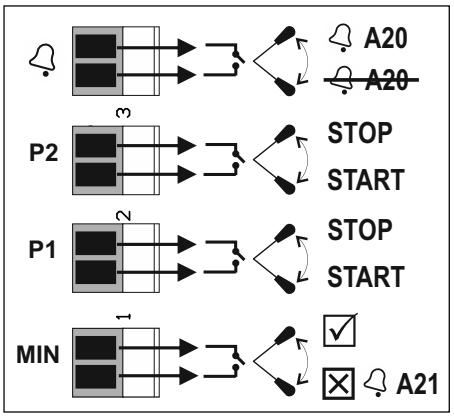


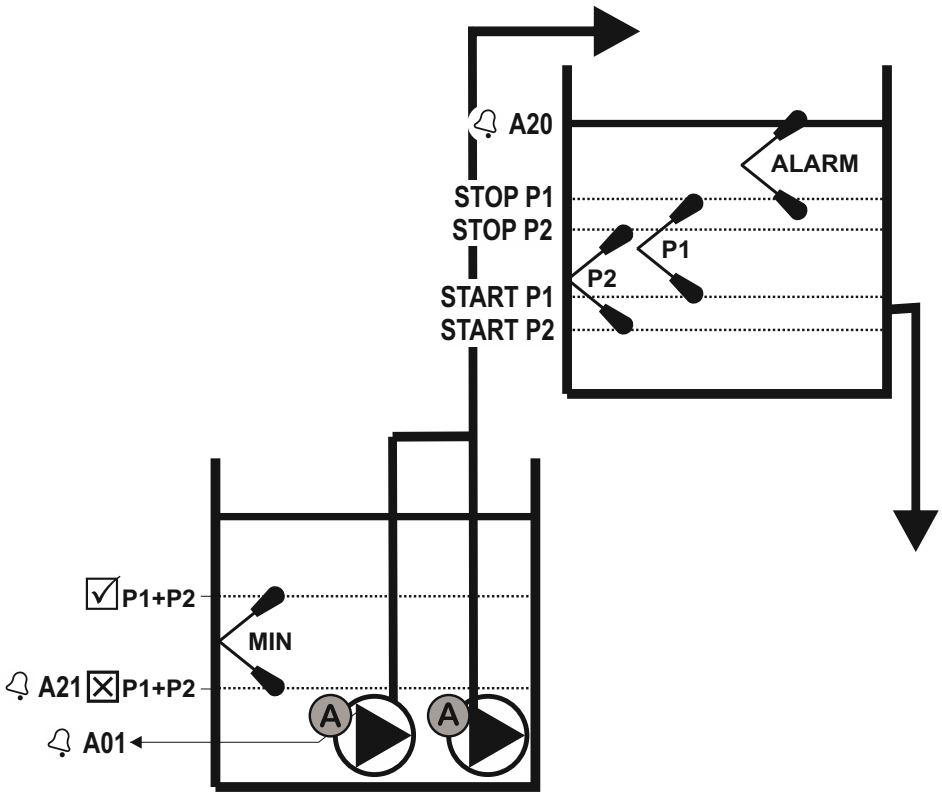


In case of 2 pump systems, they operate in **duty-assist** mode (one after one with alternated starting sequence).

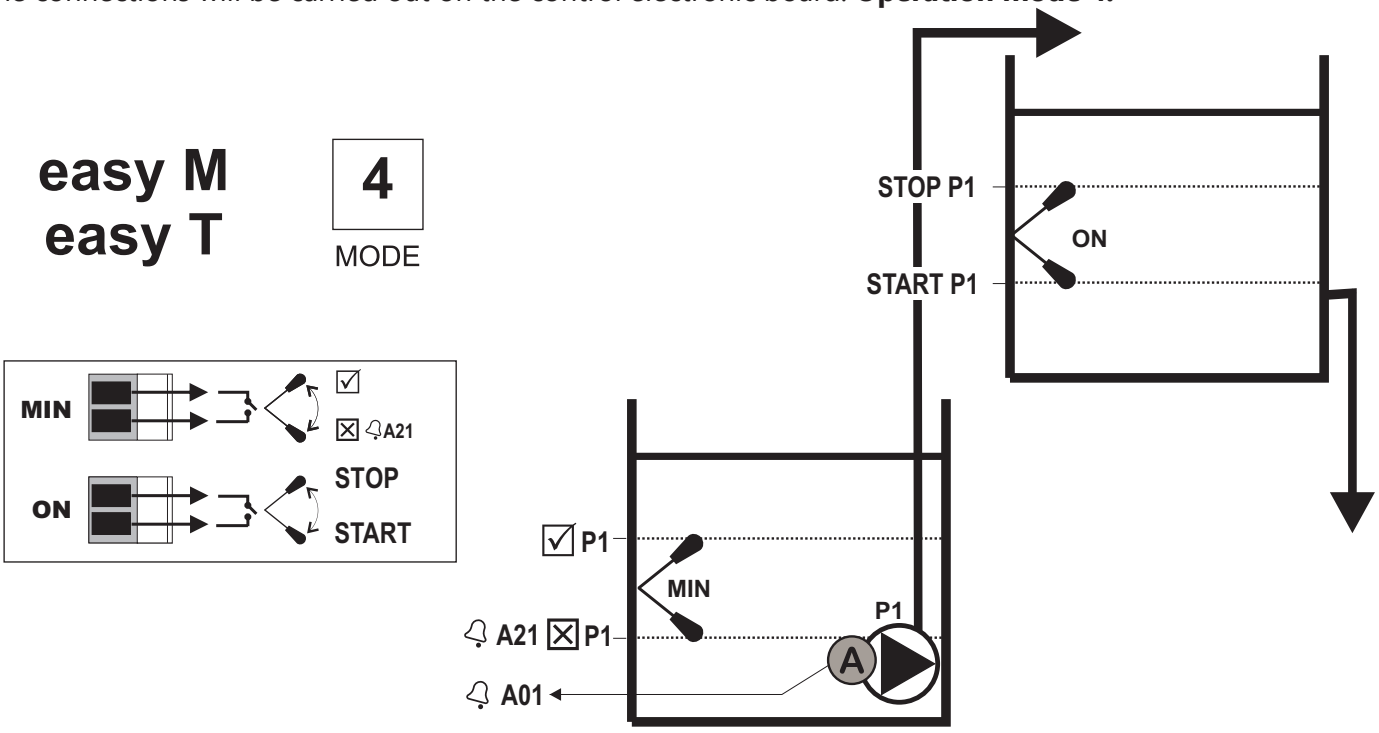
Duo M
Duo T

4
MODE

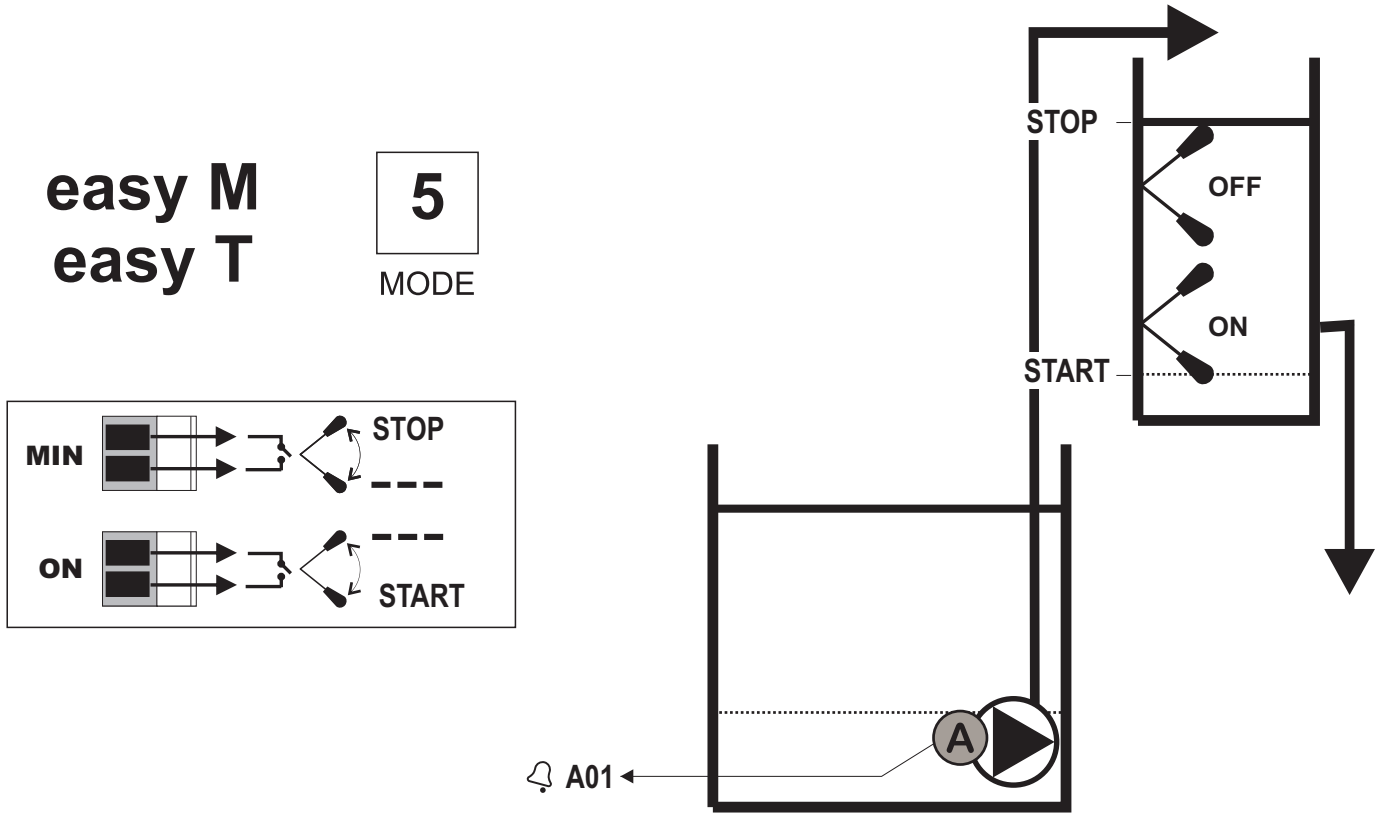




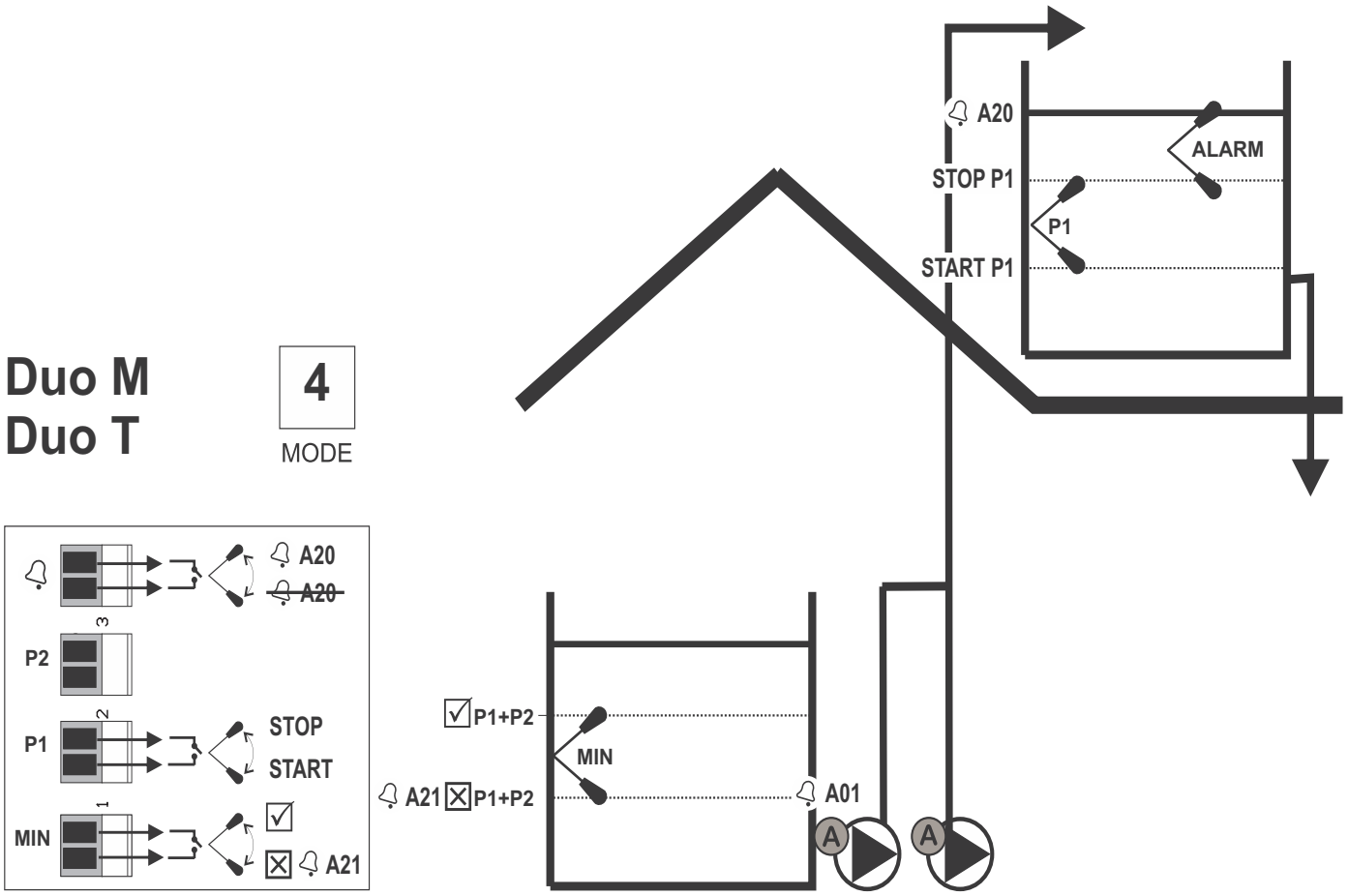
15.4.3. Start and stop managed by float switch. Float switch to activate/disable the pump in case of minimum liquid level on the well or cistern.
Redundant dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the control electronic board. **Operation mode 4.**



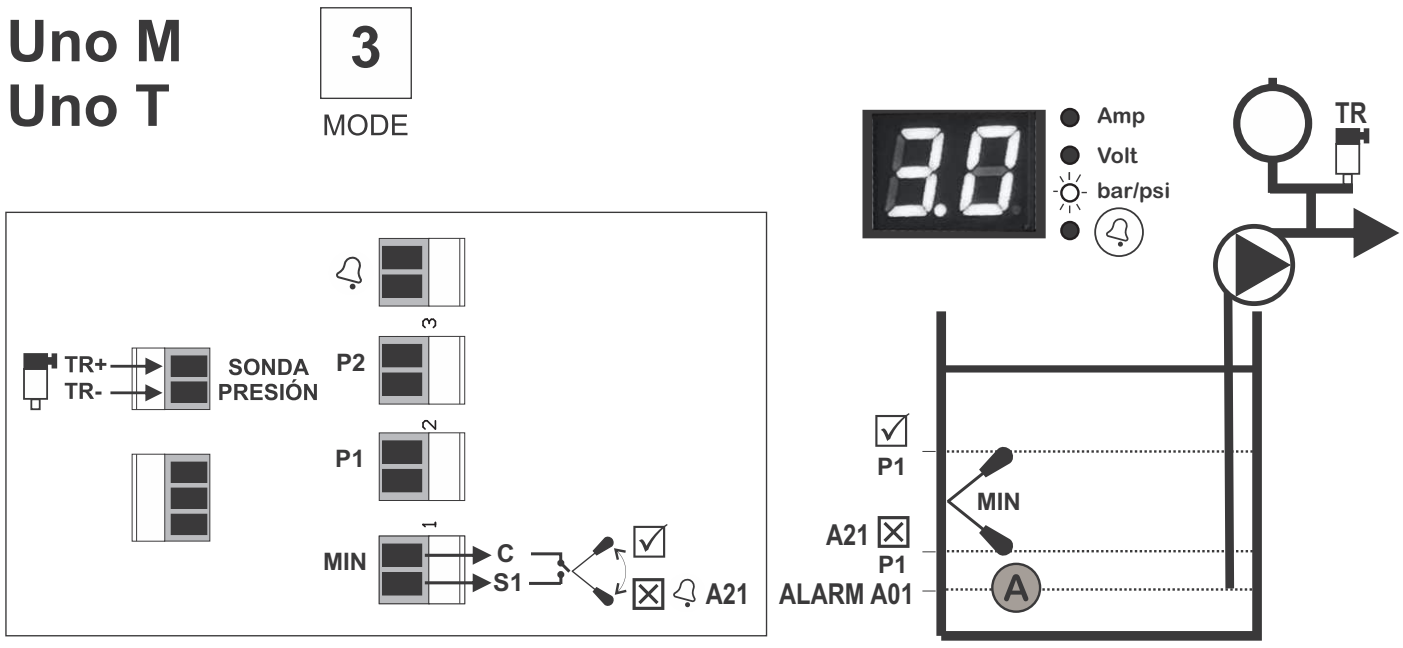
15.4.4. In case of narrow elevated tank. Start and stop managed by float switches. The connections will be carried out on the control electronic board. **Operation mode 5.**



15.4.5. **Duty-standby** operation mode (the pumps never operate simultaneously).



15.5 Examples of pressure booster system with pressure transducer.
The external pressure transducer must be connected to the HUB board.
Float switch to activate/disable the pump in case of minimum liquid level on the well or cistern.
Redundant dry-run protection by instantaneous power consumption reading.
The connections will be carried out on the HUB electronic board. **Operation mode 3.**



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