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1. GENERAL



Read this documentation carefully before installation.

Installation and operation must comply with the local safety regulations in force in the country in which the product is installed. Everything must be done in a workmanlike manner. Failure to respect the safety regulations not only causes risk to personal safety and damage to the equipment, but invalidates every right to assistance under guarantee.

2. WARNINGS

2.1. Skilled personnel

It is advisable that installation be carried out by competent, skilled personnel in possession of the technical qualifications required by the specific legislation in force. The term skilled personnel means persons whose training, experience and instruction, as well as their knowledge of the respective standards and requirements for accident prevention and working conditions, have been approved by the person in charge of plant safety, authorizing them to perform all the necessary activities, during which they are able to recognize and avoid all dangers. (Definition for technical personnel IEC 60634).

2.2. Responsibility



The Manufacturer does not vouch for correct operation of the panel or for any damage that it may cause if it has been tampered with, modified and/or run outside the recommended work range or in contrast with other indications given in this manual.

The Manufacturer declines all responsibility for possible errors in this instructions manual, if due to misprints or errors in copying. The Manufacturer reserves the right to make any modifications to products that it may consider necessary or useful, without affecting their essential characteristics

2.3. Safety

Use is allowed only if the electric system is in possession of safety precautions in accordance with the regulations in force in the country where the product is installed (for Italy CEI 64/2).

- Ensure that the panel has not suffered any damage during transport or storage.
- In particular, check that all the internal parts of the panel (components, leads, etc.) are completely free from traces of humidity, oxide or dirt: if necessary, clean accurately and check the efficiency of all the components in the panel. If necessary, replace any parts that are not perfectly efficient.
- It is indispensable to check that all the panel leads are correctly tightened in the respective clamps.
- In the event of a long period of inactivity (or when any component has been replaced), it is advisable to perform on the panel all the checks indicated by standard EN 60730-1.

3. INTRODUCTION

This documentation supplies the general indications for the installation and use of Universal Pump Manager electric panels.

The appliances have been designed and made for the control and protection of Domestic units and of Filling and Draining units with 1 or 2 pumps.

4. INACTIVITY OF THE PANEL

A long period of inactivity in precarious conditions may cause damage to our appliances, making them become dangerous for the personnel in charge of installation, checking and maintenance. It is good practice, above all, to install the panel correctly, taking particular care to comply with the following indications.

- the panel must be kept in a completely dry place, far from sources of heat;
- the electric panel must be perfectly closed and isolated from the outside environment, so as to avoid the entry of insects, humidity and dust which could damage the electrical components, jeopardising their regular operation.

5. INSTALLATION



Strictly respect the electric supply values indicated on the electrical data plate.

- Although the panel has a grade of protection IP55, it is not advisable to use it in an atmosphere charged with oxidising or corrosive gases.
- If installed outdoors, the panel must be protected as much as possible against the direct rays of the sun.

- It is necessary to take suitable steps to keep the temperature inside the panel within the "limits of environment temperature use" listed below.
- High temperatures can lead to accelerated ageing of all the components, resulting in more or less severe malfunctions.
- It is also recommended that the person carrying out installation should ensure the cable clamps are watertight.
- Accurately tighten the cable clamps where the power cable enters the panel and those of any external controls, connected by the installer, so as to ensure that the cables cannot work loose from the clamps.

6. TECHNICAL DATA

6.1 Electrical data

- Power supply:
 - 1 x 230V
 - 3 x 230/400V
- Frequency: 50/60 Hz
- Grade of protection: IP55

6.2 Operating conditions

- Number of pumps that can be connected: 2
- Max. use rated power:
 - 400V = 5,5kW + 5,5kW
 - 230V = 3kW + 3kW
- Max. use rated current: 12A + 12A
- Environment temperature: -10 ÷ 40°C
- Storage temperature: -25°C ÷ 55°C
- Air relative humidity:
 - 50% at 40°C
 - 90% at 20°C
- Max. altitude: 1000 m (a.s.l.)
- Panel construction: EN 60730-1

6.3 Management of the pumps (Applications)

The panel is self-protected and protects the electropumps against:


- **overloads and excess temperature with automatic reset,**
- **short circuits with replacement of fuses.**


Set up for inversion of the starting order of the two electropumps at each start or every 24 hours and to start one of the two in the event of breakdown of the other.

The panel is able to work also running only one pump (see DS_A7-8).

7. ELECTRICAL CONNECTIONS

- Ensure that the main switch on the power distribution panel is in OFF position (0) and that no one can switch on the power accidentally before connecting the power cables to the terminals:

L1 - L2 - L3 -  for three-phase systems

L - N -  for single-phase systems
and to the insulating switch QS1.



Insert the fuse in the respective fuse holder corresponding to the applied voltage (230V or 300V). Selecting the wrong fuse holder can cause irreparable damage to the electric panel!

- Scrupulously observe all the regulations in force concerning safety and accident prevention.



Ensure that all the terminals are fully tightened, **paying particular attention to the earth screw.**

- Connect the cables to the terminal board as indicated in the wiring diagrams .
- Check that all the connecting cables are in excellent condition, with the external sheathing unbroken.



The system must be correctly and safely earthed as required by the regulations in force.





























Check that the differential switch that protects the system is of the correct dimensions.

7.1 Instrumental checks to be carried out by the installer

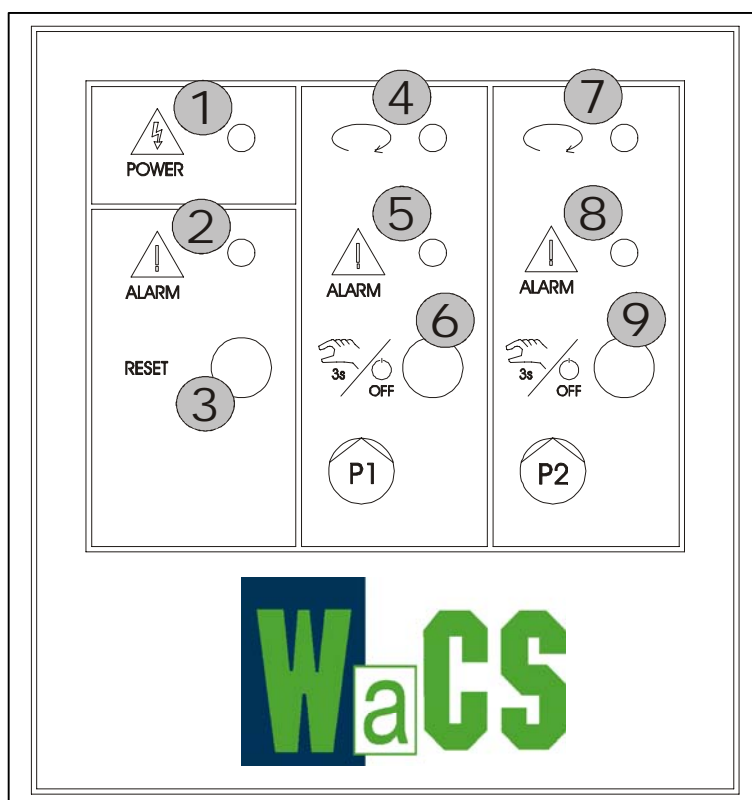
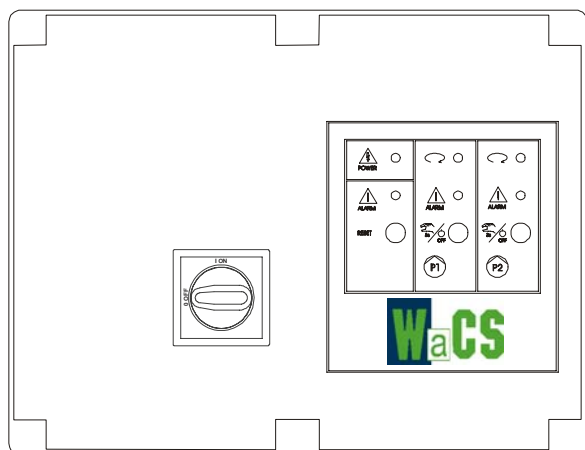
- Continuity of the protection leads and of the main and supplementary equipotential circuits.
- Insulating resistance of the electric system between the active circuits L1-L2-L3 (short-circuited with each other) and the equipotential protection circuit.
- Testing the efficiency of the differential protection.
- Testing the voltage applied between the active circuits L1-L2-L3 (short-circuited with each other) and the equipotential protection circuit.
- Testing operation.

8.1 References on the wiring diagram

Functions Ref.	Function (see references on the wiring diagrams)
Terminals for connecting the Electropump electric panel	
QS1	<u>Supply line insulating switch with door locking handle which may be padlocked</u>
L-N	 SINGLE-PHASE power supply line connection terminals. Strictly respect the correspondence provided.
L1-L2-L3	 THREE-PHASE power supply line connection terminals. Strictly respect the correspondence provided.
KM1-KM2	<u>Control contactors of electropump P1 and electropump P2.</u>
L-N  L-N 	 SINGLE-PHASE electropump connecting terminals (P1 and P2) Strictly respect the correspondence provided.
U-V-W  U-V-W 	 THREE-PHASE electropump connecting terminals (P1 and P2) Strictly respect the correspondence provided.
C-A-P  C-A-P 	 Terminals for connecting single-phase electropumps P1/P2 with motor starting capacitor inside the panel. Strictly respect the correspondence provided.
K - K ₁ 	 Thermal protection input for pump P1 motor. Electrical characteristics: 230V ac not insulated. ATTENTION! For pumps with thermal protection KK, remove the KK terminals jumper of the panel and connect them to the protection cables present in the pump cable.
K - K ₂ 	 Thermal protection input for pump P2 motor. Electrical characteristics: 230V ac not insulated. ATTENTION! For pumps with thermal protection KK, remove the KK terminals jumper of the panel and connect them to the protection cables present in the pump cable.
Terminals for connecting digital and analog inputs	
	 The terminals for connecting the electric panel input may be connected according to the type and actual needs of the system. ATTENTION! Digital inputs have priority!
	Terminals for connecting digital inputs Each digital input may be connected to pressure switches, floats or electric level probes (probe sensitivity max. 55kOhm).
A 1 - 2	Terminals for connecting minimum level control in drainage systems or maximum level in filling systems, with three floats or with electric probes. Electrical characteristics: 24VAC 10mA, impedance max. 55kOhm. If connecting with electric level probes, consider only Terminal no. 1
B 3 - 4	Terminals for connecting minimum/maximum level control or minimum/maximum pressure of the electropump P1. Electrical characteristics: 24VAC 10mA, impedance max. 55kOhm. If connecting with electric level probes, consider only Terminal no. 3
C 5 - 6	Terminals for connecting minimum/maximum level control or minimum/maximum pressure of the electropump P2. Electrical characteristics: 24VAC 10mA, impedance max. 55kOhm. If connecting with electric level probes, consider only Terminal no. 5
R 7 - 8	 Terminals for connecting alarm float or pressure switch for maximum pressure (P.Max). Pressurisation function: If the maximum pressure switch (P.Max) is connected, remove the by-pass jumper supplied as a standard feature between the respective terminals! Draining function: the by-pass jumper IS NOT FITTED! Electrical characteristics: 24VAC 10mA, impedance max. 55kOhm. If connecting with electric level probes, consider only Terminal no. 7

Ref.	Function (see references on the wiring diagrams)
<p>N 9 - 10</p>	<p>Connecting terminals against dry operation. If used, remove the by-pass jumper supplied as a standard feature between the respective terminals. Electrical characteristics: 24VAC 10mA, impedance max. 55kOhm. If connecting with electric level probes, consider only Terminal no. 9</p> <p> Terminals N and R activate the alarm light on the front board of the Electric Panel; they close the remote alarm contact and the terminal N stops the pump while the terminal R starts or stops the pump depending on the function chosen (pressurisation, filling, draining).</p> <p> The controls A, B, C, R, N do not require connection to \oplus as they are connected to the PELV safety circuit.</p> <p>Terminals for connecting analog inputs</p> <p>Terminals for connecting the analog input for pressure sensor. H1 – 11 = power supply output for sensor: 24V, max 100mA. H1 – 12 = input characteristics: 4...20mA with DS_B7 in ON / 0.5...4.5V with DS_B8 in ON. H1 – 13 = characteristics: 0V.</p>
Terminals for connecting alarms	
<p>Q1 14 - 15</p> <p>Q2 16 - 17</p> <p>Q3 18 - 19</p> <p>13 - 14 </p> <p>13 - 14 </p>	<p>Terminals for connecting the electropump P1 remote alarm (see alarms table). Contact characteristics: clean contact, 250VAC/30VDC 5A, double insulation (AC 1).</p> <p>Terminals for connecting the electropump P2 remote alarm (see alarms table). Contact characteristics: clean contact, 250VAC/30VDC 5A, double insulation (AC 1).</p> <p>Terminals for connecting the general remote alarm (see alarms table). Contact characteristics: clean contact, 250VAC/30VDC 5A, double insulation (AC 1).</p> <p> NO Contact with panel fed and with no active alarm.</p> <p>Connecting terminals for indicating pumps being fed (P1 and P2). Contact characteristics: NO 250V 3A (AC 15)</p>
Protection fuses	
<p>FU1 FU2</p> <p>FU3</p> <p>FU4</p> <p>FU5</p>	<p>Fuses protecting the transformer against short circuiting of the primary circuit and of its supply line. FU1 = Electrical characteristics: 6,3x32 T 250mA FU2 = Electrical characteristics: 5x20 T 100mA</p> <p> For 400V power supply insert the fuse FU1 in the 400V fuse holder. For 230V power supply insert the fuse FU2 in the 230V fuse holder. Selecting the wrong fuse holder can cause irreparable damage to the electric panel!</p> <p>Fuse protecting the transformer against incorrect connection of the motor cables (check the thermal protection). The panel remains live even after intervention of the protection which interrupts operation. Electrical characteristics: 6,3x32 T 250mA</p> <p> Switch off power before performing maintenance.</p> <p>Fuse protecting the electropump P1 against short circuiting. Electrical characteristics: 10x38 16A (aM)</p> <p> Switch off power before performing maintenance.</p> <p>Fuses protecting the electropump P2 against short circuiting. Electrical characteristics: 10x38 16A (aM)</p> <p> Switch off power before performing maintenance.</p>

9. PANEL FRONT CONTROL BOARD



Ref.	Function
1	White warning light indicating correct operation of the auxiliary circuits.
2	Red warning light indicating a general alarm.
3	Alarm RESET button.

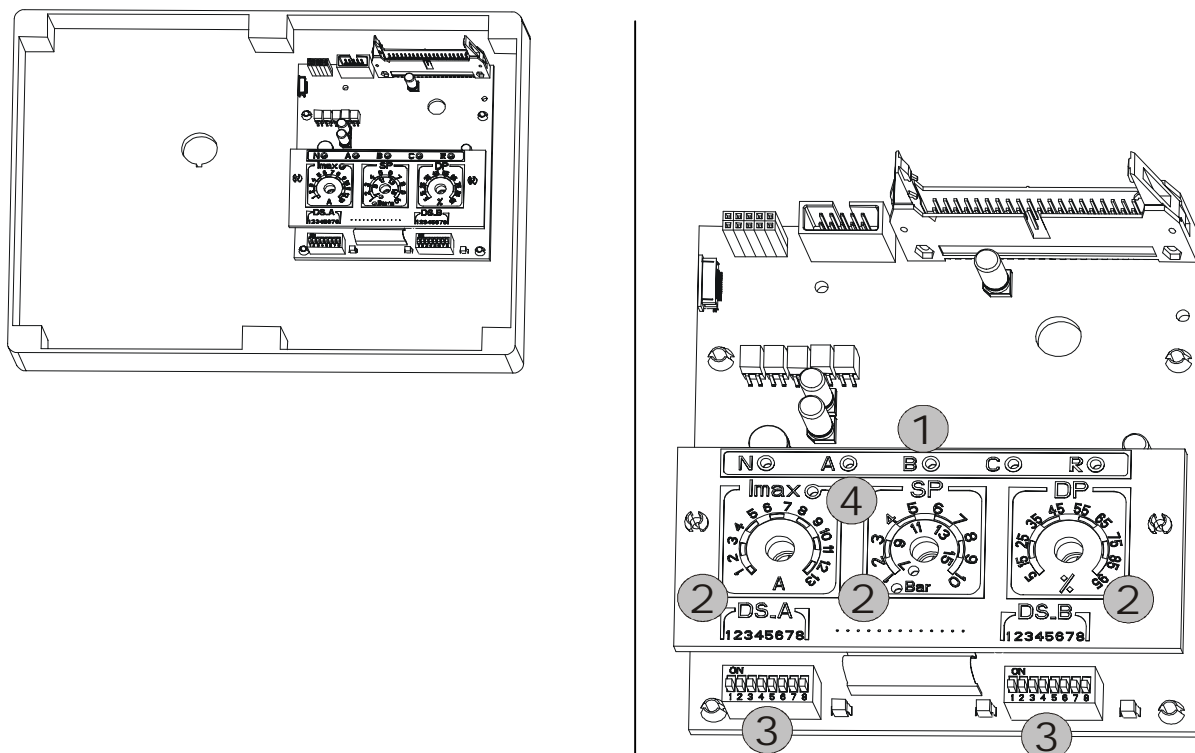
Electropump P1

- 4 Green warning light: fixed light indicating pump running.
Green warning light: blinking light indicating pump not available.
- 5 Yellow warning light indicating pump P1 malfunction alarm
- 6 Button for manual control or deactivation of pump P1:
 - if held down for more than 3 seconds, allows the pump to be switched on manually,
 - if pressed quickly, allows deactivation of the respective pump or activation of automatic operation.

Electropump P2

- 7 Green warning light: fixed light indicating pump running.
Green warning light: blinking light indicating pump not available.
- 8 Yellow warning light indicating pump P2 malfunction alarm
- 9 Button for manual control or deactivation of pump P2:
 - if held down for more than 3 seconds, allows the pump to be switched on manually,
 - if pressed quickly, allows deactivation of the respective pump or activation of automatic operation.

10. PANEL INTERNAL REGULATING BOARD



Before starting regulation, switch off the mains power by means of the insulating switch QS1.

To access the internal panel, slacken the screws, turn the cover of the electric panel downwards and operate the commands.

Ref.	Function
1	Warning lights for activating the digital inputs (N-A-B-C-R).
2	Trimmer for regulating the system (Imax – SP – DP).
3	Dip-switch for selecting functions (DS_A – DS_B).
4	Led indicating current overload set at the motor data plate values. For a correct setting the Led must be off.

10.1 Trimmer for regulating the system (Imax – SP – DP)

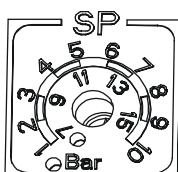
T1 – Trimmer (Imax)

Trimmer for setting the maximum current for the two electropumps P1 and P2 (0.25A –13A). Set the Trimmer at the motor data plate value (the yellow led must be off).

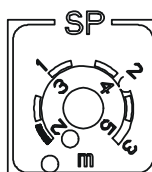
T2 – Trimmer (SP – system Set Point) / Trimmer 3 (DP – Pressure level differential)

Trimmer for setting the pressures or level of the system.

- The trimmer SP (set by DS_B5) presents a double regulating scale in bar: from 1 to 10 bar or from 7 to 15 bar corresponding to the led lit, if a pressure sensor is used in the booster sets. This scale may also be expressed in metres (as an optional version, using the plate supplied): from 1 to 3 metres or from 2 to 5 metres always corresponding to the led lit, if an analog level sensor is used in the filling and draining sets.



Standard regulation in bar

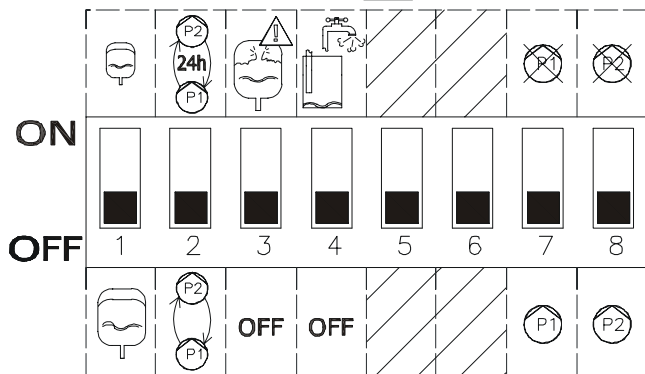


Optional regulation in metres (plate supplied)

- DP regulation is expressed as a percentage of the value set in SP.

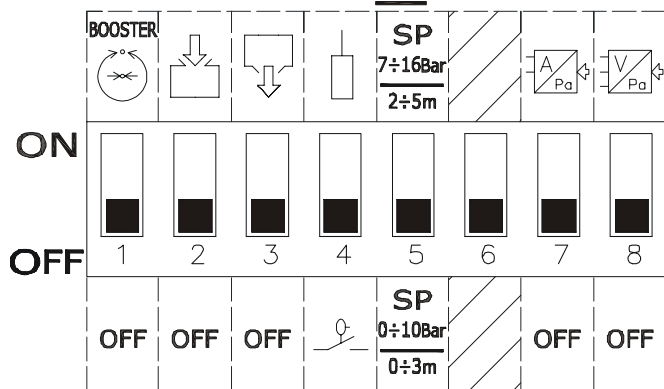
10.2 Dip-switch for selecting functions (DS_A – DS_B)

DS_A



No.	ON status	OFF status
1	Booster set with STANDARD expansion vessels (19 litres each pump)	Booster set with additional expansion vessels (over 100 litres)
2	Automatic exchange between pump P1 and P2 every 24 hours.	Automatic exchange between pump P1 and P2 at every start.
3	Rapid starts control function active. (ON)	OFF
4	Protection against dry running active. (ON)	OFF
5		
6		
7 (**)	Pump P1 not available.	Pump P1 available.
8 (**)	Pump P2 not available.	Pump P2 available.

DS_B



No.	ON status	OFF status
1 (*)	Operation as booster set.	OFF
2 (*)	Operation as filling set.	OFF
3 (*)	Operation as draining set (drainage).	OFF
4	Use of electric probes.	Use of floats.
5	Pressure set point scale: 7-16 bar / 2-5 m.	Pressure set point scale: 0-10 bar / 0-3 m.
6		
7 (**)	Regulation with analog sensor with current output.	OFF
8 (**)	Regulation with analog sensor with voltage output.	OFF

(*) Only one (and at least one) of these dip switches may be in ON position.

(**) Only one (or none) of these dip switches may be in ON position.

11. PRESSURE BOOSTER FUNCTION

11.1 Operation with sensor

Operation with a sensor allows 2 types of regulation:

- Regulation with Standard expansion vessel = 19 litres each pump (DS_A1=ON).
- Regulation with Additional expansion vessel = over 100 litres (DS_A1=OFF).

Regulation is obtained by turning the trimmers SP (system pressure) and DP (differential pressure).

Regulation with Standard expansion vessel		
Sequence	Pump P1	Pump P2
START	System pressure = < SP	Pump P1 = started. Pump P2 = starts with System Pressure = < SP - ½ DP
STOP	System pressure > = SP+DP	Pump P1 = stopped. Pump P2 = stops with System Pressure > = SP+DP.

Regulation with Additional expansion vessel		
Sequence	Pump P1	Pump P2
START	System pressure = < SP	Pump P1 = started. Pump P2 = starts with System Pressure = < SP - 2%
STOP	System pressure > = SP+DP	Pump P1 = stopped. Pump P2 = stops with System Pressure > = SP+DP.

11.2 Operation with pressure switches

The pressure switches of the pumps P1 and P2 must be connected to the respective terminals B and C.

Sequence	Pump P1	Pump P2
START	Pressure switch B = ON	Pressure switch C = ON
STOP	Pressure switch B = OFF	Pressure switch C = OFF

N.B. The indications pump P1 and P2 and the references B and C are only indicative.

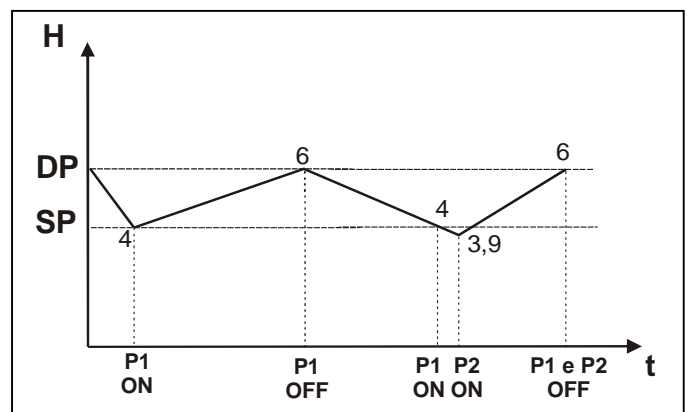
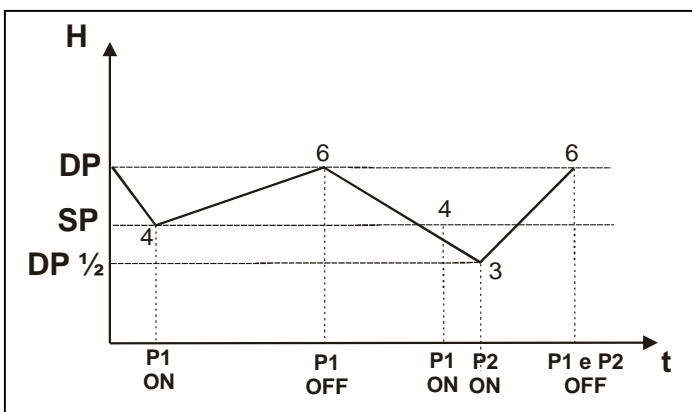
Example of Regulation with Standard expansion vessel and Regulation with Additional expansion vessel

SP= 4 bar (starting pressure P1)

DP = 50% of the value of SP = 1/2 (differential pressure)

Regulation with Standard expansion vessel

Regulation with Additional expansion vessel



N.B. The indications pump P1 and P2 are only indicative.

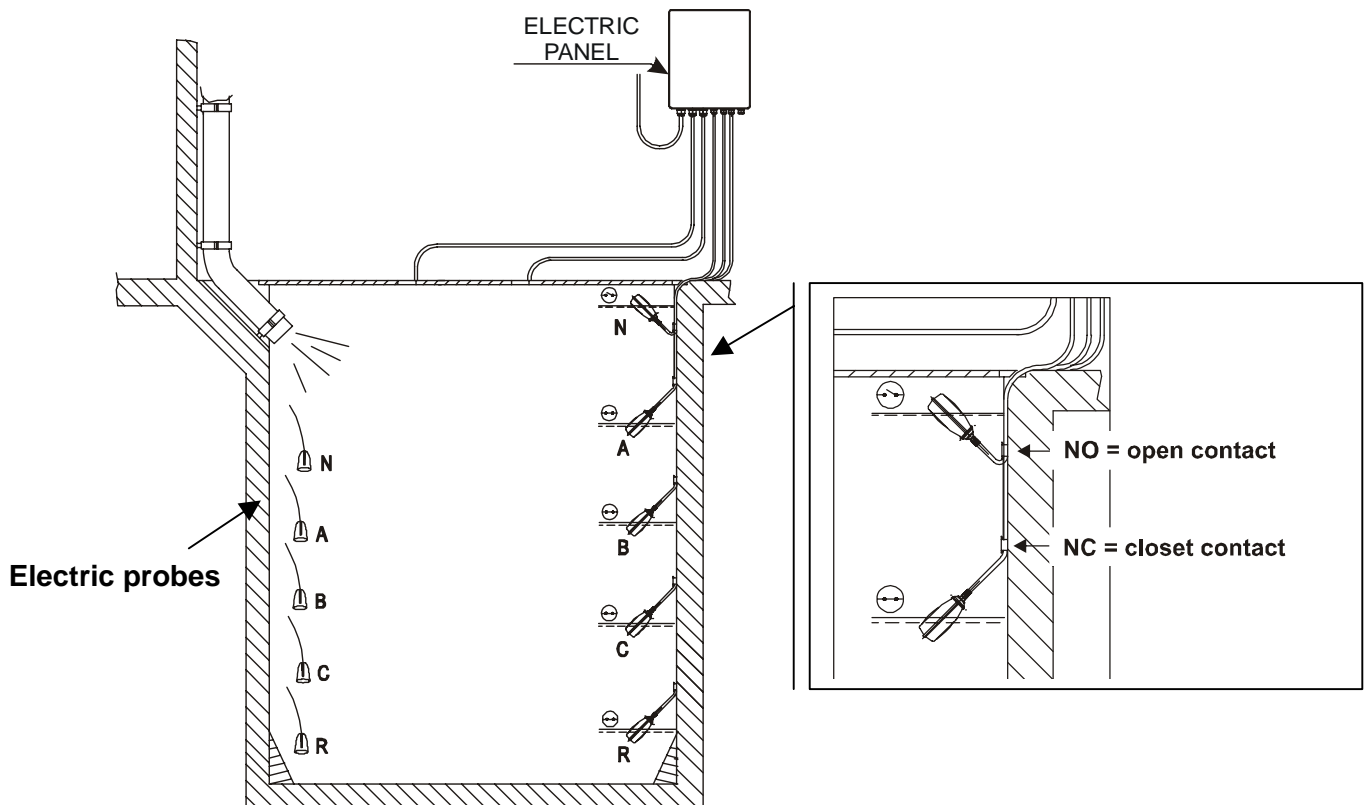


Both with sensor operation and with pressure switch operation there will be an automatic exchange of the order of switching on the two pumps at each start, or an exchange between the two pumps every 24 hours, depending on the regulation chosen in the DS_A2.

The two pumps will always be started alternately with a minimum interval of 2 seconds between one and the other.

12. FILLING FUNCTION

In filling, the floats, if present, are positioned in this order:



12.1 Operation with 2 floats

In operation with 2 floats, Pump P1 starts with the closed contact of the float B, while Pump P2 starts with the closed contact of the float C.

Both pumps stop with the open contact of the float B.

The following table sums up the behaviour described:

Sequence	Pump P1	Pump P2
START	Float B = NC	Float C = NC
STOP	Float B = NO	Float B+C = NO

12.2 Operation with 3 floats

In operation with 3 floats, Pump P1 starts with the closed contact of the float B, while Pump P2 starts with the closed contact of the float C.

The pumps stop with the open contact of the floats A+B+C which controls the maximum level for both.

The following table sums up the behaviour described:

Sequence	Pump P1	Pump P2
START	Float B = NC	Float C = NC
STOP	Float A+B+C = NO	Float A+B+C = NO

**N.B. Instead of the floats, electric probes may be connected.
ONLY WITH CLEAN CLEAR WATER!**



Operation with 3 floats is used in installations with deep narrow tanks that do not allow an ample excursion of the floats!

12.3 Operation with sensor

In operation with a sensor the parameters must be set with the Trimmers SP and DP:

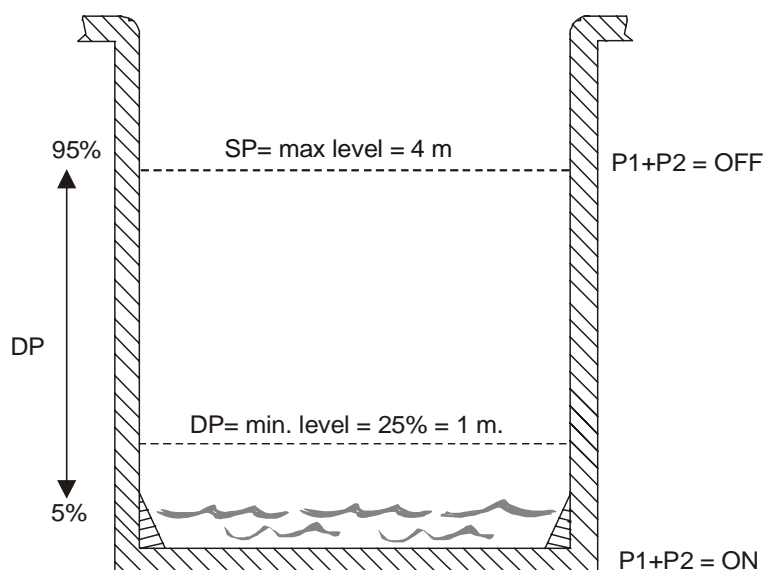
- SP represents the maximum level of the tank (L_{MAX}).
- DP represents the minimum level of the tank (L_{MIN}).

If the tank level is equal to or less than DP the pump P1 starts and if the level continues to fall the pump P2 is also activated.

Both pumps stop when the SP level is reached.

The following table sums up the behaviour described:

Sequence	Pump P1	Pump P2
START	Tank level \leq DP	Pump P1= started for at least 5 seconds and with tank level \leq DP
STOP	Tank level = SP	Tank level = SP - 2%

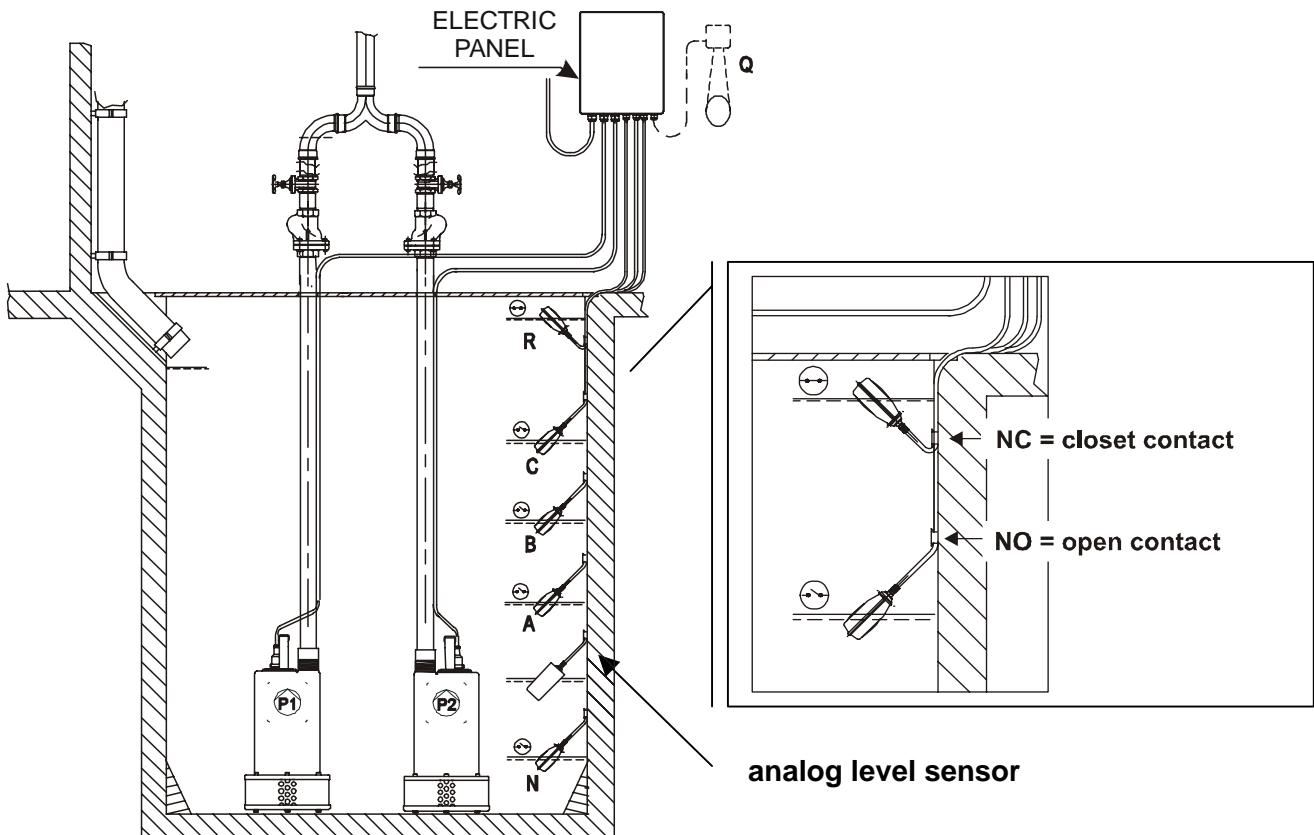


Both with float operation and with sensor operation there will be an automatic exchange of the order of switching on the two pumps at each start, or an exchange between the two pumps every 24 hours, depending on the regulation chosen in the DS_A2.

The two pumps will always be started alternately with a minimum interval of 2 seconds between one and the other.

13. DRAINING FUNCTION

In draining function (drainage) the floats, if present, are positioned in this order:



Do not touch and clean the sensor membrane with your hands, screwdrivers, brushes, etc.!
Do not clean the membrane with compressed air!
The transmitter must be steeped in water and cleaned only with soap and water or with alcohol!
Do not drop the transmitter and do not tap it on the table to get the residue out!
Do not blow into the cable compensation hose! Do not pull the cable!

13.1 Operation with 2 floats

In operation with 2 floats, Pump P1 starts with the closed contact of the float B, while Pump P2 starts with the closed contact of the float C.

Both pumps stop with the open contact of the float B.

The following table sums up the behaviour described:

Sequence	Pump P1	Pump P2
START	Float B = NC	Float C = NC
STOP	Float B+C = NO	Float B+C = NO

13.2 Operation with 3 floats

In operation with 3 floats, Pump P1 starts with the closed contact of the float B, while Pump P2 starts with the closed contact of the float C.

The pumps stop with the open contact of the float A which controls the minimum level for both.

The following table sums up the behaviour described:

Sequence	Pump P1	Pump P2
START	Float B = NC	Float C = NC
STOP	Float A+B+C = NO	Float A+B+C = NO

N.B. Instead of the floats, electric probes may be connected.
ONLY WITH CLEAN CLEAR WATER!

13.3 Operation with sensor

In operation with a sensor the parameters must be set with the Trimmers SP and DP:

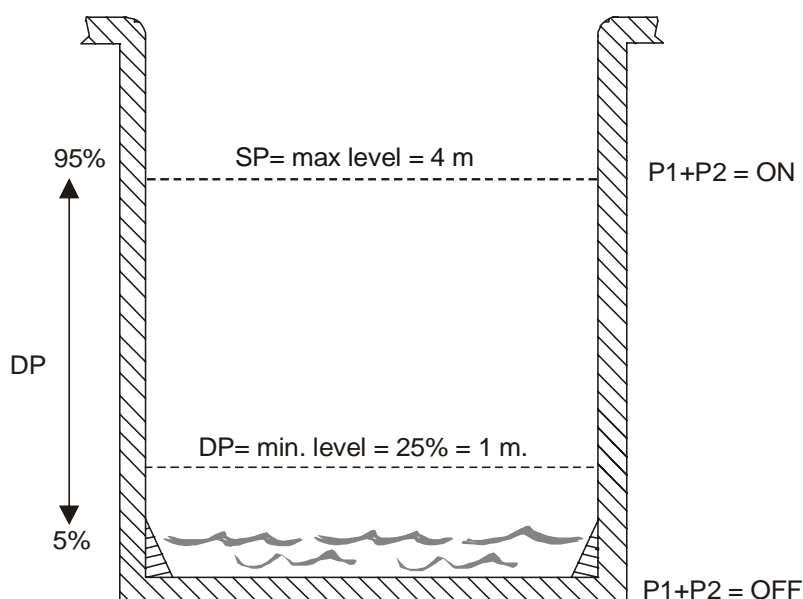
- SP represents the maximum level of the tank (L_{MAX}).
- DP represents the minimum level of the tank (L_{MIN}).

If the level in tank reaches the SP value the pump P1 is started, and if the opportune starting threshold is exceeded, within a time of 5 seconds, the pump P2 is also started.

Both pumps stop when the DP level is reached.

The following table sums up the behaviour described:

Sequence	Pump P1	Pump P2
START	Tank level \geq SP	Pump P1= started for at least 5 seconds and with tank level \geq SP
STOP	Tank level \leq DP	Tank level \leq DP + 2%



Both with float operation and with sensor operation there will be an automatic exchange of the order of switching on the two pumps at each start, or an exchange between the two pumps every 24 hours, depending on the regulation chosen in the DS_ A2.

The two pumps will always be started alternately with a minimum interval of 2 seconds between one and the other.

14. PROTECTIONS AND PANEL ALARMS

The protections and the alarms are indicated on the panel by the lighting of the respective leds and at a distance by the relays Q1, Q2, Q3.

General alarms table: signals and contacts

Name of alarm/malfunction	Led signal on front board	Alarm properties				Remote signal					
		Malfunction Pump P1 (yellow led)	Malfunction Pump P2 (yellow led)	General alarm (red led)	Water alarm	Pumps alarm	Resettable alarm	Blocking alarm	Alarm contacts P1 relay Q1	Alarm contacts P2 relay Q2	General alarm contacts relay Q3
Pumps control relay incoherence alarm		1	1	**		X	X	X	X	X	**
Phase lack alarm - KK		2	2	**		X	X	X	X	X	**
Dry running alarm		3	3	**	X				X	X	X
Protection alarm against rapid starts		4	4	**		X	X		X	X	X
Overcurrent alarm				**		X	X	*	X	X	**
Alarm coming from R				1	X		X				X
Alarm coming from N				2	X		X				X
Pressure sensor alarm				3	X		X				X
Floats incoherence alarm				4	X		X				X
Dip-Switch incoherence alarm				5				X			X
Buttons incoherence alarm				6							
Pump P1+P2 general alarm											



Indicates the number of blinks made by the led.



Led with fixed light.

**

If malfunctions/alarms should occur on both pumps at the same time, the REMOTE ALARM is activated (Relays Q1,Q2,Q3) and the GENERAL ALARM (red) is shown with a fixed light.

*

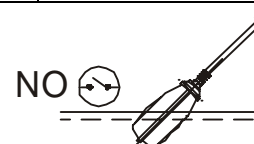
The current overload alarm may occur up to a maximum of 6 times in 24 hours, after which it becomes a blocking alarm.

- Water alarm =** represents an alarm linked with dry running (overflow, system excess pressure, etc.).
- Pump alarm =** represents an alarm linked with pump protection (pump thermal protection, current overload, etc.).
- Self-resettable alarm =** the control unit reactivates the pump if the cause that generated the alarm is removed, or in cases where this is not possible it makes attempts at intervals.
- Blocking alarm =** the control unit keeps the pump stopped until it is manually reset.

14.1 Protection/Alarm coming from the digital inputs R and N.

Digital inputs	Pressure boosting function	Filling function	Draining function
R	<p>Max. Pressure The 2 pumps stop with:</p> <ul style="list-style-type: none"> - general alarm signal, - remote signal Q1 	<p>Min. Level (in tank) The 2 pumps start with:</p> <ul style="list-style-type: none"> - general alarm signal, - remote signal Q1 <p>Intervention and reset after 0.5 seconds.</p>	<p>Max. Level The 2 pumps start with:</p> <ul style="list-style-type: none"> - general alarm signal, - remote signal Q1 <p>Intervention and reset after 0.5 seconds.</p>
N	<p>Min. Pressure The 2 pumps stop with:</p> <ul style="list-style-type: none"> - general alarm signal, - alarm signal against dry running. - remote signal Q1 	<p>Max. Level (in tank) The 2 pumps stop with:</p> <ul style="list-style-type: none"> - general alarm signal, - remote signal Q1 <p>Min. Level (water reserve) The 2 pumps stop with:</p> <ul style="list-style-type: none"> - general alarm signal, - indication against dry running. - remote signal Q1 <p>Intervention and reset after 1 second. **</p>	<p>Min. Level The 2 pumps stop with:</p> <ul style="list-style-type: none"> - general alarm signal, - alarm signal against dry running, - remote signal Q1 <p>Intervention and reset after 1 second.</p>
	Attention! If not used, a jumper must be fitted on terminals R and N .	Attention! If not used, a jumper must be fitted on terminal N .	Attention! If not used, a jumper must be fitted on terminal N .

** only in the case of a water reserve must the float be in this position:



14.2 Pressure sensor alarm

If the panel detects a pressure sensor with a dip-switch configuration incoherent with the device installed, an alarm signal is given. However it is possible to operate the panel.

If sensor operation is selected with a dip-switch, but the panel does not detect the sensor, the pumps are deactivated and an alarm signal is given.

If the pressure sensor has been correctly installed, but the sensor signal is outside the measuring range, the pumps are deactivated and an alarm signal is given.

14.3 Dip-Switch alarm

The Dip Switch alarm is activated in the following cases:

Incoherence of the Dip Switch with the respective functions (incorrect regulation).

To reset the alarm:

- Return the Dip Switches to the correct position.
- Press the RESET key.

Dip Switch regulation with the panel live.

To reset the alarm:

- Press the RESET key.

14.4 Overcurrent protection/alarm (overload protection)

When the overcurrent alarm intervenes the yellow warning light is lit for the respective pump P1 or P2, located on the front board of the electric panel (par. 8 – ref. 5/8).

For each pump the overcurrent alarm allows 6 auto-reset attempts, every 10 minutes, in the space of 24 working hours. At the seventh attempt the panel no longer makes auto-resets, unless after manual reset by the user.

14.5 Dry running protection/alarm

The dry running protection/alarm is activated in a pressure boosting situation when 1 analog pressure sensor is connected.

This protection may be selected by the DS_A4.

When the pressure falls to a value of less than 0.5 bar for about 10 seconds, the alarm is activated with stopping of the pump and lighting of the yellow led (par. 9 – ref. 5/8).

After 1 minute there will be 1 reset attempt for maximum 30 seconds. If this attempt succeeds the alarm is reset, otherwise the pump will remain in blocked status.



The dry running protection/alarm is not activated if the electropumps are started manually.

14.6 Protection against rapid starts.

The protection against rapid starts allows each pump a maximum number of 8 starts per minute.

If the protection is activated, the yellow led for the respective pump on the front board (par. 9 – ref. 5/8) will blink.

The protection does not intervene if the number of starts per minute is less than 8.

14.7 Lack of phase and KK protection.

When the lack of phase or KK protection intervenes (motor thermal protection), the yellow warning light blinks for the respective pump P1 or P2, located on the front board of the electric panel (par. 9 – ref. 5/8).

For each pump the alarm allows a series of restart attempts with a variable pause time between one start and the next which is increased by 1 minute for the first 60 minutes (1-2-3 min.... 60 min.), after which there will be one attempt every hour.

If this attempt succeeds the protection is reset and the warning light goes off.

14.8 Buttons incoherence alarm.

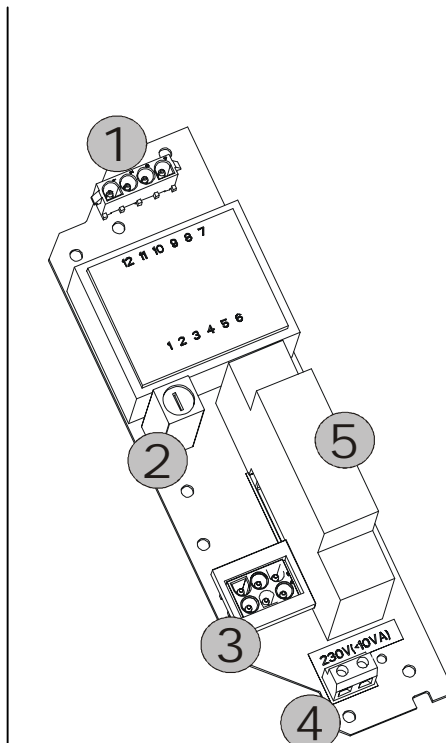
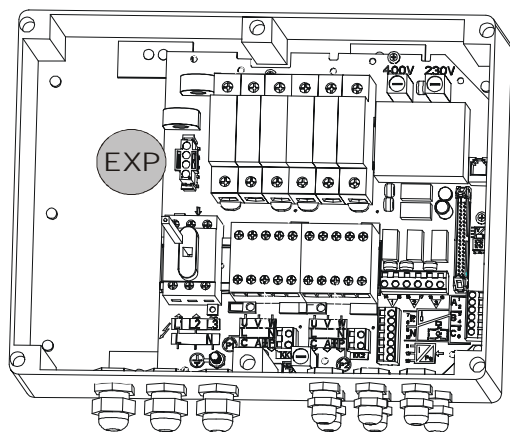
If pressing of the buttons on the front board is detected in the first 30 seconds of power supply, the buttons incoherence alarm is activated.

Check that the buttons function efficiently!

14.9 Floats and/or probes incoherence alarm.

If installation has not been carried out correctly or if there is a malfunction of the floats (and/or probes) which causes the activation of only the float C with the starting of both pumps, the floats and/or probes incoherence alarm will be activated.

15. EXP BOARD (OPTIONAL)



Depending on the programming of the clock (see enclosed instructions leaflet), the function of the EXP board is to feed a possible electrovalve which, connected to the delivery of the hydraulic system, when water is drawn, activates the automatic start of the pressure boosting set.

Ref.	Function
1	Connector for connection to the electric panel board (Ref. 16 – Paragraph 8).
2	Fuse protecting against overloads and short circuits of the output terminal. Electrical characteristics: 5x20 T 100mA.
3	Connector for connecting the clock.
4	Output terminal. Electrical characteristics: 230VAC, maximum using power: 10VA
5	Programming clock.