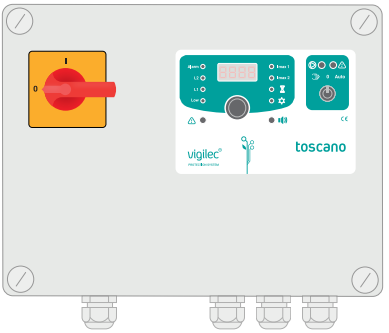
vigilec | COMPACT

toscano

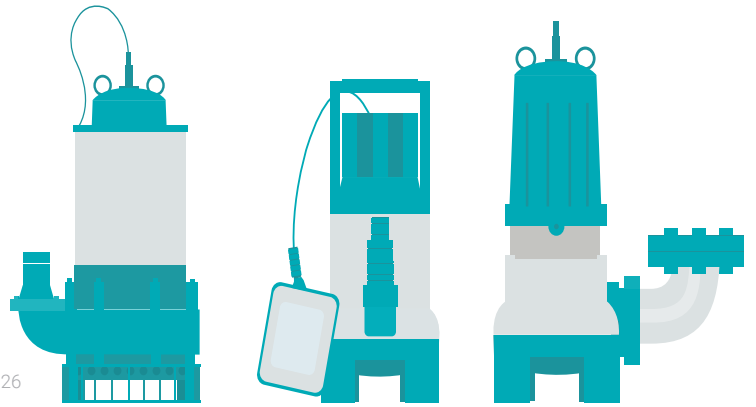
V1B

Ed. 3.26



ENGLISH (EN) User manual

Multi-control and multi-protection panel for 1 sewage pump



EN

Cod. 50023896. Ed.3.26

ENGLISH (EN)

1. GENERAL DESCRIPTION 2
   1.1. PRODUCT DESCRIPTION 2
   1.3. FRONT CONFIGURATION 3
   1.4. INTERIOR CONFIGURATION 4
2. INSTALLATION 5
   2.1. MECHANICAL INSTALLATION (WALL FIXING) 5
   2.2. ELECTRICAL INSTALLATION | SINGLE PHASE SYSTEM 6
   2.3. ELECTRICAL INSTALLATION | THREE PHASE SYSTEM 8
3. HANDLING OF EQUIPMENT 10
   3.1. PUMP SELECTOR 10
   3.2. SYMBOLOGY 10
   3.3. DISPLAY MESSAGES 11
   3.4. ALARM RESET 11
4. SETTINGS / CONFIGURATION 12
   4.1. THERMAL PROTECTION SETTINGS 12
   4.2. MECHANICAL PROTECTION SETTINGS 14
   4.3. LEVEL CONTROL SETTINGS / PUMP WITH INTEGRATED FLOAT 16
   4.4. LEVEL CONTROL SETTINGS / PUMP WITH 2 EXTERNAL FLOATS 18
   4.5. LEVEL CONTROL SETTINGS / PUMP WITH 3 EXTERNAL FLOATS 19
   4.6. LEVEL CONTROL SETTINGS / PUMP WITH 4-20 mA SENSOR 20
   4.7. ADVANCED SETTINGS 22
5. ALARMS / SIGNALLING OUTPUTS 24
   5.1. SIGNALLING OUTPUT (TERMINALS 5-6/7-8) 24
   5.2. GENERAL ALARM OUTPUT (TERMINALS 9-10-11) 25
   5.3. MUTING THE BUZZER 25
   5.4. ALARM MESSAGES / TROUBLESHOOTING 26
6. FACTORY RESET 28
7. MAINTENANCE 29
   7.1. CONSULTATION OF OPERATING DATA (DATALOGGER) 29
   7.2. MAINTENANCE ADVICE 30
8. TECHNICAL CHARACTERISTICS 31

SAFETY WARNINGS

ATTENTION! Before making any adjustments, it is essential to connect the motor or pump to the equipment to avoid unexpected tripping of the underload protection (minimum load 0.5A). We recommend that you follow all locally approved safety instructions and procedures when working with electrically connected equipment. Important safety information is listed below. For the safe installation and operation of this equipment, make sure to read and understand all cautions and warnings. ⚠ **WARNING:** Before installing, operating, doing maintenance, or testing this equipment, please read and understand the contents of this manual. Improper operation, handling, or maintenance could cause death, serious personal injury and damage to the equipment. ⚠ **WARNING:** This equipment is not designed to safeguard human lives. Follow all locally approved safety procedures and practices when installing or operating this equipment. Failure to do so could cause death, serious personal injury and damage to the equipment. ⚠ **WARNING:** Dangerous voltages. Contact with electrical current will cause serious personal injury or death. Follow all locally approved safety procedures when working around high voltage lines and equipment. ⚠ **WARNING:** This equipment requires regular inspection and maintenance to ensure proper operation. If it is not maintained properly, it could stop working correctly. Improper operation could cause equipment damage and possibly result in personal injury. ⚠ **WARNING:** All connections must be made by a qualified person. There is a risk of electric shock if this precaution is not followed. ⚠ **WARNING:** Additional pump motor protection can be added when required during installation. ⚠ **WARNING:** If the equipment is used or modified outside of what is specified by the manufacturer, Toscano disclaims all responsibility for improper use. The interior of the equipment should only be handled by our technical service personnel.



Installation must be performed by an electrician.



It is essential to read this technical manual before proceeding.



Danger: Electric risk



Important notice or recommendation



Mandatory action: Failure to do so could cause damage to the equipment or installation.



To know more

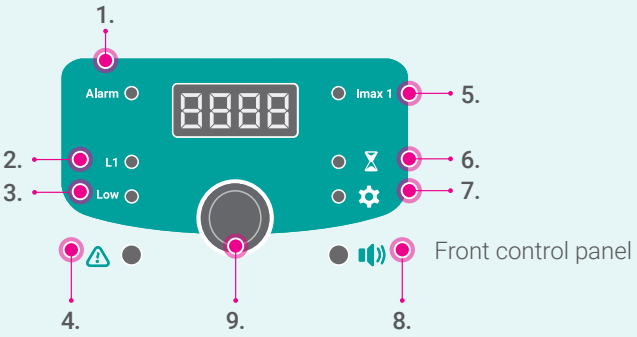
1.1. PRODUCT DESCRIPTION

Control and Protection Panel for Sewage Pumps: controls and protects 1 pump via 2/3 level floats or 4-20 mA sensor. Key features include overload protection, pump alternation, and alarm outputs. It offers simple and intuitive handling for efficient operation. It guarantees precise control of the liquid level and prevents damage to the system.

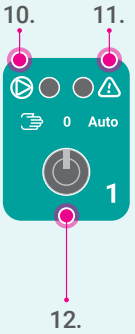
Includes general functions such as:

- Overload
- Phase failure and phase sequence
- Motor overheating
- Maximum running time
- Other advanced settings

1.3. FRONT CONFIGURATION



Front control panel

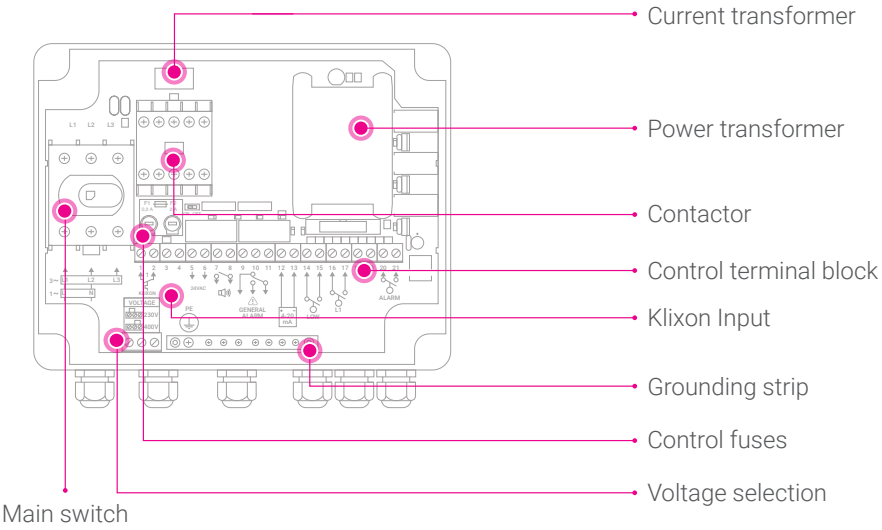


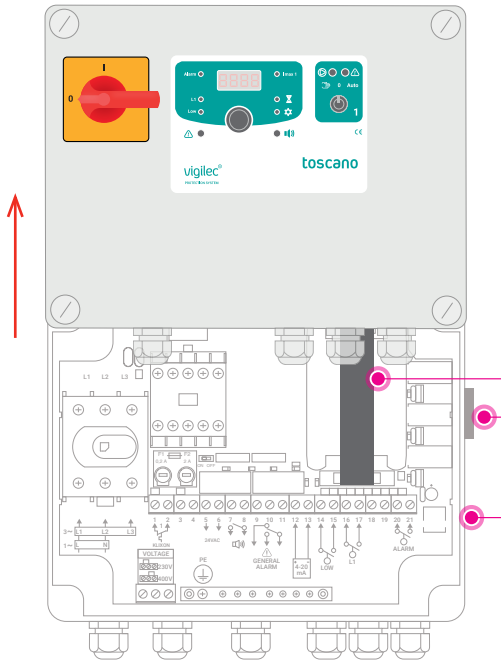
Pump selector

Parts of the Control Module

1. Alarm level (ALARM)
2. Medium level (L1)
3. Low level (LOW)
4. General alarm
5. Overload setting for pump 1
6. Maximum running time setting
7. Advanced settings / Datalogger
8. Alarm indicator
9. Rotary push button
10. Pump in operation
11. Pump failure
12. Selector MANUAL- 0 - AUTOMATIC

1.4. INTERIOR CONFIGURATION

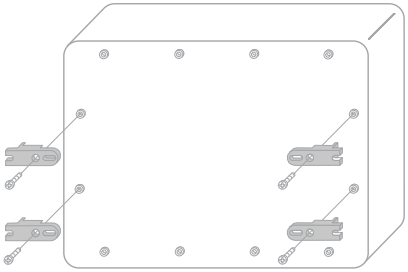




Warning: Be careful when opening the front cover of the equipment. The Flat ribbon cable is connected.

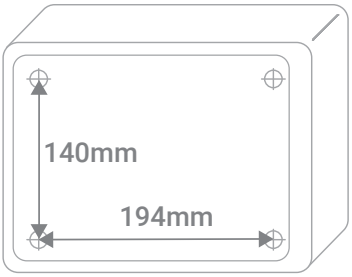
2.1. MECHANICAL INSTALLATION (WALL FIXING)

- **Clamping brackets mounting**



1. Place the fixing brackets in one of the anchor points established for this purpose.
2. Drill holes in the wall using the location where you have placed the fixing brackets.
3. Place the screws to anchor the equipment using the fixing claws.

- **Direct wall mounting**

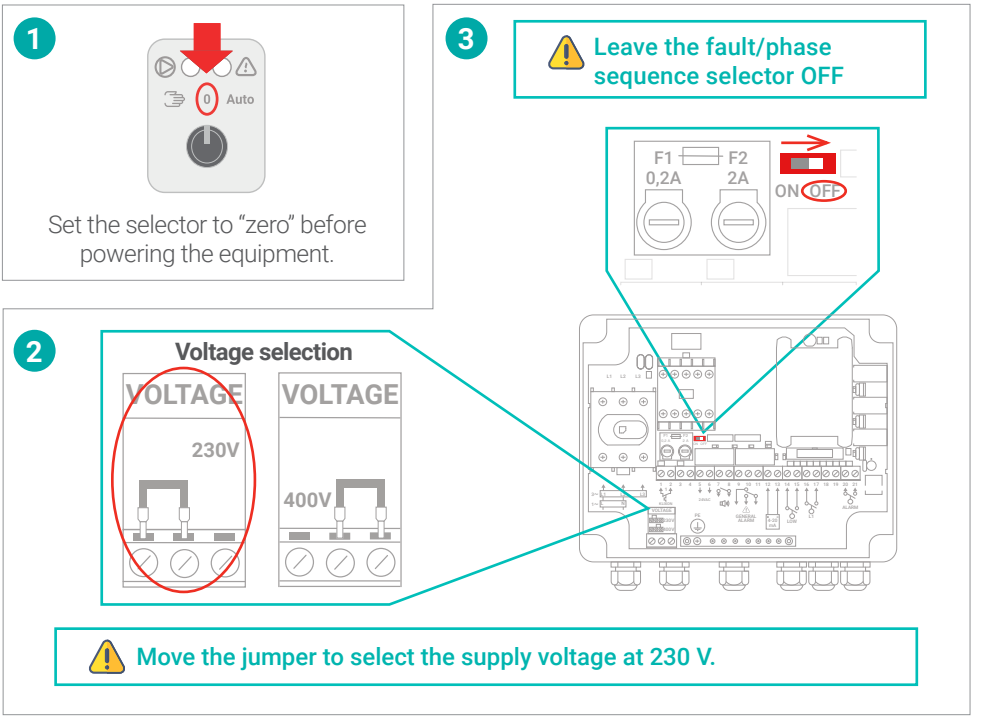


Drill the wall at the indicated dimensions (in mm) and screw the equipment directly to the wall. A full-size template is enclosed with the drilling indications for easier fastening.

2.2. ELECTRICAL INSTALLATION | SINGLE PHASE SYSTEM

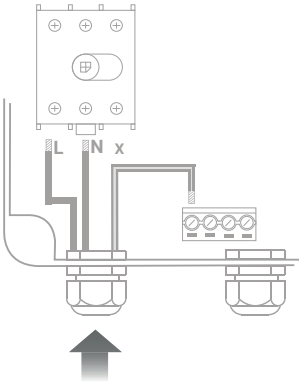
The correct electrical installation of a single phase pump system is crucial to guarantee efficient and safe operation of this panel. Follow the steps below carefully:

1. Position the selectors on - 0 -.
2. Move the voltage selection jumper to the 230 V position.
3. Leave the fault/phase sequence selector OFF.
4. Follow the instructions for connecting the power input.
5. Follow the instructions for connecting the pump output.

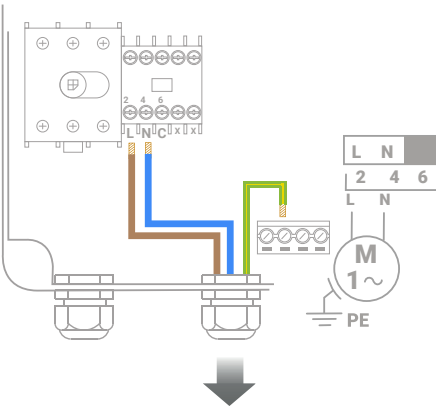


4

Single phase power input (L/N, 230 VAC)

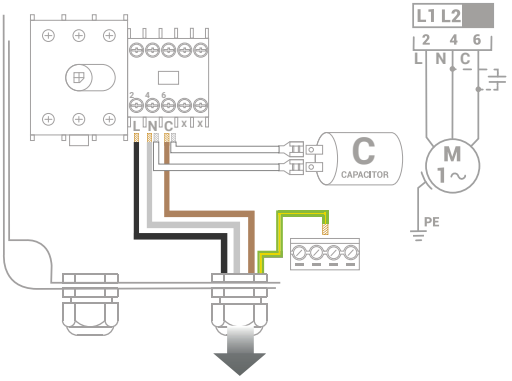


Single phase pump output with integrated starting capacitor



5

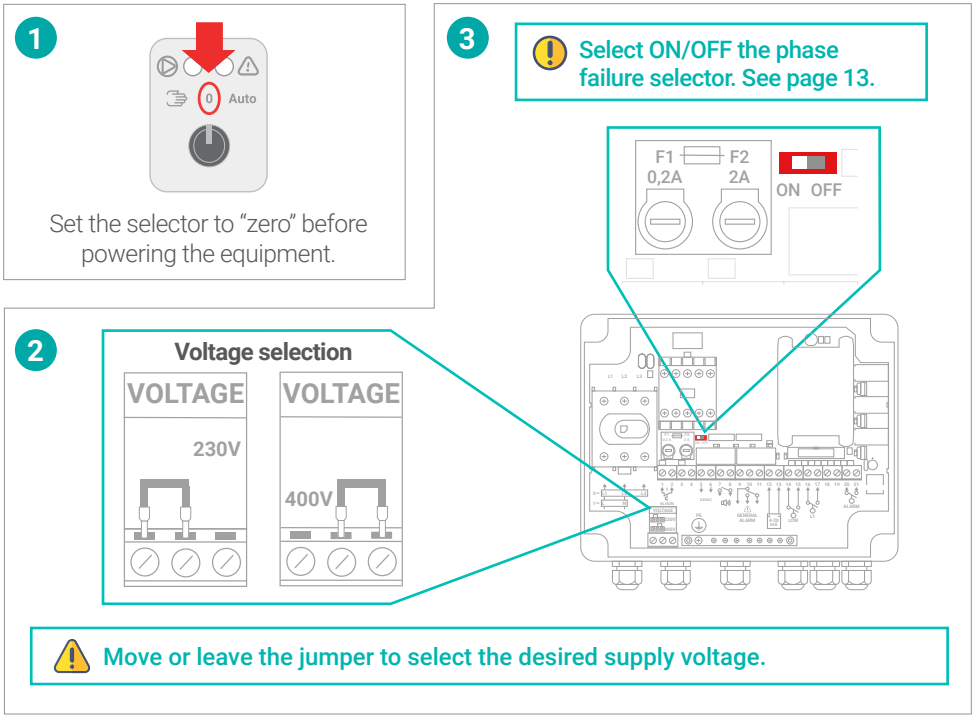
Single phase pump output with separate starting capacitor



2.3. ELECTRICAL INSTALLATION | THREE PHASE SYSTEM

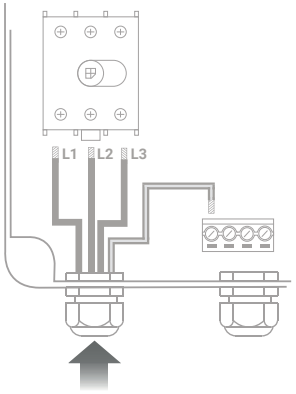
The correct electrical installation of a three phase pump system is crucial to guarantee efficient and safe operation of this panel. Follow the steps below carefully:

1. Position the selectors on - 0 -.
2. Move the voltage selection jumper to the 230 V or 400 V position, depending on the type of motor you have chosen.
3. Move or leave the fault/phase sequence selector.
4. Follow the instructions for connecting the power input.
5. Follow the instructions for connecting the pump output.
6. Check the direction of rotation if necessary.



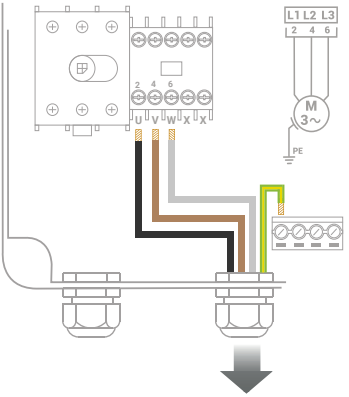
4

Three phase power input (L1/L2/L3, 230/400 VAC).



5

Output to three phase pump.

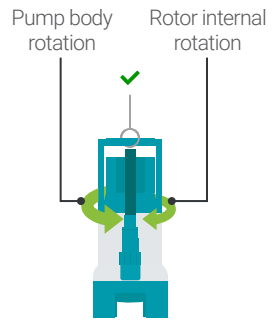


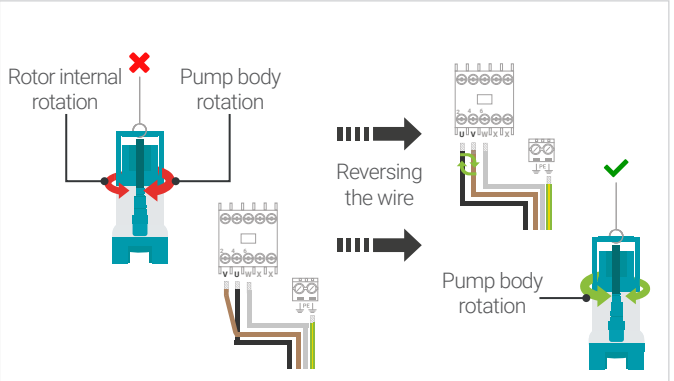
⚠ If E r r PhAS (phase sequence error) appears when turning on, two of the power supply phases must be swapped with each other.

- **Verification of the direction of rotation**

Hang up the pump and turn on for a moment using the ´´manual´´ mode.

6





3. HANDLING OF EQUIPMENT

3.1. PUMP SELECTOR

Manual mode



The pump works in forced operation for a maximum of 15 seconds

Zero mode



The pump cannot work

Automatic mode



The pump will start when necessary

If the selector is not in AUTO, the equipment activates the alarm

3.2. SYMBOLOGY



Confirm



Hold down

OFF

Permanent: ON/Parameter selection



Parameter modification



Parameter selection



Flashing: Parameter modification

Alarm

	No alarm
	Failing
	Alarmed

Pump

	Stop
	In operation
	In manual operation

3.3. DISPLAY MESSAGES

OFF	The selector is at zero (system disabled).
AutO	Equipment in Automatic mode.
3.4A	Pump operating (consumption of 3.4 Amps).
oFF	Neither of the selectors is in AUTO.
t -25	Stopping of the pumps during the timing sequence (pg.14).
Err PhAS	Failure or incorrect sequence in power supply phases (pg. 13).
OUEr LOAd 6.7A	Pump stopping due to overload. Tripping at 6.7Amps.
Err. PhAS	Pump with phase failure fault (pg. 13).
OUEr hEAt	Pump overheated with open Klixon (pg. 13).
run End	Pump has exceeded the maximum run time (pg. 14).
Only if a sensor is being used	
24	Level in centimetres.
Err. SEn Oc	Sensor error due to broken wire or poor connection (pg. 27).
Err. SEn Sc	Sensor error due to short circuit (pg. 27).

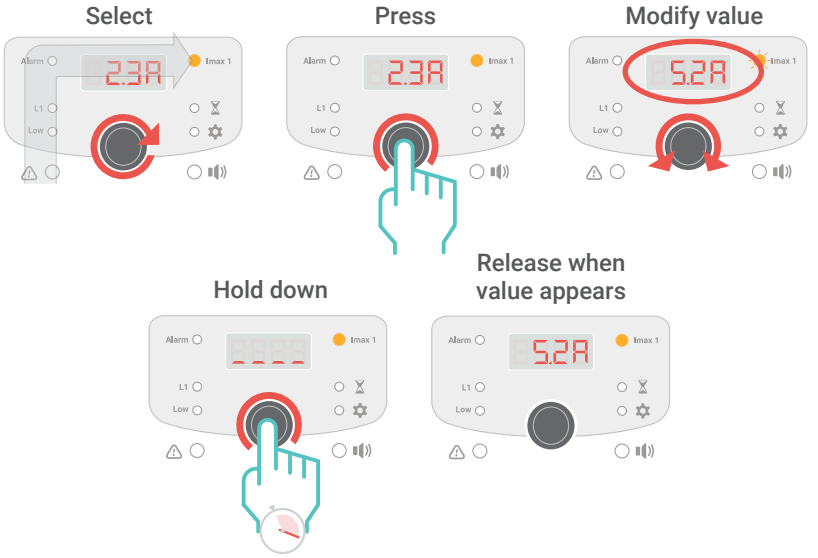
3.4. ALARM RESET

Press to delete the message



4.1. THERMAL PROTECTION SETTINGS

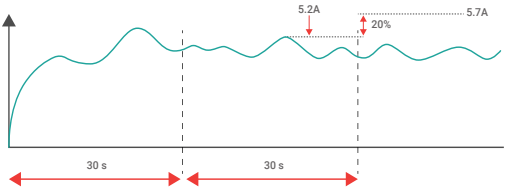
- **Manual setting Imax**



> If you do not touch the control for more than 15 seconds, the device will return to the main screen.

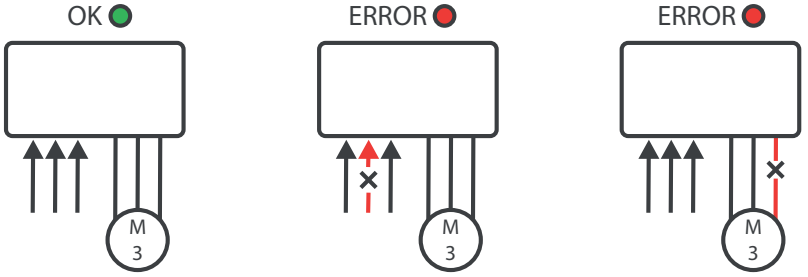
- **Automatic calibration**

The equipment self-calibrates on first start-up. After the first 30 seconds, the equipment registers the maximum current consumed. Then, it sets the **Imax value. 20% above.** To repeat the process select cAL in Imax.



- **Phase failure**

If, in a three phase installation, **the direction changes** or **one of the phases in the power supply or in the pump is cut**, an Err PhAS **phase failure** will occur.

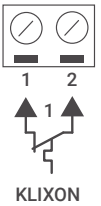


- **Motor overheating (KLIXON)**

If the pump has an integrated thermocontact (KLIXON or similar), we can connect them to terminals 1-2 and 3-4.

When the pump overheats, the thermocontact opens.

For example, the display shows the message OVEr hEAt indicating that pump is overheated.



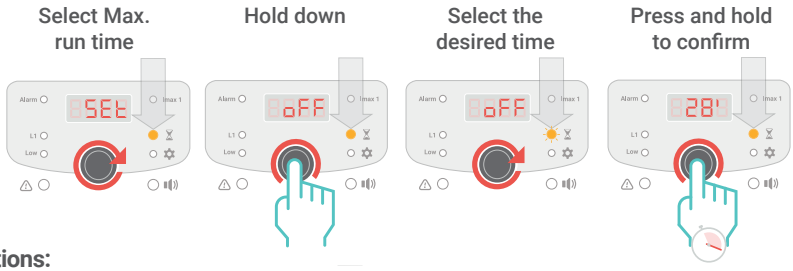
If you do not use these inputs, a jumper must be placed between terminals 1-2 and 3-4.

- As long as the thermocontact is open, the pump cannot be started.
- The alarm LED of that pump will remain on in a fixed red colour.
- The overheat alarm can be silenced, but **cannot be reset**.
- When the pump cools down, the thermocontact closes, **the alarm automatically disappears** and the pump can work again.

4.2. MECHANICAL PROTECTION SETTINGS

- **Maximum running time**

Allows detection of the blockage of the lower floats or of the sensor by analysing the time that it pumps with only the lowest level activated.



Functions:

Blockage detection in single phase pump with integrated floats.

The pump floats at the bottom (where there is more dirt) can get stuck. If they are blocked in the "ON" position, the pump does not stop.

When the pump is running with only its **integrated float activated**, the LED flashes.

If the maximum set time is exceeded, the pump is cancelled due to failure, the message runEnd is displayed and the LED stays on.

> **If we press the control or the alarm float is activated, the fault is reset and the pump starts working again.**

Detection of blocked floats in Installations with external floats

If the lower float (LOW or L1) is blocked in the "ON" position, the pumps do not stop.

When the pump is running **with only the lower float activated**, the LED flashes.

If the maximum time is exceeded, the float is cancelled and the LED stays on.

The lowest level LED (LOW or L1) **flashes** indicating that the float is disabled. The equipment continues to work with the rest of the floats.

Since the lower float is disabled, the stop is delayed 30 seconds after lowering the upper float and a countdown t-30...t-00 appears.

> **If we press the control or if the float goes down, the error disappears.**

Detection of blockages in continuous level sensor

If the sensor gets stuck when the tank is emptying the reading does not drop below the LOW level and the pump does not stop.

When any pump is in operation **with only LOW activated**, the LED flashes: 

If the maximum time is exceeded, the LOW level is cancelled and the LED  lights up.

The LOW led  **flashes** indicating that the sensor is disabled.

The equipment continues to operate with the rest of the levels. Since LOW is overridden, the stop is delayed 30 seconds after L1 is deactivated and a countdown  appears.

If we press the control or the reading drops below the LOW setting, the fault disappears.

4.3. LEVEL CONTROL SETTINGS / PUMP WITH INTEGRATED FLOAT

OPERATION

The equipment keeps one of the outputs activated. When the tank fills up, the pump floats go up at the same time, but only one of the pumps will start.

Alarm float

- Activates the buzzer.
- Activates the **GENERAL ALARM** output.
- Activates the **24 VAC** output.

Integrated floats

- The pump starts (alternation function).
- The pump stop when the floats are lowered.

Additional float (optional)

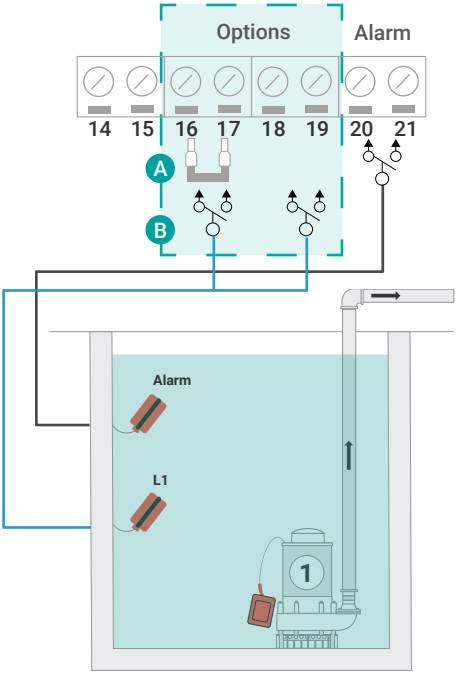
Option A Without an additional float

- Works with the integrated floats and the alarm.

Option B Float to allow start up

- The pump starts.

-The integrated floats to the pump will carry out the function of safety stop and protection from dry running.



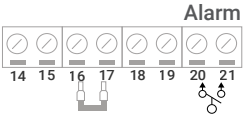
SETTINGS

1. Set the selector to zero before configuring the equipment.

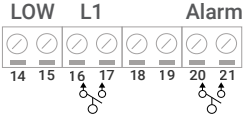


2. We will choose one of the following options:

Option A Without additional float
- We put a jumper in 16-17 terminal.

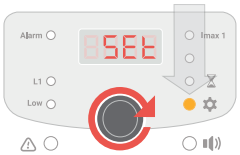


Option B Float to allow start up
- Remove the jumper at 16-17 to connect the L1 float.



The equipment comes configured by default for external floats **(External Floats)** and it will be necessary to configure it as **(Integrated Floats)**.

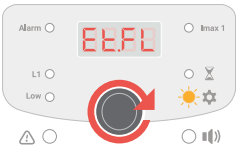
Select settings (SET)



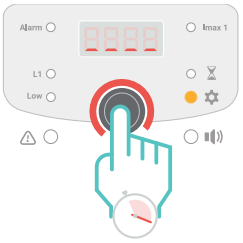
Press



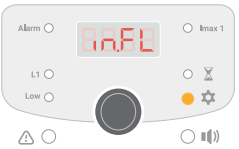
Rotate and select Et.FL



Hold down



Release when in.FL appears





This pump cannot be started manually when the level is very low because its float disconnects the motors.

This step is necessary for a proper functioning of the equipment.

4.4. LEVEL CONTROL SETTINGS / PUMP WITH 2 EXTERNAL FLOATS

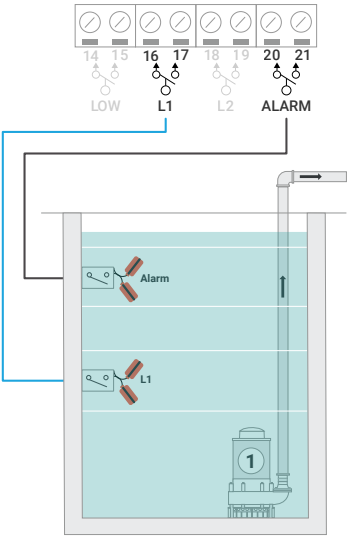
OPERATION

Alarm float

- Activates the buzzer.
- Activates the **GENERAL ALARM** output.
- Activates the **24 VAC** output.

Level L1

- Starts the pump.
- When level L1 drops, the pump stops.



4.5. LEVEL CONTROL SETTINGS / PUMP WITH 3 EXTERNAL FLOATS

OPERATION

Alarm float

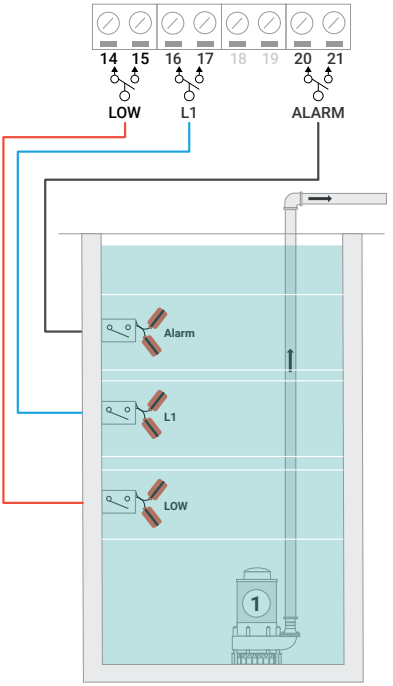
- Activates the buzzer.
- Activates the **GENERAL ALARM** output.
- Activates the **24 VAC** output.

Level L1

- Starts the pump.

LOW level

- When the LOW level drops, the pump stops.



This operating mode comes by default. (ET.FL parameter) Check advanced settings if there are any problems.

4.6. LEVEL CONTROL SETTINGS / PUMP WITH 4-20 mA SENSOR

OPERATION

Control of the pump by means of a 4-20 mA sensor + alarm float allows us to adjust up to 3 levels. The sensor monitors the liquid level and activates the pump based on these preset levels. In addition, the alarm float is responsible for signalling when the level reaches a critical point, securing the system.

Alarm float / Alarm level

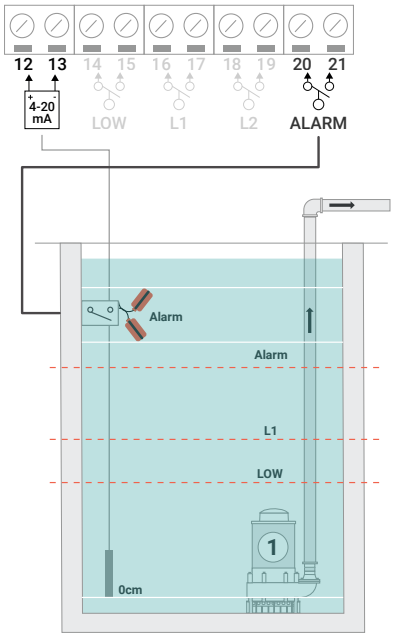
- Activates the buzzer.
- Activates the **GENERAL ALARM** output.
- Activates the **24 VAC** output.

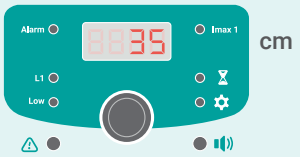
Level L1

- Starts the pump.

LOW level

- When the LOW level drops, the pump stops.





- The display shows the level in cm.
- Only the consumption of the pump in manual mode or during calibration is displayed.

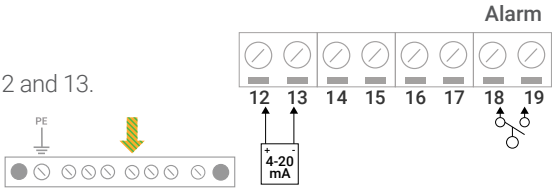
If the sensor fails, the pump starts with the alarm float. When the level drops and the alarm float is deactivated, the stop will be delayed by 30 seconds, during which a countdown t-30...t-00 will be displayed.

SETTINGS

1 Connections

- Connect the sensor in terminal 12 and 13.

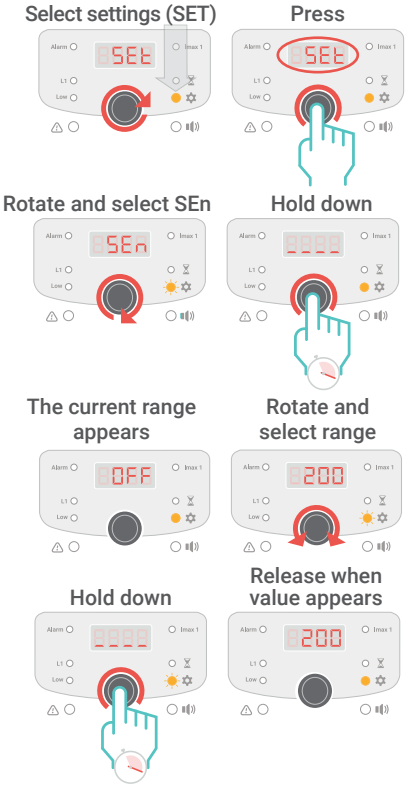
- The sensor mesh is connected to the **PE** grounding strip.



The use of an alarm float is recommended

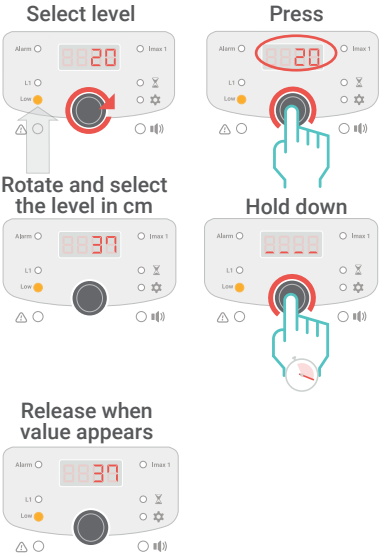
2 Range selection

The equipment comes by default with the sensor disabled OFF. We can choose one of these ranges: r 50, r 100, r 150, r 200, r 250, r 300, r 400 or r 500 in cm.



3 Level settings

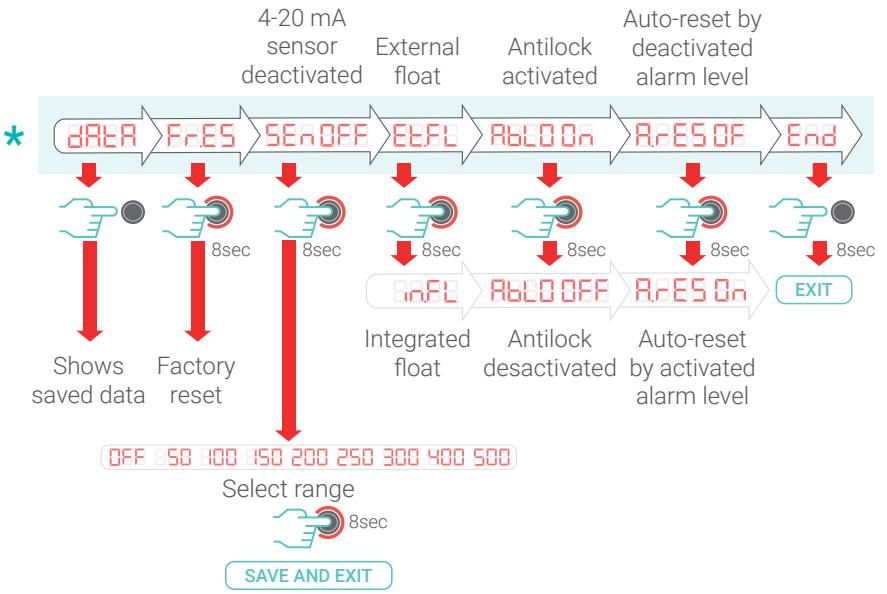
We can adjust each of the three levels **LOW, L1 and Alarm**. Each level is set to its corresponding LED.



The system prevents crossing the levels and requires a minimum separation of 1 cm between each level.

4.7. ADVANCED SETTINGS





* *Default parameters.*

- **External float/integrated float**

The advanced configuration mode allows you to select between the option of integrated floats or external floats in the installation. Depending on the choice, the corresponding mode must be set to ensure proper operation. See section **4.3. LEVEL CONTROL SETTINGS**.

> **Et.FL *** / In .FL : Choice of the type of pump used: Pump with external level float / Pump with integrated level float (automatic pump).

- **Antilock ON / OFF**

If enabled, when the pump remains in **Automatic mode** without running for more than 50 hours, the equipment will start the pump for one second to prevent it from getting stuck during idle periods.



1 second / 50 hour (Auto mode)

> Ablo **ON *** / Off : Function enabled/disabled (ON/OFF) for the automatic exercise of the pump 1 second every 50 hours of continuous stop.

- **Auto-reset by alarm level ON / OFF**

This function resets the pump alarms if the alarm level is activated. If, with the alarm level active, an alarm occurs again, it will no longer be reset.

Example

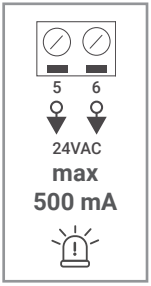
The pump has suffered an overload due to a one-off failure and is stopped with an alarm. If the level rises and the alarm level is activated, the fault is reset and the pump starts working again. As the overload fault was isolated and has not reappeared, the pump is operational again.

> A.rES **OFF *** / On : Function enabled/disabled (ON/OFF) for automatic reset after activation of the thermal protection and only at alarm level (single reset).

* *Default parameters.*

5.1. SIGNALLING OUTPUT (TERMINALS 5-6/7-8)

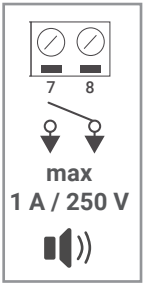
- **Beacon light option with 24 VAC power supply (max. 500 mA)**



Voltage output
(NO contact)

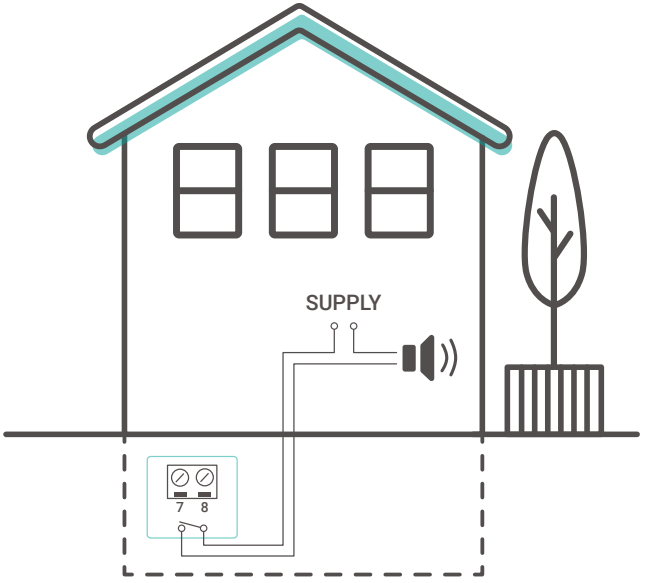
- Activates if any problem is detected (see page 26).
- Allows the direct connection of a signalling device to 24 VAC, such as a beacon or an additional buzzer. This output can be silenced (section 5.3.).

The maximum current is limited to 500mA.

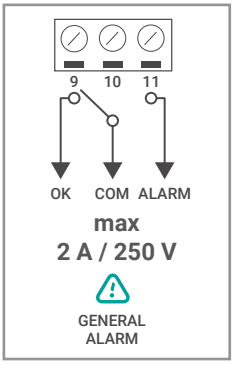


Potential free output
(NO contact)

- It is activated at the same time as the previous output and can be used to connect any external signalling element. This output can be silenced (section 5.3.).



5.2. GENERAL ALARM OUTPUT (TERMINALS 9-10-11)

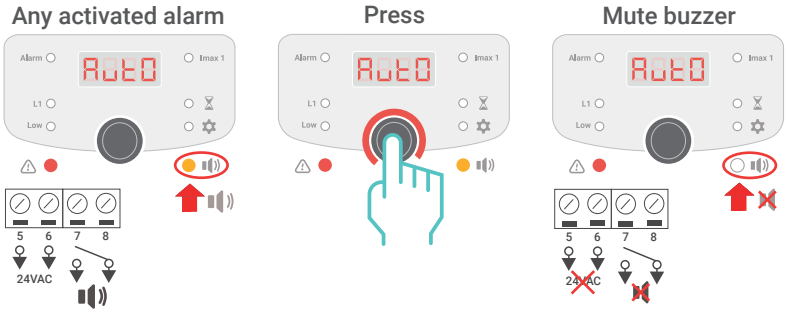


Potential free output (NO/ NC changeover contact)

- If everything is correct, the contact is located between terminals 9 and 10. When there is a problem, the contact is between 10 and 11.

5.3. MUTING THE BUZZER

It is possible to mute these alarms by pressing the control.



If another alarm occurs later, the buzzer and the output will be activated again.
The general alarm output is not cancelled.

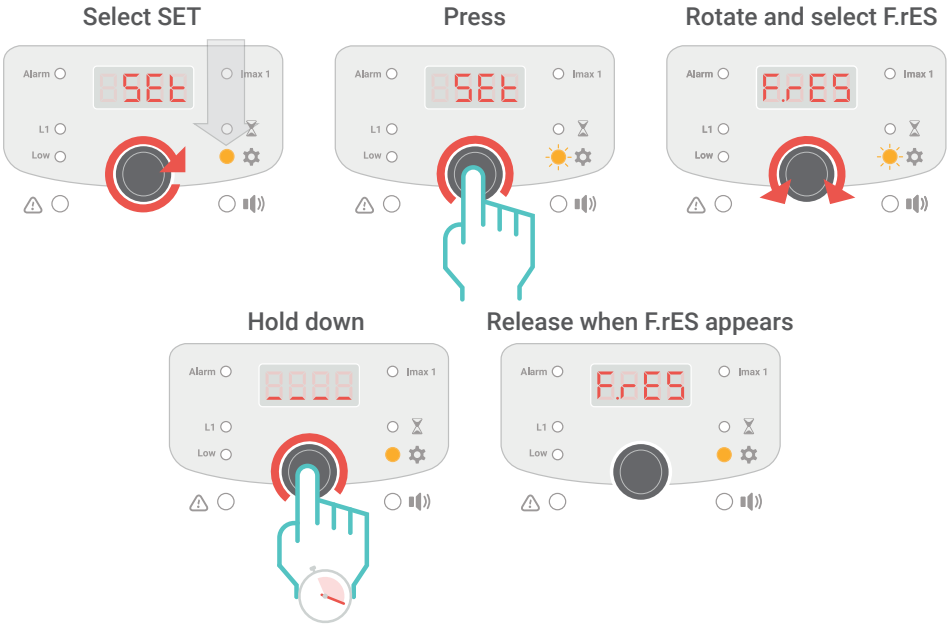
5.4. ALARM MESSAGES / TROUBLESHOOTING

Message	Description	Output 5-6/7-8*	Output 9-10-11*	Possible cause	Possible solution
	The screen does not turn on			Mains supply OFF	Power the equipment respecting the input voltage (see page 6-9)
				The main switch is in - 0 -	Move the main switch to - 1 -
				Unconnected flat ribbon cable	Make sure that the flat ribbon is correctly connected inside the equipment
	The equipment display flashes			Voltage selection not checked	Set the voltage selection jumper according to whether you are installing a 230 I/III or 400 III motor
	Alarm LED flashes	x	x	The alarm float has been raised or the water has reached the alarm level set in the 4-20mA sensor setting	Find out why the water reached that height and take corrective action
OUEr LOAd 6.7A	Overload alarm	x	x	Motor protections activated. Indicates the pump that has the fault and the current at which it tripped	Check that the maximum current setting is in accordance with the nominal current specifications of the motor
Err. PhAS	Phase/ sequence failure	x	x	The power supply or one of the pump is missing a phase	Check the power and pump connection points
				The phases are connected but in the wrong order (only on three phase motor)	Phase sequence: Go over pg. 13 check up on motor rotation
runEnd	Running time exceeded	x	x	Set run time exceeded	Check this running time setting (pg 14)
OUEr hEAt	Motor overheating (KLIXON)	x	x	Opening the KLIXON input of the indicated pump. The motor has overheated.	Find out why the motor got hot and take corrective measures

* (X) Means output contact actuated.

Err.SEn Oc	4-20 mA sensor error due to open circuit	x	x	The sensor is not connected. It's consuming less than 4mA	Check the sensor connection (terminals 12-13) to see if it is wired correctly
Err.SEn Sc	4-20 mA sensor error due to short circuit	x	x	The sensor is short-circuited	Change the sensor
				The sensor is consuming more than 20 mA	Make sure the sensor capillary is not obstructed
oFF	No selector in AUTO	x	x	When performing installation maintenance or a manual activation, you forgot to set the selectors back to AUTO.	Set the selector to AUTO after maintenance / Silence the equipment whilst it is being used, as long as you do not forget to set the selector back to AUTO again.

6. FACTORY RESET



The counters for hours, start ups, alarms and last alarm will not be deleted.

- **Default parameters**

Et.FL : Choice of the type of pump used: Pump with external floats.

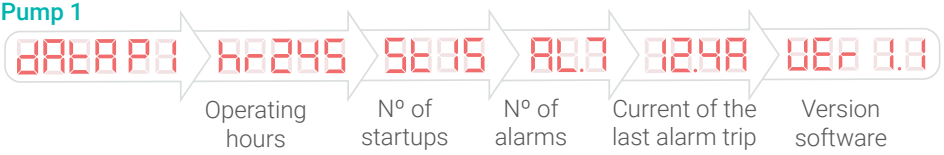
Ablo ON: Function activated (ON) for the automatic exercise of the pump 1 second every 50 hours of continuous stop.

A.rES OFF: Function disabled (OFF) for automatic reset after tripping of the thermal protection and only at alarm level (single reset).

7.1. CONSULTATION OF OPERATING DATA (DATALOGGER)



Pump 1



You can stop this message with a short press of the control.

7.2. MAINTENANCE ADVICE

- **Regular inspection**

Carry out regular inspections of the entire control and protection panel system for sewage pumps. Check components, cables, connections, and protection devices for signs of wear, damage, or deterioration. Check and tighten electrical connections and terminals to ensure they are tight and free of signs of corrosion. Be sure to follow proper safety guidelines when working with electricity.

- **Sensor Calibration**

If 4-20 mA sensor are used, regularly check and calibrate this sensor according to the manufacturer's recommendations. Make sure that the measurement values are accurate and within the expected ranges.

- **Performance testing**

Carry out periodic tests of the control and protection panel system to verify its correct operation. This may include tests for starting and stopping the pump, tests for alarms, and tests for responding to protective situations, such as running dry or maximum alarm level.

- **Event log and maintenance**

Keep a detailed record of maintenance activities performed, including inspections, cleanings, calibrations and tests. Also record any abnormal event, alarm or system failure. This will make it easier to track maintenance and identify potential recurring issues.

- **Training and documentation**

Make sure that the personnel in charge of maintenance is properly trained in the operation and maintenance of the control and protection panel. Provide clear and detailed documentation, such as user manuals and wiring diagrams, to facilitate proper system maintenance.

8. TECHNICAL CHARACTERISTICS

Electrical characteristics	
Supply voltage	230/400 VAC (selectable)
Permissible voltage variations	+/-20% (>30%: Self-disconnection)
Control fuses (F1/F2)	F1: 0.3 A (primary) / F2: 2A (secondary)
Maximum current	16A AC3
Protections	Overload, failure or incorrect phase sequence, overheating and maximum running time
Display	LED 4 digits
Signalling	Pump in operation, alarms, status of levels, maximum current and maximum running time
Overload setting (Imax)	0.6 - 20.0A
Auto calibration setting	+20% of fixed In (nominal current)
Maximum running time setting	OFF - 30 seconds – 99 minutes
Sensor range 4-20 mA	50cm, 100cm, 150cm, 200cm, 250cm, 300cm, 400cm or 500cm
Detection of sensor failure 4-20 mA	Short circuit (I>23 mA) and open circuit (I < 3 mA)
Overload Trip Time	7 seconds
Voltage on floats/sensor 4-20 mA	24 VDC
Alarm contacts	Maximum AC1:2 A/250 VAC and AC11: 1 A/250 VAC
Signalling output	24 VAC (max. 500 mA)
Operating data (Datalogger)	Running hours, number of starts, number of alarms and current of the last alarm.
Control connection terminals	4 mm^2
Mechanical characteristics	
Cable gland configuration	1x M25 (power) + 1x M20 (motors) + 5x M16 (control)
Fixing	Direct or with clamping brackets
Measurements (mm)	255 x 230 x 150
Weight	2.5 kg
Work temperature	-10 +55ºC
Protection	IP56
Software	V 1.2

Cod. 50023896. Ed. 3.26

toscano

Toscano Línea Electrónica, S.L.
P.I. La Isla c/Río Viejo, 50 - 41700 - Dos Hermanas - SEVILLA - SPAIN - (+34) 954 999 900 - www.toscano.es - info@toscano.es