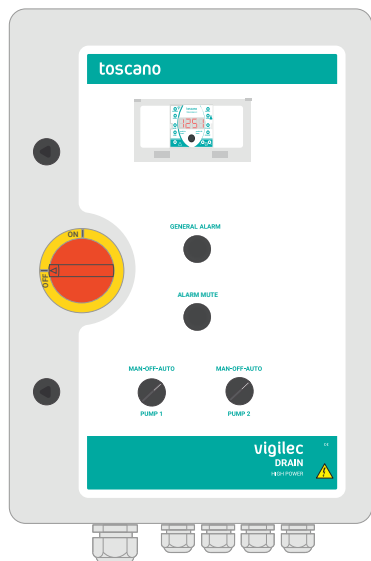


VHP-DRAIN-2

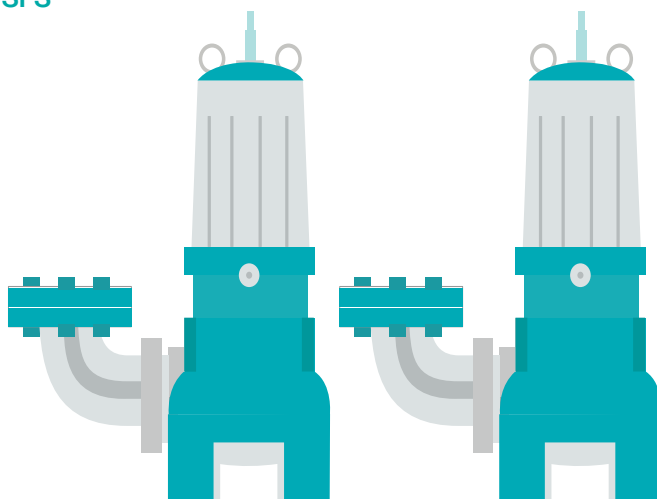
Ed. 3.22



VHP-DRAIN-2-DOL
VHP-DRAIN-2-SFS

ENGLISH (EN) User manual

Duplex control and protection panel for 2 drain pumps,
1ph/3ph 230/400VAC with DOL or SFS starting method



ENGLISH (EN)

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WARNING

ENGLISH (EN)

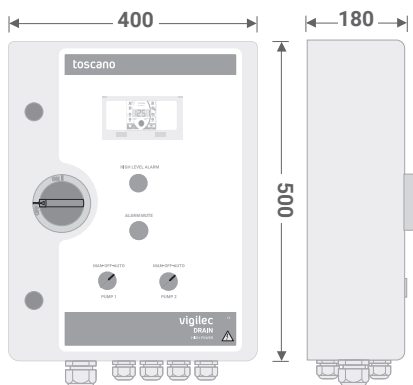
CAUTION! Before making any adjustments, it is essential to connect the motor to the equipment to avoid unintentional tripping of the underload protection (minimum load 0.5A). We recommend to follow all procedure and safety instructions approved in your area operating with equipment connected to the electrical power supply. Important safety information is detailed hereafter. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings. ⚠ **WARNING:** Before installing, operating, servicing, or testing this equipment, read and understand the contents of this manual. Improper operation, handling, or maintenance could result in death, serious personal injury, and equipment damage. ⚠ **WARNING:** This equipment is not designed to safeguard human lives. Follow all locally approved safety procedures and practices installing or operating this equipment. Failure doing so could result in death, serious personal injury, and equipment damage. ⚠ **WARNING:** Dangerous voltages. Contact with electrical current will cause serious personal injury or death. Follow all locally approved safety procedures when working near high voltage lines and equipment ⚠ **WARNING:** This equipment requires periodic inspection and maintenance to ensure proper operation. If not properly maintained, it may fail to operate properly. Incorrect operation could cause damage to the equipment and possibly result in personal injury. ⚠ **WARNING:** All connections must be made by a qualified person in charge. There is a risk of electric shock if this warning is not heeded. ⚠ **WARNING:** Additional protection of the pump motor may be added when necessary in the installation. ⚠ **WARNING:** If the equipment is used or modified outside the manufacturer's specifications, Toscano disclaims all liability due to improper use. The interior of the equipment should only be handled by personnel of our technical service.



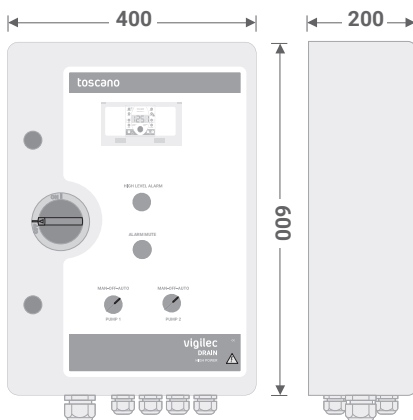
The installation has to be done by an electrician

1. MODELS

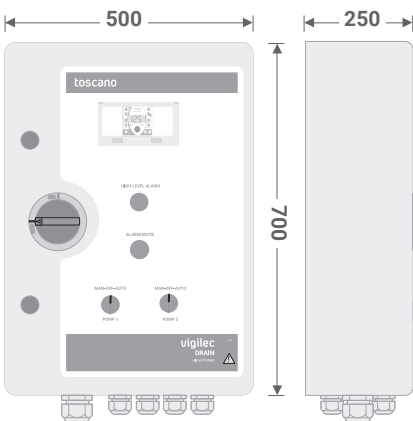
10003738	VHP-DRAIN-2-DOL-1,6/2,5A
10003739	VHP-DRAIN-2-DOL-2,5/4A
10003740	VHP-DRAIN-2-DOL-4/6,3A
10003741	VHP-DRAIN-2-DOL-6,3/10A
10003742	VHP-DRAIN-2-DOL-10/16A
10003743	VHP-DRAIN-2-DOL-14,5/20A
10003744	VHP-DRAIN-2-DOL-18/25A



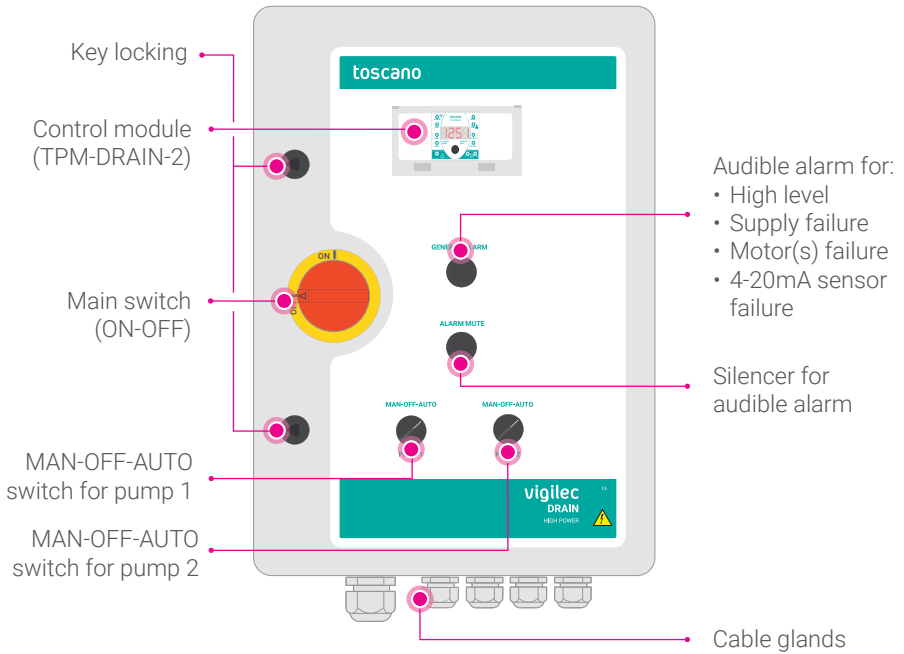
10003745	VHP-DRAIN-2-SFS-2/12A
10003746	VHP-DRAIN-2-SFS-6/16A
10003747	VHP-DRAIN-2-SFS-12/25A



10003752	VHP-DRAIN-2-SFS-20/32A
10003753	VHP-DRAIN-2-SFS-32/45A

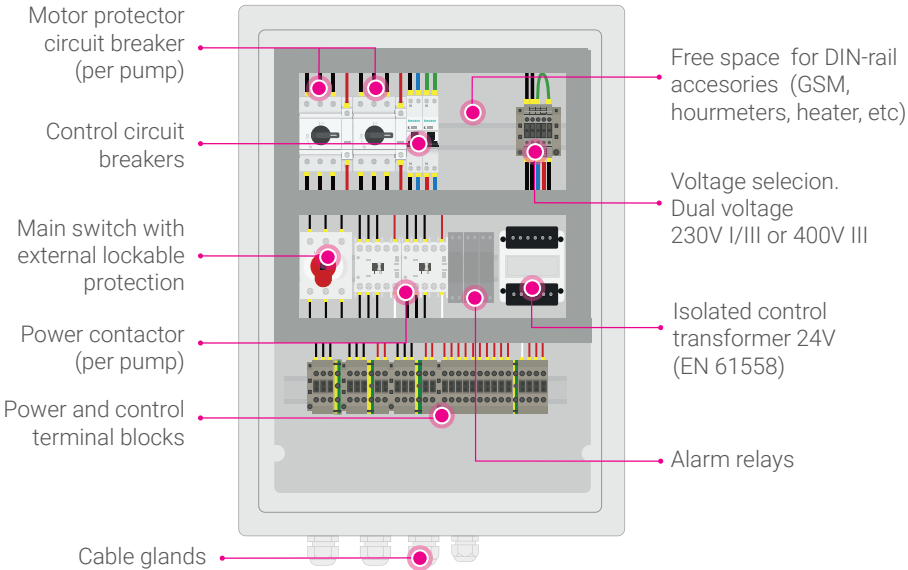


2. FRONT DISPLAY

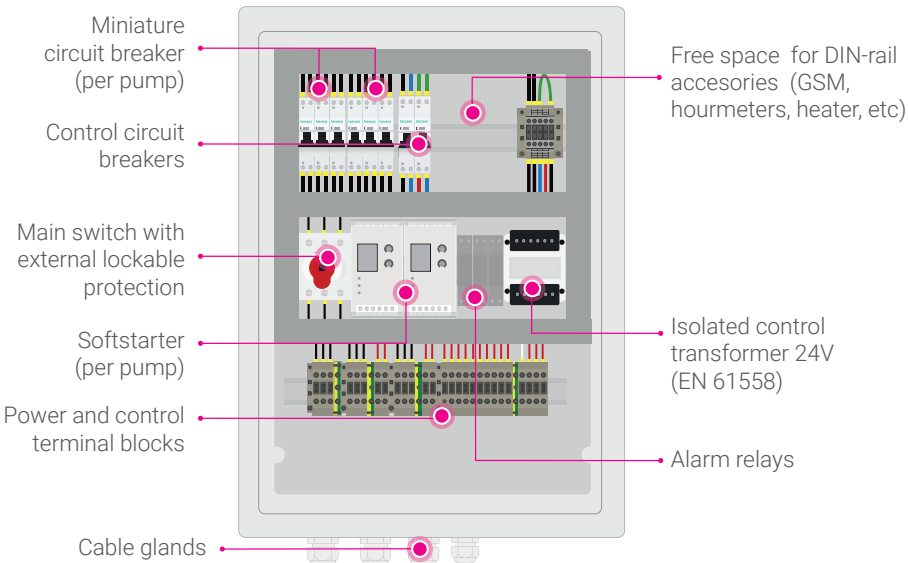


3. INTERNAL LAYOUT

VHP-DRAIN-2-DOL

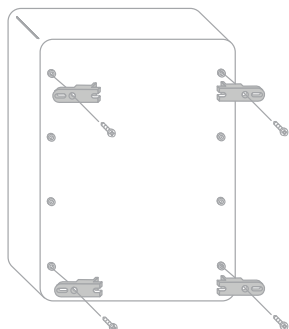


VHP-DRAIN-2-SFS



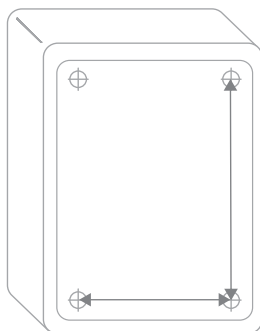
4. SETTING-UP (WALL MOUNTING)

Clamping brackets mounting



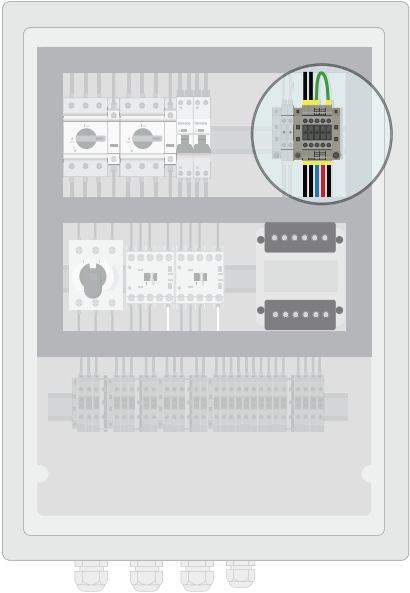
- 1 Place the fixing brackets in the anchor points established for this purpose.
- 2 Drill holes in the wall using the location where you have placed the fixing brackets.
- 3 Insert the screws to anchor the equipment by using the fixing brackets.

Clamping brackets mounting



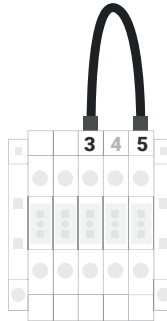
Drill the wall at the indicated perforations points and screw the equipment directly to the wall.

5. VOLTAGE SELECTION

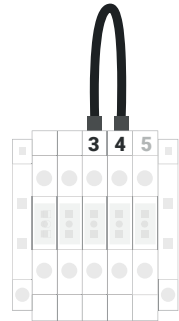


Only for DOL model.

230 VAC



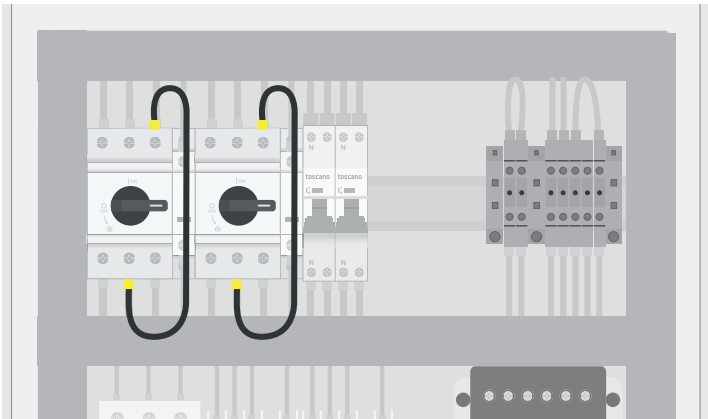
400 VAC



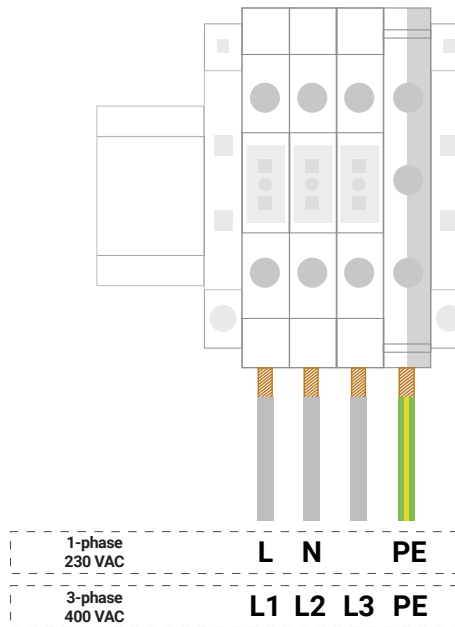
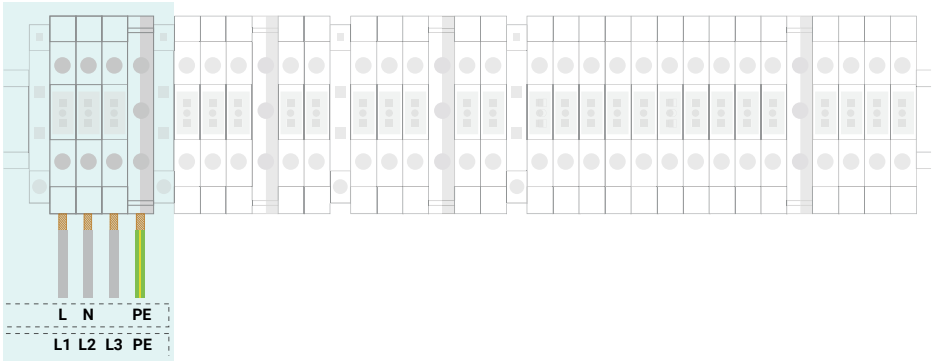
The cabinets are set at 400V by default.

Power supply VHP-DRAIN-2-DOL at 230VAC:

In case of single-phase power supply, wire the motor protectors as indicated below. The equipment includes 2 cables supplied for this purpose.



6. POWER CONNECTIONS

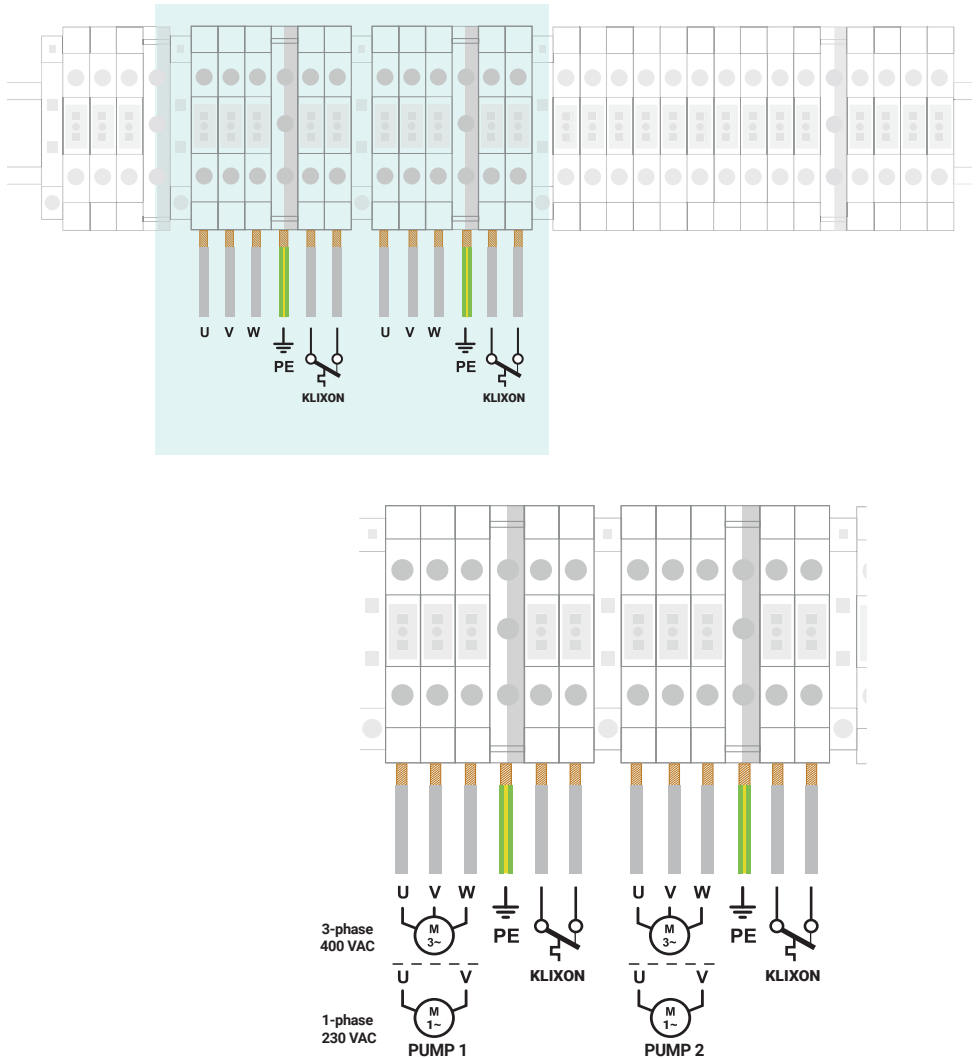


Only for SFS model.



- Connect the 3 input phases L1/L2/L3 in the correct order, otherwise the softstarter will fail.
- If you don't know the correct order of the phases and connecting them causes the softstarter to fail, invert one phase with another and test (L1 with L2, L1 with L3 and L2 with L3).

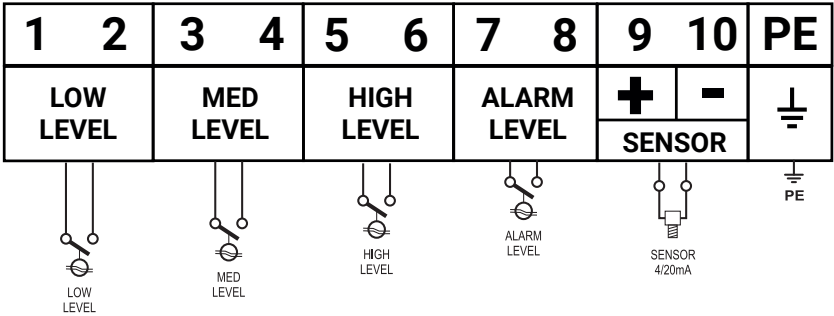
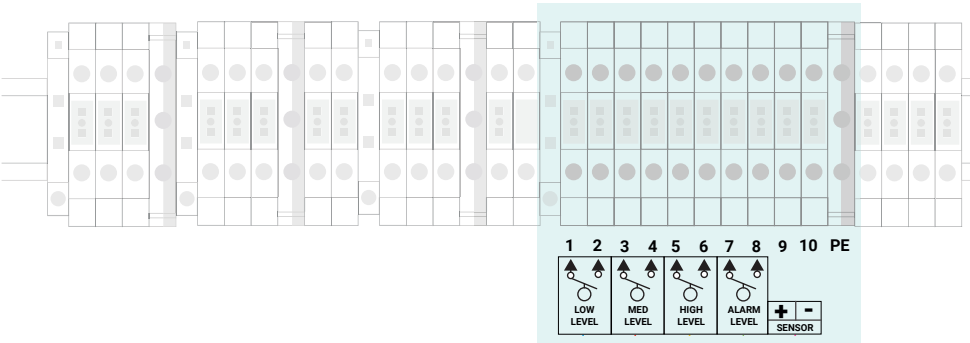
7. MOTOR CONNECTIONS



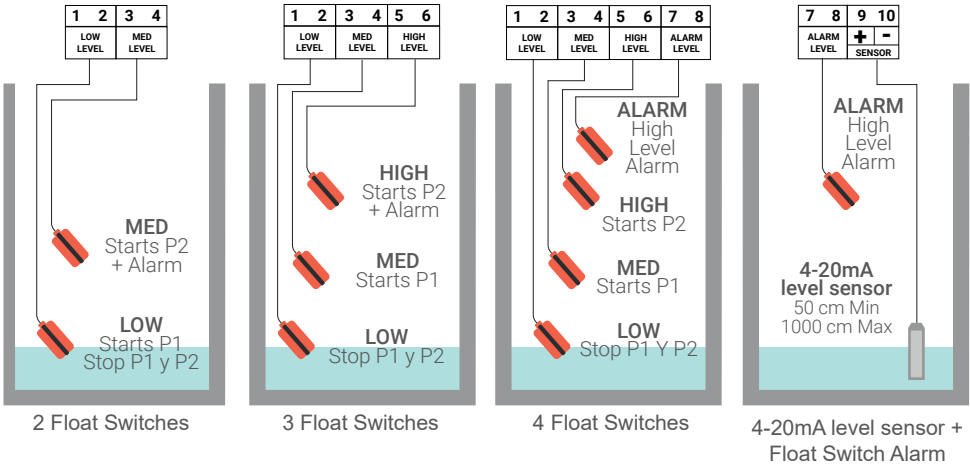
- Connect the 3 motor output phases U/V/W and check that the motor turns in the correct direction.
- If the motor does not turn in the correct direction, invert one phase with another (U with V, U with W or V with W).

If the Klixon inputs (1-2 and 3-4) are not used, they must be bypassed.

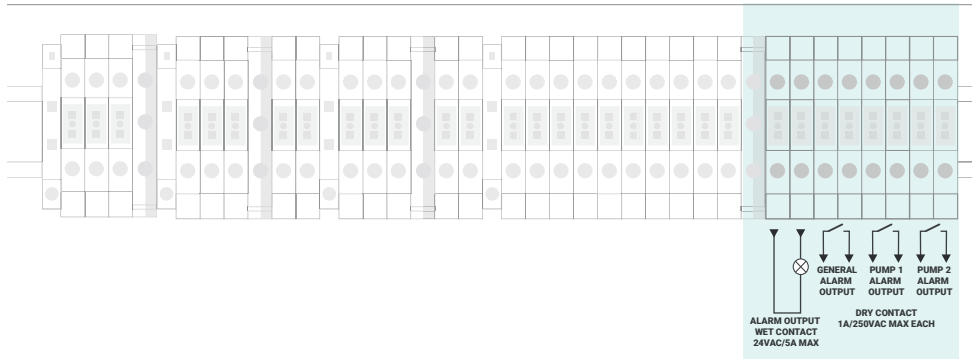
8. LEVEL CONTROL INPUTS



P1 = Pump 1
P2 = Pump 2



9. ALARM OUTPUT

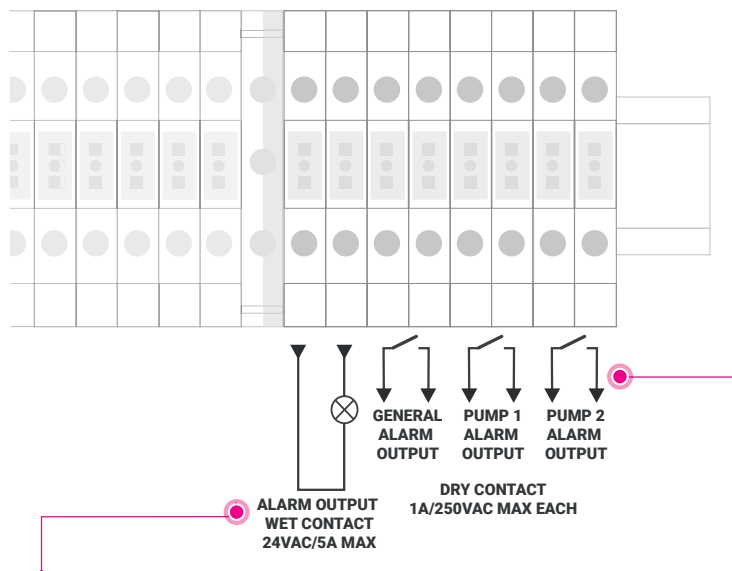


The general alarm outputs will close and activate the general alarm in the event of:

- Power supply disconnected
- High level
- Sensor failure
- Failure of any of the pumps

The pump alarm contacts will close on failure of the respective pump:

- Pump 1 failure
- Pump 2 failure



Alarm contact 24VAC / 5A MAX

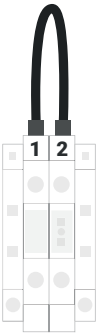
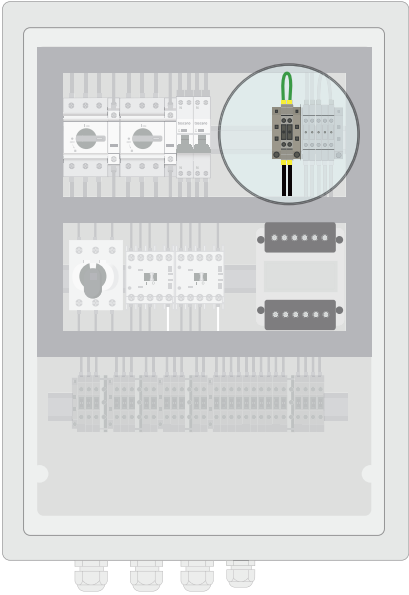
Voltage-free alarm contacts, 1A / 250 VAC MAX.

- External signalling of the equipment (red flash beacon). See section 17.

- GSM 
- Radio 
- Other

10. DISABLING AUDIBLE ALARM

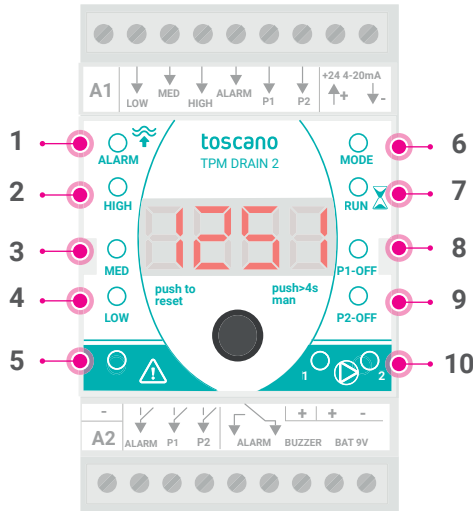
ENGLISH (EN)



The equipment is supplied with an acoustic alarm buzzer to signal the faults or warnings indicated above. In the event of not requiring the acoustic alarm provided, disconnect the cable marked on terminals 1 and 2 shown in the image.

11. CONTROL MODULE SIGNALLING

Control module layout



1. **Alarm level**
Alarm float status indication.
2. **Current water level (high)**
Status indication of HIGH float (high level).
3. **Current water level (medium)**
Status indication of MED float (medium level).
4. **Current water level (low)**
Status indication of LOW float (low level).
5. **Alarm**
General fault alarm indication.
6. **Operating mode**
Selection menu for operating modes and special functions.
7. **Maximum running time**
Indication of operation by time limit.
8. **Pump 1 out of service**
Indication of malfunction or shutdown of pump 1.
9. **Pump 2 out of service**
Indication of malfunction or shutdown of pump 2.
10. **Pump 1 and pump 2 running**
Indication of pump(s) running.

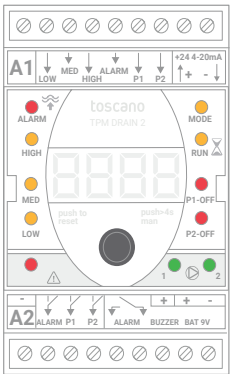
Control module LED signalling

• During adjustment

 MODE	Parameter selection "Operating mode setting and sensor range adjustment"
 MODE	Parameter modification "Operating mode setting and sensor range adjustment"
 RUN	Parameter selection "Operating time limit setting"
 RUN	Parameter modification "Operating time limit setting"
 HIGH	Parameter selection "Sensor high level setting" (Only in SEN mode)
 MED	Parameter selection "Sensor medium level setting" (Only in SEN mode)
 LOW	Parameter selection "Sensor low level setting" (Only in SEN mode)

• In operation

	Pump 1 running
	Pump 2 running
 LOW	Low level float activated or the sensor has reached the value set to LOW.
 MED	Medium level float activated or the sensor has reached the value set to MED.
 HIGH	High level float activated or the sensor has reached the value set to HIGH.
 ALARM	Alarm float activated or the sensor has reached the set maximum range
	Alarm activated
 P1-OFF	Pump selector 1 in position 0
 P2-OFF	Pump selector 2 in position 0
 P1-OFF	Pump 1 in manual mode (forced run)
 P2-OFF	Pump 1 in manual mode (forced run)



 OFF

   ON

  Flashing

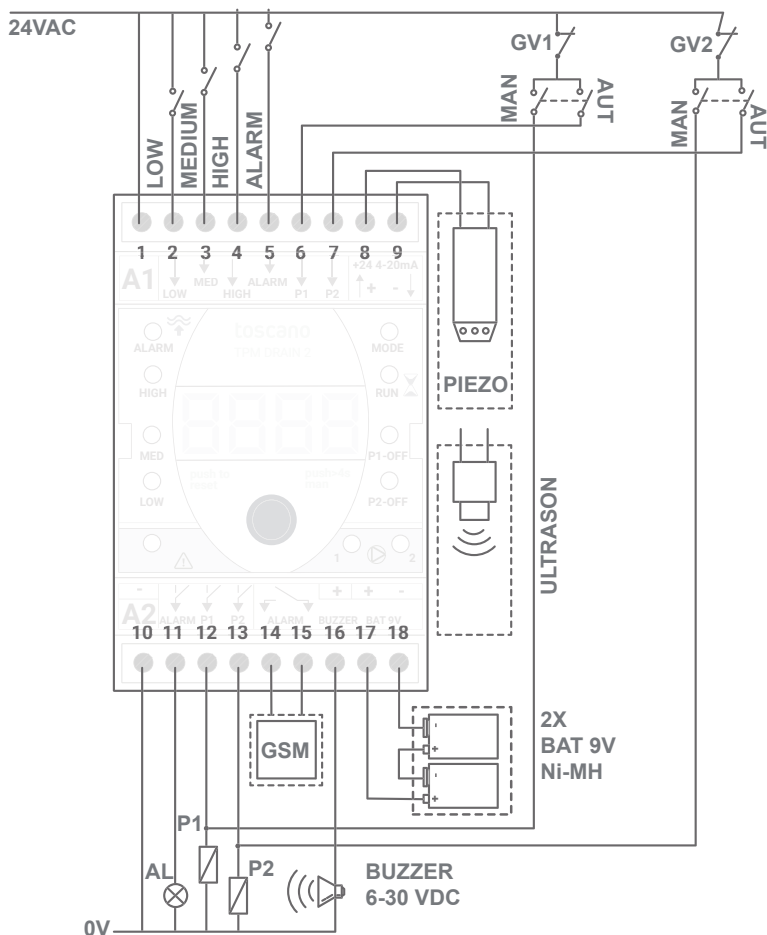
Rotary knob

 **Parameter selection**

 **Parameter modification**

 **Confirm**

12. CONTROL MODULE CONNECTIONS



CONNECTION TERMINALS

1. Power supply 24VAC (A1).
2. Float switch/conductive probe input LOW.
3. Float switch/conductive probe input MEDIUM.
4. Float switch/conductive probe input HIGH.
5. Float switch/conductive probe input ALARM.
6. Pump 1 signal input in automatic.
7. Pump 2 signal input in automatic.
8. Power supply (+24VDC) for 4-20mA sensor.
9. 4-20mA sensor signal input.
10. Power supply 0 VAC (A2) (buzzer negative).
11. 24VAC output for general alarm.
12. 24VAC output for Pump 1 contactor.
13. 24VAC output for Pump 2 contactor.
14. Voltage-free relay for GSM or remote warning.
15. Voltage-free relay for GSM or remote warning.
16. External buzzer power supply (6-30VDC).
17. 9V Ni-MH battery terminal (+ positive).
18. 9V Ni-MH battery terminal (- negative).

13. MANUAL OPERATION MODE AND PUMP OFF

To activate the manual mode, keep the selector switch in the -MAN- position for each pump. In this case, the protections will remain disabled. This mode is used for test runs or to check the direction of rotation of the pump.



MAN - 0 - AUT

Manual mode

MAN - 0 - AUT



OFF mode



MAN - 0 - AUT

Automatic mode

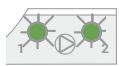
If a pump is stopped, it can be started in MANUAL mode. The P1-OFF or P2-OFF LEDs will flash.



The flashing light indicates that pump 1 is in manual mode.



The flashing light indicates that pump 2 is in manual mode.



The flashing light indicates that pump 1 and pump 2 are in manual mode.

If the pump is switched off or in failure, the following will be displayed:



Pump 1 in failure or switched off



Pump 2 in failure or switched off

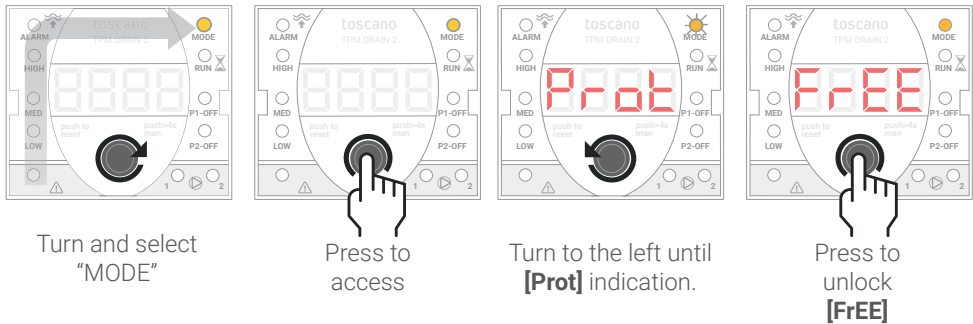
To identify the problem, follow the steps below:

1. Check that the pump selector with the warning is not set to - 0 -.
2. Open the cabinet and check if the motor protector circuit breaker of any of the pumps has tripped. The unit will give an acoustic warning.
3. If the pump temperature sensor or "Klixon" was connected and none of the above conditions were met, the pump has stopped working due to overheating.

14. LOCKING AND UNLOCKING [PROT - FREE]

TPM-DRAIN-2 prevents unwanted configuration changes. [Prot] is displayed on the screen for 2 seconds. The unit always starts up in protected/locked mode. If there is no action after 5 minutes, the control module will automatically lock.

Unlock



Lock



15. OPERATING MODES

- Selection of the float switch operating mode.

2FLd

2 floats mode

3FLd

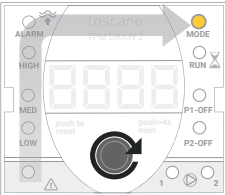
3 floats mode

4FLd

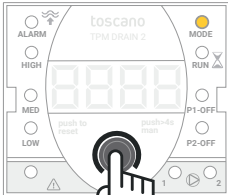
3 floats mode

5Ea 50..1000

4-20mA sensor mode



Turn and select
"MODE"



Press to access



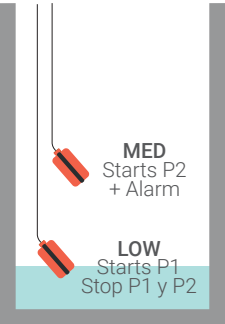
Turn to select the
operating mode



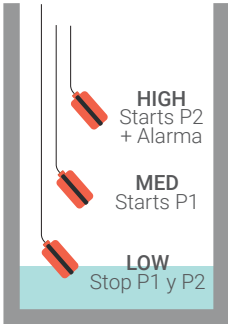
Press to
validate

In all operating modes, the water level is displayed by the LOW, MED, HIGH, ALARM leds. In AUTO mode, the pumps will operate in alternation. In case of failure of one of the 2 pumps, the unit will display [P1-0] (pump 1 switched off or failed) or [P2-0] (pump 2 switched off or failed). The active pump will remain in operation for safety, until the fault is revised.

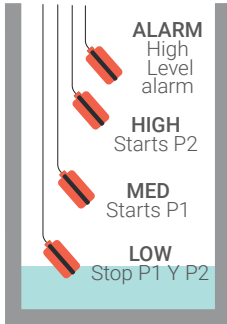
2 floats



3 floats



4 floats



P1 = Pump 1
P2 = Pump 2

- Selection of the 4-20mA sensor + alarm float operating mode.

2FL00

2 floats mode

3FL00

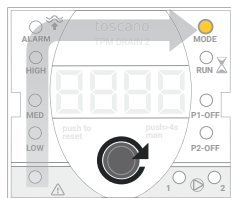
3 floats mode

4FL00

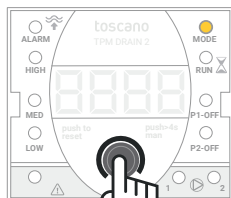
3 floats mode

50..1000

4-20mA sensor mode



Turn and select
"MODE"



Press to access



Turn to select
the sensor range
in cm



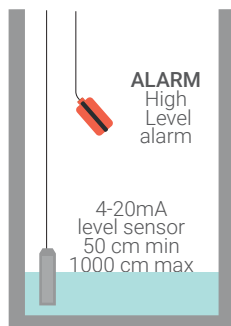
Press to
validate

50..100..1000

We can install a 4-20 mA level sensor with a range between 50 and 1000 cm (selectable).



4-20mA level sensor +
Float Switch Alarm



The level in cm is displayed every 5 seconds. It is possible to adjust each of the 3 levels: LOW, MEDIUM and HIGH by selecting their respective led light with the rotary button. Turn it and press on each led to set the desired level in centimetres.

LOW: For P1 + P2

MED: Starts P1

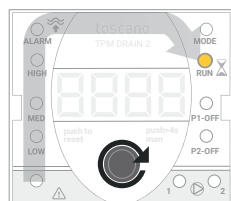
HIGH: Starts P2

ALARM:

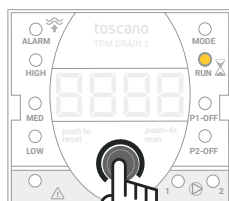
Alarm will sound when the level reaches the alarm float. If a 4-20mA sensor is used, a float must be installed to detect the ALARM level. The installation of float switch is recommended, otherwise the equipment will not warn of high level.

16. LOW LEVEL FLOAT SWITCH ANTI-LOCK SYSTEM

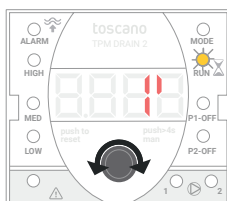
The LOW float is responsible of stopping the pumps when the level drops. If this float is blocked or stops working, the pumps will be at risk of dry running. This function protects the pumps by means of a configurable maximum running time. Also valid for operating mode with 4-20mA level sensor to protect the pumps in case the level sensor is damaged or out of calibration and does not measure correctly.



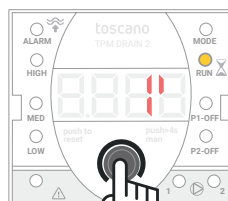
Turn and select
"RUN"



Press to
access



Turn to select the
protection time



Press to
validate

To set it up, select the RUN led and set a maximum running time between 1 and 15 minutes. After this time, the pumps will switch off automatically, ignoring the LOW level.

With float switch operating mode:

The max. running time is counted from the medium level when the float switch (MED) goes down. This option will protect the pump from dry running if the LOW float becomes stuck.

With 4-20mA sensor operating mode:

The max. running time is counted from the level set in MED. This option will protect the pump from dry running if the sensor fails detecting the LOW level. This could happen if the sensor becomes decalibrated, for example.



If the same fault persist on the next cycle, the delay time will be reduced to 30 seconds by default.

The RUN light will flash during the max. running time. When the system stops after the selected time has elapsed, the display will show [Err.FL.BL] in float switch mode and [Err.SEN] in sensor mode. The LOW led will flash, indicating that the LOW level has not acted on that cycle

To disable this protection, select OFF in the parameter setting.

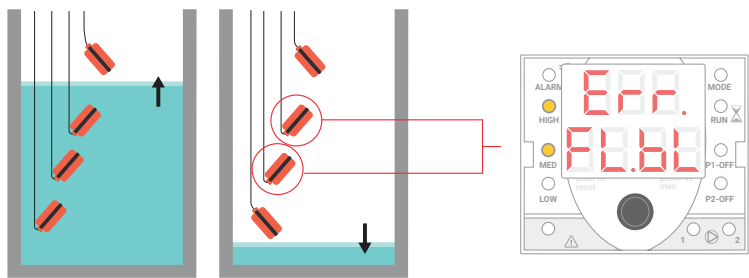
17. ADDITIONAL FUNCTIONS

Detection of float blockage

This function allows the pumps to keep running in the event that the MED, HIGH or ALARM floats become blocked or stop working. The equipment will continue to operate even if any of the floats are blocked. The light of the blocked float will flash and will display the message:



Example situation:



If the float is restored to correct operation on the next cycle, the error message will disappear without any further operation.

4-20 mA level sensor failure

If the 4-20mA sensor fails due to a short circuit or because the equipment does not detect it, the display will show the following messages:



Tank purge function

This function is activated if a maximum run time has been previously set in RUN. If the LOW float is blocked and disabled, the pump stop will be done after the settled time. If this time elapses and the float is still blocked, consecutive cycles will last a maximum of 30 seconds to allow for proper emptying.

Anti-lock protection (Jammed impeller preventive system)

Every 23 hours VHP-DRAIN-2 will run the pump for 1 second avoiding blockage of the pump motor. Intended to avoid possible failures after long inactivity periods.

18. ALARM MESSAGES



Unit has detected a problem.
A revision is required.



Float blocked.



Sensor obstructed or damaged.

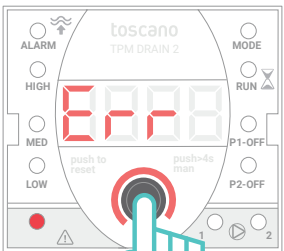


Sensor short-circuit



Sensor open circuit

Alarm reset/mute alarm

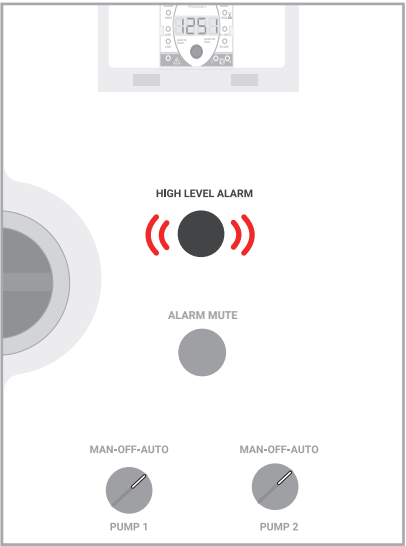


Press to delete
the message

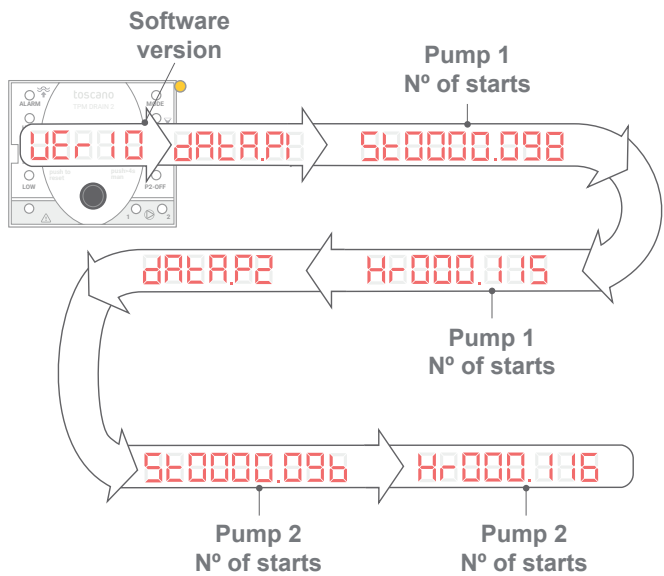
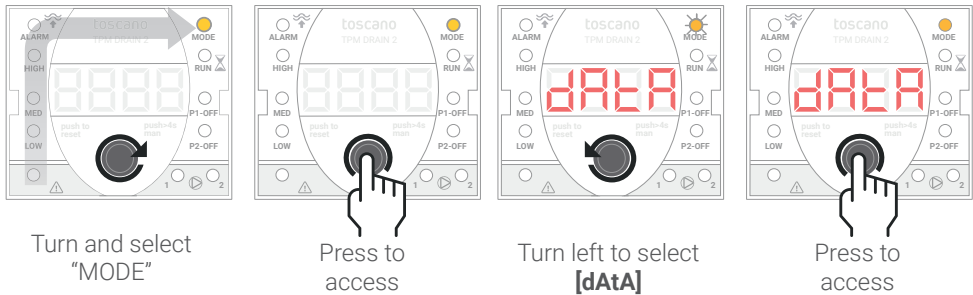
The acoustic alarm is triggered in the event of:

- Pump 1 failure
- Pump 2 failure
- High level
- Sensor failure
- Power failure
(to be able to indicate this failure, two 9V batteries must be added in series on terminals 17-18 of the TPM-DRAIN-2 control module).

To mute the audible alarm, press the “Alarm mute” button. This action does not reset the fault. To do so, check the messages of the control module.



19. DATALOGGER



20. TECHNICAL CHARACTERISTICS

Power supply	Dual-voltage 230 VAC I/III and 400 VAC III - 50/60 Hz
Led signaling	Level status, Pumps status, Float switch status, Control mode, Max. running time, Alarm, Pumps out of service
Pump protections	Overload and Overheating (Klixon). Phase-loss and Phase sequence (optional)
Displayed information (4-digit LED display)	Alarm messages, Level status, Run time data, Service
Max. pump current	12, 16, or 25 Amp (depending on model)
Wet alarm output	24 VAC / 5A max.
Alarm output relays	Dry contact - 1A / 250VAC max.
Motor protector circuit breaker current ratings	1,6...2,5A / 2,5...4A / 4...6,3A / 6,3...10A / 10...16A / 14,5...20A / 18...25A (depending on model)
Starting method	DOL / SFS (Softstart) (depending on model)
Maximum running time setting	OFF - 1...15 minutes
Floats voltage	Isolated 24 VAC
Sensor 4/20mA voltage	Isolated 24 VDC
Maximum terminal cross-section	2,5mm ²
Regulations	2014/35/EU (Low voltage) - 2014/30/EU (EMC)

21. ADDITIONAL DEVICES

Optional devices to complete the external alarm outputs monitoring.

GSM-BOX / TGSM-2

GSM communication box/module



Ref: 10003115



Ref: 10003054

Dry contact

FLASH-BEACON-BOX

Alarm panel with LED flash light

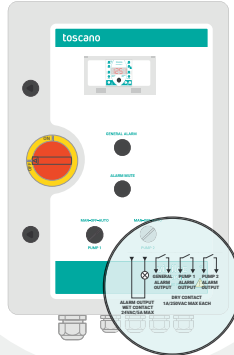


Ref: 10003472

24VAC

Dry contact

Dry contact



Ref: 10002721

ALARM-BOX

Level alarm panel with light and sound signal



Ref: 10003727

ALARM-BOX-LORA

Wireless tank level alarm system.
Transmitter + receiver



User manual digital version

toscano

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