

# IdroMOP



## USER MANUAL

Version 3.2 – rev. B

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The information, the descriptions and the illustrations in this Manual reflect the current version. The maker reserves the right to make at any time changes to the equipment for technical or commercial reasons. These changes do not require that the maker intervene on the equipment sold before the release of this current version.

Any additions that the maker will consider necessary will need to be attached to this document and considered to be a part of it.

This document contains technical information that cannot be disclosed or released to third parties without prior written permission of the maker.

The information contained in this Manual is intended for professional use.

The maker recommends the users to read carefully this Manual before using the equipment.

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**IdroMOP S.r.l.**

Via Generale dalla Chiesa 94/D – 36030 Sarcedo (Vicenza) Italy  
info@idromop.com



## WARRANTY

- The warranty is valid one year from the date of delivery of the equipment and covers all faults of the materials
- The warranty doesn't include the transport costs and the receiver supports the transport risks
- The warranty concerns only the reparation or the free of charge replacement of the defective piece
- The warranty doesn't cover any damage due to costs of labour, transportation, direct or indirect accidents, loss of earnings related to the crops
- Possible damages caused to persons or things are not covered by the warranty

## WARRANTY EXPIRATION

- In case you don't respect the electrical characteristics of the equipment
- In case you use the equipment inadequately, for applications that don't suit the purpose of the appliance
- In case you don't follow carefully the instructions explained in this manual
- In case of wrong use, faulty maintenance or installation errors
- In case you remove or modify the protective parts of the equipment

## SAFETY AND MAINTENANCE

- The equipment must be supplied with continuous electric tension between 10 Vdc and 30 Vdc
- Always check the polarity of the power source
- In case of personalization of the cables of the engine supplied with the equipment, you have to respect strictly the positions of the electric signals provided on the connector and the dimensions of the electrical wiring
- Avoid exposing the electronic unit to environmental conditions that favour the inflow of corrosive agents or liquids in general
- Protect the display carefully and keep away as much as possible from direct exposure to the sun
- Pay attention to the mechanical operations carried out in front of the equipment in order to prevent accidental damage to the front knob
- Don't attempt any maintenance procedure not described in the present documentation
- In case of moving or relocating the equipment, proceed with extreme caution
- In case of installation with remote control, make sure that the whole machine is inaccessible to persons or things during the operation
- At the end of the season take care that the equipment is kept in a dry place, protected from all external agents such as rain and ice
- At the end of the season make sure that you disconnect the power cords



This product is an electronic instrument and therefore shouldn't be considered a machine. Consequently the product isn't subject to the requirements of the CEE directive 89/392 (Directive). Therefore we assert that this instrument is used as a component part of a machine and it cannot be switched on if the machine doesn't meet the requirements of the Machinery Directive.

**The identification marking of the instrument doesn't make void the responsibility of the customer to respect the law referring to the own finished product.**

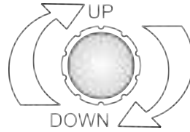


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<b>1. PANEL FUNCTIONS</b>	<b>4</b>
1.1. <i>ROTARY ENCODER - KNOB</i>	4
1.2. <i>KEY ON / OFF</i>	5
1.3. <i>KEY STOP</i>	6
1.4. <i>KEY START</i>	6
1.5. <i>KEY INCREASE</i>	6
1.6. <i>KEY DECREASE</i>	7
<b>2. MAP OF MENU</b>	<b>8</b>
<b>3. MANUAL OPERATION MODE</b>	<b>10</b>
<b>4. PROCEDURE EMPTYING PIPES</b>	<b>11</b>
<b>5. WAFER CONTROL – DELIVERY VALVE</b>	<b>12</b>
<b>6. AUTOMATIC OPERATION MODE</b>	<b>13</b>
<b>7. CONFIGURATION</b>	<b>14</b>
7.1. <i>OPERATOR</i>	14
<b>8. SETTINGS</b>	<b>18</b>
<b>9. DIAGNOSIS</b>	<b>19</b>
<b>10. WARNING LIGHTS</b>	<b>20</b>
<b>11. DIMENSIONS OF THE PANEL</b>	<b>21</b>
<b>12. CONNECTIONS</b>	<b>22</b>
<b>NOTE</b>	<b>23</b>

# 1. PANEL FUNCTIONS

## 1.1. Rotary encoder - KNOB



### ENGINE CONTROL



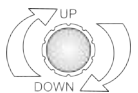
When the engine is switched off, from the MANUAL or AUTOMATIC page, press shortly the knob to switch on the engine.



When the engine is switched on, during the MANUAL irrigation cycle, if you press the knob for longer than 2 seconds, you'll activate the procedure of shutting down the engine with deceleration.



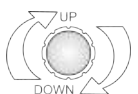
If you turn the knob to the right you'll increase the RPM and viceversa, if you turn it to the left, you'll decrease the engine speed.



When the engine is switched on, during the AUTOMATIC irrigation cycle, if you press the knob for longer than 2 seconds, you'll activate the procedure of shutting down the engine with deceleration.



You can change the target value of the pressure at any time, when the water system is operated with automatic pressure adjustment by turning the knob to the right or to the left. This data is shown on the display in the frame at the bottom left.

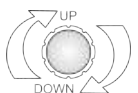


Don't EVER turn off the engine by pressing the key STOP except in extreme cases of emergency; pressing this button will deactivate the command of the solenoid valve for the diesel fuel and will immediately stop the engine, without any deceleration.



### MODIFY PARAMETERS

In order to modify the adjustable parameters, press briefly the knob and when the value becomes highlighted by a flashing frame, turn the knob clockwise (increase) or counterclockwise (decrease) until you obtain the desired value.



Confirm the modification by pressing the knob shortly.



If the page includes other fields of editable data, the flashing frame will move to the next one, otherwise it will disappear automatically.

After you made the changes, press and hold the knob for longer than 2 seconds to save the data and return to the previous menu.



This procedure applies to all editable fields in the configuration pages.



## 1.2. Key ON / OFF



### SWITCH ON

When the controller is switched off, press shortly this button to turn it on.

### SWITCH OFF



From the main menu, and only in this position, keep the button pressed until following writing appears *"Now release the button"*.

Release the button and the device will switch off.

### ENABLE / DISABLE THE WATER PRESSURE CONTROL



If you keep this button pressed for longer than 2 seconds during the manual irrigation cycle, the control of the water pressure will be disabled. The fact that the control of the water pressure has been inactivated is shown by the black marking of the writing *"Pressure"*.



To reset the water pressure control keep this button pushed longer than 2 seconds and the black marking of the word *"Pressure"* will disappear.



### SETTING IRRIGATION TIME ( AVAILABLE ONLY IN THE MANUAL OPERATION MODUS )

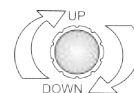
During the manual irrigation cycle, if you press this button shortly you can set the irrigation time up to the maximum value of 47 hours and 59 minutes.



Turn the knob to increase or decrease the irrigation time.

This procedure can also be performed when the engine is swithed off; the set irrigation time will be taken on when you start the engine.

To confirm the irrigation set time and return to the working page press briefly the same button.



### SELECTION ENGINE IN DIAGNOSIS



On the page dedicated to the engines diagnosis, by pressing this key you can select the type of actuator to be handled.

The engine control selected is highlighted with a black frame.

After you made the selection, use the keys Increase/Decrease to verify the functional efficiency.





### 1.3. Key STOP



#### STOP ENGINE

MI On	Pressione		
1250	5.4		
FlOlo	Motori		
4.2	75		
-	STOP		

During the MANUAL or AUTOMATIC irrigation cycle while the engine is on if you keep this button pressed, the engine will come to a stop, in case of emergency without any deceleration.

### 1.4. Key START



#### FORCED ENGINE START

MI On	Pressione		
0	0.0		
FlOlo	Motori		
0.0	0		
-	START		

With the engine off, and only in MANUAL mode by pressing and holding this key, you impose the forced engine start for the entire duration of the key pressure.

### 1.5. Key INCREASE



#### INCREASE ENGINE SPEED

MI On	Pressione		
1250	5.4		
FlOlo	Motori		
4.2	75		
-	STOP		

On the MANUAL working sheet, with the engine switched on, press this button to increase the engine speed.

#### SELECT MENU ITEMS / SETUP PARAMETERS

Inside the various menu (main menu, programming, configuration and settings), press this button to select the menu item or the desired parameter.

#### MODIFY THE VALUE OF A PARAMETER

In the editing mode, when the flashing frame appears, this button increases the value.



## 1.6. Key DECREASE



### DECREASE ENGINE SPEED

On the MANUAL working cycle, with the engine switched on, press this button to decrease the motor speed.

### SELECT MENU ITEMS / SETUP PARAMETERS

Inside the various menu (main menu, programming, configuration and settings), press this button to select the menu item or the desired parameter.

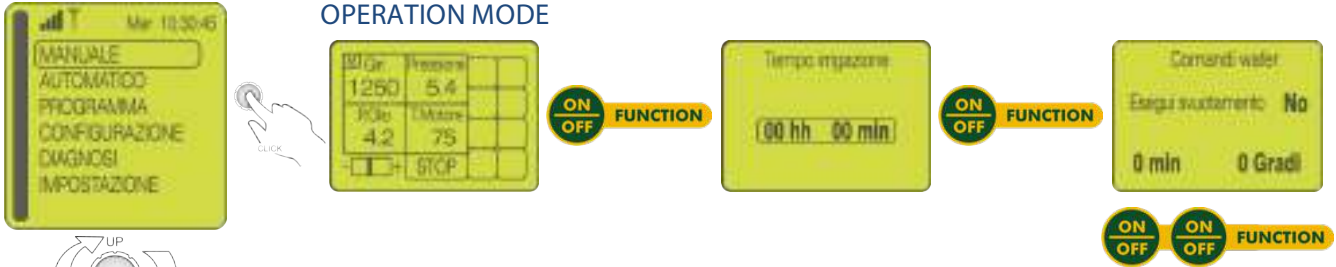
### MODIFY THE VALUE OF A PARAMETER

In the editing mode, when the flashing frame appears, this button decreases the value.



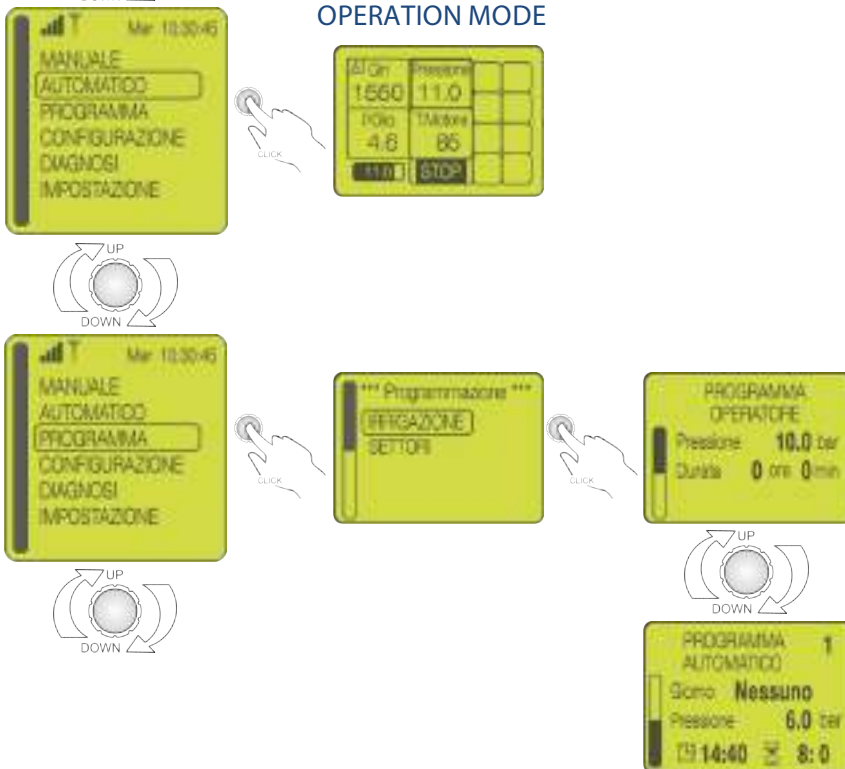
## 2. MAP OF MENU

### MANUAL OPERATION MODE

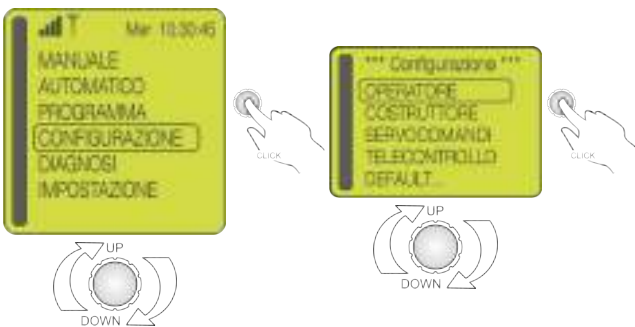


Press to return at the manual operation page

### AUTOMATIC OPERATION MODE



### CONFIGURATION OPERATOR



- Period time for auto priming (if enabled)
- Pressure end of priming (if enabled)
- Time for filling pipe
- Minimum pressure system
- Maximum pressure system
- Positive tolerance
- Negative tolerance
- Engine warm up time
- Engine cooling time
- Service
- Key code

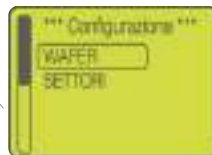
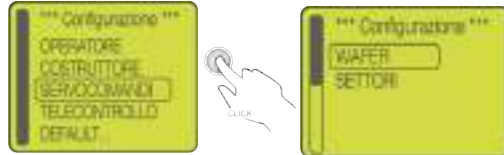
### RESTRICTED AREA

- Delay alarm out of tolerance
- Acceleration ramp
- Deceleration ramp
- Gain system
- Minimum pulse actuator
- Flow check
- Limit overspeed engine
- Dynamo alarm
- Starting delay
- Glow plugs preheating time
- Pressure control
- ID System



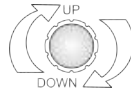


Password-protected area  
Access permitted to the manufacturer



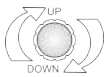
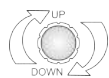
**CONFIGURATION WAFER**

- Wafer control
- Variation of pressure to stop opening
- Wait time to reopening
- Maximum pause



**CONFIGURATION REMOTE CONTROL**

- System status / Interval
- Engine ON / Engine OFF
- Mobile number S1
- Mobile number S2
- Mobile number S3
- Status GSM / GPRS module
- Service center
- Registration status
- Check receiving SMS
- Check sending SMS
- Left credit
- Configuration APN
- Unlock PIN (only if the SIM is locked)



**SETTINGS**



- Language
- Set weekly day, hour e minutes
- Set year, month and day
- Backlight time
- Temperature unit
- Serial number



### 3. MANUAL OPERATION MODE



To switch on the engine press shortly the knob



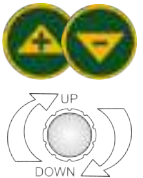
With the engine on, the sign START will be replaced by STOP to indicate the possibility of stopping the engine with deceleration, if the pump unit is provided with an electronic accelerator.



Use key STOP only in case of EMERGENCY with immediate stop of the engine.



While the engine is switched on, on the left of the STOP sign will appear a small horizontal scroll bar that indicates the engine speed in consideration of the allowed limits.



To accelerate or decelerate, press respectively the key INCREASE / DECREASE or turn the knob.

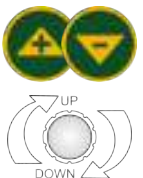
In the upper cells of the screen you can see the engine speed, the pressure of the waterworks and the main work parameters.

If during the manual operation, the water pressure remains stable for more than 2 minutes, the protection of the water system switches on automatically with self-learning of the pressure value. The self-learning of the operating point is shown on the display with a black frame that appears around the box pressure.



If the water pressure exceeds the set tolerance limits, positive or negative ( default +/- 1 BAR from the self-learned operating point ), the instrument will activate the alarm by shutting down the engine with deceleration, if the pump unit is equipped with an electronic accelerator .

With the keys INCREASE and DECREASE or with the knob you can always change the working point.



After you made the change, the black frame around the box pressure will disappear signaling the start of a new phase of self-learning of the water pressure.

If the operating point remains stable for more than 2 minutes the self-learning procedure will be activated again.



## 4. PROCEDURE EMPTYING PIPES

In the presence of a self-propelled machine with integrated motor pump, through the device IdroMOP is possible to arrange the delivery valve in order to successfully perform the steps of emptying tubes.



In this case select the MANUAL menu and then press 2 times the key ON/OFF to go at page "Commands wafer".



Before starting the compressor located on the self-propelled set "Emptying" on YES option; for the time set by the manufacturer, the device IdroMOP will close the delivery valve allowing the execution of the procedure emptying pipes.

To end this operation beforehand set "Emptying" on NO option.

Only with the parameter "Emptying" set to NO, pressing the key ON/OFF,



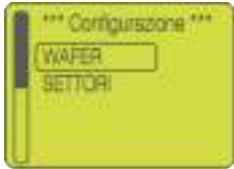
will return in the page MANUAL from which you can exit to the main menu by pushing and holding for more than 2 seconds the knob.





## 5. WAFER CONTROL – DELIVERY VALVE

If provided in the waterworks, the IdroMOP device can control the opening and closing of this valve during the irrigation cycle.



To enable the wafer control go to menu *CONFIGURATION – SERVO COMMANDS*, choose the item *WAFER* and then set the "Control wafer" on the "Enabled".

The wafer control is totally independent both in the *MANUAL* that *AUTOMATIC* procedure.

For this reason, you should check the following settings for a correct adaptation of the system to your irrigation plant.



During the opening of the valve, the system continually checks any pressure drops, interrupting the movement if the pressure variation is greater than the set value.  
The opening process will resume after the return of pressure and not before the time defined by the following parameter "Pause before reopen"

Value in BAR

Admitted values	0.1 / 1.0	Default	0.2 bar
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During the opening phase of the valve, this is the waiting time before the next check of the return of the water pressure

Time in SECONDS

Admitted values	0 / 59	Default	5 seconds
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This time defines the maximum waiting time during the opening phase of the valve. In the case the pressure value does not increase, the control system performs the shutdown procedure of the motor pump to avoid the condition of cavitation

Time in MINUTES

Admitted values	0 / 60	Default	3 minutes
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You can save your changes any time and return to the previous menu level by pushing and holding the knob for more than 2 seconds.





## 6. AUTOMATIC OPERATION MODE



Before starting the automatic control system be sure to set the working pressure in the menu *PROGRAM - OPERATOR*.

Select *PROGRAM* from the main menu, choose the *IRRIGATION* time and then you can set the *PROGRAM OPERATOR* or the *AUTOMATIC PROGRAMS*.



By the *PROGRAM OPERATOR* is possible set the target of water pressure and the time of the next automatic irrigations started from panel or remote control.



Also are available 16 *AUTOMATIC PROGRAMS* controlled from the system clock. Through these programs you can schedule the daily or weekly irrigation cycles.

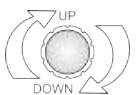


Simply, briefly press the knob to start the irrigation process.



Automatically the device IdroMOP execute in sequence the following procedures:

- engine start
- engine heating
- filling of pipes: in the presence of a delivery valve wafer, the procedure filling of pipes will modulate the opening of the valve in order to avoid possible events of cavitation of the pump
- adjustment of the working pressure set from menu *PROGRAM - OPERATOR*: during the irrigation cycle is allowed the temporary change of water pressure by turning the knob clockwise (increase of the target value) or counterclockwise (decrease of the target value); the changed value of pressure is displayed on the bar in the lower left of the display
- control and protection of the water system and of the motor pump
- verification of the conditions of *STOP IRRIGATION* due to any alarm situations, end irrigation or *STOP operator* from panel by pressing the knob for more than 2 seconds
- during the *STOP* the engine is decelerated gradually to idling; in the presence of a delivery valve wafer the device IdroMOP will closes the valve to the achievement of the minimum pressure in order to avoid the continuous outflow of the water during the cooling phases and stopping the engine.



All the working steps listed above are performed automatically without the presence of people. The automatic procedure can also be activated remotely by free application available for smartphones or simply sending an SMS with text *START*.



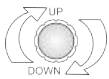
## 7. CONFIGURATION

These menus contain the SETUP parameters that are useful for the adjustment of the instrument to the motor pump according to the specific needs of each manufacturer / operator.

To facilitate the search of the parameters and allow access to authorized personnel only, the configuration is divided into three levels:

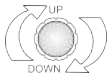
- Operator (final user) – RESTRICTED AREA (advanced user, code 0123)
- Configuration level 1 ( *access allowed only to the manufacturer, password-protected menu* )
- Configuration level 2 ( *access allowed only to the manufacturer, password-protected menu* )

### 7.1. Operator



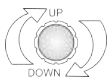
!!! *This parameter is available only if enabled by the manufacturer !!!*  
 Operation time of the auxiliary electrical pump to allow the filling of the pipe and the priming of the pump.  
 At the end of this time, even if the pressure at the end of priming hasn't been reached, the system will start the motor pump. If the water pressure does not rise over the value at the end of the priming process, the system will repeat the procedure for a maximum of three times. If all attempts fail, the system will signal the alarm of failed priming

Time in MINUTES : SECONDS			
Admitted values	0 : 0 / 4 : 59	Default	2 : 00



!!! *This parameter is available only if enabled by the manufacturer !!!*  
 This is the threshold beyond which the pump priming process was executed correctly

Value in BAR			
Admitted values	0.1 / 2.0	Default	0.2



After the warming up phase of the engine, this time allows you to execute the filling of the water pipes with a slight acceleration of the engine speed thus avoiding damage to the waterworks with long pipelines

Time in HOURS : MINUTES			
Admitted values	0 : 0 / 59 : 59	Default	0 : 0



This pressure threshold is fundamental to avoid the condition of dry running. If this pressure threshold is not reached within the time set by the manufacturer "*Delay dry running protection*" after the start of the motor pump, the engine will shut down with deceleration. In the AUTOMATIC operation mode this pressure threshold represents the transition between the phase of filling pipes and the phase of automatic pressure regulation

Value in BAR			
Admitted values	0.1 / 30.0	Default	3.0





CONFIGURAZIONE OPERATORE - CONTROLLO

Pressione massima impianto

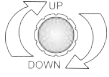
**14.0 bar**



Maximum allowed pressure. Limit above which the engine will be stopped with deceleration

Value in BAR

Admitted values	1.0 / 25.0	Default	14.0
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CONFIGURAZIONE OPERATORE - CONTROLLO

Tolleranza positiva

**1.0 bar**

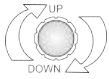


If for any reason the water pressure exceeds the limit determined by the operating pressure + this tolerance range, the engine will stop with deceleration.

Upper limit of the working pressure = pressure + positive tolerance

Value in BAR

Admitted values	0.2 / 5.0	Default	1.0
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CONFIGURAZIONE OPERATORE - CONTROLLO

Tolleranza negativa

**1.0 bar**

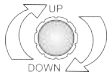


If for any reason the water pressure drops below the limit determined by the operating pressure - this tolerance range, the engine will stop with deceleration.

Lower limit of the working pressure = pressure of work - negative tolerance

Value in BAR

Admitted values	0.2 / 5.0	Default	1.0
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CONFIGURAZIONE OPERAT. - AVVIAMENTO

Tempo riscaldamento motore

**0 sec**



This parameter allows you to keep the engine at minimum revolutions to allow its warming up.

Time in SECONDS

Admitted values	0 / 240	Default	0
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CONFIGURAZIONE OPERAT. - ARRESTO

Tempo raffreddamento motore

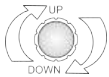
**10 sec**



At each stop request, the motor's revolutions are brought to a minimum. In this condition you can insert a cooling time to avoid turning off the engine at high temperatures and / or after long periods of work

Time in SECONDS

Admitted values	0 / 240	Default	10
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CONFIGURAZIONE OPERATORE - CONTROLLO

Tagliando

**200**



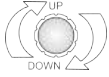
With this parameter you can insert programmed maintenance interventions. If set, the unit will warn you by highlighting the field "Service", that you find in the pages MANUAL / AUTOMATIC operating mode

Time in HOURS

Admitted values	0 / 9999	Default	200
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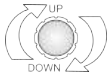






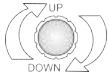
This parameter allows you to enter a personal key code. Once inserted, it is essential to remember the code because, without it, you can no longer access the device. To disable this code, set it to 0 (zero)

Admitted values	0 / 9999	Default	0
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PASSWORD request for access RESTRICTED AREA. Section reserved to ADVANCED USERS

Admitted values	0123	Default	0
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If the water pressure comes out of the tolerance limits for a time that exceeds this value, the motor will stop with deceleration

Time in MINUTES : SECONDS

Admitted values	0 : 0 / 59 : 59	Default	0 : 30
-----------------	-----------------	---------	--------



This parameter allows you to adjust the profile of the speed with which the system reaches the operating water pressure. A value of 100% represents the maximum acceleration ramp

Value in %

Admitted values	5 / 100	Default	40
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This parameter allows you to adjust the profile of the speed with which the system will reach the minimum pressure.

A value of 100% represents the maximum deceleration ramp

Value in %

Admitted values	5 / 100	Default	100
-----------------	---------	---------	-----



Reactivity index for the pressure control. The higher this value, the faster the pressure controller will recover the errors of pressure. Take care to set extreme values otherwise you may obtain undesired regulation effects such as:

- Failure of the pressure regulator to achieve the set operating pressure
- Fluctuations around the value of the set operating pressure

Admitted values	0.10 / 2.00	Default	0.90
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CONFIGURAZIONE OPERATORE - CONTROLLO

Durata impulso minimo

**90 ms**



Minimum correction applied during adjustment of the water pressure. If the control unit is attached to a pump unit with IVECO TIER3 engine this time must be set at 200 ms.

Time in **MILLISECONDS (0.001 second)**

Admitted values	20 / 250	Default	90
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CONFIGURAZIONE OPERATORE - CONTROLLO

Verifica flussostato

**Disabilitato**



Alarm activation delay due to the lack of flow

Time in **MINUTES**

Admitted values	Disabled / 15	Default	Disabled
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CONFIGURAZIONE OPERATORE - CONTROLLO

Soglia fuori giri motore

**2100 rpm**



Out of range engine speed. Limit beyond which the engine will be stopped with deceleration

Value in **ENGINE REVOLUTIONS**

Admitted values	1000 / 3200	Default	2100
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CONFIGURAZIONE OPERATORE - CONTROLLO

Alarme dinamo

**Disabilitato**



Battery charge check

Admitted values	Disabled / Enabled	Default	Disabled
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CONFIGURAZIONE OPERAT. - AVVIAMENTO

Ritardo

**0 min 0 sec**



Time delay of the engine ignition after an automatic START

Time in **MINUTES : SECONDS**

Admitted values	0 : 0 / 59 : 59	Default	0 : 0
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CONFIGURAZIONE OPERAT. - AVVIAMENTO

Tempo di preriscaldamento candelette

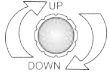
**0 sec**



**!!! This parameter is available only if enabled by the manufacturer !!!**  
 Activation time for the output sparking plugs. To be set in the applications that provide this functionality. If the electrical site includes a sensor for the motor temperature, this time will be ignored if the value exceeds 50 degrees celsius.

Time in **SECONDS**

Admitted values	0 / 240	Default	0
-----------------	---------	---------	---



This parameter allows you to disable the control of the water pressure. When using the instrument for a motor pump unit it is not recommended to disable this control			
Admitted values	Disabled / Enabled	Default	Enabled

Assign a numeric code to the pump unit			
Admitted values	1 / 15	Default	1

You can save your changes any time and return to the previous menu level by pushing and holding the knob for more than 2 seconds.



## 8. SETTINGS

From this menu you define the general settings panel IdroMOP, such as:

- LANGUAGE ( Italian, English, French, Spanish, German, etc ... )
- WEEKLY DAY, HOUR and MINUTE
- YEAR, MONTH and DAY
- TIME BACKLIGHT
- UNIT OF TEMPERATURE ( Celsius or Fahrenheit )
- SERIAL NUMBER IdroMOP. Parameter display only and shows the serial number of the device IdroMOP. This parameter is essential for the registration of the device to the services of remote control available on the site [www.idromop.com](http://www.idromop.com) .

You can save your changes any time and return to the previous menu level by pushing and holding the knob for more than 2 seconds.





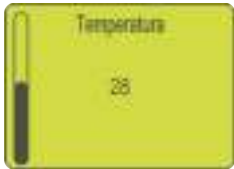
## 9. DIAGNOSIS

Through this menu you can check the motor outputs available, such as:

- THROTTLE CONTROL
- DELIVERY VALVE WAFER CONTROL



In the MOTORS page choose the output motor using the key ON/OFF and then push the keys INCREASE or DECREASE to open or close the specific actuators.



In this page is visualized the temperature inside of device IdroMOP. Only display data.

You can save your changes any time and return to the previous menu level by pushing and holding the knob for more than 2 seconds.

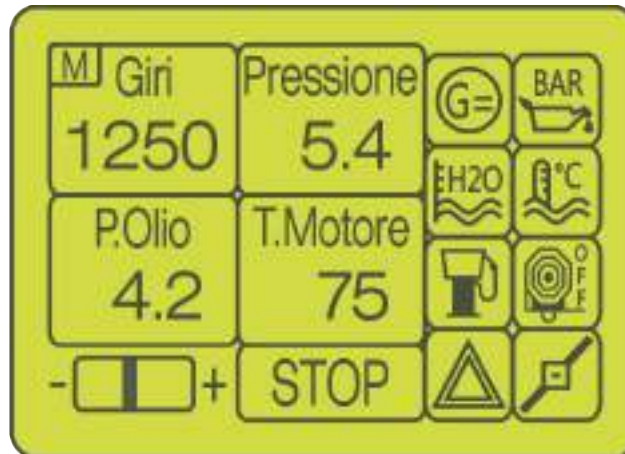




## 10. WARNING LIGHTS

Inside of the MANUAL or AUTOMATIC operation page, in the double column boxes on the right are shown the conditions of active alarms.

During proper functioning of the working cycle the alarm lights MUST NOT BE VISIBLE.



Insufficient battery charge (check alternator)



Low pressure engine oil



Low level engine cooling liquid



High engine temperature



Fuel reserve



External stop and/or stop from the end of the irrigation cycle



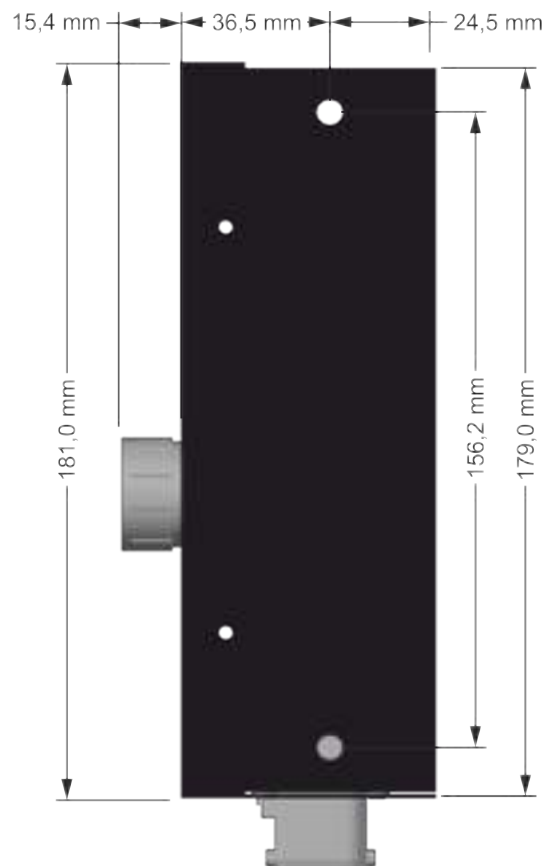
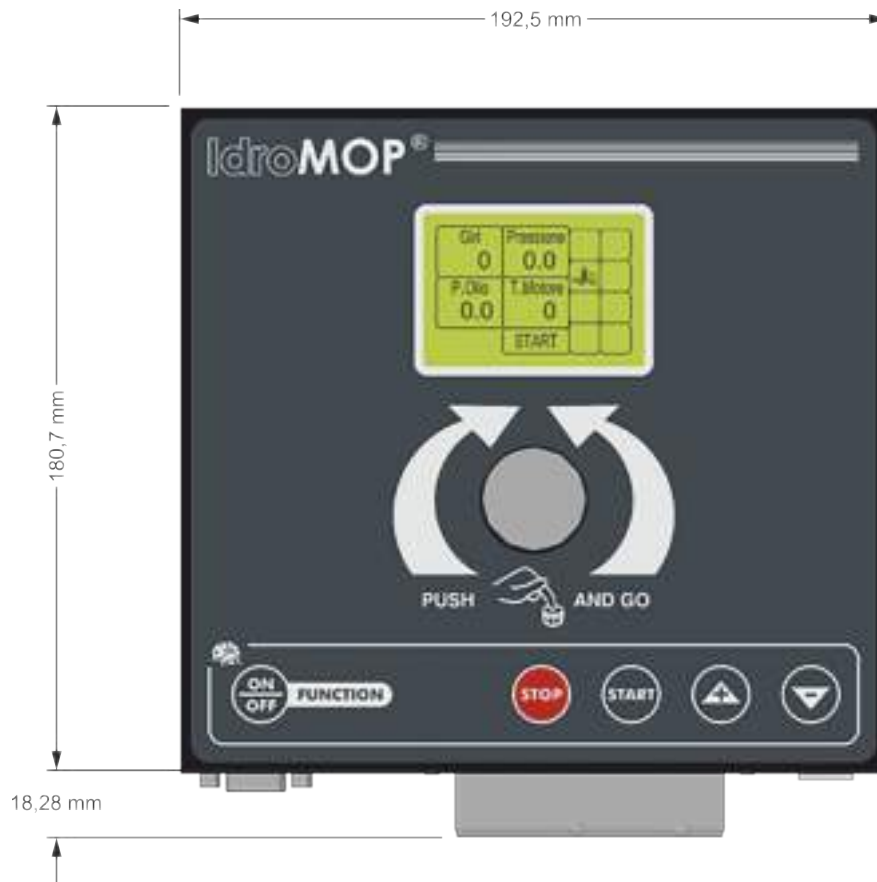
External input emergency



Flow switch

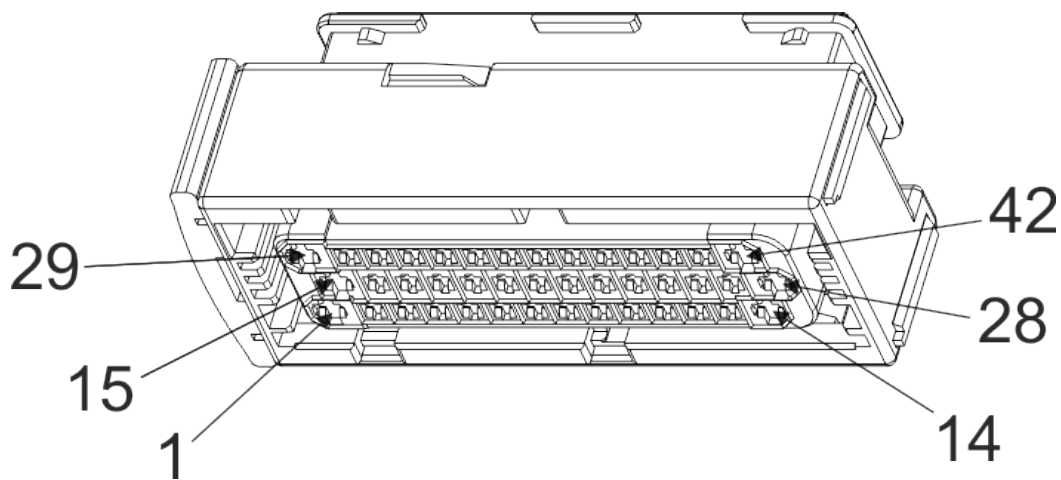


## 11. DIMENSIONS OF THE PANEL





## 12. CONNECTIONS



<b>1.</b> –	<b>15.</b> –	<b>29.</b> – Battery (31)
<b>2.</b> AN engine oil pressure	<b>16.</b> 15/54	<b>30.</b> AN engine temperature
<b>3.</b> –	<b>17.</b> 15/54 pressure transducer	<b>31.</b> AN fuel level
<b>4.</b> AN water pressure	<b>18.</b> 15/54	<b>32.</b> Ground
<b>5.</b> –	<b>19.</b> 15/54	<b>33.</b> Ground flow switch
<b>6.</b> IN external stop	<b>20.</b> 15/54 Can bus	<b>34.</b> Ground Can bus
<b>7.</b> IN rpm	<b>21.</b> Can L	<b>35.</b> Can H
<b>8.</b> OUT motor wafer –	<b>22.</b> IN enable self-priming	<b>36.</b> IN alarm common rail pressure
<b>9.</b> OUT motor wafer +	<b>23.</b> IN high temperature	<b>37.</b> IN external start
<b>10.</b> OUT motore actuator –	<b>24.</b> IN coolant level	<b>38.</b> IN low pressure oil
<b>11.</b> OUT motore actuator +	<b>25.</b> IN emergency	<b>39.</b> IN reserve
<b>12.</b> OUT solenoide (PNP)	<b>26.</b> IN dynamo (D+)	<b>40.</b> IN flow switch
<b>13.</b> OUT auxiliary (PNP)	<b>27.</b> DOUT 2 (NPN)	<b>41.</b> DOUT 1 (NPN)
<b>14.</b> OUT starter (50)	<b>28.</b> +Battery (30)	<b>42.</b> + Battery (30)

### Legend

OUT : power output (max 8 A)

AN : analog input

DOUT : digital output (max 0.15 A)

IN : digital input

PNP : positive output

NPN : output to ground







[www.IdroMOP.com](http://www.IdroMOP.com)