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# IrriMOP H6

## USE AND INSTALLATION MANUAL

IdroMOP

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# 1. USER MANUAL

This manual contains instructions for the installation, configuration, use and maintenance of the device described for the control, management and monitoring of agricultural irrigation machines. The manual is made up of various sections, each of which deals with a series of topics, divided into chapters and paragraphs. The general index lists all the topics covered in the entire manual.The numbering of the pages is progressive and each page shows the number of the same. This manual is intended for the user responsible for the configuration, use and maintenance of the device and relates to its technical life after its production and sale.
In the event that it is subsequently transferred to third parties for any reason (sale, loan for use, or any other reason), the device must be delivered complete with all documentation.
The information, descriptions and illustrations contained in the Manual reflect the version reported. The Manufacturer reserves the right to make any changes to the equipment at any time for technical or commercial reasons. It is recommended to read this manual carefully and in full.

## 1.1 ADDITIONAL DOCUMENTATION

Please refer to the **www.idromop.com** website to download the updated version of the documentation.

## 1.2 DECLARATION OF CONFORMITY

All products are tested and fine-tuned by the manufacturer before shipping and delivery to the customer.

The product has been designed, manufactured and tested to meet all specific standards (see the declaration of conformity), if installed and configured in a workmanlike manner.
If the installation, configuration, use and / or maintenance of the device are not carried out in a workmanlike manner, anomalies may occur during use, and safety problems may also occur. Inappropriate installation, configuration and maintenance will void the warranty terms.

This product is an electronic instrument and therefore is not subject to the requirements of EEC Directive 89/392 (Machinery Directive). Therefore, it is stated that if this device is used as a component of a machine, it must not be operated unless the machine complies with the Machinery Directive. The marking of the instrument does not relieve the customer from fulfilling the legal obligations relating to their finished product.
The electronic control unit described in this documentation is accompanied for sale by the declaration of conformity, drawn up in accordance with the laws in force in the European territory. In case of non-presence it is still possible to download it from the manufacturer's website: **www.idromop.com.**

## 1.3 MANUFACTURER DATA

| | |
|---|---|
| Company | **IdroMOP srl** |
| HQ | **Viale del lavoro 9,<br>36049 Sovizzo ( VI ),<br>Italia** |
| Vat Nr. | **IT03951780240** |
| Phone | **+39 0444 1240784** |
| Email | **info@idromop.com** |
| Web Site | **www.idromop.com** |

## 1.4 WARRANTY

IdroMOP srl products are manufactured and delivered on the basis of our production codes expressly stated in the order. The date stated in the order and/or confirmation is however not binding, but with a margin of 14 days. IdroMOP srl guarantees that each item is free from defects if used properly under normal operating conditions and not tampered with.
IdroMOP srl products are guaranteed for a period of twelve months from the date of production indicated on the products themselves; an extension of the guarantee period is excluded.
The warranty covers the free repair of products with manufacturing defects and/or the replacement of parts recognised as faulty.
All interventions on IdroMOP srl products will be carried out only at our workshop. Transport costs and risks will be borne by the customer. All any materials sent freight collect will be rejected.
Damage caused by neglect, incorrect or improper installation, non-compliant use, phenomena not depending on normal use and operation are excluded from the warranty.
The warranty is invalidated if the product has been tampered with or the action of personnel not authorised by IdroMOP srl is evident.
In the case of repairs carried out during the warranty period, any parts replaced (which are in no case returned) will have a warranty coverage of six months, or in any case not less than the remaining portion of the warranty.
The replacement of products and the extension of the warranty following failure is excluded.
Compensation for direct or indirect damage of any kind to property or persons due to the use or suspension of use of the products is excluded.
Any changes to the products requested by the customer due to his incorrect order, must be agreed in advance with the Sales Department and anticipated by written order before shipping the material to IdroMOP srl .
The Customer must perform an incoming INSPECTION of the materials and/or components, for conformity with what has been ordered and confirmed by IdroMOP srl, the check must also concern the technical functioning, the quantities, and the documents received, IdroMOP srl will not accept complaints or returns for non-conformity of any kind after 8 days from the receipt of the goods.
Any request for penalties as compensation for damages or for any other reason is expressly excluded.
The present supply and warranty conditions are an integral part of the supply contract executed with the order by the customer and the order confirmation by IdroMOP srl.
The Court of Vicenza has sole jurisdiction for any dispute.

## 1.5 AUTHORIZED ASSISTANCE

Assistance on the product must be performed directly by IdroMOP srl or by a qualified technician appointed by the same.

If it is deemed necessary to claim under warranty, please indicate the following data:

Model of device
Serial number of device
Date of purchase (attach documentation)
Detailed description of the issue

## 1.6 GENERAL SAFETY RULES

Avoid exposing the control unit in environmental situations that favor the entry of dust, chemicals or liquids inside.
It is recommended to protect the display area with particular attention, reducing direct sunlight as much as possible.
Always use the utmost caution when moving or transferring the equipment. In case of use with a remote control system, make sure that the machine is not accessible to people or things during operation.
The equipment must be powered with DC voltage between 10Vdc and 30Vdc
Always check the polarity of the power source.
In case of customization of the motor wiring supplied with the equipment, strictly respect the positions of the electrical signals provided on the connector and the size of the electrical cables.
If the device is not used for a long period, it is recommended to store it in a dry environment protected from external agents such as rain and ice; make sure to disconnect the power cables from the electrical system.

### 1.6.1 SAFETY RULES FOR THE USE OF ID4 PLATFORM DEVICES

The ID4 platform allows you to remotely monitor, control and modify the parameters of the IdroMOP and IrriMOP devices.

Use of the ID4 platform is restricted to authorised staff only.
Improper use of the ID4 platform, such as uncontrolled start-up of machines or incorrect modification of working parameters, could be dangerous to people and/or property.

In order to be able to access their machines remotely in total safety, the ID4 platform requires the operator to declare, under their own responsibility, that the machine is in safe operating condition and ready to execute the remote start command.

Industry 4.0 and industrial remote control are regulated by specific European Directives in order to protect the safety of the company and the operators themselves.

When we speak of remote control we mean the possibility of intervening, by means of special commands, on industrial plants that are not under the immediate control of the operator. There are therefore regulations specifying when it is permitted and when it is not, to use remote control for safety reasons.

This is possible when:

- The machine is visible to the operator.
- The machine is not in close proximity to other operators who might physically be exposed to risks associated with remote intervention.
- Alarms are never silenced, just in case there are problems that need to be remedied promptly.
- The area of the remotely controlled machinery is protected and cannot be reached directly either by the user or by anyone else passing in front of it. Specific signage must also be in place.
- Only one control station is active.
- Software connection systems only allow connection to the selected machine.
- There is a stable network that minimises transmission errors.
- It is not possible to connect to the machine without first obtaining consent from the local operator.

All standards relevant to remote control are taken from the European Directives UNI EN ISO 10218-2:2011 and UNI EN ISO 13849-1:2016.

## 1.7 RESIDUAL RISKS

During the design phase, IdroMOP srl carried out an in-depth risk analysis on the device in question.
From this analysis, risks that cannot be eliminated by their nature emerged. These risks have therefore been examined individually, and guidelines on how to avoid them have been emphasized in this manual. It is therefore important that any user responsible for the installation, configuration, use and maintenance of the IdroMOP electronic control unit has previously read the manual.

Already in the design phase, solutions have been adopted aimed at making the use of the device safe in all phases of use: transport, assembly, adjustment, use and maintenance.

## 1.8 LOCATION

It is good to keep some aspects in mind before proceeding with the handling, installation and subsequent use of the device. In particular, it is necessary to check some factors:
The area of use and storage of the IdroMOP electronic control unit should be chosen so that it cannot be hit by jets of steam, water or other liquids (especially if corrosive). Although it can be installed in an outdoor environment, it must be placed inside an electrical panel that can protect it from atmospheric agents.

Operating temperatures -10 ° C to +55 ° C
Storage temperatures -20 ° C to + 65 ° C
Maximum relative humidity conditions 90%

## 1.9 HANDLING

When handling the device, special attention must be paid to the care of the knob, keypad, screen and connectors; any shocks could compromise its use.

## 1.10 INSTALLATION AND CONFIGURATION

The installation and configuration must be carried out by specialized personnel authorized by IdroMOP srl who must first check that the electrical system of the destination system is up to standard, equipped with a grounding line and a residual current device (RCD).

### 1.10.1 PRELIMINARY CHECK

Check the various parts of the device for physical damage due to knocks, tears or abrasions. If any damage is found, stop the procedure in progress and report the nature of the damage to the manufacturer's customer support department.

### 1.10.2 INSTALLATION

The following recommendations must be scrupulously observed when installing the device:

- Always connect the device in accordance with the indicated connections and type of sensors and/or actuators.
- Check that the absorption and consumption of the connected devices is compatible with the technical characteristics of the device.
- Install the device in a dry location, away from possible contamination by corrosive liquids. Protect the front panel of the device from direct sunlight.
- Install the device at least 50 cm away from heat sources that could damage the device's internal/external electronic components
- Avoid mounting the device on supports that subject the most delicate parts, such as the knob and display, to excessive mechanical stress and/or vibration
- It is strictly forbidden to use a battery charger for emergency start-up; even in this case, the manufacturer will not be liable under warranty for damage to electronic components
- Ensure that the programmed configuration is consistent with the application
- Before working on the rotating parts of the motor, it is strongly recommended to switch off the motor and disconnect terminal 50 (starter) on the starter motor

### 1.10.3 CONFIGURATION

For the correct configuration procedure of the device, refer to the various menus described in this document and check that all the parameters enabled are consistent with the specifications of the machine on which it is installed.

## 1.11 USE

For the correct procedure for using the device, follow the instructions in this manual scrupulously. In the event of any unforeseen and dangerous anomaly occurring during a phase of device start-up and operation, it is recommended to switch it off, disconnect the removable connector, wait about ten seconds and connect the connector again. If the malfunction persists, disconnect the power supply and contact the service centre immediately.

## 1.12 MAINTENANCE

Maintenance operations must be carried out by personnel who have previously read the manual. Any type of cleaning or physical maintenance must always be carried out with the system switched off and disconnected from the power supply. In carrying out these interventions, strictly follow the instructions in this manual.

For any maintenance and cleaning operations, in addition to the instructions contained in this manual, the general safety standards and, if necessary, the general safety standards at work in force in the place where these operations are carried out must be observed.

## 1.13 PERIODIC MAINTENANCE

Periodically it is necessary to clean the IdroMOP electronic control unit from any accumulation of dust and dirt that may have formed on its external surface. If necessary, use compressed air to remove dust. You can also use a non-abrasive damp cloth that is free of alcohol or aggressive solvents. Do not use abrasive sponges, chemical solvents or detergents. During cleaning, avoid allowing water to come into contact with internal electrical components.

## 1.14 EXTRAORDINARY MAINTENANCE

Extraordinary maintenance is required in case of failures or breakages, unforeseeable accidents or inappropriate use of the device. The situations that may arise from time to time are completely unpredictable and therefore it is not possible to describe appropriate intervention procedures. If necessary, consult the manufacturer's technical service to receive the appropriate instructions for the situation. All interventions, mechanical, electrical or electronic, ordinary or extraordinary, must in any case be carried out by specialized and authorized personnel from our service department.

## 1.15 OUT OF SERVICE

The device is manufactured and constructed according to criteria of robustness, durability and flexibility which allow it to be used for many years. Once it has reached the end of its technical and operational life, it must be decommissioned to prevent further use for the purposes for which it was originally designed and built, while still making it possible to reuse the raw materials that make it up.

# 2. INTERFACE

## 2.1 KEYBOARD

### 2.1.1 ON | OFF BUTTON

Briefly press the ON/OFF button to turn on the device.
Wait until the system is initialized until the audible signaling, following which the initial screen will be presented. To turn off the device, press and hold the ON/OFF button for more than 3 seconds until the message “OFF” appears.
For control units with remote control WAIT UNTIL THE SYSTEM SHUTS DOWN AUTOMATICALLY.

### 2.1.2 MENU BUTTON

Briefly press the MENU button to access the main menu.

### 2.1.3 IRRIGATION BUTTON

Briefly press the IRRIGATION button to go to the irrigation dashboard.

### 2.1.4 ENGINE BUTTON

Briefly press the ENGINE button to go to the engine dashboard.

### 2.1.5 START | STOP BUTTON

Briefly press the START button to start watering.
This control is accepted in the absence of alarms and with at least 1.0 m of unrolled pipe. Briefly press the STOP button to finish watering.The collection of the trolley will be stopped and the engine, if present, will begin the shutdown phase.

### 2.1.6 EMERGENCY BUTTON

Briefly press the EMERGENCY button to immediately stop the machine.

**NOTE:** If you are inside the PROGRAM menu you can exit by pressing the emergency button.

### 2.1.7 INCREASE BUTTON

Press and hold the INCREASE button to set the desired speed, rainfall or reentry speed.

### 2.1.8 DECREASE BUTTON

Press and hold the DECREASE button to set the speed desired rainfall or reentry speed.

## 2.2 KNOB

Rotate the knob clockwise to go to the next dashboard or, vice versa, counterclockwise to go to the previous dashboard.
Press and hold the knob for at least 3 seconds to access the work, configuration and diagnosis menus.
Rotate the knob clockwise to scroll down the menu or, vice versa, counterclockwise to scroll up.
Briefly press the knob to select a menu item or parameter to change.
Rotate the knob clockwise to increase the value of the parameter to be modified or, vice versa, counterclockwise to decrease it.

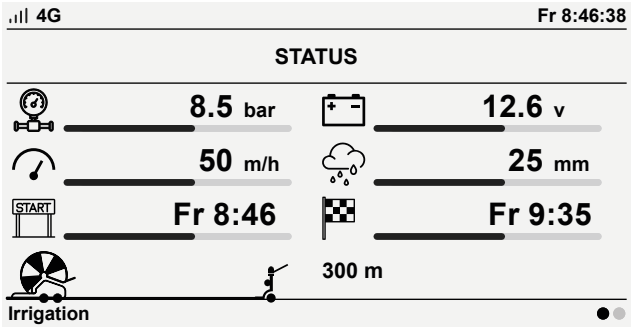
## 2.3 SCREEN

### 2.3.1 TOP BAR

The top bar has information on the left regarding the connection status of the device and modem status while on the right the current date and time. Where present, the GPS indicator is also displayed to indicate the connection.

### 2.3.2 DASHBOARD

The dashboard is displayed in the central portion of the screen and contains the main information divided by type. In the upper part there is the status bar, while in the central section all the instruments relating to the current dashboard appear.
The date and time of the start and end of watering are also displayed.

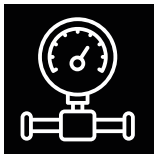



## 2.3.3 INSTRUMENT

The instruments are generically composed of an identification icon and a numerical value with relative unit of measurement. If the value has well-defined thresholds or limits, a progressive bar is also displayed for a better understanding of the limits accepted by the device.

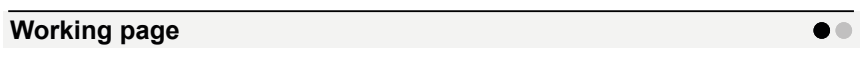
## 2.3.4 WARNING LIGHT

If the instrument is tied to a specific input, the background of the relevant icon will indicate its status. The warning status is indicated in yellow color above the warning light and can only cause a stop if the condition lasts beyond a time preset by the manufacturer; the red color indicates an active ALARM with an imminent controlled stop procedure of the machinery. The yellow/red flashing light indicates the disabling of active engine/hydro alarms.
IdroMOP does NOT assume responsibility for disabling alarms.



## 2.3.5 BOTTOM BAR

The bottom bar has the index for the page being viewed and the working mode on the left and the position of the current dashboard on the right. If an alert, or alarm, is activated, the position will indicate the active anomaly state in the specific dashboard: the flashing yellow dot signals an alert state; the flashing red dot signals an alarm state.

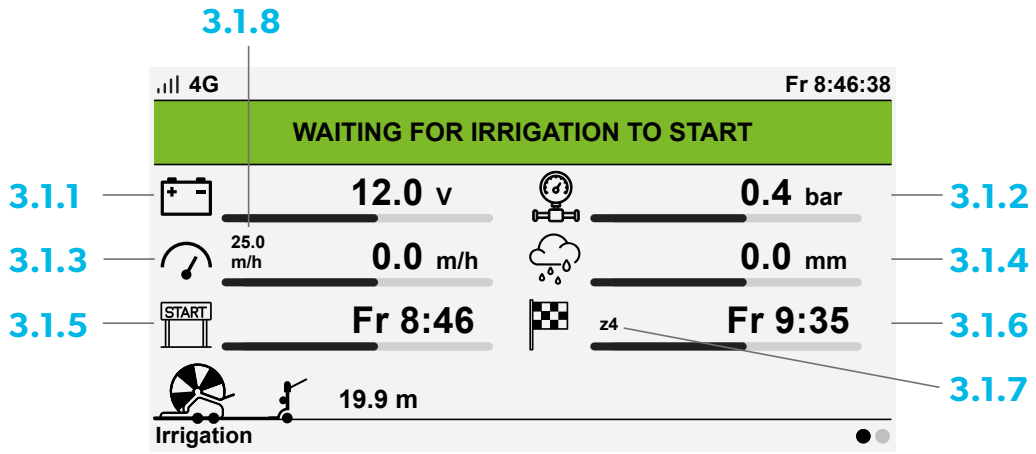


# 3. DYNAMIC DASHBOARDS

The number of dashboards and tools contained varies depending on the type of application configured by the manufacturer.

## 3.1 IRRIGATION DASHBOARD

This dashboard is always displayed.




### 3.1.1 BATTERY

Value expressed in volts and acquired directly from the device power supply.

The yellow tell-tale indicates no charging by the alternator (D+ ) connected to pin **[J26]**, if any.

If the battery voltage drops below 11 Vdc (or 21 Vdc for 24 Vdc systems) for more than 20 seconds the warning message "LOW BATTERY" is generated.

If the battery voltage drops further below 10.5 Vdc (or 20 Vdc for 24 Vdc systems) the BATTERY OUT alarm message is generated for more than 10 seconds.

Under 9 Vdc the device will turn off independently 10 seconds after detecting the shutdown threshold.

### 3.1.2 WATER PRESSURE

Value expressed in bar and acquired by the pressure transducer connected to pins **[J04]** (signal) and **[J17]** (ignition-switched positive).

**MENU --> OPERA --> ENABLE \ DISABLE PRESSURE SWITCH**

Enables or disables the water protection of the system; the DISABLED status is signaled through the flashing yellow/red light.

Any failure, failure to connect or incorrect configuration of the sensor will be reported through the warning light and the yellow flashing progressive bar.

### 3.1.3 RETURN SPEED

Value expressed in m/h and acquired by the speed sensor connected to the pin **[J05]**. Limits and thresholds for generating alarms are defined by **[U02]** and **[E08]**. When the detected velocity is within tolerance thresholds settable **[U02]**, the light appears green.

### 3.1.4 RAINFALL

Value expressed in mm and derived from the re-entry speed, pressure and angle of rotation of the sprinkler.

### 3.1.5 WATERING START TIME

Set watering start time.

### 3.1.6 EXPECTED END-OF-WATERING TIME

Calculated irrigation end time based on the meters unrolled and the return speed.

### 3.1.7 AREA IN USE

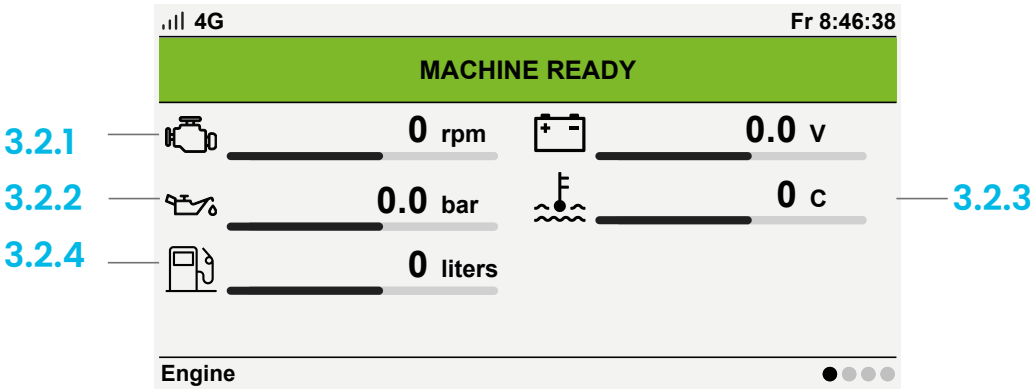
View which of the 4 programmable zones is being used at that time.

### 3.1.8 SPEED SET BY PROGRAMME

Reentry speed set by the program.

## 3.2 ENGINE DASHBOARD

This dashboard is only displayed if **[F01]** is configured as a HYDRAULIC RE-ENTRY MACHINE or INTEGRATED MACHINE.




### 3.2.1 ENGINE SPEED

Value expressed in rpm and acquired by an alternator phase, generically W, connected to pin **[J07]**. In irrigation machines with integrated motor pump (controlled by the IdroMOP device) the engine speed is communicated via CAN BUS. Limits and thresholds for generating alarms are defined by **[E06]** and [E08].

### 3.2.3 ENGINE OIL PRESSURE

Value expressed in bar and acquired by the sensor connected to the pin **[J02]**. The yellow light signals the activation of the bulb connected to the pin **[J38]**; condition that if maintained it will generate the alarm message "OIL PRESSURE ANOMALY".

**NOTE:** it is normal for the BATTERY and ENGINE OIL PRESSURE warning lights to be active when the engine is off.

### 3.2.4 ENGINE TEMPERATURE

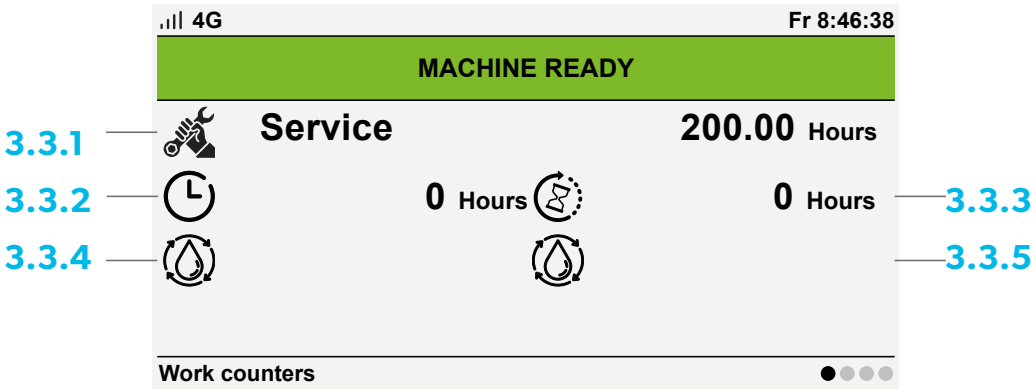
Value expressed in celsius and acquired by the sensor connected to the pin **[J30]**. The yellow light signals the activation of the bulb connected to the pin **[J23]**, a condition which if maintained will generate the alarm message "HIGH ENGINE TEMPERATURE".

### 3.2.5 FUEL TANK LEVEL

Value expressed in liters and acquired by the sensor connected to the pin **[J31]**. The yellow light signals the activation of the contact connected to pin **[J39]**, a condition which if maintained for the time set in **[U16]** will generate the alarm message "FUEL RESERVE".

## 3.3 COUNTERS DASHBOARD

This dashboard is always displayed.




### 3.3.1 HOURS TO MAINTENANCE

Value expressed in hours; decrement counter that signals the time remaining until the next maintenance.

**MENU --> METERS --> REFILL MAINTENANCE**

Reload the maintenance counter with the value set at **[U10]**.

### 3.3.2 PARTIAL HOUR COUNTER

Value expressed in hours; shows the operating hours since the last reset.

**MENU --> COUNTERS --> RESET PARTIAL COUNTER**

Reset partial counter.

### 3.3.3 TOTAL HOUR COUNTER

Value expressed in **hours** and not modifiable; shows the total operating hours

### 3.3.4 PARTIAL LITRE COUNT

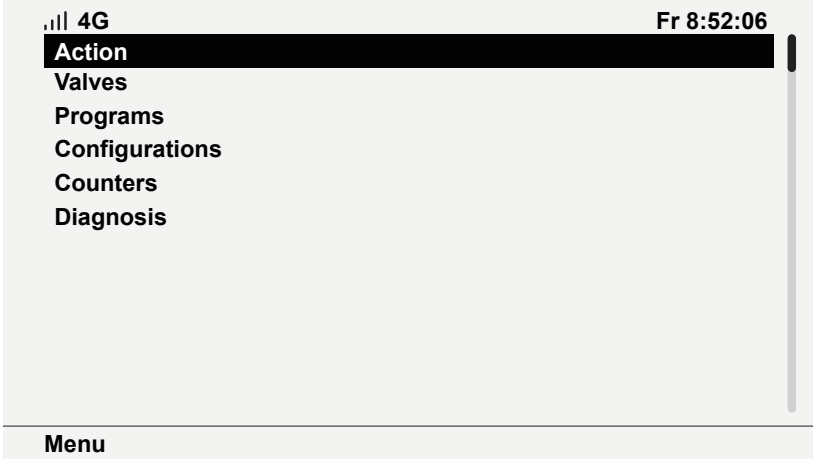
Value expressed in $m^3$. It automatically resets with each new watering.
This value is displayed only if flow-rate reading via **[E07]** is enabled.

### 3.3.5 TOTAL LITRE COUNT

Value expressed in $m^3$ x 1000, not modifiable.
This value is displayed only if flow-rate reading via **[E07]** is enabled.

# 4. ACTION

The ACTION dynamic menu lists all the quick actions allowed at the current state of the machine:




## 4.1 REMOVE ALARM

Allows you to remove the alarm signal.

## 4.2 MODIFICATION OF THE UNROLLED TUBE

Allows you to change the length of the tube read by the device.

## 4.3 ENABLE /DISABLE WATER PROTECTION

It allows you to exclude the pressure control for starting the machine or stopping it in the event of a lack of water.

## 4.4 ENABLE / DISABLE ENGINE PROTECTION

It allows enabling, or disabling, the intervention of inputs **[J23]**, **[J24]**, **[J26]**, **[J36]** and **[J38]** dedicated to motor protection, if it is present.

**NOTE:** IdroMOP does NOT assume responsibility for disabling engine protection.

## 4.5 USE LOW/HIGH PRESSURE VALVE

If both valves are present, before starting the single irrigation, this command allows you to choose which valve to use in the next irrigation.

**NOTE:** IdroMOP does NOT assume responsibility for disabling the valves.

## 4.6 OPEN /CLOSE HIGH PRESSURE VALVE

Allows you to open, or close, the high pressure valve.

## 4.7 OPEN /CLOSE LOW PRESSURE VALVE

Allows you to open, or close, the low pressure valve.

## 4.8 OPEN /CLOSE AUXILIARY SPRINKLER

It allows the auxiliary sprinkler to be opened, or closed.

## 4.9 START/STOP ENGINE

If there is an internal combustion engine, it allows you to start/stop the engine.

## 4.10 TURN OFF THE DEVICE

Turning off the device via internal control and not from the ON/OFF button.

# 5. PROGRAM

The automatic program section is accessible after the tube has been unrolled.
Any alarm conditions present block access to this section.
It is accessed by pressing the START / STOP button.

## 5.1 UNROLLED METERS

**[ A21 ]** Meters of the tube to be wound.
Value available for verification and/or confirmation of the cart position.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0.0 m | F31 | 0.0 m |

**[ *** ]** **VALVE IN USE**

A simple check and/or confirmation of the valve used in the next irrigation.

Unchangeable value.

To change this setting, exit with the EMERGENCY button and log in.

**MENU --> OPERA --> USE VALVE ... LOW PRESSURE / HIGH PRESSURE**

Modification and repositioning of the valve in use.

## 5.2 HEADER BAND

**[ Z01 ]** Band modification **[Z01]** (start of watering).
Once the row is selected (flashing) you can change the depth of the band **[Z01]**. The pressure of the knob confirms the flashing data and allows the modification of the next parameter, such as SPEED' | RAINFALL INDEX | FRONT OF ADVANCE.

Rainfall index and advance face are only available with **[U03]** enabled.

Even with **[U03]** enabled, recalculation of the rainfall index can be excluded by setting it to 0 (ZERO).

The advancing front is expressed in degrees of jet opening. A value of 180 degrees corresponds to the maximum opening of the sprinkler; a field edge irrigation shall be performed with a 90 degree advancing face.

Band depth value 0 m (zero meters) determines the disabling of the band.

## 5.3 INTERMEDIATE BAND 1

**[ Z02 ]** Modification of the intermediate band **[Z02]**. For parameter editing mode, see **[Z01]**. Band depth value 0 m (zero meters) determines the disabling of the band.

## 5.4 INTERMEDIATE BAND 2

**[ Z03 ]** Modification of the intermediate band **[Z03]**. For how to change parameters, see **[Z01]**. Band depth value 0 m (zero meters) determines the disabling of the band.

## 5.5 GENERIC OR END OF IRRIGATION BAND

**[ Z04 ]** Modification of the generic use band **[Z04]**. For parameter editing mode, see **[Z01]**. This band can never have a depth of less than 20 m.

**NOTE:** If irrigation does not need speed changes, the settings of this band **[Z04]** will determine the general irrigation conditions.
The sum of the lengths of the 4 zones must coincide with the meters of tube unrolled.

## 5.6 SPRINKLER MOUTHPIECE

**[ A23 ]** With rain gauge enabled **[U03]**, sets the diameter of the mouthpiece placed on the sprinkler.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 18 mm | 46 mm | 34 mm |

## 5.7 SPRINKLER RANGE

**[ A24 ]** With rain gauging enabled **[U03]**, setting the sprinkler radius.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 30 m | 120 m | 60 m |

## 5.8 IRRIGATION PRESSURE AT SPRINKLER

**[ A25 ]** With rain gauge enabled **[U03]**, available water pressure at the sprinkler.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 2.0 bar | 9.0 bar | 6.0 bar |

## 5.9 WATERING START PAUSE

**[ A26 ]** Wetting time before starting the trolley return.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0:00 h:m | 4:00 h:m | 0:00 h:m |

## 5.10 AUXILIARY SPRINKLER OPENING POSITION

**[ A27 ]** Remaining metres at which the auxiliary sprinkler will open for the time set in **[A28]**, if present.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0 m | A21 | 0 m |

## 5.11 AUXILIARY SPRINKLER OPENING TIME

**[ A28]** Wetting time of the auxiliary sprinkler after reaching the set position **[A27]** or the final break **[A30]**, if present.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0:00 h:m | 3:00 h:m | 0:00 h:m |

## 5.12 ADVANCE STOP

**[ A29 ]** Position of the trolley to which irrigation will be terminated early with notification of the end of irrigation.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0 m | A21 | 0 m |

## 5.13 IRRIGATION END PAUSE

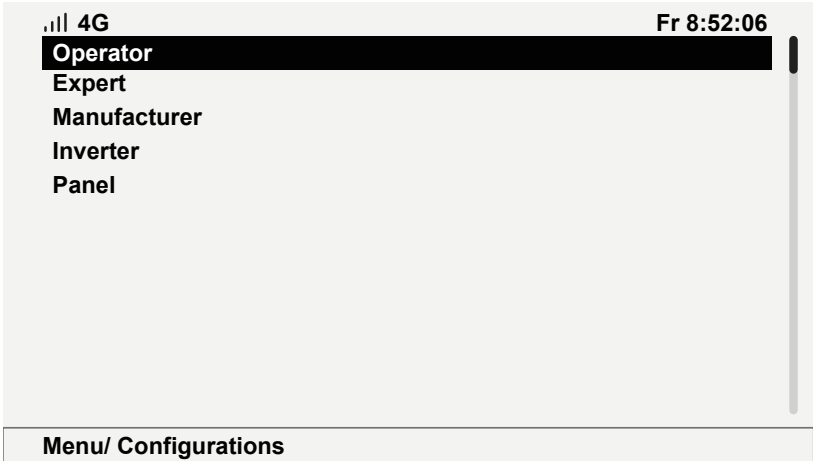
**[ A30 ]** Wetting time after the trolley is completely retracted.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0:00 h:m | 4:00 h:m | 0:00 h:m |

## 5.14 IRRIGATION START TIME

**[ A31 ]** Allows you to set the desired start time of the next irrigation.
The delay may not exceed 24 hours.

# 6. OPERATOR CONFIGURATIONS




## 6.1 PRESSURE START OF IRRIGATION

**[ U01]** Water pressure threshold beyond which the machine will begin collecting the trolley.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0.0 bar | 10.0 bar | 4.0 bar |

## 6.2 SPEED TOLERANCE

**[U02 ]** Maximum permissible speed error after which a delayed alarm **[E01]** will be notified with consequent slowdown and stop of the machine.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 2.0 m/h | 10.0 m/h | 4.0 m/h |

## 6.3 RAINFALL

**[ U03 ]** Enabling the adjustment of the re-entry speed by the calculated rainfall index.

## 6.4 HIGH PRESSURE OPENING

**[ U04 ]** High pressure valve start opening pressure.

**NOTE:** The pressure transducer must be mounted upstream of the motorized valve.

## 6.5 SPEED ADJUSTMENT FILTER

**[ U05 ]** Waiting time interval on by-pass control once the reentry speed has entered tolerance.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0 s | 20 s | 5 s |

## 6.6 SPEED FILTER WIND

**[ U08 ]** Setting this time, in minutes, enables the suspension or resuming irrigation procedure for wind speed detection. A non-ZERO value triggers the setting of thresholds **[U09]** and **[U10]**.
Irrigation is suspended if the wind speed remains above **[U09]** for longer than **[U08]**.
Irrigation resumes if the wind speed remains below **[U10]** for **[U08]**.

## 6.7 SPEED WIND SUSPENSION IRRIGATION

**[ U09 ]** Value in km/hour.

## 6.8 SPEED WIND RESTORE IRRIGATION

**[ U10 ]** Value in km/hour.

**NOTE:** Wind speed is detected via external anemometer connected between pins **[J40]** (anemometer input) and **[J32]** (mass reference). The anemometer must be a pulse type (reed switch) with a typical instrumental constant of 3.67 Hz per m/s.

## 6.9 SERVICING

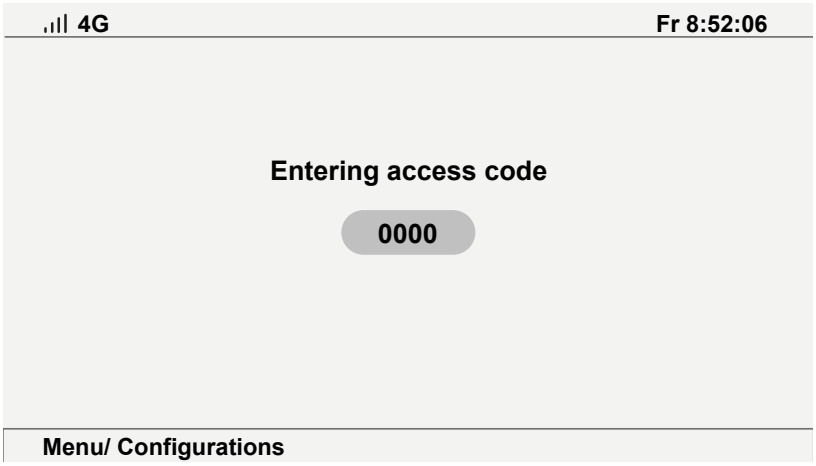
**[ U16]** Working hours after which the control unit will report the request for new maintenance of the machine.

**NOTE:** Achieving this condition does not prevent the machine from functioning; it is only a warning/recommendation to carry out the necessary maintenance of the mechanical parts subject to wear.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0 h | 500 h | 200 h |

# 7. EXPERT CONFIGURATIONS

Access code: **123**




## 7.1 ACCELERATION AND DECELERATION TIME

**[ E01 ]** Time taken to accelerate from the minimum speed of 5 m/h to the maximum speed set in **[E06]**, and vice versa.
Intermediate speeds will be reached with the ramp determined by the set time.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0:10 m:s | 2:00 m:s | 1:00 m:s |

## 7.2 ADJUSTMENT COEFFICIENT

**[ E02 ]** Reactivity index on the speed adjustment; the higher this value, the faster the regulator will recover the speed error.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 10% | 100% | 80% |

## 7.3 NASPO FILLING CORRECTION

**[ E03 ]** Naspo fill index.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 80% | 100% | 100% |

## 7.4 COIL NESTING CORRECTION

**[ E04 ]** Coil nesting index.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0% | 100% | 50% |

## 7.5 PIPE LENGTH CORRECTION

**[ E05 ]** Pipe elongation index.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0.0% | 10.0% | 0.0% |

## 7.6 MAXIMUM RE-ENTRY SPEED

**[ E06 ]** Maximum speed allowed for the re-entry of the trolley, after which an alarm will be generated with consequent controlled stop of the machine.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 60 m/h | 250 m/h | 180 m/h |

## 7.7 FLOWMETER

**[ E07 ]** Enabling the reading of the water flow rate through an external sensor or algebraic calculation.

**ABSENT**
**DN80**
**DN100**
**DN125**
**DN150**

## 7.8 BYPASS OPENING

**[ E08 ]** Total bypass valve opening time.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 10 s | 60 s | 25 s |

## 7.9 BYPASS DEAD TIME

**[ E09 ]** Initial pulse of opening the bypass valve before performing the speed control.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0 s | 15 s | 6 s |

## 7.10 LOW PRESSURE OPENING TIME

**[ E10 ]** Opening time of low pressure valve if set as direct motor parameter **[E05]**.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0:00 m:s | 4:00 m:s | 0:10 m:s |

## 7.11 HIGH PRESSURE VALVE OPENING

**[ E11 ]** Opening time of the high pressure valve if set as direct motor parameter **[F07]**.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0:00 m:s | 4:00 m:s | 0:10 m:s |

## 7.12 AT IGNITION INITIALIZES VALVES

**[ E12 ]** If set to YES, pressing START returns all valves to their default position.

## 7.13 ENGINE RPM THRESHOLD

**[ E13 ]** Maximum permissible speed beyond which the engine will be stopped with deceleration, if any.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| E06 | 3000 rpm | 1900 rpm |

## 7.14 ENGINE PROTECTION

**[ E14 ]** Enables or disables engine protection, if present.

# 8. MANUFACTURER CONFIGURATIONS

Access code: **Reserved**

## 8.1 HOSE REEL MACHINE

**[ F01 ]** Type of machine to be controlled:

**TURBINE:** machine with turbine return;
**HYDRAULIC:** machine with motor-powered hydraulic return;
**INTEGRATED:** machine with on-board pumping unit.

## 8.2 ENGINE INTERFACE

**[ F02 ]** Technology adopted for interfacing to the engine:

| | |
|---|---|
| **IDROMOP** | **TIER3** |
| **STAGE IV** | **STAGE V < 55kW** |
| **STAGE V > 55kW** | |

Visible only if the **[F01]** parameter is configured as INTEGRATED.

## 8.3 ENGINE MANUFACTURER

**[ F03 ]** Engine manufacturer, which determines the type of communication protocol to be used:

| | |
|---|---|
| **UNKNOWN** | **IVECO** |
| **JCB** | **DEUTZ** |
| **JOHN DEERE** | **SCANIA** |
| **VOLVO** | **KOHLER** |

Visible only if the **[F02]** parameter is configured as TIER3, STAGE IV, STAGE V < 55kW, or STAGE V > 55kW.

## 8.4 BYPASS CONTROL

**[ F05 ]** Technology adopted for interfacing with the bypass valve:

| | |
|---|---|
| **ABSENT** | **DIRECT** |
| **SERVOMOTOR** | |

## 8.5 LOW PRESSURE CONTROL

**[ F06 ]** Technology used for interfacing with the low pressure valve:

| | |
|---|---|
| **ABSENT** | **DIRECT** |
| **SERVOMOTOR** | |

## 8.6 HIGH PRESSURE CONTROL

**[ F07 ]** Technology adopted for interfacing with the high pressure valve:

| | |
|---|---|
| **ABSENT** | **DIRECT** |
| **SERVOMOTOR** | |

## 8.7 AUXILIARY SPRINKLER

**[ F08 ]** Technology used for interfacing the auxiliary irrigator:

| | |
|---|---|
| **ABSENT** | **DIRECT** |
| **SERVOMOTOR** | |

## 8.8 EMERGENCY INPUT POLARITY

**[ F13 ]** Emergency input **[J25]** idle state:

**N.O.** normally open and active if connected to ground;
**N.C.** normally closed and active if not connected to ground.

## 8.9 FUEL LEVEL SENSOR

**[ F19 ]** Fuel level sensor model:

| | |
|---|---|
| **ABSENT** | **EUROSW1 330-0** |
| **EUROSW2 0-180** | **ELCOS GAR-15** |

Visible only if the **[F01]** parameter is configured as HYDRAULIC.

## 8.10 TANK CAPACITY

**[ F26 ]** Fuel tank capacity.

| **MINIMUM** | **MAXIMUM** | **DEFAULT** |
|---|---|---|
| 0 lt | 2000 lt | 600 lt |

Visible only if the **[F01]** parameter is configured as HYDRAULIC.

## 8.11 ENGINE START SPEED THRESHOLD

**[ F27 ]** Engine speed above which the engine is considered started.

| **MINIMUM** | **MAXIMUM** | **DEFAULT** |
|---|---|---|
| 200 rpm | 600 rpm | 350 rpm |

Visible only if parameter **[F01]** is configured as HYDRAULIC or INTEGRATED.

## 8.12 ENGINE IDLE SPEED

**[ F28 ]** Minimum engine idle speed.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 900 rpm | 2400 rpm | 1000 rpm |

Visible only if the **[F01]** parameter is configured as HYDRAULIC.

## 8.13 ENGINE REVOLUTION CONVERSION RATIO

**[ F29 ]** Calibration ratio for correct engine speed reading.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 0.100 | 1.000 | 0.995 |

Visible only if the **[F01]** parameter is configured as HYDRAULIC.

## 8.14 PIPE LENGTH

**[ F31 ]** Length of the pipe.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 250 m | 900 m | 500 m |

## 8.15 PIPE EXTERNAL DIAMETER

**[ F32 ]** External diameter of the pipe.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 60 mm | 200 mm | 125 mm |

## 8.16 NUMBER OF PULSES PER REVOLUTION

**[ F33 ]** Number of pulses detected for each complete revolution of the drum.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 90 | 1400 | 250 |

## 8.17 DRUM INTERNAL DIAMETER

**[ F34 ]** Inner diameter of the drum.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 500 mm | 2000 mm | 1800 mm |

## 8.18 DRUM INTERNAL WIDTH

**[ F35 ]** Internal width of the drum.

| MINIMUM | MAXIMUM | DEFAULT |
|---|---|---|
| 1000 mm | 2000 mm | 1650 mm |

## 8.19 DEAD BAND

**[ F36 ]** Band around the set return speed where the control unit will not apply any control pulses to the bypass

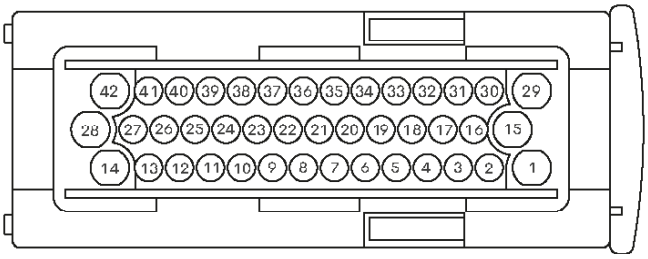
## 8.20 MINIMUM CONTROL PULSES

**[ F37 ]** Minimum pulse applied to the bypass during return speed control

## 8.21 P.I.D. MAXIMUM CONTROL PULSE

**[ F38 ]** Maximum pulse applied to the bypass during return speed control

# 9. ELECTRIC CONNECTIONS




**LEGEND:**

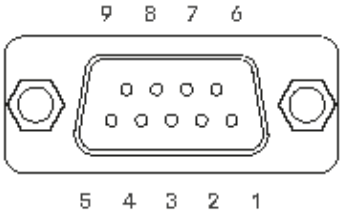
| | |
|---|---|
| **DI:** Digital inputs | 10 |
| **FDI:** Frequency digital input | 2 |
| **VAI:** Voltage analogue inputs | 3 |
| **CAI:** Current analogue inputs | 3 (4 - 20 mA) |
| **PI:** Power input | |
| **PO:** Power output | |
| **DO:** Digital output | |
| **MO:** Engine output | 2 |
| **PNP:** PNP outputs | 3 |
| **NPN:** NPN outputs | 2 |
| **CB:** CANBUS | 1 |

( Contact insertion on flying connector)

| PIN | RIF. | FEATURES | DESCRIPTION |
|---|---|---|---|
| **J1** | 31-GND | PI | BATTERY NEGATIVE |
| **J2** | - | VAI | ENGINE OIL PRESSURE SIGNAL |
| **J3** | - | CAI (4-20mA) | WATER VACUUM SIGNAL |
| **J4** | - | CAI (4-20mA) | WATER PRESSURE SIGNAL |
| **J5** | - | DI | RETRACTION SPEED SIGNAL |
| **J6** | - | DI | EXTERNAL STOP |
| **J7** | W-RPM | FDI | ENGINE SPEED SIGNAL |
| **J8** | VALVE | MO (5A max) | MOTOR 2 - |
| **J9** | VALVE | MO (5A max) | MOTOR 2 + |
| **J10** | BY-PASS | MO (5A max) | MOTOR 1 - |
| **J11** | BY-PASS | MO (5A max) | MOTOR 1 + |
| **J12** | EV | PNP (5A max) | SOLENOID VALVE |
| **J13** | - | PNP (5A max) | AUXILIARY SPRINKLER |
| **J14** | 50 | PNP (10A max) | STARTER SIGNAL |
| **J15** | 15/54 | PO (10A max) | IGNITION-SWITCHED POSITIVE |
| **J16** | 15/54 | PO (5A max) | IGNITION-SWITCHED POSITIVE |
| **J17** | 15/54 | PO (5A max) | IGNITION-SWITCHED POSITIVE |
| **J18** | 15/54 | PO (5A max) | IGNITION-SWITCHED POSITIVE |
| **J19** | 15/54 | PO (5A max) | IGNITION-SWITCHED POSITIVE |
| **J20** | - | CB | CAN Low |

| | | | |
|---|---|---|---|
| **J21** | - | CB | CAN Low |
| **J22** | - | CAI (4-20mA) | WIND SPEED SIGNAL |
| **J23** | ATA | DI | ENGINE HIGH TEMPERATURE ALARM |
| **J24** | | DI (NO/NC Normally open/closed) | REEL ROTATION ALARM |
| **J25** | - | DI (NO/NC) | EXTERNAL EMERGENCY |
| **J26** | D+ | DI/DO | ALTERNATOR D+ |
| **J27** | - | NPN (5A max) | BLINKER |
| **J28** | +30 | PI (12/24 Vdc) | BATTERY POSITIVE |
| **J29** | 31-GND | PI | BATTERY NEGATIVE |
| **J30** | - | VAI | ENGINE TEMPERATURE SIGNAL |
| **J31** | - | VAI | FUEL LEVEL SIGNAL |
| **J32** | 31-GND | PI | BATTERY NEGATIVE |
| **J33** | 31-GND | PI | BATTERY NEGATIVE |
| **J34** | - | CB | CAN High |
| **J35** | - | CB | CAN High |
| **J36** | COMMON RAIL | DI | FUEL PRESSURE FAULT |
| **J37** | - | DI | EXTERNAL START/STOP |
| **J38** | BPO | DI | LOW ENGINE OIL PRESSURE ALARM |
| **J39** | - | DI | FUEL RESERVE ALARM |
| **J40** | - | FDI | FLOW SWITCH SIGNAL |
| **J41** | - | NPN (5A max) | AUXILIARY NPN OUTPUT |
| **J42** | +30 | PI (12/24 Vdc) | BATTERY POSITIVE |

# 10. SERIAL COMMUNICATION



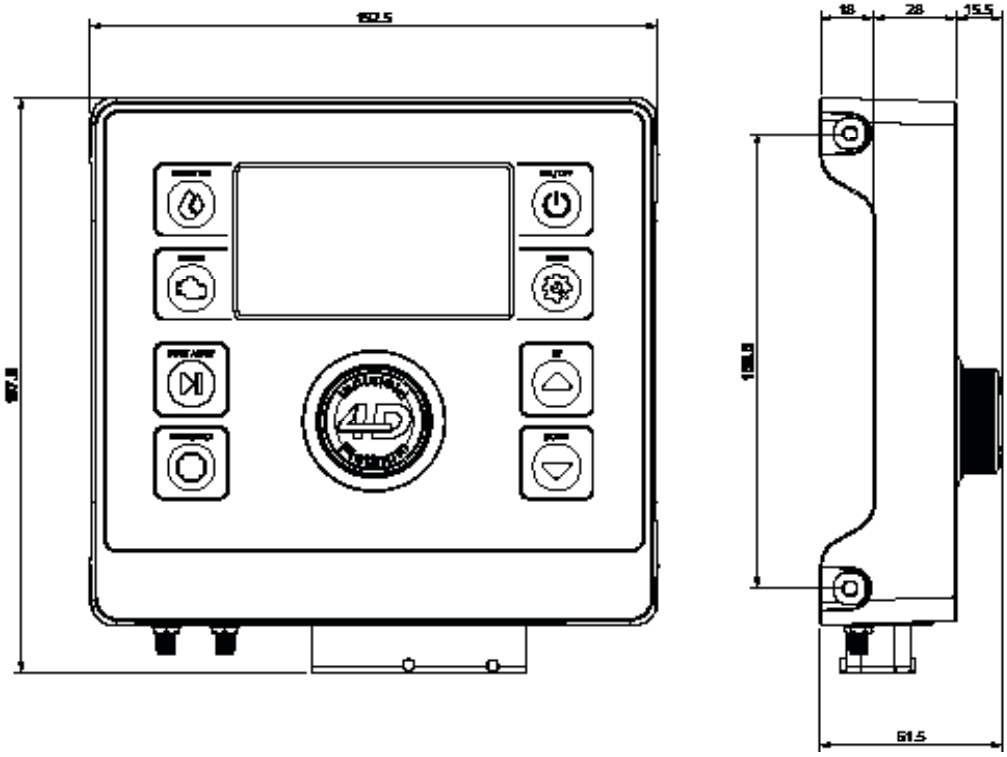

(Contact insertion on flying connector )

## 10.1 SERIAL RS232

**Communication channel for exclusive use IdroMOP**

**DS2** TX Line
**DS3** RX Line
**DS5** [ 31 ] Reference

# 11. MECHANICAL DIMENSIONS



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