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IdroMOP H7

**USER AND
INSTALLATION MANUAL**

IdroMOP

SUMMARY

1.	MANUAL PRESENTATION	3	9.8	MOTOR PUMP GROUP	29
1.1	ADDITIONAL DOCUMENTATION	3			
1.2	DECLARATION OF CONFORMITY	3			
1.3	MANUFACTURER DETAILS	3			
1.4	WARRANTY	4			
1.5	AUTHORIZED SERVICE	4			
1.6	GENERAL SAFETY RULES	4			
1.6.1	SAFETY RULES FOR USING DEVICES VIA THE ID4 PLATFORM	5			
1.7	RESIDUAL RISKS	5			
1.8	LOCATION	5			
1.9	HANDLING	6			
1.10	INSTALLATION AND CONFIGURATION	6			
1.10.1	PRELIMINARY CHECKS	6			
1.10.2	INSTALLATION	6			
1.10.3	CONFIGURATION	6			
1.11	USE	7			
1.12	MAINTENANCE	7			
1.13	PERIODIC MAINTENANCE	7			
1.14	EXTRAORDINARY MAINTENANCE	7			
1.15	DECOMMISSIONING	7			
2.	INTERFACE	8			
3.	DASHBOARD	10			
3.1	DASHBOARD INTERFACE	10			
3.2	ANALOG DASHBOARDS	11			
3.2.1	PUMP UNIT GRAPH	11			
3.2.2	IRRIGATION MACHINE GRAPH	12			
4.	ICON LEGEND	13			
4.1	STATUS BAR	13			
4.2	PROCEDURE BAR	14			
4.3	PARAMETERS FOR ALL MACHINES	14			
4.4	ENGINE PARAMETERS	15			
4.5	IRRIGATION MACHINE PARAMETERS	17			
4.6	VALVE PARAMETERS	17			
5.	MENU	18			
6.	MENU ACTIONS	19			
7.	PROGRAMS	21			
7.1	ENGINE - AUTOMATIC - SYSTEM FILLING	21			
7.2	ENGINE - MANUAL - SYSTEM FILLING	21			
7.3	ENGINE - AUTOMATIC - MANUAL - IRRIGATION	22			
7.4	ENGINE - AUTOMATIC - MANUAL - FLOW CONTROL	23			
7.5	HOSE REEL - MAIN SPRINKLER	23			
7.6	HOSE REEL - [Z1] FIELD START SECTOR	23			
7.7	HOSE REEL - [Z2/Z3] CENTRAL SECTOR #2/#3	24			
7.8	HOSE REEL - [Z4] FIELD END SECTOR #4	24			
7.9	HOSE REEL - AUXILIARY SPRINKLER	25			
7.10	HOSE REEL - IRRIGATION TIMES	25			
8.	CYCLES	26			
8.1	CYCLE SECTION	26			
8.2	CYCLE #1, 2, 3, 4, 5 - SCHEDULING	26			
9.	USER PARAMETERS	27			
9.1	HOSE REEL - IRRIGATION	27			
9.2	HOSE REEL - VALVES	27			
9.3	HOSE REEL - SPEED REGULATION	27			
9.4	HOSE REEL - MEASUREMENT CORRECTIONS	27			
9.5	ANEMOMETER	28			
9.6	PUMP PRIMING	28			
9.7	HIGH PRESSURE VALVE	29			
10.	MANUFACTURER PARAMETERS	31			
10.1	DIESEL ENGINE CONTACTS	31			
10.2	SERVICE DIGITAL INPUTS	31			
10.3	CONTROL OUTPUTS	32			
10.4	SPEED SENSOR	32			
10.5	FLOW SENSORS	33			
10.6	DIESEL ENGINE SENSORS	33			
10.7	VALVE CONTROL	33			
10.8	VALVE TIMINGS	34			
10.9	HOSE REEL - DIMENSIONS	34			
10.10	DIESEL ENGINE - CONTROL TYPE	35			
10.11	DIESEL ENGINE - TIMING	35			
10.12	DIESEL ENGINE - ENGINE RPM	35			
10.13	DIESEL ENGINE - FUEL TANK	36			
10.14	MAINTENANCE INTERVALS	36			
11.	CAN BUS	37			
11.1	VALVE PARAMETERS - CHANGE MODE	37			
11.2	VALVE PARAMETERS - SETTINGS	37			
11.3	VALVE PARAMETERS - INPUTS	37			
11.4	VALVE PARAMETERS - INITIALIZATION	38			
12.	PANEL MENU	39			
12.1	PANEL	39			
12.2	LOCAL SETTINGS	39			
12.3	SCREEN	39			
12.4	VISUAL AREA	39			
12.5	NETWORK	40			
12.6	OPERATING MODES	40			
13.	SYSTEM DIAGNOSTICS	41			
13.1	MAINTENANCE OPERATING HOURS	41			
13.2	ENGINE DIAGNOSTICS	41			
13.3	CHECK INPUT STATUS	42			
13.4	CHECK OUTPUT STATUS	42			
14.	VALVE SELECTION	43			
14.1	PUMP UNIT	43			
14.2	HOSE REEL MACHINE	43			
15.	ELECTRICAL CONNECTIONS	44			
16.	SERIAL COMMUNICATION	46			
16.1	RS232 SERIAL	46			
16.2	RS485 SERIAL	46			
17.	MECHANICAL DIMENSIONS	47			

1. MANUAL PRESENTATION

This manual contains the instructions for the installation, configuration, use and maintenance of the device described, intended for the control, management and monitoring of machines used for agricultural irrigation. The manual consists of various sections, each covering a series of topics divided into chapters and paragraphs. The table of contents lists all the topics covered in the entire manual. The page numbering is progressive and each page shows its own page number. This manual is intended for the user responsible for configuring, using and maintaining the device, and refers to its technical life after production and sale. If the device is subsequently transferred to third parties for any reason, such as sale, loan for use, or any other purpose, it must be delivered complete with all documentation. The information, descriptions and illustrations contained in this manual reflect the version indicated. 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 website www.idromop.com to download the updated version of the documentation.

1.2 DECLARATION OF CONFORMITY

All products are tested and adjusted by the manufacturer before shipment and delivery to the customer. The product has been designed, manufactured and tested to comply with all applicable standards, see the declaration of conformity, provided that it is 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, malfunctions may occur during use, and safety problems may also arise. Incorrect installation, configuration and maintenance will void the warranty terms. This product is an electronic instrument and therefore is not subject to the requirements established by EEC Directive 89/392, the Machinery Directive. Therefore, if this instrument is used as a component part of a machine, it may not be switched on unless the machine complies with the requirements of the Machinery Directive. The marking of the instrument does not exempt the Customer from fulfilling the legal obligations relating to their finished product. The electronic control unit described in this documentation is supplied with the declaration of conformity, drawn up in accordance with the legislation in force within the European territory.

If it is missing, it can still be downloaded from the manufacturer's website: www.idromop.com.

1.3 MANUFACTURER DETAILS

Company	IdroMOP srl
Headquarters	Viale del lavoro 9, 36049 Sovizzo (VI), Italy
VAT number	IT03951780240
Telephone	+39 0444 1240784
Email	info@idromop.com
Website	www.idromop.com

1.4 WARRANTY

The Products are manufactured and delivered on the basis of the production codes expressly indicated in the order. The Products are warranted against manufacturing defects for a period of twelve (12) months from the delivery date pursuant to Article 8. For the H7 control unit range, an additional twelve (12) month warranty extension may be requested in accordance with the applicable price list. Notice of defects: the Customer shall forfeit its warranty rights unless defects are notified within eight (8) days from their discovery. Where the defect requires technical assessments for its complete identification, such term shall commence from the moment the Customer has acquired full knowledge of the defect. Notice shall not be required where the Supplier has acknowledged the existence of the defect or has fraudulently concealed it. Customer obligations: the Customer shall carry out an incoming inspection of the Products and/or components received, verifying quantities, compliance with the order, integrity and completeness of the technical documentation. Any apparent defects or discrepancies must be notified in writing within eight (8) days from delivery, failing which the warranty rights shall lapse. Scope of warranty: the warranty exclusively covers the free repair or replacement of defective parts, at the Supplier's discretion. Repairs shall be carried out at the Supplier's premises. Transportation costs and risks shall be borne by the Customer. Exclusions: the warranty does not cover damage arising from: (i) improper use or use not compliant with the instructions; (ii) incorrect installations; (iii) tampering or interventions by unauthorized personnel; (iv) normal wear and tear; (v) force majeure events; (vi) overvoltage or unforeseeable external events. In any event, the right to compensation pursuant to Article 1494 of the Italian Civil Code shall remain unaffected where the Supplier fails to prove that it was unaware of the defects without fault.

1.5 AUTHORIZED SERVICE

Product service must be carried out directly by IdroMOP S.r.l. or by a technician authorized and appointed by the company.

If use of the warranty is considered necessary, please provide the following information:

Device model

Device serial number

Purchase date, with documentation attached

Detailed description of the problem

1.6 GENERAL SAFETY RULES

Avoid exposing the control unit to environmental conditions that may allow dust, chemical agents or liquids to enter it. It is recommended to protect the display area with particular care, reducing direct sunlight exposure as much as possible. Always use the utmost caution when moving or transferring the equipment. When using a remote-control system, make sure that the machine is not accessible to people or objects during operation.

The equipment must be powered with direct voltage between 10 Vdc and 30 Vdc. Always check the polarity of the power supply source.

If the engine wiring supplied with the equipment is customized, strictly observe the positions of the electrical signals provided on the connector and the dimensions 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 of the electrical system.

1.6.1 SAFETY RULES FOR USING DEVICES VIA THE ID4 PLATFORM

The ID4 platform allows remote monitoring, control and modification of the parameters of H7-generation devices. The use of the ID4 platform is reserved exclusively for authorized personnel. Improper use of the ID4 platform, such as uncontrolled machine start-up or incorrect modification of working parameters, could be dangerous for people and/or property. To access machines remotely in complete safety, the ID4 platform requires the operator to declare, under their own responsibility, that the machine is safe and ready for execution of the remote start command. Industry 4.0 and industrial remote control are regulated by specific European Directives in order to protect company safety and operator safety. Remote control means the possibility of intervening, through specific commands, on industrial systems that are not under the immediate control of the operator. There are therefore standards specifying when remote control is permitted and when it is not, for safety reasons.

This is possible when:

- The machine is visible to the operator.
- The system is not near other operators who could physically be exposed to risks connected to remote intervention.
- Alarms are never silenced, precisely so that warnings are issued if there are problems requiring prompt intervention for recovery.
- The area of the remotely controlled machinery is protected and cannot be directly reached by the user or by anyone else passing in front of that area. Specific warning signs must also be present.
- Only one control station is active.
- The software connection systems allow connection only to the selected machine.
- There is a stable network that minimizes transmission errors.
- It is not possible to connect to the machine without first obtaining consent from the local operator.

All standards relating 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 S.r.l. carried out an in-depth risk analysis on the device in question. This analysis identified risks that cannot be eliminated due to their nature. These risks were therefore examined individually and, in this manual, the instructions on how to avoid them have been emphasized. It is important that any user responsible for installing, configuring, using and maintaining the electronic control unit has read the manual beforehand. Already during the design phase, solutions were adopted to make the use of the device safe in all phases of use: transport, assembly, adjustment, use and maintenance.

1.8 LOCATION

Before handling, installing and subsequently using the device, some aspects must be taken into account. In particular, certain factors must be checked: the area where the IdroMOP electronic control unit is used and stored must be chosen so that it cannot be hit by jets of steam, water or other liquids, especially corrosive ones. Although it can be installed outdoors, it must be placed inside a housing capable of protecting it from weather conditions.

- Operating temperature: 0 °C / +60 °C
- Storage temperature: -10 °C / +70 °C
- Maximum relative humidity conditions: 90%

1.9 HANDLING

During device handling procedures, particular attention must be paid to the knob, keypad, screen and connectors. Any impacts could compromise use of the device.

1.10 INSTALLATION AND CONFIGURATION

Installation and configuration must be carried out by specialized personnel authorized by IdroMOP S.r.l., who must first verify that the electrical system of the destination installation complies with applicable standards.

1.10.1 PRELIMINARY CHECKS

Check that the various parts of the device do not show physical damage caused by impacts, tears or abrasions. If any damage is found, stop the ongoing procedure and report the nature of the damage found to the manufacturer's customer support office.

1.10.2 INSTALLATION

For device installation, carefully observe the following recommendations:

- Connect the device while always respecting the indicated connections and the type of sensors and/or actuators.
- Check that the absorption and consumption of the connected equipment are compatible with the technical characteristics of the device.
- Place the device in a dry location, away from possible contamination by corrosive liquids.
- Protect the front panel of the device from direct sunlight.
- Place the device at least 50 cm away from heat sources that could damage its internal or 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.
- The use of a battery charger for emergency starting is strictly forbidden. In this case as well, the manufacturer shall not respond under warranty for damage to the electronic components.
- Make sure that the programmed configuration is consistent with the application.
- Before working on the rotating parts of the engine, it is strongly recommended to switch off the engine and disconnect terminal 50, starting, located on the starter motor.

1.10.3 CONFIGURATION

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

1.11 USE

For the correct procedure for using the device, strictly follow the instructions given in this manual. If any unexpected and dangerous anomaly occurs during a device start-up or use phase, it is recommended to switch it off, disconnect the removable connector, wait approximately ten seconds and reconnect the connector. If the malfunction persists, remove the power supply and immediately contact the service center.

1.12 MAINTENANCE

Maintenance operations must be carried out by personnel who have previously read the manual. Any type of cleaning or physical maintenance operation must always be carried out with the system switched off and its electrical connection disconnected. When carrying out these operations, strictly follow the instructions given in this manual. For any maintenance and cleaning operation, in addition to the instructions contained in this manual, the general safety regulations and, where applicable, the general workplace safety regulations in force at the location where these operations are carried out must be observed.

1.13 PERIODIC MAINTENANCE

Periodically, the electronic control unit must be cleaned of any accumulation of dust and dirt that may have formed on its external surface. If necessary, use a compressor to blow away the dust. A non-abrasive damp cloth free from alcohol or aggressive solvents may also be used. Do not use abrasive sponges, chemical solvents or detergents. During cleaning, avoid allowing water to touch internal electrical parts.

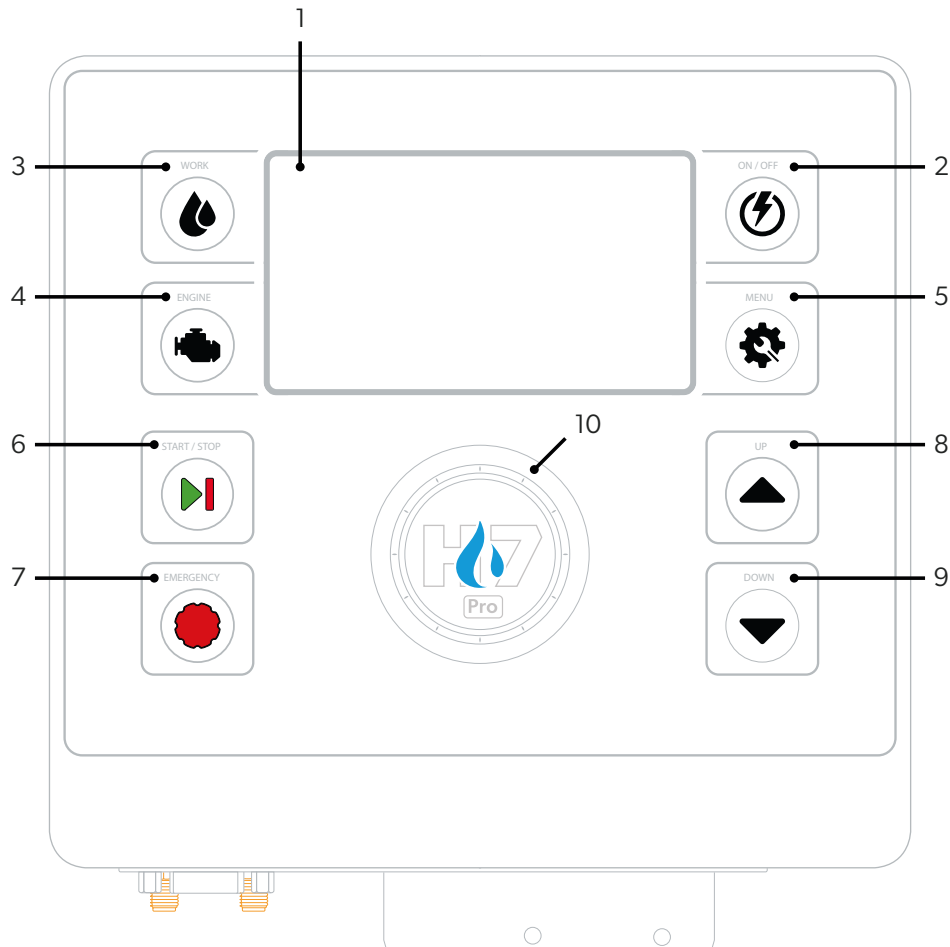
1.14 EXTRAORDINARY MAINTENANCE

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

1.15 DECOMMISSIONING

The device is produced and manufactured according to criteria of robustness, durability and flexibility that allow it to be used for many years. Once it has reached the end of its technical and operational life, it must be decommissioned in such a way that it can no longer be used for the purposes for which it was originally designed and manufactured, while still allowing the reuse of the raw materials of which it is made.

2. INTERFACE



1- DASHBOARD

2- ON/OFF

Long press: switches the device on/off. Short press: opens the ACTION menu.

3- WORK

If already positioned on the irrigation dashboard, pressing the button allows navigation through the parameters on the right side of the dashboard. Otherwise, it switches to the irrigation page.

4- ENGINE

If already positioned on the engine dashboard, pressing the button allows navigation through the parameters on the right side of the dashboard. Otherwise, it switches to the engine page, if available.

5- MENU

Press to access the main menu.

6- START/STOP

Press START to start irrigation, provided there are no active alarms.
Press STOP to end irrigation.

7- EMERGENCY

Press to stop the machine immediately.

8- UP

Pressing this button increases the set adjustment value.

9- DOWN

Pressing this button decreases the set adjustment value.

10- KNOB

The knob allows simple navigation between the dashboard and the various device menus.

Rotating it clockwise moves to the next parameters; rotating it counterclockwise returns to the previous parameters.

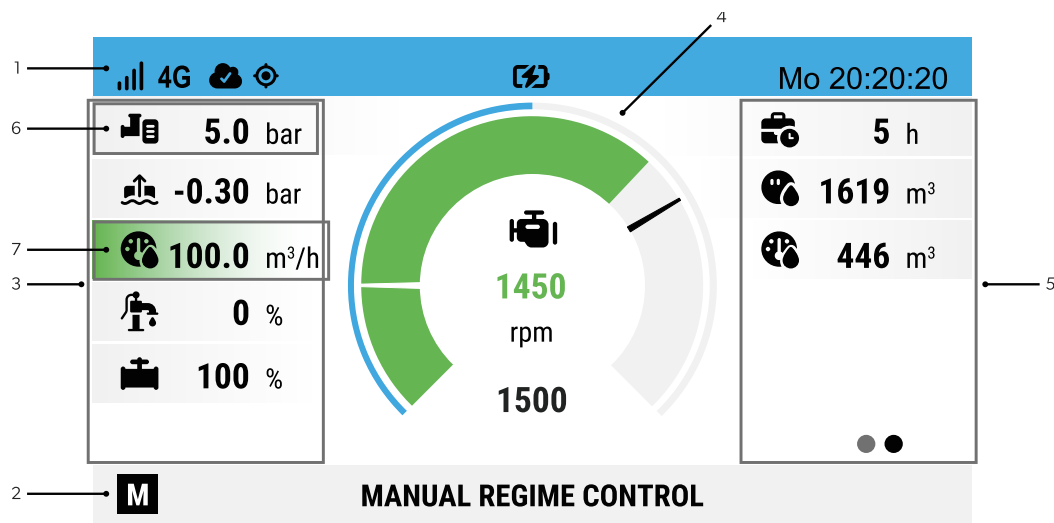
Inside the menu, rotation allows scrolling through the available pages. Pressing the knob allows access to the selected submenu or modification of the parameters shown on the displayed page.

To modify a parameter, rotate the knob until the desired value is highlighted, then press it to enable editing. The outer frame will start flashing. At this point, rotate the knob to set the new value and press it again to confirm.

During navigation or parameter editing, pressing and holding the knob returns to the previous screen or condition.

3. DASHBOARD

3.1 DASHBOARD INTERFACE

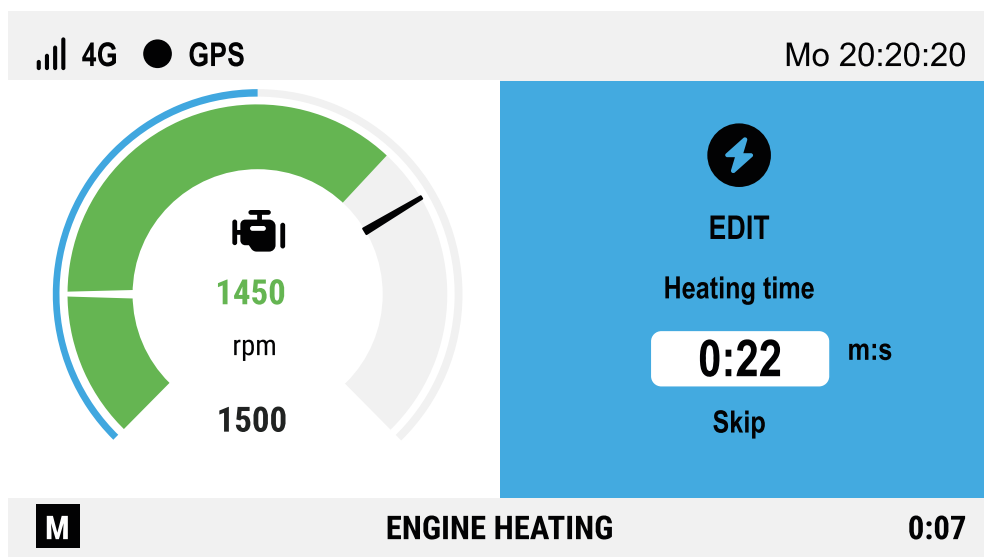


1- STATUS BAR

The upper bar shows, on the left, the connection status of the device: NETWORK, SERVER, GPS, CAN-BUS and MODBUS. In the center, it shows the battery status and the presence of warnings or alarms; on the right, it shows the date and time.

2- PROCEDURE BAR

The lower bar shows, on the left, the work program, manual or automatic, only for pump units, and in the center the operations currently in progress. By selecting and pressing the knob, it is possible to view and modify the details and certain parameters according to the operation currently in progress, through the side pop-up window.



NOTE: The upper and lower bars, which can be selected by rotating the knob, will have different colors depending on the machine status.

GREEN: Machine ready for irrigation, with no warnings, alarms or procedures in progress.

BLUE: Machine irrigating with no warnings or alarms.

YELLOW: Warnings or procedures in progress.

RED: Alarms present.

3- FIXED PARAMETERS

Main parameters, always visible on the left side of the dashboard, depending on the displayed page.

4- ANALOG DASHBOARD

Allows the main machine working parameters to be displayed graphically, making the operating values easy to read immediately.

5- DYNAMIC PARAMETERS

Secondary parameters. By pressing the WORK button on the irrigation page and the ENGINE button on the engine page, it is possible to navigate through the different parameters.

6- PARAMETER

Each parameter shows an identifying icon, a numerical value and the related unit of measurement, if present.

7- INDICATOR LIGHT

Some parameters may have a differently colored background indicating their status:

GREEN: within tolerance.

BLUE: flow present.

YELLOW: WARNING. This may cause a subsequent alarm condition and shutdown if the condition persists beyond the time set by the manufacturer.

RED: active ALARM with start of the controlled shutdown procedure.

3.2 ANALOG DASHBOARDS

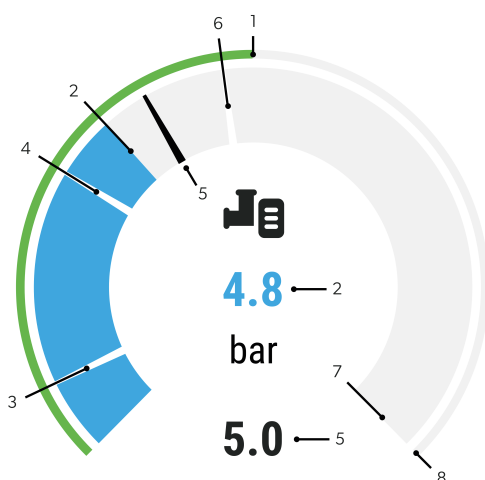


PROTECTION DISABLED

This flashing yellow icon appears to the right of the central dashboard icon when the engine protections are disabled from the ACTIONS menu, only if the device is set as MOTOR PUMP or COMBI MACHINE.

IdroMOP s.r.l. accepts no responsibility if alarms are disabled.

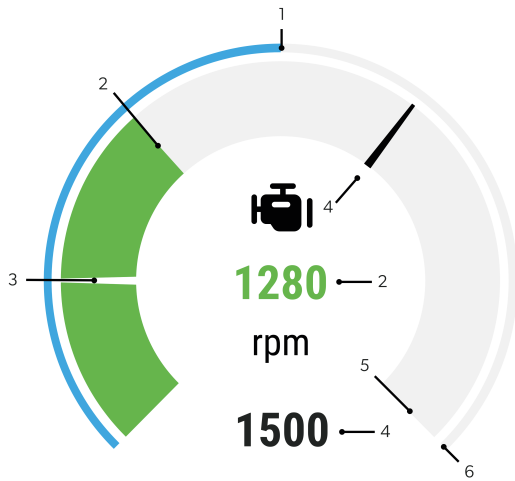
3.2.1 PUMP UNIT GRAPH



AUTOMATIC PROGRAM

Mode that allows the desired working pressure to be set. The control unit automatically adjusts the engine RPM to keep the pressure stable during use.

- 1- Engine RPM
- 2- Measured water pressure
- 3- Minimum system pressure [G006]
- 4- Underpressure tolerance [G012]
- 5- Pressure setpoint
- 6- Overpressure tolerance [G013]
- 7- Maximum system pressure [G007]
- 8- Engine overspeed [E103]

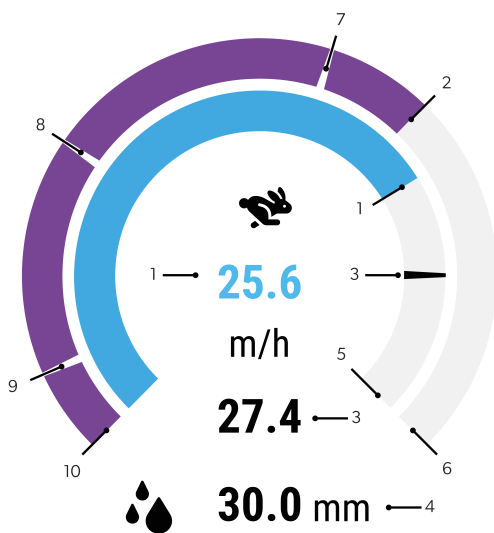


MANUAL PROGRAM

Mode that allows the desired engine RPM to be set manually. The control unit maintains the set speed during machine operation.

- 1- Measured pressure
- 2- Measured engine RPM
- 3- Minimum engine RPM limit [U063]
- 4- Engine speed setpoint
- 5- Engine overspeed [E103]
- 6- Maximum system pressure [G007]

3.2.2 IRRIGATION MACHINE GRAPH



IRRIGATION MODE

Mode that allows the desired retraction speed or rainfall rate to be set. The control unit automatically maintains the set value: if the speed is set, it displays the corresponding rainfall rate; if the rainfall rate is set, it adjusts the retraction speed accordingly.

- 1 - Measured retraction speed
- 2- Hose length still laid out
- 3- Retraction speed set point
- 4- Rainfall rate set point
- 5- Maximum retraction speed
- 6- Hose length laid out at the start of irrigation
- 7- End of zone 1
- 8- End of zone 2
- 9- End of zone 3
- 10- End of zone 4

4. ICON LEGEND

The icons may have the following colors:

GREEN

BLUE

YELLOW

RED

MACHINE TYPE:

D: Motor pump - Pump unit

E: Electric pump - Pump unit

H: Hydraulic - Hose reel machine

C: Combi machine

G: Hybrid - Pump unit

T: Turbine - Hose reel machine

S: Electric - Hose reel machine

4.1 STATUS BAR

ICON	DESCRIPTION	MACHINE TYPE
	SIGNAL Signal level; the type of connection available is also displayed immediately to the right.	ALL
	SIGNAL NOT AVAILABLE Network connection absent.	ALL
	MQTT SENDING Message sent to the ID4 platform.	ALL
	MQTT RECEIVING Message received from the ID4 platform.	ALL
	FTP DOWNLOAD Update package download.	ALL
	FTP UPLOAD Data package upload.	ALL
	SERVICE ACTIVE Connection to the ID4 platform established.	ALL
	SERVICE EXPIRED ID4 platform connection problem.	ALL
	SERVICE NOT AVAILABLE Failed connection to the ID4 platform.	ALL
	CAN BUS CAN-BUS communication line detected.	ALL
	MODBUS MODBUS communication line detected.	H / E
	GPS GPS connection detected.	ALL
	BATTERY CHARGING Internal battery charging.	ALL
	INTERNAL BATTERY ERROR Internal battery malfunction detected.	ALL
	INTERNAL BATTERY IN USE Internal battery in use, remaining charge above 50%.	ALL

	INTERNAL BATTERY HALF CHARGED Internal battery in use, remaining charge below 50%.	ALL
	EMERGENCY Emergency active.	ALL
	ALARM Alarm present.	ALL
	INFORMATION	ALL
	CONNECTION Device connected to the system through the ID4 platform.	ALL
Mo	DAY	ALL
20:20:20	TIME	ALL

4.2 PROCEDURE BAR

ICON	DESCRIPTION	MACHINE TYPE
	AUTOMATIC PROGRAM Machine operation in AUTOMATIC mode.	D / G / E / C
	MANUAL PROGRAM Machine operation in MANUAL mode.	D / G / E / C
00:00	TIME Remaining time of the displayed procedure.	ALL

4.3 PARAMETERS FOR ALL MACHINES

ICON	DESCRIPTION	MACHINE TYPE
	BATTERY Device input voltage.  The YELLOW background of the icon indicates that input J26 is active and signals a warning condition: ALTERNATOR FAULT .	ALL 
	MAINTENANCE Time remaining until the next maintenance operation.	ALL
	TOTAL HOURS Total machine operating hours.	ALL
	PARTIAL HOURS Partial machine operating hours, resettable from the panel.	ALL
	DURATION Work duration.	ALL
	PARTIAL FLOW RATE Partial liter counter, resettable from the menu.	ALL
	TOTAL FLOW RATE Total liter counter.	ALL



FLOW RATE

Instantaneous flow rate read by the device from the sensor connected to input **J40** or via CAN-BUS communication.

ALL



⚠ The **BLUE** background of the icon indicates that the sensor is connected and detected by the device. The **YELLOW** background indicates activation of input **J40** and, if configured as flow control, may signal a warning condition: **FLOW SWITCH**. In the case of a pulse sensor, the frame may flash, alternating between **BLUE** and **YELLOW** during pulse reading.

4.4 ENGINE PARAMETERS

ICON	DESCRIPTION	MACHINE TYPE
	PUMP Pressure detected after the pumping system by the sensor connected to input J04 . ⚠ The GREEN background of the icon indicates that the detected pressure is within the set tolerance values.	D / G / E / C
	VACUUM Vacuum detected on the suction side by the sensor mounted on input J03 .	D / G / E / C
	ENGINE Mechanical engine rotation speed detected on input J07 . ⚠ The GREEN background of the icon indicates that the detected engine speed is within the set tolerance values.	D / G / H / C
	ENGINE OIL Engine oil pressure detected by the sensor connected to input J02 . ⚠ The YELLOW background of the icon indicates that input J38 is active and signals a warning condition: LOW OIL PRESSURE . If the condition persists, the icon background becomes RED , indicating an active alarm with consequent machine shutdown.	D / G / H / C
	OIL FILTER Engine oil filter fault.	D / C
	FUEL LEVEL Fuel tank level in %. The value is calculated based on the tank capacity set in parameter [E105] and detected by the sensor mounted on input J31 configurable through parameter [J031] in the manufacturer menu. ⚠ The YELLOW background of the icon indicates that input J39 is active and signals a warning condition: FUEL RESERVE . If the condition persists, the icon background becomes RED , after a programmable time set by parameter [U070] in the operator menu, indicating an active alarm with consequent machine shutdown.	D / G / H / C

	FUEL FILTER Signals a fuel pressure fault in the injection circuit. This icon appears instead of the fuel level icon if input J36 is activated. ⚠ Available if the parameter in the manufacturer menu [J036] = FUEL ANOMALY. The YELLOW background of the icon indicates that input J36 is active and signals a warning condition: FUEL ANOMALY. If the condition persists, the icon background becomes RED, indicating an active alarm with consequent machine shutdown.	D / G / H / C ● ●
	FUEL CONSUMPTION Fuel consumption expressed in L/h.	D / G / H / C
	ENGINE TEMPERATURE Engine temperature detected by the sensor connected to input J30 , configurable through parameter [J030] in the manufacturer menu. ⚠ The YELLOW background of the icon indicates that input J23 is active and signals a warning condition: HIGH ENGINE TEMPERATURE. If the condition persists, the icon background becomes RED indicating an active alarm with consequent machine shutdown.	D / G / H / C ● ●
	LEVEL Signals a low coolant level. This icon appears instead of the engine temperature icon if input J24 , configurable through parameter [J024] in the manufacturer menu, is activated. ⚠ The YELLOW background of the icon indicates that input J24 is active and signals a warning condition: LOW COOLANT LEVEL. If the condition persists, the icon background becomes RED, indicating an active alarm with consequent machine shutdown.	D / G / H / C ● ●
	COOLING Indicates the engine cooling procedure.	D / G / H / C
	WARM-UP Indicates the engine warm-up procedure.	D / G / H / C
	ENGINE POWER REDUCTION Indicates a power reduction commanded by the engine control unit.	D / C
	ENGINE FAULT Indicates the presence of a generic engine fault. ⚠ Fault details can be viewed on the diagnostics / engine service page.	D / C
	ENGINE LOAD Displays the engine load percentage relative to the current operating speed.	D / C
	AIR FILTER Signals a clogged air filter.	D / C
	ADBLUE LEVEL	D / C
	HEST Signals a high exhaust gas temperature. ⚠ Normal condition during automatic and/or stationary regeneration.	D / C

	EXHAUST WARNING LIGHT Signals a malfunction of the particulate filter system.	D / C
	PARTICULATE FILTER Signals a clogged particulate filter.	D / C

4.5 IRRIGATION MACHINE PARAMETERS

ICON	DESCRIPTION	MACHINE TYPE
	END OF IRRIGATION Irrigation end time.	T / H / S / C
	HOSE LAID OUT Hose length laid out.	T / H / S / C
	HYDRANT Pressure detected at the irrigation machine inlet by the sensor connected to input J04 .	T / H / S
	MAIN SPRINKLER Main sprinkler opening status.	T / H / S / C
	RAINFALL INDEX Millimeters of water sprayed, calculated by the device.  The GREEN background of the icon indicates that the calculated rainfall rate is within the set tolerance values.	T / H / S / C 
	SPEED Retraction speed detected by the sensor configurable through parameter [J005] in the manufacturer menu and connected to input J05 .  The GREEN background of the icon indicates that the measured rewind speed, detected by the sensor connected to pin J05 and configurable through parameter [J005] in the manufacturer menu, is within the configured tolerance limits.	T / H / S / C 
	WIND Wind speed detected by the sensor connected to input J22 .	T / H / S / C

4.6 VALVE PARAMETERS

ICON	DESCRIPTION	MACHINE TYPE
	BYPASS VALVE Bypass valve opening percentage.	T / H / S / C
	AUXILIARY SPRINKLER VALVE Auxiliary sprinkler valve opening percentage.	T / H / S / C
	OUTLET VALVE Outlet valve opening percentage.	T / H / S
	PRIMING VALVE Opening percentage of the priming valve.  The BLUE background of the icon indicates that the water level probe input of the servo controller is active. This input can be configured through parameter [S014] in the CAN-BUS menu. It is also possible to run the pump priming procedure.	D / G / E / C 
	DELIVERY VALVE Delivery valve opening percentage.	D / G / E / C

5. MENU

ICON	DESCRIPTION	MACHINE TYPE
	ACTIONS Dynamic menu containing procedures available according to the current operating conditions.	ALL
	PROGRAMS Menu for configuring the operating program.	ALL
	CYCLES Menu for configuring work cycles, if enabled from the PANEL menu.	D / G / E / C
	CONFIGURATIONS SETTINGS  USER SETUP Menu for configuring the machine operating parameters;  MANUFACTURER SETUP Restricted menu for machine manufacturer configuration;  MODBUS Menu for configuring the machine's MODBUS communication;  CAN BUS Menu for configuring the devices connected to the machine via the CAN-BUS line.	ALL
	PANEL Menu for general device configuration.	ALL
	DIAGNOSTICS Menu for device input, output and counter diagnostics.	ALL
	HISTORY Menu showing the history of procedures, warnings and alarms of the device.	ALL

6. MENU ACTIONS

The ACTIONS menu is dynamic and displays only the operations available at the moment it is opened. The functions shown vary according to the configured machine type, machine status, active alarms, installed accessories and the irrigation phase currently in progress.

SEE MACHINE TYPE LEGEND IN CHAPTER 4

OPERATION / DESCRIPTION	MACHINE TYPE
RESET ALARM Allows the active alarm to be cleared. Before restarting work, it is recommended to check and resolve the cause of the fault.	ALL
ENABLE MANUAL / AUTOMATIC CONTROL Switches the unit operating mode: automatic  manual, even during the work phase.  When switching from manual mode to automatic mode, the detected pressure is acquired as the new working value. When switching from automatic mode to manual mode, the detected engine speed is acquired instead.	D / G / E / C
PERFORM / CANCEL REGENERATION Starts or cancels regeneration of the particulate filter of the motor pump unit.  Stage V engines only. Manual mode, engine running, RPM within limits.	D
INHIBIT / ENABLE REGENERATION Enables or inhibits automatic regeneration of the pump unit particulate filter  Only for Stage V engines. Inhibiting automatic regeneration is not recommended; if inhibited, the operator assumes responsibility for possible pump unit shutdown.	D
MODIFY IRRIGATION TIME Opens a side pop-up window that allows the remaining irrigation time to be modified.	D / G / E / C
ENABLE / DISABLE WATER PROTECTION Enables/disables the device controls on pressure and the related alarms.  On hose reel machines: ENABLE/DISABLE PRESSURE SWITCH.	ALL
ENABLE / DISABLE ENGINE PROTECTION Enables/disables controls on engine-related alarms, and a flashing yellow icon appears to the right of the central dashboard icon. IdroMOP s.r.l. accepts no responsibility if alarms are disabled.  Available only with parameter [E090] set to FIXED SPEED or ACCELERATOR.	D / G / E / C
PERFORM / END PRIMING Opens the priming side pop-up window and allows the procedure to be started or ended manually.  Only if [E040] is different from UNAVAILABLE, work mode is MANUAL, and measured water pressure is lower than parameter [U021].	D / G / E / C
DELIVERY VALVE CONTROL Opens the delivery valve control side pop-up window and allows the valve to be opened or closed manually.  If [E041] is different from UNAVAILABLE and the machine is not operating.	ALL

MODIFY LAID-OUT HOSE MEASUREMENT**T / H / S / C**

Opens the side pop-up window that allows the meters of hose still laid out to be modified.

MODIFY FIELD START PAUSE**T / H / S / C**

Opens the side pop-up window that allows the field start pause to be modified.

⚠ Only when the machine is operating and the Z1 pause is still available.

MODIFY INTERMEDIATE PAUSE #2**T / H / S / C**

Opens the side pop-up window that allows the pause between sector 1 and sector 2 to be modified.

⚠ Only when the machine is operating with pauses, sector Z2 is configured, and the Z2 pause is still available.

MODIFY INTERMEDIATE PAUSE #3**T / H / S / C**

Opens the side pop-up window that allows the pause between sector 2 and sector 3 to be modified.

⚠ Only when the machine is operating with pauses, sector Z3 is configured, and the Z3 pause is still available.

MODIFY FIELD END PAUSE**T / H / S / C**

Opens the side pop-up window that allows the final pause to be modified.

⚠ Only when the machine is operating with pauses and the final pause is still available.

ENGINE CONTROL**H / C**

Opens the side pop-up window that allows the engine to be started or stopped. Start is also possible from the ENGINE page by pressing the button of the same name.

⚠ For integrated machine: function available in Manual work mode only.

INLET VALVE CONTROL**T / H / S**

Opens the inlet valve control side pop-up window and allows the valve to be opened or closed manually.

⚠ Only if [E043] is different from UNAVAILABLE.

AUXILIARY SPRINKLER CONTROL**T / H / S**

Opens the auxiliary sprinkler control side pop-up window and allows the valve to be opened or closed manually.

⚠ Only if [E045] is different from UNAVAILABLE.

7. PROGRAMS

SEE MACHINE TYPE LEGEND IN CHAPTER 4

7.1 ENGINE - AUTOMATIC - SYSTEM FILLING

CODE	DESCRIPTION	MACHINE TYPE
[G003]	ACCELERATION Time required for the engine to move from idle speed [E102] to the engine speed limit threshold [G004] during the system filling phase. This parameter allows the machine acceleration ramp to be configured during this phase.	D / G / E / C RANGE: 0:00 / 30:00 m:s DEFAULT: 1:00 m:s
[G004]	ENGINE SPEED LIMIT Maximum RPM threshold that can be reached during the system filling phase within time [G003]. Once this value is reached, the machine will remain at the set RPM until the minimum system pressure [G006] is reached.	D / G / E / C RANGE: 1100/2400 rpm DEFAULT: 1400 rpm
[G005]	MAXIMUM DURATION Indicates the maximum time within which the system must reach the minimum pressure [G006] during the pipe filling phase. If this condition is not reached within this time, the device will trigger a SYSTEM FILL FAILED alarm.	D / G / E / C RANGE: 0 / 45 min DEFAULT: 1 min
[G006]	MINIMUM SYSTEM PRESSURE Control parameter used to detect a dry-running fault condition.  This parameter represents the minimum pressure value that must be reached to allow the motor pump to switch to work mode. It is recommended to set a pressure 2 - 3 bar lower than the working pressure, to ensure proper system filling.	D / G / E / C RANGE: 0.0 / 10.0 bar DEFAULT: 1.0 bar
[G007]	MAXIMUM SYSTEM PRESSURE Indicates the maximum permitted pressure limit. If exceeded, the device will trigger a MAXIMUM SYSTEM PRESSURE alarm and the machine will be stopped with deceleration.  It is recommended to set a pressure 2 - 3 bar lower than the system burst pressure.	D / G / E / C RANGE: 2.0 / 25.0 bar DEFAULT: 12.5 bar

7.2 ENGINE - MANUAL - SYSTEM FILLING

CODE	DESCRIPTION	MACHINE TYPE
[G005]	MINIMUM PRESSURE CONTROL DELAY Delay time for enabling pressure control after the minimum system pressure [G006] has been exceeded and the machine has switched to work mode. After this time, the device will perform normal tolerance control on the detected pressure.	D / G / E / C RANGE: 1 / 45 min DEFAULT: 1 min
[G006]	MINIMUM SYSTEM PRESSURE Control parameter used to detect a dry-running fault condition.  This parameter represents the minimum pressure value that must be reached to consider system filling complete. It is recommended to set a pressure 2 - 3 bar lower than the working pressure, to ensure proper system filling.	D / G / E / C RANGE: 0.0 / 10.0 bar DEFAULT: 1.0 bar

[G007]	MAXIMUM SYSTEM PRESSURE Indicates the maximum permitted pressure limit. If exceeded, the device will trigger a MAXIMUM SYSTEM PRESSURE alarm and the machine will be stopped with deceleration.	D / G / E / C RANGE: 2.0 / 25.0 bar DEFAULT: 12.5 bar
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⚠ It is recommended to set a pressure 2 - 3 bar lower than the system burst pressure.

7.3 ENGINE - AUTOMATIC - MANUAL - IRRIGATION

CODE	DESCRIPTION	MACHINE TYPE
[G010]	IRRIGATION DURATION Indicates the irrigation duration. The value 00:00 indicates a program with no irrigation end condition. ⚠ The time starts when the system exceeds the minimum pressure [G006].	D / G / E / C RANGE: 0:00 / 168:00 h:m DEFAULT: 0:00 h:m
[G011]	PRESSURE SETPOINT Indicates the working pressure that must be reached in the system. The reference pressure can be changed using the UP/DOWN buttons at any time and remains valid until the end of irrigation. At the start of the next irrigation cycle, parameter [G011] will be loaded again. ⚠ Only for automatic program.	D / G / E / C RANGE: 0.5 / 25.0 bar DEFAULT: 8.0 bar
[G012]	UNDERPRESSURE TOLERANCE This parameter determines the tolerance below the working pressure [G011]. If exceeded, an LOW PRESSURE alarm is generated, followed by engine deceleration and shutdown after time [G015].	D / G / E / C RANGE: 0.2 / 5.0 bar DEFAULT: 1.0 bar
[G013]	OVERPRESSURE TOLERANCE This parameter determines the tolerance above the working pressure [G011]. If exceeded, an OVERPRESSURE alarm is generated, followed by engine deceleration and shutdown after time [G015].	D / G / E / C RANGE: 0.2 / 5.0 bar DEFAULT: 1.0 bar
[G014]	TOLERANCE PROTECTION ACTIVATION DELAY Time after the start of irrigation during which the device does not perform pressure tolerance control. ⚠ The time starts when the system exceeds the minimum pressure [G006].	D / G / E / C RANGE: 0:30 / 20:00 m:s DEFAULT: 1:00 m:s
[G015]	OUT-OF-TOLERANCE ALARM DELAY Determines the intervention delay for any OVERPRESSURE or LOW PRESSURE alarm if the detected system pressure remains outside the tolerance thresholds for longer than the set value. ⚠ The overpressure and underpressure thresholds are calculated by applying parameters [G012] and [G013] to the working pressure [G011].	D / G / E / C RANGE: 0:01 / 10:00 m:s DEFAULT: 0:20 m:s

7.4 ENGINE - AUTOMATIC - MANUAL - FLOW CONTROL

CODE	DESCRIPTION	MACHINE TYPE
[G020]	FLOW SWITCH BYPASS TIME Determines the intervention delay for any MINIMUM FLOW RATE [G021] or MAXIMUM FLOW RATE [G022] alarm. ⚠ The value 0:00 indicates a program without flow control. The time starts when the system exceeds the minimum pressure [G006].	D / G / E / C RANGE: 0:00 / 168:00 h:m DEFAULT: 0:00 h:m
[G021]	MINIMUM FLOW RATE This parameter indicates the minimum accepted flow rate. ⚠ The minimum flow rate is checked when the working pressure is reached, after the flow control exclusion time [G023]. If this parameter is set to 0, this threshold is not considered.	D / G / E / C RANGE: 0 / 250 m ³ /h DEFAULT: 0 m ³ /h
[G022]	MAXIMUM FLOW RATE This parameter indicates the maximum accepted flow rate. ⚠ The maximum flow rate is checked when the working pressure is reached, after the flow control time [G023]. If this parameter is set to 0, this threshold is not considered.	D / G / E / C RANGE: 0 / 250 m ³ /h DEFAULT: 0 m ³ /h
[G023]	FLOW RATE PROTECTION DELAY Determines the intervention delay for any MAXIMUM FLOW RATE or MINIMUM FLOW RATE alarm if the system flow rate exceeds the thresholds set in [G021] and [G022] for longer than the set value. ⚠ It starts when the minimum system pressure is reached. Flow control is performed when the working pressure is reached, after the flow control time [G023]. If this parameter is set to 0, this threshold is not considered.	D / G / E / C RANGE: 0:00 / 30:00 m:s DEFAULT: 0:00 m:s

7.5 HOSE REEL - MAIN SPRINKLER

CODE	DESCRIPTION	MACHINE TYPE
[R001]	NOZZLE Diameter of the mounted sprinkler nozzle.	T / H / S / C RANGE: 6.0 / 46.0 mm DEFAULT: 36.0 mm
[R002]	THROW RADIUS Sprinkler throw radius.	T / H / S / C RANGE: 30 / 140 m DEFAULT: 60 m
[R003]	INLET PRESSURE Pressure at the hose reel machine inlet.	T / H / S / C RANGE: 2.0 / 16.0 bar DEFAULT: 10.0 bar

7.6 HOSE REEL - [Z1] FIELD START SECTOR

CODE	DESCRIPTION	MACHINE TYPE
[R010]	INITIAL PAUSE Wetting time before starting cart retraction.	T / H / S / C RANGE: 0:00 / 240:00 m:s DEFAULT: 0:00 m:s
[R011]	DEPTH Length of Z1.	T / H / S / C RANGE: 0 / E061 m DEFAULT: 0 m

[R012]	IRRIGATION FRONT ANGLE Sprinkler rotation angle.	T / H / S / C RANGE: 0 / 220° DEFAULT: 180°
[R013]	RAINFALL INDEX Rainfall index in Z1. ⚠ Dependent on retraction speed; changing this parameter will automatically change parameter [R014].	T / H / S / C RANGE: 0.0 / 100.0 mm DEFAULT: 0 mm
[R014]	REWIND SPEED Rewind speed in Z1. ⚠ Dependent on rainfall rate; changing this parameter will automatically change parameter [R013].	T / H / S / C RANGE: 5.0 / 600.0 m/h DEFAULT: 25.0 m/h

7.7 HOSE REEL - [Z2/Z3] CENTRAL SECTOR #2/#3

CODE	DESCRIPTION	MACHINE TYPE
[R020 / R030]	DEPTH Length of Z2 / Z3.	T / H / S / C RANGE: 0 / E061 m DEFAULT: 0 m
[R021 / R031]	INTERMEDIATE PAUSE Wetting time before starting cart retraction.	T / H / S / C RANGE: 0:00 / 240:00 m:s DEFAULT: 0:00 m:s
[R022 / R032]	IRRIGATION FRONT ANGLE Sprinkler rotation angle.	T / H / S / C RANGE: 0 / 220° DEFAULT: 180°
[R023 / R033]	RAINFALL INDEX Rainfall index in Z2 / Z3. ⚠ Dependent on retraction speed; changing this parameter will automatically change parameter [R024 / R034].	T / H / S / C RANGE: 0.0 / 100.0 mm DEFAULT: 0 mm
[R024 / R034]	REWIND SPEED Rewind speed in Z2 / Z3. ⚠ Dependent on rainfall rate; changing this parameter will automatically change parameter [R023 / R033].	T / H / S / C RANGE: 5.0 / 600.0 m/h DEFAULT: 25.0 m/h

7.8 HOSE REEL - [Z4] FIELD END SECTOR #4

CODE	DESCRIPTION	MACHINE TYPE
[****]	DEPTH Length of Z4. ⚠ Automatically calculated, not editable. Indicates the available unwound hose.	T / H / S / C
[R041]	IRRIGATION FRONT ANGLE Sprinkler rotation angle.	T / H / S / C RANGE: 0 / 220° DEFAULT: 180°
[R042]	RAINFALL INDEX Rainfall index in Z4. ⚠ Dependent on retraction speed; changing this parameter will automatically change parameter [R043].	T / H / S / C RANGE: 0.0 / 100.0 mm DEFAULT: 0 mm

[R043]	REWIND SPEED Rewind speed in Z4. ⚠ Dependent on rainfall rate; changing this parameter will automatically change parameter [R042].	T / H / S / C RANGE: 5.0 / 600.0 m/h DEFAULT: 25.0 m/h
[R044]	FINAL PAUSE Wetting time before stopping irrigation.	T / H / S / C RANGE: 0:00 / 240:00 m:s DEFAULT: 0:00 m:s

7.9 HOSE REEL - AUXILIARY SPRINKLER

CODE	DESCRIPTION	MACHINE TYPE
[R050]	OPENING DISTANCE Remaining hose length at which the auxiliary sprinkler opens. ⚠ If [E045] is different from UNAVAILABLE.	T / H / S / C RANGE: 0 / E061 m DEFAULT: 0 m
[R051]	OPENING TIME Auxiliary sprinkler opening time when the meters set in [R050] are reached. ⚠ If [E045] is different from UNAVAILABLE.	T / H / S / C RANGE: 0:00 / 4:00 h:m DEFAULT: 0:00 h:m

7.10 HOSE REEL - IRRIGATION TIMES

CODE	DESCRIPTION	MACHINE TYPE
[R060]	IRRIGATION END DISTANCE Meters of hose still laid out at which irrigation stops.	T / H / S RANGE: 0 / E061 m DEFAULT: 0 m
[R061]	IRRIGATION START TIME Settable irrigation start day and time. ⚠ Dependent on the irrigation end time; changing this parameter will change parameter [R062].	T / H / S RANGE: 0:00 / 23:59 h:m
[R062]	IRRIGATION END TIME Settable irrigation end day and time. ⚠ Dependent on the irrigation start time; changing this parameter will change parameter [R061].	T / H / S RANGE: 0:00 / 23:59 h:m

8. CYCLES

NOTE: To enable work cycles, click on:
Menu — Panel — Operating modes — Work cycles

Up to 5 cycles can be selected. Once one cycle has been set, the next cycle can be configured. Cycle management allows irrigation to be set and started automatically with the preset programs by selecting the activation day and time.

SEE MACHINE TYPE LEGEND IN CHAPTER 4

8.1 CYCLE SECTION

CODE	DESCRIPTION	MACHINE TYPE
[C000]	CYCLE TO EDIT	D / G / E / C RANGE: CYCLE #1 / CYCLE #2 / CYCLE #3 / CYCLE #4 / CYCLE #5 / NONE

8.2 CYCLE #1, 2, 3, 4, 5 - SCHEDULING

CODE	DESCRIPTION	MACHINE TYPE
[C001]	ACTIVATION DAY	D / G / E / C RANGE: NONE / MONDAY / TUESDAY / WEDNESDAY / THURSDAY / FRIDAY / SATURDAY / SUNDAY / ANY DAY
[C002]	START TIME	D / G / E / C RANGE: 0:00 h:m / 23:59 h:m
[C003]	PROGRAM TO EXECUTE	D / G / E / C RANGE: MANUAL / AUTOMATIC #1 / AUTOMATIC #2 / AUTOMATIC #3 / AUTOMATIC #4 / AUTOMATIC #5

9. USER PARAMETERS

SEE MACHINE TYPE LEGEND IN CHAPTER 4

9.1 HOSE REEL - IRRIGATION

CODE	DESCRIPTION	MACHINE TYPE
[U040]	IRRIGATION START PRESSURE Water pressure threshold above which the machine switches to work mode.  If an inlet valve is present, once the set pressure threshold is exceeded, the device will command the valve to open.	T / H / S / C RANGE: 0.0 bar / 10.0 bar DEFAULT: 4.0 bar
[U041]	RAINFALL CONTROL Enables retraction speed adjustment according to the rainfall rate index.  If rainfall rate control is disabled, the value is still displayed, but the possibility of adjusting the retraction speed according to the rainfall rate is disabled.	T / H / S / C RANGE: DISABLE / ENABLE DEFAULT: DISABLE
[U042]	SPEED TOLERANCE Maximum permitted speed error. If exceeded, an alarm will be notified, with consequent slowing down and stopping of the machine.	T / H / S / C RANGE: 2.0 / 20.0 m/h DEFAULT: 4.0 m/h

9.2 HOSE REEL - VALVES

CODE	DESCRIPTION	MACHINE TYPE
[U025]	INITIAL BYPASS PULSE DURATION Initial bypass valve opening pulse before speed control is performed.	T / H / S / C RANGE: 0 / 15 sec DEFAULT: 6 sec
[U026]	OUTLET VALVE OPENING HOLD Time during which the outlet valve remains open during the machine shutdown phase.	T / H / S / C RANGE: 10 / 120 sec DEFAULT: 40 sec

9.3 HOSE REEL - SPEED REGULATION

CODE	DESCRIPTION	MACHINE TYPE
[U043]	MINIMUM CONTROL PULSE Minimum pulse applied to the bypass during retraction speed adjustment.	T / H / C RANGE: 5 / 100 ms DEFAULT: 10 ms
[U044]	MAXIMUM CONTROL PULSE Maximum pulse applied to the bypass during retraction speed adjustment.	T / H / C RANGE: 50 / 600 ms DEFAULT: 100 ms
[U045]	GAIN ADJUSTMENT Reactivity index for speed adjustment.	T / H / C RANGE: 50 / 200 % DEFAULT: 100 %

9.4 HOSE REEL - MEASUREMENT CORRECTIONS

CODE	DESCRIPTION	MACHINE TYPE
[U047]	DRUM FILLING FACTOR Reel filling index: represents the percentage of volume occupied by the hose compared to the total reel volume.	T / H / S / C RANGE: 80 / 100 % DEFAULT: 97 %

[U048]	PIPE NESTING CORRECTION Coil nesting index: represents the percentage of overlap of the upper hose coils over the lower coils. The greater the nesting, the lower the percentage that must be set.	T / H / S / C RANGE: 0 / 100 % DEFAULT: 100 %
[U049]	PIPE LENGTH CORRECTION Configures the pipe elongation index.	T / H / S / C RANGE: 0.0 / 10.0 % DEFAULT: 2.0 %

9.5 ANEMOMETER

CODE	DESCRIPTION	MACHINE TYPE
[U050]	WIND SPEED FILTER Time after which, once threshold [U051] is exceeded, irrigation is suspended. Irrigation resumes when the detected speed remains below the set threshold [U052] for the configured time. ⚠ [U050] = 0 disables wind speed detection.	T / H / S / C RANGE: 0 / 60 min DEFAULT: 0 min
[U051]	IRRIGATION PAUSE Upper wind speed threshold. ⚠ [U050] ≠ 0	T / H / S / C RANGE: 0.0 / 30.0 km/h DEFAULT: 11.5 km/h
[U052]	IRRIGATION RESUME Lower wind speed threshold. ⚠ [U050] ≠ 0	T / H / S / C RANGE: 0.0 / 30.0 km/h DEFAULT: 6.0 km/h

9.6 PUMP PRIMING

CODE	DESCRIPTION	MACHINE TYPE
[U020]	PUMP PRIMING DURATION Maximum allowed impeller priming time. The priming procedure is considered complete when the pressure configurable through parameter [U021] is reached, as detected by the sensor. Failure to reach the pressure within the set time [U020] will generate a PRIMING FAILED alarm, with consequent machine shutdown. ⚠ [E040] ≠ 0	D / G / E / C RANGE: 0:00 / 5:00 m:s DEFAULT: 2:30 m:s
[U021]	PRIMING END PRESSURE Pressure to be reached within the configurable time [U020] in order to consider the impeller primed. The priming procedure is considered complete when the pressure configurable through parameter [U021] is reached, as detected by the sensor. Failure to reach the pressure within the set time [U020] will generate a PRIMING FAILED alarm, with consequent machine shutdown. ⚠ [E040] ≠ 0	D / G / E / C RANGE: 0.00 / 3.00 bar DEFAULT: 1.00 bar
[U031]	WATER PRESENCE INPUT Defines the polarity of the water presence input. ⚠ Visible only if [J041] and [E040] = ELECTRIC PUMP	D / G / E / C RANGE: EXCLUDED / N.O. / N.C. DEFAULT: EXCLUDED

9.7 HIGH PRESSURE VALVE

CODE	DESCRIPTION	MACHINE TYPE
[U022]	VALVE OPENING AT IDLE Opening percentage to which the high pressure valve will move when the thresholds configurable through the related engine speed [U023] and pressure [U024] parameters are reached.  [E041] ≠ 0	D / G / E / C RANGE: 0 / 50% DEFAULT: 0 %
[U023]	VALVE OPENING SPEED Engine speed threshold above which the high pressure valve will move to the opening position configured through parameter [U022].  [E041] ≠ 0	D / G / E / C RANGE: 800 / 2400 rpm DEFAULT: 1000 rpm
[U024]	VALVE OPENING PRESSURE Pressure threshold above which the high pressure valve will move to the opening position configured through parameter [U022].  [E041] ≠ 0 The pressure transducer must be installed upstream of the motorized valve.	D / G / E / C RANGE: 0.2 / 8.0 bar DEFAULT: 1.0 bar

9.8 MOTOR PUMP GROUP

CODE	DESCRIPTION	MACHINE TYPE
[U060]	WARM-UP TIME Time after engine start during which the engine is kept at the idle speed configurable through parameter [U063].	D / G / C RANGE: 0:00 / 10:00 m:s DEFAULT: 0:00 m:s
[U061]	COOL-DOWN TIME Time after the engine stop command during which the engine is kept at the idle speed configurable through parameter [U063] before stopping.	D / G / C RANGE: 0:00 / 10:00 m:s DEFAULT: 0:00 m:s
[U062]	ACCELERATOR TIME FOR IDLE SPEED Throttle travel time required to reach the engine idle speed position configurable through parameter [U063].	D / C RANGE: 0.0 / 10 sec DEFAULT: 0.5 sec
[U063]	IDLE SPEED Minimum engine rotation speed to which the device brings the machine once the threshold at which the engine is considered started, configurable through parameter [E101] in the manufacturer menu, has been exceeded.	D / G / H / C RANGE: 700 / 2000 rpm DEFAULT: 800 rpm
[U064]	OVERSPEED THRESHOLD Maximum engine rotation speed above which the engine will be stopped with deceleration, generating the ENGINE OVERSPEED alarm.	D / G / H / C RANGE: 1500 rpm / 3800 rpm DEFAULT: 1900 rpm
[U065]	ACCELERATION TIME Time required to accelerate from the idle speed configurable through parameter [U063] to the maximum speed configurable through parameter [U064].	D / C RANGE: 0:03 / 5:00 m:s DEFAULT: 00:20 m:s
[U066]	DECELERATION TIME Time required to decelerate from the maximum permitted speed configurable through parameter [U064] to the idle speed configurable through parameter [U063].	D / C RANGE: 0:03 / 5:00 m:s DEFAULT: 0:30 m:s

[U067]	MINIMUM CONTROL PULSE Minimum pulse applied to the throttle during speed adjustment.	D / C RANGE: 5 / 200 ms DEFAULT: 10 ms
[U068]	MAXIMUM CONTROL PULSE Maximum pulse applied to the throttle during speed adjustment.	D / C RANGE: 50 / 600 ms DEFAULT: 200 ms
[U069]	ADJUSTMENT GAIN Reactivity index for pressure / speed adjustment. The higher this value, the faster the regulator will respond to a pressure / speed variation.	D / C RANGE: 0.50 / 2.00 DEFAULT: 1.00
[U070]	ENGINE STOP ON LOW FUEL Delay time configuration for shutdown caused by fuel reserve input J39 .	D / G / H / C RANGE: 0:00 / 8:00 h:m DEFAULT: 2:30 h:m
 [U070] = 0 disables engine stop due to fuel reserve.		

10. MANUFACTURER PARAMETERS

SEE MACHINE TYPE LEGEND IN CHAPTER 4

10.1 DIESEL ENGINE CONTACTS

CODE	DESCRIPTION	MACHINE TYPE
[J023]	HIGH TEMPERATURE Enables reading of device input J23 , which, when activated, generates the warning and subsequent HIGH ENGINE TEMPERATURE alarm.	D / G / E / H / C RANGE: EXCLUDED / ENABLE DEFAULT: ENABLE
[J024]	RADIATOR LEVEL Enables reading of device input J24 , which, when activated, generates the warning and subsequent LOW COOLANT LEVEL alarm.	D / G / E / C RANGE: EXCLUDED / N.O. / N.C. DEFAULT: EXCLUDED
[J026]	ALTERNATOR D+ Enables reading of device input J26 , which, when activated, generates the ALTERNATOR FAULT warning.	D / G / E / C RANGE: EXCLUDED / ENABLE DEFAULT: ENABLE
[J036]	DIGITAL J36 Enables reading and configuration of device input J36 . Depending on the input configuration, activation will generate the warning and subsequent FUEL FILTERS CLOGGED alarm, if [J036] = FUEL ANOMALY, or regeneration consent, if [J036] = REGENERATION ENABLE, only when [E090] is different from FIXED SPEED and ACCELERATOR.	D / G / E / C RANGE: EXCLUDED / FUEL ANOMALY / REGENERATION ENABLE DEFAULT: EXCLUDED
[J038]	LOW OIL PRESSURE Enables reading of device input J38 , which, when activated, generates the warning and subsequent LOW OIL PRESSURE alarm.	D / G / E / H / C RANGE: EXCLUDED / ENABLE DEFAULT: ENABLE
[J039]	FUEL RESERVE Enables reading of device input J39 , which, when activated, generates the warning and, after the time configured by parameter [U070] in the operator menu, the subsequent FUEL RESERVE alarm.	D / G / H / C RANGE: EXCLUDED / ENABLE DEFAULT: EXCLUDED

10.2 SERVICE DIGITAL INPUTS

ICON	DESCRIPTION	MACHINE TYPE
[J006]	DIGITAL J06 Enables reading of device input J06 , which, when activated, generates the EXTERNAL STOP ACTIVE warning and the subsequent machine shutdown.	D / G / E RANGE: EXCLUDED / STOP DEFAULT: EXCLUDED
[J025]	EMERGENCY Enables reading of device input J25 , which, when activated, generates the EXTERNAL EMERGENCY ACTIVE alarm.	ALL RANGE: EXCLUDED / N.O. / N.C. DEFAULT: N.O.

[J037]	DIGITAL J37 Enables reading and configuration of input J37, used for external machine start. When the input is activated, the device performs the irrigation start procedure. Input J37 can be configured in two modes: 1 - START: when the input is activated, the device starts irrigation. Work ends when the time set in parameter [G010] is reached or via the STOP command. 2 - START/STOP: when the input is activated, the device starts irrigation. Work ends when the input is deactivated.  External start launches the preset program in MANUAL or AUTOMATIC mode, according to the mode selected from the ACTIONS menu at the moment the input is activated.	D / G / E RANGE: EXCLUDED / START-STOP / START DEFAULT: EXCLUDED
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10.3 CONTROL OUTPUTS

CODE	DESCRIPTION	MACHINE TYPE
[E013]	M1 - END STOP BY OVERCURRENT Enables electronic limit switch control on motor output M1, connected to pins J10 and J11 of the device. When the function is active, the control unit automatically detects when the limit switch is reached and interrupts the command without waiting for the expected full closing time of the connected device.	ALL RANGE: EXCLUDED / ENABLE DEFAULT: ENABLE
[E014]	M2 - END STOP BY OVERCURRENT Enables electronic limit switch control on motor output M2, connected to pins J08 and J09 of the device. When the function is active, the control unit automatically detects when the limit switch is reached and interrupts the command without waiting for the expected full closing time of the connected device.	ALL RANGE: EXCLUDED / ENABLE DEFAULT: ENABLE
[J013]	PNP OUTPUT FUNCTION Enables and configures the function of device PNP output J13.	ALL RANGE: UNAVAILABLE / GLOW PLUGS / ALARM / SOFT-START / SHUT DOWN / CRUISE DEFAULT: UNAVAILABLE
[J041]	NPN OUTPUT FUNCTION Enables and configures the function of device NPN output J41.	ALL RANGE: UNAVAILABLE / SOLENOID / ELECTRIC PUMP / VALVES SELECT DEFAULT: UNAVAILABLE

10.4 SPEED SENSOR

CODE	DESCRIPTION	MACHINE TYPE
[J005]	SPEED DETECTION SENSOR	T / H / S / C RANGE: PNP/NPN DEFAULT: PNP
[E018]	VELOCITY READING Velocity reading mode.	T / H / C RANGE: PULSE/ROTATION / MM/PULSE DEFAULT: PULSE/ROTATION
[E060]	MAXIMUM RETURN SPEED Maximum accepted return speed of the irrigation machine.	T / H / S / C RANGE: 50 / 600 m/h DEFAULT: 180 m/h

10.5 FLOW SENSORS

CODE	DESCRIPTION	MACHINE TYPE
[J040]	FLOW SWITCH Enables contact J40 for flow control.	D / G / E / C RANGE: EXCLUDED / ENABLE DEFAULT: EXCLUDED
[E020]	FLOWMETER Enables water flow rate reading through an external sensor or algebraic calculation. Algebraic calculation sensors must be connected to device input J40 , while the others must be connected to the IdroMOP CAN-BUS communication line.	ALL RANGE: UNAVAILABLE / DN80 / DN100 / DN125 / DN150 / DN200 / DN250 / DN300 / DN350 / DN400 / 1/10 lt / 1/100 lt / 1/1000 lt / ULTRASONIC DEFAULT: UNAVAILABLE

10.6 DIESEL ENGINE SENSORS

CODE	DESCRIPTION	MACHINE TYPE
[J002]	OIL PRESSURE TRANSDUCER Type of sensor connected to input J02 for analog oil pressure reading. ⚠ This input does not directly generate warnings or alarms.	D / G / C RANGE: VEGLIA/VDO/TP0403/ UNAVAILABLE DEFAULT: VEGLIA
[J030]	OIL PRESSURE TRANSDUCER Type of sensor connected to input J30 for analog engine temperature reading. ⚠ This input does not directly generate warnings or alarms.	D / G / C RANGE: VEGLIA120 / VDO120 / VDO150 / DEUTZ 04217846 / DEUTZ 01182702 / JCB TTA0402 / F16173 / UNAVAILABLE DEFAULT: VEGLIA 120
[J031]	TANK LEVEL TRANSDUCER Type of sensor connected to input J31 for analog fuel level reading. ⚠ This input does not directly generate warnings or alarms.	D / G / H / C RANGE: EUROS W1 320-0 / E URS W2 0-180 / ELCOS GAR-15 / COBO 29-1040 DEFAULT: EUROS W1 320-0

10.7 VALVE CONTROL

CODE	DESCRIPTION	MACHINE TYPE
[E040]	PUMP PRIMING SYSTEM Technology used for impeller priming.	D / G / E / C RANGE: UNAVAILABLE / ELECTRIC PUMP / TANK / VACCUM PUMP DEFAULT: UNAVAILABLE
[E041]	HIGH PRESSURE VALVE Enables management of the delivery valve.	D / G / E / C RANGE: UNAVAILABLE / DIRECT MOTOR / SERVO MOTOR DEFAULT: UNAVAILABLE
[E042]	BYPASS CONTROL Configures management of the irrigation machine bypass valve.	T / H / C RANGE: UNAVAILABLE / DIRECT MOTOR DEFAULT: UNAVAILABLE
[E043]	INLET VALVE Configures management of the irrigation machine inlet valve.	T / H / S / C RANGE: UNAVAILABLE / DIRECT MOTOR / SERVO MOTOR DEFAULT: UNAVAILABLE
[E044]	OUTLET VALVE Configures management of the irrigation machine outlet valve.	T / H / S / C RANGE: UNAVAILABLE / DIRECT MOTOR / SERVO MOTOR DEFAULT: UNAVAILABLE

[E045]	AUXILIARY SPRINKLER Configures management of the irrigation machine auxiliary sprinkler.	T / H / S / C RANGE: UNAVAILABLE / DIRECT MOTOR / SERVO MOTOR DEFAULT: UNAVAILABLE
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10.8 VALVE TIMINGS

CODE	DESCRIPTION	MACHINE TYPE
[E047]	BYPASS OPENING TIME Configures the total opening time of the bypass valve. ⚠ [E042] = DIRECT MOTOR	T / S / C RANGE: 5 / 30 sec DEFAULT: 18 sec
[E048]	INLET VALVE OPENING TIME Configures the opening time of the inlet valve. ⚠ [E043] = DIRECT MOTOR	T / H / S / C RANGE: 0:00 / 8:00 m:s DEFAULT: 1:00 m:s
[E049]	OUTLET VALVE OPENING TIME Configures the opening time of the outlet valve. ⚠ [E044] = DIRECT MOTOR	T / H / S / C RANGE: 0:00 / 4:00 m:s DEFAULT: 1:00 m:s

10.9 HOSE REEL - DIMENSIONS

CODE	DESCRIPTION	MACHINE TYPE
[E061]	HOSE LENGTH	T / H / S / C RANGE: 100 / 999 m DEFAULT: 450 m
[E062]	HOSE DIAMETER	T / H / S / C RANGE: 30 / 200 mm DEFAULT: 140 mm
[E063]	INTERNAL DIAMETER	T / H / S / C RANGE: 500 / 2200 mm DEFAULT: 1650 mm
[E064]	INTERNAL WIDTH	T / H / S / C RANGE: 600 / 2000 mm DEFAULT: 1650 mm
[E065]	ROLLER PULSE TRAVEL Pitch in mm for each pulse of the hose feeler roller. ⚠ [E018] = MM/PULSE	T / H / S / C RANGE: 80.0 / 200.0 mm DEFAULT: 99.0 mm
[E066]	PULSES PER DRUM TURN Number of pulses detected for each complete drum revolution. ⚠ [E018] = PULSES/ROTATION	T / H / S / C RANGE: 80 / 1400 DEFAULT: 276
[E067]	PRESSURE LOSS COEFFICIENT Coefficient representing the pressure loss from the irrigation machine inlet to the sprinkler.	T / H / S / C RANGE: 2.0 / 50.0 DEFAULT: 15.0

10.10 DIESEL ENGINE - CONTROL TYPE

CODE	DESCRIPTION	MACHINE TYPE
[E090]	INTERFACE Interface technology between the control unit and the engine.	D / G / E / C RANGE: FIXED SPEED / ACCELERATOR / TIER III PTO / TIER III CAN / STAGE V / STAGE V ADBLUE DEFAULT: ACCELERATOR
[E091]	ENGINE MANUFACTURER	D / G / E / C RANGE: IVECO / JCB / DEUTZ / JOHN DEERE / SCANIA / VOLVO / KOHLER / HYUNDAI / KUBOTA / YANMAR / CATERPILLAR DEFAULT: IVECO

10.11 DIESEL ENGINE - TIMING

CODE	DESCRIPTION	MACHINE TYPE
[E093]	THROTTLE STROKE Total accelerator stroke time from the minimum position to the maximum extension position.	D / G / E / C RANGE: 0.0 / 15.0 sec DEFAULT: 6.0 sec
[E094]	GLOW PLUGS PREHEAT Glow plug preheating time. ⚠ [J013] = GLOW PLUGS. The preheating time may be reduced according to the engine temperature detected by the sensor connected to output J30 .	D / G / E / C RANGE: 0 / 20 sec DEFAULT: 6 sec
[E095]	STARTER DELAY Defines the delay between activation of the solenoid valve connected to output J12 and activation of the starter connected to output J14 .	D / G / E / C RANGE: 0 / 60 sec DEFAULT: 0 sec

10.12 DIESEL ENGINE - ENGINE RPM

CODE	DESCRIPTION	MACHINE TYPE
[E100]	ENGINE RPM CONVERSION RATIO Calibration ratio for correct engine RPM reading.	D / G / E / H / C RANGE: 0.1 / 2.000 DEFAULT: D/G/C: 0.320, H: 0.995, D and E090 different from FIXED SPEED / ACC: 1.000
[E101]	ENGINE RUNNING SPEED THRESHOLD Engine speed above which the engine is considered started. Once this value is reached, the D+ J26 output for alternator pre-excitation is deactivated and assigned to the input for the BATTERY NOT CHARGING warning.	D / G / E / H / C RANGE: 200 / 700 rpm DEFAULT: D/G/C: 350 rpm, H: 600 rpm
[E102]	MINIMUM ENGINE SPEED LIMIT Minimum engine rotation speed to which the device brings the machine once the threshold at which the engine is considered started, configurable through parameter [E101] in the manufacturer menu, has been exceeded. ⚠ If [E090] = TIER III PTO, TIER III CAN, STAGE V, STAGE V or STAGE V ADBLUE ADBLUE, [E102] = 900 rpm.	D / G / E / H / C RANGE: 700 / 2000 rpm DEFAULT: D/G/C: 900 rpm, H: 800 rpm
[E103]	MAXIMUM ENGINE SPEED LIMIT Maximum engine rotation speed above which the engine will be stopped with deceleration, generating the ENGINE OVERSPEED alarm.	D / G / E / H / C RANGE: 1500 / 3800 rpm DEFAULT: D/G/C: 1900 rpm, H: 3600 rpm

10.13 DIESEL ENGINE - FUEL TANK

CODE	DESCRIPTION	MACHINE TYPE
[E105]	TANK CAPACITY Tank capacity in liters. This parameter is used to calculate the percentage of remaining fuel.	D / G / E / H / C RANGE: 0 / 2000 L DEFAULT: D/G/C: 500 L, H: 150 L

10.14 MAINTENANCE INTERVALS

CODE	DESCRIPTION	MACHINE TYPE
[E130]	SERVICE OIL FILTER REPLACEMENT	H / C RANGE: 0 / 4000 h DEFAULT: 0
[E131]	ADBLUE FILTER REPLACEMENT	D / C RANGE: 0 / 2000 h DEFAULT: 0
[E132]	ENGINE OIL FILTER REPLACEMENT	D / G / H / C RANGE: 0 / 1000 h DEFAULT: 0
[E133]	REPLACEMENT OF FUEL FILTERS	D / G / H / C RANGE: 0 / 1000 h DEFAULT: 0

NOTE: Parameters [E132] and [E133] are automatically set to 100 h until the first service. After the first maintenance operation, the device applies the time set in the respective parameters.

11. CAN BUS

SEE MACHINE TYPE LEGEND IN CHAPTER 4

Select the type of valve you want to modify:

- auxiliary sprinkler
- priming
- outlet
- inlet / delivery

11.1 VALVE PARAMETERS - CHANGE MODE

CODE	DESCRIPTION	MACHINE TYPE
[****]	FIRMWARE	ALL
[S001]	VALVE FUNCTION Configuration of the valve operation: PRIMING, DELIVERY, OUTLET, INLET and AUXILIARY SPRINKLER.  The valve function can only be changed by selecting from the configurations available for the machine type set on the control unit.	ALL

11.2 VALVE PARAMETERS - SETTINGS

CODE	DESCRIPTION	MACHINE TYPE
[S007]	TOTAL OPENING	ALL RANGE: 0 / 180 ° DEFAULT: 90 °
[S009]	MINIMAL SPEED Minimum valve opening and closing speed.	ALL RANGE: 160Nm: 0.5 - 2.5 °/s 40Nm: 10 - 40 °/s DEFAULT: 160Nm: 2.0 °/s 40Nm: 25 °/s
[S010]	MAXIMUM SPEED Maximum valve opening and closing speed.	ALL RANGE: 160Nm: 0.5 - 2.5 °/s 40Nm: 10 - 40 °/s DEFAULT: 160Nm: 2.0 °/s 40Nm: 25 °/s

11.3 VALVE PARAMETERS - INPUTS

CODE	DESCRIPTION	MACHINE TYPE
[S013]	MANUAL MODE Enables the manual consent input of the selected valve. Available for [S001] = PRIMING.	ALL RANGE: EXCLUDED / ENABLE DEFAULT: EXCLUDED
[S014]	WATER LEVEL SWITCH Configuration of the level input of the selected valve. Available for [S001] = PRIMING.	ALL RANGE: EXCLUDED / N.O. / N.C. DEFAULT: EXCLUDED

11.4 VALVE PARAMETERS - INITIALIZATION

CODE	DESCRIPTION	MACHINE TYPE
[S019]	SEARCH FOR CLOSING POSITION Starts servo motor initialization.	ALL
[****]	VALVE STATUS Instant display of the valve status.	ALL
[****]	POSITION Instant valve opening angle.	ALL

NOTE: The servomotor is supplied already programmed in position 0.

12. PANEL MENU

SEE MACHINE TYPE LEGEND IN CHAPTER 4

12.1 PANEL

CODE	DESCRIPTION	MACHINE TYPE
[U001]	PANEL ID	ALL
[*SN]	SERIAL NUMBER	ALL
[*FW]	FIRMWARE VERSION	ALL

12.2 LOCAL SETTINGS

CODE	DESCRIPTION	MACHINE TYPE
[U002]	LANGUAGE ENGLISH, ITALIAN, GERMAN, FRENCH, SPANISH.	ALL
[U003]	YEAR	ALL
[U004]	DATE	ALL
[U005]	TIME	ALL

12.3 SCREEN

CODE	DESCRIPTION	MACHINE TYPE
[U006]	GRAPHIC THEME LIGHT, DARK.	ALL
[U007]	DASHBOARD STYLE	ALL
[U008]	BACKLIGHT TIME Screen backlight time. If set to 0, the screen remains constantly lit.	ALL RANGE: 0 / 10 min DEFAULT: 3 min
[U009]	BRIGHTNESS Screen brightness setting.	ALL RANGE: 10% / 90% DEFAULT: 60%

12.4 VISUAL AREA

CODE	DESCRIPTION	MACHINE TYPE
[U010]	X POSITION ON THE DISPLAY Horizontal position of the graphic page displayed on the screen.	ALL RANGE: 0 / 10 px DEFAULT: 7 px
[U011]	Y POSITION ON THE DISPLAY Vertical position of the graphic page displayed on the screen.	ALL RANGE: 5 / 30 px DEFAULT: 15 px

12.5 NETWORK

CODE	DESCRIPTION	MACHINE TYPE
[*ICCID]	ICCID	ALL
[-]	MODULE FIRMWARE	ALL
[U012]	ACCESS TECHNOLOGY AUTOMATIC, GSM, UMTS, LTE, GSM/LTE, UMTS/LTE, GSM/ UMTS/LTE.	ALL

12.6 OPERATING MODES

CODE	DESCRIPTION	MACHINE TYPE
[P020]	ADDITIONAL AUTOMATIC PROGRAMS Enables the automatic programs extension, allowing the configuration and storage of 4 additional automatic programs.	D / G / E / C RANGE: DISABLE / ENABLE DEFAULT: DISABLE
[P021]	WORK CYCLES Enables work cycles.	D / G / E / C RANGE: DISABLE / ENABLE DEFAULT: DISABLE
[P022]	AUTOMATIC UPDATES Enables automatic device updates.  Updates are carried out exclusively when the machine is stopped; the update package download may also take place in the background.	ALL RANGE: DISABLE / ENABLE DEFAULT: DISABLE

13. SYSTEM DIAGNOSTICS

13.1 MAINTENANCE OPERATING HOURS

The page shows the service status and the remaining hours until the next maintenance operation. If filter replacement has been postponed, the postponement indication is also displayed.

SYSTEM DIAGNOSTIC	
OIL FILTER CHANGE SERVICES  50 h	UREA CIRCUIT FILTER CHANGE  50 h
ENGINE OIL FILTER CHANGE  100 h	FUEL FILTER CHANGE  50 h
MAINTENANCE COUNT	

13.2 ENGINE DIAGNOSTICS

The page allows the CAN messages received from the engine control unit to be displayed. From this screen, it is also possible to power or disconnect power from the engine control unit, even when the machine is stopped.

 Available only when [E090] is different from "FIXED SPEED" and "ACCELERATOR".

SYSTEM DIAGNOSTIC	
EDC POWER SUPPLY	EDC STATUS
OFF	
ENGINE DIAGNOSTICS	

13.3 CHECK INPUT STATUS

The page displays the status of the digital and analog inputs. For digital inputs, the box with a green background indicates that the input is active. For analog inputs, the value read by the control unit is displayed.

SYSTEM DIAGNOSTIC			
(J38) BPO	(J25) EMERGENCY	(J02) POIL	260 ohm
(J23) ATA	(J37) START	(J30) TMOT	1478 ohm
(J39) RESERVE	(J06) STOP	(J31) FUEL	256 ohm
(J24) H2O	(J40) FLOW	(J04) PRESS	5.9 mA
(J36) FILTER	(J05) SPEED	(J03) VACUUM	5.8 mA
(J26) D+	(J07) RPM	(J22) ANEMOM	5.6 mA
CHECK INPUT STATUS			

13.4 CHECK OUTPUT STATUS

The page displays the status of the device outputs. The box with a green background indicates that the output is active, while the detected current absorption is shown on the right.

From this page, it is also possible to activate the outputs manually. Pressing the knob enables output selection, which is highlighted. Pressing it a second time selects the output to be modified, and the corresponding box starts flashing. Pressing the knob again changes the status of the selected output.

⚠ Manual activation of the outputs must be performed only by authorized personnel and with the machine in safe conditions.

SYSTEM DIAGNOSTIC	
(J15-16-17-18-19) 15/54	0.04 A
(J12) EV	0.00 A
(J14) STARTER	0.00 A
(J13) AUX PNP	0.00 A
(J41) NPN 1	
(J27) NPN 2	
CHECK OUTPUT STATUS	

14. VALVE SELECTION

14.1 PUMP UNIT

PUMP UNIT	Accelerator	Clutch	Bypass
Electric pump			X
Hybrid		M2	X
Motor pump	M1	M2	X

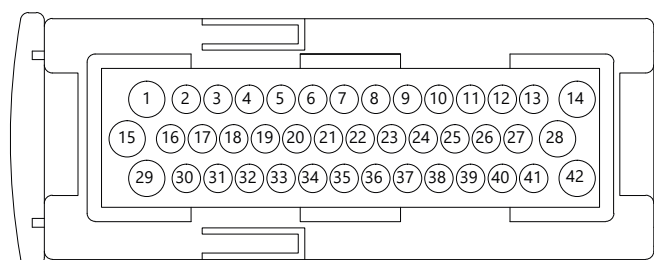
PUMP UNIT	Delivery valve	Priming valve	Outlet valve	Inlet valve	Sprinkler valve
Electric pump	SERVO	SERVO	X	X	X
Hybrid	SERVO	SERVO	X	X	X
Motor pump	SERVO	SERVO	X	X	X

14.2 HOSE REEL MACHINE

HOSE REEL MACHINE		Accelerator	Clutch	Bypass
Turbine		X	X	M1
Hydraulic		X	X	M1
Electric		IdroMOP H6		M1
Combi machine	Mechanical pump	M2		M1
	Tier III	M2		M1
	Stage V	-	-	M1

HOSE REEL MACHINE		Delivery valve	Priming valve	Outlet valve		Inlet valve		Sprinkler valve	
Turbine		X	X	M2	SERVO	M2	SERVO	M2	SERVO
Hydraulic		X	X	M2	SERVO	M2	SERVO	M2	SERVO
Electric		X	X	M2	SERVO	M2	SERVO	M2	SERVO
Combi machine	Mechanical pump	SERVO	SERVO					SERVO	
	Tier III	SERVO	SERVO					SERVO	
	Stage V	SERVO	SERVO					SERVO	

15. ELECTRICAL CONNECTIONS



LEGEND:

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

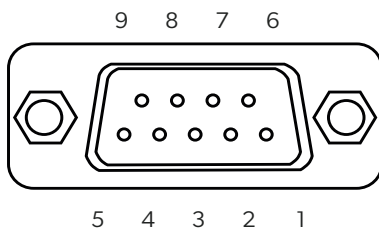
(Contact insertion on cable connector)

SEE MACHINE TYPE LEGEND IN CHAPTER 4

PIN	REF.	CHARACTERISTICS	DESCRIPTION	MACHINE TYPE
J1	31-GND	PI	BATTERY NEGATIVE	ALL
J2	-	VAI	ENGINE OIL PRESSURE SIGNAL	ALL
J3	-	CAI (4-20mA)	VACUUM SIGNAL	ALL
J4	-	CAI (4-20mA)	WATER PRESSURE SIGNAL	ALL
J5	-	DI	PRIMING END CONSENT REWIND SPEED SIGNAL	D / G / E T / H / S / C
J6	-	DI	EXTERNAL STOP	ALL
J7	W-RPM	FDI	ENGINE RPM SIGNAL	ALL
J8	MOTOR	MO (5A max)	MOTOR 2 -	ALL
J9	MOTOR	MO (5A max)	MOTOR 2 +	ALL
J10	MOTOR	MO (5A max)	MOTOR 1 -	ALL
J11	MOTOR	MO (5A max)	MOTOR 1 +	ALL
J12	EV	PNP (5A max)	SOLENOID VALVE	ALL
J13	-	PNP (5A max)	AUXILIARY PNP OUTPUT AUXILIARY SPRINKLER	D / G / E T / H / S / C
J14	50	PNP (max. 16 A continuous / 36 A pulsed current)	START	ALL

J15	15/54	PO (10A max)	IGNITION-SWITCHED POSITIVE	ALL
J16	15/54	PO (5A max)	IGNITION-SWITCHED POSITIVE	ALL
J17	15/54	PO (5A max)	IGNITION-SWITCHED POSITIVE	ALL
J18	15/54	PO (5A max)	IGNITION-SWITCHED POSITIVE	ALL
J19	15/54	PO (5A max)	IGNITION-SWITCHED POSITIVE	ALL
J20	-	CB	ENGINE CAN L	ALL
J21	-	CB	IDROMOP CAN L	ALL
J22	-	CAI (4-20mA)	WATER LEVEL SIGNAL WIND SPEED SIGNAL	D / G / E T / H / S / C
J23	ATA	DI	HIGH ENGINE TEMPERATURE ALARM	ALL
J24	H2O	DI (NO/NC Normally open/closed)	LOW COOLANT LEVEL ALARM REEL ROTATION ALARM	D / G / E T / H / S / C
J25	-	DI (NO/NC)	EXTERNAL EMERGENCY	ALL
J26	D+	DI/DO	D+	ALL
J27	-	NPN (5A max)	FLASHING LIGHT	ALL
J28	+30	PI (12/24 Vdc)	BATTERY POSITIVE	ALL
J29	31-GND	PI	BATTERY NEGATIVE	ALL
J30	-	VAI	ENGINE TEMPERATURE SIGNAL	ALL
J31	-	VAI	FUEL LEVEL SIGNAL	ALL
J32	31-GND	PI	BATTERY NEGATIVE	ALL
J33	31-GND	PI	BATTERY NEGATIVE	ALL
J34	-	CB	ENGINE CAN H	ALL
J35	-	CB	IDROMOP CAN H	ALL
J36	COMMON RAIL	DI	FUEL ANOMALY	ALL
J37	-	DI	EXTERNAL START/STOP	ALL
J38	BPO	DI	LOW ENGINE OIL PRESSURE ALARM	ALL
J39	-	DI	FUEL RESERVE ALARM	ALL
J40	-	FDI	FLOW SWITCH SIGNAL	ALL
J41	-	NPN (5A max)	AUXILIARY NPN OUTPUT	ALL
J42	+30	PI (12/24 Vdc)	BATTERY POSITIVE	ALL

16. SERIAL COMMUNICATION



Contact insertion on cable connector

16.1 RS232 SERIAL

Communication channel for exclusive IdroMOP use.

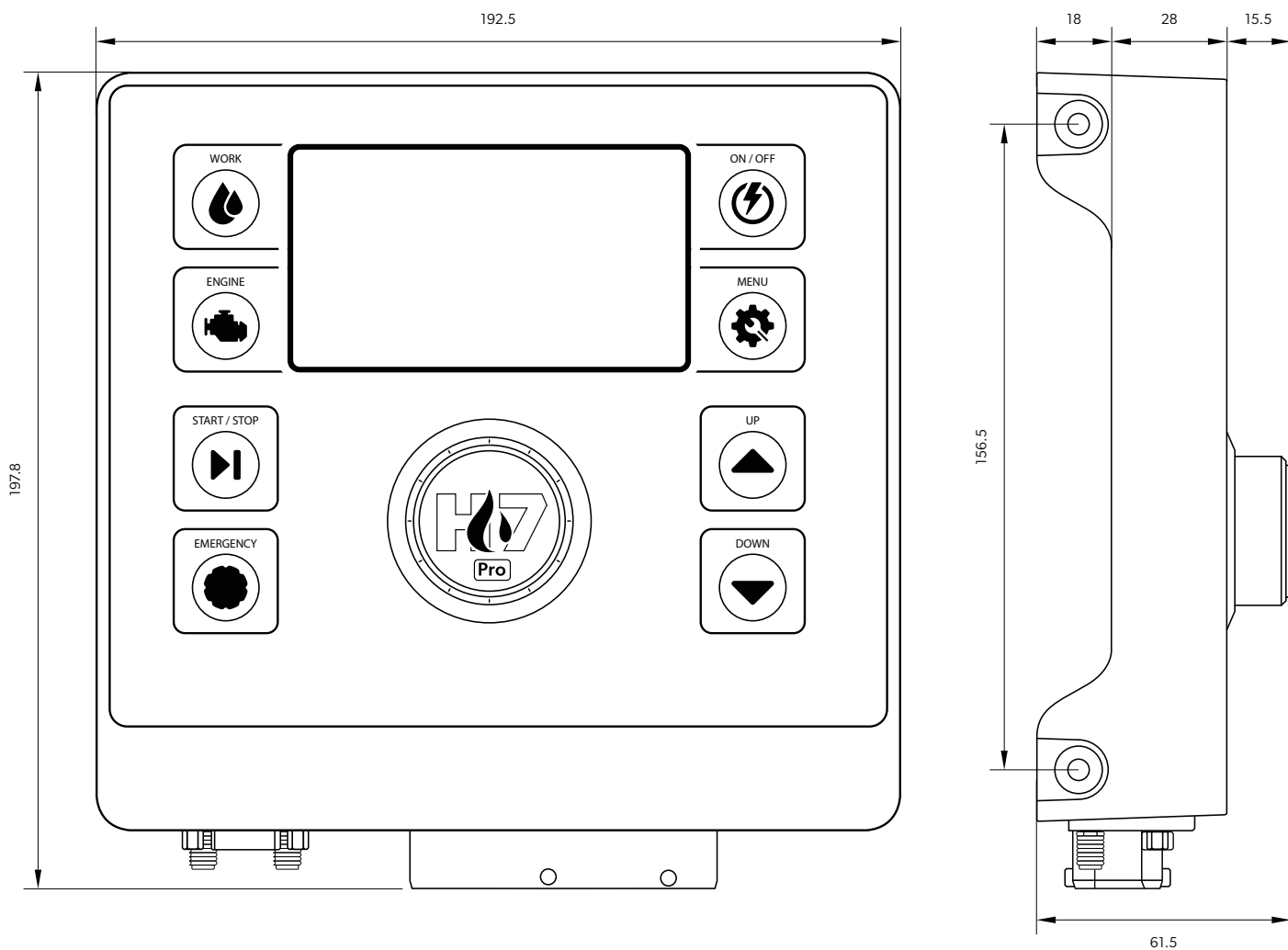
DS2 Line TX
DS3 Line RX
DS5 [31] Reference

16.2 RS485 SERIAL

Communication channel for an external inverter.

DS8 Line A+
DS9 Line B-
DS6 [31] Reference

17. MECHANICAL DIMENSIONS



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