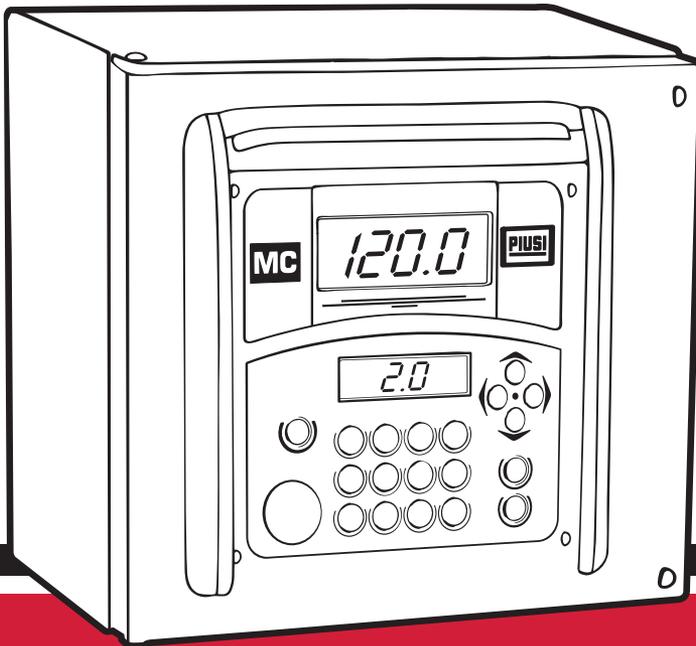


PIUSI
®

*Fluid Handling
Innovation*

**MC
BOX
2.OETL**



**MADE
IN
ITALY**

Use and maintenance manual | **EN**

BULLETIN MO365A EN

ENGLISH

BULLETIN MO365A EN

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MC BOX 2.0 ETL dispensing units described in this manual are for professional use only.

1. DECLARATION OF CONFORMITY

1.1 ETL DECLARATION OF CONFORMITY

This product is ETL listed for Canada and United States under the UL1238 and CSA 222#142 standards.

1.2 EC DECLARATION OF CONFORMITY

The undersigned:

PIUSI S.p.A.

Via Pacinotti c.m. z.i. Rangavino
46029 Suzzara - Mantova - Italy

HEREBY STATES

under its own responsibility, that the equipment described below:

Description: DIESEL FUEL DISPENSER

Model: **MC BOX 2.0 ETL**

Serial number: refer to Lot Number shown on CE plate affixed to the product

Year of manufacture: refer to the year of production shown on the CE plate
affixed to the product

is in conformity with the legal provisions indicated in the directives:

- Low-Voltage Directive 2014/35/EU
- Electromagnetic Compatibility Directive 2014/30/EU
- RoHS II Directive 2011/65/EU

The documentation is at the disposal of the competent authority following motivated request at PIUSI S.p.A. or following request sent to the email address: doc_tec@piusi.com

The person authorised to compile the technical file and draw up the declaration is *Otto Varini* as legal representative.

Suzzara, 20/04/2016

Otto Varini
the legal representative



2. GENERAL WARNINGS

Warnings

To ensure operator safety and to protect the dispensing system from potential damage, workers must be fully acquainted with this instruction manual before attempting to operate the dispensing system.

Symbols used in the manual

The following symbols will be used throughout the manual to highlight safety information and precautions of particular importance:

 <p>WARNING</p> <p>This symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>	 <p>ATTENTION</p> <p>This symbol indicates that there is risk of damage to the equipment and/or its components.</p>	 <p>NOTE</p> <p>This symbol indicates useful information.</p>
--	---	---

Manual preservation

This manual should be complete and legible throughout. It should remain available to end users and specialist installation and maintenance technicians for consultation at any time.

Reproduction rights

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3. FIRST AID RULES

Electrocution

Disconnect the unit from the mains, or use a dry insulator as protection while moving the electrocuted person far from any conductor. Do not touch the electrocuted person with bare hands until he/she is far from any conductor. Ask qualified and trained people for help immediately.
Do not operate switches with wet hands.



NOTE

In all cases ask for a doctor immediately.

EN

4. SAFETY INSTRUCTION

All **MC BOX 2.0 ETL** models have been developed and built according to the applicable EC rules concerning fundamental safety and health requirements. A copy of the manufacturer's **DECLARATION OF COMPLIANCE** is supplied at the beginning of this manual.

Essential protective equipment characteristics

Wear protective equipment according to the info below:

- suited to the operations that need to be performed;
- resistant to cleaning products.

Personal protective equipment that must be worn

Wear the following personal protective equipment during handling and installation:



safety shoes



close-fitting clothing



protective gloves



safety goggles



Use Instruction Manual



WARNING

The Device is **NOT** an **ANTI-EXPLOSIVE** type. The device must be installed outside areas at risk of explosion. Do not install in areas where flammable vapors may be present.

The device must be installed under a roof or in any environment, protected from rain.

The device must be mounted vertically with the grommets facing down.



Installation operations are carried out with the box open and accessible electrical contacts.



All these operations have to be done with the unit isolated from the power supply to prevent electrical shock!



All work related to electrical installation must be performed by qualified installer electrical or electronic. Wear insulated gloves for electrician.

As a general rule of electrical safety is always recommended to power the device protecting the line with:

- switch/breaker with adequate ampacity to the power line;
- RCD (Residual Current Device) of 30 mA.



Devices must be professionally installed by qualified and authorized installer and it is the professional installer's responsibility to make sure the device is operated within local country law and regulatory requirements.

The device is intended for use only by professional staff and authorized.



The cable must be adapted to the current capacities of the device. Unsuitable extension cable can be dangerous.

In accordance with current regulation only extension cable that are labelled for outdoor use and have a sufficient ampacity should be used outdoor.

Never touch the plug and socket with wet hands. The connection between plug and socket must stay away from water.

Before each use, check that the power cable for damage.

Replace immediately the cable connection to the network if it is damaged.



The maintenance of the electrical parts can be done only by qualified installer electrical or electronic. Wear insulated gloves for electrician.



Before performing any maintenance make sure to unplug the device from the power supply to turn it off and isolate it from the mains.



If the device is sold without cable to provide periodic verification of the circuit grounding in accordance with current regulations.

Do not switch the dispensing system on if the network connection cable or important parts of the apparatus are damaged, such as the inlet/outlet pipe, nozzle or safety devices.

Replace the damaged pipe immediately.



It is the installer's responsibility to provide for the accessories needed for a safe and proper operation.

The choice of accessories unfit for use, may result in damage to the device and/or personal injury.

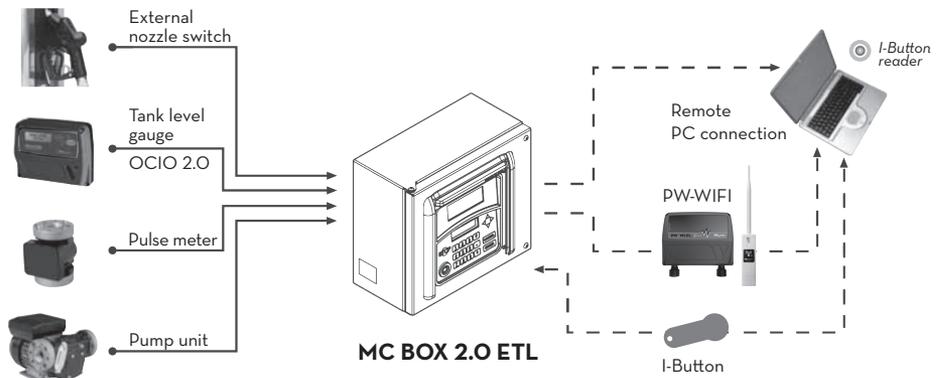
To maximize performance and prevent damage which may impair the functionality of the device, require genuine accessories.

5. GENERAL INFORMATION

MC BOX 2.0 ETL electronic panels are designed for the private distribution of fuel (or other liquids). All of the models in the serie are characterised by the same form for which the **MC BOX 2.0 ETL** is known: a solid metal structure, high-accuracy measurements in the dispensed product and PC software that is designed for simplicity.

This electronic panel allows you to control and monitor private use fuel consumption via a fuel dispenser with pump and flow meter.

The **MC 2.0** system consists of a multi-user panel, dedicated software and the option to connect to a PC. Data transfer, configurations, fuel dispensing, etc., can be done by means of a manager key or a LAN-WIFI connection.



The **MC 2.0** system is composed of various devices:

- an electronic controller to manage fuel dispensing, equipped with:
 - 2 displays;
 - keypad;
 - electronic key reader/writer;
- electronic manager keys for data configuration and download, user keys and vehicle keys for access to fuel supplies;
- a series of status sensors (e.g. dispenser nozzle positioning or tank level sensor alarm status);
- flow meter - pulser that emits counter pulses to be processed by the controller;
- a pump that is started and stopped by the controller;
- (optional) a meter for tank levels (ocio 2.0) and "level contact" inputs that can be used only through LAN-WIFI connection;
- client-server software for system configuration and monitoring;
- (optional) a wireless Wi-Fi converter (**PW-WIFI 2.0**) to connect the controllers to the PC when it is not practical to install an Ethernet connection cable;
- a key reader connected to the PC by means of a USB port.

MC BOX 2.0 ETL must be correctly configured before dispensing any fluid. The number of type of configuration parameters are established by the system administrator.

Possible configurable parameters are:

- stand-alone operation with data transfer via manager key or through LAN-WIFI connection with automatic synchronization of configurations, driver databases and vehicles;
- prompt to present an electronic user key or a pin code;
- prompt to present an electronic vehicle key;
- prompt to enter the vehicle odometer reading (kilometers, miles or working hours);
- prompt to select full tank yes or no.

These configuration parameters may all be present or only some of them, depending on the selections made by the administrator. By means of the software CONFIGURATION page (see manual **SSM2.0**) the administrator sets up the various parameters.

- The quantity of fuel that can be dispensed is configured via software and it can be:
 - free without PRESET;
 - with PRESET.

By choosing preset mode you can:

- dispense a PRESET quantity programmed by the administrator and modifiable only by this latter;
- dispense a PRESET quantity established by the vehicle driver and modifiable by the driver at any time.

In case of LAN-WIFI connection by means of the Ethernet bus (with **PW-WIFI 2.0**), **MC BOX 2.0 ETL** communicates its operating status to the management software installed on the PC.

(The columns operating states are described and explained in the PC software manual).

The panel is easy to install and adequately protected. The electrical connections are easily accessible. The unit can be supplied complete with flow meter to be installed in line with the pump.

Construction characteristics

- Panel with double display, keypad and i-button key reader/writer;
- openable metal enclosure for easy access to electrical connections;
- max current 6.5 Amps.

Optional

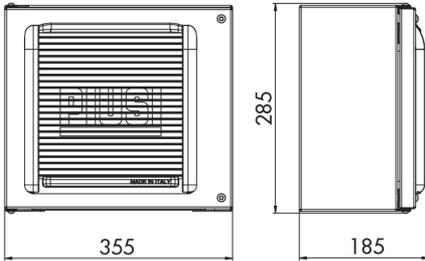
- Additional i-button keys for users and vehicles;
- high precision oval gear electronic flow meter;
- **OCIO 2.0** level meter.

Performance

- Can manage up to 1000 users and 1000 vehicles (depending on the software version);
- facility to calculate consumption/period for each user;
- local memory up to the last 650 supplies, with memory nearly full alert when 500 is reached;
- mileage entry option;
- dispensing date and time management;
- interfaceable with **SELF SERVICE MANAGEMENT 2.0** ERP software.

6. HANDLING AND DISPOSAL

6.1 TRANSPORT, HANDLING AND UNPACKING



MC BOX 2.0 ETL is shipped inside stackable cardboard packaging.

Dimensions of packaging:

H = 285 mm (14")

L = 355 mm (7.3")

D = 185 mm (11.2")

Total weight: 5,386 kg (11.9 Lb)

Weight of packaging: 0,482 kg (1.1 Lb)

When the machine is not used, whether it is packed or unpacked, it must be stored in a place protected from the weather (rain, damp, sun, etc.) and from dust.

To remove the cardboard packaging, use a pair of scissors or cutters, being careful not to damage the appliance. Fully open the packaging and take out the **MC BOX 2.0 ETL** so that it can be taken to the place of final installation.

Packaging parts (cardboard, wood, cellophane, etc.) must be placed in specific containers and not left lying around or within reach of children, as these represent a potential risk hazard.

They must be disposed of according to the regulations applicable in the country of use.

Check the integrity of the machine by making sure the shipped parts are not damaged in any way that could affect safety and operation. In case of any doubts, do not start the appliance but contact the manufacturer's After-Sales Service.

6.2 DISPOSAL

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Foreword The components must be given to companies that specialise in the disposal and recycling of industrial waste.

Disposal of packaging The packaging consists of biodegradable cardboard which can be delivered to companies for normal recycling of cellulose.

Disposal of metal components The metal components, both painted and stainless steel, are usually recycled by companies that are specialised in the metal-scraping industry.

Disposal of electric and electronic components These have to be disposed by companies that are specialised in the disposal of electronic components, in accordance with the instructions of 2012/19/EU (see text of directive in next page).

Environmental information for customers in the European Union

European Directive 2012/19/EU requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams.



It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities.

Disposal of other parts The disposal of other parts such as pipes, rubber seals, plastic components and cables should be entrusted to companies that are specialized in the disposal of industrial waste.

7. USE AND AVAILABILITY OF MANUALS

This manual describes the main features of all **MC BOX 2.0 ETL** models and gives instructions concerning:

- mechanical installations;
- initial starting operations;
- daily use.

This manual does NOT cover subjects such as configuration and operation of management system 2.0.

These subjects are dealt within specific electric and software manuals supplied with each model station.

All manuals are contained in an envelope supplied with a detailed list of same. This collection of manuals is an integral part of the product and **shall be handed to the use and maintenance personnel**, in order to meet the training and information requirements set. Read the instructions carefully: they contain important information on safety during installation, use and maintenance. **The manufacturer is not responsible for damages to people, things or to the unit when it is not used as indicated. Keep this manual in a safe place** protected from humidity, heat, dust, oil, grease, etc: it will be needed for future reference and consultation. Do not remove, tear or modify any part of this manual for any reason. Should it be lost or damaged, ask the manufacturer for another copy, indicating manual number. This manual shall always follow the unit; should the unit be sold, the manual will be handed to the new user.



NOTE

The manufacturer reserves the right to modify any features of the **MC BOX 2.0 ETL** unit at any time.

7.1 DATA PLATE

MC BOX 2.0 ETL stations feature an identification plate that is attached to the shell showing:

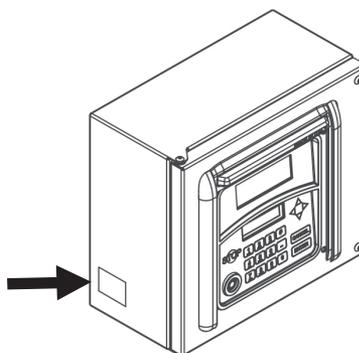
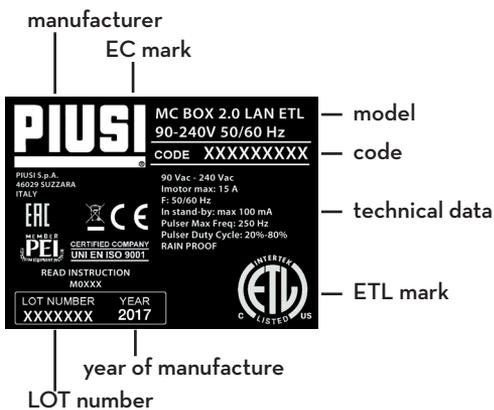
- model;
- serial number / year of manufacture;
- technical data;
- EC mark;
- ETL mark.



WARNING

Before installing the unit, check that the model is right and suitable for currently available supply (voltage and frequency).

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8. DESCRIPTION OF MAIN PARTS

MC BOX 2.0 ETL is designed for the private dispensing of fuel. Recognised for their ease of use and maximum safety, **MC BOX 2.0 ETL** dispensers are reliable, high-performing, quick to install and ready-to-use.

Equipment and features

Sturdy, lockable metal box with hinged door.

Electronic Control Panel with:

- dual display;*
- membrane keyboard;*
- user and vehicle recognition and access control system with electronic key, allowing a simple man-machine interface.*

The electronic panel is also equipped with other out-facing interfaces, such as:

- pump ignition control*
- nozzle contact input command*
- level contact input command*
- Ethernet output for hard wired or Wi-Fi (via PW-WIFI 2.0) connection to the PC with the **SELF SERVICE MANAGEMENT 2.0** application.*

8.1 CONTROL SYSTEM

The electronic control system **MC 2.0** ensures the dispenser can only be used by authorised personnel. All the data relating to each dispensing operation are stored and can be transferred to a PC.

9. TECHNICAL SPECIFICATIONS

9.1 PERMITTED USES

Implementation of a fluid dispensing system, intended for private use, not subject to special regulations (e.g. ATEX) for potentially explosive environments.

9.2 CONTROL SYSTEM PERFORMANCE

The performance of the **MC 2.0** control system is detailed in the manual of electronic parts and software.

9.3 METERING PRECISION

Mainly influenced by the pulsation type used.
For further details, please refer to the specific user manual for the pulsation type used.

9.4 TECHNICAL DATA

Maximum acceptable variations from the electrical parameters are:

- *voltage* +/- 10% for AC versions;
- *frequency* +/- 1% (+/-2% for short periods).

MC BOX 2.0 ETL	
Nominal power supply voltage	90-240 Vac
Nominal frequency (Hz)	50/60Hz
Max current draw in stand-by at ambient T. 25°C	20 mA @230Vac 40 mA @110 Vac
Electronic control card power line fuse	1 A T (del.)
Max motor current	15 A
Motor line fuse	1 fuse 20 A T (del.)

From the electrical and electronic standpoint **MC BOX 2.0 ETL** offers standard operating conditions and preset operating limits.

Signal	Standard conditions	Limits	Notes
Motor driving output	MVmot= Vin_power	I _{max} =15 A	
Electronic key input	Gray key (manager key): PIUSI electronic key enabling input	Used to configure the panel and to download the dispensing data related to SSM 2.0.	The presence of the keys can be either configured or disregarded
	Yellow key (user key): PIUSI electronic key enabling input	A software procedure is used to record the yellow user keys on the PC and they are then enabled for use at one or more dispensing stations	The presence of the keys can be either configured or disregarded
	Blue key (vehicle key): PIUSI electronic key enabling input	A software procedure is used to record the blue vehicle keys on the PC and they are then enabled for use at one or more dispensing stations	The presence of the keys can be either configured or disregarded
Nozzle contact input (optically coupled) (only certain versions)	Voltage-free contact or open collector electronic signal (NPN)	The voltage-free contact (or the open collector) will be supplied with around 12mA at 24Vdc	The presence of this enabling signal can be configured or disregarded The signal type can be configured (stable level / pulse or normally open / normally closed)
Pulser IN input (optically coupled)	Voltage-free contact or open collector electronic signal	The voltage-free contact (or the open collector) will be supplied with around 1mA at 24Vdc	The maximum input signal frequency is 300Hz with minimum half-period (Hi or LOW) of 0.3ms
Level 1 contact input (optically coupled) (only certain versions)	Voltage-free contact or open collector (NPN) electronic signal; the terminal also carries +24Vdc to power a level sensor, if necessary; the max current available to power the sensor is 30mA	The voltage-free contact (or open collector) will carry around 12mA at 24Vdc I _{max} for sensor power= 100mA (at 24Vdc)	The presence of this signal can be either configured or disregarded The signal type can be configured (stable level / pulse or normally open / normally closed) You can choose the action to be performed by the controller when it receives this signal: it can simply show an alarm on the display and activate the OUT alarm output or it can inhibit fluid dispensing if the "pump cut-out" option is selected



Signal	Standard conditions	Limits	Notes
Level 2 contact input (optically coupled) (only certain versions)	Voltage-free contact or electronic open collector (NPN) signal; the terminal also carries +24Vdc to power the level sensor, if necessary. The max current available to power the sensor is 30mA	The voltage-free contact (or the open collector) will be supplied with around 10mA at 24Vdc Sensor power supply I _{max} =100mA (at 24Vdc)	The presence of this signal can be either configured or disregarded The signal type can be configured (stable level / pulse or normally open / normally closed) You can choose the action to be performed by the controller when it receives this signal: it can simply show an alarm on the display or it can inhibit fluid dispensing if the "pump cut-out" option is selected No alarm signal is sent to the alarm output because the alarm output is linked to the level 1 contact
24Vdc auxiliary power circuits output	24Vdc auxiliary output to power remote displays (if present)	I _{max} = 200mA limited by self-resettable fuse	The equipment to be powered must not draw more than 200mA with 24Vdc power supply. Typically this could be an electronic level sensor that requires a 24Vdc power input
Alarm output (optically coupled)	The alarm output replicates the status of level contact number 1 and, in general, the status of many other possible fault conditions	Max current rating of the open collector output: 25mA	The presence of this signal can be either configured or disregarded The signal type can be configured as normally open or normally closed
Fuses	FH1 (motor) 20 A 250V FH2 (general) 1,5 A T (del.) 250V FH3 (general) 0,5 A T (del.) 250V		
Protection rating	Rainproof	-	-
Working temperature	-10 + 40 °C	-	-
Storage temperature	-20 +60 °C	-	-
Humidity	<90%		
Cable routing distances	Max pulser distance	15 m	
	Max level sensors distance	100 m	
	Max distance between PC and controller on Ethernet cable	90 m	

Display and counter limits

Maximum quantity dispensed before instrument resets.
 Floating point sequence: 0,00 ▶ 99,99 ▶ 999,9 ▶ 9999 ▶ 9999x10 (99.990) ▶ 9999x100 (999.900) ▶ 0



Stops when maximum value is reached.

Maximum resettable total (after which counter resets and count recommences): **10.000.000** units of measurement
 Maximum NON resettable total (after which counter resets and count recommences): **10.000.000** units of measurement
 Maximum quantity programmable in PRESET: **99.999,99** units of measurement

Memories

If used with the manager key or in order to be used even when LAN or Wi-Fi data connection is not available, the electronic control unit can store:

- up to 1000 users (depending on the software license);
- up to 1000 vehicles (depending on the software license);
- up to 650 supplies, with memory nearly full alert when 500 is reached.

10. INSTALLATION

10.1 HAZARDOUS AREA

Any fuel dispenser is a hazardous area as defined in the National Electrical Code. Installation must be in accordance with the following:

- National Electrical Code (NFPA No. 70)
- Automotive and Marine Service Station Code (NFPA No. 30A)

! WARNING

The installer is responsible to investigate and follow any local codes.
MC BOX 2.0 ETL is listed for use in a non-classified area. All of the equipment must be installed outside of the hazardous areas.

+ NOTE

Local codes may dictate specific installation requirements. Installation is subject to approval by the local authority having jurisdiction at the site.

10.2 GENERAL INFORMATION

MC BOX 2.0 ETL can be installed outdoors. Nevertheless, it is advisable to locate it under the shelter of a roof to ensure the dispenser's longevity and provide greater comfort during refueling in the event of bad weather. The installation of the dispenser must be carried out by skilled personnel and performed according to the instructions provided in this chapter.

10.3 ELECTRICAL CONNECTIONS

The power connections must be workmanlike performed by skilled personnel, in strict compliance with the laws applicable in the country of installation and with the instructions on the wiring diagrams in electronic parts and software manual.

MC BOX 2.0 ETL is equipped with **4 junction boxes**. These can easily be accessed by opening the door to where the screw terminals for the external cable connections are located.



WARNING

MC BOX 2.0 ETL electronic panel does NOT come with protective switches; it is therefore mandatory that the **MC BOX 2.0 ETL** be installed with an electrical panel that is suitable to the individual **MC BOX 2.0 ETL** and has a differential power switch or, at the very least, a fast-access device such as a socket/plug, to be used in the event of anomalies.



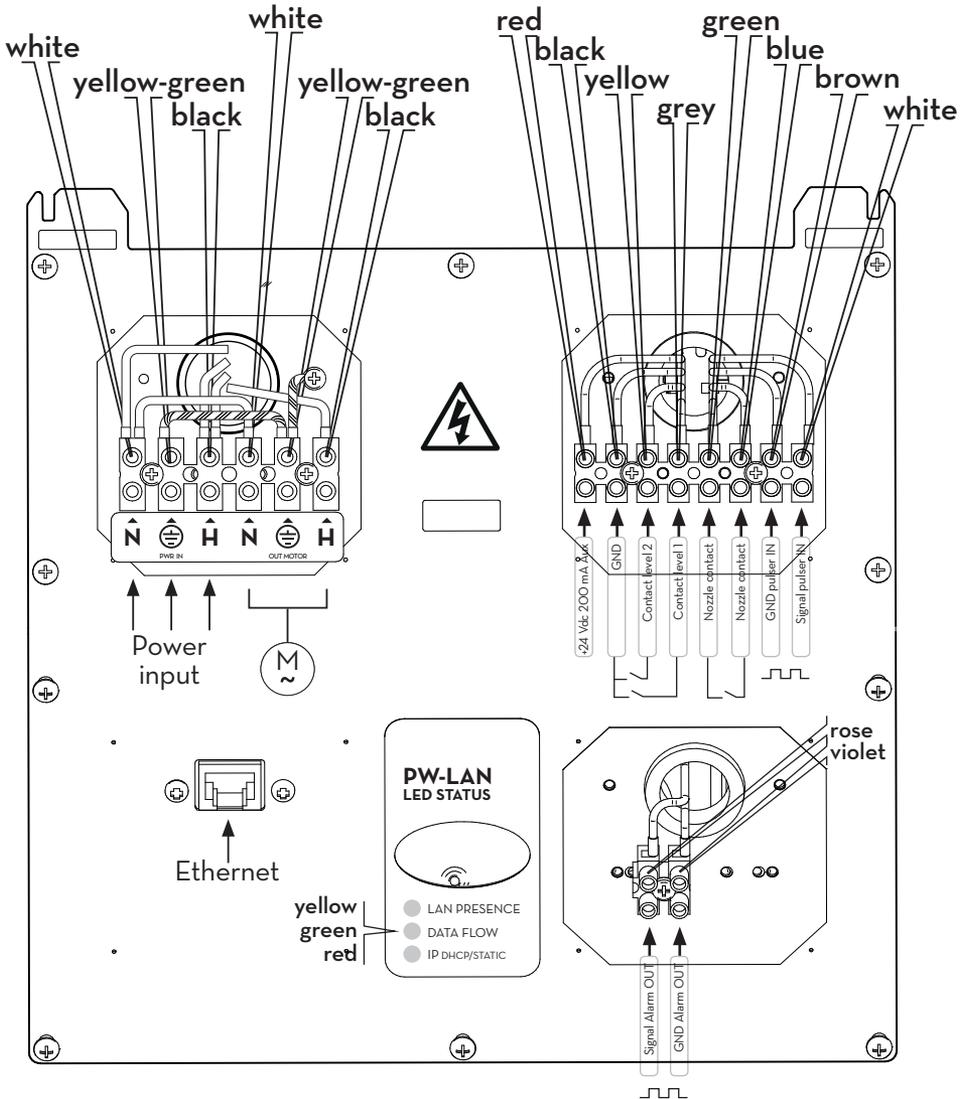
ATTENTION

All the electronic components found within the **MC BOX 2.0 ETL** container have been pre-wired and tested at the factory; as such, it is NEVER necessary to have the **MC BOX 2.0 ETL** opened by the person who installed it or the plant operator, unless the fuse protection on the I/O card needs to be replaced; The installer should carry out a plug/socket connection for a quick sectioning of the electric system in case of failures.



WARNING

Before accessing the electrical parts, be sure that you have disconnected all of the general switches that power the device.

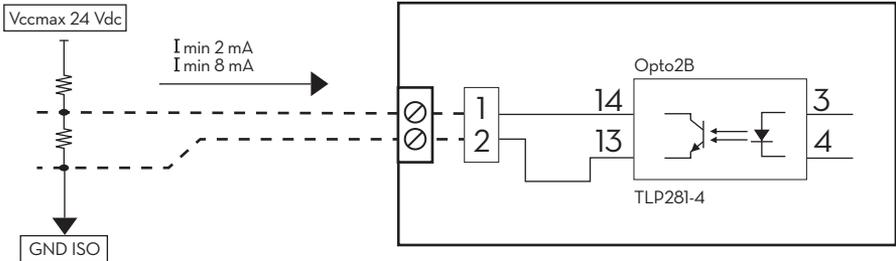


10.4 ELECTRICAL INPUT/OUTPUT INTERFACES



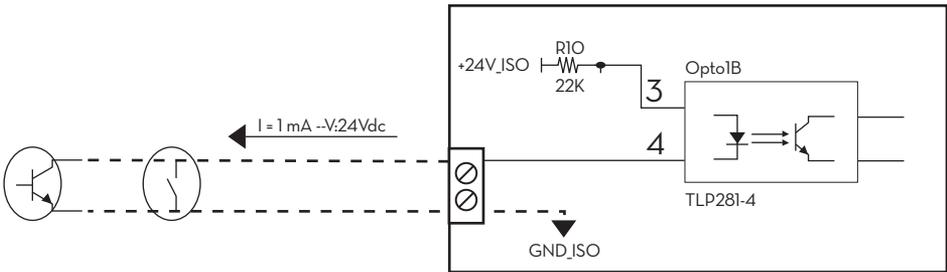
Optically coupled output

Example of interface with external units.



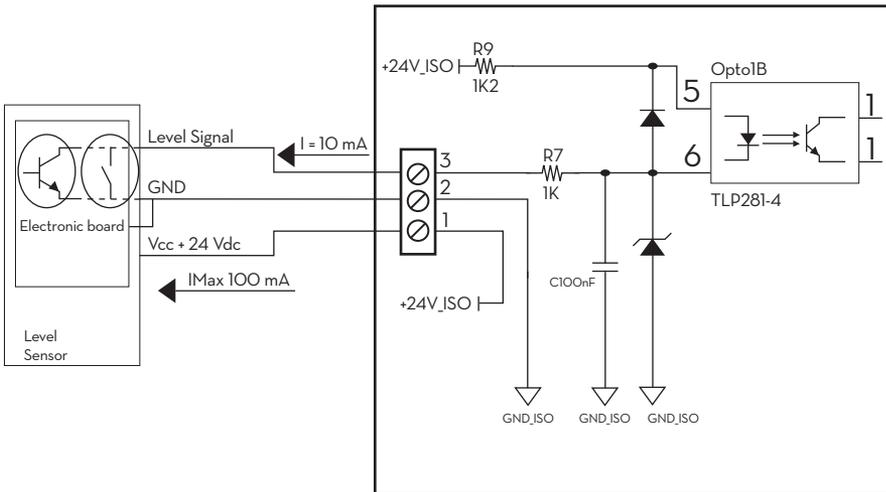
Optically coupled input

Example of interface with external units.



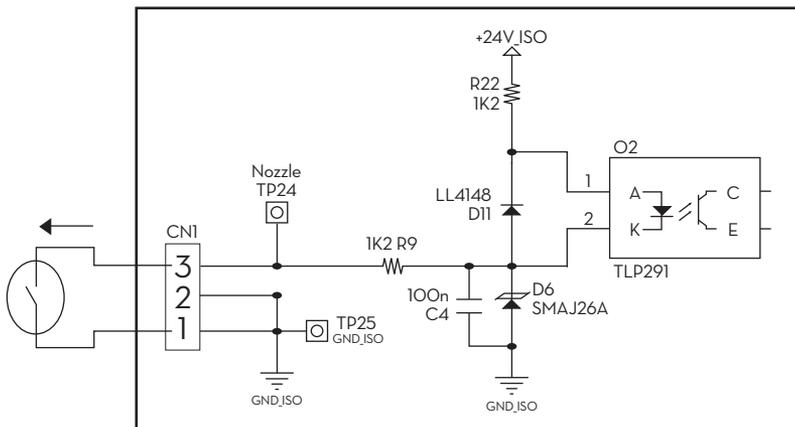
Level sensor or level contact

Example of interface with a DC powered sensor.



Nozzle input optically coupled

Example of interface with nozzle contact.





11. COMMISSIONING

To correctly commission **MC BOX 2.0 ETL** the sequence of operations indicated below must be followed and the **MC 2.0** electronic control system functions must be known.

11.1 ELECTRICAL POWER SUPPLY

Once the power connections have been made, the **MC BOX 2.0 ETL** can be energised by means of the master switch to be fitted by the installer on the upstream line. Switching on of the **MC 2.0** system will be indicated by the lighting up of the two backlit LCDs fitted on the front.

11.2 STATION CONFIGURATION

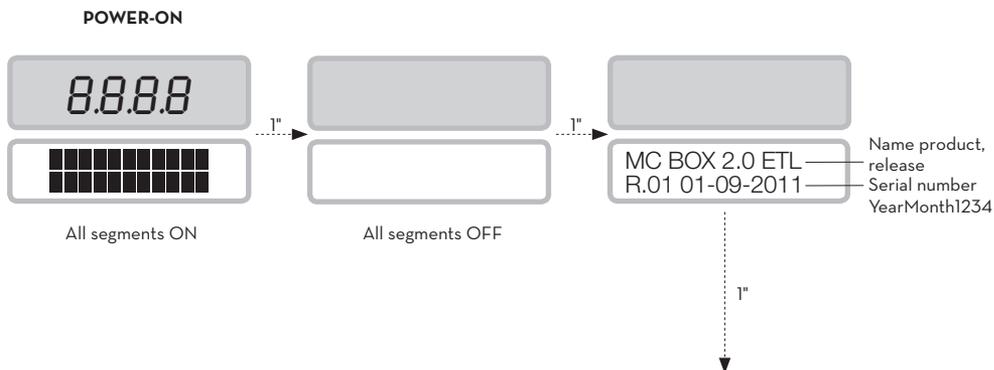
Every **MC BOX 2.0 ETL** station can be adapted to the specific requirements of the station manager. To do this the **MC 2.0** control system must be CONFIGURED by means of PC Software.

!

ATTENTION

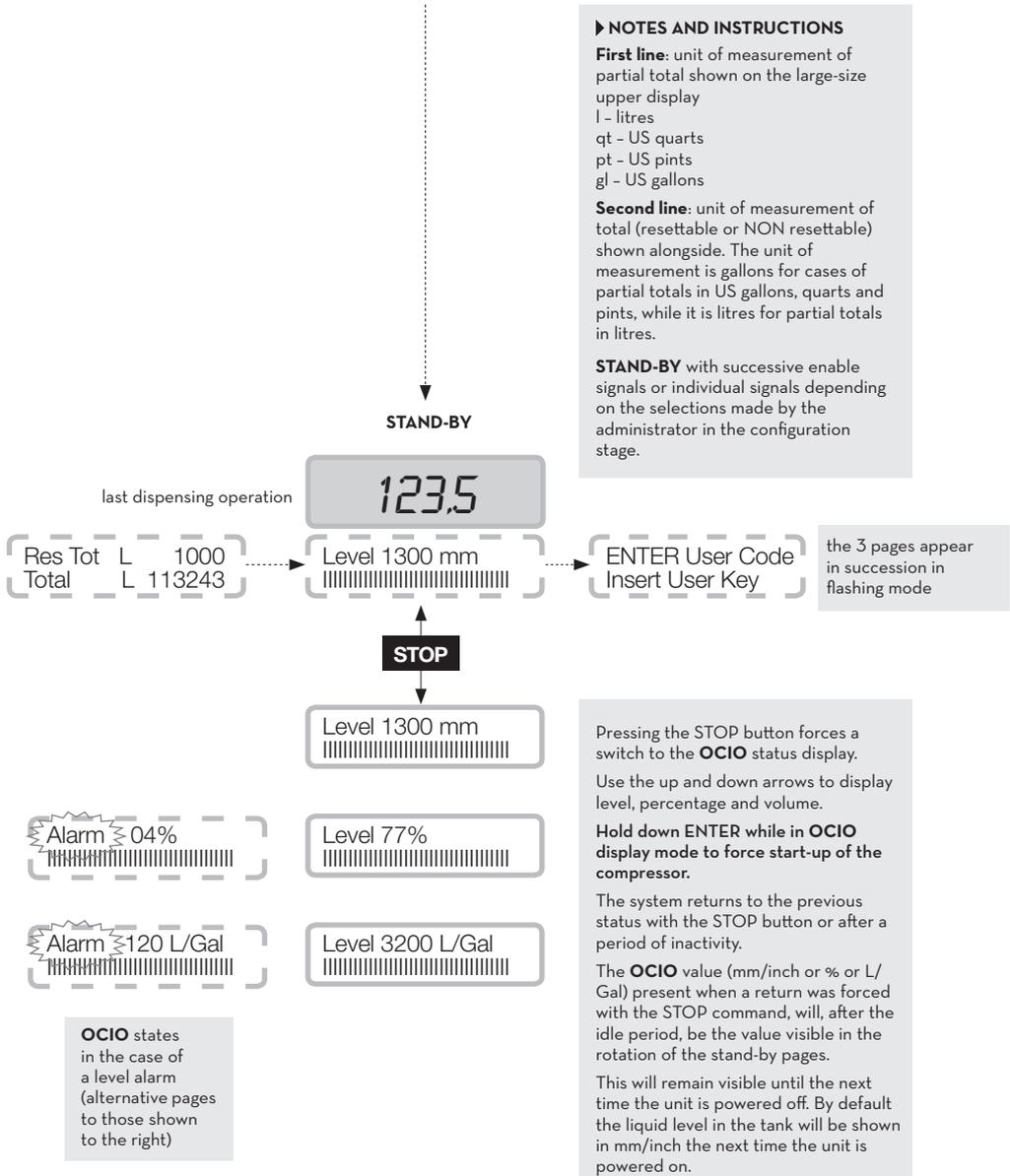
MC BOX 2.0 configuration is crucial and must be done by skilled personnel. To perform this operation, the MC manual must be carefully and thoroughly read.

11.3 POWER-ON AND STAND-BY STATUS IN LAN-WIFI MODE



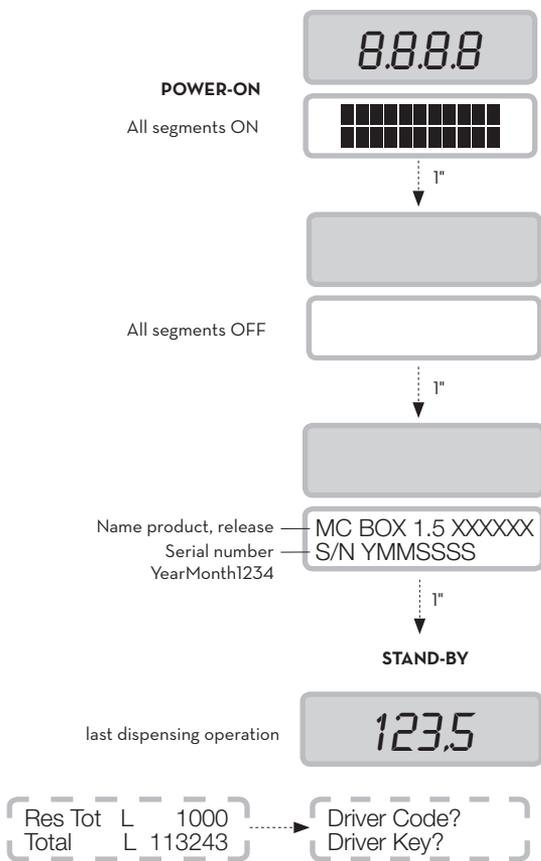
STAND-BY

OCIO STATES





11.4 POWER-ON AND STAND-BY STATUS IN MANAGER KEY MODE



► **NOTES AND INSTRUCTIONS**

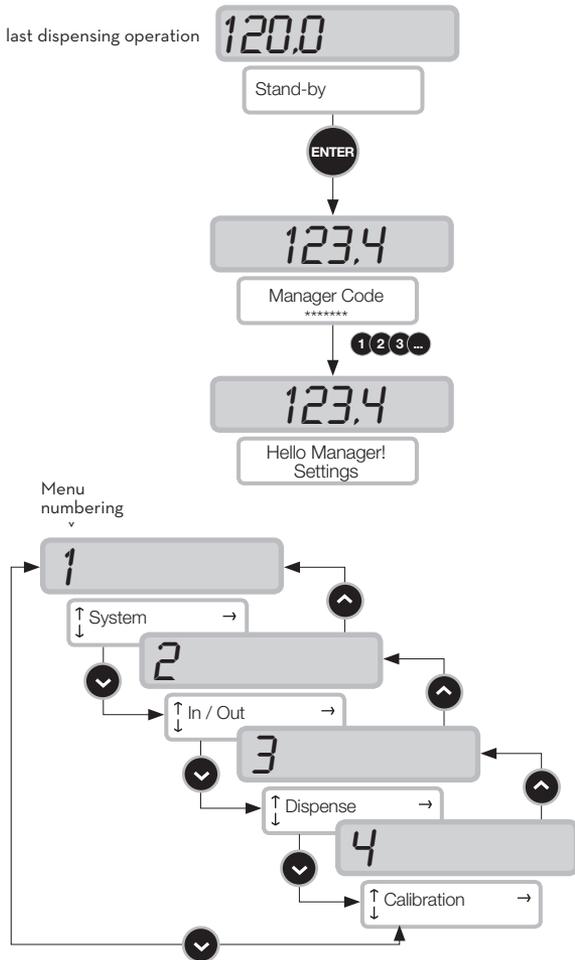
STAND-BY with successive enable signals or individual signals depending on the selections made by the administrator in the configuration stage.

► the 2 pages appear in succession in flashing mode

First line: unit of measurement of partial total shown on the large-size upper display
l - litres qt - US quarts
pt - US pints gl - US gallons
Second line: unit of measurement of total (resettable or NON resettable) shown alongside. The unit of measurement is gallons for cases of partial totals in US gallons, quarts and pints, while it is litres for partial totals in litres.

11.5 ELECTRONIC CONTROLLER CONFIGURATION IN LAN-WIFI MODE

The system is designed to be highly flexible and configurable. The configuration functions and parameters are all present in the PC software. Refer to the software manual for further details. A reduced number of information items and possible configurations remain on the controller, as can be seen from the user interface on the display. The PIN code required to open the manager menu can be changed via software by the administrator. The default factory code is 123456.



► NOTES AND INSTRUCTIONS



General notes on key functions:

ENTER Key to confirm entry of a value or entry into a submenu.

CANC Key to return from a lower level submenu to a higher level one, or menu exit key.

< > Keys to enter/exit a submenu.

↑ ↓ Keys to scroll through the various submenus at the same level or up/down keys for the numerical values to be entered.

..... Automatic access to the next page.

→ Access to the page shown by the button indicated.

⚡ Blinking

1 2 3 ... Value input with numerical keys.

1
 ↑ System →
 ↓

▶ **SYSTEM**

1.1
 ↑ Language
 ↓ English

1.2
 ↑ Date
 ↓ 09/09/2015

1.3
 ↑ Hour
 ↓ 14:54:21

1.4
 ↑ System
 ↓ Settings

1.5

1.4.7

1.4.1
 ↑ Reg. Number?
 ↓ Yes/No

1.4.2
 ↑ Odometer
 ↓ Yes/No

1.4.3
 ↑ Ocio
 ↓ Yes/No

YES

1.4.3.1
 ↑ Ocio
 ↓ External/Internal

1.4.4
 ↑ Unmeasured Tank?
 ↓ Yes/No

NO

1.4.5
 ↑ Driver Key ?
 ↓ Yes/No

1.4.6
 ↑ Vehicle Key?
 ↓ Yes/No

1.4.7
 ↑ Driver Code?
 ↓ Yes/No

1.4.1

NOTES

"YES" "NO"

Transition to the next page **YES** or **NO** depends on the desktop settings

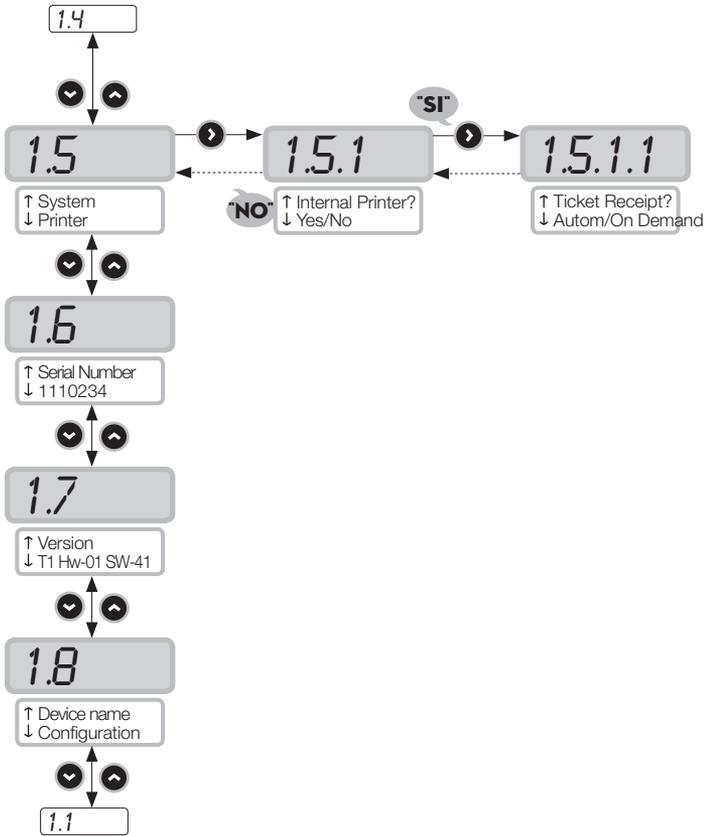
YES

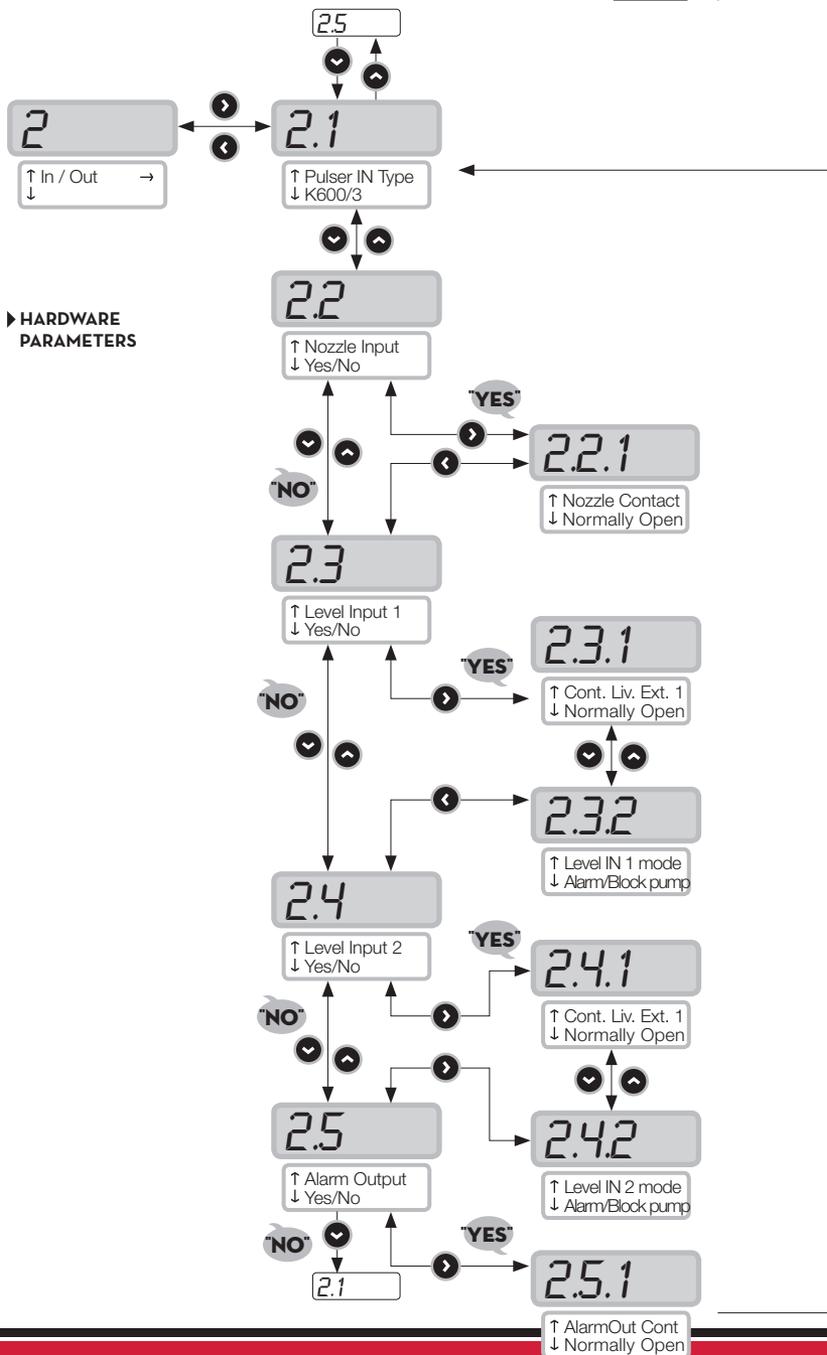
1.4.2 → **1.4.2.1**

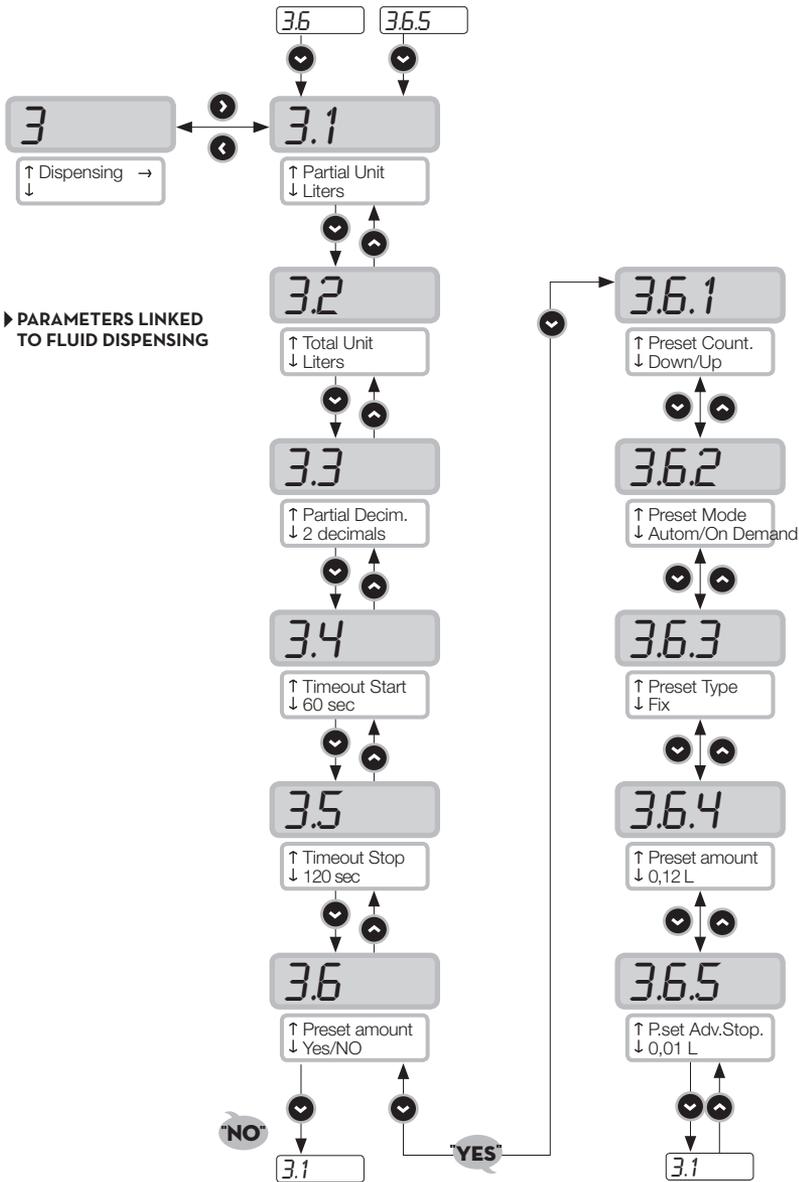
↑ Odometer
 ↓ Yes/No

NO

1.4.3

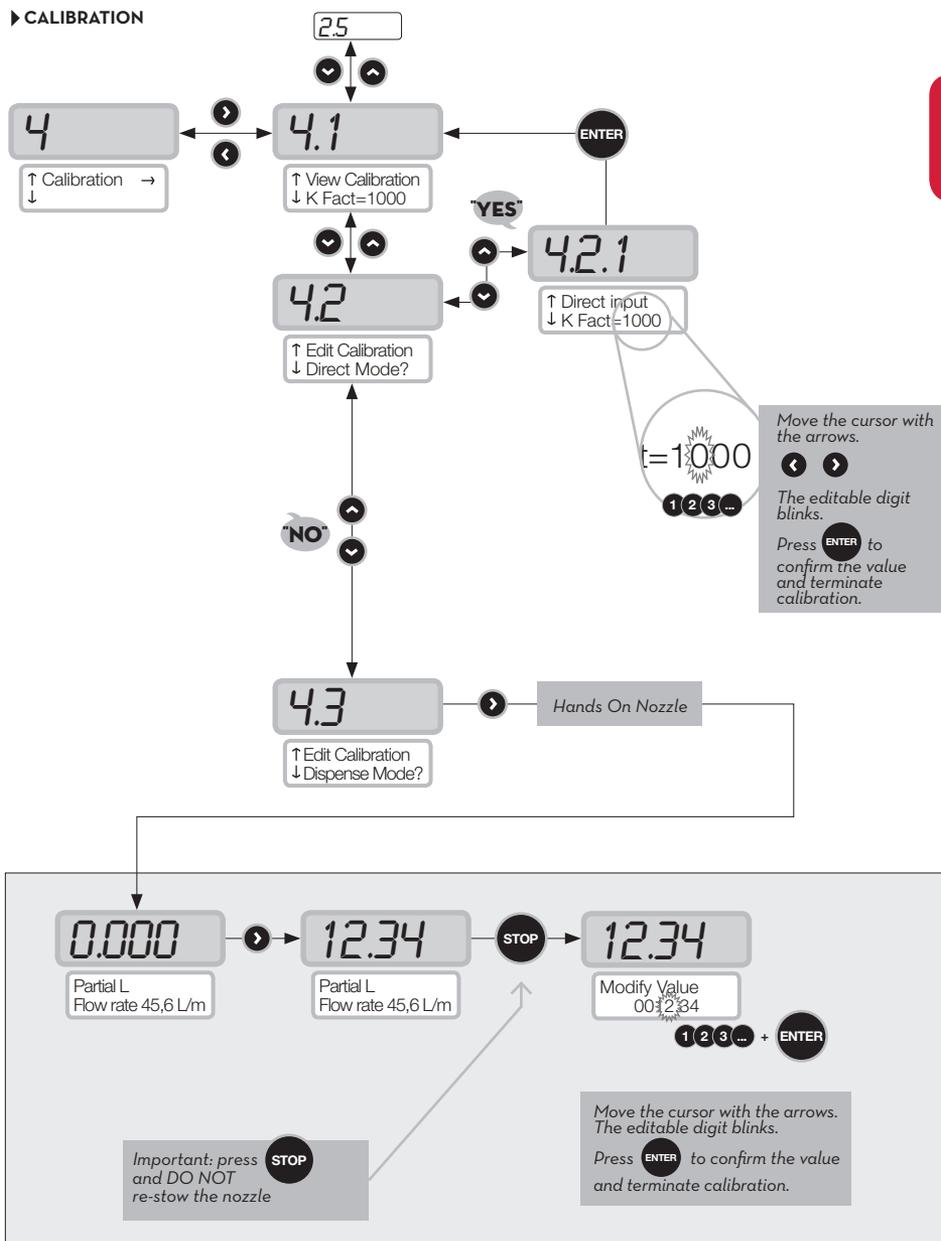








► CALIBRATION



11.6 ELECTRONIC CONTROLLER CONFIGURATION IN MANAGER KEY MODE

The system is designed to be highly flexible and configurable.

The configuration functions and parameters are all present in the PC software. Refer to the software manual for further details. A reduced number of information items and possible configurations remain on the controller, as can be seen from the user interface on the display. The PIN code required to open the manager menu can be changed via software by the administrator. The default factory code is 123456.

For a correct operation of the system, date and time of the panel must be preset; then, using the i-button panel or placing the manager key on the player, carry out an "export config".

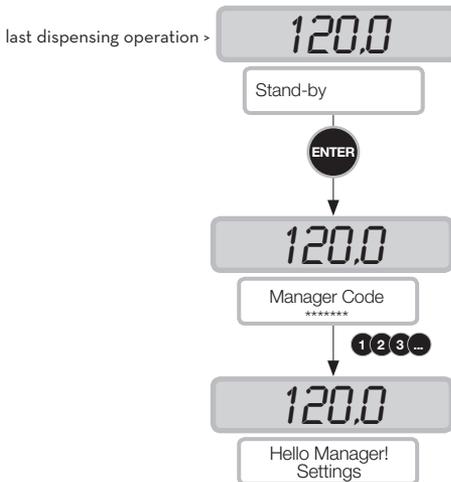
Later on, connecting the manager key to the computer, the panel will be recognised, imported in the system and will be configurable.

For further information, see the manual of the **SSM 2.0** software.

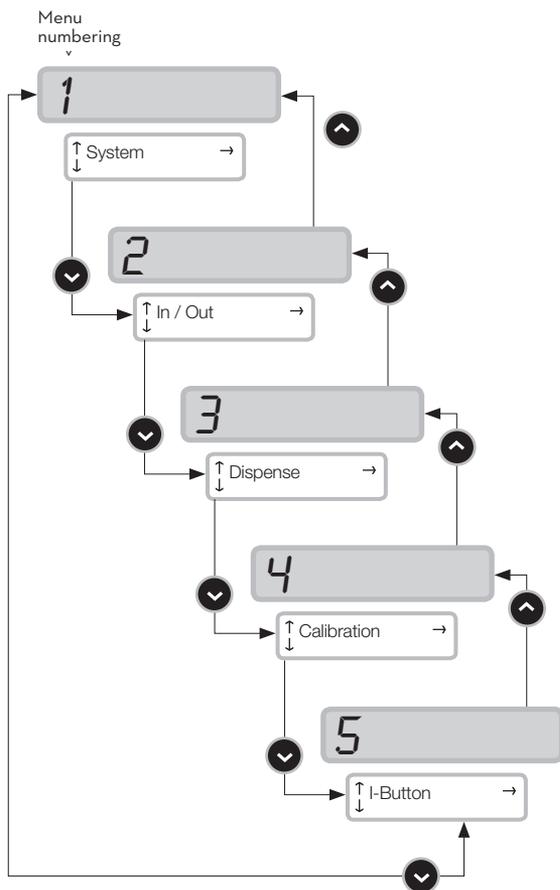


NOTE

Whenever a modification is made inside the Manager Menu, before exporting any configuration from the panel on i-Button, exit the menu, so that the controller can save the new settings.



► **NOTES AND INSTRUCTIONS**



General notes on key functions:

ENTER Key to confirm entry of a value or entry into a submenu.

CANC Key to return from a lower level submenu to a higher level one, or menu exit key.

< > Keys to enter/exit a submenu.

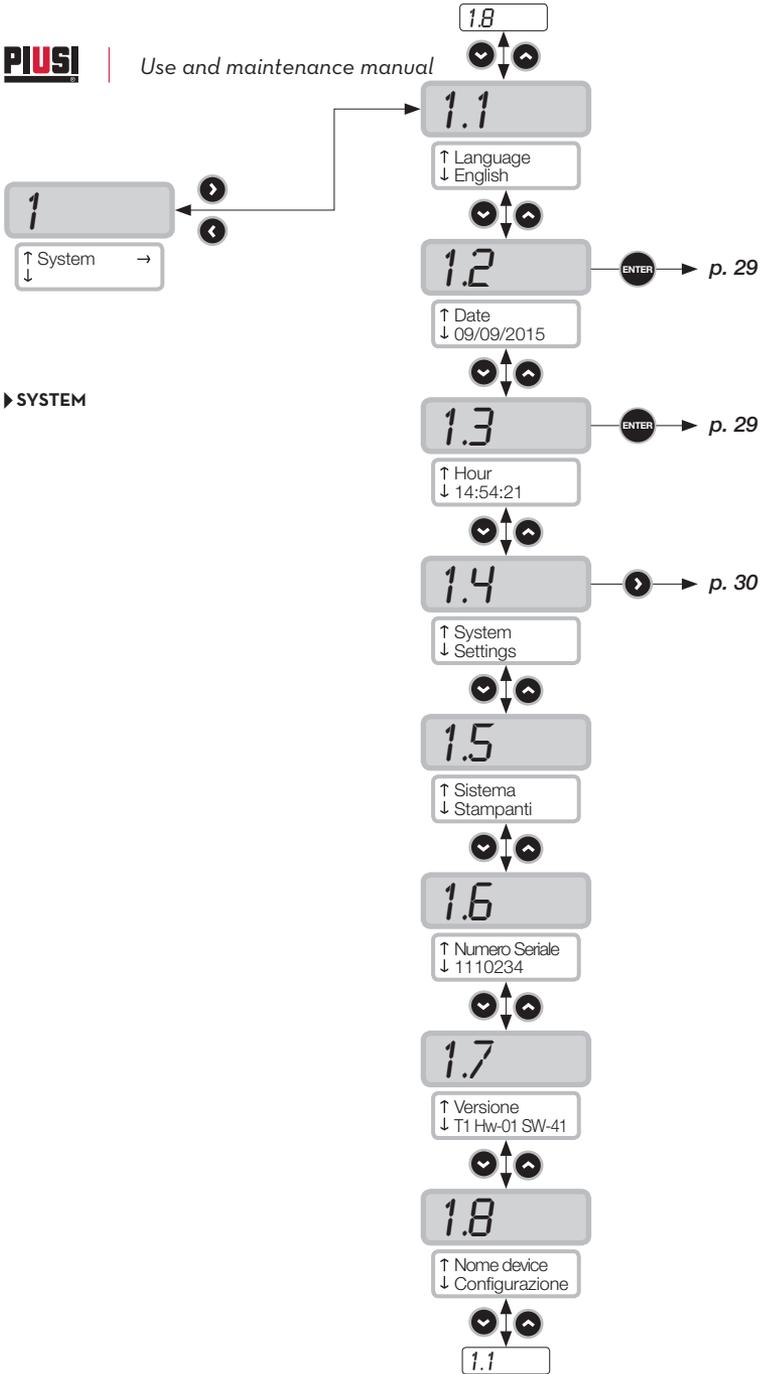
↑ ↓ Keys to scroll through the various submenus at the same level or up/down keys for the numerical values to be entered.

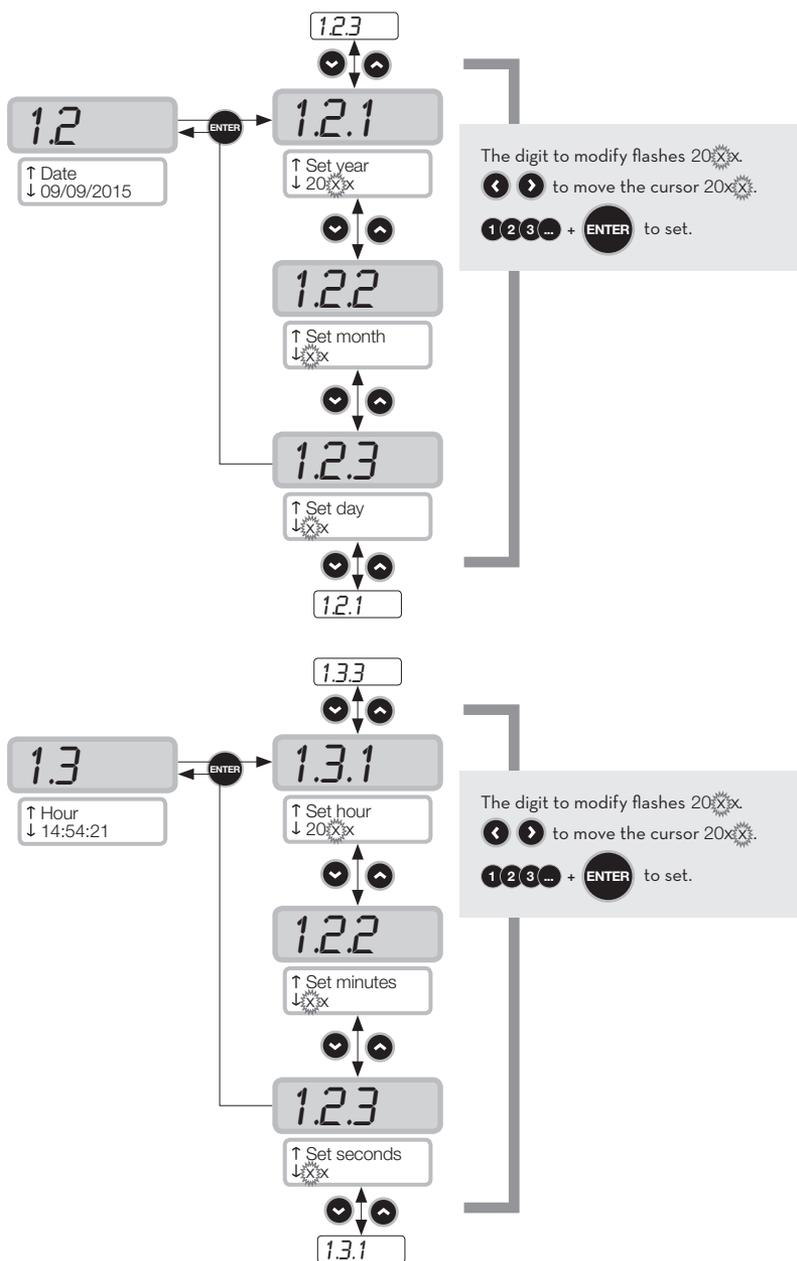
..... Automatic access to the next page.

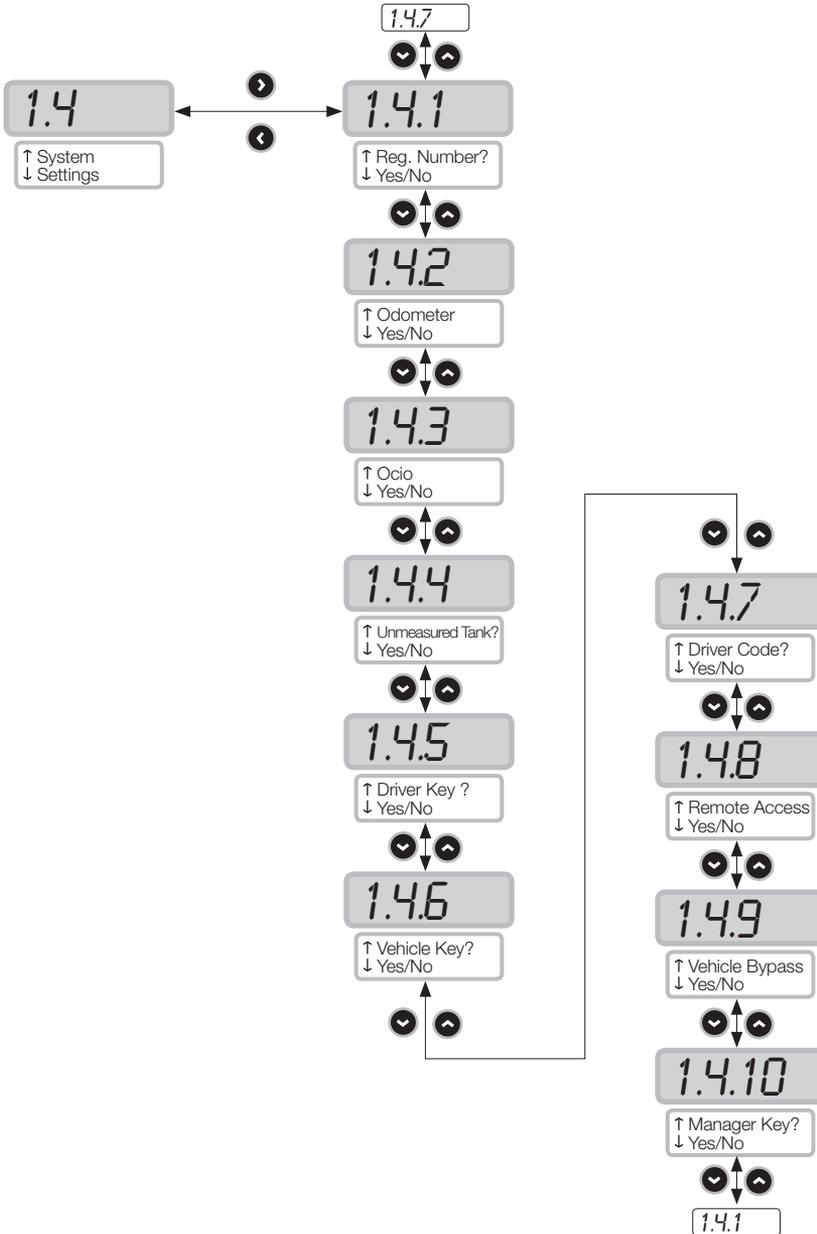
→ Access to the page shown by the button indicated.

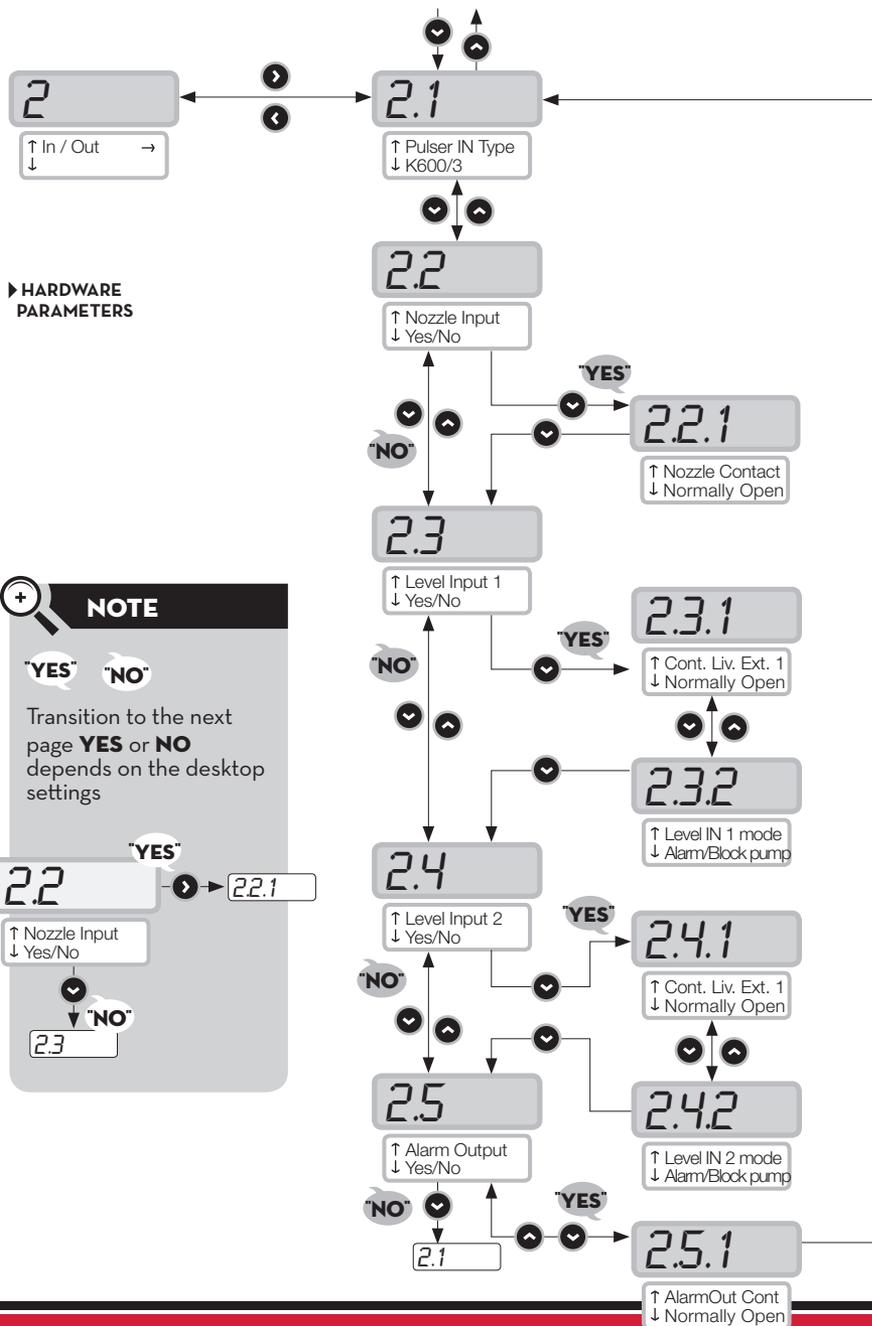
⚡ Blinking

1 2 3 ... Value input with numerical keys.









► HARDWARE PARAMETERS

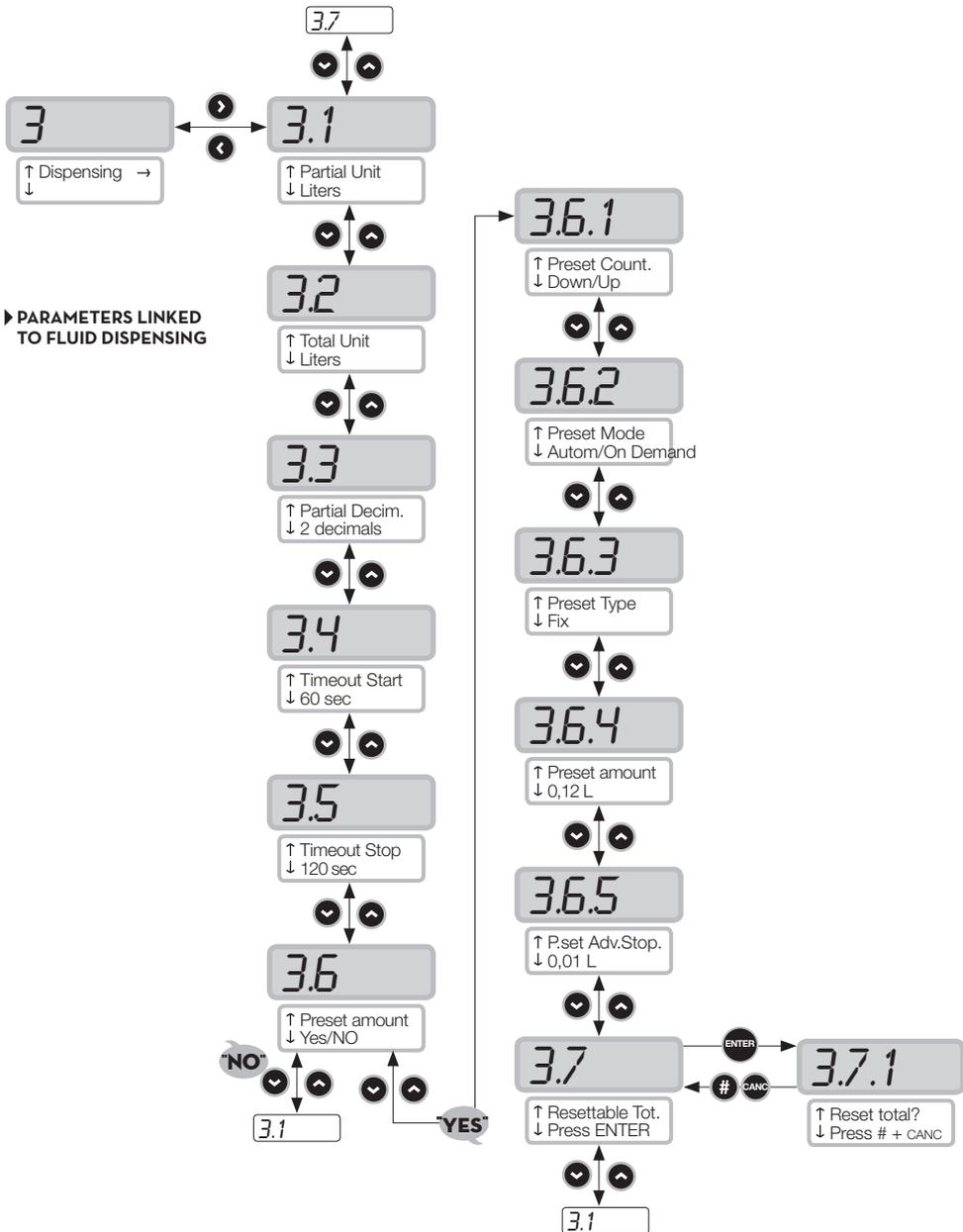
NOTE

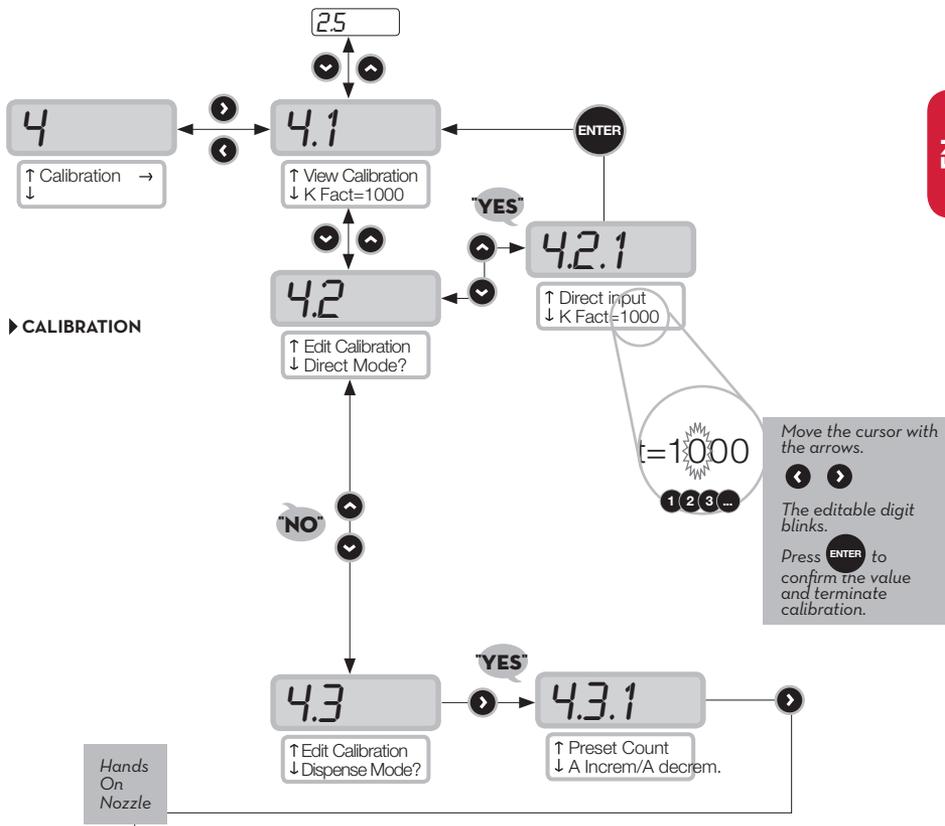
“YES” “NO”

Transition to the next page **YES** or **NO** depends on the desktop settings

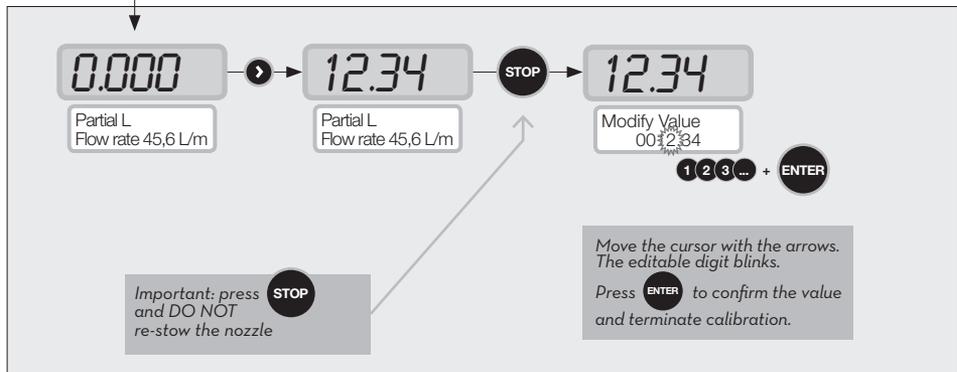
2.2 → 2.2.1 (YES)

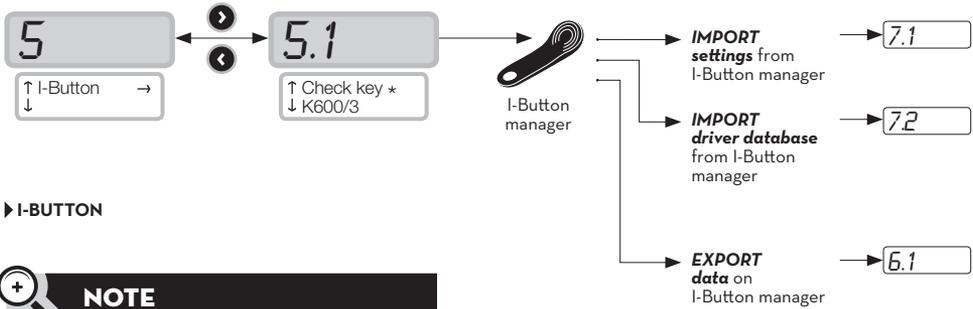
2.2 → 2.3 (NO)





Move the cursor with the arrows.
 The editable digit blinks.
 Press **ENTER** to confirm the value and terminate calibration.





► I-BUTTON

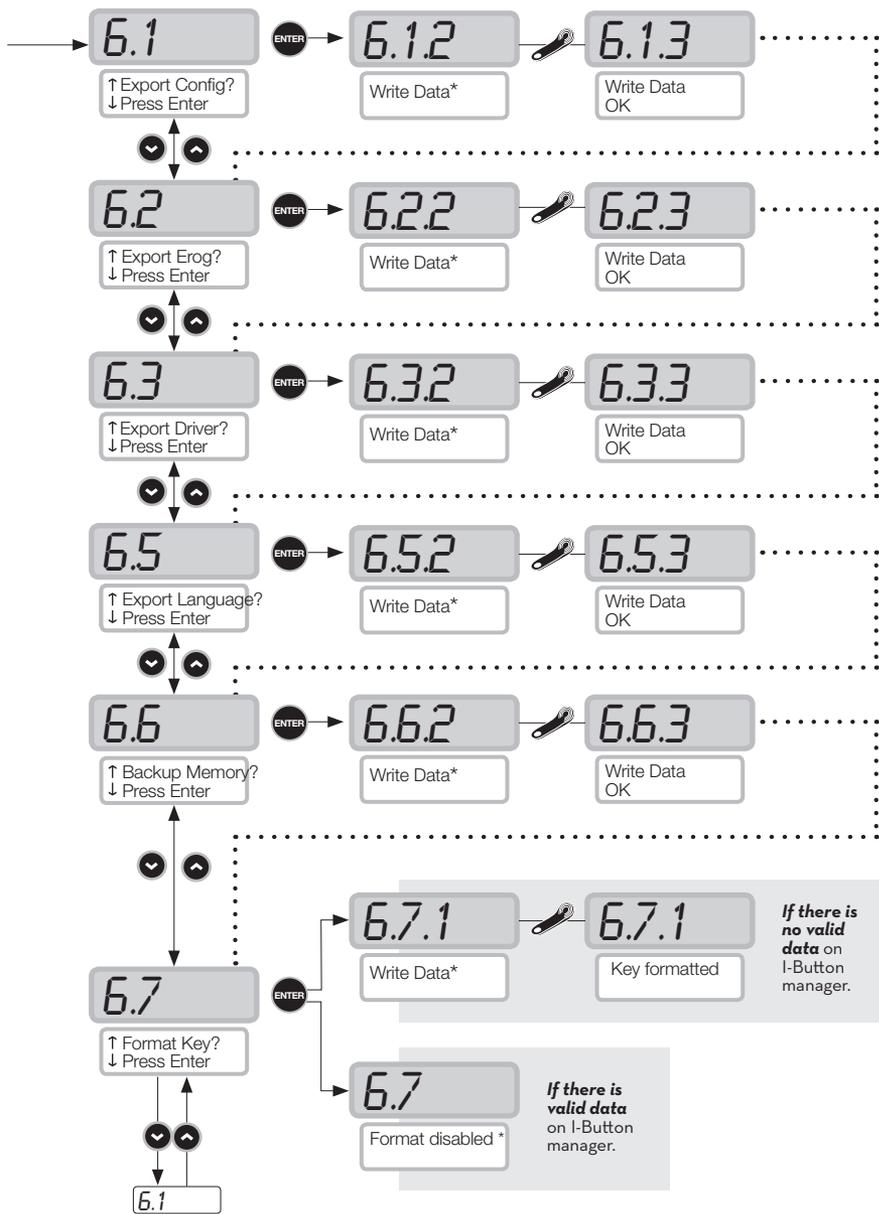
NOTE

Some functions could be available depending on the free memory space in the manager key and on the dimensions of the drivers and supplies databases.



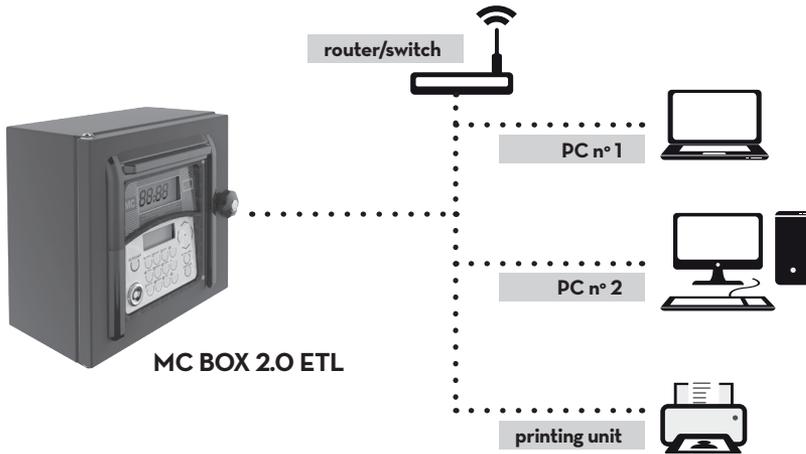
The presence of the asterisk on the display means that the key is not connected; check that positioning of the i-Button on the player is correct.

.....
The hatched line shows an automatic movement from one screen to the other.

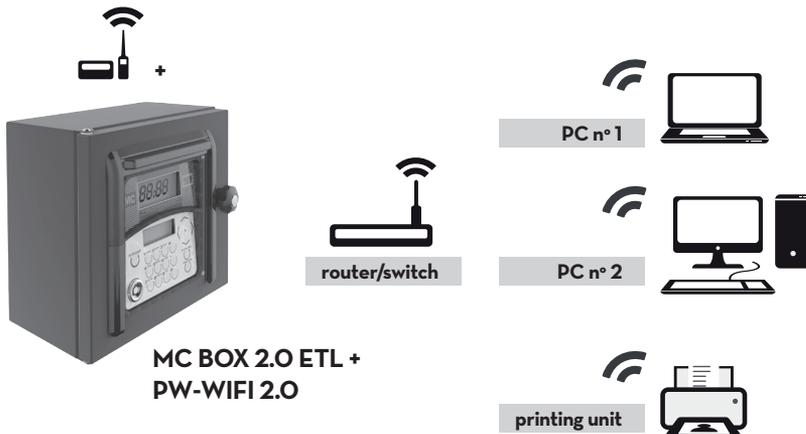


11.7 ETHERNET CONVERTER CONFIGURATION

Possible scenarios This is a possible layout of a typical LAN.



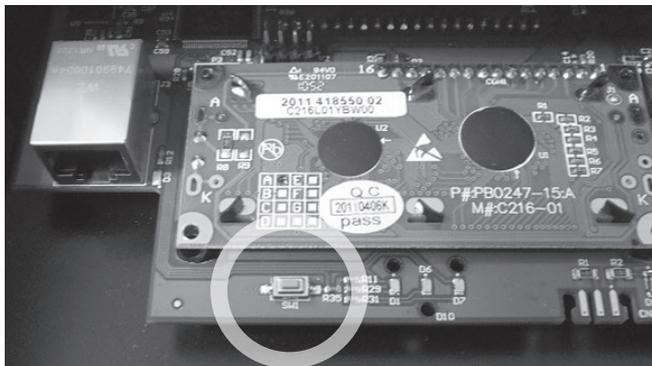
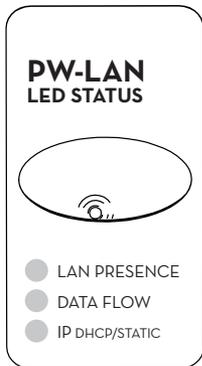
This is a possible layout of a typical Wi-Fi W-LAN.



11.8 LAN GATE LEDS AND CONNECTORS



Open the enclosure containing the electronic control card to gain access to the RJ45 Ethernet connector, monitor the diagnostic LEDs and access to RESET to default switch.



LAN: RESET to default.

- RESET button to restore factory defaults;
- ethernet connector.

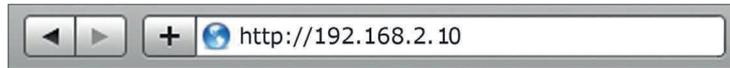
LED	Blinking mode	Meaning
LAN PRESENCE	Steady on	LAN carrier signal present
DATA FLOW	Steady off	NO traffic between microcontroller and LAN
	Slow blinking	Data traffic between microcontroller and LAN
IP DHCP/STATIC	Steady off	Client DHCP mode NOT active, responds to user set IP DIFFERENT from factory set IP 192.168.2.10
	Steady on	Client DHCP mode active, IP address received by DHCP server
	Slow blinking	Client DHCP mode active, awaiting IP address (responds to fallback IP set by user or factory IP 192.168.2.10)
	Fast blinking	Client DHCP mode NOT active, responds to factory IP 192.168.2.10

Access to integrated web-server

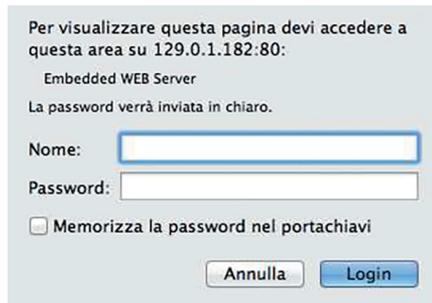
To access to LAN configuration, perform the following steps:

- 1 · Make sure the PC is connected to the PIUSI S.p.A. device via the LAN (or via Wi-Fi);
- 2 · Configure the PC Ethernet card with a static IP address on the same subnet as the device (default 255.255.255.0);
- 3 · Launch the web browser on the PC. Type the default IP address in the address bar. Press ENTER.

Default IP address



- 4 · Enter admin for username with piusipass for the password, and click on login.



- 5 · If the login was successful the PW-LAN configuration page will appear; otherwise repeat the above steps to be sure you performed them correctly.



Configuration page

The LAN configuration interface contains three main pages each of which used to configure different functions of the PIUSI S.p.A. device:

NETWORK

- to configure:
- network operation
 - hostname
 - IP address
 - DHCP
 - subnet mask
 - gateway IP
 - primary and secondary DNS

SYSTEM

manage the administrator account, firmware updates and configuration backup

NETWORK

Network page is used to configure TCP/IPv4 parameters.

MC BOX 2.0 ETL

NETWORK | SYSTEM

Item	Setting
Device Name	PW-LAN-2.0-1169
Management IP Address	<input checked="" type="radio"/> DHCP Client <input type="radio"/> Static
Current IP	192.168.2.10
Fallback IP	192.168.2.10
Netmask	255.255.255.0
Gateway IP	192.168.2.1
Primary DNS IP	1.1.1.1
Secondary DNS IP	1.1.1.1

Device name	specify the device hostname
DHCP	the local DHCP server assigns a dynamic IP address, a gateway IP address and a DNS address to the device (the device functions as client DHCP)
Current IP	specifies the IP address of the device that will be used to access management
Fallback IP	the fallback address the device will use if no DHCP server is found
Netmask	defines the range in which a device is included in a subnet. Netmask 255.255.255.0 (or "/24") is commonly used in class C networks
Gateway IP	this is typically the IP address of the ISP host. It may be an ADSL router, a modem or a WISP router
Primary DNS IP	specifies the primary DNS (domain name system) address of the server
Secondary DNS IP	specifies the secondary DNS address of the server; this field is optional and will be used only if the primary DNS fails to respond

SYSTEM

System page is used to modify the administrator account password.

MC BOX 2.0 ETL

NETWORK | SYSTEM

New password	<input style="width: 80px;" type="password" value="*****"/>
Verify new password	<input style="width: 80px;" type="password" value="*****"/>

New password	prompts user to enter a new password for the administrator account
Verify new password	prompts user to enter the administrator account password again to confirm

12. METER CALIBRATION

Before using the **MC BOX 2.0 ETL** station it is advisable to check the **ACCURACY OF THE FLOW METER** by opening a submenu that offers the following two activities linked to checking or modification of the flow meter/pulsers **CALIBRATION**.

Calibraton display submenu

To display the current **CALIBRATION FACTOR** value. All the flow meters/pulsers installed on the dispensers are factory set for use with the liquid to be dispensed by the unit and the "factory" calibration factor displayed will be "K Fact 1.000". After having performed a calibration procedure, the K Fact value will deviate from 1.000.



WARNING

The calibration procedure optimizes the accuracy of the flow meter. After calibration the K Fact value will be different from 1.000, but it will normally deviate only by plus or minus 5%, so it will remain within the range between 0.950 and 1.050. Greater deviations could indicate that the calibration procedure has been performed incorrectly.

Calibraton submenu

Provides access to another submenu that offers the following two alternative flow meter calibration methods: **DIRECT CALIBRATION** and **CALIBRATION BY DISPENSING**.

DIRECT CALIBRATION

The **DIRECT** calibration method allows the calibration factor (**K FACTOR**) to be changed directly.

This method of calibration can be used when you want to correct the calibration factor by a known percentage in order to compensate for a mean error on the basis of one or more fluid dispensing operations.



WARNING

To calculate the new **K FACT** value always start from the **K FACT** value currently in use.
E.g. if the current calibration factor is 1.0120.

(value obtained following a prior calibration because it is different from the initial default value of 1.0000) and you find that:

- the flow meter gives a reading that is 1.5% higher than the "true" value on average; a new K FACT value able to compensate for this mean error can be calculated as follows: $K \text{ FACT (new)} = 1.0120 * [1 - (1.5/100)] = 0.9968$
- the flow meter gives a reading that is 0.8% lower than the "true" value on average; a new K FACT value able to compensate for this mean error can be calculated as follows: $K \text{ FACT (new)} = 1.0120 * [1 - (0.8/100)] = 1.0200$.

CALIBRATION BY DISPENSING

The DISPENSING calibration method allows the flow meter to be calibrated by dispensing fuel into a SAMPLE CONTAINER.

This calibration method is faster and more practical, and it does not call for mathematical calculations.

The calibration flow can be interrupted and resumed freely, and can be considered to be terminated when the level is visible in the graduated area of the sample container.



WARNING

For properly executed calibration of the flow meter it is essential to use an accurately graduated sample container with capacity of at least 20 litres.

Mandatory procedure:

- bleed the air from the pump, hoses, and flow meter by dispensing fluid until obtaining a full and even flow;
- stop dispensing by closing the dispenser nozzle without stopping the pump;
- do not reduce the flow rate to reach the graduated area of the container.

The correct technique is to start and stop the flow at constant flow rate until reaching the required filling level, attempting to limit the number of times the flow is shut off.

If the value shown on the display differs from the value indicated by the sample container (or TRUE VALUE), correct the value shown on the display until it coincides with the TRUE VALUE. As soon as you confirm the value correction with "ENTER" the system will recalculate the new calibration factor (K Fact). From now on the system will use this new calibration factor.

EN**WARNING**

A single dispensing operation is sufficient to obtain final calibration of the flow meter directly on site. Once the calibration procedure has been performed, check the result periodically to ensure the accuracy of the flow meter remains within the permissible limits.

13. DAILY USE

Thanks to the **MC 2.0** control system, the **MC BOX 2.0 ETL** models provide access to authorised users only. **MC 2.0** acknowledges user authorisation by means of two alternative systems:

- the entering of a **SECRET CODE (USER CODE)**;
- the fitting of an electronic key for user and vehicle.



ATTENTION

All the users to whom a **USER CODE**, or a user key and/or a key vehicle, is assigned must be adequately instructed and be acquainted with the contents of this chapter.

The flexibility of the management system means the user can be prompted to enter optional data: mileage and quantity of fuel to dispense.

In daily use, in consideration of the many parameters that can be configured by the station administrator it's not practical to indicate all possible combinations. However, to simplify, we can identify five different types of dispensing, one free and four with preset quantity.

Dispensing types

- **Free dispensing** with no preset quantity facility.
- **Dispensing with preset** (vehicle key **DISABLED**): (PRESET) pressing button # for two seconds gives access to "ON DEMAND" PRESET which suggests a default quantity (defined by the manager) that the user can modify.
- **Dispensing with preset** (vehicle key **ENABLED**): (PRESET) if full tank is not selected, "ON DEMAND" PRESET is accessed and a user-editable quantity corresponding to the vehicle tank capacity is suggested.

Configuration parameter types

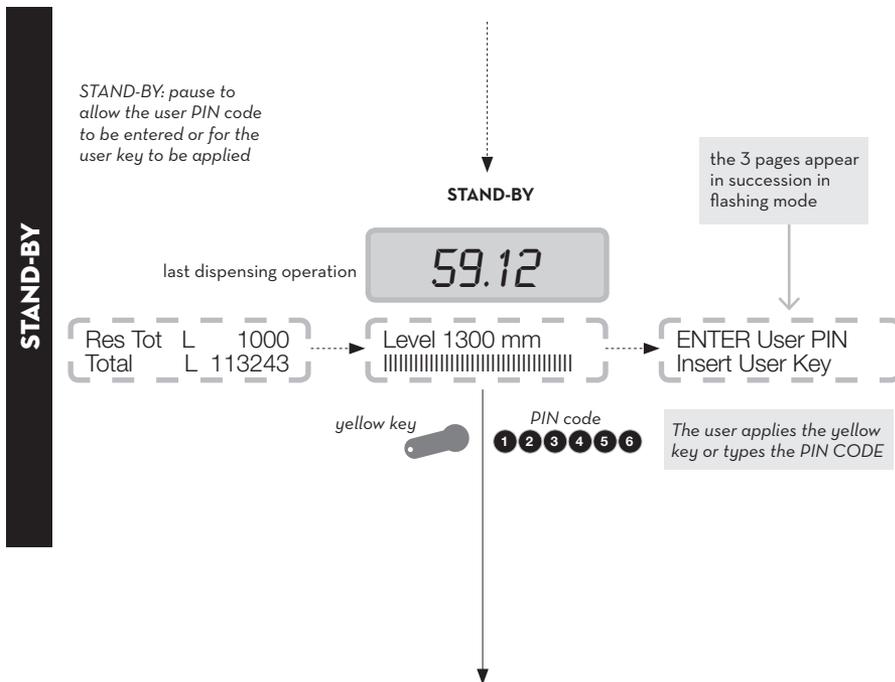
- *Dispensing enabled by an electronic user key (yellow) or by a **USER CODE**;*
- *dispensing enabled with or without electronic vehicle key (blue);*
- *dispensing started or stopped by nozzle contact.*

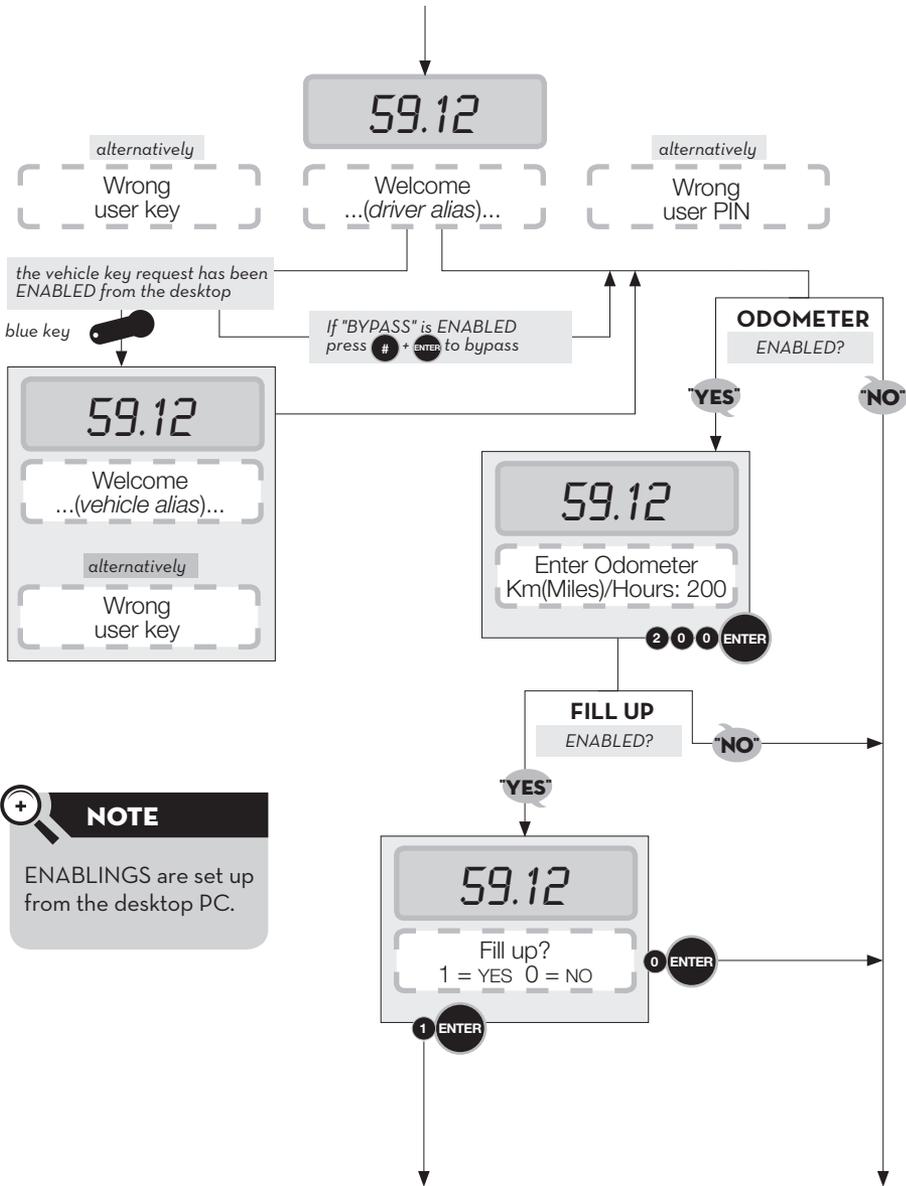
Information that may be required before dispensing commences

· Before dispensing fluid the user may be prompted to provide additional information. The choice of whether to request all details or only selected items depends on the administrator's configuration of the electronic controllers.

For example:

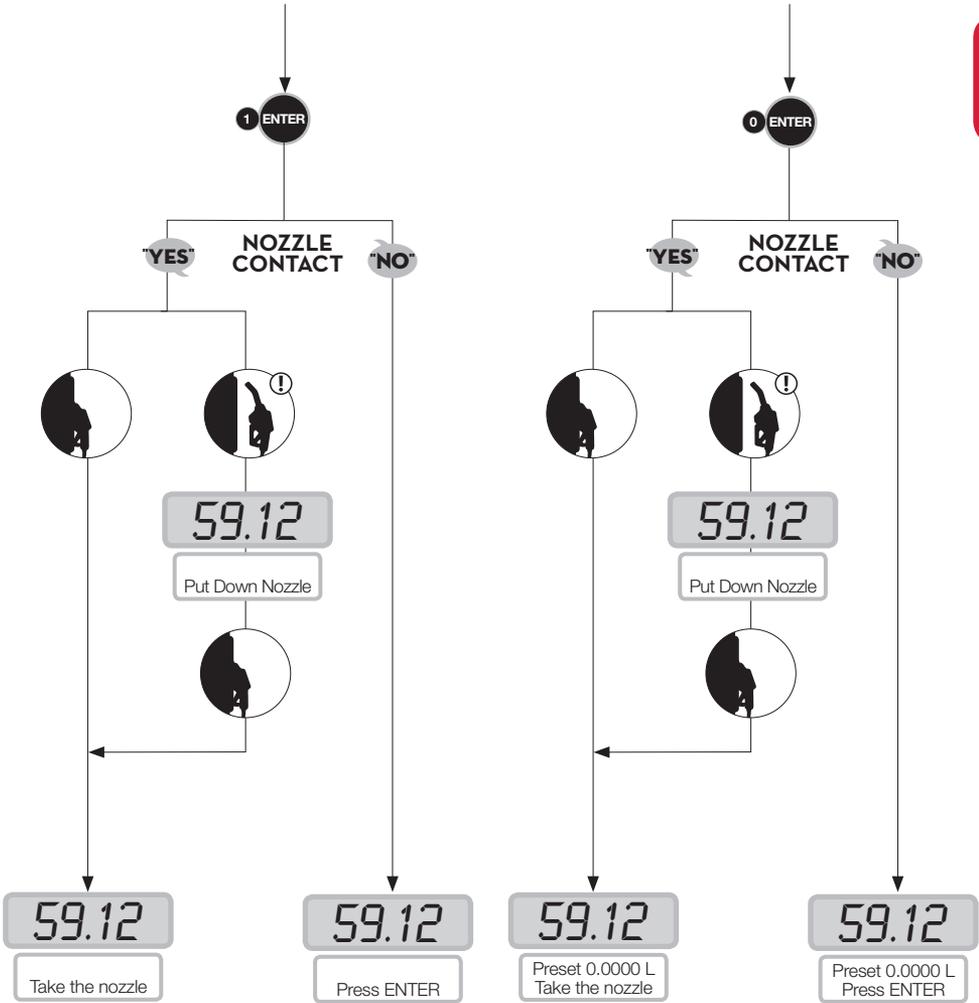
- **Odometer.** The user is prompted to enter the information for either total mileage or total working hours of the vehicle at the time of refueling.
- **Full? Yes/No.** The user given the option to choose full tank for the vehicle. This information is important in order to allow vehicle fuel consumption calculation between one full tank and the next full tank, with a high degree of accuracy.
- **(in No Full Tank case) PRESET:** The user is asked to specify a number of litres to dispense.





NOTE

ENABLINGS are set up from the desktop PC.



Fuel dispensing

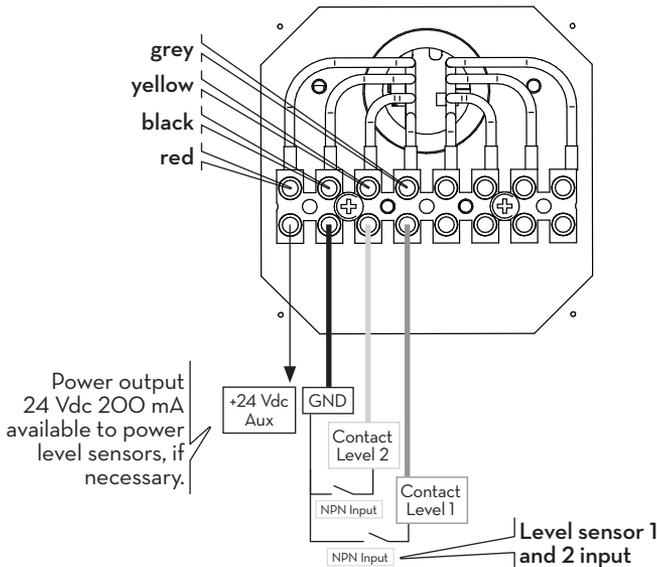


! ATTENTION

Fuel **MUST ONLY** be dispensed under the careful control of the user.

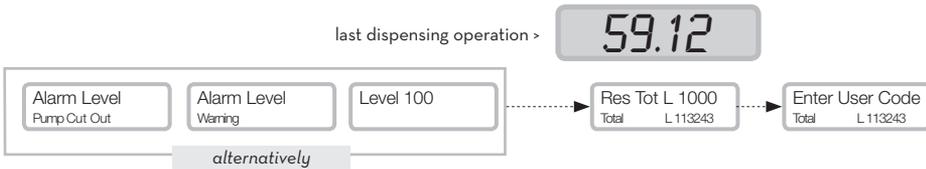
14. TANK LEVEL ALARM STATES

There are two hardware alarms transmitted by the level contracts, which can be installed and connected to the controller terminals. The level contacts wiring diagram is given below (with voltage-free contact).



Depending on the software configuration of level alarms one and two, the following messages will appear on the column in the case of an alarm:

- Alarm 1 or 2: **PUMP CUT OUT** (flashing message on column)
- Alarm 1 or 2: **WARNING**



In the case of alarms with pump cut out message (PUMP CUT OUT) the system is OUT OF SERVICE (dispensing not possible). To override this condition the administrator must gain access via the PC to reconfigure the controller, removing the "pump cut out" condition". In the case of alarms with a WARNING message, dispensing remains possible.

15. BYPASS VEHICLE KEY

The column is configured to prompt for the vehicle i-button always. If the vehicle i-button of the driver can no longer be used, a key combination can be enabled to bypass the vehicle i-button request (pressing the # and ENTER keys together). This option is **disabled** on the column in the default factory setting. The function can be enabled via software (refer to the software manual).

16. ROUTINE MAINTENANCE

MC BOX 2.0 ETL is maintenance free.

17. SUPPLEMENTARY MAINTENANCE



WARNING

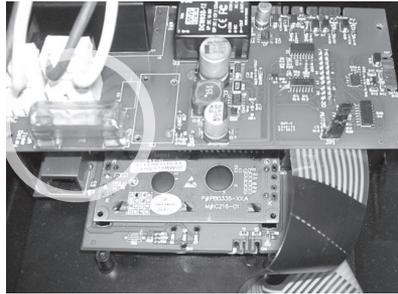


The maintenance of the electrical parts can be done only by qualified installer electrical or electronic. Wear insulated gloves for electrician. Before performing any maintenance make sure to unplug the device from the power supply to turn it off and isolate it from the mains.

To gain access to the fuse you must open the unit and access the parts that are normally live when the system is in use.

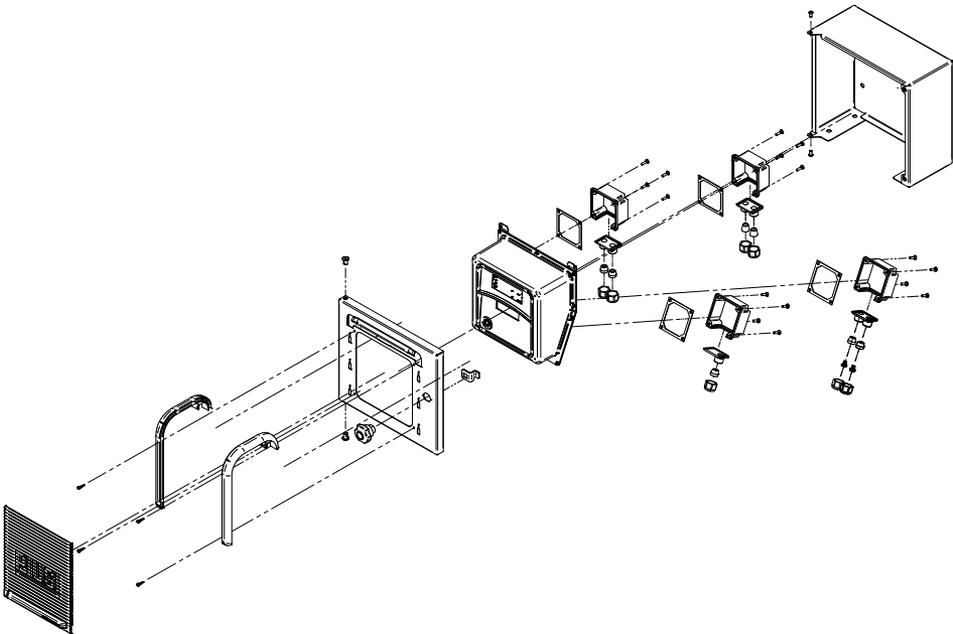
To proceed safely act as follows:

- 1 · disconnect the unit's main electrical power supply;
- 2 · open the metal back panel by undoing the screws to gain access to the electronic boards bay;
- 3 · check the condition of the fuse and change it if necessary.



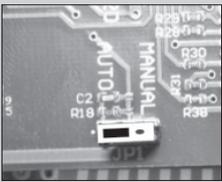
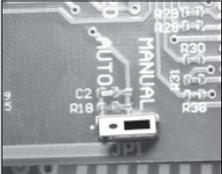
Motor fuse 6x32 mm glass:
20 A T (rit) 250 V

18. MC BOX 2.0 ETL EXPLODED VIEW

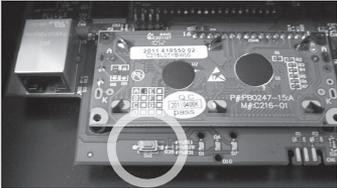


19. TROUBLESHOOTING

EN

Problem	Possible cause	Corrective action
The displays remain blank. Backlighting not active	Unit incorrectly powered	Check mains voltage
	Incorrect electrical power supply connections	Check electrical connections
	Blown power supply unit fuse	Check power supply fuse on electronic control card
Motor fails to start	Incorrect electrical power connections	Check connections
	Motor switch set to OFF	Set switch to ON
	One of the 2 motor fuses has blown	Check the 2 motor fuses on the electronic control card
Card behaves anomalously or fails to generate the motor start enable signal	Incorrect software configurations, problems with the electronic control card	<p>Carefully check all the software settings of the device. Check the number and type of enable signals required for dispensing.</p> <p>Check that all the electrical connections associated with enable signals have been made correctly.</p> <p>If all appears to be in order but the device continues to malfunction and fuel can be dispensed only using the nozzle contact, reposition the jumper that bypasses all electrical enabling controls except for the nozzle contact.</p> <p>Proceed as follows:</p> <ul style="list-style-type: none"> · disconnect the mains power supply from the device · open the metal back panel by undoing the screws to gain access to the electronic boards bay · move the jumper as shown in the figure
		 <p>Electronics ON (AUTO) Factory default</p>  <p>Electronics OFF (MANUAL) Forcing in the event of faults</p>



Problem	Possible cause	Corrective action
IP address problems		<p>Restore the factory default settings by pressing the RESET key</p> 
The display shows the message: "ErrBlock"	The operating parameters have been corrupted. An unrecoverable error has occurred in the data written to the memory.	Reload the factory data by typing 123456 followed by ENTER. The controller will be returned to its default status present at the time of sale.
The display shows the message: "Download Erog" (Blinking)	The internal dispensing memory is full	Connect a PC to download the dispensing data and free up the controller memory
Manager PIN code loss	Operation with active manager key of the device and manager PIN code change needed in case of loss.	Switch the device to LAN operation mode and connect it to the network or, if this is not possible, contact the technical assistance service and request the SUPER MASTER CODE.

20. MANUFACTURER'S DATA - SERVICE
EN

Manufacturer:	PIUSI S.p.A.
Document Type:	General description and instructions for installation, activation, use and maintenance
Edition:	Bullettin MO365A EN
Product:	MC BOX 2.0 ETL
Model:	All the models of the MC BOX 2.0 ETL range
Conformity:	ETL MARK CE MARK (see Declaration of Conformity)
Technical Support:	Provided by the Service Departments of our Authorized Resellers

The information contained in this manual is provided by the Manufacturer, who reserves the right to make changes without prior notice.

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EN. This document has been drawn up with the greatest attention to precision and accuracy of all data herein contained. Nevertheless, PIUSI S.p.A. denies liability for any possible mistake or omission.



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