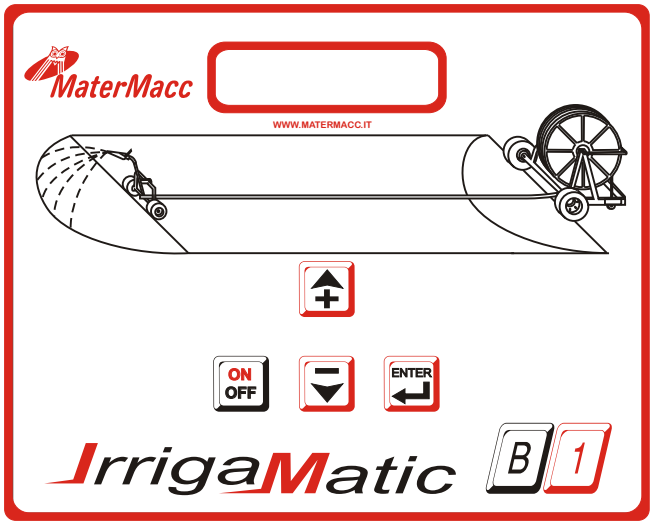
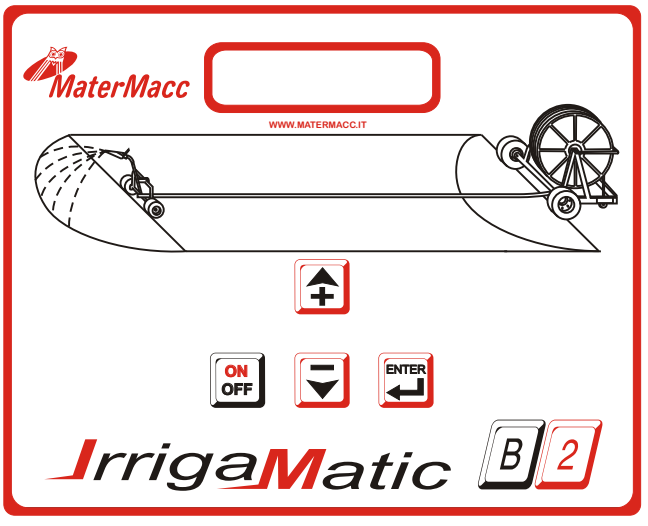
MaterMacc

MANUAL FOR USE AND MAINTENANCE IRRIGAMATIC B1 - B2





Carefully read this Handbook before using the centraline

Matermacc S.p.a.

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INTRODUCTION

This manual guide contains a description of the work and the necessary instructions for performing basic operations and regular maintenance of the device.
This guide is for convenience divided into easily-defined chapters.
These instructions are intended for professional users only, who are to possess specific knowledge about how to use the device, special admittance and training.

It is recommended to use original spare parts and accessories. Non-original parts in addition to forfeiture of the guarantee can be dangerous and may affect the durability and specifications of the machine.

This symbol indicates that it is necessary to pay maximum attention to the discussed issue.

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It is possible that some devices, described in the manual, will not be present in your device, depending on the selected equipment and the intended market .

UPDATING THE MANUAL

Information, descriptions and illustrations contained herein shall reflect the state of the equipment at the time of its sale.
The manufacturer reserves the right to perform from time to time possible changes in the equipment for technical or commercial reasons. Such changes do not require the Producer to intervene in sold up devices and do not render this publication inappropriate.
Possible additions the manufacturer finds necessary to provide in the future should be kept together with this manual guide and shall be an integral part thereof.

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WARRANTY

Verify on delivery that the equipment has not been damaged during the transport and that the accessories are integral and complete.

Any claims must be made in writing within 8 days from reception.

The warranty against any defect of the materials is valid one year from the delivery date of the equipment.

The warranty does not include shipment expenses (the material travels at risk and danger of the addressee).

Any damage caused to people or things are excluded from the warranty.

The warranty is limited to the repair or free replacement of the faulty piece.

The retailers and the users are not entitled to any indemnification from the manufacturer for any damages (costs for work, transport, defective job, direct or indirect incidents, no profit on harvests, etc). .

WARRANTY DECLINE

Besides what is reported in the supply contract the warranty declines:

In case the limits referred to in the technical data table or in other tables in the handbook are exceeded.

In case the instructions described in this handbook have not been followed carefully.

In case of wrong use, faulty maintenance or mistakes made by the client.

In case of non original spare parts.

The contractual guarantee is not applied if the cited conditions are not respected even only partially.

The use of spare parts not approved by the Manufacturer invalidates every guarantee and releases the Manufacturer of Retailer from every liability due to malfunctioning or incidents.

The removal or modification of the shelters and protections releases the Manufacturer from every liability due to damages to things and/or people.

However, the Manufacturing Company is available to assure an immediate and accurate technical attendance and all that can be necessary for the better functioning maximum production of the equipment.

NOTES ON SAFETY

For the safe operation of the device first read carefully these notes.

Power supply

The device is designed for the specified type of current.

Maintenance

Maintenance procedures performed by the operator are described in the documentation supplied to the customer with the product.
Do not perform maintenance operations, which are not specified in the client documentation.

Cleaning

Before proceeding to cleaning, disconnect the power cord from the device.
Use specific multifunctional cleaning spray, since the use of other cleansers may result in breakage and possible incidents.

Electrical safety

Use only the power cord supplied with the equipment.
Do not place the unit where there is a chance of stepping on the power cord.
Do not put any objects on the device.
In the case of one of the below mentioned situations, immediately turn off the device and disconnect the power cord.

The device produces noise or an unusual smell.
Power cable is damaged or worn.
Some liquid spilled into device.
Any part of the device is damaged.

To resolve this issue, contact an authorized service center.

Operational safety

Do not perform maintenance procedures, if they are not described in the documentation, or no training was provided to the operator by the authorized regional dealer.

Always follow all warnings and instructions marked on the device or supplied with it.

Always pay utmost care when moving or transferring the device.

Always install the device in a spacious room, so you can perform the maintenance.

Do not place the device near a source of heat .

Recycling and processing

In accordance with European standards electrical and electronic devices should not be recycled together with domestic waste.
In the member states of the European Union you are to take electrical appliances to special places free of charge . For further information please contact the local agency responsible for recycling.

For further information, contact the local agency responsible for recycling, or ask for special instructions.

INDEX

1 GENERAL FEATURES

FUNCTIONS

- **Current date and time**
- **Measurement of unwound and woundup tube.**
- **Working speed adjustment (from 5 up to 250 m/h).**
- **Irrigation time and work end time**
- **Operations of " winding up over" (By-pass open).**
- **Automatic switching off to save energy**

OPTIONS

- **Connection to pressure switch**
- **Speed measurement by feeler roller**

2 GENERAL TECHNICAL DATA

Microchip UProcessor PIC18f4682

Display LCD with back light

Controls: by means of 4 buttons

Inputs:

Digital type:
Speed sensor (on roller or on pinion)
Sensor of end of unwinding
Sensor of end of winding up.
Pressure switch

Analog type:
Battery monitor

Outputs

Digitaltype: 3A relay for aux functions

Modulated: 1 H-bridge max 3A to pilot
Bypass valve

Connections: set up for serial connection

Power supply 12V dc to battery

Op range: -20 70° C free air

Temp and humidity Room temp -5...25° C; T. Storage t. 30...70°C; RH % 10...60 condensation free.

2.1 DESCRIPTION OF THE EQUIPMENT

Switching
electronic console on or off

Increases the value of the functionbeing displayed

Decreases the value of the function being displayed

Confirmation of the value

3 MODALITY OF USE

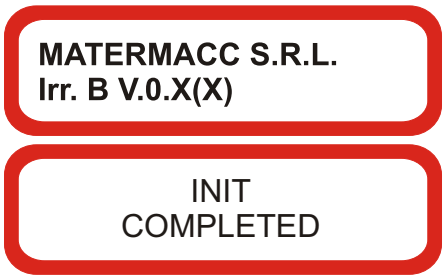
3.1 EXECUTION OF THE IRRIGATION CYCLE

Below please find a full description of the process by assuming that the hose reel irrigator has already been positioned on the field and the IRRIGAMATIC 2K7-B1 or B2 electronic console has been duly calibrated.

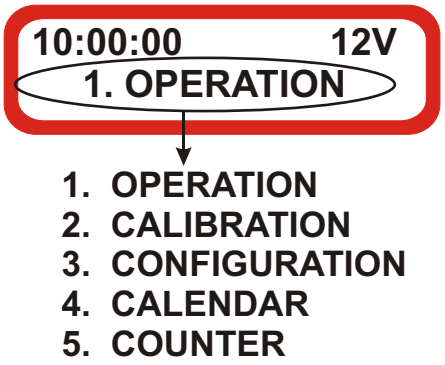
1 SWITCHING THE electronic console ON

1.1 Connect power supply cables of electronic console to a 12V d.c. voltage source

1.2 When switching **electronic console** on the LCD will display name and version of its Firmware.



The electronic console then goes to standby waiting for new commands by the user who can access the menus listed below:



2. SETTING AN IRRIGATION CYCLE

3. Before starting to unwind the hose, select the menu **(1. OPERATION)**.

The OPERATION menu permits to set the irrigation cycle values.

- Tube unwinding
- Irrigation start pause
- Windup speed

3.1 To scroll the menus press keys  or 

3.2. Press key  to access the chosen menu.

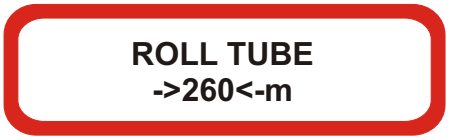
Once unwinding is complete, the electronic console displays the number of tube meters unwound.

4 In order to modify this value, if necessary, proceed as follows: 

4.1 Press key , the following will

4.2 Modify the value if needed by acting on keys  or  .

4.3 Confirm by pressing  , the following will be displayed for example:



5. Proceed by pressing  , the following will be displayed for instance:

6. The START TIME field cannot be modified.

7. Proceed by pressing  the following will be displayed for instance:

7.1 Modify the starting pause value if necessary by acting as below:

7.2 Press ENTER, the value becomes editable to indicate the time can be modified:

7.3 Modify the value by acting on keys + or −.

7.4 Confirm by key ENTER.

8. Proceed by pressing +, the following will be displayed as a default:

8.1 Modify if necessary the windup speed value by proceeding as follows:

8.2 Press ENTER, the value becomes editable to indicate the time can be modified:

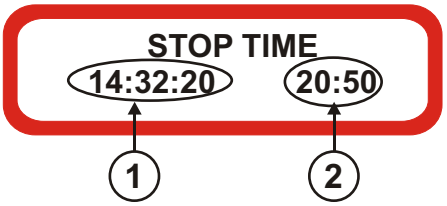
8.3 Modify the value by acting on keys + or −.

8.4 Confirm by key ENTER.

9. Proceed by pressing +, the following will be displayed:

1) current time

2) time expected for work over based on the tube meters to be wound up and to the set windup speed



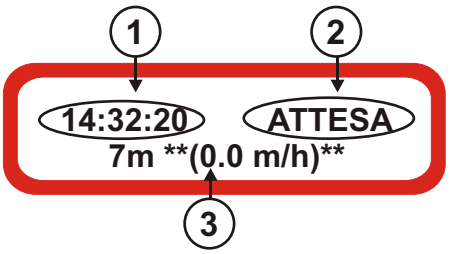
10. Start the irrigation cycle by holding key ENTER pressed for 5 seconds.

The following will be displayed:

1) the current time on the top line left,

2) the current work stage further to the right (for example "STANDBY" if it is waiting for the starting pause to elapse);

3) if it is in standby, the bottom line will display alternately the tube meters already unwound and the current windup speed:



11. To block the display at speed, meters remaining or time until end of work, press the + or − keys.

The display continuously shows the selected size between the symbols >< .

12. To change the rewinding speed during the irrigation cycle, press the key ENTER.

The display shows the speed currently set next to an asterisk.
Change the value with keys + or − and confirm with the key ENTER.

The display goes back to the original screen.

13. To temporarily accelerate or decelerate hose rewinding, press the keys +

(Accelerate) or − (decelerate) for at least 2 seconds.

5.1.1 DESCRIPTION OF THE IRRIGATION CYCLE

Below please find the description of the evolution of a typical irrigation cycle from pressing key 

.

1. BYP valve initialized to guarantee the starting speed is zero (BYP open)
2. Waiting for the irrigation start time
3. Initial pause: Irrigation starts with BYP valve open.
4. After the pause time has elapsed the trolley is recovered and the system begins Adjustment.
5. The recovery process ends with the signal of end of winding up for model B2: the BYP valve is opened completely to guarantee ZERO speed and the electronic console displays “OVER”; for model B1 The cycle substantially ends with an error of trolley lost.
6. The IRRIGAMATIC 2K7-B1 or B2 electronic console goes to standby after a programmable lapse of time.

3.2 Menu “2.CALIBRAZ.”

!!! ATTENTION !!!

The calibration menu is password protected.
It is accessible only to the hose reel irrigator manufacturer.

3.3 Menu "3.CONFIG"

!!! ATTENTION !!!

The calibration menu is password protected.

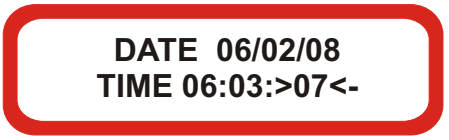
It is accessible only to the irrigator manufacturer.

3.4 Menu "4.CALENDAR"

Choose calendar menu

The date format is Day / Month / Year
The time format is Hour / Minutes / Seconds

1. As you enter the calendar menu, you will see: the pre-set time and date.



2. All data may be modified by pushing enter, 

the double harrows will move up to every Shown data.
3. In order to modify them, push  or  .
4. Confirm the set value by acting on key 

.
5. Repeat the same operations for the other fields you wish to modify.
6. Once the editing is over hold key 

. pressed for 3 seconds
The electronic console returns to menu 

(1.OPERATION) .

3.5 Menu "5.COUNTERS"

This menu permits to display the total and partial counters of the hours of work and to set the partial counter to zero.

1. To access it act as specified in par. Page 03 (common to all menus), the electronic console will display for instance:

2. To begin set the counter value hold key 

pressed for at least 3 seconds
until the value is set to zero:

3. To quit keep pressed for about 5s 

, the will return to menu **(1. OPERATION).**

3.6 Menu "6.TEST & MAN"

This menu allows you to perform the test of the control unit inputs and to activate the bypass valve motor manually.
The top line of the display shows the symbols of the terminals: M2 = speed sensor, M3 = work end sensor (only B2), M4 = bypass, M6 = unwinding end sensor, M7 = pressure switch.
To activate/deactivate the digital inputs of the control unit, open and close the contacts.
The bottom line shows the state of the relative input: 0 = NOT ACTIVE, 1 = ACTIVE. To activate the bypass valve motor,
press the keys  and  .

The absorption percentage appears on the bottom line.

4. IRRIGAMATIC OPERATION

The device operation is connected with several factors characterizing the irrigation process.

4.1 LENGTH OF THE SECTORS

The IRRIGAMATIC 2K7-B1 and B2 electronic consoles permit to irrigate a single sector.
The length of the sector can be set by the user bearing in mind that:

LTot = total length of the unwound tube.

Generally speaking we shall consider that:

The irrigation cycle is over when the sensor of end of winding up receives the right signal, in the negative it ends when the end of winding up has been reached.

4.2 USER'S PARAMETERS

4.2.1 USER'S CONTROL PARAMETERS

The control parameters the user can set at the beginning and/or during an irrigation cycle are the ones summarized in Tab.1

Nr. of	Parameter	Description	M.U.	RANGE	DEFAULT
1	UNW. TUBE	M of tube unwound before starting to work	M	**0...1500**	
2	BEGIN TIME	Time when the irrigation cycle should begin	hh:mm	Current time	
3	BEGIN PAUSE	Starting interval for irrigation on field edges (v = 0 => BYP open)	mm	**0...120**	**5**
4	SPEED BACK	Speed for trolley return for a single sector available	m/h	**0...250**	**30**
5	END TIME	Time calculated based on 1).2) 3) 4)	hh:mm		*calculated CANNOT be modified

USER'S PASSWORD PROTECTED PARAMETERS (1 1 1 1) SETTING UP

#	Parameter	Description	Range	Default	UM
47	Measure_units	Measure units in use This parameter is also visually from the end user if endowed with password.	0 = meters 1 = feet	0	

5 BASIC CONFIGURATION OF THE MACHINE

5.1 FUNCTION AND OPERATION OF THE BY-PASS VALVE

The adjustment is made by keeping the instantaneous and average speed into account .
At startup the adjustment is made only based on the instantaneous speed until this speed exceeds the setup speed
The initial sequence includes valve opening in order to make sure the trolley is still:
from "BYP -" to "BYP open"

While the adjustment is made "ADJUSTMENT" or "BYP +/-" will be displayed

If during adjustment the end of stroke is reached an error warning shall be provided.

5.2 PRESSURE SWITCH FUNCTION

The pressure switch is NOT always provided.
This shall be kept into account when initially configuring the IRRIGAMATIC 2K7-B1 and B2 electronic consoles upon their installation on board the machine.
This will stop the irrigation cycle if the pressure in the tube falls down to 2 atm.
If pressure decreases for more than 2s the electronic consoles position the BYP valve at cycle start in order to prevent any dangerous situations should the pressure go back to normal.

ERROR MESSAGES

The electronic console keeps a list of the last 6 error conditions which might arise.
The error messages are displayed in a sequence on the first line of the LCD alternatively to the other messages being displayed such as for ex:

These blinking messages indicate for instance that there has been a short circuit in the BYP control circuit and then a trolley has been lost.

The table below indicates the exceptions that might take place during an operating cycle and the relevant messages being displayed.

The list of the events aims at indicating a sequence of the errors which have taken place to help the servicing staff to understand the events that took place should the machine be out of order.

#	Type	Description	Conditions	Action	Lock	Suspension
4	SC on BYP valve	A short circuit has been detected on the control circuit of the BYP valve			NO	NO
5	Timeout on BYP valve opening				YES	NO
6	Speed adjustment limit	The BYP valve end of stroke has been reached without reaching the preset speed			NO	NO
7	Trolley lost	No pulses for some time(par. C#8 and par. C#9)		If no pulses are received for a time of c°8 an average speed will be set that will be measured at the min. threshold (set by par #M12) in order to force long pulse transmission for BYP valve control.	NO	YES
				If there are no pulses for a C#9 time despite long pulses being sent, the cycle will be locked.	NO	
9	Zero pressure	Detection of zero pressure in the tube	Only if the pressure sensor exists (par C#13)	Time isteresis of the relevant digital input is 30s	NO	Yes(waiting for pressure to return)

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Note:

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