DOSA BOX™

junior automatic

MANUAL

irritec®

INDEX

1. SAFETY

All the safety instructions must be applied.
• Make sure that the installation is performed in a way that prevents the leakage from the **DOSABOX JR. AUTOMATIC** of fertilizer / acid, contaminating the environment, the soil or the surrounding area.
• The electrical installation must be performed by a qualified electrician.
• The electrical system must be in compliance with the local applicable safety standards and rules.
• The installation shall be performed by authorized persons only.
• The protection provided by the equipment can be compromised if the device is used in a different way than the one specified by the manufacturer.

2. DESCRIPTION

DOSABOX JR. AUTOMATIC is a simple and modular fertigation system.
It is suitable both for greenhouses and open field. Its operation is based on the injection of fertilizer by a set of injection pumps using the Venturi system.
It is already supplied to be connected to any preexisting irrigation line. It is equipped with a EC/PH/Temp display.

DOSABOX JR. AUTOMATIC has 2 different selectable operation modes.
Proportional dosing: dosage of fertilizers in proportion to water flow-rate (requiring a flow meter with pulse emitter on the main line).
Volumetric dosing: dosing of a volume of fertilizer per hour.

3. ADVANTAGES

• Minimum investment
• Efficient use of fertilizers and power
• Designed for all applications that require volumetric or proportional fertigation
• Venturi operation principle - without moving parts
• Venturi with high suction capacity and low power consumption
• It works easily with any existing irrigation system
• High precision dosing channels
• Rapid-action dosing valves
• Available with 3 dosing channels
• Fast and user-friendly programming
• High quality components and PVC pipes
• Corrosion resistant 304 stainless steel frame
• Easy to install and maintain

4. SPECIFICATIONS

DOSABOX JR. AUTOMATIC ensures a good mixture of a wide range of flow capacity.

Example:
It can handle the dosage of fertilizers on a small nursery of 0.1 hectares or 200 hectares of tomato in an open field.
Proportional dosing: minimum 0.1, maximum 1.0%
Volumetric dosing: minimum 50 l/h, maximum 500 l/h

For the applications where the pressure of the main line is between 1.5 and 5.0 bar

The pressure difference to ensure the operation of Venturi injectors is generated by the suction pump integrated in the **DOSABOX JR. AUTOMATIC**.
Standard model: 3x500 l/h 4 or 5 bar (for other flow rates and pressures, please contact Irritec technical department)

5. INSTALTION

We recommend to install **DOSABOX JR. AUTOMATIC** on solid and flat land, away from intense cold and direct sunlight in order to avoid the corrosion of the electrical and hydraulic parts. **DOSABOX JR. AUTOMATIC** must be connected to a by-pass system (only part of the water flows through the system) by two offtakes on the main line before and after a safety filter. The suction of the water is after the filter and pumped back before the filter in order to improve the dilution of the salts and to protect the system in the case of any residues of fertilizer. (See fig. 01)

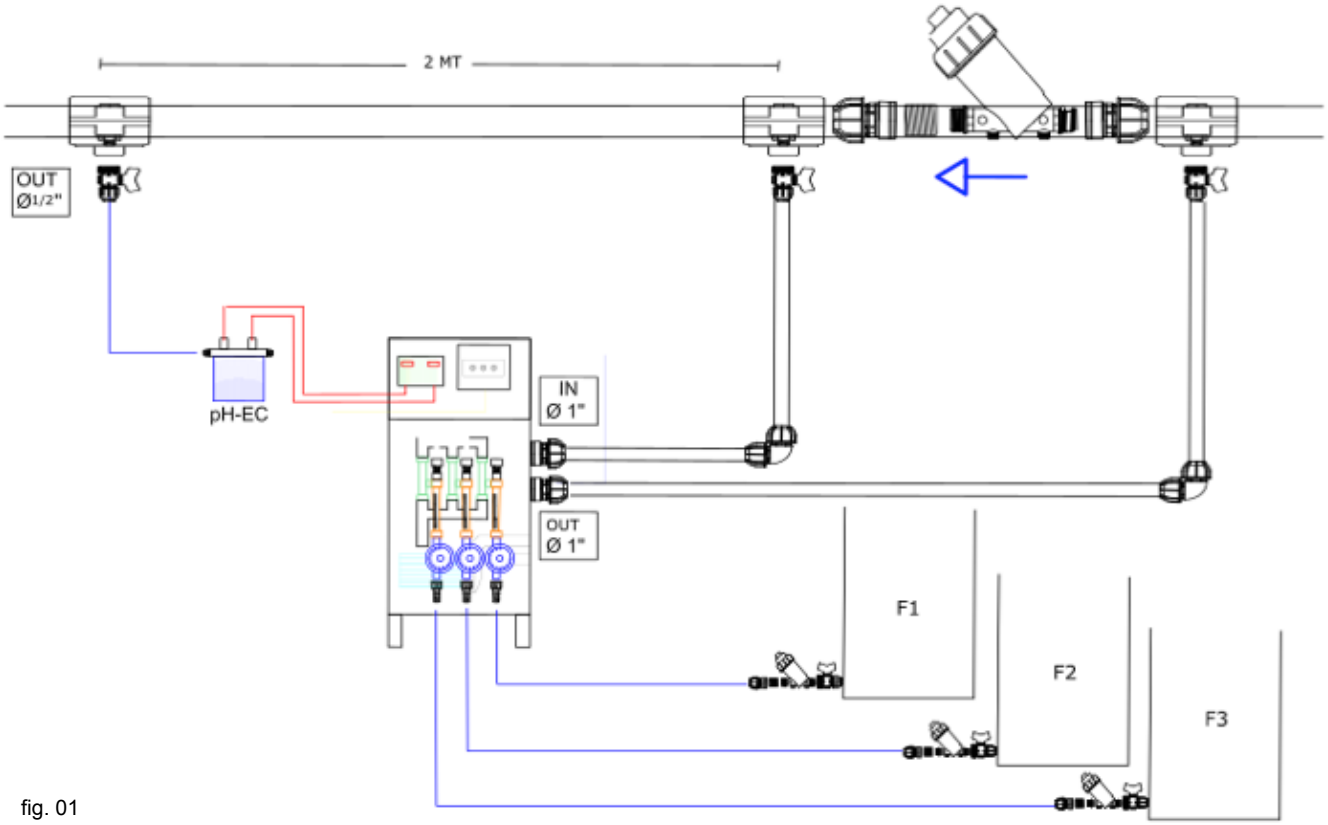


fig. 01

Connect the **DOSABOX JR. AUTOMATIC** to the irrigation system using two 1” threaded fittings. The water enters from the 1” female threaded fitting and exits from the 1” male threaded fitting. (See fig. 02)

fig. 02

Connect the 1/2” valve of the probe holder 2 meters away after the safety filter in order to ensure a constant reading, The output of the probe holder is already connected to the suction pump to avoid the waste of water and fertilizer. (See fig. 03)

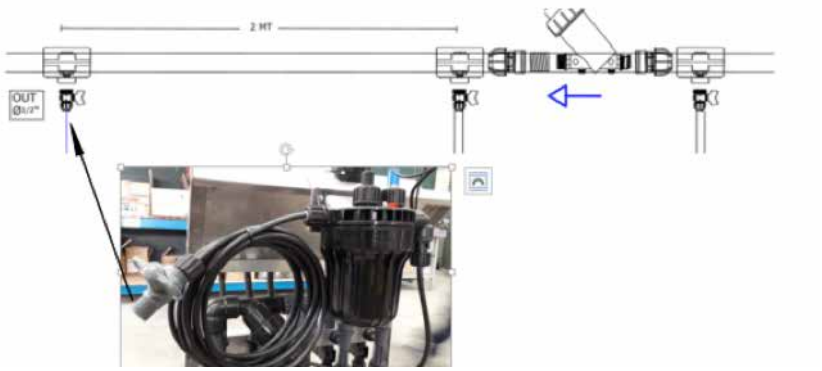


fig. 03

5.1. CONNECT THE FERTILIZER TANKS

Provide the tanks with a valve and safety filter and connect them to the suction pumps using corrosion-resistant pipes. (see fig.04) Connect the tanks to the solenoid valves through the special insert coupling (Ø16), tighten the tube with a clamp and mark the tubes with number of the corresponding valve (1.2.3)

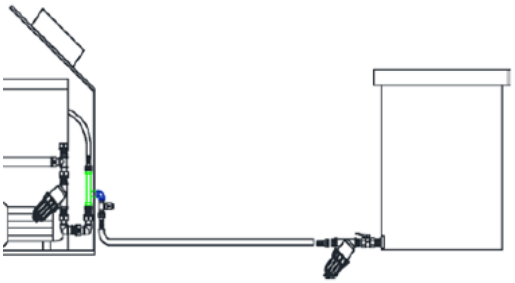


fig. 04

5.2. ELECTRICAL CONNECTIONS

Open the electric panel of the **DOSABOX JR. AUTOMATIC** using a screwdriver, connect the power supply (single fase) to the thermal-magnetic circuit breaker. (see fig. 05)

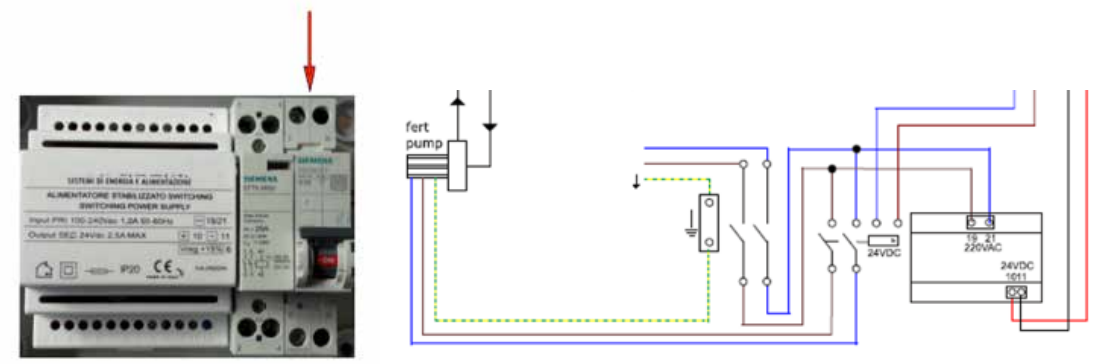


fig. 05

Connect the power supply of the pH/EC display to an electrical source. (see fig.06)

fig. 06

Connect the volumetric water meter to the white/brown wires coming out from the electric panel.

Important: in the volumetric version instead of the water meter an on/off switch or a remote control can be connected to startup the system.

6. PROGRAMMER

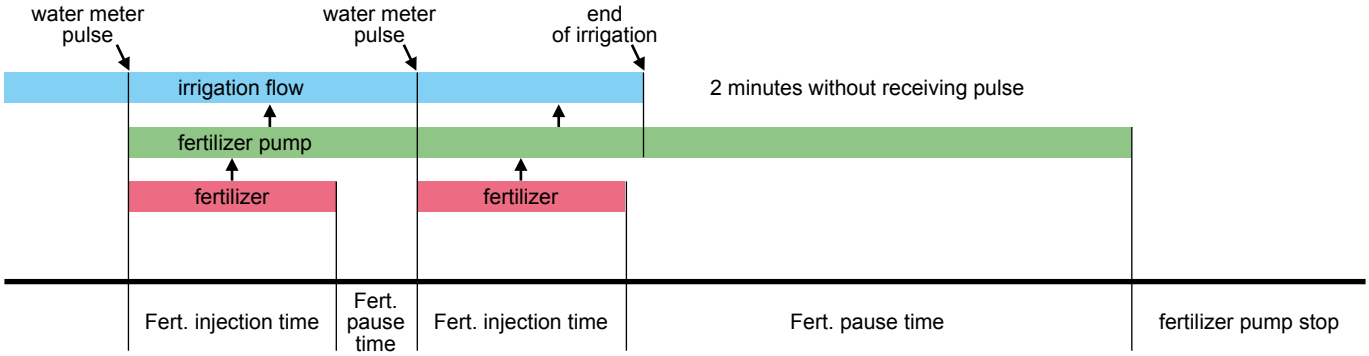
COMMANDER NPK is the strongest point of the Il **DOSABOX JR. AUTOMATIC**. Very easy programming, there are no buttons neither display or configuration menus. You just need to turn the three knobs to the desired position to select the percentage of fertilizer to be injected.

PROGRAMMING
Turn the knobs to the desired position.
Set the flow of each single fertilizer by the appropriate needle taps. This operation is important to stabilize the reading of the pH/EC values (see fig. 07).

fig. 07

OPERATION

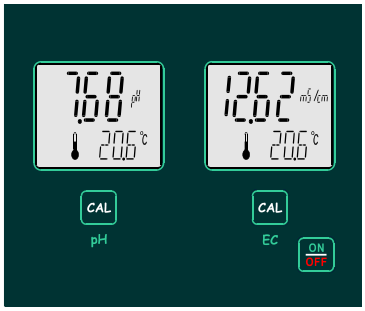
DOSABOX JR. AUTOMATIC will start automatically with the first impulse of the flow meter installed on the main line. The fertilizer channels will start to work at each pulse of the volumetric flow meter keeping the percentage of suction set for the whole duration. The **DOSABOX JR. AUTOMATIC** pump will stop automatically if the time between the first and the second pulse is more than 2 minutes. The manual position (MAN) starts the selected channel and the master pump for 2 minutes. The Power LED indicates electric power supply; The alarm LED indicates insufficient flow rate (the system is unable to inject the percentage set).



7. PH/EC/TEMP DISPLAY

DESCRIPTION

DOSABOX JR. AUTOMATIC has 2 LCD displays: the left one shows the pH value and the right one shows the value of EC with the temperature of 25 0C.



Simultaneously, on both displays, below the value reading the 0C temperature is shown. The symbols of the units of measurement are displayed next to the values. The **CAL** symbol, that appears on the left side of the display of pH or EC informs us that the device is calibrationg one of the parameters.

Below each display the 

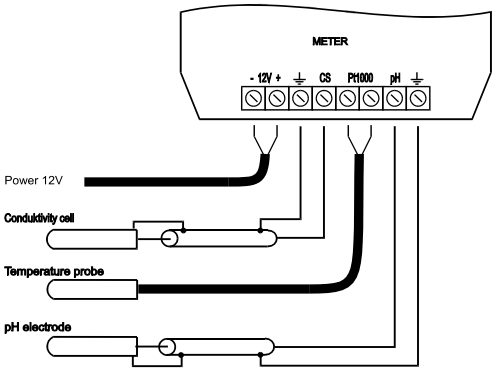
button is located.

By pressing the button during measurement mode you enter the calibration mode of the selected parameter (The **CAL** symbol appears), by briefly pressing the key, the device memorizes the value of the calibration point.

On the lower right corner, you can find the 

button, allowing to switch on/off the device.

7.1. CONNECTION SCHEME



Description of the connectors sectors:

-12V	• power supply - Negative;
+12V	• power supply - Positive;
⏚	• conductivity cell braid cable;
CS	• conductivity cell central cable;
Pt1000	• two cables of the temperature probes (exchangeable);
pH	• pH electrode central cable;
⏚	• pH electrode braid cable.

7.2. CALIBRATION OF THE PH ELECTRODE

INTRODUCTION

Before starting the measurement using a new electrode, this should be calibrated. The absence of calibration would result in important measurement errors. The calibration is carried out with different standard solutions of: pH 4.00,7.00 and 9.00. It is possible to calibrate from one to three solutions. The more calibration points are used, the more accurate the measurement will be over the whole range. The selection of the order of using the standard solutions is free. If you wish to use just one standard solution, its value should be as close as possible to the estimated value of the measurement. In the case of the measurements that do not require high accuracy, it is enough to perform the calibration of a point using the buffer solution pH 7.00.

The values of the buffer solutions are related to a temperature of 20 0C. If the temperature differs a lot, the buffer solutions should be heated or cooled. Basically, the difference of ±5 0C, will not affect the result.

PH CALIBRATION

Press the CAL key until in the lower left corner of the display shows the **CAL** symbol.

The calibration parameters will be deleted immediately.

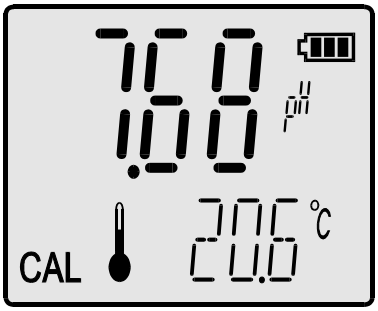
Insert the electrode and the temperature sensor in the pH 7.0 solution, the tool will recognize the value of the pH standard and the **P1** symbol will appear (calibration point). The reading value may be different from the current value of pH7.0. Insert the electrode and the temperature sensor in the pH4.0 solution, the instrument will recognize the value of the pH automatically and the **P2** symbol will appear. The value may be different from the current pH4.0 value.

When the value on the display will be stabilized press the CAL key below the display on the left.

The value on the display will flash to show the correct memorization of the calibration value. At the same time, the measured value will be aligned to the buffer value used.

The calibration can be terminated by pressing the CAL button below the display on the left until the **CAL** symbol disappears.

If the value of the used solution (buffer) is different from the memorized one and cannot be detected by the device or if the connected electrode of the instrument is broken this symbol will appear Err



If entering the calibration mode and exiting without calibrating at least one point, the parameters will be deleted from the memory and the standard parameters will be used.

7.3. CALIBRATION OF THE ELECTRODE EC

INTRODUCTION

Before starting the measurement of the EC the conductivity cell must be prepared and calibrated. To achieve accurate values, the cell (probe) must be moistened one hour before measuring. The cell maintenance can be done by washing it with distilled water. The platinum electrodes of the cell should not be cleaned mechanically, because the platinum layer would be taken away by rubbing, and this would increase the measurement errors. Breaking the measuring cell will prevent further measurements due to the significant change of the constant K value and the instability of the reading values. The results of the measurement also depend on the way in which the measuring cell was filled. The cell should be immersed in order to fill it completely preventing the formation of air bubbles. The best way is to immerse the cell by moving it vertically to remove the air bubbles through the holes in the top of the cell. If the air bubbles appear each time when the cell is immersed and it is difficult to remove these bubbles, it is advisable to immerse the cell in water and detergent. After that, wash the cell accurately with distilled water. The device allows the calibration at standard solution at 1.41mS or 12.90mS. To achieve the highest available precision, it is recommended to calibrate with a value that is as close as possible to the solution to be measured. The calibration requires high quality standard solutions.

EC CALIBRATION

Insert the conductivity cell and the temperature probe in the 1.4mS solution, keeping the conductivity cell at least 1 cm far from the bottom and sides of the bowl. The measuring cell must be filled by the solution preventing the formation of air bubbles;

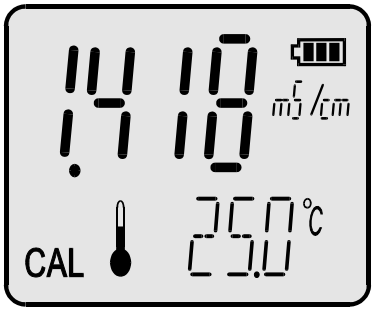
In the measurement mode keep pressing the CAL button below on the right of the display until the appearance of the **CAL** symbol.

When the value becomes stable, the symbol **P1** will appear (1.41mS calibration point).

Press briefly the CAL button. The display value will flash to show the correct memorization of the calibration value.

At the end of the calibration, return to the measuring mode by pressing the CAL key below on the right of the display until the disappearance of the **CAL** symbol.

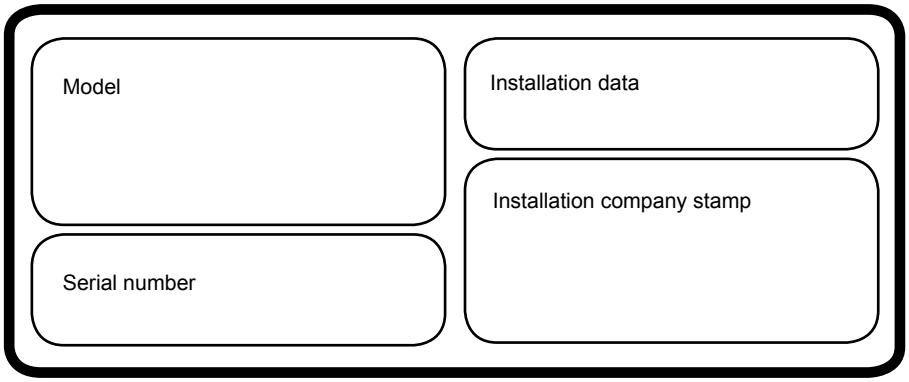
If the cell used is broken or the instrument cannot recognize the standard value, the symbol Err will appear.



Note: Out of scale temperature range is indicated by the flashing of the EC value and the symbol.

8. WARRANTY

I prodotti fabbricati dalla Irritec hanno la garanzia di 1 anno dalla data di acquisto.
Questa garanzia copre possibili difetti di fabbricazione. Irritec garantisce i prodotti DOSABOX JR. AUTOMATIC da eventuali difetti di fabbricazione per un (1) anno a partire dalla data di vendita. La Irritec si riconosce unico responsabile ai sensi di questa garanzia per riparare, sostituire con un prodotto equivalente o rimborsare la somma pagata per l'acquisto di qualsiasi prodotto difettoso nel periodo della garanzia, una volta ricevuto dalla Irritec, con spese di trasporto a carico del mittente, il prodotto, la copia della fattura e la descrizione del problema. Per ulteriori informazioni sulla garanzia, chiamare il numero 800 607050 oppure contattare la Irritec all'indirizzo indicato alla fine di questo manuale. Questa garanzia limitata non vale per: (i) regolare usura o invecchiamento del prodotto, (ii) perdita o danno accidentale, uso scorretto, irragionevole, cattivo uso o negligenza, (iii) danni causati dal prodotto o dal sistema nel quale è utilizzato il prodotto oppure (iv) danni causati dalla manutenzione o da modifiche apportate al prodotto da personale non autorizzato dalla Irritec.
QUESTA GARANZIA E RESPONSABILITÀ IMPLICITA SONO ESCLUSIVE E SOSTITUISCONO QUALSIASI GARANZIA ESPLICITA O IMPLICITA (COMPRESA OGNI EVENTUALE GARANZIA COMMERCIALE IMPLICITA CHE E' REVOCATA).
TUTTE LE GARANZIE APPLICATE A QUESTO PRODOTTO VALGONO PER UN ANNO. LA IRRITEC NON SARÀ IN ALCUN CASO RESPONSABILE PER DANNI ACCIDENTALI O SUCCESSIVI, COMPRESI MA NON SOLO I DANNI DERIVATI DAL MALFUNZIONAMENTO DEL PRODOTTO O DEL SISTEMA NEL QUALE è UTILIZZATO IL PRODOTTO, PERDITA DI PROFITTI O DA PEZZI DI RICAMBIO. PERCHÈ SIA VALIDA, QUESTA GARANZIA DEVE ESSERE DEBITAMENTE COMPILATA E TIMBRATA ED ESSERE ACCOMPAGNATA DALLA FATTURA DI ACQUISTO.



9. NOTES

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