

PRODUCT DATASHEET

CICLÓN



Conventional Irrigation





CICLON® is a SIMPLE and RELIABLE fertigation controller, suitable for all kind of crops since with it you can control most of the fertigation parameters.

WHAT CAN IT CONTROL? ✓

- 1- Irrigation
- 2- Pumping
- 3- Agitation of fertilizers
- 4- Fertilization based on time
- 5- Filter cleaning
- 6- Sensors measurement (optional)
- 7- Irrigation EC limitation (optional)



Surface model

MAIN FEATURES ✓

1 Irrigation pump expandable to 2

1 Master valve

1 Safety valve

1 Fertilizer Mixer

1 Special treatment

4 Fertilizers (+1 optional)

1 Main fertilization pump

8 Filters

20 independent programs

10 valves / program independent or grouped

3 starts per day

Cyclical irrigation

Demanded Irrigation (3 digital inputs expandable to 5)

Irrigation based on analog sensors

Irrigation by solar radiation

Irrigation duration by time or volume

Programming on the go or in real-time, without stopping the system

TYPICAL APPLICATIONS ✓

Fruit trees, vineyards, olive groves, horticulture, gardens ... Also for the control of water and lights in fountains



USER INTERFACE

- 20 characters 4-line LCD display
- 16-key membrane keypad

- Available in Spanish, English, French and Portuguese languages. Language selection made from the controller itself by the user

 **IRRIGATION****Starting Types**

By start times (3 starts a day)

Cyclic or sequential

By demand (Digital inputs)

By accumulated solar radiation

By analog or sensor input. (Temperature, soil moisture, soil tensiometer, anemometer, etc).

From remote or external units: The start of the program irrigation is conditioned to the state of the digital inputs or measurements from sensors connected to remote units

Irrigation Program Features

The duration of the irrigations can be set up in time (minutes - seconds or in hours - minutes) or volume (liters)

Irrigation scheduling for days of the week or break days for each program

10 valves per program to be irrigated independently or grouped

Independent Pre-irrigation time in each program

2 main irrigation valves: master valve and motorized safety valve

Alarm output for warning of anomalies

Delay for starting/stopping of main pumps

Delay for the closing of valves or sectors at the end of irrigation to avoid water hammers

Irrigation Data Record

The Ciclón® controller **records data from the last 100 finished irrigations**. You can browse them through the parameters detailed below.

Historical by finished irrigations:

- Program number
- Irrigation start time
- Program start type
- Number of faults or anomalies detected during the irrigation
- Type of completion of irrigation: stopping without faults, stopped by the user or by an error
- The irrigation time duration of each valve
- Pre-irrigation time of each valve
- Volume consumption
- If the sensor measurement option is available, statistical data, maximum, minimum and averages of pH and EC measurements will be recorded

Historical by valves:

- Number of irrigations of each valve
- Total irrigation time and volumen consumption
- Total pre-irrigation time and volumen consumption
- If the option of sensors measurement is available, statistical data as maximum, minimum and average of pH and EC will be recorded

Additionally, recording of accumulated data since the last reset of:

- Total irrigation and pre-irrigation time
- The total irrigation and pre-irrigation volume
- Total time of each fertilizer
- Total time of special treatments

Anomalies record **Kind of anomalies detected:**

- High pressure*
- Low pressure*
- High or Low Flow Rate*
- Incomplete fertilization
- Possible leak in the irrigation network
- Power outage*
- Run out of fertilizer*
- Diesel error *
- Incomplete special treatment
- Pumps or general irrigation not activated (RTU, external units communication) *
- Emergency irrigation, in demanded and analog input irrigations

* Current Irrigation can be stopped



The **stop conditionings** can stop irrigation before the programmed time or volume elapses. Up to **3 independent stop conditionings per program** can be established:

- By the status of a certain **digital input** of the programmer or remote unit
- **Measurement of a sensor** connected to the controller or remote unit
- In both cases, a delay can be set up in seconds to accept the stop conditioning

FERTILIZATION

Ciclón manages the injection of 4 fertilizers (optionally 5) in series or in parallel.

Main features

Independent programming of injection time setting of each fertilizer

Possibility of using a Main Injection Pump

Injection of special treatment programming a delay from the start time and its duration in time

Fertilizer mixing, start/stop, pre-mixing and continuous types

Low-level of a fertilizer can stop the current irrigation

If the analog inputs option is set up, a minimum and maximum EC thresholds can be established for irrigation water



Fitting model

FILTERS CLEANING

Up to 8 outputs can be set up for filters cleaning. The activation of the filter system cleaning is settable, starting cleaning the first condition that is reached of the following:

1. Irrigated time
2. Irrigated volume
3. Differential pressure switcher

Selectable cleaning start time:

- At the moment the activation condition occurs
- At the beginning of the next irrigation

At the same time, the following parameters can be configured:

- 1.- Injection of fertilizers in the filters cleaning stage
- 2.- The closing of the valves to raise the pressure
- 3.- Time of filters cleaning
- 4.- Pause time between filters





↩ **IMPUTS**

Analog Inputs

Digital Inputs

If the analog input option is available, sensors can be connected to the controller to measure the pH and the EC of the irrigation water, as well as other kind of sensors, among others, temperature, soil moisture, wind speed, etc.

These inputs are configurable in the out-signal range as well as the input voltage range. Sensors must source an out signal either 4-20mA or 0-5V output =.

10 optocoupled digital inputs are available in the controller, which are activated with a voltage-free contact at a low level. All of them can be delayed to avoid mistakes by false micro-switchings or electric spikes

The function of each of them is **configurable to detect the following failures** or malfunctions:

- **Low/high pressure** (for anomaly detection and to stop the irrigation)
- **Fertilizer at a low level** (for anomaly detection and to stop the irrigation)
- **Differential pressure** to start of filters cleaning
- **Oil pressure to detect anomalies** when using the option to start a diesel pump or generator set
- **External stop**, an external signal used to stop irrigating (water level switch, rain detector, etc.).
- **3 demand signals**, expandable to 5, irrigation starts at the close of voltage-free contact.
- **Volume counter**, this input receives the pulses from a volumetric counter with a pulse emitting device to record the volume of water and measure the irrigation flow rate, being able also to detect abnormalities due to excess or defect flow rate or possible leaks in the system
- **External Pause** to temporarily put the programmer at STOP TOTAL status
- **User 1 input**: To send the SMS "GSM ALARM 1"
- **User 2 input**: To send the SMS "GSM ALARM 2"

The delay time to detect and confirm each anomaly or alarm is configurable



Electric enclosure model



OUTPUTS

- **Controller outputs are relay outputs** with a maximum capacity of up to **10A at 250VAC**. The function of each output is configurable.
- Available in versions of **8, 16, 24, 32, 40 and 48 outputs**. Except for the 48 output model, all of them are expandable with 8 output card.
- An **internal 24VAC / 1A transformer (surface version) or "4VAC/1,25A (fitting version)** is available, although if a higher intensity would be necessary a higher power external transformer can be used.
- **Different voltages are allowed to be used at the outputs**. Each 8 -output card can use a different voltage. For example, to start a generator set a 12VDC voltage can be connected and once it has been started 24VAC voltage will be available for use in the rest of the outputs.
- In 12VDC controllers, the outputs **can be configured to work on continuous 12VDC voltage or on latch** or pulse function.
- **2 configurable RS232 communication ports** where baud rate and function can be configured for communication with GPRS, computer, or radio remote units (RTU). In addition, **the COMO port can be used to update the firmware**.



Desk box model

POWER AND CONSUMPTION

- 220 VAC 50/60 Hz 70 mA without activated outputs
- 12 VDC 20 mA without activated outputs

MODELS

- **Outputs Number:** 8,16, 24, 32, 40 or 48.
- **Supply voltage and outputs**
 - + 220VAC power supply and 24VAC outputs
 - + 12VDC power supply and 12VDC outputs
 - + 12VDC power supply and 12 VDC outputs and Latch outputs
 - + 12VDC power and 12VDC / 24VAC outputs., Operation for Generator Set
- **Surface or fitting installation.**

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SOFTWARE OPTIONS

- **Second Irrigation Pump**, in this case, the two pumps can be used independently or simultaneously in each irrigation program.

- **Diesel starting control**. It controls the starting and stopping of a diesel engine or generator set, controlling the number of starting attempts, warmings up, automatic shutdown, fault detection, etc.

- **Analog inputs**. With this option, 6 configurable analog inputs are available to measure the pH and the EC of the irrigation water, accumulated solar radiation (to start irrigation), the irrigation pressure, humidity, temperature, soil moisture sensors, etc.

The sensors must give an out signal either 4-20mA or 0-5Vdc.

- **External Modules communication with remote units of 8 or 16 outputs, 6 analog inputs, and 10 digital inputs**. This option allows opening and closing valves, starting and stopping motors using radiofrequency or RS485 communications. The remote units also allow measuring of analog sensors and remote digital inputs that can be used to start irrigation or as conditioning factors for their stoppings.

- **Increase the number of demand inputs to start irrigation**. Up to 5 demands inputs.

- **5th fertilizer**. With this option, the controller can inject up to 5 fertilizers.

- **PC software**. Using this software, based on Windows OS, the controller can be managed allowing the user to store data in a database, graphics of the measurements of sensors etc. The

computer can be connected to the controller either using a direct cable, remotely with a GPRS or radio transmitter

- **MaHer App**. The MaHer App allows the user to remotely access the controller using any device connected to the Internet, such as a smartphone, tablet, laptop, or Smart TV.

It also allows sending SMS messages to 1 or 2 mobile phones configured in the controller or sending messages to 5 different email addresses to inform about anomalies, failures, starting and finishing of irrigation.

A detailed report of each irrigation finished can be sent via email and some data from MaHer App can be downloaded as an excel file, as well.

- **Connection with meteorological stations METOS**.



MAHER APP
Control the irrigation remotely



MAHER RADIO
Radio communications with remote units



maher

Smart Agrocontrollers

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The **controller for irrigation, pumping and fertilization systems**
most advanced on the market.

MAHER ELECTRÓNICA

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