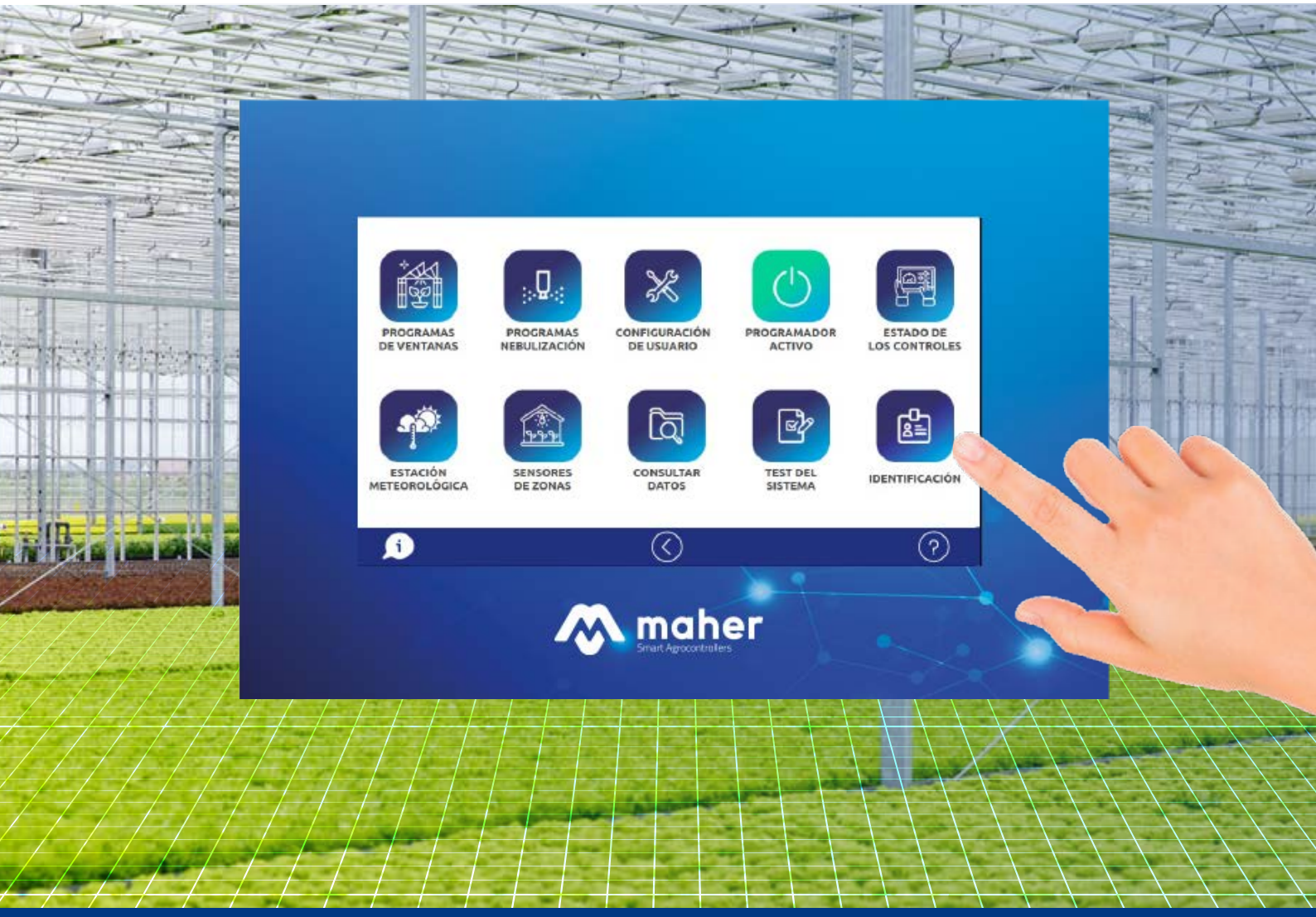
DATASHEET

maher
clima

Climate control and fogging



maher
Smart Agrocontrollers

maher clima | Climate control par excellence

MAHER CLIMA® is the most innovative, easy-to-use and versatile climate controller. It can record sensor readings and control some environmental parameters in closed areas, such as greenhouses, farms, warehouses, etc.

Inquire about the possibility of adding IRRIGATION to your CLIMATE equipment!

WHAT DOES IT CONTROL? ☑

1- Window control

2- Shade cloths or thermal cloths control

3- Fogging control

4- V.P.D. Calculation

5- Communication with external modules

6- Up to 8 control zones

7- Record outdoor sensor readings (weather station): RH probe, temperature probe, anemometer, wind vane, solar radiation and rain detector

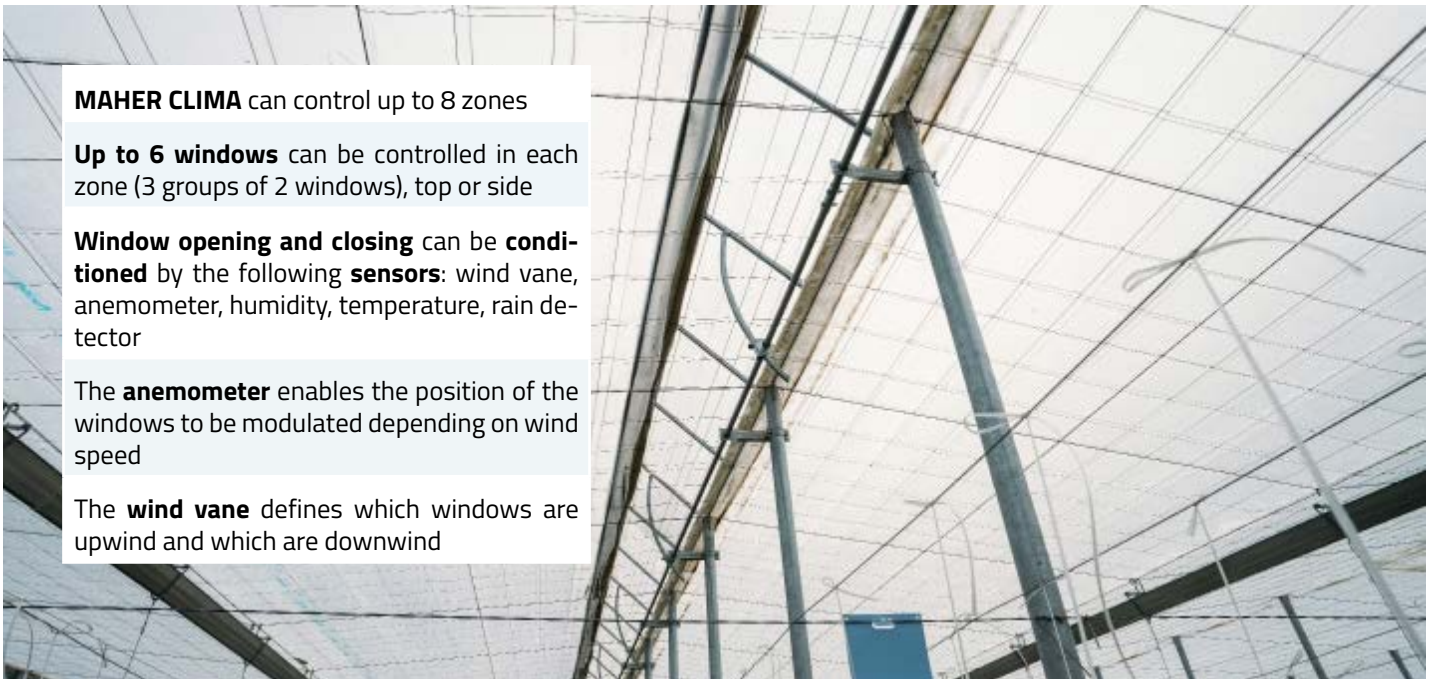
8- Record reading of interior sensors (zone sensors): RH probe and temperature probe

TYPICAL APPLICATIONS ☑

Greenhouses, farms, wineries, dryers...

WINDOW CONTROL

MAHER CLIMA is used to control the opening and closing of the top and side windows of a greenhouse



MAHER CLIMA can control up to 8 zones

Up to 6 windows can be controlled in each zone (3 groups of 2 windows), top or side

Window opening and closing can be **conditioned** by the following **sensors**: wind vane, anemometer, humidity, temperature, rain detector

The **anemometer** enables the position of the windows to be modulated depending on wind speed

The **wind vane** defines which windows are upwind and which are downwind

SCHEDULE

Up to 5 different schedules can be defined with different control instructions:

Day schedule. The time can be set by the user or by the controller automatically using an astronomical clock (it calculates the sunrise and sunset time every day)

Night schedule. The time can be set by the user or by the controller automatically using an astronomical clock (it calculates the sunrise and sunset time every day)

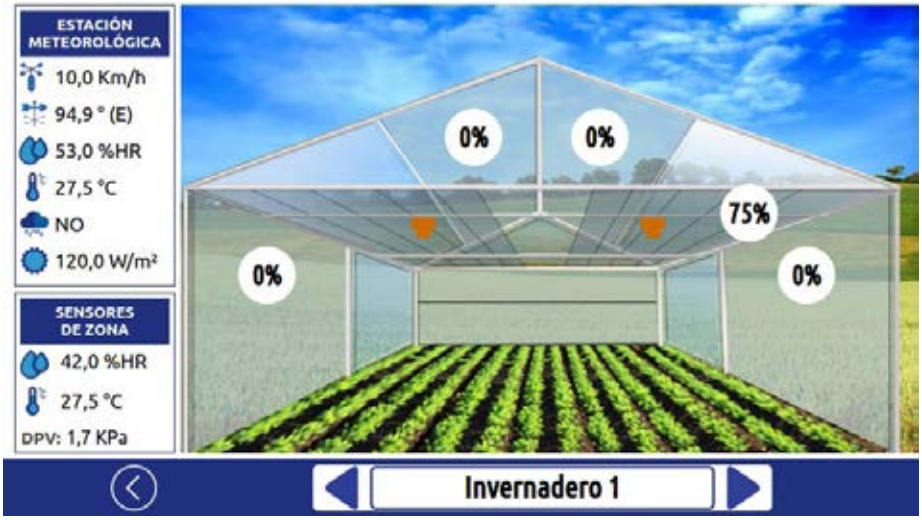
Special schedule 1. The schedule is set by the user

Special schedule 2. The schedule is set by the user

Thermal inversion schedule. A schedule established by the user with which the temperature inside the greenhouse can be increased with respect to the outside by opening windows, as long as the inside temperature is lower than the outside

SHADE CLOTH / THERMAL CLOTH CONTROL

The equipment can regulate shade cloths or thermal cloths. A cloth is displayed in the greenhouse window if the selected control area has a cloth configured. The cloth will be represented according to its current state, indicating its percentage of extension.



In the programming of the cloths, we can edit the parameters for controlling the cloth of each control zone. For each control zone:

SHADE CLOTH	SHADE CLOTH BY SOLAR RADIATION	Programming the position of the shade cloth based on the received **solar radiation** at any given time
	SHADE CLOTH BY SCHEDULE	Indicates the positioning of the shade cloth at **specific hours**. You can also use the option **'Use astronomical clock'** to have the controller calculate and set the daily sunrise and sunset times
THERMAL CLOTH BY SOLAR RADIATION	This is a screen that prevents the escape of the heat that accumulates inside the greenhouse during the hours of highest solar radiation. For this type of cloths, control is carried out by programming solar radiation references.	
THERMAL CLOTH BY TEMPERATURE	This is a thermal screen where **temperature** is used as a reference for control.	

FOGGING CONTROL

The controller enables humidity and temperature control inside closed rooms by managing a **humidification or fogging system**.

Fogging can be managed in **8 control zones** (8 different fogging groups)
Up to **8 fogging pumps** can be defined
Up to **8 fogging masters** can be defined
One to eight **fogging sectors** can be configured for each **fogging group**
The desired **pump and fogging master** can be configured for each sector

The fogging programming for each ZONE indicates:

ACTIVE SCHEDULE

PAUSE TIME

FOGGING OPERATION TIME

→ FOGGING CYCLE

START TYPES: CYCLICAL, MANUAL OR BY REFERENCE →

1- Cyclical (multiple starts per day per program)

2- Manual. The user can start a fogging cycle for a fogging group at any time

3- By relative humidity (RH) reference

4- By temperature reference

5- By V.P.D. reference

V.P.D. CONTROL

It can calculate the VPD in **8 different zones**

An RH probe and a temperature probe need to be configured in order to calculate the V.P.D. for a zone

The fogging of an area can be started **by reference** of the V.P.D. calculated for that area

ASTRONOMICAL CLOCK

The controller can calculate the **sunrise** and **sunset** time of each day

To obtain this astronomical data, the **time zone and the coordinates** of the unit's location must be configured.

The controller enables **automatic updating** of the start time and end time of the day schedule and night schedule in window control programs. This optimises the window control and avoids the user having to continually update the schedules

DATALOGGER

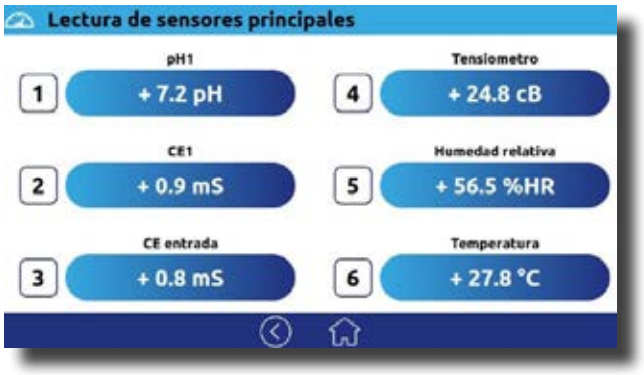
The readings of the sensors connected to the controller can be viewed **in real time**: weather station sensors, internal sensors for each zone and V.P.D. calculated in each zone.

The **recorded readings** of the sensors can be consulted through graphs

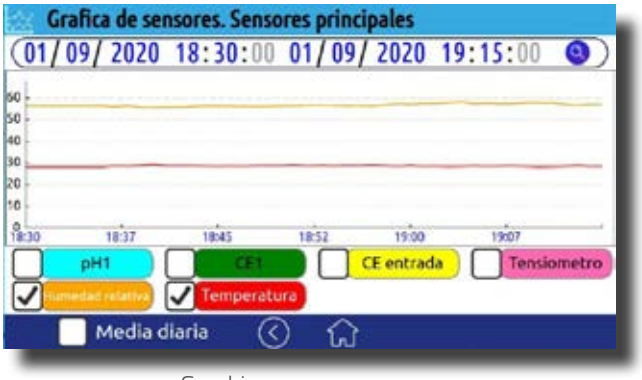
The graphs of several sensors can be viewed **simultaneously** and the sensors to be viewed at each moment can be selected

The sensor graphs can be viewed for a **certain period** (maximum one year)

See the **statistics** for the selected sensors: maximum value, minimum value and the average for the period consulted



Sensor reading screen



Graphic sensor screen

USB PORT

The controller has a USB port through which the touch **module software** can be updated and data downloaded from the unit to a USB memory.

The following can be downloaded:

- Backup of configuration and programming data
- A copy can be recovered to restore the unit's data
- Sensor reading
- Statistics

MANUAL ACTIONS

Some actions can be performed manually through the controller:

- Change the state of the controller: set it to STOP or ACTIVE

- Change the state of the window control: set the window control to STOP, ACTIVE or RESTART or position the windows manually using the AUTOTEST option

- Change the status of the fogging control: set it to STOP or ACTIVE

- Manually start a fogging cycle of a group

Start the fogging program

Reset running window control state

Active - Stop

INPUTS

ANALOG INPUTS ☑

- **6 configurable analog inputs** for connecting 0-5 Vdc or 4-20 mA signal analog sensors to the unit. More sensors can be connected to the controller using up to 8 analog input expansion boards

- Possibility of **expansion** through external panels with 6 analog inputs. A maximum of 8 expansion boards can be connected, so up to 54 sensors could be connected to the controller.

DIGITAL INPUTS ☑

- **10 opto-coupled** digital inputs for connecting digital sensors, such as a rain detector




OUTPUTS

- The unit outputs are relays with capacity of up to 10 A at 24 V_{AC}. The function of each of them is fully configurable from the unit. **It is available with 16 outputs, expandable up to 96**

- **Different voltages can be used in the outputs**. Each module can use a different voltage. For example, to start a generator set, 12 V_{DC} outputs can be used and, once it is running, 24 V_{AC} will be available to use in the rest of the output groups

POWER AND CONSUMPTION

- Touch screen power: 12V_{DC} 3A
- Power relay outputs: 12V_{DC} 3A

MODELS

- **Number of outputs:** from 16 relay outputs to 96 (expandable in groups of 8 outputs)

- **Supply voltage and outputs**

+ 12V_{DC} power and relay outputs / 12V_{DC} Latch 2 wires (configurable in the unit)

- **Format:** built-in controller, cupboard and control box

Built-in controller

Control box with methacrylate synoptic

Cupboard with methacrylate synoptic

OPTIONAL APPLICATIONS

SOFTWARE ☑

- **Maher App.** With a GPRS or Ethernet modem, the controller can be managed from an electronic device with internet connection and a web browser such as a smartphone, tablet, PC or Smart TV. Messages can also be sent by e-mail, configuring the controller to notify anomalies or sensor warnings

HARDWARE ☑

- **Expansion of outputs.** . The controller has 16 outputs as standard and the number of outputs can be increased up to a maximum of 96
- **Expansion of analog inputs.** The controller has 6 analog inputs as standard and the number of analog inputs can be increased up to a maximum of 54
- **GPRS or Ethernet modem.** The GPRS or Ethernet modem enables the controller to connect to the Maher App server.

maher app

Controller remote control

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