



Climate
Control
Systems

a nebula group company

CLIMATE MANAGER

Be in control of your grow
operation from **anywhere.**

CLIMATE MANAGER™

The Climate Manager™ is a wireless process control system capable of controlling and monitoring multiple indoor operations. It gives the grower the ability to access data and control equipment over the Internet through any computer or mobile device.

The Climate Manager™ works around the clock to optimize the indoor climate, to increase crop yields, reduce energy costs and protect the indoor environment against harsh weather conditions.

The image displays four screenshots of the Climate Manager software interface:

- CO2 Setpoint:** Shows settings for Zone 1, including Day Start Time (7:00), Day End Time (18:00), and a Turn On CO2 threshold of 1,200 ppm +/- 100 ppm. Influence modifiers include Turn Off CO2 if Solar drops below 600 µmol/s, Turn Off CO2 if Vents Open more than 20.0%, Turn Off CO2 if Fan cooling is Fan 1, and Turn Off CO2 if temperature higher than 86.0 °F.
- Irrigation Program:** Shows a table of irrigation triggers with columns for Time Prog., Start Time, Stop Time, Start Irrigation, and Solar Level. A list of valves is shown with their respective times.
- Louver and Side Vent Setpoints:** Shows settings for Zone 1, including a table of Stage, Ventilation Source, and Open Vent percentages.
- Zone 1 Control Panel:** Shows a table of Start Time, System 1, System 2, and System 3 settings, including Heat on @ and +/- values.

VALUE PROPOSITION

Mold is one of every growers' biggest concerns. Mold is caused by the moisture in the air condensing on plant leaves. This can cause complete crop failure and decrease crop value.

The Climate Manager™ allows the grower to control the environment by vapour pressure deficit. By using this feature the grower can keep the crop in the best growing zone, and out of the mold zone.

MAIN SCREEN DISPLAY

The Main Screen Display outlines the overall climate conditions within all growing compartments which allows growers a quick glance of accurate and real-time data for the following conditions:

- Displays moisture levels in substrate growing medium for irrigation starts
- Temperature and humidity conditions in all growing compartments
- Irrigation and fertigation schedule E.C., pH and water flow readings
- Displays all vent positions, louver positions and cooling fan activity
- Displays solar levels for irrigation triggers and solar E.C. corrections
- Additional zones can be displayed on subsequent pages
- CO2 levels in each growing compartment
- Displays up to 16 zones

Climate Manager (TM)

Settings Backup Restore Alarm Timers 1 2 3 4 5 6 7 8 9 10 Irrigation Misting Time: 13:03:46 Climate Control

Wind Speed 11 mi/hr Wind Direct. SE Rain No Solar 2,089 $\mu\text{mol/s}$ Temperature 25.7 °F Humidity 76.1 % Valve Time 0 0 2 78

Version: 7.0.04.06
PAC: R10.2001

Zone	Temp °F	RH %	VPD kPa	Heating	Vent 1 % Open	Vent 2 % Open	Fans	Louver	CO2 ppm	Lighting	Fog & Pad
1 Greenhouse 1	73.4	51.2	1.55	1 2	0 W	0 E	Fan 4	SV1 50		1	
2 Greenhouse 2	73.1	55.9	1.39	1 2	0 W	0 E	Off	Off		1	
3 Greenhouse 3	73.1	55.6	1.39	1 2	0 W	0 E	Off	Off		1	
4 Not Used	73.2	55.8	1.39	1 2	0 W	0 E	Off	Off			
5 Zone 5	77.1	55.9	1.58	1 2	0 W	0 E	Fan 1	Louver 1			
6 Zone 6	76.7	56.3	1.55	1 2	0 W	0 E	Fan 1	Louver 1		1	
7 Zone 7	75.1	56.1	1.48	1 2	0 W	0 E			#		
8 Zone 8	76.5	56.6	1.52	1 2	0 W	0 E	Off	Off	#		

HEATING, COOLING AND CO₂ PROGRAMS

Lighting

Zone 1 Defaults

Group #	On Time	Off Time	Hours	
1	8.00	18.00	52.05	Reset
2	0.00	0.00	0.00	Reset
3	0.00	0.00	0.00	Reset
4	0.00	0.00	0.00	Reset
5	0.00	0.00	0.00	Reset
6	0.00	0.00	0.00	Reset

* hours are used to track bulb life; reset when bulbs are replaced

Turn On Lights
If Solar Drops below $\mu\text{mol/s}$ +/- $\mu\text{mol/s}$

Influence modifiers

Turn off lights if SOLAR above $\mu\text{mol/s}$

Turn off lights if CO₂ above ppm +/-

Turn off if TEMPERATURE above °F +/-

Lights delay OFF time Min

Lights delay ON TIME Min

Save Cancel

Fan Setpoints

Zone 1 Select Time Period -> One Two Three Four Five

Time Start 2:

Stage	If Temperature is Above		+/-	If Humidity is Above		+/-	And temp. Above		+/-
	Min	Max		Min	Max		Min	Max	
1	82.4	0.0	0.5	65.0	2.0	2.0	36.0	0.5	0.5
2	76.0	0.0	0.5	65.0	2.0	2.0	36.0	0.5	0.5
3	32.0	0.0	0.0	65.0	2.0	2.0	36.0	0.5	0.5
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OR

Exchanges Influences Defaults Save Cancel

Vent Setpoints

Zone 1 Outside Wind Rain Vents Defaults

Use Vent Temp. scale #:
Use Vent Hum. scale #:

Start Time hh:mm	Leeward		Open		Windward		If Temperature is Above		+/-	If Humidity is Above		+/-	And temp. Above	
	Min	Max	Min	Max	Min	Max	Min	Max		Min	Max		Min	Max
1	8.00	0.0	50.0	0.0	0.0	20.0	75.2	0.5	0.5	75.0	2.0	2.0	68.0	0.5
2	18.00	0.0	10.0	0.0	0.0	10.0	70.0	0.5	0.5	0.0	0.0	0.0	70.0	0.5
3	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-27.7	0.5
5	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-27.7	0.5

Close Save

- Simple and easy to use software programs for raising vegetable/flower crops
- CO₂ programs for gas burners, CO₂ boiler recovery or liquid CO₂ systems
- Heating and cooling programs for hot water, steam or hot air heater
- Ethernet/Internet access from a computer or mobile device
- Weather station, solar, rain, wind and temperature programs
- Day and night temperature and humidity programs
- Temperature ramping with solar temperature programs
- Lighting and shading programs

IRRIGATION SOFTWARE PROGRAMS

- Irrigation management and drain water recycling programs
- Solar, rain, wind, temperature weather programs
- Time and solar irrigation start programs
- Multiple irrigation programs
- Multi-zone misting programs
- Solar radiation program

Irrigation Program

Pair Valves: Manual start: Cancel Stop Valve

Default Valve Time: (min) Set

Time Prog.	Start Time	Stop Time	Start Irrigation	Solar Level
1	8.00	18.00	60.00	0
2	0.00	0.00	0.00	0
3	0.00	0.00	0.00	0
4	0.00	0.00	0.00	0
5	0.00	0.00	0.00	0

Time to next irrigation Start: (Sec)

Total Irrigation Time: (Sec)

Solar Accumulation: $\mu\text{mol/m}^2$

Select	Time	Select	Time
1	3.00		
2	3.00		
3	3.00		
4	3.00		
5	3.00		
6	3.00		
7	3.00		
8	3.00		
9	3.00		
10	3.00		
11	3.00		
12	3.00		
13	3.00		
14	3.00		
15	3.00		

EPIC CONTROLLER

COMING FALL 2023



EXPANDABLE • CUSTOMIZABLE • ACCESSIBLE

The groov EPIC gives input/output, a flexible Linux-based controller with gateway functions, a high-resolution touchscreen display, two independent network interfaces, USB and HDMI ports. The software includes control programming for device-independent HMI, simple data flows, OPC-UA drivers, communications and more.

Powering a web-based app, the EPIC controller provides **instant access, anywhere** to the Climate Manager.™ With more power, comes more possibilities... The EPIC controller serves as the ideal platform for expandability, so your Climate Manager can be truly customized to supply you with the data you need to optimize your growth.



COMPLETE GREENHOUSE CONTROL



CONTROLLER

- Powerful Ethernet/Internet industrial computer
- Optically isolated circuits (protect in power outages)
- All output modules are fused with manual override
- Switches and LEDs on each output modules
- No proprietary motherboards to source
- Memory backed non-volatile-memory
- Simple to use programs



ASPIRATED TEMPERATURE AND HUMIDITY SENSORS

- Aspirated temperature and humidity sensors
- Made from high impact durable plastics
- Solid state sensors for trouble-free operation
- Watertight connector on each sensor
- Colour coded temperature and humidity sensors



CO₂ METER

- Digital CO₂ meter computer interface
- Read CO₂ levels on a computer screen
- Scale 0-2000 PPM or 0-5000 PPM
- CO₂ meters have NO/NC relay contact for alarms
- Control CO₂ valves and burners



UNIQUE WEATHER STATION

- Weather station measures and logs weather conditions
- Solar radiation, wind speed, direction and wind chill
- Temperature and rain sensors
- Outside humidity sensors

CLIMATE MANAGER™ ACCESSORIES

VENT MOTORS

Various vent motor gearboxes available for venting, shading and side louvers for glass and poly houses. Motors are available for 120 volts, 220 volts, 208 volts 3 phase, 575 volts 3 phase.



CONTROL PANELS

The vent control boxes are available to control two vent motors and are built to accommodate single-phase or three-phase motors.

The control panels are also available to control one motor per box. Each box is equipped with 24-volt relays to control the high voltage interlocked contactors.



HOT WATER SENSOR

The hot water temperature sensor is a stainless-steel probe with 3/4-inch NPT thread with a weatherproof cap. The terminal is provided on top of the sensor to connect wiring to the Climate Manager™ control panel.



Creating consistent growing environments for **healthy crop growth and quality control.**



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Climate Control Systems Inc. has been manufacturing greenhouse automation systems around the globe since 1985.

Our greenhouse automation software and solutions work around the clock to optimize greenhouse climate, increase crop yields and reduce water, energy and fertilizer costs.

We provide complete solutions for your growing operations. Our solutions help achieve a better crop while saving you precious time and overhead costs.

nebula group

Nebula Group's primary mission is to profitably expand leadership in food production and safety in a localized manner through the decentralization of the food supply chain via sustainable resources, modernized technology systems, and self-sufficient processes.

CONTACT US TODAY FOR A CUSTOM QUOTE

DEALERSHIP AND AGENT INQUIRIES ARE WELCOME

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