

# ***SPECIFACTIONS***

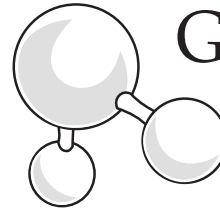
## **MCC-1**

Maximum Amperage Capacity ..... 12 Amps  
 Normal Output ..... 115 VAC  
 Warm Up Period ..... less than 5 minutes  
 Operating Temperature Range ..... 0 to + 50° C  
 Operating Humidity Range ..... 5% to 95% RH  
 Thermostat Range ..... 10° to 110° F  
 Humidity Range ..... 10% to 90% RH  
 Power Requirement ..... 110 VAC  
 Dimensions (HxWxD) ..... 9"x12"x3"  
 Weight ..... 7 Pounds  
 Repair Service ..... Return to Manufacture  
 Operating Life Expectancy ..... 7 year minimum  
 Operating Power Requirements ..... 120 VAC ± 20% 50/60 Hz  
 Relay ..... Electro Mechanical  
 Mechanical Operations ..... 1,000,000  
 Electrical Operations ..... 100,000  
 Switching Capacity ..... 12 Amp Max

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***GREEN AIR PRODUCTS***  
 P.O. BOX 1318  
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**GREEN AIR PRODUCTS**  
 PROFESSIONAL GREENHOUSE EQUIPMENT

# ***MICROCLIMATE CONTROLLER***

## **MCC-1**



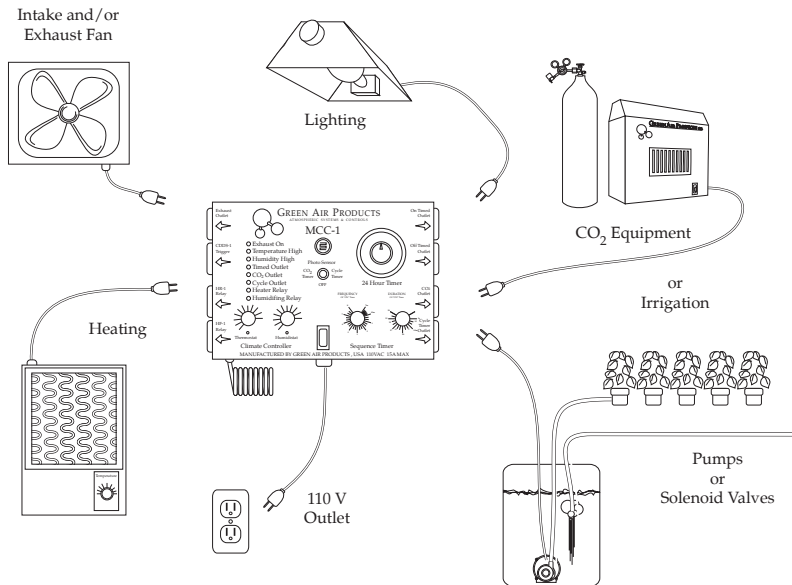
# ***INSTRUCTION MANUAL***

# MICROCLIMATE CONTROLLER MCC-1



The MicroClimate Controller MCC-1 is designed to perform all the major atmospheric and timed functions required in an automated growth environment including temperature, humidity, carbon dioxide enrichment, lighting and irrigation control. The controller incorporates an external coil cooling thermostat, a dehumidifying humidistat, a 24-hour clock timer, a photosensor and a repeat cycle timer. Heating and humidifying control is provided by triggers for remote high-amperage relays which enable synchronized equipment management. Automatic override and defeat systems coordinate controls to consider all possible variables. The

MCC-1 is enclosed in a black anodized, brush finish aluminum housing. An attractive screen-printed front panel with function indicator lights makes system monitoring and adjustment quick and easy. All connections are standard 3-prong grounded plugs and receptacles. No hard wiring is required for basic operations. Low and high voltage relays are available to operate auxiliary equipment. Every aspect of the growing environment may be addressed by the Micro Climate Controller (MCC-1). Operates on 115VAC with 12 Amp switching capacity. Approved for indoor only.



# FUNCTION RELAYS

Dry Contact Switches

## HAR-1



The HAR-1 is a power relay that uses high amperage capacity contacts to transfer power to large fans or lighting systems requiring high voltage or amperage service. Use to operate 115 or 240 Volt high draw equipment. 30 Amp switching capacity with 115 Volt trigger.

## HR-1



The HR-1 is a high amperage relay with a built in external coil heating thermostat. Use to supply 115 or 240 Volt power to heating equipment when temperature falls below set point. 30 Amp switching capacity for heavy load requirements. A jack receptacle and internal low voltage dry contacts are used to function gas type heaters. See MCC-1 installation description.

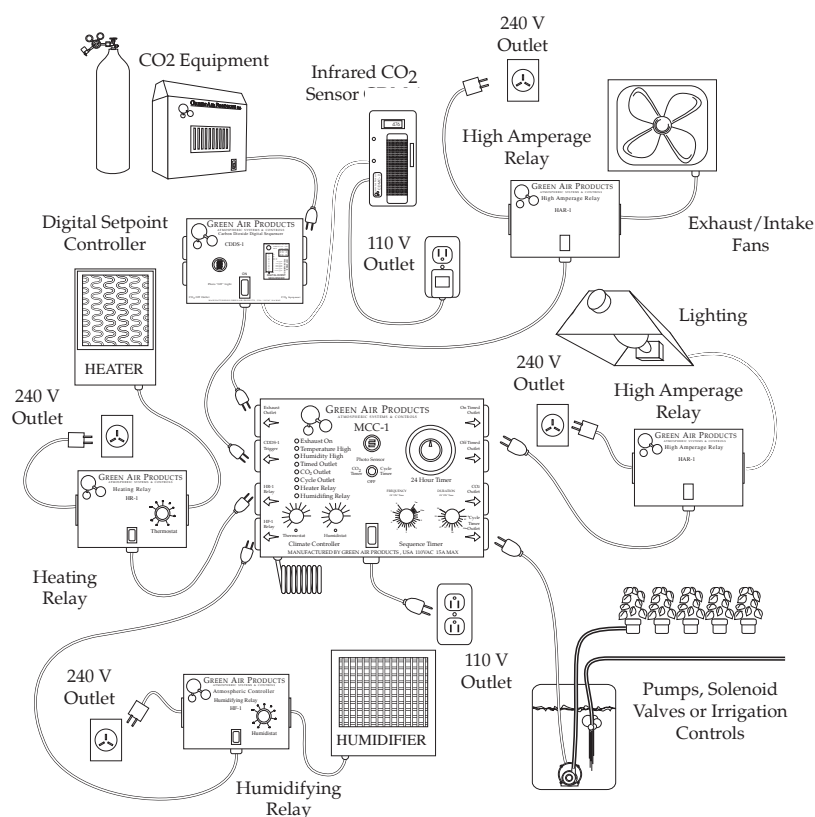
## HF-1



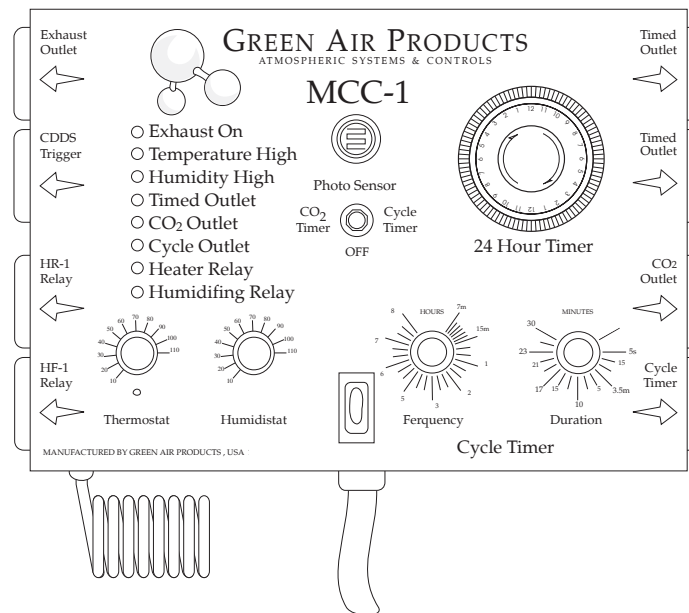
This HF-1 is a high amperage relay with a built in humidifying humidistat. Use to supply 115 or 240 Volt power to humidifying equipment when humidity falls below set point. 30 Amp switching capacity for heavy load requirements.

# COMPLETE SYSTEM CONTROL

## Function Relay Diagram



Use Green Air Products function relays in combination with the MCC-1 to operate high voltage or high amperage equipment. The MCC-1 outlets trigger the relay contactor to close which switches power to the auxiliary equipment. This design protects the controller from power overload and provides precise and dependable system management. See detailed descriptions of function relays.

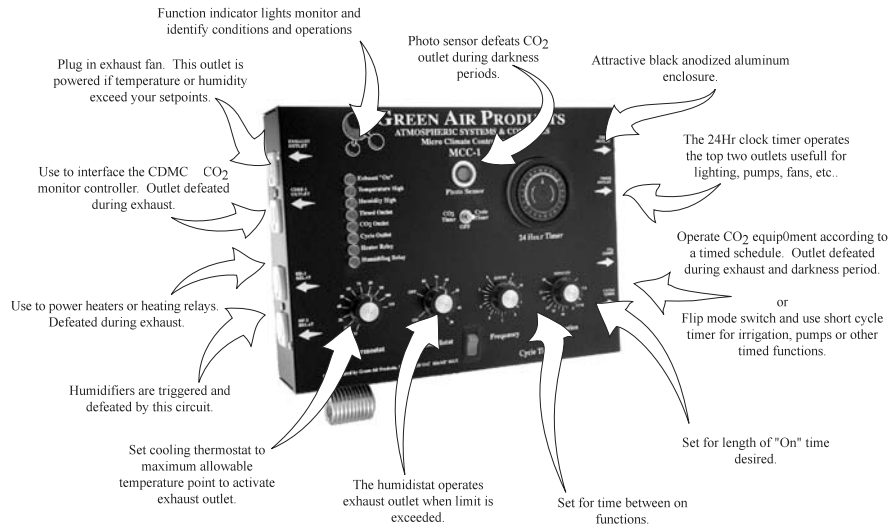


## HOW TO OPERATE

The MCC-1 was designed to be used independently or in conjunction with Green Air Products function relays. The MCC-1 will serve independently for systems and equipment requiring 115 VAC of 12Amps or less. Plug power cord into surge protected outlet and locate controller where good air circulation represents plant zone conditions. Plug exhaust fan into exhaust outlet. Set thermostat and humidistat dials to maximum desired values. Fan will operate when conditions exceed those set points. Function indicator lights will display the condition and outlet status. CO<sub>2</sub> equipment can be operated from the CDD-1 trigger when using the CDMC infrared monitor controller. This outlet provides an exhaust synchronized override feature to delay enrichment during ventilation periods. When timed control is desired plug CO<sub>2</sub> equipment into CO<sub>2</sub> outlet and set timer mode toggle switch accordingly. Set the sequence timer duration dial for minutes of "On" time and frequency dial for the time between "On" functions. Exhaust demand will override CO<sub>2</sub> production and timer will reset to cycle immediately following ventilation. CO<sub>2</sub> outlet is defeated by a built-in photo sensor to operate only when light is present. If not being used for CO<sub>2</sub> enrichment the sequence timer can be used for a variety of other timing duties. Switch the mode toggle to "Cycle Timer" to bypass the exhaust and photoperiod defeat circuits. Timer "On" times as short as 5 sec. can be achieved to operate irrigation pumps or solenoids for all kinds of hydroponic and automatic watering systems. Plug thermostatically controlled heater into HR-1 relay trigger outlet. Exhaust operations will override heating trigger to defeat heaters. Use the HR-1 relay outlet for humidifiers to provide a comfort zone between humidifying and dehumidifying. The 24 hour clock timer is useful for all daily oriented timing operations. The 96 independent 15 min trippers allow any combination of on/off functions repeated each 24 hours. Lighting, fans, pumps and watering are only a few of the tasks this timer can perform. If your combined amperage draw exceeds 15 amp power handling capacity of the controller optional high amperage function relays can be used to provide service to large systems. Approved for indoor use only.

# The Master Control

TOTALLY AUTOMATE YOUR SYSTEMS AND EQUIPMENT



## FUNCTION OUTLET DESCRIPTIONS

### EXHAUST OUTLET

This outlet receives power when excess heat or humidity need to be ventilated. Intake and exhaust fans or other venting equipment can be automatically functioned according to the setpoints on the thermostat and humidistat dial face. There is approximately five points differential between "On" and "Off" cycles to maintain a consistent air quality.

### CDDS TRIGGER

When using a CO<sub>2</sub> monitor to determine and control CO<sub>2</sub> producing equipment this outlet provides 24 hr. power which is defeated during exhaust functions to minimize CO<sub>2</sub> loss. Plug CDMC digital sequencer into this trigger to integrate CO<sub>2</sub> management with atmospheric control.

### HR-1 RELAY

This feature provides power for heaters or heating relays. A small heater with built in thermostat can be plugged directly into HR-1 outlet. Larger units must use heating relay HR-1 to isolate high amperage requirements. Set heating thermostat to minimum allowable temperature and cooling thermostat to maximum high temperature. The span between these two settings is the comfort zone. The HR-1 relay outlet will not operate during exhaust functions.

### HF-1 RELAY

This outlet is similar in function to the HR-1 relay outlet except it is for humidity producing apparatus. Humidifying equipment can not function during dehumidifying cycles.

### TIMED OUTLETS

These outlets are operated by the 24 hr. time clock. Use to function almost any electrical equipment according to time of day settings. This precision synchronous clock provides 96 independent 15 min. On - Off trippers. Use the HAR-1 relay for high amperage or voltage equipment.

### CO<sub>2</sub> OUTLET

Carbon dioxide enrichment equipment can be precisely timed through this outlet by the on board cycle timer. This timer will repeat your pre-set "ON" and "Off" periods continuously whenever the photo sensor detects the presence of light. The duration of the "On" cycles are from 5 sec. to 30 min. and the frequency of "On" cycles ( or the "Off" time between them ) is from 7 min. to 8 hrs. The photo sensor mode switch must be in the CO<sub>2</sub> timer position for photo and exhaust function defeat circuits. Reset feature will replenish CO<sub>2</sub> immediately after exhaust cycle. Switch mode toggle to "Off" for manual reset.

### CYCLE OUTLET

The cycle outlet utilizes the same internal short cycle timer and operates syotaneously with the CO<sub>2</sub> outlet. When the photo sensor mode switch is in the cycle timer position the timer is not interrupted by the photo and exhaust defeat circuits. Both outlets will provide 24 hr. sequence timing for irrigation systems, pumps, solinoids, transformers, motors, relays and many other equipment devices.

### IMPORTANT

Make certain the combined amperage draw of all equipment operating through the MCC-1 does not exceed 12 amps. Use function relays to conduct high amperage or alternate voltage currents.

