



## Harvest-Master®

411 Great South Rd, Penrose, Auckland, New Zealand 1006

Ph +64.9.579-2057. Fax +64.9.579-2068

2533 N Carson St. Carson City, NV 89706, USA.

Ph (775) 841-3235. Fax (775) 883-2384.

Website [www.Harvest-Master.com](http://www.Harvest-Master.com) email [sales@harvest-master.com](mailto:sales@harvest-master.com)

## Harvest-Master Climate Controllers

The first and most important consideration about Harvest-Master®, it Controls Climate,  
**to get a Harvest .**

Control of light and warmth, humidity and CO<sup>2</sup> (and any other problems along the way), is what he does, to make that happen.

### Harvest-Master® is two parts.

- There is the controller. A computer with the ability to control 8 or 16 outputs, and monitors Temperature, Humidity and CO<sup>2</sup> sensors.



- Then there is the software that operates the controller.  
The **“Man in the Machine”!**

**THIS**, is Harvest-Master. The thinking, analyzing, learning brain that knows what plants like, then watches and maintains that environment to nurture and protect the plants. Harvest-Master is a patient, attentive and caring tutor, watching the operation 24/7, doing the job a person would do (if they could!).

He is the trusted “Special Friend”.

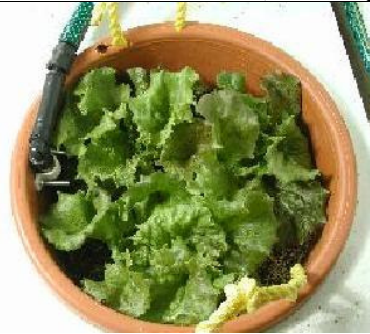
Reliable, dependable (& doesn't empty your beer fridge).



## Climate

- Climate is an organic, “infinitely variable condition”, of light/darkness and atmospheric condition, all operating in balance. Nature does this well.
- Harvest-Master continuously manages this balance to optimize a natural, stress free plant growth, *learning* minute by minute, what effect using light, fans etc will produce.
- The **Most** important conditions for plant health and growth, are the simplest; Think of Earth millions of years ago, the CO<sup>2</sup> rich, warm planet, dinosaur era.
  - **Light          Warmth          Air (CO<sup>2</sup>, Oxygen)          Water**
 Controlling and enhancing these conditions make plants grow best.

**Lettuces: 10 days.    With H-Master,.... Cropping!**



Harvest-Master



Standard

**Silverbeet: At 12 days.    With H-Master,.... Harvesting..!**



Harvest-Master



Standard

**Sunflowers: At 12 days.    With Harvest-Master, in bloom at 3 wks..!**



Harvest-Master



Standard



## Harvest-Master® Interactive Display

- Mount the Harvest Master controller to display board with double sided adhesive tape.
- On the Controller, connect the 9 pin data connector to ‘serial’, the power jack to ‘power’, then the top/bottom row of RCA plugs to the top/bottom row of controller outputs.
- Connect the power pack (supplied) plug to the display board plug point (lower left corner).

When a Harvest-Master® controller is connected to the Display Board, the display will show; **Checking sensors**. Press the <Exit> key  
 Display will soon show “Demo Mode”. Use ^ arrow to select **Enter Demo mode**. Press <OK>

The green LEDs indicate whether that device is enabled on the controller.  
 The red LEDs indicate whether that device is working at the moment.

- Use Menu, ^ arrow to select Time to set the current time of day. Use Grow Cycle to change from Vegetative to Fast Flowering or Full Flowering Grow Cycle.
- Turning the Temperature or Humidity control up or down, will cause Harvest-Master to change the devices operating, to maintain the best climate (within +/- 2' (or 2%) of target!).
- The Harvest-Master® interactive display panel is an intelligent device to simulate a “real” closed room growing environment (operating 20 times faster than “normal”).
- It is possible to see the “organic” nature of the climate control. Even though conditions appear to be within the Temp and Humidity tolerances, Harvest-Master is managing the “balance” for the best environment, **in anticipation of what it expects will happen next**. Demonstrate the “**Predictive Intelligence**” of Harvest-Master. See devices activated even though everything is in balance. (Temp may reduce to allow for a “CO<sup>2</sup>/no fan period” rise)
- Extreme high or low temperature changes could cause the system to change into “survival” mode, disabling lights during day periods or initiating lights in night periods. This is the correct reaction, plant survival being a priority purpose of Harvest-Master.
- Enjoy just watching the display and see the temperature cycle high and low due to lights and cooling, CO<sub>2</sub> dispense and be consumed by the plants, cycling endlessly and effortlessly.
- For a customer, set up their controller on the panel!  
 Set up the devices to be enabled, see how it operates, then: **“take it home, plug it in”!**
- If a customer has a problem with their controller, connect it to the display. Check to see if it is operating correctly, if Climate or Equipment menu options are correct, or set it to suit their conditions.
- If your display starts to misbehave, just power OFF/ON and restart as above.



## Features and Benefits: General

- **Harvest-Master® is simple.**  
What you see it do on the in-store display, is what it does in the greenhouse.
- **It comes as a complete kit:**  
Controller with built-in, ready to start 'Harvest-Master' Program, Temp/Humidity sensor with 10' lead, (plus CO<sup>2</sup> sensor in *Pro* types), 3 (or 4) x 15amp relays with 10' leads, a manual and instruction guide for a successful greenhouse. **“Plug it in, Go and Grow!”**
- **Harvest-Master®** will self calibrate, “learning” continuously how fast the greenhouse gets hot, cools, or gets humid. When first started, this takes 20 to 60 minutes, then it just runs, day after day. At any time, a menu option allows; “recalibrate the room”.
- **Man in the Machine!**  
Harvest-Master® is the brain, the thinking part of the controller. He knows enough about plants to keep the basics right, ALL of the time. He is **“Special Friend”, the Man in the Machine.** This friendly, benign, knowledgeable fellow takes over the minute by minute monitoring and 24/7 tending of the climate controls, and... **watch for intruders too!**
- **The “Talk 2 Me” cellular modem option,** calls you with a text message for alarms. Climate state, **and** for intruders. Motion detection, door & window sensors.
- **Organic Climate control.** Because climate is not a “switch”, Harvest-Master® continuously monitors and manipulates conditions to maintain the best balance for plant comfort and performance. **24/7 attention to detail!**
- **Predictive Intelligence.** Smarter than “fuzzy logic”, Harvest-Master® “learns” about the way the room operates. The rate of change for temperature, humidity and CO<sup>2</sup> injection, usage rates for CO<sup>2</sup>. All are learned continuously, so Harvest-Master® can predict, anticipate and correct conditions *before they occur.*
- **Ready to Run**  
While you can make personalized settings for the climate, and change day/night lengths, **using the factory presets will get you a great result everytime!**  
This is the recommended option.  
Crop scientists have provided the factory settings, or change specific settings yourself, in seconds. Easier than saving numbers or names on a cellphone! Taking the mystery and doubt away is important. Harvest-Master® WILL get a crop, everytime.
- **Set it up for the customer!**  
Use Menu, Select Equipment, then enable (or disable) the things they use; Air-cond. etc.  
Select the Growing Cycle that they would like (Vegetative, Fast Flower or Full Flowering).  
Send them off home with it! It will work, out of the box.
- **Harvest-Master Smart, reliable, sensible and 24/7!** Qualified horticulturists and University scientists & graduates have checked the growing programs and mechanisms that Harvest-Master® uses. He will ensure that you DO get a crop.



## Features and Benefits: Specific

- **Harvest-Master® is convenient.** Small, lightweight, powered by 12v power pack. Everything connected by 12volt leads. Can be wall mounted outside the Greenhouse. Simple menu options to check or change settings. Preset growing programs make choices easy.
- **Harvest-Master® is Ready to Run.** Just plug the devices in to the appropriate relay, power it up and it goes. Use as many or few controls as you like (or, the Master will work out what actually is connected and working). Harvest-Master® is supplied market ready with power packs and relay plugs specific to the country of sale. Spare parts are available from the reseller. Simple replacements (power packs, RCA lead, RCA splitter (“Y”) leads are commonly available from radio, electrical and hardware stores.
- **8 relay isolated outputs.** The 8 outputs are preset and named for commonly used greenhouse devices, including Lights, Fans, CO<sup>2</sup>, Air-conditioning, Heat, Humidifier, De-humidifier, Spare (could best be for Watering). These are all enabled ex factory, but can be turned off quickly and easily in Menu, Equipment. RCA control leads connect to the relay switches, 15amp x120/240v), which plug into the outlet and have the device plugged into its socket. For higher capacity systems, such as 6000 watts of lights, a “Y” cable is used to allow two or more (use up to 6 relays maximum) relay switches to connect to the one output. High amperage relays are available, including 240v 2 phase and 3 phase industrial models.
- **Sensors.** Temp and Humidity sensors are high accuracy, microchip type. Humidity and Temp are within 1% accuracy. CO<sup>2</sup> sensors are the twin beam IR diffuser type, accurate within 100ppm and use comparative twin beam analysis.
- **Security.** Harvest-Master® is warranted free of defects for 12 months. A buyer can return the unit to a dealer. If it is not working and has no obvious damage that would preclude warranty, we will replace it on the spot. No argument. Simple, honest, safe.
- **Versatile, Flexible.** The controller is able to have any device allocated to any output. The range of devices is extensive. ProPlus controllers have 8 inputs and an additional 8 outputs (total 16). The inputs can be used to drive the outputs. Outputs can be periodic or cycle timers, devices or other actions. Inputs are contacts (opening or closing).



## Extended uses. Pro Plus I/O

- Alarms.** An input can be set as an alarm. A door or window magnetic or simple switch, can initiate an alarm by the switch opening or closing. This alarm message can be sent to the optional “Text Message” modem which will send a “**door open**” text message to your cellphone. The input signal can also/or trigger an output signal such as strobe lights or alarm klaxons to deter intruders. We could have a series of alarms that protect both your greenhouse and your home, garage and/or yard.
- Nutrient Minder/pH Minder.** I worked out I was using about 20ml each of solution A and Solution B each day. Using a tube and solenoid controlling the flow from a small reservoir, I found it took 5 seconds to deliver 20mls of liquid.  
Set up an output as a *timer* to turn on for 5 seconds each day to deliver nutrients.  
Simple and effective automation for me to take 5 day weekend breaks away!
- Tank Filler.** I used the *2INPUT option* for setting an output up. Input 1 turns the output on and Input 2 turns it off. When the water level gets to the bottom sensor the output is turned on to drive a pump (via a relay). When the water gets to the level of the top sensor it turns the output (and therefore the pump) off.
- Carbon Monoxide Sensor.** Keep your room safe when using a CO<sup>2</sup> burner. A CO sensor suitable for a motor home (or grow room) can be purchased from RV accessory suppliers for about \$50. Set up an *input switched* output on Harvest-Master. Input 1 controlling Output 9. Connect the sensor to Input 1. Connect output 9 to your extractor fan Relay switch. (Use a “Y” cable for 2 into one). If CO rises to unsafe levels it will trigger output 9 to come on which turns the fan on until the CO drops to a safe level.
- Mister.** It is good to give your plants a misting each day to wash the leaves (before the lights come on. Set up an output for *timer*. Set the output to come on 30 minutes before lights on with duration of 5 minutes (or whatever your mister needs).
- Outputs** can be turned on for;

  - Timers.* Start time and Stop time
  - Periodic timers.* Operate for XX seconds every YY minutes or hour. Watering, sprays, stirrers.
  - Input tied Output.* Turns output on/off driven by an input. E.g., “Door switch” makes “alarm”.
  - Input Tied Periodic Timer Output.* The output to occur 30 seconds per 20 minutes, only when the input is ON.
  - “Dual Input” Output.* An output signal turned ON by one Input and turned OFFf by another.
  - “Input Controlled” Output Burst.* So long as an input is activated (even ON then OFF), a single “burst” of output signal is provided. Say,... a pesticide spray for 15 secs, triggered by a flying insect detector (0.1 sec)