

## CT9210 Greenhouse CO<sub>2</sub> Generator Controller (120VAC) Manual

*The CT9210 is the simplest, safest and most affordable CO<sub>2</sub> controller available today... from any manufacturer. Perfect for economically controlling LP or natural gas generators with PPM accuracy.*



- The CT9210 is a two-piece controller that includes a wall mounted infrared CO<sub>2</sub> sensor with a 10 ft cord and a plug-in pass-through controller/power supply.
- Separate plug in controller is designed to be electrically safe by integrating UL approved components and electrically safe power switching design.
- Controls the Carbon Dioxide level in your area with parts per million accuracy.
- Simple to use and easy to understand with 3 LED lights that indicate CO<sub>2</sub> ppm range.
- Least expensive CO<sub>2</sub> / PPM controller available.
- Switching set point factory set to 1450 ppm with 50 ppm hysteresis/dead-band.
- Automatic, smart outside air calibration initiated at the press of a button.
- Safely controls any 120vac valve or CO<sub>2</sub> generator with a simple plug in controller.

### INSTALLATION

- 1) Plug the controller into an active wall plug that will provide a constant source of power. It should be located near where you want to measure and control CO<sub>2</sub>. When plugged into an active powered socket the plug-in unit should illuminate the "Power" LED on the upper right face of the plug.
- 2) Unwind the CO<sub>2</sub> controller 10 ft cable and plug it into the circular port at the top of plug in controller. The green LED on the front of the wall mount sensor should illuminate when power is provided to the plug in controller. The cable is used to draw power for the wall mounts sensor and send a control signal to the plug-in controller. This cable must be connected for the controller to work.
- 3) Hang the controller on the wall by sliding the keyhole mounting hole on the back of the wall mount sensor over a nail or screw (provided) inserted into the wall at the desired CO<sub>2</sub> measurement location (typically at mid level between the ceiling and floor). You can either use a single screw or two screws spaced 3.25 inches apart vertically. There should be a gap between the screw head and the wall of approximately 1/4".
- 4) Plug the CO<sub>2</sub> valve or generator into the wall-mounted plug-in controller. The "On" indicator light on the plug in unit will indicate when the power is switched on to your CO<sub>2</sub>



generator. Note: The controller can handle a maximum load of 10 amps. If this rating is exceeded the warranty will be void.

## OPERATION

The CT9210 controller has been factory programmed to provide an optimum CO<sub>2</sub> maximum control set point of 1450 ppm. When levels are below 1450 ppm, power will be provided by the plug-in controller to activate the CO<sub>2</sub> generation source. When levels exceed 1450 ppm the controller will deactivate power at the plug-in controller. The controller will repower the generation source when levels drop below 1400 ppm in the space (a 50 ppm hysteresis/dead-band).

In most greenhouse operations CO<sub>2</sub> is only generated when the plants are exposed to light. As a result you may wish to also include a timer with your setup. If using natural light, or a timer used to activate lighting, the plug in controller should be installed after the timer so that constant power is provided to the timer.

### Indicators

The wall mount CO<sub>2</sub> sensor provides three LED s that indicate the CO<sub>2</sub> levels. The when illuminate the LEDs indicate the following information:

- Left LED (green): 0-900 ppm and power on
- Middle LED (yellow): 901 to 1350 ppm
- Right LED (red): 1350+ ppm

The plug in controller also has two LED indicators:

- Left LED (green): Power is activated to the CO<sub>2</sub> control device/on control signal.
- Right LED (green): The plug-in controller is plugged into an active power source.

## CALIBRATION

The CT9210 is factory calibrated and the sensor in the wall mount unit is capable of remaining in calibration for a minimum of three years. However extreme shock during shipping and other factors may affect the calibration. The unit can easily be calibrated to outside air before use and periodically if desired. Outside concentrations are typically between 380 and 450 ppm and can be used as a ideal calibration source.

### To calibrate, or recalibrate the unit:

- 1) Bring the unit outside so that it will receive fresh air. Do not locate the unit in direct sunlight.
- 2) Connect the plug-in controller to a 120V power supply and then connect the wall mount sensor to the plug in controller. Allow the sensor to warm up for 1 minute.
- 3) Locate the small calibration button that is on the back of the wall mount controller. The calibration button is located in the one of the slots going across the upper part of the back of the case. The button is in the second slot from the right. Using an unbent paperclip or some similar implement handy to press and hold the button.
- 4) To activate calibration the button must be depressed for 8 seconds. When the calibration feature is activated, all LEDs should start flashing and will continue to flash until the calibration is complete. The CT9210 has a integrated calibration routine that waits for CO<sub>2</sub> levels to fully stabilize before finalizing the calibration.
- 5) Move away from the controller to allow the reading to stabilize for approximately 10-20 minutes. If the LEDs lights have stopped flashing, the calibration is complete.

**\*Important: Do not breathe in the vicinity of the sensor while the calibration routine is activated, this will just prolong the time necessary for the unit to complete its calibration. As you exhale, large concentrations of CO<sub>2</sub> are expelled from your lungs and can create unstable CO<sub>2</sub> levels around the wall mount CO<sub>2</sub> sensor.**



## PRECAUTIONS

- 1) DO NOT expose the TR9210 to water. It utilizes a ventilated enclosure to properly “sample” the CO<sub>2</sub>.
- 2) DO NOT connect loads greater than 5 amps @ 120vac to this unit.

## WARRANTY

The CT9210 is warranted against defects in workmanship for one year. If the enclosure on the wall mount sensor or plug-in controller is opened the warranty is void. A copy of the full product warranty is attached.

## SPECIFICATIONS

Operating principle	Single-beam Non-Dispersive Infrared (NDIR) with a 5” optical path length
Measurement range	0 – 5000 PPM CO <sub>2</sub>
Warm-up time	1 Minute
Maximum drift per year	+/- 15 PPM
Accuracy @ 77°F	+/- 50 PPM
Recommended calibration interval	1 to 3 years
Operating voltages	120 VAC to plug in controller
Maximum amperage	5 amp @ 120vac
Operating temperature range	0-50° C
Operating humidity range	0-99% RH (non-condensing)
Operating life expectancy	15 years typical
Warranty	Three years, parts and labor through repair or exchange.

### Warranty

AirTest Technologies Inc. (AIRTEST) warrants that the Product shall conform to and perform in accordance with published technical specifications and the accompanying written materials, and shall be free of defects in material and workmanship for a period of three years, such Warranty period commencing on receipt of the product by the Customer.

This Warranty is limited to the repair and or replacement, at AirTest’s sole discretion, of defective or non-conforming Product, and AirTest shall not be responsible for failure of the Product to perform specific functions, or any other non-conformance caused by or attributable to: a) any misapplication or misuse of the Product; b) failure of the Customer to adhere to any of AIRTEST’s specifications or instructions; c) neglect of, abuse of, modification to, or accident to, the Product; or d) any associated or complimentary equipment or software not furnished by AIRTEST; or e) the product enclosure has been opened or has signs of water exposure or electrical short.

If this unit should malfunction and you believe you may have a Warranty claim, contact AIRTEST and explain the issue you are experiencing ([sales@AirTest.com](mailto:sales@AirTest.com) or 604 517-3888). If your claim appears to be covered by the warranty as decided by AIRTEST, you will receive a Return Materials Authorization Number (RMA #). This number must be marked clearly on the outside of the package you are sending. Packages without RMA #'s may be returned to sender unopened. Customer agrees to insure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to AIRTEST, and to use the original shipping container or equivalent. Upon examination by AIRTEST, if the unit is found to be defective and therefore qualifies for Warranty, it will be repaired or replaced at no charge to the Customer.

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