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› TEKCOPLUS CO2 Monitor & Controller User Manual

TEKCOPLUS TK297PLUS_R1

TEKCOPLUS CO2 Monitor & Controller User Manual

MODEL: TK297PLUS_R1

Product Overview

The TEKCOPLUS CO2 Monitor & Controller (Model TK297PLUS_R1) is an advanced device designed for precise monitoring and control of carbon dioxide levels. Equipped with a highly accurate Non-Dispersive Infrared (NDIR) sensor, it ensures reliable measurements for optimal air quality management. This controller features intelligent day/night detection, programmable CO2 control values, and a large LCD for real-time data display. It is suitable for a wide range of applications, including greenhouses, grow rooms, residential spaces, commercial buildings, and more.



Figure 1: TEKCOPLUS CO2 Monitor & Controller with external NDIR sensor.

Package Contents

Upon opening the package, please verify that all the following items are included:

- 1 x CO2 Meter (Controller + Sensor)
- Screws and tapes for mounting
- English Instruction Manual
- Standard factory packaging



Figure 2: All items included in the product package.

Key Features

- **Low Drift NDIR CO2 Sensor:** Ensures precise and reliable carbon dioxide level measurements.
- **Auto Day/Night Detection:** Built-in photo sensor overrides CO2 control and shuts off the device when darkness is sensed, optimizing CO2 regulation for different phases of plant growth.
- **Big LCD Display with Real-Time Value:** Provides real-time CO2 readings and displays a CO2 chart with adjustable time scale (week/day/hour/min/auto).
- **Programmable CO2 Control Value & Zone Value:** Customize CO2 control settings and target zones to suit specific requirements.
- **Monitoring & Controlling CO2:** Designed for use in greenhouses or residential spaces, with human and plant modes to fine-tune CO2 regulation.
- **Extra-Long Sensor Cable:** The 4.5-meter long sensing probe cable allows for extended measurement distance from the display unit.

OPTIMIZING CO2 REGULATION FOR DIFFERENT PHASES OF PLANT GROWTH WITH 0-5000PPM MEASURING RANGE



BUILT-IN AUTO DAY/NIGHT DETECTION



DISPLAY CO2 CHART WITH ADJUSTABLE TIME SCALE (WEEK/DAY/HOUR/MIN/AUTO)

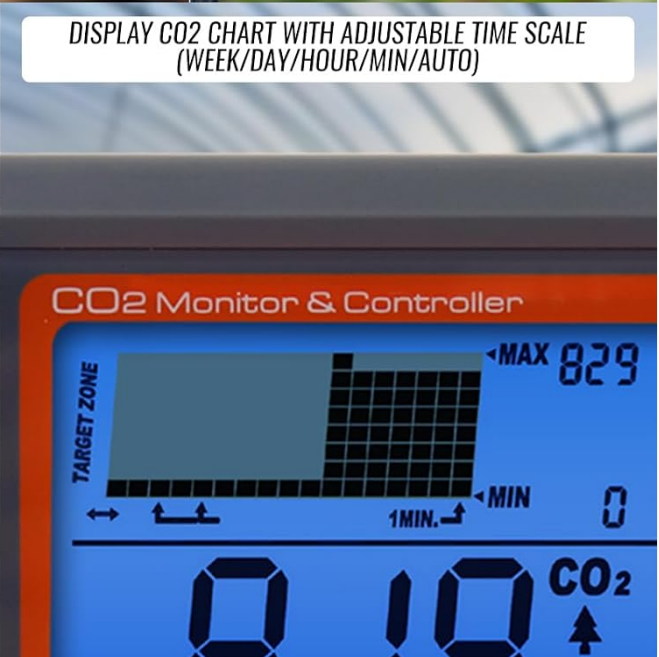


Figure 3: Display showing CO2 chart and auto day/night detection feature.



LARGE LCD DISPLAY

Our CO2 meter features a large LCD display that provides real-time CO2 readings, allowing you to monitor and control carbon dioxide levels with ease.



EXTRA-LONG SENSOR CABLE

The 4.5-meter probe cable lets you measure CO2 levels from a distance, providing flexibility and convenience.



Figure 4: The large LCD display and the 4.5-meter sensor cable.

LCD DISPLAY

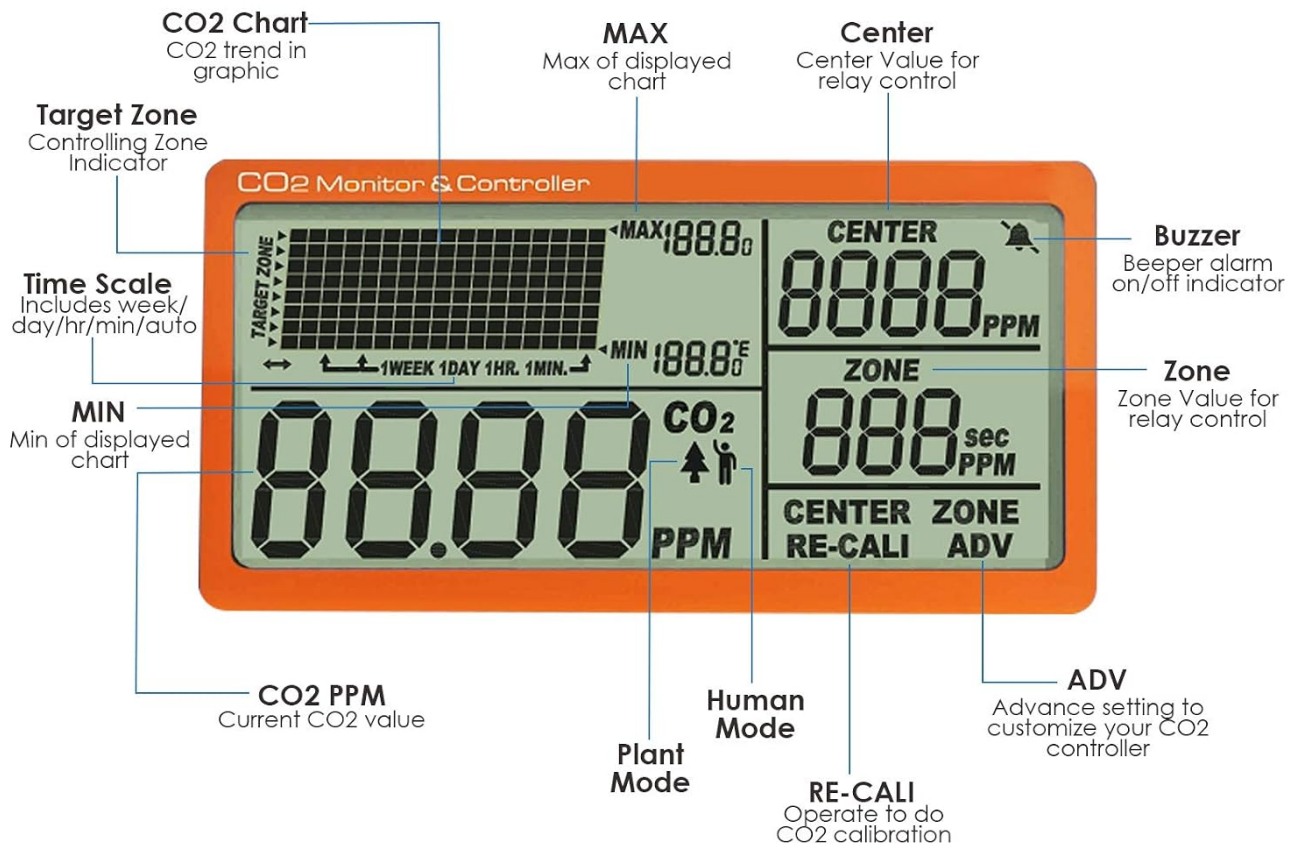


Figure 5: LED indicators on the controller for power, daytime, and output status.

Setup and Initial Configuration

To set up your TEKCOPLUS CO2 Monitor & Controller, connect the NDIR sensor probe to the main unit. Plug the power adapter into a suitable electrical outlet. The device will power on and begin displaying real-time CO2 readings. You can easily configure various settings such as Center, Zone, Re-Cali, and Advance using the intuitive buttons on the unit.

Video 1: Overview of the CO2 Controller's features and basic setup.

Operating Modes: Plant and Human

The controller offers two distinct operating modes to cater to different environmental needs:

- **Plant Mode:** Optimized for plant growth environments like greenhouses. In this mode, the controller activates a CO2 generator/regulator when CO2 levels fall below the set target, promoting photosynthesis.
- **Human Mode:** Ideal for residential or commercial spaces where maintaining healthy indoor air quality is crucial. In this mode, the controller activates a ventilation fan when CO2 levels exceed the set target, ensuring

fresh air circulation.

MONITORING AND CONTROLLING CO₂

This controller is perfect for greenhouses or homes. Choose between human and plant modes to adjust CO₂ levels based on your needs, ensuring optimal plant growth or maintaining good air quality.



PLANT MODE

To select "Plant mode" you will see plant icon flashing



HUMAN MODE

To select "Human mode" you will see human icon flashing



Figure 6: Visual representation of Plant Mode and Human Mode selection.

OUTPUT CONTROL

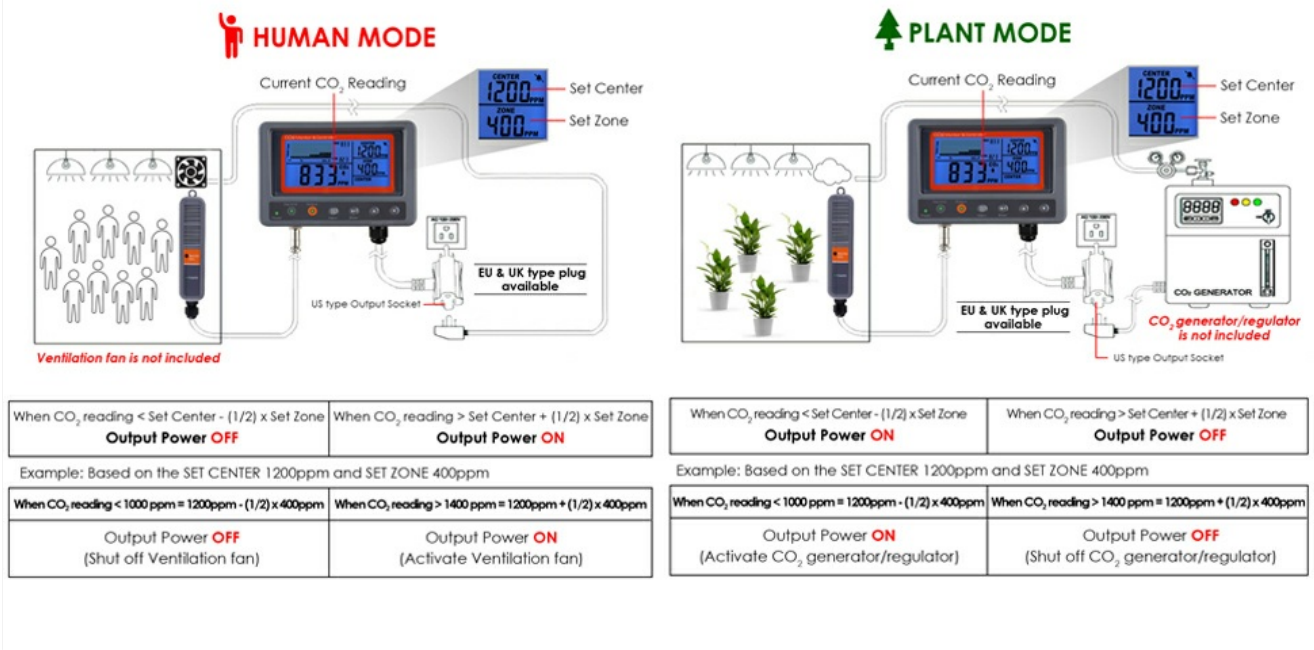


Figure 7: Combined diagram illustrating output control in both Human and Plant modes.

Output Control Logic

The controller manages external devices (CO₂ generator/regulator or ventilation fan) based on the set Center and Zone values. The output power is activated or deactivated according to the following logic:

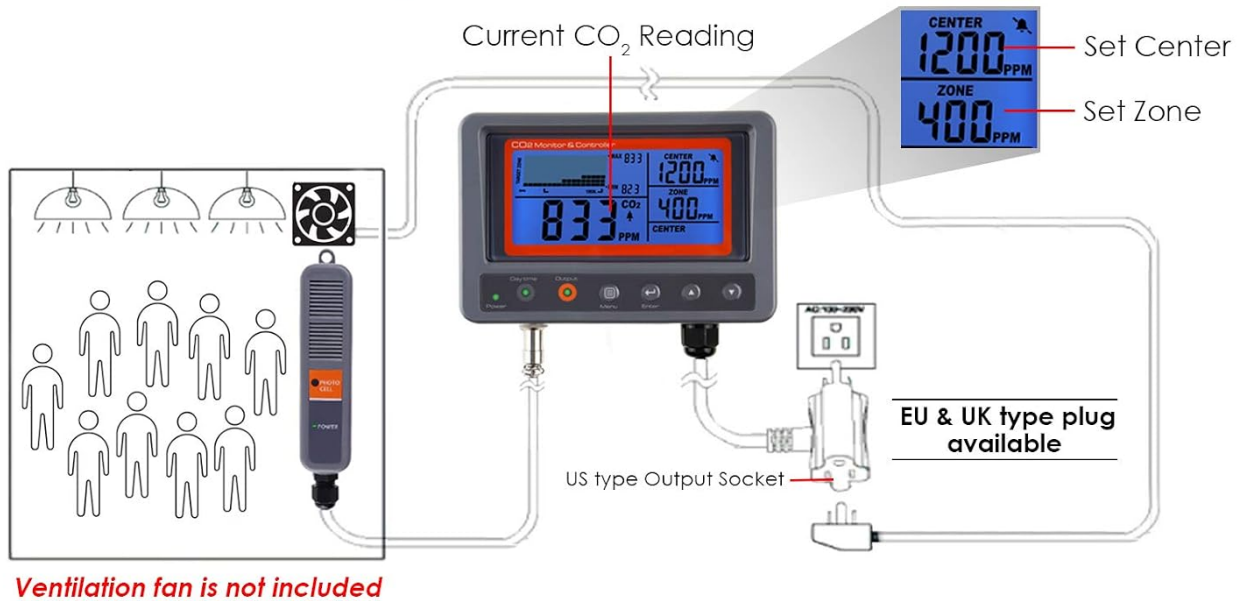
- **Output Power ON:** When the current CO₂ reading is less than [Set Center - (1/2) x Set Zone].
- **Output Power OFF:** When the current CO₂ reading is greater than [Set Center + (1/2) x Set Zone].

Example: If SET CENTER is 1200ppm and SET ZONE is 400ppm:

- Output Power ON (Activate CO₂ generator/regulator or ventilation fan) when CO₂ reading < 1000ppm (1200 - 200).
- Output Power OFF (Shut off CO₂ generator/regulator or ventilation fan) when CO₂ reading > 1400ppm (1200 + 200).

OUTPUT CONTROL

HUMAN MODE



When CO ₂ reading < Set Center - (1/2) x Set Zone	When CO ₂ reading > Set Center + (1/2) x Set Zone
Output Power OFF	Output Power ON

Example: Based on the SET CENTER 1200ppm and SET ZONE 400ppm

When CO ₂ reading < 1000 ppm = 1200ppm - (1/2) x 400ppm	When CO ₂ reading > 1400 ppm = 1200ppm + (1/2) x 400ppm
Output Power OFF (Shut off Ventilation fan)	Output Power ON (Activate Ventilation fan)

Figure 8: Detailed output control diagram for Plant Mode.

LED INDICATOR



Figure 9: Detailed output control diagram for Human Mode.

Adjustable Altitude Setting

The device allows for altitude adjustment to ensure accurate CO2 readings in various geographical locations. The adjustable range is from 50m to 5000m, with increments of 50m per step. This feature compensates for changes in atmospheric pressure at different altitudes, which can affect CO2 sensor accuracy.

Maintenance

To ensure the longevity and accuracy of your CO2 Monitor & Controller, follow these maintenance guidelines:

- Keep the device and sensor clean. Use a soft, dry cloth to wipe surfaces. Avoid abrasive cleaners or solvents.
- Ensure the sensor probe is free from dust, debris, or moisture, which can affect its performance.
- Store the device in a cool, dry place when not in use.
- Regularly check cable connections for any signs of wear or damage.

Troubleshooting

If you encounter issues with your CO2 Monitor & Controller, please refer to the following common troubleshooting steps:

- **No Power:** Ensure the power adapter is securely connected to both the device and a working electrical outlet.
- **Inaccurate Readings:** Verify that the sensor probe is clean and unobstructed. Perform a recalibration if necessary (refer to the device's menu for 'RE-CALI' option). Ensure the device is not placed near strong air currents or direct CO2 sources that could skew readings.
- **Output Not Activating/Deactivating:** Check your Center and Zone settings to ensure they are configured correctly for your desired CO2 levels. Verify that the external device (CO2 generator/regulator or ventilation fan) is properly connected and functional.
- **Display Issues:** If the LCD is dim or flickering, ensure stable power supply.

For persistent issues, please contact customer support.

Product Specifications

Specification	Value
Measuring Range	0-5000 ppm
Resolution	1ppm (0-1000); 5ppm (1000-2000); 10ppm (>2000)
Accuracy	CO2 below 3000ppm: ± 50 ppm or $\pm 5\%$ of reading (whichever is greater) / CO2 above 3000ppm: $\pm 7\%$ of reading
Warm-up Time	30 seconds
Response Time CO2	<2min for 63% of step changes or <4.6min for 90% step change
Product Dimensions	9.7 x 7.41 x 4.68 inches; 1.97"D x 1.57"W x 2.36"H
Item Model Number	TK297PLUS_R1
Item Weight	2 Pounds
Manufacturer	Tekcoplus Ltd
Power Source	Corded Electric
Alarm	Audible
Operating Humidity	0-95 percent
Upper Temperature Rating	50 Degrees Celsius
Sensor Type	Non Dispersive Infrared

Warranty and Customer Support

For warranty information, technical assistance, or any inquiries regarding your TEKCOPLUS CO2 Monitor & Controller, please refer to the contact details provided in your product packaging or visit the official TEKCOPLUS website. Our customer support team is available to assist you with any questions or concerns.

