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ArecaloT CO2-15-10K-INS-D

ArecaloT CO2 Sensor Instruction Manual

Model: **CO2-15-10K-INS-D**

Brand: **ArecaloT**

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, maintenance, and troubleshooting of the ArecaloT CO2 Sensor, Model CO2-15-10K-INS-D. This high-precision carbon dioxide transmitter is designed for agricultural greenhouses and industrial applications, featuring RS485 output and an integrated display for real-time CO2 monitoring.



Image: The ArecaloT CO2 Sensor, part of the CWT-602 X Series, featuring an internal CO2 probe with OLED display and RS485 output.

2. PRODUCT OVERVIEW AND FEATURES

The ArecaloT CO2 Sensor is a robust device engineered for accurate carbon dioxide measurement in demanding environments. Key features include:

- CO2 measuring range: 0-10000 ppm
- Output interface: RS485 for seamless data integration
- Power supply: DC10-30V
- Integrated OLED display for direct, real-time CO2 readings
- IP65 waterproof casing for enhanced environmental protection
- Waterproof and breathable membrane for sensor longevity and accurate air sampling

3. SETUP

Proper installation ensures optimal performance and longevity of your CO2 sensor. Follow these steps carefully:

1. **Unpacking:** Carefully remove the sensor from its packaging. Inspect the device for any visible damage that may have occurred during transit.
2. **Mounting:** Select a suitable location for the sensor. The chosen spot should be representative of the area where CO2 levels need to be monitored and protected from direct physical impact or extreme environmental conditions. Use the integrated mounting holes to securely attach the device to a wall or other stable surface. The sensor dimensions are approximately 110mm (length) x 85mm (width) x 44mm (height).

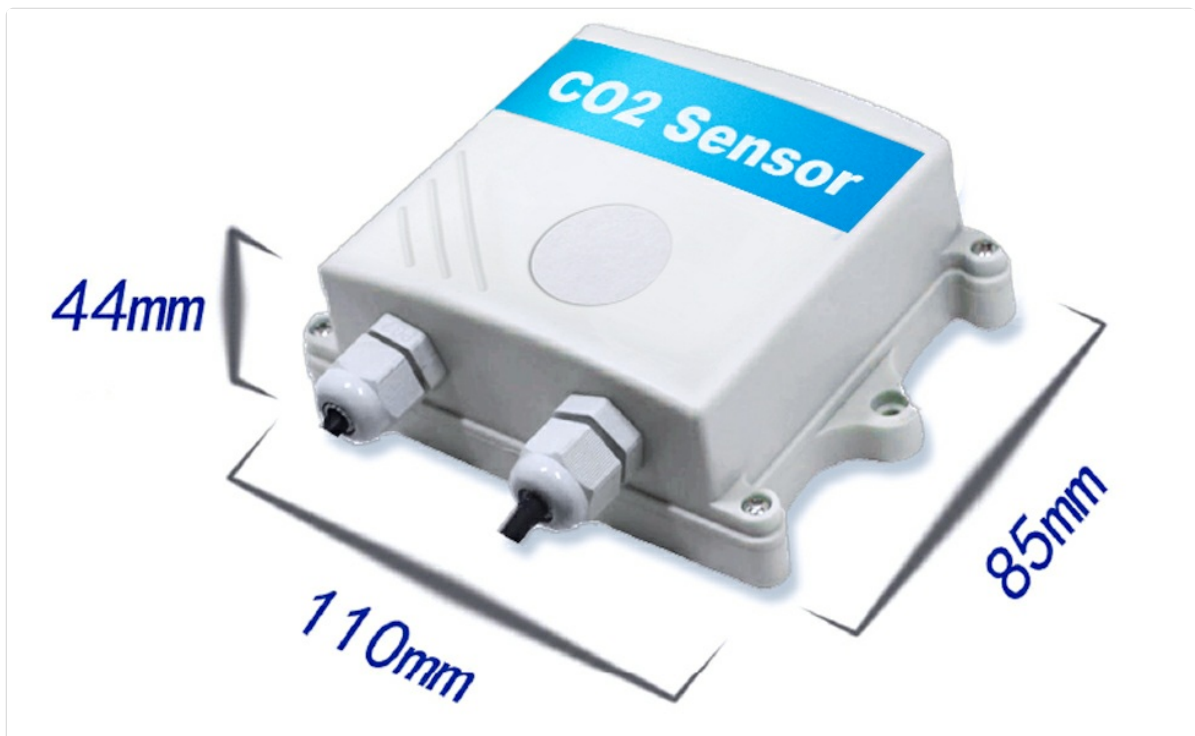


Image: ArecaloT CO2 Sensor showing its overall dimensions (110mm x 85mm x 44mm) for accurate mounting.

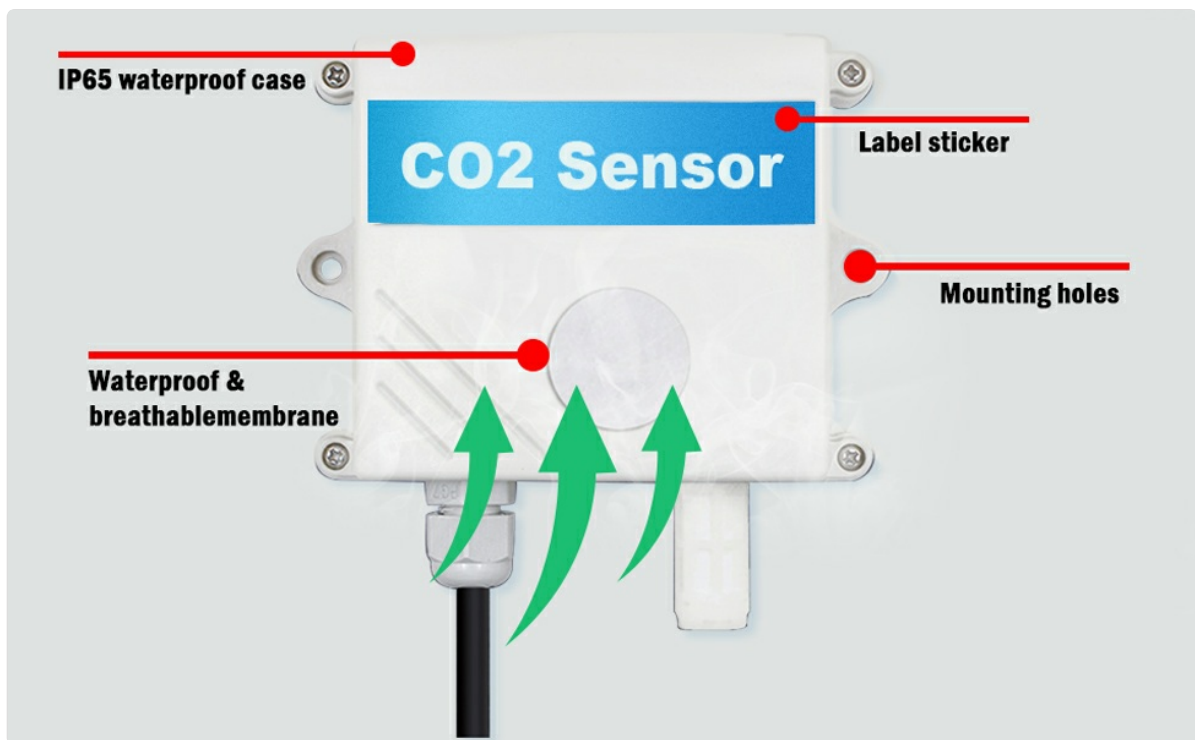


Image: Detailed view of the ArecaloT CO2 Sensor highlighting the IP65 waterproof case, mounting holes, and the waterproof & breathable membrane.

3. **Wiring:** Connect the power supply (DC10-30V) and RS485 communication lines according to the wiring diagram provided in the product packaging or technical datasheet. Ensure all connections are secure and correctly polarized to prevent damage to the sensor or connected equipment.
4. **Power On:** Once all wiring is complete and secure, apply power to the sensor. The device will initiate a preheating sequence. Initial readings are available after approximately 2 minutes, with maximum precision achieved after 10 minutes.

4. OPERATING INSTRUCTIONS

The sensor begins measuring CO2 levels automatically upon power-up, following the preheating period.

1. **Display Readings:** The integrated OLED display will show the current CO2 concentration in parts per million (ppm). This provides immediate visual feedback on the environmental CO2 levels.
2. **RS485 Output:** For remote monitoring, data logging, and integration with control systems, connect the RS485 interface to a compatible data acquisition system or programmable logic controller (PLC). Refer to the communication protocol details in the technical datasheet for proper data interpretation and system integration.
3. **Calibration:** The sensor is factory-calibrated to ensure accuracy. If recalibration is deemed necessary due to specific application requirements or prolonged use, consult the technical datasheet or contact ArecaloT customer support for specific instructions and procedures.

5. MAINTENANCE

The ArecaloT CO2 Sensor is designed for robust performance and requires minimal maintenance to ensure continued accuracy and reliability.

- **Cleaning:** Periodically clean the exterior casing of the sensor with a soft, damp cloth. Do not use abrasive cleaners, solvents, or harsh chemicals, as these can damage the casing or internal components. Ensure the waterproof and breathable membrane, which allows air to reach the sensor

element, is kept clear of dust, debris, and any obstructions to maintain proper air circulation.

- **Inspection:** Regularly inspect all wiring connections and the mounting hardware for any signs of wear, corrosion, or loosening. Ensure the sensor remains securely mounted.
- **Environmental Protection:** The sensor features an IP65 rating, providing protection against dust ingress and low-pressure water jets. While robust, avoid submerging the device in water or exposing it to high-pressure water streams, which could compromise its sealing.

6. TROUBLESHOOTING

This section addresses common issues and provides solutions to help you resolve them.

- **No Display or Power:**
 - Check all power supply connections. Ensure they are secure and correctly wired.
 - Verify that the power source is active and providing voltage within the specified DC10-30V range.
- **Incorrect CO2 Readings:**
 - Allow sufficient preheating time (up to 10 minutes for maximum precision) after power-up.
 - Ensure the sensor is placed in an area truly representative of the CO2 levels you intend to measure, away from direct air currents, vents, or localized CO2 sources that might skew readings.
 - Check for any obstructions on the waterproof and breathable membrane that could impede air sampling.
 - If readings remain consistently inaccurate after these checks, recalibration might be necessary. Refer to the operating instructions or contact support.
- **No RS485 Communication:**
 - Verify the RS485 wiring connections (A/B lines, ground) for correctness and security.
 - Check the communication parameters (e.g., baud rate, parity, data bits, stop bits) on your data acquisition system or controller to ensure they precisely match the sensor's specifications.
 - Confirm that the RS485 interface on your connected system is functioning correctly.
- **Display is Blank or Flickering:**
 - This symptom often indicates an unstable or insufficient power supply. Check the power source and connections.
 - If the issue persists after verifying power, contact customer support for further assistance.

7. SPECIFICATIONS

Detailed technical specifications for the ArecaloT CO2 Sensor, Model CO2-15-10K-INS-D, are provided below.

Image: Technical specifications table for the ArecaloT CO2 Sensor, detailing various parameters.

Parameters Measuring

Parameter	Details
CO2	<ul style="list-style-type: none">• Measuring range: 0-10000 ppm• Accuracy: $\pm(40\text{ppm} + 3\%F\cdot S)$ (25°C)• Long-term stability: $<2\%F\cdot S$• Non-linearity: $<1\%F\cdot S$• Data update time: 2s• Response time: less than 90S at 90% step change
Temperature	<ul style="list-style-type: none">• Measuring range: -40°C-80°C• Accuracy: $\pm 5^\circ\text{C}$ (25°C)• Long-term stability: $\leq 0.1\%^\circ\text{C}/\text{y}$• Response time: $\leq 15\text{s}$
Humidity	<ul style="list-style-type: none">• Measuring range: 0-100%RH• Accuracy: 2% within 0-50%, 3% within 50-100%• Long-term stability: $\leq 1\%RH/\text{y}$• Response time: $\leq 4\text{s}$

Basic Parameters

Parameter	Value
Power supply	DC10-30V
Max Power consumption	0.3W@24V DC
Average current	$<85\text{mA}$
Preheating time	2min (available), 10min (maximum precision)
Temperature influence	Self-contained temperature compensation
Operating environment	-10~50°C / 0-80%RH (No condensation)
Overall dimensions	110×85×44mm

8. WARRANTY INFORMATION

Please refer to the manufacturer's official website or contact ArecaloT customer support for detailed warranty terms and conditions applicable to the CO2-15-10K-INS-D sensor. Keep your purchase receipt as proof of purchase for any warranty claims.

9. SUPPORT INFORMATION

For technical assistance, product inquiries, or support regarding your ArecaloT CO2 Sensor, please visit the official ArecaloT website or contact their customer service department. Contact information can typically be found on the product packaging or the manufacturer's website.

We recommend checking the ArecaloT website for the latest documentation, FAQs, and software updates related to your sensor model.