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Mini-C6AG-RS232 MODBUS

Generic Mini-C6AG-RS232 MODBUS 6-in-1 Ultrasonic Weather Station User Manual

Model: Mini-C6AG-RS232 MODBUS

1. Introduction

The Generic Mini-C6AG-RS232 MODBUS 6-in-1 Ultrasonic Weather Station is a compact, integrated environmental monitoring device designed for accurate and real-time data collection. This sensor combines six essential meteorological parameters into a single unit, providing comprehensive environmental insights without the need for multiple separate instruments.

Figure 1: The Mini-C6AG 6-in-1 Ultrasonic Weather Sensor, illustrating its capability to measure wind speed, wind direction, air temperature, air humidity, atmospheric pressure, and illuminance.

Key Features:

- **Six Integrated Sensors:** Measures wind speed, wind direction, air temperature, air humidity, atmospheric pressure, and light intensity.

- **Compact and Durable Design:** Small size, high integration, lightweight, and robust construction made from engineering plastics (ABS) to withstand various weather conditions.
- **Maintenance-Free Operation:** No moving parts, eliminating the need for on-site maintenance and calibration.
- **Multi-Parameter Detection:** Provides accurate and rapid real-time detection of all six environmental parameters.
- **Versatile Connectivity:** Supports RS232 and MODBUS protocols for data output.

Applications:

This weather station is suitable for a wide range of applications, including:

- Meteorology and weather forecasting
- Environmental monitoring and protection
- Transportation infrastructure monitoring
- Smart city projects
- Industrial testing and control systems

2. Safety Information

Please read and understand the following safety precautions before installing or operating the device:

- Ensure the device is installed by qualified personnel.
- Disconnect power before performing any installation or maintenance.
- Do not expose the device to extreme physical shock or corrosive substances.
- Ensure proper grounding if required by local electrical codes.
- Avoid direct contact with internal components when the device is powered.
- Install the device in a location that minimizes obstruction to wind flow and light exposure for accurate readings.

3. Package Contents

Verify that all items are present in the package:

- 1 x Mini-C6AG-RS232 MODBUS 6-in-1 Ultrasonic Weather Station
- Integrated Wind speed and direction sensor
- Integrated Temperature and Humidity Meter
- Integrated Illuminance sensor
- (Additional cables or mounting hardware may be included depending on the specific kit)

4. Product Overview and Dimensions

The Mini-C6AG sensor features a compact, integrated design. Understanding its physical characteristics is crucial for proper installation.

Figure 2: Front view of the Mini-C6AG Ultrasonic Weather Sensor.

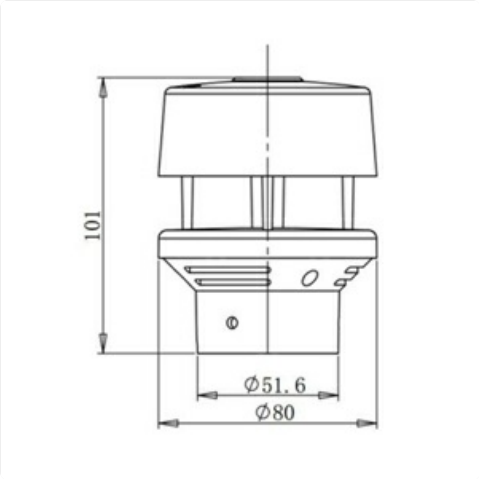

Figure 3: Dimensional drawing of the Mini-C6AG Ultrasonic Weather Sensor. All dimensions are in millimeters (mm). The sensor has a height of 101mm and a base diameter of 80mm.

5. Setup and Installation

5.1 Mounting Location

Select a mounting location that provides:

- A stable and secure mounting surface, free from excessive vibration.
- Unobstructed exposure to wind from all directions.
- Clear line of sight to the sky for accurate illuminance readings.
- Accessibility for wiring and future maintenance (if any).
- Avoid mounting near large structures, trees, or heat sources that could interfere with readings.

5.2 Physical Installation

1. Securely attach the sensor to a mounting pole or bracket using appropriate hardware (not included unless specified). Ensure the sensor is level.
2. Orient the sensor correctly if specific directional alignment is required for your application (consult application-specific guidelines if applicable).

5.3 Electrical Connection

The device operates via a corded electric power source and communicates using RS232 and MODBUS protocols. Refer to the wiring diagram (if provided with your specific unit) for precise connections.

- **Power Supply:** Connect the power input according to the specified voltage and current requirements. Ensure

polarity is correct.

- **RS232 Connection:** Connect the RS232 data lines (TX, RX, GND) to your data acquisition system or controller.
- **MODBUS Connection:** For MODBUS RTU, connect the A and B data lines (and GND if applicable) to your MODBUS master device. Ensure proper termination resistors are used on the bus if necessary.

Note: Incorrect wiring can damage the device. If unsure, consult a qualified electrician or technical support.

6. Operation

Once properly installed and powered, the Mini-C6AG-RS232 MODBUS weather station will begin collecting data for all six parameters. Data is transmitted via the configured communication protocol (RS232 or MODBUS).

6.1 Data Acquisition

Your data acquisition system or controller will need to be configured to communicate with the sensor using the appropriate protocol settings (baud rate, data bits, stop bits, parity for RS232; slave ID, function codes for MODBUS). The sensor continuously measures:

- Wind Speed (m/s)
- Wind Direction (degrees)
- Air Temperature (°C)
- Air Humidity (% RH)
- Atmospheric Pressure (hPa)
- Illuminance (Lux)

6.2 MODBUS Protocol (Example)

For MODBUS communication, the sensor acts as a slave device. Your MODBUS master will send requests to read specific registers corresponding to each measured parameter. Consult the detailed MODBUS register map provided by the manufacturer for exact register addresses and data formats.

7. Maintenance

The Mini-C6AG-RS232 MODBUS weather station is designed for maintenance-free operation due to its lack of moving parts. However, periodic visual inspection and cleaning can help ensure optimal performance.

- **Cleaning:** Gently wipe the exterior of the sensor with a soft, damp cloth to remove dust, dirt, or debris that may accumulate over time. Avoid using abrasive cleaners or solvents.
- **Inspection:** Periodically check the mounting hardware and electrical connections for any signs of loosening, corrosion, or damage.
- **Obstructions:** Ensure that there are no new obstructions (e.g., growing vegetation, new structures) that could interfere with the sensor's readings.

8. Troubleshooting

If you encounter issues with the weather station, consider the following troubleshooting steps:

- **No Data Output:**
    - Check power supply: Ensure the device is receiving adequate power and connections are secure.
    - Verify wiring: Confirm all communication wires (RS232/MODBUS) are correctly connected and not damaged.
    - Check communication settings: Ensure your data acquisition system's baud rate, parity, stop bits, and

MODBUS slave ID match the sensor's configuration.

- **Inaccurate Readings:**
  - Check mounting location: Ensure there are no obstructions affecting wind flow or light exposure.
  - Environmental factors: Extreme local conditions (e.g., heat sources, strong local air currents) can affect readings.
  - Sensor cleanliness: Clean the sensor surface as described in the Maintenance section.
- **Intermittent Data:**
  - Check cable integrity: Look for loose connections or damaged cables.
  - Power fluctuations: Ensure a stable power supply.

If problems persist, contact technical support for further assistance.

9. Specifications

Parameter	Value/Description
Model	Mini-C6AG-RS232 MODBUS
Measured Parameters	Wind Speed, Wind Direction, Air Temperature, Air Humidity, Atmospheric Pressure, Illuminance
Connectivity Technology	RS232, MODBUS
Power Source	Corded Electric
Material	Engineering plastics (ABS)
Color	White
Item Weight	400 g
Temperature Accuracy	1 °C
Upper Temperature Range	120 °F (approx. 49 °C)
Sensor Technology	Ultrasonic
Dimensions (approx.)	Height: 101mm, Base Diameter: 80mm
Recommended Uses	Meteorology, environment monitoring, environmental protection, transportation, smart city, industrial testing

10. Warranty and Support

Warranty Information:

This product comes with a**1-Year Limited Warranty** from the date of purchase. The warranty covers defects in materials and workmanship under normal use. It does not cover damage caused by misuse, accident, unauthorized modification, or improper installation.

Technical Support:

For technical assistance, troubleshooting, or warranty claims, please contact the seller or manufacturer directly. Refer to your purchase documentation for specific contact details.

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