

AeroSense 6-in-1 Ultrasonic Weather Sensor - Bracket Mount

Overview

The AeroSense 6-in-1 Ultrasonic Weather Sensor - Bracket Mounted is a compact, robust, and highly accurate ultrasonic weather station designed for industrial, agricultural, and meteorological applications. It measures light/solar sensing, barometric pressure, wind speed, wind direction, air temperature, and Relative Humidity in a single, maintenance-free enclosure. Utilizing RS485 Modbus RTU, it is optimized for seamless integration with PLCs, RTUs, and SCADA systems.



AeroSense 6-in-1 Ultrasonic Weather Sensor - Bracket Mount

Table of Contents

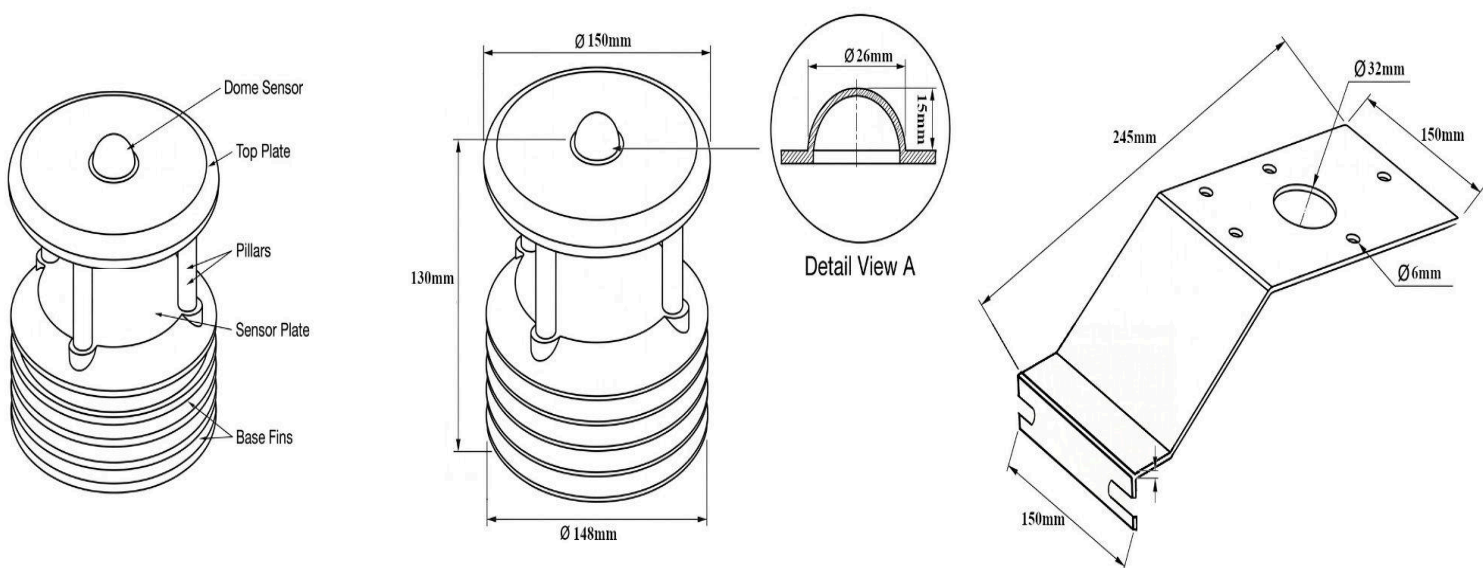
Overview	1
Table of Contents	2
Technical Specifications	3
Dimensions	3
Wiring Interface	4
Mounting & Installation Instructions	4
Modbus Register Map	4
Applications	5
Important Notes	5

AeroSense 6-in-1 Ultrasonic Weather Sensor - Bracket Mount

Technical Specifications

Parameter	Value	Accuracy
Operating Voltage	10V to 24V DC (12V DC Nominal)	-
Power Consumption	< 1.2 W	-
Communication Protocol	RS485 Modbus RTU (up to 2000 meters)	-
Baud Rate	9600 bps (Default), 8-N-1	-
Wind Speed - Measuring Range	0 to 40 m/s	$\pm(0.2 \text{ m/s} \pm 0.02v)$, where v is the actual wind speed
Wind Direction - Measuring Range	0 to 359.9°	$\pm 2^\circ$
Air Temperature - Measuring Range	-20°C to +60°C	$\pm 0.5^\circ\text{C}$
Relative Humidity- Measuring Range	0% to 99% RH	$\pm 3\%\text{RH}$
Light / Solar Radiation- Measuring Range	0 to 200,000 Lux	$\pm 5\%$
Barometric pressure - Measuring Range	300 hPa to 1100 hPa	0.2 hPa
Operating Temperature	-20°C to +60°C	-
Operating Humidity	0% to 99% RH	-
Ingress Protection (IP Rating)	IP65	-
Housing Material	UV-resistant - ABS engineering plastic	-

Dimensions:



AeroSense 6-in-1 Ultrasonic Weather Sensor - Bracket Mount

Wiring Interface

Wire Color	Signal Function	Description
RED	VCC	Power Supply Positive (10V - 24V DC)
BLACK	GND	Power Negative / Ground
YELLOW	RS485-A	Modbus Data Plus (D+)
BLUE	RS485-B	Modbus Data Minus (D-)

Mounting & Installation Instructions

- Find True North:** Locate the "N" alignment arrow stamped on the top plate next to the solar dome. This marker must point exactly towards True North before securing the unit.
- Bracket Installation:** Mount the angled metal bracket (245x150mm) to your desired surface or pole. Ensure the bracket is perfectly level to prevent skewing the ultrasonic measurement geometry.
- Securing the Sensor:** Place the sensor on the flat portion of the bracket. Use the three included screws and wingnuts to secure the sensor base. Do not over-torque.
- Cable Routing:** Route the 4-wire cable safely from the sensor body gap to prevent strain. You may pass it through the 32mm center hole of the mounting bracket for clean cable management.
- Clearance:** Ensure the top solar dome is completely free from shadows and obstructions to provide accurate light readings. Mount the unit at least 2 meters above ground level to prevent artificial wind turbulence.

Modbus Register Map

Parameter	Register (Hex)	PLC Address	Data Type	Scaling & Parsing
Illuminance / Light	0x0004	40005	16-bit Integer	Direct Value (Lux)
Wind Direction	0x0005	40006	16-bit Integer	Direct Value (°)
Air Temperature	0x0006	40007	16-bit Signed	Value / 10 (°C)
Relative Humidity	0x0007	40008	16-bit Integer	Value / 10 (%)
Barometric Pressure	0x0008	40009	16-bit Integer	Direct Value (hPa)
Wind Speed	0x0009	40010	16-bit Integer	Value / 10 (m/s)

AeroSense 6-in-1 Ultrasonic Weather Sensor - Bracket Mount

Applications

- **Agricultural & Smart Farming:** Monitoring field microclimates, evapotranspiration rates, and automating greenhouse climate control systems.
- **Renewable Energy Optimization:** Tracking ambient conditions for wind turbine safety. The 5-parameter model is highly specific to solar farms for correlating panel energy output with real-time solar irradiance.
- **Industrial & Construction Safety:** Providing critical wind shear and speed alerts for tower cranes, suspended scaffolding, and open-pit mining operations.
- **Environmental & Meteorological:** Integration into municipal smart city grids, local pollution tracking stations, and automated highway weather alert systems.
- **Building Automation:** Feeding ambient temperature, humidity, and wind data into commercial HVAC systems to optimize heating and cooling loads.

Important Notes

1. **Transducer Protection:** *Never touch, press, or insert objects into the ultrasonic transducers located in the measurement gap. Damage to these nodes will permanently destroy the sensor's ability to measure wind.*
2. **Optical Dome Care:** *The clear solar dome must be kept completely free from dust, bird droppings, and scratches. Clean only with a soft, damp microfiber cloth and non-abrasive cleaners.*
3. **Strict Leveling Requirements:** *The sensor must be mounted perfectly vertically on its mast or bracket. Any tilt will disrupt the horizontal ultrasonic time-of-flight geometry, resulting in dropped or skewed wind vectors.*
4. **True North Alignment:** *The physical "N" marker on the top plate or dome must be manually aligned to geographic True North during installation. Modbus data does not auto-correct for orientation.*
5. **Clearance Zones:** *Mount the unit at least 2 meters above ground level. Keep it far away from walls, dense tree canopies, or HVAC exhaust vents to prevent artificial wind turbulence and thermal contamination.*
6. **Electrical Safety:** *Verify your power supply is strictly within the range before applying power. Reversing the RED (VCC) and BLACK (GND) wires, or applying AC voltage, will instantly destroy the internal RS485 communication transceiver.*

AeroSense 6-in-1 Ultrasonic Weather Sensor - Bracket Mount

Terms and Conditions Agreement

Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your ProMax sales/technical representative if you have any questions or comments.

Warranties.

(a) Warranty. ProMax's does not offer any warranty/guarantee/replacement/returns for products once sold. Since these products are used in research/testing/production with other components, it is beyond our scope to determine the working of our product in your application. ProMax disclaims all other warranties, express or implied.

(b) Limitations. ProMax MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

ProMax further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right.

(c) Buyer Remedy. ProMax sole obligation hereunder shall be, at ProMax's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall ProMax be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless ProMax analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification or any other reason. Return of any Products by Buyer must be approved in writing by ProMax before shipment. ProMax Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://www.probots.co.in/> or contact your ProMax representative for published information.

Limitation on Liability; Etc.

ProMax COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of ProMax Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use. ProMax Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, ProMax will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE ProMax PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

ProMax Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof. Performance Data.

Data presented in ProMax Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of ProMax's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the ProMax's Warranty and Limitations of Liability.

Change in Specifications. Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your ProMax's representative at any time to confirm actual specifications of purchased Product. Errors and Omissions. Information presented by ProMax Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.