OHTS1080 Aluminum Enclosure Wind Speed Transmitter (RS485 Type)

1 Product Overview

The OHTS1080 is a wind speed measurement transmitter based on a three-cup mechanical structure, featuring an aluminum alloy enclosure and bottom cable exit design for long-term outdoor environmental monitoring. The device incorporates a bearing rotation mechanism that converts cup wheel rotational speed into electrical signals via photoelectric or magnetoelectric conversion principles. Internal circuitry processes these signals and outputs standard Modbus RTU protocol data through an RS-485 interface. The enclosure surface undergoes anodizing or spray coating treatment, providing UV resistance, rain and snow resistance, and chemical corrosion resistance, making it suitable for wind speed parameter acquisition in meteorological, environmental protection, and industrial field applications.

2 Applications

- Wind speed observation at meteorological stations and environmental monitoring stations
- Ventilation control monitoring in greenhouse facilities
- Meteorological parameter acquisition for ships and port terminals
- Airflow monitoring in aquaculture environments
- Peripheral ambient wind speed detection at industrial plants
- Preliminary wind resource assessment for wind farms
- Urban environmental monitoring network nodes
- Microclimate monitoring in agricultural fields
- Meteorological safety monitoring at construction sites
- Meteorological observation systems for scientific research and educational purposes

3 Features

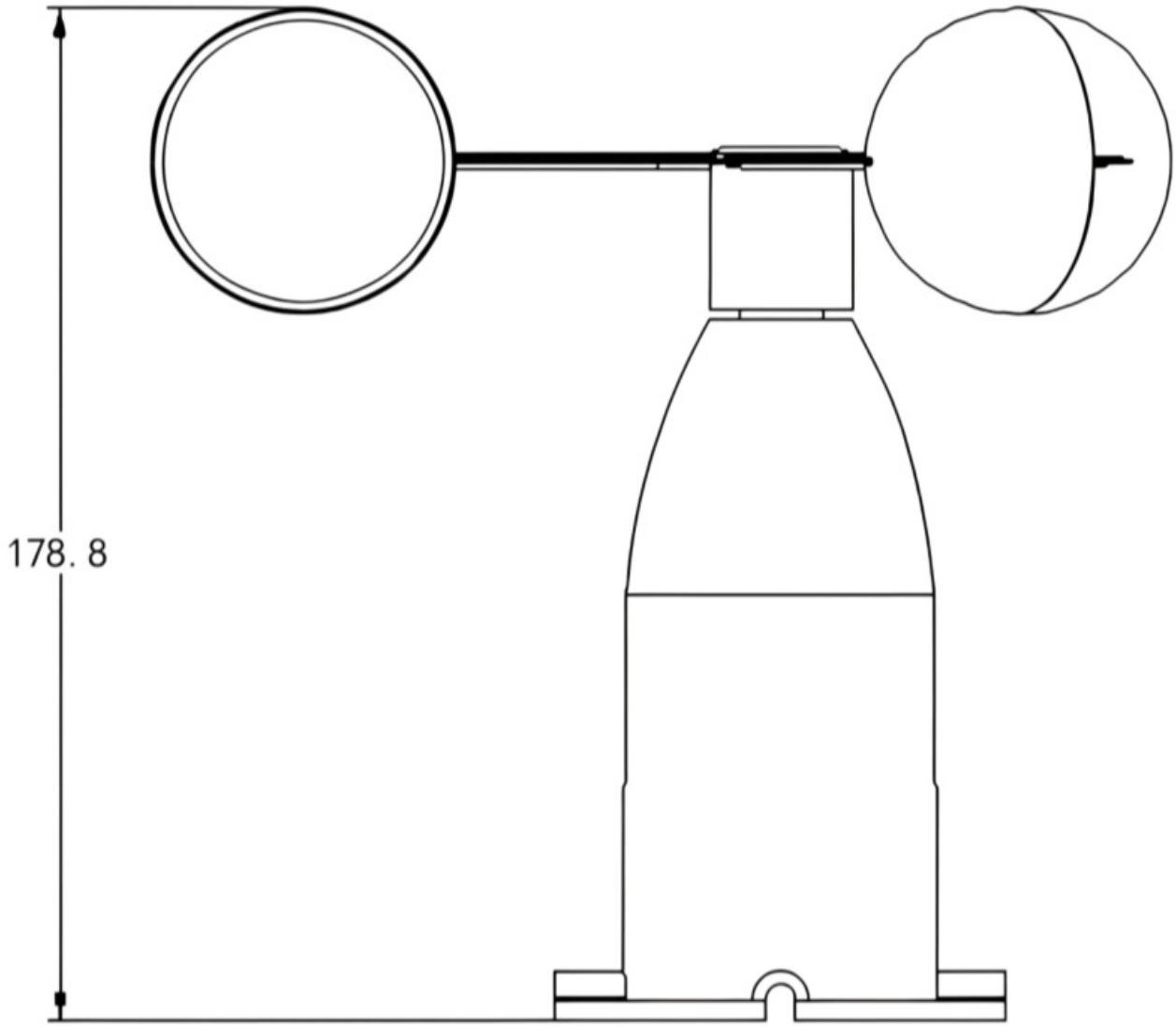
- Measurement range of 0~60 m/s with 0.1 m/s resolution, meeting conventional meteorological and industrial monitoring requirements
- All-aluminum alloy enclosure structure with high mechanical strength and corrosion-resistant surface treatment for long-term outdoor deployment
- Direct bottom cable exit design eliminates waterproofing failure risks caused by aging of aviation plug rubber gaskets
- Low-friction bearing solution with small moment of inertia and dynamic response time ≤2s
- Internal circuitry with electromagnetic interference suppression capability for industrial electromagnetic environments
- Standard Modbus RTU communication protocol supporting multiple baud rate configurations from 2400~115200 bps
- Wide-voltage DC power supply range accommodating 5~30V DC input

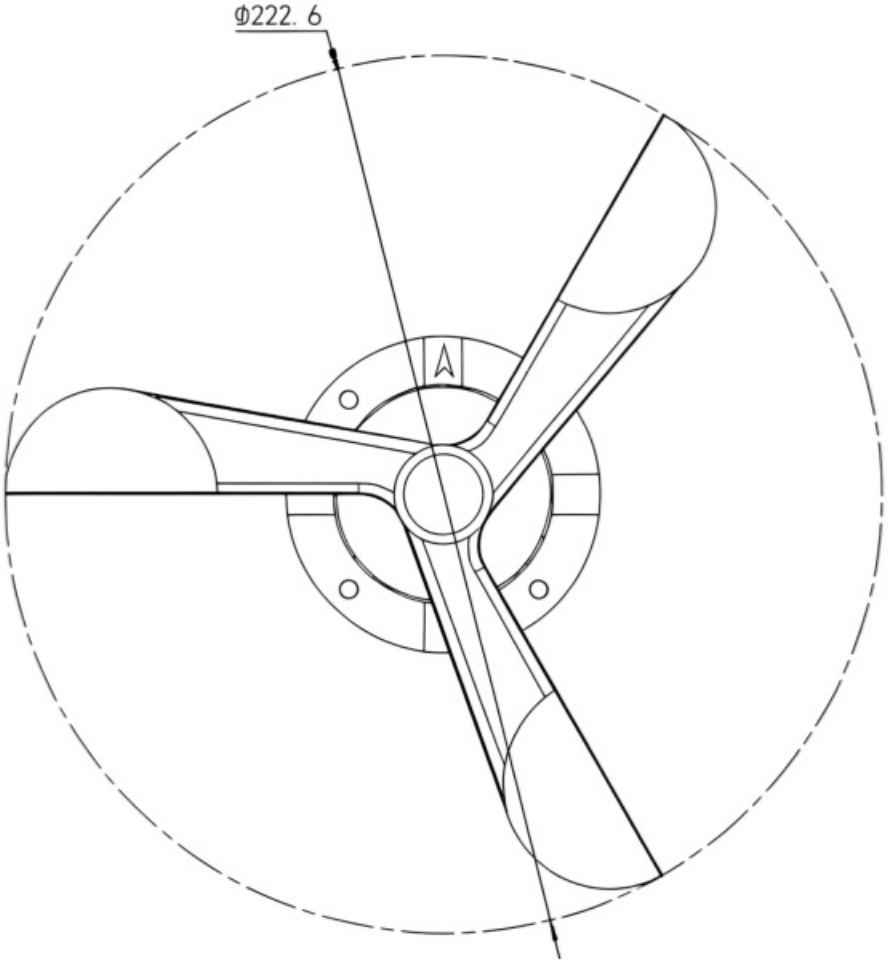
4 Technical Specifications

Parameter	Specification	Remarks
Supply Voltage	5~30V DC	DC Power Supply
Maximum Power Consumption	0.3W	@12V DC Supply
Operating Temperature	-40℃~+60℃	Relative Humidity 0%RH~95%RH (Non-condensing)
Communication Interface	RS-485	Modbus RTU Protocol
Data Format	8 data bits, no parity, 1 stop bit	8N1
Default Communication Address	0x01	Configurable via software
Supported Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200 bit/s	Factory default: 4800 bit/s
Measurement Range	0~60 m/s	-
Resolution	0.1 m/s	-
Accuracy	±(0.2+0.03V) m/s	V = current wind speed value; Conditions: 0~30 m/s, 25℃
Dynamic Response Time	≤2s	-
Parameter Configuration	Parameter settings via RS-485 interface and configuration software	-

5 Physical Specifications

Parameter	Specification
Mounting Method	Flange mounting
Flange Diameter	φ79.8mm
Mounting Hole Circle Diameter	φ68mm
Mounting Hole Specification	4×φ4.5mm, equally spaced
Enclosure Material	Aluminum Alloy

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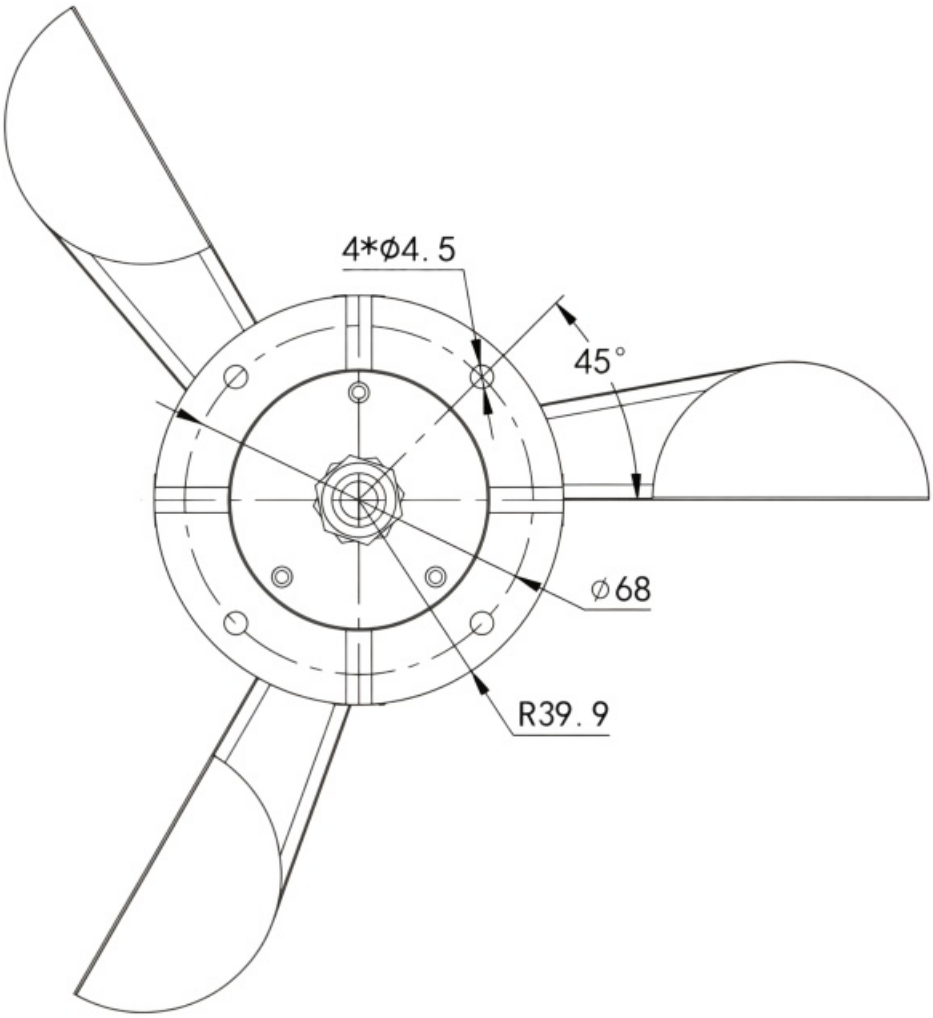

Unit: mm

6 Installation

6.1 Packing List

- Transmitter main unit: 1 pc
- Mounting screws: 4 pcs
- Mounting bracket: 1 pc
- Certificate of conformity, warranty card, wiring instructions
- USB-to-RS485 converter (optional)
- RS-485 termination resistor (optional)

6.2 Interface Description

The device employs wide-voltage power input, supporting 10~30V DC supply. When connecting to the RS-485 bus, ensure correct polarity of A and B signal lines, and verify that device addresses on the bus do not conflict.

6.3 Field Wiring Requirements

When multiple RS-485 devices connect to the same bus, follow RS-485 bus topology specifications. It is recommended to add a 120Ω termination resistor at the bus end to eliminate signal reflection. For specific wiring requirements, refer to the "RS-485 Device Field Wiring Manual."

6.4 Mechanical Installation

Utilize flange mounting by securing the lower pipe fitting of the sensor to the flange plate via threaded flange. Fasten the flange plate to the support bracket using 4 bolts through the φ4.5mm mounting holes, ensuring the device maintains a horizontal orientation to guarantee wind speed measurement accuracy.

7 Wiring Definition

Wire Color	Definition	Description
Brown	Power Positive	DC 10~30V
Black	Power Negative	GND
Yellow (Green)	RS-485-A	Differential signal positive
Blue	RS-485-B	Differential signal negative

8 Communication Protocol and Data Conversion

8.1 Communication Parameters

Parameter	Setting
Coding	8-bit binary
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Error Check	CRC-16 (Cyclic Redundancy Check)
Default Baud Rate	4800 bit/s

8.2 Data Frame Format (Modbus RTU)

Master Query Frame Structure:

Address Code	Function Code	Register Start Address	Register Length	CRC Low	CRC High
1 byte	1 byte	2 bytes	2 bytes	1 byte	1 byte

Slave Response Frame Structure:

Address Code	Function Code	Valid Byte Count	Data Area 1	Data Area N	CRC
1 byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes

8.3 Register Definition

Register Address	PLC Address	Content	Access	Data Conversion
0x0000	40001	Instantaneous wind speed	Read-only	Uploaded data is 10× the actual value

8.4 Data Conversion Formula

Wind speed calculation formula:

$$V = \frac{R}{10}$$

Where:

- V: Actual wind speed value, unit $\mathrm{m/s}$
- R: Register read value (unsigned 16-bit integer)

Example:

Reading wind speed from device address 0x01:

Query frame: `0x01 0x03 0x00 0x00 0x00 0x01 0x84 0x0A`

Response frame (current wind speed 8.6 m/s): `0x01 0x03 0x02 0x00 0x56 0x38 0x7A`

Calculation: $0x0056 = 86$, therefore $V = \frac{86}{10} = 8.6\ \mathrm{m/s}$

9 Precautions

- Strictly prohibited to disassemble the device or touch the sensor core body to avoid permanent damage or calibration failure
- Power must be disconnected before installing or removing the transmitter to prevent circuit damage from live operation
- Water ingress will cause irreversible damage; strictly prohibited to use in condensation or extreme temperature environments; prevent thermal shock
- Installation location should be far from high-power electromagnetic interference sources (such as frequency converters, high-power motors) to avoid measurement errors
- Prevent direct contact of chemical reagents, oils, dust, and other contaminants with the sensor
- This device is strictly prohibited from use as a safety device or emergency stop device, and shall not be used in applications where equipment failure may cause personal injury

10 After-Sales Guarantee & Support

Warranty Period: 24 months from date of purchase (subject to valid purchase documentation)

Warranty Coverage: During normal use and maintenance, free repair and replacement parts services are provided for failures caused by material and workmanship defects. Lifetime paid maintenance services are provided beyond the warranty period.

Exclusions from Warranty:

- Damage caused by incorrect installation, use, or operation
- Disassembly, repair, modification, alteration, or replacement of internal components by non-authorized technical personnel
- Damage caused by negligent use, water ingress, or infiltration of other substances
- Failures caused by accidents or natural disasters
- Damage caused by operation outside the working parameters listed in the product technical specifications

11 Manufacturer Information

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12 Revision History

Version	Date	Description
V1.0	-	Initial version creation