OHTS1090 Aluminum Housing 360° Wind Direction Transmitter

1 Product Overview

The OHTS1090 is a 360° wind direction detection transmitter based on an aluminum alloy housing structure. It utilizes a precision bearing transmission mechanism to achieve low-resistance rotation, ensuring the accuracy and sensitivity of wind direction data acquisition. The housing undergoes surface oxidation treatment, providing excellent weather resistance for long-term outdoor deployment. The device integrates an RS485 communication interface and supports the ModBus-RTU protocol, enabling seamless integration into industrial automation systems and environmental monitoring networks.

2 Applications

- Greenhouse environmental control systems
- Environmental protection monitoring stations
- Meteorological observation networks
- Marine navigation monitoring
- Wharf operation safety monitoring
- Livestock breeding environment monitoring
- Industrial plant micro-meteorological monitoring
- Agricultural field environment monitoring
- Wind power auxiliary monitoring
- Smart city environmental monitoring

3 Features

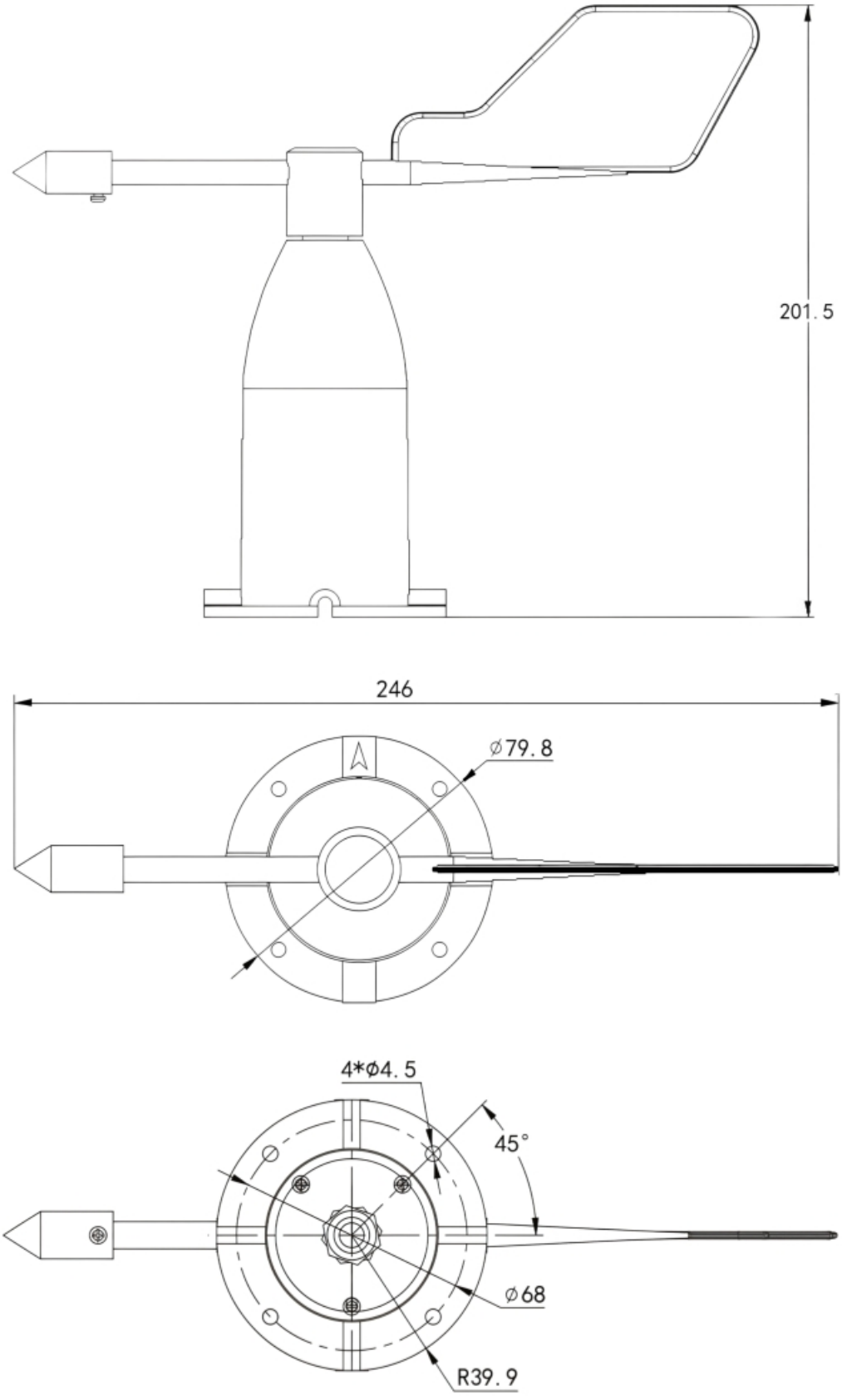
- Measurement range 0~359.9°, full-angle coverage
- Anti-electromagnetic interference (EMI) design
- High-precision bearing structure with low rotational resistance torque and high measurement accuracy
- Full aluminum alloy housing with high mechanical strength, high hardness, and corrosion resistance, suitable for long-term outdoor deployment
- Optimized moment of inertia design for sensitive dynamic response
- Standard ModBus-RTU communication protocol with strong compatibility and convenient access

4 Technical Specifications

Parameter	Specification
Supply Voltage	5~30V DC
Maximum Power Consumption	0.2W (at 12VDC supply)
Operating Temperature	-40℃~+60℃
Operating Humidity	0%RH~80%RH
Communication Interface	RS485
Communication Protocol	ModBus-RTU
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Default Communication Address	1 (0x01)
Supported Baud Rates	2400/4800(default)/9600/19200/38400/57600/115200 bps
Measurement Range	0~359.9°
Dynamic Response Time	≤0.5s

5 Physical Specifications

Parameter	Specification
Housing Material	Aluminum Alloy
Surface Treatment	Anodized / Spray Coated (high temperature resistant, rain/snow and UV resistant)
Mounting Method	Flange Mounting
Flange Base Diameter	Φ79.8mm
Mounting Hole Pitch Circle Diameter	Φ68mm
Mounting Hole Diameter	Φ4.5mm
Number of Mounting Holes	4



Unit: mm

6 Installation

6.1 Packing List

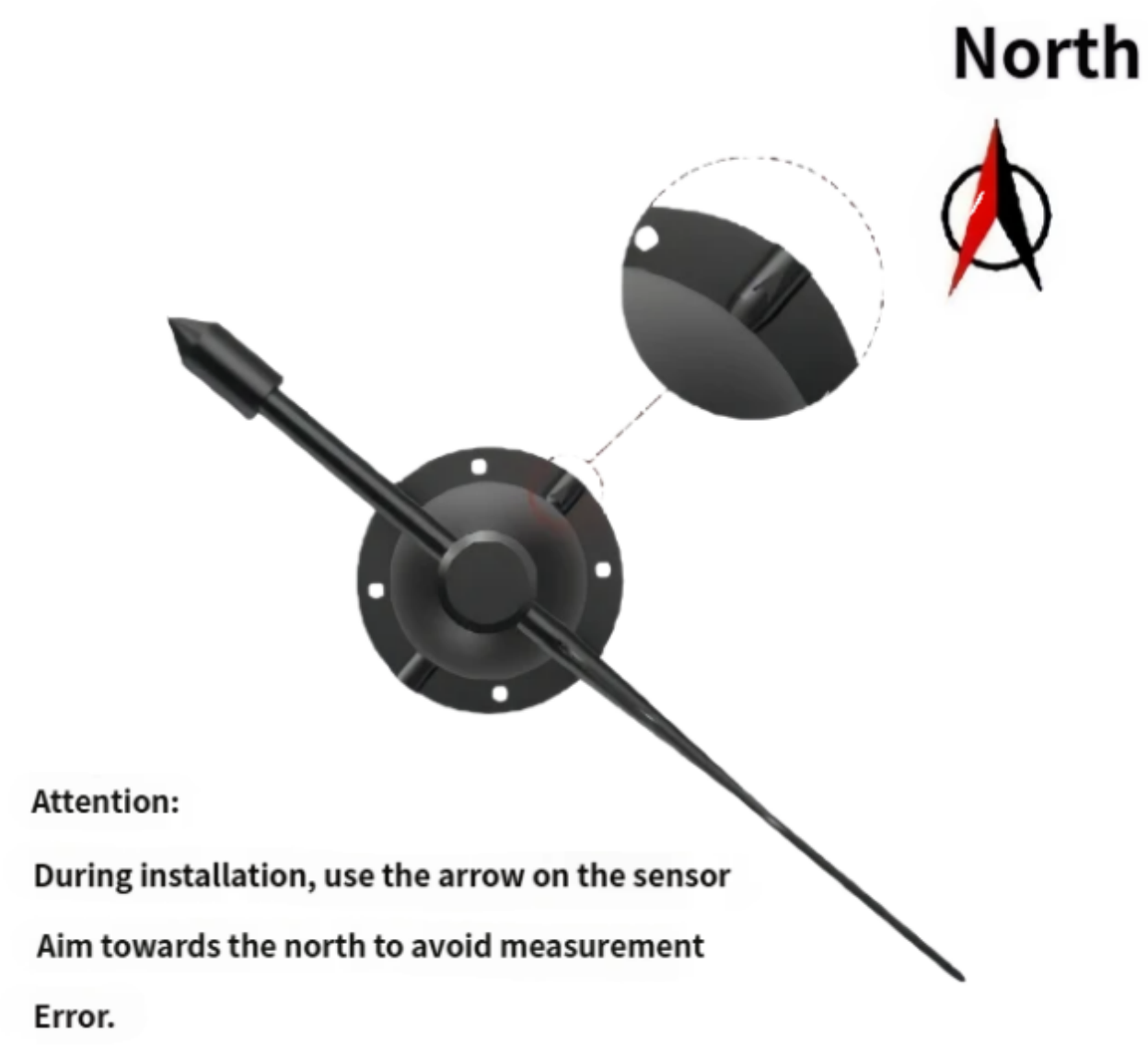
- Transmitter main unit: 1 pc
- Mounting screws: 4 pcs
- Mounting shim: 1 pc
- Certificate of conformity, warranty card, wiring instructions
- USB to 485 converter (optional)
- 485 terminal resistor (optional)

6.2 Electrical Connection Preparation

Wide voltage power input range is 5~30V DC. When connecting 485 signal wires, ensure correct A/B wire sequence, and device addresses on the same bus must not conflict.

6.3 Installation Method

Adopt flange mounting method to fix the sensor to the mounting bracket through threaded flange connection. The flange base diameter is Φ79.8mm, with 4 mounting holes of Φ4.5mm evenly distributed on the Φ68mm pitch circle, fastened with bolts. During installation, ensure the entire instrument remains horizontal to guarantee wind direction measurement accuracy.



6.4 Field Wiring Requirements

When multiple 485 devices are connected to the same bus, follow RS485 bus wiring specifications. For specific technical requirements, refer to the "485 Device Field Wiring Manual".

7 Wiring Definition

Function Category	Wire Color	Definition
Power	Brown	Positive (+, 5~30V DC)
Power	Black	Negative (-)
Communication	Yellow (Green)	RS485-A
Communication	Blue	RS485-B

8 Communication Protocol and Data Conversion

8.1 Communication Parameters

Parameter	Setting
Coding Format	8-bit binary
Data Bits	8 bits
Parity Bit	None
Stop Bits	1 bit
Error Check	CRC-16 (Cyclic Redundancy Check)
Baud Rate	2400/4800(default)/9600/19200/38400/57600/115200 bps

8.2 Data Frame Format

Adopting ModBus-RTU communication protocol:

Initial Structure: ≥4 bytes silent interval
Address Code: 1 byte
Function Code: 1 byte (this device only supports 0x03 read holding registers)
Data Area: N bytes (16-bit data, high byte first)
CRC Check: 2 bytes
End Structure: ≥4 bytes silent interval

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 2	...	Data Area N	CRC Check
1 byte	1 byte	1 byte	2 bytes	2 bytes	...	2 bytes	2 bytes

8.3 Register Definition

Register Address	PLC/SCADA Address	Content Description	Operation	Data Conversion
0000H	40001	Angle value with one decimal place (0-359.9°) Uploaded data is actual value multiplied by 10	Read Only	$\theta = \frac{D_{0000H}}{10}$ Where D_{0000H} is the raw register value (decimal)
0001H	40002	Integer angle value (0-359°) Uploaded data is actual value	Read Only	$\theta = D_{0001H}$ Where D_{0001H} is the raw register value (decimal)

8.4 Communication Example

Query Frame (Reading angle value from device at address 0x01):

Address Code	Function Code	Start Address	Data Length	CRC Low	CRC High
0x01	0x03	0x00 0x00	0x00 0x02	0xC4	0x0B

Response Frame (Example data: angle value with one decimal place is 160.8°):

Address Code	Function Code	Valid Byte Count	0000H Data	0001H Data	CRC Low	CRC High
0x01	0x03	0x04	0x06 0x48	0x00 0xA0	0x7A	0xD5

Data Parsing:

- Register 0000H data: $0648_{16} = 1608_{10}$, converted angle value:

$$\theta = \frac{1608}{10} = 160.8^\circ$$

- Register 0001H data: $00A0_{16} = 160_{10}$, converted angle value:

$$\theta = 160^\circ$$

9 Precautions

- It is strictly prohibited to use this device as a safety device or emergency stop device, nor for any purpose where equipment failure may cause personal injury.
- Users must not disassemble the device by themselves. Touching the sensor core is strictly prohibited to avoid irreversible damage.
- Power must be disconnected before installing or removing the transmitter.
- Water ingress into the device can cause permanent damage. Use in condensation or liquid immersion environments is strictly prohibited.
- Install away from high-power electromagnetic interference sources (such as frequency converters, motors, etc.) to avoid measurement errors.
- Prevent direct contact of chemical reagents, oils, dust and other contaminants with the sensor.
- Avoid long-term use in extreme temperature environments, and prevent thermal shock.
- Strictly follow the technical manual for installation, operation and maintenance.

10 After-Sales Guarantee & Support

Warranty Period: 24 months from the date of purchase (subject to valid purchase certificate).

Warranty Scope: Under normal use and maintenance conditions, free repair and replacement of components are provided for failures caused by defects in materials and workmanship of the equipment itself.

Beyond Warranty Period: Lifetime maintenance service is provided (charges apply).

Non-Warranty Scope:

- Equipment damage caused by incorrect installation, use or operation
- Disassembly, repair, modification or replacement of internal components by non-authorized technicians
- Damage caused by water or other substances entering the device due to negligence
- Failures or damage caused by accidents or natural disasters
- Failures caused by use beyond the operating parameters listed in the product technical specifications

11 Manufacturer Information

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12 Revision History

Version	Date	Description
V1.0	-	Initial release