

# WIND DIRECTION SENSOR

## RY-FS01

### MANUAL



#### APPLICATION

This sensor is used to measure the wind direction in the outdoor environment, measure the 16 azimuth wind direction, and output in degrees. It can output 485 signal according to demand.

It is widely used for wind speed measurement in greenhouses, environmental protection, weather stations, ships, docks, and aquaculture.

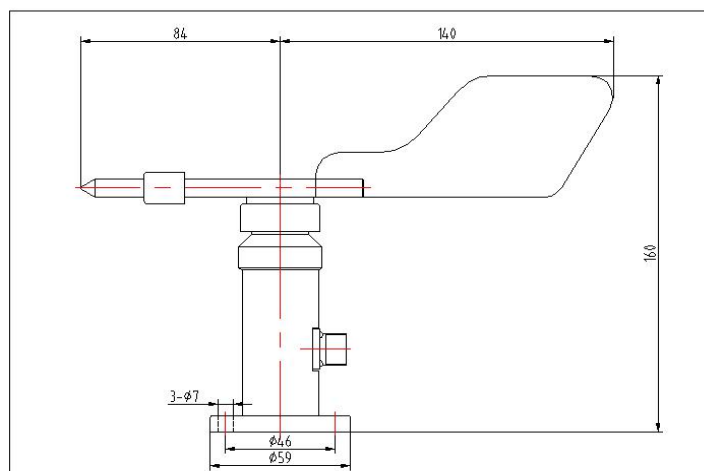
## FEATURES

- .Small size, easy to carry, easy to install
- .High accuracy, wide range and good stability
- . Reasonable structural design and good appearance quality
- .Good linearity of data information, long signal transmission distance, strong anti-interference ability

## TECHNICAL SPECIFICATION

Model	RY-FX01/485
	16 direction output 485
Starting wind speed	$\leq 0.3\text{m/s}$
Measuring range	0~360°
Output signal	RS485
Working Voltage	DC12V
Resolution	16 Direction
Operating temperature	-20~80°C
Environment humidity	$\leq 95\%$
Transmission distance	>300m
Size and weight	1. Weathercock height: 160mm 2. Weathercock rotation radius: 147mm 3. Weathercock length: 231mm 4. Weight: 0.3kg

## SIZE



## 16 WIND DIRECTION WIRING

Correspondence between output degree and direction:

North	0
North to East	22.5
Northeast	45
East to North	67.5
Ease	90
East to South	112.5
Southeast	135
South to east	157.5
South	180
South to west	202.5
Southwest	225
West to south	247.5
West	270
West to north	292.5
Northwest	315
North to west	272.5

## WIRING METHOD

**Red: + Black: - Yellow: A Blue: B**

## COMMUNICATION PROTOCOL

The CRC16 description of the system:

In all the following descriptions, the two bytes of CRC16 in the MODBUS RTU protocol are specified by the MODBUS protocol: the low byte is first, and the high byte is last.

In the following description, it is assumed that the system address is 0x01 (the system default address is 0x01)

System's standard MODBUS register description

Special Note: Each register data is 16 bits and two bytes, with the high byte first and the low byte last.

The number or length of the registers in the MODBUS command are two bytes and 16 bits as a unit, instead of single byte 8 bits as a unit. The user should ensure that the range of the two parameters of the address and number of registers in the command is within the range specified by this system. If it is out of range, the output result of the system cannot be predicted. The user should ensure that the MODBUS command meets the requirements of this manual in the software design of the host computer.

### Direction module default parameters:

Address: 01

Baud rate: 9600

Communication port parameters: 9600, n, 8,1

For the user, the address or baud rate of the module can be modified by the 06 command, and the real-time bearing value can be read by the 03 command.

(Note that the bearing value has been increased by 10 times. The actual value must be divided by 10.)

The unit is degree.

16 Azimuth mode: 0 (360) degrees from true north, and an azimuth every 22.5 degrees clockwise.

0 (360) degrees = 90 degrees north = 180 degrees east = 270 degrees south = 270 degrees west:

Omni-directional mode: 0 (360) degrees north, increasing the angle clockwise.

**The following example introduces the method of using Modbus RTU commands to access system registers:**

- 1、 Read the internal register (read the wind speed value)

Command sent: 01 03 00 01 00 01 D5 CA

01	03	00 01	00 01	D5 CA
Device address	Function code	Start register address	No. of registers	CRC16 check digit

Respond: 01 03 02 01 C2 38 45

01	03	02	01 C2	38 45
System address	Function code	Number of bytes in the data segment	Data segment data	CRC16 check digit

The data in the data segment is the direction value. 01 C2 = 01C2H is converted to decimal 45.0 degrees (divide by 10)

2、 Modify internal register (Modify module address) command (change 01 address to 02)

Send: 01 06 00 A1 00 02 59 E9

01	06	00 A1	00 02	59 E9
Current address	Function code	Start register address	New address	CRC16 check digit

Respond: 01 06 00 A1 00 02 59 E9 (The data is returned as it is, the modification is successful.)

The new address of the system: 02

3、 Modify internal register (modify module baud rate) command (change baud rate to 19200)

Send: 01 06 00 A2 00 02 A9 E9

01	06	00 A2	00 02	A9 E9
Current address	Function code	Start register address	New address	CRC16 check digit

Answer: 01 06 00 A2 00 02 A9 E9 (the data is returned as it is, indicating that the modification was successful) The new baud rate of the system: 19200

The following is the baud rate corresponding to the code

**00 00:** 4800    **00 01:** 9600    **00 02:** 19200    **00 03:** 38400    **00 04:** 56000    **00 05:** 115200

## WARRANTY & SERVICE

**Warranty commitment:** the warranty period is 12 months from the delivery period (except for the product problems caused by the failure to operate according to the corresponding technical requirements or other human behaviors).

**After sales commitment:** users can consult relevant technical problems by phone and get clear solutions. If it is a quality problem, it can be returned to the factory for maintenance or replacement.

**Service Phone:** 0310-8033736