

RAINFALL SENSOR

YANTAI RY-TBS



RY-TBS tipping bucket rain gauge is based on the principle of converting rainfall into physical signals that can be measured to measure precipitation. It can be widely used in small weather stations, hydrological stations, agriculture and forestry and other relevant departments to measure precipitation and precipitation. Intensity, precipitation time. The pulse signal is output sent to the datalogger and RTU, the purpose of measuring the size of rainwater is achieved by recording the number of pulses.

Features

Good linearity, long transmission distance, good anti-interference ability;

Made from corrosion-resistant metal in all weather conditions. UV protection.

The unique design of the funnel can effectively prevent debris from blocking the funnel.

The supporting system of the tipping bucket parts is well-manufactured, with low frictional resistance, sensitive turning over of the tipping bucket parts, and stable performance;

The shell and main structure of the rain sensor are made of stainless steel, with good appearance quality and high grade;

The water receiving port is made of stainless steel by one stamping process, with good finish and small water stagnation error;

Technical Data

Rainfall Collector	circle bucket /Dimension 200 mm.		
Measuring Range	0-150 mm./hr.		
Accuracy	±2% (150mm./hr.)		
Resolution	0.2mm(customizable 0.1mm)		
Output	Reed switch on and off, pulse (1 pulse=0.2mm precipitation)	4-20mA	RS485Modbus RTU
Weight	About 4KG		
Material	Stainless steel		
Response time	1S		
working environment	Temperature 0~+60°C		
Standard cable length	3M		
degree of protection	IP65		
According for WMO-No.168			

COMMUNICATION PROTOCOL

Communication specification

9600,8,1,N,N

Write station number:

Device address Function code Start register address No. of registers Data length Data CRC check

00 10 0001 0001 02 00xx CRClCRCChi (XX=0X01-0XFF) Write register response

Device address Function code Start register address No. of registers CRCcheck 00 10 0001 0001 CRClCRCChi

Example

Command 00 10 00 01 00 01 02 00 33 EA 04

Respond 00 10 00 01 00 01 51 D8

Initial station number: FF

Read station number command (fixed command)

Device address Function code Start register address No. of registers CRCcheck 00 03 0001 0001 CRClCRCChi

Station respond

Device address Function code Data length Data CRC check

00 03 02 00xx CRClCRCChi (XX=01-ff)

Example

Read station number

Command 00 03 00 01 00 01 D4 1B

Respond 00 03 02 00 FF C5 C4

Modify cumulative time interval

Device address Function code Start register address No. of registers Data length Data (new station number) CRC check

xx 10 0010 0001 02 00xx CRClCRCChi (XX=0X0001-0X7FFF) Write register response

Device address Function code Start register address No. of registers CRCcheck

xx 10 0010 0001 CRClCRCChi

Example

Command FF 10 00 10 00 01 02 00 0A 6C A3

Respond FF 10 00 10 00 01 15 D2

00 0A in the command is the time interval to be changed, and the unit is minute, Cleared in 10 minutes

The initial default is zero every ten minutes

Read Date

Device address Function code Start register address No. of registers CRCcheck

xx 03 0000 0001 CRClCRCChi

Data respond

Device address Function code Data length Data CRC check

xx 03 02 00yy CRClCRCChi

Example

Command FF 03 00 00 00 01 91 D4

Respond FF 03 02 00 14 91 9F

Note: Rainfall: 4th, 5th 00 14

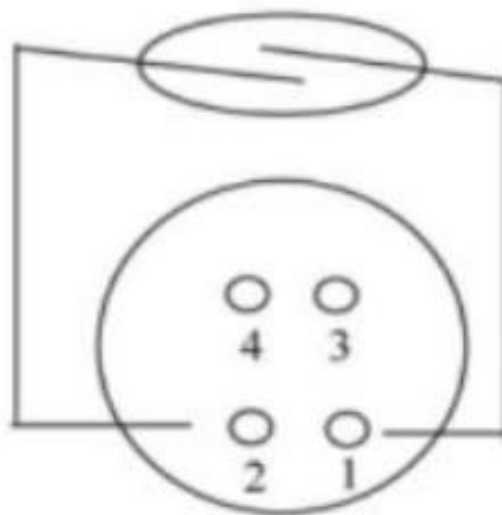
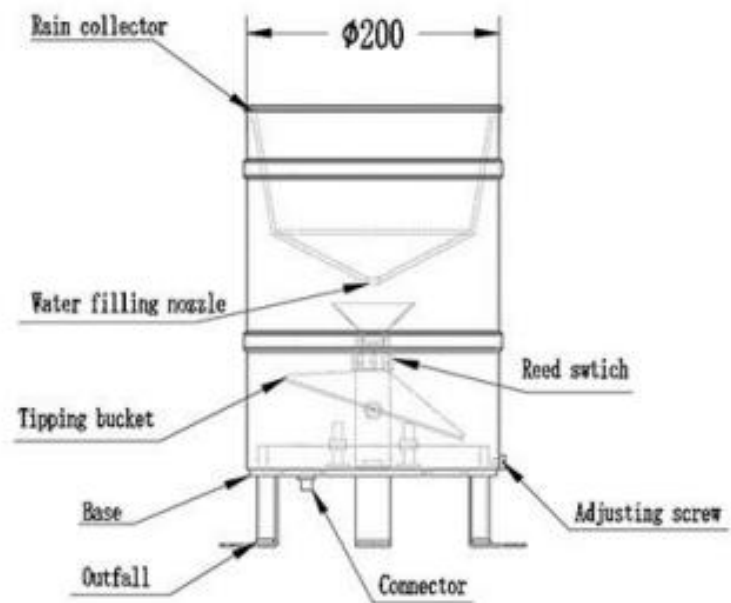
Example Rspnd FF 03 02 00 B4 91 E7

The 4th and 5th bytes respectively are 00 B4

Rainfall Decimal = $0 + B * 16 + 4 = 11 * 16 + 4 = 180$

Rainfall = Rainfall Decimal / 10 = $180 / 10 = 18\text{mm}$

STRUCTURE DIAGRAM



Wiring Method picture

The water collection port collects rainwater and injects into the metering bucket through the water injection port. When the water injection volume reaches a predetermined value, the bucket flips over. During the turning process, the magnetic steel passes the reed switch to turn the reed switch on and off. Records can achieve the purpose of automatic collection.

INSTALLATION, USE & MAINTENANCE

1. Fix the instrument on a 70cm outdoor base, adjust the level and tighten.
2. Connect the signal cables according to the wiring diagram.
3. The instrument should be regularly checked and maintained to remove dust, sand, weeds, leaves, etc., so as not to block the water injection port. The instrument should be returned to the room for storage during the winter freezing season

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