RAINFALL SENSOR

RY-YL

MANUAL

INTRODUCTION & PRINCIPLE

RY-YL tipping bucket rain gauge is based on the principle of converting rainfall into measurable physical signals to measure precipitation. It can be widely used in small weather stations, hydrological stations, agriculture and forestry and other related departments to measure precipitation and precipitation Intensity, precipitation time. Output is the pulse signal, and measure the rainwater by recording the pulse number.

FEATURES：

- ●Good linearity, long transmission distance, and good anti-interference ability;
- ●The unique design of the funnel can effectively prevent debris from blocking the funnel.
- ●The tipping part support system is well-made, with low friction, and the tipping part is sensitive and stable in performance.
- ●The rain sensor housing and main structure are made of stainless steel, with good appearance quality and high grade;
- ●The water inlet is made of stainless steel in a single stamping process, with good smoothness and small water retention error;
- ●There is a level-adjusting bubble in the chassis.

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 CRCloCRChi（XX=0X01-0XFF）

Write register response

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

00 10 0001 0001 CRCloCRChi

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 CRC check

00 03 0001 0001 CRCloCRChi

Station respond

Device address Function code Data length Data CRC check

00 03 02 00xx CRCloCRChi（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 CRCloCRChi（XX=0X0001-0X7FFF）

Write register response

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

xx 10 0010 0001 CRCloCRChi

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 CRC check

xx 03 0000 0001 CRCloCRChi

Data respond

Device address Function code Data length Data CRC check

xx 03 02 00yy CRCloCRChi

Example

Command FF 03 00 00 00 01 91 D4

Respond FF 03 02 00 14 91 9F

Note：Rainfall：4th, 5th 00 14

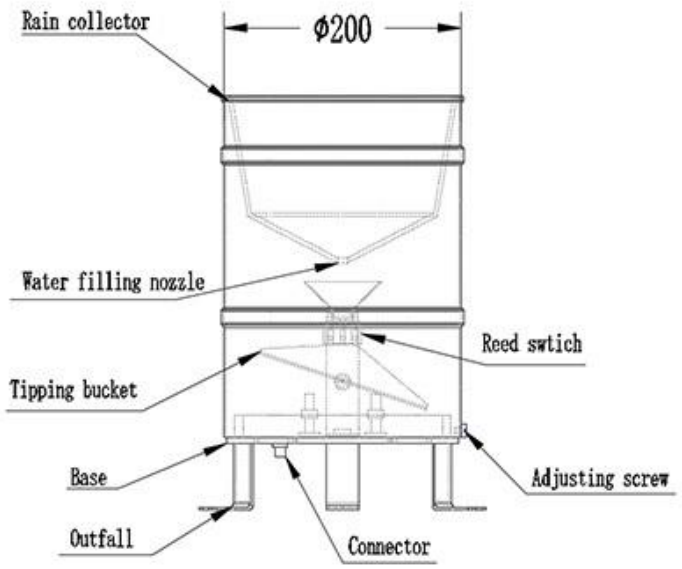
Example Rspond FF 03 02 00 B4 91 E7

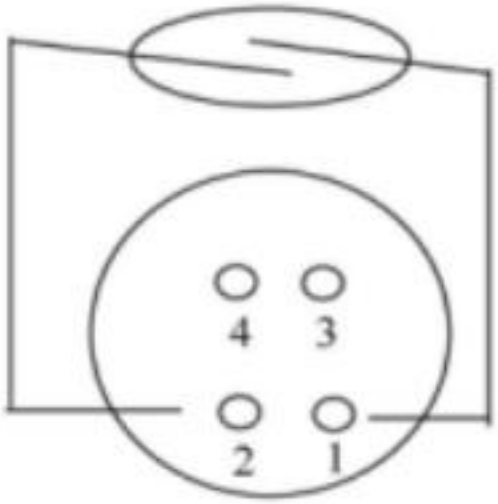
The 4th and 5th bytes respectively are 00 B4

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

Rianfall = Rainfall Decimal /10 = 180/10 = 18mm

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.

TECHNICAL SPECIFICATION

●Rian collector diameter： φ200mm

●Measuring range：≤4mm/min

●Resolution 0.2mm(customizable 0.1mm)

●Outpur：

RY-YL	RY-YL/S	RY-YL/485
Dry reed pipe switch on and off, pulse (1 pulse = 0.2mm rainfall)	4-20 mA	RS485modbus

●Weigth：4KG

●Material：Stainless steel

●Respond time：1S

●Work environment：Temperature 0～+60℃

●Standard line length：1.5m

●Farthest lead wire：Current200m、 RS485 100 m、voltage 50m

●Ingress Protection：IP65

CHECK & DEBUG

The instrument has been debugged well before leaving the factory. If the error exceeds ± 4% after a flood season, it can be calibrated. Use a 10 ml graduated cylinder labeled MC to hold 6.28 ml of water as the base (considering loss) and inject it into the bucket. If it is turned over in advance, The height of the screw should be adjusted downwards and vice versa, and the nut should be tightened after repeated adjustments.

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.

FAILURES & SOLUTIONS：

FAILURES	REASON	SOLUTION
Rainfall exceeds calibration error	1.Limit screw position changed 2.Position change of the dry reed pipe and magnetic steel.	Adjust the position of the single dry reed pipe and tighten
No signal output	1.Bad dry reed pipe 2.Lead off 3.The Tipping bucket is stuck 4.Dry reed pipe and magnetic steel position shift	Adjust the spare tube to the working position, and enable welding of line 3 of aviation plug. Adjust the position of the dry reed pipe and tighten

Due to the high resolution, careful adjustment and patience are required, otherwise it will cause large errors

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.

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