CDY-10B
Metal Economical
Tipping Bucket Rainfall Sensor
Manual

Catalogue

CDY-10B Metal Economical Tipping Bucket Rainfall Sensor

- **Product Brief**

The CDY-10B Tipping Bucket Rainfall Sensor is an instrument for testing rainfall in the nature. In order to meet the requirement of information transmission, processing, recording and display, the amount of rainfall is converted to pulse output. It can be widely used in weather stations, hydrometric stations, agriculture & forestry, defense & field monitoring stations. It can provide the original data for flood-prevention, water-supply system, and reservoir water management in plant.

- **Application**
  · Meteorological Monitoring
  · Micro Environmental Monitoring
  · Grid Environment Monitoring
  · Agricultural Meteorological Monitoring
  · Meteorological Traffic Monitoring
  · Photovoltaic Environment Monitoring
  · Meteorological Environment Monitoring for Smart Cities

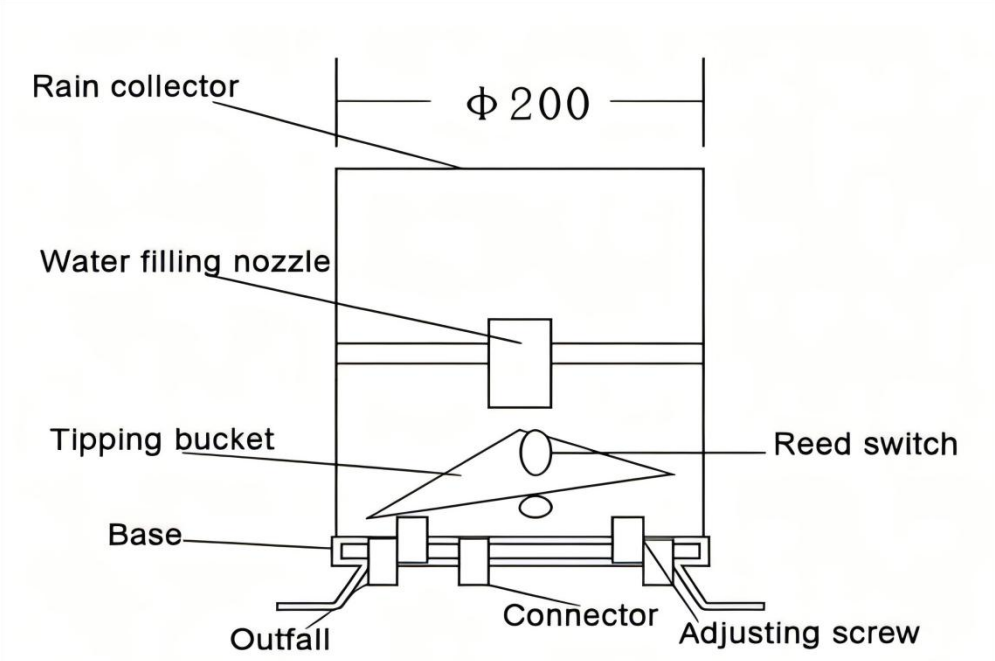
- **Features**
  · Small in size · Integrated design
  · High integration · Low starting threshold
  · Easy to install · One year warranty
  · Free testing software MODBUS - poll V1.0 (ask your salesperson for it)

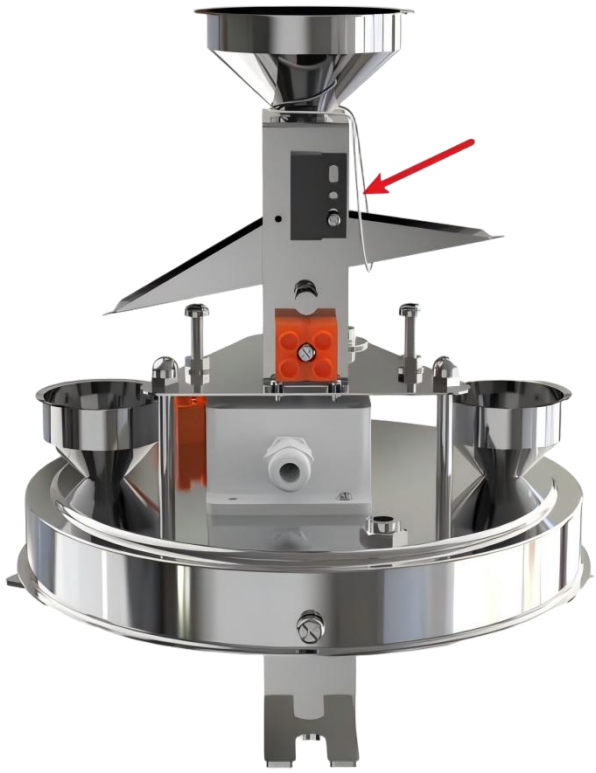
Technical Parameters

Parameters	Measuring Range	Accuracy	Resolution
Rainfall	0-4mm/min	±4%	0.1mm,0.2mm, 0.5mm
Supply	5VDC, 12-24VDC		
Output Signal	Reed switch pulses,RS485(12-24VDC supply)		
Rainfall collector	Diameter :φ200mm, height: 330mm		
Allow rainfall intensity	Max: 10mm/min		
Ingress Protection	IP65		
Operating temperature (no freeze)	0-+55℃		
Main material	Collector:304SS		
Collector filter	Removable filter (prevent leaves and sundries)optional		
Weight(unpacked)	3.5kg		
Blade angle	40-45°		

⋆ Specifications may be updated without prior notice.

- **Product Size**





MODBUS RTU Communication Protocol

（Apply to CDY-10B product）

Baud Rate: 4800
Data Bits: 8
Stop Bit: 1
Check Bit: None

1.1 CRC Description:

Among all the following instructions, the two bytes of CRC16 in MODBUS RTU protocol are as follows: the low byte comes before and the high byte comes after.

In the following instructions, the assumed sensor address is 0x01 (the default sensor address is 01).

1.2 Return Error Code Rule:

When receive error instruction (including CRC16 validation error), no error codes will be returned. It is considered to be a failure, when there is no return data in 200ms after the instruction is issued. Upper computer may resend instruction.

1.3 Standard MODBUS register description

Special Notice:

The quantity or length of the register in MODBUS is two bytes with 16 bits as a unit (the high byte comes first, and the low bytes follows), instead of one byte with 8 bits as a unit.

User shall ensure that the address and quantity of register in command are confined within the range specified by the system. Otherwise, the output of the sensor will be unpredictable. Users shall ensure that the MODBUS command complies with the requirements of this manual in the software design of the upper computer and the minimum query period supported is 1s/ time.

Input register: read with function code 03

Address	Operation	Contents	Note
0x0000	Read-only	Rainfall, a hexadecimal number magnified by 10 times. For example, 0x000A indicates 10/10=1mm	
0x07D0	Read /Write	Device Address	Default Address 01
0x07D1	Read /Write	Device Baud Rate 0 represents 2400, 1 represents 4800 2 represents 9600, 3 represents 1920	Default 4800

1.4 Electrical Connections

Cable	RS485
Brown	V+
Black	V-
Yellow	RS485A
Green / Blue	RS485B

1.5 Communication Example

The following is an example of how to use MODBUS RTU commands to access system registers:

1. Read multiple input registers (real time data) command

Send: 01 03 00 00 00 01 84 0A

01	03	00 00	00 01	84 0A
System Address	Function Code	Register Address	Number of Registers	CRC16 check digit automatically generated by software

Answer: 01 03 02 00 0A 38 43

01	03	02	00 0A	38 43
System Address	Function Code	The number of bytes in a data segment	Segment Data	CRC16 check bit

Analytical Data:
0x000A= 0x00 * 256 + 0x0A= 10
Rainfall = 10/10=1mm

2. Modify internal register (system address) command (change the address to 0x02)
Send: 01 06 07 D0 00 02 08 86 (00 02 new address)

01	06	07 D0	00 02	08 86
System Address	Function Code	Register Address	New Address	CRC16 check

Answer: 01 06 07 D0 00 02 08 86 (indicates that the modification is successful)

3. Modify Baud rate (system address) command (change the 9600)
Send: 01 06 07 D1 00 02 59 46 (02 -- 9600)

01	06	07 D1	00 02	59 46
System Address	Function Code	Register Address	New Address	CRC16 check

Answer: 01 06 07 D1 00 02 59 46 (indicates that the modification is successful)

4. Read address register command (Universal Address FF)

Send: FF 03 07 D0 00 01 91 59

FF	03	00 00	00 01	91 59
System Address	Function Code	Register Address	Number of Registers	CRC16 check digit automatically generated by software

Answer: FF 03 02 00 01 50 50

FF	03	02	00 01	50 50
System Address	Function Code	The number of bytes in a data segment	Sensor Address	CRC16 check bit

5. Rainfall reset command

Send: 01 06 00 00 00 5A 09 F1

01	06	00 00	00 5A	09 F1
System Address	Function Code	Register Address	Number of Registers	CRC16 check digit automatically generated by software

Answer: 01 06 00 00 00 5A 09 F1 (indicates that the modification is successful)

Warranty and After-sales Service:

Warranty: The product warranty period is 12 months from the delivery date (except for the product problems caused by not operating in accordance with corresponding technical requirements or other artificial behavior).

After-sales telephone: 86-0731-86117089 www.codasensor.com Molly@codasensor.com

Other Weather Sensors

Model number	Type	Output	Special features
CDF-10A	Wind speed	Pulses(PNP) RS485 4-20MA 0-5V	Three cup plastic wind speed
CDF-11A	Wind direction	RS485 4-20MA 0-5V	Plastic wind direction sensor
CDF-12A	Pipe wind speed	RS485 4-20MA 0-5V 0-10V	Duct type wind speed sensor
CDF-13B	Wind speed display controller	LED display	Wireless output relay output
CDF-15A	Digital Anemometer	LCD display	Hand-held anemometer
CDF-20B	Combined Wind Speed & Direction	RS485 4-20MA 0-5V 0-10V	Integrated wind speed and direction
CDF-21A	Ultrasonic Wind Speed & Direction	RS232/RS485(Modbus/NMEA-0183), Voltage(0-5V),Current(4-20mA) optional	Ultrasonic principle
CDF-22A	Mini Ultrasonic Wind Speed & Direction	4-20mA,RS232/RS485(Modbus or NMEA-183), SDI-12	Ultrasonic principle
CDF-26B	Recorder station for wind	LCD display & 4G WIFI Ethernet	Wind speed & direction recorder
CDQ-T6A	Miniature Ultrasonic Automatic Weather	RS485	Wind speed & direction temp & humidity &pressure
CDW-33A	Atmospheric Temperature,Humidity & Pressure	RS485	Shelter installation
CDY-12A	Economical Tipping Bucket Rainfall	Pulses(@10kΩ&0.01uF),RS485	Diameter :φ200mm, height: 271mm
CDG-10B	Solar Radiation	0-5V,4-20mA,RS485	Spectral range:300～1100nm

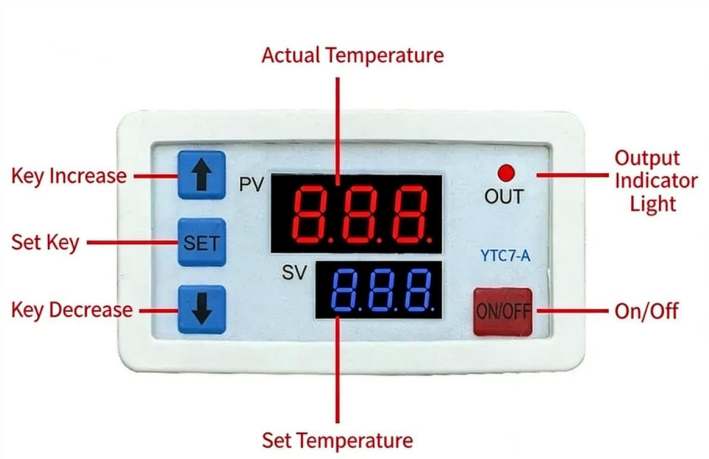
Heating module settings

1. Heating temperature

Set：After pressing, you can set the temperature and make adjustments up and down.After setting the temperature, press the "set" button to confirm.

The light being on indicates that the device is heating up to the set temperature.
Default temperature: 50℃

2. Relay temperature setting



Operating principle : When the temperature alarm is triggered, the relay is activated and the heating module starts to operate.