

**CDY-11A**  
**Rain & Snow Sensor**  
**Manual**

## Catalogue

Product Brief.....	1
Application .....	1
Features .....	1
Technical Parameters .....	2
Product Size .....	3
MODBUS RTU Communication Protocol (Apply to CDY-11A product) .....	4
1.1 CRC Description: .....	4
1.2 Return Error Code Rule: .....	4
1.3 Standard MODBUS register description .....	4
1.4 Electrical Connections .....	5
1.5 Communication Example .....	5
Other Weather Sensors .....	7



## CDY-11A Rain & Snow Sensor

- ◆ **Product Brief**

CDY-11A Rain & Snow Sensor is a high sensitive detector to achieve qualitative detection of rain and snow. There is a ring conductor sense rain board on the surface. Products are optional automatic melting snow and melting ice function (automatic heating). When it rains or snows, it will output switch signal.

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

# Technical Data

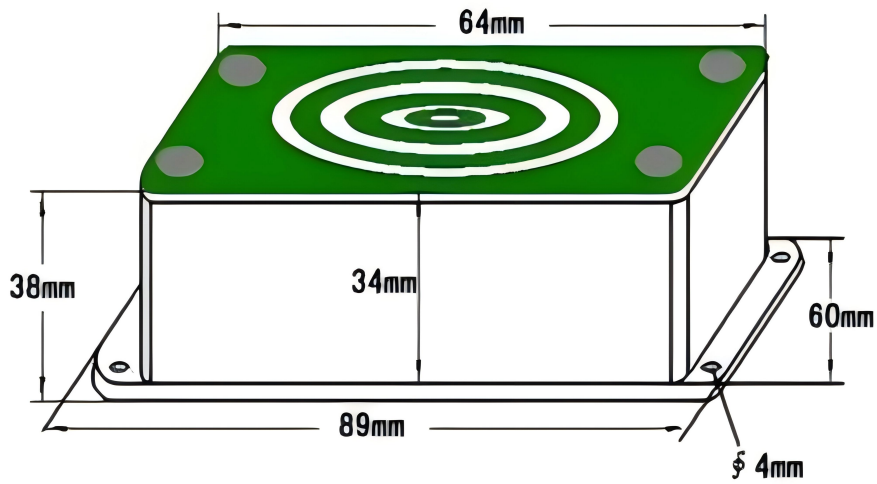
CDY-11A Rain&Snow Sensor

## ◆ Technical Parameters

Parameters	Measuring Range
Rain & Snow	Rainy days or snowy days
Supply Voltage	12-24VDC
Automatic heating	heating power:10W max.
Output	Relay(NO) RS485
Load Capacity(relay)	AC120V/2A ,DC24V/2A
Coil material	Gold-plated(Strong corrosion resistance)
Ingress protection	IP67
Operating Temperature	-30°C-+70°C
Weight(unpacked)	150g
Dimension	90*60*40mm
Shell material	ABS
Storage Condition	10°C-60°C@20%-90%RH

★ Specifications may be updated without prior notice.

### ◆ Product Size



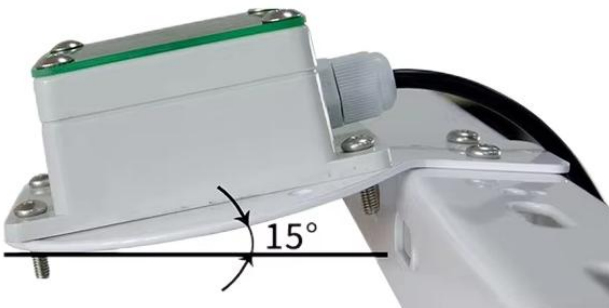
Mounting plate



Rain and Snow Sensor



Installation and fixation



# **MODBUS RTU Communication Protocol**

## **(Apply to CDY-11A product)**

Baud Rate: 9600  
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	Rain, a hexadecimal number magnified by 1 times. For example, 0x000A indicates 10 :No rain 0x000B indicates 11 :Rain	

**1.4 Electrical Connections**

Cable	RS485	Relay(NO)
Brown	V+	V+
Black	V-	V-
Yellow	RS485A	R1
Green / Blue	RS485B	R2

**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

# CODA Technical Data

CDY-11A Rain&Snow Sensor

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:

$$0x000A = 0x00 * 256 + 0x0A = 10$$

Rain:10 :No rain    Rain:11 : rain

2. Modify internal register (system address) command (change the address to 0x02)

Send: 01 06 00 00 00 02 08 0B (00 02 new address)

01	06	00 00	00 02	08 0B
System Address	Function Code	Register Address	New Address	CRC16 check

Answer: 01 06 00 00 00 02 08 0B (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](http://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