ATO

Tipping Bucket Rainfall Sensor

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.

FEATURES

- Compact size for easy use
- High accuracy, good stability
- Mesh in the funnel preventing debris such as leaves and insects from entering the working of rain sensor
- Well made tipping bucket with low resistance
- Highly polished stainless steel construction
- Horizontal Bubble in the bottom

Parts：

1. Rainfall sensor with cable: 1
2. Fixed foot and screw: 3

SPECIFICATIONS

Model	ATO-RK400-01
Rainfall collector	Diameter :φ215mm, height: 345mm
Measured rainfall intensity	Max: 4mm/min
Allow rainfall intensity	Max: 8mm/min
Resolution	0.1mm, 0.2mm
Accuracy(2mm/min)	±4%
Maximum load voltage	30VDC(pulse output)
Maximum load current	20mA(pulse output)
Output	Reed switch pulses,RS485
Operating temperature(no freeze)	0-+50℃
Main material	Collector:304SS,tipping bucket:ABS
Tipping bucket	Single
Heating(optional)①	Heating power: approx.1000W
Weight(unpacked)	3.3kg

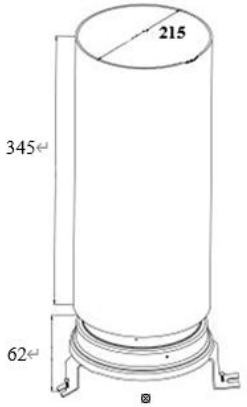
①According to user requirements,set heating start point and heated end point before leaving the factory.

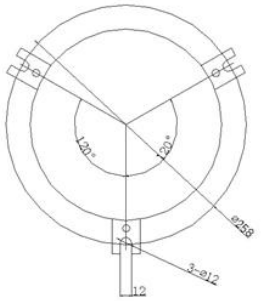
MOUNTING

1.loosen the three fixed screw at bottom of the rain collector ,then remove the collector.

2.Keep product horizontal by adjusting three scews on product.

3.Take down the fixed rubber band, reinstall the collector and then connect the cable to work normally.





WORKING PROCESS

Rainfall is captured in the 200mm diameter collector funnel and is directed through a delivery pipe to fill a divided ABS injection molded tipping bucket device.The bucket is pivoted through its center and has a preset calibration to tip for 0.2 mm of rainfall. When the bucket is “full”, it pivots and empties - this action magnetically closes and opens a reed switch, sending a pulse signal to the data logger or electronic counter. Through this tipping “seesaw” action, the other side of the bucket is aligned to receive the flow from the delivery pipe. This recording and tipping cycle continues with rainfall.

ELECTRICAL CONNECTIONS

Connector（cable）	Pulse	RS485
Pin 1（red）	Signal_A	V+
Pin 2（black）	Signal_B	V-
Pin 4（yellow）		RS485A
Pin 5（Blue）		RS485B

Note: This product has been tested and complies with European CE requirements for EMC directive.

Communication Protocol（MODBUS）

Transmission mode: MODBUS-RTU,**Baud rate:** 9600bps,**Data bits:**8,**Stop bit:**1,**Check bit:**no

Slave address:the factory default is 01H (set according to the need,00H to FFH)

- **The 03H Function Code Example: Read The Rainfall**

Host Scan Order(slave address:0x01)

01 03 00 00 00 01 840A

Slave Response

01 03 02 00 04 B987

Rainfall:(0004)H=(4)D,4/5=0.8mm

- **The 10H Function Code Example: Modify the slave address**

Host Scan Order (Changed from 01H):

00 10 01 BDC0

Slave Response:

00 10 007C

- **The 16H Function Code Example: Clear The Rainfall Value(Restart the sensor can also be clear)**

Host Scan Order

01 16 10 10 00 01 02 00 00 352B

Slave Response:

01 16 10 10 00 01 8C CC

Note:

1. All underlined is fixed bit;

2. The last two bytes is CRC check command.

WARRANTY

This product is warranted to be free of defects in materials and construction for a period of 12 months from date of lead time.

Liability is limited to repair or replacement of defective item.