NBL-W-LM/Leaf temperature and humidity sensor

Product introduction

The leaf temperature and humidity sensor can accurately measure the leaf surface humidity, and can monitor the trace moisture or ice crystal residue on the leaf surface. The shape of the sensor adopts the imitation blade design, which simulates the characteristics of the page, so it can more accurately reflect the situation of the leaf environment. It measures the presence of water or ice by imitating the change in the dielectric constant of the upper surface of the blade medium. Low power consumption enables long-term uninterrupted monitoring. It is easy to install and can be hung on the greenhouse of the greenhouse or on the mast of the weather station.

technical parameter

temperature of leaves
Measuring range：-20～80℃
Resolution：0.1℃
Accuracy：±1℃（25℃）

leaf humidity
Measuring range：0～100%
Resolution：0.1%
Accuracy：±5%（25℃）

Power supply：DC12V
Signal output：RS-485
Response time：＜1s
Working current：17ma（DC12V）
Power consumption：DC12V <=0.22W
Settling time：About 10 seconds after power up
Protection class：IP65

External dimensions

Wiring method

(1)If equipped with the collector produced by our company, directly connect the sensor to the corresponding interface on the collector using the sensor cable.
(2)Purchase the transmitter separately, and the matching line sequence of the transmitter is as follows:

line color	output signal：RS485
red	A+
black (green) color	G
yellow	A+/TX
blue	B-/RX

communication protocol

Sensor default station number：0xFF
Baud Rate：9600
Data bits：8
Stop bit：1
Check digit：/

A、Read station number: (fixed command)

Device address Function code Start register address Number of registers CRC

00 03 00 01 00 01 CRC

Reply

Device address Function code Data length Data CRC

00 03 02 00 xx CRC

Example

read station number

Order 00 03 00 01 00 01 D4 1B

Reply 00 03 02 00 FF C5 C4

B、write station number：

Device address Function code Start register address Number of registers Data length Data (new station number) CRC

00 10 00 01 00 01 02 00 xx CRC

Respond

Device address Function code Start register address Number of registers CRC check

00 10 00 01 00 01 CRC

Example

Order: 00 10 00 01 00 01 02 00 33 EA 04

Reply: 00 10 00 01 00 01 51 D8

C.read data command

- Host send command format：

Device address Function code Start register address Number of registers CRC check

xx 03 00 00 00 02 CRC

- Slave response command format：

Device address Function code Data length Data CRC check

xx 03 04 00yy CRC

Example：

- Order：FF 03 00 00 00 02 D1 D5
- Reply：FF 03 04 00 11 0E BA 30 2A

leaf humidity = 00 11 = 17/10 = 1.7 %

leaf temperature = 0E BA = 3770/100-20 = 17.7℃

Steps to Calculate CRC Code：

1、Preset 16-bit registers as FFFF in hexadecimal (ie all 1s). Call this register the CRC register；

2、XOR the first 8-bit data with the low-order bits of the 16-bit CRC register, and place the result in the CRC register；

3、Shift the contents of the register one bit to the right (toward the low bit), fill the highest bit with 0, check the shifted out bit；

4、If the shift out bit is 0: repeat step 3 (shift again)

If the shift out bit is 1: XOR the CRC register with the polynomial A001 (1010 0000 0000 0001)；

5、Repeat steps 3 and 4 until the right shift is performed 8 times, so that the entire 8-bit data has been processed；

6、Repeat steps 2 to 5 for the next 8-bit data processing；

7、The final obtained CRC register is the CRC code；

8、When putting the CRC result into the information frame, the high and low bits are exchanged, and the low bits come first。

troubleshooting

1、During analog output, the display device indicates that the value is 0 or not within the range. The collector may not be able to obtain information correctly due to wiring problems. Please check whether the wiring is correct and firm, and whether the power supply voltage is normal；

2、If not for the above reasons, please contact the manufacturer。

Precautions

1、Please check whether the packaging is in good condition, and check whether the product model is consistent with the selection；

2、Do not wire live After the wiring is completed and checked, the power can be turned on；

3、The length of the sensor line will affect the output signal of the product. Do not arbitrarily change the components or wires that have

been soldered when the product leaves the factory. If you need to change it, please contact the manufacturer.；

4、The sensor is a precision device, please do not disassemble it by yourself to avoid damage to the product.；

5、Please keep the verification certificate and certificate of conformity, and return it together with the product during maintenance.