

USER GUIDE FOR CDT-17B SOIL PH SENSOR

CDT-17B-01-MN-10

SEP-2024

This document is applied for the following products

| | | | | | |
|-----------|---------|---|-----|---------|-----|
| SKU | CDT | HW Ver. | 1.0 | FW Ver. | 1.0 |
| Item Code | CDT-17B | Soil PH Sensor, 4-20mA RS485 0-5V 0-2V Output, SUS304, 0-14 ±0.05PH | | | |

1. Introductions

CDT-17B pH sensor should be a good solution to measure pH value. It uses low-impedance sensitive glass, adopts internal signal isolation technology, has strong anti-interference ability, has good reproducibility, thermal stability, and does not require professional calibration instruments. Easy installation, stable performance, can be used to continuously measure the pH value of the soil, suitable for agriculture and environmental protection and other fields.



2. Specification

| Item | Technical Specification |
|-----------------------|----------------------------------|
| Measurement Principle | Electrochemistry |
| Range | 0-14PH |
| Supply | 7-30VDC (power consumption<0.2W) |
| Accuracy | ±0.05PH |
| Resolution | 0.01PH |
| Response time | <10s (soil moisture>30%) |
| Stability | ≤0.01PH/24h |
| Output Signal | 4-20mA & RS485 at the same time |
| Calibration Cycle | Every 6 month |
| Operating Environment | 0-+80℃(<0.6MPa) |
| Cable length | 5m(default), customizable |
| Probe material | 304SS |
| Ingress Protection | IP68 |
| Storage | 10-60℃@20%-90%RH |

3. Working Process

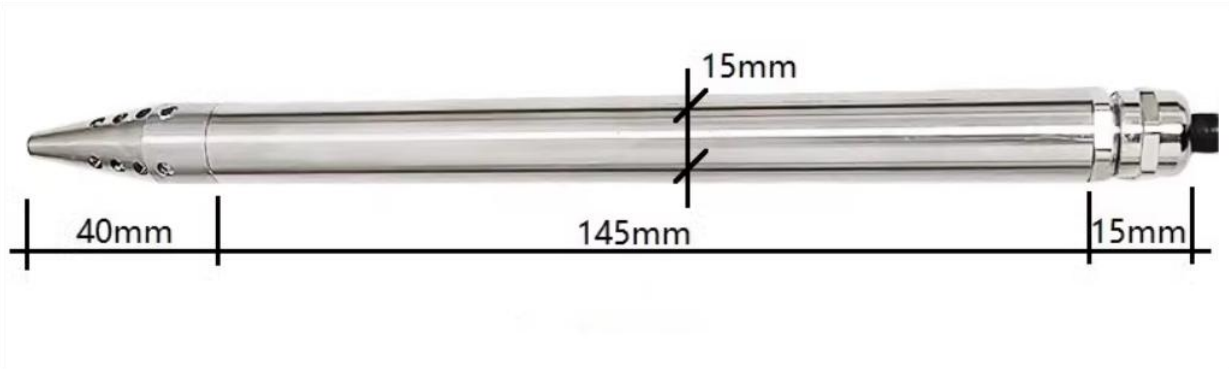
This type of soil pH sensor is a combination of a metal sensor and a functional value switching device. Metal sensor as the core of the hardware system, the detection electrode (sensor) directly in contact with the soil. In the soil, the REDOX reaction in the chemical reaction will generate current, and the size of the current value will drive the different pH unit data corresponding to the ammeter, and finally convert the host to show the results in the form of numerical values.



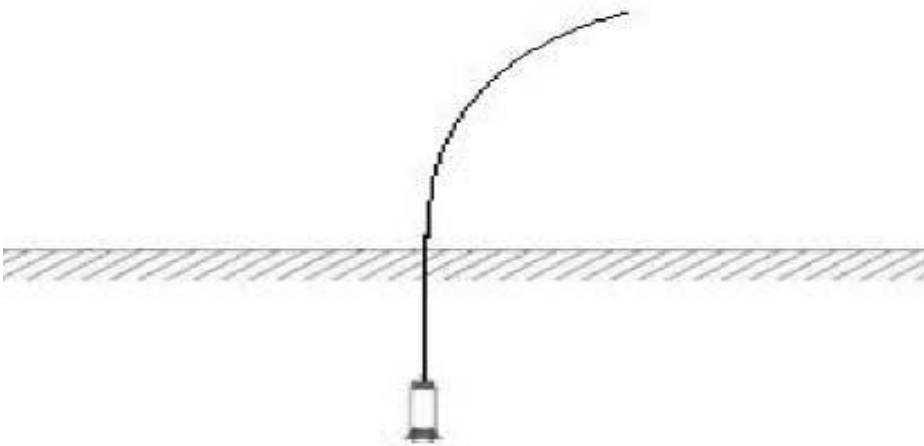
4. Electrical Connections

| Connector (cable) | Voltage/Current | RS485 |
|-------------------|-----------------|--------|
| Red | V+ | V+ |
| Black | V- | V- |
| Yellow | / | RS485A |
| Green | / | RS485B |
| White | Signal | / |

5. Dimensions



6. Installation



The probe of the sensor must be covered by soil !

The sensor probe has a protective cover to protect the probe. When using, remove the protective cover. Do not insert the probe directly into the soil to avoid irreparable damage to the probe.

Excavate the soil to be tested, place the sensor vertically into the soil, and then fill the soil;

7. 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)

7.1 The 03H Function Code Example: Read The PH Value

Host Scan Order(slave address:0x03)

03 03 00 00 00 06 C42A

Slave Response

03 03 0C 40 E0 51 EC C0 89 99 9A 41 C9 47 AE CRC CRC

PH: 40E051EC >>7.01

Temperature: 41C947AE >>25.16

7.2 The 06H Function Code Example: Modify the slave address

The 06H Function Code Example: Modify the slave address Host Scan

Order (Changed the 03H to 01H):

03 06 00 14 00 01 09EC

Slave Response:

03 06 00 14 00 01 09EC

Note:

1. All underlined is fixed bit;

2. The last two bytes is CRC check command.

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

8. Troubleshooting

If some error occurs, such as no output or unreliable. Please disconnect the sensor first, then check if the sensor installation and connection is correct with the instruction manual.

If still not successful, please contact our company.

9. Support contacts:



Complies with applicable CE directives.

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