

CDT-70B All-in-one Soil Sensor

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The soil integrated sensor is suitable for measuring soil temperature, moisture, total soil salt (conductivity), soil pH and nitrogen, phosphorus and potassium. The soil comprehensive sensor creatively measures the seven parameters of conductivity, moisture, temperature, ph, and nitrogen, phosphorus, and potassium, which greatly facilitates the customer's systematic assessment of soil conditions. .

FEATURES

- High accuracy
- Connect directly to data collector or instrument
- Fully sealed structure
- Placed in any depth underground(>200mm.)
- Low power design
- Easy Installation

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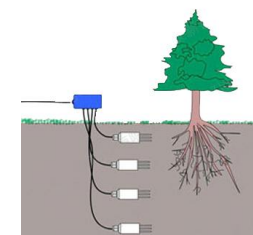
SPECIFICATIONS

| Item | Technical Specification | | |
|-----------------------|-------------------------|-----------------------------|------------|
| | Range | Accuracy | Resolution |
| Temperature | -40~+80℃ | ±0.5℃ | 0.1℃ |
| Moisture | 0-100% | ±3%(0-53%), ±5%(54-100%) | 0.1% |
| EC | 0-10ms/cm | ±3%F.s | 0.01 ms/cm |
| pH | 3-9 pH | ±0.3 pH | 0.01 pH |
| NPK | 0-1999mg/kg | ±2%F.s | 1 mg/kg |
| Output Signal | RS485 | | |
| Response Time | <1s | | |
| Supply | 12-24VDC | | |
| Housing | ABS | | |
| Operating Temperature | -40℃~+80℃ | | |
| Ingress Protection | IP68 | | |
| Storage | 10-60℃@20%-90%RH | | |
| Probe material | 316L stainless steel | | |

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MOUNTING

- (1) The sensor needs to be used in an environment with a soil humidity of 20%-25%
- (2) All steel needles must be inserted into the soil during measurement.
- (3) Avoid strong sunlight directly shining on the sensor to cause excessive temperature. Pay attention to lightning protection in the field
- (4) Do not bend the steel needle violently, pull the lead wire of the sensor forcefully, and do not hit the sensor or hit the sensor violently
- (5) Due to the presence of radio frequency electromagnetic radiation in the air. it is not suitable to stay energized in the air for a long time..



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ELECTRICAL CONNECTIONS

| Connector (cable) | RS485 |
|-------------------|--------|
| Brown | V+ |
| Black | V- |
| Yellow | RS485A |
| Green | RS485B |

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

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.

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 temperature and humidity value of the sensor**

Host Scan Order(slave address:0x01)

01 03 00 00 00 02 C40B

Slave Response

01 03 04 03 E8 01 29 BA0D

Temperature: (0129)H=(297)D, $297/10=29.7^{\circ}\text{C}$

Moisture: (03E8)H=(1000)D, $1000/10=100\%$

If the data $\geq 0x8000$, for example: 0xFF05, according to the following method to calculate:

$0xFF05-0xFFFF-0x01=(65285)D-(65535)D-(1)D=(-251)D, -251/10=-25.1(^{\circ}\text{C})$

Read the value of sensor EC

Host Scan Order(slave address:0x01)

01 03 00 02 00 01 25CA

Slave Response

01 03 02 05 DC BA8D

EC: (05DC)H=(1500)D, $1500/1000=1.5(\text{mS/cm})$

Read the value of sensor PH

Host Scan Order(slave address:0x01)

01 03 00 03 00 01 740A

Slave Response

01 03 02 01 34 B803

PH: (0134)H=(308)D, $308/100=3.08(\text{PH})$

Read The NPK Value

Host Scan Order(slave address:0x01)

01 03 00 04 00 03 440A

Slave Response

01 03 06 00 20 00 25 00 30 B16D

N: (0020)H=(32)D, 32mg/kg

P: (0025)H=(37)D, 37 mg/kg

K: (0030)H=(48)D=48 mg/kg

- **The 06H Function Code Example: Modify the slave address(After the restart sensor changes to take effect)**

Host Scan Order (Changed to 02H):

01 06 00 30 00 02 0804

Slave Response


01 06 00 30 00 02 0804

Note:

1. All underlined is fixed bit;
2. The last two bytes is CRC check command.

WARRANTY

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 Complies with applicable CE directives.

Manual subject to change without notice. Version 1.0

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