SERRATA
INSTRUMENTS

Soil Moisture & Temperature Sensor

SOM-250-A (4-20 mA output version)
SOM-250-D (Rs485 Modbus version)

SOM-250 Soil Moisture & Temperature Sensor to integrate the moisture and temperature measurement. The stainless steel probe is inserted into soil surface or soil profile to test soil moisture and temperature quickly. The probe can be permanently embedded underground and be connected to a data logger for unlimited testing.

FEATURES

- High accuracy
- Connect directly to data collector or instrument
- Fully sealed structure
- Placed in any depth underground(800mm,max.)
- Low power design
- Easy Installation

SPECIFICATIONS

Item	Technical Specification	
	Moisture	Temperature
Range	0-100%（m^3/m^3）	-30℃-+70℃
Accuracy	±3%(0-50%),±5%(51-100%)	±0.2℃
Output Signal	4-20mA or RS485 optional	
Response Time	<1s	
Supply	Mark on the label	
Effective measurement area	With the center of the probe diameter is 70mm, high 70mm cylinder	
Housing	ABS	
Dimensions	71*45*16mm(probe:2* Ø3*55mm,1*Ø4*55mm)	
Operating Temperature	-40℃-+80℃	
Ingress Protection	IP67	
Storage	10-60℃@20%-90%RH	
Probe material	316L stainless steel	

MOUNTING

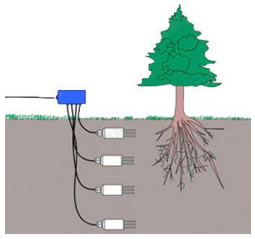
1.Testing medium should be with uniform intensity.

2. If surface soil water content measurement, the sensor should be insert into soil vertically. Do not shake the sensor when inserted, otherwise the probe will be blended;

3. If multi-layer soil water content measurement, the sensor should be buried in the soil and parallel to the ground. Make sure the probe not be blended;

4. When removing sensors from the soil, please hold the sensor housing shell and do not forcibly pull on the cable. Soil on probes should be brushed tightly.

5. Please keep the sensor in dry & clean conditions.



ELECTRICAL CONNECTIONS

Connector（cable）	Current	RS485
Red	V+	V+
Black	V-	V-
Brown	Temp._out	
Yellow		RS485A
Green		RS485B
White	Humi._out	

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 & Humidity**

Host Scan Order(slave address:0x01)

01 <u>03 00 00 00 02</u> C40B

Slave Response

01 <u>03 04</u> 01 23 01 64 0A7E

Temperature:(0123)H<0x8000,(0123)H=(291)D,291/10=29.1(℃)

If the data≧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(℃)

Humidity:(0164)H=(356)D,356/10=35.6(%)

- **The 06H Function Code Example: Modify the slave address (ensure that no other devices on the bus at this time)**

Host Scan Order (Changed the 02H to 01H):

02 <u>06 00 30 00</u> 01 4836

Slave Response:

02 <u>06 00 30</u> 00 01 4836

If you forget the original address, you should use the broadcast address(FEH) (ensure that no other devices on the bus at this time).

Note:

1. All underlined is fixed bit;

2. The last two bytes is CRC check command.

CE Complies with applicable CE directives.

Manual subject to change without notice. Version 2.0