

SM3102M

Soil moisture and temperature sensor



http:// www.sonbus.com

Product Overview

The SM3102B is a self-developed product of SONBEST, using industrial-grade precision core components to provide superior accuracy and long-term stability. Compact size for easy carrying and installation. The structural design is reasonably sealed and the stainless steel probes ensure suitability and versatility. Encapsulated with epoxy resin sealant, it can be directly buried in the soil and protected from corrosion, ensuring a long service life. High measurement sensitivity and accuracy, high anti-interference design, reliable and stable performance.

Parameters

Interface

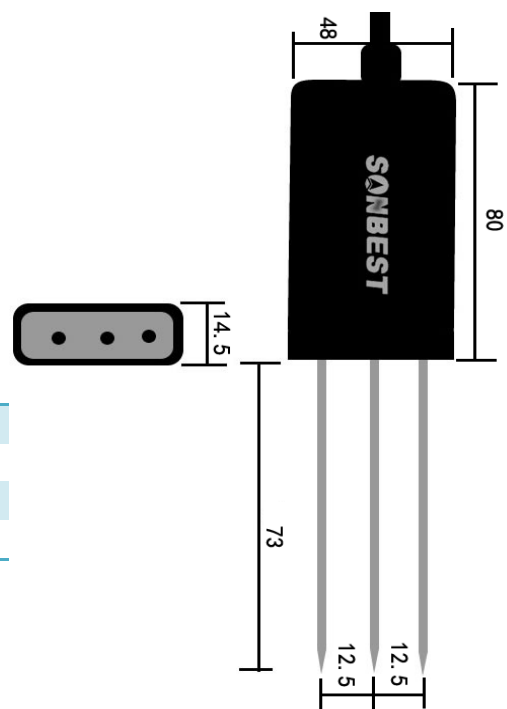
Specifications	Value
Moisture Measuring range	0-100%
Moisture Measuring Accuracy	±3 %
Temperature range	-30℃~80℃
Temperature Accuracy	±0.5℃
Test Range	Probe centered 30cm
Output	4-20mA
Test Range	Probe centered 30cm
Input voltage	DC12~24V
power	<0.5W
Working environment	-40℃~80℃
Dimensions	See dimensions

The device comes with a 1 meter long 4-core cable.

Wire color	Pin	Explanation
Red	V+	Power +
Green	V-	Power -
Yellow	H+	Moisture output
Blue	T+	Temperature output



Package dimensions



Instructions

The Sensor have a 4-20mA interface, which is four-wire. The red wire and black line is power input interface, the Blue Line is a current output interface for **temperature**, The yellow line is a current output interface for **moisture**.

The output is analog, and the current corresponds to the set full range. The relationship between current and specific temperature and humidity values is described below.

Calculate soil moisture value

The set range of humidity detection is 0-100% RH. The relationship between current and humidity is shown in the following table: if the full range of humidity is recorded as HA, the read current value is AR, the actual corresponding humidity value is HR: $HR=(AR-4)*HA/16$, the commonly used data can be listed as follows:

Readout Current Value (mA)	Readout Humidity Value (100% RH)	Computation process
4	0	$(4-4)*100/16$
8	25	$(8-4)*100/16$
12	50	$(12-4)*100/16$
16	75	$(16-4)*100/16$
20	100	$(20-4)*100/16$

Calculate soil temperature values

For example, the range of temperature measurement is set as follows: - 30 to 80 C. The relationship between current and temperature is shown in the following table: if the full range of temperature is recorded as TA, the read current value is AR, the actual corresponding humidity value TR is:

$$TR=(AR-4)*TA/16-30$$

Current Value (mA)	Temperature value (°C)	Computation process
4	-30	$(4-4)*110/16-30$
8	-2.5	$(8-4)*110/16-30$
10	11.25	$(10-4)*110/16-30$
12	25	$(12-4)*110/16-30$
16	52.5	$(16-4)*110/16-30$
20	80	$(20-4)*110/16-30$