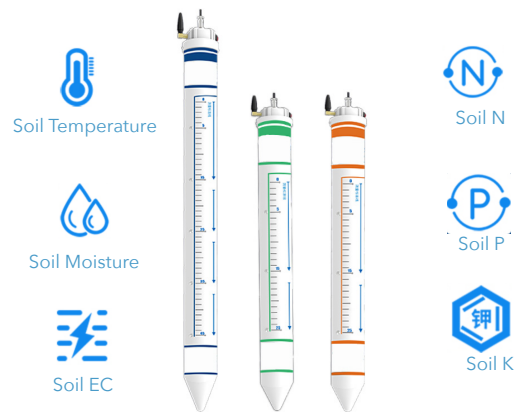


SEM2254 Series Comb Soil Analyzer

FEATURES

- Real time monitoring of soil temperature and humidity at different levels
- The plastic pipe moves up and down to realize the dynamic observation of soil moisture content in each soil layer
- The equipment adopts standard Modbus Protocol
- High sensitivity probe, fast response
- Stable, reliable and accurate measurement
- Small zero drift, good repeatability
- Product protection grade IP67, temperature and humidity resistance
- The product has been tested in various environments and has anti-interference ability
- Remote Cloud View Data



OVERVIEW

The independently developed chlamyroscope is a sensor based on the principle of dielectric constant, which can monitor the soil temperature and humidity of different soil layers quickly, accurately and comprehensively.

Our company's independently developed chlamydrometer adopts TDR measurement method, which is a sensor based on the principle of dielectric constant; it can measure the soil temperature, humidity and conductivity of different soil layers Rate, NPK were monitored quickly and accurately. The new TDR measurement instrument adopts non-contact measurement method, which enhances the measurement stability measurement accuracy will not deviate with the increase of time, and the special structure design greatly extends the service life.

The device supports a variety of communication modes, not only supporting the standard modbus485 protocol, but also including 4G, Lora and NB-IOT modes with low power consumption.

It is widely used in the monitoring of garden irrigation, soil moisture, agricultural guidance, water conservancy construction, mine monitoring, geological exploration, scientific experiments and grass planting.

CALCULATION METHOD & MEANING

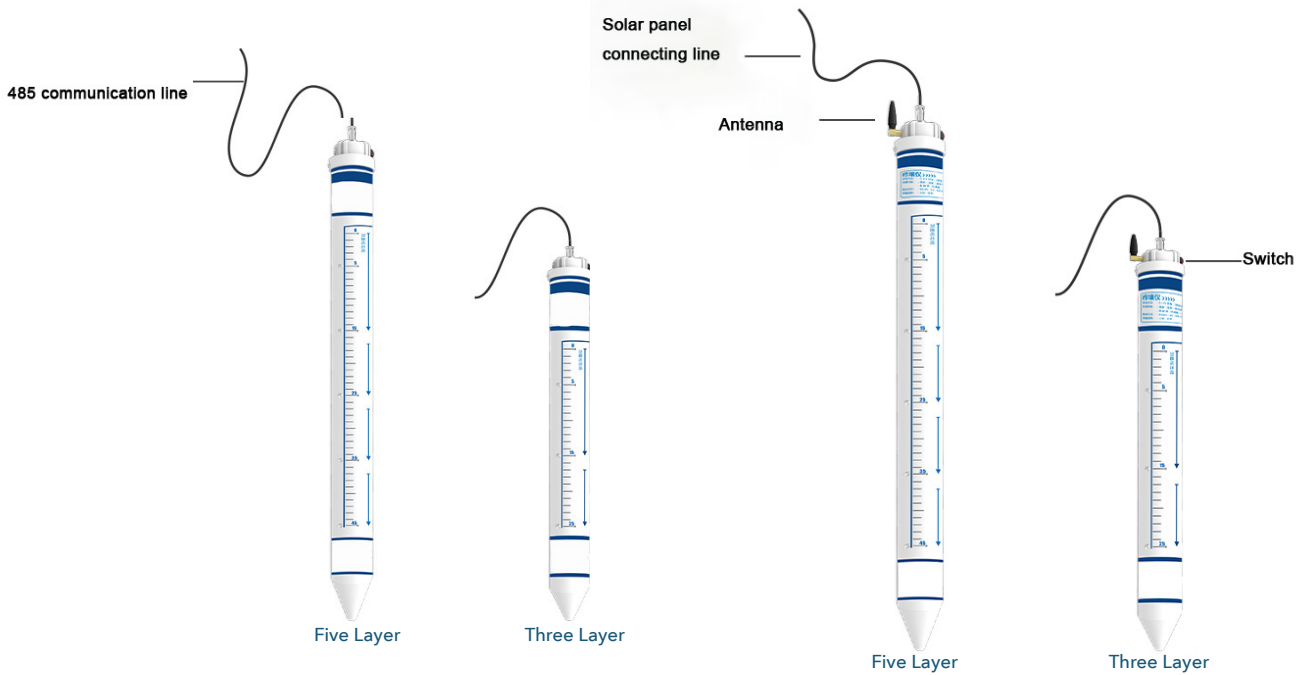
The soil moisture calculated by this sensor is the soil volume moisture content (also known as the soil volume moisture content), which is popularly known as "soil moisture", "soil moisture".

The calculation method of soil volume moisture content is the ratio of the volume of water in the soil to the total volume of the soil. 0% represents completely dry soil, without any water, 100% represents completely water, without any soil.

SPECIFICATION

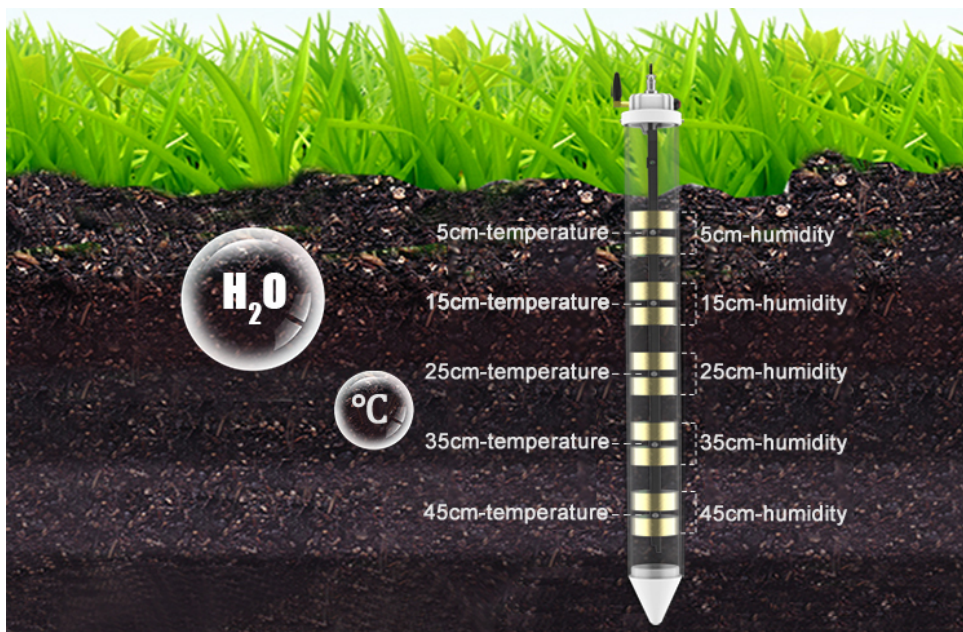
Moisture range	0-100%
Power supply	12-24V DC, battery power supply
Moisture accuracy	0-53% (± 3%) / 53-100% (± 5%)
Resolution	0.1% RH
Temperature range	- 30 ~ 90 °C
Temperature accuracy	± 0.5 °C
Resolution	0.1 °C
Communication mode	RS485 (default) / 4G / NB-IOT / Lora
Protection grade	IP67
Operating temperature	- 30 °C ~ 90 °C
Working humidity	0 ~ 95% (relative humidity), no condensation

OUTLINE STRUCTURE



FUNCTION DISPLAY

- Real time monitoring of different levels of soil temperature and humidity, to achieve the dynamic observation of soil moisture content in each layer.
- Visualization of soil salt accumulation



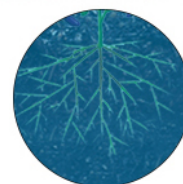
There is no salt accumulation and there may be excessive drainage.



Suitable salt accumulation under the root zone.

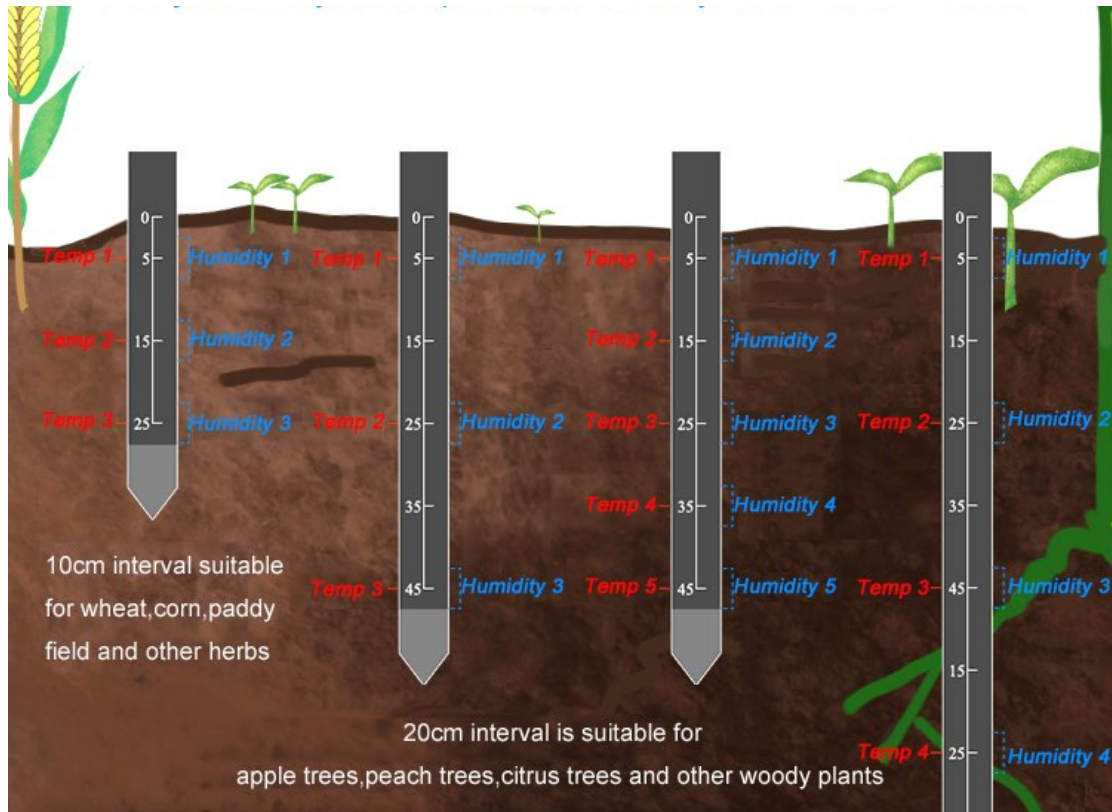


Excessive salt accumulation, requires salt washing according to the root zone profile of the soil.



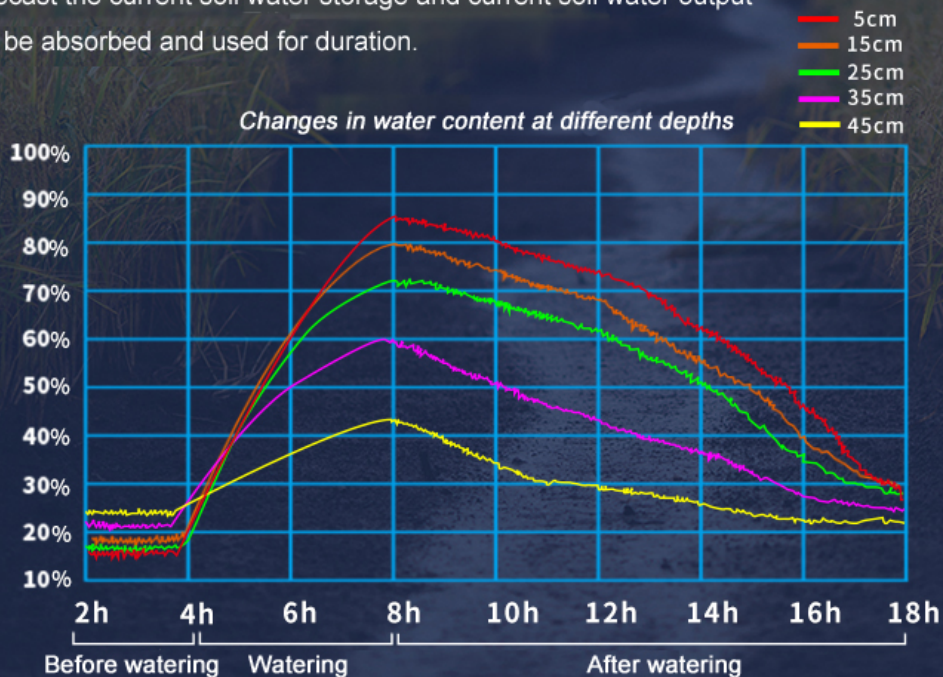
Excessive salt accumulation in root zone and below, need irrigation to drain salt.

- 3 / 5 layers temperature / humidity 10cm / 20cm interval diagram



Visualization of crop growth and water level changes

- ◆ Forecasting the onset and duration of crop water stress.
- ◆ Forecast the current soil water storage and current soil water output can be absorbed and used for duration.



INSTALLATION INSTRUCTIONS

• Perforation

First of all, the bit, handle and strut of the soil sampler shall be vertical to the ground after completion, and the handle shall be tightly held by both hands to press down clockwise and rotate slowly. (Note: do not use too much force, and make sure to rotate slowly for several turns to prevent the bit from running off to the hole and playing askew)

Secondly, take the soil drill out of the hole and put it into the basin. Use tools to collect the drilled soil into the basin for use with mud. If there is too much sand and stone, choose the finer soil. (Note: the first drilling soil will not be collected due to too many impurities)

Finally, continue the above drilling and soil sampling repeatedly, and try to put the sensor into the hole gently in the process (do not touch the bottom of the equipment with force), to test whether the depth of the hole is appropriate; if there is a jam, use the soil sampler to correct, to ensure that the sensor is put in and taken out smoothly; until the hole depth is flush with the installation position marked by the sensor, and the drilling is completed.

• And mud

First of all, pick out the soil impurities in the basin, stones, roots, soil blocks that are not easy to dissolve, etc. Rub the soil to make it fine with the mud.

Secondly, pour in a proper amount of water and stir it to a viscous state; loam mud generally can't be thicker than "sesame paste"; complete with mud.

• Grouting installation

First, slowly pour the mud into the hole, about 1 / 2 of the hole position; increase or decrease according to the actual situation.

Secondly, put the sensor into the hole slowly, turn it slowly in one direction and press it down. Too fast speed may cause the bubble can not be completely discharged. (Note: it is not allowed to pull up the sensor during the process of turning down again to prevent the gas from being sucked into the hole again).

Finally, when the sensor is installed to the correct depth, some mud will overflow around the equipment and the grouting is completed; at this time, the installation depth of the sensor is flush with the hole. (Note: remove excess mud beyond 3cm around the sensor to prevent caking affecting water infiltration).

• Installation complete

After pulling out the top cover of the equipment, press the opening key, and the equipment can work normally. It is recommended that normal operation be carried out after the mud returns to normal state.

SOLAR PANEL INSTALLATION

• Solar panel site selection

The installation position of the solar panel shall be far away from the sensor as far as possible. Generally, it is suitable to be more than 50cm away, but it shall not exceed the length of the power line. The panel of the solar power supply panel shall face the direction of the sun, i.e. the south, and there shall be no shelter in the front as far as possible. Insert the solar panel bracket at the selected position.

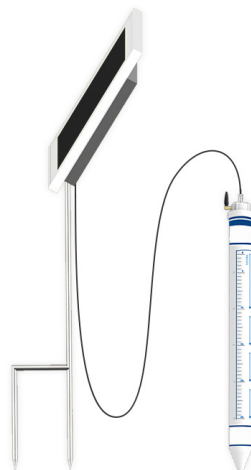
• Fixed solar panel

Install and fix the solar panel on the bracket, align the four holes on the back of the solar panel metal frame with the four holes on the bracket, and then tighten the screws and nuts to complete the installation.

• Connect the solar panel to the meter

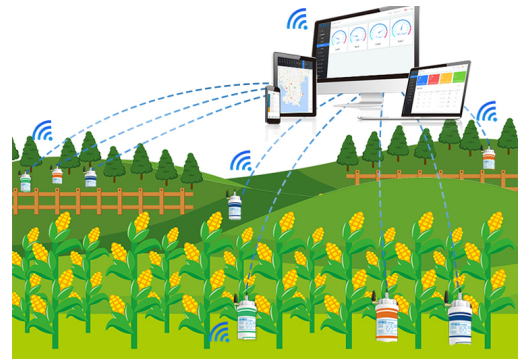
First, connect the panel with the terminal on the bracket and screw them together; second, insert the other end of the power line of the bracket into the sensor interface and tighten the bolts to complete the installation of the solar panel.

Finally, after the installation, press the on key, and the equipment will work normally. It is recommended to carry out normal operation after mud returns to normal state, as shown in the figure:



MEASUREMENT APPLICATION

Select a suitable measuring place, measure the depth according to the needs, and conduct hole drilling test according to the size of the measuring instrument, fill the pit tightly, press the power switch button of the measuring instrument, the measuring instrument starts to work, after stabilizing for a period of time, it can be measured and recorded for several days, months or even longer. The acquisition mode is as shown in the figure:



PRECAUTIONS

- The tester must be inserted vertically into the test environment
- Do not press too hard when the equipment is buried in the test environment
- It is not applicable to the absolute moisture measurement of saline alkali land, sandy land or other powdery objects with high salinity
- Do not use in soil impurities, stones, roots, and environments that are not easy to dissolve
- The measuring instrument cannot be completely buried in the soil, and the equipment is marked

ORDER CODE

SEM2254	Comb Soil Analyzer			
	CODE	Function type		
	A	3-layer temperature 3-layer humidity		
	B	5-layer temperature 5-layer humidity		
	C	3-layer temperature 3-layer humidity + Salinity		
	D	5-layer temperature 5-layer humidity + Salinity		
		CODE	Layer interval	
		1	10cm	
		2	20cm	
			CODE	Signal output
			A	RS485
			B	Lora/4G/NB-IOT
SEM2254	A	1	A	Order example