ATO

Speedy Soil Moisture Sensor

User Manual

ATO

1. Product Introduction

1.1 Product Overview

The soil quick tester is a portable instrument developed by our company for quickly detecting soil temperature, moisture content, EC conductivity, pH, and other parameters. The device adopts a handheld design for easy carrying. The probe uses a needle-type design and is made of stainless steel, offering good corrosion resistance, strength, and toughness.

This quick tester uses FDR technology for soil moisture measurement and AC detection technology for EC conductivity measurement. It features high measurement accuracy and fast response. A low-power LCD screen is used to display measured values clearly and directly. The product is powered by three standard AA batteries, which are easy to replace. With an overall low-power design, three AA batteries can support continuous use for up to two years.

The device is widely used in farmland production, soil research, greenhouse cultivation, orchards and nurseries, horticultural planting, tree planting, potted plant cultivation, and other fields.

1.2 Features

1. Handheld design, compact size, lightweight, and easy to carry.
2. Real-time monitoring of soil parameters; capable of detecting multiple soil components.
3. Easy to operate, with simple steps, fast measurement, no reagent required, and unlimited testing frequency.
4. Battery-powered with LCD digital display; clear interface and replaceable batteries.
5. Probe insertion design ensures accurate measurement and reliable performance.

1.3 Technical Parameters

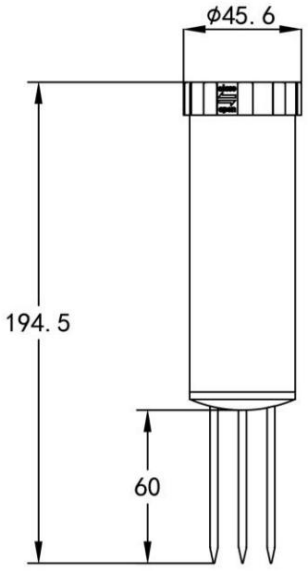
Category	Item	Specification
General	Power Supply	Alkaline zinc-manganese batteries (3 pcs)
General	Standby Time	More than 2 years
General	Working Time	Up to 1.3 years based on 20 uses per day (data measured by Renke Laboratory)
General	Static Current	< 50 μA
General	Average Working Current	13 mA
Temperature Parameters	Range	-40 to 80°C

Temperature Parameters	Resolution	0.1°C
Temperature Parameters	Accuracy	±0.5°C (at 25°C)
Moisture Parameters	Range	0–100%
Moisture Parameters	Resolution	0.10%
Moisture Parameters	Accuracy	0–50%: ±2% @ (brown soil, 30%, 25°C)
Moisture Parameters	Accuracy	50–100%: ±3% @ (brown soil, 60%, 25°C)
Conductivity Parameters	Range	0–10000 µS/cm
Conductivity Parameters	Resolution	1 µS/cm
Conductivity Parameters	Accuracy	±3% FS @ (brown soil, 60% RH, 25°C)
General	Response Time	< 1 s
General	Operating Temperature	-20 to 60°C
General	Protection Rating	IP54

2. Product Dimensions and Packing List

2.1 Product Dimensions

Device dimension drawing, unit: mm.



2.2 Packing List

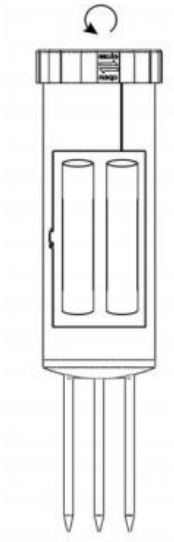
- Quick tester device × 1
- Certificate of conformity and warranty card

3. Operating Instructions

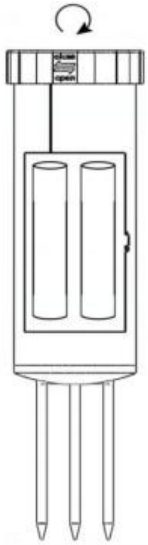
At the measurement location, insert the alloy probe of the quick tester vertically into the soil, then press the button once to start measurement.

After pressing the button, the device powers on after 1 second and then performs detection for 2 seconds. For multi-parameter models, each measured parameter is displayed for 3 seconds, and the results cycle 3 times before the screen turns off. For single-parameter models, the measurement result is displayed for 10 seconds before the screen turns off. If the button is pressed again during display, the device will perform another 2-second measurement and then display the results in cycles again.

Battery Replacement



Open the top cover



Close the top cover

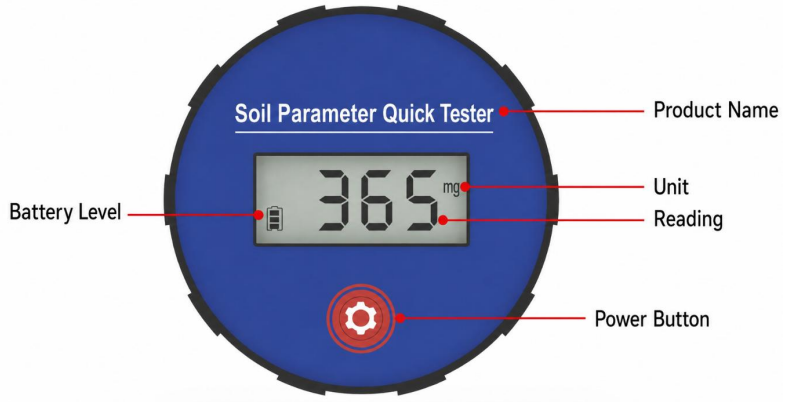
When replacing the batteries, rotate the upper cover counterclockwise by 15°. After hearing a sound, the buckle will open. Lift the upper cover to expose the battery holder inside. Disconnect the terminal connecting the circuit board and the battery holder, remove the entire battery holder, and replace the batteries. Then place the battery holder back into the device, reconnect the terminal, and rotate the upper cover clockwise to fasten it to the device housing. The device can then be used normally.

4. Precautions

1. Warning: Risk of personal injury. This device must not be used as a safety device or emergency stop device, nor in any application where equipment failure may cause personal injury. Usage restriction: only use the device for its intended authorized purpose. The technical manual must be consulted before installation, operation, or maintenance. Failure to follow these instructions may result in death or serious injury.
2. Ensure that the probe is in full contact with the soil and that the soil is compacted around the probe to ensure data accuracy.
3. The soil quick tester is only suitable for testing soil and earth. It is not suitable for dry flour, small stones, organic wood chips, liquid particles, or similar materials.
4. To improve test accuracy, it is recommended to perform measurements at multiple points and calculate the average value.
5. During use, make sure the probe does not hit stones. Do not use excessive force, otherwise the electrodes may be damaged. The probe should not be left inserted in soil for a long time, as this may cause oxidation.
6. After measurement, clean soil particles from the probe surface with gauze in time and keep the probe dry.

5. Screen Display

Press and hold the “Power” button, and the device will operate normally.



Note: When measuring different soil parameters, the screen will display the corresponding measurement unit.

6. Precautions

Warning: Risk of personal injury. This device must not be used as a safety device or emergency stop device, nor in any application where equipment failure may cause personal injury. Usage restriction: only use the device for its intended authorized purpose. The technical manual must be consulted before installation, operation, or maintenance. Failure to follow these instructions may result in death or serious injury.

7. Warranty Statement

The warranty period is 12 months from the date of purchase, based on valid proof of purchase. During the warranty period, if the equipment fails due to defects in materials or workmanship under normal use and maintenance, and the issue is verified by inspection, the company will provide free repair and replacement of parts.

After the warranty period expires, lifetime maintenance service is provided.

The following situations are not covered by the warranty:

1. Product damage caused by incorrect installation, use, or operation.
2. The product has been disassembled, repaired, modified, altered, or any internal component has been replaced by non-company technical personnel or by the user.
3. Damage caused by negligent use, water ingress, or other substances entering the device.
4. Failures or damage caused by accidents or natural disasters.
5. Failures or damage caused by operation outside the working parameter range listed in the product specifications.