

PASW-I 型便携自动土壤水分观测仪

概述

PASW-I 便携式土壤水分观测仪是集 FDR 原理的土壤水分测量传感器和数据采集技术于一体的土壤水分自动化测量仪，具有现场测量和存储数据的功能，可以选配 GPS 模块，实现测量地点的定位。其传感器技术指标符合中国气象局土壤水分观测仪的设计要求并得到定型。便携式终端可通过其内的 GPS 实现现场定位；连接土壤水



分传感器测量土壤的体积含水量，在输入相应参数的情况下可计算重量土壤的含水率、相对湿度和土壤水分贮存量；连接土壤温度传感器可以测量土壤的即时温度；通过 RS-232 通信接口可与计算机连接，读取存储的数据及设置参数。为便于野外作业，配专用手提箱，重量轻，配备延长工具，可使测量深度延至 60 公分。

该仪器能够对各类土壤和多种介质的水分进行测量，可作为水分定点监测或移动测量的基本工具，也可用于农业生产中的自动灌溉控制。广泛应用于气象、生态、农业、灌溉等领域的探测与研究。

技术指标

该仪器能够现场测量我国各气候区内壤土、黑土、褐土、钙土、风沙土、灌淤土等主要土壤类型。具体技术指标如下：

1. 土壤水分测量范围：0~100 %土壤体积含水量 θ_v ；
2. 分辨力：1%
3. 测量准确度： $\leq \pm 2\%$ ， $\theta_v < 40\%$ ； $\leq \pm 3\%$ ， $\theta_v > 40\%$ ；（特殊标定后 $\pm 1\%$ ）；
4. 土壤温度范围：-40~+80℃；准确度： $\pm 0.3^\circ\text{C}$
5. 土壤水分传感器尺寸：不锈钢探针 60mm 长，

探头总长：205mm 配备延长工具，可使测量深度延至 600mm。

6. 土壤温度传感器尺寸：不锈钢探针 350mm 长，探头总长：430mm
7. GPS 定位准确度：不小于 10 米 经纬度输出格式为：度：分：秒

PASW- I Portable Automatic Soil Moisture Observing Apparatus

Summary

PASW-I portable automatic soil moisture observing apparatus combines soil moisture sensor applied with FDR theory and data collection technology as one automatic measurement of soil moisture, which has the function of field measurement and the ability to store data. Equipped with GPS part, the realization of positioning of the measuring sites is very easy. Its sensor technology indices meet design requirements for soil moisture observations, China Meteorological Administration and so it get the setting. The automatic terminal can locate the site via GPS part inside. With the connection of soil



moisture sensor to measure the soil volumetric water content, when you input the corresponding parameters, it can calculate the weight of the soil moisture content, relative humidity and soil water storage capacity. With the connection of soil temperature sensor, it can measure the real-time temperature. With the connection to computer by RS-232, it can also read the data and set the parameter. In order to let it work easily outdoor, we equip it suitcase which is light, and extended tools giving it 60 cm deeper measure rang.

The instrument can measure the moisture in all kinds of soil and medium, which is used as the basic tool for moisture measurement or as the controller of automatic irrigation in agriculture production.

Main technical index

It can measure loam soil, black soil, cinnamon soil, calcium soil, aeolian sandy soil, irrigation silted soil and other main types soil in every China's climate zone. Specific indicators are as follows:

- 1、 Measuring range: 0~100% soil volumetric water content
- 2、 System resolution: 1%
- 3、 Measuring accuracy: error $\leq\pm 2\%$ (when soil volumetric water content is in 0~40%);
error $\leq\pm 3\%$ (when soil volumetric water content is in 40~100%)
- 4、 Soil temperature range: -40~+80°C; accuracy: $\pm 0.3^\circ\text{C}$
- 5、 Soil moisture sensor probe size: stainless steel probe 60mm;
Probe length: 205mm, equipped with extension tool allows to extend the depth of 600mm
- 6、 Soil temperature sensor probe size: stainless steel probe 350 mm
Probe length: 430mm
- 7、 GPS positioning accuracy: 10m
Longitude output format: °, ', ''.