

SWS-406 精密土壤水分传感器

概述

SWS-406 土壤水分传感器应用 FDR 原理，可直接测量土壤体积含水量。

SWS-406 土壤水分传感器由高频发射器、接收器、微处理、探针等组成。高频发射器、接收器、微处理密封在 Φ 40mm 长 130mm 防水室内，4 个长 60mm 不锈钢探针与之固定相连，中间探针发射高频信号其它 3 个探针接收信号。接收端高频信号强弱变化取决于土壤中介电常数大小，土壤的含水量变化其介电常数也随之变化。

该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。

该传感器已广泛应用于气象、生态、农业、地质灾害等领域的探测与研究。



主要功能及特点

- ☆密封和抗腐蚀性好，可长期连续掩埋在任意深度进行连续测量；
- ☆选用高频信号频率使离子传导率影响可忽略不记；
- ☆工作性能稳定、可靠性高、便于维修；
- ☆抗雷及抗干扰能力强。

主要技术指标

能够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。具体指标如下：

1. 测量范围：0~100%土壤体积含水量；
2. 测量精度：土壤体积含水量在 0~40%范围，误差 $\leq \pm 2\%$ ；
土壤体积含水量在 40~100%范围，误差 $\leq \pm 3\%$ ；
3. 供电：DC 7~15V，工作电流 $\leq 20\text{mA}$
4. 输出信号：0~1000mV
5. 土壤环境温度：-40~+80°C

SWS-406 precise soil moisture sensor

Summary

SWS-406 soil moisture sensor applies the principle of FDR to measure the soil volumetric water content directly. It consists of the high-frequency transmitter, receiver, microprocessor, probe and other parts. The high-frequency transmitter, receiver and microprocessor are sealed in a waterproof chamber diameter 40mm length 130mm, there are four 60mm long stainless steel probes fixed connected to it, and the intermediate one emits high-frequency signals while the other three probes receive signals. The high-frequency signal strength's changes of the receiving end depend on the value of soil's dielectric constant which will change when soil moisture changes.



The technical indicators of this sensor are in accordance with China Meteorological Administration(CMA) soil moisture observation instrument design requirements. The sensor has been widely used in the detection and research of meteorology, ecology, agriculture, geological disasters and many other fields.

Main functions and features

- ☆good sealing performance and corrosion resistance, can be long-term buried at arbitrary depth for continuous measurement
- ☆select high frequency signal so that the ionic conductivity effect can be neglected
- ☆stable performance, high reliability, easy to repair and maintenance; lightning protection and strong anti-interference ability

Product Specifications

It can measure loam soil, black soil, cinnamon soil, calcium soil, wind sandy soil, anthropogenic alluvial 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. 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%);
3. Power supply: DC 7~15V current $\leq 20\text{mA}$
4. Output signal: 0~1000mV
5. Soil environment temperature: -40~+80°C