Soil volumetric water content

HD3910... series
PROBES FOR VWC WITH 2 OR 3 ELECTRODES

INTRODUCTION

Introducing the **HD3910 Soil Moisture Probes**—your ultimate solution for precise and reliable **soil volumetric water content (VWC) measurement**.
These probes are designed to provide accurate and stable measurements with minimal soil disturbance in different applications:

- **Agriculture**: Optimize irrigation strategies by monitoring soil moisture levels.
- **Hydrology**: Study soil hydraulic properties for environmental research.
- **Geology**: Analyze soil characteristics for geological investigations.

FEATURES

Advanced Measurement Options

HD3910.1: Measures soil VWC with 2 electrodes. - HD3910.2: Enhanced with 3 electrodes for precise measurements in restricted volumes like pots.

Comprehensive Measurements

Measures both soil volumetric water content and temperature

Reliable and Durable

The probes are pre-calibrated at the factory, eliminating the need for additional calibration. Enclosed in a robust plastic housing sealed with epoxy resin, they offer reliable performance even in challenging conditions.
IP67 protection ensures resilience in harsh environmental conditions. Minimal invasiveness for non-disruptive installation.

Easy Installation

Equipped with a fixed cable (5 or 10m standard length) with open wires for straightforward setup.

CONFIGURATION & MEASUREMENT

Flexible Output Options

Digital RS485 with MODBUS-RTU protocol for long-distance connections; digital SDI-12 for compatibility with various data loggers; analog voltage outputs (0.5–3V standard; customizable 0–2.5V, 0–5V, or 0–10V on request) for versatile data integration.

VWC & TEMPERATURE MEASUREMENT
Measures soil volumetric water content using 2-electrode or 3-electrode probes, with built-in temperature sensing

FLEXIBLE OUTPUT OPTIONS
Choose from RS485 with MODBUS-RTU, SDI-12 digital, or analog voltage outputs for seamless integration

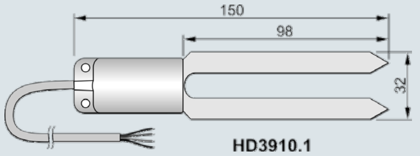
ACCURATE & RELIABLE
Scratch-resistant coatings and minimal maintenance, ready for any environment

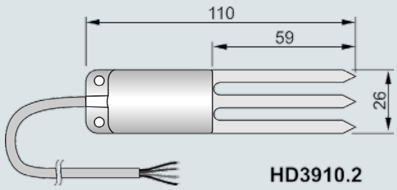
MINIMAL INVASIVENESS
Designed to minimize disturbance to the soil, ensuring precision with easy installation

General specifications

Output	Depending on model: • RS485 with MODBUS RTU protocol • SDI 12 •2 x analog voltage 0,5...3 V, 0...2,5 V, 0...5 V or 0...10 V (depending on model)
Power supply	
0...2.5 V analog output	3.6...30 Vdc
RS485 output	5...30 Vdc
0.5...3 V analog output	5...30 Vdc
SDI 12 output	6...30 Vdc
0...5 V analog output	7...30 Vdc
0...10 V analog output	12...30 Vdc
Consumption	
RS485 output	2 mA average / 15 mA peak @ 12 Vdc
analog output	2.5 mA average / 15 mA peak @ 12 Vdc
SDI 12 output	300 µA @ 12 Vdc in standby <15 mA @ 12 Vdc during measurement
Materials	Handle: PP Electrodes: copper on glass epoxy substrate, thickness 2 mm
Cable	4 poles ending with open wires, length 5 or 10 m depending on the model
Protection degree	IP 67
Weight	150 g approx. (including the 5 m cable)

Dimensions





Ordering codes

HD3910. □ □ □ . □

Cable length
5= 5 m
10 = 10 m

Analog output range
Blank = 0.5...3 V
2 = 0...2.5 V
5 = 0...5 V
10 = 0...10 V

Type of output
Blank = RS485 MODBUS-RTU (default)
A = analog voltage
S = SDI-12

Number of electrodes
1 = 2 electrods
2 = 3 electrods

Measurement specifications

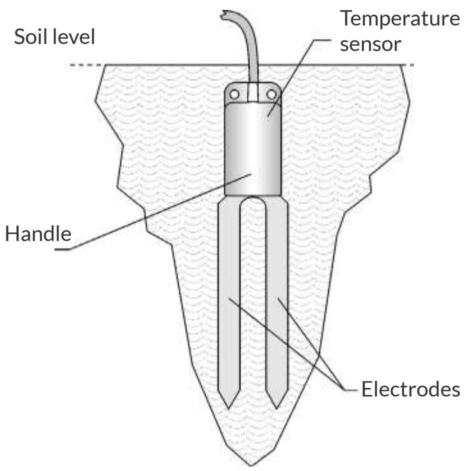
Volumetric water content	
Measuring principle	Capacitive
Measuring range	0...60% VWC
Resolution	0.1%
Accuracy (@ 23 °C)	± 3 % between 0 and 50% VWC (standard mineral soil, EC < 5 mS/cm)
Measuring volume	
2-electrode	Ø = 100 mm x H=150 mm
3-electrode	Ø = 80 mm x H=110 mm
Sensor operating temperature	-40...+60°C
Temperature	
Sensor	NTC 10 kΩ @ 25°C
Measuring range	-40...+60°C
Resolution	0.1°C
Accuracy	± 0.5°C
Long-term stability	0.1°C / year

Installation

To install the probe:

- first create a hole deep enough to fully insert it, using a tool rather than the probe itself to prevent damage;
- ensure the handle is completely buried, as the temperature sensor is located near the electrodes inside the handle;
- fill any gaps with loose soil to ensure proper contact between the soil, electrodes, and handle.

While the probe can be oriented in any direction, it's best to place it vertically to allow natural water flow and minimize disturbance to the soil.



V 1.0

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