MODBUS SOIL MOISTURE

TEROS12-MB

Measured Soil Metrics

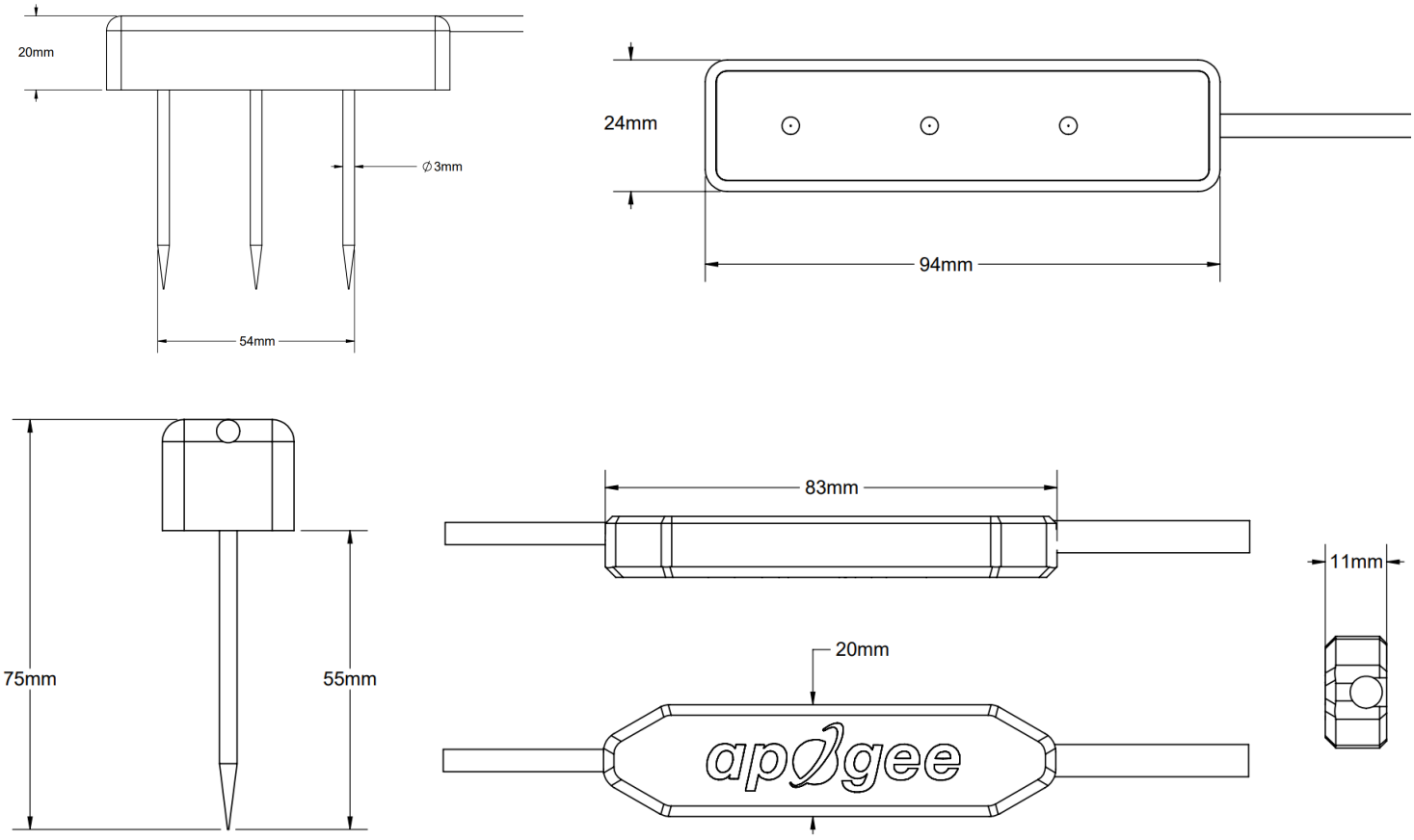
- **Volumetric Water Content**
- **Temperature**
- **Electrical Conductivity**

Robust soil moisture sensor fit for field use. Installable in a borehole or trench.

Product Specifications

	TEROS12-MB
Input Voltage Requirement	5-24 V
RS-232 Current Draw	Minimum: 14.0 mA Typical: 14.6 mA Maximum: 37.0 mA
RS-485 Current Draw	Minimum: 9.0 mA Typical: 9.6 mA Maximum: 48.0 mA
Volumetric Water Content Range	Mineral Soil Calibration: 0.00-0.70 m^3/m^3 Soilless Media Calibration: 0.0-1.0 m^3/m^3 Apparent Dielectric Permittivity (ε_a): 1 (air) to 80 (water)
Volumetric Water Content Resolution	0.0010 m^3/m^3
Volumetric Water Content Accuracy	Generic Calibration: ±0.03 m^3/m^3 (±3.00% VWC) typical in mineral soils that have solution EC <8,000 µS/cm Medium Specific Calibration: ±0.01–0.02 m^3/m^3 in any porous medium Apparent Dielectric Permittivity (ε_a): 1–40 (soil range), ±1 ε_a (unitless) 40–80, 15% of measurement
Output	Modbus (RS-232 and RS-485)
Temperature Measurement Range	-40 to +60 °C
Temperature Resolution	0.10 °C
Temperature Accuracy	±1.0 °C from –40 to 0 °C ±0.5 °C from 0 to +60 °C
Dielectric Measurement Frequency	70 MHz
Electrical Conductivity Range	0–20,000 µS/cm (bulk)
Electrical Conductivity Resolution	1 µS/cm
Electrical Conductivity Accuracy	+/- (5% + 10 µS/cm) from 0–10,000 µS/cm +/- 8% from 10,000–20,000 µS/cm
Volume of Inluence	1010 mL
Sensor Dimensions	Length: 9.4 cm (3.70 in) Width: 2.4 cm (0.95 in) Height: 7.5 cm (2.95 in), Needle Length: 5.5 cm (2.17 in)
Operating Environment	-40 to +60 °C
Measurement Duration	25 to 150 ms
Mass (with 5 m of cable)	171.5 g
Cable	5, 10, or 20 m of four conductor, shielded, twisted-pair wire; customized cable lengths available; TPR jacket (high water resistance, high UV stability, flexibility in cold conditions); pigtail lead wires
Warranty	3 years against defects in materials and workmanship
Complience Assessment Standards	EN 61326-1:2013, EN 63000:2018
Union Harmonization Legislation Conformity	2014/30/EU, 2011/65/EU, 2015/863/EU

Dimensions



Features

TYPICAL APPLICATIONS

- Irrigation scheduling & management
- Monitoring soil health in natural environments, mineral soils, potting media, soilless substrates, and greenhouses.
- Analyzing fertilizer, salt, and solute movement
- Multi-depth profiling

STABLE MEASUREMENTS

This sensor combines moisture, temperature, and EC in a single probe. The 70 MHz dielectric capacitance minimizes interference from soil salinity or texture.

FIELD DEPLOYMENT DESIGN

This sensor utilizes an epoxy body for tough field conditions and pointed, steel needles that cut through the soil to provide high soil to sensor contact. Its large volume of influence produces measurements representative of a soil zone — helpful when soil is spatially heterogeneous.
It requires little maintenance to make it practical for long-term field deployment.

MODBUS OUTPUT

Our Modbus communication offers a straightforward way to stream calibrated measurements into controllers and data systems, making integration especially fast and convenient for teams already using RS-232 or RS-485 networks. It supports multiple parameters on a single line, long cable runs, and provides noise-resistant communication in demanding environments.

Rev: 23-Dec-2025