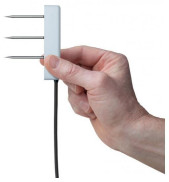
ENVIROMONITORS

Call our friendly team on
01243 558280

EnviroMonitors
Ford Lane Business Park
Ford
West Sussex
BN18 0UZ, UK
www.enviromonitors.co.uk

HOBOnet T12 Soil Moisture, Temperature & EC Sensor

Product Images



Description

The HOBOnet T12 is a wireless sensor that works with the HOBOnet system to not only provide advanced soil moisture measurements (volumetric water content) with better accuracy and precision, but also measure soil temperature and electrical conductivity. Designed to withstand harsh environmental conditions, these durable sensors last up to 10 years, so you can leave them in the field for extended periods of time.

Sharpened stainless-steel probe tips make installation easy, even in hard soil, and a large volume of influence provides more accurate results. Featuring the METER TEROS 12 soil moisture and temperature sensor, the HOBOnet T12 is backed by over 20 years of soil-moisture research and leverages METER's trademark 70MHz frequency capacitance technology, minimizing salinity and textural effects.

Sensors are easily linked to the HOBOnet network, and data can be accessed through HOBOlink, Onset's

innovative cloud-based software platform.

We suggest using a TEROS Verification Clip, which provides a convenient way to confirm the operation and soil moisture accuracy of the sensor. Attaching this clip to a TEROS sensor provides a known soil moisture level for verifying measurement accuracy, without having to test the sensor in actual soils, which normally requires weighing soil samples and drying them in an oven.

Sensor Features

- Soil moisture (volumetric water content), soil temperature, and electrical conductivity measurements with one device
- Sensor lasts up to 10 years in the field
- Largest volume of influence (1010 mL) relative to sensor size, resulting in more accurate soil moisture measurements
- Easy installation with sharpened stainless-steel probes that are more resistant to damage/deterioration
- Less sensor-to-sensor variability.

Wireless Features

- 900 MHz wireless mesh self-healing technology
- 450 to 600 metre (1,500 to 2,000 feet) wireless range and up to five hops
- Up to 50 wireless sensors or 336 data channels per HOBO RX station
- Simple button-push to join the HOBOnet wireless network
- Onboard memory to ensure no data loss
- Powered by rechargeable AA batteries and built-in solar panel.

Note: A complete HOBOnet system requires at least one HOBO RX3000 Remote Monitoring Station, a HOBOnet Wireless Manager, and a HOBOnet Wireless Sensor, OR one HOBO MicroRX Station (which has an integrated HOBOnet Wireless Manager) and a HOBOnet Wireless Sensor. HOBOnet Wireless Repeaters can be added to extend the range.

Additional Information

Country of Manufacture	United States
Brand	Onset HOBO
Measurements	Soil Electrical Conductivity (EC), Soil Moisture, Soil Temperature
Typical applications	Environmental (Outdoor), Field Research
Explanation	Soil Moisture: Volumetric Water Content (VWC) Measurement Range*: 0.00 to 0.70 m³/m³ in mineral soils Accuracy: ±0.030 m³/m³ (±3%) typical from 0 to 50°C (32 to 122°F); ±0.020 m³/m³ (±2%) with soil specific calibration Resolution: 0.001 m³/m³ Dielectric Measurement Frequency: 70 MHz Temperature** Measurement Range: -40 to 60°C (-40 to 140°F) Accuracy: ±0.5°C (0.9°F) from -40 to 0°C (-40 to 32°F) ±0.3°C (0.54°F) from 0 to 60°C (32 to 140°F) Resolution: 0.1°C (0.18°F) Bulk Electrical Conductivity (EC) Measurement Range: 0 to 20 dS/m (bulk) Accuracy: ±5% of reading + 0.01 dS/m from 0 to 10 dS/m ±8% of reading from 10 to 20 dS/m Resolution: 0.001 dS/m Wireless Mote Operating Temperature Range: Sensor: -40 to 60°C (-40 to 140°F) Mote: -25° to 60°C (-13° to 140°F) with rechargeable batteries -40 to 70°C (-40 to 158°F) with lithium batteries Radio Power: 12.6 mW (+11 dBm) non-adjustable Transmission Range: Reliable connection to 457.2 m (1,500 ft) line of sight at 1.8 m (6 ft) high Reliable connection to 609.6 m (2,000 ft) line of sight at 3 m (10 ft) high Wireless Data Standard: IEEE 802.15.4 Radio Operating Frequencies: RXW-T12-900: 904–924 MHz RXW-T12-868: 866.5 MHz RXW-T12-921: 921 MHz RXW-T12-922: 916–924 MHz Modulation Employed: OQPSK (Offset Quadrature Phase Shift Keying) Data Rate: Up to 250 kbps, non-adjustable Duty Cycle: <1% Maximum Number of Motes: 50 motes per one HOBOnet Wireless Sensor Network Logging Rate: 1 minute to 18 hours Number of Channels: 4 Battery Type/ Power Source: Two AA 1.2V rechargeable NiMH batteries, powered by built-in solar panel or two AA 1.5 V lithium batteries for operating conditions of -40 to 70°C (-40 to 158°F) Battery Life: With NiMH batteries: Typical 3–5 years when operated in the temperature range -20° to 40°C (-4°F to 104°F) and positioned toward the sun (see Deployment and Mounting), operation outside this range will reduce the battery service life With lithium batteries: 1 year, typical use Memory: 16 MB Dimensions: Sensor: 7.47 x 9.4 x 2.39 cm (2.94 x 3.7 x 0.94 inches) Sensor needle length: 5.4 cm (2.13 inches) Sensor needle diameter: 0.32 cm (0.13 inches) Cable length: 5 m (16.4 ft) Mote: 16.2 x 8.59 x 4.14 cm (6.38 x 3.38 x 1.63 inches) Weight: RXW-T12-xxx sensor and cable: 245 grams (8.64 oz) Mote: 223 g (7.87 oz) Materials: Sensor: ASA plastic body with polyurethane epoxy filling and stainless steel pins Cable: PVC, UV resistant and rodent repellent Mote: PCPBT, silicone rubber seal Environmental Rating: Mote: IP67, NEMA 6 Compliance Marks: ☒ RXW-T12-900 ☒ RXW-T12-868 ☒ RXW-T12-921 ☒ RXW-T12-922 * The sensor data can be post-calibrated if necessary (e.g. the sensor is used in non-mineral soil types or higher than standard accuracy is required). Users can apply a calibration equation to the data exported from HOBOlink. The VWC range will depend on the calibration equation. ** Temperature measurement, for applicable sensors, may not be accurate if sensor is not fully immersed in medium of interest, due to longer equilibration time.
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