



HOBOnet T12 Soil Moisture/Temp/EC Sensor

A durable wireless sensor that works with the HOBOnet system to measure soil moisture, temperature, and electrical conductivity; lasts up to 10 years in the field.

Important Information

A complete system requires at least one HOBOnet RX3000 Remote Monitoring Station, a HOBOnet Wireless Manager, and a HOBOnet Wireless Sensor, OR one HOBOnet MicroRX station (which has an integrated HOBOnet Wireless Manager) and a HOBOnet Wireless Sensor. HOBOnet Wireless Repeaters (RXW-RPTR-xxx or RXW-RPTR-B-xxx) can be added to extend the range.

Supported Measurements

Electrical Conductivity (soil), Soil Moisture, Soil Temperature

Features

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 meter (1,500 to 2,000 feet) wireless range and up to five hops
- Up to 50 wireless sensors or 336 data channels per HOBOnet 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

What's in the box

Contact Us

Sales (8am to 5pm ET, Monday through Friday)

- Email sales@onsetcomp.com
- Call 1-508-759-9500
- In U.S. toll free 1-800-564-4377
- Fax 1-508-759-9100

Onset Computer Corporation
470 MacArthur Boulevard
Bourne, MA 02532

Technical Support (8am to 5pm ET, Monday through Friday)

- Contact Product Support www.onsetcomp.com/support/contact
- Call 1-508-759-9500
- In U.S. toll free 1-877-564-4377

HOBOnet T12 Soil Moisture/Temp/EC Sensor (RXW-T12-xxx) Specifications

Soil Moisture: Volumetric Water Content (VWC)

Measurement Range*	0.00 to 0.70 m ³ /m ³ in mineral soils
Accuracy	±0.030 m ³ /m ³ (±3%) typical from 0 to 50°C (32 to 122°F); ±0.020 m ³ /m ³ (±2%) with soil specific calibration
Resolution	0.001 m ³ /m ³
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 Note

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	Up to 50 wireless sensors or 336 data channels per one HOBO RX station
Logging Rate	1 minute to 18 hours
Number of Data 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

Notices

* 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.

