RXW-SMC-xxx Sensor

HOBOnet Soil Moisture EC-5 Sensor

The HOBOnet Wireless Soil Moisture Sensor integrates the field-proven ECH2O™ EC5 Sensor and provides readings directly in volumetric water content. The sensor's high-frequency design minimizes sensitivity to salinity and textural effects, and gives it a wide measurement range. HOBOnet Wireless Sensors communicate data directly to the RX3000 weather station or pass data through other wireless sensors back to the central station. They are preconfigured and ready to deploy, and data is accessed through HOBOlink, Onset's innovative cloud-based software platform.

Supported Measurements:

Soil Moisture

Key Advantages:

Sensor Features

- ±3% accuracy in typical soil conditions, and ±2% accuracy with soil-specific calibration
- Measures a 0.3-liter volume of soil for taking readings at a specific depth or in a container
- High-frequency (70 MHz) circuit provides good accuracy even in high-salinity and sandy soils

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 per RX3000
- 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

RXW-SMC-xxx Sensor Specifications

Sensor

Measurement Range	In soil: 0 to 0.550 m /m (volumetric water content)
Extended Range	-0.401 to 2.574 m /m
Accuracy	±0.031 m /m (±3.1%) typical 0 to 50°C (32° to 122°F) for mineral soils up to 8 dS/m and ±0.020 m /m (±2%) with soil specific calibration; see Notes 2 and 3
Resolution	0.0007 m /m (0.07%)
Volume of Influence	0.3 liters (10.14 oz)
Sensor Frequency	70 MHz
Sensor Operating Temperature Range	0° to 50°C (32° to 122°F). Although the sensor probe and cable can safely operate at below-freezing temperatures (to -40°C/F), the soil moisture data collected at these extreme temperatures is outside of the sensor's accurate measurement range.

Wireless Mote

Operating Temperature Range	-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-SMC-900: 904–924 MHz RXW-SMC-868: 866.5 MHz RXW-SMC-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 RX Wireless Sensor Network
Battery Type/ Power Source	Two AA 1.2 V 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	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	Mote: 223 g (7.87 oz)
Materials	Sensor: Weatherproof Mote: PCPBT, silicone rubber seal
Environmental Rating	Mote: IP67, NEMA 6
Compliance Marks	RXW-SMC-900 RXW-SMC-868 RXW-SMC-922

Contact Us

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