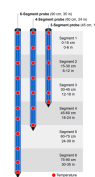




# HOBOnet Multi-Depth Soil Moisture & Temperature Sensor (45cm)

## Product Images



## Short Description

The HOBOnet Multi-Depth Soil Moisture Sensor is a wireless sensor that works with the HOBOnet system to measure soil moisture and soil temperature at multiple depths with a single probe, for fast and easy installation. This durable sensor is available in three probe lengths for measurements from 45 cm (18 in) to 90 cm (35 in) deep.

## Description

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Featuring GroPoint's TDT5 technology with patented antenna design, these sensors measure soil moisture along the entire length of each probe segment, resulting in the largest volume of influence per measurement section. A high frequency of pulses per measurement provides precise and consistent soil moisture data.

We recommend using the optional [pilot rod](#) and [slide hammer](#) for quick and easy installation.

The HOBOnet system is a cost-effective and scalable wireless sensor network for web-enabled monitoring of field conditions for applications such as crop management, research, and greenhouse operations. And because it's wireless, you can deploy a network of sensors to easily monitor multiple points with a single system, while avoiding the risk of long cables that can interfere with field operations. Sensors are easily linked to the network, and data can be accessed through [HOBOLink](#), Onset's innovative cloud-based software platform.

## Sensor Features

- Soil moisture measurements over entire probe segment lengths
- Available in three probe lengths: 45 cm (18 in), 60 cm (24 in), and 90 cm (35 in)
- Soil temperature measurements at multiple points
- Largest volume of influence per measurement (2 L volume of influence per 15 cm segment)
- Advanced filtering of 400,000 pulses per measurement eliminates outlying readings and provides precise, repeatable soil moisture data
- Polycarbonate housing and epoxy-sealed circuit board protect vital components during installation and throughout deployment
- Easy installation with minimal soil disturbance, and no digging required when using the optional pilot rod and slide hammer.

## Wireless Features

- 868 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 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.

**Note:** A complete [HOBOnet](#) 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](#) can be added to extend the range.

# Additional Information

Country of Manufacture	United States																																																						
Brand	Onset HOBO																																																						
Measurements	Soil Moisture, Soil Temperature																																																						
Typical applications	Environmental (Outdoor), Field Research																																																						
Explanation	<h2>Specifications</h2> <h3>Soil Moisture: Volumetric Water Content (VWC)</h3> <table border="1"> <tr> <td>Measurement Range</td> <td>In soil: 0 to 0.550 m<sup>3</sup>/m<sup>3</sup> (volumetric water content)</td> </tr> <tr> <td>Accuracy</td> <td>±0.02 m<sup>3</sup>/m<sup>3</sup> (±2%) in most soils typical from 0° to 50°C (32° to 122°F)*</td> </tr> <tr> <td>Resolution</td> <td>0.001 m<sup>3</sup>/m<sup>3</sup></td> </tr> </table> <h3>Temperature</h3> <table border="1"> <tr> <td>Measurement Range</td> <td>-20° to 70°C (-4° to 158°F)</td> </tr> <tr> <td>Accuracy</td> <td>±0.5°C (0.9°F)</td> </tr> <tr> <td>Resolution</td> <td>0.1°C (0.18°F)</td> </tr> </table> <h3>Depths Measured (see below)</h3> <table border="1"> <tr> <td>RXW-GP3A-xxx</td> <td>45 cm (18 inches) total; three soil moisture zones, six temperature depths</td> </tr> <tr> <td>RXW-GP4A-xxx</td> <td>60 cm (24 inches) total; four soil moisture zones, six temperature depths</td> </tr> <tr> <td>RXW-GP6A-xxx</td> <td>90 cm (35 inches) total; six soil moisture zones, nine temperature depths</td> </tr> </table> <h3>Wireless Mote</h3> <table border="1"> <tr> <td>Operating Temperature Range</td> <td>Sensor: -20° to 70°C (-4° to 158°F) Mote: -25° to 60°C (-13° to 140°F) with rechargeable batteries -40° to 70°C (-40° to 158°F) with lithium batteries</td> </tr> <tr> <td>Radio Power</td> <td>12.6 mW (+11 dBm) non-adjustable</td> </tr> <tr> <td>Transmission Range</td> <td>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</td> </tr> <tr> <td>Wireless Data Standard</td> <td>IEEE 802.15.4</td> </tr> <tr> <td>Radio Operating Frequencies</td> <td>RXW-GPxA-900: 904-924 MHz RXW-GPxA-868: 866.5 MHz RXW-GPxA-921: 921 MHz RXW-GPxA-922: 916-924 MHz</td> </tr> <tr> <td>Modulation Employed</td> <td>OQPSK (Offset Quadrature Phase Shift Keying)</td> </tr> <tr> <td>Data Rate</td> <td>Up to 250 kbps, non-adjustable</td> </tr> <tr> <td>Duty Cycle</td> <td>&lt;1%</td> </tr> <tr> <td>Maximum Number of Motes</td> <td>Up to 50 wireless sensors or 336 data channels per one HOBO RX station</td> </tr> <tr> <td>Logging Rate</td> <td>Maximum logging interval: 18 hours Recommended minimum logging interval: 5 minutes year round when using solar power with rechargeable batteries, 10 minutes when using non-rechargeable lithium batteries</td> </tr> <tr> <td>Number of Data Channels</td> <td>RXW-GP3A-xxx: 10 RXW-GP4A-xxx: 11 RXW-GP6A-xxx: 16</td> </tr> <tr> <td>Battery Type/ Power Source</td> <td>Two AA 1.2V rechargeable NiMH batteries, powered by built-in solar panel or two AA 1.5 V non-rechargeable lithium batteries for operating conditions of -40 to 70°C (-40 to 158°F)</td> </tr> <tr> <td>Battery Life</td> <td>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 Mounting and Positioning the Mote), operation outside this range will reduce the battery service life With non-rechargeable lithium batteries: 1 year with a 10-minute logging interval</td> </tr> <tr> <td>Memory</td> <td>16 MB</td> </tr> <tr> <td>Dimensions</td> <td>RXW-GP3A-xxx sensor length: 53.2 cm (20.9 inches) RXW-GP4A-xxx sensor length: 68.2 cm (26.9 inches) RXW-GP6A-xxx sensor length: 98.2 cm (38.7 inches) Sensor diameter: 3 cm (1.2 inches) Cable length: 3.5 m (11 ft 6 in) Mote: 16.2 x 8.59 x 4.14 cm (6.38 x 3.38 x 1.63 inches)</td> </tr> <tr> <td>Weight</td> <td>RXW-GP3A-xxx sensor: 351 g (12.4 oz) RXW-GP4A-xxx sensor: 408 g (14.4 oz) RXW-GP6A-xxx sensor: 526 g (18.6 oz) Cable: 180 g (6.5 oz) Mote: 226 g (7.97 oz)</td> </tr> <tr> <td>Materials</td> <td>Sensor: Polycarbonate housing encasing epoxy sealed circuit board Cable: Polyurethane Mote: PCPBT, silicone rubber seal</td> </tr> <tr> <td>Environmental Rating</td> <td>Mote: IP67, NEMA 6</td> </tr> </table> <p>*Soil-specific calibration requires user post-processing in a spreadsheet program such as Microsoft® Excel® or a utility and connector as recommend by RioT Technology Corp., manufacturer of GroPoint sensors. Refer to "Performing a Soil-Specific Calibration" in the manual for details.</p>	Measurement Range	In soil: 0 to 0.550 m <sup>3</sup> /m <sup>3</sup> (volumetric water content)	Accuracy	±0.02 m <sup>3</sup> /m <sup>3</sup> (±2%) in most soils typical from 0° to 50°C (32° to 122°F)*	Resolution	0.001 m <sup>3</sup> /m <sup>3</sup>	Measurement Range	-20° to 70°C (-4° to 158°F)	Accuracy	±0.5°C (0.9°F)	Resolution	0.1°C (0.18°F)	RXW-GP3A-xxx	45 cm (18 inches) total; three soil moisture zones, six temperature depths	RXW-GP4A-xxx	60 cm (24 inches) total; four soil moisture zones, six temperature depths	RXW-GP6A-xxx	90 cm (35 inches) total; six soil moisture zones, nine temperature depths	Operating Temperature Range	Sensor: -20° to 70°C (-4° to 158°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-GPxA-900: 904-924 MHz RXW-GPxA-868: 866.5 MHz RXW-GPxA-921: 921 MHz RXW-GPxA-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	Maximum logging interval: 18 hours Recommended minimum logging interval: 5 minutes year round when using solar power with rechargeable batteries, 10 minutes when using non-rechargeable lithium batteries	Number of Data Channels	RXW-GP3A-xxx: 10 RXW-GP4A-xxx: 11 RXW-GP6A-xxx: 16	Battery Type/ Power Source	Two AA 1.2V rechargeable NiMH batteries, powered by built-in solar panel or two AA 1.5 V non-rechargeable 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 Mounting and Positioning the Mote), operation outside this range will reduce the battery service life With non-rechargeable lithium batteries: 1 year with a 10-minute logging interval	Memory	16 MB	Dimensions	RXW-GP3A-xxx sensor length: 53.2 cm (20.9 inches) RXW-GP4A-xxx sensor length: 68.2 cm (26.9 inches) RXW-GP6A-xxx sensor length: 98.2 cm (38.7 inches) Sensor diameter: 3 cm (1.2 inches) Cable length: 3.5 m (11 ft 6 in) Mote: 16.2 x 8.59 x 4.14 cm (6.38 x 3.38 x 1.63 inches)	Weight	RXW-GP3A-xxx sensor: 351 g (12.4 oz) RXW-GP4A-xxx sensor: 408 g (14.4 oz) RXW-GP6A-xxx sensor: 526 g (18.6 oz) Cable: 180 g (6.5 oz) Mote: 226 g (7.97 oz)	Materials	Sensor: Polycarbonate housing encasing epoxy sealed circuit board Cable: Polyurethane Mote: PCPBT, silicone rubber seal	Environmental Rating	Mote: IP67, NEMA 6
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Compatibility	RX3000, RX Micro Station																																																						
Power	Powered by rechargeable AA batteries and built-in solar panel																																																						