



Rugged, research-grade sensors and monitoring systems for accurate weather, soil, and water resources data

Trusted by researchers. Used by all.

Whether your focus is meteorology, hydrology, renewable energy, agriculture or alpine research, accurate data from a dependable weather station is critical. Affordable and flexible, HOBO weather systems deliver weather monitoring solutions that streamline your data collection and analysis.



Temperature & Relative Humidity

Assess climate impact on ecosystems, agriculture, health and water resources



Wind Speed & Direction

Accurately predict weather patterns or determine when to safely apply herbicides



Rainfall

Improve irrigation management, erosion monitoring and hydrological research



Leaf Wetness

Protect crops and reduce disease management costs



Soil Moisture

Determine soil health, improve irrigation and reduce harmful runoff



Light - PAR & Solar Radiation

Understand the impact of light levels, from plant growth to solar energy site evaluation



Water Level & Flow

Gain critical data for irrigation optimization, hydrological studies, and water-use regulation compliance



Evapotranspiration

Support irrigation management, water balance analysis, and environmental studies



RX3000 Remote Monitoring Station

Features

- Flexible support for a broad range of sensors
- LCD display for easy field deployment
- Cloud-based data access through [HOBOLink](#)
 - Get 24/7 web access to your data via web browser
 - Verify RX3000 system status remotely
 - Set up and manage alarm notifications over the web
 - Schedule automated delivery of data
- Plug-and-play operation
- Alarm notifications via text, email
- Rugged double-weatherproof enclosure
- Configurable from your mobile device
- Optional Analog Input, Relay, and Water Level Sensor Modules
- Remote water level and water flow monitoring with Onset's water level module (RXMOD-W1)

Operating Range	-40° to 60°C (-40° to 140°F); no remote communications for battery voltage less than 3.9 V DC
Smart Sensor Connectors	10
Smart Sensor Network Cable Length	100 m (328 ft) maximum
Smart Sensor Data Channels	Maximum of 15 (some smart sensors use more than one data channel; see sensor manual for details)
Module Slots	2
Logging Rate	1 second (RX3001 and RX3002) or 1 minute (RX3003 and RX3004) to 18 hours
Time Accuracy	±8 seconds per month in 0° to 40°C (32°F to 104°F) range; ±30 seconds per month in -40° to 60°C (-40° to 140°F) range
Battery Type/Power Source	4 Volt, 10 AHr, rechargeable sealed lead-acid; external power required using one of these options: AC power adapter (AC-U30), solar panel (SOLAR-xW), or external power source 5 V DC to 17 V DC with external DC power cable (CABLE-RX-PWR)
Rechargeable Battery Service Life	Typical 3–5 years when operated in the temperature range -20° to 40°C (-4°F to 104°F); operation outside this range will reduce the battery service life
Memory	32 MB, 2 million measurements, continuous logging
Alarm Notification Latency	Logging interval plus 2–4 minutes, typical
Enclosure Access	Hinged door secured by two latches with eyelets for use with user-supplied padlocks
LCD	LCD is visible from 0° to 50°C (32° to 122°F); the LCD may react slowly or go blank in temperatures outside this range
Materials	Outer enclosure: Polycarbonate/PBT blend with stainless steel hinge pins and brass inserts; Inner enclosure: Polycarbonate; Gaskets: Silicone rubber; Cable channel: EPDM rubber; Cable opening cover: Aluminum with ABS plastic thumb screws; U-Bolts: Steel with zinc dichromate finish
Size	18.6 x 18.1 x 11.8 cm (7.3 x 7.1 x 4.7 in.); see diagrams on next page
Weight	2.2 kg (4.85 lb)
Mounting	3.8 cm (1.5 inch) mast or wall mount
Environmental Rating	Weatherproof enclosure, NEMA 4X (requires proper installation of cable channel system)

HOBOLink SIM Card Plan Details

User-Supplied SIM plan for HOBOLink

- If selecting a user-supplied SIM plan (SP-610 or SP-611), please note:
 - The station will ship without a SIM card
 - The user must provide SIM card meeting the following requirements for proper function:
 - RX3004: Micro SIM for 4G LTE Network; supports UMTS/HSPA+ at 800, 850, 900, 1800, 1900, or 2100 MHz and LTE at 700, 800, 850, 900, 1800, 1900, 2100, or 2600 MHz
 - The SIM card must be activated and unlocked
 - APN for the associated carrier

Onset-Supplied SIMs Cellular Data Global Coverage

- RX3000 4G and RX2100 4G Plans (SP-811, SP-813, SP-815) operate on 4G networks where available with backward compatibility for 2G and 3G coverage.
- Covered countries are listed below. Please call about specific coverage concerns.

Current Countries With Cellular Data Coverage

This list reflects primary coverage by our station. Users outside of this list can always supply their own SIM card.

United States	Ecuador	Japan	Puerto Rico	Togo
Argentina	Finland	Kenya	Saudi Arabia	Tonga
Armenia	France	Kuwait	Singapore	Turkey
Australia	Germany	Mexico	Slovenia	United Arab Emirates
Austria	Ghana	Netherlands	Sonatel	United Kingdom
Barbados	Greenland	New Zealand	South Africa	
British Virgin Islands	Guatemala	Norway	Spain	
Canada	Indonesia	Panama	Taiwan	
China	Italy	Philippines	Tanzania	
Croatia	Jamaica	Portugal	Thailand	
Dominican Republic	Jamaica	Portugal	Thailand	



Solar Radiation (Silicon Pyranometer) Smart Sensor

A silicon pyranometer sensor that effectively measures light levels. Rapid deployment, with no complicated programming or setup required. This sensor offers a measurement range of 0 to 1280 W/m² over a spectral range of 300 to 1100 nm. A measurement averaging mode is available.

Features

- Measurement range of 0 to 1280 W/m² over a spectral range of 300 to 1100 nm
- Plug-n-play smart sensor
- Compatible with H21, H22, and U30 family loggers

Technical Specifications

Measurement range: 0 to 1280 W/m²

Operating temperature range: -40° to 75°C (-40° to 167°F)

Accuracy: ±10 W/m² or ±5%, whichever is greater in sunlight. Additional temperature induced error ±0.38 W/m² /°C from 25°C (0.21 W/m²/°F from 77°F)

Resolution: 1.25 W/m²

Drift: <±2% per year

Spectral range: 300 to 1100 nm

Cosine response error: ±5%, 0° to 70°; ±10%, 70° to 80° from vertical

Azimuth error: ±2% error at 45° from vertical, 360° rotation

Calibration: Factory recalibration available

Housing: anodized aluminum housing with acrylic diffuser and o-ring seal

Dimensions: 4.1 cm high x 3.2 cm diameter (1 5/8 in. x 1 1/4 in.)

Approximate weight: 120 g (4 oz)

Cable length: 3 m (9.8 ft)

Length of Smart Sensor Network Cable: 3 m

Measurement parameters: average over logging interval, user-defined sampling interval from 1 second



Smart Barometric Pressure Sensor

A weatherproof smart sensor with a measurement range of 660 mb to 1070 mb (19.47 to 31.55 inHg); can perform measurement averaging to obtain the highest accuracy. The operating temperature range for this sensor is -40° to 70°C (-40° to 158°F). Compatible with the HOBO Remote Monitoring System and HOBO Micro Station, this sensor is mounted outside the station enclosure.

Features

- Weatherproof housing enables mounting outside the station enclosure, so the station can maintain its weatherproof seal without having to be vented to the atmosphere
- Measures barometric pressure over a wide range
- Includes zip ties for mounting on mast; can also be mounted on flat surface with screws

Technical Specifications

Measurement range: 660 to 1070 mbar (19.47 to 31.55 in. Hg)

Accuracy: ± 3.0 mbar (0.088 in. Hg) over full pressure range at 25°C (77°F); maximum error of ± 5.0 mbar (0.148 in. Hg) over -40° to 70°C (-40° to 158°F)

Resolution: 0.1 mbar (.003 in. Hg)

Drift: 1.0 mbar (0.03 in. Hg) per year

Operating temperature range: -40° to 70°C (-40° to 158°F)

Environmental rating: Weatherproof

Dimensions: 6.4 cm (2.5 in) diameter x 5.1 cm (2 in) height

Weight: 96 gm (3.4 oz)

Bits per sample: 12

Number of data channels: 1 *

Measurement averaging option: Yes

Cable length available: 50 cm (20 in)

Length of Smart Sensor network cable: 50 cm (20 in)



Temperature/Relative Humidity (2m cable) Smart Sensor

A temperature/relative humidity sensor designed to work with all HOBO data loggers that accept Smart Sensors. All sensor parameters are stored inside the Smart Sensor, which automatically communicates configuration data information to the logger without any programming, calibration, or extensive user setup.

Technical Specifications

Measurement Range

Temp: -40°C to 75°C (-40°F to 167°F)

RH: 0-100%* RH at -40° to 75°C (-40° to 167°F); exposure to conditions below -20°C (-4°F) or above 95% RH may temporarily increase the maximum RH sensor error by an additional 1%

Accuracy

Temp: $\pm 0.25^{\circ}\text{C}$ from -40° to 0°C ($\pm 0.45^{\circ}\text{F}$ from -40° to 32°F); $\pm 0.20^{\circ}\text{C}$ from 0° to 70°C ($\pm 0.36^{\circ}\text{F}$ from 32° to 158°F); $\pm 0.25^{\circ}\text{C}$ from 70° to 75°C ($\pm 0.45^{\circ}\text{F}$ from 158° to 167°F)

RH: $\pm 2.5\%$ from 10% to 90% RH (typical), to a maximum of $\pm 3.5\%$ including hysteresis at 25°C (77°F); below 10% and above 90% $\pm 5\%$ typical

Resolution

Temp: 0.02°C

RH: 0.01% RH

Bits Per Sample

Temp: 16

RH: 16

Drift

Temp: $< 0.01^{\circ}\text{C}$ (0.18°F) per year

RH: $< 1\%$ per year typical

Response Time (typical, to 90% of change)

Temp: Without solar radiation shield: 3 minutes, 45 seconds in air moving 1 m/s; With RS3-B solar radiation shield: 6 minutes, 30 seconds in air moving 1 m/s

RH: Without solar radiation shield: 15 seconds in air moving 1 m/s; With RS3-B solar radiation shield: 30 seconds in air moving 1 m/s

Operating temperature range: -40°C to 75°C (-40°F to 167°F)

Environmental rating: Weatherproof: 0 to 100% RH intermittent condensing environments. For best results, protect the Temp/RH sensor from sunlight and direct splashing by mounting it inside a protective enclosure, such as a [solar radiation shield](#).

Housing: PVC cable jacket with ASA styrene polymer RH sensor cap; modified hydrophobic polyethersulfone membrane

Sensor dimensions: 45.97 x 11.43 x 10.16 mm (1.81 x 0.45 x 0.40 inches)

Weight: 110 g (3.88 oz)

Number of data channels**: 2

Measurement averaging option: No

Cable lengths available: 2.5 m (8.2 ft)

Length of Smart Sensor network cable: 0.5 m (1.6 ft)

The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).



Wind Speed and Direction Set Smart Sensor

Includes Onset's research-grade plug-and-play Wind Speed Smart Sensor and the Wind Direction Smart Sensor. This combination provides average wind speed, highest 3-second wind gust, and average wind direction for the measurement interval. These durable sensors will provide many years of accurate and reliable performance.

Features

- Wind Sensor Set includes Onset's research-grade plug-and-play Wind Speed Smart Sensor and the Wind Direction Smart Sensor
- Provides average wind speed, highest 3-second wind gust, and average wind direction for the measurement interval
- Durable sensors

Technical Specifications

Specifications	Wind Speed/Gust (S-WSB-M003)	Wind Direction (S-WDA-M003)
Measurement Range	0 to 76 m/s (0 to 170 mph)	0 to 355 degrees, 5 degree dead band
Maximum Wind Speed Survival	76 m/sec (170 mph)	67 m/sec (150 mph)
Accuracy	± 1.1 m/s (2.4 mph) or ± 4% of reading whichever is greater	± 5 degrees
Resolution	0.5 m/s (1.1 mph)	1.4 degrees
Starting Threshold	1.0 m/s (2.2 mph)	1.0 m/s (2.2 mph)
Measurement Definition	Cup revolutions are accumulated every three seconds for the duration of the logging interval. Wind speed is the average speed for the entire logging interval. Gust speed is the highest three-second wind recorded during the logging interval.	Unit vector components of wind direction are accumulated every three seconds for duration of logging interval. Average direction is calculated from the average of these.
Operating Temperature Range	-40°C to +75°C (-40°F to +167°F)	-40°C to +70°C (-40°F to +158°F)
Environmental Rating	Weatherproof	Weatherproof
Service Life	Greater than 5 years typical	4 to 6 years typical depending upon environmental conditions
Housing	Three cup polycarbonate anemometer: Modified Teflon® bearings and hardened beryllium shaft with ice shedding design	Injection-molded housing and vane, static dissipating base, lead-free silicon bronze nose, and aluminum mounting rod.
Bearing Type	Modified Teflon® bearings	two shielded stainless steel ball bearings
Turning Radius	9.5 cm (3.75 in.)	Approximately 13.5 cm (5.25 in.)
Dimensions	41 x 16 cm (16 x 6.5 in.) including 1.27 cm (0.5 in) diameter mounting rod; 5.5 cm (2.1 in.) drip overhang	46 x 20 cm (18 x 8.5 in) including 1.27 cm (0.5 in) diameter mounting rod, 2.5 mm (0.1 in) drip overhang
Weight	Approximately 700 g (1.5 lbs)	Approximately 370 g (13 oz)
Number of Data Channels	2	1
Measurement Averaging Option	No	Automatic averaging (see Measurement Definition)
Cable Length Available	3.5 m (11.5 ft)	3.5 m (11.5 ft)
Length of Smart Sensor Network Cable	0.5 m (1.6 ft)	0.5 m (1.6 ft)



0.2 mm Rainfall (2m cable) Smart Sensor

Measures rainfall with a resolution of 0.2 mm, and 1% accuracy for rainfall rates up to 12.7 cm. The tipping bucket mechanism is mounted on a stainless-steel shaft with brass bearings. This model includes a 2m cable.

Features

- Measures rainfall rates up to 12.7 cm per hour
- Resolution of 0.2 mm
- Maximum of 4000 tips per interval
- 2m cable

Technical Specifications

Measurement range: 0–12.7 cm or 0–5 in. per hour; maximum 4000 tips per interval

Operating range: 0° to 50°C (32° to 122°F); survival –40° to 75°C (–40° to +167°)

Mechanism: Tipping bucket, stainless steel shaft with brass bearings

Resolution: 0.2 mm (S-RGB) 0.01 inch (S-RGA) models

Calibration: Requires annual calibration; can be field calibrated by user or returned to factory

Calibration accuracy: ±1.0% at up to 20 mm or 1" per hour

Housing: Aluminum housing and collector

Dimensions: 22.8 cm height x 15.4 cm diameter (9" height x 6" diameter), 154 mm receiving orifice (6.06")

Approximate weight: 1 Kg (2 lbs)

Cable lengths: 2 meter, 6.5 feet

Note: Comes with side bracket for post or tripod mount and feet for surface mount. If mounting separate from main tripod, order with 6m cable and an additional 1.5m mast. If mounting on main tripod, order with guy wire kit.



Solar Radiation Shield

Use the RS3-B Solar Radiation Shield with HOBO external sensors for improved temperature measurement accuracy in locations exposed to sunlight. The small size and unobstructed airflow of this shield provides a faster response to changing conditions than larger radiation shields.

The RS3-B Solar Radiation Shield works with most of Onset's external temperature and temperature/relative humidity sensors, including those for our award-winning HOBO Weather Station products.

Technical Specifications

Time response: 2.5 times faster than the RS1 and M-RSA

Wind resistance: Tested in sustained winds up to 129 kph (80 mph), Tested in gusts up to 161 kph (100 mph)

Materials

Shield: ASA styrene (UV-stable)

Bracket: Glass-filled nylon (UV-stable)

Mounting hardware: Stainless steel and brass

Temperature: -40° to 75°C (-40° to 167°F)

Weight: 113 g (4 oz)

Height: 89 mm (3.5 inches); 159 mm (6.25 inches) with bracket

Diameter: 102 mm (4 inches); bracket protrudes an additional 51 mm (2 inches) from shield

Maximum Sensor Diameter: 1.22 cm (0.48 inches)

Mounting: Up to 51 mm (2 inches) mast diameter with hose clamp; unlimited with screws

Compatible sensors: S-THC-M00x, S-TMB-M0xx, RXW-THC-xxx, RXW-TMB-xxx, TMCx-HD, and external sensors from U23-00x or MX230x.



Light Sensor Level

Simply drop the light sensor level over the PAR or solar radiation sensor to determine if the sensor is level. Purchase one for use on any number of light sensors.



Light Sensor Bracket

The light sensor bracket is designed for use with tripods, masts, or flat surfaces. Use to avoid obstructions and shadows that could affect your PAR or solar radiation measurements. Includes leveling screws.

Technical Specifications

Dimensions:

Bracket: reach 16.5", height 11", 1.38" wide

Mounting plate: h 3.38" x w 3"



Full Cross Arm

For use with Onset tripods or masts, the full cross arm assures unobstructed wind measurement. Full cross arm (91.2cm/36in) provides mounting for two wind sensors.

Technical Specifications

91.5 x 3.2 x 3.2 cm (36 x 1.25 x 1.25 in)

Includes mast-mounting hardware



HOBOnet Manager (optional)

A wireless manager module for installation in a HOBOnet RX3000 monitoring station. Data is transmitted wirelessly from sensors across the network to the RX3000 station and then uploaded to HOBOLink, Onset's innovative cloud software platform.

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
- Plugs into RX3000 flex port



HOBOnet Leaf Wetness Sensor (optional)

Provides accurate leaf wetness data for a variety of growing and research applications. This preconfigured, ready-to-deploy sensor requires no painting or coating, uses a capacitive grid that is less sensitive to surface residues than resistive grid-based sensors, and comes preconditioned for long-term stability and consistent measurements between sensors.

Features

Sensor Features

- Does not require any painting or coating
- Preconditioned for consistent measurements
- 3-meter cable and mounting bracket included

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