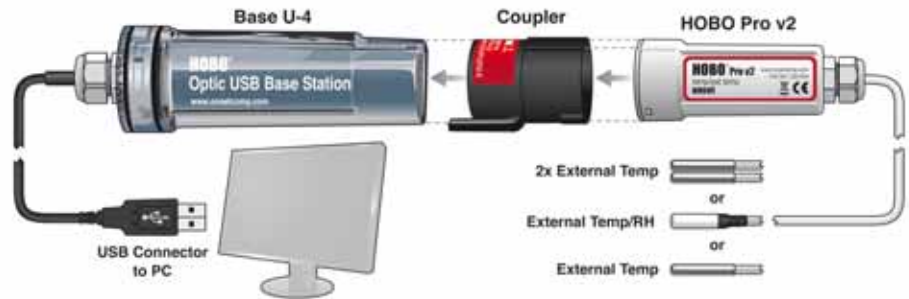




HOBO Pro v2 data loggers are weatherproof loggers that provide high accuracy temperature and relative humidity measurements in a wide range of outdoor environments.

Key Advantages:

- Weatherproof housing for use in outdoor or condensing environments
- High-accuracy measurements
- Replaceable RH sensor provides superior recovery from condensing conditions
- Small-diameter, external sensor versions for measurements in tight spaces
- Optic USB interface for fast and reliable download



BASE-U-4 or U-DTW-1 is required with this logger (coupler is included).



Memory: 42,000 measurements
 Sample rate: 1 second to 18 hours, fixed rate or multiple logging intervals
 Battery life: 3 years (typical)—user-replaceable

Internal Temperature

Measurement range: -40° to 70°C (-40° to 158°F)
 Accuracy: ± 0.21°C from 0° to 50°C (0.38°F from 32° to 122°F)
 Resolution (12-bit): 0.02°@ 25°C (0.04°@ 77°F)
 Response time: 40 minutes (to 90% in airflow of 1 m/s)





Relative Humidity (RH)

Measurement range: 0 to 100% RH
 Accuracy: ± 2.5% typical, 3.5% maximum, from 10 - 90% RH
 Resolution (12-bit): 0.03% RH
 Response time: U23-001: 10 minutes (90% in airflow of 1 m/s; RH change only)
 U23-002: 5 minutes (90% in airflow of 1 m/s)

External Temperature

Measurement range: U23-002: -40° to 70°C (-40° to 158°F)
 U23-003 & U23-004: -40° to 100°C (-40° to 212°F);
 sensor tip and cable immersion in fresh water up to 50°C (122°F) for one year
 Accuracy: ± 0.2°C from 0° to 50°C (0.36°F from 32° to 122°F)
 Resolution (12-bit): 0.02°@ 25°C (0.04°@ 77°F)
 Response time: U23-002: 5 minutes (to 90% in airflow of 1 m/s)
 U23-003 & U23-004: 3 minutes (to 90% in airflow of 1 m/s)
 30 seconds (to 90% in water)

NIST-traceable temperature accuracy certification service available for all temperature sensors. (See page 72)

HOBO Pro v2 Comparison				
	Internal Temp/RH	External Temp/RH	2x External Temp	Temp/External Temp
				
	U23-001*	U23-002*	U23-003	U23-004
Number of Channels	2	2	2	2
Internal Sensors	Temperature	yes	--	yes
	Relative Humidity	yes	--	--
Integrated External Sensors	Temperature	--	yes	yes
	Relative Humidity	--	yes	--
Size	cm	10.2 x 3.8	10.2 x 3.8	10.2 x 3.8
	inches	4.0 x 1.5	4.0 x 1.5	4.0 x 1.5
	probe	--	1 cm (0.38 in) diameter probe on 1.8 m (6 ft) cable	0.5 cm (0.2 in) diameter probe on 1.8 m (6 ft) cable
Weight	grams	57	118	102
	ounces	1.5	3.1	2.7

* Replaceable RH Sensors available. Complete system requires logger, software, and base station or shuttle U-DTW-1.

Ordering Information	
Data Loggers	
HOBO Pro v2 Internal Temp/RH	U23-001
HOBO Pro v2 External Temp/RH	U23-002
HOBO Pro v2 2x External Temp	U23-003
HOBO Pro v2 Internal Temp/External Temp	U23-004
Software	
HOBOWare Pro Software (Windows/Mac)	BHW-PRO-CD
Optic USB Base Station* with Couplers	BASE-U-4
Optional Communications and Accessories	
HOBO U-Shuttle (requires Base Station)***	U-DT-1
HOBO Waterproof Shuttle with Couplers***	U-DTW-1
Solar Radiation Shield** (U23-001, 004)	RS1
Assembled Solar Radiation Shield** (U23-001, 004)	M-RSA
Solar Radiation Shield** U23-002, 003, 004	RS3
Mounting Clamp (for mounting U23-001 and 004 in RS1 or M-RSA)	U23-RS-CLAMPKIT
Replaceable RH Sensor for U23-001	HUM-RHPCB-1
Replaceable RH Sensor for U23-002	HUM-RHPCB-2
Replaceable RH Sensor Caps for U23-002 (5 pack)	HUM-RHCAP-2
* HOBO Waterproof Shuttle can also be used as a Base Station (See pages 70-71 for details on Data Shuttles and Base Stations).	
** Accurate temperature and RH measurements in sun require a radiation shield. Use the RS1 or M-RSA for internal sensors and the RS3 for external sensors.	
*** Requires HOBOWare Pro software, see page 52 for details. HOBOWare includes USB interface cable	

HOBOWare software is available for download via the web. Visit onsetcomp.com for details.





The HOBO RG3 data logging rain gauge is a self-contained rainfall logger that includes an integrated data logger with a high-quality tipping-bucket rain gauge. The RG3's logger has a built-in temperature sensor and is on a cable so it can be used in an optional radiation shield for logging air temperature.

Key Advantages (RG3 and RG3-M models):

- Aluminum housing and 15.4 cm (6.06 in.) collector ring
- Field-proven design
- Logger can be moved into an optional radiation shield for logging air temperature
- Three mounting feet to use on flat, level surfaces (three screws included)
- Side bracket for mast mounting (hose clamps included)
- Self-emptying for continuous rainfall logging

RG3 Data Logging Rain Gauge

0.2 mm RG3-M
0.01 in RG3
15.2 cm diameter
x 25.7 cm high (6 x 10 in)
1.2 kg (2.5 lbs)

Rainfall

Range: Up to 320 cm (RG3-M), up to 160 in (RG3)
Resolution: 0.2 mm (RG3-M), 0.01 in (RG3)
Time stamp
Resolution: 1 second
Calibration
Accuracy: ±1.0% (up to 20 mm/hr [RG3-M], 1 in/hr [RG3])
Maximum rainfall rate: 12.7 cm (5 in.) per hour



Temperature

Range: -20° to 70°C (-4° to 158°F)
Accuracy: ±0.47° @ 25°C (±0.85° @ 77°F);
a solar radiation shield is required for temperature measurements
Resolution: 0.10° @ 25°C (0.18° @ 77°F)
Sample rate: 1 second to 18 hours, user-selectable

Memory

16,000 to 23,000 tips when recording rainfall only
25,000 to 30,000 total measurements when recording rainfall and temperature

Mounting the Rain Gauge

The HOBO Rain Gauge has provisions for mounting two ways: surface mounting (Figure 1) and pole mounting (Figure 2). Surface mounting is recommended where possible. Note: Figure 2 has logger deployed outside of rain gauge housing, mounted inside an optional solar radiation shield.

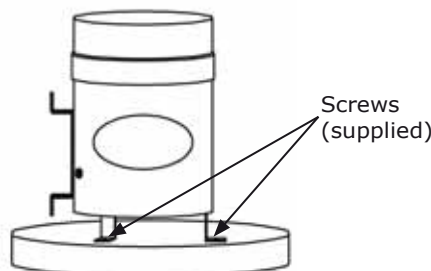


Figure 1: Surface mounting

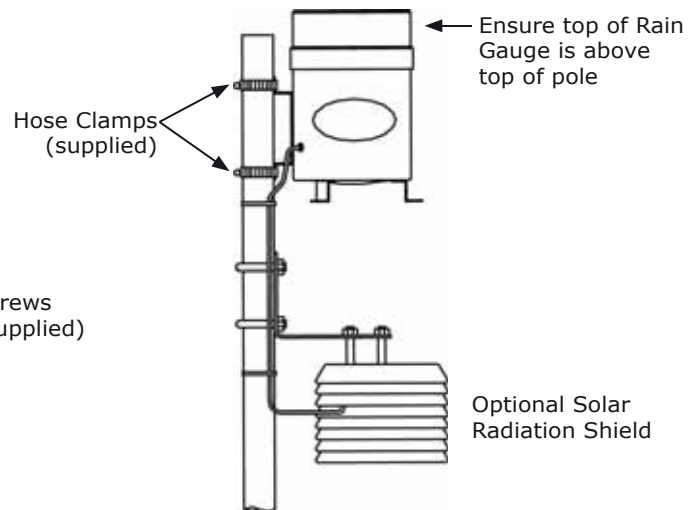


Figure 2: Mast mounting

General Mounting Considerations

- The HOBO Rain Gauge housing **MUST** be mounted in a LEVEL position.
- A clear and unobstructed mounting location is necessary to obtain accurate rainfall readings. Tall objects can interfere with accurate rain measurements. It is recommended that you place the rain gauge away from the obstruction by a distance greater than three times the height of the obstruction. If that is not possible, raise the rain gauge as high as possible to avoid shedding.
- Avoid splashing and puddles. Be sure the gauge is high enough above any surface that rain will not splash into the top of the collector.
- Vibration can significantly degrade accuracy of the tipping bucket mechanism. In windy locations make sure that the bucket will be vibration-free.
- For maximum sensitivity in low-moisture environments you can remove the collector screen. This eliminates water retention on the screen which could evaporate before being measured. The tradeoff is that without the screen, debris can get into the funnel and clog the orifice.

Complete system requires logger, software and base station.

Ordering Information

Data Logger

HOBO Rain Gauge	RG3 (0.01 in) RG3-M (0.2 mm)
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Software

HOBOWare Pro Software (Windows/Mac)	BHW-PRO-CD
Pendant Base Station (required)	BASE-U-1

Communications and Accessories

HOBO U-Shuttle (requires Base Station)*	U-DT-1
HOBO Waterproof Shuttle with Couplers**	U-DTW-1
Solar Radiation Shield	M-RSA

Tripod/Mast Accessories

1.5 Meter Mast	M-MPB
2m Tripod with Mast	M-TPB
1/4 in Stake Kit	M-SKB
Guy Wire Kit	M-GWA
1/2 in Stake Kit	M-SKA

* Requires HOBOWare Pro software. See page 52 for details.
HOBOWare includes USB interface cable

** U-DTW-1 Data Shuttle can be used in place of base station (BASE-U-1)(See pages 70-71 for details).

HOBOWare software is available for download via the web. Visit onsetcomp.com for details.





HOBO Pendant Event

UA-003-64

7.1 x 3.3 x 2.3 cm
(2.8 x 1.3 x 0.9 in)
Cable 1.8 m (6 ft)
50 g (1.7 oz)

The HOBO Pendant Event data logger is ideal for rainfall logging and connects to most standard tipping-bucket rain gauges to determine rainfall rates, times, and duration.

Key Advantages:

- Records tips or momentary contact closures and temperature
- Event-based data storage provides detailed data and efficient memory usage
- Stores over 16,000 tips (160 inches of rainfall with a 0.01 inch rain gauge)
- Includes scaling to inches, millimeters, or other units

Memory: Events only: 16K to 23K events
Events and temperature: 25K to 30K data points
Battery life: 1 year (typical) — user-replaceable

Weatherproof housing tested to NEMA 6 and IP67 

Rain Gauge Tips

External Event
type: Relay contact closure or rain gauge "tips"
Connection: 2 m (6 ft) cable with 2-wire input
Resolution: 1.0 second
Maximum input frequency: 1 Hz

Temperature

Range: -20° to 70°C (-4° to 158°F)
Accuracy: ±0.54°C from 0° to 50°C (±0.97°F from 32° to 122°F); a solar radiation shield is required for temperature measurements
Resolution: 0.10° @ 25°C (0.8° @ 77°F)
Response time: 15 minutes (to 90% in airflow of 1 m/s)
Sample rate: 1 second to 18 hours, user-selectable

NIST-traceable temperature accuracy certification service available. (See page 72).

Complete system requires logger, software and base station.

Ordering Information

Data Logger

HOBO Pendant Event UA-003-64

Software

HOBOWare Pro Software (Windows/Mac) BHW-PRO-CD
Pendant Base Station BASE-U-1
HOBOWare includes USB interface cable

Optional Communications and Accessories

HOBO U-Shuttle (requires Base Station)* U-DT-1
HOBO Waterproof Shuttle with Couplers*† U-DTW-1
Solar Radiation Shield M-RSA

* Requires HOBOWare Pro software, see page 52 for details.

† U-DTW-1 Data Shuttle can be used in place of base station (BASE-U-1)(See pages 70-71 for details).

HOBOWare software is available for download via the web. Visit onsetcomp.com for details.



HOBO U12 Industrial Logger
U12-008
 14.0 x 13.7 x 3.2 cm
 (5.50 x 5.38 x 1.25 in)

The HOBO U12 Industrial data logger is a 4-channel logger that accepts a wide range of external sensors. The rugged enclosure is designed for use in harsh outdoor environments, as well as indoor industrial applications.

Key Advantages:

- Weatherproof enclosure (tested to NEMA 4x and IP67)
- Four channels of external input allow monitoring of multiple parameters

Memory: 43,000 measurements
 Sample rate: 1 second to 18 hours, user-selectable
 Battery life: 1-year (typical)—user-replaceable



External Input

External sensors for temperature, AC current, AC voltage, CO₂, 4-20mA, 0-2.5 VDC
 Input range: 0 to 2.5 volts DC
 Accuracy: ±2mV ±2.5% of absolute reading
 Resolution (12-bit): 0.6 mV
 Output power: 2.5 volts DC at 2 mA, active only during measurements
 Maximum recommended source impedance: 2.5k ohms

Ordering Information

Data Loggers

HOBO U12 Industrial Logger	U12-008
kW**	
3 Phase, 450V, 100 AMP	T-VER-8044-100
Gauge Pressure**†	
100 psig	T-ASH-G2-100
200 psig	T-ASH-G2-200
500 psig	T-ASH-G2-500
Differential Air Pressure Transducer**†	
.01-10.0 WC	T-VER-PXU-L
.01-10.0 WC	T-VER-PXU-X
Humidity**†	
Duct-Mount RH/Temp	T-VAI-HMD-40Y
DC Current**†	
0-200 Amp	T-VER-H970-200
-200 to 200 Amp	T-VER-971BP-200
Air Velocity Sensor**†	
0.15-10 m/s	T-DCI-F900-L-P
0.15-5 m/s	T-DCI-F900-L-O
0.15-10 m/s	T-DCI-F900-S-P
0.15-5 m/s	T-DCI-F900-S-O
Compressed Air Flow Meter**	
1-80 SCFM	T-CDI-5200-10S
3-350 SCFM	T-CDI-5400-20S
Volatile Organic Compound (VOC)**†	
0-10, 0-100, 0-1000 ppm	T-ION-TVOC

Temperature Sensors

Air/Water/Soil Probe 0.3m (1ft)	TMC1-HD
Air/Water/Soil Probe 1.8m (6ft)	TMC6-HD
Air/Water/Soil Probe 6.1m (20ft)	TMC20-HD
Air/Water/Soil Probe 15.2m (50ft)	TMC50-HD
Stainless Steel Temp Probe 1.8m (6ft)	TMC6-HC
Pipe Temp 1.8m (6ft)	TMC6-HE

Split-core AC Current Sensors

0-20 Amps AC	CTV-A
0-50 Amps AC	CTV-B
0-100 Amps AC	CTV-C
0-200 Amps AC	CTV-D
0-600 Amps AC	CTV-E

CO₂**

Telaire CO ₂ /Temp Monitor	TEL-7001
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AC Voltage Transmitters**

0 - 150 Volts AC	T-CON-ACT-150
0 - 300 Volts AC	T-CON-ACT-300

DC Voltage

0 - 2.5 Volts DC	CABLE-2.5-STEREO
0 - 5 Volts DC	CABLE-ADAP5
0 - 10 Volts DC	CABLE-ADAP10

Milliamps

4 - 20mA	CABLE-4-20MA
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Software

HOBOware Pro Software (Windows/Mac)	BHW-PRO-CD
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Optional Communications

HOBO U-Shuttle*	U-DT-1
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* Requires HOBOware Pro software, see page 52 for details. HOBOware includes USB interface cable.
 ** Requires input cable. See page 57 for compatibility.
 † Requires sensor power adapter (AC-SENS-1) See page 57 for compatibility.

HOBOware Software is available for download via the web. Visit onsetcomp.com for details.

