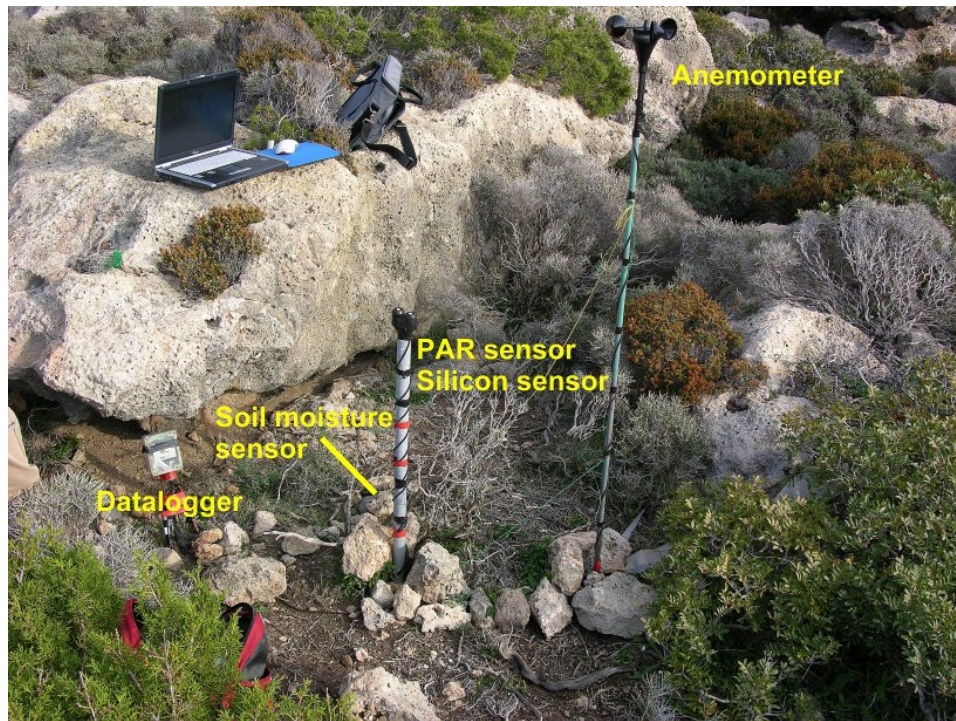


METEOROLOGICAL SENSORS & DATALOGGERS

MICROSTATION AND SENSORS



Meteorological Station 1 at the Phoenix theophrasti Plant Micro-Reserve

HOBO® Micro Station Data Logger

The HOBO Micro Station is perfect for economically monitoring micro-climates for crop or alternative energy applications such as research and site selection. The Micro Station has four sensor inputs which accept any combination of Onset's plug-in smart sensors
Dimensions: 11.4 cm x 8.9 cm x 5.4 cm (4.5 in x 3.5 in x 2.13 in)

Weight: 500 grams

Memory: 512,000 or more events

Smart sensors simply plug in and are ready for logging — no calibration or complex wiring

Input adapters for 4-20mA, DC voltage, and pulses increase the range of possible measurements

Runs for one year on four user-replaceable AA batteries (typical)



HOBO® Weather Station Temperature/RH Smart Sensor

Measurement range: -40° to +75°C (-40° to +167°F)

0 to 100% RH between 0° to +50°C (+32° to +122°F)

Operating Range: RH sensor will provide readings -40° to 75°C (-40° to 167°F), but accuracy specification only applies within the specified measurement range

Accuracy: ±0.7°C @ +25°C (±1.3°F @ +77°F); ±3% RH over the range of 0° to +50°C; ±4% in condensing environments

Resolution: 0.4°C @ +25°C (0.7°F at +77°F); 0.5% RH @ +25°C (+77°F)

Drift: Temp: <0.1° C (0.2°F) per year; RH: ±1% RH per year, factory RH recalibration available

Response time: Temp: 8 minutes typical; RH: 5 minutes typical (both in 2 meter/second airflow)

Dimensions: 1.6 cm x 8.6 cm (5/8" x 3 1/2")

Approximate Weight: 60 g (2 oz), 140 g (5 oz), 370 g (13 oz); weight varies with cable length

Cable Lengths: 2 meter, 6 meter, 17 meter (6.5 foot, 20 foot, 56 foot)



Hobo Solar Radiation & Rain Shield

Hobo Datalogger Solar Radiation and Rain Shields are recommended for improved Temperature and RH measurement in locations exposed to solar radiation, reflective heat, or rain.



HOBO® Weather Station 8-bit Temperature Smart Sensor

Measurement range: -40° to +100°C (-40° to +212°F) sensor tip*

Accuracy: $\pm 0.7^{\circ}\text{C}$ @ +25°C ($\pm 1.3^{\circ}\text{F}$ @ +77°F)

Resolution: 0.4°C @ +25°C (0.7°F at +77°F)

Drift: $<0.1^{\circ}\text{C}$ (0.2°F) per year

Response time: <2.5 minutes typical in 2 meter/second airflow

Housing: Stainless steel sensor tip

Dimensions: $1/4" \times 1 \frac{1}{4}"$ (0.6 cm x 3.2 cm)

Approximate Weight: 1 oz (30 g), 4 oz (110 g), 12 oz (340 g); weight varies with cable length

Cable Lengths: 2 meter, 6 meter, 17 meter (6.5', 20', 56')



HOBO® Weather Station S-SMB Soil Moisture Smart Sensor

Measurement range: 0 to 0.450 m³/m³ volumetric water content (0 to 45.0%)

Operating Environment: -40° to 50° C (-40° to 122° F)

Accuracy: $\pm 0.041 \text{ m}^3/\text{m}^3$ ($\pm 4\%$), typical 0 to 50°C (32° to 122°F); $\pm 0.020 \text{ m}^3/\text{m}^3$ ($\pm 2\%$) with soil-specific calibration*

Resolution: $0.0006 \text{ m}^3/\text{m}^3$ (0.06%)

Service Life: 3–5 years typical

Dimensions: 152 mm x 32 mm x 1.0 mm (6 x 1.25 x 0.04 in)

Approximate Weight: 190 grams (6.7 oz)

Cable Length: 5.0 m (16 ft)

Number of Data Channels: 1

Length of Smart Sensor Network Cable: 0.5m (1.6 ft)



HOBO® Weather Station Rain Gauge Smart Sensor

Measurement range: 0–10 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 and 0.01 inch models

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

Calibration Accuracy: $\pm 1.0\%$ at up to 20 mm or 1" per hour

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 meter (6.5 feet, 20 feet)



Data Logging Communications Systems: HOB0 U-Shuttle

4 MB non-volatile Flash memory, allowing you to readout many loggers

Fast logger offload; Synchronizes HOB0 data logger clocks

Synchronizes relaunch: sets the HOB0 sample times to be synchronized with the prior launch sample times

Checks loggers' battery status; Checks and displays its own battery status

Displays current readings for many loggers; Provides basic smart sensor diagnostics

Automatically powers down when not in use, to prolong shuttle battery life

Backup battery allows for changing shuttle batteries in the field; Convenient direct USB connection to host computer

Stores data from up to:

504 loggers with 8K memory (some Pendant Loggers)

63 loggers with 64K memory (most U-series loggers)

7 loggers with 512K memory (HOB0 Weather/Micro Stations and HOB0 Energy Logger Pro)

Operating temperature range: 0 °C to 50 °C (32 °F to 122 °F)

Survival temperature range: -10 °C to 50 °C (14 °F to 122 °F)

Operating RH range: 0 to 95%, non-condensing

Clock accuracy: ± 1 minute/month at 25 °C (77 °F)

Logger Offload Speed: USB-based: approx. 30 seconds for 64K; Serial-based approx. 60 seconds for 512K

Shuttle to host computer offload: 3 to 5 minutes for 4MB, depending on computer

Batteries: two AA batteries (user-replaceable)

Battery life: 1 year or approximately 50 complete memory fills typical

Clock-backup battery: CR-1225 3V Lithium (user-replaceable)

Backup battery life: 10 years typical (backup service only)

Case materials: ABS and urethane rubber

Size: 11.0 x 6.9 x 2.7 cm (4.35 in. x 2.70 in. x 1.05 in.)

Weight: 160 g (4.2 oz.)



INDEPENDENT SENSORS/DATALOGGERS

StowAway TB132 Tidbit Datalogger

A totally encapsulated and durable miniature temperature data logger with a 5 year battery life.

Waterproofed to 1000 feet.

Capacity: 32,520 measurements.

Blinking Green LED confirms operation.

Red LED indicates alarm condition.

Use with BoxCar 4.3 Windows Software for easy set-up/download and analysis.

User selectable sampling intervals between 0.5 seconds and 9 hours.

Two memory modes: stop when full, or wrap around when full.

Note: Requires DSA Optic Base Station for launch/download.



Optic Shuttle

The pocket-sized Optic Shuttle provides a convenient way to readout and relaunch Optic data loggers and bring the data back to your host PC.

128K capacity enough for 16 full 8K loggers or 4 full 32K loggers

Waterproof to 15 psi (30ft)

Uploads the same data to a PC as if the data were read out directly from the logger

6 year factory-replaceable battery

Data offload time from logger: 1.5 minutes typical from 8K logger, 6 minutes typical from 32K log

Data readout time to PC: 3 minutes typical for complete offload

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

Time accuracy: ±1 minute per week at +20°C (+68°F)

Size: 132 x 20 x 25 mm (5.2" long x 0.8" tall x 1.0" thick) without Optic Coupler



Optic Base Station

The Optic Base Station is used to communicate between the host computer and either an Optic data logger or an Optic Shuttle. The Optic Base Station connects to the computer interface cable included with the software starter kits.

Used for readout of the Optic StowAway and StowAway TidbiT loggers



HOBO LCD Logger with External Temp/RH Input

2-channel logger with no internal sensors requires an external Temp or Temp/RH probe for operation. Temperature probes can be used underwater, and Temp/RH probes are suitable for intermittent condensing environments.

With External Temperature/RH probe – Part # S-THA-M00x

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

Temperature Accuracy: ±0.7° at 20°C (±1.3°C at 68°F)

RH Measurement Range: 0-100% RH between 0 to 50°C (32° to 122°F)

RH Accuracy: ±3% RH

ONLY FOR USE INDOORS



HOBO Pro Internal and External Temperature Data Logger (H08-031-08)

Weatherproof

High accuracy: ±0.3°F

User-selectable sampling intervals: 0.5 seconds to 9 hours, recording times up to 3 years

Readout and relaunch in the field with optional HOBO Shuttle (new H09-003-08 version required)

High speed data readout: full 64K in about 1 minute to either PC or HOBO Shuttle

Drop-proof to 5 feet

Blinking LED light confirms operation (visible through communication jack)

User-replaceable battery lasts 3 years

Operating range: -22°F to +122°F (-30°C to +50°C)

Time accuracy: ±1 minute per week at +68°F (+20°C)

Size/Weight: 4 x 3.2 x 2" (102 x 81 x 51 mm)/ approx. 3.7 oz. (104 gms)

Measurement Specifications

Temperature (internal sensor)

Range: -22°F to +122°F (-30°C to +50°C)

Accuracy: ±0.33°F (±0.2°C) at +70°F in high resolution mode and ±0.7°F (±0.4°C) in standard resolution mode



HOBO® Pro v2 Family: Twin External Temperature on 6ft probe (U23-003)

The new HOBO Pro v2 family of Temp and RH data loggers are designed for years of reliable use in harsh outdoor or condensing environments.

The Temp/RH sensor provides fast response and superior durability in humid conditions, with small-diameter external sensors available for installation in tight spaces or building ducts.

Weatherproof housing for use in outdoor or condensing environments

High-accuracy

Replaceable RH sensor provides fast response and superior recovery from condensing conditions

Small-diameter external sensor versions for measurements in tight spaces

Optic USB interface for fast and reliable download

Memory: 42,000 measurements

Sampling Rate: 1 second to 18 hours

Time accuracy: 1 minute/month at 25°C (77°F)

Battery life: 3 years (typical) – user-replaceable 1/2 AA 3.6 Volt lithium battery

Weight: 138 g (3.7 oz); U23-004: 102 g (2.7 oz)

Dimensions: Housing measures 10.2 x 3.8 cm (4.0 x 1.5 in.)

Internal Temperature

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

Accuracy: $\pm 0.2^{\circ}\text{C}$ over 0 to 50°C ($\pm 0.36^{\circ}\text{F}$ over 32° to 122°F)

Resolution (12-bit): 0.02°C at 25°C (0.04°F at 77°F)

External Temperature

Measurement range: -40° to 100°C (-40° to 212°F); sensor tip and cable immersion in fresh water up to 50° (122°F) for one year

Accuracy: $\pm 0.2^{\circ}\text{C}$ over 0 to 50°C ($\pm 0.36^{\circ}\text{F}$ over 32° to 122°F)

Cable Length: 1.8 m (6 feet)

Resolution (12-bit): 0.02°C at 25°C (0.04°F at 77°F)

Relative Humidity

Measurement range: 0 to 100% RH

Accuracy: $\pm 2.5\%$ from 10 to 90%

Resolution (12-bit): 0.03% RH



HOBO Underwater Temperature Data Logger

This model of the Optic USB Base Station supports HOBO U-Series loggers with an optic. The Optic USB Base Station allows communication between the host computer and HOBO® optic loggers. The base station uses infrared light to transfer data, which allows loggers to be completely sealed and waterproof.

Water-resistant. It is splashproof, but it is not designed to be immersed or operated under water.

Strong sunlight may interfere with communications. If the base station does not seem to be working, try again in a shaded area.

This Optic USB Base Station requires HOBOWare® 2.2 or later to launch and read out data. For detailed software instructions, refer to the HOBOWare User's Guide.

The Optic USB Base Station will operate at temperatures of 0 to 50°C (32 to 122°F). The device can be safely stored at temperatures of -20 to 70°C (-4 to 158°F).temperatures of 0 to 50°C (32 to 122°F)

