HOBO® Pendant
Temperature Data Logger
(Part # UA-001-XX)

Inside this package:

- HOBO Pendant®
  Temperature Data Logger

Doc # 9531-I, MAN-UA-001
Onset Computer Corporation

Thank you for purchasing a HOBO data logger. With proper care, it will give you years of accurate and reliable measurements.

The HOBO Pendant Temperature Data Logger is a waterproof, one-channel logger with 10-bit resolution and can record up to approximately 6,500 (8K model) or 52,000 (64K model) measurements or internal logger events. The logger uses a coupler and optical base station with USB interface for launching and data readout by a computer.

A base station, coupler, and HOBOware® software are required for logger operation. Visit www.onsetcomp.com for compatibility information.

Specifications

Measurement range	-20° to 70°C (-4° to 158°F)
Alarms	High and low alarms can be configured for total amount of contiguous or non-contiguous time outside of user-defined limits between -20° and 70°C (-4° to 158°F)
Accuracy	± 0.53°C from 0° to 50°C (± 0.95°F from 32° to 122°F), see Plot A
Resolution	0.14°C at 25°C (0.25°F at 77°F), see Plot A
Drift	Less than 0.1°C/year (0.2°F/year)
Response time	Airflow of 2 m/s (4.4 mph): 10 minutes, typical to 90% Water: 5 minutes, typical to 90%
Time accuracy	± 1 minute per month at 25°C (77°F), see Plot B
Operating range	In water/ice: -20° to 50°C (-4° to 122°F) In air: -20° to 70°C (-4° to 158°F)
Water depth rating	30 m from -20° to 20°C (100 ft from -4° to 68°F), see Plot C
NIST traceable certification	Available for temperature only at additional charge; temperature range -20° to 70°C (-4° to 158°F)
Battery life	1 year typical use
Memory	UA-001-08: 8K bytes (approximately 6.5K sample and event readings) UA-001-64: 64K bytes (approximately 52K sample and event readings)
Materials	Polypropylene case; stainless steel screws; Buna-N o-ring
Weight	15.0 g (5.3 oz)
Dimensions	58 x 33 x 23 mm (2.3 x 1.3 x 0.9 inches)
CE	The CE Marking identifies this product as complying with the relevant directives in the European Union (EU).
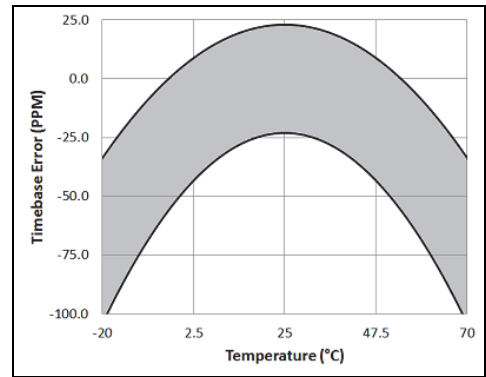
Plot B
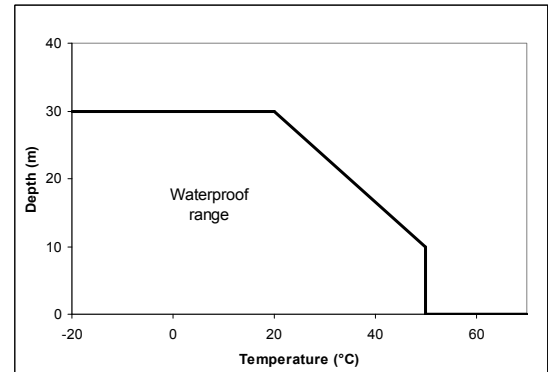
Plot C
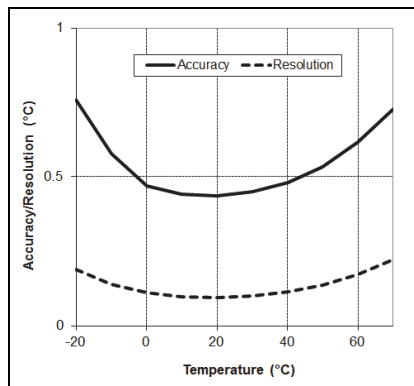
Plot A

Connecting the logger

The HOBO Pendant logger requires either of the following to connect to the computer:

- Pendant Optic USB Base Station & Coupler (part # BASE-U-1); HOBOware 2.1 or later

  OR

- Optic USB Base Station (part # BASE-U-4) or HOBO Waterproof Shuttle (part # U-DTW-1); coupler (part # COUPLER2-A); HOBOware 2.2 or later

If possible, avoid connecting at temperatures below 0°C (32°F) or above 50°C (122°F).
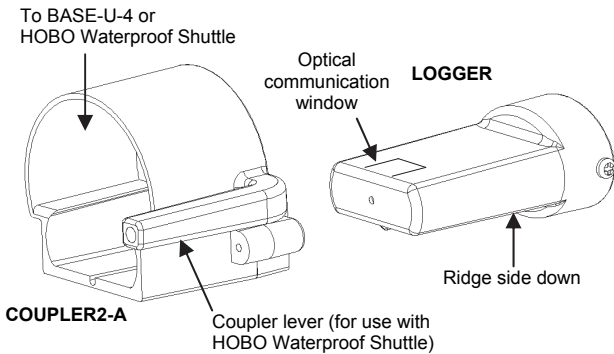
1. Plug the USB connector on the base station into an available USB port on your computer.

2. Insert the logger and the base station into the coupler, as shown in the following diagrams.

   For BASE-U-1, make sure that the logger is inserted in the end of the coupler that has the magnet, and that the ridges on the base station and logger are aligned with the grooves in the coupler.

BASE-U-1 & COUPLER

Ridge

Magnet
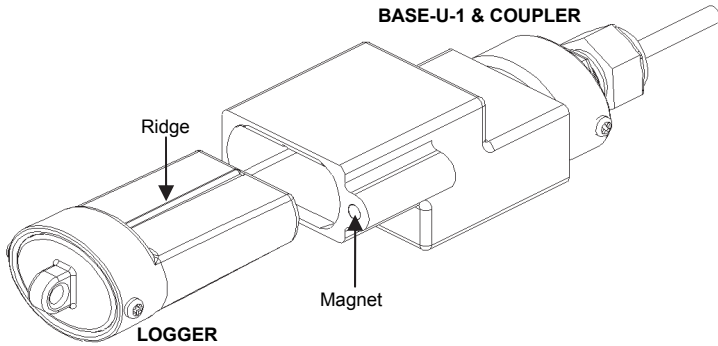
LOGGER

For BASE-U-4 or the HOBO Waterproof Shuttle, firmly insert the optical end of the base station into the D-shaped end of the coupler, and make sure that the ridge on the logger is aligned with the groove in the coupler.

To BASE-U-4 or
HOBO Waterproof Shuttle

Optical
communication
window

LOGGER

Ridge side down

COUPLER2-A

Coupler lever (for use with
HOBO Waterproof Shuttle)

3. If you are using the HOBO Waterproof Shuttle, briefly press the coupler lever to put the shuttle into base station mode.

4. If the logger has never been connected to the computer before, it may take a few seconds for the new hardware to be detected.

5. Use the logger software to set up the alarms, launch, and read out the logger.

You can read out the logger or check its status while it continues to log, stop it manually with the software, or let it record data until the memory is full. Refer to the software user's guide for complete details on launching, reading out, and viewing data from the logger.

Important: Do not cover the optical communication window in the logger (shown in diagram above) with a label or sticker as that may interfere with the communications with the base station or shuttle.

Triggered start

This logger can be configured to start at your command, using the magnet in the coupler to trigger a start.

1. Use the logger software to launch the logger with Trigger Start selected. Remove the logger from the coupler.

2. Bring the logger and an empty coupler or strong magnet to the deployment location.

   Important: Any magnet can trigger a start. This can be helpful, but it can also cause a premature start. Keep the logger away from strong magnetic fields until you are ready to begin logging.

3. When you are ready for the logger to start logging, insert the logger into the empty coupler (or place it next to a strong magnet) and remove it after three seconds. **Important: The logger will not launch if the base station is in the coupler.**

4. Verify that the logger's light is blinking at least every four seconds.

Sample and event logging

The logger can record two types of data: samples and internal logger events. Samples are the measurements recorded at each logging interval (for example, temperature every minute). Events are independent occurrences triggered by a logger activity, such as Bad Battery or Host Connected. Events help you determine what was happening while the logger was logging.

Operation

Lights (LEDs) on the front of the logger confirm logger operation. The following table explains when the lights blink during logger operation.

When:	The lights:
The logger is logging faster than four seconds	Blinks at the logging interval: • Green LED if temperature is OK • Red LED if high alarm has been triggered • Blue LED if low alarm has been triggered
The logger is logging at four seconds or slower	Blinks every four seconds: • Green LED if temperature is OK • Red LED if high alarm has been triggered • Blue LED if low alarm has been triggered
The logger is awaiting a start because it was launched in Start At Interval, Delayed Start, or Trigger Start mode	Green light blinks once every eight seconds until launch begins

Protecting the logger

The logger can be damaged if the water depth rating is exceeded. The depth rating is approximately 30 m (100 ft) at temperatures below 20°C (68°F), but is less in warmer water. Refer to Plot C for details.

Do not store the logger in the coupler. Remove the logger from the coupler when you are not using it. When the logger is in the coupler or near a magnet, it consumes more power and will drain the battery prematurely.

Keep the logger away from magnets. Being near a magnet can cause false coupler events to be logged. It can also launch the logger prematurely if it was waiting for a trigger start.

Periodically inspect the desiccant and dry it if it is not bright blue. The desiccant pack is located in the cap of the logger. To dry the

desiccant, remove the desiccant pack from the cap and leave the pack in a warm, dry location until the bright blue color is restored. (Refer to the "Battery" section for instructions on removing and replacing the logger cap.)

| Temperature range	Desiccant maintenance schedule
Less than 30°C (86°F)	Approximately once per year
30° to 40°C (86° to 104°F)	Approximately every six months
Over 40°C (104°F)	Approximately every three months

Note! Static electricity may cause the logger to stop logging. To avoid electrostatic discharge, transport the logger in an anti-static bag, and ground yourself by touching an unpainted metal surface before handling the logger. For more information, search for "static discharge" in the FAQ section on onsetcomp.com.

Battery

The logger requires one 3-Volt CR-2032 lithium battery. Battery life varies based on the temperature and the frequency at which the logger is recording data (the logging interval). A new battery typically lasts one year with logging intervals greater than one minute. Deployments in extremely cold or hot temperatures, or logging intervals faster than one minute, may significantly reduce battery life. Continuous logging at the fastest logging rate of one second will deplete the battery in as little as two weeks.

To replace the battery:

1. Remove the two screws that secure the end cap to the case and remove the cap.

2. Examine the desiccant pack that is tucked into the cap. If the desiccant is not bright blue, put the desiccant pack in a warm, dry place until the blue color is restored.

3. Gently tap the case to loosen the circuit board and remove it from the case.

4. Carefully push the battery out of the holder with a small, nonmetallic blunt instrument.

5. Insert a new battery, positive side facing up.

6. Return the circuit board and label to the case, carefully aligning the circuit board with the grooves in the case so that the battery faces the ridged side of the case.

7. Replace the end cap, ensuring that the desiccant pack is tucked into the cap, and the o-ring is seated in the groove, not pinched or twisted. Make sure no dirt or lint is trapped on the o-ring, as this could result in a leak.

8. Re-fasten the screws. Do not over-tighten the screws.
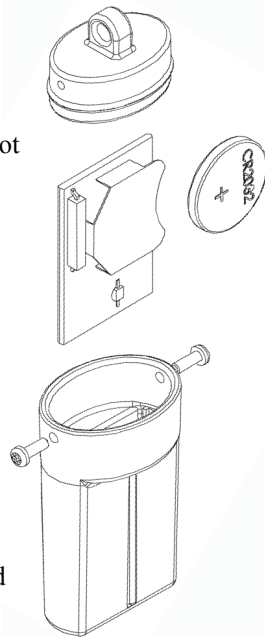
⚠ **WARNING:** Do not cut open, incinerate, heat above 85°C (185°F), or recharge the lithium battery. The battery may explode if the logger is exposed to extreme heat or conditions that could damage or destroy the battery case. Do not dispose of the logger or battery in fire. Do not expose the contents of the battery to water. Dispose of the battery according to local regulations for lithium batteries.

Alarms

Configure alarms to flash a warning on the high or low LEDs if monitored sensor falls outside user-selectable limits.

You access the Alarms window from the Launch window in HOBOware.

Alarms window
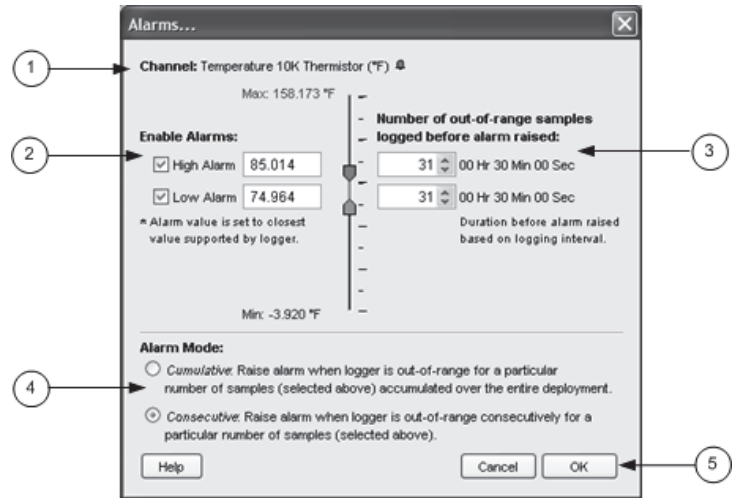
1. Channel. This indicates the selected channel.

2. Enable Alarms. Select the check box for the High Alarm and/or the Low Alarm. Enter a value to define the alarm threshold. You can enter a value in the box or use the sliders. (If you enter values manually, the software may adjust them slightly to the nearest values compatible with the logger.)

3. Samples. Enter the number of samples that are needed to trigger each alarm.

4. Alarm Mode

   Cumulative - alarm will be triggered after a specific number of samples have been logged above or below an allowed value, even if the samples are not logged consecutively.

   Consecutive - alarm will be triggered only when the value has been above or below an allowed value for a specific amount of time. If the value goes back in range before triggering the alarm, the count is reset.

5. Click OK when done.