

Requires Onset® Computer Corporation's BoxCar® or BoxCar Pro software and interface cable for operation.

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Part Number: MAN-H06-ON-OFF

HOB0® on/off loggers User's Manual

(For use with part numbers H06-002-02, H06-003-02, and H06-004-02)

Inside this package:
HOB0 on/off logger

- Mounting Accessories:**
1. Magnet
 2. Hook and loop tape
 3. Double-sided tape

Introduction

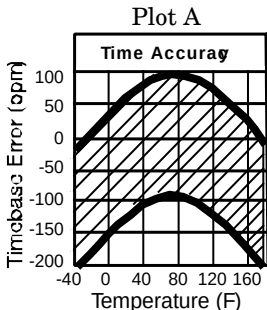
Thank you for buying a HOB0 on/off data logger. With proper care it will give you years of reliable readings. These loggers detect and record each time that a device turns on or off as determined by a level going above or below a threshold value.

HOB0 on/off in detail

HOB0 on/off data loggers measure only two states: on or off. The logger checks for a state change every half second and records the time at which a state change occurs. If there is no change in state, the logger will not record. This feature optimizes the use of internal memory and allows the logger to record up to 2000 state changes over extended periods.

Common specifications:

- Minimum state duration: 0.5 seconds
- Time accuracy: approx. ±1 minute per week (±100 ppm at +68°F), accuracy detail shown in Plot A
- Capacity: 2,000 state changes (requires 8K of memory in HOB0 Shuttle to fully offload)
- Operating temperature: -4°F to +158°F (-20°C to +70°C)
- Relative humidity range: 0 to 95%, non-condensing, non-fogging
- Size/weight: 2.4" x 1.9" x 0.8"/approximately 1 oz.
- Battery: CR-2032 (lithium); provides one year of continuous use; user-replaceable
- Storage temperature: -40°F to +167°F (-40°C to +75°C)

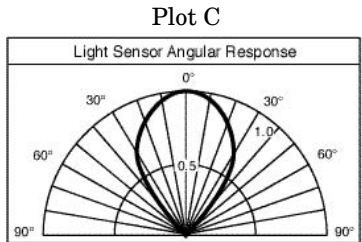
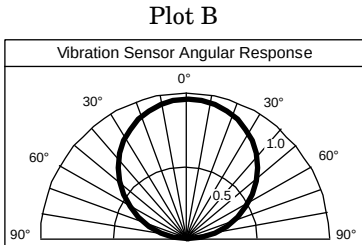


Sensor specifications

AC-field sensor version (part number H06-004-02) - The AC-magnetic-field threshold is approximately 2 Gauss at 60 Hz. Position the logger such that its green LED blinks when the motor is on. See Application Notes section of this manual for mounting recommendations.

Vibration sensor version (part number H06-003-02) - The HOB0 is most sensitive to vibrations that are perpendicular to the face of the logger. The logger's vibration sensitivity is adjustable from about 0.05G to 0.5G at 60Hz (0.0001" to 0.001" displacement).

Light sensor version (part number H06-002-02) - The light intensity threshold is adjustable from approximately 10 to 100 lumens/m². The HOB0's light sensitivity is peaked in the forward direction as shown in Plot C. This directionality can be taken advantage of to minimize the effect of other light sources when trying to determine the on/off state of a particular light source. The light sensor is on the side of the case, next to the green LED. Note, however, that the sensor detects light directed at the front of the case.



Connecting the communications cable and Launching

A Starter Kit, which includes an interface cable and software, is required to operate your logger. Connect the interface cable into the 3.5 mm jack (Diagram A) on the logger and into a working serial port of your computer. Install and start the logger's software. Select **Launch...** under **Logger** on the menu bar and the launch dialog box will appear. For a complete explanation on installing the software and launching your logger, please refer to the software manual or the software's on-line help.

Deploying your logger

Operation and on/off indication

The HOB0 on/off loggers have two LED lights: red and green (Diagram A). One of these LEDs will blink every two seconds (every four seconds during Delayed Start); if the logger detects that the device being monitored is off, then the red LED will blink, if the logger detects that the device is on, then the green LED will blink. When deploying the loggers, be sure to position them such that they detect 'on' and 'off' properly, using the sensitivity control as needed on the models with that feature.

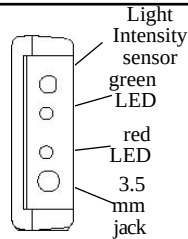


Diagram A

Although the LEDs blink every two seconds, the state is checked every half second, with state changes recorded as detected. If the battery voltage is low, both LEDs will blink every other second regardless of the state. The LED's should be viewed straight on, as shown in Diagram A.

Sensitivity control

The sensitivity control on the front of the vibration and light sensing loggers (Diagram B) adjusts the threshold that the HOB0 uses to determine if the motor/light is on or off. Use a small screw driver to adjust the sensitivity control. Turning it clockwise increases the HOB0's sensitivity. Turning it counterclockwise decreases the HOB0's sensitivity.

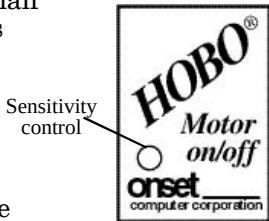


Diagram B

How to set the sensitivity control

(part number H06-002-02 and H06-003-02)

Launch the logger and mount it where it will be used. With the monitored device on, turn the sensitivity control down until the red LED is blinking. (If the green LEDs are still blinking with the sensitivity all the way down, that is OK because this means you have plenty of vibration to be detected.) With the device still on, turn the sensitivity control up until the green LED is blinking. From this point turn the sensitivity control up by an additional 10 degrees. Verify that HOB0 detects on and off properly by turning the monitored device on and off, and watching for the HOB0 to change between blinking the red LED and blinking the green LED.

If you turn the sensitivity control all the the way up, and the green LED does not consistently blink with the device on, this means there is not enough vibration for the HOB0's sensor. Try moving the HOB0 closer to the vibration source, or changing its orientation such that the vibration is perpendicular to the face of the logger.

Test deployment

Before deploying your HOB0 on/off logger for an extended time, we recommend running a test deployment to verify that the HOB0 is reliably recording when your device turns on and off, and to benchmark how often it turns on and off. Based on this benchmark you can determine about how long the HOB0 can go before its 2000 state-change capacity is full.

Continued on other side

Deploying your logger (Continued from previous side)

Moving the vibration-sensor version (part number H06-003-02)

The vibration sensor will pick up all kinds of vibration, including vibrations caused by moving the logger to the measurement location. To reduce this extraneous data, you can launch the logger with delayed start. Turning the sensitivity down while moving the logger can help too.

Mounting options

Included with your HOB0 on/off are three options for mounting it on location: a magnet, hook-and-loop tape, and double-sided tape. These can be stuck on the back of your HOB0. When using the magnet, note that it works best on flat surfaces. Note that the hook-and-loop tape mounting will reduce the sensitivity of the vibration-sensor version.

Readout

Reconnect the HOB0 data logger to the interface cable, start the software, select **Readout** under **Logger** on the menu bar, and the data will be displayed in a graphical or tabular form. For a complete explanation on reading out your logger, please refer to the software manual.

No data is information too

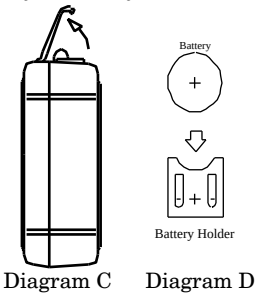
The HOB0 logger records the initial on/off state at launch and a final on/off state at readout, even if the state has not changed. This allows you to determine the entire period during which the logger was watching for on/off state changes.

Keep it dry

Your HOB0 data logger can be permanently damaged by corrosion if it gets wet. Protect it from rain or condensation. Should it get wet, remove the battery immediately and dry the board completely with a hair dryer before reinstalling the battery.

Changing the battery

To change the battery, open the case (Diagram C). Lift the circuit board and remove the battery by carefully pushing it out with a small screwdriver or other small, blunt instrument. Be sure to install the battery with the printed side away from the logger's circuit board (Diagram D). The logger's green LED will blink a number of times after the battery has been installed. **Note: Do not cut open, incinerate, heat above 185°F (85°C) or recharge the lithium battery. Dispose per local regulations.**



Application Notes

Motor on/off with AC-field sensor

Because the AC-field sensor is in the front of the logger the logger should be mounted facing the field source (i.e., with the tape or magnet on the logger front). Mount the logger on or near a motor, transformer, or single wire carrying a large AC current. Magnetic field intensities fall off rapidly with increasing distance from their source. This means the logger must be mounted very close to (ideally, directly on) the field source. While this may make it less convenient to attach the logger, it means that interference from other sources is less likely. If you cannot mount the logger directly on a motor with heat fins or shielding, isolate one phase or “leg” of power going to the motor and mount the logger with the HOB0 label facing the line.

Motor on/off with vibration sensor

This version of the HOB0 measures vibration, and it needs to be mounted where there is enough vibration to be reliably detected, but not so much that the logger will vibrate off. If there is enough vibration, it will be conducted through the framework holding the motor, allowing the HOB0 to be mounted on the framework. This is useful for applications where you do not have convenient access to the motor itself. To determine if a given mounting location will work, refer to “How to set the sensitivity control” on the other side of this page.

Room light on/off

Place the HOB0 Light on/off logger so that it faces the light of interest and is positioned to minimize the light that can reach it from other sources. Sunlight reflected from windows or mirrors can trigger false readings. Adjust the sensitivity control on the front of the logger so that it can tell the difference between on and off. When monitoring fluorescent lights, mount the logger away from the light ballast.

Service and Support

HOB0 products are easy to use and reliable. In the unlikely event that you have a problem with this instrument, contact the company where you bought the logger: Onset or an Onset Authorized Dealer. Before calling, you can evaluate and often solve the problem if you write down the events that led to the problem (are you doing anything differently?) and visit the Technical Support section of the Onset web site at www.onsetcomp.com/support.html. When contacting Onset, ask for technical support and be prepared to provide the product number and serial number for the logger and software version in question. Also completely describe the problem or question. The more information you provide, the faster and more accurately we will be able to respond.

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Phone: 1-800-LOGGERS (1-800-564-4377) or 508-759-9500
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E-mail: loggerhelp@onsetcomp.com
Internet: www.onsetcomp.com

Warranty

Onset Computer Corporation (Onset) warrants to the original end-user purchaser for a period of **one year** from the date of original purchase that the HOB0® product(s) purchased will be free from defect in material and workmanship. During the warranty period Onset will, at its option, either repair or replace products that prove to be defective in material or workmanship. This warranty shall terminate and be of no further effect at the time the product is (1) damaged by extraneous cause such as fire, water, lightning, etc. or not maintained in accordance with the accompanying documentation; (2) modified; (3) improperly installed; (4) repaired by someone other than Onset; or (5) used in a manner or purpose for which the product was not intended.

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Returns

Please direct all warranty claims and repair requests to place of purchase. Before returning a failed unit directly to Onset, you must obtain a Return Merchandise Authorization (RMA) number from Onset. You must provide proof that you purchased the Onset product(s) directly from Onset (purchase order number or Onset invoice number). Onset will issue an RMA number that is valid for 30 days. You must ship the product(s), properly packaged against further damage, to Onset (at your expense) with the RMA number marked clearly on the outside of the package. Onset is not responsible for any package that is returned without a valid RMA number or for the loss of the package by any shipping company. Loggers must be clean before they are sent back to Onset or they may be returned to you.

Repair Policy

Products that are returned after the warranty period or are damaged by the customer as specified in the warranty provisions can be returned to Onset with a valid RMA number for evaluation. ASAP Repair Policy. For an additional charge, Onset will expedite the repair of a returned product. Data-back™ Service. HOB0 data loggers store data in nonvolatile EEPROM memory. Onset will, if possible, recover your data to a disk. Tune Up Service. Onset will examine and retest any HOB0 data logger.