HOBO® H8 Outdoor/Industrial 4-Channel External User's Manual

ruires Onset Computer Corporation Car[®] Pro or BoxCar[®] 3.6 or later ware and PC interface cable for ration.

Inside this package
The HOBO H8

Outdoor/Industrial
4-Channel External logger
is shipped with:

1. One HOBO H8 logger
(part number H08-008-04)

4 Mounting Screws
4 Flat Washers
1 Spare Dome Plug
1 O-Ring
1 Allen Wrench
1 Desiccant pack
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Thank you for buying a HOBO data logger. With proper care it will give you years of accurate and reliable measurements.

This manual covers the HOBO H8 Outdoor/Industrial 4-Channel External data logger. This logger can store 32,520 time-stamped measurements and is compatible with the HOBO Shuttle allowing for convenient retrieval of field data.

Specifications

Weatherproof case tested to NEMA 6 standard

Operating range (logger): -4°F to +158°F (-20°C to +70°C)

Time accuracy: approx. ± 1 minute per week (± 100 ppm at $+68^{\circ}F$ or $+20^{\circ}C$), full dependance shown in Plot A

Measurement capacity: 32,520 measurements total, stored in nonvolatile memory

Drop-proof to 5'

Size: 5.50" H x 5.38" W x 1.25" D (140 mm x 137 mm x 32 mm)

Weight: 7 oz. (200 gms)

Battery: CR-2032 (lithium), user-replaceable

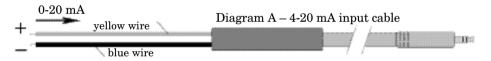
Battery life (continuous use): 1 year

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

External Sensors - Onset has a range of external temperature and AC current sensors that are compatible with the HOBO H8 Outdoor/Industrial 4-Channel External logger. Measurement specifications for using Onset temperature and AC current sensors with this logger are provided in the sensor manuals. For compatible sensors see the HOBO catalog, contact Onset Computer Corporation or an Onset authorized dealer.

When using multiple voltage inputs, current inputs, or a combination of both input types; keep in mind that the (-) from your current source(s) and the (0V) line of your voltage source(s) will be tied together when installed on the logger. The lines must be at the same voltage potential or inaccurate readings or even damage to the logger may occur. You must also take into account that these lines may also be tied to earth ground through your PC interface cable when connected to your computer. Special precautions may be necessary if any of your voltage or current source common lines are not tied to earth ground.

4-20 mA Input Cable - This cable (part number CABLE-4-20mA) measures currents from 0 to 20.1 mA. The accuracy is ± 0.1 mA $\pm 3\%$ of reading. The 4-20 mA cable must be connected such that the current flows through, and with the proper polarity, as shown in Diagram A. Do not expose to current above 20 mA or negative current. Do not cut off the end of the gray cable where it connects to the blue and yellow wires as that contains the precision resistor required for current measurement. If you are using this cable outdoors, you will need to insure that the connection to your sensor or device is also weatherproof. The connection between the gray cable and yellow and blue wires is splashproof, but not weatherproof.



Voltage Input Cable

The logger's external inputs can accept the voltage input cable (Onset part number CABLE-2.5-STEREO) which allows a voltage to be recorded. This input reads 0 to 2.5 DC volts, with a $\pm 0.1~\mu A$ maximum

Voltage Input Cable Connections red wire switched 2.5 V output white wire voltage input

leakage between measurements and a $\pm 0.4~\mu A$ leakage during sensor measurements (2 ms each). The accuracy is $\pm 10~mV$ $\pm 3\%$ of reading. Input impedance is 10k . The input line should not be exposed to signals below 0 volts or above 2.5 DC volts. If you are using this cable outdoors, you will need to ensure that the connection to your sensor or device is also weatherproof.

Switched 2.5 V Output - This signal can be used to power a sensor directly or it can be used to trigger an external circuit. External sensors should draw no more than 4 mA total when powered. The switched 2.5 V output switches on about 4.5 ms before the first channel is measured and stays powered for 11 ms often the last channel is measured, as shown in

powered for 11 ms after the last channel is measured, as shown in Diagram B. The grayed bars show the 2 ms periods during which the HOBO logger samples the input signals. Diagram B shows the envelope when all four channels are enabled. For each disabled channel the envelope is 16.5 ms shorter.

Cable/Desiccant Installation Instructions

- 1. Using the Allen wrench provided, remove the four socket head screws holding the lid onto the case as shown in Diagram C.
- screws holding the lid onto the case as shown in Diagram C.

 2. Remove dome nut, using a 15 mm wrench, from the fitting
- corresponding to the channel you wish to connect to (refer to label on lid).
- 3. Slide black rubber plug out of the fitting by grabbing the exposed end and pulling. **Warning**: Do not throw black rubber plugs away, channels that are not utilizing a cable must have a plug in place to maintain proper weatherproof seal.
- 4. Slide dome nut over plug end of cable with threads facing in towards the case.
- 5. Feed plug end of cable from the outside of the case through the dome fitting of the channel you want to use (refer to label on lid) and plug it into the corresponding jack on the PC board (see Diagram C). If plug is difficult to insert through fitting, a small amount of dishwashing liquid can be used as a lubricant on the plug. Do not use O-ring lubricant because the input cable can more easily be pulled out of the dome fitting and input jack.
- 6. Thread dome nut back onto fitting, hand tight. With 15mm or
- adjustable wrench tighten an additional 1/2 turn.
 7. Remove the two desiccant cartridges from the foil pouch
- and install them in the cavity at the top of the case.

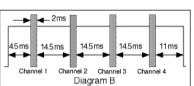
 8. Inspect O-ring to insure that it is clean, lubricated, and fully seated into groove, place lid back on case, with cut-out clear area in label over desiccant cavity, and attach loosely using the four socket head screws. O-ring lubricant

 Dome Nut
- is available from Onset Computer (Part #85-SEALANT).

 9. Visually inspect O-ring through clear cover to verify that O-ring is properly seated and tighten socket head screws starting at any corner and then tightening the opposite corner. Tighten two remaining screws and inspect O-ring through the clear cover to insure proper sealing all around.

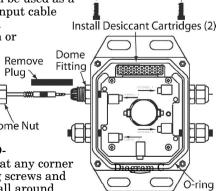


A starter kit, which includes a PC interface cable and software, is required to operate your logger. Connect the PC interface cable into the 3.5 mm jack on the logger, by removing the dome plug, as shown in Diagram D, using a dime or a flat screwdriver. Connect the other end of the cable into a working serial port of your computer. Install and start the logger's software. Select **Launch...** under



Socket Head Screws

04-Channel Externa



Logger on the menu bar and a launch dialog box will be provided. For a complete explanation on installing the software and launching your logger, please refer to the software

Readout

Reconnect the HOBO data logger to the interface cable, start the logger 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 logger software manual.

Operation Indication

HOBO data loggers have a red LED light that blinks while they are logging. The LED blinks brightly at every measurement, and weakly every two seconds if the interval between measurements is longer than two seconds. The blinking LED is located on the front of the logger and is most visible when viewed straight on, as shown in Diagram D.

Mounting Options

Included with your HOBO H8 Outdoor/Industrial 4-Channel External data logger are four mounting screws and washers for mounting it to a wooden post. U-bolt clamps (available from Onset; part # U-BOLT-KIT) are preferred for mounting to a 1" pipe (1.3" outside diameter), see Diagram E. U.V. stable tie wraps also work well.



The desiccant cartridges should be checked monthly or at each download, by looking through the viewing window. The cartridges are blue when new and will change to pink when they need to be replaced. New cartridges are available from Onset (Part # DESIC-PACK). To

replace desiccant cartridges remove the four socket head screws shown in Diagram F and remove the lid. Discard old cartridges and replace with two new (blue) ones. Inspect O-ring to insure that it is clean, lubricated, and properly seated. O-ring lubricant is available from Onset Computer (PART # 85-SEALANT). Reattach lid using four socket head screws starting at any corner and then tighten the opposite corner. Tighten two remaining screws and inspect O-ring through the clear cover to insure proper sealing all around.

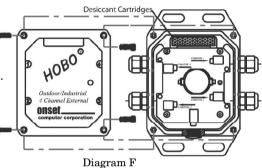


Diagram E

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Diagram D

Changing the Battery

The logger requires one 3-Volt CR-2032 lithium battery.

Expected battery life varies based on the temperature and the frequency at which the logger is recording data (the logging interval). A new battery will typically last 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. Onset recommends that you install a fresh battery before every deployment if temperatures below 0°C (32°F) are expected. Data stored in the HOBO will not be lost when removing the battery. To replace the battery, disconnect the logger from the computer. Use the Allen wrench to remove the four socket head screws on the logger's cover, then remove the cover. Carefully insert a thin screwdriver blade between the edge of the battery and the battery contact that is farther from the red LED. Gently pry up the edge of the battery, popping it out of the holder. Slide the new battery, positive side up, under the two small tabs of the contact that is closer to the red LED. Press down on the battery until it snaps into place. The logger's LED will blink several times. When the new battery is secure, close the logger's case as described above.

AWARNING: 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.

If you will not be using the logger right away bring the logger to the launch window of BoxCar Pro or BoxCar and then select cancel or you can offload the data. This action puts the logger into its low power state to conserve your battery power.

Replacement Part Kit Available

A replacement part kit is available from Onset (Part # H8x4-BK) which includes a dome plug, desiccant, O-ring, O-ring lube, socket head screws, Allen wrench, access fitting grommets and access fitting plugs. If there are any signs on the rubber parts of cracking or damage they should be replaced.

Service and Support

HOBO® products are easy to use and reliable. In the unlikely event that you have a problem with the hardware or software, please read the following

Who do I contact?

Contact the company that you bought the loggers from: Onset Computer Corporation or an Onset Authorized Dealer.

Before calling, you can evaluate and often solve your problem if you try the following:

- 1. Read this manual and the ReadMe file on the software disk. It may only take a few moments to get the answers you need.
- 2. Write down the events that led to the problem. Have you changed anything in your computer recently? Are you doing anything differently?

When contacting Onset Computer

Corporation, please indicate that you need Technical Support for HOBO® products.

Be prepared to:

- Provide the product number which is found on the bottom of the logger, the software version and serial number if present on the diskette.
 Provide details on the hardware and software configuration of your computer including: manufacturer, model number, peripherals, and version of operating system.
- 3. Completely describe the problem or question. The more information you provide, the faster and more accurately we will be able to respond. NOTE: Onset allows one technical support

contact for each software license. Onset Technical Support

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470 MacArthur Blvd., Bourne, MA 02532
Mailing: PO Box 3450,
Pocasset, MA 02559-3450
Phone: (508) 759-9500
Fax: (508) 759-9100
e-mail: loggerhelp@onsetcomp.com
www.onsetcomp.com

Warranty

The HOBO® products are warranted to be free from defects in material and workmanship for a period of one year from the date of original purchase. During the warranty period Onset will, at its option, either repair or replace products that prove to be defective. This warranty is void if the Onset products have been damaged by customer error or negligence or if there has been an unauthorized modification.

Returning Products to Onset Direct all warranty claims to place of

purchase. Before returning a failed unit, 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 and free of any toxins 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 that are damaged by the customer as specified in the warranty provisions can be returned to Onset with a valid RMA number for evaluation.

Please contact Onset for more information and prices on:

ASAP Repair Policy

Onset will expedite the repair of a returned product.

Data-back™ Service

HOBO® 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 HOBO® data logger.