

**HOBO® U12 Stainless Temp
Data Logger
(Part # U12-015, U12-015-02)**

Inside this package:

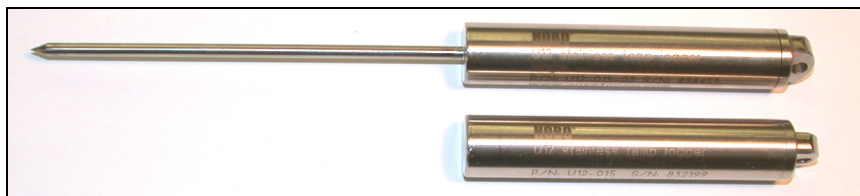
- HOBO U12 Stainless Temp Data Logger (U12-015)
or
HOBO U12 Stainless Temp Data Logger with 5" Probe (U12-015-02)
- O-Ring Replacement Kit (Onset part # U12-015-Oring-kit)

Doc # 7938-E, MAN-U12-015
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 U12 Stainless Temp Data Logger is a single-channel temperature logger with 12-bit resolution that can record up to 43,000 measurements. The logger uses a direct USB interface for launching and data readout by a computer.

An Onset software starter kit is required for logger operation. Visit www.onsetcomp.com for compatible software.



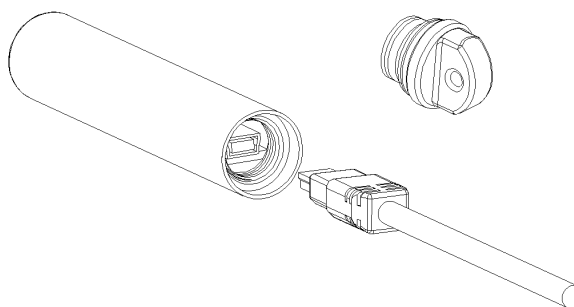
Specifications

Measurement range	-40° to 125°C (-40° to 257°F)
Accuracy	± 0.22°C at 25°C (± 0.4°F at 77°F), see Plot A
Resolution	0.025°C at 25°C (0.045°F at 77°F), see Plot A
Drift	0.05°C/year + 0.1°C/1000 hrs above 100°C (0.09°F/year + 0.2°F/1000 hrs above 212°F)
Response time in 1 m/s (2.2 mph) airflow	U12-015: < 10 minutes, typical to 90% U12-015-02: 2.25 minutes, typical to 90%
Response time in water	U12-015: < 3.5 minutes, typical to 90% U12-015-02: 20 seconds, typical to 90%
Time accuracy	± 2 minute per month at 25°C (77°F), see Plot B
Operating environment	Air, water, steam, 0 to 100% RH
Operating temperature	Logging: -40° to 125°C (-40° to 257°F) Launch/readout: 0° to 50°C (32° to 122°F), per USB specification
Battery life	3 year typical use, factory replaceable
Memory	64K bytes (43,000 12-bit measurements)
Construction	316L stainless steel with O-ring seal (food grade)
Weight	U12-015: 72 g (2.5 oz) U12-015-02: 82 g (2.9 oz)
Logger dimensions	17.5 x 101.6 mm (0.69 x 4.00 inches)
Probe dimensions (U12-015-02 only)	4 x 124 mm (0.16 x 4.90 inches)
Pressure/depth rating	2200 psi (1500 m/4900 ft) maximum
Vibration rating	Navy spec: NAVMAT P-9492 (non-probe model only)
NIST certificate	Available for additional charge; temperature range -30° to 120°C (-22° to 248°F)
	The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).

Connecting the logger

The U-Family logger requires a USB interface cable to connect to the computer. If possible, avoid connecting at temperatures below 0°C (32°F) or above 50°C (122°F).

1. Remove the stainless steel end-cap from the logger by turning it counter-clockwise. If the cap is difficult to turn, place the stem of a small screwdriver through the hole in the end-cap for better leverage.
2. Plug the large end of the USB interface cable into a USB port on the computer.
3. Plug the small end of the USB interface cable into the logger as shown in the following diagram.



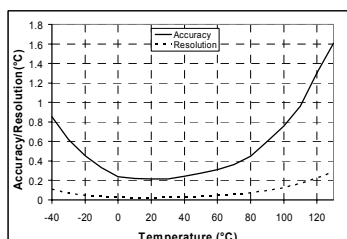
4. If the logger has never been connected to the computer before, it may take a few seconds for the new hardware to be detected.
5. Use the logger software to launch the logger. (The first time you launch the logger, the deployment number will be greater than zero. Onset launches the loggers to test them prior to shipping.)
6. You can read out the logger 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: USB communications may not function properly at temperatures below 0°C (32°F) or above 50°C (122°F).

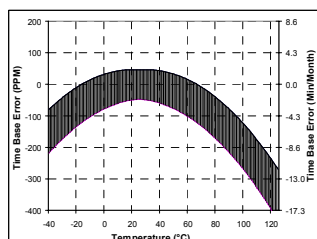
Sample and event logging

The logger can record two types of data: samples and events. Samples are the sensor measurements recorded at each logging interval (for example, the temperature every minute). Events are independent occurrences triggered by a logger activity. Examples of events recorded asynchronously during deployment include when the logger is connected to the host, when the battery is low, and the end of a data file once the logger is stopped.

The logger stores 64K of data, and can record up to 43,000 samples.



Plot A



Plot B

Supplied in Australia by Instrument Choice
Call our scientists on 1300 737 871
www.instrumentchoice.com.au

Mounting

A 4.8 mm (3/16") diameter hole is provided in the end-cap to secure the logger to an object.

Care and maintenance of the logger

The logger can be permanently damaged by internal corrosion from condensation or foreign matter entering the case. The logger is shipped with an installed EPDM O-ring. (Refer to the chart in the included O-ring Replacement Kit for information about specific O-ring applications.) The logger electronics depend upon the integrity of the O-ring seal for protection. Prior to every deployment, the O-ring should be inspected for cracks or tears, and for proper lubrication. The O-ring's surface should be smooth and lightly lubricated. If needed, the O-ring should be re-lubricated or replaced. In addition, the end-cap must be securely in place with no visible gap between the housing and the end-cap. Before opening the end-cap for read out, make sure that the logger is clean and dry. The logger should always be capped when it is not connected to the computer.

316L stainless steel has good corrosion resistance, but it can be damaged by contact with dissimilar metals or through crevice corrosion. The logger should not be deployed in salt or brackish water, or the housing will eventually fail and water will destroy the electronics. If long-term deployment in salt water is required, place the logger in a sealed bladder containing a non-corrosive liquid. Always rinse the logger with fresh water after deployment in salt or brackish water.

On the U12-015-02, the 5" piercing probe can be bent and/or broken with excessive force. Damage to the 5" probe is expressly not covered by the product warranty, and cannot be repaired.

Note! Static electricity may cause the logger to stop logging.

To avoid electrostatic discharge, transport the logger only with its end-cap on, or in an anti-static bag. Ground yourself by touching an unpainted metal surface before handling the logger. For more information about electrostatic discharge, visit our website at <http://www.onsetcomp.com/support/support.html>.

Battery

Expected battery life varies based on the temperature and the frequency at which the logger is recording data (the logging interval). With 60 minutes of operation at 125°C (257°F) per day, a new battery will typically last approximately three years 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.

The logger has the ability to report and log its own battery voltage. If the battery falls below 3.1 V, the logger will record a "bad battery" event in the datafile. If the datafile contains "bad battery" events, or if logged battery voltage repeatedly falls below 3.3 V, the battery is failing and the logger should be returned to Onset for battery replacement.

Do not attempt to replace the battery. If the battery needs to be replaced, contact Onset or an Onset Authorized Dealer for factory replacement battery service.

⚠ WARNING: Do not cut open, incinerate, heat above 150°C (302°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.

Service and Support

HOBO 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 if you 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.

Onset Computer Corporation
470 MacArthur Blvd., Bourne, MA 02532
Mailing: PO Box 3450, Pocasset, MA 02559-3450
Phone: 1-800-LOGGERS (1-800-564-4377) or 508-759-9500
Fax: 508-759-9100
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 HOBO® 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.

THERE ARE NO WARRANTIES BEYOND THE EXPRESSED WARRANTY ABOVE. IN NO EVENT SHALL ONSET BE LIABLE FOR LOSS OF PROFITS OR INDIRECT, CONSEQUENTIAL, INCIDENTAL, SPECIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS CONTRACT OR OBLIGATIONS UNDER THIS CONTRACT, INCLUDING BREACH OF WARRANTY, NEGLIGENCE, STRICT LIABILITY, OR ANY OTHER LEGAL THEORY.

Limitation of Liability. The Purchaser's sole remedy and the limit of Onset's liability for any loss whatsoever shall not exceed the Purchaser's price of the product(s). The determination of suitability of products to the specific needs of the Purchaser is solely the Purchaser's responsibility. **THERE ARE NO WARRANTIES BEYOND THE EXPRESSED WARRANTY OFFERED WITH THIS PRODUCT. EXCEPT AS SPECIFICALLY PROVIDED IN THIS DOCUMENT, THERE ARE NO OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO INFORMATION OR ADVICE GIVEN BY ONSET, ITS AGENTS OR EMPLOYEES SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THE EXPRESSED WARRANTY OFFERED WITH THIS PRODUCT.**

Indemnification. Products supplied by Onset are not designed, intended, or authorized for use as components intended for surgical implant or ingestion into the body or other applications involving life-support, or for any application in which the failure of the Onset-supplied product could create or contribute to a situation where personal injury or death may occur. Products supplied by Onset are not designed, intended, or authorized for use in or with any nuclear installation or activity. Products supplied by Onset are not designed, intended, or authorized for use in any aeronautical or related application. Should any Onset-supplied product or equipment be used in any application involving surgical implant or ingestion, life-support, or where failure of the product could lead to personal injury or death, or should any Onset-supplied product or equipment be used in or with any nuclear installation or activity, or in or with any aeronautical or related application or activity, Purchaser will indemnify Onset and hold Onset harmless from any liability or damage whatsoever arising out of the use of the product and/or equipment in such manner.

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. 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.



© 2003 - 2005 Onset Computer Corporation. All rights reserved.
Part #: MAN-U12-015 Doc #: 7938-E

Onset and HOBO are registered trademarks of Onset Computer Corporation. Other products and brand names may be trademarks or registered trademarks of their respective owners.