WATER LEVEL DATA LOGGER

FOR WATER MEASUREMENT & MONITORING

Product List:
- Water Level U20L-01
- Water Level U20L-04
- HOBOware Pro CD

HOBO Water Level (30 ft) Data Logger

Part # U20L-01

Important Info:

HOBO data loggers require HOBOware software (USB interface cable included w/CD purchase) and a communications device. HOBOware Pro is required when using the U-DTW-1 Waterproof shuttle. See compatible items below.

Overview

The HOBO U20L-01 is a low-cost, research-grade water level data logger for continuously measuring water level and temperature in a wide range of underwater environments. It features 0.1% measurement accuracy, a polypropylene housing for use in both fresh and salt water, and a non-vented design for convenient and hassle-free deployment.

Highlighted Features

- Self-contained non-vented design enables easy deployment
- Ideal for use in both fresh and saltwater environments, including wells, streams, lakes, wetlands, and tidal areas
- Depths up to 30 feet
- Durable ceramic pressure sensor withstands freezing
- HOBOware Pro software provides easy conversion to accurate water level reading, fully compensated for barometric pressure, temperature, and water density

In what environment does this data logger operate?

This data logger operates in outdoor and underwater environments.

What measurements does this data logger support?

The U20L-01 data logger supports the following measurements: Absolute Pressure, Barometric Pressure, Temperature and Water Level

Specification

The country of origin for this product is the United States. To see the full specifications for this product, please see our product manual found under the documentation tab if available.

Pressure (Absolute) and Water Level Measurements U20L-01	
Operation Range	0 to 207 kPa (0 to 30 psia); approximately 0 to 9 m (0 to 30 ft) of water depth at sea level, or 0 to 12 m (0 to 40 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 207 kPa (10 to 30 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	310 kPa (45 psia) or 18 m (60 ft) depth
Water Level Accuracy*	Typical error: ±0.1% FS, 1.0 cm (0.03 ft) water Maximum error: ±0.2% FS, 2.0 cm (0.06 ft) water
Raw Pressure Accuracy**	±0.3% FS, 0.62 kPa (0.09 psi) maximum error
Resolution	<0.02 kPa (0.003 psi), 0.21 cm (0.007 ft) water
Pressure Response Time (90%)***	<1 second at a stable temperature; measurement accuracy also depends on temperature response time

Temperature Measurements	
Operation Range	-20° to 50°C (-4° to 122°F)
Accuracy	±0.44°C from 0° to 50°C (±0.79°F from 32° to 122°F), see Plot A in manual
Resolution	0.10°C at 25°C (0.18°F at 77°F), see Plot A in manual
Response Time (90%)	10 minutes in water (typical)
Stability (Drift)	0.1°C (0.18°F) per year

Logger	
Real-time Clock	±1 minute per month 0° to 50°C (32° to 122°F)
Battery	2/3 AA, 3.6 Volt lithium, factory-replaceable
Battery Life (Typical Use)	5 years with 1 minute or greater logging interval
Memory (Non-volatile)	64K bytes memory (approx. 21,700 pressure and temperature samples)
Weight	Approximately 154 g (5.43 oz) in air Approximately 53.9 g (1.9 oz) in fresh water
Dimensions	3.18 cm (1.25 inches) diameter, 15.24 cm (6.0 inches) length; mounting hole 6.3 mm (0.25 inches) diameter
Wetted Materials	Polypropylene housing and lanyard; Viton and Buna-N O-rings; ceramic sensor in acetyl end cap; stainless steel screws suitable for saltwater
Logging Interval	Fixed-rate or multiple logging intervals, with up to 8 user-defined logging intervals and durations; logging intervals from 1 second to 18 hours. Refer to the *HOBOware User's Guide* for details.
Launch Modes	Immediate start and delayed start
Offload Modes	Offload while logging; stop and offload
Battery Indication	Battery voltage can be viewed in status screen and optionally logged in datafile. Low battery indication in datafile.
CE	The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).

* Water Level Accuracy: With accurate reference water level measurement, known water density, accurate Barometric Compensation Assistant data, and a stable temperature environment.

** Raw Pressure Accuracy: Absolute pressure sensor accuracy includes all sensor drift, temperature, and hysteresis-induced errors.

*** Changes in Temperature: Allow 20 minutes in water to achieve full temperature compensation of the pressure sensor. Maximum error due to rapid thermal changes is approximately 0.5%.

HOBO Water Level (13 ft) Data Logger

Part # U20L-04

Important Info:

HOBO data loggers require HOBOware software (USB interface cable included w/CD purchase) and a communications device. HOBOware Pro is required when using the U-DTW-1 Waterproof shuttle. See compatible items below.

Overview

The HOBO U20L-004 is a low-cost, research-grade water level data logger for continuously measuring water level and temperature in a wide range of underwater environments. It features 0.1% measurement accuracy, a polypropylene housing for use in both fresh and salt water, and a non-vented design for convenient and hassle-free deployment.

Highlighted Features

- Self-contained non-vented design enables easy deployment
- Ideal for use in both fresh and saltwater environments, including wells, streams, lakes, wetlands, and tidal areas
- Depths up to 13 feet
- Durable ceramic pressure sensor withstands freezing
- HOBOware Pro software provides easy conversion to accurate water level reading, fully compensated for barometric pressure, temperature, and water density

Note: A calibration certificate is not offered for this logger. If you require a NIST-traceable calibration certificate, please see the U20-001-04 (freshwater) or U20-001-04-Ti (saltwater).

In what environment does this data logger operate?

This data logger operates in outdoor and underwater environments.

What measurements does this data logger support?

The U20L-04 data logger supports the following measurements: Absolute Pressure, Barometric Pressure, Temperature and Water Level

Specification

The country of origin for this product is the United States. To see the full specifications for this product, please see our product manual found under the documentation tab if available.

Pressure (Absolute) and Water Level Measurements U20L-04	
Operation Range	0 to 145 kPa (0 to 21 psia); approximately 0 to 4 m (0 to 13 ft) of water depth at sea level, or 0 to 7 m (0 to 23 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 145 kPa (10 to 21 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	310 kPa (45 psia) or 18 m (60 ft) depth
Water Level Accuracy*	Typical error: ±0.1% FS, 0.4 cm (0.013 ft) water Maximum error: ±0.2% FS, 0.8 cm (0.026 ft) water
Raw Pressure Accuracy**	±0.3% FS, 0.43 kPa (0.063 psi) maximum error
Resolution	<0.014 kPa (0.002 psi), 0.14 cm (0.005 ft) water
Pressure Response Time (90%)***	<1 second at a stable temperature; measurement accuracy also depends on temperature response time

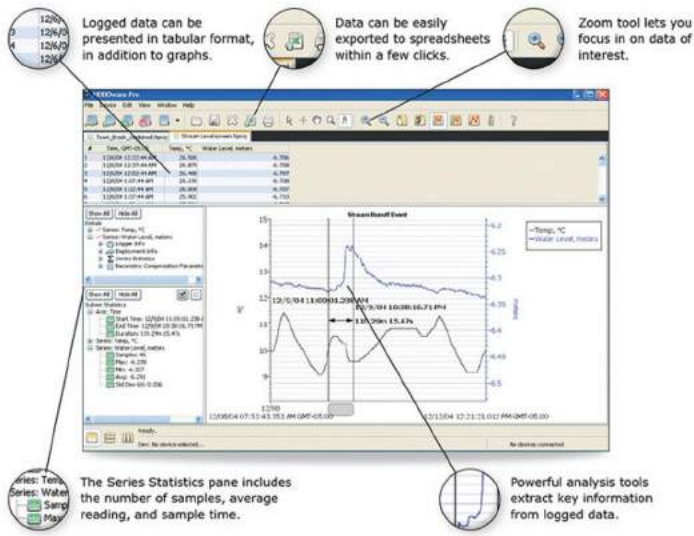| Temperature Measurements	
Operation Range	-20° to 50°C (-4° to 122°F)
Accuracy	±0.44°C from 0° to 50°C (±0.79°F from 32° to 122°F), see Plot A in manual
Resolution	0.10°C at 25°C (0.18°F at 77°F), see Plot A in manual
Response Time (90%)	10 minutes in water (typical)
Stability (Drift)	0.1°C (0.18°F) per year

Logger	
Real-time Clock	±1 minute per month 0° to 50°C (32° to 122°F)
Battery	2/3 AA, 3.6 Volt lithium, factory-replaceable
Battery Life (Typical Use)	5 years with 1 minute or greater logging interval
Memory (Non-volatile)	64K bytes memory (approx. 21,700 pressure and temperature samples)
Weight	Approximately 154 g (5.43 oz) in air Approximately 53.9 g (1.9 oz) in fresh water
Dimensions	3.18 cm (1.25 inches) diameter, 15.24 cm (6.0 inches) length; mounting hole 6.3 mm (0.25 inches) diameter
Wetted Materials	Polypropylene housing and lanyard; Viton and Buna-N O-rings; ceramic sensor in acetyl end cap; stainless steel screws suitable for saltwater
Logging Interval	Fixed-rate or multiple logging intervals, with up to 8 user-defined logging intervals and durations; logging intervals from 1 second to 18 hours. Refer to the *HOBOware User's Guide* for details.
Launch Modes	Immediate start and delayed start
Offload Modes	Offload while logging; stop and offload
Battery Indication	Battery voltage can be viewed in status screen and optionally logged in datafile. Low battery indication in datafile.
CE	The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).

* Water Level Accuracy: With accurate reference water level measurement, known water density, accurate Barometric Compensation Assistant data, and a stable temperature environment.

** Raw Pressure Accuracy: Absolute pressure sensor accuracy includes all sensor drift, temperature, and hysteresis-induced errors.

*** Changes in Temperature: Allow 20 minutes in water to achieve full temperature compensation of the pressure sensor. Maximum error due to rapid thermal changes is approximately 0.5%.

Logged data can be presented in tabular format, in addition to graphs.

Data can be easily exported to spreadsheets within a few clicks.

Zoom tool lets you focus in on data of interest.

The Series Statistics pane includes the number of samples, average reading, and sample time.

Powerful analysis tools extract key information from logged data.

HOBOware Pro CD or USB Drive (USB Cable Included) Software

BHW-PRO-CD • BHW-PRO-USB

Important Info:

A USB cable is included with BHW-PRO-CD and BHW-PRO-USB. HOBOware data logger software must be purchased one license per computer. See License Agreement for more details. HOBOware Pro is non-refundable upon receipt of software license key.

Overview

Powerful, Intuitive, One-of-a-Kind: Put your data to productive use with HOBOware® Pro software.
Plot or export data to spreadsheets to conduct analysis necessary for your project.
HOBOware® Pro is easy to set up and its intuitive, point-and-click interface makes it simple to run.
This data logging application is compatible with all HOBO data loggers and wireless data nodes.

Highlighted Features

- Powerful software for logger management, data graphing, data analysis, and data export
- Data Assistants and Real-Time Alarm Plug-ins provide advance data analysis, monitoring and notifications
- Mac and Windows compatible (see system requirements)

The country of origin for this product is the United States. To see the full specifications for this product, please see our product manual found under the documentation tab if available.

System Requirements:

HOBOware 3.7.13 has some basic common System Requirements that are presented in the list below. If using HOBOware as the data collection server for a network of Indoor Wireless HOBO data nodes you may want to consider the configuration guidelines provided in the table. There are more detailed configuration recommendations available on the Onset Web site at http://www.onsetcomp.com/tech-note/hoboware-performance.

- Windows: Windows 8 and 8.1 (Core, Pro), Windows 7 (Pro, Ultimate and Home Premium), Windows 10 (Home, Pro).
- Windows 7 Enterprise: Note: While HOBOware has been modified to work on Windows 7 Enterprise, there may be local configurations of that operating system that will not work with HOBOware.
- Mac: OS X Versions 10.9.x, 10.10.x and 10.11.4+ and 10.12.x.
- Java Runtime Environment (JRE) 1.7.0_17 and above (32-bit or 64-bit on Windows). Please note that version 1.6, also known as Java 6, is no longer supported. See the time zone note below.
- One of the following Internet browsers: Safari 7 and 8, Microsoft Internet Explorer 10 and 11, as well as the most recent versions of Firefox and Google Chrome.
- Minimum screen resolution of 1024x768. Recommended screen resolution of 1280x800 or greater particularly for non-English users.
- 256+ colors
- Processor Speed, Memory and Disk Space

	High End	Mid Range	Low End	Lowest End
CPU	2.9 GHz	2.0 GHz	1.8 GHz	1.8 GHz
	dual core	dual core	single core	single core
RAM	3 GB	2 GB	1.5 GB	1 GB
Disk Space	256 MB+ (see note)	256 MB+ (see note)	256 MB+ (see note)	300 MB
User Model	4	3	2	1

The User Model row suggests some guidelines for using the Processor Speed and Memory table:

User Model 1 - Using HOBO Data loggers only, no data nodes - traditional desktop user
User Model 2 - Using HOBO Data loggers and up to 5 data nodes, 20 sensors
User Model 3 - Using HOBO Data loggers and up to 50 data nodes, 100 sensors
User Model 4 - Using HOBO Data loggers and up to 100 data nodes, 200 sensors

Disk Space – Defining the disk space requirements for HOBOware depends on the proposed use. The table above describes the disk space needed for a traditional desktop user, allowing for installation of the program and storage of data files. For users of HOBO data nodes, the space requirements depend on a variety of factors, including the number of nodes, the number of sensors, the frequency of data sampling, the longevity of deployments, and other factors. Please see the FAQ on the Onset Web site for more details, at http://www.onsetcomp.com/support/loggers

NOTICE

HOBOware 3.7.11 is built with Java 1.7.0_71 on Windows and on OS X. HOBOware no longer runs on Java 6. Use of Java v1.4.x, Java 5 and Java 6 are specifically no longer supported.

HOBOware 3.7.11 on Mac is built for OS X 10.9 as a minimum. While HOBOware may run using a previous version of OS X, earlier versions of OS X are specifically no longer supported.

HOBOware 3.7.13 is not certified to run on Java 9. It is certified for Java 7 and Java 8. NOTICE - HOBOware will be dropping support for Java 7 in a future release.

HOBOware 3.7.13 is not certified to run on macOS 10.13 (High Sierra). It is certified for OS X 10.9.x, 10.10.x, 10.11.4+ and macOS 10.12.x.

HOBOware 3.7.13 is not certified to run on Enterprise versions of any version of Windows and is not certified to run on Server versions of Windows. It is certified to run on Windows 7 (Pro, Ultimate and Home Premium), 8 and 8.1 (Core, Pro) and 10 (Home, Pro).

Time zone note: Regardless of the Java runtime version in use, it is up to every user to ensure that their Java installation is up to date regarding the Olson Timezone Database for their locale. Please see this article on the Oracle Website that discusses the topic:
http://www.oracle.com/technetwork/java/javase/timezones-137583.html