Field Guide to Quick Deployment Thermocouples

This guide is intended to outline all of the steps & associated details necessary to: 1) Launch your data logger, 2) Trigger the logger, 3) Place the thermocouple in the field, and 4) To stop the logger and save the data after the burn. Be sure to read the complete manual prior to thermocouple use.

1) Prepping the Data Logger for use:

Launching the logger should be done the day of the use, before the logger is paired with the housing unit and brought to the field unless a laptop is used to launch them in the field.

Open Hobo-ware

Connect data logger to USB port.

In the lower left hand corner, you should see " Dev: HOBO ...Thermocouple JKST,..."

Under the **Device** drop-down select **Launch**. Select **OK**.

Make sure battery level is not too low.

In **Channels to Log**- Make sure only box 1 is checked. This will save battery life. Only check box 2 if interested in what temperatures the logger itself is experiencing.

In **Logging Interval**- Make sure it is set to 1 sec.

In **Launch Options**- Make sure Trigger is selected. (this allow you to start the thermocouple in the field by pressing a button)

Hit **Launch**. Light on logger should now be blinking every 8 seconds or so.

2) Trigger the Logger (how to start logging temperature)

Triggering the data logger will be conducted prior to conducting your burns. (note: from starting the loggers, you have approximately 8 hours of logging)

Remove the logger from the housing unit and hold the black button for at least 3 seconds.

You should see that the red light is blinking more rapidly, once every second.

Connect the logger to the thermocouple and close housing unit.

Deploy logger in burn area according to experimental design and ensure the housing unit will not melt (bury or cover with wet towels).

3) Thermocouple Placement (how to install this in the field)

After you have triggered the logger in the field, assure the red light is blinking, and then begin to place the unit on the desired site

Lay the wrapped case in the desired location underneath the vegetation, attempting to leave the area relatively undisturbed

Part vegetation and lay thermocouple wire, as close to bare ground as possible.

Using landscaping pins, stake down the wire to the ground, to secure it from moving.

Roughly 2 inches from the tip of the wire, pin the wire down so the tip is elevated from the surface of the ground approximately 1cm.

Restore vegetation to previous condition (fluffing if necessary, similar to "leave no trace")

Record the position of each data logger on a map of the area by the number on each of the data loggers

4) Stop the Logger and Save Logged Data

After you are done with the burns, removed the thermocouple units and return them to the office or lab for data retrieval

Open Hobo-ware and connect logger as instructed above.

Under **Device** drop-down, select **Stop**. Hit OK-Yes.

Under **Device** drop-down, select **Status**. Look over battery level and memory used. Select OK.

Under **Device** drop-down, select **Readout**. OK. Label hobo file and place in appropriate folder. If you want to see the data: When plot setup window appears, hit Plot.
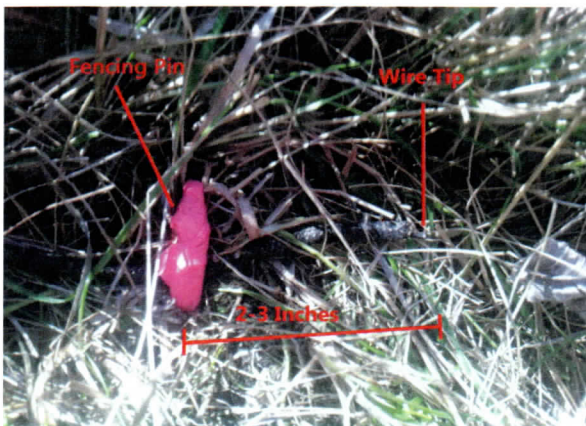
Note: To ensure logger data is not lost, save the logged data every time the logger is stopped. When The logger is re-launched, the data will be erased.

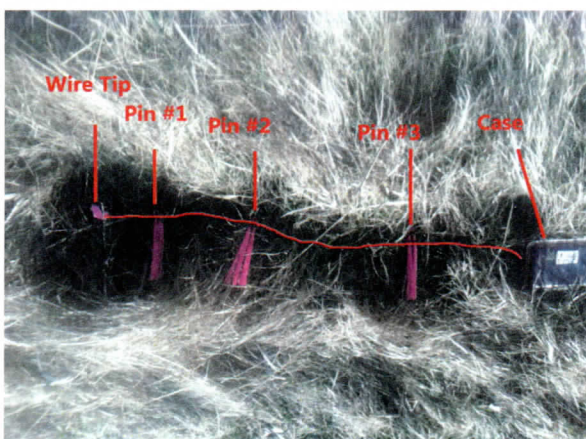Fully Set-up Quick Deployment Thermocouple
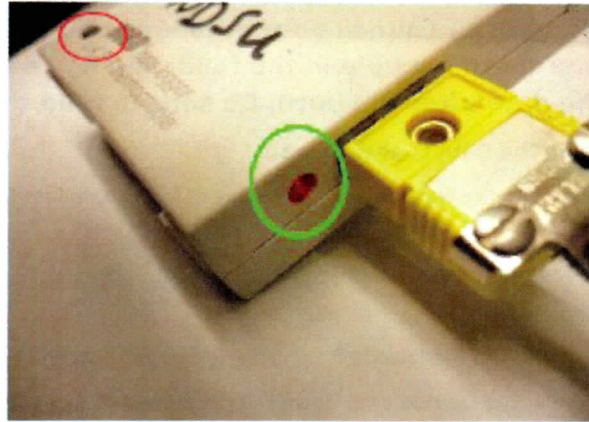
Red light blinking circled in green. Black trigger button circled in red.
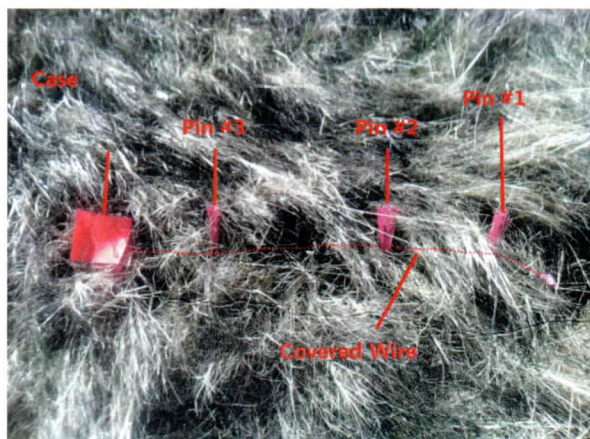

Thermocouple wire pinned to the ground

Thermocouple wire pinned down to the ground. Red line signifies 2 cm gap between ground and tip.

Thermocouple wire pinned to the ground, with vegetation parted.

Thermocouple unit fully set up, vegetation restored and ready to burn!

HOBOware for PC and Mac, Version 3.2.1

Last updated June 30, 2011

Welcome to HOBOware. This version of HOBOware is available to customers of Onset Computer Corporation under the terms of the Software License Agreement contained in the installation programs. This agreement is also available via the Onset Web site at
http://www.onsetcomp.com/corporate/policies/software-license-agreement

Installation of HOBOware software:

PC Users: Please double-click "HOBOware_Setup.exe". When the installer comes up, follow the instructions. If you do not have a supported version of Java (1.6_22 or later) installed, the installer will install it for you. HOBOware will inform you if your Java version is not up to date. Please see the note below regarding the latest version of Java.

Mac Users: The procedure will vary depending on whether you are working from a product CD or a downloaded installer file. If using a CD, please double-click "HOBOware.pkg" and follow the instructions. If you have downloaded the installer, please double-click the file named   HOBOware_Installer.dmg, then double-click the HOBOware.pkg file.   You must have a supported version of Java (1.6 or later) already installed. Java SE 6 1.6.0_22 is available for OS X 10.5 in Mac OS X v10.5 Update 9. Java SE 6 1.6.0_24 is available for OS X 10.6 in Mac OS X v10.6 Update 4.

Using the HOBOware Updater:

PC Users: Please double-click "HOBOware_Updater.exe". When the installer comes up, follow the instructions. You must have HOBOware currently installed for the Updater to succeed. Please see the note below regarding the latest version of Java.

Mac Users: Please double-click "HOBOware_Updater.dmg file, then double-click the HOBOware_Updater.pkg file and follow the instructions. You must have HOBOware currently installed for the Updater to succeed.

Before double-clicking the updater file please make sure that HOBOware has been shut down.

Please Note:

Sample datafiles are contained in the installer and updater, and are also on the CD. On the PC, these files are also installed in the common documents area at \Documents and Settings\All Users\Shared Documents\HOBOware Public Files\Sample Datafiles for Windows XP and \Users\Public\Documents\HOBOware Public Files\Sample Datafiles on Windows Vista and Windows 7. On the Mac, these files are installed in the user's Library/Application Support/HOBOware folder.

The Java Runtime Environment (JRE) for Windows, available from Oracle America, Inc., is also supplied on the HOBOware product CD, in the Java-JRE folder.

System Requirements:

HOBOware 3.2.1 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/support/knowledgebase/hoboware-30-performance

* PC: Windows 7 (Pro, Ultimate and Home Premium), Windows XP Pro, Windows XP Home, Vista Business, Vista Home Premium

* Mac: OS X Versions 10.5.x and 10.6.x.

* Java Runtime Environment (JRE) 1.6 (32-bit or 64-bit on Windows).   Please note that version 1.6, also known as Java 6, is officially supported on OS X only on Intel Core 2 Duo and later processors. See the time zone note below.

* One of the following Internet browsers (version number listed is the highest major version we tested): Safari 4 or greater, Firefox 3 or greater, Microsoft Internet Explorer 8.0.

* Minimum screen resolution of 1024x768

* 256+ colors

* Processor Speed, Memory and Disk Space

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

* Alarm & Readout Tool Additional Requirements:
    * Continuous Internet connection and access to SMTP service to send notifications
    * One or more of the following:
        - Email account (to receive email notifications and/or readout data)
        - Alphanumeric pager (to receive text message notifications)
        - Text-message enabled cell phone (to receive text message notifications)
        - FTP account (to store readout data to an FTP location)

NOTICE

HOBOware 3.2.1 is built with Java 1.6.0_25 on Windows and on OS X. While HOBOware may run using a previous or later version of the Java JRE, version 1.6.0_22 is recommended as a baseline.   Use of Java v1.4.x and Java 5 are specifically no longer supported.

HOBOware 3.2.1 on Mac is built for OS X 10.5 as a minimum.   While HOBOware may run using a previous version of OS X, earlier versions of OS X are specifically no longer supported.

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

New Features added in HOBOware 3.2.1
* The integration of the Alarm and Readout Tool, which is now automatically installed and available for use from the Tools menu (HOBOware Pro only).

* HOBOware 3.2.1 is an English-only release.

* A revision to the calculation for the S-SMD Soil Moisture sensor ensuring data is displaying accurately.

* The ability for all non-administrator users to run HOBOware on Windows (administrator privileges are required to install HOBOware, map and unmap file associations, and load new Data Assistants.)

* Compatibility with iMac, MacBook Pro and Intel Core i5 and i7 processors.

* The option to create new files or overwrite existing ones via FTP when using the Data Delivery feature for HOBO Data Nodes. This allows you to automatically import wireless node CSV data into other applications, such as Microsoft Excel (HOBOware Pro only).

* Macintosh support for the U24 series loggers.

* Several other high priority bug fixes.

Known Issues:
* Loggers launched in HOBOware 3.2.0 cannot be read out in earlier versions of HOBOware.

* The Bulk Export Tool preference to include YAML headers currently does not result in YAML headers being created. This will be addressed in a future release of HOBOware.

* When running on a non-English desktop there is the remote possibility that you may encounter a problem bringing up the Launch window.   This has been found to be a conflict in a few locales when using the 12-hour time format, and has been corrected for all tested locales.   To get around the problem should you encounter it please go to Preferences, and under the Display category, in the Date/Time section, change the Time Format to 24-hour.

* From the Export Preferences pane, if selecting the option, "Include sensor serial number, or label if available," in order to export the label string, you must also select the option, "Include sensor Label (if available) in points table and details pane," in the Plotting Preferences pane.

* When running in a French locale please be aware that the keyboard accelerator keys have not been changed to adapt to the French language.   For example, the key to select the crosshair tool when plotting is C regardless of the language of the user interface. Please see the application Help for details

on these accelerator keys.

* It has been reported that the NOD32 virus detection program from ESET.com reports an embedded Win32/Adware.LastDefender spyware application in the HOBOwarePro_Updater.exe program.   This has been reviewed with ESET and has been identified as a false positive.   To our knowledge, after scanning the installer and updater programs prior to releasing them, there is no spyware or malware embedded in our installers or updaters.

* When launching a HOBO Pendant with only events enabled (no temp, no battery logging), HOBOware correctly sets the logging interval to one hour (so the battery doesn't drain), but incorrectly sets the internal information used by shuttles to re-launch the logger to a one-second interval. This is OK for the initial launch, but if the logger is re-launched with either the U-DT-1 or U-DTW-1 shuttle it starts "logging" at one second, draining the battery.   It isn't logging data since it isn't supposed to, but it does wake up once a second, causing the battery to drain faster than expected.

* The new icon(s) may not show up immediately after installation.   Generally this will fix itself after a reboot.

* Plots with series that logged over the Spring or Fall time change will not display the time change.

* Occasionally HOBOware may report that communications with the logger failed - just retry the operation.

* While in a locale which formats numbers as follows "123 456 789,00", when entering a number in an input field, do not use the spacebar to input the grouping separator. The grouping separator is a no-break space character, and the spacebar will insert a space character, which the input field will treat as an invalid character. It is best to enter the number without any grouping separator(s) and when you leave the input field, the value will format itself correctly.

* When a serial logger (HOBO Weather Station, HOBO Micro Station, HOBO Energy Logger) is awaiting an interval, delayed, or button start, the sensor readings are not updated in the Status window. This is a hardware limitation. When logging begins, sensor readings will update as usual.

* At low screen resolutions (1024x768), plots with many series (and therefore many Y axes), may initially display too small.   A message "Plot Panel Too Small" will display across the plot when this occurs.   To see the plot, try maximizing HOBOware to full screen size.   If this does not work, try hiding the details pane and points table.

* Changing the units of a series using the right-click menu item "Convert Series Units" will work for everything except the Y-axis values used by that series. Use the Main Menu item "Edit | Convert Units" or the Toolbar button "Convert units for all series" instead.

* The HOBO U14 can be launched without the Temperature channel or the Relative Humidity channel selected, although there will be a warning about this condition. The logger will continue to display current conditions of those channels, but no data will be logged and alarms will not work.

* The battery state for the HOBO U23 loggers (-001, -002, -003 and -004 versions) is shown as Good at battery voltages above 2.85 V. The battery state should be shown as Good only when the voltage reads 3.1 V or higher.

* Users of the HOBO Energy Logger (H22-001) may find that they are warned, "The battery voltage on this logger is too low to use excitation power." This warning is sometimes given even when the battery voltage is high enough to supply excitation power. We suggest that you make your own decision based on the voltage reading from the Status window or from the battery gauge near the top of the Launch window.
    That dialog's warning should not be confused with the dialog whose text, "This logger's battery is very low..." is only issued when the logger battery is dangerously low. You should NOT ignore this dialog's warning.

* The Bulk Export Tool preferences may not show up in the Preferences window under some circumstances. Closing the Preferences window and re-opening usually corrects the problem.

Windows Only:
* If you are receiving a User Access Control warning every time you start HOBOware 3.2.1, be sure that you are not running HOBOware in Compatibility mode. To check this, right-click the HOBOware desktop shortcut, go to the Compatibility tab and uncheck the Compatibility options particularly that for "Run as administrator".

* HOBOware does not support roaming user profiles.

* By default, HOBOware maps all .hobo and .dtf files to itself. This will remove the mapping from GreenLine or BoxCar Software. If you would like to remap the file types to the original software, use the Map/Unmap buttons in the General pane of HOBOware Preferences. To use the Map/Unmap feature you'll need to run HOBOware with administrator privileges, otherwise you get a series of "error modifying registry" messages. Even while running as administrator, occasionally the Map/Unmap buttons in Preferences may produce an error message. Simply click the button again and the mapping should proceed properly.

* If the logger you plug in has never been seen by your computer before, the Found New Hardware balloon will appear next to the Windows Taskbar and any default action on plug will not work. If you wait until the system informs you the device is ready and unplug the logger and plug it back in, the default action on plug will then happen.

* When exporting points to Excel, it is possible that the resultant Excel file may not open in the exact same format when opened in Excel on a Macintosh system.

* When exporting details to text, it is possible that the resultant text file may not open in the exact same format when opened in a text editor on a Macintosh system.

* As described in the manual, bitmap images of the graph can be pasted directly into many applications. However, the following steps are needed to paste the graph into a WordPad document:
From the Insert menu, choose Object.
In the Insert Object dialog, click the Create New button.
Choose Bitmap Image from the list. Click OK. This should create a frame in your document.
From the Edit menu, choose Paste. The graph should appear within the frame.

Windows Vista Only:
* While at the time of this writing there are both 32 and 64 bit Vista-compatible Keyspan drivers available from Keyspan's website for the Keyspan USB-to-serial USA-19HS, there are no Vista-compatible Keyspan drivers available for the older USA-19QW adapter. The Keyspan Serial Assistant won't recognize the device, nor does Vista. Please ensure that if you need to use a Keyspan USB-to-serial adapter you are using the USA-19HS device.

* At the time of this writing there is Vista-compatible device management software for Tibbo devices, but with limitations. This includes the Virtual Serial Port Manager, Connection Wizard and Device Server Manager. Please see the Tibbo web site for details (www.tibbo.com)

Mac Only:
* The original version of the Pendant Base Station has a known issue that results in slower communications with versions of HOBOware for Mac. This will not affect the validity of the data. Pendant Base Stations with serial numbers below #961469 have this problem. The serial number is visible through the clear plastic of the Base Station on a white label. Please check periodically for an update to HOBOware that addresses this issue, or contact Onset Computer Corporation Technical Support (www.onsetcomp.com) for a free replacement Pendant Base Station.

* At times, it is possible that the HOBOware menu enters a disabled state, where the items in the menu

are disabled. If you restart HOBOware, the menu will return to its normal state. Be sure to save any unsaved data before restarting HOBOware.

* When exporting points to Excel, it is possible that the resultant Excel file may not open in the exact same format when opened in Excel on a Windows system.

* When exporting details to text, it is possible that the resultant text file may not open in the exact same format when opened in a text editor on a Windows system.

* HOBOware for Mac may experience problems when using a Keyspan USB to Serial Adapter that is attached to a USB hub. It is recommended that Keyspan USB to Serial adapters be attached directly to the USB port on the computer to avoid this issue.

* On OS X v10.5 (Leopard), the Apple Help icons found in some HOBOware dialogs may not work if your default Web Browser (Safari or Firefox) is not already open. In some cases this may cause HOBOware to crash. If you experience this problem please update to the latest version of OS X.

Alarm and Readout Tool:

* **Support for UX120 and other upcoming loggers.** Alarm and Readout Tool currently supports all U-Series and serial logger types as were supported in HOBOware 3.1. Support for the new UX120 loggers and any other loggers supported after HOBOware 3.1 will be addressed in a future Alarm and Readout Tool update.

* **Support for U30 loggers.** Although Alarm and Readout Tool will support U30 loggers, please be aware that the USB port on U30's will time out after thirty minutes of inactivity. This means that Alarm and Readout Tool must poll the U30 at an interval of less than thirty minutes or the U30 will be come unreachable until the USB connection is unplugged and re-plugged.

* **Important note on scheduled readout** of **event** and **state data**. To do scheduled readouts of event or state loggers such as a U9 or a U11 with partial readouts, the battery channel must be logged to get valid timestamps. The battery logging interval can be as large as you want, up to the maximum – the only requirement is that the channel be enabled.

* Alarm sensor conditions cannot be set on event or state channels. For example, with U9 and U11 loggers, only the logger conditions (e.g. communication, memory, and battery level) can be monitored.

* If you communicate with a logger in HOBOware Pro while there is a monitor running on it, the monitor will report Communication Failure and/or Readout Failure as long as HOBOware Pro is accessing the logger (i.e. accessing means Launch, Status, Readout, or Stop window is open). Once HOBOware Pro is finished with the logger the monitor will clear the Communication Failure and resume running as expected.

* If a logger is being read by the monitor while you attempt to list available devices in HOBOware Pro, the logger being read may not appear in the list or you may get a communication error. It is best to wait until the monitor is not performing a reading, to list devices.

* Data Assistants and Filtered series preset from the Launch window cannot be used with the Alarm and Readout Tool. They will cause the Alarm and Readout Tool to read the data incorrectly.

* When importing text files created by scheduled readouts into HOBOware Pro, it is possible that not all Data Assistants will function properly. For example, if you attempt to use the Linear Scaling Assistant you may only get a title bar when clicking Process, leaving you unable to linearly scale any channels. If using Data Assistants is important to you, it is suggested that you enable the datafile format as well as the text file format when setting up scheduled readouts. This way you will be assured access to the Data Assistants when opening the datafile.

* When reading out files to text file format, data is always in SI. The HOBOware Preference for US/SI units is not followed.

* Loggers launched with multiple intervals cannot be scheduled for partial readouts.

* If you set up scheduled partial readouts on a serial logger that is wrap-enabled, and the logger wraps before the first partial readout then that readout will fail and the monitor will no longer attempt to read out the logger.

* If you set up scheduled partial readouts on a serial logger that is wrap-enabled, and the logger wraps more than once between readouts then data has been lost and there will be a gap in the data timestamps. Therefore that readout will fail and the monitor will no longer attempt to read out the logger.

* When performing scheduled readouts to text file format on a logger that was launched with alarm parameters (such as the UA-001 Pendant Temp/Alarm), these alarm parameters are not stored in the text file. When you import the text file into HOBOware Pro, there will not be alarm lines drawn on the graph. If you would like to have alarm lines displayed on the graph when opening the readout file, be sure to save to the datafile format.

* When importing an "empty" text file created by scheduled readouts into HOBOware Pro, it is possible that you will get an invalid plot. An "empty" text file is a file with just an End of File event. It is possible to get an "empty" text file if you are performing readouts on a logger that is on a delayed or triggered start.

* When performing alarm checks on a logger whose memory is almost full, if you have enabled the logger memory alarm condition to be tripped when the logger's memory is at N% or above, you may receive an errant < Memory 0% CLEAR > alarm notification in addition to the expected < Memory M %> alarm notification, where M is greater than or equal to N.

* For Mac users, the Launch Program notification method sometimes fails when passing in a file argument. Be sure to check that your Launch Program notification method settings are functioning before leaving a monitor unattended.

* If you have the Host Computer notification method enabled in addition to another notification method, such as Email or Text Message to Mobile Device, if this other notification method fails due to incorrect SMTP settings, lack of internet connection, or some other reason, then you will not be able to view the last notification in the Details window even though Host Computer is also enabled.

* When a serial logger (HOBO Weather Station, HOBO Micro Station, HOBO Energy Logger) is awaiting an interval, delayed, or button start, the sensor readings are not updated. This is a hardware limitation. This means that alarm conditions are being checked against readings that are not current and may result in FALSE or MISSED alarm conditions. When logging begins, sensor readings will be updated at the logging interval.

* If you (or an automated program) set your system time clock back in time after the monitor has started, the monitor will not begin responding again until you reach the time at which you turned your clock back. For example, if at 2:00:00 PM your system clock is set back to 1:56:00 PM, the monitor will not take readings again until the system clock reaches 2:00:00 PM. If you must adjust the system clock, it is best to stop the monitor, make your adjustments, and then start the monitor again. (This is not an issue when the system clock is automatically set back or forward to accommodate a known shift for Daylight Savings Time.)

* Optic loggers:
    - U20, U22, and TidbiT loggers in couplers go to sleep after 30 minutes to conserve battery power. They won't wake up unless you take them out of the coupler and then reattach them. If one of these loggers is added to a configuration, the interval needs to be less than 30 minutes to prevent the logger from going to sleep. Please note that keeping the logger continually awake will result in an increased battery drain.
    - UA loggers do not go to sleep, but their batteries run down faster when in the coupler, even when the logger isn't communicating.

* Starting with HOBOware version 2.7, the Alarm and Readout Tool stores its configurations and readouts in a new location on Macintosh computers. If you had a previous version of HOBOware or a previous version of Alarm and Readout Tool, these were stored in a Documents/HOBOware folder in subfolders named Alarms and Readouts. Now these folders are in the Library/Application Support/HOBOware folder off your Home folder. You can configure the Alarm and Readout Tool to change the location of where it stores the readouts and where is stores the alarm configurations, but it will continue to save its configurations in the old location unless you reset your Preferences. You can do this by changing the folder in the "Save as…" dialog or you can go to the Preferences dialog and choose "Restore Defaults". You will then need to change any of the preferences you may have changed before.

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Questions or comments?   Please direct to Onset Computer Corporation at
1-800-LOGGERS (1-800-564-4377) or support@onsetcomp.com