Project GreenHab

Notes on the Installation of BoxCar software and Onset HOBO Pro Data Loggers

BoxCar Pro is a software tool used to configure and extract data from onset Hobo and StowAway data loggers. It is compatible with all Windows 32-bit operating systems.

The version delivered to the MDRS is 4.3.1.1. Crews at the MDRS should retain the original software packaging box.

Included in the box are a CD containing the software, a hardcopy User's Guide, and a Serial cable.

Please note that the CD container has a label on it containing a software activation code. The installer should copy this number inside the front cover of the User's Guide and also enter it here:

At the completion of the install please edit a copy of this document with all the blanks filled in and email it to Gary Fisher gcfisheris@aol.com.

The software should be installed on a permanent MDRS computer. Installed, the software requires 6.75 megabytes of hard disk space. The computer should have a free serial port, or a serial port that can from time-to-time be freed up for use with the software and data loggers.

Please jot down information to identify the computer the software was installed on:

Computer: _____

In the hab, possibly in a wall cabinet to the left of the lab sink, is a label maker. The crew should make 3 labels using a medium size text reading: "Project GreenHab" and attach one label to the outside of the BoxCar box, the User's Guide, and the CD case.

During Installation you will be asked several questions.

The product activation code needs to be entered. The field presented is in two parts and the portion of the code before the dash should be entered in the first (left) field and the portion after the dash in the second (right) field.

The default location for the install is:

C:\Program Files\Onset Computer Corporation\BoxCar Pro 4.3

If the default location is not used please enter the drive and directory on the line below:

_____

Pick "Typical" for the installation type.

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When the install is complete you will need to restart the computer. Remove the CD and reboot. Note: some PCs may freeze up if the serial cable that came with the software is attached while the PC is running. To be safe you might shut down the PC, install the cable, then power up the PC rather than do a simple restart.

After the computer restarts you should ensure that the computer's clock is set to the correct time in the correct time zone.

You should also print off a copy of the BCPReadme.txt file in the BoxCar Pro 4.3 directory. This copy should be folded and stored in the software box with the CD and the hardcopy User's Guide.

Note that a PDF version of the User's Guide is available on the installation CD in a file called BCP 4.3 user guide.pdf . If space permits you should copy it to the PC as well.

Once the clock is properly set verify the installation worked, test the communications port, and also initially configure and launch the Hobo Pro data loggers.

The installation will leave an icon on the desktop that looks like a train box car and is labeled "BoxCar Pro 4.3". Use the icon or select the program by clicking through Start, Programs, Onset Applications, Box Car Pro 4.3. Do not start the program by clicking on the .exe file.

Follow the instructions in the User's Guide on page 3 to test the communications port. You will need a paper clip. It is tricky to hold the paper clip (or small length of wire) in the correct position on the end of the serial cable. You might find it is easier if you put the serial cable jack on a nonconducting surface and then press the paper clip to it as shown on the Communication Port Test window. Set the Baud Rate to the highest value that still gives a Good Connection reading when doing the test. Three hands would be helpful.

Please jot down the values used:

Logger Serial Port: COM___ Baud Rate: _____

The next task is to configure the data loggers. The three types of data loggers sent are:

HO8-030-08 Onset 64K HOBO Pro Temp (single channel) –22 deg F to +122 deg F
HO8-031-08 Onset 64K HOBO Pro Temp/external, 2 channel
HO8-032-08 Onset 64K HOBO Pro RH/Temp

Note that a serial number sticker and sticker from the supplier, MicroDAQ, is also on each. I would appreciate it if 3 more labels with the word "GreenHab", using the smallest font, could be made up and applied to the data loggers.

Please retain the plastic boxes the data loggers came in. Leave the User Manual sheet in the plastic boxes and store them in the Pumps and Timers storage bin in the hab.

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In addition to the data loggers a TMC6-HD 6' Water/Soil Temperature Sensor was also sent. This sensor is to be installed in the HO8-031-08 to replace the standard issue sensor. The TMC6-HD is better able to tolerate dirty water and has a broader temperature range.

Before configuring the HO8-031-08 (TET1) data logger this sensor replacement should be performed. You will need a Phillips head screw driver to carefully remove the steel back plate of the data logger. You will need to unscrew, using your fingers, the gray cap where the sensor wire enters the sensor. Remove the back plate screw and remove the back plate. Inside will probably be a small bag of sorbent. When finished, you will put the sorbent bag back inside. You will see where the sensor jack plugs into a black socket on the circuit board. Carefully pull the sensor jack out. With the gray cap nut unscrewed you can pull on the sensor wire to pull out the sensor. It looks like it will not make it through, but a firm straight pull will extract it. Save the sensor in the Pumps and Timers box in the hab.

To insert the TMC6-HD sensor it might help to wet the plastic at the jack end or use some petroleum jelly, being careful not to get any on the jack. Remove the gray cap from the old sensor wire and put it on the TMC6-HD wire over the jack (not the sensor) end. Gently wiggle while firmly pushing to insert it through the rubber seal. Once through plug it into the socket. Put in the sorbent bag, replace the backplate and screw it down. Finger tighten the gray cap nut.

Each data logger has a roughly 3 cm high cylindrical protrusion that ends in a roughly 2 cm diameter cap that can be unscrewed. You must remove the cap to insert the serial jack into the data logger for launch or readout. There is another small protrusion on the data logger with a hole in it, that can be used to store the cap while it is removed. A small nib on the bottom of the cap should fit into the hole, however, the tolerances are not always good enough to ensure a tight hold. Once deployed care should be taken to not let the caps get lost or fall into some inaccessible corner of the greenhouse.

You will also notice that with the plug cap off you can observe the red LED that blinks when logging. The LED blinks brightly with every measurement, and weakly every two seconds if the interval between measurements is longer than two seconds.

An excel spreadsheet, DataLogDeployFS3.xls, was previously sent. This should be used to record the deployment and configuration of each data logger and any attached sensors on a wire. The "FS3" in the file name refers to Field Season 3 and each field season a new instance of this spreadsheet should be created. The spreadsheet should be placed in the same directory as the BoxCar Pro software.

Each time the data is read out from a data logger a Save As window will appear. The datafiles produced should be put in a unique directory for each field season. It is suggested that the directory be named:

C:\GreenHab\Datalog\FSn\ Where n refers to the field season number.

Please record the drive and directory created to hold field season 3 data here:

And also update the description in DataLogDeployFS3.xls.

Each data logger will be given a unique identifier that will be used in the Description and in the naming of the readout data files.

Please enter the following settings when using the Launch window under the Logger menu for each of the data loggers.

Logger	Description	Interval	Channels turned ON
HO8-030-08	TMP1 GH Outside N End	1 Mins (22 Days, 16 Hrs, 5 Mins)	1,2
HO8-031-08	TET1 GH Floor & AT3	1 Mins (22 Days, 16 Hrs, 5 Mins)	1,3
HO8-032-08	RHT1 GH Center	1 Mins (22 Days, 16 Hrs, 5 Mins)	1,3

Each data logger should go through the Launch process one time to replace the default description and set up the Interval and the channels set to what is shown above via the Enable/Disable Channels… button. The reason the TET1 and RHT1 data loggers have channels turned off is one, we do not need the higher resolution, and two it permits the full duration of data logging at an interval of 1 min to be the same for all the data loggers.

The first time you start the data loggers it will probably be to test them in the hab rather than in the greenhouse. In order to get data that represents the same set of time you use the Delayed Start option. It should be checked and then use the pulldown for the date (note that at the bottom of the calendar is a Red circle with "Today" written next to it; clicking on Today will jump the calendar to today's date) and then click on the HH MM or SS parts of the time indicator to set the time. Note that time is specified using a 24 hour clock. You can pick a time long enough in the future so that you will have time to configure all the sensors and place them where you want to record before they start.

A HOBO Shuttle is being sent out to facilitate launching and reading the data loggers without having to remove them from their installed location. The Shuttle provides for temporary storage for moving data between the data logger and the PC.

A label can be made up and wrapped around the serial cable to stick to itself that explains that it is "Used with GreenHab data loggers".

When the data loggers are read out using the Readout option of the Logger menu item please set the Save in directory to be the one specified above and in the DataLogDeployFSn.xls spreadsheet for the current field season. Modify the File name to be the 4-character prefix for the data logger followed by the date as YYMMDD. Leave the extension as .dtf. For example, TET1040131.dtf for data unloaded from the HO9-031-08 data logger on Jan 31, 2004.

For further information on the Onset products you can consult the Onset website:

http://www.onsetcomp.com