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**OTT Orphimedes
Direct to PC
using an IrDA LinkIt Adapter
Sensor Interface Manual
Revision 07.09.25**

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About NexSens Technology, Inc.

NexSens software and real-time data logging systems are designed to simplify the setup and operation of environmental monitoring networks. NexSens products automate much of the tedious programming, data collection, and manual data processing common with other systems.

iChart is an easy-to-learn, easy-to-use Windows-based software program designed to interface with the industry’s most popular environmental monitoring sensors and systems. A large multi-vendor instrument library makes setup quick and easy. iChart automates much of the tedious programming, data collection and manual data processing common with other environmental data collection systems.

The NexSens iSIC (Intelligent Sensor Interface and Control) is a state-of-the-art line of data loggers that simplify the collection of real-time data from environmental sensors and monitoring instruments. The iSIC data logger supports multi-vendor sensor connections and is designed for environmental data monitoring with NexSens communication equipment and software.

How to Use This Manual

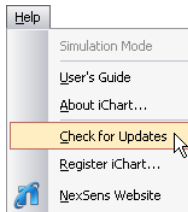
This manual is designed to provide you with detailed instructions for interfacing specific sensors to the NexSens iSIC data logger.

This manual provides you with all the information needed to interface your sensor with the iSIC data logger. For advanced system and sensor reference material:

- Review the material in the iSIC operations manual:
 - <http://www.nexsens.com/support/manuals.htm>
- Review the sensor manufacturer’s operations manual. This information should have been provided with the purchase of the sensor. This material can also typically be found at the instrument manufacturer’s website. If you are still having difficulty, email your technical support question to:
support@nexsens.com

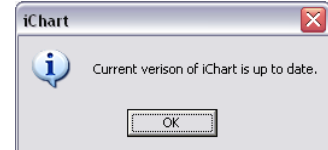
Keeping iChart Up to Date

NexSens periodically releases new versions of iChart software and iSIC firmware to be downloaded free of charge. The updated versions typically add new features, improve existing features, and/or add more reliability to the system. It is important that iChart is updated to the latest version before connecting a new sensor to your iSIC data logger. Your computer will require internet access to update automatically.

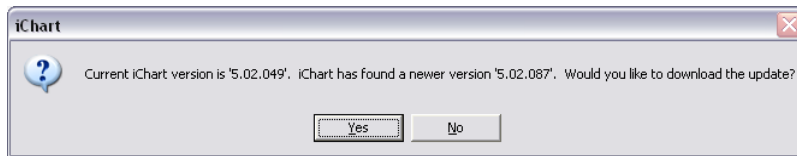


To obtain the latest version of iChart software, open the program on your computer. In the **Help** menu, select **Check for Updates**.

If your software is up to date, iChart will confirm that your computer is running the current software release.

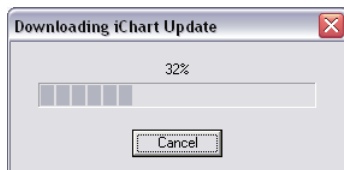


If a newer version of iChart is available, a dialog box will appear asking if you would like to upgrade to download the update.



Click **Yes**. iChart will begin downloading the update.

Note: Depending on your connection speed, this update may take a few minutes. You can continue running other applications on your computer while the download is progressing.



When the update has finished the downloading process, click **OK** and close iChart.

Reopen iChart. When the program opens, iChart will automatically begin the installation process. Follow the step-by-step installation windows to complete the iChart software update.

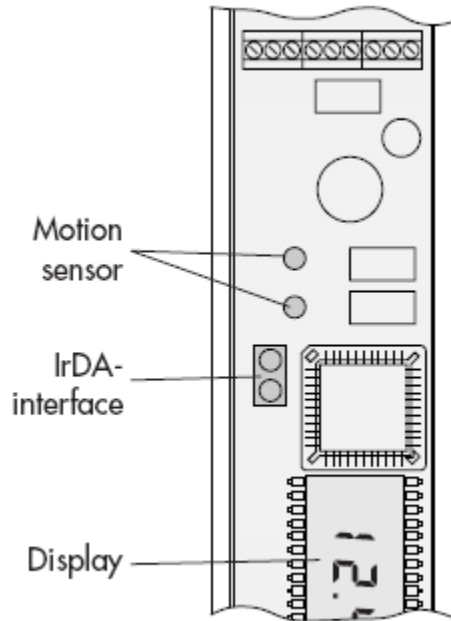
Note: If an internet connection is unavailable on the computer, iChart can be downloaded onto another computer and then moved to the computer where it needs installed. The latest version of iChart can be downloaded here:

<http://www.nexsens.com/support/downloads.htm>

Wiring – Infrared IrDA Link-It Adapter

An OTT Orphimedes can communicate directly to a PC using infrared with an IrDA Link-It adapter.

For IrDA Link-It adapters, no wiring is required. When the display is powered, the Orphimedes can communicate directly to the PC by pointing the Link-It adapter at the IrDA interface LED's.



Note: not shown is the C-cell batteries for powering the Orphimedes as the Orphimedes cannot be powered from an external power source. For all customers, we recommend replacing the Orphimedes battery whenever the battery reaches 1 to 1.1V.

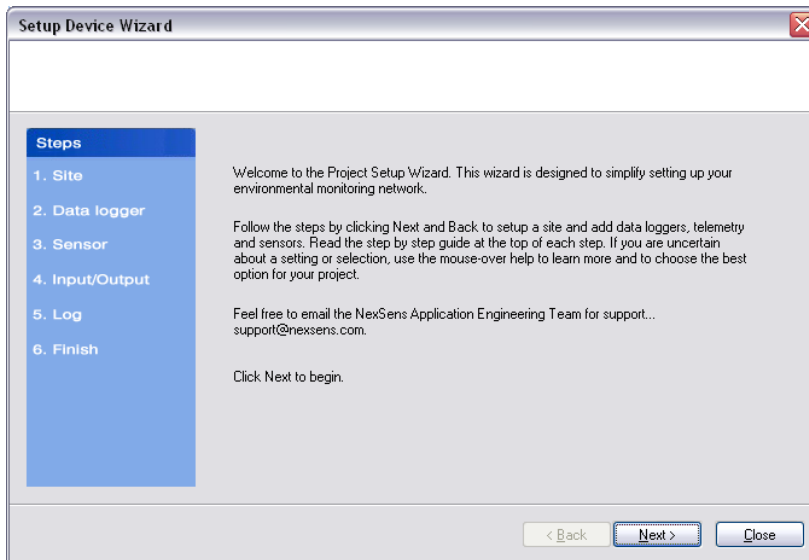
Adding to iChart

NOTE: The Orphimedes must be powered and connected to the computer (an IrDA Link-It adapter facing the IrDA LED's) running iChart before it can be configured.

Once all wiring is completed, the device is ready to be added to an iChart database. To add the device to an existing database, select **Instrument | Add Device**. To create a new database, select **File | New Project**.

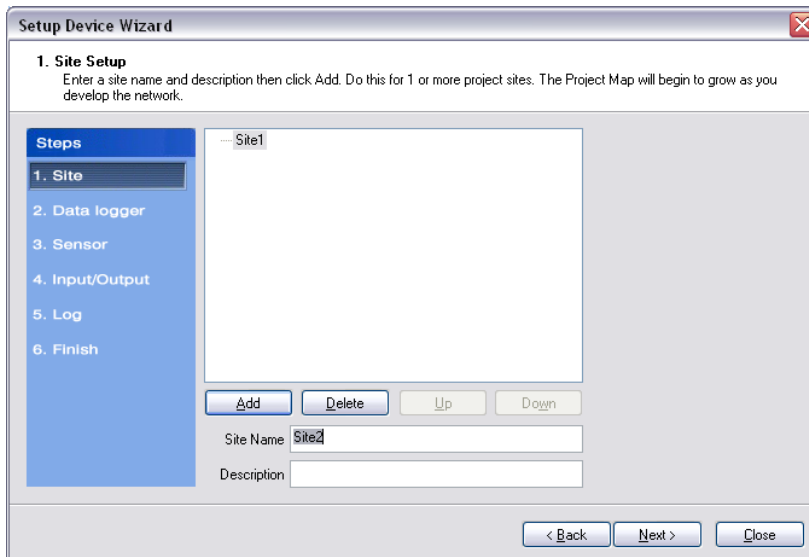
Setup Device Wizard

The Setup Device Wizard will begin. Click **Next** to continue.



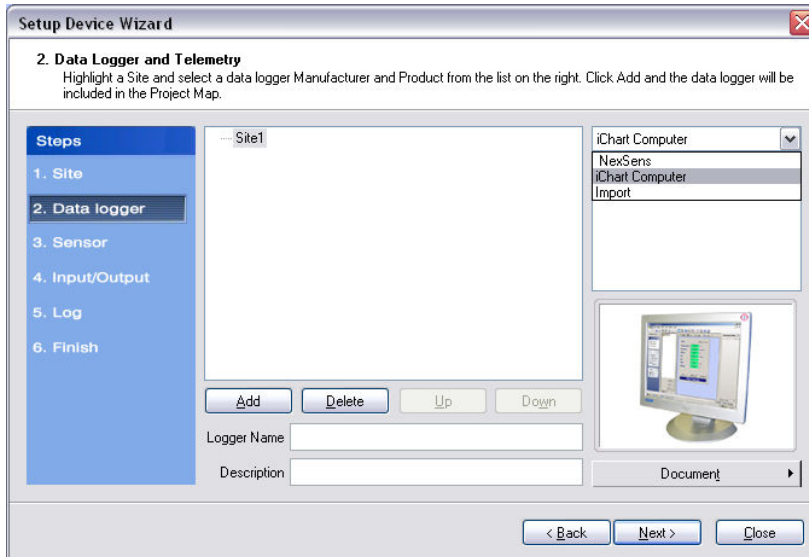
Step 1 – Site Setup

The first step is to create a site for data loggers and sensors to be located in. If this is an existing project, sites may already exist. Enter a **Site Name** and click **Add**.

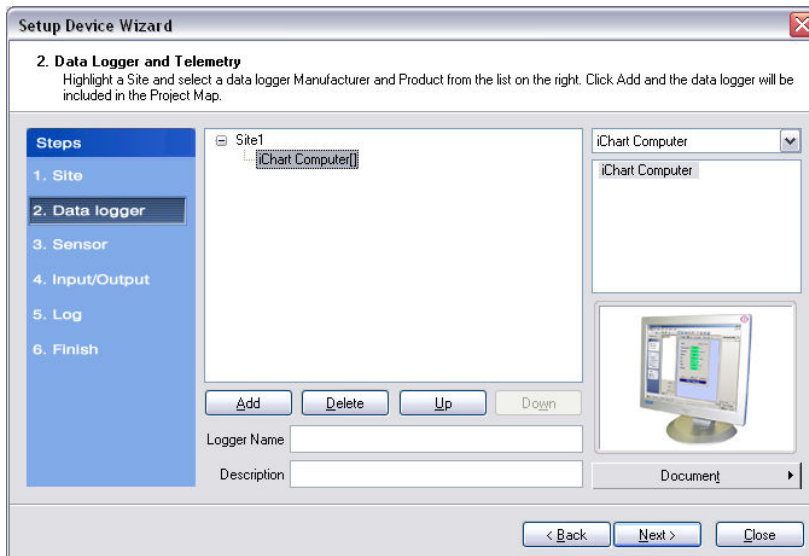


Step 2 – Data Logger & Telemetry

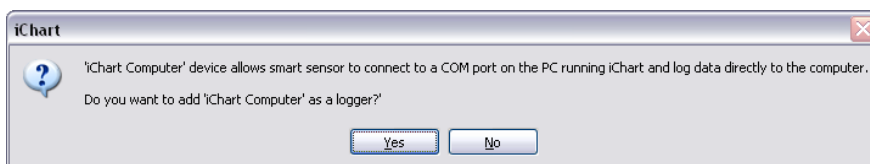
The next step is to add the data logger(s) to the sites created in the previous step. Select a site to add a data logger to. Then select **iChart Computer** from the data logging drop down list.



Click **Add** to add the **iChart Computer** device to the selected site.

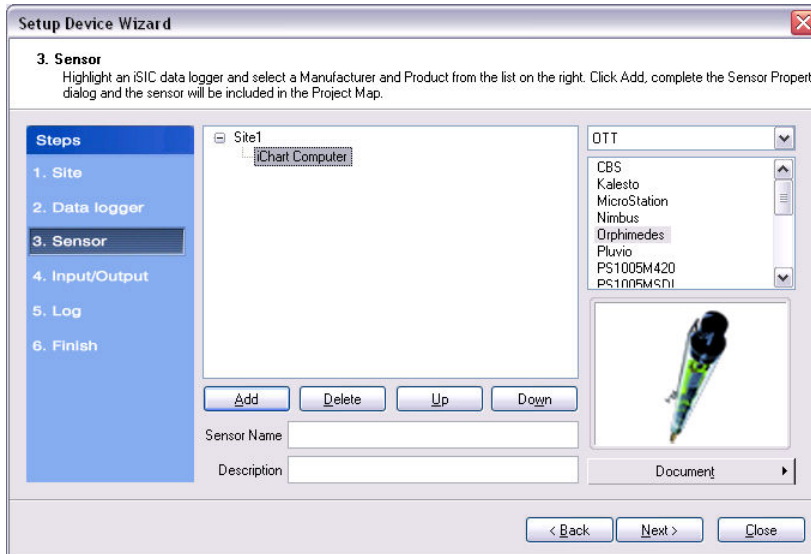


iChart will pop up a warning message letting you know that when a device is connected to the **iChart Computer** device, it will log data directly to the computer. Click **Yes** after reading the message.

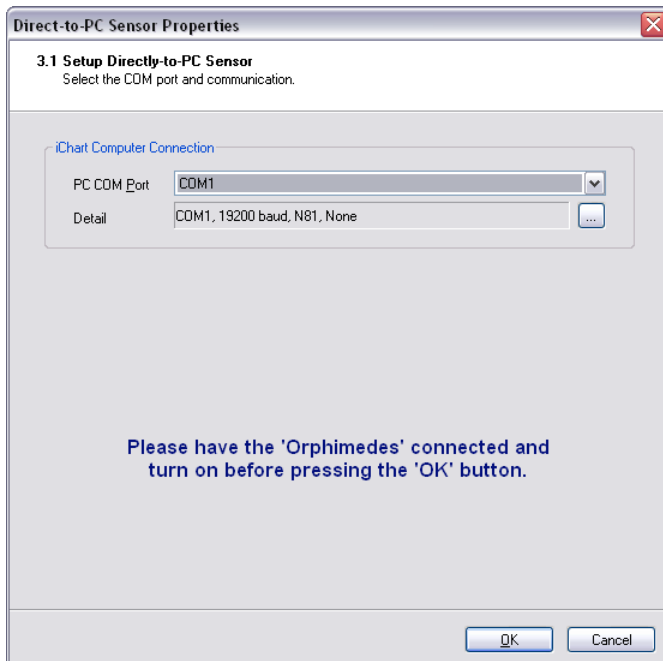


Step 3 – Sensor

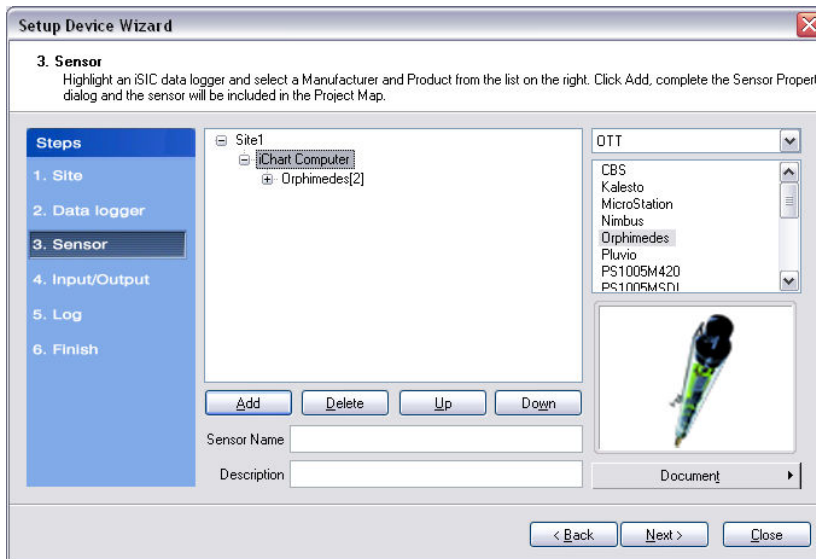
After selecting a data logger, click **Next** and select **OTT** from the drop-down list of manufacturers. Then select the **Orphimedes** model and click **Add**.



The **Sensor Properties** dialog box will come on the screen. Select the COM port the IrDA Link-It adapter is connected to. Make sure the Orphimedes is powered before performing this step. See the troubleshooting section of this manual for more information if iChart is unsuccessful in communicating with the Orphimedes.

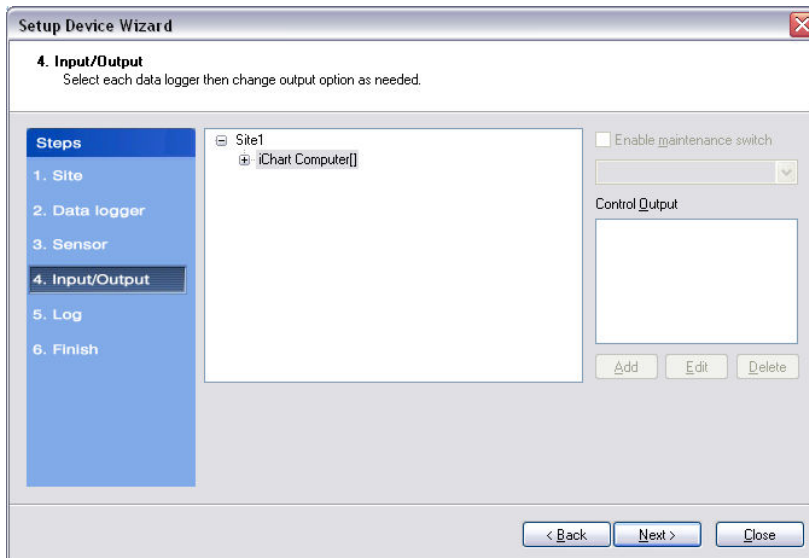


Click **OK** and the sensor will be added to the selected data logger. More sensors can be added at this time by selecting the sensor manufacturer and then sensor model number from the drop down menu on the right. Click **Next** when finished adding sensors.



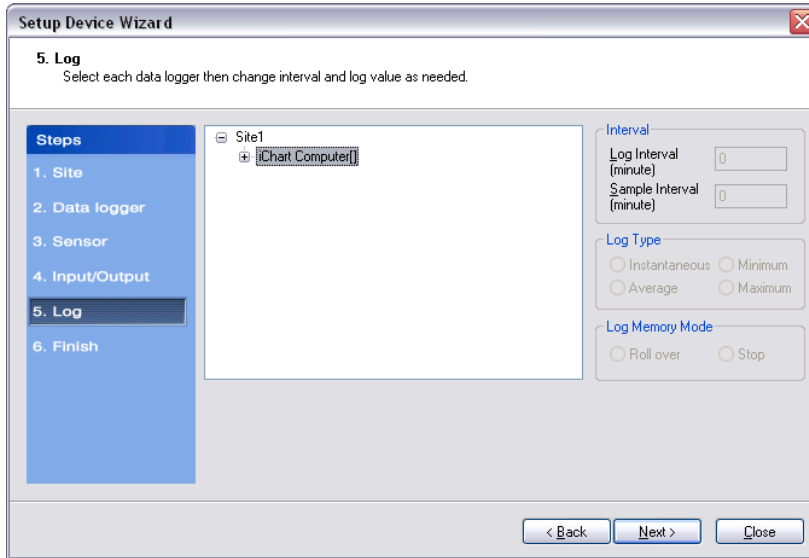
Step 4 – Input/Output

Click **Next** on the **Input/Output** tab, as the WXT510 directly to PC does not have any control capabilities.



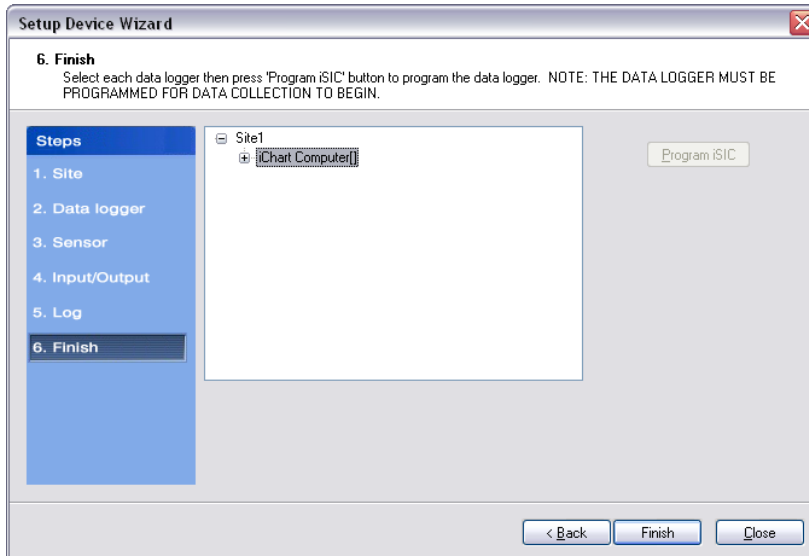
Step 5 – Log

Click **Next** on the **Log** tab, as the direct to PC log and sample interval is not setup on this tab. This **Log** tab is for data logging devices, such as iSIC data loggers.



Step 6 – Finish

Click the **Finish** button to complete. No programming is required as the device has already been configured and setup.



After clicking **Finish** follow the next sections to configure the Orphimedes:

- Changing the storage interval
- Setting device time to PC time
- Calibrating the depth reading

Changing the Storage Interval

By default, the Orphimedes logs data every hour. If you would like to change this interval, simply select the Orphimedes from the Navigation panel and click the **Setup** button.

Orphimedes Menu

Select the desired storage interval from the **Storage interval**.

Click on the **Update Orphimedes** button to save your changes.

Update Orphimedes

Set device time to PC time

Make sure all data is uploaded before syncing the clock of erasing data storage.

When you first deploy your Orphimedes system it will most likely be necessary to set the Orphimedes clock to your computer clock. This makes sure that readings are taken at the exact time you think they are taken. Place a check in the **Set device time to PC time** checkbox.

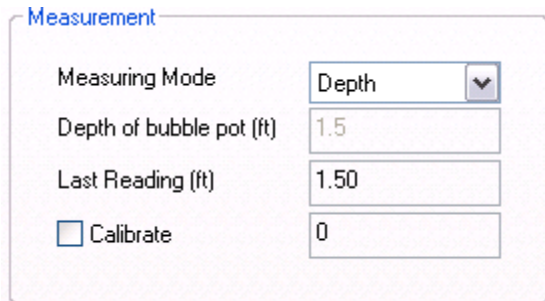
Then click on the **Update Orphimedes** button to set the clock.

After setting the **Orphimedes** clock place a check box in **Erase data storage** and clear the memory. This step is essential to ensure that data gaps do not appear in the device memory. (ie. If the **Orphimedes** is reading 9/01/06 and the PC is reading 9/28/06, when the clock is synced there will be a 27 day gap in the memory).

Calibrating the Depth Reading

After the Orphimedes has been deployed it will be necessary to calibrate the depth/level reading.

To do so, simply hit the **Setup** button in the main instrument screen and go to the **Orphimedes** tab.



The screenshot shows a 'Measurement' settings window with the following fields:

Measuring Mode	Depth
Depth of bubble pot (ft)	1.5
Last Reading (ft)	1.50
<input type="checkbox"/> Calibrate	0

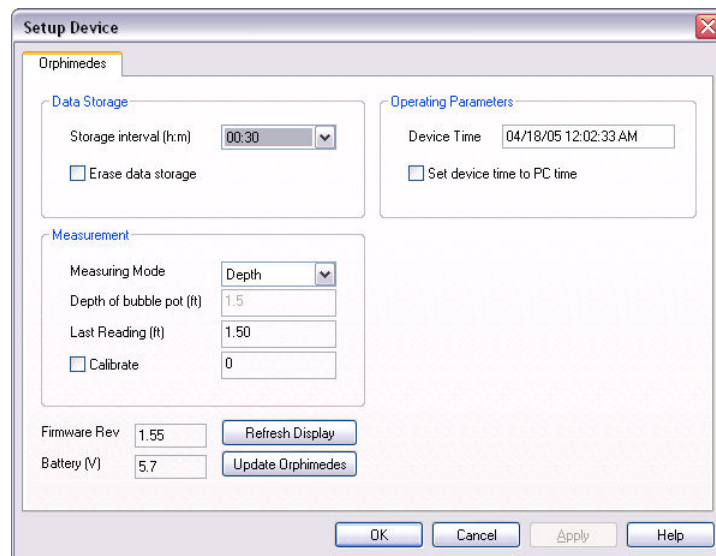
Place a check mark next to the calibrate button and enter the value in feet you wish to calibrate the reading to.

Click on **Update Orphimedes** button to save the results of the calibration.

Update Orphimedes

Ensuring Data Retrieval and Troubleshooting:

1. First make sure the correct Orphimedes is selected from the iChart Navigation panel.
2. Make sure the Thalimedes is powered and can display readings on the LCD screen.
3. Click the **Setup** button and then click **Refresh Display**.
 - a. Check to make sure the **Last Reading (ft)** matches the current water conditions
 - b. Look at the **Device Time** and record how much it varies from the PC (if at all)
 - c. Make sure **the Battery (V)** is above 1.0 to 1.1 V.



Note: Until Refresh Display is clicked this screen will only show the last time refresh display was clicked.

4. Click **OK**. Then click **Interrogate** to upload the data. Make sure the correct device is selected from the Navigation panel.
5. After every data upload, it is recommended to do the following:
 - a. **Set device time to PC time** and **Erase data storage** and clear the memory. This step is essential to ensure that data gaps do not appear in the device memory. (ie. If the Orphimedes is reading 9/01/06 and the PC is reading 9/28/06, when the clock is synced there will be a 27 day gap in the memory).

6. If you are able to communicate to a Orphimedes (by Refreshing Display) but are unable to upload any data (and you know data is there), the most likely cause is that the Orphimedes is not responding to the request data command in the amount of time specified to respond before determining data cannot be retrieved. This occurs when large data gaps exist in the Orphimedes memory (from not being powered for a period of time, or syncing the clock making the data points go from one date to another).

This situation can be tested by extending the timing for two values: the upload timeout seconds and the data request size.

To do this:

- o Open iChart and click on <Ctrl> + <Alt> + <t> to open the iChart timing dialog box.
 - o Select "Orphimedes" from the device drop down list and select "Direct "IrDA" (for IrDA interface) from the communication drop down list
 - o Change Var5 from 1510 to 4510 (increasing the upload timeout)
 - o Change Va6 from 2048 to 32048 (increasing the data request size)
 - o Try to upload the data again.
7. If you are unable to upload data from the Orphimedes, see if you can communicate with it. Click the **Setup** button and go to the **Orphimedes** tab. Click **Refresh Display** and see if the screen is refreshed.
 - a. If not try changing the Orphimedes batteries, and then try turning it on and communicating to it again. It is always recommended to have spare batteries when going to upload data from deployment sites.
 - b. For all customers, we recommend replacing the Orphimedes battery whenever the Orphimedes battery reaches 1.0 to 1.1V.
 8. If using RS232, check the wiring for any cuts or areas that look damaged. Double check the wiring according to the wiring earlier in this document.
 9. If using an IrDA LinkIt adapter make sure the adapter is facing the IrDA LED's.
 - c. When using IrDA, make sure the LCD changes from its reading to say "IrDA" when attempting to communicate to it in iChart software.
 10. If the Orphimedes powers and everything looks OK as far as physical connection, make sure the correct baud rate is selected in iChart for the Orphimedes. The default baud rate of a Orphimedes is 19200. If this has been changed, the new baud rate will need to be selected in iChart. If unsure you can try it at 9600 to see if it will communicate then.
 - d. It is recommended for Direct to PC applications to leave the Orphimedes at 19200 baud rate to avoid confusion.