

**DRAFT**

# **ACOUSONDE™ FIRMWARE UPDATING GUIDE**

Model B003A and B003B

Firmware version 2.1.0, PalmOS client app version 2.1.0  
March 2012



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**GREENERIDGE SCIENCES, INC.**

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Model B003A and B003B

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**PREFACE**

This standalone firmware updating guide was released on 27 September 2011 and updated 7 March 2012, in advance of the Acousonde™ User Guide. It will be superseded by the User Guide when the latter is released.

## 1 FIRMWARE UPDATING

### 1.1 REQUIRED EQUIPMENT AND SOFTWARE

Users wishing to update their Acousonde™ firmware will require the following:

- Apple Macintosh computer running MacOS X, version 10.5 (“Leopard”) or later.
- Actisys ACT-IR224UN-L+ USB-to-infrared dongle, available from [www.actisys.com](http://www.actisys.com)  
**OR**  
Actisys ACT-IR220L+ serial-to-infrared dongle, combined with a USB-to-serial adapter. Both the Keyspan USA-19HS and the Cables Unlimited USB-2920 have been found to work fine as USB-to-serial adapters for this purpose. *Caution: The IOGEAR GUC232A USB-to-serial adapter could not be made to work for this application during testing in December 2011 and cannot be recommended.*
- MacOS X software driver for the Actisys ACT-IR224UN-L+ **OR** for the USB-to-serial adapter you are using to support the Actisys ACT-IR220L+. The driver comes with the device. The driver for the ACT-IR224UN-L+ may be downloaded from the Prolific web site [www.prolific.com.tw](http://www.prolific.com.tw) (the USB-to-serial adapter chip embedded in the ACT-IR224UN-L+ is a Prolific 2303).
- **aobex** command-line OS X application (available to customers on request).
- The new Acousonde firmware file (available to customers on request).
- The latest Acousonde PalmOS “.prc” app file (available from the downloads area of [www.acousonde.com](http://www.acousonde.com)).

### 1.2 INITIAL PREPARATION

Initial preparation is only necessary once for a given personal computer.

1. Your USB-to-infrared hardware will not work until you have installed its driver software on your Mac. Follow the instructions that came with it to install the driver. Note that you only need concern yourself with the driver for the the USB-to-serial aspect of your infrared gear. The **aobex** software contains the necessary information to drive the infrared portion of the hardware.
2. Create a new folder under your home folder, i.e., at the same level as the Mac-standard folders Documents, Music, Downloads, etc. Name this new folder `bin`, all lower-case like that.
3. Drag-and-drop `aobex.zip` to the new folder `bin` you created in Step 2.
4. Double-click `aobex.zip`. This will place the **aobex** program in the `bin` folder.

### 1.3 FINAL PREPARATION

5. Zipped Acousonde firmware files have names like `b003_xxxx.s19.zip`, where the `xxxx` is the version number without periods. For example, the zipped filename for firmware version 2.0.19 is `b003_2019.s19.zip`. Place the zipped file in the `bin` folder that you created in Step 2 and unzip it by double-clicking it. Take note of the unzipped firmware filename. In the example just stated, it would be `b003_2019.s19`.
6. Insert the USB-to-serial adapter in the Mac.
7. Attach the IR dongle to the USB-to-serial adapter (if it is not already unified with the USB cable).
8. The rest of the process is done with a command line, so you need to open a command-line window. The **Terminal** program is located in the `Utilities` subfolder of the Mac's main `Applications` folder. Once you find the **Terminal** icon, double-click it to start it.
9. Type this command in the **Terminal** window and press return: `cd bin`
10. Type this command in the **Terminal** window and press return: `chmod +x aobex` (this step only needs to be done once after **aobex** is first installed and unzipped, after that it can be omitted, but there is no harm in repeating it.)

### 1.4 UPDATING THE ACOUSONDE™ FIRMWARE

11. Locate the IR dongle and the Acousonde you wish to update out of the optical path of sources of infrared interference. Such sources include flat-panel computer monitors and televisions as well as compact fluorescent light fixtures.
12. Point the IR dongle at the Acousonde you wish to update. Make sure the Acousonde is powered up and in standby. If the Acousonde is powered via USB the update will go faster but the update can be done with (relatively fresh) battery power as well. **Caution: Make sure no other powered-up Acousonde units are in the line of sight of either the IR dongle or the Acousonde to be updated, or their firmware might be corrupted!** We commonly put any other Acousonde units nearby into a box or drawer to ensure they do not unintentionally become party to the infrared transaction.
13. Note the filename of the firmware file you unzipped in Step 5 (e.g. `b003_2019.s19`). Type the following command in the **Terminal** window (substituting the actual filename where it says `<filename>`) and press return: `./aobex -1 <filename>` (the `-1` is a dash followed by the numeral one, not the letter ell).

14. If everything is OK, the **aobex** program will run, find the USB-to-infrared hardware, make an infrared connection with the Acousonde, and begin transferring the new firmware. The Acousonde's light will flash regularly as the firmware file is transferred. If it does not seem to work, ensure that you have no other USB-to-serial adapters connected to your computer and try again after the first attempt times out (about 30 seconds).
15. Wait until **aobex** completes. **Caution: If aobex warns you that the transfer did not complete properly, go back and repeat Step 13 immediately. Do not reboot the Acousonde until the transfer completes successfully!** If the transmission failures continue, remove any possible sources of infrared interference and keep trying. Again, **do not reboot or disconnect power to the Acousonde until the transfer completes successfully.**
16. If **aobex** reports the number of bytes transferred without any obvious warnings, the Acousonde has been updated. Reboot the Acousonde by swiping a magnet past the LED ports (3B and newer 3A units) or past the embedded magnetic switch painted white (earlier 3A units), or simply by power cycling. **Caution: Do not use a more powerful magnet than necessary, and take care not to bring the magnet close to any other part of the Acousonde. If the magnet comes too close to the compass, permanent damage may result.** After reboot, check the version number of the operating system using a **Query** command from the **STORAGE** pane of the PalmOS **Acousonde** app.

## 1.5 UPDATING THE PALM "ACOUSONDE" APP (IF NECESSARY)

Some firmware revisions add features that cannot be accessed without the latest companion PalmOS **Acousonde** application. Each Acousonde unit stores an onboard copy of the PalmOS application (to allow users to upload the PalmOS application directly from that Acousonde to their Palm via infrared). So, when you update the firmware on an Acousonde, you should ensure it is storing the most recent version of the **Acousonde** PalmOS application as well.

17. You may download the latest PalmOS application file (with a ".prc" filename extension) from the Acousonde.com website. Alternately you may have been sent the file, zipped. In either case place the file in the bin folder that you created in Step 2, and, if it came to you zipped, unzip it so its filename extension is ".prc".
18. Follow the above instructions for a firmware update exactly, with one exception: use the .prc file's filename instead of the firmware filename. For example, if the **Acousonde** PalmOS application file is called **Acousonde206.prc**, transmit this file with the **Terminal** command: `./aobex -1 Acousonde206.prc`
19. As with the firmware file, check that **aobex** does not report any errors. If it does, repeat the transfer.
20. Once your Acousonde has the latest version of the **Acousonde** PalmOS app, you may transfer the app from the Acousonde directly to your Palm via infrared following the instructions in the Quick Start Guide.