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[www.lazydogengineering.com](http://www.lazydogengineering.com)  
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## **LD-1B Software-Defined Receiver Installation and Quick-Start Guide**

The following instructions describe the installation procedure for a PC running Microsoft Vista. Installation under Windows XP or Windows 7 may result in dialog boxes that look different, and the procedure may vary a bit.

In addition to the LD-1B software, you will need to obtain and install third-party SDR software, because the LD-1B software only controls the LD-1B's LO frequency, phase shift, and filter selection. It does not do any signal processing. I recommend that you download and install Winrad Version 1.6.1 (NOT version 1.33) from [www.winrad.org](http://www.winrad.org), because the LD-1B control software is designed to communicate with Winrad. Alternatives you might want to evaluate include Rocky, available at [www.dxatlas.com/Rocky/](http://www.dxatlas.com/Rocky/), and SDRadio ([www.sdradio.org](http://www.sdradio.org))

After receiving your LD-1B SDR, follow these instructions to install it and begin using it:

### **Introduction:**

The control software for the LD-1B resides in two DLLs (ExtIO\_LD-1.dll and SiUSBXp.dll) and one executable file (LD1Control.exe). The executable file links to the two DLL's, which must be installed in the same folder as the executable. The installer, which you will download from [lazydogengineering.com](http://lazydogengineering.com), will create the folder and install those files and several others.

The external connections for signal output, RF input, power supply, and USB are described in Paragraphs 13 and 14.

### **Winrad:**

If you intend to use Winrad as your SDR software, download Winrad 1.6.1 from [www.winrad.org](http://www.winrad.org) and install it before installing the LD-1B software. The Winrad executable will install to C:\Program Files\Winrad by default, and the LD-1B installer will automatically find it and put copies of the two dlls into that folder.

### **USB Drivers:**

The LD-1B Installer will automatically install the current USB Express drivers from Silicon Laboratories. When you connect your LD-1 to the USB port for the first time, it will be detected and will appear in your Device Manager as "USBXpress Device".



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## Installing the LD-1B Software:

1. Go to <http://shop.lazydogengineering.com/LD1Downloads.htm> and click the button to download the installation pack

The screenshot shows a web browser window with the address bar displaying [www.lazydogengineering.com/Downloads.html](http://www.lazydogengineering.com/Downloads.html). The page has a navigation menu with links for Home, About Us, Contact, Garage-Shoppe.com, LD-1A SDR, Kit Support, Downloads, and Lazy Dog Store. Below the menu, there is a sub-menu for LD-1B SDR. The main content area is titled "Downloads" and contains a table with the following data:

<a href="#">LD-1B Rev 1.3</a>	(23 Nov 2010) Major bug fix. If you have an LD-1B, please uninstall the old version of the PC software, then run this installer. Use the bootloader to install the firmware, and all should be well! Improvements coming soon.
<a href="#">Revision 1.5</a>	(28 June 2010) including current firmware, bootloader for firmware installation, DLLs for use with Winrad, and standalone control application. Added ability to save LO frequency to flash memory, primarily to support iSDR.
<a href="#">Revision 1.3</a>	LD-1.3 Software Installation Package (20 April 2010) including current firmware, bootloader for firmware installation, DLLs for use with Winrad, and standalone control application. Fixed a bug in the standalone application.
<a href="#">Revision 1.2</a>	LD-1.2 Software Installation Package (19 February 2010) including current firmware, bootloader for firmware installation, DLLs for use with Winrad, and standalone control application. Fixed a bug in the standalone application, and incorrect implementation of the Winrad API "Inithw" method.
<a href="#">Revision 1.1</a>	LD-1.1 Software Installation Package (14 February 2010) including current firmware, bootloader for firmware installation, DLLs for use with Winrad, and standalone control application. Improved installation package, improved functionality.
<a href="#">Quickstart Guide</a>	Quickstart guide for LD-1, PDF format.
<a href="#">Users's Guide</a>	User's guide for LD-1 and LD-1A
<a href="#">Demo File 1</a>	40-meter demo file recorded in the afternoon, includes 7166 - 7262 kHz. Antenna: MFJ-1788 "Super Hi-Q Loop at 25 feet above ground.
<a href="#">Demo File 2</a>	20-meter CW demo file recorded in the afternoon during the ARRL International DX Contest, includes 14.018 - 14.110 MHz. Antenna: MFJ-1788 "Super Hi-Q Loop at 25 feet above ground.
<a href="#">Demo File 3</a>	15-meter demo file recorded in the afternoon, includes 21.228 - 21.324 MHz. Antenna: MFJ-1788 "Super Hi-Q Loop at 25 feet above ground. If the button doesn't work, right-click on the words "demo file" above and select "save target as".

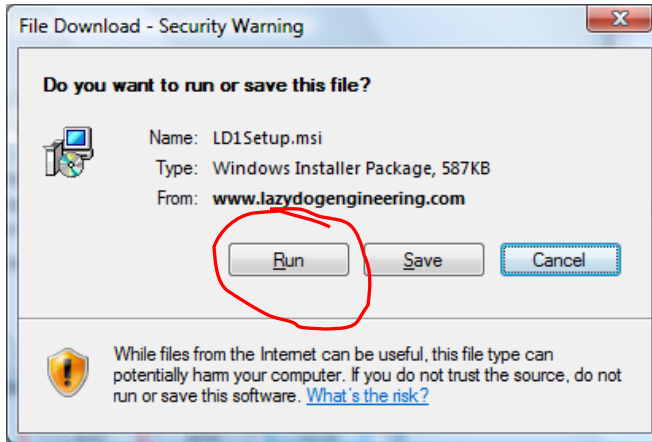
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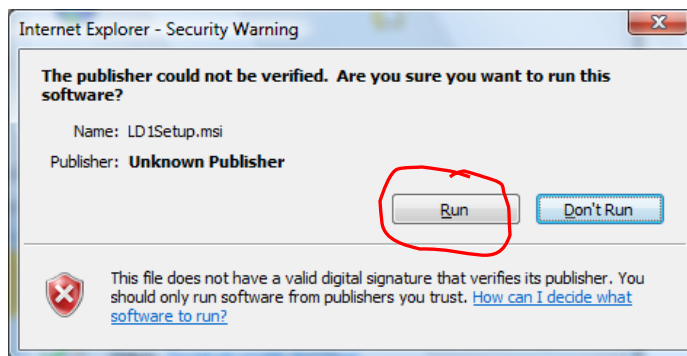
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2. Click the “Run” button to run the installer:



3. Click “Run” again:

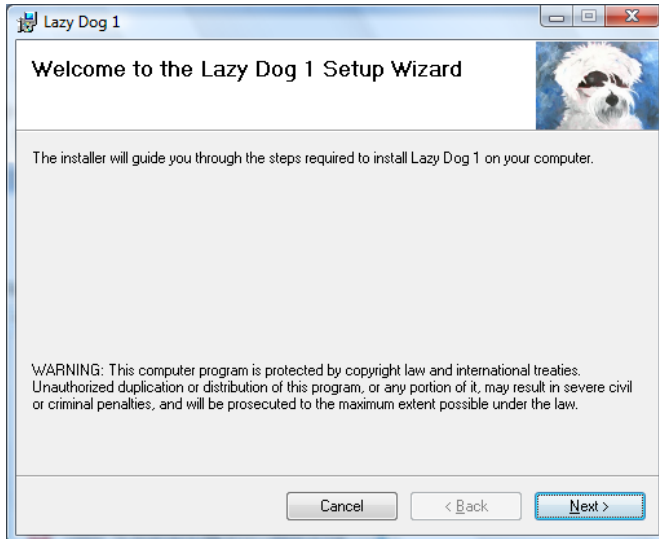




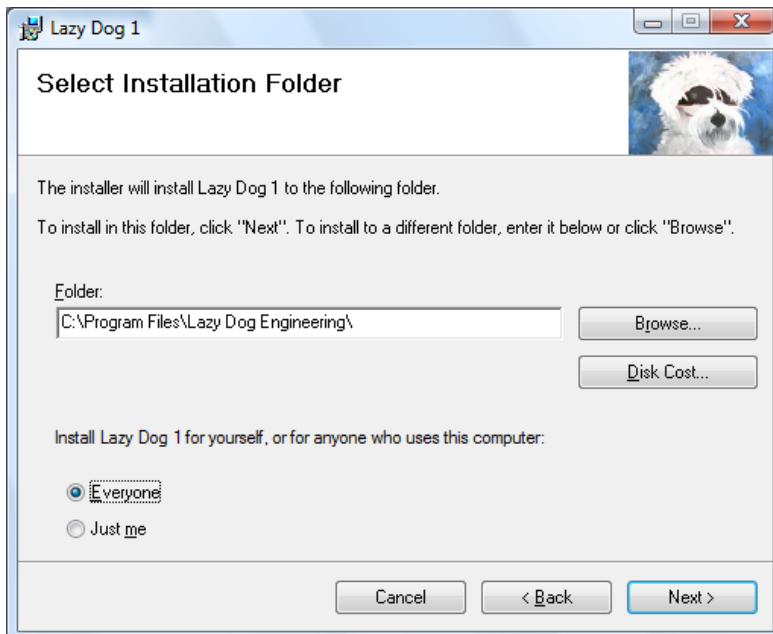
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4. The Setup Wizard will start. Click the “Next” button:



5. Click “Next”. The “Select Installation Folder” dialog should appear. Click “Next” again to install the LD-1 software in the default folder:

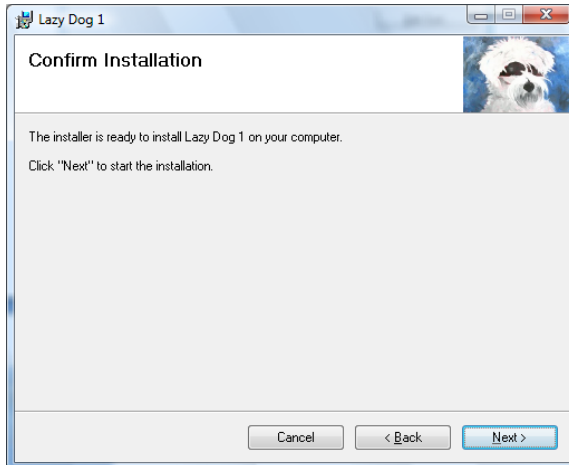




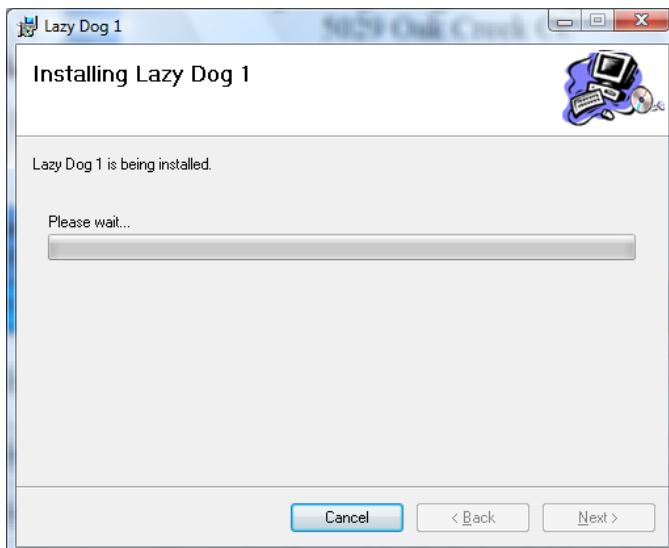
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6. Click "Next" again to confirm the installation:



7. Wait for the installation to complete. You may be asked by windows for permission to complete the installation. If so, click "Allow".

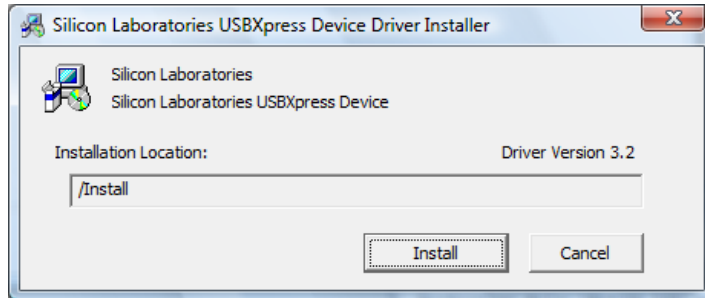




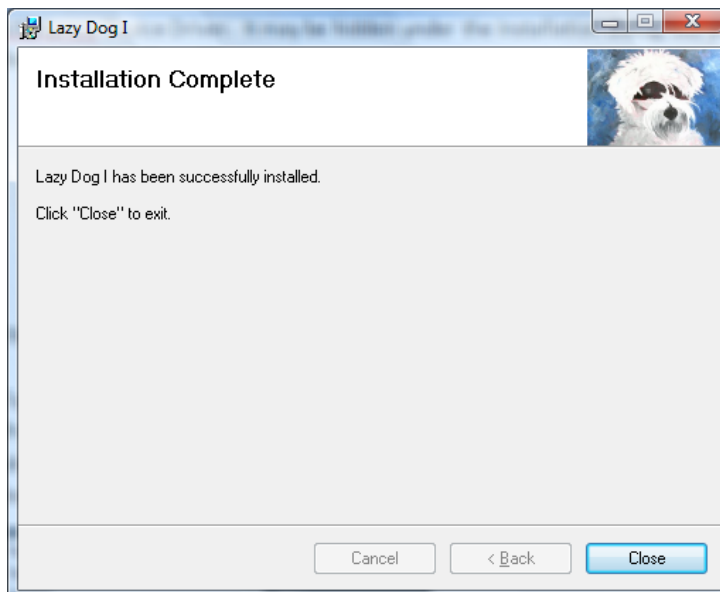
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8. Just before the installation is complete, the dialog shown below will appear to install the USBXpress Device Driver. It may be hidden under the Installation dialog, but you must find it and click "Install":



9. The "Installation Complete" dialog should appear; click "Close" to dismiss it. The installation is finished:

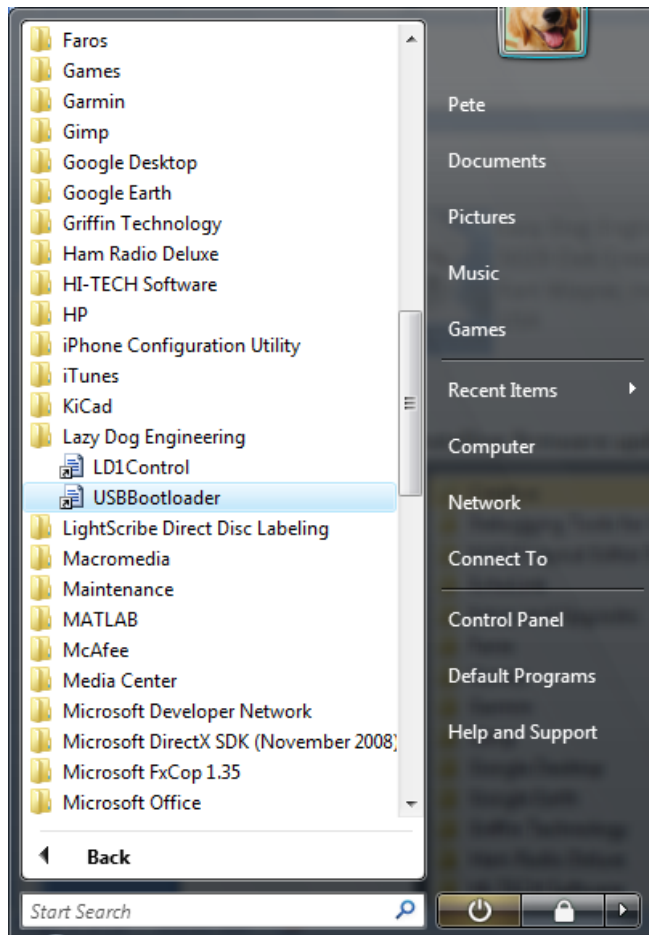




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10. To see that the files installed correctly, open the Windows “Start” menu and select “All Programs”. You should find a “Lazy Dog Engineering”. In the folder there should be shortcuts to the stand-alone control application “LD1Control” and “USBBootloader” for installing firmware updates. :



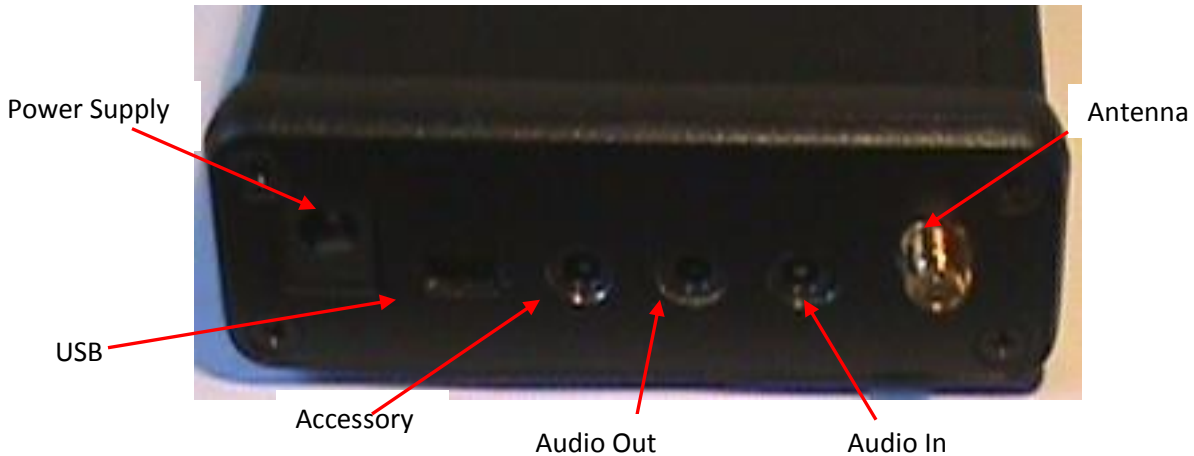


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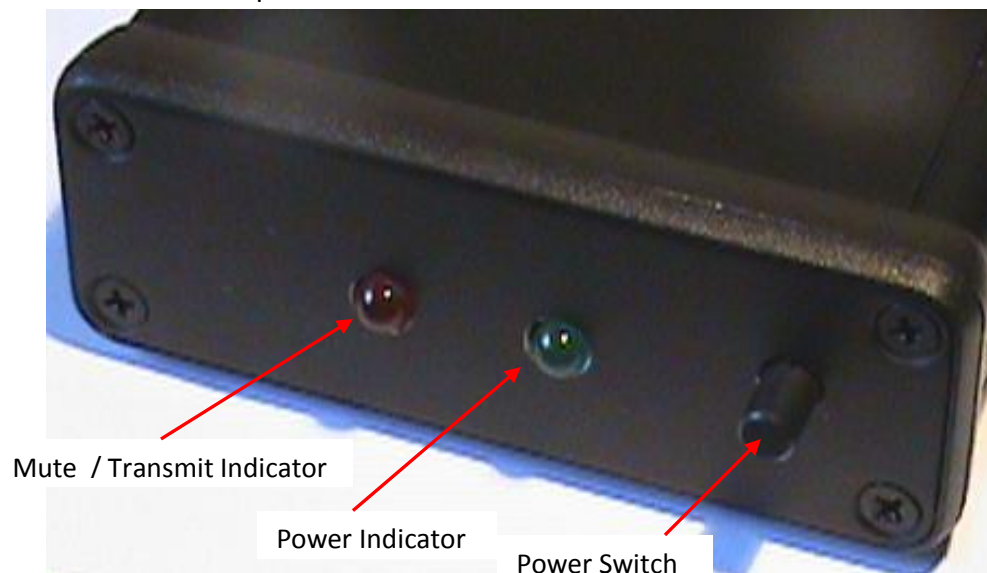
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### Connecting the LD-1:

11. Take a look at the rear panel of the LD-1B, and you will see all the connectors:



12. Connect the power supply to the power supply. You may also connect the antenna, or you may do that after completing the installation. Connect the USB cable between the LD-1B and the host computer.



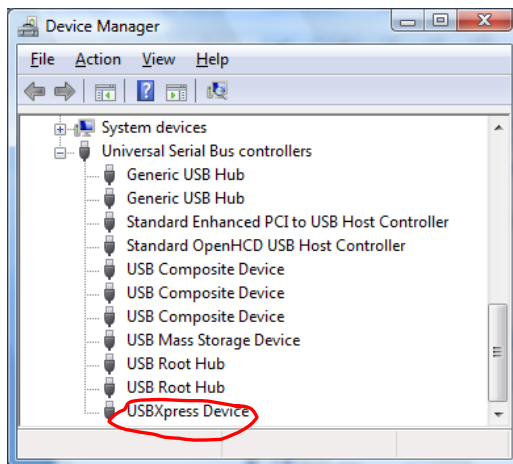
13. Turn on the power by clicking the power switch on the front panel. The green LED should light; if it does not, click the switch again. If the green LED still does not light, check the power supply and the connection to the power supply. If the green LED does light, proceed to the next step.



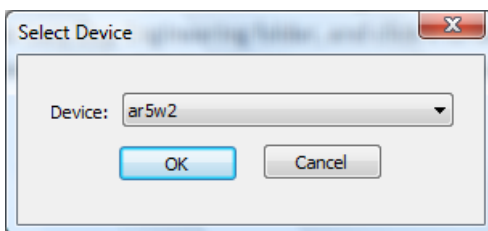
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14. When you turn on the power with the USB cable connected, Windows will tell you that it has found new hardware and is installing the drivers. You should not need to take any action. In a few moments, windows should tell you that your new hardware is ready to use. If you check the Device Manager, you should see a “USBXpress Device” under “Universal Serial Bus Controllers”:



15. Connect an audio cable between the LD-1B’s “Audio Out” connector and the “Line In” connector of your sound card. Connect a suitable antenna to the antenna connector.
16. Go to the Windows start menu, and select “All Programs”. Find the shortcut to LD1Control, in the Lazy Dog Engineering folder, and click it to launch the stand alone



application. A “Select Device” dialog should appear. Unless you have two or more USBExpress devices connected to your computer, there should only be one device in the select list, so click “OK”:

17. The LD-1 Control screen should appear. Use the Coarse and Fine sliders to set the LO frequency, which appears in the text box next to the sliders when you release either



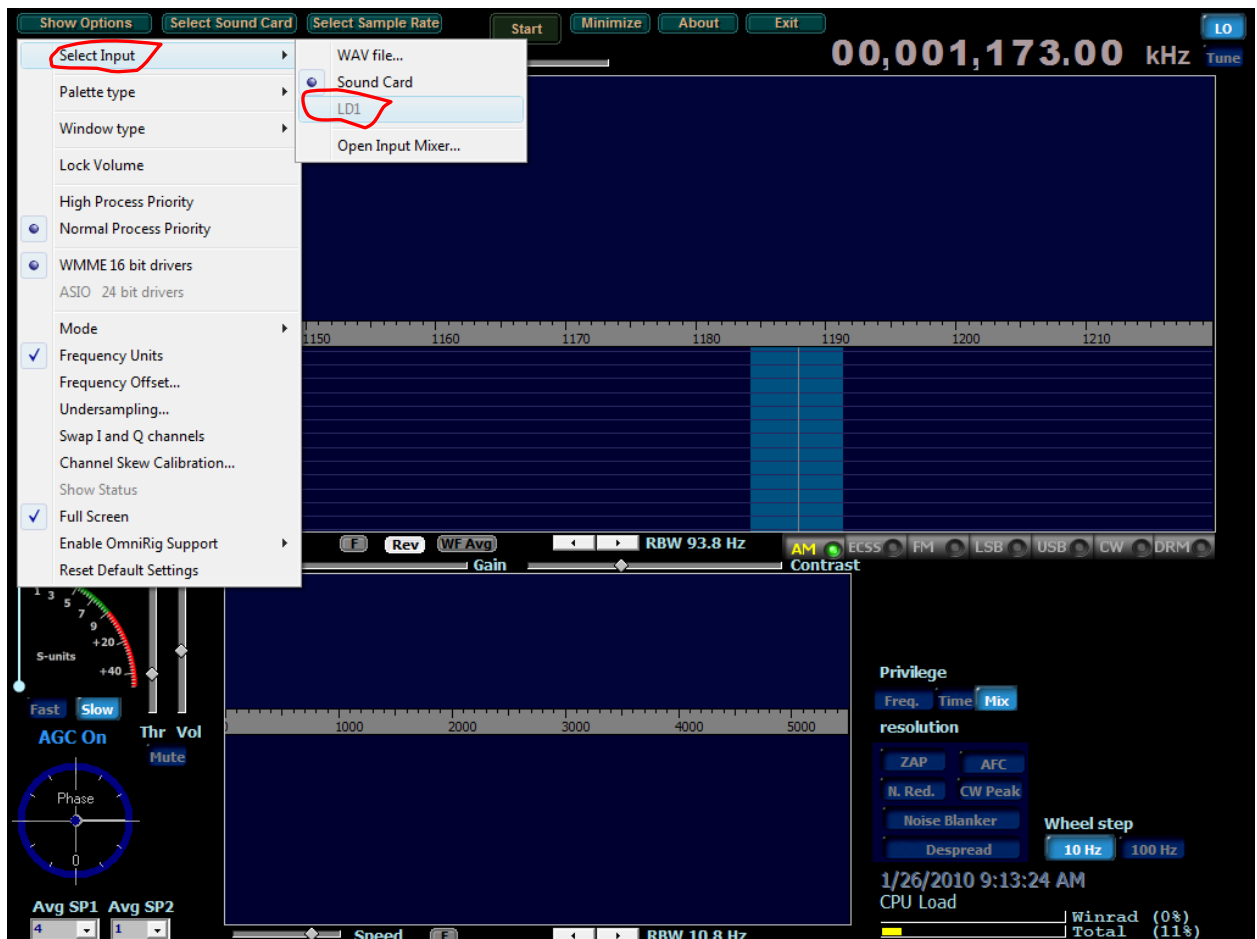
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slider. Select the sample rate your sound card is set for, as this determines the “fine” step size. You will probably want to select the “90” phase shift button, and the band selection is done automatically when you change the LO frequency. If you wish to override the filter band selection, you may click any of the radio buttons at will.

### Using Winrad:

18. Before launching Winrad, if the standalone control application is still running, click the “Cancel” button to stop it. Launch Winrad, but do not click the “Start” button yet. First, click the “Show Options” button, and select “Select Input” from the menu. Select “LD1”:

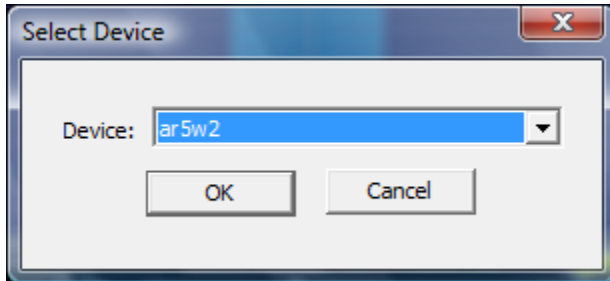




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19. The “Select Device” dialog should appear; click “OK”:



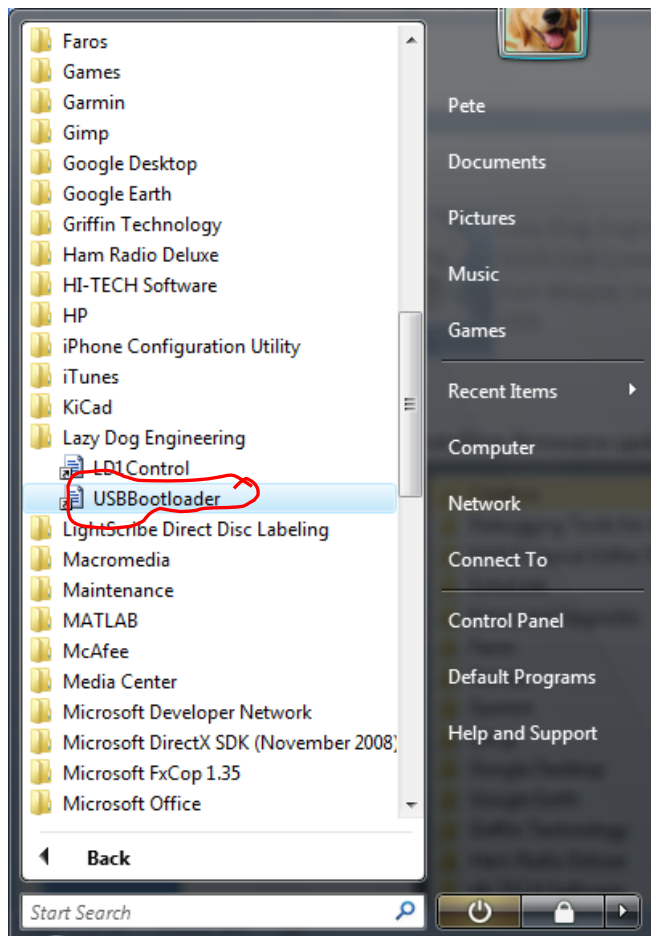
20. The LD-1 control panel should appear. Click the Winrad “Start” button, should receive signals!



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21. When you click OK, the LD-1 control panel disappears, and you can no longer control the LD-1, because the control software has been stopped. Exit from Winrad, if you had it running. You may need to use the Task Manager to do exit from Winrad. You will have to use the Bootloader to either reinstall the firmware hex file, or to install a new, updated hex file. From the Windows Start menu, select USBBootloader:

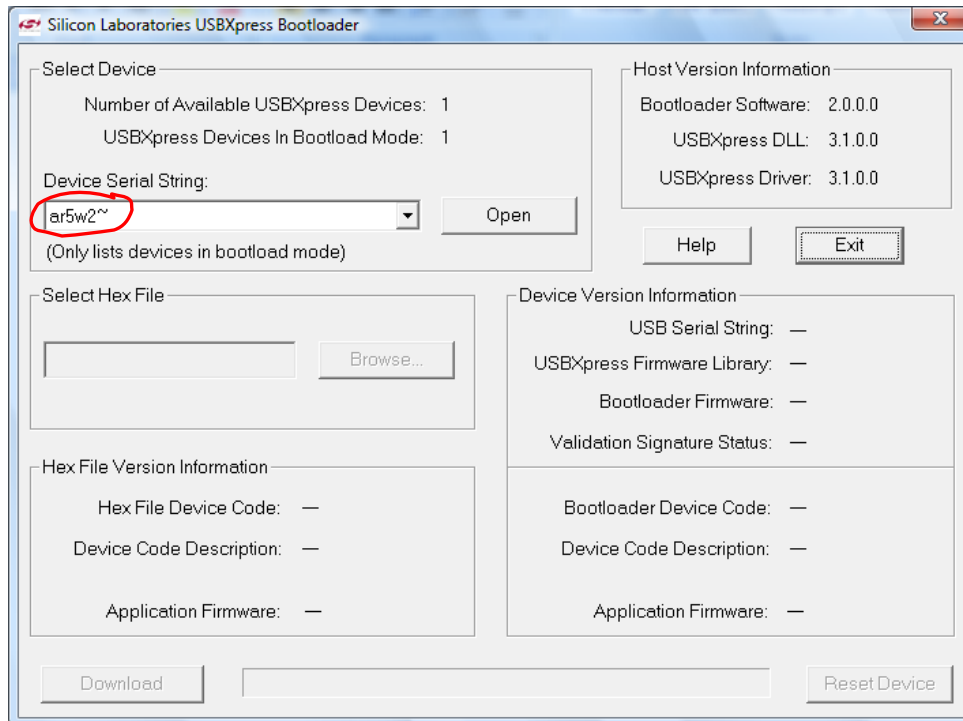




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22. The Bootloader should launch. Make sure that a few characters appear in the “Device Serial String” textbox:

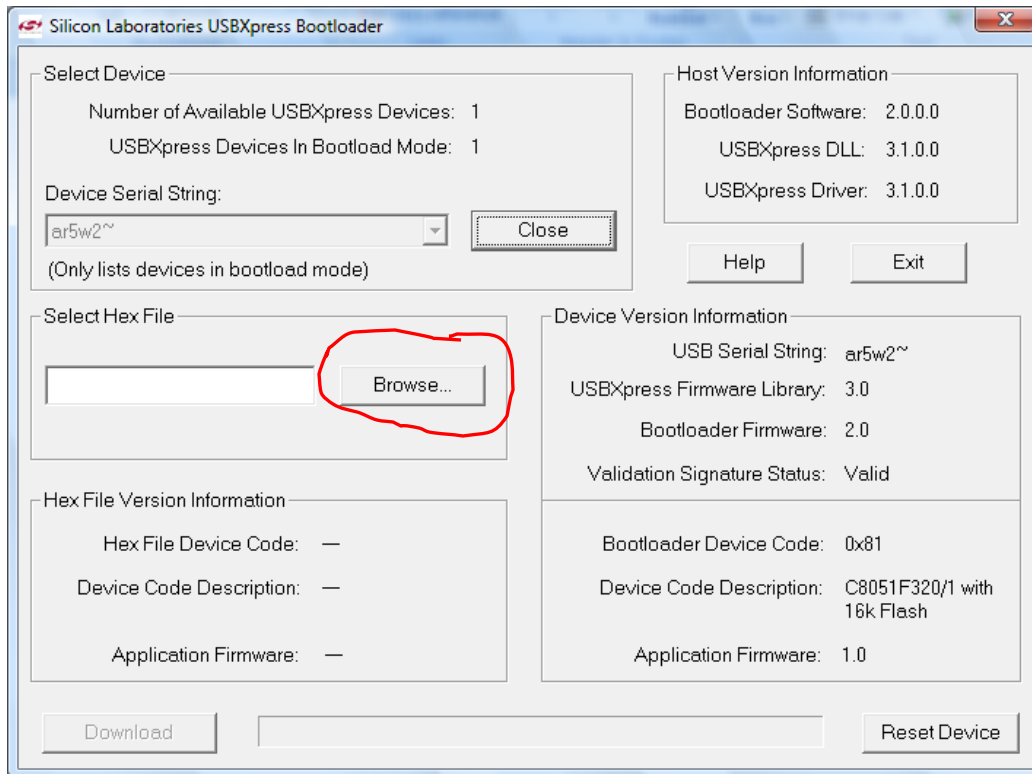




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23. If the “Device Serial String” textbox is blank (unlikely), click Exit. Unplug the power supply from the LD-1, count to ten, and plug it in again. This resets the LD-1. Launch the bootloader again, and click the “Open” button. This enables the “Browse” button, which you should now click:

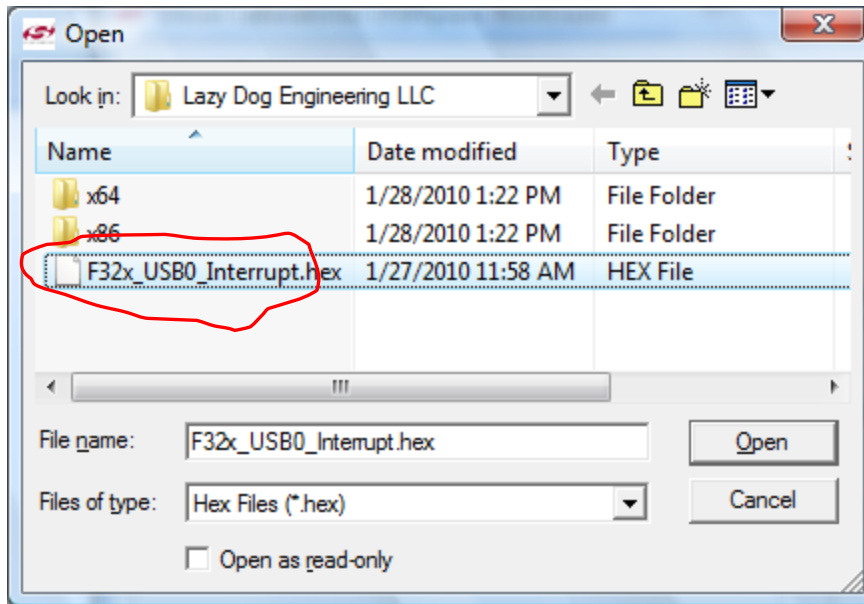




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24. Browse to the Lazy Dog Engineering installation folder (usually C:\Program Files\Lazy Dog Engineering), and select the one "hex" file, then click "Open":

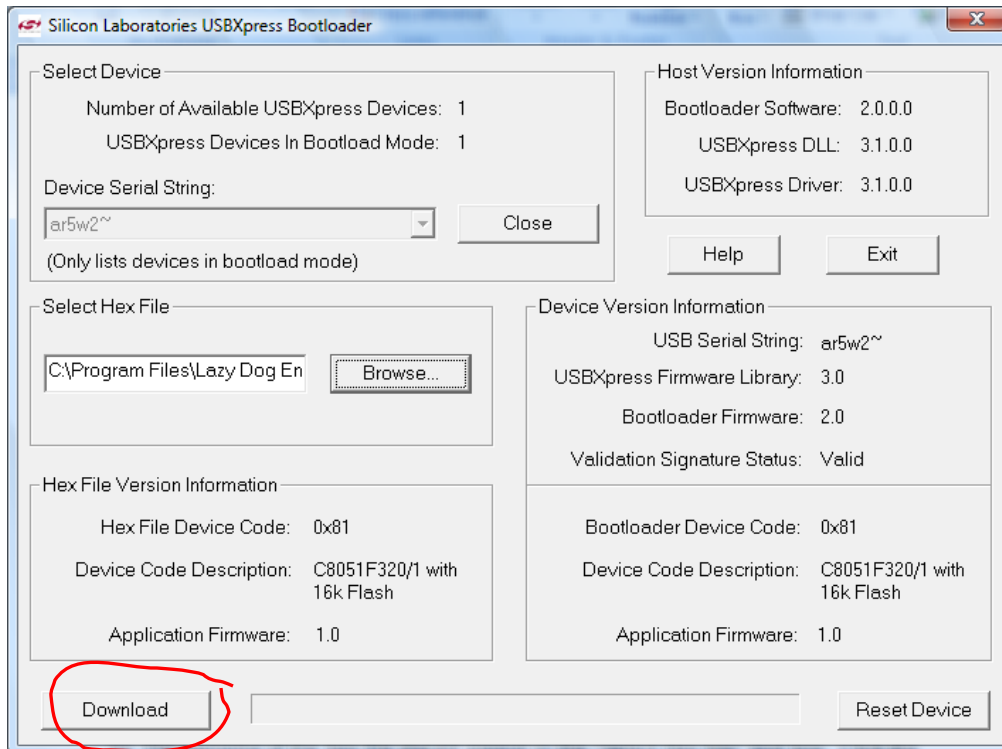




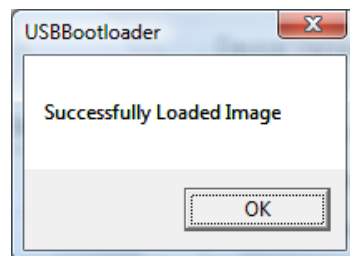
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25. The filename of the hex file should appear in the “Select Hex File” text box. Click the “Download” button:



26. In a few seconds, you should be rewarded with this:



27. Click OK to dismiss it, then click “Reset Device” on the Bootloader panel, and then click “Exit” . This completes the installation or reinstallation of the firmware. You may now relaunch Winrad or LD1Control.