

Getting Started with the OMAP-L138 LCDK

To make the process of getting started with a new “out of the box” OMAP-L138 LCDK and the book *Real-Time Digital Signal Processing from MATLAB to C with the TMS320C6x DSPs*, 2nd Edition (Welch, Wright, and Morrow; CRC 2012), we offer this brief step-by-step guide. Hereafter we refer to the textbook simply as WWM. Now would be a good time to look over the annotated figure of the LCDK board included at the very end of this document.

1. Unpack the OMAP-L138 LCDK. You can ignore the SD card that comes in the box; it contains a Linux OS distribution for use with other applications, not with the WWM book. You can also ignore the Quick Start Guide. Choose the correct power supply connector for your location and snap it into place on the power supply brick. Do not connect power to the LCDK yet. You will also need an XDS100v2 emulator pod (a very small board, sold separately), in addition to the LCDK. Unpack it also.
2. Place the WWM textbook CD in your CD/DVD drive and follow the instructions given by the self-installer. We recommend that you install all the files; the required disk space is modest.
Important: when the CD was created, the LCDK board had not yet been released, so be sure to download all the files that have been updated or added on the book web site that together provide full support of the LCDK board. *You cannot use the LCDK with the WWM text without these updates!* All the new files associated with the LCDK can be found on the textbook web site at URL <http://www.rt-dsp.com> in the 2nd edition section.
3. After the WWM textbook CD files and any new files from the web site have been installed, you should have a directory called **pc-apps**, and in that directory is a subdirectory called **reflashing_OMAPL138_for_winDSK8**. Note that this is **NOT** for the OMAP-L138 LCDK, but for another board (the Logic PD Zoom Experimenters Kit). Instead, you need to follow the reflashing instructions for the LCDK (called **Reflashing the LCDK for winDSK8.pdf**) that you should have found on the web site mentioned above. Follow the directions given in the “Reflashing the LCDK for winDSK8.pdf” document to reflash the OMAP-L138 LCDK; this enables use of the winDSK8 application and increases the stability of the LCDK board. All the files needed are in the **Reflashing LCDK for winDSK8.zip** archive on the textbook web site. Even if, for some reason, you have no intention of running winDSK8 on the LCDK, we still recommend performing the reflashing procedure. Many users report more stable operation of the LCDK after reflashing.
 - a. Note: you need to know the PC’s COM port number for the port to which you have attached the OMAP-L138 LCDK in order to correctly execute the command to reflash the board. The port number is dependent upon your installation. If you aren’t sure what it is, it can be found several ways, for example by selecting “Devices and Printers” in Windows 7 and looking for the entry for the USB port to which the LCDK is connected. Alternatively, you can start up winDSK8 even before you have reflashed the LCDK (with the LCDK connected directly to your PC via the USB connector J3), and on the main winDSK8 GUI screen, on the right side, you’ll see the choices for COM Port. Click the down arrow for the “COM Port:” list. Typically the highest number listed in the winDSK8 COM port choices is the port the LCDK is using. You may need to click on “Rescan COM Ports” if you’ve changed something since starting winDSK8.
 - b. As mentioned above, many users have found that the reflashed OMAP-L138 LCDK is more stable even when running C programs using Code Composer Studio (CCS), so we

encourage you to reflash the board before using CCS. This avoids potential issues with Linux kernel conflicts that appear to exist if you do not reflash the board.

- c. We recommend you run winDSK8 at this time, and at least click on the “Get Board Version” button, to be sure everything is working properly. When finished with winDSK8 for now, disconnect the LCDK’s USB connector J3 from the PC’s USB port.
4. Install the Code Composer Studio (CCS) software development environment from Texas Instruments. Do *not* connect the OMAP-L138 LCDK to the PC (via the small XDS100 emulator pod) until *after* this installation, or the correct drivers may not be found. A CCS DVD may have been included in the box with your OMAP-L138 LCDK, but a newer version may be available online. As of this writing, the URL is http://processors.wiki.ti.com/index.php/Download_CCS. It’s probably best to use the newest CCS version available.
 - a. Note that a full installation of CCS supports many Texas Instruments processor types. If you choose a custom installation to reduce the disk space requirements, the choice for “Processor Support” depends on what you plan to use with CCS. If you will only use one of the OMAP-L138 boards (e.g., the LCDK or the Experimenter Kit), you can choose just “OMAP.” If you will also use the C6713 DSK, then also select “C6000 Single Core DSPs.” Similarly, for “Components,” you probably don’t need the C5500 and C5400 compiler tools, if you are trying to conserve disk space.
 - b. After CCS is installed, verify that the LCDK board DIP switch SW1 is set with switch 1 OFF and switches 2, 3, 4 and 8 are ON. If you look closely, the switch positions are labeled.
 - c. Remove the power connector from the LCDK if you haven’t already. Connect the XDS100v2 emulator pod to the LCDK (either directly or with the short ribbon cable supplied with the XDS100v2 board) using the 14-pin header J6 on the LCDK. Note the header connection is keyed so that it can only be connected to the pod in the correct orientation. Connect the USB port on the XDS100v2 emulator pod to a USB port on your PC, and the correct drivers should now be found automatically. There is no need to turn the power on to the LCDK for this to occur; the USB port will be recognized.
5. You are now ready to power up the LCDK again and use both winDSK8 and CCS with the OMAP-L138 LCDK, in conjunction with the WWM text.

Important notes:

- If you want to use winDSK8, be sure that switch SW1 switch 8 is set to ON (and SW1 switches 6 and 7 to the setting for your desired UART port speed; we suggest both switches ON). In this mode of operation, you communicate between your host PC and the OMAP-L138 LCDK using the J3 UART USB connector on the LCDK.
- If you want to use CCS and run compiled C programs, you also want to be sure that switch SW1 switch 8 is set to ON, except for the one situation described in the next bulleted item. When using CCS, you communicate between your host PC and the OMAP-L138 LCDK via the XDS100v2 emulator pod’s USB connector. In this mode of operation, SW1 switches 6 and 7 settings can be read by a user program if desired. If this is your first time using CCS with the LCDK, we **highly recommend** you now turn to the Appendix A tutorial written for the LCDK and your version of CCS, as found on the www.rt-dsp.com web site. This short document guides you through selecting the license options, creating a simple CCS

project, and running a real-time program. It will save you a great deal of time and frustration!

- If you want to use CCS and run compiled C programs, but wish to have your C program access data from the UART port (J3, a USB connector) on the LCDK, then you should set switch SW1 switch 8 to OFF. This is the only situation in which you should have SW1 switch 8 set to OFF; otherwise it should be ON.

An annotated figure of the LCDK and the XDS100v2 emulator pod is shown below.

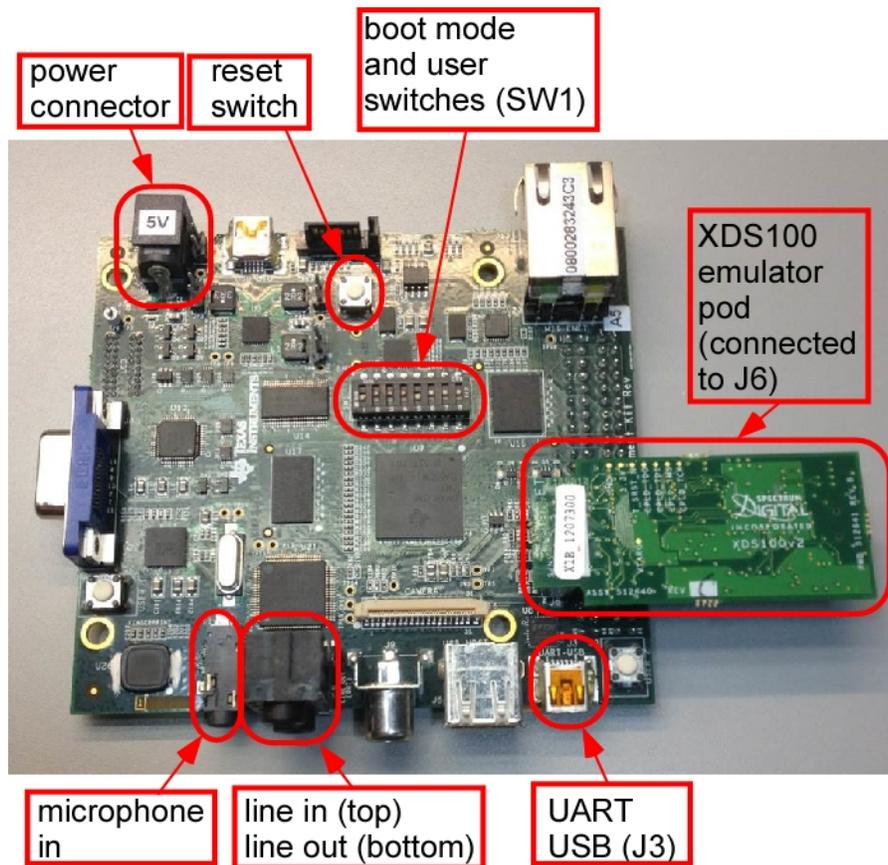


Figure 1. The OMAP-L138 LCDK board from Texas Instruments, with the separate XDS100 emulator pod shown on the right, connected to J6 on the LCDK. For operation with winDSK8, connect to your PC using the UART USB (J3). For operation with CCS, connect to your PC using the USB port on the XDS100 emulation pod.