

## Getting Started with the OMAP-L138 Experimenter Kit

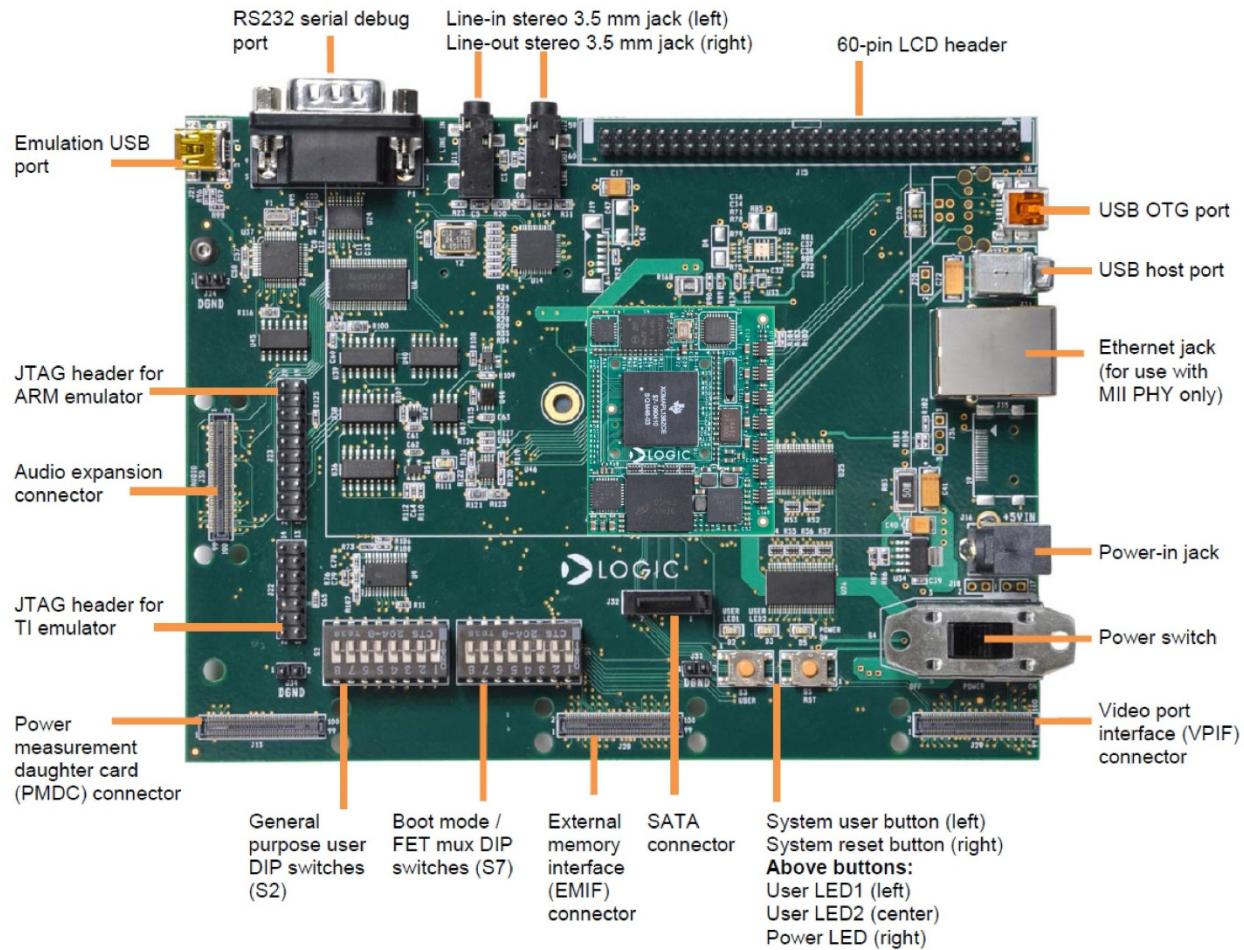
To make the process of getting started with a new “out of the box” OMAP-L138 Zoom Experimenter Kit (ZEK, from Logic PD) and the book *Real-Time Digital Signal Processing from MATLAB to C with the TMS320C6x DSPs, 2<sup>nd</sup> Edition* (Welch, Wright, and Morrow; CRC 2012), we offer this brief step-by-step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

1. Unpack the OMAP-L138 Zoom Experimenter Kit (ZEK) base board and the small system-on-module (SOM) board. Place the base board on a hard surface, and very carefully press the SOM into place, listening for the sound (or feel) of a click as the connectors mate properly.
2. If you are planning to use a USB-to-serial converter, install the appropriate USB device driver before connecting any hardware. Note that a null modem cable or null modem adapter is **required** when connecting your PC to the OMAP-L138 ZEK serial port, regardless of whether or not you use a USB-to-serial converter.
3. Place the WWM textbook CD in your CD/DVD drive and follow the instructions given by the self-installer. We recommend you install all the files; the required space is modest. Updates to some files have been posted on the book’s web site. Download all the files that have been updated or added on the book web site. All the new files can be found on the textbook web site at URL <http://www.rt-dsp.com> in the 2<sup>nd</sup> edition section. This includes a newer version of winDSK8 than the one that is on the textbook CD.
4. There is now no need to install winDSK6; as of version 2, winDSK8 can be used with any board supported by the book and the associated web site, including the OMAP-L138 ZEK, the OMAP-L138 LCDK, and the C6713 DSK.
5. After the WWM textbook CD is installed 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**. Follow the directions given in the file “Reflashing OMAPL138 for winDSK8.pdf” to reflash the OMAP-L138 ZEK. All the files needed are in the **reflashing\_OMAPL138\_for\_winDSK8** directory. Any updated files can be found on <http://www.rt-dsp.com> in the 2<sup>nd</sup> edition section of the web site. Even if, for some reason, you have no intention of running winDSK8 on the ZEK, we still recommend performing the reflashing procedure. Many users report more stable operation of the ZEK after reflashing.
  - a. Note: you need to know the COM port number of the port to which you have attached the OMAP-L138 ZEK to correctly execute the command to reflash the board. If connecting directly to a physical serial port on your computer, it is most likely COM1 or perhaps COM2. If using a USB-to-serial converter, the port number is dependent upon your installation. If you aren’t sure what it is, it can be found, for example, by selecting “Devices and Printers” in Windows 7 and looking for the entry for the USB-to-serial converter. Alternatively, you can start up winDSK8 even before you have reflashed the OMAP-L138 ZEK, 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 choices is the port the OMAP-L138 ZEK 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 ZEK 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.
6. Install the Code Composer Studio (CCS) software development environment from Texas Instruments. Do *not* connect the OMAP-L138 ZEK emulation USB port to the PC 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](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 the OMAP-L138 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, connect the powered-off OMAP-L138 ZEK emulation USB port (J21) to the PC, and the correct drivers should now be found automatically. There is no need to turn the power on to the ZEK for this to occur; the USB port will be recognized.
7. You are now ready to use both winDSK8 and CCS with the OMAP-L138 Experimenter Kit, in conjunction with the WWM text.

**Important notes:**

- If you want to use winDSK8, be sure to set switch S2-1 to ON (and S2-2 and S2-3 to the setting for your desired port speed). In this mode of operation, you communicate between your host PC and the OMAP-L138 ZEK via the serial port DB-9 connector, using a null modem cable or null modem adapter, and perhaps a USB-to-serial converter.
- If you want to use CCS and run compiled C programs, be sure to set switch S2-1 to OFF. In this mode of operation, you communicate between your host PC and the OMAP-L138 ZEK via the emulation USB port (J21), located next to the serial port DB-9 connector, and the S2-2 and S2-3 switch settings can be read by a user program if desired. If this is your first time using CCS with the ZEK, we **highly recommend** you now turn to the Appendix A tutorial written for the ZEK and your version of CCS, as found on the [www.rt-dsp.com](http://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!



**Figure 1.** Logic PD's Zoom Experimenter Kit, with the OMAP-L138 System-on-Module (SOM) installed. For operation with winDSK8, connect to your PC using the RS-232 port (top left). For operation with CCS, connect to your PC using the emulation USB port (upper left). Photograph courtesy of Logic PD, Inc.