

LM3S811 EVALUATION KIT

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Stellaris® LM3S811 Evaluation Kit

The Stellaris® LM3S811 Evaluation Kit provides a low-cost way to start designing with Stellaris® microcontrollers. The LM3S811 Evaluation Board (EVB) can function as either a complete evaluation target, or as a debugger interface to any external Stellaris® device. The included USB cable is all that is needed to provide power and communication to the host PC.

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Requirements

- You have a PC, with a USB interface, running Microsoft® Windows 2000, XP, or Vista
- You have the Stellaris LM3S811 Evaluation Kit Documentation and Software CD



CAUTION: There is a known electrical issue with the FT2232 device that is used in the on-board In Circuit Debug Interface (ICDI). Some USB hubs can cause the device to misbehave, with symptoms ranging from failed enumeration to corrupt data transfers. If you experience trouble when using the on-board ICDI, try connecting the USB cable directly to one of the USB ports on your PC or laptop.

Board Set-Up

The LM3S811 Evaluation Board is configured for immediate use. To power the EVB, use the USB cable supplied in the kit. Connect the mini-b (smaller) end of the USB cable to the connector labeled “J42” on the EVB. Connect the other end (Type A) to a free USB port on your host PC. The USB is capable of sourcing up to 500 mA for each attached device, which is sufficient for the evaluation board. If connecting the board through a USB hub, it must be a powered hub.

When you plug in the EVB for the first time, Windows starts the Found New Hardware Wizard and asks if Windows can connect to Windows Update to search for software. Select “No, not this time” and then click Next.

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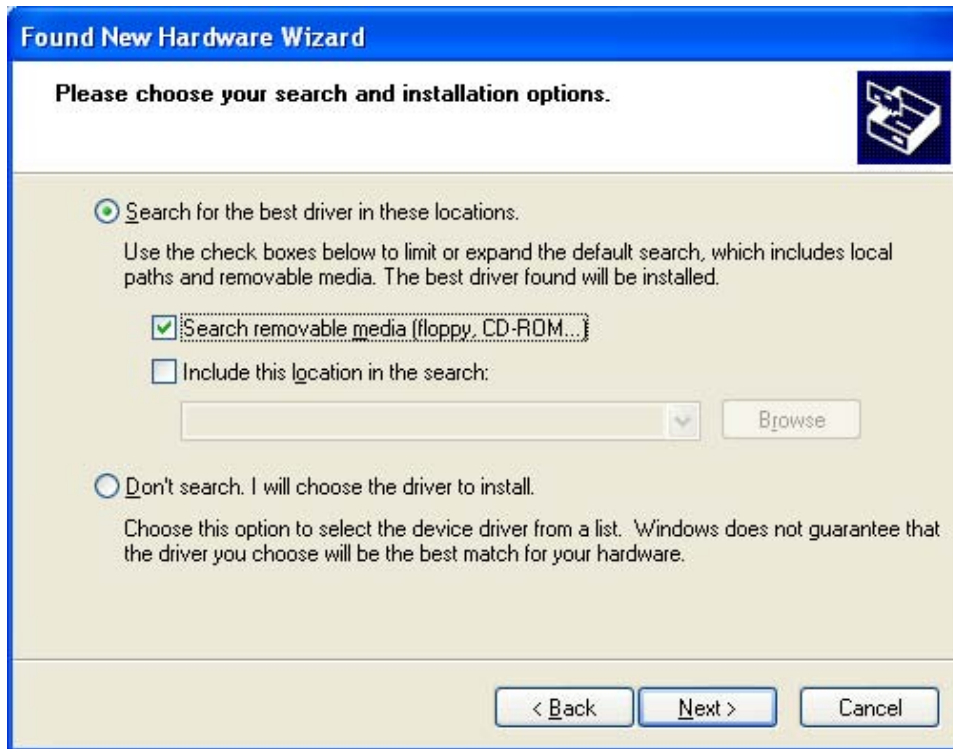
Next, the Found New Hardware Wizard asks you from where to install the software. Select “Install from a list or specific location (Advanced)” and click Next.



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Make sure the “Documentation and Software” CD that came with the evaluation kit is in your CD-ROM drive. Select “Search for the best driver in these locations,” and check the “Search removable media (floppy, CD-ROM...)” option. Click Next.



A warning may pop up during the Hardware Installation like the one below; click Continue Anyway.



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Windows finishes installing the drivers for “LM3S811 Evaluation Board A.” When the driver install is finished, the Found New Hardware Wizard window appears like the one below. Click Finish to close the dialog box.



You have just installed the drivers for “LM3S811 Evaluation Board A.” The USB device built into the EVB is a composite USB device. After you click Finish, Windows automatically installs a driver for the “Luminary Micro ICDI Board B” part of the composite USB device. Follow the same instructions as above to install the drivers for this device.

The Found New Hardware Wizard appears one last time. This is to install the drivers for the “LM3S811 Virtual COM Port.” Again, follow the same instructions to install the drivers for this device.

Now all of the hardware drivers for the LM3S811 Evaluation Board have been installed. These drivers give the debugger access to the JTAG interface and the host PC access to the Virtual COM Port.

With the drivers installed, Windows automatically detects any new Stellaris boards that you attach, and install the drivers for you.

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Quickstart Application

The LM3S811 Evaluation Board comes preprogrammed with a quickstart application. Once you have powered the board, this application runs automatically. You have probably already noticed this running as you installed the drivers. A Luminary Micro and Keil Software splash screen appear on the OLED display for a few seconds before the application begins.

The quickstart application is a game in which you navigate a ship through an endless tunnel. Use the potentiometer (POT) to move the ship up and down, and the user pushbutton (USER) to fire a missile to destroy obstacles in the tunnel. Score accumulates for survival and destroying obstacles. The game lasts for only one ship; the score displays at the end of the game.

Since the OLED display on the evaluation board has burn-in characteristics similar to a CRT, the application also contains a screen saver. The screen saver only becomes active if two minutes have passed without the user pushbutton being pressed while waiting to start the game (that is, the screen saver never appears during game play). An implementation of the Game of Life is run with a field of random data as the seed value.

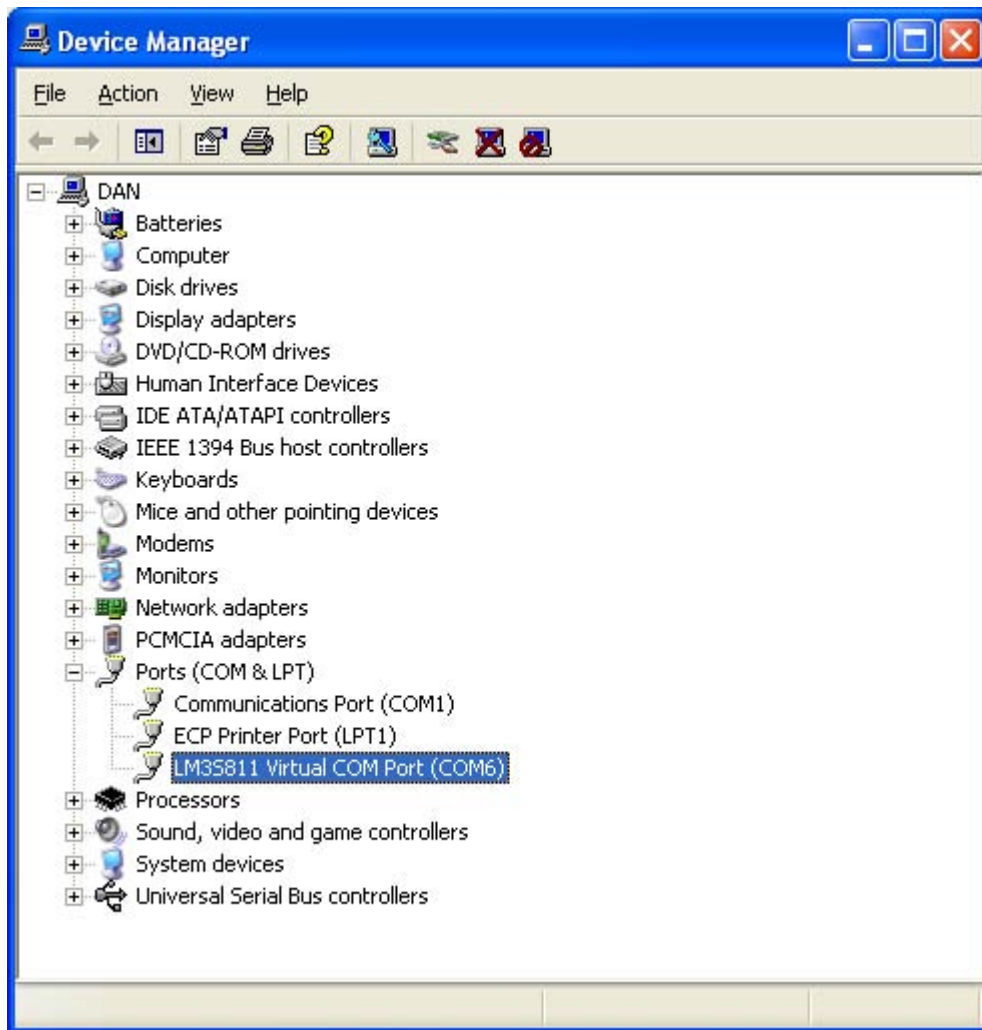
After two minutes of running the screen saver, the display turns off and the user LED blinks. Exit either mode of screen saver (Game of Life or blank display) by pressing the user pushbutton (USER). Press the button again to start the game.

While the game is being played, a running tally of the score is output through UART0 of the LM3S811 microcontroller. UART0 is connected to the FTDI's second serial channel. This serial channel is available to Windows as a Virtual COM port. To view the score, open up a terminal application such as HyperTerminal. Connect using COM#, where # is the number Windows has assigned the Virtual COM port. Set the serial connection to a baud rate of 115200, 8 data bits, no parity, 1 stop bit, and no flow control.

To determine which COM# Windows has assigned to the Virtual COM port on the LM3S811 microcontroller, follow these steps:

- 1) From the Start Menu, select Control Panel, then double-click the System icon.
- 2) Select the Hardware tab.
- 3) Click on the Device Manager button.
- 4) Click on the + symbol to expand the Ports (COM & LPT) group.
- 5) "LM3S811 Virtual COM Port (COM#)" is listed as shown in the figure below. This COM# is the device you connect to using your terminal application. In this example, the COM port is COM6.

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Software Development Tools

The next step is to install and run the software development tools included in the evaluation kit. For more information, see the quickstart guides included on the Stellaris LM3S811 Evaluation Kit CD. Additional tools may be available through the www.ti.com/stellaris web site.

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References

The following references are included on the Stellaris LM3S811 Evaluation Kit Documentation and Software CD and are also available for download at www.ti.com/stellaris:

- *Stellaris LM3S811 Evaluation Kit User's Manual*
- EK-LM3S811 Firmware Development Package
- *EK-LM3S811 Firmware Development Package User's Guide*
- Stellaris LM3S811 Microcontroller Data Sheet

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