LM3S9B92 EVALBOT BOARD README FIRST

Stellaris® LM3S9B92 EVALBOT
Robotic Evaluation Board

The Stellaris EVALBOT Robotic Evaluation Board provides a low-cost way to start designing simple robotic applications with Stellaris microcontrollers. The EVALBOT Evaluation Board (EVB) functions as a complete evaluation target that also includes a debugger interface that can be used to program and debug the evaluation board. The included USB cable is all that is needed to provide power and communication to the host PC. Three included AA batteries provide power for mobile applications.

Requirements

- You have a PC, with a USB interface, running Microsoft® Windows 2000, Windows XP, Windows Vista, or Windows 7.
- You have the Stellaris LM3S9B92 Robotic Evaluation Kit Documentation and Software CD
- You have assembled the EVALBOT using the printed assembly instructions in your kit and have powered on the unit and started the robot's preprogrammed quickstart application.
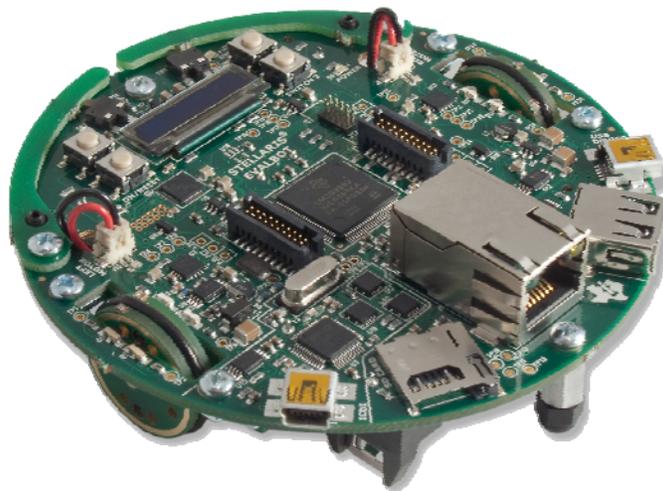
Board Set-Up

If you have already assembled the EVALBOT, you will have seen it driving around using battery power. The board can also be powered via a USB connection. This configuration would typically be used when downloading or debugging software on the board. To connect the EVB to a PC, use the USB-miniB to USB-A cable supplied in the kit. Connect the miniB (smaller) end of the USB cable to the connector labeled "ICDI." 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

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each attached device, which is sufficient for the evaluation board. If connecting the board through a USB hub, it must be a powered hub. Once the board is connected to the PC, press the ON/RESET button next to the display on the EVALBOT.

Important Note: The next step explains how to install the FTDI drivers for the board. Some customers with previous installations of the FTDI drivers may experience trouble when installing newer (2.02.04 and later) versions of the driver. The problem only seems to affect users of Windows XP, and not Windows Vista. If you have any problems with the driver installation, go to www.ti.com/lm_ftdi_driver for information.

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.
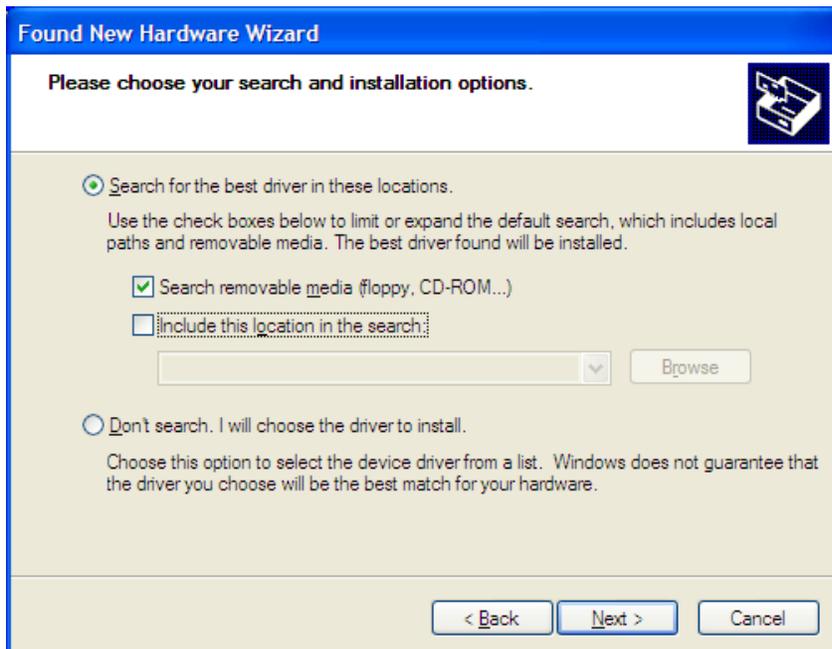

Next, the Found New Hardware Wizard asks from where to install the software. Select "Install from a list or specific location (Advanced)" and click Next.

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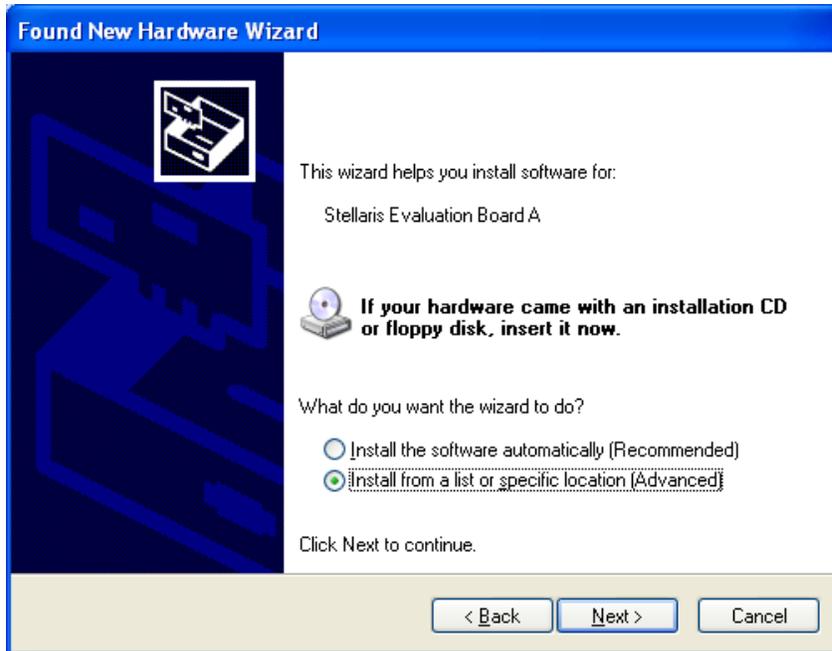
Make sure the "Documentation and Software" CD that came with the evaluation kit is in your CD-ROM drive. Select "Search for the best driver in these locations," and check the "Search removable media (floppy, CD-ROM…)" option. Click Next.

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Windows finishes installing the drivers for "Stellaris 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 "Stellaris 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 "Stellaris Evaluation 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 "Stellaris Virtual COM Port." Again, follow the same instructions to install the drivers for this device.

Now all of the FTDI drivers for the EVALBOT Evaluation Board have been installed. These drivers give the debugger access to the JTAG/SWD 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 installs the drivers for you.

Quickstart Application

The EVALBOT Evaluation Board comes preprogrammed with a quickstart application. Once you have powered the board by pressing the "ON/RESET" button, this application runs automatically. Press SWITCH 1 to start the robot's preprogrammed quickstart application.

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Press SWITCH2 to stop the operation. Press the OFF button to turn off the robot. The quickstart application provides autonomous control of the EVALBOT evaluation board using the motors and bump sensors on the board. This project demonstrates how the EVALBOT evaluation board, can be used to create an autonomous motor control application. The robot drives forward until either the robot bumps into something or a bounded random time value expires. If either of these events occurs, the robot turns in a random direction and then continues driving forward.
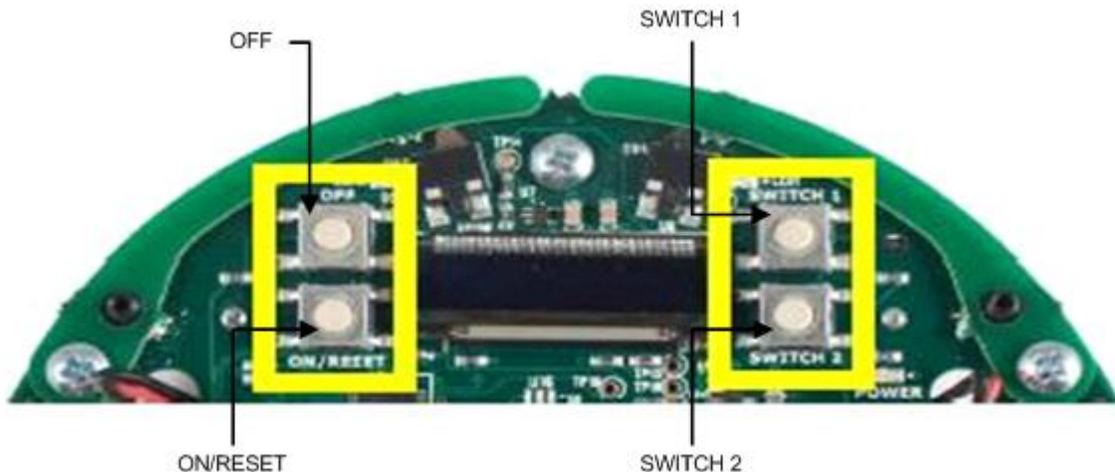
The bump sensors on the front of the EVALBOT board are used to detect the robot bumping into something while driving forward. If the left bump sensor is triggered, the robot turns to the right and then continues driving forward. Conversely, if the right bump sensor is triggered, the robot turns to the left and then continues driving forward.

In addition to the bump sensors, a timer expiration event causes the robot to change directions while driving forward. A timer is configured to expire in a bounded random amount of time when the robot begins to drive forward. If the timer expires prior to bumping into something, the robot randomly chooses to turn to the left or right, and then continues driving forward.

Software Development Tools

The next step is to install and run the software development tools included in the development kit. For more information, see the quickstart guides included on the Stellaris LM3S9B92 EVALBOT Robotic Evaluation Board Documentation and Software 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 LM3S9B92 EVALBOT Robotic Evaluation Board Documentation and Software CD and are also available for download at http://www.ti.com/stellaris:

- *Stellaris LM3S9B92 EVALBOT Product Brief*

- *Stellaris LM3S9B92 EVALBOT Documentation Addendum*

- *Stellaris LM3S9B92 EVALBOT Schematics*

- *Stellaris LM3S9B92 EVALBOT User's Manual*

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