

Tmote Sky JTAG guide

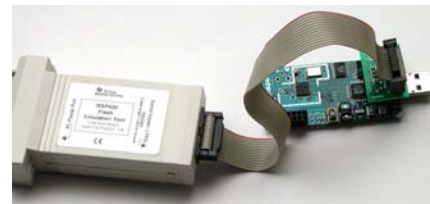
This guide covers the use of JTAG tools with Tmote Sky modules.

Required hardware:

- Tmote Sky module
- JTAG adapter
- JTAG pod

Connecting JTAG to Tmote Sky:

- If your JTAG adapter came unbundled from a Tmote Sky, the first thing that you will first need to solder the 8-pin receptacle to the tmote sky module.
- Once the connector has been attached, plug in the JTAG adapter as shown. That will allow you to plug in the standard 14-pin JTAG pod used with TI microcontrollers.
- Connect the JTAG pod as shown in the picture (the red stripe denoting pin one is at the top of the cable). Note that in this configuration the JTAG pod does not provide power to the device – to run it, the Tmote Sky will either need to be plugged into the USB connector or powered via the battery pack.
- Connect the JTAG pod to your PC



Using JTAG debugging facilities

At the moment, source debugging of NesC code on Tmote Sky is not supported. However, a number of tools, both open source and commercial, do support debugging of C source code or assembly code. MSPGCC-based tools will allow source debugging of the C file generated by the TinyOS build system (app.c). Even if the tools are unable to compile TinyOS code, they can still be used to debug the TinyOS binaries at the assembly level. These tools include:

- GNU tools: MSPGCC project distributes a number of tools that enable JTAG support. In particular, GDB is supported; it interfaces with tmote sky through remote GDB protocol and a tool called msp-gdbproxy. This toolchain will work only with the JTAG pod that plugs into the parallel port. For more information, visit <http://msp gcc.sourceforge.net>. Chapter 10 of MSPGCC manual covers GDB usage from GNU toolchain (<http://msp gcc.sourceforge.net/manual/c1532.html>); many questions regarding the debugging facilities in GCC have been answered on the MSPGCC users list (archives accessible at http://sourceforge.net/mailarchive/forum.php?forum_id=7539)
- CodeComposerEssentials from TI is an Eclipse-based IDE that supports JTAG debugging. While the integrated proprietary compiler in the freely available version is limited to 8K of code, the debugger is based on GDB, and integrates nicely with the IDE. The unrestricted compiler is available with the Professional version. It takes a bit of work to make it work with TinyOS code, but we're making progress to that end. More information on TI tools is available at <http://focus.ti.com/docs/toolsw/folders/print/msp-cce430.html>
- A number of commercial IDEs offer C compiler and JTAG debugging support: IAR Embedded Workbench (http://www.iar.com/p4771/p4771_eng.php), Rowley Associates CrossWorks (<http://www.rowley.co.uk/msp430/>), as well as products from ImageCraft and Quadravox. Most of the above offer functional (sometimes unrestricted) demos of their software.

General Information

Document History

Revision	Date	Notes
1.0	2005/07/12	Initial Release
1.0.1	2006/03/04	Updated contact information

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