

## Technical Summary for DSC Multilink, Rev. A (PART# DSC-MULTILINK)

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1. Introduction
2. Firmware Updates
3. Debug Headers
4. Usage
5. Driver Installation
6. Connecting To The Target
7. Troubleshooting - Startup Reset Sequence
8. Interface Libraries
9. Third-Party IDEs & Other Compatible Software
10. Transition To Production Programming



**DSC Multilink**

### 1 Introduction

The DSC Multilink is a debug interface which accelerates the debug and flash programming process, saving valuable development time. The Multilink provides access to the debug modes of NXP's DSC MCUs by allowing communications between the target device and a laptop/PC. The Multilink connects the target's standard debug header to the laptop/PC's USB port.

### 2 Firmware Updates

A utility called *PEFirmwareConfig.exe* can be used to manually update the Multilink firmware. This application is included with the "USB Multilink Resources Install" which can be downloaded from the pemicro.com Support tab, the Multilink product page, or directly from the link below:

[http://www.pemicro.com/downloads/download\\_file.cfm?download\\_id=346](http://www.pemicro.com/downloads/download_file.cfm?download_id=346)

### 3 Debug Headers

The 14-pin header that is used to connect to NXP DSC targets is located inside the Multilink unit and is labeled Port A; the Multilink case should easily flip open to reveal the headers. The Ports A header is dual-row with a .100" pitch. The pin-out for this connection is shown below.

#### DSC Multilink Pinout - Port A

**Please note:**

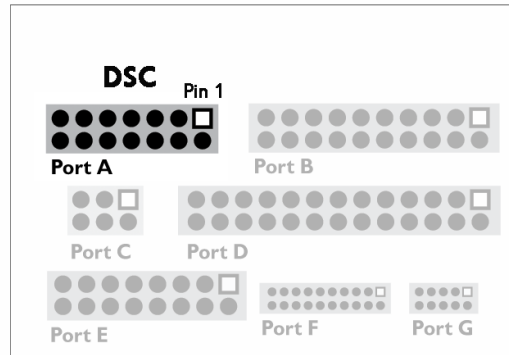
Overlined text indicates an active low signal.

PORT A - JTAG/ONCE	
DSC	
Pin 1: TDI	Pin 2: GND
Pin 3: TDO	Pin 4: GND
Pin 5: TCK	Pin 6: GND
Pin 7: NC	Pin 8: KEY
Pin 9: <u>RESET</u>	Pin 10: TMS
Pin 11: TVCC	Pin 12: GND
Pin 13: NC	Pin 14: <u>JCOMP/TRST</u>

The user can take advantage of debug modes to halt normal processor execution and use a computer to control the processor. The user can then directly control the target's execution, read/write registers and memory values, debug code on the processor, and program internal or external FLASH memory devices.

## 4 Usage

The user connects a ribbon cable between the DSC target's debug header and Port A on the Multilink. The location of Port A is shown in the figure below. Do not attempt to use multiple ports at once, as this may damage both the target processors as well as the Multilink.



**Port A Header Location (Pin 1 Highlighted)**

The DSC Multilink interface will work with targets whose processor power supply is in the range of 1.8V to 5V. Use a Type A to Type B male-to-male USB cable to connect the interface to the PC.

There are two LEDs on the Multilink interface. The blue LED indicates that the interface is powered and running. The yellow LED indicates that target power has been detected.

**Note:** To avoid improper connections, the red stripe of the ribbon cable should always be oriented towards Pin 1, both on the Multilink port and the target processor header. In the Header Location figure above, Pin 1 is indicated by a white square.

The DSC Multilink is a USB device. If a USB Hub is used, it must be a self-powered hub (i.e. with its own power supply). By default, the USB protocol used is USB 2.0.

## 5 Driver Installation

Before connecting the DSC Multilink to the PC, the appropriate drivers need to be installed on the PC. The Multilink drivers are supported on Windows XP, 2000, 2003, Vista, 7, 8, 10, and 11. These drivers are automatically installed with NXP's CodeWarrior or any of PEmicro's recent software development packages. If you have installed a recent version of these then the instructions for manual installation that follow are not necessary. However, Windows 7 users who are installing software distributed before December 28, 2009 will need to obtain the latest version of the drivers and install them manually. A copy of the driver installation program may be downloaded from the "Downloads" section of PEmicro's "Support Center" located at <http://www.pemicro.com>. If you are using third-party software, make sure you have a version which supports your specific interface (DSC Multilink). Once you have obtained the latest version of the driver installation program, please use the instructions below to manually install the drivers.

When the cable is plugged in, the operating system should indicate that it has found a driver for the attached interface. Follow the instructions in the "Found New Hardware Wizard" dialog for having Windows automatically install the driver.

If you connected the Multilink interface prior to installing the drivers, Windows will not have been able to find the appropriate driver and may have disabled the device. If you unplug the device and then plug it in again, Windows will automatically disable it even if you have installed the drivers. To force Windows to attempt to load the driver again, perform the following steps while the Multilink interface is plugged into the computer:

1. Open the Control Panel: Start Button [ ->Settings ] ->Control Panel. (You will not need to select "Settings" on Vista and Windows 7).
2. Double Click the "System" Icon. (Windows 7: "System and Security")
3. Select the "Hardware" Tab. (Windows 7: "Hardware and Sound", Windows Vista: skip this step)
4. Click the "Device Manager" Button. (Windows 7: "Devices and Printers -> Device Manager")
5. The "USB Multilink 2.0" device will be shown with an exclamation point next to it. Double-click this device.
6. Click the "Reinstall Driver..." button and follow the dialog instructions to have Windows automatically install the driver. (Windows 7: First click the "Driver" tab, then select "Update Driver...")