Summit-ICE Emulator
Hardware and Software Installation Guide

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Part Number
MANSUMICE

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The Summit-ICE hardware is warranted against defects in materials and workmanship for a period of one year from the date of purchase from Analog Devices or from an authorized dealer.

The Summit-ICE PCI-based emulator contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store used Summit-ICE PCI-based emulator in the protective-shipping package.

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1 Introduction

Thank you for purchasing Analog Devices Summit-ICE PCI-based JTAG emulator. The Summit-ICE is used in conjunction with the VisualDSP++ development environment to create, test and debug advanced DSP application software on all of Analog devices fixed and floating-point JTAG based DSPs.

The Summit-ICE system provides state-of-the-art support for JTAG-compliant Analog Devices DSPs. Key features of the Summit-ICE include:

- Plug-n-Play PCI card
- Windows® 98, Windows NT, Windows® 2000, or Windows XP operation
- Emulation for the industry standard Analog Devices JTAG families of DSPs
- Rugged high-speed JTAG emulation pod

1.1 For More Information About Analog Devices Products

Analog Devices can be accessed on the Internet at http://www.analog.com. You can directly access the DSP Web pages at http://www.analog.com/dsp. This page provides access to DSP specific technical information and documentation, product overviews, and product announcements. For specific information about DSP tools, go to http://www.analog.com/dsp/tools.

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- FAX questions or requests for information to (781) 461-3010.

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  dsp.support@analog.com

dsp.europe@analog.com (European customer support)

- Call: (800) ANALOGD
- Contact your local Analog Devices sales office or an authorized Analog Devices distributor.

1.3 Purpose of This Manual

The *Summit-ICE Hardware and Software Installation Guide* provides directions for installing the hardware and software for the Summit-ICE on your PC. This manual also provides a description of the use and configuration of the components on the Summit-ICE PCI-based emulator.

1.4 Intended Audience

This manual is an installation guide for the Summit-ICE PCI-based emulator. This manual is intended to help the customer quickly install the Summit-ICE so that they can begin using VisualDSP++.

1.5 Manual Contents

This manual contains the following information:

- Chapter 1 — Introduction
  Provides manual information and Analog Devices contact information.

- Chapter 2— Getting Started
  Provides software and hardware installation procedures, PC system requirements, and basic board information.

- Chapter 3 — Support
  Provides Technical Support Contact information.

- Chapter 4 — References
  Provides information on different resources available in developing an ADI DSP application.

1.6 On-line Help

Your software installation kit includes online Help as part of the Windows® interface. These Help files provide information about VisualDSP++ and the Summit-ICE.

To view the VisualDSP++'s Help, click on the **Help** menu item or go to the Windows task bar and select Start\Programs\VisualDSP\VisualDSP++ Help.

The documents in the following two tables can be found through online help or in the Docs folder of your VisualDSP++ installation.

For more documentation, please go to http://www.analog.com/dsp/tech_doc.

2 Getting Started

2.1 Overview

This chapter provides the information you need to begin using the Summit-ICE system. Install your software and hardware in the order presented in section 2.4 for correct operation. This chapter has the following sections:

- Contents of your Summit-ICE Package (Section 2.2)
  Provides a list of the components that are shipped with this Summit-ICE PCI-based Emulator.

- PC Configuration (Section 2.3)
  Describes the minimal requirement for the PC to work with the Summit-ICE PCI-based Emulator.

- Installation Tasks (Section 2.4)
  Describes the step-by-step procedure for setting up the hardware and software.

2.2 Contents of your Summit-ICE Package

Your Summit-ICE PCI-based emulator package contains the following items:

- Summit-ICE JTAG daughter card
- Summit-ICE pod assembly
- CD containing emulation driver software
- Registration card – please fill out and return

The Summit-ICE PCI-based emulator contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store used Summit-ICE in the protective-shipping package.

2.3 PC Configuration

For correct operation of the Summit-ICE PCI-based emulator, your computer must have the minimal configuration shown in Table 2-1.

Table 2-1: Minimum PC Configuration

Windows® 98, Windows NT, Windows® 2000, or Windows XP
Intel (or compatible) 166 MHz processor
VGA monitor and color video card
2-button mouse
50 MB free on hard drive
32 MB RAM
One available PCI slot
CD-ROM drive

2.4 Installation Tasks

The following tasks are provided for the safe and effective use of the Summit-ICE PCI-based emulator. Follow these instructions in the order presented to ensure correct operation of your software and hardware.

1. Install the Summit-ICE hardware
2. Install the Summit-ICE driver
3. Verify driver installation.

2.4.1 Install the Summit-ICE Hardware

This section provides all of the information required to install the Summit-ICE card and pod into your PC.

The Summit-ICE PCI-based emulator contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store used Summit-ICE in the protective-shipping package.

2.4.1.1 Unpacking the Emulator

Remove the Summit-ICE board and pod from the package. Care should be taken when handling these boards to avoid discharge of static electricity, which may damage some components. Put the pod aside. The Summit-ICE board must first be installed in your computer.

2.4.1.2 Installing the Summit-ICE Board in your Computer

For specific instructions on installing a PCI card into your computer consult the documentation that is provided by the manufacturer of your computer.

Upon installing your Summit-ICE you will need to install the driver before you can use it for the first time. Refer to section 2.7 for instructions on how to install the appropriate driver.

2.4.1.3 Configuring the Summit-ICE Pod

The Summit-ICE pod contains four internal jumpers. These jumpers are accessed by removing the four screws on the bottom of the plastic enclosure and removing the top of the enclosure. The jumpers are shown in Figure 2-1. The Summit-ICE pod also contains two status LEDs. The LED on the left is for voltage status (3V/5V) and the LED on the right is for emulator status. The LEDs are shown in Figure 2-2. Periodic LED activity on the emulator status LED indicates communication between the target DSPs and emulator.

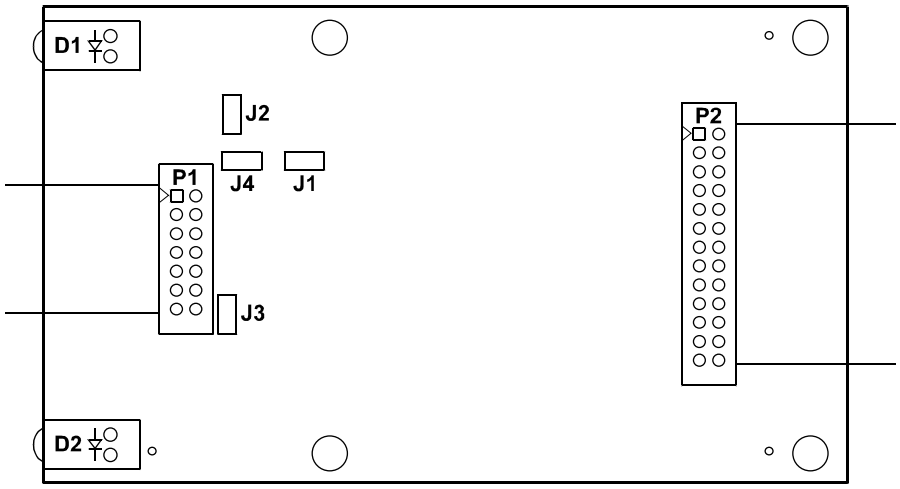

Figure 2-1 Jumpers

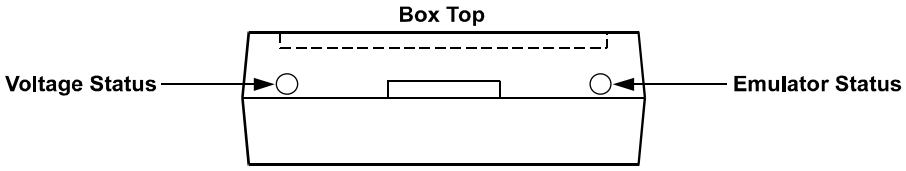

Figure 2-2 LEDs

2.4.1.3.1 Connecting to a 5V Target

Jumper J1 is used to differentiate between a 3V or 5V target. This is the only jumper that most users will need to change. When the jumper is installed the JTAG signals are configured to connect to a 5V target. When the jumper is installed the LED on the left side is not illuminated.

2.4.1.3.2 Connecting to a 3V Target

When the jumper is not installed the JTAG signals are configured to connect to a 3V target. When the jumper is not installed the LED on the left is illuminated indicating a 3V target. This is the default setting.

2.4.1.3.3 Reducing Noise Issues on the JTAG Signals

There are three jumpers provided to help reduce problems that may arise because of ringing and reflections on the JTAG signals on the target board. The default is that these jumpers are not installed. The three jumpers are J2, J3, and J4.

Jumpers J2 and J3 are used for adding a parallel terminator on the TDO and CLKIN signals. When the jumper is installed a parallel terminator of 120Ω and 91Ω is connected to the TDO and CLKIN signals. Figure 2-3 shows how the terminator is connected to the JTAG signals. It is important to note that the target MUST be able to drive a 51Ω load before these jumpers are installed. The DSP cannot drive this load directly; a driver should be inserted between the JTAG signals on the DSP and the JTAG signals on the header.

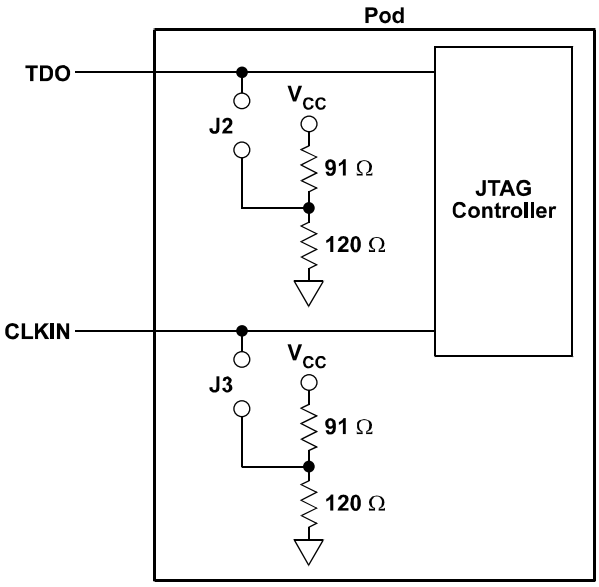

Figure 2-3 Terminators connected to the JTAG Signals

Jumper J4 is provided to allow the board level test pins on the JTAG connector (BTMS, BTCK, BTRST, and BTDI) to be used as ground pins to allow for greater shielding on the JTAG cable connecting the pod to the target. These pins should only be used as ground pins if they are not used on your target.

2.5 Connecting the Pod to the Summit-ICE Board

The pod connects to the Summit-ICE board through a shielded flat ribbon cable and a 25-pin connector. Connect the pod to the Summit-ICE before applying power to the PC. The JTAG header attached to the pod can be connected/disconnected without damaging the pod system as long as the target system is powered down.

Important! Connect/disconnect the remote pod to/from the emulator card *only* with the power turned off. Failure to follow this precaution may result in damage to the pod or board.

2.6 Connecting the Pod to your Target System

The pod connects to the target processor through the JTAG interface. The target board must be built with an appropriate JTAG connector. Please note the position of the key pin. The key pin should be used as a guide to connect the pod to the target. Included with the Summit- ICE system are two extender connectors. These extenders are used to connect the Summit-ICE system to a target, which was designed for use with the ADI ICEPAC™. These extenders allow connection to the JTAG pins on the ICEPAC header.

2.7 Installing the Summit-ICE PCI Driver

The Summit-ICE can be installed on Windows 98, Windows NT, Windows 2000, and Windows XP and requires one available PCI slot. Section 2.7.1 describes the installation on Windows 98. Section 2.7.2 describes the installation on Windows NT. Section 2.7.3 describes the installation on Windows 2000. Section 2.7.4 describes the installation on Windows XP.

2.7.1 Windows 98 PCI Driver Installation

Before using the Summit-ICE for the first time, the Windows 98 PCI driver must be installed. This is accomplished as follows:

1. Insert the **VisualDSP++ Emulator Tools CD-ROM** into the CD-ROM drive.
2. Power on the PC and start Windows 98. This will activate the **Windows 98 Add New Hardware Wizard** as shown in Figure 2-4.

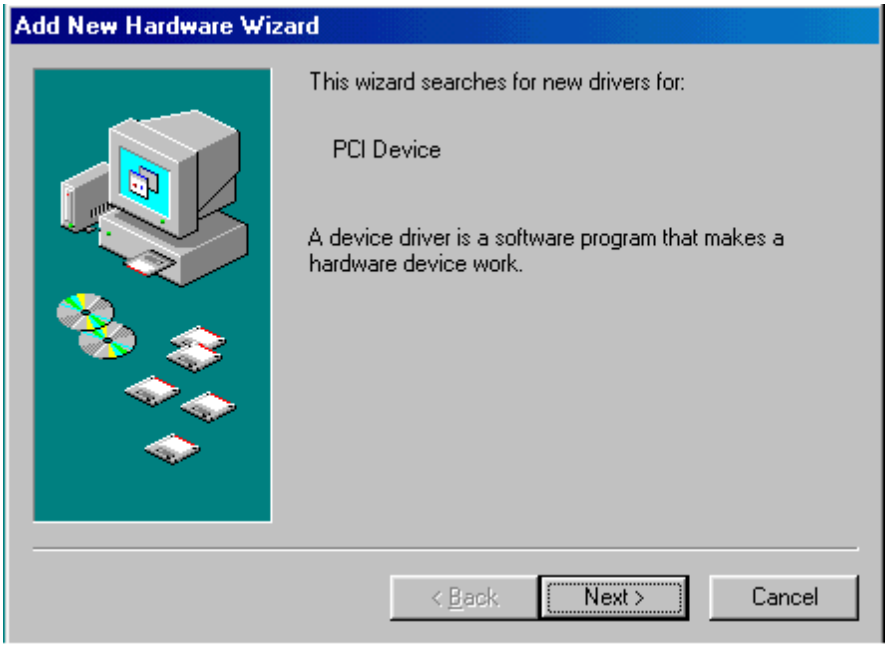

Figure 2-4: Add New Hardware Wizard Dialog Box

3. Click **Next**.
4. Select **Search for the best driver for your device** as shown in Figure 2-5.

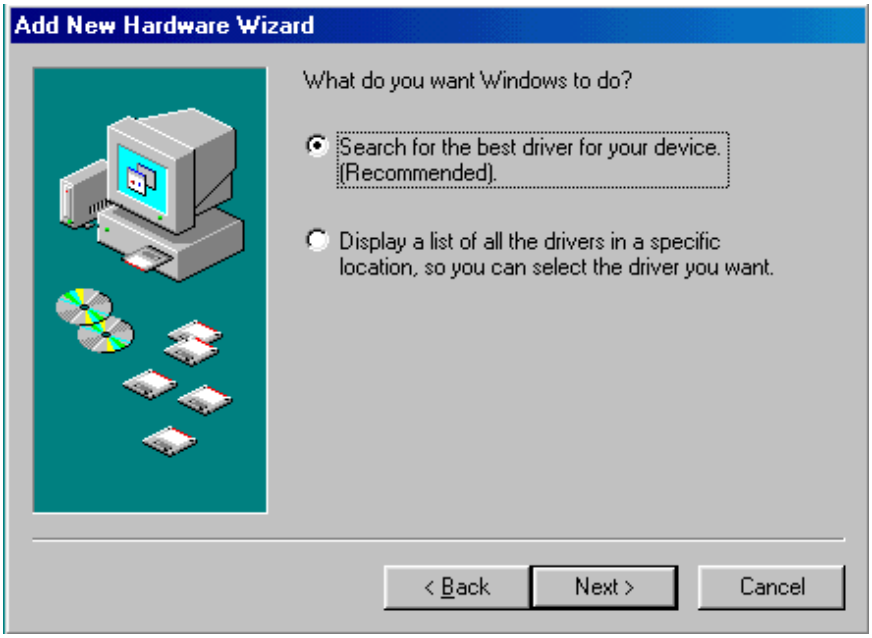

Figure 2-5: Search for the Driver

5. Click **Next**.
6. Select **CD-ROM drive** as shown in Figure 2-6.

Figure 2-6: Search the CD-ROM

7. Click **Next**.

Windows 98 will locate the PCIEmul.inf file that is on the CD-ROM as shown in Figure 2-7.

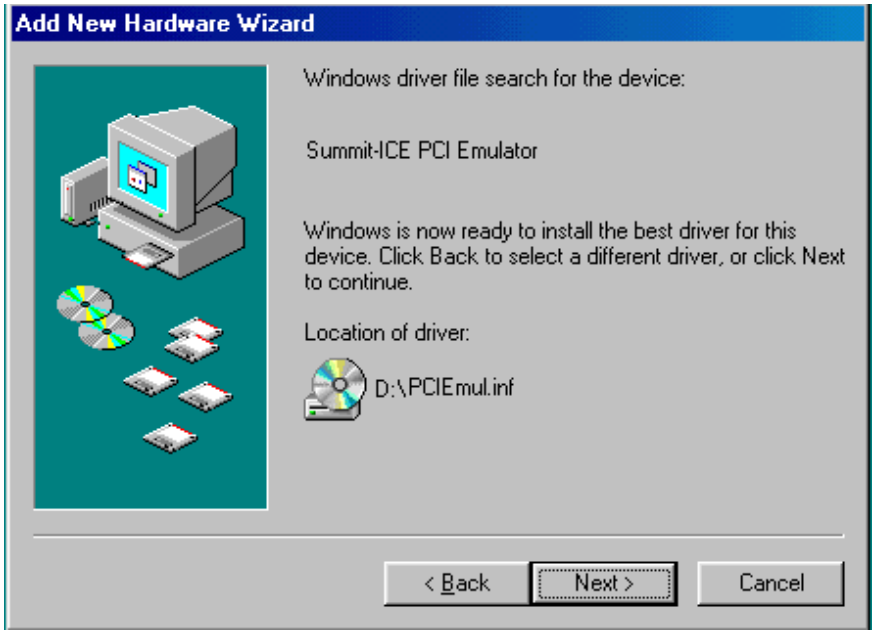

Figure 2-7: The Driver is Located

8. Click **Next**.

Figure 2-8 will appear.

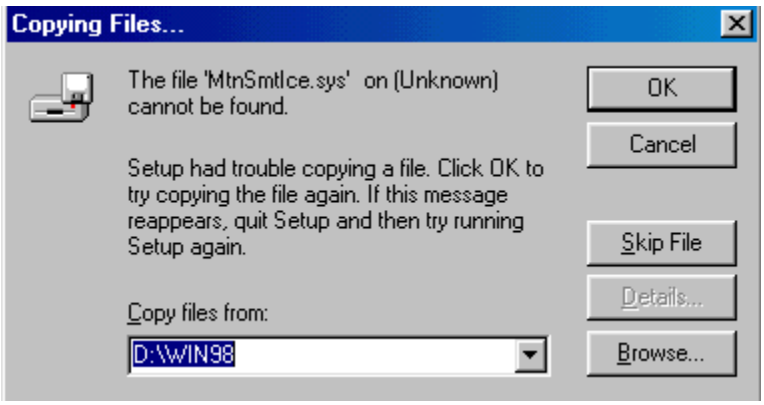

Figure 2-8: Search for .sys File Dialog Box

9. Click **Browse** button.

Figure 2-9 will appear.

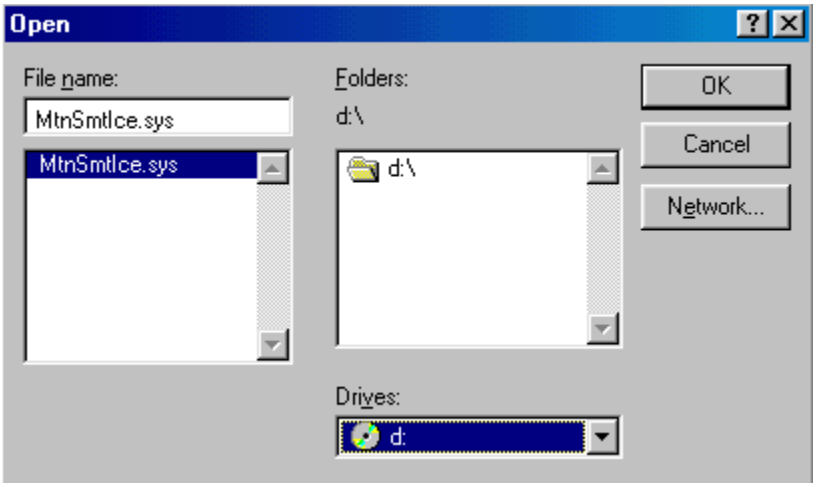

Figure 2-9: Open the .sys File

10. In **Drives** select your CD-ROM drive.
11. Click **OK**.

Figure 2-10 will appear.

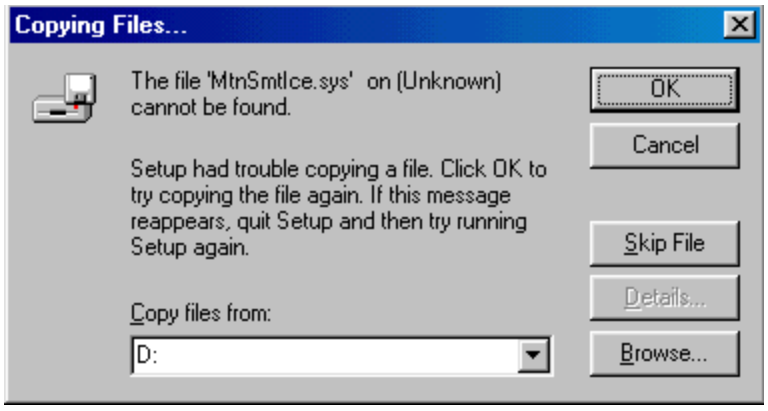

Figure 2-10: Copying Files

12. Click **OK**.

The driver installation is now complete as shown in Figure 2-11.

Figure 2-11: Finish the Software Installation

13. Click **Finish** to exit the wizard.

Verify driver installation by following the instructions in Section 2.7.5.

2.7.2 Windows NT PCI Driver Installation

Before using the Summit-ICE for the first time, run the Emulator Tools installation and be sure to select Summit/Mountain as the Emulator to install. The install will place the driver in the appropriate folder so that the driver is installed properly.

2.7.3 Windows 2000 PCI Driver Installation

Before using the Summit-ICE for the first time, the Windows 2000 PCI driver must be installed. This is accomplished as follows:

1. Insert the **VisualDSP++ Emulator Tools CD-ROM** into the CD-ROM drive.
2. Power on the PC and start Windows 2000. This will activate the **Windows 2000 Found New Hardware Wizard** as shown in Figure 2-12.

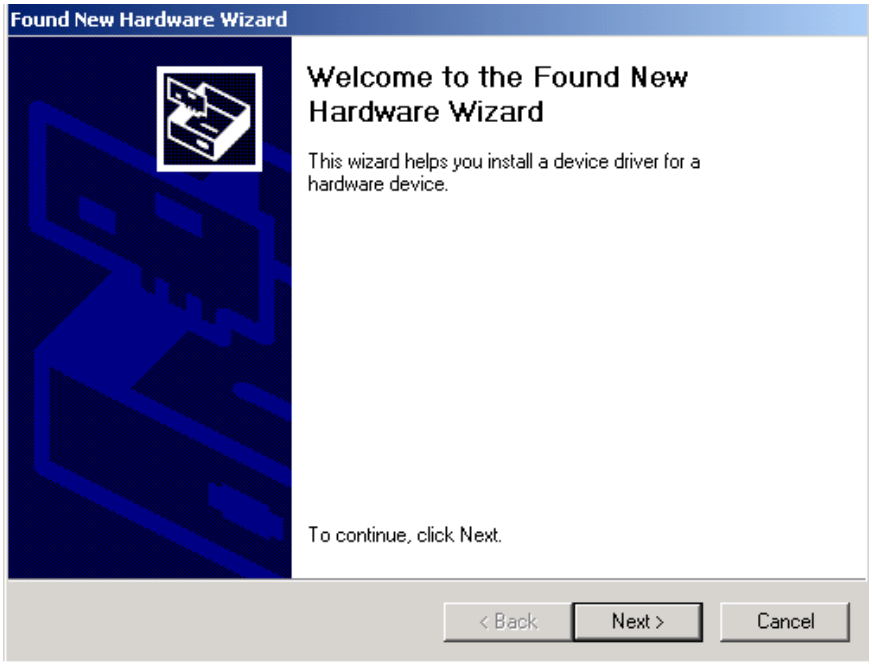

Figure 2-12: Found New Hardware Wizard

3. Click **Next**.
4. Select **Search for a suitable driver for my device** as shown in Figure 2-13.

Figure 2-13: Search for a Suitable Driver

5. Click **Next**.
6. Ensure that **CD-ROM drive** is selected as shown in Figure 2-14.

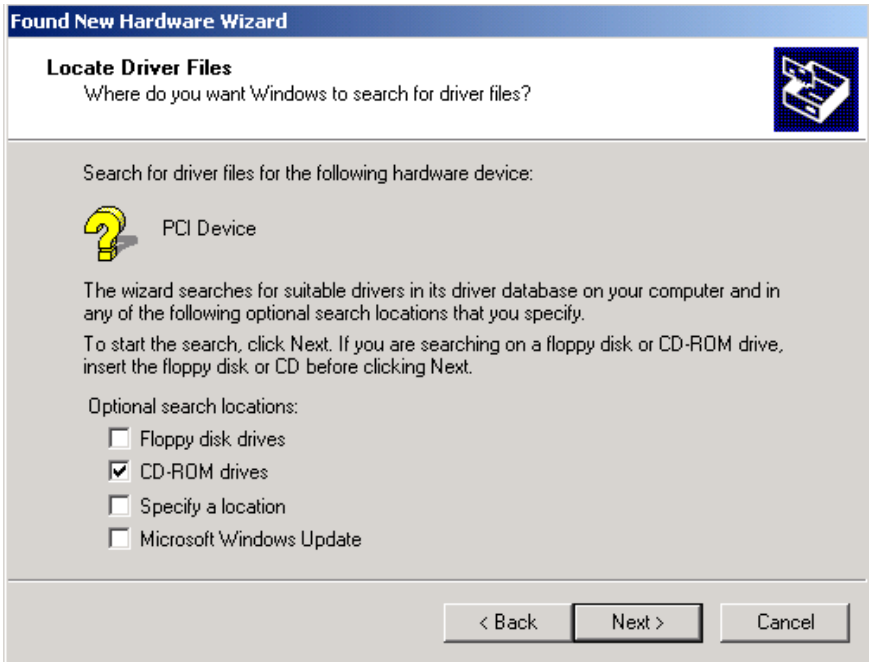

Figure 2-14: Locate Driver Files

7. Click **Next**.

Figure 2-15 appears.

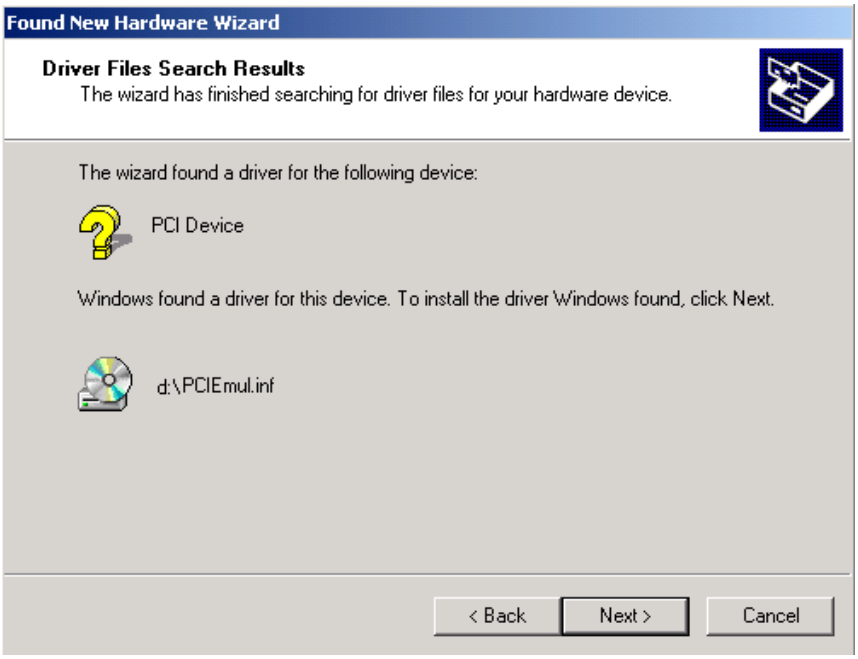

Figure 2-15: Driver File Search Results

8. Click **Next**.

Windows 2000 will automatically install the Summit-ICE JTAG Emulator driver. The driver installation is now complete as shown in Figure 2-16.

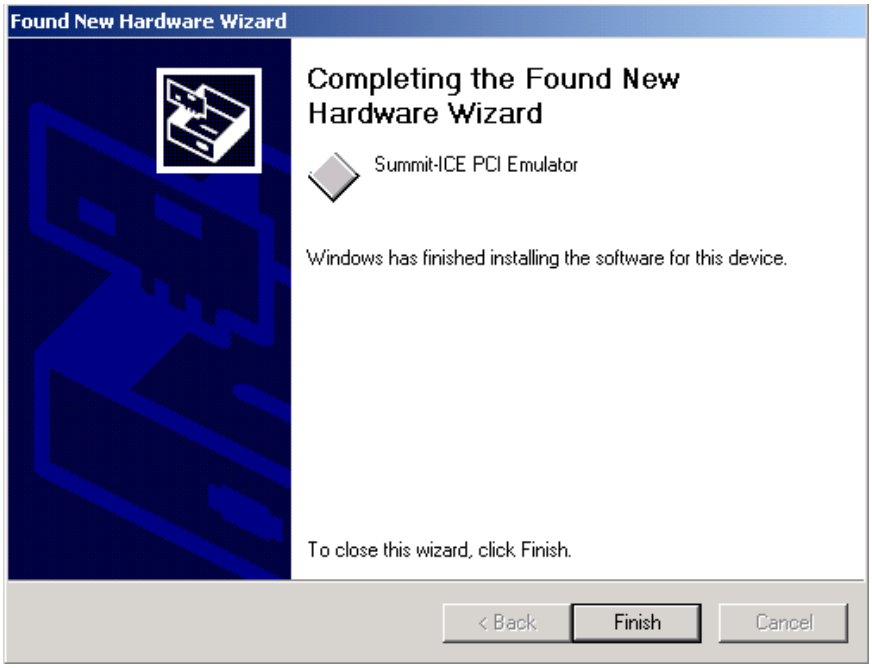

Figure 2-16: Completing Driver Installation Dialog Box

9. Click **Finish** to exit the wizard.

Verify driver installation by following the instructions in section 2.7.5.

2.7.4 Windows XP PCI Driver Installation

Before using the Summit-ICE for the first time, the Windows XP PCI driver must be installed. This is accomplished as follows:

1. Insert the **VisualDSP++ Emulator Tools CD-ROM** into the CD-ROM drive.
2. Power on the PC and start Windows XP. This will activate the **Windows XP Found New Hardware Wizard** as shown in Figure 2-17.

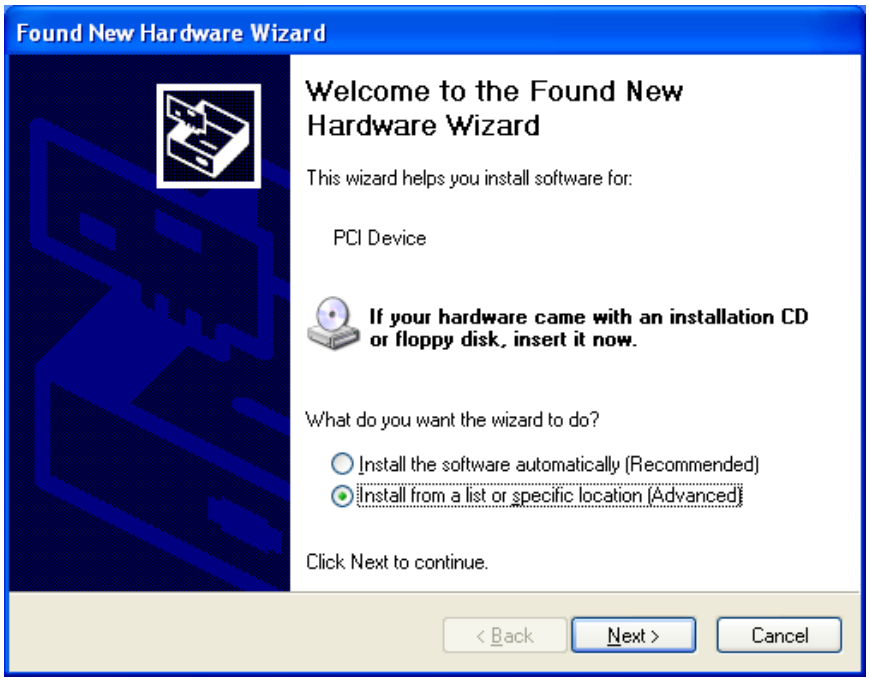

Figure 2-17: Found New Hardware Wizard

3. Select **Install from a list or specific location**.
4. Click **Next**.

5. Select **Search for the best driver in these locations** and select **Include this location in the search** as shown in Figure 2-18. Enter the path for the drive that contains **VisualDSP++ Emulator Tools CD-ROM**.

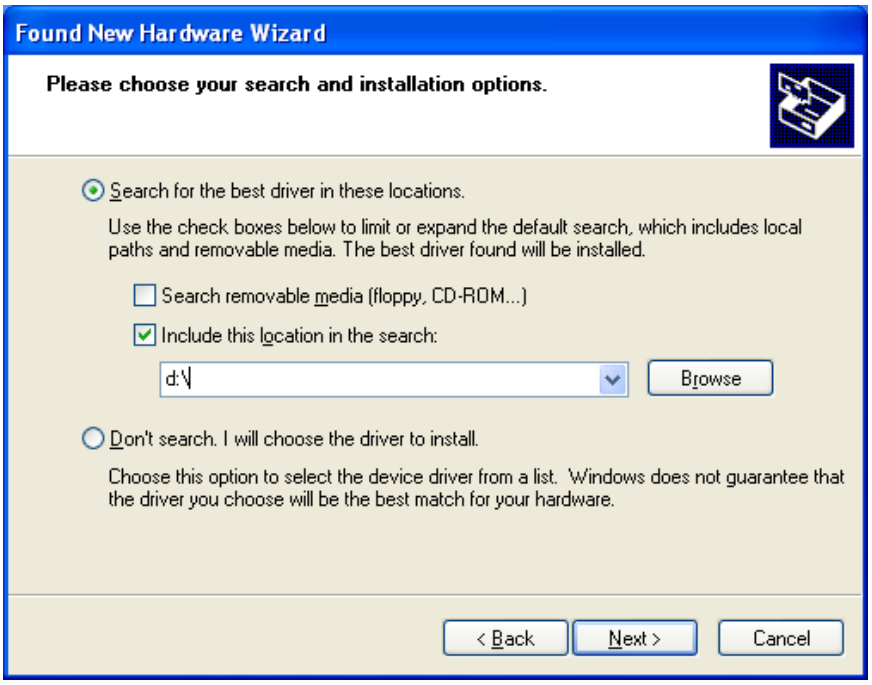

Figure 2-18: Search for a Suitable Driver

6. Click **Next**.

7. Windows XP will automatically install the Summit-ICE JTAG Emulator driver. The driver installation is now complete as shown in Figure 2-19.

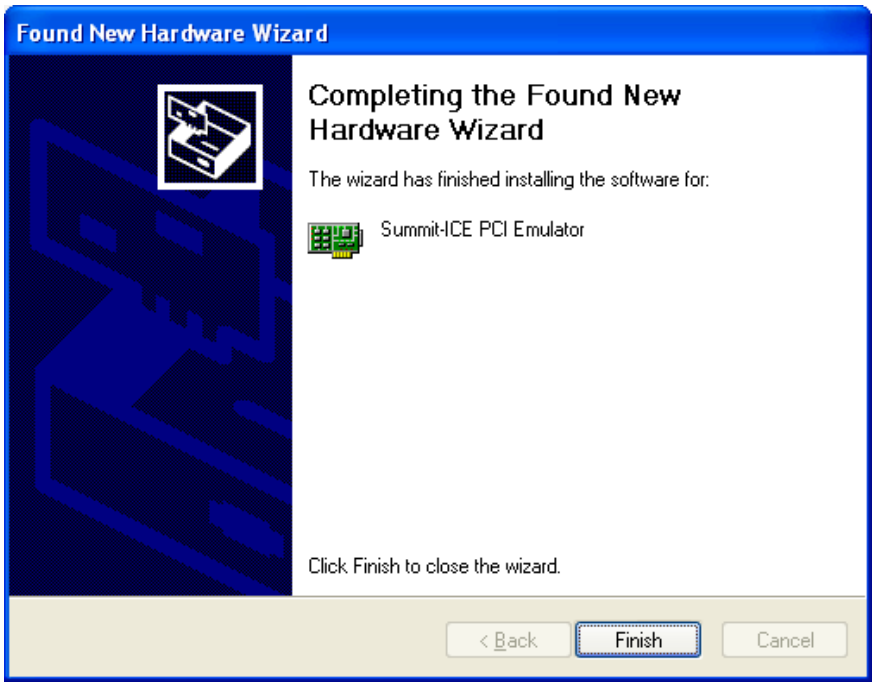

Figure 2-19: Completing Driver Installation Dialog Box

8. Click **Finish** to exit the wizard.

Verify driver installation by following the instructions in Section 2.7.5.

2.7.5 Verifying Driver Installation

Before using your Summit-ICE PCI-based emulator, verify that the PCI driver software is installed properly.

1. Open **Device Manager** and verify that Summit-ICE JTAG Emulator shows under DSP Emulators with no exclamation point as shown in Figure 2-20.

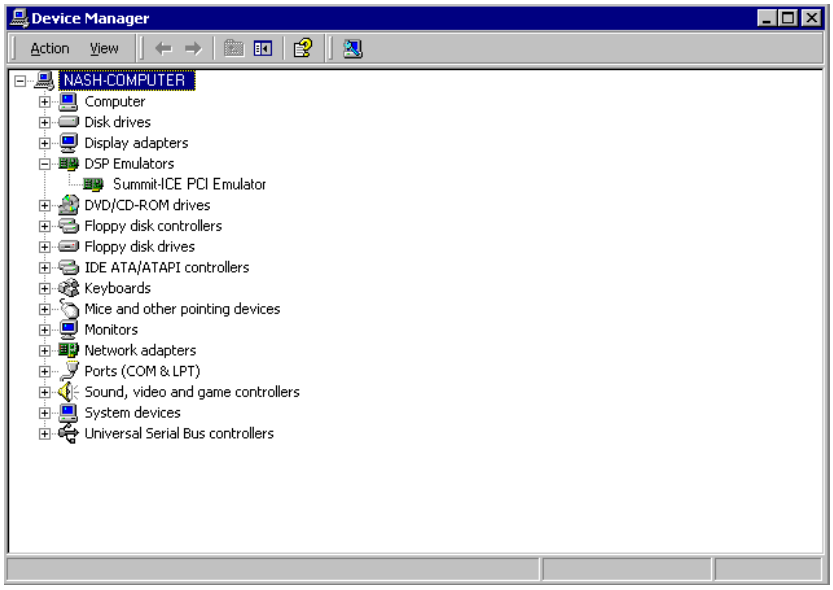

Figure 2-20: Verifiying Driver Installation

2. From **Start\Program Files\VisualDSP\ICE Test Utility** open **IceTest** as shown in Figure 2-21 to verify that the driver is installed correctly and that there is connectivity with the target board.

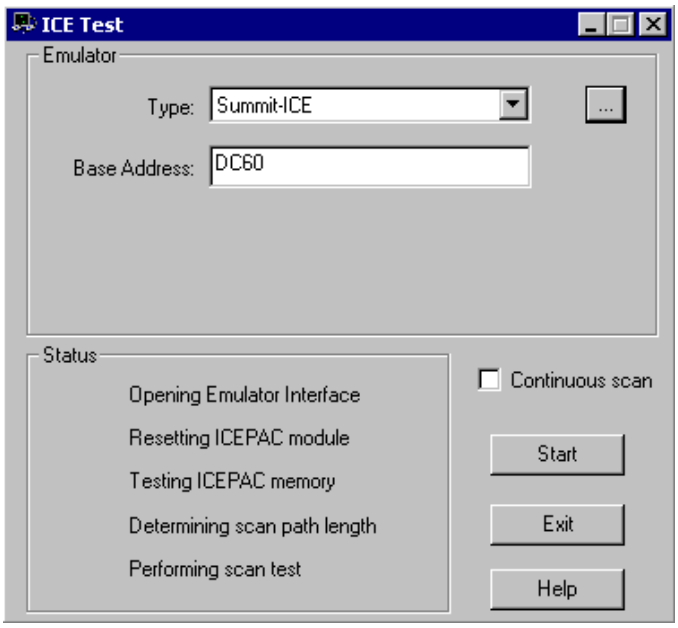

Figure 2-21: IceTest Utility

3. If there is more than one emulator installed in the PC click on the **browse** button ("…") to the right of Type as shown in Figure 2-21 to bring up the list of Emulators installed as shown in Figure 2-22. If there is only one emulator installed in the PC then the address information will be filled in automatically when launching IceTest and you can skip to step 5.

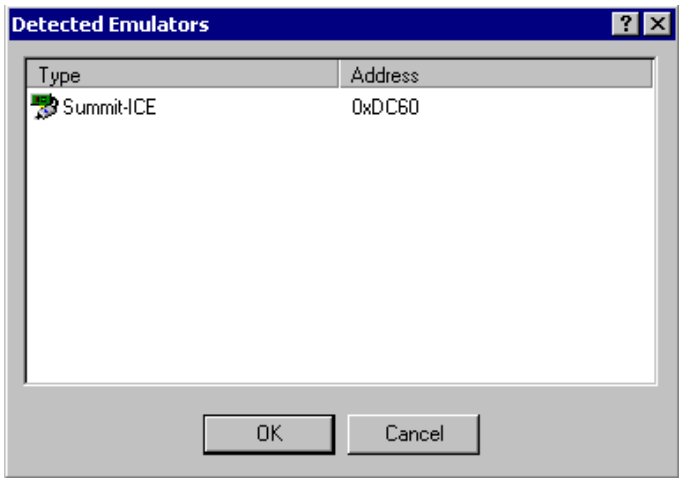

Figure 2-22: Detected Emulators

4. Choose **Summit-ICE** as shown in Figure 2-22 and click **OK**. This will fill in Base Address with the appropriate address as shown in Figure 2-21.
5. Ensure that the JTAG header is connected to a target board and click **Start**.
6. If all the tests pass, green check marks appear next to the entries in the Status group as shown in Figure 2-23.

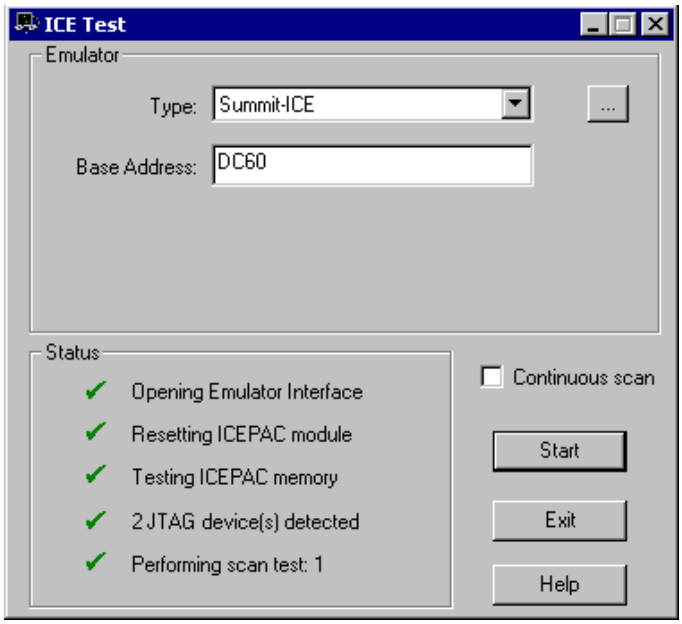

Figure 2-23: IceTest Pass

The driver is installed correctly and communication with the target board has been established.

If they do not pass you will see a note at the bottom of the dialog box explaining the failure in more detail as show in Figure 2-24.

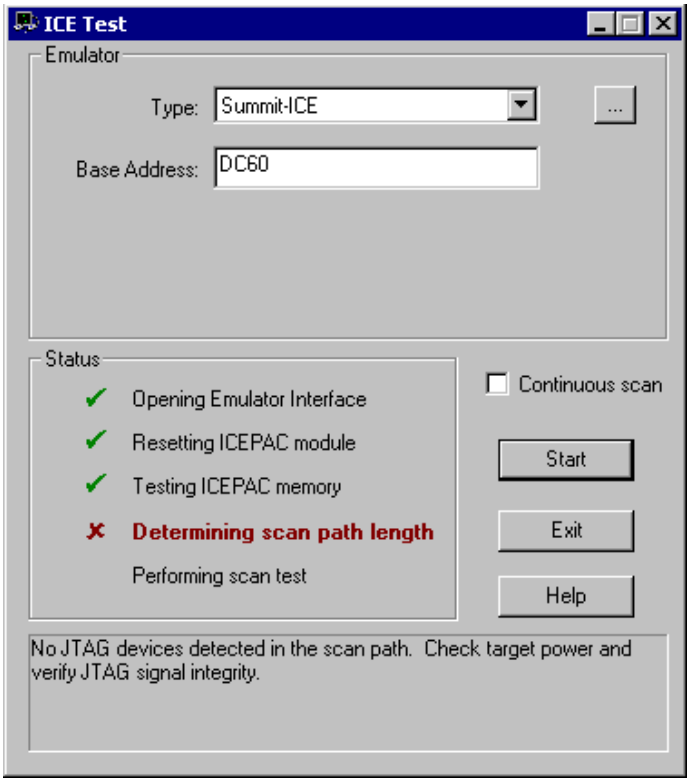

Figure 2-24 IceTest Failure

2.7.6 Creating a New Platform

When creating a new platform, use an existing template or create a new template from scratch. Base your platform on one of the existing platforms (Analog Devices evaluation kits) listed in the VisualDSP++ Configurator window's Platform Templates box. To launch the VisualDSP++ Configurator go to Start\Program Files\VisualDSP\VisualDSP++ Configurator.

2.7.6.1 Creating a new platform based on an Analog Devices Evaluation Kit

To create a platform that is based on an Analog Devices, Inc. evaluation kit follow theses instructions:

- **NOTE: The Addresses shown are for example purposes only. Actual addresses will depend on the PC and operating system.**

1. Bring up the **VisualDSP++ Configurator** from the Windows Start menu.
2. In the Platform Templates box, **highlight the template** on which to base your new platform as shown in Figure 2-25.

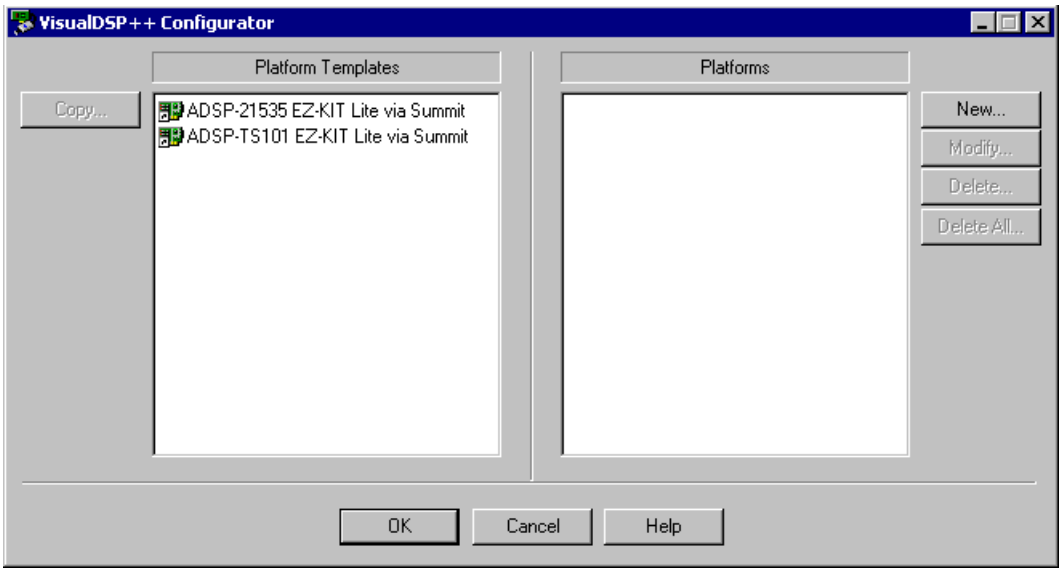

Figure 2-25: VisualDSP++ Configurator (from template)

3. Click **Copy** and Figure 2-26 will appear.

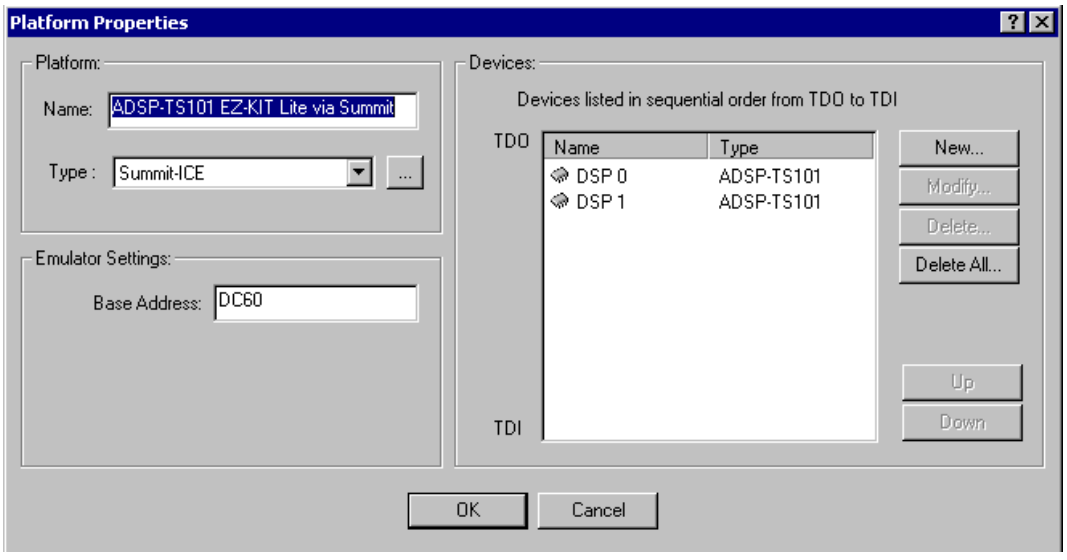

Figure 2-26: Platform Properties (from template)

4. If required, you can add a new device by following steps 9 and 10 in section 2.7.6.2 or click **OK** to add your new platform as shown in Figure 2-27.

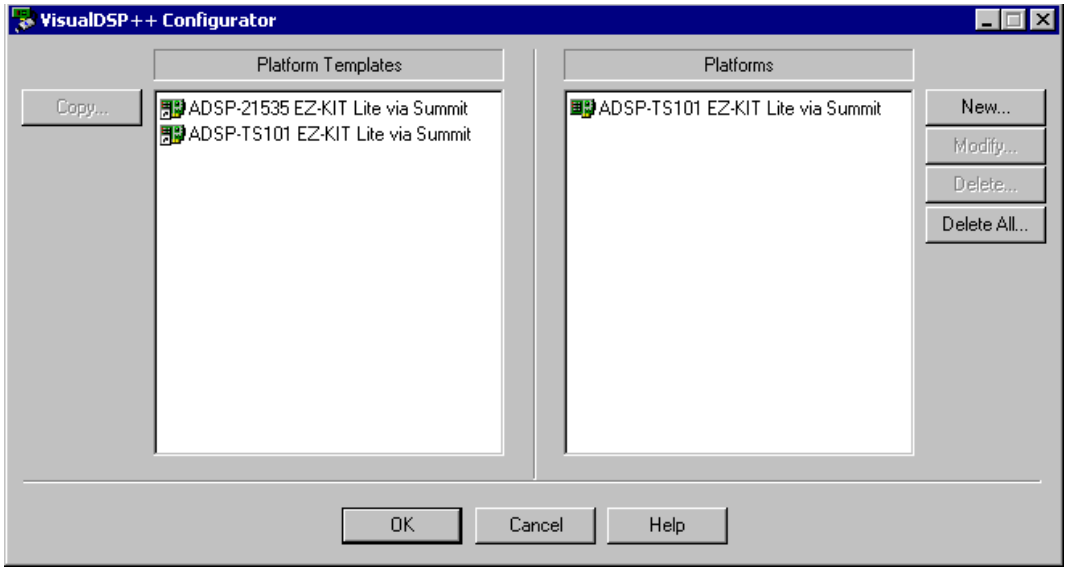

Figure 2-27: VisualDSP++ Configurator (from template) Platform Added

5. Click **OK** to finish the VisualDSP++ Configurator

2.7.6.2 Creating a New Platform from Scratch

Follow the instructions below to create a platform that is **not** based on an Analog Devices evaluation kit.

1. Bring up the **VisualDSP++ Configurator** from the Windows Start menu.
2. Click **New** in the VisualDSP++ Configurator to open the Platform Properties dialog box as shown in Figure 2-28 to create a new platform.

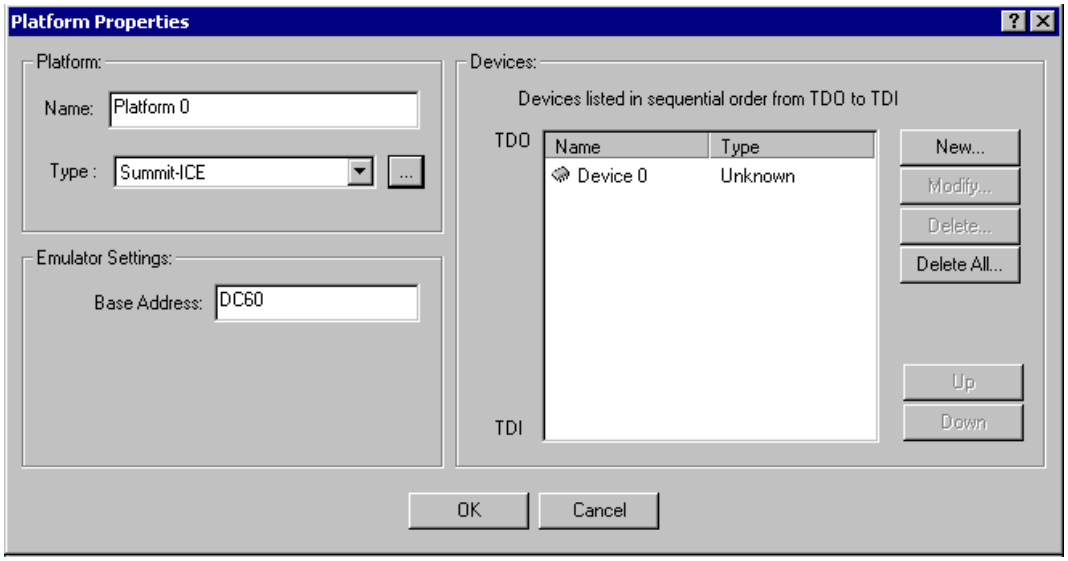

Figure 2-28: Platform Properties (from scratch)

3. In the name field**, type** an appropriate name for the platform that is being created.
   The Type field indicates the type of emulator that you would like to use.
4. If there is more than one emulator installed in the PC click on the **browse** button ("…") to the right of Type as shown in Figure 2-28 to bring up the list of Emulators installed shown in Figure 2-29. If there is only one emulator installed in the PC then the address information will be filled in automatically when launching IceTest and you can skip to step 6.

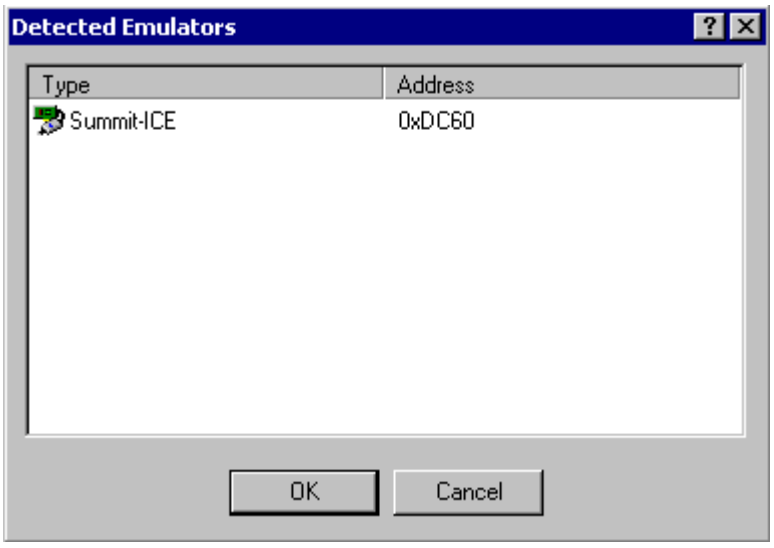

Figure 2-29: Detected Emulators

5. **Highlight** the emulator to be used for your platform and click **OK**.
   Notice that the Emulator Settings group shown in Figure 2-28 gets filled in with the correct information based on the emulator you chose.
6. **Highlight Device 0** in the Devices list and click **Modify** to display the Device Properties dialog box shown in Figure 2-30.

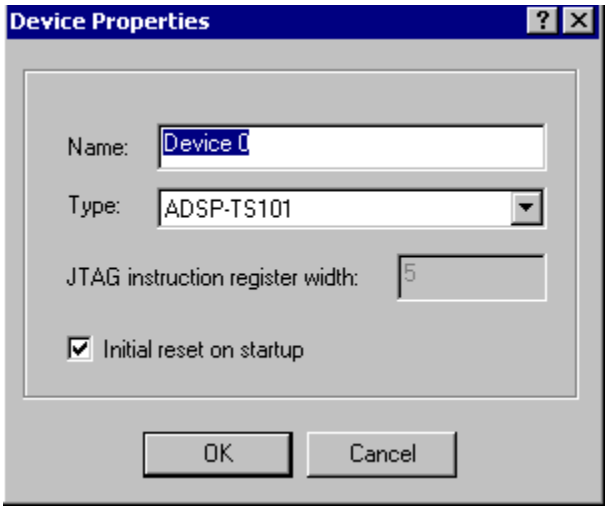

Figure 2-30: Device Properties

7. **Select an appropriate name** for your device and then **select the type of device** to which you will be connecting.
8. Click **OK** and you will see that your device shows up under the Devices list with the appropriate type as shown in Figure 2-31.

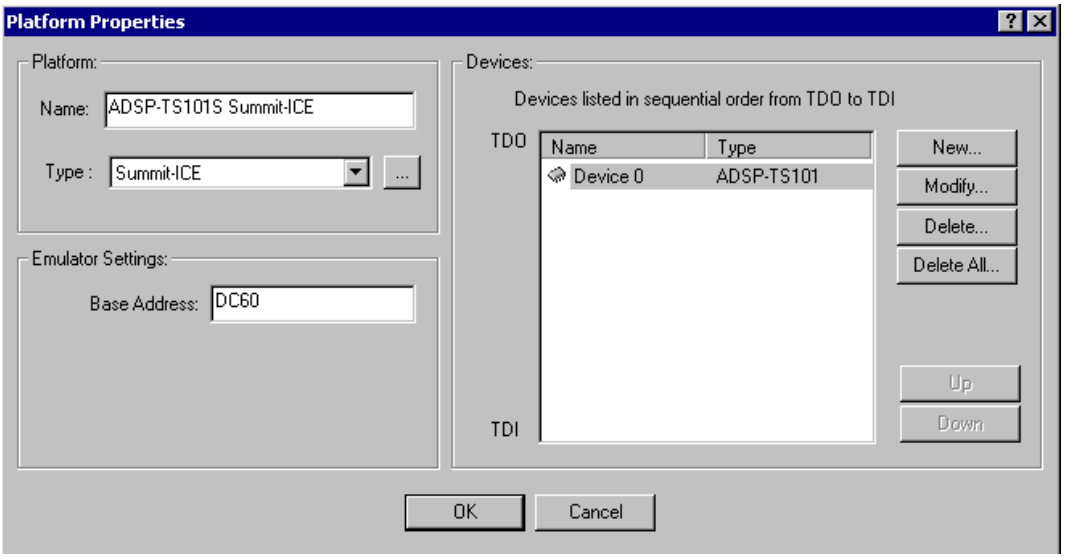

Figure 2-31: Platform Properties (from scratch) Device Added

9. Click **OK** to add your new platform as shown in Figure 2-32.

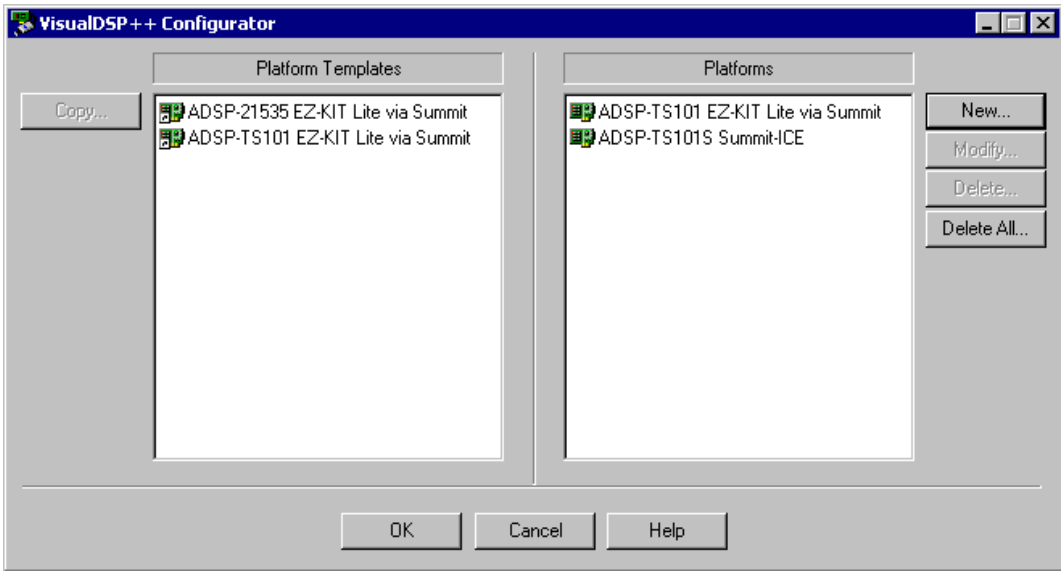

Figure 2-32: VisualDSP++ Configurator (from scratch) Platform Added

10. Click **OK** to finish the VisualDSP++ Configurator.

3 Support

3.1 Technical Support

For technical support, you may contact the Analog Devices DSP Tools Technical Support group in any of the following ways:

- Fill out the DSP Tools Technical Support Web site form at: http://forms.analog.com/Form_Pages/DSP/tools/contactDSP.asp
- Send a description of the problem by e-mail to: dsptools.support@analog.com
- Call the customer support hotline at 1-800-ANALOG-D (1-800-262-5643 U.S.A. only)

For direct support of the Analog Devices' DSPs, call the Analog Devices' DSP Applications Engineering group at 1-800-ANALOG-D or email dsp.support@analog.com.

3.2 Quality Assurance

Analog Devices is committed to providing quality products and services. To continually provide this quality, please contact our Quality Assurance Department directly if you have any concerns (603) 883-2430, Monday through Friday during normal business hours or via e-mail at *dsptools@analog.com*. Our Quality Assurance Manager will listen to your concerns and provide a timely and effective solution.

4 References

This section describes other documentation resources you may find helpful in developing your application.

- For information on designing the interface between an Analog Devices JTAG DSP and the emulation header on your custom DSP target board, refer to the latest version of Analog Devices EE-68.
- For information on the architecture and system interface of the ADSP processor, refer to the appropriate Analog Devices *DSP Hardware Reference.*
- For ADSP timing specification and other hardware design information, refer to the appropriate DSP *Data Sheet*.
- For complete information on software development tools (assembler, compiler, linker, and so on), refer to the documentation included with VisualDSP++. This information is available in printed manuals, online help, and online in PDF format.
- For information about your development platform, refer to your operating system manuals and hardware system manuals.
- For information about digital signal processing theory and applications, you may wish to consult:
  - Higgins. *Digital Signal Processing In VLSI*. Prentice-Hall, 1990.
  - Oppenheim and Schafer. *Digital Signal Processing*. Prentice-Hall, 1975.

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