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# *Activator 2 and 2s*

## *Hardware Installation*

### *and Setup Guide*



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## Introduction

This document contains installation and setup instructions for the operation of the Activator™ 2 and 2s programmers. The Activator 2 and 2s are used to program Actel devices. The Activator 2 and Activator 2s programmers are functionally equivalent except in the number of programming sockets and Actionprobe ports (four for Activator 2 and one for Activator 2s).

The Activator 2 or 2s will program any Actel design created with the Actel development system ALS 1.22 or later, or the Designer Series software.

On a PC, there are three parts to installing an Activator 2 or 2s programmer: installing a SCSI card into the PC, installing the appropriate software driver(s), and hooking up the Activator programmer itself. On workstations, there are two parts: hooking up the Activator programmer and creating a symbolic link.

After completing the installation instructions contained in this manual, you will need to reference the *APS Programming System User's Guide* for instructions on how to use the APS programming software to program a device.

For the most up-to-date Activator installation information, see the Actel Web site below or use the automated fax back service.

Web site: <http://www.actel.com/pub/activator>

Action Facts fax back service: (800) 262-1062

## Unpacking

Unpack your Activator 2 or 2s carefully and set it up in a clean operating environment. Never expose the unit to excessive heat, such as direct sunlight or heating vents and other heat-generating devices. Make sure you allow adequate ventilation on all four sides of the unit. The programmer comes equipped with rubber feet to raise it above the operating surface, allowing further ventilation. Do not allow the Activator 2 to slip off the front of the operating surface; this would block the ventilation to the bottom of the unit.

## Activator 2 and 2s Rear Panels

The connectors on the rear panels of the Activator 2 and 2s are shown in Figure 1-1 and Figure 1-2. The SCSI connectors are used to communicate with the computer via the SCSI interface. The two connectors on the Activator 2 are connected in parallel.

The two Actel test ports are used for factory diagnostic testing of the Activator 2 and are not available for customer use. Please *do not* connect any devices to these ports. The Actionprobe<sup>®</sup> ports support in-circuit debugging of up to four separate Actel devices.

Use the SCSI Rotary Switch to select the SCSI bus ID. The proper position of the switch is explained in the hardware and software installation sections that follow.

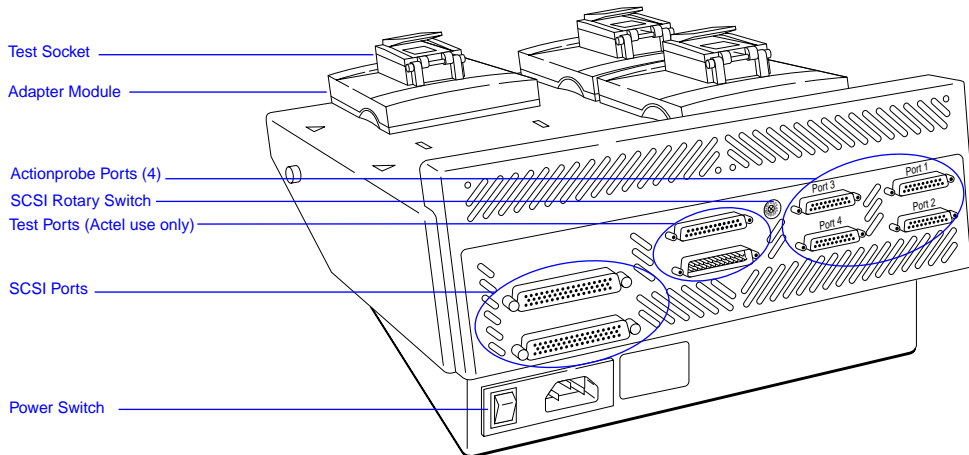
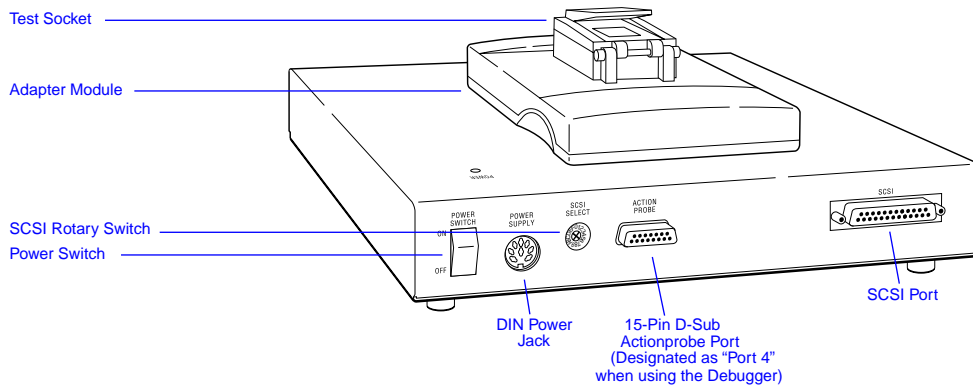


Figure 1-1. Activator 2 Rear Panel Connectors





*Figure 1-2. Activator 2s Rear Panel Connectors*

## Programming Adapters

The Activator 2 programmer has four sockets for Programming Adapters; this allows simultaneous programming of up to four Actel FPGAs. The Activator 2s has one socket for a single Programming Adapter.

**Note** For availability of programming adapters, consult your local sales representative.

To install a Programming Adapter, position the two metal guides on the adapter into the corresponding slots on the Activator 2 or 2s programmer. Press down on the Programming Adapter to seat the connector firmly on the bottom of the module. Do not force the adapter; it should fit easily. Be sure to keep the connector area clean.

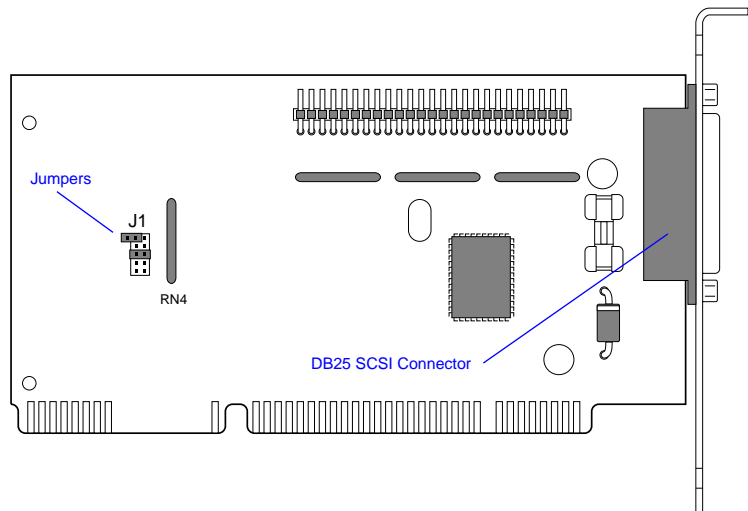
To remove the Programming Adapter, start by pulling the top of the adapter toward you until the connector comes free (indentations are provided to facilitate this step). Then slide the adapter upward to free the two metal guides.

Select the Programming Adapter required for the package type being programmed. If the Programming Adapter does not match the package type of the design being programmed, the APS 2 software displays the message “wrong adapter type” for each incorrect socket. In each case, replace the wrong adapter with the correct one.

## *Adaptec AVA-1505 SCSI Board (PC only)*

The Adaptec® AVA-1505 SCSI Controller board, included with this package (Figure 1-3), interfaces with either the Activator 2 or 2s programmer. The Adaptec AVA-1505 SCSI board, shown in Figure 1-3, has an external 25-pin DB25 edge connector that is similar to a typical parallel port.

**Warning:** Make sure you do not confuse this connector with the parallel port — if you plug an Activator or printer into the wrong connector it can cause irreversible damage.



*Figure 1-3. Adaptec AVA-1505 SCSI Controller Board*

A jumper block (J1) is located on the left-center of the board. This block is used to configure the I/O address and interrupt number, if necessary. The default I/O address is 340H-35FH. The default interrupt number is IRQ11.

## *Device Handling*

Actel FPGAs are CMOS devices and require proper grounding and ESD handling procedures. While all Actel parts have static discharge protection built in, you should always practice proper ESD handling procedures.

Always keep the Actel parts in their shipping tubes until they are used, and keep the surrounding environment clean and free of dust and debris. Periodically check the Programming Adapter sockets to verify that they are free of dirt or other debris that would prevent good electrical pin connections between the device and socket.

When loading Actel FPGAs in the Programming Adapter socket, be sure to orient them such that pin #1 or pin A1 is facing down. In most cases, the Actel logo is upside down, but you should rely on the Pin 1 indicator to position each package rather than on the logo.

Warning: Damage occurs if the FPGAs are loaded incorrectly.



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## *Installing Activator 2 or 2s on a PC*

This chapter describes how to install an Activator on a PC. There are three parts to installing an Activator 2 or 2s programmer: installing a SCSI card into the PC, installing the appropriate software driver(s), and hooking up the Activator programmer itself.

If your PC already contains an Adaptec SCSI controller card, you can use it instead of installing the Adaptec 1505 SCSI card provided by Actel. See Appendix A on page 33.

Before continuing, verify that you have at least the following minimum PC configuration:

The following is the minimum recommended configuration for Windows APSW programming software:

- 486 or Pentium PC
- 16 MB memory
- Windows 3.1x, Windows 95, or Windows NT

This chapter is divided into the following sections:

- Some brief background information about interrupts and busses in PCs, in “Background Information” on page 8.
- An overview of what is required for a successful installation of the Adaptec 1505 SCSI card, in “Overview” on page 8.
- Configuring the Adaptec 1505 SCSI card when using Windows 3.1x, in “Configuring the 1505 Card for Windows 3.1x/DOS” on page 9.
- Configuring the Adaptec 1505 SCSI card when using Windows 95, in “Configuring the 1505 Card for Windows 95” on page 14.
- Configuring the Adaptec 1505 SCSI card when using Windows NT in “Configuring the 1505 Card for Windows NT” on page 18.
- Installing the Activator programmer, in “Hardware Installation on the PC” on page 22.

## Background Information

PCs use interrupts and addresses to distinguish between different add-in cards. Each add-in card must be assigned a unique interrupt number and a unique address range. If more than one card uses the same interrupt or address range, conflicts between the cards may occur. The newer Plug and Play cards can be configured by software to use unique interrupts and addresses; non-Plug and Play, or legacy, cards cannot. The user of legacy cards must determine which interrupts and addresses are already used by the other cards in the PC so that unique ones can be selected for use by the legacy card. The Adaptec AVA-1505 SCSI card is a legacy card.

All PCs (486 and newer) contain an ISA (or AT) bus, but Plug and Play cards use a different type of bus: the PCI bus. Pentium PCs usually include both types of busses. The Adaptec 1505 SCSI card uses the ISA bus, not the PCI bus. If your Pentium PC contains a PCI bus, then it has reserved certain interrupts for use only by the PCI bus. To use the 1505 card, you will need to tell your computer that the interrupt used by the 1505 card needs to access the ISA bus, not the PCI bus. This is done by changing the setup information in your PC's BIOS, typically during boot-up.

## Overview

For the Adaptec 1505 SCSI card to work on a PC, four things must be correct:

1. The card must be set to a unique interrupt number (IRQ) and a unique port address range. The board's default interrupt number is IRQ11, but may be set to IRQ9 - IRQ12. The default port address range is 340h-35Fh, but alternatively may be set to 140h-15Fh.
2. On Pentiums with a PCI bus, the selected interrupt must be configured for use by the ISA bus, not the PCI bus (the 1505 card runs off the ISA bus and is not a Plug and Play device).

3. The software driver(s) must be properly installed, with its IRQ number and port address range matching the 1505 card settings.
4. If the Activator 2 is sharing the 1505 SCSI card with other SCSI devices, the termination resistors on the 1505 card and the other SCSI devices need to be properly configured.

How to determine which interrupts and addresses are already in use depends upon the type of operating system you are running. Try to determine if you will have any hardware conflicts (that is, two or more cards using the same interrupt or port address range) before installing the 1505 SCSI card into the PC.

The Adaptec AVA-1505 SCSI card is shipped with an Installation Guide (Actel part number AVA-1505). This Installation Guide is referenced throughout this chapter.

## *Configuring the 1505 Card for Windows 3.1x/DOS*

This section describes how to configure the Adaptec 1505 SCSI controller card when using Windows 3.1x/DOS. After installing the card and its driver per the instructions in this section, you will need to reference “Hardware Installation on the PC” on page 22 for instructions on how to install the Activator itself. You can then use the APSW or APS2 software to program a device.

This section is divided into the following steps:

- “Selecting a Unique Interrupt Number and Port Address Range” on page 10
- “Installing the 1505 Card Into Your PC” on page 11
- “Configuring the Desired Interrupt for the ISA Bus” on page 11
- “Installing the Software Driver” on page 11
- “Configuring the Termination Resistors” on page 12
- “Installing the Activator 2 or 2s Programmer” on page 12
- “Programming a Device” on page 13

### **Selecting a Unique Interrupt Number and Port Address Range**

The default settings on the 1505 card will generally work, but if there is a hardware conflict, it may affect your video, network connection, or even your hard drive, so it is recommended that you determine what interrupts or addresses are already in use before installing the 1505 card.

To determine what add-in cards are currently installed, take the cover off the PC to see what add-in cards are present. You will then need to determine which interrupts and port addresses these cards are using. Some add-in cards come with utilities that can tell the user which IRQ they are using. At boot up, some device drivers have an option to display which IRQ they are using. The BIOS or motherboard manufacturer may have utilities that display the used IRQs.

Unlike Windows 95 or Windows NT, there are no built-in utilities in DOS or Windows 3.1x to determine which IRQs or port addresses are already in use. There is a DOS program available called MSD, which displays the IRQs it thinks are in use and which are available, but it reads data from the BIOS, not from the hardware itself. This may give misleading information, as the MSD program may show IRQs available when in actuality they are being used.

If all the interrupts between IRQ9 and IRQ12 are being used, then you will have to change the interrupt settings on another card to free up one of these interrupts for the 1505 card.

If you must change the default settings on the 1505 card (which involves changing jumpers on the card), refer to section 8 in the *AVA-1505 Installation Guide* that came with the card for more details on how to change its interrupt number and port address.

**Note** The *AVA-1505 Installation Guide* refers to a software diskette, which is not included in the Actel package. Instead, the required software driver is copied onto the hard drive during the Designer Series software installation.



## ***Installing the 1505 Card Into Your PC***

Turn off your computer, remove its cover, and install the 1505 card into an AT expansion slot in the PC. After installing the card, replace the cover and turn the PC on.

## ***Configuring the Desired Interrupt for the ISA Bus***

When you have chosen the interrupt to use, if you are running on a Pentium with a PCI bus, you must tell the BIOS that you want to use that interrupt for the ISA bus, not the PCI bus. On Pentiums with a PCI bus, some of the interrupts are by default reserved for use with Plug and Play devices on the PCI bus. Since the 1505 SCSI card uses the ISA bus, you will have to go into the CMOS setup to tell the BIOS that you need to use that IRQ for the ISA bus instead of for Plug-and-Play. How you change this setting depends upon your BIOS. Usually you can change your BIOS settings during boot-up. **If you forget to do this, even if you have no hardware conflicts, the Activator will not work.**

**Note** If you remove the 1505 SCSI card from the PC, change the BIOS setting to re-configure the interrupt back to Plug and Play (PCI bus) use.

If you don't know if your Pentium has a PCI bus in it, remove the cover and look at the add-in card connectors. The PCI add-in board connectors on the mother board will be different than the ISA ones: the board contacts are more closely spaced and the connector will be shorter in length (and may be white instead of black). The network card, display adapter, and SCSI adapter (if any) will probably be installed in the PCI slots.

## ***Installing the Software Driver***

The software driver executable is included in the Designer Series and APS2 software, so make sure that you install the Designer Series or APS2 software before editing the config.sys file.

To install the software driver using the default interrupt and port addresses, add the following line to the beginning of your config.sys file, then re-boot the PC. (This example assumes that your Actel software is installed under the c:\actel directory.)

```
device=c:\actel\adm\aspi2dos.sys /z
```

If you need to change the default IRQ or port address, then you also need to use the /q and /p options, respectively. When specifying more than one option, make sure that the /z option is first. For example, if you want to use interrupt 10 and port address 140h, then the line in the config.sys file would look like:

```
device=c:\actel\adm\aspi2dos.sys /z /q10 /p140
```

The valid interrupts for the 1505 card are 9, 10, 11, and 12, and the two valid port addresses are 340 and 140.

To verify that the driver is installed correctly, look for the appearance of the following message during boot-up:

ASPI2DOS.SYS Installation Successful

### ***Configuring the Termination Resistors***

If an Activator 2 or Activator 2s is sharing a 1505 SCSI card with other SCSI devices, then you must make sure that the SCSI devices are properly terminated. Refer to the *AVA-1505 Installation Guide*, section 5, “Terminating the SCSI Bus Cable” section for more information.

If you do not have any other SCSI devices connected to the 1505 card, then the termination resistors are already configured properly.

### ***Installing the Activator 2 or 2s Programmer***

Install the Activator 2 or 2s programmer as described in “Hardware Installation on the PC” on page 22.

#### ***Verifying Hardware Installation***

To verify that the Activator hardware installation was correct, add the /d option to the device driver line in the config.sys file, as shown in the following example:

```
device=c:\actel\adm\aspi2dos.sys /z /d
```

Re-boot your PC and watch for the following messages to appear on the screen. The values for your installation may be different than the ones shown.

```
AIC-6260/6360/6370 ASPI Manager for DOS
Version 3.60
Copyright 1990-1995 Adaptec, Inc.

Host Adapter #:      0      Host Adapter SCSI ID:  7
I/O Port Address:   340      DMA Channel:          0
Interrupt Level:    11      Transfer Mode:         PIO
Parity Checking:    Enabled  LUN Support:          Disabled
Disconnection:      Enabled  Sync Negotiation: Enabled

Host Adapter #0 - SCSI ID 5 - LUN 0: Device name not available.

ASPI2DOS.SYS Installation Successful
```

If the hardware installation was incorrect, then the line beginning with “Host Adapter #0...” will be missing. Check that the Activator SCSI cable connections are correct, that all the cable connections are seated together firmly, and that the power is connected properly and is turned on. Also check that the SCSI ID rotary switch on the back of the Activator is set to 5.

## ***Programming a Device***

Refer to the *APS Programming System User's Guide* for instructions on how to run the APSW or APS2 programming software to program a device.

## *Configuring the 1505 Card for Windows 95*

This section describes how to configure the Adaptec 1505 SCSI controller card when using Windows 95. After installing the card and its driver, you will need to reference “Hardware Installation on the PC” on page 22 for instructions on how to install the Activator itself. You can then use the APSW software to program a device.

This section is divided into the following steps:

- “Selecting a Unique Interrupt Number and Port Address Range” on page 14
- “Installing the 1505 Card Into Your PC” on page 15
- “Configuring the Desired Interrupt for the ISA Bus” on page 15
- “Running the “Add New Hardware Wizard”” on page 16
- “Installing the Software Driver” on page 16
- “Configuring the Termination Resistors” on page 17
- “Installing the Activator 2 or 2s Programmer” on page 17
- “Programming a Device” on page 17

### ***Selecting a Unique Interrupt Number and Port Address Range***

The default settings on the 1505 card will generally work, but if there is a hardware conflict, it may affect your video, network connection, or even your hard drive, so it is recommended that you determine what interrupts or addresses are already in use before installing the 1505 card.

To view the interrupts and port addresses already in use, from the Windows 95 Start menu, select the following: Settings -> Control Panel -> System -> Device Manager tab -> Computer -> Properties. To view the interrupts already in use, select the Interrupt request (IRQ) radio button. To view the addresses already in use, select the Input/output (I/O) radio button. If IRQ11 or addresses 340h-35Fh are already in use, then you will need to change the settings on the 1505 card. If all the interrupts between IRQ9 and IRQ12 are being used, then you will have to change the interrupt settings on another card to free up one of these interrupts for the 1505 card.

If you must change the default interrupt or port address settings on the 1505 card (which involves changing jumpers on the card), refer to section 8 in the *AVA-1505 Installation Guide* that came with the card for more details on how to change these.

**Note** The *AVA-1505 Installation Guide* refers to a software diskette, which is not included in the Actel package. Instead, the software drivers provided by Windows 95 are used.

### ***Installing the 1505 Card Into Your PC***

Turn off your computer, remove its cover, and install the 1505 card into an AT expansion slot in the PC. After installing the card, replace the cover and turn the PC on.

### ***Configuring the Desired Interrupt for the ISA Bus***

When you have chosen the interrupt to use, if you are running on a Pentium with a PCI bus, you must tell the BIOS that you want to use that interrupt for the ISA bus, not the PCI bus. On Pentiums with a PCI bus, some of the interrupts are by default reserved for use with Plug and Play devices on the PCI bus. Since the 1505 SCSI card uses the ISA bus, you will have to go into the CMOS setup to tell the BIOS that you need to use that IRQ for the ISA bus instead of for Plug-and-Play. How you change this setting depends upon your BIOS. Usually you can change your BIOS settings during boot-up. **If you forget to do this, even if you have no hardware conflicts, the Activator will not work.**

**Note** If you remove the 1505 SCSI card from the PC, change the BIOS setting to re-configure the interrupt back to Plug and Play (PCI bus) use.

If you don't know if your Pentium has a PCI bus in it, remove the cover and look at the add-in card connectors. The PCI add-in board connectors on the mother board will be different than the ISA ones: the board contacts are more closely spaced and the connector will be shorter in length (and may be white instead of black). The network card, display adapter, and SCSI adapter (if any) will probably be installed in the PCI slots.

### ***Running the “Add New Hardware Wizard”***

Run the “Add New Hardware Wizard” to tell Windows 95 that you are installing a new card and new driver. When you run this, it will automatically assign the new card an interrupt number and port address. This is done without regard to what the new card is actually configured for. If it doesn’t match the IRQ and/or port address range that you selected, then you can change the software IRQ and address settings. (Alternatively, you can change the settings on the card to match the software.)

To run the “Add New Hardware Wizard”, from the Main window, select: My Computer -> Control Panel -> Add New Hardware -> Next -> No -> SCSI controllers -> Adaptec AVA-1505 SCSI Host Adapter. Note the IRQ and port address the Wizard assigned it. If they match what you selected initially, then continue on to installing the software driver. If not, then change the software settings to match the board (or change the board settings to match).

### ***Installing the Software Driver***

Actel uses the driver installed by the Windows 95 Device Manager when you add the new 1505 card.

To run the Device Manager, from the Windows 95 Start menu, select the following: Settings -> Control Panel -> System -> Device Manager tab. Double-click on the <appropriate\_device> (it may show up as the “Adaptec 1505 SCSI Adapter”, the “Adaptec AIC-6260/6360” driver, or as the “ISA SCSI” device). Select Resources -> Change Setting... (if the “Use automatic settings” box is checked, uncheck it). Change the interrupt and/or the I/O port addresses as needed.

To verify that the installation was correct, from the Main window, select My Computer -> Control Panel -> System -> Device Manager -> <appropriate\_device> (see above). If there is a yellow dot with an exclamation point next to the driver name, then you have a hardware conflict. Please review the interrupts and addresses used by the other devices to determine where the conflict is occurring. If you change the 1505 card settings, remember to change the BIOS and software settings to match, as described in the preceding sections. After each change, check the Device Manager again until the conflict goes away.

### ***Configuring the Termination Resistors***

If an Activator 2 or Activator 2s is sharing a 1505 SCSI card with other SCSI devices, then you must make sure that the SCSI devices are properly terminated. Refer to the *AVA-1505 Installation Guide*, section 5, “Terminating the SCSI Bus Cable” section for more information.

If you do not have any other SCSI devices connected to the 1505 card, then the termination resistors are already configured properly.

### ***Installing the Activator 2 or 2s Programmer***

Install the Activator 2 or 2s programmer as described in “Hardware Installation on the PC” on page 22.

### ***Programming a Device***

Refer to the *APS Programming System User’s Guide* for instructions on how to run the APSW programming software to program a device.

## *Configuring the 1505 Card for Windows NT*

This section describes how to configure the Adaptec 1505 SCSI controller card when using Windows NT. After installing the card and its driver, you will need to reference “Hardware Installation on the PC” on page 22 for instructions on how to install the Activator itself. You can then use the APSW software to program a device.

This section is divided into the following steps:

- “Selecting a Unique Interrupt Number and Port Address Range” on page 18
- “Installing the 1505 Card Into Your PC” on page 19
- “Configuring the Desired Interrupt for the ISA Bus” on page 19
- “Installing the Windows NT Driver” on page 20
- “Installing the Software Driver” on page 21
- “Configuring the Termination Resistors” on page 21
- “Installing the Activator 2 or 2s Programmer” on page 21
- “Programming a Device” on page 22

### ***Selecting a Unique Interrupt Number and Port Address Range***

The default settings on the 1505 card will generally work, but if there is a hardware conflict, it may affect your video, network connection, or even your hard drive, so it is recommended that you determine which interrupts or addresses are already in use before installing the 1505 card.

**For NT 3.51.** To see which interrupts are currently being used, from the Main window, select Administrative Tools -> Windows NT Diagnostics -> Interrupts/Ports. This displays the interrupts being used in the top table (under the “Level” heading) and the port addresses in the lower table (under the “Physical Address” heading). Verify that IRQ11 and port addresses 340h-35Fh are not being used. If they are, then you will need to change these settings on the 1505 card.



**For NT 4.0.** To see which interrupts are currently being used, from the Main window, select: Start ->Programs -> Administrative Tools (Common) -> Resources tab. Click the IRQ button to display the interrupts being used. Click the I/O Port button to display the addresses being used. Verify that IRQ 11 and port address 340h-35Fh are not being used. If they are, then change these settings on the 1505 card.

If all the interrupts between IRQ9 and IRQ12 are being used, then you will have to change the interrupt settings on another card to free up one of these interrupts for the 1505 card.

If you must change the default settings on the 1505 card (which involves changing jumpers on the card), refer to section 8 in the *AVA-1505 Installation Guide* that came with the card for more details on how to change its interrupt number and port address.

**Note** The *AVA-1505 Installation Guide* refers to a software diskette, which is not included in the Actel package. Instead, the required software driver is included on the Designer Series software CD-ROM.

## ***Installing the 1505 Card Into Your PC***

Turn off your computer, remove its cover, and install the 1505 card into an AT expansion slot in the PC. After installing the card, replace the cover and turn the PC on.

## ***Configuring the Desired Interrupt for the ISA Bus***

When you have chosen the interrupt to use, if you are running on a Pentium with a PCI bus, you must tell the BIOS that you want to use that interrupt for the ISA bus, not the PCI bus. On Pentiums with a PCI bus, some of the interrupts are by default reserved for use with Plug and Play devices on the PCI bus. Since the 1505 SCSI card uses the ISA bus, you will have to go into the CMOS setup to tell the BIOS that you need to use that IRQ for the ISA bus instead of for Plug-and-Play. How you change this setting depends upon your BIOS. Usually you can change your BIOS settings during boot-up. **If you forget to do this, even if you have no hardware conflicts, the Activator will not work.**

**Note** If you remove the 1505 SCSI card from the PC, change the BIOS settings to re-configure the interrupt back to Plug and Play (PCI bus) use.

If you don't know if your Pentium has a PCI bus in it, remove the cover and look at the add-in card connectors. The PCI add-in board connectors on the mother board will be different than the ISA ones: the board contacts are more closely spaced and the connector will be shorter in length (and may be white instead of black). The network card, display adapter, and SCSI adapter (if any) will probably be installed in the PCI slots.

### ***Installing the Windows NT Driver***

**For NT 3.51.** From the Main window, select -> Windows NT Setup -> Options menu -> Add/Remove SCSI Adapters -> Add/Remove SCSI Adapters... From the list of drivers, select "Adaptec 151x/152x/AIC 6260/6360". You will need to put the Windows NT 3.51 CD-ROM into the drive. The appropriate NT driver will then be installed. Re-boot the PC for this driver to take effect.

To verify that the driver installation was correct, from the Main window, select -> Control Panel -> Devices and find the Sparrow device driver. Its status should be "Started" and "Boot".

**For NT 4.0.** From the Main window, select -> Start -> Settings -> Control Panel -> SCSI Adapters -> Drivers -> Add -> Manufacturers -> Adaptec. From the list of drivers, select "Adaptec AIC-6X60 ISA Single-Chip SCSI Controller", then OK. You will need to put the Windows NT 4.0 CD-ROM into the drive. Re-boot the PC for this driver to take effect.

To verify that the driver installation was correct, from the Main window, select Start -> Settings -> Control Panel -> SCSI Adapters -> Drivers. Look for the "Adaptec AIC-6X60 ISA Single-Chip SCSI Controller". Its status should be "(Started)".

**Note** For all of the above verifications, if there is a yellow dot with an exclamation point next to the driver name, then you have a hardware conflict. Please review the interrupts and addresses used by the other devices to determine where the conflict is occurring. If you change the 1505 card settings, remember to change the BIOS and software settings to match, as described in the preceding sections. After each change, check the Driver status again until the conflict goes away.

## ***Installing the Software Driver***

To install the Adaptec ASPI driver, insert the Designer Series 3.1 CD-ROM into the drive and, using the File Manager, execute the following program on the CD-ROM:

`\ASPI_NT\ASPIINST.EXE`

**Note** This will re-boot your machine.

**For NT 3.51.** To verify that the driver installation was correct, from the Main window, select -> Control Panel -> Devices. Look for Aspi32 and verify that its status is "(Started)".

**For NT 4.0.** To verify that the driver installation was correct, from the Main window, select -> Start -> Settings -> Control Panel -> Devices. Look for the "Aspi32" driver. Its status should be "Started" and "Automatic."

## ***Configuring the Termination Resistors***

If an Activator 2 or Activator 2s is sharing a 1505 SCSI card with other SCSI devices, then you must make sure that the SCSI devices are properly terminated. Refer to the *AVA-1505 Installation Guide*, section 5, "Terminating the SCSI Bus Cable" section for more information.

If you do not have any other SCSI devices connected to the 1505 card, then the termination resistors are already configured properly.

## ***Installing the Activator 2 or 2s Programmer***

Install the Activator 2 or 2s programmer as described in "Hardware Installation on the PC" on page 22.

### ***Verifying Hardware Installation (NT 4.0 only)***

From the Main window, select: Start -> Settings -> Control Panel -> SCSI Adapters -> Devices tab. Double click on the Adaptec device driver "Adaptec AIC-6X60 ISA Single-Chip SCSI Controller". If eight unnamed tape drive icons appear, then the Activator hardware installation was successful. If not, then check that the Activator SCSI cable connections are correct, that all the cable connections are seated together firmly, and that the power is connected properly and is turned on. Also check that the SCSI ID rotary switch on the back of the Activator is set to 5.

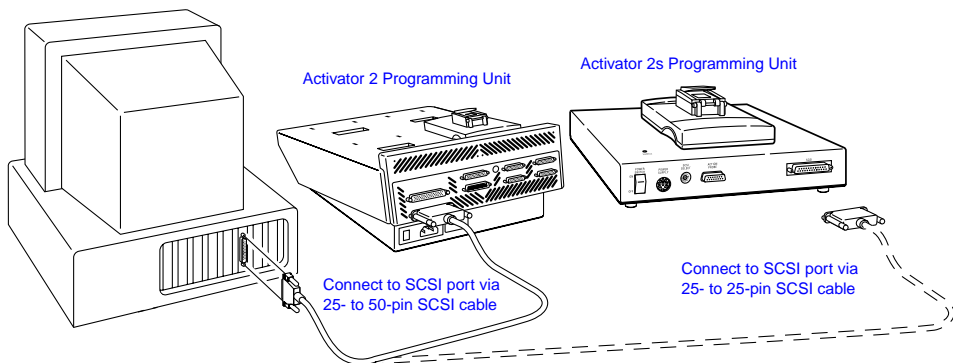
## Programming a Device

Refer to the *APS Programming System User's Guide* for instructions on how to run the APSW programming software to program a device.

## Hardware Installation on the PC

### Installing Activator 2 or 2s

1. **Turn off the PC.**
2. **Verify that the Activator 2 or 2s power switch is OFF** (See Figures 1-1 and 1-2).
3. **Verify that the SCSI Bus Select rotary switch is in position 5** (see Figures 1-1 and 1-2).
4. **Connect Activator 2 or 2s to the PC using the supplied cable (see Figure 2-1).** Connect one end of the cable to a SCSI connector on the Activator 2 or 2s rear panel and tighten the locking screws (see Figures 1-1 and 1-2 for the location of the SCSI connectors).



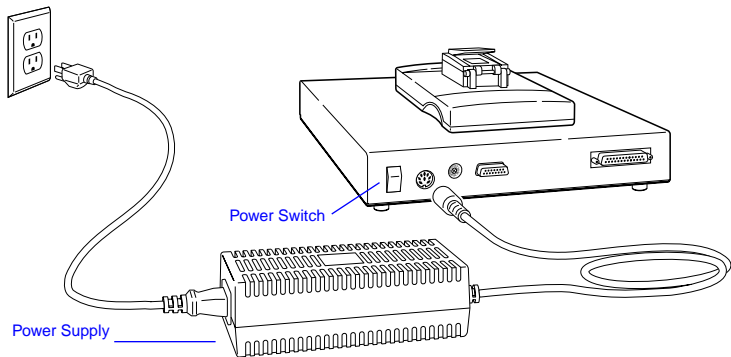
*Figure 2-1. Activator 2 and 2s PC Connections*

Connect the other end of the cable to the AVA-1505 SCSI board in the PC and tighten the locking screws.

**Note** The Adaptec AVA-1505 SCSI connector is a female DB25 that can be easily confused with the PC's parallel port connector. Be careful that you plug the cable into the correct connector or damage could result.

- 5. Connect power to the Activator.** For Activator 2, insert the power cord into the appropriate connector located on the rear panel and plug the other end into an AC power outlet.

For Activator 2s, insert the 8-pin DIN connector from the power supply into its corresponding connector located on the rear panel of the Activator 2s. Connect the AC power cord to the power supply and plug the other end into an AC power outlet (Figure 2-2).



*Figure 2-2. Power Supply Connected to Activator 2s*

**Note** The power supplies are rated for 100–240 VAC at 50 or 60 Hz. The Activator 2s power switch will remotely power down the power supply. Only a small voltage will remain to detect power up.

- 6. Turn on the Activator 2 or 2s power.** After a brief delay, the green power light should turn on and remain lighted continuously as long as the power is turned on.

7. **Turn on the PC.** You are now ready to program a device using the APSW programming software. See the *APS Programming System User's Guide* for more information.

## *Installing Activator 2 or 2s Using the Sun OS*

This chapter describes how to install an Activator when using Sun OS. There are two parts to installing an Activator: hooking up the Activator programmer and creating a symbolic link. You can then use the APSW software to program a device.

Before continuing, verify that you have at least the following minimum workstation configuration:

- Sun 4™ Workstation (or a fully compatible workstation)
- 32 MB of RAM and 150 MB of swap space
- SunOS™ operating system, Release 4.1.1 or later

### *Installing Activator 2 or 2s*

- 1. Shutdown, then power down the Sun workstation.**
- 2. Verify that the Activator 2 or 2s power switch is OFF** (see Figures 1-1 and 1-2).
- 3. Set the position of the SCSI Bus Select rotary switch.** The location of this switch is shown in Figures 1-1 and 1-2. If you want to map the Activator to rst1, then set the rotary switch to position 5. If you want to map the Activator to device rst0, then set the rotary switch to position 4.
- 4. Connect the Activator 2 or 2s to the Sun workstation using the supplied SCSI cable** (see Figure 3-1).

**Warning** DO NOT connect SCSI cables to the Activator 2 or 2s while the Sun Workstation or other peripherals are turned on; data loss may result.

Connect one end of the cable with the locking screws to the SCSI connector located on the Activator 2 or 2s rear panel. See Figures 1-1 and 1-2 for the location of the SCSI connectors.

Connect the other end of the cable to the SCSI connector of the workstation and secure the locking screws or make sure the micro-miniature SCSI connector has snapped into place.

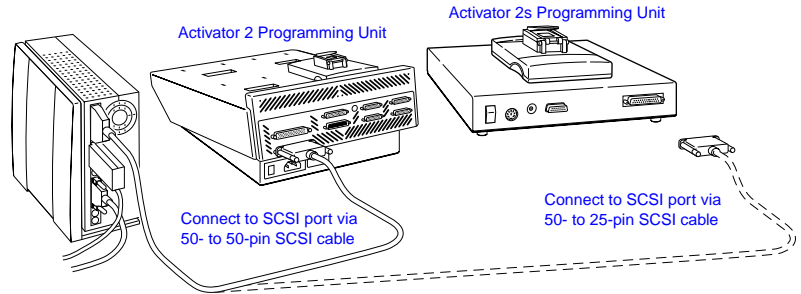


Figure 3-1. Activator 2 and 2s Workstation Connections

If several devices are daisy-chained from the workstation SCSI port, the Activator must be the *last* device in the chain. The Activator is terminated internally.

**Note** Daisy chaining could require a cable with a different type of connector. The Activator SCSI cable is a standard cable with no scrambling, however, other connector combinations can be purchased. The cable length should be as short as possible and must not exceed 6 feet.

#### 5. Connect power to the Activator.

- For Activator 2, insert the power cord into the appropriate connector located on the rear panel, and plug the other end into an AC power outlet.
- For Activator 2s, insert the 8-pin DIN connector from the power supply into its corresponding connector on the rear panel of the Activator 2s. Connect the AC power cord to the power supply and plug the other end into an AC power outlet (see Figure 2-2).

**Note** The power supplies are rated for 100-240 VAC at 50 or 60 Hz. The Activator 2s power switch will remotely power down the power supply. Only a small voltage will remain to detect power up.

6. **Turn on the Activator 2 or 2s power.** After a brief delay, the green power light should turn on and remain on continuously as long as the power is on.



7. **Power up the Sun Workstation.** You now need to install the device driver to complete the Activator installation, as described in the following section.

**Warning** When shutting the system down, turn off the power to the Sun system before turning off power to the Activator 2 or 2s.

### *Creating a Link to the Activator*

1. **Log in as ROOT.**

2. **Create a symbolic link as follows:**

- To map the Activator 2 or 2s to *rst1*, verify that the Activator 2 or 2s SCSI rotary switch is set to position 5, and create a link with the following command:

```
ln -s /dev/rst1 /dev/activator2
```

**Note** Since *rst0* is usually used for a tape drive or another storage unit, the Activator 2 or 2s SCSI rotary switch is by default set to position 5 for use with *rst1*.

- To map the Activator 2 or 2s to *rst0*, verify that the Activator 2 or 2s rotary switch is set to position 4, and create a link with the following command:

```
ln -s /dev/rst0 /dev/activator2
```

### *Programming a Device*

Refer to the *APS Programming System User's Guide* for instructions on how to run the APSW programming software to program a device.



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## *Installing Activator 2 or 2s Using HP-UX or Solaris*

This chapter describes how to install an Activator when using the HP-UX or Solaris operating systems. There are two parts to installing an Activator: hooking up the Activator programmer and creating a symbolic link. You can then use the APSW software to program a device.

Before continuing, verify that you have at least one of the following minimum configurations:

### *Installation Requirements for the Sun*

The following is the minimum recommended configuration:

- Sun 4™ Workstation (or a fully compatible workstation)
- 32 MB of RAM and 150 MB of swap space
- Solaris 2.3 or higher

### *Installation Requirements for the HP 700*

The following is the minimum recommended configuration:

- HP 700 workstation
- 32 MB of RAM and 150 MB of swap space
- HP-UX version 9.01 or higher

## Installing Activator 2 or 2s

1. **Shutdown, then power down the workstation.**
2. **Verify that the Activator 2 or 2s power switch is OFF** (see Figures 1-1 and 1-2).
3. **Change the position of the SCSI Bus Select rotary switch** (see Figures 1-1 and 1-2). By default, the switch is set to position 5, but for use with HP-UX or Solaris, the switch *must* be set to another position; we recommend using position 3 or 4. The switch settings correspond to device files, which may require a system administrator to create.
4. **Connect the Activator 2 or 2s to the workstation using the supplied SCSI cable.**

Warning: DO NOT connect SCSI cables to the Activator 2 or 2s while the workstation or other peripherals are turned on; data loss could result.

- Connect one end of the cable with the locking screws to the SCSI connector located on the Activator 2 or 2s rear panel. See Figures 1-1 and 1-2 for the location of the SCSI connectors.
- Connect the other end of the cable to the SCSI connector of the HP 700. Make sure the micro-miniature SCSI connector has snapped into place. If several devices are daisy-chained from the computer SCSI port, the Activator *must* be the *last* device in the chain. The Activator is terminated internally.

**Note** Daisy chaining could require a cable with a different type of connector. The Activator SCSI cable is a standard cable with no scrambling, however, other connector combinations can be purchased. The cable length should be as short as possible and must not exceed 6 feet.

5. **Connect power to the Activator.**
  - For Activator 2, insert the power cord into the appropriate connector located on the rear panel, and plug the other end into an AC power outlet.

- For Activator 2s, insert the 8-pin DIN connector from the power supply into its corresponding connector on the rear panel of the Activator 2s. Connect the AC power cord to the power supply and plug the other end into an AC power outlet (see Figure 2-2).

**Note** The power supplies are rated for 100-240 VAC at 50 or 60 Hz. The Activator 2s power switch will remotely power down the power supply. Only a small voltage will remain to detect power up.

6. **Turn on the Activator 2 or 2s power.** After a brief delay, the green power light should turn on and remain on continuously as long as the power is on.
7. **Power up the workstation.** You now need to install the device driver to complete the Activator installation, as described in the following section.

Warning: When shutting the system down, turn off the power to the computer before turning off power to the Activator 2.

### *Creating a Link to the Activator*

1. **Log in as ROOT.**
2. **Create a symbolic link as follows:**

```
# ln -s <device_file> /dev/activator2
```

For example, if you have set the Activator rotary switch to position 3, first verify the device file “/dev/rmt/3mn” exists, then create a symbolic link as follows:

```
# ln -s /dev/rmt/3mn /dev/activator2
```

If “/dev/rmt/3mn” does not exist, or if you don’t know which SCSI ID to set the rotary switch to, contact your system administrator for help.

### *Programming a Device*

Refer to the *APS Programming System User’s Guide* for instructions on how to run the APSW programming software to program a device.



## Using an Existing Adaptec SCSI Controller on a PC

You can only use an Adaptec SCSI controller card with Activator 2 or 2s. You cannot use any other manufacturer's SCSI card. Find an appropriate SCSI cable to match the your board's external SCSI connector to the Activator 2 or 2s connector (female DB50 for Activator 2; DB25 for Activator 2s).

### IMPORTANT

*Activator 2 or 2s must be the last device in the SCSI chain, as Activator 2 and 2s contain termination resistors.*

If SCSI ID number 5 is not available on your SCSI bus, set the rotary switch on the back of your Activator 2 or 2s to an available SCSI ID, and invoke the APSW programming software with an additional parameter, as described below. These examples assume that your Actel software is installed in the c:\actel directory, and you want to use SCSI ID number 4.

- If you use Windows 3.1x or Windows NT 3.51, highlight the Windows Programming icon in the Designer Series 3.1 program group. From the File menu, select Properties and append "devactivator2:<SCSI ID>" to the command line, as shown below.

```
c:\actel\bin\apsw.exe devactivator2:4
```

- If you use Windows NT 4.0 or Windows 95, from the Main Window, highlight the Start button with the right mouse button, then select Open All Users (Open for Windows 95) -> Programs -> Designer Series 3.1, Click the Windows Programming and then, from the File menu, select Properties -> Shortcut tab. Append "devactivator2:<SCSI ID>" to the command line, as shown below.

```
c:\actel\bin\apsw.exe devactivator2:4
```





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## Troubleshooting Activator on a PC

### ***Driver won't load***

If there are problems with the driver loading, check for the following:

- The 1505 card is installed properly.
- The interrupt and address settings match between the 1505 card and the software driver.
- The software driver is the correct one.
- There are no hardware conflicts.

### ***Additional Windows 3.1x driver issues***

If you are running Windows 3.1x, check also for the following:

- There is enough memory to load the driver.
- The driver is the first driver loaded in the config.sys file.
- The /z option was specified when loading the device driver in the config.sys file.

In addition to the /z option, you might also want to use the /d option — during boot-up it displays the interrupt and address range the driver is using.

When using Windows 3.11, if the address settings used by the driver and the 1505 card are different, the message “Host adapter at port address XXX failed diagnostics” will appear when booting, followed by the message “ASPI2DOS.SYS Installation failed.”

If there is an IRQ mismatch between the driver and the board settings, but the address settings are OK, the message “ASPI2DOS.SYS Installation failed” will appear and the machine will hang when booted.

### ***Hardware Conflicts***

If you suspect that you have a hardware conflict and you are running Windows 95 or Windows NT, see the appropriate section in Chapter 2 to determine where the conflict is occurring. If you are using Windows 3.1x, you need to determine which other add-in cards are installed and which interrupts and addresses these cards are using. You might have to contact the manufacturers of these other cards and/or the manufacturer of your motherboard to get this information. Add the /d option when loading the device driver in the config.sys file to see which interrupt and addresses are being used by the 1505 software driver.

***Other Trouble-  
shooting Issues***

See also Appendix C for more troubleshooting issues.

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## Troubleshooting Hardware

This chapter lists some common problems you could encounter with Activator 2 or 2s and their solutions. However, if you are still unable to resolve your problems after reading Appendix B and C, refer to the introduction in Chapter 1 where information about how to access Actel's web site and Fax-back service is listed. You can also get further help by contacting Actel's customer applications center at (800) 262-1060.

### ***Activator Connections Error***

ERROR: Activator communication link down. Exiting...

There is a problem with the connection between the Activator 2/2s and the PC, or the Activator 2/2s has lost power. Check the connections (the Activator 2/2s power light should be illuminated), and try reentering APSW.

### ***Adapter Failure***

FAILED—Wrong adapter module

The incorrect Programming Adapter is inserted in the Activator 2/2s. Remove the adapter and replace it with the correct one. Another possibility is that the design was configured with a different package or device type.

### ***AFM File Generation***

Generating the .AFM file is taking a long time.

Depending on device type, device utilization, and machine speed, this process could take a few minutes. If 15 minutes have passed without completion, the hard disk may be out of memory. Exit from APSW and check available disk space. If there is less than 1 megabyte, free up some disk space (perhaps some old .AFM files), and try again.

### ***AFM Generation Failure***

AFM file generation failed

The software could not find a valid .FUS file. The file may not be present or it was created with a release prior to ALS 1.22. You must regenerate the .FUS file.

***Firmware Load Failure***

Firmware load failed. WARNING: Could not connect with Activator.

No contact with the programmer is found. Should this occur, check that you have turned on the Activator 2/2s programmer and that the SCSI cable is correctly installed. Be especially sure that the SCSI cable connection to the workstation is secure. The locking arms on the SCSI board can be misaligned easily.

Also, verify that the device driver(s) were installed correctly. See the appropriate sections in the preceding chapters for further details.

***Fuse Integrity Failure***

FAILED—fuse XXX integrity test 6, 7, or 8

This message often indicates that the device is bad. If you observe a programming failure rate in excess of 2%, contact Actel Technical Support.

***Fuse Programming Failure***

FAILED—programming fuse XXXX

This message often indicates that the device is bad. If you observe a programming failure rate in excess of 2%, contact Actel Technical Support.

***Green Power Light is Blinking***

If the green power light is blinking after power is turned on, a self test has failed. Contact Actel for a replacement Activator.

***SCSI Controller Error***

SCSI Controller not found (PC only).

The SCSI controller board has not been installed in the PC, or there is a SCSI I/O address conflict. Also, verify that the device driver(s) were installed correctly. See the appropriate sections in Chapter 2 for further details.

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## *Product Support*

Actel backs its products with various technical support services including a Web site, monthly Fax Broadcast, a fax back service, a bulletin board system, electronic mail, Customer Service, and a Customer Applications Center.

### *Web Site*

Actel has a World Wide Web home page where you can browse a variety of technical and non-technical information. Use a Net browser (Netscape recommended) to access Actel's home page. The URL is <http://www.actel.com>. You are welcome to share the resources we have provided on the net.

Be sure to visit the "Actel User Area" on our Web site, which contains information regarding: products, technical services, Designer's Digest, current manuals, and release notes.

### *Designer's Digest and Fax Broadcast*

Designer's Digest is a monthly report that includes discussions of current technical software and hardware issues. Designer's Digest is published by Actel and is automatically faxed to a large customer base on the 15th of each month via "Fax Broadcast." All issues described in Designer's Digest are archived on Action Facts and on the Actel World Wide Web site in the "Actel User Area."

To receive a copy of Designer's Digest via fax, contact Actel at (800) 262-1060, and inform the administrator that you would like to be a member of Actel's Fax Broadcast.

## *FTP Site*

Actel has an anonymous FTP site located at <ftp://ftp.actel.com>. You can directly obtain library updates (such as VITAL), software patches, design files, and data sheets.

## *Action Facts*

Action Facts is a 24-hour fax-back service that allows you to have technical literature faxed directly to you. The literature includes current applications notes, device diagrams, radiation testing reports, CAE-related documents, training release schedules, and much more.

To receive your free copy of the catalog or any of our literature, contact us at (800) 262-1062 or (408) 739-1588.

## *Bulletin Board*

Actel offers information access and data transfer via our 24-hour world-wide bulletin board. You can download information, such as software bug fixes. Also, our applications and field applications engineers use the BBS to help solve design problems.

First-time callers need to establish an account. When you are connected to the BBS, you are prompted for your name, company, phone number, etc. After your account is established, you may call our Customer Applications Center (800) 262-1060 and request an upgrade for your account's security level.

To connect to the BBS by modem, call:

(408) 739-6397 (9600 Baud max.)

(408) 738-5717 (14,400 Baud max.)

## *Electronic Mail*

You can communicate your technical questions to our e-mail address and receive answers back by e-mail, fax, or phone. Also, if you have design problems, you can e-mail your design files to receive assistance. The e-mail account is monitored several times per day.

The technical support e-mail address is: tech@actel.com.

## *Customer Service*

Contact Customer Service for non-technical product support, such as product pricing, product upgrades, update information, order status, and authorization.

In North East U.S.A., Canada and Europe, call **(408) 522-4256**.

In the North West and South West U.S.A., call **(408) 522-4474**.

In the North Central and South East U.S.A., call **(408) 522-4434**.

In the South Central U.S.A. and Japan, call **(408) 522-4298**.

From the rest of the world, call **(408) 522-4434**.

Fax, from anywhere in the world **(408) 522-8044**.

## *Customer Applications Center*

The Customer Applications Center is staffed by applications engineers who can answer your hardware, software, and design questions.

All calls are answered by our Technical Message Center. The center retrieves information, such as your name, company name, phone number and your question, and then issues a case number. The Center then forwards the information to a queue where the first available application engineer receives the data and returns your call. The hotline phone hours are from 7:30 a.m. to 5 p.m., Pacific Standard Time, Monday through Friday.

The Customer Applications Center number is (800) 262-1060.

