



Apple® II

Setting Up Your Apple IIgs™



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Operation with noncertified peripheral devices is likely to result in interference to radio and television reception.



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Radio and television interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with our instructions—it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a “rabbit-ear” television antenna is used. (A rabbit-ear antenna is the telescoping-rod type usually found on television receivers.)

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem, disconnect the peripheral devices and their input/output cables one at a time. If the interference stops, it was caused by either the peripheral device or the I/O cable. These devices usually require shielded I/O cables. For Apple peripherals, you can obtain the proper **shielded cable** from your dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

A **shielded cable** has a metallic wrap around the wires to reduce the potential effects of radio-frequency interference.

Important! Your Apple computer and its peripheral devices were FCC-certified under test conditions that included use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radio, television, and other electronic devices.

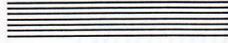
If your computer does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit than the television or radio. (That is, make certain the computer and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with a coaxial cable lead-in between the antenna and television.

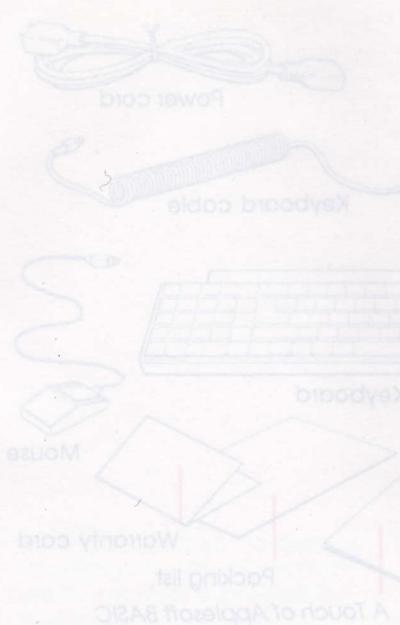
If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions.



Preface



Getting Set



An **interface card** is a small circuit board containing the instructions the computer needs to communicate with a particular peripheral device. (See Figure P-2.)

This guide explains how to set up your Apple® IIGS and how to connect a variety of devices to it—like printers, monitors, and disk drives. In addition to specific instructions for hooking up the most common devices directly to the Apple IIGS, you'll find general instructions for hooking up the hundreds of other devices that come with their own **interface cards**.

Unless you have a particular fascination with cables and connectors, there's no reason to read this book from cover to cover. Just read the sections that apply to the devices you own and then go to the owner's guide.

Taking inventory

If you haven't done so already, open the Apple IIGS box and accessory kit and make sure you have everything shown in Figure P-1. If you're missing anything, contact your authorized Apple dealer. If you have everything, fill out the warranty card and mail it in.

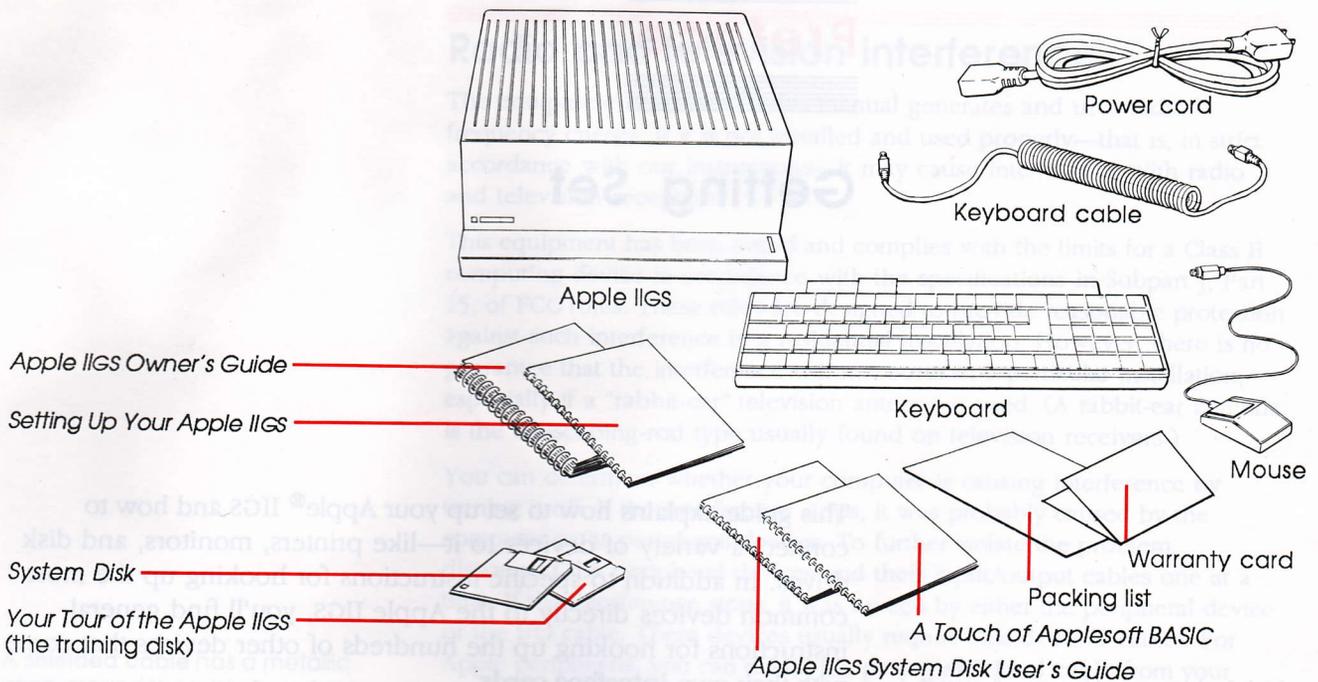


Figure P-1
What's in the box

The warranty card asks for the serial number of your Apple II GS. You'll find it on the bottom of the computer.

Setting up

There isn't any trick to setting up your Apple II GS, but you'll save yourself some time and contortions if you allow plenty of room for the initial setup. Once everything is plugged in, you can stack the video monitor on top of the computer and the disk drives on top of each other. But until everything is plugged in, give yourself easy access to the rear of the computer (and to the inside of the computer if your devices connect with interface cards).

Devices designed to be plugged into the back of the computer come with just a cable. These kinds of devices are discussed in Chapter 1 of this guide. Devices designed to be plugged into **slots** inside the computer come with interface cards like the one shown in Figure P-2. Devices with cards are discussed in Chapter 2 of this guide.

Slots are long, narrow connectors on the computer's main circuit board for connecting peripheral devices to the computer by using interface cards.

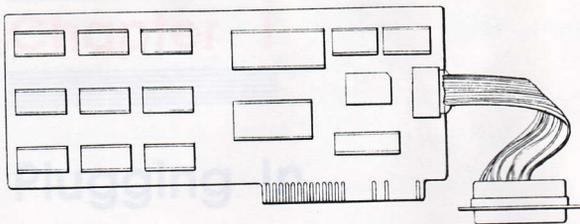


Figure P-2
Interface card

Read the sections that apply to the devices you have. If you need more detailed instructions for any of the devices, read the manual that came with the device.

Ports are outlets on the back of the computer for connecting particular kinds of peripheral devices.

The chapter explains how to connect the power cord, the keyboard, the mouse, and a number of other popular peripheral devices to the Apple IIGS by using the ports on the back panel. The icon below each port illustrates what kind of device plugs into that port. Most of the icons are self-explanatory; the exception might be the picture under the keyboard port. (See Figure 1-1.) Instead of a keyboard icon, there is an icon representing a daisy chain of devices. That's because you can attach several devices to the computer through this port. You attach the keyboard directly and daisy-chain other devices, like the mouse, to the keyboard.

Figure 1-1 gives you an overview of which device plugs into which port.

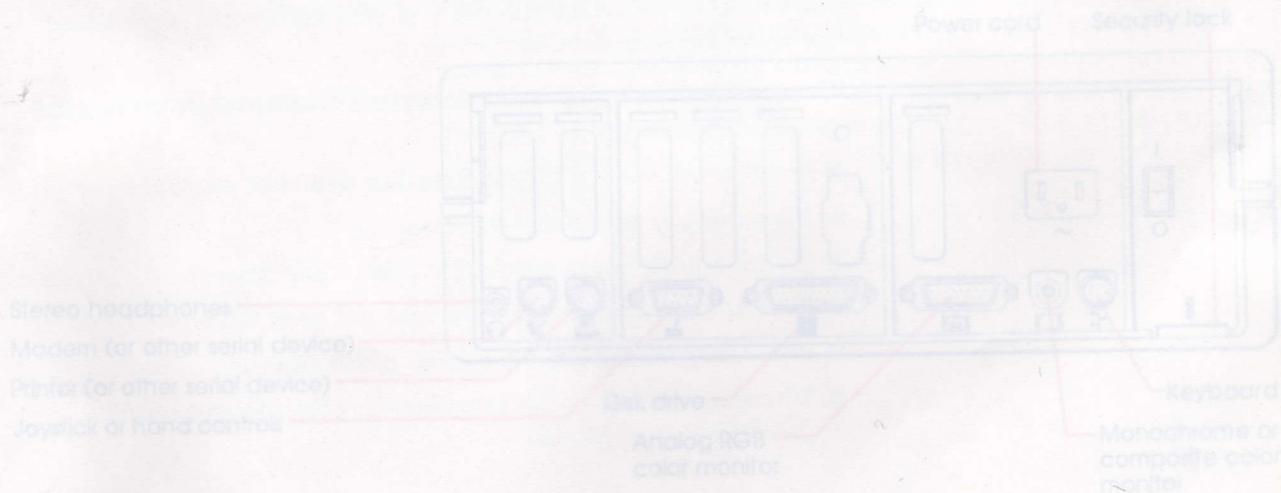


Figure 1-1
What goes where

Chapter 1

Plugging In

Ports are outlets on the back of the computer for connecting particular kinds of peripheral devices.

This chapter explains how to connect the power cord, the keyboard, the mouse, and a number of other popular peripheral devices to the Apple IIGS by using the **ports** on the back panel. The icon below each port illustrates what kind of device plugs into that port. Most of the icons are self-explanatory; the exception might be the picture under the keyboard port. (See Figure 1-1.) Instead of a keyboard icon, there is an icon representing a daisy chain of devices. That's because you can attach several devices to the computer through this port. You attach the keyboard directly and daisy-chain other devices, like the mouse, to the keyboard.

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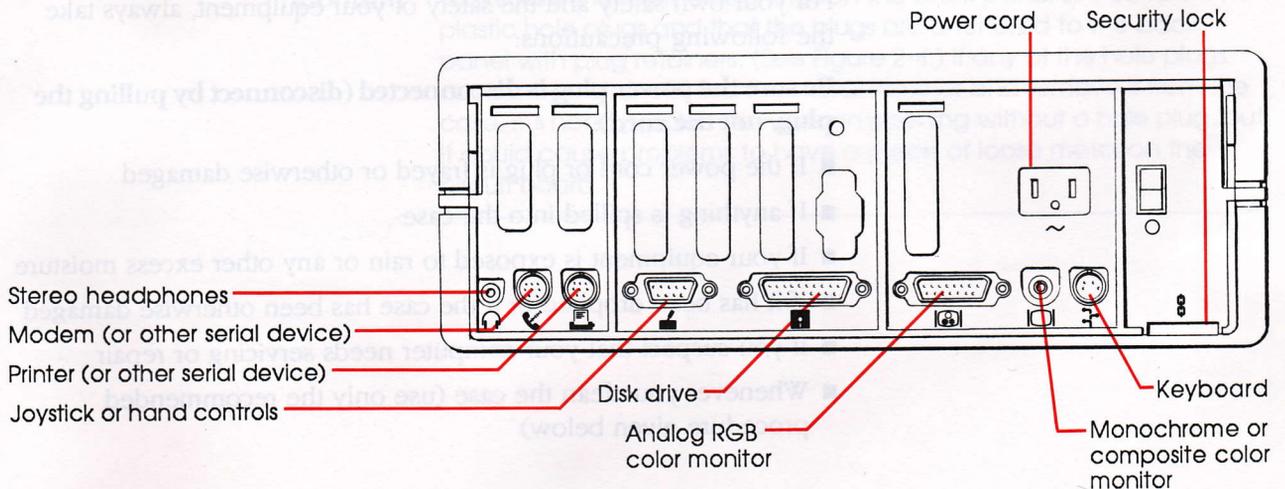


Figure 1-1
What goes where

Important!

As you study the diagrams in this guide, and as you plug connectors into ports, notice that the pins in the connectors are designed to line up with holes in the ports. If you have to force a connector into a port, it's the wrong port, the connector's upside down, or the pins aren't lined up with the holes. Don't force it!

The rectangular opening in the bottom-right corner of the back panel is for connecting a security lock. Security locks are available from your authorized Apple dealer.

Important safety instructions

You're almost ready to plug in your Apple IIGS, but first read these important safety instructions.

Warning This equipment is intended to be electrically grounded.

Your Apple IIGS is equipped with a three-wire grounding plug—a plug having a third (grounding) pin. This plug will fit only a grounding-type AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet.

Do not defeat the purpose of the grounding plug!

For your own safety and the safety of your equipment, always take the following precautions:

Be sure the power plug is disconnected (disconnect by pulling the plug, not the cord):

- If the power cord or plug is frayed or otherwise damaged
- If anything is spilled into the case
- If your equipment is exposed to rain or any other excess moisture
- If it has been dropped or if the case has been otherwise damaged
- If you suspect that your computer needs servicing or repair
- Whenever you clean the case (use only the recommended procedure given below)

Be sure that you always do the following:

- Keep all air vents clear.
- Keep your equipment away from any source of liquid, such as wash basins, bathtubs, and shower stalls.
- Keep it protected from damp or wet weather, such as rain or snow.
- Read all the installation instructions carefully before you plug in the product to a wall socket.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

Warning

Electrical equipment may be hazardous if misused. Operation of this product or similar products must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

To clean the case, do the following:

1. Disconnect the power plug by pulling the plug, not the cord.
2. Use a clean, soft cloth moistened with water. Wipe the surfaces lightly, but *do not wipe the screen of the monitor*. For cleaning the monitor screen, use only the special cloth provided and do not moisten it.

Important!

Make sure that all the openings on the back panel are covered with plastic hole plugs and that the plugs are anchored to the back panel with plug retainers. (See Figure 2-4.) If any of the hole plugs are missing retainers, find the metal retainer and remove it from the case. It's not a problem to have an opening without a hole plug, but it could cause problems to have a piece of loose metal on the circuit board.

Power cord

Important!

Before you start connecting devices to your Apple IIGs, make sure the power switch on the back of the Apple IIGs is set to 0 for *off*. If the power has been on, wait at least 30 seconds after turning off the power before connecting anything to or disconnecting anything from the Apple IIGs.

1. Plug one end of the power cord into the Apple IIGs.
2. Plug the other end of the power cord into a grounded outlet.

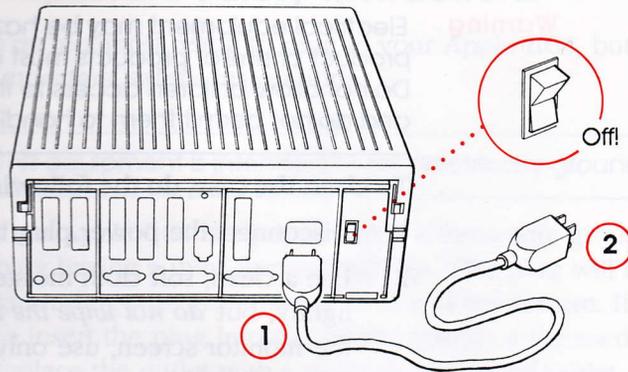


Figure 1-2
Plug in power cord

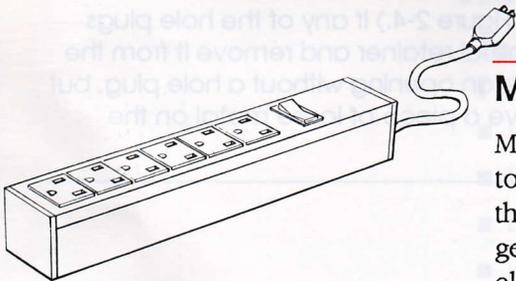


Figure 1-3
Power strip

More power

Many devices—including printers, monitors, and modems—need to be plugged into three-hole, grounded outlets. If you have more than two devices that need to be plugged into the wall, you should get a **power strip**. (See Figure 1-3.) A power strip, available at any electronics store, is like a wall socket with four to eight outlets. Many power strips have an on/off switch, so you can turn all your devices on and off with one switch.

Important!

Leave the power cord plugged in while you install other peripheral devices. This keeps your computer system grounded. But be sure the power is off when you're connecting peripheral devices.

Keyboard

1. With the keyboard facing away from you, plug one end of the keyboard cable into the port on the right side of the keyboard.
2. Plug the other end of the keyboard cable into the keyboard port on the back of the Apple IIGS.

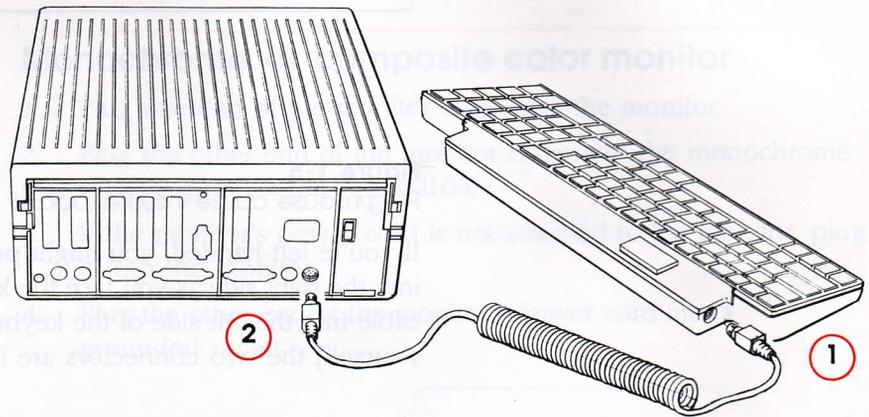


Figure 1-4
Plug in keyboard cable

The official name for the keyboard port is the Apple Desktop Bus™. It's called a bus instead of a port because several different devices (the keyboard, mouse, and other Apple desktop devices) can send information along one bus line to the computer. You'll see how to daisy-chain Apple Desktop Bus devices when you connect your mouse to the keyboard.

Mouse

With the keyboard facing you, plug the mouse cable into the connector on the right side of the keyboard.

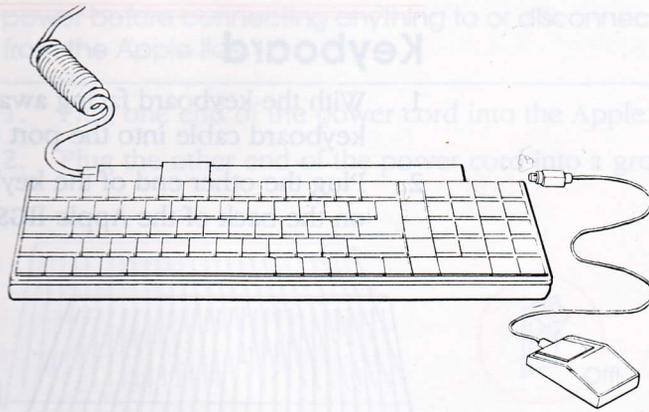


Figure 1-5
Plug mouse cable into keyboard

If you're left-handed, you might prefer to plug the keyboard cable into the right side as you face the keyboard and plug the mouse cable into the left side of the keyboard, as shown in Figure 1-6. Suit yourself; the two connectors are identical.

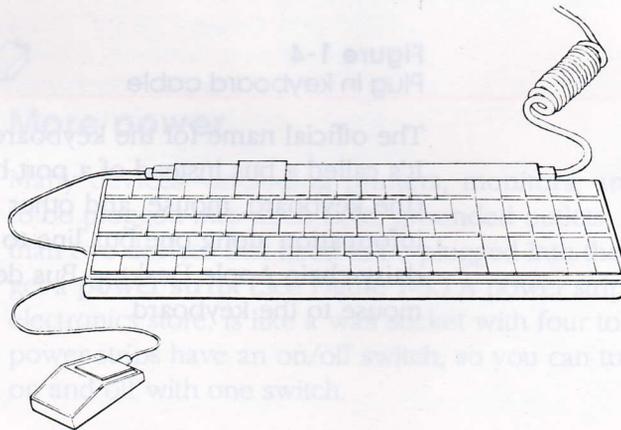


Figure 1-6
Mouse cable on the left

Monitor

Check the manual that came with your color monitor to see if it's a **composite** or an **analog RGB monitor**.

A **DB-15 connector** is a D-shaped connector with 15 pins; also called a *15-pin connector*.



Figure 1-7
DB-15 connector

There are several kinds of video monitors you can use with your Apple IIGS. Read the first set of instructions if you're connecting a **monochrome** or a **composite color monitor**. Read the second set of instructions if you're connecting an **analog RGB color monitor**.

You can use a television set as a monitor, but you'll need an RF modulator to translate the signals from the computer into a form the television can display. Ask your authorized Apple dealer for an RF modulator designed for the Apple IIGS—one with a DB-15 connector. (See Figure 1-7.) Modulators with **DB-15 connectors** can be attached to the Apple IIGS via the RGB monitor port.

Monochrome or composite color monitor

1. Plug one end of the monitor cable into the monitor.
2. Plug the other end of the monitor cable into the monochrome monitor port on the Apple IIGS.
3. If the monitor's power cord is not attached to the monitor, plug it into the monitor.
4. Plug the other end of the monitor's power cord into a grounded outlet.

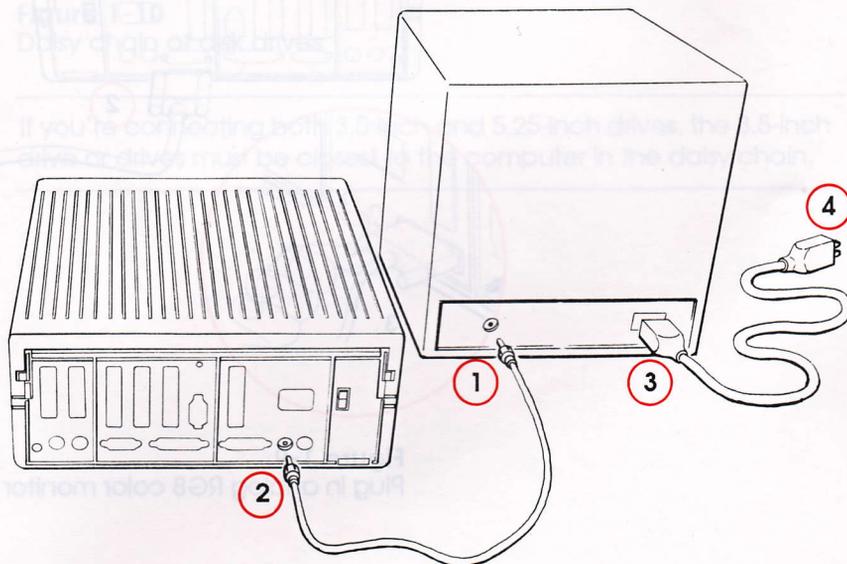


Figure 1-8
Plug in monochrome or composite color monitor cables

Analog RGB color monitor

1. Plug one end of the monitor cable into the monitor.
2. Plug the other end of the monitor cable into the RGB color monitor port on the Apple IIGS.
3. Tighten the screws on both sides of the monitor cable connector.
4. If the monitor's power cord is not attached to the monitor, plug it into the monitor.
5. Plug the other end of the monitor's power cord into a grounded outlet.

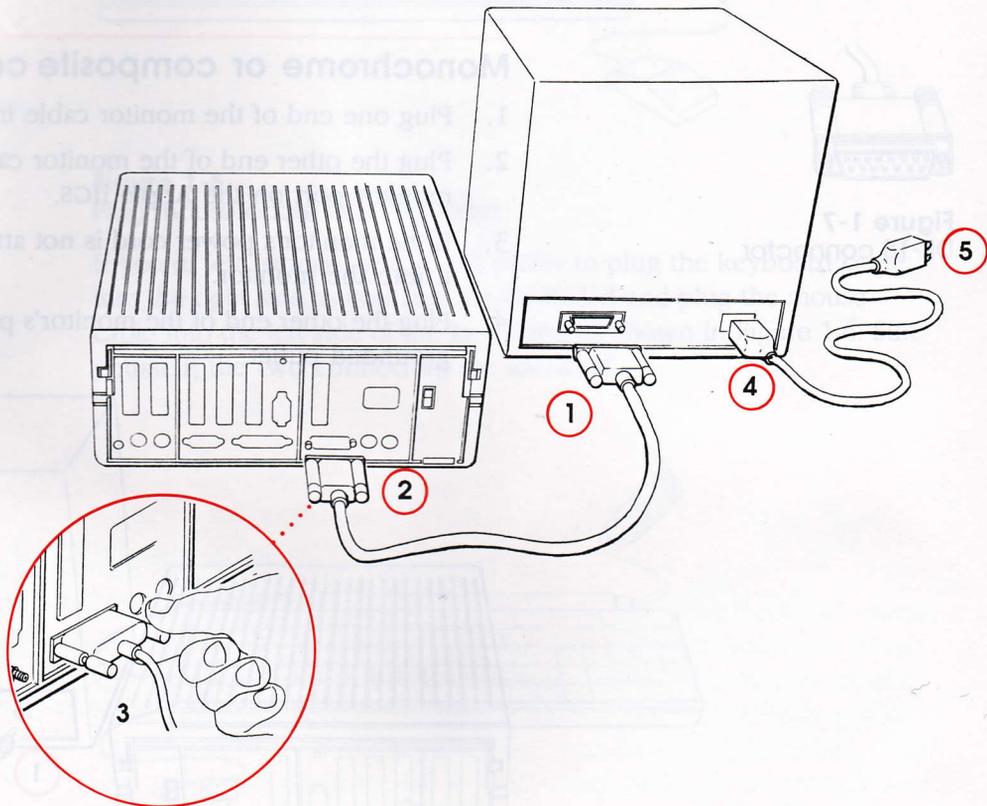


Figure 1-9
Plug in analog RGB color monitor cables

Disk drive

There are two kinds of disk drives you can attach to the Apple IIGS through the disk drive port: 3.5-inch drives and 5.25-inch drives. You can also attach a hard disk to the Apple IIGS, but not through the disk drive port. A hard disk comes with an interface card that you connect to one of the slots inside the computer. (See Chapter 2 for more information about devices with interface cards.) You can attach up to four drives to the port by connecting them to each other in daisy-chain fashion as shown in Figure 1-10. Only two of the drives can be 3.5-inch drives.

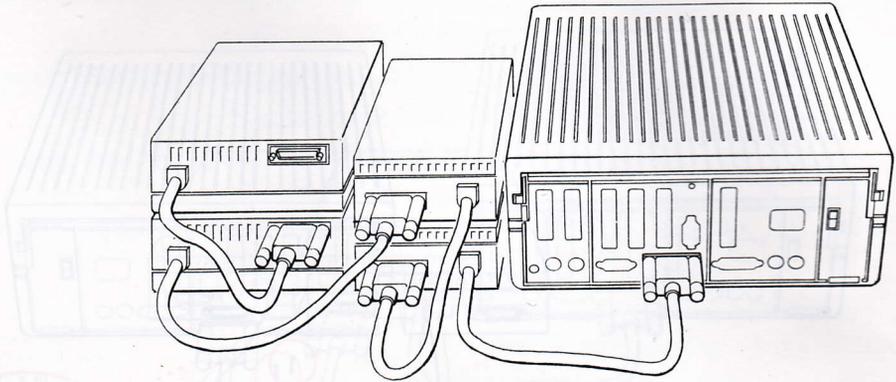


Figure 1-10
Daisy chain of disk drives

Important!

If you're connecting both 3.5-inch and 5.25-inch drives, the 3.5-inch drive or drives must be closest to the computer in the daisy chain.

Connecting the first disk drive

Important!

Make sure the power switch on the back of your Apple IIgs has been off for at least 30 seconds before you connect your disk drive. Connecting a drive when the power is on could seriously damage your disk drive and your computer.

1. Plug the disk drive cable into the disk drive port on the Apple IIgs.
2. Tighten the screws on both sides of the disk drive cable connector.

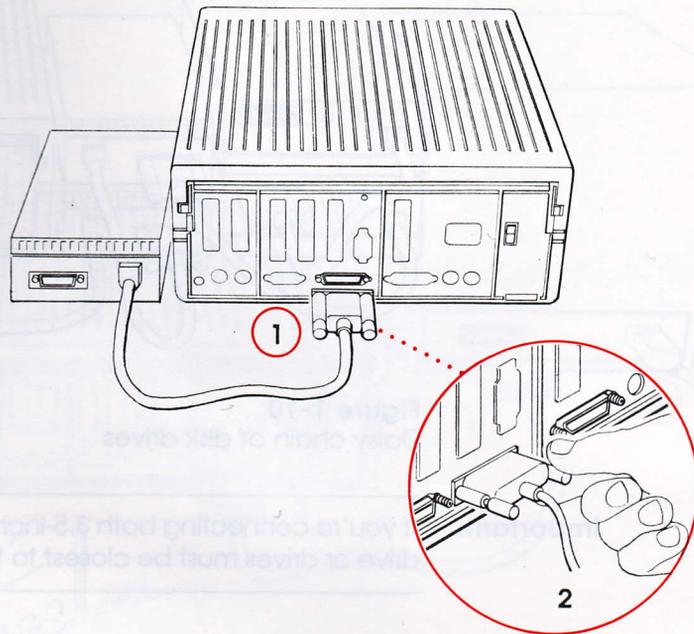


Figure 1-11
Connect disk drive

Connecting the second disk drive

Important!

Make sure the power switch on the back of your Apple IIs has been off for at least 30 seconds before you connect your disk drive. Connecting a drive when the power is on could seriously damage your disk drive and your computer.

1. Plug the disk drive cable into the port on the back of disk drive 1.
2. Tighten the screws on both sides of the disk drive cable connector.

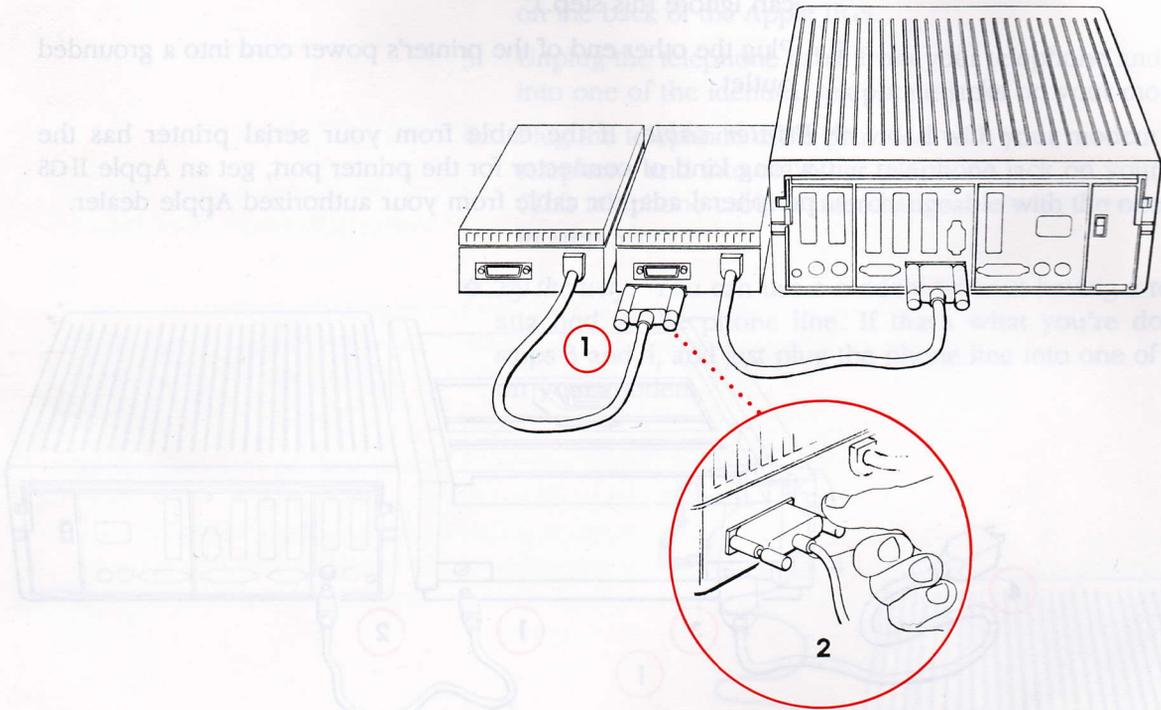


Figure 1-12
Plug in disk drive cable

If you have additional disk drives, connect each new drive to the port on the back of the last drive in the daisy chain. Just be sure that the 3.5-inch drives come before the 5.25-inch drives in the daisy chain.

Printer

A **serial printer** receives information from the computer over a single wire, as opposed to a **parallel printer**, which receives information over parallel wires.

These instructions are for **serial printers**—printers that use a serial interface. You can also use a **parallel printer** with the Apple IIGS, but you'll need a parallel interface card to connect it. (See Chapter 2 for more information about devices with interface cards.)

1. Plug one end of the printer cable into the printer.
2. Plug the other end of the printer cable into the printer port on the back of the Apple IIGS.
3. Plug one end of the printer's power cord into the printer. (With some printers, the power cord is permanently attached, so you can ignore this step.)
4. Plug the other end of the printer's power cord into a grounded outlet.

❖ *Printer cable:* If the cable from your serial printer has the wrong kind of connector for the printer port, get an Apple IIGS peripheral adaptor cable from your authorized Apple dealer.

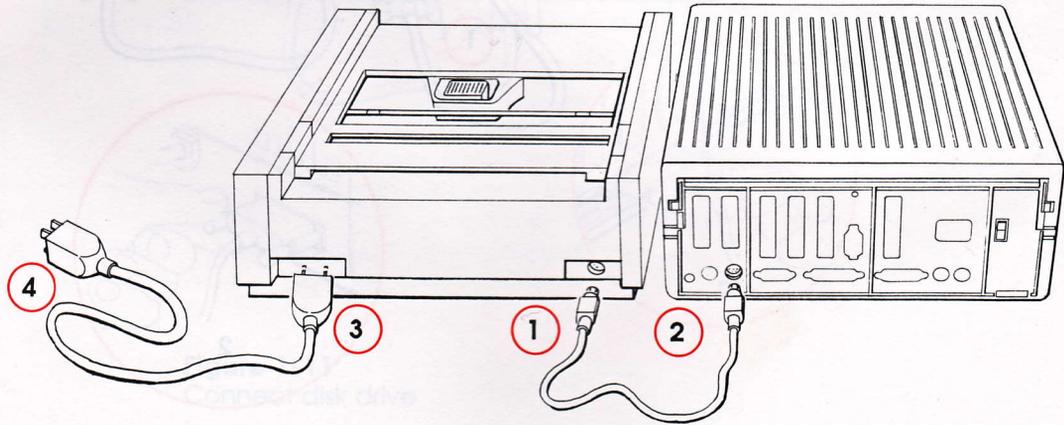


Figure 1-13
Plug in printer cables

Read the manual that came with your printer for instructions on loading paper, changing ribbons, and operating the printer.

The Apple IIGS is designed to work automatically with all printers in the Apple ImageWriter™ series and with many other popular serial printers. If you're using a printer other than an ImageWriter and you have trouble printing, you may need to change the way information is being sent to your printer. You can change the configuration of the printer port by using the Control Panel Program, which is explained in the owner's guide.

Modem

1. Plug one end of the modem cable into the modem.
2. Plug the other end of the modem cable into the modem port on the back of the Apple IIGS.
3. Unplug the telephone cable from your telephone and plug it into one of the identical telephone jacks on your modem.
4. Plug the telephone cable provided with your modem into your telephone and into the other telephone jack on your modem.
(This telephone cable is interchangeable with the one you used in step 3.)

❖ *By the way:* You can use a modem without having a telephone attached to the phone line. If that's what you're doing, skip steps 3 and 4, and just plug the phone line into one of the jacks on your modem.

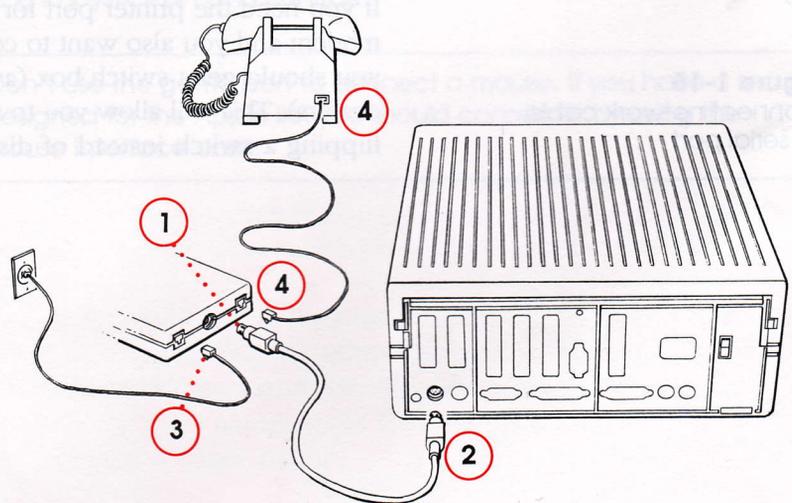


Figure 1-14
Plug in modem cables

Plug the modem into a grounded outlet. (With the Apple Personal Modem™, you'll need to plug the power connector into the modem body before plugging it into a power source. With other modems, plug the modem's power cable into the modem and into a grounded outlet.)

Read the manual that came with your modem for information on how to use your modem.

The Apple IIGS is designed to work automatically with the Apple Personal Modem and many other popular modems. If you have trouble communicating with other computers through your modem, you may need to change the configuration of the modem port by using the Control Panel Program (explained in the owner's guide).

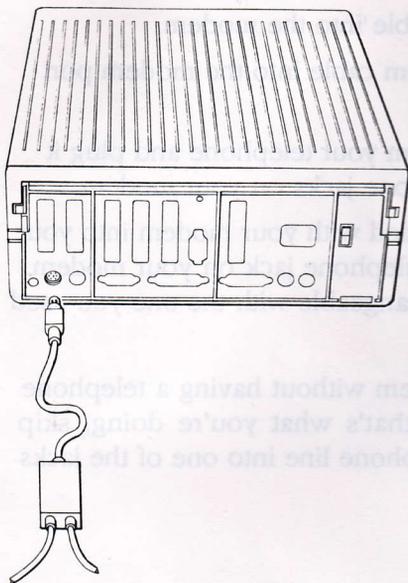


Figure 1-15
Connect network cable
to serial port

AppleTalk

You can use either the printer port or the modem port to connect your Apple IIGS to an AppleTalk™ Personal Network. (See Figure 1-15.)

❖ *By the way:* This is only the last step in the process of connecting your computer to a network. Read the manual that came with the AppleTalk Connector Kit for information on planning and setting up a network.

If you need the printer port for a printer and the modem port for a modem and you also want to connect your Apple IIGS to a network, you should get a switch box (available from most authorized Apple dealers). This will allow you to switch between devices just by flipping a switch instead of disconnecting and reconnecting cables.

Joystick and hand controls

1. Plug the joystick or hand-control cable into the game port on the back of the Apple IIGS.
2. Tighten the screws on both sides of the connector.

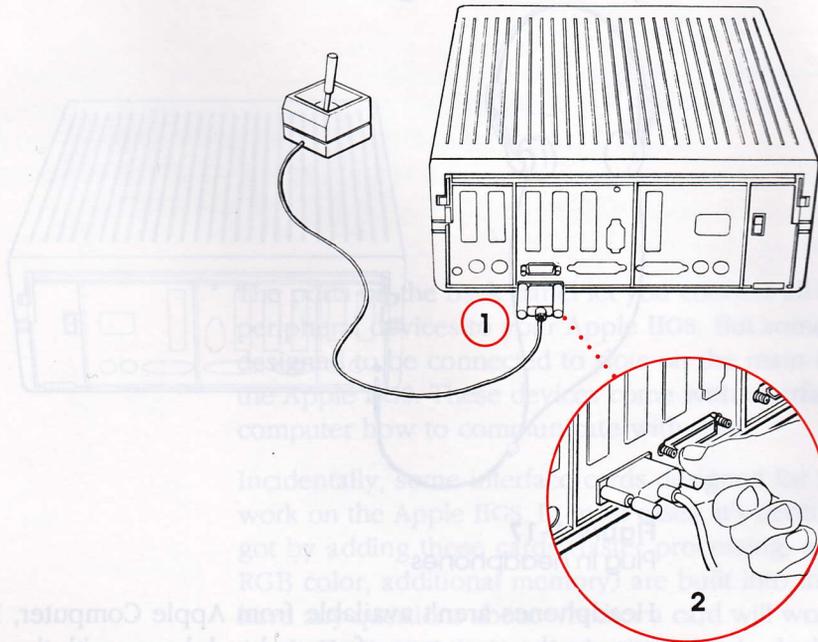


Figure 1-16
Plug in joystick or hand controls

Important! Don't use the game port to connect a mouse. If you have a mouse designed for the Apple IIe, you should connect it by using the mouse interface card.

Important! If you have a UniDisk™ 3.5-inch drive, you must connect it to the disk drive port rather than connecting it to a controller card in a slot.

You can also connect a serial printer to the printer port, and a modem to the modem port, without using interface cards. If the cable from your printer or modem has the wrong kind of connector for the port, get an Apple IIGS peripheral adaptor cable from your authorized Apple dealer.

Headphones

1. Plug the headphone cable into the headphone port on the Apple IIGS as shown in Figure 1-17.

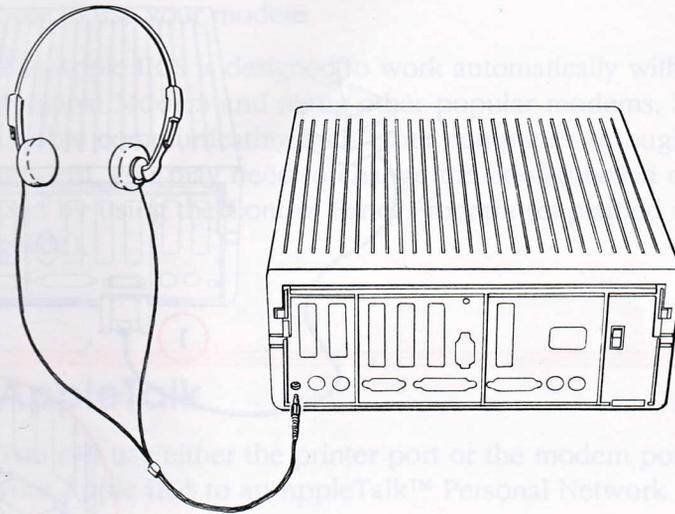


Figure 1-17
Plug in headphones

Headphones aren't available from Apple Computer, Inc., but you can use the same type of stereo headphones with the Apple IIGS that you use for a portable radio.



Chapter 2



Making Inside Connections

The ports on the back panel let you connect all sorts of standard peripheral devices to your Apple IIGS. But some devices are designed to be connected to slots on the main circuit board inside the Apple IIGS. These devices come with interface cards that tell the computer how to communicate with them.

Incidentally, some interface cards designed for the Apple IIe won't work on the Apple IIGS. In most cases, it's because the functions you got by adding those cards (faster processing, an 80-column display, RGB color, additional memory) are built into the Apple IIGS. If you have any questions about whether a card will work on your Apple IIGS, consult your authorized Apple dealer.

Some devices that require interface cards with other models of the Apple II can be plugged directly into ports on the Apple IIGS. For example, if the connector on your disk drive cable matches the connector of the disk drive port, you can connect it directly to the disk drive port.

Important!

If you have a UniDisk™ 3.5-inch drive, you must connect it to the disk drive port rather than connecting it to a controller card in a slot.

You can also connect a serial printer to the printer port, and a modem to the modem port, without using interface cards. If the cable from your printer or modem has the wrong kind of connector for the port, get an Apple IIGS peripheral adaptor cable from your authorized Apple dealer.

General installation instructions

Here are some general instructions for connecting peripheral devices to the computer through the slots on the main circuit board. Before you can get at the slots, you need to remove the lid of your Apple IIGS.

Important!

Make sure the Apple IIGS power switch is off, but leave the power cord plugged into a grounded outlet. This keeps your computer system grounded. If the power has been on, wait at least 30 seconds after turning off the power before connecting anything to or disconnecting anything from the Apple IIGS.

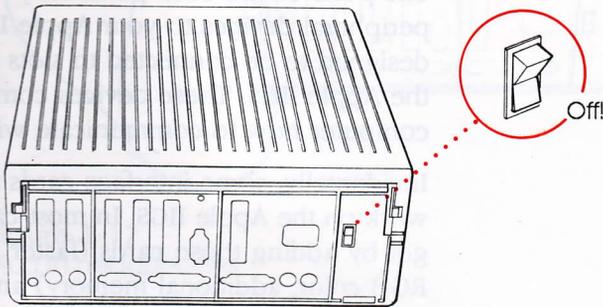


Figure 2-1
Make sure power is off

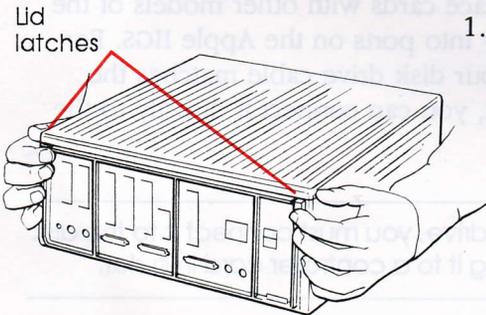


Figure 2-2
Lift off lid

1. To remove the Apple IIGS lid, wrap your hands around the rear corners of the Apple IIGS case as shown in Figure 2-2, and hold the lid latches in with your index fingers while you push up on the lid with your thumbs. When you feel the lid release, lift it all the way off the case and put it to one side.

Important!

Make sure that all the openings on the back panel are covered with plastic hole plugs and that the plugs are anchored to the back panel with plug retainers. (See Figure 2-4.) If any of the hole plugs are missing retainers, find the metal retainer and remove it from the case. It's not a problem to have an opening without a hole plug, but it could cause problems to have a piece of loose metal on the circuit board.

2. Touch the power supply case inside the computer to discharge any static electricity that may be on your clothes or body. (See Figure 2-3.)
3. Find a hole plug in the back panel that matches the size of the connector on the ribbon cable that came with the interface card. Remove the hole plug by turning the plug retainer (from inside the case) 90 degrees counterclockwise, as shown in Figure 2-4.
4. Connect the ribbon cable to the inside of the back panel, as shown in Figure 2-5. By anchoring the connector to the back panel, you reduce stress on the cable and you form a bond between the electromagnetic shielding on the computer's case and the shielding on the cable. This virtually eliminates the possibility that your computer will generate radio-frequency interference.

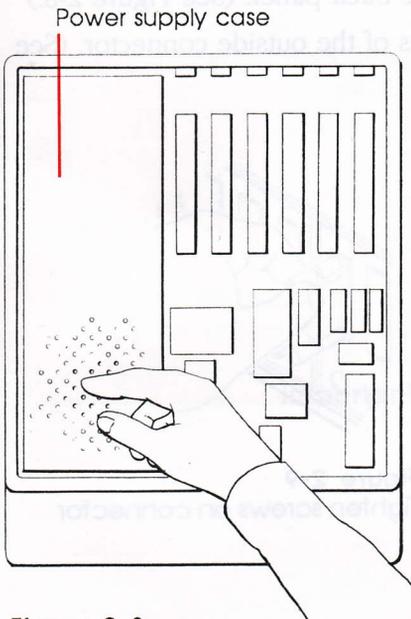


Figure 2-3
Touch power supply case

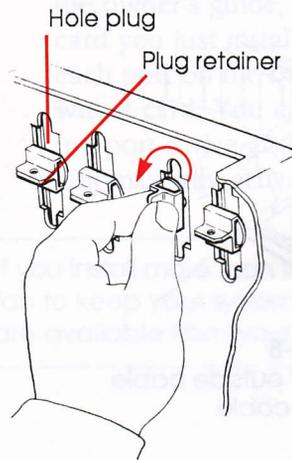


Figure 2-4
Remove hole plug from opening

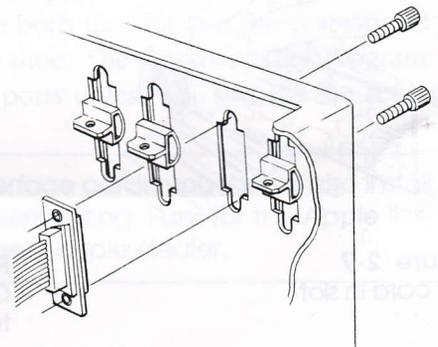


Figure 2-5
Connect cable to back panel

5. Connect the ribbon cable to the card. (See Figure 2-6.) In some cases the ribbon cable is permanently attached to the card, so you'd skip this step.

Warning

When you're joining connectors, make sure the pins on one connector line up with the holes on the other connector. If you aren't careful, you could bend a pin or force a pin into the wrong opening and damage the connector, the peripheral device, or even the computer.



Figure 2-6
Connect cable to card

6. Put the card in the slot recommended in the manual that came with the card. When you handle the interface card, avoid touching the gold fingers along the bottom edge of the card. The moisture from your fingers could attract dust, which would weaken the card's connection to the computer. You'll have to exert some pressure to get the card into the slot. (If it were a loose fit, it would be a loose connection.) But don't wiggle the card from side to side in your efforts to insert it. Rock it forward and back until it's firmly seated in the slot. (See Figure 2-7.)
7. Connect the outside cable to the ribbon cable by way of the connector that's anchored to the back panel. (See Figure 2-8.)
8. Tighten the screws on both sides of the outside connector. (See Figure 2-9.)

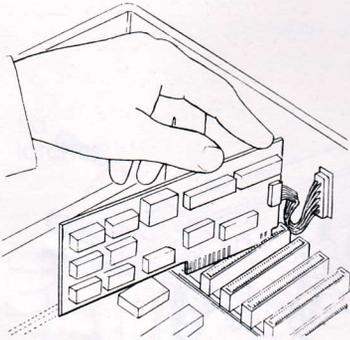


Figure 2-7
Put card in slot

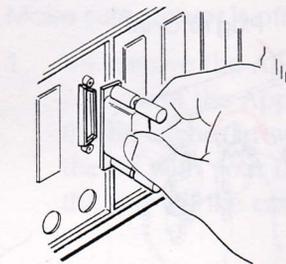


Figure 2-8
Connect outside cable
to inside cable

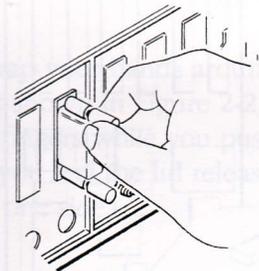


Figure 2-9
Tighten screws on connector

9. Install any other devices that require interface cards, and then replace the Apple IIGS lid by laying the front edge of the lid in the groove in the front of the Apple IIGS case and lowering the back edge of the lid into place. Press down on the back corners of the lid until you hear the latches click shut.

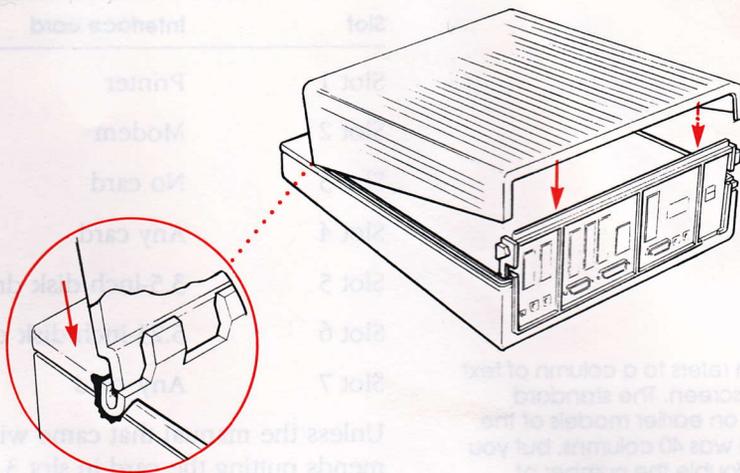


Figure 2-10
Replace lid

10. Use the Control Panel Program, explained in Appendix A of the owner's guide, to activate the slot that contains the interface card you just installed. Activating the slot is necessary because each port on the back of the Apple IIGS imitates a particular slot with a card. You can't have both the slot and the corresponding port active at the same time. The Control Panel Program automatically activates the ports unless you change the settings.

Important!

If you install more than three interface cards, you should also install a fan to keep your system from overheating. Fans for the Apple IIGS are available from your authorized Apple dealer.

Recommended slots

Here are the recommended slots for common peripheral devices. If the device you're connecting isn't listed here, use the slot recommended in the manual that came with the device.

Slot	Interface card
Slot 1	Printer
Slot 2	Modem
Slot 3	No card
Slot 4	Any card
Slot 5	3.5-inch disk drive
Slot 6	5.25-inch disk drive
Slot 7	Any card



Column refers to a column of text on the screen. The standard display on earlier models of the Apple II was 40 columns, but you could double the number of characters that could be displayed on each line by adding an 80-column card. The 80-column display is standard on the Apple IIGS, so you don't need a card.

Unless the manual that came with the device specifically recommends putting the card in slot 3, don't put a card in slot 3. Slot 3 was the 80-column card slot in earlier models of the Apple II, and, for purposes of software compatibility, a card in slot 3 (which you activate by using the Control Panel Program) may interfere with the Apple IIGS's built-in 80-column capability.

Where you go from here

Now that you've got your computer system set up, you're probably eager to turn it on and get started. But before you flip the power switch, read the first few pages of the owner's guide to find out how to start up the Apple IIGS training disk—your hands-on introduction to the Apple IIGS.

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Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, California 95014
408 996-1010
TLX 171-576

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