
Where to Find Information

This User's Guide

This guide shows how to setup the scanner and calibrate the screen, how to install the scanner software and options, and how to use the scanner and make basic scans.

It also shows how to make basic software settings and use the Start Button function. Finally, it offers troubleshooting tips, customer support information.

EPSON Scan Server & EPSON TWAIN Pro Network User's Guide

Provides detailed instructions for installing and using EPSON Scan Server and EPSON TWAIN Pro Network software.

Online EPSON Scanner Software Reference Guide

Provides basic information about scanning and detailed reference on the settings and functions of EPSON TWAIN Pro and other EPSON scanner utility software. Explanations about EPSON TWAIN Pro also apply to EPSON TWAIN Pro Network.

Online Color Guide (may not be available in some countries)

Explains the basics of color imaging and how to get impressive results from your scanner and other EPSON products.

Information on EPSON TWAIN Pro and EPSON TWAIN Pro Network

Online help provides you with detailed information on EPSON TWAIN Pro and EPSON TWAIN Pro Network, click the ? button in the EPSON TWAIN Pro or EPSON TWAIN Pro Network dialog box.

Information on PageManager and other Software

See the PageManager for EPSON, and other software documentation provided on the EPSON Scanner Software CD-ROM.

EPSON EXPRESSION™ 1600

EPSON EXPRESSION™ 1600 Pro

Color Image Scanner

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User's Guide

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Glossary

Safety Instructions

Important Safety Instructions

Read all these instructions and save them for later reference. Follow all warnings and instructions marked on the scanner.

- ❑ Unplug the scanner before cleaning. Clean with a damp cloth only. Do not spill liquid on the scanner.
- ❑ Do not place the scanner on an unstable surface, or near a radiator or heat source.
- ❑ Use only the type of power source indicated on the scanner's label.
- ❑ Connect all equipment to properly grounded power outlets. Avoid using outlets on the same circuit as photocopiers or air control systems that regularly switch on and off.
- ❑ Do not let the power cord become damaged or frayed.
- ❑ If you use an extension cord with the scanner, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure the total ampere rating of all devices plugged into the wall outlet does not exceed the wall outlet's ampere rating.
- ❑ Except as specifically explained in this *User's Guide*, do not attempt to service the scanner yourself.
- ❑ Unplug the scanner and refer servicing to qualified service personnel under the following conditions:

If the power cord or plug is damaged; if liquid has entered the scanner; if the scanner has been dropped or the case damaged; if the scanner does not operate normally or exhibits a distinct change in performance. (Do not adjust controls that are not covered by the operating instructions.)

Warnings, Cautions, and Notes



Warnings must be followed carefully to avoid bodily injury.



Cautions must be observed to avoid damage to your equipment.

Notes contain important information and useful tips on the operation of your scanner.

ENERGY STAR Compliance

As an ENERGY STAR Partner, EPSON has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

The International ENERGY STAR Office Equipment Program is a voluntary partnership with the computer and office equipment industry to promote the introduction of energy-efficient personal computers, monitors, printers, fax machines, copiers, and scanners, in an effort to reduce air pollution caused by power generation.



Getting to Know Your Scanner

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
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Features

The EPSON Expression 1600/Expression 1600 Pro scanner offers the following features:

- ❑ Optical resolution of 1600 dots per inch (dpi) for main scanning, and 3200 dpi with micro step for sub scanning (36-bit input, 36-bit output).
- ❑ A4/Letter size scanning area.
- ❑ Start Button control for shortcut local and networked scanning operation.

In a stand-alone configuration, the  Start button can automatically start a scanning sequence by invoking Page Manager and EPSON TWAIN Pro, scanning documents, launching a graphical application and importing the scanned image to the application.

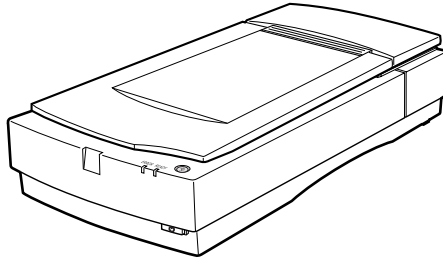
In a networked configuration, pressing the  Start button on the scanner starts the same operation as clicking the **SCAN** button in the EPSON TWAIN Pro Network dialog box.

- ❑ Full color or grayscale scanning. Capture your images with up to 68.7 billion colors, or up to 4,096 shades of gray.
- ❑ EPSON TWAIN Pro lets you take full advantage of your scanner's advanced features.
- ❑ EPSON TWAIN Pro Network and EPSON Scan Server software work together to directly control all of the features of your EPSON scanner in a networked environment.
- ❑ EPSON TWAIN Pro and TWAIN Pro Network's Unsharp Mask option automatically sharpens the image to provide crisp detail.

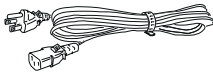
- ❑ EPSON TWAIN Pro and TWAIN Pro Network's De-screening option automatically removes unwanted moiré patterns from scanned images for higher quality output.
- ❑ Auto Area Segmentation (AAS) allows you to separate text from photographs on a page so that grayscale images are clearer and text recognition is more accurate.
- ❑ Text Enhancement Technology (TET) enhances text recognition accuracy for optical character recognition (OCR) scanning.
- ❑ The Expression 1600 Pro includes the Transparency Unit which enables negative film and slide film to be scanned. The Transparency Unit is available as an option for the Expression 1600.
- ❑ The Automatic Document Feeder which enables continuous sheet scanning is available as an option.

Unpacking the Scanner

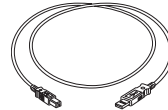
Your Expression 1600/Expression 1600 Pro comes shipped with CD-ROMs which include the driver software that runs your scanner, and some additional items, depending on your scanner model.



scanner

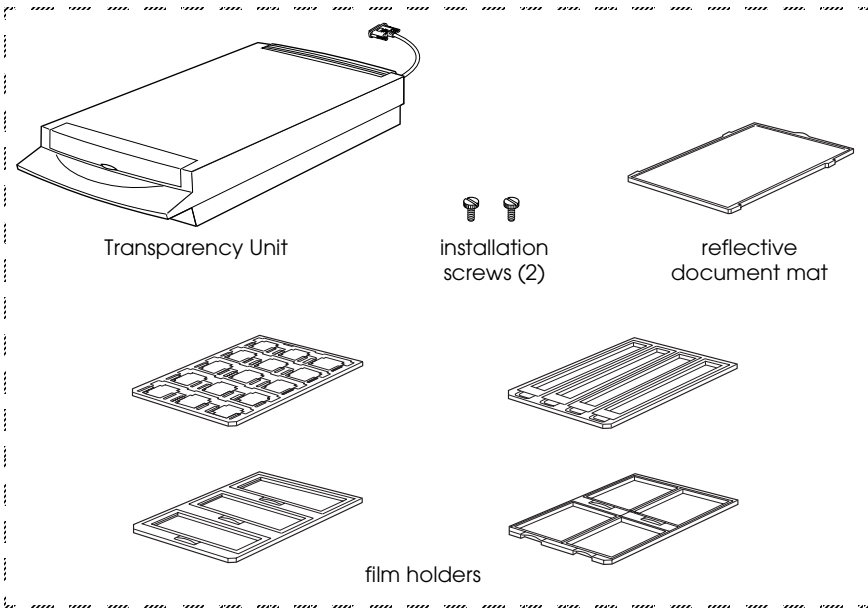


power cord



USB interface cable

For the Expression 1600 Pro

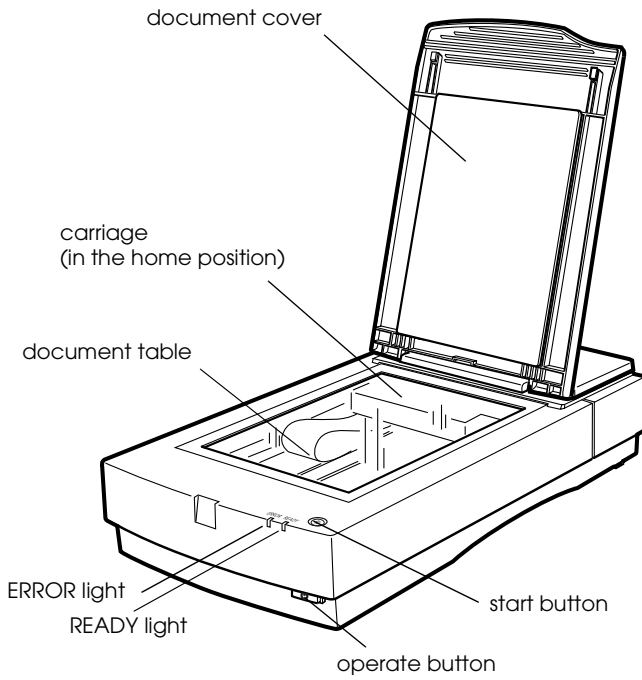


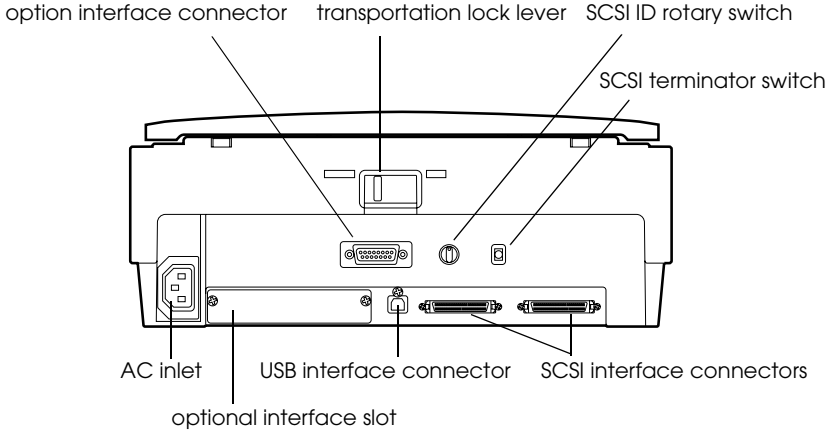
Note:

The Expression 1600 Pro comes with the Transparency Unit which is also available as an option for the Expression 1600.

Depending on the country of purchase, the power cord may come attached to the scanner. The shape of the AC plug also varies, so make sure the plug included is the correct shape for the electrical outlet in your country.

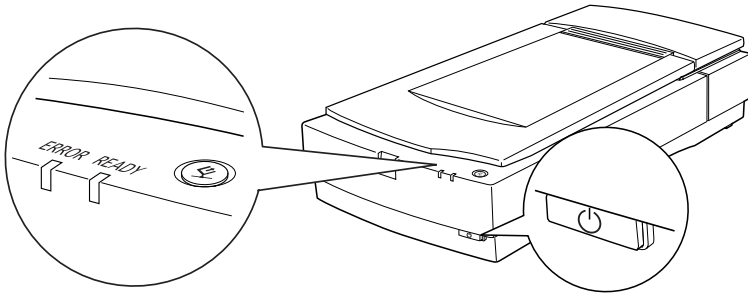
Scanner Parts





Lights and Buttons



The scanner has two indicator lights and two buttons.



Light

ERROR Light	READY Light	Error Type
On	On	Command error
Flashing	Off	Interface error
Flashing	Flashing	Fatal error
Off	Off	Option error

Buttons

Button	Function
 Operate	Turns the scanner on and off.
 Start	The hardware switch to execute scanning and transfer the scanned image to assigned application software in a stand-alone configuration. To use this feature, you need to setup software. See Chapter 3 for more details. In a networked environment it starts the same operation as the Scan button in EPSON TWAIN Pro Network.

Options

The following optional items are available to expand the versatility of your scanner. For detailed information on the use of these options, see Chapter 6 of this guide.

Automatic Document Feeder (B81316*)

Designed primarily for optical character recognition (OCR) scanning, the Automatic Document Feeder allows you to scan up to 30 pages automatically, then use them in word processing programs, as if you had typed the text yourself.

Transparency Unit (B81318*)

Allows you to scan transparent materials; primarily 35 mm slides and filmstrips. The Transparency Unit's reading area allows you to scan film up to 8.5 × 11.7 inches (216 × 297 mm) in size.

IEEE 1394 Scanner I/F Card (B80834*)

Allows you to connect your computer or scanner to other devices which support the IEEE 1394 standard.

Note:

The asterisk is a substitute for the last digit of the product number, which varies by country.

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Choosing a Place for the Scanner

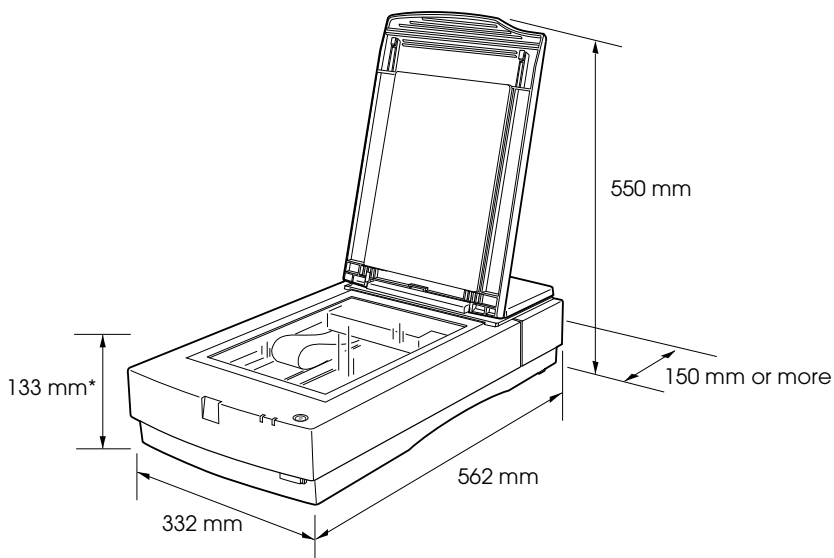
Follow the guidelines below when selecting a location for your scanner:

- ❑ Place the scanner on a flat, stable surface. The scanner will not operate properly if it is tilted at an angle.
- ❑ Place the scanner close enough to the computer for the interface cable to reach it easily.
- ❑ Place the scanner near a wall outlet where the power cord can be easily unplugged.

Note for French-speaking users:

Placez le scanner près d'une prise de courant où la fiche peut-être débranchée facilement.

- ❑ Allow space behind the scanner for the cables, and space above the scanner so that you can fully raise the document cover.



* When document cover is closed.

- ❑ Keep the scanner away from high temperatures, humidity and excessive dirt or dust. Also avoid using or storing the scanner in places subject to rapid changes of temperature and humidity.
- ❑ Keep the scanner away from direct sunlight and strong light sources.
- ❑ Avoid places subject to shocks and vibrations.

Installing a SCSI Interface Board (SCSI Interface Users Only)

Unless your computer already has a SCSI board installed, you need to install a SCSI board and SCSI software before installing the scanner driver and software applications.

If you have a Macintosh that has a SCSI interface or if you already have a SCSI board installed in your PC or Macintosh, go to the next section.

Note:

For additional information, see the installation guide that comes with your SCSI board.

1. Turn off the computer and any peripheral devices. Unplug any power cords, then disconnect all cables from the back panel of your computer.
2. Remove the cover from your computer.



Caution:

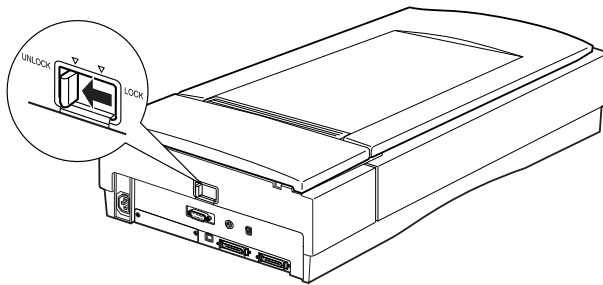
Static electricity can damage electronic components. Discharge static electricity by touching the metal frame of your computer before handling the interface board or any of the computer's circuit boards.

3. Insert the interface board into an appropriate expansion slot, then secure it with the retaining screw.
4. Replace the computer cover and reconnect all cables.

Releasing the Transportation Lock

Before connecting the scanner to a power source, you must release the transportation lock.


1. Place the scanner on a flat, stable surface with the back facing you.
2. Slide the transportation lock lever on the back of the scanner to the UNLOCK position, as shown below.

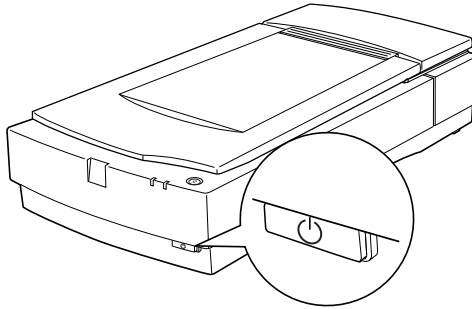


Note:

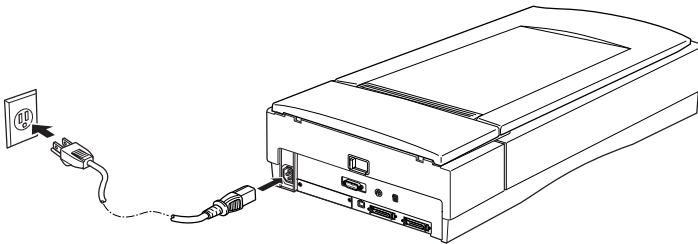
Simply sliding the transportation lock to the LOCK position does not fully lock the carriage. Before moving or transporting the scanner, be sure to perform the procedure under "Transporting the Scanner and the Transparency Unit" on page 7-4.

Plugging in the Scanner

1. Make sure that the scanner is turned off. The scanner is off when the  operate button is raised (not depressed).



2. If the power cord is not attached to the scanner, connect it to the AC inlet on the back of the scanner, and plug the other end into a properly grounded electrical outlet.




Caution:

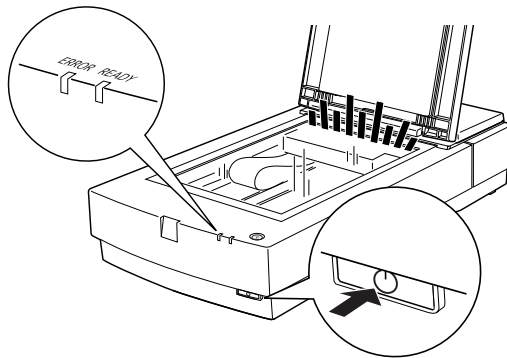
It is not possible to change the scanner's voltage. If the label on the back of the scanner does not show the correct voltage for your country, contact your dealer. Do not plug in the power cord.

Initialization

2

Before connecting the scanner to your computer, follow the steps below to make sure that the scanner is operating properly.

1. Open the document cover so you can see the operation of the scanner during initialization (startup).
2. Turn on the scanner by pressing the  operate button.
3. Make sure the fluorescent lamp on the carriage and the READY light flash, and the carriage moves slightly.



4. The READY light stays on, meaning the scanner has completed initialization.
5. Turn off the scanner.

If the scanner does not work as described, make sure the power cord is firmly plugged in and that you have released the transportation lock, then try again.



Caution:

Whenever you turn off the scanner, wait at least 10 seconds before turning it back on. Rapidly turning the scanner on and off can damage the scanner.

Connecting the Scanner to Your Computer using the SCSI Interface

For instructions on connecting the scanner to your computer using the SCSI interface, read this section.

Note for Macintosh Users:

Be sure to install the scanner software before connecting the scanner to your computer. See Chapter 3 for details.

For PC users:

Unless your PC already has a SCSI board installed, you need to install one, along with SCSI driver software. Install the SCSI board according to the directions included with it. Also see “Installing a SCSI Interface Board (SCSI Interface Users Only)” on page 2-4.

If your PC has a SCSI board up and running, connect the scanner as described in the next section.

Note:

You will need to install the SCSI driver that is normally included with Windows 95, 98, or NT (see your system documentation for instructions), or the driver described in the SCSI board installation documentation.

For Macintosh users:

Your Macintosh may or may not have SCSI ports, depending on which model you own. If you have a new Power Macintosh G3, you need to install a SCSI board and driver. See “Installing a SCSI Interface Board (SCSI Interface Users Only)” on page 2-4. Follow the directions below to connect your scanner and computer.

Note:

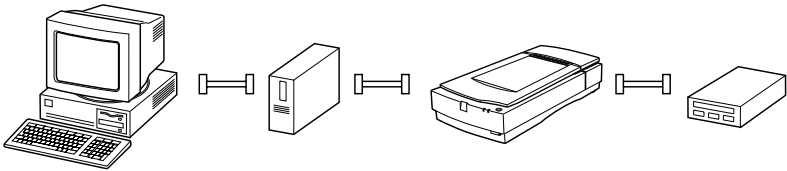
The latest driver may be available for download from the Web site of the SCSI board manufacturer.

Understanding SCSI connections

Read the following sections to determine how to set up your SCSI devices and whether you need any optional SCSI cables.

Daisy Chain

The SCSI interface allows you to connect up to seven devices (such as a scanner, hard disk, CD-ROM, and so on) to the computer, in what is called a “daisy chain” arrangement. Only the first SCSI device in a daisy chain is connected to the computer; each of the other devices is connected to another SCSI device.



SCSI Cables

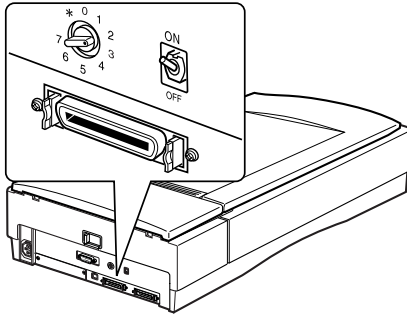
You may need to purchase SCSI cables before setting up your SCSI daisy chain. Be sure the SCSI cable connectors are suitable for your hardware, depending on the maker of your SCSI device and SCSI interface board.

SCSI ID and terminator

Each device has a SCSI ID number: the computer is usually number 7, and each of the other devices must have a different number between 0 and 6. Also, the first device and the last device in the chain (not including the computer) must have a terminator. No other device can have a terminator, or if a terminator does exist, it must be turned off or removed.

Setting the SCSI ID number

The scanner's default SCSI ID number is 2.



The SCSI ID rotary switch is located at the rear of the scanner.

If you add the scanner to a system in which one of your SCSI devices already has a SCSI ID of 2, change the ID number to an unused number using the rotary switch. See the table below as a guide.

ID	Availability	Description
0	Not available for Macintosh	Used for hard disk
	Not recommended for Windows	Usually used for hard disk
1	Not recommended	Usually used for hard disk
2		Factory setting of the scanner
3		Not available if your Macintosh has a built-in CD-ROM
4		
5		
6		
7	Not available for Macintosh	Always used for the Macintosh itself
	May not be available for Windows	Usually used for the SCSI board
*	Not available	For transportation purposes.* See page 7-4

* Scanner will not work if selected.



Caution:

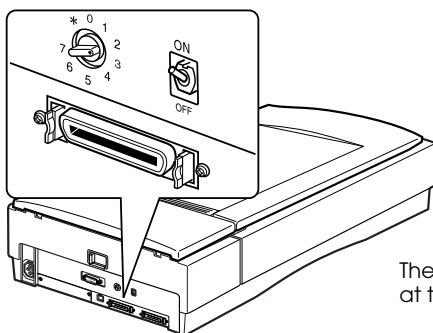
Do not set the SCSI ID to an ID number that is already assigned to another device otherwise the computer, scanner, and other devices will not operate properly.

Setting the terminator switch

The scanner has a built-in terminator, which allows SCSI devices to communicate properly with each other. You may need to change the terminator switch setting according to your computer system.

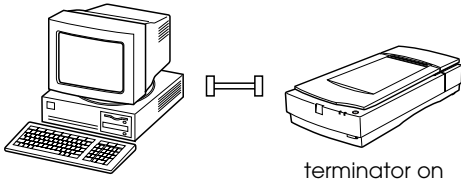
Note:

Do not use an external terminator.

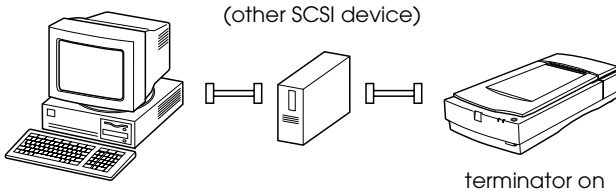


The terminator switch is located at the rear of the scanner.

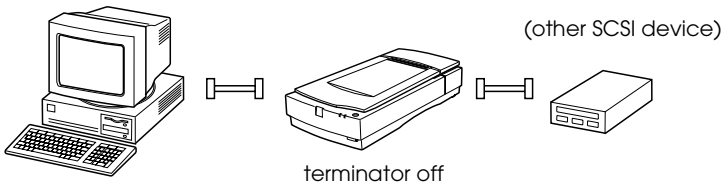
Only the scanner is connected



The scanner is the last device in the daisy chain



The scanner is in the middle of the daisy chain



Connecting the scanner

Connect the scanner to your computer or to another SCSI device as follows:

Note:

The combination of connectors on the SCSI interface cable you need varies depending on the maker of your SCSI device and SCSI interface board.

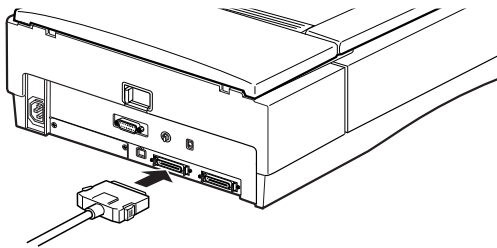
1. Make sure the scanner, computer, and all other SCSI devices are turned off and unplugged from the power source.



Caution:

Do not connect the scanner to the computer or other devices while they are turned on as damage may occur.

2. Connect one end of the interface cable to one of the scanner SCSI connectors until the locks on both sides snap in.



Note:

- To connect the scanner to a SCSI device other than the computer, the length of cable in the daisy chain must not exceed 6 meters; otherwise the system may not work properly.
- To connect the scanner to a PC using SCSI-2, the length of the cable must not exceed 3 meters.
- Make sure no other interface is used.

3. Connect the other end of the cable to the SCSI port of your computer or another SCSI device.

Note:

The SCSI port on the Macintosh is the larger port with the SCSI icon over it.

4. Plug in the power cords of your computer, scanner, and other external SCSI devices.

Note:

Before turning on your system, be sure to read "Power-on sequence" following.

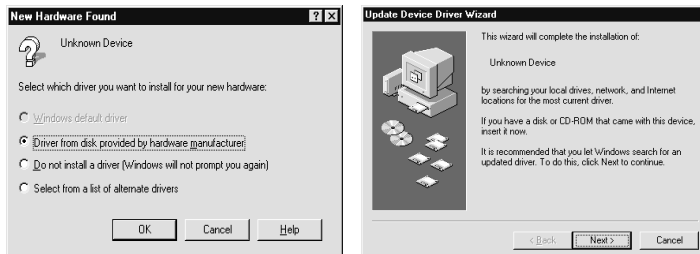
Power-on sequence

Keep the following in mind every time you turn on your computer and SCSI devices, including the scanner.

- ❑ Be sure to turn on the SCSI device which is connected at the farthest end of the daisy chain first, then the second farthest and so on, until finally your computer. If you attempt to use a SCSI device which has been turned on after the computer, it may not work properly, or the computer may not work properly.

❑ **For Windows 95 or 98 users:**

The first time you turn on the computer after turning on the scanner, one of the following dialog boxes or similar may appear.



Windows 95



Windows 98

If you see one of these, follow the installation instructions in Chapter 3, then see “Power-off sequence” following.

Power-off sequence

Keep the following in mind every time you turn off your computer and SCSI devices.

- ❑ When you are finished using your system, turn off your computer first, then the scanner and other SCSI devices in reverse order of the power-on sequence.

- ❑ While using your computer, do not turn off any SCSI device which has a terminator that is active (on).
- ❑ Do not turn the scanner off and back on while using your computer, otherwise the scanner may not work properly.

When the connection is complete, you need to install the scanner software. See Chapter 3 of this guide.

Connecting the Scanner to Your Computer using the USB Interface

Your PC must be preinstalled with Windows 98, and have a working USB port.

Your Apple Macintosh G3 or iMac computer must be running system 8.5 or later, or system 8.1 with iMac Update1.0 and have a working USB port.

Note for Macintosh Users:

Be sure to install the scanner software before connecting the scanner to your computer. See Chapter 3 for details.

Understanding USB connections

USB Cables

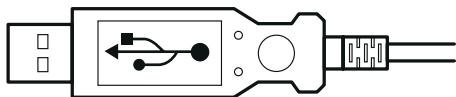
USB cables enable you to connect or remove peripherals to and from your computer easily, without having to shut down and restart the system each time a peripheral is plugged in or unplugged. You do not have to set an ID number or a terminator.

Note:

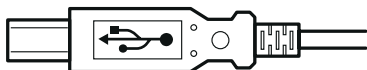
Do not connect or disconnect USB cables when the scanner is in use.

USB cables have 2 different connectors at each end.

Type A connects to your computer.



Type B connects to your scanner.



USB hub

You can also use a USB hub, allowing you to increase the number of USB ports and therefore connect several peripherals.

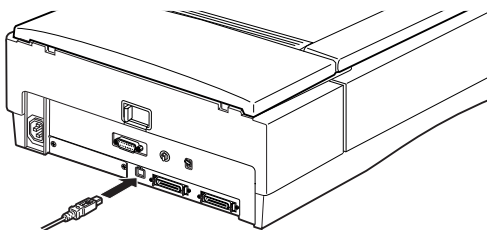
Note:

If you connect your scanner through more than one hub, your system may not work properly. In this case, try connecting the scanner directly to the computer's USB port. Also, your system may not work properly if you use a USB cable other than that supplied by EPSON.

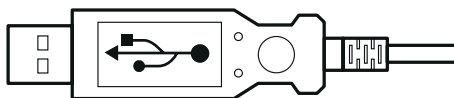
Connecting the scanner

To connect the scanner to your computer or USB hub:

1. Connect one end of the cable (Type B) to the USB port on the back of the scanner.



2. Connect the other end of the cable (Type A) to the USB port on your computer, or USB hub.



Note:

- *USB cables enable you to connect the scanner whether your computer is on or off. If you connect the scanner while your computer is on, the “Add New Hardware Wizard” dialog box (Windows) or a message telling you that the scanner driver needs to be installed (Macintosh) will appear. When this happens, follow the instructions in Chapter 3, then install the software.*

- ❑ *Connect the USB cable to your computer, then install or start the scanner software. Do not connect or disconnect the USB cable while the scanner software is open.*
- ❑ *Make sure no other interface is used.*

Installing the Scanner Software for Windows

After setting up the scanner as described above, you need to install the scanner software before you use the scanner to scan documents. For details on setting up the scanning software, see the next chapter.

Installing the Software

System Requirements	3-2
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For Macintosh and USB users	3-4
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System Requirements

Before installing the scanner software, make sure that your system meets the following requirements.

For PCs

For Windows and SCSI users

Scanner:	EPSON Expression 1600/Expression 1600 Pro
System:	Microsoft® Windows® 95, Windows® 98, or Windows NT® 4.0
Interface:	Adaptec® SCSI adapter
Display:	VGA or higher resolution monitor 640 × 480 screen resolution (800 × 600 or higher recommended), and 256 color (65,000 color or higher recommended)

Note:

Color and tone reproduction are subject to the display capability of your computer system, including the video card, display monitor, and software. See the product documentation for details.

For Windows and USB users

Scanner:	EPSON Expression 1600/Expression 1600 Pro
System:	Microsoft® Windows® 98 preinstalled
Interface:	The computer's USB port (TYPE A receptacle)
Display:	VGA or higher resolution monitor 640 × 480 screen resolution (800 × 600 or higher recommended), and 256 color (65,000 color or higher recommended)

Note:

Color and tone reproduction are subject to the display capability of your computer system, including the video card, display monitor, and software. See the product documentation for details.

For Macintosh and SCSI users

Scanner:	EPSON Expression 1600/Expression 1600 Pro
System:	Apple® Macintosh® with a PowerPC processor (except PowerBook 100) running system 7.5.x or later
Interface:	SCSI adapter

Note:

You cannot use a serial interface.

Display: Color Monitor, 640 × 480 screen resolution (or higher recommended), and 256 color (32,000 color or higher recommended)

Note:

Color and tone reproduction are subject to the display capability of your computer system, including the video card, display monitor, and software. See the product documentation for details.

For Macintosh and USB users

Scanner: EPSON Expression 1600/Expression 1600 Pro

System: Apple Power Macintosh G3 with built-in USB ports and running AppleSystem 8.5 or later

iMac running AppleSystem 8.5 or later, or AppleSystem 8.1 with iMac Update 1.0

Interface: USB port

Note:

You cannot use a serial interface.

Display: Color Monitor, 640 × 480 screen resolution (or higher recommended), and 256 color (32,000 color or higher recommended)

Note:

Color and tone reproduction are subject to the display capability of your computer system, including the video card, display monitor, and software. See the product documentation for details.

Installing the Scanner Software for Windows

After connecting the scanner to your computer, install the scanner software from the CD-ROM. The installation steps differ depending on the version of Windows.

Find instructions for Windows 98 users in this section. Instructions for Windows 95 and NT 4.0 users can be found in “For Windows 95 and Windows NT 4.0 users” on page 3-15.

3

For Windows 98 users

The following will describe installing the software for SCSI users, USB users should go to page 3-10.

SCSI users

Note:

If you are currently using Windows 95 and the scanner software is already installed, but you are upgrading from Windows 95 to 98, first uninstall EPSON TWAIN Pro while running Windows 95. Then reinstall EPSON TWAIN Pro as described in step 1 below on Windows 98. When uninstalling EPSON TWAIN Pro see page 3-21.

1. Make sure that the scanner is turned on.
2. Turn on the computer, and start Windows.

3. When the dialog box below or similar appears, insert the scanner software CD in the CD-ROM drive, then click Next.



4. Select the Search for the best driver for your device option, then click Next.



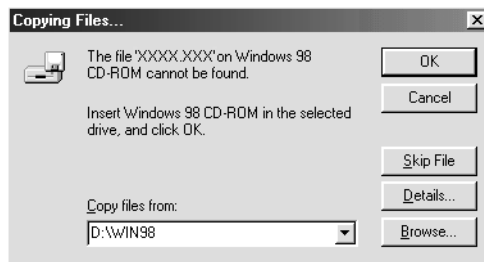
5. Make sure the Specify a location check box is selected, then browse and select or type in the CD-ROM drive letter, EPSON folder, the folder of your preferred language, and Win98 folder as the location, as shown below, and click Next.



6. Follow the instructions on the screen. You may be asked to insert the Windows 98 CD-ROM.



Make sure that the correct CD-ROM drive letter and the Win98 folder are specified in the Copy files from: box as shown below.



7. The EPSON Screen Calibration utility automatically starts. Follow the instructions on the screen. For details, see page 3-25.

Note:

If the EPSON Screen Calibration utility doesn't start automatically, see page 3-25 to calibrate your screen after installing the scanner software.

8. When the following dialog box is displayed, click Finish.



This completes the EPSON TWAIN Pro installation, next you will install utility and application software from the CD-ROM.

Installing application software

1. Double-click the My Computer icon.
2. Double-click the CD-ROM drive icon. A dialog box asking for your preferred language appears on your screen. If no dialog box appears, double-click the Cdsetup.exe icon.
3. Select your preferred language and click OK.
4. You will see the following dialog box. Click Add Software.

3



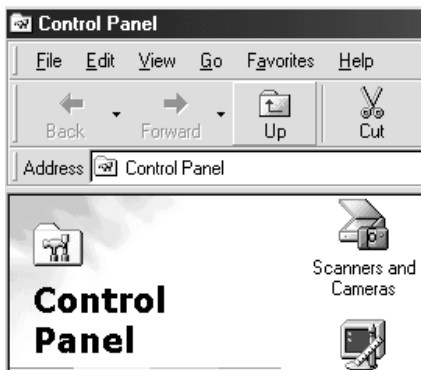
5. You will see the list of software in the list box. Click to select the names of the software you want to install in your PC. Descriptions of the software can be found in the software documentation, or on the CD-ROMs that come with your scanner. Make sure PageManager for EPSON is selected to be installed.
6. Click OK. Then follow the instructions on the screen.

The setup program installs the selected software.

Note:

- ❑ *If folders for the applications on the CD-ROM contain README files, double-click and read them as they contain up-to-date information regarding the software.*

- ❑ *You will find the Scanners and Cameras icon shown below in the Control Panel after EPSON TWAIN Pro is installed.*



USB users

1. Make sure that the scanner is turned on.
2. Turn on the computer, and start Windows.

Note:

You do not necessarily have to follow steps 1 and 2 above in that order. USB cables enable you to connect or remove the scanner to or from your computer easily, regardless of whether your computer and/or scanner are on or off.

3. When the dialog box below appears, insert the scanner software CD in the CD-ROM drive, then click Next.



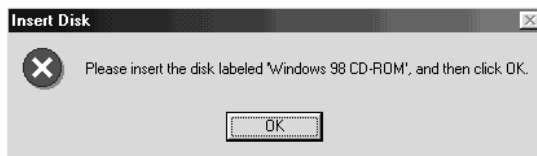
4. Select the Search for the best driver for your device option, then click Next.



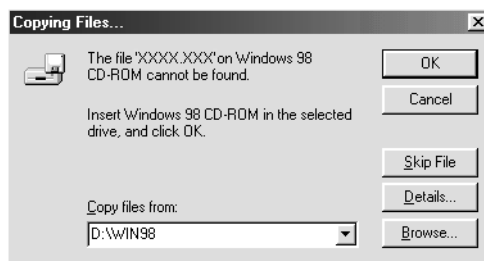
5. Make sure the Specify a location check box is selected and click Next.



6. Follow the instructions on the screen. Depending on your system, you may be asked to insert the Windows 98 CD-ROM.



Make sure that the correct CD-ROM drive letter and the Win98 folder are specified in the Copy files from: box as shown below.



7. The EPSON Screen Calibration utility automatically starts. Follow the instructions on the screen. For details, see page 3-25.

Note:

If the EPSON Screen Calibration utility doesn't start automatically after installing the scanner software, see page 3-25 to calibrate your screen.

8. When the following dialog box is displayed, click Finish.

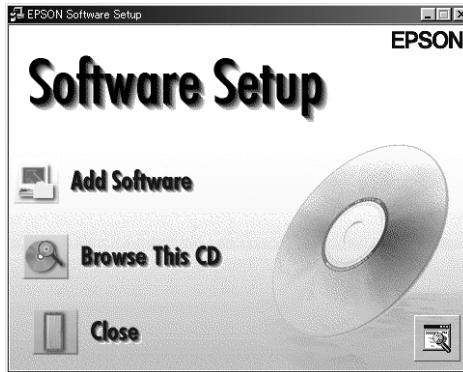


This completes the EPSON TWAIN Pro installation, next you will install utility and application software from the CD-ROM.

Installing application software

1. Double-click the My Computer icon.
2. Double-click the CD-ROM drive icon. A dialog box asking for your preferred language appears on your screen. If no dialog box appears, double-click the Cdsetup.exe icon.
3. Select your preferred language and click OK.

4. You will see the following dialog box. Click Add Software.



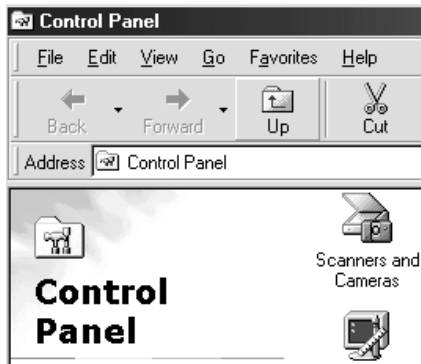
5. You will see the list of software in the list box. Click to select the names of the software you want to install in your PC. Make sure PageManager for EPSON is selected to be installed. Descriptions of the software can be found in the software documentation, or on the CD-ROMs that come with your scanner.
6. Click OK. Then follow the instructions on the screen.

The setup program installs the selected software.

Note:

- ❑ *If folders for the applications on the CD-ROM contain README files, double-click and read them as they contain up-to-date information regarding the software.*

- ❑ You will find the Scanners and Cameras icon shown below in the Control Panel after EPSON TWAIN Pro is installed.



For Windows 95 and Windows NT 4.0 users

1. Make sure that the scanner is turned on.
2. Turn on the computer, and start Windows.

If you are using Windows NT 4.0, insert the scanner software CD in the CD-ROM drive. Go to step 3.

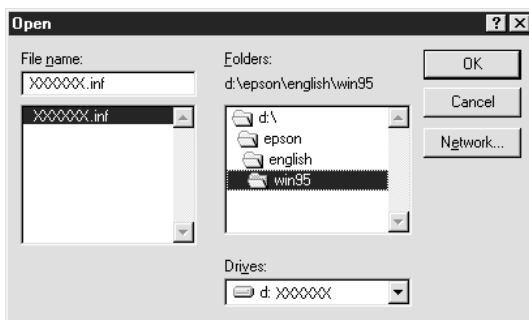
If you are using Windows 95, one of the following dialog boxes will appear.

- ❑ If the dialog box below appears, insert the scanner software CD in the CD-ROM drive.



Select Driver from disk provided by hardware manufacturer, then click OK, and Browse.

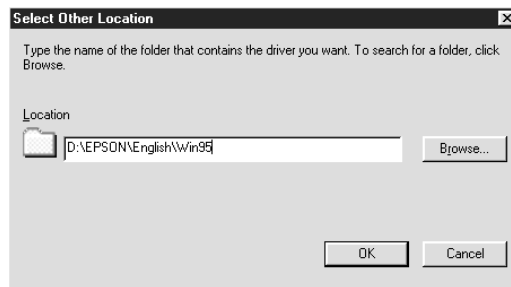
Select the CD-ROM drive, EPSON folder, the folder of your preferred language, and Win95 folder, then click OK. Go to step 3.



- ❑ If the dialog box below appears, insert the scanner software CD in the CD-ROM drive, then click Next.



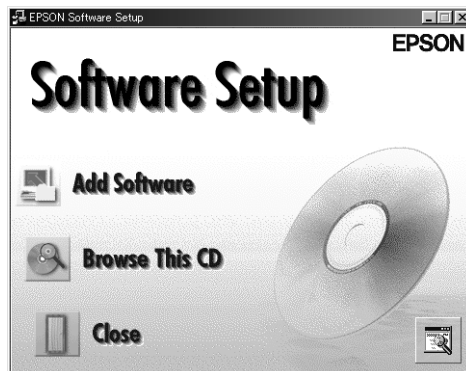
When you are asked for the drive and folder, select the CD-ROM drive, EPSON folder, your language preference, and Win95 folder. An example is shown below.



When the following dialog box or similar appears, click Finish.



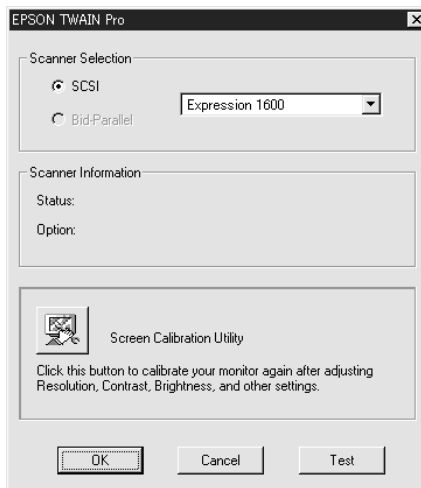
3. Double-click the My Computer icon.
4. Double-click the CD-ROM drive icon. A dialog box asking your preferred language appears on your monitor. If no dialog box appears, double-click the Cdsetup.exe icon.
5. Select your preferred language and click OK.
6. You will see the following dialog box. Click Add Software.



7. You will see the list of software in the list box. Click to select the names of the software you want to install in your PC. Make sure EPSON TWAIN Pro and PageManager for EPSON are selected. Descriptions of the software can be found in Chapter 4, or on the CD-ROMs that come with your scanner.
8. Click OK. Then follow the instructions on the screen.

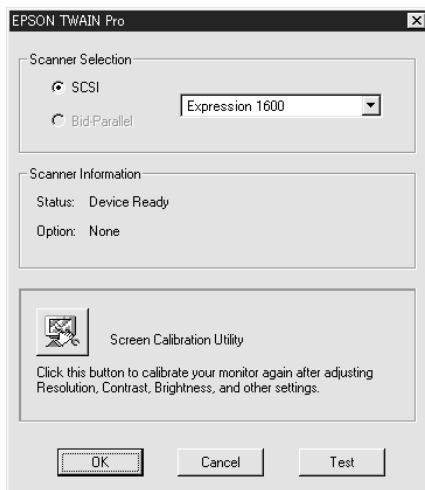
The setup program installs EPSON TWAIN Pro, EPSON Scanner Monitor and PageManager for EPSON.

9. After EPSON TWAIN Pro is installed, the EPSON TWAIN Pro dialog box appears.



10. Make sure that SCSI is selected and your EPSON scanner appears in the Scanner Selection list. If not, see Chapter 7, "Maintenance and Troubleshooting."

11. Click **Test** to check the connection. If everything is properly installed and connected, **Status: Device Ready** appears under **Scanner Information** in the dialog box.



If the “Device Ready” message does not appear, see Chapter 7, “Maintenance and Troubleshooting.”

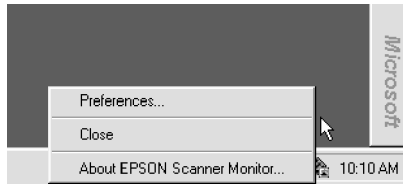
12. Click **OK** to close the EPSON TWAIN Pro dialog box.

The EPSON Screen Calibration utility automatically starts. Go to page 3-25.

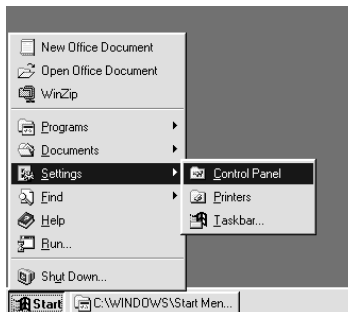
Upgrading from Windows 95 to Windows 98

Before you upgrade from a Windows 95 operating system to Windows 98, you need to uninstall EPSON TWAIN Pro. Follow the steps below.

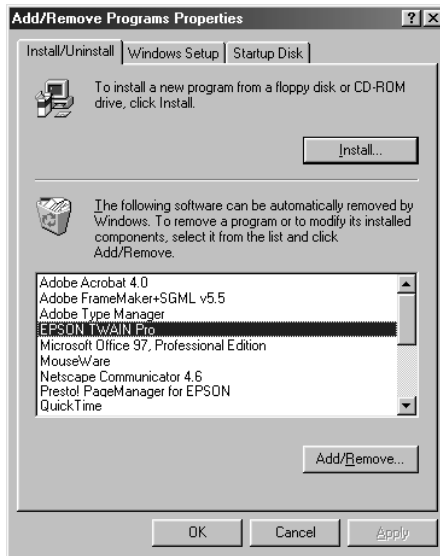
1. Click the EPSON Scanner Monitor icon in the task bar and select Close to close EPSON Scanner Monitor.



2. Click the Start button, highlight Settings, and then select Control Panel.



3. Double-click the Add/Remove Programs icon. Select EPSON TWAIN Pro and click the Add/Remove button. Then follow the instructions on the screen.



After you uninstall EPSON TWAIN Pro, upgrade to Windows 98, then install EPSON scanner software as described on page 3-5.

Installing the Scanner Software for Macintosh

Before connecting the scanner to your Macintosh computer, you must first install the EPSON scanner software; EPSON TWAIN Pro, EPSON Scanner Monitor, PageManager for EPSON and other application software from the CD-ROM. Follow the steps below.

Note:

If you are using an EPSON scanner or EPSON Stylus Scan series product that has a USB port and have installed EPSON TWAIN or EPSON Stylus Scan FB/SF TWAIN on your Macintosh, do the following before you install the software:

- 1) Go to Control Panels in the Apple Menu.
- 2) Open Extensions Manager.
- 3) Clear the check box next to EPSON Scanner Monitor USB Extension.
- 4) Restart your Macintosh.

1. Turn on the computer.
2. Insert the CD in the CD-ROM drive.
3. Double-click the EPSON TWAIN Pro folder.

The EPSON TWAIN Pro folder contains multiple-language versions of the software. Double-click the folder of your preferred language.

4. Double-click the EPSON TWAIN Pro Installer icon.



EPSON TWAIN Pro Installer

5. The installer software shows a dialog box. Click Install in the dialog box that appears, and follow the instructions on the screen.



When you have finished the entire installation, click Restart to complete the installation. The EPSON Screen Calibration utility automatically starts, see page 3-25 for details. After finishing screen calibration, the computer will restart. Continue from step 6 below to install other software.

6. Double-click the folder that contains the software you want to install.

The software folder contains multiple-language versions of the software. Double-click the folder of your preferred language.

7. Double-click the installer icon to start the installation program. Then follow the instructions on the screen.
8. After installing the software, connect the scanner to your computer as described in Chapter 2. (Keep in mind the “Power-on sequence” on page 2-14 if you are using a SCSI interface.)

Calibrating Your Screen

You must calibrate your screen and scanner to reproduce images identical to the originals.

Note for Windows 98 and Macintosh users:

The introductory Screen Calibration dialog box will not appear. Follow the instructions from step 2 below to calibrate your screen.

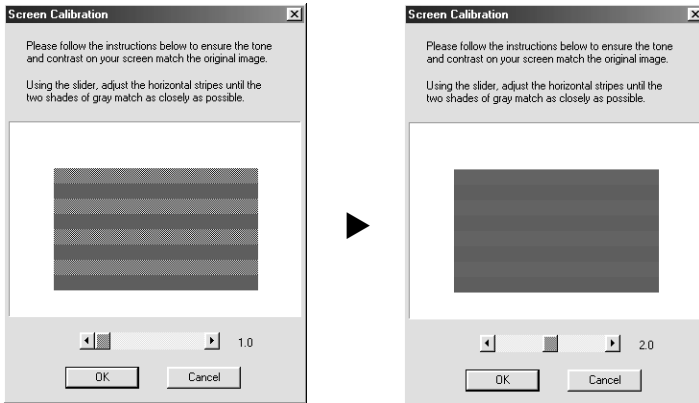
During the EPSON scanner software installation on Windows, the following dialog box appears.

3



1. Click Next.

2. In the following or similar dialog box, move the slider to the right or left until the two shades of the gray horizontal stripes match.



Note:

View the screen from a distance. The gray stripes will not perfectly blend together; however, try to make the two tones match as closely as possible.

3. Click OK to register the calibration setting.
4. The message Setup is complete appears. Click OK.

You will not need to change the screen calibration again so long as you continue to use the same display.

Selecting Scanners

If you connect several scanners that are supported by EPSON TWAIN Pro to your computer, follow the instructions below to select which scanner to use.

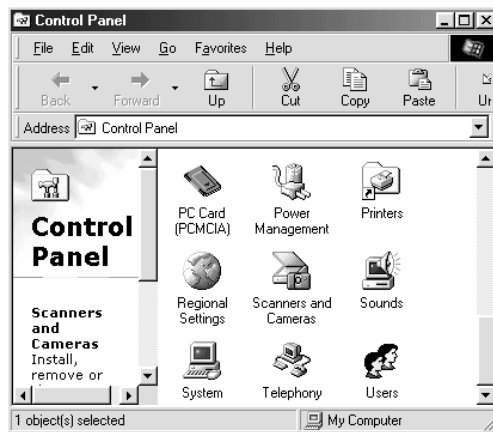
Note:

You can only connect and use scanners that are the same model if you use different interface connections.

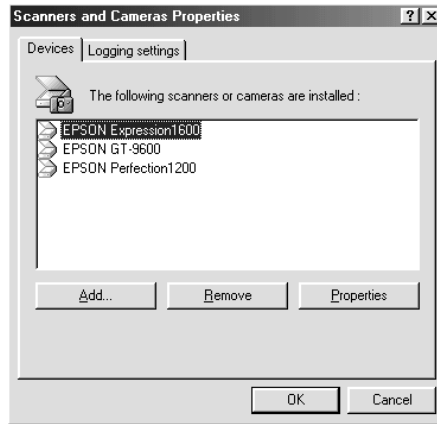
3

For Windows 98 users

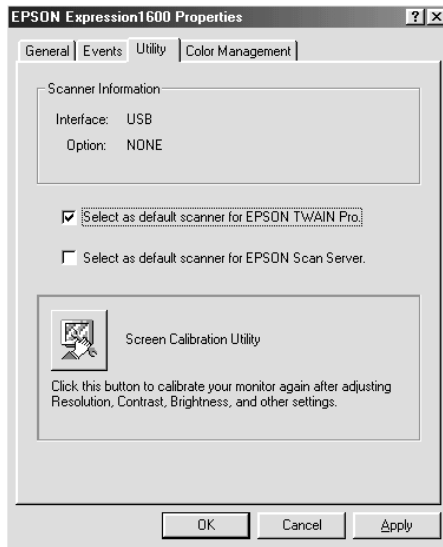
1. Double-click the Scanners and Cameras icon in Control Panel.



2. Select a scanner you want to use from the installed scanners and cameras list in the Scanners and Cameras Properties dialog box. Click Property, and then click the Utility tab.



3. Make sure Select as default scanner for EPSON TWAIN Pro is selected and then click OK.

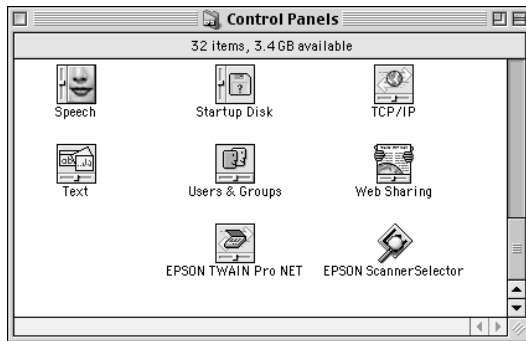


Note:

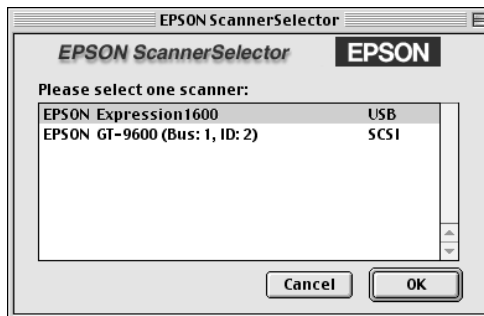
If you have installed EPSON Scan Server, you can setup your scanner to be used over the network by selecting the Select as default scanner for EPSON Scan Server check box.

For Macintosh users

1. Choose Control Panels from the Apple menu. Then click the EPSON ScannerSelector icon.



2. Select the scanner you want to use from the list in the EPSON ScannerSelector dialog box and click OK.



Chapter 4

Using Your Scanner

Scanning Procedure	4-2
Placing a Document on the Scanner	4-2
Removing the Cover for Thick or Large Documents	4-6
Starting EPSON TWAIN Pro	4-7
Scanning an Image	4-10
Saving the Scanned Image	4-22
Scanning by Pressing the Start button	4-23




Scanning Procedure

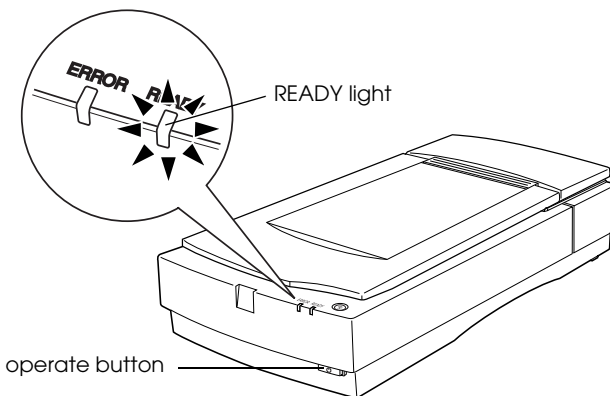
This chapter shows you how the scanner operates. The basic procedure for scanning is as follows:

1. Turn on the scanner. (Keep in mind the “Power-on sequence” on page 2-14.)
2. Place the document you want to scan on the document table. (This is described in detail in the next section.)
3. Run the scanner software and scan. (See page 4-7 for details on scanning.)

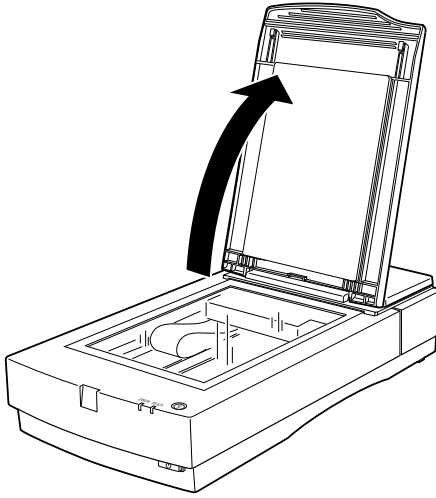
Placing a Document on the Scanner

Before scanning a document, remember to respect the rights of copyright owners. Do not scan published text or images without first checking the copyright status.

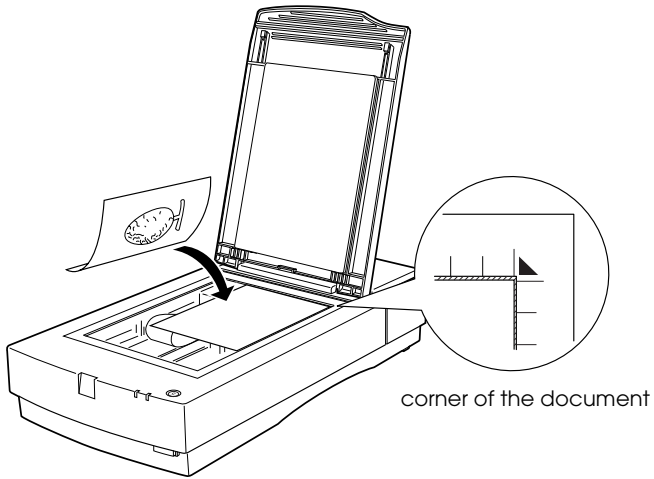
1. Turn on the scanner by pressing the  operate button. The READY light comes on.



2. Turn on the computer and make sure that the scanner's READY light is on.
3. Open the document cover.

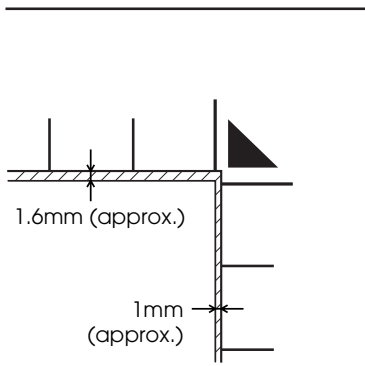


4. Place the document on the document table, with the side to be scanned facing down. Make sure that the document is carefully aligned.

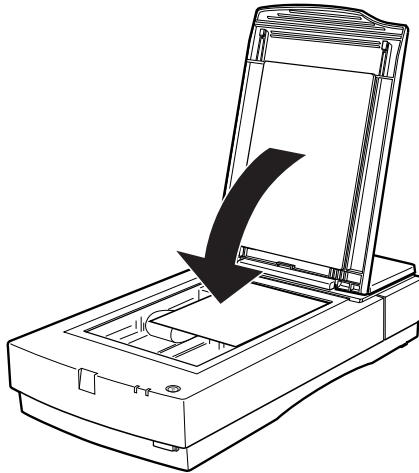


Note:

An area approximately 1.6mm from the horizontal and 1mm from the vertical edges of the document table glass will not be scanned.



5. Close the document cover gently so that the document does not move.

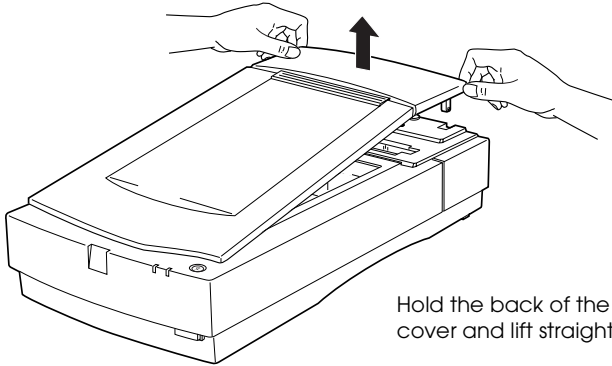


Note:

- Make sure the document is flat against the glass surface, otherwise the image will appear fuzzy and out of focus. Also be sure to close the document cover to prevent interference from external light.*
 - Always keep the document table clean. See “Cleaning the Scanner” in Chapter 7.*
 - Do not leave photographs on the document table for an extended period of time as they may stick to the glass.*
 - Do not place heavy objects on top of the scanner.*
6. Start your scanner software, and follow scanning instructions described later in this chapter or your scanner software reference guide.

Removing the Cover for Thick or Large Documents

Carefully lift straight up on the back of the document cover.

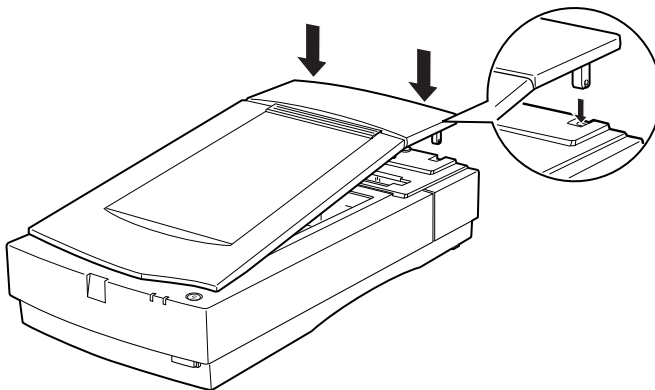


Hold the back of the document cover and lift straight up.

Note:

When scanning with the cover removed, do not leave any area of the document table exposed to prevent interference from external light.

When you are finished scanning, reattach the document cover by pushing straight down on the back until it clicks into place.








Caution:

Make sure both of the notches in the cover's hinges are directly above the clips on the scanner before pushing the cover down into place. Improperly aligned notches can damage the cover.

Starting EPSON TWAIN Pro

There are two ways to scan; with an application that supports TWAIN, or with the  Start button and preassigned application software.

If you ..

- use an application that supports EPSON TWAIN Pro to scan, open your application (see “Starting EPSON TWAIN Pro through your application software” below).
- want to scan an image directly to your application without opening EPSON TWAIN Pro or the TWAIN-compliant application every time, setup the  Start button and the application to work with (see Chapter 5, “Using the Start Button”). Then simply press the  Start button.

Note:

Even if your application supports TWAIN, some features of EPSON TWAIN Pro may not be available depending on the application software.

Starting EPSON TWAIN Pro through your application software

Application programs that support the scanning interface standard TWAIN, allow you to scan images while an application is running. To verify whether your application is compatible with TWAIN, see your application documentation.

How you should open EPSON TWAIN Pro and scan varies depending on the application. Read the following to find out how to access EPSON TWAIN Pro.

1. Start your application. For example, Presto! PageManager for EPSON.
2. Select Select Source from the File menu, and then select EPSON TWAIN Pro on Windows and Macintosh.

Note:

You usually need to perform this step only the first time you use the scanner with your application.

3. Choose Acquire from the File menu to open EPSON TWAIN Pro.

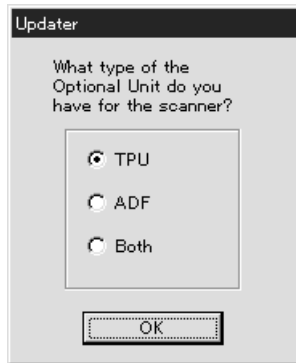
To scan, see the next section.

The Updater utility may automatically start the first time you start EPSON TWAIN Pro if an older version of EPSON TWAIN Pro was already installed, but this depends on the version of the older EPSON TWAIN Pro. For details, see below.

Using Updater

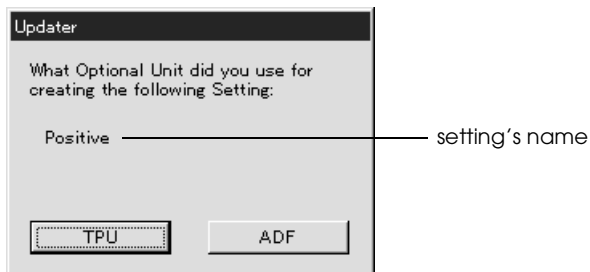
The Updater utility imports user-defined settings you created for Image Type, Destination, or Tone Correction settings from the old version to the new version of EPSON TWAIN Pro.

If the user-defined settings you created on the old version of the EPSON TWAIN Pro includes information for the Automatic Document Feeder (ADF) or Transparency Unit (TPU), the following dialog box is displayed. Select the appropriate options.



4

If you have both the Automatic Document Feeder and the Transparency unit, and select Both on the above dialog box, the following dialog box appears. Click the appropriate option and repeat this procedure for all user-defined settings for each option.



Scanning an Image

When you start EPSON TWAIN Pro or EPSON TWAIN Pro Network through a TWAIN-compliant application, the following window or similar appears on the screen:

Note for Macintosh users:

Most illustrations shown in this chapter are for Windows, so they may vary from the actual dialog boxes that appear on your screen. You can use them for reference however, as almost all the settings and functions are the same.



The following gives an overview of EPSON TWAIN Pro and EPSON TWAIN Pro Network.

Note:

- ❑ *Some settings may appear dimmed and cannot be selected because of your choice of settings.*

- ❑ You cannot scan an image that exceeds available memory or disk space. If you attempt to scan an image that is too large, an alert appears on the screen.
- ❑ Before you begin scanning, you should calibrate your screen. For details, see your Software Reference Guide.
- ❑ After an image is scanned, be sure to save it.

Document Source

When using the document table of the scanner, leave the Document Source set to Flatbed. Other selections are available depending on what is installed.

Note:

Uninstalled options are not displayed.



Select any of the following settings from the Document Source list:

Flatbed:

Select this setting when you use the scanner document table.

Auto Document Feeder:

Select this setting when using the optional Automatic Document Feeder that can take only single sided documents. This setting is available only when the optional Automatic Document Feeder has been installed.

TPU for Neg. Film:

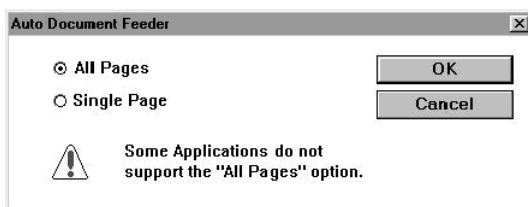
Select this setting when using the optional Transparency Unit with negative film. This setting is available only when the optional unit has been installed.

TPU for Pos. Film:

Select this setting when using the optional Transparency Unit with positive film. This setting is available only when the optional unit has been installed.

Multi-page Support with Automatic Document Feeder

If you select Auto Document Feeder as the Document Source and click the **SCAN** button, the following dialog box appears.

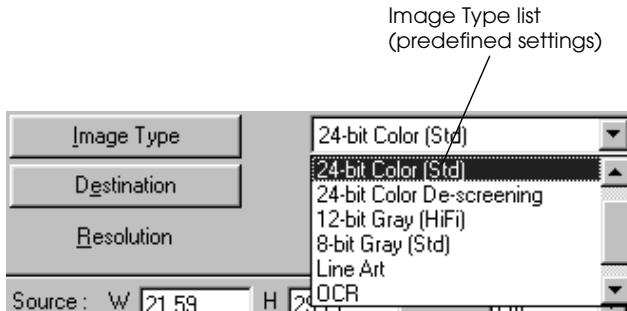


If you select **Single Page**, only one page is fed from the Automatic Document Feeder and scanned.

If you select **All Pages** (default), all the pages are fed from the Automatic Document Feeder and are scanned. Depending on your application, the **All Pages** option may not work correctly.

Image Type

Use the Image Type list to select the type of image to be scanned.



The Image Type list provides the following predefined settings. Click the arrows on the right to view all of the available settings:

36-bit Color (HiFi):

36-bit colors, high quality

Note:

This setting is available only in certain applications, such as Adobe® PhotoShop®.

24-bit Color (Std):

24-bit colors, high quality

24-bit Color De-screening:

24-bit colors, high quality, and de-screening

12-bit Gray (HiFi):

12-bit gray, high quality

Note:

This setting is available only in certain applications, such as Adobe PhotoShop.

8-bit Gray (Std):

256 grays, high quality, and de-screening

Line Art:

Black-and-white, draft quality and fast

OCR:

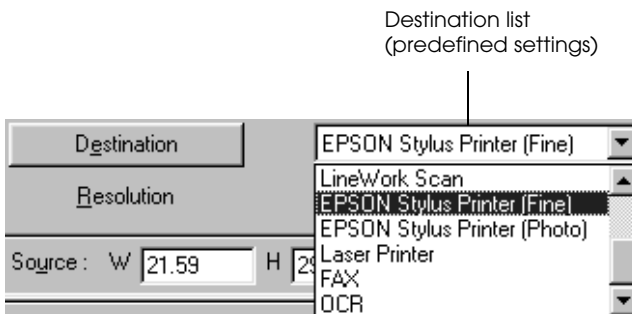
Black-and-white, high quality, and Text Enhancement Technology

Copy & Fax:

Black-and-white, draft quality and fast, and Auto Area Segmentation

Destination

Select the destination, or output device, where the scanned image is to be printed or displayed using the Destination list.



The Destination list provides the following predefined settings.

Screen/Web:

Suitable to display on screen

Prepress (175, 150, 133, 120 lpi)

Optimize for prepress printing at 175, 150, 133, or 120 lines per inch.

LineWork scan

Optimize for LineWork scanning.

EPSON Stylus Printer (Fine or Photo):

If you are using an EPSON Stylus printer and are printing scanned images with the Economy, Normal, or Fine Print Quality settings in your printer software, selecting EPSON Stylus Printer (Fine) is recommended. If you are printing with the SuperFine or Photo Print Quality settings, select EPSON Stylus Printer (Photo).

Laser Printer:

Optimize for printing on a laser printer

Fax:

Suitable for facsimile transmission

OCR:

For optical character recognition scanning

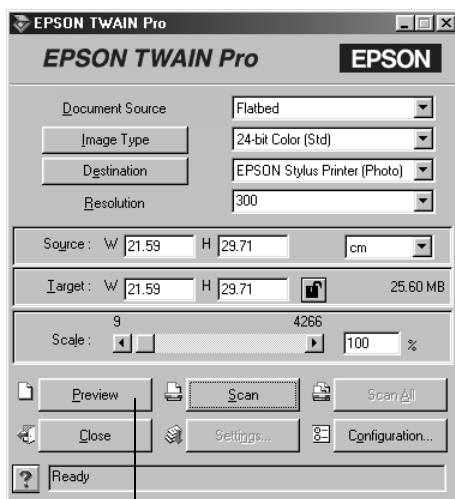
Note:

- ❑ *The effects of the Destination settings cannot be viewed in the Preview window.*
- ❑ *The online Software Reference Guide in the Scanner Software Reference Guide CD-ROM provides you with more information on settings and functions.*

- ❑ *Online help also provides you with information on settings. Click ? to access help.*
- ❑ *You cannot scan an image that exceeds available memory or disk space. If you attempt to scan an image that is too large, an alert appears on the screen.*
- ❑ *Before you begin scanning, you should calibrate your screen. For details, see your Software Reference Guide.*
- ❑ *After an image is scanned, be sure to save it.*

Previewing images

To preview an image, click Preview on the EPSON TWAIN Pro window.

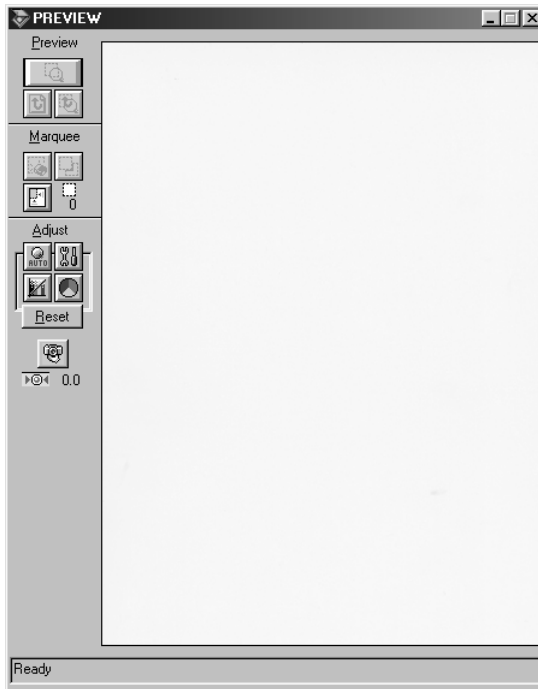


Preview button

Note:

- ❑ *You cannot preview an image that exceeds available memory or disk space. If you attempt to preview an image that is too large, an alert appears on the screen.*

The following window appears.



You can see the effects of the following settings in the preview image.

- Pixel Depth, Halftone, and Dropout in the Image Type dialog box
- Exposure, Gamma, Highlight, Shadow, and Threshold in the Image Controls dialog box
- Tone Correction in the Tone Correction dialog box
- Gray Balance Intensity, and Saturation in the Color Adjustment dialog box
- Auto Exposure

Note:

Although the image in the Preview window changes as you make settings, the settings do not affect the actual image until you scan or rescan the image.

Preview Buttons

Zoom preview button



Clicking the zoom preview button enlarges the active marquee. See the next page for information about marquees.

Return to full preview button



Clicking the return to full preview button restores the image to a full preview. This button is available only when the marquee is zoomed as described above.

Return to zoom preview button



Clicking the return to zoom preview button restores the image to the previous zoom. This button is available only when a marquee has been previously zoomed. This restores the zoom preview from memory, which is quicker than rescanning the same zoom by clicking the zoom preview button again.

Marquees

A marquee is a frame around an entire image, or just a certain part of an image. Marquees are often used in scanning and image-editing software to select only the most important part of an image.

Making and modifying marquees

Move the pointer over the image in the Preview window, and the pointer becomes cross-hairs. Drag (move the mouse while holding down the mouse button) the cross-hairs over any area of the image, and a frame appears. The point where you first clicked is anchored, but the rest of the frame is sizable and movable. After you finish creating a marquee, you can resize and move it as described below.

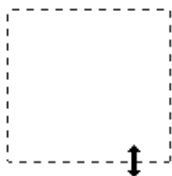
Multiple marquees

You can make multiple marquees in one image to scan the most important parts while ignoring the rest. Marquees can be different sizes, and they can overlap. Extra marquees can be made anywhere except on the frame of another marquee. You can begin a marquee anywhere the pointer appears as cross-hairs. To distinguish the active marquee from other marquees, look at the marquee frames. The active marquee has an animated dashed frame as shown below.



Resizing marquees

When the mouse pointer is placed on the edge of the marquee, it changes to an arrow allowing you to resize the marquee. The double-headed arrows only appear on the active marquee.



If you drag an arrow while pressing the Shift key, the marquee will be resized proportionally.

Moving marquees

When the mouse pointer is placed within the active marquee (the frame of the selected image area), the mouse pointer changes to a hand icon. You can click and drag the marquee anywhere in the Preview window.



If you drag a hand while pressing the Shift key, the marquee will be limited to vertical or horizontal movement.

Delete marquee button



Clicking the delete marquee button removes the active marquee.

Note:

You can also delete the active marquee by pressing the Delete key on your keyboard.

Duplicate marquee button



Clicking the duplicate marquee button creates another marquee the same size as the active marquee. Use this button to make multiple marquees.

Clicking the duplicate marquee button while holding down the keys noted in the table below causes the active marquee to be duplicated in a specific direction.

	Horizontal	Vertical
Windows	Ctrl key	Alt key
Macintosh	Command key	option key

Marquee number indicator



This shows the number of marquees in the Preview window. To create more marquees, see “Duplicate marquee button” above.

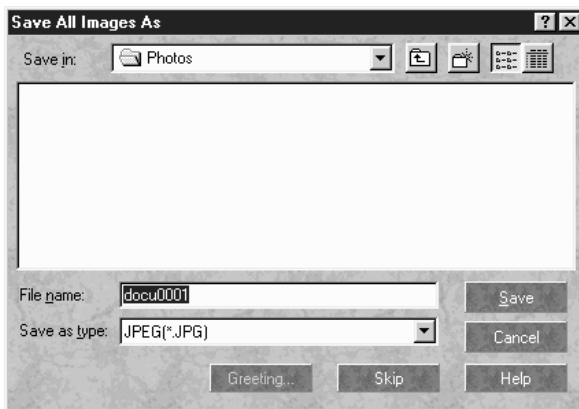
Saving the Scanned Image

- ❑ To save a scanned image in your application, choose **Save** or **Save As** from the **File** menu. For details, see your application documentation.
- ❑ To save a scanned image in PageManager for EPSON, follow the steps below.

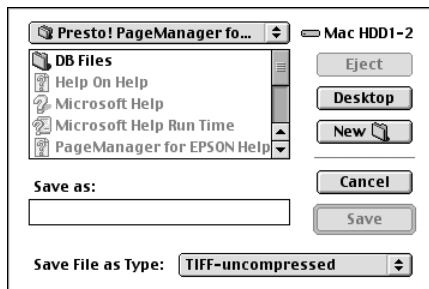
Note:

Parenthesized words in the following steps apply to Macintosh users.

1. Choose **Save As** from the **File** menu. The following dialog box appears on the screen.




Windows




Macintosh


2. Select the folder where the image will be saved.
3. Type a filename for your image in the File Name (Save as) field.
4. Select the file format you want to save the image in from the Save as type field.
5. Click OK (Save).

Scanning by Pressing the Start button

You can open EPSON TWAIN Pro, start scanning, and have the scanned image sent to a certain application, simply by pressing the  Start button on your scanner. To use this feature, you need to install PageManager for EPSON, or other Start button compatible software. The following occurs:

- ❑ Windows 98, or EPSON Scanner Monitor software on an operating system other than Windows 98, detects when the  Start button is pressed and sends information to the Start button compatible application, such as PageManager for EPSON.
- ❑ The Start button compatible application will automatically open EPSON TWAIN Pro, scan the image and process it in the way the application is designed.

Note:

- ❑ *You need to setup the Start button compatible software before using this feature. See Chapter 5 and the documentation that comes with the application.*
- ❑ *The scanned image will be handled by the software to its maximum capability. For example, using PageManager for EPSON, you can send the scanned image to a printer to print, or convert your scanned OCR image to text format and paste it in a wordprocessing application—all by simply pressing the  Start button.*


- *If the scanner is connected to a PC which is running EPSON Scan Server, the Start Button feature mentioned above is disabled. For information on using the Start button in a networked environment, refer to the EPSON Scan Server & EPSON TWAIN Pro Network User's Guide.*

Chapter 5

Using the Start Button

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The Start Button Feature

The Start Button feature allows you to scan and send data to a target application with a single push of your scanner's  Start button. The following sections will help you set up your PageManager for EPSON and EPSON Scanner Monitor software, or Windows 98 system, so you can begin to use the Start Button feature.



Note for Windows 98 users:

The Start Button feature is supported by Windows 98, the EPSON Scanner Monitor software will not be installed onto Windows 98. See page 5-13 for instructions on setting up the Start Button feature.

Note:

If the scanner is connected to a PC which is running EPSON Scan Server, the Start Button feature mentioned above is disabled. For information on using the Start button in a networked environment, refer to the EPSON Scan Server & EPSON TWAIN Pro Network User's Guide.

PageManager for EPSON



PageManager allows you to scan and send data directly to an assigned application with a single push of your scanner's  Start button. You can also scan to any target application by simply clicking on the application icon in PageManager's Scan Buttons bar. This section will help you set up PageManager so you can begin to scan using the  Start button. For more detailed information on PageManager settings, see your PageManager documentation.

Note:

For information on PageManager installation, see Chapter 3.

Target applications in the Scan Buttons bar

When PageManager is started, the Scan Buttons bar will appear on your screen. The icons in this bar represent target applications or peripheral devices, such as a printer, that can be accessed by your scanner. This means that you can scan and send data directly to these applications or devices by clicking on their icons.


PageManager for EPSON also allows you to assign any one of the applications or devices on the Scan Buttons bar to the  Start button. This means that an image can be scanned and sent straight to your selected application with one simple push of the  Start button.



Note:

The application button showing the Start button icon represents the application that is assigned to the Start button.

Assigning an application to the Start button

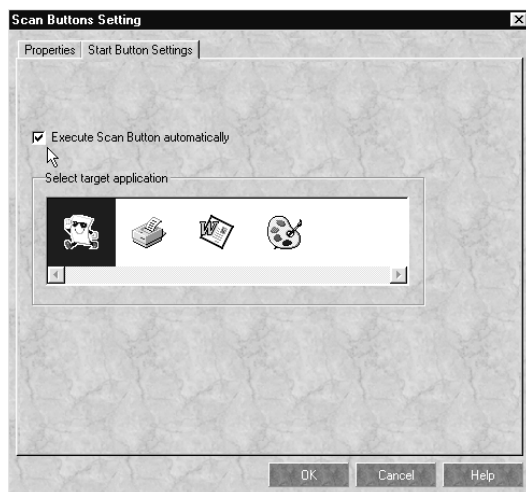
To assign an application on the Scan Buttons bar to the  Start button, follow the steps below.

1. Select the Scan Buttons Setting from the File menu.




2. Click the Start Button Settings tab in the Scan Buttons Setting dialog box. The following dialog box appears.




The icons in Select target application correspond to the icons in the Scan Buttons bar and represent the possible target devices and applications.



3. Select an application from the Select target application box and click OK.

The selected application is now assigned to the scanner's  Start button.

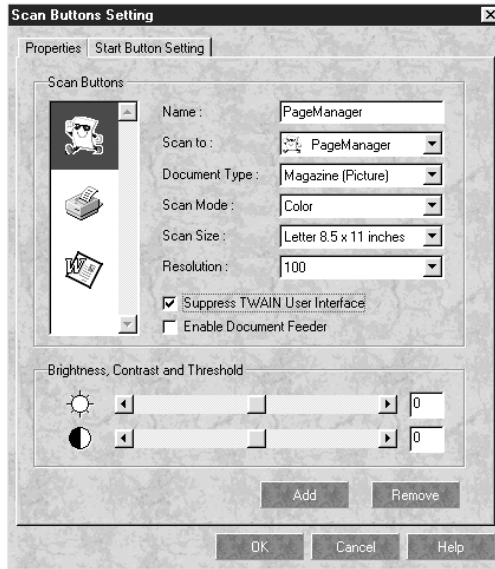
Execute Scan Button automatically check box

When this check box is selected, the assigned application will automatically open and the scanned image is sent to the application when you press the  Start button. When this check box is clear, no application is assigned to the  Start button and only the Scan Buttons bar will appear when the  Start button is pressed. Then you can select an application from the Scan Buttons bar.

Adding Applications to the Scan Buttons Bar

You can add applications appearing in the Application bar at the bottom of the PageManager window to the Scan Buttons bar. Follow the steps below.

1. Select Scan Buttons Setting from the File menu. You will see the following dialog box.



2. Specify the name of the setting in the Name box.
3. Click the arrow next to the Scan to box and select the application you want to add to the Scan Buttons bar.
4. Select the appropriate scanning settings (Document Type, Scan Mode, etc.) for the application from this dialog box and click Add. Then click OK.

The button of the selected application appears on the Scan Buttons bar.

To remove an application assigned to the Scan Buttons bar, select the application in the box on the left of the dialog box and click Remove. Then click OK.

Suppress TWAIN User Interface check box

When this check box is selected, the EPSON TWAIN Pro dialog box does not appear when you scan, and the scanner works according to the settings in PageManager. When this check box is clear, the EPSON TWAIN Pro dialog box appears when you scan, and the scanner works according to the settings in EPSON TWAIN Pro.

Enable Document Feeder check box

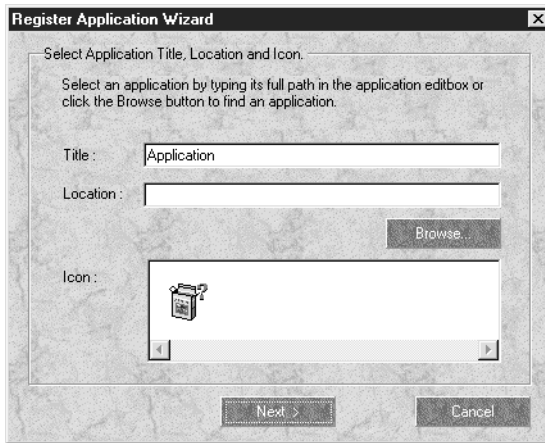
When this check box is selected, the scanner feeds your documents through the Automatic Document Feeder. When this check box is clear, the scanner scans your documents from the document table.

Registering new applications

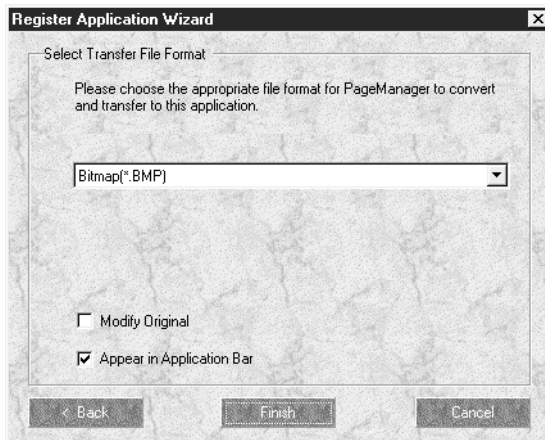
To add an application to the Scan Buttons bar, you need to register the application. The registered applications will appear in the Scan to: box in the Scan Buttons Setting dialog box.

1. Select Application Setting from File menu and then select Register New Application.

The Register Application Wizard dialog box appears.




2. Specify the application's name, location and icon and click Next>.



3. Specify the format of the image and click Finish.

Setting Up EPSON Scanner Monitor

EPSON Scanner Monitor is software that recognizes when the  Start button is pressed and sends information to assigned application software supporting the Start Button feature and EPSON Scanner Monitor, such as PageManager for EPSON.

Once EPSON TWAIN Pro is installed on an operating system other than Windows 98, EPSON Scanner Monitor is active and identifies PageManager for EPSON as the application that allows you to use the Start Button feature. If you need to turn off Scanner Monitor, or select another application that supports the Start Button feature, access Scanner Monitor as described below.

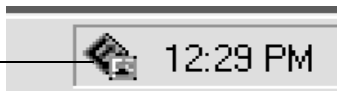
Note:

- ❑ *Application software other than PageManager for EPSON which supports both EPSON Scanner Monitor and the Start button feature may be limited.*
- ❑ *Windows 98 supports the Start Button feature; therefore, EPSON Scanner Monitor is not installed automatically when you install EPSON TWAIN Pro on Windows 98.*

For Windows 95 or NT 4.0 users

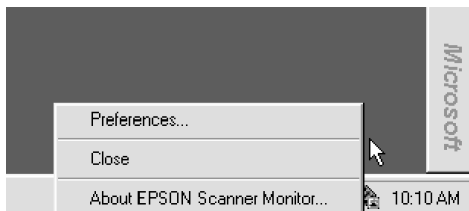
Click the Scanner Monitor icon located in the task bar on your desktop.

Scanner Monitor
icon



❑ Turning off Scanner Monitor

If you want to turn off Scanner Monitor, select Close. However, this will disable the scanner's Start Button feature.



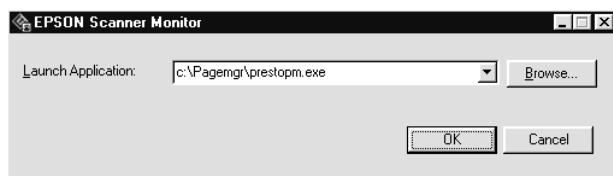
Note:

After you turn off Scanner Monitor, it will turn back on automatically the next time you start Windows.

To activate Scanner Monitor again, select Programs from the Start menu and click EPSON Scanner; then select EPSON Scanner Monitor. The Scanner Monitor icon appears in your taskbar.

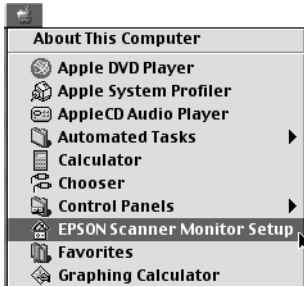
❑ Assigning an application to Scanner Monitor

Select Preferences. The EPSON Scanner Monitor dialog box appears. You can select an application that supports the Start Button feature and EPSON Scanner Monitor, such as PageManager for EPSON.



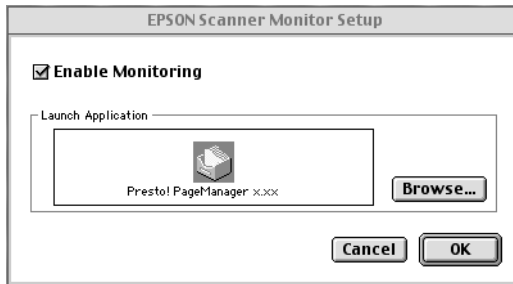
For Macintosh users

Select EPSON Scanner Monitor Setup from the Apple menu.



❑ Turning off Scanner Monitor

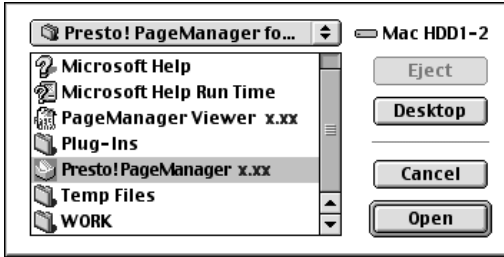
If you want to turn off Scanner Monitor, clear the Enable Monitoring check box. However, this will disable the scanner's Start Button feature.





To activate Scanner Monitor again, select the Enable Monitoring check box.

❑ Assigning an application to Scanner Monitor

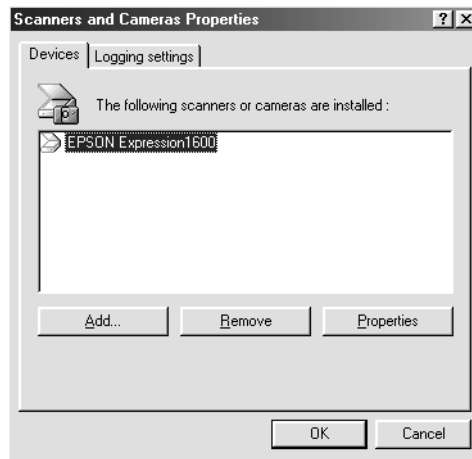
Click **Browse**. Select a folder and an application that supports the Start Button feature and EPSON Scanner Monitor, such as PageManager for EPSON.



Setting Up the Start Button Feature for Windows 98


Without having EPSON Scanner Monitor installed, Windows 98 allow you to use the  Start button on your scanner without having to open an application that supports the Start Button feature. When you press the  Start button, you can have a scanned image automatically sent to your application, such as PageManager for EPSON, as long as it is installed.

Once EPSON TWAIN Pro is installed on Windows 98, the Scanners and Cameras icon appears on the Control Panel, and your scanner is listed in the Scanners and Cameras Properties dialog box as shown below.

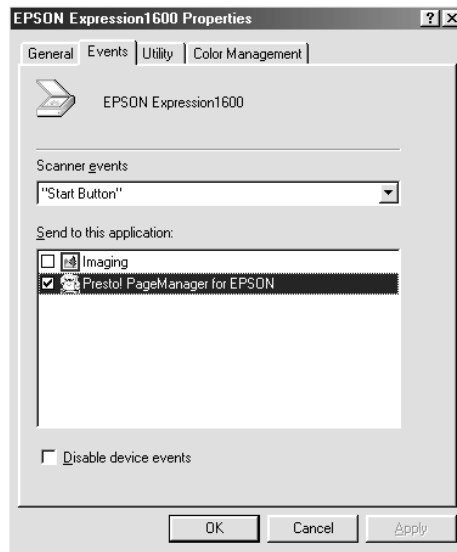



Assigning an application to the Start button

After you install applications that support “Scanner events”, such as PageManager for EPSON, you need to select one of those applications for the scanner event.

If you want to use your scanner's  Start button with PageManager for EPSON as the supporting application, follow the steps on the next page.

1. Select your scanner from the installed scanners and cameras list in the Scanners and Cameras Properties dialog box. Click Properties, and then click the Events tab.




2. You can see the Start Button is listed as the scanner event. Make sure the check box of the application you want to assign to the  Start button is selected and all other application check boxes are clear in the Send to this application list.

Note:

- ❑ *If more than one application is selected, a dialog box appears prompting you to select an application when the Start button is pressed.*
- ❑ *Some applications do not support linkage to scanners and digital cameras. Linkage is available only with the applications that appear in the Send to this application list.*

3. Close the dialog box by clicking the OK button.

Disabling the Start button

If you need to disable the Start Button feature, select the Disable device event check box in the EPSON Expression 1600 Properties dialog box. When this check box is clear, Windows 98 will detect if the  Start button is pressed and launch the application you selected in the Send to this application list.

Chapter 6

Options

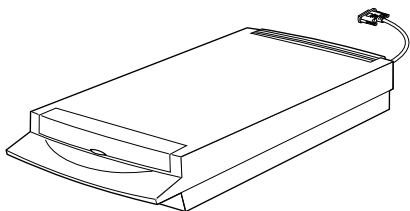
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Using the Transparency Unit

The optional Transparency Unit (B81318*) makes it possible to scan transparencies and slides, in full color. Once you install the Transparency Unit, you can leave it in place even when you want to return to scanning normal (paper) documents.

Unpacking the Transparency Unit

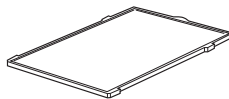
Make sure that all the items shown below are included and have not been damaged during shipping. Contact your EPSON dealer if any item is missing or damaged.



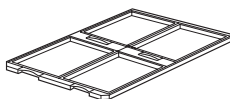
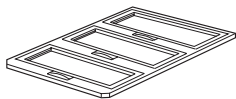
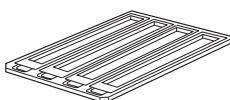
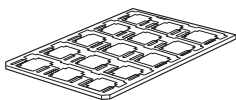
Transparency Unit



installation
screws (2)



reflective
document mat



film holders

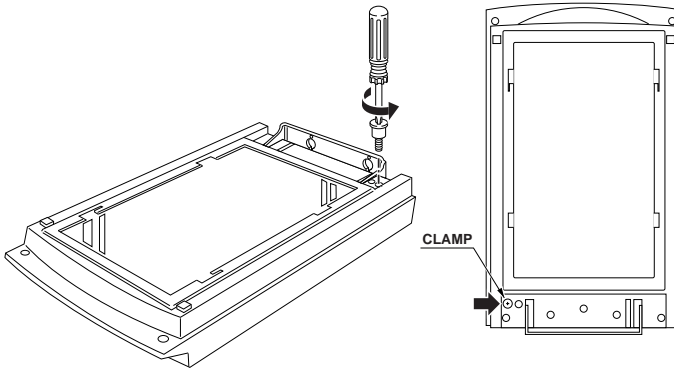
Note:

Do not store anything except the reflective document mat in the Transparency Unit pocket.

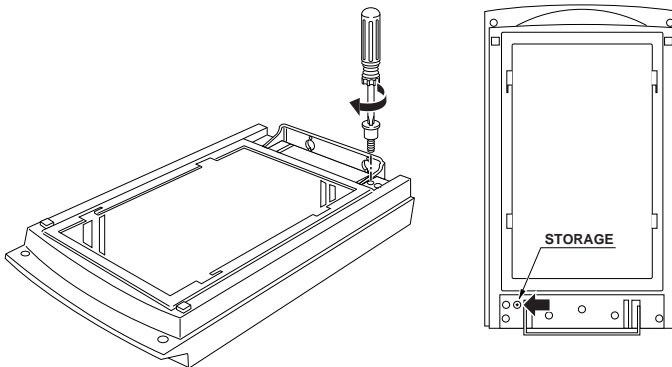
Removing the shipping screw

A shipping screw is installed on the Transparency Unit to prevent damage during shipping. Be sure to use the following procedure to remove this screw before attempting to use the unit.

1. Turn over the Transparency Unit so its glass side is facing up.
2. Remove the shipping screw as shown below.



3. Screw the shipping screw into the storage hole as shown.



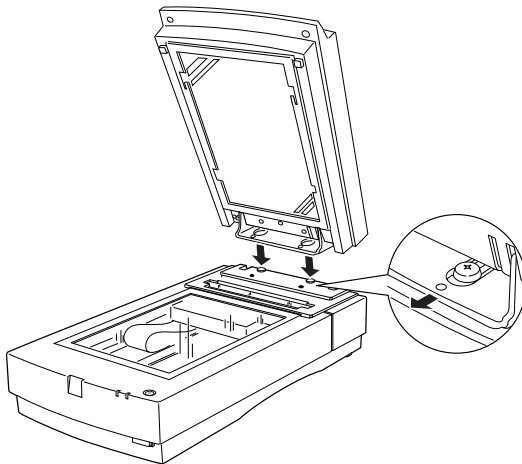
Note:

Before transporting the scanner, remove the Transparency Unit and return the shipping screw to its original shipping hole. See "Transporting the Scanner and the Transparency Unit" on page 7-4 for details.

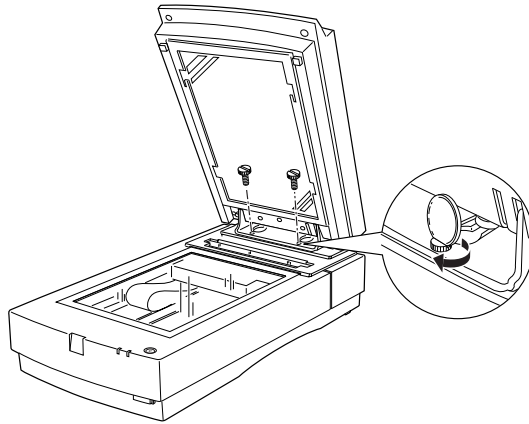
Installing the Transparency Unit

Follow the steps below to install the Transparency Unit on the scanner.

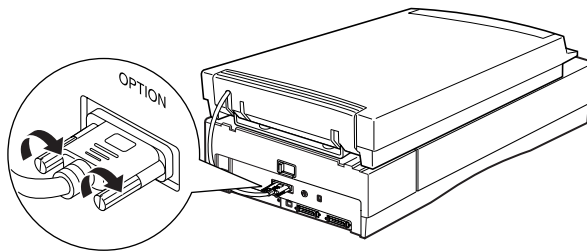
1. Make sure the scanner is turned off, and unplug the power cord.
2. Remove the document cover from the scanner by lifting straight up on its back edge. (See page 4-6)
3. Slide the mounting slots on the Transparency Unit under the two installation screws attached to the scanner.



4. Insert the two installation screws provided with the Transparency Unit into the holes as shown below, and then tighten the screws with a coin.

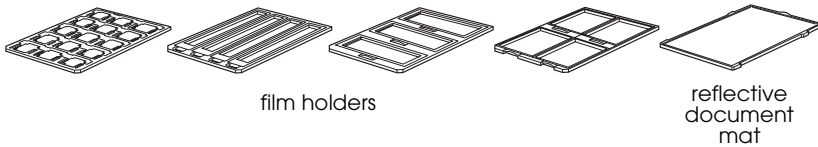


5. Close the Transparency Unit.
6. Connect the Transparency Unit's connector to the option connector on the scanner.



Film Holders and reflective document mat

Four film holders for scanning transparencies and a reflective document mat for scanning normal paper documents are included with this unit. To use them, see the instructions below.



Positioning transparencies for scanning

Note:

- ❑ *Be sure to wipe the Transparency Unit glass, the scanner's document table, and the narrow window near the mounting bracket with a soft cloth before scanning transparencies.*
- ❑ *Operation of the Transparency Unit is controlled automatically by your scanner software, so make sure to select TPU for Neg. film or TPU for Pos. film as the Document Source setting in EPSON TWAIN Pro depending the type of the material you are scanning.*
- ❑ *Note that if the TPU for Neg. film or the TPU for the Pos. film is selected as the Document Source setting, the focus position is automatically set to 2.5 to accommodate the use of the film holders.*

1. Open the Transparency Unit.
2. Place the transparency into the appropriate holder.

See the following pages for details on each of the following types of transparencies.

35mm film strips ... page 6-8

Mounted slides ... page 6-10

120/220 film ... page 6-11

4 × 5 inch film ... page 6-13

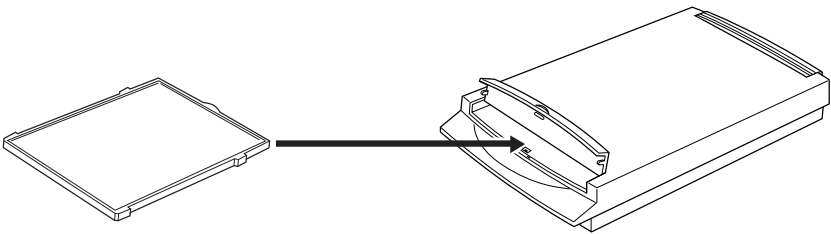
Non-standard film sizes ... page 6-15

3. Place the film holder on the scanner's glass document table, aligning it with the upper right-hand corner. Make sure the glossy side of the transparency is facing down.
4. Close the Transparency Unit. If the reflective document mat is installed on the Transparency Unit, remove it.

Use your scanner software to scan the transparency.

Note:

- ❑ *Make sure the Transparency Unit is completely closed. Otherwise an option error will occur and scanning will be impossible.*
- ❑ *Store the reflective document mat in the Transparency Unit pocket when not in use.*

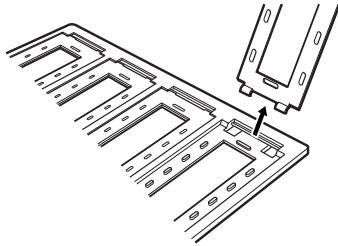
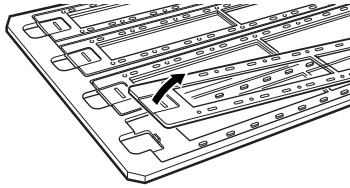


Caution:

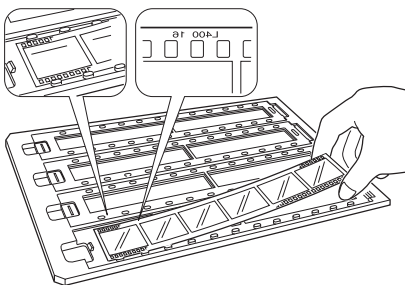
Do not put the film holders into the Transparency Unit pocket. This pocket is only for storing the reflective document mat.

35mm film strips

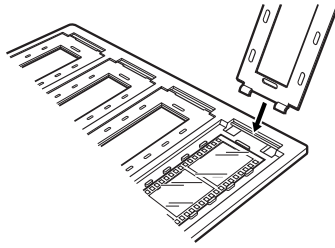
1. Place the 35mm film strip holder on a flat surface, and remove a strip cover.



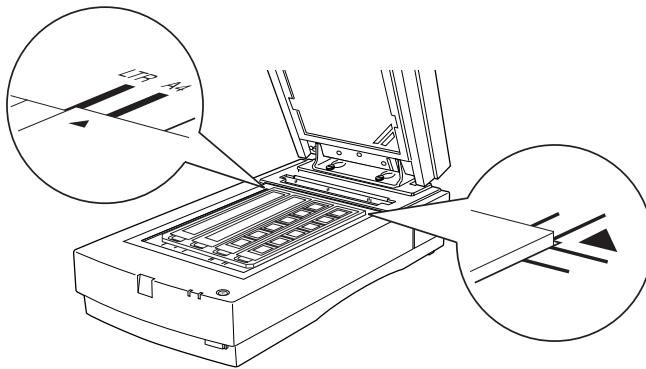
2. Insert a strip of film in the film strip holder, making sure the glossy (smooth) side of the film is facing down.



3. Replace the strip cover that you removed in step 1. Repeat steps 1 through 3 for all the film strips you scan.

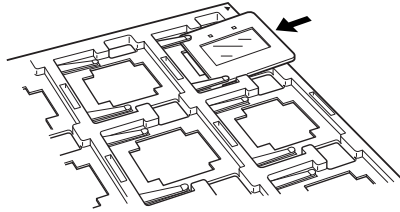


4. Place the film strip holder on the document table and align it as shown below.

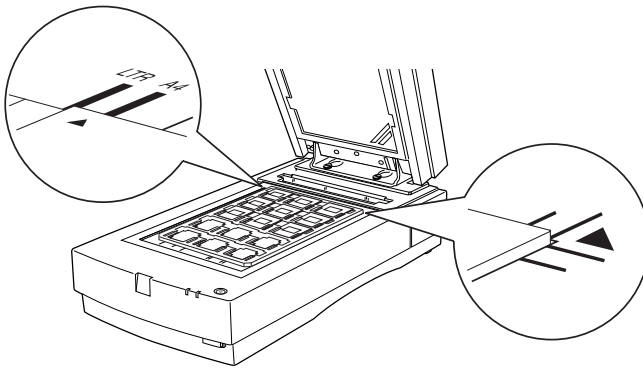


Mounted slides

1. Load slides in the 35mm slide holder face down, as shown below. Repeat this step for all the slides you scan.

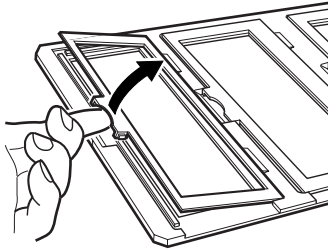


2. Place the slide holder on the document table. Align the slide holder as shown below.

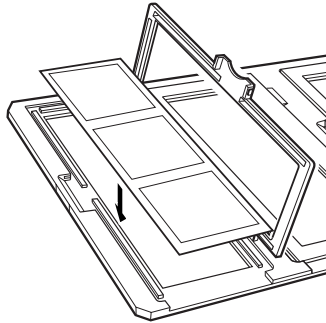


120/220 film

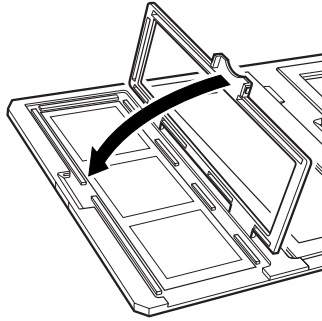
1. Place the 120/220 film holder on a flat surface, and open a strip cover.



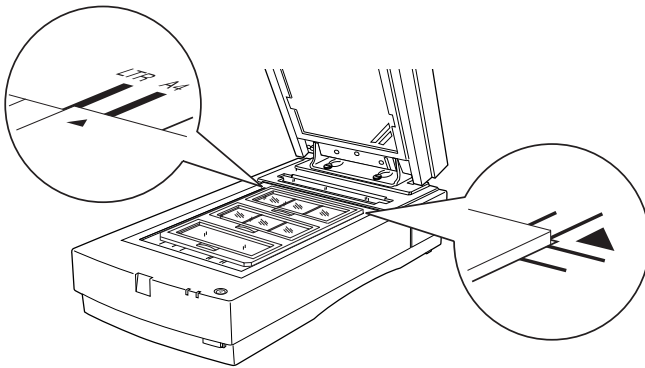
2. Insert the film in the film holder, making sure the glossy (smooth) side of the film is facing down.



3. Close the cover. Repeat steps 1 through 3 for all the film you scan.

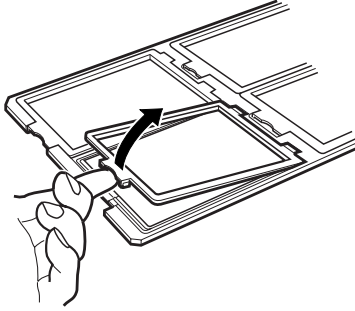


4. Place the film holder on the document table and align it as shown below.

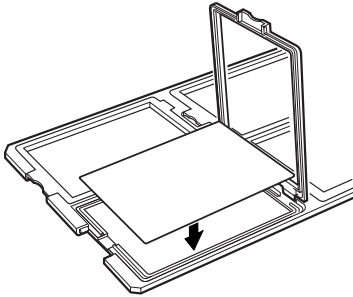


4 × 5 inch film

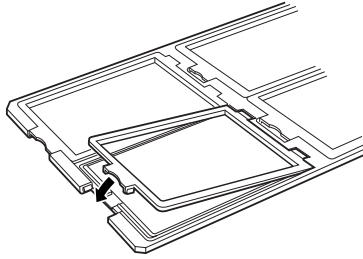
1. Place the 4 × 5 inch film holder on a flat surface, and open a cover.



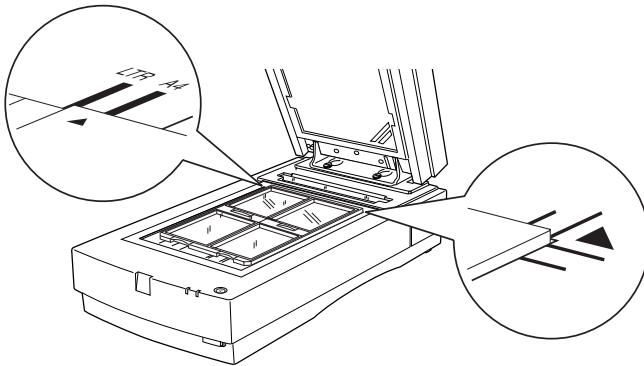
2. Insert the film in the film holder, making sure the glossy (smooth) side of the film is facing down.



3. Close the cover. Repeat steps 1 through 3 for all the film you scan.

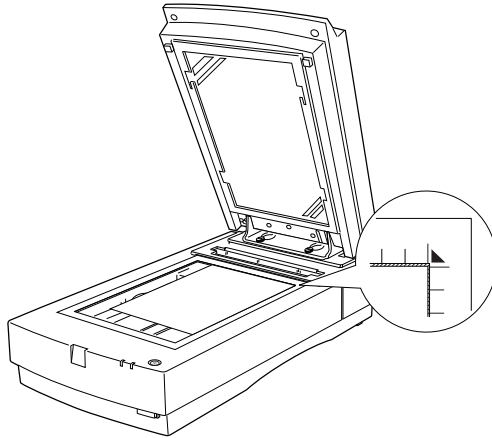


4. Place the film holder on the document table and align it as shown below.



Non-standard film sizes

Place the film directly onto the scanner's glass document table, making sure the glossy (smooth) side of the film is facing down.



6

Note:

- ❑ *When you place the film directly on the document table, make sure to set the focus position to 0.0 in EPSON TWAIN Pro.*
- ❑ *An area approximately 1.6mm in from the horizontal and 1mm in from the vertical edges of the document table glass will not be scanned.*

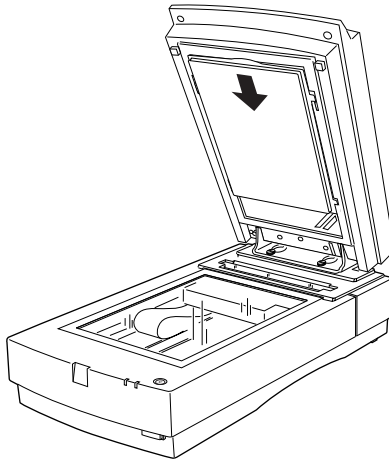
Scanning normal (reflective) documents

When you return to scanning normal reflective documents, you should always insert the reflective document mat included with this unit. Also, make sure you remove the transparency guide from the scanner's document table.

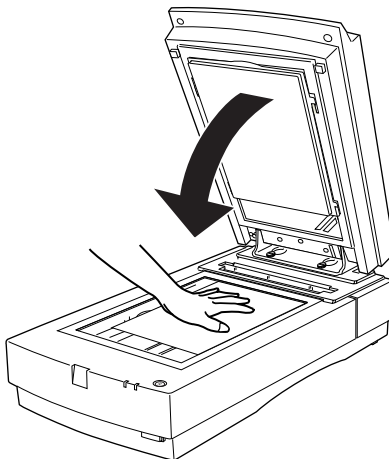
Insert the reflective document mat as described below.

1. Open the Transparency Unit.

2. Insert the tabs on the reflective paper document mat into the slots on the Transparency Unit and slide the mat into place.



3. Position the reflective document and close the unit.



To remove the reflective document mat, slide it up and out of the slots on the Transparency Unit.

Using the Automatic Document Feeder

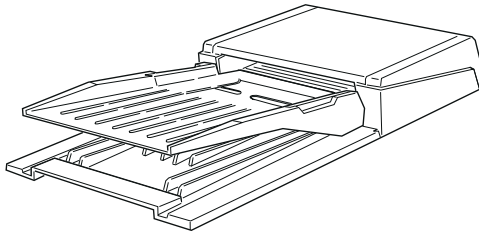
The Automatic Document Feeder (B81316*) allows you to automatically load multiple-page documents into your scanner. This document feeder is particularly useful for OCR (optical character recognition) scanning, or for creating an image database.

Unpacking the Automatic Document Feeder

When you unpack your Automatic Document Feeder, make sure you have all the parts shown below and that none is damaged. If you find any missing or damaged items, contact your EPSON dealer immediately.



Installation
screws

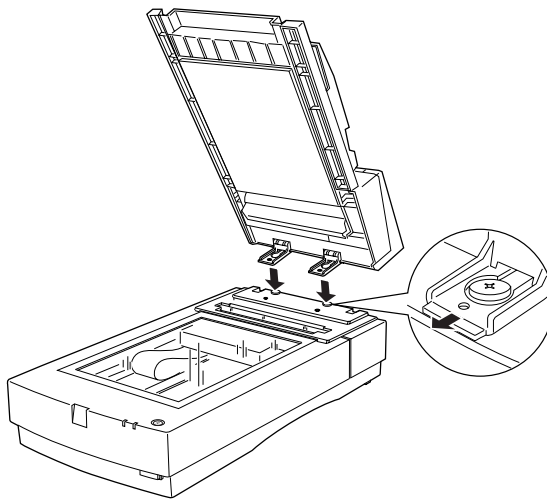


Automatic Document Feeder

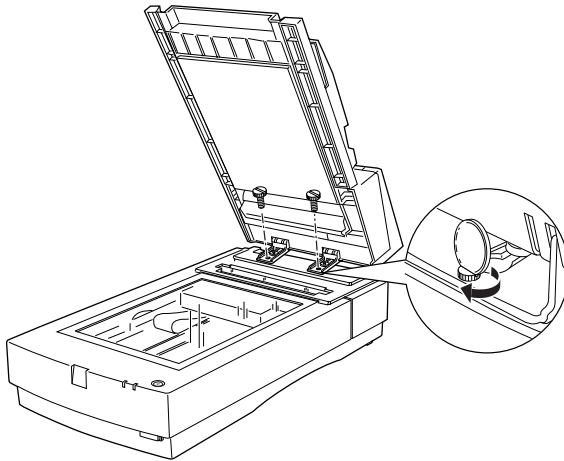
Installing the Automatic Document Feeder

Follow the steps below to install the Automatic Document Feeder on your EPSON scanner.

1. Make sure your scanner is turned off, and unplug the scanner's power cord.
2. Remove your scanner's document cover by holding the cover behind the hinge and lifting the back of the cover straight up. (See page 4-6)
3. The scanner comes with two installation screws attached; slide the mounting slots on the Automatic Document Feeder forward, underneath these two screws. Do not remove the protective materials from the Automatic Document Feeder's mounting hardware yet.

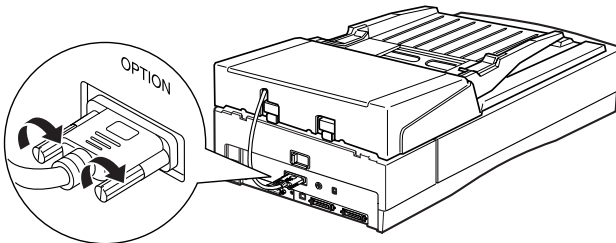


4. Insert the installation screws included with your Automatic Document Feeder into the holes in the scanner, then use a coin to tighten them.



6

5. Remove the protective materials from the Automatic Document Feeder's mounting hardware.
6. Close the Automatic Document Feeder.
7. Attach the Automatic Document Feeder's connector to the scanner's option interface.



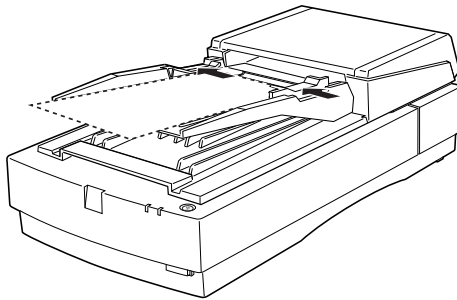
Loading paper into your Automatic Document Feeder

Your Automatic Document Feeder can automatically load up to 30 sheets of the following paper sizes (based on a paper weight of 17 lbs and a stack thickness of 6.0 mm or less):

Checks	76 x 127 mm (3 x 5 inches)
B5	182 x 257 mm (7.17 x 10.1 inches)
A4	210 x 297 mm (8.27 x 11.69 inches)
Letter	215.9 x 279.4 mm (8.5 x 11 inches)
Legal	215.9 x 355.6 mm (8.5 x 14 inches)

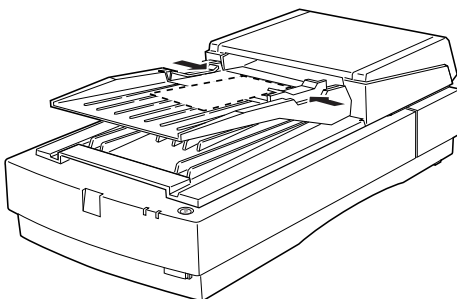
Follow the steps below to load paper into the Automatic Document Feeder.

1. Slide the left edge guide all the way to the left and place your paper in the feeder tray. Then move the right edge guide so it is flush with the right edge of your paper.



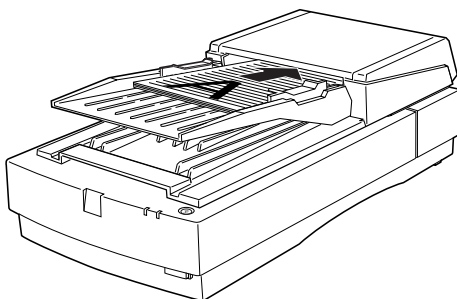
Note:

For checks, move the left edge guide to the center until it stops, then place your checks in the tray and move the right edge flush against them.



2. Insert the paper stack into the Automatic Document Feeder until it meets resistance. Make sure that the side you want to scan is facing up.

6



Documents are fed into the lower tray after scanning is finished.

Loading documents manually

You can load documents manually even when the Automatic Document Feeder is installed.

To load manually, lift the Automatic Document Feeder and place the document on the scanning surface. Then lower the Automatic Document Feeder and scan the document.

Note:

- ❑ *Opening the Automatic Document Feeder or its cover while it is operating results in an option error and paper feeding stops.*
- ❑ *Always close the Automatic Document Feeder and its cover before using it.*

Scanning from the Automatic Document Feeder

The scanning instructions are divided into two sections; read “Scanning the full document area” to scan an entire document or image, or read “Scanning only part of the document area” to scan only a certain part of an image or document.

Scanning the full document area

You do not need to use the preview feature when scanning a full document or image. The scanner automatically find and scans the whole image. Follow the steps below to scan an image or document.

1. Load paper in the Automatic Document Feeder as described on page 6-20.
2. Start the PageManager for EPSON software.
3. Select EPSON TWAIN Pro from Select Source of PageManager’s File menu depending on your scanner configuration.
4. Select Acquire from File.

5. In the dialog box of EPSON TWAIN Pro, make sure that Auto Document Feeder is selected from the Document Source list. Also choose appropriate settings for the scanning.
6. Click Scan.

After scanning the entire stack of documents, a window with thumb-nail images will appear. In this window you can select and change the orientation of the scanned images.

Scanning only part of the document area

To scan just a part of an image, follow the steps below.

1. Load the first page of the document in the Automatic Document Feeder as described on page 6-20.

Note:

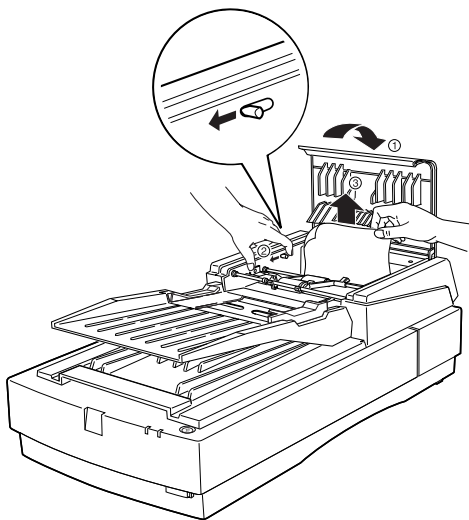
Only set one page of the document at this time. If you set multiple pages at this time, the second page will be fed right after the first page is scanned and may become stuck in the middle of the document path as if the paper is jammed. In this case, you have to remove the second page from the document path and load it again.

2. Start the PageManager for EPSON software and select Acquire from the File menu.
3. In the dialog box of EPSON TWAIN Pro, click Preview. The document is ejected after previewing.
4. Draw a marquee (frame around a certain area) to define the part of the image you want to scan by dragging the mouse pointer over that area.
5. Set document(s) to be scanned in the Automatic Document Feeder, including the ejected document.
6. Choose your settings in EPSON TWAIN Pro and click the SCAN button. Refer to the HTML Scanner Software Reference Guide for details on choosing EPSON TWAIN Pro settings.

After scanning the entire stack of documents, a window with thumb-nail images appears. In this window you can select and change the orientation of the scanned images.

Fixing paper jams in the Automatic Document Feeder

If a paper jam occurs, first open the Automatic Document Feeder's cover. Then pull forward on the jam-release lever and slowly pull the jammed paper out of the feeder mechanism. (Be careful not to pull too hard; the paper may tear, making it more difficult to remove.)



After removing the jammed paper, close the document feeder cover and make sure the READY light is on and not flashing, and the ERROR light is off.

Document specifications

Size:	Width 3 to 8.5 inches (76 to 215.9 mm) Length 5 to 14 inches (127 to 355.6 mm)
Thickness:	0.07 to 0.16 mm
Weight:	52.3 to 127.9 g/m ²
Paper quality:	High-quality bond or thermal paper
Document type:	Documents printed with impact printers, laser printers, or facsimile machines

Document conditions

Make sure of the following before feeding a document:

- Ink on the document is dry.
- The document has no holes, is not ripped or wrinkled, and has no articles attached to it.
- The document has no staples or other objects attached that might damage the feeder mechanism.
- The document has no folds closer than 8 mm from its edge.
- The document is not a multipart form or bound.
- The document has no rear carbon coating.
- The document has no cut out areas.

Other precautions

Do not feed photographic sheets or particularly valuable original artwork into this Automatic Document Feeder; misfeeding a document may result in accidental wrinkling or damage.

When you are scanning high-quality color or halftone documents, it is recommended you open the Automatic Document Feeder and scan documents individually.

Using the IEEE 1394 Scanner I/F Card

The optimal IEEE 1394 Scanner I/F Card (B80834*) offers high-speed data transfer and flexible connectivity for your scanner. It supports a peak data transfer rate of 400 Mbps, and interface cables can be connected and disconnected without turning off the scanner or your computer. You can connect multiple IEEE 1394 devices simultaneously in either a daisy-chain or tree configuration.

System requirements

Hardware: Power Macintosh G3 equipped with built-in IEEE 1394 (FireWire) port, or Power Macintosh G3 equipped with an IEEE 1394 (FireWire) PCI card, supported by Apple® Computer.

OS: Mac OS 8.6 or later, with FireWire Update 2.1 or later.

Unless your computer already has built-in IEEE 1394 ports or an IEEE 1394 board installed, you need to install an IEEE 1394 board.

If you already have an IEEE 1394 board installed in your computer, go to “Installing the IEEE 1394 Scanner I/F Card in your scanner” on page 6-27.

Installing the IEEE 1394 interface board in your computer

Note:

For additional information, see the installation guide that comes with your IEEE 1394 board.

1. Turn off the computer and any peripheral devices. Unplug any power cords, then disconnect all cables from the back panel of your computer.
2. Remove the cover from your computer.



Caution:

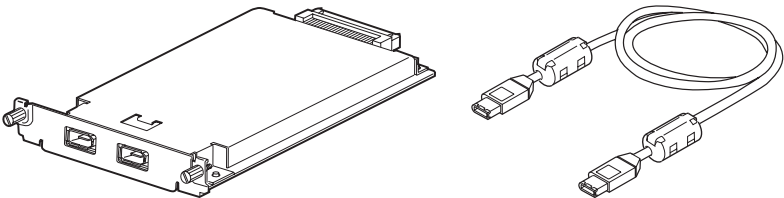
Static electricity can damage electronic components.

Discharge static electricity by touching the metal frame of your computer before handling the interface board or any of the computer's circuit boards.

3. Insert the interface board into an appropriate expansion slot, then secure it with the retaining screw.
4. Replace the computer cover and reconnect all cables.

Installing the IEEE 1394 Scanner I/F Card in your scanner

To use your scanner as an IEEE 1394 device, you need to install the optional IEEE 1394 Scanner I/F Card.



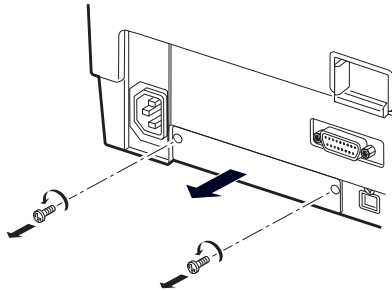
1. Turn off the scanner. Unplug any power cords, then disconnect all cables from the back panel of your scanner.

2. Use a cross-head screwdriver to remove the two screws securing the shield plate to the optional interface slot; then remove the plate. Be sure to keep both screws; you may need to use them again if you re-install the shield plate.

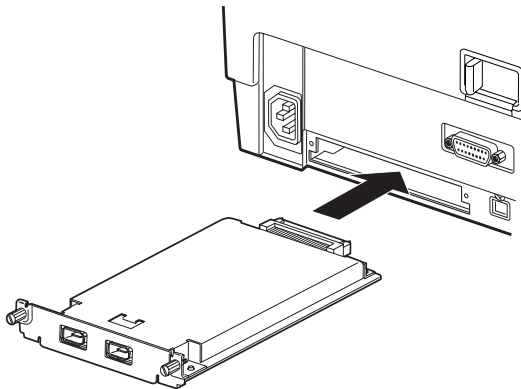


Caution:

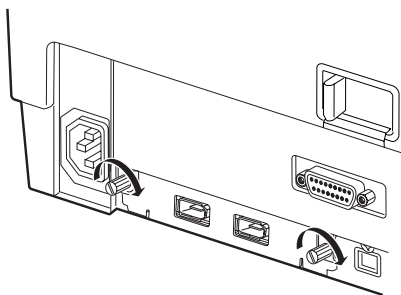
Static electricity can damage electronic components. Discharge static electricity by touching the metal frame of your scanner before handling the interface board.



3. Insert the Scanner I/F Card along the side guide rails into the expansion slot in the optional interface slot.



- Secure it with the retaining screws.



- Reconnect all cables.

Installing the Scanner Software

After installing the Scanner I/F Card as described above, you need to install the scanner software before you connect your scanner to your computer and use the scanner to scan documents. For details on installing the scanner software, see Chapter 3.

Note:

When you install the EPSON scanner software, the FireWire Update 2.1 will automatically be installed or updated, if the software is not installed on your Macintosh, or is out of date.

Understanding IEEE 1394 connections

The Scanner I/F Card is equipped with two cable connectors. One is used to connect the card to the computer, and the other is used to connect other IEEE 1394 devices in a daisy chain or tree configuration. Use the cable supplied when making the connection. The cable can be connected without switching off the power supply to the computer or the scanner because it complies with the IEEE 1394 standard. Cables can be connected whether the scanner or computer are on or off.



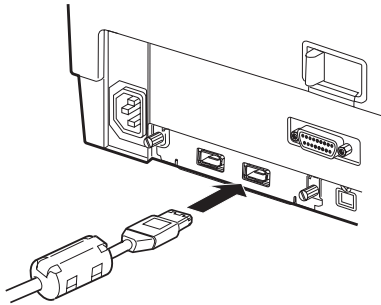
Caution:

Do not connect or disconnect IEEE 1394 cables when the scanner is in use.

Connecting the scanner

To connect the scanner to your computer or other IEEE 1394 device:

1. Connect one end of the cable to the IEEE 1394 port of the Scanner I/F Card on back of the scanner.

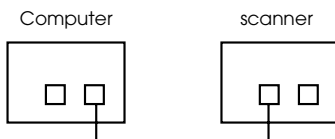


2. Connect the other end of the cable to the IEEE 1394 port on your computer, or other IEEE 1394 device.

When connecting the scanner directly to your computer

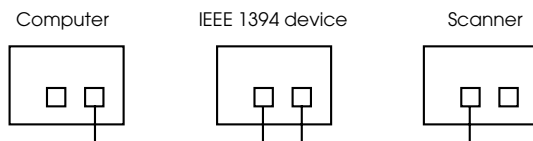
Connect the cable connector to your computer's IEEE 1394 port (FireWire port).

The other cable can be connected to any of the IEEE 1394 ports on the Scanner I/F Card attached to your scanner (any of the ports may be used).



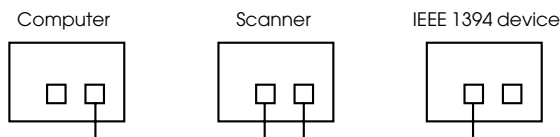
When connecting the scanner to your computer with other IEEE 1394 devices

If IEEE 1394 devices are already connected to your computer, connect the scanner so that it is the last IEEE 1394 device in the chain.



Note:

The IEEE 1394 cable supplied with the optional IEEE 1394 Scanner I/F Card has 2 six pin connectors at each end. If IEEE 1394 devices with four pin connectors are used in a daisy chain or tree, you will need to use a 6:4 converter cable.



Note:

Connect the cable to a vacant IEEE 1394 connector if additional IEEE 1394 devices are to be connected to your scanner.

Chapter 7

Maintenance and Troubleshooting

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Maintenance

Cleaning the scanner

To keep your scanner operating at its best, you should clean it periodically, as described below.

1. Unplug the power cord.
2. Clean the outer case with mild detergent and water.
3. If the glass of the document table gets dirty, clean it with a soft dry cloth. If the glass is stained with grease or some other hard-to-remove material, use a small amount of glass cleaner and a soft cloth to remove it. Wipe off all remaining liquid.

Be sure that there is no dust on the glass of the document table. Dust can cause spots in your scanned image.



Caution:

- Be careful not to scratch or damage the glass of the document table, and do not use a hard or abrasive brush to clean it. A damaged glass surface can decrease the scanning quality.*
- Never use alcohol, thinner, or corrosive solvent to clean the scanner. These chemicals can damage the scanner components as well as the case.*
- Be careful not to spill liquid into the scanner mechanism or electronic components. This could permanently damage the mechanism and circuitry.*
- Do not spray lubricants inside the scanner.*
- Never open the scanner case.*

Replacing the fluorescent lamp

The luminosity of the fluorescent lamp declines over time. If the lamp breaks or becomes too dim to operate normally, the scanner stops working and both the READY and ERROR lights rapidly flash. When this happens, the lamp assembly must be replaced. For details, contact your dealer.



Caution:

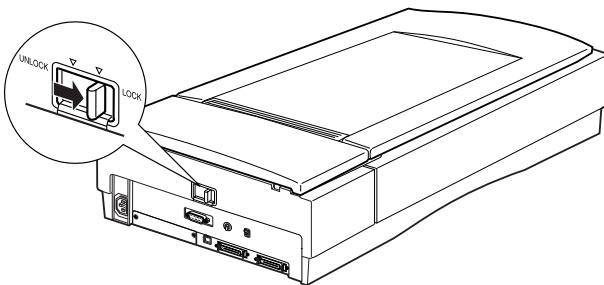
Never open the case of the scanner. If you think repairs or adjustments are necessary, consult your dealer.

Transporting the Scanner and the Transparency Unit

When transporting the scanner or the Transparency Unit over a long distance, or storing them for an extended period, you need to lock the scanner's carriage and the Transparency Unit's lamp assembly, to prevent damage. Follow the procedures below.

For the scanner

1. Make sure the transportation lock lever is in the UNLOCK position.
2. Align the SCSI ID rotary switch with “*”.
3. Turn on the scanner.
4. After the carriage moves to the back of the scanner, slide the transportation lock lever to its LOCK position.



For the optional Transparency Unit

1. With the Transparency Unit attached, turn on the scanner and wait until the unit's lamp assembly moves to its home position. Then turn off the scanner and remove the Transparency Unit.

2. Raise the front of the Transparency Unit, hold it upright, and gently shake it up and down once so that the lamp assembly slides down toward the back of the unit. Wait until the lamp assembly comes to rest.
3. Install the shipping screw in its original shipping hole.

Problems and Solutions

This section divides scanner problems into seven categories:

Error indicator	page 7-6
Operating problems	page 7-7
Quality problems	page 7-11
Software setup problems	page 7-18
Software operation problems	page 7-20
Scanning problems	page 7-22
Paper jams	page 7-24

See the table in “Error indicator” first. If this does not help you solve your problem, go to the category for the type of problem you have, then look for the problem description.

The online Color Guide also provides versatile tips and other information helpful for problem-solving.

Note:

If some settings appear dimmed in EPSON TWAIN Pro, they cannot be selected because of the capability of your scanner or your choice of other settings.

If you cannot solve a problem after reading and following the information in this chapter, contact your dealer or a qualified customer support person for assistance.

Error indicator

When an error occurs, the scanner stops operating and the ERROR and READY lights indicate the error type as described below.

ERROR Light	READY Light	Error Type
On	On	Command error
Flashing	Off	Interface error
Flashing	Flashing	Fatal error
Off	Off	Option error


Command error

The scanner has received incorrect commands from your scanning software.

When this error occurs, try to rescan the document. The scanner returns to normal when it receives correct commands. Normally you do not need to reset the scanner when this type of error occurs.

Interface error

The interface setup is wrong or the scanner is not properly connected to the printer.

When this error occurs, check the interface connection and then push the  operate button to turn the scanner off and then back on again to reset it.

Fatal error

This type of error indicates one of the following problems:

- The fluorescent lamp needs to be replaced.
- The transportation lock lever is not released.

- ❑ The scanner is malfunctioning.

Check that the transportation lock lever is released and check any installed options for problems. Next, turn the scanner off and then back on again. If this does not correct the problem, consult your dealer.

Option error

This indicates a problem with an installed option, such as a paper jam, an empty document feeder, or an open cover.

Check the option and correct the cause of the problem.


Operating problems

Problems you may have while using the scanner often involve the operation of your software and computer. Operation problems usually occur because of:

- ❑ Incorrect setup of the interface (see Chapter 2).
- ❑ Inappropriate selection of the scanner functions (see your software documentation).
- ❑ Incorrect setup of your computer or software (see Chapter 2 in this guide or the software documentation).
- ❑ Incorrect operation of your software (see your software documentation).

Also see the documentation that came with your computer and printer for possible solutions.

The READY light does not come on.

Cause	What to do
The scanner is off.	Press the  operate button to turn on the scanner.
The scanner is not connected correctly.	Make sure the power cord is connected to the scanner and plugged into a power outlet.

The scanner does not scan.

Cause	What to do
The scanner is not ready to scan.	Wait until the READY light stops flashing and remains on (ready for scanning).
Interface port or software settings are incorrect.	Make sure your interface port and software settings are correct. Also make sure that your computer's interface board is installed properly.

For SCSI interface users :

SCSI ID or terminator is incorrect .

Make sure the scanner's SCSI ID and terminator are set correctly. See "Connecting the Scanner to Your Computer using the SCSI Interface" on page 2-8.

Interrupt settings are conflicting with your SCSI board.

If you have other expansion boards in your computer, make sure that their interrupt settings are not interfering with your SCSI board. See your computer's documentation for details.

For USB interface users :

More than one hub is in use,
or the cable is unsuitable.

Try connecting the scanner directly
to the computer's USB port, or use an
EPSON USB cable .

Try connecting your scanner to a
different port on your hub, or a
different hub, if one is available.

For Macintosh and IEEE

1394 interface users:

The necessary Extensions are
disabled.

Make sure that the following
Extensions are selected in the
Extensions Manager.

EPSON FW Scanner Enabler

EPSON FW Scanner Expert

EPSON FW ScannerLib

The scanner software does not work properly.

Cause

What to do

Software is not installed properly.

Make sure your software is installed correctly.

For Windows 98 users:

Check if your scanner is listed more than once in the Scanners and Cameras Properties dialog box. To view the dialog box, double-click the Scanners and Cameras icon in Control Panel. Remove your scanner every place it appears in the dialog box, then reinstall EPSON TWAIN Pro following the instructions in the Chapter 3.

Note:

When reinstalling the scanner software, if a dialog box does not appear and a message box, followed by a dialog box requesting the EPSON Scanners Driver Disk appears instead, insert the scanner software CD in the CD-ROM drive. Make sure to specify the correct drive letter, the EPSON folder, the folder of your preferred language, and the Win98 folder as the location.

Computer system doesn't meet the requirements.

Make sure your computer meets the memory and other system requirements specified for the software you are using.

Not enough memory is available.

Make sure the computer has enough memory for your software. If the computer does not have enough memory available, see your software and computer documentation for details.

Quality problems

The entire image is distorted or blurred.

Cause	What to do
Document is not placed correctly.	Make sure the document is flat against the document table.
Document was moved.	Make sure you do not accidentally move the document during scanning.
Scanner orientation is unsuitable.	Make sure the scanner is on a flat, stable surface.

Part of the image is distorted or blurred.

Cause	What to do
The document condition is poor or the document was placed incorrectly.	Make sure the document is uniformly flat against the document table. A document that is wrinkled or warped may not scan well.



Caution:

Do not place heavy objects on the document table.

Edges of the document are not scanned.

Cause	What to do
The document size exceeds the readable scanning area.	Position the document so the area you want to scan is within the edge guide limits of the document table. Note that an area 1.6mm from the horizontal guide and 1mm from the vertical guide will not be scanned.

Colors are patchy or distorted at the edges of the image.

Cause	What to do
The document is too thick or warped, or there is too much outside light.	A document that is very thick or warped at the edges can cause discoloration. Cover the edges of the document with paper to block outside light.
The document is not placed correctly.	Make sure the document is flat against the document table.

The image is faint or out of focus.

Cause	What to do
The document is not placed correctly.	Make sure the document is flat against the document table.
Exposure setting is unsuitable.	Adjust your software's Exposure setting. See the online Reference Guide.
Gamma setting is unsuitable.	Adjust your software's Gamma setting. See the online Reference Guide.

The image is too dark.

Cause	What to do
Brightness is unsuitable.	Check your software's Brightness setting. Check the brightness and contrast settings of your computer display. See the online Reference Guide.

Straight lines in the image come out jagged.

Cause	What to do
Document is not placed correctly.	Make sure the document orientation is perfectly straight on the document table. Align vertical and horizontal lines with the scales at the top and side of the document table.

The image does not look the same as the original.

Cause	What to do
Image settings are incorrect.	Try different image setting combinations on your scanner software.

Color matching software is not sufficient, or not installed properly.	Your software may not have sufficient color matching and color management features, or these components may not be installed correctly. See the documentation that comes with your software and computer.
---	---

File format or image settings are unsuitable.	If you are importing an image file, make sure the file format is one your software can read. Also, make sure the image settings of your software are appropriate for the type of image you want to scan.
---	--

A line of dots is always missing from the scanned image.

Cause	What to do
The print head has malfunctioned.	Print head malfunction is indicated when a line is missing on printouts only. See your printer manual.

The scanner sensor has malfunctioned.

Scanner sensor malfunction is indicated when a line is missing on both screen images and printouts. Contact your dealer.

A line of dots always appears in the scanned image.

The narrow window near the mounting bracket is dirty

Wipe and remove any dirt on the window with a soft cloth.

Moiré (cross hatch) patterns appear in the scanned image during halftone scanning

Cause	What to do
Image Type setting is unsuitable.	Select the 24-bit Color De-screening setting in the Image Type list or select On for De-screening in the Image Type dialog box.
Transparent sheet was not used.	Place a transparent sheet between the document and document table to defocus the image.
Document is not positioned correctly.	Move or angle the document slightly.
Unsharp Mask is selected.	Clear the check from the Unsharp Mask check box in EPSON TWAIN Pro.
Image size setting is unsuitable.	Make the image size slightly smaller.

Colors differs from the original or look strange.

Cause	What to do
Screen is not calibrated.	Calibrate the screen. See Chapter 3.
Image Type and Destination settings are incorrect.	Make sure the Image Type (page 4-13) and Destination settings (page 4-14) are correct.
Opening on the document table is covered, or Transparency Unit was not closed during scanning.	When using the Transparency Unit, make sure the opening near the hinges on the document table is uncovered, or the Transparency Unit is closed when scanning.
Normal scanning.	Printed colors will not exactly match the colors on your monitor, since printers and monitors use different color systems: monitors use RGB (red, green, and blue), while printers typically use CMYK (cyan, magenta, yellow, and black).

Colors on your monitor are different from those in the original image.

Cause	What to do
Software image settings need adjustment.	Check the image settings of your scanner software, especially data format (bits, pixel, color), gamma correction, and color correction. Try different combinations of these settings.

Color matching and color management capabilities of your system are insufficient.

Check the color matching and color management capabilities of your computer, display adapter, and software. Some computers can change the color palette to adjust the colors on your screen. See your software and hardware manuals for details.

Normal scanning.

Exact color matching is very difficult. Check your software and monitor documentation for information on color matching and calibration. Also see your *Color Guide*.

Printed colors are different from those in the original image.

Cause

What to do

Normal scanning.

Exact color matching is very difficult. Check your software or contact your printer company for information on color matching and calibration.

The printed image is larger or smaller than the original.

Cause

What to do

Printed size was judged using the monitor image.

The image size settings of your software determine the size of the printed image. Do not use the size of the monitor image to judge the printed size.

Scanned images cannot be printed or come out garbled when printed.

Cause	What to do
Printer is not connected or set up properly, or maintenance is necessary.	Make sure your printer is properly connected to the computer, correctly set up, and maintained. See your printer manual for details.
Software is not installed properly.	Check that your software is properly installed and set up for your printer. See Chapters 3 and 4.

The colors of negative film preview images look strange.

Cause	What to do
Document Source setting is incorrect.	Make sure the EPSON TWAIN Pro Document Source setting is TPU for Neg. Film.
Using the film holder frame.	The dark area around the film, such as the frame of the film holder, is perceived as white, which alters the exposure of the scanning area and causes scans to appear darker. See the correct color by clicking and dragging the mouse over an area, and then clicking the zoom preview button.

Software setup problems

You cannot install EPSON TWAIN Pro.

Cause	What to do
System configuration does not meet the requirements.	Check if your computer and operating system meet the system requirements on pages 3-2 to 4. Make sure your computer has enough memory to run the application.

The scanner does not appear in the Port list of the EPSON TWAIN Pro dialog box in the Control Panel when you connect the SCSI model to your PC running Windows other than Windows 98.

Cause	What to do
SCSI connection is not made properly.	Turn off the computer and scanner and check the connection between your hardware.
SCSI ID number is unsuitable.	Change the SCSI ID number to one that is not being used by any other SCSI device.
Connection sequence is incorrect.	Check the connection sequence and make sure the scanner's terminator switch is set correctly. See Chapter 2 for details.

The Scanner Status does not indicate “Device Ready” after you click Test in the EPSON TWAIN Pro dialog box or the Scanner’s Properties dialog box (Windows 98) in the Control Panel.

Cause	What to do
Interface cable is unsuitable.	Make sure the interface cable meets the requirements of your interface board. See the manual that comes with the interface board.
Connection is not made properly.	Turn off the scanner and computer and check the connection between the scanner and computer.
SCSI interface board is not installed properly.	Make sure the SCSI interface board is installed correctly.
Power on sequence is incorrect.	Turn off the scanner and computer. Turn on the scanner and then turn on the computer.
SCSI driver is not installed correctly.	Make sure the SCSI driver is properly installed.
SCSI ID number is unsuitable.	Change the scanner’s SCSI ID number to one that is not being used by any other SCSI device.
Connection sequence is incorrect.	Check the connection sequence and make sure the scanner’s terminator switch is set correctly. See Chapter 2 for details.

Software operation problems

You cannot start EPSON TWAIN Pro.

Cause	What to do
Scanner is switched off.	Turn on the scanner and then turn on the computer.
Interface cable is unsuitable.	Make sure the interface cable meets the requirements of your interface board. See the manual that comes with the interface board.
Connection is not made properly.	Turn off the scanner and computer and check the connection between the scanner and the computer.
Interface board is not installed properly.	Make sure the interface board is installed correctly.
Incorrect selection of TWAIN Data Source in application.	Make sure that EPSON TWAIN Pro is selected properly in your application software. See "Starting EPSON TWAIN Pro through your application software" on page 4-7.

Software is not installed properly and EPSON TWAIN Pro does not appear in the TWAIN Data Source list.

Make sure your software is installed correctly.

For Windows 98 users:

Check if your scanner name appears under Imaging Device hardware type without a ? or ! mark in the Device Manager menu. To view this menu, right-click the My Computer icon on the Desktop, click Properties, then click the Device Manager tab. If your scanner appears with a ? or ! mark, or appears as an Unknown devices hardware type, click Remove while your scanner is connected and turned on to remove it from the Device Manager menu. Then reinstall EPSON TWAIN Pro. See “Recovering from Scanner Software Installation Problems on Windows 98” on page 7-28 for details.

Note:

If the EPSON Scanners Driver Disk is requested when reinstalling the scanner software, insert the Scanner Software CD in the CD-ROM drive and make sure to specify the correct drive letter, the EPSON folder, the folder of your preferred language, and the Win98 folder as the location.

You can't select optional equipment (Automatic Document Feeder or Transparency Unit).

Cause

What to do

Option is not installed properly.

Make sure the optional equipment is installed correctly. See Chapter 6.

Scanning problems

Image is dark, with little or no detail.

Cause	What to do
Screen is not calibrated.	Calibrate the screen as described in "Calibrating Your Screen" on page 3-25.
Destination setting is incorrect.	Select Screen/Web as the Destination setting (page 4-14). Selecting a printer may cause onscreen colors to be different from the colors of the original, however colors will be reproduced correctly when it is printed.

You cannot scan an image or you only get a few dots for the scanned image.

Cause	What to do
No document on the document table.	Make sure you have placed a document on the document table of the scanner.
Threshold setting needs changing.	<p>When OCR is selected as the Image Type, change Text Enhancement Technology to None from the B/W Option in the Image Type dialog box. Then change the Threshold setting in the Image Controls dialog box. See "Image Controls" on the online Software Reference Guide.</p> <p>When OCR is selected as the Image Type, change OCR to Line Art, then change the Threshold setting in the Image Control dialog box. See "Image Controls" on the online Software Reference Guide.</p>

Scanned image is too large.

Cause	What to do
Destination setting is unsuitable.	Select Screen/Web as the Destination setting (page 4-14). Selecting a printer as the Destination setting (page 4-14), the print will appear in the correct size even if the image is enlarged on the screen in some applications.

Poor character recognition during OCR scanning.

Cause	What to do
Image Type setting is unsuitable.	Select OCR as the Image Type setting.
Threshold setting is unsuitable.	Try adjusting the Threshold setting in the Image Controls dialog box.
Background noise on the document.	Select Text Enhancement Technology from the B/W Option in the Image Type dialog box.

Scanning does not start by pressing the Start button.

Cause	What to do
Scanner Monitor software is not installed properly. (For Windows 95, NT 4.0 and Macintosh)	Make sure the Scanner Monitor software is running and check that the Scanner Monitor's Launch Application path is set correctly.

Scanner Event is not selected properly. (For Windows 98)

Click the Events tab in your scanner's Properties dialog box and make sure the Disable device events check box is clear. And make sure the Start button is selected as the Scanner events, and at least one scanner event recognizable application in the Send to this application box is selected. See "Assigning an application to the Start button" on page 5-13 for details.

Paper jams

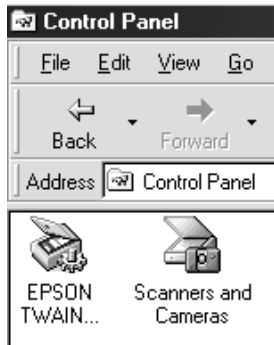
Paper gets jammed in the Automatic Document Feeder.

Cause	What to do
Paper cannot pass smoothly through the Automatic Document Feeder.	Remove the jammed paper. See page 6-24.

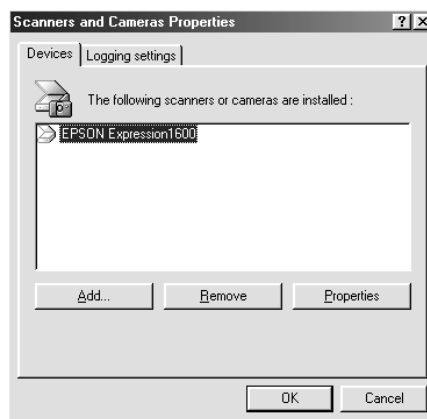
Changing the SCSI ID number or SCSI board

If you are using your scanner with Windows 98 and you want to change the scanner's SCSI ID number or replace the SCSI board with a new one, follow the steps below.

1. Double-click the Scanners and Cameras icon in the Control Panel.



2. Select your scanner in the installed devices list, then click Remove.



3. Click OK and close the dialog box.
4. Shut down Windows 98 and turn off your PC and scanner.
5. Change the SCSI ID number (see page 2-10), or replace the SCSI board (see page 2-4).
6. Turn on your scanner and then your PC.
7. Follow the instructions on the screen.

Note:

If the EPSON Scanners Driver Disk is requested, insert the Scanner Software CD in the CD-ROM drive and make sure to specify the correct drive letter, the EPSON folder, the folder of your preferred language, and the Win98 folder as the location.

Changing USB Connections Ports

When you want to change the scanner to a different USB port (on your computer or hub), for example when you are adding other USB devices, follow the procedure below.

If you do not follow the procedure below, your scanner or computer may not operate correctly.

1. Connect the scanner to your computer.
2. Turn on the scanner and then your computer.

Note:

Before turning on your computer, if you have any other scanners, in addition to EPSON Expression 1600, or cameras listed in the Control Panel's Scanner and Cameras Properties dialog box, be sure to connect them to your computer or hub and turn them on.

3. Click the Start menu, point to Settings and click Control Panel.

4. Double-click the Scanners and Cameras icon.
5. Select EPSON Expression 1600 and click Remove.

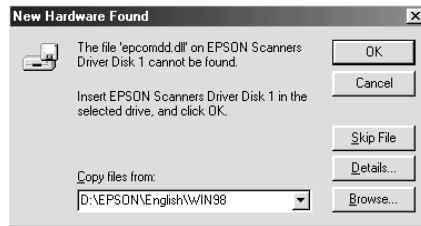
Note:

- ❑ *Be sure you have selected the correct device to remove. Since there is no Cancel button, there is no way to stop removal of a device once you click the Remove button.*
 - ❑ *If other devices listed in the Scanners and Cameras Properties dialog box are not connected to the computer when you remove the scanner, you may not be able to properly remove them at a later time. Be sure to connect and turn on all the devices listed in the Scanners and Cameras Properties dialog box before turning on your computer and removing the scanner.*
6. Click OK to close the dialog box, then close the Control Panel.
 7. Shut down Windows98 and turn off your computer, but leave the scanner on.
 8. Connect the USB cable to the new USB port.
 9. Turn on your computer.
 10. When the dialog box below appears, insert your scanner software CD into your CD-ROM drive, then click OK.

EPSON TWAIN Pro will be reinstalled.



If this dialog box appears, click the ▼ button and select X:\EPSON\English\Win98 (where X refers to your CD-ROM drive), then click OK.



11. The Screen Calibration utility will automatically start. See page 3-25 for details.

Recovering from Scanner Software Installation Problems on Windows 98

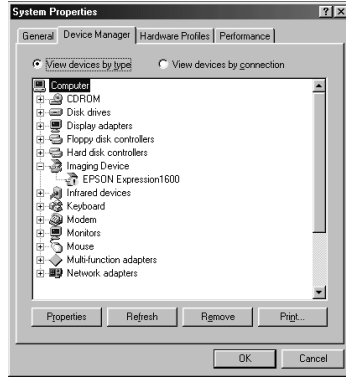
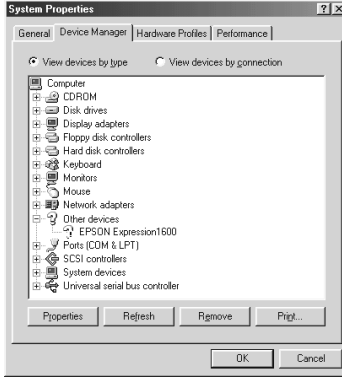
If you cancelled the plug-and-play driver installation before the procedure was completed, EPSON TWAIN Pro may be incorrectly installed.

Follow the steps below to check the installation.

1. Turn your scanner and then computer on. Plug the interface cable into your scanner and the computer.
2. Right-click the My computer icon on your desktop, then click Properties.
3. Click the Device Manager tab.

If your EPSON TWAIN Pro is correctly installed, EPSON Expression 1600 should appear under Imaging Device when you click the plus (+) sign next to Imaging Device.

If EPSON Expression 1600 appears under Other Devices with a ? mark or under Imaging Device with an ! mark, the EPSON TWAIN Pro file is not installed correctly. Follow the instructions below to reinstall the driver.



If EPSON Expression 1600 appears under Other Devices

Note:

Make sure your scanner is on and connected to your computer. If your scanner is off or not connected to your computer, you cannot reinstall the driver properly.

1. If ? EPSON Expression 1600 appears under Other Devices, click ? EPSON Expression 1600. Then click Remove and OK.



2. Click Close to close the System Properties window.
3. Make sure your scanner is on and restart your computer.
4. The following dialog box appears. To install the driver again, follow the instructions in Chapter 3.

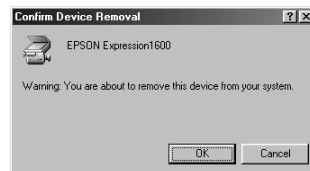
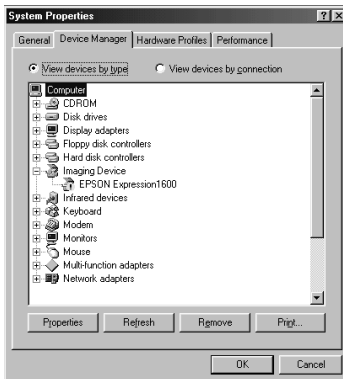


If EPSON Expression 1600 appears under Imaging Device

Note:

Make sure your scanner is on and connected to your computer. If your scanner is off or not connected to your computer, you cannot reinstall the driver properly.

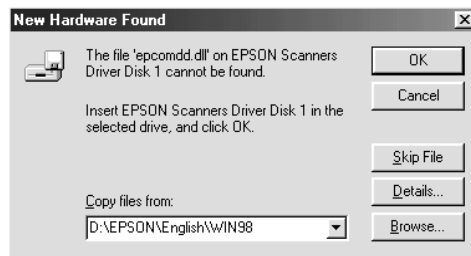
1. If ! EPSON Expression 1600 appears under Imaging Device, click ! EPSON Expression 1600. Then click Remove and OK.



2. Click **Close** to close the System Properties window.
3. Make sure your scanner is on and restart your computer.
4. When the following dialog appears, insert the scanner software CD in the CD-ROM drive, then click **OK**.



If the following dialog appears, click ▼, then browse and select or type in the CD-ROM drive letter, EPSON folder, the folder of your preferred language, and Win98 folder as the location, as shown below, then click **OK**.



5. The Screen Calibration window appears. Follow the instructions described in Chapter 3.

Sizing Up Your System

Your scanner is sufficient for most scanning needs, but if you are not satisfied with the quality of the images on your monitor or with the speed of image processing, read this section. While it does not contain specific recommendations, it describes various possibilities for improving your scanning system. For further information, seek advice from your dealer or an experienced scanner user.

RAM and hard disk size

Scanned images use much more memory than text files, so you may need more RAM (Random Access Memory) in your computer and a larger hard disk than you have used previously.

Accelerator boards

In addition to memory, processing speed is important because large files take longer to process than small ones. Therefore, you may want to add an accelerator board to your computer.

Video cards

A video card that is sufficient for text may not be good enough for displaying graphic images, especially in color. If all your scanned images look coarse on your monitor, you may want to upgrade your video card. You will need 24-bit color, also called true color or millions of colors, to make the highest quality image reproductions.

Monitors

The resolution of your monitor affects the quality of the image you see. Consider a high resolution monitor if you do precise color work, but also be sure you have a high quality video card.

File compression software

Many different programs are available to make image files smaller for storage or transmission. For example, some compression software can store a 3MB image file on a 1.44MB floppy disk, and compress images and restore them with no loss of data or quality; others compress images more, but the restored file is not exactly the same as the original. The difference between the original and restored files is, however, almost unnoticeable.

Appendix A

Technical Specifications

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IEEE 1394 Scanner I/F Card	A-11



Scanning

Scanner type:	Flatbed, color
Photoelectric device:	Color CCD line sensor
Effective pixels:	13600 × 18720 pixels at 1600 dpi, 100%
Document size:	216 mm × 297 mm (8.5 inches × 11.7 inches) A4 or US letter size (The reading area can be specified from your software.)
Scanning resolution:	1600 dpi (main scan) 3200 dpi with Micro Step (sub scan)
Output resolution:	50 dpi to 9600 dpi (50 to 4800 dpi in 1 dpi increments, 7200 dpi, and 9600 dpi. 7200 dpi and 9600 dpi performed with zoom function)
Color separation:	RGB color filters on CCD
Reading sequence:	
Monochrome	One-pass scanning
Color page sequence	Three-pass scanning (R, G, B) (This sequence is not supported by EPSON TWAIN Pro)
Color byte sequence	One-pass scanning (R, G, B)
Color line sequence	One-pass scanning (R, G, B)
Zoom:	50% to 200% in 1% increments
Image data:	12 bits per pixel per color internal 1 to 12 bits per pixel per color external
Brightness:	7 levels (In EPSON TWAIN Pro, Gamma correction controls Brightness)

Line Art settings:	Fixed threshold Text Enhancement Technology (enable/disable selectable)
Halftoning process:	AAS (Auto Area Segmentation) Enable/disable selectable 3 halftoning modes (A, B, and C) and 4 dither patterns (A, B, C, and D) for bi-level and quad-level data (2 downloadable dither patterns)
Gamma correction:	2 types for CRT display 3 types for printer 1 type for user-defined
Color correction:	1 type for CRT display 3 types for printer output (available in color byte sequence mode and color line sequence mode) 1 type for user-defined (Only user-defined Color correction is available in EPSON TWAIN Pro)
Interface:	SCSI (50 pin half pitch connectors), USB (Type B Receptacle Connector), and optional IEEE 1394 Serial Bus Interface
Light source:	Xenon gas fluorescent lamp
Reliability:	100,000 cycles of carriage movement (main unit MCBF)
Dimensions:	Width: 332 mm (13 inches) Depth: 562 mm (22.1 inches) Height: 133 mm (5.3 inches)
Weight:	Approx. 8.5 kg (18.7 lb)

Electrical

	100 to 120 V AC	220 to 240 V AC
Input voltage range	AC 90 to 132 V	AC 198 to 264 V
Rated frequency	50 to 60 Hz	
Rated current	0.8 A	0.4 A
Power consumption	Approx. 30W (operating) Approx. 10W (standby)	

Note:

Check the label on the back of the scanner for voltage information.

Environmental

Temperature:

Operation 5° C to 35° C (41° F to 95° F)
 10° C to 32° C (50° F to 89° F)
 when using the ADF

Storage -25° C to 60° C (-13° F to 140° F)

Humidity:

Operation 10% to 80%, without condensation

Storage 10% to 85%, without condensation

Operating conditions: Ordinary office or home conditions.
 Extreme dust should be avoided.
 Operation under direct sunlight or
 near a strong light source should be
 avoided.

Note:

Specifications are subject to change without notice.

Safety Approvals

120V model:

Safety standards	UL 1950 with D3 CSA C22.2 No. 950
EMC	FCC part 15 Subpart B Class B CSA C108.8 Class B

230V model:

Safety standards	EN 60950
EMC	EN 55022 (CISPR Pub 22) Class B AS/NZS 3548 Class B

CE marking

230 V model:

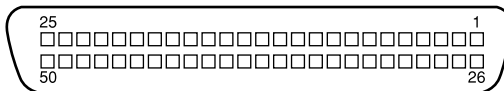
Low Voltage Directive 73/23/EEC	EN 60950
EMC Directive 89/336/EEC	EN 55022 Class B
	EN 61000-3-2
	EN 61000-3-3
	EN 50082-1
	IEC 801-2
	IEC 801-3
	IEC 801-4



A

SCSI Interface

- Interface type: ANSI X3T9.2/375R Revision 10L (SCSI 2)
- Functions: BUS FREE phase
ARBITRATION phase
SELECTION/RESELECTION phase
COMMAND phase
(Logical Unit Number is fixed to 0 and command link function is not supported.)
DATA phase
Data in phase
Data out phase
STATUS phase
MESSAGE phase
MESSAGE IN phase
MESSAGE OUT phase
ATTENTION condition
RESET condition
- Logic level: TTL compatible
- Electrical standard: ANSI X3T9.2/375R Revision 10L (SCSI 2)
- ID Setting: Selectable from 0 to 7
- Terminator: Internal terminator selectable (enable/disable)
- Connector type: Two half pitch 50-pin connectors
- Connector pin arrangement:



USB Interface

Interface type: Universal Serial Bus Specification Revision 1.0

Configuration:

Element	Description
Device	Full Speed mode (12Mbit/s) Class : Vendor-specific Vendor ID : 0x04B8 (SEIKO EPSON Corp.) Product ID : 0x0107
Configuration	Characteristics : Self-powered Remote wake up feature: Not supported Maximum power consumption from VBUS : 2mA (5V)
Interface	No alternate setting Number of endpoints used by this interface (excluding endpoint 0) : 2 Class : Vendor specific
Endpoint 1	Bulk IN transfer Maximum data transfer size : 64 byte
Endpoint 2	Bulk OUT transfer Maximum data transfer size: 64 byte
String Descriptor	Language ID : US English 1 : iManufacturer: "EPSON" 2 : iProduct: "Expression 1600"

Electrical standard: Full Speed mode (12Mbit/s) of Universal
Serial Bus Specification Revision 1.0.

Connector type: One receptacle (Type B)

A

Option Interface Connector

Interface type: For use with the optional Automatic Document Feeder (B81316*) and Transparency Unit (B81318*) only.

Electrical specifications:

Output voltage: DC 21.6 to 26.4V
DC 4.75 to 5.25V

Output current: 0.6A (24V)
0.3A (5V)

Initialization Methods

The scanner can be initialized (returned to a fixed set of conditions) in the following ways:

SCSI

Hardware initialization	<ul style="list-style-type: none">* The scanner is turned on.* The scanner receives a SCSI Reset signal from the SCSI interface.
Software initialization	<ul style="list-style-type: none">* Software sends the ESC @ (initialize the scanner) command.* The scanner receives a SCSI Bus Device Message.

USB

Hardware initialization	<ul style="list-style-type: none">* The scanner is turned on.* The USB cable is unplugged from the USB port on the scanner.
Software initialization	<ul style="list-style-type: none">* Software sends the ESC @ (initialize the scanner) command.* The scanner receives a Bus Reset from the USB interface.

Transparency Unit

Electrical Specifications:

Supplied Voltage:	DC 21.6 to 26.4 V	DC 4.75 to 5.25 V
Rated Current:	0.6A	0.1 A

Environmental Conditions:

Temperature

Operation: 5° C to 35° C (41° F to 95° F)

Storage: -20° C to 60° C (-14° F to 140° F)

Humidity

Operation: 10% to 80%, without condensation

Storage: 10% to 85%, without condensation

Reliability: 100,000 cycles for the MCBF

Document:

Transparencies up to 8.5 x 11.7 inch film
35 mm strip film
35mm slide
120/220 size (6cm x 9cm) strip film
4 x 5 inch film

Manuscript: Up to 8.5 x 11.7 inches

Readable area: 216 x 297 mm

Dimensions: Width: 324 mm (12.8 inches)

Depth: 540 mm (21.3 inches)

Height: 92 mm (3.6 inches)

Weight: Approx. 5 kg (11 lb)

A

Automatic Document Feeder

General specifications:

Paper supply:	Face up load
Paper out:	Face down eject
Paper setting quantity:	30pcs (55g paper, maximum total thickness under 6 mm)

Electrical specifications:

Input voltage:	DC 22.8 to 25.2 V DC 4.75 to 5.25 V
Input current:	24V: 0.6 A 5V: 0.3 A

Environmental conditions:

Temperature

Operation:	10° C to 32° C (50° F to 89° F)
Storage:	-20° C to 60° C (-4° F to 140° F)

Humidity

Operation:	20% to 80%, without condensation
Storage:	95% or less, without condensation

Reliability: 100,000 sheets (Load/Eject MCBF)

Dimensions: Width: 310 mm (12.2 inches)
Depth: 528 mm (20.9 inches)
Height: 92 mm (3.6 inches)

Weight: Approx. 4.5 kg (9.9 lb)

IEEE 1394 Scanner I/F Card

Interface type:	IEEE 1394-1995 compatible
Data transfer method:	Half-duplex Data/Strobe differential serial
Synchronization method:	Clock synchronization with DS-Link
Encoding/decoding:	DS-Link
Logic level:	3.3 V
Compatible connectors:	IEEE 1394-1995 compatible

Connector pin signal layout:

Pin number	Signal name	Function
1	VP	Cable power supply
2	VG	Cable ground
3	TPB*	Strobe during receipt, data during transmission (differential pair)
4	TPB	
5	TPA*	Data during receipt, strobe during transmission (differential pair)
6	TPA	

Power class:

Power class code 100

No power supply from external sources

Fitted with a repeat function with bus power

Environmental Conditions:

Temperature

Operation: 5°C to 35°C (41°F to 95°F)

Storage: -25°C to 60°C (-13°F to 140°C)

Humidity

Operation: 10% to 80%, without condensation

Storage: 10% to 85%, without condensation

A

Glossary

additive primary colors

The colors of red, green and blue (RGB) - which give the perception of white when fully added. These are the colors of the color system used with monitors and scanners.

bi-level data

Image data that is composed of 1 bit per pixel. A pixel is represented by a single bit of digital data that can express only 1 (light) or 0 (dark).

bit

Short for binary digit. The smallest unit of data in computer processing. A bit can represent two values: on and off, or 1 and 0.

bit/pixel

The unit that indicates the number of bits allocated for a pixel. The larger the bit value, the more detail of a pixel will be reproduced.

brightness

A scanner function to lighten or darken the output image data.

byte

A unit of information consisting of eight bits. A byte can represent a control code or character.

carriage

A component of the scanner that contains the optical sensor and light source for scanning.

color correction

A method of adjusting the color image data for a particular type of device so that the reproduction results are as close as possible to the original colors.

color separation

A process of converting full-color images into a limited number of primary colors. Additive primary colors (red, green, and blue) are used by the scanner, and the subtractive primary colors (cyan, magenta, and yellow) plus black are used for printing press separation.

ColorSync

Color management system for Macintosh that is designed to help you get WYSIWYG (what you see is what you get) color output. This software displays colors on your screen as they are on the scanned documents, or prints colors as you see them on your screen.

daisy chain

A SCSI bus arrangement that allows several devices to be connected simultaneously in a line to a single computer. See *SCSI*.

default

A set of values used when no other selections have been made. These are sometimes called factory defaults if the original values have not been changed since the scanner has left the factory.

dithering

A process in which software or an output device simulates continuous tones with groups of dots.

document

The item, such as a sheet of paper or a book, that is placed on the document table for the scanner to read.

dpi

Short for dots per inch. A unit of measurement for resolution. The higher the value, the higher the resolution.

dropout color

A color the scanner does not recognize and ignores. You can select and deselect dropout colors in the scanner software.

ESC/I

Abbreviation for EPSON Standard Code for Image scanners. A system of commands that allows you to control image scanners from your software.

ESC/P

Abbreviation for EPSON Standard Code for Printers. A system of commands that allows you to control printers from your software.

exposure

A scanner function that lightens or darkens the scanned image data.

grayscale

Images represented with various shades of gray in addition to black and white.

halftoning

A method of reproducing images with patterns of dots to improve the quality of the output.

home position

The position at the rear (nearest the cover hinge position) of the scanner where the carriage rests before a scanning operation.

ICM

Image Color Matching. Windows color management system designed to help you get WYSIWYG (what you see is what you get) color output. This software displays colors on your screen as they exist on the scanned documents, or prints colors as you see them on your screen.

imagesetter

A device that uses computer files to produce high-resolution text and graphics output on film or paper. These are usually found in service bureaus and printing companies.

impact dot printer

A printer that transfers ink onto the paper by striking an ink ribbon with a number of small pins.

ink jet printer

A printer that transfers ink onto the paper by spraying the ink through a number of small nozzles.

interface

A piece of hardware, a method, or a standard used for connection between or among computer devices.

laser printer

A printer that uses a laser and the electrophotographic method to print a full page at a time. The laser is used to “paint” a charged drum with light, to which toner is applied and then transferred onto paper.

line sequence

A type of color scanning that separates primary colors line by line. The carriage makes only one pass.

marquee

A moveable and adjustable frame that marks the area of an image that will be previewed or scanned.

monochrome

Black and white images, or images represented only by the intensity of luminosity.

OCR

Optical Character Recognition. The technology that allows computers to “read” text from physical objects. OCR requires a graphical representation of text to interpret, which usually comes from a scanned image.

page sequence

The type of color scanning in which the entire image is scanned once for each separate color.

pixel

Short for picture element. Each image is composed of a number of pixels. Pixels are also counted in units of dots.

plain bi-level

Bi-level image data without the halftoning process.

port

An interface channel through which data is transmitted between devices.

primary colors

Basic colors. See *additive primary colors* and *subtractive primary colors*.

resolution

Indication of how finely an image is resolved into pixels. Measured in dots per inch (dpi), pixels per inch (ppi), or samples per inch (spi).

scan

An operation performed by the sensor and the carriage. The image is divided into pixels by scanning.

scanning area

The physical size of the image that can be scanned by the scanner.

SCSI

Small Computer System Interface. This is one method used to connect your computer to peripherals such as scanners, hard disk drives, CD-ROM drives, and so on.

SCSI ID

The numbers that all devices in a SCSI connection (see *daisy chain*) use to identify each other. If the same ID number is used by two devices in the same daisy chain, the devices cannot operate properly.

sRGB

A standard color space used as the default color space within the Windows 98 color management system (ICM 2.0).

subtractive primary colors

The colors of cyan, magenta, and yellow (CMY) - which produce black when mixed in certain amounts. In printing, black is often added to give more definition as mixing of actual inks cannot produce pure black.

terminator

A device that stops electronic signals, and prevents them from proceeding or returning to other devices. This is necessary to stop a signal from continuously bouncing between devices.

threshold

A reference point that is used to determine whether data will be processed as "on" or "off". In the case of color image data, "on" means that a certain color will appear in a pixel or dot, and "off" means that color will not appear there.

tone correction

A method of adjusting the tone curve so that the reproduction results on different types of output devices have gradations similar to the original image.

tone curve

The graph that shows the contrast ratio between the input (original image) and output (image data) in image processing.

USB

A Universal Serial Bus. A hardware interface for connecting low-speed peripherals such as a keyboard, mouse, scanner, or printer to the computer.

USB hub

A device that normally provides four TYPE A sockets to increase the number of USB ports on a PC.

