

Paper Specifications

Overview

This printer accepts a variety of media, such as cut-sheet paper (including up to 100 % recycled fiber content paper), envelopes, labels, transparencies and custom-size paper. Properties such as weight, composition, grain and moisture content are important factors affecting printer performance and output quality. Paper that does not meet the guidelines outlined in this manual can cause the following problems:

- Poor print quality
- Increased paper jams
- Premature wear on the printer, requiring repairs.

Notes:

- Some paper may meet all of the guidelines in this manual and still not produce satisfactory results. This might be the result of improper handling, unacceptable temperature and humidity levels, or other variables over which Samsung has no control.
- Before purchasing large quantities of paper, make sure that the paper meets the requirements specified in this user

CAUTION: Using paper that does not meet that stated specifications may cause problems for the printer, requiring repairs. Repairs made necessary by the use of paper not specified in this manual are not covered by the Samsung warranty or service agreements.

Supported Sizes of Paper

Tray 1 or Optional Tray 2	Dimensions ^a	Weight	Capacity ^b
Letter	8.5 X 11 in. (216 X 279 mm)	16 to 28 lb Bond (60 to 105 g/m ²)	550 sheets of 20 lb Bond (75 g/m ²) paper
A4	210 X 297 mm (8.3 X 11.7 in.)		
Executive	7.3 X 10.5 in. (191 X 267 mm)		
Legal	8.5 X 14 in. (216 X 356 mm)		
B5 (JIS)	182 X 257 mm (7.2 X 10 in.)		
Folio	216 X 330 mm (8.5 X 13 in.)		

a. The printer supports a wide range of media sizes. See "Printing on Card Stock or Custom-Sized Media" on page 4.17.

b. Capacity may vary depending on media weight and thickness, and environmental conditions.

Multi-Purpose Tray	Dimensions ^a	Weight	Capacity ^b
Minimum Size (custom)	90 X 148 mm (3.5 X 5.83 in.)	60 to 163 g/m ² Bond (16 to 43 lb)	100 sheets of 75 g/m ² Bond (20 lb) paper
Maximum Size (custom)	216 X 356 mm (8.5 X 14 in.)		
Transparency	Same minimum and maximum paper sizes as listed above.	Thickness: .10 X .14 mm (0.0039 X 0.0055 in.)	20 typical
Labels ^c		Thickness: .10 X .14 mm (0.0039 X 0.0055 in.)	25 typical
Envelopes		up to 90 g/m ² (16-24 lb)	up to 10

a. The printer supports a wide range of media sizes. See "Printing on Card Stock or Custom-Sized Media" on page 4.17.

b. Capacity may vary depending on media weight and thickness, and environmental conditions.

c. Smoothness - 100 to 250 (Sheffield)

Note: You may experience some paper jams when using any media with a length of less than 148 mm (5.83 in.). For optimum performance, make sure you are storing and handling the paper correctly. Please refer to "Printer and Paper Storage Environment" on page A.6.

Guidelines for Using Paper

For best results, use conventional 90 g/m² (24 lb) paper. Make sure the paper is of good quality, and free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, voids, and curled or bent edges.

If you are unsure of what type of paper you are loading (such as bond or recycled), check the label on the package of the paper.

The following problems with paper can cause print quality deviations, jamming, or even damage to the printer.

Symptom	Problem with Paper	Solution
Poor print quality or toner adhesion Problems with feeding	Too moist, too rough, too smooth, or embossed; faulty paper lot	Try another kind of paper, between 100 ~ 250 Sheffield, 4 ~ 5 % moisture content.
Dropout, jamming, curl	Stored improperly	Store paper flat in its moisture-proof wrapping.
Increased gray background shading /printer wear	Too heavy	Use lighter paper, open the rear output tray.
Excessive curl problems with feeding	Too moist, wrong grain direction or short-grain construction	• Open the rear output tray. • Use long-grain paper.
Jamming, damage to printer	Cutouts or perforations	Do not use paper with cutouts or perforations.
Problems with feeding	Ragged edges	Use good quality paper

Notes:

- Do not use letterhead paper that is printed with low-temperature inks, such as those used in some types of thermography.
- Do not use raised or embossed letterhead.
- The printer uses heat and pressure to fuse toner to the paper. Make sure that any colored paper or preprinted forms use inks that are compatible with this fusing temperature (200 °C or 392 °F for 0.1 second).

Paper Specifications

Category	Specifications
Acid Content	5.5 ~ 8.0 pH
Caliper	.094 ~ .18 mm (3.0 ~ 7.0 mils)
Curl in Ream	Flat within 5 mm (.02 in.)
Cut Edge Conditions	Cut with sharp blades with no visible fray.
Fusing Compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 200 °C (392 °F) for .1 second.
Grain	Long Grain
Moisture Content	4 % ~ 6 % by weight
Smoothness	100 ~ 250 Sheffield

A

Paper Output Capacity

Output Tray	Capacity
Top output (Face-down) tray	250 sheets of 20 lb bond (75 g/m ²) paper
Rear output (Face-up) tray	100 sheets of 20 lb bond (75 g/m ²) paper

Printer and Paper Storage Environment

Ideally, the printer and paper storage environment should be at or near room temperature, and not too dry or humid. Remember that paper absorbs and loses moisture rapidly.

Heat works with humidity to damage paper. Heat causes the moisture in paper to evaporate, while cold causes it to condense on the sheets. Heating systems and air conditioners remove most of the humidity from a room. As paper is opened and used, it loses moisture, causing streaks and smudging. Humid weather or water coolers can cause the humidity to increase in a room. As paper is opened and used it absorbs any excess moisture, causing light print and dropouts. Also, as paper loses and gains moisture it can distort. This can cause paper jams.

As a result, paper storage and handling are as important as the paper-making process itself. Paper storage environmental conditions directly affect the feed operation.

Care should be taken not to purchase more paper than can be easily used in a short time (about 3 months). Paper stored for long periods may experience heat and moisture extremes, which can cause damage. Planning is important to prevent damage to a large supply of paper.

Unopened paper in sealed reams can remain stable for several months before use. Opened packages of paper have more potential for environment damage, especially if they are not wrapped with a moisture-proof barrier.

The paper storage environment should be properly maintained to ensure optimum printer performance. The required condition is 20 ° to 24 °C (68° to 75 °F), with a relative humidity of 45 % to 55 %. The following guidelines should be helpful when evaluating the paper's storage environment:

- Paper should be stored at or near room temperature.
- The air should not be too dry or too humid (due to the hygroscopic properties of paper).
- The best way to store an opened ream of paper is to rewrap it tightly in its moisture-proof wrapping. If the printer environment is subject to extremes, unwrap only the amount of paper to be used during the day's operation to prevent unwanted moisture changes.

Envelopes

Envelope construction is critical. Envelope fold lines can vary considerably, not only between manufacturers, but also within a box from the same manufacturer. Successful printing on envelopes depends upon the quality of the envelopes. When selecting envelopes, consider the following components:

- **Weight:** The weight of the envelope paper should not exceed 90 g/m² (24 lb) or jamming may occur.
- **Construction:** Prior to printing, envelopes should lie flat with less than 6 mm (0.25 in.) curl, and should not contain air.
- **Condition:** Envelopes should not be wrinkled, nicked, or otherwise damaged.
- **Temperature:** You should use envelopes that are compatible with the heat and pressure of the printer.
- **Size:** You should only use envelopes within the following size ranges.

	Minimum	Maximum
Multi-Purpose Tray	90 X 148 mm (3.5 X 5.83 in.)	216 X 356 mm (8.5 X 14 in.)

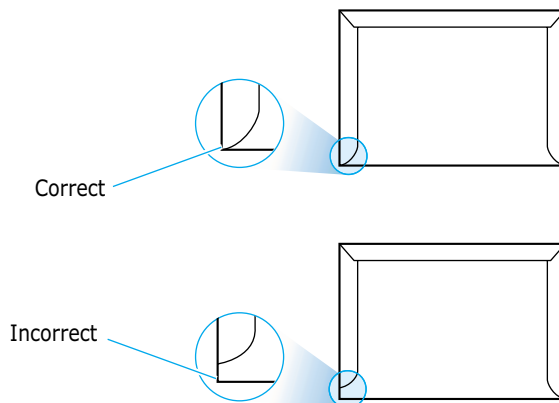


Notes:

- Use only the Multi-Purpose Tray to print envelopes.
- You may experience some paper jams when using any media with a length less than 148 mm (5.83 in.). This may be caused by paper that has been affected by environmental conditions. For optimum performance, make sure you are storing and handling the paper correctly. Please refer to “Printer and Paper Storage Environment” on page A.6.

Envelopes with Double Side Seams

Double side-seams construction has vertical seams at both ends of the envelope rather than diagonal seams. This style may be more likely to wrinkle. Be sure the seam extends all the way to the corner of the envelope as illustrated below.



Envelopes with Adhesive Strips or Flaps

Envelopes with a peel-off adhesive strip or with more than one flap that folds over to seal must use adhesives compatible with the heat and pressure in the printer. The extra flaps and strips might cause wrinkling, creasing, or even jams and may even damage the fuser.

Envelope Margins

The following gives typical address margins for a commercial #10 or DL envelope.

Type of Address	Minimum	Maximum
Return address	15 mm (0.6 in.)	15 mm (0.6 in.)
Delivery address	51 mm (2 in.)	89 mm (3.5 in.)

Notes:

- For best print quality, position margins no closer than 15 mm (0.6 in.) from the edges of the envelope.
- Avoid printing over the area where the envelope's seams meet.

Envelope Storage

Proper storage of envelopes helps contribute to print quality. Envelopes should be stored flat. If air is trapped in an envelope, creating an air bubble, then the envelope may wrinkle during printing. See "Printing on Envelopes" on page 4.12.

Labels

CAUTIONS:

- To avoid damaging the printer, use only labels recommended for laser printers.
- To prevent serious jams, always use the Multi-Purpose Tray to print labels and always use the rear output tray.
- Never print on the same sheet of labels more than once and never print on a partial sheet of labels.

When selecting labels, consider the quality of each component:

- **Adhesives:** The adhesive material should be stable at 200 °C (392 °F), the printer's fusing temperature.
- **Arrangement:** Only use labels with no exposed backing between them. Labels can peel off sheets with spaces between the labels, causing serious jams.
- **Curl:** Prior to printing, labels must lie flat with no more than 13 mm (.5 in.) of curl in any direction.
- **Condition:** Do not use labels with wrinkles, bubbles, or other indications of separation.

See "Printing on Labels" on page 4.14.



Transparencies

Transparencies used in the printer must be able to withstand 200 °C (392 °F), the printer's fusing temperature.

CAUTION: To avoid damaging the printer, use only transparencies recommended for use in laser printers.

See "Printing on Transparencies" on page 4.15.

Appendix

B

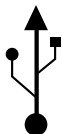
Using Your Printer with a USB Cable

If you have a USB (Universal Serial Bus) port enabled on your computer, and if your computer is running Windows 98, you can connect your ML-1650 series printer to the USB chain of devices.

This appendix provides information on the following topics:

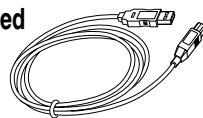
- ◆ Installing the Printer Software
- ◆ Frequently Asked Questions About USB

Installing the Printer Software



If you have a USB (Universal Serial Bus) port enabled on your computer, and if your computer is running Windows 98, you can connect your ML-1650 series printer to the USB chain of devices.

Note: Connecting the printer to the USB port of the computer requires a certified USB cable. You will need to buy the USB 1.0 compliant cable.

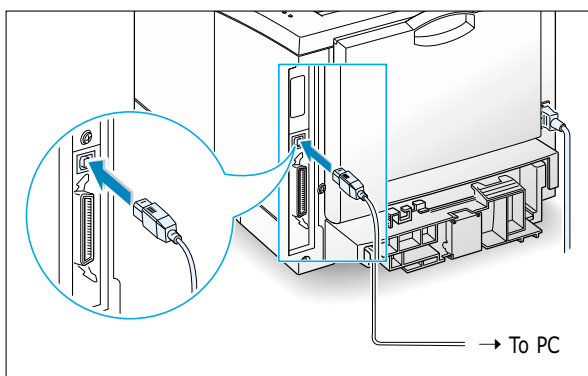


1. Install PCL driver

To operate your printer with Windows PC, you must install the PCL printer driver. Place the CD-ROM in the CD-ROM drive and perform the instructions on page 2.10.

2. Connect printer with USB cable and install USB driver

- 1 Make sure that both the printer and computer are turned **ON**.
- 2 Plug one end of the USB cable into the USB port on the printer.



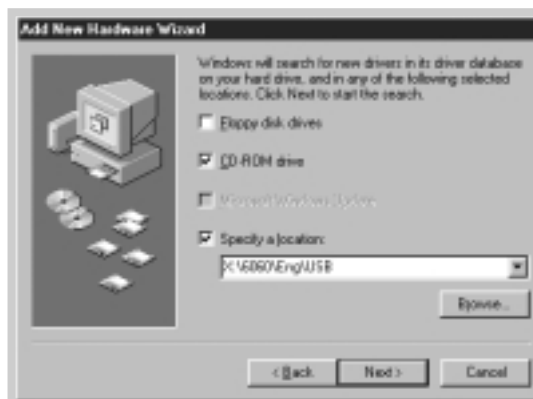
- 3 Plug the other end into the USB port on the computer.
- 4 The Add New Hardware Wizard dialog box appears. Click **Next**.



- 5 Check **Search for the best driver for your device** and click **Next**.



- 6 Check **CD-ROM drive** and click **Browse**, then choose **x:\1650\Eng** (or the desired language code, see page D.2.)\USB (where **x** is the drive letter for the CD-ROM drive).



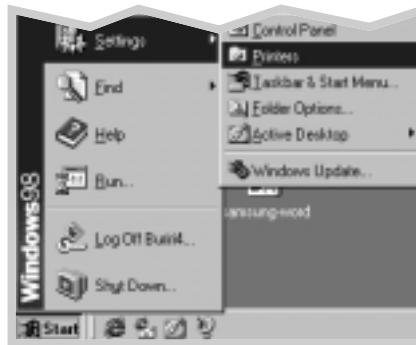
- 7 Click **Next**. The USB driver will be installed.



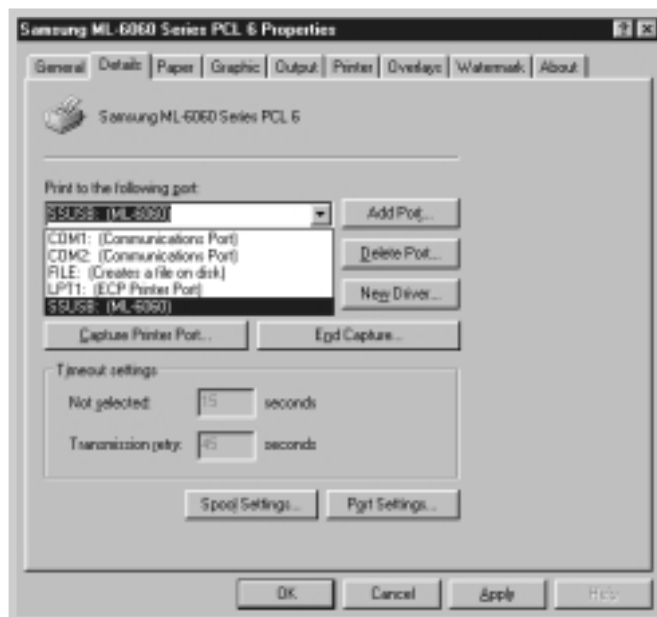
- 8 Follow the instructions on the screen to complete the installation.

3. Set your PC printer port

- 1 From the **Start** menu, select **Settings**, then select **Printers**.



- 2 Select the **ML-1650 Series PCL 6** printer icon in the **Printers** folder.
- 3 Select **Properties** from the **File** menu.
- 4 Click the **Details** tab. Select **SSUSB: (ML-1650)** in the **Print to the following port** box. Click **OK**. The setup is now completed.



Frequently Asked Questions About USB

What is USB?

A

Universal Serial Bus (USB) makes it easy to connect devices to your computer without having to open your PC. USB uses a standard port and plug combination for connecting devices like printers, modems, scanners, and digital cameras. It also offers the benefit of being able to easily add, remove, and move devices.

Because USB is a relatively new technology, we recommended using a parallel printing connection. However, USB is an option to customers who want to print from Windows 98, Macintosh using a USB cable. If your computer's USB port is enabled and properly setup, you can connect your printer to it or to a chain of USB devices via a USB cable.

How can I determine if my computer's USB port is enabled?

A

- 1 In Windows 98, select **Start** → **Settings** → **Control Panel**.
- 2 Double-click the **System** icon.
- 3 Click the **Device Manager** tab.
- 4 Click the plus (+) icon before the **Universal Serial Bus Controller** item.

If you see a USB host controller and a USB root hub listed, USB is properly enabled. If you have multiple hubs on the USB chain, try connecting your printer to a different hub or to another USB device. Also, make sure the cable connections are firm. (USB hubs are hardware devices into which you can plug multiple USB cables.)

If you do not see these devices listed, refer to your computer's documentation or contact the manufacturer for more information on enabling and setting up USB. Remember, you can always use a parallel cable to connect your printer's parallel port to your computer. (If you decide to switch to a parallel cable connection, you may need to remove and reinstall the printer software.)

Q Can other users on my USB chain print to my ML-1650 series printer?

A Yes. Windows 98 allows you to “share” your printer using software settings on your computer. After others on the USB chain have installed the printer software for your specific printer, they can print to your shared printer.

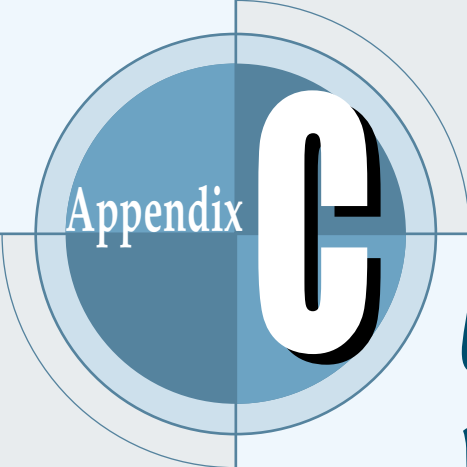
Q After I install my printer, why isn't my ML-1650 series printer assigned to an LPT printer port in the Print dialog box of my software application?

A USB uses a different naming convention for USB devices. After the printer has been installed, you see **SSUSB:(your printer name)** instead of **LPT**.

B

Q How can I increase printing speed and quality?

A When operated on a USB chain, your printer may become slower if other USB devices are being used while you're printing. For optimal print performance, avoid using other devices in the USB chain while printing.

A graphic on the left side of the page. It consists of a large, light blue circle with a darker blue center. The word "Appendix" is written in white serif font in the upper left of the circle. A large, white, stylized letter "E" is positioned in the center of the circle, with a blue shadow effect.

Appendix

E

Using Your Printer with a Macintosh

Your printer supports Macintosh systems with a built-in USB interface or 10/100 Base-TX network interface card. When you print a file from Macintosh, you can use the PCL driver to support your printer's major printing features. You can also use PostScript driver by installing the PPD file.

Topics included in this appendix are:

- ◆ Macintosh Installation
- ◆ Using PCL Driver
- ◆ Using PS Driver

Macintosh Installation

System Requirements

To use your ML-1650 Series printer and its software with a Macintosh, your system should have:

Macintosh Hardware Requirement

- One of the following Macintosh models:
 - Power Macintosh series (for network connection only)
 - Power Macintosh G3, G4
 - iMac series
 - iBook series
- USB interface or network interface (for network connection only)

Macintosh System Requirement

- For network connection: System 7.6 or later
- For USB connection: System 8.6 or later

Printer Hardware Requirement

- PS DIMM (for PS driver user only.)
- Network interface (for network connection only.)



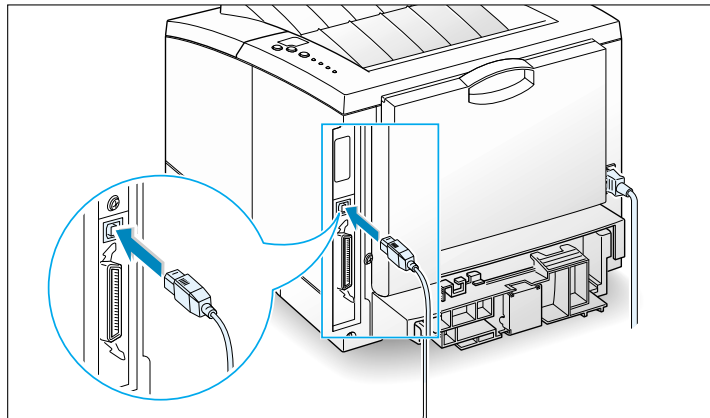
Connecting To Macintosh

You can connect the printer to your Macintosh using the USB interface or network interface.

USB Connection

USB cable is not provided in your printer. Purchase a certified USB 1.0 compliant cable.

- 1 Turn off the printer and computer.
- 2 Hold the USB cable so the  icon faces up and connect it to your printer's USB connector.



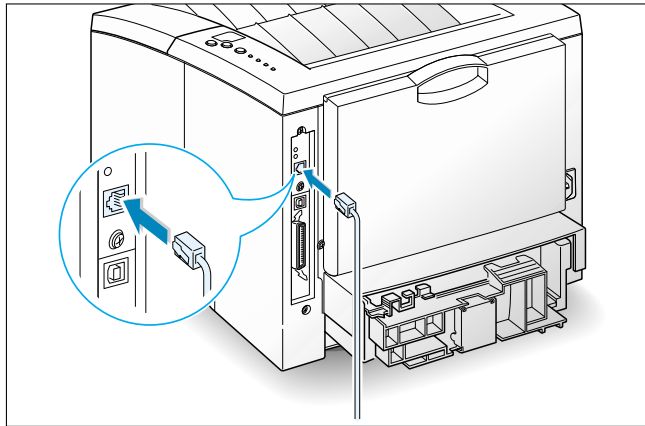
- 3 Connect the other end of the cable to an available USB port on your Macintosh computer. If you have any connecting problems, please refer to your computer documentation.

Note: If you are using a USB hub, connect the printer's cable to the first tier of the hub or the printer may malfunction. If the printer doesn't work with the hub, connect it directly to the USB port.

Network Connection

If you have a printer with 10/100Base-TX network interface card installed, you can connect to an Ethernet network. Use a Category 5 twisted pair cable with RJ-45 connectors for 10/100Base-T Ethernet.

- 1 Plug one end of the network cable into the twisted-pair connector on the back of the printer.



- 2 Connect the other end to the network hub.

Note: You must configure your printer for the network. For information about configuring your printer, refer to the Network User's Guide.



Installing Software for Macintosh

- 1 Turn on your computer and printer.
- 2 Insert the CD-ROM which came with your printer into the CD-ROM drive.
- 3 Double-click **Samsung ML-1650** on your Macintosh desktop.
- 4 Select the correct language, then click **Continue**.
- 5 The Samsung Laser Printer Installer opens. Select installation type. The installer provides two options for software installation:
 - **Easy Install** (recommended method): This option loads PPD, installs PCL driver.
 - **Custom Install** : This option allows you to choose which components will be installed. If you want to use the PCL driver, you must install it. If you want to use PostScript driver, you must install the PPD file.
- 6 Click **Install**.
- 7 After installation is complete, click **Quit**.

Using PCL Driver

If you want to use your printer's PCL driver on your Macintosh computer, take the following steps:

Choosing PCL Driver

- 1 From the **Apple** menu, select **Chooser**.
- 2 From the left pane of the Chooser window, click **SAMSUNG PCL**. Then the Samsung PCL driver name will appear in the right pane of the Chooser window.
- 3 Click the Samsung PCL driver, and close the Chooser window.
- 4 You see the message box indicating that you have changed your current printer. Click **OK**.
- 5 A Samsung PCL printer icon will be created on your desktop.

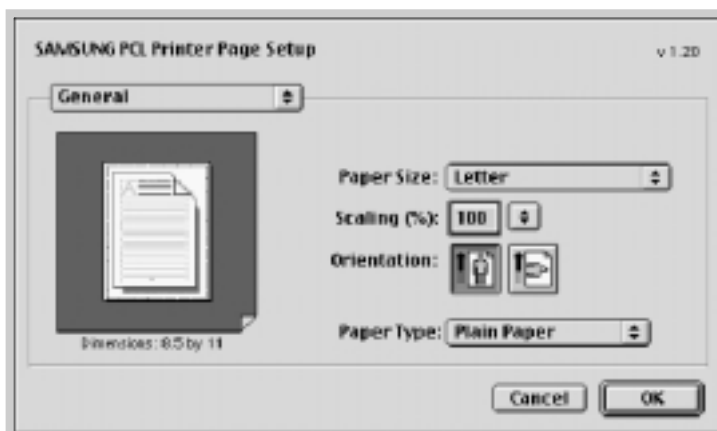
Printing from a Macintosh



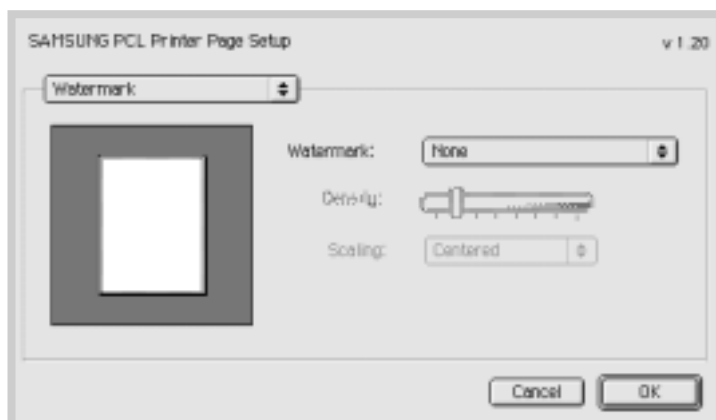
When you print with a Macintosh, you need to check the printer software setting in each application you use. Follow these steps to print from a Macintosh:

- 1 Open a Macintosh application and select a file you want to print.
- 2 Open the **File** menu, and click **Page Setup (Document Setup)** in some applications). You will see the Page Setup dialog box.

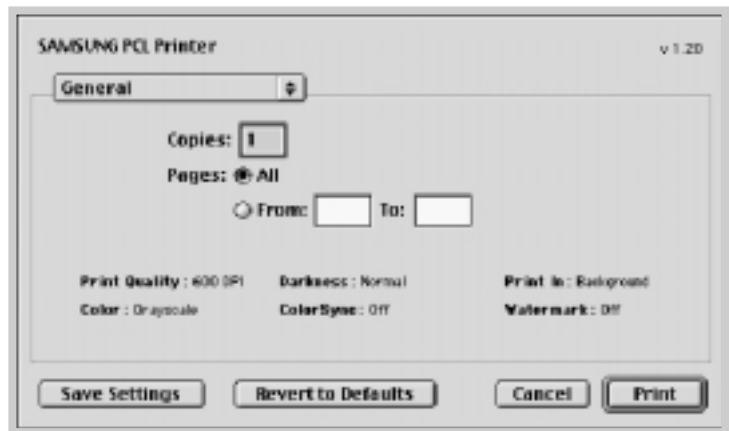
- 3 Choose your paper size, orientation, paper type and other options and click **OK**.



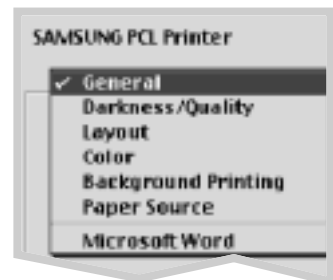
Choose **Watermark** if you want to add a watermark to each page in your document to emphasize its purpose or indicate how it should be handled. For details on the watermark option, see page 5.21.



- 4 Now open the **File** menu and click **Print**. You see the main printer settings dialog box.
- 5 Choose the number of copies and indicate which pages you want to print. For advanced printing features, select the desired option. For details, see page C.8.



Select the desired option for advanced printing features.



- 6 Click **Print** when you are finished checking your settings.

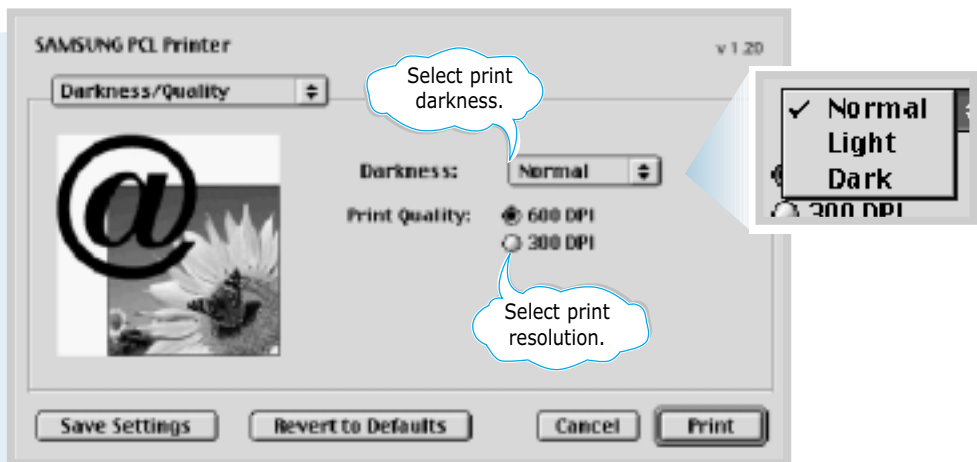
Advanced Printing

The Page Setup dialog box contains five categories of page setup properties. Listed below is the name of each property.

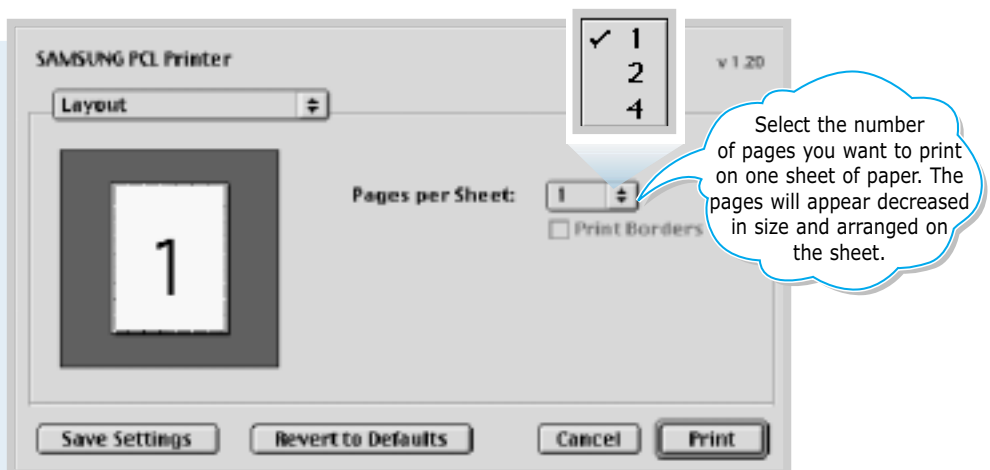
- Darkness/Quality
- Layout
- Color
- Background Printing
- Paper Source

Figures below display each property in the Page Setup dialog box.

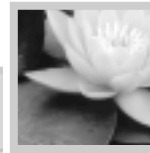
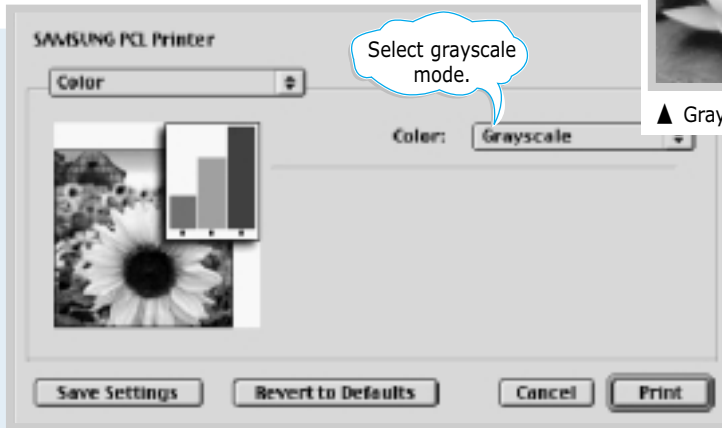
Darkness/Quality



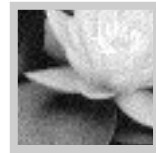
Layout



Color

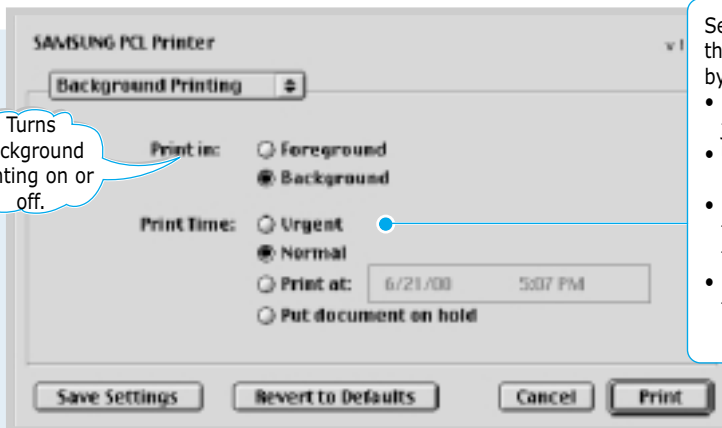


▲ Grayscale



▲ Black&White

Background Printing

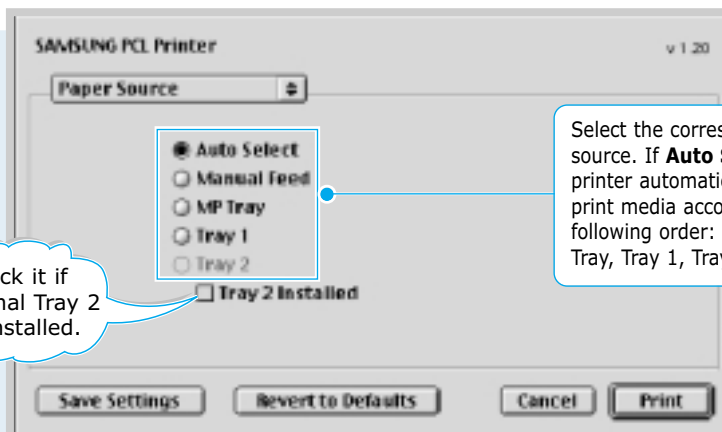


Select a priority for your print job in the queue of jobs waiting to print, by clicking one of the following:

- **Normal** to print in the order the job is received.
- **Urgent** to print before any Normal priority job.
- **Print at:** to print at the specific time you enter in the day and time in the fields to the right.
- **Put document on hold** to hold the print job in the print queue until you are ready to release it.



Paper Source



Select the corresponding paper source. If **Auto Select** is set, the printer automatically selects the print media according to the following order: Multi-Purpose Tray, Tray 1, Tray 2 (option).

Using PS Driver

If you want to use the PS driver which were installed on your Macintosh computer, you must install the PPD file to access your printer features and allow the computer to communicate with your printer.

PPD file installation method is different for USB connection and the network connection.

Installing PPD file on the USB-connected Macintosh

- 1 Follow the instruction as described on page C.4 to install the PPD file on your computer.
- 2 Open the **Macintosh HD** and double-click **Apple Extras**.
- 3 Double-click **Apple LaserWriter Software**.
- 4 Double-click **Desktop Printer Utility**.
- 5 Select **LaserWriter 8**, and select **Printer (USB)** in the list box. Then click **OK**.
- 6 Click the **Change** button in the USB Printer Selection section. The name of your printer appears in the list.
- 7 Click **ML-1650**, then click **OK**.
- 8 Click the **Auto Setup** button in the PostScript Printer Description (PPD) File section.
If Auto Setup does not work properly, click **Select PPD** and choose **Samsung ML-1650 Series**.
- 9 When the setup is completed, click the **Create** button.
- 10 Click the **Save** button to save ML-1650 as a desktop printer.

Installing PPD file on the network-connected Macintosh

- 1 Follow the instruction as described on page C.4 to install the PPD file on your computer.
- 2 From the **Apple** menu, select **Chooser**.
- 3 Click **LaserWriter 8** (the PostScript driver provided with your Macintosh). The name of your printer appears in the list. Select **SEC000xxxxxxxxxx** from the printer box (where the **xxxxxxxxxx** varies depending on each of the products.).
- 4 When the setup is completed, you see your printer icon is created as a desktop printer.
If Auto Setup does not work properly, click **Select PPD**

Printing from a Macintosh

Follow these steps to print from a Macintosh:

- 1 Open a Macintosh application and select a file you want to print.
- 2 Open the **File** menu, and click **Print**. You see the main printer settings dialog box.
- 3 Choose the number of copies and indicate which pages you want to print. For advanced printing features, select the desired option.
- 4 Click **Print** when you are finished checking your settings.



Appendix

D

Printing from DOS Applications

While your printer is primarily a Windows printer, you can also print from a DOS software program using the Remote Control Panel utility provided in the ML-1650 series CD-ROM.

Topics included in this Appendix are:

- ◆ About Remote Control Panel for DOS
- ◆ Installing the Remote Control Panel for DOS Users
- ◆ Selecting Print Settings

About Remote Control Panel for DOS

DOS users have access to many printer features through specific DOS printer drivers; however, many software manufacturers do not develop printer drivers for their software programs. The Samsung ML-1650 series printer provides the DOS software control panel for improved printer control when DOS printer drivers are not available or when certain print settings are not available through DOS software programs.

Notes:

- **ML-1650 series printer's Remote Control Panel for DOS can be used when the printer is connected via the parallel interface.**
- **The ML-1650 series printer's Remote Control Panel is not a printer driver. It should be used to set print settings that are not available through DOS software programs. Printer drivers are supplied by the manufacturers of your DOS software programs. If your DOS software program does not include a printer driver for your Samsung printer, contact the manufacturer of the software program or use one of the alternate printer drivers.**

Installing the Remote Control Panel for DOS Users

The Remote Control Panel utility is provided on the printer software CD-ROM. If you do not have a CD-ROM drive, refer to Appendix G, "Installing Software from Diskette" for information on obtaining printer software on diskettes.

To install the DOS Remote Control Panel:

- 1 Insert the printer software CD-ROM or RCP diskette in your computer's drive.
- 2 At the DOS prompt, make a directory that you want to use the DOS software and change to that directory.
- 3 From the floppy drive, type:
COPY x:*.* (where **x** is the floppy drive designator)

From the CD-ROM drive, type:

COPY x:\1650\xxx\RCP*.* (where **x** is the CD-ROM drive designator and **xxx** is the designator for your language. See the list on the left for the designator for each language).

Then press **Enter**.

Language Codes

Code	Language
DEU	German
ENG	English
ESN	Spanish
FRN	French
ITA	Italian
KOR	Korean

Selecting Print Settings

When you are running DOS, you can use this Remote Control Panel to select print settings that may not be available from some DOS programs. Typically, duplicate print settings that are selected from a DOS software program override print settings selected in the ML-1650 Series Remote Control Panel.

Note: After you change the RCP settings, you must send it to the printer by pressing **Send** on the RCP screen.

To access the Remote Control Panel

- 1 Make sure that the Remote Control Panel is in your path statement. You can check your path by typing **PATH** and pressing **Enter**. If the Remote Control Panel directory is not in your path, you will have to change to the default directory **C:\DOSUTIL** to start the program.
- 2 At the DOS prompt, type **DOSRCP** and press **Enter**.

After the Remote Control Panel appears, you can activate its selections in one of two ways:

- With the mouse – Move the mouse to position the pointer on the desired selection, then click the left mouse button.
- With the keyboard – Press the key that corresponds to the highlighted letter in the selection name.

The Remote Control Panel allows you to access the following features:

PRINTING

- **Paper Size** sets the paper size.
- **Paper Source** sets the default paper source.
- **Copies** sets the number of copies printed for each page.
- **Orientation** determines how the output is printed on the page.
- **Top Margin** sets the top margin of the print material.
- **Left Margin** sets the left margin of the print material.
- **Auto CR** sets how the printer performs a carriage return.
- **Quality** determines the print resolution.

CONFIG

- **Power Save** determines the length of time the printer waits after a job is printed before it goes to a reduced power state. If the printer is used frequently, select **OFF** which keeps the printer ready to print with the minimum warm-up time. This uses more electricity to keep the printer warm and ready to print.
- **Econo Mode** determines the toner quantity the printer should use when printing. If set to **ON**, the printer conserves toner when printing. The default value is **OFF**, which provides 100% usage.
- **Auto Continue** determines what action the printer should take when a manual feed print job is sent to the printer and there is no paper in the Multi-Purpose Tray. If set to **ON**, the printer will pick up the paper from the standard Tray 1 or optional Tray 2 after fifteen seconds. Otherwise, the printer will wait for you to load paper in the Multi-Purpose Tray.
- **Jam Recovery** determines what action the printer should take when a paper jam occurs. When set to **OFF**, the printer does not reprint a page that has jammed. When set to **ON**, the printer keeps the image in memory for a printed page until the printer signals that the page has successfully printed. The printer reprints all jammed pages.

JOB

- **Timeout** determines the amount of time (in seconds) the printer will wait before printing the last page of a print job that does not end with a command to print the page or a formfeed character. Valid range is 0 to 300 seconds.
- **Paper Type** provides the printer with information about the type of paper to be used for a print job. For the best result, set this to the paper type you loaded in the paper tray in the printer. When using the plain paper, set this to **Default**.
- **SRT Mode** makes the printer optimize the print quality to 1200 dpi image quality.

TEST

- **Configuration Page** prints the configuration sheet. A list of the user default settings, the installed options, and the amount of printer memory available prints.
- **Demonstration Page** prints the demonstration page. It shows the printer features and specifications.

PCL5e

- **Typeface** allows you to select the desired typeface. This setting is ignored when the software application specifies a font.
- **Symbol Set** determines the symbol set. A symbol set is a set of alphabetic and numeric characters, punctuation, and special symbols used when printing with a selected font.
- **Pitch** sets the font pitch (only if you have selected a scalable monospaced font). Pitch refers to the number of fixed-space characters in a horizontal inch of type.
- **Lines Per Page** sets the number of lines that print on each page. The setting can range from 5 to 128 lines per page.
- **Point Size** sets the font point size (only if you have selected a scalable typographic font). Point size refers to the height of the characters in the font. One point equals approximately 1/72 of an inch. You can select point sizes from 4.0 to 999.75 in increments of 0.25 points.
- **Courier** determines the courier font type: Regular or Dark.
- **Font List** prints the font list showing all the fonts available for PCL emulation.

PS3

- **Font List** prints the font list showing all the fonts available for PostScript (only available when the PostScript option is installed).
- **PS Error** determines what action the printer should take when an error occurs in PS interpreter. When set to **OFF**, the printer does not print error information when error occurs in PS interpreter. When set to **ON**, the printer prints error information when error occurs in PS interpreter.

Appendix

E

Using Windows PostScript Driver

If you want to use the PostScript driver provided with your system CD-ROM or diskettes to print a document, use the information on this Appendix.

Topics included in this Appendix are:

- ◆ Setting Up Your Printer with PS Option
- ◆ Installing PPD Files
- ◆ Accessing the PS Printer Driver Features

Setting Your Printer with the PS Option

If you want to use the PostScript driver to print a document, your printer should have:

- PS DIMM

For instructions on installing the printer options, see Appendix H, "Printer Options."

Installing PPD Files

PPDs, in combination with the PostScript driver, access the printer features and allow the computer to communicate with the printer. An installation program for the PPDs is provided on the ML-1650 CD-ROM.

Notes:

- Installing the PostScript printer driver may require the use of the operating system files on the original CD-ROM or diskette that came with your system.
- If you have a PostScript 3 driver and want to use it, you must install the PostScript 3 PPD which is also provided on the ML-1650 series CD-ROM.

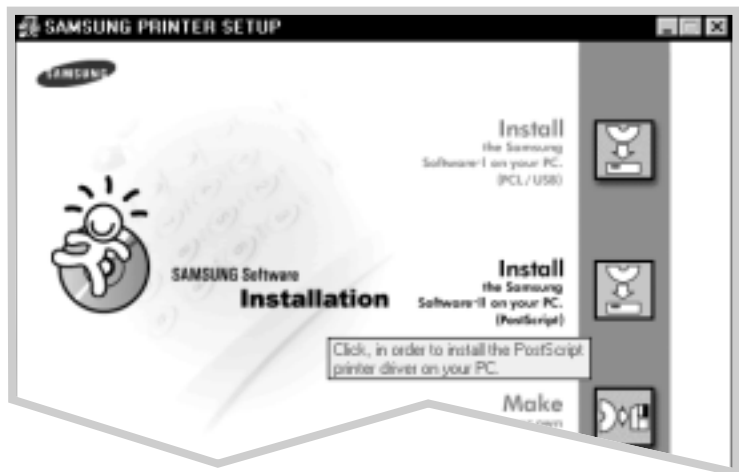
- 1 Before installing PPD files, make sure that the printer and the PC are properly connected with parallel, USB, or optional network interface. For information on:
 - Connecting with parallel interface, see page 2.7.
 - Connecting with an USB interface, see Appendix B, "Using Your Printer with a USB Cable." To use the USB interface, you must also install the USB port driver.
 - Connecting with an optional network interface, see Appendix F, "Using Your Printer on a Network."

- 2 Insert the CD-ROM shipped with your printer into your CD-ROM drive.

If the CD-ROM drive does not automatically run:

Select **Run** from the **Start** menu, and type **x:\cdsetup.exe** in the Open box (where **x** is the drive letter for the CD-ROM drive), then click **OK**.

- 3 When the opening screen appears, select the appropriate language.
- 4 Click **Install the Samsung Software-II on your PC (PostScript)**.



- 5 Click on **HaveDisk**, click **Browse**, then choose:
 - for Windows 9x, **x:\Eng**(or the desired language code. See page D.2.)**\ps\Win95_98\level 2**
 - for Windows NT 4.0, **x:\Eng**(or the desired language code. See page D.2.)**\ps\WinNT\level 2**
 - for Windows 2000, **x:\Eng**(or the desired language code. See page D.2.)**\ps\Win2000**where **x** is the drive letter for the CD-ROM drive, then click **OK**.

- 6 Follow the instructions on the screen to complete the installation.

Accessing the PS Printer Driver Features

Certain printer features are not available in this PS driver. Refer to "Printer Driver Features" on page 2.12.

The printer automatically switches between PS and PCL printer languages depending on the driver you have selected.

Opening the Printer Properties Window

The properties window for the Windows PostScript printer driver can be opened from the Printers folder or an application.

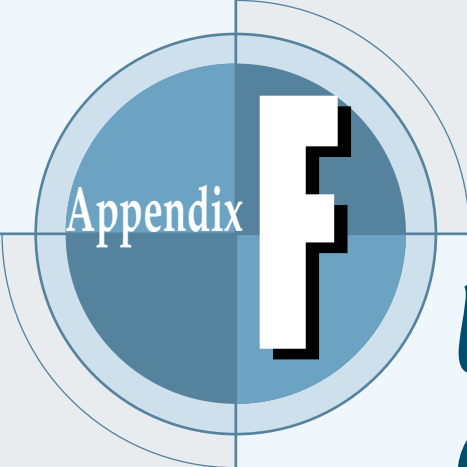
To open the properties window from the Printer folder:

1. Click the Windows **Start** button.
2. Select **Settings** then **Printers** to open the Printers window.
3. Select **Samsung ML-1650 Series PS**.
4. Click the right mouse button and select **Properties** to open the properties window.

To open the properties window from inside an application:

1. From the **File** menu, select **Print** to open the Print dialog box.
2. Make sure that **Samsung ML-1650 Series PS** is selected in the **Name** drop-down list.
3. Click **Properties** to open the properties window.



A graphic on the left side of the page. It features a large, stylized white letter 'F' with a black outline, set against a blue circular background. The word 'Appendix' is written in white text to the left of the 'F'. The entire graphic is partially enclosed by a light blue circular arc.

Appendix

F

Using Your Printer on Network

If you work in a networked environment, the printer can be shared by other users on the network.

This appendix provides information on the following topics:

- ◆ About sharing the Printer on a Network
- ◆ Setting Up a Locally Shared Printer
- ◆ Setting Up a Network-Connected Printer

About Sharing the Printer on a Network

If you work in a networked environment, you can connect the ML-1650 series printer to your network.

Locally Shared

You can connect the printer directly to a selected computer (called the "host computer") on the network. The printer can then be shared by other users on the network through a Windows 9x or NT 4.0 network printer connection.

Network-Connect

If an option network card was installed on your printer (see page H.5 for information on installing the option network card in your printer).

Printing Across a Network

Whether the printer is locally connected or network connected, you need to install the ML-1650 series printer software on each computer that will print documents to the ML-1650 series printer.

Setting Up a Locally Shared Printer

Setting Up Host Computer

- 1 Start Windows.
- 2 From the **Start** menu, select **Control Panel**, and double-click on the **Network** icon.
- 3 Check the **File and Print Sharing** box, then click **OK**. Close the window.
- 4 Click **Start** and select **Printers** from **Settings**, then double-click your printer name.
- 5 Select **Properties** in the **Printers** menu.
- 6 Click the **Sharing** tab, then check the **Shared As** box. Fill in the Shared Name field, then click **OK**.

Setting Up Client PC

- 1 Right-click **Start**, and select **Explorer**.
- 2 Open your network folder in the left column.
- 3 Right-click the shared name, and select **Capture Printer Port**.
- 4 Select the port you want, check the **Reconnect at log on** box, then click **OK**.
- 5 From the **Start** menu, select **Settings**, then **Printers**.
- 6 Double-click your printer icon.
- 7 From the **Printers** menu, select **Properties**.
- 8 Press the **Details** tab, select the printer port, then click **OK**.

Setting Up a Network-Connected Printer

To use ML-1650 series printer as a network printer, you must install an optional network card in your printer. See page H.5 for information on installing network card. After the network card is installed, you must set up your printer as a network printer using the documentation and Samsung SyncThru software provided with the network card.



Appendix

G

Installing Software from Diskettes

If you need to install the printer software on a system that does not have a CD-ROM drive, use the instruction on this appendix to create the software diskettes and install the printer software from the diskettes.

This appendix provides information on the following topics:

- ◆ Making Installation Diskettes
- ◆ Installing Software from Diskettes

Making Installation Diskettes

If you do not have a CD-ROM drive but you have access to another computer with a CD-ROM drive, you can copy software installation files from your printer software CD-ROM onto floppy diskettes, and then use the diskettes instead of the CD-ROM to install the software.

You can make installation diskettes for PCL6 printer driver, USB driver for Windows 98, PostScript Printer Description (PPD) file and Remote Control Panel utility independently. Make sure that you have several formatted diskettes ready, and then follow these steps:

- 1 Insert the CD-ROM shipped with your printer into the CD-ROM drive. Installation will start automatically.

If the CD-ROM drive does not automatically run:

Select **Run** from the **Start** menu, and type **x:\cdsetup.exe** in the Open box (where **x** is the drive letter for the CD-ROM drive), then click **OK**.

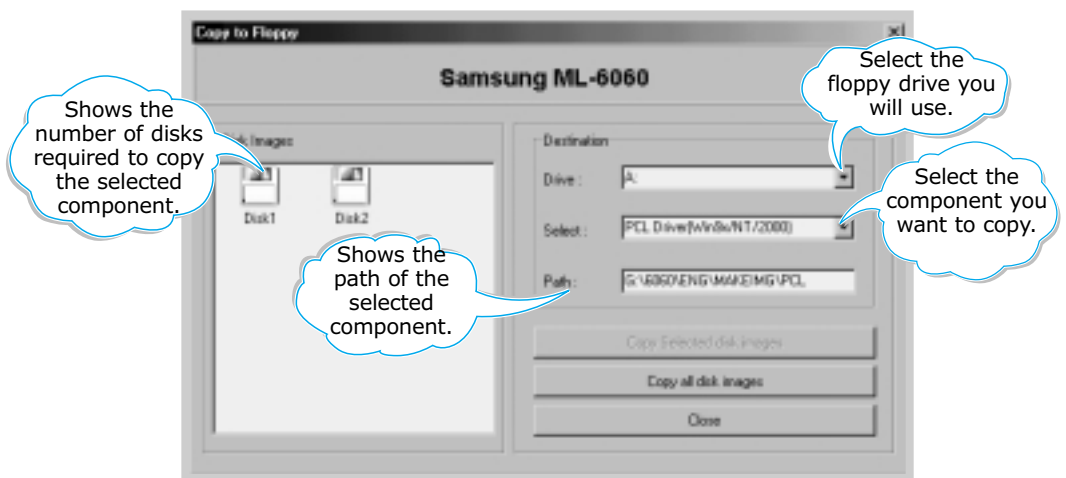
- 2 When the opening screen appears, select the appropriate language.
- 3 Click **Make your own Diskette set of software**.



4 The Copy to Floppy dialog box appears.

Select the desired components you want to copy to the diskette from the Select box. You can select PCL6 Printer Driver, PostScript Printer Description file, USB Port Driver and RCP.

Select the floppy disk drive you will use to insert the diskette.



5 Click **Copy all disk images**.

If you want to copy a portion of the selected component, select the disk you want to copy in the Disk Images window, then click **Copy selected disk image**.

6 When prompted, insert a blank, formatted diskette into the floppy drive, and click **Yes** to copy the first diskette. For multiple diskettes, when the first diskette is finished, you are prompted to insert disk 2.

Make sure you label each diskette in order of creation PCL printer driver, disk 1 of 3, etc.

- 7 If you have more than one disk, insert the next disk and click **Yes**. Repeat this step for a third disk if necessary.
- 8 When copying to diskettes has been completed, click **Close** in the Copy to Floppy dialog box. Then click **Exit** in the SAMSUNG PRINTER SETUP dialog box.

Installing Software from Diskettes

The instructions to install a PCL 6 printer driver, PPD file and RCP are same. Take the following steps:

- 1 Insert the first diskette (if you have more than are selected software diskette) which contains the desired installation software; PCL 6 printer driver, USB driver, PPD file or RCP.
- 2 From the **Start** menu, select **Run**.
- 3 Type **A:\setup.exe** in the Open box and click **OK**. (if your floppy drive is not **A**, substitute the correct letter.)
- 4 Follow the on-screen instruction to complete the installation.

Printer Options

Your printer is a full-featured laser printer that has been optimized to meet most of your printing needs. Recognizing that each user may have different requirements, however, Samsung makes several options available to enhance the printer's capabilities.

This appendix provides information on the following topics:

- ◆ Precautions
- ◆ Memory and PostScript DIMMs
- ◆ Network Interface Card
- ◆ Paper Tray 2

Precautions

DISCONNECT THE POWER CORD:

Never remove the printer control board while the printer is plugged in.

To avoid the possibility of electrical shock, always disconnect the power cord when installing or removing ANY internal or external printer option.

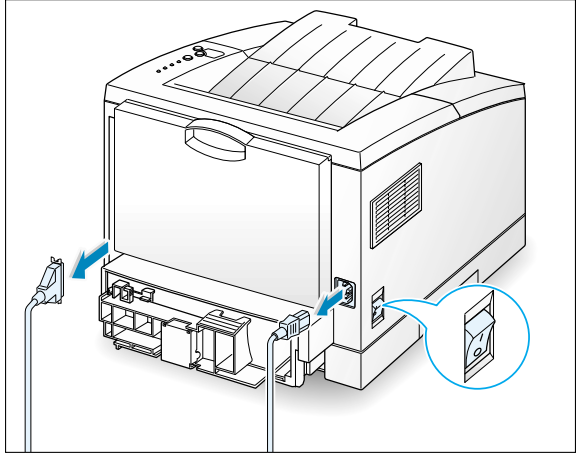
DISCHARGE STATIC ELECTRICITY:

The control board and internal printer options (Memory DIMM, PS DIMM, Network interface) are sensitive to static electricity. Before installing or removing an internal option, discharge static electricity from your body by touching something metal, such as the metal back plate on any device plugged into a grounded power source. If you walk round before finishing the installation, discharge any static electricity once again.

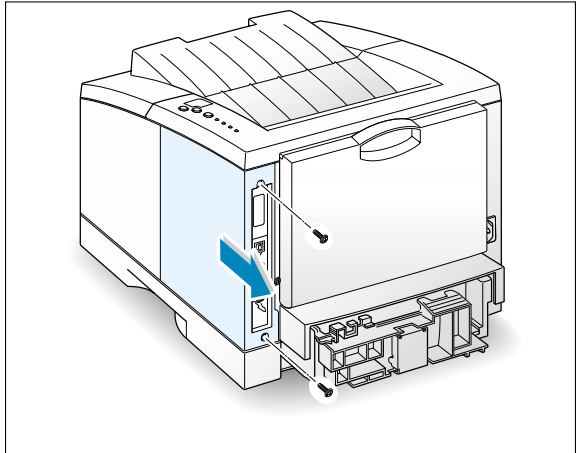
Memory and PostScript DIMMs

Additional printer memory and the PostScript option are provided on DIMMs (single in-line memory modules). This procedure is applicable to either option.

- 1 Turn the printer power off and unplug all cables from the printer.

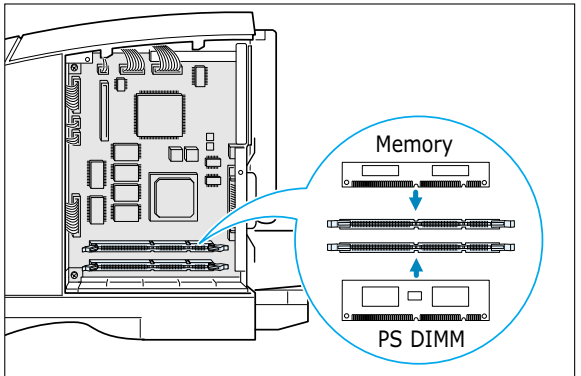


- 2 Remove the two screws on the rear of the printer, then remove the control board cover.

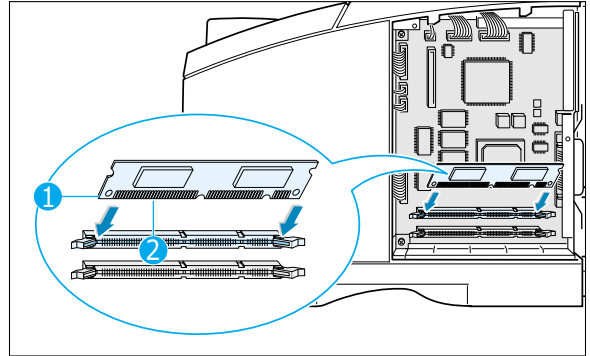


- 3 Locate the PS DIMM slot (the lower slot on the left as shown) and the memory DIMM slot (the upper slot) on the control board. They are not interchangeable.

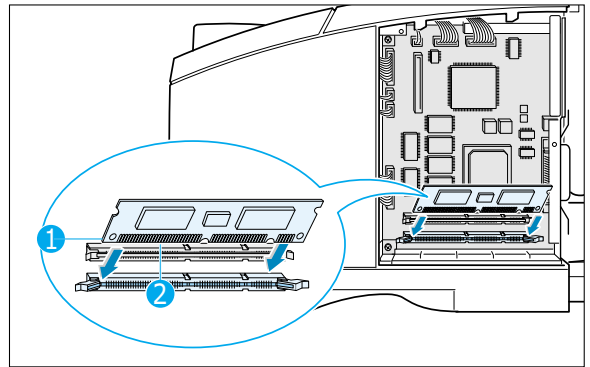
- To install the memory DIMM, continue with Step 4.
- To install the PS DIMM, go to Step 5.



- 4 Hold the memory DIMM so that the notch ❶ and the connection point ❷ are aligned with the slot as shown, and insert the DIMM all the way into the upper slot labeled **DRAM MODULE** at a 90(Straight) degrees angle.



- 5 Hold the PS DIMM so that the notch ❶ and the connection point ❷ are aligned with the slot as shown, and insert the DIMM all the way into the lower slot labeled **FLASH-ROM MODULE** at a 90(Straight) degrees angle.



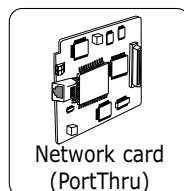
- 6 Reconnect the power cord and turn the printer on.

Note: For PostScript driver installation and usage information on a Macintosh system, refer to Appendix C, “Using Your Printer with a Macintosh.” For PS printing on a Windows system, refer to Appendix E, “Using Windows PostScript Driver.”

Network Interface Card

Review the precautions on page H.1 and then follow this procedure to install the Network card option in your printer.

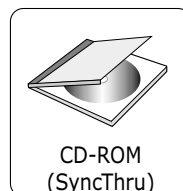
1. Unpack the network printer card. You should find the following items.



Network card
(PortThru)



User's guide



CD-ROM
(SyncThru)



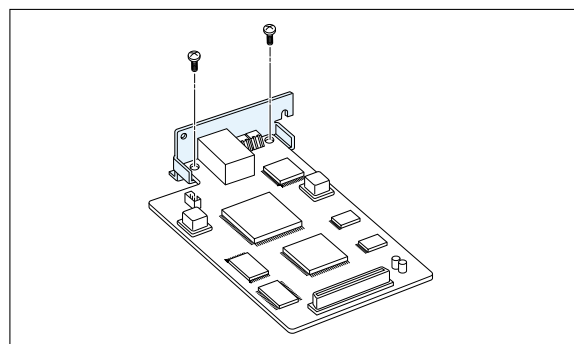
Brackets



Screws

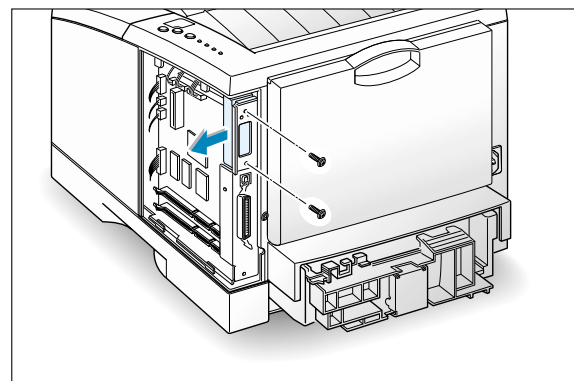
2. Two brackets come with the network card. Select the long bracket and attach it to the network card with two screws provided.

3. Turn the printer power off and unplug all cables from the printer.

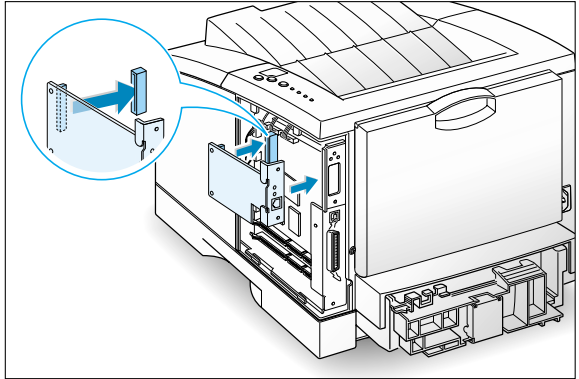


4. Remove the two screws on the back of the printer, then remove the control board cover. See the figure on page H.2.

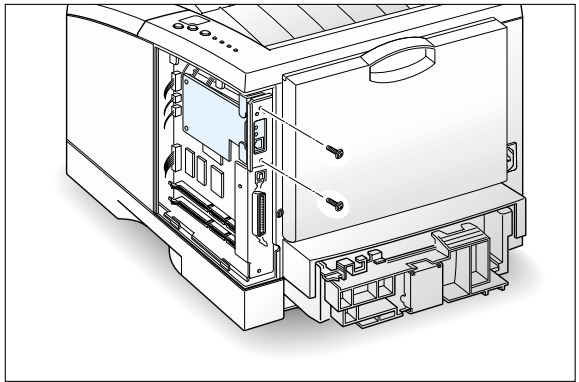
5. Remove the two screws, then remove the plate.



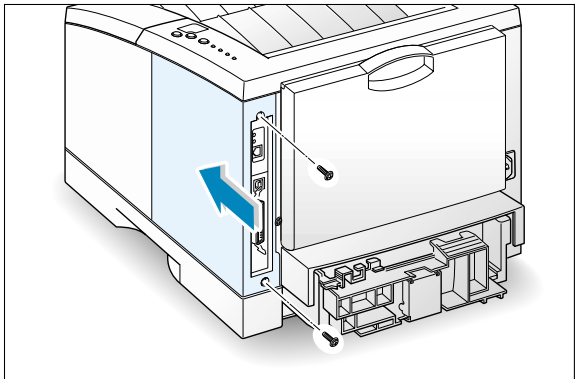
- 6 Align the connector on the network card with the connector on the control board. Push the card firmly into the connector until it is completely inserted in place.



- 7 Tighten the two screws as shown.



- 8 Tighten the two screws, then replace the plate.



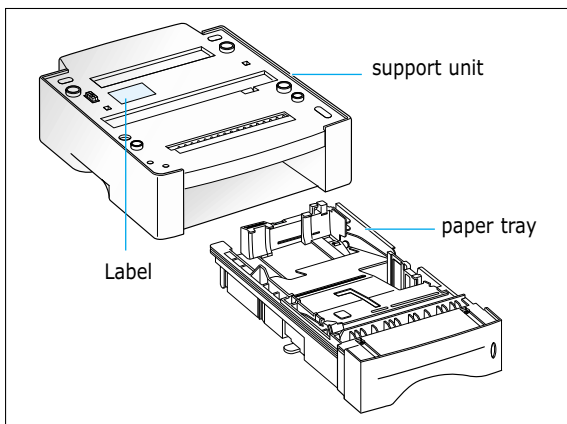
- 9 Reconnect the power cord and printer cable, then turn the printer on.

Note: For information on configuring and using the printer on a network environment, refer to the documentation provided with the network card option.

Paper Tray 2

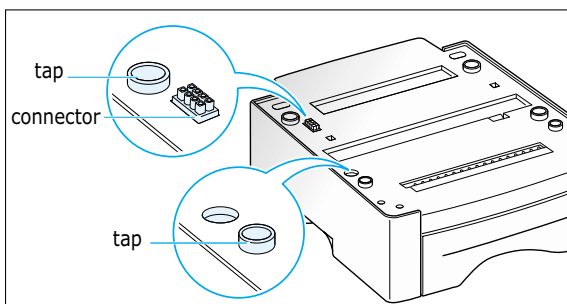
You can increase the paper handling capacity of your printer by installing the optional Tray 2. The optional paper tray consists of two components; the **support unit** and **paper tray**.

Note: Be sure you check the label before using the optional Tray 2. (For use with ML-1650 Series only)

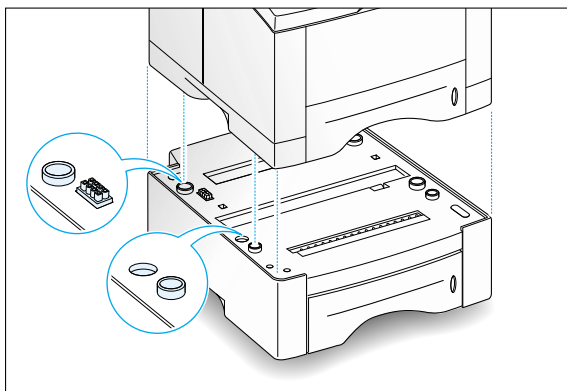


1 Turn off the printer and unplug all cables from the printer.

2 Observe the location of the support unit's connector and tabs.



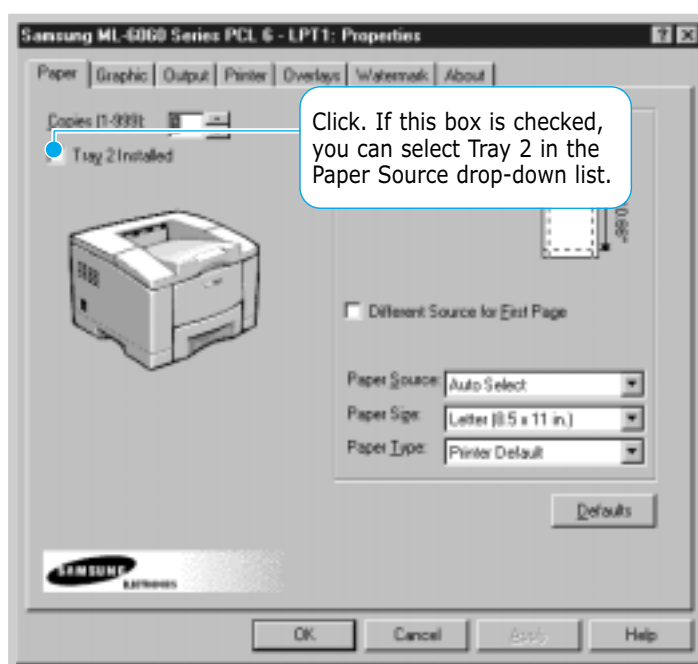
3 Align the printer with the support unit and lower it into place on the tabs and connector.

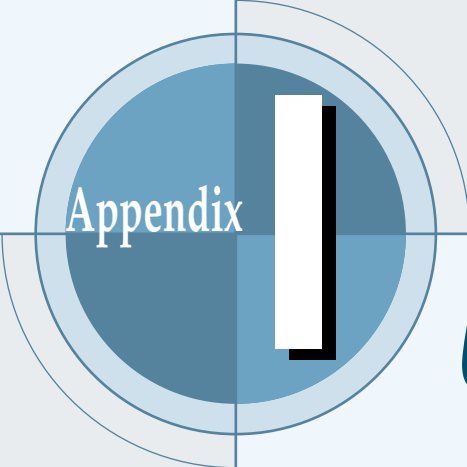


4 Load paper in Tray 2. For information on loading paper in the tray, see page 2.4.

- 5 Reconnect the cables, then turn the printer on.

Note: To print from Tray 2, you must configure the printer driver from your application prior to printing. To access the printer driver, see page 5.2.



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Appendix

Using Your Printer in Linux

You can use Samsung ML-1650 Series printer in Linux environment.

This appendix provides information on the following topic:

- ◆ Linux Driver Installation

Linux Driver Installation

This Linux driver is designed for the Samsung ML-1650 Series printer and supports Linux Red Hat 6.0 or higher and Intel Linux. If your Linux version is not included, this driver might not work properly.

- Install Setup Script file configuration
 - a. /cdrom/linux/install.sh
 - b. /cdrom/linux/ssprt.db
 - c. /cdrom/linux/readme.txt

Installation

To install the driver, open the x terminal screen and take the following steps:

1. Mount the CD-ROM drive.

Note: To mount the CD-ROM drive, you must be a super user or must be authorized to mount the CD-ROM by the super user. If you fail to mount the CD-ROM drive, ask the system administrator.

To mount the CD-ROM drive:

- 1 Insert the Samsung ML-1650 Series CD-ROM into the CD-ROM drive.
- 2 Mount the CD-ROM drive under a directory like **/mnt** in order to access the files on the CD-ROM:
>mount -t iso9660 /dev/cdrom /mnt/cdrom

2. Install setup script.

For details on installing the setup script, refer to the **/cdrom/linux/readme.txt** file.

Add the driver to the printer list by typing in:

/cdrom/linux>install.sh (or)
/cdrom/linux>./install.sh (if the path of the current working directory is not determined.)

3. Set up the printer filter.

To set up:

- 1 Run **printtool** at x terminal.
- 2 To add the printer driver, click the **Add** button.
- 3 In the Add a Printer Entry window, decide the printer type you will use. Select **Local Printer** if you have a PC-connected printer.
- 4 Click the **OK** button.
- 5 If the **Info** button appears, ignore it, then click the **OK** button.
- 6 The Edit xxxx Entry window opens (where xxxx is the printer type you have selected at step 3).

If you are not an advanced user, do not change the **Names/Spool Directory/File Limit in Kb/Printer Device** option.

- 7 Click the **Select** button in the **Input Filter** to access filter setup.
- 8 Select **Samsung Printer PCL5e Compatible** for the Printer Type item. Then select the default resolution and paper size.
- 9 To save the setting, press the **OK** button.
- 10 In the Edit xxxx Entry window, press the **OK** button to complete the printer driver installation.
- 11 You can find that the printer driver is added to the driver window. Select **Quit** from the **PrintTool** menu.



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