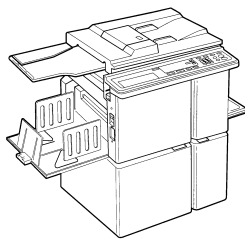# Controller User's Guide

Adobe PostScript® 3™

# Customer Service

## For a Printer Driver for your Digital Duplicator, contact:

The nearest authorized supplier for your digital duplicator.

## For Customer Support and Service, contact:

The nearest authorized supplier for your digital duplicator.

# Controller
# User's Guide

**Part Number – UG026AW0US**

**First Edition – January 1999**

## Notice

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## Printing History

This manual was created using text formatting software on personal computer. The body text is printed in *Times New Roman* fonts, and chapter and section heads are printed in *Arial* fonts.

**First Edition – January 1999**

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All references to PostScript on the screen or in this guide or manual are references either to the PostScript interpreter or to the PostScript Language.

## Conventions

This manual uses the following conventions:

**Bold** indicates emphasis or a minor heading
*Italic* refers to a document title or is used for emphasis.

COMPUTER type indicates text visible on a computer screen

The cursive *l* is used in examples to distinguish the letter **l** from the numeral **1** (one). The character Ø is used in examples to distinguish the numeral **0** from the letter **O**.

**Note**    Notes contain important information set off from the text. Special note headings, such as **Network Note**, indicate specific kinds of notes.

**Caution**    Caution messages appear before procedures which, if not observed, could result in loss of data or damage to equipment.

**Warning**    **Warning messages alert you to a specific procedure or practice which, if not followed correctly, could cause serious personal injury.**

# Table of Contents

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# 1

## Controller Features

### Introduction

This chapter provides an overview of the key features of your controller.

## Key Features

| Print Engine Performance Features | ❑ NEC Vr4300 MIPS RISC 100 MHz technology.<br>❑ Patented Adobe PostScript 3 compression and printing technology. |
|---|---|
| Formatter/Language/Typeface Features | ❑ Printer drivers included for the Microsoft Windows 95/98/NT4 and Apple MAC OS 7.6.1 (or higher) operating systems.<br>❑ Compatible with digital duplicators having a print resolution of 300 dpi, 400 dpi, or 600 dpi.<br>❑ PostScript 3 printer language compatible - 136 Adobe PostScript fonts built-in.<br>❑ PCL-5e printer language compatible - 45 scalable typefaces built-in<br>❑ 32 Mbytes standard memory.<br>❑ Two SIMM slots for up to 256 MByte industry standard memory. |
| User and Computer Interface Features | ❑ Configuration Utility software included for the Microsoft Windows 95/98/NT4 and Apple MAC OS 7.6.1 (or higher) operating systems.<br>❑ Three Types of Input Ports:<br>  ♦ Standard Bi-directional/ECP parallel port.<br>  ♦ LocalTalk port.<br>  ♦ 10BASE-T Ethernet LAN port<br>❑ Two computers and a LAN may be connected to and use the controller simultaneously. |

## System Requirements

□ An IBM-compatible PC with:
  · Microsoft Windows 95 w/IE4, Windows 98, or Windows NT4 w/SP3 operating system,
  · CDROM,
  · 15 MB of free hard drive space,
  · A parallel port (LPT1:) defined as ECP (bi-directional).

□ A controller-compatible digital duplicator (see Note below) with the appropriate video interface installed and working.

**Note**  Early models of the digital duplicators that do not have an ONLINE button on their control panel, or that have a printing resolution of 406 dpi, are not compatible with this controller.

# Controller

The following illustrations give the location and names of key parts of the controller:
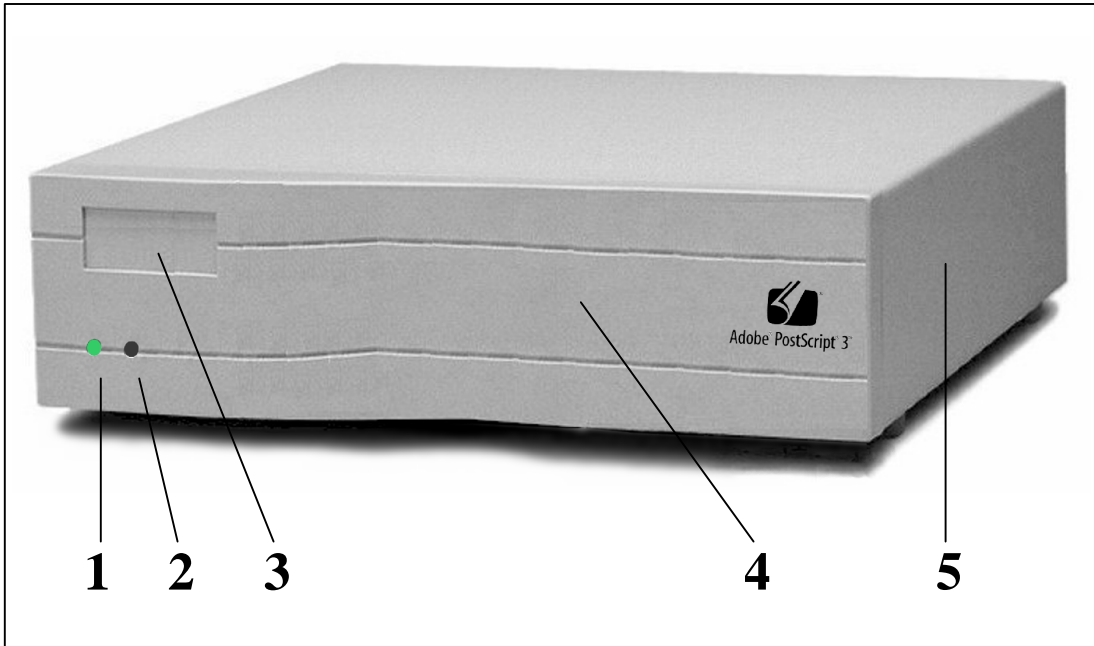


**Figure 1-1.4.  Controller (front and right side view)**

1. Left status light
2. Right status light
3. Brand nameplate
4. Front panel bezel
5. Side/top cover
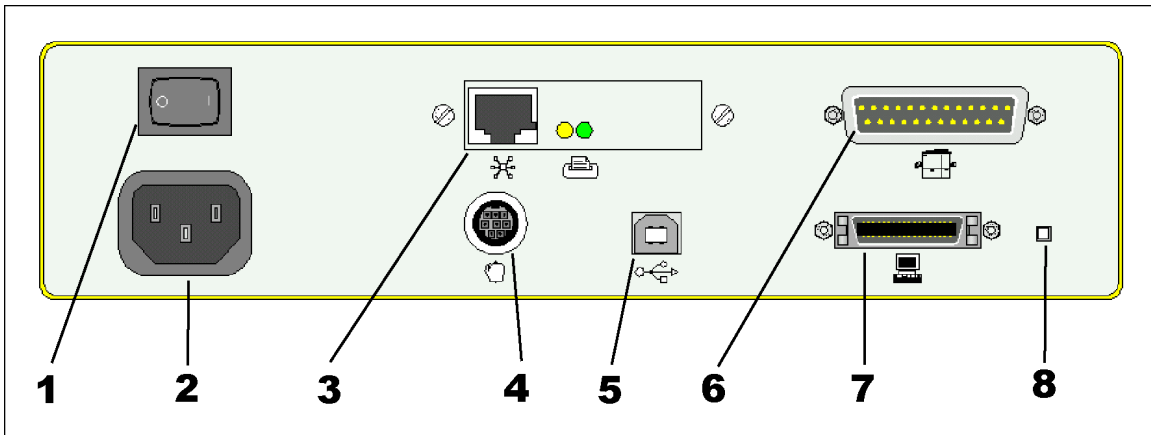
**Figure 1-1.5.  Controller (rear view)**

1. ON/OFF power switch
2. Power connector jack
3. 10BASE-T Ethernet LAN port
4. LocalTalk port (Apple Macintosh)
5. Not supported
6. Digital Duplicator port
7. Bi-directional parallel (ECP) port
8. Diagnostic Test Page button

# 2

## Using Your Controller

**Introduction**

This chapter provides instructions on how to setup and use your controller. It includes information about:

- ❑ Connection Components.
- ❑ Setting Up Your Controller.
  - · A step-by-step process.
  - · Required memory.
  - · Print resolution.
- ❑ Installing a Printer Driver.
- ❑ Changing Printer Drivers.
- ❑ Automatic I/O switching.
- ❑ Connecting to a Peer-to-Peer Ethernet Local Area Network.
- ❑ Managing Paper.
  - · Page size and orientation.
  - · Number of copies.
  - · Bleed-off printing.
- ❑ Shared Printer Environments.
  - · Using a switchbox.
  - · I/O port order.
  - · Optimizing multiple I/O port operation.
  - · Personality/language switching.
- ❑ Managing Print Jobs
  - · The Configuration Utility program.
  - · Starting the Utility.
  - · Canceling a print job.
  - · Optimizing operation in a shared printer environment.

**Caution**

*Proper Grounding:* Ensure that all interface cables and host computer(s) or other equipment attached to the controller follow proper grounding methods for electronic equipment in accordance with local electrical codes.

# Connection Components
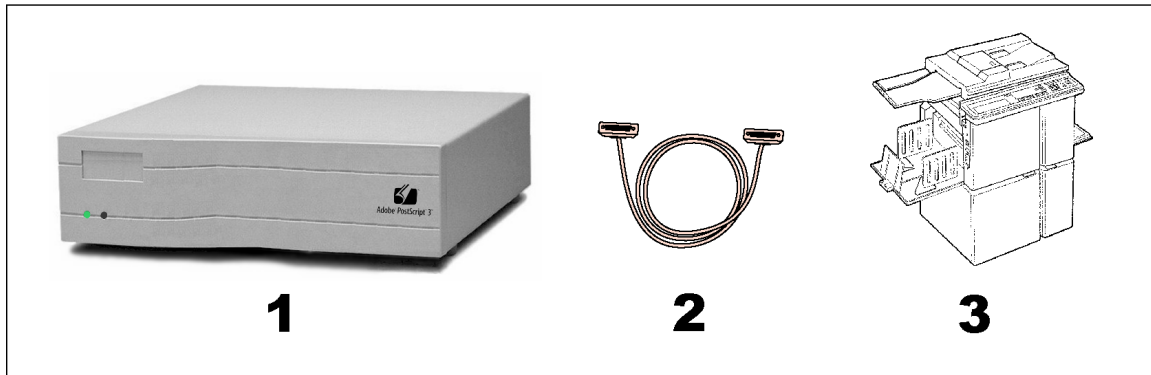


**Figure 2-2.1. Major Components**

The three major components are:

1) **Controller**. Several models are available which will work with your digital duplicator. Its function is to make the digital duplicator appear as a printer to a computer. As such, it provides one or more physical connection ports for a computer, formats the documents sent by a computer for printing on the digital duplicator, and houses built-in fonts.

2) **Cable** for the digital duplicator-to-controller connection. This cable is shipped with the controller and provides the communication path between controller and digital duplicator.

3) **Digital Duplicator**. Various models exist, each one unique in its characteristics and specifications. The function of the digital duplicator is to make the physical master and copies.

## Setting Up Your Controller

The process of setting up your controller is extremely easy and straightforward.

### A step-by-step Process

Follow the simple steps below to have your product printing documents in a very short time.

## Network Note

If you are in the process of installing the controller/ digital duplicator on your computer as a printer accessible though a local area network (LAN), and the controller and digital duplicator have been previously set up using the procedure outlined by the steps in this section, you may skip this section and proceed to the section in this chapter entitled *Installing a Printer Driver*.

If the controller/digital duplicator are to be used as a network printer, but have not been previously setup using the procedure outlined by the steps in this section, you must follow the steps outlined in this section first, then proceed with installation as a network printer.

## Caution

*Power OFF the digital duplicator* before proceeding with the setup steps that follow.

# Step 1

**Unpack the Controller**

There are five items (shown in Figure 2-3.1) contained in the controller shipping box.
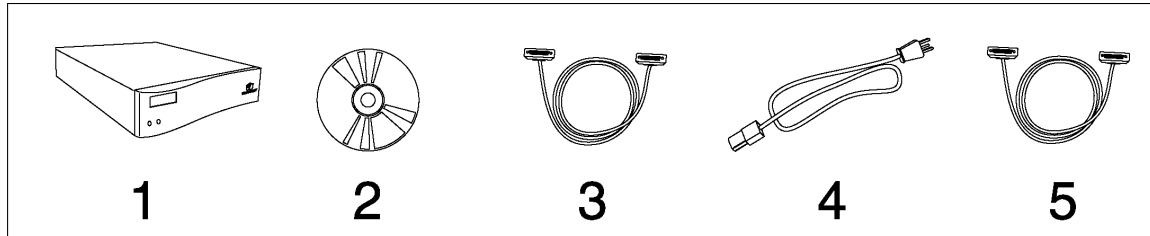


**Figure 2-3.1.  Items contained in the shipping box.**

1.  Digital duplicator controller.

2.  CDROM containing the Configuration Utility software, drivers, and controller documentation.

3.  Controller-to-digital duplicator communications cable - DB25M connector to DB25F connector.

4.  Power cord for the controller.

5.  Computer-to-controller communications cable - DB25M connector to IEEE 1284C Mini-Centronics connector.

Unpack all items and set on a table near the digital duplicator.

**Note**

The shipping container for the controller is designed specifically to protect the controller and other components from being damaged during shipment. We recommend that you store the box in a safe place, from where it may be retrieved and used should you need to return the controller for service.

# Step 2

**Locate a Place to
Keep the Controller**

The controller must be set up within 6 feet (2 meters)
of the digital duplicator.  This is the length of the
cable between the two units.
The controller may be mounted in any position or
direction.  The only constraints are:

1)  Leave a minimum or 4 inches (100 mm) between
    the back panel, left and right side panels and any
    other object for proper ventilation,

2)  If possible, mount the controller in a position
    where the computer operator may clearly see the
    front panel status lights.
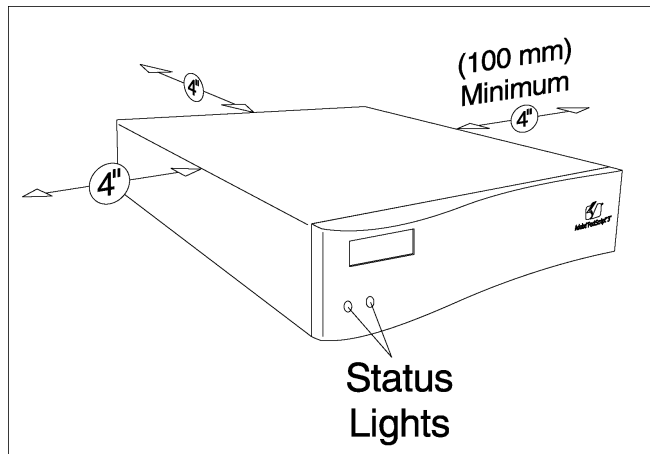


**Figure 2-3.2.1.  Controller Ventilation
Requirements**

# Step 3

**Connect the Digital Duplicator to the Controller**

Use the cable supplied with the controller to connect the controller's digital duplicator port to the controller port on the digital duplicator.
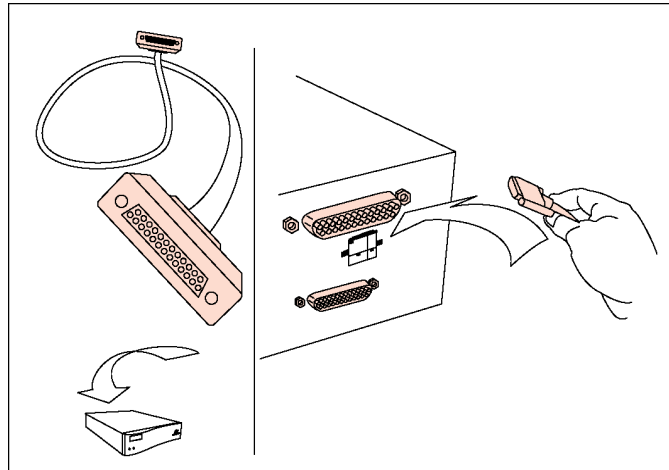


**Figure 2-3.2.2.  Connecting the Controller to the Controller-Digital Duplicator Cable**
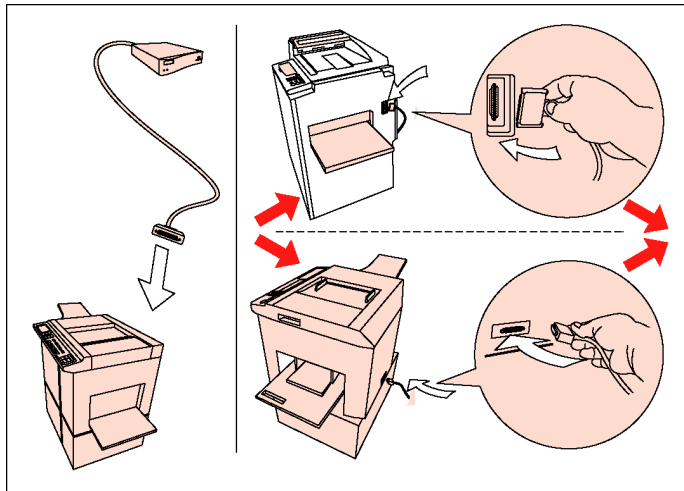
**Figure 2-3.2.3. Connecting the Digital Duplicator to the Controller-Digital Duplicator Cable**

Your digital duplicator will have one *or* the other of the following types of controller connections.

The vertical connection is typically located on the side of the digital duplicator.

The horizontal connection is typically located on the back of the digital duplicator.

# Step 4

## Connect Power to
## the Controller

Locate the power cord which came with the
controller, and attach it to the controller's power input
jack, and a local mains power socket (can be the same
supply as is used for the digital duplicator).
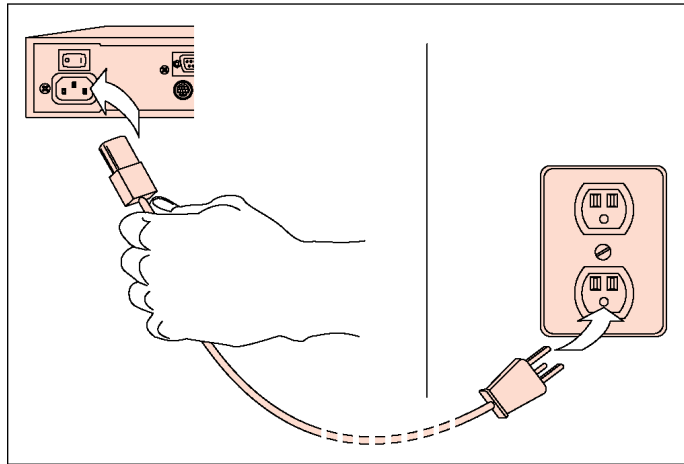


**Figure 2-3.3.1.  Connect Power to the
Controller**

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# Step 5

**Apply Power to the
Digital Duplicator**

Power ON the digital duplicator by locating the power switch and pushing it to the ON ("1") position. The switch is usually located in one or the other of the positions indicated by the drawings in Figure 2-3.3.2.
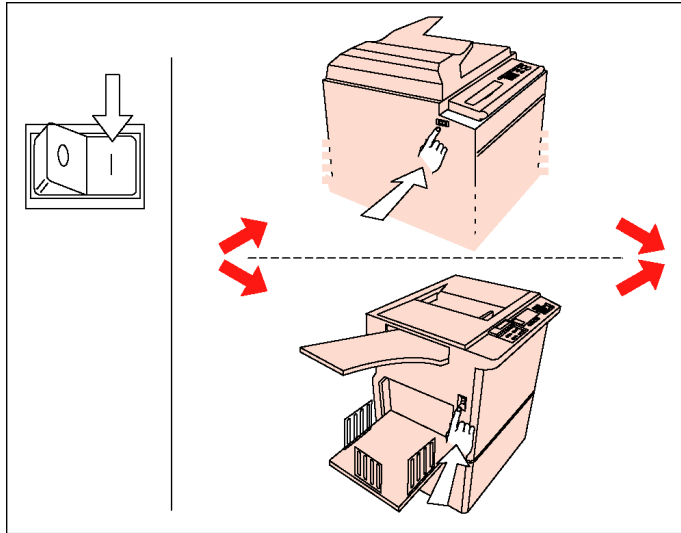
Figure 2-3.3.2.  Power On the Digital Duplicator

# Step 6

**Apply Power to the
Controller**

Power ON the controller by locating the power switch and pushing it to the ON ("1") position.
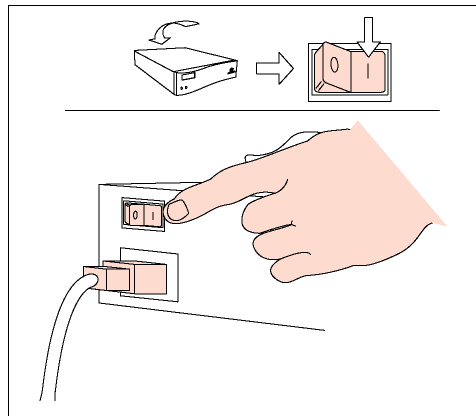
Figure 2-3.3.3.  Power On the Controller

# Step 7

**Put the Digital
Duplicator ONLINE**

Locate and push the ONLINE button on the digital
duplicator.
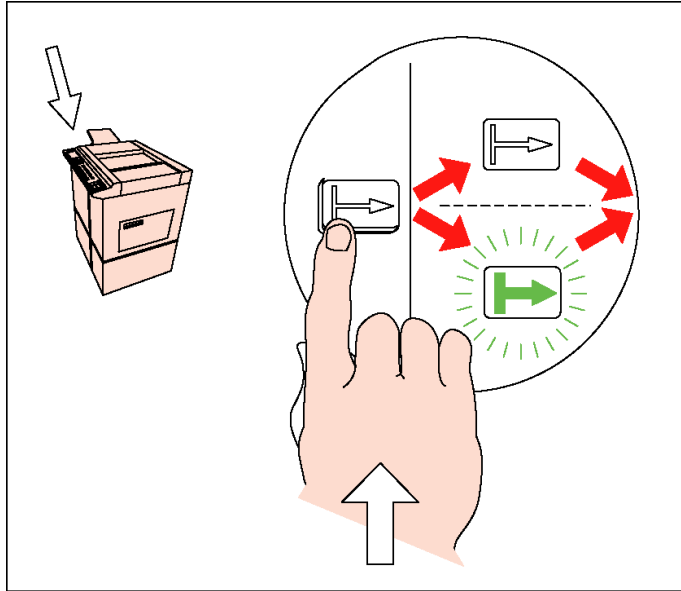


**Figure 2-3.3.4.  Push the ONLINE button on
the Digital Duplicator**

**Note**  ✔ *The ONLINE symbol or light may or may not
illuminate when the button is pressed.* Even though
the action of pushing the ONLINE button enables
communication with the controller, some models of
digital duplicators will illuminate the lamp *only after
a print job has been sent*.

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# Step 8

**Check for Controller
Green Light Status**

Locate and observe the status lights on the front panel of the controller.  If the digital duplicator is ONLINE and it and the controller are functioning properly, the left status light should be green and on steady.
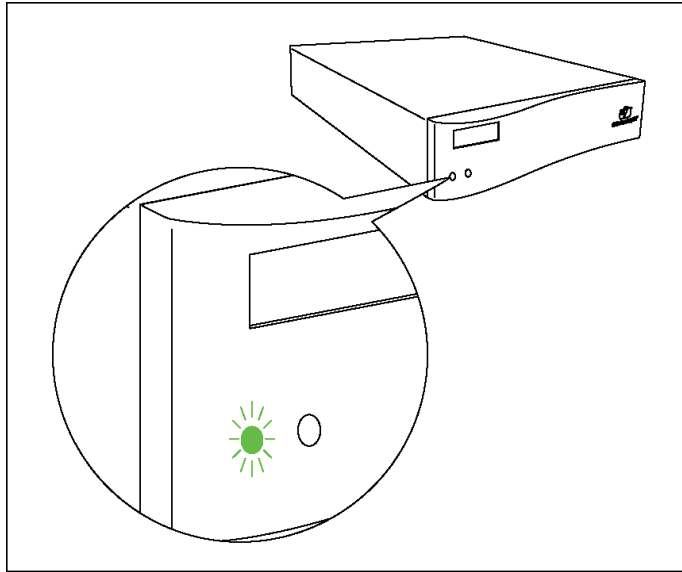


**Figure 2-3.4.1.  Controller Green Light Status**

**Note** ✔

If the controller begins flashing error messages (**red** or **yellow** lights), either the setup has not been done correctly or there is a problem with the digital duplicator or controller.  DO NOT PROCEED with the remainder of this setup procedure until the problem has been resolved.

For assistance, look in Chapter 7, *Troubleshooting*, or Appendix B, *Controller Status Lights*, for assistance.  If the problem persists, contact the supplier of your digital duplicator.

# Step 9

**Print a Diagnostic Test Page**

Locate and push the Diagnostic Test Page button on the rear of the controller.
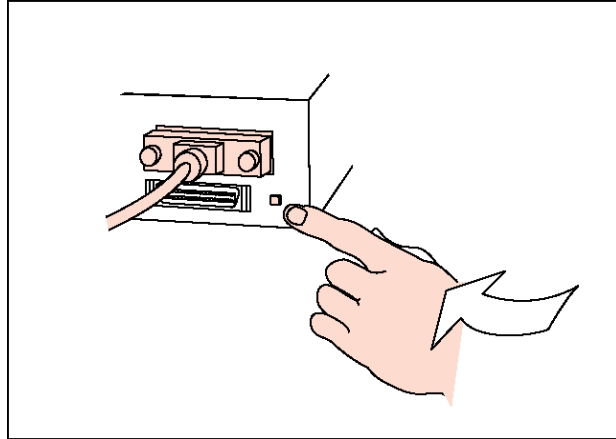


**Figure 2-3.4.2. Push the Diagnostic Test Page Button**

The digital duplicator will make a master and print a page similar to the one shown in Figure 2-3.4.3.

This process confirms that the controller and the digital duplicator are communicating correctly. The exact contents of the Diagnostic Test Page do not matter at this point – we are only confirming that the controller and digital duplicator are functioning together.

**Note** ✔

If the controller or digital duplicator begin flashing error messages, or you do not get a test page printed from the digital duplicator, either the setup has not been done correctly or there is a problem with the digital duplicator or controller. DO NOT PROCEED with the remainder of this setup procedure until the problem has been resolved.

For assistance, look in Chapter 7, *Troubleshooting*, or Appendix B, *Controller Status Lights*, for assistance. If the problem persists, contact the supplier of your digital duplicator.

# Digital Duplicator Controller

Adobe® PostScript® 3™

**Installed fonts:**

| | | |
|---|---|---|
| Albertus ‡ | GillSans ‡ | New Century Schoolbook Bold † |
| Albertus Italic ‡ | GillSans Bold ‡ | New Century Schoolbook Bold Italic † |
| Albertus Light ‡ | GillSans Condensed Bold ‡ | New Century Schoolbook Italic † |
| AntiqueOlive Bold § | GillSans Bold Italic ‡ | New Century Schoolbook Roman † |
| AntiqueOlive Compact § | GillSans Condensed ‡ | New York ¤ |
| AntiqueOlive Italic § | GillSans Extra Bold ‡ | Optima † |
| AntiqueOlive Roman § | GillSans Italic ‡ | Optima Bold † |
| Apple Chancery ¤ | GillSans Light ‡ | Optima Bold Italic † |
| Arial ‡ | GillSans Light Italic ‡ | Optima Italic † |
| Arial Bold Italic ‡ | Goudy | Oxford * |
| Arial Bold ‡ | Goudy Bold | Palatino Bold † |
| Arial Italic ‡ | Goudy Bold Italic | Palatino Bold Italic † |
| ITC AvantGarde Gothic Book * | Goudy ExtraBold | Palatino Italic † |
| ITC AvantGarde Gothic Book Oblique * | Goudy Oldstyle Italic | Palatino Roman † |
| ITC AvantGarde Gothic Demi * | Helvetica † | Stempel Garamond Bold † |
| ITC AvantGarde Gothic Demi Oblique * | Helvetica Bold † | Stempel Garamond Bold Italic † |
| Bodoni | Helvetica Bold Oblique † | Stempel Garamond Italic † |
| Bodoni Bold | Helvetica Condensed † | Stempel Garamond Roman † |
| Bodoni Bold Italic | Helvetica Condensed Bold † | ITC Symbol * AβXδEφГηIφKλM!≅#∃%⊥& |
| Bodoni Italic | Helvetica Condensed Bold Oblique † | Tekton • |
| Bodoni Poster | Helvetica Condensed Oblique † | Times Bold † |
| Bodoni Poster Compressed | Helvetica Narrow † | Times Bold Italic † |
| ITC Bookman Demi * | Helvetica Narrow Bold † | Times Italic † |
| ITC Bookman Demi Italic * | Helvetica Narrow Bold Oblique † | Times Roman † |
| ITC Bookman Light * | Helvetica Narrow Oblique † | Times New Roman Bold ‡ |
| ITC Bookman Light Italic * | Helvetica Oblique † | Times New Roman Bold Italic ‡ |
| Carta • ✻☆ⓙ◯🌴♦₁₅₉△🌟 | Hoefler Text Black ¤ | Times New Roman Italic ‡ |
| Chicago ¤ | Hoefler Text Black Italic ¤ | Times New Roman ‡ |
| Clarendon † | Hoefler Text Italic ¤ | Univers † |
| Clarendon Bold † | Hoefler Text Ornaments ¤ | Univers Bold † |
| Clarendon Light † | Hoefler Text ¤ | Univers Bold Oblique † |
| CooperBlack | Joanna ‡ | Univers Oblique † |
| CooperBlack Italic | Joanna Bold ‡ | Univers Light † |
| COPPERPLATE THIRTYTHREE | Joanna Bold Italic ‡ | Univers Light Oblique † |
| COPPERPLATE THIRTYTWO | Joanna Italic ‡ | UniversCondensed † |
| Coronet Regular •• | LetterGothic | UniversCondensed Bold † |
| Courier | LetterGothic Bold | UniversCondensed Bold Oblique † |
| Courier Bold | LetterGothic Bold Slanted | UniversCondensed Oblique † |
| Courier Bold Oblique | LetterGothic Slanted | UniversExtended † |
| Courier Oblique | ITC Lubalin Graph Book * | UniversExtended Bold † |
| Eurostile •• | ITC Lubalin Graph Book Oblique * | UniversExtended Bold Oblique † |
| Eurostile Bold •• | ITC Lubalin Graph Demi * | UniversExtended Oblique † |
| Eurostile Bold Extended Two •• | ITC Lubalin Graph Demi Oblique * | Wingdings Regular ** ✎☜✆🖂♦✝✠ |
| Eurostile Extended Two •• | Marigold * | ITC ZapfChancery Medium Italic * |
| Geneva ¤ | ITC Mona Lisa Recut * | ITC ZapfDingbats * ✿❖✧★★✷✷✲ |
| | Monaco ¤ | |

**Configuration and Settings:**

| | | | | | |
|---|---|---|---|---|---|
| Model Number: | CPIF 26 | Installed RAM: | 32MB | Duplicator resolution: | 400 DPI |
| Locale Setting: | US | Standard Ports: | Parallel AT | Video I/F Version: | unknown |
| PostScript Version: | 3010.106 | RAM Disk Size: | 384KB | Default Paper Size: | Letter |
| Board ROM Version: | 904243742 | Hard Drive: | Not Installed | Auto-Cycle: | ON |
| Flash ROM Version: | 17.098.280b | Additional Port: | Network | Diverted Copies Level: | 99 |
| Chassis Serial No: | AU598000000 | IP Address: | 90.0.0.200 | PCL Symbol Set: | PC-8 |
| Board Serial No: | 00000 | Ethernet Address: | 00:40:af:79:1d:a0 | Auto-Master Eject: | OFF |
| Network Serial No: | 992180 | Protocols Enabled: | TCP/IP IPX AT | Reserved RAM: | None |
| | | | | RAM FontCache: | 3MB |

**Figure 2-3.4.3.  Diagnostic Test Page (sample)**

**Note** ✓ The contents of the **Configuration and Settings:** section of the page will depend upon your particular controller and digital duplicator combination.

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# Step 10

**Connect Your
Computer to the
Controller**

Locate the parallel port on the back of the controller and attach an appropriate parallel cable between it and the parallel output port of your computer.
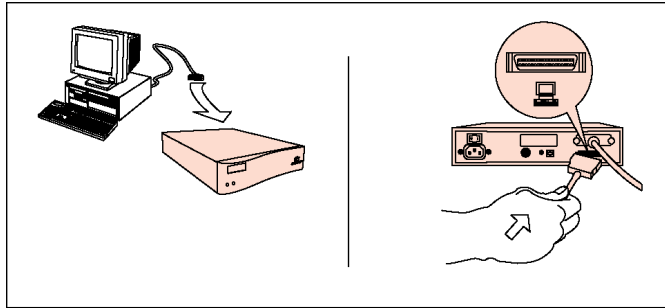


**Figure 2-3.5.1. Connect your computer to the controller's parallel port**

**Note** ✔ To facilitate the setup procedure, the initial connection between the PC and the controller is done at the *parallel port*.  After the setup of your controller is complete, connection of the computer to the controller may be done at any of the other ports.

# Step 11

## Load the CDROM into Your Computer

Locate and install the CDROM that came with the controller into your computer's CDROM drive.
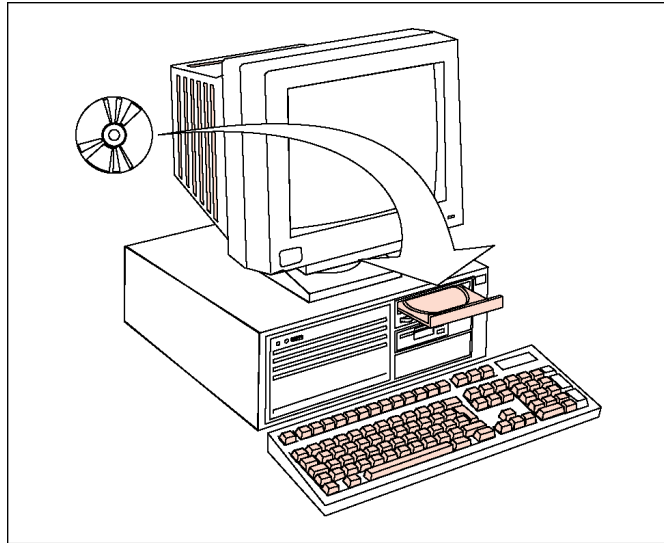


**Figure 2-3.6.  Load the CDROM into your computer.**

# Step 12

**Install the Configuration Utility software**

Once the CDROM has been loaded into your computer, the Configuration Utility installation program will start up automatically. It will prompt you for answers to questions regarding your digital duplicator in order to install it as a printer for your computer.
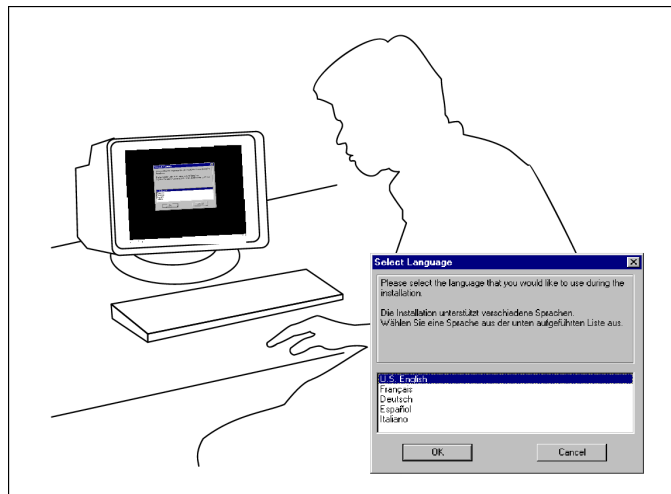


**Figure 2-3.7. Configuration Utility Installation.**

**Note** ✔

The installation program will only start automatically on your PC if AUTO INSERT NOTIFICATION has been ENABLED for the CDROM drive. If the program fails to start automatically, there is a good chance the feature has been disabled.

If this is the case, contact your computer support entity for assistance in enabling this function. Once that has been done, re-insert the CDROM and continue with the installation process.

## Required Memory

The amount of memory required for printing with your controller has been predetermined and installed in the controller. No additional memory is required.

However, additional memory may be installed to enhance your controller's job loading and master creation speeds, to increase its soft font download capacity, or both. See *Upgrading Controller Memory* in the appendix of the <u>Controller Reference Manual</u>, for details.

## Print Resolution

The resolution of the printed output is the same as the specification for your digital duplicator.

## Installing a Printer Driver

The Configuration Utility installation program on the CDROM that came with your controller provides a very intuitive, screen-by-screen installation process of the:

- Configuration Utility program,

- Printer drivers for your model of digital duplicator and controller,

- User's Guide,

- Reference Manual, and

- LAN administration tools.

**Note** Correct installation of the Configuration Utility, printer drivers, manuals and other software assumes the controller/digital duplicator have been setup previously following the procedure outlined in the section entitled *Setting Up Your Controller*, in this chapter. If this is not the case, you must first follow the steps outlined in that section before proceeding.

**Network Note**  ✔  If controller/digital duplicator are being installed on this computer as a printer accessible through an Ethernet local area network (LAN), and the controller is not currently connected to the computers parallel port, do the following (assuming the controller/digital duplicator are already setup and functioning on the LAN):

1) Follow the steps outlined here, ignoring any warning messages you receive regarding the computer not being able to communicate with the controller/digital duplicator.

2) Skip any steps relating to generating a test page.

3) After completion of the installation steps, proceed to the section in this chapter entitled *Connecting to a Peer-to-Peer Ethernet Local Area Network*.

After inserting the installation CDROM, a screen similar to Figure 2-4.3 should appear.



**Select Language** ✕

Please select the language that you would like to use during the installation.

Die Installation unterstützt verschiedene Sprachen.
Wählen Sie eine Sprache aus der unten aufgeführten Liste aus.

U.S. English
Français
Deutsch
Español
Italiano

OK        Cancel
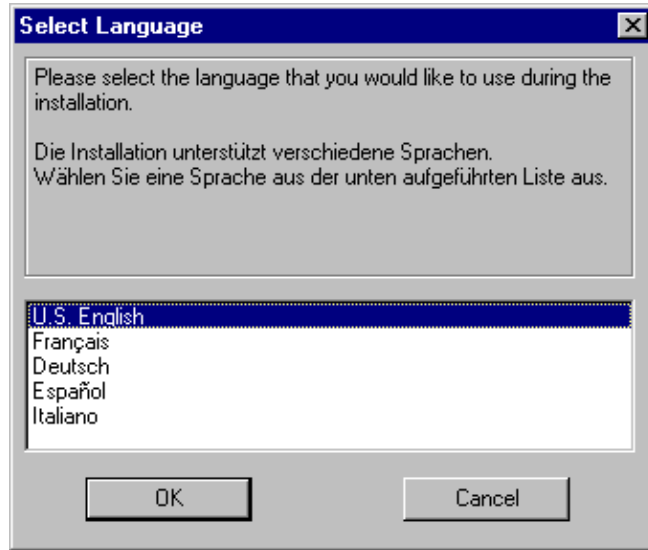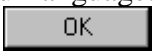
**Figure 2-4.3. Starting the CDROM installation program.**

---

**Note** ☑

If **Auto insert notification** for the CDROM has been *disabled*, the installation program will not start automatically. In this case you must do the following:

a) Start Windows Explorer and open the CDROM directory,
b) Locate and double-click on the SETUP.EXE filename.

---

As shown in Figure 2-4.3, the first screen asks you to select your language. Select the desired language and click on OK .

The installation program is user-friendly and will guide you through a series of steps to complete the installation.

When complete, the necessary components for using the digital duplicator through the printer port of your computer will be installed, along with the Controller User's Guide and the Controller Reference Manual.

**Note** ✓ To determine the model number, look on the outside bottom your controller chassis. There is a small label containing a bar code affixed to the chassis near the rear panel, similar that shown in Figure 2-4.4.

MODEL NO.    CPIF 26

S/N: ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
AU123456789

**Figure 2-4.4.  Model and serial number label.**

## Changing a Printer Driver

Most of the time you will probably stay with one printer driver for your digital duplicator. This is because your software will use either PCL or PostScript fonts. For example, if your desktop publishing program uses primarily PostScript fonts, you will want to use the PostScript printer driver for your controller so you maintain WYSIWYG ('what-you-see-is-what-you-get') compatibility between your screen and the printed output. However, if you switch to a different program, such as a spreadsheet which uses PCL fonts, you will need to change printer drivers to keep your screen and printed outputs similar.

Changing to a different printer driver to match the requirements of your software is very easy. The following example is given for Microsoft Word 97, but is similar for most programs that run under the Microsoft Windows operating system. In this example, we are changing from PostScript to PCL.

First, locate and activate the Print menu in your software.
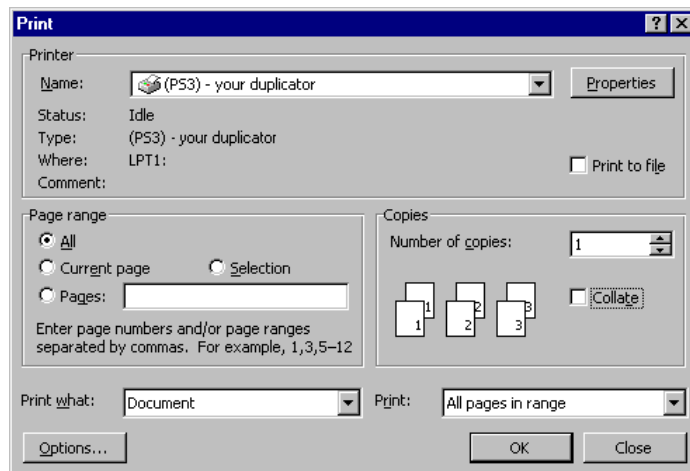


**Figure 2-5.1.1. Locate your software's Print screen (example is Microsoft Word 97).**

In the example shown in Figure 2-5.1.1, we are currently using the PostScript 3 driver for a digital duplicator. To change this to the PCL driver for the same digital duplicator, click on the down arrow next to the printer name field to bring up all of the choices.
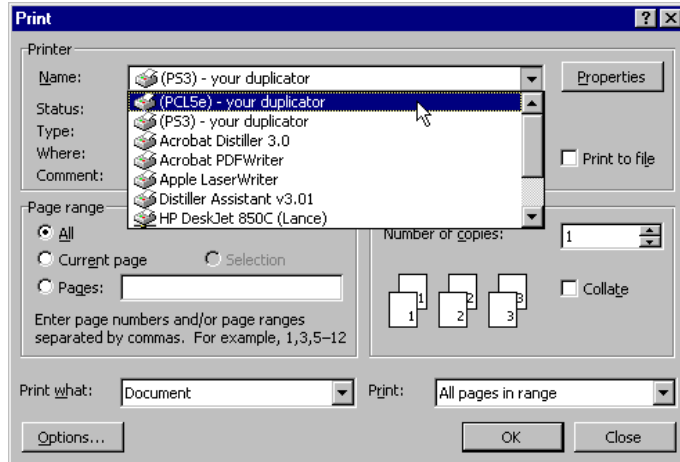
**Figure 2-5.1.2.  Selecting a different printer driver.**

Select/highlight the PCL version of the same digital duplicator (as shown) by clicking on it once, then select the OK tab on the bottom right of the screen.

In this example, the controller will automatically be set to PCL mode to print the document, allowing the screen and printed fonts to match.

# Automatic I/O Switching

Any your controller's three I/O ports – LAN, LocalTalk, and bi-directional/ECP parallel – may be used at the same time. This allows you to attach cables to all ports and communicate to all ports from up to three host computer systems (see Figure 2-6.1). Your controller will automatically switch between ports to accommodate incoming data. This allows you to think of each port as a separate controller.
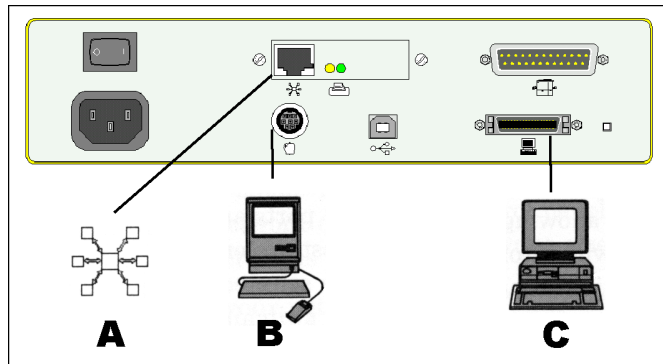


**Figure 2-6.1.  Automatic I/O Switching Ports**

A = LAN (hub), B = LocalTalk (Apple Macintosh), C = ECP parallel (PC)

**Note** ✓ Bi-directional/ECP parallel is backwards-compatible with Centronics parallel standard. Although it uses the same cable, hardware, and software as Centronics parallel, to receive its enhanced capabilities – such as bi-directional communication between computer and controller, faster transmission of data, and auto-configuration of printer drivers – you need software that supports these features. Most Windows software supports these features. However, if in doubt, check with your software vendor to see if your software supports bi-directional/ECP parallel features.

Automatic I/O switching can be adjusted for optimum performance using the *Controller Timeout* value. If, when using multiple ports, data from other ports appears in the middle of your print job, increase the value of this variable. For more information, see *Controller Timeout* value under *Managing Print Jobs, Optimizing operation in a shared printer environment*, in this chapter.

**Caution** ⭐ *Proper Grounding*: Ensure that all interface cables and host computers attached to the controller follow proper grounding methods for electronic equipment in accordance with local electrical codes.

## Connecting to a Peer-to-Peer Ethernet Local Area Network

Your controller can be attached directly to a peer-to-peer, Ethernet-based Local Area Network, or LAN, using the instructions outlined here. Any PC connected to the network, once configured, may print to the digital duplicator.

## Network Note

These instructions:

1) Assume the controller/digital duplicator have already been set up though a computer's parallel port and function correctly so connected. If this is not the case, you must return to the *Setting Up Your Controller* section of this chapter and complete the installation before proceeding.

2) Assume one or more printer drivers for the controller/digital duplicator already exist on your computer, set up to print through the parallel port (LPT1:). If this is not the case, you must go to the *Installing a Printer Driver* section of this chapter and complete the procedure before continuing.

3) Apply to *workstations only* (not servers) on a *'server-less', peer-to-peer network*. If your network uses a server, if you do not know if your network has a server, or if you are attempting to setup a network server to use the controller, contact your network administrator for assistance. Instructions for network administration are found in Chapter 4, *User Administration*, of the Controller User's Guide.

4) Assume that if you are on an NT4 workstation, you have administrator privileges.

To enable printing to a controller/digital duplicator from a *network workstation* on a *server-less*, *peer-to-peer* LAN, follow the steps outlined in this section.

# Step 1

**Connect the Ethernet
LAN to the controller.**
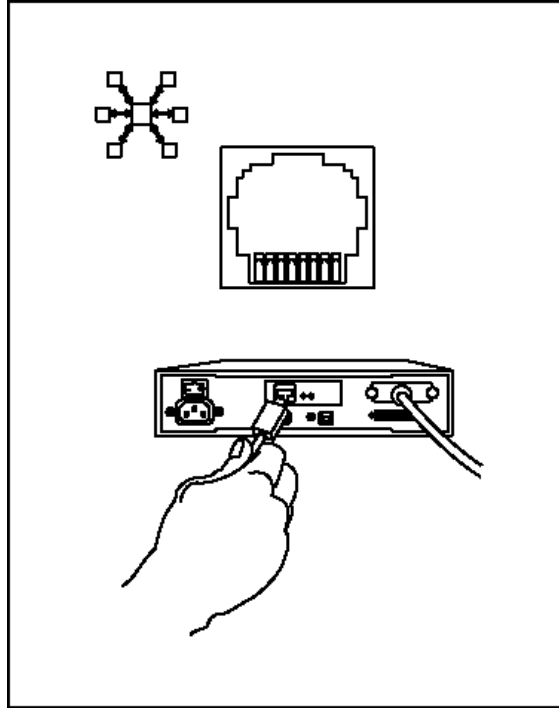


**Figure 2-7.1. Connecting to a LAN.**

Locate the 10BASE-T LAN port on the back of the
controller, as shown in Figure 2-7.1. Using a
standard UTP (Unshielded Twisted Pair) Ethernet
cable, attach one end of the cable to this port on the
rear of the controller, and the other end to your
Ethernet network drop (LAN port jack on the wall or
floor, or to your LAN hub).

**Network Note**   ✔  If you are unsure as to where the network drop/
connection is located for your office LAN, contact
your network administrator for assistance.

# Step 2

**Configure your computer to talk to the controller over the network.**

On your Windows desktop, locate the **Network Neighborhood** icon, and click the right mouse button. Click on **Properties**. A screen similar to Figure 2-7.2 will be displayed.
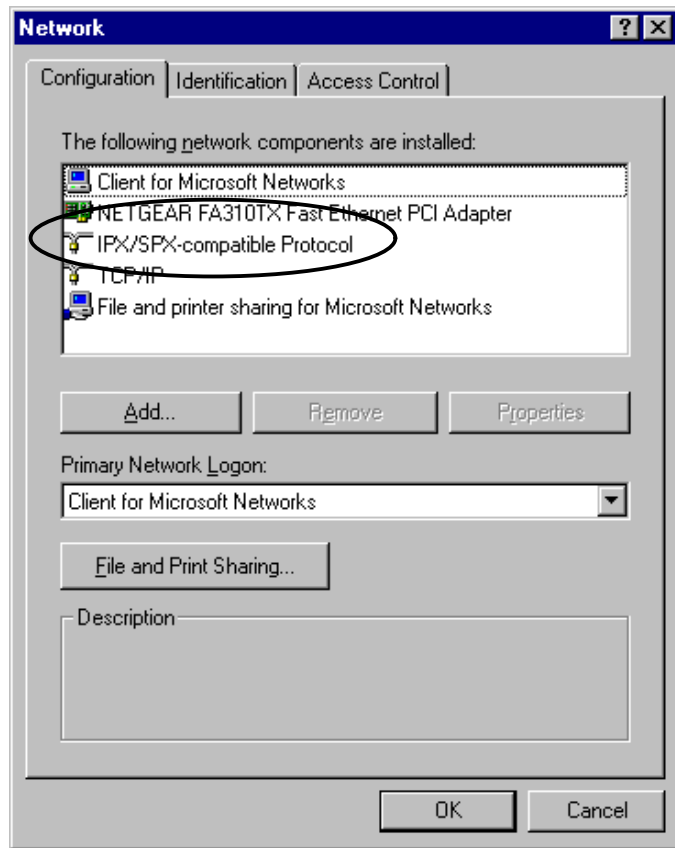


**Figure 2-7.2. IPX/SPX protocol installation.**

In order to communicate with the controller over the network you must have the IPX/SPX protocol installed on your computer. If this is not the case, it must be installed before proceeding with IPX port installation.

**Network Note** ✅   If the IPX/SPX protocol is not installed on your computer, you can install it using the instructions contained in the Windows Help function (**Start** → **Help**), clicking on the **Index** tab, and entering **protocols, installing** into the field.  Follow the instructions for installing the IPX protocol.

If you are unsure as to whether the protocols are installed on your computer, or do not wish to install them, contact your network administrator for assistance before proceeding further.

## Step 3

**Restart your computer.**

## Step 4

**Turn off all applications running on your computer.**   This includes word processing and spreadsheet programs, and especially any programs that use the network (web browsers, etc).

You may skip Step 5 and Step 6 and proceed to Step 7 if the controller has been powered on for 2 minutes or more.

## Step 5

**Power on the digital duplicator, then the controller.**

## Step 6

**Wait until the controller is ready to receive data from the LAN.**

Allow the controller to be powered on for at least 2 minutes before continuing.

**Network Note** ✅

It is necessary to wait for 2 minutes whenever power is first applied to the controller, in order for it to complete its internal power-up process. However, once the controller has gone through its power-up process, it will accept data from the network at any time.

# Step 7

## Locate and install the IPX Redirector Program.

This program installs an IPX 'port' for the controller (similar in concept to your parallel or serial port, but software only) into your computer. The program actually searches for the controller through the network, identifies it using the controller's *network serial number*, then creates and installs a port for it into your Windows Printer Wizard.

The IPX redirector program is installed from the CDROM supplied with your controller. To do this, go to **Start → Run**. If the CDROM in your computer is assigned drive letter **e:**, you would type the following information into the 'Open' window:

**e:\WIN\LAN Tools\IPXP2P\setup**

followed by the **Enter** key. The setup installation wizard will begin and you will be presented with a screen similar to Figure 2-7.3.
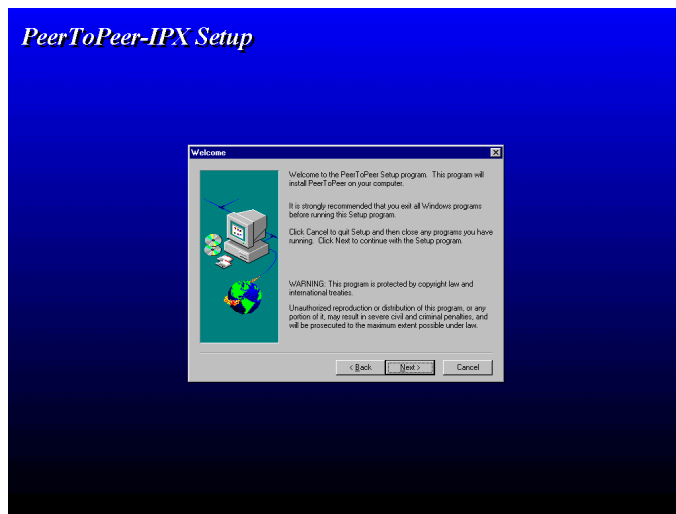


**Figure 2-7.3. IPX Redirector program setup.**

Follow the instructions to completion.

# Step 8

**Restart your
<u>computer</u> again.**

# Step 9

**Attach the digital
duplicator printer
driver to the IPX port.**

Double-click on **My Computer** and open the
**Printers** folder.  Right-click on the digital duplicator
printer driver (installed earlier) you wish to attach to
the network port, click on **Properties**, and select the
**Details** tab.  In a few seconds the details screen will
open.
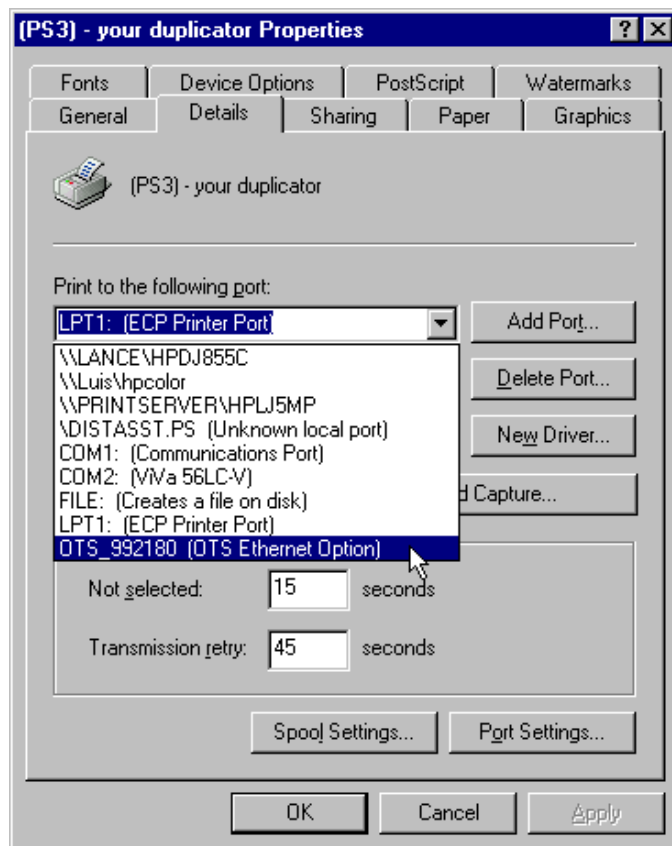


**Figure 2-7.4.1.  Attach the digital duplicator
printer driver to the desired IPX port.**

Locate and click on the pull-down menu arrow under the **Print to the following <u>p</u>ort:** field, similar to what is shown in Figure 2-7.4.1.

In our example we have a PostScript 3 (PS3) printer driver for our digital duplicator already installed on our computer. It is currently attached to the **LPT1:** printer/parallel port (performed during the initial setup described under *Installing a Printer Driver*, in this chapter).

In the pull-down menu list, we recognize

### OTS_992180 (OTS Ethernet Option)

as the <u>*IPX LAN printer port*</u> assigned to the *controller* by the IPX Redirector program. The **992180** number in the port name is the *network serial number* of the *controller*, while the **(OTS Ethernet Option)** character string identifies it as being an active, IPX-protocol port. Note that, since it is the only name of this type appearing in the list, it is the only controller on the LAN visible by our computer.

In order to print to the digital duplicator over the LAN we must 'attach' our printer driver to this IPX port. To do so, simply double-click on the *IPX LAN printer port* to make it appear in the **Print to the following port**: field.

When finished, select the [ Apply ] button. The **Details** screen should then appear similar to the example in Figure 2-7.4.2.
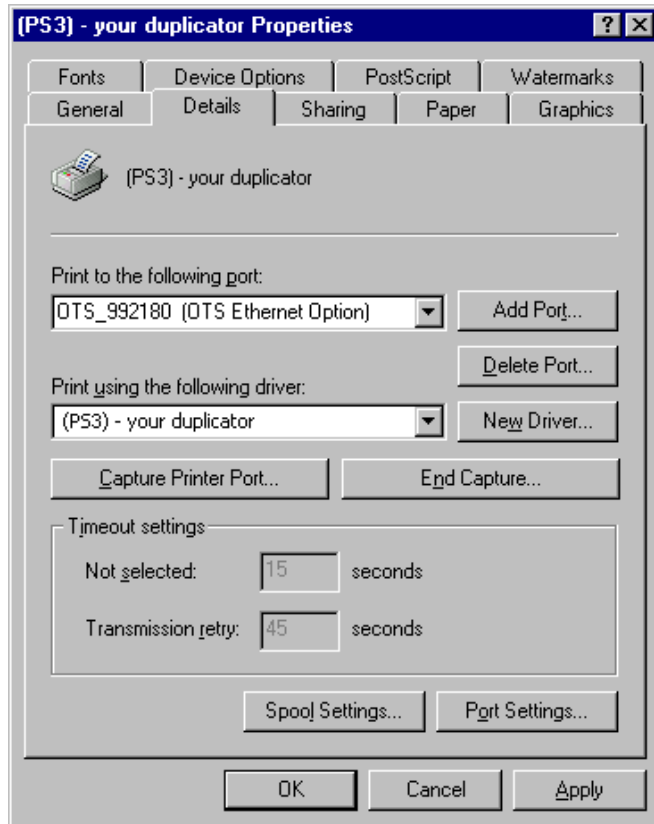
**Figure 2-7.4.2. An IPX LAN printer port
'attached' to the printer driver.**

**Network Note**  ☑  The IPX Redirector program installs an IPX port for every controller/digital duplicator it finds attached to the LAN.  Thus, if more than one controller is attached to the LAN, you will have multiple IPX network names/ports from which to choose.  You may confirm you have selected the correct IPX network name by verifying that the

1) controller's *network serial number* matches the number in the IPX LAN printer port name, and that the

2) *digital duplicator model* to which the controller is connected matches the printer driver with which you are working.

The *network serial number* of the controller in question may be identified using the Diagnostic Test Page generated by it (see Appendix A, *Diagnostic Test Page,* in the <u>Controller User's Guide</u>).  The number is located in the lower left corner of the page.

The **OTS_992180** character string of the IPX LAN printer port name is also the <u>*NetWare Print Server Name*</u>.  A network administrator may change it to another more readily identifiable name, such as Sales Digital Duplicator, or the actual name/model of the digital duplicator.  See *Assigning a custom name to the controller* under the section entitled *Using a Web Browser to Perform Common Network Management Tasks* in Chapter 4, *User Administration*, in the <u>Controller User's Manual,</u> for more details.

# Step 10

**Print a Windows Test Page.**

As shown in Figure 2-7.6, click on the **General** tab, then locate and click on the **Print Test Page** button. In a few seconds to a few minutes (depending upon how busy the LAN traffic is) the front status lights should begin blinking, and the duplicator will print the Windows Test Page.

**Figure 2-7.6. Testing the LAN connection.**

Correctly printing the Windows Test Page confirms proper connection to the LAN and correct printer driver installation.

**Troubleshooting**

The following suggestions may help if you run into problems printing to the digital duplicator through the LAN.

1) If there is more than one controller/digital duplicator on the LAN, did you attach the printer driver to the correct one?  If not, go back and repeat Step 8 and Step 9.

2) Is there a server on the LAN?  Depending on the type of server on the network, it may not allow use of the IPX redirector program.  In this case you will need the help of your network administrator to set up the workstation for printing over the LAN to the controller/digital duplicator.

3) Has any computer been able to print to the digital duplicator correctly through the controller's parallel port?  If so, the problem is probably with the LAN installation, which will have to be re-done - start by uninstalling the IPX Redirector software (explained below), then go to Step 1.  If not, there may be a problem with the printer driver you have installed.  See the sections of the Controller User's Guide entitled *Installing A Printer Driver* and *Changing A Printer Driver* in Chapter 2, *Using your Controller* for assistance in getting the correct printer driver installed on your computer.

4) If the controller was off, or not powered on for 2 minutes or more, did you wait for the signal from the LAN communications status lights before installing the IPX Redirector program?  The LAN port on the controller is not active until the yellow light begins blinking.  If the IPX Redirector program runs before this happens, it will most likely not find the controller.  Subsequently it will not install an IPX port on your computer, and you will not find it listed under '**Print to the following port:**' (see Step 9).

To correct this, re-do the IPX port installation. Start by uninstalling the IPX Redirector software (see below), then go to Step 1.

5) Did you shut off all application software before installing the IPX Redirector program? If not, it may not have installed correctly, or a program may be interfering with its operation. Try re-booting the computer. If that doesn't work, reinstall the IPX Redirector making sure to have closed all application software (i.e., any program except the Windows Operating System) before installing again. Start by uninstalling the IPX Redirector software (see below), then repeating the installation from Step 1.

## Uninstalling the IPX Redirector Software

If you encounter problems installing or using the IPX Redirector program, it may be uninstalled using a utility provided for that purpose, found on the CDROM.

To uninstall the IPX Redirector program, you must insert the CDROM (**e:** in our example) do **Start** → **Run**, and type the following into the 'Open' window:

**e:\WIN\LAN Tools\IPXP2P\uninstall**

followed by the **Enter** key .

Uninstalling will remove the IPX redirector program as well as the port definition(s) from the Printer Wizard's list of available ports. Thus, you will no longer be able to print to any digital duplicators on the LAN using the IPX protocol of your computer.

## Managing Paper

Take a few minutes to review the following sections to understand how to effectively use the printing capabilities of your controller.

### Page size and orientation

For the most part, keeping track of the paper size and orientation loaded into the digital duplicator paper input tray is an automatic process for your controller. If you remove, replace, or run out of paper, the digital duplicator will go through a process to determine what size paper is available and communicate that information to the controller. Thus, your controller automatically keeps track of what paper stock is available for printing, and makes that information available to the computer.

Be aware that anytime you remove paper from the input tray, the digital duplicator will automatically go OFFLINE. Then, when you send a print job to the controller, the controller will set the digital duplicator back ONLINE automatically[1].

**Note**

[1]You may have a model of digital duplicator that does not allow the controller to automatically put it ONLINE. If this is the case, you must *manually push the ON LINE and Auto-Cycle buttons* to enable their respective functions on the digital duplicator.

Table 2-8.1 lists common problems resulting from page size mismatches, and their remedies.

| Situation | Probable Cause | Remedy |
|---|---|---|
| The image on the master is truncated. | A paper size too small for the master has been loaded into the input paper tray. | Change the paper in the input tray of the digital duplicator to match what the software is calling for in order to print your document. Then re-send the print job to the controller. |
| The image on the master is placed incorrectly on the page. | The software is set up to print on a smaller page size than is currently loaded in the input tray. | You can print correctly-placed copies from this master by doing the following:<br>1) Load the correct paper size into the input tray.<br>2) Set the number of copies to be printed manually using the keys on the digital duplicator's control panel<br>3) Push Print Start on the digital duplicator.<br><br>Alternatively, you can load the correct paper into the input tray and simply re-send the print job from the computer. |
| The software you are using to print never reports a page size mismatch. | You are using one of the standard printer drivers that came with the operating system. | Install the digital duplicator printer drivers from the CDROM, then select the correct one which matches your model of digital duplicator. |

**Table 2-8.1. Common Page Size/Orientation Faults**

## Number of copies

The most effective way to make use of the digital duplicator's high-speed printing capabilities is to have the controller manage the number of copies of each page produced, rather than the word processing or other computer software you may be using. This is because the software will normally print multiple copies of a document one at a time, a single page at a time. This is referred to as *collating* the document copies (the pages come out in numerical order, in each document copy). This process *causes the digital duplicator to make a new master for each page*. Since the digital duplicator is designed to print many copies of a page rapidly from one master, you will need to turn the collate feature off in the software and allow the controller to manage the copy creation process.

The following two, simple steps will ensure that your digital duplicator makes fast and efficient copies of the documents you send to it from your computer.

## Step 1 – Make sure Auto-Cycle is ON

Normally the controller will turn this feature of the digital duplicator ON[1].  Just to be safe, **look at the digital duplicator's control panel and make sure Auto-Cycle is ON**.

The Configuration Utility program may be used to have the controller enable the Auto-Cycle feature automatically.  Start the Configuration Utility and locate the Settings section on the screen.  Click on the Enable Auto-Cycle circle, as shown in Figure 2-8.3. The press the  Apply  button.
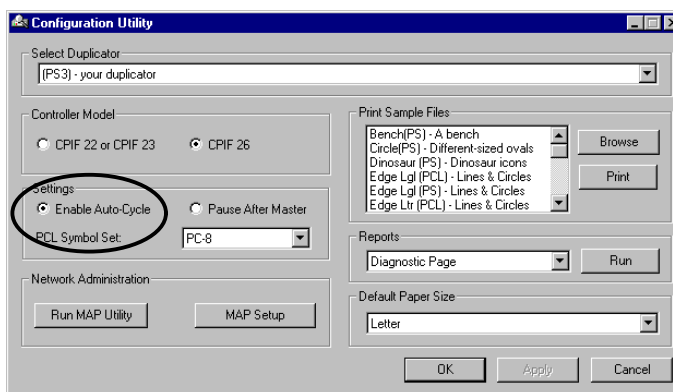


**Figure 2-8.3. Enable Auto-Cycle**

---

[1] See Note under the preceding section, *Page size and orientation*.

## Step 2 – Turn the software collate feature off

Most programs have an on/off switch for the collate feature located on their *print menu screen*. In some programs, this is referred to as 'copies generated by <software>', versus 'copies generated by printer'. **Turn the collate feature off.** (For the Microsoft Word 97 example in Figure 2-8.4 you would *uncheck* the box, as shown.)
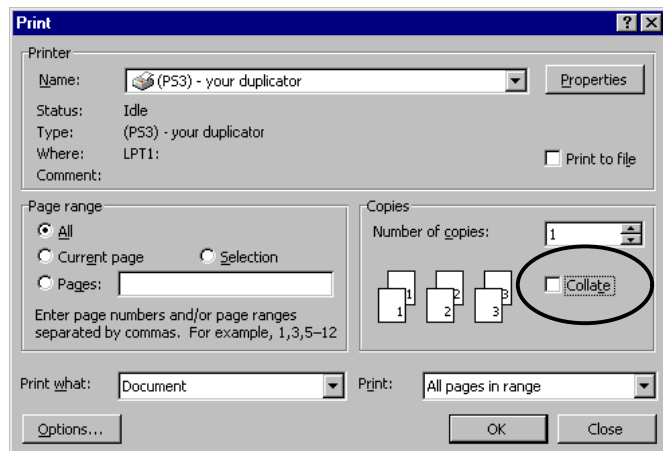


**Figure 2-8.4. Turn the collate feature off (Microsoft Word 97)**

With the feature off, the digital duplicator will make one master per page and produce the copies at a high rate of speed, in a non-collated fashion, as it was designed to do. In addition, the number of copies to be printed will pass through from the software to the digital duplicator, and be displayed on the digital duplicator's control panel screen.

**Note**    ✔    FOR DOS USERS:

Unless your DOS software application specifically
allows you to turn off the collating feature, passing
copy control (i.e., the number of copies) through to
the digital duplicator will not work properly.  In this
case, you will have to send one page at a time from
the computer to the digital duplicator, and use the
control panel of the digital duplicator to manually
create the number of desired copies from each master.

## Bleed-off Printing

Most desktop publishing programs allow printing to the edges of the paper.  You should be aware of the following limitations as they apply to your controller and digital duplicator regarding this function.

### PostScript Printing

Due to the technology employed in the digital duplicator for paper handling, there is a non-printing area on the leading (first in) edge of the paper of 5mm.

### PCL Printing

PCL printer driver technology does not allow bleed-off printing.  Instead, you will have a border of unprintable area of approximately .25 inches (6 mm) on all four paper edges.
If you need to do the bleed-off function, use the PostScript printer driver.

## Shared Printer Environments

You may wish to attach more than one computer to your controller. Multiple ports have been provided on the rear panel of the controller for this purpose - see the section on *Automatic I/O Switching* above, in this chapter.

This section lists several things to be aware of so that operation between the computers and your controller will run as smoothly as possible:

- Using a switchbox.

- I/O port order.

- Optimizing multiple I/O port operation.

### Using a switchbox

If you wish to share your digital duplicator through an electronic or mechanical switchbox, you may experience some difficulty under certain conditions, particularly with mechanical switchboxes.

If you are using a mechanical switchbox:

- Do not switch when the controller is printing to the digital duplicator, or receiving data (i.e., when either of the controller status lights are blinking).

- Do not switch to a host computer that is OFF, then switch that computer ON. The computer can send unusable data to the controller, resulting in unwanted output, or corruption of the next print job.

**Note** ✔ Ensure that your switchbox is equipped with a surge protector. Damage to the controller could occur from use of unprotected mechanical switchboxes.

## I/O port order

Print jobs arriving at the various ports are performed (or Raster Image Processed – RIPped, for short) on a first come, first served basis. Thus, the first computer to begin sending data to the digital duplicator has the controller's full attention. Other computers must wait until the first computer's print job has completed.

Thus, even though the parallel port is the fastest one to accept data, if the AppleTalk/LocalTalk port is the first to be used, its job will complete before the one coming from the parallel port.

## Optimizing multiple I/O port operation

The Configuration Utility program may be used to optimize the operation of your controller, so that multiple computers may use the digital duplicator efficiently. See the section in this chapter on *Managing the Print Jobs*.

## Personality/
## language switching

You can select the print language – PCL or PostScript – one of several ways, depending upon your operating system software:

- For Microsoft Windows: select either a PCL or a PostScript printer driver.

- For DOS: use context (automatic) language switching, or PJL (Printer Job Language) software switching (i.e., PJL commands embedded in software).

**Note**

When the controller's personality is switched, its memory is reconfigured, resulting in the loss of all user-downloaded data (such as soft-font typefaces). The result of this is that *multiple* print jobs with a significant number of downloaded fonts can take noticeably longer to process and print if the controller keeps switching between PCL and PostScript, than if it stays in one language.

Other than this longer processing time, changing print languages is transparent to users because the software simply re-downloads the fonts it needs.

### Windows PCL and PostScript printer drivers

Both custom PCL and PostScript printer drivers are available for your digital duplicator. Use the installation program on the CDROM to install both of the drivers. Then, in your Windows software, select the printer driver on the Print menu screen you wish to use. Personality switching will be accomplished automatically when you send your print job to the digital duplicator.

## Switching personalities in DOS programs

Context language switching is employed for PCL and PostScript. In this mode, the controller analyzes the stream of data being sent to determine which language is being used by the print job. Then the controller switches its personality to that language, automatically.

As an example, if PostScript is made the current language, the controller will be dedicated to that language and will switch to another 'personality' only when it encounters specific PJL commands embedded in software to do so.

For more information about PJL commands, see the *PCL Printing* chapter in the <u>Controller Reference Manual</u>.

# Managing Print Jobs

Once a print job has been initiated by the software you are using, it is offloaded to hardware or other software set up to manage the printer. This process is known as 'spooling'. Programs that manage the spooling process may exist in several places: 1) the operating system of the computer you are using, 2) a print server (such as on a network), or 3) the digital duplicator's controller.

**Use the right tool to manage your print jobs.**

If the job has been spooled by the operating system, you should use a print management tool that came with your computer's operating system to manage print jobs (e.g., Print Manager for Microsoft Windows). Likewise for a network, there are a number of tools your network administrator may use to manage print jobs sent to printers attached to the network.

## The Configuration Utility Program

The Configuration Utility program is used to setup and manage specific aspects of the print jobs sent to your digital duplicator.  It has been designed to make management of printing on your digital duplicator very easy.  By simply starting the program and using your mouse, you may:

· Set operating parameters of your digital duplicator specific to the needs of your environment.

· Manage printing to your digital duplicator in a shared printer environment.

The Configuration Utility is very easy to start and use.  The steps below outline some of the fundamental tasks associated with managing the use of your digital duplicator and the print jobs sent to it.

## Starting the Utility

Activate the Configuration Utility program by double-clicking on the Configuration Utility icon on your computer's desktop, as shown below.



**Figure 2-10.2.  Configuration Utility Desktop Icon**

**Note**

If the icon shown in Figure 2-10.2 does not appear on your computer's desktop, look under Programs – Configuration Utility.  If it still does not appear, you may need to run the CDROM installation program.  See the *Setting Up Your Controller* section of this chapter, or contact your computer specialist for assistance.

Your computer will display the screen of the
Configuration Utility program, similar to what is
shown in Figure 2-10.3.
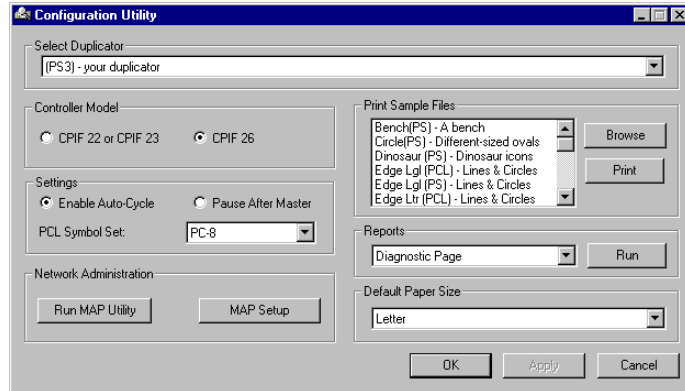


**Figure 2-10.3. Configuration Utility screen**

The default value of the *Controller Timeout* is 45 seconds, which is adequate for the majority of printing applications.  However, some applications may require a longer value.  The reasons for this could include (but are not limited to):

- An environment where most people are using Windows-based, graphics intensive printouts that, due to processing time, require the controller to wait longer than 45 seconds to start receiving the output.

*In these cases* it is recommended that the value of this variable be set at **120 seconds or longer**, to ensure that the output from a second computer will not disrupt the print job of the first.

For other tasks, see Chapter 3, *Configuration Utility Features*.

# 3

## Configuration Utility Features

**Introduction**

This chapter provides explanations for every function available in the Configuration Utility program.  It is organized in order of the screen sections as they appear from top to bottom, left to right.

Look in this chapter if you are interested in:

❑ Finding definitions of Configuration Utility terms.

❑ Understanding a Configuration Utility function or feature.

To get an understanding of more general terms having to do with printing and computers, see the Glossary at the end of this book, located after the Appendices.

# Configuration Utility Screen

After clicking on the icon, the Configuration Utility screen in Figure 3-2.1 will appear.
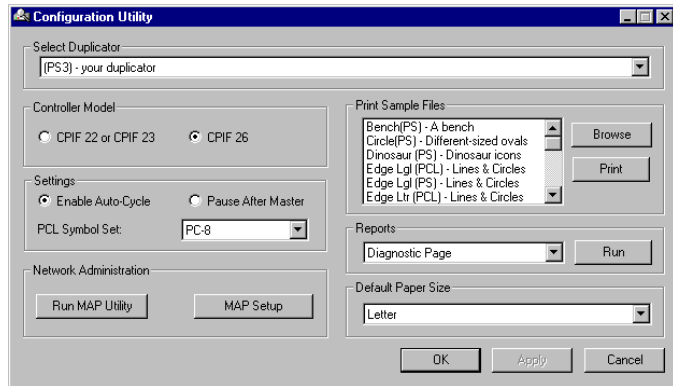


**Figure 3-2.1. Configuration Utility Screen**

The Configuration Utility screen is divided into seven sections. These are:

- The **Select Duplicator** selection screen,
- The **Controller Model** selection panel,
- The **Settings** selection panel,
- The **Network Administration** control panel,
- The **Print Sample Files** selection screen,
- The **Reports** selection screen,
- The **Default Paper Size** selection screen.

## Select Duplicator

This feature is used to select the digital duplicator you wish to configure.

To select a digital duplicator different from the one that is being displayed, click on the down arrow at the right of the display.
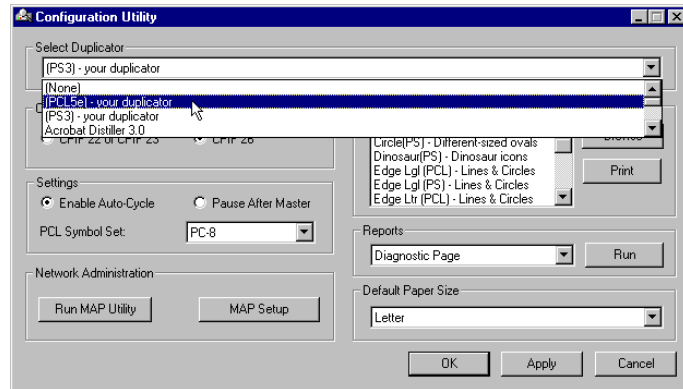


**Figure 3-2.2.1. Selecting a digital duplicator to configure.**

A list of installed printer drivers will be shown. Select the one corresponding to the digital duplicator you desire to configure. After doing so, the selection window will close, leaving the model of the digital duplicator you selected in the window.
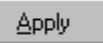
After making your choice, click on the **Apply** button to save the information

**Note** ✓ If the printer driver for your model of digital duplicator does not appear as a choice on the screen, it is likely that it has not been installed on your computer. See *Installing a Printer Driver* in Chapter 2, *Using your Controller*, in this Controller User's Guide, for instructions regarding the installation of printer drivers.

## Controller Model
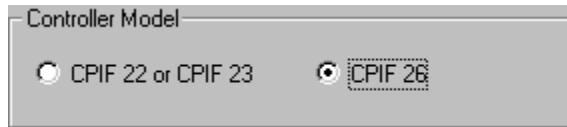
This is where you inform the Configuration Utility as to the model of controller connected to the digital duplicator (see Select Duplicator above).

To determine the model number, look on the outside bottom your controller chassis. There is a small label containing a bar code affixed to the chassis near the rear panel, similar that shown in Figure 3-2.3.



MODEL NO.    CPIF 26

S/N:    AU123456789

**Figure 3-2.3.  Model and serial number label.**

After making your choice, click on the [Apply] button to save the information.



## Settings
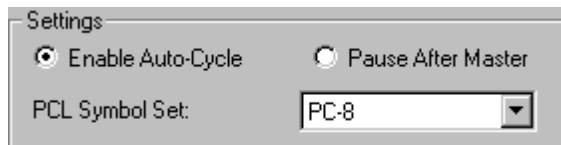
### Enable Auto-Cycle or Pause After Master

This feature allows the controller to automatically configure the digital duplicator for the mode of master and subsequent copy making you wish to use. If you enable Auto-Cycle, Pause After Master will be disabled, and vice versa.

## PCL Symbol Set

Here you may select the symbol set to match the PCL fonts your document is using.  To select something other than the default PC-8 symbol set shown, click on the down arrow and select another from the displayed list.

For a more complete discussion of which symbol set to select, see Chapter 3, *PCL Printing* in the Controller Reference Manual.

After making your choice, click on the Apply button to save the information.

## Network Administration

Discussion of the tools provided in the Network Administration section (i.e., the Run MAP Utility and MAP Setup functions), the resulting NIC HTML screens and changing controller parameters is found in Chapter 4, *User Administration*, and is oriented toward the **network administrator**. Changing the configuration of the controller's LAN behavior to optimize its operation in your LAN environment requires particular knowledge and skills. In addition, you need a **password** to access the LAN parameters, which is set and kept by your network administrator.

## Network Note

If you are on a workstation operating in a server-less, peer-to-peer LAN environment, it may possible to setup and use the digital duplicator controller using a relatively simple network installation. Read *Connecting to a Peer-to-Peer Ethernet Local Area Network* in Chapter 2, *Using Your Controller*, in this Controller User's Guide, to see if your situation applies.

## Print Sample Files
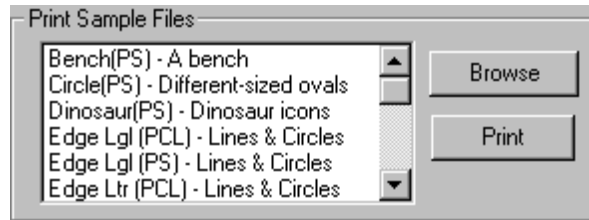
This feature allows you to print sample or raw test files loaded on your computer. It is useful for sending raw PCL or PostScript files to the digital duplicator for printing, without having to use an intermediate desktop publishing or word processing software program.

Click on the file of interest in the window to highlight it, then click on the ⬚ Print ⬚ button to immediately send the file to the digital duplicator for printing.

You may also store your own custom files so they appear in the directory shown above, by doing the following:
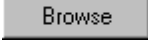
1) Locate the PostScript file(s) you wish to have the Configuration Utility add to the list above,

2) Store the files with a .PS extension into the Samples folder inside the Configuration Utility folder, on your hard drive.

The files will appear automatically in the Print Sample Files directory Window.
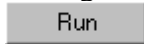
**Note** ✔ The default location of the Configuration Utility folder is the C: drive, inside the Program Files folder.

The ⬚ Browse ⬚ button provides a convenient way to access the files stored on your computer by opening a simple file manager window. This window will allow you to pick or find a printer file anywhere on your computer, or (if installed) computer network, to send to the digital duplicator for printing.

```
┌─ Reports ──────────────────────────────────┐
│ ┌──────────────────────┐ ▼ │  ┌─────────┐ │
│ │ Diagnostic Page      │   │  │   Run   │ │
│ └──────────────────────┘   │  └─────────┘ │
└─────────────────────────────────────────────┘
```

## Run Selected Report

The Reports section allows you to print a pre-designed report selected from the pull-down menu, appearing in the center.   You may view the titles of the available reports by clicking on the down arrow on the right-hand portion of the menu.

The **Diagnostic Page** is the default report.  Use this report to print a Diagnostic Test Page on the digital duplicator by clicking on the `Run` button . This is the same page you would get if you were to press the Diagnostic Test Page button on the rear panel of the controller.  For more information regarding the Diagnostic Test Page, see Appendix A, *Diagnostic Test Page*, in this <u>Controller User's Guide</u>.

Another report, the **PCL Test Page**, prints a list of PCL fonts resident in the controller.
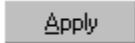
For more information regarding the PCL font list, see Chapter 3, *PCL Printing*, in the <u>Controller Reference Manual</u>.

```
┌─ Default Paper Size ───────────────────────┐
│ ┌──────────────────────────────────────┐ ▼ │
│ │ Letter                               │   │
│ └──────────────────────────────────────┘   │
└─────────────────────────────────────────────┘
```

## Default Paper Size

Use this area to set the Default Paper setting.

Normally, the software you are using to print will assign a paper size to a print job.  Where this is not the case, the controller must select a default size of paper to associate with the print job.  This is called the Default Paper Size.

Select a default paper size by simply clicking on the arrow on the right of the window and selecting the desired size.  After making your choice, click on the `Apply` button to save the information.

# 4

## User Administration

**Introduction**

In this chapter we will discuss the aspects of managing the controller and digital duplicator for multiple users, where network print server functions are being administered.

The subjects covered are:

- ❑ Using the Configuration Utility to Set Up Your Network Controller.
    - · HTML setup screens.
    - · NIC Management Password.
    - · Setting NIC parameters.

- ❑ Using a Web Browser to Perform Common Network Management Tasks
    - · Setting a custom NIC management password.
    - · Assigning a custom name to the controller.

- ❑ Network Environments and Special Utilities
    - · Common NOS environments.
    - · Special NIC management utilities.
    - · Preparing the controller.
    - · Common workstation configurations.
    - · NetWare notes.
    - · Windows notes.
    - · AppleTalk notes.
    - · NIC "Reset to Factory" procedure.

To get an understanding of more general terms having to do with printing and computers, see the Glossary at the end of this book, located after the Appendices.

**Network Note**    ☑    When working with the digital duplicator controller from a network, you are actually communicating with a Network Interface Controller, or NIC, card in the controller.  Keep in mind the following characteristics of the card:

- Reset of the NIC and reset of the digital duplicator controller are two different events: resetting the controller also causes the NIC to reset (such as at power up), while resetting the NIC from the LAN only resets the card, and not the rest of the controller hardware.

- Setting to factory defaults is only a NIC function, and does not affect the rest of the hardware in the digital duplicator controller.

- After reset or cycling power, the NIC enters a warm-up state that lasts for approximately 2 minutes. Before the warm-up state of the NIC is completed, *you will not be able to communicate with it*.

  The end of the warm-up state is signaled by the digital duplicator printing a NIC Status Page, *if the Print Status Page on Startup parameter in the NIC has been enabled*.  Otherwise, no status page will print and the only way to tell if the warm-up state has completed is by waiting 2 minutes or more past a NIC reset or power up.

- Setting parameters on the NIC are only stored into non-volatile memory after cycling power on the controller.

## Using the Configuration Utility to Set Up Your Network Controller

The digital duplicator controller will operate in a variety of network environments. In order to have it do so efficiently, the *Network Interface Controller* card, or NIC, in the digital duplicator controller must be configured for the type of network on which it will be used.

The easiest way to configure the NIC is to use the **Network** section of the Configuration Utility screen. The MAP utility, which is invoked by the buttons in this section, automatically finds any controller in most LAN environments. This provides the network administrator a tool for rapidly configuring the NIC parameters to suit the LAN environment.
The MAP utility uses two different protocols to 'discover' the controller: IPX and IP.

### IPX/IP discovery

After the prescribed warm-up time, a NIC set to factory default status (i.e., where NetWare is enabled) will always respond to the IPX discovery MAP routine using an *IPX/SPX identifier*. This is in the form of 'NPS_abcdef', where 'NPS_' identifies the unit as a *network print server*, and abcdef is the *network serial number* of the controller.

The IPX discovery utility is part of the MAP function and is automatically invoked whenever the
Run MAP Utility button is pushed. After pushing this button, the computer's default web browser is started, and, if they are found by MAP, one or more controllers will be listed in the order of IPX network name. By clicking on the subsequent hyperlink displayed on the screen, the web browser may be used to query the NIC, inspect or change parameters, etc.

The MAP discovery routines will also find a controller if NetWare is not enabled, as long as the controller has an IP address. If no IP address has previously been assigned to the NIC, then MAP can only identify the controller through the IPX protocol.

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## MAP

The Management Access Program, or MAP, is the tool the Configuration Utility calls upon to discover controllers on the network.  In its default state, MAP uses both IP and IPX protocols to discover the NIC.

You may configure MAP to have it not run one or the other protocol.  To do so, click on the

[ MAP Setup ]  button

MAP responds with its setup screen, which you may use to enable or disable the desired protocol.
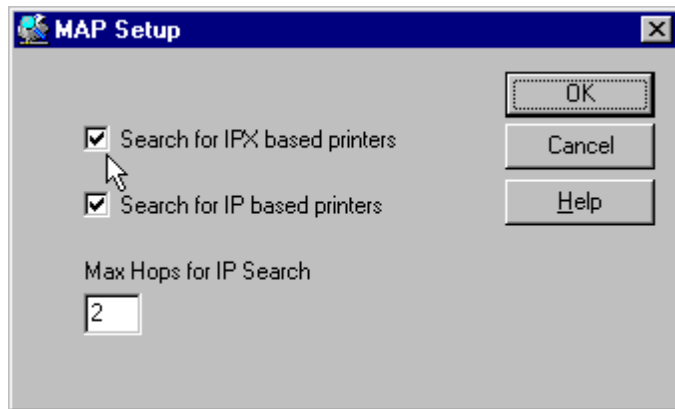


**Figure 4-2.1.2.  MAP Configuration**

**Max Hops for IP Search** sets the number of routers through which MAP will search.

## Other Tools

Several tools have been provided on the CDROM delivered with your controller to assist you in configuring it for your network.  Which one(s) you use will depend upon your network environment and the method you chose to do the job.  A more complete discussion on this topic is covered in a later section entitled *Network Environments and Special Utilities*, in this chapter.

## HTML setup screens

Subsequent to starting the MAP utility from the **Network** section on the Configuration Utility screen, the computer's default web browser opens.  Upon finding of one or more controllers on the network, you will see a screen similar that shown in Figure 4-2.2.1.
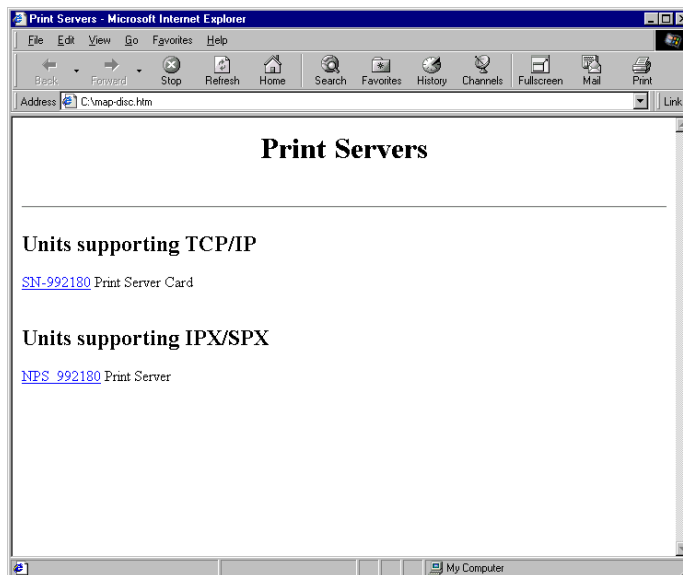


**Figure 4-2.2.1.  NIC discovery**

In this particular instance, MAP has 'discovered' one controller, which happens to have a valid IP address assigned.  It displays the network serial number and IPX/SPX identifier of each controller found.

**Network Note** ✓

The controller's default *IPX network name* (begins with 'OTS_' - see *Step 8* under *Connecting to a Peer-to-peer Ethernet Local Area Network* in Chapter 2, *Using Your Controller*, in the Controller User's Guide) and permanent *IPX/SPX identifier* (begins with NPS_' – discussed in this section) both utilize the *network serial number* of the controller.

Hyperlinks on the page allow you to select the desired controller for network configuration. Subsequent HTML pages are sent from the selected NIC in response to clicking on the hyperlinks in the text.

Upon selecting a controller to configure, the NIC will respond with a **Printer Status** web page. **Ignore the information on this page**, and double-click on the *Network Configuration* hyperlink.

The NIC will respond with its HTML **Network Administration** web page, similar to what is shown in Figure 4-2.2.2.
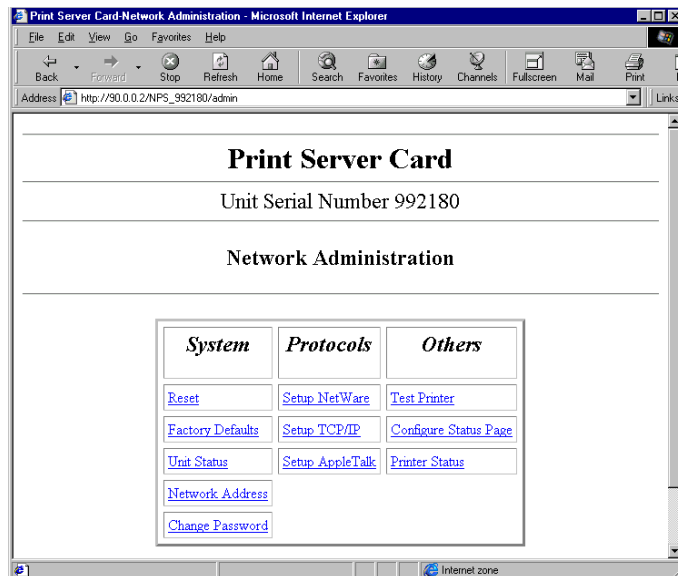


**Figure 4-2.2.2. NIC Network Administration page.**

The actual display you receive may differ slightly, depending upon the characteristics of your PC monitor, the revision of firmware in the NIC, and your default browser.  In addition, options available to the Network Administrator as displayed on this page may change with any NIC firmware upgrades, to provide greater control over NIC parameters and control new functions.

## NIC management password

The *default* password for network administrator NIC management, as shipped from the factory, is:

**sysadm** .

All functions accessible through the HTML screens are password protected.  This is necessary to prevent untrained or unauthorized users from changing vital controller network parameters.  Before beginning the process of configuring the controller, it is recommended that the network administrator set this password to something other than the default version.

The next section, *HTML setup screens*, lists the area available to customize this password.  The password may be up to eight (8) characters in length.  Once a new password is entered, the **sysadm** default password will be rejected by the NIC.

## Setting NIC parameters

Using the hyperlinks on the NIC HTML page, the user-configurable parameters and controls include those listed in Tables 4-2.3.1 through 4-2.3.3, below.

| Option | Action |
|---|---|
| Reset | Performs a hardware reset of the NIC only (not the controller). Used to bring the NIC back to the beginning of its power up routine.  If **Print Status Page on Startup** is enabled, the NIC will produce a Status Page signaling its readiness to receive data, usually 2 minutes or less after the **Reset** occurs. |
| Factory Defaults | Sets all NIC (LAN) parameters back to their original factory settings, including the NIC management password. |
| Unit Status | A single screen listing the current configuration of each of the controllers three network protocols - NetWare, TCP/IP, and AppleTalk. |
| Network Address | A screen displaying the network serial number of the controller, and the Ethernet hardware network (MAC) address of the NIC. |
| Change Password | Provides an area to change the system administrator's password. The default password from the factory is **sysadm**. |

**Table 4-2.3.1.  Network Administration Options – System Area**

| Option | Action |
|---|---|
| Setup NetWare | The screen used to set all parameters relating to a NetWare LAN topology. |
| Setup TCP/IP | The screen used to set all parameters relating to a TCP/IP LAN topology. |
| Setup AppleTalk | The screen used to set all parameters relating to an AppleTalk (EtherTalk) LAN topology. |

**Table 4-2.3.2.  Network Administration Options – Protocols Area**

| Option | Action |
|---|---|
| Test Printer | Causes the controller to immediately print a NIC Test Page on the digital duplicator, using PostScript or ASCII.  A sample NIC Test Page appears in Figure 4-2.3.1. |
| Configure Status Page | Tells the controller whether or not to print a NIC Status Page to the digital duplicator, using PostScript or ASCII, on power up.  You may also immediately print a Status Page using this screen.  A sample NIC Status Page appears in Figure 4-2.3.2. |
| Printer Status | Displays a screen showing the printer (controller) status, any errors that have been detected, and any messages from the printer (controller). |

**Table 4-2.3.3.  Network Administration Options – Others Area**

**Caution**

**Be careful setting the configuration of the controller's network operation.**

If the controller should somehow lose its capability to communicate to the network using any protocol, the NIC will have to be set back to factory default status using the hardware jumpers on the card, before network operation can resume.  This procedure is called "Reset to Factory", and is reserved for a trained, service technician.

```
********  NIC Port   Device 992180 Post Script Test Print.   ********


 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghij
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijk
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijkl
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklm
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmn
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnop
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopq
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwx
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
23456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|
3456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
56789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !
789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"
89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#
9:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$
:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%
;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&
<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'
=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'(
>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()
?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+
ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,
BCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-
CDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-.
DEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./
EFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./0
FGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./01
GHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~ !"#$%&'()*+,-./012


********  NIC Port   Device 992180 Post Script Test Print.   ********
```

**Figure 4-2.3.1.  Sample NIC Test Page (PostScript).**

```
-----------------------------------------------------------------------------

Unit Serial No: 992180                    Version: 05.21

Network Address:  00:40:af:79:1d:a0

Network Topology: Ethernet                Connector: RJ45

Network Speed: 10 Megabits

Novell Network Information                enabled
     Print Server Name: OTS_992180
     Password Defined: No
     Preferred Server Name not defined
     Directory Services Context not defined
     Frame Type: 802.2 On 802.3

Peer-to-Peer Information                  enabled
     Frame Type: 802.2 On 802.3
     Network ID: 0

TCP/IP Network Information                enabled
     Frame Type: Ethernet II              Protocol Address: 90.0.0.200
     Subnet Mask: 255.0.0.0               Default Gateway:  0.0.0.0

AppleTalk Network Information             enabled
     Frame Type: 802.2 SNAP On 802.3
     Preferred AppleTalk Zone:            Default Zone

-----------------------------------------------------------------------------

Novell inactive

Peer-to-Peer Connection Information
     Printer Name: OTS_992180

AppleTalk Connection Information
     AppleTalk Printer Name: Controller

TCP/IP Connection Information
     Port Number : 10001

-----------------------------------------------------------------------------
```

**Figure 4-2.3.2.  Sample NIC Status Page (PostScript).**

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## Using a Web Browser to Perform Common Network Management Tasks

In all likelihood, several parameters of the controller will have to be customized in order for it to function in your network environment. This section outlines a couple of the more common tasks which either must or will be performed, regardless of what kind of network you have.
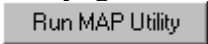
**Network Note** ✓

These procedures assume the controller is in factory default configuration.

### Setting a custom NIC management password.

This should be one of your first tasks as a network administrator in order to prevent tampering with the controller's parameters.

The password may be accessed using 1) the NIC's HTML pages via a web browser, or 2) using the Windows Telnet function. The latter method requires the controller to have a TCP/IP address, which in the factory default configuration has not been assigned. As long as the controller has its NetWare protocol enabled (which *is* a factory default condition), it will always respond to the MAP utility's IPX discovery routine. This, therefore, is the preferred method, which is outlined below.
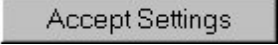
1) Start the Configuration Utility, go to the **Network** section and click on the `Run MAP Utility` button to begin the search for controllers.

2) Select the one of interest, identifying it by the *network serial number*.

3) On the **Network Administration** page under the **System** column, locate and click on Change Password.

4) Enter **sysadm** in the **Old Password** field, then up to 8 characters in the **New Password** field, followed by re-entering the same characters into the **ReType New Password** field.

5) Click on the [ Accept Settings ] button. The new password will now be accepted, and the default password of **sysadm** will no longer be accepted.

**Caution** ⭐

**Be careful setting and remembering the NIC management password.**

Should you forget or lose the management password the NIC will have to be set back to factory default status using the hardware jumpers on the card, before management of controller network operation can resume. This procedure is called "Reset to Factory", and is reserved for a trained, service technician.

Once this procedure is performed, or if you invoke the <u>Factory Defaults</u> HTML page, the NIC management password will be set back to the factory default value of **sysadm**.

## Assigning a custom name to the controller.

This task can greatly facilitate setup of the digital duplicator as a printer on a workstation. By assigning a name to the controller other than its default serial number, the IPX printer port can be more readily identified with the correct printer driver. This will reduce calls for assistance in doing peer-to-peer workstation printer configuration.

A *functioning* IPX LAN printer port name consists of two parts:

a) the *NetWare Print Server Name* : the *factory default* string is "**OTS_123456**"(where **123456** is the *controller network serial number*), followed by

b) an *IPX-protocol-active* identifier: always **(OTS Ethernet Option)**.

In the factory default configuration, the NetWare protocol in the controller is enabled (allowing the

controller to communicate using IPX protocol), and the *NetWare Print Server Name* is the default string. If you set the NetWare Print Server Name, for example, to 'Sales Digital Duplicator' or the actual make/model of your digital duplicator, it will be reported as part of the IPX LAN printer port name in place of the default string. This can facilitate the process of identifying the controller port to which you want to attach the printer driver, making setup easier.

The following steps outline an example of how this is done.

1) Start the Configuration Utility, go to the **Network** section and click on the [ Run MAP Utility ] button to begin the search for controllers.

2) Select the one of interest, identifying it by the *network serial number*.

3) On the **Network Administration** HTML page, under **Protocols**, locate and click on Setup NetWare.

4) Locate the **Print Server Name:** field. Enter a name. Some reasonable entries might be the model of digital duplicator to which the controller is attached, or the location of the digital duplicator. In our example, we chose to do the later – **Marketing DD**.

5) Enter your password in the field appearing below the warning at the bottom of the page,

   **A password is required to perform this function.**

   then press [ Accept Settings ] .

6) Cycle power on the controller, or perform the Reset function under the **System** column on the **Network Administration** page. After warm-up, the controller will respond to the IPX Redirector program with the new NetWare Print Server Name.

Figure 4-3.1 shows how the port choices might appear on the **Details** screen of the printer driver properties, once this change has been made.
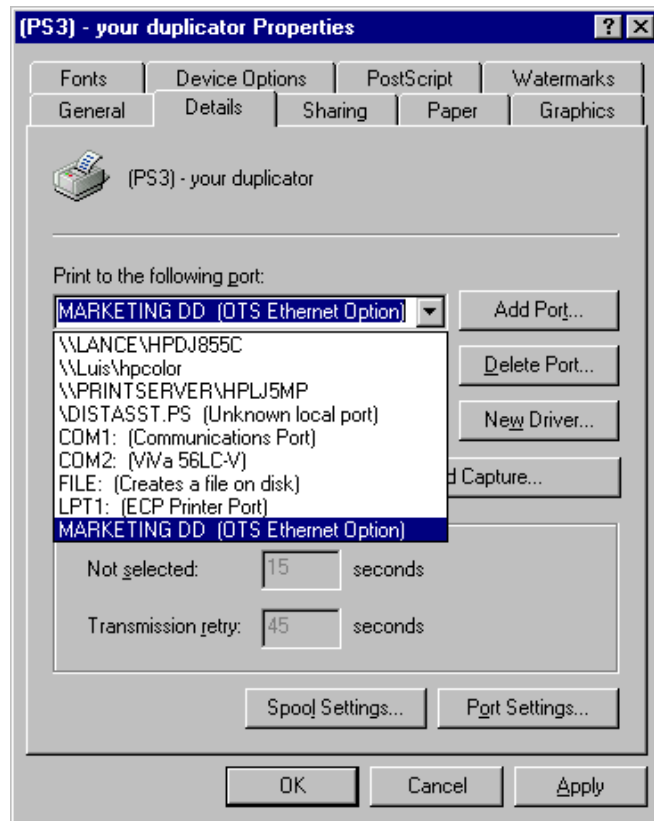
**Figure 4-3.1. Custom IPX LAN printer port name.**

Note that the *IPX LAN printer port* name still includes the term

### (OTS Ethernet Option),

identifying it as an active, IPX-protocol port.

**Network Note** ☑ If one or more digital duplicator installations have been done prior to this installation, several IPX LAN printer port names may be visible. ONLY those names that include the *IPX-protocol-active* identifier of **(OTS Ethernet Option)** are active, functioning ports.

To reduce confusion, it is suggested that any other controller ports whose names do not include this identifier be eliminated from the list using the Delete Port... key of the **Details** screen.

## Network Environments and Special Utilities

Several fundamental network environments are covered in this section, along with suggested methods of communicating with the controller.

---

## Network Note ✔

On any Windows 95, Windows 98, or Windows NT workstation, the Configuration Utility may be used in lieu of other software to make the necessary changes to the controller's network configuration, and is much faster and easier.

Some of the utilities discussed in this section are part of your operating system. Folders containing the others are stored in the C:\ Program Files\ Configuration Utility  folder on your hard drive, and on the CDROM that came with your controller,  as follows:

**[Configuration Utility]:\LAN Tools  ,**

**[CDROM drive letter]:\WIN\LAN Tools** .

---

### Common NOS environments.

- Novell NetWare
    - Versions 2.x, 3.x, 4.x
    - Bindery-based and NDS systems

- Windows 95/98 peer-to-peer
    - LPD/LPR over TCP/IP

- Windows NT
    - Versions 3.5, 3.51, 4.0
    - LPD/LPR over TCP/IP

- AppleTalk

**Special NIC management utilities.**   Table 4-4.1.1 outlines additional utilities are provided on the CDROM, or were included with your operating system.

| Utility | Workstation OS | Protocol | Used to … |
|---|---|---|---|
| MAP | Windows[1] 95/98/NT | IPX, IP | … Discover the NIC, then invoke a web browser to read the HTML setup pages from the NIC.  The HTML pages allow changes to all NIC parameters. |
| IPX Redirector | Windows[1] 95/98/NT | IPX | … Create an IPX printer port on the workstation assigned to the controller. |
| IP Redirector | Windows[1] 95/98/NT | IP | … Create an IP printer port on the workstation assigned to the controller. |
| BootP | Windows[1] 95/98/NT | IP | … Set IP parameters - IP address, subnet mask, default gateway. |
| ARP, RARP, PING | Windows[2] 95/98/NT | IP | … Set and verify NIC IP address. |
| Telnet | Windows[2] 95/98/NT | IP | … Change IP parameters, disable protocols, enable/disable banner pages, restore to factory defaults, change NIC management password, reset the NIC. |
| NIManage | MAC OS 7.6.1[1] | AppleTalk | … Change AppleTalk parameters, disable other protocols, enable/disable NIC status page. |

[1] Stored on the CDROM.
[2] Included with your operating system.

**Table 4-4.1.1.  Special NIC Configuration utilities**

- Use of the BootP, ARP and RARP utilities requires knowing the *Ethernet Address* (also termed the MAC address) of the NIC.

- The NIC must be in its factory default state to use BootP, RARP, or PING.

- After the NIC has an IP address, the Telnet or MAP utilities may be used to change IP address, subnet mask, or the default gateway.

- MAP requires that an Internet web browser be installed on the workstation.

## Preparing the controller.

Prior to beginning work on setting up the network configuration of the controller, confirm that communication is taking place between it and the digital duplicator by generating a Diagnostic Test Page.  If you are not able to generate the page, perform the 12 step setup process outlined in the section entitled *Setting Up Your Controller*, located in Chapter 2, *Using Your Controller*, in the <u>Controller User's Guide</u>.

On the bottom of the Diagnostic Test Page, highlight or otherwise make note of the following three items:

- <u>Network Serial Number</u>: the serial number of the NIC card inside the controller.

- <u>Ethernet Address</u>:  the hardware or MAC (Media Access Control) address of the NIC card inside the controller.

- <u>IP address</u>.  If it exists, it was either assigned manually or by a DHCP server prior to this installation.

Power down the controller and install an Ethernet cable between it and a network drop.

## Common workstation configurations.

The following tables list some common workstation and solutions for the NetWare and Windows NOS environments.

| NOS Version | Protocol | NOS Configuration Utility | NIC Configuration Utility |
|---|---|---|---|
| NetWare 2.x | IPX/SPX | PConsole version 3.75 | MAP version 3.50 |
| NetWare 3.x | IPX/SPX | PConsole version 3.75 | MAP version 3.50 |
| NetWare 4.x | IPX/SPX | PConsole version 4.15 | MAP version 3.50 |

**Table 4-4.1.2. NetWare Workstation Configurations**

| Workstation OS | NOS, Protocol | Printing Method | Configuration Utility | Printer Port Configuration |
|---|---|---|---|---|
| Windows 95/98 | NT[*] | LPR spooler | LPR Shareware | LPR Spooler:<br><br>* Remote Host = [NIC IP address]<br>* Remote Printer = PORT 1 |
| Windows NT[*] | NT[*] | LPR spooler | LPR Configuration | NT provides its own LPR Spooler |
| Windows 95/98/NT[*] | P2P, TCP/IP | IP Peer-to-Peer | IP Peer-to-Peer Redirector software | Add a Printer Wizard:<br><br>* Set up as a local printer<br><br>* Port = [NIC IP address] @ 10001 |
| Windows 95/98/NT[*] | P2P, IPX/SPX | IPX Peer-to-Peer | IPX Peer-to-Peer Redirector software | Add a Printer Wizard:<br><br>* Set up as a local printer<br><br>*Port = Ethernet Option* |

[*] versions 3.5, 3.51, 4.0

**Table 4-4.1.3. Windows Workstation Configurations**

# NetWare notes.

### NetWare 2.x and 3.x. PConsole.

1) Start **PConsole** and select the **File Server** you want to use.

2) Create the **Print Queues** under the **Print Queue Information** option.

3) Specify the NIC as a **Print Server** under the **Print Server Information** option.

4) Assign the **Print Queues** by choosing the **Queues Serviced by Printer** option.

5) Setup the **Notify** option by choosing **Notify List for Printer** under the **Print Server Config** menu, and select the printer from the **Defined Printers List**.

6) Repeat steps 1 through 5 for each additional **File Server**.


### NetWare 4.x Bindery Emulation.

1) Go to the 4.x server and at the **system console** type:    **load install**

2) Select **Maintenance/Selective Install** from the menu.

3) Select **NCF Files Options** from the menu.

4) Select **Edit AUTOEXEC.NCF** from the menu.

5) Search the file for the following statement:

**SET BINDERY CONTEXT = 0U = ENG**
substituting your own file server context in place of  **=0U=ENG .**

6) At the console prompt, type the same **SET BINDERY CONTEXT** statement that you just entered in the **AUTOEXEC.NCF** file.

The command at the console prompt takes effect immediately.  The definition in the file takes effect when the server is shut down and then restarted.

**Configuring Print Server and Queues with PConsole for Bindery or NDS (bindery emulation) Modes.**

1) Log into the network as **ADMIN** and type **PConsole.**

2) [*if you are using NDS bindery emulation, go to Step 3*] The **AVAILABLE OPTIONS** menu will appear. Press the **F4** key for **BINDERY MODE**.

3) Select **Quick Setup**. Use **Quick Setup** to correctly connect your print server, print queue and printer.

4) Select **Print Server** and press the **F3** key to modify the entry. Enter the name of the print server in the **Print Server** field and press **Enter**.

5) Press the **ESC** key to move to the **New Printer** field. Type in a name and press **Enter**.

6) Press the **ESC** key to move to the **New Printer Queue** field. Type in a name and press **Enter.**

7) Press the **ESC** key to move to the **New Printer Type** field, and press **Enter**. From the list of **Printer Types**, select **Other/Unknown** and press **Enter.**

8) When finished, press the **F10** key to save the configuration.

**Using the Management Access Program (MAP) to Set Up NetWare 4.x NDS (not bindery emulation).**

1) Open the **Network Administration** HTML page of the NIC (to get access to the NIC HTML pages, see *Using a Web Browser to Perform Common Network Tasks* earlier in this chapter)**.**

2) Select Setup NetWare in the **Protocols** column.

3) Enter the Print Server Name, Preferred NDS Context and Print Server Password *exactly* as they were entered in PCONSOLE (or NWADMIN).
Note: unless the network includes multiple NDS trees, entries for Preferred File Server and Preferred NDS should remain blank.

4) Enter a     mark in the "Disable Bindery" box.

5) Enter your network administrator password and click on [Accept Settings] .  After a few seconds the screen will report that the update was successful.

6) Return to the **Network Administration** page.

7) Select Reset and click on [Reset Unit] .  After a few seconds, the screen will report that the unit was reset.

8) Wait 2 minutes for NIC re-initialization.

9) Return to the **Network Administration** page and select Unit Status.

10) Scroll down to display **NetWare Status**.  The Queue Status should be attached and the Queue Name established in PCONSOLE (or NWADMIN) should be displayed.

NOTE:  If the Queue Status is *not* attached, verify that the entries for Print Server Name, Preferred NDS Context and Print Server Password exactly match those defined in PCONSOLE.

# Windows notes.

## TCP/IP in a Windows environment.

- You will need the **BootPL32.exe** file if you wish to use the BOOTPL Lite program to set up IP parameters.  The **BootPL32.exe** file is provided on the CDROM.

- The NIC must be given an IP address and routing information to be used with TCP/IP.  This can be done with MAP for Windows if you have a NetWare connection on your network, or with NIManage for Macintosh if there is an Apple Macintosh on the network.

- You can also configure IP and routing information using the **ARP -S** program, supplied with Windows.

- Prior to running the **ARP –S** or **BOOTP** programs, the controller must know
  a) the Ethernet (MAC) address of the NIC (see the bottom of the Diagnostic test Page), and
  b) that TCP/IP in the NIC has been enabled.

- Once the IP address has been set using **ARP** or **BOOTP**, the Windows **TELNET** function can be used to:
  - Change IP parameters
  - Disable protocols
  - Enable or disable banner pages
  - Restore the NIC to factory defaults
  - Change the NIC management password
  - Reset the NIC.

## ARP –S in a Windows environment.

1) Open an MS-DOS Prompt box.  At the command prompt, enter:

   **ping [**any valid IP address on your network which does not belong to the NIC**]**

2) The unit you pinged should reply.

3) At the command prompt, enter:

   **arp –s  [**the IP address you wish to assign to the controller**] [**the MAC address of the NIC**]**

4) The entry should be accepted.

5) At the command prompt, enter:

   **ping [**the IP address you just assigned to the controller**]**

6) The request should *timeout*.

7) Cycle the power on the controller.  Wait for the NIC Status Page to print, or (if it is not enabled) wait for at least 2 minutes, then press the Diagnostic Test Page button on the back of the controller to generate a Diagnostic Test Page. The bottom of the Test Page shows the IP Address, which should be the same as the one you entered in steps 3 and 5 above.

8) At the command prompt, enter:

   **ping [**the IP address you assigned to the controller**]**

9) The request should bring a valid reply, indicating that the NIC is responding to its IP address.

**BootP Lite in a Windows environment.**

To use **BootP Lite**, the controller must be on the same network segment as the workstation from which it is being configured. **BootP Lite** *will not* function on a Windows NT machine that is operating as a DHCP server.

**BootP Lite** uses the **BootP** protocol to issue **BootP** requests for a finite amount of time, immediately after power up of the NIC (i.e., start the program immediately - do not wait for the NIC to complete its warm-up state). The NIC must be reset for it to function.

1) Open an MS-DOS Prompt box, and get into the **C:\Windows** directory of the workstation. Copy the **BootPL32.exe** file from the CDROM to the **C:\Windows** directory.

2) Cycle the power on the controller.

3) At the DOS prompt, immediately type **BOOTPL**.

4) Pull down the **Admin Menu** and open the **Configure** option.

5) Enter the appropriate values for the **IP Address**, the **Subnet Mask**, the **Default Gateway**, and the **MAC address**. Use colons (**:**) as delimiters for the MAC number (as opposed to the hyphens that ARP uses).

6) Click **GO**.

7) You will receive a message that the program is **Verifying.** Then it will tell you it is **NOT ACTIVE** – this is because the NIC is resetting itself.

8) Cycle power on the controller and wait for the warm-up time to pass.

9) **PING** the IP address of the NIC (see step 8 of *ARP –S in a Windows environment,* above). The request should bring a valid reply, indicating that the NIC is responding to its IP address.

**Telnet Functionality.**

1) Telnet to the NIC using the NIC IP address.  Both the login and password are the *NIC management password*, which defaults to  **sysadm**.

2) **Important** - *Shut off the protocols that you are not using*.

3) Enter the **Subnet Mask** and **Default Gateway** values for the NIC.

4) **Exit**, **SAVE**, then cycle power on the controller.

**Creating an LPR Queue on a workstation.**

1) Install the LPR spooler on the workstation.  When done, the setup program will have created a group icon for the desktop.

2) Double click on the **spooler** icon, then pull down **setup** and choose **Define a new queue**.

3) At the **Remote Host Name** prompt, enter the NIC IP address, then PORT1 for the **Remote Printer Name**.

4) Go to **Control Panel**, select **Printers**, and choose **Connect**.

5) Select your digital duplicator driver and click on **Next**.

6) At this point you should see an entry in the "**Available ports**" listing for the Windows LPR spooler name.  For example:

**C:\spool\[printer name]**

**BootP in an NT environment.**

To use **BootP Lite**, the controller must be on the same network segment as the workstation from which it is being configured. **BootP Lite** *will not* function on a Windows NT machine that is operating as a DHCP server.

**BootP Lite** uses the **BootP** protocol to issue **BootP** requests for a finite amount of time, immediately after power up of the NIC (i.e., start the program immediately - do not wait for the NIC to complete its warm-up state). The NIC must be reset for it to function.

1) Copy the **BootPL32.exe** file from the CDROM to the **Windows** directory.

2) Cycle the power on the controller.

3) From the **Program Manager** under **File**, select **Run BootPL32**.

4) Pull down the **Admin Menu** and open the **Configure** option.

5) Enter the appropriate values for the **IP Address**, the **Subnet Mask**, the **Default Gateway**, and the **MAC address**. Use colons (**:**) as delimiters for the MAC number (as opposed to the hyphens that ARP uses).

6) Click **GO**.

7) Wait about 5 minutes, then press the Diagnostic Test Page button on the back of the controller to generate a Diagnostic Test Page. The bottom of the Test Page shows the IP Address, which should be the same as the one you entered in step 5 above.

8) Pull down the **Admin** menu to verify the changes. A message should come back indicating the unit is **ACTIVE**. This indicates that the NIC is responding to the new parameters. You should now be able to **ping** and **TELNET** to the controller.

**Setting up LPR on an NT4 workstation/ server.**

1) Open the **Printers** folder and double-click on Add Printer.
2) In the **Add Printer Wizard** screen, select My Computer, then **Next**.
3) Click on **Add Port…**.
4) Double-click on LPR Port.
5) In the **Add LPR compatible printer** screen, for
   Name or address of server providing lpd:
       enter the NIC IP address,
   and for
     Name of printer or print queue on that server:
       enter PORT1 (*all uppercase*).
   Then click on **OK**.
6) In the **Add Printer wizard** screen, put a    mark in the box next to the port containing the NIC IP address and port you just entered.  Then click on **Next**.
7) Select an appropriate digital duplicator printer driver, then click on **Next**.
   Note: PCL and PostScript printer drivers and files are installed by the CDROM installation program. You may manually load the PCL drivers by browsing the CDROM under your local language directory.

   ***PostScript drivers require PPD files and the Adobe Printer Driver to be installed.***

8) Enter an appropriate name to identify the digital duplicator on the network as a printer, and click on **Next**.
9) Enter an appropriate Share Name, keeping in mind the issues relating Windows 95/98 clients with respect to share name lengths greater than 8 characters.  Then click on **Next**.
10) Allow the wizard to print a test page, then click on **Finish** to exit.

A Windows Test Page will be printed on the digital duplicator, and the printer name entered in Step 8 will appear in the list of printers.

**Peer-to-peer network printing.**

Two utilities have been provided to enable workstations in a Windows peer-to-peer networking environment to print to the digital duplicator utilizing special printer ports in the Printer Wizard. These are the:

a) IPX Redirector, and the

b) IP Redirector.

## Installing and Using the IPX Redirector

See the section entitled *Connecting to a Peer-to-Peer Ethernet Local Area Network* in Chapter 2, *Using Your Controller*, of this <u>Controller User's Guide</u>, for installation details.

## Installing and Using the IP Redirector

1) make sure the workstation has the TCP/IP protocol stack and a web browser installed.

2) Locate and run the SETUP.EXE file that installs the IP Peer-To-peer Redirector program. It is located on the CDROM in the following directory:

**[CDROM drive letter]:\WIN\LAN Tools\ IP-P2P**

Click on OK when done and follow the program prompts.

3) Use one of the methods discussed in this manual to configure the TCP/IP parameters of the controller (recommend the Configuration Utility).

4) Go to the Windows menu (**Start → Programs**), locate and start the IP-P2P menu item, and complete the installation of the IP port using the following guidelines:

a) **Max Hops for Search** - once you install the program, you can setup Peer-To-Peer IP with a hop count. The default hop count is **2**. The hop count number determines how many networks the program will search to find units. An entry of 2 searches only the network wire

directly connected to the workstation/hub. An entry of 2 would search the wire attached to the workstation, plus all networks accessible though two routers. Entries of 15 or higher will automatically search every connected network (a number this high is not recommended due to the network traffic it generates).

b) **IP Port Base** - the starting port number for the NIC. The default number is **10000** (corresponding to a TCP/IP port of 10001). You can change it if you need to.

c) **Printer Names** – lets you select how you can view the printer names in the Windows port list. For example, instead of 'controller', the controller could be named after the digital duplicator to which it is attached, or the location of the digital duplicator (e.g., "Marketing DD").

d) **Based on Serial Number** – uses the controllers network serial number to identify the printer names. For example, if 992180 is the serial number of the unit, **SN992180 1** would be the printer port.

e) **Based on IP address** – use the IP address to identify printer names. For example, if 90.0.0.200 is the IP address for the controller, **90.0.0.200 1** would be the printer port.

f) **Based on DNS (Domain Name Server)** – uses the DNS name to identify the printer name. For example, **<PTR-MKTG.DOMAIN.COM>.**

If you cannot find printers automatically because of the router setup or hop count setting, you can add them manually.

g) from the IP-P2P setup screen, click on the **Printers …** button.

h) Enter the information in all fields on the new screen.

| Field | Description |
|---|---|
| IP Address: | Enter the IP address of the controller. |
| Name: | Assign a name to the printer. You can enter any name you feel best identifies the printer. |
| Port Number: | The port number of the printer (default is 10001). |
| Description: | Use this field to describe the printer location to the users who will access the printer. |

**Table 4-4.2.  IP-P2P Setup Field Descriptions**

      i)  Click the **Add** button.  The digital duplicator is listed in the Available Printers field at the bottom of the screen.

      j)  Click **OK** after setting up the last printer you wish to add, then **OK** again to exit the Setup screen.

  5)  Add the printer to the workstation using the Windows Printer Wizard:

      a)  Get to the Windows Printer wizard and click on the **Add Printer** icon**.**

      b)  Select **Local Printer.**

      c)  Select the digital duplicator printer driver you want to use.

      d)  A list of printer ports appears, including IP peer-to-peer ports.  Select the IP port you wish to assign to the printer driver (i.e., the one you just set up in step 4).

      e)  Complete the rest of the installation steps.

## Dynamic Host Configuration Protocol (DHCP).

DHCP is a service much like BootP, in that it provides a method for assignment and maintenance of IP addresses. The NIC is able to obtain IP information from this service.

There are two user settable, DHCP variables (refer to the NIC **TCP/IP Configuration Menu** HTML page using a web browser):

1. Enable DHCP, and

2. IP info in NVRAM.

Be aware of the following characteristics of the NIC card related to DHCP.

- Under **DHCP Settings,** if "Enable DHCP" is not checked, DHCP is not enabled, and the NIC will make no DHCP requests under any circumstances. If the NIC does not have an IP address stored, or if "IP info in NVRAM" is not checked (not enabled), the NIC will issue BootP requests.

- If "Enable DHCP" is checked, DHCP is enabled and the NIC will make DHCP requests whenever it is Reset, or on power up, provided it does not have an IP address stored, or that "IP info in NVRAM" is not checked. These DHCP requests will be in addition to BootP requests.

- If "Enable DHCP" is checked, and the NIC had an IP address in NVRAM, and "IP info in NVRAM" is checked, then the NIC will use the information from NVRAM and there will be no DHCP activity on the part of the NIC.

The factory default condition is that both "Enable DHCP" and "Use IP info in NVRAM" are checked (enabled).

**Network Note**     ✔     **IMPORTANT INFORMATION FOR A DHCP SERVER ENVIRONMENT -** If "Enable DHCP" and "IP address in NVRAM" are both checked – which is the case for the NIC factory default state – *you must establish a permanent lease or reservation for the NIC parameters in the DHCP server*. Failure to do so may result in the server re-assigning the NIC IP address to another host.

# AppleTalk notes.

These procedures are written for an Apple Macintosh running MAC OS 7.6.1. The are included in this documentation for convenience of the cross-platform (PC and Mac) network administrator.

Folders containing the utilities covered here are on the CDROM that shipped with the controller, located in the following directory:

**[CDROM drive letter]:\MAC\LAN Tools .**

The CDROM may be read on either a PC or a Macintosh computer.
Screen shots of the Configuration Utility, the web browser, and the utilities specific to the Macintosh are available in the Apple Macintosh version of this manual. To obtain the Mac version, run the CDROM installation program on a Mac and select the option to install the manual, then print it from the Mac.

**Apple Chooser Printer Configuration.**

1) Make sure you have installed the printer drivers on the Macintosh, and that operating system is at least MAC OS 7.6.1.

2) Click on the Apple icon in the Macintosh menu bar, select **Control Panel**, then **AppleTalk**.

3) Click on **Edit**, **User Mode**. Select **Advanced**, then click on **OK**.

4) Under **Connect via:**, select **Ethernet**.

5) Click on **Options…** ,select **Active**, then **OK**.

6) Close the **AppleTalk** window.

7) Open the **Chooser**.

8) Click on the **AdobePS** icon. A list of printers will appear in the display to the right.

9) Click on the appropriate digital duplicator controller, then **SETUP…**

10) Click on **AUTOSETUP**. The Chooser communicates with the printer and locates the proper PPD.

11) Select **OK**, then exit from the Chooser.

Details on this procedure may be found under the title *Connecting to an EtherTalk Local Area Network* in Chapter 2, *Using Your Controller*, in the Macintosh version of this Controller User's Guide.

**NIManage for AppleTalk.**

**Caution** ⭐ **It is recommended that you do not use NIManage for anything other than <u>initially</u> setting a TCP/IP address or an AppleTalk Printer Name.**

Using more than one method to set NIC parameters can result in NIC 'lock up', where it will not communicate over the network. For example, if the controller should lose its capability to communicate to the network because all of the protocols have been turned off, the NIC will have to be set back to factory default status using the hardware jumpers on the card, before network operation can resume. This procedure is called "Reset to Factory", and is reserved for a trained, service technician.

1) Copy the **NIManage** files from the CDROM to a folder on the Macintosh.

2) Click on the **NIManage** icon when it appears on the Mac's desktop. The **Select a Unit** screen will be displayed.

3) Select the appropriate controller and click on **Select…**

4) Under the **LAN Print Server** menu item, use the **Configuration** menu to change the controller's (Appletalk) **Printer Name** (to, for example, "Sales Digital Duplicator", or the actual name/model of your digital duplicator).

5) After completing changes to AppleTalk configurations, close the **NIManage** program

6) Cycle the power on the digital duplicator controller to store the new name into NVRAM.

**Network Note**   ☑   This NIManage procedure assumes there are no zones on the network.  If your network has zones, they will also be displayed and you will be able to select the name of your network zone, change zones, etc.

Details on the use of NIManage for setting a TCP/IP address may be found under the NIManage portion of *Using the Configuration Utility to Set Up Your Network Controller*, located in this chapter of the Macintosh version of this Controller User's Guide.

## NIC "Reset to Factory" procedure.

This procedure is not normally performed on a functioning controller, since it results in the loss of all network settings. Thus it is reserved for use by qualified service technicians.

**Warning**

**Hazardous voltages are present in the printer controller. Never remove any cover or work near exposed electrical parts while the power cord is connected.**

Begin by removing all cables attached to the controller, as well as the top cover.

**Note**

A discussion of how to remove and replace the cover of the controller is outlined in the Appendix B, *Upgrading Controller Memory*, of the Controller Reference Manual.

Identify the NIC as the board attached to the UTP LAN connection on the rear of the controller chassis.

*Once power has been removed from the controller*, and it is no longer connected to the network, and you have identified the NIC, do the following:

1) Locate the Reset Jumper **OP2**. It is located in the row of jumpers near the UTP port.

2) Move this jumper to the **ON** position, so that the jumper covers the center pin and the pin nearest the jumper designator.

3) Temporarily replace the cover on the controller using at least one screw to keep it in place, and plug in the power cord to the controller – DO NOT connect it to the network at this time.

4) Power on the controller. The NIC status lights will blink as it performs its diagnostic tests – the green LED blinks three times then goes into alternating green/amber light sequence. When you see this pattern, power off the controller.

5) Remove the power cord from the controller, then the top cover.

6) Move the Reset Jumper **OP2** back to its **OFF** position, so the jumper covers the center pin and the pin nearest the **OFF** designation.

7) Re-install the top cover, the power and LAN cords, and re-connect to the digital duplicator. This completes the process.

# 5

## Overlay Printing

**Introduction**

This chapter provides instructions on how to use your digital duplicator in applications requiring *overlay printing*, where two or more images are combined to make a single, printed image.
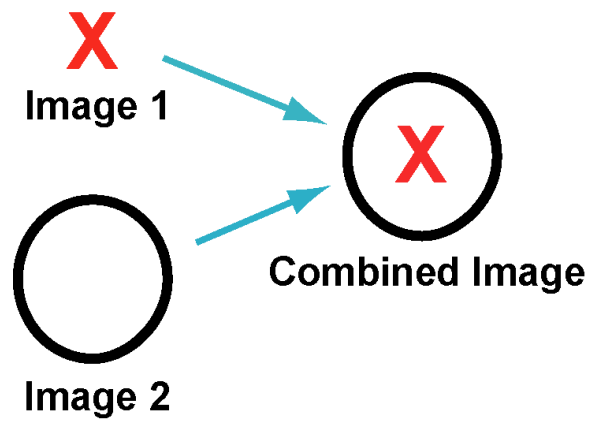


One of the unique capabilities of several models of the digital duplicator is the overlay feature.  The process of overlaying two images onto one, printed output is accomplished by combining an image from the duplicator's scanner (placed on top of the glass or using the ADF) with one that is sent from the computer.

**Note**

If your model of digital duplicator does not have an OVERLAY key or function, this chapter does not apply.

Follow all steps, in the order documented here. Failure to do so may result in the digital duplicator printing only the image sent from the computer.

# Step 1

**Take the digital duplicator OFFLINE.**

Locate and push the **ONLINE** button on the digital duplicator.  The green light or arrow (the **ONLINE** symbol) should *extinguish*.
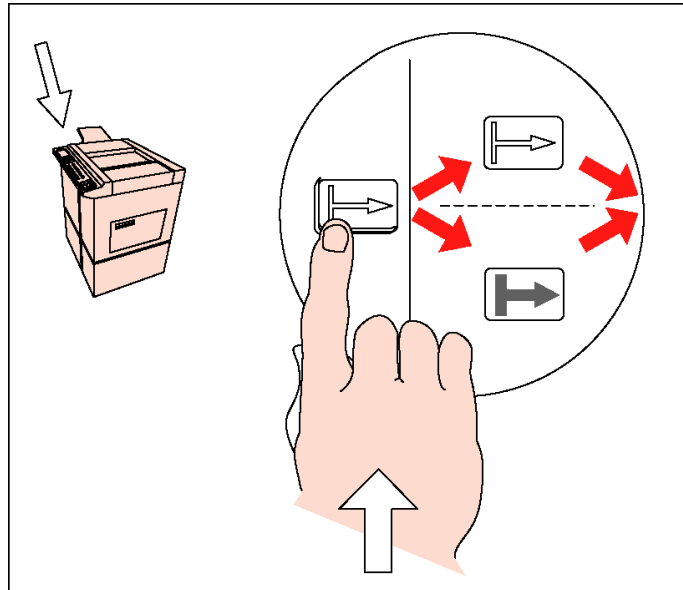


**Figure 5-1.1.  Push the ONLINE button on the digital duplicator to take it OFFLINE.**

# Step 2

**Place the document to be copied on the duplicator.**

Locate the paper original of the document to be copied and place it on the scanner glass, or in the ADF tray, as appropriate.
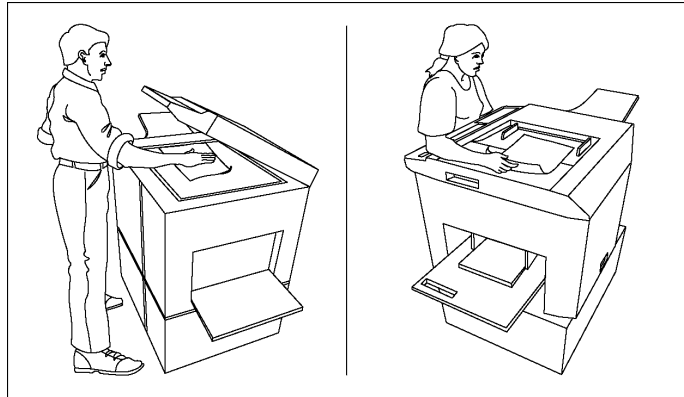


**Figure 5-1.2.  Place the document to be copied on or into the digital duplicator.**

# Step 3

**Push the OVERLAY button.**

Locate and push the **OVERLAY** button on the digital duplicator's control panel.  The green light or **OVERLAY** symbol should illuminate.
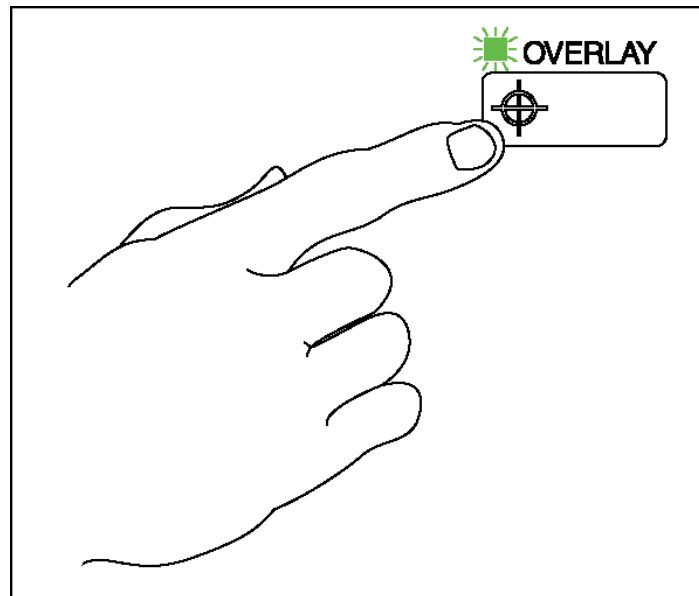
OVERLAY



**Figure 5-1.3.  Push the OVERLAY button on the digital duplicator.**

# Step 4

**Put the digital duplicator ONLINE.**

Locate and push the **ONLINE** button on the digital duplicator. A green light or arrow (the **ONLINE** symbol) should light up.
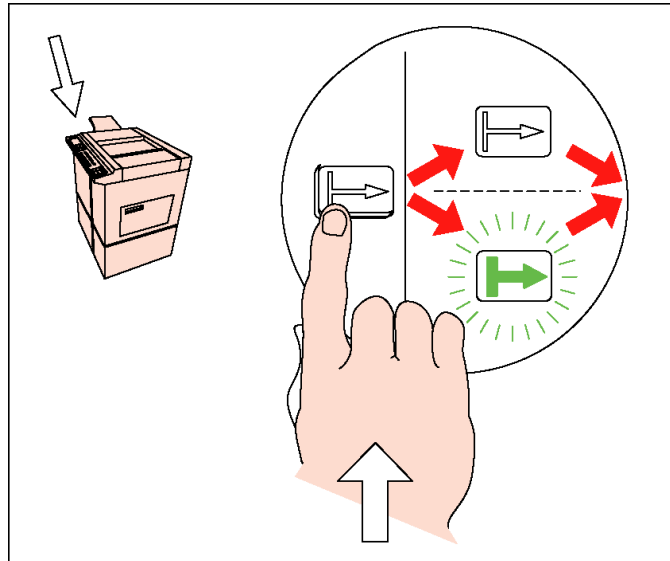


**Figure 5-1.4. Push the ONLINE button on the digital duplicator**

---

**Note** ☑

You may be using a model of digital duplicator that displays the ONLINE message on an alphanumeric display panel, and uses an 'OK' option to invoke it. In this case, the following process of putting the digital duplicator back ONLINE for image overlay may be more appropriate:

a) Locate the digital duplicator panel display.

b) Use the arrow keys to highlight the **On-line** option.

c) Press the arrow under the **OK** option to activate it.

---

# Step 5

**Send the document
to the digital
duplicator.**

Locate the computer page to be printed and send it to
the digital duplicator.



**Figure 5-1.5.  Print the computer page.**

The page exiting the digital duplicator will have the
image scanned as well as the one sent from the
computer printed on it.

# 6

# Maintenance and Adjustments

There are no adjustments or periodic maintenance tasks to be performed on the controller.

# **7**

## **Troubleshooting**

**Introduction**

Difficulties in printing to your digital duplicator have many causes ranging from simple problems like running out of paper to more difficult ones like incorrect computer-to-controller configuration, or an actual component failure. This chapter provides assistance with:

❑ Incorrect/Unexpected Digital Duplicator Output.

❑ Controller, Digital Duplicator, and Computer Error Messages

❑ Frequently Asked Questions

## Incorrect/ Unexpected Digital Duplicator Output

If your digital duplicator gives you unexpected output, check the symptoms in Table 7-1.1 for a recommended action.

**Table 7-1.1. Resolving Problems with Incorrect Digital Duplicator Output**

| Symptom | Action |
|---|---|
| The unit does not produce a master. | Note the condition of the status lights on the controller. Then turn to Appendix B, *Controller Status Lights*, locate the appropriate Controller Status condition, and follow the recommended action to be taken to correct it. |
| A new master is made, but only blank pages print out. | Verify that:<br>1) All page sizes match in the application software and the setup for your digital duplicator.<br>2) The correct printer driver for your model of digital duplicator is selected in the application software.<br>3) The document to be printed is not blank.<br><br>If these steps do not clear up the problem, contact your supplier for service. |
| Part of the image I see on my monitor is missing when it prints. | Verify that the page size and page orientation (portrait vs. landscape) selected in the application software matches the configuration of your digital duplicator. You may need to change drum sizes in the digital duplicator or select a different page size to match the drum currently installed in the digital duplicator. |
| The document image is rotated and partially missing when it prints. | Make sure you have the correct printer driver installed for your digital duplicator. Specifically, the paper sizes called for by the printer driver must match that supported by the digital duplicator. |

## Controller, Digital Duplicator, and Computer Error Messages

Except for the states immediately before and after power up, a controller light status of anything but green indicates a problem of some sort. Note the status light condition and turn to Appendix B, *Controller Status Lights,* to locate it under Controller Status condition. Then follow the recommended action to be taken to correct it. In some cases, you will have to re-send your print job.

The digital duplicator or your computer may also give you an error message relating to a problem with the setup of your digital duplicator. Or the controller may indicate something is going on, but you cannot determine what it is. Examine the following tables on Resolving Error Messages for some of the more common situations and solutions.

**Table 7-1.2. Resolving Error Messages**

| Symptom | Action |
|---|---|
| There is a blinking YELLOW light on the controller. | Possible sources of the problem:<br>1) Loose fitting cable between the digital duplicator and the controller.<br>2) An error condition on the digital duplicator, indicated by one or more of its control panel status lights (e.g., master jam, out-of-ink, out of paper, etc.).<br><br>Take corrective action as necessary and press RESET on the digital duplicator.  Print one proof copy from a newly created master; if the image is not complete, you will need to re-send the document to the controller to create a new master.<br>    Note: If you are unable to print a proof copy, you will need to power off the controller and digital duplicator, then power them back on again to clear the error (see Chapter 2, *Using your Controller*, for the correct power-on sequence).  Then re-send the document to create a new master. |
| The controller's green status light starts blinking slowly as if it is processing a print job AFTER my print job has been completed. | In a shared printer environment, the controller is processing a print job from another computer. |

# Frequently Asked Questions

The following tables contain lists of frequently asked questions and their answers.

**Table 7-2.1. Frequently Asked Questions Table #1**

| Question | Answer |
|---|---|
| How far may the controller be from the computer to which it is connected? | **Parallel**: less than 10 ft (3 m). <br> **LocalTalk**: less than 1000 ft (300 m). <br> **Ethernet:** less than 1000 ft (300 m). |
| How many computers may be connected and use the controller at the same time? | Two computers plus a LAN may be connected directly to the controller at the same time. This provides for a potentially unlimited number of computers to use the controller. For example, a PC may be connected to the parallel input and a Macintosh computer may be using the LocalTalk port, all while computers on the LAN are connected through the 10BaseT Ethernet port. |
| Which input port is the fastest? | The parallel port is generally the fastest connection, providing up to 2 MBytes/s between the computer and controller. |
| Will the digital duplicator function as network printer? | Yes! Your controller has a network interface, so it can be connected directly to a computer network. In addition, if the controller is connected to a networked computer through one of its other interface ports (parallel or LocalTalk), the digital duplicator can function as a remote network printer attached to that computer. See the documentation that comes with your operating system as to how to set up a remote printer on your network. |
| How much RAM is installed in the controller? | 32 MBytes. |
| Will the controller work with a laptop? | Yes. In fact, any computer may use your controller/duplicator combination. |

**Table 7-2.2.  Frequently Asked Questions Table #2**

| Question | Answer |
|---|---|
| How far may the controller be from the digital duplicator? | The physical distance between the digital duplicator and the controller is limited to the length of the cable connecting them. The standard cable recommended for this purpose and shipped with the controller is 10-ft (3 m) in length.<br><br>Longer cables are not recommended, but may be specially made to suit a particular installation.  For cable specifications, see the *Controller Û Digital Duplicator Cable Specifications* in Appendix A, *Controller I/O Port Specifications*, in the <u>Controller Reference Manual</u>. |
| Is any special wiring required to power the controller? | No.  The controller contains a wide-input-range power supply. Simply plug the appropriate cord into the controller for your power system. |

**Table 7-2.3. Frequently Asked Questions Table #3**

| Question | Answer |
| --- | --- |
| Should I add more memory? | Installing additional or larger SIMMs will produce the following effects: 1) increase the number of soft fonts which may be downloaded to the controller, 2) decrease the time it takes for the controller to process a print job or series of jobs, 3) free up the computer(s) attached to the controller quicker since print jobs will be stored in the controller's cache, 4) a combination of all of the above.  See Appendix E, *Upgrading Controller Memory*, in the <u>Controller Reference Manual</u>, for details on how to install additional memory into your controller. |
| Must I configure all software when I install the controller? | The CDROM installation program installs printer drivers on your computer.  Only when the installation program is finished will your combination of controller and digital duplicator be ready to use. <br><br>Once the controller has been configured, the digital duplicator will be accessible by all of your application software. |
| Will the digital duplicator work in Windows 3.1 or DOS as well as Windows 95? | Yes, but you must first configure your controller and digital duplicator using Configuration Utility on a computer that is running Windows 95/98, NT4, or later versions of Microsoft Windows.  This process sets up the communication between the controller and the digital duplicator.  Then you will have to manually configure the Windows 3.1 or DOS computer (operating system or programs) to use the digital duplicator.  Any of the PCL-type (such as HP LaserJet III or newer) and generic PostScript drivers should work just fine.  Also, since there is no Configuration Utility program to assist in configuration, your software will have to send any configuration commands to change the controller language from PostScript to PCL-5e, or vice versa, or to adjust for paper size, etc. |
| Will the digital duplicator work with all application software programs? | Extensive testing has been done to ensure that your controller and digital duplicator will function for all applications running under Windows 95/98/NT4 or greater. |

**Table 7-2.4. Frequently Asked Questions Table #4**

| Question | Answer |
|---|---|
| What fonts are built into the controller? | Both PCL and PostScript fonts are built into your controller. For a list of resident fonts, see Chapter 2, *PostScript Printing*, and Chapter 3, *PCL Printing*, in the <u>Controller Reference Manual</u>. |
| Can I use other downloaded soft fonts with the controller? | Yes, you can use downloaded soft fonts in either the PostScript or PCL modes.  Be aware that the more soft fonts you download, the more internal memory you use, and the slower will be the processing time for a print job. See Appendix E, *Upgrading Controller Memory*, in the <u>Controller Reference Manual</u>, for details on how to install additional memory into your controller. |
| Can the digital duplicator perform the 'bleed-off' print function? | Yes, with certain limitations.  See the *Bleed-off Printing* section under *Managing Paper* in Chapter 2, *Using your Controller*, of the <u>Controller User's Guide</u>. |
| Should I use the PostScript or PCL printer driver? | For most printing applications, the PostScript version will be your best choice for your printer driver, as it will usually render graphics and fonts faster than PCL.

However, an application you use may employ PCL fonts that do not have a close equivalent among the built-in PostScript fonts of your controller.  In this case, you will need to use the PCL driver to obtain the correct printed output. |

**Table 7-2.5.  Frequently Asked Questions Table #5**

| Question | Answer |
|---|---|
| Can I set the number of copies to be printed from the computer? | Yes, the printer driver has a box in which you may designate how many copies to print.  Remember to turn off the collate function in your software – see *Number of Copies* under *Managing Paper* in Chapter 2, *Using your Controller* |
| How important is the "AutoCycle" key in printing a job? | In addition to the proof copy, the digital duplicator must print at least one additional copy of a new master.  Until that additional copy has been made, the digital duplicator will not allow a new master to be created.  We recommend, therefore, that AutoCycle on the digital duplicator be *enabled* to allow the digital duplicator to clear itself and be ready for the next print job. |
| What does the Diagnostic Test Page button do? | Pushing the Diagnostic Test Page button causes the controller to output a page with the current configuration. |
| Can I use the digital duplicator as a scanner? | No.  The scanner portion of the digital duplicator is not accessible to the controller and, therefore, your computer.  However, scanned images from another source (such as a graphic file) may be transferred from the computer to the controller for printing. |
| Will the controller print the maximum image size allowed by the digital duplicator? | Yes. |
| Can I combine two A4/US letter pages side-by-side into a single A3/11" x 17" image? | Yes, as long as your software supports A3/11" x 17" printing in landscape mode. |
| If I have a software or hardware question, whom do I call? | Contact the supplier or local sales/service person from whom you obtained the digital duplicator and/or controller. |

# A

## Diagnostic Test Page

### Generating a Test Page

The controller can print a Diagnostic Test Page for the purpose of verifying the following:

- ❑ Controller-to-digital duplicator communication.

- ❑ Correct installation of a memory upgrade

- ❑ Correct configuration of your controller.

The software needed to perform this function is built-in to the controller and is activated by pushing the **Diagnostic Test Page** button located on the lower right hand corner of the controller's rear panel – *it is not necessary to connect to a computer to generate the Diagnostic Test Page*.
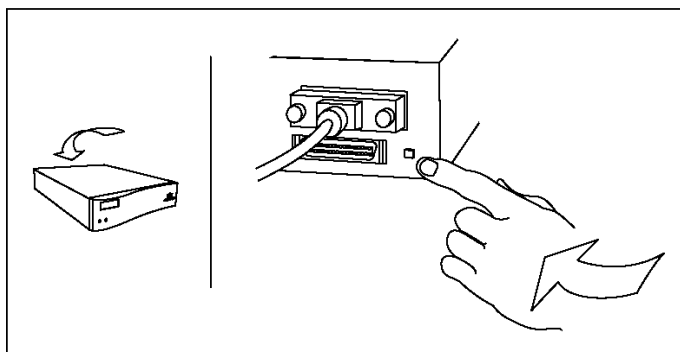


**Figure A-1.1.  Push the Diagnostic Test Page button.**

**Note**  ✔  You may have a model of digital duplicator that does not allow the controller to automatically put it ONLINE.  If this is the case, you must *manually push the ON LINE and Auto-Cycle buttons* to enable their respective functions on the digital duplicator.

$|\rightarrow$
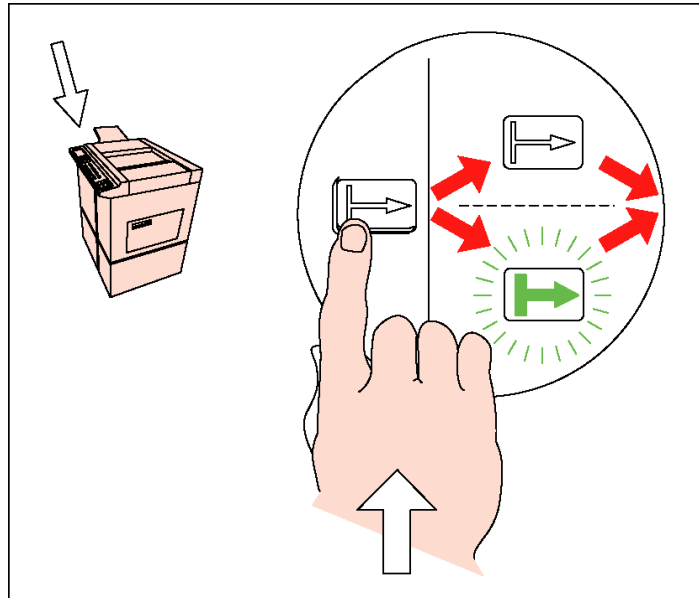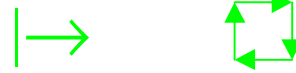


**Figure A–1.2.1.  Enabling ON LINE**

**Note**  ✔  *The ONLINE symbol or light may or may not illuminate when the button is pressed*.  Even though the action of pushing the ONLINE button enables communication with the controller, some models of digital duplicators will illuminate the lamp *only after a print job has been sent* (e.g., after the Diagnostic Test Page button has been pushed).

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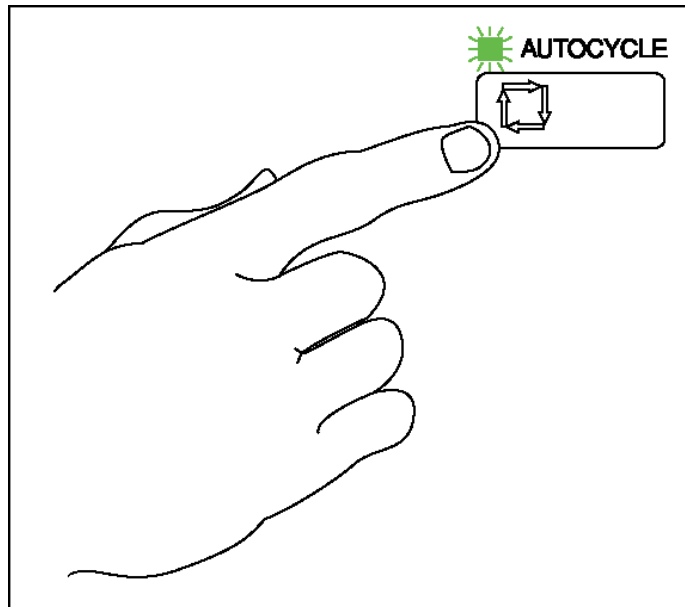
**Figure A–1.2.2.  Enabling Auto-Cycle**

If the cable between the controller and the digital
duplicator has been properly connected, and the
controller and digital duplicator are both powered on,
a diagnostic test page similar to what is shown below
will be generated by the digital duplicator.

# *Digital Duplicator Controller*

**Adobe® PostScript® 3™**

---

**Installed fonts:**

Albertus ‡
*Albertus Italic* ‡
Albertus Light ‡
**AntiqueOlive Bold** §
**AntiqueOlive Compact** §
*AntiqueOlive Italic* §
AntiqueOlive Roman §
*Apple Chancery* ▫
Arial ‡
*Arial Bold Italic* ‡
**Arial Bold** ‡
*Arial Italic* ‡
ITC AvanteGarde Gothic Book *
*ITC AvanteGarde Gothic Book Oblique* *
**ITC AvanteGarde Gothic Demi** *
*ITC AvanteGarde Gothic Demi Oblique* *
Bodoni
**Bodoni Bold**
*Bodoni Bold Italic*
*Bodoni Italic*
**Bodoni Poster**
**Bodoni Poster Compressed**
**ITC Bookman Demi** *
*ITC Bookman Demi Italic* *
ITC Bookman Light *
*ITC Bookman Light Italic* *
Carta • ✳☆▪)◯☛✸159△✹
**Chicago** ▫
Clarendon †
**Clarendon Bold** †
Clarendon Light †
**CooperBlack**
*CooperBlack Italic*
COPPERPLATE THIRTYTHREE
COPPERPLATE THIRTYTWO
*Coronet Regular* ↔
Courier
**Courier Bold**
*Courier Bold Oblique*
*Courier Oblique*
Eurostile **
**Eurostile Bold** **
**Eurostile Bold Extended Two** **
Eurostile Extended Two **
Geneva ▫

GillSans ‡
**GillSans Bold** ‡
**GillSans Condensed Bold** ‡
*GillSans Bold Italic* ‡
GillSans Condensed ‡
**GillSans Extra Bold** ‡
*GillSans Italic* ‡
GillSans Light ‡
*GillSans Light Italic* ‡
Goudy
Goudy Bold
*Goudy Bold Italic*
**Goudy ExtraBold**
*Goudy Oldstyle Italic*
Helvetica †
**Helvetica Bold** †
***Helvetica Bold Oblique*** †
Helvetica Condensed †
**Helvetica Condensed Bold** †
***Helvetica Condensed Bold Oblique*** †
*Helvetica Condensed Oblique* †
Helvetica Narrow †
**Helvetica Narrow Bold** †
***Helvetica Narrow Bold Oblique*** †
*Helvetica Narrow Oblique* †
*Helvetica Oblique* †
**Hoefler Text Black** ▫
***Hoefler Text Black Italic*** ▫
*Hoefler Text Italic* ▫
Hoefler Text Ornaments ▫ ✌❀❁❂❃❄❅
Hoefler Text ▫
Joanna ‡
**Joanna Bold** ‡
*Joanna Bold Italic* ‡
*Joanna Italic* ‡
LetterGothic
LetterGothic Bold
*LetterGothic Bold Slanted*
*LetterGothic Slanted*
ITC Lubalin Graph Book *
*ITC Lubalin Graph Book Oblique* *
**ITC Lubalin Graph Demi** *
***ITC Lubalin Graph Demi Oblique*** *
*Marigold* *
ITC Mona Lisa Recut *
Monaco ▫

**New Century Schoolbook Bold** †
***New Century Schoolbook Bold Italic*** †
*New Century Schoolbook Italic* †
New Century Schoolbook Roman †
New York ▫
Optima †
**Optima Bold** †
***Optima Bold Italic*** †
*Optima Italic* †
Οξφορδ *
**Palatino Bold** †
***Palatino Bold Italic*** †
*Palatino Italic* †
Palatino Roman †
**Stempel Garamond Bold** †
***Stempel Garamond Bold Italic*** †
*Stempel Garamond Italic* †
Stempel Garamond Roman †
ITC Symbol * ΑβΧδΕφΓηΙφΚλΜ!≅#∋%⊥&
Tekton •
**Times Bold** †
***Times Bold Italic*** †
*Times Italic* †
Times Roman †
**Times New Roman Bold** ‡
***Times New Roman Bold Italic*** ‡
*Times New Roman Italic* ‡
Times New Roman ‡
Univers †
**Univers Bold** †
***Univers Bold Oblique*** †
*Univers Oblique* †
Univers Light †
*Univers Light Oblique* †
UniversCondensed †
**UniversCondensed Bold** †
***UniversCondensed Bold Oblique*** †
*UniversCondensed Oblique* †
UniversExtended †
**UniversExtended Bold** †
***UniversExtended Bold Oblique*** †
*UniversExtended Oblique* †
Wingdings Regular ▫ ✌☜☞☝☟♦♥
*ITC ZapfChancery Medium Italic* *
ITC ZapfDingbats * ✶✷✸★✹✺✻✼

---

**Configuration and Settings:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Model Number: | CPIF 26 | Installed RAM: | 32MB | Duplicator resolution: | 400 DPI | |
| Locale Setting: | US | Standard Ports: | Parallel AT | Video I/F Version: | unknown | |
| PostScript Version: | 3010.106 | RAM Disk Size: | 384KB | Default Paper Size: | Letter | |
| Board ROM Version: | 904243742 | Hard Drive: | Not Installed | Auto-Cycle: | ON | |
| Flash ROM Version: | 17.098.280b | Additional Port: | Network | Diverted Copies Level: | 99 | |
| Chassis Serial No: | AU598000000 | IP Address: | 90.0.0.200 | PCL Symbol Set: | PC-8 | |
| Board Serial No: | 00000 | Ethernet Address: | 00:40:af:79:1d:a0 | Auto-Master Eject: | OFF | |
| Network Serial No: | 992180 | Protocols Enabled: | TCP/IP IPX AT | Reserved RAM: | None | |
| | | | | RAM FontCache: | 3MB | |

**Figure A–1.2.3.  Sample Diagnostic Test Page**

## Controller Status Lights

**Message Tables**

The controller has two status lights.  These are used to indicate:

- ❑ Controller status.

- ❑ Print job status.

- ❑ Digital duplicator online and master creation status.

- ❑ Operator intervention action required for the digital duplicator or controller.

There are thirteen possible states the controller may signal to the user.  The first seven states are the normal conditions encountered during the course of using your controller.  The six states following those indicate the abnormal conditions, requiring operator intervention to correct a problem.

Use Tables B-1.1 and B-1.2 to interpret the message described by the condition of the status lights, and to decide what action to take.

**Normal Status Light Displays**

The normal operating states of the controller are summarized in Figure B-1.1.

Table B-1.1 explains the meaning of the state displays you normally see during the course of printing.  After states 1 (power-on) and 2 (self test) have terminated successfully, states 3 though 7 occur in the order indicated.
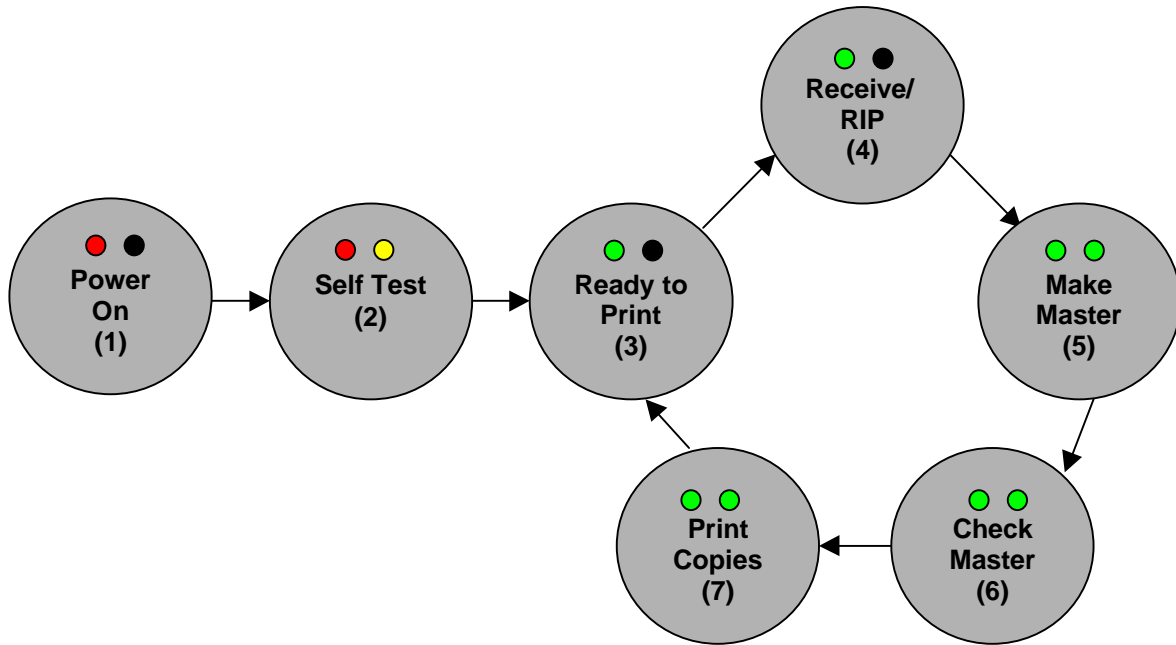
**Figure B-1.1. Normal Operation State Diagram**

## Status Light Legend

The icons shown represent the status light conditions.



Steady ON light

Flashing light
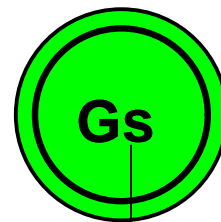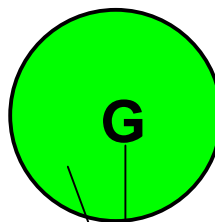
Color

Flash type

Color: **G** = green, **Y** = yellow, **R** = red. Dark = off
Flash: **s** = lights are flashing simultaneously.
**1** or **2** = lights are flashing alternately.
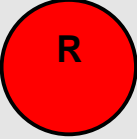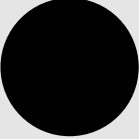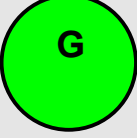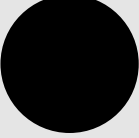
| | Status Light Condition | | | |
|---|---|---|---|---|
| **State** | **Left** | **Right** | **Controller Status** | **Action to be taken** |
| 1 | **R** (red) | (black) | Controller power on - left status light is on steady for less than **30 seconds**. | None - the controller has just been powered on. |
| 2 | **R1** (red) | **Y2** (yellow) | Controller self-test. | None - the controller is performing internal, diagnostic tests. |
| | **G** (green) | (black) | Ready to Print. | Send a print job to the digital duplicator. |
| 4 | **G** (green) | (black) | • Receiving a print job.<br>• RIPping a print job. | None. |
| 5 | **G** (green) | **G** (green) | Master making in progress. | None. |
| 6 | **Gs** (green) | **Gs** (green) | The digital duplicator has paused for proof checking by the operator. | Review the proof copy for desired result.<br>• If OK, press **Print Start** on the digital duplicator.<br>• If not OK, check if **Auto-cycle** is on.<br>  ✓ If so, modify the print job and re-send.<br>  ✓ If not, toggle (press twice) the ON LINE button on the digital duplicator, then modify the print job and re-send. |
| 7 | **G1** (green) | **G2** (green) | • Printing.<br>• Copying. | None. |

**Table B-1.1.  Normal Controller Status Light Conditions**
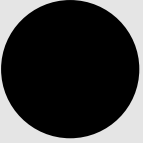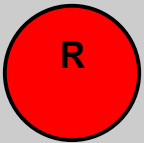
| | Status Light | Conditions | | |
|---|---|---|---|---|
| State | Left | Right | Controller Status | Action to be taken |
| 8 | ● | ● | The controller is not powered on. | Confirm the controller is connected to mains power. Push the controller power switch to ON. |
| 9 | G | Y | The digital duplicator needs operator attention. | Check the digital duplicator panel. It may need paper, master, ink, or some other attention. |
| 10 | ● | Y | The digital duplicator is offline or disconnected. | • Make sure the digital duplicator-to-controller cable is attached to both units. • Make sure the digital duplicator is powered ON. • Push the **ON LINE** button on the digital duplicator. |
| 11 | Rs | Ys | Digital duplicator failure. | Call supplier for service. |
| 12 | R | ● | Controller failure. | Call supplier for service. |
| 13 | R | ● | Controller failure if left status light is on steady for greater than 30 seconds. | Call supplier for service. |

**Table B-1.2.  Abnormal Controller Status Light Conditions**

# C

## Controller/Digital Duplicator Compatibility

**Guidelines**

Digital duplicators come with a variety of different features and options.  The specification entitled *printer resolution*, expressed as *dpi* (dots-per-inch), is the *only digital duplicator specification you need to know when selecting a controller*.

The dpi resolution rating/compatibility of your controller is stated in the *Key Features* table in Chapter 1, *Controller Features*, of this Controller User's Guide.

**Note**

Early models of the digital duplicators that do not have an ONLINE button on their control panel, or that have a printing resolution of 406 dpi, are not compatible with your controller.

For assistance in determining the compatibility of your controller and digital duplicator, as well as suitability to your printing application, contact your local digital duplicator sales representative.

# D

## Service, Support, and Warranty Information

**Introduction**

This chapter contains information about:

❑ Assistance sources

❑ Warranty

Depending upon how you purchase and use your equipment, the best source of support will be either your own organization or the supplier from which you purchased the controller and/or digital duplicator. Your warranty statement for the controller is included in this chapter.  Please read it carefully and retain it for your records.

## Assistance Sources

### Assistance From Your Organization

If your organization has a number of digital duplicator/printers, the best source of assistance may be within your own company.  Many companies designate central support personnel to help you when you have a problem with your printer, or when you need consumable items such as paper or ink.  These support personnel, in turn, can call upon special resources at the supplier when necessary.

### Assistance From Your Supplier

If you purchased your digital duplicator and controller from a large system vendor, your supplier is the best source of assistance.  Your salesperson is familiar with your needs, equipment, configuration, and software and can provide the information you need. Your supplier can also access special manufacturer support resources and programs, such as on-site service and maintenance.  Contact your supplier for details on available support options.

## Warranty

Information regarding the warranty of the controller product and the items shipped with it may be obtained from your digital duplicator sales representative.

**Note** ✔

If your are using a mechanical switchbox, ensure that it is equipped with a surge protector. Damage to the controller could occur from use of unprotected mechanical switchboxes.

## Re-packing Guidelines For Returning Your Controller

❑ Remove and include the cable connecting the digital duplicator to the controller.

❑ Include a note summarizing which items are being returned, and why.

❑ Use the original shipping container and packing materials if possible.

❑ Include print samples illustrating the problems you are having, if applicable.

**Warning** 🛑

**Shipping damage as a result of inadequate packaging is the customer's responsibility. Use the original packing materials whenever possible.**

# E

## Environmental Specifications

### Location Requirements

The environment should be stable, with no abrupt changes in temperature or humidity and no exposure to direct sunlight or chemicals.
To aid in reading the status lights, we recommend the controller be mounted on a flat surface, preferably the top of a table, bottom side down, near to the duplicator.  It is not sensitive to any particular mounting position or direction.  Use only the cable supplied with your controller to connect the controller and digital duplicator.

Refer to the manual that came with your digital duplicator for information relating to its placement.

Figure E-1.1 shows the suggested amount of space to leave around the controller.  Leave adequate space to allow air circulation around vents and to prevent overheating.
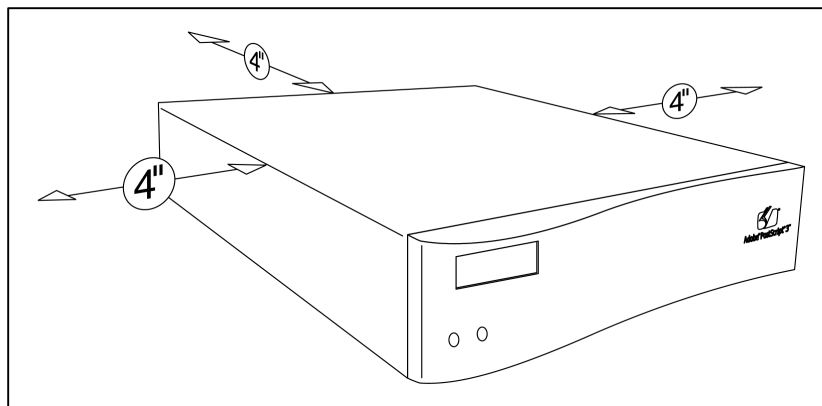


**Figure E-1.1.  Controller Clearance Dimensions**

# Controller Specifications

**Table E-1.1.  Physical Dimensions**

| Dimension | Value |
|-----------|-------|
| Height | 2.3 in. (58 mm) |
| Width | 10.5 in. (267 mm) |
| Depth | 9.7 in. (246 mm) |
| Weight | 6.2 lb (2.8 kg), maximum |

**Table E-1.2.  Electrical Power**

| Requirement | Value |
|-------------|-------|
| Input | 100-240 volts (+-10%) |
| Dissipation | 40 watts, maximum |

**Table E-1.3.  Environmental Specifications**

| Item | Operating | Storage/Standby |
|------|-----------|-----------------|
| Temperature | 50° to 91° F (10° to 35° C) | 32° to 95° F (0° to 35° C) |
| Relative Humidity | 20% to 80% | 10% to 95% |

**Note**   ✔   Use of any cable other than the one supplied with the controller to interconnect the controller and digital duplicator could jeopardize performance of the controller with respect to meeting EMI/RFI specifications.

## FCC Regulations

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules.  Operation is subject to the following two conditions:

1) This device may not cause harmful interference, and

2) This device must accept interference received, including interference that may cause undesired operation.

## VDE

Hiermit wird becheinigt, daß Controller CPIF26 DIN-VDE-Norm bzw.  EN-Norm bzw.  BMPT-Amtsbl. Vfg 243/1991 funkentstört ist.

Dem Zentralamt für Zulassungen im Fernmeldewesen wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf die Einhaltung der Bestimmungen eingeräumt.

# Glossary

**10Base-2** - IEEE 802.3 Ethernet standard implemented on thin coaxial (RG58) cable, where 10 = 10 Mbps transmission rate and Base = baseband.  May have up to 185 meters between network nodes.

**10Base-T** - IEEE 802.3 Ethernet standard implemented on UTP cable, where 10 = 10 Mbps transmission rate and Base = baseband.  May have up to 100 meters between a network node and a network drop.

**25 MHz vs 100 MHz -** These refer to CPU clock speeds.  Generally, the higher the clock speed, the faster the computational speed of the CPU, and the computer.

**300 DPI -** A printer resolution specification stating that the length and width of the master will have 300 DPI.

**300x400 -** A printer resolution specification stating that the length of the master will have 300 DPI, while the width of the master will have 400 DPI.

**386 -** First-generation 32-bit x86 microprocessor introduced to the market by the Intel Corporation.

**486 -** Second-generation 32-bit x86 microprocessor introduced to the market by the Intel Corporation, incorporating a dedicated math coprocessor.

**64 Bit Architecture -** A CPU, memory, and I/O system that transfers data and instructions using an 8 byte-at-a-time (64 bits) process.

**Adobe -** A software company that produces the PostScript printer drivers and PostScript fonts and language used by your computer to communicate with the controller.

**Adobe Certified -** Indicates that the hardware or software has passed a rigorous set of tests by Adobe and is certified to perform printing tasks as stated by the manufacturer.

**ANSI -** American National Standards Institute – a standards committee that develops and publishes technical standards.

**AppleTalk -** A proprietary network layer protocol developed by Apple Computer, Inc. for use in its Macintosh series of computers.

**AppleTalk Port -** An I/O port that adheres to the AppleTalk standard.

**Application -** Computer programs which allow computer users to perform some specific task such as word processing, accounting, etc.

**Application software -** See Application.

**Architecture -** The design and implementation of connecting components, interfaces, and protocols in a computer, program, or network.

**ASCII -** American Standard Code for Information Interchange - A standard for encoding characters (including the upper and lowercase alphabet, numerals, punctuation, and control character) using seven bits.  The standard is 128 characters; IBM expanded

the set to 256 by adding an eighth bit to each existing character.  The expanded set provides graphic, Greek, scientific, financial, and foreign language characters.

**ASIC Chip -** Application-Specific Integrated Circuit – a semiconductor product created to perform a particular function.  An example would be a logic chip in the controller or computer that allows the microprocessor (a generic or non-specific IC), to get and move data in a specific environment.

**Auto Switching -** Describes the behavior of the controller with respect to how it decides from which input port it will capture data for printing.

**Bi-directional -** Communication flow in two directions.

**Binary Digit -** Describes base-2 math or electronic states of zero (off) or one (on).

**BIOS -** Basic Input Output System – the hardware and firmware which allows a processor to control and use various aspects of a computer's hardware (such as disk drives, keyboard, monitor, and printer ports).

**Bit -** The smallest unit of storage or communication in a computer.  See Binary Digit.

**Bleed Off -** The technique of printing to the physical edge of the document paper.

**Bleed Through -** The result when, during the printing process, ink saturates the paper and is deposited on the copy below it, or leaves residual ink on the drum which is passed on to the next copy, resulting in a 'ghost' image.

**Buffer -** A temporary data storage area necessarily used during data transfer between two systems or processes whose input and output data rates differ.

**Built-In Fonts -** Fonts which are resident in the controller and cannot be erased through normal use of the controller.

**Byte -** Eight bits, can represent a character or number, and is the most common form of data storage and transfer.

**Cache –** A high-speed, short-term storage area.  Also describes the act of copying data from a relatively slow, long-term storage medium into a relatively fast storage medium/buffer, to enable fast access by multiple processes.

**Cache Buffer -** An area in RAM or on a hard drive used for storing frequently accessed data or program instructions.

**Chip -** The short name for an integrated circuit (IC) device.

**CISC -** Complex Instruction Set Computer – a type of CPU that can recognize as many as 100 or more instructions, enough to carry out most computations directly.  Generally slower than a RISC processor.

**CMYK -** Cyan, Magenta, Yellow, and Black, the four colors used in making a composite color picture (K = key color = black) – see Color separations.

**Coaxial wire -** LAN interconnect wire, usually type RG58, runs from one computer workstation to another in a daisy-chain design.

**Collate copies -** The feature of most print management programs which sends one page after another to the printer.  Note:  must be turned off to prevent creating a new master for each copy printed.

**Color separations -** Individual, single-color images used to create a full-color printed image with a multiple-pass printing process.  Colors typically used are CMYK.

**Configuration Utility -** The program used to manage printing tasks on a digital duplicator.

**Connectivity -** The term used to describe the physical methods for connecting the controller to a computer.

**CPU -** Central Processing Unit – the instruction execution and data processing component of the computer hardware.

**Daisy Chain -** A method described by serially connecting together several devices.  Peripheral devices that use a SCSI port, such as a CDROM, hard disk and scanner, can be daisy chained to one SCSI port of a computer.

**Diagnostic Test Page -** Generated by the controller in response to the corresponding button on the back panel being pushed. It displays the controller's internal settings.

**Dialog Box -** A pop-up window in some programs used to get information from the user before proceeding with some task.

**Digital Duplicator -** A duplication device that takes electronic images from a scanner or controller, creates a master of the image, and produces copies of that image on plain paper.

**DIMM -** Dual Inline Memory Module, a type of RAM configuration

**DIP Switch -** A switch in DIP (Dual Inline Pin) configuration, usually located on a circuit board of a device.

**DOS -** Disk Operating System – a non-graphical line-oriented command-driven single-task program that provides application software access to computer BIOS functions, primarily the disk drives.

**Dot Gain -** Describes the result when ink spreads a small amount on the paper after passing through the holes in the master, to ultimately become bigger than the original hole.

**Download -** The process of moving software or data from one location (e.g., an FTP site on the Internet) to another (e.g., your computer).

**DPI -** Dots Per Inch – dots are the smallest printable units by a printer.  Thus, DPI is the resolution specification of a printer or screen communicating the graininess of the resulting image.

**DPI Resolution -** The specification relating to the image quality of the printer or screen display.  Generally, the higher the DPI rating, the better the image, and the more memory the product must use to create the image.

**DRAM -** Dynamic-refresh Random Access Memory - a type of RAM IC that uses solid state capacitor elements requiring continuous refresh to store information.

**Drivers -** A file containing information needed by an application program or operating system to operate a peripheral such as a monitor or printer.

**Duplexing -** Printing on both sides of a sheet of paper. Digital duplicators print duplex by having the user pass the paper through the digital duplicator a second time.

**ECP -** Enhanced Capability Port - An improved parallel port supporting two-way communication between the computer and the controller.

**EEPROM -** Electrically Erasable PROM – a form of EPROM that may be erased and re-programmed in-circuit. See Flash ROM.

**EPP -** See ECP.

**EPROM -** Electrically Programmable ROM – a ROM chip that can be re-programmed. In a controller, the EPROM contains the latest versions of the firmware, and the PostScript and PCL5e interpreters.

**EPS -** Encapsulated PostScript – a method of storing a high-resolution graphic image in the PostScript page description language.

**EPS Files -** A file containing an image saved in the EPS format.

**Ethernet -** The common name given the LAN technology standard described by IEEE 802.3. The Xerox Company originally developed Ethernet.

**EtherTalk -** The name given by Apple Computer to the process of using the AppleTalk protocol on an Ethernet LAN.

**External drive -** A hard drive, ZIP drive, JAZ drive, CDROM drive, floppy drive, etc. with its own case, cables and power supply, external to the computer. It is usually connected to the computer through a SCSI or parallel port.

**Firmware -** This is the operating system (BIOS) software of the computer or controller stored in ROM.

**Firmware Version -** This number communicates which revision of firmware is resident in the controller or computer.

**Flash Memory -** A type of ROM that may be electrically reprogrammed (updated or upgraded) though software rather than having to remove/replace it.

**Flash ROM -** See Flash Memory.

**Floppy drive –** The mechanism that writes and reads data to and from 3.5" floppy disks.

**Font -** An arrangement of screen or printing dots forming a certain style of character numbers, letters, or symbols.

**Font Caching -** Storing fonts in RAM or a hard drive speed up printing.

**Font Matching -** The process the controller uses to select a font for printing based on the instructions it receives from the printer driver. For example, when a document containing TrueType fonts is sent to the controller using a PostScript printer driver, the controller performs font matching to match each TrueType font with an equivalent, resident PostScript font. The same process is done if a document containing PostScript fonts is sent to the controller using the PCL printer driver. The

closeness of the matched font to the original determines how accurately the fonts are reproduced on the printed page.

**GB -** See Gigabyte

**GDI -** Graphical Device Interface - software that utilizes the computer's CPU and other resources, rather than dedicated internal hardware, to perform the RIP function.

**Gigabyte -** GB, GByte - A unit of measure for memory or disk storage capacity equal to 1,024 MBytes.

**GUI -** Graphical User Interface – the feature of a program where the interaction with the user is through high-resolution graphical screen displays (e.g., windows), and using tools like a computer mouse, versus a line-by-line text method.  For example, MS Windows uses a GUI method, while MSDOS uses a line entry method.

**Halftone computation -** The process used by a RIP device to determine the size and density of dot placement when rendering a halftone image.

**Halftoning -** The process of creating the illusion of continuous tone on a printed image by breaking the image down into a series of dots. Varying the sizes and densities of the dots in a halftone screen creates the optical illusion of variations of gray or continuous color in the image.

**Hard Disk/Drive -** A computer storage device which uses a fixed, rotating platter as the storage medium for computer applications and data.

**Hardware -** The physical, tangible components of the product.

**Hub –** A 10base-T device used to connect two or more computers to each other.

**I/O -** Input/Output.

**I/O port** – see I/O and Port.

**IBM Compatible -** A computer that adheres to IBM's standards and is the equivalent in performance.

**IEEE -** Institute of Electrical and Electronic Engineers – the U.S.–based standards-setting and governing body of electrical engineers.

**IEEE 1284 -** Standard 1284 of the IEEE containing specifications of the bi-directional parallel port used in the controller and PC.

**IEEE 802.3 -** Standard 802.3 of the IEEE describing the 10 Mbit Ethernet LAN.

**IEEE 802.3u -** Standard 802.3u of the IEEE describing the 100 Mbit Ethernet LAN.

**Image Overlay -** The process of combining two digitized images onto a single digital duplicator master utilizing 1) the scanner in the digital duplicator and 2) a digitized image sent to the controller.

**ISDN -** Integrated Services Digital Network - digital telephone technology permitting the simultaneous transmission of voice, data, and video.

**KB -** see Kilobyte.

**Kilobyte -** A unit of measure for memory or disk storage equal to 1,024 bytes**.**

**Knocking Out -** Light type is knocked out of a dark background.

**LAN -** Local Area Network  - a method using hardware and software to connect two or more computers together, to share information.  Typically, a LAN connection is made via coaxial or UTP cables, or by means of line-of-sight infrared signals.

**Leading Edge -** Refers to the edge of the paper that first enters the paper input side of the digital duplicator.

**Trailing Edge -** Refers to the edge of the paper that last exits the paper output side of the digital duplicator.

**LED -** Light Emitting Diodes – lamps which emit light using semiconductor (versus incandescent) technology.

**LocalTalk Cable -** The cable conforming to the Apple-proprietary LocalTalk specifications used to connect two LocalTalk ports.

**LocalTalk Port -** An Apple-proprietary, serial port on the Macintosh computer which communicates via the AppleTalk protocol.

**LPI -** Lines Per Inch – the number of lines of characters per inch of vertical page space.

**Mac -** The short form of Macintosh, the name of the personal computer produced by Apple Computer, Inc.

**Mac Clone -** A computer that adheres to Apple Macintosh standards and is the equivalent in performance.

**Main Board -** See Motherboard.

**Master Interlock -** The term used to describe the condition where the digital duplicator refuses to make a new master because it is still using the current one.  Typically, this occurs when the requested copy count has not run to 0, or a just-created master has only produced a proof copy.

**Master Making -** The process where the digital duplicator is creating the vellum master.

**MB -** see Megabyte

**Mbps -** Megabits-per-second - a unit of data communications speed measurement equal to one million bits per second.

**Megabyte -** A unit of measure for memory or disk storage equal to 1,024 KBytes.

**Megahertz -** Also described as MHz, a unit of frequency measurement equal to one million Hertz (cycles per second).

**Memory -** The component of a computer or controller where either temporary or permanent storage of data or CPU instructions takes place.

**MHz -** See Megahertz.

**Microprocessor -** The CPU of a computer or controller.  Typical implementations in PC's include the x86 family from Intel, AMD and Cyrix for the PC-family, and the 68000 and G3 (RISC) families for the Apple Macintosh.

**Microsoft Windows NT -** See Windows NT 3.5 or Windows NT 4.0.

**MIPS -** Millions of Instructions Per Second – a term used to compare the execution speed of two CPUs.

**MIPS Processor -** A CPU or microprocessor made by the MIPS Technologies, Inc.

**MMX -** Matrix Multiply eXtensions - a set of instruction set extensions incorporated into later versions of x86 Pentium-level and higher microprocessors, enabling direct high-speed processing of multimedia data, including voice, audio, and video.

**Moire -** An interference pattern which usually results in distortion of an image, caused by overlaying the dots of different separation colors, or by printing a higher-resolution image (e.g. 400 dpi or 600 dpi) on a lower-resolution printer (e.g. 300 dpi).

**Motherboard -** The main board of the computer or controller which houses the CPU.  It distributes signals to and receives information and power from plug-in ('daughter') boards, such as a power supply and LAN interface.

**MSDOS -** A version of DOS written by the Microsoft Corporation for x86 computers.

**Multitasking -** The term used to describe the feature of some operating systems where the computer may have several programs open and operating simultaneously.

**Nanoseconds -** $1x10^{-9}$ seconds, or one-billionth of a second in time.

**NetBEUI -** NetBIOS Extended User Interface - a network transfer protocol that defines the network layer of Microsoft and IBM local area networks.

**NetWare -** A proprietary NOS manufactured by Novell for local area networks.

**Network -** The term used to describe the connecting of two or more computers together for the purpose of sharing data and common resources such as printers and disk drives.

**Network Address -** A unique number that identifies a physical network node.

**Network Drop -** The physical port where a connection to a LAN by a computer may be made.  A functioning network drop is usually attached to a hub.

**NIC -** Network Interface Controller – a board or card that connects to the motherboard of the computer or controller, providing the necessary electrical interface to communicate over a LAN.

**NIC Utility -** A software program design to assist the user in setting up and managing the NIC.

**Node -** Any network station or component with a unique network address.

**Node Address -** A unique number that identifies a device on a network

**Non-parity -** The situation where parity checking is not done (see Parity).

**NOS** – Network Operating System - the software providing a computer access to LAN resources.

**Novell -** The software manufacturer that invented, develops and distributes NetWare.

**NT -** New Technology – applied to Microsoft Windows, is the name for the non-threading technology used to implement the multitasking feature.

**NVRAM –** Non-Volatile RAM – memory into which the CPU may write data it needs to be kept intact if the power is lost.  Batter-backed-up RAM is a type of NVRAM.

**On-Line –** Signals that the digital duplicator is ready to accept data and instructions from the controller.

**OS -** Operating System – the software that allows a program to or user to make use of the resources (disk drives, ports, display) of a computer.

**Over Printing -** Black type is over printed on light backgrounds.

**PANTONE Colors -** Used for printing inks. Each PANTONE color has a specified CMYK equivalent. To select a PANTONE color, first determine the ink color you want, using either the PANTONE Color Formula Guide 747XR or an ink chart obtained from your printer. PANTONE books are available from printers and graphic arts supply stores.

**Parallel Cable -** The cable used to connect the parallel port of the computer to the parallel input port of the controller.

**Parallel Port -** The port on the back of the computer, most commonly designated LPT1, which synchronously transfers one byte at a time between the computer and a peripheral.

**Parity -** The quality of oddness or evenness.  Used in simple error detection schemes: when comparing two numbers, parity exists if both are odd or even; no parity exists of one is even and one is odd.

**PC Clone -** A computer that adheres to the IBM design standards and is the equivalent in performance

**PCL5 -** Version 5 of the Printer Control Language for laser printers developed by the Hewlett Packard Company.  It is a set of commands that tell a printer and print driver how to print a document.

**PCL5e -** An enhanced version of PCL5, capable of translating documents sent in either PostScript or PCL5/5e.  See PCL5

**PDF -** Portable Document Format – developed by Adobe to represent documents independent of the software, hardware, and operating system used to create the original document file.

**PDL -** Page Description Language, developed by Adobe to format documents sent to a printer.  See PostScript.

**Peer-To-Peer -** Describes a network arrangement where workstations (peers) communicate with one another without the need for a server.

**Pentium -** A 32 bit, x86-class CISC microprocessor designed and manufactured by Intel and introduced in 1993.

**Pentium II -** A version of the Pentium microprocessor incorporating MMX and L2 (Level 2) cache technologies.

**Peripheral -** A physical device (such as a printer or disk subsystem) that is externally attached to a workstation or a network.

.**PJL -** Printer Job Language - developed by the Hewlett Packard Company. It is printer programming language which uses @PJL line commands to send a print job to a PJL-compatible printer.

**Port -** The electronic hardware or software components allowing the CPU to communicate with peripherals. The serial, parallel, AppleTalk ports are all examples of I/O ports on controllers, PCs and Macs.

**PostScript -** The trade name of the Adobe PDL. First used by Apple.

**PPD -** PostScript Printer Description – a text file containing the characteristics of a particular printer. Used by a PostScript printer driver to correctly send a file for printing on a particular printer. All PostScript-capable printers must have a PPD file to operate properly.

**Print Manger -** The computer's operating system program that spools and otherwise manages print jobs sent from the computer to various printers.

**Print Queue -** A list of files that a print spooler prints in the background while the computer performs other tasks in the foreground.

**Print server -** A device and/or program that manages documents sent to a shared printer.

**PROM -** Programmable ROM – a ROM which may be programmed.

**Protocol -** Governing rules for communicating between two devices. Computers wishing to communicate over a LAN must do so using the same protocol.

**Queuing -** The process of saving documents to be printed in the spooler, on a first-in-first-out basis.

**QuickDraw -** Apple printer driver/management software that ships with their operating system. QuickDraw is NOT compatible with the Adobe PostScript printer driver.

**RAM -** Random Access Memory - the computers non-permanent primary working memory, in which program instructions and data are stored.

**Rasterize -** See RIP.

**Registration -** the alignment of color and graphics.

**Removable Media -** The storage component of a disk drive that may be removed and replaced. Typically these are of 100 Mbyte or larger capacities and, except for the removable feature, would be considered to be a hard drive. See also ZIP Drive and SyQuest.

**Repeater -** A device used to extend cabling distances by regenerating signals.

**Resident Fonts -** Type fonts stored permanently in the controller or printer.

**Ring topology -** A closed-loop topology in which data passes in one direction from station to station on the LAN. Each workstation on the ring acts as a repeater, passing data to the next workstation on the ring.

**RIP -** Raster Image Processor/Processing – the process of converting the print control codes sent from the computer printer driver into an image constricted of lines or dots, to be printed on a screen or paper.

**RISC -** Reduced Instruction Set Computer – a CPU architecture in which the number of instructions that the microprocessor can execute is reduced to a minimum, resulting in increased processing speed.

**ROM -** Read-Only Memory – an IC or other device used for permanent storage of data or instructions for the CPU.

**Scanner -** A peripheral device that digitizes artwork or photographs and stores the image as a file that you can merge with text in many word processing and page layout programs.

**Scanning -** The process of using a scanner to capture an image for use in an electronic medium.

**Screen -** The display screen or area of the computer.

**SCSI -** Small Computer System Interface (pronounced 'scuzzy'). An interface to the CPU bus allowing it to communicate with addressed devices such as hard disk drives, CDROM drives, scanners and laser printers.

**Separations –** See Color separations.

**Serial Cable -** The cable used to connect two serial port for the purpose of data communications between them.

**Serial Port -** A port that sends and receives data in serial fashion, one bit at a time, asynchronously.

**Server -** A network device that provides services to client stations. Services include shared disks, files, and printers.

**Set Off** - The process of ink from the front of a freshly-printed copy adhering to the back surface of the next copy to land on top of it.

**Shielded Twisted Pair Cable -** Twisted pair wire surrounded by a foil or mesh shield to reduce susceptibility to outside interference and noise.

**SIMM -** Single In-line Memory Module - A plug-in memory unit containing the chips that constitute the RAM in the controller (computer, laser printer etc.)

**Soft Fonts -** Type fonts downloaded to RAM space provided for them in the controller.

**Software -** Program instructions written to cause the computer to perform a task or set of tasks.

**Spooling -** See queuing.

**Spot Color -** Unblended color. Use spot colors to achieve exact color match.

**SPP -** Standard Parallel Port – an older parallel port definition that transfers data in one direction only, from the computer to the peripheral.

**SPX -** Sequenced Packet Exchange - a NetWare network protocol using IPX to deliver messages, then guaranteeing delivery of the messages and maintaining the order of the messages on the packet stream.

**Star topology -** A LAN topology in which each workstation connects to a central device

**Star-wired topology -** A ring network (such as a token-passing ring) cabled through centralized hubs or connection devices to create a physical star topology.

**Switch -** An mechanical, electronic, or software device that allows a user to start/enable or stop/disable a process.

**SyQuest -** A manufacturer of removable-media hard and tape drives.

**TB -** See Terabyte.

**TCP/IP -**Transmission Control Protocol/Internet Protocol - a communication protocol for internet routing and reliable message delivery, originally endorsed by the U.S. Department of Defense and implemented on ARPANET. TCP/IP is the basis of the Internet and is widely used in local area networks.

**Terabyte -**TB, TByte - a unit of measure for memory or disk storage capacity equal to 1,024 GB.

**Terminal -** A keyboard and display screen through which users can access a host computer.

**TIFF -** Tagged Image File Format - TIFF files are often used to hold scanned photographic images.

**Tints -** A lightened color created by controlling the number and size of the dots used to print the color.

**Token Ring -** A type of network topology developed by IBM for Unix systems.

**Trapping -** A technique in which adjacent colors are slightly overprinted, eliminating white-space gaps.

**True Adobe PS -** Not an emulated version of PostScript, but a true implementation of the language. See also Adobe Certified.

**TrueType fonts -** Font technology developed by Apple Computer that ships with Microsoft Windows.

**TWAIN -** Technology Without An Important Name – the protocol that allows a scanner to send images it creates directly into a user's word processing page layout program.

**TWAIN Compliant –** Incorporates the TWAIN protocol.

**Unidirectional -** Communication flow in one direction only (i.e., input or output, but not both).

**Update -** The term used to describe a revision of software or firmware incorporating changes designed to eliminate issues of non-conformance to specifications.

**Upgrade -** The term used to describe a revision of software or firmware incorporating changes designed to enhance or provide new functionality.

**USB -** Universal Serial Buss - a high-speed serial data buss capable of transferring data up to 12 Mbps.

**UTP -** Unshielded Twisted Pair – 4, twisted-pair wires combined as a single cable. Used to connect components of a 10Base-T LAN installation.

**Vellum -** The cloth-like material used to make a master in the digital duplicator.

**Video Board -** The electrical interface on the digital duplicator to which a controller communicates in order to print a page. THIS IS A RICOH PRODUCT AND MUST BE INSTALLED INTO ALL DIGITAL DUPLICATORS BEFORE THE CONTROLLER CAN BE UTILIZED.

**Video Card -** See Video Board.

**Video Interface -** See Video Board.

**Virus -** A computer program, usually very small, potentially damaging to a computer, software program, or data.

**Vr4300 Chip -** The microprocessor used in the CPIF-22/23/24/26/27.

**WAN -** Wide Area Network - a network linking computers, terminals, and other equipment over a large geographic area.

**Windows 3.1 -** A 16-bit implementation of a GUI-based OS. The product does not employ a multitasking feature, but does add a GUI interface to DOS, and allows more than one program to be open at once.

**Windows 95/98 -** A 32-bit implementation of a GUI-based OS utilizing a threading technology in its implementation of multitasking. Invented, developed, and marketed by the Microsoft Corporation.

**Windows NT 3.5 -** A 32-bit implementation of a GUI-based OS utilizing a non-threading technology to allow multitasking. It has a user interface similar to Windows 3.1. Invented, developed, and marketed by the Microsoft Corporation.

**Windows NT 4.0 -** Similar to Windows NT 3.5 but with a user interface similar to Windows 95. Invented, developed, and marketed by the Microsoft Corporation.

**ZIP Drive -** A removable-media drive manufactured by Iomega, providing 100 MBytes of storage space.

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# E·L·E·S·Y·S