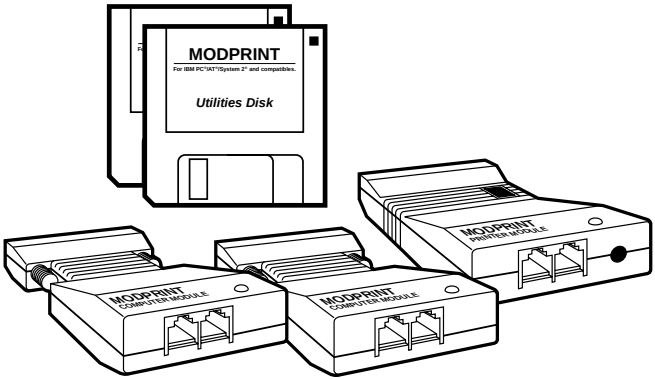
1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746

BLACK BOX
NETWORK SERVICES

MARCH 1998
PI670A-R2
PI670AE-R2
PI671A
PI672A

Modprint Starter Kit
Modprint Computer Module
Modprint Printer Module



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mail order: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS

Centronics® is a registered trademark of Centronics Corporation.

Windows™ is a trademark of Microsoft Corporation.

Windows® 95, Windows® NT, and MS-DOS® are registered trademarks of Microsoft Corporation.

HP® and LaserJet® are registered trademarks of Hewlett-Packard.

Epson® is a registered trademark of Seiko Epson Corporation.

AutoCAD® is a registered trademark of AutoDesk Corporation.

The trademarks mentioned in this manual are the sole property of their owners.

CONTENTS

Starter Kit contents

This starter kit contains everything you need to share a parallel printer with two computers.

- (2) Computer modules
- (1) Printer module
- (2) 25' connecting wires
- (1) Power supply (1 2VDC, 500mA min .)
- (1) User guide
- (2) 3½" Modprint utilities diskettes

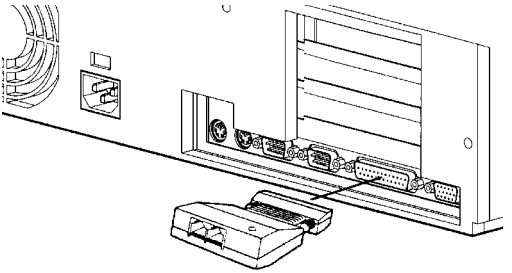
If you want to add more computers or printers, simply buy additional Modprint Add-on computer or printer modules as needed and connect in a daisy chain fashion. For more information about expanding the Modprint printer network, refer to the section **Expanding the Modprint network** on **page 49**.

NOTE

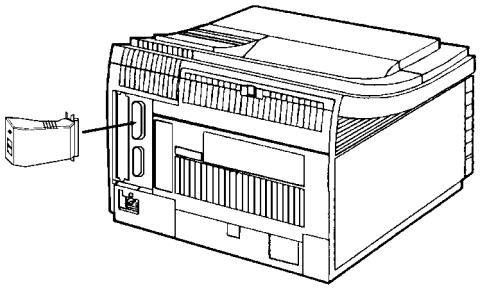
Only one power supply is required to power up to ten Modprint modules. Therefore, power supplies are not included or needed in individual Modprint Add-on modules.

Attaching the modules

1. Plug a Modprint computer module into the parallel port on each computer (just as you would plug in a printer cable).



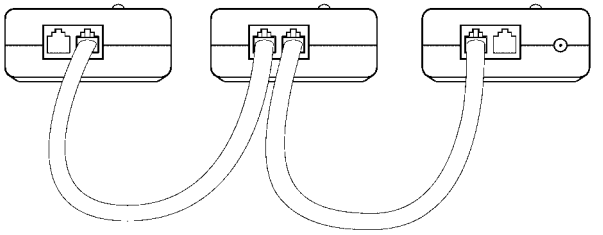
2. Plug the Modprint printer module into the parallel port on the printer (just as you would plug in a printer cable).



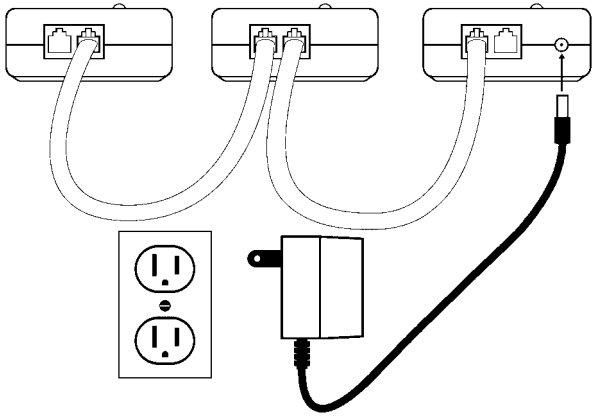
3. Connect the modules by snapping in one end of a connecting wire into a module's jack and the other end of the wire into another module's jack. You can connect the modules in any order, and you can snap the wire into either jack.

NOTE

If the included connecting wires are not long enough for your installation, they can be extended. See **Additional connection information** on **page 53**.



4. Plug the power supply into a wall outlet and insert the power plug into the round jack on the printer module.



After about 30 seconds, the LED on each begins to flash slowly at a regular interval. This indicates the system has initialized and is ready for printing. Each module's LED flash will be similar but may not be synchronized.

WHAT'S NEXT?

If you are sharing only one printer, you can start printing now. If you are sharing more than one printer, or want to transfer files between computers, you should install the Modprint utilities software.

Installing the Modprint Utilities

Your Modprint Printer Sharing Network (PSN) Starter Kit includes install programs and a set of printing utilities for MS-DOS, Windows 3.1x, and Windows 95. If you are sharing only one printer, you do not need to install the utilities unless you want to use the print spooler or transfer files between computers.

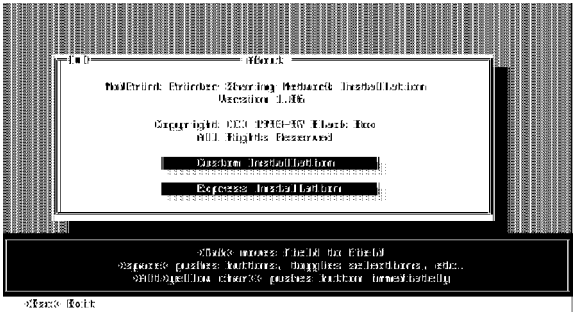
If you choose to install the Modprint utilities, you should install them on each computer connected to the Modprint network as follows:

MS-DOS Setup

1. Insert the Modprint Utilities diskette #1 into your floppy drive.

2. Run the INSTALL.EXE program located on the floppy diskette. The installation program creates a SPRINT directory on the computer and copies the utilities into this directory. It then runs the menu installation software.

3. When the following screen appears, select **Express Installation** and follow the prompts.

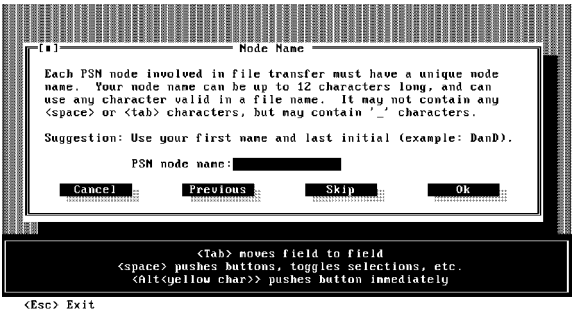


NOTE

The Custom Installation allows you to choose a different directory for your Modprint utilities, and other options. Express Installation is recommended, and is suitable for most installations.

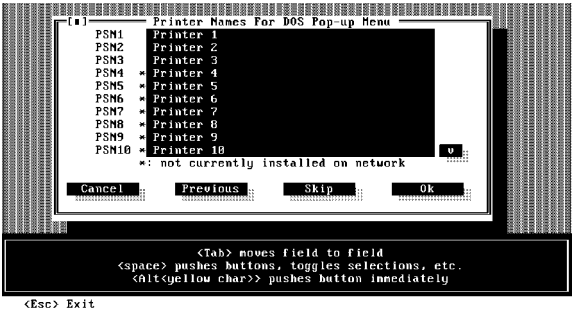
The Installation program asks you the following:

- Assign a node name



If you are not going to transfer files between computers, you can skip this screen by selecting Skip. If you want to use this capability, give each computer a node name when you install the Modprint Utilities on it.

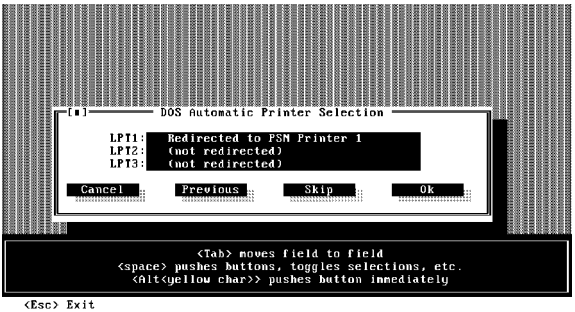
• Configuring For DOS Manual Printer Select



If you want to share multiple printers, and use only DOS applications, you can assign printer names to Modprint printers (up to thirty) on a pop-up menu. Users can open the menu within an application and select the printer.

Assign printer names that are descriptive in your environment. If you plan to share only one printer, you can skip the pop-up menu screen by selecting Skip. If you run DOS applications or "shell" to DOS under Windows 3.1x, you should still install the pop-up menu.

• Configuring For DOS Automatic Printer Selection.



DOS Automatic Printer Selection is a way to easily select your three most commonly used printers. You assign parallel ports LPT1, LPT2, and LPT3 to Modprint printers even if your computer only has one parallel port. To print to a specific PSN printer, you print to the assigned LPT port. For instance, you could set up LPT1 to be your letterhead printer and LPT2 to be your invoice printer.

HINT

Use the left or right arrow keys when LPT1, LPT2, or LPT3 is highlighted to change PSN printer numbers.

When the **Installation complete** message appears, reboot the computer to activate any changes made to the AUTOEXEC.BAT file.

5. Repeat steps 1 through 4 for each computer.

WHAT'S NEXT?

You can now start printing. Refer to the section **MS-DOS Printing** on **page 36**.

The Modprint utilities diskette includes a **README.TXT** file that provides more information about the utilities. After you install the utilities, this file resides in your **C:\SPRINT** directory.

Under DOS:

1. Type CD\SPRINT <CR>
2. Type TYPE README.TXT | MORE<CR>
3. To advance through the file, press any key.

Windows 3.1x Setup

1. To install the Windows 3.1x software, insert the Modprint Utilities Diskette #1 into your floppy drive.

2. Now run the SETUP.EXE program from the floppy disk.

3. Follow the prompts and enter the requested information.

4. Once the installation has completed, reboot your computer system and configure each printer's connect port to use PSN ports. Refer to **Editing a printer in Windows 3.1x** section.

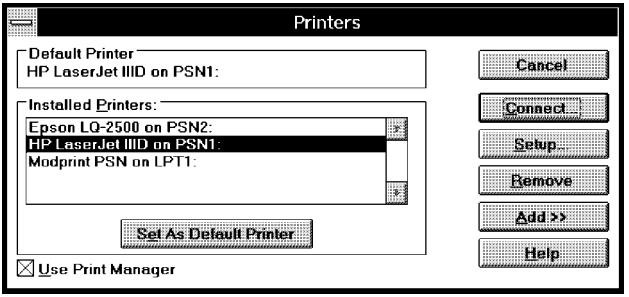
Editing a printer in Windows 3.1x

You can use up to 30 printers in Windows 3.1x by assigning them to PSN1, PSN2, PSN3 and so on up to PSN30. To change the printer port for each printer installed on the Modprint PSN Network, or to change printer ports for installed printers is simple.

1. Verify the printer module's assigned PSN printer number.

2. To edit the assigned printer number, open the **Windows Control Panel** in the **Main** window group and select **Printers**.

The Printers window opens.



3. Once the printer appears in the list of Installed Printers, highlight it and click on **Connect**.

The Connect window opens.

4. Make sure the box next to **Fast Printing Direct to Port** does have an X in it. If it does not, click on the box to add an X to the box.

5. Highlight the PSN number for the printer you selected and click **OK**.

6. Repeat steps 3-5 for each printer you need to edit.

You can now resume printing to any printer just by selecting it under the application that you are using.

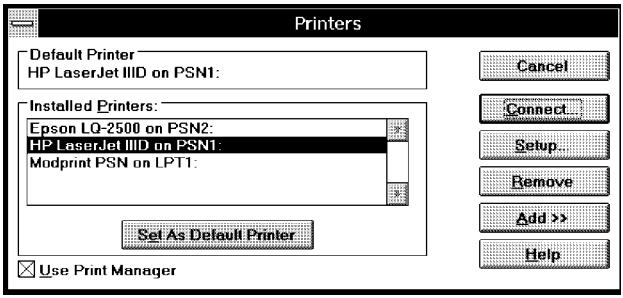
Adding printers in Windows 3.1x

You can use up to 30 printers in Windows 3.1x by assigning them to PSN1, PSN2, PSN3 and so on up to PSN30. Adding printers and configuring them to PSN ports is simple.

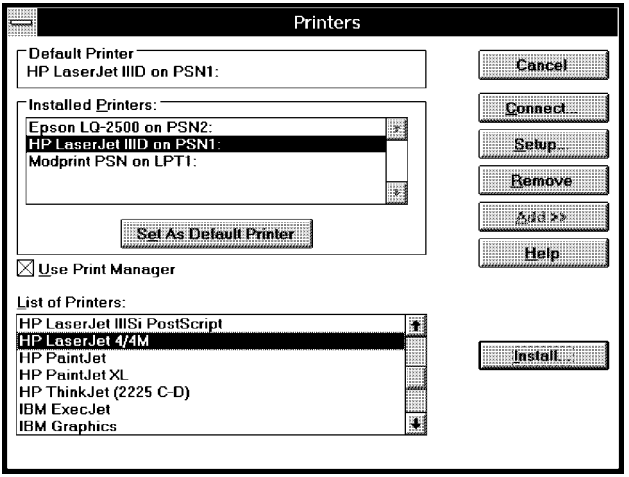
1. Verify that each new printer module is assigned to a unique PSN printer number.

2. You must now add the printer to the Windows list of installed printers and assign the Modprint PSN port number to it. To do this, open the **Windows Control Panel** in the **Main** window group and select **Printers**.

The Printers window opens.



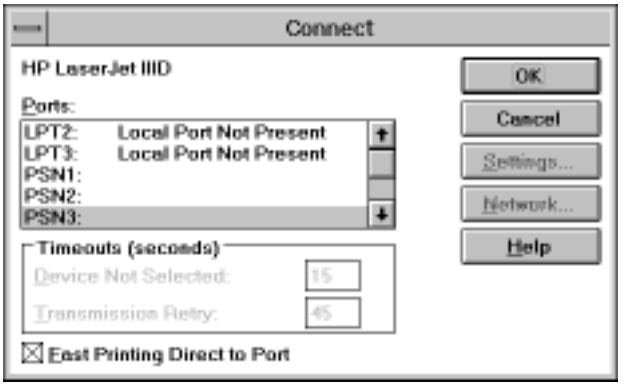
3. To install a printer device, click on **Add** in the Printers window. Highlight the printer in the list of printers that appear and click on **Install**.



NOTE

You may need to insert one or more of the Microsoft Windows disks to install the print driver. Follow the instructions Windows provides to do this. When the printer driver is installed, it will appear in the Installed Printers list.

4. When it appears in the **Printers** screen you need to connect the printer to one of the PSN numbers. Highlight the printer in the Installed Printers list, click on **Connect** and highlight the appropriate PSN number.



5. Make sure the box next to **Fast Printing Direct to Port** does have an X in it. If it does not, click on the box to add an X to the box.

6. Click on **OK** to save your selection.

7. Repeat steps 3-6 for each printer you want to add.

You are now ready to print to any printer just by selecting it under the application that you are using.

Windows 95 Setup

1. To install the Windows 95 software, insert the Modprint Utilities Diskette #1 into your floppy drive.

2. Now run the SETUP.EXE program from the floppy disk.

3. Follow the prompts and enter the requested information.

4. Once the installation is complete, reboot your computer system and configure each printer's connect port to use PSN ports. Refer to the **Editing a printer in Windows 95** section.

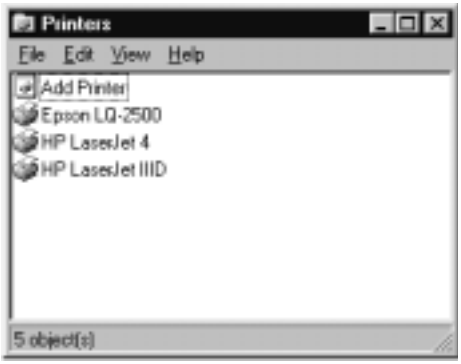
Editing printers in Windows 95

You can use up to 30 printers in Windows 95 by assigning them to PSN1, PSN2, PSN3 and so on up to PSN30.

1. Verify that each new printer module is assigned to a unique PSN printer number.

2. Click on the **Start** button and select **Settings**. Next, select **Printers**.

The Printers window opens.



3. With the right mouse button, click on the first printer you want to configure and select **Properties**. Click on the **Details** folder tab.


HP LaserJet IIID Properties
General
Details
Paper
Graphics
Fonts
Device Options
HP LaserJet IIID
Print to the following port:
PSN3 (Network Printer
Add Port...
Delete Port...
Print using the following driver:
HP LaserJet IIID
New Driver...
Capture Printer Port...
End Capture...
Timeout settings
Not selected:
15
seconds
Transmission retry:
45
seconds
Spool Settings...
Port Settings...
OK
Cancel
Apply

4. In the **Printer to the following port** option, select the PSN printer port that represents that printer module's jumper setting. For example, in this case, the HP LaserJet IIID printer driver is being configured as PSN1 because the printer module on that printer is jumpered to 1.

5. Now repeat steps 3-5 for each printer you are using with the Modprint Printer Sharing Network. Each printer driver you use with the Printer Sharing Network must be configured to print to its appropriate PSN printer port.

You can now resume printing to any printer just by selecting it under the application you are using.

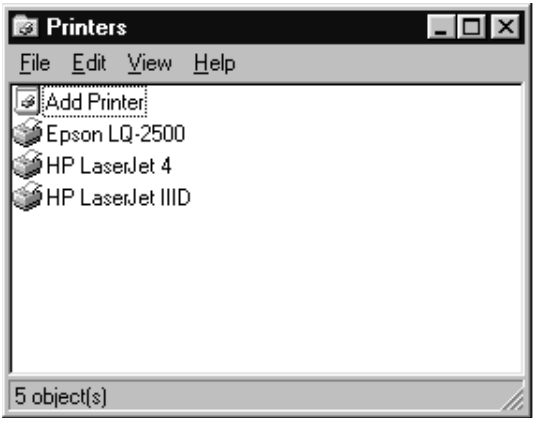
Adding a printer in Windows 95

If you need to add a new printer to your Printer Sharing Network, all you need to do is add the new printer in Windows 95 and then configure the printer to print to the correct PSN printer port.

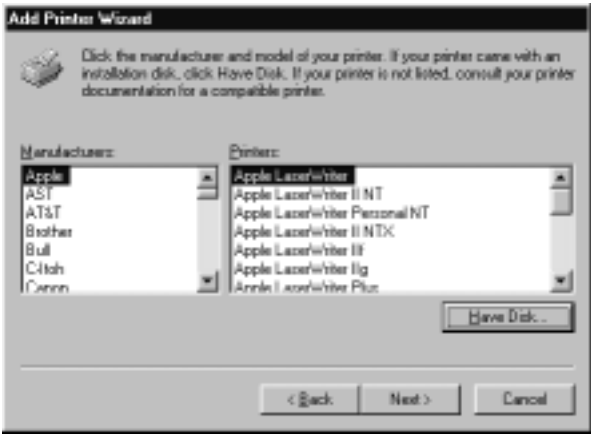
1. Verify that each new printer module is assigned to a unique PSN printer number.

2. Click on the Start button and select Settings. Next, select Printers.

The Printers window opens.

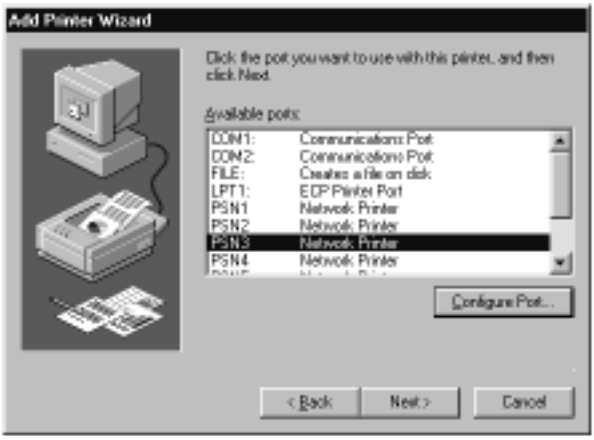


3. Next, double-click on Add Printer. If you are on a network, you may be prompted with a screen asking if you will add a local or network printer. If you are given this option, select “local” and then click on the Next button.



4. On the left side of the window, select the manufacturer of your printer. On the right side of the window, select the printer model. Once both the manufacturer and printer model are highlighted, click on the Next button.

5. Next, select the PSN port that represents your printer driver. For example, the LaserJet IIID printer driver is being setup on the PSN3 printer port because the jumper setting on the LaserJet's printer module is set to 3. Click on the Next button.



7. You will be given the option to change the name of your printer and set it as default. Click on the Next button.

8. Next, you will be prompted to choose to print a test page. If the printer's online and you already have all of the modules connected, you can choose "yes" and have it print a test page. Click on the Finish button.

Windows NT Setup

You can use up to 8 printers in Windows NT with the Printer Sharing Network.

1. To install the Windows NT software, insert the Modprint Utilities Diskette labeled Windows NT into your floppy drive.

2. Now run the SETUP.EXE program from the floppy disk and answer the installation questions as you are prompted.

3. Once the installation has completed, reboot your computer system. Next, you must configure **each printer driver** to print to the **LPT1 printer port**.

Setting up printers for OS/2

Normally, OS/2 2.x lets you print only to printer module number 1. Use this procedure to set up OS/2 for multiple printers.

1. Use a text editor to create the following batch file:

C:\SPRINT\PSELECT n <CR>

(where n=the printer module number, 1-30)

2. Save the batch file as **PTRn.BAT**, where n=the printer module number you used in step 1.

3. For each additional printer, create a batch file as in steps 1 and 2, incrementing the number (n) by one.

4. Create a separate program icon for each batch file. Assign a name to each icon, DeskJet 550C, LQ2550, or LaserJet IV, for example. You can place the icons inside a folder icon.

To switch printers:

1. Click on the icon for the printer you want.

2. After the icon executes, click on the Printer icon on your desktop and choose the option for setting the default printer.

3. Choose the printer associated with the printer in step 1 as the default printer, close the printer icon, and print as you normally would.

MS-DOS Printing

Sharing one printer:

If you are sharing one printer, just print your work as you normally would.

NOTE

Unless you want to use the spooler, or transfer files between computers, you do not need to install the Modprint utilities to share one printer.

Sharing multiple printers:

Manual DOS printing mode (PSNMENU)

If you use DOS applications and have more than one printer on the network, you can use the pop-up menu to select from up to 30 printers. The PSNMENU utility is installed with the Modprint utilities. If you didn't run the install, you can modify the AUTOEXEC.BAT file to include PSNMENU, or you can run it at the DOS prompt.

C:\SPRINT\PSNMENU LPTn <CR>

(where n=1, 2, or 3 for the PSN LPT port

To use the pop-up menu, PSNMENU is loaded into memory. PSNMENU becomes “memory resident” and takes about 4 K of memory. You can then open the menu at any time within the application.

1. To open the menu, press **ALT** and the **LEFT SHIFT** keys at the same time.

2. Select by highlighting a printer using the up or down arrow keys or press the function key listed next to the desired printer.

3. Press the **ESC** key to close the menu.

NOTE

If you change printers, make sure your application knows to use the proper command set. (For example, if you select an HP printer, your application must print with an HP command set.)

Automatic DOS printing mode (PSNMODE)

If you use applications that do not allow pop-up menus, you can use PSNMODE. The PSNMODE utility lets you assign three printers to three parallel ports LPT1, LPT2, LPT3, even if your computer only has one parallel port. If you set up **DOS Automatic Printer Selection** when installing the Modprint utilities, your AUTOEXEC.BAT file is modified to use PSNMODE. To print, you simply select the port associated with the printer you want. If you didn't run the install, you can modify the AUTOEXEC.BAT file to include PSNMODE, or you can run them at the DOS prompt. The following examples show the entries for using two or three printers. You can assign any printer module to any port.

NOTE

SPMODE and DSPOOL are recommended to be included in the file.

Using two printers:

```
C:\SPRINT\PSNMODE LPT1=PSN1 LPT2=PSN2
C:\SPRINT\SPMODE LPT1,,P
C:\SPRINT\SPMODE LPT2,,P
C:\SPRINT\DSPOOL LPT1 LPT2
```

Using three printers:

```
C:\SPRINT\PSNMODE LPT1=PSN1 LPT2=PSN2
LPT3=PSN3
C:\SPRINT\SPMODE LPT1,,P
C:\SPRINT\SPMODE LPT2,,P
C:\SPRINT\SPMODE LPT3,,P
C:\SPRINT\DSPOOL LPT1 LPT2 LPT3
```

PSNMODE, SPMODE, and DSPOOL are all loaded into memory and become memory resident programs that use 2K, 1K, and 9K of memory respectively.

Windows 3.1x and Windows 95 printing

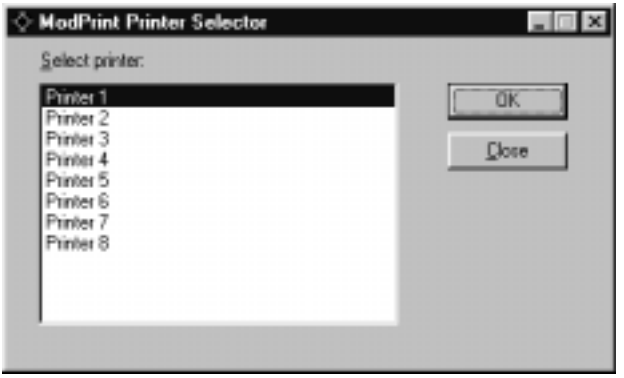
You can select from up to thirty printers in Windows 3.1x applications. After you install the Modprint utilities, all you need to do is select the proper printer under the application you are using and print. If the desired printer is not already set up, you need to add the printer to the appropriate section: **Adding printers in Windows 3.1x** on **page 22** or **Adding printers in Windows 95** on **page 30**.

Windows NT printing mode

When printing from Windows NT, you must use the Modprint Printer Selector application to select the printer to want to print to. After installing our Windows NT software, you should have the Modprint Printer Selector application loading on your taskbar.

Select the Modprint Printer Selector application from your taskbar.

The Selector window appears.



Double-click on the desired printer or single click on it then click on OK. Minimize the selection menu with the minus button. Select the proper printer under your application and print.

NOTE

If you change printers, make sure your application knows to use the proper command set. (For example, if you select an HP printer, your application must print with an HP command set.)

Selecting a printer at the DOS prompt

You can select a printer connected to the Modprint network by using PSELECT. The PSELECT utility is included with the Modprint utilities.

The following example is the command entered at the DOS prompt to select printer 3:

PSELECT 3 <CR>

The PSELECT program could be run from a batch file.

Using HSELECT with AutoCAD®

Normally, when you reboot the computer or when an application sends an "INIT" command to the printer, your printer selection is reset to printer 1. AutoCAD sends an "INIT" before every print job that will reset the pop-up menu or PSELECT command to printer 1. Use HSELECT to select a printer and prevent resetting the selected printer.

The following command entered at the DOS prompt selects printer 3 and prevents a reset to printer 1:

HSELECT 3 <CR>

Selecting a printer with embedded commands

You can also embed a soft or hard printer select command in a program. Soft command is similar to PSELECT and hard command is similar to HSELECT.

Soft printer select command (reset by an "INIT"):

ASCII	ESC	ESC	P	T	R	N	n	ESC	ESC
HEX	1B	1B	50	54	52	4E	n	1B	1B
Decimal	27	27	80	84	82	78	n	27	27

Hard printer select command (not reset by an "INIT"):

ASCII	ESC	ESC	P	T	R	#	n	ESC	ESC
HEX	1B	1B	50	54	52	23	n	1B	1B
Decimal	27	27	80	84	82	35	n	27	27

where n is a 1 or 2 digit printer number.

Resetting a computer module

The PSNINIT utility will reset a computer module to its power-on setting as follows:

1. Time-out setting will be reset to 10 seconds.
2. Any unprinted data will be cleared.
3. Printer 1 will be the selected printer.

You can run PSNINIT at the DOS prompt:

PSNINIT<CR>

NOTE

If the HSELECT program or the hard printer select command was last used to select a printer, printer 1 will not be selected. The printer selected with the HSELECT program or the hard printer select command will still be active.

Using the print spooler

Two print spoolers are provided with the Modprint utilities: DSPOOL and RSPOOL. These programs accept your print job even when the printer is busy so that you can continue working. Your print job is sent to the printer when the printer becomes available. DSPOOL uses the hard disk temporarily to store your print job and requires 9K of memory; RSPOOL uses 64K of RAM to store your print job and is recommended for floppy disk based systems.

To load the spooler, type the following at the DOS prompt:

DSPOOL LPT1<CR> (for the disk spooler)

or

RSPOOL LPT1<CR> (for the RAM spooler)

To unload the disk spooler type:

DSPOOL U<CR>

RSPOOL can not be unloaded from memory.

Copying files between computers

To copy files between computers, you need to first install the Modprint utilities software. For more information, refer to the section **Installing the Modprint Utilities** on **page 13**. PSNCOPY is one of the Modprint utilities. You assign node names to each computer when you install the utilities.

To send file(s) type:

PSNCOPY *file(s) NodeName*: [/s][/h]

where

"*file(s)*" is a list of files to send. File names must be separated by spaces, and wildcard characters (* or ?) are permitted.

"*NodeName*" is the name of the node files will be sent to. It must end with a colon.

Optional switches

"/s" will send matching files from sub-directories

"/h" will send matching hidden and system files

To receive file(s), type:

PSNCOPY *NodeName: path* [/o]

where

"*NodeName*:" is the name of the node files will be received from. It must end with a colon.

"*path*" is an existing directory path where received files will be placed.

Optional switch

"/o" will allow existing files to be overwritten.

Example:

Node DAN will send one file, LETTER.TXT, to node BRIAN into the \FILES sub-directory.

Dan types: PSNCOPY LETTER.TXT BRIAN:

Brian types: PSNCOPY DAN:\FILES

Example:

DAN will send WIN.TXT and IMAGE.TIF to BRIAN.

Dan types: PSNCOPY WIN.TXT IMAGE.TIF BRIAN

Brian types: PSNCOPY DAN:\FILES

Example:

You can use wildcard characters (* or ?) to copy groups of files. Dan will send all .DOC files to Brian.

Dan types: PSNCOPY *.DOC BRIAN:

Brian types: PSNCOPY DAN:\FILES

Example:

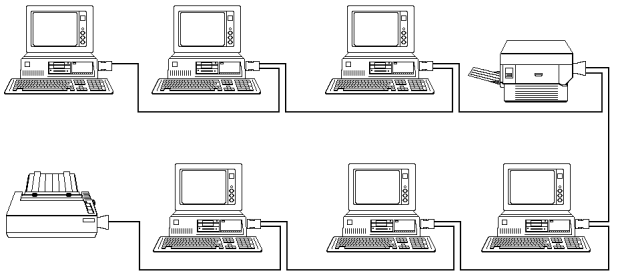
You can use the /s switch to copy all sub-directories. Dan will send all .TIF, .GIF, .PCX, .BMP files to Brian. They will overwrite any existing files that match the new file.

Dan types: PSNCOPY *.?IF *.PCX *.BMP BRIAN: /S

Brian types: PSNCOPY DAN: \FILES /O

Expanding the Modprint network

You can add printers and computers to the Modprint Printer Sharing Network by connecting additional modules. You can connect new modules at either end of the network, or insert new modules between two existing modules. When adding printers, you may need to change the settings in the Modprint utilities to let your users share the new printer(s). An easy way to change the settings is to rerun the Modprint installation. See **Installing the Modprint Utilities** on **page 13**. If your Modprint network exceeds ten modules or 500 feet of connecting wire, you will need an additional Modprint power supply.



ADDING COMPUTERS

You can use up to 31 computers on the Modprint network provided the total number of modules does not exceed 32.

1. Unplug the system power for the Modprint network.

2. Plug the computer module into the computer's parallel port. If your computer has more than one parallel port, use LPT1 unless it is already in use.

3a. To add the computer module at the end of the network, snap the new connecting wire into the new module and the last module on the network.

3b. To add the computer module in the middle of the network, break the daisy chain at the closest module to the new module and snap that wire into the new module. Snap the new connecting wire between the new module and the old module to reconnect the daisy chain.

4. Plug in the system power.

ADDING PRINTERS

You can use up to 30 printers on the Modprint network provided the total number of modules does not exceed 32.

1. Unplug the system power for the Modprint network.

2. Set the printer number to the next available number on the network. To set the printer number, locate the jumper block on the top of the printer module. Pull the jumper block on the top of the printer module. Pull the jumper off the two pins. Place the jumper onto the two pins next to the correct printer number.

3. Plug the printer module into the printer's parallel port.

4a. To add the printer module at the end of the network, snap the new connecting wire into the new module and the last module on the network.

4b. To add the printer module in the middle of the network, break the daisy chain at the closest module to the new module and snap that wire into the new module. Snap the new connecting wire between the new module and the old module to reconnect the daisy chain.

5. Plug in the system power.

Setting the Printer Number on the Module

Assign each printer a unique number by moving the jumper on the printer module's numbered pins. Printer addresses 1 to 8 are set simply by moving the jumper to the respective numbered pair of pins. For printer addresses 9 to 32, use two jumpers and connect them as shown in parentheses in the following table:

9 (1,8)	14 (7,8)	19 (6,7)	24 (2,5)	29 (3,4)
10 (2,8)	15 (1,7)	20 (1,6)	25 (3,5)	30 (1,3)
11 (3,8)	16 (2,7)	21 (3,6)	26 (4,5)	31 (2,3)
12 (5,8)	17 (4,7)	22 (4,6)	27 (1,4)	32 (1,2)
13 (6,8)	18 (5,7)	23 (5,6)	28 (2,4)	

Additional Connection Information

Changing Settings in the Modprint Utilities

When you add or change printers or computers, you can change settings as needed by running the INSTALL program again.

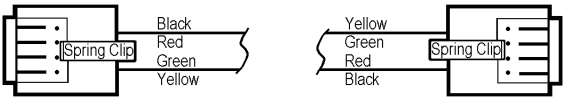
1. Type CD\SPRINT<CR>
2. Type INSTALL <CR>
3. Select **Express Installation** and make the appropriate changes.

Additional Power Requirements

Each power supply can power up to 10 modules, or up to 500 feet of wire. For example, for the first 10 modules, use one power supply; for 11 to 20 modules, use two power supplies; for 21 to 30 modules, use three power supplies.

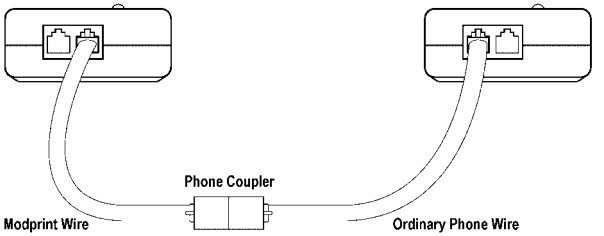
WIRING REQUIREMENTS

A Modprint network can contain up to 1200 feet of wire and up to 32 modules. The modules are connected in a daisy chain fashion, using wire that does not crossover, that is, straight through connections pin 2 to pin 2, pin 3 to pin 3, etc. See the following illustration:



ATTENTION

If you use "phone" wire. "Phone" wire introduces a crossover between the connectors (pin 2 to pin 5, pin 3 to pin 4,etc.) and therefore you can not use it to connect Modprint modules. You can use a phone coupler with ordinary "phone" wire to extend Modprint wires. In this case, the "phone" wire and the coupler each have a crossover that cancels each other, giving you a straight-through connection. See the following illustration:



Do not use a phone coupler to connect two Modprint wires together, otherwise you will introduce a crossover in the wire.

Changing the end-of-job time-out

End of job time-out refers to the time allowed before the printer is released for jobs from other computers. The computer module releases a printer for other computers whenever the printer is idle, waiting for print data, for 10 seconds. If you get other print jobs mixed in with your print job, you need to lengthen the end-of-job time-out. If you installed the Modprint utilities, you can use the PSNTIMER utility to change the time-out to any period from 1 to 255 seconds. The following example would set the time-out to 30 seconds.

PSNTIMER 30 <CR>

This does not change the time-out for any other computer.

You can also embed the command in a program.

ASCII	ESC	ESC	P	T	R	T	n	ESC	ESC
HEX	1B	1B	50	54	52	24	n	1B	1B
Decimal	27	27	80	84	82	84	n	27	27

where n is a 1, 2, or 3 digit decimal between 1 and 255 to represent the new time-out in seconds.

Sending an end-of-job command

You can send an end-of-job command to the currently selected printer using PSNEOJ utility. This is useful for doing a printer reset, or a printer form feed between jobs. The end-of-job command is sent after the end-of-job time-out occurs. The end-of-job string can be up to eight characters in length. For multiple printer networks, each printer in the network needs to be selected and the command sent to it.

The following examples would cause an end-of-job command ESC E to be sent to the selected printer.

PSNEOJ/027E <CR>

or

PSNEOJ/027/069 <CR>

The following example would clear the end-of-job command and set it to nothing.

PSNEOJ <CR>

NOTE

This is a system wide command and will affect any user printing to the printer that receives the end-of-job command. Any user can set up the command differently, but it will affect all users printing to the printer.

You can also embed the command in a program:

ASCII	ESC	ESC	P	T	R	E	c	ESC	ESC
HEX	1B	1B	50	54	52	45	c	1B	1B
Decimal	27	27	80	84	82	69	c	27	27

where c is a character string of up to 8 characters.

NOTE

For c, the last character cannot be ESC, and you cannot use two escape characters together in a row.

Troubleshooting the Modprint

Problem: All of the modules' ref LEDs do not flash.

Solution: Check to make sure that one end of the power supply is plugged into the back of one of your printer modules and that the other end is plugged into a working power outlet. Verify the power supply you are using is one that came with the Modprint starter kit. If no modules flash, connect the power supply to the printer module with no other wires or modules attached. If it flashes, try connecting additional modules one at a time until it no longer flashes to locate where the problem module is. When the problem module is located, call for technical support.

Problem: The printer module's red LED flashes but some or all of the other modules' LEDs don't flash.

Solution: The connecting wire supplied with Modprint looks like telephone wire but it is wired differently. If you are not using the supplied wire, connect the modules with the provided wire.

Problem: All of the modules' red LEDs flash, however, they flash at a constant fast rate and I cannot print.

Solution: Check the jumper setting on the printer module. If you have only one printer module, the jumper setting should be set on 1. If you have more than one printer module, make sure that each jumper setting is unique, and that no two printer modules have the same jumper setting.

Problem: I have a computer module that has a solid red LED as opposed to having a slow steady blinking pattern.

Solution: Generally, you can clear this problem by simply unplugging the power supply to the Printer Sharing Network just for a few seconds. All of the red LEDs will be off. Then, plug the power supply back in. All of the modules should begin flashing. After about 20 seconds, the modules' LEDs should have a slow steady flash. Check the module that had the solid red LED. If it is still on solid, try switching out that module with another to see if that module is defective.

Problem: I can print in MS-DOS® or Windows ®, but when I print from AutoCAD®, nothing prints.

Solution: One of two things will generally fix this problem . The first solution is to configure AutoCAD to print using the Windows Printing System. The second solution is to configure AutoCAD to print a file called LPT1. Instructions for doing so can be obtained either by contacting your AutoCAD dealer or visiting Autodesk's home page on the web at http://www.autodesk.com.

Problem: I have an Epson Stylus printer and cannot print.

Solution: See **Appendix A** on **page 67**.

Problem: I installed the Modprint software in Windows 95 and now my CD-ROM drive is not usable in Windows 95.

Solution: You have installed a previous version of our Windows 95 software or installed the software from Disk #1. Install Disk #2 to correct this problem. The current version of the software will remove the old software and add the correct drivers.

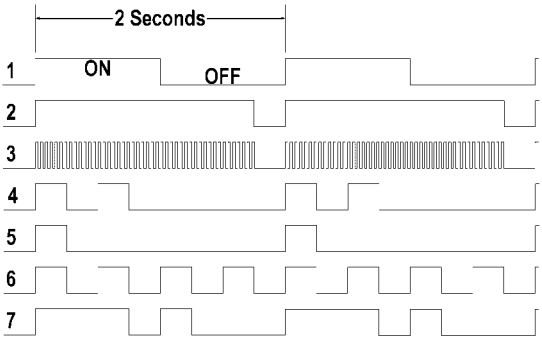
Problem: The last page I print always "hangs" in the printer until I hit the Form Feed button on the printer; and even then some characters at the end of the document are missing.

Solution: The older computer modules are not compatible with some ECP type parallel printer ports. Check the serial number on the bottom of the computer module located on the back of that specific computer you are having the problem with. If the serial number begins with a 9607 or lower, you module is not compatible. You can change the port type or port mode setting on your computer if the BIOS supports it. Standard or SPP port mode works best with Modprint.

Reading the LED indicators

The flashing of the LED indicator tells you the status of the module. The patterns and the meanings are shown below.

Pattern	Meaning
1. Slow Flash	Module idle; no problems
2. Very Long	Printer selected, not sending print data
3. Flickering	Printer selected, computer sending data
4. 2 Short	Computer or printer is not turned on
5. 1 Short	No network, check wiring
6. Fast Flash	Selected printer doesn't exist, print data discarded
7. 1 Long, 1 Short	Selected printer is busy, data is waiting


2 Seconds
1
ON
OFF
2
3
4
5
6
7

Modprint Specifications

Computer module connector: DB25 male connector for connection to standard computer parallel port

Printer module connector: Centronics type connector for connection to a standard printer parallel port. Printer modules have a jumper block for assigning a printer number and a power input jack for plugging the power supply into the system

Maximum number of nodes: 32

Maximum wire length: 1200 feet. All wiring is 4 conductor straight through (non-crossover) wire with RJ-11 modular plugs

Data transfer: 500 K baud, CRC error detection, bi-directional differential signal for error-free operation

Throughput: Up to 30,000 characters per second

Software requirements: Works with all software, including Windows and Windows 95

Power Supply: 12 VDC, 500 mA minimum

Power Plug: 5.5 mm x 2.1 mm x 10 mm, tip positive

RJ-11 Connector signals: Pin 2 V+, Pin 3 Data +,
Pin 4 Data -, Pin 5 V-

Appendix A

Epson Stylus Color series printers use their own print routine that bypasses the Windows printing system. To operate properly with Epson printer, there is a change you will have to make before using it with your Printer Sharing Network. Follow the instructions below depending on your version of Windows.

WINDOWS 95 SETUP

1. Click on the "Start" button and select "Programs."

2. Select the "Epson" menu and select the "Spool Manager" option.

3. From the "Queue" menu, select "Setup."

4. On the "General" folder tab, verify that the "Spool to local printer" option is selected.

5. Now put an "X" in the "Use Print Manager for this port" option box.

6. Click on the "OK" button and reboot your computer. It is also beneficial to reset the modules by temporarily unplugging the power supply (from the jack of the printer module) to the Printer Sharing Network for a few seconds, and then plugging it back in.

7. If this combination still doesn't work, see **Appendix B** on **page 69**.

WINDOWS 3.1X SETUP

1. Click twice on Epson Spool Manager Menu icon.

2. Click on "Queue" from the Menu Bar.

3. Click on Setup. This will take you to the "Queue Setup Window."

4. Make sure "Spool to local printer" is highlighted.

5. Place an "X" in the box next to the phrase "Use Print Manager for this port."

6. Click on OK., reboot your computer, and then print.

Appendix B

You can also switch between printers in Windows 95 by using the Modprint Printer Selector application. Follow the instructions below in order to install the Printer Selector.

1. After installing Disk #2, go into the Windows Explorer and select the folder labeled "Sprint." (It is one level below the C: drive's root directory.)

2. If you view the right side of the Explorer, the file's names are listed. Locate the program titles WINPSN.EXE. With the right mouse button, drag the file WINPSN.EXE to the Desktop folder or directly onto your Windows 95 Desktop if it is visible.

3. Now, close the Explorer, and click on My Computer. Then select Printers.

4. With the right mouse button, click on the printer driver that represents printer 1. Select Properties and then select the Details folder tab. In the section titled "Print to the following port," select LPT1 as the printer port. Then, click on the OK button.

5. Repeat step 4 until each printer driver you use with Modprint has been configured to print to the LPT1 printer port. Reboot your computer and you are ready to print. For instructions on using the Modprint Printer Selector, see **Windows NT Setup** on **page 34**.

Appendix C

Modprint wire is wired straight-through. That is, each pin leads to the same pin on the opposite side. This is different from a standard telephone wire.

Modprint Cable	Telephone Cable
Pin 1—N/C	Pin 1—N/C
Pin 2—Pin 2	Pin 2—Pin 5
Pin 3—Pin 3	Pin 3—Pin 4
Pin 4—Pin 4	Pin 4—Pin 3
Pin 5—Pin 5	Pin 5—Pin 2
Pin 6—N/C	Pin 6—N/C

An easy way to tell which kind of wire you have is by holding both ends (one in each hand) in the same direction and position (side by side). If the color of the first (left most) wire on the connector in your left hand is the same color as the first (left most) wire on the connector in your right hand, you have a Modprint wire. The colors of the wires all the way across should be the same color. If they appear to be "mirrored," the color of the first (left most) wire on the connector in your left hand is the same color as the last (right most) wire on

the connector in your right hand, or the leads are opposite from one side to the other, then you have a "phone wire."

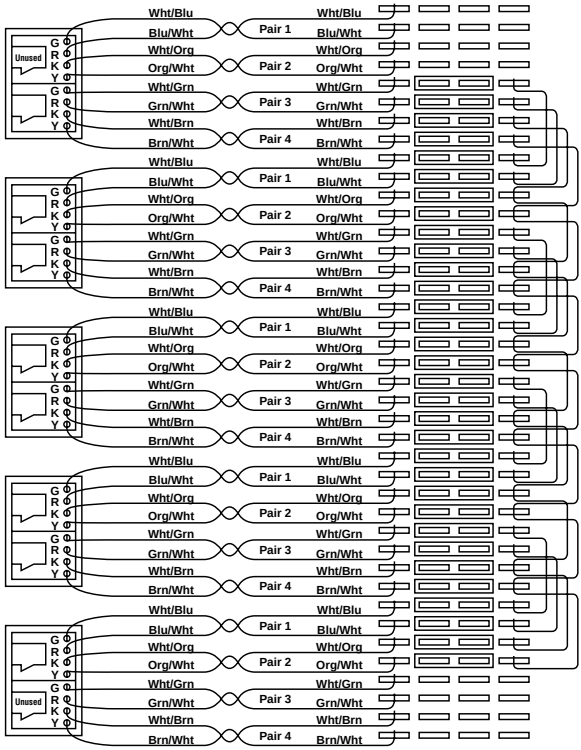
Appendix D

We recommend that you use flat four conductor silver satin telephone wire wired straight through for installation. Some installers have requested a pin-out diagram for 66 pin punch down block wiring. The diagram on **page 75** is a layout for such an installation. The installation requires four twisted pairs to each location to complete the data and power requirements of the Modprint network.

On the left side of the 66 pin block, you will run the wires to the Modprint locations. It should be twisted pair wire such as CAT 3 or CAT 5. On a 4 conductor jack, Pin 1 and Pin 6 are empty; make sure you don't twist Pin 2 with Pin 3 or Pin 4 with Pin 5, only twist Pin 2 with Pin 5 and Pin 3 with Pin 4 to prevent crosstalk interference. At the Modprint locations, you need to wire up a duplex RJ-11 wall plate, one jack in (from the previous location) and one jack out (to the next location). Plug an RJ-11 wire between a jack of the duplex RJ-11 wall plate and a jack on the Modprint PSN. The first and last Modprint PSN will only have one RJ-11 wire running to it, all others will have two RJ-11 wires.

On the right side, follow the diagram to jumper the proper connections between the Modprint modules. When all wires are installed, add the jumpers between the left and right side as shown in the diagram.

You will need to terminate the end Modprint modules with a 150 ohm resistor across the data lines, the middle two wires of the RJ-11 jack.


Unused
G
R
K
Y
Wht/Blu
Blu/Wht
Wht/Org
Org/Wht
Wht/Grn
Grn/Wht
Wht/Brn
Brn/Wht
Pair 1
Pair 2
Pair 3
Pair 4