



SmartPort[™]

INTELLIGENT SERIAL PORT BOARD USER'S MANUAL

MAN-0185-011

Rev. 1.2

November 1991

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A Note Concerning TV and Radio Interference

FCC Information

This equipment generates and uses 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 communications.

It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part **15** of FCC Rules, which are designed to provide reasonable protection against such interference when 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 required to correct the interference.

SHIELDED CABLE MUST BE USED TO REMAIN IN COMPLIANCE WITH FCC CLASS A.

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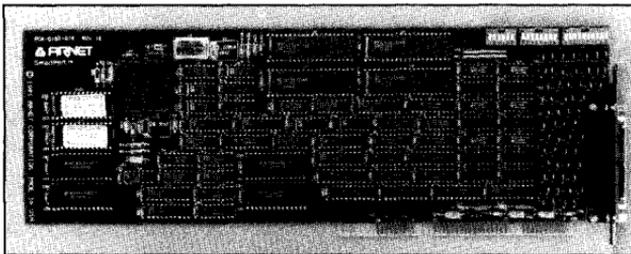
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The Arnet SmartPort expansion board adds four or eight intelligent serial ports to computers for connecting terminals, printers, and modems in multiuser systems. SmartPort boards use an onboard 80186 processor to handle most of the overhead of serial communications, leaving the system processor more time to run applications.

SmartPort uses a cable that connects to the SmartPort with a 62-pin, (DB-62) connector. Female 25-pin D-subminiature (DB-25) connectors at the other end of the cable add either four or eight ports to your ISA computer. This allows any device with an RS-232 interface to be attached to your computer. Two optional types of connectors are also available with the eight port version; an eight port D-sub connector box with female DB-25 connectors, and a modular connector block containing eight RJ-45 modular connectors. Each board and connector package is supplied with all the hardware and software needed for a complete board installation.

All Arnet SmartPort boards include SurgeBlock™, which is designed to help protect the board and the computer in which it is installed against damage from data line surges.

Figure 1, **SmartPort**



SECTION TWO

Protecting Your Equipment and Data

Electrical Surge and Power Protection

Lightning, electrical surges, and power fluctuations can damage your equipment and/or data through the power lines and /or the serial data lines.

When electrical storms occur, the most effective method of protecting your computer system is to unplug your computer and peripherals, and disconnect all data and telephone lines.

To help protect against lightning, power outages, electrical surges, and power fluctuations, Arnet recommends uninterruptible power supplies (UPS), power line filters, and surge protectors for every installation.

A UPS can provide protection from electrical surges and fluctuations in the power supplied to the computer. However, it does little good to protect the main console if you have no protection on the other devices attached to the system. Power line filters protect against electrical surges and transient spikes. Some filters even have a shutdown feature that drops power to the device if voltage drops below a preset level. This prevents the spikes and surges caused by the typical “off and on” electrical problems that occur during a thunderstorm. AC line filters should be used with ALL electrical devices connected to a computer system, no matter how small or simple.

The serial cables themselves present another potential danger. Nearby lightning strikes can induce high-voltage surges into RS-232 cables. Machinery, especially commercial machines with electric motors, often generates electrical noise that can be picked up by serial cables and cause data errors or equipment damage. Arnet includes “SurgeBlock” on every SmartPort. “SurgeBlock” clips fast-rising peak voltages to help protect against spikes over 25 volts caused by lightning, static, or induced voltage. For maximum protection we recommend surge suppressors on the peripheral end of all serial cables as well.

Cables running long distances and/or through electrically noisy areas are subject to noise pickup that can cause data errors or equipment damage. To minimize this danger, we recommend low capacitance shielded cable for all installations. (Refer to Section 7, “Making Terminal, Printer, and Modem Cables.”)

Destructive power surges can also enter through modems via telephone connections. Filters made specifically for this purpose should be included on all telephone line connections.

Grounding Techniques

Many terminals and computers are dependent on earth ground to set a reference for signal ground. Improper grounding or differences in ground potential between your computer and terminals can damage your equipment, or worse, create a safety hazard. Consequently, you should make sure that every component in your system is properly grounded. Note that most surge protectors and uninterruptible power supplies DO NOT protect against grounding problems.

Connect your computer and all terminals and other peripherals to three-prong grounded receptacles, making sure that the receptacles are wired properly. If you must use three-prong to two-prong adapters, make sure that the adapter ground tabs are properly grounded.

Pin 1 (chassis ground) of the data connector of your terminal or modem, is connected to the frame of the terminal or modem or to earth ground. When you connect the data cables, make sure that the cable shield is connected to the chassis ground. (Section 7 and Appendix F give connector pinout details.) A proper chassis ground guarantees that no dangerous voltages exist on terminal or modem frames. Proper grounding also helps cancel noise that can otherwise be induced on the frame or equipment. Local electrical codes may also dictate special grounding arrangements. Your electrician can make sure that your installation complies with all codes.

If you have any doubt about the integrity of the grounding system in your location, have the system checked by a licensed electrician.

Static Protection

Your computer's case not only houses its family of PC components, but it also protects these sensitive electronic components from stray electromagnetic (EMI) and electrical (RFI, static) fields.

WARNING

Using *proper static control methods* is essential whenever you use, *move*, or open your *computer for modifications*.

Make sure that you are working in a static-controlled area which includes at least a conductive **benchtop** mat or chair mat that is electrically connected to earth ground. Conductive wrist straps in conjunction with ground cords provide extra protection when handling electronic components. Always store and/or move individual printed circuit boards in a conductive bag. Consult your local electronics and/or office supply distributor for static control products.

If you would like an overview of grounding and static protection theories and techniques, you can obtain a copy of Federal Information Processing Standards Publication 94: Guideline on Electrical Power for ADP Installations. This booklet is available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161 703/487-4650.

SECTION THREE

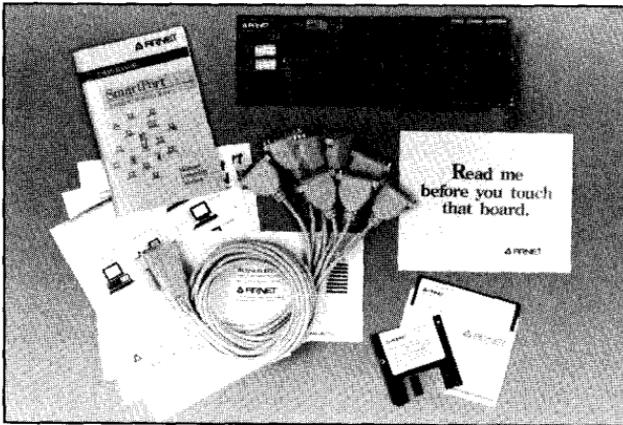
Checking Your Package Contents

After opening the shipping box, check the contents. The contents of the **SmartPort** are shown in Figure 2. If you ordered one of the optional packages, check the contents against Figure 3 or 4.

SmartPort (Figure 2):

- **SmartPort** board
- Octacable (or Quadracable for 4 port version)
- Information packet, including
 - User's Manual
 - Diagnostic diskette
 - Warranty **card**
 - "Read Me Before You Touch That Board" information sheet
 - Driver diskette is supplied as required when using some operating systems

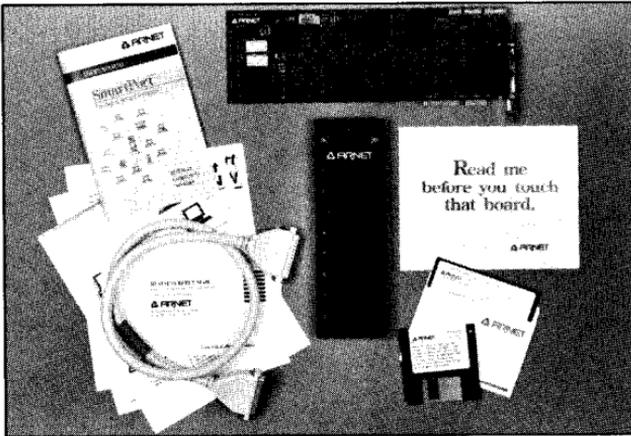
Figure 2, **SmartPort** contents



SmartPort with D-Sub Connector Box (Figure 3):

- SmartPort board
- One DB-62 cable
- One eight port, DB-25 connector box
- Information packet, including
 - User's Manual
 - Diagnostic diskette
 - Warranty card
 - "Read Me Before You Touch That Board" information sheet
 - Driver diskette is supplied as required when using some operating systems

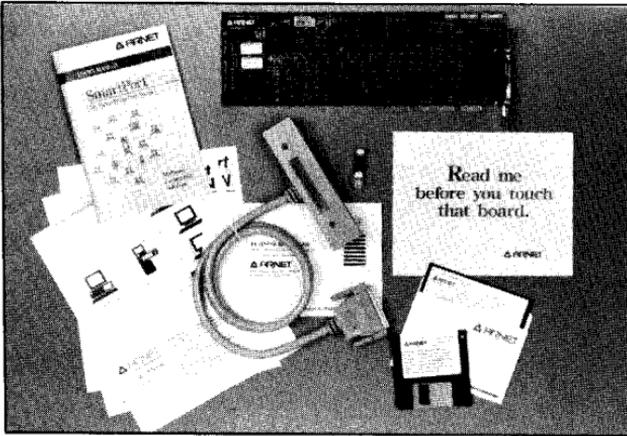
Figure 3, **SmartPort** with D-sub connector box contents



SmartPort with RJ-45 Modular Connector Block (Figure 4):

- SmartPort board
- One eight port, RJ-45 modular connector block with attached cable
- Loopback connector
- Information packet, including
 - User's Manual
 - Diagnostic diskette
 - Warranty card
 - "Read Me Before You Touch That Board" information sheet
 - Driver diskette is supplied as required when using some operating systems

Figure 4, **SmartPort** with RJ-45 modular connector block contents



**WARNING**

Leave the SmartPort in its protective anti-static bag until installation. When installing the board, use adequate precautions (such as a grounding wrist strap that is connected to earth ground) to prevent electrostatic damage.

SECTION FOUR

Quick Installation Guide

Read this section. If you are an experienced user, this section provides the information necessary to configure and install your Octoport. If you need additional information, read the detailed sections referenced.



WARNING

Leave the SmartPort in its protective anti-static bag until installation. When installing the board, use adequate precautions (such as a grounding wrist strap that is connected to earth ground) to prevent electrostatic damage.

1. Set the switches on the SmartPort circuit board (Section 5) as shown for your operating system in Appendix A.
2. Turn off your computer; disconnect the power cord from the power source and remove the computer cover.



NOTE

Before installing the SmartPort, locate the PCA revision number on the board. Write the number in the space provided. You will need this number to perform diagnostics.

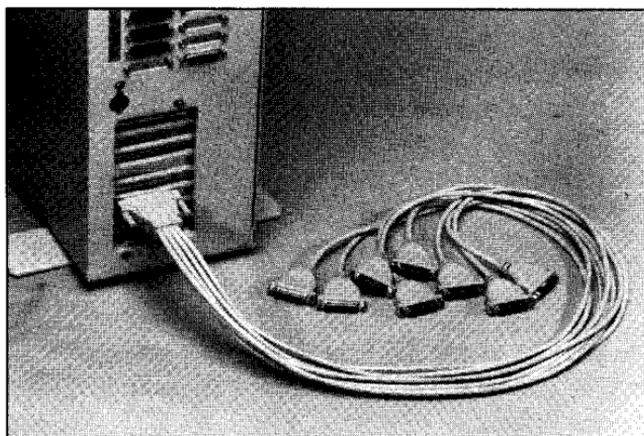
SmartPort/PCA revision number: _____

3. Install the SmartPort board in your computer (Section 6)
4. Replace the computer cover.

If you have the standard octacable or quadracable:

5. Securely attach the cable to the exposed SmartPort DB-62 connector.
6. Connect the cables of your peripherals to the DB-25 connectors on the ends of the cable. Figure 5 shows a computer equipped with SmartPort.

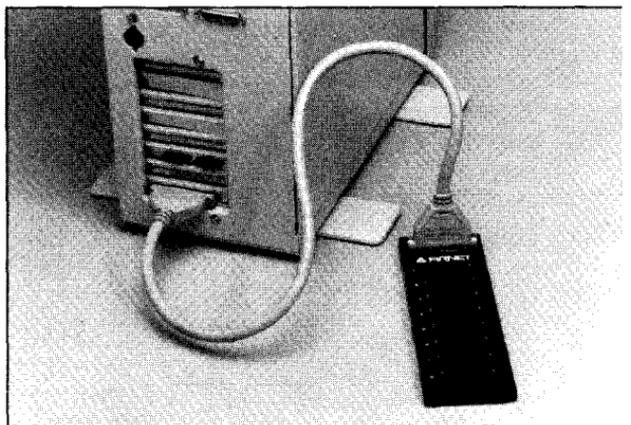
Figure 5, Computer equipped with octacable connector



If you have the optional D-sub connector box:

5. Securely attach one end of the DB-62 cable to the exposed SmartPort DB-62 connector. Attach the other end of the cable to the connector box.
6. Connect the cables of your peripherals to the DB-25 connectors on the connector box. Figure 6 shows a computer with the DB-25 connector box.

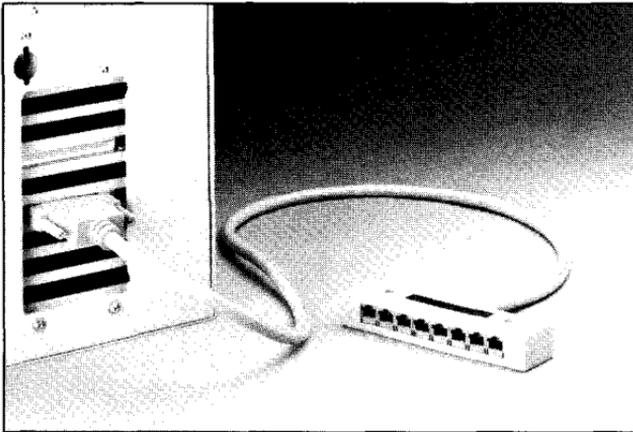
Figure 6, Computer equipped with DB-25 connector box



If you have the optional RJ-45 modular connector block:

5. Securely attach the cable from the connector block to the exposed SmartPort DB-62 connector.
6. Connect the modular cables from the peripherals to the RJ-45 modular connectors on the modular connector block. Figure 7 shows a computer equipped with the RJ-45 modular connector block.
7. Install the driver if necessary. (Refer to your operating system manual.)

Figure 7 Computer equipped with the RJ-45 modular connector block



SECTION FIVE

Setting the Switches

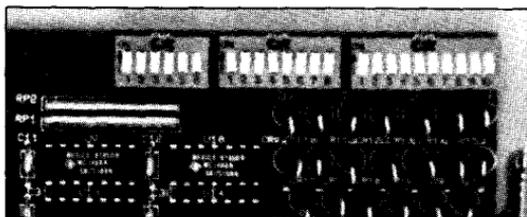
Before installing the SmartPort in your system, set the three multi-segment switches. These switches, labelled S1, S2, and S3, are located on the SmartPort board as shown in Figure 8. Set the three switches to match the configuration you choose via your operating system software.

S1 selects the starting address of the block of sixteen I/O locations used by SmartPort.

S2 selects the starting address of the 64k block of dual -ported memory on SmartPort. The dual-ported memory address block must be outside the caching memory range.

S3 selects the system interrupt line, if any, to be used by SmartPort.

Figure 8, **SmartPort** switches



Proper Switch Settings

The flexible design of SmartPort allows many combinations of switch settings. This makes it possible for you to use the SmartPort in a variety of systems with a wide range of software.

Vendors of operating systems supporting SmartPort specify settings that work with their systems. Appendix A lists all the recommended settings that were available when this manual was printed. Two or more different combinations are usually provided; at least one should work with your system. Refer to your operating system documentation for any additional setup information.

Appendices C, D, and E show possible settings for the three switches. If you need more information, call Arnet Customer Support.

SECTION SIX

Installing the SmartPort



WARNING

Turn off power to your computer and disconnect the power cord Inserting a board in the system with power applied could damage the system, the board, or both. Such abuse *will* void your warranty.

When you have set the switches, install the SmartPort board into one of the 16-bit expansion slots of your computer. Refer to Section 5 and Appendices A, C, D, and E if necessary for switch setting information. The following steps detail the installation



WARNING

Leave *the SmartPort* in its protective anti-static bag until installation. When installing the board, use adequate precautions (such as a grounding wrist strap that is connected to earth ground) to prevent electrostatic damage.

1. Remove the cover of the computer (see computer manufacturer's instructions).
2. Determine which 16-bit slot your SmartPort will occupy. (16-bit slots have double length motherboard connectors). Remove the hold-down screw and the blank card bracket of the chosen slot. The blank card bracket will not be reused.

-
3. Insert the SmartPort board into the mating motherboard socket. Push the board firmly into place (Figure 9).
 4. Secure the board by replacing the hold-down screw that was removed in Step 2. (Figure 10)

Figure 9, Inserting the **SmartPort**

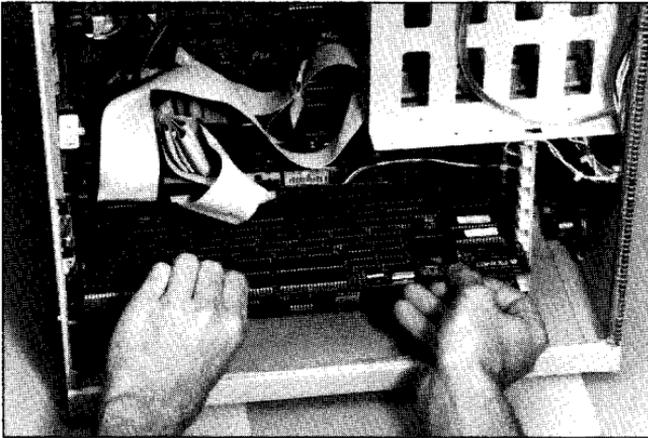
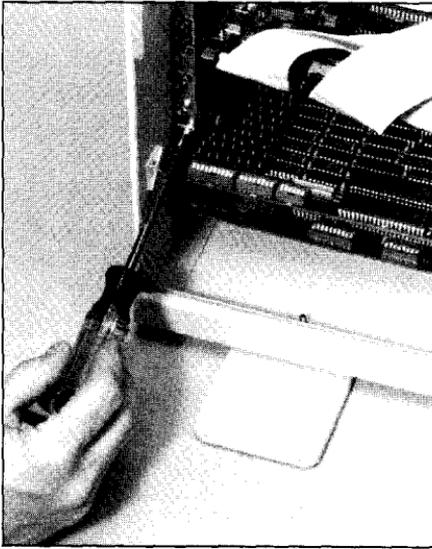


Figure 10, Replacing the hold-down screw



5. **If you** have the **standard octacable (quadracable)**, attach the cable to the exposed SmartPort DB-62 connector. (Refer to Figure 11.)

If you have the optional D-sub connector box, attach one end of the DB-62 cable to the exposed SmartPort DB-62 connector. Attach the other end of the cable to the D-sub connector box (Figure 12).

If you have the **optional RJ-45 modular connector block**, attach **the** cable from the connector block to the **exposed** SmartPort DB-62 connector.

6. Connect the computer power cable and turn on your computer.

-
7. Use the diagnostics disk to verify your installation.
Instructions for using the diagnostics disk are in Section 8.

Figure 11, Connecting the cable to the **SmartPort**

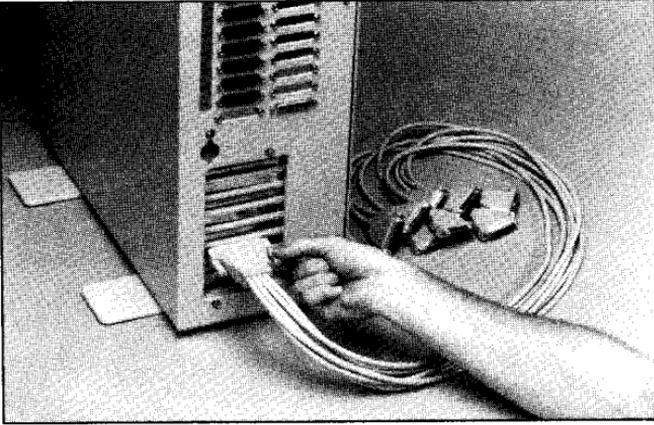
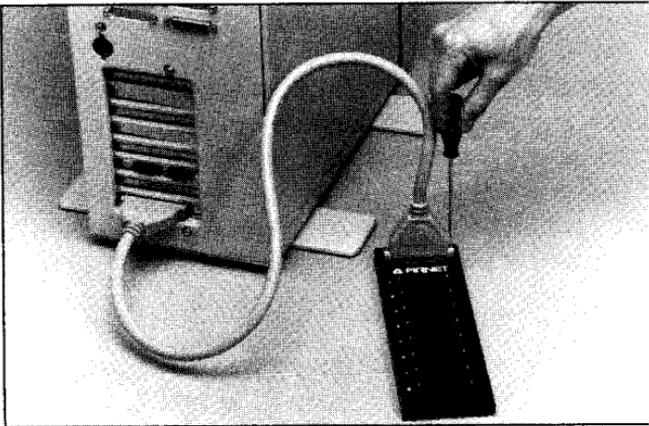


Figure 12, Connecting the cable to the D-sub connector box

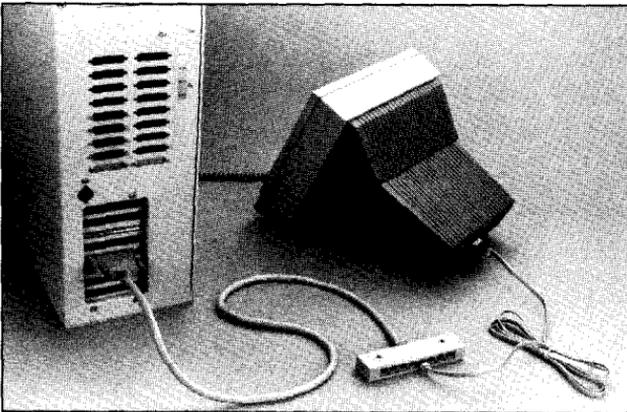


-
8. When you have verified your installation, turn off the power, disconnect the power cord, and replace the computer cover.
 9. **If you** have the **standard cable**, connect the cables of your peripherals to the DB-25 connectors on the ends of the cable. The port is identified on each DB-25 connector.

If you have the optional DB-25 connector box, connect the cables from your peripherals to the DB-25 connectors on the connector box. Each port is identified on the box.

If you have the optional **RJ-45** modular connector **block**, use telephone-style modular cables to connect your peripherals to the RJ45 modular connectors on the connector block. The port is identified on each RJ-45 connector. (Use an adapter to connect the modular cables to your peripherals.) Figure 13 shows cable and adapter orientation.

Figure 13, Modular cable and adapter orientation



-
10. Install the Arnet driver if you received one with your SmartPort. Follow the instructions in the Driver Manual. If your operating system supplies the driver, refer to the operating system manual for driver installation instructions (the driver may be already installed).

SECTION SEVEN

Making Terminal, Printer, and Modem Cables

Your operating system probably specifies the cable configuration required for connecting terminals or modems to a computer. If so, you should follow their recommendations. If cable configuration is not specified, you can probably use one or more of the cable types discussed below.

We recommend shielded cable (30pF or less capacitance per foot) for all installations. The FCC requires the use of shielded cables to comply with EMI/RFI emission limits. In addition, cables that run long distances or through electrically noisy areas are subject to interference that can cause data errors or equipment damage.

RS-232 specifies a maximum cable length of 50 feet. If you run cables farther than 50 feet, you increase the risk of surge damage and data loss. (However, using shielded cable of 10-15 pF capacitance per foot somewhat lessens the risk of data errors.)

WARNING

*When routing your cables, do not **run** them parallel to AC wiring or on top of fluorescent light ballasts. Bundling **several** RS-232 cables together is acceptable.*

The SmartPort uses cables with either 25-pin D-subminiature connectors or optional RJ-45 modular connectors. A typical RS-232 cable may have between three and eight conductors, depending on its use.

DB-25 Terminal or Printer Cables

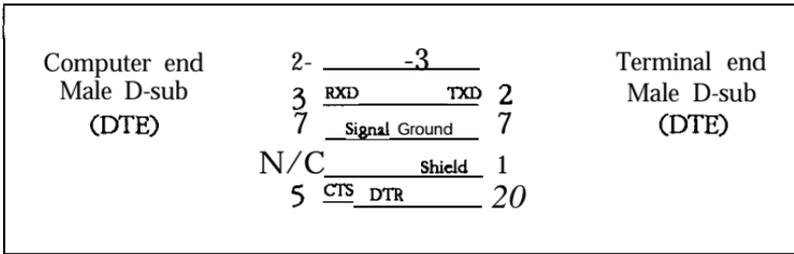
Cables for use with terminals or printers need a minimum of three wires-transmit (TXD), receive (RXD), and signal ground-plus a shield.



NOTE

Many operating systems *require the use of at least one hardware flow control signal (hardware handshaking)*. In this case you *will need a cable with four wires plus a shield*. The cable wiring diagram for this application is shown below.

Figure 14, **SmartPort** to terminal or printer cable wiring with flow control



NOTE

Printer cabling may vary. Use manufacturer's recommended cable configuration.

DR25 Modem Cables

Cables for use with modems require eight conductors plus a shield. No looping back of signals is needed for this application.

Figure 15, **SmartPort** to modem cable wiring

	2	<u>TXD</u>	2	
	3	<u>RXD</u>	3	
Computer End	4	<u>RTS</u>	5	Modem End
Male D-sub	5	<u>CTS</u>	6	Male D-sub
(DTE)	6	<u>DSR</u>		(DCE)
	7	<u>Signal Ground</u>	7	
	8	<u>DCD</u>	8	
	20	<u>DTR</u>	20	
	N/C	<u>Shield</u>	1	

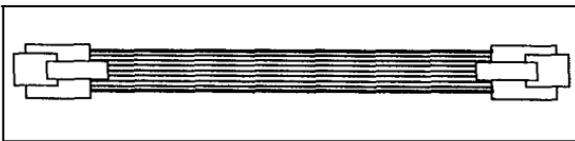
RJ-45 **Modular Terminal, Printer, or Modem Cables**

Cables for use with the optional RJ-45 modular connector block are eight-conductor telephone style cables with RJ-45 plugs at each end. The cables are assembled as shown below.

These cables require adapters for connection to terminals and printers or modems. Both types of adapters are available from Arnet. The wiring for both types of adapters is shown in Figures 17 and 18.

Note that the adapters for terminals and modems use the same basic device (RJ-45 female to DB-25 male), but wiring connections are different. Refer to the Arnet Modular Cabling Manual for further details on wiring of modular adapters.

Figure 16, Modular cable assembly



 **NOTE**

The RJ-45 pinouts shown are for modular-to-D-sub adapters only. The RJ-45 modular connector block pinouts are different. See Appendix F, "Connector Pin Assignments."

Figure 17, Terminal/printer adapter with enlarged view of **jack pinout**

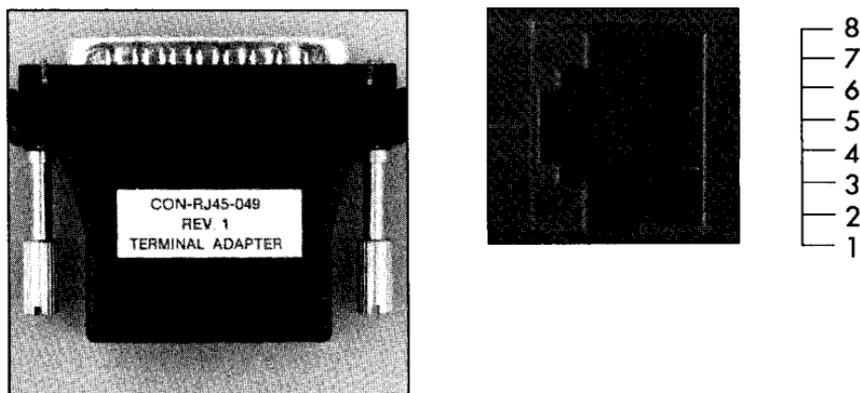
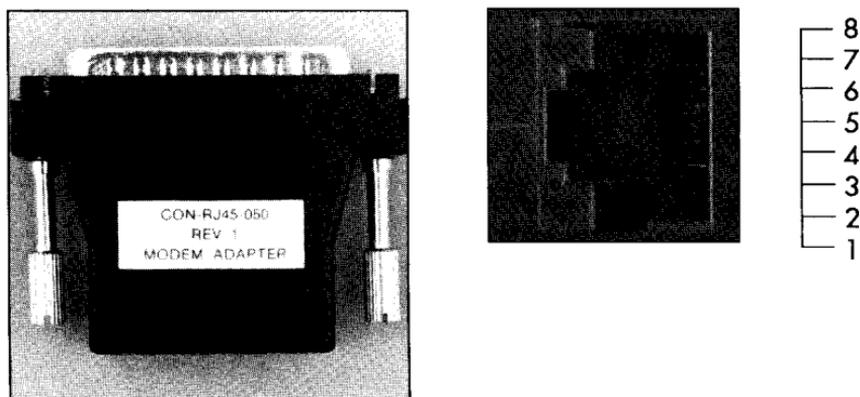


Figure 18, Modem adapter with enlarged view of **jack pinout**



SECTION EIGHT

Using the Diagnostics Disk

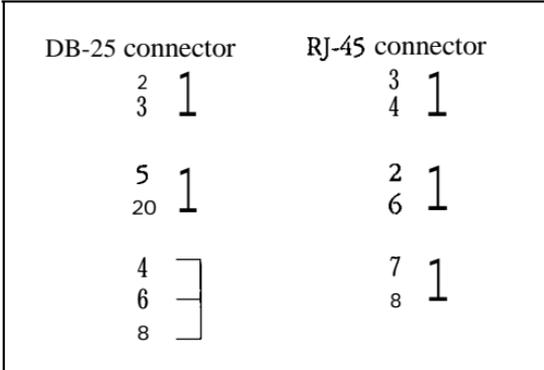
The diagnostics disk provided with your SmartPort is designed to verify correct installation and function. Keep this disk so that should a problem develop, you can run the diagnostics to locate the problem.

Proceed as follows:

1. With the computer off, insert the diagnostics disk into Drive A and close the drive door.
2. Turn the power on and boot the system from the diagnostics disk.
3. When the introduction screen comes into view, strike any key to proceed to the progressive information screens.
4. When you get a menu of various Arnet products, move the cursor to SmartPort and press ENTER.
5. The next screen will show you the I/O address, the number of ports on your board, the dual-ported memory address, and the IRQ. This information should correspond to the switch settings on the board. The screen will ask you to press “y” if the information is correct or “n” if it is incorrect. If you press “n,” follow the directions on the screen to make corrections. If the switch settings cannot be determined, there is probably a conflict. In this case try other addresses and/or interrupt settings. If you cannot determine a proper setting, call Arnet Customer Support for assistance.

6. The next screen is the TEST screen used to test the transmit/receive function and the control signal functions of each port. If you choose INTERNAL (which puts the UARTs in internal loopback mode), the test will run automatically for each port and display the results. EXTERNAL (which tests the line drivers and receivers) will tell you how to wire a loopback connector (or breakout box) to test each port. Figure 19 below shows the loopback connection diagrams. The results for each port will be given following each port test.

Figure 19, **Loopback** connection diagram



SECTION NINE

In Case of Trouble



WARNING

Make sure your computer is turned off before installing or removing boards. Your computer must also be off to change switch settings on the boards. When installing or removing board & always use adequate precautions (such as a grounding strap) to prevent electrostatic damage.

Test your SmartPort using the diagnostics disk provided. If the SmartPort passes all the tests, the problem is probably elsewhere. The symptoms of particular problems may vary between operating systems. Common problems are listed below.

Address/Interrupt Conflicts

All devices in your system must have unique addresses that do not overlap. The SmartPort dual-ported memory addresses must be outside the caching memory range. If you think you have a conflict problem, try the alternate settings listed for your operating system.

Inconsistent Baud Rate

The baud rate and other RS-232 parameters chosen via the operating system must be the same for the SmartPort and all other peripherals.

No Handshaking Signals

Some peripheral devices, especially modems, may need some or all of the handshaking signals that SmartPort supports.

Incomplete or Incorrect Installation

Some operating systems require that an installation procedure be run before SmartPort is recognized. Refer to your operating system user's manual. Verify correct SmartPort hardware installation, referring to Sections 5, 6, and 8 in this manual.

Improper Grounding

Make sure that every component in your system is properly grounded. Differences in ground potential between your computer and terminals can damage equipment.

If your board fails the diagnostics or you are unable to isolate the problem, call us (800/366-8844) anytime between 8 a.m. and 7 p.m. Central Time (Monday through Friday). We can give you suggestions for things to try. Please have the following information ready when you call:

- ✓ Computer make
- ✓ Computer model number
- ✓ Operating system
- ✓ Which Arnet board you are using
- ✓ Failure symptoms
- ✓ **Results of diagnostics**
- ✓ Whether the board has worked before
(was it installed successfully?)

If You Have to Return a Board

Sometime your board may have to be returned for service. In this case, you'll need to call us for an RMA number. You must have an RMA number to return a board to Arnet. The RMA number must appear on the outside of the package used to return the product. We recommend returning our products in their original shipping boxes. Before calling for the number, make sure you can answer the following questions:

1. Where did you buy your board? If you bought it from a dealer, you should go through the dealer to return the board. If you bought it from Arnet, you can deal directly with us for repair.
2. What is your board's serial number and revision level number?
3. Have you followed the checklist at the beginning of this section and tried all of the steps? We've found that these procedures eliminate most problems encountered during installation.
4. Have you contacted the dealer from whom you originally purchased the board for advice and assistance?

Your Arnet board is one of the most reliable parts of your multiuser system. We feel so strongly about this that we back our products with the Arnet Full Lifetime Warranty. (Refer to Appendix H.) As a matter of fact, if you purchase a board from us and it doesn't work in your application, or if you decide not to keep it for any reason during the first 30 days, we will refund your money. But remember, we're here to help in any case -- because our ultimate goal is to keep your system up and running, and to keep you as a satisfied customer.

Try primary settings first. In case of I/O address or IRQ conflicts, try alternate settings. Please refer to your Arnet Driver Manual or your operating system's documentation for detailed instructions on configuring your operating system.



NOTE

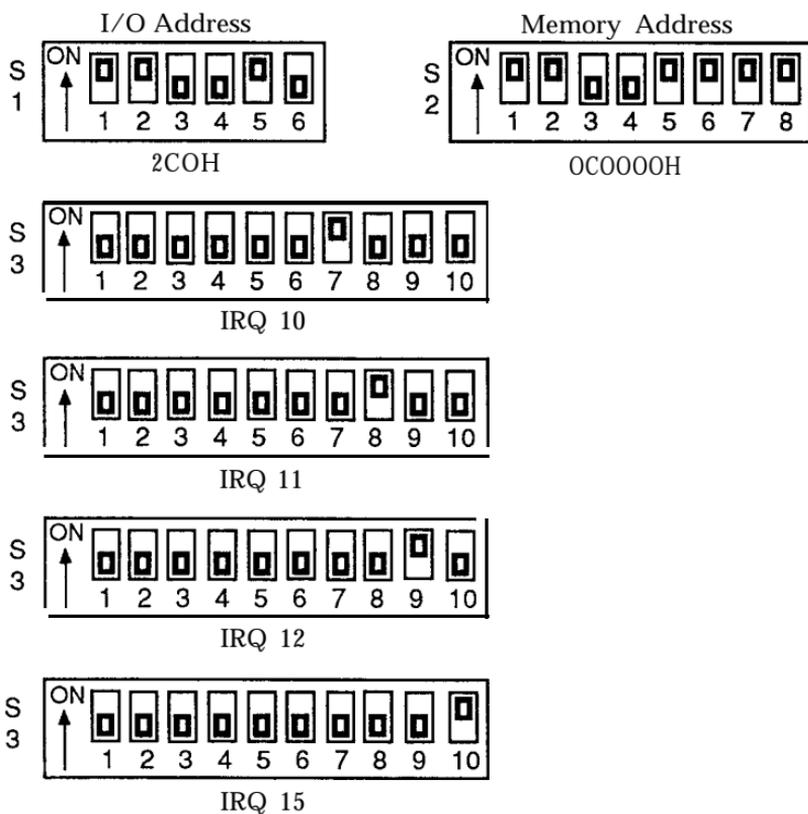
Dual-ported *memory*, assigned by *S2*, is mapped into the system's memory map, usually at **locations** suggested by operating system vendors. *These addresses are only suggested starting points; they are not absolutes.*

*This Appendix provides recommended S2 settings that are appropriate for most computers. However, if your computer has a certain style of memory cache or has 16 megabytes or more of RAM installed, the SmartPort may not work properly at the recommended memory addresses. In this case, you must reconfigure the SmartPort or your computer to avoid a memory conflict with **cache** or RAM. Refer to Appendix D for a description of memory conflict symptoms and solutions.*

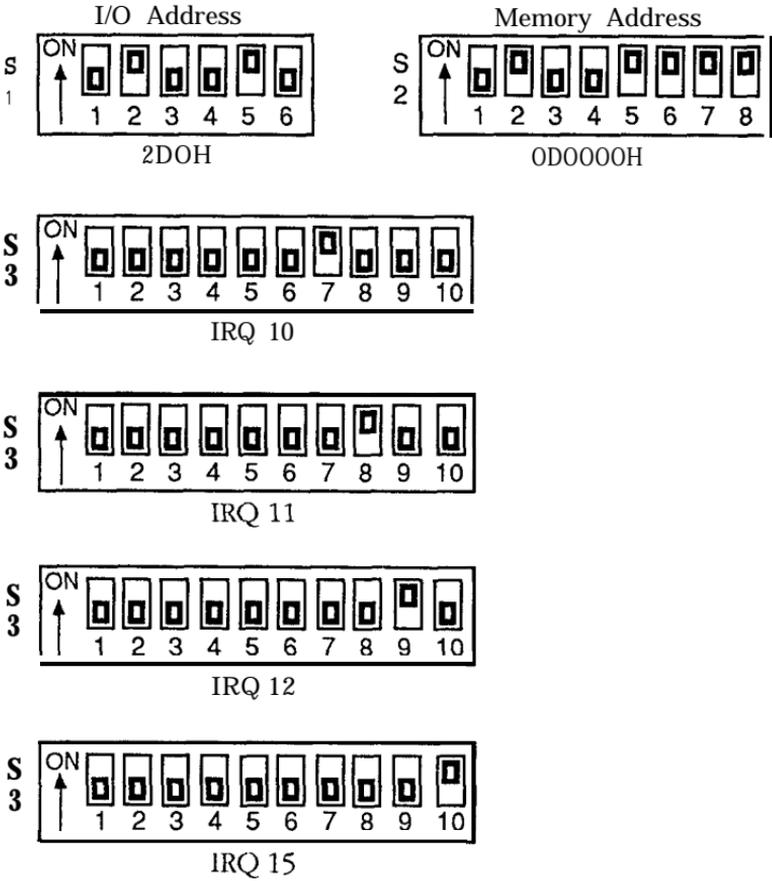
BOS/LAN, MBOS/5/Global System Manager

by TIS Software Ltd.

Primary Address



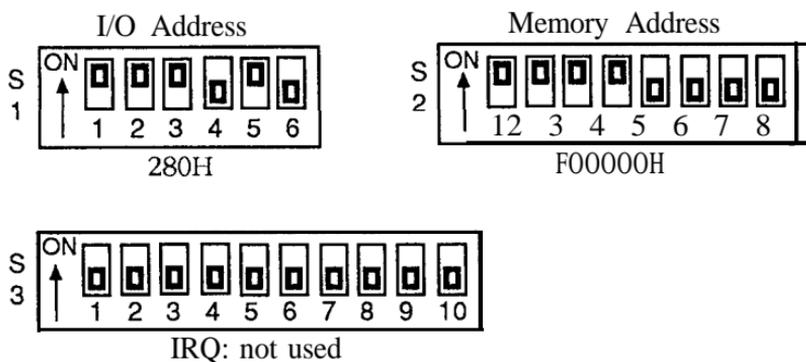
Alternate Address



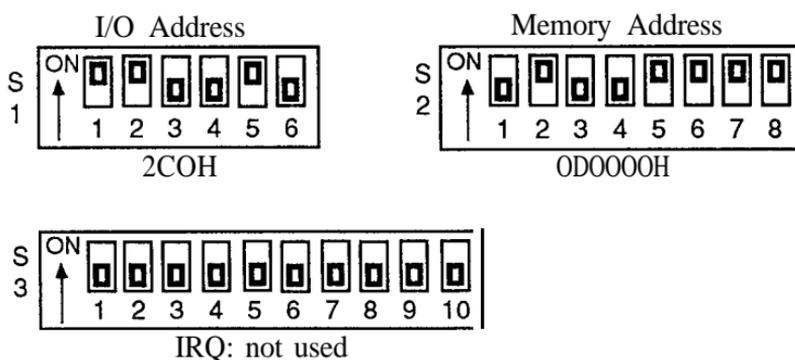
CONCURRENT DOS 386/Multiuser DOS

by Digital Research, Inc.

Primary Address



Alternate Address

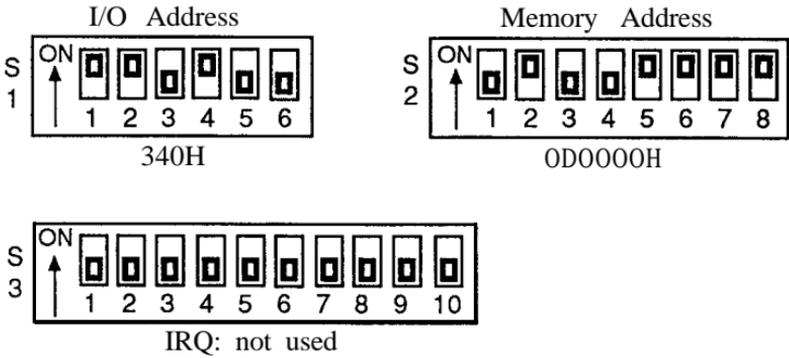


See DRI's documentation for more information.

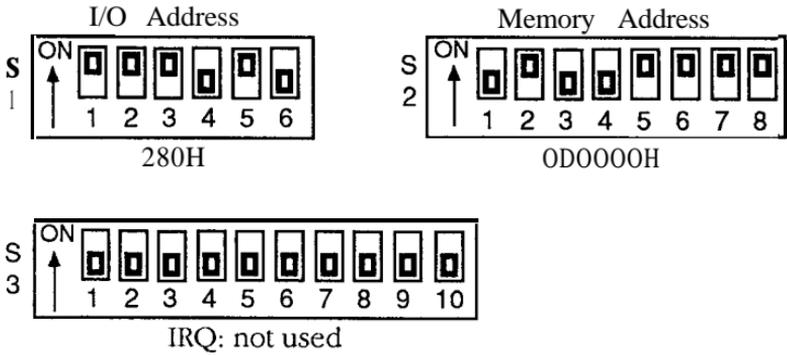
DTM-PC MUMPS

by *DataTree, Inc.*

Primary Address

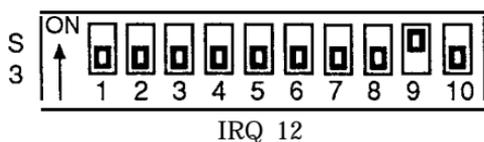
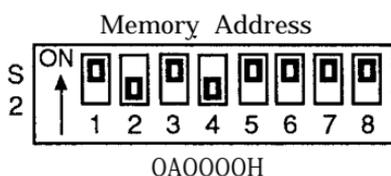
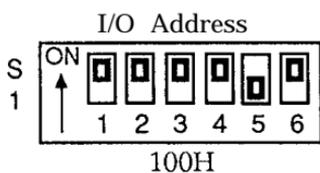


Alternate Address

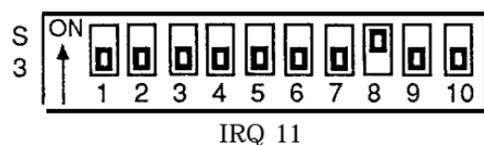
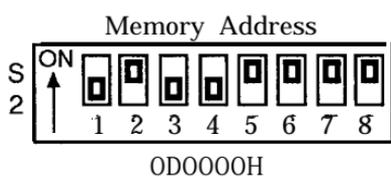
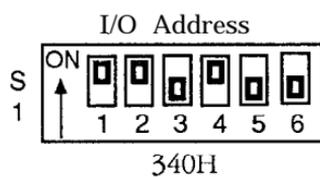


MSM-PC MUMPS
by Micronetics Design Corp.

Board 1:



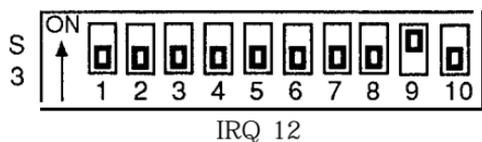
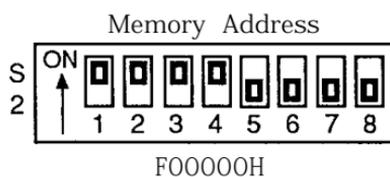
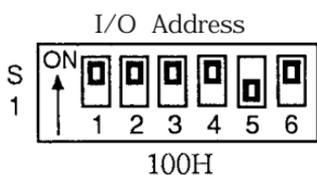
Board2:



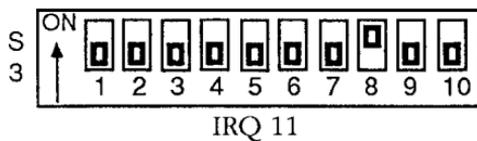
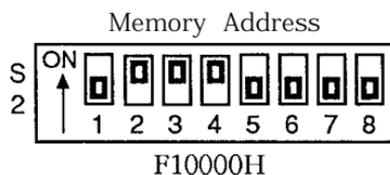
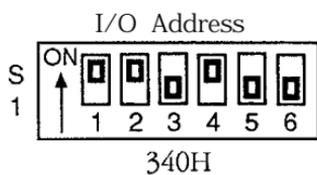
MSM-PC/384 MUMPS

by Micronetics Design Corp.

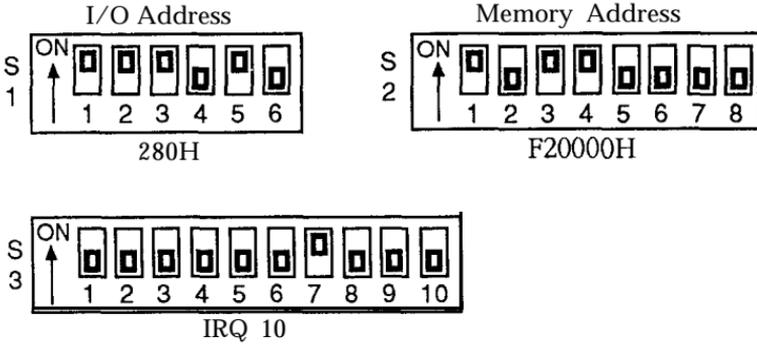
Board 1:



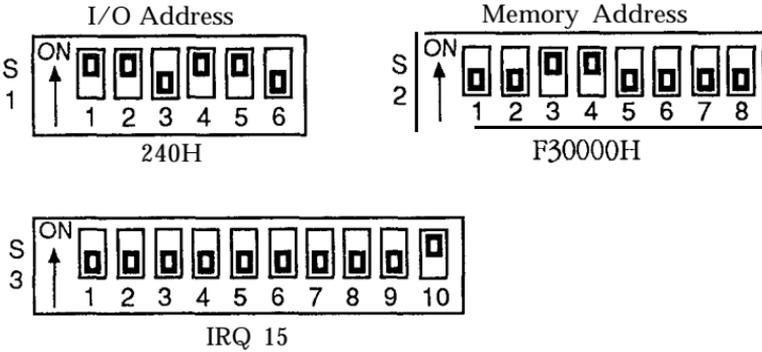
Board2:



Board 3:



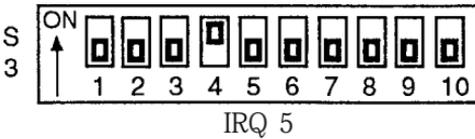
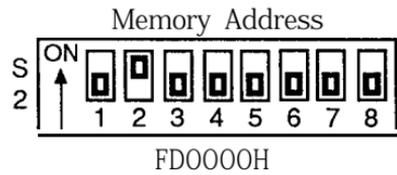
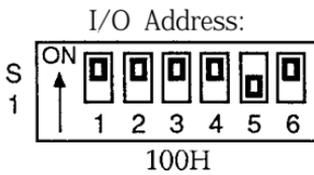
Board 4:



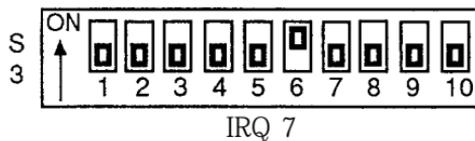
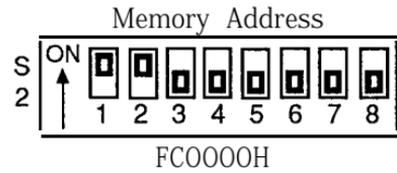
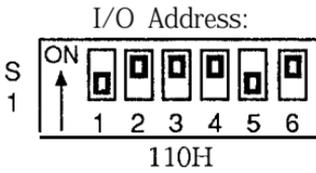
THEOS 386/THEOS 286 Plus

by THEOS Software Corp.

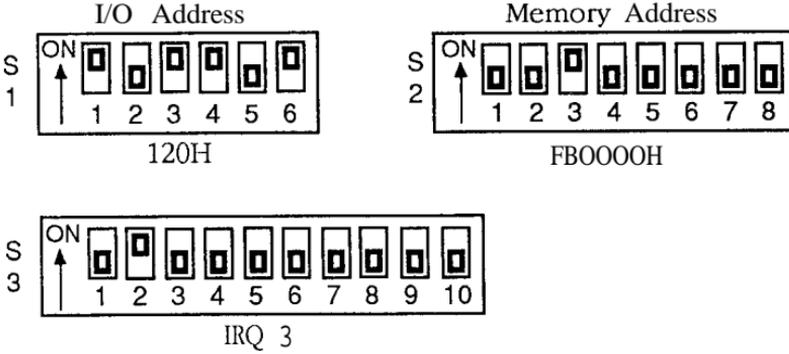
Board 1:



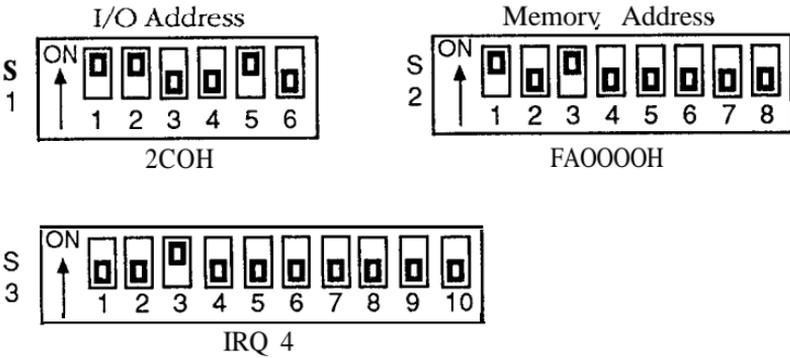
Board 2:



Board3:



Board4:



UNIX

AT&T UNIX

ESIX, by *Everex Systems*

Interactive UNIX System V/386, by *Interactive Systems*

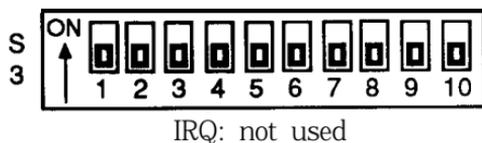
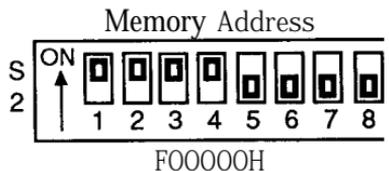
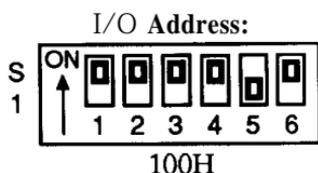
Microport UNIX, by *Microport Systems*

SCO UNIX System V/386, by *The Santa Cruz Operation*

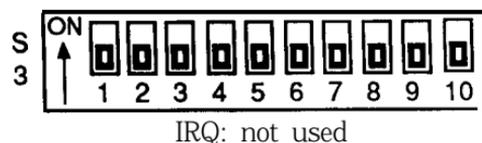
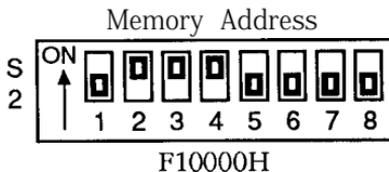
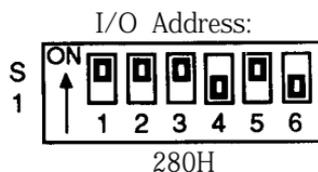
SCO XENIX System V, by *The Santa Cruz Operation*

When using **SmartPort** as **COM3**

Primary Address

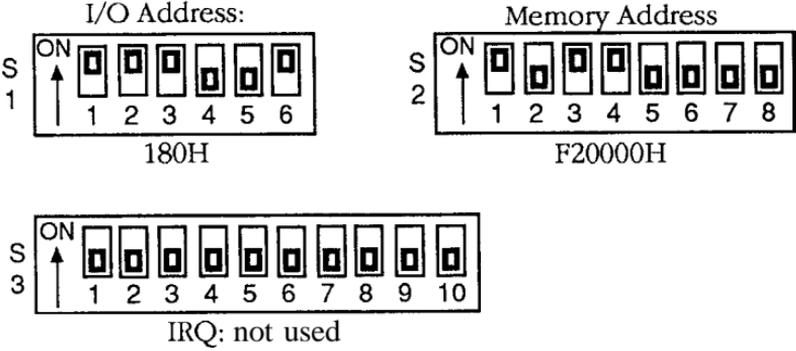


Alternate Address

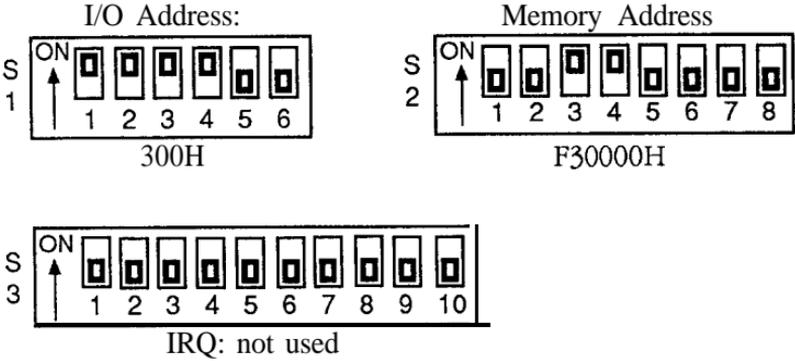


When using **SmartPort** as **COM4**

Primary Address

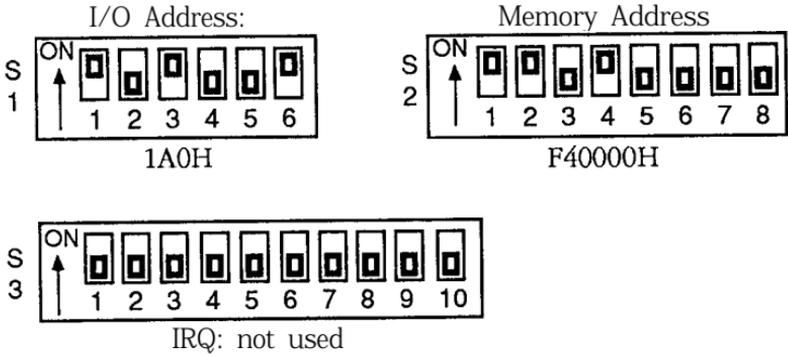


Alternate Address

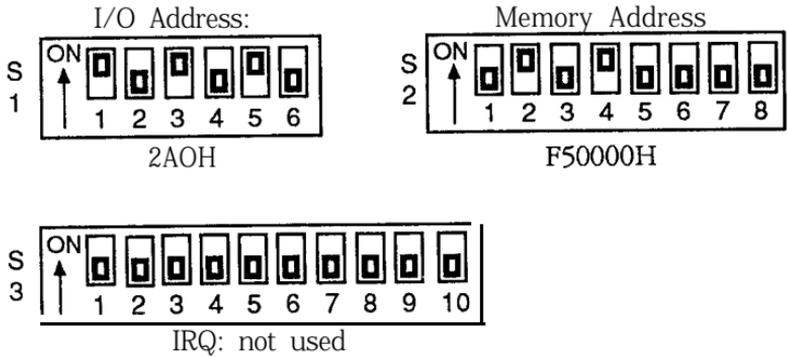


When using SmartPort as COM5

Primary Address

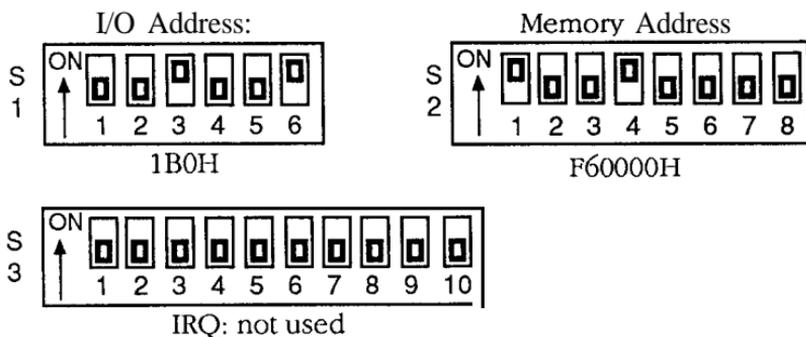


Alternate Address

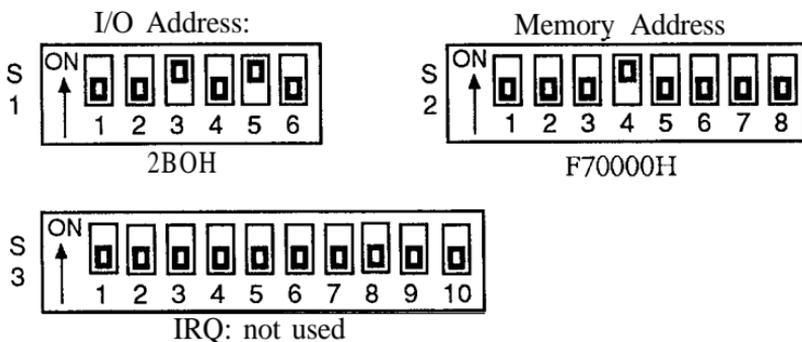


When using SmartPort as COM6

Primary Address



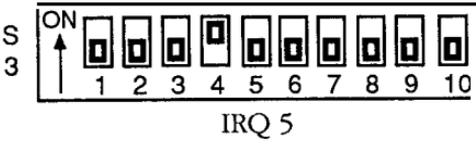
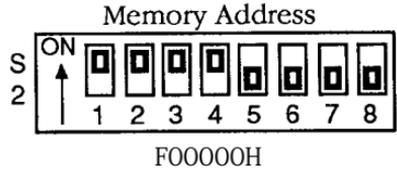
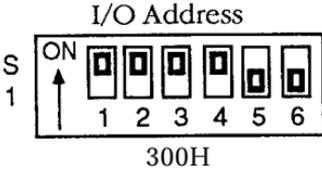
Alternate Address



These settings map the board at 15 megabytes. If your computer has physical memory or other cards at this address, please check your driver manual for alternate ways to configure your board.

VM/386

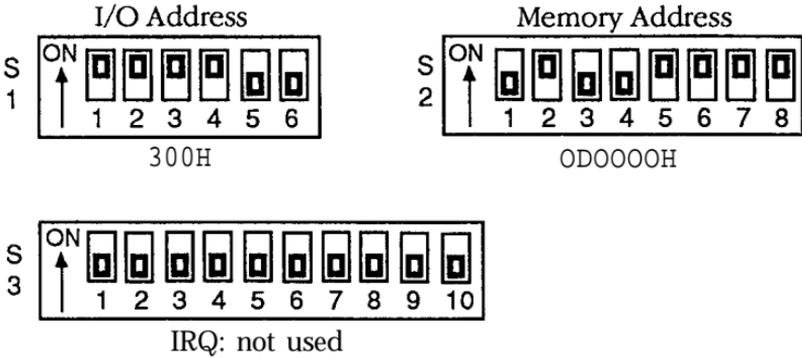
by Intelligent Graphics Corp.



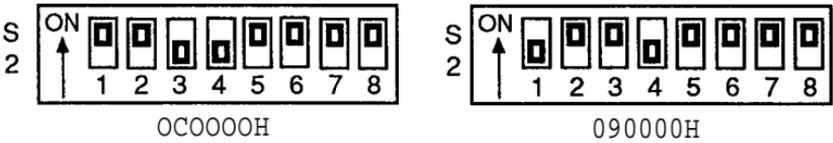
XMM-DOS

by Concurrent Controls, Inc.

Primary Address



Alternate Memory Addresses



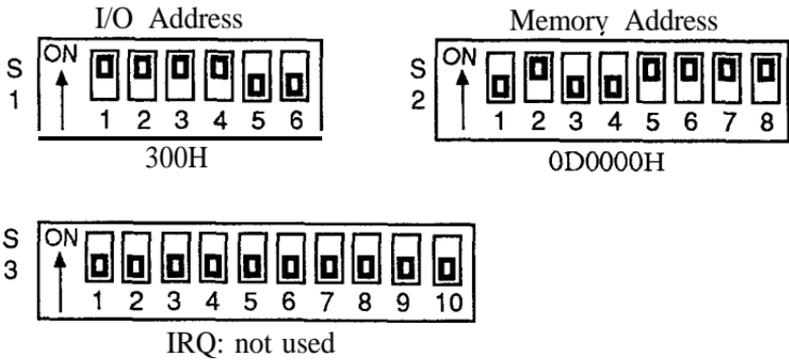
Use the same settings for S1 and S3 with either primary or alternate memory addresses.

The presence of other devices (EGA or EEMS boards, etc.) in the system may require setting the memory at an alternate address. Contact Concurrent Controls, Inc. for details.

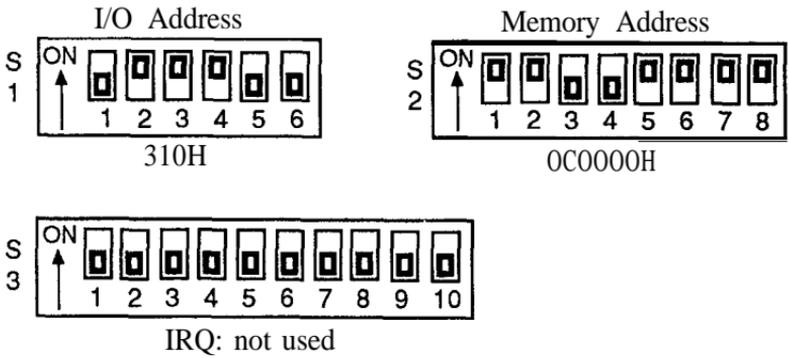
386-DOS

by Concurrent Controls, Inc.

Board 1:



Board 2:



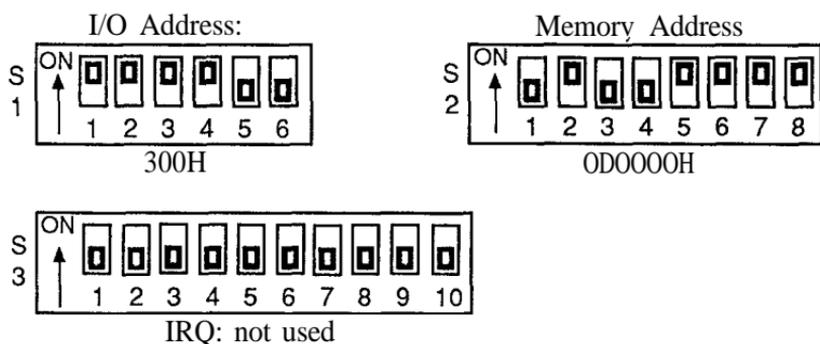
APPENDIX B

MS-DOS Setups

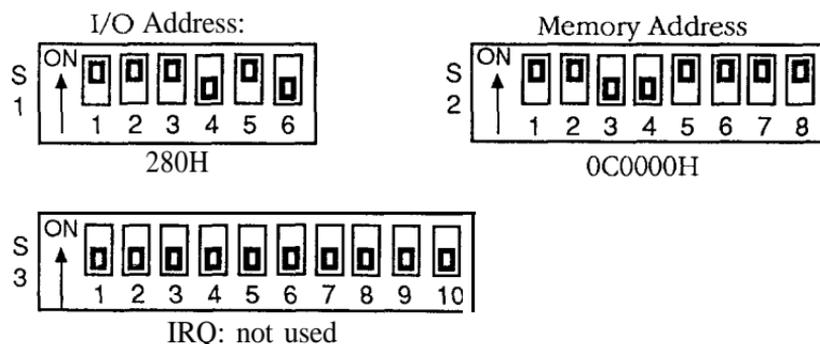


If you received an Arnet driver with your Arnet board, refer to the driver manual for switch setting information.

Primary Address



Alternate Address



APPENDIX C

Switch Settings for S1, I/O Address



All of the I/O addresses mentioned in this manual are in hexadecimal format. Hex numbers are noted by the letter "H" following the number, e.g., 20H.

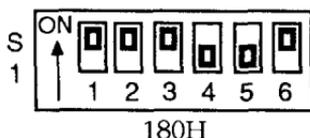
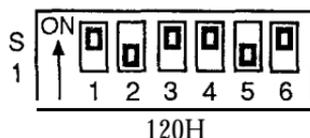
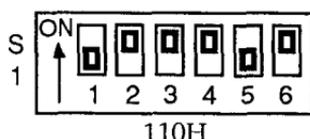
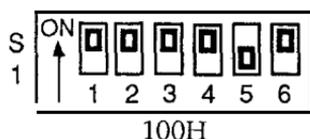
1. Find the setup listing for your operating system in Appendix A.
2. Set S1 to match the proper illustration.

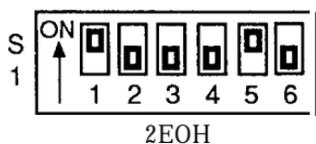
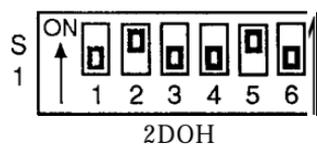
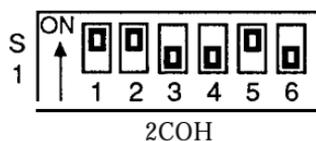
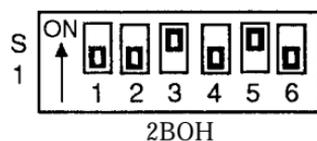
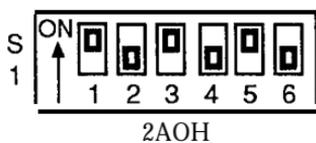
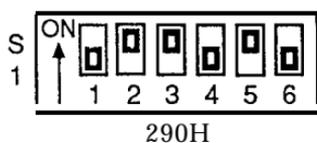
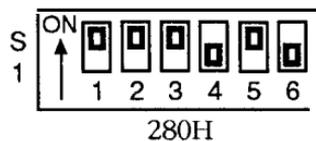
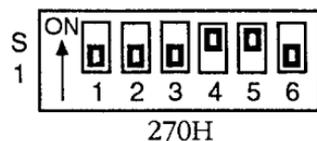
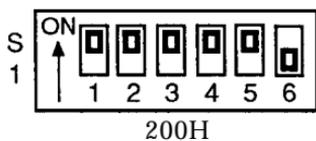
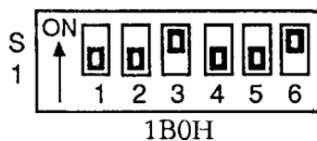
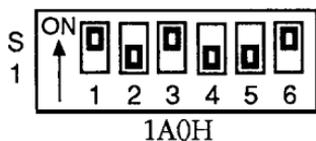
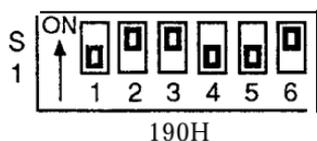


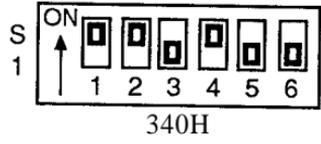
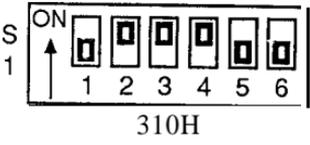
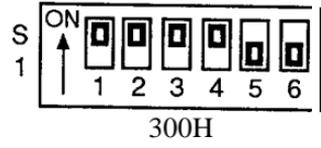
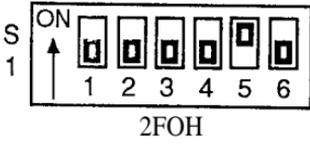
S1 selects the starting address of the block of I/O addresses. The I/O locations you select with S1 must match the locations you choose via your operating system software.

If you need switch settings for an operating system not listed in Appendix A, consult your dealer, the operating system supplier, or Arnet. The most commonly used settings are shown below.

Commonly Used I/O Location Switch Settings







APPENDIX D

Switch Settings for S2, Memory Address, Conflict Symptoms and Solutions



NOTE

AU of the memory addresses mentioned in this manual are in hexadecimal format. Hex numbers are noted by the letter "H" following the number, e.g., 20H.

1. Find the setup listing for your operating system in Appendix A_
2. Set S2 to match the proper illustration.

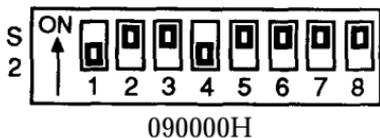
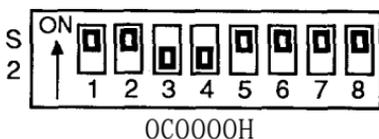
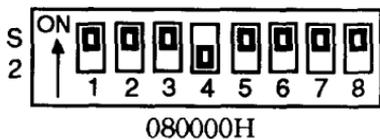


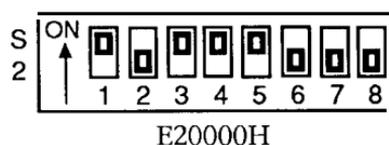
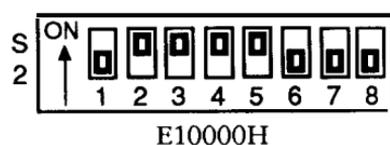
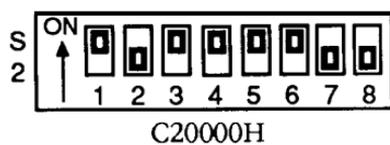
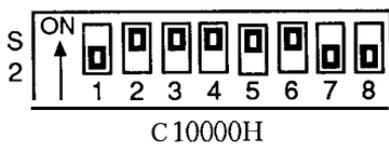
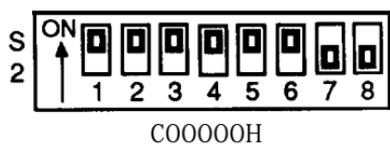
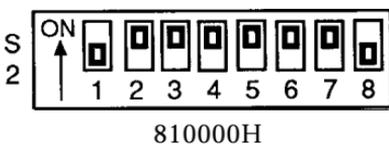
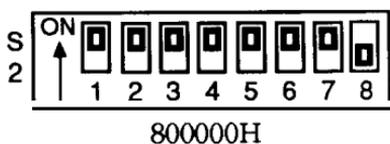
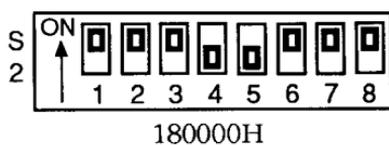
NOTE

S2 selects the starting address of the block of dual-ported memory locations. The memory address you select with S2 must be outside the caching memory range and must match the address you choose via your operating system software.

If you need switch settings for an operating system not listed in Appendix A, consult your dealer, the operating system supplier, or Arnet. The most commonly used settings are shown below.

Commonly Used Memory Address Switch Settings





Memory Addresses

The Arnet SmartPORT intelligent board family employs dual-ported RAM technology. A block of memory on the board is accessible to both the onboard and system processors. This dual-ported RAM is used for communications and data passing between the host system, the board, and peripherals connected to it.

Conflict Symptoms

If memory cache or shadow RAM is conflicting with the SmartPORT memory address, the computer system may display one or more of the following symptoms:

- Response time is extremely slow. When you press a key on a terminal connected to the SmartPORT, it may take 30 seconds or more before a character appears on the terminal screen.
- Arnet diagnostics reports that the SmartPORT failed to initialize properly.
- The Arnet diagnostics status check fails.

Conflict Solutions

If your computer has 16 megabytes or more of RAM, you must either address the SmartPORT below one megabyte in memory or disable the upper two megabytes of RAM. (If the above symptoms occur with memory addresses below one megabyte, disable shadow RAM on your system.)

Setting S2 for ODOOOOH works in most cases. However, you may need to try other settings, such as OAOOOOH or OCOOOOH (usually available in a system with a monochrome graphics adapter) before you find an available 64k block of memory.

If you cannot find an available address below one megabyte, you can free up some space by switching to a monochrome video card. If this is not an option, you may have to disable cache. Cache is disabled by changing BIOS setup and/or jumpers on the motherboard. Refer to your system manual or computer vendor's technical support representative if you need help finding an available memory address, disabling shadow RAM, or disabling cache.

If you have an EISA system with 14 or more megabytes of RAM, you can selectively disable a selected window of memory. Many EISA systems will even allow that disabled memory to be relocated to the top of system RAM. Follow the addressing instructions your EISA configuration utility gives you. When you follow the instructions correctly, the utility will probably disable more than 64k of RAM. By disabling a "notch" of memory on either side of the SmartPort, the SmartPort memory will not be seen as system RAM.

Memory Map of AT System

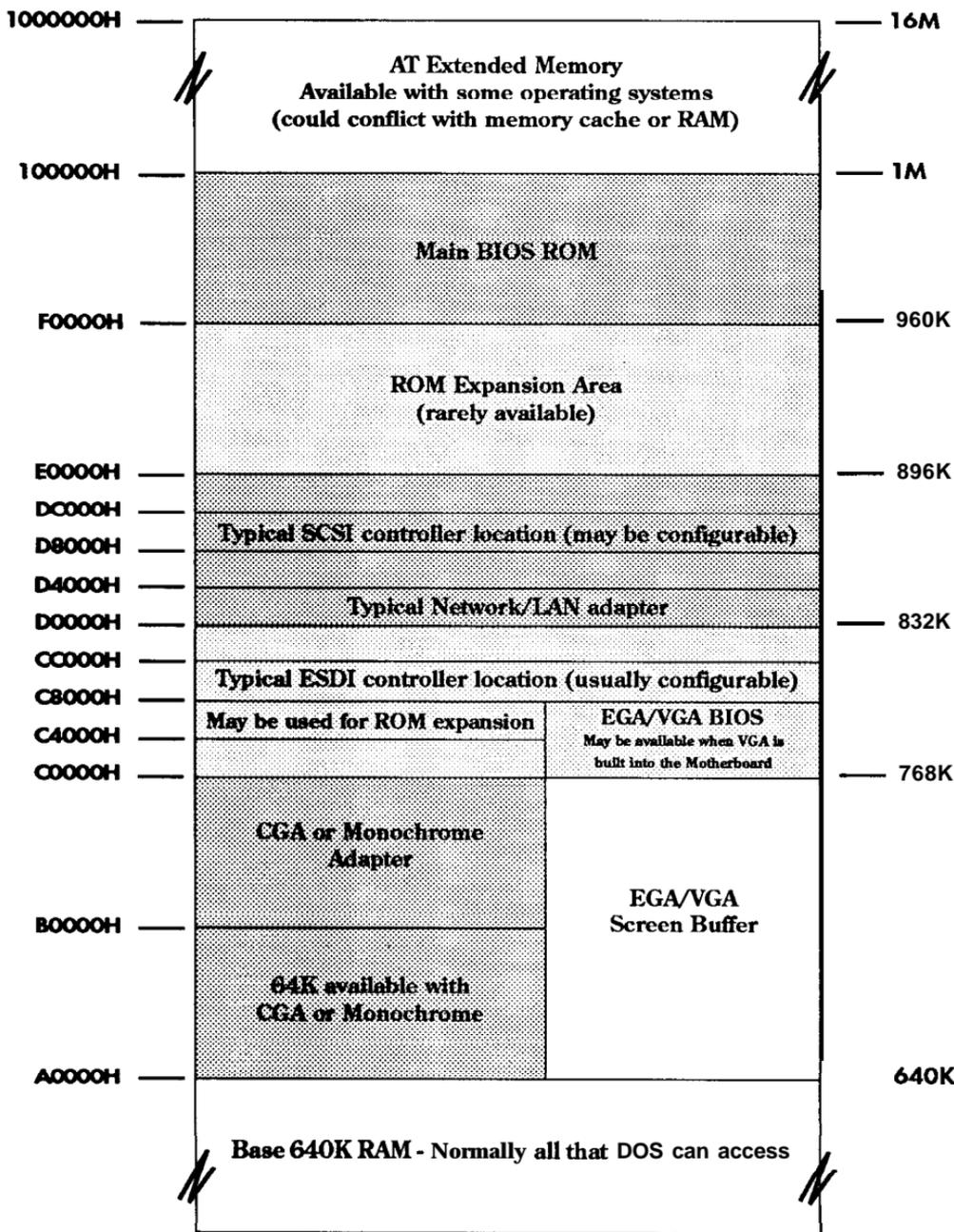


Convert the segmented addresses to physical addresses by adding a zero to the end of the segment and then adding this number to the offset. For example, convert the address C800:0005 (a common entry in an ESDI controller's format routine) to a physical address:

$$C8000 + 0005 = C8005$$

Refer to the memory map below and see that this address is in the area identified as the usual ESDI ROM BIOS location.

If you are using a system that uses EXPANDED memory, be aware that a 64k block of memory somewhere between A0000h and EFFFFh needs to be allocated for that. This is true whether you are using a hardware board (286 systems) or an emulator program (386 systems).



APPENDIX E

Switch Settings for S3, IRQ Selections

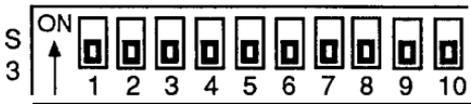
1. Find the setup listing for your operating system in Appendix A.
2. Set S3 to match the proper illustration.



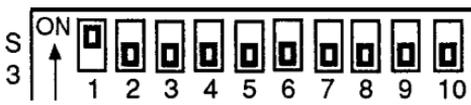
The interrupt you select with S3 must be compatible with existing system hardware and supported by your operating system software.

If you need switch settings for an operating system not listed in Appendix A, consult your dealer, the operating system supplier, or Arnet.

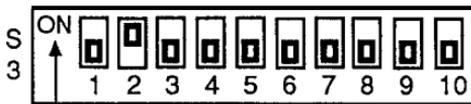
IRQ Select Switch Settings



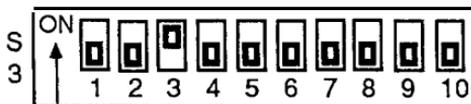
IRQ: not used



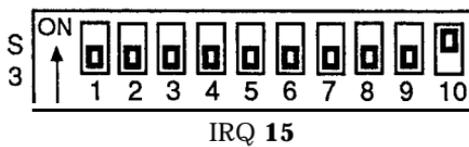
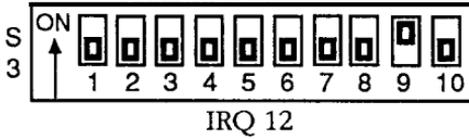
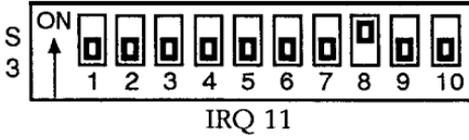
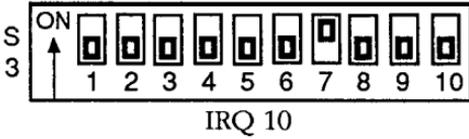
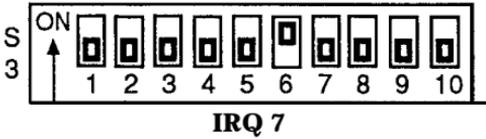
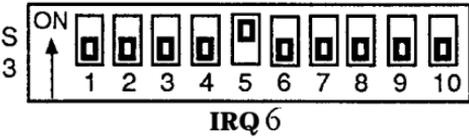
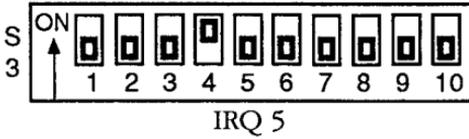
IRQ 2



IRQ 3



IRQ 4



APPENDIX F

Connector Pin Assignments

SmartPort provides an EIA RS-232C compatible interface. The standard SmartPort employs a cable with either four or eight individual port connectors at the ends of the cable. Each port has a 25-pin D-Subminiature female connector for attaching a peripheral. (The optional RJ-45 modular connector block has eight RJ-45 modular connectors.) Data transmission and reception is in serial form. The communication interface of the DB-25 and RJ-45 connectors support certain data and control signals as shown below.

Figure 20, DB-25 pin assignments

<u>Pin</u>	<u>Signal</u>	<u>SmartPort Input/Output</u>
1	Chassis Ground	
2	Transmitted Data (TXD)	output
3	Received Data (RXD)	Input
4	Request to Send (RTS)	output
5	Clear to Send (CTS)	Input
6	Data Set Ready (DSR)	Input
7	Signal Ground	
8	Data Carrier Detect (DCD)	Input
20	Data Terminal Ready (DTR)	output

Figure 2 1, DB-25 connector

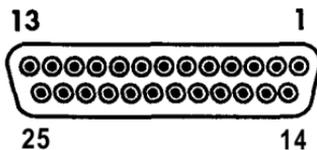
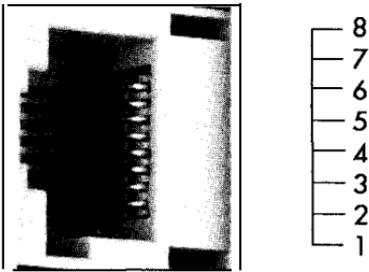


Figure 22, RJ-45 Pin assignments

<u>Pin</u>	<u>Signal</u>	<u>SmartPort</u> <u>Input/Output</u>
1	Chassis Ground	
2	Data Terminal Ready (DTR)	output
3	Transmitted Data (TXD)	output
4	Received Data (RXD)	Input
5	Signal Ground	
6	Clear to Send (CTS)	Input
7	Data Carrier Detect (DCD)	Input
8	Request to Send (RTS)	output

Figure 23, RJ-45 modular block connector



Glossary

Address

A location in computer memory or I/O space. Devices and peripherals are identified to the computer by their addresses.

AT-bus

The expansion bus system used in the IBM AT and IBM compatibles. (Also referred to as ISA)

CTS

Clear to Send - an RS-232 control signal

DCD

Data Carrier Detect - an RS-232 control signal used with modems

DSR

Data Set Ready - an RS-232 control signal

DTR

Data Terminal Ready - an RS-232 control signal

I/O

Input/Output - describes computer ports which are used to indicate status of internal and external devices. I/O port locations are identified by addresses.

Interrupt

A signal indicating a change in device status which requires action. Interrupts are prioritized by the urgency of the action they trigger. In IBM terminology, these are known as IRQ signals (Interrupt Request).

IRQ

See Interrupt.

Octacable

A serial board connection cable consisting of a male DB-62 connector with eight individual small cables attached to it, each of which terminates in a female DB-25 connector.

Port

A gateway through which data or status information is passed.

Quadracable

A serial board connection cable consisting of a male DB-62 connector with four individual small cables attached to it, each of which terminates in a female DB-25 connector.

RXD

The connector pin which is the destination of incoming data in an RS-232 serial port

RS-232C

The communication protocol used in SmartPort communications. RS-232-C (also called RS-232) is a serial protocol.

RTS

Request to Send - an RS-232 control signal

Serial

A type of data transfer in which data bits are transmitted one after the other on a single wire.

TXD

The connector pin which is the source of outgoing data in an RS-232 serial port

APPENDIX H

Arnet Full Lifetime Warranty Details

Length of Warranty:

The Arnet Lifetime Warranty extends to the original purchaser of the product as well as all subsequent owners. The warranty is a full lifetime warranty that is in existence for the life of the computer equipment in which the Arnet product is originally installed.

What the Warranty Will Cover:

Any and all defects, malfunctions, or failures of the Arnet product, including electrical and mechanical components that fail, defects in software supplied with the boards, and any and all defects in material or workmanship.

What the Warranty Will Not Cover:

Defects, malfunctions or failure of any warranted product if caused by damage (not resulting from a defect or malfunction of product) while in the consumer's possession or caused by an unreasonable use of the product. Such causes may include:

- A. Damage by acts of God (such as flood, fire, etc.); damage caused by other external forces such as power line disturbances, host computer malfunction, plugging the board in under power, or incorrect cabling, and damage caused by misuse, abuse, or otherwise failing to follow instructions.
- B. Modification of any type without authorization from the Arnet Customer Support Department.
- C. Use with unapproved operating system software or computers. A list of approved operating systems and hardware can be obtained from the Arnet Customer Support Department.
- D. Use in research and development of new software products.
- E. Installation in a computer different from the unit in which it was originally installed.

What Arnet **Will** Do Under Warranty Claims: In the event of a defect, malfunction, or failure to perform to written specifications, Arnet at its option will repair, replace, or refund the original purchase price of the item. If a product still fails after a reasonable number of attempts to remedy the defect or malfunction, you may elect for a full refund of your purchase price. Generally, boards returned from within the U.S. are repaired or replaced within two working days of receipt by the factory. International returns require from three to five days. In any event, Arnet will notify you as quickly as possible if your repair will exceed these periods. For customers in the U.S., Arnet will pay shipping charges to return repaired or replacement boards via UPS ground. For customers in other countries, Arnet will pay for return shipping by standard air carrier. If you want repaired or replacement boards shipped by some other method, you must pay the shipping charges.

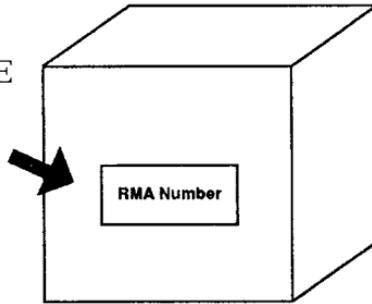
What To Do In The Event Of A Claim: *First, contact the dealer from whom you originally purchased the board for his advice and assistance.* Arnet dealers are authorized to perform warranty obligations. If you bought the product directly from Arnet, call Arnet Customer Support for an RMA number. Then send the unit postage paid to the following address:

Attention: Customer Support Dept.
Arnet Corporation
618 Grassmere Park Drive, #6
Nashville, Tennessee 37211
Telephone: (800)366-8844; (615) 834-8000

Include the following information with the return:

- Your name and address
- Daytime telephone number
- A written explanation of the defect (s) and the circumstances under which it arose.

THE RMA NUMBER MUST
APPEAR ON THE OUTSIDE
OF THE PACKAGE.



Disclaimer: **Arnet's** remedies and obligations are only to repair, replace, or refund the purchase price of the Arnet product. Arnet **disclaims** and shall not be liable for an incidental or consequential damages in connection **with** any warranty claim and /or product defect or malfunction. Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitations for exclusion may not apply to you. **This** Warranty gives you **specific** legal rights and you may also have rights that vary from state to state.