&ARNET

TWINPORT

EXPANSION BOARD
USER'S MANUAL

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ARNET

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CHAPTER 1
INTRODUCTION

The **Arnet TWINPORT**™ expansion board adds two standard serial
ports to your PC for connecting terminals, printers, and modems. This
board can be used for attaching any device with an RS-232
interface to your PC. The **TWINPORT** allows the connection of termi-
nals in multiuser systems, as well as the connection of other PCs or
peripherals in special applications.

The **TWINPORT** is supplied with all the hardware and software needed
for a complete board installation.
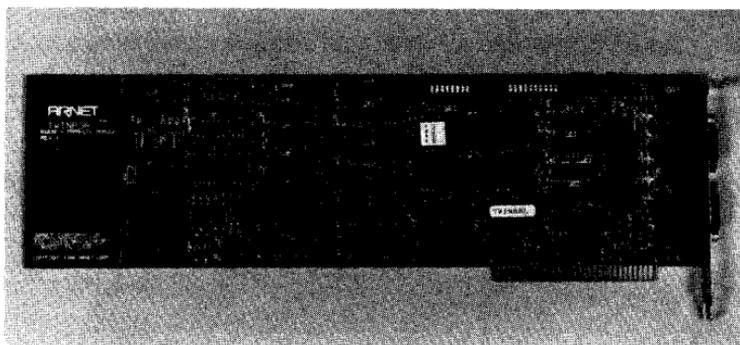
Figure 1   The TWINPORT Expansion Board.

CAUTIONS

Make sure that every component in your system is properly grounded*. Improper grounding or differences in ground potential between your computer and terminals can damage equipment. Such damage is NOT covered by warranty. Most surge protectors and uninterruptible power **supplies DO** NOT **protect against these** grounding problems.

We recommend shielded cable for all installations. Cables that run long distances and/or through electrically noisy areas are subject to voltage surges 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. This type of damage is NOT covered by warranty.

*Proper Grounding Techniques

Connect your computer and all terminals and other peripherals to three-pronged grounded receptacles. Make sure that the receptacles are wired properly.

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

Local electrical codes may also dictate special grounding arrangements. Your electrician can make sure that your installation complies with all codes.

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CHAPTER 2
UNPACKING INFORMATION

CAUTION: Leave *the* board in the protective anti-static bag until installation.

Open the shipping box and cheek the contents. Figure 2 shows the items you should receive.

TWINPORT Package:

- TWINPORT printed circuit board assembly (board)

- Information packet, including manual, diskette(s), warranty card, and introductory letter
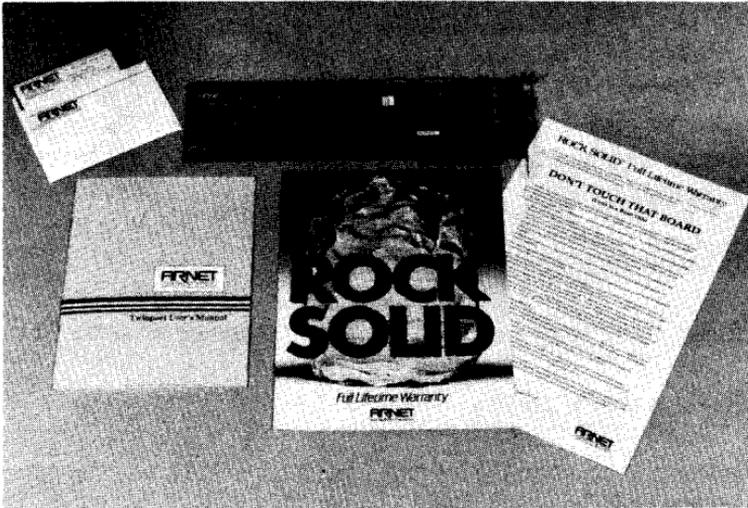
Figure 2   TWINPORT Kit Contents

CHAPTER 3
QUICK INSTALLATION GUIDE

ALL USERS SHOULD READ THIS SECTION. IT WILL POINT EXPERIENCED USERS TO THE INFORMATION THEY NEED TO KNOW WITHOUT REQUIRING THEM TO READ THE REST OF THE MANUAL. If you have difficulty performing any of the operations called for in this section, please refer to the more detailed sections referenced.

Using TWINPORT With Multiuser Operating Systems

1) Set the switches on the TWINPORT circuit board (Chapter 4). Use the settings shown in Appendix A for your operating system.

2) Remove the PC cover.

3) Install the TWINPORT board in your computer (Chapter 5).

4) Replace the PC cover.

Using TWINPORT as COM1 and COM2

1) Set the switches on the TWINPORT circuit board as shown in Figure 3.

2) Remove the PC cover.

3) Install the TWINPORT board in your computer (Chapter 5).

4) Replace the PC cover.

The lower port on your TWINPORT board is COM1, and the upper port is COM2.
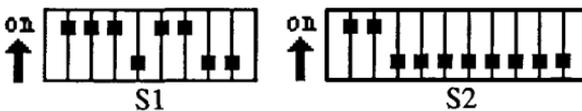
Figure 3

CHAPTER 4
SWITCH SETTINGS

Two multi-segment switches located on the TWINPORT board must be
set correctly for proper operation. These switches are labelled S 1 and
S2. Their locations are shown in Figure 4.
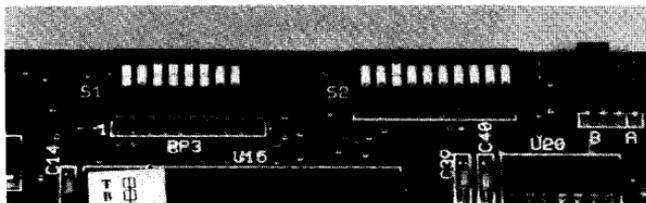
Figure 4 Switch Locations

I/O Addresses

Segments 1 - 3 of S 1 select the I/O locations used by TWINPORT.
The first of two separate I/O blocks is used by the UARTs. This
block consists of 16 I/O locations. (With DOS COM1/COM2
settings, two blocks of eight locations each are used.)
The second I/O block also has 16 I/O locations. This block is
the Option I/O space and is required if the UART I/O latch is
used.

Segment 4 of S 1 enables the option I/O space. Figure 5 shows both
positions.
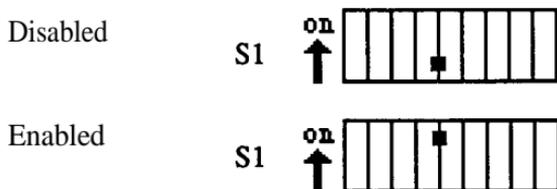
Figure 5

Port Enable/Disable

Segments 5 and 6 of S 1 enable/disable ports #1 and #2 respectively.
Figure 6 shows the possible settings.

Figure 6

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Port 2 Enabled   S1

Both Ports Enabled   S1
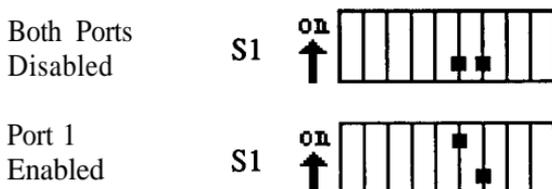
Figure 6, Continued

Segments 7 and 8 of S 1 should always be OFF.

Interrupt Selection

Segments 1 - 7 of Switch S2 select the system interrupt line.

Segments 8 - 10 of S2 should always be OFF.

Proper Switch Settings

TWINPORT is designed for use in a variety of systems with a wide range of software. Therefore, there **are** many possible switch setting combinations. Vendors of operating systems approved for use with **TWINPORT** specify settings that work with their systems. APPEN-DIX 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. Appendix A also gives settings for use under DOS as **COM1** and/or COM2.

APPENDICES C and D show the most commonly used settings for the switches. Call **Arnet** Support for information on other possible switch settings.

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CHAPTER 5
BOARD INSTALLATION

The board is installed into one of the expansion slots of your computer. The following steps detail the installation procedure.

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.

1) Remove the cover of the PC (see PC manufacturer's instructions).

2) Determine which slot your **TWINPORT** will occupy. Remove the blank card bracket from this slot; it will not be reused.

3) Insert the **TWINPORT** board into the mating motherboard socket. Rush the board fiily into place (Figure 7).

4) Secure the board by replacing the hold-down screw that was removed in Step 2.

5) Replace the **PC** cover.

Figure 7

9
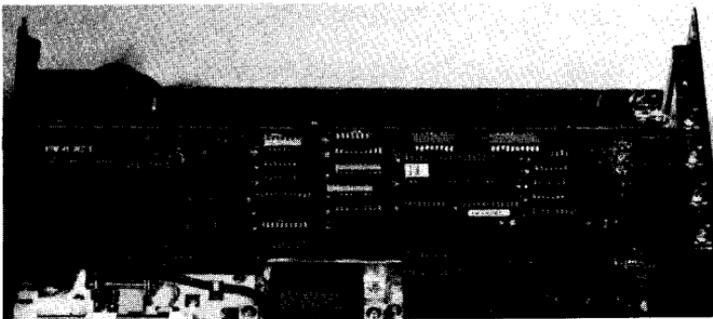
APPENDIX A
MULTIUSER OPERATING
SYSTEM SETUPS

Formula IV

by Dynamic Microprocessor Associates (DMA)

UART I/O address: 280H
Option I/O address: Not used
Interrupt: IRQ2

S1

S2
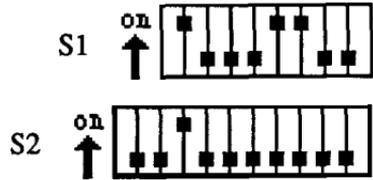
MBOS/5, BOS/LAN

by BOS National

Primary: UART I/O address: 100H
Option I/O address: Unused
Interrupt: IRQ2

S1

s2

Alternate: UART I/O address: 200H
Option I/O address: Unused
Interrupt: IRQ2

S1
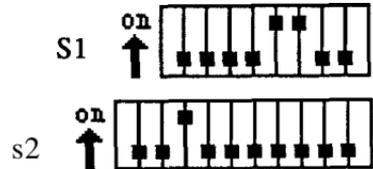
s 2
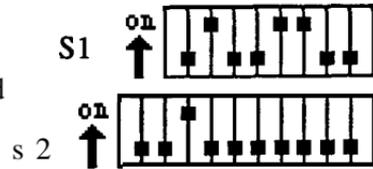
Refer to BOS documentation for more information.

MUGDOS

by Haar Industries

Primary: UART I/O address: 100H
Option I/O address: 140H
Interrupt: IRQ7

S1

S2
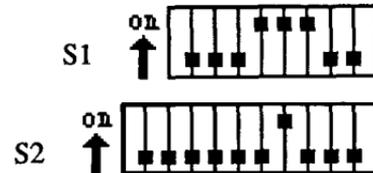
Alternate: UART I/O address: 200H
　　　　　　Option I/O address: 240H
　　　　　　Interrupt: IRQ7

S1

S2
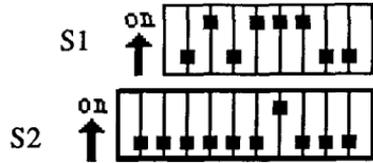
Refer to Haar's MUC-DOS documentation for more information.

MUMPS by Datatree or CCSM MUMPS by CompMark

Primary: UART I/O address: 280H
　　　　　Option I/O address: 2COH
　　　　　Interrupt: IRQ3

S1

s2
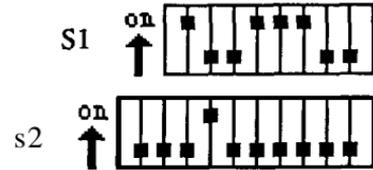
Alternate: UART I/O address: 200H
　　　　　　Option I/O address: 2DOH
　　　　　　Interrupt: IRQ3

S1

s2
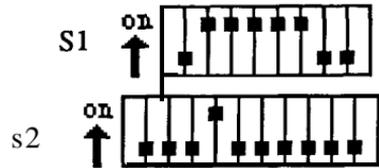
Refer to MUMPS documentation for more information.

Note: MUMPS packages supplied by vendors other than those listed above may not be compatible with your TWINPORT board.

Pick
by Pick Systems

UART I/O address: 280H
Option I/O address: 2COH
Interrupt: IRQ4

S1

s2

UART I/O address: 180H
Option I/O address: 1C0H
Interrupt: IRQ3

S1

S2
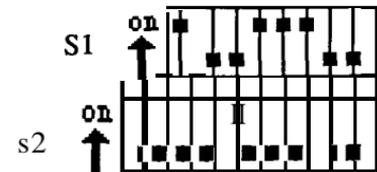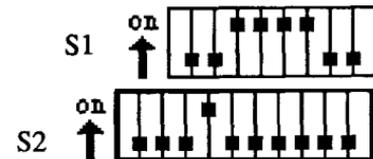
Refer to Technical Support Bulletin Vol. 1, Number 11 from Pick and other Pick documentation for more information.

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QNX

by Quantum Software

UART I/O address: **280H**
Option I/O address: Not used
Interrupt: **IRQ2, IRQ3, IRQ4, or IRQ5**

S1

IRQ2   S2

IRQ3   S2

IRQ4   S2

IRQ5   S2
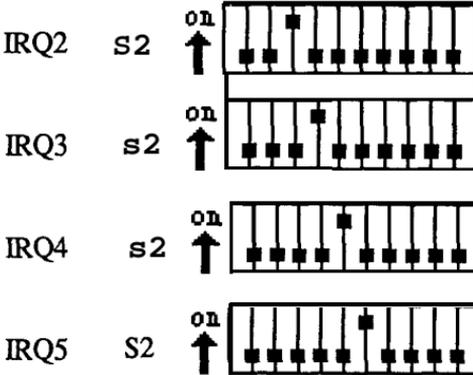
Refer to Quantum's QNX documentation for more information.

THEOS

by Theos Software Corporation

PC/AT and compatibles:
UART I/O address: 280H
Option I/O address: 2COH
Interrupr IRQ5

S1

S2
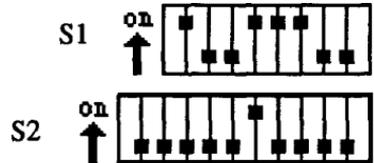
PC/XT and compatibles:
UART I/O address: 280H
Option I/O address: 2COH
Interrupt: IRQ4

S1

S2
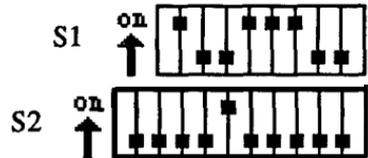
Refer to Theos documentation for more information.

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Venix/86

by Unisource Software Corp.

UART I/O address: 280H
Option I/O address: Not used
Interrupt: IRQ3 or IRQ4

S1

on

IRQ3 S2

on

IRQ4 S2

on
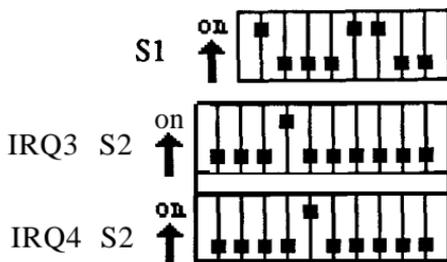
Refer to Unisource documentation for more information.

Xenix System V

by the Santa Cruz Operation
For use as COM1:

Primary: UART I/O address: 100H
          Option I/O address: 140H
          Interrupt: IRQ4

S1

on

S2

on

Alternate: UART I/O address: 280H
   Option I/O address: 2COH
           Interrupt: IRQ4

S1

on

S2

on
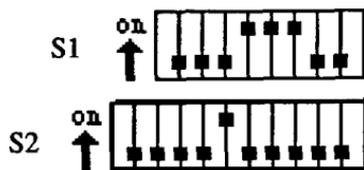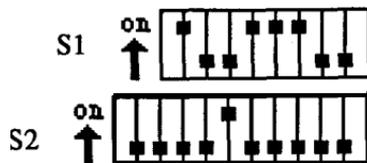
For use as COM2:

Primary: UART I/O address: 180H
         Option I/O address: 1C0H
         Interrupt: IRQ3

S1

on

S2

on
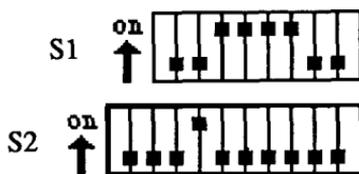
Alternate: UART I/O address: 300H
   Option I/O address: 340H
           Interrupt: IRQ3

S1

on

S2

on

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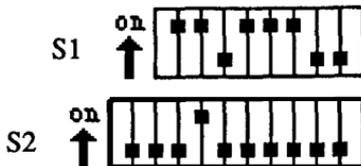
After installing Xenix as described in the Run Time Environment
Manual, log on as the super user. Run the program */etc/mkdev serial
to* initialize the serial ports. Enable and disable ports as your applica-
tion requires.

XMM-DOS

by Concurrent Controls

**Primary:** UART I/O Address: 100H   S1
         Option I/O Address: 140H
         Interrupt: IRQ2   S2
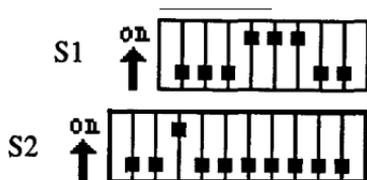
Alternate: UART I/O Address: 180H   S1
         Option I/O Address: 1C0H
         Interrupt: IRQ 7   S2
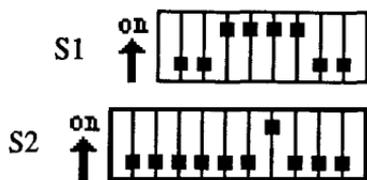
The CONFIG utility must be used to configure XMM-DOS for the
Arnet TWINPORT board. See XMM DOS Installation Guide
Appendices for CONFIG utility settings. After running CONFIG, cold
boot the computer system to enable the TWINPORT hardware and the
new XMM-DOS/CONFIG configuration.

Note: Other I/O locations and interrupts may be used as long as XMM-
DOS is set to match.

PC-MOS/386

by The Software Link   S1

Primary UART I/O address: 280H
Alternate UART I/O address: 100H   S1
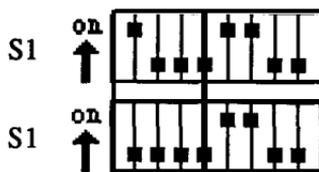
Option I/O Address: Not used
Interrupr IRQ 2   S2

Software Installation: The following is a brief description of the installation procedure; refer to the **PC-MOS/386** User's Guide for complete instructions.

1. Edit the CONFIG.SYS file
   a. Select system memory pool size (SMPSIZE)
   b. Set up device driver ($SERIAL.SYS)
   c. Insert each port Example: for **TWINPORT** at **280H,** use **A/D=280, 288**
   d. Use the ~ sign at the right side to indicate screen wrap-around.
2. Create memory partitions for each user with the **.ADDTASK** command.

DOS COM1/COM2 SETUPS

COM1 Only (Port **#2** Disabled)
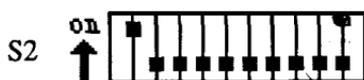
COM2 Only (Port **#1** Disabled)
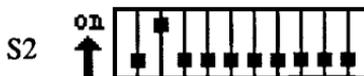
COM1 and COM2
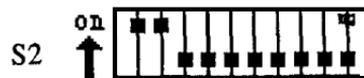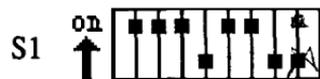
APPENDIX B
CABLE INFORMATION

Most operating systems specify the types of cables they require for
connecting terminals or modems to a PC. If so, you should follow their
recommendations. Otherwise, you can probably use one or more of the
cable types discussed below.

We recommend shielded cable for all installations. The FCC requires
the use of shielded cable for control of emissions with TWINPORT. In
addition, cables that run long distances or through electrically noisy
areas are subject to voltage surges that can cause data errors or equip-
ment 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. This type of
damage is NOT covered by warranty.

D-Sub Cables

Cables for **TWINPORT** use both 9- and 25-pin D-subminiature
connectors. A typical D-sub cable may have between three and ten
conductors, depending on its use.

Cables for use with terminals usually need only three wires— transmit,
receive, and ground-plus a shield. The cable wiring diagram and
jumper settings for this application are shown below.

Cables for use with modems require nine conductors plus a shield.
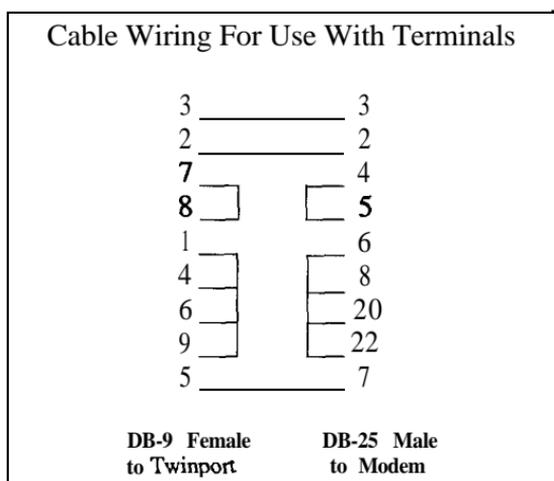
Cable Wiring For Use With Terminals

3 ———————— 3	
2 ———————— 2	
7 ——— 4	
8 ⌐ ⌐ 5	
1 ⌐ ⌐ 6	
4 ⌐ ⌐ 8	
6 ⌐ ⌐ 20	
9 ⌐ ⌐ 22	
5 ———————— 7	

DB-9 Female   **DB-25 Male**
to Twinport   **to Modem**

Cable Wiring For Use With Modems

```
2 ——————⟍   ⟋—————— 2
3 ——————  ⟋⟍ —————— 3
7 ———————————— 4
8 ———————————— 5
6 ———————————— 6
5 ———————————— 7
1 ———————————— 8
4 ———————————— 20
9 ———————————— 22
```

DB-9 Female   DB-25 Male
to **Twinport**   to Modem

Port #1 I/O Address	Port #2 I/O Address	Option I/O Address	Switch Settings
100H	108H	140H	on ↑
180H	188H	1C0H	on ↑
200H	208H	240H	on ↑
200H	208H	2D0H	on ↑
280H	288H	2C0H	on ↑
280H	288H	300H	on ↑
300H	308H	340H	on ↑
3F8H	2F8H	340H	on ↑

The settings of switch segments 4-6 will vary depending on whether the UART latch is used and whether the ports are enabled.

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APPENDIX D
IRQ SWITCH SETTINGS
SWITCH S2 (SEGMENTS 1-7)

Port #1 IRQ	Port #2 IRQ	Switch Settings
IRQ4	IRQ3	
IRQ2	IRQ2	
IRQ3	IRQ3	
IRQ4	IRQ4	
IRQ5	IRQ5	
IRQ7	IRQ7	

APPENDIX E
INTERFACE DESCRIPTION

TWINPORT provides an EIA RS-232C-like interface. Bach port has one DB-9 male connector for attaching a peripheral device. Data transmission and reception is in serial form.

The communication interface supports certain data and control signals, as listed below:

Pin 1 Carrier Detect

Pin 2 Received Data

Pin3 Transmitted Data

Pin4 Data Terminal Ready
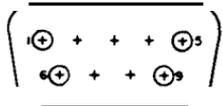
Pin 5 Signal Ground

Pin 6 Data Set Ready

Pin 7 Request To Send

Pin 8 Clear To Send

Pin 9 Ring Indicator

APPENDIX F
WARRANTY

ARNET FULL LIFETIME WARRANTY DETAILS

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

IL 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.

III. 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.

IV. 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 are repaired or replaced within two working days of **receipt by the factory.** For customers in the U.S., **Arnet** will pay shipping charges to return repaired or replacement boards via UPS ground. If you want repaired **or replacement boards shipped by some other method, you must pay the shipping charges. A $35.00 fee will be** charged for testing any board found by **Arnet** not to be defective, malfunctioning, or failed, or if the board has been damaged under the terms of Paragraph III.

V. What To Do In The Event Of A Claim: First, **contact the** dealer **you originally purchased the board from for their advice and assistance. Araet dealers am 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: Attention:** Customer Support **Dept., Arnet** Corporation, **618 Grassmere Dr., Suite 6, Nashville, TN** 37211, *Telephone:* (615) 834-8844. Include the following information with the return: your name. 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.**

VI. 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 any incidental or consequential damages in connectionwith any Warranty claim and/or product defect or malfunction. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations for exclusion may not apply to you. This Warranty gives you specific legal rigbts and you may also have rights that vary from state to state.