NC-527 Half-card full-function Low-power 6x86 MMX CPU Card

6x86-166/233/300 MMX CPU, COMx4, LCD/VGA, IDEx2, Ethernetx2, WDT, RS-232/422/485, IrDA, USBx2, DOC, Single +5V, ATX Power, PC/104, Audio, Touch Panel, CompactFlash socket for SSD / IBM MicroDrive HDD

USER'S MANUAL

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ACKNOWLEDGEMENTS

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CHAPTER

1

INTRODUCTION

THIS CHAPTER SHOWS THE INFORMATION ABOUT CPU CARD AND ITS SPECIFICATIONS.

 SECTIONS INCLUDE:

* **ABOUT THIS MANUAL**

* **SPECIFICATIONS**

* **SAFETY PRECAUTIONS**

1-1 ABOUT THIS MANUAL

This manual is written to assist you to install and set up the system.
It contents nine chapters as following:

Chapter 1: INTRODUCTION
This chapter introduces you the background of this manual, and the specifications for this system. Final in this chapter will indicate how to avoid the damages for this CPU Card.

Chapter 2: HARDWARE CONFIGURATION
This chapter outlines the components' locations and their functions.

Chapter 3: LCD/VGA
This chapter shows the information about on-board shared memory 64-bit LCD/VGA, support CRT and TFT LCD flat panel up to 280x1024x8 BPP and 1024x768x16 BPP, support MPEG1 and MPEG2 assist.

Chapter 4: TOUCH PANEL INTERFACE
This chapter shows the information of touch panel interface function, also describes how to configure touch panel hardware.

Chapter 5: DiskOnChip FLASH DISK
This chapter brings you the information about DiskOnChip function.

Chapter 6: ETHERNET
This chapter shows the detailed information about Ethernet.

Chapter 7: WDT
Helpful information for WDT functions.

Chapter 8: AUDIO
This chapter list the detail information of Audio. The way how to configure the audio is also included.

Chapter 9: AWARD BIOS SETUP
This chapter indicates you how to set up the BIOS configurations.

Appendix A: TECHNICAL SUMMARY
This appendix gives you the information about the Award BIOS.

Appendix B: TROUBLE SHOOTING
This appendix outlines the errors and offers you the methods how to isolate the problems.

1-2 SPECIFICATIONS

* **CPU + Chipset:**
  NS Geode GXLV/GX1 CPU & CX5530 chip with built-in 6x86-166/233/300 MMX CPU which GXLV support low-power 0~85℃ CPU (1.5W ~ 5.4W) and GX1 support very-low-power CPU (0.8W ~ 3W).

* **CACHE MEMORY:** 16KB L1 cache memory.

* **I/O Chipset:** NS PC97317 + SMC666/669.

* **BIOS:** AWARD, 128KB Flash BIOS for plug & play function.

* **MEMORY:** 1 X 144-pin SO-DIMM socket support 8MB ~ 128MB SDRAM and low-profile application.

* **LCD/VGA w/ MPEG II:**
  On-chip shared-memory 64-bit LCD/VGA, support CRT and TFT/DSTN LCD flat panel up to 1280x1024x8 BPP and 1024x768x16 BPP, support MPEG1 and MPEG2 assist, 44-pin LCD connector.

* **100/10M Ethernet x 2:** Standard Realtek 8139C PCI 100/10M Ethernet x 1; or, Intel 82559 chip x 1, optional Intel 82559 l00/10Mbps Ethernet x 2.

* **CMOS Backup:** CMOS Back up by Li battery.

* **KEYBOARD & MOUSE CONNECTOR:**
  Support mini DIN 6-pin K/B + Mouse and JSP 5-pin Keyboard connector.

* **BUS TYPE:** PC/104 Connector and ISA bus.

* **Optional Touch Panel interface:** 4-pin header.

* **Audio:** 16-bit stereo FM synthesis, OPL3 emulation.

* **Flash Disk SSD:** 32-pin socket for DiskOnChip SSD 8MB ~ 288MB.

* **Optional CompactFlash I / II socket:** Support IDE Flash Disk or IBM 340MB/1GB MicroDrive HDD.

* **WATCHDOG:**   I/O port 0443H to enable watchdog.
                      I/O port 043H to disable watchdog.
  Time-out timing selectable 0 to 255 sec. Period: one second.

* **IDE PORT x 2:** Support two IDE port up to 4 x IDE devices.

* **FDD:** Support up to two Floppy Disk Drivers, 3.5"or 5.25" FDD (360K/720K /1.2M/1.44M/2.88M) Drives A, B swappable.

* **SERIAL PORT x 4:** 16-byte FIFO 16C550 serial port, jumper selectable RS-232 x 3 +RS-232/422/485 x 1.

* **PARALLEL PORT:** One bi-directional parallel port configured as LPT1, 2, 3 support IEEE 1284 compliant high speed EPP and ECP modes.

* **Speaker:** Buzzer on Board.

* **IrDA and USB:** Support IrDA x 1 and USB x 2.

* **Miscellaneous Connectors/Jumpers:**
  Reset, HDD LED, 2-pin single +5V, 4-pin +/-5V & +12V Power connector. 3-pin ATX control, 2-pin single +5V power connector.

* **DMA CONTROLLER:** 82C37 X 2

* **DMA CHANNELS:** 7

* **INTERRUPT CONTROLLERS:** 82C59 X 2

* **INTERRUPT LEVELS:** 15

* **OPERATING TEMPERATURE:** 0 ~ 60℃ for board.
  0 ~ 85℃ CPU support GXLV low-power type CPU (5W ~ 5.4W), or, optional GX1 very-low-power type CPU (0.8W ~ 3W), just need metal cooler (don't need fan).

* **POWER CONSUMPTION:**

	Peak Power	Average Power
GXLV-166 (2.2V)	3.7W	1.0W
GX1-300 (2.0V)	3.0W	1.5W
GX1-266 (1.8V)	2.3W	1.2W
GX1-233 (1.8V)	2.0W	1.0W
GX1-200 (1.6V)	1.6W	0.8W

* **SYSTEM POWER REQUIREMENT:** +/-5V, 12V power by using 4-pin connector, also single +5V power by using same 4-pin power connector; 3-pin ATX control pin connect to ATX power connector on backplane.

* **BOARD DIMENSION:** 185mm x 122mm

* **BOARD WEIGHT:** 0.19Kg.

1-3 SAFETY PRECAUTIONS

Follow the messages below to avoid your system from damage.

1. Avoid your system from static electric power on all occasions.

2. Stay safe from the electric shock. Don't touch any components of this card when the power is ON. Always disconnect power when the system is not in use.

3.Remove power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

HARDWARE CONFIGURATION

THIS CHAPTER SHOWS YOU THE CONNECTORS & JUMPER SETTINGS, AND COMPONENTS' LOCATIONS.

SECTIONS INCLUDE:

* **JUMPERS/CONNECTORS QUICK REFERENCE TABLE**

* **COMPONENTS' LOCATIONS**

* **CONFIGURATION AND JUMPER SETTINGS**

* **CONNECTOR PIN ASSIGNMENTS**

2-1 JUMPERS/CONNECTORS QUICK REFERENCE TABLE

IDE1/ IDE2 CONNECTOR ……..…….……………………………… IDE1/ IDE2
LCD CONNECTOR …………………………………….………… LCD
AUDIO CONNECTOR ……………………………….………… AUDIO
FLOPPY DISK DRIVE CONNECTOR ………………..………. FDC
PRINTER CONNECTOR …………………………..……...….. LPT
COM3 & COM4 RS-232 CONNECTOR …………………….…… COM3/ 4
COM2 RS-232 CONNECTOR ……………………….………… COM2
COM1 RS-232 CONNECTOR ………………….………….…… COM1
ETHERNET1 CONNECTOR ……………………………… RJ1
ETHERNET2 CONNECTOR ………………………………… J5
VGA CONNECTOR ……………………………………………. VGA
JSP KEYBOARD CONNECTOR …………………………… JSPKB
MINI DIN PS/2 K/B & MOUSE CONNECTOR ………………… KB/MS
4-PIN POWER CONNECTOR ……..……………………… POWER
COM2 RS-422/485 CONNECTOR ……………………………… 422/485
IrDA CONNECTOR ……………………………………………... IR
USB1 CONNECTOR ……..…………………………………… USB1
USB2 CONNECTOR ……..…………………………………… USB2
HARDWARE SUSPEND CONNECTOR ……..……………… SUSP
RESET CONNECTOR ……………………………………… RST
HDD LED CONNECTOR ……………………………………... HDLED
ATX POWER-ON PUSH BUTTON CONNECTOR ……………. PW/ON
ATX POWER CONTROL SIGNAL PIN HEADER ……………… EXTATX
TOUCH PANEL CONNECTOR ……………………………... CN1
EXTERNAL SPEAKER . …………………………………….. CN2
RS-422/485 D-SUB PIN9 VOLTAGE OUTPUT SELECT ……. JP1
COM2 RS-232/422/485 SELECT …………………………… JP2
ETHERNET1 ENABLED/DISABLED SELECT ………..…….. JP3
ETHERNET2 ENABLED/DISABLED SELECT ………..…….. JP4
LCD PANEL VOLTAGE SELECT ………………………… JP5
WDT OUTPUT SELECT ……………………………………. JP6
INTERNAL OR EXTERNAL +12V SELECT ………..………... JP7
LCD BLAKLIGHT INVERTER POWER CONNECTOR ..……. JP8
CMOS BATTERY CLEAR JUMPER ………..………………. JP9
M-System ADDRESS SELECT ……………………………… JP10
COM1 D-SUB PIN 1, 9 VOLTAGE OR SIGNAL SELECT ……. J1
COM2 D-SUB PIN 1, 9 VOLTAGE OR SIGNAL SELECT …… J2
ETHERNET LED CONNECTOR ……………………………. J3
CD-ROM AUDIO IN CONNECTOR ..……………………… J4
CompactFlash SOCKET ………..…………………………… IBM1
BUZZER ……..………………………………………………. BZ1
144-PIN SO-DIMM MODULE SOCKET ..…………………… DIMM1
MANUFACTURER DEFAULT JUMPER LIST ……………… JPX

2-2 COMPONENT LOCATIONS

REALTEK 8139C X 1

Intel 82559 x2

U43

SMC ®
FDC37C666GT

COMPACT
FLASH

DIMM1
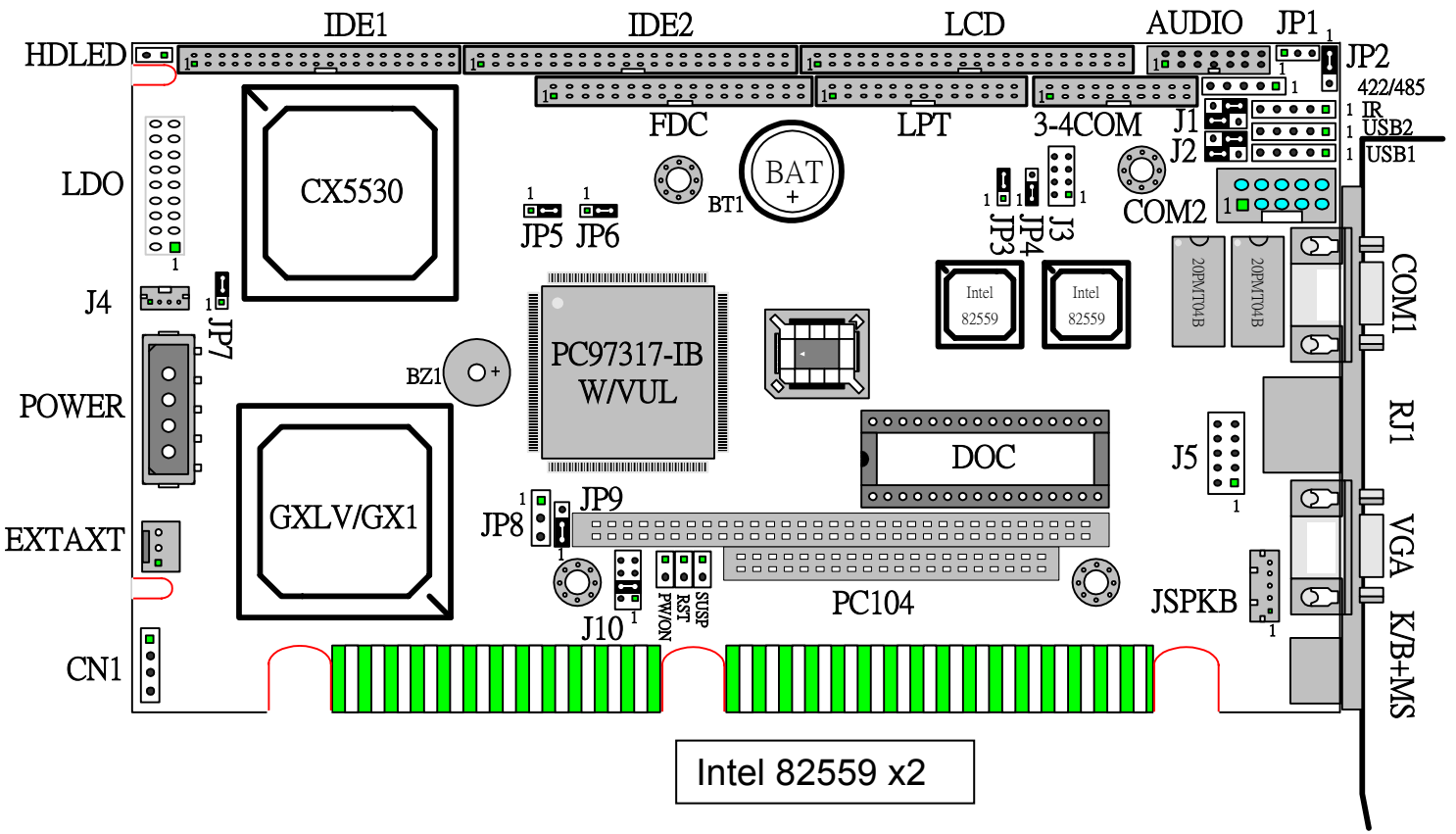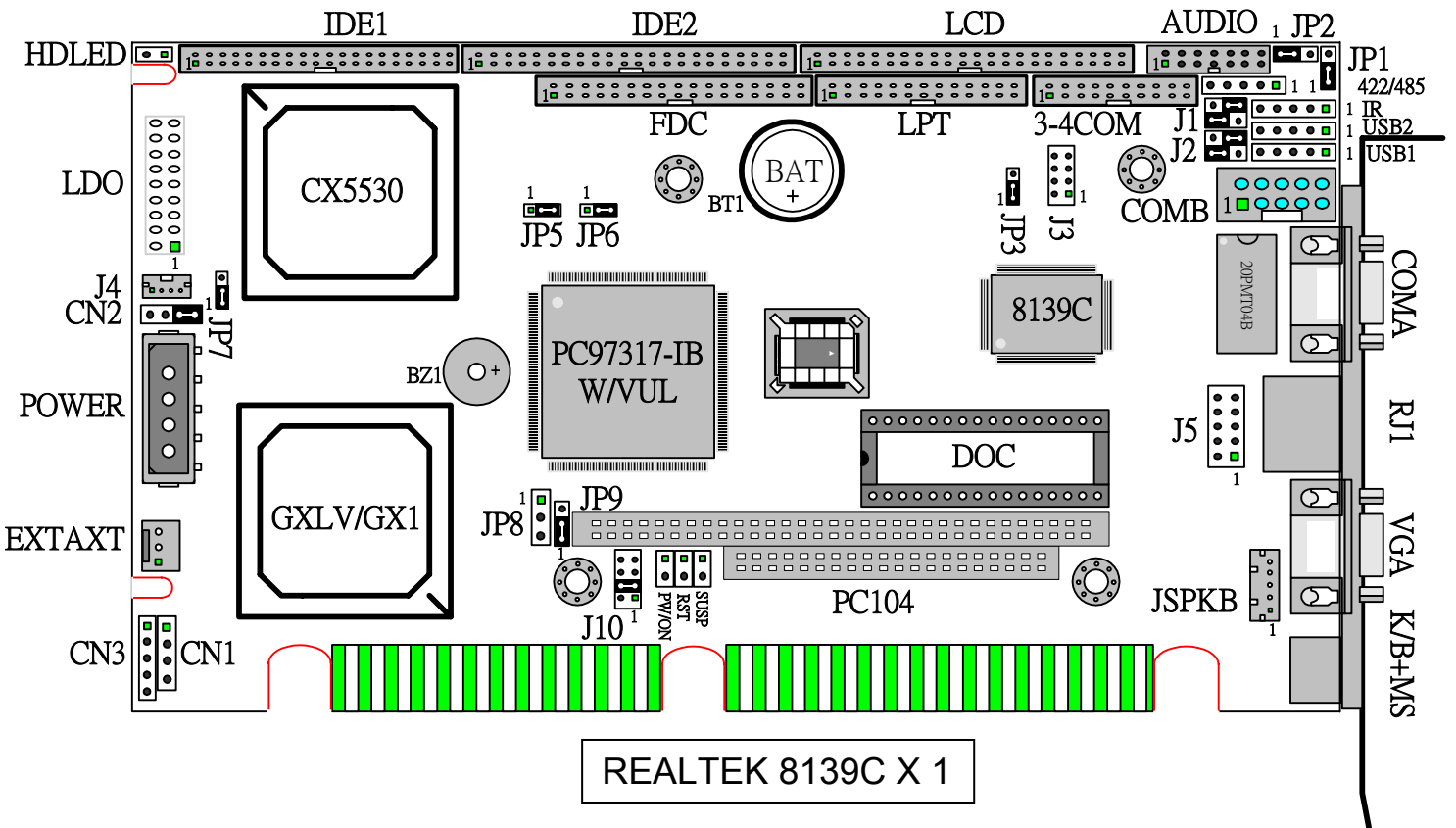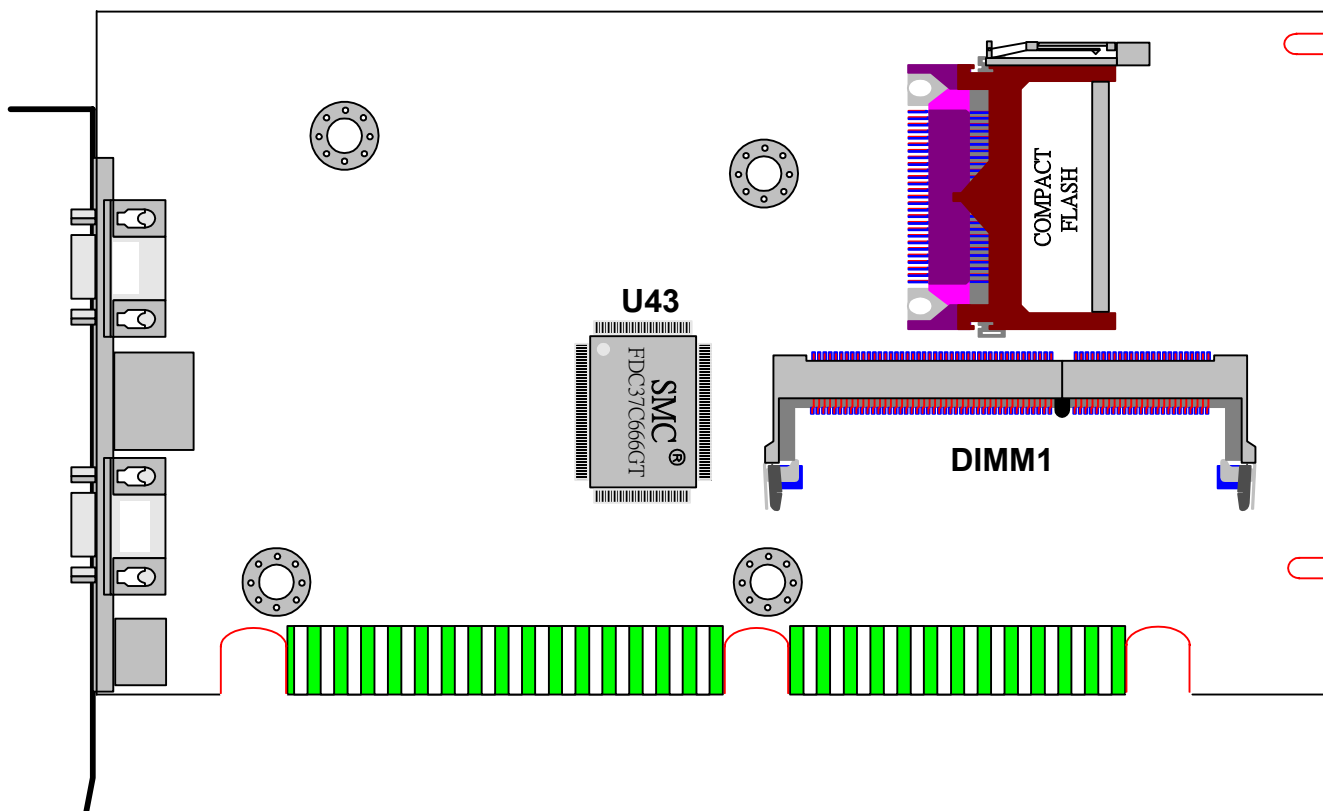
2-3 IDE1/ IDE2 CONNECTOR (IDE1/ IDE2)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RESET	2	GND
3	HD7	4	HD8
5	HD6	6	HD9
7	HD5	8	HD10
9	HD4	10	HD11
11	HD3	12	HD12
13	HD2	14	HD13
15	HD1	16	HD14
17	HD0	18	HD15
19	GND	20	NC
21	DREQ	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	GND
29	DACK	30	GND
31	IRQ	32	SINGLE GND
33	SA1	34	NC
35	SA0	36	SA2
37	HDCS0	38	HDCS1
39	LED0	40	GND
41	5V (IDE2 ONLY)	42	5V(IDE2 ONLY)
43	GND(IDE2 ONLY)	44	NC(IDE2 ONLY)

2-4 LCD CONNECTOR (LCD)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+12V	2	+12V
3	GND	4	GND
5	LCDVCC	6	LCDVCC
7	NC	8	GND
9	DSTN SIGNAL	10	DSTN SIGNAL
11	B0	12	B1
13	B2	14	B3
15	B4	16	B5
17	DSTN SIGNAL	18	DSTN SIGNAL
19	G0	20	G1
21	G2	22	G3
23	G4	24	G5
25	DSTN SIGNAL	26	DSTN SIGNAL
27	R0	28	R1
29	R2	30	R3
31	R4	32	R5
33	GND	34	GND
35	SHFCLK	36	VSYNC(FLM)
37	M(D.0)	38	HSYNC(LP)
39	GND	40	ENABKL
41	+5V	42	+5V
43	LCDVCC	44	LCDVCC

2-5 AUDIO CONNECTOR (AUDIO)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LINE IN RIGHT	2	GND
3	GND	4	LINE IN LEFT
5	GND	6	MICHONE IN
7	MICHONE IN	8	GND
9	LINE OUT LEFT	10	LINE OUT RIGHT
11	GND	12	AMP OUT LEFT
13	AMP OUT RIGHT	14	GND

2-6 FLOPPY DISK DRIVE CONNECTOR (FDC)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	DENSEL
3	GND	4	NC
5	GND	6	DRATE0
7	GND	8	INDEX
9	GND	10	MTR0
11	GND	12	DRV1
13	GND	14	DRV0
15	GND	16	MTR1
17	GND	18	DIR
19	GND	20	STEP
21	GND	22	WDATA
23	GND	24	WGATE
25	GND	26	TRK0
27	GND	28	WRTPRT
29	MID1	30	RDATA
31	GND	32	SEL
33	MID0	34	DSKCHG

2-7 PRINTER CONNECTOR (LPT)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STROB	2	AUTOFD
3	PD0	4	ERROR
5	PD1	6	INIT
7	PD2	8	SLCTIN
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	GND

2-8 COM3 & COM4 RS-232 CONNECTOR (COM3/ COM4)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD3-	2	DSR3-
3	RXD3	4	RTS3-
5	TXD3	6	CTS3-
7	DTR3-	8	RI3-
9	GND	10	NC
11	DCD4-	12	DSR4-
13	RXD4	14	RTS4-
15	TXD4	16	CTS4-
17	DTR4-	18	RI4-
19	GND	20	NC

2-9 COM2 RS-232 CONNECTOR (COM2)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD2-	2	DSR2-
3	RXD2	4	RTS2-
5	TXD2	6	CTS2-
7	DTR2-	8	RI2-
9	GND	10	NC

2-10 COM1 RS-232 CONNECTOR (COM1)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD1-	2	RXD1
3	TXD1	4	DTR1-
5	GND	6	DSR1-
7	DTR1-	8	CTS1-
9	RI1-		

2-11 ETHERNET1 CONNECTOR (RJ1)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	TX+	2	TX-
3	RX+	4	NC
5	NC	6	RX-
7	N/C	8	N/C
9	GND	10	GND

2-12 ETHERNET2 CONNECTOR (J5)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	TX+	2	TX-
3	RX+	4	NC
5	NC	6	RX-
7	N/C	8	N/C
9	GND	10	GND

2-13 VGA CONNECTOR (VGA)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDCSDA
13	HSYNC	14	VSYNC
15	DDCSCL		

2-14 JSP KEYBOARD CONNECTOR (JSPKB)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	KEYBOARD CLK	2	KEYBOARD DATA
3	NC	4	GND
5	VCC		

2-15 MINI DIN PS/2 K/B & MOUSE CONNECTOR (KB/MS)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	KEYBOARD DATA	2	MOUSE DATA
3	GND	4	VCC
5	KEYBOARD CLK	6	MOUSE CLK

2-16 4-PIN POWER CONNECTOR (POWER)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC12V	2	GND
3	GND	4	VCC5V

2-17 COM2 RS-422/485 SELECTOR (422/485)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RXD/TX+	2	DTR/RX-
3	DCD/TX-	4	TXD/RX+
5	CABLE-RI		

2-18 IrDA CONNECTOR (IR)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC	2	CIRRXD
3	IR-RXD	4	GND
5	IR-TXD		

2-19 USB1 CONNECTOR (USB1)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC+5V	2	USBP1-
3	USBP1+	4	GND
5	GND		

2-20 USB2 CONNECTOR (USB2)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC+5V	2	USBP2-
3	USBP2+	4	GND
5	GND		

2-21 HARDWARE SUSPEND CONNECTOR (SUSP)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	SUSP SIGNAL	2	GND

2-22 RESET CONNECTOR (RST)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	RESET SIGNAL	2	GND

2-23 HDD LED CONNECTOR (HDLED)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC	2	LED

2-24 ATX POWER-ON PUSH BUTTON CONNECTOR (PW/ON)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	ATX BUTTON SIGNAL	2	GND

If your computer case is equipped with an ATX power supply, you should connect this PW/ON to the power on/off button on your computer case. This connector enables you to turn your computer on and off.

2-25 ATX POWER CONTROL SIGNAL PIN HEADER (EXTATX)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	POWER ON
3	ALWAYS 5V		

Connect this 3-pin ATX Power control pin to the corresponding control pin on backplane, also connect PW/ON (see 2-23) to power on/off button on chassis, then CPU CARD can use ATX power connector on backplane to get full function of ATX Power Supply.

2-26 TOUCH PANEL CONNECTOR (CN1)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	X+	2	X-
3	Y+	4	Y-

2-27 EXTERNAL SPEAKER (CN2)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	SPKDRV	2	NC
3	NC	4	VCC

2-28 RS-422/485 D-SUB PIN9 VOLTAGE OUTPUT SELECT (JP1)

1-2 ON: +12V for RS-422/485 connector PIN5 (D-SUB PIN9)
2-3 ON: +5V for RS-422/485 connector PIN5 (D-SUB PIN9)

2-29 COM2 RS-232/422/485 SELECT (JP2)

1-2 ON: RS-232 ENABLE.   2-3 ON: RS-422 ENABLE.

2-30 ETHERNET1 ENABLED/ DISABLED SELECT (JP3)

1-2 ON: ENABLE   **2-3 ON: DISABLE**

2-31 ETHERNET2 ENABLED/ DISABLED SELECT (JP4)

1-2 ON: ENABLE   **2-3 ON: DISABLE**

2-32 LCD PANEL VOLTAGE SELECT (JP5)

1-2 ON : 5V   **2-3 ON : 3.3V**

2-33 WDT OOUPUT SELECT (JP6)

WatchDog Timer Output for System Reset or IRQ11 Selection.
When Jumper is set to position 1-2 ON, then the output signal of WDT TIMER will generate a interrupt signal to IRQ11.
Once the system accept the interrupt request, will release a ISR address (CS:E000 IP:0000) for user.

User can write some interrupt service routine here, to develop application software.
1-2 ON: IRQ11.   **2-3 ON: SYSTEM RESET.**

2-34 INTERNAL OR EXTERNAL +12V SELECT (JP7)

1-2 ON : For ATX Power +12V (External).
2-3 ON : Use Internal +12V.

2-35 LCD BACKLIGHT INVERTER POWER CONNECTOR (JP8)

PIN 1: +12V   PIN 2: GND   PIN 3: VCC5V

2-36 CMOS BATTERY CLEAR JUMPER (JP9)

1-2 ON: DEFAULT   **2-3 ON: CMOS CLEAR**

2-37 M-System ADDRESS SELECT (JP10)

ADDRESS SELECTION	JUMPER SETTING			
	PIN1&2	PIN3&4	PIN5&6	PIN7&8
C000	ON	OFF	OFF	OFF
C800	OFF	ON	OFF	OFF
D000	OFF	OFF	ON	OFF
D800	OFF	OFF	OFF	ON

2-38 COM1 D-SUB PIN 1, 9 VOLTAGE OR SIGNAL SELECT (J1)

1-3 ON: SELECT +12V   **3-5 ON: SELECT RI1**
2-4 ON: SELECT VCC5V   **4-6 ON: SELECT DCD1**

2-39 COM2 D-SUB PIN 1, 9 VOLTAGE OR SIGNAL SELECT (J2)

1-3 ON: SELECT +12V   **3-5 ON: SELECT RI2**
2-4 ON: SELECT VCC5V   **4-6 ON: SELECT DCD2**

2-40 ETHERNET LED CONNECTOR (J3)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LED1-	2	ELED1
3	LED2-	4	ELED2
5	LED3-	6	ELED3
7	LED4-	8	ELED4

2-41 CD-ROM AUDIO IN CONNECTOR (J4)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	CDL	2	GND
3	GND	4	CDR

2-42 CompactFlash SOCKET (IBM1)

The CPU CARD Support CompactFlash I / II Socket for IDE Flash Disk or IBM MicroDrive 340MB/1GB HDD.

2-43 BUZZER (BZ1)

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC	2	SIGNAL

2-44 MEMORY INSTALLATION (DIMM1)

The CPU CARD CPU Card use one 144-pin SO-DIMM Module.

2-45 MANUFACTURER DEFAULT JUMPER LIST

Factory default jumper list as below:
JPX: default 1-2 ON

LCD/VGA

THIS CHAPTER SHOWS THE INFORMATION ABOUT LCD/VGA FUNCTIONS.

SECTIONS INCLUDE:

* **PREFACE**

* **UTILITY REFERENCE**

* **QUICK INSTALLATION GUIDE**

3-1 PREFACE

The CPU CARD has two graphics output port: one for interfacing to Thin-Film Transistor (TFT) flat panel LCD display and the other one for interfacing to a CRT display.

Resolution	Colors	Refresh Rate (Hz)	DOTCLK Rate(Hz)	PCLK	Graphic Port Width (Bits)
640x480	8 BPP 256 colors	60	25.175	25.175	8
		72	31.5	31.5	8
		75	31.5	31.5	8
	16 BPP 64K colors RGB	60	25.175	50.35	8
				25.175	16
		72	31.5	63.0	8
				31.5	16
		75	31.5	63.0	8
				31.5	16
800X600	8 BPP 256 colors	60	40.0	40.0	8
		72	50.0	50.0	8
		75	49.5	49.5	8
	16 BPP 64K colors RGB	60	40.0	80	8
				40	16
		72	50.0	100	8
				50.0	16
		75	49.5	99	8
				49.5	16
1024X768	8 BPP 256 colors	60	65.0	65.0	8
		70	75.0	75.0	8
		75	78.5	78.5	8
	16 BPP 64K colors RGB	60	65.0	65.0	16
		70	75.0	75.0	16
		75	78.5	78.5	16
1280X1024	8 BPP 256 colors	60	108.0	108.0	8
				54.0	16
		75	135.0	67.5	16

TFT Panel Display Modes

Resolution	Simultaneous Colors	Refresh Rate(MHz)	DOTCLK Rate(MHz)	PCLK (MHz)	Panel Type
640x480	8 BPP 256 colors	60	25.175	25.175	9-bit
					12-bit
					18-bit
	16 BPP 64K colors RGB	60	25.175	25.175	9-bit
					12-bit
					18-bit
800x600	8 BPP 256 colors	60	40.0	40.0	9-bit
					12-bit
					18-bit
	16 BPP 64 K Colors	60	40.0	40.0	9-bit
					12-bit
					18-bit
1024x768	8 BPP 256 colors	60	65	32.5	9-bit/18-I/F
	16 BPP 64K colors	60	65	32.5	9-bit/18-I/F

3-2 UTILITY REFERENCE

The CPU CARD support on-chip VGA interface which use shared memory technology to share system memory as VGA display buffer.

The CPU CARD delivered with following VGA driver:
-Driver for WIN98
-Driver for WIN95
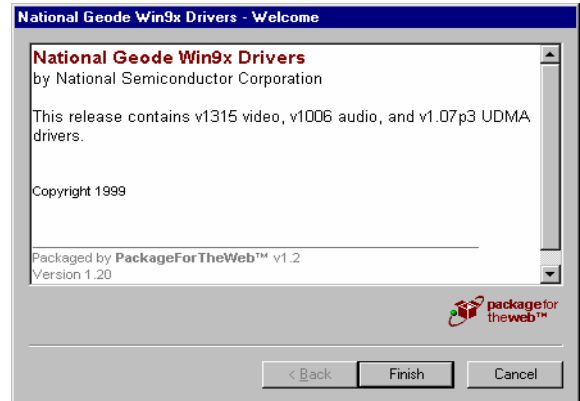-Driver for WIN31
-Driver for WIN NT40
-Driver for WIN NT311

The driver will put on the diskette or CD. User should install the driver According the OS. Following shows the example about how to install the driver.
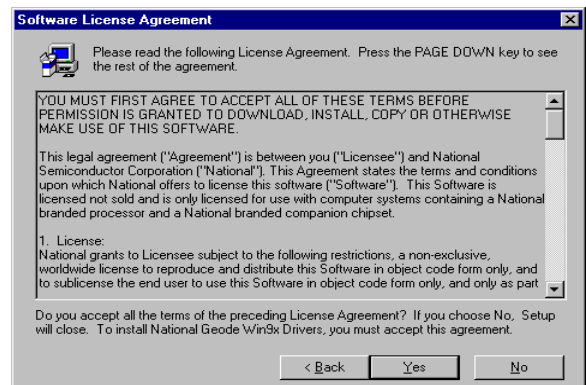
3-3 QUICK INSTALLATION GUIDE

VGA DRIVER FOR WIN95 & 98

**A. Install CD Select
   D:\CPU Card\NC-527\VGA
   \WIN9X"National Geode Win9x
   Drivers 1.2.exe"**
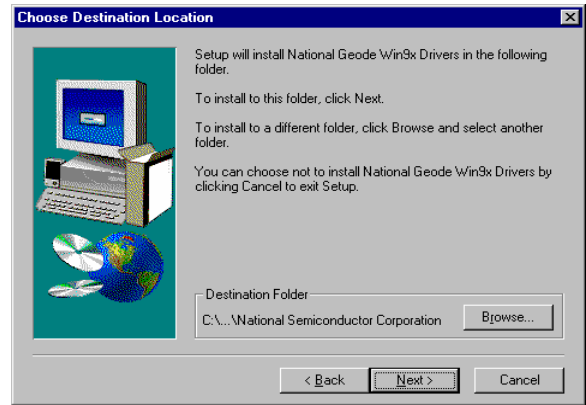
**B. Click
"National Geode Win9x Drivers**
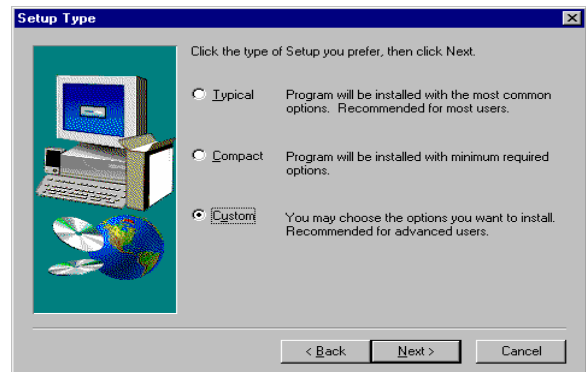
A. Click "Yes".

A. Click "Next>".
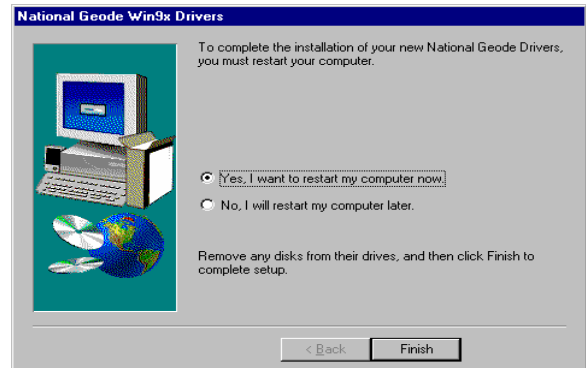
A. Select "Next >".

**A. Select "Typical" or "Custom" but
the Default is "Typical".**

B. Click "Next >".

**A. Select " Yes, I want to restart my
computer now".**

B. Click "Finish".

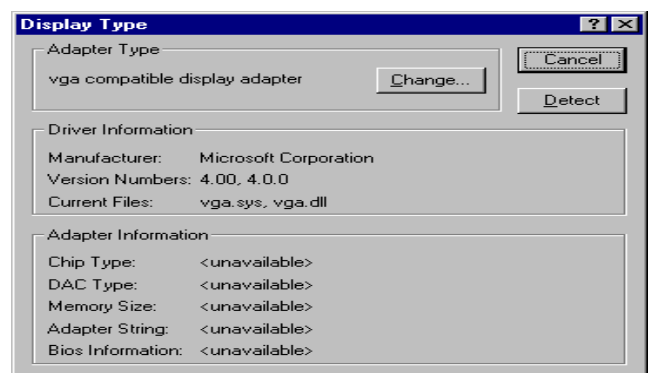## ☆ VGA DRIVER FOR NT40

**A. Select "Start" →"Seting" →
"Control Panel"→"Display" →
"Display Properties".**

B. Click "Display Type".

A. Click "Change".

A. Click "Have Disk".
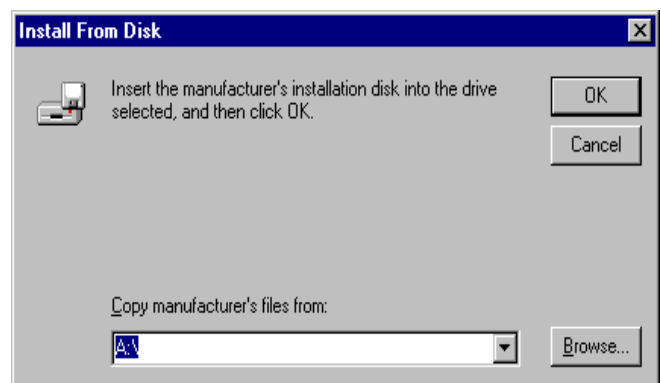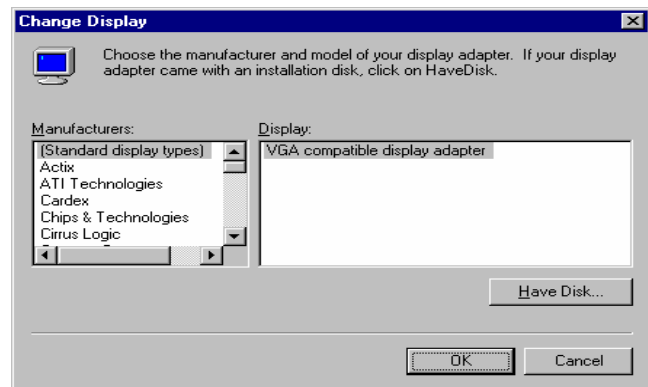
A. You can see "Cyrix Corporation GX "

B. Click "OK".
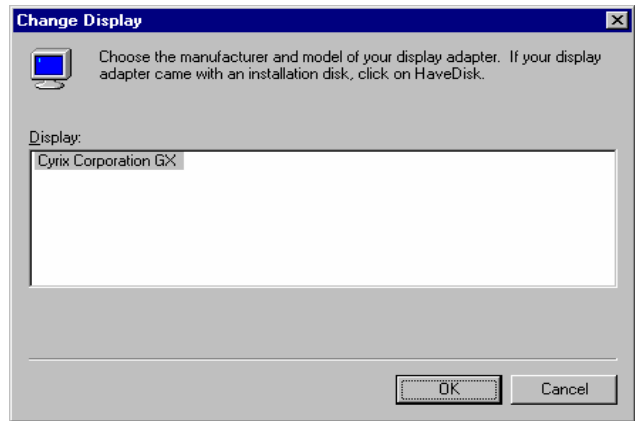
A. Can see "Third-party Drivers".

B. Click "Yes".
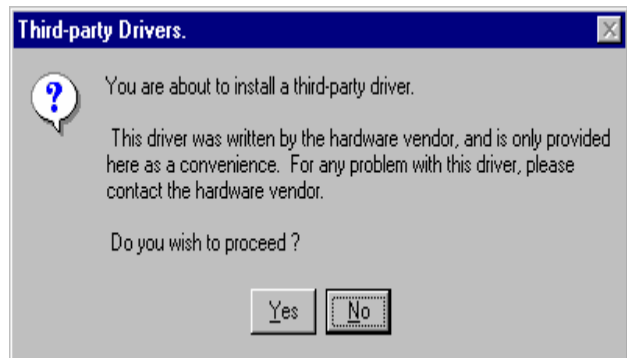
A. Can see "Installing Driver".

B. Click "OK".

C. Restart computer.
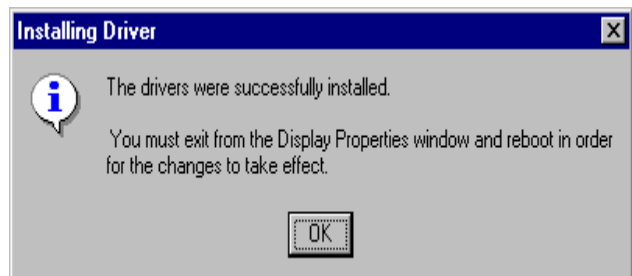
CHAPTER

4

TOUCH   PANEL INTERFACE

THIS CHAPTER SHOWS THE INFORMATION OF TOUCH PANEL INTERFACE FUNCTIONS, ALSO DESCRIBES HOW TO CONFIGURE TOUCH PANEL HARDWARE.

SECTIONS INCLUDE:

* **BAUD RATE OF SERIAL PORT**

* **TOUCH PANEL INTERFACE PIN OUT**

* **SERIAL PORT TO PIN OUT (TO TOUCH PANEL**

4-1 SERIAL PORT BAUD RATE

The BAUD rate of serial port is 19,200 BAUD which using a 1.8432MHz crystal across XTAL I/O pins with capacitors to GND leads.

4-2 TOUCH PANEL INTERFACE PIN OUT

Both versions provide X+, X-, Y+ and Y- direct connect signals to the 4 wire Touch screen. The driver circuit are internally built in. As far as possible, provide very short trace lengths to the touch screens.

4-3 SERIAL PORT PIN OUT (TO TOUCH SCREEN)

The serial data output of both chips is connected to the serial port TX pin through two general-purpose transistors. The transistors are properly biased to provide the necessary signal level swing for the TX pin. The negative signal level is derived with the RX pin of the serial port. (RX is not used since data is unidirectional.) Power is derived from the DTR signal through a 5.0V linear regulator. Refer to the schematic diagram for details Refer to Table 1 for serial port pin assignments. For serial port output data format, refer to the device data sheets.

DSUB-S CONNECTOR			
Pin No	Signal	Pin No	Signal
1	NC	6	NC
2	TX	7	NC
3	RX(-12V)	8	NC
4	DTR(+12V)	9	NC
5	NC		

Table 1: Serial Port Pin Assignments

DiskOnChip FLASH DISK

THIS CHAPTER SHOWS THE INFORMATION ABOUT M-System DiskOnChip FUNCTIONS.

SECTIONS INCLUDE:

* **PREFACE**

* **QUICK INSTALLATION GUIDE**

* **UTILITY REFERENCE**

5-1 PREFACE

The CPU CARD features a DiskOnChip Flash Disk optional function. The DiskOnChip can be build on board by order. The CPU CARD is designed to use the DiskOnChip single chip Flash Disk to plug into a standard 32-pin EEPROM socket which built on board. The DiskOnChip Flash Disk should be mapped into an 8K Byte window in the BIOS expansion address space of the CPU CARD CPU Card which is usually located between address 0C0000H to 0EFFFFH. The CPU CARD can contain the operating system in DiskOnChip to allow systems to boot without a hard disk.

The DiskOnChip of CPU CARD can install standard MS-DOS and the DOS can boot from DiskOnChip, its command is fully DOS Command compatible, such as Del, Deltree, Format, Copy, Xcopy, MD........, users can read and write DOS Command or data to DiskOnChip same as when using Hard Disk Drive.

Users can take this DiskOnChip as physical HDD and its priority is software selectable. For example, if system have one HDD, either HDD & DiskOnChip could be assigned as C or D Drive. When having two HDD (Driver C & Driver D), the DiskOnChip could be assigned as C, D, E Drive. If the system don't have HDD, the DiskOnChip will be taken as C drive only. When it is taken as C drive, it can boot system just same as using Hard Disk Drive.

The capacity of DiskOnChip have 8MB, 12MB, 24MB, 40MB, 72MB, 144MB and 288MB option. User can select the proper one before order to meet their needs.

The CPU CARD supports M-system DiskOnChip socket which locate at 'DOC'.

5-2 QUICK INSTALLATION GUIDE

1. Make sure the CPU CARD CPU Card is power OFF

2. Plug the DiskOnChip chip into socket 'DOC'. Verify the direction is correct (pin1 of the DiskOnChip is aligned with pin1 of the 'DOC' socket).

3. Power ON the system.

4. During power ON you may observe the message displayed by the DiskOnChip when its driver automatically loaded into system's memory.

5. At this stage the DiskOnChip can be accessed as any disk in the system.

6. If the DiskOnChip is the only disk in the system, it will appear as the first disk (drive C).

7. If there are more disks besides the DiskOnChip, the DiskOnChip will appear by default as the last drive.

5-3   UTILITY REFERENCE

A driver diskette will be included with DiskOnChip to offer detail information. If you need more information beside the diskette, please reach the M-System web www.m-sys.com to get the information.

ETHERNET

THIS CHAPTER SHOWS THE INFORMATION ABOUT 100/10M ETHERNET FUNCTIONS.

SECTIONS INCLUDE:

* **INTRODUCTION**

* **INSTALLATION OF ETHERNET DRIVER**

* **FEATURE INFORMATION**

6-1 INTRODUCTION

The CPU CARD is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the 82559.exe program include on the utility disk.

The Ethernet port provides two 10-pin 2.54mm connector on board. The network boot feature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

6-2 INSTALLATION OF ETHERNET DRIVE

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your CPU CARD, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or Windows.

Note: *The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.*

☆ Installation for MS-DOS and Windows 3.1

If you want to set up your Ethernet connection under the MS-DOS or Windoes3.1 environment, you should first check your server system model. For example, MS-NT, IBM-LAN server, and so on.

Then choose the correct driver to install in your panel PC.

The installation procedures for various servers can be found on CD-ROM. The file path is: D:\>cpu card\nc-527\nic   or

First you must unzip this file follow up to default directory

☆Installation 8139x for Windows 95/98

**A. Select "Start" →"Setting" →
"Control Panel".**

**B. Double Click "Add New
Hardware"**

**A. Can see "Add New Hardware
Wizard".**

B. Click "Next >".
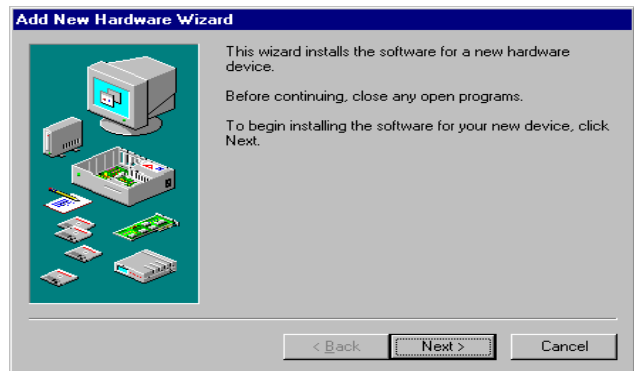
A. Insert your CD.

B. Select "Browse".

**C. c:\Program File\ NC-527\ NIC\
rtl8139c\Win98**

A. Windows driver can show "Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC.

B. Click " Next >".
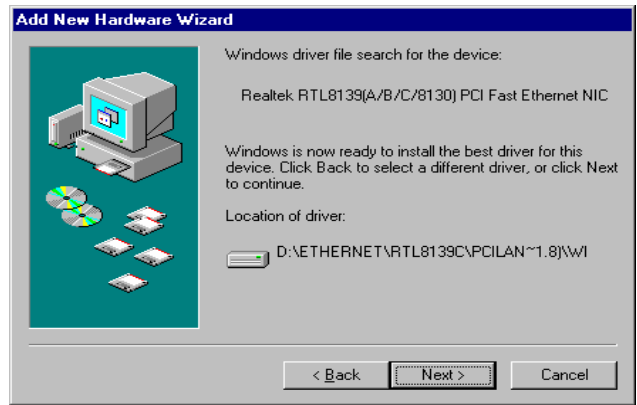
A. Copying Files.
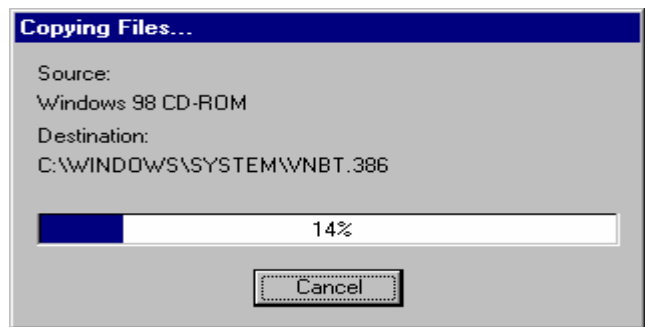
A. Click " Finish".

☆Installation 8139X for Windows NT

A. Select "Start", "settings", "Control Panel".

B. Double click "Network".
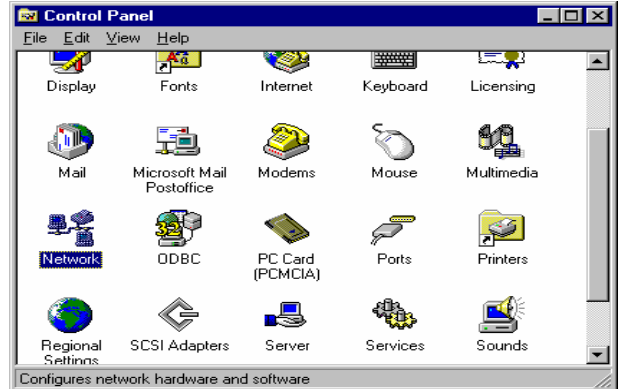
A. Choose the "Adapters" label.

B. Click the "Add" button.

C. Insert CD key-in
   c:\Program File\ NC-527\ NIC\ rtl8139c \winnt4
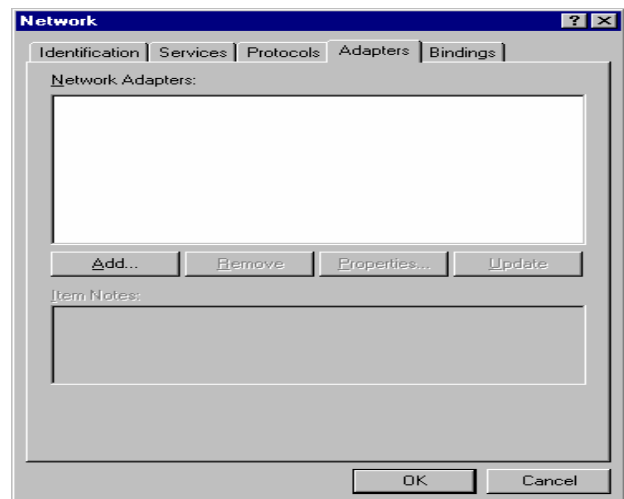
A. show Select OEM Option Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter

B. Click "OK".
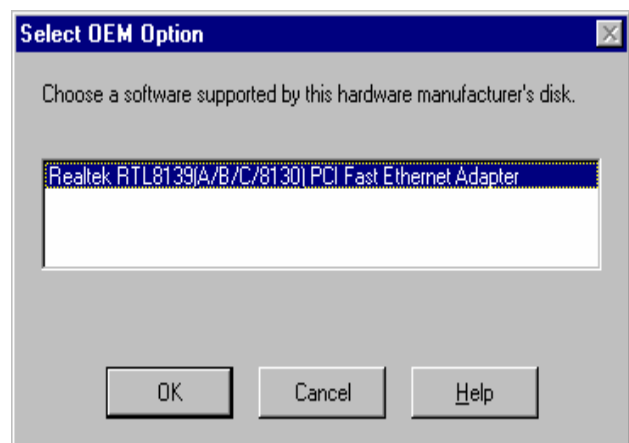
A. Select RTL8139 Duplex Mode

B. Select "(1) AUTO "

C. Click " OK ".
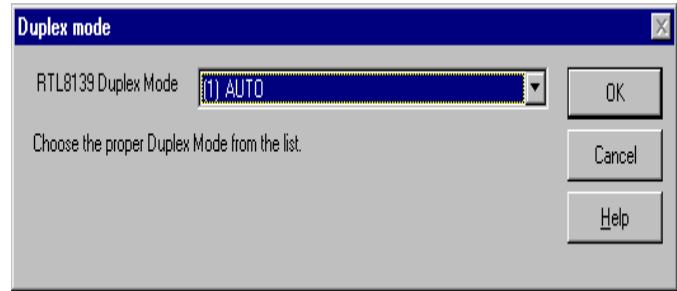
A. Can See Microsoft TCP/IP Properties

B. Key-in "IP Address"
"Subnet Mask"
"Default Gateway"

C. Click "OK".
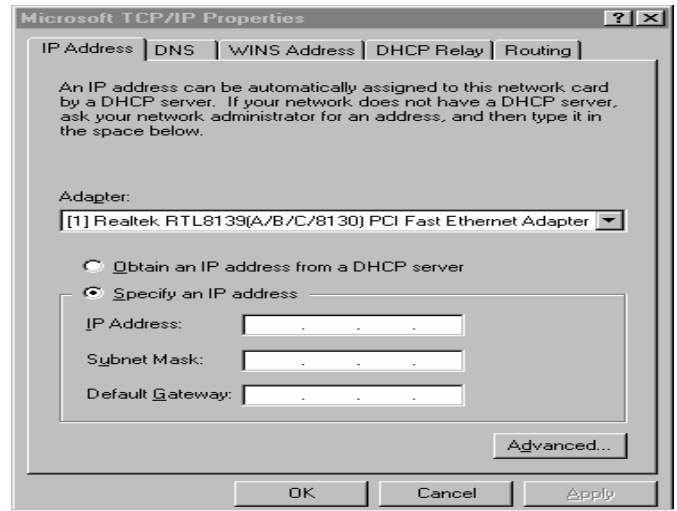
A. Network Settings Change.

B. Click "Yes".

C. Restart your computer now.
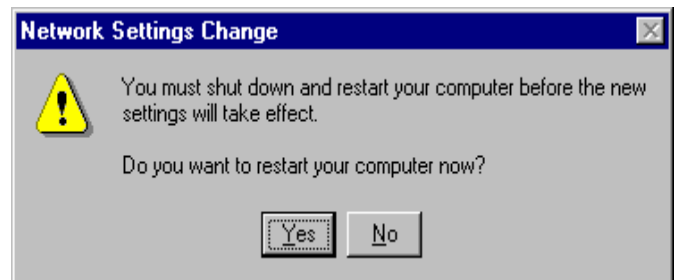
☆Installation 82559 for Windows 95/98

A. Win98 Auto search
PCI Ethernet Controller

B. Click "Next >".

A. Install CD Select
D:\Ethernet\82559.

B. Click "Next >".
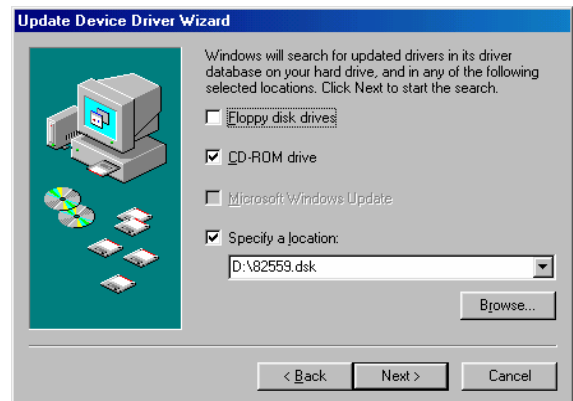
A. Select The updated driver
[Recommended] Intel[R] PRO/100+
PCI Adapter.

B. Click "Next >".
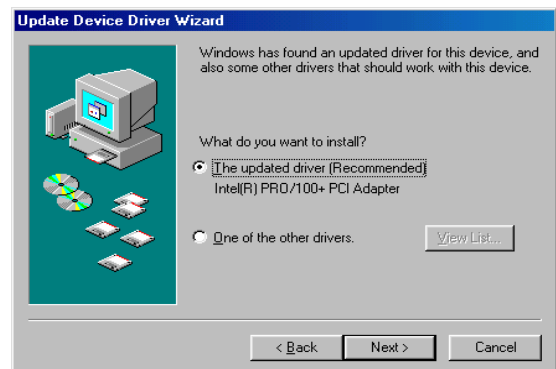
A. Computer found Location of driver
NET82557.INF

B. Click "Next >".
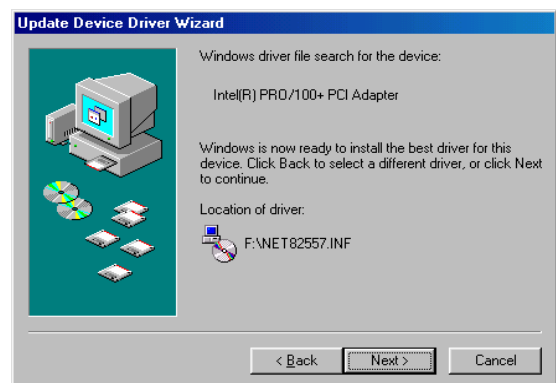
A. Found the New hardware
   Intel[R] PRO/100+ PCI Adapter

B. Click "Finish".

C. Then Restart Computer.
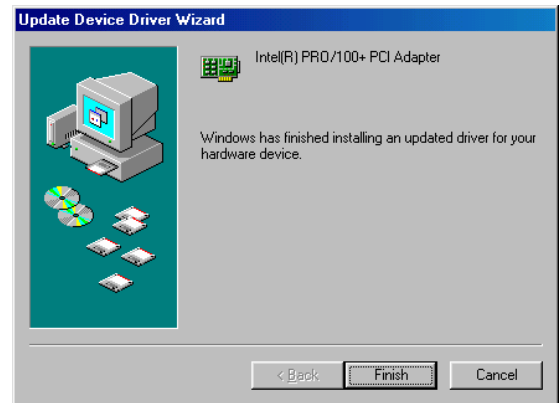
☆Installation 82559 for Windows NT

1. a. Select "Start", "settings",
   "Control Panel".
   b. Double click "Network"

2. a. Choose the "Adapters" label.
   b. Click the "Add" button.

3. Select the "Adapter" item to add the Ethernet card.

4. Click "Have Disk" to install the driver.

5. a. Insert the CD into the D:\Cpu Card\NC-527\NIC (You must Unzip First)
   b. Type: C:\Program Files\NC-527\NIC\82559
   c. Click "OK".

6. a. Choose the "Intel" item.
   b. Click "OK" button.

7. a. Make sure the configurations of relevant items are set correctly.
   b. Click "OK" to reboot.

6-3 FURTHER INFORMATION

Realtek website: www.realtek.com.tw
Intel website: www.intel.com

W D T

THIS CHAPTER SHOWS THE INFORMATION OF WDT FUNCTION, ALSO DESCRIBES HOW TO INSTALL THE WATCHDOG CONFIGURATION.

SECTIONS INCLUDE:

* **WATCHDOG TIMER FUNCTION**

* **WATCHDOG TIMER SOFTWARE GUIDE**

7-1 WATCHDOG TIMER FUNCTION

The watchdog timer can reset the system or generate a IRQ11 signal automatically. It is defined at I/O port 0443H. When you want to enable the watchdog timer, please write code to I/O port 0443H, then the system will generate a reset or IRQ11 signal. When you want to disable the function, write I/O port 043H, the system will stop the WDT function.

The CPU Card watchdog functions: write I/O port address 0443 to enable watchdog and write I/O port address 043 to disable watchdog.

The following program shows you how to program the watchdog timer in your program.

WatchDog Enable program:

For Example:

```
MOV     AX, 000FH     (choose the values you need; start from 0 to FF )
MOV     DX, 0443H
OUT     DX, AX
```

Watchdog Disable program:

```
MOV     AX, 000FH     (please ignore this value.)
MOV     DX, 043H
OUT     DX, AX
```

Please find the time you need and the corresponding value from the following Watchdog Timer Control Table:

TIME BASE IS LIST BELOW

VA Mean is Value for counter   : Unit Hexdecimal
Time Mean is WDT Signal response time   : Unit Decimal (second)

Va	time	Va	time	va	time	Va	time	va	time	va	time	va	time	va	time
00	1024	10	64	20	128	30	192	40	256	50	320	60	384	70	448
01	4	11	68	21	132	31	196	41	260	51	324	61	388	71	452
02	8	12	72	22	136	32	200	42	264	52	328	62	392	72	456
03	12	13	76	23	140	33	204	43	268	53	332	63	396	73	460
04	16	14	80	24	144	34	208	44	272	54	336	64	400	74	464
05	20	15	84	25	148	35	212	45	276	55	340	65	404	75	468
06	24	16	88	26	152	36	216	46	280	56	344	66	408	76	472
07	28	17	92	27	156	37	220	47	284	57	348	67	412	77	476
08	32	18	96	28	160	38	224	48	288	58	352	68	416	78	480
09	36	19	100	29	164	39	228	49	292	59	356	69	420	79	484
0a	40	1a	104	2a	168	3a	232	4a	296	5a	360	6a	424	7a	488
0b	44	1b	108	2b	172	3b	236	4b	300	5b	364	6b	428	7b	492
Oc	48	1c	112	2c	176	3c	240	4c	304	5c	368	6c	432	7c	496
0d	52	1d	116	2d	180	3d	244	4d	308	5d	372	6d	436	7d	500
0e	56	1e	120	2e	184	3e	248	4e	312	5e	376	6e	440	7e	504
0f	60	1f	124	2f	188	3f	252	4f	316	5f	380	6f	444	7f	508

Va	time	Va	time	va	time	Va	time	va	time	va	time	va	time	va	time
80	512	90	576	a0	640	b0	704	c0	768	d0	832	e0	896	f0	960
81	516	91	580	a1	644	b1	708	c1	772	d1	836	e1	900	f1	964
82	520	92	584	a2	648	b2	712	c2	776	d2	840	e2	904	f2	968
83	524	93	588	a3	652	b3	716	c3	780	d3	844	e3	908	f3	972
84	528	94	592	a4	656	b4	720	c4	784	d4	848	e4	912	f4	976
85	532	95	596	a5	660	b5	724	c5	788	d5	852	e5	916	f5	980
86	536	96	600	a6	664	b6	728	c6	792	d6	856	e6	920	f6	984
87	540	97	604	a7	668	b7	732	c7	796	d7	860	e7	924	f7	988
88	544	98	608	a8	672	b8	736	c8	800	d8	864	e8	928	f8	992
89	548	99	612	a9	676	b9	740	c9	804	d9	868	e9	932	f9	996
8a	552	9a	616	aa	680	Ba	744	ca	808	da	872	ea	936	fa	1000
8b	556	9b	620	ab	684	Bb	748	cb	812	db	876	eb	940	fb	1004
8c	560	9c	624	ac	688	Bc	752	cc	816	dc	880	ec	944	fc	1008
8d	564	9d	628	ad	692	Bd	756	cd	820	dd	884	ed	948	fd	1012
8e	568	9e	632	ae	696	Be	760	ce	824	de	888	ee	952	fe	1016
8f	572	9f	636	af	700	Bf	764	cf	828	df	892	ef	956	ff	1020

7-2 WATCHDOG TIMER SOFTWARE GUIDE

User can use WDT function by following way:

1.Direct start WDT function as procedure which described on Sec. 7-1.

FOR EXAMPLE:

```
MOV AL , 44
OUT  70 ,  AL
IN     AL , 71
MOV DX , 0443
OUT  DX , AL
RET
```

The above simple software was written under DOS DEBUG. It shows you how to get the SETUP VALUE from CMOS location 44H.

If you want to read the data correctly, you must put the data 44 value on register AL first.

Then you must put the register value (44) on port 70H (this mean you need to addressing the port 70H)

Whenever you need, you can send the data to IO port 0443H to trigger the WDT timer and for your application.

AUDIO

THIS CHAPTER SHOWS THE INFORMATION ABOUT AUDIO FUNCTIONS.

SECTIONS INCLUDE:

* INTRODUCTION

* QUICK INSTALLATION GUIDE

8-1 INTRODUCTION

The CPU Card on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the CX5530 audio controller and Codec chip. The audio interface can record, compress, and play back voice, sound, and music with a built-in mixer control. The CPU Card series' on-board audio interface also supports the Plug and Play (PnP) standard. The ESFM synthesizer is register compatible with the OPL3 and has extended capabilities.

8-2 QUICK INSTALLATION GUIDE

Before installing the audio driver, please take note of the procedures detailed below. You must know which operating system you are using in your CPU Card Series, and then refer to the corresponding installation flow chart. Just follow the steps in the flow chart. You can quickly and successfully complete the installation, even though you are not familiar with instructions for Windows.

Note: *The driver on CD is designated as device " D" through-out this chapter.*

☆INSTALLATION FOR WINDOWS 95/98

When you installation "National Geode Win9x Drivers 1.2.exe" Finish. It's can auto search audio.

☆INSTALLATION FOR WINDOWS NT

A. Select "Start", "Settings", "Control   Panel".

B. Double click "Multimedia".

A. Select the "Audio Devices" item.

B. Click " Add".
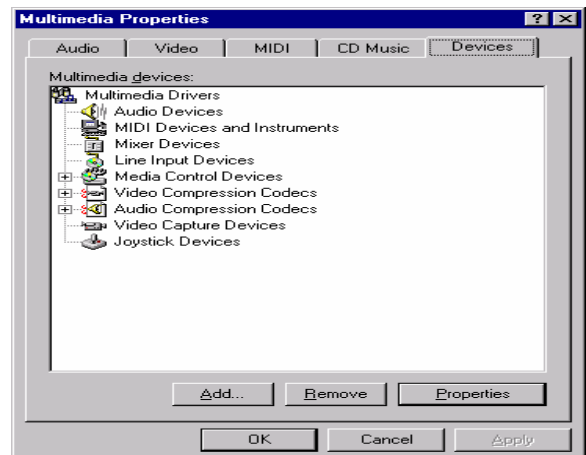
A. Select the "Unlisted Updated Driver" item.

B. Click "OK".
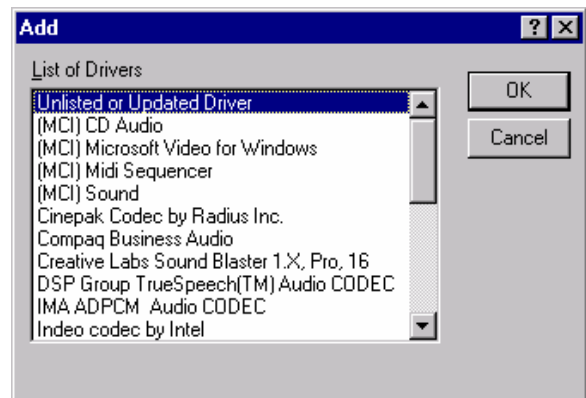
A. Insert the CD into the CD-ROM driver

B. Type "D:\Cpu Card\nc-527 vga\nt40\audio".

C. Click "OK".

Install Driver

Insert the disk with the unlisted, updated, or vendor-provided driver in:

D:\st-mgxm\nt40\audio\

OK
Cancel
Browse...
Help
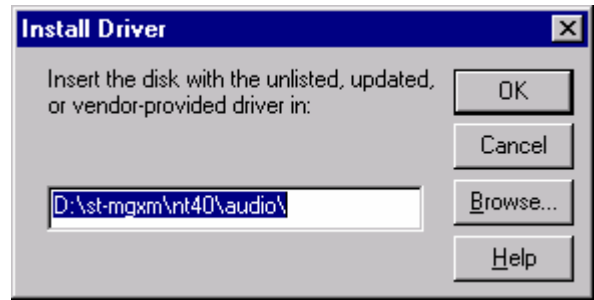
A. Select "XpressAudio [TM] Driver"

B. Click "OK" button.

Add Unlisted or Updated Driver

XpressAudio [TM] Driver

OK
Cancel
Help
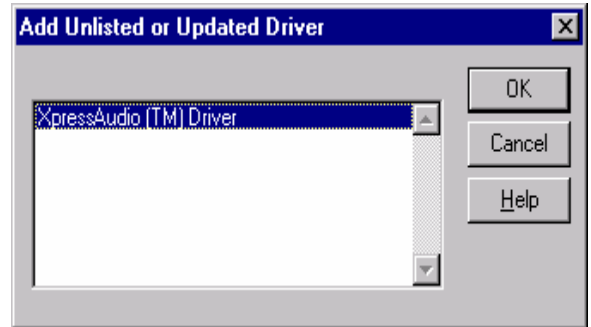
A. Select I/O Address

B. Click " Contiune ".

XpressAudio Base I/O Address

I/O Address: 220

Continue
Cancel

Help for Continue

Pressing the Continue button will test the port address of the XpressAudio (TM).
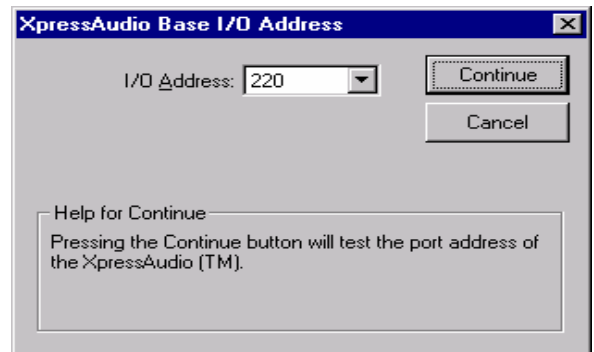
A. Set "Interrupt" "DMA Channel" "DMA Channel [16-bit]" "MPU401 I/O Address"

B. Click "OK" .

C. Restart

XpressAudio Configuration

I/O Address: 220

Interrupt: 5

DMA Channel: 1

DMA Channel (16-bit): 5

MPU401 I/O Address: 330

OK
Cancel
Advanced ...

Help for OK

Pressing the OK button tests the configuration. If the Configuration is OK any changes that you made are saved. You will have to restart Windows for your changes to take full effect.
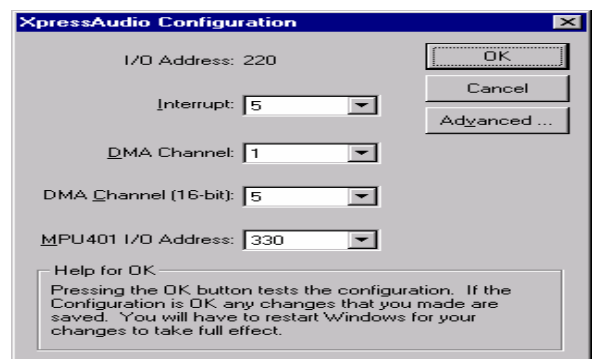
A W A R D   B I O S   S E T U P

THIS CHAPTER SHOWS HOW TO SET-UP THE AWARD BIOS.

 SECTIONS INCLUDE:

* **INTRODUCTION**
* **STARTING SETUP**
* **MAIN MENU**
* **STANDARD CMOS SETUP**
* **BIOS FEATURES SETUP**
* **CHIPSET FEATURES SETUP**
* **POWER MANAGEMENT SETUP**
* **PNP/PCI CONFIGURATION SETUP**
* **INTEGRATED PERIPHERAL**
* **SUPERVISOR/USER PASSWORD SETTING**
* **BIOS DEFAULT DRIVE TABLE**

9-1 INTRODUCTION

This section discusses Award Setup program built in the ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The Award BIOS installed in computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. This means it supports Intel/Cyrix/AMD processors in a standard IBM AT compatible Input/Output system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. Also the BIOS has been customized by adding important, but non-standard, features such as virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system. The rest of this chapter will try to guide you the process of configuring your system by using Setup.

9-2 STARTING SETUP

The Award BIOS is immediately activated when the computer start power on. The BIOS reads the system information contained in the CMOS and start the process of checking out the system and configuring it. When it finish, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated by one of two ways:
1. Press the <Del> key immediately after switching the system on, or
2. Press the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test)

<div align="center"><u>Press DEL to enter SETUP.</u></div>

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" bottom on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

<div align="center"><u>PRESS F1 TO CONTINUE, DEL TO ENTER SETUP</u></div>

9-3 MAIN MENU

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

ROM PCI / ISA BIOS (XXXXXXXX)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP / PCI CONFIGURATION SETUP	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	

Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

Time, Date, Hard Disk Type.....

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items:

The main menu includes the following main setup categories. Please note that some systems may not include all entries.

● STANDARD CMOS SETUP
This setup includes all the items in a standard AT-compatible BIOS.

- **BIOS FEATURES SETUP**

  This setup includes all the items of Award special enhanced features.

- **CHIPSET FEATURES SETUP**

  This setup includes all the items of chipset special features.

- **POWER MANAGEMENT SETUP**

  This setup only appears if your system supports Power Management, "Green PC", standard.

- **PNP / PCI CONFIGURATION**

  This setup appears if your system supports PnP / PCI.

- **LOAD BIOS DEFAULTS**

  The BIOS defaults have been set by the manufacturer and represent settings which provide the minimum requirements for your system to operate.

- **LOAD SETUP DEFAULTS**

  The chipset defaults are settings which provided for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.

- **INTEGRATED PERIPHERALS**

  This section includes all the items of IDE hard disk drive and Programmed Input / Output features. See also Section "Chipset Features Setup".

- **SUPERVISOR / USER PPASSWORD SETTING**

  Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

- **IDE HDD AUTO DETECTION**

  Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters. See also Section "Standard CMOS Setup".

- **SAVE & EXIT SETUP**

  Save CMOS value changes to CMOS and exit setup.

- **EXIT WITHOUT SAVING**

  Abandon all CMOS value changes and exit setup.

9-4 STANDARD CMOS SETUP

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes none, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

ROM PCI/ISA BIOS (XXXXXXXX)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

```
Date(mm:dd:yy) :        Mon, MAR  05  2001
Time(hh:mm:ss):         12 : 30 : 30

HARD DISKs        TYPE  SIZE  CYLS HEAD COM LANDS SECTOR MODE
Primary Master    : Auto  0     0    0    0    0      0     Auto
Primary Slave     : Auto  0     0    0    0    0      0     Auto
Secondary Master  : Auto  0     0    0    0    0      0     Auto
Secondary Slave   : Auto  0     0    0    0    0      0     Auto

Drive A :  1.44 M, 3.5 in.
Drive B :  None                     Base Memory :         640 K
                                Extended Memory :       29184 K
Video   :  EGA/VGA                  Other Memory :        384 K
Halt On :  All, But Disk/Key        Total Memory :       30208 K

ESC :Quit          ↑ ↓ →←:Select Item      PU / PD / + / - : Modify
F1   :Help          (Shift)F2:Change Color
```

- **Date**

To assign the system date, the format is "mm:dd:yy". The input range for the Month is 1-12. Rang for Date is 1-31. Rang for Year is 1994-2079. System BIOS will calculate the day of the week automatically.

- **Time**

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

● Hard Disks Setting

The BIOS supports Dual-Channel PIO and PCI Bus Master IDE ports. Each port supports one master and one slave hard drive. You can use <PageUp> or <PageDown> key to change hard drive type. Incorrect setting may result in boot up error or system hang. If your hard disk drive is not listed, you can select Type "USER" to define your own drive manually. We recommend that you select Type "Auto" for all drives. The BIOS will auto-detect the hard disk drive and CD-ROM drive at the POST stage. If your hard disk drive is a SCSI device, please select "None" for your hard drive setting.

● Drive A Type / Drive B Type

The category identifies the types of Floppy Disk Drive A or Drive B that have been installed in the computer.

● Video

The category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode.
CGA 80	Color Graphics Adapter, power up in 80 column mode.
MONO	Monochrome adapter include high resolution mono adapters.

● Halt On

This function allows the system to halt when an error is detected during Power-On Self-Test.

No errors	Whenever the BIOS detects a non-fatal error the system Would be stopped and you will be prompted.
All errors	The system boot will not be stopped whenever any error Detected.
All, But Keyboard	The system boot will not stop for a keyboard error but it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error but it will Stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk Error but it will stop for all other errors.

9-5 BIOS FEATURES SETUP

This section allows you to configure your system for basic operation. You can select the system's default speed, boot-up sequence, shadowing, keyboard operation and security.

<div align="center">

ROM PCI/ ISA BIOS (XXXXXXXX)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

</div>

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
		CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On	Cyrix 6x86/MII CPUID	: Enabled
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Memory Parity Check	: Enabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled	ESC:Quit ↑ ↓ →←:Select Item	
OS Select For DRAM>64MB	: Non-OS2	F1 : Help Pu/Pd/+/-:Modify	
Report No FDD For WIN 95	: NO	F5 : Old Values (Shift)F2 :Color	
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

● **Virus Warning**

When enabled, the BIOS will monitor the boot sector and the partition table on the hard drive for any attempt to modify. If an attempt is detected, the BIOS will halt the system and prompt the warning message. Select "Disabled" if you are installing a new operating system.

● **CPU Internal Cache**

These two categories speed up memory access. However, it depends on CPU/ chipset design. The default value is enable.

● Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

● Boot Sequence

This option allows user to assign boot sequence of the system. Available options are A, C, D, E, F, CD-ROM, SCSI and LS120/ZIP.

● Swap Floppy Drive

When enabled, physical drive A will be assigned to logical drive B, and physical drive B will be assigned to logical drive A.

● Boot Up Floppy Seek

The system will detect and verify operation of the floppy drive type.

● Boot Up NumLock Status

The option allows the <NumLock> key to be activated after system boot up.

● Boot Up System Speed

Selects the default system speed--the normal operating speed at power on.

● Gate A20 Option

This item allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, even keyboards still provide this support, it is more common and much faster for the system chipset to provide gate A20 support.

● Memory Parity Check

This item allows you to select memory's parity check function. The factory default is Disable (recommended value).

● Typematic Rate Setting

This item determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

● Typematic Rate (Chars/Sec)

Use this option to set the rate at which a character keeps repeating while you hold down a key.

● Typematic Delay (Msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and the acceleration begins.

● Security Option

You can select whether the password is required every time the system boots or only when you enter the Setup. You can assign "Supervisor Password" and "User Password" in the main CMOS Setup Utility Screen.

● PCI / VGA Palette Snoop

Enabled this option to correct screen color shifts, when there is a combination of VGA cards, accelerator cards, or MPEG cards present.

● OS Select for DRAM > 64

If you are using OS/2 operating system and installed memory is larger than 64MB. You need to have the setting in the enable mode.

● Video BIOS Shadow

Video shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM.

● C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

Optional firmware will be copied from ROM to RAM. When this option is enabled.

9-6 CHIPSET FEATURES SETUP

ROM ISA BIOS (XXXXXXXX)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

```
SDRAM CAS latency Time      : 3T
SDRAM Clock Ratio Div By    : 4

16-bit I/O Recovery (CLK)   : 5
8-bit  I/O Recovery (CLK)   : 5

USB Controller              : Enabled
USB Legacy Support          : Enabled
```

```
ESC:Quit               ↑ ↓ → ← :Select Item
F1: Help               Pu/Pd/+/-:Modify
F5: Old Values         (Shift)F2:Color
F6     : Load BIOS Defaults
F7     : Load Setup Defaults
```

● **SDRAM CAS latency Time**

These are timing of SDRAM CAS Latency Delay, calculated by clocks.

● **SDRAM Clock Ratio Div By**

This item can choice SDRAM Clock Ratio. Default is 4.

● **16-bit I/O Recovery (CLK)**

This option specifies the length of a delay inserted between consecutive 16-bit I/O operations.

● **8-bit I/O Recovery (CLK)**

This option specifies the length of a delay inserted between consecutive 8-bit I/O operations.

9-7 POWER MANAGEMENT SETUP

ROM PCI/ISA BIOS (XXXXXXXX)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management : User Define	IRQ1 (KeyBoard)	: ON
	IRQ3 (COM 2)	: OFF
** PM Timers **	IRQ4 (COM 1)	: OFF
Doze Mode : Disabled	IRQ5 (LPT 2)	: OFF
Standby Mode : Disabled	IRQ6 (Floppy Disk)	: OFF
HDD Power Down : Disabled	IRQ7 (LPT 1)	: OFF
MODEM Use IRQ : NA	IRQ9 (IRQ2 Redir)	: OFF
	IRQ10 (Reserved)	: OFF
Throttle Duty Cycle : 33.3 %	IRQ11 (Reserved)	: OFF
	IRQ12 (PS/2 Mouse)	: ON
RING POWER ON Controller : Enabled	IRQ13 (Coprocessor)	: OFF
Net POWER ON Controller : Disabled	IRQ14 (Hard Disk)	: OFF
RTC Alarm Function : Disabled	IRQ15 (Reserved)	: OFF

ESC:Quit   ↑ ↓ → ←:Select Item
F1: Help   Pu/Pd/+/-:Modify
F5   : Old Values (Shift)F2 : Color
F6   : Load BIOS Defaults
F7   : Load Setup Defaults

● Power Management

This item allows you to select the type (or degree) of power saving and it is directly related to the following modes:
There are three selections for Power management, four of which have fixed mode settings.

Disabled	The system operates in Normal conditions (Non-GREEN), and the Power Management function is disabled.
Max. saving	This mode will maximize the power saving capability.
Min. saving	This mode will minimize the power saving capability.
User define	Allow user to define time-out parameters to control power saving. Refer item shown below.

● PM Timers

The following four modes are Green PC power saving functions which are only user configurable when User Defined Power Management has been selected. See above for available selections.

1. Doze Mode
When system is inactive after the predefined time limit, system performance will drop down. This is the first level of Power Management.

2. Standby Mode
System turns off the video signal and the fixed drives. This is the second level of Power Management.

3. HDD Power Down
This instructs hard drives to shut off while in the Power Management modes.

4. MODEM Use IRQ
This item tells the Power Management BIOS which IRQ is assigned to the installed MODEM. Option are NA, 3, 4,5,7, 9,10, and 11.

● RING POWER ON Controller
An incoming call on the external Modem power on the system. The function of power on through modem when system is off. When set to "Enabled" : To let the system to enter the environment of DOS or Windows 9X OS before system is power off. As long as there are any message through the Modem to enter the System during system is power off. The system will enable power on function.

● **RTC Alarm Resume**

Set this option to enable or disable the RTC Alarm to Wake Up the system which is set at soft Off.

● **Power Down & Resume Events**

Power Down and Resume events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In fact, the system remains alert for anything occurs to a device which is configured as ON, even when the system is in a Power Down mode. The following is a list of IRQ's, Interrupt Requests, which can be exempted as much as the above COM ports and LPT ports can. When an I/O device wants to gain the attention of the operating system, it activate this by causing an IRQ to occur. When the operating system respond to the request, it interrupts itself and performs the service. The choices are ON and OFF (Default). When set to ON, activity will neither prevent the system from going into a power management mode nor awaken it.

* IRQ3 (COM2)	* IRQ4 (COM1)	* IRQ5 (LPT 2)
* IRQ6 (Floppy Disk)	* IRQ7 (LPT 1)	* IRQ8 (RTC Alarm)
* IRQ9 (IRQ2 Redir)	* IRQ10 (Reserve)	* IRQ11 (Reserved)
* IRQ12 (PS/2 Mouse)	* IRQ13 (Coprocessor)	* IRQ14 (Hard Disk)
* IRQ15 (Reserved)		

9-8 PNP/PCI CONFIGURATION SETUP

This section describes about configuring the PCI bus system. PCI (Personal Computer Interconnect) is a bus standard which allows I/O devices to operate at the speed near to the speed which is the CPU itself uses when communicating with its own special components. This section covers some very technical item and it is strongly recommended that only experienced users should make any changes to the default settings.

```
              ROM PCI/ISA BIOS (XXXXXXXX)
                 PNP/PCI CONFIGURATION
                 AWARD SOFTWARE, INC.

 PNP OS Installed         : NO        PCI  IRQ  Actived By    : Level
 Resources Controlled By   : Auto
 Reset Configuration Data  : Disabled




                                       ESC:Quit         ↑ ↓ → ←:Select Item
                                       F1: Help              Pu/Pd/+/-:Modify
                                       F5     : Old Values (Shift)F2:Color
                                       F6     : Load BIOS Defaults
                                       F7     : Load Setup Defaults
```

● PNP OS Installed

This Field allows you to use a Plug-and-Play (PnP) operating system. Please set it as " No" if the operating system has no PnP function or to avoid reassigning the IRQs by the operating system.

● Resources Controlled By

Default setting is " Auto". This setting allows the BIOS to self detect setting and Plug-and-Play devices during start up. The user can select and configure IRQs under "Manual" mode.

● Reset Configuration Data

In case a conflict occurs after you assign the IRQs or after you configure you system, you can enable this function to allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.

● IRQ-XX assigned to

If your ISA card is not PnP compatible and requires a special IRQ to support its function, set the select IRQ-x assigned to : "Legacy ISA". This setting informs the PnP BIOS to reserve the selected IRQ for the installed legacy ISA card.

● DMA-X assigned to

If your ISA card is not PnP compatible and requires a special DMA channel to support its function, set the select DMA channel to : "Legacy ISA". This setting informs the PnP BIOS to reserve the selected DMA channel for the installed legacy ISA card.

9-9 INTEGRATED PERIPHERALS

ROM PCI/ISA BIOS (XXXXXXXX)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Disabled	Parallel Port Mode	: Normal
Primary IDE Channel	: Enabled	ECP Mode Use DMA	: 3
Master Drive PIO Mode	: Auto		: Disabled
Slave Driver PIO Mode	: Auto	Build in CPU Audio	: Enabled
Secondary IDE Channel	: Enabled	Audio I/O Base Address	: 220H
Master Drive PIO Mode	Auto	mpu-401I/OBase ddress	: 330H
Slave Driver PIO Mode	Auto	Audio IRQ Select	: IRQ 5
		Audio Low DMA Select	: DMA 1
IDE Primary Master UDMA	: Auto	Audio High DMA Select	: DMA 5
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDM	Auto		
IDE Secondary Slave UDMA	: Auto	Multiple Monitor Support	: Onboard
		Video Memory Size	: 2.5 M
KBC input clock	: 8 MHz	Flat Panel Status	: Enabled
Onboard FDC Controller	: Enabled	Flat Panel Resolution	: 800x600
Onboard Serial Port 1	: 3F8/IRQ4	ESC:Quit ↑ ↓ →←:Select Item	
Onboard Serial Port 2	: 2F8/IRQ3	F1: Help Pu/Pd/+/- : Modify	
UR2 Mode	: Standard	F5: Old Values (Shift)F2 : Color	
Onboard Parallel Port	: 378/IRQ7	F6: Load BIOS Defaults	
		F7: Load Setup Defaults	

NOTE: If you don't use the on-board IDE connector, then use on-card
(ISA Card) IDE connector. You will set Onboard Primary IDE:
Disabled an Onboard Secondary IDE: Disabled from CHIPSET
FEATURES SETUP UTILITY.

● **IDE HDD Block Mode**

This feature enhances disk performance by allowing multi-sector data transfers and eliminates the interrupt handling time for each sector.

● **IDE Primary Master & Secondary Master/Slave PIO:**

These four PIO fields let you set a PIO mode (0-4) for each of four IDE devices. When under "Auto" mode, the system automatically set the best mode for each device.

● **IDE Primary Master & Secondary Master/Slave UDMA:**

When set to " Auto" mode, the system will detect if the hard drive supports Ultra DMA mode.

● **Onboard FDC Controller:**

Select "Enabled" to activate the on-board FDC
Select "Disabled" to activate an add-on FDC

● **Onboard Serial Port 1 & 2**

Select an address and corresponding interrupt for the first/second serial port. The default value for the first serial port is "3F8/IRQ4" and the second serial port is "2F8/IRQ3".

● **UR2 Mode:**

Select to activate the Infrared transfer function.

● **Onboard Parallel port:**

Select address and interrupt for the Parallel port.

● **Parallel Port Mode:**

Select an operating mode for the parallel port. Mode options are SPP, EPP1.7, EPP1.9, ECP and ECP/EPP1.7, ECP/EPP1.9 .

● **Build in CPU Audio:**

This item is setting on board Video Enabled or Disabled.

● **Video Memory Size:** This item is setting Video Memory Size.

● **Flat Panel Status:** This item is setting LCD Enabled or Disabled.

● **Flat Panel Resolution:**

This item is setting LCD Resolution "640x480, 800x600, 1024x768"

9-10 SUPERVISOR/USER PASSWORD SETTING

You can set either supervisor or user password, or both of them. The difference between them are: 'supervisor password' can enter and change the options of the setup menus and 'user password' just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD :

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

9-11 BIOS DEFAULT DRIVE TABLE

This is the current list of the drive type table contained in Setup.

Type	Size (MB)	Cylinders	Heads	Sectors	Write Precomp	Land Zone	Example Model
1	10	306	4	17	128	305	TEAC SD510, MMI 112, 5412
2	21	615	4	17	300	615	Seagate ST225, ST4026
3	32	615	6	17	300	615	
4	65	940	8	17	512	940	
5	49	940	6	17	512	940	
6	21	615	4	17	65535	615	Seagate ST125, Tandon TM262
7	32	462	8	17	256	511	
8	31	733	5	17	65535	733	Tandon TM 703
9	117	900	15	17	65535	901	
10	21	820	3	17	65535	820	
11	37	855	5	17	65535	855	
12	52	855	7	17	65535	855	
13	21	306	8	17	128	319	Disctron 526, MMI M125
14	44	733	7	17	65535	733	
15		Reserved					
16	21	612	4	17	0	663	Microscience HH725, Syquest 3250,3425
17	42	977	5	17	300	977	
18	59	977	7	17	65535	977	
19	62	1024	7	17	512	1023	
20	31	733	5	17	300	732	
21	44	733	7	17	300	732	
22	31	733	5	17	300	733	Seagate ST4038
23	10	306	4	17	0	336	
24	42	977	5	17	65535	976	Seagate ST4051
25	80	1024	9	17	65535	1023	Seagate ST4096
26	74	1224	7	17	65535	1223	Maxtor 2085
27	117	1224	11	17	65535	1223	Maxtor 2140, Priam S14
28	159	1224	15	17	65535	1223	Maxtor 2190, Priam S19
29	71	1024	8	17	65535	1023	Maxtor 1085, Micropolis 1325
30	98	1024	11	17	65535	1023	Maxtor 1105, 1120, 4780

31	87	918	11	17	65535	1023	Maxtor 1170
32	72	925	9	17	65535	926	CDC 9415
33	89	1024	10	17	65535	1023	
34	106	1024	12	17	65535	1023	
35	115	1024	13	17	65535	1023	
36	124	1024	14	17	65535	1023	
37	17	1024	2	17	65535	1023	
38	142	1024	16	17	65535	1023	
39	119	918	15	17	65535	1023	Maxtor 1140, 4380
40	42	820	6	17	65535	820	Seagate ST251
41	44	1024	5	17	65535	1023	Seagate 4053 Miniscribe3053/6053
42	68	1024	5	26	65535	1023	Miniscribe 3053/ 6053 RLL
43	42	809	6	17	65535	852	Miniscribe 3650
44	64	809	6	26	65535	852	Miniscribe 3675 RLL
45	104	776	8	33	65535	775	Conner CP3104
User							

APPENDIX

A

TECHNICAL   SUMMARY

THIS SECTION SHOWS YOU THE MAPES CONCISELY.

SECTIONS INCLUDE:

* **INTERRUPT MAP**

* **RTC & CMOS RAM MAP**

* **TIMER & DMA CHANNELS MAP**

* **I/O & MEMORY MAP**

A-1 INTERRUPT MAP

IRQ	ASSIGNMENT
0	System TIMER interrupt from TIMER-0
1	Keyboard output buffer full
2	Cascade for IRQ 8-15
3	Serial port 2
4	Serial port 1
5	Parallel port 2
6	Floppy Disk adapter
7	Parallel port 1
8	RTC clock
9	Available
10	Available
11	Available
12	Available
13	Math coprocessor
14	Hard Disk adapter
15	Available

A-2 RTC & CMOS RAM MAP

CODE	ASSIGNMENT
00	Seconds
01	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
10	Floppy Disk drive type byte
11	Reserve
12	Hard Disk type byte
13	Reserve
14	Equipment byte
15	Base memory low byte
16	Base memory high byte
17	Extension memory low byte
18	Extension memory high byte
30	Reserved for extension memory low byte
31	Reserved for extension memory high byte
32	Date Century byte
33	Information Flag
34-3F	Reserve
40-7F	Reserved for Chipset Setting Data

A-3 TIMER & DMA CHANNELS MAP

● Timer Channel Map

Timer Channel	Assignment
0	System timer interrupt
1	DRAM Refresh request
2	Speaker tone generator

● DMA Channel Map

DMA Channel	Assignment
0	Available
1	IBM SDLC
2	Floppy Disk adapter
3	Channel-3 Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

A-4 I/O & MEMORY MAP

● Memory Map

MEMORY MAP	ASSIGNMENT
0000000-009FFFF	System memory used by DOS and application
00A0000-00BFFFF	Display buffer memory for VGA/EGA/CGA/MONO Adapter
00C0000-00DFFFF	Reserved for I/O device BIOS ROM or RAM buffer.
00E0000-00EFFFF	Reserved for PCI device ROM
00F0000-00FFFFF	System BIOS ROM
0100000-BFFFFF	System extension memory

● I/O Map

I/O MAP	ASSIGNMENT
000-01F	DMA controller (Master)
020-021	Interrupt controller (Master)
022-023	Chipset controller registers I/O ports.
040-05F	Timer control registers.
060-06F	Keyboard interface controller (8042)
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	Interrupt controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	Math coprocessor
1F0-1F8	Hard Disk controller
278-27F	Parallel port-2
2B0-2DF	Graphics adapter controller
2F8-2FF	Serial port-2
360-36F	Net work ports
378-37F	Parallel port-1
3B0-3BF	Monochrome & Printer adapter
3C0-3CF	EGA adapter
3D0-3DF	CGA adapter
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port-1

APPENDIX

B

TROUBLE SHOOTING

THIS SECTION SHOWS THE ERRORS MAY OCCUR WHEN YOU OPERATE THE SYSTEM, ALSO GIVES YOU THE SUGGESTIONS ON SOLVING THE PROBLEMS.

SECTIONS INCLUDE:

* **TROUBLE SHOOTING POST MESSAGE**

* **TROUBLE SHOOTING POST BEEP**

* **TROUBLE SHOOTING POST CODE**

B-1 TROUBLE SHOOTING POST MESSAGES

During the Power On Self Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message. If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

B-2 TROUBLE SHOOTING POST BEEP

Currently there are two kind of beep codes in BIOS.
The one code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

● **Error Messages**
One or more error messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

● **CMOS BATTERY HAS FAILED**
CMOS battery is no longer functional. It should be replaced.

● **CMOS CHECKSUM ERROR**
Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

● **DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER**
No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure that the disk is formatted as a boot device. Then reboot the system.

● **DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP**
Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

● DISPLAY SWITCH IS SET INCORRECTLY

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then turn off the selection.

● DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last power off the system, the display adapter has been changed. You must configure the system for the new display type.

● ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

● ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize controller. Make sure the card is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check if any jumper needs to be set correctly on the hard drive.

● FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

● Invalid EISA Configuration

PLEASE RUN EISA CONFIGURATION UTILITY. The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

● KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot. If you are purposely configure the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

● MEMORY ADDRESS ERROR AT ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

● MEMORY PARITY ERROR AT ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

● MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Memory has been added or removed since the last boot. In EISA mode, use Configuration Utility to reconfigure the memory configuration. In ISA mode, enter Setup and enter the new memory size in the memory fields.

● MEMORY VERIFY ERROR AT ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

● OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem which cannot be isolated.

● OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem which has been isolated.

● PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

● PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

● RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

● SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

B-3 TROUBLE SHOOTING FOR POST CODES

NOTE: EISA POST codes are typically output to port address 300h.
ISA POST codes are output to port address 80h.

POST (hex)	Name	Description
C0	Turn Off Chipset Cache	OEM Specific - Cache control
1	Processor Test 1	Processor Status (1 FLAG) Verification. Tests the following processor status flags carry, zero, sign, overflow. The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off.
2	Processor Test 2	Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FF and 00.
3	Initialize Chips	Disable NMI, PIE, AIE, UEI, SQWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers, CMOS shutdown byte. Initialize timer 0, 1, and 2, including set EISA timer to a known state. Initialize DMA controllers 0 and 1. Initialize interrupt controllers 0 and 1. Initialize EISA extended registers.
4	Test Memory Refresh Toggle	RAM must be periodically refreshed in order to keep the memory from decaying. This function assures that the memory refresh function is working properly.
5	Blank video, Initialize keyboard	Keyboard controller initialization.
6	Reserved	
7	Test CMOS Interface And Battery Status	Verifies CMOS is working correctly, detects bad battery.
BE	Chipset Default Initialization	Program chipset registers with power on BIOS defaults.
C1	Memory presence test	OEM Specific-Test to size on-board memory
C5	Early Shadow	OEM Specific – Early Shadow enable for fast boot.
C6	Cache presence test	External cache size detection
8	Setup low memory	Early chipset initialization Memory presence test

		OEM chipset routines
		Clear low 64K of memory
		Test first 64K memory.
9	Early Cache Initialization	Cyrix CPU initialization
		Cache initialization
A	Setup Interrupt Vector Table	Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL
B	Test CMOS RAM Checksum	Test CMOS RAM Checksum, if bad, or insert key pressed, load defaults.
C	Initialize keyboard	Detect type of keyboard controller (optional) Set NUM_LOCK status.
D	Initialize Video Interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter.
E	Test Video Memory	Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup.
F	Test DMA Controller 0	BIOS checksum test. Keyboard detect and initialization.
10	Test DMA Controller 1	
11	Test DMA Page Registers	Test DMA Page Registers.
12-13	Reserved	
14	Test Timer Counter 2	Test 8254 Timer 0 Counter 2.
15	Test 8259-1 Mask Bits	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
16	Test 8259-2 Mask Bits	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
17	Test Stuck 8259's Interrupt Bits	Turn off interrupts then verify no interrupt mask register is on.
18	Test 8259 Interrupt Functionality	Force an interrupt and verify the interrupt occurred.
19	Test Stuck NMI Bits (Parity I/O Check)	Verify NMI can be cleared.
1A		Display CPU clock.
1B-1E	Reserved	
1F	Set EISA Mode	If EISA non-volatile memory checksum is

		correct, execute EISA initialization. If not, execute ISA tests an clear EISA mode flag. Test EISA Configuration Memory Integrity (checksum & communication interface).
20	Enable Slot 0	Initialize slot 0 (System Board).
21-2F	Enable Slots 1-15	Initialize slots 1 through 15.
30	Size Base and Extended Memory	Size base memory from 256K to 640K and extended memory above 1MB.
31	Test Base and Extended Memory	Test base memory from 256K to 640K and extended memory above 1MB by using various patterns. NOTE: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
32	Test EISA Extended Memory	If EISA Mode flag is set then test EISA memory found in slots initialization. NOTE: This will be skipped in ISA mode and can be "skipped" with ESC key in EISA mode.
33-3B	Reserved	
3C	Setup Enabled	
3D	Initialize & Install Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup Cache Controller	Initialize cache controller.
3F	Reserved	
BF	Chipset Initialization	Program chipset registers with Setup Values
40		Display virus protect disable or enable
41	Initialize Floppy Drive & Controller	Initialize floppy disk drive controller and any drives.
42	Initialize Hard Drive & Controller	Initialize hard drive controller and any drives.
43	Detect & Initialize Serial/Parallel Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	
45	Detect & Initialize math Coprocessor	Initialize math coprocessor.
46	Reserved	
47	Reserved	
48-4D	Reserved	
4E	Manufacturing POST Loop or Display Messages	Reboot if Manufacturing POST Loop pin is set. Otherwise display any messages (i.e., any non-fatal errors that were detected

		during POST) and enter Setup.
4F	Security Check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM and clear screen.
51	Pre-boot Enable	Enable parity checker. Enable NMI, Enable cache before boot.
52	Initialize Option ROMs	Initialize any option ROMs present from C8000h to EFFFFh. NOTE: When FSCAN option is enabled, will initialize from C8000h to F7FFFh.
53	Initialize Time Value	Initialize time value in 40h: BIOS area.
60	Setup Virus Protect	Setup virus protect according to Setup.
61	Set Boot Speed	Set system speed for boot.
62	Setup NumLock	Setup NumLock status according to Setup.
63	Boot Attempt	Set low stack. Boot via INT 19h.
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display. Press F1 to disable NMI, F2 reboot.
E1-EF	Setup Pages	E1 - Page 1, E2 – Page 2, etc.
FF	Boot	