# NuPRO-795

ETX PICMG 1.0

Half-Size SBC

**User's Manual**


**Manual Rev.** 2.00

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Recycled Paper


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| Web Site | | |
| **Product Information** | | |
| Product Model | | |
| Environment | OS:<br>M/B:<br>Chipset: | <br>CPU:<br>Bios: |

| Please give a detailed description of the problem(s): |
|---|
| |


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# 1 Introduction

## 1.1 Product Overview

The NuPRO-795 ETX-based single board computer is comprised of the ProCB-795, a PICMG 1.0 compliant half-size carrier board, and the ETX-EV133 ETX module.

The carrier board includes common PC peripheral I/O interfaces such as serial and parallel ports, keyboard/mouse, Ethernet, IDE, VGA, and audio. It also includes an integrated debug port, hardware monitor, GPIO, and audio power amplifier and is expandable via the PCI bus.

The ETX-EV133 module is based on the VIA Eden ESP processor and VIA Apollo PLE133T and VT82C686B chipsets. The onboard SODIMM socket supports 144-pin SODIMM type memory modules and accommodates non-ECC SDRAM modules up to 512MB. The VIA Eden Processor is available from 400 MHz up to 1 GHz.

The VIA VT82C686B southbridge incorporates a PCI/ISA bridge, a VGA AGP controller, an EIDE controller supporting both PIO and UDMA modes, USB ports v1.1, two serial ports, one parallel port (SPP/ECP/EPP), one PS2 keyboard/mouse interface, AC '97 audio interface and power management functionality.

The ETX-EV133 also includes an integrated 10/100Base-T Ethernet port, a watchdog timer, and support for LVDS based flat panel displays.

## 1.2 Unpacking Checklist

Check the shipping carton for any damage. If the shipping carton and contents are damaged, notify the dealer for a replacement. Retain the shipping carton and packing materials for inspection by the dealer. Obtain authorization before returning any product to ADLINK.

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Check the following items are included in the package, if there are any items missing, please contact your dealer:

| Included Items |
|---|
| All-in-one support CD-ROM (software & manuals) |
| NuPRO-795 carrier board with ETX-EV133 module |
| Printer and COM port cable bracket |
| ATA-100 cables (x2) |

Note: The packaging of the NuPRO-795 OEM version with non-standard configuration, functionality, or package may vary according to different configuration requests.

CAUTION: 

The board fitted inside the NuPRO-795 system must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the board. Wear a wrist strap grounded through one of the system's ESD Ground jacks when servicing system components

## 1.3 Specifications

| NuPRO-795 Specifications | |
|---|---|
| Carrier Board | ProCB-795 |
| CPU | VIA Eden ESP processor (eBGA package) |
| System Memory | 144-pin SODIMM socket for up 512 MB PC100/133 non-ECC SDRAM |
| Chipset | VIA Apollo PLE133T with VT8601T northbridge and VT82C686B southbridge |
| L2 Cache | 64kB integrated in CPU |

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| NuPRO-795 Specifications | |
|---|---|
| Display | Integrated AGP2X Trident Blade 2D/3D Video Accelerator (VT8601T) |
| | Up to 8MB UMA Video RAM |
| | Up to UXGA 1600 x 1200 @ 32bpp CRT |
| | Supports TFT on single channel LVDS (18-bit) |
| BIOS | AWARD 2Mb Flash BIOS with ACPI and APM 1.2 power management with console redirection and CMOS backup in onboard EEPROM |
| USB | Two USB ports, USB 1.1 compliant |
| Ethernet | Realtek RTL8139CL+ chipset, 10BaseT/ 100BaseTx, Wake-on LAN |
| Parallel Port | One high-speed parallel port, SPP/EPP/ECP mode |
| Serial Ports | Two high speed RS-232C ports (COM1/COM2) |
| Keyboard/Mouse | One PS/2 keyboard and one PS/2 mouse |
| Floppy Interface | Not implemented |
| IrDA | Supports SIR IrDA 1.1 |
| Audio | Realtek ALC201A AC97 ver. 2.0 |
| Watchdog Timer | 128-level timer generates RESET or NMI |
| Dimension | 122mm x 167.5mm |
| Power Supply | +5V, 10W typical |
| Operating Temp. | 0 to 60ºC |
| Humidity | 0 to 90% @ 55ºC |
| Dimensions | 185.45mm x 123.12mm |
| Operating System | Windows 2000, XP, Linux |
| Vibration | Operating: 5-100Hz, 0.00142 g2/Hz; 100-500Hz<br>▶ 6dB/Octave; 0.5Grms, 3 axes, 30mins/axis<br>Non-operating: 5-100Hz, 0.02g2/Hz; 100-500Hz<br>▶ 6dB/Octave; 1.88Grms, 3 axes, 1hr/axis (IEC 68-2-64) |

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## 1.4 NuPRO-795 Mechanical Drawing

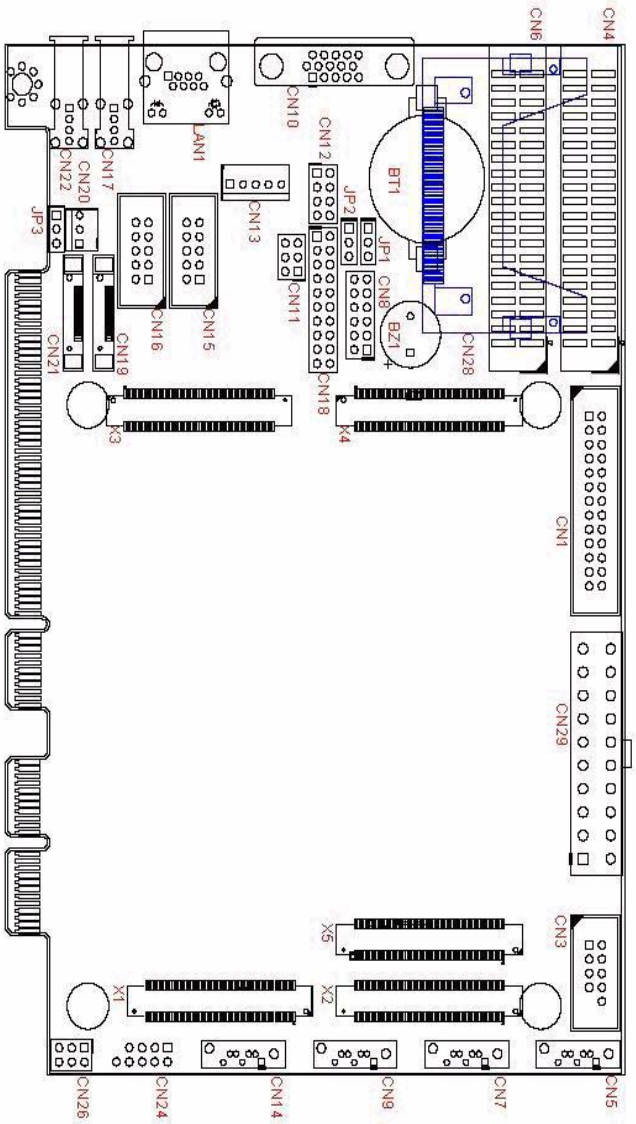



**Figure 1-1: ProCB-795 Carrier Board Layout**

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## 1.5 ETX-EV133 Functional Diagrams

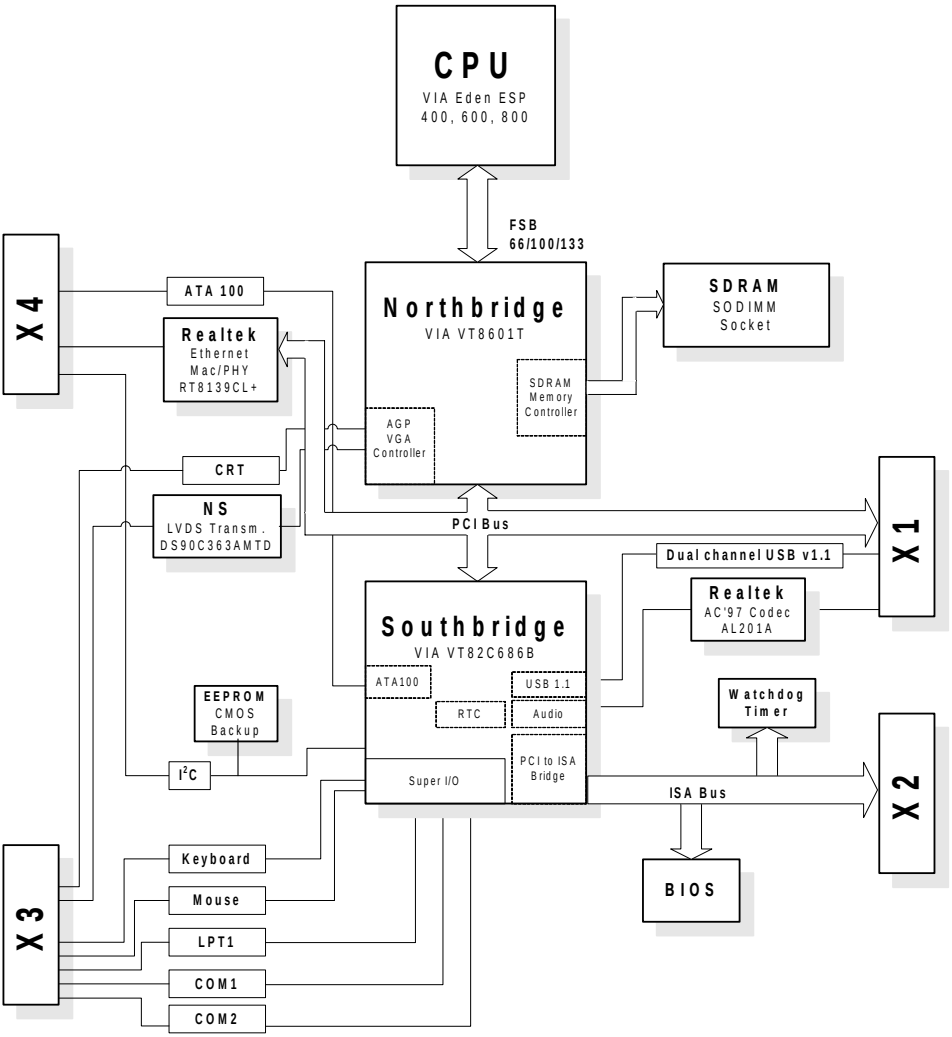



**Figure 1-2: ETX-EV133 Functional Diagram**

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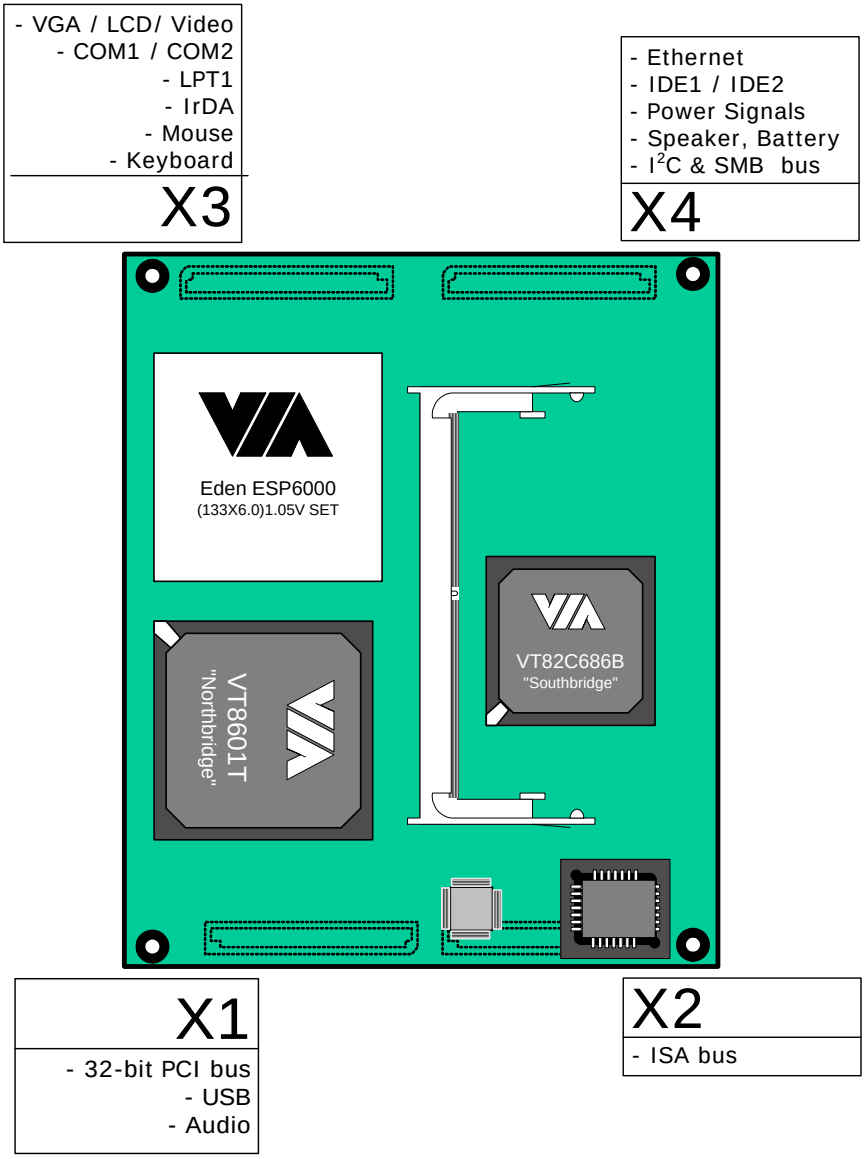



**Figure 1-3: ETX-EV133 Board/Connector Layout**

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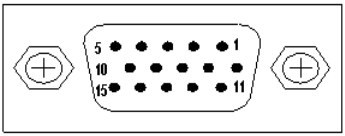
# 2 Connectors and Jumpers

This chapter will familiarize the user with the connectors and jumpers on the NuPRO-795.

## 2.1 Connector Pin Assignments

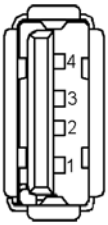
Detailed descriptions and pin-outs for each connector are given in the following section. Please refer to

### VGA Connector (CN10)




| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| Red | 1 | 2 | Green |
| Blue | 3 | 4 | N.C. |
| GND | 5 | 6 | GND |
| GND | 7 | 8 | GND |
| +5V | 9 | 10 | GND |
| N.C. | 11 | 12 | DDCDAT |
| HSYNC | 13 | 14 | VSYNC |
| DDCCLK | 15 | — | — |

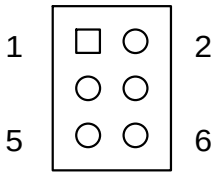
### USB Connector (CN17, CN22)




| PIN | SIGNAL |
|---|---|
| 1 | VCC |
| 2 | USB- |
| 3 | USB+ |
| 4 | Ground |

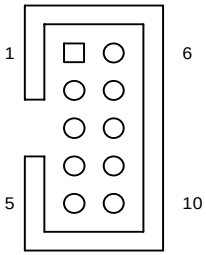
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## Keyboard and Mouse (CN11)




| Pin | Signal Name |
|---|---|
| 1 | Keyboard Data |
| 2 | Keyboard Clock |
| 3 | Mouse Data |
| 4 | Mouse Clock |
| 5 | Power |
| 6 | Ground |

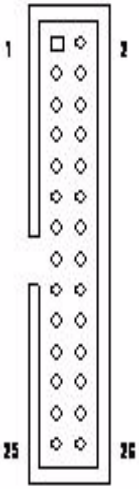
## COM Pin Header (CN15, CN16)




| Pin | RS-232 |
|---|---|
| 1 | DCD, Data carrier detect |
| 2 | RXD, Receive data |
| 3 | TXD, Transmit data |
| 4 | DTR, Data terminal ready |
| 5 | GND, ground |
| 6 | DSR, Data set ready |
| 7 | RTS, Request to send |
| 8 | CTS, Clear to send |
| 9 | RI, Ring indicator |

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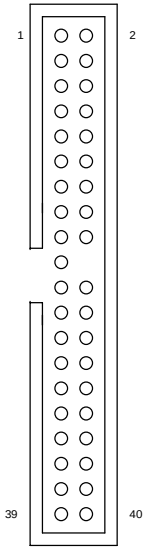
## Parallel Port (CN1)




| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| Line printer strobe | 1 | 14 | AutoFeed |
| PD0, parallel data 0 | 2 | 15 | Error |
| PD1, parallel data 1 | 3 | 16 | Initialize |
| PD2, parallel data 2 | 4 | 17 | Select |
| PD3, parallel data 3 | 5 | 18 | Ground |
| PD4, parallel data 4 | 6 | 19 | Ground |
| PD5, parallel data 5 | 7 | 20 | Ground |
| PD6, parallel data 6 | 8 | 21 | Ground |
| PD7, parallel data 7 | 9 | 22 | Ground |
| ACK, acknowledge | 10 | 23 | Ground |
| Busy | 11 | 24 | Ground |
| Paper empty | 12 | 25 | Ground |
| Select | 13 | N/A | N/A |

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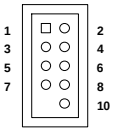
## IDE (CN4, CN6)




| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| Reset IDE | 1 | 2 | GND |
| IDE Data 7 | 3 | 4 | IDE Data 8 |
| IDE Data 6 | 5 | 6 | IDE Data 9 |
| IDE Data 5 | 7 | 8 | IDE Data 10 |
| IDE Data 4 | 9 | 10 | IDE Data 11 |
| IDE Data 3 | 11 | 12 | IDE Data 12 |
| IDE Data 2 | 13 | 14 | IDE Data 13 |
| IDE Data 1 | 15 | 16 | IDE Data 14 |
| IDE Data 0 | 17 | 18 | IDE Data 15 |
| Ground | 19 | 20 | KEY |
| DREQ0 | 21 | 22 | GND |
| IDEIOW# | 23 | 24 | GND |
| IDEIOR# | 25 | 26 | GND |
| IDEIORDY | 27 | 28 | CBSEL |
| DACK0# | 29 | 30 | GND |
| IDEIRQ14 | 31 | 32 | NC |
| IDE Address 1 | 33 | 34 | PDIAG# |
| IDE Address 0 | 35 | 36 | IDE Address 2 |
| IDE Chip select 1# | 37 | 38 | IDE Chip select 3# |
| IDE activity | 39 | 40 | GND |

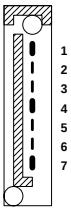
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## USB Pin (CN3, CN24)




| Pin | Signal Name | Signal Name | Pin |
|---|---|---|---|
| 1 | USB1_VCC | USB2_VCC | 2 |
| 3 | USB1- | USB2- | 4 |
| 5 | USB1+ | USB2+ | 6 |
| 7 | GND | GND | 8 |
| — | — | KEY | 10 |

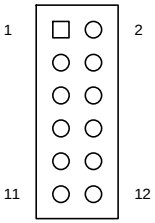
## Serial ATA Connectors (CN5, CN7, CN9, CN14)




| Pin | Signal Name |
|---|---|
| 1 | GND |
| 2 | Tx+ |
| 3 | Tx- |
| 4 | GND |
| 5 | Rx- |
| 6 | Rx+ |
| 7 | GND |

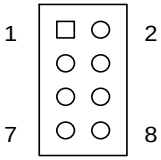
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## X4 Extension Pin Header (CN8)




| Pin | Signal Name |
|---|---|
| 1 | +5V |
| 2 | X4_GPE1J |
| 3 | X4_SMBLARTJ |
| 4 | X4_GPE2J |
| 5 | BATLOWJ |
| 6 | ROMKBCSJ |
| 7 | X4_RSMRSTJ |
| 8 | X4_EXTSMI |
| 9 | X1_SERIRQ |
| 10 | X4_GPCSJ |
| 11 | GND |
| 12 | X4_EXTPRG |

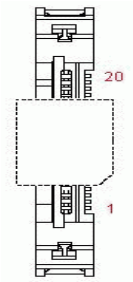
## TV-Out Pin Header (CN12)




| Pin | Signal Name |
|---|---|
| 1 | Y |
| 2 | GND |
| 3 | C |
| 4 | GND |
| 5 | COMP |
| 6 | GND |
| 7 | SYNC |
| 8 | GND |

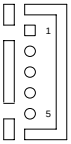
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## LDVS Connector (CN19, CN21)




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Panel Power | 11 | Txout2# |
| 2 | Panel Power | 12 | Txout2 |
| 3 | GND | 13 | GND |
| 4 | GND | 14 | Txclk# |
| 5 | Txout0# | 15 | Txclk |
| 6 | Txout0 | 16 | GND |
| 7 | GND | 17 | Txout3# |
| 8 | Txout1# | 18 | Txout3 |
| 9 | Txout1 | 19 | GND |
| 10 | GND | 20 | Panel Detect |

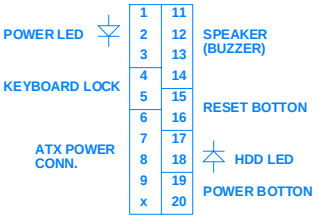
## IrDA Connector (CN13)




| Pin | Signal Name |
|---|---|
| 1 | +5V |
| 2 | No connect |
| 3 | IrRXD |
| 4 | Ground |
| 5 | IrTXD |

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## Miscellaneous Connector (CN18)]



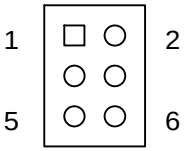

| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| PW_LED+ | 1 | 11 | BUZZER |
| NC | 2 | 12 | NC |
| PW_LED- | 3 | 13 | NC |
| KB_LOCK | 4 | 14 | +5V |
| GND | 5 | 15 | PW_GD |
| GND | 6 | 16 | GND |
| NC | 7 | 17 | HDD_LED- |
| PS_ON | 8 | 18 | HDD_LED+ |
| 5VSB | 9 | 19 | PW_BTN |
| PME# | 10 | 20 | GND |

## Fan Connector (CN20)




| Pin | Signal Name |
|---|---|
| 1 | NC |
| 2 | +12V |
| 3 | GND |

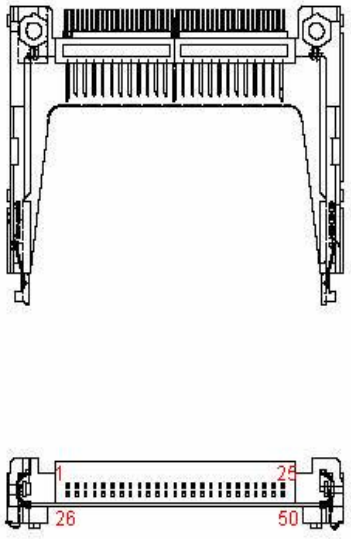
## Audio-Out Pin Header (CN26)




| Pin | Signal Name |
|---|---|
| 1 | MIC In |
| 2 | ASGND |
| 3 | Line In Left |
| 4 | Line In Right |
| 5 | Line Out Left |
| 6 | Line Out Right |

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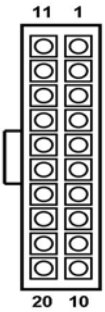
## Compact Flash Type I/II Connector (CN28)




| Signal Name | Pin | Pin | Signal Name |
|---|---|---|---|
| GND | 1 | 26 | GND |
| SDD3 | 2 | 27 | SDD11 |
| SDD4 | 3 | 28 | SDD12 |
| SDD5 | 4 | 29 | SDD13 |
| SDD6 | 5 | 30 | SDD14 |
| SDD7 | 6 | 31 | SDD15 |
| SDCS#1 | 7 | 32 | SDCS#3 |
| GND | 8 | 33 | GND |
| GND | 9 | 34 | SDIOR# |
| GND | 10 | 35 | SDIOW# |
| GND | 11 | 36 | +5V |
| GND | 12 | 37 | IDEIRQ15 |
| +5V | 13 | 38 | +5V |
| GND | 14 | 39 | PCSEL |
| GND | 15 | 40 | NC |
| GND | 16 | 41 | SIDERST# |
| GND | 17 | 42 | SIORDY |
| SDA2 | 18 | 43 | NC |
| SDA1 | 19 | 44 | SDDACK# |
| SDA0 | 20 | 45 | IDEACT# |
| SDD0 | 21 | 46 | S66DECT |
| SDD1 | 22 | 47 | SDD8 |
| SDD2 | 23 | 48 | SDD9 |
| IOIS16# | 24 | 49 | SDD10 |
| GND | 25 | 50 | GND |

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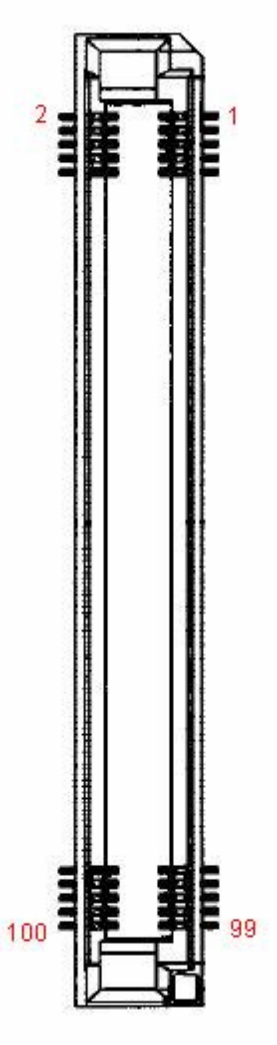
## ATX Power Connector (CN29)




| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | +3.3V | 11 | +3.3V |
| 2 | +3.3V | 12 | -12V |
| 3 | GND | 13 | GND |
| 4 | +5V | 14 | PS_ON# |
| 5 | GND | 15 | GND |
| 6 | +5V | 16 | GND |
| 7 | GND | 17 | GND |
| 8 | PWRGOOD | 18 | -5V |
| 9 | STB5V | 19 | +5V |
| 10 | +12V | 20 | +5V |

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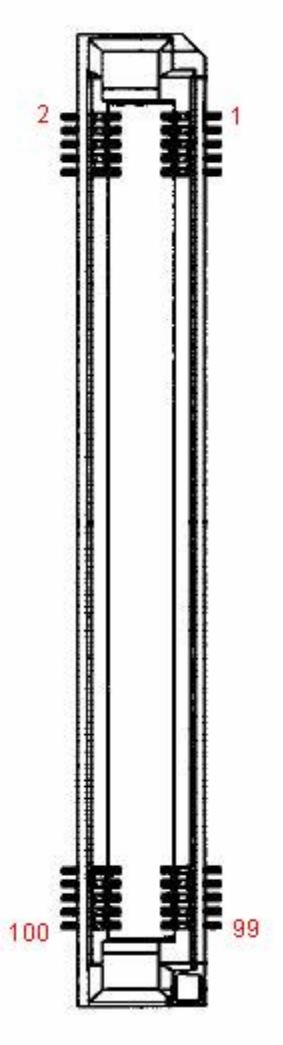
## ETX X1 Connector (PCI Bus, USB, Audio)




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | PCICLK3 | 4 | PCICLK4 |
| 5 | GND | 6 | GND |
| 7 | PCICLK1 | 8 | PCICLK2 |
| 9 | REQ3# | 10 | GNT3# |
| 11 | GNT2# | 12 | 3V3 |
| 13 | REQ2# | 14 | GNT1# |
| 15 | REQ1# | 16 | 3V3 |
| 17 | GNT0# | 18 | RESERVED |
| 19 | VCC | 20 | VCC |
| 21 | SERIRQ | 22 | REQ0# |
| 23 | AD0 | 24 | 3V3 |
| 25 | AD1 | 26 | AD2 |
| 27 | AD4 | 28 | AD3 |
| 29 | AD6 | 30 | AD5 |
| 31 | C/BE0# | 32 | AD7 |
| 33 | AD8 | 34 | AD9 |
| 35 | GND | 36 | GND |
| 37 | AD10 | 38 | LINEIN_L |
| 39 | AD11 | 40 | MICIN |
| 41 | AD12 | 42 | LINEIN_R |
| 43 | AD13 | 44 | AVCC |
| 45 | AD14 | 46 | LINEOUT_L |
| 47 | AD15 | 48 | AGND |
| 49 | C/BE1# | 50 | LINEOUT_R |
| 51 | VCC | 52 | VCC |
| 53 | PAR | 54 | SERR# |
| 55 | PERR# | 56 | RESERVED |
| 57 | PME# | 58 | USB2- |
| 59 | LOCK# | 60 | DEVSEL# |
| 61 | TRDY# | 62 | USB3- |
| 63 | IRDY# | 64 | STOP# |
| 65 | FRAME# | 66 | USB2+ |
| 67 | GND | 68 | GND |
| 69 | AD16 | 70 | C/BE2# |
| 71 | AD17 | 72 | USB3+ |
| 73 | AD19 | 74 | AD18 |
| 75 | AD20 | 76 | USB0- |
| 77 | AD22 | 78 | AD21 |
| 79 | AD23 | 80 | USB1- |
| 81 | AD24 | 82 | C/BE3# |
| 83 | VCC | 84 | VCC |
| 85 | AD25 | 86 | AD26 |
| 87 | AD28 | 88 | USB0+ |
| 89 | AD27 | 90 | AD29 |
| 91 | AD30 | 92 | USB1+ |
| 93 | PCIRST# | 94 | AD31 |
| 95 | INTC# | 96 | INTD# |
| 97 | INTA# | 98 | INTB# |
| 99 | GND | 100 | GND |

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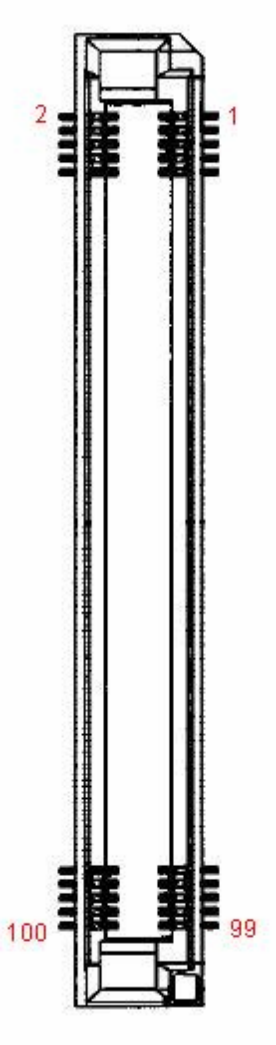
## ETX X2 Connector (ISA Bus)




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | SD14 | 4 | SD15 |
| 5 | SD13 | 6 | MASTER# |
| 7 | SD12 | 8 | DREQ7 |
| 9 | SD11 | 10 | DACK7# |
| 11 | SD10 | 12 | DREQ6 |
| 13 | SD9 | 14 | DACK6# |
| 15 | SD8 | 16 | DREQ5 |
| 17 | MEMW# | 18 | DACK5# |
| 19 | MEMR# | 20 | DREQ0 |
| 21 | LA17 | 22 | DACK0# |
| 23 | LA18 | 24 | IRQ14 |
| 25 | LA19 | 26 | IRQ15 |
| 27 | LA20 | 28 | IRQ12(1) |
| 29 | LA21 | 30 | IRQ11 |
| 31 | LA22 | 32 | IRQ10 |
| 33 | LA23 | 34 | IO16# |
| 35 | GND | 36 | GND |
| 37 | SBHE# | 38 | M16# |
| 39 | SA0 | 40 | OSC |
| 41 | SA1 | 42 | BALE |
| 43 | SA2 | 44 | TC |
| 45 | SA3 | 46 | DACK2#(2) |
| 47 | SA4 | 48 | IRQ3 |
| 49 | SA5 | 50 | IRQ4 |
| 51 | VCC | 52 | VCC |
| 53 | SA6 | 54 | IRQ5 |
| 55 | SA7 | 56 | IRQ6 |
| 57 | SA8 | 58 | IRQ7 |
| 59 | SA9 | 60 | SYSCLK |
| 61 | SA10 | 62 | REFSH# |
| 63 | SA11 | 64 | DREQ1 |
| 65 | SA12 | 66 | DACK1# |
| 67 | GND | 68 | GND |
| 69 | SA13 | 70 | DREQ3 |
| 71 | SA14 | 72 | DACK3# |
| 73 | SA15 | 74 | IOR# |
| 75 | SA16 | 76 | IOW# |
| 77 | SA18 | 78 | SA17 |
| 79 | SA19 | 80 | SMEMR# |
| 81 | IOCHRDY | 82 | AEN |
| 83 | VCC | 84 | VCC |
| 85 | SD0 | 86 | SMEMW# |
| 87 | SD2 | 88 | SD1 |
| 89 | SD3 | 90 | NOWS# |
| 91 | DREQ2(2) | 92 | SD4 |
| 93 | SD5 | 94 | IRQ9 |
| 95 | SD6 | 96 | SD7 |
| 97 | IOCHK# | 98 | RSTDRV |
| 99 | GND | 100 | GND |

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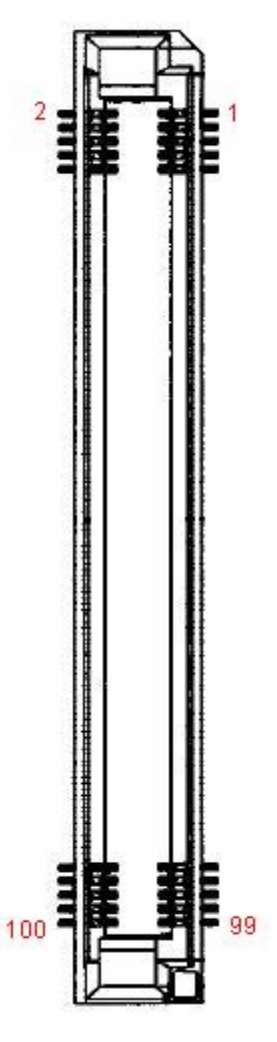
## ETX X3 Connector




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | RED | 4 | BLUE |
| 5 | HSYNC | 6 | GREEN |
| 7 | VSYNC | 8 | DDC2B_CLK |
| 9 | PAL_DETECT# | 10 | DDC2B_DAT |
| 11 | LCDDO16 | 12 | LCDDO18 |
| 13 | LCDDO17 | 14 | LCDDO19 |
| 15 | GND | 16 | GND |
| 17 | LCDDO13 | 18 | LCDDO15 |
| 19 | LCDDO12 | 20 | LCDDO14 |
| 21 | GND | 22 | GND |
| 23 | LCDDO8 | 24 | LCDDO11 |
| 25 | LCDDO9 | 26 | LCDDO10 |
| 27 | GND | 28 | GND |
| 29 | LCDDO4 | 30 | LCDDO7 |
| 31 | LCDDO5 | 32 | LCDDO6 |
| 33 | GND | 34 | GND |
| 35 | LCDDO1 | 36 | LCDDO3 |
| 37 | LCDDO0 | 38 | LCDDO2 |
| 39 | VCC | 40 | VCC |
| 41 | JILI_DAT | 42 | FLM |
| 43 | JILI_CLK | 44 | BLON# |
| 45 | BIASON | 46 | PLPWR_EN |
| 47 | TV_COMP | 48 | TV_Y |
| 49 | TV_SYNC | 50 | TV_C |
| 51 | LPT/FLPY# | 52 | RESERVED |
| 53 | VCC | 54 | GND |
| 55 | STB# | 56 | AFD# |
| 57 | RESERVED | 58 | PD7 |
| 59 | IRRX | 60 | ERR# |
| 61 | IRTX | 62 | PD6 |
| 63 | RXD2 | 64 | INIT# |
| 65 | GND | 66 | GND |
| 67 | RTS2# | 68 | PD5 |
| 69 | DTR2# | 70 | SLIN# |
| 71 | DCD2# | 72 | PD4 |
| 73 | DSR2# | 74 | PD3 |
| 75 | CTS2# | 76 | PD2 |
| 77 | TXD2 | 78 | PD1 |
| 79 | RI2# | 80 | PD0 |
| 81 | VCC | 82 | VCC |
| 83 | RXD1 | 84 | ACK# |
| 85 | RTS1# | 86 | BUSY# |
| 87 | DTR1# | 88 | PE |
| 89 | DCD1# | 90 | SLCT# |
| 91 | DSR1# | 92 | MSCLK |
| 93 | CTS1# | 94 | MSDAT |
| 95 | TXD1 | 96 | KBCLK |
| 97 | RI1# | 98 | KBDAT |
| 99 | GND | 100 | GND |

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## ETX X4 Connector




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | 5V_SB | 4 | PWGIN |
| 5 | PS_ON | 6 | SPEAKER |
| 7 | PWRBTN# | 8 | BATT |
| 9 | KBINH | 10 | LILED |
| 11 | RSMRST# | 12 | ACTLED |
| 13 | ROMKBCS#(1) | 14 | SPDLED |
| 15 | EXT_PRG(1) | 16 | I2CLK |
| 17 | VCC | 18 | VCC |
| 19 | OVCR# | 20 | GPCS#(1) |
| 21 | EXTSMI# | 22 | I2DAT |
| 23 | SMBCLK | 24 | SMBDATA |
| 25 | SIDE_CS3# | 26 | SMBALRT# |
| 27 | SIDE_CS1# | 28 | DASP_S(1) |
| 29 | SIDE_A2 | 30 | PIDE_CS3# |
| 31 | SIDE_A0 | 32 | PIDE_CS1# |
| 33 | GND | 34 | GND |
| 35 | PDIAG_S | 36 | PIDE_A2 |
| 37 | SIDE_A1 | 38 | PIDE_A0 |
| 39 | SIDE_INTRQ | 40 | PIDE_A1 |
| 41 | BATLOW# | 42 | GPE1# |
| 43 | SIDE_ACK# | 44 | PIDE_INTRQ |
| 45 | SIORDY | 46 | PIDE_ACK# |
| 47 | SIDE_IOR# | 48 | PIORDY |
| 49 | VCC | 50 | VCC |
| 51 | SIDE_IOW# | 52 | PIDE_IOR# |
| 53 | SIDE_DRQ | 54 | PIDE_IOW# |
| 55 | SIDE_D15 | 56 | PIDE_DRQ |
| 57 | SIDE_D0 | 58 | PIDE_D15 |
| 59 | SIDE_D14 | 60 | PIDE_D0 |
| 61 | SIDE_D1 | 62 | PIDE_D14 |
| 63 | SIDE_D13 | 64 | PIDE_D1 |
| 65 | GND | 66 | GND |
| 67 | SIDE_D2 | 68 | PIDE_D13 |
| 69 | SIDE_D12 | 70 | PIDE_D2 |
| 71 | SIDE_D3 | 72 | PIDE_D12 |
| 73 | SIDE_D11 | 74 | PIDE_D3 |
| 75 | SIDE_D4 | 76 | PIDE_D11 |
| 77 | SIDE_D10 | 78 | PIDE_D4 |
| 79 | SIDE_D5 | 80 | PIDE_D10 |
| 81 | VCC | 82 | VCC |
| 83 | SIDE_D9 | 84 | PIDE_D5 |
| 85 | SIDE_D6 | 86 | PIDE_D9 |
| 87 | SIDE_D8 | 88 | PIDE_D6 |
| 89 | GPE2# | 90 | CBLID_P# |
| 91 | RXD- | 92 | PIDE_D8 |
| 93 | RXD+ | 94 | SIDE_D7 |
| 95 | TXD- | 96 | PIDE_D7 |
| 97 | TXD+ | 98 | HDRST# |
| 99 | GND | 100 | GND |

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## 2.2 Jumper Settings

### CF Mode Selection (JP2)




| Jumper | Status |
|---|---|
| 1-2 | Master |
| 2-3 | Slave |

### Panel Power Selection (JP3)




| Jumper | Status |
|---|---|
| 1-2 | +5V |
| 2-3 | +3.3V |

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# 3 System Resources

## 3.1 Interrupt Assignments

PCI and ISA interrupts supported by the VIA VT82C686B South Bridge are as follows:

| ISA IRQ | Edge/ Level | Polarity | Interrupt Source | Notes |
|---|---|---|---|---|
| NMI | Edge | High | SERR_L asserted | |
| SMI | Edge | Low | VT82C686B Hardware Monitor | |
| IRQ0 | Edge | High | Timer0 | (1) |
| IRQ1 | Edge | High | Keyboard | |
| IRQ2 | Edge | High | Cascade Interrupt from Slave Interrupt Controller | |
| IRQ3 | Edge | High | COM2 | (2) |
| IRQ4 | Edge | High | COM1 | (2) |
| IRQ5 | Edge | Low | PCI PnP IRQ | |
| IRQ6 | Edge | High | FDC | (2) |
| IRQ7 | Edge | High | LPT1 | (2) |
| IRQ8_L | Edge | Low | Real Time Clock | (2) |
| IRQ9 | Edge | Low | PCI PnP IRQ | |
| IRQ10 | Level | Low | PCI PnP IRQ | |
| IRQ11 | Level | Low | PCI PnP IRQ, USB | (3) |
| IRQ12 | Edge | High | Mouse | (2) |
| IRQ13 | Edge | High | FERR_L asserted | |
| IRQ14 | Edge | High | Primary IDE | (4) |
| IRQ15 | Edge | High | Secondary IDE | (5) |

**Notes:**

1. Internally generated by the VT82C686B.
2. Suggested. These interrupts are plug and play compatible and may be routed to any available interrupt.
3. The USB interrupt is internally routed to the PIRQD# input of the VT82C686B.
4. This interrupt is routed to the IRQ14 input of the VT82C686B.
5. This interrupt is routed to the IRQ15 input of the VT82C686B.

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## 3.2 PCI Bus Arbitration Assignment

| PCI Bus REQ#/GNT# (ETX Module) | Arbitor (ProCB-795) | PCI Master) | IDSEL |
|---|---|---|---|
| REQ0#/GNT0# | — | LAN8139CL+ | AD23 |
| REQ1#/GNT1# | — | PCI Slot 1 | * |
| REQ2#/GNT2# | — | PCI Slot 2 | * |
| REQ3#/GNT3# | — | PCI Slot 3 | * |
| REQ4#/GNT4# | REQ5#/GNT5# | PCI Slot 4 | * |
| | REQ6#/GNT6# | SATA Sil3114 | AD19 |

***Note:** AD28 ~ AD31 dependent on backplane.

## 3.3 PCI Interrupt Routing

| Device | Net PIRQ0_L | Net PIRQ1_L | Net PIRQ2_L | Net PIRQ3_L |
|---|---|---|---|---|
| PCI Slots 1-4 (Golden Fingers) | PIRQA# | PIRQB# | PIRQC# | PIRQD# |
| LAN 8139CL+ | PIRQD# | — | — | — |
| SATA Sil3114 | — | — | — | — |

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## 3.4 Memory Map

| Address | Size | Description |
|---|---|---|
| 00000000-0009FFFF | 640k | DOS Application Area |
| 000A0000-000BFFFF | 128k | Video Buffer Area |
| 000C0000-000DFFFF | 1M | Expansion Area |
| 000F0000-000FFFFF | 64k | System BIOS Area |
| 000E0000-000EFFFF | 64k | Extended System BIOS Area |
| 00100000-DRAMTop | — | System memory area |
| DRAM Top-FFFRFFFF | — | Bus area |
| FFFEFFFF-FFFFFFFF | 64k | Initialization area |

## 3.5 Direct Memory Access Channels

| DMA# | Available | Description |
|---|---|---|
| 0 | Yes | — |
| 1 | Yes | Unavailable if Sound Blaster is enabled with default configuration |
| 2 | No | Used by FDC |
| 3 | Yes | Unavailable when LPT is in ECP mode |
| 4 | No | Used for Cascade |
| 5 | Yes | — |
| 6 | Yes | — |
| 7 | Yes | — |

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## 3.6 I/O Address Map

| Address | Size | Description |
|---|---|---|
| 0000-001F | 32 bytes | Master DMA controller |
| 0020 - 002D | 14 bytes | Master Interrupt Controller |
| 0040 - 005F | 32 bytes | Timer/Counter |
| 0060 - 006F | 32 bytes | Keyboard Controller |
| 60h | 1 byte | KBC data |
| 61h | 1 byte | Misc function and Speaker control |
| 64h | 1 byte | KBC command / status |
| 0070 - 0077 | 8 bytes | RTC/CMOS/NMI-Disable |
| 0078 - 007F | 8 bytes | Available for system use |
| 0080 | 1 byte | Reserved (Debug port) |
| 0081 - 008F | 16 bytes | DMA page registers |
| 0090-0091 | 2 bytes | Available for system use |
| 0092 | 1 byte | System Control |
| 0093 - 009F | 13 bytes | Available for system use |
| 00A0-00BF | 32 bytes | Slave Interrupt Controller |
| 00C0-00DF | 32 bytes | Slave DMA Controller |
| 00E0-00FF | 32 bytes | Available for system use |
| 0100-0CF7 | | Available for system use |
| 0CF8 -0CFB | 4 bytes | PCI configuration address |
| 0CFC - 0CFF | 4 bytes | PCI configuration data |
| 0D00 - FFFF | — | Available for system use |

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## 3.7 System Management Bus ($I^2C$)

The System Management Bus (SMB) controller is integrated into the VT82C686B chip on the ETX-EV133. There are several slave devices that reside on the SMB. Their addresses are as follows:

| Address | Function | Device |
|---|---|---|
| 1010000 | Identification Info | SODIMM0 |
| 1011110 | CMOS setting backup | EEPROM |
| Inside LAN ID | Control and Status | Ethernet # 1 |

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# 4 Phoenix Award BIOS

## 4.1 Description

The ETX-EV133 module has a Phoenix Award PCI/ISA BIOS ver. 6.0 for system configuration. The Award BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options that can be tailored for end-user requirements. This chapter is written to assist you in the proper usage of these features.

## 4.2 Main Menu

To access the Phoenix AWARD PCI/ISA BIOS Setup program, press <Del> key immediately after powering up the system. The Main Menu will be displayed.

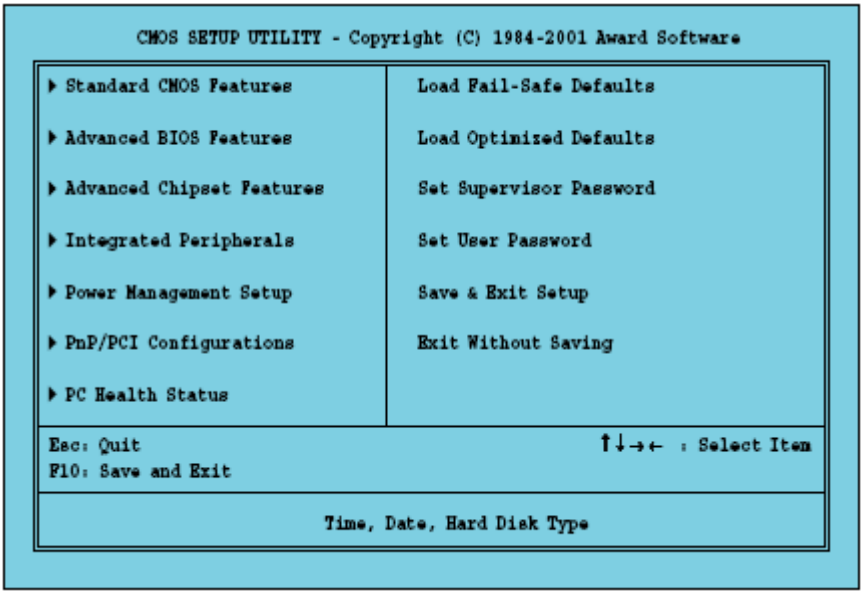



**Figure 4-1: AWARD BIOS Main Menu**

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- **Standard CMOS Features:** Use this menu for basic system configuration (see Section 4.3).
- **Advanced BIOS Features:** Use this menu to set the Advanced Features available on your system (see Section 4.4).
- **Advanced Chipset Features:** Change values in the chipset registers and optimize your system's performance (see Section 4.5).
- **Integrated Peripherals:** Use this menu to specify your settings for integrated peripherals (see Section 4.6).
- **Power Management Setup:** Use this menu to specify your settings for power management (see Section )4.7.
- **PnP/PCI Configuration:** This entry appears if your system supports PnP/PCI (see Section 4.8).
- **PC Health Status:** Use this menu to specify your settings for frequency/voltage control (see Section 4.9).
- **Load Fail-Safe Defaults:** Loads the BIOS default values for the minimal/stable performance for your system to operate.
- **Load Optimized Defaults:** Loads the BIOS default values that are factory settings for optimal system performance.
- **Supervisor / User Password:** Use this menu to set User and Supervisor Passwords.
- **Save & Exit Setup:** Save CMOS value changes to CMOS and exit setup.
- **Exit Without Saving:** Abandon all CMOS value changes and exit setup.

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## 4.3 Standard CMOS Features

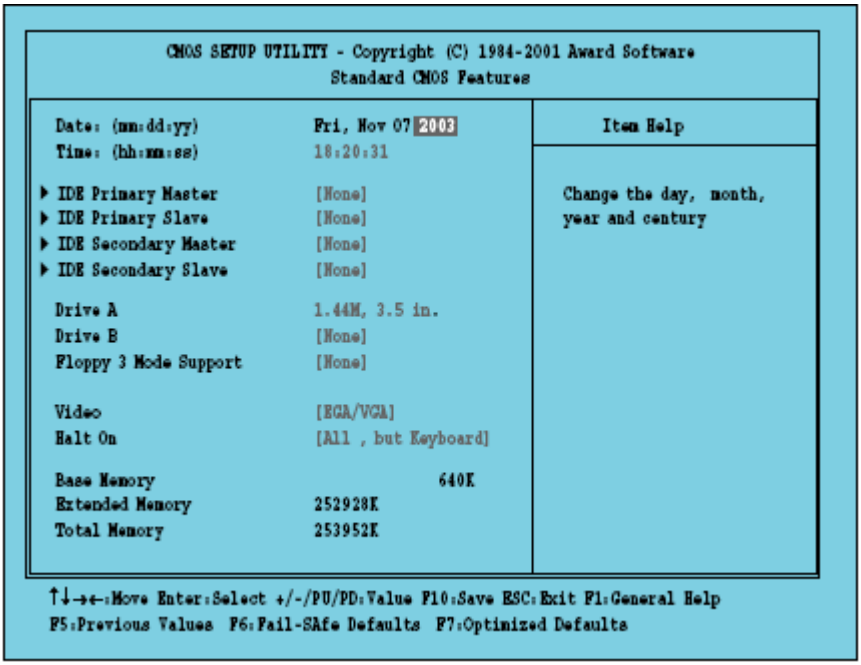



**Figure 4-2: Standard CMOS Features Menu**

The main menu includes the following main setup categories.

- **Date:** The BIOS determines the day of the week from other date information; this field is for information only.
- **Time:** The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the ( key to move to the desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.
- **IDE Primary and Secondary Master/Slave Items:** This selection brings you a configuration menu of the designated Drive.

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- **Drive A, B:** Select the correct specifications for the diskette drive(s) installed in the computer.
  - None: No diskette drive installed.
  - 360K: 5-1/4 inch PC-type standard drive.
  - 1.2M: 5-1/4 inch AT-type high-density drive.
  - 720K: 3-1/2 inch double-sided drive.
  - 1.44M: 3-1/2 inch double-sided drive.
  - 2.88M: 3-1/2 inch double-sided drive.
- **Floppy Mode 3 Support:** Enables support for 1.2 MB format capacity on 3-1/2 inch disk drives. This format is commonly used Japan. Options are: disabled, drive A, drive B, both.
- **Video:** Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.
- **Halt On:** During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:
  - No errors: POST does not stop for any errors.
  - All errors: If any non-fatal error, POST stops and prompts to take corrective action.
  - All, But Keyboard: POST does not stop for a keyboard error, but stops for all other errors.
  - All, But Diskette: POST does not stop for diskette drive errors, but stops for all other errors.
  - All, But Disk/Key: POST does not stop for keyboard / disk error, but stops for all other errors.

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## IDE Primary and Secondary Master/Slave Items

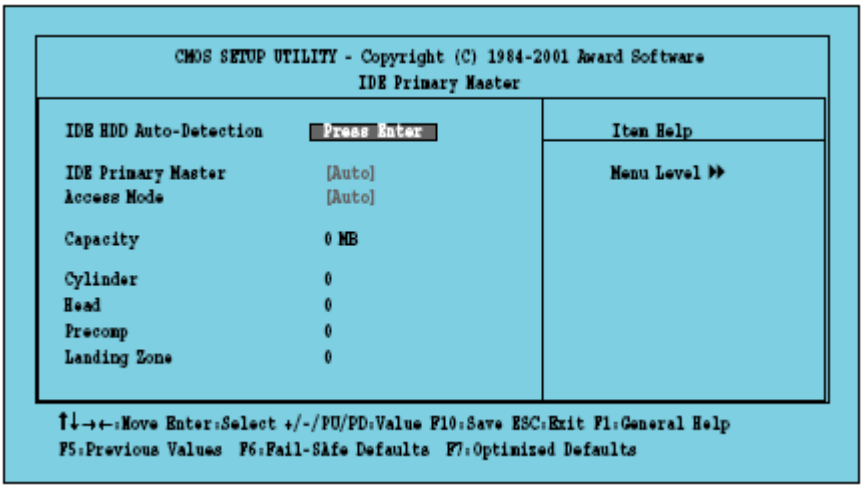



**Figure 4-3: IDE Primary and Secondary Master/Slave Items Menu**

**IDE HDD Auto-detection** Press Enter
Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

**IDE Primary Master** NoneAutoManual
Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE!

**Capacity** Auto Display disk size
Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.

**Access Mode** Normal/LBA/Large/Auto
Choose the access mode for this hard disk**.**

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## 4.4 Advanced BIOS Features

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

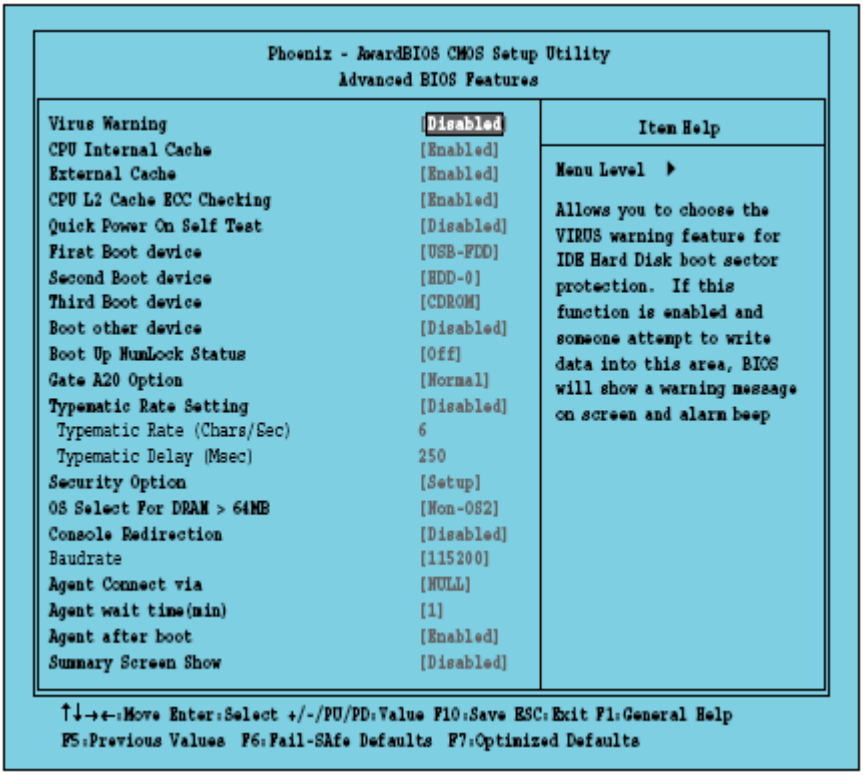



**Figure 4-4: Advanced BIOS Features Menu**

### Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and an attempt is made to write data into this area, BIOS will show a warning message on screen and alarm beep. Enabled: Activates automatically when the system boots up causing a warning mes-

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sage to appear when anything attempts to access the boot sector or hard disk partition table. Disabled: No warning message will appear.

**CPU Internal Cache / CPU External Cache**
These two categories speed up memory access. However, it depends on CPU/chipset design. Enabled: Enable cache, Disabled: Disable cache.

**CPU L2 Cache ECC Checking**
This item allows you to enable/disable CPU L2 Cache ECC checking. Enabled, Disabled.

**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. Enabled Enable quick POST. Disabled: Normal POST.

**First / Second / Third Boot Device**
Enter brings you to Boot Device Menu. The BIOS attempts to load the operating system from the selected device. See menu for possible options.

**Boot Other Device**
When enabled the BIOS will try to boot from second or third option if booting from first device fails. When disabled the BIOS will not use the alternative devices.

**Boot Up NumLock Status**
Select power on state for NumLock. The choice: Enabled/Disabled.

**Gate A20 Option**
Select if chipset or keyboard controller should control GateA20. Normal: A pin in the keyboard controller controls GateA20 Fast: Lets chipset control GateA20.

**Typematic Rate Setting**
Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. Choices: Enabled/Disabled.

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**Typematic Rate (Chars/Sec)**
Sets the number of times a second to repeat a key stroke when you hold the key down. Choices: 6, 8,10,12,15, 20, 24, 30.

**Typematic Delay (Msec)**
Sets the delay time after the key is held down before it begins to repeat the keystroke. Choices: 250, 500, 750, 1000.

**Security Option**
Select whether the password is required every time the system boots or only when you enter setup. Choices: System: the system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. Setup: The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

**OS *Select For DRAM > 64MB***
Select the operating system that is running with greater than 64MB of RAM on the system. Choices: Non-OS2, OS2.

**Console Redirection**
Award's Preboot Agent provides you with console redirection to let you control a remote PC or embedded system via modem or direct serial connection at boot time. Choices: Enable, Disable.

**Baudrate**
Select baud rate: 9600,19200, 38400, 57600 and 115200.

**Agent Connect via**
Fixed to NULL (Null modem cable), no selection possible.

**Agent wait time (min)**
Timeout in minutes to install agent if no serial connection can be established.

**Agent after boot**
Enable this option to keep the Agent running after OS boot.

**Summary Screen Show**
Suppress the summary screen. Choices: Enable, Disable.

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## 4.5 Advanced Chipset Features

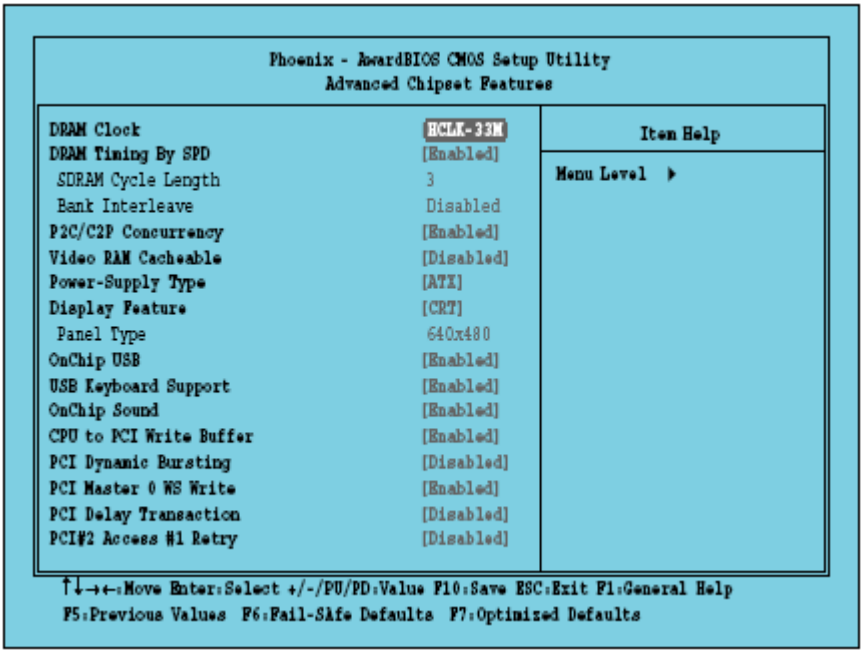



**Figure 4-5: Advanced Chipset Features Menu**

**DRAM Clock**

This item allows you to set the DRAM Clock. Options are Host CLK, HCLK+33M or HCLK-33M. Please set the item according to the Host (CPU) Clock and DRAM Clock.

**DRAM Timing by SPD**

If your DIMM memory has SPD (Serial Presence Detect) 8-pin IC on module, you can set this option to Enabled. System will set your DRAM clock and timing from the SPD IC. If the option is set as Disabled, DRAM clock and timing must be set from the items below. (SDRAM Cycle Length and Bank Interleave).

**SDRAM Cycle Length**

This feature is similar to SDRAM CAS Latency Time. It controls the time delay (in clock cycles -CLKs) that passes before the SDRAM starts to carry out a read command after receiving it.

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This also determines the number of CLKs for the completion of the first part of a burst transfer. Thus, the lower the cycle length, the faster the transaction. However, some SDRAM cannot handle the lower cycle length and may become unstable. So, set the SDRAM Cycle Length to 2 for optimal performance if possible but increase it to 3 if your system becomes unstable.

**Bank Interleave**
This feature enables you to set the interleave mode of the SDRAM interface. Interleaving allows banks of SDRAM to alternate their refresh and access cycles. One bank will undergo its refresh cycle while another is being accessed. This improves performance of the SDRAM by masking the refresh time of each bank.

**P2C/C2P Concurrency**
This item allows you to enable/disable the PCI to CPU, CPU to PCI concurrency. Choices: Enabled, Disabled.

**Video RAM Cacheable**
Select Enabled allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Choices: Enabled, Disabled.

**OnChip USB**
This should be enabled if your system has a USB installed on the system board and you want to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature. Choices: Enabled, Disabled.

**USB Keyboard Support**
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. Choices: Enabled, Disabled.

**OnChip Sound**
This item allows you to control the onboard AC 97 audio. Choices: Auto, Disabled.

**CPU to PCI Write Buffer**
When this field is Enabled, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writes are not buffered

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and the CPU must wait until the write is complete before starting another write cycle. Choices: Enabled, Disabled.

**PCI Dynamic Bursting**
This item allows you to enable/disable the PCI dynamic bursting function. Choices: Enabled, Disabled.

**PCI Master 0 WS Write**
When Enabled, writes to the PCI bus are executed with zero wait states.

**PCI Delay Transaction**
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. Choices: Enabled, Disabled.

**PCI#2 Access #1 Retry**
When disabled, PCI#2 will not be disconnected until access finishes (default). When enabled, PCI#2 will be disconnected if max retries are attempted without success. Choices: Enabled, Disabled.

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## 4.6 Integrated Peripherals

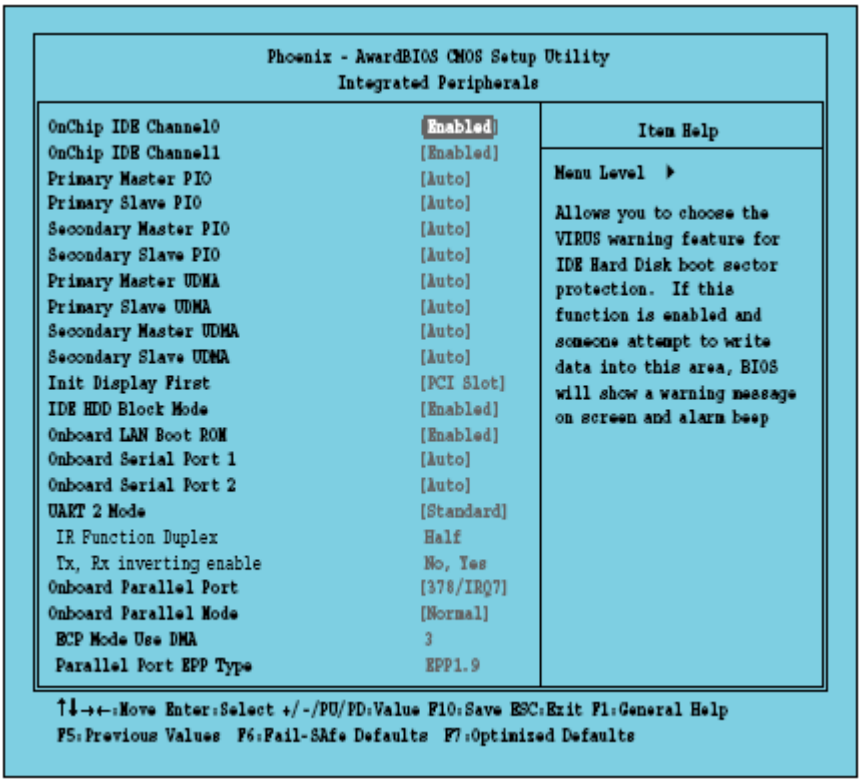



**Figure 4-6: Integrated Peripherals Menu**

### OnChip IDE Channel 0/1

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

### Primary & Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. Choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

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**Primary & Secondary Master/Slave UDMA**
Ultra DMA implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both support Ultra DMA, select Auto to enable BIOS support.

**Init Display First**
This item allows you to decide to active either PCI Slot or AGP first.

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

**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".

**UART 2 Mode**
This item allows you to select which mode for the Onboard Serial Port 2. Choices: Standard, HPSIR, ASKIR.

**IR Function Duplex**
This item allows you to select the IR half/full duplex function. Choices: Half, Full.

**TX,RX inverting enable**
This item allow you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system Choices: No, No/No, Yes(Default)/Yes, No/Yes, Yes.

**Onboard Parallel Port**
Select address and interrupt for the Parallel port.

**Onboard Parallel Mode**
Select an operating mode for the parallel port. Mode options are Normal, EPP, ECP, ECP/EPP.

**ECP Mode Use DMA**
Select a DMA channel if parallel Mode is set as ECP, ECP/EPP.

**Parallel Port EPP Type**
Select a EPP Type if parallel Port is set as EPP, ECP/EPP.

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## 4.7 Power Management Setup

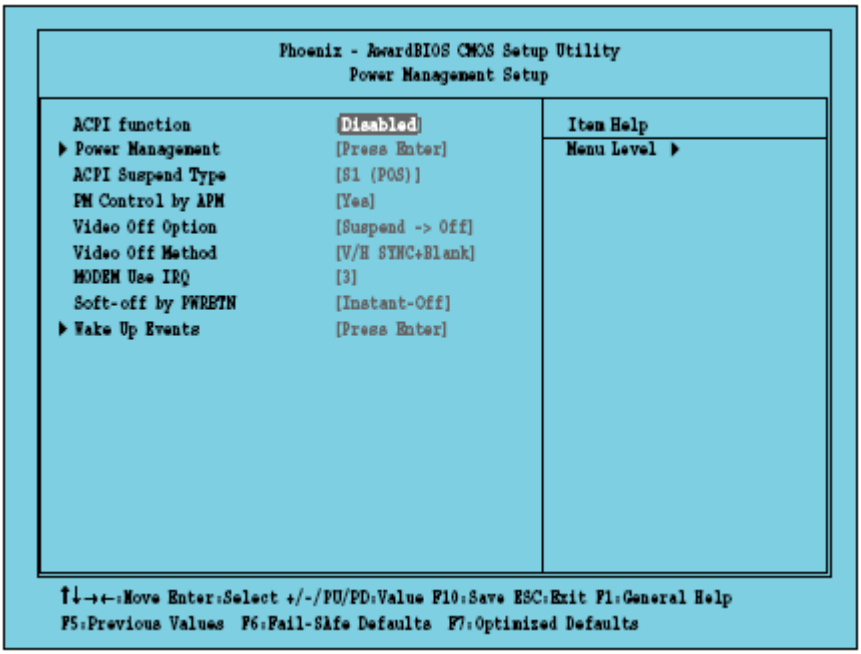



**Figure 4-7: Integrated Peripherals Menu**

### ACPI Function

Select Enabled only if your computer's operating system supports ACPI (the Advanced Configuration and Power Interface) specification. Currently, Windows 98 and Windows 2000 support ACPI.

### Power Management

There are 4 selections for Power Management (other than *Disabled*), 3 of which have fixed mode :

**Disabled** (default)**:** No power management. Disables all four modes.

**Min. Power Saving:** Minimum power management. Doze Mode = 1 hr., **Standby Mode** = 1 hr., **Suspend Mode** = 1 hr.,

**Max. Power Saving:** Maximum power management — ONLY AVAILABLE FOR SL CPU's. **Doze Mode** = 1 min., **Standby Mode** = 1 min., **Suspend Mode** = 1 min.

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**User Defined:** Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr.

**HDD Power Down** is always set independently

**ACPI Suspend Type:**

**S1 (POS) Power On suspend:** All devices are powered up except for the clock synthesizer. The Host and PCI clocks are inactive and PIIX4 provides control signals and 32-kHz Suspend Clock (SUSCLK) to allow for DRAM refresh and to turn off the clock synthesizer. The only power consumed in the system is due to DRAM Refresh and leakage current of the powered devices. When the system resumes from POS, PIIX4 can optionally resume without resetting the system, can reset the processor only, or can reset the entire system. When no reset is performed, PIIX4 only needs to wait for the clock synthesizer and processor PLLs to lock before the system is resumed. This takes typically 20 ms.

**S3 (STR) Suspend To RAM:** Power is removed from most of the system components during STR, except the DRAM. Power is supplied to Suspend Refresh logic in the Host Controller, and RTC and Suspend Well logic in PIIX4. PIIX4 provides control signals and 32-kHz Suspend Clock (SUS-CLK) to allow for DRAM refresh and to turn off the clock synthesizer and other power planes.

**PM Control By APM**
When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Max. Power Saving is not enabled, this will be preset to *No*.

**Video Off Option**
Controls what causes the display to be switched off:

- ▷ Suspend -> Off
- ▷ Always On
- ▷ All Mode -> Off

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**Video Off Method**
This determines the manner in which the monitor is blanked.

- ▷ V/H SYNC+Blank causes the system to turn off the vertical and horizontal synchronization signals and writes blanks to the screen.
- ▷ Blank Screen: This option only writes blanks to the screen.
- ▷ DPMSInitial: Display power management signaling.
- ▷ Modem Use IRQ: Name the interrupt request (IRQ) assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

**Soft-Off By PWRBTN**
The field defines the power-off mode when using an ATX power supply. The Instant-Off mode means powering off immediately when pressing the power button. In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than four seconds or places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or resume by ring activity when press for less than four seconds. The default is 'Instant-Off'.

**State After Power Failure**
On: After a power failure, the system will automatically reboot as soon as power is restored.

Off: After a power failure, the system will not reboot when power is restored. The system needs to be turned on again manually.

Auto: After a power failure, the system will automatically reboot as soon power is restored if the PC was turned on when the power failed. If the PC was already turned off when the power failed, the system needs to be turned on again manually.

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**Wake Up Events**

Setting an event on each device listed to awaken the system from a soft off state.

- ▷ VGA
- ▷ LPT & COM
- ▷ HDD & FDD
- ▷ PCI Master
- ▷ Power On by PCI Card
- ▷ Wake Up on LAN/Ring
- ▷ RTC Alarm Resume
- ▷ Date (of Month)
- ▷ Resume Time (hh:mm:ss)
- ▷ Primary INTR
- ▷ IRQs Activity Monitoring

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## 4.8 PnP/PCI Configuration

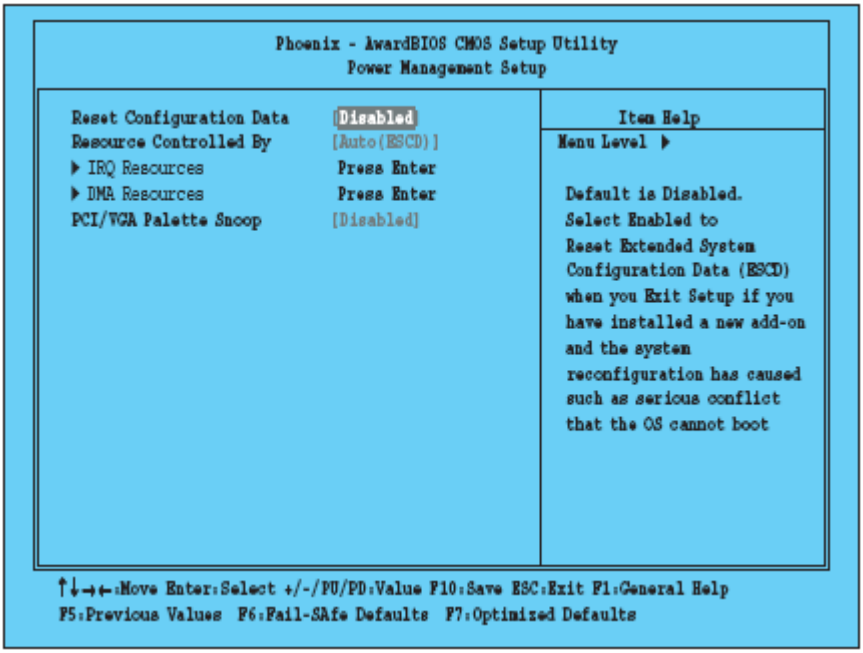



**Figure 4-8: PnP/PCI Configuration Menu**

This section describes configuration of the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

**Reset Configuration Data**

Normally, you leave this field Disabled. Select Enabled to reset ESCD (Extended System Configuration Date) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

**Resource Controlled By**

The Award Plug and Play BIOS can automatically configure all boot and Plug-and-Play compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

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**IRQ Resources**
When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt.

**Legacy ISA:** Devices compliant with the original PC/AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

**PCI/ISA PnP:** Device compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

**DMA Resources**
When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the DMA.

**Legacy ISA:** Devices compliant with the original PC/AT bus specification, requiring a specific DMA channel.

**PCI/ISA PnP:** Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

**PCI/VGA Palette Snoop**
Normally this option is always Disabled! Nonstandard VGA display adapters such as overlay cards or MPEG video cards may not show colors properly. Setting Enabled should correct this problem. If this field set Enabled, any I/O access on the ISA bus to the VGA card's palette registers will be reflected on the PCI bus. This will allow overlay cards to adapt to the changing palette colors.

## 4.9 PC Health Status

**CPU Warning Temperature**
Brings up a submenu that lets you assign a temperature level that is not to be exceeded by the CPU. If the CPU temperature goes over this limit a audio warning signal sounds

**Current CPU Temp.**
Displays the current CPU temperature.

**Current System Temp.**
Displays the current system temperature.

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**Vcore, 2.5V, 3.3V, 5V**
Displays the actual voltage levels on the board.

**Case Open Warning**
When enabled an audible signal is generated when pin GPE1# and CBLID_P# on X4 are disconnected.

## 4.10 BIOS POST Codes

| POST (hex) | Description |
|---|---|
| CFh | Test CMOS R/W functionality. |
| C0h | Early chipset initialization:<br>- Disable shadow RAM<br>- Disable L2 cache (socket 7 or below)<br>- Program basic chipset registers |
| C1h | Detect memory<br>- Auto-detection of DRAM size, type and ECC<br>- Auto-detection of L2 cache (socket 7 or below) |
| C3h | Expand compressed BIOS code to DRAM |
| C5h | Call chipset hook to copy BIOS back to E000 & F000 shadow RAM. |
| 0h1 | Expand the Xgroup codes locating in physical address 1000:0 |
| 02h | Reserved |
| 03h | Initial Superio_Early_Init switch. |
| 04h | Reserved |
| 05h | 1. Blank out screen<br>2. Clear CMOS error flag |
| 06h | Reserved |
| 07h | 1. Clear 8042 interface<br>2. Initialize 8042 self-test |
| 08h | 1. Test special keyboard controller for Winbond 977 series Super I/O chips.<br>2. Enable keyboard interface. |
| 09h | Reserved |
| 0Ah | 1. Disable PS/2 mouse interface (optional).<br>2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional).<br>3. Reset keyboard for Winbond 977 series Super I/O chips. |

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| POST (hex) | Description |
|---|---|
| 0Bh | Reserved |
| 0Ch | Reserved |
| 0Dh | Reserved |
| 0Eh | Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker. |
| 0Fh | Reserved |
| 10h | Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support. |
| 11h | Reserved |
| 12h | Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override. |
| 13h | Reserved |
| 14h | Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers. |
| 15h | Reserved |
| 16h | Initial Early_Init_Onboard_Generator switch. |
| 17h | Reserved |
| 18h | Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686). |
| 19h | Reserved |
| 1Ah | Reserved |
| 1Bh | Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR. |
| 1Ch | Reserved |
| 1Dh | Initial EARLY_PM_INIT switch. |
| 1Eh | Reserved |
| 1Fh | Load keyboard matrix (notebook platform) |
| 20h | Reserved |
| 21h | HPM initialization (notebook platform) |
| 22h | Reserved |

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| POST (hex) | Description |
|---|---|
| 23h | 1. Check validity of RTC value:e.g. a value of 5Ah is an invalid value for RTC minute.<br>2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.<br>3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.<br>4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots.<br>5. Early PCI initialization:<br>- Enumerate PCI bus number<br>- Assign memory & I/O resource<br>- Search for a valid VGA device & VGA BIOS, and put it into C000:0. |
| 24h | Reserved |
| 25h | Reserved |
| 26h | Reserved |
| 27h | Initialize INT 09 buffer |
| 28h | Reserved |
| 29h | 1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU.<br>3. Program early chipset according to CMOS setup.<br>4. Measure CPU speed.<br>5. Invoke video BIOS. |
| 2Ah | Reserved |
| 2Bh | Reserved |
| 2Ch | Reserved |
| 2Dh | 1. Initialize multi-language<br>2. Put information on screen display, including Award title, CPU type, CPU speed …. |
| 2Eh | Reserved |
| 2Fh | Reserved |
| 30h | Reserved |
| 31h | Reserved |
| 32h | Reserved |
| 33h | Reset keyboard except Winbond 977 series Super I/O chips. |
| 34h | Reserved |

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| POST (hex) | Description |
|---|---|
| 35h | Test DMA Channel 0 |
| 36h | Reserved |
| 37h | Test DMA Channel 1 |
| 39h | Test DMA Page Registers |
| 3Ah | Reserved |
| 38h | Reserved |
| 3Bh | Reserved |
| 3Ch | Test 8254 Channel 2 |
| 3Dh | Reserved |
| 3Eh | Test 8259 interrupt mask bits for channel 1. |
| 3Fh | Reserved |
| 40h | Test 8259 interrupt mask bits for channel 2. |
| 41h | Reserved |
| 42h | Reserved |
| 43h | Test 8259 functionality. |
| 44h | Reserved |
| 45h | Reserved |
| 46h | Reserved |
| 47h | Initialize EISA slot |
| 48h | Reserved |
| 49h | 1. Calculate total memory by testing the last double word of each 64K page.<br>2. Program writes allocation for AMD K5 CPU. |
| 4Ah | Reserved |
| 4Bh | Reserved |
| 4Ch | Reserved |
| 4Dh | Reserved |
| 4Eh | 1. Program MTRR of M1 CPU2.<br>2.Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range.<br>3. Initialize the APIC for P6 class CPU.<br>4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical. |

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| POST (hex) | Description |
|---|---|
| 4Fh | Reserved |
| 50h | Initialize USB |
| 51h | Reserved |
| 52h | Test all memory (clear all extended memory to 0) |
| 53h | Reserved |
| 54h | Reserved |
| 55h | Display number of processors (multi-processor platform) |
| 56h | Reserved |
| 57h | 1. Display PnP logo<br>2. Early ISA PnP initialization<br>3. Assign CSN to every ISA PnP device. |
| 58h | Reserved |
| 59h | Initialize the combined Trend Anti-Virus code. |
| 5Ah | Reserved |
| 5Bh | Test EISA available memory |
| 5Ch | Reserved |
| 5Dh | 1. Initialize Init_Onboard_Super_IO switch.<br>2. Initialize Init_Onbaord_AUDIO switch. |
| 5Eh | Reserved |
| 5Fh | Reserved |
| 60h | Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility. |
| 61h | Reserved |
| 62h | Reserved |
| 63h | Reserved |
| 64h | Reserved |
| 65h | Initialize PS/2 Mouse |
| 66h | Reserved |
| 67h | Prepare memory size information for function call: INT 15h ax=E820h |
| 68h | Reserved |
| 69h | Turn on L2 cache |
| 6Ah | Reserved |

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| POST (hex) | Description |
|---|---|
| 6Bh | Program chipset registers according to items described in Setup & Auto-configuration table. |
| 6Ch | Reserved |
| 6Dh | 1. Assign resources to all ISA PnP devices.<br>2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO". |
| 6Eh | Reserved |
| 6Fh | 1. Initialize floppy controller<br>2. Set up floppy related fields in 40:hardware. |
| 70h | Reserved |
| 71h | Reserved |
| 72h | Reserved |
| 73h | Initialize fixed disk controller |
| 74h | Reserved |
| 75h | Detect & install all IDE devices: HDD, LS120, ZIP, CDROM….. |
| 76h | Reserved |
| 77h | Detect serial ports & parallel ports. |
| 78h | Reserved |
| 79h | Reserved |
| 7Ah | Detect & install co-processor |
| 7Bh | Reserved |
| 7Ch | Reserved |
| 7Dh | Reserved |
| 7Eh | Reserved |
| 7Fh | Switch back to text mode if full screen logo is supported.<br>- If errors occur, report errors & wait for keys<br>- If no errors occur or F1 key is pressed to continue: Clear EPA or customization logo. |
| 80h | Reserved |
| 81h | Reserved |
| 82h | 1. Call chipset power management hook.<br>2. Recover the text fond used by EPA logo (not for full screen logo)<br>3. If password is set, ask for password. |
| 83h | Save all data in stack back to CMOS |

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| POST (hex) | Description |
|---|---|
| 84h | Initialize ISA PnP boot devices |
| 85h | 1. USB final Initialization<br>2. NET PC: Build SYSID structure<br>3. Switch screen back to text mode<br>4. Set up ACPI table at top of memory.<br>5. Invoke ISA adapter ROMs<br>6. Assign IRQs to PCI devices<br>7. Initialize APM<br>8. Clear noise of IRQs. |
| 86h | Reserved |
| 87h | Reserved |
| 88h | Reserved |
| 89h | Reserved |
| 90h | Reserved |
| 91h | Reserved |
| 92h | Reserved |
| 93h | Read HDD boot sector information for Trend Anti-Virus code |
| 94h | 1. Enable L2 cache<br>2. Program boot up speed<br>3. Chipset final initialization.<br>4. Power management final initialization<br>5. Clear screen & display summary table<br>6. Program K6 write allocation<br>7. Program P6 class write combining |
| 95h | 1. Program daylight saving<br>2. Update keyboard LED & typematic rate |
| 96h | 1. Build MP table<br>2. Build & update ESCD<br>3. Set CMOS century to 20h or 19h<br>4. Load CMOS time into DOS timer tick<br>5. Build MSIRQ routing table. |
| FFh | Boot attempt (INT 19h) |

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# 5 Driver Installation

This chapter describes the installation procedure for all device drivers for the NuPRO-795 running Windows 2000/XP.

## 5.1 VIA Hyperion 4in1 Drivers

The VIA Hyperion 4in1 drivers includes four system drivers to improve performance and maintain stability of systems using VIA chipsets. These four drivers are:

- VIA Registry (INF) Driver
- VIA AGP VxD driver
- VIA ATAPI Vendor Support Driver
- VIA PCI IRQ Miniport Driver

The VIA Hyperion 4in1 drivers automatically detect your operating system and will install only the necessary drivers. The driver features are as follows:

- VIA IDE Bus Master Driver: For Windows NT users, the VIA IDE Bus Mastering driver is the only driver that will be installed on your system.
- VIA Registry (INF) Driver will be installed. The driver will enable the VIA Power Management function.
- VIA AGP Vxd Driver will provide service routines for your VGA driver and interface directly to hardware, providing fast graphical access.
- The IDE Filter driver enables the performance enhancing bus mastering functions of ATA-capable hard disk drives and ensures IDE device compatibility (also known as the ATAPI Vendor Support Driver).

### Installation Procedure

1. Operating System Requirements: Windows 2000/XP must be fully installed and running on the system prior to installing drivers.
2. Close any running applications.

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3. On the ADLINK All-in-One CD, navigate to **X:\NuPRO\NuPRO-795\Chipset** (where X: is the location of the CD-ROM drive), and run **VIAHyperion4in1453v.EXE**.
4. Bypass the *Welcome* dialog by clicking **Next**.
5. The *readme* file will appear, which contains similar information to this installation guide. Click **Yes** to continue.
6. Keep the default setup and click *Enable Normal Installation* in *Setup Mode Option*. Click **Next** to continue.
7. Keep the default setup that selects all three items *VIA PCI IDE Bus Driver*, *AGP Driver (AGP 3.0 Supported)*, and *VIA INF Driver 2.00a* in *Setup Mode Option*. Click **Next** to continue.
8. Keep the default setup that selects *Install VIA PCI IDE Bus Driver on VIA PCI IDE Bus Driver 1.2a*, then click **Next** to continue.
9. Keep the default setup that selects *Install AGP driver on VIA GART AGP Driver 4.42b*, then click **Next** to continue.
10. The Hyperion 4in1 drivers will automatically detect which drivers you need and will tick the boxes corresponding to the necessary drivers. It is recommended that you leave these boxes as they appear, unless you are an advanced user. Click Next.
11. You will be presented with a window that reads:

    > Set up has finished copying files to your computer. Before you can use the program you must restart Windows or your computer. *Yes I want to restart my computer now* (ticked by default).

    Remove any disks from your drives and then click **Finish** to complete the installation.
12. Your computer will restart itself and the installation process is complete.

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## 5.2 VGA Driver

This section provides information on how to install the VGA driver that comes on the ADLINK All-in-One CD. Please follow the instructions set forth in this section carefully. Note that the appropriate operating system must be installed on your system before you can install the VGA driver.

The following section describes the display driver installation procedure for Windows 2000/XP.

### Installation Procedure

1. Boot Windows 2000/XP.
2. The driver is included on the ADLINK All-in-One CD. Run **SETUP.exe** in the following directory: **X:\NuPRO\NuPRO-795\VGA\Setup** (where X: is the location of the CD-ROM drive).
3. Click **Next** on the *Welcome screen* to read and agree to the license agreement.
4. Click **Yes** if you agree to continue. (NOTE: If you click **No**, the program will terminate.)
5. Click **Yes** to restart your computer to allow the new settings to take effect.
6. Follow the screen instructions and use default settings to complete setup when Windows 2000/XP restarts.

## 5.3 Realtek RTL8139CL+ Ethernet Controller

This chapter describes the LAN driver installation for the RTL8139CL+ onboard Ethernet controller. The relevant drivers are in the following directory on the ADLINK All-in-One CD: **X:\NuPRO\NuPRO-795\LAN** (where X: is the location of the CD-ROM drive).

In the following section, we will describe the LAN driver installation for Windows 2000/XP.

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### Installation Procedure

Although Windows 2000/XP may automatically install a LAN driver, to ensure compatibility we recommend that you manually install the most up-to-date driver which is included on the ADLINK All-in-One CD. After installing Windows 2000, please update to the new driver using the following procedure.

1. Boot Windows 2000/XP, click **Start**, select **Settings**, and then double-click **Control Panel**.
2. Double-click the **System** icon, click the **Hardware** tab, and click the **Device Manager** button.
3. Double-click **Network Adapters**, then double-click the **Realtek RTL 8139C+ PCI Fast Ethernet Adapter** entry.
4. Click the **Driver** tab, then click the **Update Driver** button.
5. An *Upgrade Device Driver Wizard* will appear. Click **Next**.
6. Select **Display a list of …** and click **Next**. The next window may show a list of hardware models.
7. Insert the ADLINK All-in-One CD and click **Have Disk**.
8. Browse to the RTL-8139C+ driver in the following path: **X:\NuPRO\NuPRO-795\LAN\Win2000**. Select **Netrts5.inf**, click **Open**, then click **OK**.
9. Select **Realtek RTL8139CL+ PCI Fast Ethernet Adapter,** then click **Next**. An *Update Driver Warning* window may pop up, click **Yes** to continue.
10. Click **Next** when the *Wizard Summary* window appears.
11. Click the **Finish** button, then click the **Close** button.

## 5.4 Audio Driver

This section describes the Audio driver installation for the Avance AC'97 onboard Audio controllers. The relevant driver is located in the following directory on the ADLINK All-in-One CD: **X:\NuPRO\NuPRO-795\Audio**.

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The following section describes the display driver installation procedure for Windows 2000/XP.

## Installation Procedure

1. Boot Windows 2000/XP.
2. Locate the directory **X:\NuPRO\NuPRO-795\Audio** on the CD-ROM, and run **wdm_a362.exe**.
3. Click **Next** on the *Welcome* screen, and then click **Next** to continue driver installation.
4. Finally, click **Finish** to re-start.

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# 6 Watchdog Timer

The NuPRO-795 includes a watchdog timer (WDT) that consists of a one-second resolution down counter. Once a value is written to the WDT, the timer automatically starts to count down. If the counter ever reaches zero before the software restarts it, the software is presumed to be malfunctioning and the processor's RESET signal is asserted.

The watchdog function can be enabled or disabled by setting the control register at I/O port 440h and 443h.

| Status | Action |
|---|---|
| Enable / Refresh the Watchdog Timer | Write timeout value to address 440h |
| Disable the Watchdog Timer. | Read 443h |

### Programming Examples:

**Enable Watchdog Timer:**

Write Timeout value to I/O port 440h

```
mov dx, 440
mov al, <0~255>
out dx, al
```

**Disable Watchdog Timer:**

Write and Value to I/O port 443h

```
mov dx, 443h
mov al, 1<0-255>
out dx, al
```

| Value | Timeout |
|---|---|
| 0 | None |
| 1 | 1 sec |
| 2 | 2 sec |
| 3 | 3 sec |
| 4 | 4 sec |
| 5 | 5 sec |
| 6 | 6 sec |
| 7 | 7 sec |
| 8 | 8 sec |
| 9 | 9 sec |
| A | 10 sec |
| B | 11 sec |
| C | 12 sec |
| D | 13 sec |
| E | 14 sec |
| F | 15 sec |
| … | … |
| FF | 255 sec |

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# Warranty Policy

Thank you for choosing ADLINK. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ADLINK's products please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form which can be downloaded from: http://rma.adlinktech.com/policy/.
2. All ADLINK products come with a two-year guarantee:

   ▶The warranty period starts from the product's shipment date from ADLINK's factory.

   ▶Peripherals and third-party products not manufactured by ADLINK will be covered by the original manufacturers' warranty.

   ▶For products containing storage devices (hard drives, flash cards, etc.), please back up your data before sending them for repair. ADLINK is not responsible for loss of data.

   ▶Please ensure the use of properly licensed software with our systems. ADLINK does not condone the use of pirated software and will not service systems using such software. ADLINK will not be held legally responsible for products shipped with unlicensed software installed by the user.

   ▶For general repairs, please do not include peripheral accessories. If peripherals need to be included, be certain to specify which items you sent on the RMA Request & Confirmation Form. ADLINK is not responsible for items not listed on the RMA Request & Confirmation Form.

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3. Our repair service is not covered by ADLINK's two-year guarantee in the following situations:

   ▶Damage caused by not following instructions in the user's manual.

   ▶Damage caused by carelessness on the user's part during product transportation.

   ▶Damage caused by fire, earthquakes, floods, lightening, pollution, other acts of God, and/or incorrect usage of voltage transformers.

   ▶Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals).

   ▶Damage caused by leakage of battery fluid during or after change of batteries by customer/user.

   ▶Damage from improper repair by unauthorized technicians.

   ▶Products with altered and/or damaged serial numbers are not entitled to our service.

   ▶Other categories not protected under our warranty.

4. Customers are responsible for shipping costs to transport damaged products to our company or sales office.

5. To ensure the speed and quality of product repair, please download an RMA application form from our company website: http://rma.adlinktech.com/policy. Damaged products with attached RMA forms receive priority.

If you have any further questions, please email our FAE staff: service@adlinktech.com.

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