

CI5TTV Series
Full-Size Pentium PCI CPU Card
Version 1.1B

Industrial CPU Card
PC-Based Computer Boards for Industrial Automation
User's Manual

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CI5TTV Series Comparison Table

| Model | CI5TTV | CI5TT |
|---------------------------------------|---|---|
| Processor | Intel Pentium (P54C, P55C/MMX) Cyrix 6x86, 6x86L, 6x86MX AMD K5, K6 | Intel Pentium (P54C, P55C/MMX) Cyrix 6x86, 6x86L, 6x86MX AMD K5, K6 |
| Processor Socket | ZIF Socket | ZIF Socket 7 |
| Chipset | Intel 430TX | Intel 430TX |
| Multi I/O Chip | SMC 37C669 | SMC 37C669 |
| BIOS | Award | Award |
| L2 cache | 512KB P.B. SRAM | 512KB P.B. SRAM |
| Max. RAM | 256MB FPM/EDO | 256MB FPM/EDO |
| Memory Sockets | 4 x 72-pin SIMMs | 4 x 72-pin SIMMs |
| VGA CRT/LCD | C&T 65550 | None |
| Watchdog Timer | 16-level | 16-level |
| PC/104 Connector | yes | yes |
| Enhanced IDE | yes | yes |
| 2S/1P | yes | yes |
| USB | yes | yes |
| IrDA | yes | yes |
| CPU Digital Temperature Sensor (LM75) | yes | yes |
| Board Size | 338mm x 124mm | 338mm x 124mm |

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1

Introduction

This manual is designed to give you information on the CI5TTV CPU card. It is divided into the following sections:

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The topics covered in this chapter are as follows:

- ◆ Checklist
- ◆ Description
- ◆ Features
- ◆ Specifications
- ◆ Layout of Key Components and Dimensions

Checklist

Please check that your package is complete and contains the items below. If you discover damaged or missing items, please contact your dealer.

- The CI5TTV Industrial CPU Card
- This User's Manual
- 1 IDE Ribbon Cable
- 1 Floppy Ribbon Connector
- 1 Serial Port Ribbon Cable and 1 Parallel Port Attached to a Mounting Bracket
- 1 PS/2 mouse cable
- 1 Diskette Containing Intel PCI IDE Driver and Flash Memory Utility
- 1 Diskette Containing C&T 65550 VGA Driver

Description

The CI5TTV is a PCI Pentium Industrial CPU card based on Intel's 430TX chipset and is fully designed for harsh industrial environment. It features ZIF Socket 7 compatible with various processors from Intel, AMD and Cyrix. This card accommodates up to 256MB of DRAMs in FPM or EDO configurations and a secondary level 512KB cache.

The CI5TTV comes with onboard CPU temperature sensor to protect your processor from overheating. The power management feature provides power savings by slowing down the CPU clock, turning off the monitor screen and stopping the HDD spindle motor.

Features

- CPU Speed 90~233MHz, Intel P54C, P55C/MMX, Cyrix 6x86, 6x86L, 6x86MX, AMD K5, K6
- Intel 430TX PCIset
- Up to 256MB system memory
- Onboard VGA CRT/LCD
- 16 level programmable watchdog timer
- High speed bi-directional SPP/ECP/EPP parallel port
- PC/104 connector
- CPU Temperature monitoring and alert (LM75)
- Auto fan off

Specifications

- **Processor Socket:** ZIF Socket 7
- **Processor:**
 - Intel Pentium/P55C 90/100/120/133/150/166/200/233
 - Cyrix 6x86/6x86L P150+/P166+
 - Cyrix 6x86MX-166/180/200
 - AMD K5 PR90/PR100/PR133/PR166
 - AMD K6-166/200/233/266/300
 - AMD K6/2-300/333/366/400
- **Chipset:** Intel 430TX PCIset with built-in PCI EIDE
- **Secondary Cache:** 512KB P.B. SRAM
- **Memory:** Up to 256MB FPM/EDO DRAM
- **Memory Sockets:** Four 72-pin SIMM sockets for DRAMs in 4MB, 8MB, 16MB, 32MB and 64MB configurations.
- **BIOS:** Award BIOS, PnP support
 - FLASH EEPROM (128KB) for BIOS update
 - ISA Plug and Play (PnP) extension
 - Power management

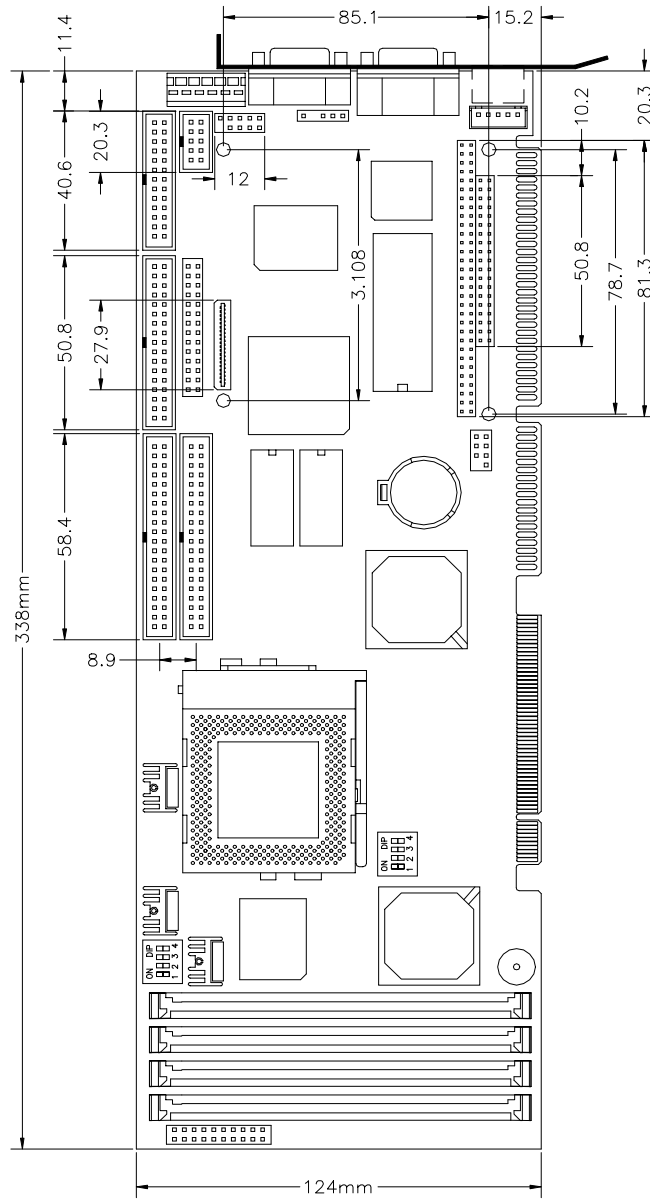
- **Multi I/O:** SMC 37C669 chipset
- **Parallel Port:** One high-speed parallel port, SPP/EPP/ECP mode
- **Serial Port:** Two 16550 UART compatible RS232/422/485 ports
- **Enhanced IDE:** Two Bus Mastering EIDE mode, up to 4 devices, Two EIDE interfaces for up to four devices, support PIO Mode 3/4 or Ultra DMA/33 IDE Hard Disk and ATAPI CD-ROM.
- **FDD Interface:** Two floppy drives (360KB, 720KB, 1.2MB, 1.44MB, 2.88MB, LS-120)
- **USB Interface:** Two USB pin-header connectors, compliant with USB Specification Rev. 1.0
- **Watchdog Timer:** 16-level, programmable
 - I/O port 0443H to enable watchdog.
 - I/O port 0441H to disable watchdog.
 - Time-out timing select 0/2/4/6/8/10/12/14/16/18/20/22/24/26/28/30 seconds (+/-20%).
- **Green Function:** Power management via BIOS, activated through mouse/keyboard movement
- **Keyboard Connector:** PC/AT type mini-DIN and 5-pin external keyboard connectors
- **IrDA Interface:** Pin-header connector for the optional IrDA external connector
- **VGA Display:**
 - C&T 65550 VGA chip on board
 - SVGA for CRT & Panel
 - 32-bit PCI local bus
 - VGA BIOS with 128KB flash ROM and system BIOS
 - 15-pin connector
 - 1024x768 (256 colors) resolution on SVGA(1MB memory)
 - 41-pin connector for LCD panel, 640 x 480 resolution
 - LCD panel supports monochrome, color STN, TFT, EL
 - Simultaneous VGA and panel display

- **Environmental and Mechanical:**
 - **Power Supply:** 3.5A @+5V
 - **Temperature:** 0°C to 60°C
 - **Humidity:** 5% to 95%
 - **Dimensions:** 338mm x 124mm

Intelligence

- **CPU Slow Down:** When system overheat is detected, CPU slows down to prevent CPU damage. The CPU speed is restored when temperature falls to a safe level. System overheat is usually caused by malfunctioning of the CPU or system fan.
- **Auto Fan Off:** To reduce energy consumption and system noise, the system fan automatically powers off during **sleep mode**.
- **Temperature Monitoring and Alert:** A sensor for the CPU temperature on the CI5TTV monitors the CPU temperature and alerts the user through the speaker when temperature exceeds the safe heat level.

Board Dimensions and Layout



2

Installations

This chapter provides information on how to use the jumpers and connectors on the CI5TTV in order to set up a workable system. The topics covered are:

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CPU Installation

The CISTTV Industrial CPU Card supports a ZIF processor socket for Pentium-level processors.

Unlike PGA sockets, ZIF (Zero Insertion Force) sockets come with a lever to secure the processor. Make sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket.

After you have installed the processor into the ZIF socket, check if the jumpers for the CPU type and speed are correct.

NOTE: Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.

Memory Installation

The CI5TTV Industrial CPU Card supports four 72-pin SIMM sockets for a maximum total memory of 256MB. The DRAMs (5Volts) for the SIMM sockets can be 4MB, 8MB, 16MB, 32MB, and 64MB in EDO and FPM types.

The following should be noted when populating the SIMM sockets:

1. SIMM1/SIMM2 and SIMM3/SIMM4 should consist of the same size SIMMs.
2. SIMM1/SIMM2 and SIMM3/SIMM4 should consist of the same type SIMMs. For example, *SIMM1 and SIMM2 are both be EDO or Page Mode.*
2. Either SIMM1/SIMM2 or SIMM3/SIMM4 can be populated first.

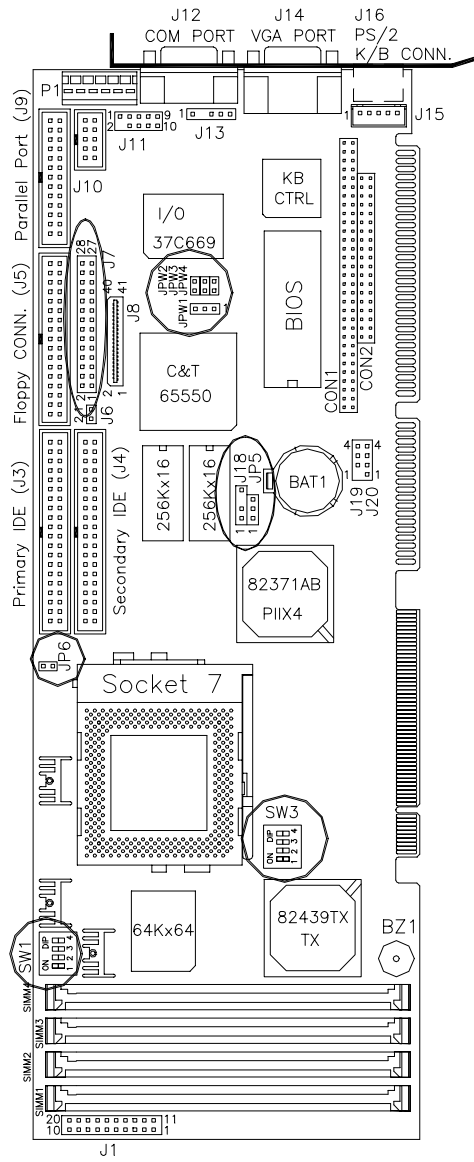
| (SIMM1, SIMM2) | (SIMM3, SIMM4) | Total Memory |
|----------------|----------------|--------------|
| 4MB×2 | | 8MB |
| 8MB×2 | | 16MB |
| 16MB×2 | | 32MB |
| 32MB×2 | | 64MB |
| 64MB×2 | | 128MB |
| 4MB×2 | 4MB×2 | 16MB |
| 8MB×2 | 4MB×2 | 24MB |
| 16MB×2 | 4MB×2 | 40MB |
| 32MB×2 | 4MB×2 | 72MB |
| 8MB×2 | 8MB×2 | 32MB |
| 16MB×2 | 8MB×2 | 48MB |
| 32MB×2 | 8MB×2 | 80MB |
| 16MB×2 | 16MB×2 | 64MB |
| 32MB×2 | 16MB×2 | 96MB |
| 32MB×2 | 32MB×2 | 128MB |
| 64MB×2 | 64MB×2 | 256MB |

Jumpers on the CI5TTV

The jumpers on the CI5TTV allow you to configure your CPU card according to the needs of your applications. If you have doubts about the best jumper configuration for your needs, contact your dealer or sales representative. The following table lists the connectors on CI5TTV and their respective functions.

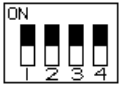
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Jumper Locations on the CI5TTV



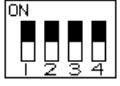


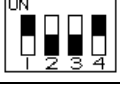





SW1 (1-4): CPU Voltage Selector





For Single Voltage CPU**: Intel P54C, Cyrix 6x86, AMD K5

| VIO | VCORE | SW1 (1-4) | Switch Setting |
|------|-------|---|------------------------|
| 3.5V | 3.5V |  | 1 2 3 4 on on on on |

**Default


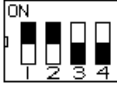

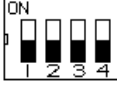





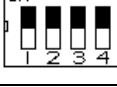


Dual Voltage CPU: Intel P55C/MMX, Cyrix 6x86L/MX, AMD K6




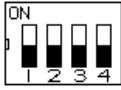
| VIO | VCORE | CPU | SW1 (1-4) | Switch Setting |
|------|-------|------------------|---|---------------------------|
| 3.3V | 3.5V | |  | 1 2 3 4 on on on on |
| 3.3V | 3.2V | K6-233 |  | 1 2 3 4 off off on on |
| 3.3V | 3.0V | |  | 1 2 3 4 off on off on |
| 3.3V | 2.9V | K6-166 K6-200 |  | 1 2 3 4 on off off on |
| 3.3V | 2.8V | P55C 6x86L |  | 1 2 3 4 off off off on |
| 3.3V | 2.7V | |  | 1 2 3 4 on on on off |
| 3.3V | 2.6V | |  | 1 2 3 4 off on on off |
| 3.3V | 2.5V | |  | 1 2 3 4 on off on off |
| 3.3V | 2.4V | |  | 1 2 3 4 off off on off |

| | | | | |
|------|------|----------------------------|---|----------------------------|
| 3.3V | 2.3V | |  | 1 2 3 4 on on off off |
| 3.3V | 2.2V | K6-266/300/ 333/366/400 |  | 1 2 3 4 off on off off |
| 3.3V | 2.1V | |  | 1 2 3 4 on off off off |
| 3.3V | 2.0V | |  | 1 2 3 4 off off off off |








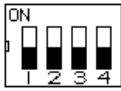

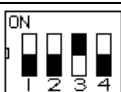



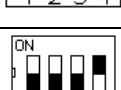




JP6, SW3 (1-4):CPU Frequency Selector

For Intel Pentium CPU











| CPU FREQ. | Bus Clock Multiplier | JP6 | SW3 (1-4) | Switch Setting |
|-------------------|----------------------|---|---|----------------------------|
| P54C-90 | 60MHz 1.5x |  OPEN |  | 1 2 3 4 on on off off |
| P54C-100 | 66MHz 1.5x |  OPEN |  | 1 2 3 4 off off off off |
| P54C-120 | 60MHz 2x |  OPEN |  | 1 2 3 4 on on on off |
| P54C-133 | 66MHz 2x |  OPEN |  | 1 2 3 4 off off on off |
| P54C-150 | 60MHz 2.5x |  OPEN |  | 1 2 3 4 on on on on |
| P54C/P55 C-166 | 66MHz 2.5x |  OPEN |  | 1 2 3 4 off off on on |

| | | | | |
|-------------------|---------------|---|---|----------------------------|
| P54C/P55 C-200 | 66MHz 3x |  OPEN |  | 1 2 3 4 off off off on |
| P55C-233 | 66MHz 3.5x |  OPEN |  | 1 2 3 4 off off off off |

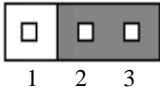
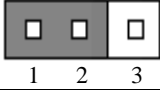
For AMD K5/K6/K6-2 CPU

| CPU FREQ. | Bus Clock Multiplier | JP6 | SW3 (1-4) | Switch Setting |
|--------------------------------|-------------------------|--|---|----------------------------|
| K5-PR133 (133MHz) | 66MHz 1.5x |  OPEN |  | 1 2 3 4 off off on off |
| K5-PR166 (166MHz) K6-166 | 66MHz 1.75x |  OPEN |  | 1 2 3 4 off off on on |
| K6-200 | 66MHz 3x |  OPEN |  | 1 2 3 4 off off off on |
| K6-233 | 66MHz 3.5x |  OPEN |  | 1 2 3 4 off off off off |
| K6-266 | 66MHz 4x |  SHORT |  | 1 2 3 4 off off on off |
| K6-300 | 66MHz 4.5x |  SHORT |  | 1 2 3 4 off off on on |
| K6/2-333 | 66MHz 5x |  SHORT |  | 1 2 3 4 off off off on |
| K6/2-366 | 66MHz 5.5x |  SHORT |  | 1 2 3 4 off off off off |
| K6/2-400 | 66MHz 6x |  OPEN |  | 1 2 3 4 off off on off |

For Cyrix CPU

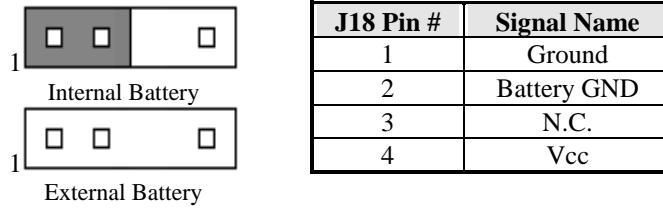
| CPU FREQ. | Bus Clock Multiplier | JP6 | SW3 (1-4) | Switch Setting |
|-------------------------------|----------------------|---|--|---------------------------|
| 6x86(L)-P 150+ (120MHz) | 60MHz 2x |  OPEN |  | 1 2 3 4 on on on off |
| 6x86(L)-P 166+ (133MHz) | 66MHz 2x |  OPEN |  | 1 2 3 4 off off on off |
| 6x86MX-P R166 | 60MHz 2.5x |  OPEN |  | 1 2 3 4 on on on on |
| 6x86MX-P R200 | 66MHz 2.5x |  OPEN |  | 1 2 3 4 off off on on |
| 6x86MX-P R233 | 66MHz 3x |  OPEN |  | 1 2 3 4 off off off on |

JP5: Clear CMOS Content

| JP5 | Setting | Function |
|--|-------------------------|--------------------|
|  1 2 3 | Pin 2-3 Short/Closed | Clear CMOS Content |
|  1 2 3 | Pin 1-2 Short/Closed | Normal Operation |

J18: External Battery Connector

This 4-pin connector allows the user to connect an external battery to maintain the information stored in the CMOS RAM in case the built-in battery malfunctions. The default is set to Internal Battery with a jumper connecting pin 1 and pin 2.



JPW1: LCD Panel Interface Selection

| JPW1 | Setting | Function |
|--------------|-------------------------|----------------|
| <p>1 2 3</p> | Pin 1-2 Short/Closed | 3.3V |
| <p>1 2 3</p> | Pin 2-3 Short/Closed | 5.5V (default) |

J7, JPW2/3/4: RS232/422/485 (COM2) Selection

COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.

The following table describes the jumper settings of this connector.

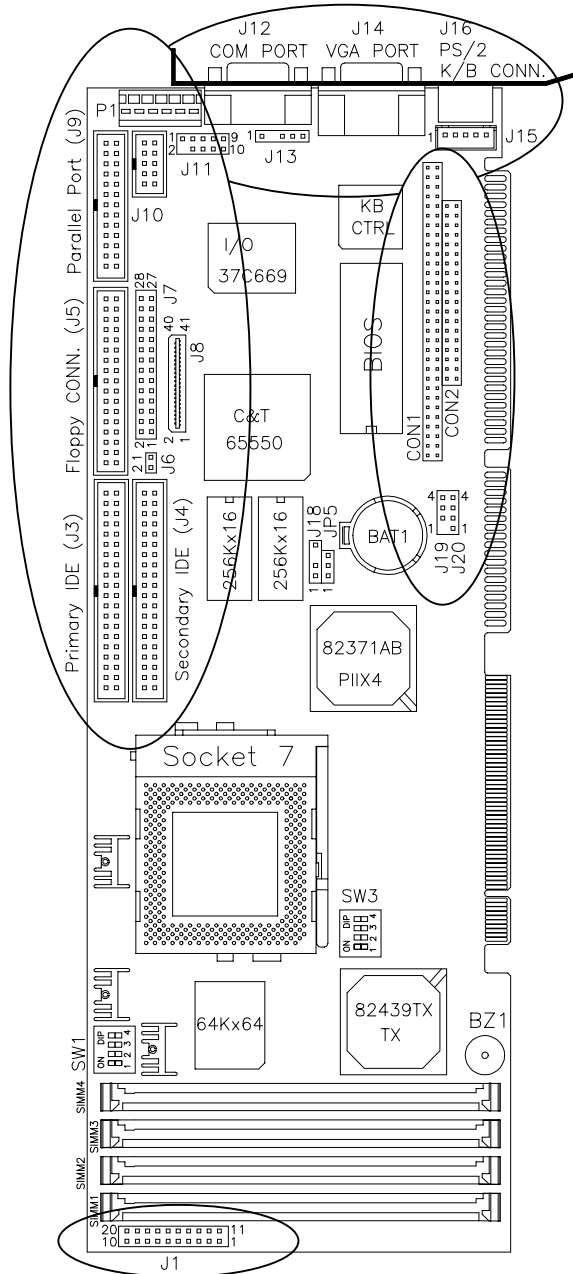
| COM2 Function | RS-232 | RS-422 | RS-485 |
|---------------------------------------|---|--|---|
| J7 Jumper Setting (pin closed) | 1-3 2-4 7-8 9-10 11-12 13-14 15-16 17-18 | 3-5 4-6 23-25 27-28 | 3-5 4-6 19-20 21-22 23-25 24-26 27-28 |
| J7 Jumper Illustration | <p style="text-align: center;">J7</p> | <p style="text-align: center;">J7</p> | <p style="text-align: center;">J7</p> |
| COM2 Function | RS-232 | RS-422 | RS-485 |
| JPW2 | OPEN | SHORT | SHORT |
| JPW3 | OPEN | SHORT | SHORT |
| JPW4 | OPEN | SHORT | OPEN |

Connectors on the CI5TTV

The connectors on the CI5TTV allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on CI5TTV and their respective functions.

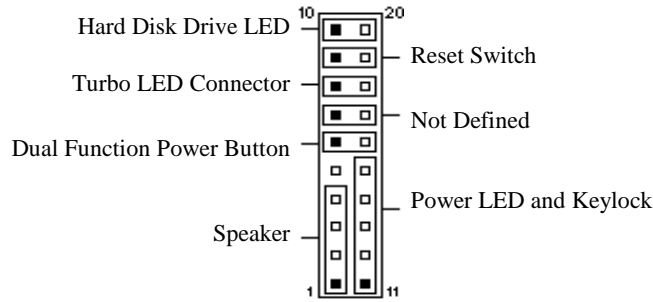
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|---|----|
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| J5: Floppy Drive Connector | 23 |
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| J11: PS/2 Mouse Connector | 27 |
| J12: COM2 Serial Port | 27 |
| J13: IrDA Connector | 27 |
| J14: VGA CRT Connector | 28 |
| J15: External Keyboard Connector | 28 |
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Connector Locations on the CI5TTV



J1: Front Bezel Connector

The front bezel of the case has a control panel which provides light indication of the computer activities and switches to change the computer status. J1 is a 20-pin header that provides interfaces for the following functions.



Speaker: Pins 1 - 4

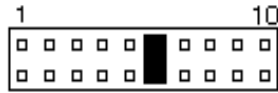
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



| J1 Pin # | Signal Name |
|----------|-------------|
| 1 | Speaker out |
| 2 | No connect |
| 3 | Ground |
| 4 | +5V |

Green Function: Pins 6 and 16

This connector is for the “Green Switch” on the control panel, which, when pressed, will force the motherboard immediately into the power saving (sleep) mode.



| J1 Pin # | Signal Name |
|----------|-------------|
| 6 | Sleep |
| 16 | Ground |

Power LED and Keylock: Pins 11 - 15

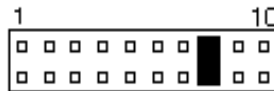
The power LED indicates the status of the main power switch. The keylock switch, when closed, will disable the keyboard function.



| J1 Pin # | Signal Name |
|----------|-------------|
| 11 | Power LED |
| 12 | No connect |
| 13 | Ground |
| 14 | Keylock |
| 15 | Ground |

Turbo LED Connector: Pins 8 and 18

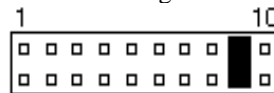
There is no turbo/deturbo function on the CPU card. The Turbo LED on the control panel will always be on when attached to this connector.



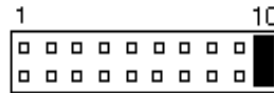
| J1 Pin # | Signal Name |
|----------|-------------|
| 8 | 5V |
| 18 | Ground |

Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning the main power switch off and then on. Orientation is not required when making a connection to this header.

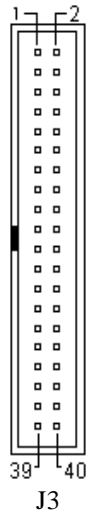
**Hard Disk Drive LED Connector: Pins 10 and 20**

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

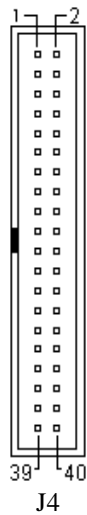


J3, J4: EIDE Connectors

J3 is the *primary* IDE connector and J4 is the *secondary* IDE connector.



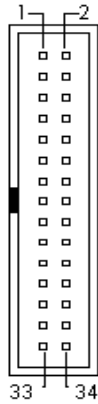
| Signal Name | Pin # | Pin # | Signal Name |
|---------------|-------|-------|---------------|
| Reset IDE | 1 | 2 | Ground |
| Host data 7 | 3 | 4 | Host data 8 |
| Host data 6 | 5 | 6 | Host data 9 |
| Host data 5 | 7 | 8 | Host data 10 |
| Host data 4 | 9 | 10 | Host data 11 |
| Host data 3 | 11 | 12 | Host data 12 |
| Host data 2 | 13 | 14 | Host data 13 |
| Host data 1 | 15 | 16 | Host data 14 |
| Host data 0 | 17 | 18 | Host data 15 |
| Ground | 19 | 20 | Key |
| DRQ0 | 21 | 22 | Ground |
| Host IOW | 23 | 24 | Ground |
| Host IOR | 25 | 26 | Ground |
| IOCHRDY | 27 | 28 | Host ALE |
| DACK0 | 29 | 30 | Ground |
| IRQ14 | 31 | 32 | No connect |
| Address 1 | 33 | 34 | No connect |
| Address 0 | 35 | 36 | Address 2 |
| Chip select 0 | 37 | 38 | Chip select 1 |
| Activity | 39 | 40 | Ground |



| Signal Name | Pin # | Pin # | Signal Name |
|---------------|-------|-------|---------------|
| Reset IDE | 1 | 2 | Ground |
| Host data 7 | 3 | 4 | Host data 8 |
| Host data 6 | 5 | 6 | Host data 9 |
| Host data 5 | 7 | 8 | Host data 10 |
| Host data 4 | 9 | 10 | Host data 11 |
| Host data 3 | 11 | 12 | Host data 12 |
| Host data 2 | 13 | 14 | Host data 13 |
| Host data 1 | 15 | 16 | Host data 14 |
| Host data 0 | 17 | 18 | Host data 15 |
| Ground | 19 | 20 | Key |
| DRQ0 | 21 | 22 | Ground |
| Host IOW | 23 | 24 | Ground |
| Host IOR | 25 | 26 | Ground |
| IOCHRDY | 27 | 28 | Host ALE |
| DACK1 | 29 | 30 | Ground |
| MIRQ0 | 31 | 32 | No connect |
| Address 1 | 33 | 34 | No connect |
| Address 0 | 35 | 36 | Address 2 |
| Chip select 0 | 37 | 38 | Chip select 1 |
| Activity | 39 | 40 | Ground |

J5: Floppy Drive Connector

J5 of the CI5TTV is a 34-pin header and will support up to 2.88MB floppy drives.



| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-----------------|
| Ground | 1 | 2 | RM/LC |
| Ground | 3 | 4 | No connect |
| Ground | 5 | 6 | No connect |
| Ground | 7 | 8 | Index |
| Ground | 9 | 10 | Motor enable 0 |
| Ground | 11 | 12 | Drive select 1 |
| Ground | 13 | 14 | Drive select 0 |
| Ground | 15 | 16 | Motor enable 1 |
| Ground | 17 | 18 | Direction |
| Ground | 19 | 20 | Step |
| Ground | 21 | 22 | Write data |
| Ground | 23 | 24 | Write gate |
| Ground | 25 | 26 | Track 00 |
| Ground | 27 | 28 | Write protect |
| Ground | 29 | 30 | Read data |
| Ground | 31 | 32 | Side 1 select |
| Ground | 33 | 34 | Diskette change |

J6: CPU Fan Power Connector

J6 is a 2-pin header for a CPU fan. The fan must be a 12V fan.

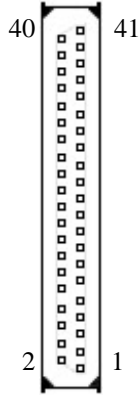


J6: CPU Fan Power Connector

| J6 Pin # | Signal Name |
|----------|-------------|
| 1 | +12V |
| 2 | Ground |

J8: LCD Panel Connector

J8 is a 41-pin (dual in line header) for flat panel LCD displays. The following shows the pin assignments of this connector.



| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| P20 | 1 | 2 | GND |
| P16 | 3 | 4 | VCC |
| P21 | 5 | 6 | P0 |
| P17 | 7 | 8 | P8 |
| P22 | 9 | 10 | P1 |
| P18 | 11 | 12 | P9 |
| P23 | 13 | 14 | P2 |
| P19 | 15 | 16 | P10 |
| VCC | 17 | 18 | P3 |
| FLM | 19 | 20 | P11 |
| MDE | 21 | 22 | P4 |
| LP | 23 | 24 | P12 |
| SHFCLK | 25 | 26 | P5 |
| 3.3V | 27 | 28 | P13 |
| 3.3V | 29 | 30 | P6 |
| ENABKL | 31 | 32 | P14 |
| LCDVDD | 33 | 34 | P7 |
| ENVEE | 35 | 36 | P15 |
| GND | 37 | 38 | +12V |
| GND | 39 | 40 | +12V |
| NC | 41 | | |

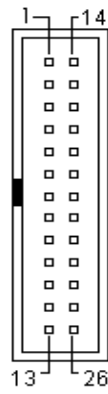
Flat Panel Display Interface Pin Descriptions

| 65550 | | Mono | Mono | Mono | Color | Color | Color | Color | Color | Color | Color | Color |
|-------|------------------|--------|--------|--------|----------------|--------------|--------------|-----------------|-----------------|----------------|-----------------|-----------|
| | | SS | DD | DD | TFT | TFT | TFT STN | STN SS | STN SS | STN DD | STN DD | STN DD |
| Pin# | Pin Name | 8-bit | 8-bit | 16-bit | 9/12/16 bit | 18/24 bit | 18/24 bit | 8-bit (X4bP) | 16-bit (4bP) | 8-bit (4bP) | 16-bit (4bP) | 24-bit |
| 71 | P0 | -- | UD3 | UD7 | B0 | B0 | B00 | R1 | R1 | UR1 | UR0 | UR0 |
| 72 | P1 | -- | UD2 | UD6 | B1 | B1 | B01 | B1 | G1 | UG1 | UG0 | UG0 |
| 73 | P2 | -- | UD1 | UD5 | B2 | B2 | B02 | G2 | B1 | UB1 | UB0 | UB0 |
| 74 | P3 | -- | UD0 | UD4 | B3 | B3 | B03 | R3 | R2 | UR2 | UR1 | LR0 |
| 75 | P4 | -- | LD3 | UD3 | B4 | B4 | B10 | B3 | G2 | LR1 | LR0 | LG0 |
| 76 | P5 | -- | LD2 | UD2 | G0 | B5 | B11 | G4 | B2 | LG1 | LG0 | LB0 |
| 78 | P6 | -- | LD1 | UD1 | G1 | B6 | B12 | R5 | R3 | LB1 | LB0 | UR1 |
| 79 | P7 | -- | LD0 | UD0 | G2 | B7 | B13 | B5 | G3 | LR2 | LR1 | UG1 |
| 81 | P8 | P0 | -- | LD7 | G3 | G0 | G00 | ShfClk | B3 | -- | UG1 | UB1 |
| 82 | P9 | P1 | -- | LD6 | G4 | G1 | G01 | -- | R4 | -- | UB1 | LR1 |
| 83 | P10 | P2 | -- | LD5 | G5 | G2 | G02 | -- | G4 | -- | UR2 | LG1 |
| 84 | P11 | P3 | -- | LD4 | R0 | G3 | G03 | -- | B4 | -- | UG2 | LB1 |
| 85 | P12 | P4 | -- | LD3 | R1 | G4 | G10 | -- | R5 | -- | LG1 | UR2 |
| 86 | P13 | P5 | -- | LD2 | R2 | G5 | G11 | -- | G5 | -- | LB1 | UG2 |
| 87 | P14 | P6 | -- | LD1 | R3 | G6 | G12 | -- | B5 | -- | LR2 | UB2 |
| 88 | P15 | P7 | -- | LD0 | R4 | G7 | G13 | -- | R6 | -- | LG2 | LR2 |
| 90 | P16 | -- | -- | -- | -- | R0 | R00 | -- | -- | -- | -- | LG2 |
| 91 | P17 | -- | -- | -- | -- | R1 | R01 | -- | -- | -- | -- | LB2 |
| 92 | P18 | -- | -- | -- | -- | R2 | R02 | -- | -- | -- | -- | UR3 |
| 93 | P19 | -- | -- | -- | -- | R3 | R03 | -- | -- | -- | -- | UG3 |
| 94 | P20 | -- | -- | -- | -- | R4 | R10 | -- | -- | -- | -- | UB3 |
| 95 | P21 | -- | -- | -- | -- | R5 | R11 | -- | -- | -- | -- | LR3 |
| 96 | P22 | -- | -- | -- | -- | R6 | R12 | -- | -- | -- | -- | LG3 |
| 97 | P23 | -- | -- | -- | -- | R7 | R13 | -- | -- | -- | -- | LB3 |
| 67 | FLM | FLM | FLM | FLM | FLM | FLM | FLM | FLM | FLM | FLM | FLM | FLM |
| 68 | LP | LP | LP | LP | LP | LP | LP | LP | LP | LP | LP | LP |
| 69 | MDE | M | M | M | M | M | M | M | M | M | M | M |
| 70 | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk | ShfClk |
| | Pixels/ Clock | 8 | 8 | 16 | 1 | 1 | 2 | 2-2/3 | 5-1/3 | 2-2/3 | 5-1/3 | 8 |

NOTE: The higher order output lines should be used when only 9 or 12 bits are needed from the 9/12/16-bit TFT interface, or when only 18 bits are needed from the 18/24-bit TFT or TFT HR interfaces. The lower order bits should be left unconnected.

J9: Parallel Port Connector

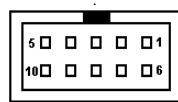
The following table describes the pin out assignments of this connector.



| 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 |

J10: COM2 Serial Port

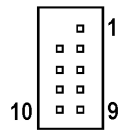
J10, a 10-pin header connector, is the onboard COM2 serial port of the CI5TTV. The following table shows the pin assignments of this connectors.



J10: COM2

| Pin # | Signal Name | | |
|-------|-------------|--------|--------|
| | RS-232 | R2-422 | RS-485 |
| 1 | DCD | TX- | DATA- |
| 2 | RX | TX+ | DATA+ |
| 3 | TX | RX+ | NC |
| 4 | DTR | RX | NC |
| 5 | GND | GND | GND |
| 6 | DSR | RTS- | NC |
| 7 | RTS | RTS+ | NC |
| 8 | CTS | CTS+ | NC |
| 9 | RI | CTS- | NC |
| 10 | NC | NC | NC |

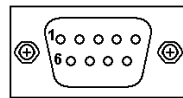
J11: PS/2 Mouse Connector



| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| | | 1 | N.C. |
| Mouse clock | 4 | 3 | N.C. |
| 5V | 6 | 5 | N.C. |
| N.C. | 8 | 7 | Mouse data |
| N.C. | 10 | 9 | GND |

J12: COM1 Serial Port

J12, a DB-9 connector, is an onboard serial port of the CI5TTV. The following table shows the pin assignments of this connector.

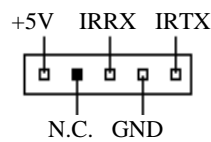


J12: COM1

| Pin # | Signal Name |
|-------|--------------------------|
| 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 |

J13: IrDA Connector

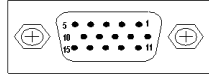
This connector is used for an IrDA connector for wireless communication.



| J13 Pin # | Signal Name |
|-----------|-------------|
| 1 | +5V |
| 2 | No connect |
| 3 | Ir RX |
| 4 | Ground |
| 5 | Ir TX |

J14: VGA CRT Connector

J14 is a 15-pin VGA CRT connector. The pin assignments are as follows:



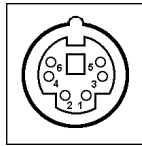
| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| Red | 1 | 2 | Green |
| Blue | 3 | 4 | N.C. |
| GND | 5 | 6 | GND |
| GND | 7 | 8 | GND |
| N.C. | 9 | 10 | GND |
| N.C. | 11 | 12 | N.C. |
| HSYNC | 13 | 14 | VSYNC |
| NC | 15 | | |

J15: External Keyboard Connector



| J15 Pin # | Signal Name |
|-----------|----------------|
| 1 | Keyboard clock |
| 2 | Keyboard data |
| 3 | PG |
| 4 | GND |
| 5 | Vcc |

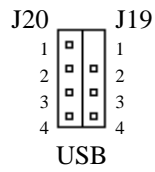
J16: Keyboard Connector



| J16 Pin # | Signal Name |
|-----------|----------------|
| 1 | Keyboard data |
| 2 | N.C. |
| 3 | GND |
| 4 | 5V |
| 5 | Keyboard clock |
| 6 | N.C. |

J19, J20: USB Connectors

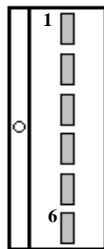
J19 and J20 are optional USB connectors. The following table shows the pin outs of these connectors.



| J20 Pin # | J19 Pin # | Signal Name |
|-----------|-----------|-------------|
| 1 | 1 | Vcc |
| 2 | 2 | USB- |
| 3 | 3 | USB+ |
| 4 | 4 | Ground |

P1: Power Connector

When using an AT compatible power supply, plug the power supply connectors into P1. Make sure the power supply connectors are connected in the right orientation. See the pin assignments below.

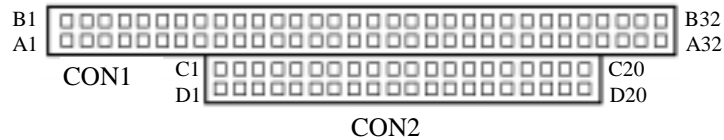


| P1 Pin# | Signal Name |
|---------|-------------|
| 1 | N.C. |
| 2 | +5V |
| 3 | +12V |
| 4 | -12V |
| 5 | GND |
| 6 | GND |

CON1, CON2: PC-104 Connector

CON1 and CON2 are dual-in-line pin headers that support PC-104 modules. CON1 consists of 64 pins and CON2 has 40 pins. The following table shows the their pin assignments.

| CON1 | | | | CON2 | | | |
|------|-------------|-----|-------------|------|-------------|-----|-------------|
| Pin | Signal Name | Pin | Signal Name | Pin | Signal Name | Pin | Signal Name |
| A1 | IOCHK | B1 | GND | C1 | GND | D1 | GND |
| A2 | D7 | B2 | REST | C2 | SBHE | D2 | MEMCS16 |
| A3 | D6 | B3 | VCC | C3 | LA23 | D3 | IOCS16 |
| A4 | D5 | B4 | IRQ9 | C4 | LA22 | D4 | IRQ10 |
| A5 | D4 | B5 | -5V | C5 | LA21 | D5 | IRQ11 |
| A6 | D3 | B6 | DRQ2 | C6 | LA20 | D6 | IRQ12 |
| A7 | D2 | B7 | -12V | C7 | LA19 | D7 | IRQ15 |
| A8 | D1 | B8 | OWS | C8 | LA18 | D8 | IRQ14 |
| A9 | D0 | B9 | +12V | C9 | LA17 | D9 | DACK0 |
| A10 | IOCHRDY | B10 | GND | C10 | MEMR | D10 | DRQ0 |
| A11 | AEN | B11 | SMEMW | C11 | MEMW | D11 | DACK5 |
| A12 | A19 | B12 | SMEMR | C12 | D8 | D12 | DRQ5 |
| A13 | A18 | B13 | IOW | C13 | D9 | D13 | DACK6 |
| A14 | A17 | B14 | IOR | C14 | D10 | D14 | DRQ6 |
| ZA15 | A16 | B15 | DACK3 | C15 | D11 | D15 | DACK7 |
| A16 | A15 | B16 | DRQ3 | C16 | D12 | D16 | DRQ7 |
| A17 | A14 | B17 | DACK1 | C17 | D13 | D17 | VCC |
| A18 | A13 | B18 | DRQ1 | C18 | D14 | D18 | MASTER |
| A19 | A12 | B19 | REFRESH | C19 | D15 | D19 | GND |
| A20 | A11 | B20 | CLK | C20 | KEY PIN | D20 | GND |
| A21 | A10 | B21 | IRQ7 | | | | |
| A22 | A9 | B22 | IRQ6 | | | | |
| A23 | A8 | B23 | IRQ5 | | | | |
| A24 | A7 | B24 | IRQ4 | | | | |
| A25 | A6 | B25 | IRQ3 | | | | |
| A26 | A5 | B26 | DACK2 | | | | |
| A27 | A4 | B27 | TC | | | | |
| A28 | A3 | B28 | BALE | | | | |
| A29 | A2 | B29 | VCC | | | | |
| A30 | A1 | B30 | OSC | | | | |
| A31 | A0 | B31 | GND | | | | |
| A32 | GND | B32 | GND | | | | |



Watchdog Timer Configuration

The function of the watchdog timer is to reset the system automatically and is defined at I/O port 0443H. To enable the watchdog timer and allow the system to reset, write I/O port 0443H. To disable the timer, write I/O port 0441H for the system to stop the watchdog function. The timer has a tolerance of 20% for its intervals.

The following describes how the timer should be programmed.

Enabling Watchdog:

```
MOV  AX, 000FH (Choose the values from 0)
MOV  DX, 0443H
OUT  DX, AX
```

Disabling Watchdog

```
MOV  AX, 00FH (Any value is fine.)
MOV  DX, 0441H
OUT  DX, AX
```

WATCHDOG TIMER CONTROL TABLE

| Level | Value | Time/sec | Level | Value | Time/sec |
|-------|-------|----------|-------|-------|----------|
| 1 | F | 0 | 9 | 7 | 16 |
| 2 | E | 2 | 10 | 6 | 18 |
| 3 | D | 4 | 11 | 5 | 20 |
| 4 | C | 6 | 12 | 4 | 22 |
| 5 | B | 8 | 13 | 3 | 24 |
| 6 | A | 10 | 14 | 2 | 26 |
| 7 | 9 | 12 | 15 | 1 | 28 |
| 8 | 8 | 14 | 16 | 0 | 30 |

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3

BIOS Configuration

This chapter describes the different settings available in the Award BIOS that comes with the CI5TTV CPU card. The topics covered in this chapter are as follows:

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| IDE HDD Auto Detection..... | 55 |
| HDD Low Level Format | 55 |
| Save & Exit Setup..... | 56 |
| Exit Without Saving..... | 56 |

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel/Cyrix/AMD processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the key immediately allows you to enter the Setup utility. If you are a little bit late pressing the key, POST(Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

ROM PCI/ISA BIOS
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 | HDD LOW LEVEL FORMAT |
| LOAD BIOS DEFAULTS | SAVE & EXIT SETUP |
| LOAD SETUP DEFAULTS | EXIT WITHOUT SAVING |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| Time, Date, Hard Disk Type | |

The section below the setup items of the Main Menu displays the control keys for this menu. Another section at the bottom of the Main Menu just below the control keys section displays information on the currently highlighted item in the list.

NOTE: After making and saving system changes with Setup, you find that your computer cannot boot, the Award BIOS supports an override to the CMOS settings that resets your system to its default.

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

Standard CMOS Setup

“Standard CMOS Setup” choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the Industrial CPU Card is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

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

| Date (mm:dd:yy) : Mon , Aug 19 1996 | | | | | | | | |
|--|----------------|------|---------------------------|------|-----------------|--------------------------|----------|-------|
| Time (hh:mm:ss) : 00 : 00 : 00 | | | | | | | | |
| HARD DISKS | TYPE | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR | MODE |
| Primary Master | Auto | 0 | 0 | 0 | 0 | 0 | 0 | Auto |
| Primary Slave | None | 0 | 0 | 0 | 0 | 0 | 0 | ----- |
| Secondary Master | None | 0 | 0 | 0 | 0 | 0 | 0 | ----- |
| Secondary Slave | None | 0 | 0 | 0 | 0 | 0 | 0 | ----- |
| Drive A | : 1.44M, 3.5in | | | | Base Memory | | : 640K | |
| Drive B | : None | | | | Extended Memory | | : 15360K | |
| Floppy 3 Mode Support | : Disabled | | | | Other Memory | | : 384K | |
| Video | : EGA / VGA | | | | Total Memory | | : 16384K | |
| Halt On | : All Errors | | | | | | | |
| ESC : Quit | | | ↑ ↓ → ← : Select Item | | | PU / PD / + / - : Modify | | |
| F1 : Help | | | (Shift) F2 : Change Color | | | | | |

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : Sun to Sat
Month : 1 to 12
Date : 1 to 31
Year : 1994 to 2097

To set the date, highlight the “Date” field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is: **Hour : 00 to 23**
Minute : 00 to 59
Second : 00 to 59

To set the time, highlight the “Time” field and use the <PgUp>/<PgDn> or +/- keys to set the current time.

Primary HDDs / Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the “Master” and the second is the “Slave”.

To enter the specifications for a hard disk drive, you must select first a “Type”. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to 45 are predefined. Type “User” is user-definable. For the Primary Master/Slave as well as Secondary Master/Slave, you can select “Auto” under the TYPE and MODE fields. This will enable auto detection of your IDE drives and CD-ROM drive during POST.

Press <PgUp>/<PgDn> to select a numbered hard disk type or type the number and press the <Enter> key. The hard disk will not work properly if you enter incorrect information for this field. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually. If you select Type User, related information is asked to be entered to the following items.

CYLS : Number of cylinders
HEAD : Number of read/write heads
PRECOMP : Write precompensation
LANDZ : Landing zone
SECTOR : Number of sectors
SIZE : Automatically adjust according to the configuration
MODE (for IDE HDD only) : Auto
Normal (HD < 528MB)
Large (for MS-DOS only)
LBA (HD > 528MB and supports
Logical Block Addressing)

*NOTE: The specifications of your drive must match with the drive table.
If your hard disk drive type is not matched or listed, you can use
Type User to define your own drive type manually.*

Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

| | | | | |
|----------|----------|---------|---------|---------|
| 360KB | 1.2MB | 720KB | 1.44MB | 2.88MB |
| 5.25 in. | 5.25 in. | 3.5 in. | 3.5 in. | 3.5 in. |

Floppy 3 Mode Support

This is the Japanese standard floppy drive. The standard stores 1.2MB in a 3.5-inch diskette. You have four options to choose:

- Disabled No 3 mode floppy drive installed. (default)
- Drive A Installed 3 mode drive at drive A.
- Drive B Installed 3 mode drive at drive B.
- Both Installed 3 mode drive at drive A and B.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

- EGA/VGA For EGA, VGA, SEGA, SVGA or PGA monitor adapters.(default)
- CGA 40 Power up in 40 column mode.
- CGA 80 Power up in 80 column mode.
- MONO For Hercules or MDA, includes high resolution monochrome adapters.

Halt On

This field determines whether the system will halt if an error is detected during power up.

- No errors The system boot will not be halted for any error that may be detected. (default)
- All errors Whenever the BIOS detects a non-fatal error, the system will be halted and you will be prompted.
- All, But Keyboard The system boot will not be halted for a keyboard error; it will stop for all other errors.
- All, But Diskette The system boot will not be halted for a disk error; it will stop for all other errors.
- All, But Disk/Key The system boot will not be halted for a keyboard or disk error; it will stop for all other errors.

BIOS Features Setup

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

| ROM / PCI ISA BIOS BIOS FEATURES SETUP AWARD SOFTWARE, INC. | | | |
|---|--------------|--------------------------|-----------------------|
| Virus Warning | : Disabled | Video BIOS Shadow | : Enabled |
| CPU Internal Cache | : Enabled | C8000-CBFFF Shadow | : Disabled |
| External Cache | : Enabled | 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 | : Enabled | DC000-DFFFF Shadow | : Disabled |
| Boot Up Numlock Status | : On | | |
| Boot Up System Speed | : High | | |
| Gate A20 Option | : Fast | | |
| Security Option | : Setup | | |
| PCI /VGA Palette Snoop | : Disabled | | |
| OS Select For DRAM>64MB | : Non-OS2 | | |
| | | ESC : Quit | ↑ ↓ → ← : Select Item |
| | | F1 : Help | PU/PD/+/- : Modify |
| | | F5 : Old Values | (Shift) F2 : Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

NOTE: Many disk diagnostic programs which attempt to access the boot sector table can cause the virus warning. If you will run such a program, disable the Virus Warning feature.

CPU Internal Cache / External Cache

These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are **Enabled**.

Quick Power On Self Test

This choice speeds up the Power On Self Test (POST) after you power up the system. If it is set to **Enabled**, BIOS will skip some items. By default, this choice is **Enabled**.

Boot Sequence

This field determines the drive that the system searches first for an operating system. The options are :

| | | |
|-------------|------------|------------|
| A, C, SCSI | D, A, SCSI | SCSI, C, A |
| C, A, SCSI | E, A, SCSI | C only |
| C, CDROM, A | F, A, SCSI | LS120, C |
| CDROM, C, A | SCSI, A, C | |

The default value is **A, C, SCSI**.

Swap Floppy Drive

This item allows you to determine whether to enable the swap Floppy Drive or not. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to **Disabled**.

Boot Up Floppy Seek

When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks. By default, this field is set to **Enabled**.

Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system. By default, the system boots up with **NumLock On**.

Boot Up System Speed

This has no function and selects the default system speed (**High**).

Gate A20 Option

This field allows you to select how Gate A20 is worked. The Gate A20 is a device used to address memory above 1 MB. By default, this field is set to **Fast**.

Security Option

This field allows you to limit access to the System and Setup. The default value is **Setup**. When you select **System**, the system prompts for the User Password every time you boot up. When you select **Setup**, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

PCI/VGA Palette Snoop

Some display cards that are non-standard VGA may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When this field is enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is **NON-OS/2**.

Video BIOS Shadow

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether optional ROM will be copied to RAM or not.

Chipset Features Setup

This Setup menu controls the configuration of the Industrial CPU Card chipset.

| ROM PCI/ISA BIOS CHIPSET FEATURES SETUP AWARD SOFTWARE INC. | |
|---|------------|
| DRAM Timing | : 70ns |
| System BIOS Cacheable | : Disabled |
| Video BIOS Cacheable | : Disabled |
| 8 Bit I/O Recovery Time | : 1 |
| 16 Bit I/O Recovery Time | : 1 |
| Memory Hole At 15M-16M | : Disabled |
| PCI 2.1 Compliance | Disabled |
| ** System Hardware Monitor * | |
| Current CPU Temperature: 37°C/98°F | |
| CPU Warning Temperature: 80°C/176°F | |
| ESC : Quit | |
| F1 : Help | |
| F5 : Old Values | |
| F6 : Load BIOS Defaults | |
| F7 : Load Setup Defaults | |
| ↑ ↓ → ← : Select Item | |
| PU/PD/+/- : Modify | |
| (Shift) F2 : Color | |

DRAM Timing

The DRAM timing is controlled by the DRAM Timing Registers. The timing type is dependent on the system design. Slower rates may be required in some system designs to support loose layouts or slower memory.

System BIOS Cacheable

When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

Video BIOS Cacheable

When enabled, access to video BIOS addressed at C0000H to C7FFFH are cached, provided that the cache controller is enabled.

8 Bit I/O Recovery Time

This field allows you to select the recovery time allowed for 8 bit I/O. By default, this field is set to *1 Clock*.

16 Bit I/O Recovery Time

This field allows you to select the recovery time allowed for 16 bit I/O. By default, this field is set to *1 Clock*.

Memory Hole at 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to *Disabled*.

PCI 2.1 Compliance

Concurrent PCI allows multiple PCI transfers from the PCI master buses to memory to CPU. By default, this field is set to *Disabled*.

System Hardware Monitor

The onboard hardware thermal sensor monitors CPU temperature changes and prevents the CPU from overheating. Alert is sounded through the speaker and CPU speed slows down when the temperature exceeds the temperature set in the BIOS until the temperature falls below a safe level. By default, this field is set to **80°C/176°F**.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn off video display after a period of inactivity.

ROM PCI/ISA BIOS (2A591M29)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

| | | |
|-----------------------|------------|--|
| Power Management | : Disabled | ** Reload Global Timer Events ** |
| PM Control by APM | : Yes | IRQ3 [3-7, 9-15],NMI : Enabled |
| Video Off Method | : DPMS | Primary IDE 0 : Disabled |
| Video Off After | : Suspend | Primary IDE 1 : Disabled |
| Doze Mode | : Disabled | Secondary IDE 0 : Disabled |
| Standby Mode | : Disabled | Secondary IDE 1 : Disabled |
| Suspend Mode | : Disabled | Floppy Disk : Disabled |
| HDD Power Down | : Disabled | Serial Port : Enabled |
| VGA Active Monitor | : Disabled | Parallel Port : Disabled |
| CPUFAN Off In Suspend | : Enabled | 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 field allows you to select the type of power saving management modes. There are four selections for Power Management.

- Disable No power management. (Default)
- Min. Power Saving Minimum power management.
- Max. Power Saving Maximum power management. Only available for SL CPU.
- User Define Each of the ranges are from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

PM Control by APM

This field allows you to use the Advanced Power Management device to enhance the Max. Power Saving mode and stop the CPU's internal clock. If the Max. Power Saving is not enabled, this will be preset to NO.

Video Off Method

This field defines the Video Off features. There are three options.

| | |
|------------------|--|
| V/H SYNC + Blank | Default setting, blank the screen and turn off vertical and horizontal scanning. |
| DPMS | Allows the BIOS to control the video display card if it supports the DPMS feature. |
| Blank Screen | This option only writes blanks to the video buffer. |

Video Off After

This field specifies the mode after which the Video Off feature is enabled. The options are *Doze*, *Standby*, *Suspend*, and *N/A*.

Doze Mode

When enabled, and after the set time of system inactivity, the CPU clock will run at a slower speed while all other devices still operate at full speed.

Standby Mode

When enabled, and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

When enabled, and after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down

When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

VGA Active Monitor

This option specifies if the BIOS is to monitor activity on the display monitor for power conservation purposes.

CPU Fan Off in Suspend

The system fans will power off automatically even in suspend mode. This function reduces both energy consumption and system noise.

PNP/PCI Configuration

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

ROM PCI/ISA BIOS
PNP/PCI CONFIGURATION
AWARD SOFTWARE INC.

| | | | |
|--------------------------|---------------|--------------------------|---------------------|
| PNP OS Installed | : Yes | Used MEM base addr | : N/A |
| Resources Controlled by | : Manual | | |
| Reset Configuration Data | : Disabled | | |
| IRQ-3 assigned to | : Legacy ISA | | |
| IRQ-4 assigned to | : Legacy ISA | | |
| IRQ-5 assigned to | : Legacy ISA | | |
| IRQ-7 assigned to | : Legacy ISA | | |
| IRQ-9 assigned to | : PCI/ISA PnP | | |
| IRQ-10 assigned to | : PCI/ISA PnP | | |
| IRQ-11 assigned to | : PCI/ISA PnP | | |
| IRQ-12 assigned to | : PCI/ISA PnP | | |
| IRQ-14 assigned to | : PCI/ISA PnP | | |
| IRQ-15 assigned to | : PCI/ISA PnP | | |
| DMA-0 assigned to | : PCI/ISA PnP | | |
| DMA-1 assigned to | : PCI/ISA PnP | ESC : Quit | ↑ ↓ ← : Select Item |
| DMA-3 assigned to | : PCI/ISA PnP | F1 : Help | PU/PD/+/- : Modify |
| DMA-5 assigned to | : PCI/ISA PnP | F5 : Old Values | (Shift) F2 : Color |
| DMA-6 assigned to | : PCI/ISA PnP | F6 : Load BIOS Defaults | |
| DMA-7 assigned to | : PCI/ISA PnP | F7 : Load Setup Defaults | |

PNP OS Installed

This field allows you to specify if the operating system installed in your system is plug and play aware.

Note: Operating systems such as DOS, OS/2, and Windows 3.x do not use PnP.

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically. However, this capability needs you to use a PnP operating system such as Windows 95. The default value is **Manual**.

Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is **Disabled**.

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to

These fields allow you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.

Used MEM base addr

This field allows the user to set the base address and block size of a legacy (non-PnP) ISA card that uses any memory segment within the C800H and DFFFH address range. If the you have such a card and are not using an ICU (ISA Configuration Utility) to specify its address range, select a base address from the six available options. During selection, the “Used MEM Length” field will appear with the block size options. If you have more than one legacy ISA card in your system that require the use of this address range, you can increase the block size to either 8K, 16K, 32K or 64K. If you are using ICU to accomplish this task, leave “Used MEM base addr” to its default setting of **N/A**.

Load BIOS Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

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

| | |
|---|---------------------------|
| STANDARD CMOS SETUP | INTEGRATED PERIPHERALS |
| BIOS FEATURES SETUP | SUPERVISOR PASSWORD |
| CHIPSET FEATURES SETUP | USER PASSWORD |
| POWER MANAGE | DETECTION |
| PNP/PCI CONF | SETUP |
| LOAD BIOS DE | AVING |
| LOAD SETUP DEFAULTS | |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| Load BIOS Defaults except Standard CMOS Setup | |

To load BIOS defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

Load Setup Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

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

| | |
|---|---------------------------|
| STANDARD CMOS SETUP | INTEGRATED PERIPHERALS |
| BIOS FEATURES SETUP | SUPERVISOR PASSWORD |
| CHIPSET FEATURES SETUP | USER PASSWORD |
| POWER MANAGEMENT SETUP | USE HDD AUTO DETECTION |
| PNP/PCI CONF | SETUP |
| LOAD BIOS DE | AVING |
| LOAD SETUP D | |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| Load BIOS Defaults except Standard CMOS Setup | |

To load SETUP defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

Integrated Peripherals

This option allows you to determine your hard disk configuration, mode and port.

ROM PCI/ISA BIOS
INTEGRATED PERIPHERALS
AWARD SOFTWARE INC.

| | | | |
|---------------------------|-------------|--------------------------|---------------------|
| IDE HDD Block Mode | : Enabled | | |
| IDE Primary Master PIO | : Auto | | |
| IDE Primary Slave PIO | : Auto | | |
| IDE Secondary Master PIO | : Auto | | |
| IDE Secondary Slave PIO | : Auto | | |
| IDE Primary Master UDMA | : Auto | | |
| IDE Primary Slave UDMA | : Auto | | |
| IDE Secondary Master UDMA | : Auto | | |
| IDE Secondary Slave UDMA | : Auto | | |
| On-Chip Primary PCI IDE | : Enabled | | |
| On-Chip Secondary PCI IDE | : Enabled | | |
| USB Keyboard Support | : Disabled | | |
| Onboard FDD Controller | : Enabled | | |
| Onboard UAART 1 | : Auto | ESC : Quit | ↑ ↓ ← : Select Item |
| Onboard UART 2 | : Auto | F1 : Help | PU/PD/+/- : Modify |
| Onboard UART 2 Mode | : Standard | F5 : Old Values | (Shift) F2 : Color |
| Onboard Parallel Port | : 378H/IRQ7 | F6 : Load BIOS Defaults | |
| Parallel Port Mode | : Normal | F7 : Load Setup Defaults | |

IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

IDE Primary Master/Slave PIO And Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary Master/Slave UDMA And Secondary Master/Slave UDMA

This field allows your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

On-Chip Primary/Secondary PCI IDE

These fields allow you either to enable or disable the Primary/Secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

USB Keyboard Support

This field allows your system to support a USB keyboard.

Onboard FDD Controller

This option allows you to select the onboard FDD port.

Onboard Serial/Parallel Port

These fields allow you to select the onboard serial/parallel port and its address. The default value for these ports are:

| | |
|---------------|-----------|
| Serial Port 1 | 3F8/IRQ4 |
| Serial Port 2 | 2F8/IRQ3 |
| Parallel Port | 378H/IRQ7 |

UART 2 Mode

This field determines the UART 2 mode in your computer. The options are *Standard*, *HPSIR*, and *ASKIR*.

Onboard Parallel Mode

This field allows you to determine parallel port mode function.

| | |
|---------|--|
| Normal | Normal Printer Port |
| EPP | Enhanced Parallel Port |
| ECP | Extended Capabilities Port |
| ECP+EPP | Extended Capabilities Port or Enhanced Parallel Port |

Supervisor / User Password

These two options set the system password. *Supervisor Password* sets a password that will be used to protect the system and Setup utility. *User Password* sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The **Enter Password:** message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

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

ROM PCI/ISA BIOS
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 | |
| LOAD BIOS DEFAULTS | LOADING |
| LOAD SETUP DEFAULTS | |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| Change / Set / Disable Password | |

IDE HDD Auto Detection

This option detects the parameters of an IDE hard disk drive, and automatically enters them into Standard CMOS Setup screen.

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

| HARD DISKS | TYPE | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR | MODE |
|--|------|------|------|------|---------|-------|--------|--------|
| Primary Master: | | | | | | | | |
| Select Primary Master Option (N=SKIP) : N | | | | | | | | |
| 1 (Y) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NORMAL |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| NOTE: Some OSes (like SCO-UNIX) must use "NORMAL" for installation | | | | | | | | |

Up to four IDE drives can be detected, with parameters for each appearing in sequence inside a box. To accept the displayed entries, press the “Y” key; to skip to the next drive, press the “N” key. If you accept the values, the parameters will appear listed beside the drive letter on the screen.

HDD Low Level Format

This option should only be used by a professional. Low-level formatting can cause irreparable damage to your hard disk. The procedures include selecting the drive you want to low-level format, determining the bad tracks, and proceeding with pre-formatting.

Save & Exit Setup

This option allows you to determine whether to accept the modifications or not. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

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

| | |
|--------------------------------|---------------------------|
| STANDARD CMOS SETUP | INTEGRATED PERIPHERALS |
| BIOS FEATURES SETUP | SUPERVISOR PASSWORD |
| CHIPSET FEATURES SETUP | USER PASSWORD |
| POWER MANAGE | DETECTION |
| PNP/PCI CONF | SETUP |
| LOAD BIOS DEF | AVING |
| LOAD SETUP DEFAULTS | |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| Save Data to CMOS & Exit Setup | |

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

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

| | |
|-------------------------------|---------------------------|
| STANDARD CMOS SETUP | INTEGRATED PERIPHERALS |
| BIOS FEATURES SETUP | SUPERVISOR PASSWORD |
| CHIPSET FEAT | D |
| POWER MANAGE | DETECTION |
| PNP/PCI CONF | SETUP |
| LOAD BIOS DEF | AVING |
| LOAD SETUP DEFAULTS | |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| Abandon all Data & Exit Setup | |

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4

VGA Driver Installation

This chapter provides information on how to install the VGA drivers that come in the floppy diskette with your CI5TTV card. Please follow the instructions set forth in this chapter carefully. Please note that there must be relevant software installed in your system before you could proceed to install the VGA drivers. It is recommended that you make a copy of the VGA driver diskette and put the backup copy in a safe place.

The following items are covered in this chapter:

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| Driver Installation..... | 59 |
| Changing Display Drivers | 59 |
| Changing Color Schemes | 59 |
| Installing the Drivers for Windows 95 | 60 |
| Driver Installation..... | 60 |
| Installing the Drivers for Windows NT 3.5x..... | 61 |
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| Installing the Drivers for Windows NT 4.0..... | 62 |
| Driver Installation..... | 62 |

Installing the Drivers for Windows 3.1

Driver Installation

Included in your VGA Drivers diskette are drivers designed for Windows 3.1. To install the drivers, please follow the procedure below.

1. Run Windows as you would normally do to check if the operating system is working properly.
2. Insert the VGA Drivers diskette into your floppy disk drive which we will assume to be Drive A. In the Program Manager in Windows, choose **File** from the menu on top of the screen. From the pull-down menu, Choose **Run**. When prompted to enter the file to run, type **a:\windows\setup** and press <ENTER> or click **OK** to start the installation. The setup program then installs the drivers in the directory where the Windows program is. When the drivers are loaded, press <ENTER> to finish the installation. The Display Driver Control Panel appears when the installation is complete. It allows you to choose and load the installed display drivers.

Changing Display Drivers

Windows allows you to change your display drivers. To do so, select **Windows Setup** in the **Main** window. Then select **Change System Settings** in the **Option** menu. Click on the arrow at the end of the Display line to see the list of display drivers available. Click on the driver you want and click on the **OK** button. Follow the instructions to complete the change.

Changing Color Schemes

Windows also allows you to change the color scheme of your system. From the **Main** window, select the **Control Panel** and then the **Color** icon. The screen shows you the current color scheme. To change the current color configuration, select the color scheme you want and click the **OK** button.

Installing the Drivers for Windows 95

Driver Installation

The following section describes the normal display driver installation procedures for Windows 95. Use the following procedures when installing the display drivers for Windows 95.

1. Click Start, then Settings, then Control Panel.
2. Double click on "Display".
3. Select the "Settings" page, click the "Change Display Type" button.
4. Click the "Change" button in the "Adapter Type" area.
5. Click the "Have Disk" button and press "OK".
6. Specify the path to the new driver and press <ENTER>:

Example 1: Insert the drivers disk in the A: floppy drive, and enter
A:\win95.

Example 2: Type in the name of the directory where you copied the drivers, either on your local hard drive or on a network share.

Example 3: If you're not sure exactly where the drivers are, choose the "Browse..." button to find them.

7. The "Select Device" dialog box will appear. Select the adapter that corresponds to the one you installed in your machine and click OK.
8. Windows 95 will copy the display drivers to the proper directories on your system.
9. Continue choosing Close until asked to restart your machine from the "Systems Settings Change" dialog box.
10. After the system has restarted, you can go back into the Display applet and select alternate screen resolutions and color depths.

Installing the Drivers for Windows NT 3.5x

Driver Installation

The following section describes the VGA driver installation procedures for Windows NT 3.5x.

1. Run Windows NT Setup from Main Group
2. Choose Option from the menu (Alt-O)
3. Select Change System Setting (Alt-C)
4. Choose "Other" under the Display section
5. Insert display driver disk in appropriate floppy drive
6. Type the destination as "A:\NT35x"

Installing the Drivers for Windows NT 4.0

Driver Installation

Once you are in the Windows NT 4.0 environment, follow the procedures below to install the VGA drivers in the diskette that comes with your CPU card.

1. Click the Start button, then go to Settings and click on Control Panel.
2. Click on the Display icon to start the Display Properties window.
3. Click on the Settings tab, and then click on Display Type.
4. In the Change Display Type window, click on Change in Adapter Type. This will bring up the Select Device Window.
5. In the Change Display window, click on Have Disk. Follow the directions on the screen to supply the directory where the Windows NT driver files are located. Then select OK, or press ENTER.
6. Select Chips Video Accelerator from Display list provided, then click OK or press ENTER.
7. You will then see a warning panel about Third Party Drivers. Click on Yes to finish the installation.
8. Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.
9. When the system has restarted, the default graphics mode (usually 640x480x256color) has been automatically selected. Click the Start button, then go to Settings and click on Control Panel. Click on the Display icon to start the Display Properties window. Click on the Settings tab. A new screen setting can be selected using either of the following methods:
 - A. Use the slide-bar in the Desktop Area to select new setting.
 - B. Click on List All Modes. From the list provided, select a new setting, then click OK or press ENTER.
 - C. Click on Test to test the newly selected graphics mode. Follow the instructions given on the screen. A test screen should appear, followed by the Testing Mode window. Click on Yes to continue. Click on Apply to switch to the new graphics mode. Graphics modes are changed dynamically on NT 4.0, so you do not need to shut down and restart for the new screen settings to work.

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5

Intel PIIX Bus Master IDE Driver Installation

This chapter describes the installation procedure for Intel PIIX Bus Master IDE Drivers for Windows 95.

This chapter contains the following sections:

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| System Requirements | 65 |
| Installing the Software | 66 |

System Requirements

This section describes system requirements for the PIIX Bus Master IDE Device Driver for Windows 95*. This driver has been designed for and tested with Windows 95 only. This driver will only install on systems with Windows 95.

1. The system must contain a supported Intel processor and chipset configuration.
2. Ensure that a mouse is connected to the system.
3. One of the following versions of Windows 95* must be installed on the system prior to running utility program.

Windows 95* 4.00.950 (Retail)

Windows 95* 4.00.950a (OSR1)

Windows 95* 4.00.950b (OSR2 without USB Supplement)

Windows 95* 4.00.950b (OSR2.1 with USB Supplement)

4. This utility should only be used on desktop systems. The utility must not be executed on notebook or portable systems with or without dock.
5. It is assumed that the BIOS properly initialized the 82371xB IDE interface for Bus Master IDE operation.
6. There are no other non-82371xB IDE controllers (add-in IDE controller or sound card with IDE) enabled on the system.

Installing the Software

This subsection describes how to install the software on a system where Windows 95 is installed.

NOTE: Record the location of the Windows 95* directory before installing the driver.

1. Check the System Requirements. Windows 95* must be fully installed and running on the system prior to running this software.
2. Close any running applications.
3. Remove references to installed real-mode IDE device drivers in the AUTOEXEC.BAT and CONFIG.SYS files (especially any drivers that control ATAPI CD-ROM and special IDE features). Use the Notepad utility to do this.

The driver files are stored in an integrated application setup program.

This program is a Windows 95* program that allows the driver files to be INSTALLED or DE-INSTALLED.

Execute the driver setup program.

Run SETUP.EXE.

4. Click 'Next' on Welcome Screen to read and agree to the license agreement. View the text file and choose File\Exit to close Notepad and continue. **NOTE:** If you click 'No', program will terminate.
5. Click 'Yes' if you agree to continue. **NOTE:** If you click 'No', the program will terminate.
6. Select 'INSTALL', to install the PIIX Bus Master IDE Device Driver when prompted to do so.

NOTE: If the driver is currently installed on the system, SETUP will ask you whether or not you want to continue. Follow the prompts on the screen to Install the driver if desired.

7. Click 'OK' to restart the system when prompted to do so.
8. Follow the screen instructions and use default settings to complete the setup when Windows 95* is re-started. Upon re-start, Windows 95* will display that it has found an Intel PCI Bus Master IDE controller hardware and is installing hardware for it.

If a "New Hardware Found" dialog box is displayed requesting the location of the drivers, use the mouse to click on the scrollbar and click on the <Windows 95* directory>\System\IOSubSys path:

For example:

Click on 'C:\WINDOWS\SYSTEM\IOSUBSYS'

Click 'OK'.

9. Select 'Yes', when prompted to re-start Windows 95.

NOTE: After installation, the following driver and related files are stored as listed.

<Windows 95* directory>\System\IOSubSys\IDEATAPI.MPD

<Windows 95* directory>\System\IOSubSys\PIIXVSD.VXD

<Windows 95* directory>\INF\IDEATAPI.INF

Appendix

A. I/O Port Address Map

B. Interrupt Request Lines (IRQ)

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. There are a total of 1K port address space available. The following table lists the I/O port addresses used on the Industrial CPU Card.

| Address | Device Description |
|-------------|------------------------------------|
| 000h - 01Fh | DMA Controller #1 |
| 020h - 03Fh | Interrupt Controller #1 |
| 040h - 05Fh | Timer |
| 060h - 06Fh | Keyboard Controller |
| 070h - 07Fh | Real Time Clock, NMI |
| 080h - 09Fh | DMA Page Register |
| 0A0h - 0BFh | Interrupt Controller #2 |
| 0C0h - 0DFh | DMA Controller #2 |
| 0F0h | Clear Math Coprocessor Busy Signal |
| 0F1h | Reset Math Coprocessor |
| 1F0h - 1F7h | IDE Interface |
| 278 - 27F | Parallel Port #2(LPT2) |
| 2F8h - 2FFh | Serial Port #2(COM2) |
| 2B0 - 2DF | Graphics adapter Controller |
| 378h - 3FFh | Parallel Port #1(LPT1) |
| 360 - 36F | Network Ports |
| 3B0 - 3BF | Monochrome & Printer adapter |
| 3C0 - 3CF | EGA adapter |
| 3D0 - 3DF | CGA adapter |
| 3F0h - 3F7h | Floppy Disk Controller |
| 3F8h - 3FFh | Serial Port #1(COM1) |

B. Interrupt Request Lines (IRQ)

There are a total of 15 IRQ lines available on the Industrial CPU Card. Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on the Industrial CPU Card.

| Level | Function |
|--------------|--------------------------------|
| IRQ0 | System Timer Output |
| IRQ1 | Keyboard |
| IRQ2 | Interrupt Cascade |
| IRQ3 | Serial Port #2 |
| IRQ4 | Serial Port #1 |
| IRQ5 | Parallel Port #2 |
| IRQ6 | Floppy Disk Controller |
| IRQ7 | Parallel Port #1 |
| IRQ8 | Real Time Clock |
| IRQ9 | Software Redirected to Int 0Ah |
| IRQ10 | Reserved |
| IRQ11 | Reserved |
| IRQ12 | Reserved |
| IRQ13 | 80287 |
| IRQ14 | Primary IDE |
| IRQ15 | Secondary IDE |