



**3308585**

**Half-size ISA CPU Card with on-board AMD Geode LX 600  
VGA, LAN, USB 2.0, CF, COM, Parallel Port and Audio  
RoHS Compliant**

## **User Manual**



# Revision

| Date           | Version | Changes         |
|----------------|---------|-----------------|
| 31 March, 2011 | 1.00    | Initial release |



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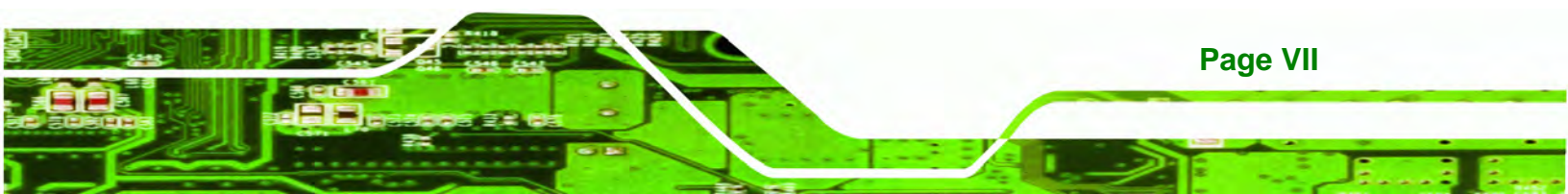
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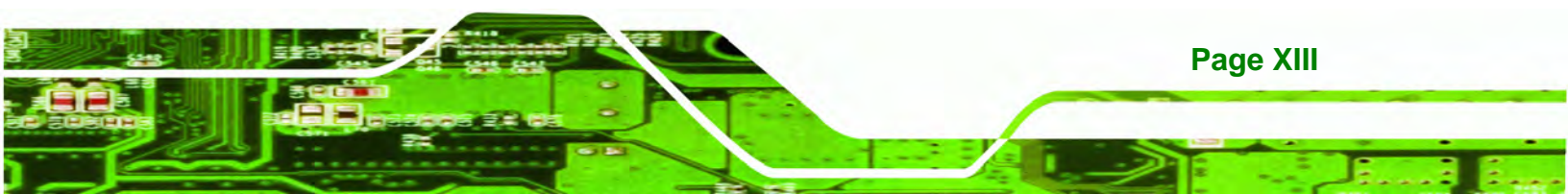
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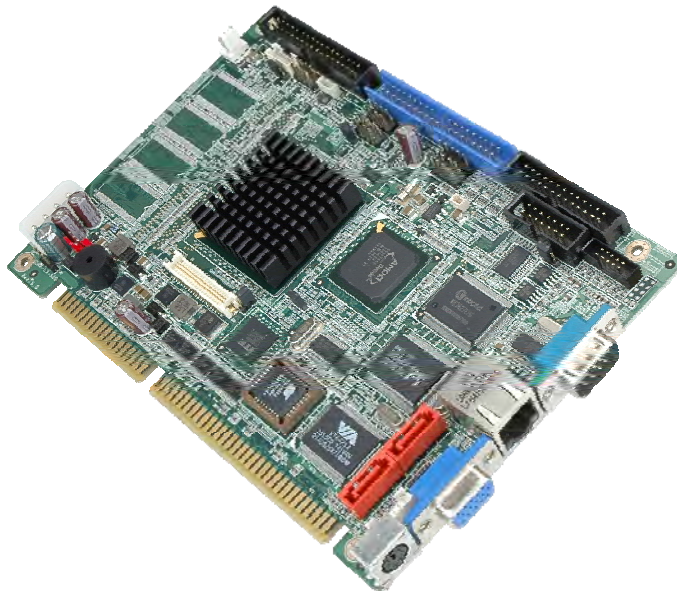
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# Introduction

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### 1.1 Introduction



**Figure 1-1: 3308585**

The 3308585 is an AMD Geode™ LX based based half-size ISA CPU card. The 3308585 has a Front Side Bus (FSB) of 366 MHz, 128 MB of RAM on-board and is upgradeable with a further 512 MB of SDRAM.

Multiple input/output options include VGA and 24-bit TTL for video output, a parallel port, two serial ports, an infrared port and 10/100BASE-T Ethernet. The 3308585 supports up to two IDE drives and one floppy drive. Two SATA ports with RAID 0 and RAID 1 capabilities are optional.

### 1.2 Model Variations

The 3308585 series has two models:

- 3308585A
- 3308585B

The specifications for the two models are show in Table 1-1



## 3308585 Half-size CPU Card

| MODEL          | 3308585 | 3308585B |
|----------------|---------|----------|
| CPU Speed      | 366 MHz | 366 MHz  |
| Onboard Memory | 128 MB  | 128 MB   |
| SATA           | No      | Yes      |

**Table 1-1: 3308585 Model Variations**

### 1.3 Benefits

Some of the 3308585 benefits:

- Power efficient, fanless CPU lowers hardware and operational overhead costs
- ISA expansion options available through compatible backplanes
- Support for both legacy ISA and DMA (direct memory access)
- Multiple display output devices including VGA and TTL
- RAID options including RAID 1 for increased data safety and RAID 0 for improved drive performance for faster data access (on SATA models)

### 1.4 Features

Some of the 3308585 features:

- Half-size form factor
- RoHS compliant
- AMD Geode™ LX processor installed
- VGA or TTL display
- Low power consumption
- One 10/100BASE-T Ethernet controller on-board
- Two SATA channels with transfer rates up to 1.5Gb/s on-board (SATA model)
- Four USB 2.0 devices supported
- Integrated audio



## 1.5 Connectors

The connectors on the 3308585 are shown in the figure below.

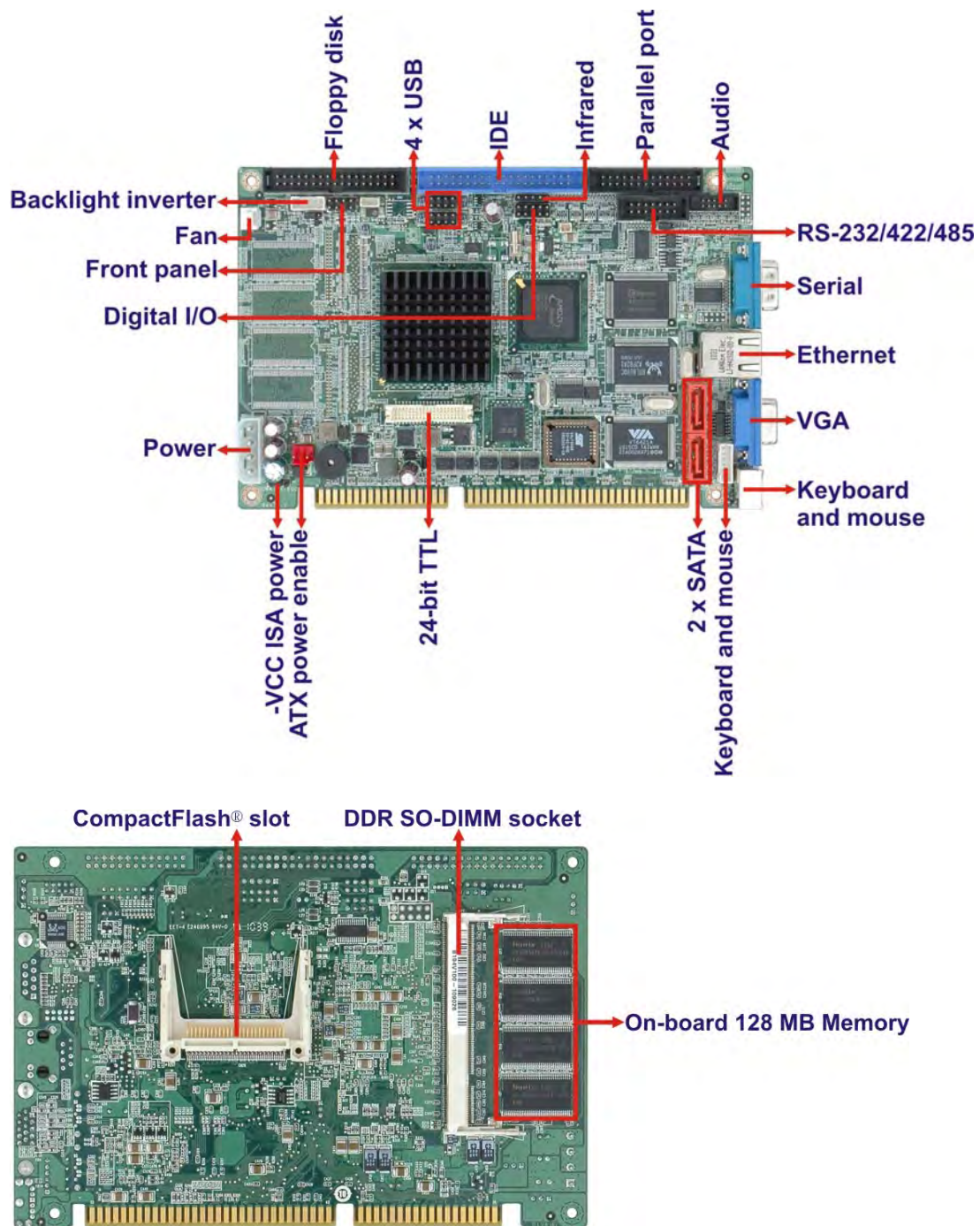


Figure 1-2: Connectors

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### 1.6 Dimensions

The dimensions of the board are listed below:

- **Length:** 184.99 mm
- **Width:** 122.38 mm

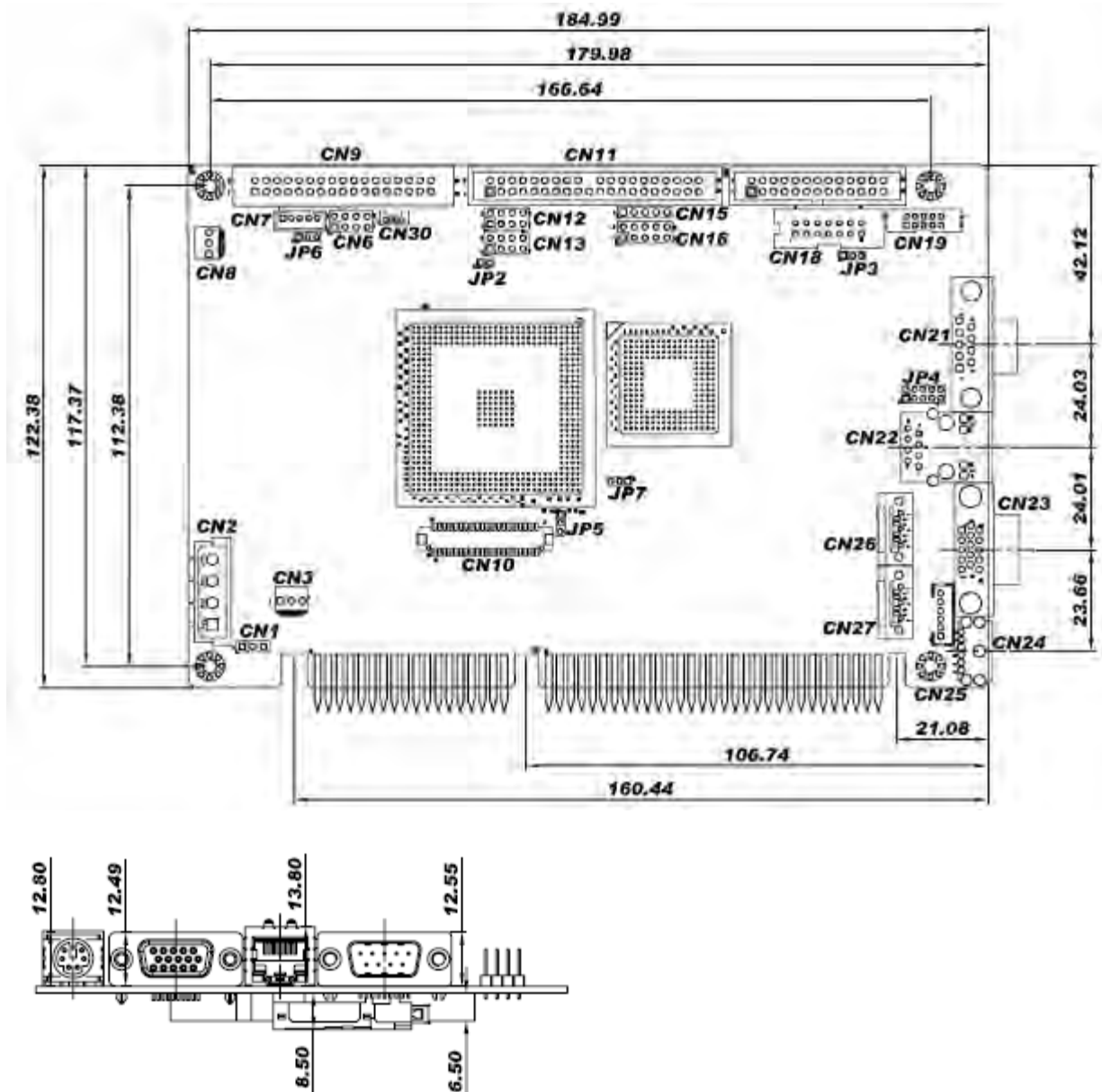
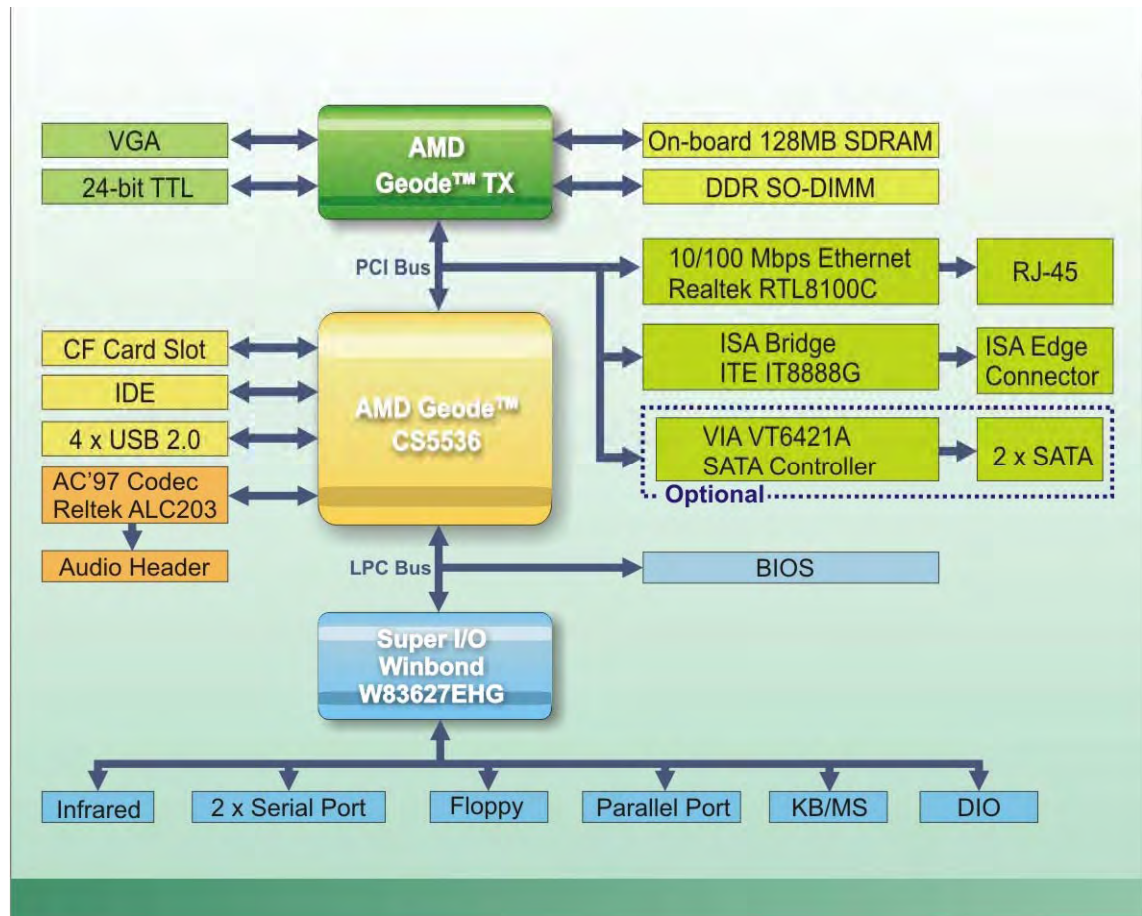


Figure 1-3: 3308585 Dimensions (mm)



## 1.7 Data Flow

**Figure 1-4** shows the data flow between the two on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.



**Figure 1-4: Data Flow Block Diagram**

### 1.8 Technical Specifications

3308585 technical specifications are listed in table below.

| Specification            | 3308585  |
|--------------------------|--|
| Form Factor              | Half-size  |
| CPU Supported            | AMD Geode™ LX 600 with a 366 MHz FSB and 128KB L2 cache  |
| Express Chipset          | AMD Geode™ CS5536  |
| Memory                   | On-board 128 MB 200/266 MHz DDR SDRAM<br>One 200-pin SO-DIMM sockets support 200/266 MHz DDR SDRAM SO-DIMMs (system max. 512 MB) |
| Graphics                 | VGA integrated in AMD Geode™ LX 600<br>AMD Geode™ LX 600 24-bit TTL  |
| Display Output           | Single HD VOP 2.0 output<br>1920x1440 CRT output<br>1600x1200 TFT output   |
| Audio                    | Realtek ALC203 AC'97 audio codec   |
| LAN                      | 10/100 Mbps Realtek RTL8100C Ethernet Chipset  |
| Super I/O                | Winbond W83627EHG  |
| BIOS                     | Award BIOS   |
| Digital I/O              | 8-bit digital I/O (4-bit input/4-bit output)   |
| Watchdog Timer           | Software programmable supports 1~255 sec. system reset   |
| I/O Interface Connectors |  |
| Audio Connector          | One internal audio connector (10-pin header)   |
| Display Ports            | One external VGA port<br>One internal 24-bit TTL connector (40-pin)  |
| Ethernet                 | One RJ-45 10/100 Mbps Ethernet port  |

## 3308585 Half-size CPU Card

| Specification                                 | 3308585   |
|---|---|
| <b>Serial Ports</b>                           | Two RS-232<br>One RS-422/485 via pin header   |
| <b>USB 2.0/1.1 Ports</b>                      | Four internal USB ports via two 8-pin headers   |
| <b>Parallel Port</b>                          | One internal parallel port via one 26-pin header  |
| <b>Keyboard/Mouse</b>                         | One keyboard/mouse connector via one 6-pin wafer<br>One PS/2 keyboard/mouse connector                               |
| <b>Fan Connectors</b>                         | One 3-pin fan connector   |
| <b>Infrared</b>                               | One 5-pin header  |
| <b>Storage</b>                                |   |
| <b>IDE</b>                                    | One 40-pin IDE connector  |
| <b>CompactFlash®</b>                          | One CF Type II slot   |
| <b>Floppy Disk Drive</b>                      | One 34-pin FDD connector  |
| <b>Serial ATA (Optional)</b>                  | Two SATA 1.5 Gb/s connectors support RAID0, 1   |
| <b>Environmental and Power Specifications</b> |   |
| <b>Power Supply</b>                           | 5 V / 12 V via ISA bus<br>ATX and AT power supported  |
| <b>Power Connector</b>                        | One internal 4-pin Molex power connector for power supply   |
| <b>Power Consumption</b>                      | 5V@1.51A, 5VSB@0.09A (366 MHz AMD Geode™ LX 600<br>CPU with on-board 128 MB memory and 512 MB 333 MHz<br>DDR SDRAM) |
| <b>Operating Temperature</b>                  | -10°C ~ 60°C (requires cooler and silicone heat sink paste)   |
| <b>Humidity</b>                               | 5% ~ 95% (non-condensing)   |
| <b>Physical Specifications</b>                |   |
| <b>Dimensions</b>                             | 185.00 mm x 122.38 mm   |
| <b>Weight GW/NW</b>                           | 1000 g / 250 g  |

Table 1-2: Technical Specifications



Chapter

2

# Unpacking

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## 2.1 Anti-static Precautions

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### WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

---

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband:*** Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding:*** Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad:*** When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB:*** Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

## 2.2 Unpacking Precautions

When the 3308585 is unpacked, please do the following:

- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.



## 3308585 Half-size CPU Card







### 2.3 Packing List





#### NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the reseller or vendor the 3308585 was purchased from or contact a sales representative directly

The 3308585 is shipped with the following components:





| Quantity | Item and Part Number       | Image   |
|----------|----------------------------|---|
| 1        | 3308585 motherboard        |   |
| 1        | Audio cable                |  |
| 1        | IDE flat cable             |  |
| 1        | KB/MS PS/2 Y-cable         |  |
| 1        | Dual USB cable (w bracket) |  |
| 1        | Mini jumper pack (2.0mm)   |  |

## 3308585 Half-size CPU Card

|   |                          |   |
|---|--------------------------|---|
| 1 | Utility CD               |  |
| 1 | Quick Installation Guide |  |

### 2.3.1 Optional Items

The following are optional components which may be separately purchased:

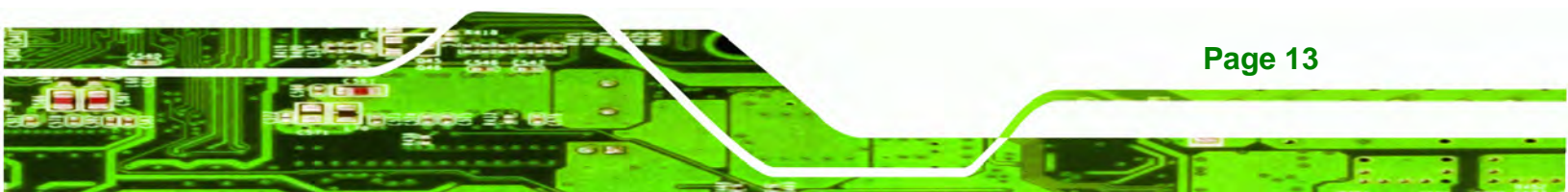
| Item and Part Number                                | Image   |
|---|---|
| FDD cable<br>(P/N: 32200-000017-RS)                 |    |
| Parallel port cable<br>(P/N:19800-000400-100-RS)    |   |
| SATA cable<br>(P/N: 32000-062800-RS)                |  |
| Dual RS-232/422/485 cable<br>(P/N: 19800-000058-RS) |  |

Chapter

3

# Connectors

---



## 3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

### 3.1.1 3308585 Layout

The figures below show all the connectors and jumpers.

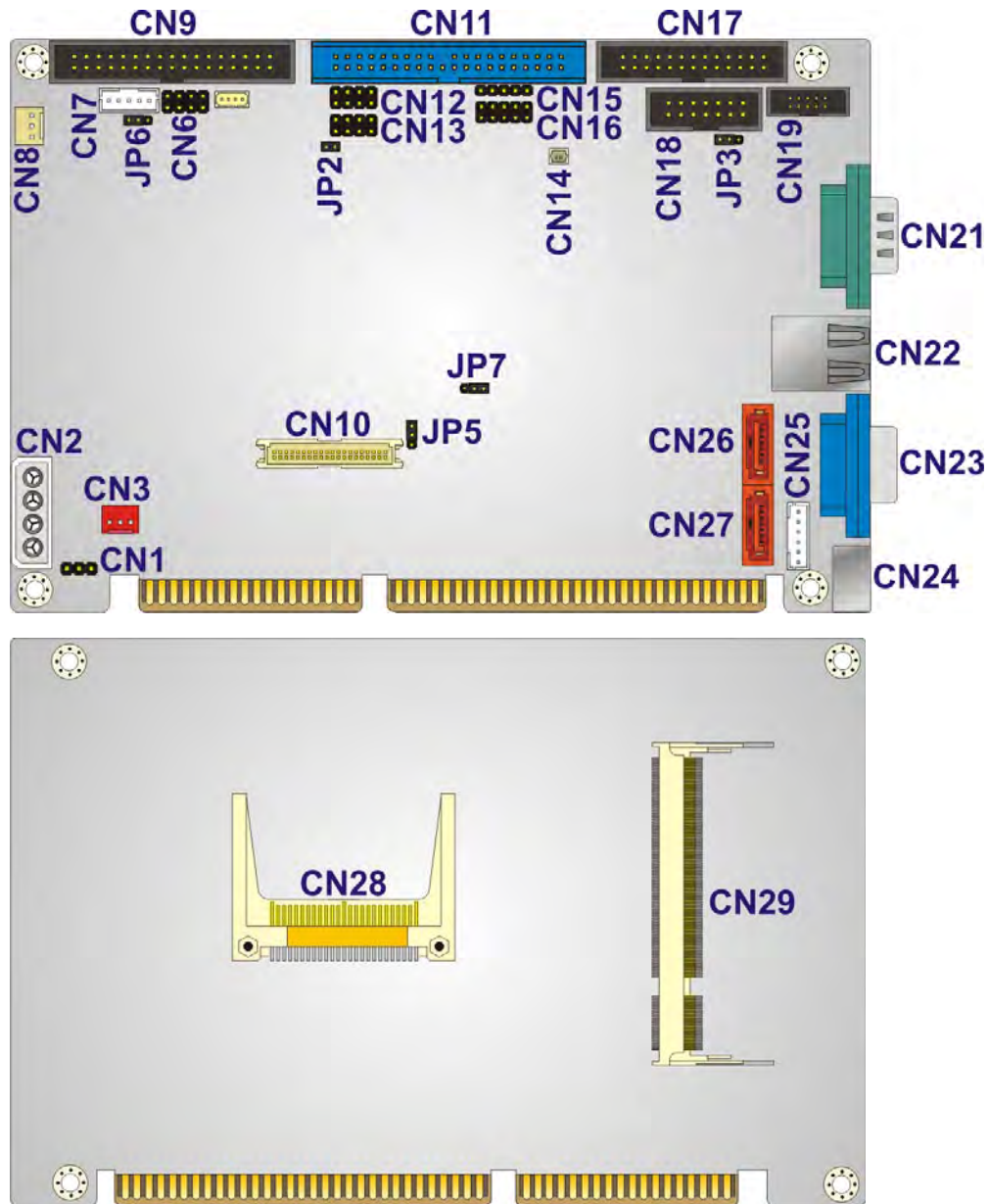


Figure 3-1: Connector and Jumper Locations

### 3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

| Connector                            | Type              | Label |
|--------------------------------------|-------------------|-------|
| ATX power enable connector           | 3-pin wafer       | CN3   |
| Audio connector                      | 10-pin box header | CN19  |
| Backlight inverter connector         | 5-pin wafer       | CN7   |
| Battery connector                    | 2-pin wafer       | CN14  |
| CompactFlash® slot                   | CF Type II slot   | CN28  |
| DDR SO-DIMM socket                   | 200-pin socket    | CN29  |
| Digital I/O connector                | 10-pin header     | CN16  |
| Fan connector (CPU)                  | 3-pin wafer       | CN8   |
| Floppy disk connector                | 34-pin box header | CN9   |
| Front panel connector                | 10-pin header     | CN6   |
| IDE connector                        | 40-pin box header | CN11  |
| Infrared connector                   | 5-pin header      | CN15  |
| Keyboard and mouse connector         | 6-pin wafer       | CN25  |
| Parallel port connector              | 26-pin box header | CN17  |
| Power connector (+12V, power supply) | 4-pin connector   | CN2   |
| RS-232/422/485 serial port connector | 14-pin box header | CN18  |
| Serial ATA (SATA) drive connector    | 7-pin SATA        | CN26  |
| Serial ATA (SATA) drive connector    | 7-pin SATA        | CN27  |
| TTL LCD connector                    | 40-pin crimp      | CN10  |
| USB connector                        | 8-pin header      | CN12  |



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|                         |              |      |
|-------------------------|--------------|------|
| USB connector           | 8-pin header | CN13 |
| VCC ISA power connector | 3-pin header | CN1  |

**Table 3-1: Peripheral Interface Connectors**

### 3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

| Connector                    | Type         | Label |
|------------------------------|--------------|-------|
| Ethernet connector           | RJ-45        | CN22  |
| Keyboard and mouse connector | PS/2         | CN24  |
| Serial port                  | DB-9 male    | CN21  |
| VGA connector                | DB-15 female | CN23  |

**Table 3-2: Rear Panel Connectors**

## 3.2 Internal Peripheral Connectors

The section describes all of the connectors on the 3308585.

### 3.2.1 ATX Power Enable Connector

|                     |                   |
|---------------------|-------------------|
| <b>CN Label:</b>    | CN3               |
| <b>CN Type:</b>     | 3-pin wafer (1x3) |
| <b>CN Location:</b> | See Figure 3-2    |
| <b>CN Pinouts:</b>  | See Table 3-3     |

The ATX power supply enable connector enables the 3308585 to be connected to an ATX power supply. In default mode, the 3308585 can only use an AT power supply. To enable an ATX power supply the AT Power Select jumper must also be configured.





3308585 Half-size CPU Card

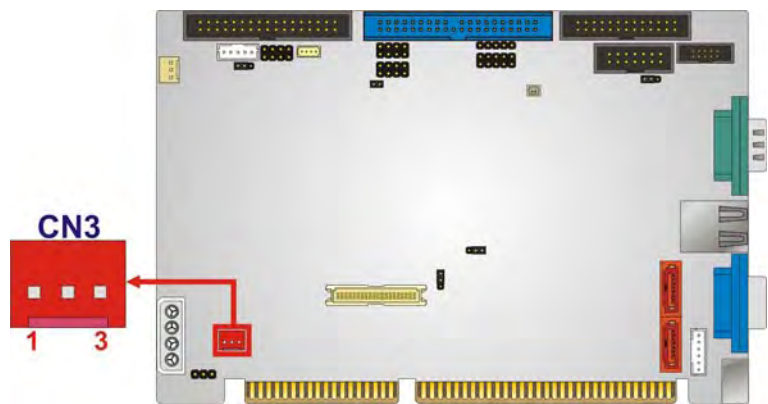


Figure 3-2: ATX Power Supply Enable Connector Location

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | GND         |
| 2   | PS-ON       |
| 3   | +5V Standby |

Table 3-3: ATX Power Supply Enable Connector Pinouts

3.2.2 Audio Connector (10-pin)

- CN Label: CN19
- CN Type: 10-pin box header (2x5)
- CN Location: See Figure 3-3
- CN Pinouts: See Table 3-4

The 10-pin audio connector is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.

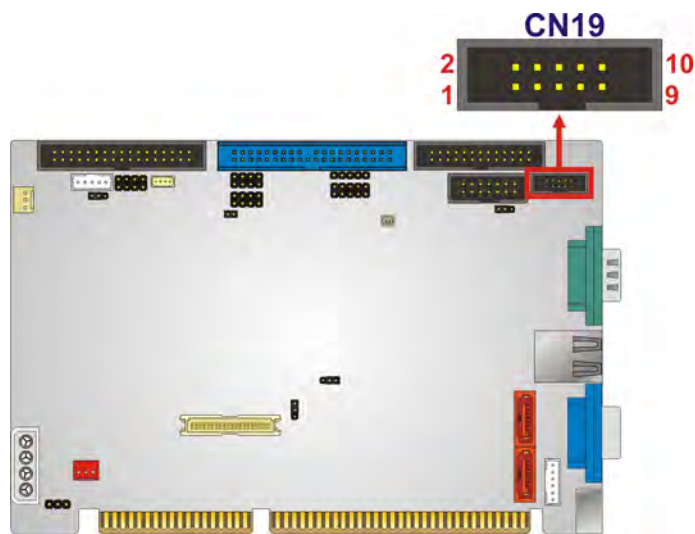


Figure 3-3: Audio Connector Pinouts (10-pin)

| PIN | DESCRIPTION      | PIN | DESCRIPTION     |
|-----|------------------|-----|-----------------|
| 1   | Line out (Right) | 2   | Line in (Right) |
| 3   | GND              | 4   | GND             |
| 5   | Line out (Left)  | 6   | Line in (Left)  |
| 7   | GND              | 8   | GND             |
| 9   | MIC1 in          | 10  | MIC2 in         |

Table 3-4: Audio Connector Pinouts (10-pin)

3.2.3 Backlight Inverter Connector

- CN Label: CN7
- CN Type: 5-pin wafer (1x5)
- CN Location: See Figure 3-4
- CN Pinouts: See Table 3-5

The backlight inverter connector provides the backlight on the LCD display connected to the 3308585 with +12V of power.

## 3308585 Half-size CPU Card

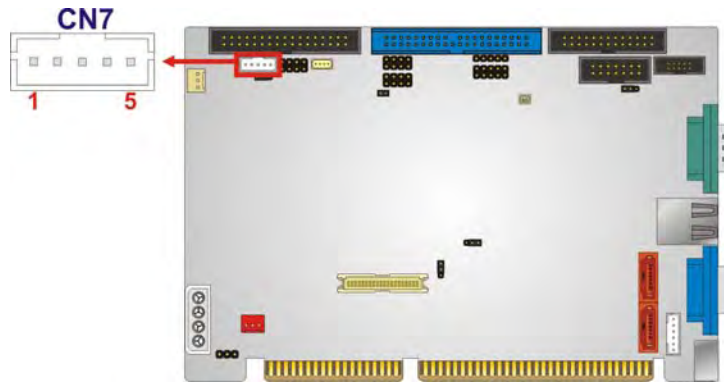


Figure 3-4: Backlight Inverter Connector Pinout Locations

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | GND         |
| 2   | GND         |
| 3   | +12V        |
| 4   | GND         |
| 5   | LCD Enable  |

Table 3-5: Backlight Inverter Connector Pinouts

### 3.2.4 Battery Connector

|                     |                   |
|---------------------|-------------------|
| <b>CN Label:</b>    | CN14              |
| <b>CN Type:</b>     | 2-pin wafer (1x2) |
| <b>CN Location:</b> | See Figure 3-5    |
| <b>CN Pinouts:</b>  | See Table 3-6     |

The battery connector is connected to a backup battery. The battery connector is also used to reset the CMOS memory if the incorrect BIOS settings have been made and the system cannot boot up.

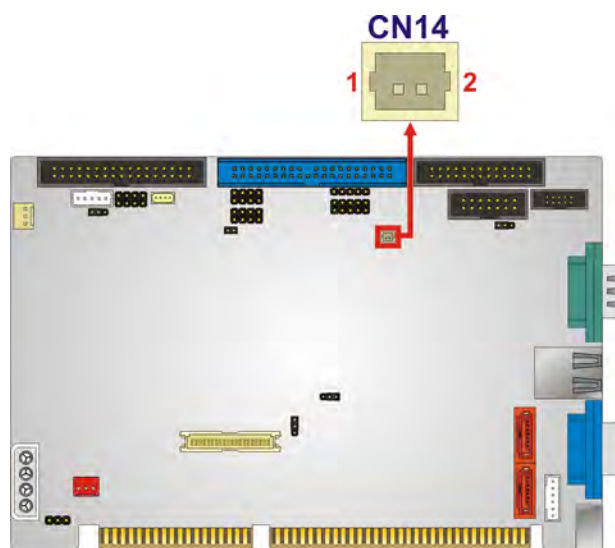


Figure 3-5: Battery Connector Location

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | Battery+    |
| 2       | Ground      |

Table 3-6: Battery Connector Pinouts

3.2.5 CompactFlash® Socket

- CN Label:** CN28 (solder side)
- CN Type:** 50-pin CF Type II slot
- CN Location:** See Figure 3-6
- CN Pinouts:** See Table 3-7

A CF Type I or Type II memory card can be inserted to the CF socket on the solder side of the 3308585.

3308585 Half-size CPU Card

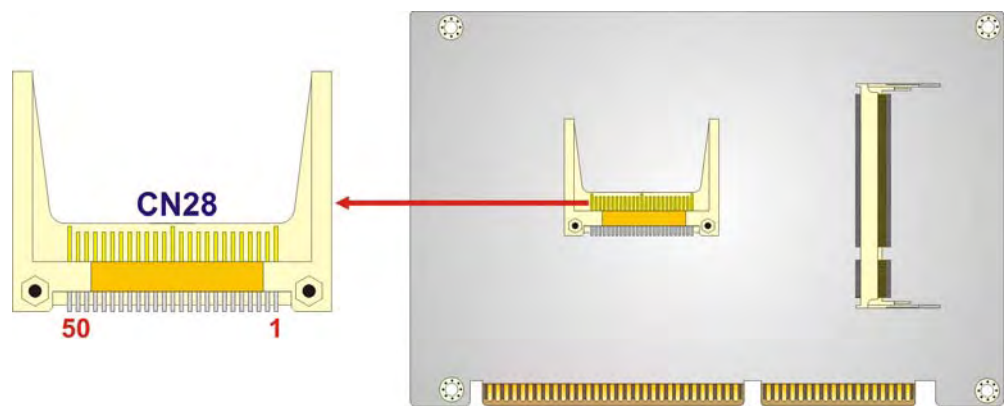


Figure 3-6: CF Card Socket Location

| PIN | DESCRIPTION | PIN | DESCRIPTION  |
|-----|-------------|-----|--------------|
| 1   | GROUND      | 26  | CFD2         |
| 2   | SDD3        | 27  | SDD11        |
| 3   | SDD4        | 28  | SDD12        |
| 4   | SDD5        | 29  | SDD13        |
| 5   | SDD6        | 30  | SDD14        |
| 6   | SDD7        | 31  | SDD15        |
| 7   | SDCS1#      | 32  | SDCS3#       |
| 8   | GROUND      | 33  | N/C          |
| 9   | GROUND      | 34  | SDIOR#       |
| 10  | GROUND      | 35  | SDIOW#       |
| 11  | GROUND      | 36  | VCC          |
| 12  | GROUND      | 37  | IRQ15        |
| 13  | VCC         | 38  | VCC          |
| 14  | GROUND      | 39  | MASTER/SLAVE |
| 15  | GROUND      | 40  | N/C          |
| 16  | GROUND      | 41  | RESET#       |
| 17  | GROUND      | 42  | SIORDY       |
| 18  | SDA2        | 43  | SDDREQ       |
| 19  | SDA1        | 44  | SDDACK#      |
| 20  | SDA0        | 45  | HD_LED2      |
| 21  | SDD0        | 46  | PDIAG#       |
| 22  | SDD1        | 47  | SDD8         |

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 23  | SDD2        | 48  | SDD9        |
| 24  | N/C         | 49  | SDD10       |
| 25  | CFD1        | 50  | GROUND      |

Table 3-7: CF Card Socket Pinouts

3.2.6 Digital Input/Output (DIO) Connector

- CN Label:

CN16
- CN Type:

10-pin header (2x5)
- CN Location:

See Figure 3-7
- CN Pinouts:

See Table 3-8

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable.

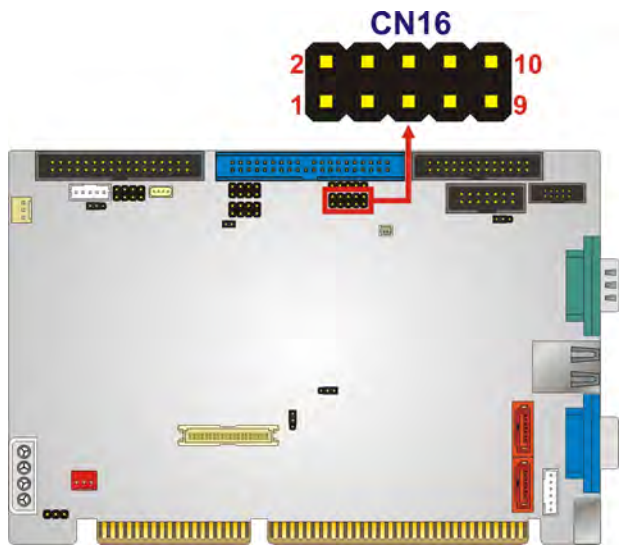


Figure 3-7: DIO Connector Locations

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 1   | Ground      | 2   | +5V         |
| 3   | Output 0    | 4   | Output 1    |



3308585 Half-size CPU Card

|   |          |    |          |
|---|----------|----|----------|
| 5 | Output 2 | 6  | Output 3 |
| 7 | Input 0  | 8  | Input 1  |
| 9 | Input 2  | 10 | Input 3  |

Table 3-8: DIO Connector Pinouts

3.2.7 Fan Connector (+5V)

- CN Label: CN8
- CN Type: 3-pin wafer
- CN Location: See Figure 3-8
- CN Pinouts: See Table 3-9

The cooling fan connector provides a 5V, 500mA current to a system cooling fan. The connector has a "rotation" pin to get rotation signals from fans. Please note that only specified fans can issue the rotation signals.

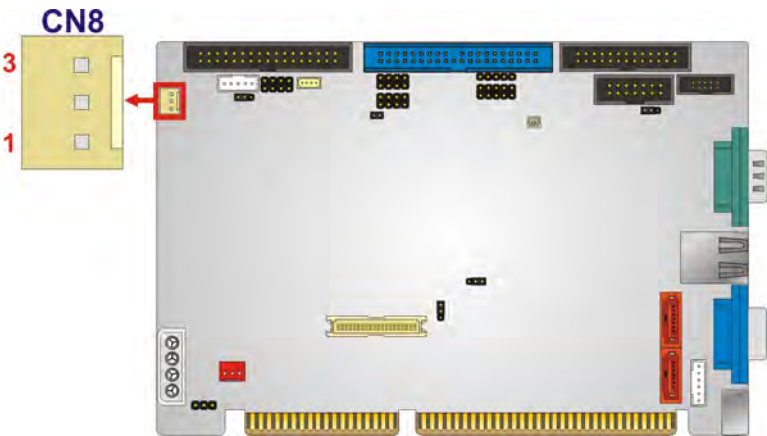


Figure 3-8: Fan Connector Location

| PIN | DESCRIPTION     |
|-----|-----------------|
| 1   | GND             |
| 2   | +5V             |
| 3   | Rotation Signal |

Table 3-9: Fan Connector Pinouts



3.2.8 Floppy Disk Connector

- CN Label: CN9
- CN Type: 34-pin header (2x17)
- CN Location: See Figure 3-9
- CN Pinouts: See Table 3-10

The floppy disk connector is connected to a floppy disk drive.

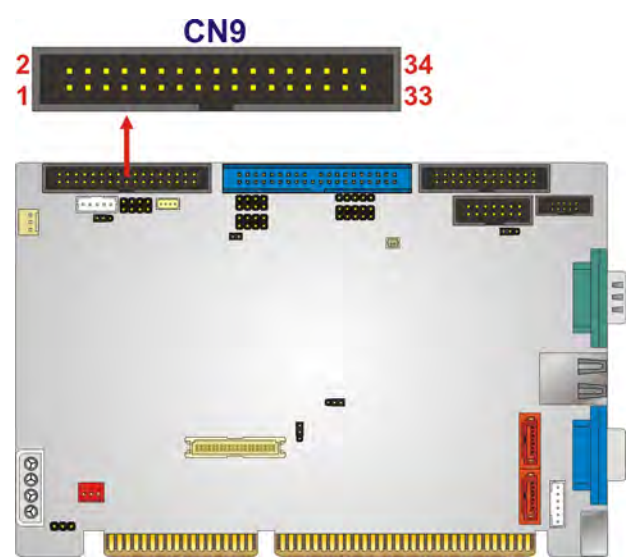


Figure 3-9: FDD Connector Location

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 1   | GROUND      | 2   | DRVDEN0     |
| 3   | GROUND      | 4   | N/C         |
| 5   | GROUND      | 6   | N/C         |
| 7   | GROUND      | 8   | INDEX#      |
| 9   | GROUND      | 10  | MOTO#-      |
| 11  | GROUND      | 12  | N/C         |
| 13  | GROUND      | 14  | DSA#-       |
| 15  | GROUND      | 16  | N/C         |
| 17  | GROUND      | 18  | DIR#        |

## 3308585 Half-size CPU Card

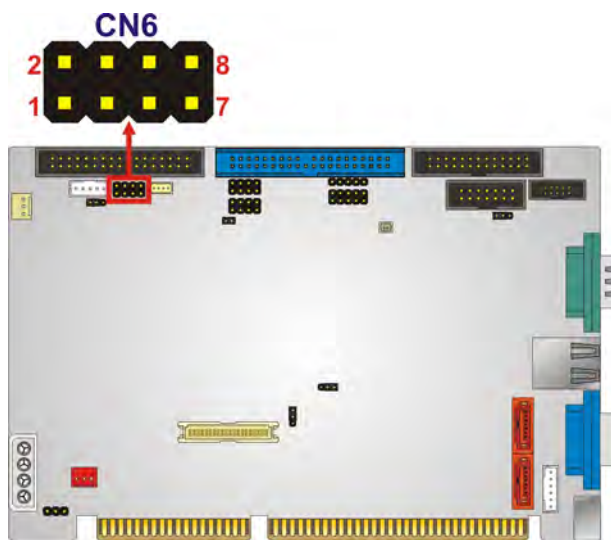
| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 19  | GROUND      | 20  | STEP#       |
| 21  | GROUND      | 22  | WDATA#      |
| 23  | GROUND      | 24  | WGATE#      |
| 25  | GROUND      | 26  | TRK0#       |
| 27  | GROUND      | 28  | WP#         |
| 29  | N/C         | 30  | RDATA#      |
| 31  | GROUND      | 32  | HDSEL#      |
| 33  | N/C         | 34  | DSKCHG#     |

**Table 3-10: FDD Connector Pinouts**

### 3.2.9 Front Panel Connector (8-pin)

|                     |                    |
|---------------------|--------------------|
| <b>CN Label:</b>    | CN6                |
| <b>CN Type:</b>     | 8-pin header (2x4) |
| <b>CN Location:</b> | See Figure 3-10    |
| <b>CN Pinouts:</b>  | See Table 3-11     |

The front panel connector connects to the power button, reset button and hard drive LEDs located on the front panel of the chassis.



**Figure 3-10: Front Panel Connector Pinout Locations**

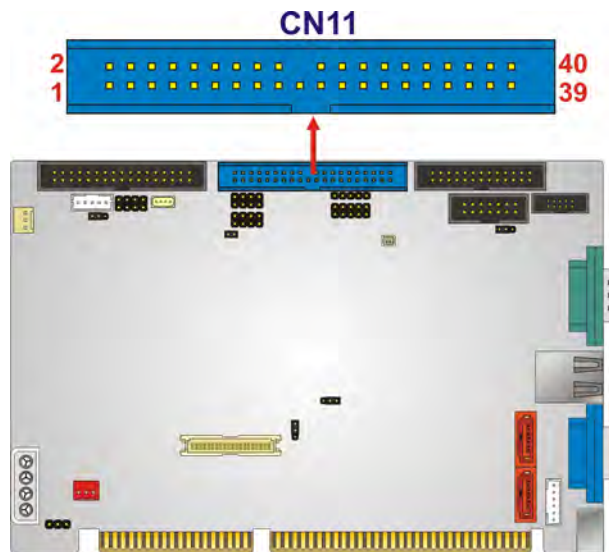
| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 1   | PWRBTN      | 2   | +5V         |
| 3   | GROUND      | 4   | GROUND      |
| 5   | +5V         | 6   | RESET       |
| 7   | HDDLED-     | 8   | GROUND      |

**Table 3-11: Front Panel Connector Pinouts**

## 3.2.10 IDE Connector (40-pin)

|                     |                          |
|---------------------|--------------------------|
| <b>CN Label:</b>    | CN11                     |
| <b>CN Type:</b>     | 40-pin box header (2x20) |
| <b>CN Location:</b> | See Figure 3-11          |
| <b>CN Pinouts:</b>  | See Table 3-12           |

One 40-pin IDE device connector on the 3308585 supports connectivity to two hard disk drives.



**Figure 3-11: IDE Device Connector Locations**

## 3308585 Half-size CPU Card

| PIN | DESCRIPTION | PIN | DESCRIPTION       |
|-----|-------------|-----|-------------------|
| 1   | RESET#      | 2   | GROUND            |
| 3   | DATA 7      | 4   | DATA 8            |
| 5   | DATA 6      | 6   | DATA 9            |
| 7   | DATA 5      | 8   | DATA 10           |
| 9   | DATA 4      | 10  | DATA 11           |
| 11  | DATA 3      | 12  | DATA 12           |
| 13  | DATA 2      | 14  | DATA 13           |
| 15  | DATA 1      | 16  | DATA 14           |
| 17  | DATA 0      | 18  | DATA 15           |
| 19  | GROUND      | 20  | N/C               |
| 21  | DRQ         | 22  | GROUND            |
| 23  | IOW#        | 24  | GROUND            |
| 25  | IOR#        | 26  | GROUND            |
| 27  | CHRDY       | 28  | (PULL LOW TO GND) |
| 29  | DACK#       | 30  | GROUND            |
| 31  | INTERRUPT   | 32  | N/C               |
| 33  | SA1         | 34  | N/C               |
| 35  | SA0         | 36  | SA2               |
| 37  | HDC CS0#    | 38  | HDC CS1#          |
| 39  | HDD ACTIVE# | 40  | GROUND            |

**Table 3-12: IDE Connector Pinouts**

### 3.2.11 Infrared Interface Connector (5-pin)

|                     |                    |
|---------------------|--------------------|
| <b>CN Label:</b>    | CN15               |
| <b>CN Type:</b>     | 5-pin header (1x5) |
| <b>CN Location:</b> | See Figure 3-12    |
| <b>CN Pinouts:</b>  | See Table 3-13     |

The infrared interface connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.

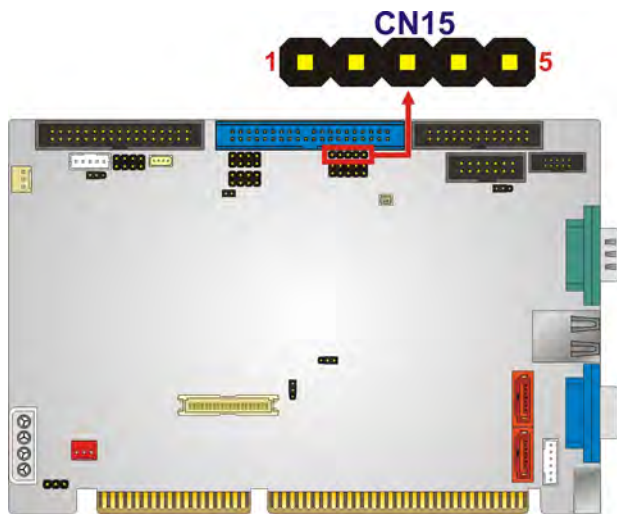


Figure 3-12: Infrared Connector Pinout Locations

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | VCC         |
| 2   | NC          |
| 3   | IR-RX       |
| 4   | GND         |
| 5   | IR-TX       |

Table 3-13: Infrared Connector Pinouts

3.2.12 Keyboard/Mouse Connector

- CN Label:** CN25
- CN Type:** 6-pin wafer (1x6)
- CN Location:** See Figure 3-13
- CN Pinouts:** See Table 3-14

The keyboard and mouse connector can be connected to a standard PS/2 cable or PS/2 Y-cable to add keyboard and mouse functionality to the system.

## 3308585 Half-size CPU Card

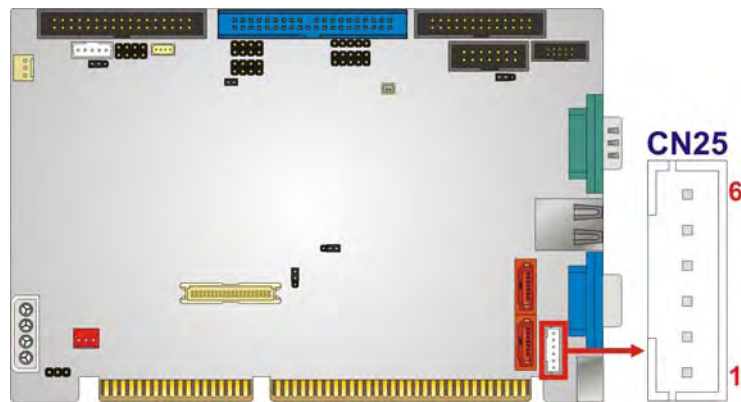


Figure 3-13: Keyboard/Mouse Connector Location

| PIN | DESCRIPTION    |
|-----|----------------|
| 1   | +5V            |
| 2   | Mouse Data     |
| 3   | Mouse Clock    |
| 4   | Keyboard Data  |
| 5   | Keyboard Clock |
| 6   | Ground         |

Table 3-14: Keyboard/Mouse Connector Pinouts

### 3.2.13 Parallel Port Connector

|                     |                   |
|---------------------|-------------------|
| <b>CN Label:</b>    | CN17              |
| <b>CN Type:</b>     | 26-pin box header |
| <b>CN Location:</b> | See Figure 3-14   |
| <b>CN Pinouts:</b>  | See Table 3-15    |

The 26-pin parallel port connector connects to a parallel port connector interface or some other parallel port device such as a printer.



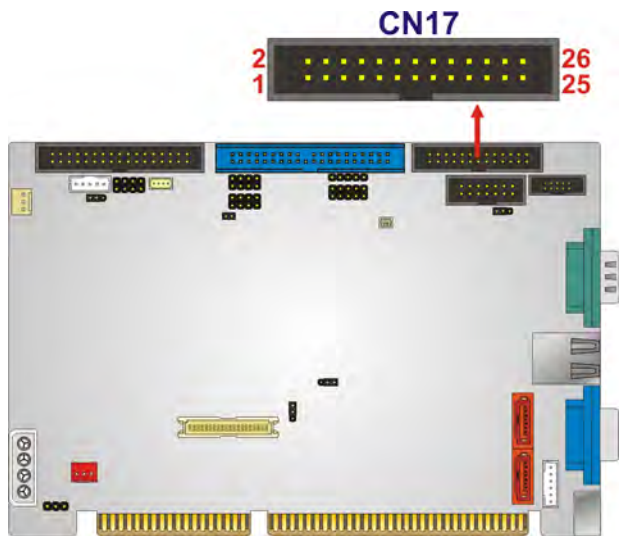


Figure 3-14: Parallel Port Connector Location

| PIN | DESCRIPTION    | PIN | DESCRIPTION        |
|-----|----------------|-----|--------------------|
| 1   | STROBE#        | 2   | AUTO FORM FEED #   |
| 3   | DATA 0         | 4   | ERROR#             |
| 5   | DATA 1         | 6   | INITIALIZE         |
| 7   | DATA 2         | 8   | PRINTER SELECT LN# |
| 9   | DATA 3         | 10  | GROUND             |
| 11  | DATA 4         | 12  | GROUND             |
| 13  | DATA 5         | 14  | GROUND             |
| 15  | DATA 6         | 16  | GROUND             |
| 17  | DATA 7         | 18  | GROUND             |
| 19  | ACKNOWLEDGE    | 20  | GROUND             |
| 21  | BUSY           | 22  | GROUND             |
| 23  | PAPER EMPTY    | 24  | GROUND             |
| 25  | PRINTER SELECT | 26  | N/C                |

Table 3-15: Parallel Port Connector Pinouts

3.2.14 Power Connector

CN Label: CN2

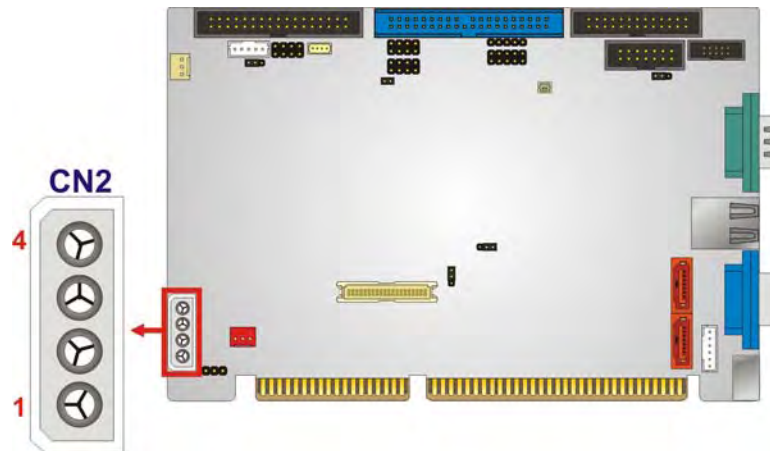
CN Type: 4-pin power connector (1x4)

## 3308585 Half-size CPU Card

**CN Location:** See Figure 3-15

**CN Pinouts:** See Table 3-16

The 4-pin power connector is connected to a power supply.



**Figure 3-15: Power Connector Location**

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | +5V         |
| 2   | GND         |
| 3   | GND         |
| 4   | +12V        |

**Table 3-16: Power Connector Pinouts**

### 3.2.15 SATA Drive Connectors (Optional)

**CN Label:** CN26 and CN27

**CN Type:** 7-pin SATA drive connectors

**CN Location:** See Figure 3-16

**CN Pinouts:** See Table 3-17

The SATA connectors connect to SATA 1.5Gb/s hard drives or optical drives. The SATA connectors are option and only for 3308585B model.

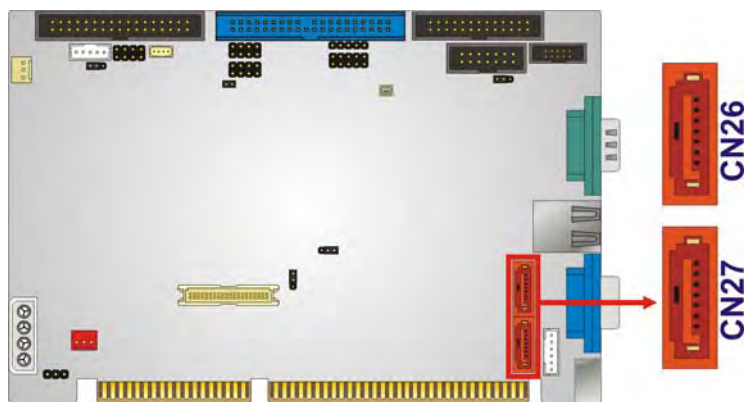


Figure 3-16: SATA Drive Connector Locations

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | GND         |
| 2   | TX +        |
| 3   | TX -        |
| 4   | GND         |
| 5   | RX -        |
| 6   | RX +        |
| 7   | GND         |

Table 3-17: SATA Drive Connector Pinouts

3.2.16 Serial Port Connector (RS-232/422/485)

- CN Label:** CN18
- CN Type:** 14-pin box header (2x7)
- CN Location:** See Figure 3-17
- CN Pinouts:** See Table 3-18

This connector provides RS-232 communications via pin 1 ~ pin 10 as COM2.

Pin 11 ~ pin 14 of this connector provides RS-422 or RS-485 communications as COM3.

3308585 Half-size CPU Card

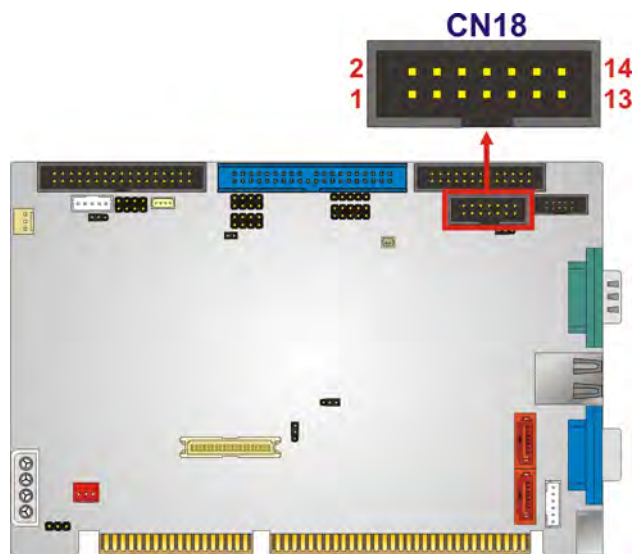


Figure 3-17: Internal Serial Port Connector Pinout Locations

| PIN | DESCRIPTION               | PIN | DESCRIPTION           |
|-----|---------------------------|-----|-----------------------|
| 1   | Data Carrier Direct (DCD) | 2   | Data Set Ready (DSR)  |
| 3   | Receive Data (RXD)        | 4   | Request To Send (RTS) |
| 5   | Transmit Data (TXD)       | 6   | Clear To Send (CTS)   |
| 7   | Data Terminal Ready (DTR) | 8   | Ring Indicator (RI)   |
| 9   | Ground (GND)              | 10  | Ground (GND)          |
| 11  | TxD485+                   | 12  | TxD485#               |
| 13  | RxD485+                   | 14  | RxD485#               |

Table 3-18: Internal Serial Port Connector Pinouts

3.2.17 TTL Connector

- CN Label:

CN10
- CN Type:

40-pin crimp (2x20)
- CN Location:

See Figure 3-18
- CN Pinouts:

See Table 3-19

The 40-pin TTL connector can be connected to a TFT LCD panel .

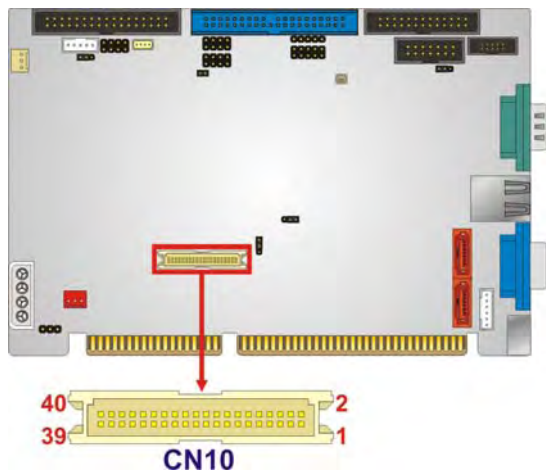


Figure 3-18: TFT LCD Connector Pinout Locations

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 1   | VCD_VCC     | 2   | VCD_VCC     |
| 3   | GROUND      | 4   | GROUND      |
| 5   | VCD_VCC     | 6   | VCD_VCC     |
| 7   | I_SDATA     | 8   | GROUND      |
| 9   | TFT_B0      | 10  | TFT_B1      |
| 11  | TFT_B2      | 12  | TFT_B3      |
| 13  | TFT_B4      | 14  | TFT_B5      |
| 15  | TFT_B6      | 16  | TFT_B7      |
| 17  | TFT_G0      | 18  | TFT_G1      |
| 19  | TFT_G2      | 20  | TFT_G3      |
| 21  | TFT_G4      | 22  | TFT_G5      |
| 23  | TFT_G6      | 24  | TFT_G7      |
| 25  | TFT_R0      | 26  | TFT_R1      |
| 27  | TFT_R2      | 28  | TFT_R3      |
| 29  | TFT_R4      | 30  | TFT_R5      |
| 31  | TFT_R6      | 32  | TFT_R7      |
| 33  | GROUND      | 34  | GROUND      |
| 35  | FPCLK       | 36  | VSYNC       |
| 37  | LCD_EN      | 38  | HSYNC       |
| 39  | I_SCLK      | 40  | DISPEN      |

Table 3-19: TFT LCD Port Connector Pinouts



3.2.18 Internal USB Connectors

- CN Label:

CN12 and CN13
- CN Type:

8-pin header (2x4)
- CN Location:

See Figure 3-19
- CN Pinouts:

See Table 3-20

The 2x4 USB pin connectors each provide connectivity to two USB 2.0 ports. Each USB connector can support two USB devices. The USB ports are used for I/O bus expansion.

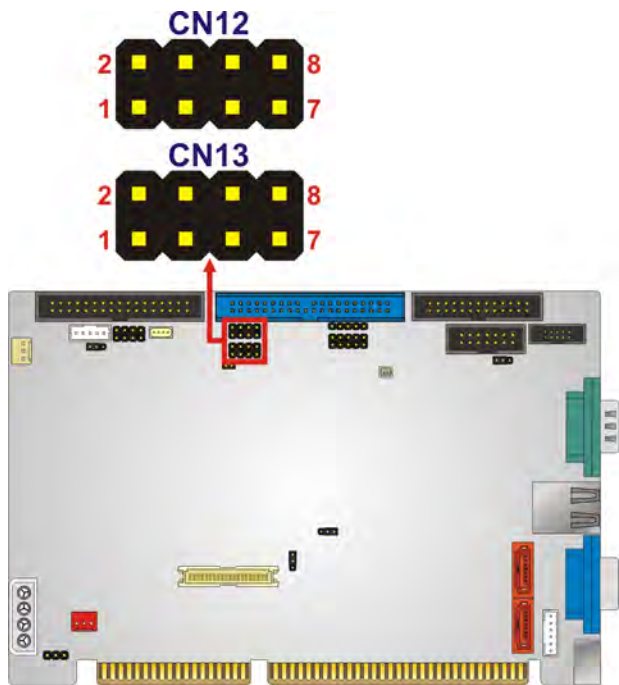


Figure 3-19: USB Connector Pinout Locations

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 1   | VCC         | 2   | GROUND      |
| 3   | DATA-       | 4   | DATA +      |
| 5   | DATA +      | 6   | DATA-       |
| 7   | GROUND      | 8   | VCC         |

Table 3-20: USB Port Connector Pinouts



3.2.19 -VCC Power Connector

- CN Label:** CN1
- CN Type:** 3-pin header (1x3)
- CN Location:** See Figure 3-19
- CN Pinouts:** See Table 3-20

The -VCC power connector provides -5V and -12V power to legacy expansion ISA devices installed on the backplane. The power supply is connected to the -VCC power connector and transmitted to the ISA devices through the backplane.

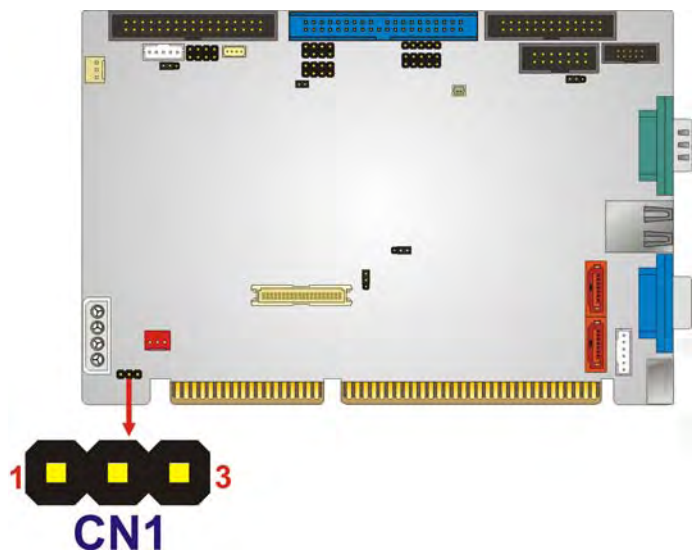


Figure 3-20: -VCC Power Connector Pinout Locations

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | -5V         |
| 2   | GROUND      |
| 3   | -12V        |

Table 3-21: -VCC Power Connector Pinouts

### 3.3 External Peripheral Interface Connectors

The 3308585 external peripheral interface connectors are listed below and shown in Figure 3-21:

- 1 x PS/2 Keyboard/Mouse connector
- 1 x RJ-45 Ethernet connector
- 1 x Serial communications port
- 1 x VGA port

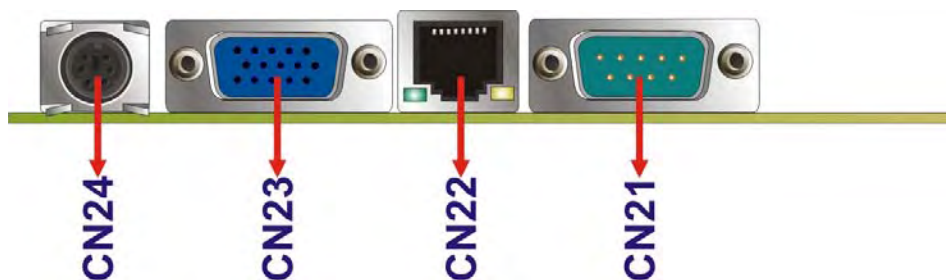


Figure 3-21: 3308585 On-board External Interface Connectors

#### 3.3.1 PS/2 Keyboard/Mouse Connector

|                     |                                |
|---------------------|--------------------------------|
| <b>CN Label:</b>    | CN24                           |
| <b>CN Type:</b>     | PS/2                           |
| <b>CN Location:</b> | See Figure 3-21                |
| <b>CN Pinouts:</b>  | See Figure 3-22 and Table 3-22 |

The PS/2 connector can be connected to a keyboard or mouse.

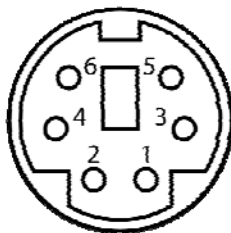


Figure 3-22: PS/2 Pinouts

| PIN | DESCRIPTION    | PIN | DESCRIPTION |
|-----|----------------|-----|-------------|
| 1   | KEYBOARD DATA  | 2   | MOUSE DATA  |
| 3   | GND            | 4   | GND         |
| 5   | KEYBOARD CLOCK | 6   | MOUSE CLOCK |

**Table 3-22: PS/2 Connector Pinouts**

## 3.3.2 RJ-45 Ethernet Connector

|                     |                 |
|---------------------|-----------------|
| <b>CN Label:</b>    | CN22            |
| <b>CN Type:</b>     | RJ-45           |
| <b>CN Location:</b> | See Figure 3-21 |
| <b>CN Pinouts:</b>  | See Table 3-23  |

The RJ-45 Ethernet connector on the 3308585 provides connectivity to a 10/100 megabit Ethernet connection between the 3308585 and a Local Area Network (LAN) through a network hub.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 1   | TX+         | 8   | N/C         |
| 2   | GROUND      | 9   | ACT_LED-    |
| 3   | TX-         | 10  | ACT_LED+    |
| 4   | RX+         | 11  | LINK_LED -  |
| 5   | GROUNG      | 12  | LINK_LED+   |
| 6   | RX-         | 13  | GROUND      |
| 7   | N/C         | 14  | GROUND      |

**Table 3-23: RJ-45 Ethernet Connector Pinouts**



3308585 Half-size CPU Card

Figure 3-23: RJ-45 Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked.

| SPEED LED |                        | LINK LED |                                  |
|-----------|------------------------|----------|----------------------------------|
| Status    | Description            | Status   | Description                      |
| GREEN     | ON: 100MB<br>OFF: 10MB | YELLOW   | ON: Linked<br>Flashing: Activity |

Table 3-24: J7 Connector LEDs

3.3.3 Serial Port Connector (COM 1)

- CN Label:

CN21
- CN Type:

DB-9 connector
- CN Location:

See Figure 3-21
- CN Pinouts:

See Table 3-25 and Figure 3-24

The 9-pin DB-9 COM 1 serial port connector is connected to RS-232 serial communications devices.

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|
| 1   | DCD1        | 2   | RXD1        |
| 3   | TXD1        | 4   | DTR1        |
| 5   | GND         | 6   | DSR1        |
| 7   | RTS1        | 8   | CTS1        |
| 9   | COM_RI1     |     |             |

Table 3-25: RS-232 Serial Port (COM 1) Pinouts

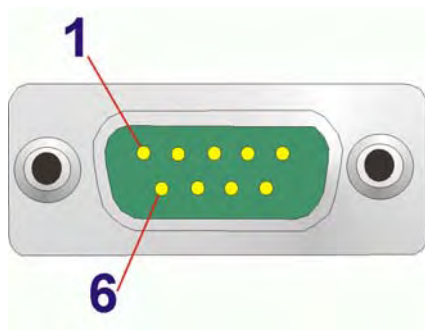


Figure 3-24: COM1 Pinout Locations

### 3.3.4 VGA Connector

- CN Label:** CN23
- CN Type:** DB-15
- CN Location:** See Figure 3-21
- CN Pinouts:** See Table 3-26

The standard 15-pin female DB-15 VGA connector connects to a CRT or LCD monitor directly.

| PIN | DESCRIPTION | PIN | DESCRIPTION | PIN | DESCRIPTION |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | RED         | 6   | GROUND      | 11  | NC          |
| 2   | GREEN       | 7   | GROUND      | 12  | DDCDAT      |
| 3   | BLUE        | 8   | GROUND      | 13  | HSYNC       |
| 4   | NC          | 9   | NC          | 14  | VSYNC       |
| 5   | GROUND      | 10  | GROUND      | 15  | DDCCLK      |

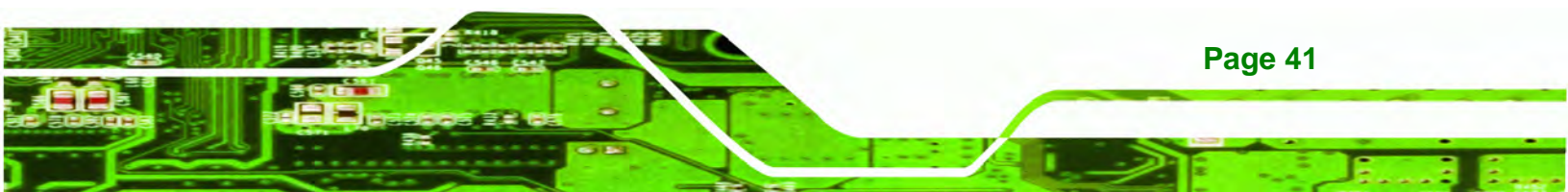
Table 3-26: VGA Connector Pinouts

Chapter

4

# Installation

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### 4.1 Anti-static Precautions

---



#### **WARNING:**

Failure to take ESD precautions during the installation of the 3308585 may result in permanent damage to the 3308585 and severe injury to the user.

---

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3308585. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3308585 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the 3308585, place it on an anti-static pad. This reduces the possibility of ESD damaging the 3308585.
- ***Only handle the edges of the PCB:*** When handling the PCB, hold the PCB by the edges.



### 4.2 Installation Considerations

---



#### NOTE:

The following installation notices and installation considerations should be read and understood before the 3308585 is installed. All installation notices pertaining to the installation of the 3308585 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the 3308585 and injury to the person installing the motherboard.

---

#### 4.2.1 Installation Notices

---



#### WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the 3308585, 3308585 components and injury to the user.

---

Before and during the installation please **DO** the following:

- Read the user manual:
  - The user manual provides a complete description of the 3308585 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the 3308585 on an antistatic pad:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the 3308585 off:

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- When working with the 3308585, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the 3308585 **DO NOT**:

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

### 4.3 Unpacking

When the 3308585 is unpacked, please check all the unpacking list items listed in Chapter 3 are indeed present. If any of the unpacking list items are not available please contact the 3308585 vendor reseller/vendor where the 3308585 was purchased or contact a sales representative.

### 4.4 SO-DIMM Installation



#### NOTE:

Using incorrectly specified SO-DIMM may cause permanently damage the 3308585. Please make sure the purchased SO-DIMM complies with the memory specifications of the 3308585. SO-DIMM specifications compliant with the 3308585 are listed in **Chapter 2**.

To install a SO-DIMM into a SO-DIMM socket, please follow the steps below and refer to Figure 4-1.



## 3308585 Half-size CPU Card

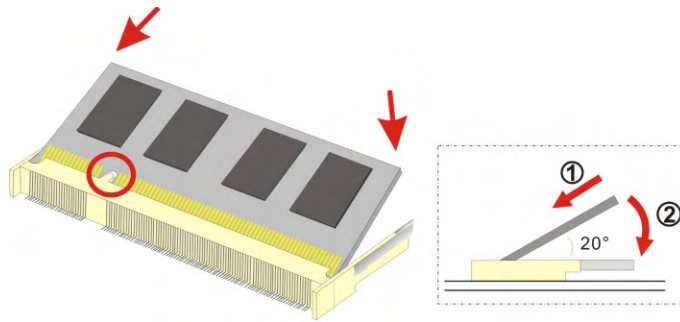


Figure 4-1: SO-DIMM Installation

- Step 1:** **Locate the SO-DIMM socket.** Place the 3308585 on an anti-static pad with the solder side facing up.
- Step 2:** **Align the SO-DIMM with the socket.** The SO-DIMM must be oriented in such a way that the notch in the middle of the SO-DIMM must be aligned with the plastic bridge in the socket.
- Step 3:** **Insert the SO-DIMM.** Push the SO-DIMM chip into the socket at an angle. (See Figure 4-1)
- Step 4:** **Open the SO-DIMM socket arms.** Gently pull the arms of the SO-DIMM socket out and push the rear of the SO-DIMM down. (See Figure 4-1)
- Step 5:** **Secure the SO-DIMM.** Release the arms on the SO-DIMM socket. They clip into place and secure the SO-DIMM in the socket.

## 4.5 CF Card Installation



### NOTE:

The 3308585 can support both CF Type I cards and CF Type II cards. For the complete specifications of the supported CF cards please refer to **Chapter 2**.

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To install the a CF card (Type I or Type II) onto the 3308585, please follow the steps below:

- Step 1:** **Locate the CF card socket.** Place the 3308585 on an anti-static pad with the solder side facing up. Locate the CF card on the solder side.
- Step 2:** **Align the CF card.** Make sure the CF card is properly aligned with the CF socket.
- Step 3:** **Insert the CF card.** Gently insert the CF card into the socket making sure the socket pins are properly inserted into the socket. See Figure 4-2.

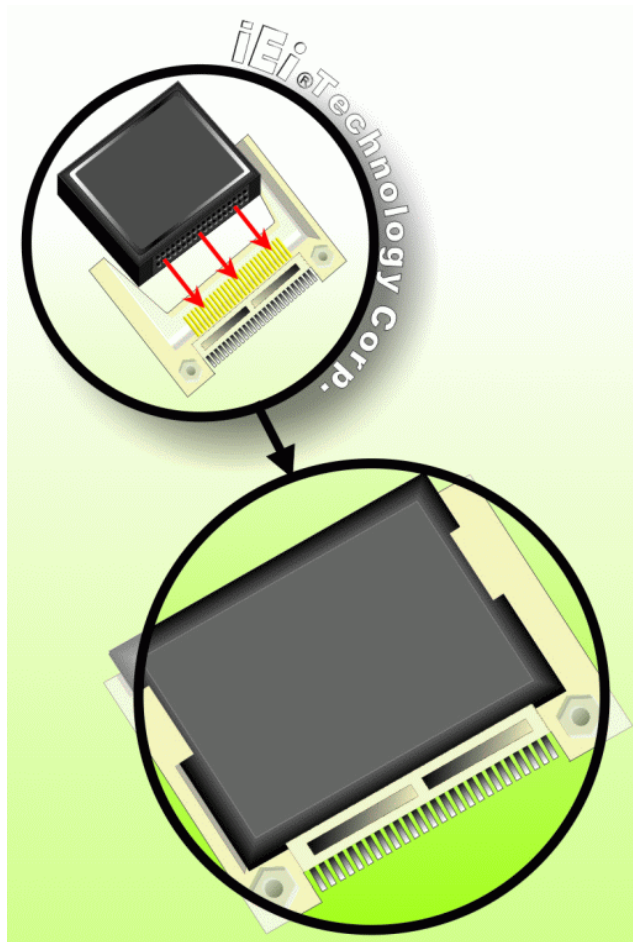


Figure 4-2: CF Card Installation



4.6 Jumper Settings



NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

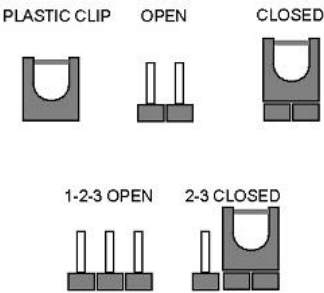


Figure 4-3: Jumper Locations

Before the 3308585 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the 3308585 are listed in **Table 4-1**.

| Description               | Type         | Label |
|---------------------------|--------------|-------|
| AT/ATX power mode setting | 2-pin header | JP2   |
| CompactFlash® card setup  | 3-pin header | JP7   |
| COM3 RS-422/485 select    | 3-pin header | JP3   |
| LCD voltage select        | 3-pin header | JP5   |
| LCD TTL clock select      | 3-pin header | JP6   |

Table 4-1: Jumpers

4.6.1 AT/ATX Power Select

- Jumper Label:

JP2
- Jumper Type:

2-pin header
- Jumper Settings:

See Table 4-2
- Jumper Location:

See Figure 4-4

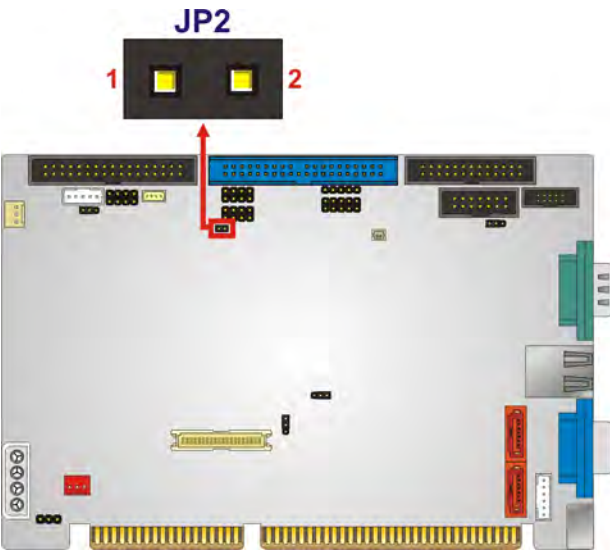


The AT/ATX Power Select jumper specifies the systems power mode as AT or ATX. AT/ATX Power Select jumper settings are shown in **Table 4-2**.

| Setting | Description            |
|---------|------------------------|
| Short   | Use AT power (Default) |
| Open    | Use ATX power          |

**Table 4-2: AT/ATX Power Select Jumper Settings**

The location of the AT/ATX Power Select jumper is shown in **Figure 4-4** below.



**Figure 4-4: AT/ATX Power Select Jumper Location**

4.6.2 CF Card Setup

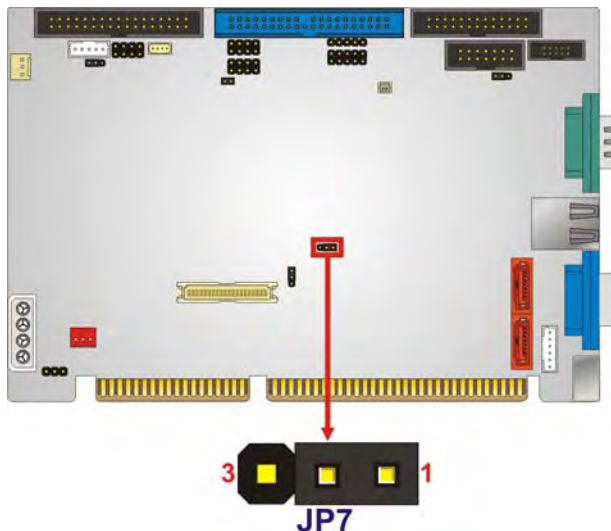
- Jumper Label: JP7
- Jumper Type: 3-pin header
- Jumper Settings: See Table 4-3
- Jumper Location: See Figure 4-5

The CompactFlash® slot is connected through an IDE connection. This jumper sets the CompactFlash® card as the master or slave IDE device.

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| Setting   | Description |
|-----------|-------------|
| Short 1-2 | Slave       |
| Short 2-3 | Master      |

**Table 4-3: CompactFlash® Setup Jumper Settings**



**Figure 4-5: CompactFlash® Setup Jumper Location**

### 4.6.3 COM 3 Function Select

|                         |                |
|-------------------------|----------------|
| <b>Jumper Label:</b>    | <b>JP3</b>     |
| <b>Jumper Type:</b>     | 3-pin header   |
| <b>Jumper Settings:</b> | See Table 4-4  |
| <b>Jumper Location:</b> | See Figure 4-6 |

The COM 3 Function Select jumper sets the communication protocol used by the third serial communications port (COM 3) as RS-422 or RS-485. The COM 3 Function Select settings are shown in the table below.

| Setting   | Description      |
|-----------|------------------|
| Short 1-2 | RS-422 (Default) |
| Short 2-3 | RS-485           |

**Table 4-4: COM 3 Function Select Jumper Settings**

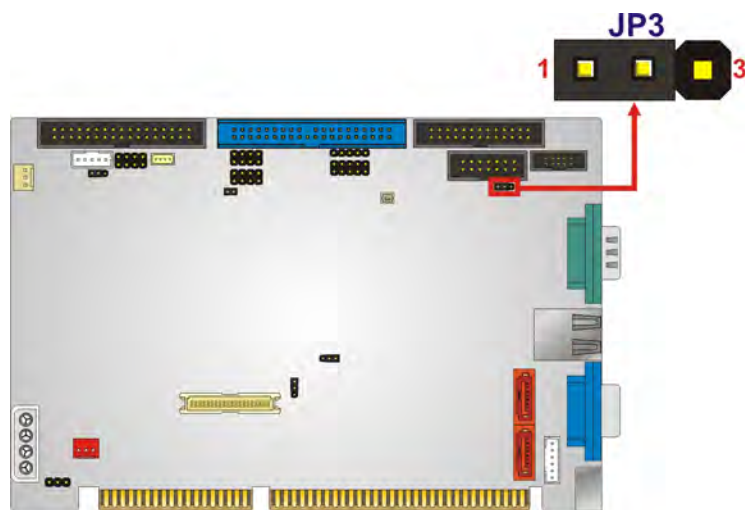


Figure 4-6: COM 3 Function Select Jumper Location

#### 4.6.4 LCD Voltage Select



**WARNING:**

Incorrect voltages can destroy the LCD panel. Make sure to select a voltage that matches the voltage required by the LCD panel.

- Jumper Label:** JP5
- Jumper Type:** 3-pin header
- Jumper Settings:** See Table 4-5
- Jumper Location:** See Figure 4-7

The LCD voltage selection jumper sets the voltage of the power supplied to the LCD panel.

| Setting   | Description      |
|-----------|------------------|
| Short 1-2 | +3.3 V (Default) |
| Short 2-3 | +5.0 V           |

Table 4-5: LVDS Voltage Selection Jumper Settings

3308585 Half-size CPU Card

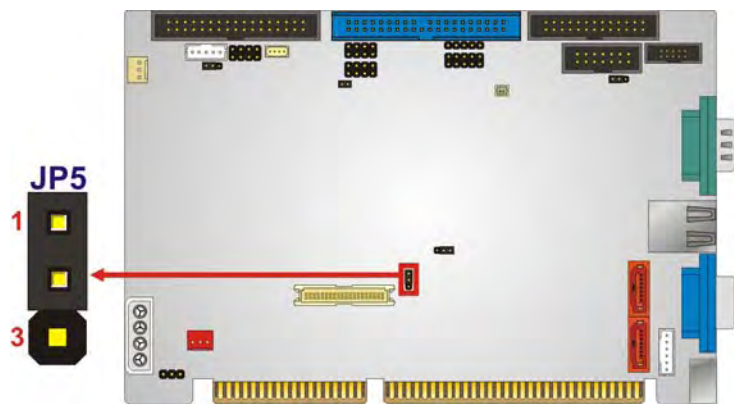


Figure 4-7: LVDS Voltage Selection Jumper Locations

4.6.5 LCD Clock Select Jumper

- Jumper Label: JP6
- Jumper Type: 3-pin header
- Jumper Settings: See Table 4-1
- Jumper Location: See Figure 4-8

This jumper inverts the LCD clock of the LCD connector (CN10).

| Setting   | Description |
|-----------|-------------|
| Short 1-2 | FPCLK       |
| Short 2-3 | FPCLK#      |

Table 4-6: LCD Clock Select Jumper Settings

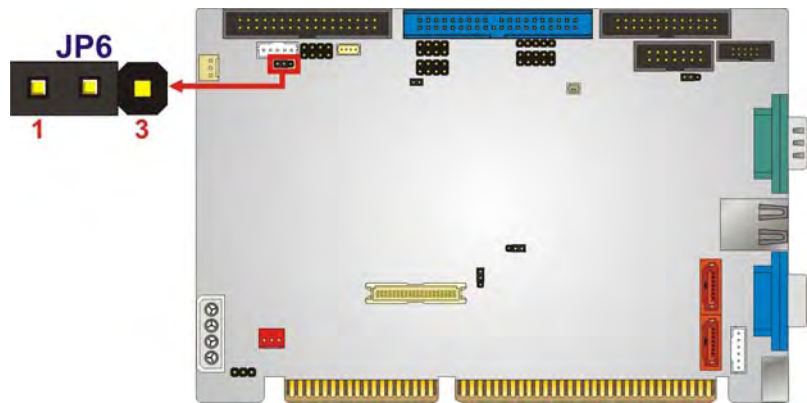


Figure 4-8: LCD Clock Select Jumper Location

### 4.7 Chassis Installation

#### 4.7.1 Airflow



#### **WARNING:**

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the 3308585 must have air vents to allow cool air to move into the system and hot air to move out.

---

The 3308585 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

#### 4.7.2 Backplane Installation

Before the 3308585 can be installed into the chassis, a backplane must first be installed. Please refer to the installation instructions that came with the backplane and the chassis to see how to install the backplane into the chassis.

---

#### 4.7.3 CPU Card Installation

To install the CPU card onto the backplane, carefully align the CPU card edge connector with the CPU card socket on the backplane. To do this, please refer to the reference material that came with the backplane. Next, secure the CPU card to the chassis. To do this, please refer to the reference material that came with the chassis.



## 4.8 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors

### 4.8.1 5.1 Channel Audio Kit Installation

The audio kit attaches to the audio connector. The audio kit provides 5.1 channel audio. To install the audio kit, please refer to the steps below:

**Step 1:** **Connect the cable to the audio kit.** Connect the included cable to the audio kit.

Make sure pin 1 aligns with the marked pin.

**Step 2:** **Connect the cable to the board.** Connect the other end of the cable to the board.

Make sure to line up the marked pin 1.

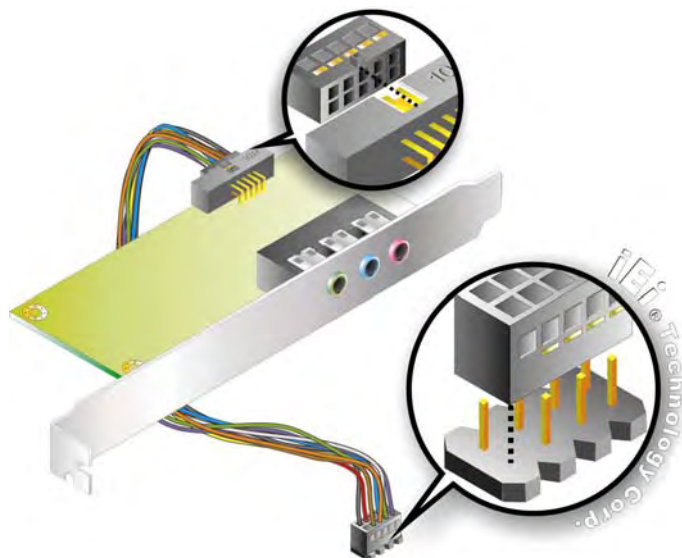


Figure 4-9: 5.1 Channel Audio Kit

**Step 3:** **Mount the audio kit onto the chassis.** Once the audio kit is connected to the board, secure the audio kit bracket to the system chassis.

**Step 4:** **Connect the audio devices.** Connect speakers and external audio sources to the audio jacks on the audio kit.

**Step 5:** **Install the driver.** Install the 5.1 channel audio driver included with the board.



#### 4.8.2 ATA Flat Cable Connection

The IDE cable can connect to one or two IDE devices. To connect the IDE devices, follow the steps below.

**Step 1: Locate the IDE connector.** Locate the IDE connector on the board.

**Step 2: Insert the connector.** Connect the IDE cable connector to the on-board connector. See Figure 4-10. A key on the front of the cable connector ensures it can only be inserted in one direction.

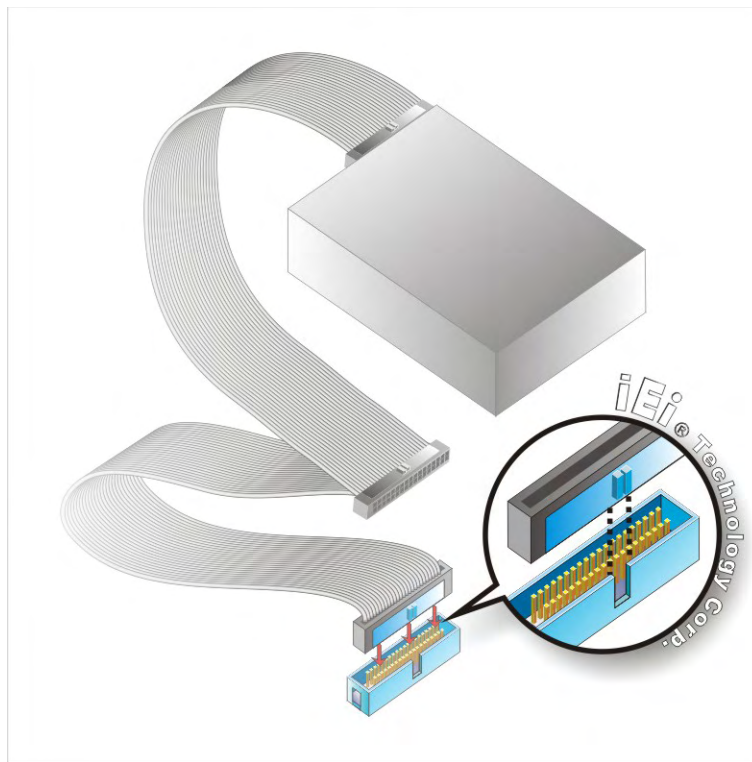


Figure 4-10: IDE Cable Connection

**Step 3: Connect the cable to an IDE device.** Connect the two connectors on the other side of the cable to one or two IDE devices. Make sure that pin 1 on the cable corresponds to pin 1 on the connector.

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### 4.8.3 USB Cable

The 3308585 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

**Step 1: Locate the connectors.** The locations of the USB connectors are shown in Chapter 3.



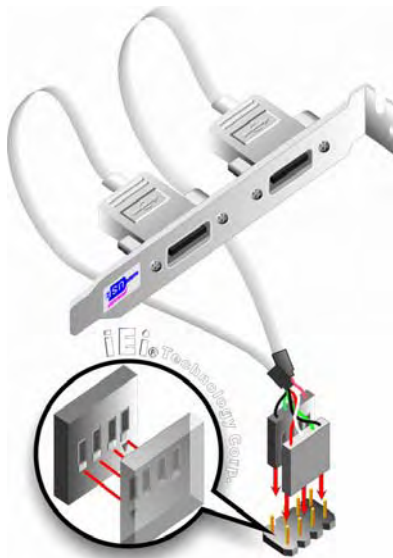
#### **WARNING:**

If the USB pins are not properly aligned, the USB device can burn out.

---

**Step 2: Align the connectors.** The cable has two connectors. Correctly align pin 1 on each cable connector with pin 1 on the 3308585 USB connector.

**Step 3: Insert the cable connectors** Once the cable connectors are properly aligned with the USB connectors on the 3308585, connect the cable connectors to the on-board connectors. See Figure 4-11.



**Figure 4-11: Dual USB Cable Connection**

**Step 4:** **Attach the bracket to the chassis.** The USB 2.0 connectors are attached to a bracket. To secure the bracket to the chassis please refer to the installation instructions that came with the chassis.

## **4.9 External Peripheral Interface Connection**

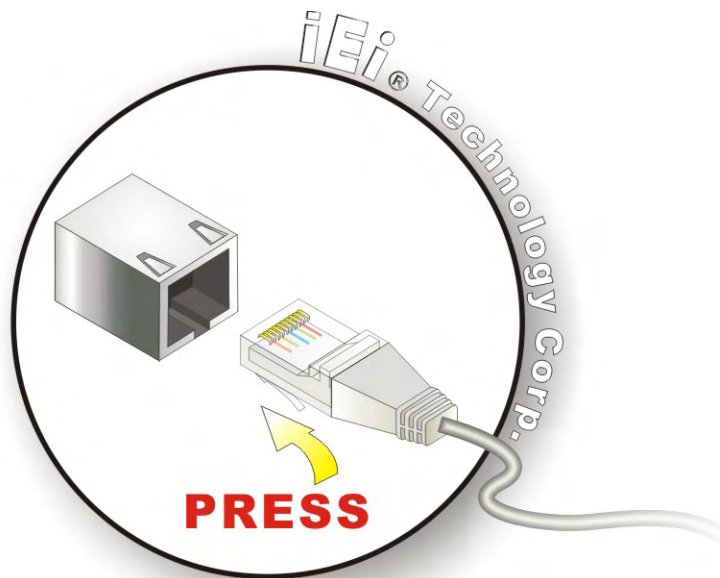
Devices can be connected to the external connectors. To install external devices, follow the directions in the subsections below.

### **4.9.1 LAN Connection (Single Connector)**

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

**Step 1:** **Locate the RJ-45 connectors.** The location of the LAN connector is shown in Chapter 4.

**Step 2:** **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the 3308585. See Figure 4-12.



**Figure 4-12: LAN Connection**

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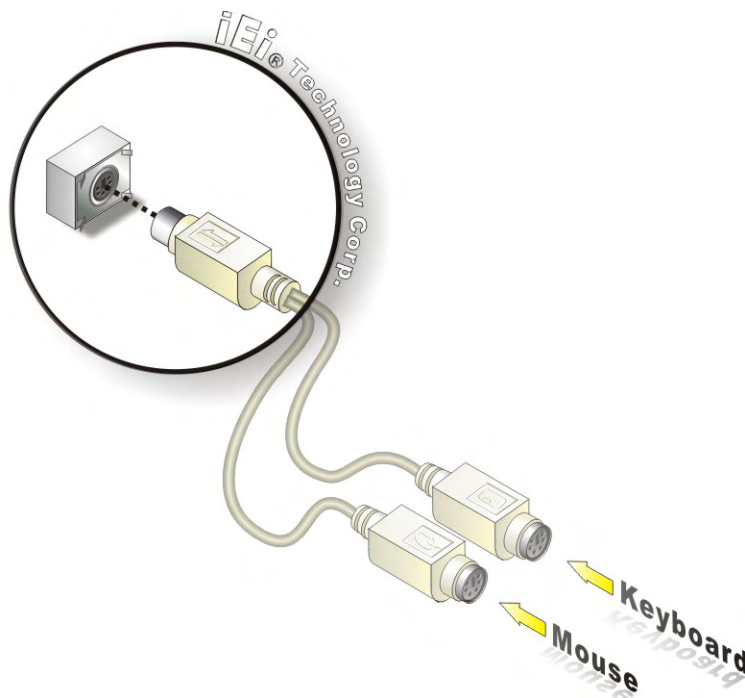
**Step 3:** Insert the LAN cable RJ-45 connector. Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

### 4.9.2 PS/2 Y-Cable Connection

The 3308585 has a PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is connected to the PS/2 Y-cable that came with the 3308585. One of the PS/2 cables is connected to a keyboard and the other to a mouse to the system. Follow the steps below to connect a keyboard and mouse to the 3308585.

**Step 1:** Locate the dual PS/2 connector. The location of the PS/2 connector is shown in **Chapter 3**.

**Step 2:** Insert the keyboard/mouse connector. Insert the PS/2 connector on the end of the PS/2 y-cable into the external PS/2 connector. See Figure 4-13.



**Figure 4-13: PS/2 Keyboard/Mouse Connector**

**Step 3:** Connect the keyboard and mouse. Connect the keyboard and mouse to the appropriate connector. The keyboard and mouse connectors can be

distinguished from each other by looking at the small graphic at the top of the connector.

### 4.9.3 Serial Device Connection

The 3308585 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the 3308585.

**Step 1: Locate the DB-9 connector.** The location of the DB-9 connector is shown in Chapter 3.

**Step 2: Insert the serial connector.** Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 4-14.

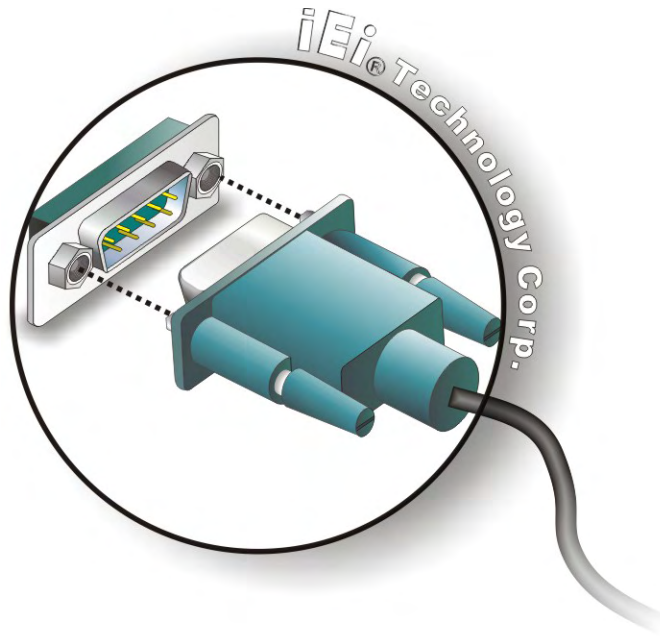


Figure 4-14: Serial Device Connector



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**Step 3: Secure the connector.** Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

### 4.9.4 VGA Monitor Connection

The 3308585 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the 3308585, please follow the instructions below.

**Step 1: Locate the female DB-15 connector.** The location of the female DB-15 connector is shown in **Chapter 3**.

**Step 2: Align the VGA connector.** Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

**Step 3: Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the 3308585. See Figure 4-15.

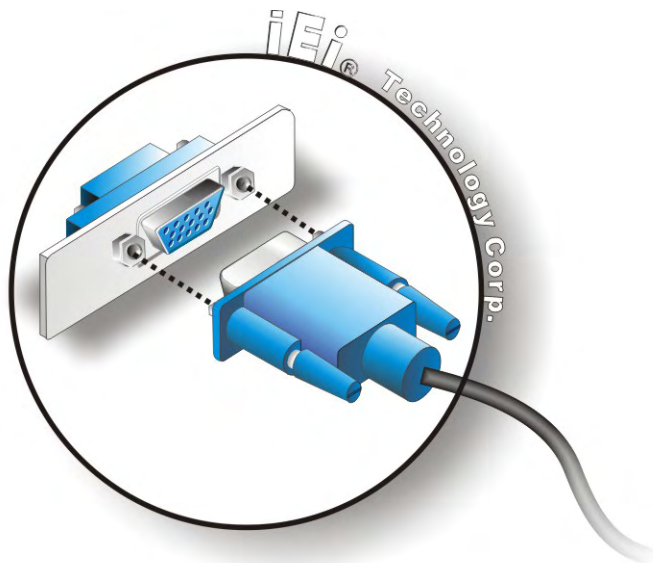


Figure 4-15: VGA Connector



## 3308585 Half-size CPU Card

**Step 4:** **Secure the connector.** Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

### 4.10 Software Installation

All the drivers for the 3308585 are on the CD that came with the system. To install the drivers, please follow the steps below.

**Step 1:** Insert the CD into a CD drive connected to the system.



#### NOTE:

If the installation program doesn't start automatically:  
Click "Start->My Computer->CD Drive->autorun.exe"

---

**Step 2:** The driver main menu appears (**Figure 4-16**).



Figure 4-16: Introduction Screen

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**Step 3:** Click **IOWA-LX**.

**Step 4:** A new screen with a list of available drivers appears (**Figure 4-17**).



**Figure 4-17: Available Drivers**

**Step 5:** Install all of the necessary drivers in this menu.

Chapter

5

# BIOS Screens

---



### 5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

#### 5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the “**Press Del to enter SETUP**” message appears on the screen.

If the message disappears, restart the computer and try again.

#### 5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, press **F1** for help and press **Esc** to quit. Navigation keys are shown below.

| Key           | Function  |
|---------------|---|
| Up arrow      | Move to the item above  |
| Down arrow    | Move to the item below  |
| Left arrow    | Move to the item on the left hand side  |
| Right arrow   | Move to the item on the right hand side   |
| Page up / +   | Increase the numeric value or make changes  |
| Page down / - | Decrease the numeric value or make changes  |
| Esc           | Main Menu – Quit and do not save changes into CMOS<br>Status Page Setup Menu and Option Page Setup Menu --<br>Exit current page and return to Main Menu |
| F1            | General help, only for Status Page Setup Menu and Option<br>Page Setup Menu   |
| F7            | Load optimized defaults   |

|     |                            |
|-----|----------------------------|
| F10 | Save changes and Exit BIOS |
|-----|----------------------------|

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

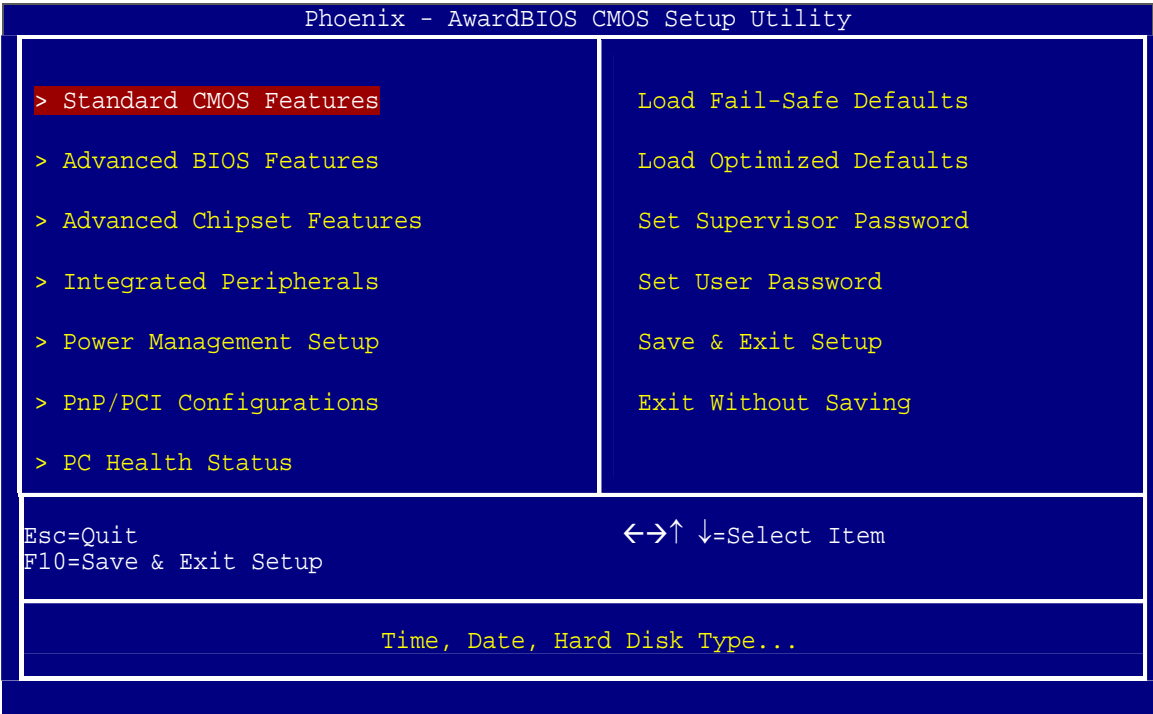
When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot After Configuration Changes

If the system cannot be booted after changes are made, restore the CMOS defaults. Refer to **Section 3.2.4** for more information.

5.1.5 Main BIOS Menu

Once the BIOS opens, the main menu (**BIOS Menu 1**) appears.



BIOS Menu 1: Award BIOS Setup Utility



### NOTE:

The following sections will completely describe the menus listed below and the configuration options available to users.

The following menu options are seen in **BIOS Menu 1**.

- **Standard CMOS Features:** Changes the basic system configuration.
- **Advanced BIOS Features:** Changes the advanced system settings.
- **Advanced Chipset Features:** Changes the chipset configuration features.
- **Integrated Peripherals:** Changes the settings for integrated peripherals.
- **Power Management Setup:** Configures power saving options.
- **PnP/PCI Configurations:** Changes the advanced PCI/PnP settings.
- **PC Health Status:** Monitors essential system parameters.

The following user configurable options are also available in **BIOS Menu 1**:

#### → Load Fail-Safe Defaults

Use the **Load Fail-Safe Defaults** option to load failsafe default values for each BIOS parameter in the setup menus. Press **F6** for this operation on any page.

#### → Load Optimized Defaults

Use the **Load Optimized Defaults** option to load optimal default values for each BIOS parameter in the setup menus. Press **F7** for this operation on any page.

#### → Set Supervisor Password

Use the **Set Supervisor Password** option to set the supervisor password. By default, no supervisor password is set. To install a supervisor password, select this field and enter the password. After this option is selected, a red dialogue box appears with “**Enter Password:** ”. Type the password and press **ENTER**. Retype the original password into the “**Confirm Password:** ” dialogue box and press **ENTER**. To disable the password, simply press **ENTER** in the “**Enter Password:** ” dialogue box, then press any key in the “**Password Disabled !!!**” dialogue box.



### ➔ Set User Password

Use the **Set User Password** option to set the supervisor password. By default no user password is set. To install a user password, select this field and enter the password. After this option is selected, a red dialogue box appears with “**Enter Password:** ”. Type the password and press **ENTER**. Retype the original password into the “**Confirm Password:** ” dialogue box and press **ENTER**. To disable the password, simply press **ENTER** in the “**Enter Password:** ” dialogue box, then press any key in the “**Password Disabled !!!**” dialogue box.

### ➔ Save & Exit Setup

Use the **Save & Exit Setup** option to save any configuration changes made and exit the BIOS menus.

### ➔ Exit Without Saving

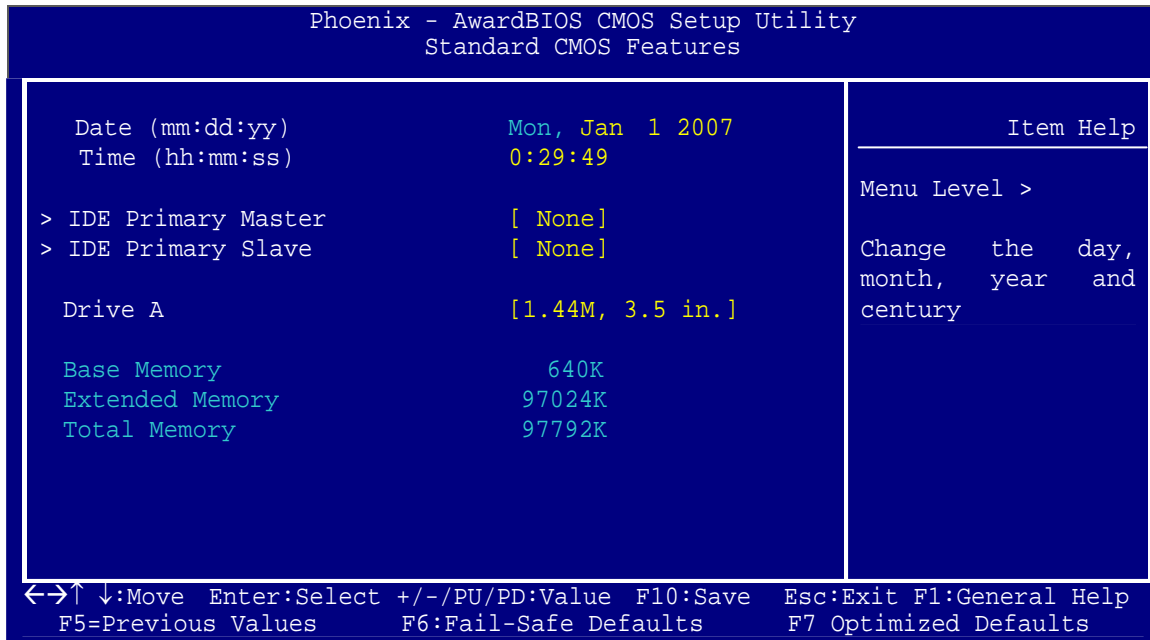
Use the **Exit Without Saving** option to exit the BIOS menus without saving any configuration changes.

## 5.2 Standard BIOS Features

Use the **Standard BIOS Features** BIOS menu (**BIOS Menu 2**) to set basic BIOS configuration options.



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### BIOS Menu 2: Standard CMOS Features

#### → Date [Day mm:dd:yyyy]

Use the **Date** option to set the system date

#### → Time [hh/mm/ss]

Use the **Time** option to set the system time.

#### → IDE Master and IDE Slave

When entering setup, BIOS auto detects the presence of IDE devices. The **Standard CMOS Features** menu shows the status of the auto detected IDE devices. The following IDE devices are detected and shown in the **Standard CMOS Features** menu:

- IDE Primary Master
- IDE Primary Slave

IDE device configurations are changed or set in the IDE Configuration menu (BIOS Menu 3). If an IDE device is detected, and one of the above listed two BIOS configuration options is selected, the IDE configuration options shown in **Section 5.2.1** appear.

### → Drive A [None]

Use the **Drive A/B** configuration to specify the floppy drive type installed in the system. The floppy drive configuration options are:

- None
- 360K, 5.25 in.
- 1.2M, 5.25 in.
- 720K, 3.5 in.
- 1.44M, 3.5in (Default)
- 2.88M, 3.5 in.

### → Base Memory:

The **Base Memory** is NOT user configurable. The POST determines the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed, or 640K for systems with 640K or more memory installed.

### → Extended Memory

The **Extended Memory** is NOT user configurable. The BIOS determines how much extended memory is present during the POST. This is the amount of memory above 1MB located in the memory address map of the CPU.

### → Total Memory

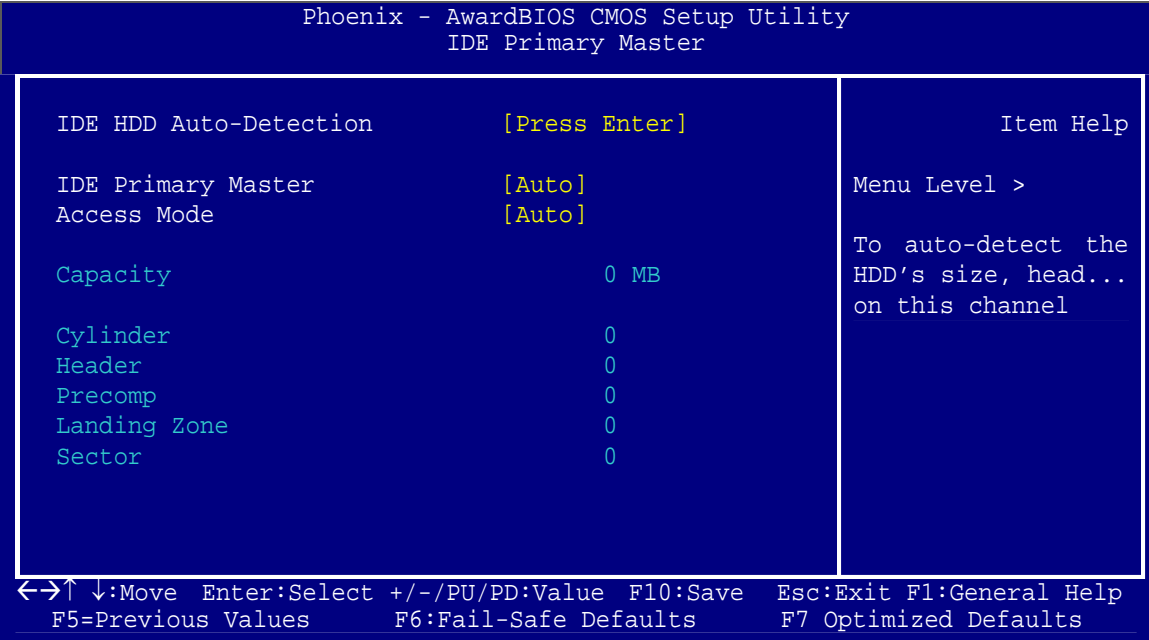
The **Total Memory** is NOT user configurable.

## 5.2.1 IDE Primary Master/Slave

Use the **IDE Primary Master/Slave** menu (BIOS Menu 3) to set or change the master/slave IDE configurations.



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BIOS Menu 3: IDE Channel Master

➔ IDE HDD Auto-Detection [Press Enter]

Use the **IDE HDD Auto-Detection** option to enable BIOS to automatically detect the IDE settings. Select **IDE HDD Auto-Detection** and press **ENTER**. BIOS automatically detects the HDD type. Do not set this option manually.

➔ IDE Primary Master [Auto]

Use the **IDE Primary Master** option to activate or deactivate the following drive channels:

- Channel 0 Master
- Channel 0 Slave

➔ None

If no drives are connected to the IDE channel select this option. Once set, this IDE channel becomes inaccessible and any drives attached to it are undetected.

➔ Auto (Default)

Setting this option allows the device to be automatically detected by the BIOS.

➔ Manual

Selecting this option allows manual configuration of the

device on the IDE channel in BIOS.

### → Access Mode [Auto]

The **Access Mode** option can only be configured if the BIOS configuration option is set to either **Manual** or **Auto**. Use the **Access Mode** option to determine the hard disk BIOS translation modes. Most systems now use hard drives with large capacities and therefore either the LBA translation mode or auto mode should be selected.

- **CHS** Select this mode if the HDD capacity is less than 504MB.
- **LBA** Select this mode if the HDD capacity is more than 8.4GB.
- **Large** This mode is an extended ECHS mode and while it supports HDDs larger than 504MB, it is not recommended.
- **Auto** (Default) If you are unsure of what access mode to set, select this option.

### → Capacity

The **Capacity** specification indicates the storage capacity of the HDD installed in the system.

### → Cylinder

The **Cylinder** specification indicates how many cylinders (tracks) are on the HDD installed in the system.

### → Head

The **Head** specification indicates how many logical heads are on the HDD installed in the system.

### → Precomp

The **Precomp** specification indicates on what track the write precompensation begins.



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➔ Landing Zone

The **Landing Zone** specification indicates where the disk head will park itself after the system powers off.

➔ Sector

The **Sector** specification indicates how many logical sectors the HDD has been divided into.

5.3 Advanced BIOS Features

Use the **Advanced BIOS Features** menu (**BIOS Menu 4**) to configure the CPU and peripheral device configuration options.

Phoenix - AwardBIOS CMOS Setup Utility  
Advanced BIOS Features

|                              |            |                      |
|------------------------------|------------|----------------------|
| Virus Warning                | [Disabled] | Item Help            |
| CPU Internal Cache           | [Enabled]  |                      |
| Boot From Lan Control        | [Disabled] | Menu Level >         |
| SATA Boot Rom Control        | [Disabled] |                      |
| First Boot Device            | [HDD-0]    | Allow you to choose  |
| Second Boot Device           | [SCSI]     | the VIRUS warning    |
| Third Boot Device            | [LS120]    | feature for IDE Hard |
| Boot Other Device            | [Enabled]  | Disk boot sector     |
| Boot Up Floppy Seek          | [Enabled]  | protection. If this  |
| Boot Up NumLock Status       | [On]       | function is enabled  |
| Gate A20 Option              | [Fast]     | and someone attempt  |
| Typematic Rate Setting       | [Disabled] | to write data into   |
| X Typematic Rate (Chars/Sec) | 6          | this area, BIOS will |
| X Typematic Delay (Msec)     | 250        | show a warning       |
| Security Option              | [Setup]    | message on screen    |
| OS Select For DRAM > 64MB    | [Non-OS2]  | and alarm beep       |
| HDD S.M.A.R.T. Capability    | [Disabled] |                      |
| Console Redirection          | [Disabled] |                      |
| X Baud Rate                  | 19200      |                      |
| Agent after boot             | [Disabled] |                      |
| Full Screen LOGO Show        | [Enabled]  |                      |
| Small Logo(EPA) Show         | [Diabled]  |                      |

⬅➡↑↓:Move Enter:Select +/-/PU/PD:Value F10:Save Esc:Exit F1:General Help  
F5=Previous Values F6:Fail-Safe Defaults F7 Optimized Defaults

BIOS Menu 4: IDE Channel Master



### → Virus Warning [Disabled]

---



#### NOTE:

Many disk diagnostic programs can cause the above warning message to appear when the program attempts to access the boot sector table. If you are running such a program, it is recommended that the virus protection function be disabled beforehand.

---

Use the **Virus Warning** option to enable BIOS to monitor the boot sector and partition table of the HDD for any attempted modification. If a modification attempt is made, the BIOS halts the system and an error message appears. If necessary, an anti-virus program can then be run to locate and remove the virus before any damage is done.

- **Enabled** Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or HDD partition table.
- **Disabled** (Default) No warning message appears when there is an attempt to access the boot sector or HDD partition table.

### → CPU Internal Cache [Enabled]

Use the **CPU Internal Cache** option to enable or disable the internal CPU cache.

- **Disabled** The internal CPU cache is disabled.
- **Enabled** (Default) The internal CPU cache is enabled.

### → Boot From LAN Control [Disabled]

Use the **BOOT From LAN Control** option to enable the system to be booted from a remote system.

- **Disabled** (Default) The system cannot be booted from a remote system through the LAN.
- **Enabled** The system can be booted from a remote system



through the LAN.

### → SATA Boot ROM Control [Disabled]

Use the **SATA Boot ROM Control** option to configure SATA IDE use in DOS mode.

- **Disabled** (Default) Disables SATA IDE use in DOS mode.
- **Enabled** Enables SATA IDE use in DOS mode.

### → Boot Device

Use the **Boot Device** options to select the order of the devices the system boots from.

There are three boot device configuration options:

- **First Boot Device** [Default: HDD-0]
- **Second Boot Device** [Default: SCSI]
- **Third Boot Device** [Default: LS-120]

Using the default values, the system first looks for a FDD to boot from. If it cannot find an FDD, it boots from a HDD. If both the FDD and the HDD are unavailable, the system boots from a LS-120 drive.

Boot Device configuration options are:

- Floppy
- LS120
- HDD-0
- SCSI
- CDROM
- HDD-1
- ZIP100
- USB-FDD
- USB-ZIP
- USB-CDROM
- USB-HDD
- LAN
- Disabled

### → **Boot Other Device [Enabled]**

Use the **Boot Other Device** option to determine whether the system uses a second or third boot device if the first boot device is not found.

→ **Disabled**                      The system does not look for second and third boot devices if the first one is not found.

→ **Enabled**    (Default)      The system looks for second and third boot devices if the first one is not found.

### → **Boot Up Floppy Seek [Enabled]**

Use the **Boot Up Floppy Seek** option to enable the BIOS to determine if the floppy disk drive installed has 40 or 80 tracks during the POST. 360K FDDs have 40 tracks while 760K, 1.2M and 1.44M FDDs all have 80 tracks.

→ **Disabled**                      BIOS does not search for the type of FDD drive by track number. Note that there is no warning message if the drive installed is 360K.

→ **Enabled**    (Default)      BIOS searches for a FDD to determine if it has 40 or 80 tracks. Note that BIOS cannot tell the difference between 720K, 1.2M or 1.44M drives as they all have 80 tracks.

### → **Boot Up Numlock Status [On]**

Use the **Boot Up Numlock Status** option to specify the default state of the numeric keypad.

→ **Off**                              The keys on the keypad are not activated.

→ **On**                      (Default)      Activates the keys on the keypad.

### → **Gate A20 Option [Fast]**

Use the **Gate A20 Option** option to set if the keyboard controller or the chipset controls the Gate A20 switching.



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- ➔ **Normal**                      The keyboard controller does the switching.
- ➔ **Fast**                      (Default)      The chipset does the switching.

### ➔ **Typematic Rate Setting [Disabled]**

Use the **Typematic Rate Setting** configuration option to specify if only one character is allowed to appear on the screen if a key is continuously held down. When this option is enabled, the BIOS reports as before, but it then waits a moment, and, if the key is still held down, it begins to report that the key has been pressed repeatedly. This feature accelerates cursor movement with the arrow keys.

- ➔ **Disabled**                      (Default)      Disables the typematic rate.
- ➔ **Enabled**                      Enables the typematic rate.

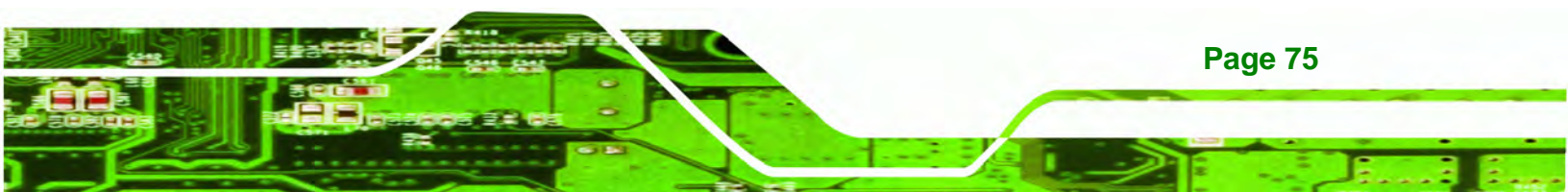
### ➔ **Typematic Rate (Chars/sec) [6]**

The **Typematic Rate** option can only be configured if the **Typematic Rate Setting** is enabled. Use the **Typematic Rate** option to specify the rate keys are accelerated.

- ➔ **6**                      (Default)      6 characters per second
- ➔ **8**                      8 characters per second
- ➔ **10**                      10 characters per second
- ➔ **12**                      12 characters per second
- ➔ **15**                      15 characters per second
- ➔ **20**                      20 characters per second
- ➔ **24**                      24 characters per second
- ➔ **30**                      30 characters per second

### ➔ **Typematic Delay (Msec) [250]**

The **Typematic Rate** option can only be configured if the **Typematic Rate Setting** is enabled. Use the **Typematic Delay** option to specify the delay time between when a key is first pressed and when the acceleration begins.



- ➔ **250** (Default) 250 milliseconds
- ➔ **500** 500 milliseconds
- ➔ **750** 750 milliseconds
- ➔ **1000** 1000 milliseconds

### ➔ **Security Option [Setup]**

Use the **Security Option** to limit access to both the system and Setup, or just Setup.

- ➔ **Setup** (Default) The system does not boot and access to Setup is denied if the correct password is not entered at the prompt.
- ➔ **System** The system boots, but access to Setup is denied if the correct password is not entered at the prompt.



#### **NOTE:**

To disable security, select the password setting in the Main Menu. When asked to enter a password, don't type anything, press **ENTER** and the security is disabled. Once the security is disabled, the system boots and Setup can be accessed.

---

### ➔ **OS Select For DRAM > 64MB [Non-OS2]**

Use the **OS Select For DRAM > 64MB** option to specify the operating system.

- ➔ **Non-OS2** (Default) Select this option when not using the OS/2 operating system.
- ➔ **OS2** Specifies the operating system used as OS/2.

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### → HDD S.M.A.R.T Capability [Disabled]

Self-Monitoring Analysis and Reporting Technology (SMART) feature can help predict impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

→ **Disabled** (Default) Select this value to prevent the BIOS from using the SMART feature.

→ **Enabled** Select this value to allow the BIOS to use the SMART feature on support hard disk drives.

### → Console Redirection [Disable]

Use the **Console Redirection** option to enable or disable access to the remote functionalities of the system.

→ **Disabled** (Default) Console redirection is disabled.

→ **Enabled** Console redirection configuration option shown below appear:

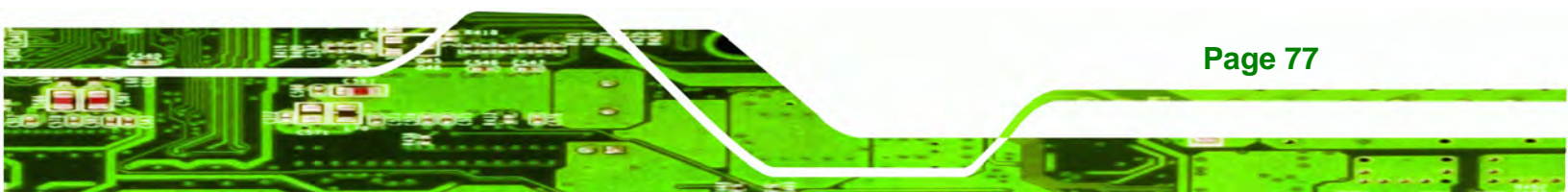
Baud Rate

The configuration option is discussed below.

### → Baud Rate [19200]

Use the **Baud Rate** option to select baud rate through which the console redirection is made. The following configuration options are available

- 9600
- 19200 (Default)
- 38400
- 57600
- 115200







### NOTE:

Identical baud rate setting must be set on the host (a management computer running a terminal software) and the slave

#### → Agent after boot [Disabled]

Use the **Agent after boot** option to keep agent running after bootup.

- **Disabled** (Default) Stop agent running after bootup
- **Enabled** Keep agent running after bootup

#### → Full Screen LOGO Show [Enabled]

Use the **Full Screen LOGO Show** option to specify whether to display the full-screen logo when the system boots.

- **Disabled** (Default) Full-screen logo does not appear during boot up.
- **Enabled** Full-screen logo appears during boot up.

#### → Small Logo (EPA) Show [Disabled]

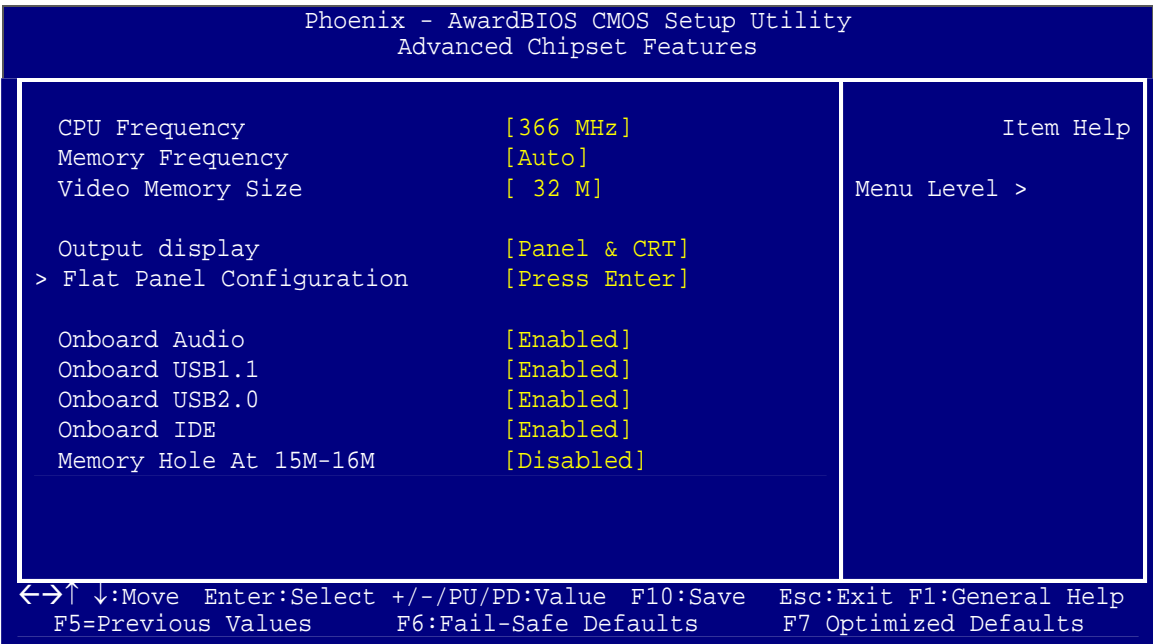
Use the **Small Logo (EPA) Show** option to specify if the Environmental Protection Agency (EPA) logo appears during the system boot-up process. If enabled, the boot up process may be delayed.

- **Disabled** (Default) EPA logo does not appear during boot up.
- **Enabled** EPA logo appears during boot up.



## 5.4 Advanced Chipset Features

Use the **Advanced Chipset Features** menu (BIOS Menu 5) to change chipset configuration options.



### BIOS Menu 5: Advanced Chipset Features

#### ➔ CPU Frequency [366 MHz]

Use the **CPU Frequency** option to set the CPU frequency.

#### ➔ Memory Frequency [Auto]

Use the **Memory Frequency** option to set the frequency of the installed DRAM modules.

The **Memory Frequency** options are:

- Auto (Default)
- 200MHz
- 266MHz
- 333MHz

### → Video Memory Size [32 M]

Use the **Frame Buffer Size** option to specify the amount of memory allocated to the integrated graphics processor when the system boots up. Configuration options are:

- Disable
- 8 M
- 16 M
- 32 M (Default)
- 64 M
- 128 M
- 254 M

### → Output Display [Panel & CRT]

Use the **Output Display** configuration to specify the display devices the system is connected to. The **Output Display** options are:

- Flat Panel
- CRT
- Panel & CRT (Default)

### → Onboard Audio [Enabled]

Use the **Onboard Audio** option to enable or disable the chipset codec.

- **Enabled** (Default) The onboard audio codec is enabled.
- **Disabled** The onboard audio codec is disabled.

### → Onboard USB 1.1 [Enabled]

Use the **Onboard USB 1.1** option to enable or disable the chipset USB controller.

- **Enabled** (Default) Chipset USB 1.1 controller enabled
- **Disabled** Chipset USB 1.1 controller disabled



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### → Onboard USB 2.0 [Enabled]

Use the **Onboard USB 2.0** option to enable or disable the chipset USB controller.

→ **Enabled** (Default) Chipset USB 2.0 controller enabled

→ **Disabled** Chipset USB 2.0 controller disabled

### → Onboard IDE [Enabled]

Use the **Onboard IDE** option to specify if the system uses the integrated primary IDE channel or not.

→ **Disabled** The primary IDE channel is not used.

→ **Enabled** (Default) The primary IDE channel is used.

### → Memory Hole At 15M – 16M [Disabled]

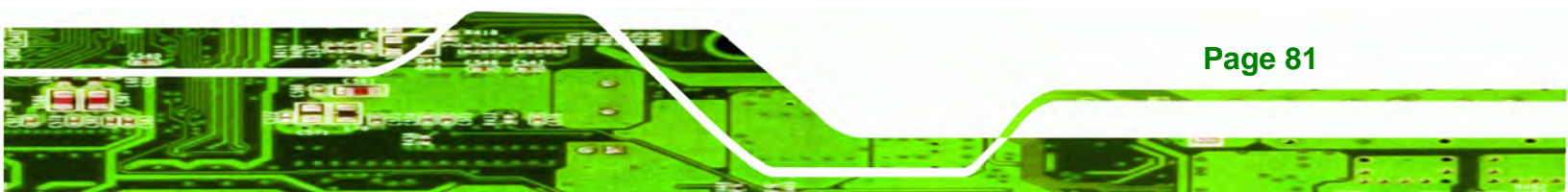
Use the **Memory Hole At 15M – 16M** option to reserve memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

→ **Disabled** (Default) Memory is not reserved for ISA expansion cards.

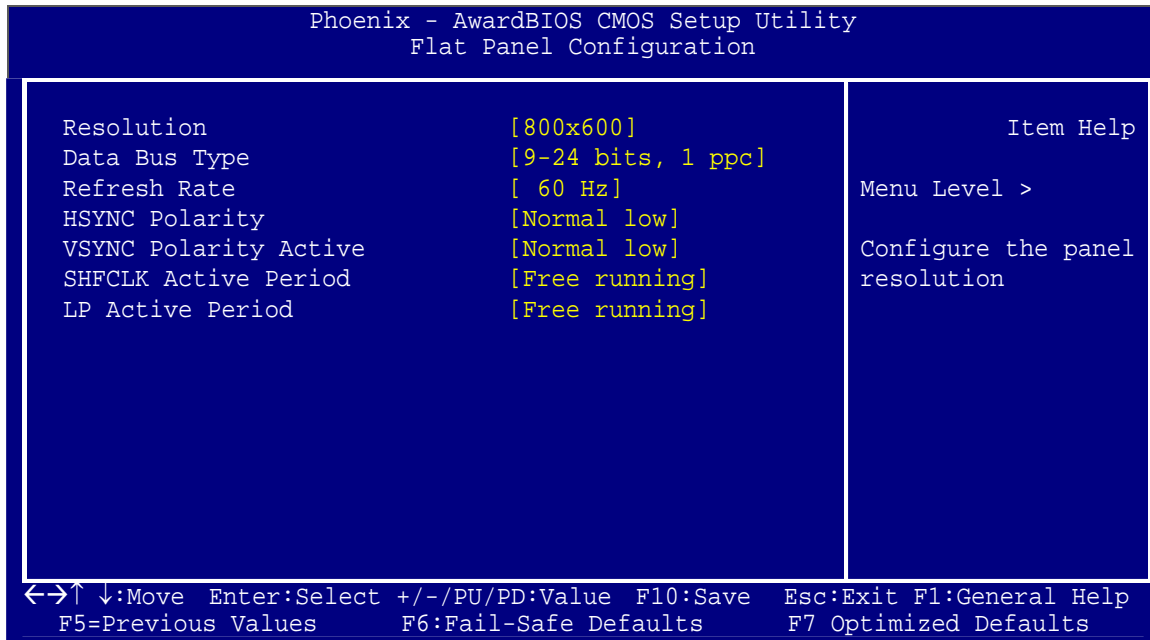
→ **Enabled** Memory is reserved for ISA expansion cards.

## 5.4.1 Flat Panel Configuration

Use the **Flat Panel Configuration** menu to configure the screen resolution.



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### BIOS Menu 6: Flat Panel Configuration

#### → Resolution [800 x 600]

The **Resolution** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **Resolution** option to set the resolution of the flat panel screen connected to the system. The **Resolution** options are:

- 320 x 240
- 640 x 480
- 800 x 600 (Default)
- 1024 x 768
- 1152 x 864
- 1280 x 1024
- 1600 x 1200
- 320 x 234
- 640 x 240
- 800 x 480
- 1280 x 800



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### → Data Bus Type [9 – 24 bits, 1 ppc]

The **Data Bus Type** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **Data Bus Type** option to set the bus type and the data bus width used to transfer data between the system and the flat panel screen connected to the system. The **Data Bus Type** options are:

- 9-24 bits, 1 ppc (Default)
- 18, 24 bits, 2 ppc

### → Refresh Rate [60Hz]

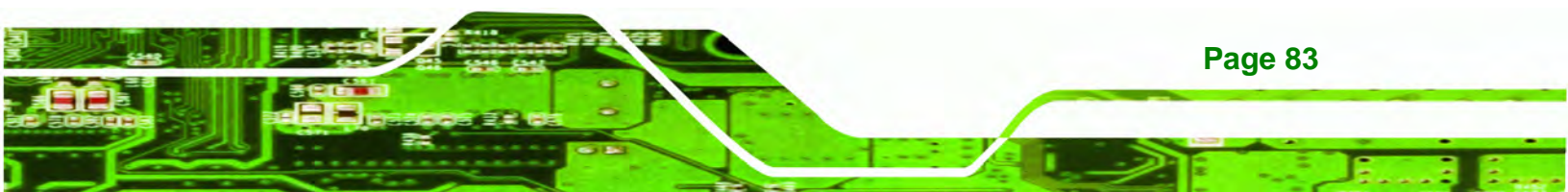
The **Refresh Rate** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **Refresh Rate** option to set the screen refresh rate required by the panel connected to the system. Check the documentation that came with the panel before setting this option. The **Refresh Rate** options are:

- 60Hz (Default)
- 70Hz
- 72Hz
- 75Hz
- 85Hz
- 90Hz
- 100Hz

### → HSYNC Polarity [Normal low]

The **HSYNC Polarity** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **HSYNC Polarity** option to set the polarity of the HSYNC signal to the panel. The **HSYNC Polarity** options are:

- Normal high
- Normal low (Default)





### ➔ VSYNC Polarity Active [Normal low]

The **VGSYNC Polarity Active** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **VGSYNC Polarity Active** option to set the polarity of the VSYNC signal to the panel. The **VGSYNC Polarity Active** options are:

- Normal high
- Normal low (Default)

### ➔ SHFCLK Active Period [Free Running]

Use the **SHFCLK Active Period** option to set the SHFCLK. The **SHFCLK Active Period** options are:

- Active Only
- Free running (Default)

### ➔ LP Active Period [Free Running]

Use the **LP Active Period** option to set the LDE/MOD signal to the panel. The **LP Active Period** options are:

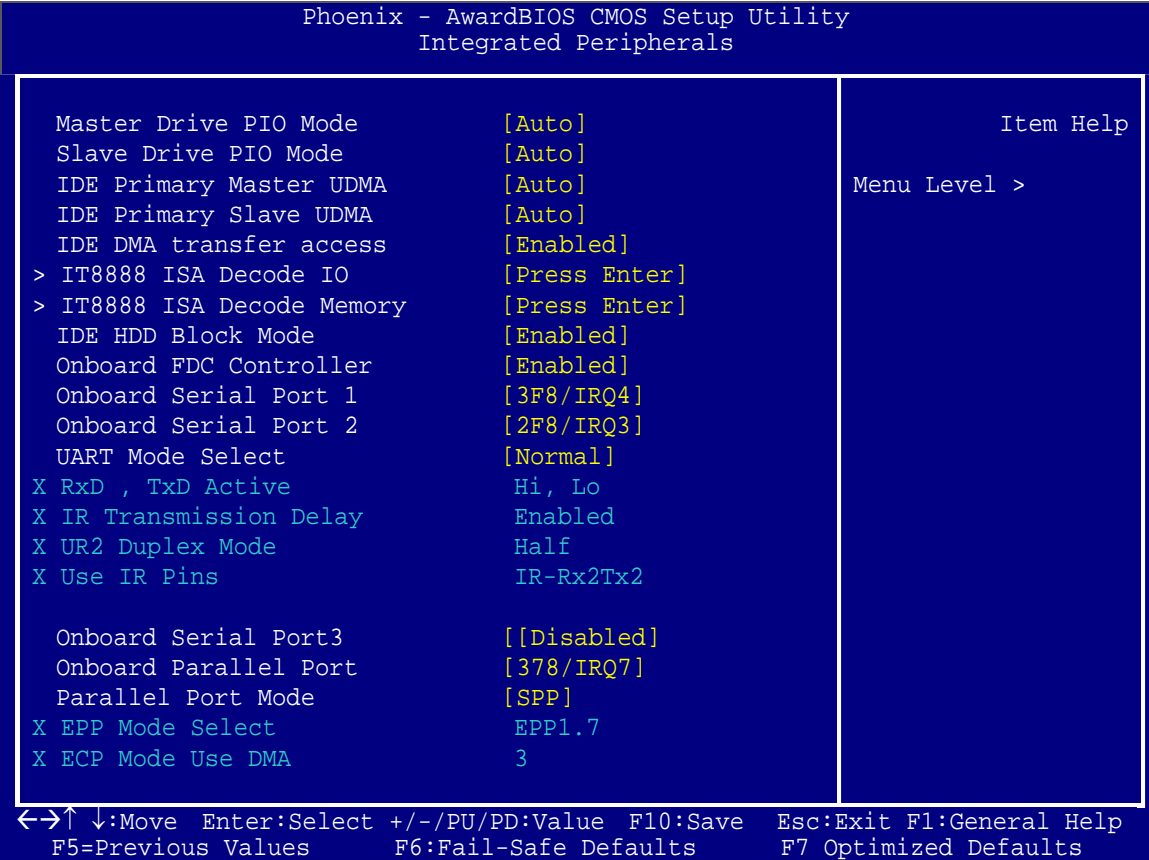
- Active Only
- Free running (Default)

## 5.5 Integrated Peripherals

Use the **Integrated Peripherals** menu (BIOS Menu 7) to change the configuration options for the attached peripheral devices.



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BIOS Menu 7: Integrated Peripherals

➔ Drive PIO Mode [Auto]

Use the **Drive PIO Mode** options below to select the Programmed Input/Output (PIO) mode for the following HDDs:

- Master Drive PIO Mode
- Slave Drive PIO Mode

- ➔ **Auto** (Default) The computer selects the correct mode.
- ➔ **Mode 0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps.
- ➔ **Mode 1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps.
- ➔ **Mode 2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps.
- ➔ **Mode 3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps.

➔ **Mode 4**                      PIO mode 4 selected with a maximum transfer rate of 16.6MBps.

### ➔ **IDE UDMA [Auto]**

Use the **IDE UDMA** option below to select the Ultra DMA (UDMA) mode for the following HDDs:

- IDE Primary Master UDMA
- IDE Primary Slave UDMA

➔ **Disabled**                      The UDMA for the HDD device is disabled.

➔ **Auto**                      (Default)      The computer selects the correct UDMA.

### ➔ **IDE DMA transfer access [Enabled]**

Use the **IDE DMA transfer access** option to enable or disable DMA support for IDE devices connected to the system.

➔ **Disabled**                      All IDE drive DMA transfers are disabled. The IDE drives use PIO mode transfers.

➔ **Enabled**                      (Default)      All IDE drive DMA transfers are enabled.

### ➔ **IDE HDD Block Mode [Enabled]**

If the drive connected to the system supports block mode, use the **IDE HDD Block Mode** option to enable the system to detect the optimal number of block read/writes per sector the system IDE drive can support. Block mode is also called block transfer, multiple commands, or multiple sector read/write.

➔ **Disabled**                      Block mode is not supported.

➔ **Enabled**                      (Default)      Block mode is supported.



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### → Onboard FDC Controller [Enabled]

Use the **Onboard FDC Controller** option to enable or disable the onboard floppy controller. If the system is not connected to a floppy disk or uses an adapter for the FDD, this option can be disabled.

→ **Disabled**                      The FDD controller is disabled.

→ **Enabled**      (Default)      The FDD controller is enabled.

### → Onboard Serial Port 1 [3F8/IRQ4]

Use the **Onboard Serial Port 1** option to select the I/O address and IRQ for the onboard serial port 1. The serial port can be disabled or the I/O address and the IRQ can be automatically selected by the BIOS. The **Onboard Serial Port 1** options are:

- Disabled
- 3F8/IRQ4 (Default)
- 2F8/IRQ3
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

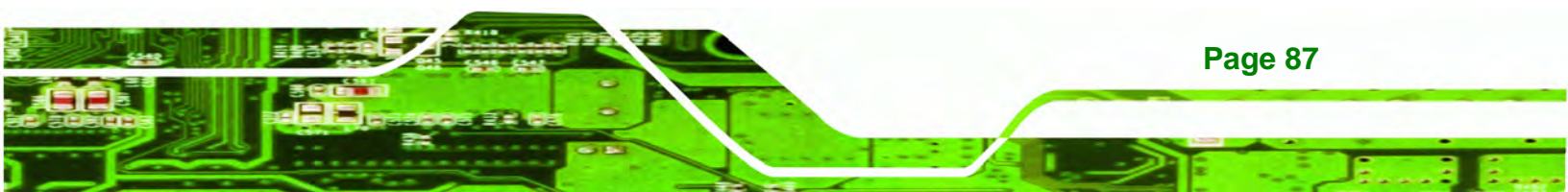
### → Onboard Serial Port 2 [2F8/IRQ3]

Use the **Onboard Serial Port 2** option to select the I/O address and IRQ for the onboard serial port 2. The serial port can be disabled or the I/O address and the IRQ can be automatically selected by the BIOS. The **Onboard Serial Port 2** options are:

- Disabled
- 3F8/IRQ4
- 2F8/IRQ3 (Default)
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

### → UART Mode Select [Normal]

Use the **UART Mode Select** to select the UART mode for the system



- ➔ **IrDA** IrDA compliant serial infrared port
- ➔ **ASKIR** Amplitude shift keyed infrared port
- ➔ **Normal** (Default) RS-232C serial port

### ➔ **RxD, TxD Active [Hi, Lo]**

The **RxD, TxD Active** option can only be selected if the **UART Mode Select** option is set to IrDA mode or ASKIR mode. Use the **RxD, TxD Active** option to set the infrared reception (RxD) and transmission (TxD) polarity. The **RxD, TxD Active** options are:

- Hi, Hi
- Hi, Lo (Default)
- Lo, Hi
- Lo, Lo

### ➔ **IR Transmission Delay [Enabled]**

Use the **IR Transmission Delay** option to specify whether or not there should be a delay for the IR transmission.

- ➔ **Disabled** There is no transmission delay.
- ➔ **Enabled** (Default) There is a transmission delay.

### ➔ **UR2 Duplex Mode [Normal]**

Use the **Parallel Port Mode** option to select parallel port operation mode.

- ➔ **Full** Full-duplex mode allows transmission in both directions at the same time.
- ➔ **Half** Default Half-duplex mode allows transmission in one direction at a time only.

### ➔ **Use IR Pins [IR-Rx2Tx2]**

Use the **Use IR Pins** options to specify how the IR pins respond. The **Use IR Pins** options are:



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- RxD2,TxD2
- IR-Rx2Tx2 (Default)

### → Onboard Serial Port3 [Disabled]

Use the **Onboard Serial Port 3** option to select the I/O address and IRQ for the onboard serial port 3. The serial port can be disabled or the I/O address and the IRQ can be automatically selected by the BIOS. The **Onboard Serial Port 3** options are:

- Disabled (Default)
- 3F8/IRQ7
- 2F8/IRQ5
- 3E8/IRQ7
- 2E8/IRQ5

### → Onboard Parallel Port [378/IRQ7]

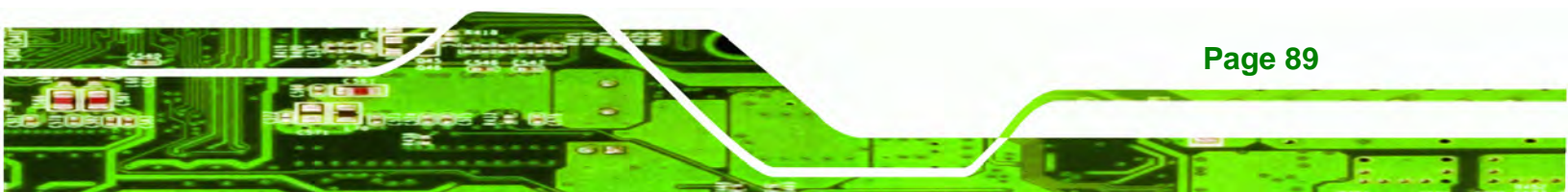
The **Onboard Parallel Port** BIOS option assigns the I/O port address of the parallel port. The following address options are available:

- Disabled
- 378/IRQ7 (Default)
- 3BC/IRQ7

### → Parallel Port Mode [SPP]

The Parallel Port Mode selection selects the mode the parallel port operates in.

- **SPP** (Default) The parallel port operates in the standard parallel port (SPP) mode. This parallel port mode works with most parallel port devices but is slow.
- **EPP** The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the SPP mode.





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### ➔ ECP

The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the SPP mode.

### ➔ ECP+EPP

The parallel port is compatible with both ECP and EPP devices.

### ➔ Normal

### ➔ EPP Mode Select [EPP1.7]

The **Parallel Port EPP Type** option is only available if the **Parallel Port Mode** option is set to EPP mode. Use the **EPP Mode Select** option to select the parallel port mode standard for the parallel port.

### ➔ EPP1.9

EPP 1.9 is selected as the EPP standard.

### ➔ EPP1.7

(Default) EPP 1.7 is selected as the EPP standard.

### ➔ ECP Mode Use DMA [3]

Use the **ECP Mode Use** option to select which DMA channel should be used for this port.

### ➔ 1

The parallel port uses DMA Channel 1 in ECP mode.

### ➔ 3

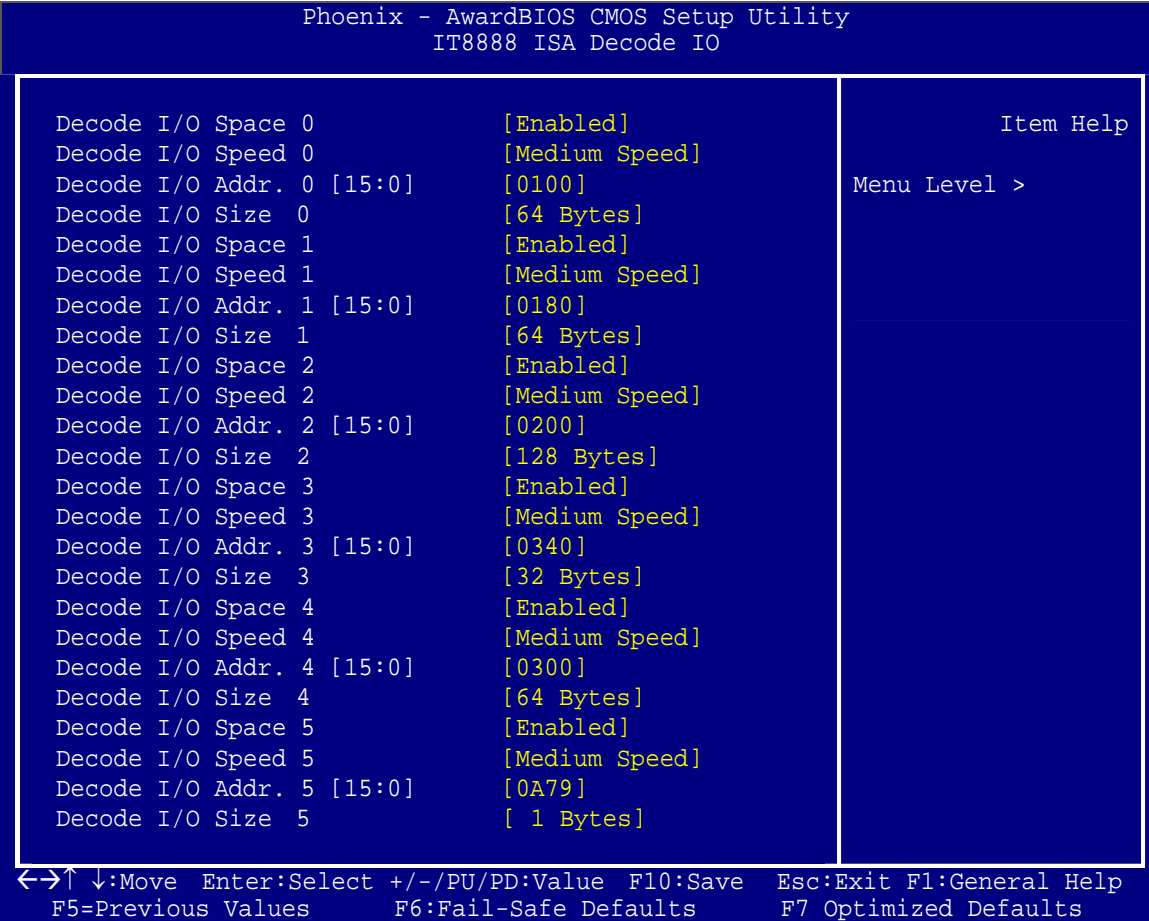
(Default) The parallel port uses DMA Channel 3 in ECP mode.

## 5.5.1 IT8888 ISA Decode IO

Access the **IT8888 ISA Decode** configuration settings (BIOS Menu 8) in the Integrated Peripherals menu and make the appropriate I/O space settings.



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BIOS Menu 8: IT8888 ISA Decode IO

➔ Decode IO Space x [Enabled]

Use the **Decode IO Space x** option to enable or disable the decoding of a particular IO space.

- ➔ **Disabled** IO space decoding is disabled
- ➔ **Enabled** (Default) IO space decoding is enabled and the options below are accessible

➔ Decode IO Speed x [Medium Speed]

Use the **Decode IO Space x** option to enable or disable the decoding of a particular IO space.



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- ➔ **Slow Speed** Set the I/O speed to Slow
- ➔ **Medium Speed** (Default) Set the I/O speed to Medium

### ➔ **Decode IO Address x [15:0] [Varying defaults]**

Use the **Decode IO Address** option to manually enter the IO address that should be used by this IO space. The defaults for the different IO spaces are shown below

- IO Space 0: 0100
- IO Space 1: 0180
- IO Space 2: 0200
- IO Space 3: 0340
- IO Space 4: 0300
- IO Space 5: 0A79

### ➔ **Decode IO Size x [Varying defaults]**

Use the **Decode IO Size** option to manually enter the size of the IO space. The defaults for the different IO spaces are shown below

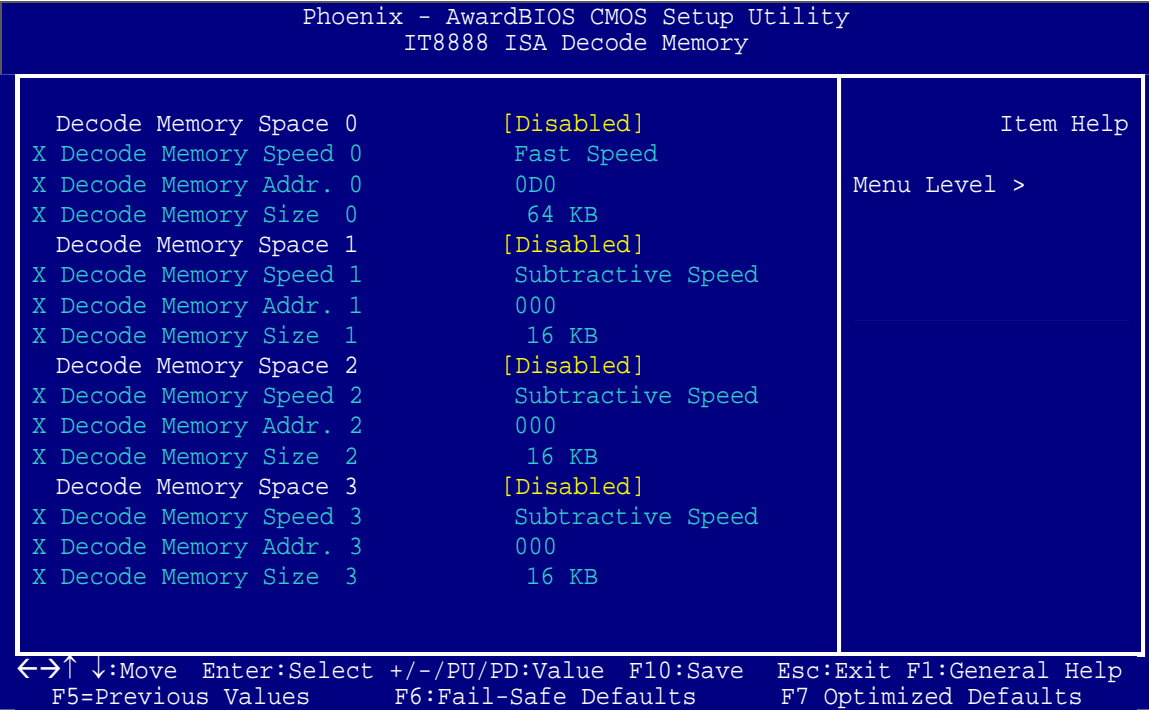
- IO Space 0: 64 Bytes
- IO Space 1: 64 Bytes
- IO Space 2: 128 Bytes
- IO Space 3: 32 Bytes
- IO Space 4: 64 Bytes
- IO Space 5: 1 Bytes

## 5.5.2 IT8888 ISA Decode Memory

Access the **IT8888 ISA Decode Memory** configuration settings (**BIOS Menu 9**) in the Integrated Peripherals menu and make the appropriate I/O space settings.



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BIOS Menu 9: IT8888 ISA Decode Memory

➔ Decode Memory Space x [Disabled]

Use the **Decode Memory Space x** option to enable or disable the decoding of a particular IO space.

- ➔ **Disabled** (Default) Memory space decoding is disabled
- ➔ **Enabled** Memory space decoding is enabled and the options below are accessible

➔ Decode Memory Speed x

Use the **Decode Memory Space x** option to enable or disable the decoding of a particular IO space.

- ➔ **Subtractive Speed** Set the Memory Speed to Subtractive Speed
- ➔ **Slow Speed** Set the Memory Speed to Slow Speed
- ➔ **Medium Speed** Set the Memory Speed to Medium Speed

### ➔ **Fast Speed**

Set the Memory Speed to Fast Speed

### ➔ **Decode Memory Address x [Varying defaults]**

Use the **Decode Memory Address** option to manually enter the memory address that should be used by this memory space. The defaults for the different memory spaces are shown below

- Memory Space 0: 0D0
- Memory Space 1: 000
- Memory Space 2: 000
- Memory Space 3: 000

### ➔ **Decode Memory Size x [Varying defaults]**

Use the **Decode Memory Size** option to manually enter the size of the memory space. The defaults for the different memory spaces are shown below

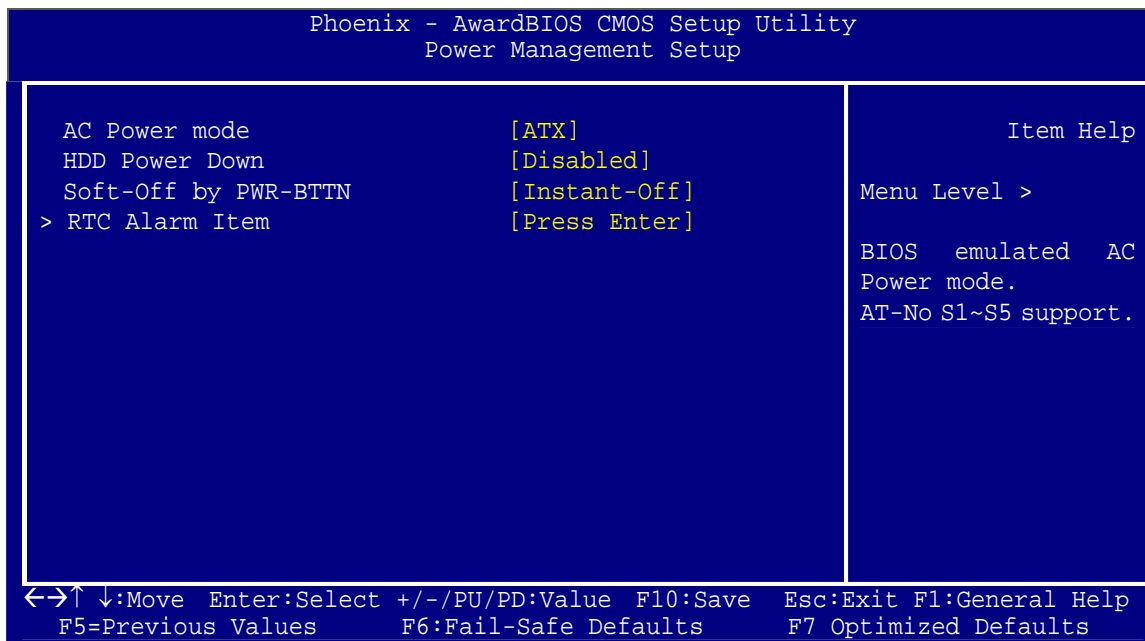
- Memory Space 0: 64 KB
- Memory Space 1: 16 KB
- Memory Space 2: 16 KB
- Memory Space 3: 16 KB

## 5.6 Power Management Setup

Use the **Power Management Setup** menu (BIOS Menu 10) to set the BIOS power management and saving features.



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### BIOS Menu 10: Power Management Setup

#### → AC Power mode [ATX]

Use the **AC Power mode** option to specify whether an AT or ATX power supply is connected to the system.

→ **ATX** (Default) An ATX power supply is used.

→ **AT** An AT power supply is used.

#### → HDD Power Down [Disabled]

Use the **HDD Power Down** option to specify how long the computer must wait for no activity before the HDD powers down. If this option is disabled, the HDD does not power down. The following settings can be made.

- Disabled (Default)
- 1 Sec
- 5 Sec
- 10 Sec
- 15 Sec
- 30 Sec



- 45 Sec
- 1 Min
- 5 Min
- 10 Min
- 15 Min
- 30 Min
- 45 Min
- 60 Min
- 90 Min
- 120 Min

### → Soft-Off by PWR-BTTN [Instant-Off]

Use the **Soft-Off by PWR-BTTN** option to enabled the system to enter a very low-power-usage state when the power button is pressed.

- **Instant-Off** (Default) When the power button is pressed, the system is immediately shutdown.
- **Delay 4-sec** To shutdown the system the power button must be held down longer than four seconds otherwise the system enters a low power usage state.

### → Power-On by Alarm [Disabled]

The **Power-On by Alarm** determines when the computer will be roused from a suspended state.

- **Disabled** **DEFAULT** The computer will stay turned off
- **Enabled** If selected, the following will appear with values that can be selected:

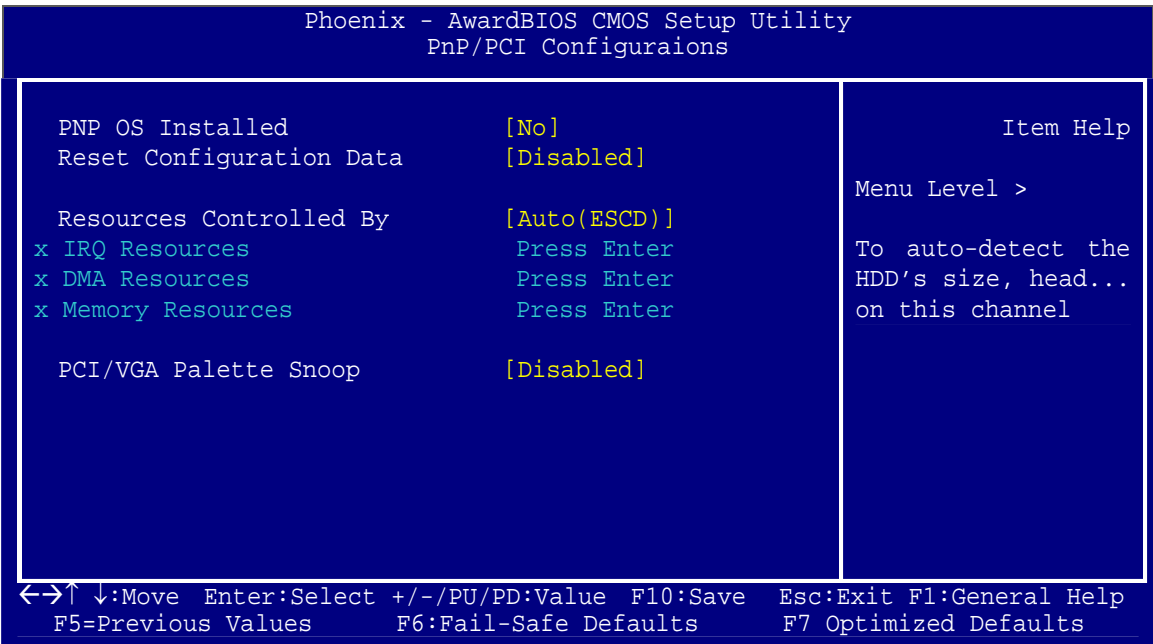
#### → Tim Alarm

After setting the alarm, the computer will turn itself on from a suspend state when the alarm goes off.



5.7 PnP/PCI Configurations

Use the **PnP/PCI Configurations** menu (BIOS Menu 11) to set the plug and play, and PCI options.



BIOS Menu 11: PnP/PCI Configurations

➔ PNP OS Installed [No]

The **PNP OS Installed** option determines whether the Plug and Play devices connected to the system are configured by the operating system or the BIOS.

- ➔ **No** (Default) If the operating system does not meet the Plug and Play specifications, BIOS configures all the devices in the system.
- ➔ **Yes** Set this option if the system is running Plug and Play aware operating systems. The operating system changes the interrupt, I/O, and DMA settings.

➔ Reset Configuration Data [Disabled]

Use the **Reset Configuration Data** option to reset the Extended System Configuration Data (ESCD) when exiting setup if booting problems occur after a new add-on is installed.

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- ➔ **Disabled** (Default) ESCD will not be reconfigured
- ➔ **Enabled** ESCD will be reconfigured after you exit setup

### ➔ Resources Controlled By [Auto (ESCD)]

Use the **Resources Controlled By** option to either manually configure all the boot and plug and play devices, or allow BIOS to configure these devices automatically. If BIOS is allowed to configure the devices automatically IRQs, DMA and memory base address fields cannot be set manually.

- ➔ **Auto(ESCD)** (Default) BIOS automatically configures plug and play devices as well as boot devices.
- ➔ **Manual** Manually configure the plug and play devices and any other boot devices.

### ➔ IRQ Resources [Press Enter]

The **IRQ Resources** option can only be selected if the **Resources Controlled By** option is set to **Manual**.

The **IRQ Resources** menu has the following options:

- IRQ-3 assigned to
- IRQ-4 assigned to
- IRQ-5 assigned to
- IRQ-7 assigned to
- IRQ-10 assigned to
- IRQ-11 assigned to

The above options all have the following default options.

- ➔ **PCI/ISA PnP** (Default) The IRQ is reserved by BIOS for PCI and ISA PnP devices.
- ➔ **Legacy ISA** The IRQ is assigned to legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PNP for devices compliant with the Plug and Play standard



whether designed for PCI or ISA bus architecture.

### → DMA Resources [Press Enter]

The **DMA Resources** menu can only be accessed if the **Resources Controlled By** option is set to **Manual**. Use **DMA Resources** to assign each system DMA channel a type.

The **DMA Resources** menu has the following options:

- DMA-0 assigned to
- DMA-1 assigned to
- DMA-3 assigned to
- DMA-5 assigned to
- DMA-6 assigned to
- DMA-7 assigned to

The above options all have the following default options.

- **PCI/ISA PnP** (Default) The DMA is reserved by BIOS for PCI and ISA PnP devices.
- **Legacy ISA** The DMA is assigned to legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PNP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

### → Memory Resources [Press Enter]

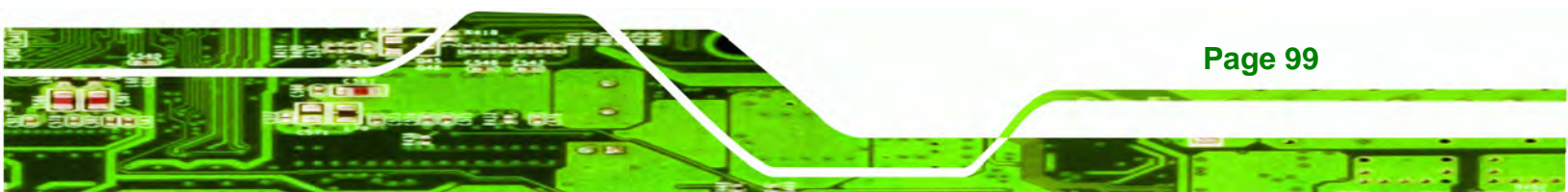
The **Memory Resources** menu can only be accessed if the **Resources Controlled By** option is set to **Manual**. Use **Memory Resources** to select a base address and the length for the memory area used by a peripheral that requires high memory.

The **Memory Resources** menu has the following option:

### → Reserved Memory Base [N/A]

The **Reserved Memory Base** option specifies the base address for the peripheral device.

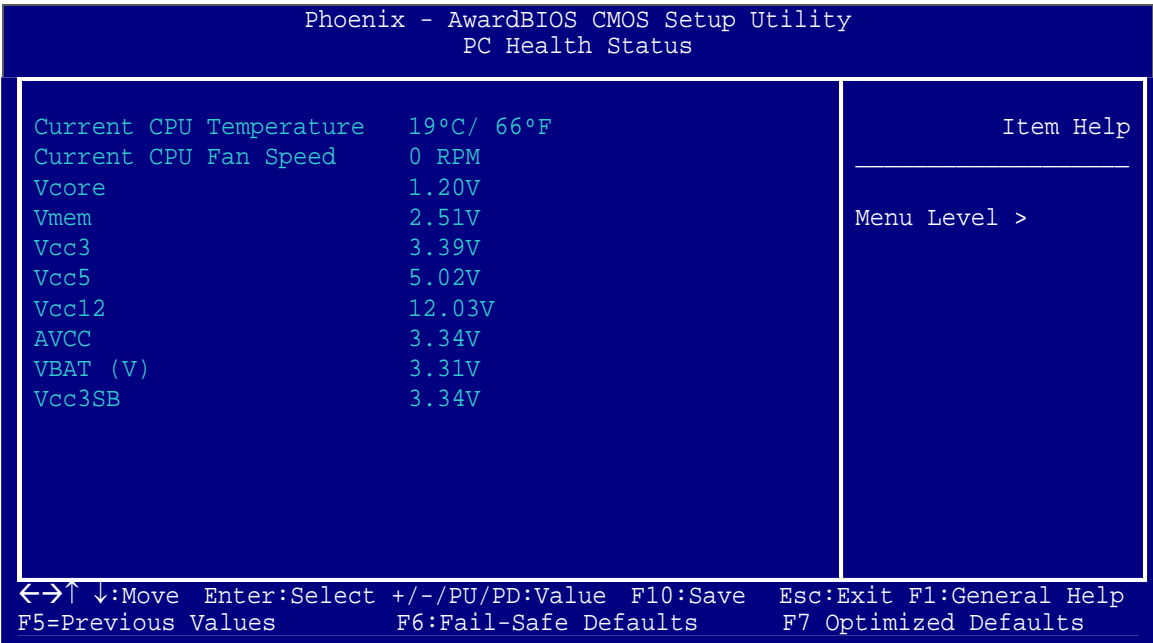
The **Reserved Memory Base** options are:



- N/A (Default)
- C800
- CC00
- D000
- D400
- D800
- DC00PC

5.8 Health Status

The **PC Health Status** menu (BIOS Menu 12) has no user configurable options, but shows system operating parameters that are essential to the stable operation of the system.



BIOS Menu 12: PC Health Status

The following system parameters are monitored by the **PC Health Status** menu.

➔ **System Temperature**

The following temperature is monitored:



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- Current CPU Temperature

### → Voltages

The following voltages are monitored:

- Vcore
- Vmem
- Vcc3
- Vcc5
- Vcc12
- AVCC
- VBAT
- Vcc3SB





Appendix

A

# BIOS Menu Options

---



|   |    |
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Appendix

C

# Terminology

---



## 3308585 Half-size CPU Card

|        |   |
|--------|---|
| AC '97 | Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.  |
| ACPI   | Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.  |
| AHCI   | Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.   |
| ATA    | The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.   |
| APM    | The Advanced Power Management (APM) application program interface (API) enables the inclusion of power management in the BIOS.  |
| ARMD   | An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.  |
| ASKIR  | Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude (“volume”) of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1. |
| BIOS   | The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user   |
| CODEC  | The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.   |
| CMOS   | Complimentary metal-oxide-conductor is a type of integrated circuit used in chips like static RAM and microprocessors.  |
| COM    | COM is used to refer to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal   |





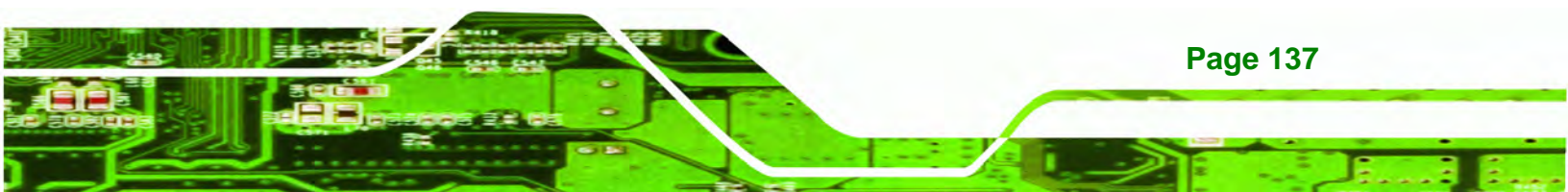
computer is usually a male DE-9 connector.

|          |  |
|----------|--|
| DAC      | The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.  |
| DDR      | Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.  |
| DMA      | Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.                         |
| DIMM     | Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.                        |
| EHCI     | The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.                                |
| GbE      | Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.                                      |
| GPIO     | General purpose input  |
| IrDA     | Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.         |
| L1 Cache | The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.  |
| L2 Cache | The Level 2 Cache (L2 Cache) is an external processor memory cache.  |
| LVDS     | Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer. |
| MAC      | The Media Access Control (MAC) protocol enables several terminals or network nodes to communicate in a LAN, or other multipoint networks.                          |



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|           |  |
|-----------|--|
| PCIe      | PCI Express (PCIe) is a communications bus that uses dual data lines for full-duplex (two-way) serial (point-to-point) communications between the SBC components and/or expansion cards and the SBC chipsets. Each line has a 2.5 Gbps data transmission rate and a 250 MBps sustained data transfer rate. |
| POST      | The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.  |
| QVGA      | Quarter Video Graphics Array (QVGA) refers to a display with a resolution of 320 x 240 pixels.   |
| RAM       | Random Access Memory (RAM) is a form of storage used in computer. RAM is volatile memory, so it loses its data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.   |
| SATA      | Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA 3Gb/s bus has data transfer speeds of up to 3.0 Gbps.   |
| S.M.A.R.T | Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.  |
| UART      | Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.   |
| UHCI      | The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.   |
| USB       | The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates, while   |



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USB 2.0 supports 480Mbps data transfer rates.

VGA

The Video Graphics Array (VGA) is a graphics display system developed by IBM.

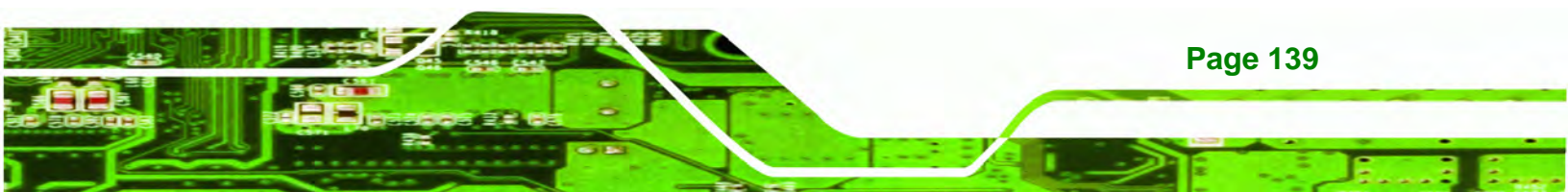


Appendix

D

# Watchdog Timer

---



The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

**INT 15H:**

| AH – 6FH Sub-function: |   |
|------------------------|---|
| AL – 2:                | Sets the Watchdog Timer's period.   |
| BL:                    | Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup). |

**Table D-1: AH-6FH Sub-function**

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.





### NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

### Example program:

**; INITIAL TIMER PERIOD COUNTER**

;

**W\_LOOP:**

MOV AX, 6F02H ;setting the time-out value

MOV BL, 30H ;time-out value is 48 seconds

INT 15H

;

**; ADD THE APPLICATION PROGRAM HERE**

;

CMP EXIT\_AP, 1 ;is the application over?

JNE W\_LOOP ;No, restart the application

MOV AX, 6F02H ;disable Watchdog Timer

MOV BL, 0 ;

INT 15H

;

**; EXIT ;**



Appendix

E

# Hazardous Materials Disclosure

---



## **E.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury**

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.



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| Part Name   | Toxic or Hazardous Substances and Elements |                 |                 |                                    |                                      |   |
|---|--|-----------------|-----------------|------------------------------------|--------------------------------------|---|
|   | Lead<br>(Pb)                               | Mercury<br>(Hg) | Cadmium<br>(Cd) | Hexavalent<br>Chromium<br>(CR(VI)) | Polybrominated<br>Biphenyls<br>(PBB) | Polybrominated<br>Diphenyl Ethers<br>(PBDE) |
| Housing   | X  | O               | O               | O                                  | O                                    | X   |
| Display   | X  | O               | O               | O                                  | O                                    | X   |
| Printed Circuit<br>Board  | X  | O               | O               | O                                  | O                                    | X   |
| Metal<br>Fasteners  | X  | O               | O               | O                                  | O                                    | O   |
| Cable<br>Assembly   | X  | O               | O               | O                                  | O                                    | X   |
| Fan Assembly  | X  | O               | O               | O                                  | O                                    | X   |
| Power Supply<br>Assemblies  | X  | O               | O               | O                                  | O                                    | X   |
| Battery   | O  | O               | O               | O                                  | O                                    | O   |
| <p>O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006</p> <p>X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006</p> |  |                 |                 |                                    |                                      |   |



## 3308585 Half-size CPU Card

Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

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