IEI Technology Corp.

PPC-5170GS

User Manual

RoHS Lead Free

REVISION HISTORY

Title	PPC-5170 Flat Panel PC User Manual	
Revision Number	Description	Date of Issue
1.0	Initial release	September 2006
1.1	Appendix A – IEI Panel PC product line added Wall mounting procedure updated LCD dimensions corrected	December 2006

ABOUT THIS MANUAL

This document covers the description and installation instructions for the PPC-5170 flat panel PC.

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SAFETY PRECAUTIONS

1   Prior to installing, moving, and modifying the panel PC, make sure the power is turned off and the power cord is disconnected.

2   Do not apply voltage levels that exceed the specified voltage range.   Doing so will cause fire or an electrical shock.

3   Electric shocks can occur if the panel is opened. Do not drop or insert any objects into the ventilation openings of the panel PC.

4   Only qualified engineers from certified system integrators or VARs are allowed to make necessary functional modifications to the panel PC, e.g., adding a touch screen. IEI offers the customization service on a pre-order basis.

5   For installations related to human safety, connect a separately installed mechanical switch instead of the panel PC's power switch.

6   Designs with stand-alone and fault-tolerant hardware considerations should be implemented using the series models as a critical alarm or production line control.

7   If considerable amount of dust, water, or fluids entered the panel PC, turn off the power supply immediately, unplug the power cord, and contact the MPC industrial panel PC vendor.

8   Explosions may occur with installations in environments where flammable gases are present.

9   Fault-tolerant and failsafe designs should be implemented with the use of the series models on transportation vehicles, ships, safety/security devices, or medical devices not related to life-support functions.   Users/integrators should take the responsibility for implementations with adequate levels of reliability and safety.

10 Preventive designs should be implemented so as to avoid the communications faults between the panel PC and the PC/workstation/terminals that controls it.

FURTHER PANEL PC PRECAUTIONS

1   Do not drop the panel PC against a hard surface. Doing so will damage the display.

2   Do not strike or exert excessive force onto the touch panel.

3   Touching the touch panel using a sharp object will damage the LCD panel.

4   Avoid environments exposed to direct sunlight, dust, or chemical vapors.

5 The panel PC is actively cooled. In no circumstances should the panel PC operate with the openings obstructed by foreign objects.   However, the ambient temperature of the installation site should be observed and controlled to avoid overheating the panel PC.

6 Condensation might form inside the panel PC chassis if exposed to sudden changes in temperature.

7 Carefully route the power cord so that people cannot step on it. Do not place anything over the power cord.

8 If the equipment should be left unused for an extended period of time, disconnect it from the power source to avoid damage by transient over-voltage.

9 If any of the following situations arises, get the equipment checked by service personnel:

   o The power cord or plug is damaged.

   o Liquid has penetrated into the equipment.

   o The equipment has been exposed to moisture.

   o The equipment does not work properly, or cannot be made to work according to the user manual.

   o The equipment has been dropped and damaged.

   o The equipment shows obvious signs of breakage.

⚠ WARNING!

Any changes or modifications made to the equipment that are not expressly approved by the relevant standards could void the authority to operate the equipment.

ADDITIONAL INFORMATION AND ASSISTANCE

Maintenance and Cleaning

Note the following precautions before starting to clean the panel PC.

When cleaning any single part or component of the computer, please read and understand the details below fully.

1. Except for the properly installed front LCD panel, never spray or squirt liquids directly onto any computer component. If the device needs to be cleaned, please rub it with a piece of dry and soft cloth or a slightly moistened cloth with the exterior casing.

2. The interior of the panel PC does not require cleaning. Keep fluids away from the panel PC and the interior of it.

3. Be cautious of the tiny removable components when using a vacuum cleaner to absorb the dirt on the floor.

4. Turn the system off before starting to clean up the panel PC.

5. Never drop any tiny objects through the openings of the panel PC or get circuit board damp or wet.

6. Be cautious of all kinds of cleaning solvents or chemicals when usingt them for the sake of cleaning. Some individuals may be allergic to the ingredients.

7. Avoid any food, drink or cigarette around the panel PC.

Cleaning Tools

Although many companies have created products to help improve the process of cleaning

Panel PCs and peripherals, users can also use household items to clean their computers and peripherals. Below is a list of some items that may be needed or used when cleaning the panel PC or panel PC peripherals.

Please keep in mind that some components in panel PC components may only be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning tips.

1. *Cloth* - A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, it is still recommended that a piece of cloth is used to rub it.

2. *Water or rubbing alcohol* – Moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer.

3. Unknown solvents may be harmful to the plastics parts.

4. *Vacuum cleaner* - Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.

5   *Cotton swabs* - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in the keyboard, mouse, and other locations.

6   *Foam swabs* - Whenever possible it is better to use lint free swabs such as foam swabs.

ESD PRECAUTIONS

Observe all conventional anti-ESD methods while handling the components contained within the LCD should the need arise for adding a functionality.   The use of a grounded wrist strap and an anti-static work pad is recommended.   Avoid dust and debris or other static-accumulating materials in the work area.

CONVENTIONS USED IN THIS MANUAL

⚡ WARNING!

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury.   Warnings should be taken seriously.   Warnings are easy to recognize. The word "warning" is written as "**WARNING**," both capitalized and bold and is followed by text in italics. The italicized text is the warning message.

⚠ CAUTION!

Cautionary messages should also be heeded to helps reduce the chance of losing data or damaging the system.   Cautions are easy to recognize. The word "caution" is written as "**CAUTION**," both capitalized and bold and is followed by text in italics. The italicized text is the cautionary message.

✔ NOTE:

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can helps avoid making mistakes. Notes are easy to recognize. The word "note" is written as "**NOTE**," both capitalized and bold and is followed by text in italics. The italicized text is the cautionary message.

Lists

Bulleted Lists: Bulleted lists are statements of non-sequential facts that can be read in any order. Each statement is preceded by a black square "■" or bullets in other shapes.

Numbered Lists: Numbered lists describe sequential steps should be followed in order.

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Glossary

AC '97	Audio Codec 97
ACPI	Advanced Configuration and Power Interface
APM	Advanced Power Management
ARMD	ATAPI Removable Media Device
ASKIR	Shift Keyed Infrared
ATA	Advanced Technology Attachments
BIOS	Basic Input/Output System
CFII	Compact Flash Type 2
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
Codec	Compressor/Decompressor
COM	Serial Port
DAC	Digital to Analog Converter
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DIO	Digital Input/Output
DMA	Direct Memory Access
EIDE	Enhanced IDE
EIST	Enhanced Intel SpeedStep Technology
FDD	Floppy Disk Drive
FDC	Floppy Disk Connector
FFIO	Flexible File Input/Output
FIFO	First In/First Out
FSB	Front Side Bus
IrDA	Infrared Data Association

HDD	Hard Disk Drive
IDE	Integrated Data Electronics
I/O	Input/Output
ICH4	I/O Controller Hub 4
L1 Cache	Level 1 Cache
L2 Cache	Level 2 Cache
LCD	Liquid Crystal Display
LPT	Parallel Port Connector
LVDS	Low Voltage Differential Signaling
MAC	Media Access Controller
OS	Operating System
PCI	Peripheral Connect Interface
PIO	Programmed Input Output
PnP	Plug and Play
POST	Power On Self Test
RAM	Random Access Memory
SATA	Serial ATA
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology
SPD	Serial Presence Detect
S/PDI	Sony/Philips Digital Interface
SDRAM	Synchronous Dynamic Random Access Memory
SIR	Serial Infrared
UART	Universal Asynchronous Receiver-transmitter
USB	Universal Serial Bus
VGA	Video Graphics Adapter

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Chapter

1

Introduction

1.1 PPC-5170 Flat Panel PC Overview

The PPC-5170 flat panel PC is a flexible, multi-functional flat panel PC that can be applied in diverse operational environments and implemented in multi-faceted applications. The PPC-5170 comes fully kitted with a high-performance motherboard, CPU, power supply unit and a host of other peripheral interface connectors. The PPC-5170 is designed for ease of use and easy installation.

1.1.1 PPC-5170 Model Variation

Two IEI PPC-5170 models are available. The models are listed in **Table 1-1**.

Model	CPU	Socket	Touch Screen
PPC-5170GS/8520	**Intel Pentium 4 / Celeron D**	**478**	**No**
PPC-5170GS/8520/T-R	**Intel Pentium 4 / Celeron D**	**478**	**Yes**

Table 1-1: PPC-5170 Model Variation

1.1.2 PPC-5170 Flat Panel PC Applications

The PPC-5170 flat panel PC is designed for rigorous industrial environments where it may be exposed to both heat and moisture. Its durability and strength also makes it an ideal choice for public access computers. Some possible applications include:

8   Automated manufacturing processes
9   Public information gathering point

1.1.3 PPC-5170 Flat Panel PC Features

Some of the features of the PPC-5170 flat panel PC include:

10   Mainstream panel PC design with dual display function.
11   Aluminum die-casting front panel meet IP65 water proof standard
12   High performance Intel Pentium 4 / Celeron CPU support
13   Dual DDR memory DIMM support up to 2GB SDRAM
14   Serial ATA-150 connections

15 High brightness 17" industrial grade panel

16 Fully I/O function support:

   o 6 x COM (1 for Touch Screen)

   o 6 x USB 2.0 ports

   o 1 x PCI slot

   o 1 x CF socket

17 Dual 10/100/Gigabit Ethernet supported

18 RoHS compliant

1.2 PPC-5170 External Overview

1.2.1 General Description

The PPC-5170 flat panel PC is comprised of an LCD screen, aluminum front panel and heavy duty steel rear and side panels. The rear panel provides screw holes for wall and an arm mounting. The right panel provides access to a slim type CD drive bay and a floppy disk drive bay. The bottom panel provides access to external interface connectors that include GbE, USB 2.0, audio, parallel port, serial port connectors and a CF card slot.

1.2.2 Front Panel

The front panel of the PPC-5170 (**Figure 1-1**) is a flat panel 17" TFT LCD screen surrounded by an aluminum frame.
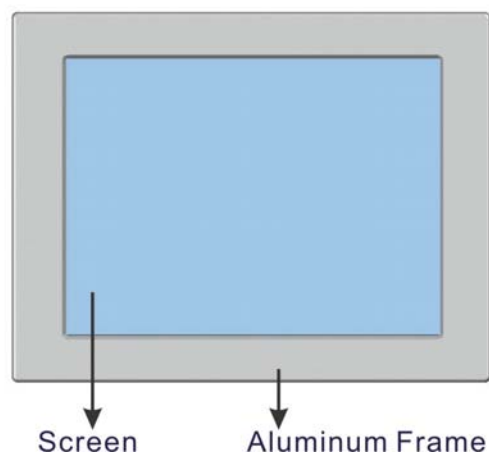
Figure 1-1: PPC-5170 Front View

1.2.3 Rear Panel

The rear panel has a fan vent, four VESA standard mounting holes and several retention

screw holes. The VESA mounting holes are circled in **Figure 1-2**.
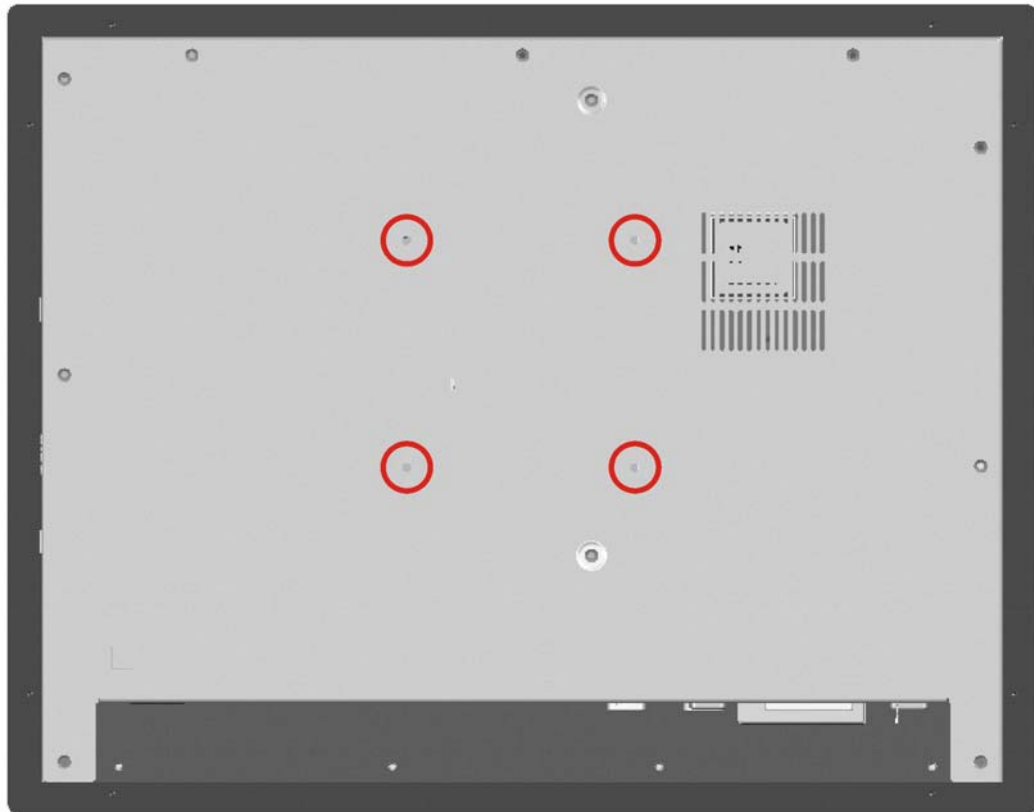
Figure 1-2: PPC-5170 Rear View

1.2.4 Top Panel

The top panel has two fan vents and three retention screws for securing the drive bay bracket. The retention screws are circled in **Figure 1-3** below.

Figure 1-3: PPC-5170 Top View

1.2.5 PPC-5170 Bottom Panel

The bottom panel shown in **Figure 1-4** has the following interfaces:

19 1 x Power input connector

20 1 x Power switch

21 6 x USB connectors

22 1 x Reset button

23 2 x RJ-45 GbE connectors

24 2 x PS/2 keyboard/mouse connector

25 5 x Serial port (COM) connectors

26 1 x PCI add-on card slot

27 1 x Parallel port connector

28 3 x Audio jacks

29 1 x VGA connector

30 1 x Compact Flash slot
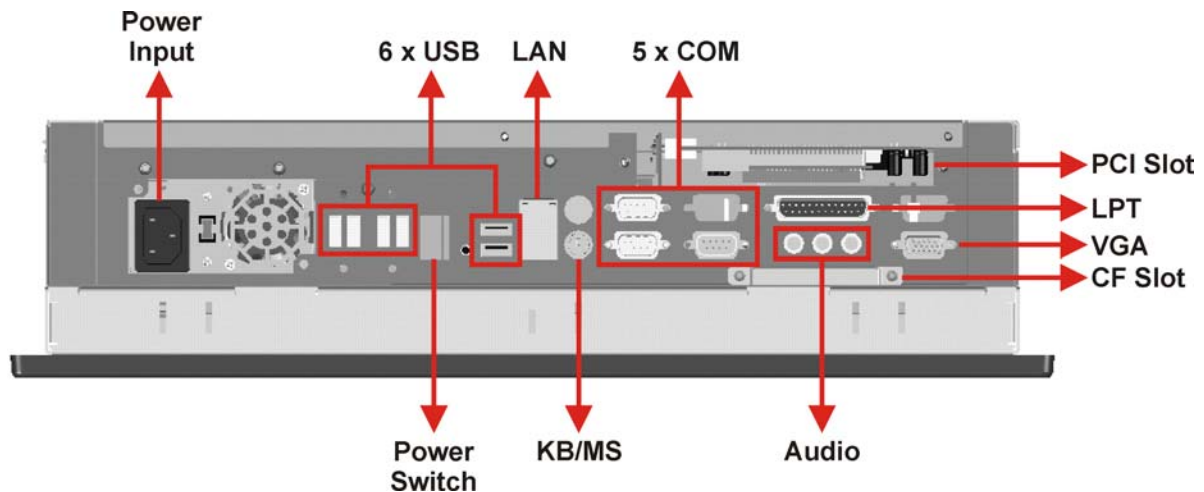
Figure 1-4: Bottom View

1.2.6 Left Panel

The left side panel has two fan vents and four retention screws for securing the two internal fans. The retention screws are circled in **Figure 1-5**.
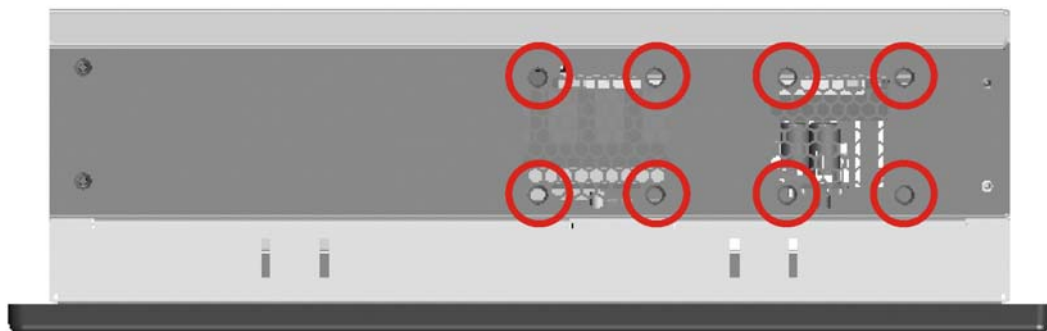
Figure 1-5: Left View

1.2.7 Right Panel

The right side panel provides access to a slim type CD drive bay and a FDD drive bay shown in **Figure 1-6**.

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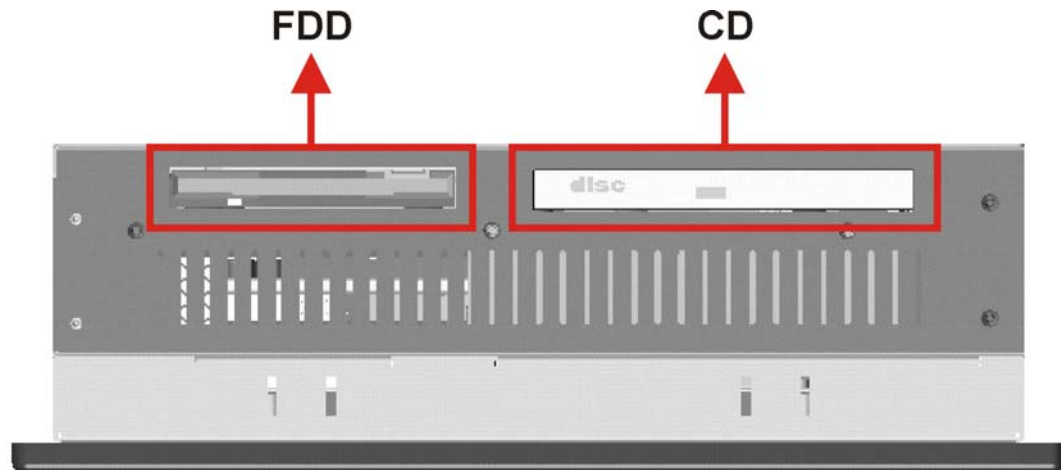
Figure 1-6: Left View

1.2.8 Frame

An aluminum frame surrounds the 17" TFT LCD screen. The back of the aluminum frame has sixteen mounting screw holes. These screws are circled in **Figure 1-7**.
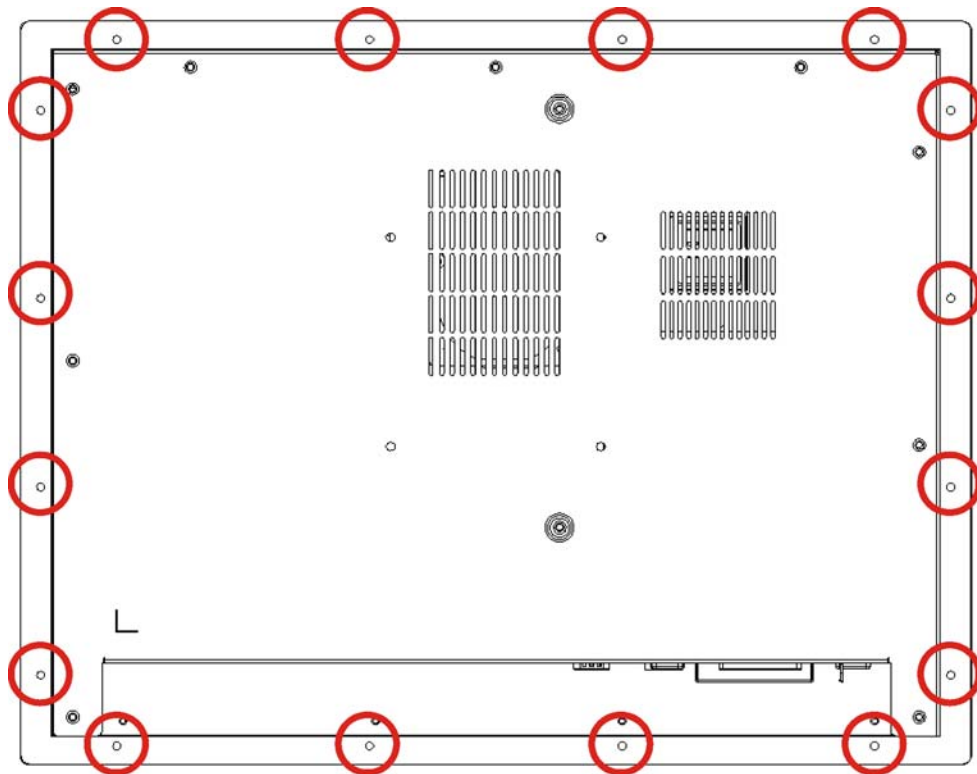
Figure 1-7: Frame Rear View

1.3 PPC-5170 Internal Overview

The PPC-5170 internal components are configured in a three level format. An elevated platform on the right side of the chassis supports a HDD, a CD drive and a FDD. On the second level, below the elevated platform, are a motherboard and a PSU module. The motherboard and the PSU module are installed on a metal sheet that protects the rear of the 17" TFT LCD screen. Below the metal sheet is a circuit board that is connected to the screen and the motherboard. The three levels of components can be seen in **Figure 1-8**.
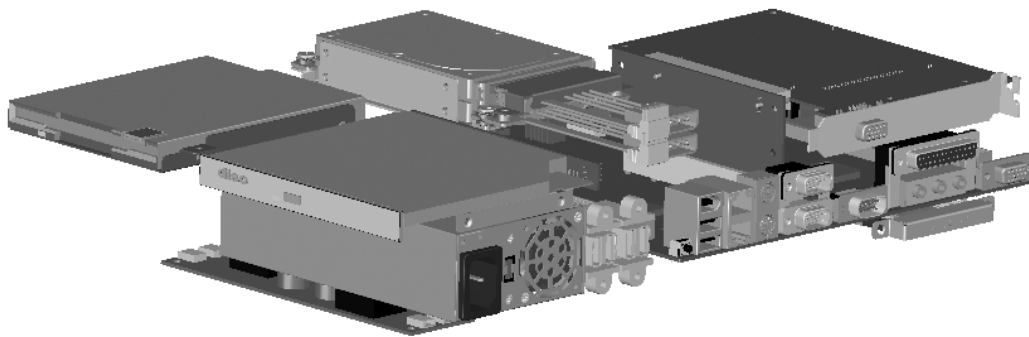
Figure 1-8: Internal Components

1.4 PPC-5170 Specifications

1.4.1 Preinstalled Hardware Components

The PPC-5170 flat panel PC has the following preinstalled components:

31 1 x Motherboard
32 1 x 17" TFT LCD screen
33 1 x Power supply

The technical specifications for these components and the system are shown in the sections below.

1.4.2 System Specifications

The technical specifications for the PPC-5170 system are listed in **Table 1-2**.

SPECIFICATION	DETAIL
Front Panel	Aluminum Front Panel meets IP65 standard
Chassis	Heavy-duty Steel
LCD Panel	17" High luminance TFT LCD
Resolution	1280 x 1024 (SXGA)
Brightness	300 cd/m2
Contrast Ratio	500:1
LCD MTBF	50,000 hrs
Backlight MTBF	50,000 hrs
Viewing Angle (H-V)	140/130
Touch Screen	Optional 5-wire resistive type touch screen with RS-232 interface
Display	Support Dual Display
Add-On Card (Optional)	Support PCI and CFII
Drive Bay	One 2.5" HDD bay with anti-shock One slim type CD drive bay One slim type FDD bay
Power Supply	Input voltage: 100~240V AC, 50~60 Hz Output rating: 180W Output voltage: +3.3V@16.8A +5V@12A +12V@10A -12V@0.8A +5VSB@2A
Mounting Feature	Panel, Arm, Wall, or Rack/Cabinet
Color	Silver (PANTONE PMS-8001)
Operating Temperature	0~50°C
Relative Humidity	5 ~ 95%, non-condensing

SPECIFICATION	DETAIL
Vibration	5 - 17Hz, 0.1" double amplitude displacement. 17 - 640Hz, 1.5G acceleration, peak to peak.
Shock	10G Acceleration, peak to peak (11ms)
Dimensions	452(W) x 356(H) x 110(D) mm
Net/Gross Weight	8/12 Kg
Environment	RoHS Compliant

Table 1-2: PPC-5170 Specifications

1.4.3 PPC-5170 Motherboard Specifications

The PPC-5170 comes with a POS-8520 motherboard. The technical specifications of the motherboard are listed in **Table 1-3**.

SPECIFICATION	DETAIL
CPU	Socket-478 base Intel Pentium 4 / Celeron D
Northbridge	852GME
Southbridge	ICH5
Max. FSB	533 MHz
Memory	2 x DDR 266/333 DIMM socket up to 2GB
BIOS	AMI BIOS Label
Display	CRT integrated in Intel 852GME
	LVDS Dual 18-bit TTL LCD integrated in Intel 852GM
Expansion Interface	1 x PCI slot 1 x CFII
Audio	AC' 97 Codec
Ethernet	2 x Realtek RTL8110SC GbE controller

SPECIFICATION	DETAIL
COM	1 x RS-232/422/485 port 5 x RS-232 ports (1 for optional touch screen)
USB 2.0	6 x USB 2.0 ports
Drive Interfaces	2 x SATA drive connectors
LPT	2 x ATA 100 channels
KB/ MS	2 x PS/2 connector
IrDA	1 x IrDA interface

Table 1-3: Motherboard Specifications

1.4.4 Flat Panel Screen

The PPC-5170 comes with a 17" TFT LCD monitor at the front of the flat panel PC (**Figure 1-1**). The specifications for the LCD monitor are shown in **Table 1-4** below.

SPECIFICATION	DETAILS
Model	AUO-M170EG01 V8
Size	17"
Resolution	SXGA (1280 x 1024)
Active Area (mm)	337.9 x 270.3
Pixel Pitch (mm)	0.264
Mode	TN
Number of Colors	16.2M
Color Saturation (%)	72
View Angel (H/V)	140 / 130
Brightness (cd/m2)	300
Contrast Ratio	500 : 1

SPECIFICATION	DETAILS
Response Time (ms) (at 25°C)	8
Power Consumption (W)	25.8
Interface	2ch LVDS
Supply Voltage (V)	5
Backlight	4 CCFL
Outline Dimensions (mm)	358.5 x 296.5 x 17.0
Weight (g)	1900

Table 1-4: 17" TFT LCD Monitor Specifications

1.4.5 Power Supply

The PPC-5170 flat panel PC comes with an 180W AC-DC 1U, RoHS compliant ATX power supply. The PSU has an MTBF greater than 100,000 hours. The maximum power output for the PSU is shown below.

1. +3.3V and +5V Combined Power 61W MAX.
2. +3.3V, +5V and +12V Combined Power 160W MAX.

 WARNING:

Under no circumstances is the PSU case to be opened. The PSU module is not user serviceable and there are dangerous high-voltages inside the case. If there are any problems with the PSU module, please contact the dealer or reseller immediately.

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The specifications for the PSU module are shown in (**Table 1-5**).

INPUT	**Voltage**	AC90V ~ 264VAC Full Range				
	Frequency	**47 ~ 63Hz**				
	Input Current	**4A(RMS)@115VAC** **2A(RMS)@230VAC**				
	Inrush Current	**50A Max for 115VAC** **80A Max for 230VAC**				
OUTPUT	**Voltage (V)**	**+3.3V**	**+5V**	**+12V**	**-12V**	**5VSB**
	Min. Load (A)	**0.3A**	**0.3A**	**1.5A**	**0A**	**0A**
	Max. Load (A)	**16.8A**	**12A**	**10A**	**0.8A**	**2A**
	Ripple and Noise (mV)	**50mV**	**50mV**	**120mV**	**120mV**	**50mV**
	+3.3V & +5V$\leqq$61W **+3.3V & +5V & +12V$\leqq$160W**					
GENERAL	**Watt**	**180W**				
	PFC	**Active**				
	Hold-up time	**17ms minimum**				
	Efficiency	**68%**				
	MTBF	**100,000hrs**				
	Temperature	**0~50℃ (Operating)** **-20~80℃ (Storage)**				
	Dimension	**150mm (W) x 81.5mm (H) x 40.5mm (D)**				

Table 1-5: Power Supply Specifications

1.5 Dimensions

The dimensions of the PPC-5170 flat panel PC are shown in **Figure 1-9** below.
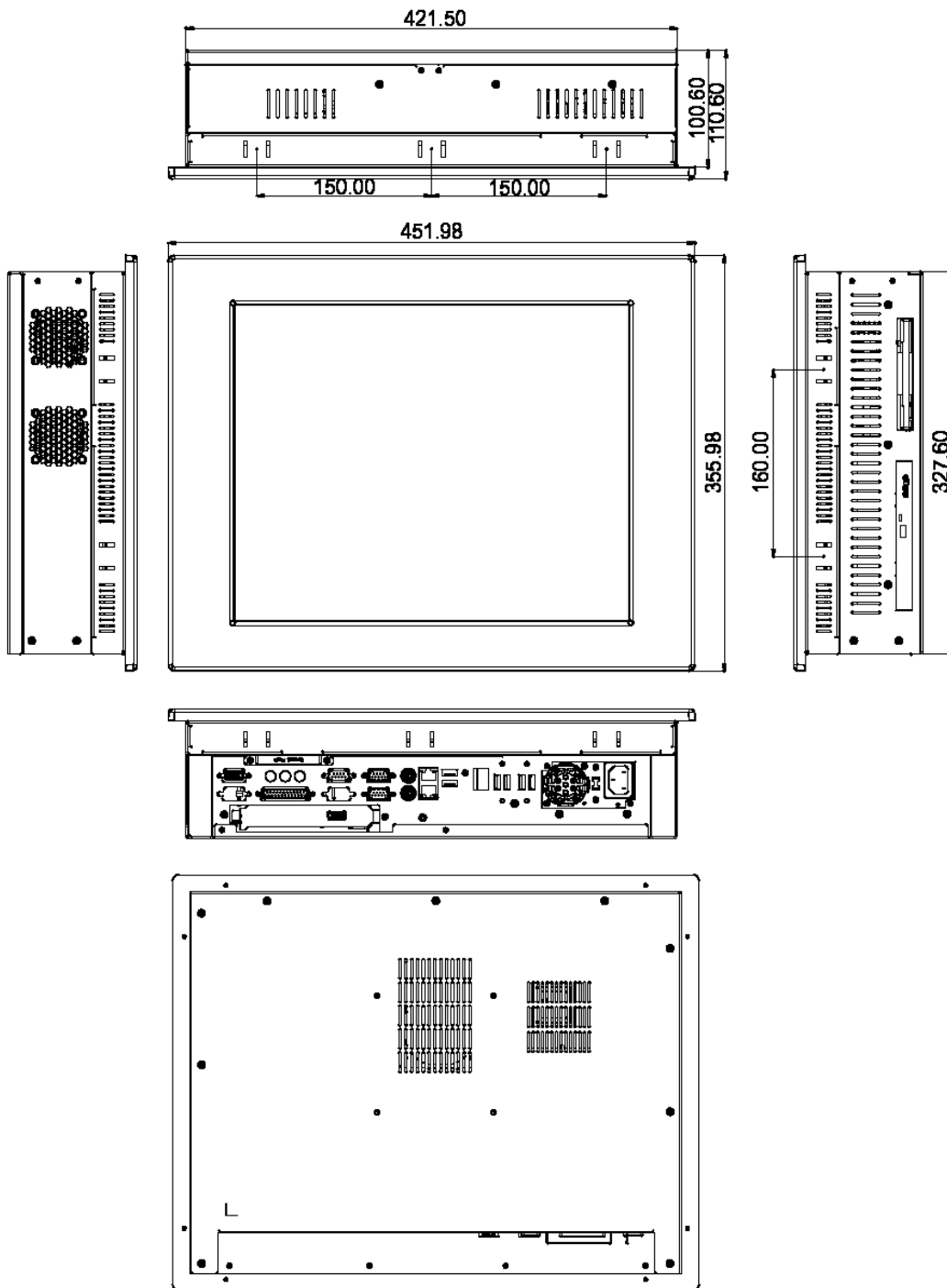
Figure 1-9: Dimensions (units in mm)

Chapter

2

POS-8520
Motherboard

2.1 Introduction

The PPC-5170 flat screen PC contains a POS-8520 motherboard. The motherboard is the heart of any computer and is responsible for transmitting, receiving and processing data as well as driving the different on-board devices. This chapter gives a brief introduction to the POS-8520 motherboard. For more complete details on the connectors and the different implementations of the POS-8520, please refer to the POS-8520 user manual.

2.2 CPU Support

The POS-8520 installed in the PPC-5170 supports socket 478, Intel Pentium 4 / Pentium M / Celeron M FSB 533 MHz CPU or on-board Intel Celeron M 1GHz zero cache CPU.

2.3 On-board Chipsets

2.3.1 Northbridge and Southbridge Chipsets

The following chipsets are preinstalled on the board:

34 **Northbridge**: Intel 852GM
35 Southbridge: ICH5

The following two sections (**Section 2.3.2** and **Section 2.3.3**) list some of the features of the 852GME and the ICH5 chipsets. For more information on these two chipsets please refer to the Intel website.

2.3.2 852GME Northbridge Chipset

The 852GME northbridge chipset comes with the following features:

36 Supports the Intel Pentium 4 processor and Intel Celeron processor with Intel NetBurst® microarchitecture
37 400 MHz or 533 MHz system bus delivers a high-bandwidth connection between the processor and the platform
38 Integrated graphics utilizing Intel® Extreme Graphics 2 technology
39 AGP 4X support
40 Three USB host controllers support up to six USB 2.0 ports.
41 The latest AC '97 implementation delivers 20-bit audio for enhanced sound

quality and full surround sound capability.

42 LAN Connect Interface (LCI) provides network solutions for 10/100 Mbps Ethernet and 10/100 Mbps Ethernet with LAN manageability

43 Dual Ultra ATA/100 controllers

44 Error Correcting Code (ECC) support in integrated graphics mode only

45 The Intel Application Accelerator software provides additional performance over native ATA drivers by improving I/O transfer rates and enabling faster O/S load time, resulting in accelerated boot times

46 Display

- o Analog display support
- o Dual independent pipe support
- o DVO (DVOB and DVOC) support
- o Dedicated Local Flat Panel (LFP) LVDS interface

47 Intel® Embedded Graphics Drivers

- o Graphics interface support
- o Multi-monitor support
- o Dynamic display-mode support
- o Embedded video BIOS

2.3.3 ICH5 Southbridge Chipset

The ICH5 southbridge chipset comes with the following features:

48 PCI Bus Interface

- o New: Supports PCI Revision 2.3 Specification at 33 MHz
- o 6 available PCI REQ/GNT pairs
- o One PCI REQ/GNT pair can be given higher arbitration priority (intended for external 1394 host controller)
- o Support for 44-bit addressing on PCI using DAC protocol

49 Integrated LAN Controller

- o Integrated ASF Management Controller
- o WfM 2.0 and IEEE 802.3 Compliant
- o LAN Connect Interface (LCI)
- o 10/100 Mbit/sec Ethernet Support

50 Integrated Serial ATA Host Controllers

- o Independent DMA operation on two ports.
- o Data transfer rates up to 1.5 Gb/s (150 MB/s).

    o   RAID Level 0 Support (ICH5R Only)

51 Integrated IDE Controller

    o   Supports "Native Mode" Register and Interrupts

    o   Independent timing of up to 4 drives

    o   Ultra ATA/100/66/33, BMIDE and PIO modes

    o   Tri-state modes to enable swap bay

52 Interrupt Controller

    o   Supports up to 8 PCI interrupt pins

    o   Supports PCI 2.3 Message Signaled Interrupts

    o   Two cascaded 82C59 with 15 interrupts

    o   Integrated I/O APIC capability with 24 interrupts

    o   Supports Front Side Bus interrupt delivery

53 High-Precision Event Timers

54 1.5 V operation with 3.3 V I/O

    o   5V tolerant buffers on IDE, PCI, USB Overcurrent and Legacy signals

55 Integrated 1.5 V Voltage Regulator (INTVR) for the Suspend wells

56 Enhanced DMA Controller

    o   Two cascaded 8237 DMA controllers

    o   PCI DMA: Supports PC/PCI — Includes two PC/PCI REQ#/GNT# pairs

    o   Supports LPC DMA

    o   Supports DMA Collection Buffer to provide Type-F DMA performance for all DMA channels

57 Real-Time Clock

    o   256-byte battery-backed CMOS RAM

    o   Integrated oscillator components

    o   Lower Power DC/DC Converter implementation

2.4 Graphics Support

The Intel® Extreme Graphics 2 is integrated on the Intel® 852GME Northbridge chipset. The Intel® Extreme Graphics 2 features are listed below.

58 **Enhanced Rapid Pixel and Texel Rendering**: Optimized visual quality and performance from the addition of hardware to support of texel formatting, bicubic filter, color blending accuracy, and video mixing render, resulting in optimized visual quality and performance.

59 **Zone Rendering 2 Technology**: Enhances the performance of zone rendering by using larger zones and new commands that improve graphics pipeline efficiency.

60 **Dynamic Video Memory Technology v2.0**: Increases total system performance by optimizing the efficiency of AGP dynamic video memory by increasing its size of Video RAM allocation to 96 MB.

61 **Enhanced Intelligent Memory Management**: Improves memory bandwidth efficiency and platform performance by improving the memory management arbitration between CPU, system memory and graphics memory.

Intel® Extreme Graphics 2 specifications are listed below:

62 Enhanced 2D:
   o 256-bit internal path
   o 8/16/32bpp
   o DirectDraw*, GDI, GDI+
   o Anti-aliased text support
   o Alpha blending
   o Alphas stretch blitter
   o Hardware alpha blended RGB cursor
   o Color space conversion
   o 5x2 overlay support
   o Rotate, scale and translate operations

63 High-performance 3D:
   o 256-bit internal path
   o 32bpp/ 24ZorW/ 8 Stencil
   o DX7*/DX8*/OGL*1.1
   o DXTn texture compression
   o Up to 4 textures / pixel on a single pass
   o Cubic reflection map
   o Embossed/DOT3 bump mapping
   o Multi-texture
   o DOT3 bump-mapping
   o Point sprites

64 Video and Display:
   o DirectShow*/DirectVA*

o Hardware motion compensation support for DVD playback

o 4x2 overlay filter

o 350 MHz DAC frequency

o Maximum DVO pixel rate of up to 330MP/s

o Flat panel monitors and TV-out support via AGP Digital Display (ADD) cards

o 350 MHz DAC for 1800x1440 @ 85Hz max CRT resolution or 2048x1536@60Hz max FP resolution

o Synchronous display for dual monitor capabilities

o 350MHz RAMDAC for up to QXGA analog monitor support

o Dual DVO ports for up to QXGA digital display support

o Multiple display types (LVDS, DVI, TV-out, CRT)

2.5 Peripheral Device Interfaces, Connectors, and Slots

The peripheral device connectors, interfaces and slots on the POS-8520 motherboard are listed in the sections below.

2.5.1 OEM Options

Many of the peripheral device connectors listed below are not connected to any devices. These connectors are reserved for OEM customizations. For a customized option, please contact the vendor, reseller or IEI sales representative.

2.5.2 Internal Slots

The slots listed below can all be found on the POS-8520 motherboard.

65 2 x DDR DIMM sockets

66 1 x CFII slot

67 1 x PCI slot

2.5.3 Internal Peripheral Device Connectors

The peripheral device connectors listed below are located on the POS-8520 motherboard. Pinouts for these connectors can be found in *Appendix A*.

68 1 x ATX 12V power connector

69 1 x ATX power connector

70 2 x Audio connectors

71 1 x DIO connector

72 3 x Fan connectors

73 1 x FDD connector

74 2 x IDE device connectors

75 1 x IrDA connector

76 1 x Keyboard connector

77 1 x PS/2 mouse connector

78 1 x LCD backlight connector

79 1 x LVDS interface connector

80 1 x Multi panel connector

81 1 x Parallel port connector

82 1 x Reset connector

83 2 x Serial ATA connectors

84 6 x Serial port connectors

85 6 x USB connectors

86 1 x VGA connector

2.5.4 External Peripheral Device Connectors

The peripheral device connectors listed below are located on the rear panel of the POS-8520 motherboard. Pinouts for these connectors can be found in *Appendix A*.

87 3 x Audio jack connectors

88 1 x Keyboard connector

89 1 x Mouse connector

90 2 x RJ-45 Ethernet connectors

91 1 x Serial port connector (COM)

92 1 x VGA connector

93 2 x USB ports

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Chapter

3

Installation and Configuration

3.1 Installation Precautions

When installing the PPC-5170, please follow the precautions listed below:

1 **Power turned off**: When installing the PPC-5170 make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.

2 **Certified Engineers**: Only certified engineers should install and modify on-board functions.

3 **Mounting**: The PPC-5170 is a heavy device. When mounting the system onto a rack, panel, wall or arm please make sure that at least two people are assisting with the procedure.

4 **Anti-static Discharge**: If a user open the rear panel of the PPC-5170, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear and anti-static wristband.

3.2 Preinstalled Components

The following components are all preinstalled.

94 Motherboard
95 17" TFT LCD
96 17" Touch screen (T-R model only)
97 Power switch
98 Power supply
99 Inverter board
100 PCI riser card
101 System cooling fans

Preinstalled OEM customizations may include the following.

102 CPU
103 HDD
104 FDD
105 CD drive
106 DIMM

Removal and reinstallation of some of the components are described in **Chapter 4**.

3.3 Installation and Configuration Steps

The following installation steps must be followed.

Step 1:   Unpack the PPC-5170.

Step 2:   Set the jumper settings.

Step 3:   Install HDD, FDD and CD drive.

Step 4:   Mount the PPC-5170 flat panel PC.

Step 5:   Connect peripheral devices to the bottom panel of the PPC-5170.

Step 6:   Configure the system.

3.4 Unpacking

To unpack the PPC-5170 flat panel PC, follow the steps below:

⚠ WARNING!

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the PPC-5170 flat panel PC has been properly installed. The plastic cover ensures the screen is protected during the installation process.

Step 1:   Use box cutters, a knife or a sharp pair of scissors to cut the tape that seals the top side of the external (second) box.

Step 2:   Open the external (second) box.

Step 3:   Use box cutters, a knife or a sharp pair of scissors to cut the tape that seals the top side of the internal (first) box.

Step 4:   Lift the monitor out of the boxes.

Step 5:   Remove both polystyrene ends, one from each side.

Step 6:   Make sure all the components listed in the packing list are present.

3.4.1 Packing List

The PPC-5170 flat panel PC is shipped with the following components:

107 1 x Carton

108 1 x Power cord

109 1 x Screw kit

110 1 x HDD IDE cable (44 pin + 2 x 40 pin)

111 1 x HDD IDE cable (44 pin + 40 pin)

112 1 x HDD SATA cable

113 1 x Driver CD (including user manual)

114 1 x CPU cooler

115 1 x CD-ROM installation kit

116 1 x FDD installation kit

117 1 x HDD bracket

118 1 x Jumper pack

119 1 x Wall-mounting kit

120 1 x Panel-mounting kit

121 1 x Touch screen driver CD (T-R model only)

122 1 x Touch pen (T-R model only)

3.5 Jumper Settings

NOTE:

These jumper settings and the jumper locations are described in detail in the user manual that came with the POS-8520 motherboard. Please refer to the manual for more detailed descriptions of the jumper settings.

NOTE:

A jumper is a metal bridge that is used to close an electrical circuit. It consists of two 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.

The POS-8520 comes with fifteen jumpers (**Table 3-1**).

Jumper	Type	Label
Clear CMOS Setup	3-pin header	JP1
COM# RI and Voltage Selection	3-pin header	JP6 JP7 JP8 JP9 JP13 JP14 JP15 JP16
COM2 RS-232/422/485 Setup	12-pin header	JP10
	6-pin header	JP20
CompactFlash Card Setup	2-pin header	JP12
CPU Voltage Setting	10-pin header	S3
Keyboard/Mouse Power Source	3-pin header	JP18
LCD Voltage Select	6-pin header	JP2

Table 3-1: Onboard Jumpers

3.5.1 Remove the Back Cover

The back cover is secured to the chassis with thirteen retention screws, eleven on the rear panel and two on the bottom panel (**Figure 3-1**). Remove the thirteen retention screws and lift the cover off the PPC-5170.
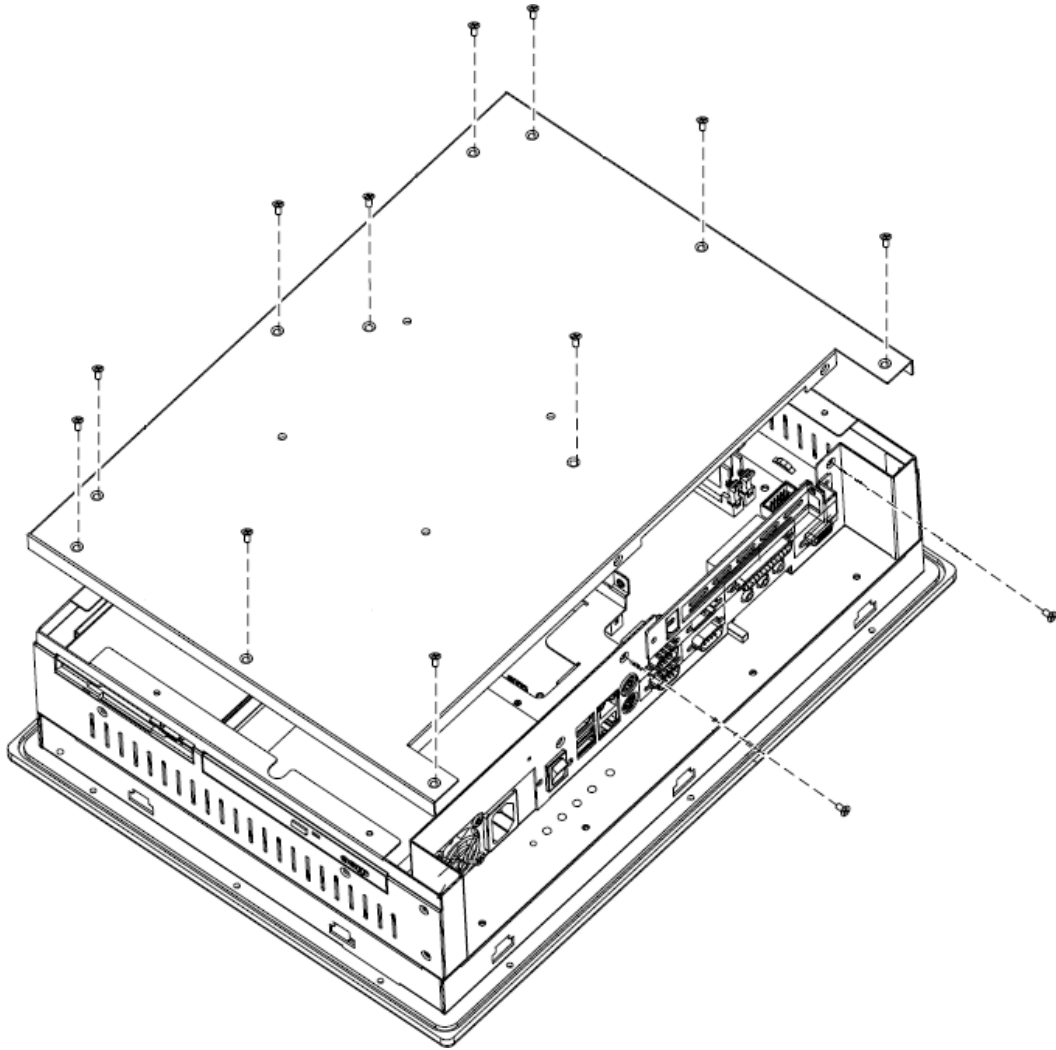
Figure 3-1: Back Cover Retention Screws

3.5.2 CF Card Setup (JP12)

The CF Card Setup jumper configures a CF card as either the slave or the master.

JP12	DESCRIPTION
Open	Slave (Default)
Close	Master

Table 3-2: CF Card Setup Jumper Settings

3.5.3 Clear CMOS Setup (JP1)

If the motherboard fails to boot due to improper BIOS settings, use this jumper to clear the CMOS data and reset the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the "CMOS Settings Wrong" message displays during the boot up process, try to correct the fault by pressing the F1 to enter the CMOS Setup menu. Then do one of the following:

123 Enter the correct CMOS setting
124 Load Optimal Defaults

After one of the above has been done, save the changes and exit the CMOS Setup menu.

JP1	DESCRIPTION
1-2 closed	Normal (Default)
2-3 closed	Clear CMOS

Table 3-3: Clear CMOS Jumper Settings

3.5.4 COM2 Port RS232/422/485 Selection (JP10, JP20)

The COM Port jumper configures the COM2 serial port.

JP10	JP20	DESCRIPTION
1-2,4-5,7-8,10-11 closed	1-3 closed	RS232 (default)
2-3,5-6,8-9,11-12 closed	3-5, 2-4 closed	RS422
2-3,5-6,8-9,11-12 closed	3-5, 4-6 closed	RS485

Table 3-4: COM2 Port Jumper Settings

3.5.5 COM port RI and Voltage Selection

Use JP7 and JP9 to set pin 9 of COM1 as signal RI or voltage source.

JP9	DESCRIPTION
2-3 closed	COM1 RI PIN Use RI
1-2 closed	COM1 RI PIN Use Voltage

Table 3-5: COM1 RI and Voltage Selection Jumper

JP7	DESCRIPTION
2-3 closed	COM1 RI PIN Use Voltage +12V
1-2 closed	COM1 RI PIN Use Voltage +5V

Table 3-6: COM1 RI Voltage Selection Jumper

NOTE:

The use of pin 2-3 or pin 1-2 of JP7 does not make any difference when pin 2-3 of JP9 is in use.

Use JP6 and JP8 to set pin 9 of COM2 as signal RI or voltage source.

JP8	DESCRIPTION
2-3 closed	COM2 RI PIN Use RI
1-2 closed	COM2 RI PIN Use Voltage

Table 3-7: COM2 RI and Voltage Selection Jumper

JP6	DESCRIPTION
2-3 closed	COM2 RI PIN Use Voltage +12V
1-2 closed	COM2 RI PIN Use Voltage +5V

Table 3-8: COM2 RI Voltage Selection Jumper

Use JP13 and JP15 to set pin 9 of COM3 as signal RI or voltage source.

JP15	DESCRIPTION
2-3 closed	COM3 RI PIN Use RI
1-2 closed	COM3 RI PIN Use Voltage

Table 3-9: COM3 RI and Voltage Selection Jumper

JP13	DESCRIPTION
2-3 closed	COM3 RI PIN Use Voltage +12V
1-2 closed	COM3 RI PIN Use Voltage +5V

Table 3-10: COM3 RI Voltage Selection Jumper

Use JP14 and JP16 to set pin 9 of COM4 as signal RI or voltage source.

JP16	DESCRIPTION
2-3 closed	COM4 RI PIN Use RI
1-2 closed	COM4 RI PIN Use Voltage

Table 3-11: COM4 RI and Voltage Selection Jumper

JP14	DESCRIPTION
2-3 closed	COM4 RI PIN Use Voltage +12V
1-2 closed	COM4 RI PIN Use Voltage +5V

Table 3-12: COM4 RI Voltage Selection Jumper

3.5.6 CPU Voltage Setting (S3)

Two different types of CPU can be used on the POS-8520 motherboard. One is Pentium 4 CPU and the other is Pentium4-M CPU. Use the CPU voltage setting jumper (S3) to configure the power of CPU. When using Pentium 4 CPU, please open S3 jumper. CPU VID automatically configures the power of CPU. When using Pentium 4-M CPU, short 1-2, 7-8, 11-12 pins and open 3-4, 5-6, 9-10 pins of S3. The power of CPU is then set to 1.3V.

S3	DESCRIPTION
All Open	Pentium 4 CPU (Default)
1-2, 7-8, 11-12 closed	Pentium 4-M CPU (1.3V)

Table 3-13: CPU Voltage Setting

3.5.7 Keyboard and Mouse Power Source Setting (JP18)

JP18	DESCRIPTION
1-2 closed	VCC (default)
2-3 closed	5VSB

Table 3-14: Keyboard and Mouse Power Source Setting

3.5.8 LCD Voltage Setup (JP2)

WARNING:

Do not change this voltage. This voltage has been preset and is compatible with the currently installed 17" TFT LCD screen. Change this jumper setting may cause damage to the system.

The LCD Voltage Setup jumper sets the voltage for the LCD screen. This setting MUST NOT be changed.

JP2	DESCRIPTION
1-2 closed	+3.3V (default)
3-4 closed	+5V
5-6 closed	+12V

Table 3-15: LCD Voltage Setup Jumper Settings

3.6 HDD, FDD and CD Drive Installation

3.6.1 HDD Installation

To install a HDD, please follow the steps below:

Step 1: Remove the back cover (**Section 3.5.1**).

Step 2: The HDD bracket is attached to the elevated platform by four retention screws. Remove the four retention screws from the elevated platform (**Figure 3-2**).
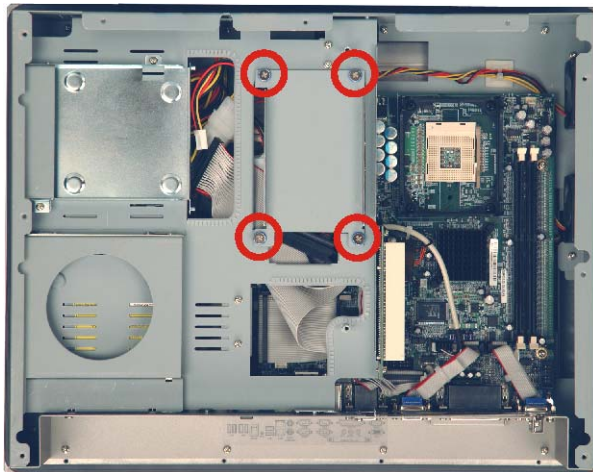
Figure 3-2: HDD Retention Screws

Step 3: Attach the HDD bracket to the HDD. To do this, align the four retention screw holes in both side of HDD bracket with the retention screw holes on the side of the HDD. Insert two retention screws into the bracket on both sides of the HDD.

Step 4: Install the HDD into the PPC-5170 by aligning the retention screw holes in the base of the HDD bracket with the retention screw holes on the elevated platform.

Insert the four retention screws into the base of the HDD bracket.

Step 5: Connect the IDE/SATA cable from the IDE/SATA connector on the motherboard to the rear of HDD.

3.6.2 FDD Installation

To install the FDD, please follow the steps below:

Step 1: Remove the back cover (**Section 3.5.1**).

Step 2: The FDD bracket is attached to the elevated platform by two retention screws (**Figure 3-3**). Remove the two retention screws from the elevated platform.

Step 3: Remove the FDD bracket by sliding toward the HDD.
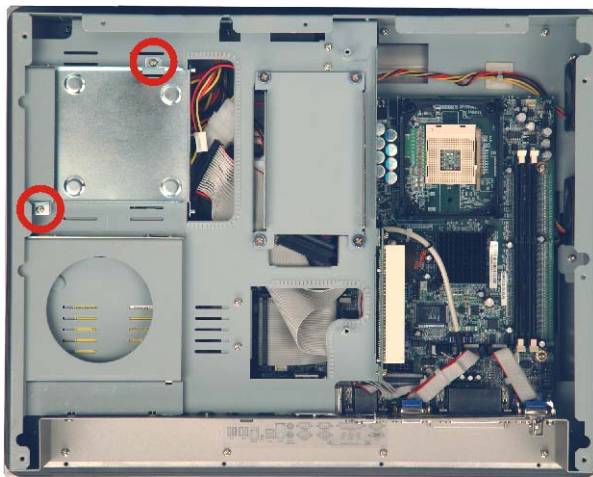
Figure 3-3: FDD Retention Screws

Step 4: Attach the FDD adapter to the FDD by aligning the two retention screw holes in the FDD adapter with the retention screw holes on the rear side of the FDD bracket. Insert two retention screws into the adapter (**Figure 3-4**). Connect the FDD adapter and FDD with ribbon cable.
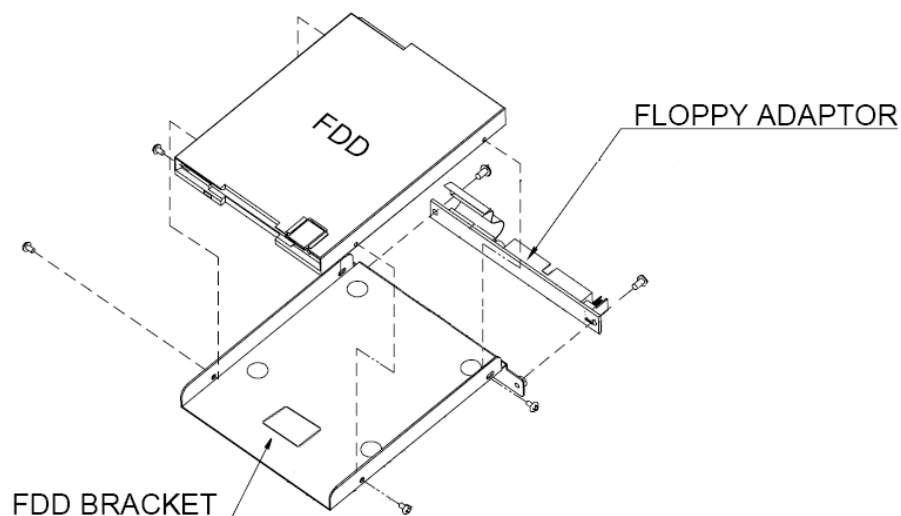
Figure 3-4: FDD Adapter and FDD Bracket Installation

Step 5: Attach the FDD bracket to the FDD. To do this, align the four retention screw

holes in the FDD bracket with the retention screw holes on the sides of the FDD.

Insert four retention screws into the bracket of the FDD.

Step 6: Reinstall the FDD bracket onto the elevated platform with the previously

removed two retention screws.

Step 7: Connect the FDD ribbon cable and the power cable from the connectors on the

motherboard and the PSU to the rear of the FDD.

3.6.3 CD Drive Installation

To install a CD drive, please follow the steps below.

Step 1: Attach a CD drive adapter to a CD drive by aligning the two retention screw

holes in the CD drive adapter with the retention screw holes on the rear side of

the CD drive.

Step 2: Place two spacers between the CD drive and CD drive adapter.

Step 3: Insert two retention screws and secure the adapter to the CD drive (**Figure 3-5**).
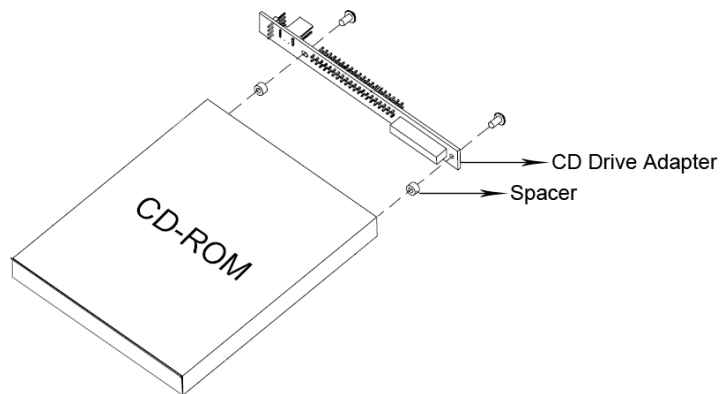
Figure 3-5: CD Drive Adapter Installation

Step 4: Remove the back cover of the PPC-5170 (see **Section 3.5.1**).

Step 5: The CD drive blank plate assembly is attached to the rear panel by two retention

screws (**Figure 3-6**).

Figure 3-6: CD Drive Retention Screws

Remove the two retention screws from the bottom panel and slide the CD drive

blank plate assembly toward the PCI riser card until it can be lifted out of the

chassis (**Figure 3-7**).
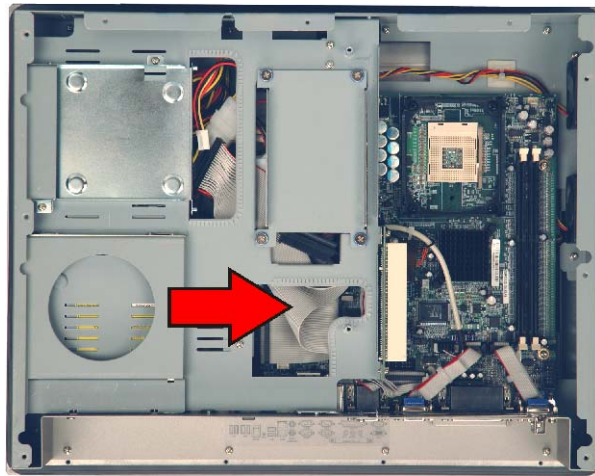
Figure 3-7: Remove CD Drive

Step 6: The CD drive blank plate assembly consists of a blank plate and two brackets that attach the assembly to the chassis. The two brackets each have two screws that attach them to the blank plate. Remove the four screws that attach the brackets to the blank plate. **Figure 3-8** shows the underside of the CD drive blank plate assembly with the four screws to be removed.
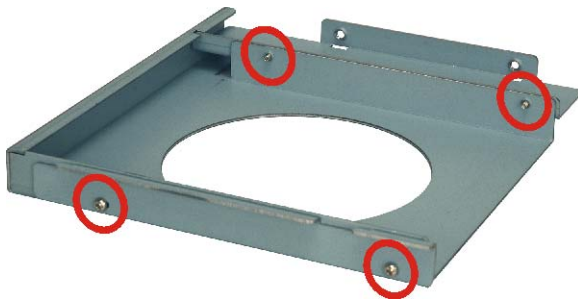
Figure 3-8: CD Drive Blank Plate Assembly

Step 7: Attach the two brackets to a CD drive with the four previously removed screws. Be sure to orient the brackets properly before attaching them to the CD drive. **Figure 3-9** shows two views of a CD drive with the brackets attached and the proper retention screws to use.
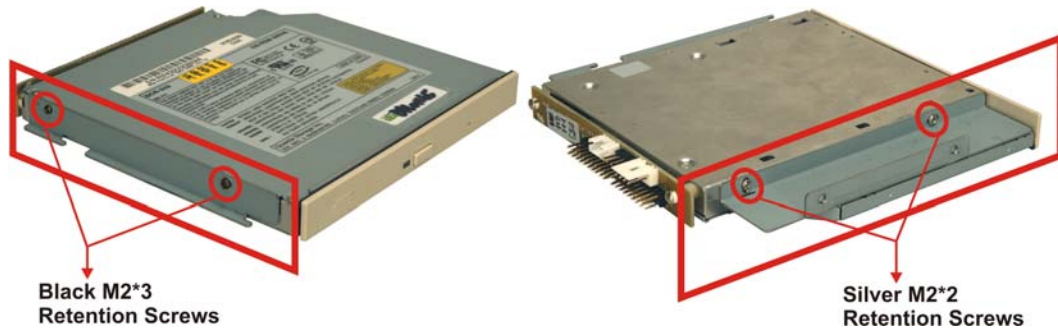
Figure 3-9: CD Drive Blank Plate Assembly

![WARNING icon] **WARNING!**

*The two screws (black M2*3) shown in the left image of **Figure 3-9** are different from the two screws (silver M2*2) shown in the right. Please secure the correct screws into the CD drive according to the images shown in the **Figure 3-9**.*

Step 8:   Slide the CD drive into the PPC-5170 and align the two retention screw holes in the side of the CD drive bracket with the retention screw holes on the bottom panel.

Step 9:   Reinsert the two previously removed retention screws.

Step 10: Connect the CD ribbon cable and the power cable from the connectors on the motherboard and the PSU to the rear of the CD drive. **Figure 3-10** shows a properly installed CD drive.
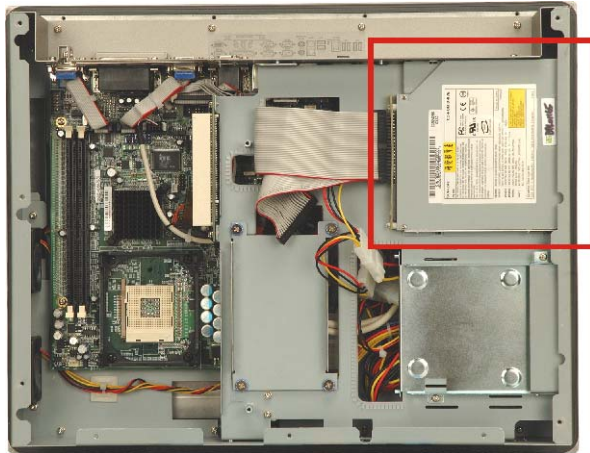
Figure 3-10: CD Drive Installed

3.7 Mounting the System

![warning icon] **WARNING!**

When mounting the PPC-5170 flat panel PC onto an arm, wall or into a panel, it is advisable to have more than one person help with the installation to prevent accidental damage to the panel and avoid personal injury.

The four methods of mounting the PPC-5170 are:

125 Wall mounting

126 Panel mounting

127 Arm mounting

128 Rack mounting

The four mounting methods are fully described below.

3.7.1 Wall Mounting

To mount the PPC-5170 flat panel PC onto a wall, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four bracket screw holes on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (see **Figure 3-11**).
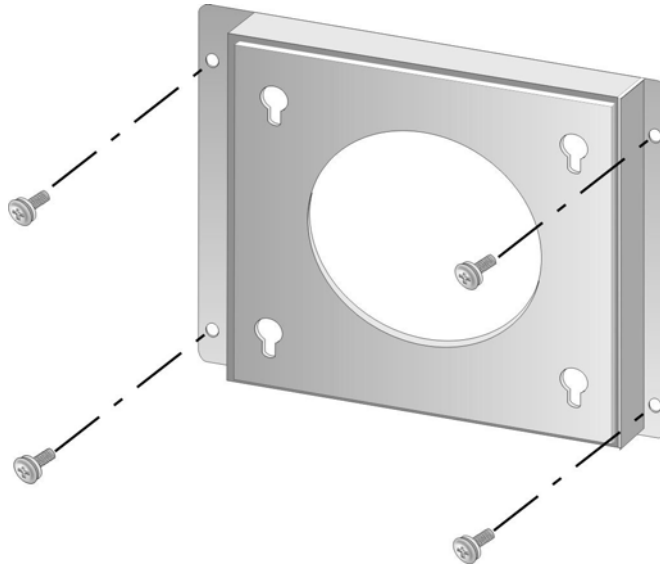
Figure 3-11: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the monitor and tighten until the screw shank is secured against the rear panel (see **Figure 3-12**).

Step 7: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (see **Figure 3-12**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

NOTE:

In the diagram below the bracket is already installed on the wall.
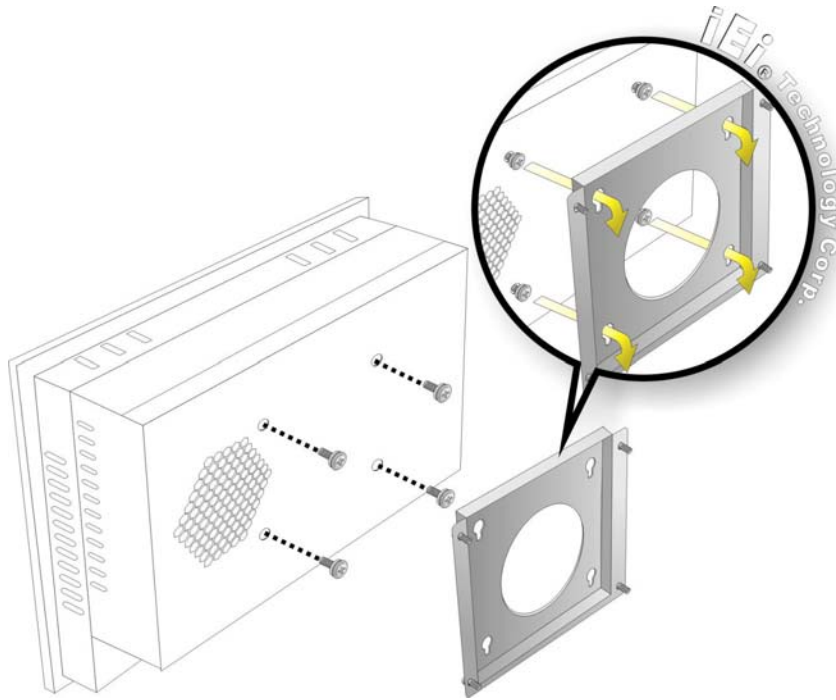
Figure 3-12: Mount the Chassis

Step 9: Secure the panel PC with the wall-mounting kit. To do this, stick the protective cushion to the wall-mounting kit first. Then, put the wall-mounting kit on the top panel of the panel PC. Carefully mark the location of the wall-mounting kit screw holes on the wall. Drill a pilot hole at the marked location on the wall. Secure the wall-mounting kit to the wall by inserting a retention screw into the pilot hole on the wall (**Figure 3-13**). This step is to avoid the panel PC being pushed apart from the wall-mounting bracket accidentally.
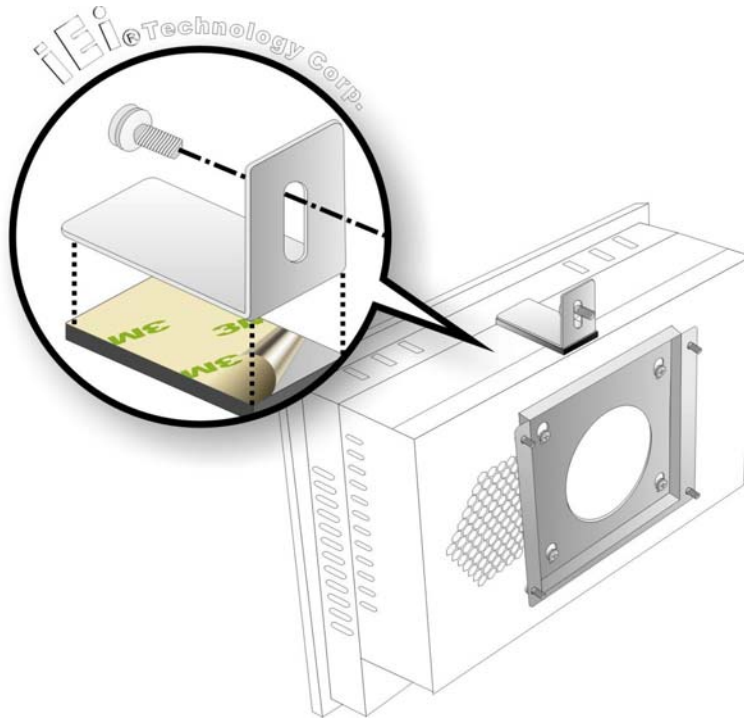
Figure 3-13: Secure the Chassis

3.7.2 Panel Mounting

To mount the PPC-5170 flat panel PC into a panel, please follow the steps below.

NOTE:

The maximum panel thickness should be no more than 6mm.

Step 1: Select the position on the panel to mount the PPC-5170.

Step 2: Cut out a section of the panel that corresponds to the rear panel dimensions of the PPC-5170. Take care that the panel section that is cut out is smaller than the overall size of the metal frame that surrounds the PPC-5170 but just large enough for the rear panel of the PPC-5170 to fit through (**Figure 3-14**).
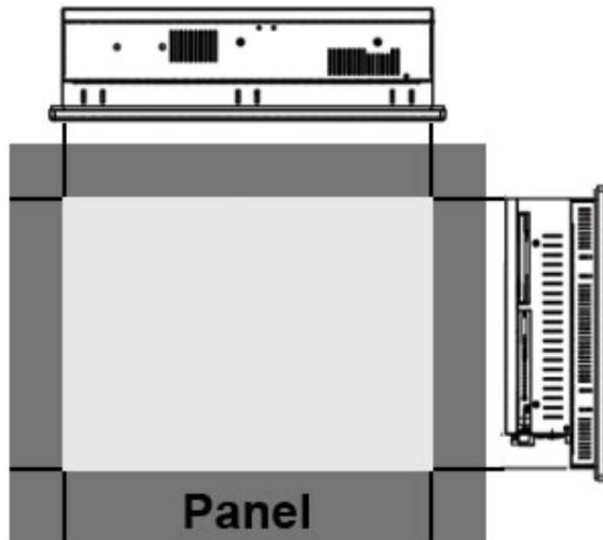
Figure 3-14: Cut the Panel

Step 3: Slide the PPC-5170 through the hole until the metal frame is flush against the panel.

Step 4: Insert the panel mounting clamps into the pre-formed holes along the edges of the PPC-5170, behind the metal frame. Refer to the mounting kit packing list for the required number of mounting clamps.
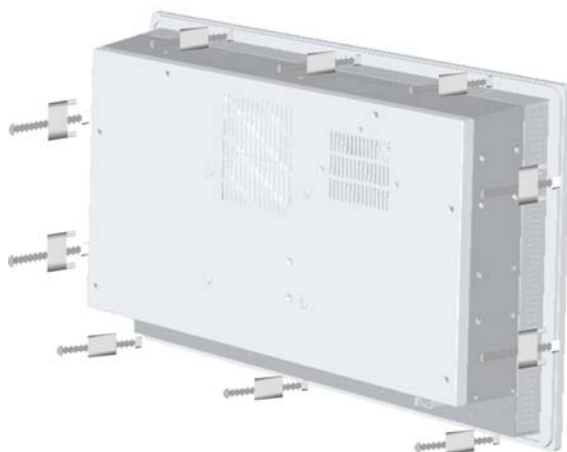
Figure 3-15: Panel Mounting Clamp Positions

Step 5: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 3-16**).
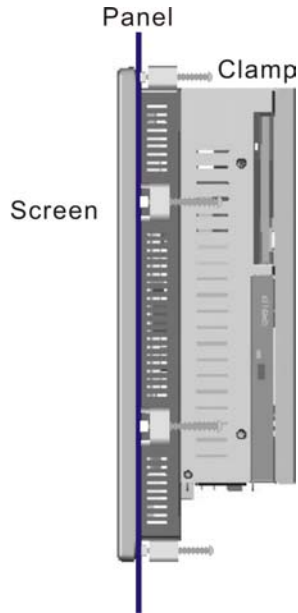
Figure 3-16: Tighten the Panel Mounting Clamp Screws

3.7.3 Arm Mounting

The PPC-5170 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 100mm interface pad. To mount the PPC-5170 on an arm, please follow the steps below.

Step 1: The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 100mm interface pad. If the mounting arm is not VESA compliant, it cannot be used to support the PPC-5170 flat panel PC.

Step 2: Once the mounting arm has been firmly attached to its surface, lift the PPC-5170 flat panel PC onto the interface pad of the mounting arm.

Step 3: Align the retention screw holes on the mounting arm interface with those in the

PPC-5170 flat panel PC. The PPC-5170 flat panel PC arm mount retention screw holes are shown in **Figure 3-17**.
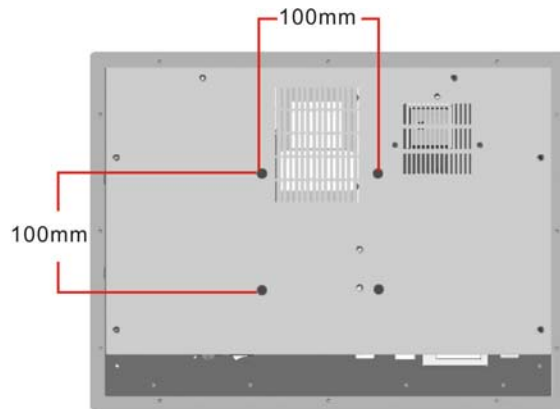
Figure 3-17: Arm Mount Retention Screw Holes

Step 4: Secure the PPC-5170 to the interface pad by inserting four retention screws through the mounting arm interface pad and into the PPC-5170 flat panel PC.

3.7.4 Cabinet and Rack Installation

The PPC-5170 flat panel PC can be installed into a cabinet or rack. To do this, please follow the steps below.

Step 1: The back of the metal frame surrounding the PPC-5170 flat panel PC has several retention screw holes for a cabinet/rack installation bracket.

NOTE:

When purchasing a cabinet/rack installation bracket, make sure it is compatible with both the PPC-5170 flat panel PC and the cabinet/rack into which the PPC-5170 flat panel PC is installed.

Step 2: Slide the PPC-5170 through the cabinet/rack bracket until the rear side of the PPC-5170 frame is flush against the front of the bracket.

Step 3: Make sure the retention screw holes at the rear of the PPC-5170 frame are aligned with the retention screw holes in the cabinet/rack bracket.

Step 4: Secure the cabinet/rack bracket to the monitor by inserting and tightening the retention screws (**Figure 3-18**).
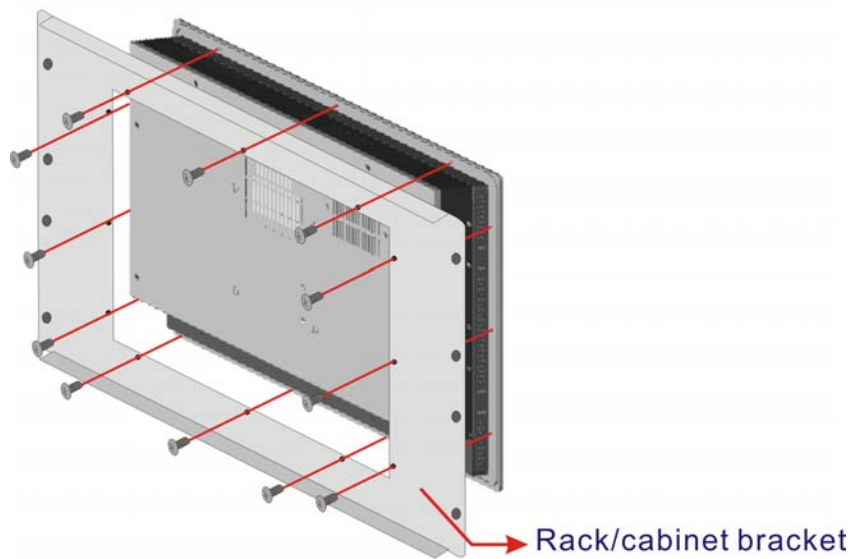
Figure 3-18: Secure the Rack/Cabinet Bracket

Step 5: Slide the PPC-5170 flat panel PC with the attached cabinet/rack bracket into a rack or cabinet (**Figure 3-19**).
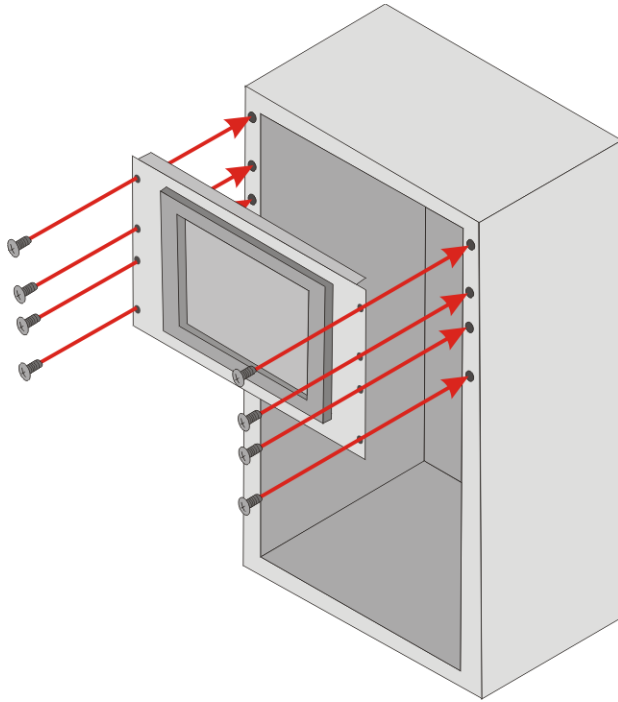
Figure 3-19: Install into a Rack/Cabinet

Step 6:   Once the PPC-5170 flat panel PC with the attached rack/cabinet bracket has

been properly inserted into the rack/cabinet, secure the front of the rack/cabinet

bracket to the front of the rack/cabinet (**Figure 3-19**).

3.8 External Peripheral Interface Connectors

3.8.1 LCD Panel Connection

A conventional CRT VGA 15-pin female D-SUB connector is located on the bottom panel
to connect the PPC-5170 flat panel PC to a second monitor.

NOTE:

To use the dual screen option, please configure this option in the Intel® Extreme
Graphics configuration settings. To do this, open the Control Panel, locate the
Intel® Extreme Graphics icon and click on it. Once opened, an option for Multiple
Display is available. Select this option and select notebook as the primary device.

3.8.2 Ethernet Connection

The two external peripheral interface RJ-45 connectors can be connected to an external LAN to provide Internet connectivity to the flat panel PC.

3.8.3 USB Connection

The external peripheral interface USB connectors provide easy and quick access to external USB devices. The external peripheral interface USB connectors are a standard connector and can easily be connected to other USB devices.

3.8.4 Keyboard and Mouse Connection

Two PS/2 connectors on the external peripheral interface panel facilitate the connection of a mouse and a keyboard. To connect either device, plug the PS/2 connector at the end of the keyboard or mouse cable into the corresponding PS/2 connector on the external peripheral interface panel.

3.8.5 Parallel Port Connection

The parallel port is typically connected to a printer, but can also be connected to other parallel devices.

3.8.6 Serial Port Connection

The external peripheral interface panel serial connectors provide easy and quick access to external serial devices.

3.8.7 Audio Port Connection

The external peripheral interface panel audio ports provide line in, line out and speaker connectivity.

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Chapter

4

System Maintenance

4.1 System Maintenance Introduction

The following system components may require maintenance.

129 Motherboard

130 DIMM module

131 PSU module

132 Cooling fans

If these components fail, they must be replaced. Please contact the system reseller or vendor to purchase replacement parts. Replacement instructions for the above listed components are described below.

4.2 Motherboard Replacement

A user cannot replace a motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. If the system motherboard has failed, please contact the system vendor, reseller or an IEI sales person directly.

4.3 Back Cover Removal and Elevated Platform Detachment

WARNING!

BEFORE REMOVING THE BACK COVER, MAKE SURE ALL POWER TO THE SYSTEM HAS BEEN DISCONNECTED. Failing to do so may cause severe damage to the PPC-5170 and injury to the user.

⚠ WARNING!

PLEASE TAKE ANTISTATIC PRECAUTIONS WHEN WORKING WITH THE INTERNAL COMPONENTS. The interior of the PPC-5170 contains very sensitive electronic components. These components are easily damaged by electrostatic discharge (ESD). Before working with the internal components, make sure all anti-static precautions described earlier have been observed.

4.3.1 Back Cover Removal

Please read the warnings at the beginning of **Section 4.3** before attempting to remove the PPC-5170 back cover.

To access the panel PC internal components, the back cover must be removed. To remove the back cover, please follow the steps below.

Step 1: Remove the PPC-5170 from its mount (panel, wall, rack, arm, etc.).

Step 2: The back cover is secured to the chassis with thirteen retention screws, eleven on the back cover and two on the bottom panel (**Figure 4-1**). Remove the retention screws and lift the cover off the PPC-5170.
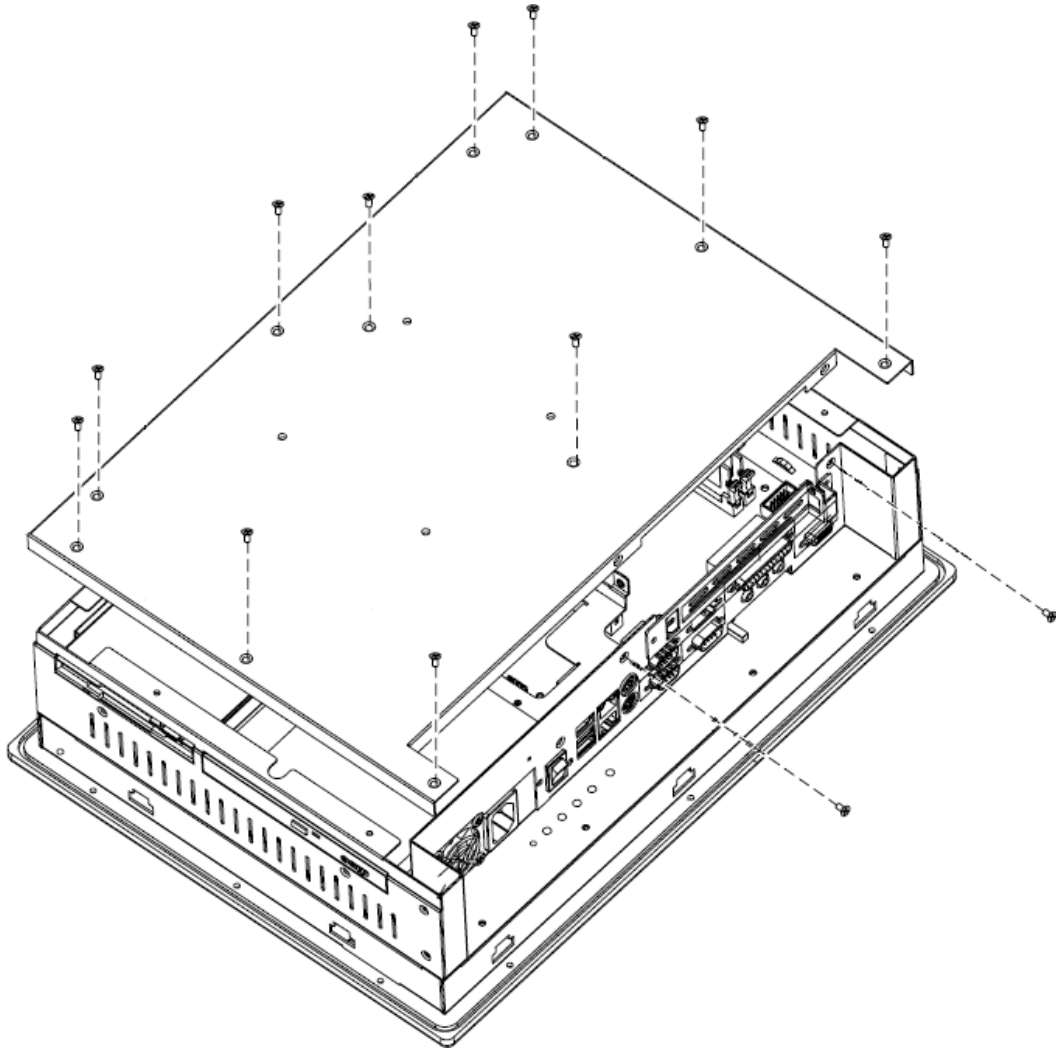
Figure 4-1: Rear Cover Retention Screws (Real Panel)

4.3.2 Detaching the Elevated Platform

Please read the warnings at the beginning of **Section 4.3** before attempting to access any PPC-5170 internal components.

The elevated platform supports the FDD, CD drive and HDD. Back cover removal is discussed in **Section 4.3.1**. To detach the elevated platform, please follow the steps below.

Step 1:   Disconnect all FDD, CD drive and HDD cabling.

Step 2:   Remove the CD drive retention screws from the bottom panel (**Figure 4-2**).

Figure 4-2: CD Drive Retention Screws

Step 3: The elevated platform is secured to the chassis with fourteen retention screws, four on the internal platform (**Figure 4-3**), three on the top panel (**Figure 4-4**), three on the right panel (**Figure 4-5**), two on the bottom panel (**Figure 4-6**) and two on the PCI riser card (**Figure 4-7**). Remove the retention screws and lift the elevated platform out of the chassis.
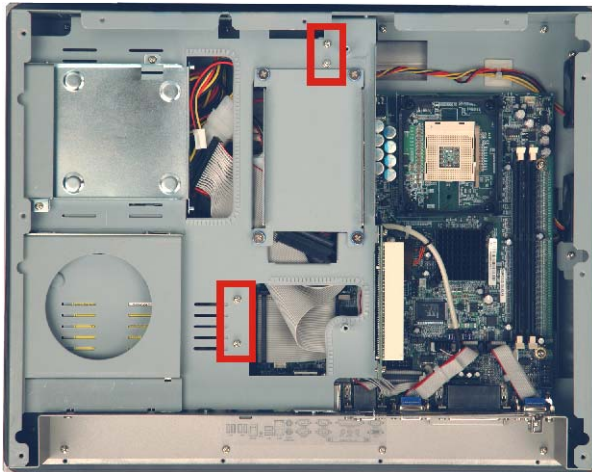
Figure 4-3: Internal Elevated Platform Retention Screws

Figure 4-4: Elevated Platform Retention Screws (Top Panel)
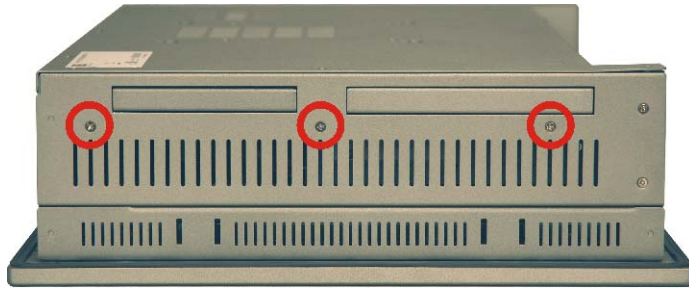
Figure 4-5: Elevated Platform Retention Screws (Right Panel)

Figure 4-6: Elevated Platform Retention Screws (Bottom Panel)

Figure 4-7: Elevated Platform Retention Screws (PCI Riser Card)

4.4 DIMM Replacement

Please read the warnings at the beginning of **Section 4.3** before attempting to access any PPC-5170 internal components.

To install/replace the DIMM modules please follow the steps below.

Step 1:   Remove the back cover (**Section 4.3.1**).

Step 2: Locate the DIMM socket on the motherboard near the right of the chassis. Push down on the white levers of the socket until the DIMM module is dislodged from the socket (**Figure 4-8**).

Figure 4-8: DIMM Socket Clip Locations

Step 3: Slowly slide the new DIMM module along the plastic guides at both ends of the socket. Press the DIMM module down into the socket until it clicks into position and the two handles have automatically locked the memory module into place.

4.5 PSU Module Replacement

Please read the warnings at the beginning of **Section 4.3** before attempting to access any PPC-5170 internal components.

If the PSU module has been damaged it must be replaced. To replace the PSU module, please follow the steps below.

4.5.1 Remove the Old PSU

Step 1: Remove the back cover (**Section 4.3.1**).

Step 2: Detach and remove the elevated platform (see **Section 4.3.2**).

Step 3: Disconnect all PSU connections including those to the motherboard (**Figure 4-9**) and any disk drives.
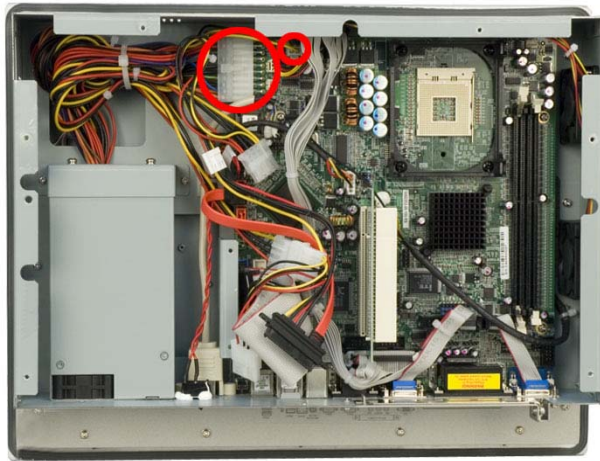
Figure 4-9: PSU Motherboard Connectors

The PSU module is secured to the PPC-5170 flat panel PC with six retention screws, two connect to the bottom panel (**Figure 4-10**), two connect to the internal PSU bracket (**Figure 4-12**) which is connected to the chassis by two screws (**Figure 4-11**).

Step 4: Remove the PSU retention screws from the bottom panel (**Figure 4-10**).

Figure 4-10: PSU Bottom Panel Retention Screws

Step 5: Remove the retention screws that connect the PSU bracket to the chassis

(**Figure 4-11**).

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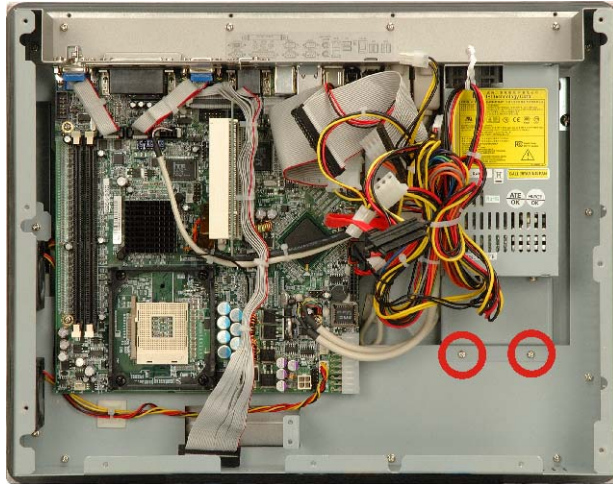
Figure 4-11: PSU Bracket to Chassis Retention Screws

Step 6: Remove the retention screws that connect the PSU to the PSU bracket (**Figure 4-12**).

Figure 4-12: PSU Bracket Retention Screws

4.5.2 Install the New PSU

To install a new PSU module, please follow the steps below.

Step 1: Attach the PSU bracket to the PSU module with the previously removed retention screws.

Step 2: Insert the PSU module and bracket assembly into the chassis and attach the PSU bracket to the chassis with the previously removed retention screws.

Step 3: Secure the PSU module to the chassis by reinserting the previously removed retention screws through the bottom panel.

Step 4: Bundle the cables of the new PSU module and secure them with a plastic tie similar to the old PSU module.

Step 5: Reconnect all previously disconnected power connectors to the motherboard and disk drives.

Step 6: Reattach the elevated platform.

Step 7: Replace the back cover.

4.6 System Cooling Fan Replacement

Please read the warnings at the beginning of **Section 4.3** before attempting to access any PPC-5170 internal components.

If the system cooling fans have been damaged, they must be replaced. To replace the system cooling fans, please follow the steps below.

4.6.1 Remove the Old System Cooling Fans

Step 1: Remove the back cover (**Section 4.3.1**).

Step 2: Detach and remove the elevated platform (see **Section 4.3.2**).

Step 3: Remove the plastic tie that bundles the fans wires together and disconnect the system cooling fans from the motherboard (**Figure 4-13**).
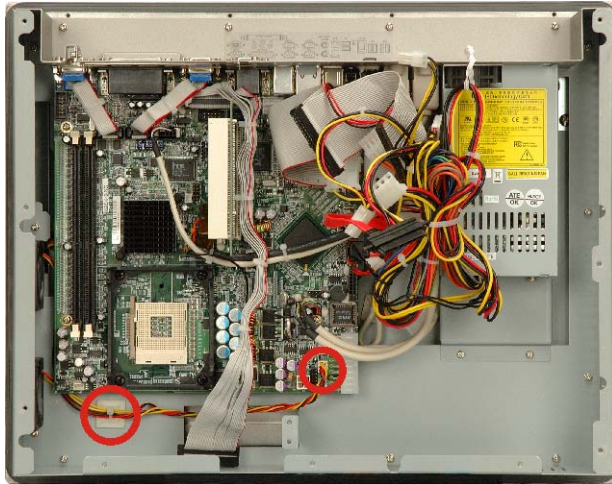
Figure 4-13: System Cooling Fans Motherboard Connector

Step 4: Remove the system cooling fans retention screws from the left panel (**Figure 4-14**).
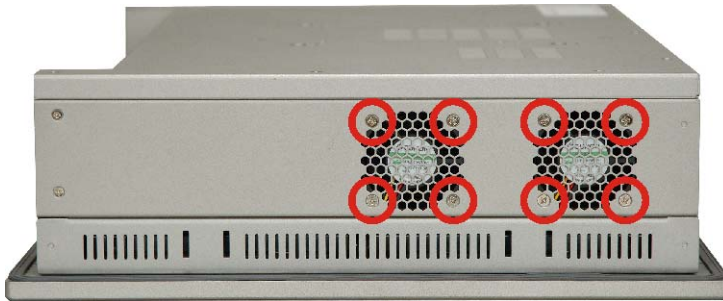
Figure 4-14: System Cooling Fans Left Panel Retention Screws

Step 5: Remove the system cooling fans from the chassis.

4.6.2 Install the New System Cooling Fans

To install the new system cooling fans, please follow the steps below.

Step 1: Insert the system cooling fans into the chassis and attach to the left panel with the previously removed retention screws.

Step 2: Rebundle the new fan wires and tie them to the chassis like the old fan wires.

Step 3: Reconnect the new fan connector to the motherboard.

Step 4: Reattach the elevated platform.

Step 5: Replace the back cover.

Chapter

5

AMI BIOS

5.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration.   This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

5.1.1 Starting Setup

The AMI 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 before the DELETE key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press ENTER to select, use the "+" and "-" keys to change entries, press F1 for help and press ESC to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
"+" key	Increase the numeric value or make changes
"-" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu

Key	Function
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

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 computer cannot boot after changes are made to the system configuration, use the jumper described in **Section 0** to reset the CMOS defaults.

5.1.5 BIOS Menu Bar

The menu bar on top of the BIOS screen has the following main items:

133 **Main** Changes the basic system configuration.
134 **Advanced** Changes the advanced system settings.
135 **PCIPnP** Changes the advanced PCI/PnP Settings
136 **Boot** Changes the system boot configuration.
137 **Security** Sets User and Supervisor Passwords.
138 **Chipset** Changes the chipset settings.
139 **Power** Changes power management settings.
140 **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The Main BIOS menu (**BIOS Menu 1**) appears when the BIOS Setup program is entered.

The Main menu gives an overview of the basic system information.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPnP   Boot   Security   Chipset   Power    Exit

  System Overview                                  Use [ENTER], [TAB]
  _____     or [SHIFT-TAB] to
                                                   select a field.
  AMIBIOS
  Version   :08.00.13
  Build Date:08/16/06                              Use [+] or [-] to
  ID        :E053MR06                              configure system Time.

  Processor
  Type    :Intel(R) Pentium(R) 4 CPU 2.80GHz
  Speed   :2800MHz
  Count   :1

  System Memory                                    ←    Select Screen
  Size    :504MB                                   ↑↓   Select Item
                                                   +-   Change Field
  System Time                 [00:11:30]           Tab  Select Field
  System Date                 [Sun 01/27/2002]     F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit

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```

BIOS Menu 1: Main

➔   **System Overview**

The System Overview lists a brief summary of different system components. The fields in System Overview cannot be changed. The items shown in the system overview include:

141 **AMI BIOS**: Displays auto-detected BIOS information

   o   **Version**:   Current BIOS version
   o   **Build Date**: Date the current BIOS version was made
   o   **ID**:   Installed BIOS ID

142 **Processor**: Displays auto-detected CPU specifications

   o   **Type**:   Names the currently installed processor
   o   **Speed**: Lists the processor speed
   o   **Count**: The number of CPUs on the motherboard

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143 **System Memory**: Displays the auto-detected system memory.

- o **Size**: Lists memory size

The System Overview field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

Use the System Time option to set the system time. Manually enter the hours, minutes and seconds.

➔ **System Date [xx/xx/xx]**

Use the System Date option to set the system date. Manually enter the day, month and year.

5.3 Advanced

Use the Advanced menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING:

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

---

144 CPU Configuration (**Section 5.3.1**)

145 IDE Configuration (**Section 5.3.2**)

146 Floppy Configuration (**Section 5.3.3**)

147 SuperIO Configuration (**Section 5.3.4**)

148 Hardware Health Configuration (**Section 5.3.5**)

149 ACPI Configuration (**Section 5.3.6**)

150 MPS Configuration (**Section 5.3.7**)

151 Remote Access Configuration (**Section 5.3.8**)

152 USB Configuration (**Section 5.3.9**)

```
                    BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

  Advanced Settings                                    Configure CPU.

  WARNING: Setting wrong values in below sections
           may cause system to malfunction.

  ▶ CPU Configuration
  ▶ IDE Configuration
  ▶ Floppy Configuration
  ▶ SuperIO Configuration
  ▶ Hardware Health Configuration
  ▶ ACPI Configuration
  ▶ MPS Configuration
  ▶ USB Configuration                       ←     Select Screen
                                            ↑↓    Select Item
                                            Enter Go to Sub Screen
                                            F1    General Help
                                            F10   Save and Exit
                                            ESC   Exit


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```

BIOS Menu 2: Advanced

5.3.1 CPU Configuration

Use the CPU Configuration menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.

```
                          BIOS SETUP UTILITY
        Advanced

Configure advanced CPU settings                    Disabled for WindowsXP
Module Version:3C.0E

Manufacturer:Intel
Brand String:Intel(R) Pentium(R) 4 CPU 2.80GHz
Frequency    :2.80GHz
FSB Speed    :533MHz
Cache L1     :8 KB
Cache L2     :512 KB

Max CPUID Value Limit:          [Disabled]

Hyper Threading Technology      [Enabled]           ←    Select Screen
                                                    ↑↓   Select Item
                                                    +-   Change Option
                                                    F1   General Help
                                                    F10  Save and Exit
                                                    ESC  Exit


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```

BIOS Menu 3: CPU Configuration

The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

153 **Manufacturer**: Lists the name of the CPU manufacturer

154 **Brand String**: Lists the brand name of the CPU being used

155 **Frequency:** Lists the CPU processing speed

156 **FSB Speed**: Lists the FSB speed

157 **Cache L1**: Lists the CPU L1 cache size

158 **Cache L2**: Lists the CPU L2 cache size

The following CPU Configuration menu items can be configured.

159 Max CPUID Value Limit

160 Hyper Threading Technology

➔ **Max CUPID Value Limit [Disabled]**

 NOTE:

If the OS is NT, this value must be set to enabled.

➔ **Disabled** DEFAULT Disables legacy OSes that cannot support CPUs with extended CUPID functions from booting up

➔ **Enabled** Enables legacy OSes that cannot support CPUs with extended CUPID functions to boot up

➔ **Hyper Threading Technology [Disabled]**

➔ **Disabled** DEFAULT Disables the use of hyper threading technology

➔ **Enabled** Enables the use of hyper threading technology

5.3.2 IDE Configuration

Use the IDE Configuration menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.

```
                        BIOS SETUP UTILITY
   Advanced

IDE Configuration                              Select IDE Mode.

  IDE Configuration          [P-ATA Only]
   S-ATA Running Enhanced Mode [Yes]          P-ATA Only:
    P-ATA Channel Selection   [Both]           4 P-ATA & 2 S-ATA
    S-ATA Ports Definition    [P0-3rd./P1-4th.] S-ATA Only:
                                                2 S-ATA
                                               P-ATA & S-ATA:
 ▶ Primary IDE Master         : [Not Detected]  2 P-ATA & 2 S-ATA
 ▶ Primary IDE Slave          : [Not Detected]
 ▶ Secondary IDE Master       : [Not Detected]
 ▶ Secondary IDE Slave        : [Not Detected]
 ▶ Third IDE Master           : [Not Detected]
 ▶ Fourth IDE Master          : [Not Detected]  ←    Select Screen
                                               ↑↓   Select Item
 Hard Disk Write Protect      [Disabled]       +-   Change Option
 IDE Detect Time Out (Sec)    [35]             F1   General Help
 ATA(PI) 80Pin Cable Detection [Host & Device] F10  Save and Exit
                                               ESC  Exit



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```

BIOS Menu 4: IDE Configuration

➔ **IDE Configuration [P-ATA Only]**

Use IDE Configuration option to setup the configuration of the hard drive interfaces.

➔ **Disabled** The hard drive interfaces are disabled.

➔ **P-ATA Only** DEFAULT The hard drive interfaces are configured as P-ATA only.

➔ **S-ATA Only** The hard drive interfaces are configured as S-ATA only.

➔ **P-ATA & S-ATA** The hard drive interfaces are configured as P-ATA and S-ATA.

➔   **S-ATA Running Enhanced Mode [Yes]**

Use S-ATA Running Enhanced Mode option to select whether the S-ATA interface is running in enhanced mode or legacy mode.

➔   **Yes**   **DEFAULT**   The S-ATA interface is running in enhanced mode.

➔   **No**   The S-ATA interface is running in legacy mode.

➔   **P-ATA Channel Selection [Both]**

Use P-ATA Channel Selection option to select the active IDE channels.

➔   **Primary**   The primary P-ATA channel is set to be the active IDE channel.

➔   **Secondary**   The secondary P-ATA channel is set to be the active IDE channel.

➔   **Both**   **DEFAULT**   The primary and secondary P-ATA channel are both set to be the active IDE channels.

➔   **S-ATA Ports Definition [PO-3rd./P1-4th.]**

Use S-ATA Ports Definition option to select the physical ports for S-ATA.

➔   **PO-3rd./P1-4th.**   **DEFAULT**   Set the physical ports (PO/PI) to be 3rd./4th.

➔   **PO-4th. /P1-3rd.**   Set the physical ports (PO/PI) to be 4th./3rd.

➔   **Configure S-ATA as RAID [No]**

The Configure S-ATA as RAID option can only be selected if the IDE Configuration option is set to "P-ATA Only". Use Configure S-ATA as RAID option to configure the S-ATA interface as RAID.

➔   **No**   **DEFAULT**   The S-ATA interface cannot be configured as RAID drive.

➔   **Yes**   The S-ATA interface can be configured as RAID drive.

➔ **Hard Disk Write Protect [Disabled]**

The Hard Disk Write Protect BIOS option protects the hard disks from being overwritten. This menu item is only effective if the device is accessed through the BIOS.

➔ **Disabled** **DEFAULT** Allows hard disks to be overwritten

➔ **Enabled** Prevents hard disks from being overwritten

➔ **IDE Detect Time Out (Sec) [35]**

The IDE Detect Time Out (Sec) BIOS option specifies the maximum time (in seconds) the AMI BIOS will search for IDE devices. This allows fine-tunes the settings to allow for faster boot times. The following configuration options are available.

161 0 seconds
162 5 seconds
163 10 seconds
164 15 seconds
165 20 seconds
166 25 seconds
167 30 seconds
168 35 seconds **DEFAULT**

The best setting to use if the onboard IDE controllers are set to a specific IDE disk drive in the AMIBIOS is "0 seconds" and a large majority of ultra ATA hard disk drives can be detected well within "5 seconds" (the default setting).

➔ **ATA (PI) 80Pin Cable Detection [Host & Device]**

When an Ultra ATA/66, an Ultra ATA/100 or an Ultra ATA/133 IDE hard disk drive is used, an 80-conductor ATA cable must be used. The 80-conductor ATA cable is plug compatible with the standard 40-conductor ATA cable. The system must detect the presence of correct cable so that the AMIBIOS can instruct the drive to run at the correct speed for the cable type detected.

The ATA (PI) 80Pin Cable Detection BIOS option determines how the IDE cable will be detected.

➔ **Host & Device**   DEFAULT   Both the motherboard onboard IDE controller and IDE disk drive are used to detect the type of IDE cable used.

➔ **Host**   The motherboard onboard IDE controller detects the type of IDE cable used.

➔ **Device**   The IDE disk drive to detects the type of IDE cable used.

➔ **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the IDE Configuration menu:

> 169 Primary IDE Master
> 170 Primary IDE Slave
> 171 Secondary IDE Master
> 172 Secondary IDE Slave
> 173 Third IDE Master
> 174 Fourth IDE Master

The IDE Configuration menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

5.3.2.1 IDE Master, IDE Slave

Use the IDE Master and IDE Slave configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.

```
                          BIOS SETUP UTILITY
           Advanced

 Primary IDE Master                                    Select the type
 _____          of device connected
 Device    :Not Detected                               to the system.
 _____

 Type                          [Auto]
 LBA/Large Mode                [Auto]
 Block (Multi-Sector Transfer) [Auto]
 PIO Mode                      [Auto]
 S.M.A.R.T.                    [Auto]
 32Bit Data Transfer           [Disabled]


                                                  ←     Select Screen
                                                  ↑↓    Select Item
                                                  +-    Change Option
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit



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```
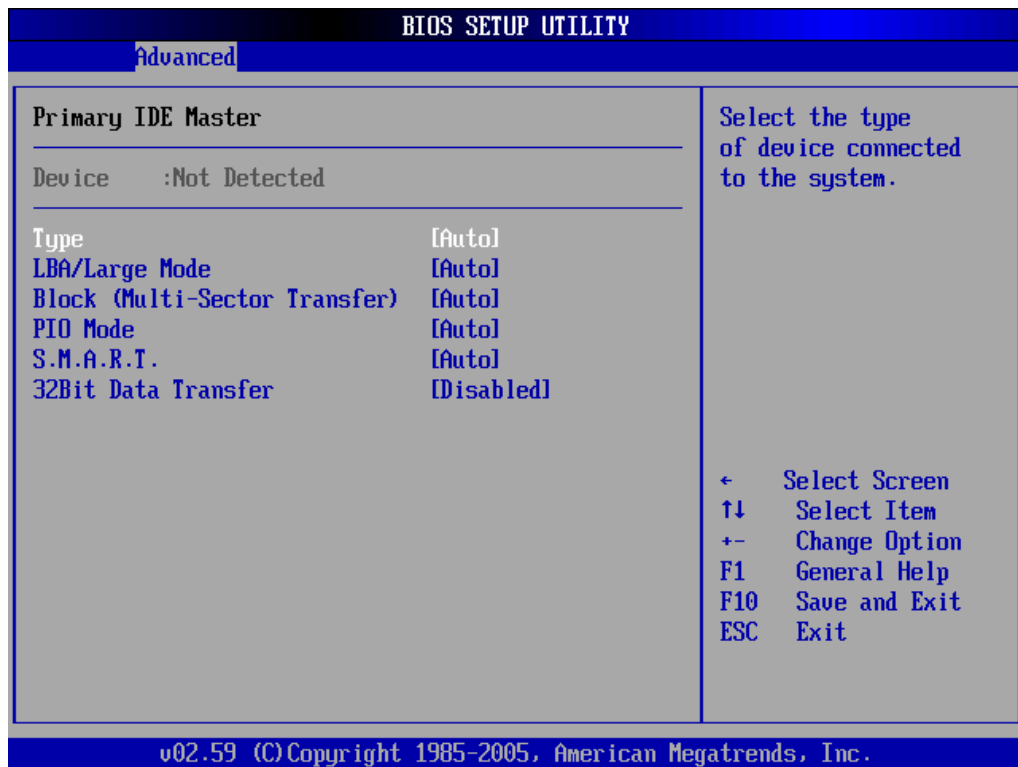
BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

The "grayed-out" items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

175 **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)

176 **Type**: Indicates the type of devices a user can manually select

177 **LBA/Large Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.

178 **Block (Multi-Sector Transfer)**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows

transfers of up to 64 KB per interrupt.

179 **PIO Mode**: Indicates the PIO mode of the installed device.

180 **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

181 **32Bit Data Transfer**: Enables 32-bit data transfer.

→ **Type [Auto]**

Use the Type BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

→ **Not Installed**   BIOS is prevented from searching for an IDE disk drive on the specified channel.

→ **Auto**   DEFAULT   The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.

→ **CD/DVD**   The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.

→ **ARMD**   This option specifies an ATAPI Removable Media Device. These include, but are not limited to:

→ **ZIP**

→ **LS-120**

→ **LBA/Large Mode [Auto]**

Use the LBA/Large Mode option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled** BIOS is prevented from using the LBA mode control on the specified channel.

➔ **Auto** **DEFAULT** BIOS auto detects the LBA mode control on the specified channel.

➔ **Block (Multi Sector Transfer) [Auto]**

Use the Block (Multi Sector Transfer) to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled** BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

➔ **Auto** **DEFAULT** BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

➔ **PIO Mode [Auto]**

Use the PIO Mode option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.

➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps

➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps

➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps

➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps

è **4**   PIO mode 4 selected with a maximum transfer rate of 16.6MBps

(This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

è **S.M.A.R.T [Auto]**

Use the S.M.A.R.T option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. S.M.A.R.T predicts impending drive failures. The S.M.A.R.T BIOS option enables or disables this function.

è **Auto**   **DEFAULT**   BIOS auto detects HDD SMART support.

è **Disabled**   Prevents BIOS from using the HDD SMART feature.

è **Enabled**   Allows BIOS to use the HDD SMART feature

è **32Bit Data Transfer [Disabled]**

Use the 32Bit Data Transfer BIOS option to enables or disable 32-bit data transfers.

è **Disabled**   **DEFAULT**   Prevents the BIOS from using 32-bit data transfers.

è **Enabled**   Allows BIOS to use 32-bit data transfers on supported hard disk drives.

5.3.3 Floppy Configuration

Use the Floppy Configuration menu (**BIOS Menu 6**) to set or change the configurations for floppy disk drives.

```
                    BIOS SETUP UTILITY
     Advanced

 Floppy Configuration                            Select the type of
                                                 floppy drive
 Floppy A                    [1.44 MB 3½"]        connected to the
                                                 system.




                                                 ←    Select Screen
                                                 ↑↓   Select Item
                                                 +-   Change Option
                                                 F1   General Help
                                                 F10  Save and Exit
                                                 ESC  Exit


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```
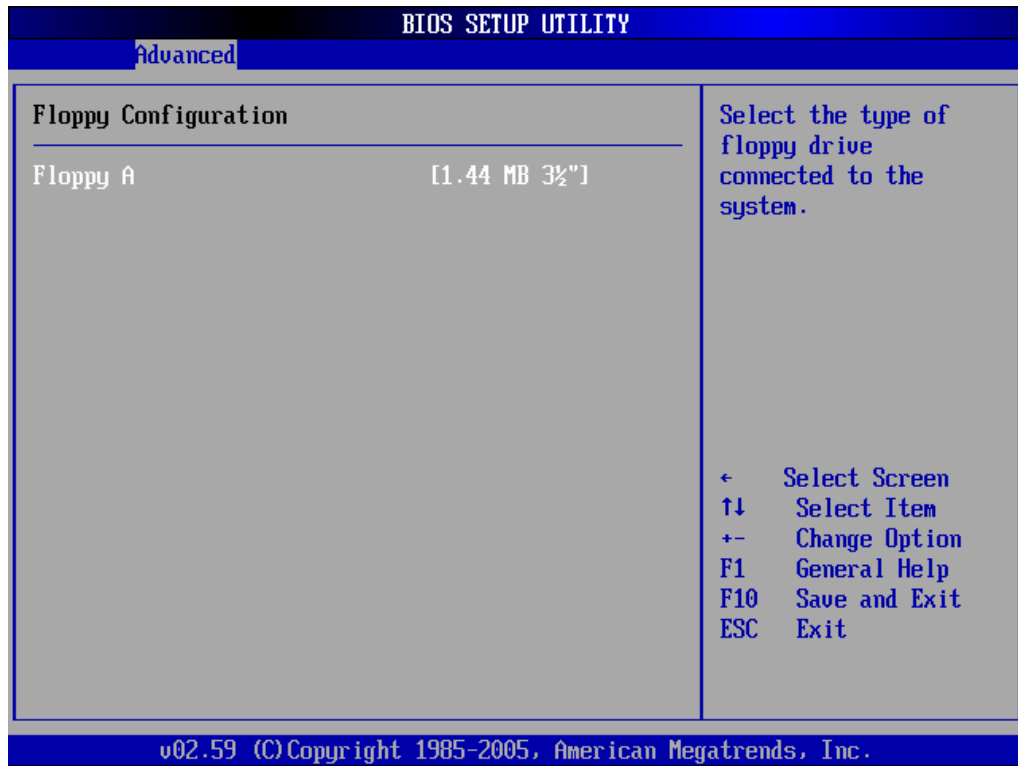
BIOS Menu 6: Floppy Configuration

➔ **Floppy A [1.44 MB 3½"]**

The Floppy A configuration option determines the types of the floppy drive installed in the system. The following configuration options are available.

182 Disabled (default)
183 360 KB 5¼"
184 1.2 MB 5¼"
185 720 KB 3 ½"
186 1.44 MB 3½"
187 2.88 MB 3½"

5.3.4 Super IO Configuration

Use the Super IO Configuration menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

```
                      BIOS SETUP UTILITY
    Advanced

Configure ITE8712 Super IO Chipset          Allows BIOS to Select
                                            Serial Port1 Base
Serial Port1 Address       [3F8/IRQ4]       Addresses.
Serial Port2 Address       [2F8/IRQ3]
  Serial Port2 Mode        [Normal]
Parallel Port Address      [378]
  Parallel Port Mode       [Normal]
  Parallel Port IRQ        [IRQ7]
Serial Port3 Address       [3E8]
  Serial Port3 IRQ         [11]
Serial Port4 Address       [2E8]
  Serial Port4 IRQ         [10]
Serial Port5 Address       [2F0]            ←    Select Screen
  Serial Port5 IRQ         [11]             ↑↓   Select Item
Serial Port6 Address       [2E0]            +-   Change Option
  Serial Port6 IRQ         [10]             F1   General Help
Digital I/O Address        [280h]           F10  Save and Exit
                                            ESC  Exit

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```

BIOS Menu 7: Super IO Configuration

➔ **On Board Floppy Controller [Enabled]**

➔ **Disabled**　　　　　Allows BIOS to disable the floppy controller

➔ **Enabled** DEFAULT　Allows BIOS to enable the floppy controller

➔ **Serial Port1 Address [3F8/IRQ4]**

Use the Serial Port1 Address option to select the Serial Port 1 base address.

➔ **Disabled**　　　　　No base address is assigned to Serial Port 1

➔ **3F8/IRQ4** DEFAULT Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4

➔ **3E8/IRQ4** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4

➔ **2E8/IRQ3** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Address [2F8/IRQ3]**

Use the Serial Port2 Address option to select the Serial Port 2 base address.

➔ **Disabled** No base address is assigned to Serial Port 2

➔ **2F8/IRQ3** DEFAULT Serial Port 2 I/O port address is 3F8 and the interrupt address is IRQ3

➔ **3E8/IRQ4** Serial Port 2 I/O port address is 3E8 and the interrupt address is IRQ4

➔ **2E8/IRQ3** Serial Port 2 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Mode [Normal]**

Use the Serial Port2 Mode option to select the Serial Port2 operational mode.

➔ **Normal** DEFAULT Serial Port 2 mode is normal

➔ **IrDA** Serial Port 2 mode is IrDA

➔ **ASK IR** Serial Port 2 mode is ASK IR

➔ **Parallel Port Address [378]**

Use the Parallel Port Address option to select the parallel port base address.

➔ **Disabled**   No base address is assigned to the Parallel Port

➔ **378**   DEFAULT   Parallel Port I/O port address is 378

➔ **278**   Parallel Port I/O port address is 278

➔ **3BC**   Parallel Port I/O port address is 3BC

➔ **Parallel Port Mode [Normal]**

Use the Parallel Port Mode option to select the mode the parallel port operates in.

➔ **Normal**   DEFAULT   The normal parallel port mode is the standard mode for parallel port operation.

➔ **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 Normal mode.

➔ **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 Normal mode

➔ **EPP+ECP**   The parallel port is also be compatible with EPP and ECP devices

➔ **Parallel Port IRQ [IRQ7]**

Use the Parallel Port IRQ selection to set the parallel port interrupt address.

➔ **IRQ5**   IRQ5 is assigned as the parallel port interrupt address

➔ **IRQ7**   **DEFAULT**   IRQ7 is assigned as the parallel port interrupt address

➔ **Digital I/O Address [280h]**

Use the Digital I/O Address option to select the interrupt address for digital I/O.

➔ **200h**   Digital I/O address is 200h

➔ **220h**   Digital I/O address is 220h

➔ **240h**   Digital I/O address is 240h

➔ **260h**   Digital I/O address is 260h

➔ **280h**   **DEFAULT**   Digital I/O address is 280h

➔ **Serial Port3 Address [3E8]**

Use the Serial Port3 Address option to select the base addresses for serial port 3

➔ **Disabled**   No base address is assigned to serial port 3

➔ **3E8**   **DEFAULT**   Serial port 3 I/O port address is 3E8

➔ **2E8**   Serial port 3 I/O port address is 2E8

➔ **2F0**   Serial port 3 I/O port address is 2F0

➔ **2E0**   Serial port 3 I/O port address is 2E0

➔ **Serial Port3 IRQ [11]**

Use the Serial Port3 IRQ option to select the interrupt address for serial port 3.

➔ **4**   Serial port 3 IRQ address is 4

➔ **9**   Serial port 3 IRQ address is 9

➔ **10**   Serial port 3 IRQ address is 10

➔ **11**   DEFAULT   Serial port 3 IRQ address is 11

➔ **Serial Port4 Address [2E8]**

Use the Serial Port4 IRQ option to select the interrupt address for serial port 4.

➔ **Disabled**   No base address is assigned to serial port 4

➔ **3E8**   Serial port 4 I/O port address is 3E8

➔ **2E8**   DEFAULT   Serial port 4 I/O port address is 2E8

➔ **2F0**   Serial port 4 I/O port address is 2F0

➔ **2E0**   Serial port 4 I/O port address is 2E0

➔ **Serial Port4 IRQ [10]**

Use the Serial Port4 IRQ option to select the interrupt address for serial port 4.

➔ **3**   Serial port 4 IRQ address is 3

➔ **9**   Serial port 4 IRQ address is 9

➔ **10**   DEFAULT   Serial port 4 IRQ address is 10

➔ **11**   Serial port 4 IRQ address is 11

➔ **Serial Port5 Address [2F0]**

Use the Serial Port5 IRQ option to select the interrupt address for serial port 5.

➔ **Disabled**   No base address is assigned to serial port 5

➔ **3E8**   Serial port 5 I/O port address is 3E8

➔ **2E8**   Serial port 5 I/O port address is 2E8

➔ **2F0**   DEFAULT   Serial port 5 I/O port address is 2F0

➔ **2E0**   Serial port 5 I/O port address is 2E0

➔ **Serial Port5 IRQ [11]**

Use the Serial Port5 IRQ option to select the interrupt address for serial port 5.

➔ **4**   Serial port 5 IRQ address is 4

➔ **9**   Serial port 5 IRQ address is 9

➔ **10**   Serial port 5 IRQ address is 10

➔ **11**   DEFAULT   Serial port 5 IRQ address is 11

➔ **Serial Port6 Address [2E0]**

Use the Serial Port6 IRQ option to select the interrupt address for serial port 6.

➔ **Disabled**   No base address is assigned to serial port 6

➔ **3E8**   Serial port 6 I/O port address is 3E8

➔ **2E8**   Serial port 6 I/O port address is 2E8

➔ **2F0**   Serial port 6 I/O port address is 2F0

➔ **2E0**   DEFAULT   Serial port 6I/O port address is 2E0

➔ **Serial Port6 IRQ [10]**

Use the Serial Port6 IRQ option to select the interrupt address for serial port 6.

➔ **3**   Serial port 6 IRQ address is 3

➔ **9**   Serial port 6 IRQ address is 9

➔ **10**   DEFAULT   Serial port 6 IRQ address is 10

➔ **11**   Serial port 6 IRQ address is 11

5.3.5 Hardware Health Configuration

The Hardware Health Configuration menu (**BIOS Menu 8**) shows the operating temperature, fan speeds and system voltages.

```
                        BIOS SETUP UTILITY
        Advanced

Hardware Health Configuration                     Enables Hardware
                                                  Health Monitoring
CPU Temperature                :-79°C/-174°F      Device.
System Temperature             :37°C/98°F

Fan1 Speed                  :3054 RPM
Fan2 Speed                  :N/A
Fan3 Speed                  :N/A

CPU Core                    :1.472 V
+1.50V                      :1.472 V
+3.30V                      :3.248 V
+5.00V                      :5.107 V        ←      Select Screen
+12.0V                      :12.201 V       ↑↓     Select Item
5VSB                        :5.080 V        +-     Change Option
                                            F1     General Help
                                            F10    Save and Exit
                                            ESC    Exit


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```

BIOS Menu 8: Hardware Health Configuration

➔ **H/W Health Function [Enabled]**

➔ **Disabled** Disables the health monitoring function

➔ **Enabled** **DEFAULT** Enables the health monitoring function

If the H/W Health Function is enabled different system parameters and values are shown. The system parameters that are monitored are:

188 **System Temperatures**: The following system temperatures are monitored

○ CPU Temperature

○ System Temperature

189 **Fan Speeds**: The CPU cooling fan speed is monitored.

○ Fan1 Speed

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   o   Fan2 Speed

   o   Fan3 Speed

190 **Voltages**: The following system voltages are monitored

   o   Vcore

   o   +1.50V

   o   +3.30V

   o   +5.00V

   o   +12.0V

   o   5VSB

5.3.6 ACPI Configuration

The ACPI Configuration menu (**BIOS Menu 9**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.
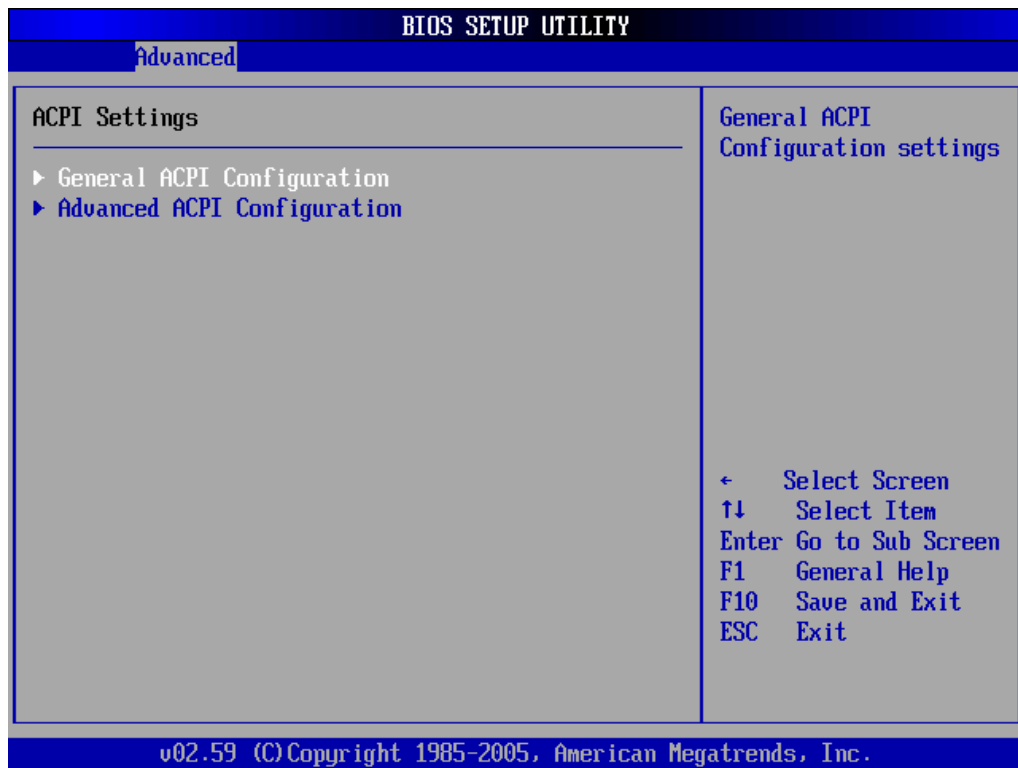
BIOS Menu 9: ACPI Configuration

5.3.6.1 General ACPI Configuration

Use the General ACPI Configuration menu (**BIOS Menu 10**) to select the ACPI state when the system is suspended.
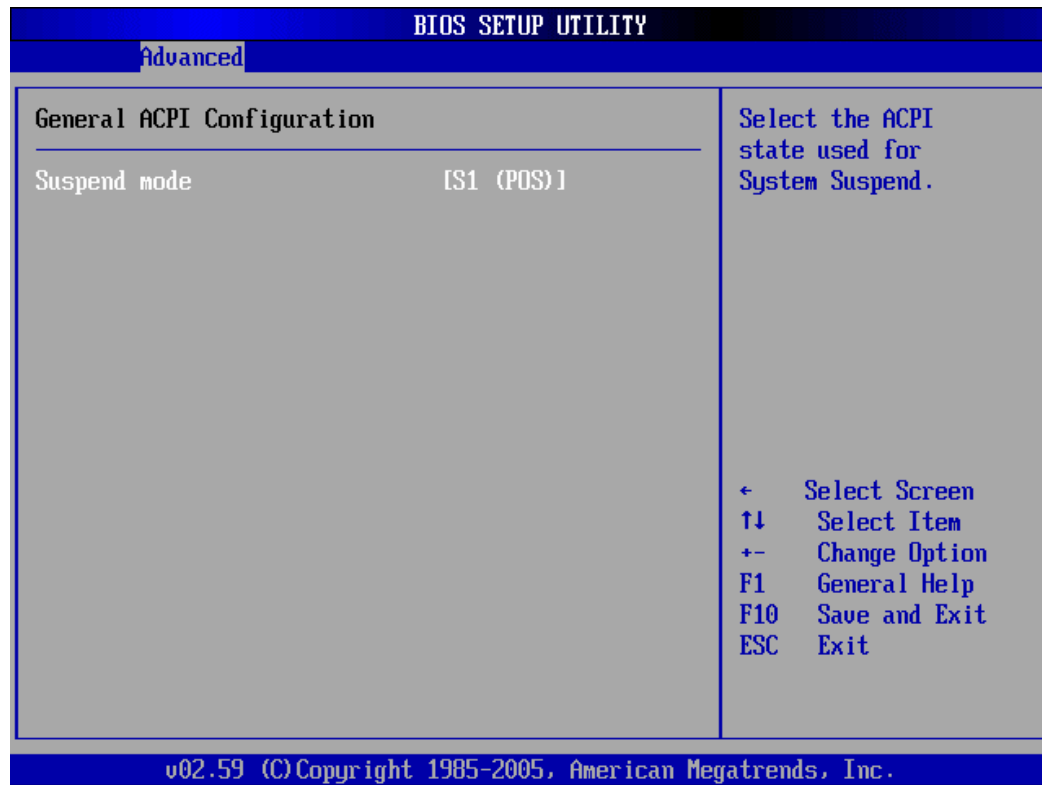
BIOS Menu 10: General ACPI Configuration

➔ **Suspend Mode [S1 (POS)]**

Use the Suspend Mode option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)**   The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

5.3.6.2 Advanced ACPI Configuration

Use the Advanced ACPI Configuration menu (**BIOS Menu 11**) to select the ACPI state when the system is suspended.

```
                          BIOS SETUP UTILITY
        Advanced

   Advanced ACPI Configuration                     Enable RSDP pointers
                                                   to 64-bit Fixed System
   ACPI 2.0 Features          [No]                 Description Tables.
   ACPI APIC support          [Enabled]
   AMI OEMB table             [Enabled]
   Headless mode              [Disabled]



                                                   ←     Select Screen
                                                   ↑↓    Select Item
                                                   +-    Change Option
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit



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```
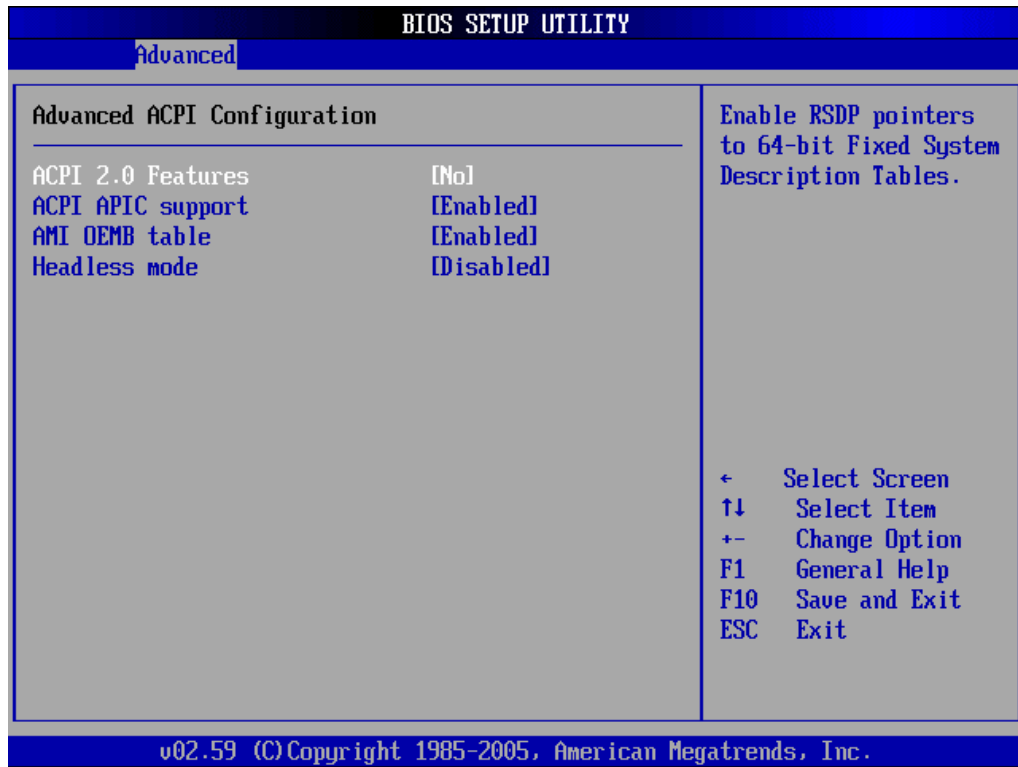
BIOS Menu 11: Advanced ACPI Configuration

➔ **ACPI 2.0 Features [No]**

Use the ACPI 2.0 Features option to enable the ACPI (Advanced Configuration and Power Interface) features. By enabling this feature the system RSDP (Root System Description Pointer) is able to obtain physical addresses for other 64-bit fixed system description tables.

➔ **No**   **DEFAULT**   RSDP pointers to 64-bit fixed systems are not provided to the system

➔ **Yes**   RSDP pointers to 64-bit fixed systems are provided to the system

➔ **ACPI APIC Support [Enabled]**

Use the ACPI APIC Support option to add a pointer to an ACPI APIC table in the RSDT (Root System Description Table). The RSDT is an array of pointers that direct the system to the physical addresses of other description tables. The RSDT is the main ACPI table. The RSDP is located in low memory space of the system and provides the physical address of the RSDT. The RSDT itself is identified in memory because it starts with the signature "RSDT."

➔ **Disabled**   Pointers to the APIC APIC table are not be provided in the RSDT

➔ **Enabled** **DEFAULT**   Pointers to the APIC APIC table are provided in the RSDT

➔ **APIC ACPI SCI IRQ [Disabled]**

Use APIC ACPI SCI IRQ option to enable the system to send a flag report to the ACPI OS if a SCI IRQ interrupt event is made via the APIC.

➔ **Disabled** **DEFAULT**   No flag report is sent to the ACPI OS when there is a "SCI IRQ" interrupt event.

➔ **Enabled**   Flag report is sent to the ACPI OS when there is a "SCI IRQ" interrupt event is made via the APIC.

➔ **AMI OEMB table [Enabled]**

Use the AMI OEMB table option to add a pointer to an OEMB table in the RSDT table and the Extended System Description Table (XSDT), which accommodates physical addresses of description headers that are larger than 32-bits. Notice that both the XSDT and the RSDT can be pointed to by the RSDP structure.

➔ **Disabled**   Pointers to the AMI OEMB table are not provided in the RSDT and the XSDT

➔ **Enabled**   DEFAULT   Pointers to the AMI OEMB table are provided in the RSDT and the XSDT

➔ **Headless Mode [Disabled]**

Use the Headless Mode option to update the ACPI FACP (Fixed ACPI Description Table) to indicate headless operations, i.e. a computer without a monitor, keyboard and mouse.

➔ **Disabled**   DEFAULT   The FACP is not updated to indicate headless mode

➔ **Enabled**   The FACP is updated to indicate headless mode

5.3.7 MPS Configuration

Use the MPS Configuration menu (**BIOS Menu 12**) to select `he multi-processor table.

```
                          BIOS SETUP UTILITY
        Advanced

 MPS Configuration                                Select MPS
                                                  Revision.
 MPS Revision                    [1.4]




                                              ←    Select Screen
                                              ↑↓   Select Item
                                              +-   Change Option
                                              F1   General Help
                                              F10  Save and Exit
                                              ESC  Exit



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```
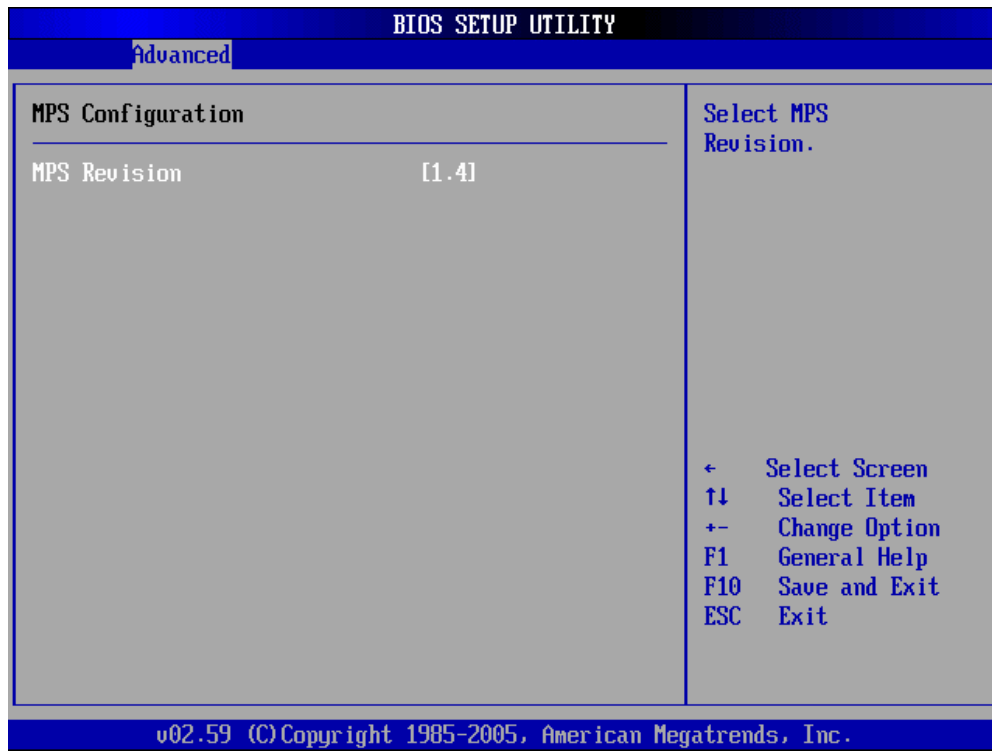
BIOS Menu 12: MPS Configuration

➔ **MPS Revision [1.4]**

Use the Multiprocessor Specification (MPS) for OS option to specify the MPS version to be used.

➔ **1.1**   MPS version 1.1 is used

➔ **1.4**   DEFAULT   MPS version 1.4 is used

5.3.8 Remote Access Configuration

Use the Remote Access Configuration menu to configure remote access parameters. The Remote Access Configuration is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.

➔ **Remote Access [Disabled]**

Use the Remote Access option to enable or disable access to the remote functionalities of the system.

➔ **Disabled** DEFAULT Remote access is disabled.

➔ **Enabled** Remote access configuration options shown below appear:

➔ **Serial Port Number**

➔ **Serial Port Mode**

➔ **Flow Control**

➔ **Redirection after BIOS POST**

➔ **Terminal Type**

➔ **VT-UTF8 Combo Key Support**

These configuration options are discussed below.

5.3.9 USB Configuration

Use the USB Configuration menu (**BIOS Menu 13**) to read USB configuration information and configure the USB settings.

```
                        BIOS SETUP UTILITY
     Advanced

  USB Configuration                                    Enables USB host
 ─────────────────────────────────────               controllers.
  Module Version - 2.24.0-11.4

  USB Devices Enabled :
    2 Drives

  USB Function                    [8 USB Ports]
  Legacy USB Support              [Enabled]
  USB 2.0 Controller              [Enabled]


                                                   ←     Select Screen
                                                   ↑↓    Select Item
                                                   +-    Change Option
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit


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```
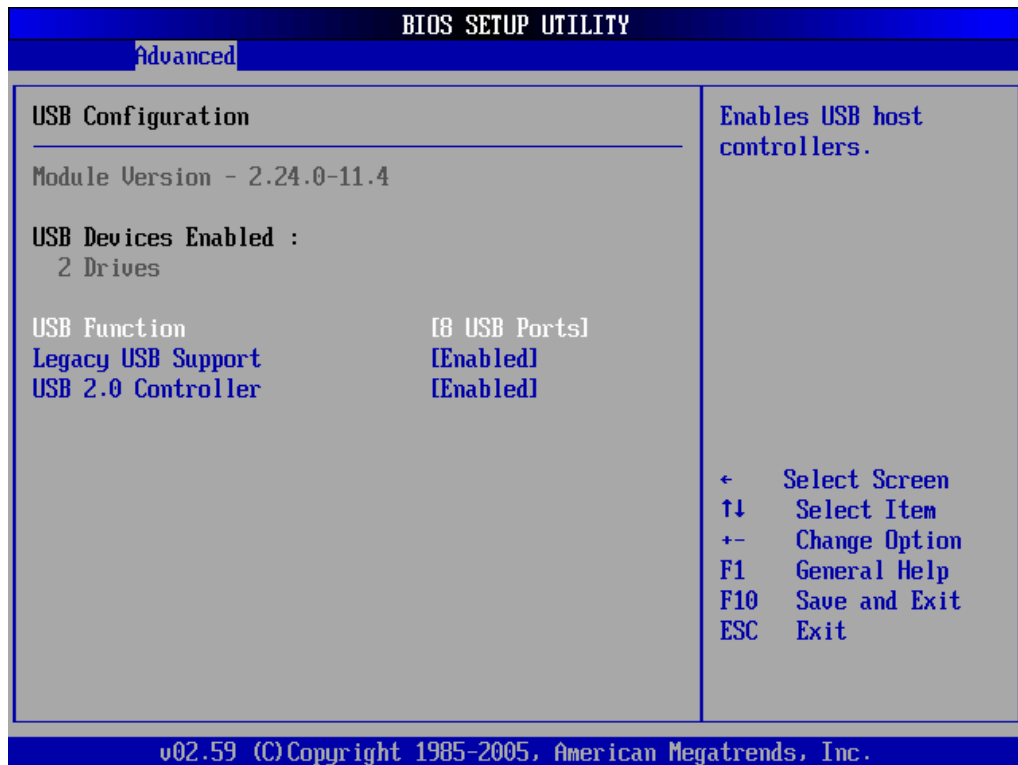
BIOS Menu 13: USB Configuration

➔ **USB Configuration**

The USB Configuration field shows the system USB configuration. The items listed are:

191 Module Version: x.xxxxx.xxxxx

➔ **USB Devices Enabled**

The USB Devices Enabled field lists the USB devices that are enabled on the system

➔ **USB Function [8 USB Ports]**

Use the USB Function BIOS option to select USB function support.

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➔   **Disabled**   USB function support disabled

➔   **2 USB Ports**   USB function support two USB ports

➔   **4 USB Ports**   USB function support four USB ports

➔   **6 USB Ports**   USB function support six USB ports

➔   **8 USB Ports**   DEFAULT   USB function support eight USB ports

➔   **Legacy USB Support [Disabled]**

Use the Legacy USB Support BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔   **Disabled**   DEFAULT   Legacy USB support disabled

➔   **Enabled**   Legacy USB support enabled

➔   **Auto**   Legacy USB support disabled if no USB devices are connected

➔   **USB 2.0 Controller [Enabled]**

Use the USB 2.0 Controller BIOS option to enable or disable the USB 2.0 controller

➔   **Enabled**   DEFAULT   USB 2.0 controller enabled

➔   **Disabled**   USB 2.0 controller disabled

5.4 PCI/PnP

Use the PCI/PnP menu (**BIOS Menu 14**) to configure advanced PCI and PnP settings.

![WARNING icon] **WARNING!**

> *Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.*


```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPnP    Boot    Security   Chipset   Power    Exit

  Advanced PCI/PnP Settings                      ▲    Clear NVRAM during
                                                      System Boot.
  WARNING: Setting wrong values in below sections
           may cause system to malfunction.


  Plug & Play O/S              [No]
  PCI Latency Timer            [64]
  Allocate IRQ to PCI VGA      [Yes]
  Palette Snooping             [Disabled]
  PCI IDE BusMaster            [Disabled]
  OffBoard PCI/ISA IDE Card    [Auto]

  IRQ3                         [Available]        ←    Select Screen
  IRQ4                         [Available]        ↑↓   Select Item
  IRQ5                         [Available]        +-   Change Option
  IRQ7                         [Available]        F1   General Help
  IRQ9                         [Available]        F10  Save and Exit
  IRQ10                        [Available]        ESC  Exit
  IRQ11                        [Available]        ▼

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```

BIOS Menu 14: PCI/PnP Configuration

➔ **Plug & Play O/S [No]**

Use the Plug & Play O/S BIOS option to specify whether system plug and play devices are configured by the operating system or the BIOS.

➔ **No**   **DEFAULT**   If the operating system does not meet the Plug and Play specifications, this option allows the BIOS to configure all the devices in the system.

➔ **Yes**   This setting allows the operating system to change the interrupt, I/O, and DMA settings. Set this option if the system is running Plug and Play aware operating systems.

➔ **PCI Latency Timer [64]**

Use the PCI Latency Timer option to specify the PCI latency time. The latency time is measured in units of PCI clock cycles for the PCI device latency timer register. Configuration options are:

192 32
193 64   Default
194 96
195 128
196 160
197 192
198 224
199 248

➔ **Allocate IRQ to PCI VGA [Yes]**

Use the Allocate IRQ to PCI VGA option to restrict the system from giving the VGA adapter card an interrupt address.

➔ **Yes**   **DEFAULT**   Assigns an IRQ to a PCI VGA card if card requests IRQ

➔ **No**   Does not assign IRQ to a PCI VGA card even if the card requests an IRQ

➔ **Palette Snooping [Disabled]**

Use the Palette Snooping option to enable or disable the palette snooping function.

➔ **Disabled** DEFAULT Unless the VGA card manufacturer requires palette snooping to be enabled, this option should be disabled.

➔ **Enabled** PCI devices are informed that an ISA based Graphics device is installed in the system so the ISA based Graphics card functions correctly. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with the adapter card manual first, before modifying the default settings in the BIOS.

➔ **PCI IDE BusMaster [Disabled]**

Use the PCI IDE BusMaster BIOS option to enable or prevent PCI IDE busmastering.

➔ **Disabled** DEFAULT Busmastering is prevented

➔ **Enabled** IDE controller on the PCI local bus has mastering capabilities

➔ **OffBoard PCI/ISA IDE Card [Auto]**

Use the OffBoard PCI/ISA IDE Card BIOS option to select the OffBoard PCI/ISA IDE Card.

➔ **Auto** DEFAULT The location of the Off Board PCI IDE adapter card is automatically detected by the AMIBIOS.

➔ **PCI Slot 1** PCI Slot 1 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 1.

➔ **PCI Slot 2**   PCI Slot 2 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 2.

➔ **PCI Slot 3**   PCI Slot 3 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 3.

➔ **PCI Slot 4**   PCI Slot 4 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 4.

➔ **PCI Slot 5**   PCI Slot 5 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 5.

➔ **PCI Slot 6**   PCI Slot 6 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 6.

➔ **IRQ#   [Available]**

Use the IRQ# address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available**   DEFAULT   The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved**   The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

200 IRQ3
201 IRQ4
202 IRQ5

203 IRQ7

204 IRQ9

205 IRQ10

206 IRQ 11

207 IRQ 14

208 IRQ 15

➔   **DMA Channel# [Available]**

Use the DMA Channel# option to assign a specific DMA channel to a particular PCI/PnP device.

➔   **Available**   D<small>EFAULT</small>   The specified DMA is available to be used by PCI/PnP devices

➔   **Reserved**   The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

209 DM Channel 0

210 DM Channel 1

211 DM Channel 3

212 DM Channel 5

213 DM Channel 6

214 DM Channel 7

➔ **Reserved Memory Size [Disabled]**

Use the Reserved Memory Size BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔ **Disabled**   DEFAULT   No memory block reserved for legacy ISA devices

➔ **16K**   16KB reserved for legacy ISA devices

➔ **32K**   32KB reserved for legacy ISA devices

➔ **64K**   64KB reserved for legacy ISA devices

5.5 Boot

Use the Boot menu (**BIOS Menu 15**) to configure system boot options.
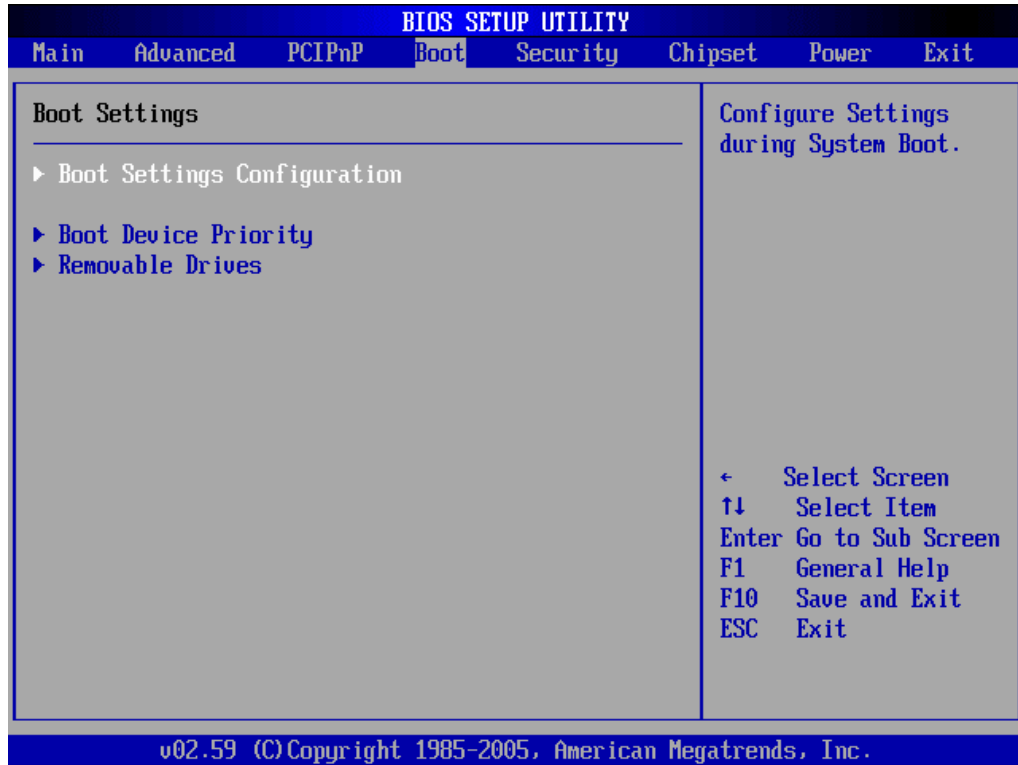
BIOS Menu 15: Boot

5.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (**BIOS Menu 16**) to configure advanced system boot options.

```
                         BIOS SETUP UTILITY
                        Boot

Boot Settings Configuration                          Allows BIOS to skip
                                                     certain tests while
Quick Boot                 [Enabled]                 booting. This will
Quiet Boot                 [Disabled]                decrease the time
AddOn ROM Display Mode     [Force BIOS]              needed to boot the
Bootup Num-Lock            [On]                      system.
PS/2 Mouse Support         [Auto]




                                                     ←    Select Screen
                                                     ↑↓   Select Item
                                                     +-   Change Option
                                                     F1   General Help
                                                     F10  Save and Exit
                                                     ESC  Exit




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```

BIOS Menu 16: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

Use the Quick Boot BIOS option to make the computer speed up the boot process.

➔ **Disabled** No POST procedures are skipped

➔ **Enabled** D<small>EFAULT</small> Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Disabled]**

Use the Quiet Boot BIOS option to select the screen display when the system boots.

➔   **Disabled**   DEFAULT   Normal POST messages displayed

➔   **Enabled**   OEM Logo displayed instead of POST messages

➔   **AddOn ROM Display Mode [Force BIOS]**

Use the AddOn ROM Display Mode option to allow add-on ROM (read-only memory) messages to be displayed.

➔   **Force BIOS**   DEFAULT   The system forces third party BIOS to display during system boot.

➔   **Keep Current**   The system displays normal information during system boot.

➔   **Bootup Num-Lock [On]**

Use the Bootup Num-Lock BIOS option to specify if the number lock setting must be modified during boot up.

➔   **Off**   Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔   **On**   DEFAULT   Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.
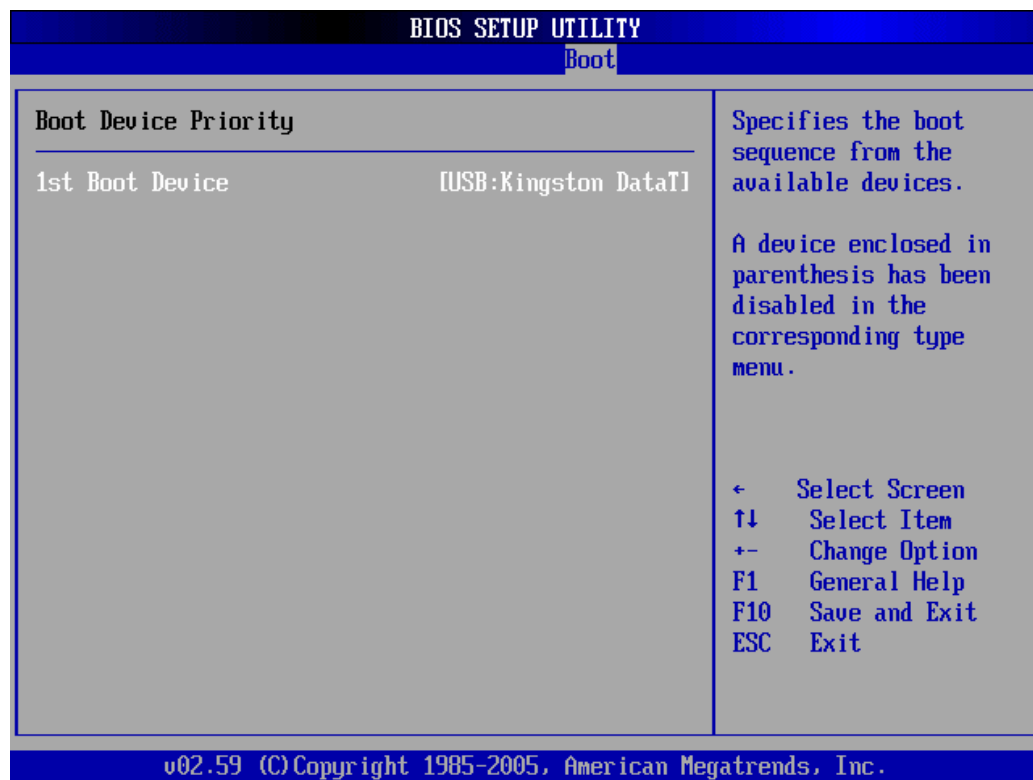
➔   **PS/2 Mouse Support [Auto]**

Use the PS/2 Mouse Support option adjusts PS/2 mouse support capabilities.

➔ **Disabled**   PS/2 mouse support is disabled and prevented from using system resources.

➔ **Enabled**   Allows the system to use a PS/2 mouse.

➔ **Auto**   DEFAULT   The system auto-adjusts PS/2 mouse support.

5.5.2 Boot Device Priority

Use the Boot Device Priority menu (**BIOS Menu 17**) to specify the boot sequence from the available devices. Possible boot devices may include:

215 1st FLOPPY DRIVE
216 HDD
217 CD/DVD

```
                       BIOS SETUP UTILITY
                            Boot

 Boot Device Priority                          Specifies the boot
                                               sequence from the
 1st Boot Device          [USB:Kingston DataT] available devices.

                                               A device enclosed in
                                               parenthesis has been
                                               disabled in the
                                               corresponding type
                                               menu.



                                               ←    Select Screen
                                               ↑↓   Select Item
                                               +-   Change Option
                                               F1   General Help
                                               F10  Save and Exit
                                               ESC  Exit


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```

BIOS Menu 17: Boot Device Priority Setting

5.5.3 Removable Drives

Use the Removable Drives menu (**BIOS Menu 18**) to specify the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:
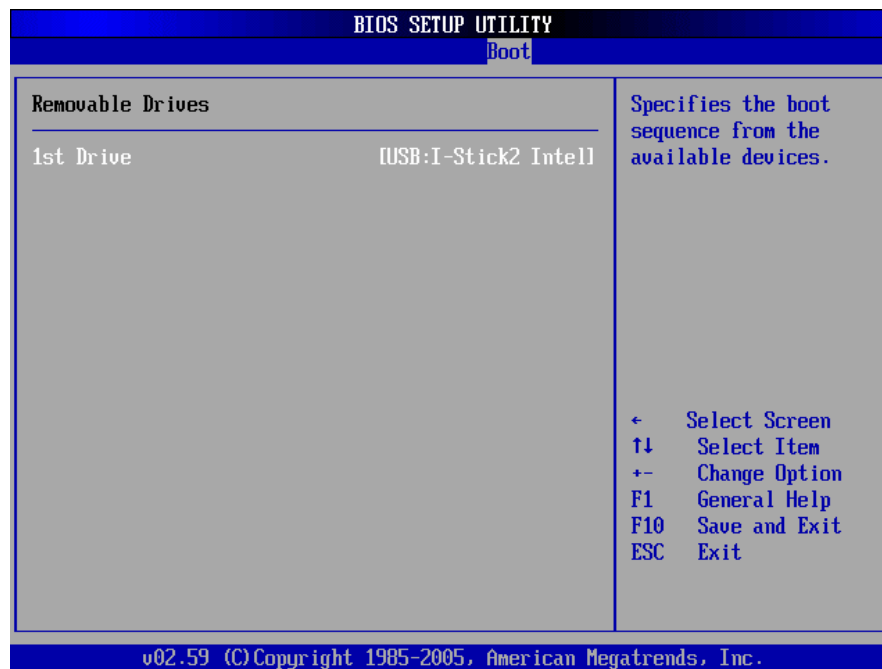
218 1st Drive   [1st FLOPPY DRIVE]

NOTE:

Only the drives connected to the system are shown. For example, if only one FDD is connected only "1st Drive" is listed.
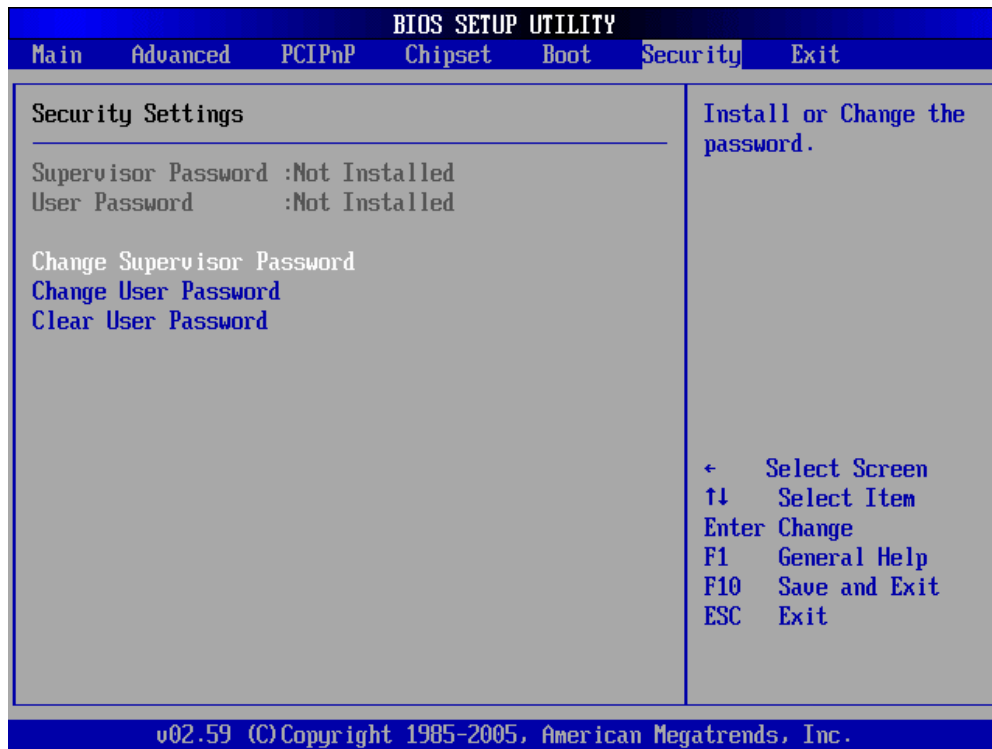
The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available FDDs is shown. Select the first FDD the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.

```
                    BIOS SETUP UTILITY
                          Boot

 Removable Drives                         Specifies the boot
 ─────────────────────────────────        sequence from the
 1st Drive              [USB:I-Stick2 Intel]  available devices.




                                          ←    Select Screen
                                          ↑↓   Select Item
                                          +-   Change Option
                                          F1   General Help
                                          F10  Save and Exit
                                          ESC  Exit

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```

BIOS Menu 18: Removable Drives

5.6 Security

Use the Security menu (**BIOS Menu 19**) to set system and user passwords.

```
                    BIOS SETUP UTILITY
 Main    Advanced   PCIPnP   Chipset   Boot   Security   Exit

 Security Settings                              Install or Change the
 _____  password.
 Supervisor Password :Not Installed
 User Password       :Not Installed

 Change Supervisor Password
 Change User Password
 Clear User Password


                                               ←    Select Screen
                                               ↑↓   Select Item
                                               Enter Change
                                               F1    General Help
                                               F10   Save and Exit
                                               ESC   Exit


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```

BIOS Menu 19: Security

➔ **Change Supervisor Password**

Use the Change Supervisor Password to set or change a supervisor password. The default for this option is Not Installed. If a supervisor password must be installed, select this field and enter the password. After the password has been added, Install appears next to Change Supervisor Password.

➔ **Change User Password**

Use the Change User Password to set or change a user password. The default for this option is Not Installed. If a user password must be installed, select this field and enter the password. After the password has been added, Install appears next to Change User Password.

5.7 Chipset

Use the Chipset menu (**BIOS Menu 20**) to access the NorthBridge and SouthBridge configuration menus
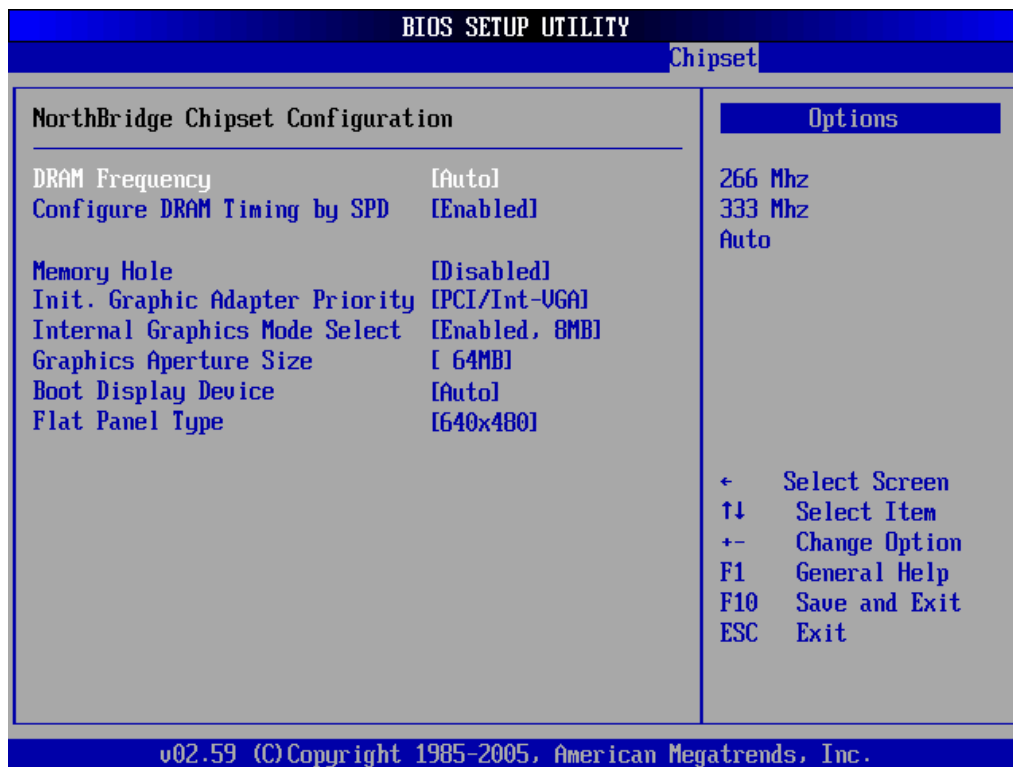

⚠ WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

BIOS Menu 20: Chipset

5.7.1 NorthBridge Configuration

Use the NorthBridge Configuration menu (**BIOS Menu 21**) to configure the northbridge chipset.

BIOS Menu 21: NorthBridge Chipset Configuration

➔ **DRAM Frequency [Auto]**

Use the DRAM Frequency option to specify the DRAM frequency or allow the system to automatically detect the DRAM frequency.

➔ **200MHz**   Sets the DRAM frequency to 200MHz

➔ **266MHz**   Sets the DRAM frequency to 266MHz

➔ **333MHz**   Sets the DRAM frequency to 333MHz

➔ **Auto**   **DEFAULT**   Automatically selects the DRAM frequency

➔ **Configure DRAM Timing by SPD [Enabled]**

Use the Configure DRAM Timing by SPD option to determine if the system uses the SPD *(*Serial Presence Detect) EEPROM to configure the DRAM timing. The SPD EEPROM contains all necessary DIMM specifications including the speed of the individual components such as CAS and bank cycle time as well as valid settings for the module and the manufacturer's code. The SPD enables the BIOS to read the spec sheet of the DIMMs on boot-up and then adjust the memory timing parameters accordingly.

➔ **Disabled** DRAM timing parameters are manually set using the DRAM sub-items

➔ **Enabled** **DEFAULT** DRAM timing parameter are set according to the DRAM Serial Presence Detect (SPD)

If the Configure DRAM Timing by SPD option is disabled, the following configuration options appear.

219 DRAM CAS# Latency [3]
220 DRAM RAS# to CAS# Delay [5 DRAM Clocks]
221 DRAM RAS# Precharge [5 DRAM Clocks]
222 DRAM RAS# Activate to Precha [15 DRAM Clocks]

➔ **Memory Hole [Disabled]**

Use the Memory Hole 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

➔ **15MB – 16MB** Between 15MB and 16MB of memory is reserved for ISA expansion cards

➔ **Init. Graphic Adapter Priority [PCI/Int-VGA]**

The Init. Graphic Adapter Priority option selects the graphics controller the system uses as a primary boot device. The options are:

223 Internal VGA

224 PCI/Int-VGA **DEFAULT**

➔ **Internal Graphics Mode Select [Enable, 8MB]**

Use the Internal Graphic Mode Select option to specify the amount of system memory that can be used by the Internal graphics device.

➔ **Disable**

➔ **Enable, 1MB**   1MB of memory used by internal graphics device

➔ **Enable, 4MB**   4MB of memory used by internal graphics device

➔ **Enable, 8MB** **DEFAULT**   8MB of memory used by internal graphics device

➔ **Enable, 16MB**   16MB of memory used by internal graphics device

➔ **Enable, 32MB**   32MB of memory used by internal graphics device

➔ **Graphics Aperture Size [64MB]**

The Graphics Aperture Size option selects the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated as graphics memory address space.

➔ **64MB**   **DEFAULT**   Graphics aperture size set as 64MB

➔ **128MB**   Graphics aperture size set as 128MB

➔ **Boot Display Device [CRT+LFP]**

Use the Boot Display Device option to select the display device used by the system when it boots**. Configuration options are listed below.**
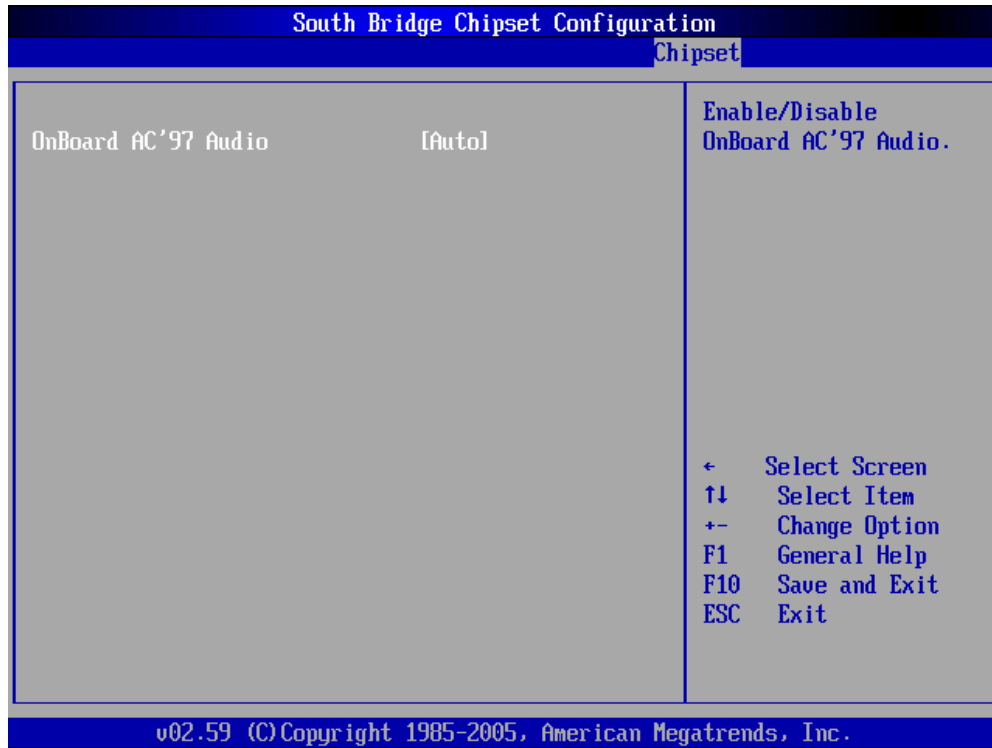
    225 CRT
    226 LFP
    227 CRT+LFP   **DEFAULT**

➔ **Flat Panel Type [640x480]**

Use the Flat Panel Type option to select the type of flat panel connected to the system. Configuration options are listed below.

    228 640x480   **DEFAULT**
    229 800x600
    230 1024x768 24bits
    231 1280x1024
    232 1400x1050
    233 1024x768 18bits
    234 1600x1200 48bits
    235 800x600 24bits
    236 800x600 18bits
    237 1024x768 36bits

5.7.2 SouthBridge Configuration

The SouthBridge Configuration menu (**BIOS Menu 22**) the southbridge chipset to be configured.

```
                 South Bridge Chipset Configuration
                                         Chipset

 OnBoard AC'97 Audio           [Auto]          Enable/Disable
                                               OnBoard AC'97 Audio.




                                               ←    Select Screen
                                               ↑↓   Select Item
                                               +-   Change Option
                                               F1   General Help
                                               F10  Save and Exit
                                               ESC  Exit



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```

BIOS Menu 22: SouthBridge Chipset Configuration

➔   **OnBoard AC97 Audio [Auto]**

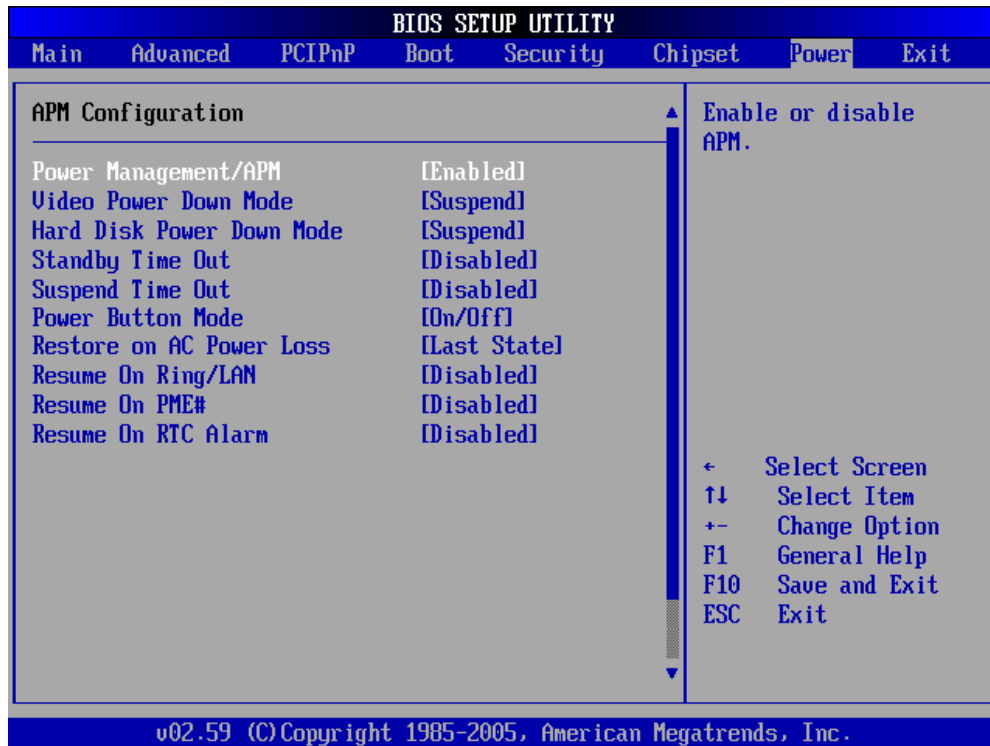Use the OnBoard AC97 Audio option to enable or disable the AC'97 CODEC.

➔   **Auto**   DEFAULT   The onboard AC'97 automatically detected and enabled

➔   **Disabled**   The onboard AC'97 is disabled

5.8 Power

The Power menu (**BIOS Menu 23**) allows the advanced power management options to be configured.

```
                    BIOS SETUP UTILITY
 Main    Advanced   PCIPnP   Boot   Security   Chipset   Power   Exit

 APM Configuration                                ▲  Enable or disable
 ─────────────────────────────────                   APM.
 Power Management/APM          [Enabled]
 Video Power Down Mode         [Suspend]
 Hard Disk Power Down Mode     [Suspend]
 Standby Time Out              [Disabled]
 Suspend Time Out              [Disabled]
 Power Button Mode             [On/Off]
 Restore on AC Power Loss      [Last State]
 Resume On Ring/LAN            [Disabled]
 Resume On PME#                [Disabled]
 Resume On RTC Alarm           [Disabled]
                                                     ←    Select Screen
                                                     ↑↓   Select Item
                                                     +-   Change Option
                                                     F1   General Help
                                                     F10  Save and Exit
                                                  ▼  ESC  Exit

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```

BIOS Menu 23: Power

➔ **Power Management/APM [Enabled]**

Use the Power Management/APM BIOS option to enable access to the advanced power management features. If this option is disabled, the only other option on the screen is the Power Button Mode.

➔ **Disabled**   Disables the Advanced Power Management (APM) feature

➔ **Enabled** DEFAULT   Enables the APM feature

➔ **Video Power Down Mode [Suspend]**

The Video Power Down Mode BIOS option specifies in what system mode the video device can be turned off.

➔ **Disabled**   The Video cannot be turned off in the Suspend or Standby mode

➔ **Standby**   The video can be turned off in the Standby mode

➔ **Suspend** **DEFAULT**   The video can be turned off in the Suspend mode

➔ **Hard Disk Power Down Mode [Suspend]**

The Hard Disk Power Down Mode BIOS specifies in what system mode the hard disk device can be turned off.

➔ **Disabled**   The hard disk cannot be turned off in the Suspend or Standby mode

➔ **Standby**   The hard disk can be turned off in the Standby mode

➔ **Suspend** **DEFAULT**   The hard disk can be turned off in the Suspend mode

➔ **Standby Time Out [Disabled]**

The Power Management/APM option must be enabled in order to change this configuration option. The Standby Time Out option specifies what length of time without activity on certain components will place those components in a standby state. The options are:

238 Disabled   **DEFAULT**
2391 Min
2402 Min
2414 Min
2428 Min
24310 Min

> **244**20 Min
>
> **245**30 Min
>
> **246**40 Min
>
> 247 50 Min
>
> 248 60 Min

➔ **Suspend Time Out [Disabled]**

The Suspend Time Out option specifies what length of time without activity on certain components will place those components in a suspended state. The options are listed below:

> **249**Disabled   **Default**
>
> **250**1 Min
>
> **251**2 Min
>
> **252**4 Min
>
> **253**8 Min
>
> **254**10 Min
>
> **255**20 Min
>
> **256**30 Min
>
> **257**40 Min
>
> **258**50 Min
>
> **259**60 Min

➔ **Power Button Mode [On/Off]**

Use the Power Button Mode BIOS to specify how the power button functions.

➔ **On/Off**   DEFAULT   When the power button is pressed the system is either turned on or off

➔ **Suspend**   When the power button is pressed the system goes into suspend mode

➔ **Restore on AC Power Loss [Last State]**

Use the Restore on AC Power Loss option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**   The system remains turned off

➔ **Power On**   The system turns on

➔ **Last State**   **DEFAULT**   The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

➔ **Resume on Ring/LAN [Disabled]**

The Resume on Ring/LAN BIOS option specifies if the system will be roused from a suspended or standby state when there is activity on the RI (ring in) modem line. That is, the system will be roused by an incoming call on a modem.

➔ **Disabled**   **DEFAULT**   Wake event not generated by an incoming call

➔ **Enabled**   Wake event generated by an incoming call

➔ **Resume on PME# [Disabled]**

The Resume on PME# BIOS option specifies if the system will be roused from a suspended or standby state when there is activity on the PCI PME (power management event) controller.

➔ **Disabled**   **DEFAULT**   Wake event not generated by PCI PME controller activity

➔ **Enabled**   Wake event generated by PCI PME controller activity

➔ **Resume On RTC Alarm [Disabled]**

Use the Resume On RTC Alarm option to specify the time the system should be roused from a suspended state.

➔ **Disabled** DEFAULT The real time clock (RTC) cannot generate a wake event

➔ **Enabled** If selected, the following appears with values that can be selected:

      ➔ **RTC Alarm Date (Days)**

      ➔ **System Time**

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

5.9 Exit

Use the Exit menu (**BIOS Menu 24**) to load default BIOS values, optimal failsafe values and to save configuration changes.

```
                         BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Power    Exit

  Exit Options                                        Exit system setup
                                                      after saving the
  Save Changes and Exit                               changes.
  Discard Changes and Exit
  Discard Changes                                     F10 key can be used
                                                      for this operation.
  Load Optimal Defaults



                                                      ←     Select Screen
                                                      ↑↓     Select Item
                                                      Enter Go to Sub Screen
                                                      F1     General Help
                                                      F10    Save and Exit
                                                      ESC    Exit


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```

BIOS Menu 24:Exit

➔ **Save Changes and Exit**

Use the Save Changes and Exit option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Exit**

Use the Discard Changes and Exit option to exit the BIOS configuration setup program without saving the changes made to the system.

➔ **Discard Changes**

Use the Discard Changes option to discard the changes and remain in the BIOS configuration setup program.

➔ **Load Optimal Defaults**

Use the Load Optimal Defaults option to load the optimal default values for each of the parameters on the Setup menus. F9 key can be used for this operation.

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Appendix

A

IEI Panel PC

Product Line

A.1 IEI Panel PC Products

A.1.1 Overview

IEI panel PC products are flexible, multi-functional flat panel PCs that can be applied in diverse operational environments and implemented in multi-faceted applications. IEI panel PC products come fully kitted with high-performance motherboards, CPUs, power supply units and a host of other peripheral interface connectors. IEI panel PC products are designed for ease of use and easy installation. This appendix introduces the full range of IEI panel PC products.

A.1.2 IEI Panel PC Product Series

There are currently four panel PC product series. The four series are listed below.

260 PPC-27 Series
261 PPC-37 Series
262 PPC-51 Series
263 PPC-52 Series
264 PPC-53 Series

A.2 Panel PC Product Solutions

The different IEI panel PC product solutions are listed below. For further information, please contact an IEI distributor, reseller, vendor or IEI sales representative. Please also visit the IEI website (www.ieiworld.com).

A.2.1 PPC-27 Series Panel PC Solutions

All the models listed in the table below support an AMD® Geode® LX800 500MHz CPU.

Model	PPC-2706GS	PPC-2708GS
LCD Size	6.5" TFT LCD	8.4" TFT LCD
Max. Resolution	640 x 480	800 x 600
Brightness	400 cd/m2	220 cd/m2
LCD Color	262K	262K
Viewing Angle	120/100	120/100
Backlight MTBF	50000hrs	20000hrs
SBC Model	WAFER-LX800	WAFER-LX800
CPU	AMD LX800	AMD LX800
RAM	1 x DDR 333/400MHz SO DIMM socket up to 1GB	1 x DDR 333/400MHz SO DIMM socket up to 1GB
I/O Ports	1 x RS-232 2 x USB 2.0 1 x PS/2 1 x VGA out 2 x LAN 1 x Audio 1 x IDE 2 x SATA	2 x RS-232 2 x USB 2.0 1 x PS/2 1 x VGA out 2 x LAN 3 x Audio 1 x IDE 2 x SATA
SSD	CF Type II	CF Type II
HDD Drive Bay	1 x 2.5" SATA/IDE HDD	1 x 2.5" SATA/IDE HDD
Power Supply	60W AC Adapter	60W AC Adapter
Mounting	Stand/Rack/Wall/ Panel/Arm/Din	Stand/Rack/Wall/ Panel/Arm/Din
Dimension (WxDxH) mm	183 x 143 x 62.6	244 x 178 x 67
Weight	1.4/3.4kg	2.2/4.4kg
Front Panel Protection	IP 65 compliant	IP 65 compliant
Touch Screen	Resistive Type 4-wire with RS-232 Interface	Resistive Type 4-wire with RS-232 Interface

Table A-1: PPC-27 Series Panel PC Solutions

A.2.2 PPC-37 Series Panel PC Solutions

All the models listed in the table below support Intel® Pentium® M / Celeron ® M / ULV Celeron® M 1GHz/800MHz CPUs.

Model	PPC-3708GS	PPC-3710GS	PPC-3712GS	PPC-3715GS	PPC-3717GS
LCD Size	8.4" TFT LCD	10.4" TFT LCD	12.1" TFT LCD	15" TFT LCD	17" TFT LCD
Max. Resolution	800 x 600	800 x 600	800 x 600	1024 x 786	1280 x 1024
Brightness	220 cd/m2	230 cd/m2	400 cd/m2	350 cd/m2	300 cd/m2
LCD Color	262K	262K	262K	262K	16.2M
Viewing Angle	120/100	120/100	140/110	120/100	140/130
Backlight MTBF	20000hrs	50000hrs	50000hrs	50000hrs	50000hrs
SBC Model	NANO-8522 (Socket 479/ BGA On-board)	NANO-8522 (Socket 479/ BGA On-board)	NANO-8522 (Socket 479/ BGA On-board)	ENANO-6612 (Socket 479/ BGA On-board)	ENANO-6612 (Socket 479/ BGA On-board)
CPU	Pentium® M / Celeron® M / ULV Celeron® M 1GHz/800MHz	Pentium® M / Celeron® M / ULV Celeron® M 1GHz/800MHz	Pentium® M / Celeron® M / ULV Celeron® M 1GHz/800MHz	Pentium® M / Celeron® M / ULV Celeron® M 1GHz	Pentium® M / Celeron® M / ULV Celeron® M 1GHz
RAM	1 x DDR 266/200MHz SO DIMM socket up to 1GB	1 x DDR 266/200MHz SO DIMM socket up to 1GB	1 x DDR 266/200MHz SO DIMM socket up to 1GB	1 x DDR 333/400MHz SO DIMM socket up to 1GB	1 x DDR 333/400MHz SO DIMM socket up to 1GB
I/O Ports	1 x RS-232/ 422/485 2 x RS-232 4 x USB 2.0 1 x PS/2 N/A 1 x VGA out 1 x LAN 3 x Audio 1 x IDE	1 x RS-232/ 422/485 2 x RS-232 4 x USB 2.0 1 x PS/2 N/A 1 x VGA out 1 x LAN 3 x Audio 1 x IDE	1 x RS-232/ 422/485 3 x RS-232 4 x USB 2.0 1 x PS/2 1 x LPT 1 x VGA out 1 x LAN 3 x Audio 1 x IDE	1 x RS-232/ 422/485 1 x RS-232 4 x USB 2.0 1 x PS/2 1 x LPT 1 x VGA out 1 x LAN 3 x Audio 1 x IDE	1 x RS-232/ 422/485 1 x RS-232 4 x USB 2.0 1 x PS/2 1 x LPT 1 x VGA out 1 x LAN 3 x Audio 1 x IDE

Model	PPC-3708GS	PPC-3710GS	PPC-3712GS	PPC-3715GS	PPC-3717GS
	2 x SATA	2 x SATA	2 x SATA	2 x SATA	2 x SATA
SSD	CF Type II	CF Type II	CF Type II	CF Type II	CF Type II
Expansion Slot	N/A	N/A	N/A	1 x PCI	1 x PCI
HDD Drive Bay	1 x 2.5" SATA/IDE HDD	1 x 2.5" SATA/IDE HDD	1 x 2.5" SATA/IDE HDD	1 x 3.5" Removable SATA/IDE HDD, 1 x 2.5" SATA/IDE HDD	1 x 3.5" Removable SATA/IDE HDD, 1 x 2.5" SATA/IDE HDD
FDD Drive Bay	N/A	N/A	N/A	1 x Slim FDD	1 x Slim FDD
CD-ROM Drive Bay	N/A	N/A	1 x Slim CD-ROM	1 x Slim CD-ROM	1 x Slim CD-ROM
Power Supply	80W/55W AC Adapter	80W/55W AC Adapter	80W/55W AC Adapter	150W ATX Power	150W ATX Power
Mounting	Stand/Rack/ Wall/Panel/ Arm	Stand/Rack/ Wall/Panel/ Arm	Stand/Rack/ Wall/Panel/ Arm	Stand/Rack/ Wall/Panel/ Arm	Stand/Rack/ Wall/Panel/ Arm
Dimension (WxDxH) mm	244 x 178 x 75.2	311.5 x 242 x 72.8	340 x 260 x 73.4	410 x 309 x 80	452 x 356 x 80
Weight	2.2/4.4kg	3.4/5.8kg	6/8kg	8/12kg	TBD
Front Panel Protection	IP 65 compliant	IP 65 compliant	IP 65 compliant	IP 65 compliant	IP 65 compliant
Touch Screen	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface

Table A-2: PPC-37 Series Panel PC Solutions

A.2.3 PPC-51 Series Panel PC Solutions

All the models listed in the table below support Intel® Pentium® 4 / Celeron® D CPUs up to 2.8GHz.

Model	PPC-5150GS	PPC-5170GS	PPC-5190GS
LCD Size	15" TFT LCD	17" TFT LCD	19" TFT LCD
Max. Resolution	1024 x 786	1280 x 1024	1280 x 1024
Brightness	350 cd/m2	300 cd/m2	300 cd/m2
LCD Color	262K	16.2M	16.2M
Viewing Angle	120/100	140/130	140/130
Backlight MTBF	50000hrs	50000hrs	50000hrs
SBC Model	POS-8520 (Socket 478)	POS-8520 (Socket 478)	POS-8520 (Socket 478)
CPU	Pentium® 4 / Celeron ® D	Pentium® 4 / Celeron ® D	Pentium® 4 / Celeron ® D
RAM	2 x DDR 266/333MHz DIMM socket up to 2GB	2 x DDR 266/333MHz DIMM socket up to 2GB	2 x DDR 266/333MHz DIMM socket up to 2GB
I/O Ports	1 x RS-232/422/485 4 x RS-232 4 x USB 2.0 2 x PS/2 1 x LPT 1 x VGA out 2 x LAN 3 x Audio 2 x IDE 2 x SATA	1 x RS-232/422/485 4 x RS-232 6 x USB 2.0 2 x PS/2 1 x LPT 1 x VGA out 2 x LAN 3 x Audio 2 x IDE 2 x SATA	1 x RS-232/422/485 4 x RS-232 6 x USB 2.0 2 x PS/2 1 x LPT 1 x VGA out 2 x LAN 3 x Audio 2 x IDE 2 x SATA
SSD	CF Type II	CF Type II	CF Type II
Expansion Slot	1 x PCI	1 x PCI	1 x PCI
HDD Drive Bay	1 x 2.5" SATA/IDE HDD w/ Anti-Shock or 2 x 2.5" SATA/IDE HDD	1 x 2.5" SATA/IDE HDD w/ Anti-Shock or 2 x 2.5" SATA/IDE HDD	1 x 2.5" SATA/IDE HDD w/ Anti-Shock or 2 x 2.5" SATA/IDE HDD

Model	PPC-5150GS	PPC-5170GS	PPC-5190GS
	w/o Anti-Shock	w/o Anti-Shock	w/o Anti-Shock
FDD Drive Bay	1 x Slim FDD	1 x Slim FDD	1 x Slim FDD
CD-ROM Drive Bay	1 x Slim CD-ROM	1 x Slim CD-ROM	1 x Slim CD-ROM
Power Supply	180W ATX Power	180W ATX Power	180W ATX Power
Mounting	Stand/Rack/ Wall/Panel/Arm	Stand/Rack/ Wall/Panel/Arm	Stand/Rack/ Wall/Panel/Arm
Dimension (WxDxH) mm	410 x 309 x 110	452 x 356 x 110	482 x 399 x 110
Weight	7/11kg	8/12kg	12.6/18.2kg
Front Panel Protection	IP 65 compliant	IP 65 compliant	IP 65 compliant
Touch Screen	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface

Table A-3: PPC-51 Series Panel PC Solutions

A.2.4 PPC-52 Series Panel PC Solutions

All the models listed in the table below support Intel® Pentium® 4 / Celeron® D CPUs up to 3.8GHz.

Model	PPC-5150GS	PPC-5170GS	PPC-5190GS
LCD Size	15" TFT LCD	17" TFT LCD	19" TFT LCD
Max. Resolution	1024 x 786	1280 x 1024	1280 x 1024
Brightness	300 cd/m2	300 cd/m2	300 cd/m2
LCD Color	262K	16.2M	16.2M
Viewing Angle	120/100	140/130	140/130
Backlight MTBF	30000hrs	30000hrs	30000hrs
SBC Model	POS-6614 (LGA-775)	POS-6614 (LGA-775)	POS-6614 (LGA-775)
CPU	Pentium® 4 /	Pentium® 4 /	Pentium® 4 /

Model	PPC-5150GS	PPC-5170GS	PPC-5190GS
	Celeron ® D	Celeron ® D	Celeron ® D
RAM	2 x DDR 400MHz DIMM socket up to 2GB	2 x DDR 400MHz DIMM socket up to 2GB	2 x DDR 400MHz DIMM socket up to 2GB
I/O Ports	1 x RS-232/422/485 3 x RS-232 4 x USB 2.0 2 x PS/2 1 x LPT 1 x VGA out 2 x LAN 3 x Audio 2 x IDE 2 x SATA	1 x RS-232/422/485 3 x RS-232 6 x USB 2.0 2 x PS/2 1 x LPT 1 x VGA out 2 x LAN 3 x Audio 2 x IDE 2 x SATA	1 x RS-232/422/485 3 x RS-232 6 x USB 2.0 2 x PS/2 1 x LPT 1 x VGA out 2 x LAN 3 x Audio 2 x IDE 2 x SATA
SSD	CF Type II	CF Type II	CF Type II
Expansion Slot	1 x PCI, 1 x PCIe	1 x PCI, 1 x PCIe	1 x PCI, 1 x PCIe
HDD Drive Bay	2 x 3.5" SATA/IDE HDD w/ Anti-Shock	2 x 3.5" SATA/IDE HDD w/ Anti-Shock	2 x 3.5" SATA/IDE HDD w/ Anti-Shock
FDD Drive Bay	1 x Slim FDD	1 x Slim FDD	1 x Slim FDD
CD-ROM Drive Bay	1 x Slim CD-ROM	1 x Slim CD-ROM	1 x Slim CD-ROM
Power Supply	250W ATX Power	250W ATX Power	250W ATX Power
Mounting	Stand/Rack/ Wall/Panel/Arm	Stand/Rack/ Wall/Panel/Arm	Stand/Rack/ Wall/Panel/Arm
Dimension (WxDxH) mm	TBD	TBD	TBD
Weight	TBD	TBD	TBD
Front Panel Protection	IP 65 compliant	IP 65 compliant	IP 65 compliant
Touch Screen	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface	Resistive Type 5-wire with RS-232 Interface

Table A-4: PPC-52 Series Panel PC Solutions

A.2.5 PPC-53 Series Panel PC Solutions

All the models listed in the table below support Intel® Pentium® M / Celeron ® M /

ULV Celeron® M 1GHz/800MHz CPUs.

Model	PPC-5350GS
LCD Size	15" TFT LCD
Max. Resolution	1024 x 786
Brightness	350 cd/m2
LCD Color	262K
Viewing Angle	120/100
Backlight MTBF	50000hrs
SBC Model	A-300 (Socket 479)
CPU	Pentium® M / Celeron ® M / ULV Celeron® M 1GHz/800MHz
RAM	2 x DDR 266/333MHz DIMM socket up to 2GB
I/O Ports	1 x RS-232/422/485 4 x RS-232 4 x USB 2.0 2 x PS/2 1 x LPT 1 x VGA out 1 x DVI 2 x LAN 3 x Audio 2 x IDE 2 x SATA
SSD	CF Type II
Expansion Slot	1 x PCI 1 x mini-PCI 1 x PCMCIA supports 32bit Cardbus

HDD Drive Bay	1 x 2.5" SATA/IDE HDD
CD-ROM Drive Bay	1 x Slim CD-ROM
Power Supply	150W ATX Power
Mounting	Stand/Rack/ Wall/Panel/Arm
Dimension (WxDxH) mm	410 x 309 x 110
Weight	8/12kg
Front Panel Protection	IP 65 compliant
Touch Screen	Resistive Type 5-wire with RS-232 Interface

Table A-5: PPC-53 Series Panel PC Solutions

Appendix

B

Interface Connectors

The PPC-5170 flat panel PC POS-8520 motherboard comes with a number of peripheral interface connectors and configuration jumpers listed in **Chapter 2**. The pinouts for these connectors are listed below.

B.1 Floppy Disk Drive Connector

POS-8520 board is equipped with a 34-pin daisy-chain driver connector cable.

PIN	Description	PIN	Description
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

B.2 PCI E-IDE Disk Drive Connector

Four IDE (Integrated Device Electronics) hard disk drives can be attached to the POS-8520 IDE controller.

IDE1, IDE2: Primary, Secondary IDE Connector

PIN	Description	PIN	Description
1	RESET#	2	GND
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	GND	20	N/C
21	IDE DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IDE CHRDY	28	GND
29	IDE DACK	30	GND
31	INTERRUPT	32	N/C
33	SA 1	34	N/C
35	SA 0	36	SA 2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND

B.3 Parallel Port

This port is usually connected to printer. The POS-8520 includes one on-board parallel port, accessed through 25-pin D-type female connector LPT1.

LPT1: (LPT1 DB-25 Female) Parallel Port Connector

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

B.4 Serial Ports

The POS-8520 offers six high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial port (COM1/COM2/COM3/COM4/COM5/COM6)

COM1: Serial Port 2x5 pin header Connector

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

CN20A: Serial Port DB-9 Male Connector (COM1)

PIN	Description
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

COM2: Serial Port 2 x 5 Pin Header Connector

COM2 Support three modes: RS-232, RS-422 and RS-485 (via 2 x 5 pin box header connector).

RS-232 Mode

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

RS-422 Mode

PIN	Description	PIN	Description
1	TXD-	2	RX-
3	TXD+	4	RX+
5	NC	6	NC
7	NC	8	Voltage
9	NC	10	NC

RS-485 Mode

PIN	Description	PIN	Description
1	RTX-	2	NC
3	RTX+	4	NC
5	NC	6	NC
7	NC	8	Voltage
9	NC	10	NC

CN20B: Serial Port DB-9 Male Connector (COM2)

COM2 supports three modes: RS-232, RS-422 and RS-485 (via DB-9 Connector).

RS-232 Mode

PIN	Description	PIN	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTX
4	DTR	9	RI
5	GND		

RS-422 Mode

PIN	Description	PIN	Description
1	TXD-	6	RX-
2	TXD+	7	RX+
3	NC	8	NC
4	NC	9	Voltage
5	NC		

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RS-485 Mode

PIN	Description	PIN	Description
1	RTX-	6	NC
2	RTX+	7	NC
3	NC	8	NC
4	NC	9	Voltage
5	NC		

COM3: Serial Port 2x5 Pin Header Connector

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

COM4: Serial Port 2x5 Pin Header Connector

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

CN22: Serial Port DB-9 Male Connector (COM4)

PIN	Description
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

COM5: Serial Port 2x5 Pin Header Connector

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

COM6: Serial Port 2x5 Pin Header Connector

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

B.5 Keyboard / Mouse Connector

The POS-8520 provides one keyboard and one mouse box header connector, as well as external PS/2 keyboard and mouse connectors.

CN23A (Purple): Extended Keyboard 6-pin Mini Din Connector

PIN	Description
1	KB DATA
2	NC
3	GND
4	VCC
5	KB CLOCK
6	NC

CN23B (Green): Extended Mouse 6-pin Mini Din Connector

PIN	Description
1	MS DATA
2	NC
3	GND
4	VCC
5	MS CLOCK
6	NC

CN16: 5-pin Header Keyboard Connector

PIN	Description
1	KB CLOCK
2	KB DATA
3	N/C
4	GND
5	+5V

CN15: PS/2 Mouse 5-pin Header Connector

PIN	Description
1	MS CLOCK
2	MS DATA
3	N/C
4	GND
5	+5V

B.6 External Switches and Indicators

CN8: Multi Panel

PIN	Description	PIN	Description
1	SPEAKER	11	POWER-VCC
2	N/C	12	N/C
3	N/C	13	GND
4	+5V	14	KEYLOCK
5	RESET SW	15	GND
6	GND	16	GND
7	IDE LED -	17	N/C
8	IDE LED+	18	ATX POWER CONTROL
9	ATX POWER BUTTON	19	ATX 5VSB
10	GND	20	ATX 5VSB

B.7 USB Port Connector

The POS-8520 has eight built-in USB ports for the future I/O bus expansion.

CN26, CN27, CN28: 8-PIN Header USB Connectors

PIN		Description
1	8	VCC
3	6	USBD0-
5	4	USBD0+
7	2	GND

CN25: 2 External USB Connectors

PIN		Description
1	5	VCC
2	6	USBD0-
3	7	USBD0+
4	8	GND

B.8 IrDA Infrared Interface Port

The POS-8520 has a built-in IrDA port that supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interfaces. To use the IrDA port, configure the FIR or ASKIR model in the Peripheral Setup COM2 in BIOS. Then the normal RS-232 COM2 will be disabled.

IR1: IrDA Connector

PIN	Description
1	+5V
2	NC
3	IR-RX
4	GND
5	IR-TX
6	+5V

B.9 VGA Connector

The POS-8520 provides one DB-15 female connector and one built-in 10-pin VGA box header connector that can be connected directly to a monochrome CRT monitor as well as high resolution color CRT monitor.

VGA1: DB-15 Female VGA Connector

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDC CLK		

CN14: 10-pin Header VGA Connector

PIN	Description	PIN	Description
1	RED	2	SMCLK
3	GREEN	4	SMDATA
5	BLUE	6	GND
7	H-SYNC	8	GND
9	V-SYNC	10	GND

B.10 LAN RJ45 Connector

The POS-8520 is equipped with two Gigabit Ethernet Controller RTL8110SC chipsets and two GbE LAN RJ-45 connectors.

CN31: Dual LAN RJ45 Connector

PIN	Description	PIN	Description
1	TX+ (or MDX0+)	5	N/C (or MDX2-)
2	TX- (or MDX0-)	6	RX- (or MDX1-)
3	RX+ (or MDX1+)	7	N/C (or MDX3+)
4	N/C (or MDX2+)	8	N/C (or MDX3-)
13	MDX0+	17	MDX2-
14	MDX0-	18	MDX1-
15	MDX1+	19	MDX3+
16	MDX2+	20	MDX3-

B.11 Fan Connector

The POS-8520 provides three CPU cooling and system fan connectors. The CPU cooling fan has a linear fan speed controlled by the BIOS. These connectors can supply 12V/500mA to the cooling fans.

FAN1: CPU Fan Connector

PIN	Description
1	GND
2	Linear control
3	Fan Sensor

FAN2: System Fan Connector

PIN	Description
1	GND
2	+12V
3	Fan Sensor

FAN3: System Fan Connector

PIN	Description
1	GND
2	+12V
3	Fan Sensor

B.12 Inverter (LCD Backlight) Connector

CN12: Inverter (LCD Backlight) Connector

PIN	Description	PIN	Description
1	NC	2	GND
3	+12V	4	GND
5	ENABKL		

B.13 LCD Panel LVDS Interface Connector

The POS-8520 provides up to 48-bit color TFT LCD.

CN30: DF13-30DP-1.25 LVDS Interface Connector

PIN	Description	PIN	Description
1	GND	2	GND
3	A0P	4	A0M
5	A1P	6	A1M
7	A2P	8	A2M
9	CLK1P	10	CLK1M
11	A3P	12	A3M
13	GND	14	GND
15	A4P	16	A4M
17	A5P	18	A5M
19	A6P	20	A6M
21	CLK2P	22	CLK2M
23	A7P	24	A7M
25	GND	26	GND
27	LCD_VDD	28	LCD_VDD
29	LCD_VDD	30	LCD_VDD

B.14 Audio Connectors

CN7: Audio CD IN (2.54mm)

PIN	Description	PIN	Description
1	CD IN_L	2	GND
3	GND	4	CD IN_R

CN2: Audio LINE OUT (2.54mm)

PIN	Description	PIN	Description
1	LINEOUT_L	2	GND
3	GND	4	LINE OUT_R

CN24: Audio Jack

Color	Description
RED	MIC IN
BLUE	LINE IN
GREEN	SPEAK OUT

B.15 Digital Input / Output

CN6: Digital Input / Output

PIN	Description	PIN	Description
1	GND	2	+5V
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

B.16 Compact Flash TYPE II Storage Card Socket

The POS-8520 configures Compact Flash TYPE II Storage Card in IDE Mode.

CF1: Compact Flash TYPE II Socket PIN Assignment

PIN	Description	PIN	Description
1	GROUND	26	CARD DETECT1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	OBLIGATORY TO PULL HIGH
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	OBLIGATORY TO PULL HIGH
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	CARD DETECT2	50	GROUND

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B.17 ATX Power Connector

PW2 is a 20-pin ATX power supply connector with the following pin assignments.

PW2: ATX Power Supply Connector

PIN	Description	PIN	Description
11	3.3V	1	3.3V
12	-12V	2	3.3V
13	GND	3	GND
14	PS-ON	4	+5V
15	GND	5	GND
16	GND	6	+5V
17	GND	7	GND
18	-5V	8	Power good
19	+5V	9	5VSB
20	+5V	10	+12V

B.18 ATX 12V Power Connector

This connector supports ATX power. Functions such as modem Ring on, wake-up LAN and soft power off are supported.

PW1: ATX-12V Power Connector

PIN	Description	PIN	Description
1	GND	2	GND
3	+12V	4	+12V

NOTE:

The power from PW1 should support at least a 6.5A current for the P4 CPU. If the power output is too low, the CPU may not function normally. Be sure the power from the power supply is sufficient, and don't share this power with other devices, such as hard disk etc. Use IEI's special ATX power connector cable for connection to a power supply if the power supply doesn't have a suitable ATX connector cable.

B.19 Internal Switches and Indicators

S2: Reset Switch

PIN	Description	PIN	Description
1	Reset	2	GND

B.20 Serial ATA Connector

The POS-8520 provides two Serial ATA (SATA) ports.

SATA1, SATA2: Serial ATA Connector

PIN	Description	PIN	Description
1	S_TXP	3	S_RXN
2	S_TXN	4	S_RXP

Appendix

C

BIOS Configuration Options

C.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 5**.

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Appendix

D

Software Drivers

D.1 Introduction

The touch panel controller enables analog resistive touch panels for four-wire, five-wire & eight-wire models. The controller directly communicates with the PC system through the touch panel communications interface. The controller design is superior in sensitivity, accuracy, and friendly operation. The touch panel driver emulates the left mouse button and the right mouse button functions.

The touch panel driver supports the following operating systems:

265 Microsoft Windows versions:
- o Microsoft Windows 95
- o Microsoft Windows 98
- o Microsoft Windows ME
- o Microsoft Windows 2000
- o Microsoft Windows NT
- o Microsoft Windows XP
- o Microsoft Windows XP Tablet PC Edition

266 Microsoft Windows CE versions:
- o Microsoft Windows CE 2.12
- o Microsoft Windows CE 3.0
- o Microsoft Windows CE. NET

267 Linux
268 IMac
269 DOS.

Driver installation is described below.

D.2 Driver Installation

To install the touch panel software driver, please follow the steps below.

Step 1: Insert the driver CD that came with the PPC-5170 into the CD drive.

Step 2: Once the CD drive is installed, the screen in **Figure D-1** appears.
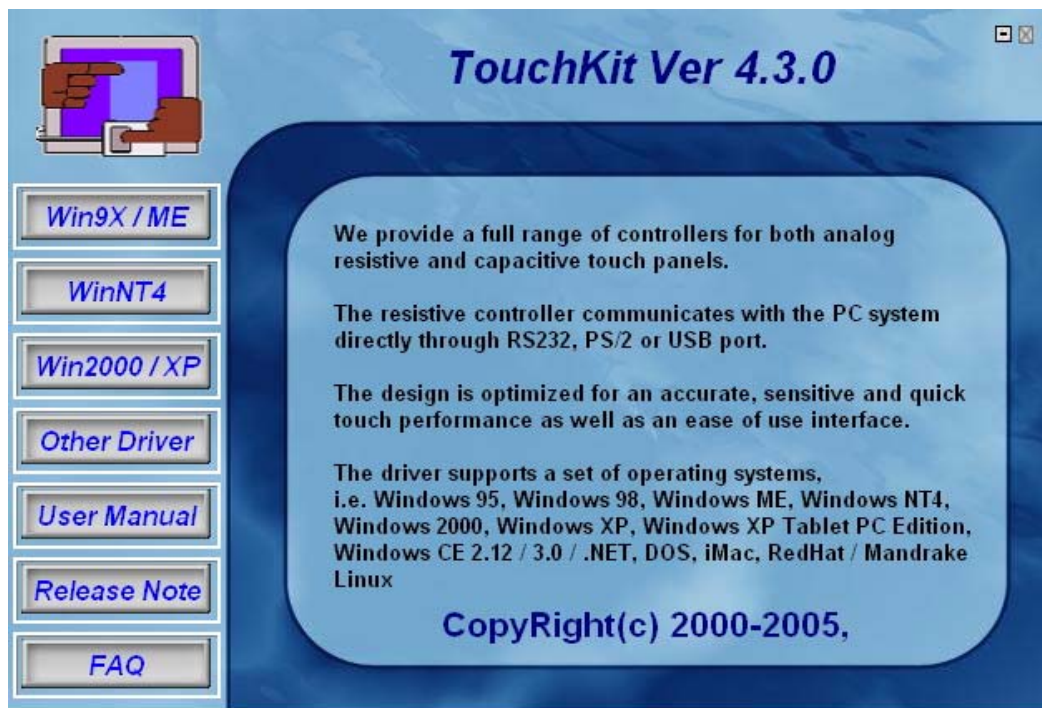
Figure D-1: Driver CD Pop Up Screen

Step 3: Select the operating system installed on the system from the menu on the left side of the screen.

 NOTE:

The following description is for driver installation using a Windows 2000 OS. If a different OS is installed, please refer to the driver user manual for the relevant OS. The driver user manuals can be accessed by selecting "User Manual" from the menu on the left side of the "Driver CD Pop Up Screen".

Step 4: Once the OS system is selected, the touch kit setup will prepare the install shield wizard (**Figure D-2**).
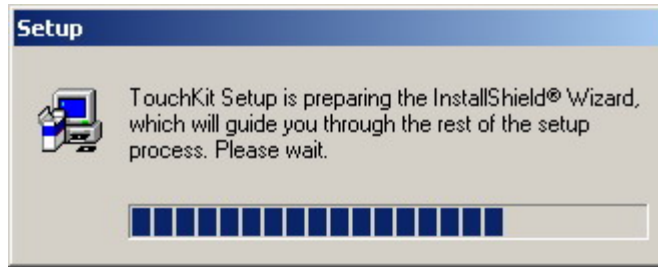
Figure D-2: Install Shield Wizard Preparation

Step 5: After the **Install Shield Wizard** is ready, a welcome screen appears (**Figure D-3**).
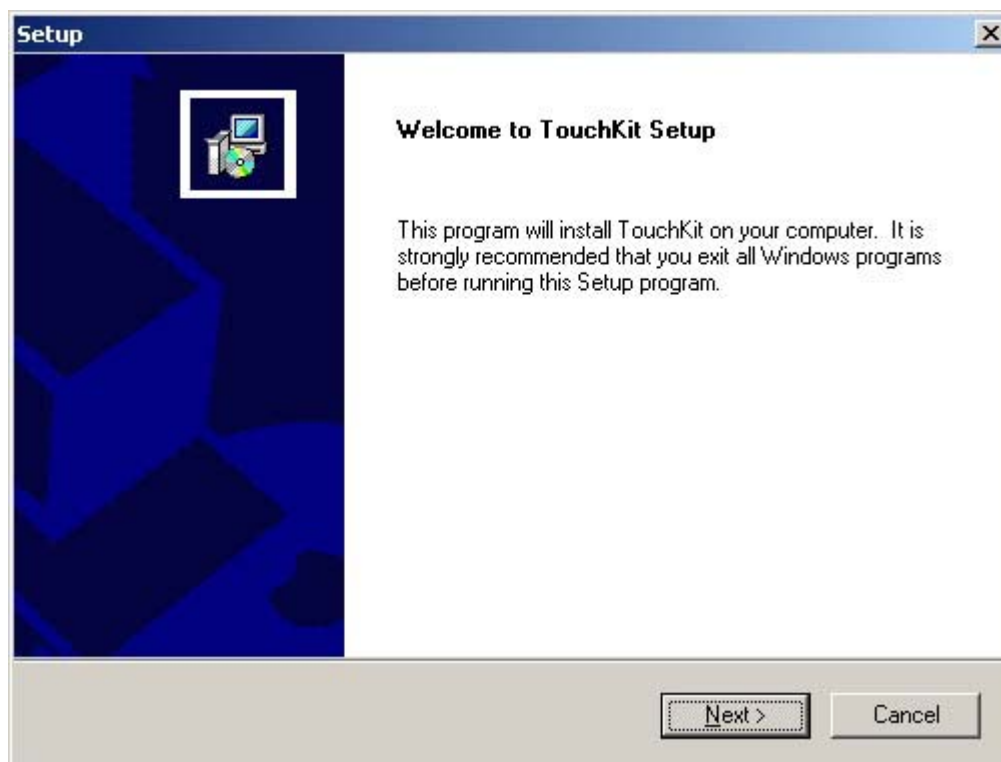
Figure D-3: Welcome Screen

Step 6: To continue the installation process click **NEXT**.

Step 7: An **Install PS/2 interface driver** screen appears (**Figure D-4**). It is not necessary to install the PS/2 interface driver. To continue click **NEXT**.
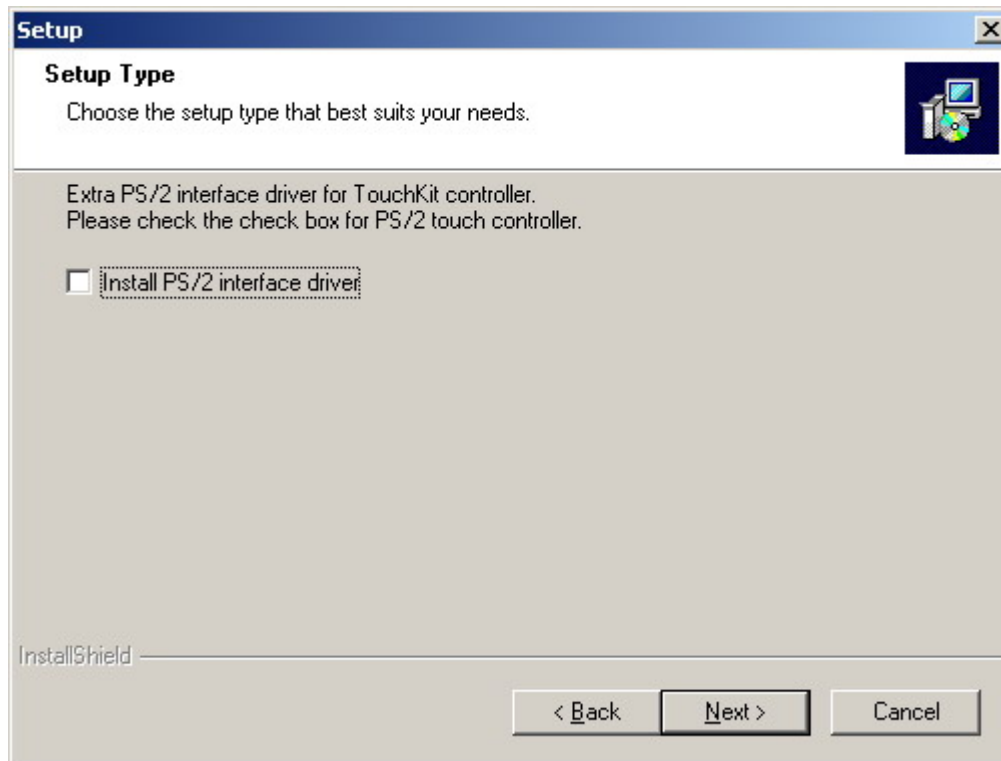
Figure D-4: Install PS/2 Interface Driver

Step 8: Four point calibration options are then selected. Four point calibrations can be

done every time a user boots up, during the next time the system boots or never.

Select when a four-point calibration should be done. Click **NEXT** to continue.
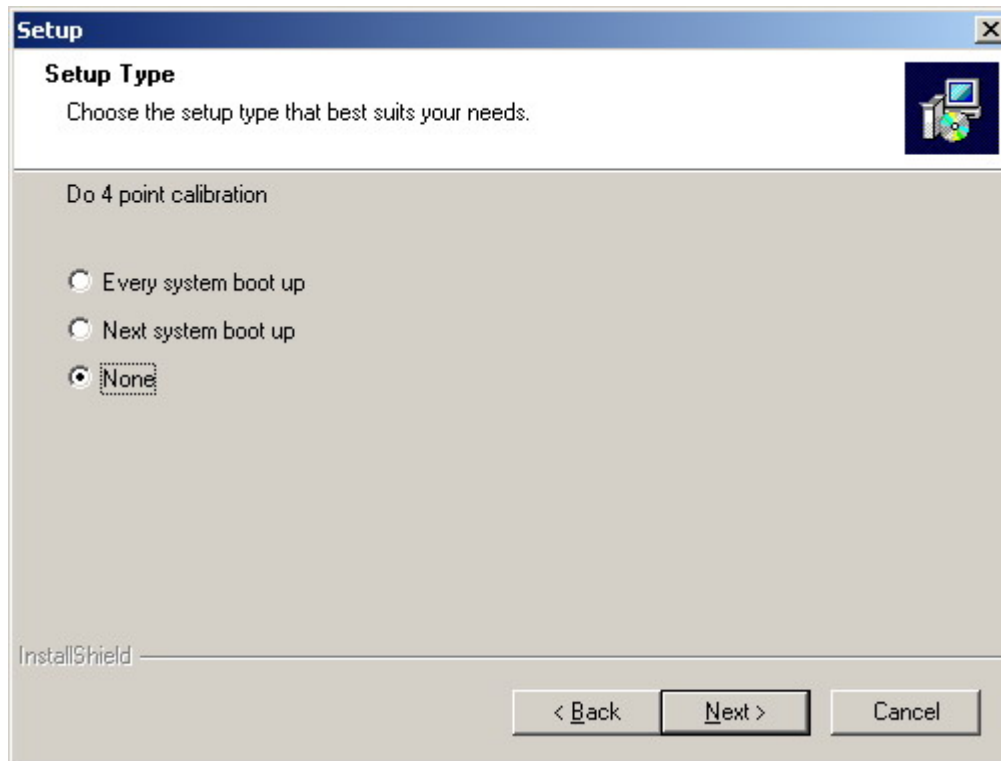
Figure D-5: Install PS/2 Interface Driver

Step 9: The user is then prompted to ensure the touch monitor or the USB for the touch controller is plugged into the system (**Figure D-6**). Once the touch controller is plugged into the system, click **OK**.

Figure D-6: Touch Monitor/USB Touch Controller Confirmation

Step 10: The user is then prompted to select a file directory in which the touch kit controller is installed (**Figure D-7**). The default directory is "**C:\Program Files\TouchKit**." If a different folder must be used, select browse and then select the folder. Once the folder is selected, click Next to continue.
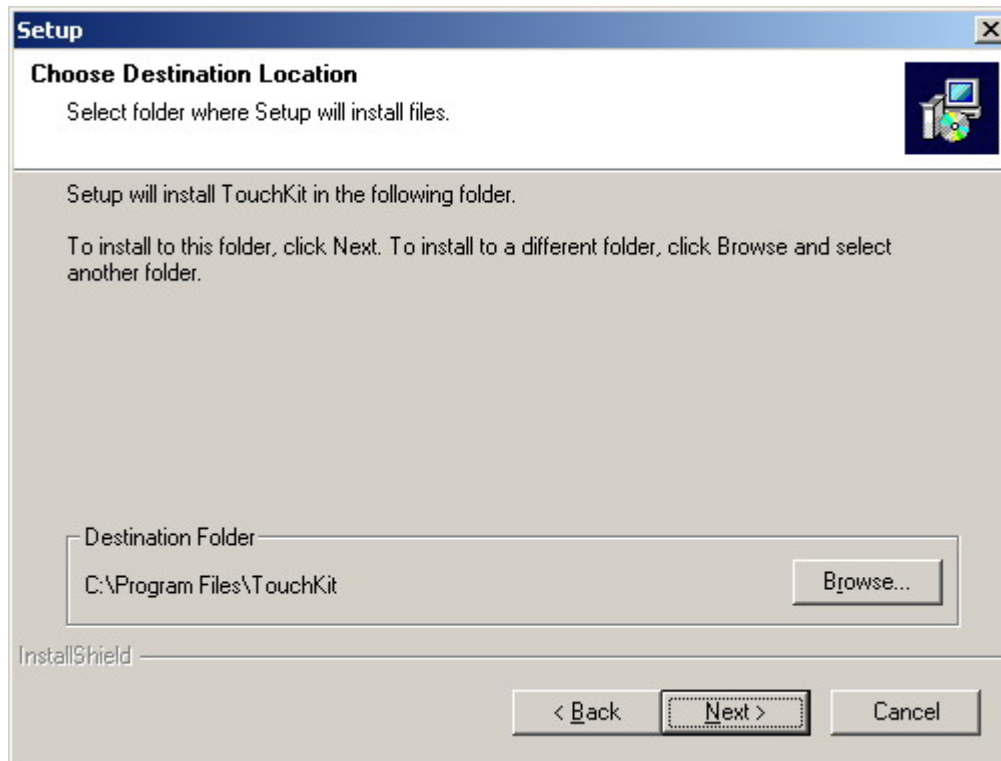
Figure D-7: Controller Installation Directory

Step 11: The user is then prompted to select a file directory in which the program icons

are saved (**Figure D-8**). The default folder is "TouchKit." If a different folder must

be used, select a folder from the list shown. Once the folder is selected, click

NEXT to continue.
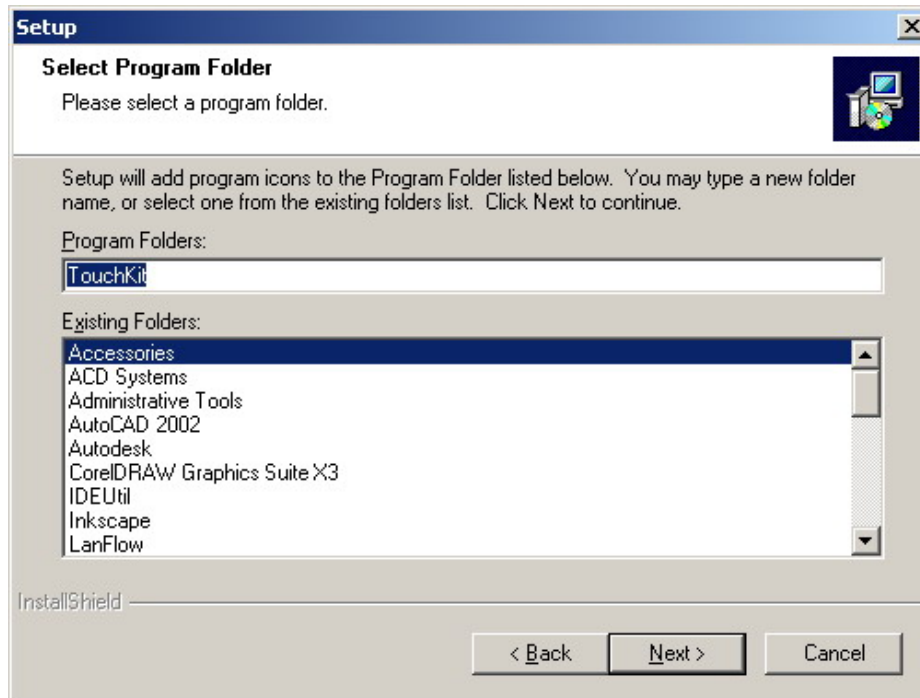
Figure D-8: Program Icon Directory

Step 12: The program then starts installing (**Figure D-9**).
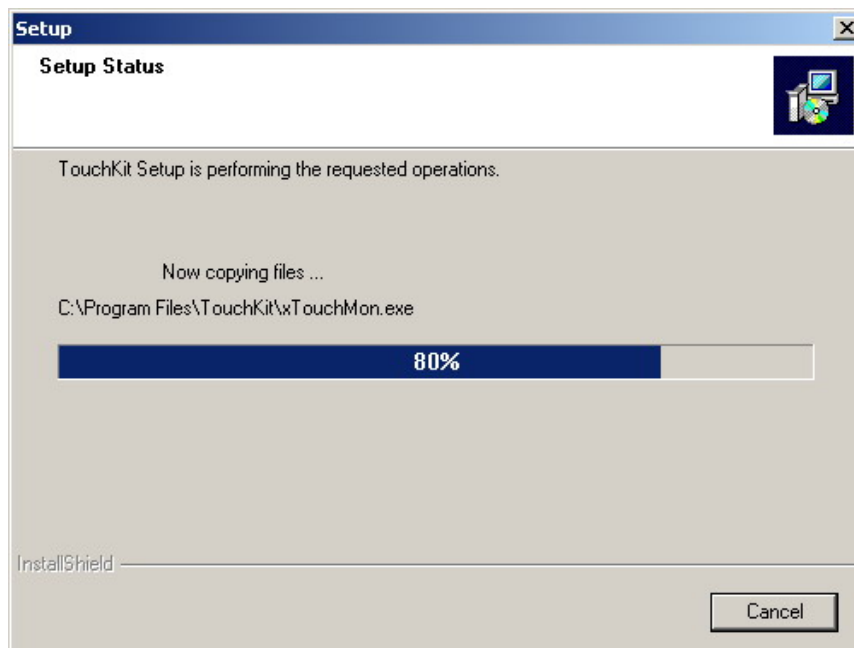
Figure D-9: Installing

Step 13: Once the program is finished installing, the user is prompted to restart the computer now or to restart the computer later (**Figure D-10**). Select when the computer should be restarted and click **FINISH** to complete the driver installation procedure.

Figure D-10: Installation Complete

D.3 Touch Panel Driver Configuration

To configure the touch panel driver options, refer to the TouchKit user manual located on the driver installation CD.

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