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User's Manual

Single Board Computer 3307840

Version 1.0, August 2007

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Manual Conventions

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. The text is the warning message. A warning message is shown below:

WARNING:

This is an example of a warning message. Failure to adhere to warning messages may result in permanent damage to the 3307840 or personal injury to the user. Please take warning messages seriously.

CAUTION!

Cautionary messages should also be heeded to help reduce the chance of losing data or damaging the 3307840. Cautions are easy to recognize. The word "caution" is written as "**CAUTION**," both capitalized and bold and is followed. The italicized text is the cautionary message. A caution message is shown below:

CAUTION:

> This is an example of a caution message. Failure to adhere to cautions messages may result in permanent damage to the 3307840. Please take caution messages seriously.

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 help avoid making mistakes. Notes are easy to recognize. The word "note" is written as "**NOTE**," both capitalized and bold and is followed by text. The text is the cautionary message. A note message is shown below:

NOTE:

> This is an example of a note message. Notes should always be read. Notes contain critical information about the 3307840. Please take note messages seriously.

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Packing List

NOTE:

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the GLOBAL AMERICAN reseller or vendor you purchased the 3307840 from or contact a Global American sales representative directly. To contact a Global American sales representative, please send an email to salesinfo@globalamericaninc.com.

The items listed below should all be included in the 3307840 package.

- 1 x 3307840 single board computer
- 1 x IDE cable
- 1 x PS/2 Keyboard and mouse Y-cable
- 1 x Keyboard and mouse cable with Mini DIN
- 2 x SATA power cables
- 4 x SATA cables
- 1 x Dual RS-232 cable
- 1 x USB cable
- 1 x Mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

Images of the above items are shown in **Chapter 3**.

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3307840 PICMG 1.3 CPU Card

Glossary

AC '97	Audio Codec 97		HDD	Hard Disk Drive
ACPI	Advanced Configuration and Power Interface		IDE	Integrated Data Electronics
			I/O	Input/Output
APM	Advanced Power Management		ICH4	I/O Controller Hub 4
ARMD	ATAPI Removable Media Device		L1 Cache	Level 1 Cache
ASKIR	Shift Keyed Infrared		L2 Cache	Level 2 Cache
ATA	Advanced Technology Attachments		LCD	Liquid Crystal Display
			LPT	Parallel Port Connector
BIOS	Basic Input/Output System		LVDS	Low Voltage Differential Signaling
CFII	Compact Flash Type 2		MAC	Media Access Controller
CMOS	Complementary Metal Oxide Semiconductor		OS	Operating System
			PCI	Peripheral Connect Interface
CPU	Central Processing Unit		PIO	Programmed Input Output
Codec	Compressor/Decompressor		PnP	Plug and Play
COM	Serial Port		POST	Power On Self Test
DAC	Digital to Analog Converter		RAM	Random Access Memory
DDR	Double Data Rate		SATA	Serial ATA
DIMM	Dual Inline Memory Module		S.M.A.R.T	Self Monitoring Analysis and Reporting Technology
DIO	Digital Input/Output			
DMA	Direct Memory Access		SPD	Serial Presence Detect
EIDE	Enhanced IDE		S/PDI	Sony/Philips Digital Interface
EIST	Enhanced Intel® SpeedStep Technology		SDRAM	Synchronous Dynamic Random Access Memory
FDD	Floppy Disk Drive		SIR	Serial Infrared
FDC	Floppy Disk Connector		UART	Universal Asynchronous Receiver-transmitter
FFIO	Flexible File Input/Output			
FIFO	First In/First Out		USB	Universal Serial Bus
FSB	Front Side Bus		VGA	Video Graphics Adapter
IrDA	Infrared Data Association			

Chapter

1
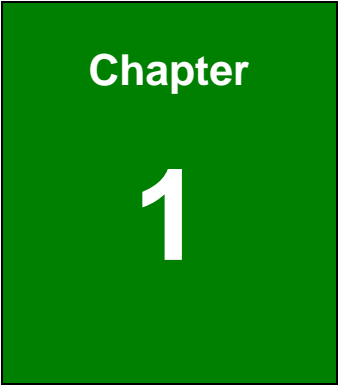
Introduction

1.1 Overview
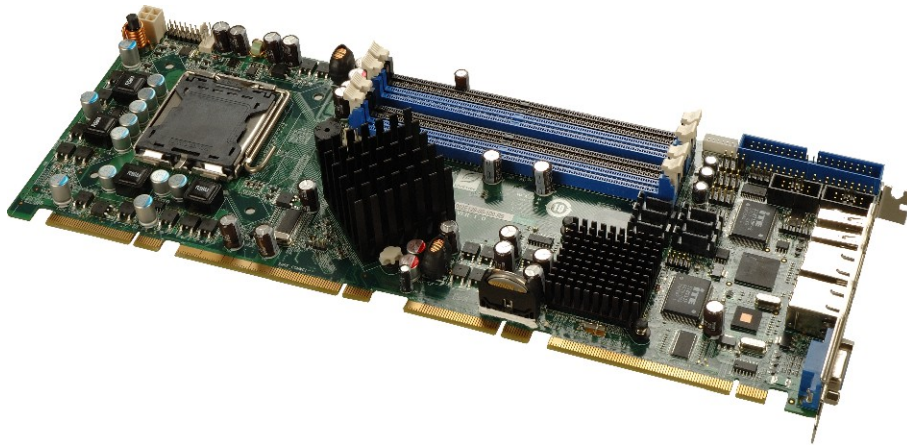
Figure 1-1: 3307840 PICMG 1.3 CPU Card

The 3307840 PICMG 1.3 form factor CPU card (**Figure 1-1**) is an LGA775 Intel® Core™2 Quad, Intel® Core™2 Duo or Intel® Celeron CPU processor platform. Both 45nm core (Wolfdale, Yorkfield) and 65nm core (Conroe) processors are supported. (For a full list of supported processors please refer to **Section 2.3**)

Up to four 2.0 GB 667 MHz or 800 MHz un-buffered DDR2 SDRAM DIMM are supported by the Mobile Intel® Q35 graphics memory controller hub (GMCH). The Intel® Q35 GMCH also has a single PCI Express x16 (PCIe x16) expansion lane for a PCIe x16 graphics card on the backplane.

The integrated Intel® ICH9DO I/O controller hub (ICH) supports six SATA II drives with data transfer speeds of 3.0 Gbps with SATA RAID configuration support. Twelve USB 2.0 channels, four expansion PCIe x1 channels and four expansion PCI channels provide flexible expansion options. Support for a (optional) trusted platform module (TPM) provides additional system security during system boot-up. High Definition Audio (HDA) support ensures an HDA audio kit can be easily implemented on the 3307840.

1.1.1 3307840 Expansion Options

The 3307840 PICMG 1.3 form CPU card has the following backplane expansion options:

- 1 x PCIe x16 graphics card
- 4 x PCIe x1 expansion cards
- 4 x PCI expansion cards

1.1.2 3307840 Features

Some of the 3307840 features are listed below.

- Supports the following Intel® LGA775 processors:
  - Intel® Core™2 Duo (45nm and 65nm)
  - Intel® Core™2 Quad (45nm and 65nm)
  - Intel® Celeron (65nm)
- Supports four 240-pin 2GB 667MHz or 800 MHz DDR2 DIMMs
- Six SATA II drives with transfer rates of 3.0 Gbps supported
- Two Ultra ATA 133, Ultra ATA 100, Ultra ATA 66 or Ultra ATA 33 IDE HDDs supported
- Twelve USB 2.0 devices supported (eight onboard and four on the backplane)
- Dual GbE Ethernet connectors
- PICMG 1.3 form factor
- RoHS compliant
- Supports ATX power supplies

1.2 3307840 Overview

1.2.1 3307840 Overview Photo

The 3307840 has a wide variety of peripheral interface connectors. **Figure 1-2** is a labeled photo of the peripheral interface connectors on the 3307840.
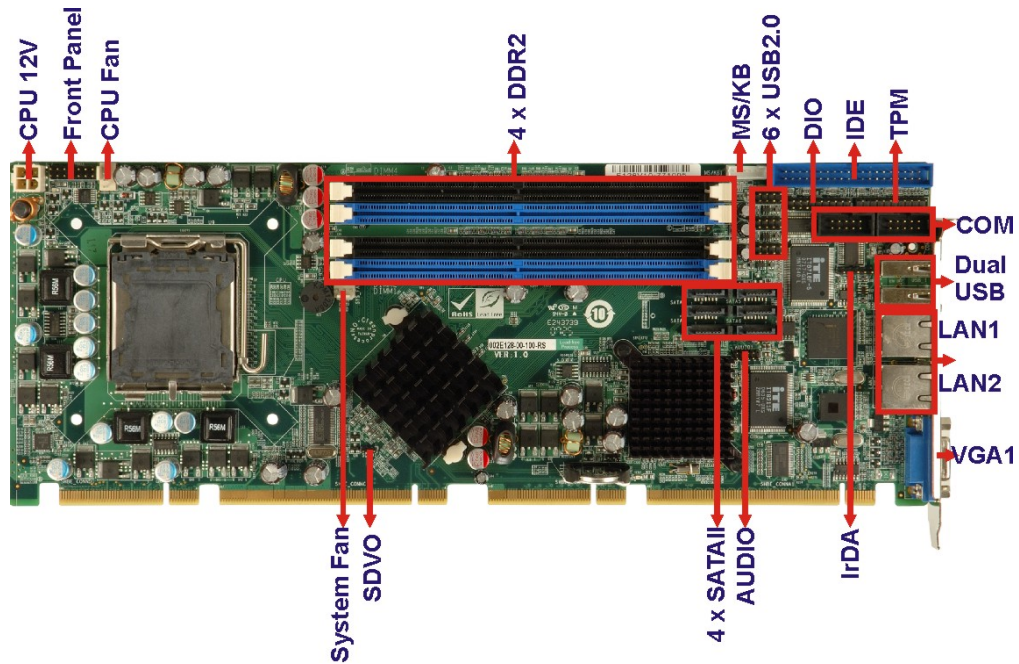
Figure 1-2: 3307840 Overview [Front View]

1.2.2 3307840 Peripheral Connectors and Jumpers

The 3307840 has the following connectors on-board:

- 1 x ATX power connector
- 1 x Audio connector
- 1 x Digital input/output (DIO) connector
- 2 x Fan connectors
- 1 x Front panel connector
- 1 x IDE disk drive connector
- 1 x Infrared interface connector
- 1 x Keyboard/mouse connector
- 6 x Serial ATA II (SATA II) drive connectors
- 2 x Serial port connectors
- 1 x TPM connector
- 1 x SDVO control connector
- 3 x USB 2.0 connectors

The 3307840 has the following external peripheral interface connectors on the board rear panel.

- 2 x RJ-45 Ethernet connectors
- 2 x USB 2.0 connectors
- 1 x VGA connector

The 3307840 has the following on-board jumpers:

- Clear CMOS

1.2.3 Technical Specifications

3307840 technical specifications are listed in **Table 1-1**. See **Chapter 2** for details.

Specification	3307840
Form Factor	PICMG 1.3
System CPU	LGA775 Intel® Core™2 Quad LGA775 Intel® Core™2 Duo LGA775 Intel® Celeron
Front Side Bus (FSB)	800 MHz, 1066 MHz or 1333 MHz
System Chipset	**Northbridge**: Intel® Q35 Express Chipset **Southbridge**: Intel® ICH9DO
Memory	Four 240-pin DDR2 DIMM sockets support four single-channel or dual-channel 2.0 GB 667 MHz or 800 MHz DDR2 DIMMs
Super I/O	ITE IT8718F Rev. G
Display	Analog VGA display through external DB-15 connector
BIOS	AMI BIOS label SPI EEPROM 8.0 MB

3307840 PICMG 1.3 CPU Card

Audio	10-pin header 7.1 channel HD audio kit with RealTek ALC883 codec and dual audio streams supported
LAN	One Intel® 82566DM (PHY) and Intel® ICH9DO (MAC) One PCIe x1 Intel® 82573L (MAC and PHY)
COM	Two RS-232 serial ports through onboard pin-headers
USB2.0	Twelve USB 2.0 devices supported: ■ Six by onboard pin-headers ■ Two by external connectors ■ Four through the backplane
IDE	One 40-pin IDE connector connects to two Ultra ATA33/66/100/133 devices
SATA	Six 3.0Gb/s SATA II drives supported
SATA RAID Levels	RAID 0, RAID 1, RAID 5 and RAID 10
Keyboard/mouse	By pin-header through the ITE IT8718F super I/O
Digital I/O	One16-bit digital input/output connector; 8-bit input/8-bit output through the ITE IT8718F super I/O
Watchdog Timer	Software programmable 1-255 sec. through the ITE IT8718F super I/O
Infrared	One IrDA connector through the ITE IT8718F super I/O. Supports: ■ Serial Infrared (SIR) ■ Amplitude Shift Keyed IR (ASKIR)
Power Supply	**Onboard:** 4-pin 12V ATX power connector **Backplane:** 24-pin ATX power on PICMG 1.3 backplane
TPM	Supports TPM v1.2 with 20-pin onboard pin-header

Fan Connector	Three pin system fan pin-header Four pin CPU fan pin-header
Buzzer	Yes
Power Consumption	3.3V@3A, 5V@5.1A, +12V@4.23A and 5VSB@0.28A (2.66 GHz E6700 Intel® Core™2 Duo CPU with a 1066MHz FSB and four 2.0 GB, 667 MHz DDR2 DIMM running 2Dmark® 2001 SE 330)
Temperature	0ºC – 60ºC (32ºF - 140ºF)
Humidity (operating)	5%~95% non-condensing
Dimensions (LxW)	338.58mm x 126.39mm
Weight (GW)	1.1Kg

Table 1-1: Technical Specifications

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Chapter

2
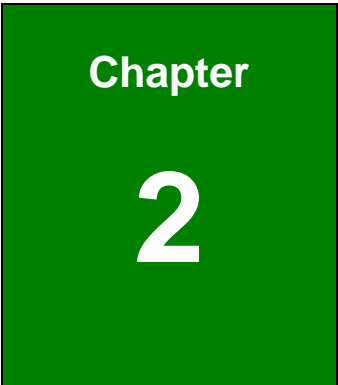
Detailed Specifications

2.1 Dimensions

2.1.1 Board Dimensions

The dimensions of the board are listed below:

- **Length**:   338.58mm
- **Width**:   126.39mm
-
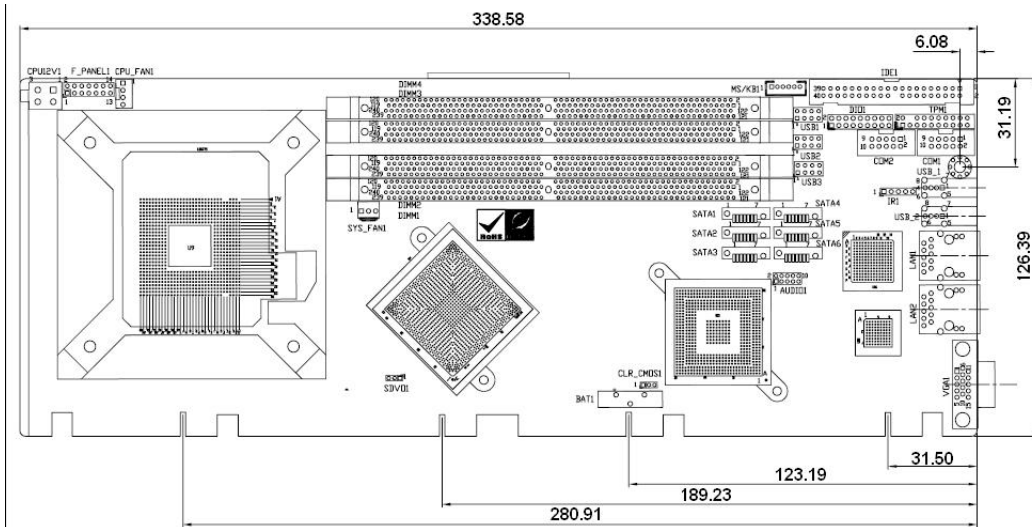
Figure 2-1: 3307840 Dimensions (mm)

2.1.2 External Interface Panel Dimensions

External peripheral interface connector panel dimensions are shown in **Figure 2-2**.
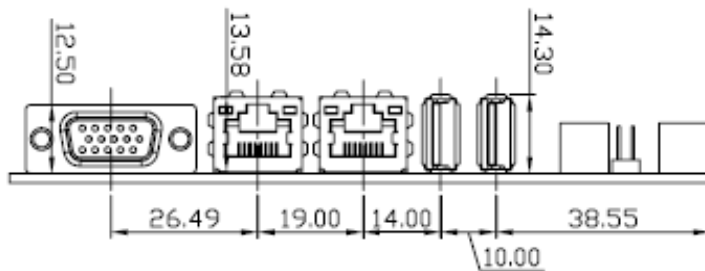
Figure 2-2: External Interface Panel Dimensions (mm)

2.2 Data Flow

Figure 2-3 shows the data flow between the two on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.

PCIE-Q350-R10

- Intel Core2 Duo / Intel Core2 Quad — 800/1066/1333MHz — Mobile Intel Q35 Chipset
- SDVO Connector — SDVO
- Analog CRT DB-15 — VGA
- PCIe — 1 x PCIe x16
- 667/800 MHZ — 4 x DDR2 DIMM
- DMI
- USB1,2 External
- USB3,4,5,6,7,8 Pin Header
- USB10,11,12 Extend to Backplane
- IDE — PATA — IT8211 — PCI
- SPI ROM — SPI
- SATAII
- TPM
- Mobile Intel Q35 Chipset
- GLCI — Intel 82566 DM PHY — RJ-45
- PCI Express — Intel 82573L MAC+PHY — RJ-45
- HDA — HD Audio
- PCIe — 4 x PCIe x1
- PCI — 2 x PCI
- PCI — PCI Arbiter (ITE IT8209) — 2 x PCI
- LPC
- IrDA
- PWM CPU Fan
- PWM SYS Fan
- ITE8718F LPC I/O
- WDT
- COM1,2
- KB/MS — 1 x 6 Pin Header
- 16 Bit Digital IO

Figure 2-3: Data Flow Block Diagram

2.3 Compatible Processors

2.3.1 Supported Processors Overview

The 3307840 supports the following Intel® LGA775 processors

- Intel® Core™2 Quad (Yorkfield)
- Intel® Core™2 Duo (Wolfdale)
- Intel® Core™2 Duo (Conroe-2M)
- Intel® Celeron (Conroe L)

2.3.2 Supported Intel® Core™2 Quad (Yorkfield) Processors

The Yorkfield core Intel® Core™2 Quad CPU is a 45nm LGA775 processor.

NOTE:

As of the date of writing this manual (August, 2007), Intel® has not released Intel® Core™2 Quad (Yorkfield) processor numbers that are supported by the Intel® Northbridge. As soon as processor numbers are released, the manual will be updated.

For further details about supported Intel® Core™2 Quad (Yorkfield) processors, please contact Intel® directly.

2.3.3 Supported Intel® Core™2 Duo (Wolfdale) Processors

The Wolfdale core Intel® Core™2 Duo CPU is a 45nm LGA775 processor.

NOTE:

As of the date of writing this manual (August, 2007), Intel® has not released Wolfdale core Intel® Core™2 Duo processor numbers that are supported by the Intel® Q35 Northbridge. As soon as processor numbers are released, the manual will be updated.

For further details about supported Intel® Core™2 Duo (Yorkfield) processors, please contact Intel® directly.

2.3.4 Supported Intel® Core™2 Duo (Conroe-2M) Processors

Table 2-1 lists the Conroe-2M core Intel® Core™2 Duo processors supported on the 3307840. All the processors in Table 2-1 are 65nm LGA775 processors with the following features:

- Enhanced Halt State (C1E)
- Enhance Intel® Speedstep® Technology
- Execute Disable Bit
- Intel® EM64T
- Intel® Thermal Monitor 2
- Intel® Virtualization Technology (**Only on E6400**)
- Intel® Dual Core Technology

Processor #	CPU Speed	FSB Speed	Cache Size
E6400	2.13 GHz	1066 MHz	2 MB
E4300	1.80 GHz	800 MHz	2 MB

Table 2-1: Supported Intel® Core™2 Duo (Conroe) Processors

2.3.5 Supported Intel® Celeron (Conroe L) Processors

Table 2-1 lists the Conroe L core Intel® Celeron processors supported on the 3307840. All the processors in Table 2-1 are 65nm LGA775 processors with the following features:

- Execute Disable Bit

Processor #	CPU Speed	FSB Speed	Cache Size
440	1.86 GHz	533 MHz	1 MB

Table 2-2: Supported Intel® Core™2 Duo (Conroe) Processors

2.4 Intel® Q35 Northbridge Chipset

2.4.1 Intel® Q35 Northbridge Chipset

The Intel® Q35 Northbridge chipset is an advanced Graphics and Memory Controller Hub (GMCH) that supports a range of Intel® processors including 45nm Wolfdale dual core and Yorkfield quad core and 65nm Conroe core processors. The Intel® Q35 Northbridge supports 1333 MHz, 1066 MHz, or 800 MHz FSB and up to 8.0 GB of 667 MHz or 800 MHz DDR2 SDRAM. The Intel® Q35 Northbridge is interfaced to an Intel® ICH9DO Southbridge chipset through a Direct Media Interface (DMI) communications link.

2.4.2 Intel® Q35 Front Side Bus (FSB) Support

The Intel® Q35 Northbridge supports processors with the following FSB speeds:

- 800 MHz
- 1066 MHz

- 1333 MHz

The LGA775 socket, Intel® Q35 Northbridge and the FSB are shown in **Figure 2-4**.
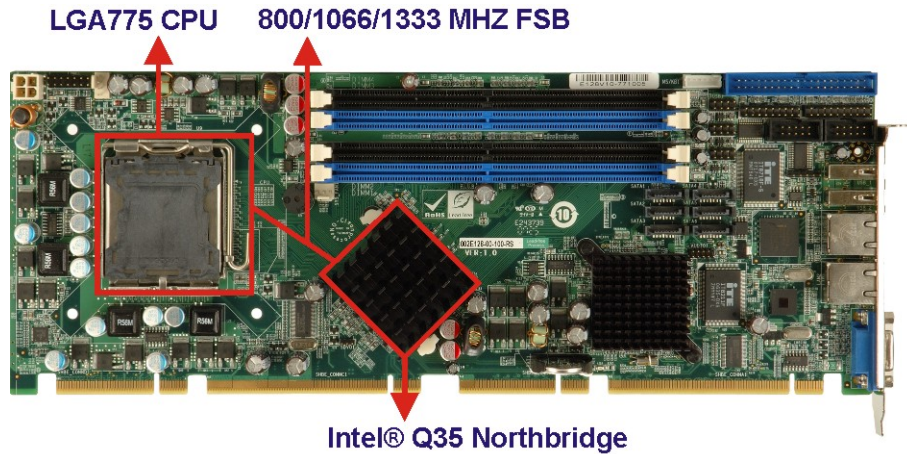
Figure 2-4: Front Side Bus (FSB)

2.4.3 Intel® Q35 Memory Controller

The memory controller on the Intel® Q35 Northbridge can support up to 8.0 GB of DDR2 SDRAM. Four DDR2 SDRAM DIMM sockets on the 3307840 are interfaced to the Intel® Q35 Northbridge memory controller. The DDR2 sockets are shown in **Figure 2-5.**
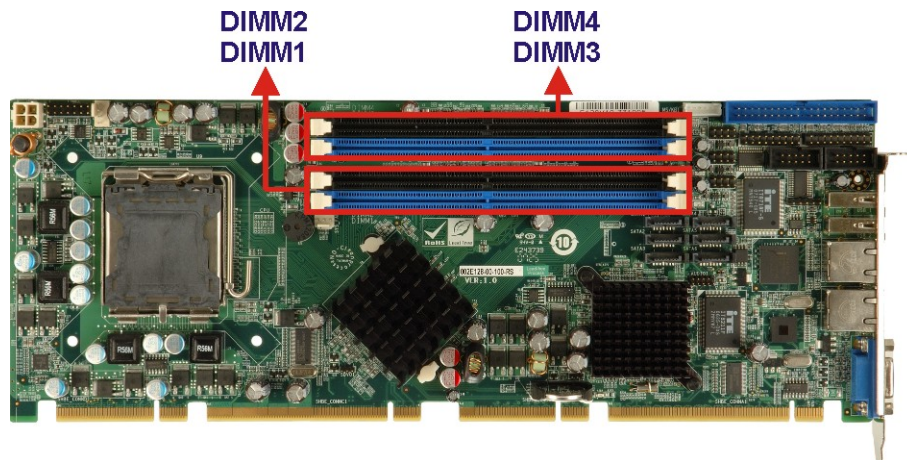
Figure 2-5: DDR2 DIMM Sockets

> ⚠️ **CAUTION:**
>
> If more than one DDR2 DIMM is being installed in the system, please purchase two DIMM that have the same capacity and operating frequency.

Each DIMM socket can support DIMMs with the following specifications:

- DDR2 only
- Un-buffered only
- 667 MHz or 800 MHz
- 2.0 GB maximum capacity per DIMM (8.0 GB supported with four DIMM)
- Memory bandwidth:
  - 6.4 GBps in single-channel or dual-channel asymmetric mode
  - 12.8 GBps in dual-channel interleaved mode assuming DDR2 800MHz

2.4.4 Intel® Q35 PCIe x16 Interface

The Intel® Q35 PCIe bus is compliant with the PCI Express 1.1a Specifications has the following PCIe lanes:

- One PCIe x16 graphics interface
- PCIe frequency of 1.25 GHz (2.5 Gbps in each direction)

For further details on the PCIe interfaces, please refer to **Section 2.6.2** on **page 30**.

2.4.5 Intel® Q35 Graphics and Display Features

NOTE:

The Intel® Q35 Graphics and Display Features can be configured in the Northbridge BIOS configuration screen. Please refer to **Section** Error! Reference source not found. on **page** Error! Bookmark not defined..

The Intel® Q35 GMCH integrated graphics device (IGD) has 3D, 2D and video capabilities. The Unified Memory Architecture (UMA) uses up to 256 MB of Dynamic Video Memory Technology (DVMT) for graphics memory. External graphics accelerators on the PCIe graphics (PEG) port are supported but cannot work simultaneously with the IGD.

2.4.6 Intel® Q35 SDVO and Analog Display Features

The Intel® Q35 GMCH provides access to:

- A progressive scan analog monitor
- An SDVO monitor

2.4.6.1 Intel® Q35 SDVO Capabilities

A Serial Digital Video Output (SDVO) communications bus is multiplexed to eight of the sixteen PCIe ports on the Intel® Q35. The SDVO interface provides 1.0 MHz point-to-point connectivity between the Intel® 35 and an SDVO device. The 3307840 provides support for a single SDVO device on a compatible GLOBAL AMERICAN backplane. The SDVO device is installed in the PCIe x16 expansion slot and the SDVO function enabled by connecting a 3-pin SDVO control connector on the 3307840 to a corresponding control connector on the GLOBAL AMERICAN backplane. The SDVO control connector on the 3307840 is shown in **Figure 2-6**.
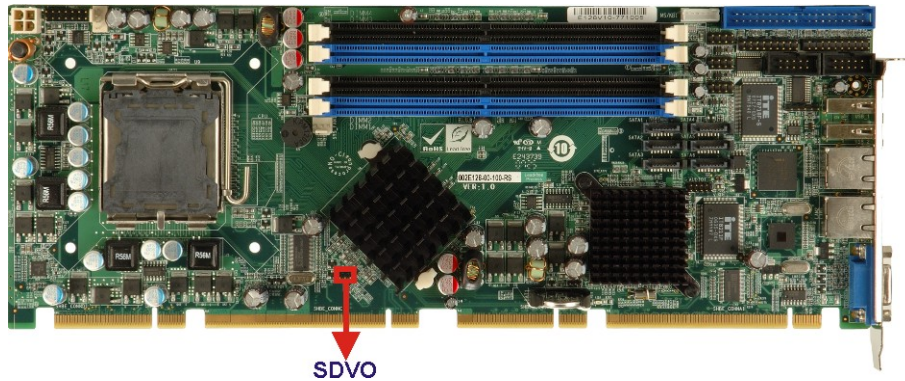
Figure 2-6: SDVO Connector

Some of the capabilities of the Intel® Q35 SDVO port are listed below:

- Multiplexed with the PCIe x16 graphics port signals
- Drives pixel clocks up to 270 MHz
- Supports a single-channel SDVO device.
- Digital display channels can drive a variety of SDVO devices including
  - TMDS
  - TV-Out
- Only works with the IGD
- 3x3 Built In full panel scalar
- 180 degree Hardware screen rotation
- 270 MHz dot clock on each 12-bit interface
- Supports flat panels up to 2048 x 1536 @ 60 Hz or digital CRT/HDTV at 1920 x1080 @ 85 Hz
- Supports Hot-Plug and Display
- Supports TMDS transmitters or TV-out encoders
- ADD2/Media Expansion card that use the PCIe graphics x16 connector

2.4.6.2 Intel® Q35 Analog Display Capabilities

A single external female DB-15 (VGA) connector interfaces an analog display to an analog CRT port on the Intel® Q35 GMCH. The VGA connector is shown in **Figure 2-7**.
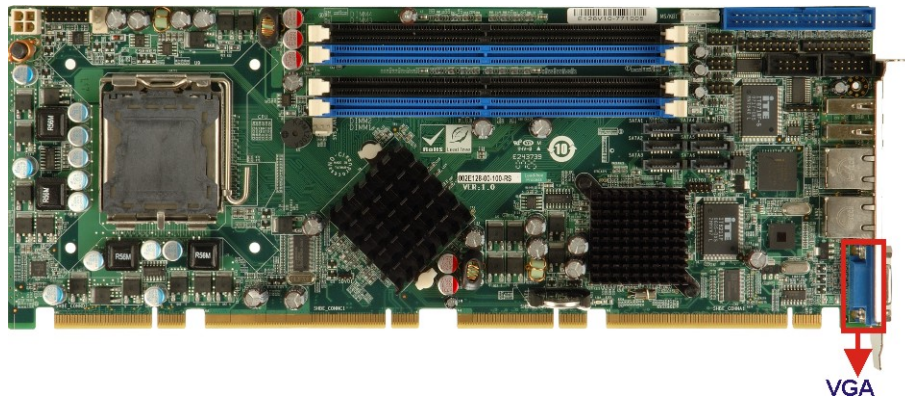
Figure 2-7: VGA Connector

Some of the capabilities of the Intel® Q35 analog CRT port are listed below:

- 400 MHz Integrated 24-bit RAMDAC
- Up to 2048x1536 @ 75 Hz refresh
- Hardware Color Cursor Support
- DDC2B Compliant Interface

2.4.7 Intel® Q35 Direct Media Interface (DMI)

The Direct Media Interface (DMI) is the communication bus between the Intel® Q35 GMCH and the ICH9DO I/O controller hub (ICH). The DMI is a high-speed interface that integrates advanced priority-based servicing and allows for concurrent traffic and true isochronous transfer capabilities. The DMI is shown in **Figure 2-8**.
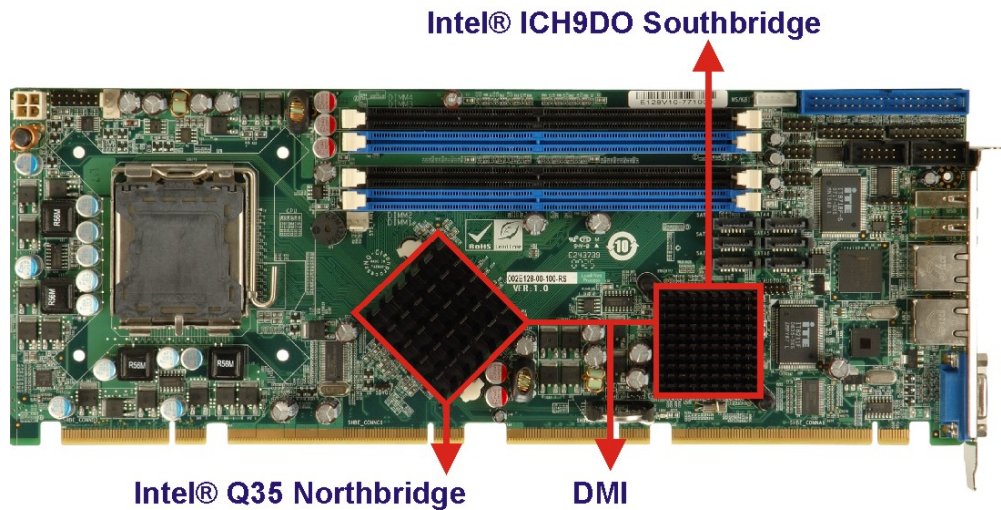
Figure 2-8: DMI Chip-to-Chip Connection

Some of the features of the DMI include:

- 2.0 GBps point-to-point DMI to ICH9DO (1.0 GBps in each direction)
- 100 MHz reference clock (shared with PCI Express* Graphics Attach)
- 32-bit downstream addressing
- APIC and MSI interrupt messaging support
- Message Signaled Interrupt (MSI) messages
- SMI, SCI and SERR error indication

2.5 Intel® ICH9DO Southbridge Chipset

2.5.1 Intel® ICH9DO Overview

Intel® ICH9DO Southbridge is an advanced I/O controller hub (ICH) connected to the Intel® Q35 Northbridge through a DMI connection. The Intel® ICH9DO has six PCIe x1 ports, supports up to twelve USB 2.0 devices, six 3.0 Gbps SATA II drives with Intel® Matrix Storage Technology (ACHI, RAID 0, RAID 1, RAID 5 or RAID 10), and comes with an integrated GbE controller that is interfaced to an external RJ-45 connector. A High-Definition audio (HDA) controller can be connected to an HDA codec on an optional audio kit. Four PCI Masters provide PCI expansion capabilities on a compatible PICMG 1.3 backplane.

2.5.2 Intel® ICH9DO Features

The ICH9DO Southbridge chipset on the 3307840 has the features listed below.

- Complies with PCI Express Base Specification, Revision 11
- Complies with PCI Local Bus Specification, Revision 2.3 and supports 33MHz PCI operations
- Supports ACPI Power Management Logic
- Contains:
  - Enhanced DMA controller
  - Interrupt controller
  - Timer functions
- Integrated SATA host controller with DMA operations on six ports with data transfer rates up to 1.5 Gbps
- Supports twelve USB 2.0 devices with six UHCI controllers and two EHCI controller
- Complies with System Management Bus (SMBus) Specification, Version 2.0
- Supports Intel® High Definition Audio
- Supports Intel® Matrix storage technology
- Contains Low Pin Count (LPC) interface
- Supports Firmware Hub (FWH) interface
- Serial Peripheral Interface (SPI) for Serial and Shared Flash
- Intel® Quiet System technology

2.5.3 Intel® ICH9DO High Definition Audio Implementation

NOTE:

The GLOBAL AMERICAN® 1007760 audio kit is optional. If a Global American® 1007760 audio kit is required please contact the vendor or reseller the 3307840 was purchased from or contact and GLOBAL AMERICAN® sales representative directly by sending an email to salesinfo@globalamericaninc.com.

A RealTek ALC883 7.1+2 channel High Definition Audio (HDA) codec on an optional GLOBAL AMERICAN® 1007760 audio kit is connected to a 10-pin onboard audio connector that is interfaced through the Intel® High Definition Audio serial link to the HDA controller integrated on the Intel® ICH9DO. The audio connector is shown in **Figure 2-9**.
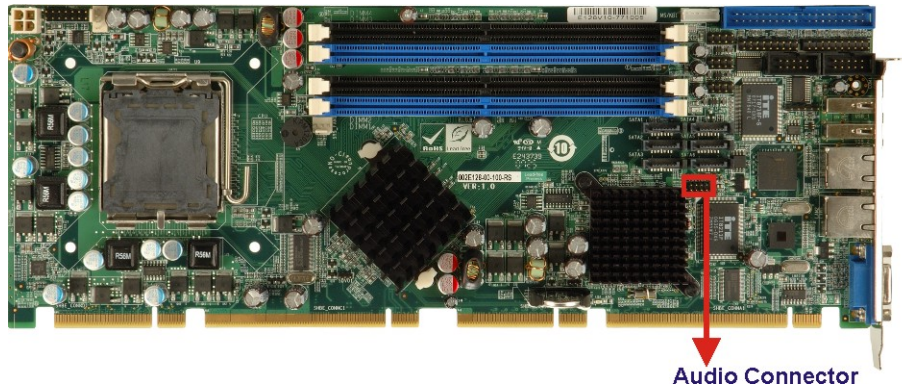
Audio Connector

Figure 2-9: Audio Connector

![NOTE icon] **NOTE:**

If an HDA audio kit is going to be installed on the backplane, the HDA controller must be enabled in the BIOS settings. To enable the HDA controller please refer to **Section** Error! Reference source not found. (the Error! Reference source not found. menu) on **page** Error! Bookmark not defined..

The ALC883 codec provides 10 DAC channels that simultaneously support 7.1 sound playback, plus two channels of independent stereo sound output (multiple streaming) through the front panel stereo output. Flexible mixing, mute, and fine gain control functions provide a complete integrated audio solution for home entertainment PCs. For more information please refer to the GLOBAL AMERICAN® 1007760 audio kit user manual (AC-KIT-883HD_UMN_v1.0).

2.5.4 Intel® ICH9DO Ethernet Controller

NOTE:

Gigabit Ethernet (1000 Mbps) is only supported in S0.

The Intel® ICH9DO Southbridge integrated GbE controller is interfaced to an Intel® 82566DM Gigabit LAN connect device through the Gigabit LAN Connect Interface (GLCI). The GLCI is shared with the PCIe x1 port 6. The Intel® 82566DM connects the Intel® ICH9DO Southbridge integrated GbE controller to an external RJ-45 Ethernet LAN connector to provide GbE access.

NOTE:

To enable the Intel® ICH9DO GbE Wake-on LAN function, the Wake-on LAN function must be enabled in the BIOS. Please refer to **Section** Error! Reference source not found. (the Error! Reference source not found. menu) on **page** Error! Bookmark not defined..

Some of the features of the Intel® ICH9DO GbE controller are listed below.

- Supports multi speeds including 10 Mbps, 100 Mbps and 1000 Mbps
- Can operate in full-duplex mode at all supported speeds
- Can operate at half-duplex at 10 MBps and 100 MBps
- Adheres to the IEEE 802.3x Flow Control Specification.
- Configurable LED operation for customization of LED display.
- 64-bit address master support for system using more than 4 GB of physical memory.
- Configurable receive and transmit data FIFO, programmable in 1 KB increments.
- Intelligent interrupt generation to enhance driver performance.
- Compliance with Advanced Configuration and Power Interface

- Compliance with PCI Power Management standards.
- ACPI register set and power down functionality supporting D0 & D3 states.
- Full wake-up support (APM and ACPI).
- Magic Packet wake-up enable with unique MAC address.
- Fragmented UDP checksum off load for package reassembly.
- Jumbo frames supported.

2.5.4.1 Intel® 82566DM Gigabit LAN Connect Device

One of the external RJ-45 Ethernet LAN connectors is interfaced to an Intel® 82566DM Gigabit LAN connect device. The Intel® 82566DM is a compact, single-port integrated physical layer (PHY) device interfaced directly to the Intel® ICH9DO Ethernet controller through the GLCI. The Intel® ICH9DO Ethernet controller has its own Media Access Controller (MAC). The Intel® 82566DM Gigabit LAN connect device is shown in **Figure 2-10**.
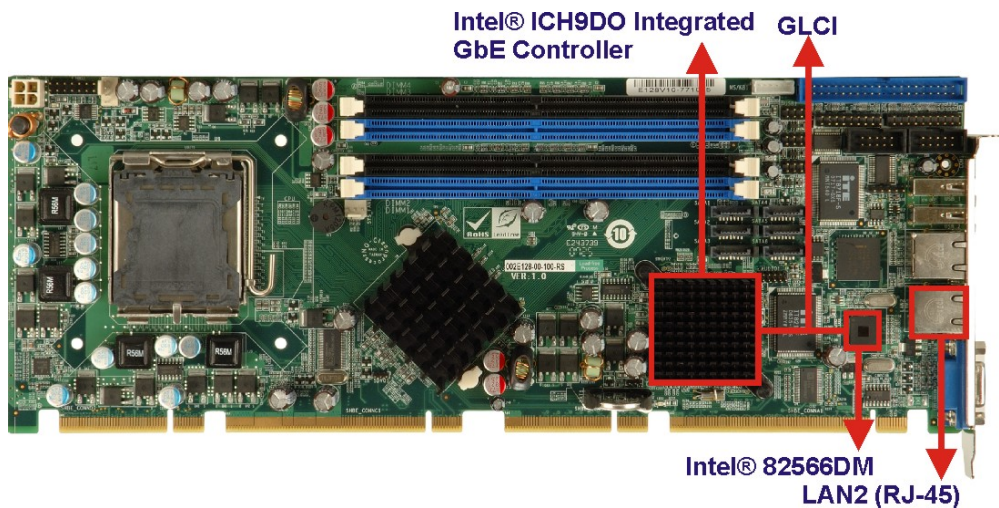
Figure 2-10: Intel® 82566DM Gigabit LAN Connect Device

Some of the features of the Intel® 82556DM are listed below:

- 10 Mbps, 100 Mbps, or 1000 Mbps
- Supports Intel® Active Management TechnologyS
- Supports Intel® Virtualization Technology through the Intel® Virtual Gigabit Network Connection.

- Can support legacy ASF2.0.
- Shared SPI flash with system BIOS
- Integrated linear voltage regulator
- TCP/UDP checksum and segmentation offload
- Receive side scaling
- Dual TX and RX queues
- 802.1p and 802.1q

2.5.5 Intel® ICH9DO Low Pin Count (LPC) Interface

The ICH9DO LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH9DO is connected to the following components:

- BIOS chipset
- Super I/O chipset
- Trusted Platform Module (TPM) connector

2.5.6 Intel® ICH9DO PCI Interface

The PCI interface on the ICH9DO is compliant with the PCI Revision 2.3 implementation. Some of the features of the PCI interface are listed below.

- PCI Revision 2.3 compliant
- 33MHz
- 5V tolerant PCI signals (except PME#)
- Integrated PCI arbiter supports up to four PCI bus masters

The PCI bus masters are interfaced to the following onboard components:

- Two backplane PCI channels
- One ITE IT8211 PCI IDE controller
- One IT8209 PCI bridge

The bus masters interfaced to the two backplane PCI channels and the two PCI channels that come from the PCI bridge are all interfaced to the PCI edge connector on the bottom of the 3307840 as specified by the PICMG 1.3 form factor.

2.5.7 Intel® ICH9DO PCIe x1 Bus

The Intel® ICH9DO Southbridge chipset has six PCIe x1 lanes. The four PCIe lanes are interfaced through a PCIe edge connector at the bottom of the CPU card through a compatible half-size backplane to either four PCIe x1 expansion cards or one PCIe x4 expansion card on.

One of the remaining PCIe x1 lanes is connected to an Intel® 82566DM GbE controller and the other PCIe x1 lane is connected to an Intel® 82573L GbE controller.

For more detailed information, please refer to **Section 2.6.3**.

2.5.8 Intel® ICH9DO Real Time Clock

256 bytes of battery backed RAM is provided by the Motorola MC146818B real time clock (RTC) integrated into the ICH9DO. The RTC operates on a 3V battery and 32.768KHz crystal. The RTC keeps track of the time and stores system data even when the system is turned off.

2.5.9 Intel® ICH9DO SATA Controller

NOTE:

> That SATA drive mode is set in the BIOS. Please refer to the **Section** Error! Reference source not found. on Error! Reference source not found. on **page** Error! Bookmark not defined. and **Section** Error! Reference source not found. on **AHCI Configuration** on **page** Error! Bookmark not defined..

The ICH9DO SATA supports three modes of operation:

- **Native IDE enabled operating system**: Two controllers enable all six ports on the bus. Controller 1 supports Port 0, Port 1, Port 2 and Port 3. Controller 2 supports Ports 4 and Port 5.

- ■ *Legacy operating system is used*: One controller is enabled and only supports Port 0, Port 1, Port 2 and Port 3.
- ■ *AHCI or RAID mode*: One controller supports all six ports including, Port 0, Port 1, Port 2, Port 3, Port 4 and Port 5.

In the AHCI or RAID mode, 3.0 Gbps data transfer speeds are supported. The SATA drive connectors are shown in **Figure 2-11**.
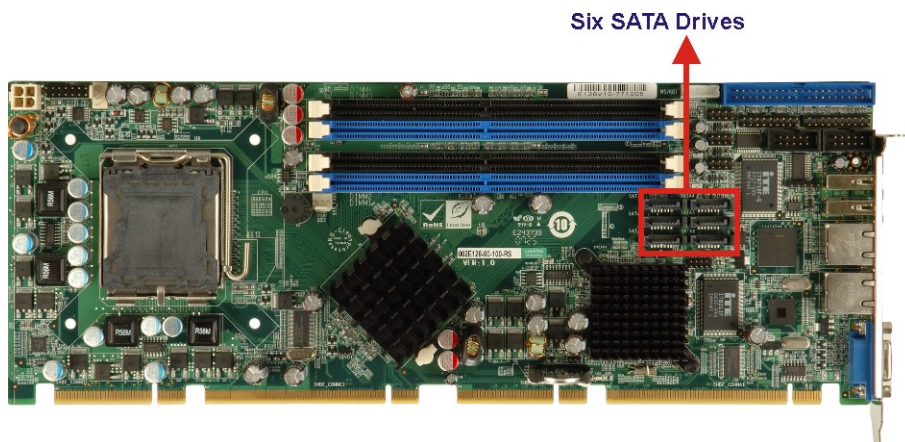
Figure 2-11: SATA Drive Connectors

2.5.10 Intel® ICH9DO Serial Peripheral Interface (SPI) BIOS

The 4-pin SPI is connected to an SPI BIOS chip. A licensed copy of AMI BIOS is preinstalled on the SPI BIOS chip. A master-slave protocol is used for communication on the SPI bus. The slave is connected to the Intel® ICH9DO Southbridge and is implemented as a tri-state bus.

2.5.11 Intel® ICH9DO USB Controller

2.5.11.1 Intel® ICH9DO USB Controller Overview

The ICH9DO comprises six full/low speed USB controllers that support the standard Universal Host Controller Interface (UHCI) Revision 1.1. Each controller supports two USB devices ensuring up to twelve USB 1.1 devices can be connected to the 3307840.

The ICH9DO also comprises two high-speed Enhanced Host Controller Interface (EHCI) controllers. Each EHCI controller supports six USB 2.0 devices ensuring twelve USB 2.0 devices can be connected to the 3307840. EHCI controllers facilitate data transfer speeds of 480 Mbps

Port routing logic on the ICH9DO determines whether a UHCI or an EHCI controller controls a USB port.

2.5.11.2 3307840 USB Implementation

Only eight of the Intel® ICH9DO USB ports are implemented on the 3307840. Two USB ports (USB Port 1 and USB Port 2) are connected to two external connectors and six USB ports (USB Port 3 to USB Port 8) are connected to three 8-pin onboard pin-headers. See **Figure 2-12**.
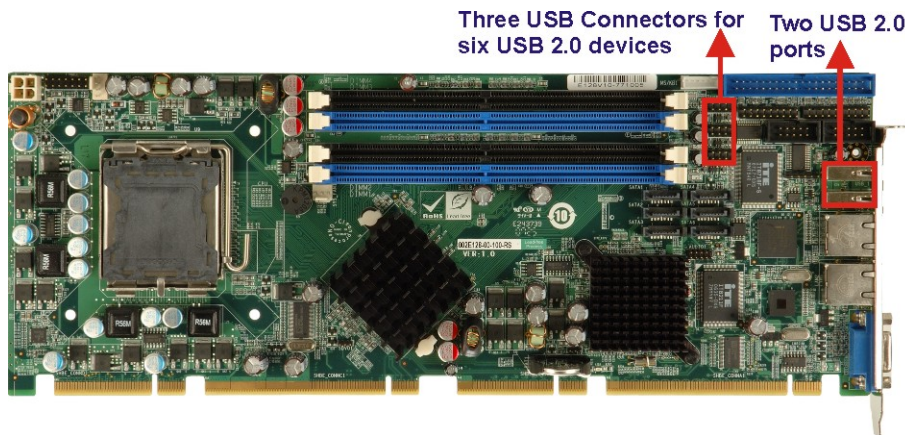
Figure 2-12: Onboard USB Implementation

2.5.11.3 Backplane USB Implementation

The remaining four Intel® ICH9DO USB ports (USB Port 9 to USB Port 8) are interfaced to the backplane through the USB edge connector on the bottom of the CPU card. See **Figure 2-13**. These four remaining USB ports are implemented through connectors on the backplane.
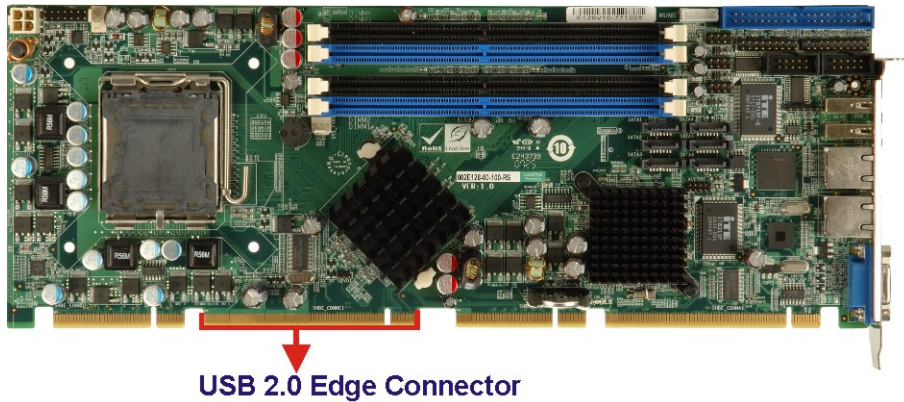
Figure 2-13: USB Edge connector

2.6 3307840 PCIe Bus Components

2.6.1 PCIe Bus Overview

The 3307840 has one PCIe x16 channel from the Intel® Q35 Northbridge and six   PCIe x1 lanes from the Intel® ICH9DO Southbridge. The PCIe bus lanes are interfaced to the following devices.

- One PCIe x16 lane is connected to one PCIe x16 graphics card on a compatible backplane
- Four PCIe x1 lanes are connected to four PCIe x1 expansion cards on a compatible backplane
- One PCIe x1 lanes are connected to two Intel® PCIe GbE connectors
- One PCIe x1 is shared with the Intel® ICH9DO Gigabit LAN Connect Interface (GLCI), which is connected to a Intel® 82566DM Gigabit platform LAN connect device

2.6.2 PCIe x16 Expansion

The Intel® Q35 Northbridge chipset has one PCIe x16 port reserved for a PCIe x16 graphics card. The PCIe x16 lane is interfaced to a PCIe x16 slot on a compatible backplane through two separate edge connectors on the bottom of the CPU card. The PCIe x16 graphics card is then installed on the PCIe x16 slot on the backplane. The PCIe x16 edge connector is shown in **Figure 2-14**.
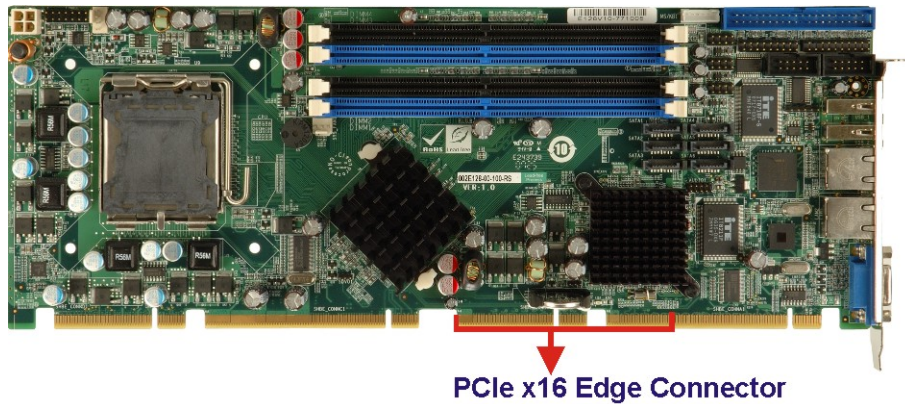
Figure 2-14: PCIe x16 Edge connector

2.6.3 PCIe x1 Expansion

Four of the six PCIe x1 expansion channels on the 3307840 are interfaced to four PCIe x1 connectors on a backplane through an edge connector on the bottom of the CPU card. The PCIe x1 edge connector is shown in **Figure 2-15**.
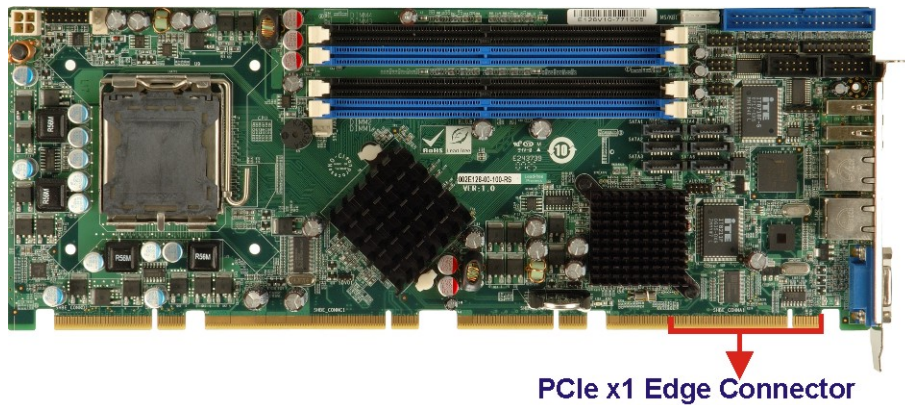
Figure 2-15: PCIe x1 Edge connector (Four Lanes)

2.6.4 Intel® 82573L PCIe GbE Controller

An RJ-45 Ethernet LAN connector is interfaced directly to an Intel® 82573L PCIe GbE controller. The Intel® 82573L PCIe GbE controller is a compact, single-port integrated physical layer (PHY) device with its own Memory Access Controller (MAC) and interfaced

to the Intel® ICH9DO Southbridge through a PCIe x1 lane. The Intel® 82573L GbE controllers is shown in **Figure 2-16** below.
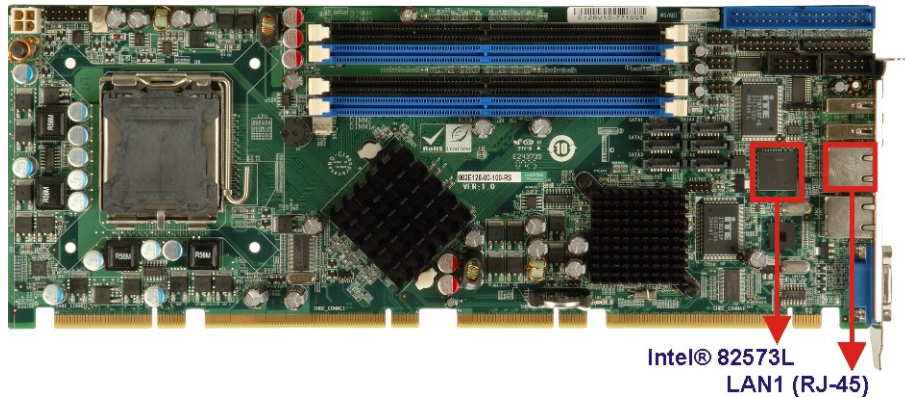
Figure 2-16: Intel® 82573L PCIe GbE Controller

Some of the features of the Intel® 82573L are listed below:

- 2 Gbps peak bandwidth per direction
- PCI Express Rev 1.0a specification
- High bandwidth density per pin
- Wide,pipelined internal data path architecture
- Optimized transmit (Tx) and receive (Rx) queues
- 32 KB configurable Rx and Tx first-in/first-out (FIFO)
- IEEE 802.3x*-compliant flow-control support with software controllable pause times and threshold values
- Programmable host memory Rx buffers (256 B-16 KB)
- Descriptor ring management hardware for Tx and Rx
- Mechanism for reducing interrupts from Tx/Rx operations
- Integrated PHY for 10/100/1000 Mbps (full- and half-duplex)
- IEEE 802.3ab* auto-negotiation support
- IEEE 802.3ab PHY compliance and compatibility
- Tx/Rx IP,TCP,and UDP checksum offloading
- Tx TCP segmentation
- IEEE 802.1q* Virtual Local Area Network (VLAN) support with VLAN tag insertion, stripping, and packet filtering for up to 4096 VLAN tags
- Boot ROM Preboot eXecution Environment (PXE) Flash interface support

- SDG 3.0,WfM 3.0 and PC2001 compliant
- Wake on LAN support

2.7 PCI Bus Components

2.7.1 PCI Bus Overview

The PCI bus is connected to the components listed below:

- ITE IT8211 ATA controller chipset
- IT8209R PCI arbiter
- PCI edge connector

The PCI bus complies with PCI Local Bus Specification, Revision 2.3 and supports 33MHz PCI operations.

2.7.2 ITE IT8211 ATA Controller Chipset

The 40-pin IDE connector on the 3307840 is connected to the ATA/ATAPI-6 ITE IT8211 ATA controller chipset, which is then connected to the Intel® ICH9DO Southbridge chipset. The controller and connector are shown in **Figure 2-17** below.
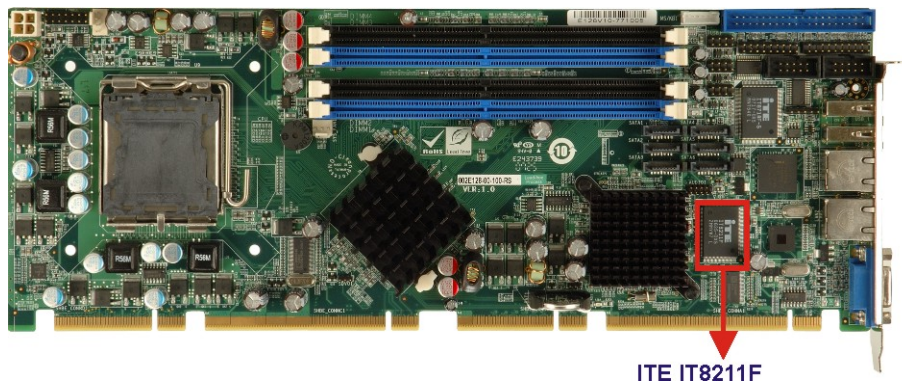
ITE IT8211F

Figure 2-17: ATA controller

Two ATA/ATAPI-6 hard disks can be connected to the IDE connector. Specifications for the ITE IT8211 are listed below.

- Compatible with ATA/ATAPI-6 specifications
- Supports ANSI ATA proposal PIO modes 0, 1, 2, 3, and 4 with flow control,

DMA modes 0, 1, and 2 and Ultra DMA modes 0, 1, 2, 3, 4, 5 and 6.

- 512 bytes FIFO for data transfer per IDE channel
- Supports pre-fetch and post-write function for PIO mode.

2.7.3 ITE IT8209 PCI Arbiter

One of the Intel® ICH9DO Southbridge PCI lanes is connected to an ITE IT8209 PCI arbiter. One set of SYSGNT# and SYSREQ# on the ITE IT8209 supports three PCI Masters thereby enabling the 3307840 to support an additional two PCI Masters. The ITE IT8209 PCI arbiter is shown in **Figure 2-18** below.

ITE IT8209R

Figure 2-18: PCI Arbiter

One of the PCI masters on the ITE IT8209 PCI arbiter is connected to the Intel® ICH9DO Southbridge. The remaining two are connected to the PCI edge connector to facilitate PCI expansion on the backplane. Some of the features of the ITE IT8209 PCI arbiter are listed below:

- Extended PCI Arbiter
- Input PCI Clock
- Clock Buffer

2.7.4 PCI Interface Edge connector

The PCI interface edge connector is connected to two PCI Masters on the ICH9DO Southbridge and to two PCI masters on the ITE IT8209 PCI arbiter. The PCI bus edge

connector on the 3307840 is interfaced to the PCI bus on the backplane thereby connecting the PCI backplane expansion boards to the Intel® ICH9DO Southbridge. The PCI bus edge connector is shown in **Figure 2-19**.

PCIe Edge Connector
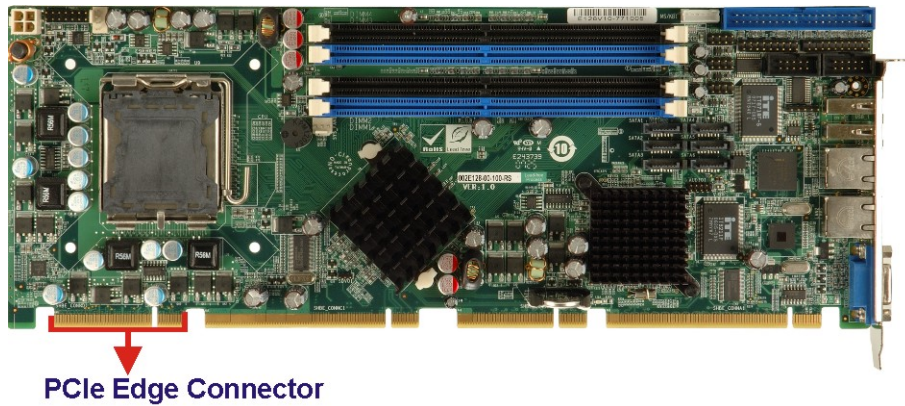
Figure 2-19: PCI Edge connector Connection

The PCI is interfaced to four standard PCI expansion cards a compatible PICMG 1.3 backplane.

2.8 LPC Bus Components

2.8.1 LPC Bus Overview

The LPC bus is connected to components listed below:

- TPM module connector
- Super I/O chipset

2.8.2 TPM Module

A TPM connector on the 3307840 is interfaced to the Intel® ICH9DO Southbridge through the LPC bus. The TPM connector is shown in **Figure 2-20** below.
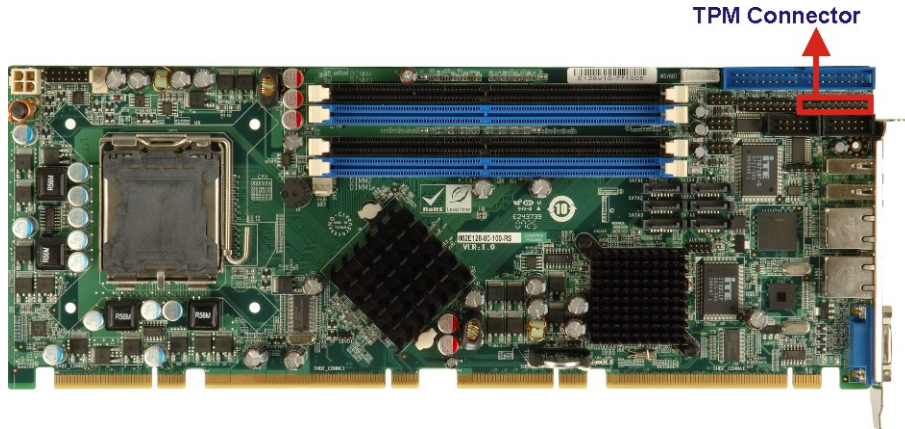
Figure 2-20: TPM Connector

The Intel® ICH9DO Southbridge supports TPM version 1.1 and TPM version 1.2 devices for enhanced security. Three TPM are available from GLOBAL AMERICAN. The three GLOBAL AMERICAN TPM are listed below:

- Infineon TPM module
- Sinosun TPM module
- Winbond TPM module

For more information about these modules please refer to Chapter 3 or contact the 3307840 reseller or vendor. Alternatively, please contact GLOBAL AMERICAN at salesinfo@globalamericaninc.com.

2.8.3 Super I/O chipset

The ITE IT8718F Super I/O chipset is connected to the Intel® ICH9DO Southbridge through the LPC bus. ITE IT8718F Super I/O chipset is shown in **Figure 2-21** below.
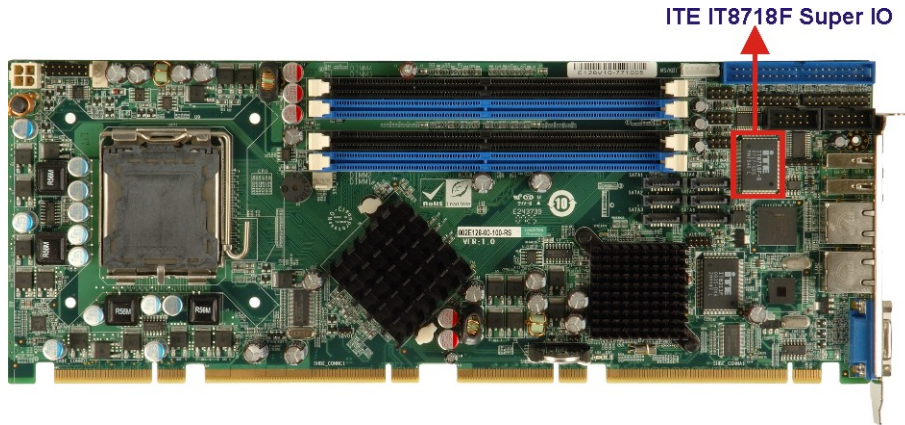
Figure 2-21: ITE IT8718F Super I/O

The ITE IT8718F is an LPC interface-based Super I/O device that comes with an integrated Environment Controller. Some of the features of the iTE IT8718F chipset are listed below:

- PC98/99/2001, ACPI and LANDesk Compliant
- Enhanced Hardware Monitor
- Fan Speed Controller
- Multi curve for one fan control
- Multi sensor for one fan control
- Single +5V Power Supply
- Two 16C550 UARTs for serial port control
- Keyboard Controller
- 48 General Purpose I/O Pins
- Watchdog Timer
- Serial IRQ Support
- SmartGuardian Controller
- ITE automatic power-failure resume and power button debounce

Some of the Super I/O features are described in more detail below:

2.8.3.1 Super I/O LPC Interface

The LPC interface on the Super I/O complies with the Low Pin Count Specification Rev. 1.0. The LPC interface supports both LDRQ# and SERIRQ protocols as well as PCI PME# interfaces.

2.8.3.2 Super I/O 16C550 UARTs

The onboard Super I/O has two integrated 16C550 UARTs that can support the following:

- Two standard serial ports (COM1 and COM2)
- IrDa 1.0 and ASKIR protocols

2.8.3.3 Super I/O Enhanced Hardware Monitor

The Super I/O Enhanced Hardware Monitor monitors three thermal inputs, VBAT internally, and eight voltage monitor inputs. These hardware parameters are reported in the BIOS and can be read from the BIOS Hardware Health Configuration menu.

2.8.3.4 Super I/O Fan Speed Controller

The Super I/O fan speed controller enables the system to monitor the speed of the fan. One of the pins on the fan connector is reserved for fan speed detection and interfaced to the fan speed controller on the Super I/O. The fan speed is then reported in the BIOS.

2.8.3.5 Super I/O Keyboard and Mouse Controller

The Super I/O keyboard and mouse controller is compatible with the following specifications.

- 8042 compatible
- Asynchronous access to two data registers and one status register
- Compatible with 8042 software
- PS/2 mouse supported
- Port 92 supported
- Interrupt and polling modes supported
- Fast Gate A20 and Hardware Keyboard Reset
- 8-bit timer/counter

The keyboard and mouse controller controller is interfaced to a keyboard and mouse connected to the backplane through the board-to-board connectors.

2.8.3.6 Super I/O GPIO Ports

The Super I/O has 48 programmable GPIO ports of which 16 are implemented on the 3307840. The GPIO connector has 16 programmable bits, 8-bit input and 8-bit output.

2.8.3.7 Super I/O Infrared

The Super I/O has dedicated infrared (IrDA) pins that are interfaced to an IrDA connector. The IrDA connector is compatible with the following standards:

- ASKIR
- SIR

2.8.4 Super I/O Watchdog Timer

The super I/O wathdog timer has a maximum time resolution of 1 minute or 1 second with a maximum or either 65,535 minutes or 65,535 seconds.

2.9 Ethernet LAN Controllers

The 3307840 CPU card has two GbE controllers. The 3307840 LAN connections are shown in **Figure 2-22**.
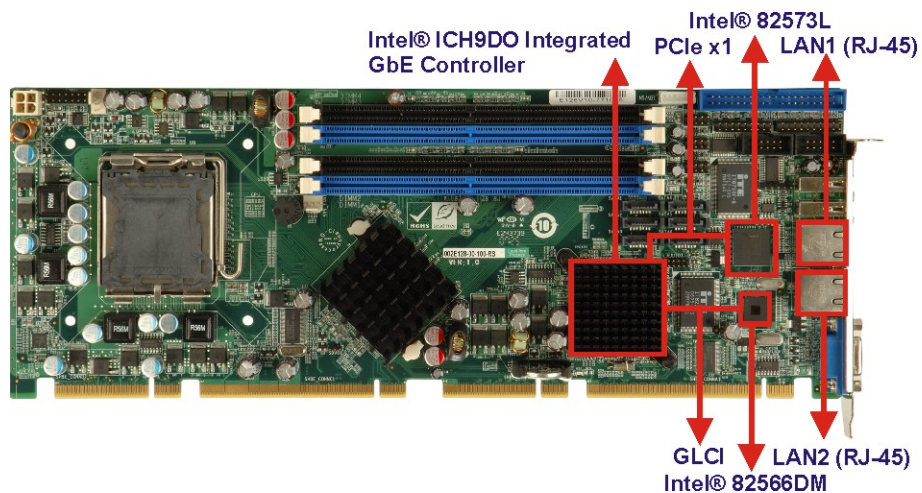
Figure 2-22: LAN Connections

The first GbE controller, is an Intel® 82537L PCIe GbE controller and is the interface between the Intel® ICH9DO Southbridge controller and the LAN1 RJ-45 Ethernet connector.

The second GbE controller is integrated on the Intel® ICH9DO Southbridge and interfaced to the LAN2 RJ-45 Ethernet LAN connector through an Intel® 82566DM Gigabit Platform LAN Connect device. The Intel® 82566DM is connected directly to the GbE controller on the Intel® ICH9DO Southbridge through the GLCI, which is shared with the PCIe x1 port 6.

Both of these Ethernet controllers have been described in detail in earlier sections. For further details please refer to the relevant sections:

- Intel® ICH9DO Ethernet controller (**Section 2.5.4**)
- Intel® 82566DM Gigabit Platform LAN Connect device (**Section 2.5.4.1**)
- Intel® 82537L PCIe GbE controller (**Section 2.6.4**)

2.10 Environmental and Power Specifications

2.10.1 System Monitoring

Three thermal inputs on the 3307840 Super I/O Enhanced Hardware Monitor monitor the following temperatures:

- CPU Temperature
- System Temperature

Five voltage inputs on the 3307840 Super I/O Enhanced Hardware Monitor monitors the following voltages:

- CPU Core
- +1.80V
- +3.30V
- +12.0V
- 5VSB
- VBAT

The 3307840 Super I/O Enhanced Hardware Monitor also monitors the following fan speeds:

- Fan Speed1 (CPU Fan)
- Fan Speed2 (System Fan)

The values for the above environmental parameters are all recorded in the BIOS Hardware Health Configuration menu.

2.10.2 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the 3307840 are listed below.

- Minimum Operating Temperature: 0ºC (32°F)
- Maximum Operating Temperature: 60°C (140°F)

A cooling fan and heat sink must be installed on the CPU. Thermal paste must be smeared on the lower side of the heat sink before it is mounted on the CPU. Heat sinks are also mounted on the Northbridge and Southbridge chipsets to ensure the operating temperature of these chips remain low.

2.10.3 Power Consumption

Table 2-3 shows the power consumption parameters for the 3307840 running 3D Mark® 2001 SE330 with a 2.66 GHz E6700 Intel® Core™2 Duo processor with a 1066 MHz FSB and four 2.0GB 667MHz DDR2 DIMMs.

Voltage	Current
+3.3V	3.0A
+5.0V	5.1A
+12V	4.23A
5Vsb	0.28A

Table 2-3: Power Consumption

2.11 Expansion Options

2.11.1 Expansion Options Overview

A number of compatible Global American, Inc. PICMG 1.3 backplanes and chassis can be used to develop and expanded system. These backplanes and chassis are listed below.

2.11.2 GLOBAL AMERICAN Expansion PICMG 1.3 Backplanes

The backplanes listed in **Table 2-4** are compatible with the 3307840 and can be used to develop highly integrated industrial applications. All of the backplanes listed below have 24-pin ATX connector and a 4-pin ATX connector. For more information about these backplanes please consult the GLOBAL AMERICAN catalog or contact your vendor, reseller or the GLOBAL AMERICAN sales team at salesinfo@globalamericaninc.com.

3307840 PICMG 1.3 CPU Card

| Model | Total Slots | System | Expansion Slots | | | | System Type |
| | | | PCIe | | | PCI | |
			x16	x4	x1		
1107780	4	One	1	-	-	2	Single
1107800	4	One	1	-	2	-	Single
1107820	5	One	1	-	3	-	Single
1107830	6	One	1	-	-	3	Single
1107770	6	One	1	-	3	1	Single
1107750	5	One	1	-	3	-	Single
1107850	5	One	1	-	2	1	Single
1107860	7	One	1	-	2	3	Single
1107870	7	One	1	-	4	1	Single
1107880	8	One	1	-	3	3	Single
1107890	9	One	1	-	4	3	Single
1107900	10	One	1	-	4	4	Single
1107910	10	One	1	-	4	4	Single
1107930	13	One	1	-	3	8	Single
1107940	19	One	1	-	1	16	Single

Table 2-4: Compatible GLOBAL AMERICAN PICMG 1.3 Backplanes

2.11.3 GLOBAL AMERICAN Chassis

GLOBAL AMERICAN chassis available for 3307840 system development are listed in **Table 2-5**.

For more information about these chassis please consult the GLOBAL AMERICAN catalog or contact your vendor, reseller or the GLOBAL AMERICAN sales team at salesinfo@globalamericaninc.com.

Model	Slot SBC	Mounting	Max Slots	Backplanes
1407460	Full-size	Wall	4	1107790 1107780 1107800
1401422	Full-size	Wall	6	1107810

Model	Slot SBC	Mounting	Max Slots	Backplanes
				1107820
				1107840
				1107770
1404540	Full-size	Wall	6	1107810
				1107820
				1107840
				1107770
1404580	Full-size (4U)	Rack	14	1107830
				1107900
				1107910
				1107930
				1107940
1404600	Full-size (4U)	Rack	14	1107830
				1107900
				1107910
				1107930
1407670	Full-size (4U)	Rack	14	1107830
				1107900
				1107910
				1107930
1404150	Full-size (4U)	Rack	14	1107830
				1107900
				1107910
				1107930
				1107940
1401032	Full-size	Wall	7	1107830
				1107860
				1107870
1401412	Full-size	Wall	10	1107830
				1107880
1407660	Full-size	Wall	6	1107840
				1107770
1404570	Full-size (2U)	Rack	6	1107750

3307840 PICMG 1.3 CPU Card

Model	Slot SBC	Mounting	Max Slots	Backplanes
				1107850
1404552	Full-size (2U)	Rack	6	1107750
				1107850

Table 2-5: Compatible GLOBAL AMERICAN Chassis

Chapter

3

Unpacking

3.1 Anti-static Precautions

⚠️ **WARNING:**

Failure to take ESD precautions during the installation of the 3307840 may result in permanent damage to the 3307840 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3307840. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3307840, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- *Self-grounding*:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring the 3307840, place it on an antic-static pad. This reduces the possibility of ESD damaging the 3307840.
- *Only handle the edges of the PCB*:-: When handling the PCB, hold the PCB by the edges.

3.2 Unpacking

3.2.1 Unpacking Precautions

When the 3307840 is unpacked, please do the following:

- Follow the anti-static precautions outlined in Section 3.1.
- Make sure the packing box is facing upwards so the 3307840 does not fall out of the box.
- Make sure all the components shown in Section 3.3 are present.

3.3 Unpacking Checklist
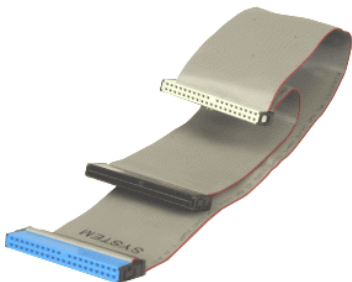
 NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the GLOBAL AMERICAN reseller or vendor you purchased the 3307840 from or contact a Global American sales representative directly. To contact a Global American sales representative, please send an email to salesinfo@globalamericaninc.com.

3.3.1 Package Contents

The 3307840 is shipped with the following components:

Quantity	Item and Part Number	Image
1	3307840 CPU Card	
1	ATA 66/100 flat cable	

1	Dual RS-232 cable	
1	KB/MS cable with Mini DIN	
1	KB/MS PS/2 Y-cable	
4	SATA cables	
2	SATA power cables	
1	Mini jumper Pack	
1	Quick Installation Guide	
1	Utility CD	

1	USB cable	

Table 3-1: Package List Contents

3.4 Optional Items

Audio kit (**P/N**: 1007760)	
5-pin Wafer-to-PS/2	
4-port USB cable	
CPU cooling kit (**P/N**: 2107695)	
Infineon TPM module (**P/N**: 1007790)	

Sinosun TPM module (**P/N**: 1007800)	
Winbond TPM module (**P/N**: 1007810)	

Table 3-2: Package List Contents

Chapter

4

Connector Pinouts

4.1 Peripheral Interface Connectors

Section **4.1.2** shows peripheral interface connector locations. **Section 4.1.2** lists all the peripheral interface connectors seen in **Section 4.1.2**.

4.1.1 3307840 Layout

Figure 4-1 shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.
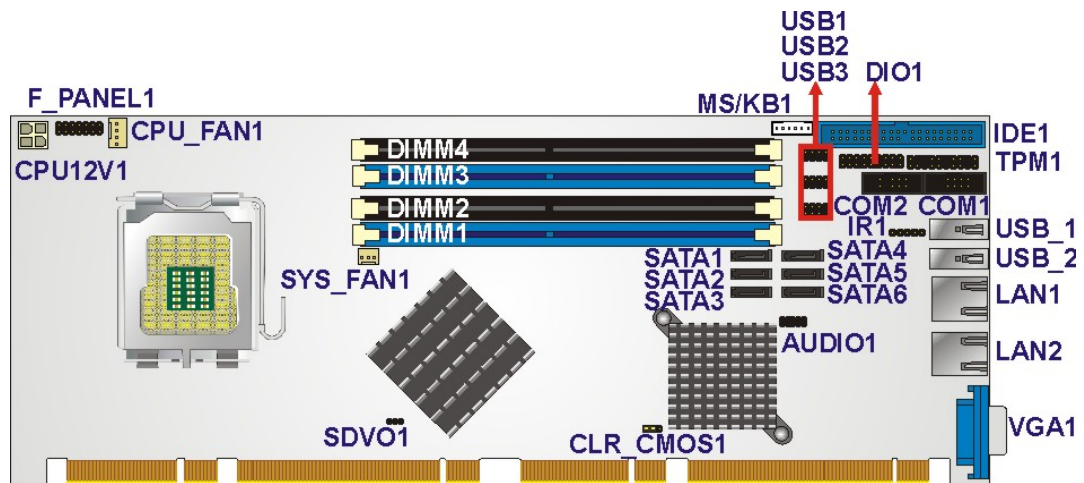
Figure 4-1: Connector and Jumper Locations

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the 3307840. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
ATX power connector	4-pin ATX connector	CPU12V1
Audio connector	10-pin header	AUDIO1
Cooling fan connector, CPU	4-pin wafer	CPU_FAN1
Cooling fan connector, System	3-pin wafer	CPU_SYS1
Digital input/output connector	10-pin header	DIO1

Keyboard and mouse connector	6-pin wafer	KB/MS1
Front panel connector	10-pin header	F_PANEL1
IDE Interface connector	40-pin box header	IDE1
Infrared (IrDA) connector	5-pin header	IR1
SDVO connector	3-pin header	SDVO1
Serial ATA drive connector	7-pin SATA	SATA1
Serial ATA drive connector	7-pin SATA	SATA2
Serial ATA drive connector	7-pin SATA	SATA3
Serial ATA drive connector	7-pin SATA	SATA4
Serial ATA drive connector	7-pin SATA	SATA5
Serial ATA drive connector	7-pin SATA	SATA6
Serial port connector (COM1)	10-pin box header	COM1
Serial port connector (COM2)	10-pin box header	COM2
TPM connector	20-pin header	TPM1
USB connectors	8-pin header	USB1
USB connectors	8-pin header	USB2
USB connectors	8-pin header	USB3

Table 4-1: Peripheral Interface Connectors

4.1.3 External Interface Panel Connectors

Table 4-2 lists the rear panel connectors on the 3307840. Detailed descriptions of these connectors can be found in **Section 4.3** on **page 76**.

Connector	Type	Label
Ethernet connector	RJ-45	LAN1
Ethernet connector	RJ-45	LAN2
USB connector	USB port	USB_1
USB connector	USB port	USB_2
VGA connector	Female DB-15	VGA1

Table 4-2: Rear Panel Connectors

4.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the 3307840.

4.2.1 ATX Power Connector

CN Label: CPU12V1

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

CN Location: See Figure 4-2

CN Pinouts: See Table 4-3

The 4-pin ATX power connector is connected to an ATX power supply and powers the CPU.
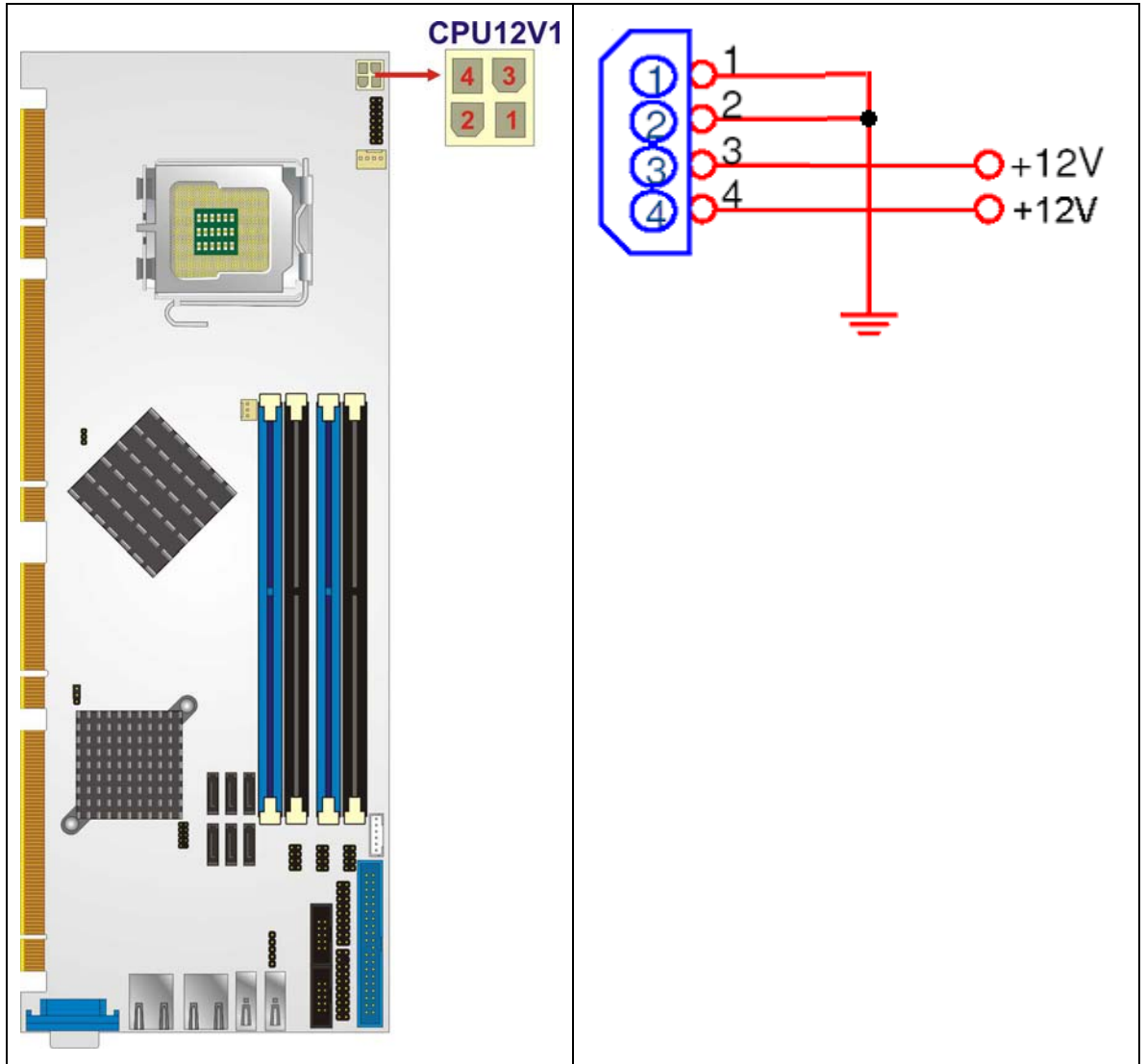
Figure 4-2: ATX Power Connector Location

PIN NO.	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

Table 4-3: AT Power Connector Pinouts

4.2.2 Audio Connector

CN Label: AUDIO1

CN Type: 9-pin header (2x5)

CN Location: See Figure 4-3

CN Pinouts: See Table 4-4

NOTE:

The GLOBAL AMERICAN® 1007760 audio kit is optional. If a Global American® 1007760 audio kit is required please contact the vendor or reseller the 3307840 was purchased from or contact and GLOBAL AMERICAN® sales representative directly by sending an email to salesinfo@globalamericaninc.com.

The 9-pin audio connector is interfaced on the one side to the high-definition audio (HDA) controller on the Intel® ICH9DO Southbridge and to an external HDA codec.

NOTE:

If an HDA audio kit is going to be installed on the backplane, the HDA controller must be enabled in the BIOS settings. To enable the HDA controller please refer to **Section** Error! Reference source not found. (the Error! Reference source not found. menu) on **page** Error! Bookmark not defined..
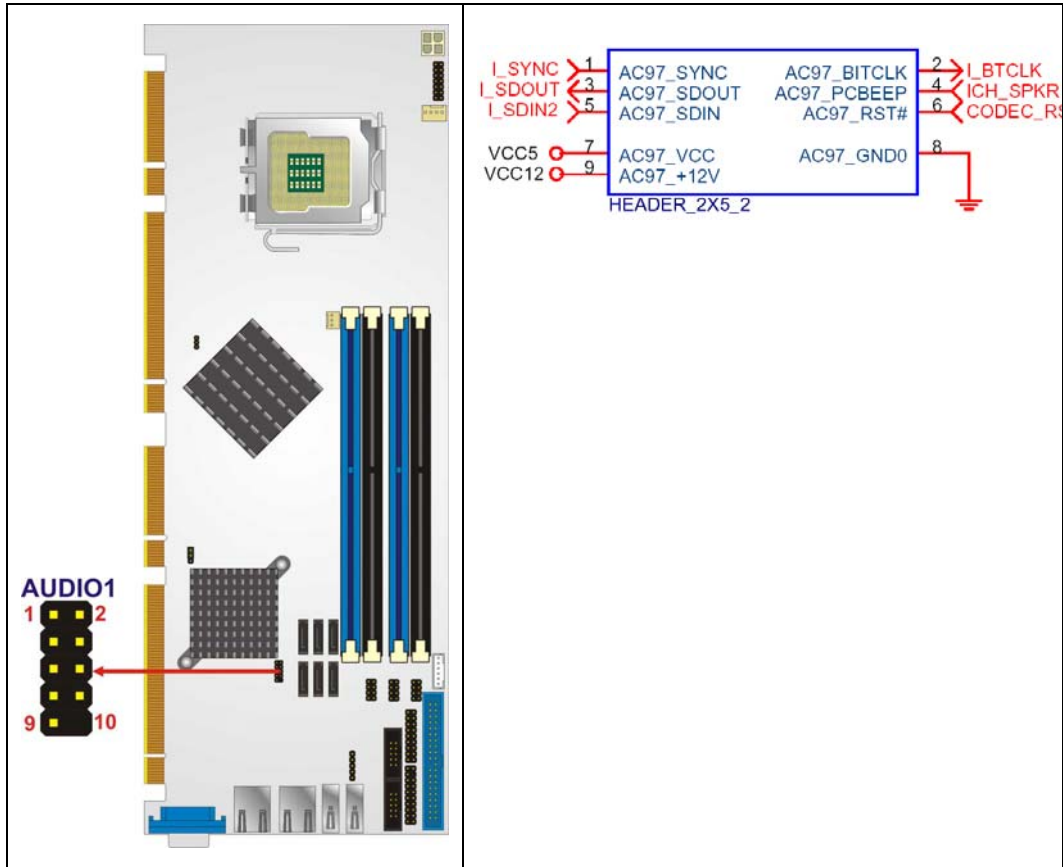
Figure 4-3: Audio Connector Location (9-pin)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SYNC	2	BITCLK
3	SDOUT	4	PCBEEP
5	SDIN	6	RST#
7	VCC	8	GND
9	+12V	10	N/C

Table 4-4: Audio Connector Pinouts

4.2.3 Digital Input/Output (DIO) Connector

CN Label: DIO1

CN Type: 18-pin header (2x9)

CN Location: See Figure 4-4

CN Pinouts: See Table 4-5

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable. To see details on how to program the DIO chip, please refer to **Appendix A**.
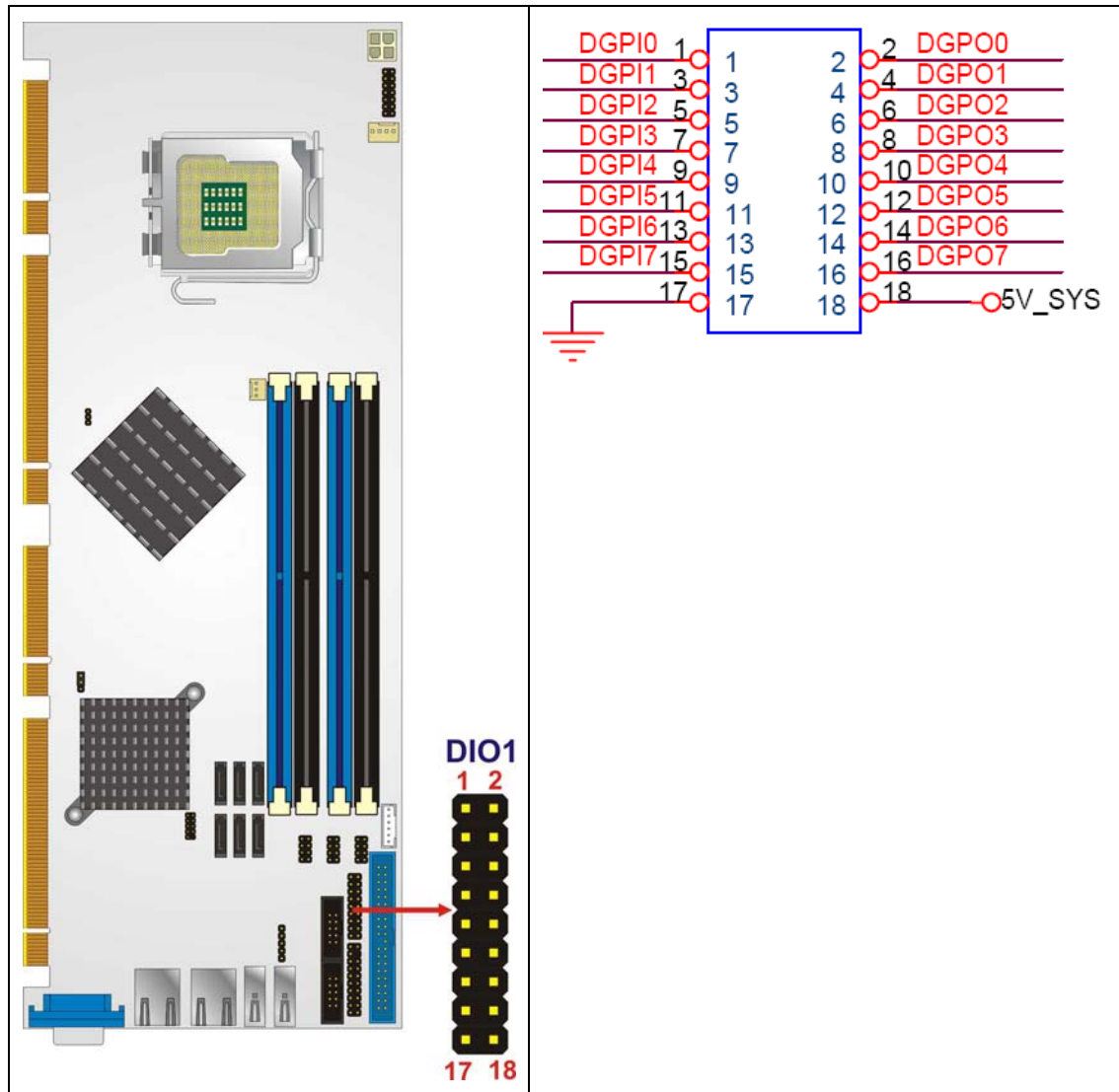
Figure 4-4: DIO Connector Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Input 0	2	Output 0
3	Input 1	4	Output 1
5	Input 2	6	Output 2
7	Input 3	8	Output 3
9	Input 4	10	Output 4
11	Input 5	12	Output 5
13	Input 6	14	Output 6
15	Input 7	16	Output 7
17	GND	18	+5V

Table 4-5: DIO Connector Connector Pinouts

4.2.4 Fan Connector, CPU (12V, 4-pin)

CN Label: CPU_FAN1

CN Type: 3-pin header

CN Location: See Figure 4-5

CN Pinouts: See Table 4-6

The CPU cooling fan connector provides a 12V, 500mA current to a CPU cooling fan. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the system BIOS can recognize the fan speed. Please note that only specified fans can issue the rotation signals.
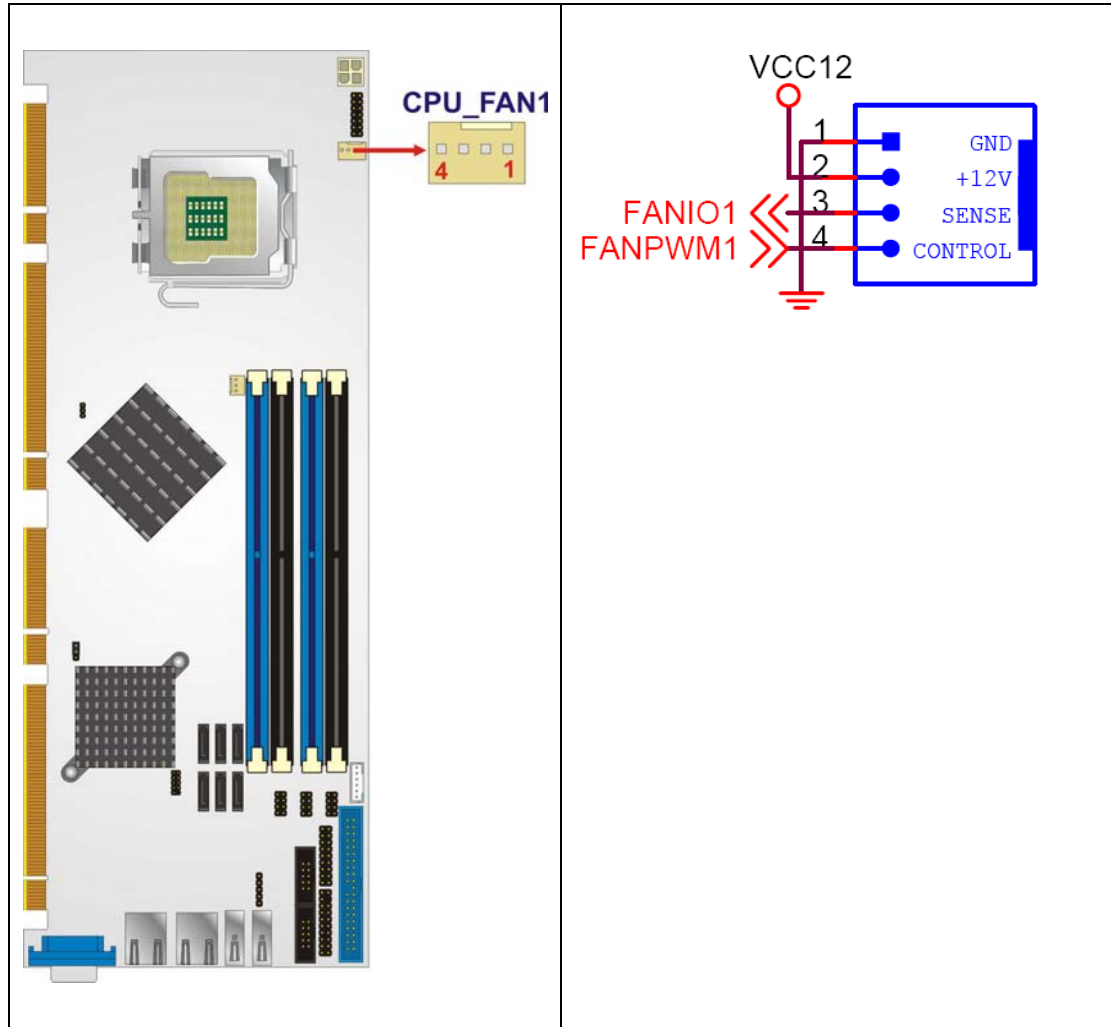
Figure 4-5: +12V Fan Connector Location

PIN NO.	DESCRIPTION
1	GND
2	+12VCC
3	Rotation Signal
4	Control

Table 4-6: +12V Fan Connector Pinouts

4.2.5 Fan Connector, System (+12V)

CN Label: SYS_FAN1

CN Type: 3-pin header

CN Location: See Figure 4-6

CN Pinouts: See Table 4-7

The system cooling fan connector provides a 12V, 500mA current to a system cooling fan.. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the system BIOS can recognize the fan speed. Please note that only specified fans can issue the rotation signals.
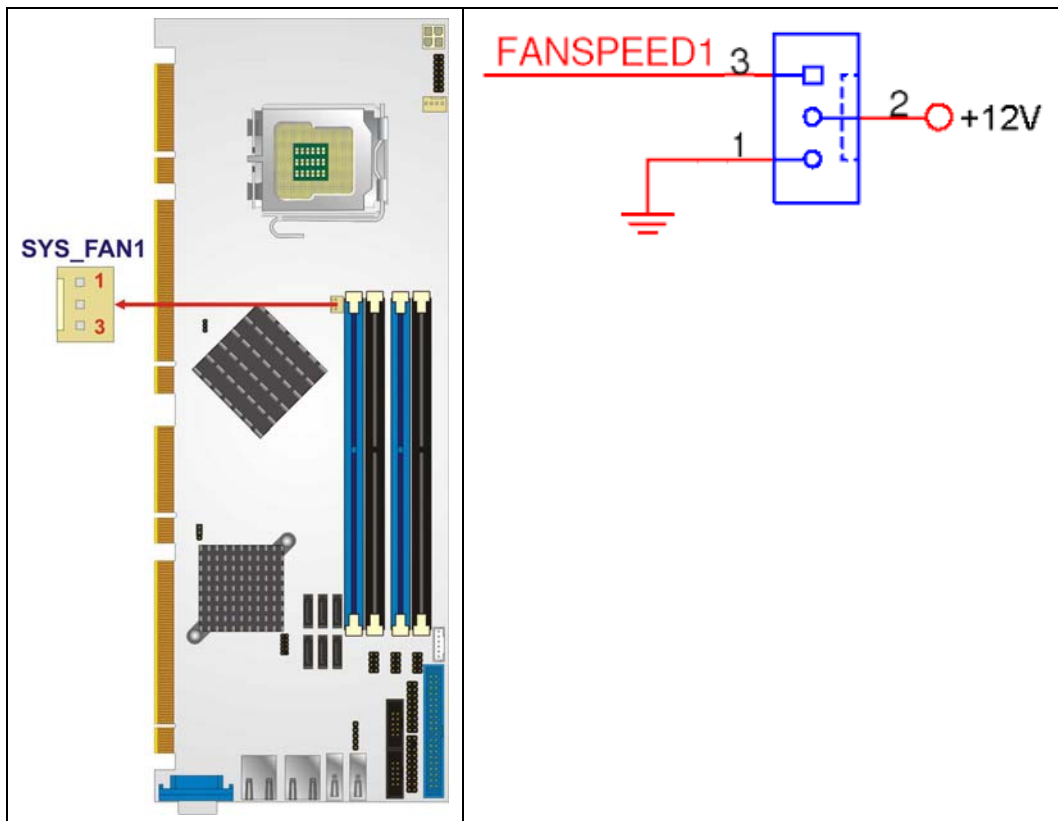
Figure 4-6: +12V Fan Connector Location

PIN NO.	DESCRIPTION
1	GND
2	+12V
3	Rotation Signal

Table 4-7: +12V Fan Connector Pinouts

4.2.6 Front Panel Connector (14-pin)

CN Label: F_PANEL1

CN Type: 12-pin header (2x6)

CN Location: See Figure 4-7

CN Pinouts: See Table 4-8

The front panel connector connects to external switches and indicators to monitor and controls the motherboard. These indicators and switches include:

- Power LED
- Speaker
- Power button
- Reset
- HDD LED
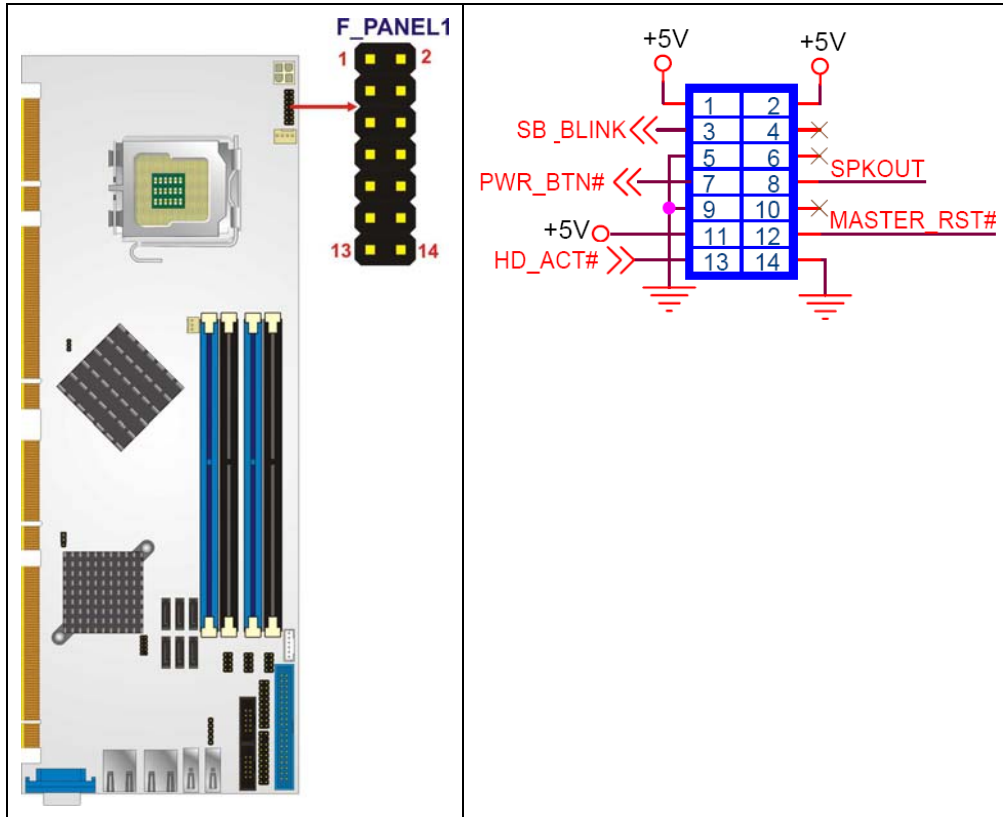
Figure 4-7: Front Panel Connector Pinout Locations (14-pin)

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power LED	1	LED+	Speaker	2	SPEAKER+
	3	N/C		4	N/C
	5	LED-		6	N/C
Power Button	7	PWRBTSW+		8	SPEAKER -
	9	PWRBTSW-	Reset	10	N/C
HDD LED	11	IDE LED+		12	RESET+
	13	IDE LED-		14	RESET-

Table 4-8: Front Panel Connector Pinouts (14-pin)

4.2.7 IDE Connector (40-pin)

CN Label: IDE1

CN Type: 40-pin header (2x20)

CN Location: See Figure 4-8

CN Pinouts: See Table 4-9

One 40-pin IDE device connector on the 3307840 supports connectivity to two hard disk drives.
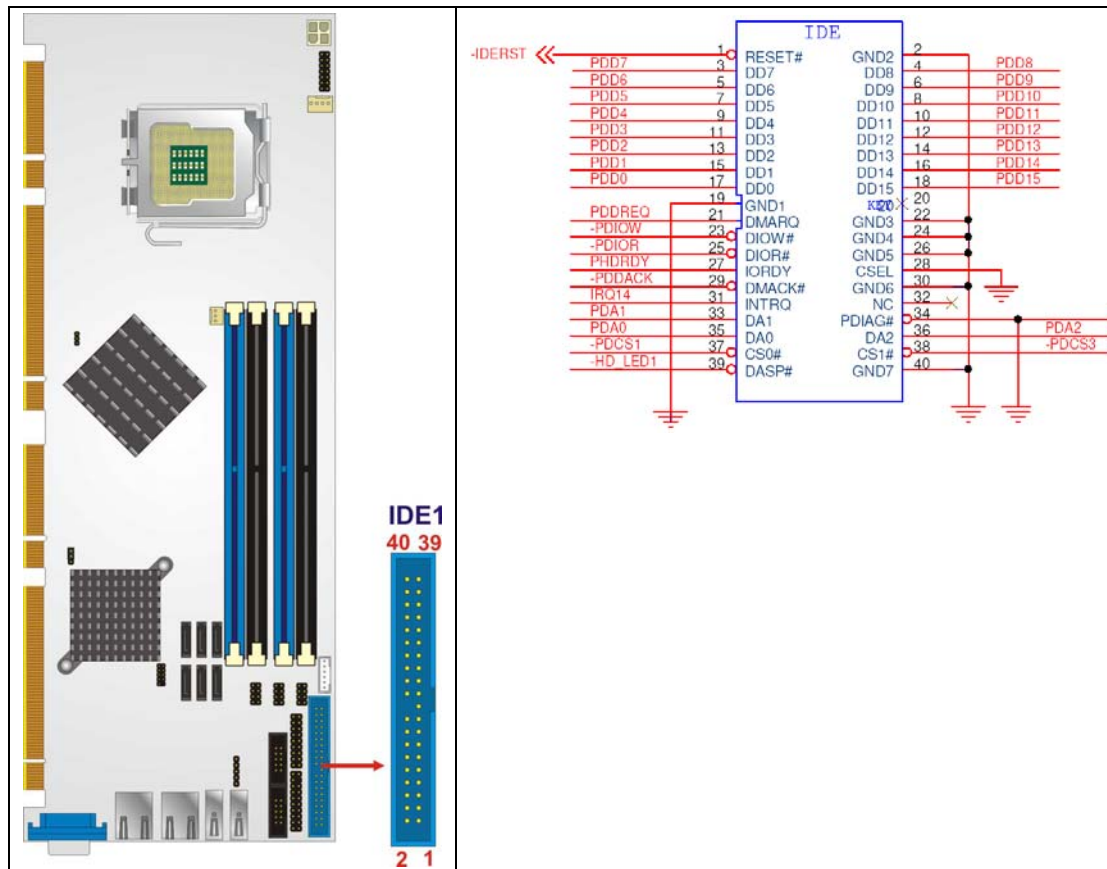
Figure 4-8: IDE Device Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

Table 4-9: IDE Connector Pinouts

4.2.8 Infrared Interface Connector (5-pin)

CN Label: IR1

CN Type: 5-pin header (1x5)

CN Location: See Figure 4-9

CN Pinouts: See Table 4-10

The infrared interface connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.
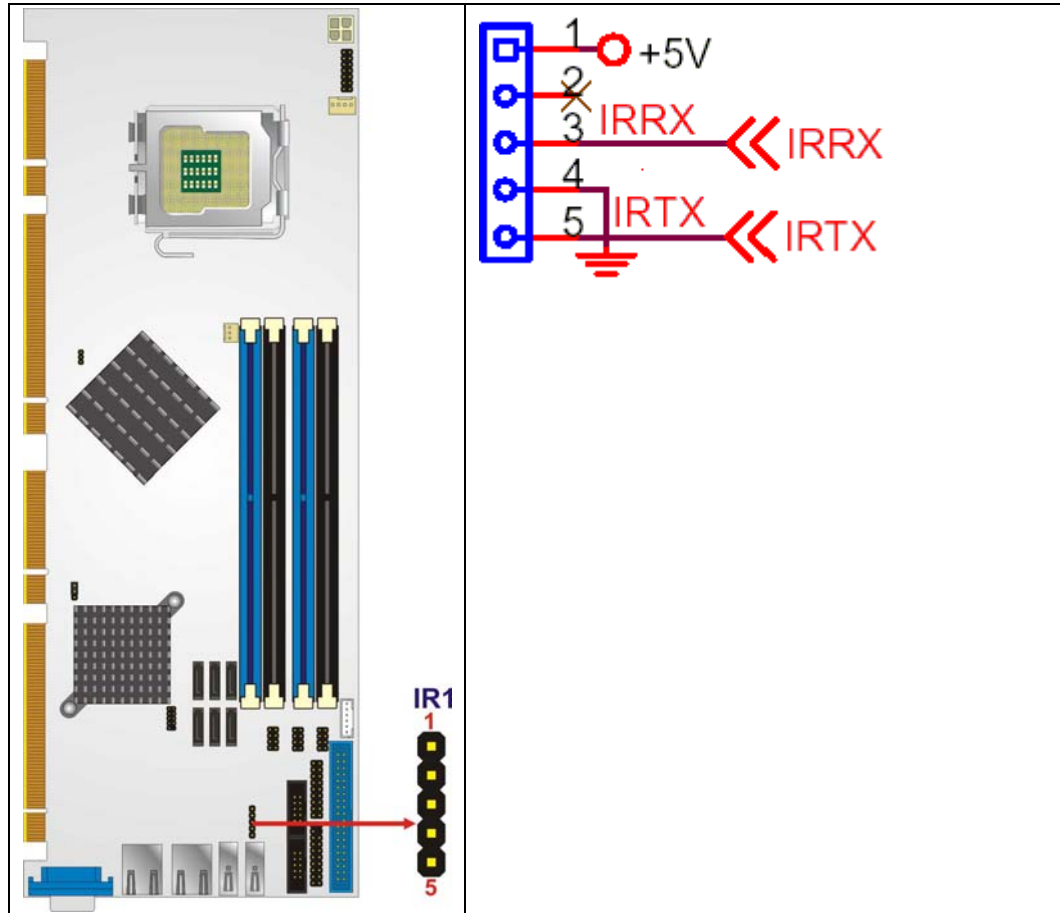
Figure 4-9: Infrared Connector Pinout Locations

PIN NO.	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX

Table 4-10: Infrared Connector Pinouts

4.2.9 Keyboard/Mouse Connector

CN Label: CN22

CN Type: 6-pin header (1x6)

CN Location: See Figure 4-10

CN Pinouts: See Table 4-11

The keyboard and mouse connector can be connected to a standard PS/2 cable or PS/2 Y-cable to add keyboard and mouse functionality to the system.
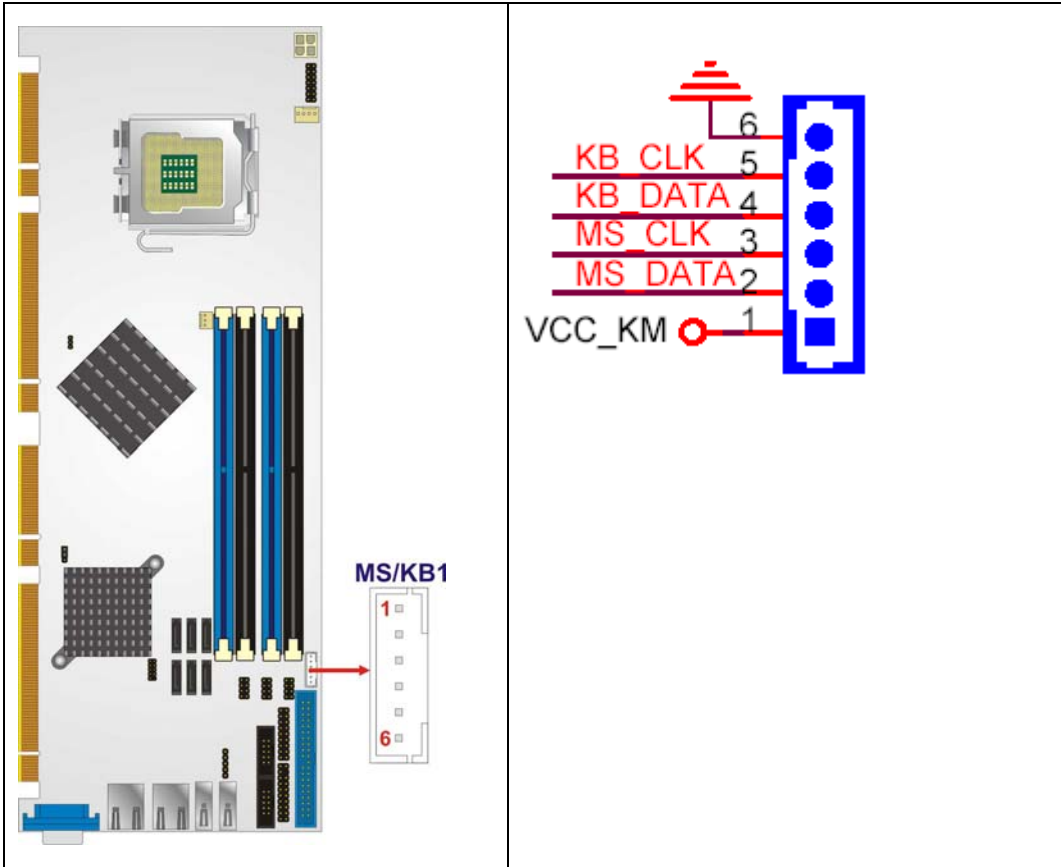
Figure 4-10: Keyboard/Mouse Connector Location

PIN NO.	DESCRIPTION
1	+5V KB DATA
2	MS DATA
3	MS CLK
4	KB DATA
5	KB CLK
6	GROUND

Table 4-11: Keyboard/Mouse Connector Pinouts

4.2.10 SATA Drive Connectors

CN Label: SATA1, SATA2, SATA3, SATA4, SATA5. and SATA6

CN Type: 7-pin SATA drive connectors

CN Location: See Figure 4-11

CN Pinouts: See Table 4-12

The six SATA drive connectors are each connected to second generation SATA drives. Second generation SATA drives transfer data at speeds as high as 300 Mbps. The SATA drives can be configured in a RAID configuration.
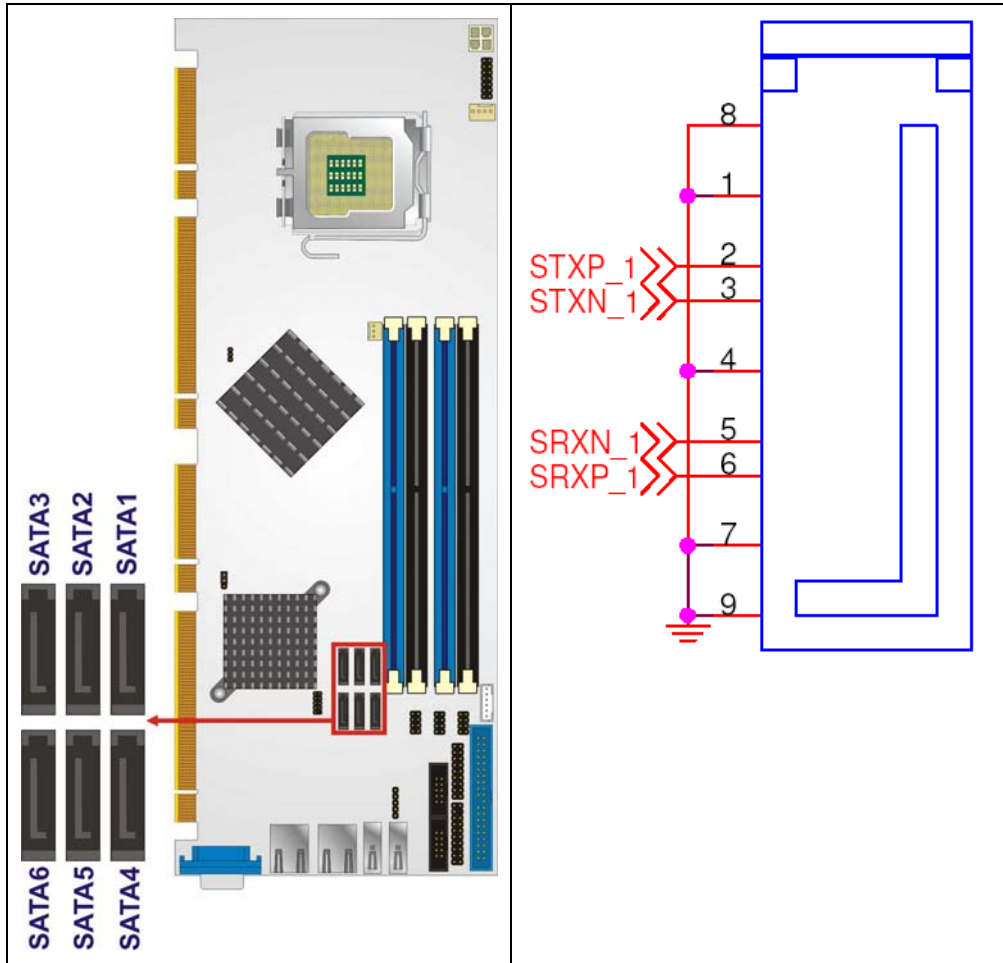
Figure 4-11: SATA Drive Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 4-12: SATA Drive Connector Pinouts

4.2.11 Serial Port Connector (COM1, COM 2)

CN Label: COM1 and COM2

CN Type: 10-pin header (2x5)

CN Location: See Figure 4-12

CN Pinouts: See Table 4-13

The 10-pin serial port connector provides a second RS-232 serial communications channel. The COM 2 serial port connector can be connected to external RS-232 serial port devices.
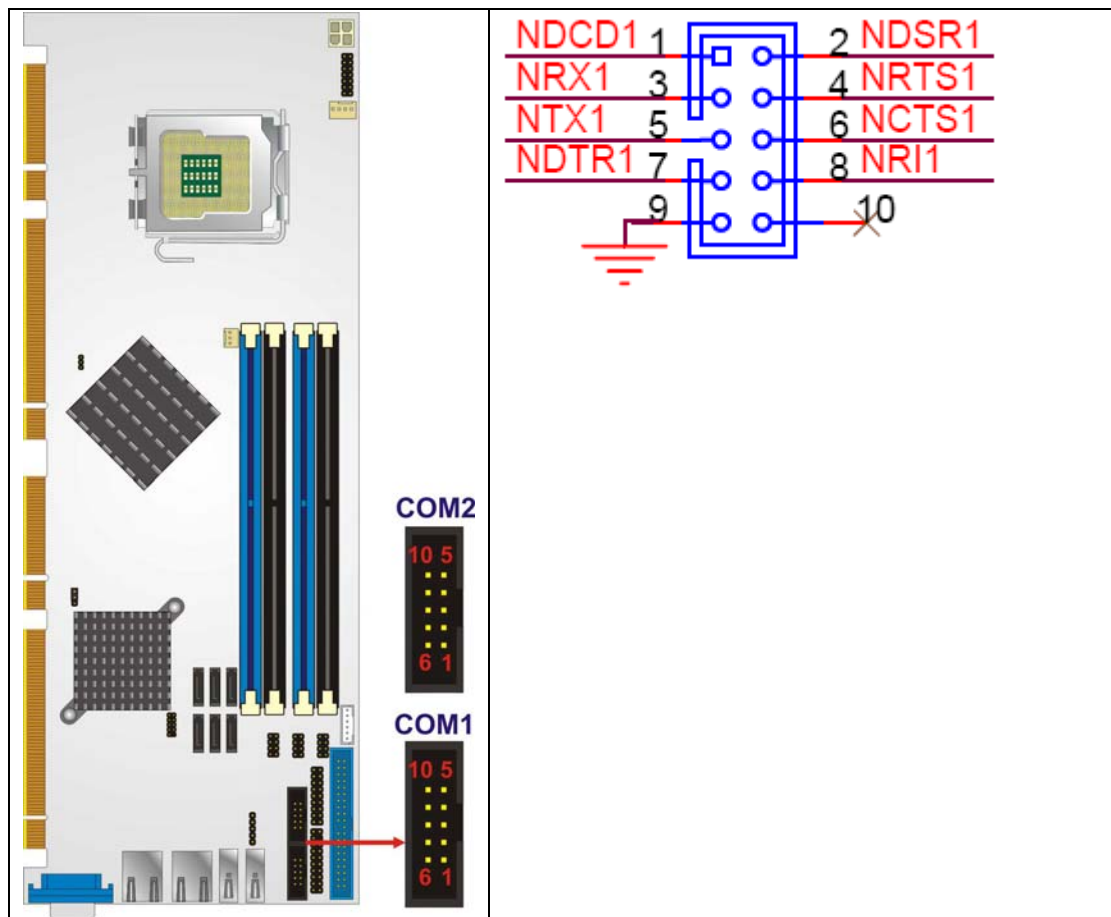
Figure 4-12: Serial Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Data Carrier Direct (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request To Send (RTS)
5	Transmit Data (TXD)	6	Clear To Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	N/C

Table 4-13: Serial Connector Pinouts

4.2.12 Trusted Platform Module (TPM) Connector

CN Label: TPM1

CN Type: 40-pin header (2x20)

CN Location: See Figure 4-14

CN Pinouts: See Table 4-15

The Trusted Platform Module (TPM) connector secures the system on bootup. An optional TPM (see packing list in **Chapter 3**) can be connected to the TPM connector.

3307840 PICMG 1.3 CPU Card
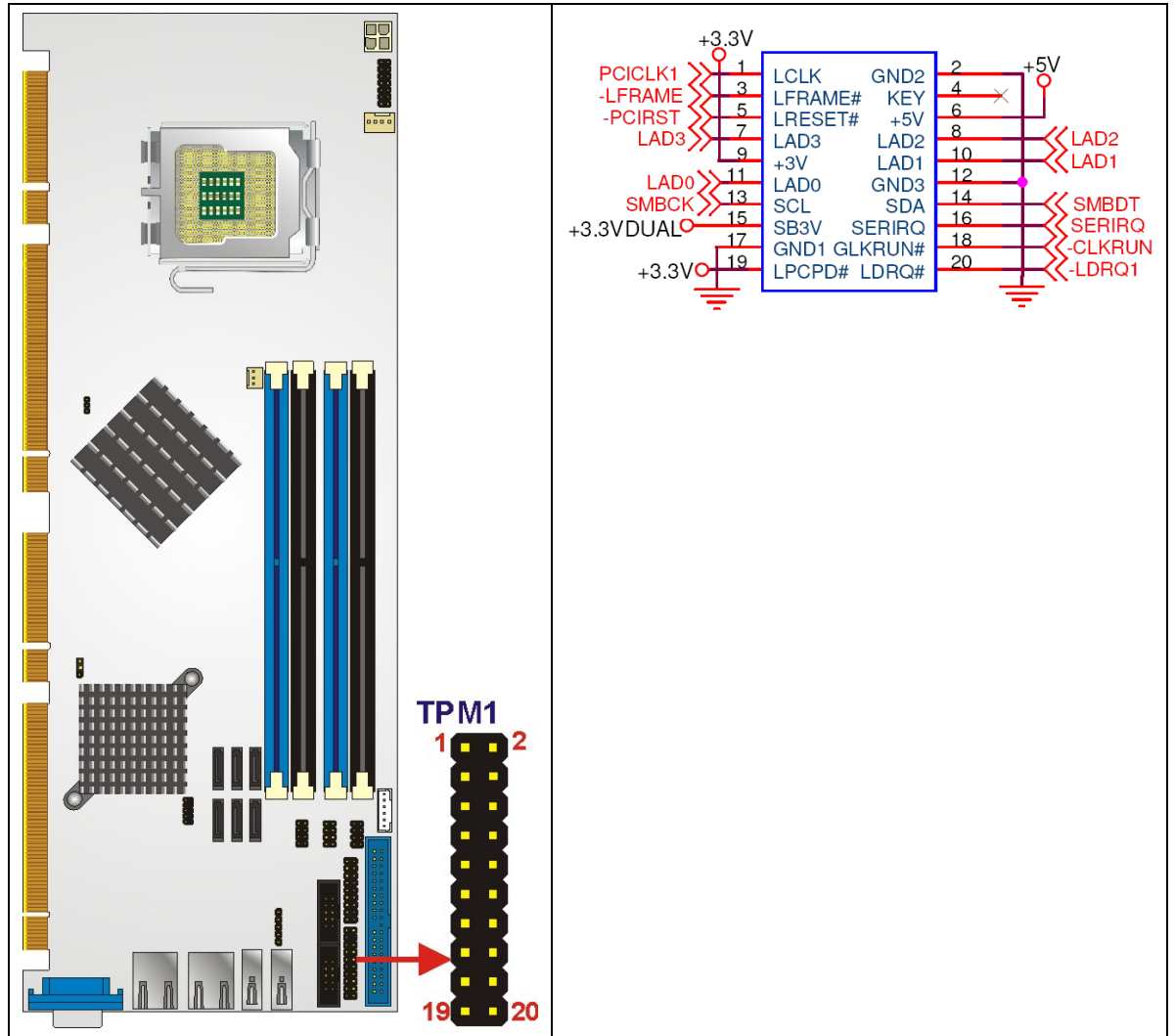
Figure 4-13: TPM Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LCLK	2	GND2
3	LFRAME#	4	KEY
5	LRESET#	6	+5V
7	LAD3	8	LAD2
9	+3V	10	LAD1
11	LAD0	12	GND3
13	SCL	14	SDA
15	SB3V	16	SERIRQ

| 17 | GND1 | 18 | GLKRUN# |
| 19 | LPCPD# | 20 | LDRQ# |

Table 4-14: TPM Connector Pinouts

4.2.13 SDVO Control Connector

CN Label: SDVO1

CN Type: 3-pin header (1x3)

CN Location: See Figure 4-14

CN Pinouts: See Table 4-15

If an SDVO graphics card is installed on the PCIe x16 expansion slot on the backplane, the 1x3 pin Serial Digital Video Output (SDVO) control connector must be connected to a corresponding SDVO control connector on a compatible GLOBAL AMERICAN backplane.

Figure 4-14:SDVO Connector Pinout Locations

PIN NO.	DESCRIPTION
1	EXP_EN
2	SDVO_CLOCK
3	SDVO_DATA

Table 4-15: SDVO Connector Pinouts

4.2.14 USB Connectors (Internal)

CN Label: USB1, USB2 and USB3

CN Type: 8-pin header (2x4)

CN Location: See Figure 4-15

CN Pinouts: See Table 4-16

The 2x4 USB pin connectors each provide connectivity to two USB 1.1 or two USB 2.0 ports. Each USB connector can support two USB devices.. Additional external USB ports are found on the rear panel. The USB ports are used for I/O bus expansion.
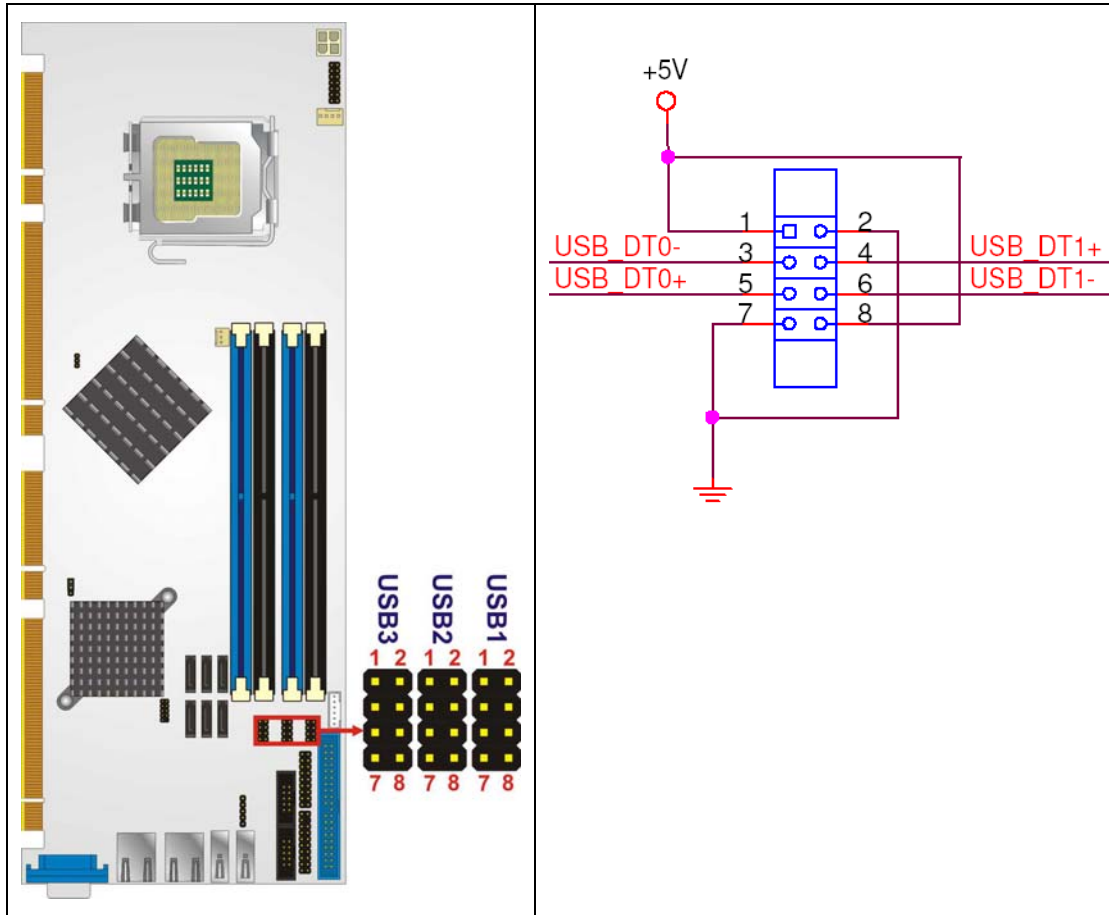
Figure 4-15: USB Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	DATAN-	4	DATAM+
5	DATAN+	6	DATAM-
7	GND	8	VCC

Table 4-16: USB Port Connector Pinouts

4.3 External Peripheral Interface Connector Panel

Figure 4-16 shows the 3307840 external peripheral interface connector (EPIC) panel. The 3307840 EPIC panel consists of the following:

■ 1 x DVI connector

- 1 x PS/2 connector
- 2 x RJ-45 LAN connectors
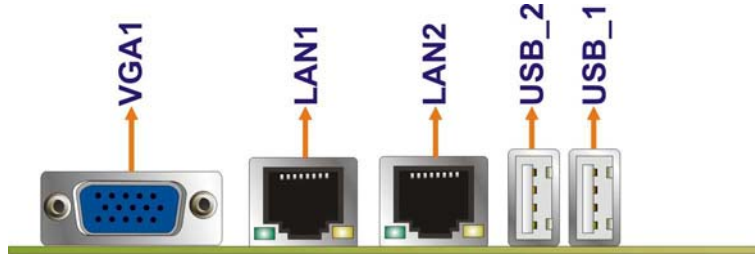
Figure 4-16: 3307840 External Peripheral Interface Connector

4.3.1 LAN Connectors

CN Label: LAN1 and LAN2

CN Type: RJ-45

CN Location: See Figure 4-16

CN Pinouts: See Table 4-17

The 3307840 is equipped with two built-in RJ-45 Ethernet controllers. The controllers can connect to the LAN through two RJ-45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TXA+	5	TXC-
2	TXA-	6	TXB-
3	TXB+	7	TXD+
4	TXC+	8	TXD-

Table 4-17: LAN Pinouts
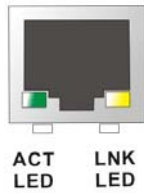
Figure 4-17: RJ-45 Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 4-18**.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
ORANGE	10/100 LAN	YELLOW	Linked
GREEN	GbE LAN		

Table 4-18: RJ-45 Ethernet Connector LEDs

4.3.2 USB Connector

CN Label: USB_1 and USB_2

CN Type: USB port

CN Location: See Figure 4-16

CN Pinouts: See Table 4-19

The 3307840 has four external USB 2.0 ports. The ports connect to both USB 2.0 and USB 1.1 devices.

PIN NO.	DESCRIPTION
1	GND
2	USB_P
4	USB_N
4	USB_5V

Table 4-19: USB Port Pinouts

4.3.3 VGA Connector

CN Label: VGA1

CN Type: 15-pin Female

CN Location: See Figure 4-16

CN Pinouts: See Figure 4-18 and Table 4-20

The 3307840 has a single 15-pin female connector for connectivity to standard display devices.
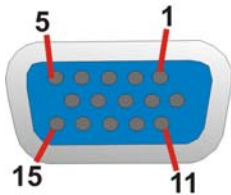
Figure 4-18: VGA Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC / NC	10	GND
11	NC	12	DDC DAT

PIN	DESCRIPTION	PIN	DESCRIPTION
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 4-20: VGA Connector Pinouts

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Chapter

5
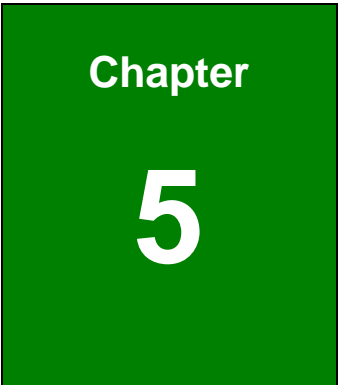
Installation

5.1 Anti-static Precautions

⚠ **WARNING:**

Failure to take ESD precautions during the installation of the 3307840 may result in permanent damage to the 3307840 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3307840. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3307840, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- *Self-grounding*:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring the 3307840, place it on an antic-static pad. This reduces the possibility of ESD damaging the 3307840.
- *Only handle the edges of the PCB*:-: When handling the PCB, hold the PCB by the edges.

5.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the 3307840 is installed. All installation notices pertaining to the installation of the 3307840 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the 3307840 and injury to the person installing the motherboard.

5.2.1 Installation Notices

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the 3307840, 3307840 components and injury to the user.

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

- Read the user manual:
  - O The user manual provides a complete description of the 3307840 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - O Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the 3307840 on an antistatic pad:
  - O When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the 3307840 off:

○ When working with the 3307840, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the 3307840 **DO NOT:**

■ Remove any of the stickers on the PCB board. These stickers are required for warranty validation.

■ Use the product before verifying all the cables and power connectors are properly connected.

■ Allow screws to come in contact with the PCB circuit, connector pins, or its components.

5.2.2 Installation Checklist

The following checklist is provided to ensure the 3307840 is properly installed.

■ All the items in the packing list are present

■ The CPU is installed

■ The CPU cooling kit is properly installed

■ A compatible memory module is properly inserted into the slot

■ The CF Type I or CF Type II card is properly installed into the CF socket

■ The jumpers have been properly configured

■ The 3307840 is inserted into a chassis with adequate ventilation

■ The correct power supply is being used

■ The following devices are properly connected

○ Primary and secondary IDE device

○ SATA drives

○ Keyboard and mouse cable

○ Audio kit

○ Power supply

○ USB cable

○ Serial port cable

○ SDVO cable

■ The following external peripheral devices are properly connected to the chassis:

○ VGA screen

o USB devices

o LAN

5.3 Unpacking

5.3.1 Unpacking Precautions

When the 3307840 is unpacked, please do the following:

■ Follow the anti-static precautions outlined in Section 5.1.

■ Make sure the packing box is facing upwards so the 3307840 does not fall out of the box.

■ Make sure all the components in the checklist shown in **Chapter 3** are present.

 NOTE:

If some of the components listed in the checklist in **Chapter 3** are missing, please do not proceed with the installation. Contact the GLOBAL AMERICAN reseller or vendor you purchased the 3307840 from or contact a Global American sales representative directly. To contact a Global American sales representative, please send an email to salesinfo@globalamericaninc.com.

5.4 CPU, CPU Cooling Kit and DIMM Installation

 WARNING:

A CPU should never be turned on without the specified cooling kit being installed. If the cooling kit (heat sink and fan) is not properly installed and the system turned on, permanent damage to the CPU, 3307840 and other electronic components attached to the system may be incurred. Running a CPU without a cooling kit may also result in injury to the user.

The CPU, CPU cooling kit and DIMM are the most critical components of the 3307840. If one of these components is not installed the 3307840 cannot run.

5.4.1 Socket LGA775 CPU Installation

NOTE:

Enabling Hyper-Threading Technology on your system requires meeting all of the platform requirements listed below:

- **CPU**: An Intel® Pentium 4 Processor with HT Technology must be installed
- **Chipset**: An Intel® Chipset that supports HT Technology (that has been met by the 3307840)
- **OS**: An operating system that has optimizations for HT Technology

WARNING:

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

The LGA775 socket is shown in Figure 5-1.
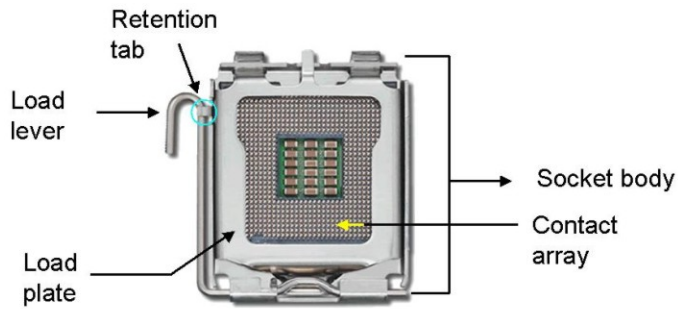
Figure 5-1: Intel® LGA775 Socket

To install a socket LGA775 CPU onto the 3307840, follow the steps below:

 WARNING:

> When handling the CPU, only hold it on the sides. DO NOT touch the
>
> pins at the bottom of the CPU.

Step 1: **Remove the protective cover.** Remove the black protective cover by prying it

off the load plate. To remove the protective cover, locate the "**REMOVE**" sign and

use your fingernail to pry the protective cover off. See **Figure 5-2**.

Figure 5-2: Remove the CPU Socket Protective Shield

Step 2: **Open the socket**. Disengage the load lever by pressing the lever down and

slightly outward to clear the retention tab. Rotate the load lever to a fully open

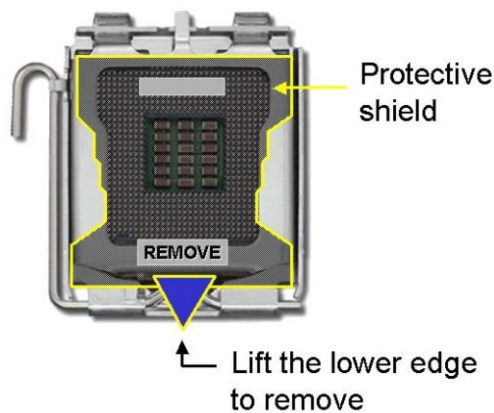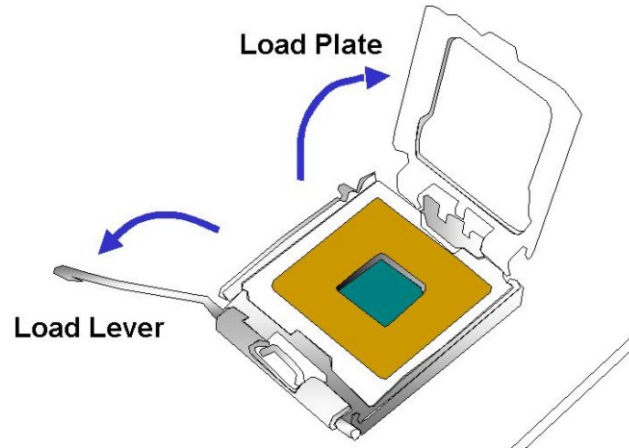position. Then rotate the load plate towards the opposite direction.

See **Figure 5-3**.

Figure 5-3: Open the CPU Socket Load Plate

Step 3: **Inspect the CPU socket** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.

Step 4: **Orientate the CPU properly**. Make sure the IHS (Integrated Heat Sink) side is facing upward.

Step 5: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.

Step 6: **Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

Step 7: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly.

See **Figure 5-4**.
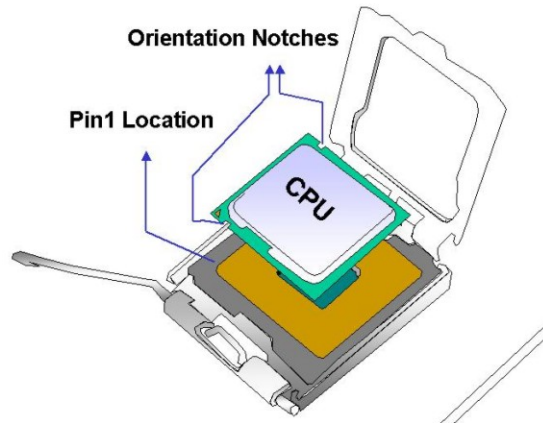
Figure 5-4: Insert the Socket LGA775 CPU

Step 8: **Close the CPU socket.** Close the load plate and engage the load lever by pushing it back to its original position. Secure the load lever under the retention tab on the side of CPU socket.

Step 9: **Connect the CPU 12V cable to the 12After the cooling kit is installed** connect the CPU cable to the CPU 12V power connector.

5.4.2 Socket LGA775 2107695 Cooling Kit Installation

⚠ **WARNING:**

It is strongly recommended that you DO NOT use the original heat sink and cooler provided by Intel® on the 3307840.

GLOBAL AMERICAN's cooling kit (2107695) includes a support bracket that is combined with the heat sink mounted on the CPU to counterweigh and balance the load on both sides of the PCB.

Figure 5-5: GLOBAL AMERICAN 2107695 Cooling Kit

A Global American Socket LGA775 CPU cooling kit shown in **Figure 5-5** can be purchased separately. The cooling kit comprises a CPU heat sink and a cooling fan.


 WARNING:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the [Fan model#] heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit follow the instructions below.

Step 1: **Place the cooling kit onto the socket LGA775 CPU**.   Make sure the CPU cable can be properly routed when the cooling kit is installed.

Step 2: **Properly align the cooling kit**. Make sure the four spring screw fasteners can pass through the pre-drilled holes on the PCB.

Step 3: **Mount the cooling kit**. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the predrilled holes on the bottom of the PCB.

Step 4: **Secure the cooling kit**. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB

holes. (See **Figure 5-6**)
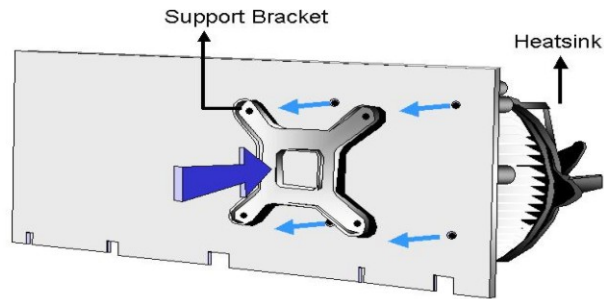
Figure 5-6: Securing the Heat sink to the PCB Board

Step 5: **Tighten the screws**. Use a screwdriver to tighten the four screws. Tighten each nut a few turns at a time and do not over-tighten the screws.

Step 6: **Connect the fan cable**. Connect the cooling kit fan cable to the fan connector on the 3307840. Carefully route the cable and avoid heat generating chips and fan blades.

5.4.3 DIMM Installation

⚠ **WARNING:**

Using incorrectly specified DIMM may cause permanently damage the 3307840. Please make sure the purchased DIMM complies with the memory specifications of the 3307840. DIMM specifications compliant with the 3307840 are listed in **Chapter 2**.

5.4.3.1 DIMM Purchasing Guidelines

WARNING:

Only use DDR2 DIMMs. If DDR DIMMs are used the system may be irreparably damaged.

When purchasing the DDR2 DIMM, please follow the guidelines below:

- ONLY purchase DDR2 DIMM
- Have a frequency of 667 MHz or 800 MHz
- Have a maximum capacity of 2.0 GB
- If more than one DDR2 DIMM is being installed in the system, please purchase DIMM that have the same capacity and operating frequency.

5.4.3.2 DIMM Installation Order

There are two 64-bit wide DDR2 channels on the Intel® Q35 Northbridge, Channel A and Channel B. DDR2 Channel A and DDR2 Channel B are shown in **Figure 5-7** below.
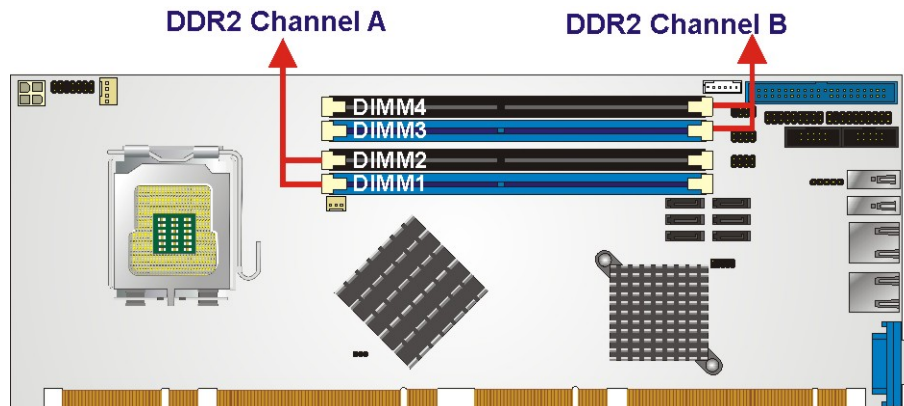
Figure 5-7: DDR2 Channels

On the 3307840, each channel is interfaced to two 240-pin DIMM sockets in the following order (see **Figure 5-7** above):

- **Channel A**: DIMM1 and DIMM2
- **Channel B**: DIMM3 and DIMM4

When populating the DDR2 DIMM sockets, populate them in the following order to optimize the memory performance:

Step 1: **DIMM1**. Install the first DDR2 DIMM into the DIMM1 DDR2 DIMM socket.

Step 2: **DIMM3**. Install the second DDR2 DIMM into the DIMM3 DDR2 DIMM socket.

Step 3: **DIMM2**. Install the third DDR2 DIMM into the DIMM2 DDR2 DIMM socket.

Step 4: **DIMM4**. Install the fourth DDR2 DIMM into the DIMM4 DDR2 DIMM socket.

5.4.3.3 DIMM Installation Guidelines

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 5-8**.

Step 1: **Open the DIMM socket handles**. The DIMM socket has two handles that secure the DIMM into the socket. Before the DIMM can be inserted into the socket, the handles must be opened. See **Figure 5-8**.

Step 2: **Align the DIMM with the socket**. The DIMM must be oriented in such a way that the notch in the middle of the DIMM must be aligned with the plastic bridge in the socket. See **Figure 5-8**.
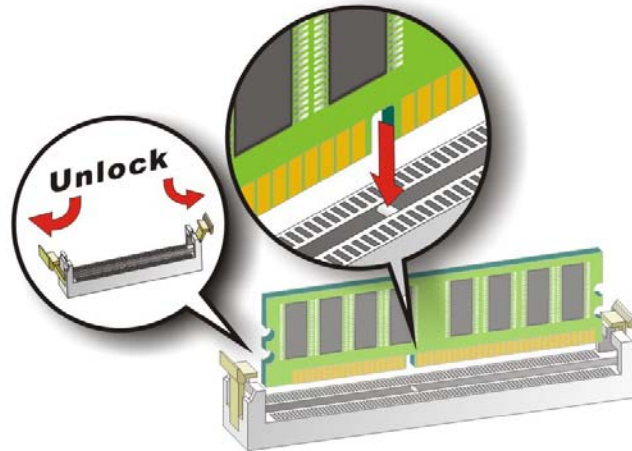
Figure 5-8: Installing a DIMM

Step 3: **Insert the DIMM**. Once properly aligned, the DIMM can be inserted into the socket. As the DIMM is inserted, the white handles on the side of the socket will close automatically and secure the DIMM to the socket. See **Figure 5-8**.

Step 4: **Removing a DIMM**. To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

5.5 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.
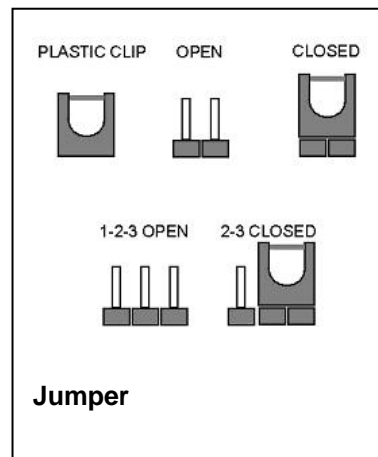
Before the 3307840 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the 3307840 are listed in **Table 5-1**.

Description	Label	Type
Clear CMOS	J_CMOS1	3-pin header

Table 5-1: Jumpers

5.5.1 Clear CMOS Jumper

Jumper Label: J_CMOS1

Jumper Type: 3-pin header

Jumper Settings: See Table 5-2

Jumper Location: See Figure 5-9

If the 3307840 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets 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 is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- ■   Enter the correct CMOS setting
- ■   Load Optimal Defaults
- ■   Load Failsafe Defaults.

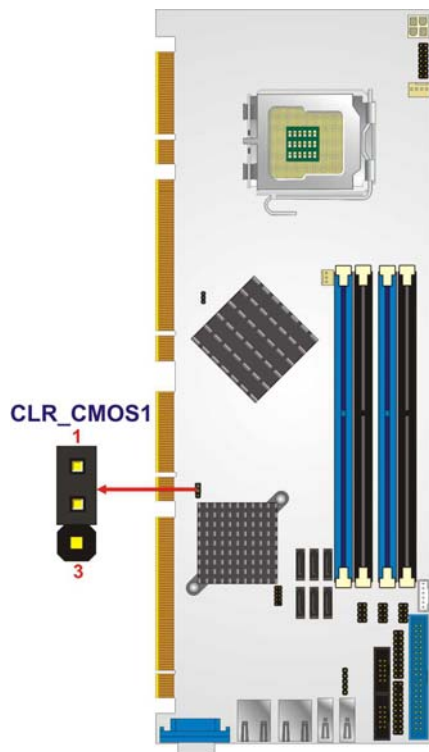After having done one of the above, save the changes and exit the CMOS Setup menu. The clear CMOS jumper settings are shown in **Table 5-2**.

Jumper Select	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 5-2: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 5-9** below.

Figure 5-9: Clear CMOS Jumper

5.6 Chassis Installation

5.6.1 Airflow

⚠ WARNING:

> Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the 3307840 must have air vents to allow cool air to move into the system and hot air to move out.

The 3307840 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

✔ NOTE:

> GLOBAL AMERICAN has a wide range of backplanes available. Please contact your 3307840 vendor, reseller or a Global American sales representative at salesinfo@globalamericaninc.com or visit the GLOBAL AMERICAN website (http://www.globalamericaninc.com) to find out more about the available chassis.

5.6.2 Backplane Installation

Before the 3307840 can be installed into the chassis, a backplane must first be installed. Please refer to the installation instructions that came with the backplane and the chassis to see how to install the backplane into the chassis.

> **NOTE:**
>
> GLOBAL AMERICAN has a wide range of backplanes available. Please contact your 3307840 vendor, reseller or a Global American sales representative at salesinfo@globalamericaninc.com or visit the GLOBAL AMERICAN website (http://www.globalamericaninc.com) to find out more about the available chassis.

5.6.3 CPU Card Installation

To install the 3307840 CPU card onto the backplane, carefully align the CPU card interface connectors with the corresponding socket on the backplane. To do this, please refer to the reference material that came with the backplane. Next, secure the CPU card to the chassis. To do this, please refer to the reference material that came with the chassis.

5.7 Internal Peripheral Device Connections

5.7.1 Peripheral Device Cables

The cables listed in **Table 5-3** are shipped with the 3307840.

Quantity	Type
1	ATA 66/100 flat cable
1	Dual RS-232 cable
1	KB/MS cable with mini DIN
1	PS/2 Y-cable

6	SATA drive cables
3	SATA drive power cables
1	USB cable

Table 5-3: GLOBAL AMERICAN Provided Cables

Separately purchased optional GLOBAL AMERICAN items that can be installed are listed below:

- Audio kit
- TPM Module

For more details about the items listed above, please refer to **Chapter 3**. Installation of the accessories listed above are described in detail below.

5.7.2 ATA Flat Cable Connection

The ATA 66/100 flat cable connects to the 3307840 to one or two IDE devices. To connect an IDE HDD to the 3307840 please follow the instructions below.

Step 1: **Locate the IDE connector**. The location/s of the IDE device connector/s is/are shown in **Chapter 3**.

Step 2: **Insert the connector**. Connect the IDE cable connector to the onboard connector. See **Figure 5-10**. A key on the front of the cable connector ensures it can only be inserted in one direction.
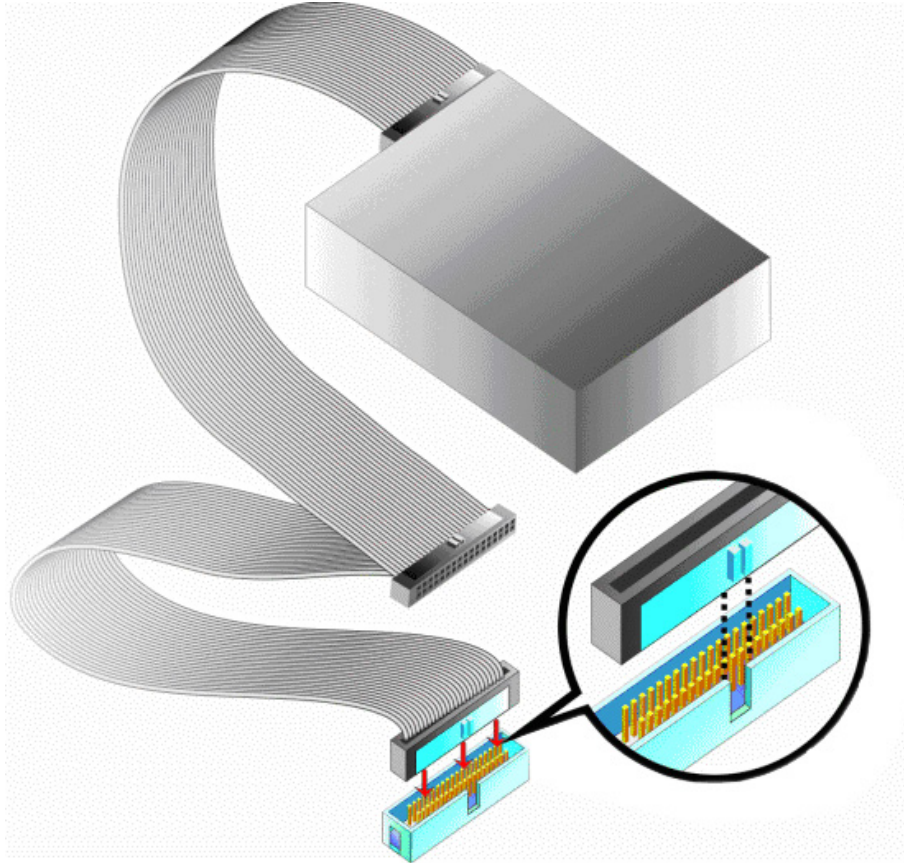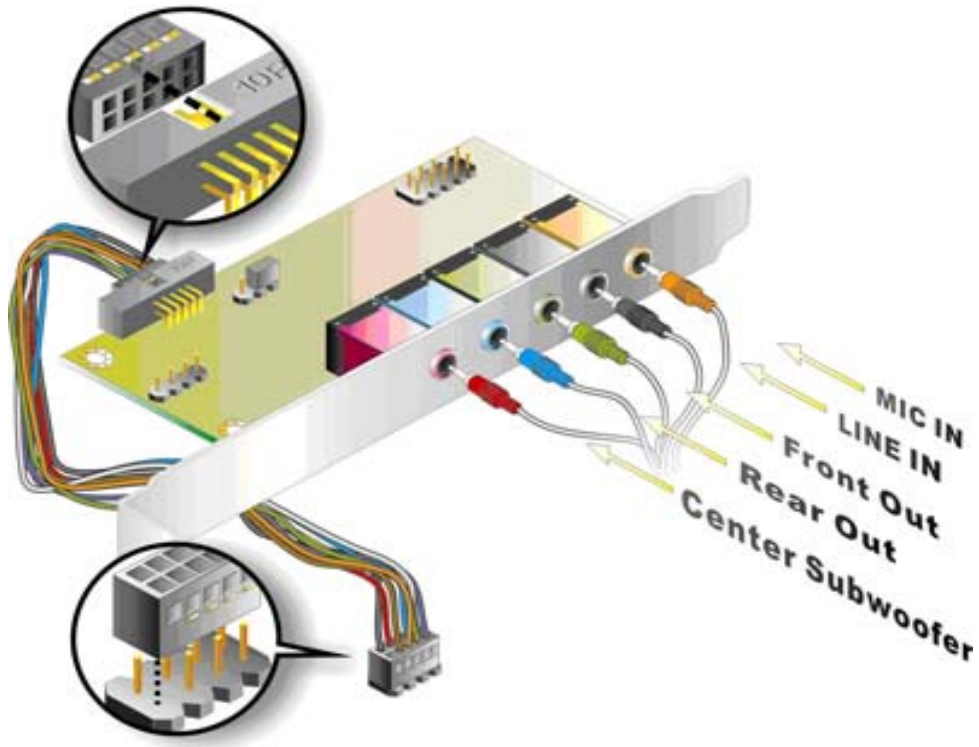
Figure 5-10: IDE Cable Connection

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

5.7.3 Audio Kit Installation

An optional audio kit that is separately ordered connects to the 9-pin audio connector on the 3307840. The audio kit consists of five audio jacks. One audio jack, Mic In, connects to a microphone. The remaining four audio jacks, Front-In, Front-Out, Rear-Out and subwoofer connect to four speakers including a subwoofer. To install the audio kit, please refer to the steps below:

Step 1: **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 2: **Align pin 1**. Align pin 1 on the onboard connector with pin 1 on the audio kit

connector. Pin 1 on the audio kit connector is indicated with a white dot. See

Figure 5-11.

Figure 5-11: Audio Kit Connection

Step 3: **Connect the audio devices**. Connect the speakers and the subwoofer to the

appropriate audio jack shown in **Figure 5-11**.

5.7.4 Dual RS-232 Cable Connection

The dual RS-232 cable consists of two connectors attached to two independent cables.

Each cable is then attached to a D-sub 9 male connector that is mounted onto a bracket. To

install the dual RS-232 cable, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the RS-232 connectors are shown in

Chapter 3.

Step 2: **Insert the cable connectors**. Insert one connector into each serial port box headers. See **Figure 5-12**. A key on the front of the cable connectors ensures the connector can only be installed in one direction.
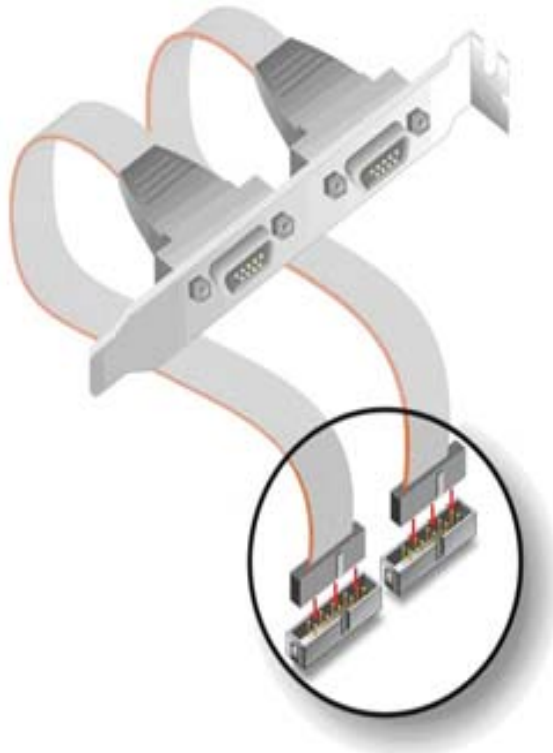
Figure 5-12: Dual RS-232 Cable Installation

Step 3: **Secure the bracket**. The dual RS-232 connector has two D-sub 9 male connectors secured on a bracket. To secure the bracket to the chassis please refer to the reference material that came with the chassis
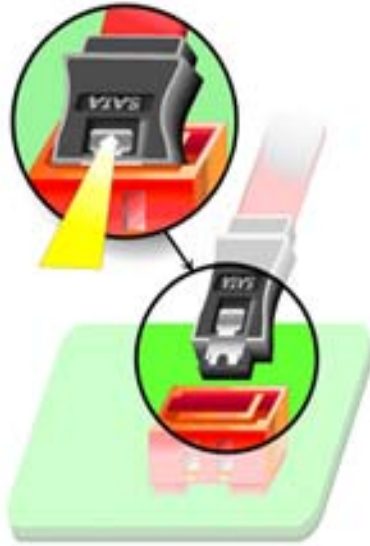
5.7.5 SATA Drive Connection

The 3307840 is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

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

Step 2: **Insert the cable connector**. Press the clip on the connector at the end of the

SATA cable and insert the cable connector into the onboard SATA drive connector.

See **Figure 5-13**.

Figure 5-13: SATA Drive Cable Connection

Step 3: **Connect the cable to the SATA disk**. Connect the connector on the other end of

the cable to the connector at the back of the SATA drive. See **Figure 5-14**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the

back of the SATA drive. See **Figure 5-14**.

Figure 5-14: SATA Power Drive Connection

5.7.6 USB Cable (Dual Port)

The 3307840 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

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

 WARNING:

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

Step 2: **Align the connectors**. The cable has two connectors. Correctly align pin 1on each cable connector with pin 1 on the 3307840 USB connector.

Step 3: **Insert the cable connectors**. Once the cable connectors are properly aligned with the USB connectors on the 3307840, connect the cable connectors to the onboard connectors. See **Figure 5-15**.

Figure 5-15: Dual USB Cable Connection

Step 4: **Attach the bracket to the chassis**. The USB 2.0 connectors are attached to a

bracket. To secure the bracket to the chassis please refer to the installation

instructions that came with the chassis.

5.8 Installing Devices on a PICMG 1.3 Backplane

Compatible PICMG 1.3 backplanes can accommodate the following devices:

- PCIe x16 graphics cards
- SDVO device graphics card
- PCIe x4 expansion cards
- PCIe x1 expansion cards
- PCI expansion cards

5.8.1 SDVO Device Installation

To install an SDVO device on the backplane, please follow the steps below:

Step 1: Make sure the 3307840 is properly installed on the backplane

Step 2: Locate the PCIe x16 graphics card slot

Step 3: Insert the SDVO device into the PCIe x16 graphics card slot

Step 4: Connect the 3307840 SDVO control connector to the corresponding connector on the backplane

5.9 External Peripheral Interface Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- RJ-45 Ethernet cable connectors
- Keyboard and mouse (first install the keyboard and mouse cable connector)
- USB device cable connectors
- VGA device cable connectors

To install these devices, connect the corresponding cable connector from the actual device to the corresponding 3307840 external peripheral interface connector making sure the pins are properly aligned.

5.9.1 LAN Connection (Single Connector)

There are two external RJ-45 LAN connectors. The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 5: **Locate the RJ-45 connectors**. The locations of the USB connectors are shown in **Chapter 4**.

Step 6: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the 3307840. See **Figure 5-16**.
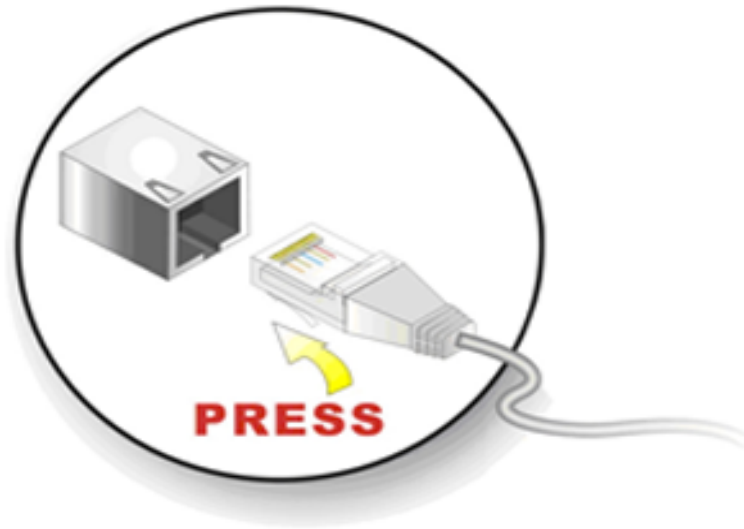
Figure 5-16: LAN Connection

Step 7: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

5.9.2 PS/2 Y-Cable Connection

NOTE:

Before installing the PS/2 Y-cable connector, make sure the keyboard and mouse cable with the mini DIN connector has been properly installed and that the DIN connector is correctly mounted on the external panel.

The 3307840 has a PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is connected to the PS/2 Y-cable that came with the 3307840. One of the PS/2 cables is connected to a keyboard and the other to a mouse to the system. Follow the steps below to connect a keyboard and mouse to the 3307840.

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

Step 2: **Insert the keyboard/mouse connector**. Insert the PS/2 connector on the end of the PS/2 y-cable into the external PS/2 connector. See **Figure 5-17**.
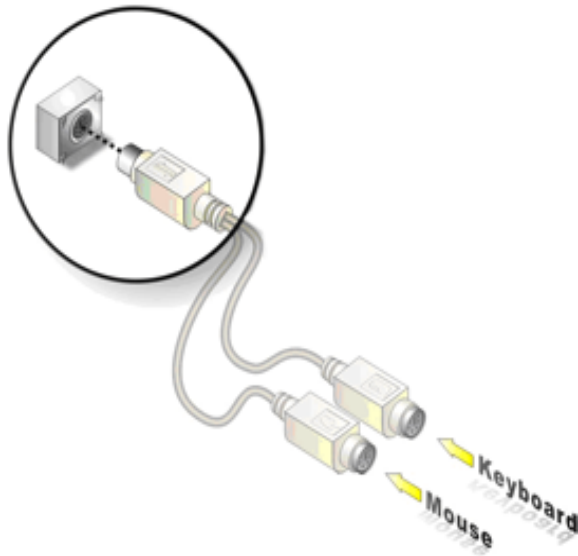
Figure 5-17: PS/2 Keyboard/Mouse Connector

Step 3: **Connect the keyboard and mouse**. Connect the keyboard and mouse to the appropriate connector. The keyboard and mouse connectors can be distinguished from each other by looking at the small graphic at the top of the connector.

5.9.3 USB Device Connection (Single Connector)

There are two external USB 2.0 connectors. Both connectors are perpendicular to the 3307840. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: **Located the USB connectors**. The locations of the USB connectors are shown in **Chapter 4**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the 3307840. See Figure 5-18.
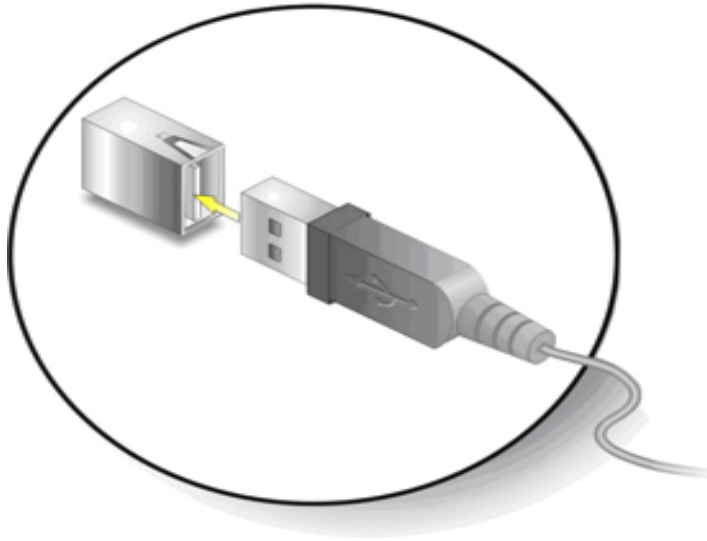
Figure 5-18: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.
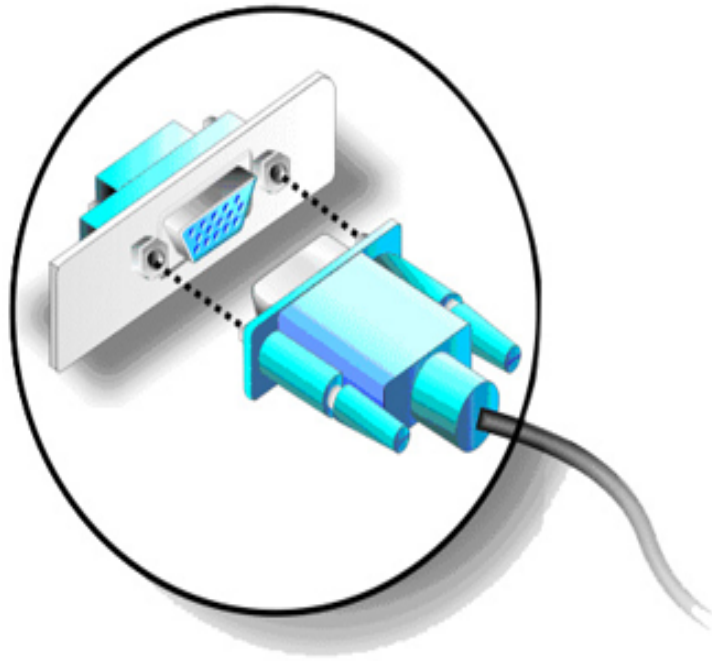
5.9.4 VGA Monitor Connection

The 3307840 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the 3307840, please follow the instructions below.

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

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

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the 3307840. See **Figure 5-19**.
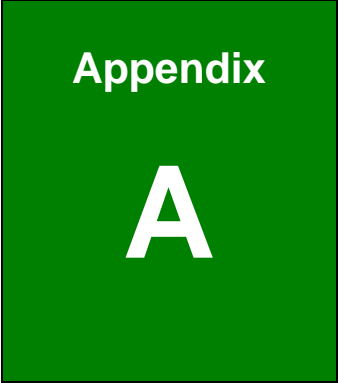

Figure 5-19: VGA Connector

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

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Appendix

A

DIO Interface

A.1 DIO Interface Introduction

The DIO connector on the 3307840 is interfaced to GIO ports on the iTE Super I/O chipset. The DIO has both 8-bit digital inputs and 8-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

> **NOTE:**
>
> For further information, please refer to the datasheet for the iTE Super I/O chipset.

A.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

Pin	Description	Super I/O Pin	Super I/O Pin Description
1	Input 0	19 (GP30)	General purpose I/O port 3 bit 0
2	Output 0	27 (GP20)	General purpose I/O port 2 bit 0
3	Input 1	18 (GP31)	General purpose I/O port 3 bit 1
4	Output 1	26 (GP21)	General purpose I/O port 2 bit 1
5	Input 2	17 (GP32)	General purpose I/O port 3 bit 2
6	Output 2	25 (GP22)	General purpose I/O port 2 bit 2
7	Input 3	16 (GP33)	General purpose I/O port 3 bit 3
8	Output 3	24 (GP23)	General purpose I/O port 2 bit 3
9	Input 4	14 (GP34)	General purpose I/O port 3 bit 4
10	Output 4	23 (GP24)	General purpose I/O port 2 bit 4
11	Input 5	13 (GP35)	General purpose I/O port 3 bit 5
12	Output 5	22 (GP25)	General purpose I/O port 2 bit 5
13	Input 6	12 (GP36)	General purpose I/O port 3 bit 6
14	Output 6	21 (GP26)	General purpose I/O port 2 bit 6
15	Input 7	11 (GP37)	General purpose I/O port 3 bit 7

16	Output 7	20 (GP27)	General purpose I/O port 2 bit 7
17	GND	N/A	N/A
18	+5V	N/A	N/A

A.3 Assembly Language Samples

A.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

```
MOV        AX, 6F08H        Sets the digital port as input

INT        15H              Initiates the INT 15H BIOS call
```

A.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

```
MOV        AX, 6F09H        Sets the digital port as output

MOV        BL, 09H

INT        15H              Initiates the INT 15H BIOS call
```

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Appendix

B
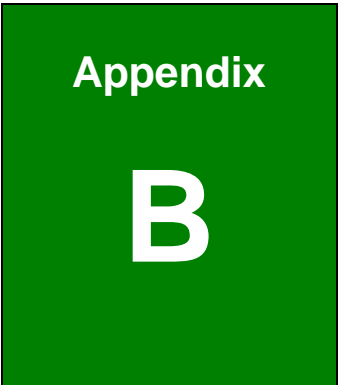
Watchdog Timer

![NOTE icon] **NOTE:**

The following discussion applies to DOS environment. GLOBAL AMERICAN support is contacted or the GLOBAL AMERICAN website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

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

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

INT 15H:

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

Table B-1: AH-6FH Sub-function

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

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

 NOTE:

When exiting a program it is necessary to disable the Watchdog Timer,

otherwise the system resets.

Example program:

; **INITIAL TIMER PERIOD COUNTER**

;

W_LOOP:

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

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

    INT   15H

 ;

; **ADD THE APPLICATION PROGRAM HERE**

;

    CMP   *EXIT_AP, 1*   ;is the application over?

    JNE   *W_LOOP*   ;No, restart the application

    MOV   *AX, 6F02H*   ;disable Watchdog Timer

    MOV   *BL, 0*   ;

    INT   15H

;

; **EXIT** ;

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Appendix

C

Address Mapping

C.1 Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel® Graphics Controller
3C0-3DF	Intel® Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table C-1: IO Address Map

C.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

Table C-2: 1st MB Memory Address Map

C.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN/USB2.0/SATA
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table C-3: IRQ Mapping Table

C.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table C-4: IRQ Mapping Table

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Appendix

D

Intel® Matrix Storage Manager

D.1 Introduction

The Intel® ICH9DO chipset can provide data protection for serial ATA (SATA) disks via the Intel® Matrix Storage Manager using one of three fault-tolerant RAID levels: RAID 1, 5 or 10. When using two hard drives, matrix RAID allows RAID 0 and RAID 1 functions to be combined, where critical files can be stored on RAID 1, and RAID 0 can be used for non-critical items such as software. RAID 5 and RAID 0 can be combined to provide higher performance, capacity, and fault tolerance.

 CAUTION!

> A configured RAID volume (which may consist of multiple hard drives) appears to an operating system as a contingent storage space. The operating system will not be able to distinguish the physical disk drives contained in a RAID configuration.

D.1.1 Precautions

One key benefit a RAID configuration brings is that a single hard drive can fail within a RAID array without damaging data. With RAID1 array, a failed drive can be replaced and the RAID configuration restored.

 WARNING!

> Irrecoverable data loss occurs if a working drive is removed when trying to remove a failed drive. It is strongly recommended to mark the physical connections of all SATA disk drives. Drive locations can be identified by attaching stickers to the drive bays. If a drive member of a RAID array should fail, the failed drive can then be correctly identified.

> ⚠ **CAUTION!**
>
> Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

D.2 Features and Benefits

- Supports RAID levels 0, 1, 5 and 10
- Supports connectivity to two or more disk drives
- Supported Operating Systems include: Windows XP, Windows Server 2003 and Windows Vista

D.3 Accessing the Intel® Matrix Storage Manager

To access the Intel® Matrix Storage Manager, please follow the steps below.

Step 1: **Connect SATA drives to the system**. Connect two or more SATA drives to the system. Make sure the drives have the same capacity, are the same type and have the same speed.

> ✓ **NOTE:**
>
> Make sure the SATA drives are EXACTLY the same when they are configured in a RAID configuration. If they are not the same size, disk drive capacity is sacrificed and overall performance affected.

Step 2: **Enable SATA drives in BIOS**. Start the computer and access the **BIOS** setup program. Enable **SATA** support for all IDE devices. Refer to the applicable BIOS configuration section in this user manual.

Step 3: **Save and Exit BIOS**. After the **SATA** support option is enabled, save and exit the **BIOS**.

Step 4: **Reboot the system**. Reboot the system after saving and exiting the **BIOS**.

Step 5: **Press Ctrl+I**. During the system boot process, press **Ctrl+I** when prompted to enter the RAID configuration software.

Step 6: **Configure the RAID settings**. Use the Intel® Matrix Storage Manager to configure the RAID array. Brief descriptions of configuration options are given below.

Step 7: **Install the OS**. After the RAID array has been configured, install the OS. To do this, please refer to the documentation that came with the OS.

D.4 RAID Configuration

D.4.1 Creating a RAID Volume

⚠️ **WARNING!**

All data previously stored on the member drives of a RAID configuration are destroyed during the RAID initialization process. If "used" drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

Step 1: **Select** "**Create RAID Volume**." Use the arrow keys to highlight **Create RAID Volume** and press **ENTER**. See **Figure D-1**.
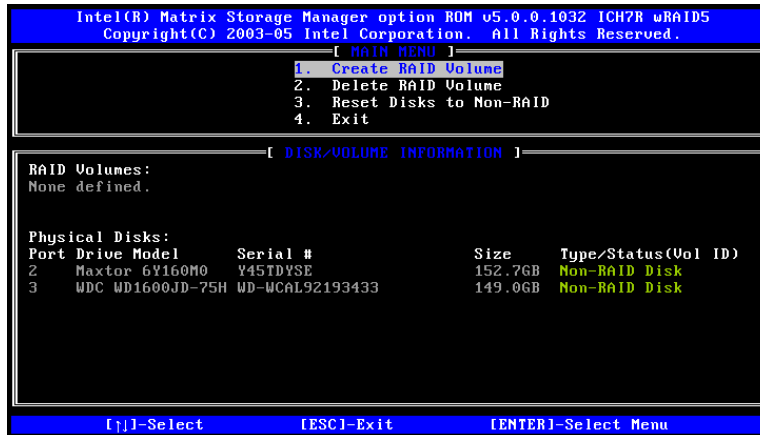
Figure D-1: Matrix Storage Manager Main Menu

Step 2: **Name the RAID volume**. Enter a name for the RAID volume, or press **ENTER** to

accept the default volume name. Upper and lower case alphabetic, numeric,

space, and underscore characters are all applicable for naming an array. See

Figure D-2.
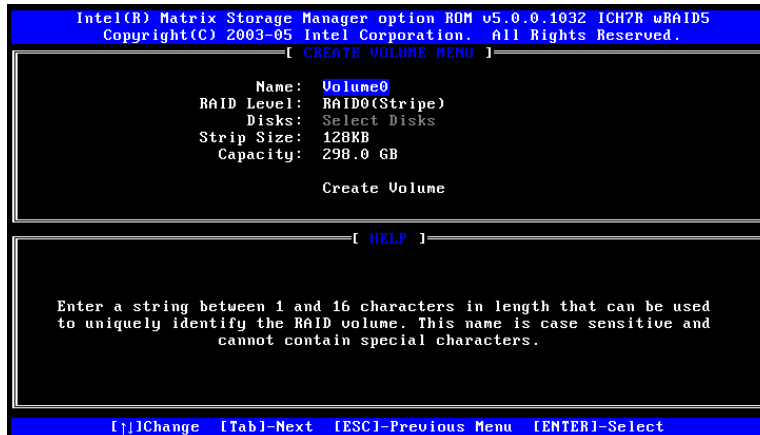
Figure D-2: Create RAID Volume Name

Step 3: **Choose the RAID level**. Select a RAID level from the list. RAID levels include

RAID 0, 1, 5 and 10. See **Figure D-3**.

> **NOTE:**
>
> RAID 0 and RAID1 levels require a minimum of two hard drives.
>
> RAID 10 level requires a minimum of four hard drives.
>
> RAID5 level requires a minimum of three hard drives.

```
Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICH7R wRAID5
       Copyright(C) 2003-05 Intel Corporation.  All Rights Reserved.
========================[ CREATE VOLUME MENU ]========================

                 Name:  Volume0
           RAID Level:  RAID0(Stripe)
                Disks:  Select Disks
           Strip Size:  128KB
             Capacity:  298.0 GB

                          Create Volume


==============================[ HELP ]================================
           Choose the RAID level best suited to your usage model.

   RAID0 - Data striped across multiple physical drives for performance.
   RAID1 - Data mirrored across multiple physical drives for redundancy.
   RAID10 - Striped volume whose segments are RAID 1 volumes. Requires
            four hard drives. Functionally equivalent to RAID0+1.
   RAID5 - Data and parity striped across three or more physical drives
           for performance and redundancy.


======================================================================
      [↑↓]Change  [Tab]-Next  [ESC]-Previous Menu  [ENTER]-Select
```

Figure D-3: Choose the Raid Level

Step 4: **Select the Stripe Size**. Select a stripe size from the list. See **Figure D-4**.
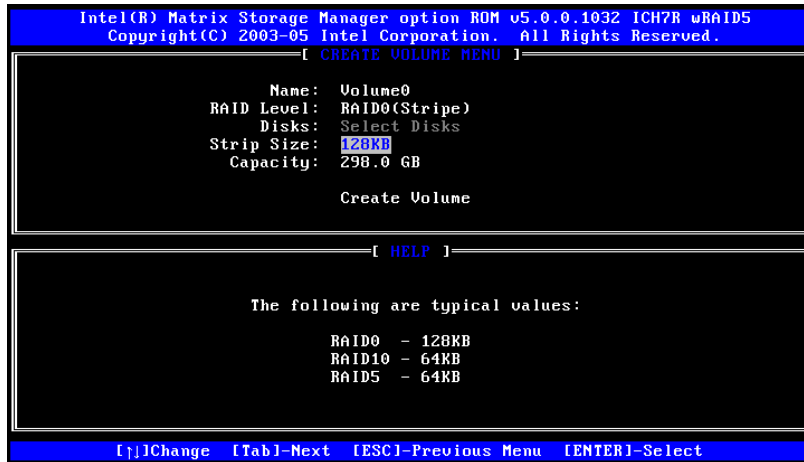
Figure D-4: Select the Stripe Size

Step 5:   **Enter the Volume Capacity**. Enter the volume capacity, or press **ENTER** to

accept the default capacity. See **Figure D-5**.
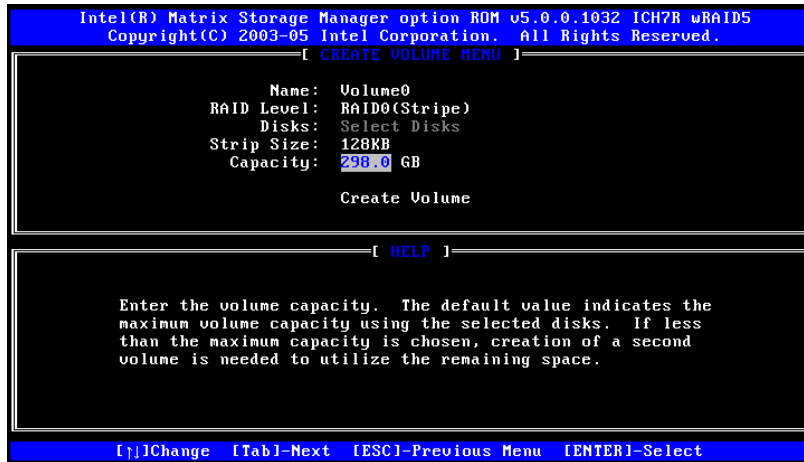
Figure D-5: Enter the Volume Capacity

Step 6:   **Create the RAID Volume**. Press **ENTER** to create the RAID volume as specified.

See **Figure D-6**.
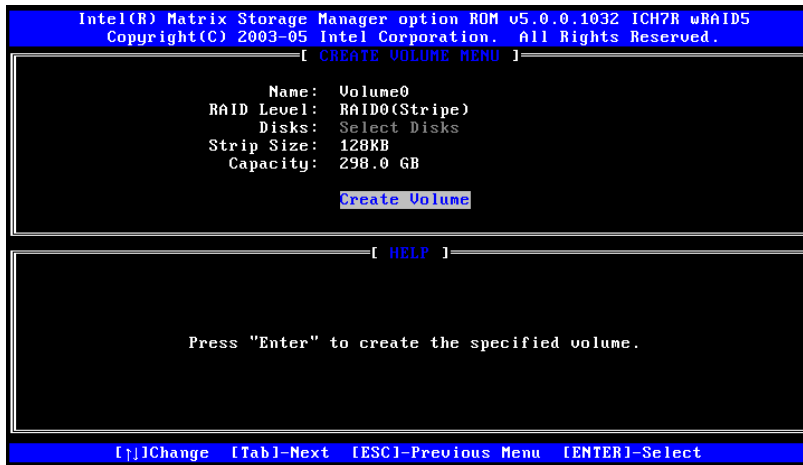
Figure D-6: Create the RAID Volume

Step 7: **Create RAID Volume Verification**. After reading the warning, press **Y** to create the RAID volume as specified, or **N** to return to the **Create RAID Volume** menu. See **Figure D-7**.
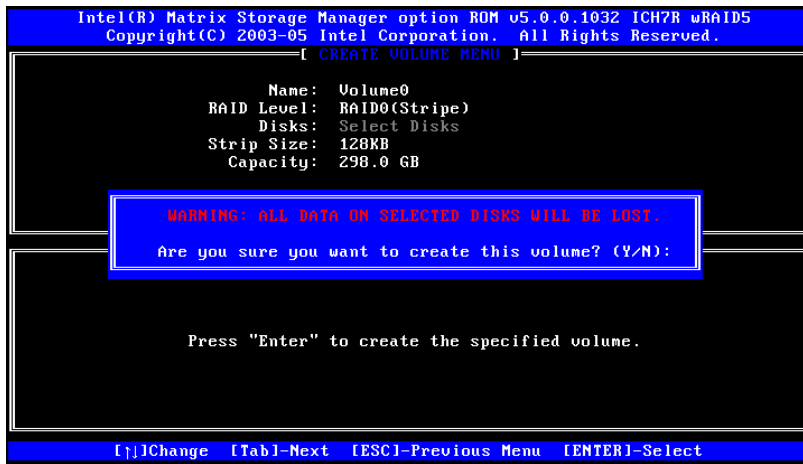
Figure D-7: Create RAID Volume Verification

D.4.2 Deleting a RAID Volume

WARNING!

All data stored on the member drives of a RAID volume are destroyed during the RAID deletion process. Make sure any data to be saved has been moved or backed up before deleting a RAID volume.

Step 1: **Select** "**Delete RAID Volume**." Use the arrow keys to highlight **Delete RAID Volume** and press **ENTER**. See **Figure D-8**.

Figure D-8: Delete RAID Volume Menu

Step 2: **Select RAID Volume to be Deleted**. Use the arrow keys to highlight the RAID

volume to be deleted and press ENTER. See **Figure D-9**.
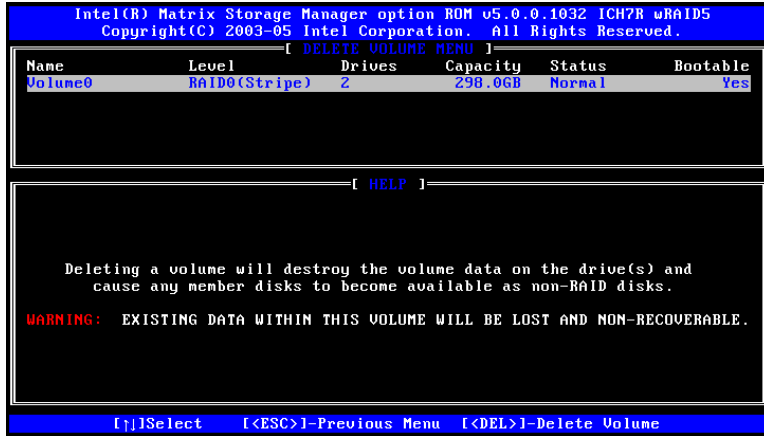
Figure D-9: Select RAID Volume to be Deleted

Step 3: **Delete Volume Verification**. After reading the warning, press **Y** to delete the

specified RAID volume, or **N** to return to the **Delete Volume** menu.

See **Figure D-10**.
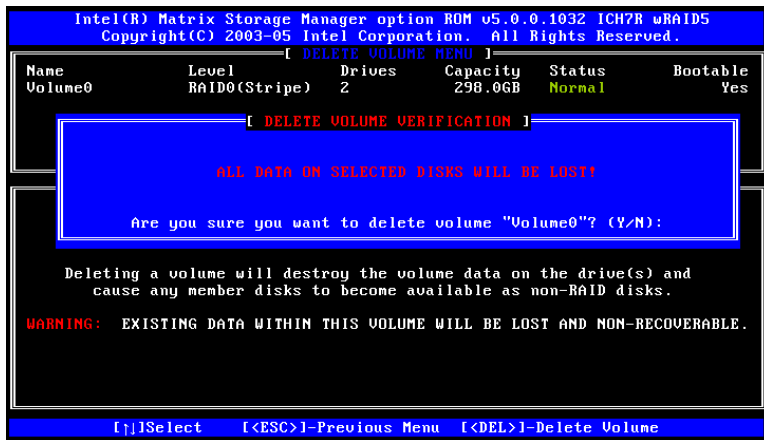
Figure D-10: Delete Volume Verification

Step 4: **Non-RAID Disks**. After deleting the RAID volume, the disks belonging to the

volume will be shown as non-RAID disks. See **Figure D-11**.

```
        Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICH7R wRAID5
           Copyright(C) 2003-05 Intel Corporation.  All Rights Reserved.
    ┌──────────────────────────────[ MAIN MENU ]──────────────────────────────┐
    │                       1.  Create RAID Volume                             │
    │                       2.  Delete RAID Volume                             │
    │                       3.  Reset Disks to Non-RAID                        │
    │                       4.  Exit                                           │
    │                                                                          │
    └──────────────────────────────────────────────────────────────────────────┘
    ┌───────────────────────[ DISK/VOLUME INFORMATION ]───────────────────────┐
    │RAID Volumes:                                                             │
    │None defined.                                                            │
    │                                                                          │
    │                                                                          │
    │Physical Disks:                                                           │
    │Port Drive Model       Serial #                Size    Type/Status(Vol ID)│
    │2    Maxtor 6Y160M0     Y45TDYSE               152.7GB  Non-RAID Disk      │
    │3    WDC WD1600JD-75H WD-WCAL92193433          149.0GB  Non-RAID Disk      │
    │                                                                          │
    │                                                                          │
    │                                                                          │
    │                                                                          │
    │                                                                          │
    └──────────────────────────────────────────────────────────────────────────┘
          [↑↓]-Select          [ESC]-Exit          [ENTER]-Select Menu
```

Figure D-11: Non-RAID Disks

D.4.3 Resetting a Disk to Non-RAID

⚠ **WARNING!**

> All data stored on the disk drive of a RAID volume is destroyed when resetting it to non-RAID. Make sure any data to be saved has been moved or backed up before resetting a disk to non-RAID.

Step 1: **Select** "**Reset Disk to Non-RAID**." Use the arrow keys to highlight **Reset Disk to Non-RAID** and press **ENTER**. See **Figure D-12**.
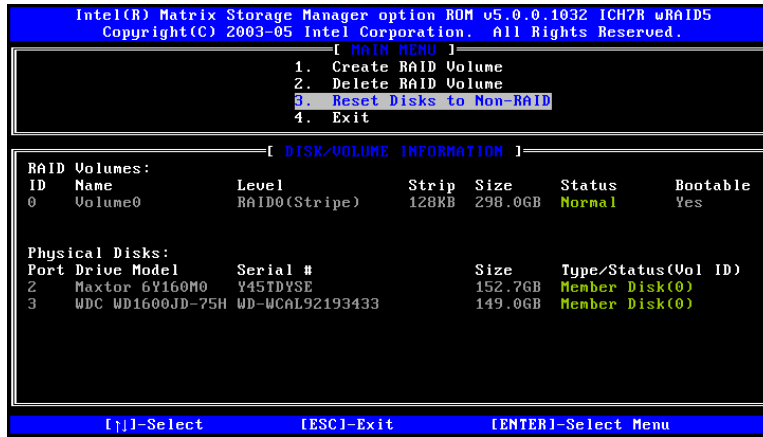
Figure D-12: Reset Disk to Non-RAID Menu

Step 2: **Select Disks to Reset**. Use the arrow keys to scroll through the disk drives and

press **SPACE** to select which drives are to be reset as non-RAID. After all the

disks to be reset have been chosen, press **ENTER**. See **Figure D-13**.
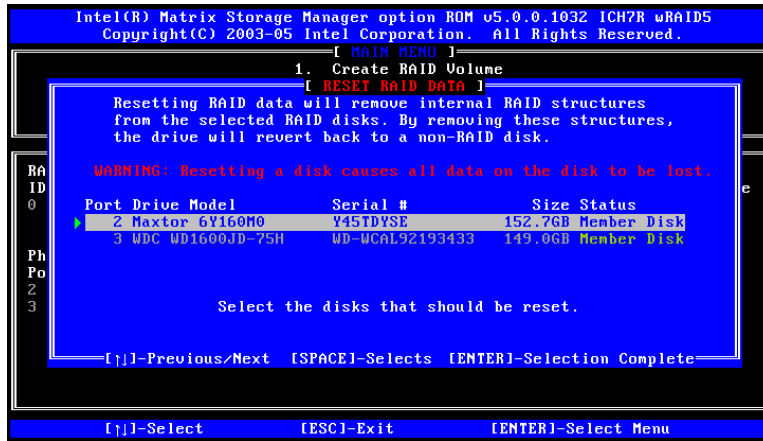
Figure D-13: Select Disk to Reset

Step 3: **Reset Disk Verification**. After reading the warning, press **Y** to reset the selected

disks as non-RAID, or **N** to return to the **Reset RAID Data** menu.

See **Figure D-14**.
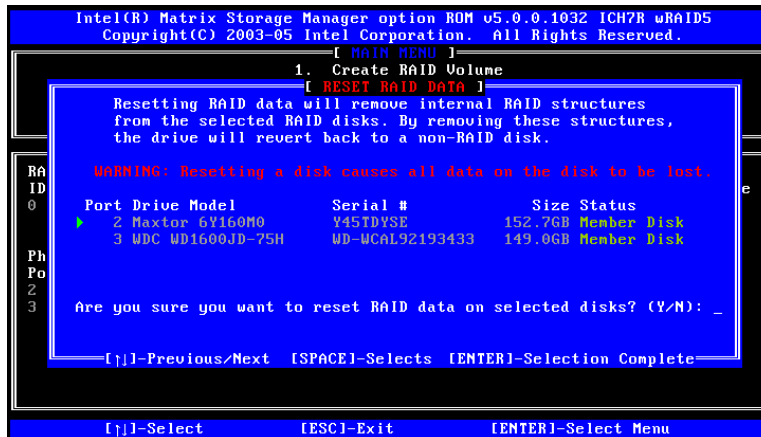
Figure D-14: Reset Disk Verification

Step 4: **Disk Drive and RAID Volume Status**. After the disk drives have been reset, the **Matrix Storage Manager Main** menu is shown indicating the status of the RAID volumes and disk drives. See **Figure D-15**.
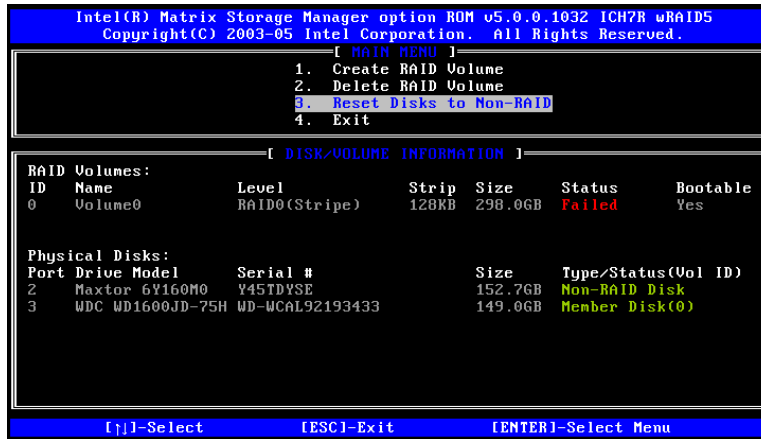
Figure D-15: Disk Drive and RAID Volume Status

D.4.4 Exiting the Matrix Storage Manager

Step 1: **Select** "**Exit**." Use the arrow keys to highlight **Exit** and press **ENTER**.

See **Figure D-16**.
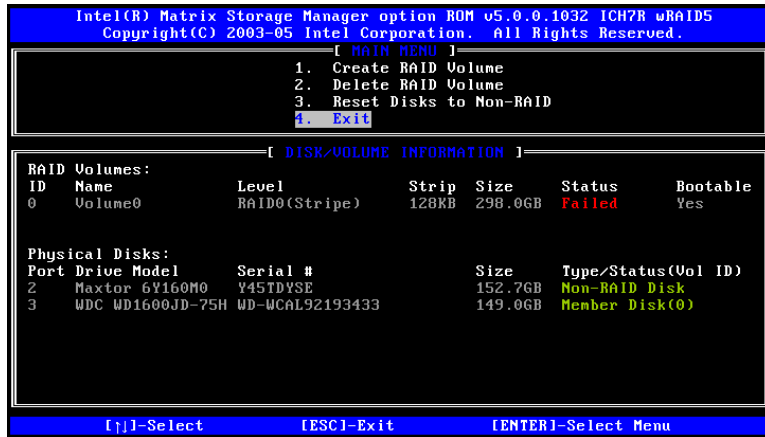
Figure D-16: Exit Menu

Step 2: **Exit Verification**. Press **Y** to exit the **Matrix Storage Manager**, or **N** to return to the **Main** menu. See **Figure D-17**.
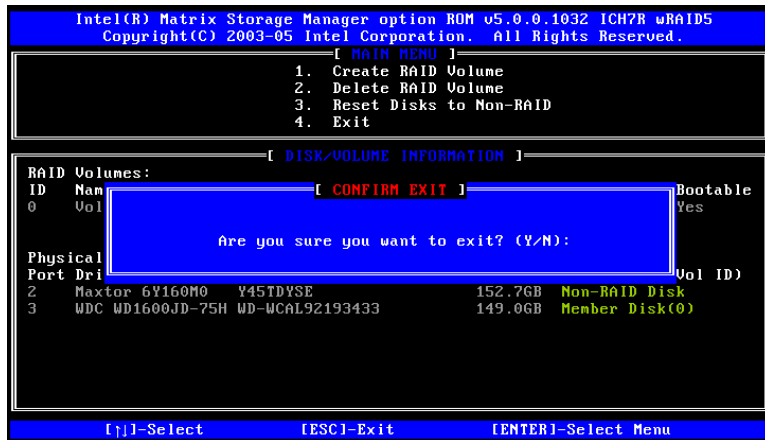
Figure D-17: Exit Verification

Appendix

E

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

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

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

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