



integration with integrity

User's Manual

Single Board Computer 3307800

Version 1.0, June 2007

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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, INC. reseller or vendor you purchased the 3307800 from or contact a Global American, INC. sales representative directly. To contact a Global American, INC. sales representative, please send an email to salesinfo@Globalamericaninc.com.

The items listed below should all be included in the 3307800 package.

- 1 x 3307800 single board computer
- 1 x IDE cable
- 1 x PS/2 Keyboard and mouse Y-cable
- 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 1 x QIG (quick installation guide)

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

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Glossary

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

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Chapter

1

Introduction

1.1 Overview

The 3307800 PICMG 1.3 form factor CPU card is an AMD Socket S1 CPU processor platform. Up to 2GB of DDR SO-DIMM SDRAM and up to four SATA II hard disk drives (HDD) are supported. SATA drives can be installed in a RAID configuration. High-performance PCI Express (PCIe) Gigabit Ethernet (GbE) connectivity is integrated into the system. Ten USB 2.0 channels along with a Mini PCIe expansion slot enable system flexibility and expansion. Multi-display interfaces and dual display functions ensure display versatility. Support for a (optional) trusted platform module (TPM) provides additional system security during system boot-up.

1.1.1 3307800 Expansion Options

The 3307800 PICMG 1.3 form factor enables PCIe x16, PCIe x1 and PCI expansion cards to easily be added to the PICMG 1.3 compatible backplane the 3307800 is installed on.

1.1.2 3307800 Features

Some of the 3307800 features are listed below.

- Supports the following AMD Socket S1 processors:
 - AMD Turion™ 64 X2 dual-core mobile
 - Mobile AMD Sempron™
- Supports two 200-pin 2GB 400MHz, 533MHz or 667MHz DDR2 SO-DIMMS
- Four SATA II drives with transfer rates of 3.0Gb/s supported
- Two Ultra ATA 133, Ultra ATA 100, Ultra ATA 66 or Ultra ATA 33 IDE HDDs supported
- Ten USB 2.0 devices supported (six onboard and four on the backplane)
- Dual PCIe GbE Ethernet connectors
- PICMG 1.3 form factor
- RoHS compliant
- Supports ATX power supplies

1.2 3307800 Overview

1.2.1 3307800 Overview Photo

The 3307800 has a wide variety of peripheral interface connectors. **Figure 1-1** is a labeled photo of the peripheral interface connectors on the 3307800.

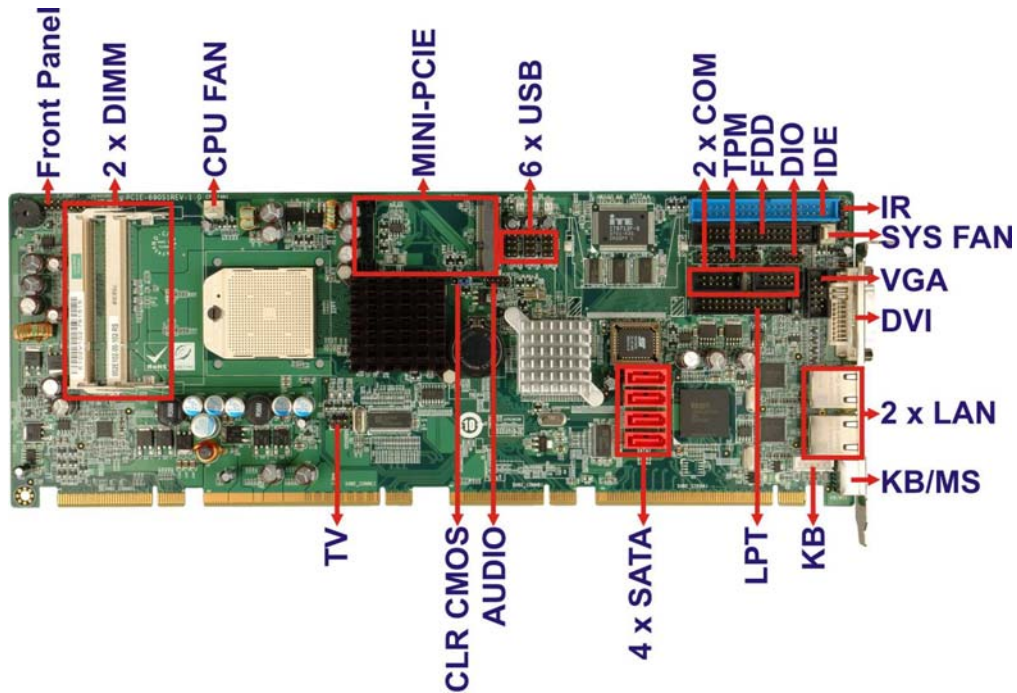


Figure 1-1: 3307800 Overview [Front View]

1.2.2 3307800 Peripheral Connectors and Jumpers

The 3307800 has the following connectors on-board:

- 1 x Digital input/output connector
- 2 x Fan connectors
- 1 x Front panel connector
- 1 x Floppy disk drive (FDD) connector
- 1 x IDE disk drive connector
- 1 x Infrared interface connector
- 1 x Mini PCIe connector
- 1 x Parallel port (LPT) connector
- 4 x Serial ATA II (SATA II) drive connectors

- 2 x Serial port connectors
- 1 x TPM connector
- 1 x TV Out connector
- 3 x USB 2.0 connectors
- 1 x VGA connector

The 3307800 has the following external peripheral interface connectors on the board rear panel.

- 2 x Ethernet connectors
- 1 x DVI-I connector
- 1 x PS/2 connector

The 3307800 has the following on-board jumpers:

- Clear CMOS

1.2.3 Technical Specifications

3307800 technical specifications are listed in **Table 1-1**. See **Chapter 2** for details.

| Specification | 3307800 |
|-----------------------------------|--|
| Form Factor | PICMG 1.3 |
| System CPU | AMD Socket S1 Turion™ 64 X2 AMD Socket S1 Sempron™ |
| HyperTransport™ Technology | 200 MHz, 400 MHz, 600 MHz and 800 MHz HyperTransport™ interfaces supported |
| System Chipset | Northbridge: AMD 690G Southbridge: ATI SB600 |
| Memory | Two 200-pin DDR2 SO-DIMM sockets support two 2GB 400MHz, 533MHz, or 667MHz un-buffered DDR2 SO-DIMMs |

| | |
|-----------------------|---|
| Super I/O | ITE8712F |
| Dual Display | DVI-D and VGA TV (Composite, S-Video, Component) and DVI |
| Graphics | ATI Radeon Express 1250 graphic engine intergated in AMD 690G provides VGA/DVI-I/TV(S-Video, Composite, Component) interfaces |
| | AVIVO provides advanced scaling, color correction of video playback processing, H/W decoding(WMV9, MPEG2/MPEG4), 2D/3D H/W Accelerating |
| | Supports max.1080i HDTV format of YPbPr componet output and NTSC/PAL TV with S-Video/Composite output |
| BIOS | AMI Flash BIOS |
| Audio | 7.1 channel HD audio kit with RealTek ALC883 and dual audio streams supported |
| LAN | Dual Broadcom PCIe GbE chipset |
| COM | Two RS-232 serial ports |
| USB2.0 | Ten USB 2.0 devices supported, six onboard and four on backplane |
| IDE | One 40-pin IDE connector connects to two Ultra ATA33/66/100/133 devices |
| Floppy Disk | One 34-pin FDD connector |
| Parallel Port | One 26-pin parallel port connector |
| SATA | Four 3.0Gb/s SATA II drives supported |
| Keyboard/mouse | One PS/2 connector |
| Expansion | One PCIe Mini Card slot |

| | |
|-----------------------------|--|
| Digital I/O | One 8-bit digital input/output connector; 4-bit input/4-bit output |
| Watchdog Timer | Software programmable 1-255 sec. by super I/O |
| Infrared | One IrDA connector by Super I/O |
| Power Supply | ATX power |
| Power Consumption | 3.3V@0.77A, 5V@4.23A, 5Vsb@0.1A and 12V@2.53A (2.0 GHz AMDI® Turion 64x2 TL-60 with two 1GB 667 MHz DDR2 DIMMs running 2Dmark® 2001 SE 330) |
| Temperature | 0°C – 60°C (32°F - 140°F) |
| Humidity (operating) | 5%~95% non-condensing |
| Dimensions (LxW) | 338.58mm x 126.39mm |
| Weight (GW) | 1.1Kg |

Table 1-1: Technical Specifications

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

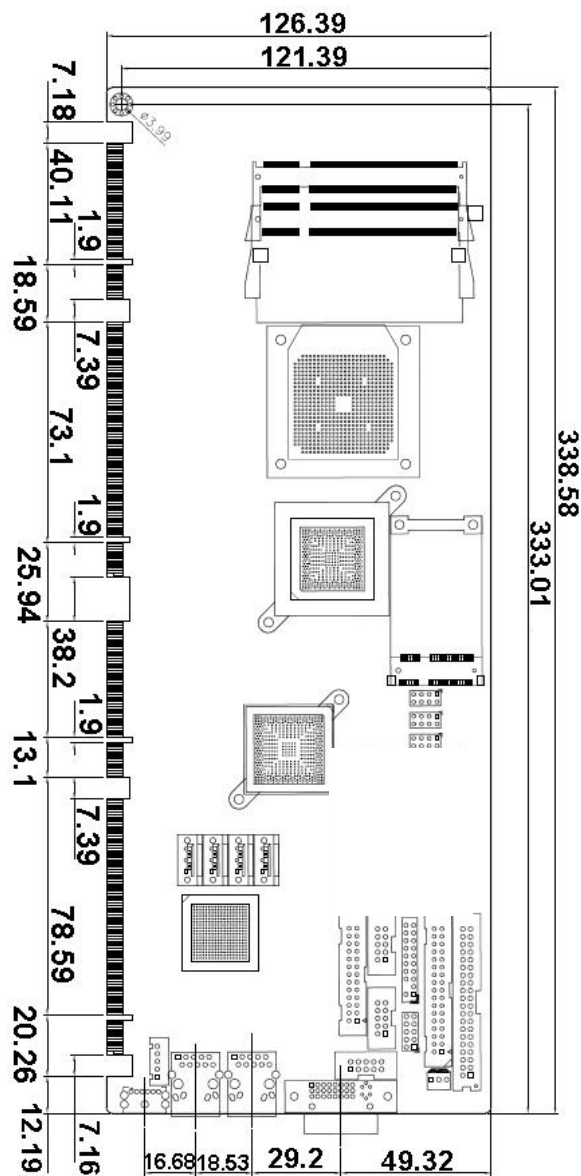


Figure 2-1: 3307800 Dimensions (mm)

2.1.2 External Interface Panel Dimensions

External peripheral interface connector panel dimensions are shown in **Figure 2-2**.

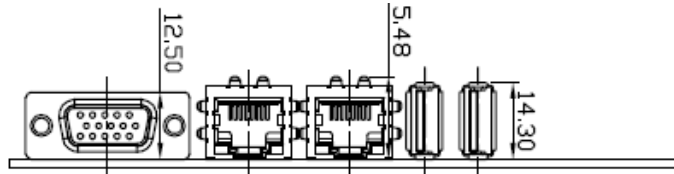


Figure 2-2: External Interface Panel Dimensions (mm)

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.

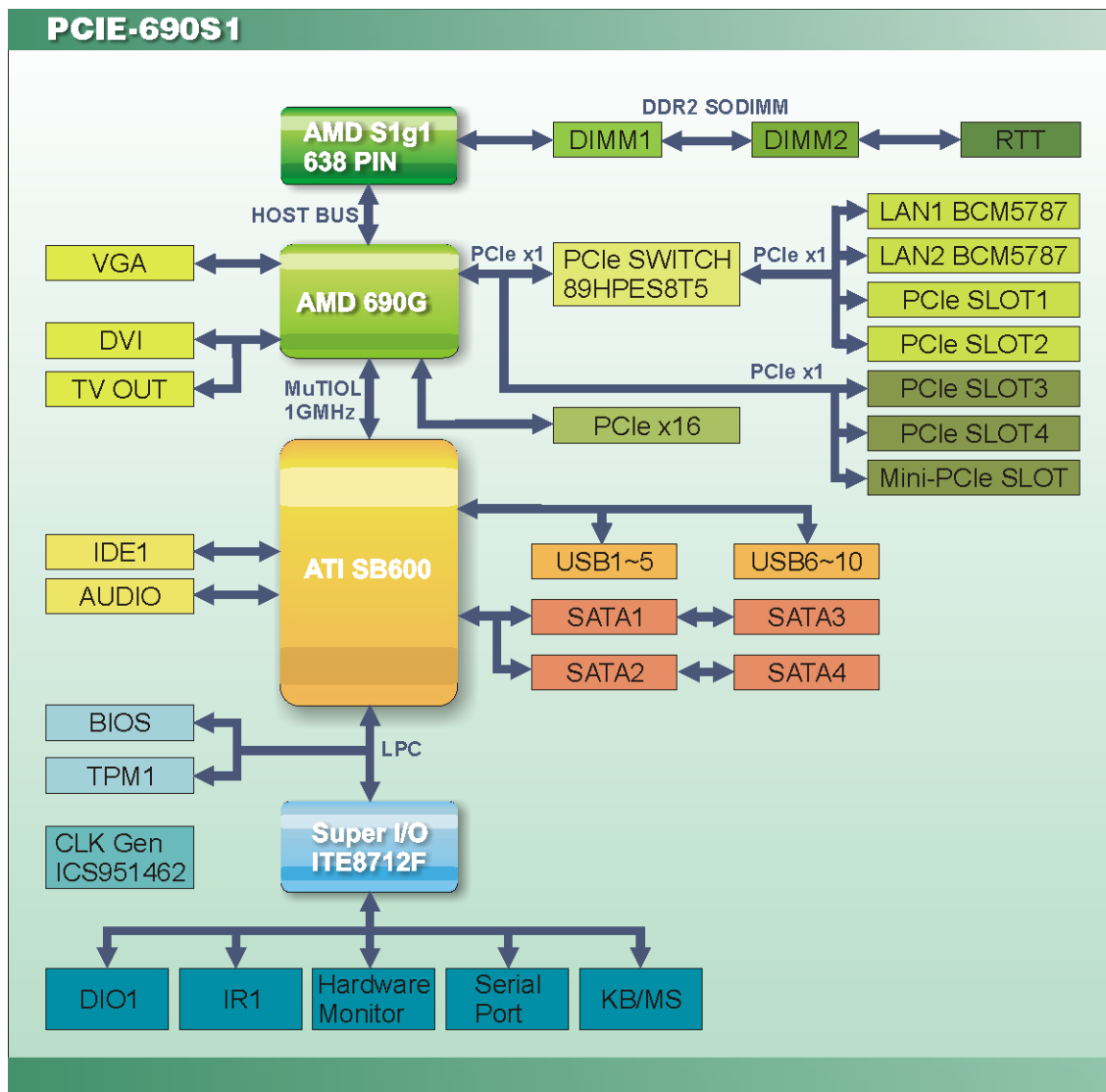


Figure 2-3: Data Flow Block Diagram

2.3 Compatible Processors

2.3.1 Supported Processors

The 3307800 supports the following AMD Socket S1 processors

- AMD Turion™ 64 X2 dual-core mobile processor
- Mobile AMD Sempron™ processor

2.3.2 DDR2 Memory Controller

All processors supported by the 3307800 CPU card have their own DDR2 memory controller. The DDR2 controller has the following features:

- Low-latency, high-bandwidth
- 667MHz 128-bit DDR2 SDRAM controller
- Supports up to two un-buffered DDR2 SO-DIMM
- Each SO-DIMM has a maximum capacity of 2GB

The DDR2 controller on the processor is interfaced to two SO-DIMM sockets on the 3307800.

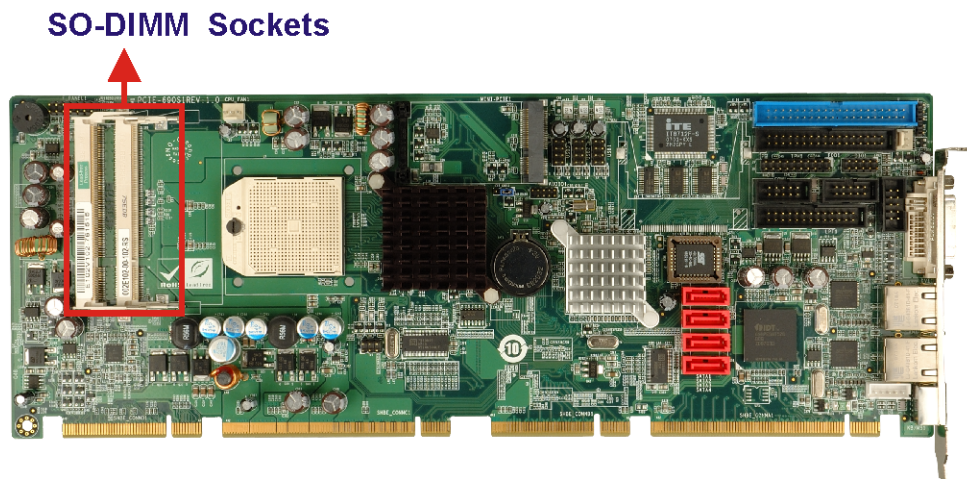


Figure 2-4: SO-DIMM Sockets

2.3.3 Processor Electrical Interfaces

The supported processors have the following electrical interfaces:

- HyperTransport™ technology: LVDS-like differential, unidirectional
- DDR2 SDRAM: SSTL_1.8 per JEDEC specification
- Clock, reset, and test signals also use DDR2
- SDRAM-like electrical specifications.

2.3.4 Processor Power Management

The supported processors have the following power management features:

- Multiple low-power states including Deeper Sleep (C1E with AltVID)
- System Management Mode (SMM)
- ACPI compliant, including support for processor performance states
- AMD PowerNow!™ technology is designed to dynamically switch between multiple low-power states based on application performance requirements.

2.4 AMD 690G Northbridge Chipset

2.4.1 PCI Express Interface

The AMD 690G PCIe bus is compliant with the PCI Express 1.1a Specifications has the following PCIe lanes:

- One PCIe x16 graphics interface
- Four PCIe x1 expansion ports.

For further details on the PCIe interfaces, please refer to **Section 2.6** on **page 21**.

2.4.2 Acceleration Features

The AMD 690G has the following 2D acceleration features:

- Highly optimized 128-bit engine, capable of processing multiple pixels per clock
- Supports a maximum resolution of 2048x1536 @ 32bpp
- Game acceleration including support for Microsoft's DirectDraw

The AMD 690G also has the following 3D acceleration features:

- Full DirectX 9.0 support
- 3D Texture support, including projective 3D textures
- Anti-aliasing using multi-sampling algorithm with support for 2,4, and 6 samples
- New generation rendering engine provides top 3D performance

- Support for OpenGL format for Indirect Vertices in Vertex Walker

Motion video acceleration features on the AMD 690G include:

- Enhanced MPEG-2 hardware decode acceleration
- MPEG-4 decode support
- Hardware acceleration for WMV9 playback
- Supports top quality DVD and time-shifted SDTV/HDTV television playback with low CPU usage

2.4.3 Display Support

The AMD 690G supports the following:

- TV Out
- DVI-I
- CRT

2.4.3.1 TV Out

TV Out features include:

- Integrated TV encoder from Xilleon products with integrated Avivo™
- Supports Macrovision 7.1 copy protection standard (required by DVD players)
- Supports the formats of component, composite and S-video outputs

2.4.3.2 Multiple Display Features

The Multiple display features include

- Dual independent displays including one digital output *
- Resolution, refresh rates, and display data can be completely independent for the two display paths
- Supports both interlaced and non-interlaced displays

2.4.3.3 DVI Support

DVI support features include:

- Supports a TMDS interface, enabling DVI <1650 Mbps/channel with 165 MHz pixel clock rate per link
- HDCP 1.1 support on data stream with on-chip key storage

2.5 ATI SB600 Southbridge Chipset

2.5.1 CPU Interface

The ATI SB600 Southbridge chipset supports the following AMD Socket S1 processors:

- AMD Turion™ 64 X2 dual-core mobile processor
- Mobile AMD Sempron™ processor

2.5.2 A-Link Xpress II interface to the Northbridge

The ATI SB600 Southbridge is connected to the ATI RS690 Northbridge chipset through an A-Link Xpress II interface. Some of the A-Link Xpress II interface features are listed below:

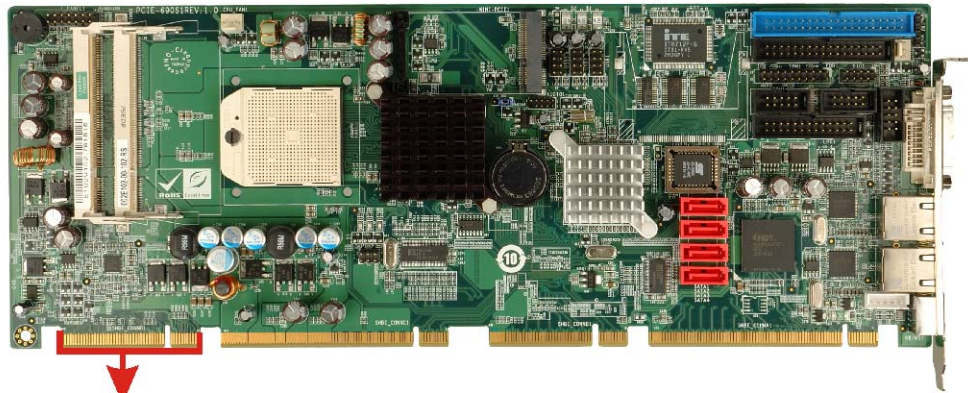
- 1/2/4-lane A-Link Xpress II interface
- Dynamic detection of lane configuration
- High data transfer bandwidth

2.5.3 PCI Host Bus Controller

The PCI interface on the ATI SB600 Southbridge is compliant with the PCI Revision 2.3 implementation. Some of the features of the PCI interface are listed below.

- PCI rev. 2.3 specifications
- PCI bus at 33 MHz
- Up to 6 master devices
- 40-bit addressing
- Interrupt steering for plug-n-play devices
- Concurrent PCI operations
- Hiding of PCI devices by BIOS/hardware
- Spread spectrum

The PCI bus is connected to an interface gold finger on the bottom of the CPU card and supports four expansion PCI cards on the backplane.



PCI Golden Finger

Figure 2-5: PCI Golden Finger Connection

2.5.4 USB Controllers

The ATI SB600 on the 3307800 supports up to ten high-speed, full-speed or low-speed USB devices. High-speed USB 2.0, with data transfers of up to 480MB/s, is enabled with the ATI SB600 integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling are enabled with the integrated Universal Host Controller Interface (UHCI) controllers.

Six of the ten USB ports are implemented on the 3307800 CPU card. The remaining four USB ports can be implemented on the backplane. The USB controller supports the following:

- USB 1.1 (“Low Speed”, “Full Speed”) and 2.0 (“High Speed”)
- ACPI S1~S5
- Legacy keyboard/mouse
- USB debug port
- Port disable with individual control

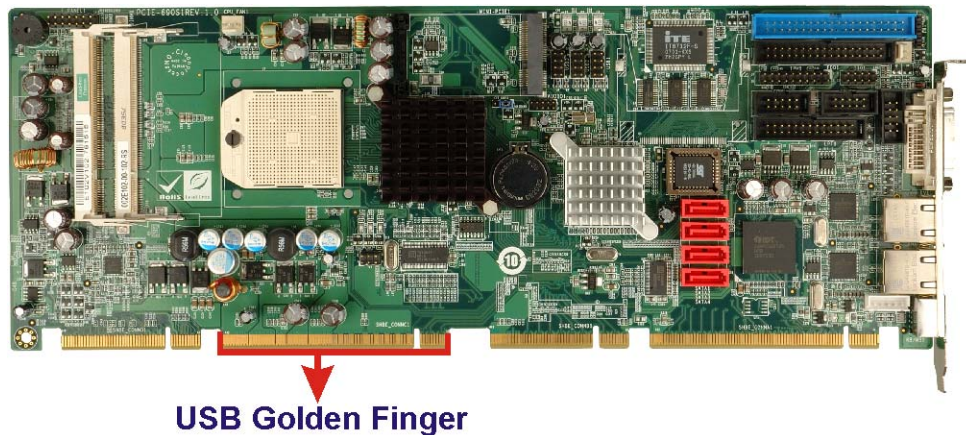


Figure 2-6: USB Golden Finger

2.5.5 SMBus Controller

The ATI SB600 southbridge chipset SMBus Controller is SMBus Rev. 2.0 compliant and supports SMBALERT # signal / GPIO.

2.5.6 Interrupt Controller

The ATI SB600 southbridge interrupt controller supports the following:

- IOAPIC/X-IO APIC mode for 24 channels of interrupts
- 8259 legacy mode for 15 interrupts
- Programmable level/edge triggering on each channels
- Serial interrupt on quiet and continuous modes

2.5.7 DMA Controller

The ATI SB600 southbridge has two cascaded 8237 DMA controllers that support the following:

- PC/PCI/DMA
- LPC DMA
- Type F DMA

2.5.8 LPC host bus controller

The ATI SB600 southbridge LPC interface complies with the LPC 1.1 and LPC 1.2 specifications. The LPC bus from the Southbridge is connected to the following components:

- BIOS chipset
- Super I/O chipset

Some of the features of the LPC bus are listed below.

- Supports LPC based super I/O and flash devices
- Supports two master/DMA devices
- Supports TPM version 1.1/1.2 devices for enhanced security
- Supports SPI devices

2.5.9 SATA II AHCI Controller

The integrated SATA controllers on the ATI SB600 Southbridge supports four SATA II drives on the 3307800 with independent DMA operations. The SATA controller supports the following:

- Four SATA ports, complying with SATA 2.0 specifications
- SATA II 3.0GHz PHY, with backward compatibility with 1.5GHz
- RAID stripping (RAID 0) across all 4 ports
- RAID mirroring (RAID 1) across all 4 ports
- RAID 10 (4 ports needed)
- Both AHCI mode and IDE mode
- Advanced power management with AHCI mode

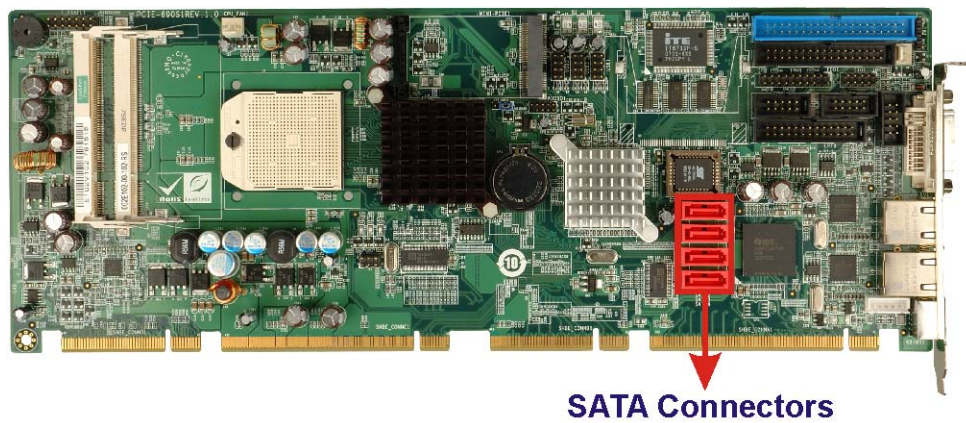


Figure 2-7: SATA Connectors

2.5.10 IDE Controller

The ATI SB600 southbridge IDE controller is interfaced to a single IDE connector. The IDE controller has the following specifications.

- Single PATA channel support
- Support PIO, multi-word DMA, and Ultra DMA 33/66/100/133 modes
- 32x32 byte buffers on each channel for buffering
- Swap bay support by tri-state IDE signals
- Supports Messages Signaled Interrupt (MSI)
- Integrated IDE series resistor

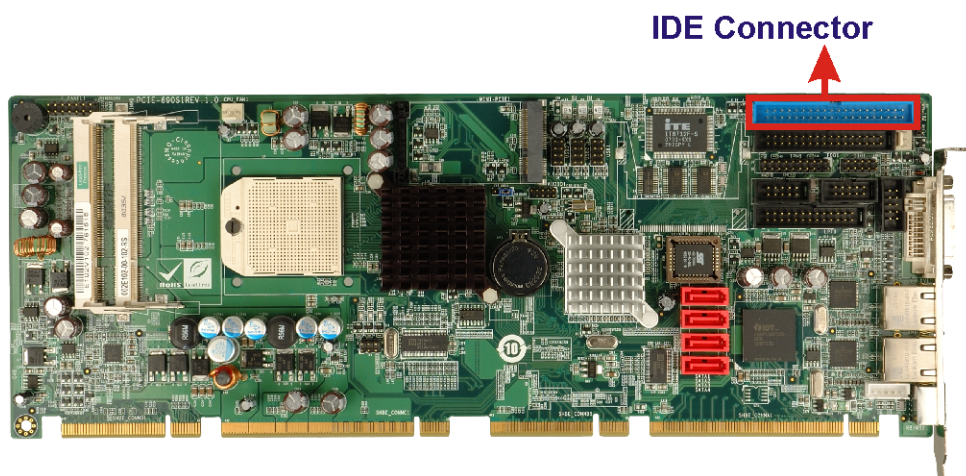


Figure 2-8: IDE Connector

2.5.11 HD Audio

The 3307800 onboard audio connector can connect to an optional audio kit through an onboard audio connector. The codec on the optional audio kit is connected to the ATI SB600 audio controller through the High Definition audio. Supported HD Audio features are listed below:

- 4 independent output streams (DMA)
- 4 independent input streams (DMA)
- Up to 16 channels of audio output per stream
- Supports up to 4 codecs
- Up to 192kHz sample rate
- Up to 32-bit per sample
- Message Signaled Interrupt (MSI) capability
- 64-bit addressing capability for MSI
- 64-bit addressing capability for DMA bus master
- Unified Audio Architecture (UAA) compatible
- HD Audio registers can be located anywhere in the 64-bit address space

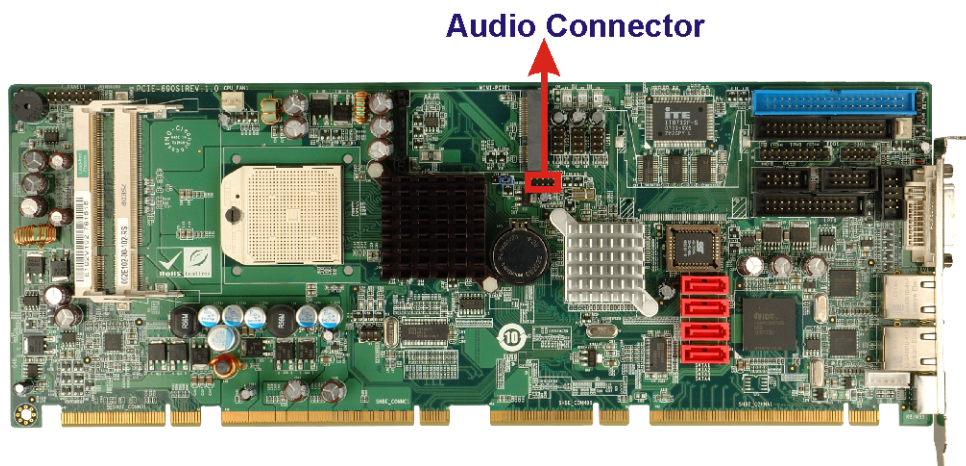


Figure 2-9: Audio Connector

2.5.12 Timers

The ATI SB600 south bridge has the following timers

- 8254-compatible timer
- Microsoft High Precision Event Timer (HPET)
- ACPI power management timer

2.5.13 RTC (Real Time Clock)

256 bytes of battery backed RAM is provided by the real time clock (RTC) integrated into the ATI SB600. The RTC keeps track of the time and stores system data even when the system is turned off. Some of the features of the RTC are listed below:

- 256-byte battery backed CMOS RAM
- Hardware supported century rollover
- RTC battery monitoring feature

2.5.14 Power Management

ACPI specification 3.0 compliant power management schemes on the ATI SB600 include:

- Supports C2, C3, C4
- Supports C1e and C3 pop-up (AMD platform only)
- Supports S0, S1, S2, S3, S4, and S4
- Supports SpeedStep™
- Full support for On-Now™
- Supports CPU SMM, generating SMI# signal upon power management events
- GPIO supports on external wake up events
- Supports CLKRUN# on PCI power management
- Provides clock generator and CPU STPCLK# control
- Hardware monitoring support
- Support for ASF

2.5.15 Hardware Monitor

3307800

The ATI SB600 has the following hardware monitoring features:

- Supports 3 Independent Fan Control outputs
- Supports 4 thermal diode temperature sensing functions
- Supports 1 AMDSI function

2.6 3307800 PCIe Bus Components

2.6.1 PCIe Bus Overview

The 3307800 supports the following PCIe devices:

- One PCIe x16 graphics card on a compatible backplane
- Four PCIe x1 expansion cards on a compatible backplane
- Two PCIe GbE connections through two Broadcom controllers
- One Mini PCIe expansion device on the 3307800

2.6.2 PCIe x16 Expansion

The AMD 690G 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 golden fingers on the bottom of the CPU card. The PCIe x16 graphics card is then installed on the PCIe x16 slot on the backplane.

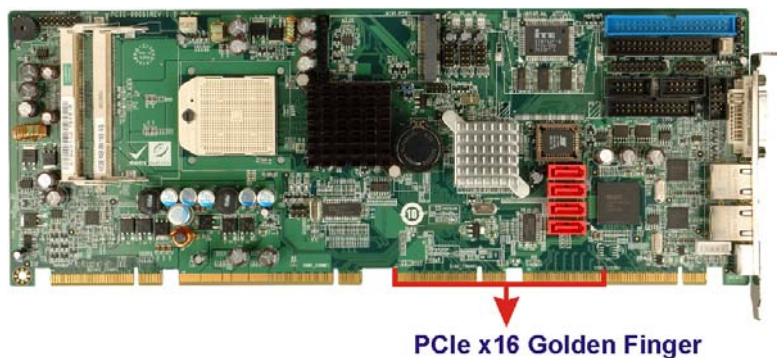


Figure 2-10: PCIe x16 Golden Finger

2.6.3 PCIe Switch

The AMD RS-690 supports four PCIe x1 lanes. One of the AMD 690G PCIe x1 lanes is interfaced to an 8-lane 5-port IDT 89HPES8T5 PCIe switch that performs PCIe packet switching. The PCIe has four PCIe x1 output ports. Two of these ports are interfaced to two Broadcom PCIe GbE controllers and two are interfaced to a golden finger on the bottom of the backplane to provide additional PCIe x1 expandability.

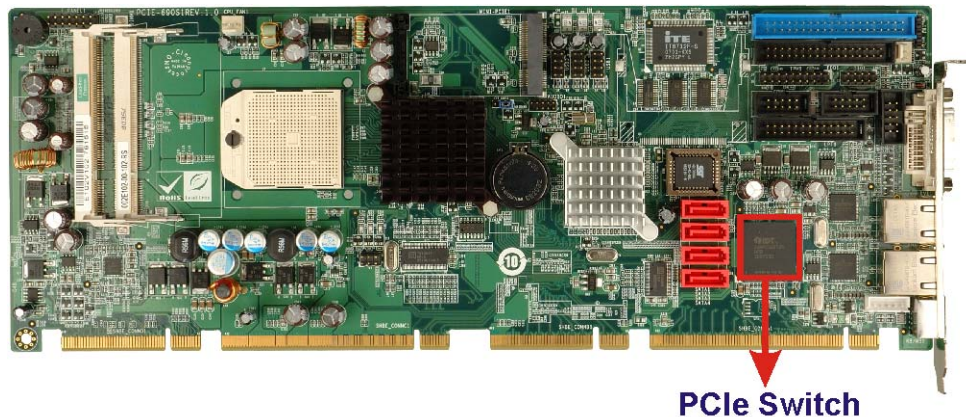


Figure 2-11: PCIe Switch

The specifications for the IDT 89HPES8T5 PCIe switch are listed below:

- 2.5Gbps PCIe lanes
- Low-latency cut-through switch architecture
- Support for Max Payload Size up to 256 bytes
- PCI Express Base Specification Revision 1.1 compliant

2.6.4 PCIe x1 Expansion

The 3307800 has four PCIe x1 expansion channels interfaced to four PCIe x1 connectors on a backplane through a golden finger on the bottom of the CPU card. Two of the expansion PCIe x1 lanes come from the AMD 690G Northbridge chipset and two PCIe x1 lanes come from the IDT 89HPES8T5 PCIe switch.

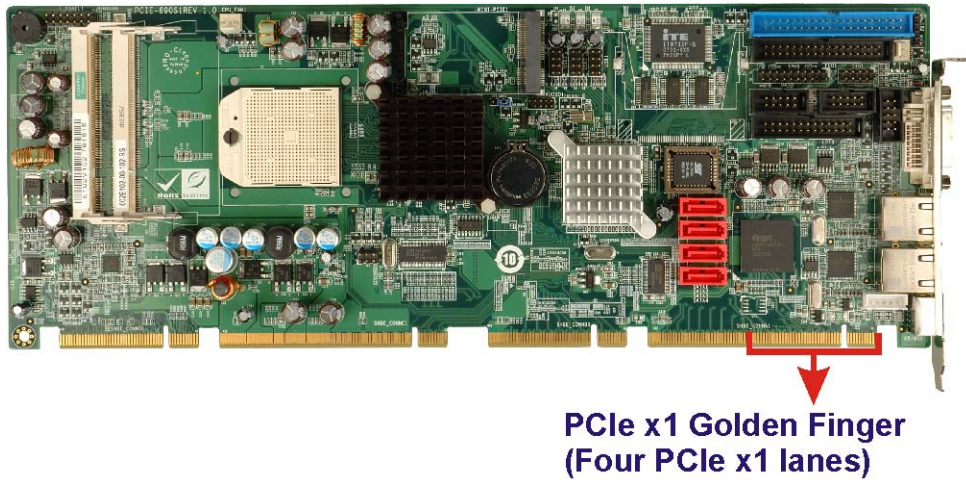


Figure 2-12: PCIe x1 Golden Finger (Four Lanes)

2.6.5 PCIe GbE Ethernet

Two PCIe x1 lanes from the IDT 89HPES8T5 PCIe switch are connected to two Broadcom BCM5787M PCIe GbE controllers shown in **Figure 2-13** below.

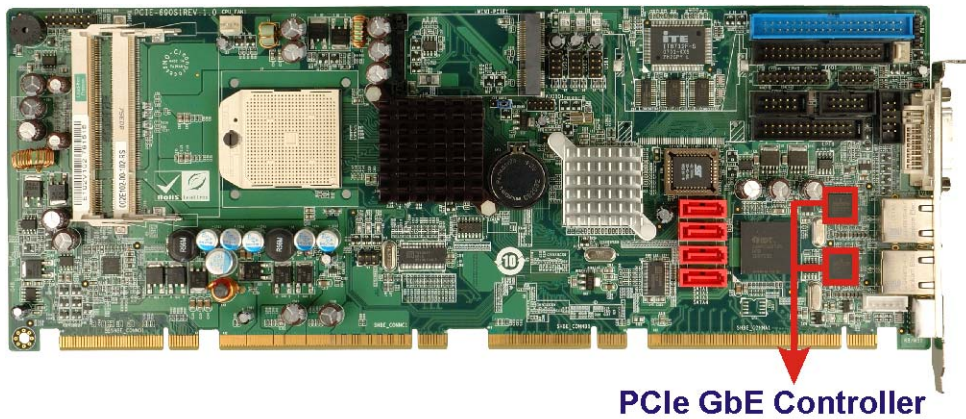


Figure 2-13: Broadcom PCI GbE Controllers

The Broadcom BCM5787M is a 10/100/1000BASE-T Ethernet LAN controller. The BCM5787M combines a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, a PCIe bus interface, and an on-chip buffer memory. Some of the BCM5787 controller features are listed below:

- Integrated 10/100/1000BASE-T transceiver
- Automatic MDI crossover function
- PCIe v1.0a
- 10/100/1000BASE-T full/half-duplex MAC
- Wake on LAN support meeting the ACPI requirements
- Statistics for SNMP MIB II, Ethernet-like MIB, and Ethernet MIB (802.3z, clause 30)
- Serial EEPROM or serial flash support

2.6.6 Mini PCIe Card Socket

One of the PCIe x1 lanes from the IDT 89HPES8T5 PCIe switch is connected to a 52-pin Mini PCIe socket. The socket can support standard Mini PCIe cards that are 30mm wide, 50.95mm long and 5mm high.

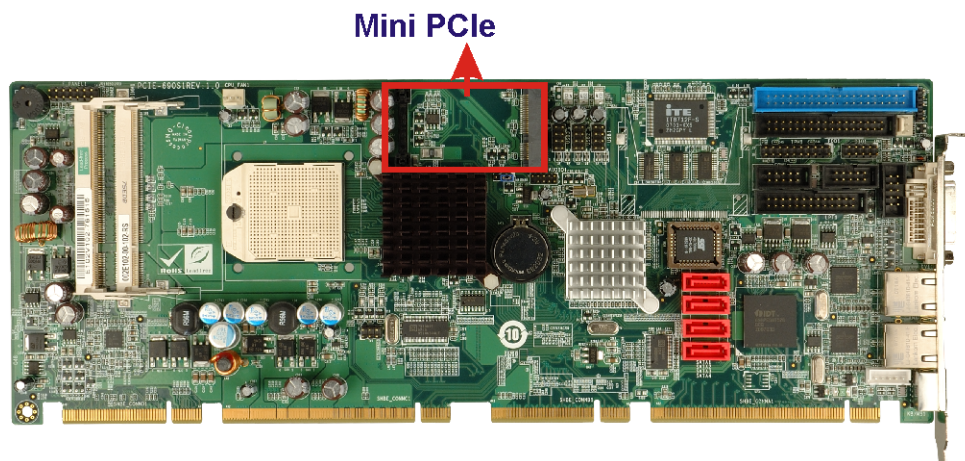


Figure 2-14: Mini PCIe Socket

2.7 LPC Bus Components

2.7.1 LPC Bus Overview

The LPC bus is connected to components listed below:

- BIOS chipset
- Super I/O chipset
- TPM module connector

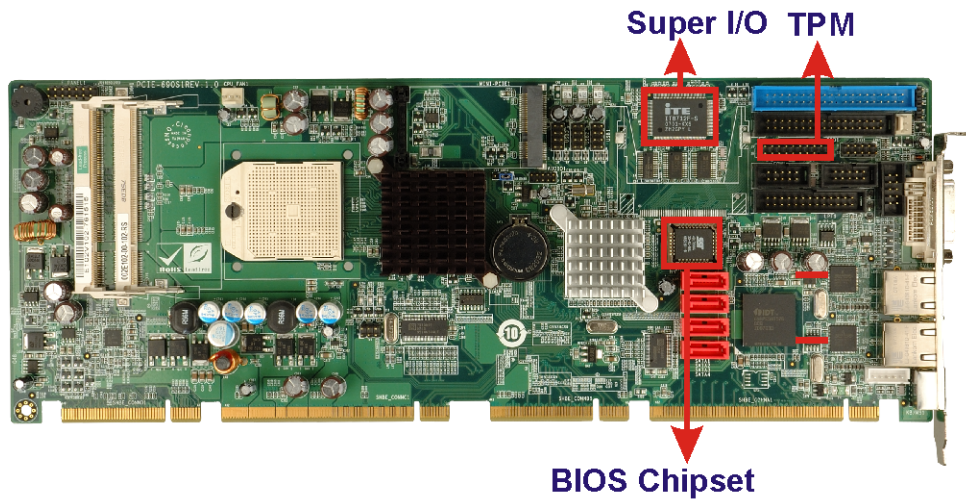


Figure 2-15: LPC BUS Components

2.7.2 BIOS Chipset:

The BIOS chipset has a licensed copy of AMI BIOS installed on the chipset. Some of the BIOS features are listed below:

- AMI Flash BIOS
- SMIBIOS (DMI) compliant
- Console redirection function support
- PXE (Pre-boot Execution Environment) support
- USB booting support

2.7.3 TPM Module

A TPM connector on the 3307800 is interfaced to the AMD SB600 southbridge through the LPC bus. The AMD SB600 southbridge supports TPM version 1.1 and TPM version 1.2 devices for enhanced security. Three TPM are available from Global American, INC.. The three Global American, INC. 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 3307800 reseller or vendor. Alternatively, please contact Global American, INC. at salesinfo@Globalamericaninc.com.

2.7.4 Super I/O chipset

The iTE IT8712F Super I/O chipset is connected to the AMD SB600 southbridge through the LPC bus. The iTE IT8712F is an LPC interface-based Super I/O device that comes with Environment Controller integration. Some of the features of the iTE IT8712F chipset are listed below:

- PC98/99/2001, ACPI and LANDesk Compliant
- Enhanced Hardware Monitor
- Fan Speed Controller
- Single +5V Power Supply
- Two 16C550 UARTs for serial port control
- One IEEE 1284 Parallel Port
- Keyboard Controller
- Watchdog Timer
- Serial IRQ Support
- Vbat & Vcch Support
- Single +5V Power Supply

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

2.7.4.1 Super I/O LPC Interface

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

2.7.4.2 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

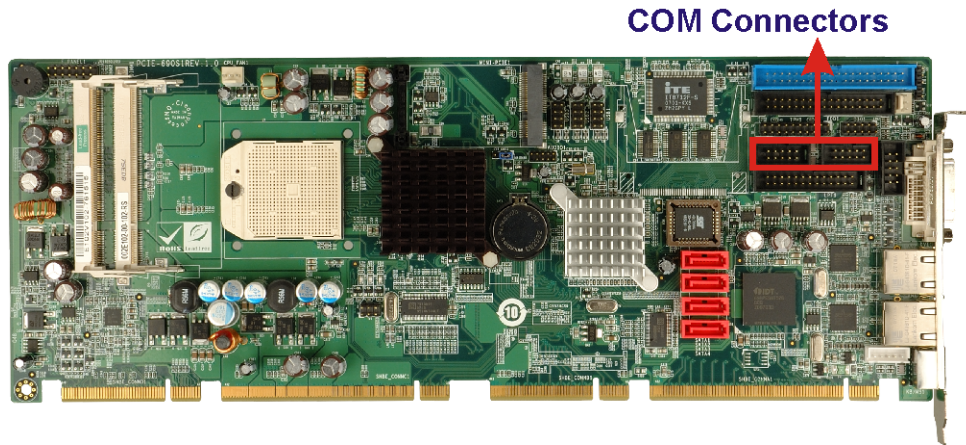


Figure 2-16: COM Connectors

2.7.4.3 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.

2.7.4.4 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.

2.7.4.5 Super I/O Keyboard Controller

The Super I/O keyboard controller can execute the 8042 instruction set. Some of the keyboard controller features are listed below:

- The 8042 instruction is compatible with a PS/2 keyboard and PS/2 mouse
- Gate A20 and Keyboard reset output
- Supports multiple keyboard power on events
- Supports mouse double-click and/or mouse move power on events

2.7.4.6 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 Environmental and Power Specifications

2.8.1 System Monitoring

Three thermal inputs on the 3307800 Super I/O Enhanced Hardware Monitor monitor the following temperatures:

- CPU temperature
- System temperature
- System temperature 2

Five voltage inputs on the 3307800 Super I/O Enhanced Hardware Monitor monitors the following voltages:

- CPU Core
- +1.20V
- +3.3V
- +5.0V
- +1.8V

The 3307800 Super I/O Enhanced Hardware Monitor also monitors the following fan speeds:

- CPU Fan speed
- System Fan speed

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

2.8.2 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the 3307800 are listed below.

- Minimum Operating Temperature: 0°C (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.

2.8.3 Power Consumption

Table 2-1 shows the power consumption parameters for the 3307800 running 3D Mark® 2001 SE330 with a 2.0GHz AMD Turion 64x2 TL-60 processor and two 1.0GB 667MHz DDR2 DIMMs.

| Voltage | Current |
|---------|---------|
| +3.3V | 0.77A |
| +5.0V | 4.23A |
| +12V | 2.53A |
| 5Vsb | 0.1A |

Table 2-1: Power Consumption

2.9 Expansion Options

2.9.1 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.

2.9.2 Global American, INC. Expansion PICMG 1.3 Backplanes

The backplanes listed in **Table 2-2** are compatible with the 3307800 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, INC. catalog or contact your vendor, reseller or the Global American, INC. sales team at salesinfo@Globalamericaninc.com.

| 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 |
| 1107940 | 19 | One | 1 | - | 1 | 16 | Single |

Table 2-2: Compatible Global American, INC. PICMG 1.3 Backplanes

2.9.3 Global American, INC. Chassis

Global American, INC. chassis available for 3307800 system development are listed in Error! Reference source not found..

For more information about these chassis please consult the Global American, INC. catalog or contact your vendor, reseller or the Global American, INC. sales team at salesinfo@Globalamericaninc.com.

| Model | Slot SBC | Mounting | Max Slots | Backplanes |
|----------------|-----------------------|-----------------|------------------|--|
| 1407460 | Full-size | Wall | 4 | 1107790 1107780 1107800 |
| 1404540 | Full-size | Wall | 6 | 1107810 1107820 1107840 1107770 |
| 1404570 | Full-size (2U) | Rack | 6 | 1107750 1107850 |
| 1404552 | Full-size (2U) | Rack | 6 | 1107750 1107850 |

Chapter

3

Unpacking

3.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the 3307800 may result in permanent damage to the 3307800 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3307800. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3307800, 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 3307800, place it on an anti-static pad. This reduces the possibility of ESD damaging the 3307800.
- **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 3307800 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 3307800 does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

3.3 Unpacking Checklist


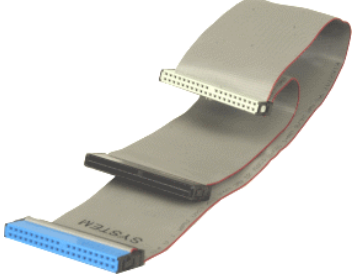



NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the Global American, INC. reseller or vendor you purchased the 3307800 from or contact a Global American, INC. sales representative directly. To contact a Global American, INC. sales representative, please send an email to salesinfo@Globalamericaninc.com.

3.3.1 Package Contents

The 3307800 is shipped with the following components:

| Quantity | Item and Part Number | Image |
|----------|-----------------------|--|
| 1 | 3307800 |  |
| 1 | ATA 66/100 flat cable |  |
| 1 | Dual RS-232 cable |  |








| | | |
|---|--------------------------|--|
| 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

| | |
|--|---|
| <p>Audio kit (P/N: 1007760)</p> |  |
| <p>CPU cooler (P/N: 2107703)</p> |  |
| <p>FDD cable (P/N: 1208380)</p> |  |
| <p>HDTV Cable Set comprises a S-Video cable and a TV-out cable (P/N: 1208410)</p> | |
| <p>TV-out extension cable with Composite / S-Video / Component output (Max.1080i HDTV resolution supported) (P/N: 1208430)</p> |  |
| <p>LPT cable (P/N:1208390)</p> |  |
| <p>Table 3-2: Package List Contents</p> | |
| | |

3307800

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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 3307800 Layout

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

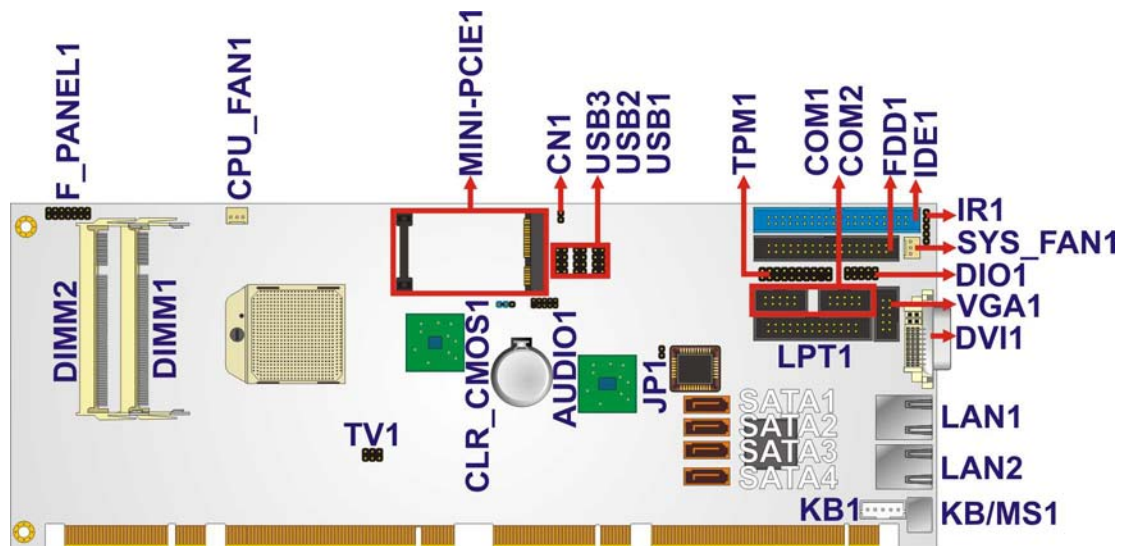


Figure 4-1: Connector and Jumper Locations

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the 3307800. Detailed descriptions of these connectors can be found below.

| Connector | Type | Label |
|-------------------------------|---------------|----------|
| Audio connector | 10-pin header | FPAUDIO1 |
| Cooling fan connector, CPU | 3-pin header | CPU_FAN1 |
| Cooling fan connector, System | 3-pin header | CPU_SYS1 |

| | | |
|--------------------------------|-------------------|------------|
| Digital input/output connector | 10-pin header | DIO1 |
| FDD connector | 34-pin box header | FDD1 |
| Front panel connector | 10-pin header | F_PANEL1 |
| IDE Interface connector | 40-pin box header | IDE1 |
| Infrared (IrDA) connector | 5-pin header | IR1 |
| Mini PCI socket | 52-pin socket | MINI-PCIE1 |
| Parallel port connector | 26-pin box header | LPT1 |
| 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 port connector (COM1) | 10-pin box header | COM1 |
| Serial port connector (COM2) | 10-pin box header | COM2 |
| TPM connector | 20-pin header | TPM1 |
| TV Out connector | 6-pin header | TV |
| 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 3307800. Detailed descriptions of these connectors can be found in **Section 4.3** on **page 68**.

| Connector | Type | Label |
|-----------------------------|-------|--------|
| DVI connector | DVI | DVI1 |
| Ethernet connector | RJ-45 | LAN1 |
| Ethernet connector | RJ-45 | LAN2 |
| Mouse or keyboard connector | PS/2 | KB/MS1 |

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 3307800.

4.2.1 Audio Connector

| | |
|---------------------|---------------------|
| CN Label: | FPAUDIO1 |
| CN Type: | 10-pin header (2x5) |
| CN Location: | See Figure 4-2 |
| CN Pinouts: | See Table 4-3 |

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

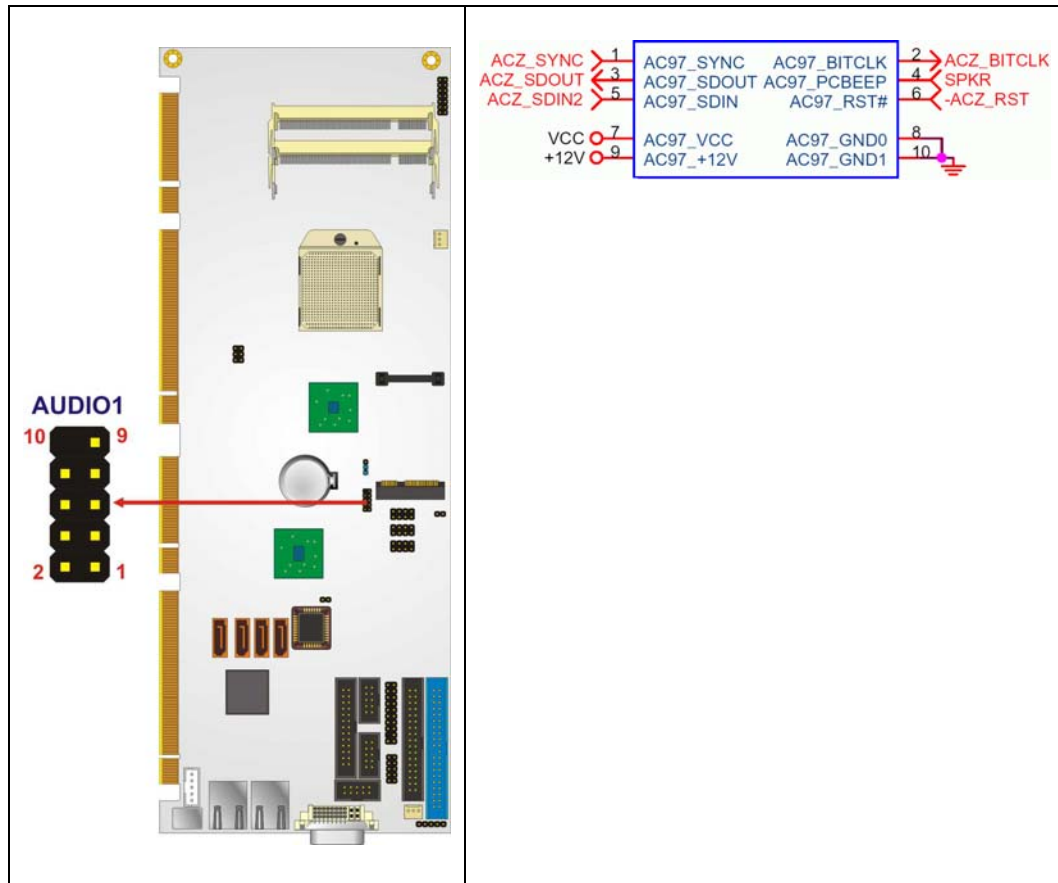


Figure 4-2: Audio Connector Location (9-pin)

| 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 | GND |

Table 4-3: Audio Connector Pinouts

4.2.2 Digital Input/Output (DIO) Connector

- CN Label:** DIO1
- CN Type:** 10-pin header (2x5)
- CN Location:** See Figure 4-3
- CN Pinouts:** See Table 4-4

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

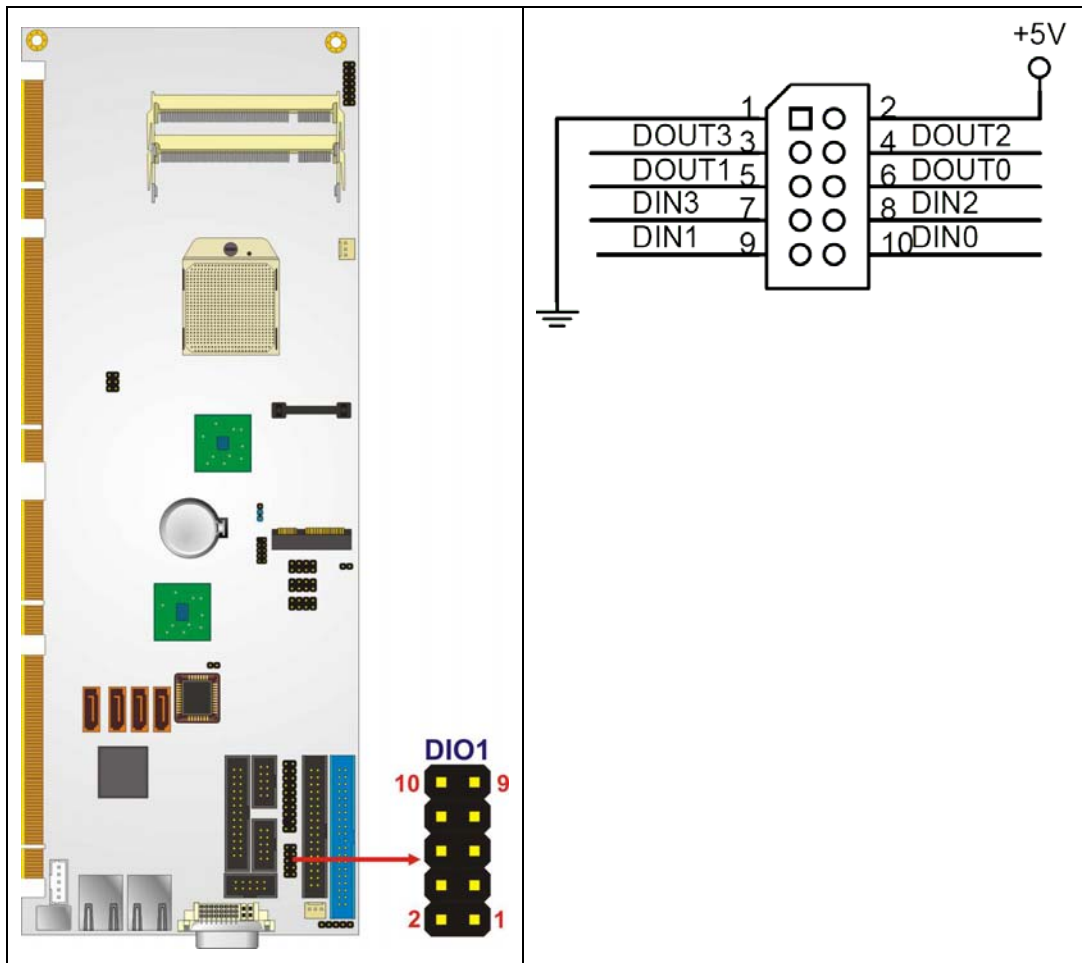


Figure 4-3: DIO Connector Connector Locations

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GND | 2 | VCC |
| 3 | Output 3 | 4 | Output 2 |
| 5 | Output 1 | 6 | Output 0 |
| 7 | Input 3 | 8 | Input 1 |
| 9 | Input 1 | 10 | Input 0 |

Table 4-4: DIO Connector Connector Pinouts

4.2.3 Fan Connector (+12V)

CN Label: CPU_FAN1, SYS_FAN1

CN Type: 3-pin header

CN Location: See Figure 4-4

CN Pinouts: See Table 4-5

The 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.

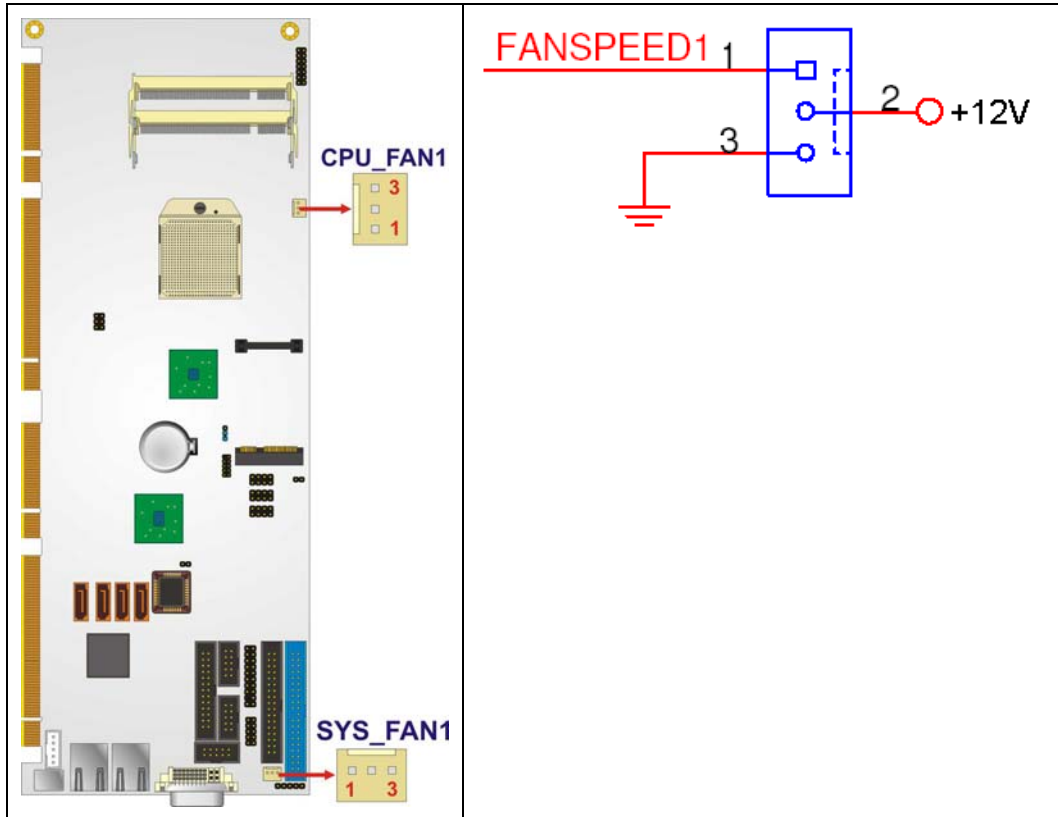


Figure 4-4: +12V Fan Connector Location

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

Table 4-5: +12V Fan Connector Pinouts

4.2.4 Floppy Disk Connector (34-pin)

- CN Label:** FDD1
- CN Type:** 34-pin header (2x17)
- CN Location:** See Figure 4-5
- CN Pinouts:** See Table 4-6

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

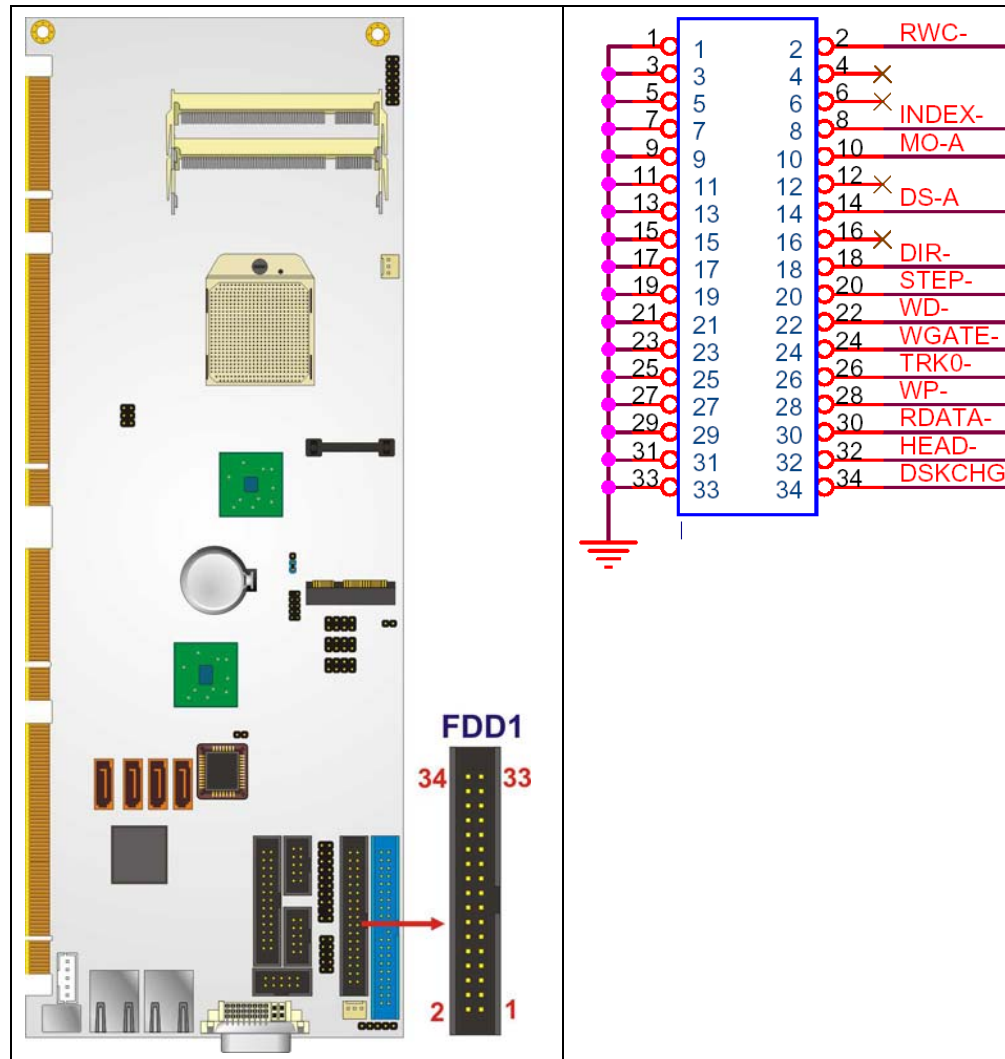


Figure 4-5: 34-pin FDD Connector Location

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-----------------|
| 1 | GND | 2 | REDUCE WRITE |
| 3 | GND | 4 | N/C |
| 5 | N/C | 6 | N/C |
| 7 | GND | 8 | INDEX# |
| 9 | GND | 10 | MOTOR ENABLE A# |
| 11 | GND | 12 | DRIVE SELECT B# |

| | | | |
|----|-----|----|-----------------|
| 13 | GND | 14 | DRIVE SELECT A# |
| 15 | GND | 16 | MOTOR ENABLE B# |
| 17 | GND | 18 | DIRECTION# |
| 19 | GND | 20 | STEP# |
| 21 | GND | 22 | WRITE DATA# |
| 23 | GND | 24 | WRITE GATE# |
| 25 | GND | 26 | TRACK 0# |
| 27 | GND | 28 | WRITE PROTECT# |
| 29 | GND | 30 | READ DATA# |
| 31 | GND | 32 | SIDE 1 SELECT# |
| 33 | GND | 34 | DISK CHANGE# |

Table 4-6: 34-pin FDD Connector Pinouts

4.2.5 Front Panel Connector (14-pin)

| | |
|---------------------|---------------------|
| CN Label: | F_PANEL1 |
| CN Type: | 12-pin header (2x6) |
| CN Location: | See Figure 4-6 |
| CN Pinouts: | See Table 4-7 |

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

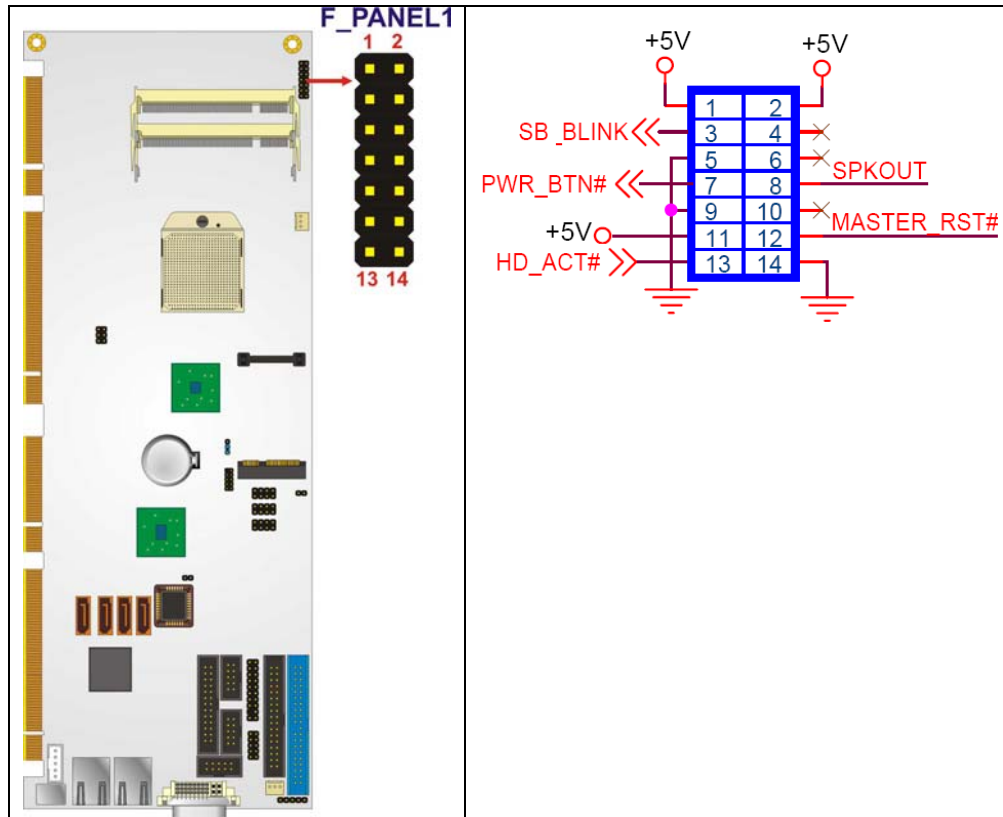


Figure 4-6: Front Panel Connector Pinout Locations (14-pin)

| 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 4-7: Front Panel Connector Pinouts (14-pin)

4.2.6 IDE Connector (40-pin)

- CN Label:** IDE1
- CN Type:** 40-pin header (2x20)
- CN Location:** See Figure 4-7
- CN Pinouts:** See Table 4-8

One 40-pin IDE device connector on the 3307800 supports connectivity to two hard disk drives.

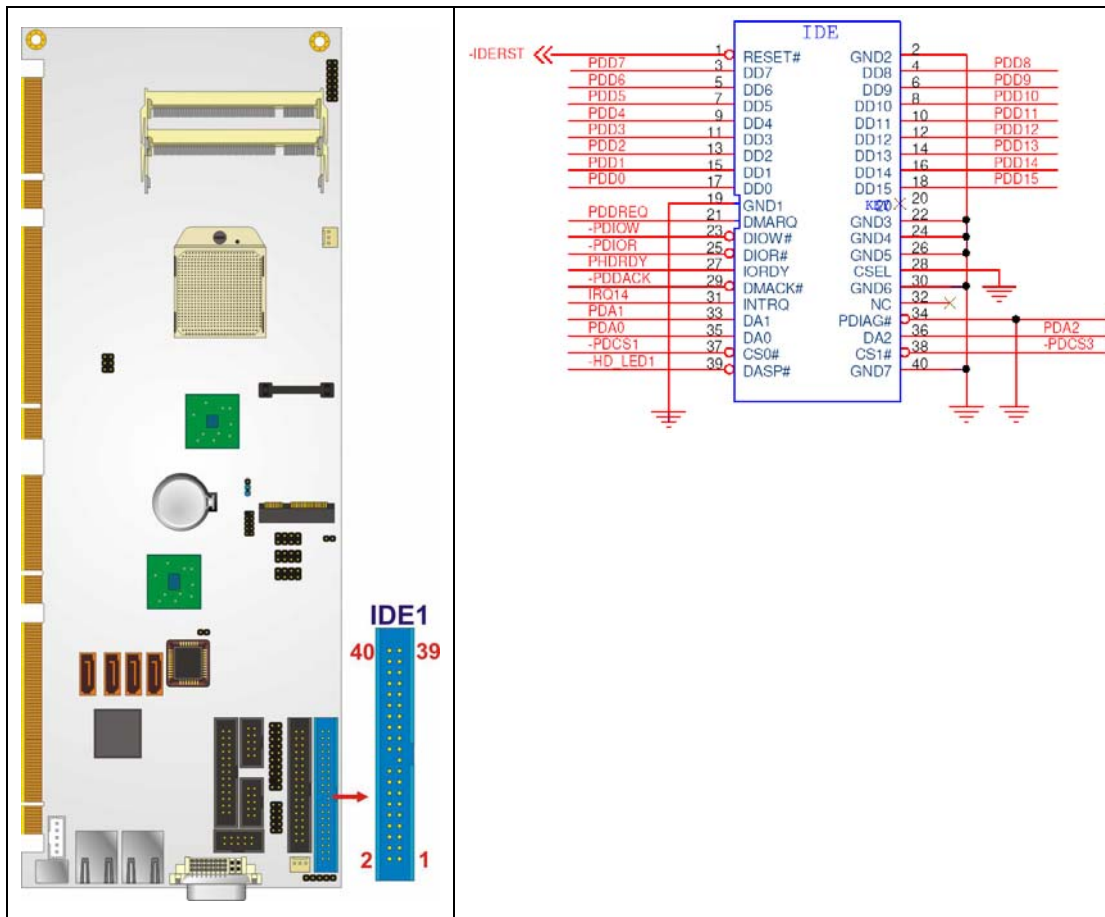


Figure 4-7: IDE Device Connector Locations

| 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 4-8: IDE Connector Pinouts

4.2.7 Infrared Interface Connector (5-pin)

| | |
|---------------------|--------------------|
| CN Label: | IR1 |
| CN Type: | 5-pin header (1x5) |
| CN Location: | See Figure 4-8 |
| CN Pinouts: | See Table 4-9 |

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

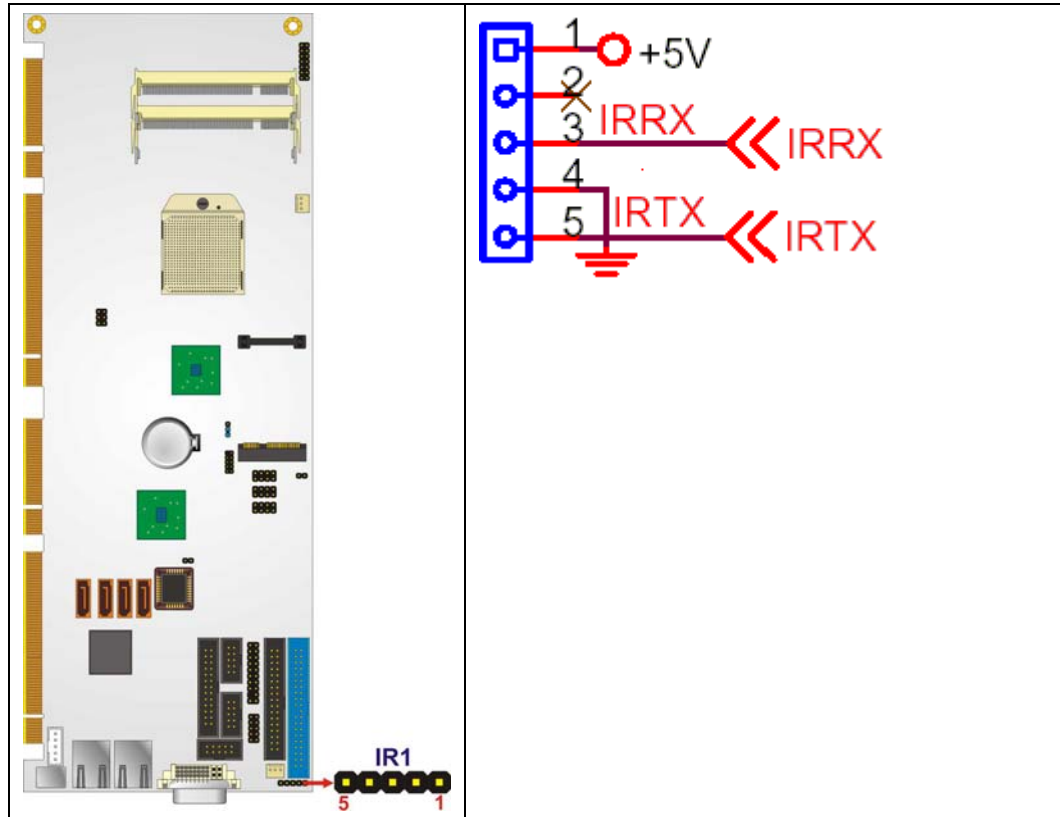


Figure 4-8: Infrared Connector Pinout Locations

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

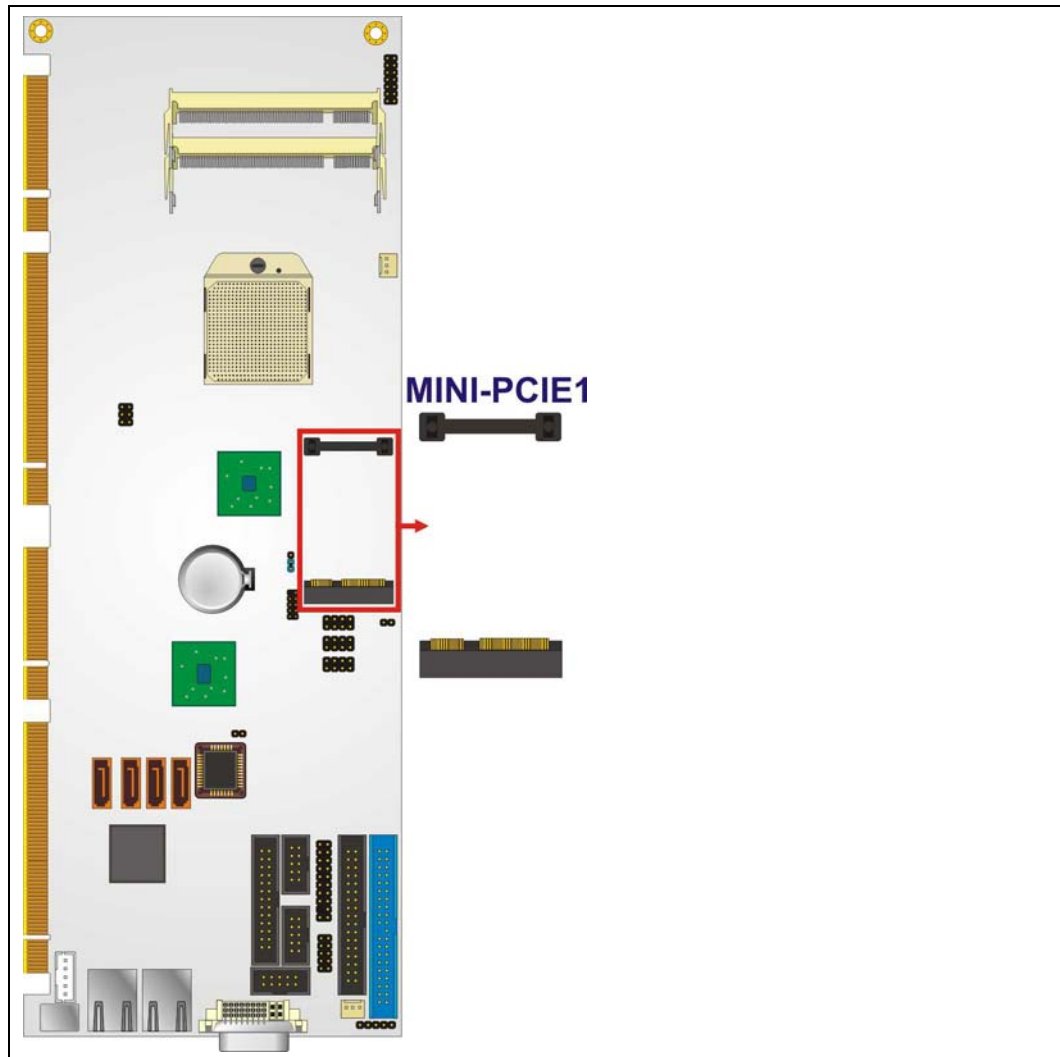
Table 4-9: Infrared Connector Pinouts

4.2.8 Mini PCI Slot

| | |
|---------------------|-----------------------|
| CN Label: | MINI-PCIE1 |
| CN Type: | 124-pin Mini PCI Slot |
| CN Location: | See Figure 4-9 |

CN Pinouts: See Table 4-10

The Mini PCI slot enables a Mini PCI expansion module to be connected to the board.



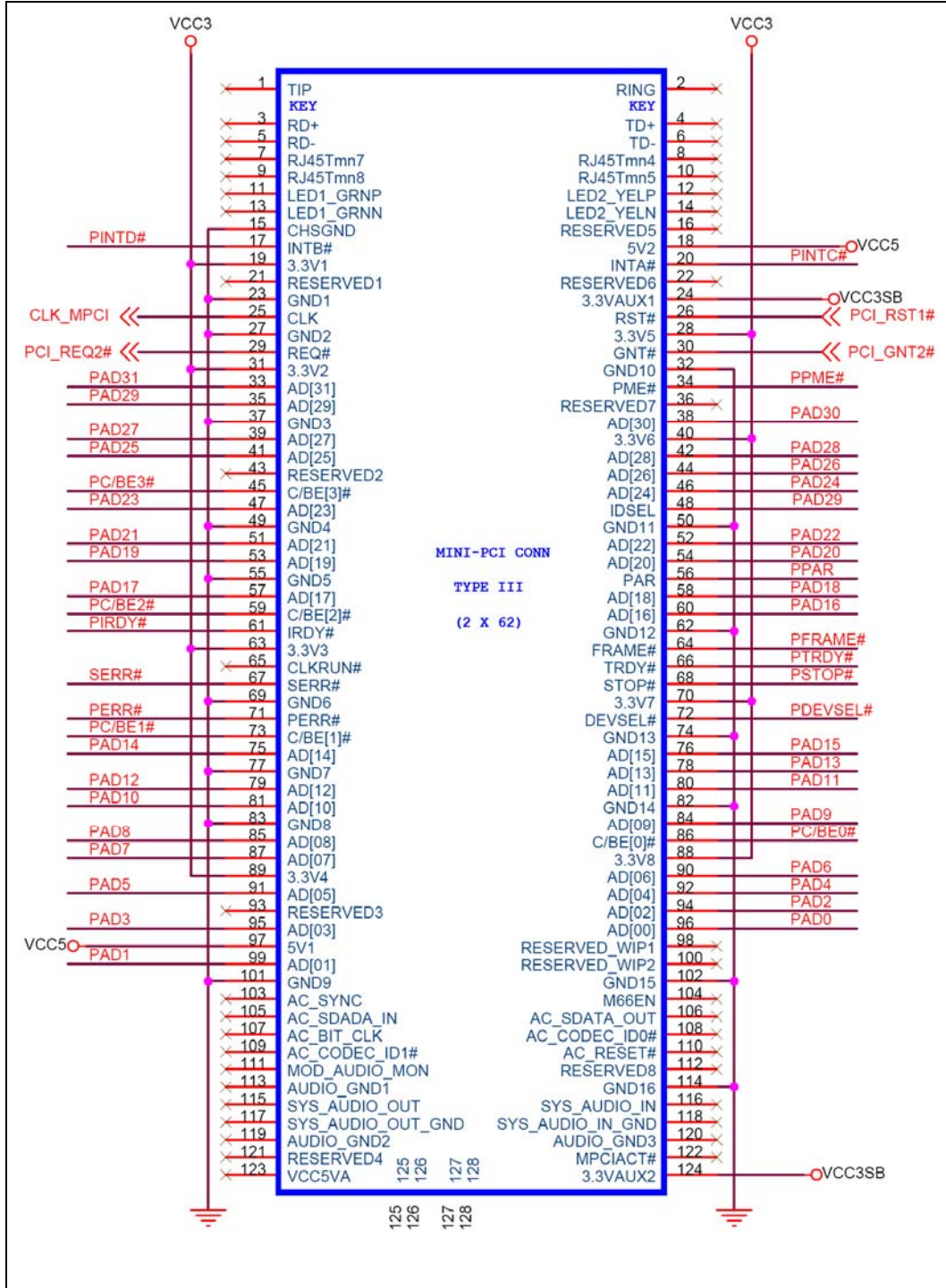


Figure 4-9: Mini PCI Slot Location

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | NC | 2 | NC |
| 3 | NC | 4 | NC |
| 5 | NC | 6 | NC |
| 7 | NC | 8 | NC |
| 9 | NC | 10 | NC |
| 11 | NC | 12 | NC |
| 13 | NC | 14 | NC |
| 15 | GND | 16 | NC |
| 17 | PINTD# | 18 | VCC5 |
| 19 | VCC3 | 20 | PINTC# |
| 21 | NC | 22 | NC |
| 23 | GND | 24 | VCC3SB |
| 25 | CLK_MPCI | 26 | PCI_RST1# |
| 27 | GND | 28 | VCC3 |
| 29 | PCI_REQ2# | 30 | PCI_GNT2# |
| 31 | VCC3 | 32 | GND |
| 33 | PAD31 | 34 | PPME# |
| 35 | PAD29 | 36 | NC |
| 37 | GND | 38 | PAD30 |
| 39 | PAD27 | 40 | VCC3 |
| 41 | PAD25 | 42 | PAD28 |
| 43 | NC | 44 | PAD26 |
| 45 | PC/BE3# | 46 | PAD24 |
| 47 | PAD23 | 48 | PAD29 |
| 49 | GND | 50 | GND |
| 51 | PAD21 | 52 | PAD22 |
| 53 | PAD19 | 54 | PAD20 |
| 55 | GND | 56 | PPAR |

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 57 | PAD17 | 58 | PAD18 |
| 59 | PC/BE2# | 60 | PAD16 |
| 61 | PIRDY# | 62 | GND |
| 63 | VCC3 | 64 | PFRAME# |
| 65 | NC | 66 | PTRDY# |
| 67 | SERR# | 68 | PSTOP# |
| 69 | GND | 70 | VCC3 |
| 71 | PERR# | 72 | PDEVSEL# |
| 73 | PC/BE1# | 74 | GND |
| 75 | PAD14 | 76 | PAD15 |
| 77 | GND | 78 | PAD13 |
| 79 | PAD12 | 80 | PAD11 |
| 81 | PAD10 | 82 | GND |
| 83 | GND | 84 | PAD9 |
| 85 | PAD8 | 86 | PC/BE0# |
| 87 | PAD7 | 88 | VCC3 |
| 89 | VCC3 | 90 | PAD6 |
| 91 | PAD5 | 92 | PAD4 |
| 93 | NC | 94 | PAD2 |
| 95 | PAD3 | 96 | PAD0 |
| 97 | VCC5 | 98 | NC |
| 99 | PAD1 | 100 | NC |
| 101 | GND | 102 | GND |
| 103 | NC | 104 | NC |
| 105 | NC | 106 | NC |
| 107 | NC | 108 | NC |
| 109 | NC | 110 | NC |
| 111 | NC | 112 | NC |

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 113 | NC | 114 | GND |
| 115 | NC | 116 | NC |
| 117 | NC | 118 | NC |
| 119 | NC | 120 | NC |
| 121 | NC | 122 | NC |
| 123 | NC | 124 | VCC3SB |

Table 4-10: Mini PCIe Slot Pinouts

4.2.9 Parallel Port Connector

| | |
|---------------------|-------------------|
| CN Label: | LPT1 |
| CN Type: | 26-pin box header |
| CN Location: | See Figure 4-10 |
| CN Pinouts: | See Table 4-11 |

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

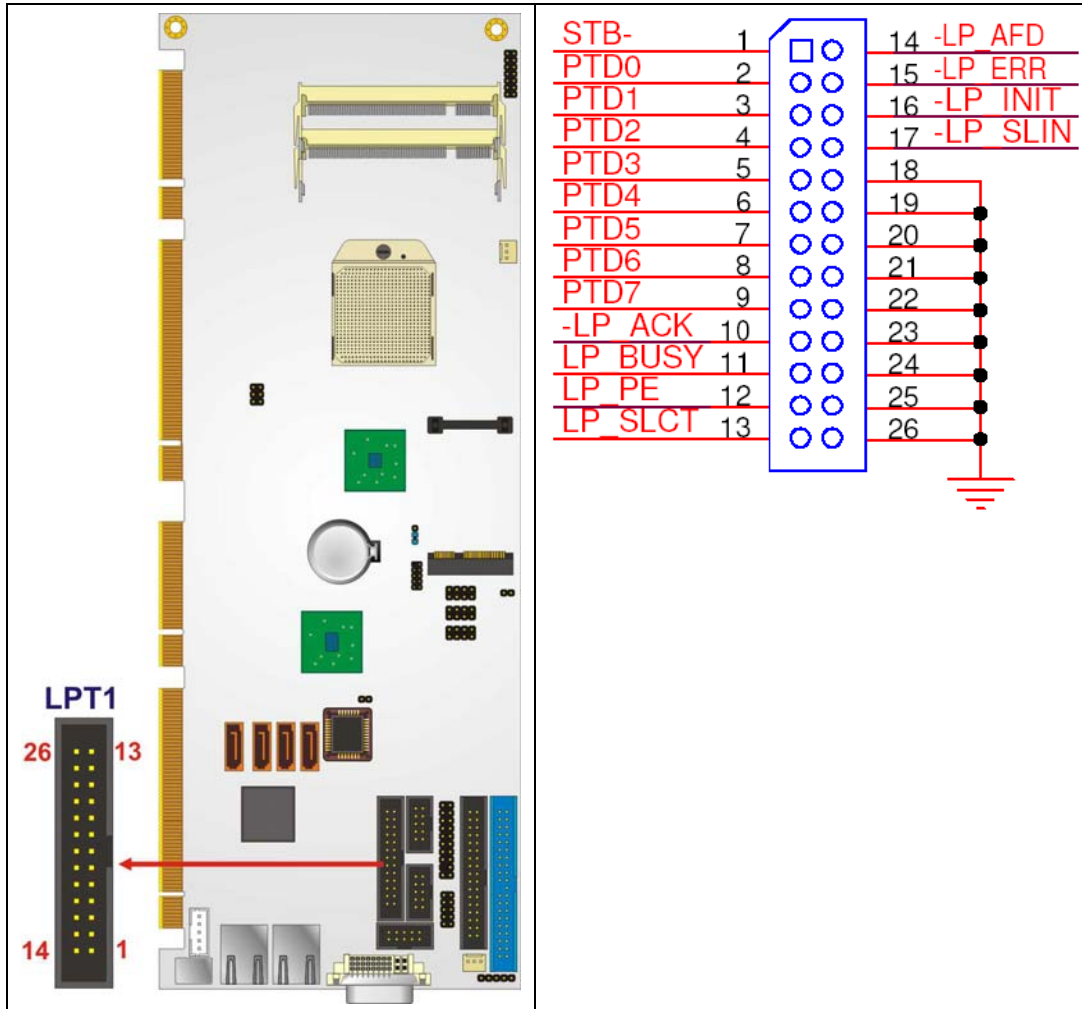


Figure 4-10: Parallel Port Connector Location

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|--------------------|---------|------------------|
| 1 | STROBE# | 2 | DATA 0 |
| 3 | DATA 1 | 4 | DATA 2 |
| 5 | DATA 3 | 6 | DATA 4 |
| 7 | DATA 5 | 8 | DATA 6 |
| 9 | DATA 7 | 10 | ACKNOWLEDGE |
| 11 | BUSY | 12 | PAPER EMPTY |
| 13 | PRINTER SELECT | 14 | AUTO FORM FEED # |
| 15 | ERROR# | 16 | INITIALIZE |
| 17 | PRINTER SELECT LN# | 18 | GROUND |

| | | | |
|----|--------|----|--------|
| 19 | GROUND | 20 | GROUND |
| 21 | GROUND | 22 | GROUND |
| 23 | GROUND | 24 | GROUND |
| 25 | GROUND | 26 | NC |

Table 4-11: Parallel Port Connector Pinouts

4.2.10 SATA Drive Connectors

CN Label: SATA1, SATA2, SATA3, and SATA4

CN Type: 7-pin SATA drive connectors

CN Location: See Figure 4-11

CN Pinouts: See Table 4-12

The two SATA drive connectors are each connected to a first generation SATA drive. First generation SATA drives transfer data at speeds as high as 150Mb/s. The SATA drives can be configured in a RAID configuration.

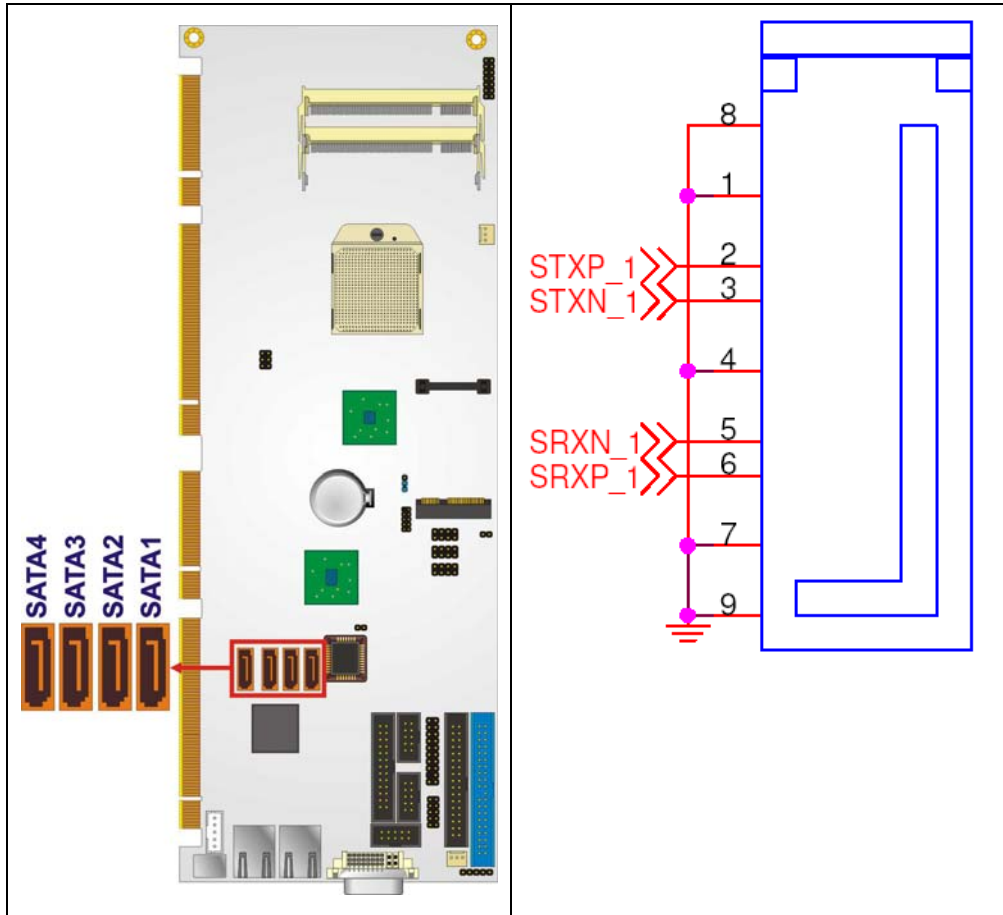


Figure 4-11: SATA Drive Connector Locations

| 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.

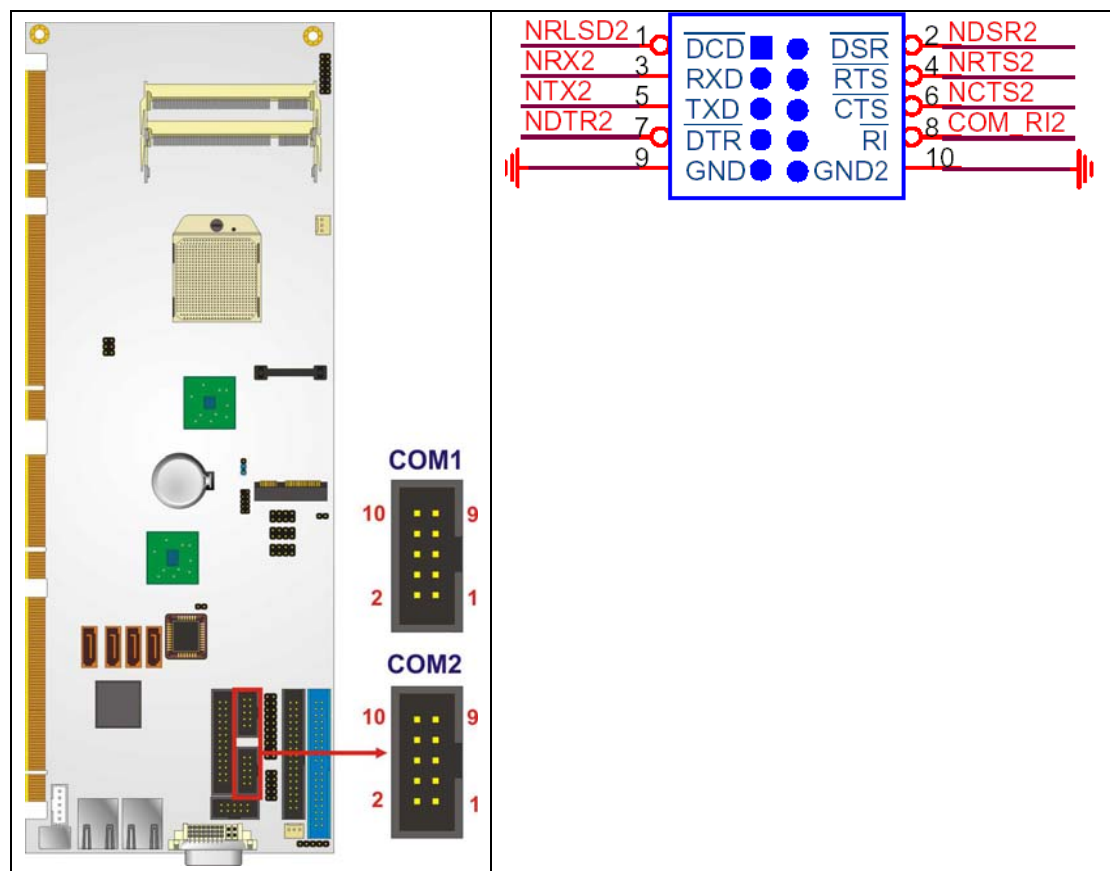


Figure 4-12: Serial Connector Pinout Locations

| 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 | Ground (GND) |

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.

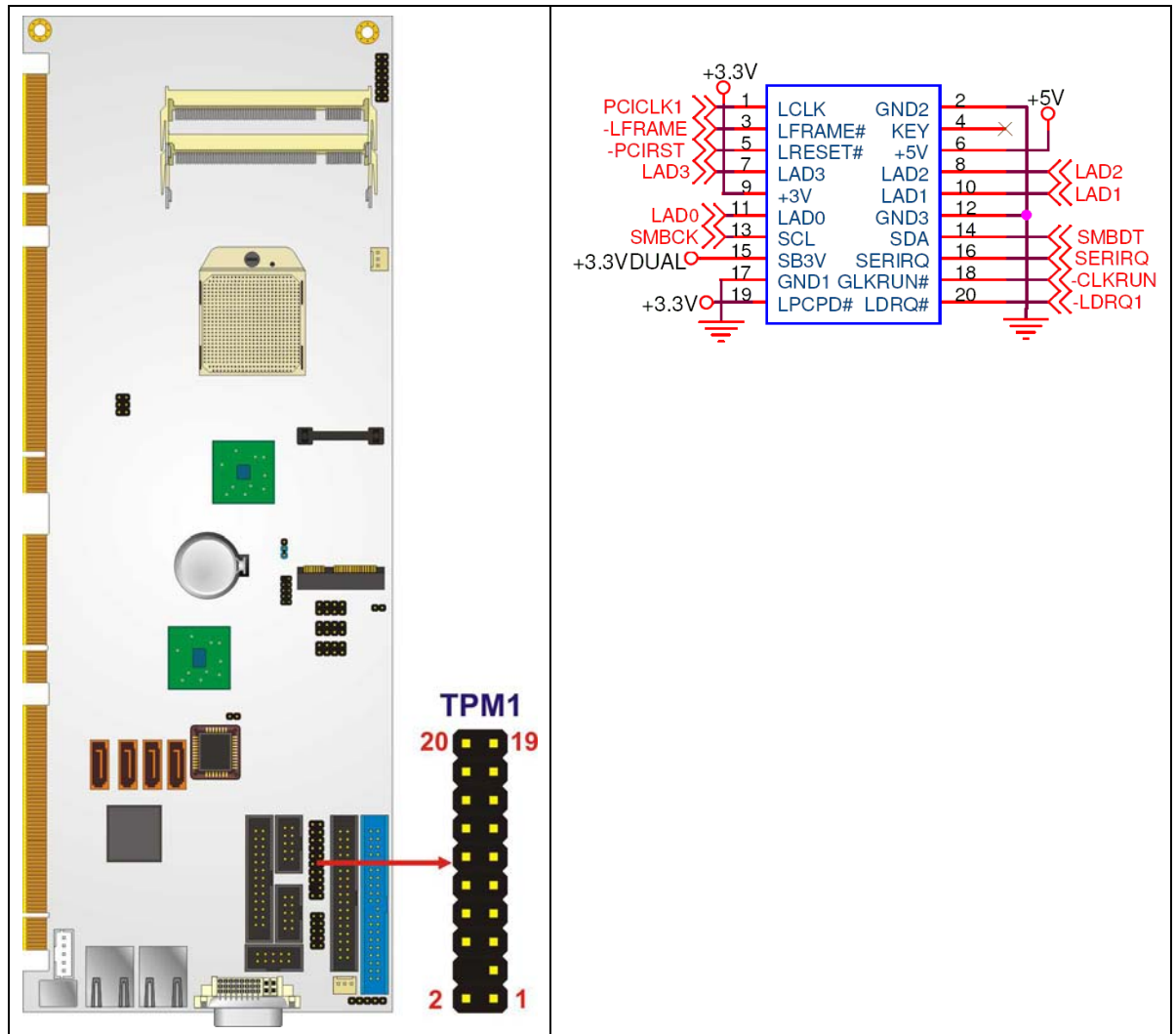


Figure 4-13: TPM Connector Pinout Locations

| 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 TV Out Connector

| | |
|---------------------|--------------------|
| CN Label: | TV1 |
| CN Type: | 6-pin header (2x3) |
| CN Location: | See Figure 4-14 |
| CN Pinouts: | See Table 4-15 |

The 2x3 pin TV out connector connects to a TV output by using an S-Video or RCA connector. The TV out connector makes displaying media data on a television easier.

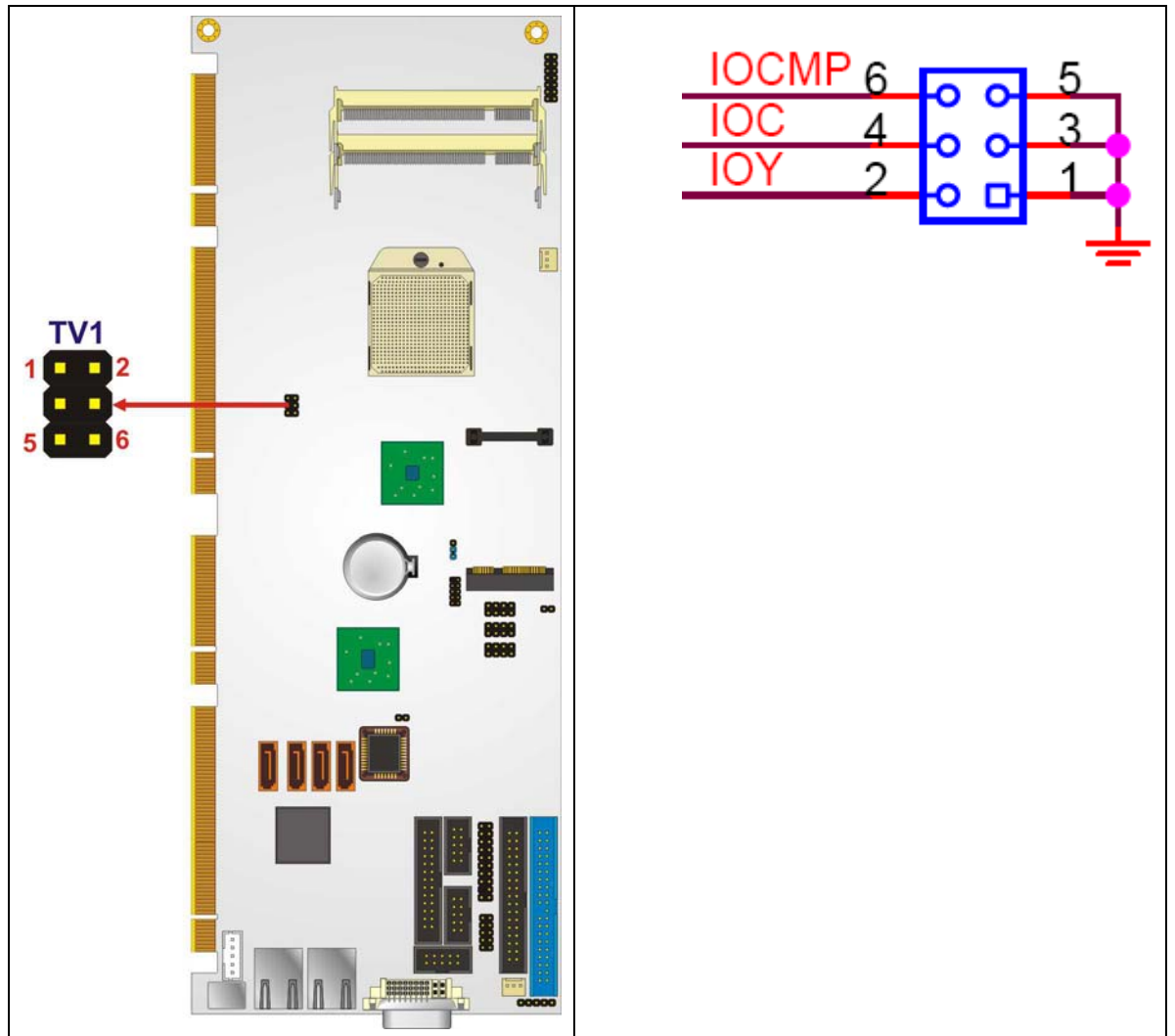


Figure 4-14: TV Connector Pinout Locations

| S-Video Connector | | | |
|-------------------|-------------|---------|------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | GND | 2 | Luminance (Y) |
| 3 | GND | 4 | Chrominance (Pr) |
| 5 | GND | 6 | Chrominance (Pb) |

Table 4-15: TV Port 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.

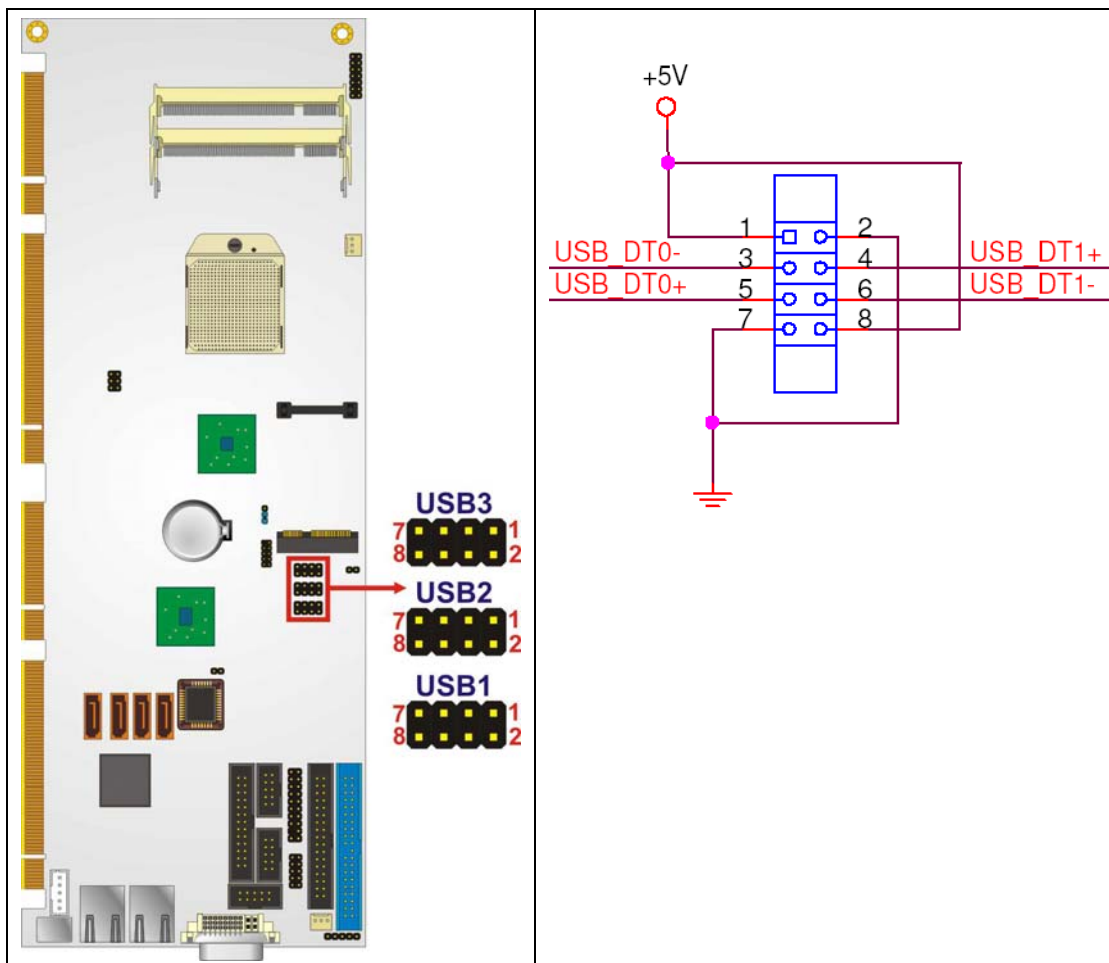


Figure 4-15: USB Connector Pinout Locations

| 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

4.2.15 VGA Connectors (Internal)

| | |
|---------------------|-------------------------|
| CN Label: | VGA |
| CN Type: | 10-pin box header (2x4) |
| CN Location: | See Figure 4-16 |
| CN Pinouts: | See Table 4-17 |

The 2x5 VGA pin connector provides connectivity to an external VGA port enabling the system to be connected to a standard CRT screen.

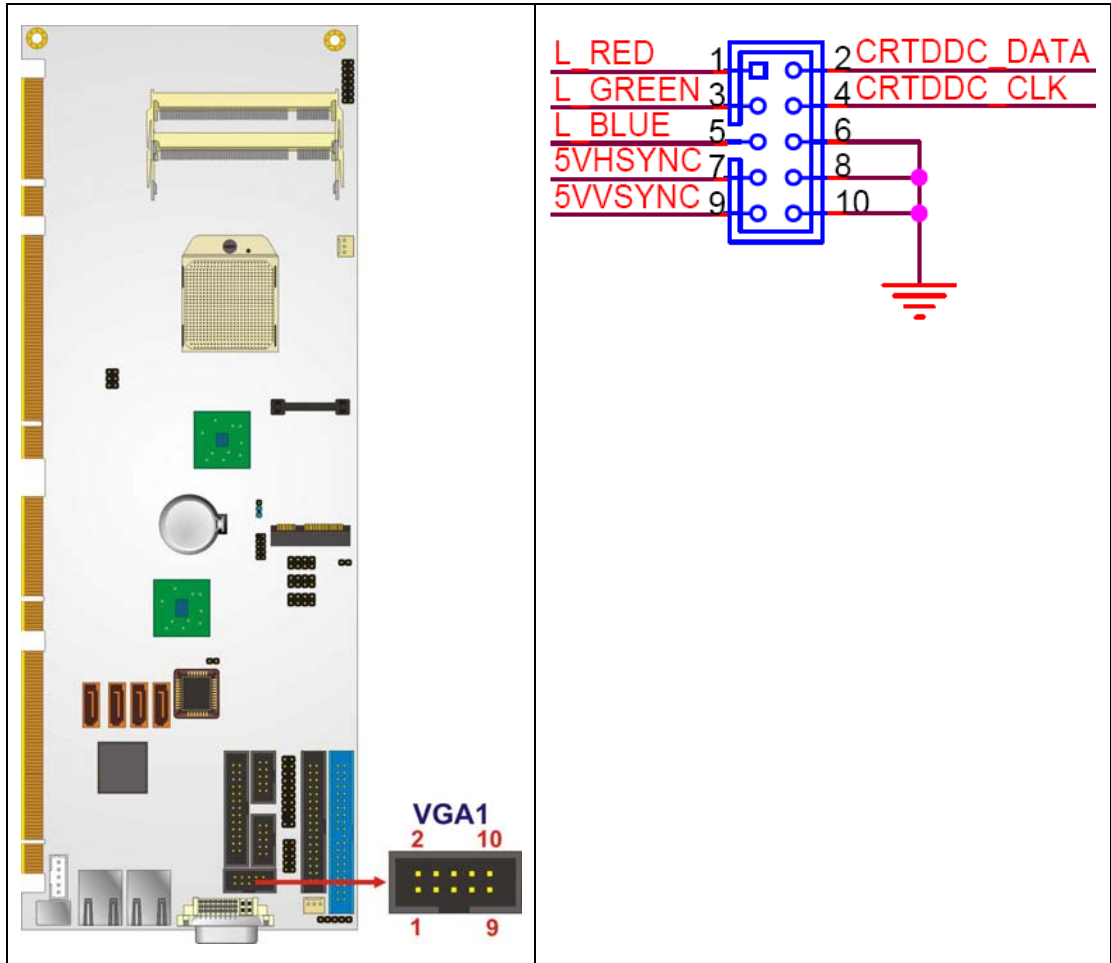


Figure 4-16: VGA Connector Pinout Locations

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|--------------|
| 1 | L_RED | 2 | CRT_DDC_DATA |
| 3 | L_GREEN | 4 | CRT_DDC_CLK |
| 5 | L_BLUE | 6 | GND |
| 7 | 5VHSYNC | 8 | GND |
| 9 | 5VVSNC | 8 | GND |

Table 4-17: VGA Connector Pinouts

4.3 External Peripheral Interface Connector Panel

Figure 4-17 shows the 3307800 external peripheral interface connector (EPIC) panel. The 3307800 EPIC panel consists of the following:

- 1 x DVI connector
- 1 x PS/2 connector
- 2 x RJ-45 LAN connectors

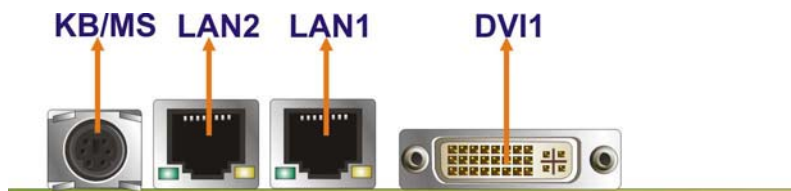


Figure 4-17: 3307800 External Peripheral Interface Connector

4.3.1 Keyboard/Mouse Connector

| | |
|--------------|------------------------------------|
| CN Label: | KB/MS1 |
| CN Type: | PS/2 |
| CN Location: | See Figure 4-18 (labeled 1) |
| CN Pinouts: | See Figure 4-18 Table 4-18 |

The 3307800 keyboard and mouse connector is a standard PS/2 connector.

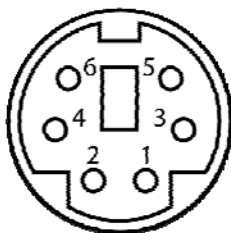


Figure 4-18: PS/2 Pinout and Configuration

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | KB DATA |
| 2 | MS DATA |
| 3 | GND |
| 4 | VCC |
| 5 | KB CLOCK |
| 6 | MS CLOCK |

Table 4-18: Keyboard Connector Pinouts

4.3.2 DVI Connector

| | |
|--------------|-----------------|
| CN Label: | DVI1 |
| CN Type: | DVI-I |
| CN Location: | See Figure 4-17 |
| CN Pinouts: | See Table 4-19 |

The 24-pin Digital Visual Interface (DVI) connector connects to high-speed, high-resolution digital displays. The DVI-I connector supports both digital and analog signals.

| PIN | Signal Name | Pin # | Signal Name | Pin # | Signal Name |
|-----|------------------------|-------|-------------|-------|--------------|
| 1 | TMDS Data2- | 9 | TMDS Data1- | 17 | TMDS Data0- |
| 2 | TMDS Data2+ | 10 | TMDS Data1+ | 18 | TMDS Data0+ |
| 3 | GND | 11 | GND | 19 | GND |
| 4 | N/C | 12 | NC | 20 | NC |
| 5 | N/C | 13 | NC | 21 | NC |
| 6 | DDC Clock [SCL] | 14 | PVDD1 | 22 | GND |
| 7 | DDC Data [SDA] | 15 | GND | 23 | TMDS Clock + |
| 8 | Analog vertical sync | 16 | GND | 24 | TMDS Clock - |
| C1 | Analog Red | -- | -- | -- | -- |
| C2 | Analog Green | -- | -- | -- | -- |
| C3 | Analog Blue | -- | -- | -- | -- |
| C4 | Analog Horizontal Sync | -- | -- | -- | -- |

| | | | | | |
|----|------------|----|----|----|----|
| C5 | Analog GND | -- | -- | -- | -- |
|----|------------|----|----|----|----|

Table 4-19: DVI Connector Pinouts

4.3.3 LAN Connectors

CN Label: LAN1 and LAN2

CN Type: RJ-45

CN Location: See Figure 4-17

CN Pinouts: See Table 4-20

The 3307800 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 4-20: LAN Pinouts

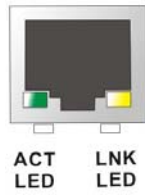


Figure 4-19: RJ-45 Ethernet Connector

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 4-21**.

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

Table 4-21: RJ-45 Ethernet Connector LEDs

Chapter

5

Installation

5.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the 3307800 may result in permanent damage to the 3307800 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3307800. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3307800, 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 3307800, place it on an anti-static pad. This reduces the possibility of ESD damaging the 3307800.
- ***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 3307800 is installed. All installation notices pertaining to the installation of the 3307800 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the 3307800 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 3307800, 3307800 components and injury to the user.

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

- Read the user manual:
 - The user manual provides a complete description of the 3307800 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
 - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the 3307800 on an antistatic pad:
 - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the 3307800 off:

3307800

- When working with the 3307800, 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 3307800 **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 3307800 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 3307800 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
 - Parallel port cable
- The following external peripheral devices are properly connected to the chassis:
 - DVI screen

- Keyboard
- Mouse
- LAN

5.3 Unpacking

5.3.1 Unpacking Precautions

When the 3307800 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 3307800 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, INC. reseller or vendor you purchased the 3307800 from or contact a Global American, INC. sales representative directly. To contact a Global American, INC. 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, 3307800 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 3307800. If one of these components is not installed the 3307800 cannot run.

5.4.1 AMD Socket S1 CPU Installation



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.

To install a AMD Socket S1 CPU onto the 3307800, 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: Unlock the CPU retention screw. When shipped, the retention screw of the CPU socket should be in the unlocked position. If it is not in the unlocked position, use a screwdriver to unlock the screw. See **Figure 5-1**.

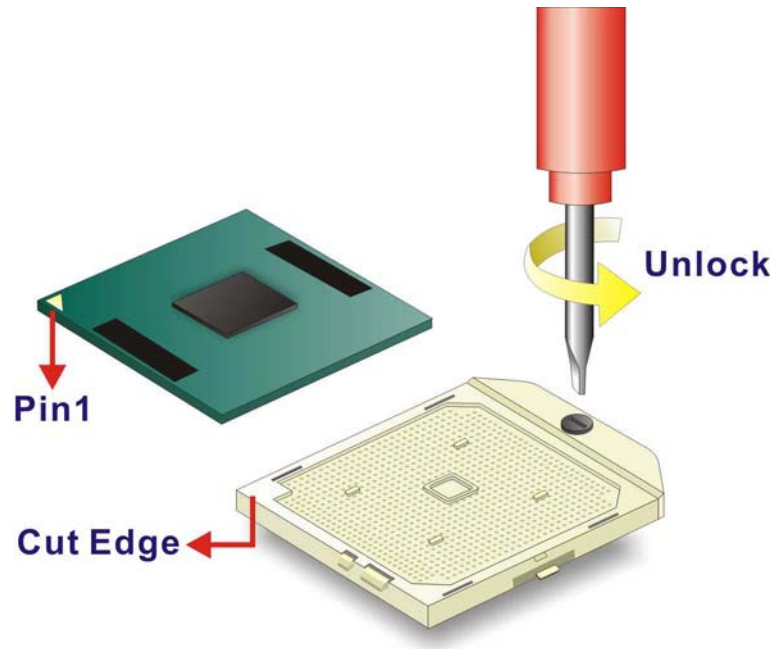


Figure 5-1: Make sure the CPU socket retention screw is unlocked

Step 2: 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 3: Correctly Orientate the CPU. Make sure the IHS (integrated heat sink) side is facing upwards.

Step 4: Correctly position the CPU. Match the Pin 1 mark with the cut edge on the CPU socket. See **Figure 5-1**.

Step 5: Align the CPU pins. Carefully align the CPU pins with the holes in the CPU socket.

Step 6: 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.

Step 7: Lock the retention screw. Rotate the retention screw into the locked position.

5.4.2 Cooling Kit 2107703 Installation



Figure 5-2: Global American, INC. 2107703 Cooling Kit

A Global American, INC. AMD Socket S1 CPU cooling kit (**Figure 5-2**) 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 2107703 cooling kit, please follow the steps below.

Step 8: Place the cooling kit onto the CPU. Make sure the CPU cooling fan cable can be properly routed when the cooling kit is installed.

Step 9: Properly align the cooling kit. Make sure its four spring screw fasteners can pass through the pre-drilled holes on the PCB.

Step 10: 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 5-3**)

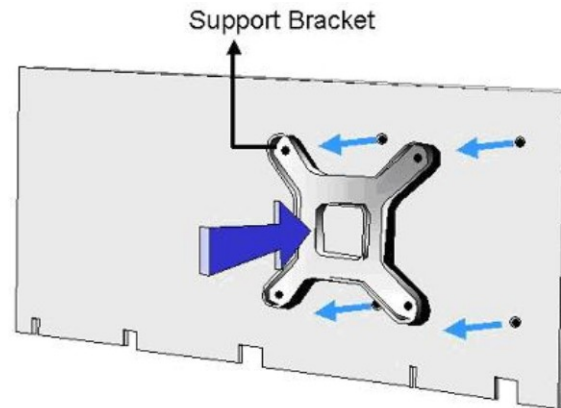


Figure 5-3: Cooling Kit Support Bracket

Step 11: 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 12: Connect the fan cable. Connect the cooling kit fan cable to the fan connector on the motherboard. Carefully route the cable and avoid heat generating chips and fan blades. See **Figure 5-4**.

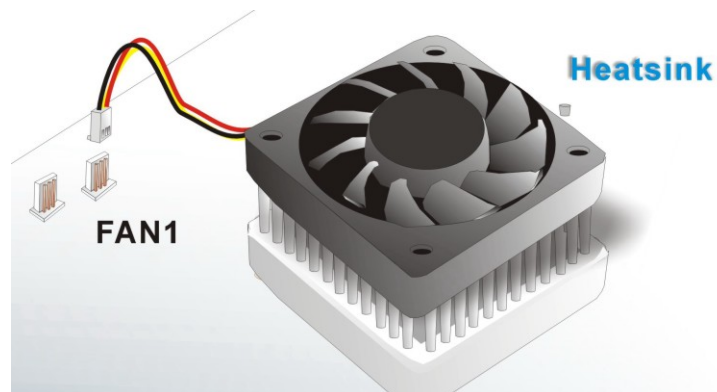


Figure 5-4: Connect the cooling fan cable

5.4.3 SO-DIMM Installation

**WARNING:**

Using incorrectly specified SO-DIMMs may permanently damage the 3307800. Please make sure the purchased SO-DIMM complies with the memory specifications of the 3307800. SO-DIMM specifications compliant with the 3307800 are listed in **Chapter 2**.

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

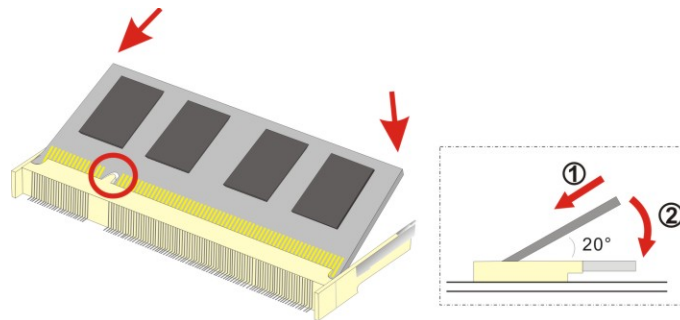


Figure 5-5: SO-DIMM Installation

- Step 1:** **Locate the SO-DIMM socket.** Place the 3307800 on an anti-static pad with the solder side facing up.
- Step 2:** **Align the SO-DIMM with the socket.** The SO-DIMM must be oriented in such a way that the notch in the middle of the SO-DIMM must be aligned with the plastic bridge in the socket.
- Step 3:** **Insert the SO-DIMM.** Push the SO-DIMM chip into the socket at an angle. (See **Figure 5-5**)
- Step 4:** **Open the SO-DIMM socket arms.** Gently pull the arms of the SO-DIMM socket

out and push the rear of the SO-DIMM down. (See **Figure 5-5**)

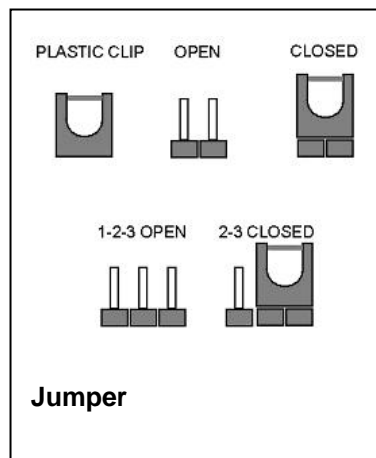
Step 5: Secure the SO-DIMM. Release the arms on the SO-DIMM socket. They clip into place and secure the SO-DIMM in the socket.

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 3307800 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the 3307800 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

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Jumper Location: See Figure 5-6

If the 3307800 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 5-6** below.

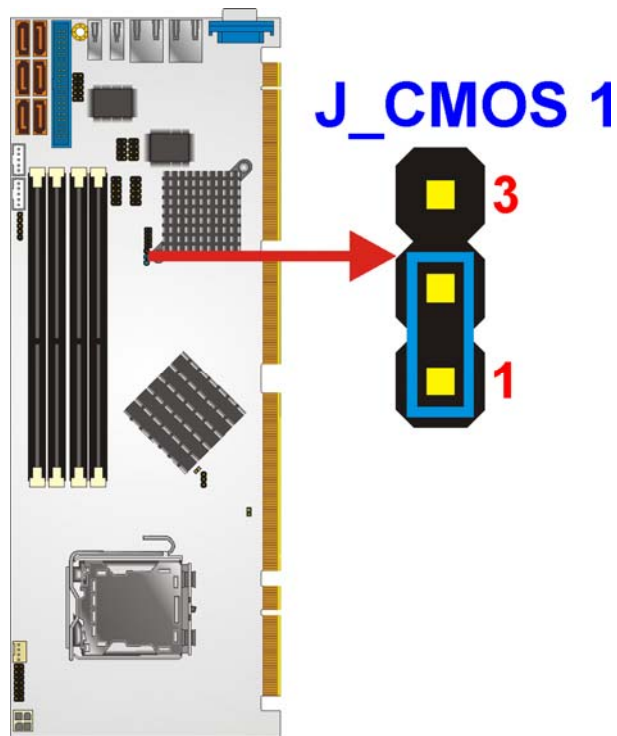


Figure 5-6: Clear CMOS Jumper

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 3307800 must have air vents to allow cool air to move into the system and hot air to move out.

The 3307800 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, INC. has a wide range of backplanes available. Please contact your 3307800 vendor, reseller or a Global American, INC. sales representative at salesinfo@Globalamericaninc.com or visit the Global American, INC. website (<http://www.Globalamericaninc.com>) to find out more about the available chassis.

5.6.2 Backplane Installation

Before the 3307800 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, INC. has a wide range of backplanes available. Please contact your 3307800 vendor, reseller or a Global American, INC. sales representative at salesinfo@Globalamericaninc.com or visit the Global American, INC. website (<http://www.Globalamericaninc.com>) to find out more about the available chassis.

5.6.3 CPU Card Installation

To install the 3307800 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 3307800.

| Quantity | Type |
|----------|-------------------------|
| 1 | ATA 66/100 flat cable |
| 1 | Dual RS-232 cable |
| 1 | PS/2 Y-cable |
| 6 | SATA drive cables |
| 3 | SATA drive power cables |
| 1 | USB cable |

Table 5-3: Global American, INC. Provided Cables

Separately purchased optional Global American, INC. items that can be installed are listed below:

- Audio kit
- FDD cable
- HDTV Cable Set
- LPT cable
- VGA D-Sub cable with bracket

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 3307800 to one or two IDE devices. To connect an IDE HDD to the 3307800 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 5-7**. A key on the front of the cable connector ensures it can only be inserted in one direction.

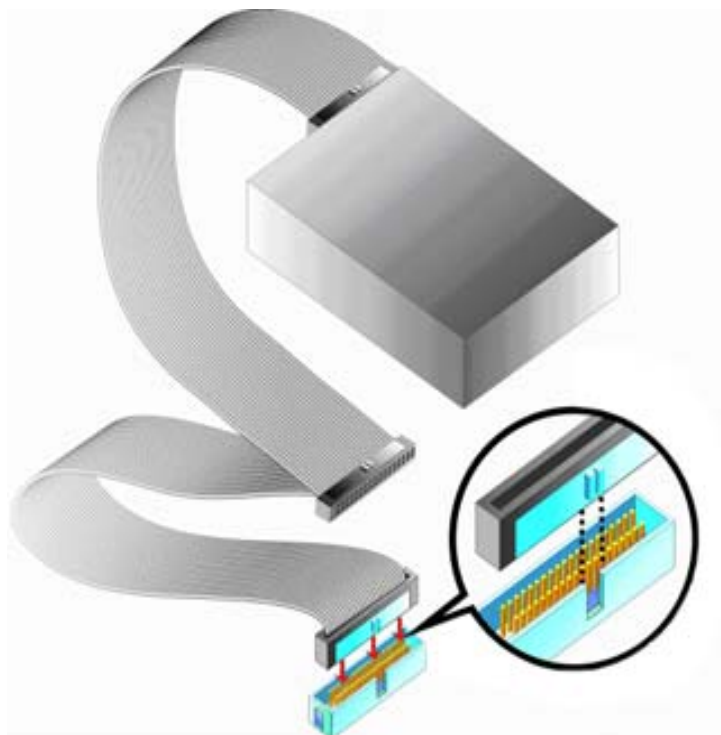


Figure 5-7: IDE Cable Connection

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

Step 0:

5.7.3 Audio Kit Installation

An optional audio kit that is separately ordered connects to the 9-pin audio connector on the 3307800. 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 5-8**.

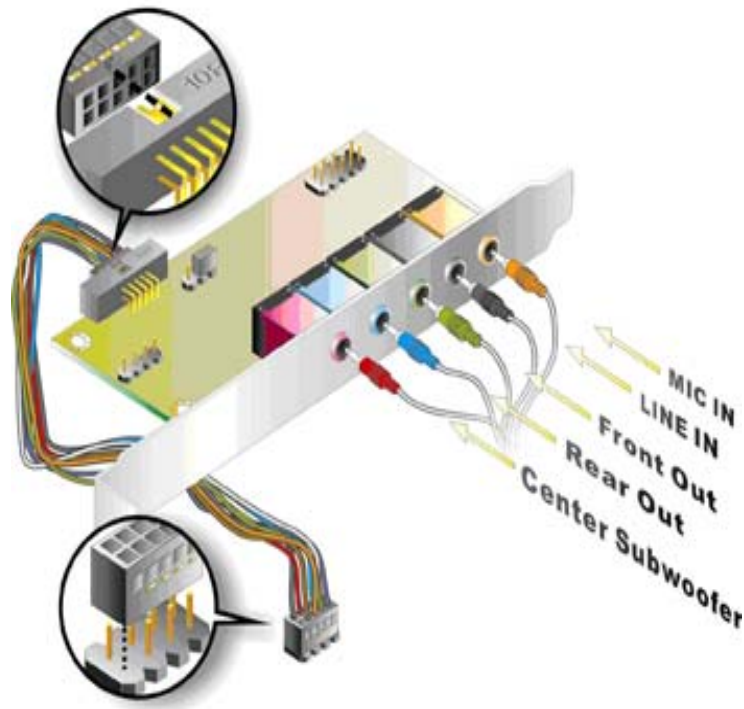


Figure 5-8: Audio Kit Connection

Step 3: **Connect the audio devices.** Connect the speakers and the subwoofer to the appropriate audio jack shown in **Figure 5-8**. **Step 0:**

5.7.4 FDD Cable Connection

The FDD flat cable connects to the 3307800 to one FDD device. To connect an FDD to the 3307800 please follow the instructions below.

Step 1: **Locate the FDD connector.** The location of the FDD device connector is shown in **Chapter 3**.

Step 2: Insert the connector. Connect the FDD cable connector to the on-board connector. See **Figure 5-9**. A key on the front of the cable connector ensures it can only be inserted in one direction.



Figure 5-9: FDD Cable Connection

Step 3: Connect the cable to an FDD device. Connect the connector at the other end of the cable to an FDD device. Make sure that pin 1 on the cable corresponds to pin 1 on the connector.

5.7.5 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 5-10**. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

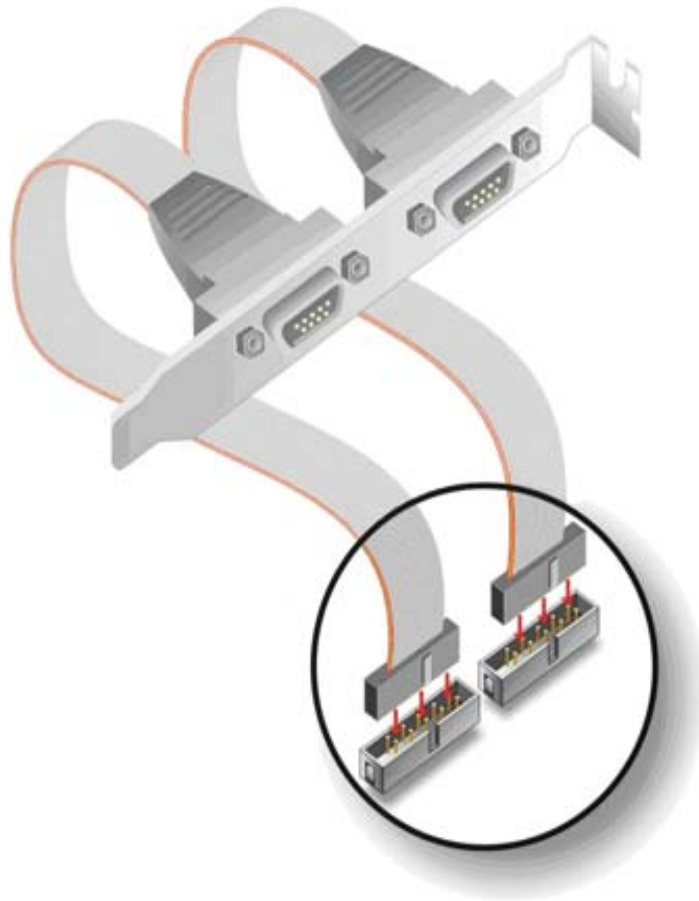


Figure 5-10: Dual RS-232 Cable Installation

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

Step 0:

5.7.6 Parallel Port Cable with Slot Bracket

The optional parallel port (LPT) cable respectively connects the onboard LPT 26-pin box header to an external LPT device (like a printer). The cable comprises a 26-pin female header, to be connected to the onboard LPT box-header, on one side and on the other side

a standard external LPT connector. To connect the LPT cable, please follow the steps below.

Step 1: Locate the connector. The LPT connector location is shown in **Chapter 4**.

Step 2: Align the connectors. Correctly align pin 1 on the cable connector with pin 1 on the PCIE-9452 LPT box-header connector. See **Figure 5-11**.

Step 3: Insert the cable connectors Once the cable connector is properly aligned with the 26-pin box-header connector on the PCIE-9452, connect the cable connector to the onboard connector. See **Figure 5-11**.

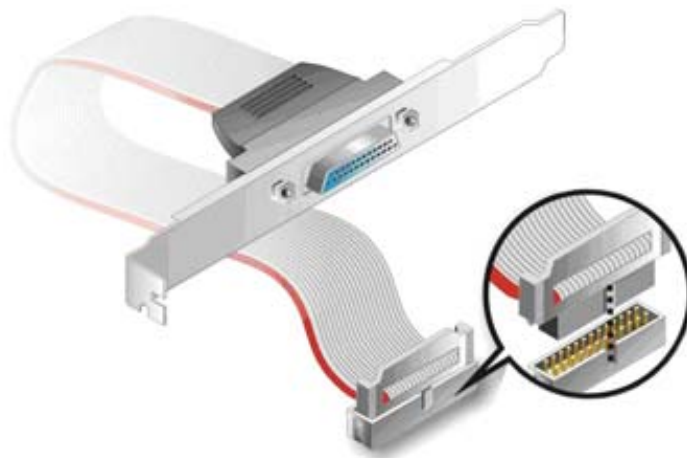


Figure 5-11: LPT Cable Connection

Step 4: Attach the LPT connector bracket to the chassis. The LPT cable connector is connected to a standard external LPT interface connector. To secure the LPT interface connector to the chassis please refer to the installation instructions that came with the chassis.

Step 5: Connect LPT device. Once the LPT interface connector is connected to the chassis, the LPT device can be connected to the LPT interface connector. See **Figure 5-12**

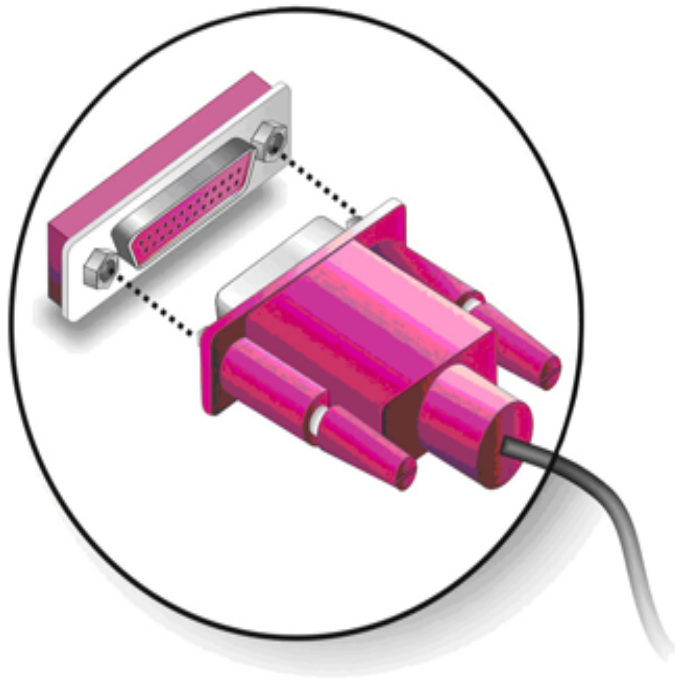


Figure 5-12: Connect the LPT Device

5.7.7 SATA Drive Connection

The 3307800 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**.

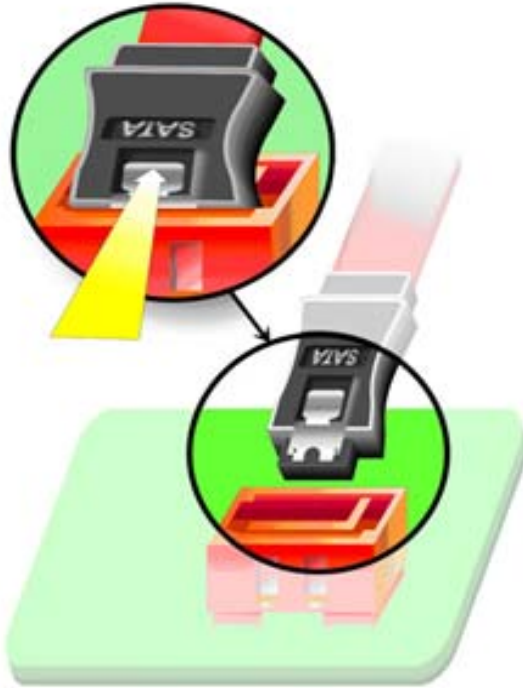


Figure 5-13: SATA Drive Cable Connection

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**. **Step 0:**



Figure 5-14: SATA Power Drive Connection

5.7.8 USB Cable (Dual Port)

The 3307800 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

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



WARNING:

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

Step 2: Align the connectors. The cable has two connectors. Correctly align pin 1 on each cable connector with pin 1 on the 3307800 USB connector.

Step 3: Insert the cable connectors. Once the cable connectors are properly aligned with the USB connectors on the 3307800, connect the cable connectors to the onboard connectors. See **Figure 5-15**.

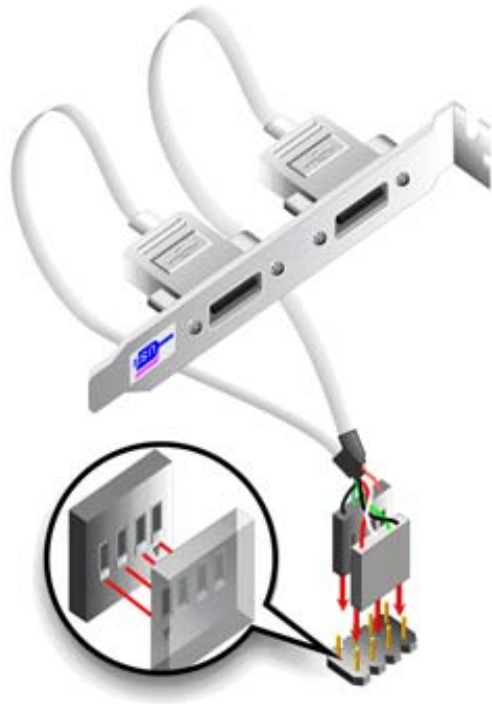


Figure 5-15: Dual USB Cable Connection

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 External Peripheral Interface Connection

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

- RJ-45 Ethernet cable connectors
- DVI display
- Keyboard and mouse

To install these devices, connect the corresponding cable connector from the actual device to the corresponding 3307800 external peripheral interface connector making sure the pins are properly aligned.

5.8.1 DVI Display Device Connection

The 3307800 has a single female DVI-I connector on the external peripheral interface panel. The DVI-I connector is connected to a digital display device. To connect a digital display device to the 3307800, please follow the instructions below.

- Step 1:** **Locate the DVI-I connector.** The location of the DVI-I connector is shown in **Chapter 2**.
- Step 2:** **Align the DVI-I connector.** Align the male DVI-I connector on the digital display device cable with the female DVI-I connector on the external peripheral interface.
- Step 3:** **Insert the DVI-I connector** Once the connectors are properly aligned with the male connector, insert the male connector from the digital display device into the female connector on the 3307800. See **Figure 5-16**.

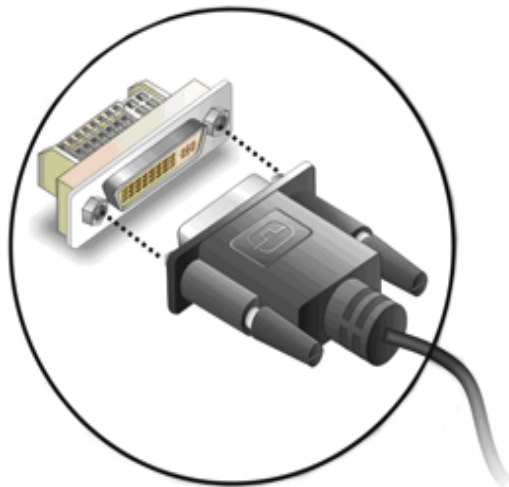


Figure 5-16: DVI Connector

- Step 4:** **Secure the connector.** Secure the DVI-I connector from the digital display

device to the external interface by tightening the two retention screws on either side of the connector.

5.8.2 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 1: **Locate the RJ-45 connectors.** The locations of the USB connectors are shown in **Chapter 4**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the 3307800. See **Figure 5-17**.

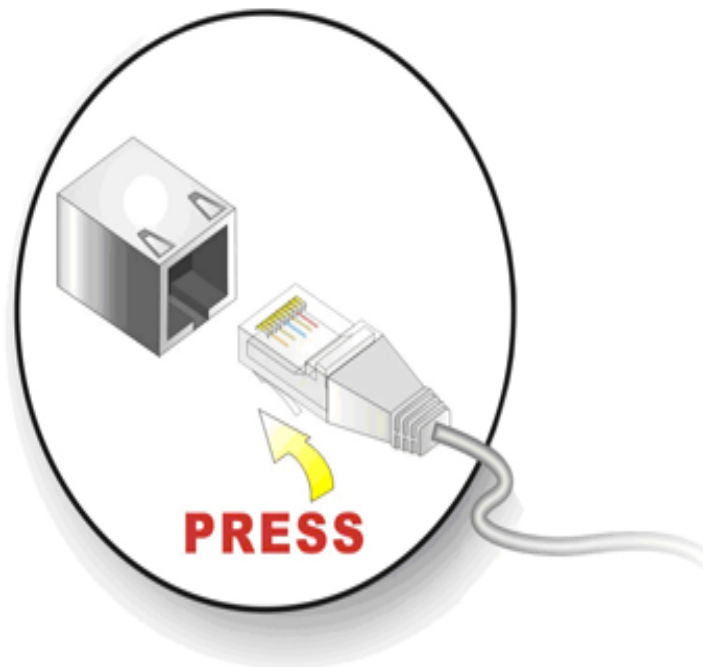


Figure 5-17: LAN Connection

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

5.8.3 PS/2 Y-Cable Connection

The 3307800 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 3307800. 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 3307800.

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 5-18**.

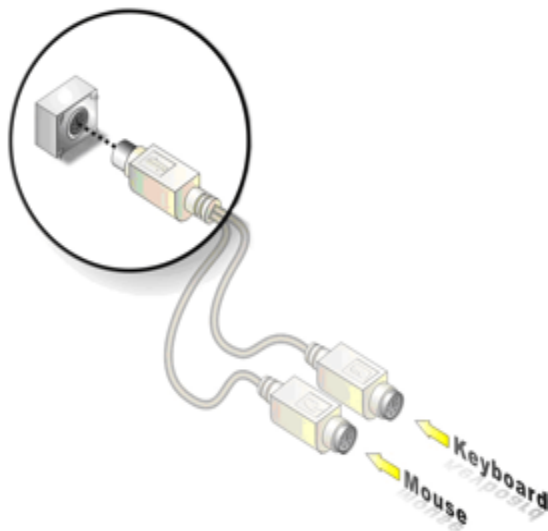


Figure 5-18: PS/2 Keyboard/Mouse Connector

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.

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Appendix

B

DIO Interface

A.1 DIO Interface Introduction

The DIO connector on the 3307800 is interfaced to GIO ports on the iTE Super I/O chipset. The DIO has both 4-bit digital inputs and 4-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 | Ground | N/A | N/A |
| 2 | VCC | N/A | N/A |
| 3 | XIN0 | 27 (GP20) | General purpose I/O port 2 bit 0. |
| 4 | XOUT0 | 23 (GP24) | General purpose I/O port 2 bit 4. |
| 5 | XIN1 | 26 (GP21) | General purpose I/O port 2 bit 1. |
| 6 | XOUT1 | 22 (GP25) | General purpose I/O port 2 bit 5. |
| 7 | XIN2 | 25 (GP22) | General purpose I/O port 2 bit 3. |
| 8 | XOUT2 | 21 (GP26) | General purpose I/O port 2 bit 2 |
| 9 | XIN3 | 24 (GP23) | General purpose I/O port 2 bit 6 |
| 10 | XOUT3 | 20 (GP27) | General purpose I/O port 2 bit 7. |

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

C

Watchdog Timer

**NOTE:**

The following discussion applies to DOS environment. Global American, INC. support is contacted or the Global American, INC. 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.

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**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

D

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 | AMD Graphics Controller |
| 3C0-3DF | AMD 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

3307800

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Appendix

E

RAID Setup

D.1 Introduction

The AMD SB600 SATA RAID control can control serial ATA (SATA) disks and increase the data read/write speed and provide protection to data by distributing mirrored duplicates of data onto two disk drives (RAID 1).



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 RAID 1 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, and JBOD
- Supports connectivity to two disk drives
- Windows-based software for RAID management

D.3 Accessing the AMD SB600 RAID Utility

To access the **AMD RAID Utility**, please follow the steps below:

Step 1: Connect SATA drives to the system. Connect at least two 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 (JBOD, RAID 0 or RAID 1). 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 **AMI BIOS** setup program. Next, open the **Southbridge Setup** menu. Enable the **OnChip SATA Channel** option and change the **OnChip SATA Type** to **RAID**.

Step 3: Save and Exit BIOS. After the **SATA ROM Support BIOS** 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-F. The following screen appears.

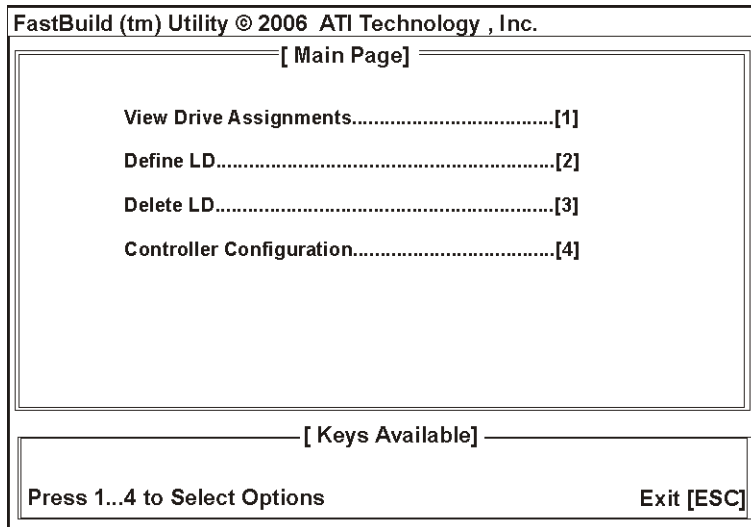


Figure D-1: Accessing AMD RAID BIOS Utility

Step 6: Delete RAID settings and partitions. Select **Delete LD** by pressing **3** in the **Main Page** menu above. Next, delete the drives individually.

Step 7: Define the Logical Drive (LD). Select **Define LD** by pressing **2** in the **Main Page** menu above.

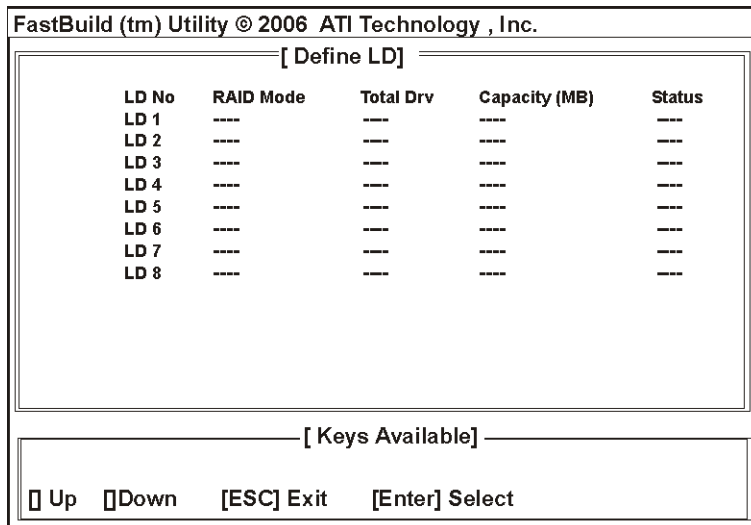


Figure D-2: Define LD

Step 8: The RAID Configuration Options screen shown below appears.

FastBuild (tm) Utility © 2006 ATI Technology , Inc.

[Define LD]

| LD No | RAID Mode | Total Drv |
|-------|-----------|-----------|
| LD 1 | RAID 1 | 0 |

Stripe Block: 64KB
Gigabyte Boundary: ON

Fast Init.: OFF
Cache Mode: WriteThru

[Drives Assignment]

| Channel ID | Drive Model | Capacity (MB) | Assignment |
|------------|-------------|---------------|------------|
| 1: Mass | xxxxxxxxxx | yyy | N |
| 2: Mass | xxxxxxxxxx | yyy | N |
| 3: Mass | xxxxxxxxxx | yyy | N |
| 4: Mass | xxxxxxxxxx | yyy | N |

[Keys Available]

Up Down [ESC] Exit [Space] Change Option [Ctrl-Y] Save

Figure D-3: RAID Configuration Options

Step 9: Configure the RAID. Use the configuration options in the **RAID Configuration Options** menu shown above to configure the RAID.

Step 10: Select the RAID Mode. The following RAID configuration options are available.

- JBOD
- RAID 0
- RAID 1
- RAID 10

Step 11: Select the stripe block. If necessary, select the stripe block.

Step 12: Select the drives. For a logical drive, at least two drives must be selected.

Step 13: Select the Capacity. For each drive, select the capacity of the drive that should be allocated to the logical drive.

Step 14: Assign the drive. For each drive, select “Y” in the assignment option.

Step 15: Save. Press “Ctrl-Y” to save the RAID configuration settings.

Step 16: The **LD Define** screen reappears with the newly configured LD showing.

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[Define LD]

| LD No | RAID Mode | Total Drv | Capacity (MB) | StatusLD |
|-------|-----------|-----------|---------------|------------|
| LD1 | RAID 1 | 2 | 100 | Functional |
| LD 2 | ---- | ---- | ---- | ---- |
| LD 3 | ---- | ---- | ---- | ---- |
| LD 4 | ---- | ---- | ---- | ---- |
| LD 5 | ---- | ---- | ---- | ---- |
| LD 6 | ---- | ---- | ---- | ---- |
| LD 7 | ---- | ---- | ---- | ---- |
| LD 8 | ---- | ---- | ---- | ---- |

[Keys Available]

Up Down [ESC] Exit [Enter] Select

Figure D-4: RAID Configuration Options

Step 17: Exit the Define LD screen. To exit, press “**Escape**.” The **Main Menu** reappears.

Step 18: Exit the Main Menu and reboot. When exiting the main menu, a prompt appears asking if the user wishes to reboot the system. Press “Y” to continue.

Step 19: The system starts to reboot.

Step 20: 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.

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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