integration with integrity

3307680 User's Manual

Full-Size PICMG 1.3 SBC

Version 1.1 October 2008

Copyrights

In general, the manufacturer will not be liable for any direct, indirect, special, incidental or consequential damages arising from the use of inability to use the product or documentation, even if advised of the possibility of such damages. The manufacturer keeps the rights in the subject to change the contents of this document without prior notices in order to improve the function design, performance, quality and reliability. The author assumes no responsibility for any errors or omissions, which may appear in this document, nor does it make a commitment to update the information contained herein.

Trademarks

Intel is a registered trademark of Intel Corporation.
Award is a registered trademark of Award Software, Inc.

All other trademarks, products and or product's name mentioned herein are mentioned for identification purposes only, and may be trademarks and/or registered trademarks of their respective companies or owners.

Packing List

NOTE:

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the GAI reseller or vendor you purchased the 3307680 from or contact an GAI sales representative directly. To contact an GAI sales representative, please send an email to sales@globalamericaninc.com

The items listed below should all be included in the 3307680 package.

- 1 x 3307680 single board computer
- 1 x IDE cable
- 2 x SATA power cable
- 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**.

Table of Contents

Glossary

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

Chapter

1

Introduction

1.1 Introduction

The 3307680 PICMG 1.3 CPU card is a Socket M Intel® Core™2 Duo, Intel® Core™ Duo, Intel® Core™ Solo or Intel® Celeron M (Yohan core) CPU platform. The 3307680 has a maximum front side bus (FSB) frequency of 667MHz and supports 667MHz 2GB dual channel memory modules. The 3307680 also comes with multiple display option, dual PCI Express (PCIe) Gigabit Ethernet (GbE) and has flexible storage options including support for four second-generation serial ATA (SATA) hard disk drives (HDD), two IDE HDD, a CompactFlash® Type II (CF Type II) disk, and a floppy disk drive (FDD).

1.1.1 3307680 Benefits

Some of the 3307680 benefits are listed below:

- Multiple display output options
- Storage flexibility with support for SATA II drives, IDE drives and CF Type II disks
- DDR2 support enables faster data transfers
- Multiple I/O interfaces provide connectivity to a broad range of external peripheral devices

1.1.2 3307680 Features

Some of the 3307680 features are listed below.

- Support for the following Socket M processors:
  - Intel® Core™2 Duo
  - Intel® Core™ Duo
  - Intel® Core™ Solo
  - Intel® Celeron M
- Maximum FSB of 667MHz
- Maximum of 4GB dual-channel memory supported with two 240-pin dual channel 400MHz, 533MHz or 667MHz 2GB DDR2 DIMMs
- Four SATA II drives with transfer rates of 3.0Gb/s supported
- Intel® Matrix Storage Manager
- High performance PCIe GbE Ethernet controllers

- Six USB 2.0 devices supported
- Multiple display options including CRT, 18-bit dual-channel LVDS and HDTV
- PICMG 1.3 form factor
- RoHS compliant

1.2 3307680 Overview

1.2.1 3307680 Overview Photo

The 3307680 has a wide variety of internal and external peripheral connectors. A labeled photo of the peripheral connectors on the front of the 3307680 is shown in **Figure 1-1**.

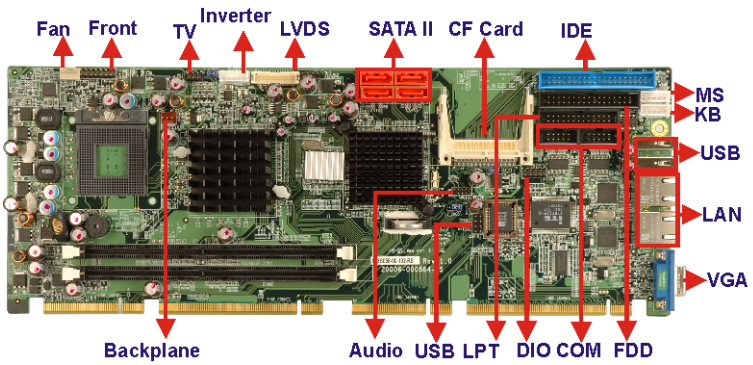


Figure 1-1: 3307680 Overview [Front View]

1.2.2 3307680 Peripheral Connectors and Jumpers

The 3307680 has the following connectors on-board:

- 1 x Audio connector
- 1 x Backplane power connector
- 1 x Compact flash connector
- 1 x Digital input/output connector
- 1 x Fan connector
- 1 x Floppy disk drive (FDD) connector
- 1 x Front panel connector
- 1 x IDE disk drive connector
- 1 x Infrared interface connector

- 1 x Inverter connector
- 1 x Keyboard connector
- 1 x LVDS connector
- 1 x Mouse connector
- 2 x Serial port connectors (internal COM 1 and COM 2 RS-232)
- 1 x Parallel port connector
- 4 x Serial ATA (SATA) drive connectors
- 1 x TV output connector
- 2 x USB connectors

The 3307680 has the following external peripheral interface connectors on the board rear panel

- 2 x Ethernet connectors
- 2 x USB port connectors
- 1 x VGA connector

The 3307680 has the following on-board jumpers:

- Clear CMOS
- LCD voltage selector
- CF card setting

1.2.3 Technical Specifications

3307680 technical specifications are listed in **Table 1-1**. See **Chapter 2** for details.

Specification	3307680
Form Factor	PICMG 1.3
System CPU	Socket M Intel® Core™2 Duo Socket M Intel® Core™ Duo Socket M Intel® Core™ Solo Socket M Intel® Celeron M (Yonah core)
Front Side Bus	400MHz, 533Mhz, or 667MHz

Specification	3307680
System Chipset	**Northbridge**: Intel® 945GM **Southbridge**: Intel® ICH7R
Memory	Two 240-pin DIMM sockets support two dual-channel 400MHz, 533MHz or 667MHz DDR2 DIMMs with a maximum capacity of 2GB each
Display	**CRT**: Integrated in the Intel® 945GM to support CRT **LVDS**: Dual channel 18-bit LVDS LCD panel **HDTV**: Supports resolutions up to 1080i / 1080P by component interface
BIOS	AMI Flash BIOS
Audio	7.1 channel or 5.1 channel audio with an optional AC-KIT
LAN	Dual PCIe GbE Broadcom BCM5787M chipsets
COM	Two RS-232 serial ports
USB2.0	Eight USB 2.0 devices supported, two on the bracket, two by pin header on board and four on the backplane
IDE	One 40-pin IDE connects to two Ultra ATA33/66/100 devices
Floppy Disk Drive	One FDD connector connects to a single FDD
SATA	Four 3.0Gb/s SATA drives supported
Keyboard/mouse	One 5-pin connector connects to a keyboard One 5-pin connector connects to a mouse
Super I/O	ITE IT8712F
Digital I/O	One 8-bit digital I/O connector (4-bit input / 4-bit output)
Infrared	One Infrared connector

Specification	3307680
SSD	CF Type II
Watchdog Timer	Software programmable 1-255 sec. by super I/O
Power Supply	ATX supported
Temperature	0ºC – 60ºC (32ºF - 140ºF)
Humidity (operating)	5%~95% non-condensing
Dimensions (LxW)	338mm x 126mm
Weight (GW/NW)	1100g/ 380g

Table 1-1: Technical Specifications

Chapter

2

Detailed Specifications

2.1 Overview

This chapter describes the specifications and on-board features of the 3307680 in detail.

2.2 Dimensions

2.2.1 Board Dimensions

The dimensions of the board are listed below:

- **Length**: 338mm
- **Width**: 126mm

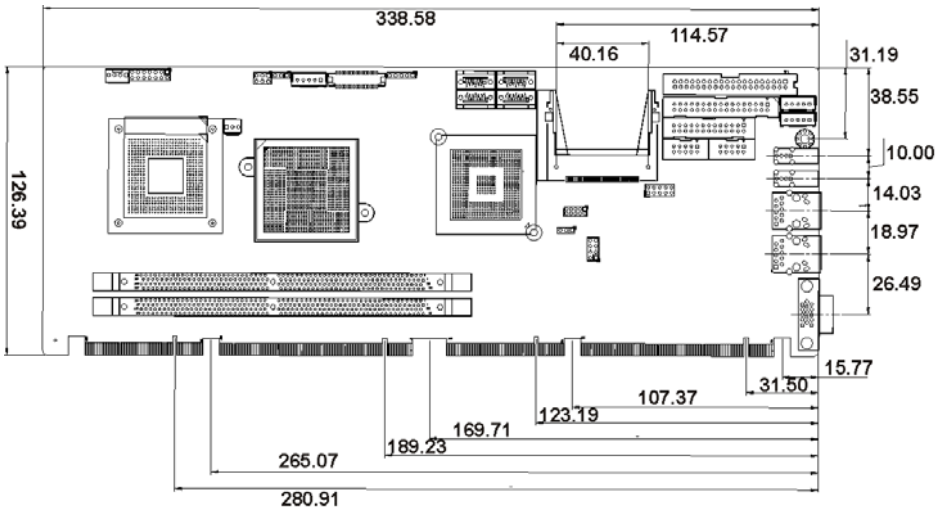


Figure 2-1: 3307680 Dimensions (mm)

2.2.2 External Interface Panel Dimensions

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

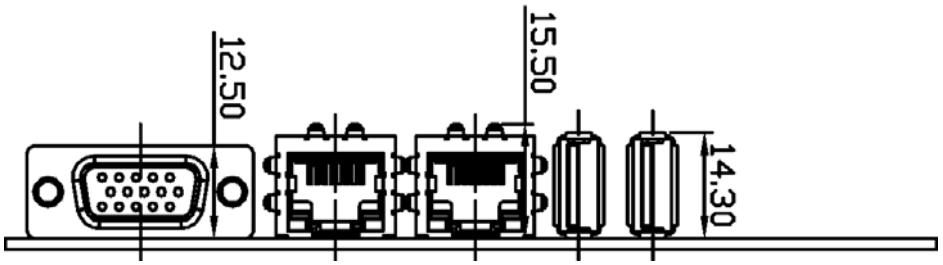


Figure 2-2: External Interface Panel Dimensions (mm)

2.3 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.

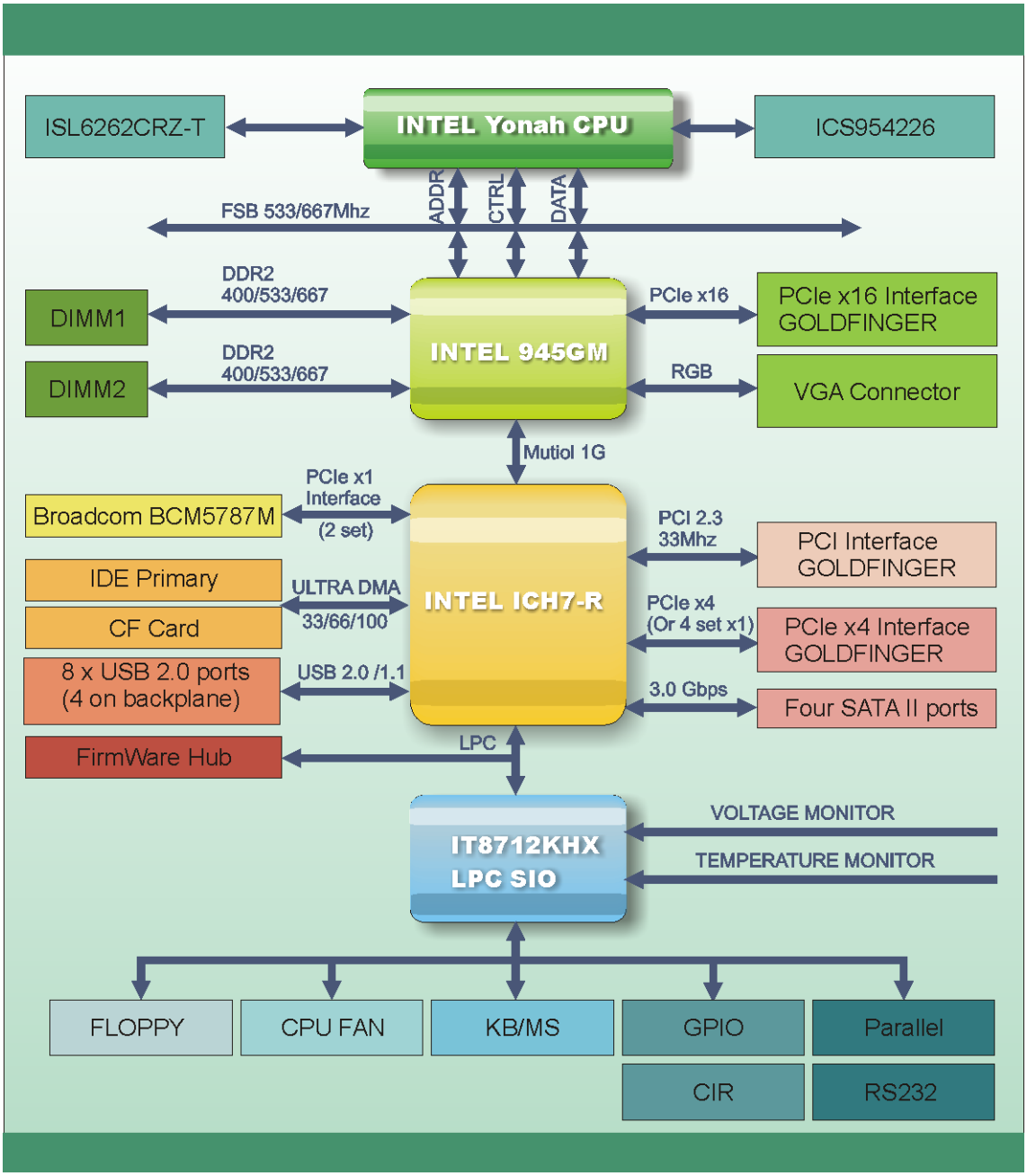


Figure 2-3: Data Flow Block Diagram

2.4 Compatible Processors

2.4.1 Compatible Processor Overview

The 3307680 supports the following Socket M processors:

- Intel® Core™2 Duo Mobile processors
- Intel® Core™ Duo processors
- Intel® Core™ Solo processors
- Intel® Celeron® M processors

All three of the above processors communicate with the Intel® 945GM northbridge chipset through a 667MHz front side bus (FSB). Features of the supported processors are listed in **Table 2-1**.

CPU Features	Core™2 Duo Mobile	Core™ Duo	Core™ Solo	Celeron® M
Dual core	Yes	Yes	No	No
Enhanced Halt State (C1E)	No	Yes	No	No
Enhanced Intel® Speedstep® Technolgy	Yes	Yes	Yes	No
Execute Disable Bit	Yes	Yes	Yes	Yes
Intel® EM64T	Yes	No	No	No
Intel® Virtualization Technology	Yes	Yes	No	No

Table 2-1: Processor Features

2.4.2 Supported Processors

Specifications for the compatible processors are listed in **Table 2-2** below:

Family	CPU Speed	Processor #	Bus Speed	Mfg Tech	Stepping	Cache Size
Core™2 Duo Mobile	2.33 GHz	T7600	667 MHz	65 nm	B2	4 MB
	2.16 GHz	T7400	667 MHz	65 nm	B2	4 MB

Family	CPU Speed	Processor #	Bus Speed	Mfg Tech	Stepping	Cache Size
	2 GHz	T7200	667 MHz	65 nm	B2	4 MB
	1.83 GHz	T5600	667 MHz	65 nm	B2	2 MB
	1.66 GHz	T5500	667 MHz	65 nm	B2	2 MB
Core™ Duo	2 GHz	T2500	667 MHz	65 nm	C0	2 MB
	1.66 GHz	T2300E	667 MHz	65 nm	C0	2 MB
Core™ Solo	1.83 GHz	T1400	667 MHz	65 nm	C0	2 MB
Celeron® M	2 GHz	450	533 MHz	65 nm	D0	1 MB
	1.86 GHz	440	533 MHz	65 nm	D0	1 MB
	1.73 GHz	430	533 MHz	65 nm	C0	1 MB
	1.73 GHz	430	533 MHz	65 nm	D0	1 MB
	1.73GHz	530	533 MHz	65 nm	-	1 MB
	1.60 GHz	520	533 MHz	65 nm	B2	1 MB
	1.46 GHz	410	533 MHz	65 nm	C0	1 MB

Table 2-2: Supported Processors

2.5 Intel® 945GM Northbridge Chipset

2.5.1 Intel® 945GM Overview

The Intel® 945GM northbridge chipset has the Generation 3.1 Intel Integrated Graphics Engine and the Intel® Graphics Media Accelerator 950 (Intel® GMA 950). The integrated graphics and memory controller hub (GMCH) facilitates the flow of information primarily between the following four interfaces:

- Front Side Bus (FSB)
- System Memory Interface
- Graphics Interface
- Direct Media Interface (DMI)

2.5.2 Intel® 945GM Memory Support

WARNING:

Only DDR2 memory module can be installed on the 3307680. Do not install DDR memory modules. If a DDR memory module is installed on the 3307680, the 3307680 may be irreparably damaged.

The Intel® 945GM northbridge chipset on the 3307680 supports two DDR2 240-pin DIMMs with the following features:

- Two 240-pin DIMMs
- DDR2 only (**DO NOT** install a DDR DIMM)
- Single-channel or dual-channel
- Capacities of 256MB, 512MB, 1GB or 2GB
- Transfer speeds of 400MHz, 533MHz or 667MHz
- 64-bit wide channel

The memory socket is shown in **Figure 2-4**.

Figure 2-4: 240-pin DDR2 DIMM Socket

2.5.3 Intel® 945GM PCIe x16

2.5.3.1 PCIe x16 Bus Overview

The Intel® 945GM northbridge chipset has a dedicated 16-lane PCIe port for an external PCIe x16 graphics card. The PCIe x16 graphics card is installed on a compatible PICMG 1.3 backplane and interfaced to the northbridge through the two golden fingers shown in **Figure 2-5**. Note that the 16 lanes of the PCIe x16 northbridge bus are connected to two golden fingers.

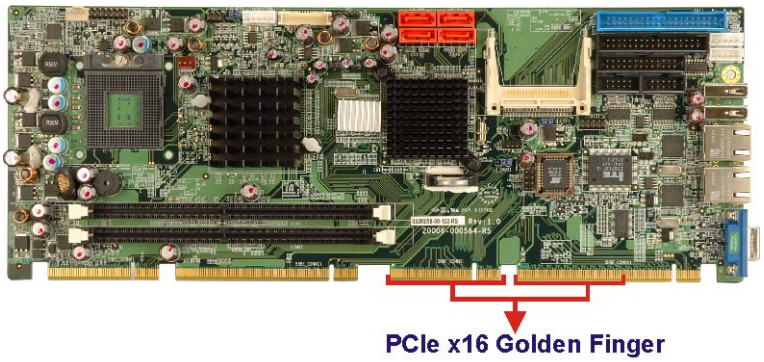


Figure 2-5: PCIe x16 Golden Fingers

2.5.3.2 PCIe x16 Expansion Options

The PCIe x16 can be interfaced to either one PCIe x16 graphics card or a single PCIe x1 expansion card on a compatible PICMG 1.3 backplane.

2.5.3.3 PCIe x16 Bus Specifications

Some of the PCIe x16 bus specifications are listed below.

- Compliant with the current PCI Express Base Specification base PCIe frequency of 2.5GHz
- Raw bit rate on the pins is 250Gb/s
- Maximum theoretical bandwidth of 4GB/s in each direction resulting in an 8GB/s bandwidth when in PCIe x16 mode
- 100MHz differential reference clock

- PCIe power management support
- L0, L1, L2/L3 ready, L3
- Hierarchical PCI compliant configuration mechanism for downstream components
- PCIe extended configuration space
- PCIe enhanced addressing mechanism
- Supports traditional PCI traffic
- Supports traditional AGP traffic
- APIC and MSI messaging support

2.5.4 Intel® 945GM Integrated Graphics

The Intel® 945GM northbridge chipset has an Intel® Gen. 3.5 integrated graphics engine that supports the following display devices:

- Analog CRT
- LVDS
- TV-Out

2.5.4.1 Intel® 945GM Analog CRT Support

A DB-15 VGA connector on the external peripheral interface connector panel is interfaced to the Intel® 945GM graphics engine. The Intel® 945GM internal graphics engine, with an integrated 400MHz RAMDAC and hot plug CRT support, supports analog CRT monitors up to QXGA.

2.5.4.2 Intel® 945GM LVDS Support

A 30-pin LVDS crimp connector is interfaced to the Intel® 945GM graphics engine. The Intel® 945GM internal graphics engine supports LVDS displays with the following features:

- Up to UXGA monitors with a maximum resolution of 1600 x 1200
- 18-bit 25MHz to 112MHz single-channel or dual-channel LVDS screens
- CPIS 1.5 compliant LVDS screens

2.5.4.3 Intel® 945GM TV Out Support

A 6-pin TV output connector is interfaced to the Intel® 945GM graphics engine. The Intel® 945GM internal graphics engine has the following TV output features:

- Three integrated 10-bit DACs
- Macrovision support
- Overscaling
- NTSC and PAL formats supported
- Supports RCA connectivity
- Supports HDTV (via Component output) with the following resolutions:
  - 480p
  - 720p
  - 1080i

2.5.5 Intel® 945GM Direct Media Interface (DMI)

Intel® 945GM northbridge GMCH is connected to the Intel® ICH7R Southbridge Chipset through the chip-to-chip Direct Media Interface (DMI). Features of the Intel® 945GM DMI are listed below:

- 2GB/s (1GB/s in each direction) bus speed
- 32-bit downstream address

2.6 Intel® ICH7R Southbridge Chipset

2.6.1 Intel® ICH7R Overview

The Intel® ICH7R southbridge chipset is connected to the Intel® 945GM northbridge GMCH through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH7R are listed below.

- Complies with PCI Express Base Specification, Revision 1.0a
- Complies with PCI Local Bus Specification, Revision 2.3 and supports 33MHz PCI operations
- Supports ACPI Power Management Logic
- Contains:
  - Enhanced DMA controller
  - Interrupt controller
  - Timer functions
- Integrated SATA host controller with DMA operations interfaced to four SATA connectors on the 3307680
- Integrated IDE controller supports Ultra ATA 100/66/33
- Supports the four USB 2.0 devices on the 3307680 with four UHCI controllers and one EHCI controller
- Complies with System Management Bus (SMBus) Specification, Version 2.0
- Supports Audio Codec ’97 (AC’97) Revision 2.3
- Supports Intel® High Definition Audio
- Contains Low Pin Count (LPC) interface
- Supports Firmware Hub (FWH) interface
- Serial peripheral interface support

2.6.2 Intel® ICH7R Audio Codec ’97 Controller

The Audio Codec ’97 (AC’97) controller integrated into the ICH7R complies with AC’97 Component Specification, Version 2.3. The AC’97 controller is connected to the onboard audio connector. The audio connector is connected to an optional 5.1 channel or 7.1 channel audio kit with an embedded AC’97 audio codec. The AC’97 controller supports up

to six PCM audio output channels. Complete surround sound requires six-channel audio consisting of:

- Front left
- Front right
- Back left
- Back right
- Center
- Subwoofer

2.6.3 Intel® ICH7R IDE Interface

The integrated IDE interface on the ICH7R southbridge supports two IDE hard disks and ATAPI devices. PIO IDE transfers up to 16MB/s and Ultra ATA transfers of 100MB/s. The integrated IDE interface is able to support the following IDE HDDs:

- **Ultra ATA/100**, with data transfer rates up to 100MB/s
- **Ultra ATA/66**, with data transfer rates up to 66MB/s
- **Ultra ATA/33**, with data transfer rates up to 33MB/s

Specification	Ultra ATA/100	Ultra ATA/66	Ultra ATA/33
IDE devices	2	2	2
PIO Mode	0 – 4	0 – 4	0 – 4
PIO Max Transfer Rate	16.6 MB/s	16.6 MB/s	16.6 MB/s
DMA/UDMA designation	UDMA 3 - 4	UDMA 3 – 4	UDMA 2
DMA/UDMA Max Transfer	100MB/s	66MB/s	33MB/s
Controller Interface	5V	5V	5V

Table 2-3: Supported HDD Specifications

2.6.4 Intel® ICH7R Low Pin Count (LPC) Interface

The ICH7R LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH6 is connected to the following components:

- BIOS chipset
- Super I/O chipset

2.6.5 Intel® ICH7R PCI Interface

The PCI interface on the ICH7R is compliant with the PCI Revision 2.3 implementation. Some of the features of the PCI interface are listed below.

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

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

2.6.6 Intel® ICH7R Real Time Clock

256 bytes of battery backed RAM is provided by the Motorola MC146818A real time clock (RTC) integrated into the ICH6. The RTC operates on a 3V battery and 32.768KHz crystal. The RTC keeps track of the time and stores system data even when the system is turned off.

2.6.7 Intel® ICH7R SATA Controller

The integrated SATA controller on the ICH7R southbridge supports four SATA drives on the 3307680 with independent DMA operations. SATA controller specifications are listed below.

- Supports four SATA drives
- Supports 3Gb/s data transfer speeds

- Supports Serial ATA Specification, Revision 1.0a

2.6.8 Intel® ICH7R USB Controller

2.6.8.1 Intel® ICH7R USB Controller Overview

Up to eight high-speed, full-speed or low-speed USB devices are supported by the ICH7R on the 3307680. High-speed USB 2.0, with data transfers of up to 480MB/s, is enabled with the ICH7R integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling is supported by the ICH7R integrated Universal Host Controller Interface (UHCI) controllers.

2.6.8.2 3307680 USB Implementation

Only four of the Intel® ICH7R USB ports are implemented on the 3307680. Two ports are connected to two external connectors and two ports are connected to an 8-pin onboard header. See **Figure 2-6**.

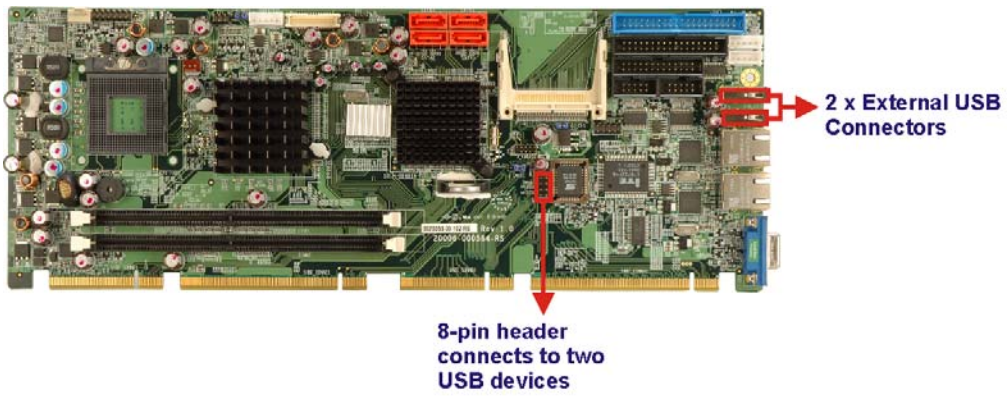


Figure 2-6: Onboard USB Implementation

2.6.8.3 Backplane USB Implementation

The remaining four Intel® ICH7R USB ports are interfaced to the backplane through a golden finger on the bottom of the CPU card. See **Figure 2-7**. These four remaining USB ports can be implemented through connectors on the backplane.

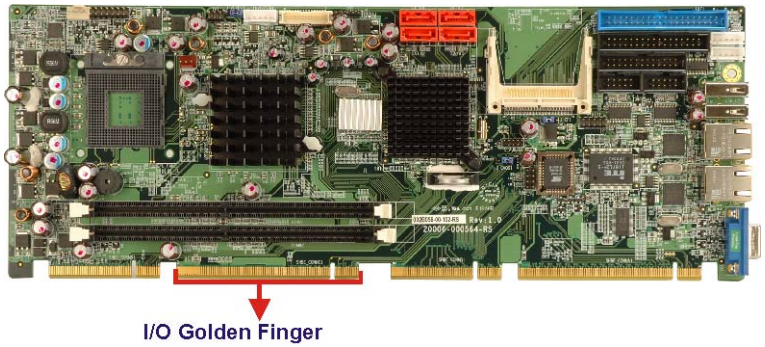


Figure 2-7: I/O Golden Finger

2.6.9 Intel® ICH7R PCIe Bus

2.6.9.1 Intel® ICH7R PCIe Bus Overview

The Intel® ICH7R southbridge chipset has six PCIe lanes. Two of the PCIe lanes are connected to two Broadcom PCIe GbE Ethernet controllers. The remaining four PCIe lanes are interfaced through a golden finger on the bottom of the CPU card through the backplane to either four PCIe x1 expansion cards or one PCIe x4 expansion card.

2.6.9.2 PCIe x4 Expansion Options

Four PCIe x1 expansion cards or one PCIe x4 expansion card can be installed onto a compatible PICMG 1.3 backplane and are interfaced through the PCIe x4 golden finger on the bottom of the 3307680 to the southbridge chipset. The PCIe x4 golden finger is shown in **Figure 2-8** below.

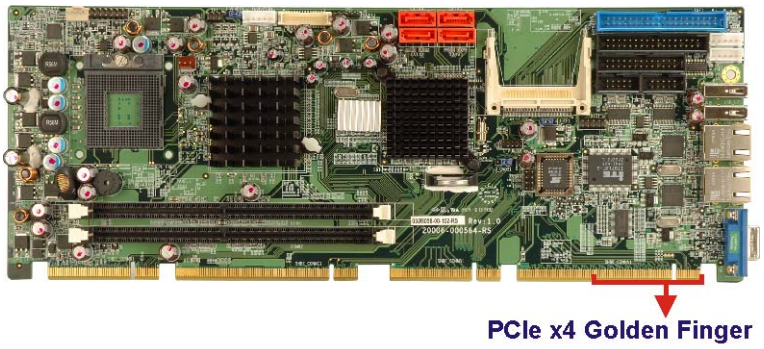


Figure 2-8: PCIe x4 Golden finger

2.6.9.3 PCIe GbE Ethernet

Two PCIe x1 lanes are connected to two Broadcom BCM5787M PCIe GbE controllers shown in **Figure 2-9** below.

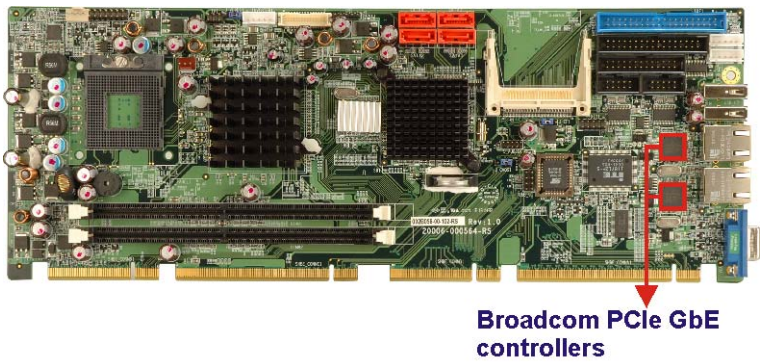


Figure 2-9: Broadcom PCI GbE Controllers

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
- JTAG support

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

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

The BIOS chipset is shown in **Figure 2-10** below.

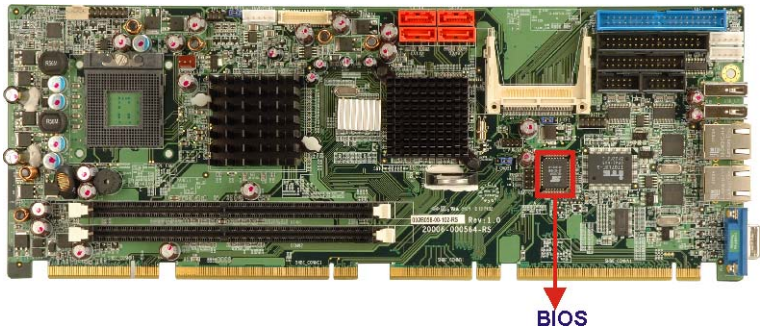


Figure 2-10: BIOS Chipset

2.7.3 Super I/O chipset

The iTE IT8712F Super I/O chipset is connected to the ICH7 southbridge through the LPC bus. The iTE IT8712F is an LPC interface-based Super I/O device that comes with Environment Controller integration.

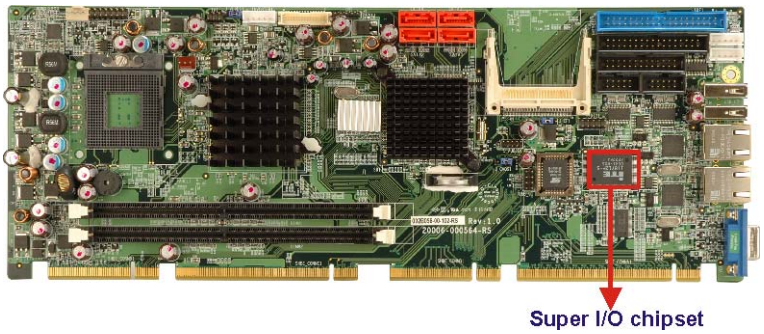


Figure 2-11: Super I/O Chipset

Some of the features of the iTE IT8712F chipset are listed below:

- LPC Interface
- PC98/99/2001, ACPI and LANDesk Compliant
- Enhanced Hardware Monitor
- Fan Speed Controller
- SmartGuardian Controller
- Single +5V Power Supply
- Two 16C550 UARTs for serial port control
- One IEEE 1284 Parallel Port
- Floppy Disk Controller

- 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:

2.7.3.1 Super I/O LPC Interface

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

2.7.3.2 Super I/O 16C550 UARTs

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

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

Another two chipsets connected to the LPC bus provided connectivity to another two serial port connectors (COM3 and COM4).

2.7.3.3 Super I/O Enhanced Hardware Monitor

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

2.7.3.4 Super I/O Fan Speed Controller

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

2.7.3.5 Super I/O Parallel Port

The Super I/O parallel port (LPT) supports standard mode, enhanced mode and high-speed mode parallel port devices. The LPT is compliant with the following LPT modes.

- Standard mode
  - Bi-directional SPP compliant
- Enhanced mode
  - EPP v1.7 compliant
  - EPP v1.9 compliant
- High-speed mode
  - ECP, IEEE 1284 compliant

2.7.3.6 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

2.8 Environmental and Power Specifications

2.8.1 System Monitoring

Three thermal inputs on the 3307680 Super I/O Enhanced Hardware Monitor monitor the following temperatures:

- System temperature
- Power temperature
- CPU temperature

Eight voltage inputs on the 3307680 Super I/O Enhanced Hardware Monitor monitor the following voltages:

- Vcore
- +2.5V
- +3.3V
- +5.0V
- +12.0V
- DDR Vtt
- +1.5V
- 5VSB

The 3307680 Super I/O Enhanced Hardware Monitor also monitors the following voltages internally:

- VBAT

The 3307680 Super I/O Enhanced Hardware Monitor also monitors the following fan speeds:

- CPU 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 3307680 are listed below.

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

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

2.8.3 Power Consumption

Table 2-4 shows the power consumption parameters for the 3307680 running with a 2.06GHz Intel® Core® 2 Duo T7200 processor through a 667MHz FSB and with 1GB of 667MHz DDR2 memory.

Voltage	Current
+3.3V	0.72A
+5V	4.14A
+12V	2.9A

Table 2-4: Power Consumption

2.9 Expansion Options

2.9.1 Expansion Options Overview

A number of compatible GAI Technology Corp. PICMG 1.3 backplanes and chassis can be used to develop and expanded system. These backplanes and chassis are listed below.

2.9.2 GAI Expansion PICMG 1.3 Backplanes

The backplanes listed in **Table 2-5** are compatible with the 3307680 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 GAI catalog or contact your vendor, reseller or the GAI sales team at sales@globalamericaninc.com

Model	Revision	Total Slots	System	Expansion Slots					System Type
				PCIe			PCI		
				x16	x4	x1	PCI	PCI-X	
1107730	2.0 or later	4	One	1	1	-	1	-	Single
1107780	2.0 or later	4	One	1	-	-	2	-	Single
1107810	2.0 or later	5	One	1	1	-	2	-	Single

Model	Revision	Total Slots	System	Expansion Slots					System Type
				PCIe			PCI		
				x16	x4	x1	PCI	PCI-X	
1107830	3.0 or later	6	One	1	-	-	3	-	Single
1107840	2.0 or later	6	One	1	1	-	3	-	Single
1107770	2.0 or later	6	One	1	-	3	1	-	Single
1107850	2.0 or later	5	One	1	-	2	1	-	Single
1107961	2.0 or later	5	One	1	1	-	2	-	Single
1108000	2.0 or later	7	One	1	-	2	3	-	Single
1107870	2.0 or later	7	One	1	-	4	1	-	Single
1107880	2.0 or later	8	One	1	-	3	3	-	Single
1107890	2.0 or later	9	One	1	-	4	3	-	Single
1107900	3.0 or later	10	One	1	-	4	4	-	Single
1107900	2.0 or later	10	One	1	-	4	4	-	Single
1107920	2.0 or later	13	Two	2	1	4	4	-	Dual
1107930	2.0 or later	13	One	1	-	3	8	-	Single
1107940	2.0 or later	19	One	1	-	1	16	-	Single

Table 2-5: Compatible GAI PICMG 1.3 Backplanes

2.9.3 GAI Chassis

GAI chassis available for 3307680 system development are listed in **Table 2-6**.

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

Model	Slot SBC	Mounting	Max Slots	Backplanes
1407460	Full-size	Wall	4	1107730 1107780 1107800
1401442	Full-size	Wall	6	1107810 1107820 1107840 1107770
1404540	Full-size	Wall	6	1107810 1107820 1107840 1107770
1404580	Full-size (4U)	Rack	14	1107830 1107900 1107910 1107920 1107930 1107940
1404600	Full-size (4U)	Rack	14	1107830 1107900 1107910 1107920 1107930
1407670	Full-size (4U)	Rack	14	1107830 1107900 1107910 1107920 1107930

Model	Slot SBC	Mounting	Max Slots	Backplanes
1404150	Full-size (4U)	Rack	14	1107830 1107900 1107910 1107920 1107930 1107940
1401032	Full-size	Wall	7	1107830 1107860 1107870
1401412	Full-size	Wall	10	1107830 1107880
1407660	Full-size	Wall	6	1107840 1107770
1404570	Full-size (2U)	Rack	6	1107850 1107850
1404552	Full-size (2U)	Rack	6	1107961 1107850

Table 2-6: Compatible GAI Chassis

THIS PAGE IS INTENTIONALLY LEFT BLANK

Chapter

3

Unpacking

3.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the 3307680 may result in permanent damage to the 3307680 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3307680. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3307680, 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 3307680, place it on an antic-static pad. This reduces the possibility of ESD damaging the 3307680.
- ***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 3307680 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 3307680 does not fall out of the box.
- Make sure all the components shown in Section 3.3 are present.

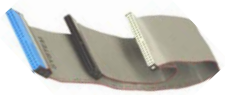
3.3 Unpacking Checklist

Note:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the GAI reseller or vendor you purchased the 3307680 from or contact an GAI sales representative directly. To contact an GAI sales representative, please send an email to sales@globalamericaninc.com

3.3.1 Package Contents

The 3307680 is shipped with the following components:

Quantity	Item and Part Number	Image
1	Full-Size PICMG 1.3 SBC (P/N: 3307680)	
1	ATA 66/100 flat cable (**P/N**:1208830)	
4	SATAcable (**P/N**: TBA)	
2	SATApower cable (**P/N**: TBA)	
1	Dual RS-232 cable (**P/N**: TBA)	

1	Dual USB cable (w bracket) (**P/N**: 1207743)	
1	Mini jumper pack	
1	Quick installation guide	
1	Utility CD	

Table 3-1: Package List Contents

3.3.2 Optional Items

NOTE:

The items listed in this section are optional items that must be ordered separately. Please contact your 3307680 vendor, distributor or reseller for more information or, contact gai directly by sending an email to: sales@globalamericaninc.com

The following optional items are available for the 3307680.

Quantity	Item and Part Number	Image
1	Audio kit_ 5.1 Channel (**P/N**: 1007550)	
1	Audio kit_ 7.1 Channel (**P/N**: 1007760)	
1	Cooling Kit (**P/N**: 2107703)	
1	5-pin Wafer to PS/2 cable (**P/N**: 1208370)	
1	LPT cable (**P/N**: 1207760)	
1	FDD cable (**P/N**: 1207764)	

Quantity	Item and Part Number	Image
1	HDTV Cable Set comprises a S-Video cable and a TV-out cable (**P/N**: 1208760)	
	TV-out extension cable with Composite / S-Video / Component output (Max.1080i HDTV resolution supported) (**P/N**: TBA)	
	TV-out cable with 7-pin mini din on bracket (**P/N**: TBA)	

Table 3-2: Optional Items

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 3307680 Layout

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

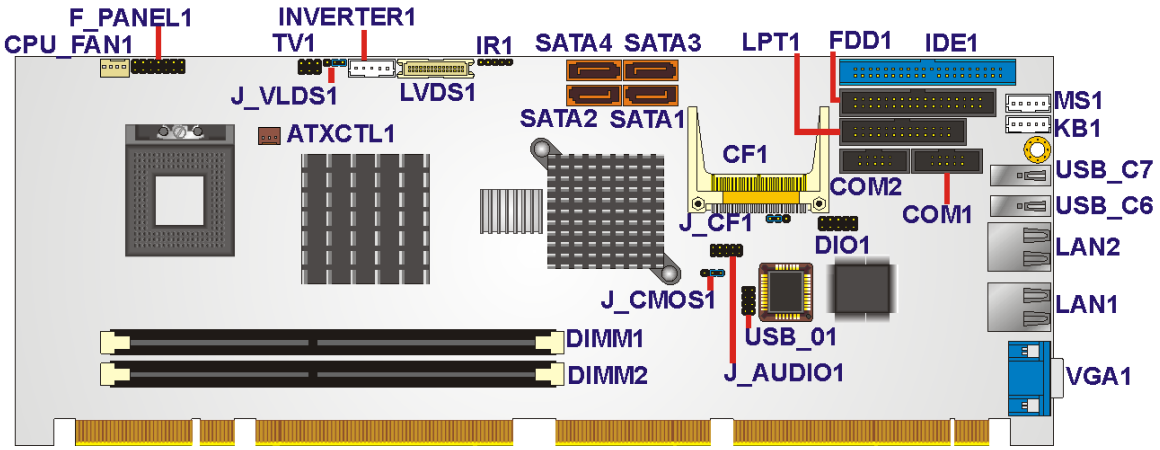


Figure 4-1: Connector and Jumper Locations

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the 3307680. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
+12V ATX power supply connector	4-pin ATX connector	CN1 and CN2
+5V power connector	2-pin ATX connector	CN3
ATX enable connector	3-pin wafer	ATXCTL1
Audio connector	14-pin header	J_AUDIO1
Compact Flash (CF) connector	50-pin header	CF1
Digital I/O connector	10-pin header	DIO1
Fan connector	3-pin wafer	CPU_FAN1
Front panel connector	8-pin header	F_PANEL1
IDE Interface connector	44-pin header	IDE1
Infrared connector	5-pin header	IR1
Inverter power connector	5-pin header	INVERTER1
Keyboard and mouse connector	6-pin wafer	KB1
LVDS connector	30-pin crimp	LVDS1
Parallel port connector	26-pin header	LPT1
Serial ATA (SATA) connector	7-pin SATA connector	SATA1
Serial ATA (SATA) connector	7-pin SATA connector	SATA2
Serial ATA (SATA) connector	7-pin SATA connector	SATA3
Serial ATA (SATA) connector	7-pin SATA connector	SATA4

Connector	Type	Label
Serial port connector (COM 1)	10-pin header	COM3
Serial port connector (COM 2)	10-pin header	COM4
TV out connector	6-pin header	TV1
USB connector	8-pin header	USB01

Table 4-1: Peripheral Interface Connectors

4.1.3 External Interface Panel Connectors

Table 4-2 lists the rear panel connectors on the 3307680. Detailed descriptions of these connectors can be found in **Section 4.3** on **page 70**

Connector	Type	Label
Ethernet connector	RJ-45	LAN1
Ethernet connector	RJ-45	LAN2
USB port	USB port	USB_C45
VGA port connector	Female DB-15	VGA1

Table 4-2: Rear Panel Connectors

4.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the 3307680.

4.2.1 ATX Power Supply Enable Connector

CN Label: ATXCTL1

CN Type: 3-pin wafer (1x3)

CN Location: See Figure 4-2

CN Pinouts: See Table 4-3

The ATX power supply enable connector enables the 3307680 to be connected to an ATX power supply. In default mode, the 3307680 can only us an AT power supply. To enable an ATX power supply the AT Power Select jumper must also be configured. Please refer to Chapter 3 for more details.

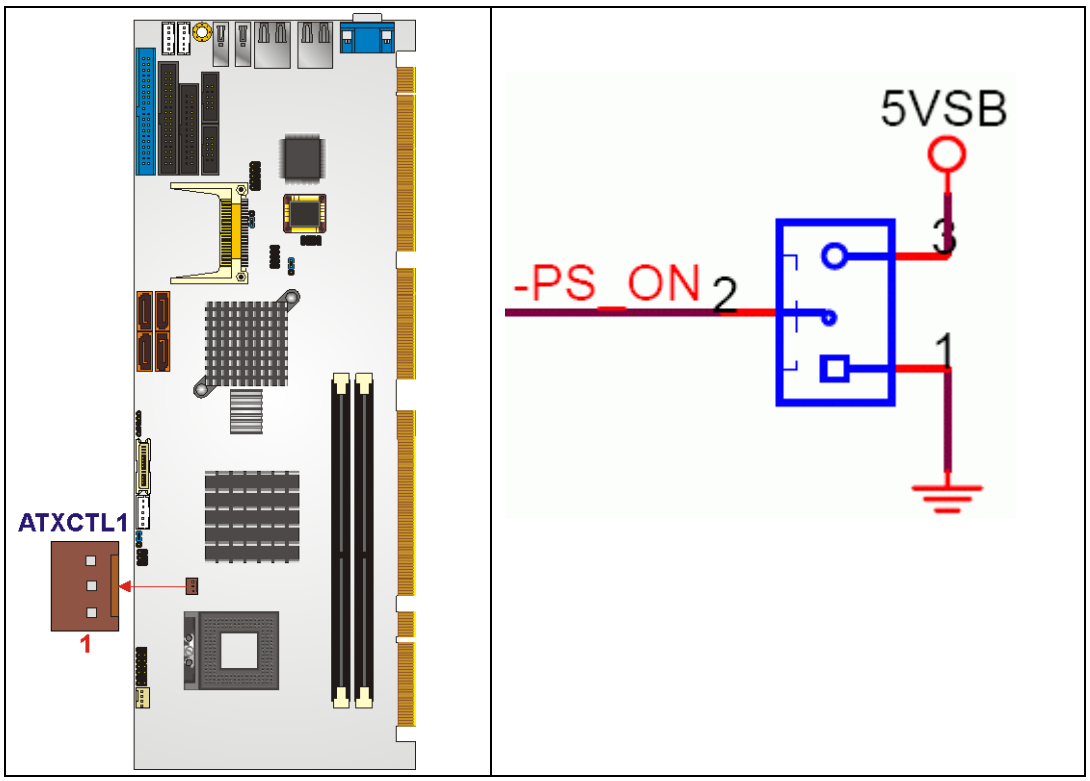


Figure 4-2: ATX Power Supply Enable Connector Location

PIN NO.	DESCRIPTION
1	GND
2	PS-ON

3	+5V Standby

Table 4-3: ATX Power Supply Enable Connector Pinouts

4.2.2 Audio Connector (9-pin)

CN Label: J_AUDIO1

CN Type: 9-pin header

CN Location: See Figure 4-3

CN Pinouts: See Table 4-4

An optional module can be connected to the 10-pin audio connector to provide the system with a high quality AC'97 or Azalia compatible codec that provides a complete integrated audio solution.

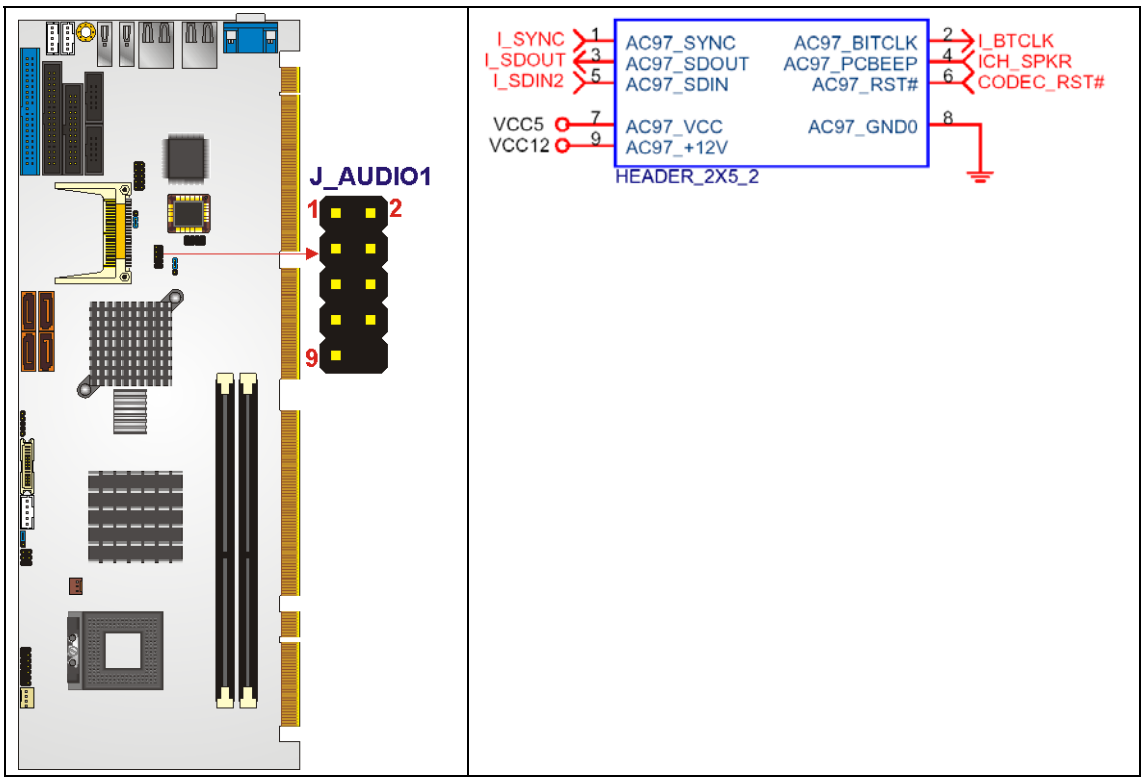


Figure 4-3: Audio Connector Pinouts (10-pin)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	AC97_SYNC	2	AC97_BITCLK
3	AC97_SDOUT	4	AC97_PCBEEP
5	AC97_SDIN	6	AC97_RST#
7	AC97_VCC	8	AC97_GND
9	AC97_12V		

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

4.2.3 Backlight Inverter Connector

CN Label:	**INVERTER1**
CN Type:	5-pin wafer (1x5)
CN Location:	See **Figure 4-4**
CN Pinouts:	See **Table 4-5**

The backlight inverter connector provides the backlight on the LCD display connected to the 3307680 with +12V of power.

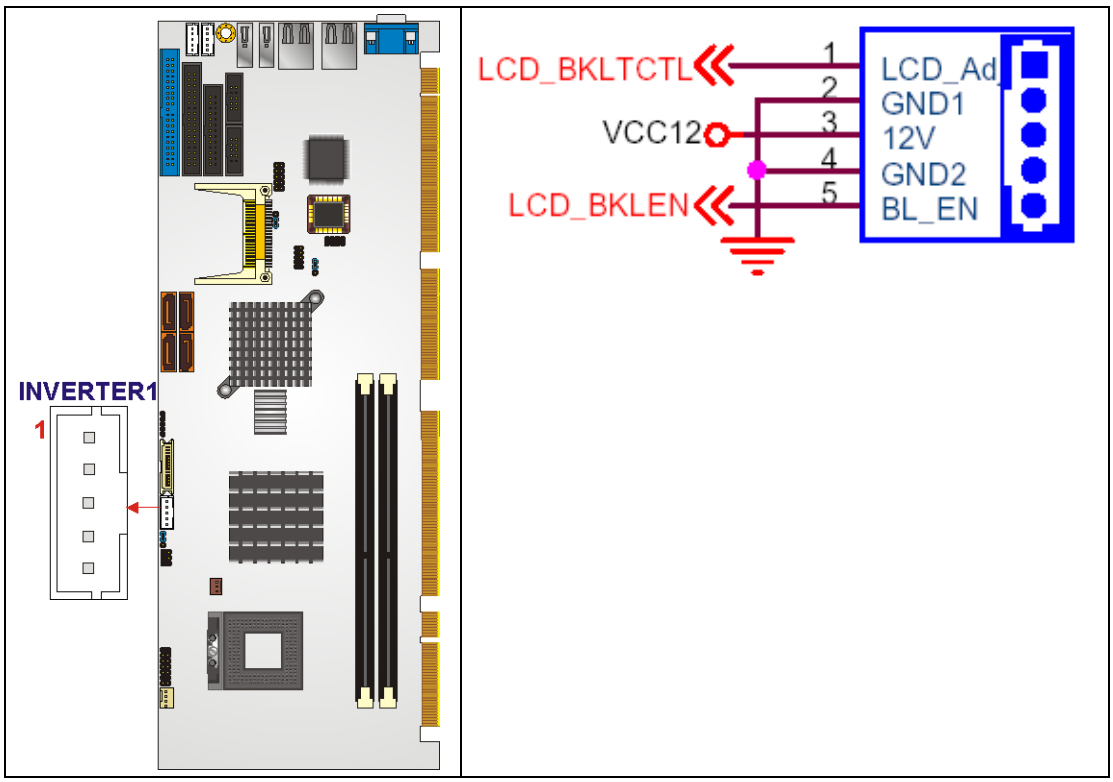


Figure 4-4: Panel Backlight Connector Pinout Locations

PIN NO.	DESCRIPTION
1	BRIGHTNESS
2	GROUND
3	+12V
4	GROUND
5	BACKLIGHT ENABLE

Table 4-5: Panel Backlight Connector Pinouts

4.2.4 Compact Flash Socket

CN Label: CF1 (solder side)

CN Type: 50-pin header (2x25)

CN Location: See Figure 4-5

CN Pinouts: See Table 4-6

A CF Type I or Type II memory card is inserted to the CF socket on the solder side of the 3307680.

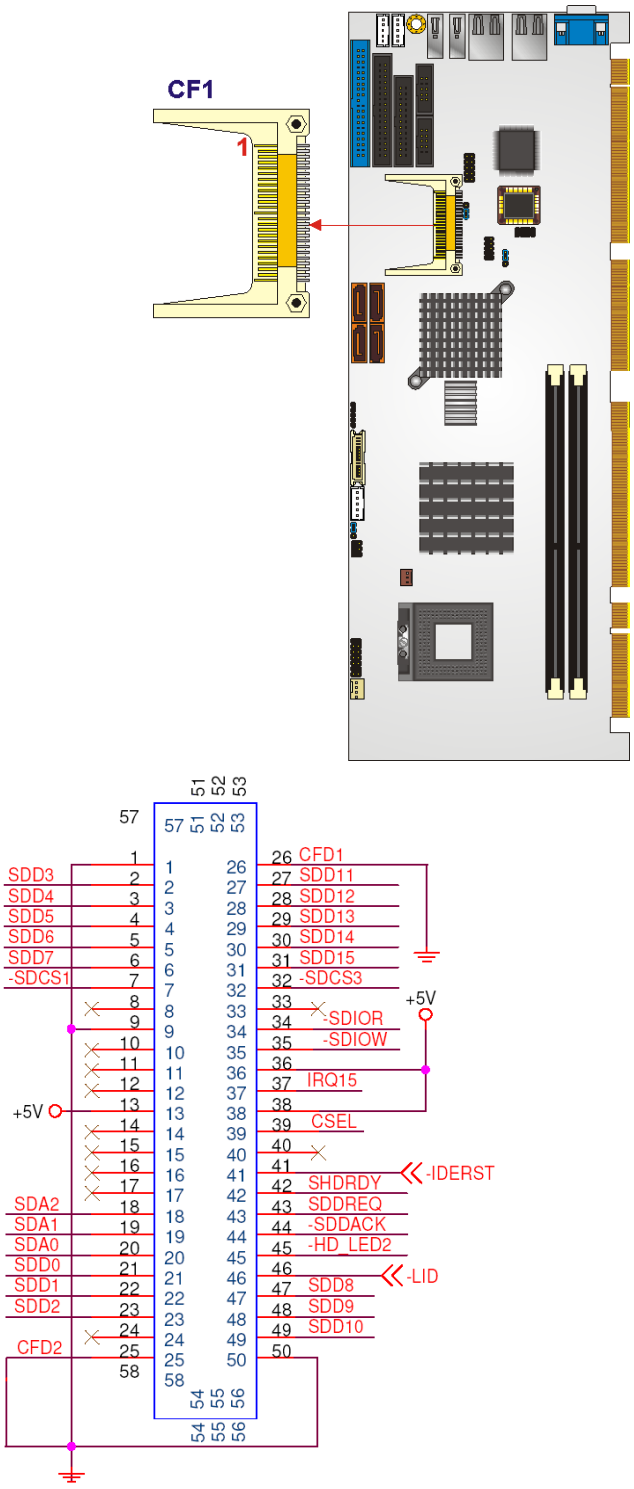


Figure 4-5: CF Card Socket Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC_COM
12	N/C	37	IRQ15
13	VCC_COM	38	VCC_COM
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	SA2	43	SDREQ
19	SA1	44	SDACK#
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	66DET
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

Table 4-6: CF Card Socket Pinouts

4.2.5 Digital Input/Output (DIO) Connector

CN Label: DIO1

CN Type: 10-pin header (2x5)

CN Location: See Figure 4-6

CN Pinouts: See Table 4-7

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

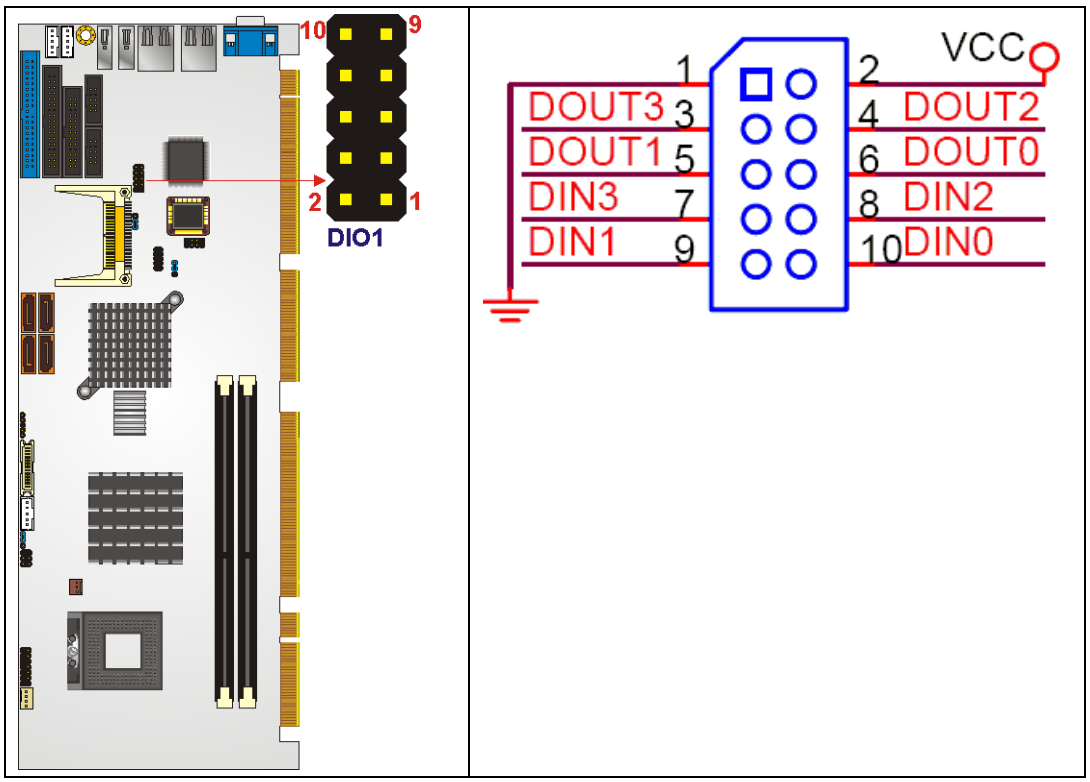


Figure 4-6: DIO Connector Connector Locations

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 2
9	Input 1	10	Input 0

Table 4-7: DIO Connector Connector Pinouts

4.2.6 Fan Connector (+12V)

CN Label: CPU_FAN1

CN Type: 3-pin header

CN Location: See Figure 4-7

CN Pinouts: See Table 4-8

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.

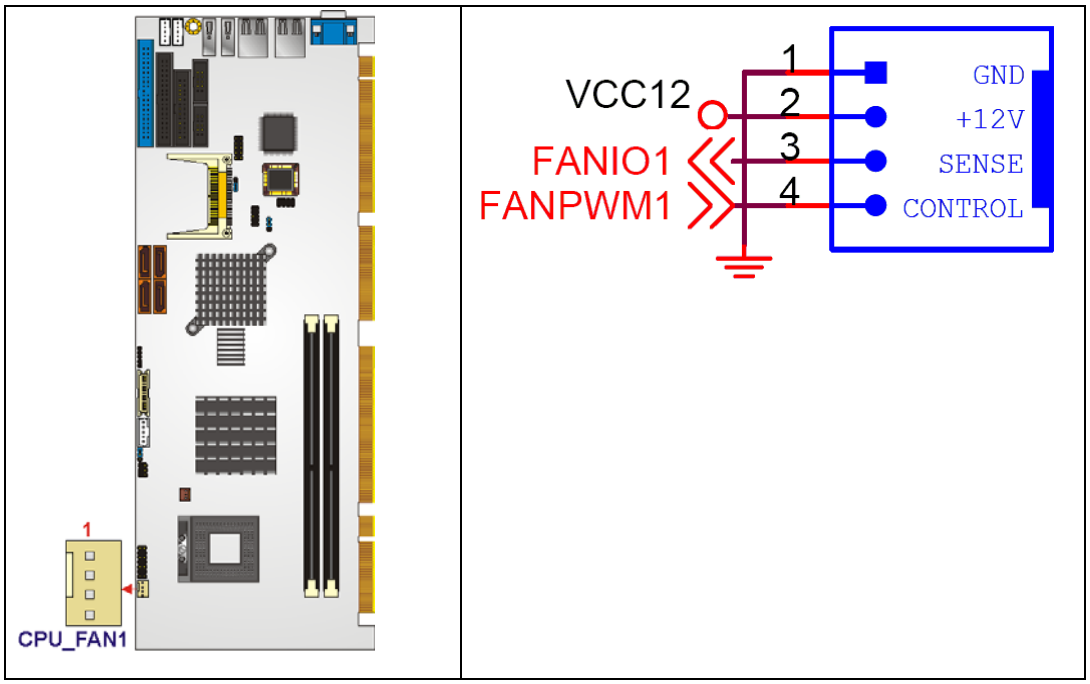


Figure 4-7: +12V Fan Connector Location

PIN NO.	DESCRIPTION
1	Ground
2	+12V
3	Rotation Signal
4	Control

Table 4-8: +12V Fan Connector Pinouts

4.2.7 Floppy Disk Connector (34-pin)

CN Label: **FDD1**

CN Type: 34-pin header (2x17)

CN Location: See **Figure 4-8**

CN Pinouts: See **Table 4-9**

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

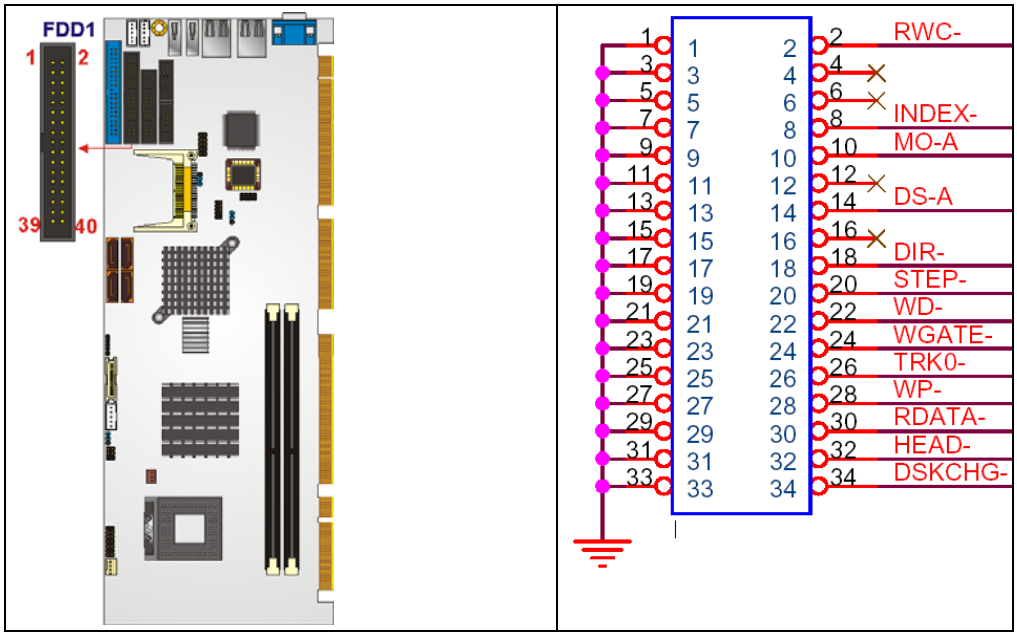


Figure 4-8: 34-pin FDD Connector Location

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 4-9: 34-pin FDD Connector Pinouts

4.2.8 Front Panel Connector (14-pin)

CN Label: F_PANEL1

CN Type: 14-pin header (2x6)

CN Location: See Figure 4-9

CN Pinouts: See Table 4-10

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

- Power button
- Reset button

- Power LED
- HDD LED

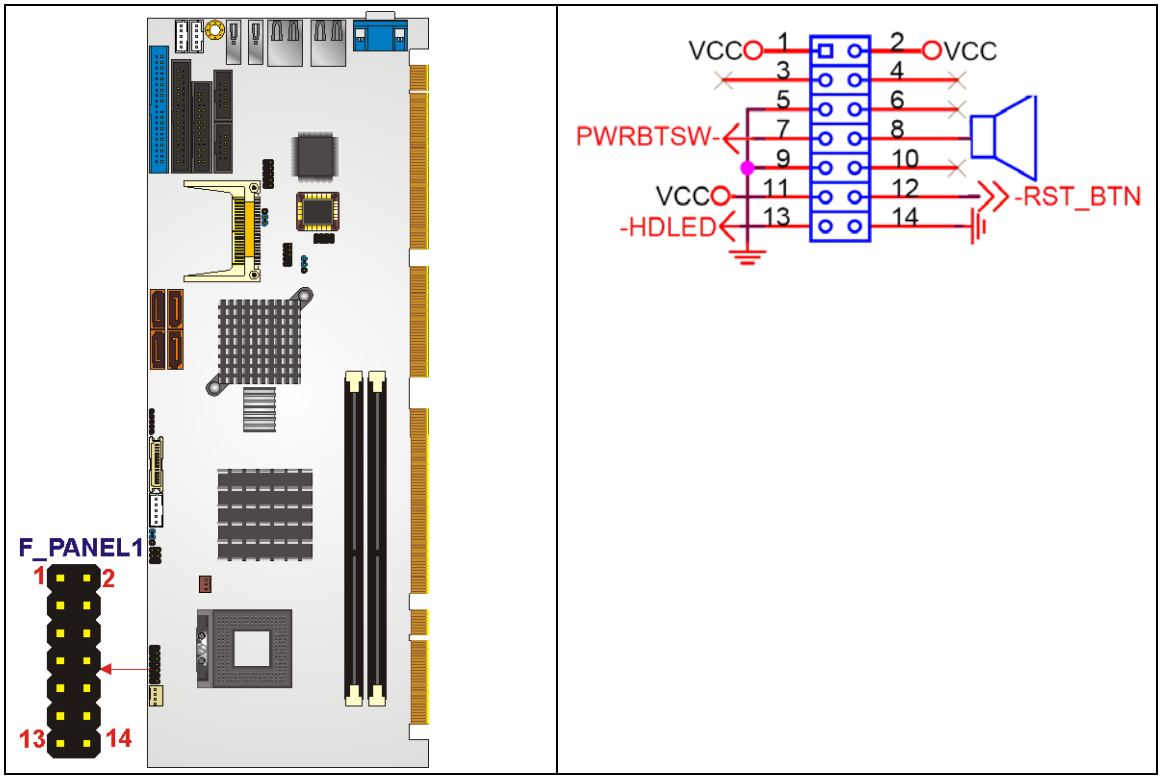


Figure 4-9: Front Panel Connector Pinout Locations

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power LED	1	+5V	Speaker	2	+5V
	3	N/C		4	N/C
	5	Ground		6	N/C
Power Button	7	PWRBTN-		8	Speaker
	9	GND	Reset	10	N/C
HDD LED	11	+5V		12	Reset-
	13	HDD LED-		14	GND

Table 4-10: Front Panel Connector Pinouts

4.2.9 IDE Connector(40-pin)

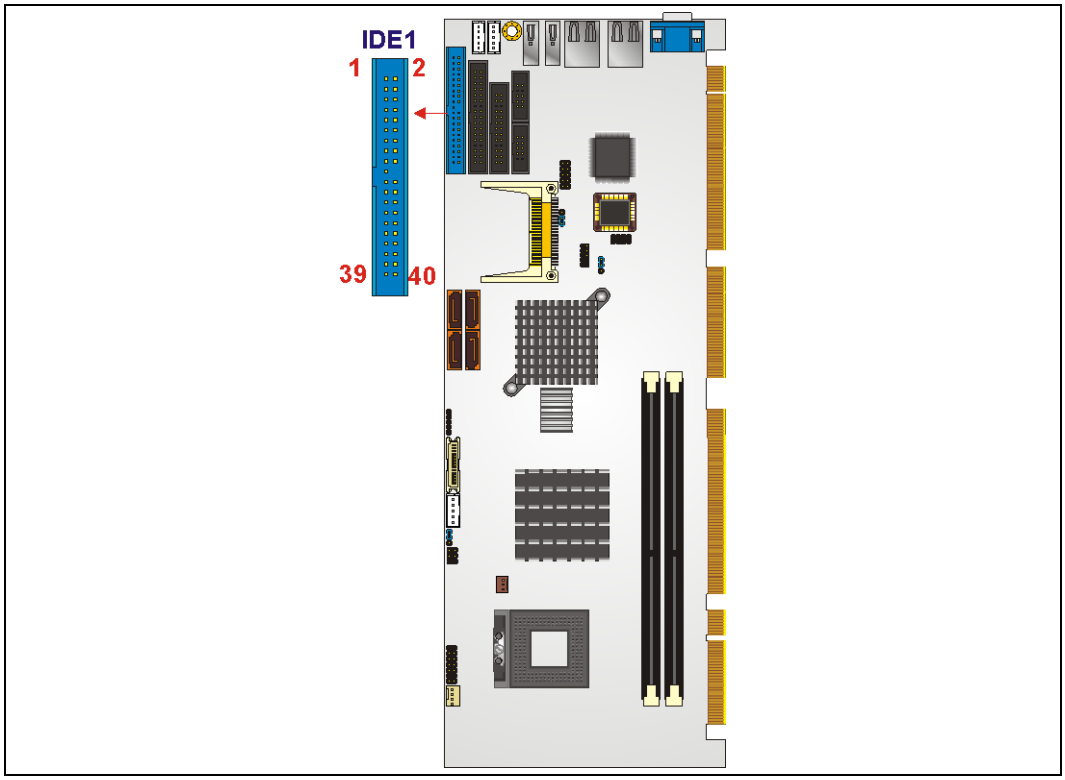
CN Label: IDE1

CN Type: 40-pin header (2x20)

CN Location: See Figure 4-10

CN Pinouts: See Table 4-11

One 40-pin IDE device connector on the 3307680 supports connectivity to two hard disk drives.



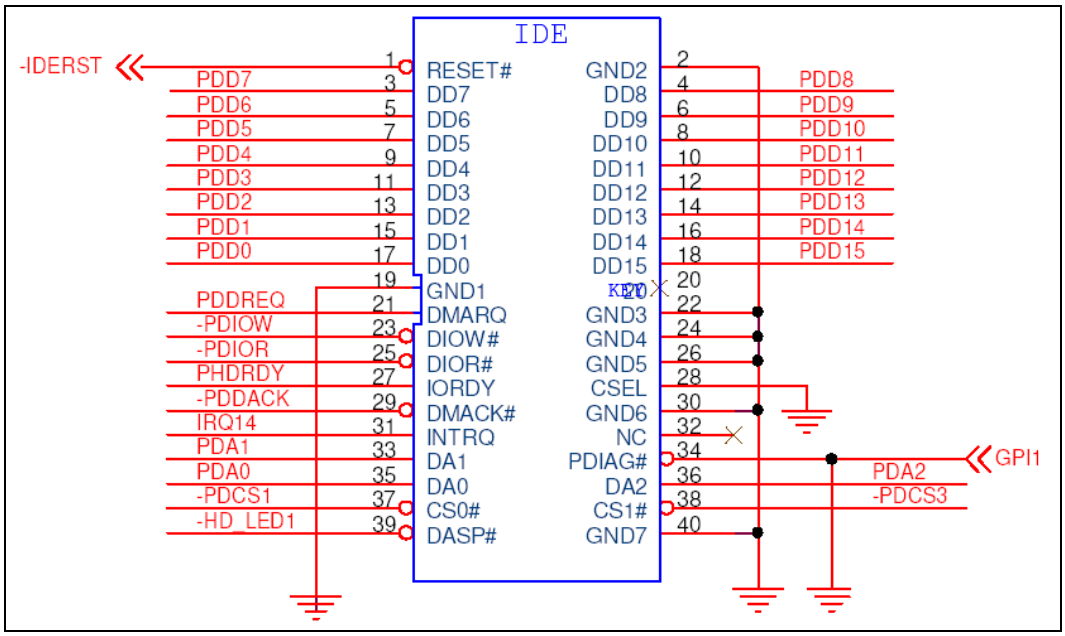


Figure 4-10: Secondary IDE Device Connector Locations

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 4-11: Secondary IDE Connector Pinouts

4.2.10 Infrared Interface Connector (5-pin)

CN Label: IR1

CN Type: 5-pin header (1x5)

CN Location: See Figure 4-11

CN Pinouts: See Table 4-12

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

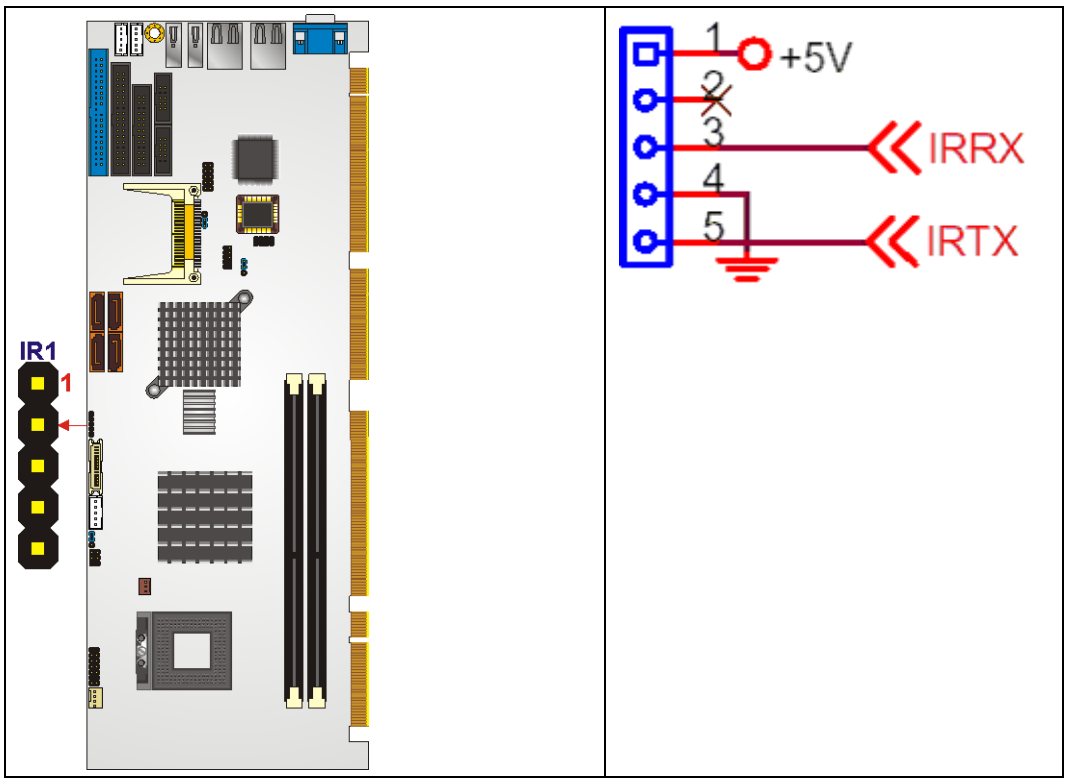


Figure 4-11: Infrared Connector Pinout Locations

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

Table 4-12: Infrared Connector Pinouts

4.2.11 Keyboard Connector

CN Label: KB1

CN Type: 5-pin header (1x5)

CN Location: See Figure 4-12

CN Pinouts: See Table 4-13

The keyboard connector can be connected to a standard PS/2 cable to add keyboard functionality to the system.

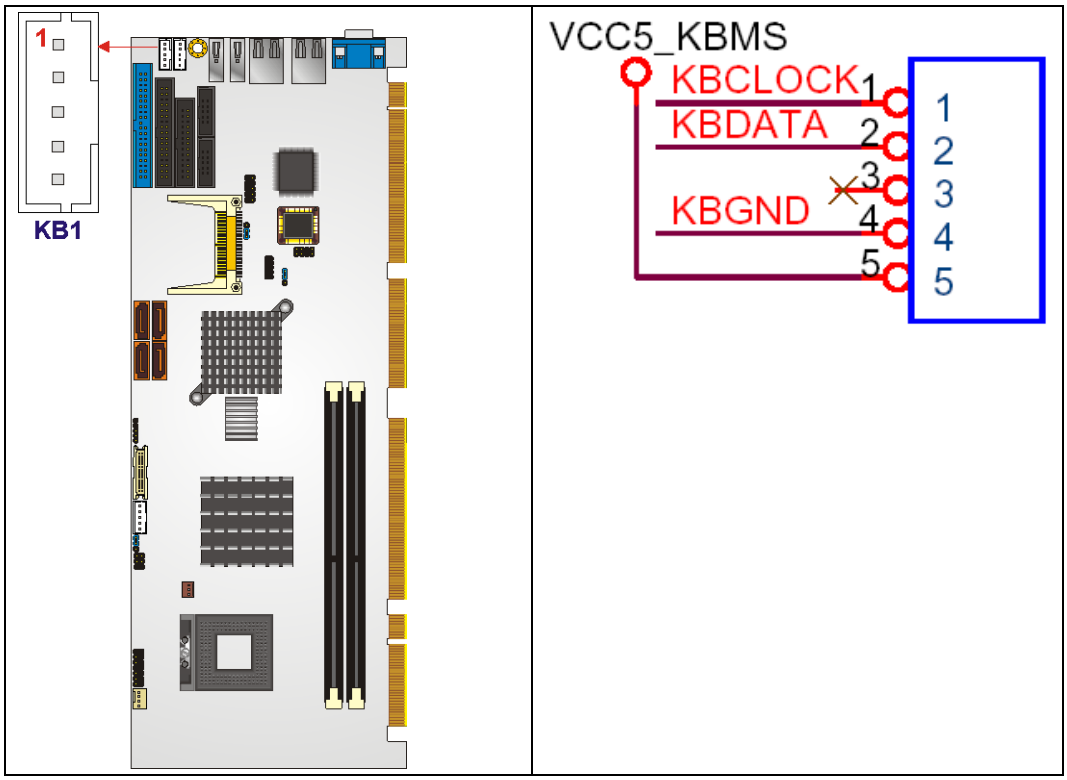


Figure 4-12: Keyboard Connector Location

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GROUND
5	VCC

Table 4-13: Keyboard Connector Pinouts

4.2.12 LVDS LCD Connector

CN Label: LVDS1

CN Type: 30-pin crimp (2x10)

CN Location: See Figure 4-13

CN Pinouts: See Table 4-14

The 30-pin LVDS LCD connector can be connected to single channel or dual channel, 18-bit or 36-bit LVDS panel.

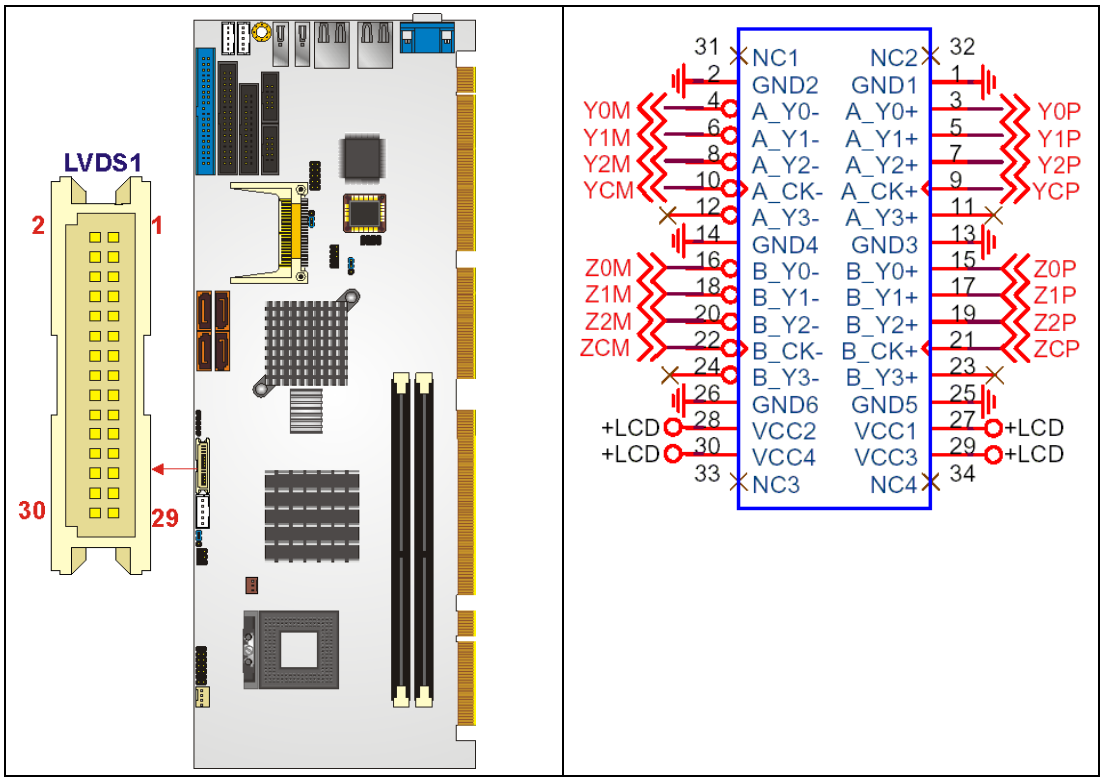


Figure 4-13: LVDS LCD Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	GROUND
3	LVDSA_Y0+	4	LVDSA_Y0-
5	LVDSA_Y1+	6	LVDSA_Y1-
7	LVDSA_Y2+	8	LVDSA_Y2-
9	LVDSA_CLK+	10	LVDSA_CLK-
11	LVDSA_Y3+	12	LVDSA_Y3-
13	GROUND	14	GROUND
15	LVDSB_Y0+	16	LVDSB_Y0-
17	LVDSB_Y1+	18	LVDSB_Y1-
19	LVDSB_Y2+	20	LVDSB_Y2-
21	LVDSB_CLK+	22	LVDSB_CLK-

23	LVDSB_Y3+	24	LVDSB_Y3-
25	GROUND	26	GROUND
27	VCC_LVDS	28	VCC_LVDS
29	VCC_LVDS	30	VCC_LVDS

Table 4-14: LVDS LCD Port Connector Pinouts

4.2.13 Mouse Connector

CN Label: MS1

CN Type: 5-pin header (1x5)

CN Location: See Figure 4-12

CN Pinouts: See Table 4-13

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

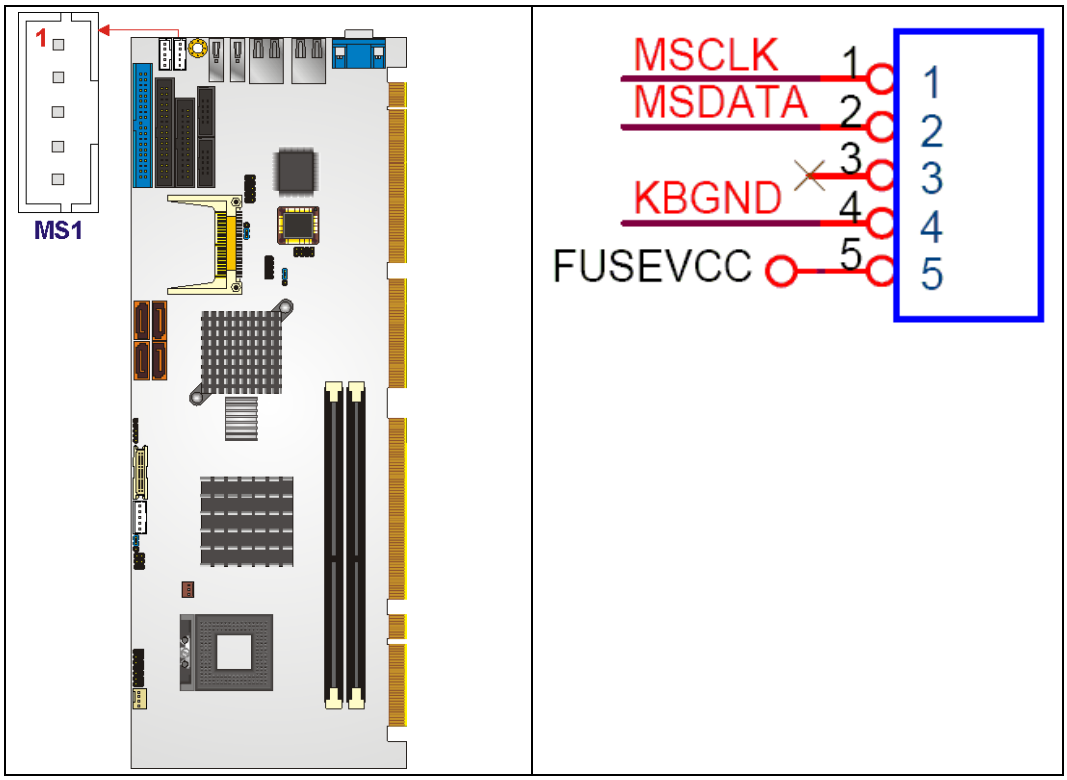


Figure 4-14: Mouse Connector Location

PIN NO.	DESCRIPTION
1	MOUSE CLOCK
2	MOUSE DATA
3	N/C
4	GROUND
5	VCC

Table 4-15: Mouse Connector Pinouts

4.2.14 Parallel Port Connector

CN Label: LPT1

CN Type: 26-pin box header

CN Location: See Figure 4-15

CN Pinouts: See Table 4-16

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

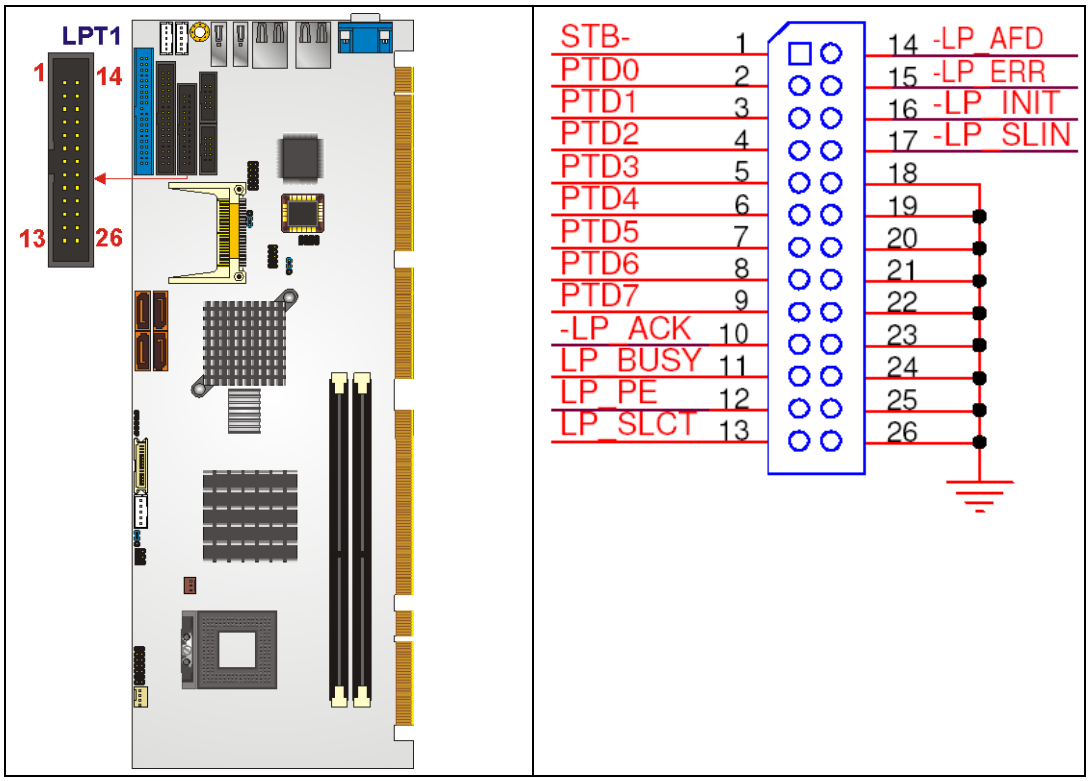


Figure 4-15: Parallel Port Connector Location

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

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
23	GROUND	24	GROUND
25	GROUND	26	NC

Table 4-16: Parallel Port Connector Pinouts

4.2.15 SATA Drive Connectors

CN Label: SATA1, SATA2, SATA3 and SATA4

CN Type: 7-pin SATA drive connectors

CN Location: See Figure 4-16

CN Pinouts: See Table 4-17

The four SATA drive connectors are each connected to a second generation SATA drive. Second generation SATA drives transfer data at speeds as high as 300Mb/s. The SATA drives can be configured in a RAID configuration.

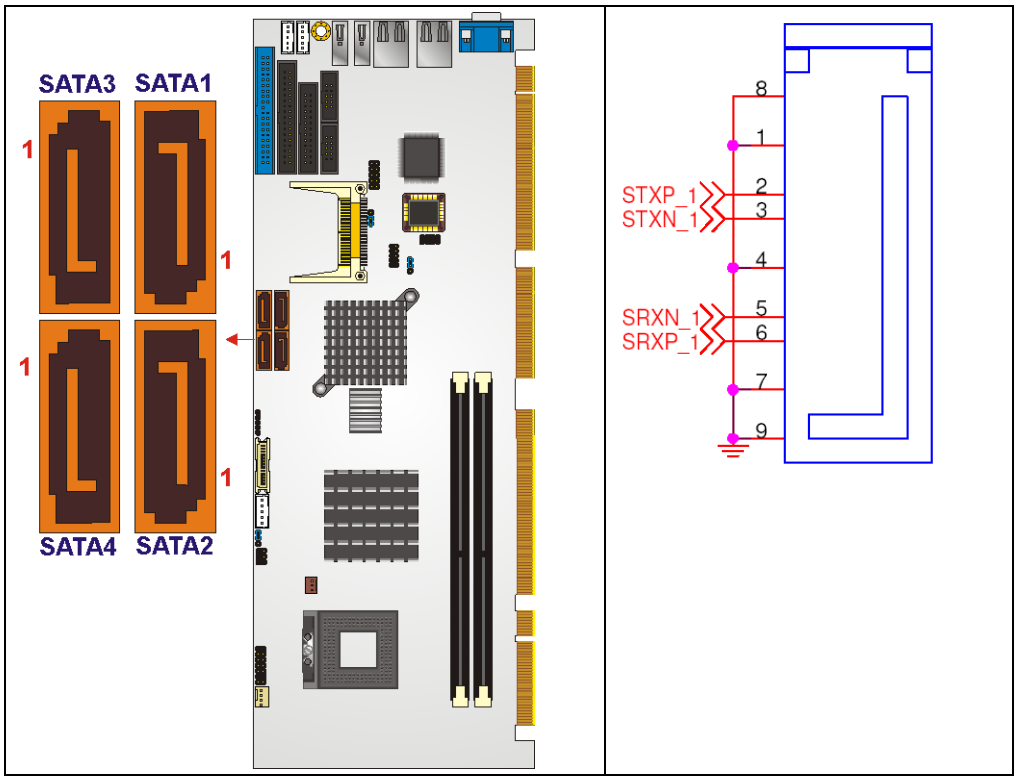


Figure 4-16: SATA Drive Connector Locations

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

Table 4-17: SATA Drive Connector Pinouts

4.2.16 Serial Port Connector (COM1and COM2)

CN Label: COM1 and COM2

CN Type: 10-pin header (2x5)

CN Location: See Figure 4-17

CN Pinouts: See Table 4-18

The 10-pin serial port connector provides a second RS-232 serial communications channel. The serial port connectors can be connected to external RS-232 serial port devices.

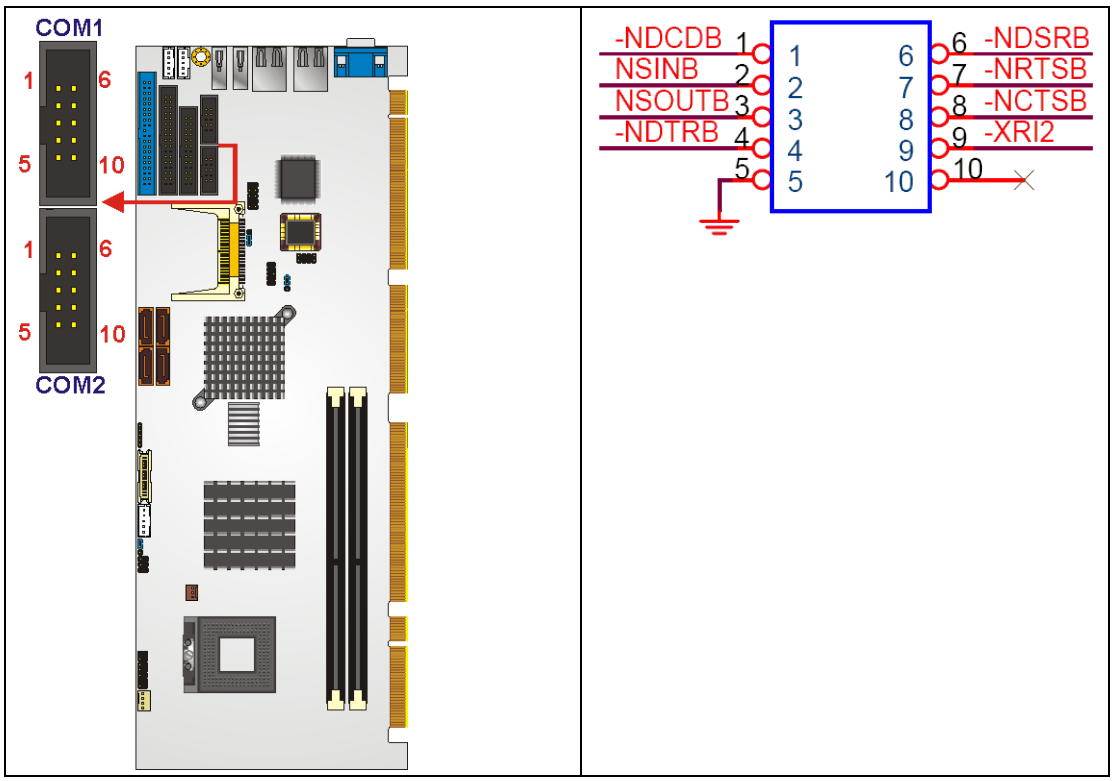


Figure 4-17: COM1 and COM2 Connector Pinout Locations

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

Table 4-18: COM1 and COM2

4.2.17 TV Out Connector

CN Label: TV1

CN Type: 6-pin header (2x3)

CN Location: See Figure 4-18

CN Pinouts: See Table 4-19

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. HDTV resolutions up to 1080i / 1080P by component interface are also supported.

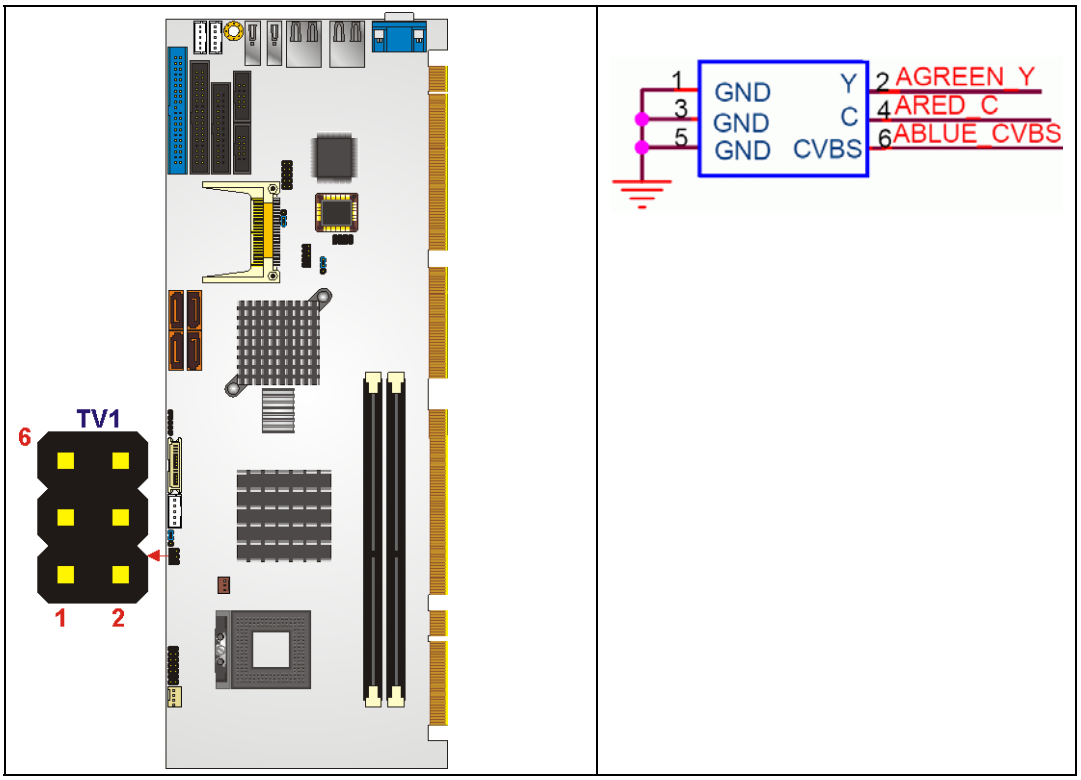


Figure 4-18: TV Connector Pinout Locations

S-Video Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	AGREEN_Y
3	GND	4	ARED_C
RCA Connector (only video signal)			
5	GND	6	ABLUE_CVBS

Table 4-19: TV Port Connector Pinouts

4.2.18 USB Connectors (Internal)

CN Label: USB01

CN Type: 8-pin header (2x4)

CN Location: See Figure 4-19

CN Pinouts: See Table 4-20

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.

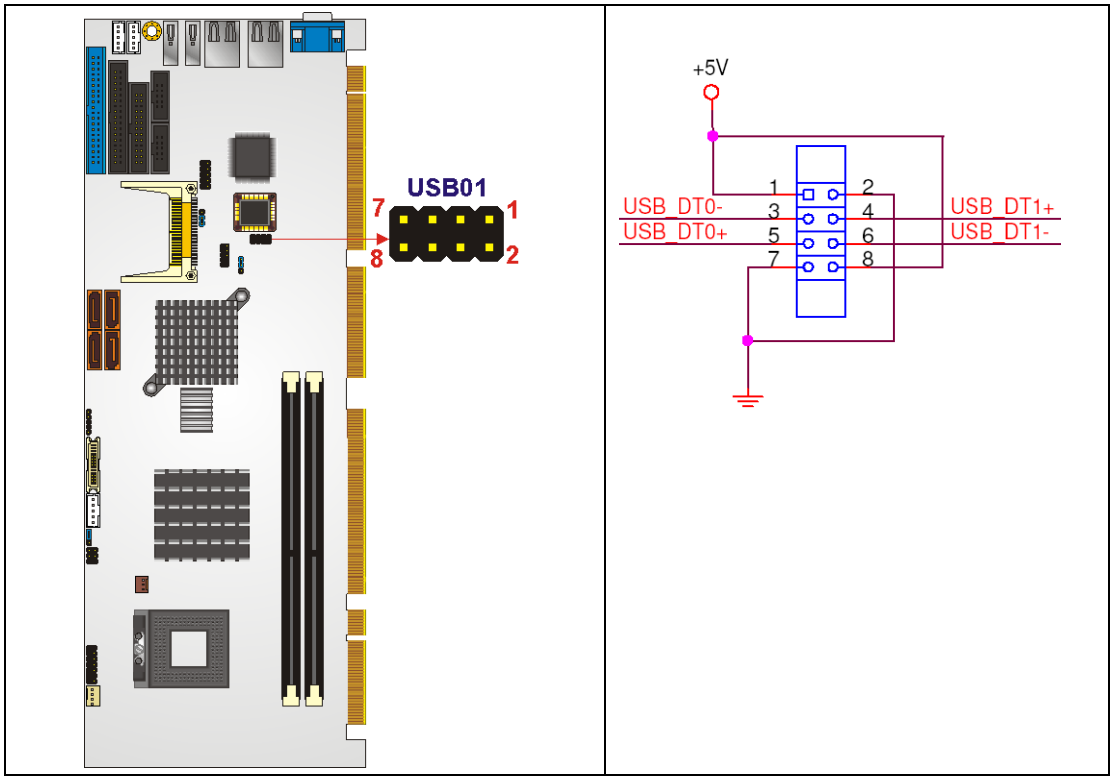


Figure 4-19: USB Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	DATAN-	4	DATA1M-
5	DATAN+	6	DATAM+
7	GND	8	VCC

Table 4-20: USB Port Connector Pinouts

4.3 External Peripheral Interface Connector Panel

Figure 4-20 shows the 3307680 rear panel. The 3307680 rear panel consists of two RJ-45 Ethernet connectors, a PS/2 keyboard connector a USB port and a VGA connector. These connectors are accessible when the 3307680 is installed in a chassis.

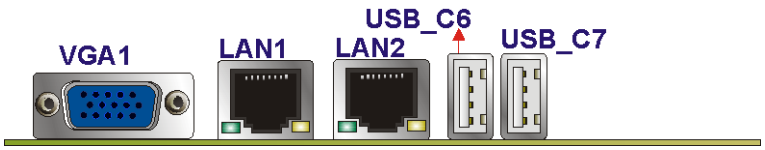


Figure 4-20: 3307680 External Peripheral Interface Connector

4.3.1 LAN Connectors

CN Label: LAN1 and LAN2

CN Type: RJ-45

CN Location: See Figure 4-20

CN Pinouts: See Table 4-21

The 3307680 is equipped with two built-in GbE 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-	9	TXB-
3	TXB+	10	TXD+
4	TXC+	11	TXD-

Table 4-21: LAN Pinouts

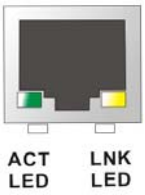


Figure 4-21: RJ-45 Ethernet Connector

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 4-22**.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 4-22: RJ-45 Ethernet Connector LEDs

4.3.2 USB Connector

CN Label: USB_C7 and USB_C6

CN Type: USB port

CN Location: See Figure 4-20

CN Pinouts: See Table 4-23

The 3307680 has a one external USB 2.0 port. The port connects to both USB 2.0 and USB 1.1 devices.

PIN NO.	DESCRIPTION
1	VCC
2	DATA-
3	DATA+
4	GND

Table 4-23: USB Port Pinouts

4.3.3 VGA Connector

CN Label: VGA1

CN Type: 15-pin Female

CN Location: See Figure 4-20

CN Pinouts: See Figure 4-22 and Table 4-24

The 3307680 has a single 15-pin female connector for connectivity to standard display devices.

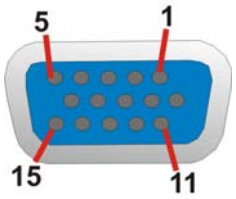


Figure 4-22: VGA Connector

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

PIN	DESCRIPTION	PIN	DESCRIPTION
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 4-24: VGA Connector Pinouts

THIS PAGE IS INTENTIONALLY LEFT BLANK

Chapter

5

Installation

5.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the 3307680 may result in permanent damage to the 3307680 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3307680. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3307680, 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 3307680, place it on an antic-static pad. This reduces the possibility of ESD damaging the 3307680.
- ***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 3307680 is installed. All installation notices pertaining to the installation of the 3307680 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the 3307680 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 3307680, 3307680 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 3307680 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 3307680 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 3307680 off:

- When working with the 3307680, 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 3307680 **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 3307680 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 3307680 is inserted into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices are properly connected
  - 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:
  - VGA screen

- USB device
- LAN connection

5.3 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, 3307680 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 3307680. If one of these component is not installed the 3307680 cannot run.

5.3.1 Socket M 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 Socket M CPU onto the 3307680, 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**.

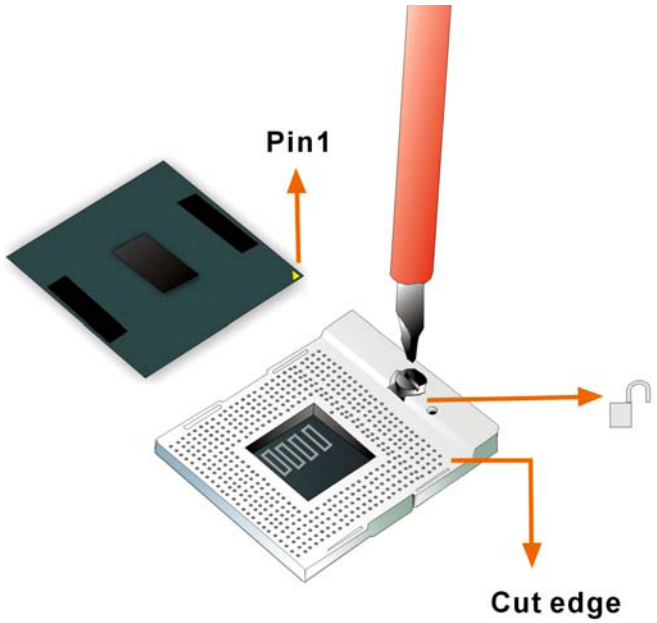


Figure 5-1: Make sure the CPU socket retention screw is unlocked

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. See **Figure 5-2**.

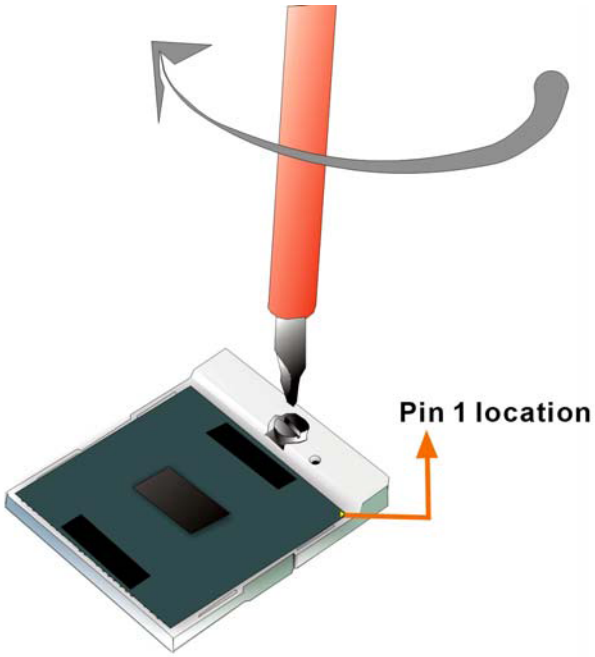


Figure 5-2: Lock the CPU Socket Retention Screw

5.3.2 Cooling Kit 2107703 Installation

Figure 5-3: 2107703 Cooling Kit

An GAI Socket M CPU cooling kit 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 1: **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 2: **Properly align the cooling kit**. Make sure its four spring screw fasteners can pass through the pre-drilled holes on the PCB.

Step 3: **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 5-4**)

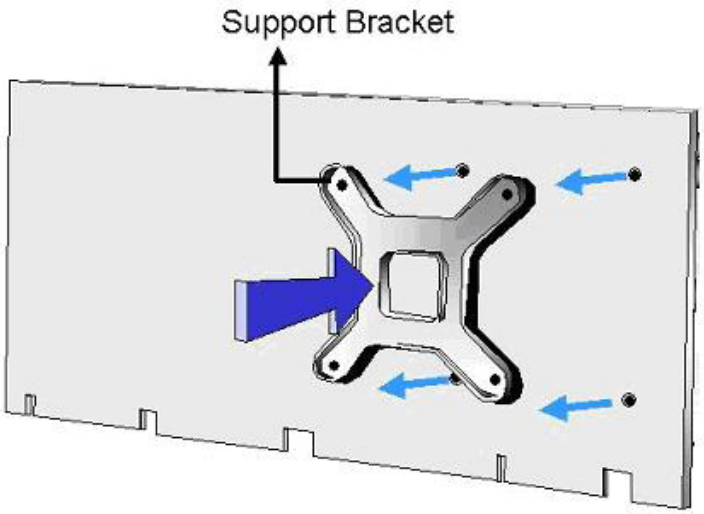


Figure 5-4: Cooling Kit Support Bracket

Step 4: **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 5: **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 5-5**.

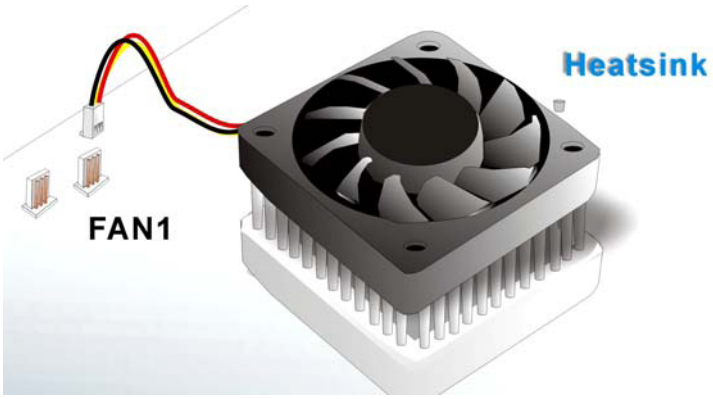


Figure 5-5: Connect the cooling fan cable

5.3.3 DIMM Installation

WARNING:

Using incorrectly specified DIMM may cause permanently damage the 3307680. Please make sure the purchased DIMM complies with the memory specifications of the 3307680. DIMM specifications compliant with the 3307680 are listed in **Chapter 2**.

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 5-6**.

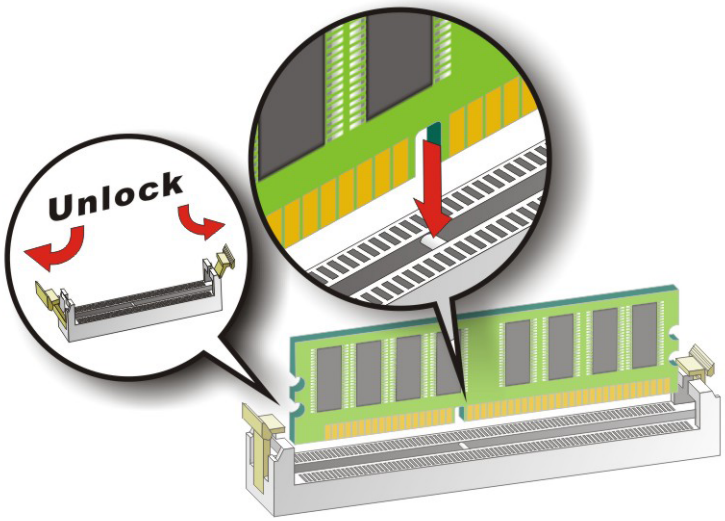


Figure 5-6: Installing a DIMM

Step 1: **Open the DIMM socket handles**. The DIMM socket has two handles that secure the DIMM into the socket. Before the DIMM can be inserted into the socket, the handles must be opened. See **Figure 5-6**.

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

in the socket. See **Figure 5-6**.

Step 3: **Insert the DIMM**. Once properly aligned, the DIMM can be inserted into the socket. As the DIMM is inserted, the white handles on the side of the socket will close automatically and secure the DIMM to the socket. See **Figure 5-6**.

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

5.3.4 CF Card Installation

NOTE:

The 3307680 can support both CF Type I cards and CF Type II cards. For the complete specifications of the supported CF cards please refer to **Chapter 2**.

To install the a CF card (Type 1 or Type 2) onto the 3307680, please follow the steps below:

Step 1: **Locate the CF card socket**. Place the 3307680 on an anti-static pad with the solder side facing up. Locate the CF card.

Step 2: **Align the CF card**. Make sure the CF card is properly aligned with the CF socket.

Step 3: **Insert the CF card**. Gently insert the CF card into the socket making sure the socket pins are properly inserted into the socket. See **Figure 5-7**.

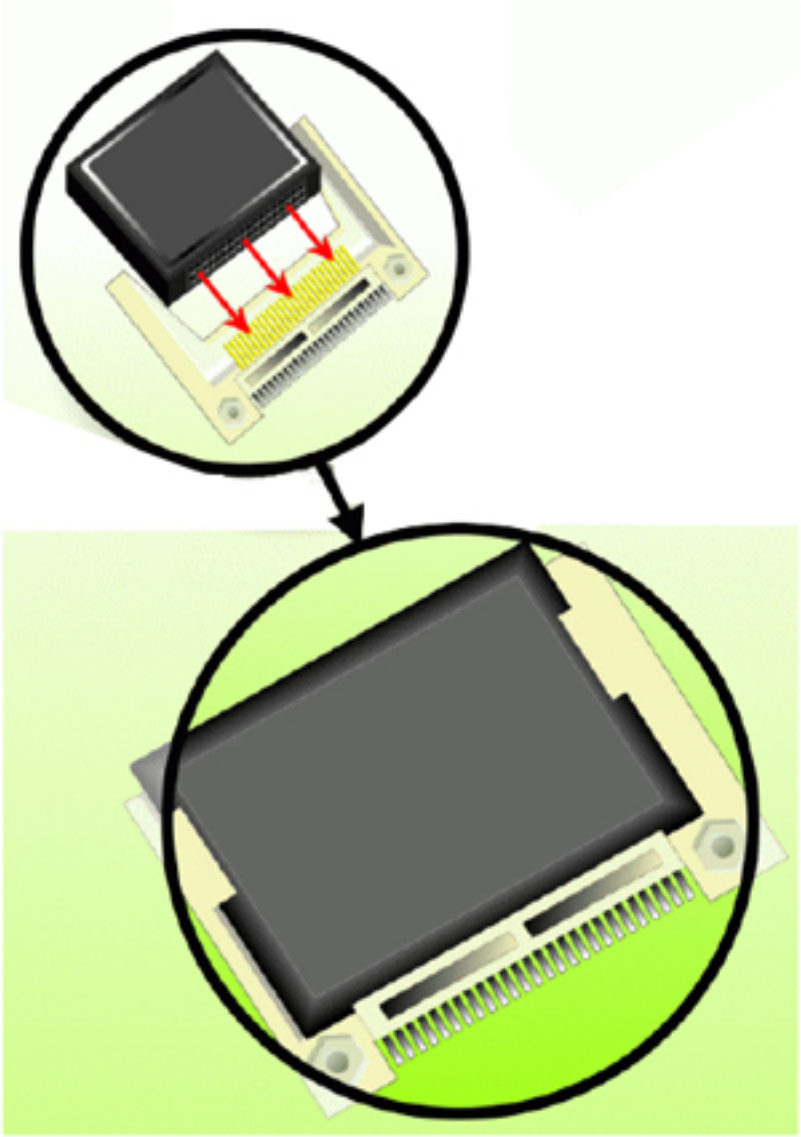


Figure 5-7: CF Card Installation

5.4 Jumper Settings

NOTE:

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

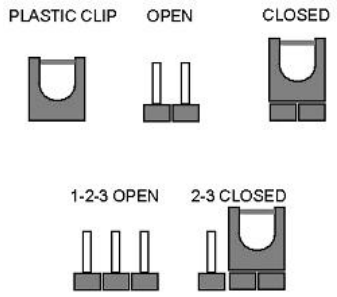


Figure 5-8: Jumper Locations

Before the 3307680 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the 3307680 are listed in **Table 5-1**.

Description	Label	Type
CF card setup	J_CF1	3-pin header
Clear CMOS	J_CMOS1	3-pin header
LVDS voltage selection	J_VLVDS1	3-pin header

Table 5-1: Jumpers

5.4.1 CF Card Setup

Jumper Label: J_CF1

Jumper Type: 3-pin header

Jumper Settings: See Table 5-2

Jumper Location: See Figure 5-9

The CF Card Setup jumper sets the CF Type I card or CF Type II cards as either the slave device or the master device. CF Card Setup jumper settings are shown in **Table 5-2**.

AT Power Select	Description	
Short 1-2	Slave	Default
Short 2-3	Master	

Table 5-2: CF Card Setup Jumper Settings

The CF Card Setup jumper location is shown in **Figure 5-9**.

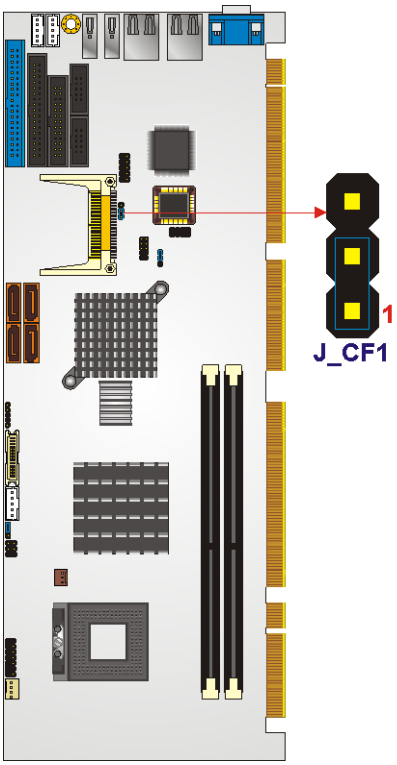


Figure 5-9: CF Card Setup Jumper Location

5.4.2 Clear CMOS Jumper

Jumper Label:	J_CMOS1
Jumper Type:	3-pin header
Jumper Settings:	See Table 5-3
Jumper Location:	See Figure 5-10

If the 3307680 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 5-3**.

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

Table 5-3: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 5-10** below.

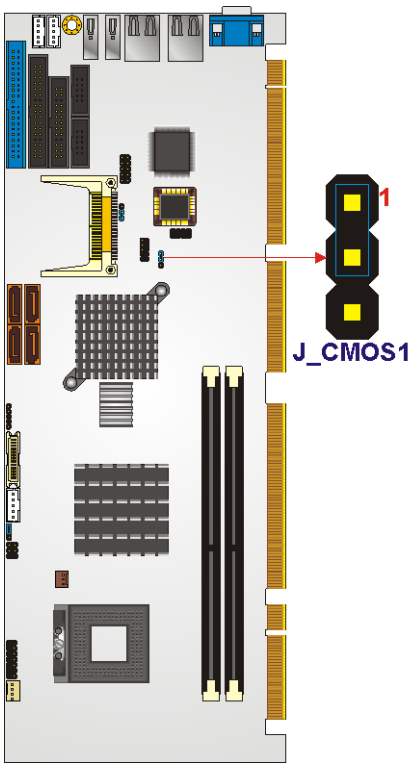


Figure 5-10: Clear CMOS Jumper

5.4.3 LVDS Voltage Selection

WARNING:

Permanent damage to the screen and 307680 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that cam with the monitor to select the correct voltage.

Jumper Label: J_VLVDS1

Jumper Type: 3-pin header

Jumper Settings: See Table 5-4

Jumper Location: See Figure 5-11

The **LVDS Voltage Selection** jumper allows the LVDS screen voltage to be set. The **LVDS Voltage Selection** jumper settings are shown in **Table 5-4**.

AT Power Select	Description	
Short 1-2	+3V LVDS	Default
Short 2-3	+5V LVDS	

Table 5-4: LVDS Voltage Selection Jumper Settings

The LVDS Voltage Selection jumper location. is shown in **Figure 5-11**.

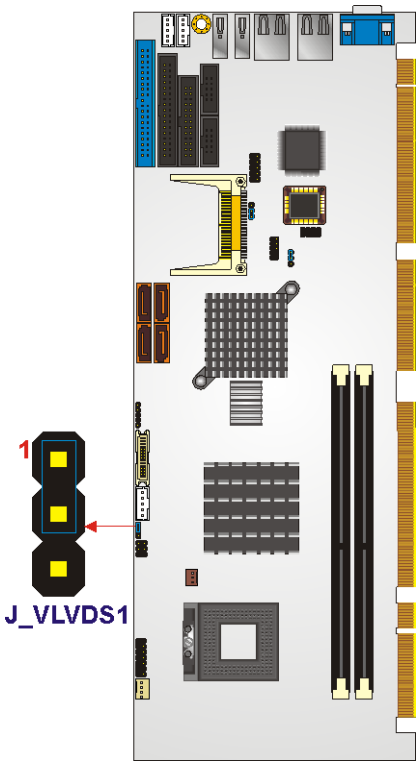


Figure 5-11: LVDS Voltage Selection Jumper Pinout Locations

5.5 Chassis Installation

5.5.1 Airflow

WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the 3307680 must have air vents to allow cool air to move into the system and hot air to move out.

The 3307680 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:

GAI has a wide range of backplanes available. Please contact your 3307680 vendor, reseller or a GAI sales representative at sales@globalamericaninc.com or visit the Global American Inc. website (http://www.globalamericaninc.com) to find out more about the available chassis.

5.5.2 Backplane Installation

Before the 3307680 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:

GAI has a wide range of backplanes available. Please contact your 3307680 vendor, reseller or a GAI sales representative at sales@globalamericaninc.com or visit the Global American Inc. website (http://www.globalamericaninc.com) to find out more about the available chassis.

5.5.3 CPU Card Installation

To install the 3307680 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.

5.6 Internal Peripheral Device Connections

5.6.1 Peripheral Device Cables

The cables listed in **Table 5-5** are shipped with the 3307680.

Quantity	Type
1	IDE Cable
1	KB/MS cable
2	SATA drive cables
1	SATA drive power cable

Table 5-5: GAI Provided Cables

Optional cables are listed below:

- TV out cable
- LPT cable
- FDD cable
- 5-pin wafer-to-PS/2 cable for mouse or keyboard
- 7.1 channel audio kit
- 5.1 channel audio kit

5.6.2 IDE Cable Connection

The IDE flat cable connects to the 3307680 to one or two IDE devices. To connect an IDE HDD to the 3307680 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 5-12**. A key on the front of the cable connector ensures it can only be inserted in one direction.

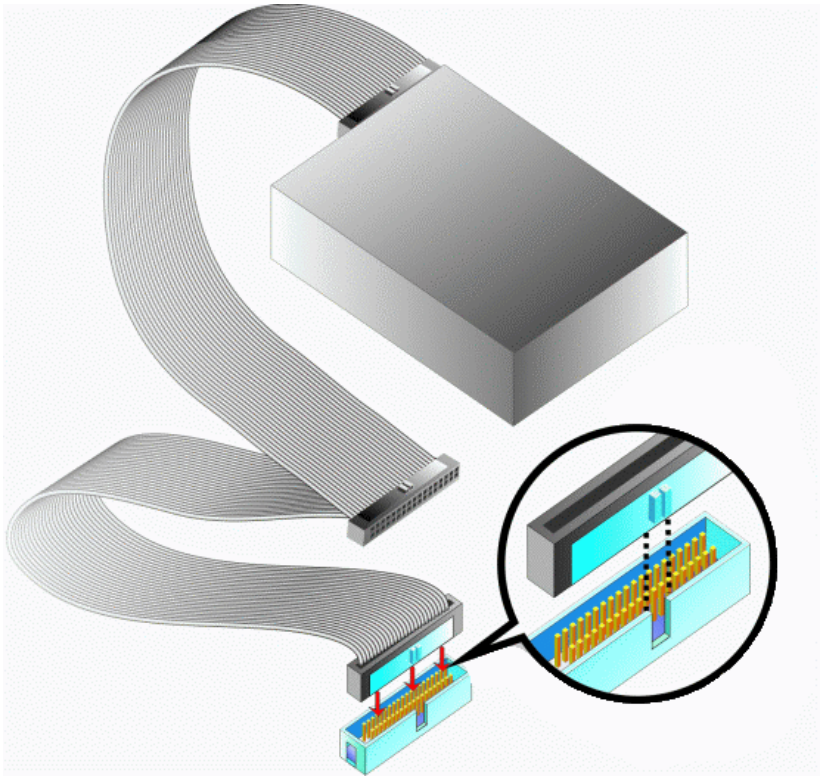


Figure 5-12: IDE Cable Connection

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

5.6.3 5.1 Channel Audio Kit Installation

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest 3307680 distributor, reseller or vendor or contact an GAI sales representative directly. Send any queries to sales@globalamericaninc.com

The optional 5.1 channel audio kit connects to the 10-pin audio connector on the 3307680. The audio kit consists of three audio jacks. One audio jack, Mic In, connects to a microphone. The remaining two audio jacks, Line-In and Line-Out, connect to two speakers. To install the audio kit, please refer to the steps below:

Step 1: **Connect the audio kit cable.** The audio kit is shipped with a cable that connects the audio kit to the 3307680. Connect the cable to the connector on the back of the audio kit. Make sure the pins are properly aligned (i.e. pin 1 connects to pin 1).

Step 2: **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 3: **Align pin 1**. Align pin 1 on the onboard connector with pin 1 on the audio kit cable connector. Pin 1 on the audio kit cable connector is indicated with a white dot. See **Figure 5-13**.

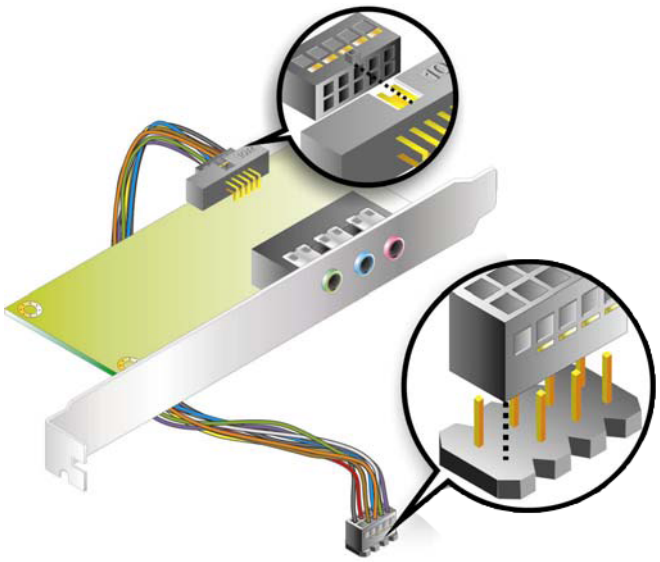


Figure 5-13: 5.1 Channel Audio Kit

Step 4: **Mount the audio kit onto the chassis**. Once the audio kit is connected to the 3307680, secure the audio kit bracket to the system chassis.

Step 5: **Connect the audio devices**. Connect one speaker to the line-in audio jack, one

speaker to the line-out audio jack and a microphone to the mic-in audio jack.

Step 6: **Install the driver**. If the 5.1 channel audio kit is used, the ALC655 Realtek codec driver must be installed. Refer to **Chapter 7** for driver installation instructions.

5.6.4 7.1 Channel Audio Kit Installation

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest 3307680 distributor, reseller or vendor or contact a GAI sales representative directly. Send any queries to sales@globalamericaninc.com

The optional 7.1 channel audio kit connects to the 10-pin audio connector on the 3307680. The audio kit consists of five audio jacks. One audio jack, Mic In, connects to a microphone. The remaining four audio jacks, Line-In, Front-Out, Rear-Out, and Center Subwoofer, connect to speakers. To install the audio kit, please refer to the steps below:

Step 1: **Connect the audio kit cable.** The audio kit is shipped with a cable that connects the audio kit to the 3307680. Connect the cable to the connector on the back of the audio kit. Make sure the pins are properly aligned (i.e. pin 1 connects to pin 1).

Step 2: **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 3: **Align pin 1**. Align pin 1 on the onboard connector with pin 1 on the audio kit cable connector. Pin 1 on the audio kit cable connector is indicated with a white dot. See **Figure 5-13**.

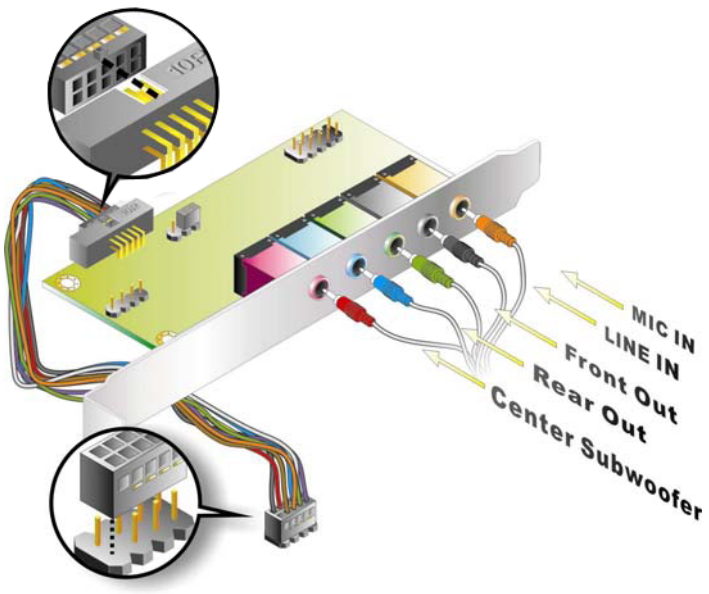


Figure 5-14: 5.1 Channel Audio Kit

Step 4: **Mount the audio kit onto the chassis**. Once the audio kit is connected to the 3307680, secure the audio kit bracket to the system chassis.

Step 5: **Connect the audio devices**. Connect one speaker to the line-in audio jack, one speaker to the line-out audio jack and a microphone to the mic-in audio jack.

Step 6: **Install the driver**. If the 5.1 channel audio kit is used, the ALC655 Realtek codec driver must be installed.

5.6.5 Parallel Port Cable

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 3307680 LPT box-header connector. See **Figure 5-15**.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the 26-pin box-header connector on the 3307680, connect the cable connector to the onboard connector. See **Figure 5-15.**

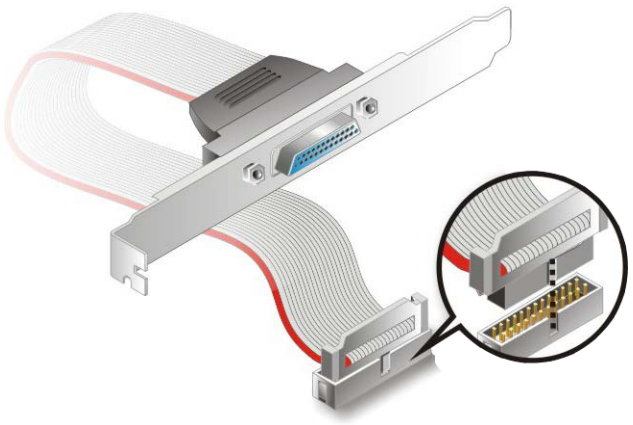


Figure 5-15: LPT Cable Connection

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 5-16**

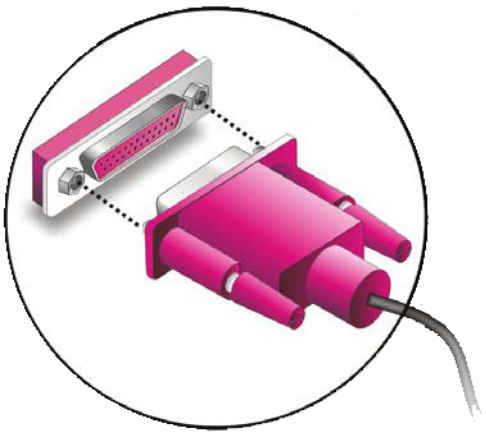


Figure 5-16: Connect the LPT Device

5.6.6 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 5-17**. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

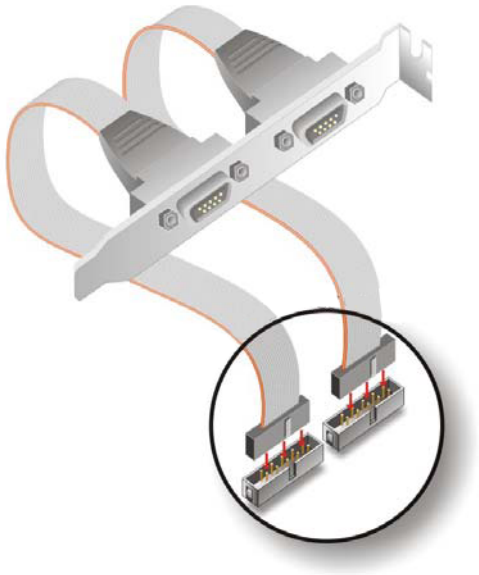


Figure 5-17: Dual RS-232 Cable Installation

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

5.6.7 USB Cable (Dual Port)

The 3307680 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

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

WARNING:

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

Step 2: **Align the connectors**. The cable has two connectors. Correctly align pin 1on each cable connector with pin 1 on the 3307680 USB connector.

Step 3: **Insert the cable connectors** Once the cable connectors are properly aligned with the USB connectors on the 3307680, connect the cable connectors to the onboard connectors. See **Figure 5-18**.

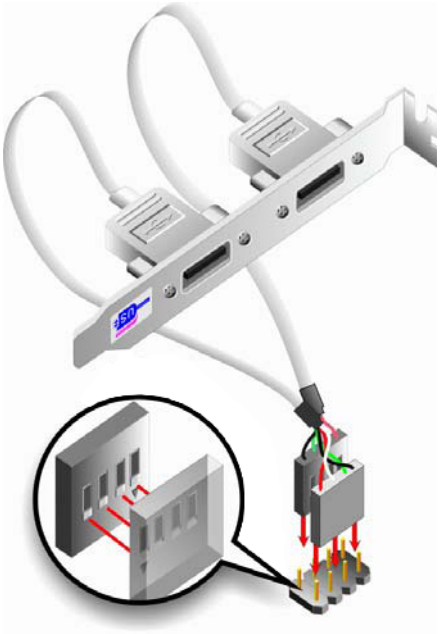


Figure 5-18: Dual USB Cable Connection

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

5.6.8 SATA Drive Connection

The 3307680 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 5-19**.

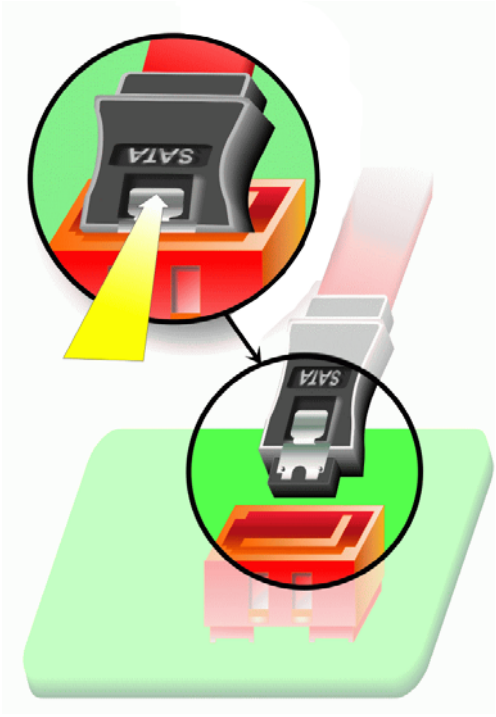


Figure 5-19: SATA Drive Cable Connection

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 5-20**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 5-20**.

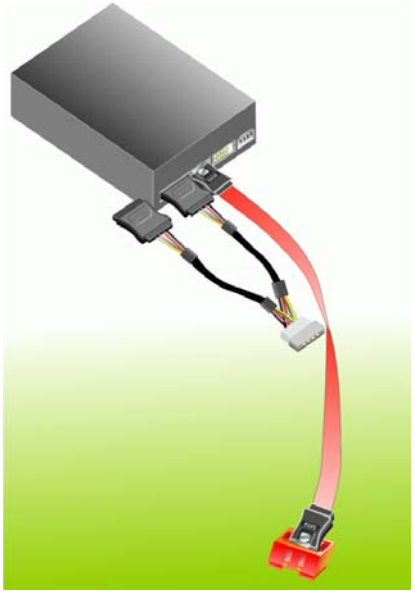


Figure 5-20: SATA Power Drive Connection

5.6.9 Wafer-to-PS/2 Cable (Keyboard/Mouse Installation)

The optional wafer-to-PS/2 cable respectively connects the onboard keyboard wafer connector and the onboard mouse wafer connector to a PS/2 keyboard and a PS/2 mouse. To connect the wafer-to-PS/2 cable, please follow the steps below.

Step 1: **Locate the connector**. The location of the keyboard/mouse connector is shown in **Chapter 4**.

Step 2: **Align the connectors**. Correctly align pin 1 on the cable connector with pin 1 on the 3307680 keyboard or mouse connector. See **Figure 5-21**.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the keyboard/mouse connector on the 3307680, connect the cable connector to the onboard connectors. See **Figure 5-21**.

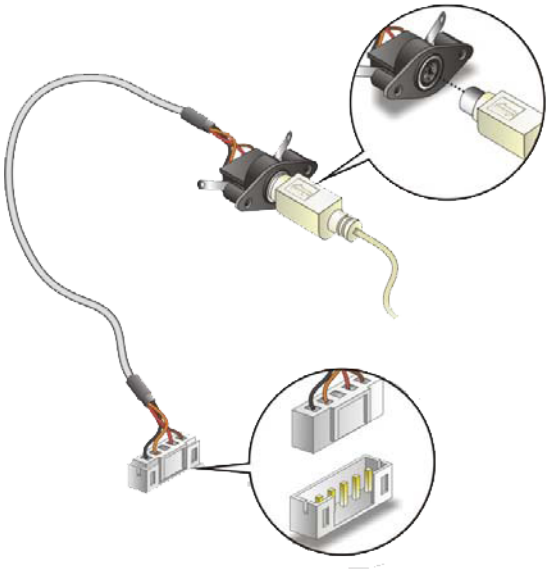


Figure 5-21: Keyboard/mouse Cable Connection

Step 4: **Attach PS/2 connector to the chassis**. The wafer-to-PS/2 cable connector is connected to a PS/2 connector. To secure the PS/2 connector to the chassis please refer to the installation instructions that came with the chassis.

Step 5: **Connect the keyboard or mouse**. Once the PS/2 connector is connected to the chassis, the wafer-to-PS/2 cable connected to the keyboard connector can be connected to the PS/2 connector on a keyboard and the wafer-to-PS/2 cable connected to the mouse connector can be connected to the PS/2 connector on a PS/2 mouse.

5.7 External Peripheral Interface Connection

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

- VGA monitors
- RJ-45 Ethernet cable connectors
- USB devices

To install these devices, connect the corresponding cable connector from the actual device to the corresponding 3307680 external peripheral interface connector making sure the pins are properly aligned.

5.7.1 LAN Connection (Single Connector)

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

Step 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 3307680. See **Figure 5-22**.

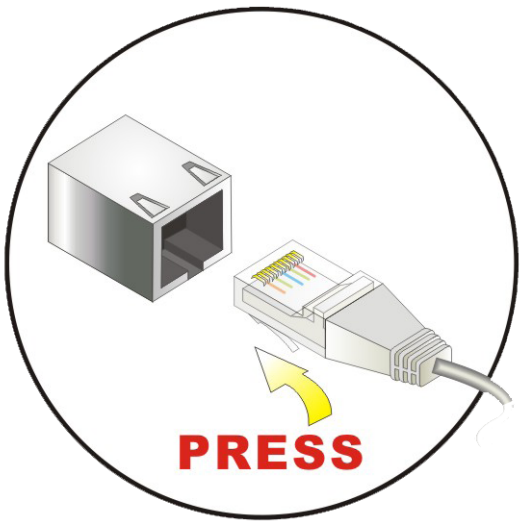


Figure 5-22: LAN Connection

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.

5.7.2 USB Device Connection (Single Connector)

There are two external USB 2.0 connectors. Both connectors are perpendicular to the 3307680. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

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

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the 3307680. See **Figure 5-22**.

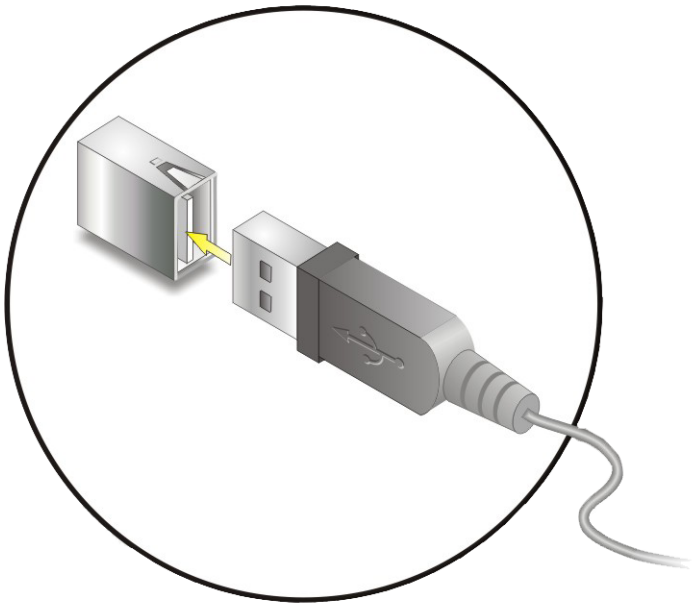


Figure 5-23: USB Device Connection

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

5.7.3 VGA Monitor Connection

The 3307680 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the 3307680, please follow the instructions below.

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

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

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the 3307680. See **Figure 5-24**.

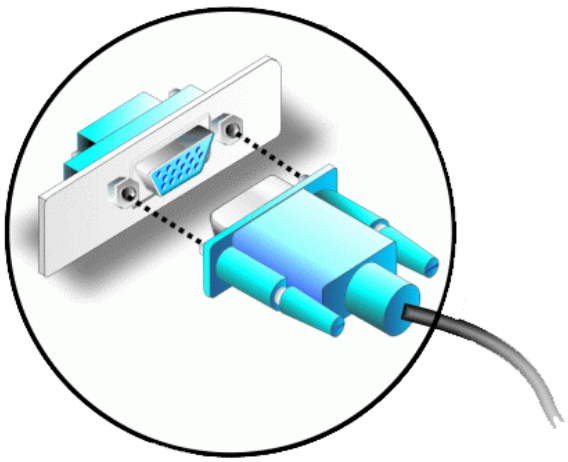


Figure 5-24: VGA Connector

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

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.

Address: Global American, Inc.
17 Hampshire Drive
Hudson, NH 03051

Telephone: Toll Free U.S. Only (800) 833-8999
(603) 886-3900

FAX: (603) 886-4545

Website: http://www.globalamericaninc.com

Support: Technical Support at Global American