integration with integrity

3308460 User's Manual

Full-Size PICMG 1.0 SBC w/ Intel Atom N270 1.6GHz Processor

Version 1.0 October 2008

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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 GAI reseller or vendor you purchased the 3308460 from or contact a 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 3308460 package.

- 1 x 3308460 Single Board Computer
- 2 x SATA cable
- 1 x Keyboard/Mouse Y-cable
- 1 x Dual RS-232 cable
- 1 x USB cable
- 1 x Utility CD
- 1 x QIG

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

Table of Contents

Chapter

1

Introduction

1.1 Introduction

Figure 1-1: 3308460

The 3308460 PICMG 1.0 CPU cards are embedded 45 nm Intel® Atom™ processor platforms. The embedded Intel® Atom™ N270 processor has a 1.60 GHz clock speed, a 533 MHz FSB and a 512 KB L2 cache. The 3308460 supports one 240-pin 533 MHz 2.0 GB (max.) DDR2 SDRAM DIMM. The 3308460 also comes with two PCI Express (PCIe) Gigabit Ethernet (GbE) connectors.

1.2 3308460 Overview

1.2.1 Overview Photo

The 3308460 has a wide variety of peripheral interface connector. **Figure 1-2** is a labeled photo of the peripheral interface connectors on the 3308460.

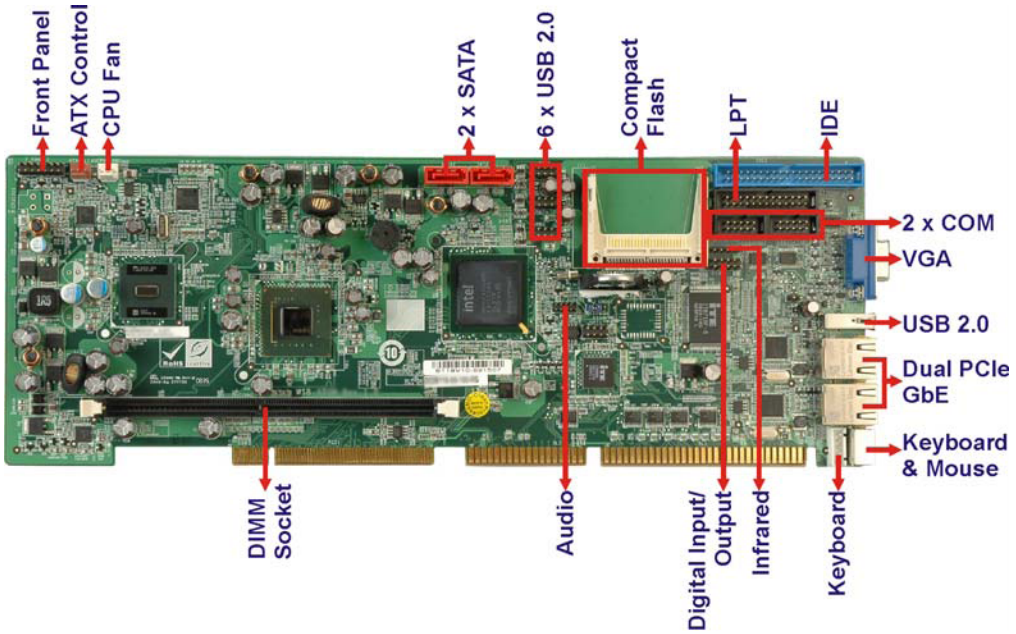


Figure 1-2: 3308460 Overview [Front View]

1.2.2 Peripheral Connectors and Jumpers

The 3308460 has the following connectors on-board:

- 1 x Audio connector
- 1 x ATX power control connector
- 1 x CompactFlash® socket
- 1 x Digital input/output (DIO) connector
- 1 x Fan connector
- 1 x Front panel connector
- 1 x IDE disk drive connectors (40-pin)
- 1 x Infrared interface (IrDA) connector
- 1 x Keyboard connector
- 1 x Parallel port connector
- 2 x SATA drive connectors
- 2 x RS-232 serial port connectors
- 3 x USB 2.0 connectors (6 USB devices)

The 3308460 has the following external peripheral interface connectors on the board rear panel.

- 2 x Ethernet connectors
- 1 x PS/2 connector
- 1 x USB connectors
- 1 x VGA connector

The 3308460 has the following on-board jumpers:

- Clear CMOS
- CF card setup

1.2.3 Technical Specifications

3308460 technical specifications are listed in **Table 1-1**. See **Chapter 2** for details.

Specification	3308460
Form Factor	PICMG 1.0
System CPU	45 nm 1.60 GHz Intel® Atom™ N270
Front Side Bus (FSB)	533 MHz
System Chipset	Northbridge: Intel® 945GSE Southbridge: Intel® ICH7M
Memory	One 240-pin DIMM socket supports one 533 MHz 2.0 GB (max.) DDR2 SDRAM DIMM
CompactFlash®	One CompactFlash® socket
Super I/O	iTE IT8718F
Display	Intel® Generation 3.5 integrated GFX core (133 MHz)
BIOS	AMI BIOS label
Audio	5.1 channel audio kit with Realtek ALC655 AC'97 codec 7.1 channel HD audio kit with Realtek ALC883 codec supports dual audio streams
LAN	Two Realtek RTL8111CP GbE controllers

Specification	3308460
COM	Two RS-232 serial ports
USB2.0	Seven USB 2.0 devices supported (six internal, one external)
Hard Drives	One 40-pin IDE connector connects to two Ultra ATA33/66/100/133 devices
SATA	Two 3.0 Gb/s SATA drives supported
Keyboard/mouse	One external PS/2 connector
Parallel Port	One 26-pin parallel port connector
Digital I/O	One 8-bit digital input/output connector; 4-bit input/4-bit output through the iTE IT8718F super I/O
Watchdog Timer	Software programmable 1-255 sec. through the iTE IT8718F super I/O
Infrared	One infrared connector supports Serial Infrared (SIR) Amplitude Shift Keyed IR (ASKIR)
Power Supply	ATX and AT power supported
Power Consumption	5 V @ 2.55 A 12 V @ 0.23 A (with 2.0 GB DDR2 memory)
Temperature	0ºC – 60ºC (32ºF - 140ºF)
Humidity (operating)	5%~95% non-condensing
Dimensions (LxW)	338 mm x 122 mm
Weight (GW/NW)	1000g/250g

Table 1-1: Technical Specifications

Chapter

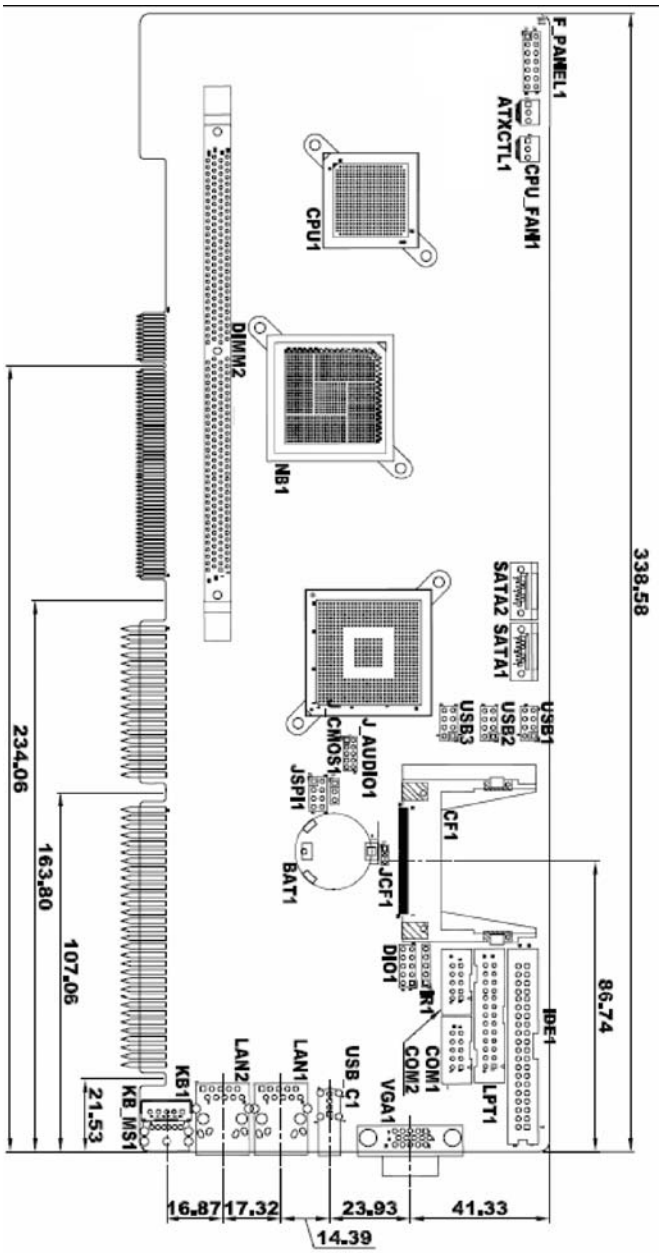
2

Detailed Specifications

2.1 Dimensions

2.1.1 Board Dimensions

Length: 338 mm
Width: 122 mm



Packing List

NOTE:

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The items listed below should all be included in the 3308460 package.

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- 2 x SATA cable
- 1 x Keyboard/Mouse Y-cable
- 1 x Dual RS-232 cable
- 1 x USB cable
- 1 x Utility CD
- 1 x QIG

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

2.3 Embedded 3308460 Processor

2.3.1 Overview

The 3308460 comes with an embedded 45 nm 1.60 GHz Intel® Atom™ N270 processor. The processor supports a 533 MHz FSB and has a 1.60 GHz 512 KB L2 cache. The low power processor has a maximum power of 2.5 W. The processor is covered with a heat sink and is shown in **Figure 2-4** below.

Figure 2-4: Intel® Atom™ N270 CPU

2.3.2 Features

Some of the features of the Intel® Atom™ N270 are listed below

- On-die, primary 32-kB instructions cache and 24-kB write-back data cache
- 533 MHz source-synchronous front side bus (FSB)
- 2-Threads support
- On-die 512-kB, 8-way L2 cache
- Support for IA 32-bit architecture
- Intel® Streaming SIMD Extensions-2 and -3 (Intel® SSE2 and Intel® SSE3) support and Supplemental Streaming SIMD Extension 3 (SSSE3) support
- Micro-FCBGA8 packaging technologies
- Thermal management support via Intel® Thermal Monitor 1 and Intel Thermal Monitor 2
- FSB Lane Reversal for flexible routing
- Supports C0/C1(e)/C2(e)/C4(e)
- L2 Dynamic Cache Sizing

- Advanced power management features including Enhanced Intel SpeedStep® Technology
- Execute Disable Bit support for enhanced security

2.3.3 Front Side Bus (FSB)

The Intel® Atom™ processor on the 3308460 is interfaced to the Intel® 945GSE Northbridge through a 533 MHz front side bus (FSB). The FSB is shown in **Figure 2-5** below.

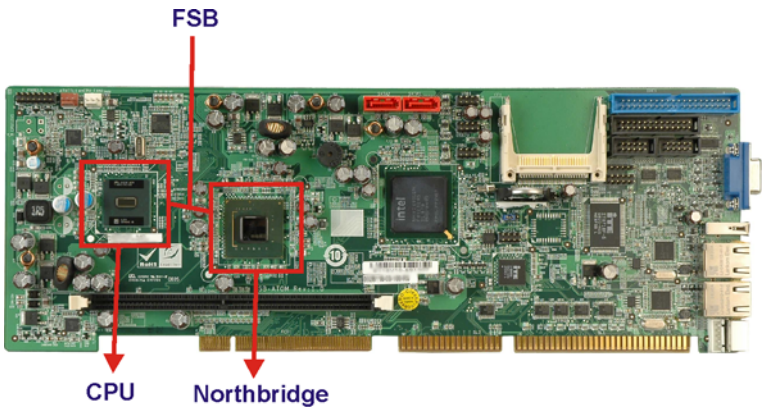

Figure 2-5: Front Side Bus

2.4 Intel® 945GSE Northbridge Chip

The Intel® 945GSE Graphics and Memory Controller Hub (GMCH) supports the embedded Intel® Atom™ N270 processor. The Intel® 945GSE is interfaced to the processor through a 533 MHz FSB.

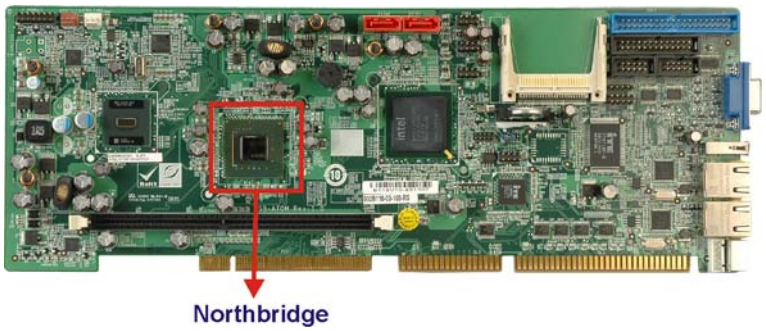

Figure 2-6: Intel® 945GSE Northbridge Chip

2.4.1 DDR2 Controller

There is one 240-pin DDR2 DIMM socket on the 3308460. The socket supports DDR2 DIMM with the following specifications:

- Maximum Memory supported 2 GB (1 GB per rank)
- Support for DDR2 at 400 MHz and 533 MHz
- No support for Dual-Channel Interleaved mode of operation
- Enhanced Addressing support (Swap only)

The DIMM socket is shown in **Figure 2-7** below.

Figure 2-7: DDR2 DIMM Socket

2.4.2 Graphics

The Intel® 945GSE supports CRT. The internal graphics engine has the following features:

- Intel® Gen 3.5 Integrated Graphics Engine
- 250-MHz core render clock and 200 MHz core display clock at 1.05-V core voltage
- Supports CRT
- Dynamic Video Memory Technology (DVMT 3.0)
- Intel® Display Power Saving Technology 2.0 (Intel® DPST 2.0)
- Intel® Smart 2D Display Technology (Intel® S2DDT)
- 4x pixel rate HWMC
- Microsoft DirectX* 9.1 operating system
- Intermediate Z in Classic Rendering

- Internal Graphics Display Device States: D0, D1, D3
- Graphics Display Adapter States: D0, D3.

2.4.2.1 Analog CRT Graphics Mode

The analog CRT bus is interfaced to an external DB-15 interface connector. The connector is shown below.

Figure 2-8: VGA Connector

Some of the features of the CRT include:

- Integrated 400-MHz RAMDAC
- Analog Monitor Support up to QXGA
- Support for CRT Hot Plug

2.5 Intel® ICH7M Southbridge Chipset

The Intel® ICH7M Southbridge chipset is connected to the Intel® 945GSE Northbridge GMCH through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH7M are listed below.

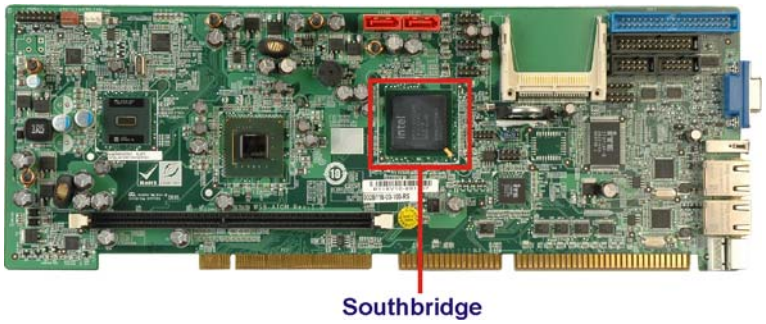

Figure 2-9: Intel® ICH7M Southbridge Chipset

- Complies with PCI Express Base Specification, Revision 1.0a
- Complies with PCI Local Bus Specification, Revision 2.3 and supports 33 MHz PCI operations
- Supports ACPI Power Management Logic
- Contains:
  - Enhanced DMA controller
  - Interrupt controller
  - Timer functions
- Integrated SATA host controller with DMA operations interfaced to two SATA connectors on the 3308460
- Integrated IDE controller supports Ultra ATA 100/66/33
- Supports the four USB 2.0 devices on the 3308460 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

2.5.1 Audio Codec ’97 Controller

The Audio Codec ’97 (AC’97) controller integrated into the Intel® ICH7M 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

2.5.2 IDE Interface

The IDE interface connects with

2.5.2.1 IDE Connector

The IDE connector on the Intel® ICH7M Southbridge connects to an IDE hard disk or other IDE device. The IDE connector is shown in **Figure 2-10** below.

Figure 2-10: IDE Connector

PIO IDE transfers up to 16 MB/s and Ultra ATA transfers of 100 MB/s. The integrated IDE interface is able to support the following IDE HDDs:

- **Ultra ATA/100**, with data transfer rates up to 100 MB/s
- **Ultra ATA/66**, with data transfer rates up to 66 MB/s
- **Ultra ATA/33**, with data transfer rates up to 33 MB/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 5	UDMA 4	UDMA 2
DMA/UDMA Max Transfer	100 MB/s	66 MB/s	33 MB/s
Controller Interface	5 V	5 V	5 V

Table 2-1: Supported HDD Specifications

2.5.2.2 CompactFlash® Slot

The CompactFlash® slot on the 3308460 is interfaced through the IDE interface on the Intel® ICH7M Southbridge. The CompactFlash® slot is shown in **Figure 2-10** below.

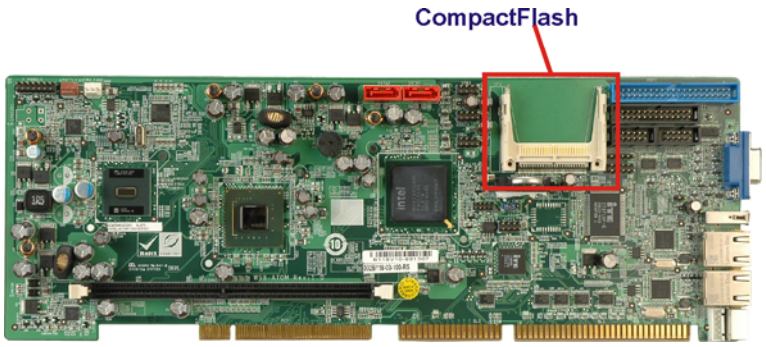

Figure 2-11: CompactFlash® Slot

2.5.3 Low Pin Count (LPC) Interface

The Intel® ICH7M LPC interface complies with the LPC 1.1 specifications. The LPC bus from the Intel® ICH7M is connected to the following components:

- BIOS chipset
- Super I/O chipset

2.5.4 PCI Interface

The PCI interface on the Intel® ICH7M 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
- 33 MHz
- 5 V tolerant PCI signals (except PME#)
- Integrated PCI arbiter supports up to seven PCI bus masters

The PCI bus connections are shown in the subsections below.

2.5.4.1 PCI Edge Connector

The PCI interface is connected directly to the edge connector on the 3308460. The location of the PCI edge connector is shown in Figure 2-12 below.

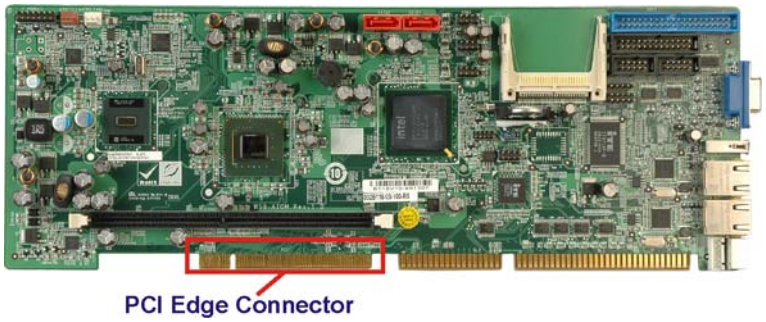

Figure 2-12: PCI Edge Connector

2.5.4.2 PCI-to-ISA Chip

The PCI interface is connected to the ISA edge connector through the PCI-to-ISA chip. The location of the PCI edge connector is shown in Figure 2-13 below.

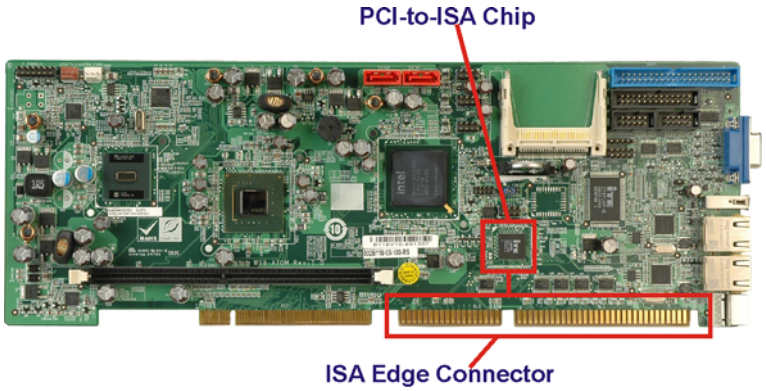

Figure 2-13: PCI-to-ISA Chip

2.5.5 PCIe Bus

The Intel® ICH7M Southbridge chipset has four PCIe lanes. Two of the four PCIe lanes are interfaced to PCIe GbE controllers.

2.5.5.1 PCIe GbE Ethernet

Two PCIe lanes are connected to two Realtek RTL8111C PCIe GbE controllers shown in Figure 2-14 below.

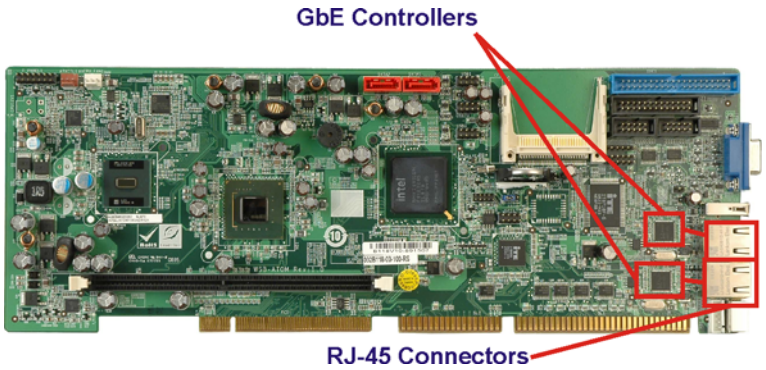

Figure 2-14: Realtek PCI GbE Controllers

The Realtek RTL8111C PCIe GbE controllers combine a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, 32-bit PCIe bus controller, and embedded memory. With state-of-the-art DSP technology and mixed-mode signal technology, they offer high-speed transmission over CAT 5 UTP cable or CAT 3 UTP (10 Mb/s only) cable. Functions such as Crossover Detection &

Auto-Correction, polarity correction, adaptive equalization, cross-talk cancellation, echo cancellation, timing recovery, and error correction are implemented to provide robust transmission and reception capability at high speeds.

Some of the features of the Realtek RTL8111C PCIe GbE controllers are listed below.

- Integrated 10/100/1000 transceiver
- Auto-Negotiation with Next Page capability
- Supports PCI Express™ 1.1
- Supports pair swap/polarity/skew correction
- Crossover Detection & & Auto-Correction
- Wake-on-LAN and remote wake-up support
- Microsoft® NDIS5, NDIS6 Checksum Offload (IPv4, IPv6, TCP, UDP) and Segmentation Task-offload (Large send and Giant send) support
- Supports Full Duplex flow control (IEEE 802.3x)
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Serial EEPROM
- Transmit/Receive on-chip buffer support
- Supports power down/link down power saving
- Supports PCI MSI (Message Signaled Interrupt) and MSI-X
- Supports Receive-Side Scaling (RSS)

2.5.6 Real Time Clock

256 bytes of battery backed RAM is provided by the Motorola MC146818 A real time clock (RTC) integrated into the ICH6. The RTC operates on a 3 V battery and 32.768 KHz crystal. The RTC keeps track of the time and stores system data even when the system is turned off.

2.5.7 SATA Controller

The integrated SATA controller on the Intel® ICH7M Southbridge supports two SATA drives with independent DMA operations. Two SATA controllers are connected to two SATA connectors on the 3308460. The SATA connectors are shown in Figure 2-15.

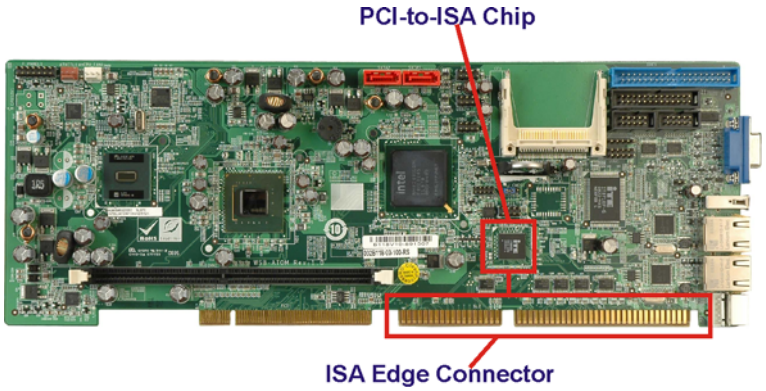

Figure 2-13: iTE IT8888G PCI-to-ISA Chip

2.5.5 PCIe Bus

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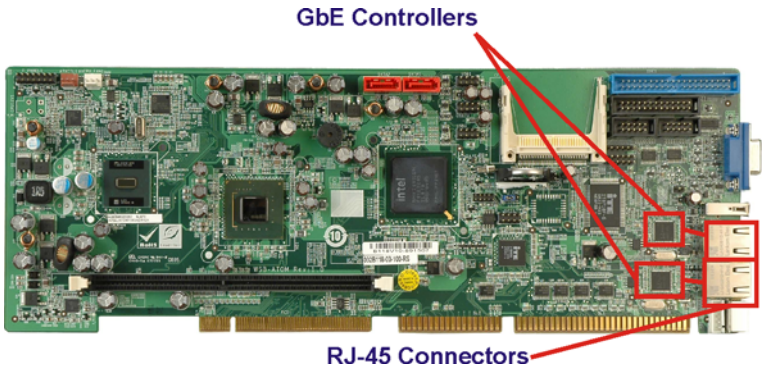

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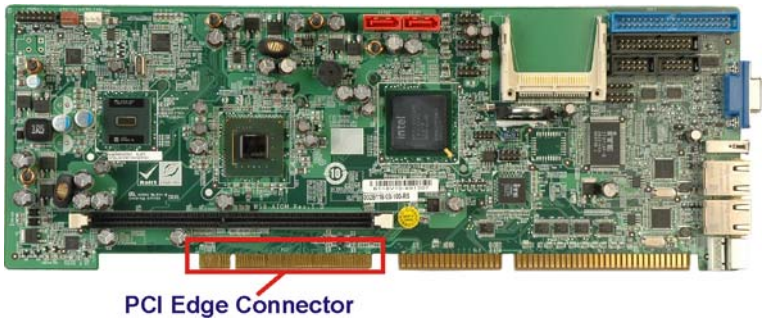

Figure 2-12: PCI Edge Connector

2.5.4.2 iTE IT8888G PCI-to-ISA Chip

The PCI interface is connected to the ISA edge connector through the iTE IT8888G PCI-to-ISA chip. The location of the PCI edge connector is shown in Figure 2-13 below.

The 3308460 has the following external peripheral interface connectors on the board rear panel.

- 2 x Ethernet connectors
- 1 x PS/2 connector
- 1 x USB connectors
- 1 x VGA connector

The 3308460 has the following on-board jumpers:

- Clear CMOS
- CF card setup

1.2.3 Technical Specifications

3308460 technical specifications are listed in **Table 1-1**. See **Chapter 2** for details.

Specification	3308460
Form Factor	PICMG 1.0
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CompactFlash®	One CompactFlash® socket
Super I/O	iTE IT8718F
Display	Intel® Generation 3.5 integrated GFX core (133 MHz)
BIOS	AMI BIOS label
Audio	5.1 channel audio kit with Realtek ALC655 AC'97 codec 7.1 channel HD audio kit with Realtek ALC883 codec supports dual audio streams
LAN	Two Realtek RTL8111CP GbE controllers

2.3 Embedded 3308460 Processor

2.3.1 Overview

The 3308460 comes with an embedded 45 nm 1.60 GHz Intel® Atom™ N270 processor. The processor supports a 533 MHz FSB and has a 1.60 GHz 512 KB L2 cache. The low power processor has a maximum power of 2.5 W. The processor is covered with a heat sink and is shown in **Figure 2-4** below.

Figure 2-4: Intel® Atom™ N270 CPU

2.3.2 Features

Some of the features of the Intel® Atom™ N270 are listed below

- On-die, primary 32-kB instructions cache and 24-kB write-back data cache
- 533 MHz source-synchronous front side bus (FSB)
- 2-Threads support
- On-die 512-kB, 8-way L2 cache
- Support for IA 32-bit architecture
- Intel® Streaming SIMD Extensions-2 and -3 (Intel® SSE2 and Intel® SSE3) support and Supplemental Streaming SIMD Extension 3 (SSSE3) support
- Micro-FCBGA8 packaging technologies
- Thermal management support via Intel® Thermal Monitor 1 and Intel Thermal Monitor 2
- FSB Lane Reversal for flexible routing
- Supports C0/C1(e)/C2(e)/C4(e)
- L2 Dynamic Cache Sizing

- +1.5 V
- +1.8 V
- +5 VSB
- VBAT

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

2.7.2 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the 3308460 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.

2.7.3 Power Consumption

Table 2-2 shows the power consumption parameters for the 3308460 running with a 1.60 GHz Intel® Atom™ with 2.0 GB DDR2 memory.

Voltage	Current
+5 V	2.55 A
+12 V	0.23 A

Table 2-2: Power Consumption

Chapter

3

Unpacking

3.1 Anti-static Precautions

WARNING!

Failure to take ESD precautions during the installation of the 3308460 may result in permanent damage to the 3308460 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3308460. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3308460, 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 3308460, place it on an antic-static pad. This reduces the possibility of ESD damaging the 3308460.
- ***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 3308460 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 3308460 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 any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the GAI reseller or vendor the 3308460 was purchased from or contact an GAI sales representative directly by sending an email to sales@globalamericaninc.com

3.3.1 Package Contents

The 3308460 is shipped with the following components:

Quantity	Item	Image
1	3308460	
2	SATA cable	
1	KB/MS PS/2 Y-cable	
1	Dual RS-232 cable	
1	USB cable	
1	Mini jumper pack (2.4 mm)	

Quantity	Item	Image
1	Utility CD	
1	Quick Installation Guide	

Table 3-1: Packing List

3.3.2 Optional Items

Item	Image
Dual USB cable (wo bracket)	
LPT cable (wo bracket)	
ATX cable	
HDTV output cable	
HDD cable	
IDE-cable	

Item and Part Number	Image
SATA power cable	
Audio kit_ 5.1 Channel	
Audio kit_ 7.1 Channel	

Table 3-2: Power Consumption

Chapter

4

Connectors

4.1 Peripheral Interface Connectors

This chapter outlines all internal and external connectors on the 3308460.

4.1.1 Layout

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

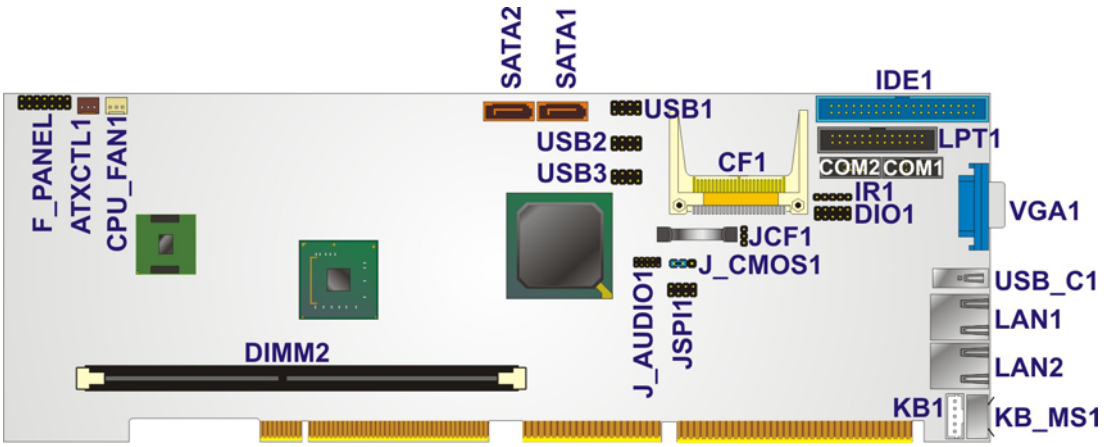


Figure 4-1: Connector and Jumper Locations [Front Side]

4.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the 3308460. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
ATX power control connector	3-pin wafer	ATXCTL1
Audio kit connector	9-pin header	J_AUDIO1
CompactFlash® slot	CF slot	CF1
CPU fan connector	3-pin wafer	CPU_FAN1
Digital I/O connector	10-pin header	DIO1
Front panel connector	14-pin header	F_PANEL1
IDE connector	40-pin box header	IDE1

Connector	Type	Label
Infrared interface connector	5-pin header	IR1
Keyboard connector	5-pin box header	KB1
Parallel port connector	26-pin box header	LPT1
SATA port connector	SATA port	SATA1
SATA port connector	SATA port	SATA2
Serial port connector	10-pin header	COM1
Serial port connector	10-pin header	COM2
USB 2.0 connector	8-pin header	USB1
USB 2.0 connector	8-pin header	USB2
USB 2.0 connector	8-pin header	USB3

Table 4-1: Peripheral Interface Connectors

4.2.1 External Interface Panel Connectors

Table 4-2 lists the rear panel connectors on the 3308460. Detailed descriptions of these connectors can be found in **Section 4.4** on **page 56**.

Connector	Type	Label
LAN connector	RJ-45	LAN1
LAN connector	RJ-45	LAN2
Keyboard/mouse	PS/2	KB_MS1
USB port	USB port	USB_C1
VGA port connector	15-pin female	VGA1

Table 4-2: Rear Panel Connectors

4.3 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 3308460.

4.3.1 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 connects to an ATX power supply and signals the power-on and power-off events.

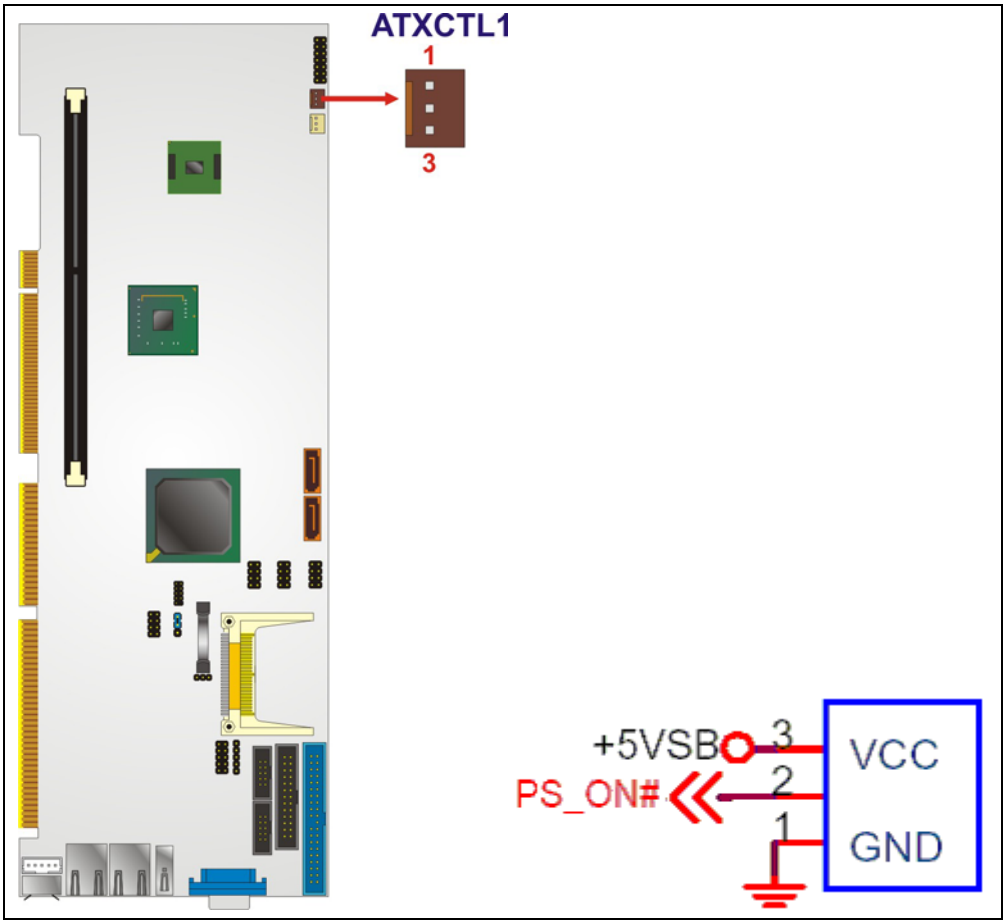


Figure 4-2: ATX Power Supply Enable Connector Location

PIN NO.	DESCRIPTION
1	GND
2	PS-ON

PIN NO.	DESCRIPTION
3	+5 V Standby

Table 4-3: ATX Power Supply Enable Connector Pinouts

4.3.2 Audio Kit Connector

CN Label: **J_AUDIO1**

CN Type: 9-pin header (2x5)

CN Location: See **Figure 4-3**

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

The 9-pin audio connector is connected to an external audio kit available from GAI. The external audio kits add audio capabilities to the system.

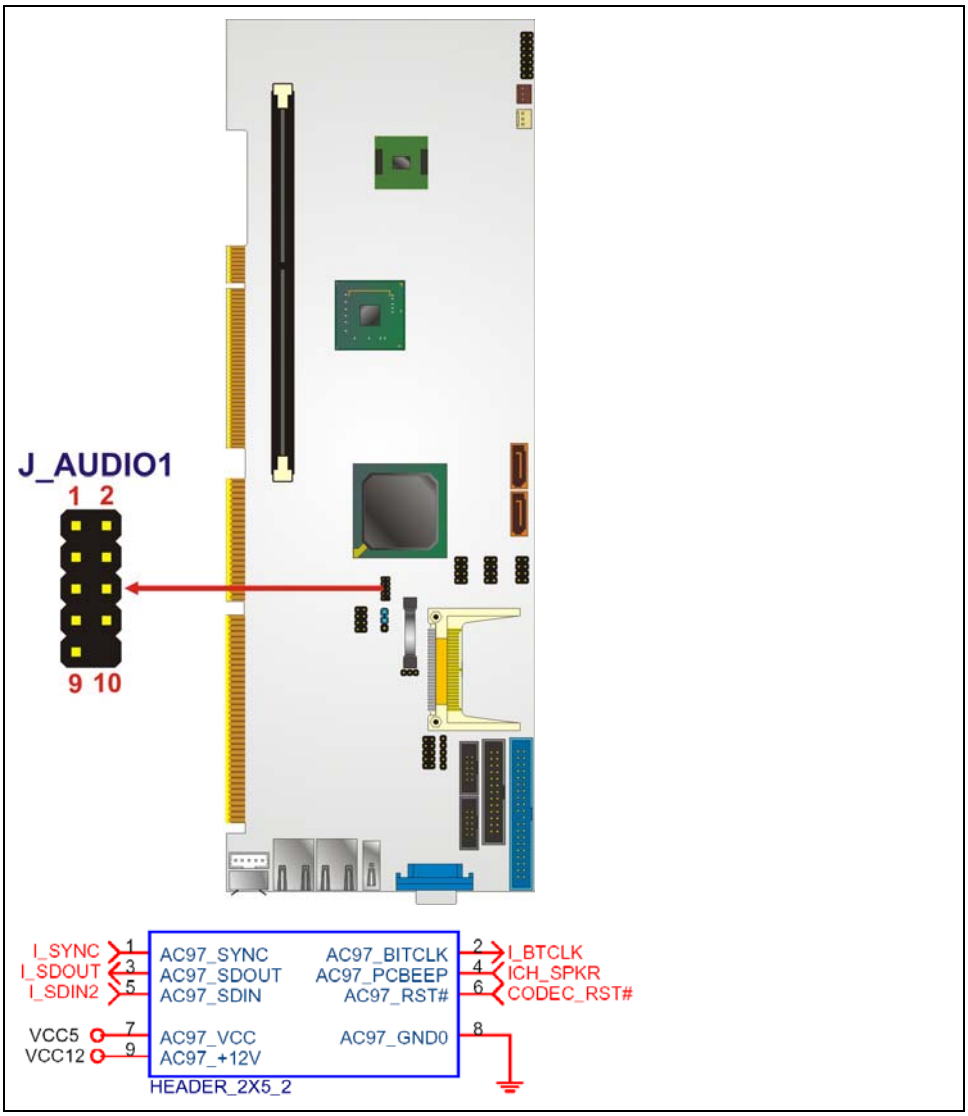


Figure 4-3: Audio Connector Location (9-pin)

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

Table 4-4: Audio Connector Pinouts (9-pin)

4.3.3 CompactFlash® Socket

CN Label: **CF1**

CN Type: 50-pin header (2x25)

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

CN Pinouts: See **Table 4-5**

The CompactFlash® card slot allows a CompactFlash® type I or II card to be installed.

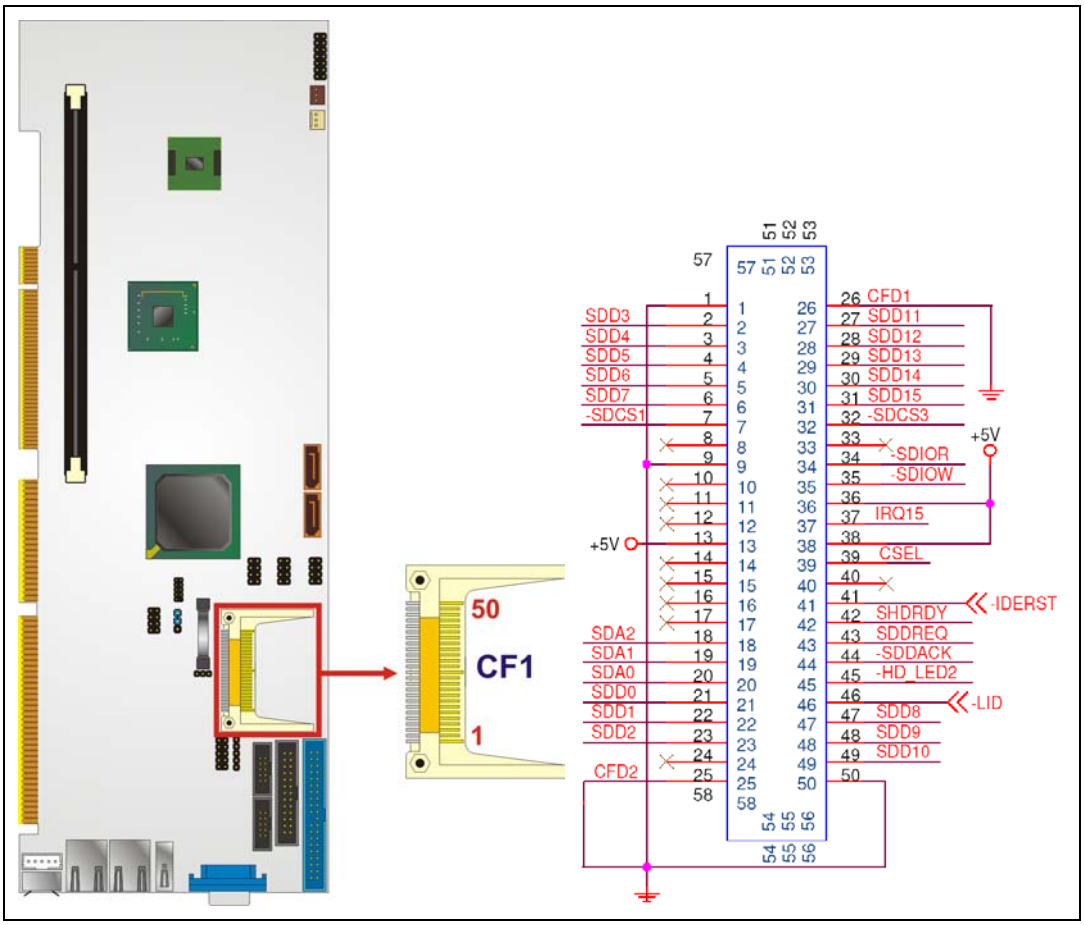


Figure 4-4: CF Card Socket Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	CE#	32	CE2#
8	A10	33	VS1#
9	OE#	34	IOR#
10	A9	35	IOW#
11	A8	36	WE#
12	A7	37	IRQ
13	VCC	38	VCC
14	A6	39	CSEL#
15	A5	40	VS2#
16	A4	41	RESET#
17	A3	42	WAIT#
18	A2	43	INPACK#
19	A1	44	REG#
20	A0	45	BVD2
21	DATA 0	46	BVD1
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	IOCS16#	49	DATA 10
25	CD2#	50	GND2

Table 4-5: CF Card Socket Pinouts

4.3.4 Digital I/O Connector

CN Label: **DIO1**

CN Type: 10-pin header (2x5)

CN Location: See **Figure 4-5**

CN Pinouts: See **Table 4-6**

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

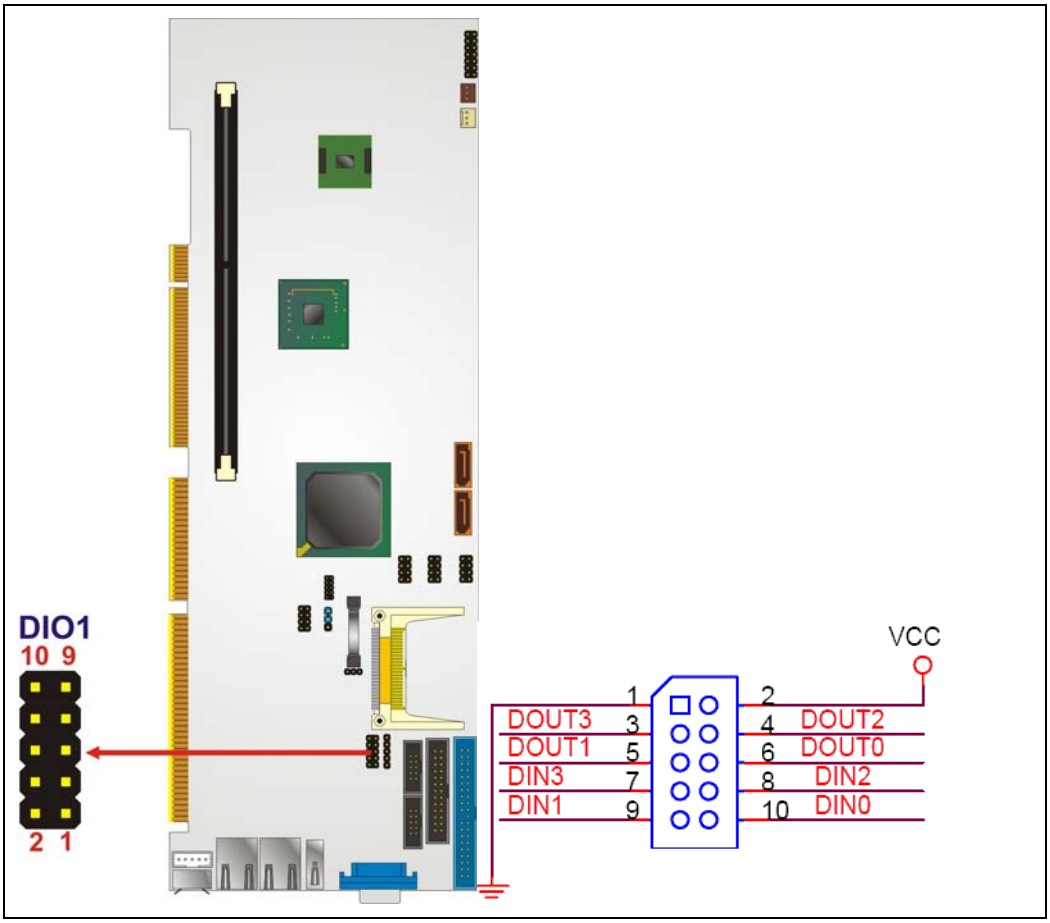


Figure 4-5: Digital I/O Connector Locations

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 4-6: DIO Connector Pinouts

4.3.5 Fan Connector

CN Label:	**CPU_FAN1**
CN Type:	3-pin header
CN Location:	See **Figure 4-6**
CN Pinouts:	See **Table 4-7**

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

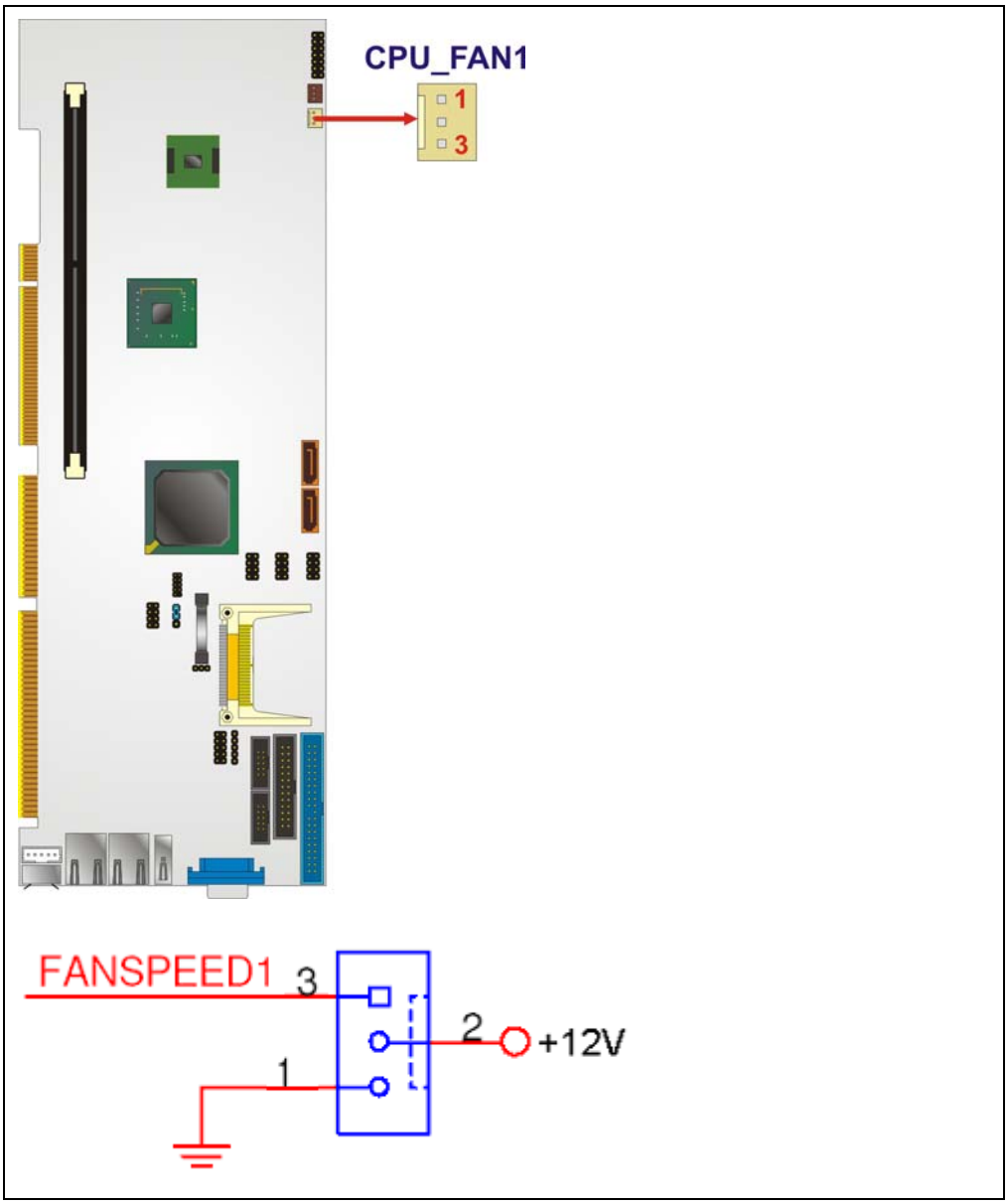


Figure 4-6: CPU Fan Connector Location

PIN NO.	DESCRIPTION
1	GND
2	+12 V
3	Fan Speed Detect

Table 4-7: CPU Fan Connector Pinouts

4.3.6 Front Panel Connector

CN Label: **F_PANEL1**

CN Type: 14-pin header (2x7)

CN Location: See **Figure 4-7**

CN Pinouts: See **Table 4-8**

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

- Power button
- Reset
- Speaker
- Power LED
- HDD LED

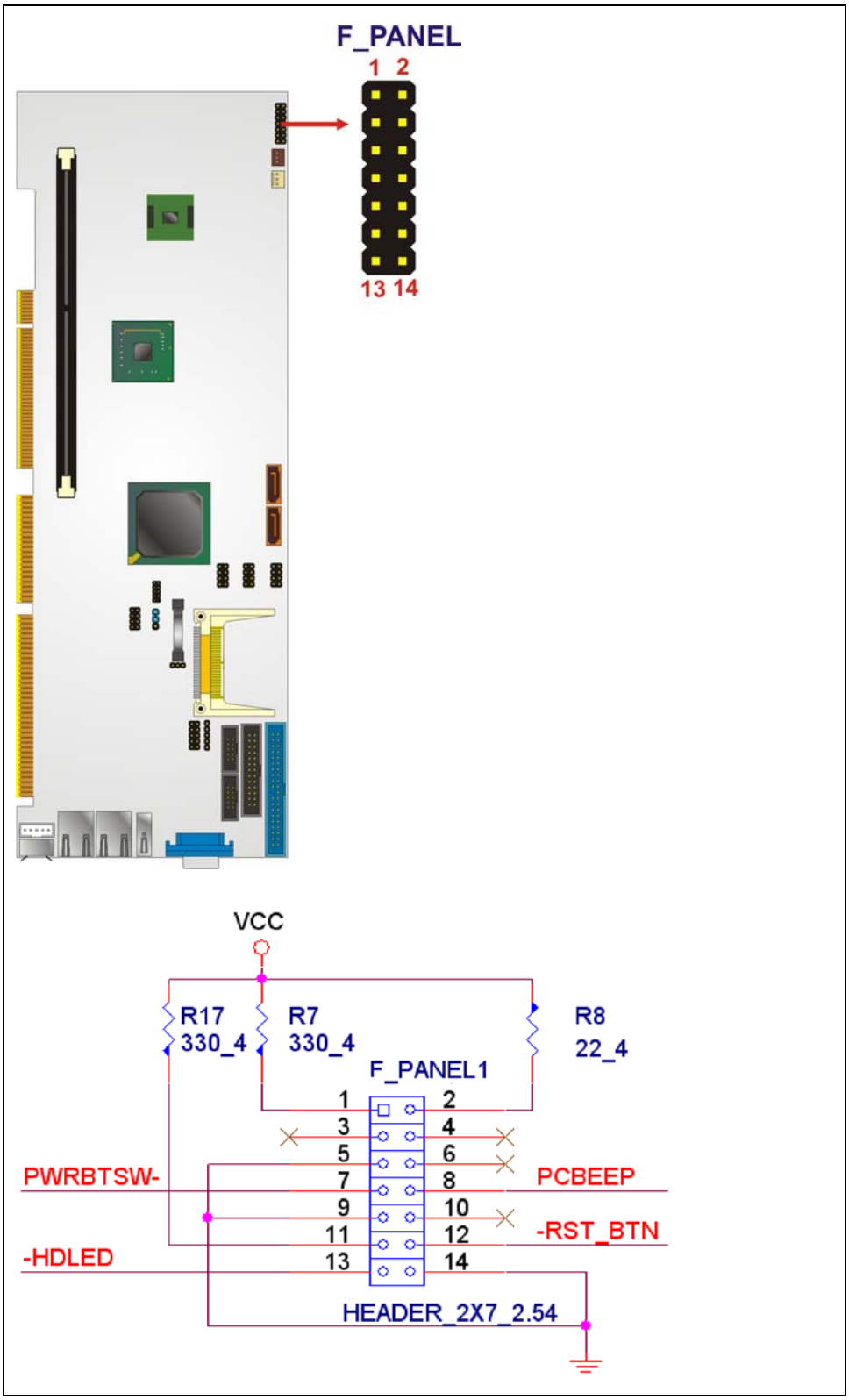


Figure 4-7: Front Panel Connector Pinout Locations

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

Table 4-8: Front Panel Connector Pinouts

4.3.7 IDE Connector

CN Label: **IDE1**

CN Type: 40-pin header (2x20)

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

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

One 40-pin IDE device connector on the 3308460 supports connectivity to two hard disk drives.

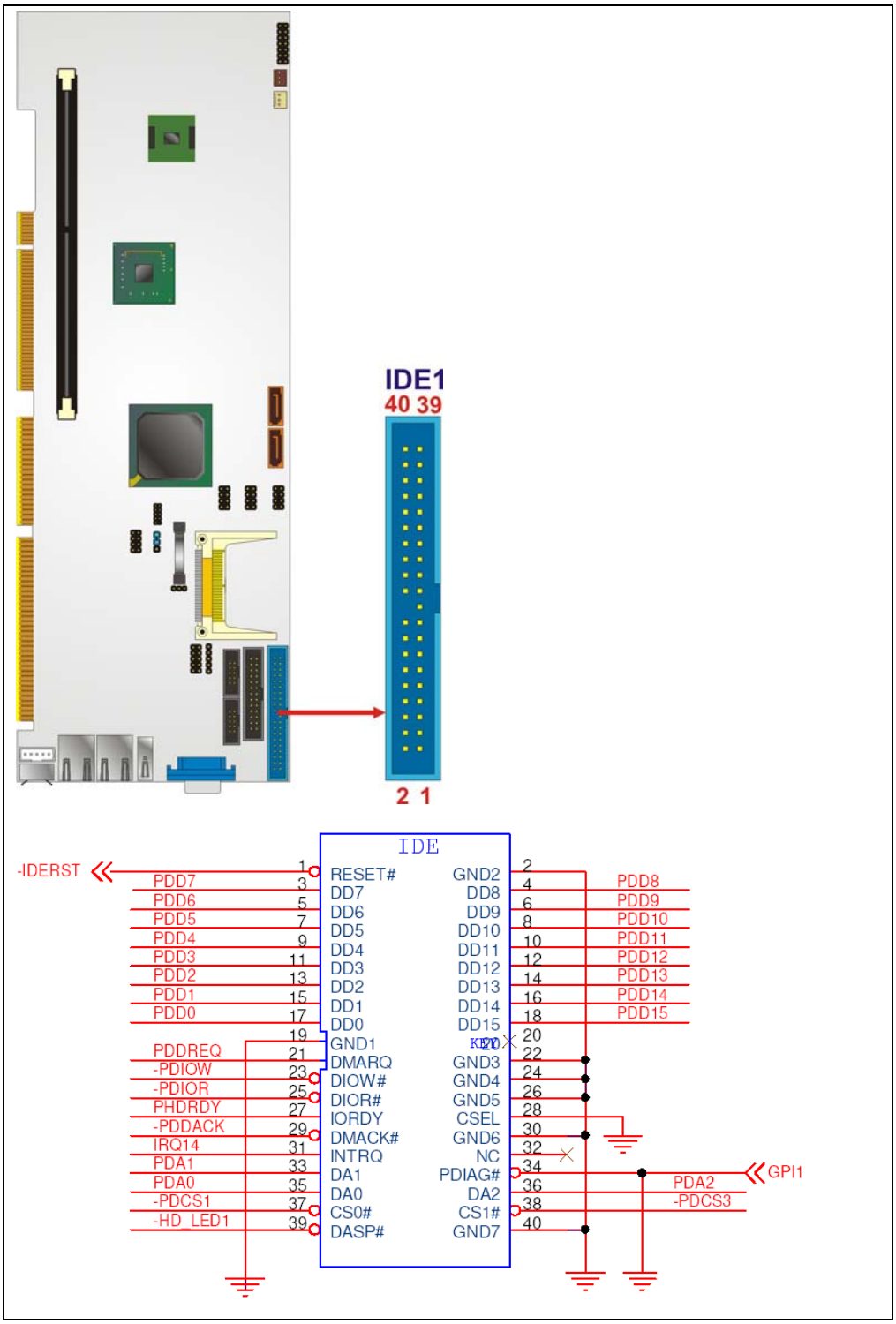


Figure 4-8: IDE Device Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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	BALE-DEFAULT
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	PDIAG#
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

Table 4-9: IDE Connector Pinouts

4.3.8 Infrared Interface Connector

CN Label: **IR1**

CN Type: 5-pin header (1x5)

CN Location: See **Figure 4-9**

CN Pinouts: See **Table 4-10**

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

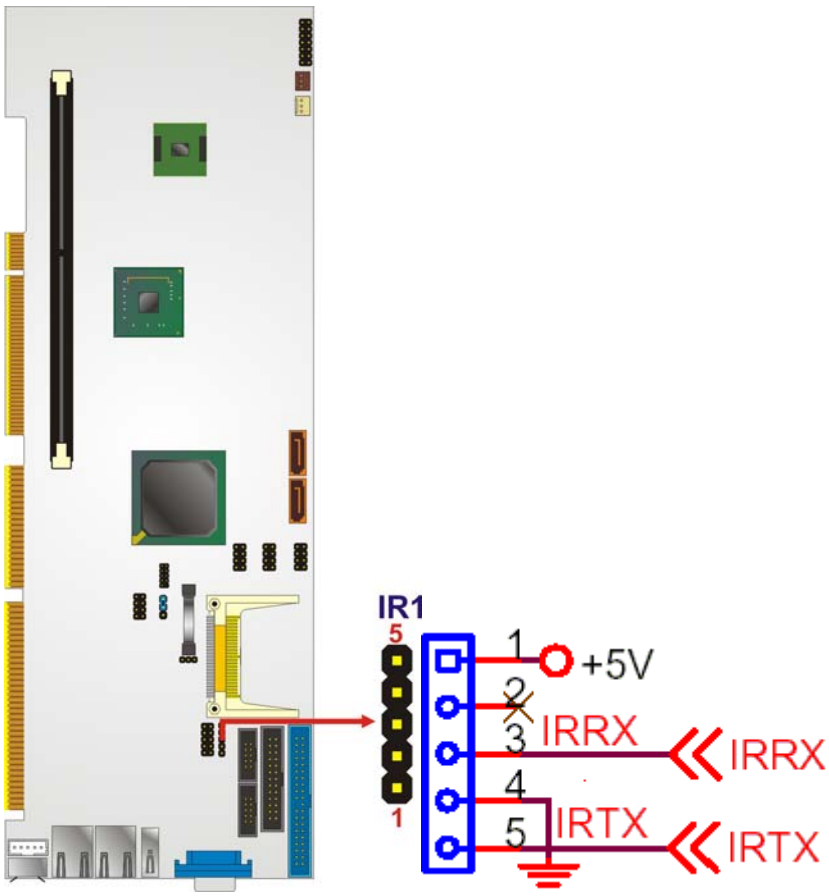


Figure 4-9: Infrared Connector Pinout Locations

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

Table 4-10: Infrared Connector Pinouts

4.3.9 Keyboard Connector

CN Label: **KB1**

CN Type: 5-pin header (1x5)

CN Location: See **Figure 4-10**

CN Pinouts: See **Table 4-11**

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

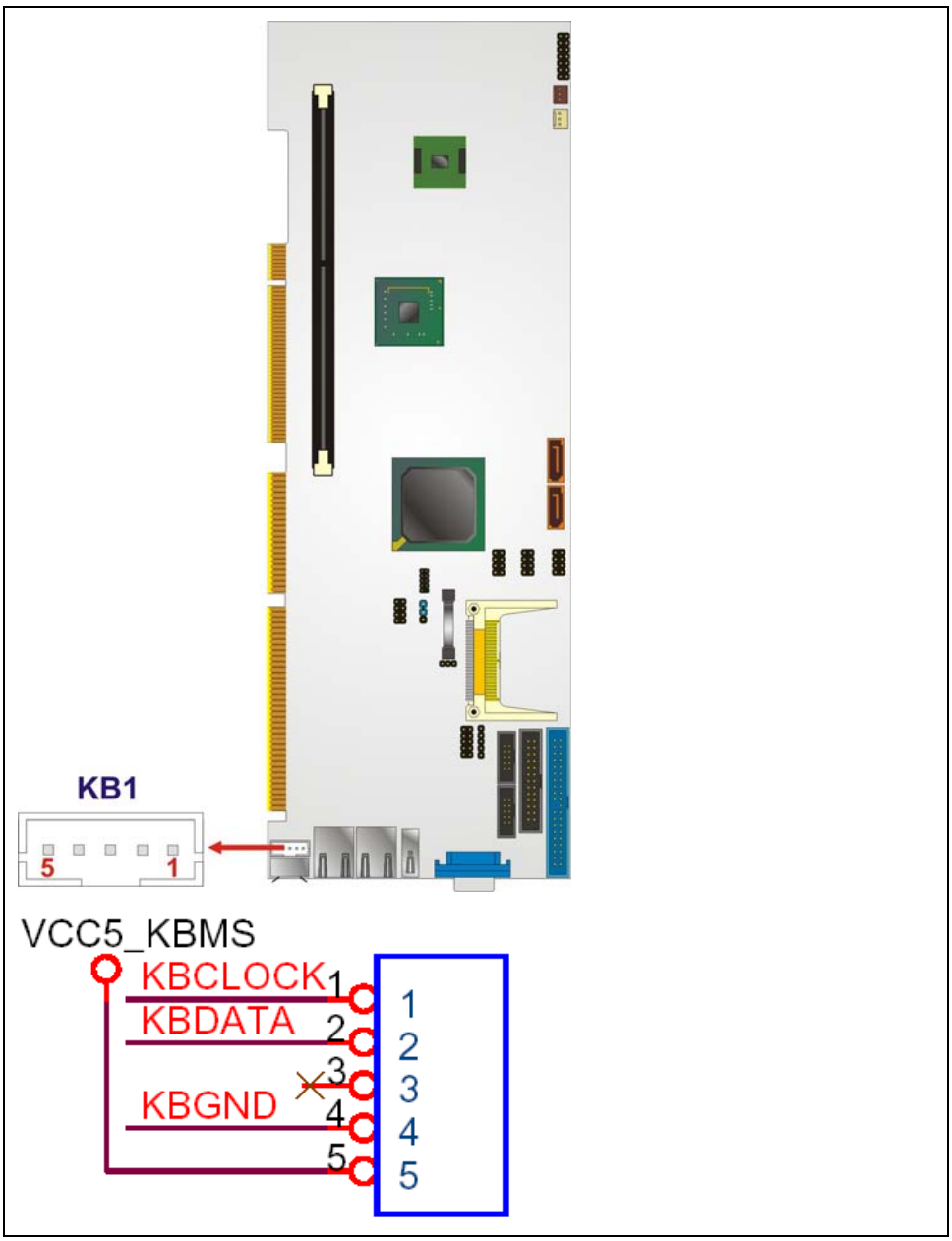


Figure 4-10: Keyboard Connector Location

PIN NO.	DESCRIPTION
1	Keyboard clock

PIN NO.	DESCRIPTION
2	Keyboard data
3	N/C
4	GROUND
5	VCC

Table 4-11: Keyboard Connector Pinouts

4.3.10 Parallel Port Connector

CN Label: **LPT1**

CN Type: 26-pin box header

CN Location: See **Figure 4-11**

CN Pinouts: See **Table 4-12**

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

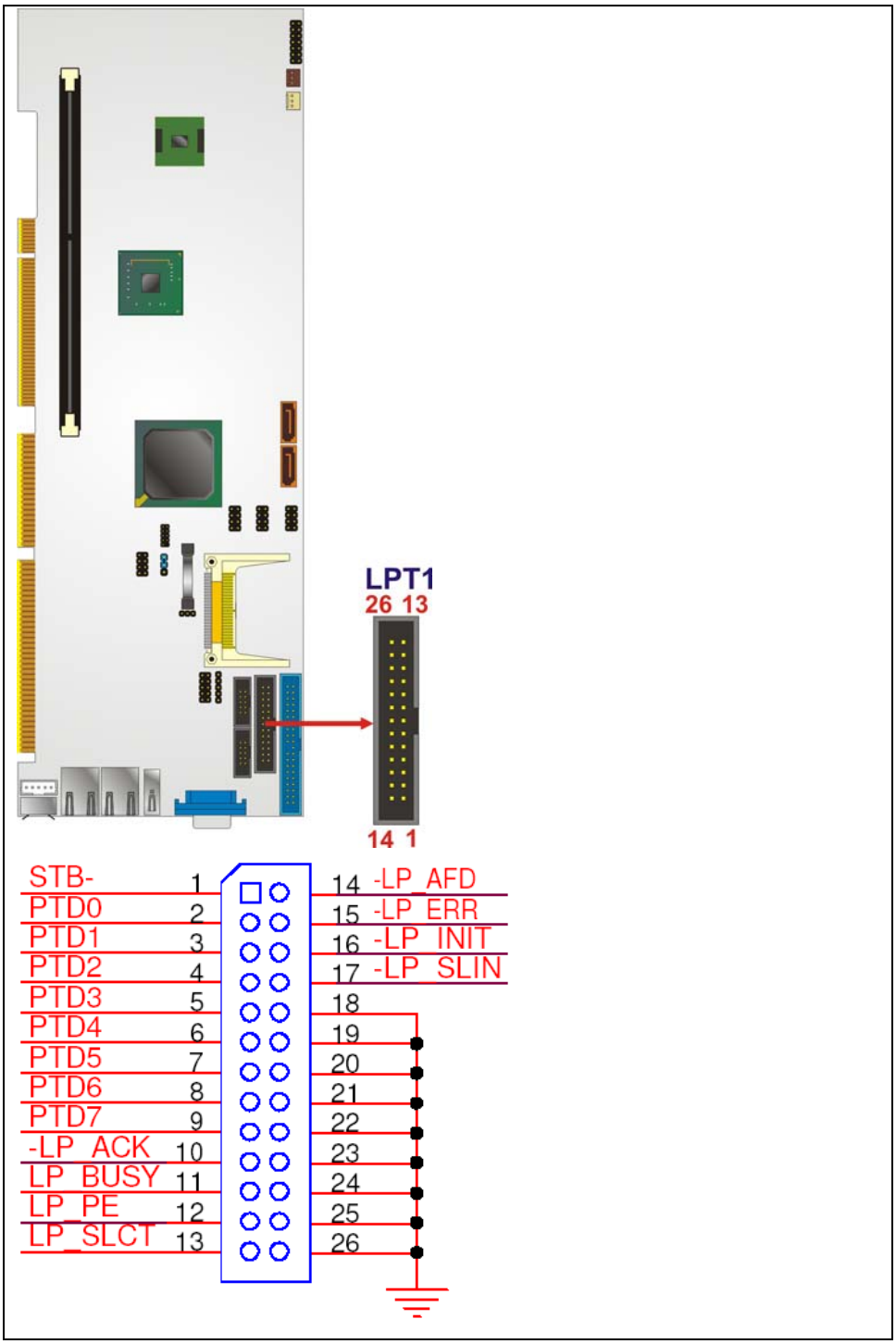


Figure 4-11: Parallel Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
2	DATA 0	15	ERROR#
3	DATA 1	16	INITIALIZE
4	DATA 2	17	PRINTER SELECT LN#
5	DATA 3	18	GROUND
6	DATA 4	19	GROUND
7	DATA 5	20	GROUND
8	DATA 6	21	GROUND
9	DATA 7	22	GROUND
10	ACKNOWLEDGE	23	GROUND
11	BUSY	24	GROUND
12	PAPER EMPTY	25	GROUND
13	PRINTER SELECT	26	NC

Table 4-12: Parallel Port Connector Pinouts

4.3.11 SATA Drive Connectors

CN Label: **SATA1, SATA2**

CN Type: 7-pin SATA drive connectors

CN Location: See **Figure 4-12**

CN Pinouts: See **Table 4-13**

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

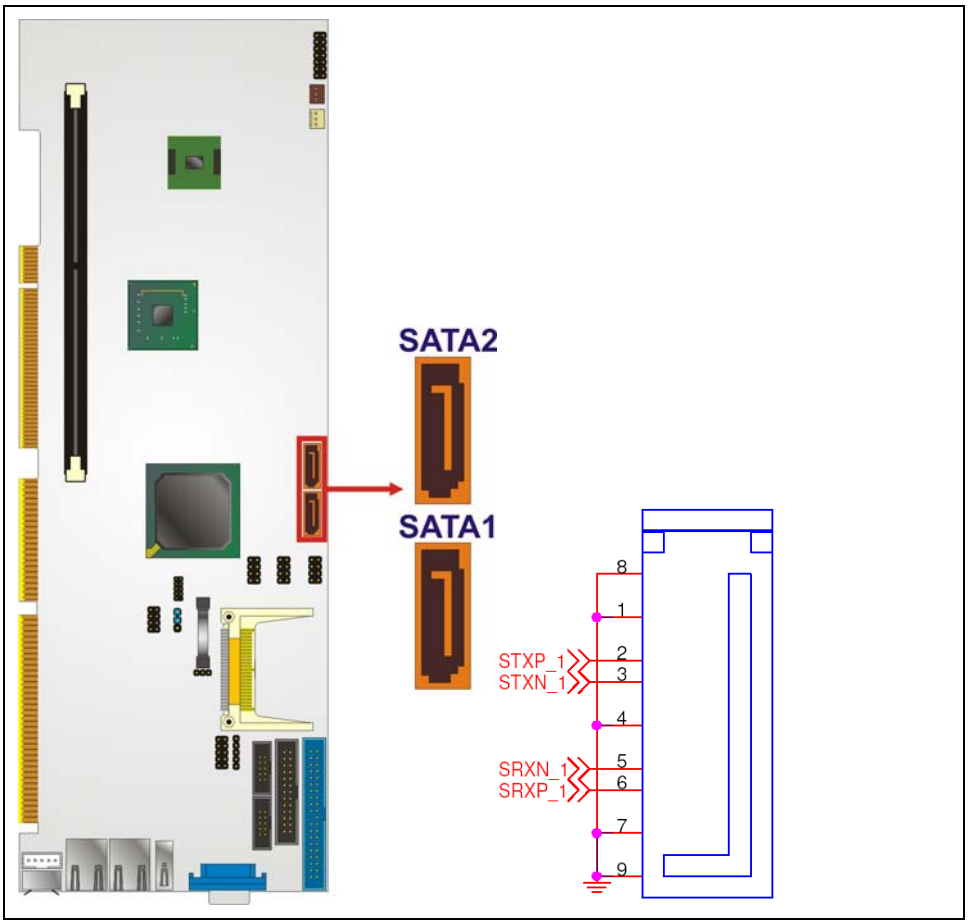


Figure 4-12: SATA Drive Connector Locations

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

Table 4-13: SATA Drive Connector Pinouts

4.3.12 Serial Port Connectors

CN Label: **COM1 and COM2**

CN Type:	10-pin header (2x5)
CN Location:	See **Figure 4-13**
CN Pinouts:	See **Table 4-14**

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

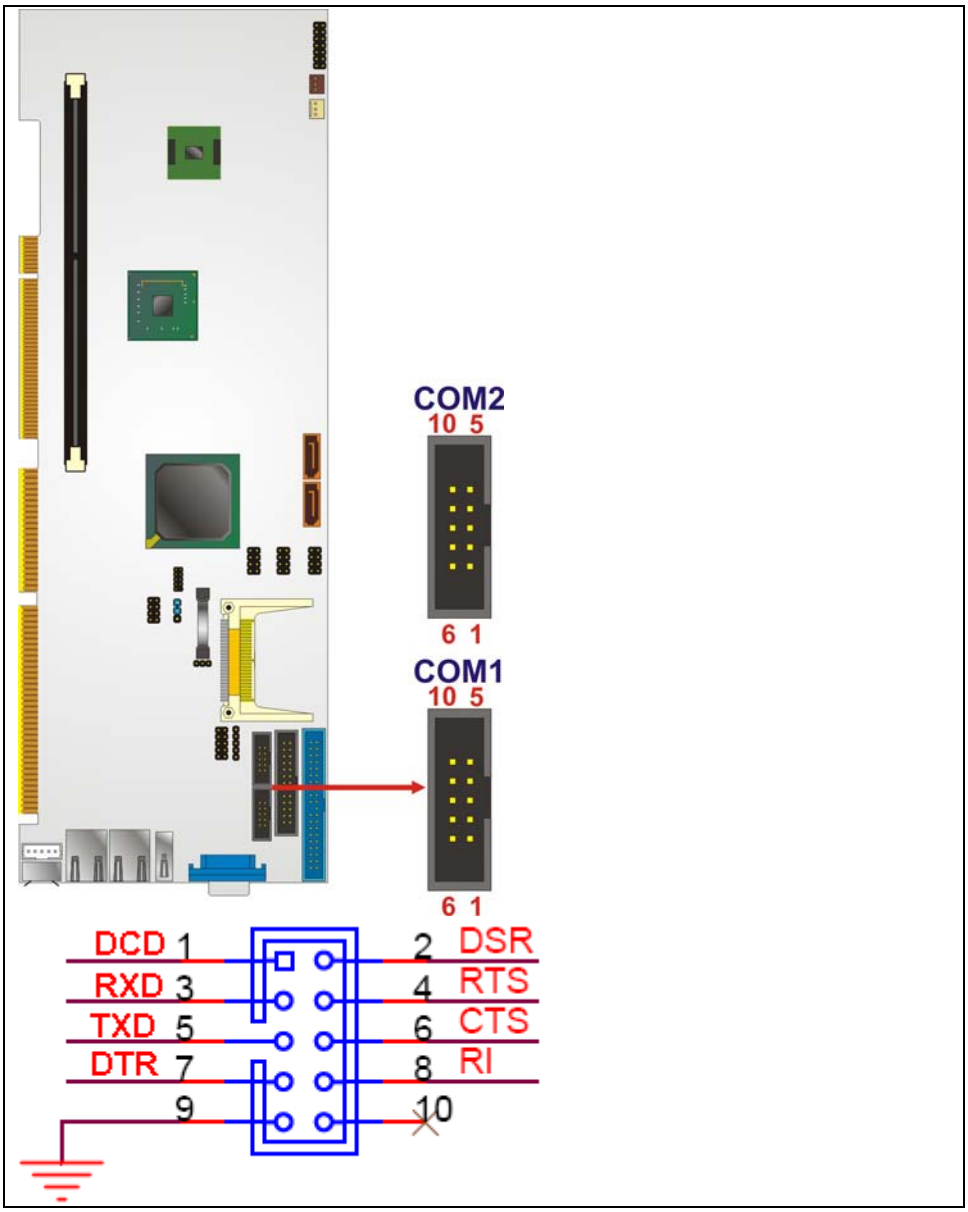


Figure 4-13: COM Connector Pinout Locations

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

Table 4-14: COM Connector Pinouts

4.3.13 USB Connectors

CN Label: **USB1, USB2 & USB3**

CN Type: 8-pin header (2x4)

CN Location: See **Figure 4-14**

CN Pinouts: See **Table 4-15**

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.

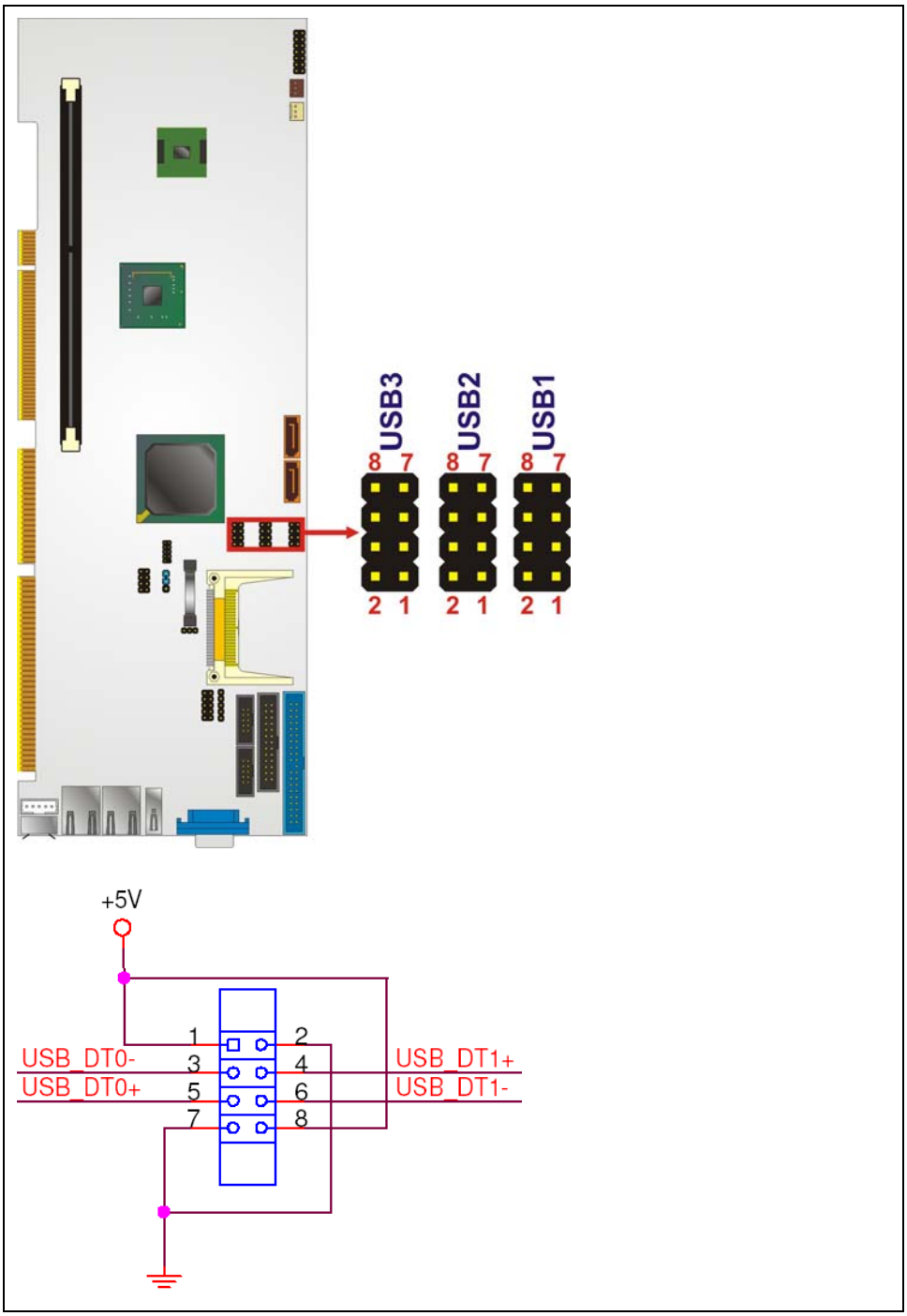


Figure 4-14: USB Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	DATA1-	4	DATA2+

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
5	DATA1+	6	DATA2-
7	GND	8	VCC

Table 4-15: USB Port Connector Pinouts

4.4 External Peripheral Interface Connector Panel

Figure 4-15 shows the 3308460 external peripheral interface connector (EPIC) panel. The 3308460 EPIC panel consists of the following:

- 2 x RJ-45 LAN connectors
- 1 x PS/2 connectors
- 1 x Serial port connectors
- 2 x USB connectors
- 1 x VGA connector

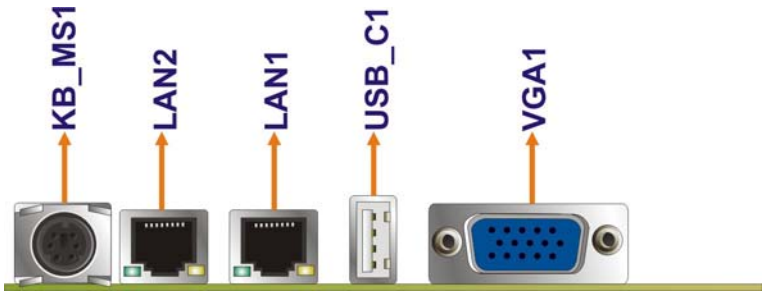


Figure 4-15: 3308460 External Peripheral Interface Connector

4.4.1 Keyboard/Mouse Connector

CN Label: **KB/MS**

CN Type: PS/2

CN Location: See **Figure 4-15**

CN Pinouts: See Figure 4-16, Table 4-16

The 3308460 keyboard and mouse connector is a standard PS/2 connector.

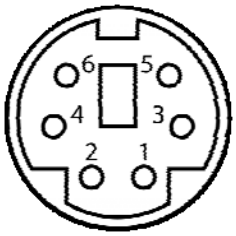


Figure 4-16: PS/2 Pinout and Configuration

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

Table 4-16: Keyboard Connector Pinouts

4.4.2 LAN Connectors

CN Label: **LAN1 & LAN2**

CN Type: RJ-45

CN Location: See **Figure 4-15**

CN Pinouts: See **Table 4-17**

The 3308460 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	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+
3	MDIA2-	7	MDIA0-

PIN	DESCRIPTION	PIN	DESCRIPTION
4	MDIA1-	8	MDIA0+

Table 4-17: LAN Pinouts

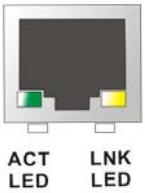


Figure 4-17: RJ-45 Ethernet Connector

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

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 4-18: RJ-45 Ethernet Connector LEDs

4.4.3 USB Connectors

CN Label: **USB_C1**

CN Type: USB port

CN Location: See **Figure 4-15**

CN Pinouts: See **Table 4-19**

The 3308460 has one external USB 2.0 port. The ports connect to both USB 2.0 and USB 1.1 devices.

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

PIN NO.	DESCRIPTION
4	GND

Table 4-19: USB Port Pinouts

4.4.4 VGA Connector

CN Label: **VGA1**

CN Type: 15-pin Female

CN Location: See **Figure 4-15**

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

The 3308460 has a single 15-pin female connector for connectivity to standard display devices.

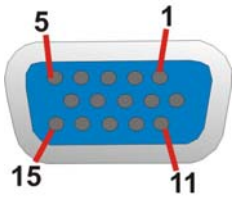


Figure 4-18: VGA Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	CRT_PLUG-
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 4-20: VGA Connector Pinouts

Chapter

5

Installation

5.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the 3308460 may result in permanent damage to the 3308460 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3308460. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 3308460, 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 3308460, place it on an antic-static pad. This reduces the possibility of ESD damaging the 3308460.
- ***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 3308460 is installed. All installation notices pertaining to the installation of the 3308460 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the 3308460 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 3308460, 3308460 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 3308460 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 3308460 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 3308460 off:
  - When working with the 3308460, 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 3308460 **DO NOT:**

- **DO NOT** remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- **DO NOT** use the product before verifying all the cables and power connectors are properly connected.
- **DO NOT** 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 3308460 is properly installed.

- All the items in the packing list are present
- 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 3308460 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
  - Power supply
  - USB cable
  - Serial port cable
- The following external peripheral devices are properly connected to the chassis:
  - VGA screen
  - Keyboard
  - Mouse
  - RS-232 serial communications device
  - USB devices

5.3 Unpacking

When the 3308460 is unpacked, please check all the unpacking list items listed in Chapter 3 are indeed present. If any of the unpacking list items are not available please

contact the 3308460 vendor reseller/vendor where the 3308460 was purchased or contact an GAI sales representative.

5.4 DIMM Installation

WARNING:

Using incorrectly specified DIMM may cause permanently damage the 3308460. Please make sure the purchased DIMM complies with the memory specifications of the 3308460. DIMM specifications compliant with the 3308460 are listed in **Chapter 2**.

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 5-1**.

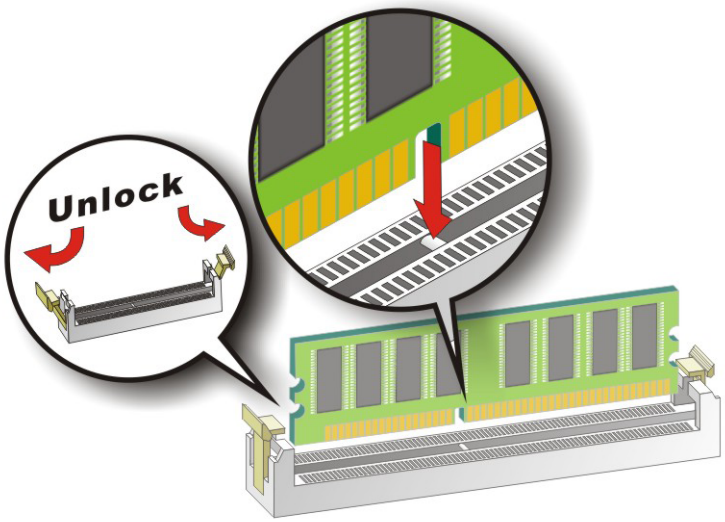


Figure 5-1: Installing a DIMM

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 5-1**.

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 5-1**.

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 5-1**.

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

5.5 CF Card Installation

NOTE:

The 3308460 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 3308460, please follow the steps below:

Step 1: **Locate the CF card socket**. Place the 3308460 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 5-2**.

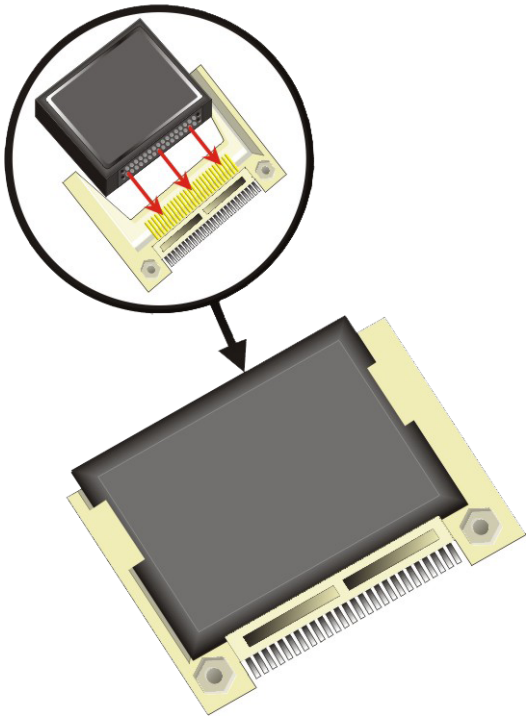
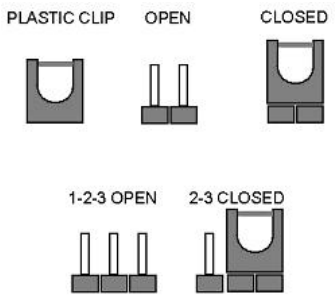


Figure 5-2: CF Card Installation

5.6 Jumper Settings

NOTE:

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



Jumper Locations

Before the 3308460 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the 3308460 are listed in T**able 5-1**.

Description	Label	Type
CF Card Setting	JCF1	2-pin header
Clear CMOS	J_CMOS1	3-pin header

Table 5-1: Jumpers

5.6.1 CF Card Setup

Jumper Label: **JCF1**

Jumper Type: 2-pin header

Jumper Settings: See Table 5-2

Jumper Location: See Figure 5-3

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.

CF Card Setup	Description	
1-2	Slave	Default
2-3	Master	

Table 5-2: CF Card Setup Jumper Settings

The CF Card Setup jumper location is shown in Figure 5-3.

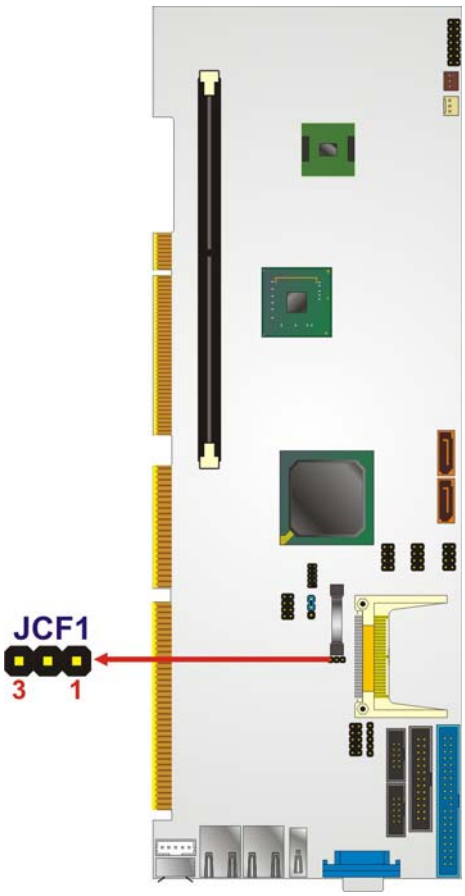


Figure 5-3: CF Card Setup Jumper Location

5.6.2 Clear CMOS Jumper

Jumper Label:	**J_CMOS1**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 5-3**
Jumper Location:	See **Figure 5-4**

If the 3308460 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	
1-2	Keep CMOS Setup	Default
2-3	Clear CMOS Setup	

Table 5-3: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 5-4** below.

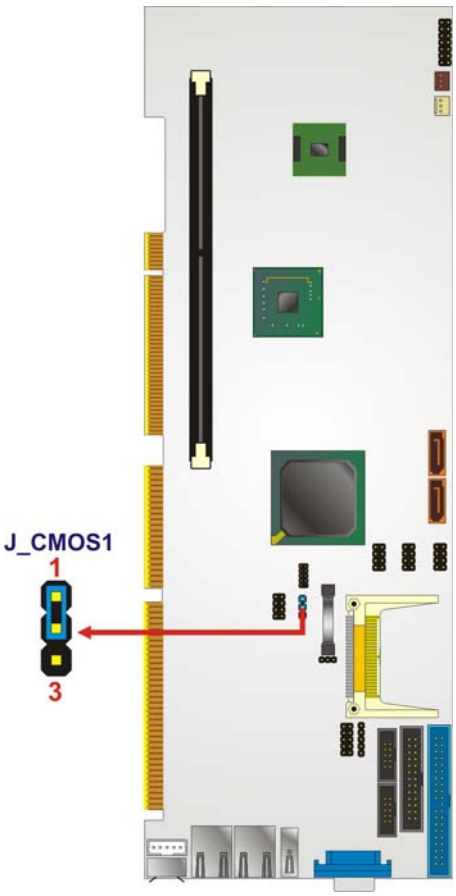


Figure 5-4: Clear CMOS Jumper

5.7 Chassis Installation

5.7.1 Airflow

WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the 3308460 must have air vents to allow cool air to move into the system and hot air to move out.

The 3308460 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 3308460 vendor, reseller or an GAI sales representative at sales@globalamericaninc.com or visit the Global American website at https://www.globalamericaninc.com/ to find out more about the available chassis.

5.7.2 Motherboard Installation

To install the 3308460 motherboard into the chassis please refer to the reference material that came with the chassis.

5.8 Internal Peripheral Device Connections

The cables listed in **Table 5-4** are shipped with the 3308460.

Quantity	Type
1	Keyboard and Mouse cable
2	SATA drive cable
1	Power cable
1	Dual RS-232 cable

Table 5-4: GAI Provided Cables

Some optional items that can be purchased separately and installed on the 3308460 include:

- Dual port USB cable
- Parallel port cable
- RS-232/422/485 cable
- ATX power cable
- HDTV out cable

- 5.1 channel audio kit
- 7.1 channel audio kit

5.8.1 5.1 Channel Audio Kit Installation

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest 3308460 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 3308460. 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 3308460. 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 on-board 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 5-5.

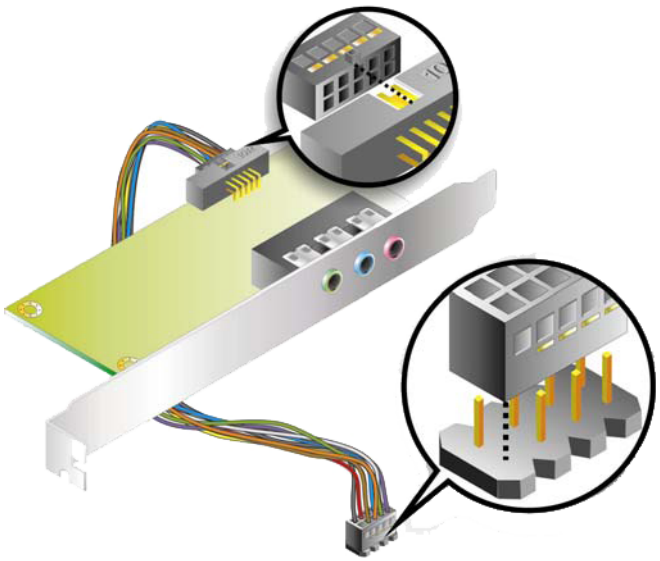


Figure 5-5: 5.1 Channel Audio Kit

Step 4: **Mount the audio kit onto the chassis**. Once the audio kit is connected to the 3308460, 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.

5.8.2 7.1 Channel Audio Kit Installation

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest 3308460 distributor, reseller or vendor or contact an 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 3308460. 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 3308460. 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 on-board 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 5-6.

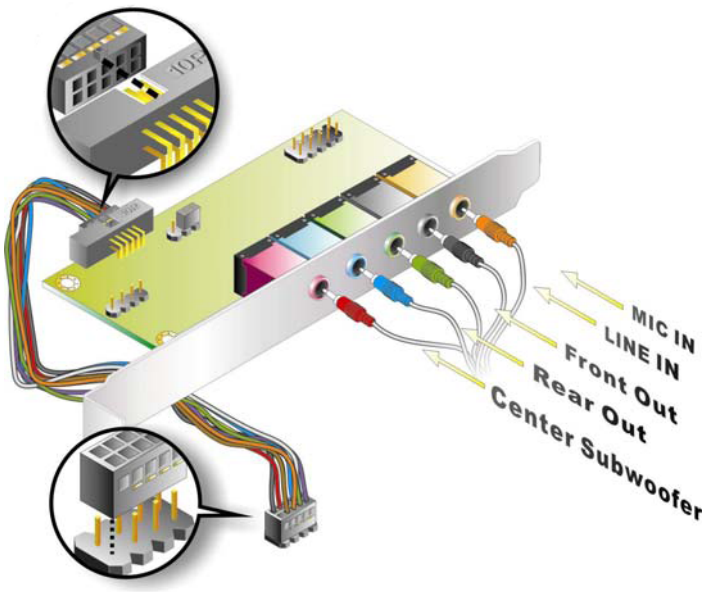


Figure 5-6: 7.1 Channel Audio Kit

Step 4: **Mount the audio kit onto the chassis**. Once the audio kit is connected to the 3308460, 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 7.1 channel audio kit is used, the ALC883 Realtek codec driver must be installed. Refer to **Chapter 7** for driver installation instructions.

5.8.3 ATA Flat Cable Connection

The ATA 66/100 flat cable connects to the 3308460 to one or two IDE devices. To connect an IDE HDD to the 3308460 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.

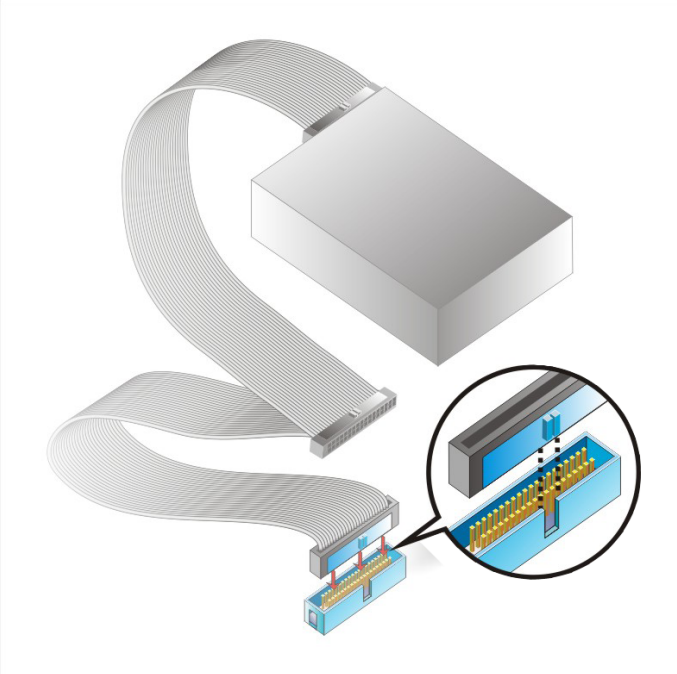


Figure 5-7: IDE Cable Connection

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.

5.8.4 SATA Drive Connection

The 3308460 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 5-8**.

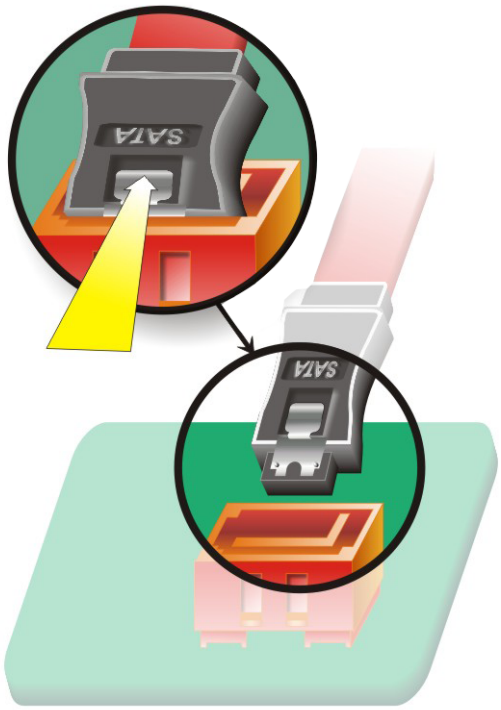


Figure 5-8: SATA Drive Cable Connection

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 5-9**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 5-9**.

Figure 5-9: SATA Power Drive Connection

5.8.5 Dual RS-232 Cable with Slot Bracket

The dual RS-232 cable slot connector 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 slot. 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.

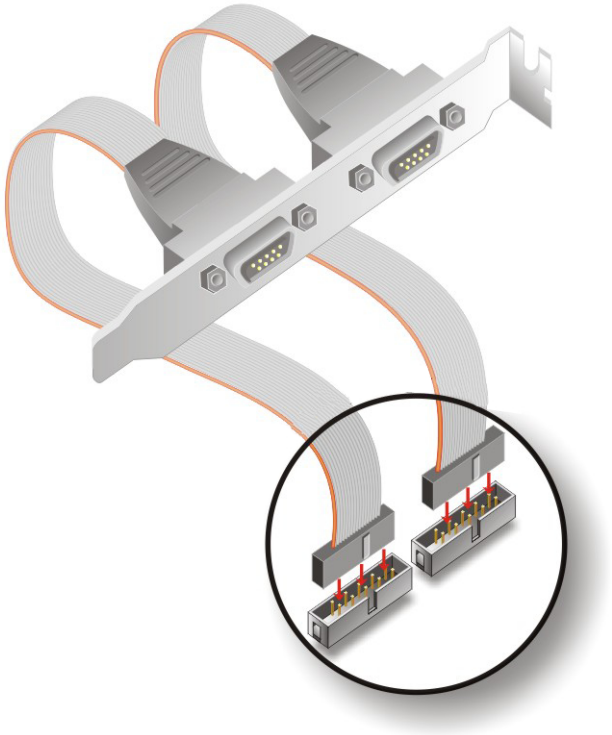


Figure 5-10: Dual RS-232 Cable Installation

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.

5.8.6 USB Cable (Dual Port) with Slot Bracket

The 3308460 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 3308460 USB connector.

Step 3: **Insert the cable connectors.** Once the cable connectors are properly aligned with the USB connectors on the 3308460, connect the cable connectors to the on-board connectors. See **Figure 5-11**.

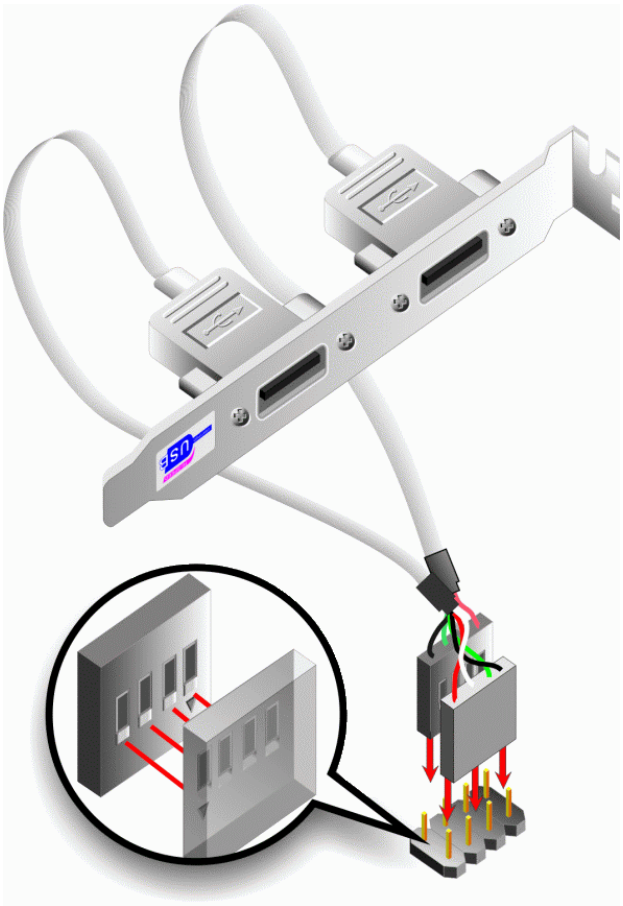


Figure 5-11: Dual USB Cable Connection

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

5.8.7 Parallel Port Cable without Bracket

The optional parallel port (LPT) cable respectively connects the on-board 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 on-board 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 3308460 LPT box-header connector. See Figure 5-12.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the 26-pin box-header connector on the 3308460, connect the cable connector to the on-board connector. See **Figure 5-12.**

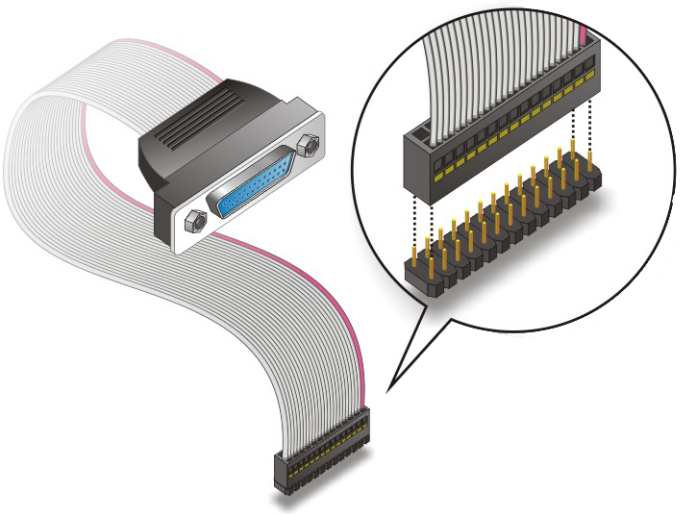


Figure 5-12: LPT Cable Connection

Step 4: **Attach the LPT connector to the chassis**. 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 5-13**

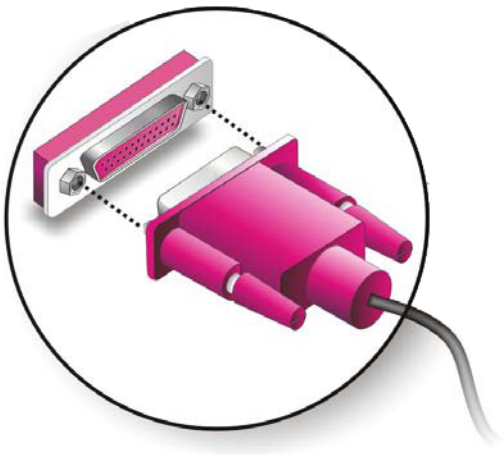


Figure 5-13: Connect the LPT Device

5.9 External Peripheral Interface Connection

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

- RJ-45 Ethernet cable connectors
- PS/2 devices
- Serial port devices
- USB devices
- VGA monitors

To install these devices, connect the corresponding cable connector from the actual device to the corresponding 3308460 external peripheral interface connector making sure the pins are properly aligned.

5.9.1 LAN Connection (Single Connector)

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

Step 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 3308460. See **Figure 5-14**.

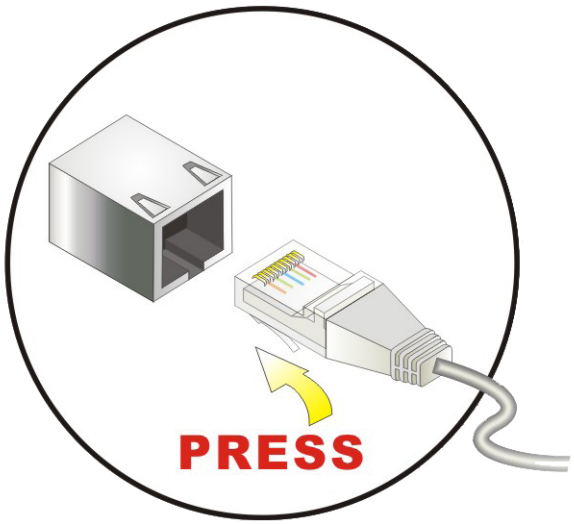


Figure 5-14: LAN Connection

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.

5.9.2 PS/2 Y-Cable Connection

The 3308460 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 3308460. 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 3308460.

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 5-15**.

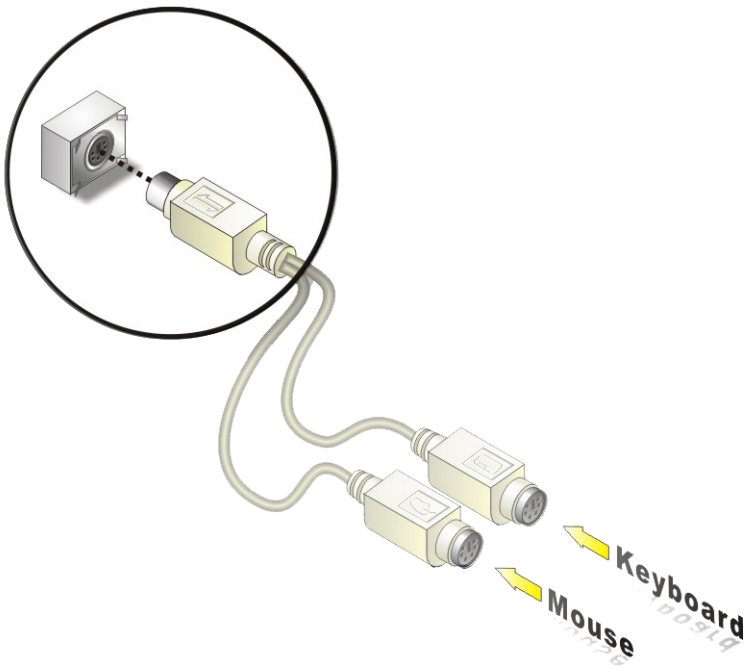


Figure 5-15: PS/2 Keyboard/Mouse Connector

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

5.9.3 Serial Device Connection

The 3308460 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the 3308460.

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

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 5-16**.

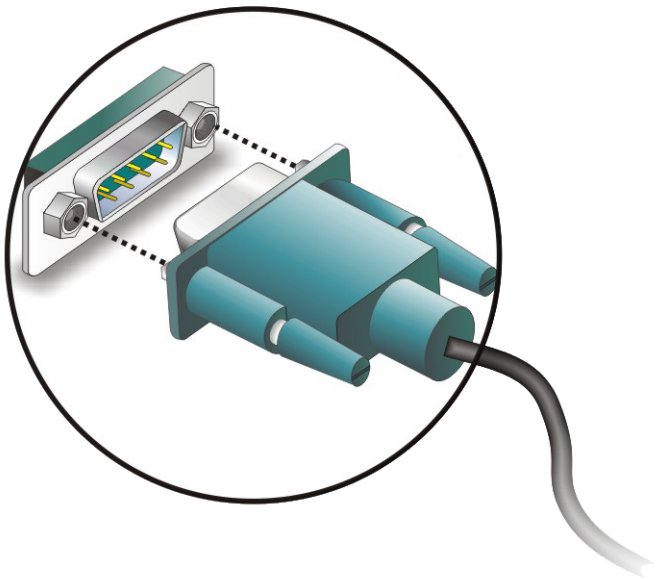


Figure 5-16: Serial Device Connector

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

5.9.4 USB Connection (Dual Connector)

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the 3308460.

Step 1: **Locate the USB Series "A" receptacle connectors**. The location of the USB Series "A" receptacle connectors are shown in **Chapter 3**.

Step 2: **Insert a USB Series "A" plug**. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See **Figure 5-17**.

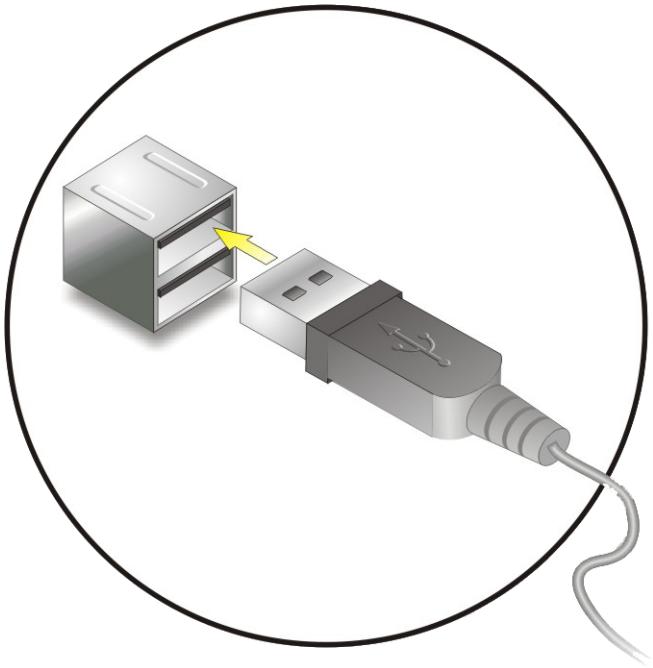


Figure 5-17: USB Connector

5.9.5 VGA Monitor Connection

The 3308460 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 3308460, 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 3308460. See F**igure 5-18**.

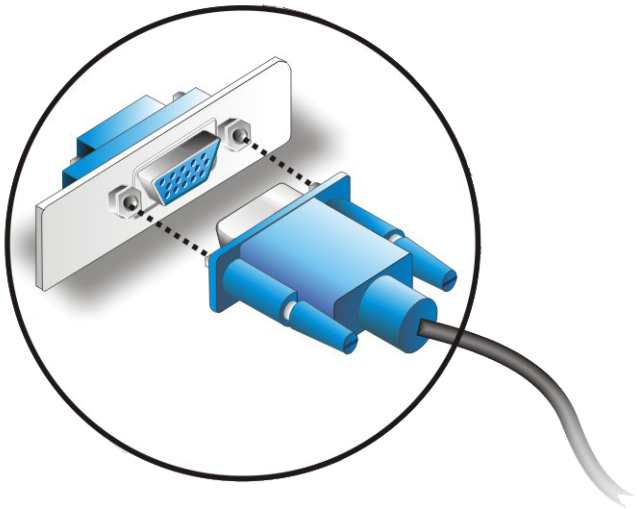


Figure 5-18: VGA Connector

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

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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