



integration with integrity

User's Manual

PICMG 1.3 SBC 3308290

Version 1.0

Copyrights

This manual is copyrighted and all rights are reserved. It does not allow any non authorization in copied, photocopied, translated or reproduced to any electronic or machine readable form in whole or in part without prior written consent from the manufacturer.

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 manual 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 manual, 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

The items listed below should all be included in the 3308290 package.

- 1 x 3308290 Single Board Computer
- 3 x SATA cable
- 1 x SATA power cable
- 1 x Dual RS-232 cable
- 1 x USB cable
- 1 x Mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

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

Table of Contents

1	INTRODUCTION.....	13
1.1	INTRODUCTION.....	14
1.2	BENEFITS	14
1.3	FEATURES.....	15
1.4	OVERVIEW.....	15
1.5	PERIPHERAL CONNECTORS AND JUMPERS	16
1.6	TECHNICAL SPECIFICATIONS	17
2	DETAILED SPECIFICATIONS	19
2.1	BOARD DIMENSIONS	20
2.2	EXTERNAL INTERFACE PANEL DIMENSIONS.....	21
2.3	DATA FLOW	22
2.4	COMPATIBLE PROCESSORS	23
2.5	INTEL® GME965 NORTHBRIDGE.....	23
2.5.1	<i>Front Side Bus (FSB) Support</i>	23
2.5.2	<i>Memory Support</i>	24
2.5.3	<i>Integrated Graphics</i>	25
2.5.3.1	<i>Analog CRT Support</i>	25
2.5.3.2	<i>LVDS Support</i>	25
2.5.3.3	<i>TV Out Support</i>	26
2.5.4	<i>Direct Management Interface (DMI)</i>	26
2.6	INTEL® ICH8M-E I/O CONTROLLER HUB	27
2.6.1	<i>HD Audio Controller</i>	27
2.6.2	<i>Ethernet Controller</i>	28
2.6.3	<i>IDE Interface</i>	29
2.6.4	<i>Low Pin Count (LPC) Interface</i>	30
2.6.5	<i>PCI Interface</i>	30
2.6.6	<i>PCIe x1 Bus</i>	31
2.6.7	<i>Real Time Clock</i>	31
2.6.8	<i>SATA Controller</i>	31
2.6.9	<i>Serial Peripheral Interface (SPI) BIOS</i>	32

2.6.10	<i>USB Controller</i>	32
2.7	LPC BUS COMPONENTS	33
2.7.1	<i>iTE IT8712F Super I/O chipset</i>	33
2.7.2	<i>TPM Module</i>	34
2.8	PCIe BUS COMPONENTS	34
2.8.1	<i>PCIe x16 Expansion</i>	35
2.8.2	<i>PCIe x1 Expansion</i>	35
2.8.3	<i>Intel® PC82573L PCIe Gigabit Ethernet (GbE) Controller</i>	35
2.9	PCI BUS COMPONENTS	36
3	UNPACKING	40
3.1	ANTI-STATIC PRECAUTIONS	41
3.2	UNPACKING PRECAUTIONS	41
3.3	UNPACKING CHECKLIST	42
3.3.1	<i>Package Contents</i>	42
3.3.2	<i>Optional Components</i>	42
4	CONNECTOR PINOUTS	44
4.1	PERIPHERAL INTERFACE CONNECTORS	45
4.1.1	<i>Layout</i>	45
4.1.2	<i>Peripheral Interface Connectors</i>	45
4.1.3	<i>External Interface Panel Connectors</i>	46
4.2	INTERNAL PERIPHERAL CONNECTORS	47
4.2.1	<i>Audio Connector</i>	47
4.2.2	<i>Backlight Inverter Connector</i>	48
4.2.3	<i>CompactFlash® Slot</i>	49
4.2.4	<i>Digital Input/Output Connector</i>	51
4.2.5	<i>Fan Connector (CPU)</i>	52
4.2.6	<i>Fan Connector (System)</i>	53
4.2.7	<i>Floppy Disk Connector</i>	55
4.2.8	<i>Front Panel Connector</i>	56
4.2.9	<i>IDE Connector</i>	57
4.2.10	<i>Infrared Connector</i>	59
4.2.11	<i>Keyboard Connector</i>	60
4.2.12	<i>LVDS Connector</i>	62

4.2.13 Mouse Connector	63
4.2.14 Parallel Port Connector	64
4.2.15 SDVO Connector.....	66
4.2.16 SATA Drive Connectors	67
4.2.17 Serial Port Connectors	68
4.2.18 Trusted Platform Module (TPM) Connector.....	69
4.2.19 TV Out Connector	71
4.2.20 USB Connectors (Internal)	72
4.3 EXTERNAL PERIPHERAL INTERFACE CONNECTOR PANEL	73
4.3.1 LAN Connectors.....	74
4.3.2 USB Connector	75
4.3.3 VGA Connector.....	76
5 INSTALLATION	77
5.1 ANTI-STATIC PRECAUTIONS	78
5.2 INSTALLATION CONSIDERATIONS.....	78
5.2.1 Installation Notices	79
5.2.2 Installation Checklist	79
5.3 UNPACKING.....	80
5.3.1 Unpacking Precautions.....	80
5.4 CPU, COOLING KIT AND DIMM INSTALLATION.....	81
5.4.1 Socket 479 CPU Installation.....	81
5.4.2 Cooling Kit Installation	83
5.4.3 DIMM Installation	86
5.5 JUMPER SETTINGS	87
5.5.1 Clear CMOS Jumper.....	88
5.5.2 CF Card Setup	89
5.5.3 Serial Port IR Mode Selection	90
5.5.4 LVDS Voltage Selection.....	91
5.5.5 LVDS Screen Resolution Selection.....	92
5.5.6 PCIe / SDVO Selection Jumper	93
5.6 CHASSIS INSTALLATION.....	95
5.6.1 Airflow.....	95
5.6.2 Backplane Installation	95
5.6.3 CPU Card Installation.....	95

5.7 INTERNAL PERIPHERAL DEVICE CONNECTIONS	95
5.7.1 <i>Peripheral Device Cables</i>	95
5.7.2 <i>7.1 Channel Audio Kit Installation</i>	96
5.7.3 <i>Dual RS-232 Cable with Slot Bracket</i>	97
5.7.4 <i>USB Cable (Dual Port) with Slot Bracket</i>	98
5.7.5 <i>SATA Drive Connection</i>	100
5.8 EXTERNAL PERIPHERAL INTERFACE CONNECTION	101
5.8.1 <i>LAN Connection</i>	101
5.8.2 <i>USB Device Connection</i>	102
5.8.3 <i>VGA Monitor Connection</i>	103

List of Figures

Figure 1-1: 3308290.....	14
Figure 1-2: Overview	15
Figure 2-1: Dimensions (mm).....	20
Figure 2-2: External Interface Panel Dimensions (mm).....	21
Figure 2-3: Data Flow Diagram.....	22
Figure 2-4: CPU.....	23
Figure 2-5: Intel® GME965	23
Figure 2-6: Front Side Bus (FSB).....	24
Figure 2-7: 240-pin DDR2 DIMM Sockets	25
Figure 2-8: Integrated Graphics Interfaces	25
Figure 2-9: DMI Chip-to-Chip Connection	26
Figure 2-10: HD Audio Codec.....	28
Figure 2-11: Intel® 82573L Gigabit LAN Connect Device	29
Figure 2-12: IDE Interface	30
Figure 2-13: PCI Interface	31
Figure 2-14: SATA Drive Connectors	32
Figure 2-15: Serial Peripheral Interface BIOS.....	32
Figure 2-16: Onboard USB Implementation.....	33
Figure 2-17: iTE IT8712F Super I/O Chipset.....	34
Figure 2-18: TPM Module	34
Figure 2-19: PCIe Interfaces	35
Figure 2-20: PCI Edge Connector	36
Figure 4-1: Connector and Jumper Locations.....	45
Figure 4-2: Audio Connector Location (9-pin).....	48
Figure 4-3: Panel Backlight Connector Pinout Locations	49
Figure 4-4: CF Card Socket Location	50
Figure 4-5: DIO Connector Locations.....	52
Figure 4-6: CPU Fan Connector Location	53
Figure 4-7: +12V Fan Connector Location	54
Figure 4-8: FDD Connector Location.....	55

Figure 4-9: Front Panel Connector Location	57
Figure 4-10: IDE Device Connector Locations	58
Figure 4-11: Infrared Connector Pinout Locations	60
Figure 4-12: Keyboard Connector Location	61
Figure 4-13: LVDS LCD Connector Pinout Locations.....	62
Figure 4-14: Mouse Connector Location.....	64
Figure 4-15: Parallel Port Connector Location	65
Figure 4-16: SDVO Connector Location.....	66
Figure 4-17: SATA Drive Connector Locations	67
Figure 4-18: COM Connector Pinout Locations	69
Figure 4-19: TPM Connector Pinout Locations	70
Figure 4-20: TV Connector Pinout Locations	72
Figure 4-21: USB Connector Pinout Locations	73
Figure 4-22: 3308290 External Peripheral Interface Connector	74
Figure 4-23: RJ-45 Ethernet Connector.....	75
Figure 4-24: VGA Connector	76
Figure 5-1: Make sure the CPU socket retention screw is unlocked	82
Figure 5-2: Lock the CPU Socket Retention Screw.....	83
Figure 5-3: Cooling Kit.....	83
Figure 5-4: Cooling Kit Support Bracket.....	84
Figure 5-5: Securing the Cooling Kit.....	85
Figure 5-6: Connect the Cooling Fan Cable.....	85
Figure 5-7: Installing a DIMM.....	86
Figure 5-8: Jumper Locations	87
Figure 5-9: Clear CMOS Jumper	89
Figure 5-10: CF Card Setup Jumper Location	90
Figure 5-11: Serial Port IR Mode Selection Jumper Location.....	91
Figure 5-12: LVDS Voltage Selection Jumper Pinout Locations	92
Figure 5-13: LVDS Screen Resolution Selection Jumper Pinout Locations	93
Figure 5-14: PCIe / SDVO Selection Jumper.....	94
Figure 5-15: 7.1 Channel Audio Kit.....	97
Figure 5-16: Dual RS-232 Cable Installation	98
Figure 5-17: Dual USB Cable Connection	99
Figure 5-18: SATA Drive Cable Connection.....	100
Figure 5-20: LAN Connection	102

Figure 5-21: USB Device Connection	103
Figure 5-22: VGA Connector	104

List of Tables

Table 1-1: Technical Specifications.....	18
Table 2-1: Supported HDD Specifications.....	30
Table 3-1: Packing List Items	42
Table 3-2: Optional Items	43
Table 4-1: Peripheral Interface Connectors	46
Table 4-2: Rear Panel Connectors	47
Table 4-3: Audio Connector Pinouts (9-pin)	48
Table 4-4: Panel Backlight Connector Pinouts.....	49
Table 4-5: CF Card Socket Pinouts.....	51
Table 4-6: DIO Connector Pinouts	52
Table 4-7: CPU Fan Connector Pinouts.....	53
Table 4-8: +12V Fan Connector Pinouts.....	54
Table 4-9: FDD Connector Pinouts	56
Table 4-10: Front Panel Connector Pinouts.....	57
Table 4-11: IDE Connector Pinouts.....	59
Table 4-12: Infrared Connector Pinouts	60
Table 4-13: Keyboard Connector Pinouts.....	61
Table 4-14: LVDS LCD Port Connector Pinouts	63
Table 4-15: Mouse Connector Pinouts	64
Table 4-16: Parallel Port Connector Pinouts	66
Table 4-17: SDVO Connector Pinouts	67
Table 4-18: SATA Drive Connector Pinouts.....	68
Table 4-19: COM Connector Pinouts	69
Table 4-20: TPM Connector Pinouts.....	71
Table 4-21: TV Port Connector Pinouts.....	72
Table 4-22: USB Port Connector Pinouts.....	73
Table 4-23: LAN Pinouts	74
Table 4-24: RJ-45 Ethernet Connector LEDs.....	75
Table 4-25: USB Port Pinouts.....	75
Table 4-26: VGA Connector Pinouts.....	76

Table 5-1: Jumpers	87
Table 5-2: Clear CMOS Jumper Settings.....	88
Table 5-3: CF Card Setup Jumper Settings	89
Table 5-4: Serial Port IR Mode Selection Jumper Settings	91
Table 5-5: LVDS Voltage Selection Jumper Settings.....	92
Table 5-6: LVDS Screen Resolution Selection Jumper Settings	93
Table 5-7: PCIe / SDVO Selection Jumper Settings	94

Chapter

1

Introduction

1.1 Introduction

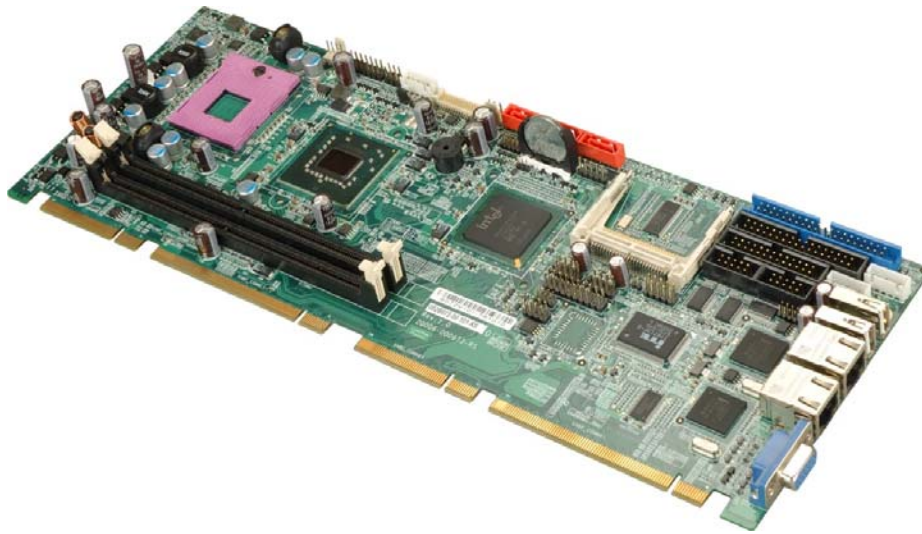


Figure 1-1: 3308290

The 3308290 PCIMG 1.3 CPU card is a Socket P Intel® Core™2 Duo Mobile processor platform. The 3308290 has a front side bus (FSB) frequency of 533 MHz or 800 MHz and supports up to two 240-pin 2 GB (max.) 533 MHz or 667 MHz dual-channel DDR2 SDRAM DIMMs (system max. 4 GB). The 3308290 supports multiple displays including VGA output, 24-bit dual-channel LVDS output and TV output for HDTV. Storage options include three SATA II ports supporting RAID 0 and 1, and one IDE port to support an IDE device and a CompactFlash® card. Other features include two RS-232 serial ports, a parallel port, an 8-bit digital I/O port, 10 USB 2.0 ports (two on the bracket, four via pin header and four on the backplane) and two Gigabit Ethernet ports.

1.2 Benefits

Some of the 3308290 benefits are listed below:

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

1.3 Features

Some of the 3308290 features are listed below.

- Support for Socket P Intel® Core™2 Duo processors with a Merom core
- Maximum FSB of 800 MHz
- Maximum of two 240-pin 2 GB (max.) 533MHz or 667MHz dual-channel DDR2 SDRAM DIMMs supported (system max. 4 GB)
- Three SATA II drives with transfer rates of 3.0 Gb/s supported
- Two high performance PCIe GbE Ethernet controllers
- Ten USB 2.0 devices supported
- VGA, 24-bit dual-channel LVDS and TV-out
- RoHS compliant

1.4 Overview

The 3308290 has a wide variety of internal and external peripheral connectors. The peripheral connectors are connected to devices including storage devices, display devices and parallel communications devices. A labeled photo of the peripheral connectors on the 3308290 is shown below.

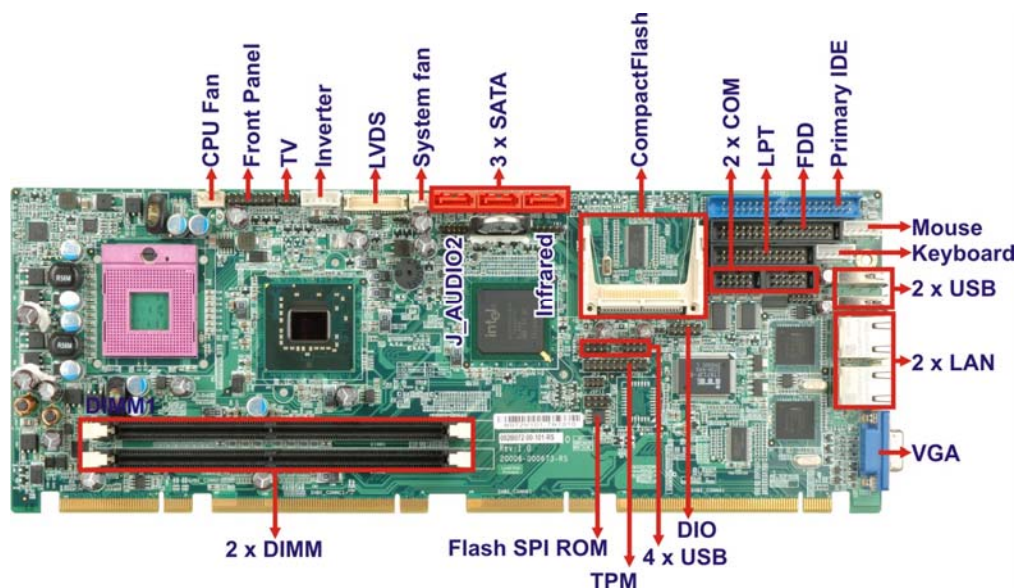


Figure 1-2: Overview

1.5 Peripheral Connectors and Jumpers

The 3308290 has the following connectors on-board:

- 1 x Audio connector
- 1 x Backlight inverter connector
- 1 x CompactFlash® slot
- 1 x Fan connector, CPU
- 1 x Fan connector, System
- 1 x DDR2 DIMM memory socket
- 1 x Digital input/output connector
- 1 x Floppy disk drive connector
- 1 x Front panel connector
- 1 x IDE connector
- 1 x Infrared connector
- 2 x Keyboard connector
- 1 x LVDS connector
- 1 x Mouse connector
- 1 x Parallel port connector
- 1 x SDVO connector
- 3 x SATA drive connector
- 2 x Serial port connector
- 1 x TPM connector
- 1 x TV out connector
- 2 x USB connectors (for 4 USB devices)

The 3308290 has the following connectors on the rear panel:

- 2 x Ethernet ports
- 2 x USB ports
- 1 x VGA connector

The 3308290 has the following on-board jumpers:

- Clear CMOS
- Serial port RI (pin 9) mode selection
- CompactFlash® card setup

- LVDS voltage selection
- LVDS screen resolution selection
- PCIe x16 and SDVO card selection jumpers

1.6 Technical Specifications

The technical specifications of the 3308290 are listed in the table below. Detailed descriptions can be found in Chapter 2.

Specification	3308290
Form Factor	PICMG 1.3
System CPU	Intel® Core™2 Duo Mobile processor
Front Side Bus	800 MHz maximum
System Chipset	Northbridge: Intel® GME965 Southbridge: Intel® ICH8M-E
Memory	Two 240-pin 2.0 GB (max) 533 MHz or 667 MHz DDR2 DIMMs (system max 4 GB)
Display	VGA 24-bit dual-channel LVDS TV-out (NTSC/PAL and Max. 1080i HDTV Resolution via Component output)
BIOS	AMI BIOS
Audio	Intel® High Definition Audio interface (implemented via a 7.1 channel audio kit)
LAN	Two Intel® 82573L GbE Controllers
COM	Two RS-232 serial ports
USB 2.0	Ten USB 2.0 devices supported
IDE	One 40-pin IDE connects to up to one Ultra ATA33/66/100 devices One CompactFlash® slot interfaced through the IDE interface
SATA	Three 3.0 Gb/s SATA drives supported
TPM	One 19-pin TPM module pin header

Specification	3308290
Keyboard/mouse	Two internal keyboard/mouse connectors
Watchdog Timer	Software programmable 1-255 sec. by super I/O
Power Consumption	3.3 V @ 0.13 A, 5 V @ 5.3 A, 12 V @ 1.3 A (3DMark® 2001, Intel® Core™2 Duo T7300 processor and 1 GB of 667 MHz DDR2 SDRAM)
Temperature	0°C ~ 60°C (32°F ~140°F)
Humidity (operating)	5%~95% non-condensing
Dimensions	338mm x 126mm
Weight (GW)	1.1kg

Table 1-1: Technical Specifications

Chapter

2

Detailed Specifications

This chapter describes the specifications and on-board features of the 3308290 in detail.

2.1 Board Dimensions

The dimensions of the board are listed and shown below.

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

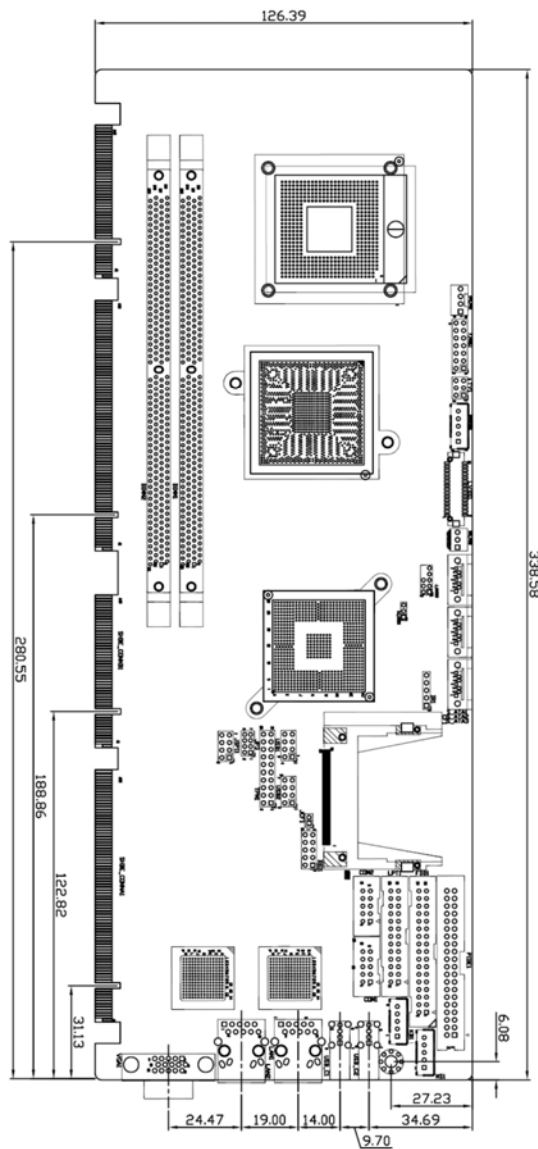


Figure 2-1: Dimensions (mm)

2.2 External Interface Panel Dimensions

The external peripheral interface connector panel dimensions are shown below.

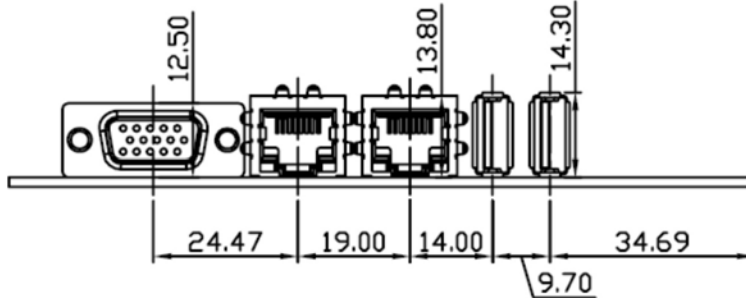


Figure 2-2: External Interface Panel Dimensions (mm)

2.3 Data Flow

The figure below shows the data flow between the on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.

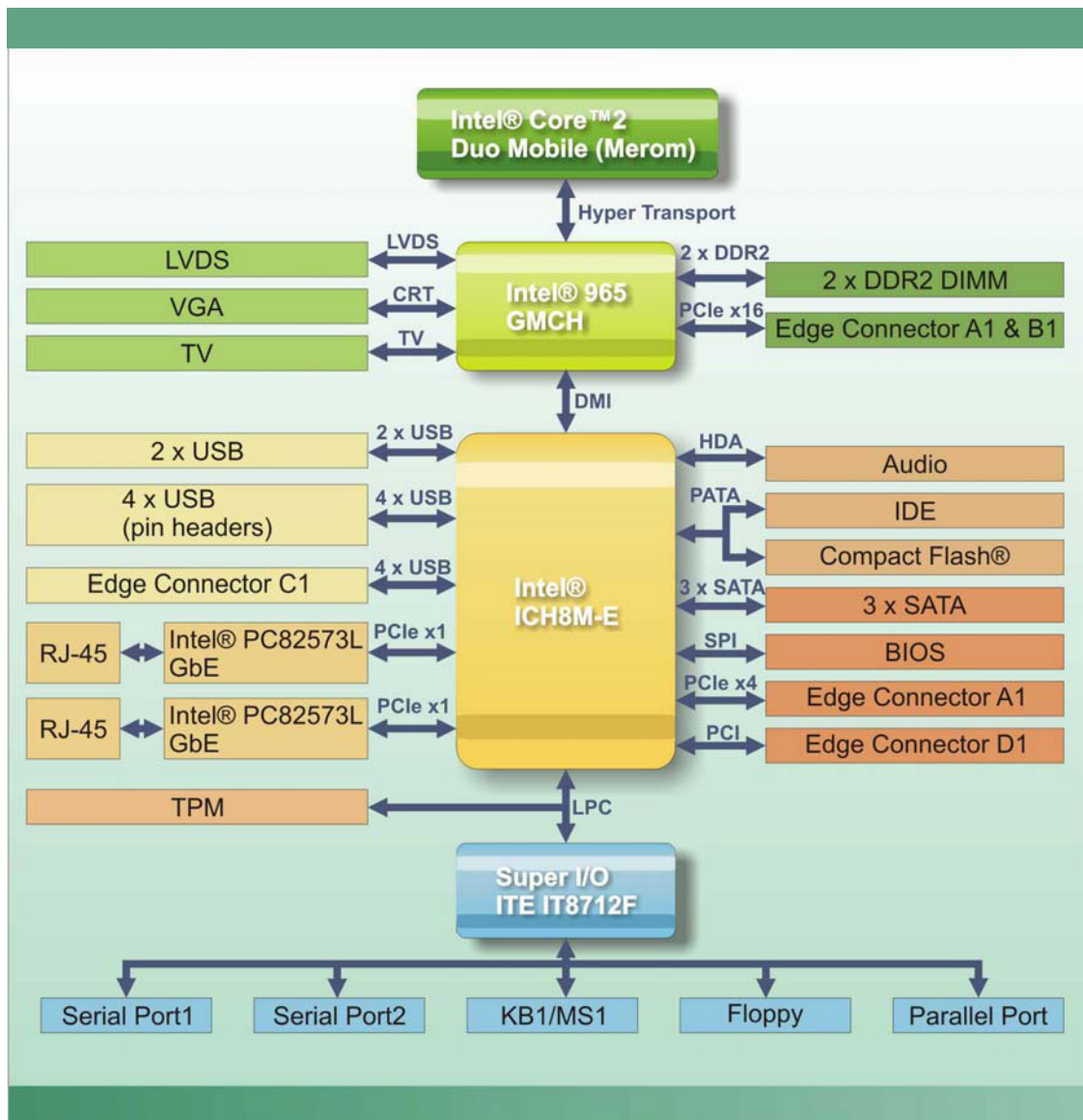


Figure 2-3: Data Flow Diagram

2.4 Compatible Processors

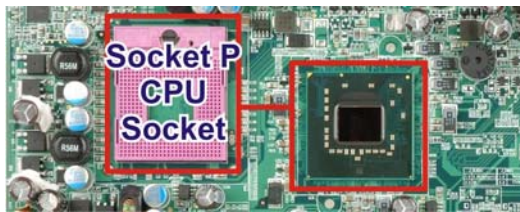


Figure 2-4: CPU

The 3308290 comes with a Socket P CPU socket. The 3308290 supports Socket P Intel® Core™2 Duo Mobile processors with a maximum 800 MHz front side bus (FSB).

2.5 Intel® GME965 Northbridge



Figure 2-5: Intel® GME965

The Intel® GME965 GMCH has the Mobile Intel® Graphics Media Accelerator X3100 to support integrated graphics. 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)

2.5.1 Front Side Bus (FSB) Support

The Intel® GME965 GMCH supports processors with the following FSB speeds:

- 533 MHz
- 667 MHz

-
- 800 MHz

The Socket P CPU socket, Intel® GME965 GMCH and the FSB are shown below.

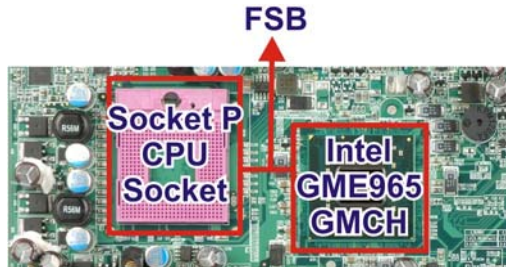


Figure 2-6: Front Side Bus (FSB)

2.5.2 Memory Support



WARNING:

Only DDR2 memory module can be installed on the 3308290. Do not install DDR memory modules. If a DDR memory module is installed, the 3308290 may be irreparably damaged.

The Intel® GME965 GMCH on the 3308290 supports two 240-pin DDR2 DIMMs with the following features:

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

The memory sockets are shown below.



Figure 2-7: 240-pin DDR2 DIMM Sockets

2.5.3 Integrated Graphics

The Intel® GME965 GMCH has an mobile Intel® Graphics Media Accelerator X3100 integrated graphics engine that supports the following display devices:

- Analog CRT
- LVDS
- Analog TV-Out

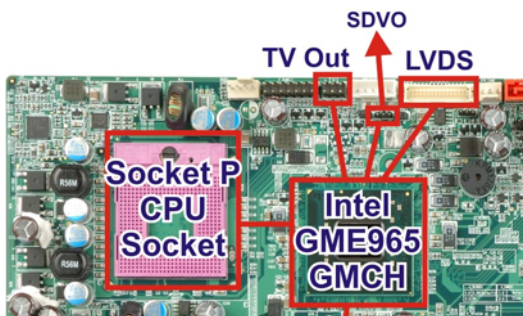


Figure 2-8: Integrated Graphics Interfaces

2.5.3.1 Analog CRT Support

A DB-15 VGA connector on the external peripheral interface connector panel is interfaced to the Intel® GME965 graphics engine. The Intel® GME965 internal graphics engine, with an integrated 300 MHz RAMDAC and hot plug CRT support, supports analog CRT monitors up to QXGA.

2.5.3.2 LVDS Support

A 30-pin LVDS crimp connector is interfaced to the Intel® GME965 graphics engine. The Intel® GME965 internal graphics engine supports LVDS displays with the following features:

-
- 18-bit/24-bit 25 MHz to 112 MHz single-channel or dual-channel LVDS screens
 - TFT panel type supported
 - Panel Fitting, Panning and Center mode supported
 - SPWG v3.5 specification compliant

2.5.3.3 TV Out Support

An internal 6-pin header TV output connector is interfaced to the Intel® GME965 graphics engine. The Intel® GME965 internal graphics engine has the following TV output features:

- Three integrated 10-bit DACs
- Macrovision support
- Overscaling
- NTSC and PAL formats supported
- Supports Component, S-Video, TV D connector or Composite output connectivity
- Supports with the following resolutions:
 - SDTV 480i
 - EDTV 480p
 - HDTV 720p, 1080i
 - True HDTV 1080p

2.5.4 Direct Management Interface (DMI)

The Direct Media Interface (DMI) is the communication bus between the Intel® GME965 GMCH and the ICH8ME I/O controller hub (ICH). The DMI is a high-speed interface that integrates advanced priority-based servicing and allows for concurrent traffic and true isochronous transfer capabilities. The DMI is shown below.



Figure 2-9: DMI Chip-to-Chip Connection

Features of the Intel® GME965 to Intel® ICH8M-E DMI are listed below:

- 2GB/s (1GB/s in each direction) bus speed
- Configurable as x2 or x4 DMI lanes
- 32-bit downstream address

2.6 Intel® ICH8M-E I/O Controller Hub

The Intel® ICH8M-E I/O Controller Hub (ICH) is connected to the Intel® GME965 GMCH through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH8M-E are listed below.

- Complies with PCI Express Base Specification, Revision 1.1
- 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 and RAID 0 and RAID 1 interfaced to three SATA connectors on the 3308290
- Supports the eight USB 2.0 devices on the 3308290 with four UHCI controllers and one EHCI controller
- Complies with System Management Bus (SMBus) Specification, Version 2.0
- Supports Intel® High Definition Audio
- Supports Intel® Active Management Technology 2.5
- Contains Low Pin Count (LPC) interface
- Supports Firmware Hub (FWH) interface
- Serial Peripheral Interface (SPI) support

2.6.1 HD Audio Controller

The HD Audio controller integrated into the ICH8M-E complies with the Intel High Definition Audio specification.



Figure 2-10: HD Audio Codec

The HD audio controller is connected to the external peripheral interface controllers through the integrated ALC883 HD Audio Codec. High Definition Audio supports up to eight audio channels at 192 KHz/32-bit quality and dual channel audio, allowing two different audio streams simultaneously. Features include:

- 7.1 channel high definition audio
- 8 channels at 192 KHz/32-bit quality
- Dual channel audio
- Automatic jack retasking

2.6.2 Ethernet Controller

The Intel® ICH8M-E integrated GbE controller is interfaced to Intel® 82573L Gigabit LAN devices through two PCIe x1 lanes. The Intel® 82573L connects the Intel® ICH8M-E integrated GbE controller to an external RJ-45 Ethernet LAN connector to provide GbE access.



NOTE:

To enable the Intel® ICH8M-E GbE Wake-on LAN function, the Wake-on LAN function must be enabled in the BIOS.

Some of the features of the Intel® ICH8M-E GbE controller are listed below.

- Supports multi speeds including 10 Mbps, 100 Mbps and 1000 Mbps
- Can operate in full-duplex mode at all supported speeds

- Can operate at half-duplex at 10 Mbps and 100 Mbps
- Adheres to the IEEE 802.3x Flow Control Specification.
- Configurable LED operation for customization of LED display.
- 64-bit address master support for system using more than 4 GB of physical memory.
- Configurable receive and transmit data FIFO, programmable in 1 KB increments.
- Intelligent interrupt generation to enhance driver performance.
- Compliance with Advanced Configuration and Power Interface
- Compliance with PCI Power Management standards.
- ACPI register set and power down functionality supporting D0 & D3 states.
- Full wake-up support (ACPI).
- Magic Packet wake-up enable with unique MAC address.
- Fragmented UDP checksum off load for package reassembly.

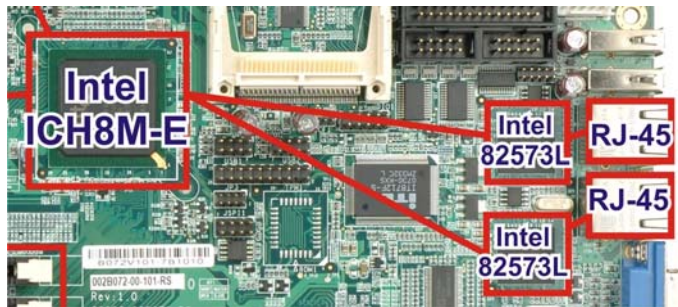


Figure 2-11: Intel® 82573L Gigabit LAN Connect Device

2.6.3 IDE Interface

The integrated IDE interface on the ICH8M-E supports two IDE hard disks and ATAPI devices. PIO IDE transfers up to 16 MB/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 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

Specification	Ultra ATA/100	Ultra ATA/66	Ultra ATA/33
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	5V	5V	5V

Table 2-1: Supported HDD Specifications

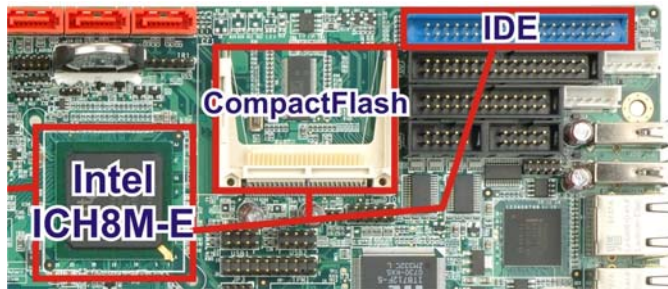


Figure 2-12: IDE Interface

2.6.4 Low Pin Count (LPC) Interface

The ICH8M-E LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH7 is connected to the following components:

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

2.6.5 PCI Interface

The PCI interface on the ICH8M-E is compliant with the PCI Revision 2.3 implementation. The PCI interface is implemented through the edge connector. Some of the features of the PCI interface are listed below.

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

The PCI bus on the 3308290 supports PCI expansion cards via a compatible backplane.

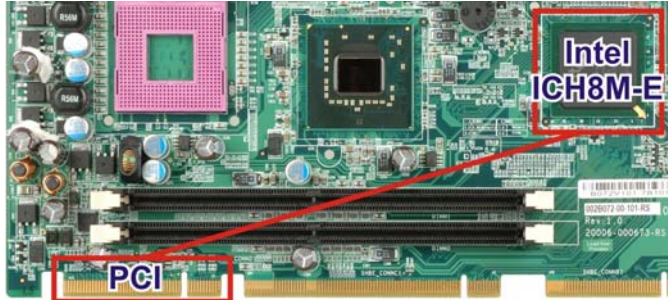


Figure 2-13: PCI Interface

2.6.6 PCIe x1 Bus

The Intel® ICH8M-E GMCH has six PCIe x1 lanes.

- Two PCIe x1 lanes are connected to Intel® 82573L GbE controllers.
- One PCIe x4 is interfaced to the backplane through the edge connector.

2.6.7 Real Time Clock

256 bytes of battery backed RAM is provided by the Motorola MC146818A real time clock (RTC) integrated into the ICH8M-E. 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.

2.6.8 SATA Controller

The integrated SATA controller on the ICH8M-E supports three SATA II drives on the 3308290 with independent DMA operations. SATA controller specifications are listed below.

- Supports three SATA II drives
- Supports 3.0 Gb/s data transfer speeds
- Supports Serial ATA Specification, Revision 1.0a



Figure 2-14: SATA Drive Connectors

2.6.9 Serial Peripheral Interface (SPI) BIOS

The 4-pin SPI is connected to an SPI BIOS chip. A licensed copy of AMI BIOS is preinstalled on the SPI BIOS chip. A master-slave protocol is used for communication on the SPI bus. The slave is connected to the Intel® ICH8M-E and is implemented as a tri-state bus.



Figure 2-15: Serial Peripheral Interface BIOS

2.6.10 USB Controller

Up to ten high-speed, full-speed or low-speed USB devices are supported by the ICH8M-E on the 3308290. High-speed USB 2.0, with data transfers of up to 480 MB/s, is enabled with the ICH8M-E integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling is supported by the ICH8M-E integrated Universal Host Controller Interface (UHCI) controllers.

Two USB ports are on the back panel, four USB ports are interfaced through pin headers and four are interfaced through the edge connector.

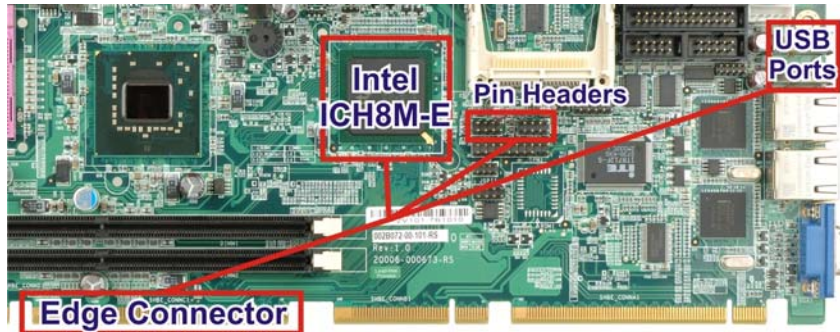


Figure 2-16: Onboard USB Implementation

2.7 LPC Bus Components

The LPC bus is connected to components listed below:

- Super I/O chipset
- TPM module chipset

2.7.1 iTE IT8712F Super I/O chipset

The iTE IT8712F Super I/O chipset is connected to the ICH8M-E Southbridge through the LPC bus. The iTE IT8712F is an LPC interface-based Super I/O device that comes with Environment Controller integration. Some of the features of the iTE IT8712F chipset are listed below:

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

- Single +5V Power Supply

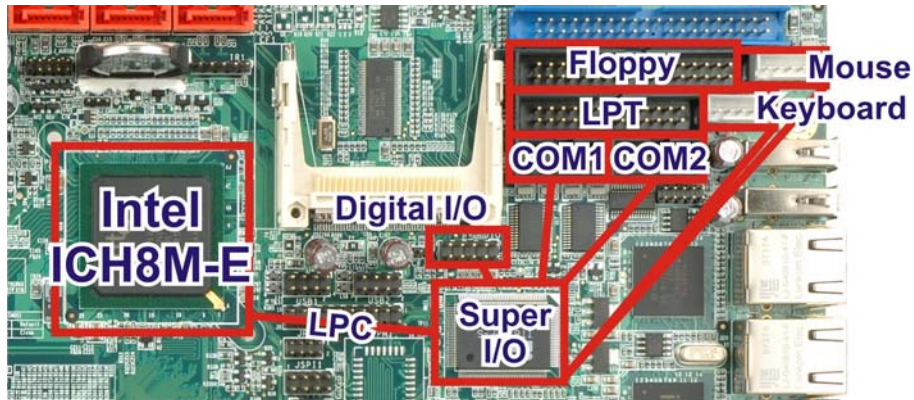


Figure 2-17: iTE IT8712F Super I/O Chipset

2.7.2 TPM Module

A TPM connector on the 3308290 is interfaced to the Southbridge through the LPC bus. The Southbridge supports TPM version 1.1 and TPM version 1.2 devices for enhanced security. The two TPMs available for the 3308290 are listed below:

- Infineon TPM module
- Winbond TPM module



Figure 2-18: TPM Module

2.8 PCIe Bus Components

The 3308290 supports the following PCIe devices:

- One PCIe x16 graphics card on a compatible backplane
- Four PCIe x1 expansion cards on a compatible backplane

- Two PCIe GbE connections through two Intel® controllers

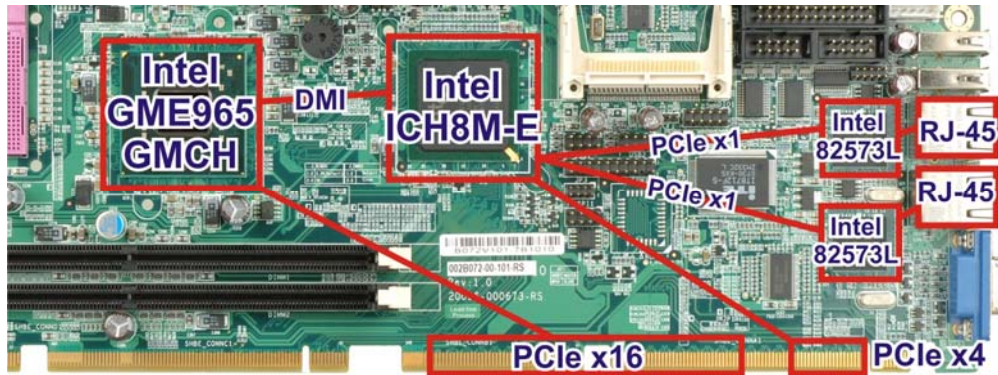


Figure 2-19: PCIe Interfaces

2.8.1 PCIe x16 Expansion

The Northbridge chipset has one PCIe x16 port reserved for a PCIe x16 graphics card. The PCIe x16 lane is interfaced to a PCIe x16 slot on a compatible backplane through two separate golden fingers on the bottom of the CPU card. The PCIe x16 graphics card is then installed on the PCIe x16 slot on the backplane.

2.8.2 PCIe x1 Expansion

The 3308290 has four PCIe x1 expansion channels interfaced to four PCIe x1 connectors on a backplane through a golden finger on the bottom of the CPU card. The PCIe lanes are interfaced from the Intel® ICH8M-E Southbridge.

2.8.3 Intel® PC82573L PCIe Gigabit Ethernet (GbE) Controller

There is one Intel® PC82573L PCIe GbE controller installed on the 3308290. The Intel® PC82573L is interfaced through a PCIe x1 channel to the Intel® ICH8M-E. The Intel® PC82573L controller is then connected to an RJ-45 Ethernet connector enabling the 3308290 to be connected to an external network.

The Intel® PC82573L controller is a low power 10/100/1000 Mb/s PCIe GbE controller that is ideal for non-managed platforms. Some of the Intel® PC82573L features are listed below.

- 2 Gbps peak bandwidth per direction
- PCI Express Rev 1.0a specification

-
- Wide, pipelined internal data path architecture
 - Optimized transmit (Tx) and receive (Rx) queues
 - 32 KB configurable Rx and Tx first-in/first-out (FIFO)
 - IEEE 802.3x*-compliant flow-control support with software controllable pause times and threshold values
 - Programmable host memory Rx buffers (256 B-16 KB)
 - Descriptor ring management hardware for Tx and Rx
 - Mechanism for reducing interrupts from Tx/Rx operations
 - Integrated PHY for 10/100/1000 Mbps (full- and half-duplex)
 - IEEE 802.3ab* auto-negotiation support
 - IEEE 802.3ab PHY compliance and compatibility
 - Tx/Rx IP, TCP, and UDP checksum offloading
 - Tx TCP segmentation

2.9 PCI Bus Components

The PCI interface edge connector is connected to the PCI bus on the backplane. The PCI bus edge connector is shown below.

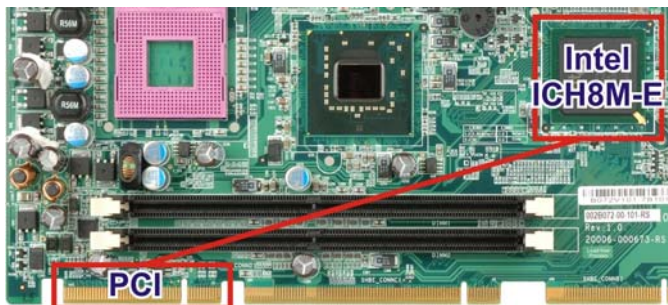


Figure 2-20: PCI Edge Connector

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







Chapter

3

Unpacking

3.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the PC may result in permanent damage to the 3308290 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3308290. Dry climates are particularly susceptible to ESD. It is therefore critical that whenever the 3308290 or any other electronic component is handled, the following anti-static precautions are strictly adhered to:

- **Wear and anti-static wristband:** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the 3308290.
- **Self-grounding:** - Before handling the 3308290 touch any grounded conducting material. During the time of handling, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** - When configuring the 3308290, place it on an anti-static pad. This reduces the possibility of ESD damaging the 3308290.
- **Only handle the PCB by the edges:** - When handling the PCB, hold the PCB by it's edges.

3.2 Unpacking Precautions

When the 3308290 is unpacked, please do the following:

- Follow the anti-static precautions outline in **Section 3.1**.
- Make sure the packing box is facing upwards so the 3308290 does not fall out of the box.
- Make sure all of the components shown in **Section 3.3.1** are present.

3.3 Unpacking Checklist

3.3.1 Package Contents

The 3308290 is shipped with the following components.








Quantity	Item and Part Number	Image
1	3308290	
3	SATA cable	
1	SATA power cable	
1	Dual RS-232 cable	
1	Dual USB cable (w bracket)	
1	Utility CD	
1	Mini jumper pack (2.0mm)	

Table 3-1: Packing List Items

3.3.2 Optional Components

The following optional components are available for the 3308290.







Item and Part Number	Image
Winbond TPM module (P/N: 1007810)	
Infineon TPM module (P/N: 1007790)	
Audio kit_ 7.1 Channel (P/N: 1007760)	
CPU cooler (P/N: 2107703)	
FDD cable (P/N:1207764)	
PS2 cable for KB and MS (P/N: 1207794)	

Table 3-2: Optional Items

Chapter

4

Connector Pinouts

4.1 Peripheral Interface Connectors

Section 4.1.1 shows peripheral interface connector locations. Section 4.1.2 lists all the peripheral interface connectors seen in Section 4.1.1.

4.1.1 Layout

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

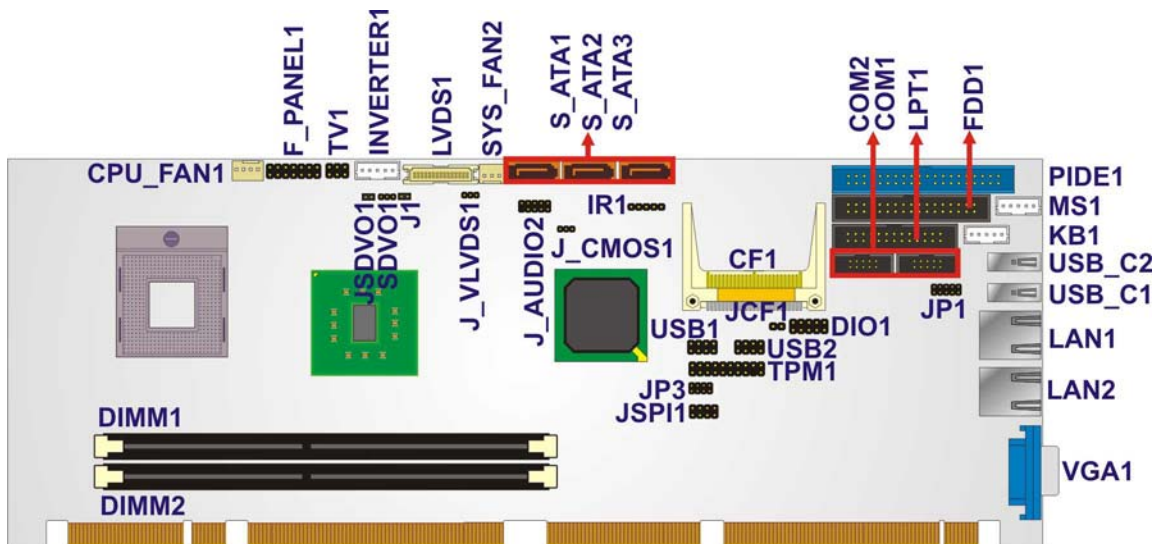


Figure 4-1: Connector and Jumper Locations

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the 3308290.

Connector	Type	Label
Audio connector	9-pin header	J_AUDIO2
Backlight inverter connector	5-pin box header	INVERTER1
CompactFlash® slot	CompactFlash® slot	CF1
Cooling fan connector, CPU	4-pin header	CPU_FAN1
Cooling fan connector, System	3-pin header	SYS_FAN2

Connector	Type	Label
Digital input/output connector	10-pin header	DIO1
FDD connector	34-pin box header	FDD1
Front panel connector	14-pin header	F_PANEL1
IDE Interface connector	40-pin box header	PIDE1
Infrared (IrDA) connector	5-pin header	IR1
Keyboard connector	5-pin box header	KB1
LVDS connector	30-pin crimp header	LVDS1
Mouse connector	5-pin box header	MS1
Parallel port connector	26-pin box header	LPT1
SDVO connector	3-pin header	SDVO1
Serial ATA drive connector	7-pin SATA	S_ATA1
Serial ATA drive connector	7-pin SATA	S_ATA2
Serial ATA drive connector	7-pin SATA	S_ATA3
Serial port connector (COM1)	10-pin box header	COM1
Serial port connector (COM2)	10-pin box header	COM2
TPM connector	19-pin header	TPM1
TV Out connector	6-pin header	TV1
USB connectors	8-pin header	USB1
USB connectors	8-pin header	USB2

Table 4-1: Peripheral Interface Connectors

4.1.3 External Interface Panel Connectors

Table 4-2 lists the rear panel connectors on the 3308290.

Connector	Type	Label
Ethernet connector	RJ-45	LAN1
Ethernet connector	RJ-45	LAN2

Connector	Type	Label
USB connector	USB port	USB_C1
USB connector	USB port	USB_C2
VGA connector	15-pin female	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 3308290.

4.2.1 Audio Connector

- CN Label:** J_AUDIO2
- CN Type:** 9-pin header (2x5)
- CN Location:** See **Figure 4-2**
- CN Pinouts:** See **Table 4-3**

The 9-pin audio connector is connected to a High Definition Audio kit. The audio kit, with an embedded HD Audio codec enables sound input and output to the 3308290

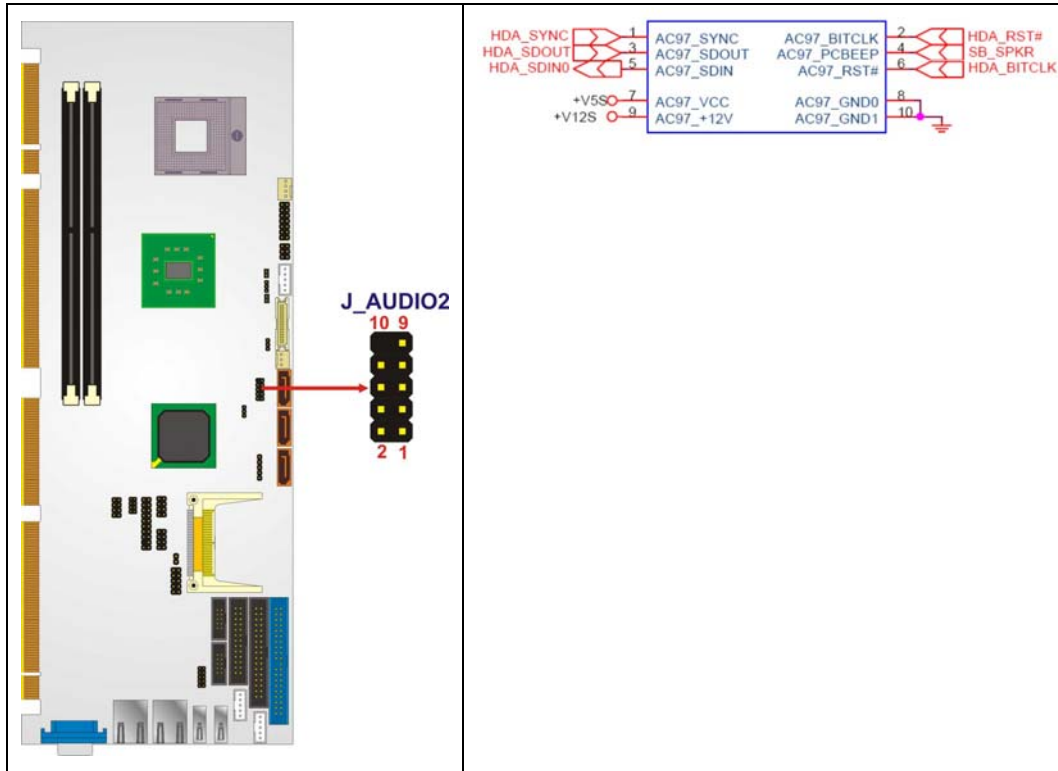


Figure 4-2: Audio Connector Location (9-pin)

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

Table 4-3: Audio Connector Pinouts (9-pin)

4.2.2 Backlight Inverter Connector

- CN Label:** INVERTER1
- CN Type:** 5-pin wafer (1x5)
- CN Location:** See Figure 4-3
- CN Pinouts:** See Table 4-4

The backlight inverter connector provides the backlight on the LCD display connected to the 3308290 with +12V of power.

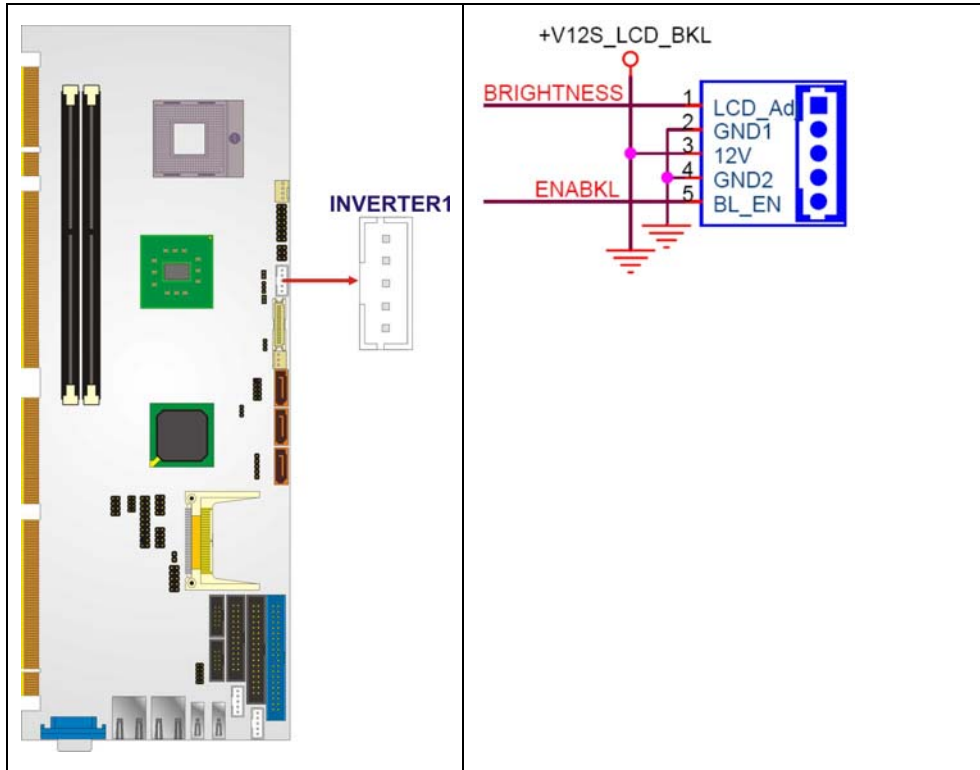


Figure 4-3: Panel Backlight Connector Pinout Locations

PIN NO.	DESCRIPTION
1	BRIGHTNESS
2	GND
3	12V
4	GND
5	BL_EN

Table 4-4: Panel Backlight Connector Pinouts

4.2.3 CompactFlash® Slot

CN Label: CF1

CN Type: 50-pin header (2x25)

CN Location: See Figure 4-4

CN Pinouts: See Table 4-5

A CF Type I or Type II memory card is inserted to the CF socket on the solder side of the 3308290.

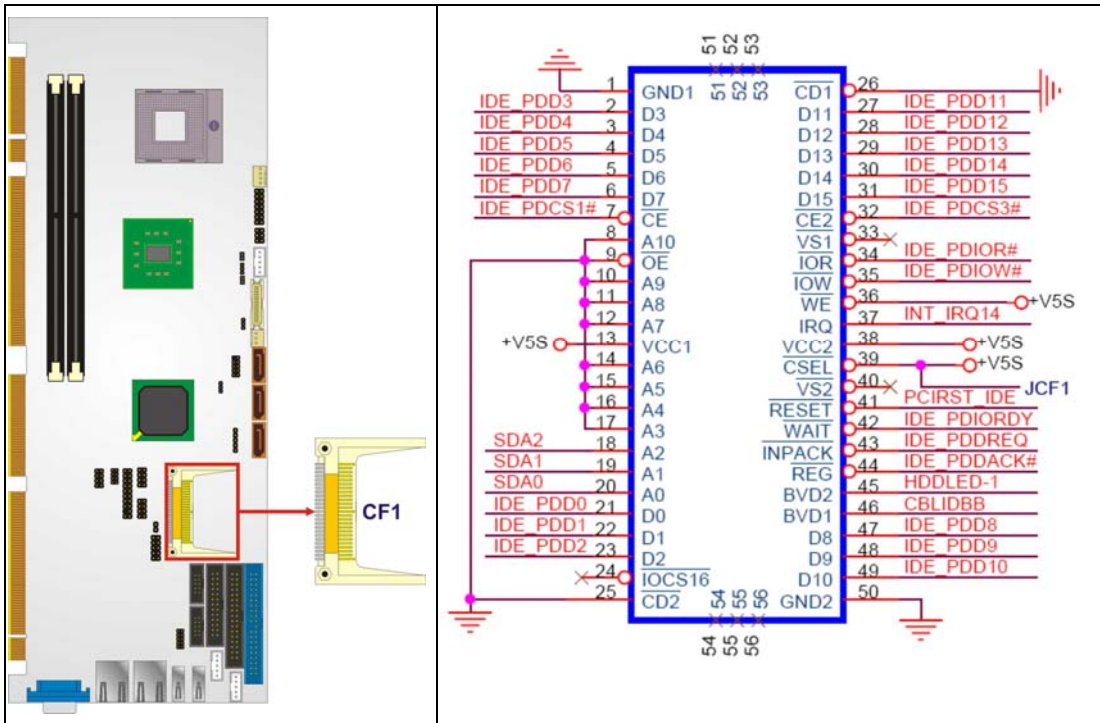


Figure 4-4: CF Card Socket Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CD1#
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	CE#	32	CE2#
8	N/C	33	VS1#
9	OE#	34	IOR#

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
10	A9	35	IOW#
11	A8	36	WE#
12	A7	37	IRQ
13	VCC1	38	VCC2
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	GROUND

Table 4-5: CF Card Socket Pinouts

4.2.4 Digital Input/Output 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.

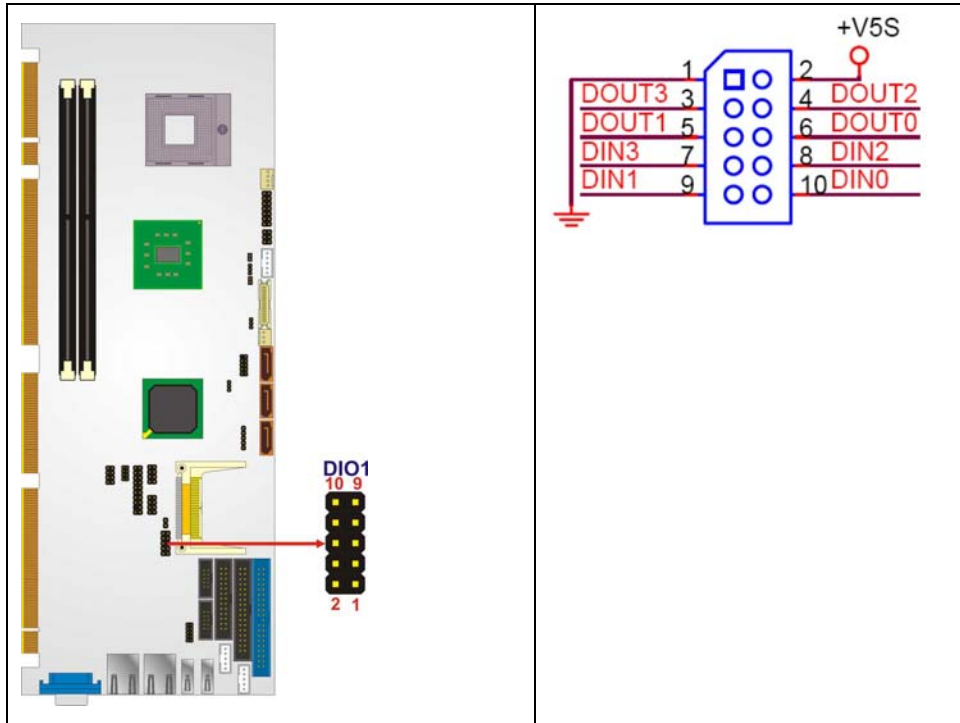


Figure 4-5: DIO Connector Locations

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

4.2.5 Fan Connector (CPU)

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

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

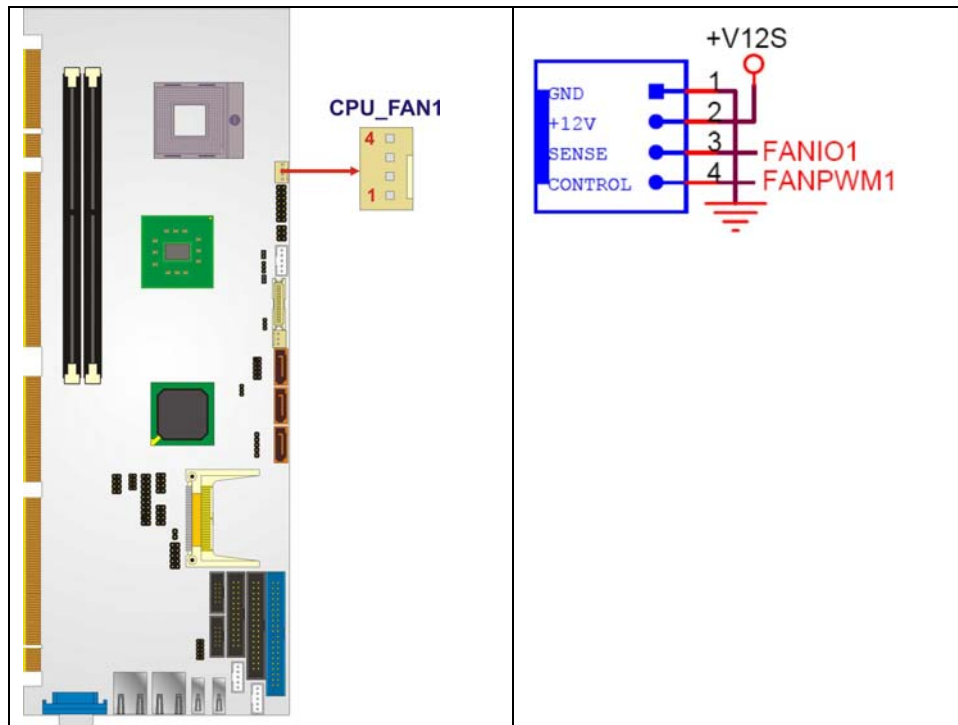


Figure 4-6: CPU Fan Connector Location

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

Table 4-7: CPU Fan Connector Pinouts

4.2.6 Fan Connector (System)

CN Label: SYS_FAN2

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.

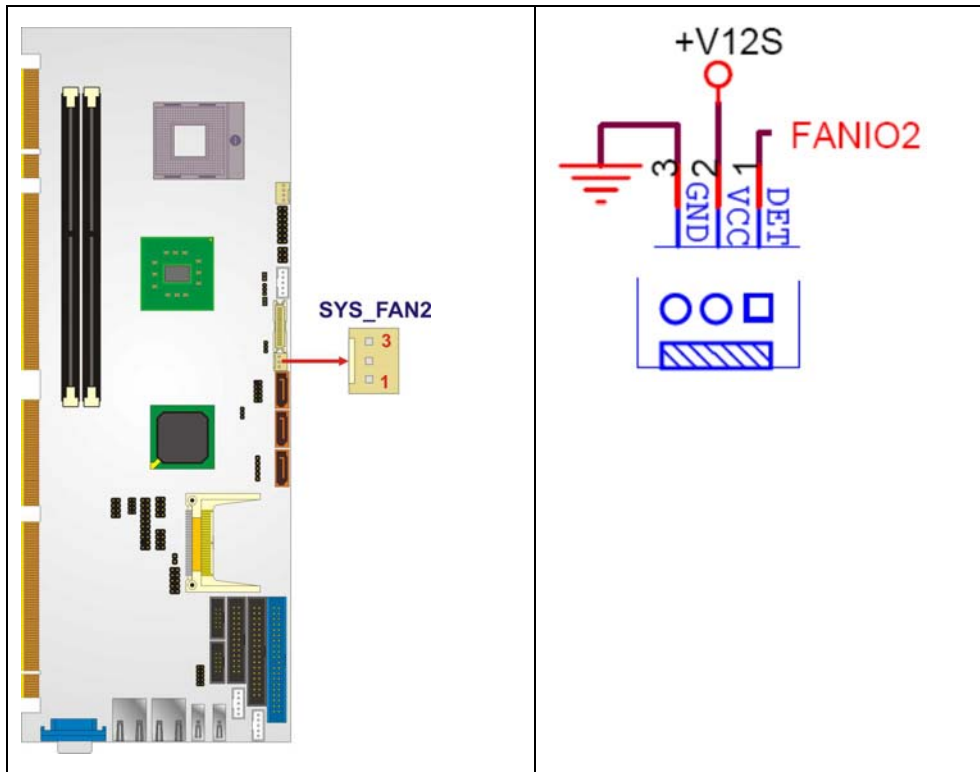


Figure 4-7: +12V Fan Connector Location

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

Table 4-8: +12V Fan Connector Pinouts

4.2.7 Floppy Disk Connector

- 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.

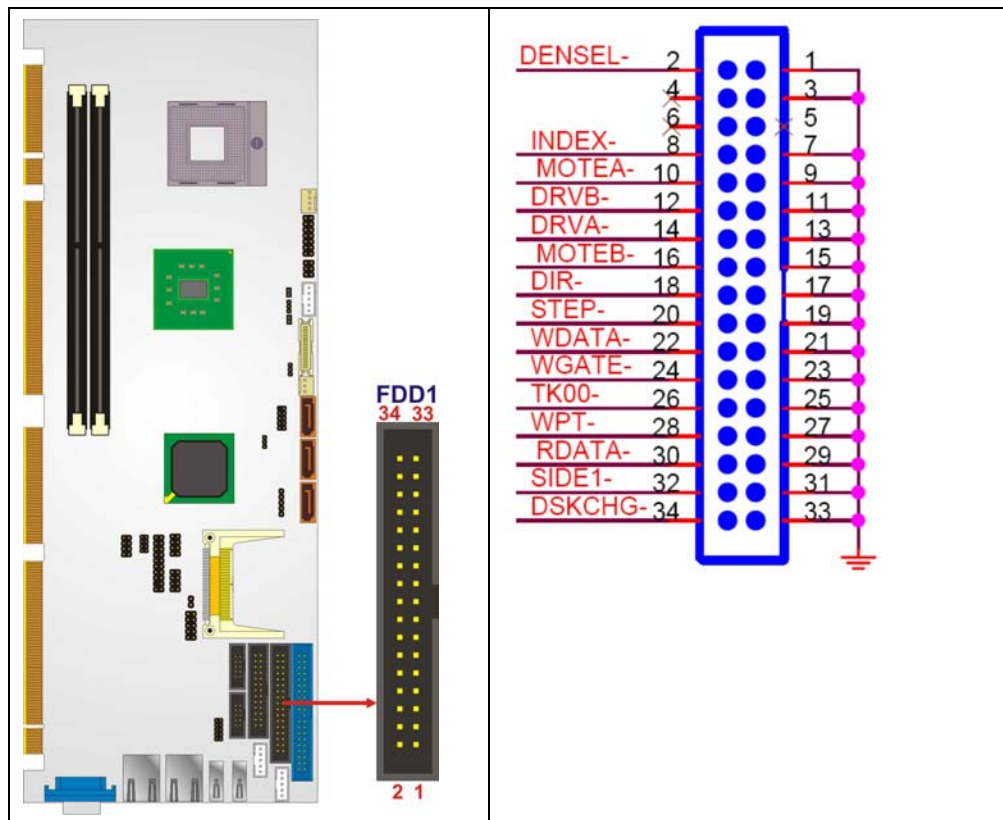


Figure 4-8: FDD Connector Location

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#

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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: FDD Connector Pinouts

4.2.8 Front Panel Connector

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

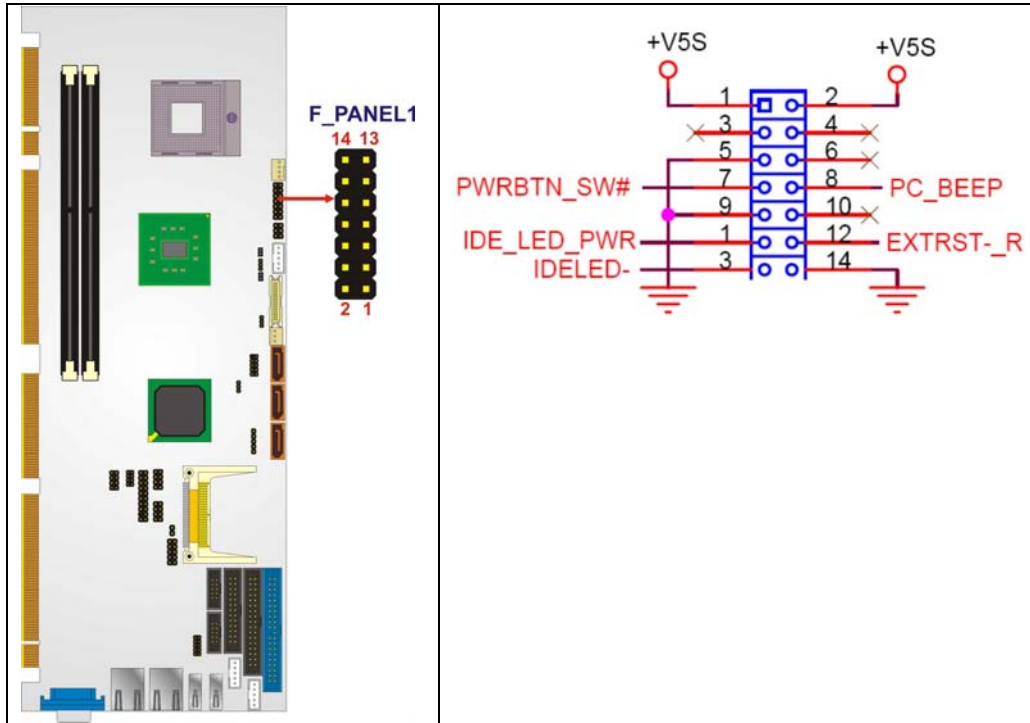


Figure 4-9: Front Panel Connector Location

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

Table 4-10: Front Panel Connector Pinouts

4.2.9 IDE Connector

- CN Label:** PIDE1
- 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 3308290 supports connectivity to two hard disk drives.

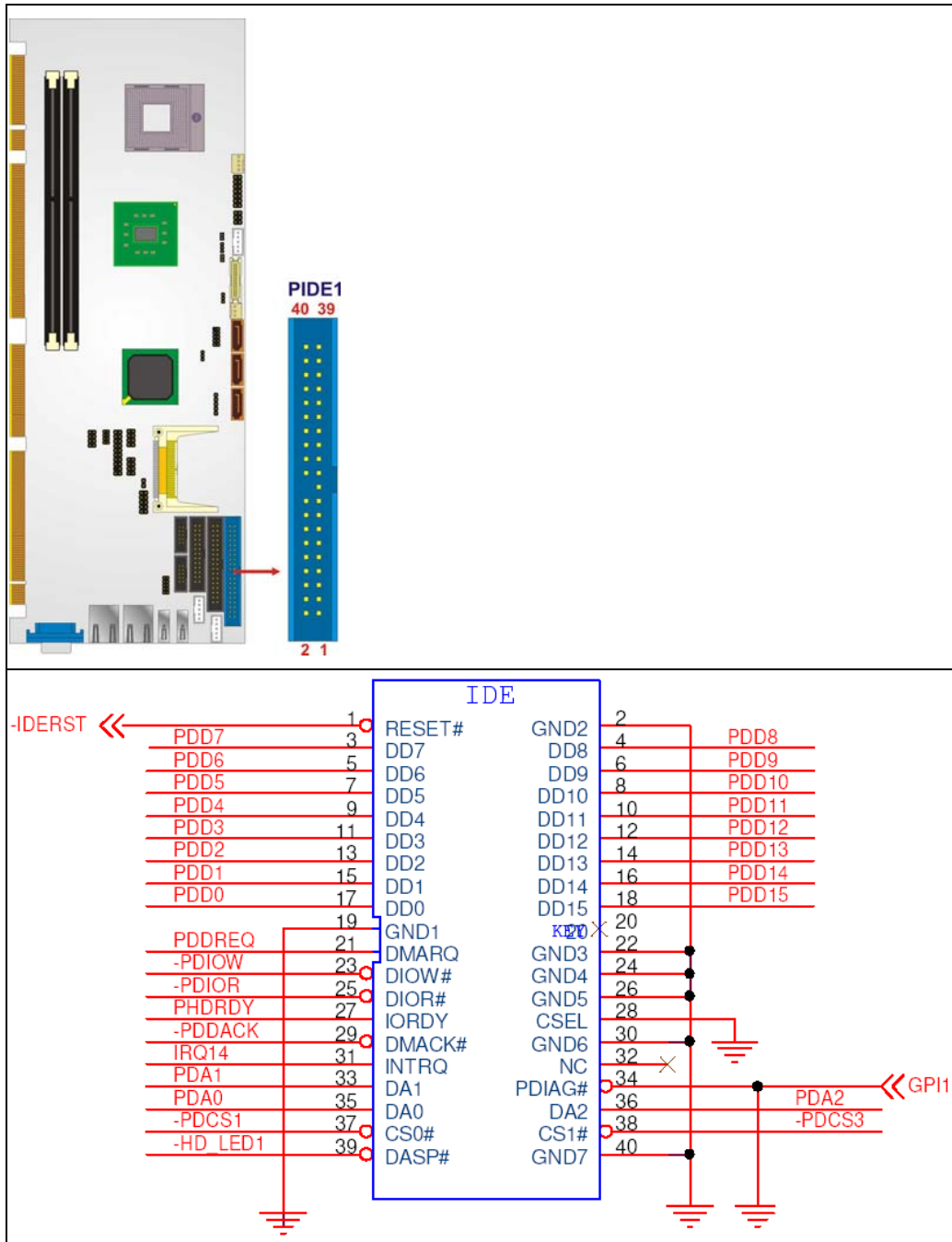


Figure 4-10: IDE Device Connector Locations

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: IDE Connector Pinouts

4.2.10 Infrared Connector

- 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.

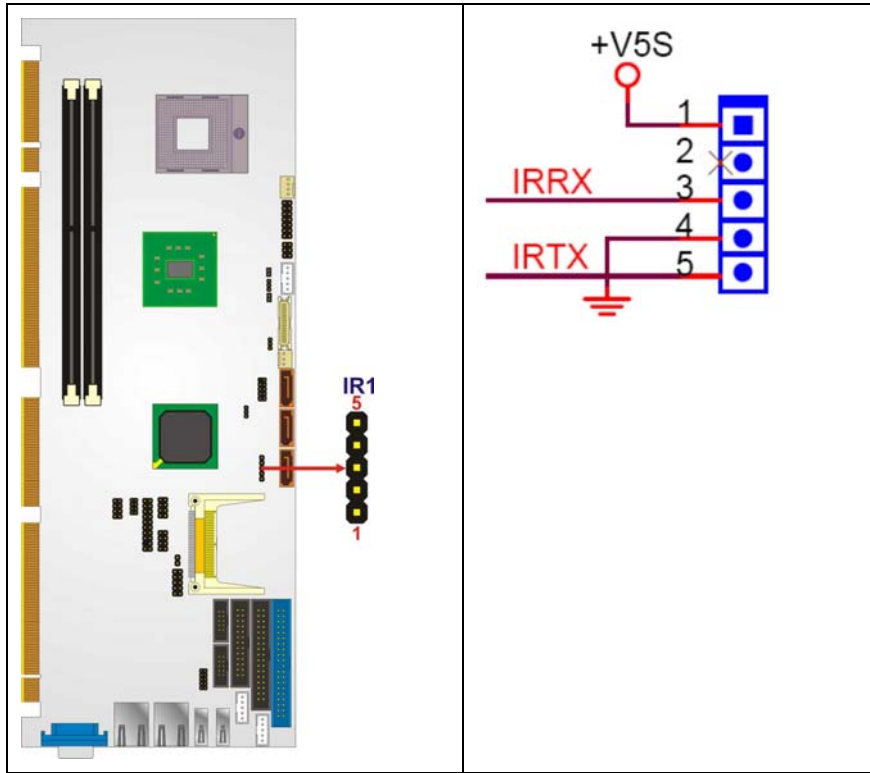


Figure 4-11: Infrared Connector Pinout Locations

PIN NO.	DESCRIPTION
1	VCC
2	N/C
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 or PS/2 cable to add keyboard and mouse functionality to the system.

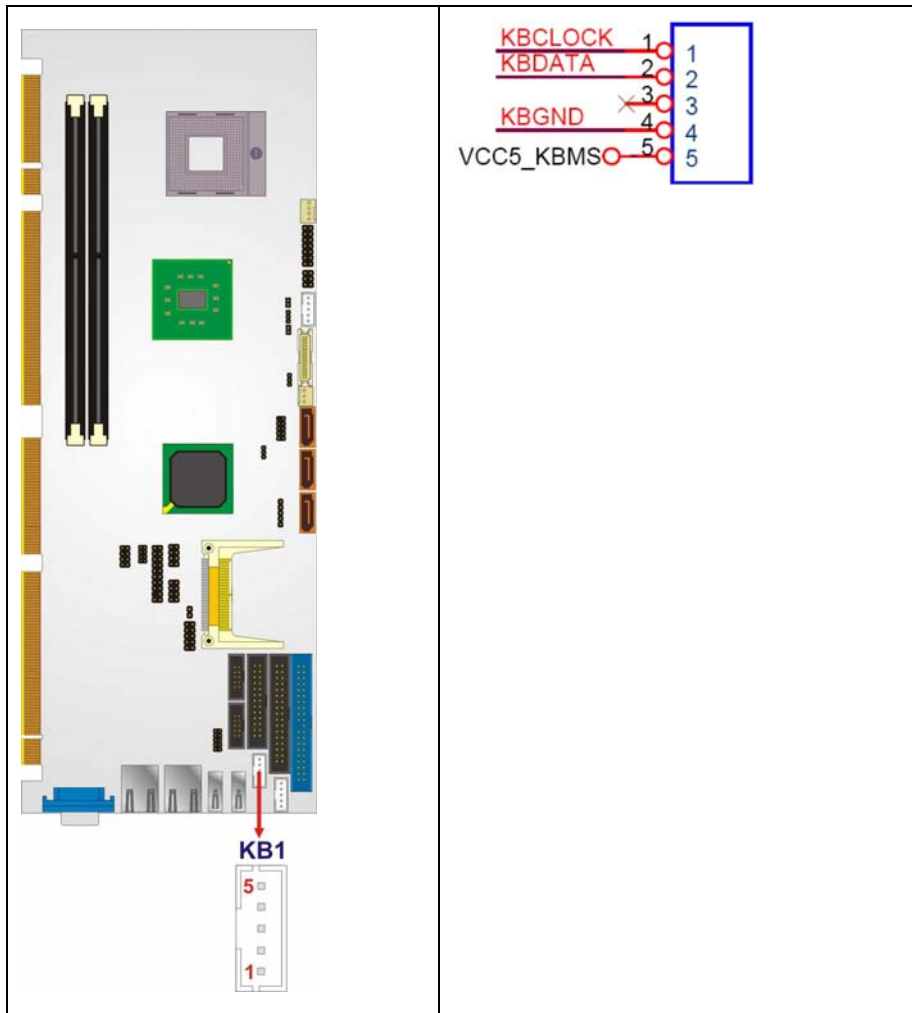


Figure 4-12: Keyboard Connector Location

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 Connector

CN Label:	LVDS1
CN Type:	30-pin crimp (2x15)
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.

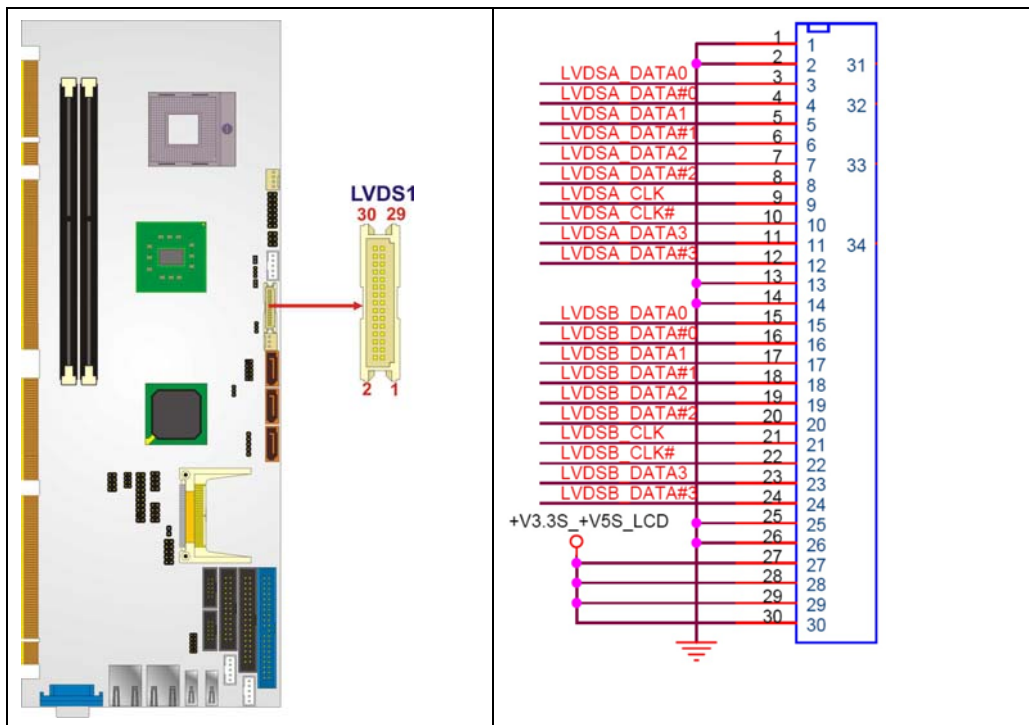


Figure 4-13: LVDS LCD Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	GROUND
3	LVDSA_DATA0	4	LVDSA_DATA#0
5	LVDSA_DATA1	6	LVDSA_DATA#1
7	LVDSA_DATA2	8	LVDSA_DATA#2
9	LVDSA_CLK	10	LVDSA_CLK#
11	LVDSA_DATA3	12	LVDSA_DATA#3

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
13	GROUND	14	GROUND
15	LVDSB_DATA0	16	LVDSB_DATA0#
17	LVDSB_DATA1	18	LVDSB_DATA1#
19	LVDSB_DATA2	20	LVDSB_DATA2#
21	LVDSB_CLK	22	LVDSB_CLK#
23	LVDSB_DATA3	24	LVDSB_DATA3#
25	GROUND	26	GROUND
27	VCC/VCC3	28	VCC/VCC3
29	VCC/VCC3	30	VCC/VCC3

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 4-14**
- CN Pinouts:** See **Table 4-15**

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

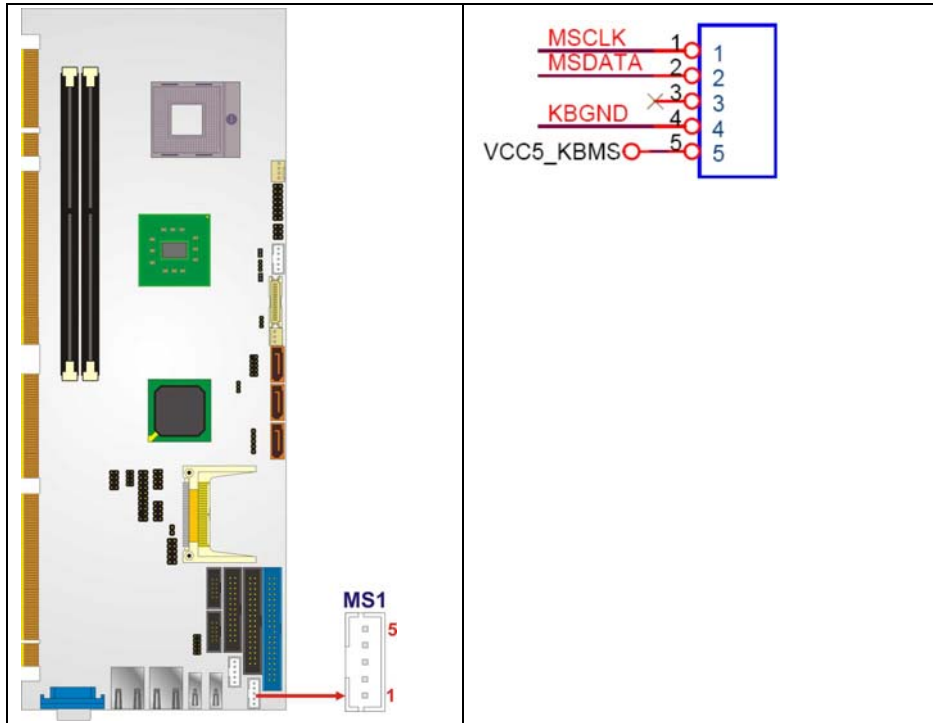


Figure 4-14: Mouse Connector Location

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.

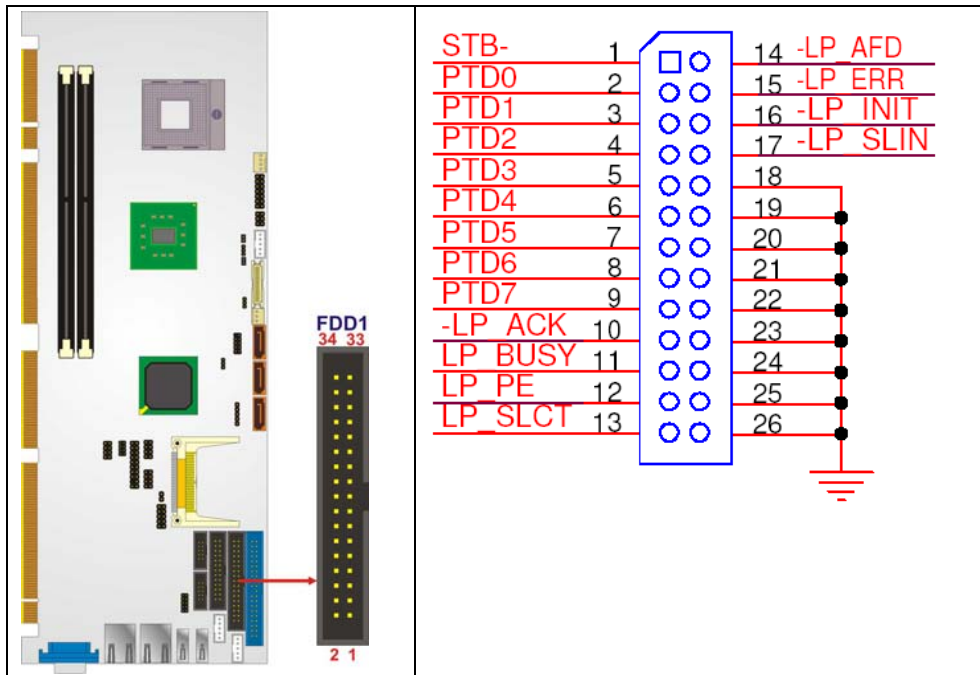


Figure 4-15: Parallel Port Connector Location

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
23	GROUND	24	GROUND

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

Table 4-16: Parallel Port Connector Pinouts

4.2.15 SDVO Connector

- CN Label:** SDVO1
- CN Type:** 3-pin header
- CN Location:** See Figure 4-15
- CN Pinouts:** See Table 4-16

The 3-pin SDVO connector connects to a compatible SDVO video card. SDVO video cards enable dual video by utilizing a direct connection to the SDVO connection to the GMCH.

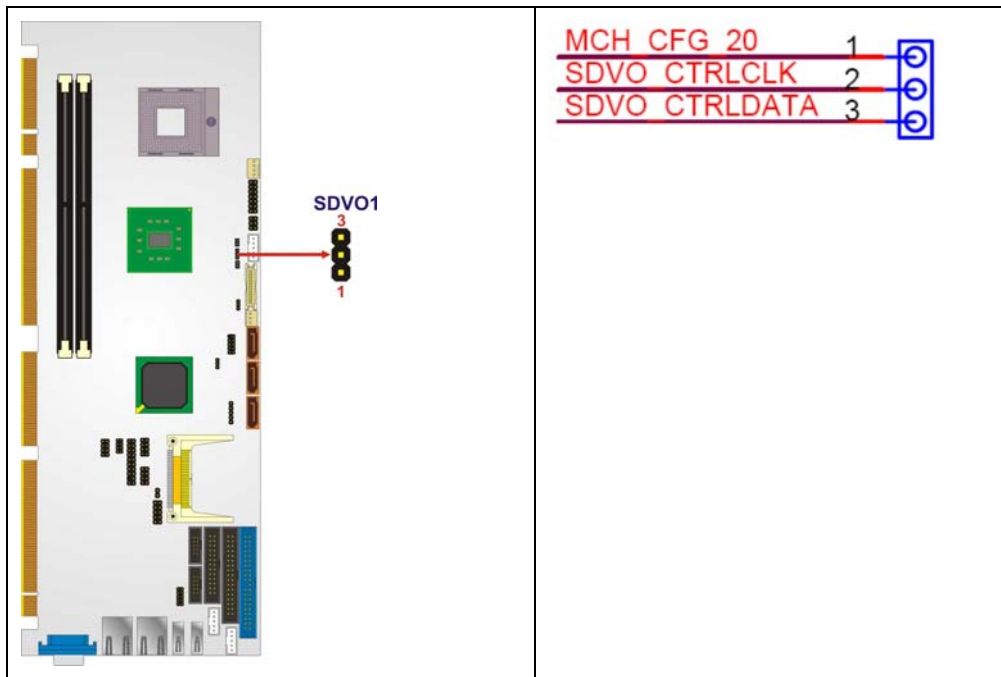


Figure 4-16: SDVO Connector Location

PIN NO.	DESCRIPTION
1	MCH_CFG_20

PIN NO.	DESCRIPTION
2	SDVO_CTRLCLK
3	SDVO_CTRLDATA

Table 4-17: SDVO Connector Pinouts

4.2.16 SATA Drive Connectors

CN Label: S_ATA1, S_ATA2 and S_ATA3

CN Type: 7-pin SATA drive connectors

CN Location: See Figure 4-17

CN Pinouts: See Table 4-18

The SATA drive connectors are each connected to second generation SATA drives. Second generation SATA drives transfer data at speeds as high as 3.0 Gb/s. The SATA drives can be configured in a RAID configuration.

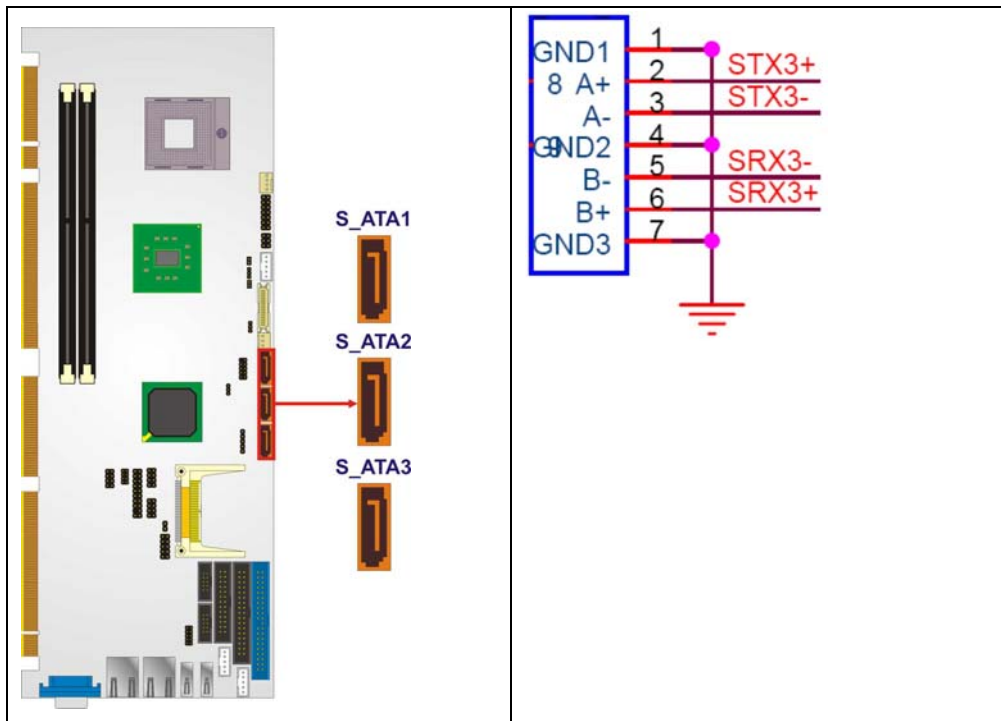


Figure 4-17: SATA Drive Connector Locations

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

Table 4-18: SATA Drive Connector Pinouts

4.2.17 Serial Port Connectors

- CN Label:** COM1 and COM2
- CN Type:** 10-pin header (2x5)
- CN Location:** See **Figure 4-18**
- CN Pinouts:** See **Table 4-19**

The 10-pin serial port connectors provide RS-232 serial communications channels. The serial port connector can be connected to external RS-232 serial port devices.

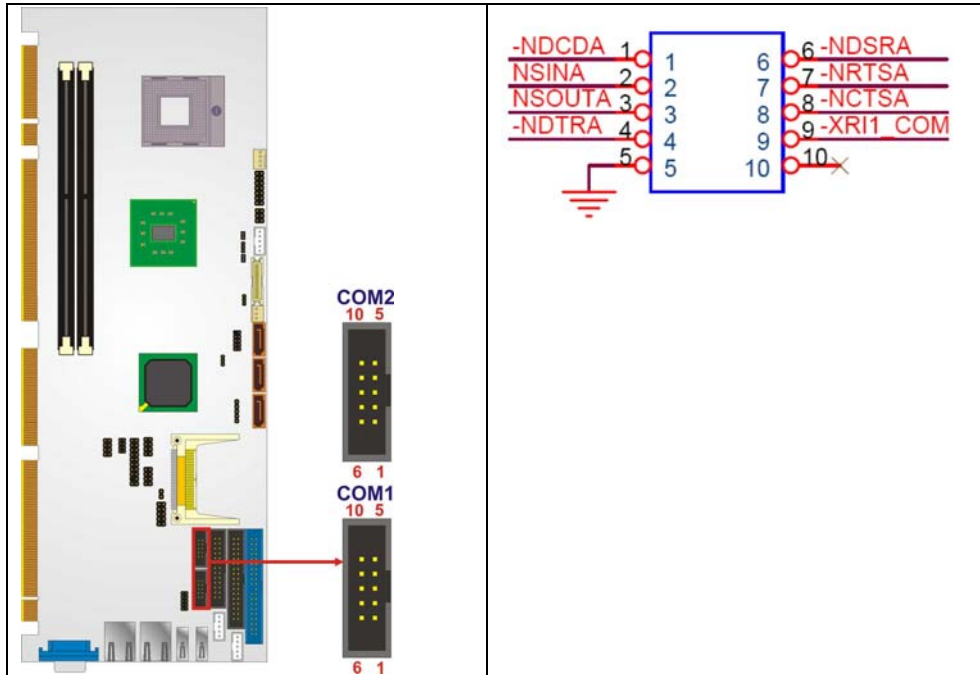


Figure 4-18: COM Connector Pinout Locations

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)		

Table 4-19: COM Connector Pinouts

4.2.18 Trusted Platform Module (TPM) Connector

- CN Label:** TPM1
- CN Type:** 40-pin header (2x20)
- CN Location:** See Figure 4-20
- CN Pinouts:** See Table 4-21

The Trusted Platform Module (TPM) connector secures the system on bootup.

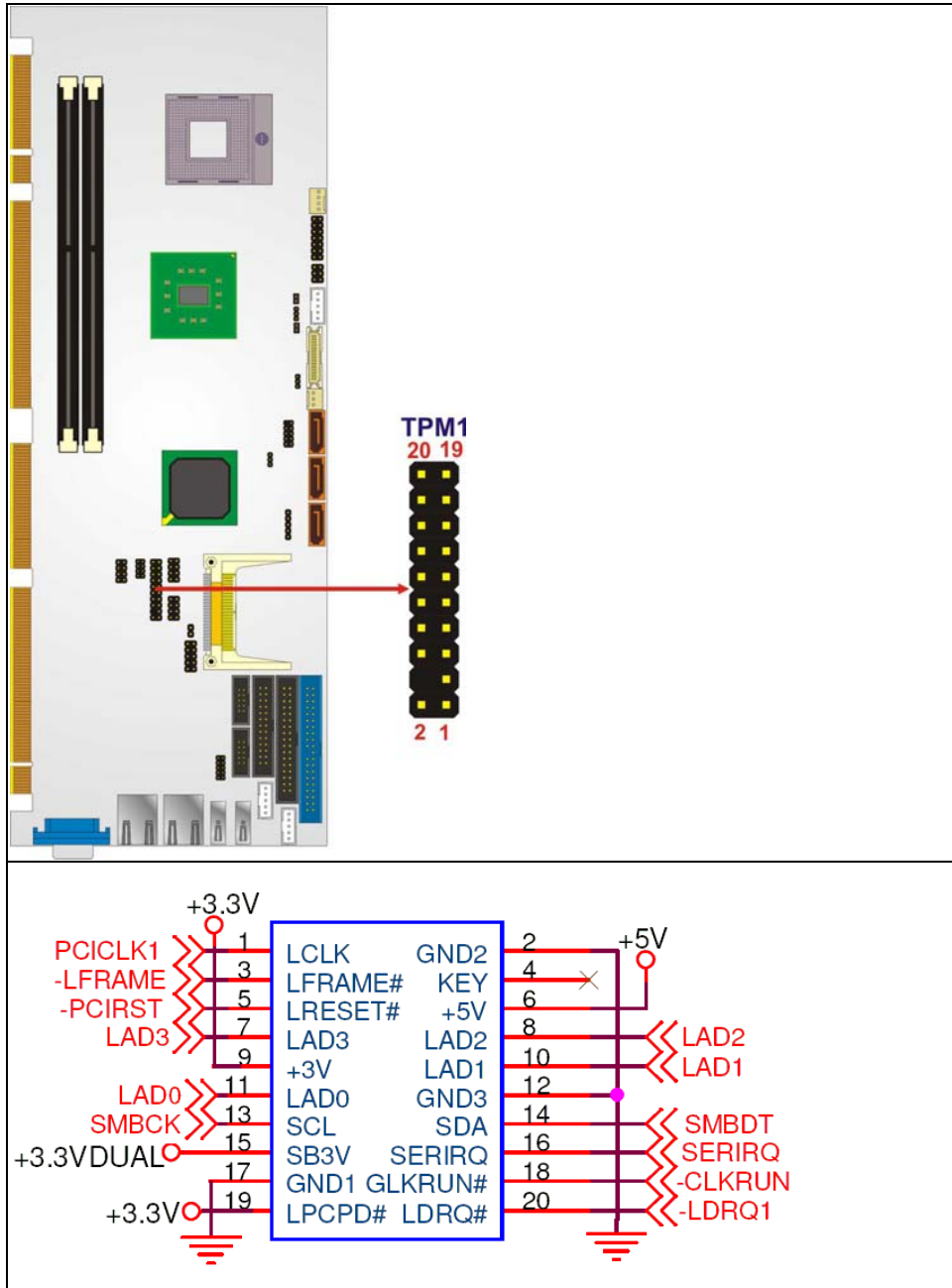


Figure 4-19: TPM Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	FWHPCLK	2	GND2
3	LFRAME#	4	KEY
5	PCIRST#	6	VCC

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	SMBCLK	14	SMBDATA
15	3VDUAL	16	SERIRQ
17	GND	18	CLKRUN#
19	LPCPD#	20	LDRQ#

Table 4-20: TPM Connector Pinouts

4.2.19 TV Out Connector

- CN Label:** TV1
- CN Type:** 6-pin header (2x3)
- CN Location:** See Figure 4-20
- CN Pinouts:** See Table 4-21

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

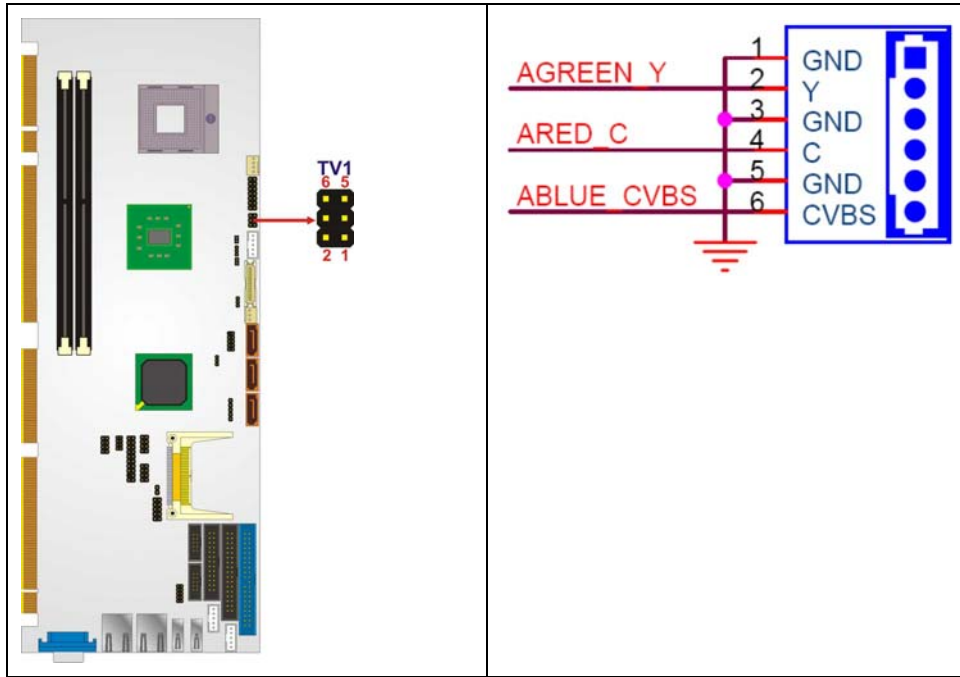


Figure 4-20: TV Connector Pinout Locations

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

Table 4-21: TV Port Connector Pinouts

4.2.20 USB Connectors (Internal)

- CN Label:** USB1 and USB2
- CN Type:** 8-pin header (2x4)
- CN Location:** See Figure 4-21
- CN Pinouts:** See Table 4-22

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.

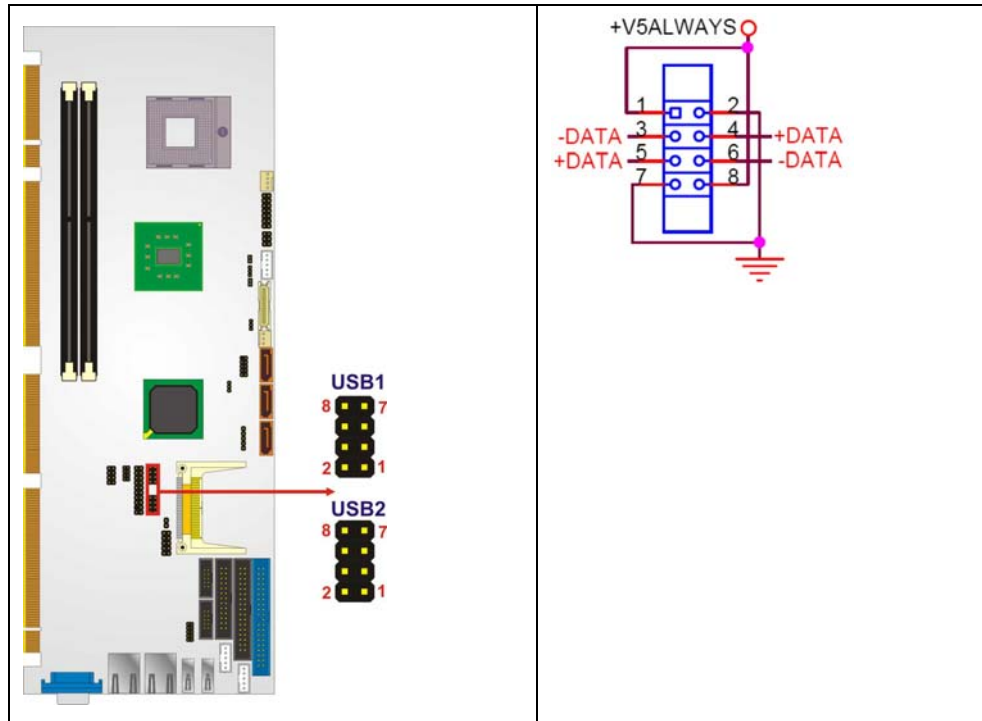


Figure 4-21: USB Connector Pinout Locations

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

Table 4-22: USB Port Connector Pinouts

4.3 External Peripheral Interface Connector Panel

Figure 4-22 shows the 3308290 external peripheral interface connector (EPIC) panel. The 3308290 EPIC panel consists of the following:

- 2 x RJ-45 LAN connectors

- 2 x USB connectors
- 1 x VGA connector

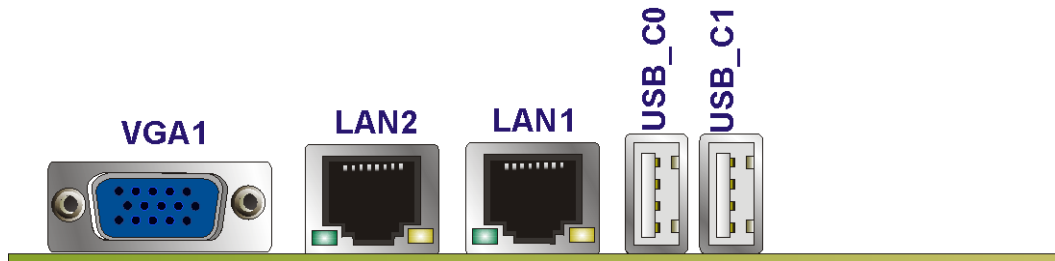


Figure 4-22: 3308290 External Peripheral Interface Connector

4.3.1 LAN Connectors

- CN Label:** LAN1 and LAN2
- CN Type:** RJ-45
- CN Location:** See **Figure 4-22**
- CN Pinouts:** See **Table 4-23**

The 3308290 is equipped with two built-in RJ-45 Ethernet controllers. The controllers can connect to the LAN through two RJ-45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

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

Table 4-23: LAN Pinouts

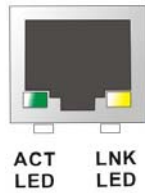


Figure 4-23: RJ-45 Ethernet Connector

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 4-24**.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 4-24: RJ-45 Ethernet Connector LEDs

4.3.2 USB Connector

CN Label: USB_C1 and USB_C0

CN Type: USB ports

CN Location: See Figure 4-22

CN Pinouts: See Table 4-25

The 3308290 has four external USB 2.0 ports. The ports connect to both USB 2.0 and USB 1.1 devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBV3L 5V	1	USBV3L 5V
2	USBP4N	2	USBP5N
3	USBP4P	3	USBP5P
4	GND	4	GND

Table 4-25: USB Port Pinouts

4.3.3 VGA Connector

- CN Label:** VGA1
CN Type: 15-pin Female
CN Location: See Figure 4-22
CN Pinouts: See Figure 4-24 and Table 4-26

The 3308290 has a single 15-pin female connector for connectivity to standard display devices.

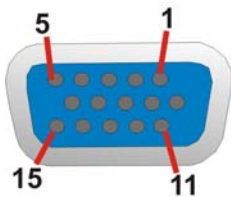


Figure 4-24: VGA Connector

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
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 4-26: VGA Connector Pinouts

Chapter

5

Installation

5.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the 3308290 may result in permanent damage to the 3308290 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 3308290. Dry climates are particularly susceptible to ESD. It is therefore critical that whenever the 3308290 or any other electronic component is handled, the following anti-static precautions are strictly adhered to:

- **Wear and anti-static wristband:** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the 3308290.
- **Self-grounding:** - Before handling the 3308290 touch any grounded conducting material. During the time of handling, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** - When configuring the 3308290, place it on an anti-static pad. This reduces the possibility of ESD damaging the 3308290.
- **Only handle the PCB by the edges:** - When handling the PCB, hold the PCB by it's edges.

5.2 Installation Considerations



NOTE:

The following installation notices and installation considerations should be read and understood before the 3308290 is installed. All installation notices pertaining to the installation of the 3308290 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the 3308290 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 3308290 and its accessories, and prevent 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 3308290 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 3308290 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 3308290 off:
 - When working with the 3308290, 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 3308290 **DO NOT** do the following:

- **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 3308290 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 jumpers have been properly configured
 - The 3308290 is inserted into a chassis with adequate ventilation
 - The correct power supply is being used
 - The following devices are properly connected
 - Primary and secondary IDE device
 - SATA drives
 - Keyboard and mouse cable
 - Audio kit
 - Power supply
 - USB cable
 - Serial port cable
 - Parallel port cable
 - The following external peripheral devices are properly connected to the chassis:
 - DVI screen
 - Keyboard
 - Mouse
 - LAN

5.3 Unpacking

5.3.1 Unpacking Precautions

When the 3308290 is unpacked, please do the following:

- Follow the anti-static precautions outlined above.
- Make sure the packing box is facing upwards so the 3308290 does not fall out of the box.
- Make sure all the components in the checklist shown in **Chapter 3** are present.

5.4 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, 3308290 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 3308290. If one of these component is not installed the 3308290 cannot run.

5.4.1 Socket 479 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 CPU onto the 3308290, 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.

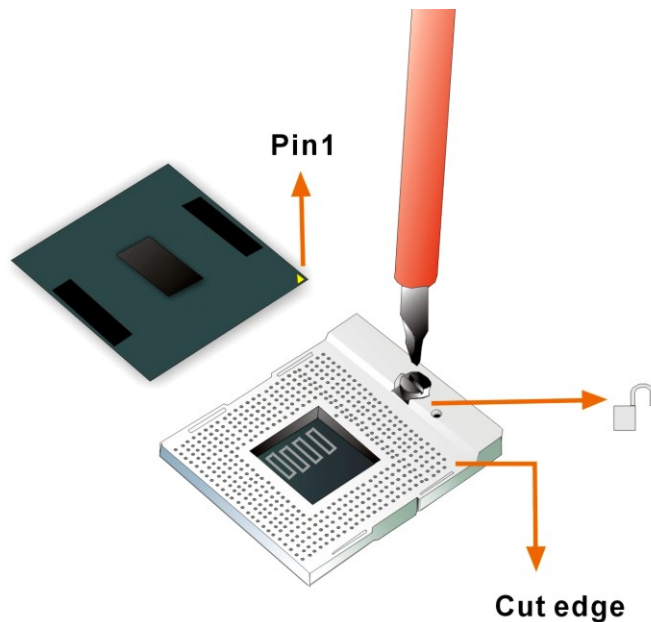


Figure 5-1: Make sure the CPU socket retention screw is unlocked

- 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.
- 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 clockwise into the locked position.

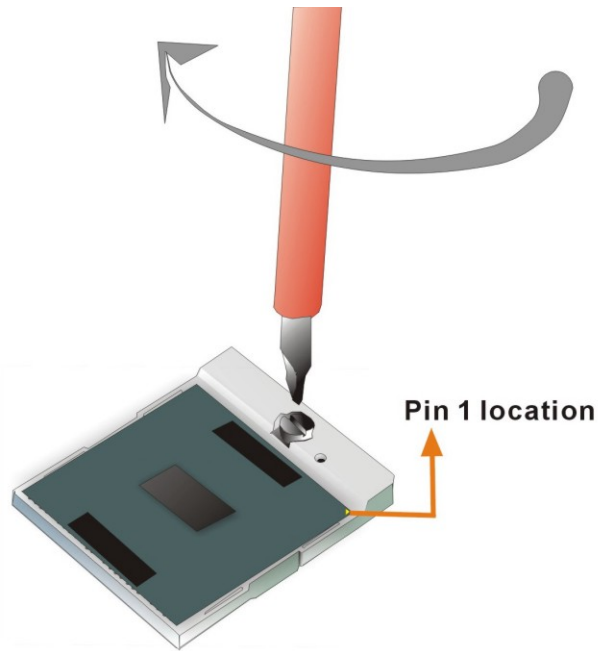


Figure 5-2: Lock the CPU Socket Retention Screw

5.4.2 Cooling Kit Installation

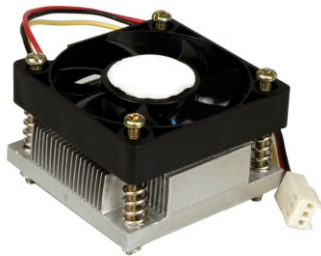


Figure 5-3: Cooling Kit

cooling kits can be purchased separately. The cooling kits comprise 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 heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit, please follow the steps below.

Step 1: Align the support bracket. Remove the tape from the support bracket. From the solder side of the PCB, align the support bracket to the holes on the PCB.

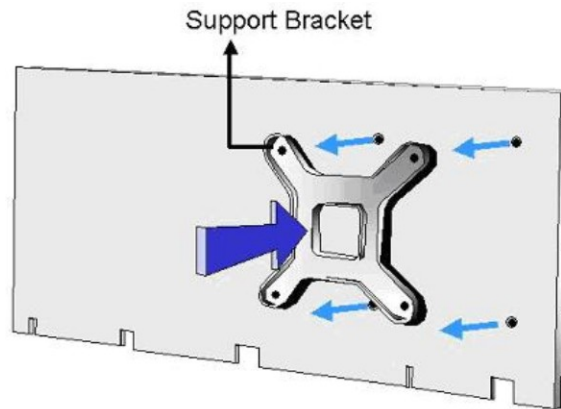


Figure 5-4: Cooling Kit Support Bracket

Step 2: 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 3: Properly align the cooling kit. Make sure its four spring screw fasteners can pass through the pre-drilled holes on the PCB.

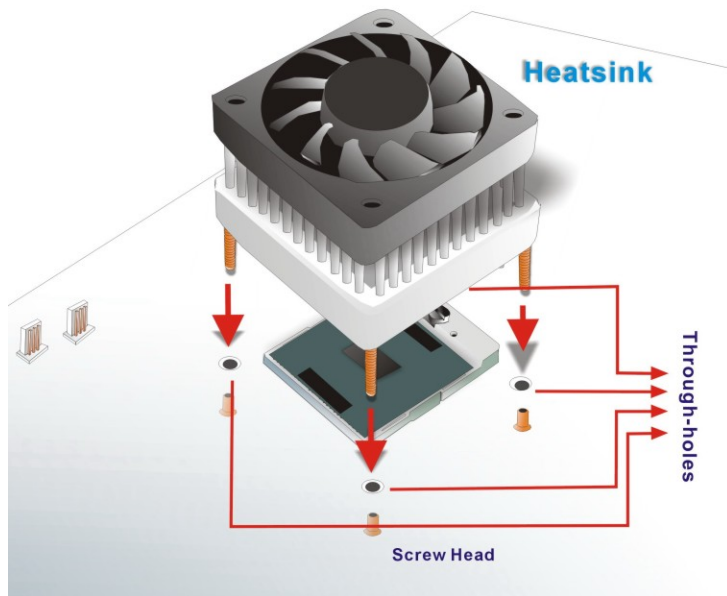


Figure 5-5: Securing the Cooling Kit

- 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. Over tightening can cause damage to the CPU.
- 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.

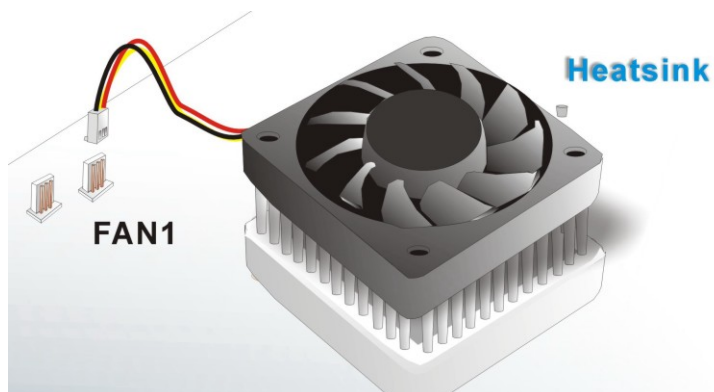


Figure 5-6: Connect the Cooling Fan Cable

5.4.3 DIMM Installation



WARNING:

Using incorrectly specified DIMM may cause permanently damage the 3308290. Please make sure the purchased DIMM complies with the memory specifications of the 3308290. DIMM specifications compliant with the 3308290 are listed in **Chapter 2**.

To install a DIMM into a DIMM socket, please follow the steps below.

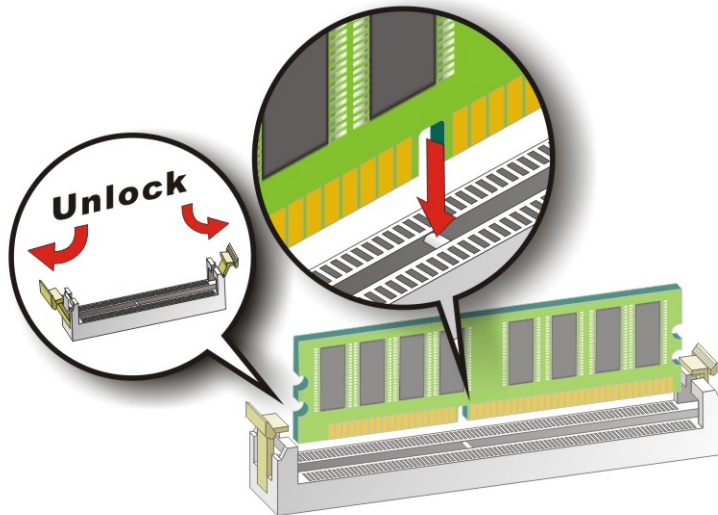


Figure 5-7: Installing a DIMM

- 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.
- 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.

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.

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

5.5 Jumper Settings



NOTE:

A jumper is a metal bridge 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.

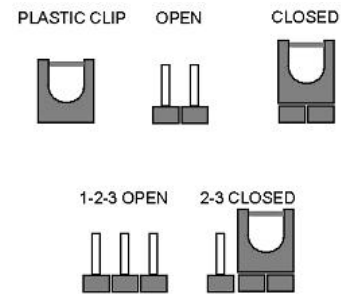


Figure 5-8: Jumper Locations

Before the 3308290 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the 3308290 are listed below.

Description	Label	Type
CF card setup	JCF1	3-pin header
Clear CMOS	J_CMOS1	3-pin header
COM 1/2 Pin 9 setting	JP1	10-pin header
LVDS voltage selection	J_LVDS1	3-pin header
LVDS screen resolution selection	JP3	8-pin header
PCIe x16 / SDVO selection	J1 & JSDVO1	2-pin headers

Table 5-1: Jumpers

5.5.1 Clear CMOS Jumper

Jumper Label:	J_CMOS1
Jumper Type:	3-pin header
Jumper Settings:	See Table 5-2
Jumper Location:	See Figure 5-9

If the 3308290 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

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

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

The clear CMOS jumper settings are shown in **Table 5-2**.

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

Table 5-2: Clear CMOS Jumper Settings

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

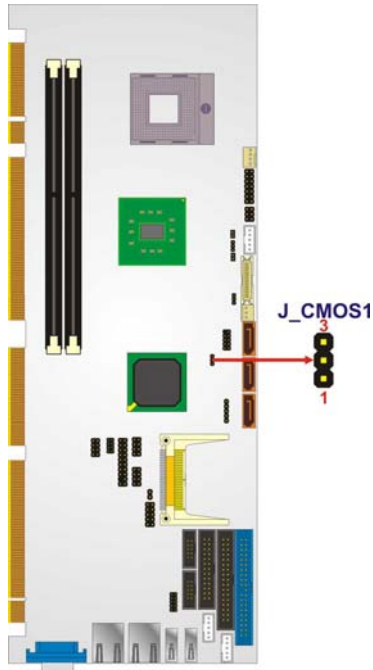


Figure 5-9: Clear CMOS Jumper

5.5.2 CF Card Setup

- Jumper Label:** JCF1
- Jumper Type:** 2-pin header
- Jumper Settings:** See Table 5-3
- Jumper Location:** See Figure 5-10

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	Description	
Open	Slave	Default
Closed	Master	

Table 5-3: CF Card Setup Jumper Settings

The CF Card Setup jumper location is shown below.

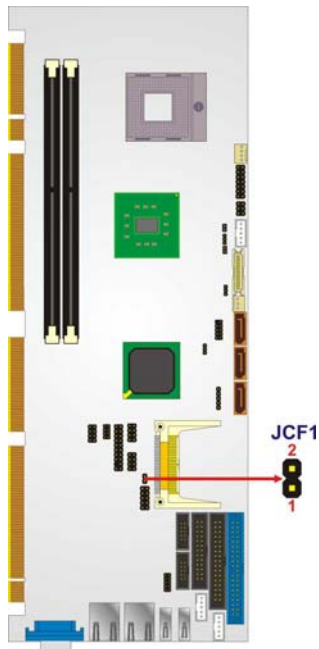


Figure 5-10: CF Card Setup Jumper Location

5.5.3 Serial Port IR Mode Selection

- Jumper Label:** JP1
- Jumper Type:** 10-pin header
- Jumper Settings:** See Table 5-4
- Jumper Location:** See Figure 5-11

The Serial Port IR Mode Selection jumper configures pin 9 on COM 1 and COM 2 as either a +5 V or +12 V power source or as a ring-in (RI) line. The serial port IR mode selection jumper options are shown in Table 5-4.

COM 1/2 RI Pin	Description	
Short 1 – 3	COM 1 RI Pin use +12V	
Short 3 – 5	COM 1 RI Pin use +5V	
Short 5 – 7	COM 1 RI Pin use +5V	
Short 7 – 9	COM 1 RI Pin use RI	
Short 2 – 4	COM 2 RI Pin use +12V	
Short 4 – 6	COM 2 RI Pin use +5V	

COM 1/2 RI Pin	Description	
Short 4 – 6	COM 2 RI Pin use +5V	
Short 8 – 10	COM 2 RI Pin use RI	

Table 5-4: Serial Port IR Mode Selection Jumper Settings

The Serial Port IR Mode Selection jumper location is shown in **Figure 5-11** below.

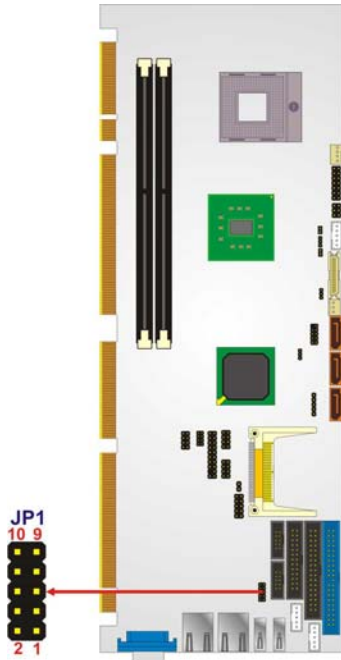


Figure 5-11: Serial Port IR Mode Selection Jumper Location

5.5.4 LVDS Voltage Selection



WARNING:

Permanent damage to the screen and 3308290 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that came with the monitor to select the correct voltage.

Jumper Label: **J_LVDS1**

Jumper Type: 3-pin header
Jumper Settings: See **Table 5-5**
Jumper Location: See **Figure 5-12**

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

LVDS Voltage Select	Description	
Short 1-2	+3.3V LVDS	
Short 2-3	+5V LVDS	Default

Table 5-5: LVDS Voltage Selection Jumper Settings

The LVDS Voltage Selection jumper location is shown in **Figure 5-12**.

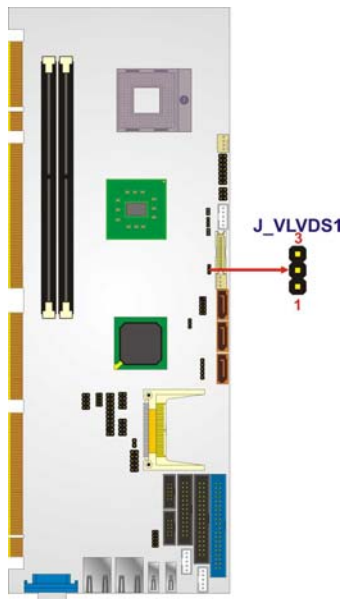


Figure 5-12: LVDS Voltage Selection Jumper Pinout Locations

5.5.5 LVDS Screen Resolution Selection

Jumper Label: JP3
Jumper Type: 8-pin header
Jumper Settings: See **Table 5-5**

Jumper Location: See Figure 5-12

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

LVDS Resolution Select	Description	
Open	640 x 480 (18-bit)	Default
Short 1-2	800 x 600 (18-bit)	
Short 3-4	1024 x 768 (18-bit)	
Short 1-2 and 3-4	1280 x 1024 (48-bit)	
Short 3-4 and 5-6	1600 x 1200 (48-bit)	
Short 3-4 and 7-8	1024 x 768 (24-bit)	

Table 5-6: LVDS Screen Resolution Selection Jumper Settings

The **LVDS Screen Resolution Selection** jumper location is shown in **Figure 5-12**.

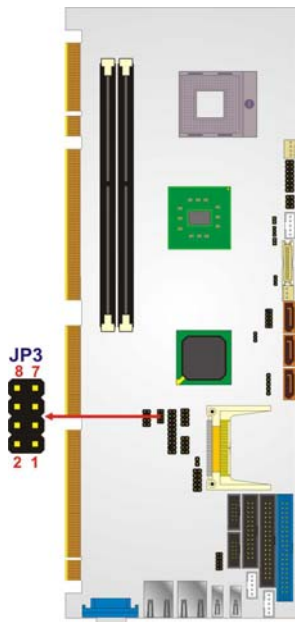


Figure 5-13: LVDS Screen Resolution Selection Jumper Pinout Locations

5.5.6 PCIe / SDVO Selection Jumper

Jumper Label: J1 and JSDVO1

Jumper Type: 2-pin headers
Jumper Settings: See Table 5-5
Jumper Location: See Figure 5-12

The **PCIe / SDVO Selection Jumper** allows the LVDS screen voltage to be set. The **PCIe / SDVO Selection Jumper** settings are shown in Table 5-5.

J1	JSDVO1	Description	
Short 1-2	Open	SDVO graphics card	
Short 1-2	Short 1-2	PCIe x16 graphics card	Default

Table 5-7: PCIe / SDVO Selection Jumper Settings

The **PCIe / SDVO Selection Jumper** location is shown in Figure 5-12.

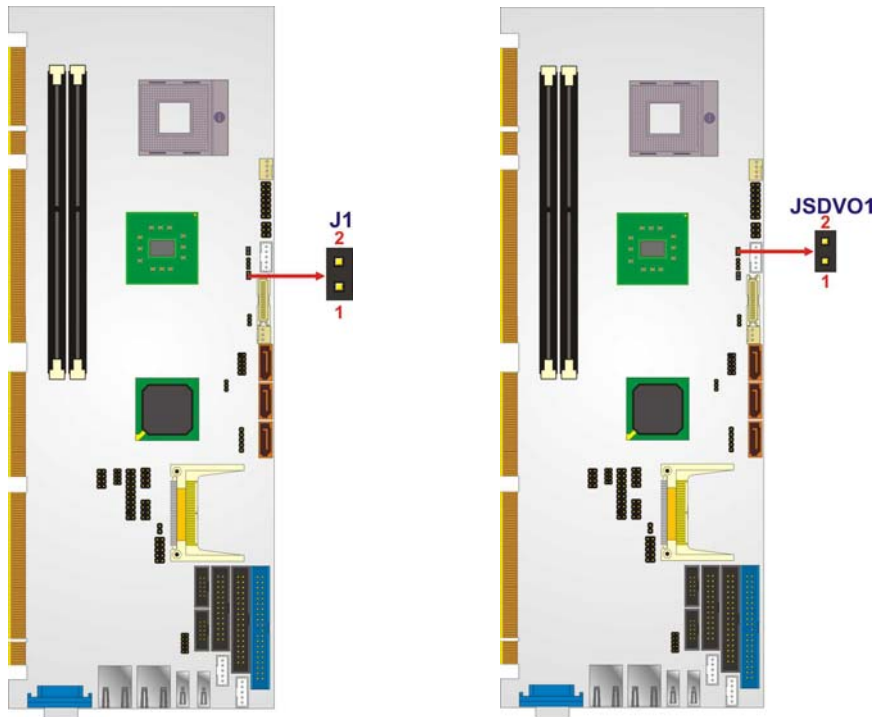


Figure 5-14: PCIe / SDVO Selection Jumper

5.6 Chassis Installation

5.6.1 Airflow



WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the 3308290 is installed must have air vents to allow cool air into the system and hot air to move out.

The 3308290 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.

5.6.2 Backplane Installation

Before the 3308290 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.

5.6.3 CPU Card Installation

To install the 3308290 CPU card onto the backplane, carefully align the CPU card interface connectors with the corresponding socket on the backplane. To do this, please refer to the reference material that came with the backplane. Next, secure the CPU card to the chassis. To do this, please refer to the reference material that came with the chassis.

5.7 Internal Peripheral Device Connections

5.7.1 Peripheral Device Cables

The cables listed in Error! Reference source not found. are shipped with the 3308290.

Quantity	Type
1	Dual RS-232 cable

3	SATA drive cable
1	SATA drive power cable
1	USB cable (dual port)

5.7.2 7.1 Channel Audio Kit Installation

The optional 7.1 channel audio kit connects to the 9-pin audio connector on the 3308290. 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 3308290. 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.

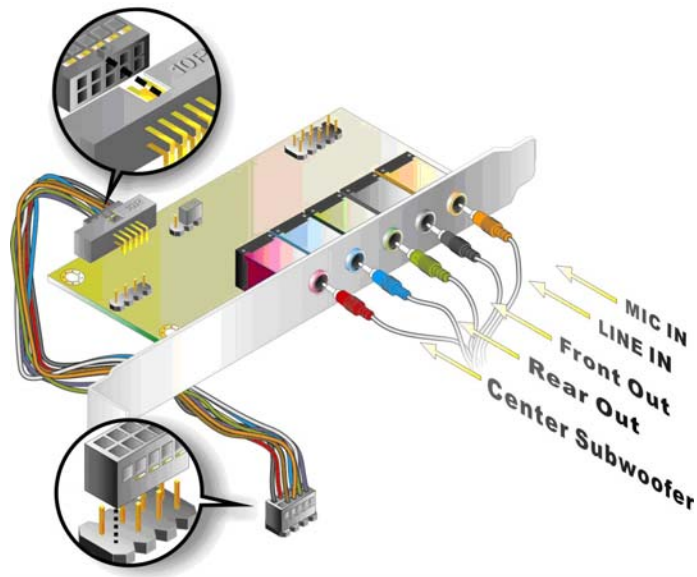


Figure 5-15: 7.1 Channel Audio Kit

- Step 4:** **Mount the audio kit onto the chassis.** Once the audio kit is connected to the 3308290, 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.

5.7.3 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. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

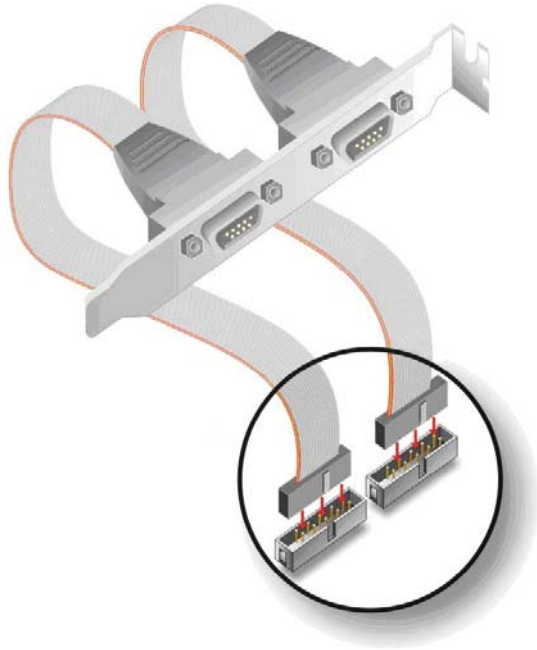


Figure 5-16: Dual RS-232 Cable Installation

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

5.7.4 USB Cable (Dual Port) with Slot Bracket

The 3308290 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

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



WARNING:

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

Step 2: Align the connectors. The cable has two connectors. Correctly align pin 1 on each cable connector with pin 1 on the 3308290 USB connector.

Step 3: Insert the cable connectors Once the cable connectors are properly aligned with the USB connectors on the 3308290, connect the cable connectors to the onboard connectors.

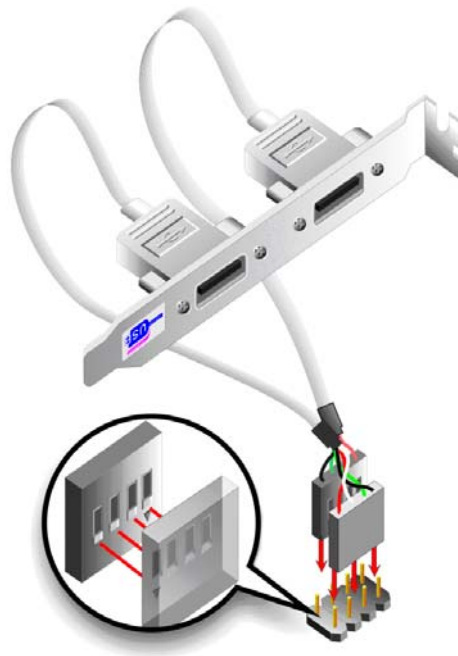


Figure 5-17: Dual USB Cable Connection

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.

5.7.5 SATA Drive Connection

The 3308290 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 5-18**.

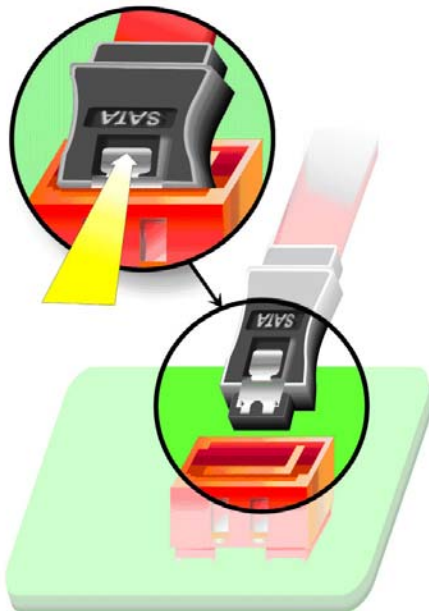


Figure 5-18: SATA Drive Cable Connection

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 Error! Reference source not found..

Step 4: Connect the SATA power cable. Connect the SATA power connector to the back of the SATA drive.

5.8 External Peripheral Interface Connection

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

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

To install these devices, connect the corresponding cable connector from the actual device to the corresponding 3308290 external peripheral interface connector making sure the pins are properly aligned.

5.8.1 LAN Connection

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 3308290. See **Figure 5-19**.

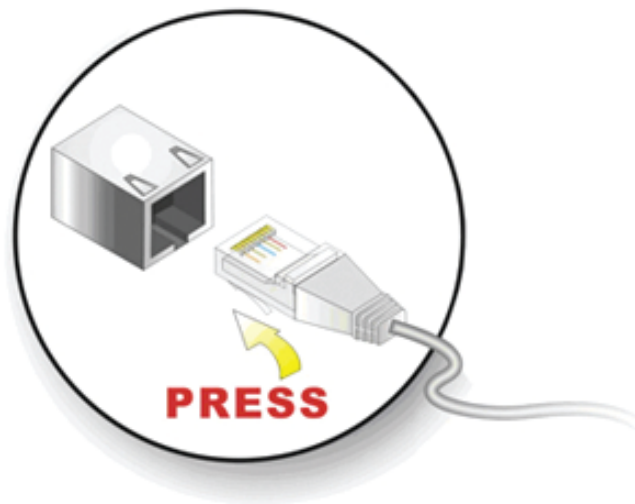


Figure 5-19: LAN Connection

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

5.8.2 USB Device Connection

There are two external USB 2.0 connectors. Both connectors are perpendicular to the 3308290. 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 3308290. See Figure 5-20.

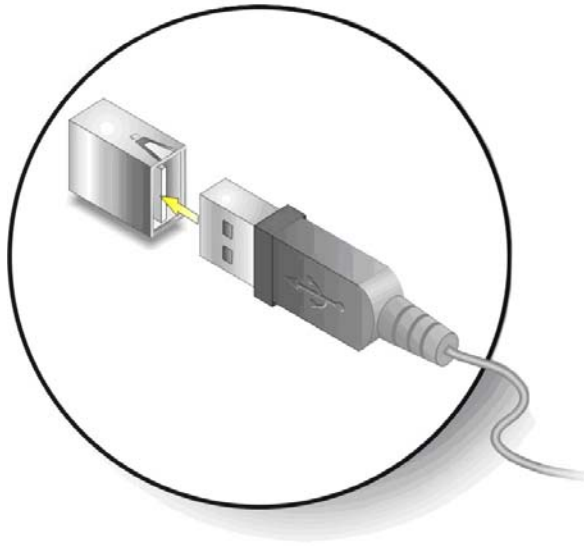


Figure 5-20: USB Device Connection

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

5.8.3 VGA Monitor Connection

The 3308290 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 3308290, 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 3308290. See **Figure 5-21**.

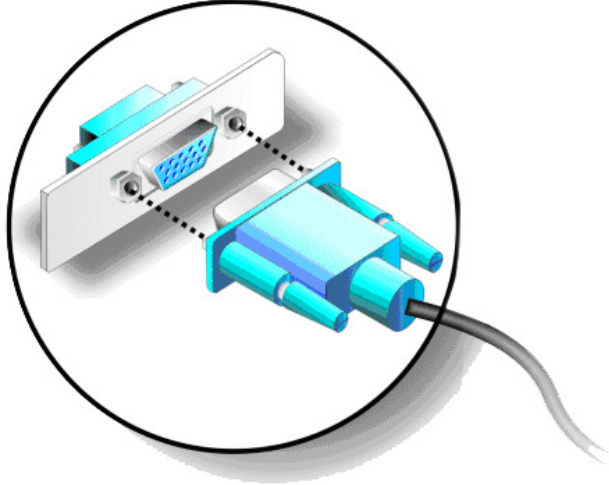


Figure 5-21: VGA Connector

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.



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