GLOBAL
American, Inc.

User's Manual

3302150

Version 1.0

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Glossary

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

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Chapter

1

Introduction

1.1 3302150 Board Overview

The EPIC form factor 3302150 Intel Petium M / Celeron M Socket 479 embedded board is fully equipped with a high performance processor and advanced multi-mode I/Os. The 3302150 is designed for system manufacturers, integrators, and VARs that want performance, reliability, and quality at a reasonable price.

1.1.1 3302150 Board Variations

Two 3302150 models are available. The models are listed in **Table 1-1**.

Model	CPU	Clock Speed—Ultra Low Voltage	FSB	Socket / On board	Ethernet
3302150G-R10	Intel Pentium M / Celeron M	1 GHz and 900 MHz	400 MHz	Socket 479	1GbE
3302150E-800Z-R10	Intel Celeron M	800 MHz	400 MHz	On board	10/100Mbps

Table 1-1: 3302150 Board Variations

1.1.2 3302150 Board Benefits

EPIC form factor 3302150 defines a new industry open standard for small form factor embedded computer boards. Some of the 3302150 board benefits include,

- ƒ allowing additional space to support advanced processors and technologies
- ƒ supporting complex I/O functions for industrial, medical, military, transportation, and commercial applications
- ƒ saving money and space from cables

1.1.3 3302150 Board Features

Some of the 3302150 board features are listed below:

- ƒ Complies with EPIC form factor
- ƒ Complies with RoHS
- ƒ Supports AT/ATX power supply
- ƒ Supports up to 1GB of 266MHz or 200MHz single channel DDR memory

ƒ   Supports dual independent displays, CRT/LCD display and 36-bit LVDS
flat panel screens

ƒ   Supports PCI-104 extension slot

ƒ   Complete I/O support with

o   2 x SATA-150 connectors

o   6 x USB 2.0 connectors

o   1 x Parallel port connector

o   1 x CFII connector

o   3 x RS-232 connectors

o   1 x RS232/422/485 selector

o   1 x PS/2 Keyboard/Mouse connector

o   1 x IDE device connector

1.2   3302150 Board Overview
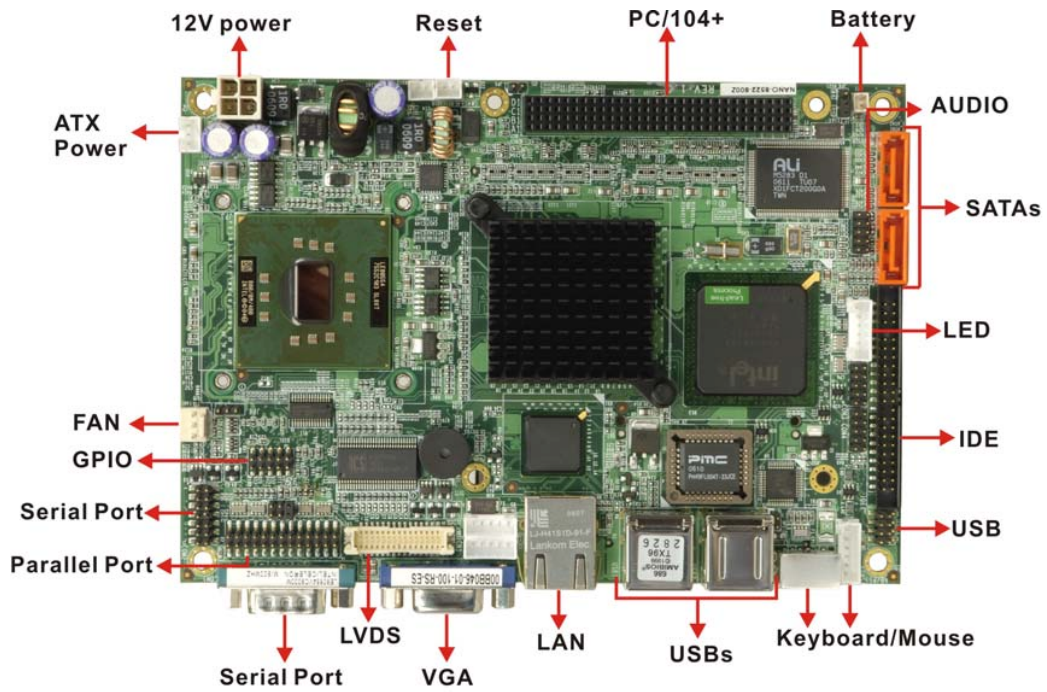
Figure 1-1: 3302150 Board Overview (Top View)
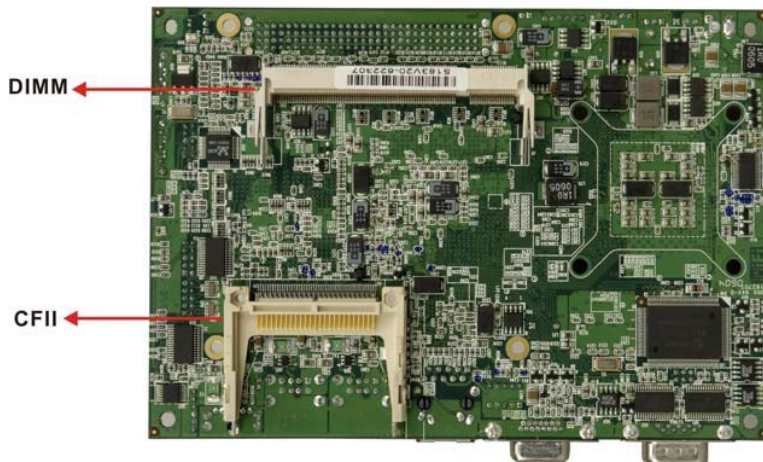
Figure 1-2: 3302150 Board Overview (Bottom View)

1.2.1 3302150 Board Connectors

The 3302150 board has the following connectors onboard:

- ƒ 1 x 12V power connector
- ƒ 1 x 4-bit GPIO connector
- ƒ 1 x ATX power button connector
- ƒ 1 x ATX power connector
- ƒ 1 x Audio connector
- ƒ 1 x Battery connector
- ƒ 1 x Compact flash connector
- ƒ 1 x DDR SDRAMSODIMM socket
- ƒ 1 x DIO connector
- ƒ 1 x Fan connector
- ƒ 1 x IDE device connector
- ƒ 1 x Keyboard/mouse connector
- ƒ 1 x LED connector
- ƒ 1 x LCD LVDS interface connector
- ƒ 1 x Parallel port connector
- ƒ 1 x PC/104-plus connector
- ƒ 1 x Reset connector
- ƒ 2 x Serial ATA connectors
- ƒ 3 x Serial port connectors
- ƒ 2 x USB 2.0 connectors

The 3302150 board has the following connectors on the board rear panel:

- ƒ 1 x Serial port connector (COM)
- ƒ 1 x VGA connector
- ƒ 1 x RJ-45 Ethernet connector
- ƒ 4 x USB 2.0 ports
- ƒ 1 x Keyboard/Mouse connector

The location of these connectors on the 3302150 can be seen in **Figure 1-1** and **Figure 1-2**. These connectors are fully described in *Chapter 3 Connectors and Jumpers*.

1.2.2 Technical Specifications

3302150 board technical specifications are listed in **Table 1-2**. Detailed descriptions of each specification can be found in *Chapter 2 Detailed Specifications*.

SPECIFICATION	
CPUs Supported	Intel® Pentium® M Socket 479, Intel® Celeron® M Socket 479, or Intel® Celeron® M 800 MHz zero cache processor on board
Chipsets	Northbridge: Intel® 852GM Southbridge: Intel® ICH4
I/O Controller	ICH4
Graphics Support	Intel® Extreme Graphics 2
Display	CRT integrated in Intel® 852GM Dual 18-bit LVDS integrated in Intel® 852GM
Memory	One DDR SDRAM SODIMM memory module (Max. 1GB)
PCI Bus Interface	PCI-104
HDD Interface	One IDE channel supports two Ultra ATA/33 devices
Serial ATA Interface	Two SATA connectors supported
USB Interfaces	Six USB 2.0 connectors supported
Serial Ports	Four COM ports
Real Time Clock	256-byte battery backed CMOS RAM
Hardware Monitoring	Cooling fans, temperature and system voltages
Power Management	Supports Advanced Configuration and Power Interface (ACPI) Specifications Revision 2.0

Ethernet	Intel 82541PI for GbE / Intel 82551ER for 10/100Mbps
BIOS	AMI flash BIOS
Physical Dimensions	115mm x 165mm (width x length)
Weight	GW: 1.1 Kg NW: 0.95 Kg
Operating Temperature	Minimum: 0ºC (32°F) Maximum: 60°C (140°F)
Audio Interfaces	AC '97 Codec Realtek ALC655

Table 1-2: Technical Specifications

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Chapter

2

Detailed Specifications

2.1 CPU Support

Table-2-1 lists the CPUs supported by the 3302150 board.

Model	Speed	L2 Cache	Max. FSB	Socket
Intel® Pentium® M	1.30 to 1.70 GHz	1 MB	400 MHz	479
Intel® Celeron® M	1.20 to 1.73 GHz	1 MB	400 MHz	479
Intel® Celeron® M	800 MHz	512 KB	400 MHz	On board

Table-2-1: Supported CPUs

2.1.1 Intel® Pentium® M :

The Intel® Pentium® M processor comes with the following features:

- ƒ Intel® Streaming SIMD Extensions accelerates 3D graphics performance, video decoding/encoding, and speech recognition.
- ƒ SpeedStep® Technology enhances overall system power management
- ƒ Micro-FCPGA and Micro-FCBGA packaging technologies
- ƒ Compatibility with IA-32 software.
- ƒ Advanced branch prediction architecture that reduces the number of mispredicted branches.

2.1.2 Intel® Celeron® M :

The (ULV) Intel® Celeron® M processor comes with the following features:

- ƒ Intel® Streaming SIMD Extensions accelerates 3D graphics performance, video decoding/encoding, and speech recognition.
- ƒ Advanced power management features
- ƒ Compatible with IA-32 software.
- ƒ Advanced branch prediction and data prefetch logic

2.2 Onboard Chipsets

2.2.1 Northbridge and Southbridge Chipsets

The following chipsets are preinstalled on the board:

- ƒ **Northbridge**: Intel® 852GM
- ƒ **Southbridge**: Intel® ICH4

The following two sections (**Section 2.2.2** and **Section 2.2.3**) list some of the features of the Intel® 852GM and the Intel® ICH4 chipsets. For more information on these two chipsets please refer to the Intel website.

2.2.2 Intel® 852GM Northbridge Chipset

The Intel® 852GM Northbridge chipset comes with the following features:

- ƒ Supports Intel® NetBurst® micro-architecture
- ƒ 400 MHz system bus delivers a high-bandwidth connection between the processor and the platform
- ƒ Supports integrated graphics utilizing Intel® Extreme Graphics 2 technology
- ƒ Three USB host controllers provide high performance peripherals with 480 Mbps of bandwidth, while enabling support for up to six USB 2.0 ports.
- ƒ The latest AC '97 implementation delivers 20-bit audio for enhanced sound quality and full surround-sound capability.
- ƒ LAN Connect Interface (LCI) provides flexible network solutions such as 10/100 Mbps Ethernet and 10/100 Mbps Ethernet with LAN manageability
- ƒ Dual Ultra ATA/100 controllers, coupled with the Intel® Application Accelerator supports faster IDE transfers to storage devices
- ƒ Intel Application Accelerator software provides additional performance over native ATA drivers by improving I/O transfer rates and enabling faster O/S load time, resulting in accelerated boot times

2.2.3 Intel® ICH4 Southbridge Chipset

The ICH4 provides extensive I/O support. Functions and capabilities include:

ƒ PCI Local Bus Specification, Revision 2.2-compliant with support for 33 MHz PCI operations.

ƒ PCI slots (supports up to 6 Req/Gnt pairs)

ƒ ACPI Power Management Logic Support

ƒ Enhanced DMA controller, Interrupt controller, and timer functions

ƒ Integrated IDE controller supports Ultra ATA100/66/33

ƒ USB host interface with support for six USB ports; three UHCI host controllers; one EHCI high-speed

ƒ USB 2.0 Host controller

ƒ Integrated LAN controller

ƒ System Management Bus (SMBus) Specification, Version 2.0 with additional support for I^2C devices

ƒ Supports Audio Codec '97, Revision 2.3 specification (a.k.a., AC '97 Component Specification, Revision 2.3)

ƒ Link for Audio and Telephony codecs (up to seven channels)

ƒ Low Pin Count (LPC) interface

ƒ Firmware Hub (FWH) interface support

ƒ Alert On LAN* (AOL) and Alert On LAN 2* (AOL2)

2.3 Data Flow

Figure 2-1 shows the data flow between the two onboard chipsets and other components installed on the 3302150 and described in the following sections of this chapter.
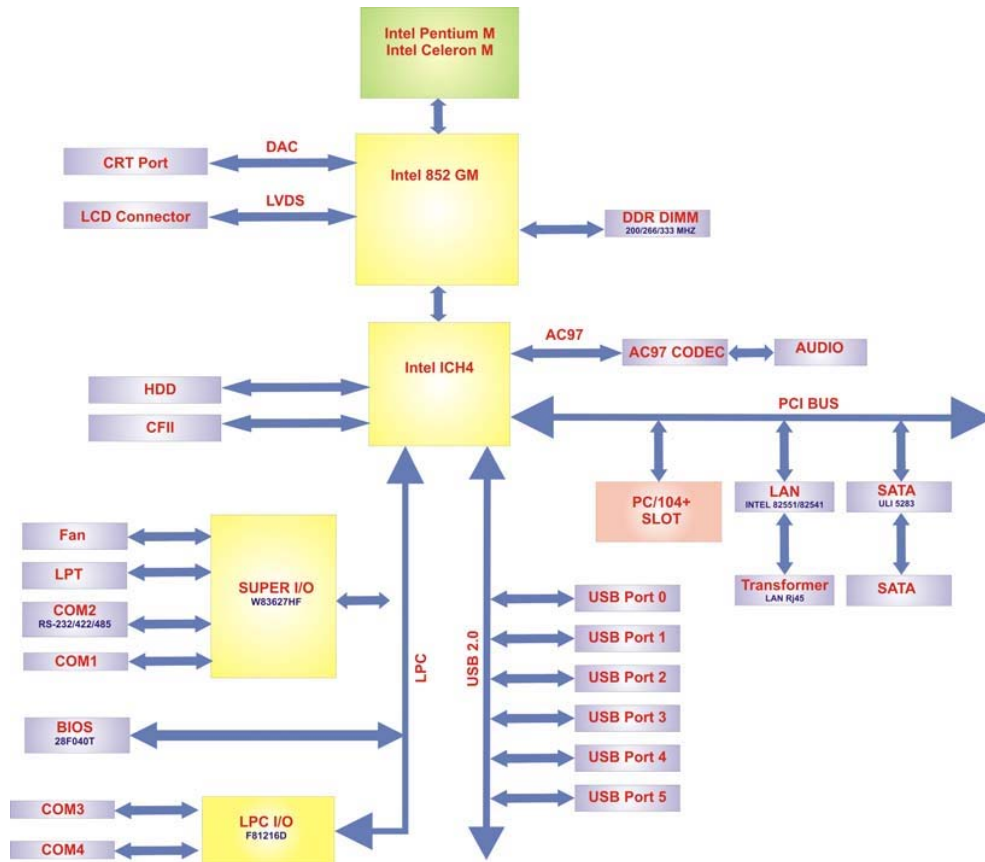
Figure 2-1: Data Flow Block Diagram

2.4   Graphics Support

The Intel® Extreme Graphics 2 is integrated on the Intel® 852GM Northbridge chipset. The Intel® Extreme Graphics 2 features are listed below.

- ƒ **Enhanced Rapid Pixel and Texel Rendering**: Optimized visual quality and performance from the addition of hardware to support of texel formatting, bicubic filter, color blending accuracy, and video mixing render, resulting in optimized visual quality and performance.
- ƒ **Zone Rendering 2 Technology**: Enhances the performance of zone rendering by using larger zones and new commands that improve graphics pipeline efficiency.
- ƒ **Dynamic Video Memory Technology v2.0**: Increases total system performance by optimizing the efficiency of AGP dynamic video memory by increasing its size of Video RAM allocation to 96 MB.
- ƒ **Enhanced Intelligent Memory Management**: Improves memory bandwidth efficiency and platform performance by improving the memory management arbitration between CPU, system memory and graphics memory.

Intel® Extreme Graphics 2 specifications are listed below:

- ƒ Enhanced 2D:
  - o 256-bit internal path
  - o 8/16/32bpp
  - o DirectDraw*, GDI, GDI+
  - o Anti-aliased text support
  - o Alpha blending
  - o Alphas stretch blitter
  - o Hardware alpha blended RGB cursor
  - o Color space conversion
  - o 5x2 overlay support
  - o Rotate, scale and translate operations
- ƒ High-performance 3D:
  - o 256-bit internal path
  - o 32bpp/ 24ZorW/ 8 Stencil

- o DX7*/DX8*/OGL*1.1
- o DXTn texture compression
- o Up to 4 textures / pixel on a single pass
- o Cubic reflection map
- o Embossed/DOT3 bump mapping
- o Multi-texture
- o DOT3 bump-mapping
- o Point sprites
- ƒ Video and Display:
  - o DirectShow*/DirectVA*
  - o Hardware motion compensation support for DVD playback
  - o 4x2 overlay filter
  - o 350 MHz DAC frequency
  - o Maximum DVO pixel rate of up to 330MP/s
  - o Flat panel monitors and TV-out support via AGP Digital Display (ADD) cards
  - o 350 MHz DAC for 1800x1440 @ 85Hz max CRT resolution or 2048x1536@60Hz max FP resolution
  - o Synchronous display for dual monitor capabilities
  - o 350MHz RAMDAC for up to QXGA analog monitor support
  - o Dual DVO ports for up to QXGA digital display support
  - o Multiple display types (LVDS, DVI, TV-out, CRT)

2.5 Memory Support

The 3302150 supports one 200-pin 266MHz or 200MHz DDR SDRAM SODIMM with a maximum capacity of 1GB.

2.6 PCI Bus Interface Support

The PCI bus on the 3302150 board has the following feature:

- ƒ 33MHz Revision 2.2 is implemented

2.7   10/100/1000 Base-T Internet

The onboard Intel 82551ER (for 3302150C) controller provides 10/100 Base-T Internet connectivity to the system. The Intel 82551ER controller features are below.

- ƒ   IEEE 802.3 10BASE-T compliant physical layer interface
- ƒ   IEEE 802.3u Auto-Negotiation and 100BASE-TX support
- ƒ   Reduces board space requirements
- ƒ   Prevents data overruns or underruns
- ƒ   Provides excellent performance with offloading of TCP, UDP and IP checksums
- ƒ   32-bit PCI bus controller with embedded memory
- ƒ   Multiple priority queues augment Quality of Service (QoS) performance

The onboard Intel 82541PI (for 3302150A) controller provides Ethernet interface for 10/100/1000 Base-T applications. The Intel 82541PI controller features are below.

- ƒ   IEEE 802.3 10BASE-T compliant physical layer interface
- ƒ   IEEE 802.3u Auto-Negotiation and 100BASE-TX support
- ƒ   Power Save mode switches link speed from 1000Mb/s down to 10 or 100Mb/s
- ƒ   PCI clock suspension for low-power mobile design
- ƒ   Programmable host memory receive buffers (256B to 16KB)
- ƒ   TCP segmentation (LSO), TCP and UDP checksum off-loading
- ƒ   Compliance with PCI Power Management v1.1/ACPI v2.0
- ƒ   Automatic link speed switching from 1000Mb/s down to 10 or 100Mb/s in standby

2.8   IDE Device Support

The 3302150 southbridge chipset IDE controller supports up to two HDDs with the following specifications:

- ƒ   Supports PIO IDE transfers up to 16MB/s
- ƒ   Supports Ultra ATA/33 devices with data transfer rates up to 33MB/s

2.9 SATA Drive Support

The 3302150 supports two first-generation SATA drives with transfer rates of up to 1.5GB/s.

2.10 Real Time Clock

256-byte battery backed CMOS RAM

2.11 System Monitoring

The 3302150 board is capable of self-monitoring various aspects of its operating status including:

- ƒ CPU, chipset, and battery voltage, +3.3V, +5V, and +12V
- ƒ RPM of cooling fans
- ƒ CPU and board temperatures (by the corresponding embedded sensors)

2.12 USB Interfaces

The 3302150 board has six USB interfaces, two internal and four external. The USB interfaces support USB 2.0.

2.13 BIOS

The 3302150 board uses a licensed copy of AMI BIOS. The features of the flash BIOS used are listed below:

- ƒ SMIBIOS (DMI) compliant
- ƒ Console redirection function support
- ƒ PXE (**P**re-Boot E**x**ecution **E**nvironment) support
- ƒ USB booting support

2.14 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the 3302150 board are listed below.

- ƒ Minimum Operating Temperature: 0ºC (32°F)

ƒ   Maximum Operating Temperature: 60°C (140°F)

A 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.

NOTE:

The 3302150 comes with a preinstalled heat sink and CPU. The heat sink should not be removed during operation. If the CPU is replaced, prior to running the system, the heat sink must be reinstalled on the 3302150.

2.15   Audio Codec

The 3302150 has an integrated REALTEK ALC655 CODEC. The ALC655 CODEC is a 16-bit, full-duplex AC'97 Rev. 2.3 compatible six-channel audio CODEC designed for PC multimedia systems, including host/soft audio and AMR/CNR-based designs. Some of the features of the codec are listed below.

ƒ   Meets performance requirements for audio on PC99/2001 systems

ƒ   Meets Microsoft WHQL/WLP 2.0 audio requirements

ƒ   16-bit Stereo full-duplex CODEC with 48KHz sampling rate

ƒ   Compliant with AC'97 Rev 2.3 specifications

ƒ   Front-Out, Surround-Out, MIC-In and LINE-In Jack Sensing

ƒ   14.318MHz -> 24.576MHz PLL to eliminate crystal

ƒ   12.288MHz BITCLK input

ƒ   Integrated PCBEEP generator to save buzzer

ƒ   Interrupt capability

ƒ   Three analog line-level stereo inputs with 5-bit volume control, LINE_IN, CD, AUX

ƒ   High-quality differential CD input

- ƒ Two analog line-level mono inputs: PCBEEP, PHONE-IN
- ƒ Two software selectable MIC inputs
- ƒ Dedicated Front-MIC input for front panel applications (software selectable)
- ƒ Boost preamplifier for MIC input
- ƒ LINE input shared with surround output; MIC input shared with Center and LFE output
- ƒ Built-in 50mW/20ohm amplifier for both Front-out and Surround-Out
- ƒ External Amplifier Power Down (EAPD) capability
- ƒ Power management and enhanced power saving features
- ƒ Supports Power-Off CD function
- ƒ Adjustable VREFOUT control
- ƒ Supports 48KHz S/PDIF output, complying with AC'97 Rev 2.3 specifications
- ƒ Supports 32K/44.1K/48KHz S/PDIF input
- ƒ Power support: Digital: 3.3V; Analog: 3.3V/5V
- ƒ Standard 48-pin LQFP package
- ƒ EAX™ 1.0 & 2.0 compatible

  Direct Sound 3D™ compatible

  A3D™ compatible

  I3DL2 compatible
- ƒ HRTF 3D positional audio
- ƒ 10-band software equalizer
- ƒ Voice cancellation and key shifting in Karaoke mode
- ƒ AVRack® Media Player
- ƒ Configuration Panel for improved user convenience

2.16 Power Consumption

Table 2-2 shows the power consumption parameters for the 3302150 when a zero cache ULV Celeron M CPU is running with a clock speed of 800MHz and a 256MB 266MHz DDR.

Voltage	Current
+12V	**0.85A**

Table 2-2: Power Consumption

Table 2-3 shows the power consumption parameters for the 3302150 when a Pentium

CPU is running with a clock speed of 1.7GHz and a 512MB 266MHz DDR.

Voltage	Current
+12V	**3.5A**

Table 2-3: Power Consumption

2.17   Packaged Contents and Optional Accessory Items

2.17.1 Package Contents

The 3302150 is shipped with the following components.

- ƒ   1 x 3302150 single board computer
- ƒ   1 x IDE flat cable 44p/44p
- ƒ   1 x Keyboard/PS2 Mouse Y cable
- ƒ   1 x Audio cable
- ƒ   2 x SATA cables
- ƒ   1 x SATA Power cable
- ƒ   1 x Power cable
- ƒ   2 x RS232 cables
- ƒ   1 x Mini jumper pack
- ƒ   1 x Utility CD
- ƒ   1 x QIG (quick installation guide)

Listed below are some optional cables:

- ƒ   CPU Cooler
- ƒ   USB cable
- ƒ   LPT cable
- ƒ   RS232/422/485 cable

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Chapter

3

Connectors and Jumpers

3.1 Peripheral Interface Connectors

The locations of the peripheral interface connectors are shown in **Section 3.1.1**. A complete list of all the peripheral interface connectors can be seen in **Section 3.1.2**.

3.1.1 3302150 Board Layout

Figure 3-1 and Figure 3-2 shows the onboard peripheral connectors, rear panel peripheral connectors and onboard jumpers.
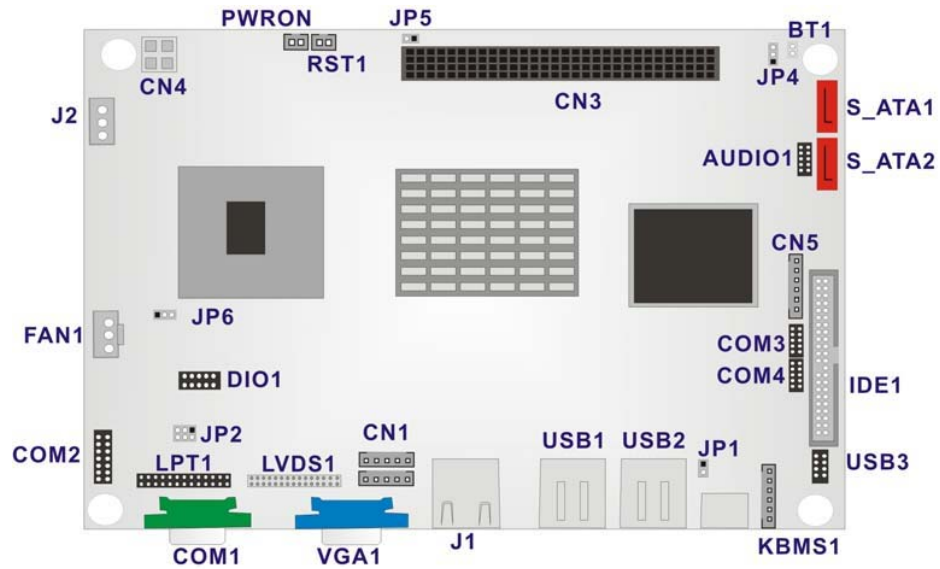
Figure 3-1: Connector and Jumper Locations (Top Side)
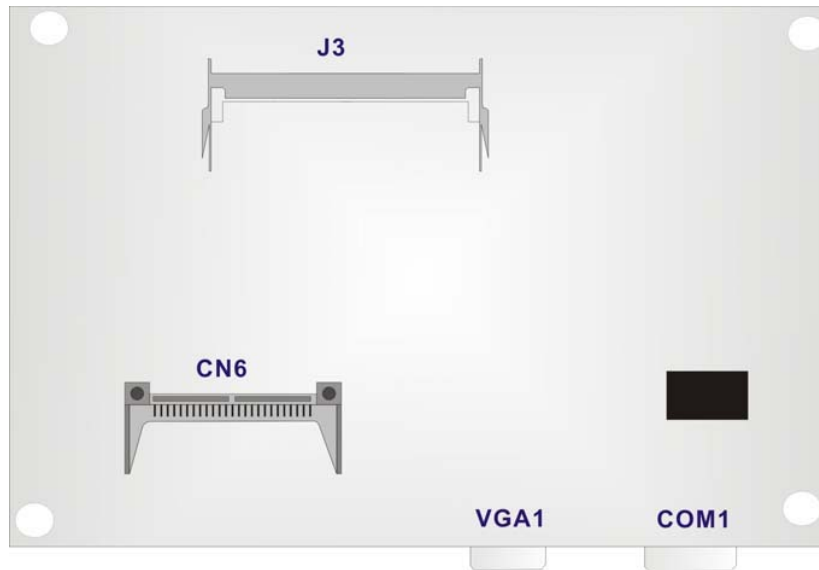
Figure 3-2: Connector and Jumper Locations (Solder Side)

3.1.2 Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the 3302150 board. Detailed descriptions of these connectors can be found in **section 3.2** on **page 41**.

Connector	Type	Label
4-bit GPIO connector	**10-pin header**	DIO1
ATX power button connector	**2-pin header**	PWRON
ATX power connector	**3-pin header**	J2
Audio connector	**10-pin header**	AUDIO1
Battery connector	**2-pin header**	BT1
Board 12V power connector	**4-pin header**	CN4
CFII connector (Secondary IDE connector)	**50-pin**	CN6
DDR SODIMM slot	**200-pin slot**	J3
Inverter connector	**5-pin header**	CN1

IR interface connector	5-pin header	IR1
Fan connector	3-pin header	FAN1
IDE interface connector (Primary)	44-pin header	IDE1
Keyboard/Mouse connector	6-pin header	KBMS1
LED connector	6-pin header	CN5
LVDS connector	30-pin header	LVDS1
Parallel port connector	26-pin header	LPT1
PC/104+ connector	120-pin PCI slot	CN3
Reset connector	2-pin header	RST1
Serial ATA connector	7-pin header	S_ATA1
Serial ATA connector	7-pin header	S_ATA2
Serial port2 connector	14-pin header	COM2
Serial port3 connector	10-pin header	COM3
Serial port4 connector	10-pin header	COM4
USB 2.0 internal USB connector	8-pin header	USB3

Table 3-1: Peripheral Interface Connectors

3.1.3 Rear Panel Connectors

Table 3-2 lists the rear panel connectors on the 3302150 board. Detailed descriptions of these connectors can be found in **Section 3.3** on **page 66**.

Connector	Type	Label
Ethernet connector	RJ-45 connector	J1
Keyboard/Mouse connector	PS/2 connector	KB/PS1
Serial port1 connector	9-pin serial port connectors	COM1
Two USB 2.0 ports	USB port connectors	USB1

Two USB 2.0 ports	USB port connectors	USB2
VGA Connector	15-pin VGA connector	VGA1

Table 3-2: Peripheral Interface Connectors

3.1.4 Onboard Jumpers

Table 3-3 lists the onboard jumpers. Detailed descriptions of these jumpers can be found in **Section 3.4** on **page 70**.

Connector	pe	Label
CF card setup	2-pin header	JP1
Clear CMOS	3-pin header	JP4
COM2 RS232/RS422/RS485 selector	6-pin header	JP2
LCD voltage selector	3-pin header	JP6
PC104+ SERIRQ net to CN3 pin B1 selector	3-pin header	JP5

Table 3-3: Onboard Jumpers

3.2   Internal Peripheral Connectors

Internal peripheral connectors are found on the board and are only accessible when the board is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the 3302150 board.

3.2.1 4-bit GPIO Connector

CN Label: DIO1

CN Type: 2x5 pin headers

CN Location: See Figure 3-3

CN Pinouts: See Table 3-4

The General Purpose Input/Output (GPIO) connector connects external devices. The GPIO connector provides a set of configurable IO ports for either input or output.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	OUT0	4	OUT1
5	OUT2	6	OUT3
7	IN0	8	IN1
9	IN2	10	IN3

Table 3-4: 4-bit GPIO Connector Pinouts
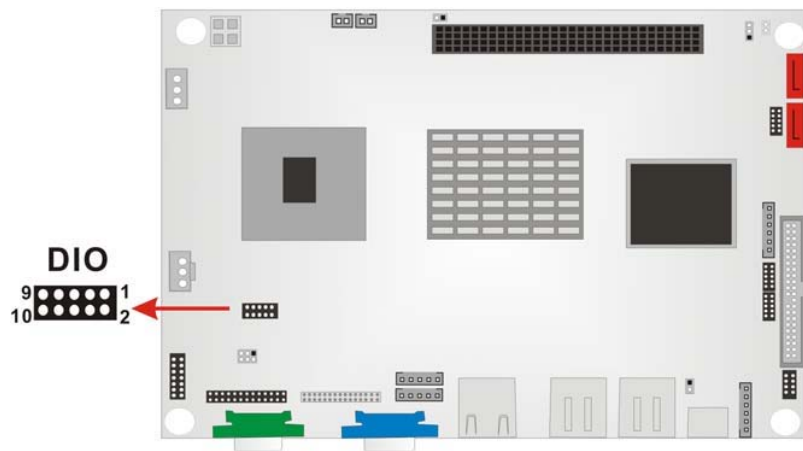
Figure 3-3: 4-bit GPIO Connector Location

3.2.2 ATX Power Button Connector

CN Label: **PWRON**

CN Type: **1x2 pin headers**

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

CN Pinouts: **See Table 3-5**

The ATX power button connector supports ATX power switch and enables power on/off from the chassis.

PIN NO.	DESCRIPTION
1	Button 1
2	Button 2

Table 3-5: Power Button Connector Pinouts
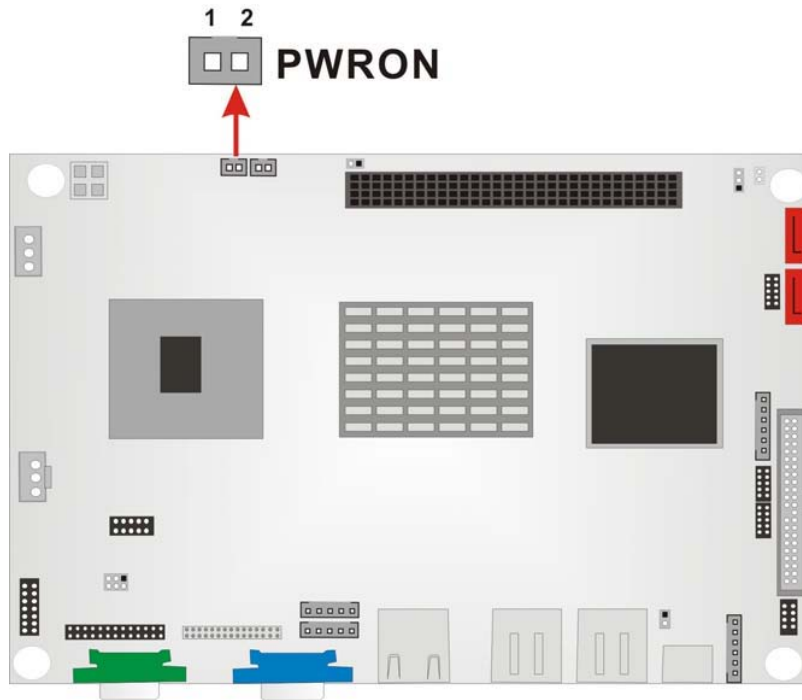
Figure 3-4: Power Button Connector Location

3.2.3 ATX Power Connector

CN Label: **J2**

CN Type: **1x3 pin header**

CN Location: **See Figure 3-5**

CN Pinouts: **See Table 3-6**

This connector supports the ATX power supply.

PIN NO.	DESCRIPTION
1	5VSBY
2	GND
3	PSON

Table 3-6: Power Connector Pinouts
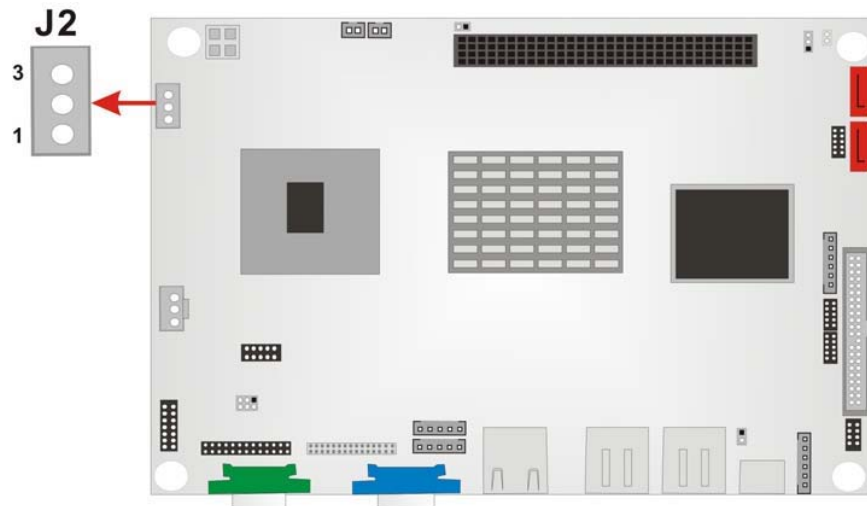
Figure 3-5: Power Connector Location

3.2.4 Audio Connector

CN Label: **AUDIO1**

CN Type: **2x5 pin headers**

CN Location: **See Figure 3-6**

CN Pinouts: **See Table 3-7**

The 3302150 has a built-in AC '97 AUDIO CODEC connector directly connected to the MIC-IN, LINE-IN and LINE-OUT.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LINE_OUT-R	2	LINE_IN-R
3	GND	4	GND
5	LINE_OUT-L	6	LINE_IN-L
7	GND	8	GND
9	MIC-IN	10	NC

Table 3-7: Audio Connector Pinouts
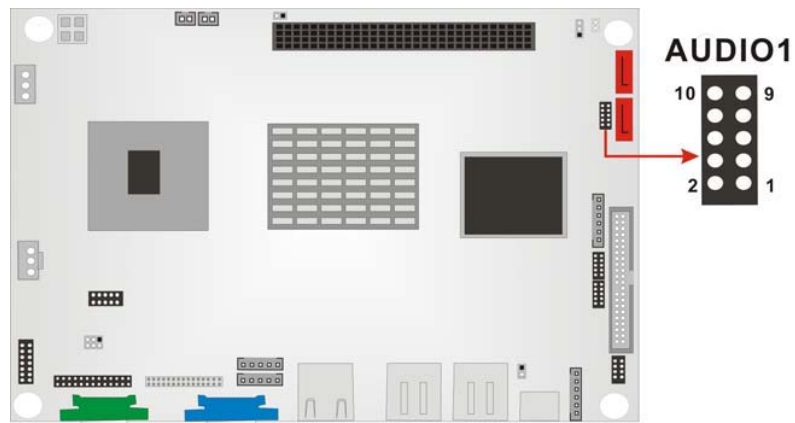
Figure 3-6: Audio Connector Location

3.2.5 Battery Connector

CN Label: BT1

CN Type: 1x2 pin header

CN Location: See Figure 3-7

The battery connector is connected to a preinstalled VARTA CR2032 3V battery
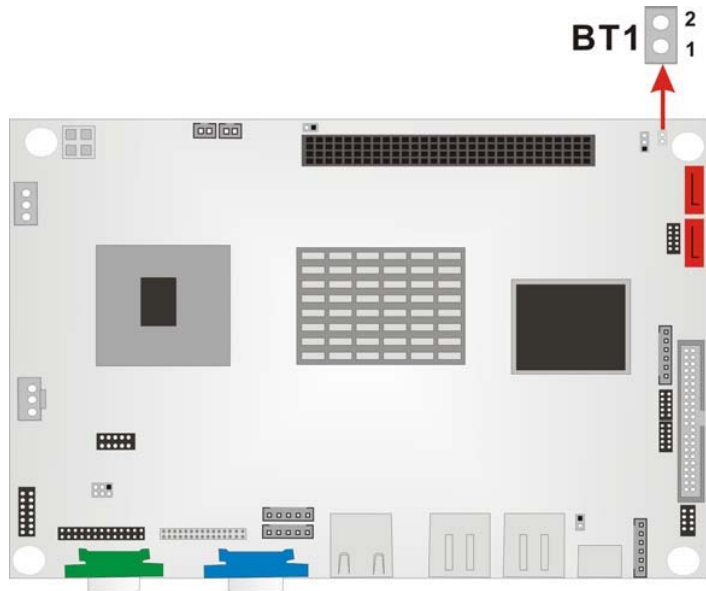
Figure 3-7: Battery Connector Location

3.2.6 12V Power Connector

CN Label: **CN4**

CN Type: **1x4 pin header**

CN Location: **See Figure 3-8**

CN Pinouts: **See Table 3-8**

Connects a power source from a power supply unit (PSU) to the 3302150.

PIN NO.	DESCRIPTION
1	GND
2	GND
3	VCC12
4	VCC12

Table 3-8: 12V Power Connector Pinouts
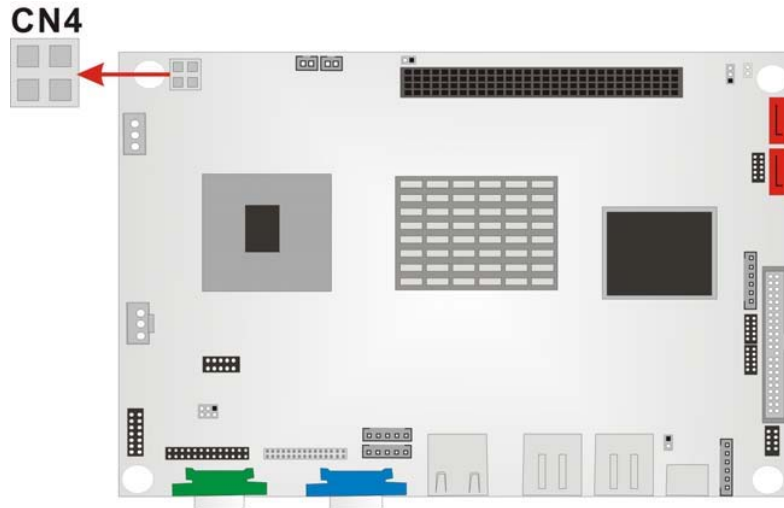
Figure 3-8: 12V Power Connector Location

3.2.7 Compact Flash Type 2 Socket

CN Label: CN6

CN Type: 50-pin

CN Location: See Figure 3-9

CN Pinouts: See Table 3-9

A CFII (compact flash type II connector) is located on the solder side of the 3302150. The CFII connector is for applications without external storage. The Compact Flash socket provides an alternative to hard disk drives in applications where hard disk drives may consume too much space and storage capacity is not a requirement.   The CF card behaves like a secondary IDE master disk drive.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15

7	HDC_CS0#	32	HDC_CS1
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	N/C
12	N/C	37	INTERRUPT
13	VCC_COM	38	VCC_COM
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	SA2	43	N/C
19	SA1	44	VCC_COM
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	N/C
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

Table 3-9: CFII Socket Pinouts

Figure 3-9: CFII Socket Location (Solder Side)

3.2.8 DDR SODIMM Socket

CN Label: J3

CN Type: **200 Pin DDR-SDRAM SODIMM Socket**

CN Location: **See Figure 3-10**

A 200 pin DDR-SDRAM SODIMM socket is located on the rear side of the 3302150 board. The SODIMM socket can support 266MHz DDR SODIMM SDRAM of up to 1GB.

Figure 3-10: SODIMM Socket Location (Solder Side)

3.2.9 Fan Connector

CN Label: FAN1

CN Type: **1x3 pin header**

CN Location: **See Figure 3-11**

CN Pinouts: **See Table 3-10**

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.

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

Table 3-10: Fan Connector Pinouts
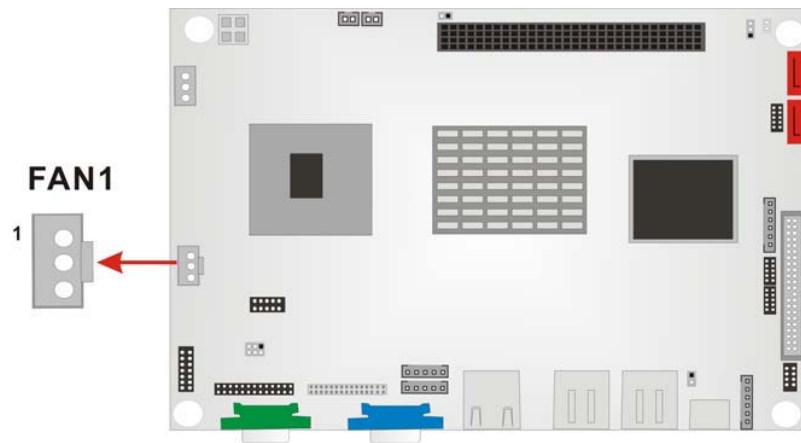
Figure 3-11: Fan Connector Location

3.2.10 IDE Interface Connector

CN Label: **IDE1**

CN Type: **2x22 pin header**

CN Location: **See Figure 3-12**

CN Pinouts: **See Table 3-11**

One IDE connector provides connectivity to two IDE devices.

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
41	VCC	42	VCC
43	GROUND	44	N/C

Table 3-11: IDE Connector Pinouts
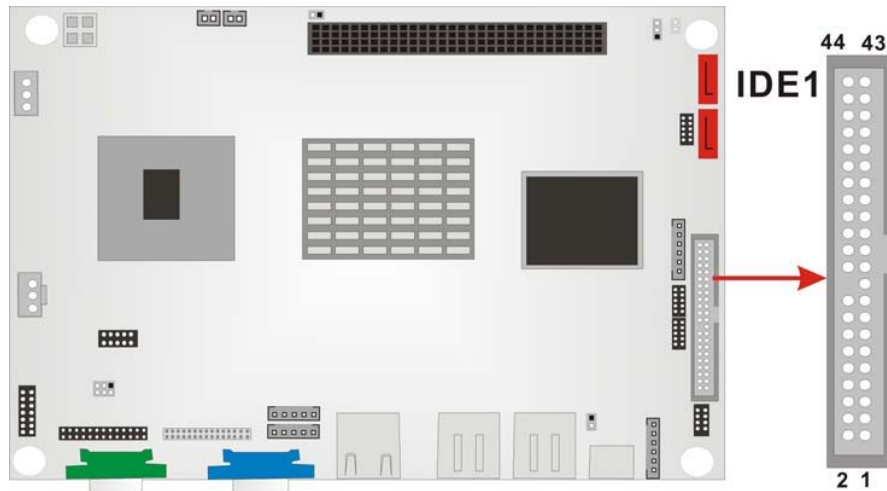
Figure 3-12: IDE Connector Location

3.2.11 Inverter Connector

    CN Label: **CN1**

    CN Type: **1x5 pin headers**

    CN Location: **See Figure 3-13**

    CN Pinouts: **See Table 3-12**

The inverter connector connects to the LCD backlight inverter.

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

Table 3-12: Inverter Connector Pinouts
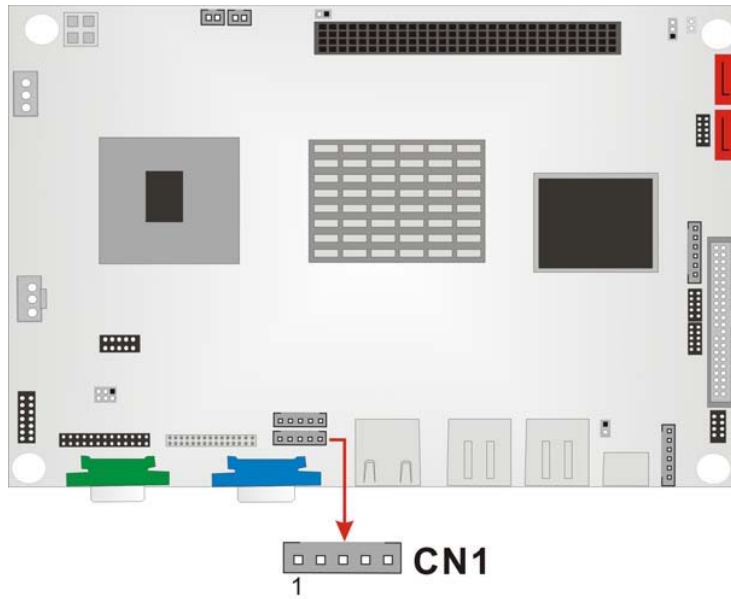
Figure 3-13: Inverter Connector Location

3.2.12 IR Interface Connector

CN Label: **IR1**

CN Type: **1x5 pin headers**

CN Location: **See Figure 3-14**

CN Pinouts: **See Table 3-13**

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

PIN NO.	DESCRIPTION
1	VCC
2	N/C
3	RXD
4	GND
5	TXD

Table 3-13: IR Interface Connector Pinouts
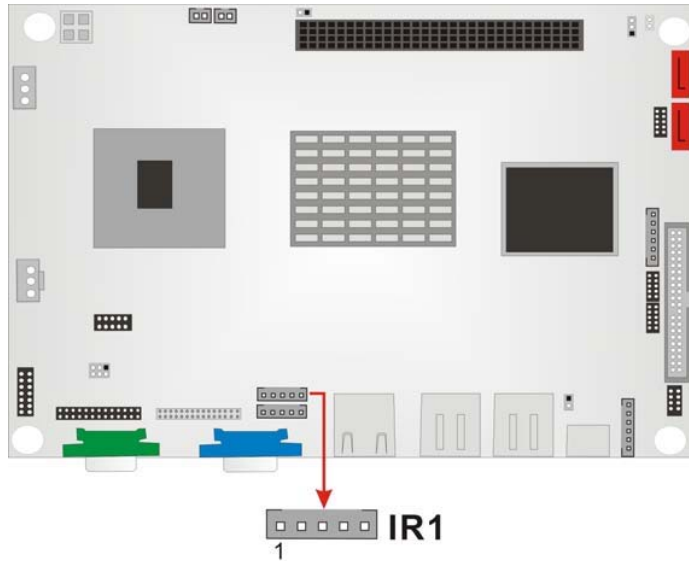
Figure 3-14: IR Interface Connector Location

3.2.13 Keyboard/Mouse Connector

CN Label:	**KBMS1**
CN Type:	**1x6 pin header**
CN Location:	**See Figure 3-15**
CN Pinouts:	**See Table 3-14**

The Keyboard/PS2 mouse cable shipped with the 3302150 board is connected to the keyoard/mouse connector.

PIN NO.	DESCRIPTION
1	VCC5
2	MOUSE DATA
3	MOUSE CLOCK
4	KEYBOARD DATA
5	KEYBOARD CLOCK
6	GND

Table 3-14: Keyboard/Mouse Connector Pinouts
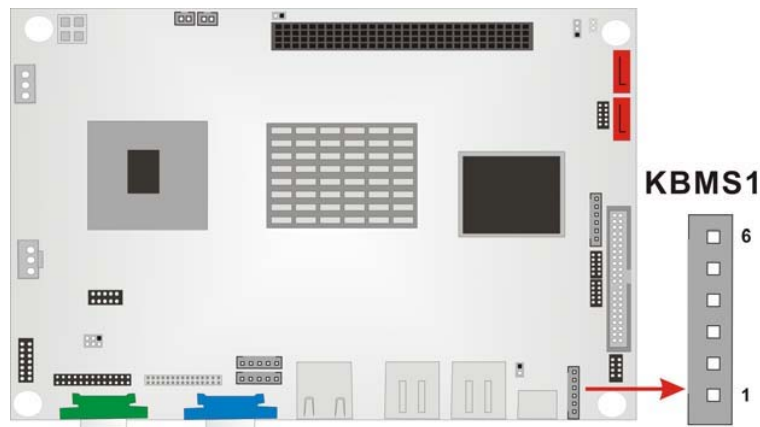
Figure 3-15: Keyboard/Mouse Connector Location

3.2.14 LED Connector

CN Label: CN5

CN Type: 1x6 pin header

CN Location: See Figure 3-16

CN Pinouts: See Table 3-15

This connector connects to the LED lights indicating the hard drive activity and the power status.

PIN NO.	DESCRIPTION
1	+5V
2	GND
3	VCC5 LED+
4	GND
5	HDD LED+
6	HDD LED-

Table 3-15: LED Connector Pinouts
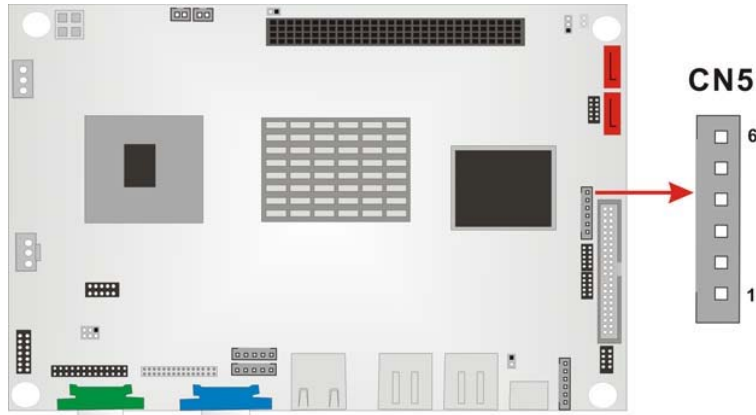
Figure 3-16: LED Connector Location

3.2.15 LVDS Connector

CN Label: **LVDS1**

CN Type: **DF 13**

CN Location: **See Figure 3-17**

CN Pinouts: **See Table 3-16**

LVDS (Low Voltage Differential Signaling) is a low noise, low power, and low amplitude method for high-speed data transmission over a copper wire. The LVDS connector is typically connected to an LCD screen.

PIN NO.	Description	PIN NO.	Description
2	GND	1	NC
4	AY0-	3	AY0+
6	AY1-	5	AY1+
8	AY2-	7	AY2+
10	AYCLK-	9	AYCLK+
12	AY3-	11	AY3+
14	GND	13	GND
16	BY0-	15	BY0+
18	BY1-	17	BY1+
20	BY2-	19	BY2+

22	BYCLK-	21	BYCLK+
24	BY3-	23	BY3+
26	GND	25	GND
28	LCDVCC	27	LCDVCC
30	LCDVCC	29	LCDVCC

Table 3-16: LVDS Connector Pinouts
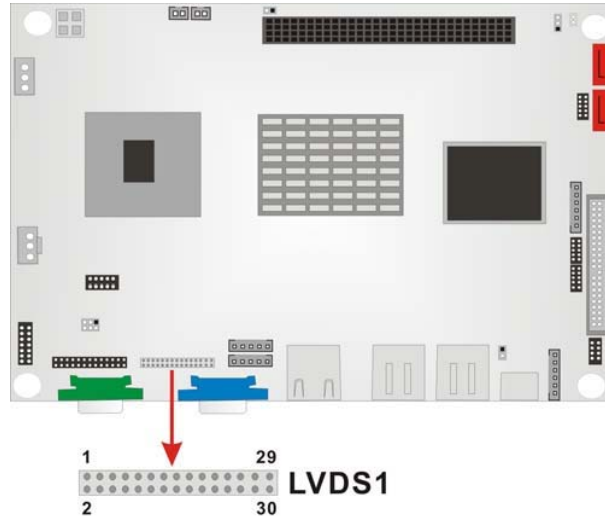
Figure 3-17: LVDS Connector

3.2.16 Parallel Port Connector

CN Label: **LPT1**

CN Type: **2x13 pin header**

CN Location: **See Figure 3-18**

CN Pinouts: **See Table 3-17**

The parallel port connector is usually connected to a printer. A 26-pin flat-cable connector is used to connect the parallel port with a printer or other parallel communication devices.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #

2	DATA0	15	ERROR#
3	DATA1	16	INITIALIZE#
4	DATA2	17	PRINTER SELECT LN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE#	23	GND
11	BUSY	24	N/C
12	PAPER EMPTY	25	GND
13	PRINTER SELECT		

Table 3-17: Parallel Port Connector Pinouts
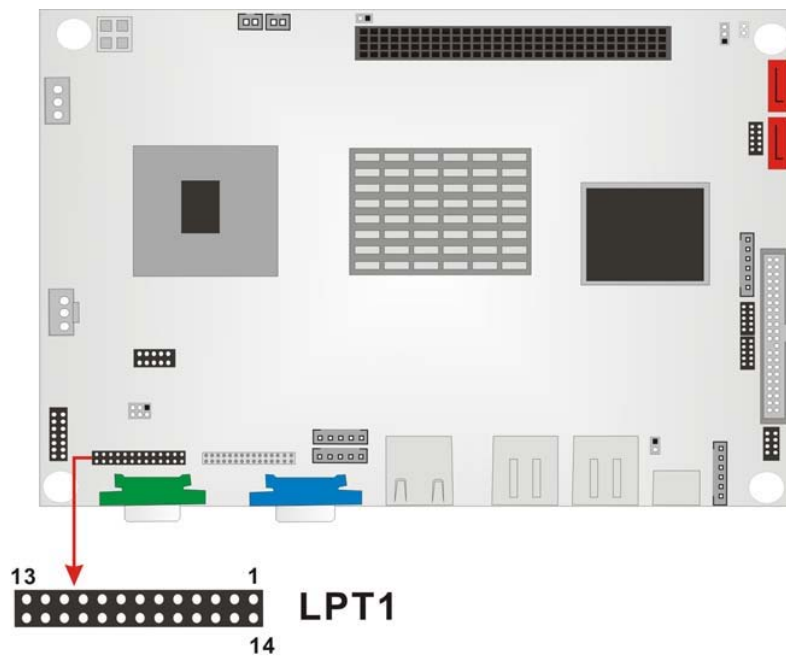
Figure 3-18: Parallel Port Connector Location

3.2.17 PC/104+ Connector

CN Label: **CN3**

CN Type: **4x30 pin PCI slot**

CN Location: **See Figure 3-19**

CN Pinouts: **See Table 3-18**

This connector supports the PC/104+ module.

PIN	Description	PIN	Description	PIN	Description	PIN	Description
A1	GROUND	B1	NC/SERIRQ	C1	+5V	D1	AD0
A2	VIO	B2	AD2	C2	AD1	D2	+5V
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	CBE0-	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	VIO	C6	AD10	D6	N66EV
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	CBE1-	C8	AD15	D8	+3.3V
A9	SERR-	B9	GND	C9	SBO-	D9	PAR
A10	GND	B10	PERR-	C10	+3.3V	D10	SDONE
A11	STOP-	B11	+3.3V	C11	LOCK-	D11	GND
A12	+3.3V	B12	TRDY-	C12	GND	D12	DEVSEL-
A13	FRAME-	B13	GND	C13	IRDY-	D13	+3.3V
A14	GND	B14	AD16	C14	+3.3V	D14	CBE2-
A15	AD18	B15	+3.3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+3.3V	B17	AD23	C17	AD22	D17	+3.3V
A18	IDSEL0	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	CBE3-	C19	VIO	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+5V	C21	AD28	D21	AD27
A22	+5V	B22	AD30	C22	GND	D22	AD31
A23	REQ0-	B23	GND	C23	REQ1-	D23	VIO
A24	GND	B24	REQ2-	C24	+5V	D24	GNT0-

A25	GNT1-	B25	VIO	C25	GNT2-	D25	GND
A26	+5V	B26	PCICLK0	C26	GND	D26	PCICLK1
A27	PCICLK2	B27	+5V	C27	PCICLK3	D27	GND
A28	GND	B28	INTD-	C28	+5V	D28	PCIRST-
A29	+12V	B29	INTA-	C29	INTB-	D29	INTC-
A30	-12v	B30	REQ3-	C30	GNT3-	D30	GND/3.3V
Table 3-18: PC/104+ Connector Pinouts							
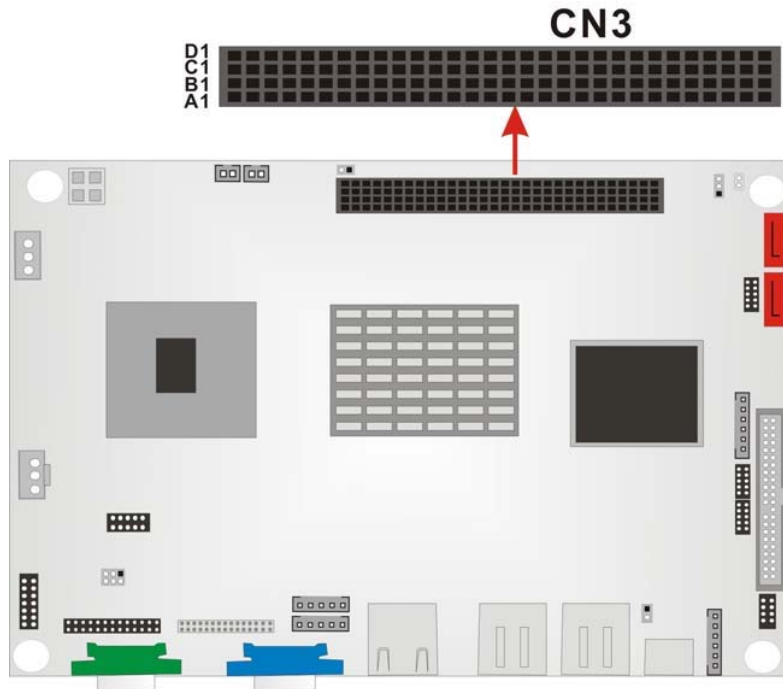
Figure 3-19: PC/104+ Connector Location

3.2.18 Reset Connector

CN Label: RST1

CN Type: 1x2 pin header

CN Location: See Figure 3-20

CN Pinouts: See Table 3-19

PIN NO.	DESCRIPTION
1	Reset 1
2	Reset 2

Table 3-19: Reset Connector Pinouts
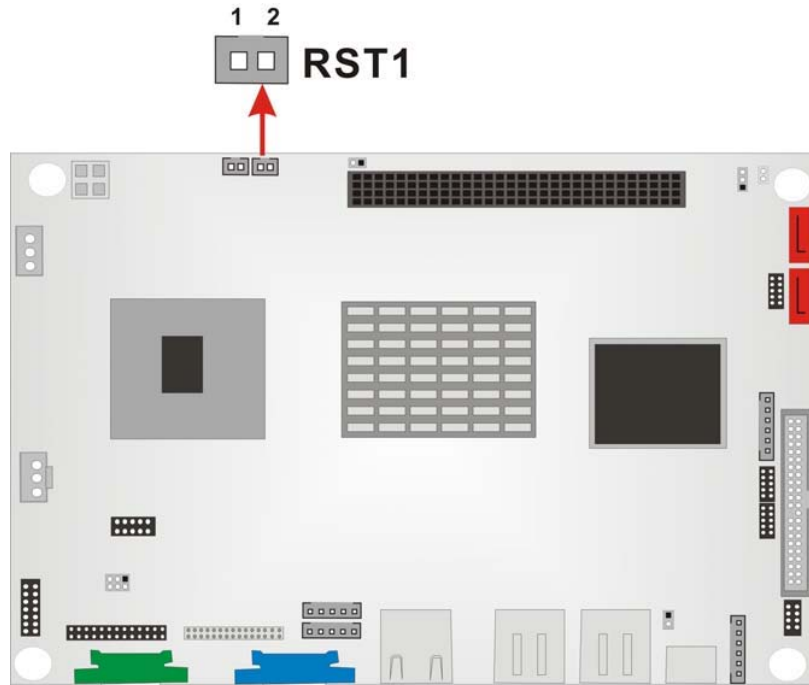
Figure 3-20: Reset Connector Location

3.2.19 SATA Connectors

CN Label: **S_ATA1, S_ATA2**

CN Type: **1x7 pin header**

CN Location: **See Figure 3-21**

CN Pinouts: **See Table 3-20**

The 3302150 provides two first-generation SATA ports to connect with SATA drives. The SATA drives transmit data at speeds up to 150MB/s.

PIN NO.	DESCRIPTION
1	GND
2	TX0+
3	TX0-
4	GND
5	RX0-
6	RX0+
7	GND

Table 3-20: SATA Connector Pinouts
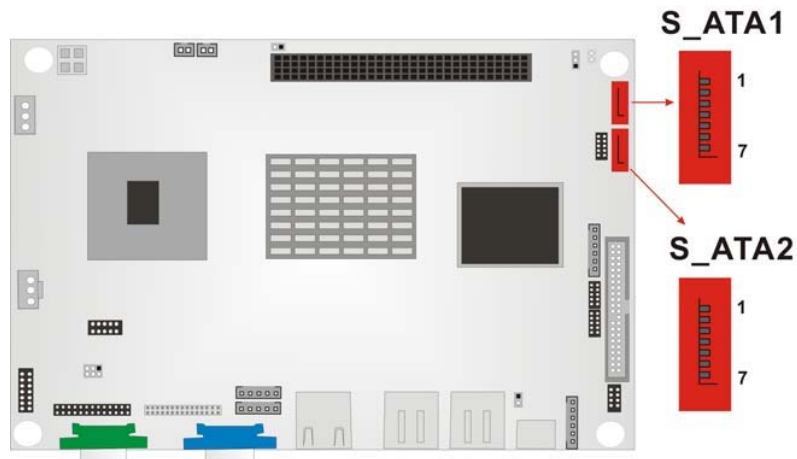
Figure 3-21: SATA Connector Location

3.2.20 Serial Port2 Connector

CN Label: **COM2**

CN Type: **2x7 pin header**

CN Location: **See Figure 3-22**

CN Pinouts: **See Table 3-21**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD#	2	DSR#
3	RxD	4	RTS#
5	TxD	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND
11	TxD485+	12	TxD485-
13	RxD485+	14	RxD485-

Table 3-21: COM2 Connector Pinouts
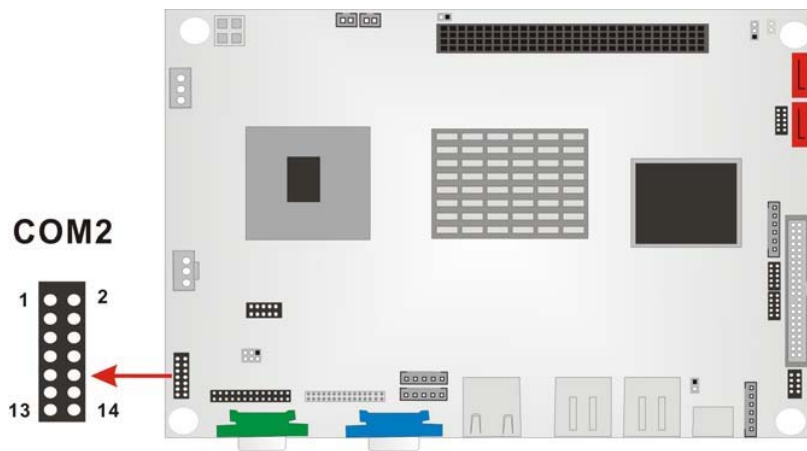
Figure 3-22: COM2 Connector Location

3.2.21 Serial Port3 Connector

CN Label: **COM3**

CN Type: **2x5 pin header**

CN Location: **See Figure 3-23**

CN Pinouts: **See Table 3-22**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD#	2	DSR#
3	RX	4	RTS#
5	TX	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND

Table 3-22: COM3 Connector Pinouts
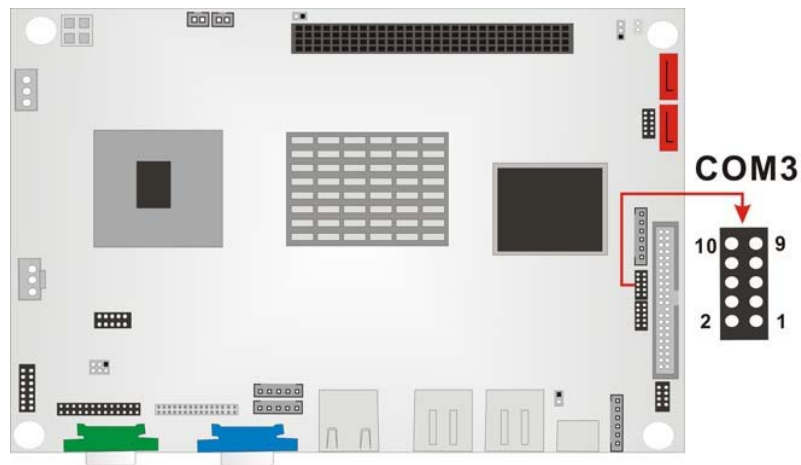
Figure 3-23: COM3 Connector Location

3.2.22 Serial Port4 Connector

CN Label: **COM4**

CN Type: **2x5 pin header**

CN Location: **See Figure 3-24**

CN Pinouts: **See Table 3-23**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD#	2	DSR#
3	RX	4	RTS#
5	TX	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND

Table 3-23: COM4 Connector Pinouts
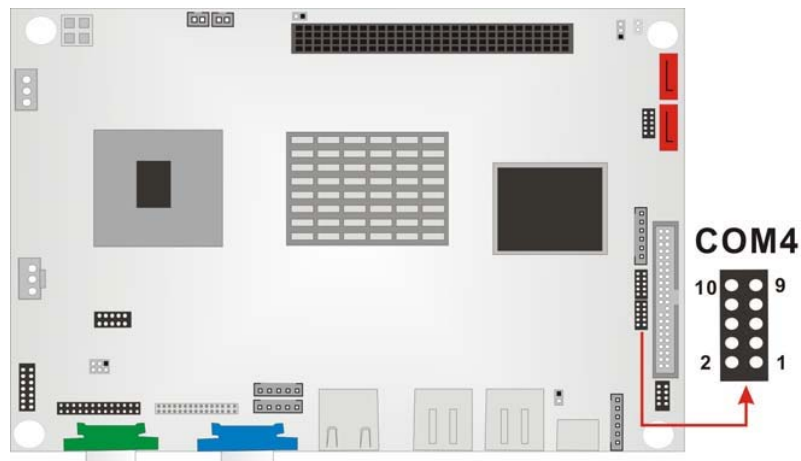
Figure 3-24: COM4 Connector Location

3.2.23 USB Connector

CN Label: **USB3**

CN Type: **2x4 pin header**

CN Location: **See Figure 3-25**

CN Pinouts: **See Table 3-24**

Two USB devices can be connected directly to the onboard USB connector. The onboard USB connector is USB 2.0 compliant.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC4	2	GND
3	D4F-	4	D5F+
5	D4F+	6	D5F-
7	GND	8	USBVCC4

Table 3-24: USB Connector Pinouts
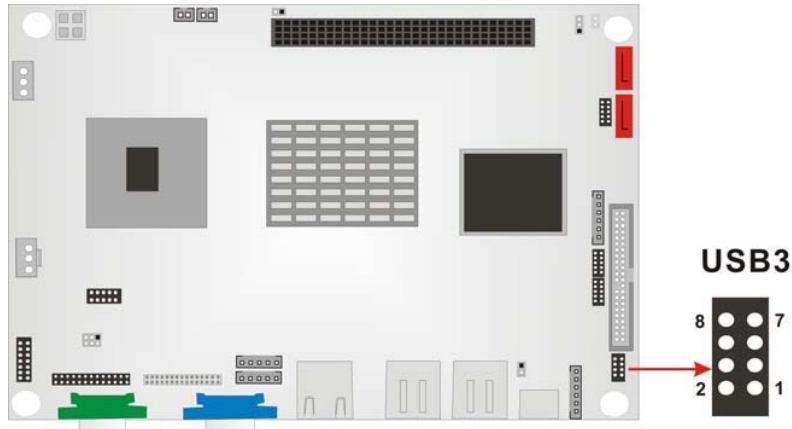
Figure 3-25: USB Connector Location

3.3   External (Rear Panel) Connectors

Figure 3-26 shows the 3302150 board rear panel. The peripheral connectors on the back panel can be connected to devices externally when the 3302150 is installed in a chassis. The peripheral connectors on the rear panel are:

- ƒ   1 x RJ-45 Ethernet connector
- ƒ   1 x PS/2 keyboard/mouse connector
- ƒ   1 x Serial port connector
- ƒ   4 x USB2.0 connectors
- ƒ   1 x VGA connector
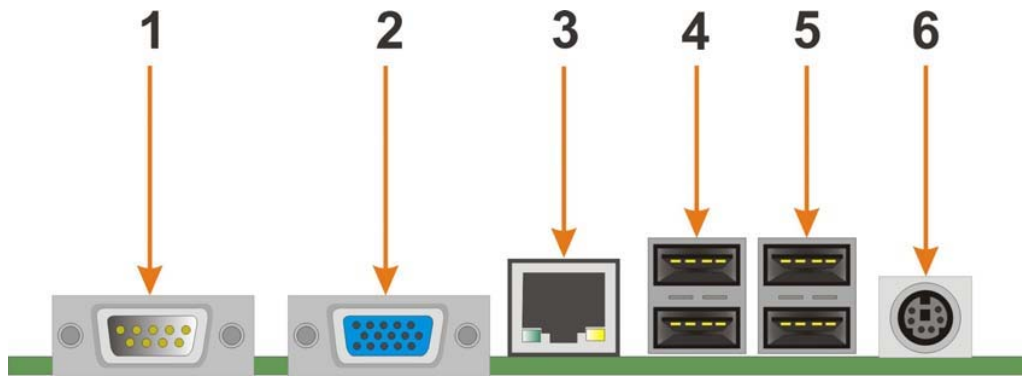
Figure 3-26: 3302150 Board Rear Panel

3.3.1 Ethernet Connector

CN Label: **J1**

CN Type: **RJ-45**

CN Location: **See Figure 3-26 (labeled number 3)**

CN Pinouts: **See Table 3-25**

The 3302150 is equipped with LAN 10/100/1000-TX Ethernet controller. The Ethernet connector can be directly connected to a Local Area Network (LAN) through a network hub. An RJ-45 Ethernet connector is shown in **Figure 3-27**.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX0+	7	TX3+
2	TX0-	8	TX3-
3	TX1+	9	Active +
4	TX2+	10	Active -
5	TX2-	11	LINK +
6	TX1-	12	LINK -

Table 3-25: RJ-45 Ethernet Connector Pinouts
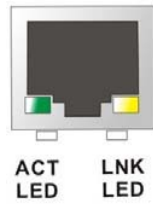
Figure 3-27: RJ-45 Ethernet Connector

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 3-26**.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 3-26: RJ-45 Ethernet Connector LEDs

3.3.2 Keyboard/Mouse Connector

CN Label: **KB/PS1**

CN Type: **PS/2 connector**

CN Location: **See Figure 3-26 (labeled number 6)**

3.3.3 Serial Port Connectors

CN Label: **COM1**

CN Type: **DB-9**

CN Location: **See Figure 3-26 (labeled number 1)**

CN Pinouts: **See Table 3-27**

The serial ports (COM1) can be connected to a serial communications device directly.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	RX
3	TX	4	DTR

5	GND	6	DSR
7	RTS	8	CTS
9	RI		

Table 3-27: Serial Port Pinouts

3.3.4 USB Connectors

CN Label: **USB1, USB2**

CN Type: **USB port**

CN Location: **See Figure 3-26 (labeled number 4 & 5)**

CN Pinouts: **See Table 3-28, Table 3-29**

USB devices can be connected directly to the USB connectors on the rear panel.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	USBVCC0	5	USBVCC0
2	D0F-	6	D1F-
3	D0F+	7	D1F+
4	GND	8	GND

Table 3-28: USB1 Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	USBVCC2	5	USBVCC2
2	D2F-	6	D3F-
3	D2F+	7	D3F+
4	GND	8	GND

Table 3-29: USB2 Connector Pinouts

3.3.5 VGA Connector

CN Label: **VGA1**

CN Type: **15-pin**

CN Location: **See Figure 3-26 (labeled number 2)**

CN Pinouts: See Table 3-30

The standard 15-pin VGA connector connects to a CRT or LCD display monitor.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Red	9	No Connect
2	Green	10	Ground
3	Blue	11	No Connect
4	No Connect	12	DDC DAT
5	Ground	13	Horizontal Synchronization
6	Ground	14	Vertical Synchronization
7	Ground	15	DDC Clock
8	Ground		

Table 3-30: VGA Connector Pinouts

3.4   Onboard Jumpers

NOTE:

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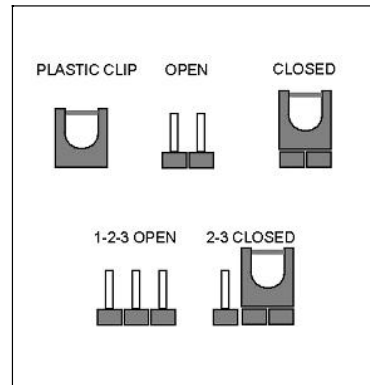

Figure 3-28 Jumper

The 3302150 board has the following four onboard jumpers:

ƒ   CF card setup (JP1)

ƒ   Clear CMOS (JP4)

ƒ   COM2 RS232/RS422/RS485 selector (JP2)

ƒ   LCD Voltage selector (JP6)

ƒ   PC104+ SERIRQ net to CN3 pin B1 selector (JP5)
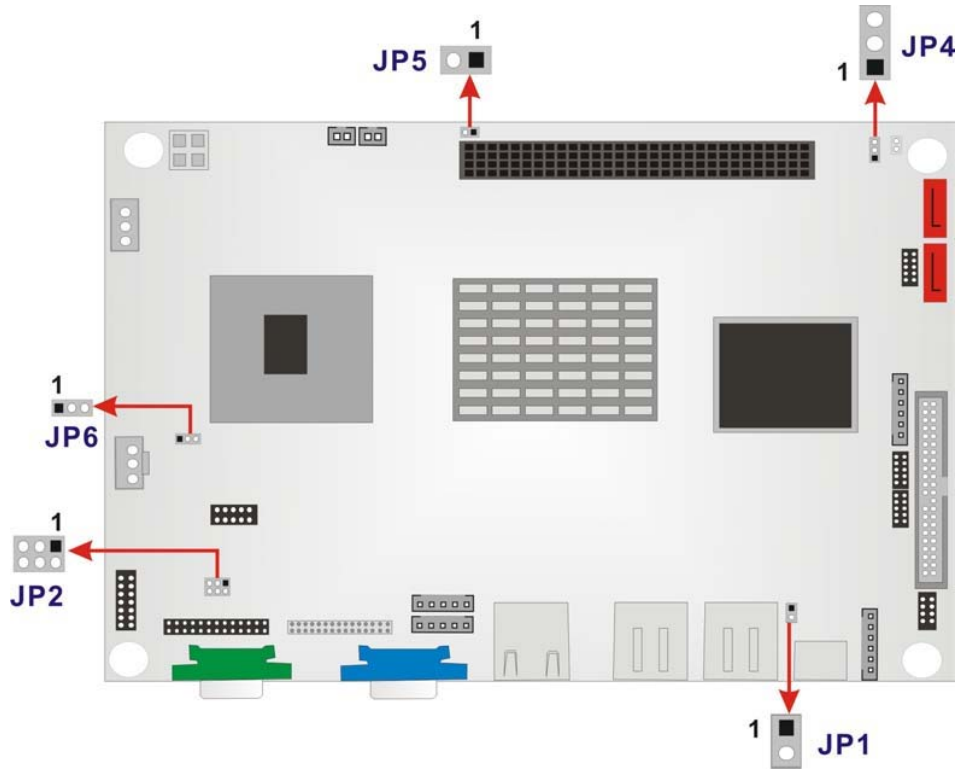
Figure 3-29: Jumper Locations

3.4.1 CF Card Setup

Jumper Label: **JP1**

Jumper Type: **2-pin header**

Jumper Settings: **See Table 3-31**

Jumper Location: **See Figure 3-29**

Use this jumper (JP1) to set a compact flash card as either the slave device or the master device.

JP1	DESCRIPTION
Open	Slave(Default)
Close	Master

Table 3-31: JP1 Jumper Settings

3.4.2 Clear CMOS Jumper

Jumper Label: JP4

Jumper Type: 3-pin header

Jumper Settings: See Table 3-32

Jumper Location: See Figure 3-29

If the 3302150 fails to boot due to improper BIOS setting, use this jumper to clear the CMOS data and reset 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 displays during the boot up process, try to correct the fault by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

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

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

JP4	CLEAR CMOS
1-2 closed	Normal (default)
2-3 closed	Clear CMOS

Table 3-32: JP4 Jumper Settings

3.4.3 COM2 Selector

Jumper Label: JP2

Jumper Type: 6-pin header

Jumper Settings: See Table 3-33

Jumper Location: See Figure 3-29

JP2	DESCRIPTION
1-2 closed	RS232 (default)
3-4 closed	RS422
5-6 closed	RS485

Table 3-33: JP2 Jumper Settings

3.4.4 LCD Voltage Selector

Jumper Label: JP6

Jumper Type: 3-pin header

Jumper Settings: See Table 3-34

Jumper Location: See Figure 3-29

This jumper allows the user to set the voltage for the LCD panel. Before setting this jumper please refer to the LCD panel user guide to determine the required voltage. After the required voltage is known, make the necessary jumper setting in accordance with the settings shown in **Table 3-34** (LCDVCC signal indicates pin 27-30 defined in **Table 3-16: LVDS Connector Pinouts**).

JP6	DESCRIPTION
1-2 closed	LCDVCC = +3.3V (default)
2-3 closed	LCDVCC = +5V

Table 3-34: JP6 Jumper Settings

3.4.5 PC/104+ Selector

Jumper Label: **JP5**

Jumper Type: **2-pin header**

Jumper Settings: **See Table 3-35**

Jumper Location: **See Figure 3-29**

JP5	DESCRIPTION
Open	Disconnect (default)
Close	Connect

Table 3-35: JP5 Jumper Settings

Chapter

4

Installation and Configuration

4.1   Installation Considerations

 NOTE:

The following installation notices and installation considerations should be read and understood before the 3302150 is installed. All installation notices pertaining to the installation of the 3302150 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of 3302150 and injury to the person installing the 3302150.

4.1.1 Installation Notices

Before and during the installation of the 3302150 board, please do the following:

- ƒ Read the user manual
    - o The user manual provides a complete description of the 3302150 board, installation instructions and configuration options.
- ƒ Wear an electrostatic discharge cuff (ESD)
    - o Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and help to prevent ESD damage.
- ƒ Place the board on an antistatic pad
    - o When installing or configuring the board, place it on an antistatic pad. This helps to prevent potential ESD damage.
- ƒ Turn off all power to the 3302150 board
    - o When working with the board, 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 3302150 board DO NOT:

- ƒ remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- ƒ use the product before verifying all cables and power connectors are properly connected.
- ƒ allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.2   Unpacking

NOTE:

If any of the items listed below are missing when the 3302150 is unpacked, do not proceed with the installation and contact the reseller or vendor.

4.2.1 Unpacking Precautions

Before installing the 3302150 board, unpack the board first. Some components on 3302150 are very sensitive to static electricity and can be damaged by a sudden rush of power. To protect it from being damage, follow these precautions:

- ƒ   The user should ground themselves to remove any static charge before touching the 3302150. Wear a grounded wrist strap at all times or frequently touch any conducting materials that are connected to the ground.
- ƒ   Handle the 3302150 by its edges. Do not touch the IC chips, leads or circuitry if not necessary.

Do not place a PCB on top of an anti-static bag. Only the inside of the bag is safe from static discharge.

4.2.2 Checklist

When unpacking the 3302150, please make sure the package contains the following items.

- ƒ   1 x 3302150 single board computer
- ƒ   1 x IDE flat cable 44p/44p
- ƒ   1 x KB/PS2 Mouse Y cable
- ƒ   1 x Audio cable
- ƒ   2 x SATA cables
- ƒ   1 x SATA Power cable
- ƒ   1 x Power cable

ƒ   2 x RS232 cables

ƒ   1 x Mini jumper pack

ƒ   1 x Utility CD

ƒ   1 x QIG (quick installation guide)

If one or more of these items are missing, please contact the reseller or vendor and do not proceed any further with the installation.

4.3   3302150 Board Installation

⚠ **WARNING!**

1. Never run the 3302150 without an appropriate heatsink and cooler that can be ordered from Global American, Inc.

2. Be sure to use the CPU 12V power connector (CN4) for the CPU power.

⚠ **WARNING!**

Please note that the installation instructions described in this manual should be carefully followed in order to avoid damage to the 3302150 components and injury to the body.

⚠ **WARNING!**

When installing electronic components onto the 3302150 always take the following anti-static precautions in order to prevent ESD damage to the 3302150 and other electronic components like the CPU and DIMM modules

4.3.1 Preinstalled Components

The components listed below are preinstalled on the 3302150.

ƒ   CPU (Intel Pentium M/Celeron M Socket 479 for 3302150A)

ƒ   CPU heat sink

ƒ   Northbridge heat sink

ƒ   Southbridge heat sink

4.3.2 Components to Install

To install the 3302150, the following components must be installed or connected to the 3302150.

ƒ   CPU (Intel Celeron M 800MHz for 3302150C)

ƒ   DIMM modules

ƒ   Compact flash device

ƒ   Peripheral devices

4.3.3 CPU Installation

⚠️ WARNING!

CPUs are expensive and sensitive components. When installing the CPU, please be careful not to damage it in anyway. Make sure to install it properly and ensure that a heatsink and CPU cooling fan is properly installed before running the CPU card or else both the CPU and the board will be damaged.

To install an Intel 479-pin CPU onto the motherboard, follow the steps below:

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 reposition the screw in an unlocked position. (See **Figure 4-1**)
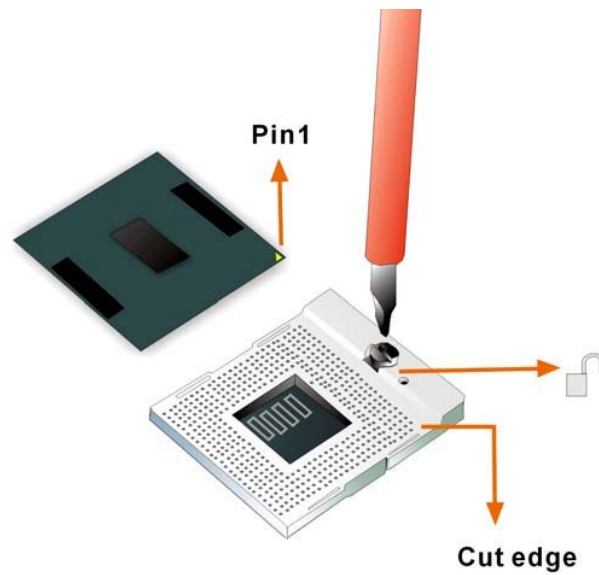
Figure 4-1: Make sure the CPU socket retention screw is unlocked

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

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 into the locked position. (See **Figure 4-2**)
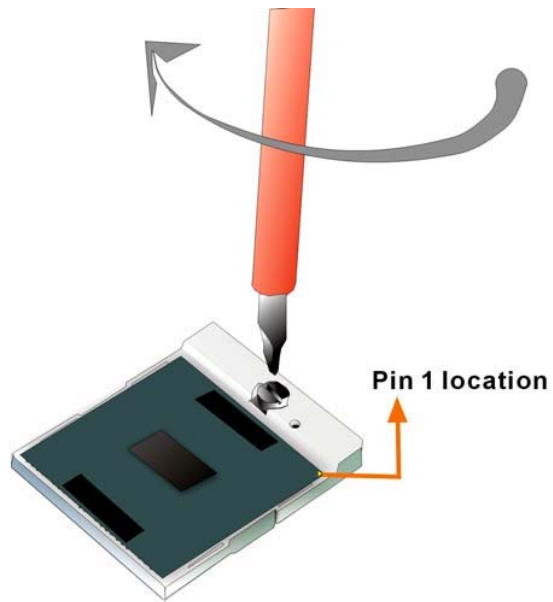
Figure 4-2: Lock the CPU Socket Retention Screw

4.3.4 Cooling Kit Installation

Figure 4-3: Cooling Kit

Global American, Inc provides a cooling kit designed for socket 479 CPUs.

(See **Figure 4-3**)   The cooling kit is comprised of a CPU heatsink and a cooling fan.

![NOTE icon] **NOTE:**

> The heatsink comes with a sprayed layer of thermal paste. Make sure not to accidentally wipe away the thermal paste while unpacking or installing the heatsink. Thermal paste between the CPU and the heatsink is important for optimum heat dissipation.

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

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

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

Step 3: **Secure the cooling kit**. From the solder side of the PCB, align the provided nut caps to the heatsink screw threads that protrude through the PCB holes. Without over tightening the nut caps, insert them onto the protruding screw threads to secure the cooling kit to the PCB board. (See **Figure 4-4**)
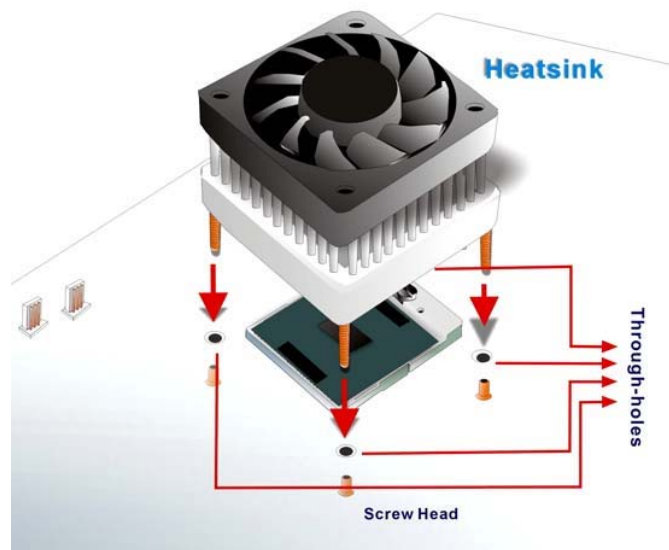

Figure 4-4: Securing the Cooling Kit

Step 4: **Connect the fan cable**. Connect the cooling kit fan cable to the FAN1 connector on the motherboard. Carefully route the cable and avoid heat generating chips and fan blades. (See **Figure 4-5**)
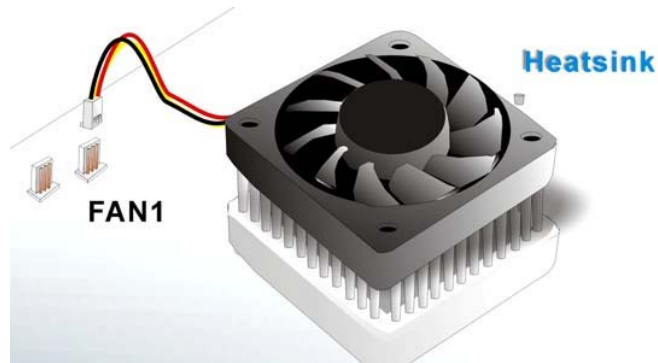

Figure 4-5: Connect the cooling fan cable

4.3.5 DIMM Module Installation

4.3.5.1 Purchasing the Memory Module

WARNING!

The DDR2 architecture is not compatible with DDR1 modules.   If   the system is installed with DDR1 modules, damage might occur and may become inaccessible

When purchasing the SODIMM modules, the following considerations should be taken into account:

- ʃ   The maximum SODIMM capacity supported is 1GB
- ʃ   The maximum SODIMM frequency supported is 266MHz.
- ʃ   The SODIMM chip must be a 200-pin memory chip

4.3.5.2 DIMM Module Installation

The 3302150 board has one 200-pin SODIMM socket. To install the SODIMM module, follow the instructions below.

Step 1:   Turn the 3302150 over so that the SODIMM socket is facing up.

Step 2:   Push the SODIMM chip into the socket at an angle.

Step 3:   Gently pull the arms of the SODIMM socket out and push the rear of the

SODIMM module down.

Step 4:   Release the arms on the SODIMM socket. They clip into place and secure the

SODIMM module in the socket.

4.3.6 Peripheral Device Connection

Cables provided by Global American, Inc. that connect peripheral devices to the board are
listed in **Table 4-1**. Cables not included in the kit must be separately purchased.

Quantity	Type
1	Keyboard/ PS2 mouse cable
1	IDE flat cable 44p/44p
1	Audio cable
2	SATA cable
1	SATA Power cable
1	Power cable
2	RS232 cable

Table 4-1: Provided Cables

4.3.6.1 IDE Disk Drive Connector (IDE1)

The cable used to connect the 3302150 to the IDE HDD is a standard 44-pin ATA/33
flat cable. To connect an IDE device to the 3302150, follow the instructions below.

Step 1:   Find the ATA/33 flat cable in the kit that came with the 3302150.

Step 2:   Connect one end of the cable to the IDE1 connector on the 3302150. A

keyed pin on the IDE connectors prevents it from being connected incorrectly.

Step 3:   Locate the red wire on the other side of the cable that corresponds to the pin 1

connector.

Step 4: Connect the other side of the cable to the IDE device making sure that the pin 1 cable corresponds to pin 1 on the connector.

Step 1:

 NOTE:

When two IDE disk drives are connected together, back-end jumpers on the drives must be used to configure one drive as a master and the other as a slave.

4.3.6.2 Keyboard/Mouse Connection

The cable used to connect the 3302150 to the keyboard and mouse is Y-cable that is connected to KBMS1. To connect a keyboard and mouse, please do the following.

Step 2: Insert the connector at the end of the keyboard/mouse cable in the keyboard/mouse connector on the 3302150.

Step 3: Connect the respective cables to the keyboard and mouse

4.4 Chassis Installation

After the CPU, the cooling kit, and the DIMM modules have been installed and after the internal peripheral connectors have been connected to the peripheral devices and the jumpers have been configure, the 3302150 can be mounted into chassis.

To mount a board into a chassis, please refer to the chassis user guide that came with the product.

4.5 Rear Panel Connectors

4.5.1 LCD Panel Connection

The conventional CRT monitor connector, VGA1, is a 15-pin, female D-SUB connector. Pin assignments can be seen in that can be connected to external monitors.

4.5.2 Ethernet Connection

The rear panel RJ-45 connectors can be connected to an external LAN and communicate with data transfer rates up to 1000M/s.

4.5.3 USB Connection

The rear panel USB connectors provide easier and quicker access to external USB devices. The rear panel USB connector is a standard connector and can easily be connected to other USB devices.

4.5.4 Keyboard and Mouse Connection

A PS/2 keyboard and a PS/2 mouse can be connected to the appropriate PS/2 connector on the rear panel.

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Appendix

B

Watchdog Timer

NOTE:

> The following discussion applies to DOS environment. It is recommended to contact Global American, Inc. support or visit our website for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

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

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

INT 15H:

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

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

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

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

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
;  INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H           ;setting the time-out value
        MOV     BL, 30              ;time-out value is 48 seconds
        INT        15H
;
;  ADD YOUR APPLICATION PROGRAM HERE
;
        CMP       EXIT_AP, 1          ;is your application over?
        JNE         W_LOOP          ;No, restart your application

        MOV     AX, 6F02H           ;disable Watchdog Timer
        MOV     BL, 0               ;
        INT        15H
;
;  EXIT ;
```

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Appendix

C
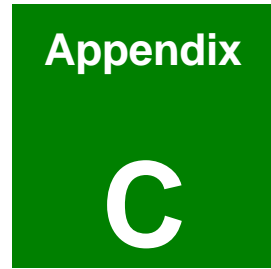
Address Mapping

C.1 IO Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2E8-2EF	Serial Port 4 (COM4)
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel(R) 82852 Graphics Controller
3C0-3DF	Intel(R) 82852 Graphics Controller
3E8-3EF	Serial Port 3 (COM3)
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table C-1: IO Address Map

C.2 1st MB Memory Address Map

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

Table C-2: 1st MB Memory Address Map

C.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	COM4
IRQ3	COM2	IRQ11	COM3
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Audio Codec	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table C-3: IRQ Mapping Table

C.4 DMA Channel Assignments

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

Table C-4: DMA Channel Assignments

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Appendix

D

External AC'97 Audio CODEC

D.1 Introduction

The 3302150 board comes with an onboard Realtek ALC655 CODEC. Realtek ALC655 is a 16-bit, full duplex AC'97 Rev. 2.3 compatible audio CODECwith a sampling rate of 48KHz.

D.1.1 Accessing the AC '97 CODEC

The CODEC is accessed through one 16-pin header including:

1. A LINE input shared with surround output
2. A MIC input shared with Center and LFE output
3. A LINE output
4. A MIC input line.

D.1.2 Driver Installation

The driver installation has been described in **Chapter 6**, **Section 6.3**.

After rebooting the sound effect configuration utility appears in the Windows Control Panel (see **Figure 6-20**). If the peripheral speakers are properly connected, sound effects should be heard.
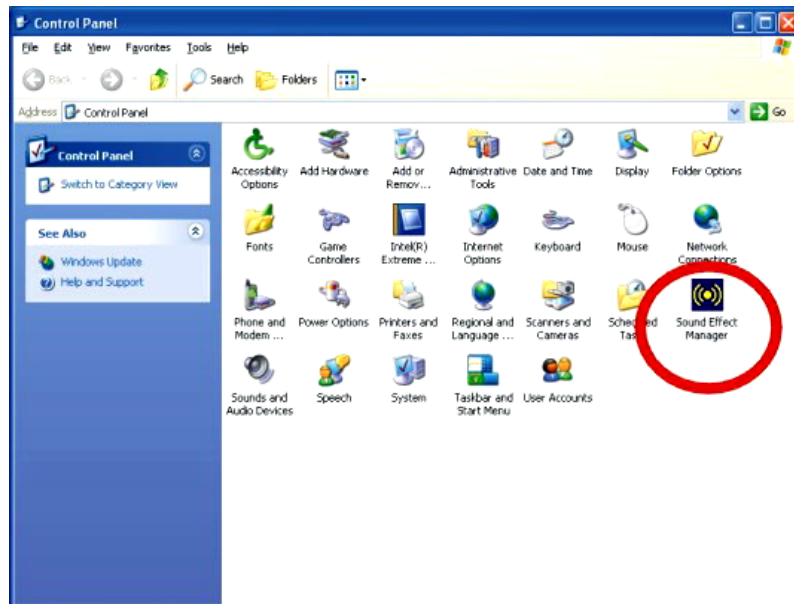
Figure 6-20: Sound Effect Manager con

D.2   Sound Effect Configuration

D.2.1   Accessing the Sound Effects Manager

To access the **Sound Effects Manager**, please do the following:

Step 9:   Install the audio CODEC driver.

Step 10:   Click either:

ƒ   The **Sound Effect Manager** icon in the **Notification Area** of the system task bar (see **Figure 6-21**), or

ƒ   The **Sound Effect Manager** icon in the Control Panel (**Figure 6-22**).

Figure 6-21:   Sound Effect Manager Icon [Task Bar]
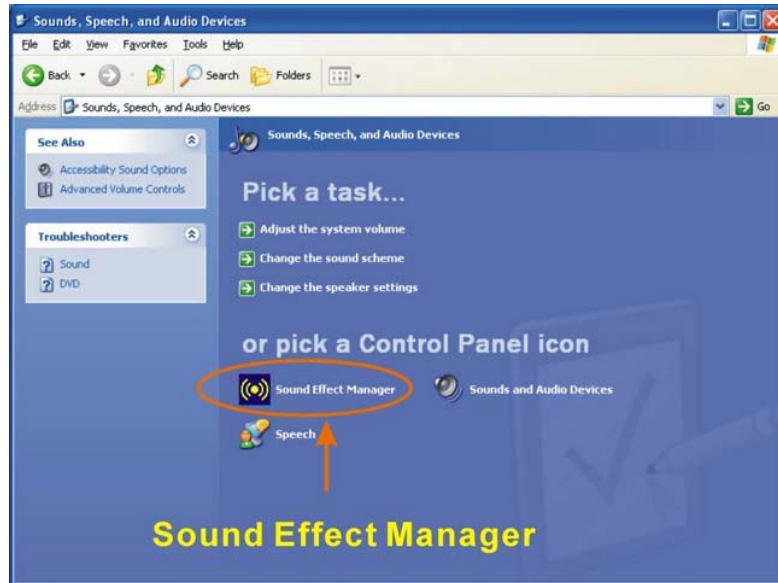
Figure 6-22: Sound Effect Manager Icon [Control Panel]

Step 11: The sound effect manager appears. (See **Figure 6-23**)
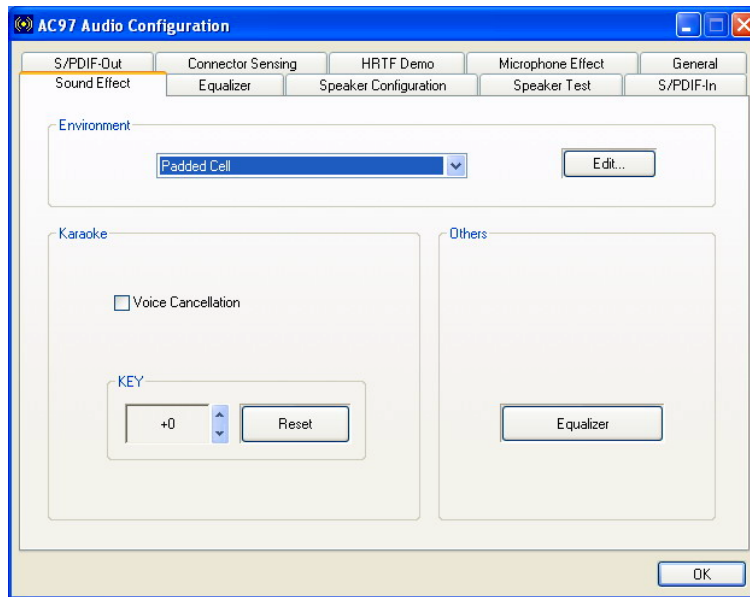
Figure 6-23: Sound Effects Manager (ALC655)

 NOTE:

The Sound Effect Manager shown in **Figure 6-23** is for the RealTek ALC655 audio CODEC. Different CODECs may have different sound manager appearances.

The following section describes the different configuration options in the Sound Effect Manager.

D.2.2   Sound Effect Manager Configuration Options

The **Sound Effects Manager** enables configuration of the items listed below. To configure these items click the corresponding menu tab in the **Sound Effects Manager** in **Figure 6-23**.

NOTE:

The **Karaoke Mode** is configured in the **Sound Effect** menu. To access Karaoke configuration settings, click on the **Sound Effect** menu tab.

- ∫   Sound Effect
- ∫   Karaoke Mode
- ∫   Equalizer
- ∫   Speaker Configuration
- ∫   Speaker Test
- ∫   S/PDIF-In
- ∫   S/PDIF-Out
- ∫   Connector Sensing
- ∫   HRTF Demo
- ∫   Microphone Effect
- ∫   General

NOTE:

Not all RealTek **Sound Effect Managers** have all the above listed options. The Sound Effect Manager loaded onto the system may only have some of the options listed above.

Below is a brief description of the available configuration options in the **Sound Effects Manager**.

- ∫   *Sound Effect*:- Select a sound effect from the 23 listed options in the drop down menu. Selected sound effect properties can be edited. To edit

the sound effect click "**EDIT**."

ƒ   *Karaoke Mode*:- The **Karaoke Mode** is accessed in the Sound Effect window. The **Voice Cancellation** disables the vocal part of the music being played. The **Key adjustment** up or down arrow icons enables users to define a key that fits a certain vocal range.

ƒ   *Equalizer Selection*:- Preset equalizer settings enable easy audio range settings. Ten frequency bands can be configured.

ƒ   *Speaker Configuration*:- Multi-channel speaker settings are configured in this menu. Configurable options include:

o   Headphone
o   Channel mode for stereo speaker output
o   Channel mode for 4 speaker output
o   Channel mode for 5.1 speaker output
o   Synchronize the phonejack switch with speakers settings

ƒ   *Speaker Test*:- Each speaker connected to the system is tested individually to see if the 4-channel or 6-channel audio operates properly.

ƒ   *S/PDIF-In & S/PDIF-Out*:- These functions are currently not supported.

ƒ   *Connector Sensing*:- Realtek ALC655 detects if an audio device is plugged into the wrong connector. If an incorrect device is plugged in a warning message appears.

ƒ   *HRTF Demo*:- Adjust HRTF (Head Related Transfer Functions) 3D positional audio here before running 3D applications.

ƒ   *Microphone Effect*:- Microphone noise suppression is enabled in this menu.

ƒ   *General*:- General information about the installed AC'97 audio configuration utility is listed here.

Appendix

E

ALi® RAID for SATA

E.1 Introduction

The ALi M5283 is a highly integrated disk drive controller that is capable of managing Parallel-ATA and Serial-ATA interface hard disk drives. The ALi controller supports PATA UDMA transfer mode up to mode 6 and SATA 1.0 disk drives. The ALi M5283 also comes with cost-effective RAID functionality that can be used to increase data read/write speed and to provide protection to data by distributing mirrored duplicates of data onto two disk drives (RAID1).

⚠ CAUTION!

The associated BIOS settings must be properly configured before the Ctlr+A key combination can take effect. Refer to **Chapter 5 AMI BIOS Setup** for more details. SATA disk drive support must be initiated under the following two BIOS sub-menus.

Boot -> Onboard SATA ROM

Chipset -> Southbridge Chipset Configuration

The ALi configuration utility cannot be accessed unless the SATA disk drive support has been initiated in the AMI BIOS configuration utility.

⚠ CAUTION!

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

E.1.1 Precautions

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

⚠ WARNING!

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

⚠ CAUTION!

Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

E.2 Features and Benefits

ƒ   Supports RAID levels 0, 1, and JBOD
ƒ   Supports connectivity to two disk drives
ƒ   Supported Operating Systems include: Windows 98/Me, Windows 2000, and Windows XP
ƒ   Windows-based software for RAID management

E.3 Accessing the ALi RAID Utility

If the SATA ROM configuration options in system BIOS have been properly configured, the RAID BIOS version and disk drive information should appear after the system POST screen.

The BIOS disk drive information should look like the following:

ALi RAID BIOS V1.XX

(c) ALi Corporation 2005, All Rights Reserved.

Identifying IDE drives…

Channel 1 Master: Maxtor xxxxxx

Channel 2 Master: Maxtor xxxxxx

Press Ctrl-A to enter ALi RAID BIOS setup utility

Press **CTRL** and **A** keys simultaneously to enter the RAID configuration utility.

E.4 RAID BIOS Setup Utility

The Serial ATA RAID volume can be configured using the RAID Configuration utility stored within the ALi RAID controller ROM. The BIOS configuration screen is divided into three major areas: Main Menu, Drive Menu, and a list for the configured RAID arrays.

```
RAID BIOS Setup Utility (c) 2003 ALi Corporation    www.ali.com.tw

Create RAID 0 Striping for Performance
Create RAID 1 Mirroring for Reliability Select
Create JBOD for integrated Capacity
Stripe Size                                  ┌─────────────────────────┐
Delete RAID Setting & Partition      64K     │ SPACE : Select          │
Delete All RAID Setting & Partition          │ ↑↓    : Moving Cursor   │
Rebuild RAID Array                           │ ENTER : Select & Finish │
Select Boot Drive                            │ ESC   : Exit            │
                                             └─────────────────────────┘

         ───────────Drive Model──── Mode ─────────Capacity──RAID Array/Type──
    Channel 1 Master : WDC WD360GD-00F   SATA1      37019MB
    Channel 2 Master : Maxtor 6Y200M0    SATA1      203928MB



         ──────────Capacity───────────RAID Type────Stripe Size──RAID Name────
    RAID Array A   :
    RAID Array B   :
    RAID Array C   :
```

E.5 RAID Options:

E.5.1 Create RAID0 Striping for Performance

⚠ **WARNING!**

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

Step 1: Use the arrow keys to highlight **Create RAID0 Striping for Performance** and press **ENTER**. A flashing 'S' appears at the **Drive Menu** where the member drives to be included in the RAID0 array can be chosen.

Step 2: Use the space bar to select members of the RAID0 RAID configuration. The flashing cursor changes to a lower case 's' once any of the connected disk drives has been selected. Follow the same method to select another member drive.

Step 3: The **Create RAID0(Y/N)** confirm box appears. Press **Y**.

Step 4: Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

Step 5: Once an array is successfully created, it will be seen in the list of configured arrays.

NOTE:

1. To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID0 array. Avoid mixing Parallel-ATA and Serial-ATA disk drives in a RAID0 array.

2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data stripes are equally distributed across all members of a RAID array.

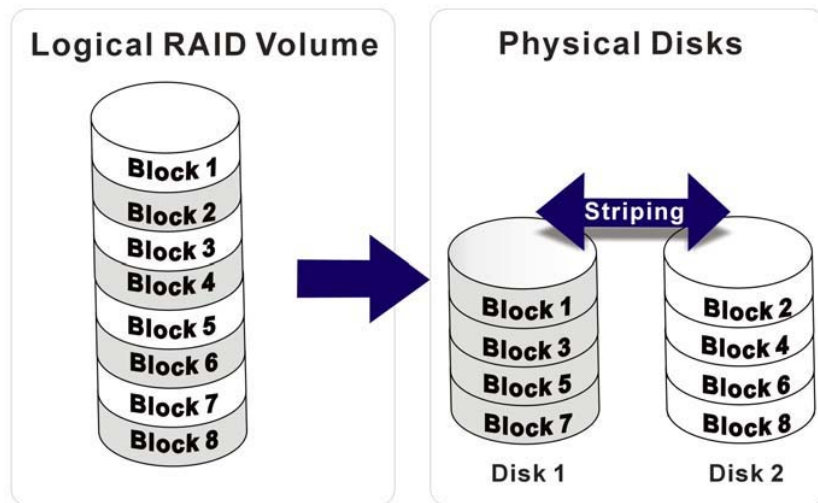### E.5.2 Create RAID1 Mirroring for Reliability

WARNING!

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

Step 1: Use the arrow keys to highlight **Create RAID1 Striping for Performance** and

press ENTER. A flashing 'M' appears at the **Drive Menu** where the member

drives to be included in the RAID1 array can be chosen.

Step 2:   Use the space bar to select members of the RAID1 RAID configuration. The

flashing cursor changes to a lower case 'm' once any of the connected disk

drives has been selected. Follow the same method to select another member

drive.

Step 3:   The **Create RAID1(Y/N)** confirm box appears. Press **Y**.

Step 4:   Enter a nickname for the created array. Upper and lower case alphabetic,

numeric, space, and underscore characters are all applicable for naming an

array.

Step 5:   Once an array is successfully created, it will be seen in the list of configured

arrays.

Step 6:   A prompt will appear to proceed with drive copy. The **Source** and **Destination**

drives will be indicated as "M" and "m" in the **Drive Menu**.

⚡ **NOTE:**

1. To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID1 array. Avoid mixing Parallel-ATA and Serial-ATA disk drives in a RAID1 array.

2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data stripes are equally distributed across all members of a RAID array.

E.5.3   Create JBOD for Integrated Capacity

JBOD is defined as "Just a Bunch of Drives." JBOD provides neither performance gains nor data redundancy.

⚡ **WARNING!**

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

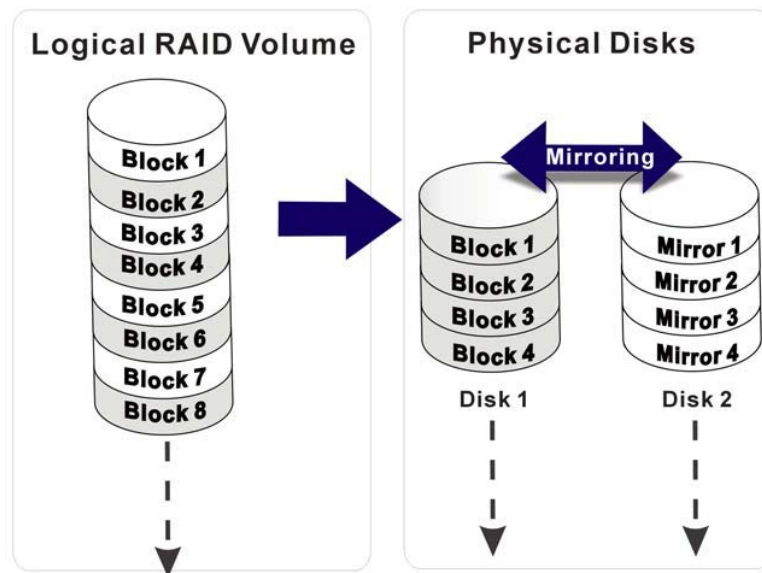**Step 1:** Use the arrow keys to highlight **Create JBOD for Integrated Capacity** and press **ENTER**. A flashing 'J' appears at the **Drive Menu** where the member drives to be included in the JBOD can be chosen.

Step 2: Use the space bar to select members of the JBOD configuration. The flashing cursor changes to a lower case 'j' once any of the connected disk drives has been selected. Follow the same method to select another member drive. The maximum number of member drives in a JBOD is four and the minimum is two.

Step 3: The **Create RAID1(Y/N)** confirm box appears. Press **Y**.

Step 4: Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

Step 5: Once an array is successfully created, it will be seen in the list of configured arrays.

NOTE:

To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID1 array. Avoid mixing Parallel-ATA and Serial-ATA disk drives in a RAID1 array.

E.5.4   Stripe Size

The change to stripe size effects RAID0 arrays. Configurable options are:

∫   64K (default)

ƒ   32K

ƒ   16K

ƒ   8K

ƒ   4K

Select a small stripe size if the I/Os to the hard drives are small and randomly occurred. Choose a larger stripe size if the I/Os are mostly large and come in sequential orders, e.g., A/V playback and editing applications. The default value should be appropriate for most applications.

E.5.5   Delete RAID Setting & Partition

 WARNING!

If a RAID configuration is deleted, all data previously stored on the member drives of the RAID configuration will also be deleted.

Step 1:   Use the arrow keys to highlight **Delete RAID Setting & Partition** and press **ENTER**. A flashing 'E' appears at the **Drive Menu** where the member drives to be removed can be chosen.

Step 2:   The **Data on RAID drives will be erased (Y/N)** confirm box appears. Press **Y**.

E.5.6   Delete All RAID Setting & Partition

 WARNING!

If a RAID configuration is deleted, all data previously stored on the member drives of the RAID configuration will also be deleted.

Step 1:   Use the arrow keys to highlight **Delete All RAID Setting & Partition** and press **ENTER**.

Step 2:   The **Data on RAID drives will be erased (Y/N)** confirm box appears. Press **Y**.

E.5.7   Rebuild RAID Array

The **Rebuild RAID Array** option can rebuild a RAID array if a member of a RAID configuration should fail. Neither RAID0 nor JBOD provides data redundancy. The **Rebuild RAID Array** option only applies to RAID1 arrays and is applicable when a member of a RAID1 configuration has failed.

Step 1:   Use the arrow keys to highlight **Rebuild RAID Array** and press ENTER. A flashing 'R' appears at the list of existing arrays. The source and destination drives will be displayed.

Step 2:   Press **Y** to begin the rebuild process.

⚠ NOTE:

A status bar will indicate the rebuild progress. Rebuild consumes considerable system resources and the time required for rebuilding a RAID array may vary depending on the size of stored data, disk drive capacity, and drive performance.

E.5.8   Select Boot Drive

Step 1:   Use the arrow keys to highlight **Select Boot Drive** and press ENTER. A flashing 'A' appears at the **Drive Menu** where the boot drive can be chosen.

Step 2:   Press ENTER or the space bar to finish the configuration.

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Appendix

F

Digital I/O Port Programming Guide

One characteristic of digital circuit is its fast response to high or low signal.   This kind of response is highly needed for harsh and critical industrial operating environment.   That is the reason for designing 4-bit digital inputs and 4-bit digital outputs on the 3302150.

Digital Input and Output, generally, are control signals. Use these signals to control external devices that needs On/Off circuit or TTL devices. Read or write data to the selected address to enable the function of digital IO.

✓ **NOTE:**

This function is applied by Winbond W83627HF chipset, if partners have further questions about it, please refer to the original datasheets or contact with our customer service department.

W83627HF pin	DIO pin	W83627HF pin	DIO pin
GP10	IN0	GP14	OUT0
GP11	IN1	GP15	OUT1
GP12	IN2	GP16	OUT2
GP13	IN3	GP17	OUT3

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

INT 15H:

AH – 6FH
<u>Sub-function:</u>
AL – 8: Set the Digital port is INPUT
AL   : Digital I/O input value

Example program:

```
MOV    AX, 6F08H                ; setting the Digital port is input
INT       15H                           ;
```

AL low byte = value

AH – 6FH
<u>Sub-function:</u>
AL – **9**: Set the Digital port is OUTPUT
BL : Digital I/O output value

Example program:

```
MOV     AX, 6F09H              ;setting the Digital port is output
MOV     BL, 09H                          ;Digital value is 09H
INT     15H                    ;
```

Digital Output is 1001b

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 you for your products, projects and business.

Global American Inc.

Address:	17 Hampshire Drive Hudson, NH 03051
TEL:	Toll Free (U.S. Only) 800-833-8999 (603)886-3900
FAX:	(603)886-4545
Website:	http://www.globalamericaninc.com
E-Mail:	salesinfo@globalamericaninc.com