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User's Manual

Single Board Computer 3307900

Version A1, June 2007

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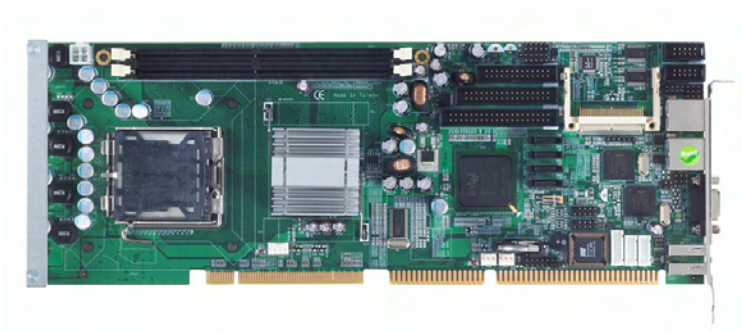
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MEMO

C h a p t e r   1
Introduction

The 3307900 PICMG 1.0 full-size Single Board Computer supports Intel® Core™ 2 Duo, Pentium® D, Pentium® 4 and Celeron® D processors, at FSB 533/800/1066 MHz. The board integrates chipsets Intel® 945G and ICH7R that deliver outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two DDR2 DIMM sockets for dual channel DDR2 533/667, maximum memory capacity up to 4GB. The board also features Ethernet 10/100/1000Mb, Dual PCI-Express LAN, four serial ATA channels for four serial ATA hard drives at maximum transfer rate up to 300MB/sec, six USB 2.0 high speed compliant, built-in high definition audio codec that can achieve the best stability and reliability for industrial applications.

1.1 Specifications

- **CPU: Intel® Core™ 2 Duo, Pentium® D, Pentium® 4 and Celeron® D processors**

- **System Chipset: Intel® 945G & ICH7R**

- **CPU Socket: LGA775**

- **Front-Side Bus: 533/800/1066MHz**

- **BIOS**
    - Award PnP Flash BIOS

- **System Memory**
    - Two x 240-pin DDR2 DIMM sockets
    - Maximum up to 4GB DDR2 memory
    - Support DDR533/667 memory

- **L2 Cache:** integrated in CPU

- **IDE Interface**
    - One IDE connector and up to two IDE devices, Ultra DMA ATA33/66/100 supported

- **Onboard Multi-I/O**
    - Parallel Port: one bi-directional with ECP/EPP/SPP support
    - Serial Port: one for RS-232 (COM1) and one port for RS-232/422/485 (COM2)
    - Floppy controller: supports two drives (1.44MB for each)

- **USB Interface**
    - Six USB ports compliant with USB Spec. Rev. 2.0

- **VGA Controller**
    - Chipset Integrated VGA Controller and Supports up to 2048x1536 at 75 Hz resolution on non-interlaced CRT monitors

- **Ethernet**
   - The LAN1/LAN2: Intel® 82573L Ethernet controller supports

       10/100/1000Mb

- ■ Dual PCI-Express LAN
- ■ Wake On LAN support

● **Serial ATA**
- ■ Built-in four SATA/SATA II ports onboard support the maximum transfer rate up to 300MB/sec

● **Audio**
- ■ Realtek ALC203 Audio Codec onboard

● **Hardware Monitoring**
- ■ Controller: Winbond W83627HF-AW detection of CPU temperature, system temperature, power failure and fan speed

● **Watchdog Timer**
- ■ Software programmable time interval and hardware reset only.
- ■ 1~256 seconds; up to 256 levels

● **Dimensions:** 338x 126mm (6 layer)

NOTE: *Specifications are subject to change without notice.*

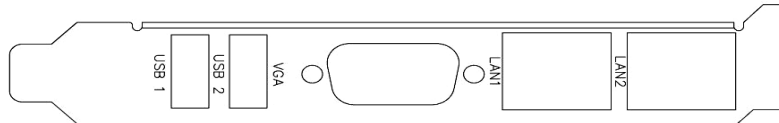# 1.2   Utilities Supported

- ● Intel® 945G Utility and Drivers
- ● VGA Drivers
- ● Ethernet Utility and Drivers
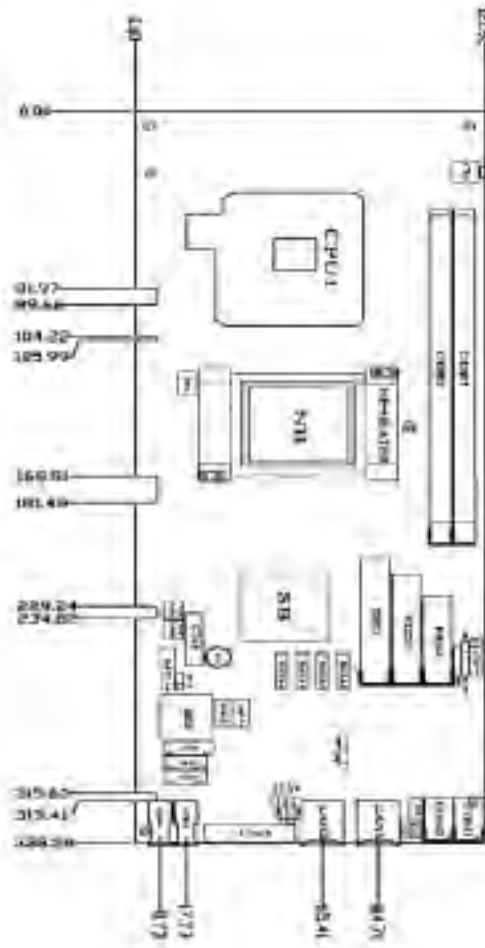- ● Audio Utility and Drivers

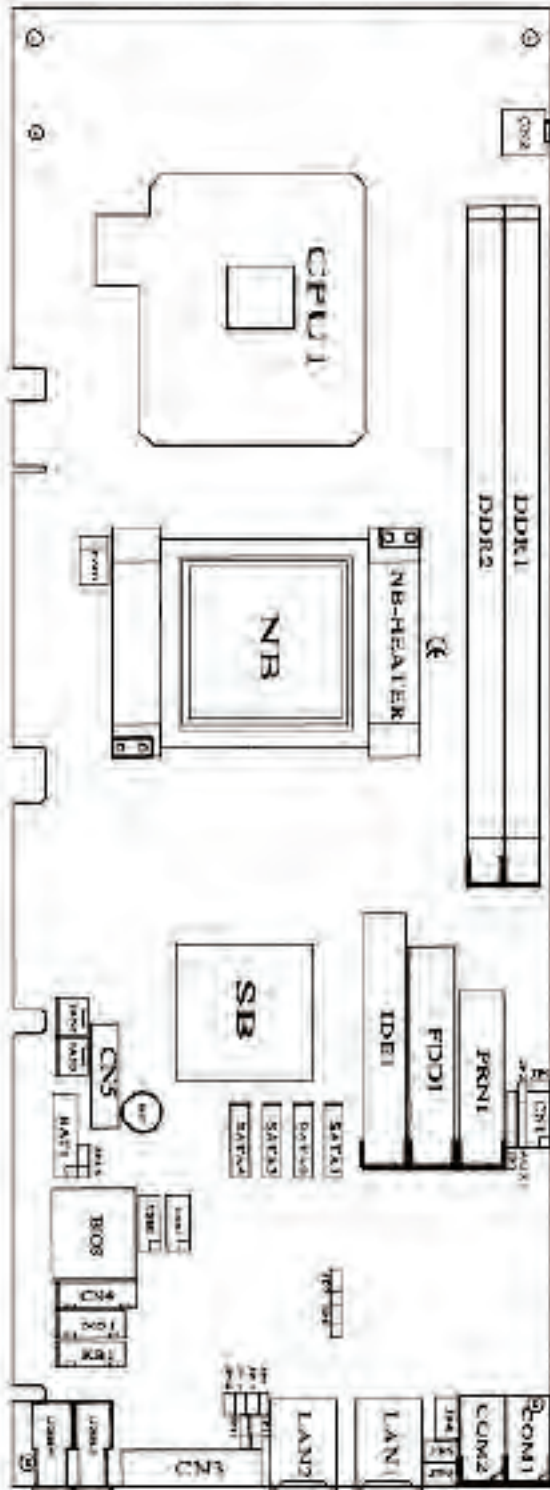## 1.3 Block Diagram
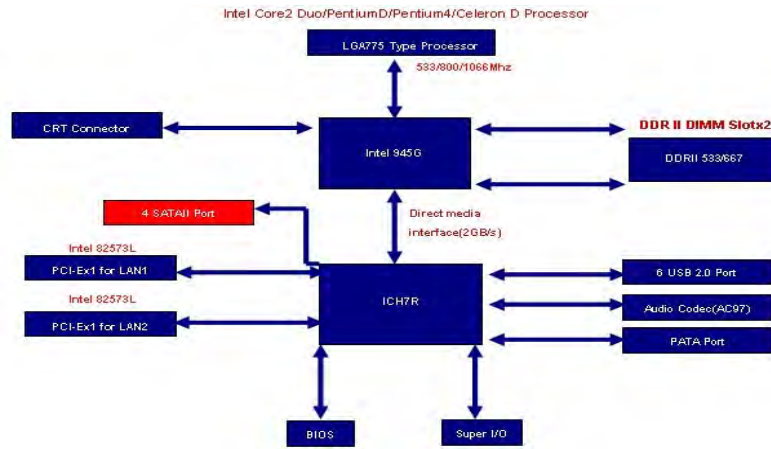
1.4 I/O Bracket

Chapter 2
Jumpers and Connectors

2.1 Board Dimensions

2.2 Board Layout

2.3   Jumper Settings

Proper jumer settings configure the **3307900** to meet your application purpose.

2.3.1 COM2 Mode Select Jumpers: JP4, JP5, JP6

These jumpers select the COM2 port's communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting		
COM2	RS-232 (Default)	JP4	JP5	JP6
	RS-422	JP4	JP5	JP6
	RS-485	JP4	JP5	JP6

2.3.2 CMOS Clear Jumper: JP15

You may need to use this jumper is to clear the CMOS memory if incorrect BIOS settings.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	**JP15** 1 2 3
	Clear CMOS	**JP15** 1 2 3

2.4   Connectors

Connectors connect the CPU card with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected.

Here is a summary table shows you all connectors on the board.

Connectors	Label	Connectors	Label
Audio Output	CN1	USB 1	USB1, 2
Parallel Port	PRN1	USB 3, 4	USB5, 6
COM1 Port	COM1	USB 2	USB3, 4
ATX 4 Pin 12V In	CN2	Front Panel	CN5
CD AUX In	AUX1	System FAN1	FAN2
COM2 Port	COM2	System FAN2	FAN3
Floppy Port	FDD1	ACPI	CN4
RJ-45 Port1	LAN1	CPU FAN	FAN1
RJ-45 Port2	LAN2	LGA775 Socket	LGA775
P-ATA IDE Port	IDE1	Mouse Connector	MS1
CompactFlash Socket (optional)	CF1	Keyboard Connector	KB1
S-ATA Port 4	SATA4	S-ATA Port 2	SATA2
S-ATA Port 3	SATA3	S-ATA Port 1	SATA1
VGA Port	CN3		

2.4.1 Print Port Connector: PRN1

Print Port Connector [Default]
This board has a multi-mode parallel port to support:

1. **Standard Mode:**
   IBM PC/XT, PC/AT and PS/2™ are compatible with bi-directional parallel port.

2. **Enhanced Mode:**
   Enhance parallel port (EPP) is compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant).

3. **High Speed Mode:**
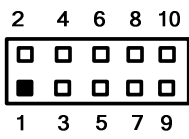   Microsoft and Hewlett Packard extended capabilities port (ECP) is IEEE 1284 compliant.

Pin	Signal	Pin	Signal
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 In #	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	

2.4.2 Audio Connector: CN1

CN1 is a 10-pin connector to support the audio interface.
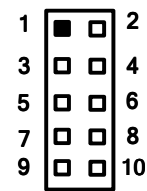
Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND

2.4.3 Serial Port Interface Connectors: COM1, COM2

The serial interface for the board consists of COM1 port (COM1) and COM2 (COM2) supports RS-232/RS-422/RS-485.

Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	NC

2.4.4 ATX 4 Pin 12V In Connector: CN2

You can connect it to the ATX12V power supply for CPU Core Voltage.

Note: *Make sure your ATX12V power supply can provide 16A on the +12V lead and at least 1A on the +5V standby lead (+5VSB). The minimum recommended wattage is 250W or 300W for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.*

Pin	Signal
1	GND
2	GND
3	+12V
4	+12V

**CN2**

```
 3 │ 4
 1 │ 2
```

2.4.5 Floppy Disk Port Connector: FDD1

The board provides a 34-pin header type connector, FDD1, supporting up to two floppy drives. The floppy drives may be any one of the following types: 5.25" 360KB/1.2MB and 3.5" 720KB/1.44MB/2.88MB.

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Reduce write current	3	GND
4	N/C	5	GND	6	N/C
7	GND	8	Index #	9	GND
10	Motor enable A #	11	GND	12	Drive select B #
13	GND	14	Drive select A #	15	GND
16	Motor enable B #	17	GND	18	Direction #
19	GND	20	STEP #	21	GND
22	Write data #	23	GND	24	Write gate #
25	GND	26	Track #	27	GND
28	Write protect #	29	GND	30	Read data #
31	GND	32	Side 1 select #	33	GND
34	Disk change #				

FDD1

```
2 ○○○○○○○○○○○○○○○○○ 34
1 □○○○○○○○○○○○○○○○○ 33
```
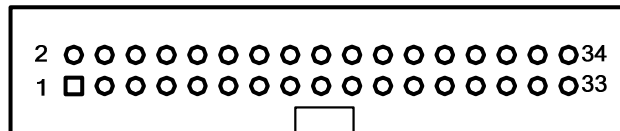
2.4.6 Parallel IDE Interface Connector: IDE1

The board provided one IDE Port to support maximum up to two IDE devices.

| Pin	Description	Pin	Description	Pin	Description
1	Reset #	2	GND	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 16
19	GND	20	N/C	21	N/C
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	N/C	29	N/C	30	GND-Default
31	Interrupt	32	N/C	33	SA1
34	N/C	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND				

IDE1
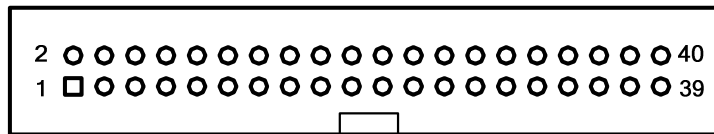
2.4.7 SATA Connectors: SATA1~4

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

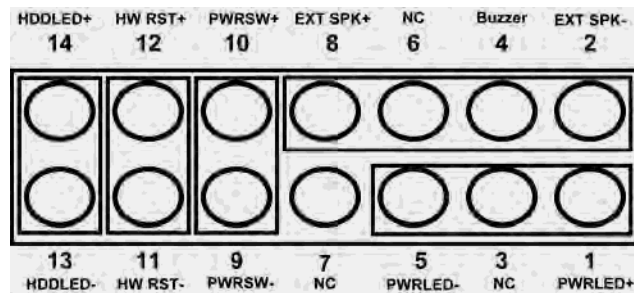| Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND

SATA1~4

7   1
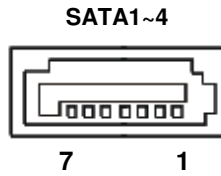
2.4.8 USB Connectors: USB1~2

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. These are 10-pin standard USB connectors.

Pin	Signal	Pin	Signal
1	USB POWER	2	USB POWER
3	USB P0-	4	USB P1+
5	USB P0-	6	USB P1+
7	USB GND	8	USB GND
9	NC	10	GND

USB1~2

USB   USB USB   USB
GND   P0- P0-   Power

GND   USB USB USB   USB
       GND P1+ P1+   Power
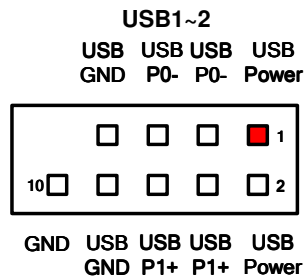
2.4.9 Front Panel Connector: CN5

■ **Power LED**

Pins 1, 3, 5 connect the system power LED indicator to its respective switch on the case. Pin 1 is +, and pin 5 assigned to -. Pin 3 is defined as NC.

■ **External Speaker and Internal Buzzer Connector**

Pins 2, 4, 6, 8 can be connected to the case-mounted speaker unit or internal buzzer.

■ **Hardware Reset**
Pins 11 and 12 are designed for Hardware Rese*t*.

■ **HDD Activity LED**
This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed. Pins 13 and 14 can be connected to the hard disk drive and front panel HDD LED.

■ **Power Button**

Pins 9 and 10 connect the front panel's ATX power button to the card, which allows users to control ATX power on or off.

2.4.10 ACPI Connector: CN4

It is to support remote power on/off for turning off the system through software control while using the ATX-compliant power supply.
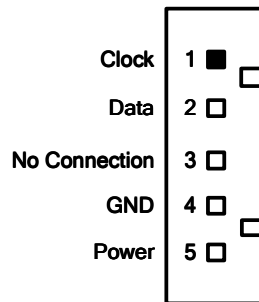
Pin	Signal	Pin	Signal
1	EXTSMI	2	GND
3	POWER BUTTOM	4	GND
5	SUSB	6	+5VSB

CN4
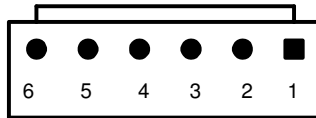
2.4.11 Internal Mouse/Keyboard Connector: MS1/KB1

The board provides a keyboard (KB1) and Mouse (MS1) interface with two 5-pin connectors.

MEMO

C h a p t e r 3
Hardware Installation

Before installing the processor, please access Intel® website for more detailed information http://www.intel.com .

3.1   Installing the Processor

The LGA775 processor socket comes with a cover to protect the processor. Please install the processor into the CPU socket step by step as below:
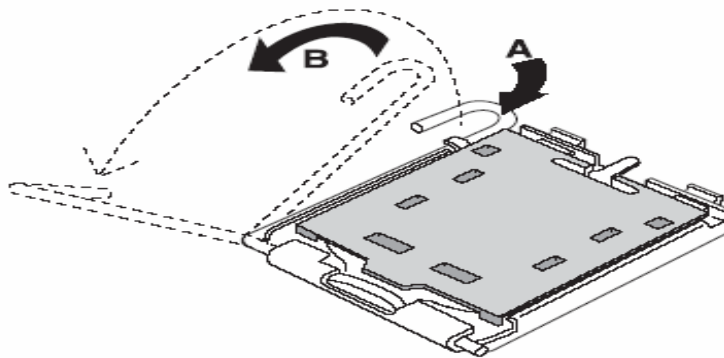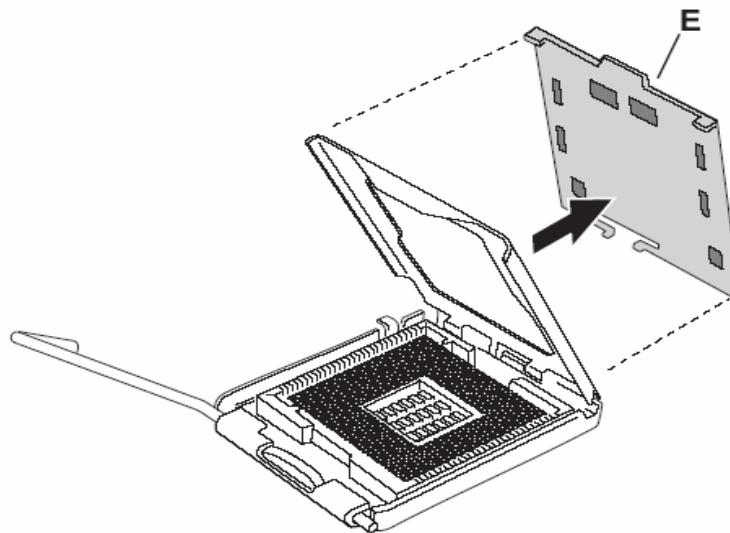

Hold the hook (A) of the lever and push it down.
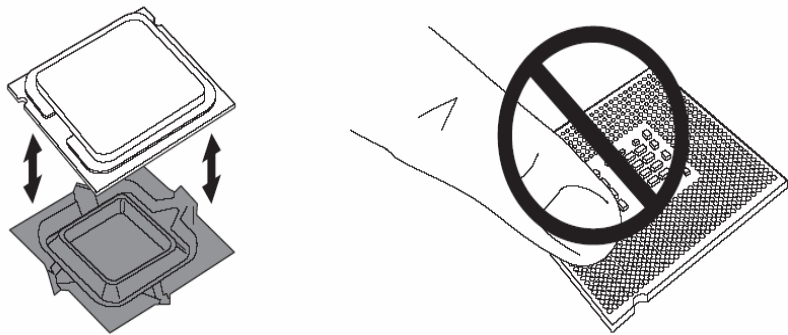Pull the lever (B) asisde to unlock the cover.
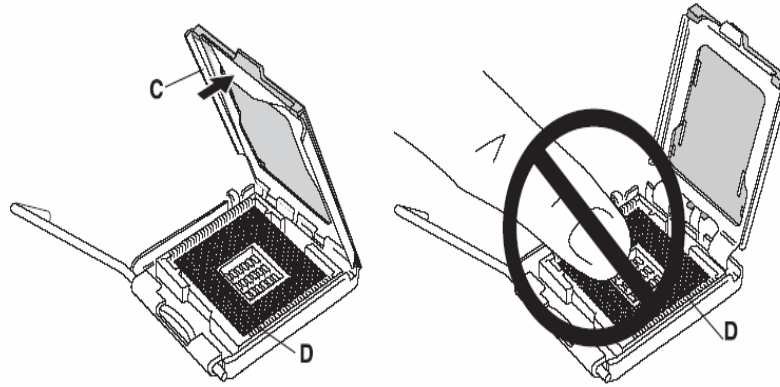
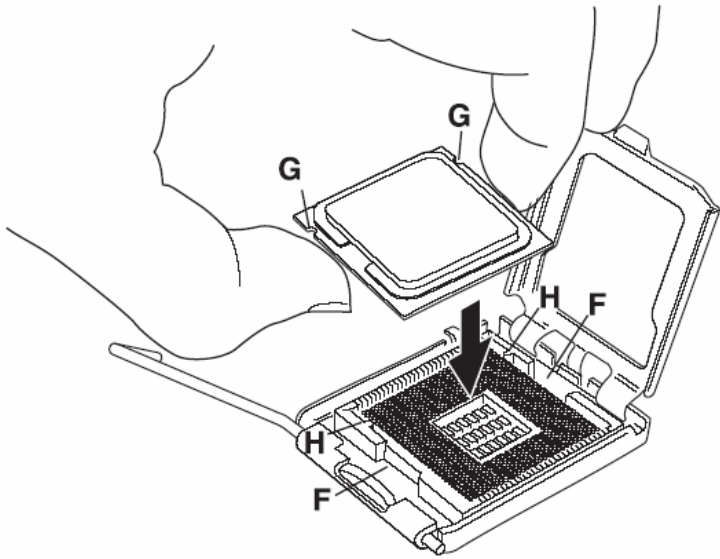Open the cover (C), you can see the contact.

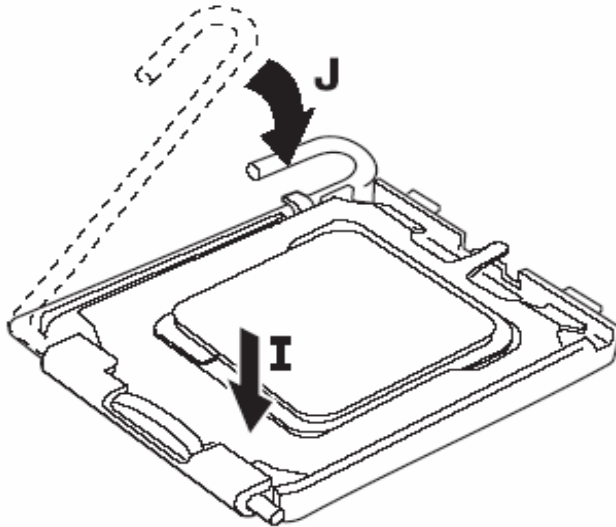Be careful not to touch the contact (D).

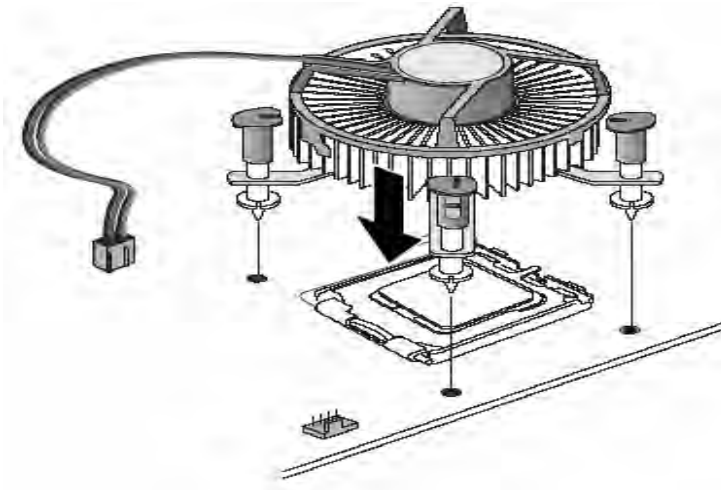Remove the plastic cap (E) from the cover.

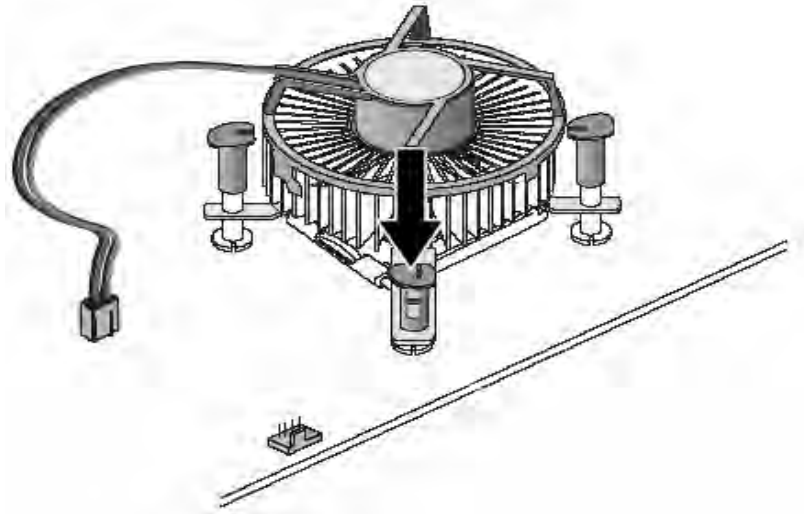Place the CPU down into the socket. Be careful not to touch the contact.

Hold the edges of the CPU, and orientate it as the marked direction (G) down into the socket to match the (H) and (F) locations.
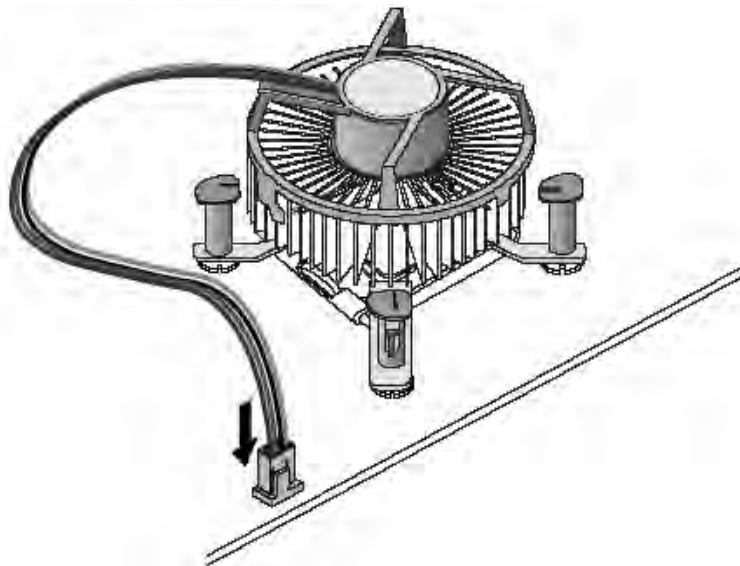
Slightly push down the cover and hook the lever (I~J). The CPU is completely locked.

Orientate the CPU cooling fan to fixing holes on the board.

Screw the CPU cooling fan onto the board.

Make sure the CPU fan is plugged to the CPU fan connector.

3.2   Installing the Memory

The board supports two 240-pin DDR2 DIMM memory sockets with maximum memory capacity up to 4GB.

Please follow steps below to install the memory modules:

1   Push down latches on each side of the DIMM socket.
2   Align the memory module with the socket that notches of memory module must match the socket keys for a correct intallation.
3   Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are levered upwards and clipped on to the edges of the DIMM.
4   Install any remaining DIMM modules.
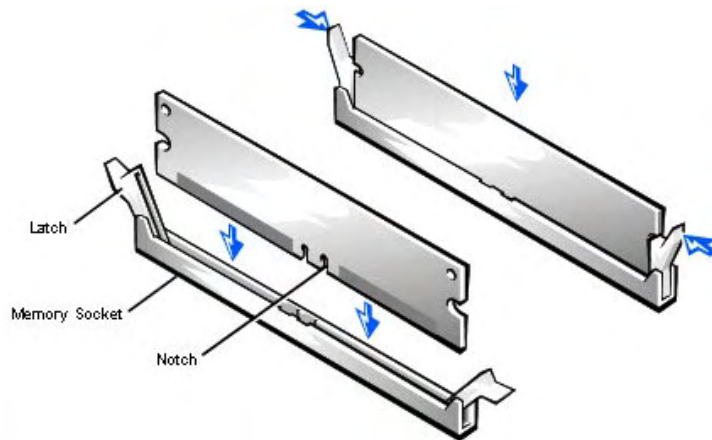
C h a p t e r 4
Hardware Description

4.1   Microprocessors

The 3307900 Series supports Intel ® Core™2 Duo, Pentium® D, Pentium® 4 and Celeron® D processors, which make your system operated under Windows® 2000/XP and Linux environments. The system performance depends on the microprocessor. Make sure your installed microprocessor with all correct settings that prevents the CPU from damages.

4.2   BIOS

The 3307900 Series uses Award Plug and Play BIOS with a single 4Mbit Flash EPROM.

4.3   System Memory

The 3307900 Series industrial CPU card supports two 240-pin DDR2 DIMM sockets for a maximum memory of 4GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB.

4.4 I/O Port Address Map

The Intel® Core™ 2 Duo, Pentium® D, Pentium® 4 and Celeron® D CPUs can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0F0	Clear math coprocessor busy signal
0C0-0DF	DMA controller #2
0F1	Reset math coprocessor
0F8-0FF	Math processor
120	Disable watchdog timer operation (read)
121	Enable watchdog timer operation (read)
122	Watchdog
1F0-1F8	Fixed disk controller
200-207	Game port
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel port #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port #1 (COM1)
2F8-2FF	Serial port #2 (COM2)

A p p e n d i x A
Watch Dog Timer

Please follow the below WDT process for setup the WDT function.
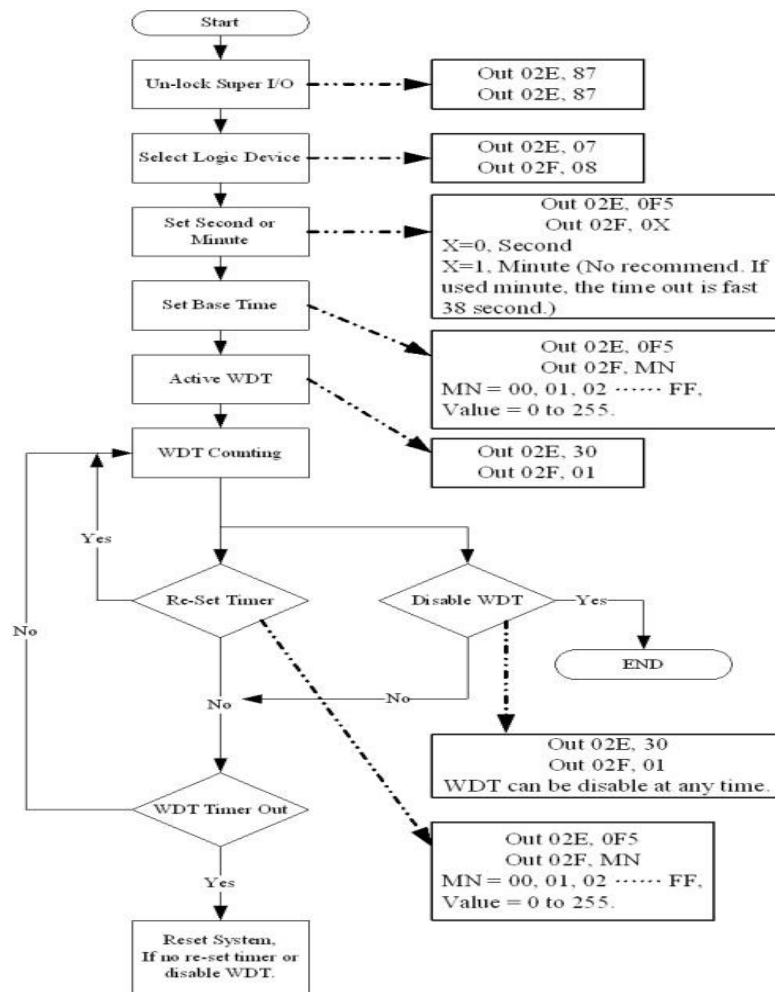
MEMO

A p p e n d i x B
PCI IRQ Routing

Digital I/O Software Programming

PICMG PCI IRQ Routing

Device	ID	Slot	Int
PCI Slot 0	31	0	BCDA
PCI Slot 1	30	1	CDAB
PCI Slot 2	29	2	DABC
PCI Slot 3	28	3	ABCD

On Board Device IRQ Routing

Device	ID	Slot	Int
PCI-ISA Bridge	22	4	
Mini-PCI 1	26	5	CD

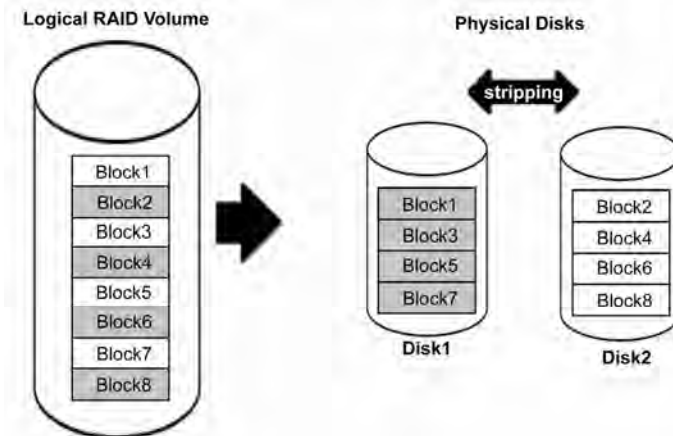**MEMO**

A p p e n d i x C
# What Is SATA RAID Function?

Introduction

ICH7R supports the SATA RAID function that allows you to combine four SATA-II disk drives into RAID volume configurations. The RAID configurations help you increase disk access speed (RAID0), or withstand a single disk drive failure (RAID1 or RAID5) and thus protect your data.

Main features of ICH8DO RAID functionalities are listed as follows:
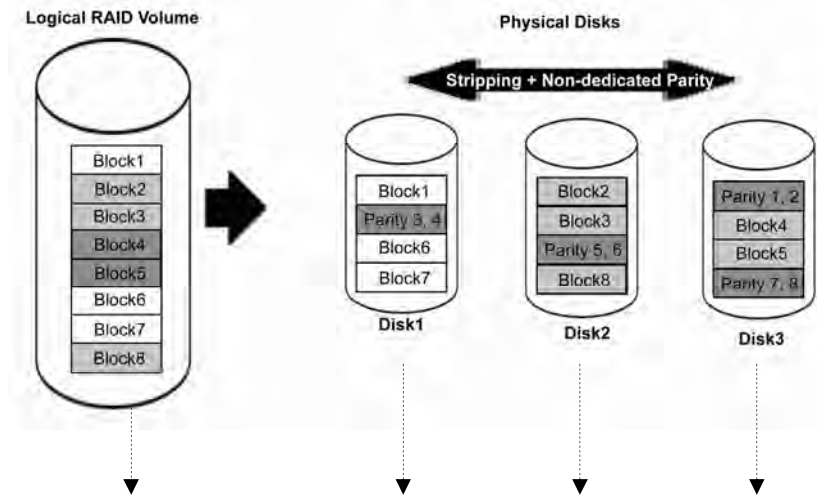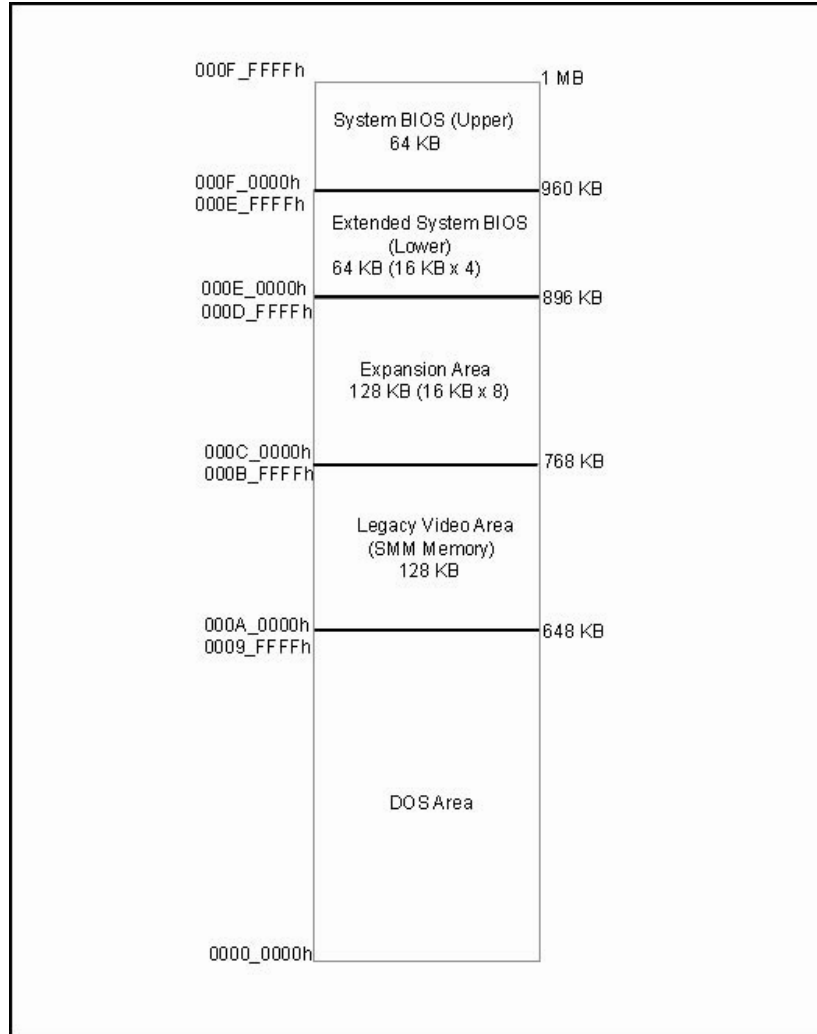
1. **RAID0** (Striping)

2. **RAID1** (Mirroring)
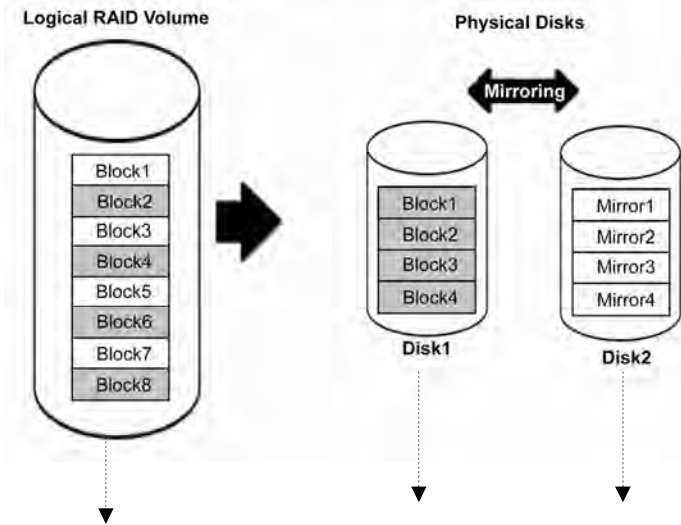
3. **RAID5** (Block Interleaved Distributed Parity)

A p p e n d i x D
Memory I/O Address

MEMO

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: E-Mail:	http://www.globalamericaninc.com salesinfo@globalamericaninc.com