

EPE-1814V2NAR

EPE 全长主板带 VGA 和双千兆 LAN

EPE Full-size Motherboard with VGA and  
Double Gigabit LAN

Version: C00

## Announcement

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Before purchasing, please have a detailed understanding of the product performance to see whether it meets your requirements.

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## Safety Instructions

1. Please carefully read the users' manual before handling the product;
2. For the board which is not ready to be installed, please put it in the anti-static packaging;
3. Before taking the board out from anti-static packaging, please put your hand on grounded metal object for a while (about 10 seconds) to discharge static;
4. Please wear static protective gloves when holding the board; and always hold the board by edges;
5. Before inserting, removing or re-configuring the motherboard or the expansion card, please firstly disconnect the AC power or unplug the AC power cable from the power source to prevent damage to the product and ensure your personal safety;
6. Before removing the boards or Box PC, firstly turn off all power resources and unplug the power cable from power source;
7. For Box PC products, when inserting or removing boards, please disconnect the AC power in advance;
8. Before connecting or disconnecting any device, make sure all power cables are unplugged in advance;
9. To avoid unnecessary damage caused by turning on/off computer frequently, wait at least 30 seconds before re-turning on the computer.

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## Chapter 1 Product Introduction

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### Overview

EPE-1814V2NAR is a sort of high-performance full-size CPU card which adopts EPE specification (compatible with PICMG1.3 bus specification) and supports dual-core/quad-core CPU and DDR3 memory; the latest EPE specification enables the stability of the card better than the PICMG1.3 motherboard.

The product adopts Intel® 4 series embedded platform: technique scheme realization of Intel® G41 + ICH7R. Integrate VGA display, support DVMT mode with shared memory up to 352MB; on-board two DDR3 memory slots, support dual-channel DDR3 800/1066MHz up to 4GB; eight USB2.0 ports (four on motherboard and the other four are educed via the carrier), two RS-232 COMs, one parallel port, two Gigabit LAN ports, four SATA connectors (two on motherboard and the other two are educed via the carrier), one IDE connector, one PS/2 keyboard and mouse connector, one 8-bit digital I/O; support HD Audio connector, MIC-in, Line-in and Speaker-out.

### Mechanical Dimension, Weight and Environment

- Dimension: 338.6 mm (L) × 129.7 mm (W) × 35mm (H)
- Net Weight: 496.9g
- Operating Environment:
  - Temperature: 0°C ~ 60°C;
  - Humidity: 5% ~ 90% (Non-condensing);
- Storage Environment:
  - Temperature: -20°C ~ 80°C;
  - Humidity: 5% ~ 90% (Non-condensing);

## Typical Consumption

CPU: Intel Core 2 Quad Q9300 1333 2.5GHz 95W

Memory: Kingston/1333/2G\*2

- +5V@ 1.47A; +5%/-3%;
- +3.3V@ 1.75A; +5%/-3%;
- +12V@ 1.07A; +5%/-3%;

## Microprocessor

Support Intel® LGA775 socket Core™2 Quad ,Core™2 Duo, Celeron® E1000 and Celeron®400 series CPU, 800/1066/1333MHz FSB.

Not support Intel® Core™2 Extreme, Pentium® 4, Pentium® D and Celeron® D series CPU.

## Chipset

Intel® G41 + Intel® ICH7R

## System Memory

Provide two 240 Pin DDR3 memory slots, support DDR3 800/1066MHz Un-buffered non-ECC memory up to 4GB;

## Video Function

Intel® G41 North Bridge chip integrates VGA display with maximum resolution up to 2048 X 1536@75Hz.

## Network Function

Provide two 10/100/1000Mbps network ports; LAN1 supports Wake-on-LAN function.

## **Audio Function**

Adopt ALC888 sound effect chip, it supports MIC-in, Line-in and Speaker-out functions.

## **Power Feature**

Adopt ATX power, support ACPI S0/S1/S4/S5 status, etc.

## **Expansion Bus**

Adopt EPE bus specification; support one PCIE x16, four PCIE x1 or one PCIE x4, four USBs, two SATAs, SMBUS and four PCI master expansions.

## **Watchdog Function**

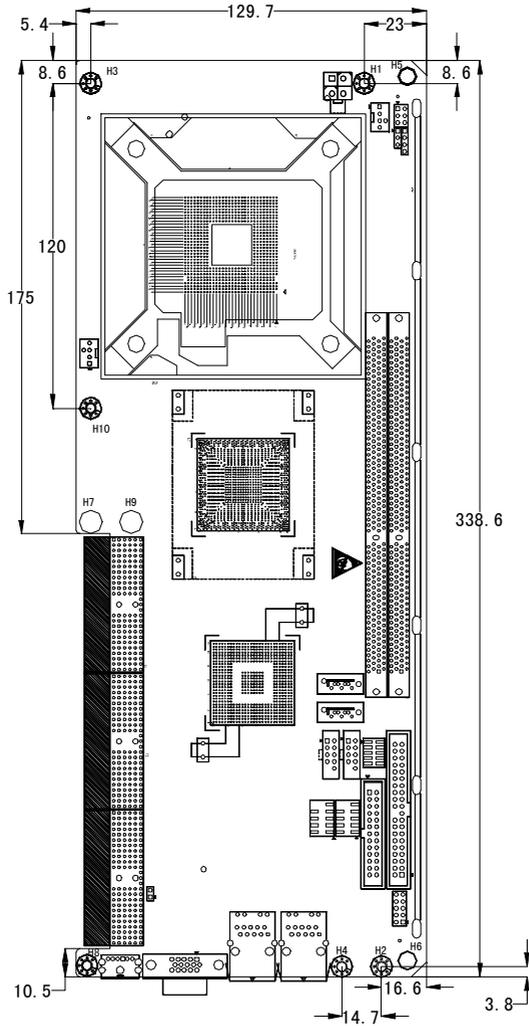
- Support 255 levels, programmable, by minute or second;
- Support watchdog interrupt or reset system.

## **I/O Connector**

- One parallel port;
- Two COMs, COM1 supports Wake-up function;
- One IDE connector;
- Four SATA connectors (two of which are educed via carrier), support RAID0, 1, 5 and 10;
- Eight USB2.0 ports (four of which are educed via carrier);
- One PS/2 keyboard/mouse connector;
- One 8-bit digital I/O connector.

## Chapter 2 Installation

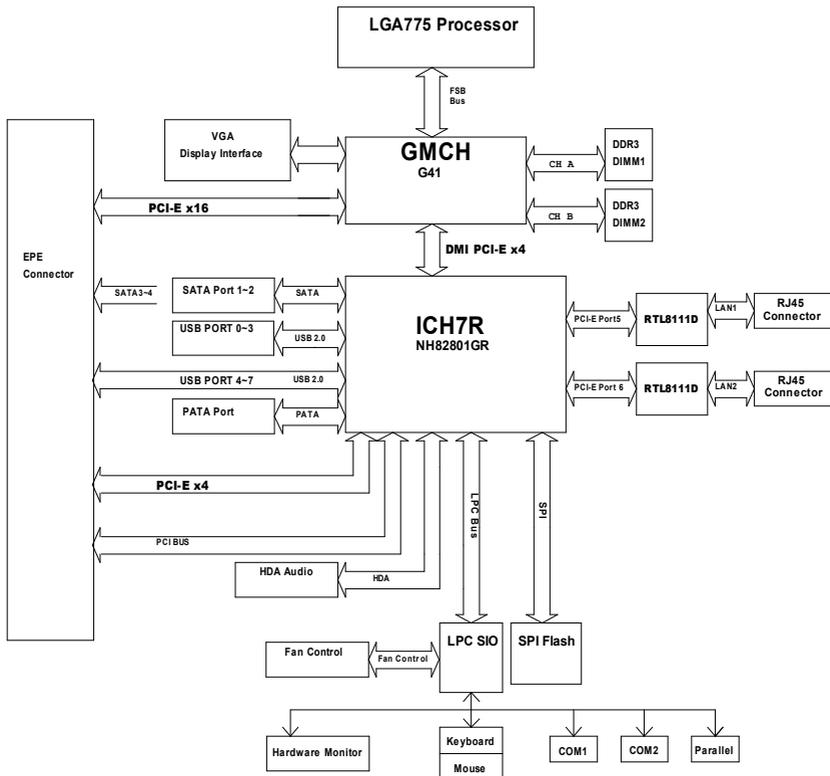
### Product Outline



Unit: mm



## Motherboard Structure



**Tip: How to identify the first pin of the jumpers and connectors?**

1. Observe the letter beside the socket, it would be marked with “1” or thickened lines or triangular symbols;
2. The square pad on the rear is the first pin;
3. The red line on the cable or other marks show that they should be connected with the first pin of the socket.

## Jumper Setting

### JCC1: Clear/Keep CMOS Setting (Pin Distance: 2.54 mm)

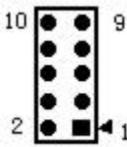
CMOS is powered by the button battery on board. Clear CMOS will restore original settings (factory default). The steps are listed as follows: (1) Turn off the computer and unplug the power cable; (2) Instantly short circuit JCC1; (3) Turn on the computer; (4) Follow the hint on screen to enter BIOS setup when starting the computer, load optimized defaults; (5) Save and exit. Please setup as follows:



JCC1

Setup	Function
1-2 Open	Normal (Default)
1-2 Short	Clear the contents of CMOS, all BIOS setting will restore to factory default values.

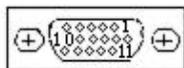
## Audio Connector


 AUDIO1  
 (Pin Distance:  
 2.54mm)

Pin	Signal Name	Pin	Signal Name
1	LOUT_R	2	LOUT_L
3	GND_AUDIO	4	GND_AUDIO
5	LIN_R	6	LIN_L
7	GND_AUDIO	8	GND_AUDIO
9	MIC_L	10	MIC_R

## Video Connector

15-Pin D-Sub VGA socket, VGA1.

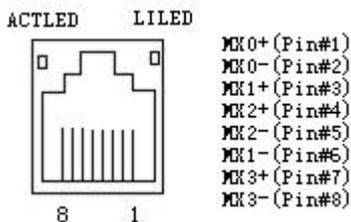


VGA1

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	NC	12	DCCDATA
13	HSYNC	14	VSYNC
15	DCCCLK		

## LAN Port

The board provides two 10/100/1000Mbps Ethernet ports; LILED and ACTLED are the two LED indicators beside Ethernet ports, which respectively show the activity and transmitting status of LAN. Please refer to the status descriptions for each LED:

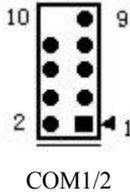


LAN1/LAN2

ACTLED (Green)	LAN Activity Indicator	LILED (Dual Color: Y/G)	
		LAN Speed Indicator	
Blink	Data Transmitting	Green	1000Mbps
Off	No Data to Transmit	Yellow	100Mbps
		Off	10Mbps

## Serial Port

The board provides two 2×5Pin serial ports (Pin Distance: 2.54 mm), they support RS-232 modes and the pin definitions are as follows:

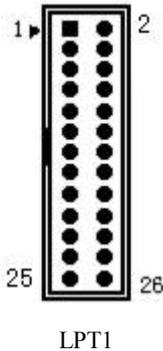


Pin	Signal Name	Pin	Signal Name
1	DCD#	6	DSR#
2	RXD	7	RTS#
3	TXD	8	CTS#
4	DTR#	9	RI#
5	GND	10	NA

## Parallel Port

The board provides one standard 2×13Pin parallel port (Pin Distance: 2.54 mm), it could connect with peripheral devices with parallel port according to requirements.

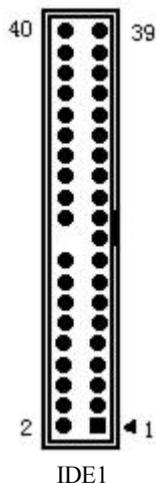
The pin definitions are as follows:



Pin	Signal Name	Pin	Signal Name
1	STB#	2	AFD#
3	PD0	4	ERR#
5	PD1	6	INIT#
7	PD2	8	SLIN#
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

## IDE Connector

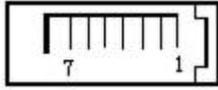
The board provides one standard 2×20Pin IDE connector (Pin Distance: 2.54 mm), it supports Ultra100/66/33 BMIDE and PIO mode. The pin definitions are as follows:



Pin	Signal Name	Pin	Signal Name
1	RESET#	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	Key
21	DREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IORDY	28	GND
29	DACK#	30	GND
31	IRQ	32	NC
33	DA1	34	ATA66_DET
35	DA0	36	DA2
37	CS1#	38	CS3#
39	LED#	40	GND

## SATA Connector

The board supports four SATA connectors, two of which are reduced via carrier. The pin definitions of the two standard connectors on motherboard are listed as follows:



SATA1/2

Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

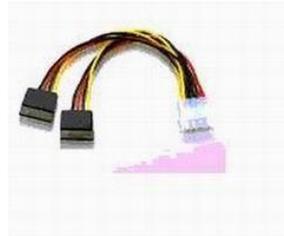
## Hot-swap of SATA Hard Disk

Notices for Hot-swap of SATA Hard Disk:

1. The hard disk shall support SATA 2.0 and use 15-pin SATA hard disk power connector.
2. The driver of chipset shall support the hot-swap of SATA hard disk.
3. Hot-swap of SATA hard disk with the operating system is forbidden when system is power-on.



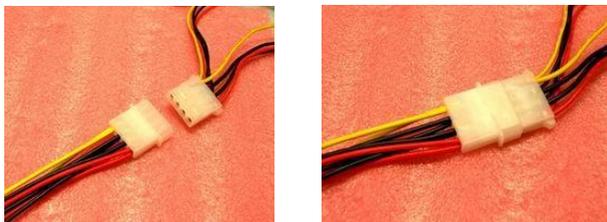
SATA Data Cable



SATA Power Cable

Please carry out hot plug as follows, improper operation may destroy the hard disk or result in data lost.

## Hot Plug



Step 1: Please plug the 1 x 4 pin SATA power connector (white) into the power adapter.



Step 2: Please connect the SATA data cable to the SATA connector on the board.



Step 3: Please connect the 15-pin SATA power connector (black) to the SATA hard disk.



Step 4: Please connect the SATA data cable to the SATA hard disk.

## Hot Unplug

Step 1: uninstall the hard disk from the device manager.



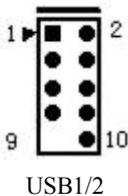
Step 2: Unplug the data cable from the SATA hard disk.



Step 3: Unplug the SATA 15-pin power connector (black) from the SATA hard disk.

## USB Port

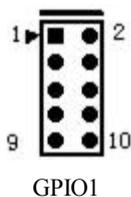
The board supports eight USB ports, four of which are educed out via carrier. The board provides two sets of standard USB ports (Pin Distance: 2.54 mm), which could educed out four USB ports. The pin definitions are as follows:



Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	NA	10	GND

## Digital IO Connector

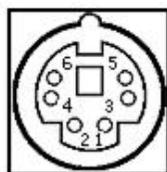
The board provides one 8-bit digital I/O connector (Pin Distance: 2.00 mm); the pin definitions are as follows:



Pin	Signal Name	Pin	Signal Name
1	DIO_IN0	2	DIO_OUT0
3	DIO_IN1	4	DIO_OUT1
5	DIO_IN2	6	DIO_OUT2
7	DIO_IN3	8	DIO_OUT3
9	GND	10	NC

## Keyboard and Mouse Connector

Keyboard and mouse connector

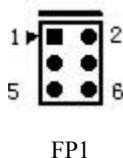


Pin	Signal Name
1	KB_DATA
2	MS_DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

## Status Indicating and Controlling Connectors

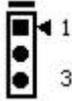
FP1, FP2 and FP3 are used to connect with the function button or indicators on front panel of the chassis.

### ATX Power Switch and Hard Disk Indicator Connector (Pin Distance: 2.54 mm)



Pin	Signal Name	Pin	Signal Name
1	PWRBTN#	2	GND
3	GND	4	RESET#
5	HDD_LED-	6	HDD_LED+

### Power Indicator Connector (Pin Distance: 2.54 mm)



FP2

Pin	Signal Name
1	PWR_LED+
2	NC
3	GND

### Loudspeaker Output Connector (Pin Distance: 2.54 mm)

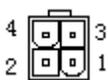


FP3

Pin	Signal Name
1	SPEAKER
2	NC
3	GND
4	+5V

### Power Connector

#### +12V Power Connector (Pin Distance: 4.20 mm)



PWR1

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

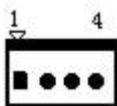
### Fan Connector

The CPU card provides two sets of standard fan sockets (Pin Distance: 2.50 mm). Pay attention as following three issues when using the fan sockets:

- The current for fan shall not be over 700 mA (12V);
- Please confirm that the fan cable complies with the socket cable. Power cable (usually red) is in the middle position. In addition, please confirm the earth

cable (usually black) and fan speed output impulse signal cable (other colors). Some fans have no speed detecting while the output of the cable is up to 12V, usage of these substandard connection will destroy the CPU card. It is recommended to use a fan with speed detection.

- Adjust the fan's airflow to the direction of heat venting.



CPUFAN1/ SYSFAN1

Pin	Signal Name
1	GND
2	+12V
3	FAN_IO
4	FAN_PWM

**FAN\_IO: Fan Speed Impulse Output; FAN\_PWM: Fan Speed PWM Control**

## Install the CPU

**Please install the CPU as follows (Refer to the figure below):**

- Aim the concave of the CPU at the heave mark on the CPU socket; then put the CPU in the socket;
- After the CPU is installed properly, cover the CPU via the upper cover of the CPU socket; then fasten the CPU with hooks.



## Install the CPU Cooling Fan

**Please install the CPU cooling fan as follows (Refer to the figure below):**

- Firstly, aim the bracket of the cooling fin (see figure ④) at the fixing holes on

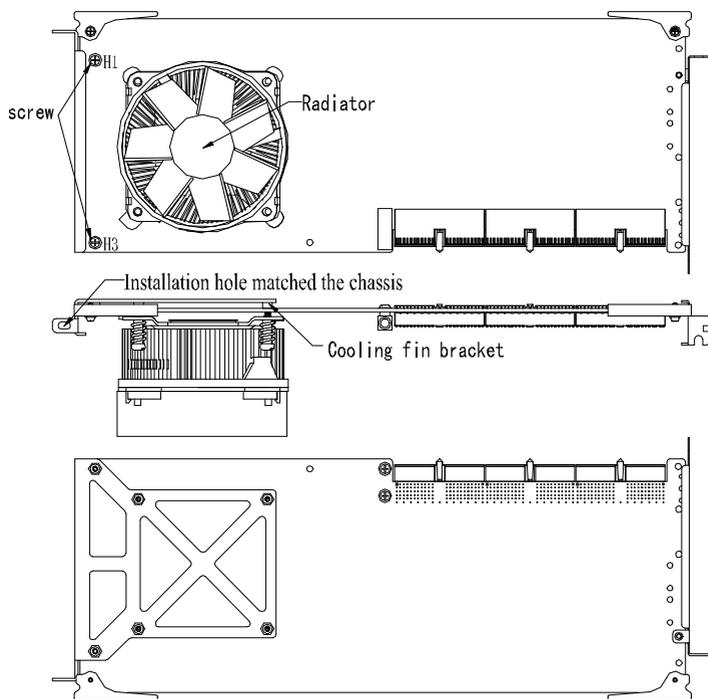
the rear of the CPU card;

- Connect the front side of cooling fin (see figure ⑤) with the bracket and fix them; pay attention that the surface between the cooling fin and the CPU crystal wafer shall be well contacted;
- Fix the cooling fin with two screws on the cross (do not tighten them) and then the other two screws; then tighten the four screws;
- Lastly, connect the fan power cable to the fan socket on the CPU card.



### Note!

- 1) It is recommended to use cooling fan authenticated by Intel; before installing the fan, smear the heat sink compound on the surface between CPU and the fan cooling fin to improve the heat dissipation performance; always check whether the fan is operating normally to ensure the heat dissipation within the chassis. When holding a board, please hold the edge instead of the cooling fin.
- 2) When assembling the computer, please fix the attached cooling fin bracket to the chassis, so as to reinforce and guarantee the stability of the system. The installation figure is shown as follows:



Steps: 1. Fix the cooling fin bracket with PCB via two screws at the locations of H1 and H3;

2. Fix the four screws on cooling fin with the cooling fin bracket.

Notes: 1: Do not tighten the screws at H1 and H3 until the four screws on cooling fin are well contacted with the rivet holder of the cooling fin bracket;

2. When tightening the four screws on cooling fin, tighten them in diagonal sequence instead of one at a time or the screws at the same side.

## Chapter 3 BIOS Setup

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### Overview

BIOS (Basic Input and Output System) is solidified in the flash memory on the CPU board. Its main functions include: initialize system hardware, set the operating status of the system components, adjust the operating parameters of the system components, diagnose the functions of the system components and report failures, provide hardware operating and controlling interface for the upper level software system, guide operating system and so on. BIOS provides users with a human-computer interface in menu style to facilitate the configuration of system parameters for users, control power management mode and adjust the resource distribution of system device, etc.

Setting the parameters of the BIOS correctly could enable the system operating stably and reliably; it could also improve the overall performance of the system at the same time. Inadequate even incorrect BIOS parameter setting will decrease the system operating capability and make the system operating unstably even unable to operate normally.

### BIOS Parameter Setup

Prompt message for BIOS setting may appear once powering on the system. At that time (inefficient at other time), press the key specified in the prompt message (usually <Del>) to enter BIOS setting.

When the BIOS setting in CMOS is destroyed, system may also require entering BIOS setting or selecting certain default value.

All the setup values modified by BIOS are saved in the CMOS storage in system. The CMOS storage is powered by battery; unless clearing CMOS contents, or else its contents will not be lost even if powered off.

Note! BIOS setting will influent the computer performance directly. Setting parameter improperly will cause damage to the computer; it may even unable to power on. Please use the internal default value of BIOS to restore the system.

Our company is constantly researching and updating BIOS, its setup interface may be a bit different. The figure below is for reference only; it may be different from your BIOS setting in use.

## Basic Function Setting for BIOS

After starting SETUP program, the main interface of CMOS Setup Utility will appear:

Phoenix – AwardBIOS CMOS Setup Utility	
<ul style="list-style-type: none"> <li>▶ Standard CMOS Features</li> <li>▶ Advanced BIOS Features</li> <li>▶ Advanced Chipset Features</li> <li>▶ Integrated Peripherals</li> <li>▶ Power Management Setup</li> <li>▶ PnP/PCI Configurations</li> <li>▶ PC Health Status</li> </ul>	<ul style="list-style-type: none"> <li>Load Fail-Safe Defaults</li> <li>Load Optimized Defaults</li> <li>Set Supervisor Password</li> <li>Set User Password</li> <li>Save &amp; Exit Setup</li> <li>Exit Without Saving</li> </ul>
Esc : Quit <span style="margin-left: 150px;">←→↑↓</span> : Select Item F10 : Save & Exit Setup	
Time, Data, Hard Disk Type...	

### ◆ Standard CMOS Features

Standard CMOS Features		
Date (mm:dd:yy)	Fri,Jan 12 2007	Item Help
Time (hh:mm:ss)	19:18:17	
<ul style="list-style-type: none"> <li>▶ IDE Channel 0 Master [None]</li> <li>▶ IDE Channel 0 Slave [None]</li> <li>▶ IDE Channel 1 Master [None]</li> <li>▶ IDE Channel 1 Slave [None]</li> <li>▶ IDE Channel 2 Master [None]</li> <li>▶ IDE Channel 3 Master [None]</li> </ul>		Menu Level  Change the internal clock.
Drive A in]	[1.44M, 3.5	
Video	[EGA/VGA]	
Halt On	[All Errors]	
Base Memory	639K	
Extended Memory	487424K	
Total Memory	488448K	

➤ **Date**

Choose this option and set current data by PageUp /PageDown, which is displayed in format of month/date/year. Reasonable range for each option is: Month (Jan.-Dec.), Date (01-31), Year (Maximum to 2099), Week (Mon. ~ Sun.).

➤ **Time**

Choose this option and set current time by PageUp /PageDown which is displayed in format of hour/minute/second. Reasonable range for each option is: Hour (00-23), Minute (00-59), Second (00-59).

➤ **IDE Channel 0 Master**

The four options: IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master and IDE Channel 3 Master indicate that the motherboard integrates four sets of IDE channels on board; channel 0 and channel 1 could connect with two devices (master/slave); channel 2 and channel 3 could connect with one IDE master device respectively.

When there is no IDE device detected, it will show [None]; if there are IDE devices detected, it will show the name of the device.

IDE Channel 0 Master		Item Help
IDE HDD Auto-Detection	[Press Enter]	Menu Level
IDE Channel 0 Master Access Mode	[Auto] [Auto]	To auto-detect the HDD's size, head...on this channel
Capacity	0 MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

Take IDE Channel 0 Master as an example, the newly appeared menu includes the following options:

- **IDE HDD Auto-Detection**

This option allows detecting the parameters of the IDE device via pressing Enter, and these parameters will automatically be displayed at the bottom of the screen.

- **IDE Channel 0 Master**

The default value is Auto; system will automatically detect which IDE device it is; select “Manual” means that users have to input all these parameters manually (it is not recommended unless the user is quite familiar with all these parameters). Select “None” to disable that channel.

- **Access Mode**

The default value is Auto; In CHS option, “C” represents Cylinder, “H” represents Head, “S” represents Sector; while the “Large” option represents extended CHS. In early times, by adding transmission in BIOS layer, the hard disk addressing exceeds the bottleneck of 512M. LBA option abandons the specifications of column, channel and sector and takes sector as unified addressing for all the hard disks. To choose this option, it requires both the BIOS and hard disk to support LBA mode. Auto means that system will decide the way of accessing the hard disks.

Capacity: current capacity of the hard disk

Cylinder: number of the hard disk cylinder

Head: number of the read/write head

Precomp: write in the pre-compensation value to adjust write-in time

Landing zone: landing zone of read/write head

Sector: sector number of each track

➤ **Drive A**

<Drive A> means 1.44M, 3.5” floppy disk.

➤ **Video**

There are four displaying modes in <Video> option, EGA/VGA: EGA (Enhanced Graphics Adapter), each pixel is 4bits, 16 colors in all and support resolution of

640\*350. VGA (Video Graphics Array) supports 16 colors, resolution 640\*480 and 256 colors, resolution 320\*200. CGA40/CGA80: CGA (Color Graphics Adapter) supports 4 colors, resolution 320\*200. 40 and 80 represent to display in 40 and 80 rows respectively. MONO: single color display.

### ➤ Halt On

<Halt On>: set the interrupt location for system self-test. All Errors: during POST phase, BIOS will stop self-test whenever there is an error. No Errors: BIOS ignores the error and continues self-inspection. All, But Keyboard: during POST phase, skip the inspection for keyboard.

Base Memory

Extended Memory

Total Memory

### ◆ Advanced BIOS Features

Advanced BIOS Features		
▶ CPU Feature	[Press Enter]	Item
▶ Hard Disk Boot Priority	[Press Enter]	Help
Virus Warning	[Disabled]	
CPU L3 Cache	[Enabled]	Menu Level
Quick Power On Self Test	[Enabled]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[LS120]	
Boot other Device	[Enabled]	
Boot Up NumLock Status	[On]	
Typematic Rate Setting	[Fast]	
Typematic Rate(Chars/Sec)	[Disabled]	
Typematic Delay(Msec)	6	
Security Option	250	
APIC Mode	[Setup]	
Small Logo(EPA) Show	[Disabled]	
Auto Detect PCI CLK	[Enabled]	
Spread Spectrum	[Enabled]	

## &gt; CPU Feature

CPU Feature		Item Help
PPM Mode	[Native Mode]	Menu Level Native Mode is for fully support ACPI OS (ex. WINXP, VISTA...), SMM mode is for legacy OS (ex. Win2K)
Limit CPUID MaxVal	[Disabled]	
C1E Function	[Auto]	
Execute Disable Bit	[Enabled]	
Virtualization Technology	[Disabled]	
Core Multi-Processing	[Enabled]	

- PPM Mode

That is EIST (Enhanced Intel Speedstep Technology); it is a module to adjust the basic frequency and voltage according to the load of the processor, which requires supports from both OS and BIOS; system will adjust via ACPI. Speedstep Technology provides more adjusting levels for CPU frequency and voltage; therefore, it could adjust the status of the processor more accurately than C1E.

Native Mode: applied in the OS supporting ACPI completely, such as: WINXP, and VISTA (Default)

SMM Mode: applied in the traditional OS, such as: WIN2000.

- Limit CPUID MaxVal

This option could be enabled to support the maximum limitation function of CPUID in former operating system, so as to prevent CPU from returning a value above 3 after implementing CPUID command and cause system error.

Disabled: this option shall be disabled under WINXP system. (Default)

Enabled

- C1E Function

The function of this option is similar with that of EIST. When enabled, it could make the unloaded CPU operate under the lowest frequency multiplication supported by CPU. However, from power saving point of view, the effect is no better than EIST option.

Disabled

Auto: BIOS automatic detection (Default)

- Execute Disable Bit

Hardware anti-virus technique is a function added into new generation processor by Intel. Enabling this function could prevent virus, Trojan and so on from destroying the system memory and control the system. The basic operating principle is that the processor will divide several areas in memory, part of the areas are allowed to implement application code while other areas are not allowed.

Disabled

Enabled (Default)

<Virtualization Technology>: virtualization technology

Disabled (Default)

Enabled

- Core Multi-Processing

Multi-core processor. If it is disabled, only one core is operating.

Disabled

Enabled (Default)

➤ **Hard Disk Boot Priority**

When the host is connected with several hard disks, choose this option; press “Enter” and you’ll see the hard disk list; the hard disk at the top of the list is the one to be boot; using “pagedown” and “pageup” to adjust the sequence. <Bootable Add-in Cards> represents the boot hard disk in expansion card.

➤ **Virus Warning**

After enabling this option, the booting area of the IDE hard disk is under protection. If certain program is trying to write data into the booting area, BIOS will show warning information on the screen and the buzzer will alarm.

Disabled (Default)

Enabled

➤ **CPU L3 Cache**

Enable CPU L3 cache.

Disabled

Enabled (Default)

➤ **Quick Power On Self Test**

If this function is enabled, certain tests during booting may be skipped to reduce booting time.

Disabled

Enabled (Default)

➤ **First Boot Device**

First boot device

LS120: 120M floppy driver, it could take 120M floppy disk as boot disk.

Hard Disk: take hard disk as boot disk. (Default)

CDROM: CD-ROM, it could take CD as boot disk.

ZIP100: 100M floppy disk driver

USB-FDD: floppy disk driver of USB port

USB-ZIP: take USB-ZIP as the first boot device

USB-CDROM: CD-ROM of USB port

Legacy LAN: take the network card as boot devices

Disabled: disable this function

➤ **Second Boot Device**

Second boot device

➤ **Third Boot Device**

Third boot device

➤ **Boot other Device**

This option is used to boot the computer by other devices, when the foresaid devices cannot start up the computer successfully.

Disabled

Enabled (Default)

➤ **Boot Up NumLock Status**

This option can be set to “On” or “Off”. When it is set to “On”, it means to enable the “NumLock” key automatically during system booting.

Off

On (Default)

➤ **Typematic Rate Setting**

This option can be set to “Enabled” or “Disabled”. When it is set to “Enabled”, if press certain key without release, the computer will regard that you’ve pressed the key repeatedly. When it is set to “Disabled”, if press certain key without release,

Disabled (Default)

Enabled

➤ **Typematic Rate(Chars/Sec)**

If “Typematic Rate Setting” is set to “Enabled”, then you may set to press certain key for one second equals to pressing the key for several times via this option.

➤ **Typematic Delay (Msec)**

If “Typematic Rate Setting” is set to “Enabled”, then you may set to press certain key and then regard as pressing this key repeatedly after certain time delay via this option; the unit is ms.

➤ **Security Option**

When chosen “system”, it will prompt to enter password when booting; when chosen “setup”, it will prompt to enter password when entering BIOS setup.

System

Setup: enter “Setup” interface. (Default)

➤ **APIC Mode**

Enable or disable APIC

Disabled

Enabled (Default)

➤ **Small Logo (EPA) Show**

When this option is enabled, it is to display the energy star logo of EPA during booting.

Disabled (Default)

Enabled

➤ **Auto Detect PCI CLK**

Enabled: automatically detect all the PCI and AGP slots; if no inserted cards are occupying that slot, disable the clock signal for that slot to reduce EMI. (Default)  
 Disabled: no matter the slots are used or not, all the clock signals are provided normally.

➤ **Spread Spectrum**

<Disabled>: disable Spread Spectrum function for system.

<Enabled>: extend clock frequency for the system to reduce EMI. (Default)

◆ **Advanced Chipset Features**

Advanced Chipset Features		Item Help
Memory Hole At 15M-16M	[Disabled]	Menu Level
Disable MCHBAR MMIO	[Enabled]	
VT-d	[Disabled]	
** VGA Setting **		
PEG/Onchip VGA Control		
On-Chip Frame Buffer Size		
DVMT Mode		
Total GFX Memory		
PAVP Mode		

➤ **Memory Hole At 15M-16M**

By enabling this function, users may reserve this portion of the address space 15M-16M for ISA device; therefore, the system address may decrease.

Disabled (Default)

Enabled

➤ **Disable MCHBAR MMIO**

By enabling this function, users may release the MMIO space of the North Bridge after BIOS POST ends.

Disabled

Enabled (Default)

➤ **PEG/Onchip VGA Control**

This option chooses to use the on-chip graphic controller or video card with PCIE slot when booting the system.

Onchip VGA: on-chip graphic processor;

PEG Port: external video card with PCIE slot;

Auto: BIOS Automatic Detection Selection. (Default)

➤ **On-Chip Frame Buffer Size**

This option chooses the system memory resource size assigned to the Graphics Media Accelerator. The options are: 32MB (Default), 64M and 128MB.

➤ **DVMT Mode**

Dynamic Video Memory Technology. By enabling this function, users may assign system memory to integrated video card dynamically.

Disabled

Enabled (Default)

➤ **Total GFX Memory**

Under Windows XP, the maximum value of GFX memory is based on the size of the system memory. For example, the system memory is 1GB, the maximum GFX video memory 512MB\ 128MB (Default)\ 256MB

➤ **PAVP Mode**

Protected Audio/Video Path mode

Disabled (Default)

Enabled

◆ **Integrated Peripherals**

Integrated Peripherals	
▶ OnChip IDE Device	Item Help
▶ SuperIO Device	Menu Level
OnChip Audio Device [Enabled]	
▶ USB Device Setting	

➤ **OnChip IDE Device**

OnChip IDE Device		Item	Help
IDE HDD Block Mode	[Enabled]		
IDE DMA transfer access	[Enabled]		
IDE Primary Master PIO	[Auto]		
IDE Primary Slave PIO	[Auto]		
IDE Primary Master UDMA	[Auto]		
IDE Primary Slave UDMA	[Auto]		
On-Chip Secondary PCI IDE	[Enabled]		
IDE Secondary Master PIO	[Auto]		
IDE Secondary Slave PIO	[Auto]		
IDE Secondary Master UDMA	[Auto]		
IDE Secondary Slave UDMA	[Auto]		
LEGACY Mode Support	[Disabled]		

● **IDE HDD Block Mode**

By enabling this function, it could transmit data from several sectors in one interrupt. All of the main stream hard disks support this function and it is recommended to set it to “Enabled”.

Disabled

Enabled (Default)

● **IDE DMA transfer access**

This option enables the DMA function of the IDE device.

Disabled

Enabled (Default)

● **IDE Primary Master PIO**

This option represents the PIO mode selection for the master hard disk in IDE channel 1.

PIO Mode	Cycle Time	Transfer Rate	Standard
Mode 0	600	3.3 (MB/S)	ATA
Mode 1	383	5.2 (MB/S)	ATA
Mode 2	240	8.3 (MB/S)	ATA
Mode 3	180	11.1 (MB/S)	ATA-2
Mode 4	120	16.7 (MB/S)	ATA-2

Auto: BIOS Automatic Detection Selection. (Default)

- IDE Primary Slave PIO

This option represents the PIO mode selection for the slave hard disk in IDE channel 1.

- IDE Primary Master UDMA

This option enables the Ultra DMA data transmitting mode of the master hard disk in IDE channel 1. The differences between Ultra DMA and common DMA are: under Ultra DMA mode, data are transmitted both in rising edge and descending edge of the clock; under the same time frequency, its speed is twice that of DMA.

Disabled

Auto: BIOS Automatic Detection Selection. (Default)

- IDE Primary Slave UDMA

The same as above.

- On-Chip Secondary PCI IDE

This option chooses whether to use the second IDE channel on South Bridge.

Disabled

Enabled (Default)

- IDE Secondary Master PIO

This option represents the PIO mode selection of the master hard disk on IDE channel 2.

- IDE Secondary Slave PIO

This option represents the PIO mode selection of the slave hard disk on IDE channel 2.

- IDE Secondary Master UDMA

This option enables the Ultra DMA data transmitting mode of the master hard disk on IDE channel 2.

- IDE Secondary Slave UDMA

This option enables the Ultra DMA data transmitting mode of the slave hard disk on IDE channel 2.

- LEGACY Mode Support

This option enables the software, data or OS that can support legacy version.

Disabled (Default)

Enabled

➤ **Super IO Device**

Super IO Device		
OnBoard FDC Controller	[Enabled]	Item Help
OnBoard Serial Port 1	[3F8/IRQ4]	Menu Level
OnBoard Serial Port 2	[2F8/IRQ3]	
OnBoard Parallel Port	[3F8/IRQ7]	
Parallel Port Mode	[Normal]	

- <OnBoard FDC Controller>

Used to enable floppy disk driver controller.

- <OnBoard Serial Port 1>

Set the address and IRQ of COM1 on motherboard.

- OnBoard Serial Port 2

Set the address and IRQ of COM2 on motherboard.

- OnBoard Parallel Port

Set the address of the parallel port on motherboard and the default value is 378.

- Parallel Port Mode

This option sets the operating mode for the specified parallel port: Normal, ECP, EPP, SPP; ECP + EPP represent the maximum speed for bi-direction data transmission; ECP represents the speed for bi-direction data transmission faster than EPP.

➤ **OnChip Audio Device**

This option selects whether to enable the audio card controller integrated on chip.

➤ **USB Device Setting**

USB Device Setting	
USB 1.0 Controller	Item Help
USB 2.0 Controller	Menu Level
USB Storage Function	[Enable] or [Disable]
*** USB Mass Storage Device Boot Setting ***	Universal Host Controller Interface for Universal Serial Bus.

● **USB 1.0 Controller**

This option is used to select whether to enable USB1.0 controller.

● **USB 2.0 Controller**

This option is used to select whether to enable USB2.0 controller.

● **USB Storage Function**

Enable to support USB storage device.

◆ **Power Management Setup**

USB Device Setting	
ACPI Function	[Enabled]
Restore on AC Power Loss	[Last State]
Resume by Alarm	[Disabled]
Date(of Month) Alarm	0
Time(hh:mm:ss) Alarm	0 : 0 : 0
	Item Help
	Menu Level

➤ **ACPI Function**

This option is used to select whether to enable ACPI power management.

Disabled

Enabled (Default)

➤ **Restore on AC Power Loss**

Off: do not boot automatically after resuming power. (Default)

On: automatically boot after resuming power.

Last State: system restores its last status after resuming power.

➤ **Resume by Alarm**

This option enables Resume by Alarm function of the system; users shall set specified time first.

<Disabled> (Default)

<Enabled>

◆ **PnP/PCI Configurations**

PnP/PCI Configurations		
Init Display First	[PCI Slot]	Item Help
Reset Configuration Data	[Disabled]	Menu Level
Resources Controlled By	[Auto(ESCD)]	
PCI/VGA Palette Snoop	[Disabled]	

➤ **Init Display First**

This option is used to select whether to use on-board video card or PCI video card when system boots.

PCI Slot: PCI slot external video card. (Default)

Onboard: on-board video card.

➤ **Reset Configuration Data**

The function of the option is to clear ESCD (Extended System Configuration Data); when the newly installed hardware conflicts with the former system, please enable this option.

Disabled (Default)

Enabled

➤ **Resources Controlled By**

Auto (ESCD): choose this option and BIOS will automatically assign the resource of the PnP/PCI device, such as, IRQ, DMA and memory. (Default)

Manual: assign various resources manually.

When “Resources Controlled By” is set to <Manual>, IRQ resource can be assigned manually.

IRQ 3-5, 7, 9-12, 14, 15 assigned to

PCI Device: assign to PCI device (Default)

Reserved

➤ **PCI/VGA Palette Snoop**

The function of this option is that when two palettes are adopted on ISA and PCI bus respectively and the colors display abnormally, please set this option to <Enabled>.

Disabled (Default)

Enabled

◆ **PC Health Status**

PC Health Status		
System Temperature	34°C / 93°F	Item Help
CPU Temperature	38°C / 100°F	
SYSFAN1 Speed	2136 RPM	Menu Level
CPUFAN1 Speed	2136 RPM	
Vcore	1.28v	
V5.0	5.05v	
V12.0	12.09v	
VBAT	3.15v	

◆ **Load Failsafe Defaults**

The function of this option is to initialize the setup of each option to the values realizing the most fundamental and secure system function. To implement this

function, choose this option and press < Enter >; messages to be confirmed will display on the screen, press < Enter > to implement this function.

◆ **Load Optimal Defaults**

This menu is used to input default value in system configuration. These default values are optimized and could give play to the high capability of all hardware.

◆ **Set Supervisor Password**

Set Supervisor Password

◆ **Set User Password**

Set User Password

◆ **Save & Exit Setup**

When you've finished all the modification and want to cover the former parameters, you may implement this option; the new parameter will be saved in the CMOS storage. To implement this option, choose this option and press < Enter >; press < Enter > again to exit.

◆ **Discard Changes and Exit**

If you do not want to save the action of modifying the setting into CMOS storage, please choose this option and press < Enter >; press < Enter > again to exit.

## The System Resource Managed by BIOS under x86 Platform

We define three types of system resources here: I/O port addresses, IRQ number and DMA number.

### ◆ DMA

Level	Function
DMA0	DRAM Refresh
DMA1	Not Assigned
DMA2	Floppy Disk
DMA3	Not Assigned (sometimes used for hard disk)
DMA4	Used for the cascade of DMAC
DMA5	Not Assigned
DMA6	Not Assigned
DMA7	Not Assigned

### ◆ APIC

Advanced programmable interrupt controller. Most motherboards above P4 level support APIC and provide more than 16 interrupt sources, like IRQ16 - IRQ23; some others can have up to 28 interrupt sources such as motherboard supporting PCI-X. However, relevant OS are required to enable that function, and currently, only the OS above Windows 2000 could support that function.

### ◆ IO Port Address

There is 64K for the system I/O address space. Each external device will occupy portion of the space. The table below shows parts of the distribution of the I/O address. As the address of PCI device (e.g. PCI network card) is configured by software, it is not listed in this table.

Address	Device Description
000h - 00Fh	DMA Controller #1
000h - CF7h	PCI Bus
010h - 01Fh	Carrier Resource
020h - 021h	Programmable Interrupt Controller #1
022h - 03Fh	Carrier Resource
040h - 043h	System Timer
044h - 05Fh	Carrier Resource
060h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
061h	System speaker
062h - 063h	Carrier Resource
064h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
065h - 06Fh	Carrier Resource
070h - 071h	Real Time Clock, NMI
072h - 07Fh	Carrier Resource
080h	Carrier Resource
081h - 083h	DMA Controller #2
084h - 086h	Carrier Resource
087h	DMA Controller #3
088h	Carrier Resource
089h - 08Bh	DMA Controller #4
08Ch - 08Eh	Carrier Resource
08Fh	DMA Controller #5
090h - 09Fh	Carrier Resource
0A0h - 0A1h	Programmable Interrupt Controller #2
0A2h - 0BFh	Carrier Resource

Address	Device Description
0C0h - 0DFh	DMA Controller #6
0E0h - 0EFh	Carrier Resource
0F0h - 0FFh	Numeric Data Processor
170h - 177h	Slave IDE
1F0h - 1F7h	Master IDE
274h - 277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2F8h - 2FFh	COM2
376h	Slave IDE(dual FIFO)
378h - 37Fh	LPT1
3B0h - 3BBh	Intel(R) Q965/Q963 Express Chipset Family
3C0h - 3DFh	Intel(R) Q965/Q963 Express Chipset Family
3F0h - 3F5h	Standard Floppy Disk Controller
3F6h	Master IDE(dual FIFO)
3F8h - 3FFh	COM1
400h - 41Fh	Intel(R) 82801G (ICH8 Family) SMBus Controller - 27DA
480h - 4BFh	Carrier Resource
4D0h - 4D1h	Carrier Resource
800h - 87Fh	Carrier Resource
B00h - B0Fh	Carrier Resource
B10h - B1Fh	Carrier Resource
A79h	ISAPNP Read Data Port
D000h - DFFFh	Intel(R) ICH8 Family PCI Express Root Port-2849
0D00h - FFFFh	PCI bus

### ◆ IRQ Assignment Table

There are 15 interrupt sources of the system. Some are exclusively occupied by the system devices. Only the ones that are not exclusively occupied can be distributed. The ISA devices claim to engross the interrupt .Only the plug and play ISA devices can be distributed by the BIOS or the OS .And several PCI devices share one interrupt through the distribution of BIOS or OS. The diagram below shows parts of the interrupt distribution under X86 platform, but it does not show the interrupt source occupied by the PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	Standard 101/102 Key or Microsoft Keyboard
IRQ2	Programmable Interrupt Controller
IRQ3	COM #2
IRQ4	COM #1
IRQ5	Parallel Port #2
IRQ6	Standard Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	System CMOS/Real-Time Clock
IRQ9	Software Transfer to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	Mouse Connector
IRQ14	Master IDE
IRQ15	Slave IDE

---

## **Chapter 4 Install the Driver**

---

Please refer to the equipped CD for the driver program of this product, and it is omitted here.

---

## Appendix

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### Watchdog Programming Guide

This board provides a programmable watchdog timer (WDT) up to 255 levels and time by minute or second. Watchdog timer overtime event can be programmed to reset system or generate maskable interrupts.

**The available IRQ numbers for this board are: 3, 4, 5, 7, 9, 10 and 11.**

**Before using, please modify the corresponding IRQ number in PCIPnP of BIOS Setup interface into “Reserved”.**

The following describes WDT program in C language. The steps to program WDT are listed as follows:

- Enter WDT programming mode
- Set WDT operating mode/enable WDT/disable WDT

#### (1) Enter WDT Programming Mode

```
#define INDEX_PORT 0x2E
#define DATA_PORT 0x2F

outportb(INDEX_PORT, 0x87);
outportb(INDEX_PORT, 0x87);
outportb(INDEX_PORT, 0x07);
outportb(DATA_PORT, 0x08);
outportb(INDEX_PORT, 0x30);
outportb(DATA_PORT, 0x01);
```

#### (2) Configure WDT operating mode, reset mode or interrupt mode:

```
unsigned char oldval;
outportb(INDEX_PORT, 0x2d);
oldval = inportb(DATA_PORT);
```

#### a. Configure WDT to reset mode

```
oldval &= 0xfe;
outputb(DATA_PORT, oldval);
```

#### b. **Configure WDT to interrupt mode**

```
oldval |= 0x01;
outputb(DATA_PORT, oldval);
outputb(INDEX_PORT, 0xf7);
outputb(DATA_PORT, IRQ_NO); /*Please replace the constant
IRQ_NO with the interrupt number need to be used and evaluate the variable IRQ.
The available range of the interrupt number has been listed in the beginning of this
chapter.*/
```

### (3) **Configure WDT to time by minute/second:**

#### a. **Time by minute:**

```
outputb(INDEX_PORT, 0xf5);
outputb(DATA_PORT, 0x08);
```

#### b. **Time by second:**

```
outputb(INDEX_PORT, 0xf5);
outputb(DATA_PORT, 0x00);
```

### (4) **Enable/Disable WDT**

#### a. **Enable WDT:**

```
outputb(INDEX_PORT, 0xf6);
outputb(DATA_PORT, TIME_OUT_VALUE); /*Please replace the
constant TIME_OUT_VALUE with the unit number of timeout
value(0x01~0xFF)*/
```

#### b. **Disable WDT:**

```
outputb(INDEX_PORT, 0xf6);
outputb(DATA_PORT, 0x00);
```

## Digital I/O Programming Guide

The motherboard provides 8-channel programmable digital I/O pins, four of which are for input while the other four are for output. The following describes digital I/O program in C language. The steps to program digital I/O are as follows:

- Initialize digital I/O
- I/O programming

### (1) Initialize Digital I/O:

```
#define    BAR 0x400

unsigned char tmp_val;
outputb(BAR,0xbf);
outputb(BAR+0x04,0x40);
outputb(BAR+0x03,0x03);
outputb(BAR+0x05,0x0F);
tmp_val =(inportb(BAR+0x02)|0x08)&0xeb;
tmp_val |= 0x40;
outputb(BAR+0x02, tmp_val);
delay(30);
tmp_val =inportb(BAR);
while((tmp_val &0x02)!=0x02)
{
    tmp_val =inportb(BAR);
    if((tmp_val &0x04)!=0)
    {
        printf("ERROR\n");
        return 0;
    }
}
```

## (2) I/O Programming

### a. Output Programming

Functions input: int pin – Value 1~4 are corresponding with output pin 1~4

int lev\_val – 1: output pin is active high; 0: output pin is active low

Functions Output: None

```

void Out_Lev(int pin ,int lev_val)
{
    unsigned int reg_val ;
    outportb(BAR,0xbf);
    outportb(BAR+0x04,0x40);
    outportb(BAR+0x03,0x01);
    reg_val = inportb(BAR+0x05);
    reg_val = lev_val ?
reg_val|(0x01<<pin+3) :reg_val&~(0x01<<pin+3) ;
    outportb(BAR+0x05, reg_val);
    reg_val =(inportb(BAR+0x02)|0x08)&0xeb;
    reg_val |= 0x40;
    outportb(BAR+0x02, reg_val);
    delay(30);
    reg_val =inportb(BAR);
    while((reg_val &0x02)!=0x02)
        {
            reg_val =inportb(BAR);
            if((reg_val &0x04)!=0)
                {
                    printf("ERROR\n");
                    return 0;
                }
        }
}
}

```

**b. Input Programming**

Functions Input: int pin – Value 1~4 are corresponding with the input pin 1~4

Functions Output: int lev\_val – 1: input pin is active high; 0: input pin is active low

```
int In_Lev(int pin)
{
    unsigned int reg_val ;
    int lev_val ;
    outportb(BAR,0xbf);
    outportb(BAR+0x04,0x41);
    outportb(BAR+0x03,0x00);
    reg_val =(inportb(BAR+0x02)&0x08)&0xeb;
    reg_val |= 0x40;
    outportb(BAR+0x02, reg_val);
    delay(30);
    reg_val =inportb(BAR);
    while((reg_val &0x02)!=0x02)
    {
        reg_val =inportb(BAR);
        if((reg_val &0x04)!=0)
        {
            printf("ERROR\n");
            return 0;
        }
    }
    lev_val = inportb(BAR+0x05)&( 0x01<<pin-1);
    lev_val = lev_val ? 1:0; /*Get the variable lev_val, 1 represents
that the input pin is active high, while 0 represents the input pin is
active low*/
    return lev_val ;
}
```

## Way and Steps for RAID Installation

Firstly, set BIOS:

Integrated Peripherals—> Onchip IDE Device—> change SATA Mode to RAID; After setting to Raid, press “F10” to save setting. Please refer to *BIOS Setup Guide* for detailed information.

Then enter “RAID Configuration Utility”:

Serial ATA RAID volume could be set in the RAID Configuration Utility of Intel RAID Option ROM.

```

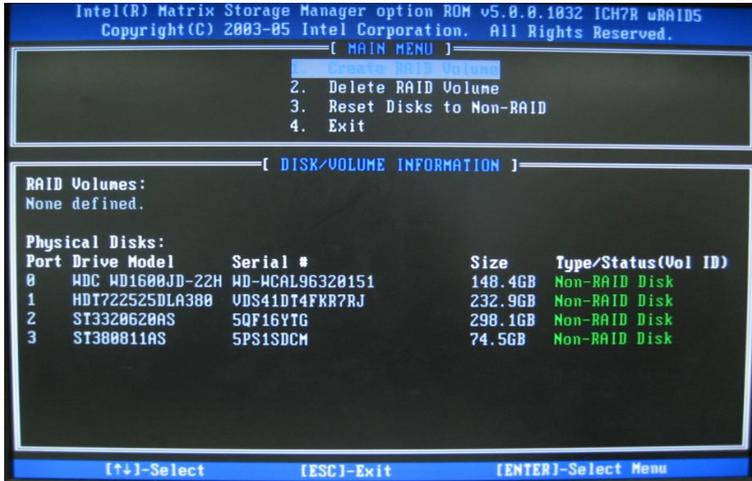
Intel(R) Matrix Storage Manager option ROM v5.0.0.1832 ICH7R v8RAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.

RAID Volumes:
ID   Name           Level           Strip   Size   Status   Bootable
0   Volune1        RAID1(Mirror)  N/A    232.9GB Degraded Yes

Physical Disks:
Port Drive Model          Serial #           Size   Type/Status(Vol ID)
0   WDC WD1600JD-22H  WD-WCAL96320151   148.4GB Non-RAID Disk
1   HD1722525DLA300  UDS41D14FKR7RJ   232.9GB Member Disk(0)
2   ST3320620AS      5QF16YTG          298.1GB Non-RAID Disk
3   ST30011AS        5PS1SDCH          74.5GB  Non-RAID Disk

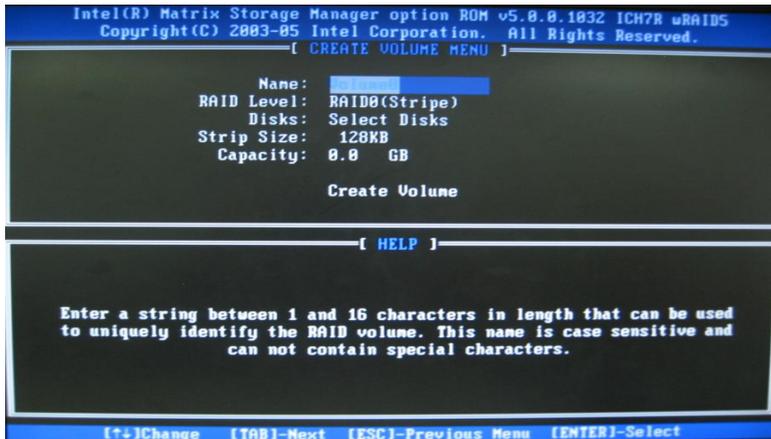
Press <CTRL-I> to enter Configuration Utility....
  
```

After showing the above information, press <Ctrl>+<I> to enter RAID Configuration Utility; and then press <Ctrl>+<I> again and the following screen will appear:

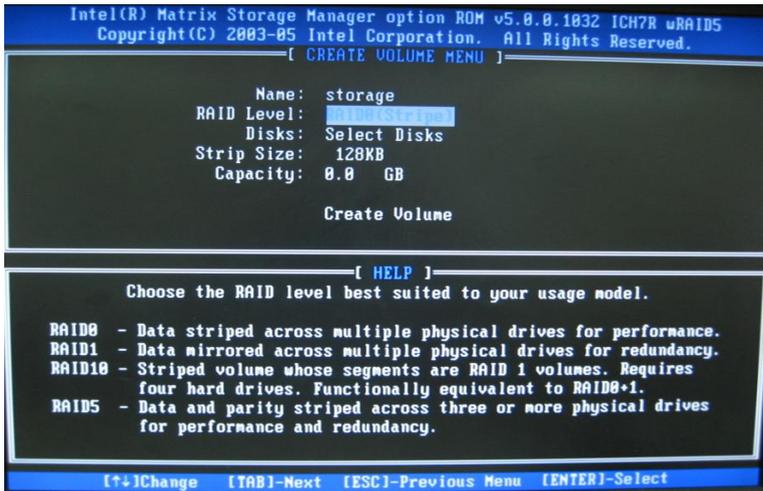


Create RAID Volume:

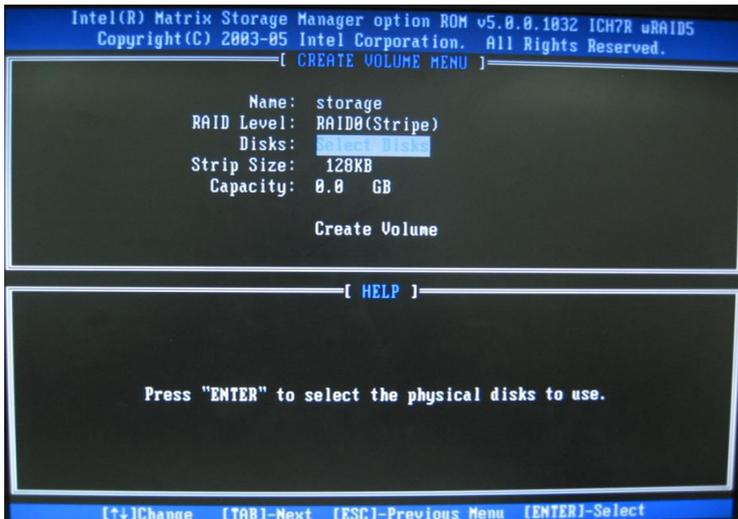
A: Choose Option 1 “Create RAID Volume”, and press <Enter>; the following screen will appear. Specify a name for the RAID volume within the name field (the name could be arbitrary and is only used as a prompt); then press <TAB> or <Enter> to enter the following field.



B: Use the direction key to select the required RAID level within the RAID Level field.



C: Press <Enter> within the Disk field and the following screen will appear. Choose the RAID volume you want to create via upper and down arrow key, press <Enter> to complete the selection of this option and enter the next field.



D: Press <SPACE> to select the HDD you want to use; after you've chosen the HDD via pressing <SPACE>, a green triangle icon will appear before the HDD information. As shown in the figure:



Note: When creating Raid0/1/10, two or four HDDs must be chosen.

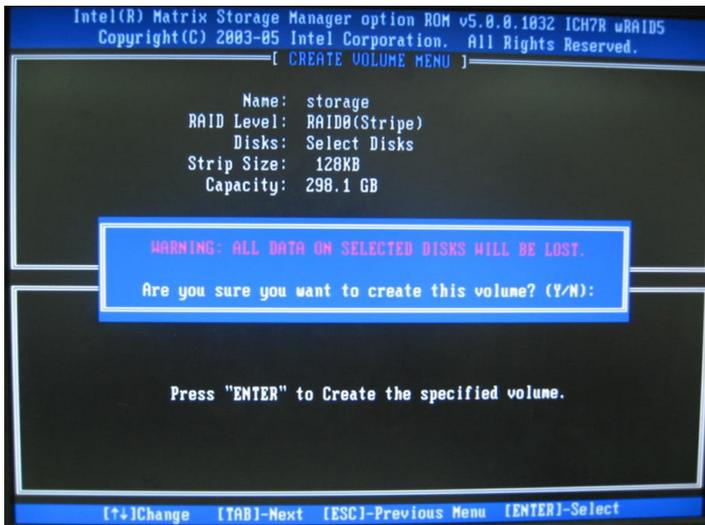
E: After choosing the appropriate HDD, press < Enter > to enter the next setting interface.



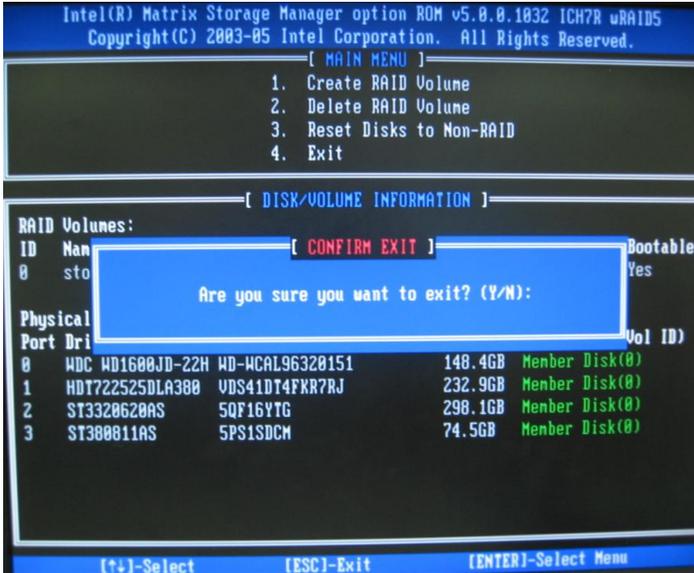
F: Choose the serial optional value for RAID array via upper or down arrow and press <Enter> to confirm and enter the next region. The optional value ranges between 4KB and 128 KB and increases in fold. The selection of serial value is based on the operating method of the driver. There are some recommended options: RAID0-128KB RAID10-64KB RAID5-64KB

G: Then, select the capacity of the volume within the Capacity field. The default value of this option is the maximum capacity of the disk chosen.

H: The following screen will appear to let you confirm whether to create RAID volume. Press <Y> to continue.



I: When the title within the red line frame appears, it indicates that your creation has completed.

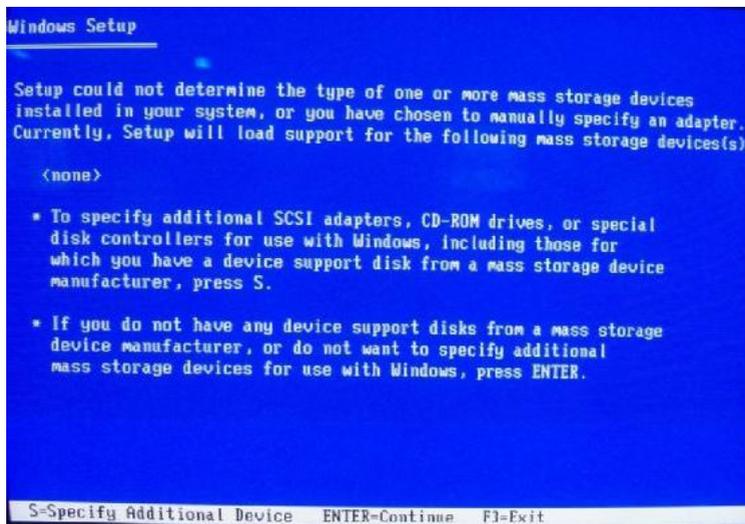


J: After finishing creation, press < ESC > to exit Raid configuration interface; the below figure will appear and press < Y > to confirm. Thus, the setting is completed and may implement system installation.

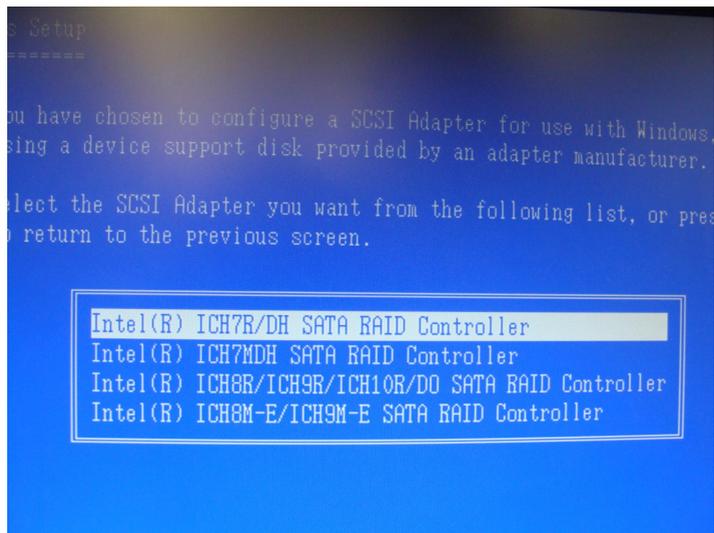
Begin to install:

Boot from CD-ROM, when “Press F6 if you need to install third party SCSI or RAID driver” appears, press F6.





Insert Intel IAA RAID XP Driver for ICH8R (NH82801HR) disk to disk A and press <Enter>. (Note: the board has no floppy disk connector; please adopt the IBM USB floppy driver). Select in the drop list of the Windows XP Setup screen (choose the corresponding south bridge) and press < Enter >:



Press < Enter > to continue installation; if you want to appoint any additional devices, please install now. When all the devices are installed, press < Enter > to continue installation.

```
*****
Setup will load support for the following mass storage device(s):
Intel(R) ICH7R/DH SATA RAID Controller

* To specify additional SCSI adapters, CD-ROM drives, or special
  disk controllers for use with Windows, including those for
  which you have a device support disk from a mass storage device
  manufacturer, press S.

* If you do not have any device support disks from a mass storage
  device manufacturer, or do not want to specify additional
  mass storage devices for use with Windows, press ENTER.
```

Press <Enter> and it will load all the device files and continue installation.

**Please visit <http://www.evoc.com> for more information.**