WADE-8071

Mini-ITX Board

User's Manual

Version 1.0

Table of Contents

How to Use This Manual

How to Use This Manual

The manual describes how to configure your system board to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Host Board.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this series model of single host board.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and Compact Flash to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5 : Troubleshooting. Provides various useful tips to quickly get its running with success. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

The content of this manual is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site : http://www.portwell.com.tw/

Chapter 1
System Overview

1.1   Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market and develop a new Intel® Mini-ITX board with latest Intel® platform for embedded application. The Portwell WADE-8071 takes advantage of Intel® 45-nanometer Hi-k process technology — the first generation of low-power IA-32 microarchitecture specially designed for Embedded Platform and can support Intel® 945GSE chipset with the ICH7-M, can provide the low power consumption for low profile fanless applications such as POS, ATM, Kiosk, Medical, Panel PC and Digital Signage.

WADE-8071 supports dual display by VGA and 24-bit LVDS. With its display-enriched interface, WADE-8071 can support various multimedia devices and enriched IO interfaces that can supply various USB and COM devices.

WADE-8071 supports SO-DIMM memory slot for DDR2 SDRAM up to 2GB, and comes with PS/2 Keyboard and Mouse header, 2 x RS232, 2 x SATA, 1 x IDE, 1 x Gigabit Ethernet, 6 x USB2.0 ports. It also support CompactFlash Socket and one PCIEx1 Slot for embedded application usage.

1.2   Check List

The WADE-8071 package should cover the following basic items

- ✓ One WADE-8071 Mini ITX Main Board
- ✓ One Serial ATA Cable
- ✓ One SATA Power Cable
- ✓ One I/O Shield bracket
- ✓ One Installation Resources CD-Title

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3　　　Product Specification

- **Main processor**
  - Support Intel Atom processor N270
  - CPU bus clock: 667/533 MHz

- **Chipset**
  Intel® 945GSE and ICH7-M

- **Main Memory**
  - Support signal channel DDR2 memory interface
  - Up to 2GB DDR2 533 SDRAM on SO-DIMM socket

- **System BIOS**
  AWARD BIOS

- **Expansion Interface**
  One PCI Express x1 slot

- **SATA Interface**
  Two SATA ports

- **Serial Ports**
  Support two RS-232 serial ports

- **IR Interface**
  N/A

- **Parallel Port**
  N/A

- **USB Interface**
  Support six USB (Universal Serial Bus) ports (four at rear, two on-board for internal devices)

- **PS/2 Mouse and Keyboard Interface**
  Support on board pin header for PS/2 keyboard/mouse

- **Audio Interface**
  Connector of Mic-in/Line-out

- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/Calendar

- **Watchdog Timer**
  - Support WDT function through software programming for enable/disable and interval setting
  - Generate system reset

- **On-board VGA**
  - Intel 945GSE Integrated GMA950 Graphics device
  - Intel DVMT 3.0 supports up to 128MB video memory

- **On-board Ethernet LAN**
  One Gigabit Ethernet (10/100/ 1000 Mbits/sec) LAN ports

- **High Driving GPIO**
  Onboard programmable 8-bit Digital I/O interface

- **Cooling Fans**
  Support one 3-pin power connector for system fan

- **System Monitoring Feature**
  Monitor system temperature and major power sources, etc

- **Outline Dimension (L X W):**
  170mm (6.69″) X 170mm (6.69″)

- **Power Requirements:**
  +12V(Board)@1.25A

Configuration:

System Configuration	
CPU Type	Intel® Atom™ N270 1.60GHz (133*12) L2:512K FSB:533MHz
SBC BIOS	Portwell, Inc. WADE-8071 BIOS Rev.: R1.00.W0.T0 (02192009)
Memory	Transcend DDR2 533MHz 2GB (Micron 7WE17 D9HNL)
VGA Card	Onboard Mobile Intel® 845 Express Chipset Family
VGA Driver	Mobile Intel® 845 Express Chipset Family Version 6.14.10.4926
LAN Card	Onboard Realtek RTL8111C PCI-E Gigabit Ethernet NIC
LAN Driver	Realtek RTL8168C/8111C(P) PCI-E Gigabit Ethernet Version 5.698.701.2008
Audio Card	Onboard Realtek ALC662 Audio Chipset
Audio Driver	Realtek High Definition Audio Version 5.10.0.5735
Chip Driver	Intel® Chipset Device Software Version 8.3.0.1013
USB 2.0 Driver	Intel® 8201G (ICH7 Family) USB2 Enhanced Host Controller Version 8.2.0.1008
SATA HDD	Seagate ST3120813AS 120GB
Compact Flash	Apacer 64MB
CDROM	LITE-ON LH20A1S DVD-ROM
Power Supply	Portwell,Inc PW-330ATXE-12V

Programs for loading both CPU & VGA: Run Burning Test V5.3
RUN time: 10 / 30 Minutes.

Item	Power ON	Full Loading 10Min	Full Loading 30Min
System +12V	1.25A	1.80A	1.85A
USB Loading Test	5.2 V/ 0.6 A	N/A	N/A

- **Operating Temperature:**
  0°C ~ 55°C

- **Storage Temperature:**
  -20°C ~ 80°C

- **Relative Humidity:**
  5% ~ 90%, non-condensing

1.3.1 Mechanical Drawing
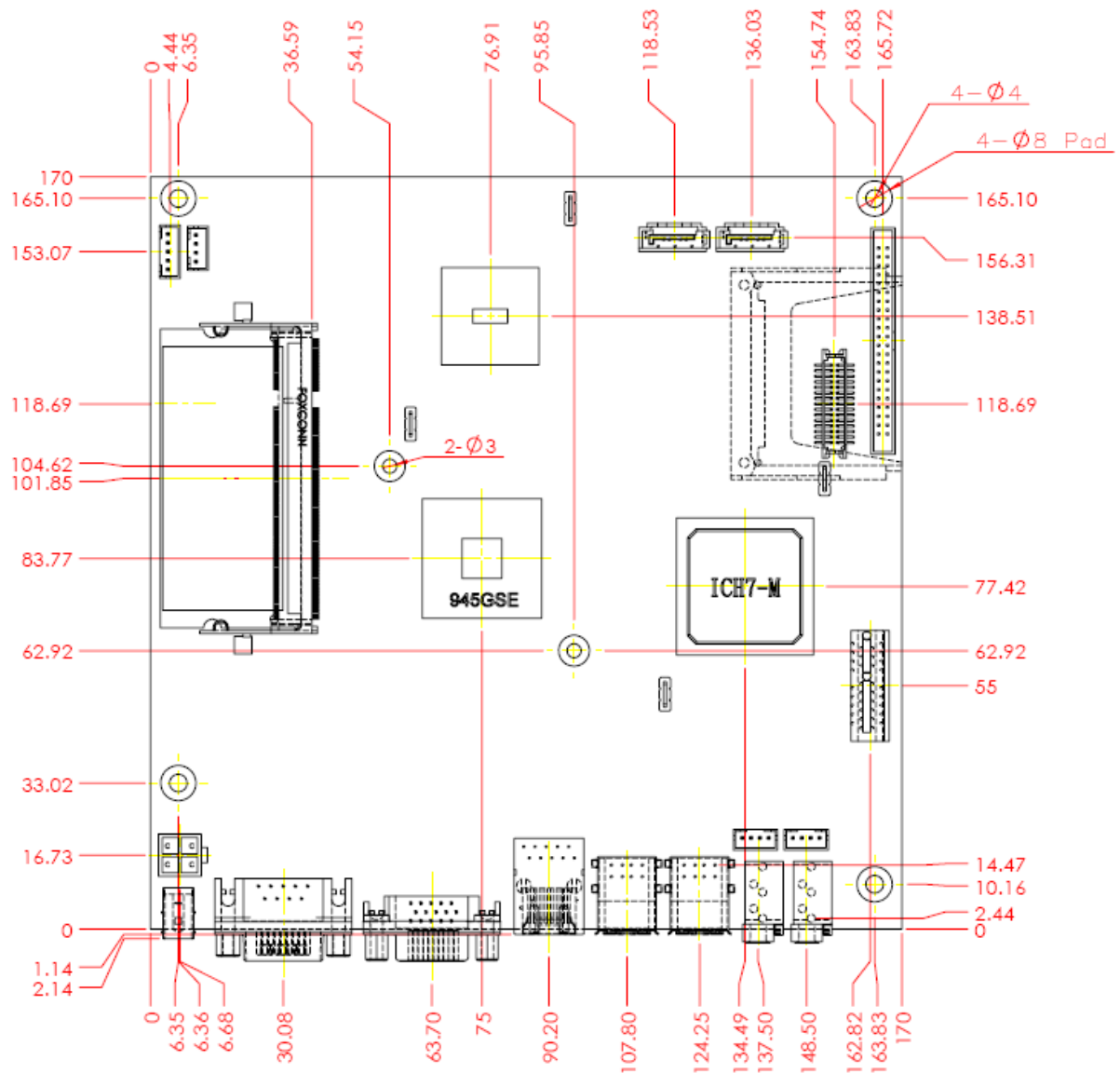
[TOP side]

[Bottom side]
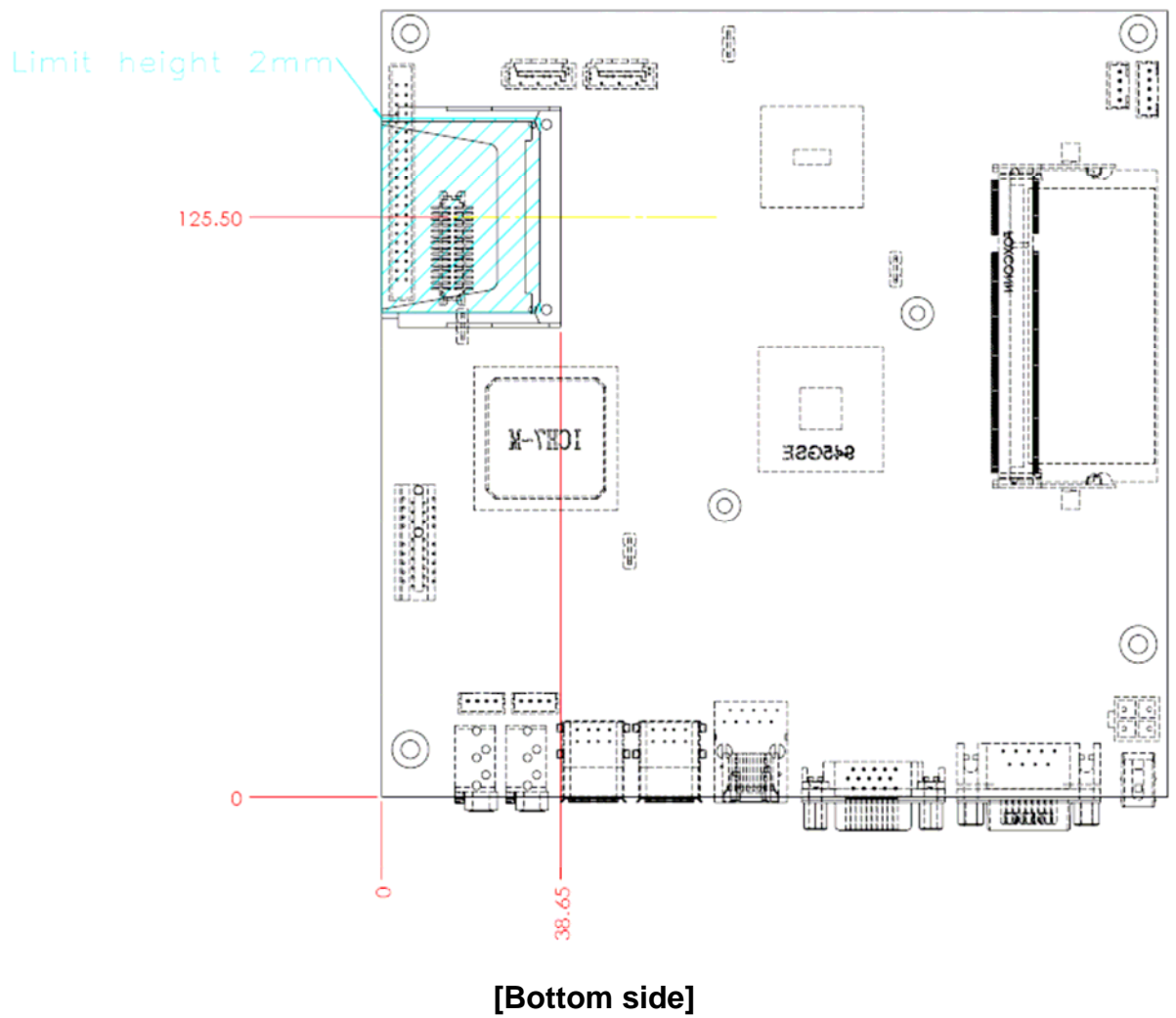
1.4 System Architecture

All of details operating relations are shown in WADE-8071 series System Block Diagram
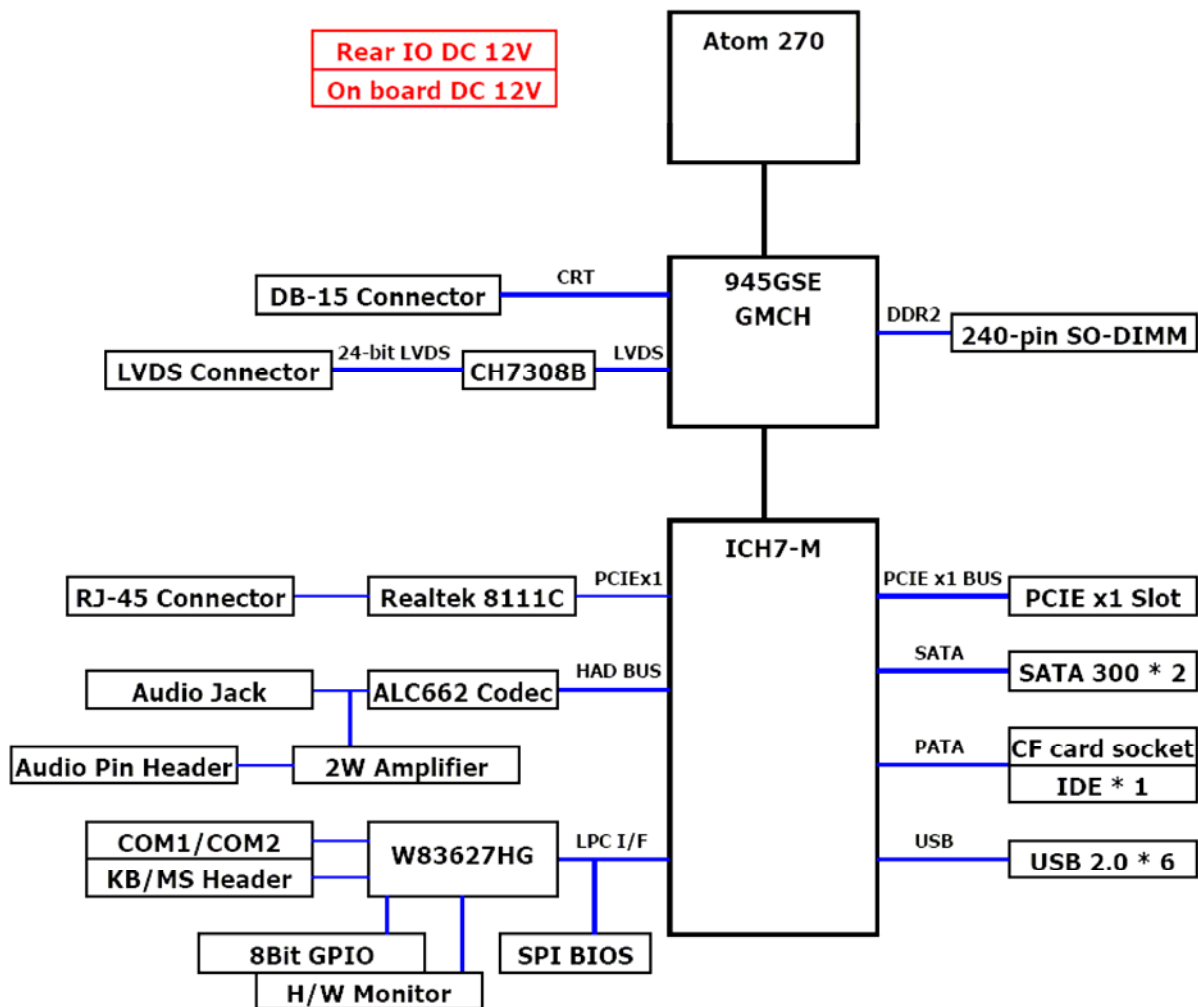
WADE-8071 System Block Diagram

Chapter 2
Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers and connector. All of the configuration jumpers on WADE-8071 are in the proper position. The default settings are indicated with a star sign (★).

2.1   Jumper Setting

In general, jumpers on the single board computer are used to select options for certain features. Some of the jumpers are designed to be user-configurable, allowing for system enhancement. The others are for testing purpose only and should not be altered. To select any option, cover the jumper cap over (SHORT) or remove (NC) it from the jumper pins according to the following instructions. Here NC stands for "Not Connect".
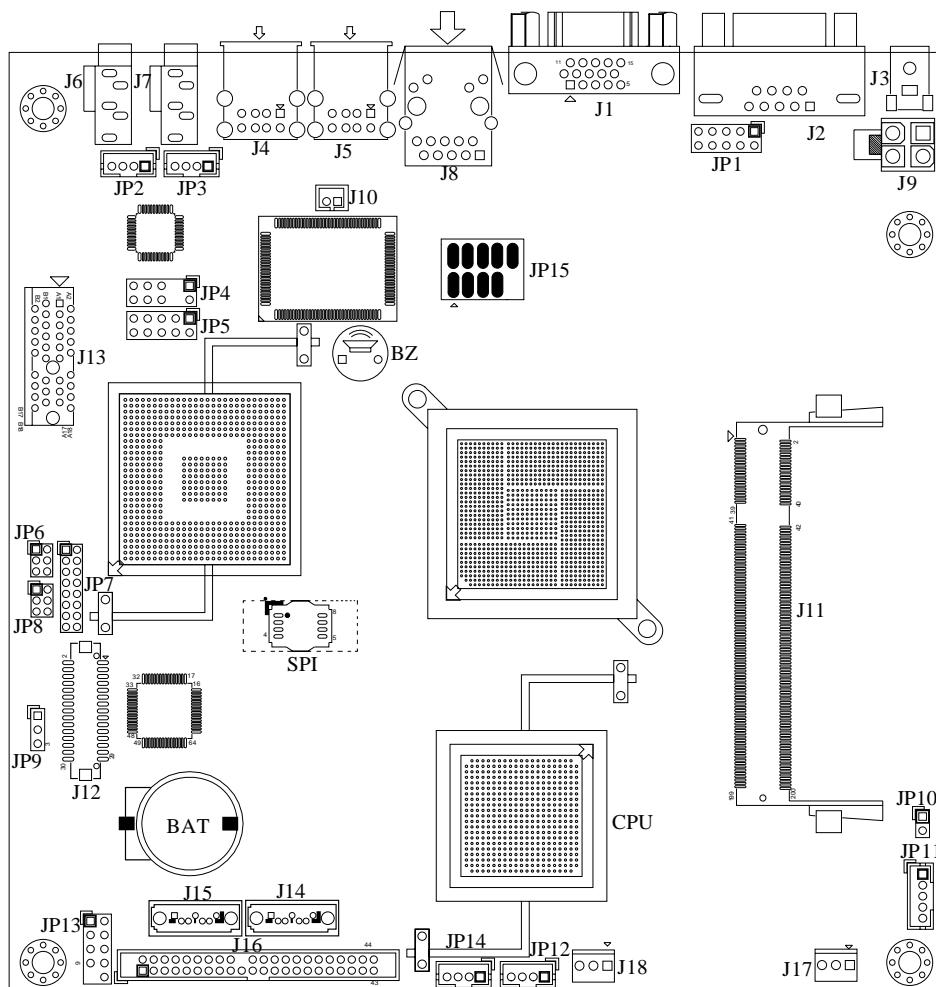
Figure 2-1   WADE-8071 Top-side Jumper and Connector Locations

JP9 : CMOS Clear

PIN1
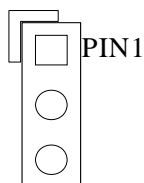
JP9	Function
1-2 Short	Normal Operation ★
2-3 Short	Clear CMOS Contents

JP6 : PANEL BACKLIGHT Selection

PIN1   2

5   6
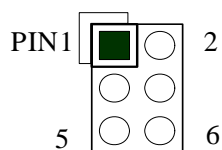
Pin No.	Signal Description
1-3, 2-4	5V, Active High ★
1-3, 4-6	12V, Active High
3-5,2-4	5V, Active Low
3-5,4-6	12V, Active Low

JP8 : PANEL Voltage Selection

PIN1   2

5   6
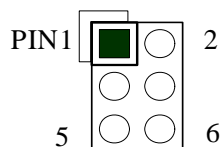
JP8	Function
2-4 Short	VCC3 ★
4-6 Short	VCC
3-4 Short	+12V

JP8 : Pin Assignments

PIN No.	Signal Description	PIN No.	Signal Description	PIN No.	Signal Description
1	N/A	3	+12V	5	N/A
2	VCC	4	VDDVLDS_IN	6	VCC3

Note:
Wrong voltage selection may damage the LVDS panel.
Please survey LVDS panel's VDD before setup this jumper setting.

2.2   Connector Allocation

I/O peripheral devices and Flash disk will be connected to these interface connectors.

<u>Connector Function List</u>

Connector	Description	Remark
J1	VGA Connector	D-Sub15
J2	COM Port Connector	D-Sub9
J3	POWER DC Jack	
J4/J5	USB Connector	Dual USB/TypeA
J6	MIC Audio Jack	
J7	Line_out Audio Jack	
J8	RJ45 LAN Connector	
J9	POWER DC +12V Connector	
J10	CASEOPEN Pin HDR	Wafer 2mm
J11	SO-DIMM DDRII Socket	
J12	LVDS Connector	DF13-30DP
J13	PCIE x1 SLOT	
J14/J15	SATA Connector	
J16	IDE Connector	22P*2
J17	System FAN	
J18	CPU FAN	
J19	CF Socket	
JP1	COM Port Pin HDR	5P*2
JP2	MIC Pin HDR	Wafer 2mm
JP3	Line_out Pin HDR	Wafer 2mm
JP4	KB/MS Pin HDR	
JP5	GPIO Pin HDR	5P*2
JP7	Front Panel Pin HDR	
JP11	BACK LIGHT PWR Connector	Wafer 2mm
JP12/JP14	External +5V/+12V Pin HDR	Wafer 2mm
JP13	External USB Pin HDR	

Pin Assignments of Connectors

J9 : POWER DC +12V Connector
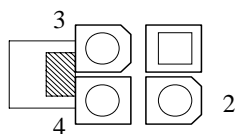
PIN No.	Signal Description
1	Ground
2	Ground
3	+12V
4	+12V

J10 : CASEOPEN PIN HDR
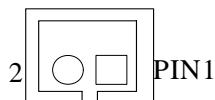
PIN No.	Signal Description
1	CASEOPEN Signal
2	Ground

J12 : LVDS Connector
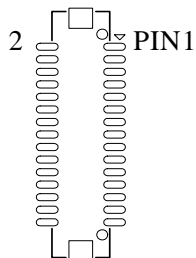
PIN No.	Signal Description	PIN No.	Signal Description
1	LCD1DO0+	2	LCD1DO0-
3	LCD1DO1+	4	LCD1DO1-
5	LCD1DO2+	6	LCD1DO2-
7	LCD1DO3+	8	LCD1DO3-
9	LCD1CLK+	10	LCD1CLK-
11	LCD2DO0+	12	LCD2DO0-
13	LCD2DO1+	14	LCD2DO1-
15	LCD2DO2+	16	LCD2DO2-
17	LCD2DO3+	18	LCD2DO3-
19	LCD2CLK+	20	LCD2CLK-
21	LCLK1	22	LDATA1

23	GND	24	N/C
25	GND	26	Ground
27	POWER	28	POWER
29	N/C	30	POWER

JP1 : COM Serial Port

PIN1

2
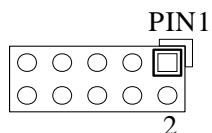
PIN No.	Signal Description
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	Ground
10	Ground

JP2 : MIC Pin HDR

PIN1
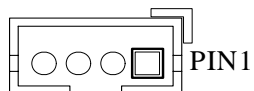
PIN No.	Signal Description
1	MIC_L
2	Ground
3	MIC_R
4	Ground

JP3 : LINE_OUT Pin HDR

PIN1
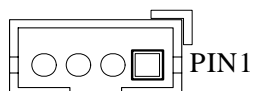
PIN No.	Signal Description
1	LINE_OUT_L
2	Ground
3	LINE_OUT_R
4	Ground

JP4 : External PS/2 Keyboard/Mouse Pin HDR
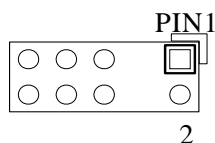
PIN No.	Signal Description	PIN No.	Signal Description
1	Mouse Data	2	Keyboard Data
	Key (no pin)		Key (no pin)
5	Ground	6	Ground
7	Power	8	Power
9	Mouse CLK	10	Keyboard CLK

JP5 : GPIO Pin HDR
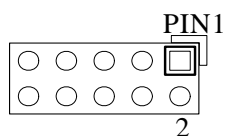
PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	Ground	10	+5V

Note:

All General Purpose I/O ports can only apply to standard TTL ± 5% signal level (0V/5V), and each Fan.

JP7 : Front Panel Pin HDR

PIN1 2
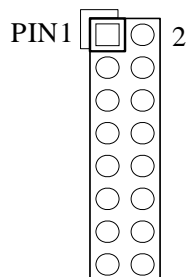
PIN No.	Signal Description	PIN No.	Signal Description
1	5VSBY through 330 ohm	2	N/C
3	N/C	4	N/C
5	PWRLED	6	N/C
7	N/C	8	N/C
9	N/C	10	5VSBY through 1k ohm
11	N/C	12	PWR_ON
13	+5V through 150 ohm	14	RESET#
15	HDD_LED#	16	Ground

JP11 : BACL LIGHT PWR Pin HDR

 PIN1
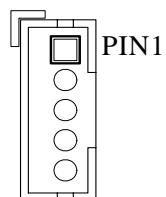
PIN No.	Signal Description
1	BACK LIGHT ENABLE
2	GND
3	+12V
4	GND
5	VCC

JP12/JP14 : External +5V/+12V Pin HDR
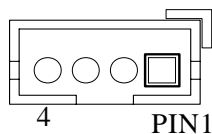
PIN No.	Signal Description
1	+12V
2	Ground
3	Ground
4	+5V

JP13 : External USB Pin HDR
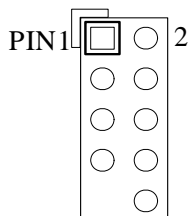
PIN No.	Signal Description	PIN No.	Signal Description
1	5V Dual	2	5V Dual
3	USB-	4	USB-
5	USB+	6	USB+
7	Ground	8	Ground
	Key(no pin)	10	N/C

Chapter 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device, handle Watch Dog Timer (WDT) and operation of GPIO in software programming.

3.1   Intel® ATOM CPU

WADE-8071 onboard uses Intel Atom N270 CPU 1.6GHz processor.
Introducing Intel Atom processor, a new microprocessor designed from the ground up for mobility, with a mobile-optimized chipset. Intel mobile processor innovative design techniques allow faster execution of instructions at lower power.

3.2   Main Memory

WADE-8071 provides 1 x 200-pin SO-DIMM sockets which supports 667/533 DDR2-SDRAM as main memory, Non-ECC (Error Checking and Correcting), non-register functions. The maximum memory size can be up to 2GB capacity. Memory clock and related settings can be detected by BIOS via SPD interface.

For system compatibility and stability, do not use memory module without brand. Memory configuration can be either one double-sided DIMM in either one DIMM socket or two single-sided SO-DIMM in both sockets.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

CPU FSB	Bandwidth
533MHz	4.2GB/s

Memory Frequency	Single Channel DDR Bandwidth
667MHz	4.2GB/s
533 MHz	4.2GB/s

Note:
To maintain system stability, don't change any of DRAM parameters in BIOS setup to upgrade system performance without acquiring technical information.

Memory frequency / CPU FSB synchronization

WADE-8071 supports different memory frequencies depending on the CPU front side bus and the type of DDR2 SO-DIMM.

CPU FSB	Memory Frequency
533 MHz	667/533MHz

3.3   Installing the Single Board Computer

To install your WADE-8071 into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position
Step 2 : Install and configure CPU and memory module on right position
Step 3 : Place WADE-8071 into the dedicated position in the system
Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that SBC is properly inserted and fixed by mechanism.

Note:
Please refer to section 3.3.1 to 3.3.7 to install INF/VGA/LAN/Audio drivers.

3.3.2   Chipset Component Driver

The chipset on WADE-8071 is a new chipset that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 2000 /XP, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in WADE-8071 CD-title.

3.3.3   Intel Integrated Graphics GMCH Chip

Using Intel® 945GSE GMCH with Media Accelerator (GMA) 950 graphics integrated chipset is aimed to gain an outstanding graphic performance. Shared 8 accompany it to 128MB system DDR2-SDRAM with Total Graphics Memory. This combination makes WADE-8071 an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI-Express by 1 VGA card can take over the system display.

Drivers Support

Please find Springdale GMCH driver in the WADE-8071 CD-title. Drivers support Windows-2000, Windows XP.

3.3.4 Realtek Gigabit Ethernet Controller

Drivers Support

Please find Realtek RTL8111C LAN driver in /Ethernet directory of WADE-8071 CD-title. The drivers support Windows 2000 /XP.

LED Indicator (for LAN status)

WADE-8071 provides two LED indicators to report Realtek RTL8111C Gigabit Ethernet interface status. Please refer to the table below as a quick reference guide.

8111C	Color	Name of LED	Operation of Ethernet Port		
			Linked	**Active**	
Status LED	Orange	LAN Linked & Active LED	On	Blinking	
Speed LED	Orange	LAN speed LED	**Giga Mbps**	**100 Mbps**	**10 Mbps**
	Green		Orange	Green	Off

3.3.5 Audio Controller

Please find Realtek ALC662 Audio driver form WADE-8071 CD-title. The drivers support Windows 2000 /XP.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumpers at proper position.
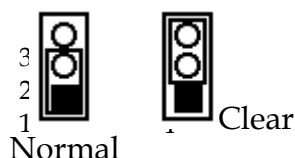
Normal

Clear

JP9	Function
1-2 Short	Normal Operation ★
2-3 Short	Clear CMOS contents

3.5　　　WDT Function

The working algorithm of the WDT function can be simply described as a counting process. The Time-Out Interval can be set through software programming. The availability of the time-out interval settings by software or hardware varies from boards to boards.

WADE-8071 allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset or to non-maskable interrupt (NMI), when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process. A well-written WDT program should keep the counting process running under normal condition. WDT should never generate a system reset or NMI signal unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately. To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

Additionally, there are maximum 2 seconds of counting tolerance that should be considered into user' application program. For more information about WDT, please refer to Winbond W83627HG-AW data sheet.

There are two PNP I/O port addresses that can be used to configure WDT,
1) 0x2E:EFIR (Extended Function Index Register, for identifying CR index number)
2) 0x2F:EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.

```
//Step1. Enter W83627HG configuration registers mode:
outportb(0x2E, 0x87);
outportb(0x2E, 0x87);

//* Step2. Pin89 to be WDTO
outportb(0x2E, 0x2b);
outportb(0x2E + 1, 0x04);

//* Step3. Select logic device 8:
outportb(0x2E, 0x07);
outportb(0x2E + 1, 0x08);
```

//* Step4. Config WDT using second to be unit:
outportb(0x2E, 0xf5);
outportb(0x2E + 1, 0x00);

//* Step5. Set WDT time-out time:
outportb(0x2E, 0xf6);
outportb(0x2E + 1, time_out);

//* Step6. Exit configuration registers mode:
outportb(0x2E, 0xaa);

3.6   GPIO

The WADE-8071 provides 8 programmable input or output ports that can be individually configured to perform a simple basic I/O function. Users can configure each individual port to become an input or output port by programming register bit of I/O Selection. To invert port value, the setting of Inversion Register has to be made. Port values can be set to read or write through Data Register.

3.6.1   Pin assignment

__JP5 : General Purpose I/O Connector__

PIN No.	Signal Description
1	General Purpose I/O Port 0 (GPIO0)
2	General Purpose I/O Port 4 (GPIO4)
3	General Purpose I/O Port 1 (GPIO1)
4	General Purpose I/O Port 5 (GPIO5)
5	General Purpose I/O Port 2 (GPIO2)
6	General Purpose I/O Port 6 (GPIO6)
7	General Purpose I/O Port 3 (GPIO3)
8	General Purpose I/O Port 7 (GPIO7)
9	Ground
10	+5V

All General Purpose I/O ports can only apply to standard TTL ± 5% signal level (0V/5V), and each source sink capacity up to 12mA.

3.6.2   WADE-8071 GPIO Programming Guide

There are 8 GPIO pins on WADE-8071. These GPIO pins are from SUPER I/O (W83627GH-AW) GPIO pins, and can be programmed as Input or Output direction.

 JP5 pin header is for 8 GPIO pins and its pin assignment as following :

        JP5_Pin1=GPIO0:from SUPER I/O_GPIO10 with Ext. 4.7K PH
        JP5_Pin2=GPIO4:from SUPER I/O_GPIO14 with Ext. 4.7K PH
        JP5_Pin3=GPIO1:from SUPER I/O_GPIO11 with Ext. 4.7K PH
        JP5_Pin4=GPIO5:from SUPER I/O_GPIO15 with Ext. 4.7K PH
        JP5_Pin5=GPIO2:from SUPER I/O_GPIO12 with Ext. 4.7K PH
        JP5_Pin6=GPIO6:from SUPER I/O_GPIO16 with Ext. 4.7K PH
        JP5_Pin7=GPIO3:from SUPER I/O_GPIO13 with Ext. 4.7K PH
        JP5_Pin8=GPIO7:from SUPER I/O_GPIO17 with Ext. 4.7K PH
                <<<<< Be careful Pin9=GND , Pin10=VCC >>>>>

There are several Configuration Registers (CR) of W83627HG-AW needed to be programmed to control the GPIO direction, and status(GPI)/value(GPO). CR00h ~ CR2F are common (global) registers to all Logical Devices (LD) in W83627HG. CR07h contains the Logical Device Number that can be changed to access the LD as needed. LD7 contains the GPIO10~17 registers.

Programming Guide:

Step1: CR2A_Bit [7.2]. P [1,1,1,1,1,1]; to select multiplexed pins as GPIO10~17 pins
Step2: LD7_CR07h.P [07h]; Point to LD7
Step3: LD7_CR30h_Bit0.P1; Enable LD7
Step4: Select GPIO direction, Get Status or output value.

LD7_CRF0h; GPIO17 ~ 10 direction, 1 = input, 0 = output pin
LD7_CRF2h.P [00h]; Let CRF1 (GPIO data port) non-invert to prevent from confusion
LD7_CRF1h; GPIO17~10 data port, for input pin, get status from the related bit, for output pin, write value to the related bit.

For example,
        LD7_CRF0h_Bit4.P0; Let GPIO14 as output pin
        LD7_CRF2h_Bit4.P0; Let CRF1_Bit4 non-inverted
        LD7_CRF1h_Bit4.P0; Output "0" to GPIO14 pin (J25_Pin6)

        LD7_CRF0h_Bit0.P1; Let GPIO10 as input pin
        LD7_CRF2h_Bit0.P0; Let CRF1_Bit0 non-inverted
        Read LD7_CRF1h_Bit0; Read the status from GPIO10 pin (J25_Pin1)

How to access W83627HG CR?

In WADE-8071, the EFER = 002Eh, and EFDR = 002Fh.
EFER and EFDR are 2 IO ports needed to access W83627HG-AW CR.
EFER is the Index Port, EFDR is the Data Port.
CR index number needs to be written into EFER first,
Then the data will be read/written from/to EFDR.

To R/W W83627HG-AW CR, it is needed to Enter/Enable Configuration Mode first.
When completing the programming, it is suggested to Exit/Disable Configuration
Mode.
   Enter Configuration Mode: Write 87h to IO port EFER twice.
   Exit Configuration Mode: Write AAh to IO port EFER.

3.6.3   Example

```
void enter_Superio2_CFG(void)
{
    outportb(0x2E, 0x87);
    outportb(0x2E, 0x87);
}

void exit_Superio2_CFG(void)
{
    outportb(0x2E, 0xAA);
}

void Set_CFG2(unsigned char Addr2,unsigned char Value2)
{
  unsigned char d2;
    outportb(0x2E, Addr2);
    delay(2);
    outportb(0x2E +1, Value2);
    delay(2);
}

unsigned char Get_CFG2(unsigned char Addr2)
{
  unsigned char d2;
    outportb(0x2E, Addr2);
    delay(2);
    d2 = inportb(0x2E +1);
    delay(2);
    return(d2);
}
```

```c
int main(void)
{
    unsigned char d2;

    enter_Superio2_CFG();
    /* CR2A B7 = 1 selet GPIO Port 1*/
    d2 = Get_CFG2(0x2A);
    d2 = (d2 & 0x7F) | 0x80;
    Set_CFG2(0x2A, d2);

    /* IO test loop 1 */
    /* Set GPIO Port 1 of Superio 2 Enable */

    Set_CFG2(0x07, 0x07);    /* Select logic device 07 of Superio2*/
    Set_CFG2(0x30, 0x01);    /* Enable GPIO Port 1 of Superio2*/


    /* IO test loop 1 */

    /* Set GPIO Port 1 of Superio2 Enable */
    Set_CFG2(0x07, 0x07);    /* Select logic device 07*/
    Set_CFG2(0xF0, 0x0F);     /* GPIO Port 1 of Superio2 is [ooooiiii], o: output, i:input
*/
    Set_CFG2(0xF2, 0x00);      /* GPIO Port 1 of Superio2 is non-inversed*/


    Set_CFG2(0x07, 0x07);    /* Select logic device 07*/
    Set_CFG2(0xF1, 0xFF);    /* Initial back all GPIO Port1 of Superio 2 to hi */

    Set_CFG2(0x07, 0x07);    /* Select logic device 07*/
    Set_CFG2(0xF1, 0xEF);    /* GP14 of Superio2 -> ~GP10 of Superio2 */
    Set_CFG2(0x07, 0x07);    /* Select logic device 07 of Superio2*/
    d2 = Get_CFG2(0xF1);    /* get GPIO Port 2 data */

    if (d2 == 0xEE )

        printf("\n GPIO14->10 test ok");
    else
        printf("\n GPIO14->10 test fail ");
```

Chapter 4
BIOS Setup Information

WADE-8071 is equipped with the AWARD BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, WADE-8071 communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2   Main Menu

Once you enter WADE-8071 AWARD BIOS CMOS Setup Utility, a Main Menu is presented. The Main Menu allows user to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

Phoenix- AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features	Load Fail-Safe Defaults
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Management Setup	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
▶ PC Health Status	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type …	

Note:
It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

4.3 Standard CMOS Setup Menu

This setup page includes all the items in standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

Phoenix- AwardBIOS CMOS Setup Utility
Standard CMOS Features

		Item Help
Date (mm:dd:yy)	Thu, Mar 12 2009	
Time (hh:mm:ss)	10 : 20 : 30	
		Menu Level ▶
▶ IDE Channel 0 Master	[ST380817AS]	
▶ IDE Channel 0 Slave	[None]	Change the day, month, year and century
▶ IDE Channel 1 Master	[None]	
▶ IDE Channel 1 Slave	[None]	
Video	[EGA/VGA]	
Halt On	[All Errors]	
Base Memory	639K	
Extended Memory	*1038336K*	
Total Memory	*1039360K*	

↑↓→←: Move   Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Note:
Oblique items are base on memory capacity which user adopts on single board.

■ **Menu Selections**

Item	Options	Description
Date	mm:dd:yy	Change the day, month, year and century
Time	hh:mm:ss	Change the internal clock
IDE Channel 0 Master		
IDE Channel 0 Slave	Options are in its sub menu	Press <Enter> to enter next page for detail hard druve settings
IDE Channel 1 Master		

IDE Channel 1 Slave		
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	639K	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as hard disk drive or CD-ROM drive. It uses a separate sub menu to configure each hard disk drive.

Phoenix- AwardBIOS CMOS Setup Utility
IDE Channel 0 Master (&Slave)

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 0 Master	[Auto]	
Access Mode	[Auto]	Menu Level ▶
Capacity	*80 GB*	To atuo-detect the HDD's size, head … on this channel
Cylinder	*38309*	
Head	*16*	
Precomp	*0*	
Landing Zone	*38308*	
Sector	*255*	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Note:
The oblique items are meaning base on what kind of storage device user employs.

■ **Menu Selections**

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Channel 0 Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS, LBA Large, Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min=0, Max=65535	Set the number of cylinders for hard disk
Head	Min=0, Max=255	Set the number of read/write heads
Precomp	Min=0, Max=65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min=0, Max=65535	****
Sector	Min=0, Max=255	Number of sectors per track

4.5　　　Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced BIOS Features

▶ CPU Feature	[Press Enter]		Item Help
▶ Hard Disk Boot Priority	[Press Enter]		
Virus Warning	[Disabled]		Menu Level　▶
Quick Power On Self Test	[Enabled]		
First Boot Device	[CDROM]		
Second Boot Device	[Hard Disk]		
Third Boot Device	[LS120]		
Boot Other Device	[Enabled]		
Boot up NumLock Status	[On]		
Gate A20 Option	[Fast]		
Typematic Rate Setting	[Disabled]		
X Typematic Rate (Chars/Sec)	6		
X Typematic Delay (Msec)	250		
Security Option	[Setup]		
APIC Mode	[Enabled]		
MPS Version Control For OS	[1.4]		
OS Select For DRAM > 64MB	[Non-OS2]		
Report No FDD For WIN 95	[No]		
Small Logo(EPA) Show	[Disabled]		

↑↓→←: Move　Enter: Select　+/-/PU/PD: Value　F10: Save　ESC: Exit　F1: General Help
F5: Previous Values　F6: Fail-Safe Defaults　F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
CPU Feature

Delay Prior to Thermal	[16 Min]		Item Help
Limit CPUID MaxVal	[Disabled]		Menu Level　▶
C1E Function	[Auto]		CPU C1E Function Select
Execute Disable Bit	[Enabled]		

↑↓→←: Move　Enter: Select　+/-/PU/PD: Value　F10: Save　ESC: Exit　F1: General Help
F5: Previous Values　F6: Fail-Safe Defaults　F7: Optimized Defaults

C1E Function

CPU C1E Function Select.

The choice: Auto, Disabled.

Execute Disabled Bit

When disabled, forces the XD feature flag to always return 0.

The choice: Enabled, Disabled.

Core Multi-Processing

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority

1. CH0 M. : ST380817AS 2. Bootable ADD-in Cards	Item Help
	Menu Level ▶ Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Hard Disk Boot Priority

Select Hard Disk Boot Device Priority. Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

Virus Warning

Allow you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

Quick Power On Self Test

Allows the system skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable Cache
Disabled	Disable Cache

First/Second/Third Boot Device

Select your Boot Device Priority.

The choice: LS120, Hard Disk, CDROM, ZIP 100, USB-FDD, USB-ZIP, USB-CDROM and Disabled.

Boot Other Device

Select your Boot Device Priority.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control GateA20 and Normal – a pin in the keyboard controller controls GateA20. Default is fast.

The choice: Normal, Fast.

Typematic Rate Setting

Keyboard repeat at a rate determined by the keyboard controller – when enabled, the typematic rate and typematic delay can de select.

The choice: Disabled, Enabled.

※Typematic Rate (Chars/sec)

The rate is which character repeats when you hold down a key.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30. (Default 6)

※Typematic delay (Msec)

The delay before keystrokes begin to repeat.

The choice: 250, 500, 750, and 1000. (Default 250)

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

APIC Mode

The choice: Enabled, Disabled.

MPS Version Control For OS

The choice: 1.1, 1.4

OS Select For DRAM > 64MB

Select OS/2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD for WIN 95

The choice: No, Yes.

Small Logo (EPA) Show

The choice: Enabled, Disabled.

4.6   Advanced Chipset Features

This section allows you to configure the system based on the specific features of the Intel GME965 chipset. This chipset manages bus speeds and access to system memory resources, such as DDR2 SO-DIMM and the external cache. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system. The only time user might consider making any changes would be if you discovered that data was being lost while during system operation.

```
            Phoenix- AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features

   ┌──────────────────────────────────────────────┬─────────────────────┐
   │  System BIOS Cacheable        [Enabled]       │      Item Help      │
   │  Memory Hole At 15M-16M       [Disabled]      ├─────────────────────┤
   │▶ PCI Express Root Port Func.  [Press Enter]   │                     │
   │                                               │  Menu Level    ▶    │
   │  ***  VGA Setting  ***                        │                     │
   │  On-Chip Frame Buffer Size    [8MB]           │                     │
   │  DVMT Mode                    [DVMT]          │                     │
   │  DVMT/FIXED Memory Size       [128MB]         │                     │
   │  Boot Display                 [CRT]           │                     │
   │  Panel Scaling                [Auto]          │                     │
   │  Panel Number                 [640x480  18bits]│                    │
   ├──────────────────────────────────────────────┴─────────────────────┤
   │ ↑↓→←: Move   Enter: Select  +/-/PU/PD: Value  F10: Save  ESC: Exit  F1: General Help │
   │        F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults        │
   └─────────────────────────────────────────────────────────────────────┘
```

System BIOS Cacheable.

The choice: Enabled, Disabled.

Memory Hole At 15-16M

The choice: Enabled, Disabled.

PCI Express Root Port Func.

Phoenix- AwardBIOS CMOS Setup Utility
PCI Express Root Port Func

PCI Express Port 1	[Auto]	Item Help
PCI Express Port 2	[Auto]	
PCI Express Port 3	[Auto]	
PCI Express Port 4	[Auto]	Menu Level ▶
PCI Express Port 5	[Auto]	
PCI Express Port 6	[Auto]	
PCI-E Compliancy Mode	[v1.0a]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

On-Chip Frame Buffer Size

Users can set the display memory size that shared from main memory.

The choice: 1MB, 8MB.

DVMT Mode

The choice: FIXED, DVMT, BOTH

DVMT/FIXED Memory Size

The choice: 64MB, 128MB, 224MB.

Boot Display

The choice: CRT, LVDS, CRT+LVDS, DVI, TV, CRT+DVI, CRT+TV.

Panel Scaling

The choice: Auto, On, Off.

Panel Number

The choice: 640x480 18bits, 800x600 18bits, 1024x768 18bits, 1280x1024 24bits.

4.7　　　Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility
Integrated Peripherals

		Item Help
▶ OnChip IDE Device	[Press Enter]	
▶ Onboard Device	[Press Enter]	
▶ SuperIO Device	[Press Enter]	Menu Level ▶
Watch Dog Timer Select	[Disabled]	

↑↓→←: Move　Enter: Select　+/-/PU/PD: Value　F10: Save　ESC: Exit　F1: General Help
F5: Previous Values　　F6: Fail-Safe Defaults　　F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
OnChip IDE Device

		Item Help
IDE HDD Block Mode	[Enabled]	
IDE DMA transfer access	[Enabled]	
On-Chip Primary PCI IDE	[Enabled]	Menu Level ▶
IDE Primary Master PIO	[Auto]	
IDE Primary Slave　 PIO	[Auto]	If your IDE hard drive
IDE Primary Master UDMA	[Auto]	supports block mode
IDE Primary Slave　 UDMA	[Auto]	select　 Enabled　 for
On-Chip Secondary PCI IDE	[Enabled]	automatic detection of
IDE Secondary Master PIO	[Auto]	the optimal number of
IDE Secondary Slave　 PIO	[Auto]	block　 read/writes　 per
IDE Secondary Master UDMA	[Auto]	sector　 the　 drive　 can
IDE Secondary Slave　 UDMA	[Auto]	support.
*** On-Chip Serial ATA Setting ***		
On-Chip Serial ATA	[Combined Mode]	
* SATA PORT Speed Settings	Disabled	
PATA IDE Mode	[Secondary]	
SATA Port	P0, P2 is Primary	

↑↓→←: Move　Enter: Select　+/-/PU/PD: Value　F10: Save　ESC: Exit　F1: General Help
F5: Previous Values　　F6: Fail-Safe Defaults　　F7: Optimized Defaults

IDE HDD Block Mode

If IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

IDE DMA transfer access

The choice: Enabled, Disabled.

On-Chip Primary/ Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

The choice: Enabled, Disabled

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields allow set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if IDE hard drive supports and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choice: Auto, Disabled.

On-Chip Serial ATA

[Disabled]: Disabled SATA Controller. [Combined Mode]: PATA and SATA are combined. Max. of 2 IDE drives in each channel. [Enhanced Mode]: Enable both SATA and PATA. Max. of 4 IDE drives are supported. [SATA only]: Only enable SATA.

The Choice: Disabled, Auto, Combined Mode, Enhanced Mode, SATA Only.

PATA IDE Mode

The Choice: Secondary.

Onboard Device

Phoenix- AwardBIOS CMOS Setup Utility
USB Device Setting

USB 1.0 Controller [Enabled] USB 2.0 Controller [Enabled] USB Keyboard Function [Enabled] USB Mouse Function [Disabled] Azalia/AC97 Audio Select [Auto]	Item Help
	Menu Level ▶ [Enabled] or [Disabled] universal host controller interface for universal serial bus.
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

USB 1.0 Controller

[Enabled] or [Disabled] Universal host controller interface for universal serial bus.

The choice: Enabled, Disabled.

USB 2.0 Controller

[Enabled] or [Disabled] Enhanced host controller interface for universal serial bus.

The choice: Enabled, Disabled.

USB Keyboard/Mouse Function

[Enabled] or [Disabled] Legacy support of USB keyboard or mouse.

The choice: Disabled, Enabled.

Azalia/AC97 Audio Select

[Enabled] or [Disabled] AC97 Audio controller.

SuperIO Device

<div align="center">

Phoenix- AwardBIOS CMOS Setup Utility
SuperIO Device
</div>

Onboard Serial Port 1	[3F8/IRQ4]	Item Help
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[Normal]	Menu Level ▶
X RxD , TxD Active	Hi , Lo	
X IR Transmission Delay	Enable	
X UR2 Duplex Mode	Half	
XUse IR Pins	IR-Rx2Tx2	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto.

UART Mode Select

This item allows users to select Infrared transmission mode.

IrDA	Select IrDA mode transmission
ASKIR	Select ASKIR mode transmission
Normal	Disable Infrared function

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available:

Hi, Hi	High rate for receiving / High rate for transmitting
Hi, Lo	High rate for receiving / Low rate for transmitting
Lo, Hi	Low rate for receiving / High rate for transmitting
Lo, Lo	Low rate for receiving / Low rate for transmitting

IR Transmission Delay

This option will be available when IR is enabled.

The choice: Enabled, Disabled.

UR2 Duplex Mode

The available choices are full duplex mode and half duplex mode

The choice: Full, Half.

UR2 Duplex Mode

The available choices are full duplex mode and half duplex mode

The choice: Full, Half.

Use IR Pins

The available choices are IR-Rx2Tx2/ RxD2, TxD2.

The choice: IR-Rx2Tx2 / RxD2, TxD2.

Watch Dog Timer Select

This BIOS testing option is able to reset the system according to the selected table.

The choice: Disabled, 10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, and 4 Min.

4.8   Power Management Setup

The Power Management Setup allows configuration of the system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix- AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	[Enabled]	Item Help
ACPI Suspend Type	[S3(STR)]	
Run VGABIOS if S3 Resume	[Auto]	Menu Level ▶
Power Management	[User Define]	
Video Off Method	[DPMS]	
Video Off In Suspend	[Yes]	
Soft-Off by PWR-BTTN	[Instant-Off]	
Power On by Ring	[Disabled]	
Wake up by onboard LAN	[Enabled]	
USB KB Wake-Up From S3	[Disabled]	
Resume by Alarm	[Disabled]	
X Date(of Month) Alarm	0	
X Time(hh:mm:ss) Alarm	0 : 0 :0	
** Reload Global Timer Events **		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	
Secondary IDE 0	[Disabled]	
Secondary IDE 1	[Disabled]	
FDD,COM,LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

ACPI Suspend Type

To decide which ACPI suspend mode to use.

The choice: S1 (POS), S3 (STR).

Run VGA BIOS if S3 Resume

The choice: Auto, Yes, No.

Power Management

This category allows selecting the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Defined	Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min.

Video off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This allows user to enable/disable video off in Suspend Mode.

The choice: Yes, No.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

Power On by Ring

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Modem signal.

The choice: Enabled, Disabled.

Wake Up By Onboard LAN

The choice: Disabled, Enabled.

USB KB Wake-Up From S3

The choice: Enabled, Disabled.

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

※Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

※Time (hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0 ~59).

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

PCI PIRQ[A-D]#

This option can be used to detect PCI device activities. If they are activities, the system will go into sleep mode.

The choice: Enabled, Disabled.

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix- AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

Init Display First	[PCI Slot]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	Menu Level ▶
X IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
** PCI Express relative items **		
Maximum Payload Size	[4096]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Init Display First

The choice: PCI Slot, Onboard, PCIEx.

Reset Configuration Data

Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

The choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure the entire boot and plug and play compatible devices. If set to Auto, IRQ DMA and memory base address fields can not be selected, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

※IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

The choice: Press Enter.

IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/IRQ-12/IRQ-14/IRQ-15 assigned to.

The choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

Legacy ISA for devices compliant with the original PC AT bus specification, PCI PnP for devices compliant with the plug and play standard whether designed for PCI bus architecture.

The choice: Enabled, Disabled.

Maximum Payload Size.

Default 4096.

4.10   PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

CaseOpen# Warning	[Disabled]	Item Help
CPU Warning Temperature	[Disabled]	
Current System Temp	39℃ / 102℉	Menu Level ▶
Current CPU Temperature	47℃ /116℉	
System FAN	0 RPM	
CPU FAN	0 RPM	
Vcore	0.88 V	
Vbat	3.28 V	
+3.3 V	3.32 V	
+12 V	12.22 V	
+ 5 V	5.21 V	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

<u>CPU Warning Temperature</u>

This item allows you to set a temperature above which the system will start the beeping warning. Default setting is disabled. This function will only with "ACPI" power management and "S3 (STR)" suspends type.

The choices : Disabled, 50℃/122℉, 53℃/127℉, 56℃/133℉, 60℃/140℉, 63℃/145 ℉, 66℃/151℉, 70℃/158℉.

4.11　Default Menu

Selecting "Defaults" from the main menu shows two options which are described below,

<u>Load Fail-Safe Defaults</u>

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

<u>Load Optimized Defaults</u>

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.12　Supervisor/User Password Setting

Either supervisor or user password can be setup, or both of then. The differences between are:

Set Supervisor Password : can enter and change the options of the setup menus.

Set User Password : just can only enter but do not have the right to change the options of the setup menus. When selecting this function, the following message will appear at the center of the screen to assist you in creating a password.

<u>ENTER PASSWORD</u>

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and

press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will reboot and Setup can be entered freely.

PASSWORD DISABLED

When a password has been enabled, user will be prompted to enter it every time user tries to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of the computer.

User may determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.13   Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after system off. During subsequnet booting of computer, the BIOS configures the system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)? N

This allows user to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Chapter 5
Troubleshooting

This chapter provides a few useful tips to quickly get WADE-8071 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

DC 12V Power Input

WADE-8071 supports DC12V input only.
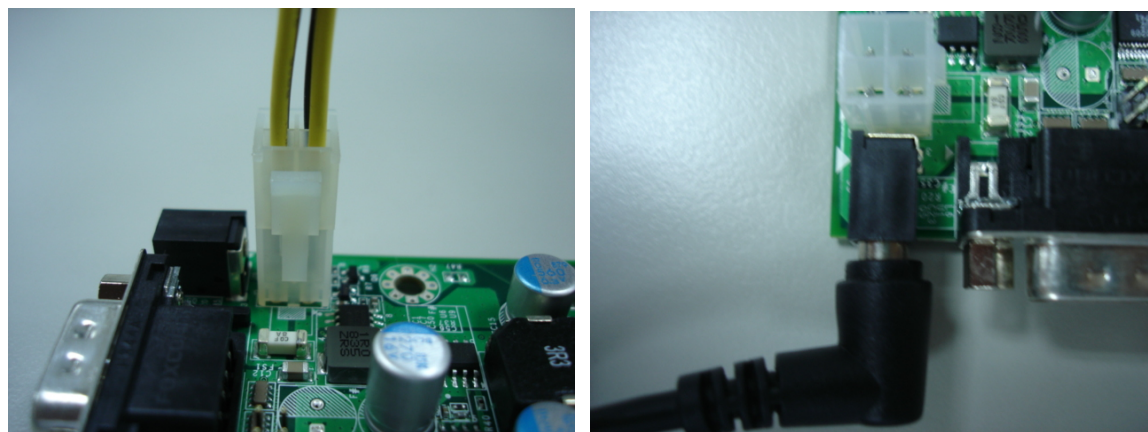
Serial ATA and IDE Hard Disk Setting

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; there are total two connectors, J14 and J15. The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation.
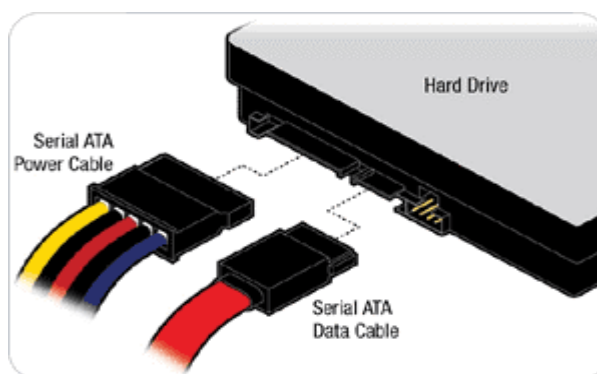
5.2   BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on DC 12V power. 200-pin DDR2 SDRAM, keyboard, mouse, SATA hard disk, VGA connector, device power cables, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with WADE-8071, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the COM1/COM2 ports, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1 serial port to release IRQ #4
Disable COM2 serial port to release IRQ #3
Etc…

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System Timer
IRQ #1	Keyboard Event
IRQ #2	Usable IRQ
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	Usable IRQ
IRQ #6	Diskette Event
IRQ #7	Usable IRQ
IRQ #8	Real-Time Clock
IRQ #9	Usable IRQ
IRQ #10	Usable IRQ
IRQ #11	Usable IRQ
IRQ #12	IBM Mouse Event
IRQ #13	Coprocessor Error
IRQ #14	Hard Disk Event
IRQ #15	Usable IRQ

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

5.3   Ordering Setting

PER-4110R

One slot PCI-E x1 to PCI-Ex1

5.4 FAQ

Symptom: SBC keeps beeping, and no screen has shown.

Solution: In fact, each beep sound represents different definition of error message. Please refer to table as following:

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Information & Support

Question:I forget my password of system BIOS, what am I supposed to do?

Answer: You can simply short 2-3 pins on JP9 to clean your password.

Note:
Please visit our technical web site at
http://www.portwell.com.tw
For additional technical information, which is not covered in this manual, you can mail to tsd@mail.portwell.com.tw or you can also send mail to our sales, they wull be very delighted to forward them to us.

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used for your reference.

Memory Area	Size	Device Description
0000-003F	1K	Interrupt Area
0040-004F	0.3K	BIOS Data Area
0050-006F	0.5K	System Data
0070-0E2E	54K	DOS
0E2F-0F6B	5K	Program Area
0F6C-9EFF	574K	[Available]
= Conventional memory ends at 636K =		
9F00-9FBF	3K	Extended BIOS Area
9FC0-9FFF	1K	Unused
A000-AFFF	64K	VGA Graphics
B000-B7FF	32K	Unused
B800-BFFF	32K	VGA Text
C000-CEBF	59K	Video ROM
CEC0-EFFF	133K	Unused
F000-FFFF	64K	System ROM
HMA	64K	First 64K Extended

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

IRQ#	Current Use	Default Use
IRQ 0	System ROM	System Timer
IRQ 1	System ROM	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM2
IRQ 4	System ROM	COM1
IRQ 5	[Unassigned]	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	[Unassigned]	Usable IRQ
IRQ 8	System ROM	Real-Time Clock
IRQ 9	[Unassigned]	Usable IRQ
IRQ 10	[Unassigned]	Usable IRQ
IRQ 11	[Unassigned]	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	[Unassigned]	Usable IRQ