WADE-6010

Mini-ITX Board

User's Manual

P/N: B8981380 Version 1.0

Table of Contents

How to Use This Manual

How to Use This Manual

The manual describes how to configure your WADE-6010 system 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 WADE-6010 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.

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Chapter 1
System Overview

1.1 Introduction

Mini-ITX is becoming an increasingly important standard for embedded application because of the effortless installation of most connectors at rear I/O panel. WADE-6010 is the board based on this form factor to easy the assembly works and to provide a clearance space inside the system.

WADE-6010 adopts VIA core logic, CX700 that supports VIA new generation V4 bus C7 processor, DDR2 400 ECC memory, one IDE channel and dual SATA 300 port. The new C7 processor is based on the advanced VIA CoolStream Architecture and manufactured using IBM's state-of-art 90nm Silicon-on-Insulator (SOI) processor, and offer unbeatable power efficiency in performance.

CX700 integrated 200MHz, 128-bit UniChrome Pro II graphics processor, manipulates system memory up to 128MB as frame buffer through Unified Memory Architecture. The high performance 3D graphics processor includes dual pixel rendering pipelines and dual texture units. The DuoView feature is implemented with two independent display engines. Each engine can display completely different contents at different resolution, pixel depth and refresh rate over CRT and LVDS interfaces display.

Coupled with the VIA CX700 digital media IGP chipset, it offers exceptional memory and peripheral support. WADE-6010 has six serial ports equipped on-board to meet requirement of low speed peripherals interconnection for those applications such as POS, KIOSK and factory control. In addition, six USB ports on-board are available as well for higher speed peripherals.

The Mini-ITX board with compact and rich functions can be widely deployed in more applications such as intelligent displays, hospital monitoring system, Point-of-Information (POI), Municipal control and monitoring systems.

Feature List

- On-board VIA new generation V4 bus C7 1.5GHz processor (up to 2GHz by project)
- Dual 240-pin DDR2 SDRAM DIMMM sockets, support for DDR2 400 DIMMs, up to 2GB ECC and non-ECC system memory
- Integrated 3D/2D video processor supports 32/64/128MB frame buffer sizes supports dual display via CRT and LVDS interfaces

- High capacity cylindrical Lithium battery was adopted for long life span CMOS backup
- One Type II CompactFlash socket on IDE channel for embedded application that is diskless
- One IDE channel, dual SATA 300 port, one parallel, one FDD channel and PCI slot supports up to three PCI devices via riser card

1.2 Check List

The WADE-6010 package should cover the following basic items:

- ✓ One WADE-6010 Industrial Mainboard
- ✓ One I/O shield
- ✓ One IDE cable
- ✓ One SATA signal cable
- ✓ 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.

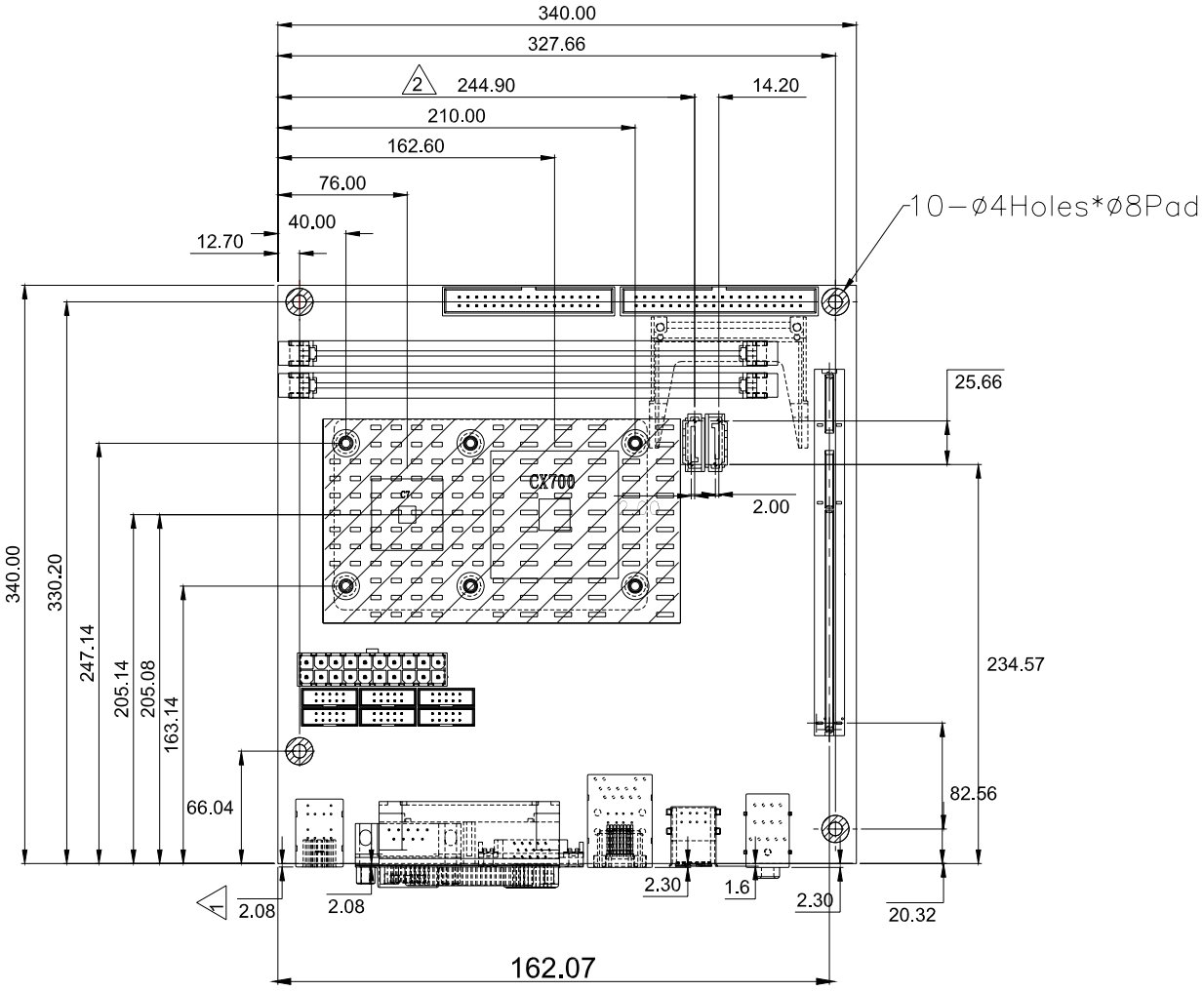
1.3 Product Specification

- **Main Processor**
  CPU & Package: VIA C7 1.5GHz processor
  FSB: 400MHz
- **BIOS**
  Award BIOS
- **Main Memory**
  - Support dual-channel & signal channel DDR memory interface
  - ECC support
  - Up to 2GB DDR2 400 SDRAM on two 240pin DIMM sockets
- **L2 Cache Memory**
  Included in processor
- **Chipset**
  VIA CX700 chipset
- **Expansion Interface**
  One 32-bit PCI expansion slot, and support up to three PCI slots by riser card

- **PCI IDE Interface**
  Support one enhanced IDE ports up to two HDD devices with Ultra DMA/33/66/100
- **SATA Interface**
  Two SATA 300 ports
- **Serial Ports**
  Support six serial ports, (RS-232x5, One RS-232/422/485 selectable)
- **IR Interface**
  IrDA 1.0 compatible
- **Parallel Port**
  Support one parallel port
- **USB Interface**
  Support six USB (Universal Serial Bus) ports (four at rear for keyboard, mouse and external devices; two on-board for internal devices) for high-speed I/O peripheral devices
- **PS/2 Mouse and Keyboard Interface**
  Support dual 6-pin mini-DIN connector at rear I/O panel for PS/2 keyboard/mouse
- **Audio Interface**
  Connector and header of Line-in/Line-out/MIC for external and internal usage
- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/Calendar with battery backup for 7-year data retention
- **Watchdog Timer**
  - Support WDT function through software programming for enable/disable and interval setting
  - Generate system reset
- **On-board VGA**
  - VIA CX700 integrated graphics
  - Share system memory up to 128MB for system memory
- **On-board Ethernet LAN**
  Fast Ethernet (10/100 Mbits/sec) LAN port
- **High Driving GPIO**
  N/A
- **Cooling Fans**
  Support one 3-pin power connector for CPU cooler and one 3-pin power connector for system fan
- **System Monitoring Feature**
  Monitor CPU temperature, system temperature and major power sources, etc
- **Outline Dimension (L X W):**
  170mm (6.69") X 170mm (6.69")

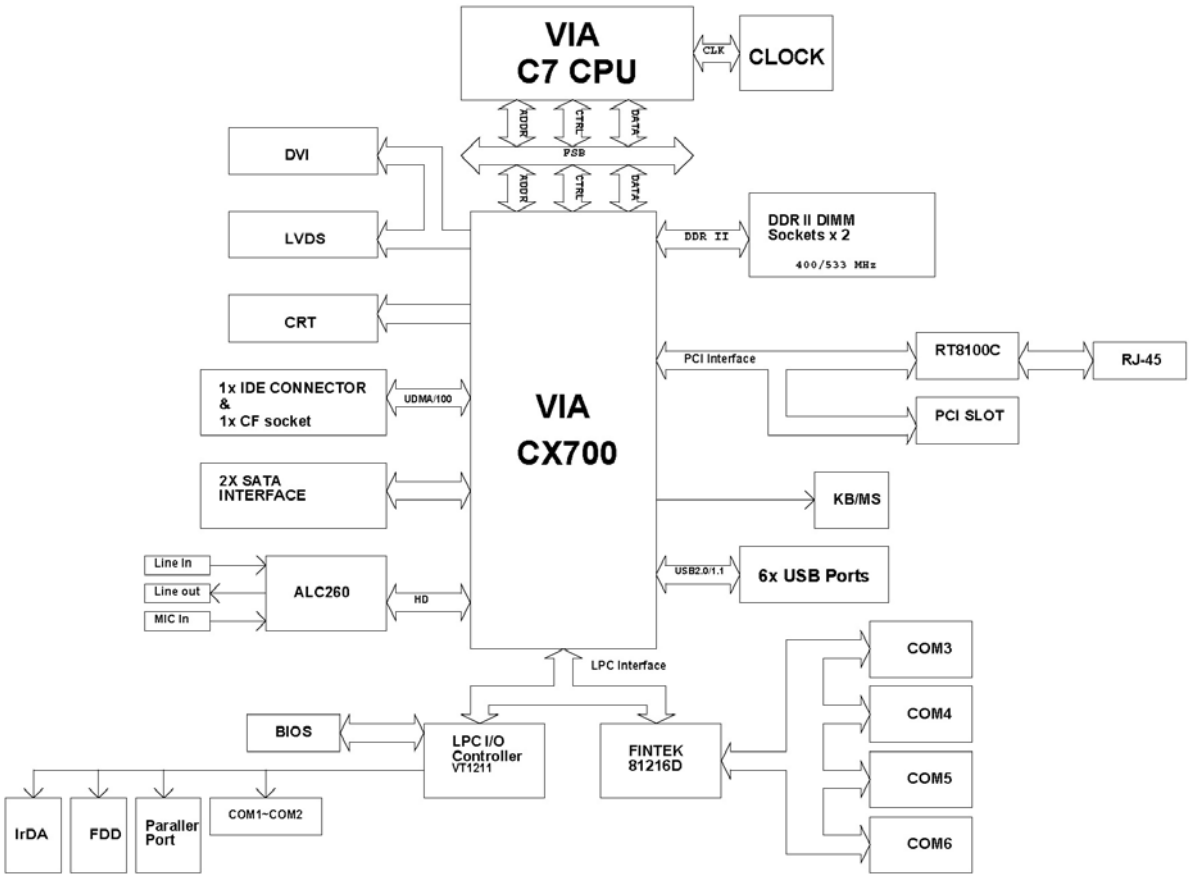
- **Power Requirements:**
- **Configuration:**
  - +12V (System) @2.5A
  - +5V (System) @4.1A
  - Test configuration:
    - CPU: Onboard VIA C7 1.50GHz (100*15 / L2 Cache: 128KB)
    - Memory: (ELPIDA E5108AG-5C) UG12T17200L8DR DDR2 533 1GBx2
    - HDD: Seagte-ST312087AS (LBA / ATA 133 / 120GB) x2
    - CD-ROM: ASUA CRW-1210R (CD-RW / DMA2)
    - OS: Windows XP Pro
    - Test Programs: Burning Test V4.0
    - Run Time: 30 minutes
- **Operating Temperature:**
  0°C ~ 55°C
- **Storage Temperature:**
  -20°C ~ 80°C
- **Relative Humidity:**
  5% ~ 90%, non-condensing

1.3.1 Mechanical Drawing



1.4 System Architecture

WADE-6010 includes VIA CX700 chipset, the VIA CX700 chipset supports the latest VIA C7 processors with 400MHz front side bus; up to 2GB DDR2 400 SDRAM system memory in dual DIMM sockets; two SATA ports; one IDE port and six USB 2.0 on WADE-6010.



WADE-6010 System Block Diagram

Chapter 2
Hardware Configuration

This chapter indicates jumpers', headers' and connectors' locations. Users may find useful information related to hardware settings in this chapter. The default settings are indicated with a star sign (★).

2.1 Jumper Setting

For users to customize WADE-6010's features. In the following sections, **Short** means covering a jumper cap over jumper pins; **Open** or **N/C** (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 2-1 for the Jumper locations.

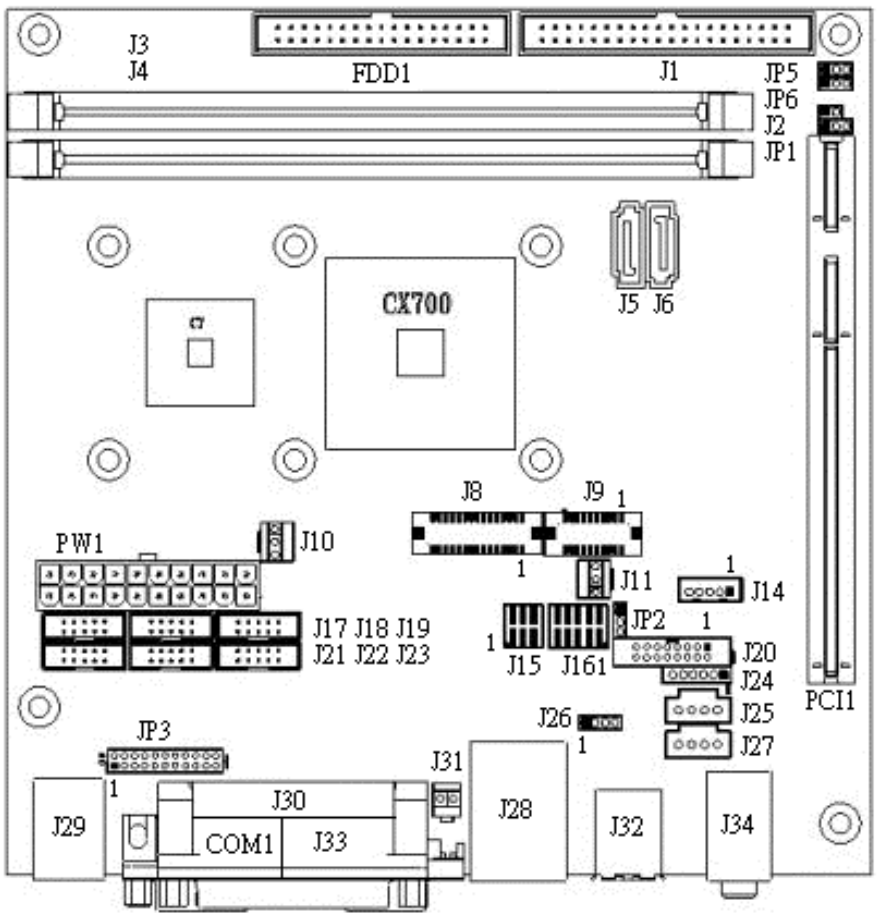


Figure 2-1 WADE-6010 Jumper and Connector Locations

The jumper settings are schematically depicted in this manual as follows:

JP1: CMOS Clear

JP1	Function
1-2 Short	Normal Operation ★
2-3 Short	Clear CMOS Contents

JP2: VDDLVDS_IN Selection

JP2	Function
1-2 Short	VCC3
2-3 Short	VCC ★

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

JP3: RS232, 422, 485 Selection

JP3	Function
5-6,9-11,10-12,15-17,16-18 Short	RS-232 ★
3-4,7-9,8-10,13-15,14-16,21-22 Short	RS-422
1-2,7-9,8-10,19-20 Short	RS-485

2.2 Connector Allocation

I/O peripheral devices are connected to the interface connectors (Figure 2-2)

Connector Function List

Connector	Function	Remark
J1	IDE Connector	
J2	AT Mode/Auto Power ON	
J3	DDRII Socket_2	
J4	DDRII Socket_1	
J5	SATA Connector	
J6	SATA Connector	
J8	LVDS Connector	
J9	DVI Connector	
J10	CPU Fan Connector	
J11	System Fan Connector	
J14	LVDS Power Connector	
J15	LVDS Setting	
J16	GPIO Connector	
J17	COM3 Connector	
J18	COM6 Connector	
J19	USB Connector	
J20	JUMP Setting	
J21	COM5 Connector	
J22	COM4 Connector	
J23	COM2 Connector	
J24	IR Connector	
J25	CD IN	
J26	LAN LED	
J27	LINE-OUT	
J28	LAN+USB Connector	
J29	PS2/KB&MS	
J30	Printer Port Connector	
J31	VBAT Connector	
J32	USB_DUAL Connector	
J33	VGA Connector	
J34	Audio Connector	
J35	Compact Flash Connector	

Pin Assignments of Connectors

J1: IDE Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	RESET#	2	Ground
3	Data7	4	Data8
5	Data6	6	Data9
7	Data5	8	Data10
9	Data4	10	Data11
11	Data3	12	Data12
13	Data2	14	Data13
15	Data1	16	Data14
17	Data0	18	Data15
19	Ground	20	N/C
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Pull-down
29	DMA ACK#	30	Ground
31	INT IRQ	32	N/C
33	SA1	34	PDIAG-
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	Active	40	Ground

J2: AT Mode/Auto Power ON

J2	Function
1-2 Short	AT MODE
1-2 Open	ATX MODE ★

J8: 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	LDATA1	22	LCLK1
23	GND	24	SPCLK1
25	GND	26	Ground
27	POWER	28	POWER
29	SPD1	30	POWER

J9: DVI Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	TX0-	2	TX0+
3	GND	4	GND
5	TX1-	6	TX1+
7	GND	8	GND
9	TX2-	10	TX2+
11	GND	12	GND
13	TXC-	14	TXC+
15	VCC	16	VCC
17	SPCLK1	18	SPD1
19	N/A	20	N/A

J10: CPU Fan Connector

Pin No.	Signal Description
1	GND
2	+12V
3	SENSE

J11: System Fan Connector

Pin No.	Signal Description
1	GND
2	+12V
3	SENSE

J14: LVDS Power Connector

Pin No.	Signal Description
1	ENABLE
2	GND
3	+12V
4	GND
5	VCC

Note:
Wrong voltage selection may damage the LVDS panel's back light inverter.
Please survey inverter's maximum allow input level before setup this jumper setting.

J15: LVDS Setting

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

J16: 8-bit GPIO

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO10	2	GPIO11
3	GPIO12	4	GPIO13
5	Ground	6	GPIO14
7	GPIO15	8	GPIO16
9	GPIO17	10	5V

J17 & J18: COM3 & COM6 Connector

Pin No.	Signal Description
1	Data Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	Data Set Ready
7	Request To Send
8	Clear To Send
9	Ring Indicator
10	N/C

J19: USB Port4 & Port5

PIN No.	Signal Description	PIN No.	Signal Description
1	USB power (5V)	6	NC
2	USB DATA A-	7	GND
3	USB DATA A+	8	USB DATA B+
4	Ground	9	USB DATA B-
5	NC	10	USB power (5V)

J20: Power/LED Header

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	2	POWER_LED+5V (330 ohm)
3	Ground	4	NC
5	NC	6	POWER_LED-
7	Speaker Signal	8	KEYLOCK
9	PWRBTN	10	Ground
11	PWRBTN	12	NC
13	RESET	14	HDD_LED+5V (1K ohm)
15	RESET	16	HDD_LED-

J21 & J22 & J23: COM5 & COM4 & COM2 Connector

Pin No.	Signal Description
1	Data Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	Data Set Ready
7	Request To Send
8	Clear To Send
9	Ring Indicator
10	N/C

J24: IR Connector

PIN No.	Signal Description
1	+5V
2	NC
3	IRRX
4	Ground
5	IRTX
6	NC (Key pin)

J25: CD-IN Connector

PIN No.	Signal Description
1	CD-IN Left
2	CD-Ground
3	CD-Ground
4	CD-IN Right

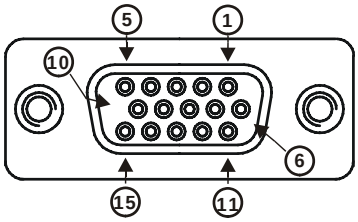
J26: LAN LED Connector

Pin No.	Signal Description
1	GA_LINK#
2	GA_LINK100#
3	GA_LINK1000#
4	GA_ACT#

J30: Printer Port Connector

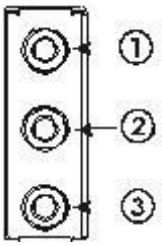
Pin No.	Signal Description	Pin No.	Signal Description
1	Strobe#	14	Auto Form Feed#
2	Data0	15	Error#
3	Data1	16	Initialization#
4	Data2	17	Printer Select In#
5	Data3	18	Ground
6	Data4	19	Ground
7	Data5	20	Ground
8	Data6	21	Ground
9	Data7	22	Ground
10	ACK#	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	N/C

J33: VGA Connector



PIN No.	Signal Description	PIN No.	Signal Description
1	RED	2	GREEN
3	BLUE	4	ID0
5	Ground	6	Ground
7	Ground	8	Ground
9	NC	10	Ground
11	ID1	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

J34: Audio Jack Connector



PIN No.	Signal Description
1 (Blue)	Line In
2 (Lime)	Line Out
3 (Pink)	Mic In

J35: (solder side) CF Socket

PIN No.	Signal Description	PIN No.	Signal Description
1	Ground	26	NC
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	Select 0	32	Select 1
8	Ground	33	NC
9	Ground	34	IO Read
10	Ground	35	IO Write
11	Ground	36	Pull Up to +5V
12	Ground	37	IRQ 14
13	+5V	38	+5V
14	Ground	39	Pull down
15	Ground	40	NC
16	Ground	41	Reset
17	Ground	42	IORDY
18	SA2	43	NC
19	SA1	44	Pull Up to +5V
20	SA0	45	IDE Active
21	Data 0	46	Pull Up to +5V
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	NC	49	Data 10
25	NC	50	Ground

FDD1: FDD Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	Ground	2	Density Select 0
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	INDEX#
9	Ground	10	Motor ENA#
11	Ground	12	N/C
13	Ground	14	Drive Select A#
15	Ground	16	N/C
17	Ground	18	Direction#
19	Ground	20	Step#
21	Ground	22	Write Data#
23	Ground	24	Write Gate#
25	Ground	26	Track 0#
27	Ground	28	Write Protect#
29	N/C	30	Read Data#
31	Ground	32	Head Select#
33	N/C	34	Disk Change#

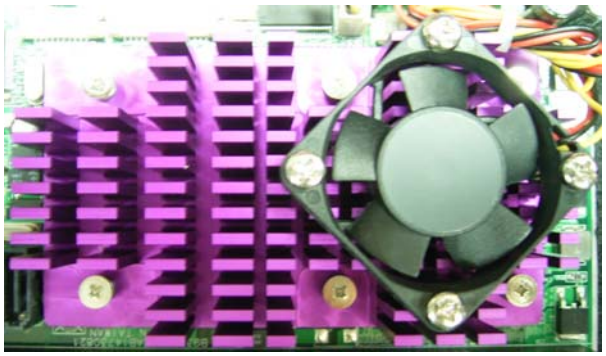
Chapter 3
System Installation

This chapter provides instruction to set up the system. The additional information is able to help you install onboard PCI device and handle WDT operation in software programming.

3.1 Onboard VIA C7 Processor

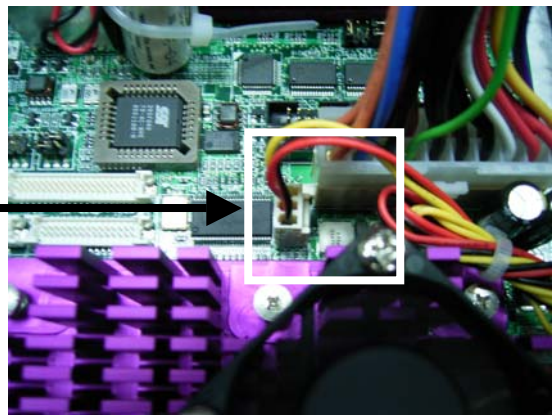
OnBoard CPU VIA C7 1.5GHz processor

The VIA C7® processor is the smallest, lowest power, most efficient and most secure native x86 processor in the world. Built on the advanced VIA CoolStream™ architecture, the 'Esther'core of the VIA C7 processor is designed to extend the digital lifestyle by combining robust performance of 1.5GHz with ultra low power consumption and highly efficient heat dissipation.



When user is going to exercise WADE-6010, you must check the power connecter of cooler module of CPU, and then follow the position to connect the power line, see the below image of demonstration.

Power line connect
J10



J10: 12V CPU cooler module Power connecter

PIN No.	Signal Description
1	Ground
2	+12V
3	Sense

Configuration System Bus

- 533 / 400 MHz FSB VIA Processor,
- DDR2 533/400 SDRAM controller, Supports 64/128/256/512/1024 MB (x8/x16/x32), ECC for DDR2 400 only.
- Integrated UniChrome Pro II 3D/2D graphic and Video Processor,
- Unified video decoding accelerator,
- Integrated HDTV Encode and LVDS / DVI transmitter,
- High definition audio controller,
- Two series SATA ports,
- One ultraDMA-133 EIDE channel,
- Six USB 2.0/1.0 ports,
- PCI-32 bit bus,
- Two RS-232 serial ports,
- RTC and LPC, SMBus, Modem interface,
- ACPI and sophistical power manager.

3.2 Main Memory

WADE-6010 provides 2 x 240-pin DIMM sockets support 1.8V of dual-channel DDR2 400 with ECC function, the maximum memory size can be up to 2GB. Auto detecting memory clock is according to BIOS CMOS settings.

For system compatibility and stability, don't use memory module without brand. You can also use single-sided or double-sided DIMM in both slots.

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

Dual Channel DDR2 DIMMs

Dual Channel DDR2 memory technology doubles the bandwidth of memory bus. Adequate or higher bandwidth of memory than processor would increase system performance. To enable Dual Channel DDR2 memory technology, you have to install dual identical memory modules in both memory sockets. Following tables show bandwidth information of different processor and memory configurations.

Memory Frequency	Dual Channel DDR Bandwidth (64 bit)	Single Channel DDR Bandwidth (32 bit)
400 MHz	25.6 GB/s	12.8 GB/s
533 MHz	34.1 GB/s	17.05 GB/s

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

CPU FSB / Memory Frequency synchronization

Support different memory frequencies depending on the CPU front side bus and the type of DDR2 DIMM.

CPU FSB	Memory Frequency
400MHz	400/533 MHz

3.3 Installing the Single Board Computer

To install your WADE-6010 into standard chassis or proprietary environment, you need to 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-6010 into the dedicated position in your system.
Step 4: Attach cables to existing peripheral devices and secure it.

WARNING

Bus Interface Fully complies with PCI Local Bus specification V2.2 (support 1 master PCI slot). And Please refer sectors form 3.3.1 to 3.3.5 instruction for install INF/VGA/LAN/Audio/Storage drivers.

3.3.1 Chipset Component Driver

WADE-6010 is base on VIA CX700 (North and South combination) chipset that a few elderly operation systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 2000 /XP / Server 2003, please install its **INF** before any of other Drivers are installed. You can find very easily this chipset component driver in WADE-6010 CD-title.

3.3.2 VIA Integrated Graphics Chip

Employing Integrated UniChrome Pro II 3D/2D High performance chipset is aimed to gain an outstanding graphic performance. Shared 32 accompany it to 128MB system DDR2-SDRAM with Total Graphics Memory. This combination makes WADE-6010 an excellent piece of multimedia hardware.

This onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI VGA Card can take over the system display.

Drivers Support
Please find VIA CX700 driver in the WADE-6010 CD-title. Drivers support Windows 2000 / XP System 32-bit & Windows XP System 64-bit.

Windows 2000/XP (32bit): Please execute Install for Windows 2000/Server 2003/XP System 32-bit file to start graphics driver installation.

Windows XP (64-bit): Please execute Install for Windows XP System 64-bit file to start graphics driver installation.

3.3.3 On-board 10/100 Fast Ethernet Controller

LED Indicator (for LAN status)
WADE-6010 provides two LED indicators to report Realtek 8100C 10/100 fast Ethernet operation status. Please refer to the table below as a quick reference guide.

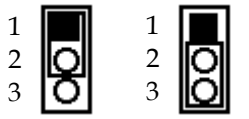
82573L	Color	Name of LED	Operation of Ethernet Port	
			Linked	Active
Status LED	Yellow	LAN Linked & Active LED	On	Flashing
Speed LED	Green	LAN speed LED	**100 Mbps**	**10 Mbps**
			Green	Off

3.3.4 On-board AC'97 Audio Device

Please find Realtek ALC260 Audio driver form WADE-6010 CD-title. The drivers support Windows 2000/Server 2003 server/ XP.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable CMOS Clear 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.

RUBY-9715VG2A 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 W83627THF 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.

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);
// Assign Pin 89 to be a WDTO
outp(0x002E, 0x2B);
outp(0x002F, inp(0x002F) & 0xEF);
// Select Logic Device 8
outp(0x002E, 0x07);
outp(0x002F, 0x08);
// Active Logic Device 8
outp(0x002E, 0x30);
outp(0x002F, 0x01);
// Select Count Mode
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | ( Count-mode Register & 0x08));
// Specify Time-out Value
outp(0x002E, 0xF6);
outp(0x002F, Time-out Value Register );
// Disable WDT reset by keyboard/mouse interrupts
outp(0x002E, 0xF7);
outp(0x002F, 0x00);
// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

Definitions of Variables:

Value of Count-mode Register:
1) 0x00 -- Count down in seconds (Bit3=0)
2) 0x08 -- Count down in minutes (Bit3=1)
Value of Time-out Value Register:
1) 0x00 -- Time-out Disable
2) 0x01~0xFF -- Value for counting down

3.6 GPIO

The RUBY-9715VG2A series 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

J38: 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 RUBY-9715VG2A GPIO Programming Guide

There are 8 GPIO pins on RUBY-9715VG2A series. These GPIO pins are from SUPER I/O (W83627THF) GPIO pins, and can be programmed as Input or Output direction.

J38 pin header is for 8 GPIO pins and its pin assignment as following :

J38_Pin1=GPIO1:from SUPER I/O_GPIO10 with Ext. 2.7K PH
J38_Pin3=GPIO2:from SUPER I/O_GPIO11 with Ext. 2.7K PH
J38_Pin5=GPIO3:from SUPER I/O_GPIO12 with Ext. 2.7K PH
J38_Pin7=GPIO4:from SUPER I/O_GPIO13 with Ext. 2.7K PH
J38_Pin2=GPIO5:from SUPER I/O_GPIO14 with Ext. 2.7K PH
J38_Pin4=GPIO6:from SUPER I/O_GPIO15 with Ext. 2.7K PH
J38_Pin6=GPIO7:from SUPER I/O_GPIO16 with Ext. 2.7K PH
J38_Pin8=GPIO8:from SUPER I/O_GPIO17 with Ext. 2.7K PH

<<<<< Be careful Pin9=GND , Pin10=VCC >>>>>

There are several Configuration Registers (CR) of W83627THF 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 W83627THF. 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 (J38_Pin2)

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 (J38_Pin1)

How to access W83627THF CR?

In RUBY-9715VG2A, the EFER = 002Eh, and EFDR = 002Fh.
EFER and EFDR are 2 IO ports needed to access W83627THHF 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 W83627THF 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

Define GPIO4 as output pin, and output "0" to this pin.

```
mov   dx,2eh   ; Enter Configuration Mode
mov   al,87h
out   dx,al
jmp   $+2
out   dx,al

mov   dx,2eh
mov   al,29h   ; Read CR29
out   dx,al
mov   dx,2fh
in    al,dx
or    al,40h   ; Set GPIO multiplexed pins as bit 7,6 as 01 for
               ; Group 1 as GPIO
mov   ah,al

mov   dx,2eh
mov   al,29h
out   dx,al
mov   dx,2fh
mov   al,ah
out   dx,al

mov   dx,2eh
mov   al,07h   ; Point to LDN7
out   dx,al
mov   dx,2fh
mov   al,07h
out   dx,al
mov   dx,2eh   ; Read CR30
mov   al,30h
out   dx,al
mov   dx,2fh
in    al,dx
or    al,01h
mov   ah,al
```

```
mov    dx,2eh    ; CR30_Bit0.P1
mov    al,30h
out    dx,al
mov    dx,2fh
mov    al,ah
out    dx,al

mov    dx,2eh
mov    al,0f0h   ; Read  LD7_CRF0
out    dx,al
mov    dx,2fh
in     al,dx
and    al,0efh
mov    ah,al

mov    dx,2eh
mov    al,0f0h   ; LD7_CRF0_Bit4.P0
out    dx,al
mov    dx,2fh
mov    al,ah
out    dx,al

mov    dx,2eh
mov    al,0f2h   ; Read  LD7_CRF2
out    dx,al
mov    dx,2fh
in     al,dx
and    al,0efh
mov    ah,al

mov    dx,2eh
mov    al,0f2h   ; LD7_CRF2_Bit4.P0
out    dx,al
mov    dx,2fh
mov    al,ah
out    dx,al
mov    dx,2eh
mov    al,0f1h   ; Read  LD7_CRF1
out    dx,al
mov    dx,2fh
in     al,dx
and    al,0efh
mov    ah,al
```

```
mov     dx,2eh
mov     al,0f1h    ; LD7_CRF1_Bit4.P0
out     dx,al
mov     dx,2fh
mov     al,ah
out     dx,al

mov     dx,2eh     ; Exit Configuration Mode
mov     al,0AAh
out     dx,al
```

Chapter 4
BIOS Setup Information

WADE-6010 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 of configuration more easily. This type of information is stored in CMOS RAM so that it is retained during power-off period. When system is turned on, WADE-6010 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 appears the message to "Hit <DEL> if you want to run SETUP" appears, and then 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 don't 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	: Optimum Defaults
F9	: Menu in BIOS
F10	: Save

4.2 Main Menu

Once you enter WADE-6010 AWARD BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you 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 ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Management Setup ▶ PnP/PCI Configurations ▶ PC Health Status	▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
ESC : Quit F9 : Menu in BIOS F10 : Save & Exit Setup	↑↓→← : Select Item
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

Date (mm:dd:yy)	Fri, Nov 3 2006	Item Help
Time (hh:mm:ss)	15 : 19 : 30	
▶ IDE Channel 0 Master	[None]	Menu Level ▶
▶ IDE Channel 0 Slave	[None]	
▶ IDE Channel 1 Master	[None]	Change the day, month, year and century
▶ IDE Channel 1 Slave	[None]	
Drive A	[1.4M, 3.5 in.]	
Drive B	[None]	
Floppy 3 Mode Support	[Disabled]	
Video	[EVG/VGA]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	980992K	
Total Memory	982016K	

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

Note:
Setting On-Chip Serial ATA is IDE Mode.

■ **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	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Channel 0 Slave	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
Drive A Drive B	360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in ★ 2.88M, 3.5 in None	Press <Enter> to enter the next page for detail hard drive settings
Video	EGA/VGA ★ CGA 40 CGA 80 MONO	Select the default for video device
Halt On	All Errors No Errors All, but Keyboard ★ All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	640K	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

Note:
★ Initial parameter of Default

4.4 IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as Hard disk drive or CDROM 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/Slave	[Auto]	Menu Level ►
Access Mode	[Auto]	
Capacity	0 MB	To auto-detect the HDD's size, head … on this channel
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

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

■ **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 Channel 0 Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this 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

Phoenix- AwardBIOS CMOS Setup Utility
IDE Channel 1 Master/Slave

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 1 Master/Slave	[Auto]	
Access Mode	[Auto]	Menu Level ►
Capacity	0GB	To atuo-detect the HDD's size, head … on this channel
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

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

■ **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 1 Master	None Auto	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	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 Channel 2 Slave' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this 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 Feature

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 ▶
CPU L1 & L2 Cache	[Enabled]	
CPU L2 cache ECC Checking	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	
Second Boot Device	[Hard Disk]	
Third Boot Device	[LS120]	
Boot Other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot up Floppy Seek	[Disabled]	
Boot up NumLock Status	[On]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
Security Option	[Setup]	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
Video BIOS Shadow	[Enabled]	
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
Thermal Management	[Thermal Monitor 1]	
X TM2 Bus Ratio	15 X	Menu Level ▶
X TM2 Bus VID	1.004V	

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

Delay Prior to Thermal

The choice: 4 Min, 8 Min, 16 Min, and 32 Min. **(Default 16 Min)**

Thermal Management

The choice: Thermal Monitor 1/2. **(Default Ther. 1)**

TM2 Bus Ratio

This item set the frequency (bus ratio) of the throttle performance that will be initially when the one die sensor goes form not hot to hot.
Key in a DEC number. Settings: [Min=0, Max=255] (Default setting 15X)

TM2 Bus VID

This item set voltage of throttle performance that will be initiated when the on die sensor goes form not hot to hot. (Default setting 1.004V)

Settings: [0.700V, 0.716V, 0.732V, 0.748V, 0.764V, 0.780V, 0.796V, 0.812V, 0.828V, 0.844V, 0.860V, 0.876V, 0.892V, 0.908V, 0.924V, 0.940V, 0.956V, 0.972V, 0.988V, 1.004V, 1.020V, 1.036V, 1.052V, 1.068V, 1.084V, 1.100V, 1.116V, 1.132V, 1.148V, 1.164V, 1.180V, 1.196V, 1.212V, 1.228V, 1.244V, 1.260V, 1.276V, 1.292V, 1.308V, 1.324V, 1.340V, 1.356V, 1.372V, 1.388V, 1.404V, 1.420V, 1.436V, 1.452V, 1.468V, 1.484V, 1.500V, 1.516V, 1.532V, 1.548V, 1.564V, 1.580V, 1.596V, 1.612V, 1.628V, 1.644V, 1.660V, 1.676V, 1.692V, 1.708]

Phoenix- AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority

1. 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	

Note:
If no storage device to be employed, the program emerges "Bootable a add-in card" message only; in other words, if user employs storage, the program will appear "Ch1 M. : *Storage module name*".

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.

Bootable Add-in Cards	Select SCSI Boot

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.

CPU L1 Cache & L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable Cache ★
Disabled	Disable Cache

CPU L2 cache ECC Checking

The choice: Enabled, Disabled. (Default Enabled)

Quick Power On Self Test

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

Enabled	Enable quick POST ★
Disabled	Normal POST

First/Second/Third Boot Device

Select your boot device priority.

The choice: Floppy, LS120, Hard Disk, CDROM, ZIP100, USB-FDD, USB-ZIP, USB-CDROM.

Boot Other device

Select your boot device priority.

The choice: Enabled, Disabled.

Swap Floppy Drive

If the system has two floppy drives, choose enable to assign physical driver B to logical drive A and Vice-Versa.

The choice: Enabled, Disabled.

Boot Up Floppy Seek

Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller – When enabled, the typematic Rate and typematic Delay can be selected.

The choice: Enabled, Disabled. (Default Disabled)

Typematic Rate (Chars/sec)

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

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

Typematic Delay (Msec)

The delay before keystrokes begin to repeat.

The choice: 250, 500, 750, and 1000.

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.

MPS Version Control For OS

Not changeable with APIC Mode set to disabled.

The choice: 1.1, 1.4. (Default 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.

Video BIOS Shadow

The choice: Enable, Disable.

Small Logo (EPA) Show

Enabled	The EPA logo will appear during system boot-up.
Disabled	The EPA logo will not appear during system boot-up.

4.6 Advanced Chipset Feature

This section allows you to configure the system based on the specific features of the VIA CX700 chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM (DDR II SDRAM) and the external cache. It also coordinates communications between the conventional PCI Express bus and PCI bus. 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 your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced Chipset Features

▶DRAM Clock/Drive Control	[Press Enter]	Item Help
▶AGP & P2P Bridge Control	[Press Enter]	
▶CPU & PCI Bus Control	[Press Enter]	Menu Level ▶
Memory Hole	[Disabled]	
System BIOS Cacheable	[Enabled]	
Video RAM Cacheavle	[Disabled]	
Init Display First	[PCI Slot]	

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

DRAM Clock/Drive Control

Phoenix- AwardBIOS CMOS Setup Utility
DRAM Clock/Drive Control

	Current FSB Frequency	100MHz
	Current DRAM Frequency	266MHz
	DRAM Clock	[By SPD]
	DRAM Timing	[Auto By SPD]
X	SRDCAS Latency	[DDR/DDR 2.5/4
X	Bank Interleave	Disabled
X	Precharge to Active (Trp)	4T
X	Active to Precharge (Tras)	07T
X	Active to CMD (Trfd)	4T
X	REF to ACT/REF (Trfc)	25T
X	ACT (0) to ACT(1) (TRRD)	3T
	Read to Precharge (Trtp)	[2T]
	Write to Read CMD (Twtr)	[1T/2T]
	Write Recovery Tim (Twr)	[4T]
	DARM Command Rate	[2T Command]
	DRAM ECC Function	[Disabled]
	RDSAIT mode	[Auto]
X	RDSAIT selection	03

Item Help

Menu Level ▶

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

DRAM Clock

The choice: By SPD, 200MHz, 266MHz, 333MHz. (Default By SPD)

DRAM Timing

This option provides DIMM plug-and-play support by serial presence detect (SPD) mechanism via the system management bus (SMBUS) interface.

The choice: Manual, Auto By SPD. (Default Auto By SPD)

Read to Precharge (Trtp)

The choice: 2T, 3T. (Default 2T)

Write to Read CMD (Twtr)

The choice: 1T/2T, 2T/3T. (Default 1T/2T)

Write Recovery Time (Twr)

The choice: 2T, 3T, 4T, 5T. (Default 4T)

DRAM Command Rate

The choice: 2T command, 1T command (Default 2T command)

DRAM ECC Function

The choice: Auto, Disabled. **(Default Disabled)**

RDSAIT mode

The choice: Manual, Auto. **(Default Auto)**

DRAM Clock/Drive Control

Phoenix- AwardBIOS CMOS Setup Utility
AGP & P2P Bridge Control

AGP Aperture Size	[128M]	Item Help
AGP3.0 Mode	[8X]	
AGP Driving Control	[Auto]	Menu Level ▶
X AGP Driviing Value	DA	
AGP Fast Write	[Disabled]	
AGP Master 1 WS Write	[Enabled]	
AGP Master 1 WS Read	[Enabled]	
AGP 3.0 Calibration cycle	[Enabled]	
VGA Share Memory Size	[64M]	
Direct Frame Buffer	[Enabled]	
Select Display Device	[CRT]	
Panel Type	[07]	
Outport Port	[DI0]	
Dithering	[Disabled]	

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

AGP Aperture Size

The choice: 32M, 64M, 128M, 256M, 512M, 1G. (Default 128M)

AGP3.0 Mode

The choice: 8X, 4X. (Default 8X)

AGP Driving Control

The choice: Manual, Auto. (Default Auto)

AGP Fast Write

The choice: Disabled, Enabled. (Default Disabled)

AGP Master 1 WS Write

The choice: Disabled, Enabled. (Default Enabled)

AGP Master 1 WS Read

The choice: Disabled, Enabled. (Default Enabled)

VGA Share Memory Size

The choice: Disabled, 8M, 16M, 32M, 64M, 128M. (Default 64M)

Direct Frame Buffer

The choice: Disabled, Enabled. (Default Enabled)

Select Display Device

The choice: CRT, LCD, DVI, CRT+DVI, CRT+DVI. (Default CRT)

Panel Type

Min=0000
Max=000F
Key in a HEX number: . (Default 07)

Outport Port

The choice: DI0, DI1. (Default I0)

Dithering

The choice: Disabled, Enabled. (Default Disabled)

CPU & PCI Bus Control

Phoenix- AwardBIOS CMOS Setup Utility
CPU & PCI Bus Control

PCI Master 0 WS Write	[Enabled]	Item Help
PCI Delay Transaction	[Enabled]	
DRDY_Timing	[Optimize]	Menu Level ►
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

PCI Master 0 WS Write

The choice: Disabled, Enabled. (Default Enabled)

PCI Delay Transaction

The choice: Disabled, Enabled. (Default Enabled)

DRDY_Timing

The choice: Slowest, Default, Optimize. (Default Optimize)

Memory Hole

The choice: Disabled, 15M -16M. (Default Disabled)
In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Disabled, Enabled. (Default Enabled)

Video RAM Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. Hit "Disabled" to ignore this BIOS caching function.

The choice: Disabled, Enabled. (Default Disabled)

Init display First

The choice: PCI Slot, AGP. (Default PCI Slot)

4.7 Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility
Integrated Peripherals

▶ VIA OnChip IDE Device	[Press Enter]	Item Help
▶ VIA Onboard Device	[Press Enter]	
▶ Super IO Device	[Press Enter]	Menu Level ▶
Onboard Serial Port 3	[3E8]	
Serial Port 3 Use IRQ	[IRQ3]	
Onboard Serial Port 4	[2E8]	
Serial Port 4 Use IRQ	[IRQ4]	
Onboard Serial Port 5	[4F8]	
Serial Port 5 Use IRQ	[IRQ5]	
Onboard Serial Port 5	[4E8]	
Serial Port 6 Use IRQ	[IRQ10]	
Watch Dog Timer Select	[Disabled]	
WDT Timer (30-250 Sec.)	[128]	
▶ USB Device Setting	[Press Enter]	

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

VIA Onchip IDE Device

Phoenix- AwardBIOS CMOS Setup Utility
VAI OnChip IDE Device

SATA Controller	[Enabled]	Item Help
SATA Controller Mode	[IDE]	
IDE DMA transfer access	[Enabled]	Menu Level ▶
OnChip IED Channel 1	[Enabled]	
IDE Prefetch Mode	[Enabled]	
Secondary Master PIO	[Auto]	
Secondary Slave PIO	[Auto]	
Secondary Master UDMA	[Auto]	
Secondary Slave UDMA	[Auto]	
IDE HDD Block Mode	[Enabled]	

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

SATA Controller

The choice: Disabled, Enabled. (Default Enabled)

SATA Controller Mode

The choice: IDE.

IDE DMA transfer access

The choice: Enabled, Disabled. (Default Enabled)

OnChip IDE Chennel 1

The choice: Enabled, Disabled. (Default Enabled)

IDE Prefetch Mode

The choice: Enabled, Disabled. (Default Enabled)

Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you 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, and Mode 4. (Default Auto)

Secondary Master/Slave UDMA

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

The choice: Auto, Disabled. (Default Auto)

IDE HDD Block Mode

If your 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. (Default Enabled)

VIA Onchip PCI Device

Phoenix- AwardBIOS CMOS Setup Utility
VAI OnChip PCI Device

Azalia HAD Controller	[Auto]	Item Help
		Menu Level ▶

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

Azalia HAD Controller

The choice: Auto, Disabled. (Default Auto)

Super IO Device

Phoenix- AwardBIOS CMOS Setup Utility
Super IO Device

Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	Menu Level ▶
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	
X EPP Mode Select	EPP1.7	
X ECP Mode Use DMA	3	
OnBoard Fast IR	[Disabled]	
X Fast IR IRQ	11	
X Fast IR DMA	6	

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

Onboard FDC Controller

This item allows you to enable/disable onboard Floppy disk controller.

The choice: Enabled, Disabled. (Default Enabled)

Onboard Serial Port 1

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.
(Default 3F8/IRQ4)

Onboard Serial 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.
(Default 2F8/IRQ3)

Onboard Parallel Port

This item allows you to configure I/O address of the onboard parallel port.

The choice: Disabled, 378/IRQ7, 278/IRQ5, and 3BC/IRQ7.
(Default 378/IRQ7)

Parallel Port Mode

There are four different modes for the onboard parallel port:

SPP ★	Switch to SPP mode
EPP	Switch to EPP mode
ECP	Switch to ECP mode
ECP + EPP	Switch to ECP + EPP mode

EPP Mode Select

Select different version of EPP mode.

The choice: EPP1.7 and EPP1.9. (Default setting EPP1.7)

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

The choice: 1 and 3. (Default setting 3)

Onboard Fast IR

The choice: Disabled, Enabled. (Default Disabled)

USB Device Setting

Phoenix- AwardBIOS CMOS Setup Utility
USB Device Setting

USB 1.0 Controller	[Enabled]	Item Help
USB 2.0 Controller	[Enabled]	
USB Operation Mode	[High speed]	Menu Level ▶
USB Keyboard Function	[Enabled]	
USB Mouse Function	[Enabled]	
USB Storage Function	[Enabled]	
*** USB Mass Storage Device Boot Setting ***		

↑↓→←: 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

This item allows you to enable/disable USB (Universal Serial Bus) function.

The choice: Enabled, Disabled. (Default Enabled)

USB 2.0 Controller

This entry is for disable/enable EHCI controller only. This BIOS itself may/may not have high speed USB support built in, the support will be automatically turn on when high speed device were attached.

The choice: Enabled, Disabled. (Default Enabled)

USB Operation Mode

The choice: Full/Low Speed, High Speed. (Default High Speed)

USB Keyboard Function

This item allows you to enabled USB Keyboard function under POST, BIOS Setup menu, DOS, or Window-NT with no USB driver loaded.

The choice: Enabled, Disabled. (Default Enabled)

USB Mouse Function

This item allows you to enabled USB Mouse function under POST, BIOS Setup menu, DOS, or Window-NT with no USB driver loaded.

The choice: Enabled, Disabled. (Default Enabled)

USB Storage Function

The choice: Enabled, Disabled. (Default Enabled)

4.8 Power Management Setup

The Power Management Setup allows you to configure you 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	[S1(POS)]	
Power Management	[User Define]	Menu Level ▶
HDD Power Down	[Disabled]	
Suspend Mode	[Disabled]	
Video Off Option	[Suspend -> Off]	
Video Off In Mode	[V/H SYNC+Blank]	
Soft-Off by PWR-BTTN	[Instant -Off]	
Run VGABIOS if S3 Resume	[Auto]	
Ac Loss Auto Reset	[Off]	
▶ Wakeup Event Detect	[Press Enter]	

↑↓→←: 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. (Default Enabled)

ACPI Suspend Type

To decide which ACPI suspend mode to use.

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

Power Management Option

This category allows you to select 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	Allow 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.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, and 1 Hour.

Video Off Option

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

The choice: Always On, Suspend -> Off.

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.

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. (Default Instant-Off)

Run VGABIOS if S3 Resume

The choice: Auto, Yes, No. (Default Auto)

Ac Loss Auto Reset

The item is able to protect power lose phenomenon when system operation.

The choice: Off, On (Default Off).

Wakeup Event Detect

Phoenix- AwardBIOS CMOS Setup Utility
Wakeup Event Detect

PS2MS Wakeup Key Select	[By Button]	Item Help
Wakeup by On-Board LAN	[Disabled]	
Modem Ring Resume	[Disabled]	Menu Level ▶
RTC Alarm Resume	[Disabled]	
X Date (of Month)	0	
X Resume Time (hh : mm : ss)	0 :0 :0	

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

PS2MS Wakeup Key Select

The choice: Any Button, Left Button, Right Button (Default Any Button)

Wakeup by On-Board LAN

The choice: Disabled, Enabled (Default Disabled)

Modem Ring Resume

The choice: Disabled, Enabled (Default Disabled)

RTC Alarm Resume

The choice: Disabled, Enabled (Default Disabled)

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**eripheral **C**omponent **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

PNP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	Menu Level ▶
X IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
Assign IRQ For VGA	[Enabled]	
Assign IRQ For USB	[Enabled]	
*** PCI Express relative items ***		
Maximum ASPM supported	[L0s & L1]	
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

PNP OS Installed

The choice: Yes, No. (Default No)

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. (Default Disabled)

Resource Controlled By

BIOS can automatically configure the entire boot and plug and play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual. (Default Auto (ESCD))

IRQ Resources

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

Leave this field at "Disabled".

The choice: Enabled, Disabled. (Default Disabled)

Assign IRQ For VGA

To enable VGA IRQ assignation by selecting enabled.

The choice: Enabled, Disabled. (Default Enabled)

Assign IRQ For USB

To enable VGA IRQ assignation by selecting enabled.

The choice: Enabled, Disabled. (Default Enabled)

Maximum ASPM support

Control maximum level of ASPM supported on the given PCI Express links on the system.

The choice: L0, L0s, L1, L0s&L1. (Default L0s&L1)

Maximum Payload Size

Set maximum TLP payload size for the PCI Express devices.

The choice: 128, 256, 512, 1024, 2048, 4096. (Default 4096)

4.10 PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

		Item Help
Current System1 Temp.1	35℃/ 95℉	
Current CPU Temperature	42℃/107℉	
Current CPU Temp	46℃/114℉	Menu Level ▶
Sys Temp2 & CPU Temp throt	[Disabled]	
Sys Temp1 Warning/Throttle	[Disabled]	
Thermal Throttle	[50.0%]	
CPU Fan Warning below	[Disabled]	
CPU Fan Speed	5851 RPM	
System Fan Speed	0 RPM	
Voltage Tolerance	[Disabled]	
5V	5.060 V	
Vcore	0.970 V	
+3.3 V	3.378 V	
+12(V)	11.899 V	

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

Note:
Upon oblique number are always versatile when system operates.

Sys Temp2 & CPU Temp throt

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, 40℃/104℉, 45℃/113℉, 50℃/122℉. (Default Disabled)

Sys Temp1 Warning/Throttle

The choices : Disabled, 40℃/104℉, 45℃/113℉, 50℃/122℉. (Default Disabled)

Thermal throttle

The choices: 12.5%, 25%, 37.5%, 50.0%, 62.5%, 75.0%, 87.5%. (Default 50.0%)

CPU Fan Warning below

The choice: Disabled, 2000 RPM, 4000 RPM, 6000 RPM. (Default Disabled)

System Fan Warning below

The choice: Disabled, 2000 RPM, 4000 RPM, 6000 RPM. (Default Disabled)

Voltage Tolerance

The choice: Disabled, ±3%, ±5%, ±10%. (Default Disabled)

4.11 Frequency/Voltage Control

Phoenix- AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

CPU Clock Ratio	[15 X]	Item Help
Auto Detect PCI Clk	[Enabled]	
Spread Spectrum	[Disabled]	Menu Level ▶
CPU Host/AGP/PCI Clock	[Default]	

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

CPU Clock Ratio

Min=8, Max=15. Key in a DEC number: . (Default 15 X)

Auto Detect PCI Clk

The choice: Disabled, Enabled. (Default Enabled)

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate

The choice: Disabled, 0.20%, 0.25%, 0.35%.

CPU Host/AGP/PCI Clock

The choice: Default, 100/66/33MHz, 105/70/35MHz, 110/73/36MHz, 115/76/38MHz, 133/66/33MHz, 140/70/35MHz, 200/66/33Mhz, 210/70/35Mhz, 220/73/36Mhz, 230/76/38Mhz.

4.12 Default Menu

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

Load Fail-Safe Defaults

When you press <Enter> on this item you get 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.

Load Optimized Defaults

When you press <Enter> on this item you get 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.

4.13 Supervisor/User Password Setting

You can set either supervisor or user password, 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 you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

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 you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try 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 your computer.

You 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.

4.14 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 you turn your system off. The next time you boot your computer, the BIOS configures your 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 you 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-6010 running with success. As basic hardware installation has been addressed in Chapter 3, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

CPU Cooler Module Equipment

The Unified cooler module for C7 and CX700 chipset on WADE-6010, user must take care power connecter of cooler module, which fan is driving or not when system is operation. And avoid system temperature overheat to occur shoot down. You can refer chapter 3 at figure 3-2 to detect power shrouder.

ATX Power Setting

WADE-6010 can support AT and ATX power mode to operating.

Serial ATA Hardware and SATA RAID Installation

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; there are total two connectors, J5 and J6. 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. All you need to do is to plug in two cables and enable SATA in System BIOS. (The Serial ATA hard disk of installation, please see figure 5-1 as a below)

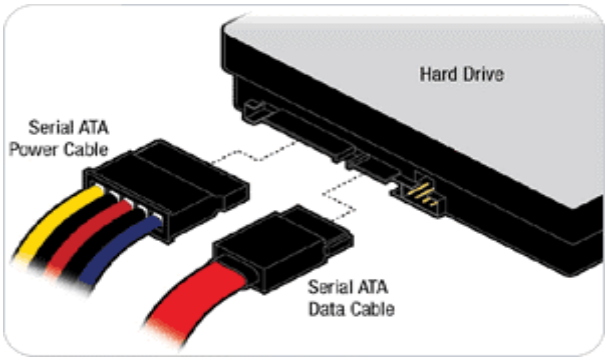
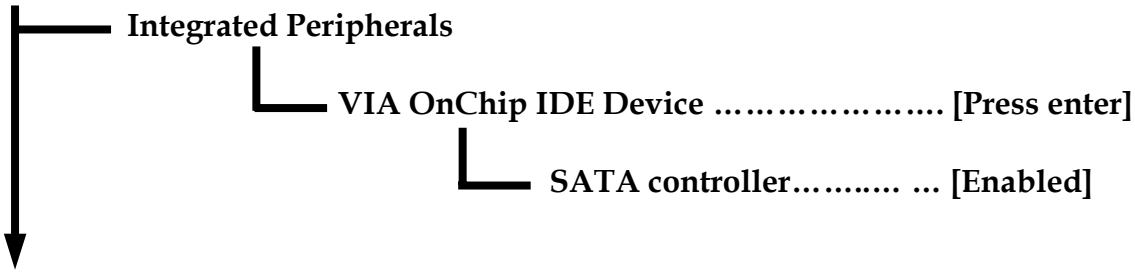


Figure 5-1

After done with the installation of SATA hardware, please enter system BIOS to enable Serial ATA function. Otherwise, Serial hardware won't be recognized. To enable SATA function, please see below demonstration as following:

System BIOS



5.2 Frequency Asking Questions

Q: I have one IDE hard disk and one SATA hard disk. How can I assign SATA Hard disk as First boot device?

A: After entering system BIOS, access Advanced BIOS Feature. And then press enter on Hard disk boot Priority. You will see the mode of your SATA hard disk. Select it as first boot device. Besides, please also notice. Every time, when your hard disk devices have been changed, system bios will ask you to re-setup Hard disk boot priority.

Q:I am using an ATA-66 (or 100) hard drive, how can I know that ATA-66 function is enabled?

A: You need to use the 80-pin ATA-66 IDE flat cable to have this function. During the Post phase, you can see ATA-66 (or 100) message while hard drive is being detected. Besides, after installing Microsoft series OS successfully, you also need to Install ATA-66/100 driver to active ATA-66/100 function.

Q: Does WADE-6010 support boot from LAN function? If it does, how and where can I enable it?

A: Yes!! WADE-6010 is able to support "boot from LAN" function, please enter "Power Management Setup", and then look for "Wakeup Event Detect" to press enter to setting default of "**Wakeup by On-board LAN**" at **Enabled**.

Q: After installing PCI Card, why isn't it working?

A: As a matter of fact, some PCI cards will occupy shadow memory, which might cause SBC or PCI malfunction. However, the best way to see if the problem relates to shadow memory or not, please kindly disable USB controller and on board LAN to release more shadow memory space.

To solve this problem, you might also check our download center if there is BIOS for this issue.
http://www.portwell.com.tw/download.asp

if you cannot find a BIOS or the BIOS on our website cannot solve your problem, please kindly contact Portwell Technical Support department for solving issue.
Portwell Technical Support Department e-mail: tsd@portwell.com.tw

5.3 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on AT or ATX power. CPU, CPU Fan, 240-pin DDRII SDRAM, keyboard, mouse, floppy drive, EIDE/SATA hard disk, printer, VGA connector, device 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 ensure that you have a successful start with WADE-6010, 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 floppy drive, COM1/COM2 ports, Parallel port, 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
Disable Parallel port to release IRQ #7
Disable PS/2 mouse to release IRQ #12,
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	COM 2
IRQ #4	COM 1
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.

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 – 9F7F	576K	[Available]
= Conventional memory ends at 638K =		
9F80 – 9FFF	2K	Extended Bios Area
A000 – AFFF	64K	VGA Graphics
B000 – B7FF	32K	Unused
B800 – BFFF	32K	VGA Text
C000 – CEFF	60K	Video ROM
CF00 – CFFF	4K	Unused
D000 – D7FF	32K	ROM
D800 – EFFF	96K	ROM
F000 – FFFF	64K	System ROM

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	SMARTDRV	System Timer
IRQ 1	SMARTDRV	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM 2
IRQ 4	System ROM	COM 1
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