

WADE-8066

Mini-ITX Board

User's Manual

Version 1.0

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Appendix A

Appendix B

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 featuring latest mobile chipset GME965, WADE-8066. WADE-8066 takes advantage of Intel® Core™ 2 Duo (Socket P) technologies and can support Merom processor like T7500 and Celeron M processor like Celeron M 550. The graphic media accelerator X3100 provides both fast video response time and high quality images via the two-channel memory architecture.

WADE-8066 supports dual display by VGA, DVI, LVDS and TV-Out. With its display-enriched interface, WADE-8066 can support various multimedia devices and suitable for Medical, KIOSK, Digital Signage and other multiple display applications.

WADE-8066 support SO-DIMM memory slot for DDR2 SDRAM up to 4GB, and comes with PS/2 Keyboard and Mouse, 1 x RS232/422/485, 1 x RS232, 2 x SATA and 2 x Gigabit Ethernet, 8 x USB2.0 ports. It also support CompactFlash Socket for embedded application usage. Moreover, WADE-8066 can support either two PCI expansion slots via riser or one PCI expansion and one PCI-E x 4 expansion via riser card.

1.2 Check List

The WADE-8066 package should cover the following basic items

- ✓ One WADE-8066 Mini ITX Main Board
- ✓ Two Serial ATA 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 Core 2 Duo and Intel Celeron M processor (Socket P)
 - CPU bus clock: 800/533 MHz
- **Chipset**
Intel® GME965 & ICH8M-E
- **Main Memory**
 - Support dual-channel & signal channel DDR2 memory interface
 - Up to 4GB DDR2 667 SDRAM on two 200pin DIMM sockets
- **System BIOS**
AWARD BIOS
- **Expansion Interface**
Two PCI expansion slots via riser or one PCI expansion and one PCI-E x 4 expansion via riser card.
- **SATA Interface**
Two SATA ports
- **Serial Ports**
Support two serial ports, one RS-232, one RS-232 / 422 / 485 selectable
- **IR Interface**
IrDA 1.0
- **Parallel Port**
N / A
- **USB Interface**
Support eight USB (Universal Serial Bus) ports (four at rear, four on-board for internal 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 of Line-in / Line-out / MIC
- **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 GME965 Integrated GMA 3000 Graphics device
 - Intel DVM T 4.0 supports up to 384MB video memory

- **On-board Ethernet LAN**
Dual Gigabit Ethernet (10 / 100 / 1000 Mbits / sec) LAN port
- **High Driving GPIO**
Onboard programmable 16-bit Digital I / O interface
- **Cooling Fans**
Support one 3-pin power connector for CPU cooler and 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:**
- **Configuration:**

System Configuration	
CPU Type	Intel®Mobile Core 2 Duo T7500 2.2GHz(200*11) L2:4068K
SBC BIOS	Portwell.Inc WADE-8066 BIOS Rev.:R2.10.W1(12212007)
Memory	Apacer DDR2 512MB PC4300 (SAMSUNG K4T510830B-ZCD5)
VGA Card	Onboard Mobile Intel®965 Express Chipset
VGA Driver	Intel®965 Express Chipset Family Corporation Version
LAN Card	Onboard Marvell Yukon 88E8053 Gigabit Network Connection
LAN Driver	Generic Marvell Yukon 88E8053 based Ethernet Controller
LAN Card	Onboard Intel®82566MM Gigabit Network Connection
LAN Driver	Intel®82566MM Gigabit Network Connection Version 9.7.22.0
Audio Card	Onboard Realtek ALC883 Audio
Audio Driver	Realtek Audio Semiconductor Corp Version 5.10.0.5366
Chip Driver	Intel®Chipset Device Software Production Version 8.0.1.1002
USB 2.0 Driver	Intel®ICH8 Family USB2 Enhanced Host Controller Version
SCSI Card	AHA-2940UW
SCSI HDD	Seagate ST318453LW
SATA HDD	Seagate ST3120813AS 120G
Compact Flash	Apacer AP-CF128B-Steno
SATA	Pioneer DVD-227A
Power Supply	Portwell.Inc Orion 330ATX

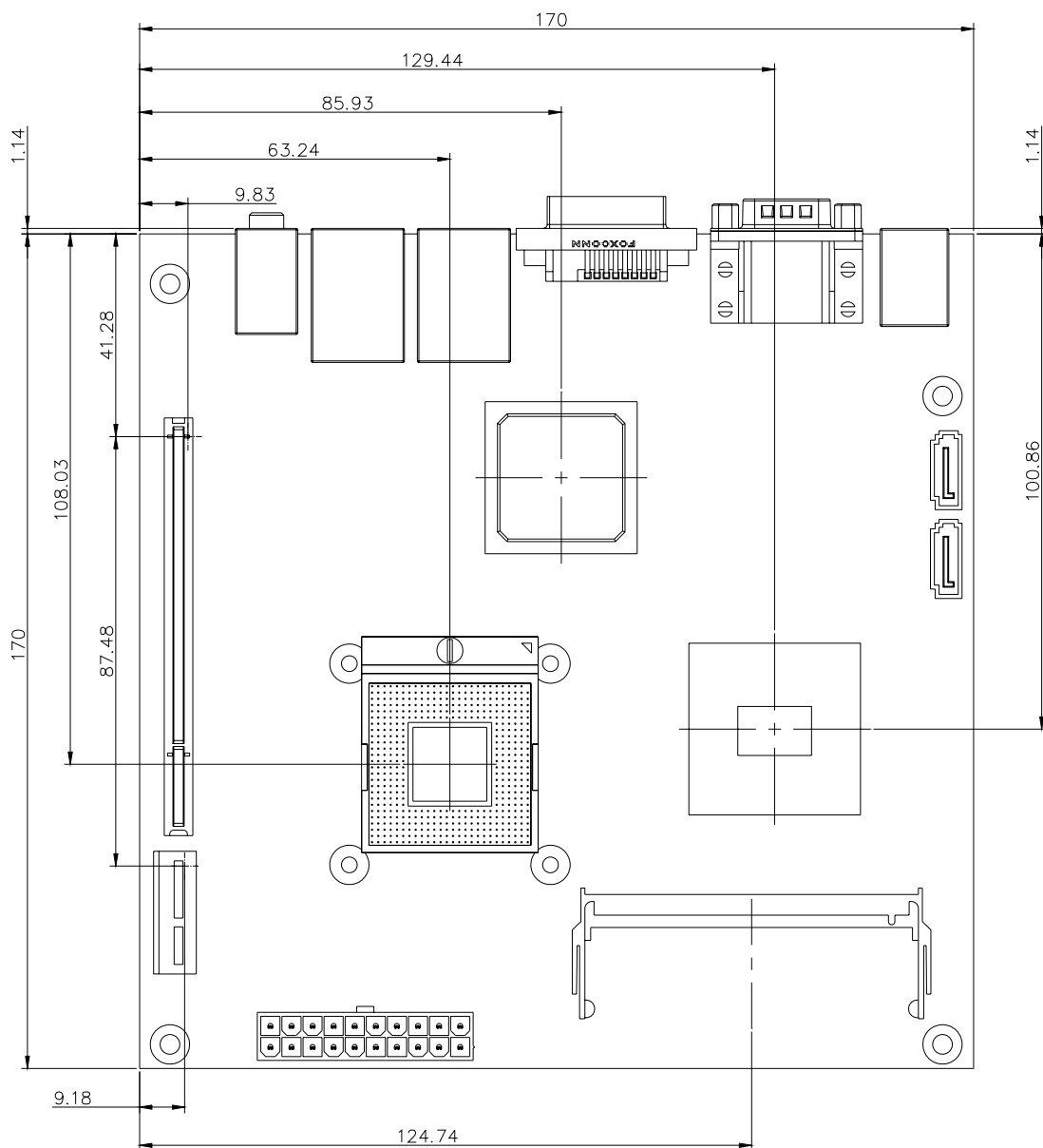
Programs for loading both CPU & VGA: Run Burning Test V4.0.
RUN time: 10 / 30 Minutes.

Item	Power ON	Enter OS	Full Loading 10Min	Full Loading 30Min
System +12V	2.59A	2.46A	2.56A	2.55A
System +5V	2.96A	2.85A	2.95A	2.96A
System +3.3V	1.31A	1.29A	1.30A	1.32A

Item	Power ON	Enter OS	Full Loading 10Min	Full Loading 30Min
System+Device	3.92A	3.93A	3.91A	3.95A
System+Device	2.99A	3A	3.10A	3.12A

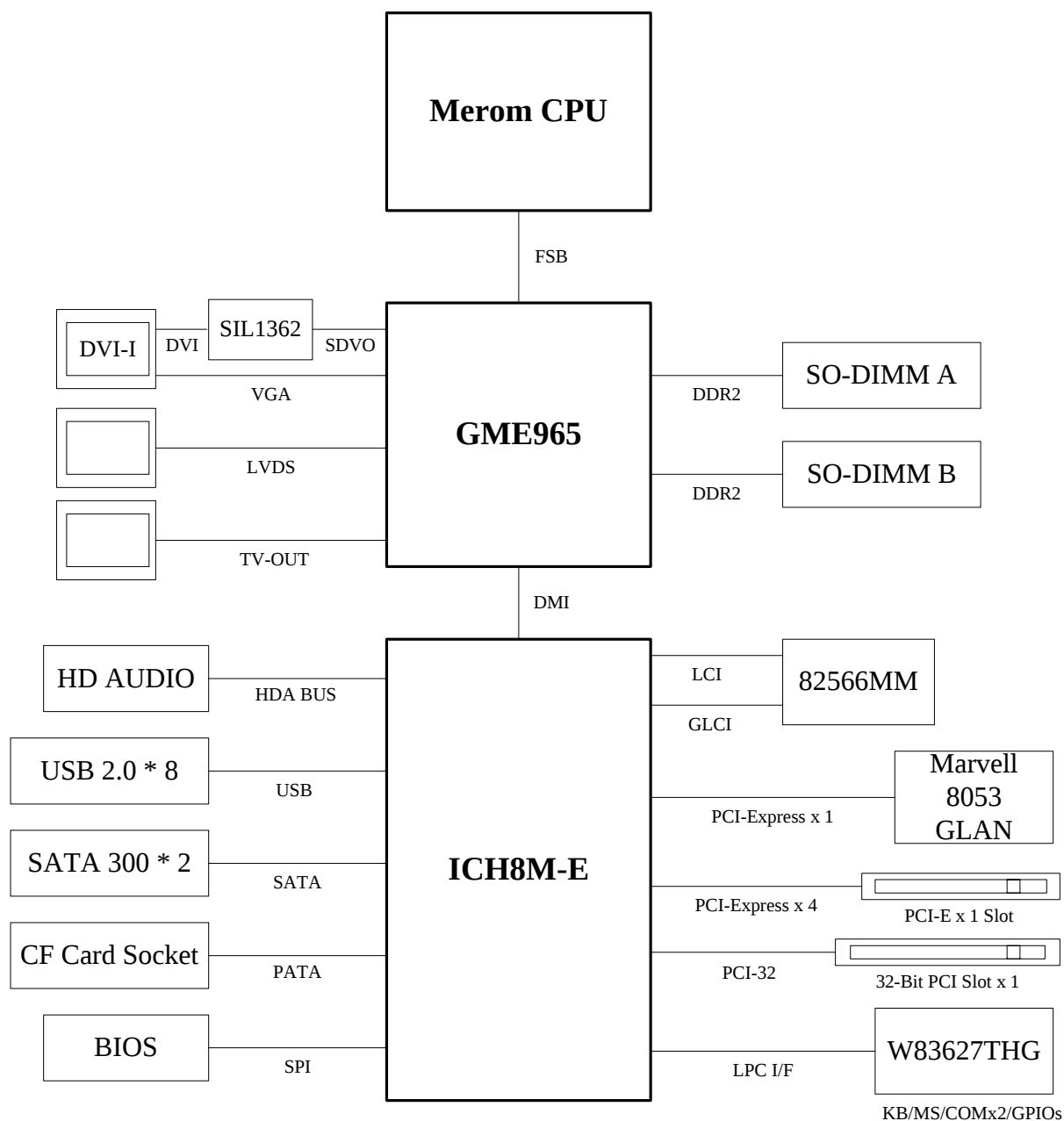
- **Operating Temperature:**
0°C ~ 55°C
- **Storage Temperature:**
-20°C ~ 80°C
- **Relative Humidity:**
5% ~ 90%, non-condensing

1-5



1.4 System Architecture

All of details operating relations are shown in WADE-8066 series System Block Diagram.



WADE-8066 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

In order to customize WADE-8066's features for users, 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 and Figure 2-2 for the Jumper locations.

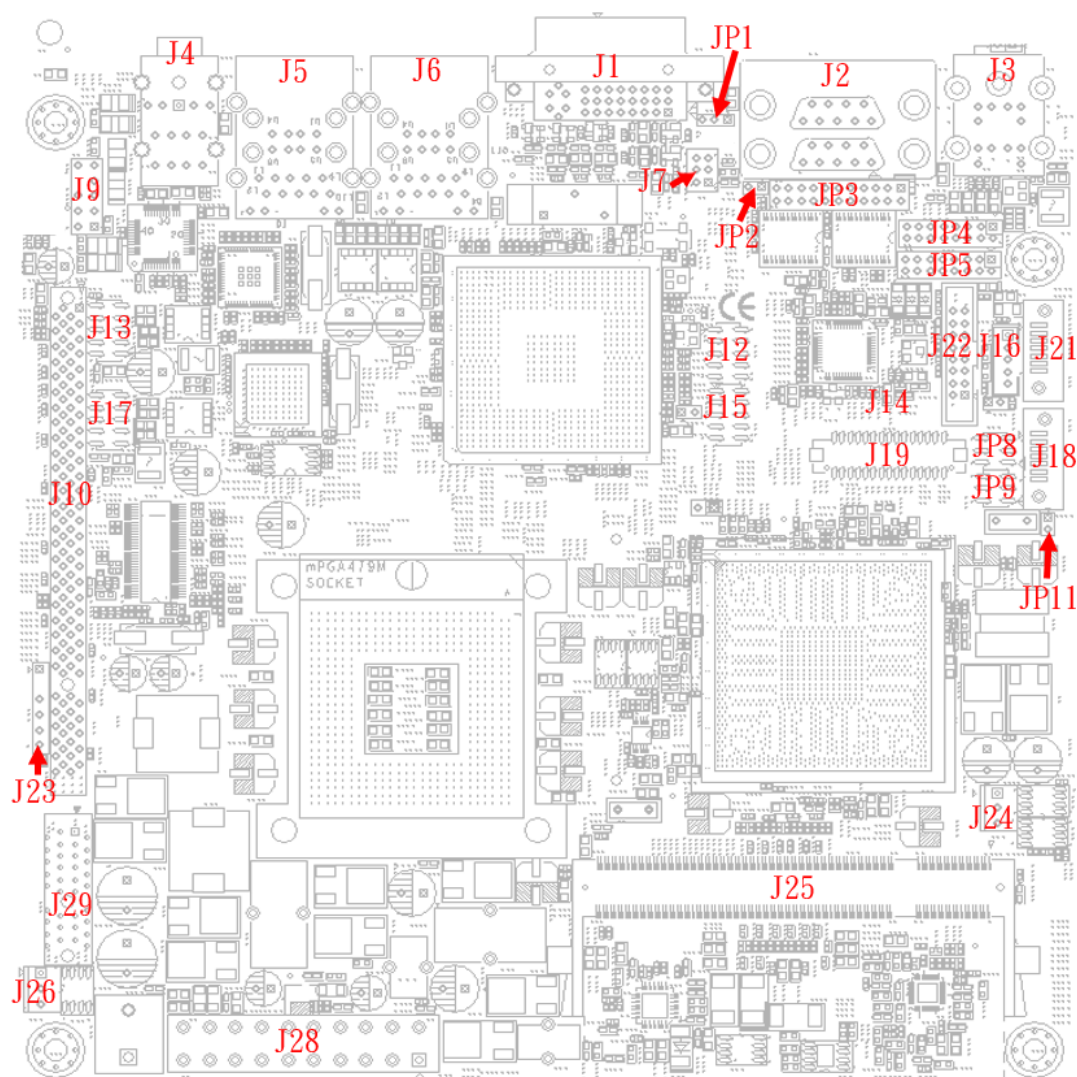


Figure 2-1 WADE-8066 Top-side Jumper and Connector Locations

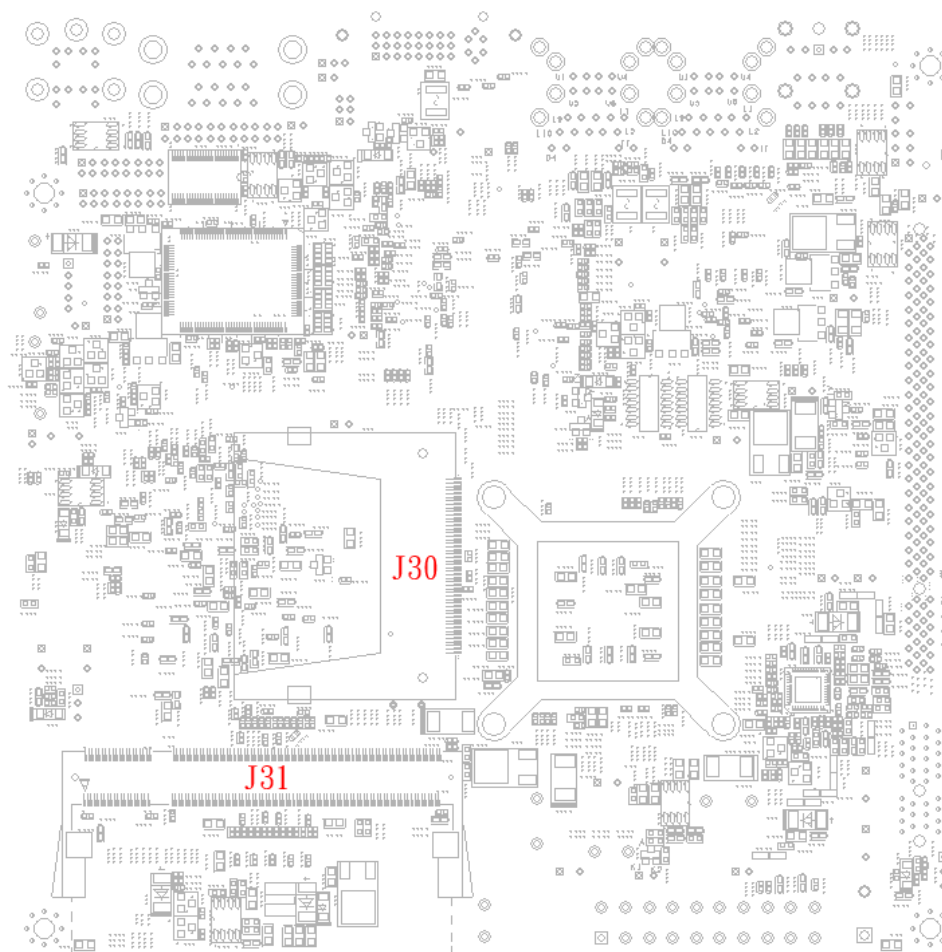
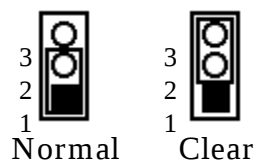


Figure 2-2 WADE-8066 Bottom-side Connector Locations

JP1: CMOS Normal / Clear Jumper



JP1	Function
1-2 Short	Clear CMOS Disable (Normal) ★
2-3 Short	Clear CMOS Enable (Clear)

JP3: COM1(J2 Bottom) Interface Selection

21 19 17 15 13 11 9 7 5 3 1



RS-232

22 20 18 16 14 12 10 8 6 4 2

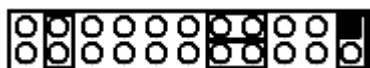
21 19 17 15 13 11 9 7 5 3 1



RS-422

22 20 18 16 14 12 10 8 6 4 2

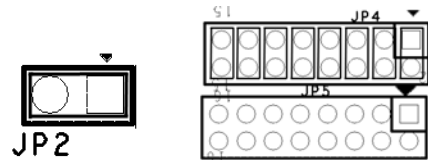
21 19 17 15 13 11 9 7 5 3 1



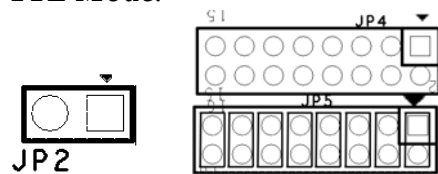
RS-485

22 20 18 16 14 12 10 8 6 4 2

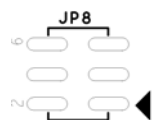
JP3	Function
5-6,9-11,10-12,15-17,16-18 Short	RS-232 ★
3-4,7-9,8-10,13-15,14-16,21-22 Short	RS-422
1-2,7-9,8-10,19-20 Short	RS-485

JP2, JP4, JP5: COM2(J2 Top) RS232/TTL Interface Selection***RS-232 Mode: ★***

JP2	JP4	JP5
1-2 Short	1-2,3-4,5-6,7-8,9-10,11-12,13-14,15-16 Short	All Open

TTL Mode:

JP2	JP4	JP5
Open	All Open	1-2,3-4,5-6,7-8,9-10,11-12,13-14,15-16 Short

JP8: LVDS Panel Logic/LCD Drive Voltage Selection

JP8	Function
1-3 Short	3.3 V
3-4 Short	12 V
3-5 Short	5 V ★

JP9: LVDS Panel Backlight Unit Ignition Logic/Voltage Selection

JP9	Function
1-3, 2-4 Short	5 V, Active high ★
1-3, 4-6 Short	12 V, Active high
3-5, 2-4 Short	5 V, Active low
3-5, 4-6 Short	12 V, Active low

JP11: Auto power on jumper

JP11	Function
1-2 Short	System boots up automatically with jumper populated after PSU powered.
1-2 Open	System requires power button pushed to boot up without jumper populated. ★

2.2 Connector Allocation

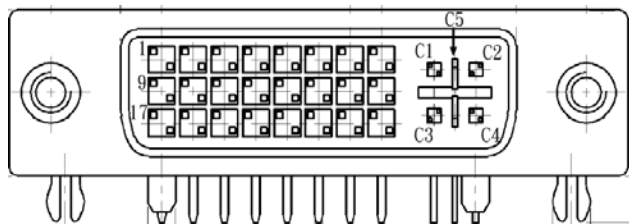
I/O peripheral devices are connected to the interface connectors.

Connector Function List

Connector	Function	Remark
J1	DVI-I connector (DVI + VGA output)	
J2	COM port 1/2 (bottom: COM1; top: COM2)	
J3	PS/2 keyboard mouse connector	
J4	Audio jack (blue: Line in; green: Line out; pink: Mic in)	
J5	USB 1/7 connector; LAN RJ-45 connector 2	
J6	USB 0/6 connector; LAN RJ-45 connector 1	
J7	TV-Out pin header	
J9	Front I/O audio panel pin header	
J10	PCI-32 slot	
J12	8-bit GPIO pin header 1	
J13	USB 3/9 pin header	
J15	8-bit GPIO pin header 2	
J16	LVDS panel backlight unit connector	
J17	USB 2/8 pin header	
J18	SATA port 1	
J19	LVDS panel signal connector	
J21	SATA port 2	
J22	Front panel control and LED / Buzzer connector	
J23	Infrared transmission (IrDA) pin header	
J24	System fan connector	
J25	DDR2 SO-DIMM socket 1	
J26	CPU fan connector	
J27	+12V CPU power connector	
J28	ATX power connector	
J29	Specified PCI Express x4 connector (Not support common PCI Express x1 cards)	
J30	Compact flash card socket	
J31	DDR2 SO-DIMM socket 2	

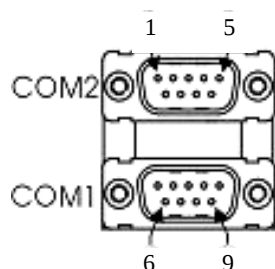
Pin Assignments of Connectors

J1: DVI-I connector



PIN No.	Signal Description	PIN No.	Signal Description
1	TMDS data2-	2	TMDS data2+
3	TMDS data2 / 4 shield	4	TMDS data4-
5	TMDS data4+	6	DDC clock
7	DDC data	8	Analog vertical sync
9	TMDS data1-	10	TMDS data1+
11	TMDS data1 / 3 shield	12	TMDS data3-
13	TMDS data3+	14	+5V power
15	Ground	16	Hot plug detect
17	TMDS data0-	18	TMDS data0+
19	TMDS data0 / 5 shield	20	TMDS data5-
21	TMDS data5+	22	TMDS clock shield
23	TMDS clock+	24	TMDS clock-
C1	Analog red	C2	Analog green
C3	Analog blue	C4	Analog horizontal sync
C5	Analog ground		

J2: COM1/COM2 Serial Port Connector



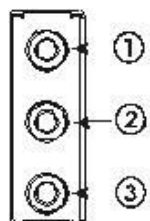
-COM1

PIN No.	Signal Description		
	RS-232	RS-422	RS-485
1	DCD (Data Carrier Detect)	TX-	DATA-
2	RXD (Receive Data)	TX+	DATA+
3	TXD (Transmit Data)	RX+	NC
4	DTR (Data Terminal Ready)	RX-	NC

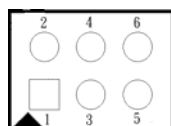
5	GND (Ground)	GND	GND
6	DSR (Data Set Ready)	NC	NC
7	RTS (Request to Send)	NC	NC
8	CTS (Clear to Send)	NC	NC
9	RI (Ring Indicator)	NC	NC

-COM2

PIN No.	Signal Description
RS-232	
1	DCD (Data Carrier Detect)
2	RXD (Receive Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND (Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator) or +12V

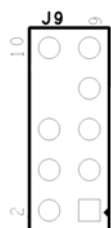
J4: Audio Jack

PIN No.	Signal Description
1 (Blue)	Line In
2 (Green)	Line Out1
3 (Pink)	Mic1

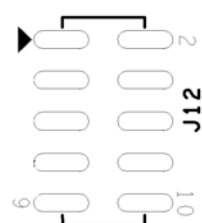
J7: TV-out pin header

PIN No.	Signal Description
1	Ground
2	COMP/B
3	Y / G

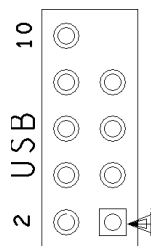
4	C / R
5	NC
6	NC

J9: Front I/O audio panel pin header

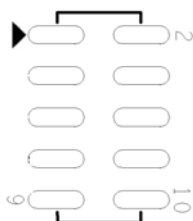
PIN No.	Signal Description
1	Mic2-left
2	Audio ground
3	Mic2-right
4	NC
5	Line out2-right
6	NC
7	NC
9	Line out2-left
10	NC

J12: 8-bit GPIO pin header 1

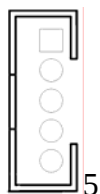
PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO10	2	GPIO20
3	GPIO11	4	GPIO21
5	GPIO12	6	GPIO22
7	GPIO13	8	GPIO23
9	Ground	10	+5V

J13: USB 3/9 pin header

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	2	+5V
3	DATA-	4	DATA-
5	DATA+	6	DATA+
7	Ground	8	Ground
		10	NC

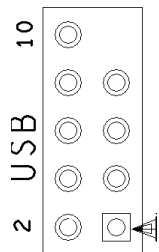
J15: 8-bit GPIO pin header 2

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO14	2	GPIO24
3	GPIO15	4	GPIO25
5	GPIO16	6	GPIO26
7	GPIO17	8	GPIO30
9	Ground	10	+5V

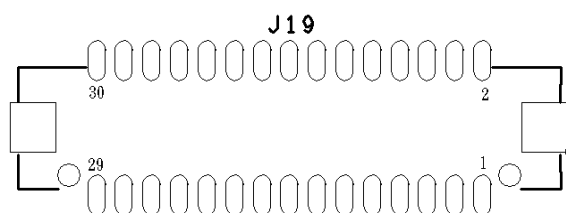
J16: LVDS panel backlight unit connector

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

4	Ground
5	+5V

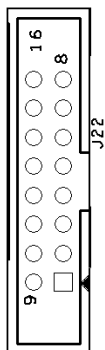
J17: USB 2/8 connector

PIN No.	Signal Description	PIN No.	Signal Description
1	+5V	2	+5V
3	DATA-	4	DATA-
5	DATA+	6	DATA+
7	Ground	8	Ground
		10	NC

J19: LVDS panel signal connector

PIN No.	Signal Description	PIN No.	Signal Description
1	LVDS channel A data0+	2	LVDS channel A data0-
3	LVDS channel A data1+	4	LVDS channel A data1-
5	LVDS channel A data2+	6	LVDS channel A data2-
7	LVDS channel A data3+	8	LVDS channel A data3-
9	LVDS channel A clock+	10	LVDS channel A clock-
11	LVDS channel B data0+	12	LVDS channel B data0-
13	LVDS channel B data1+	14	LVDS channel B data1-
15	LVDS channel B data2+	16	LVDS channel B data2-
17	LVDS channel B data3+	18	LVDS channel B data3-
19	LVDS channel B clock+	20	LVDS channel B clock-
21	LVDS DDC data *	22	LVDS DDC clock *
23	Ground	24	Panel backlight brightness control
25	Ground	26	Ground
27	Power depends on JP8	28	Power depends on JP8
29	NC	30	Power depends on JP8

* DDC: Display Data Channel. EDID support for flat panel display.

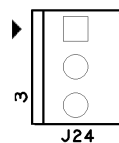
J22: Front panel control and LED/Buzzer connector

PIN No.	Signal Description
1	Buzzer (+)
2	NC
3	NC
4	Buzzer (-)
5	Power button (-)
6	Power button (+)
7	Reset button (+)
8	Reset button (-)
9	Power LED (+) +5V with 470-ohm pull-up
10	NC
11	Power LED (-)
12	Key lock (+)
13	Key lock (-)
14	NC
15	HDD LED (+) +5V with 1k-ohm pull-up
16	HDD LED (-)

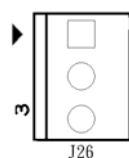
J23: Infrared transmission (IrDA) pin header

PIN No.	Signal Description
1	+5V
3	IRRX Infrared Transmitter Input
4	Ground
5	IRTX Infrared Transmitter Output.

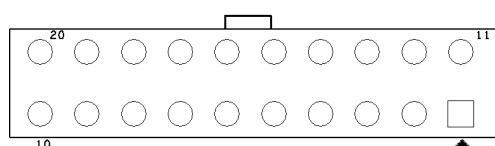
6	NC
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J24: System fan connector

PIN No.	Signal Description
1	Ground
2	Fan speed control (voltage control)
3	Fan speed sense

J26: System fan connector

PIN No.	Signal Description
1	Ground
2	Fan speed control (voltage control)
3	Fan speed sense

J28: ATX power connector

PIN No.	Signal Description	PIN No.	Signal Description
1	+3.3V	2	+3.3V
3	Ground	4	+5V
5	Ground	6	+5V
7	Ground	8	PWR_OK
9	+5V stand by	10	+12V
11	+3.3V	12	-12V
13	Ground	14	PS_ON#
15	Ground	16	Ground
17	Ground	18	-5V
19	+5V	20	+5V

Chapter 3

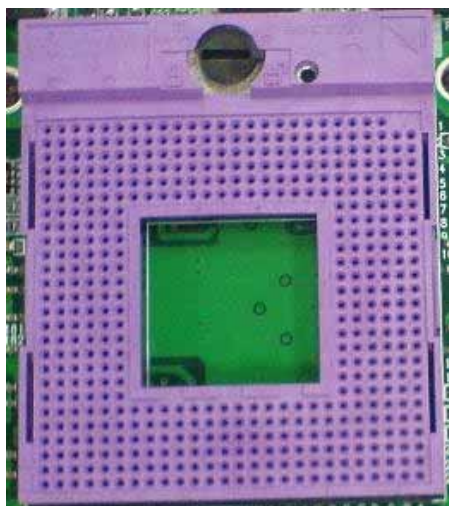
System Installation

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

3.1 Intel® mPGA 478MN CPU

Installing Intel mPGA478MN CPU

- 1) Lift the handling lever of CPU socket outwards and upwards to the other end.

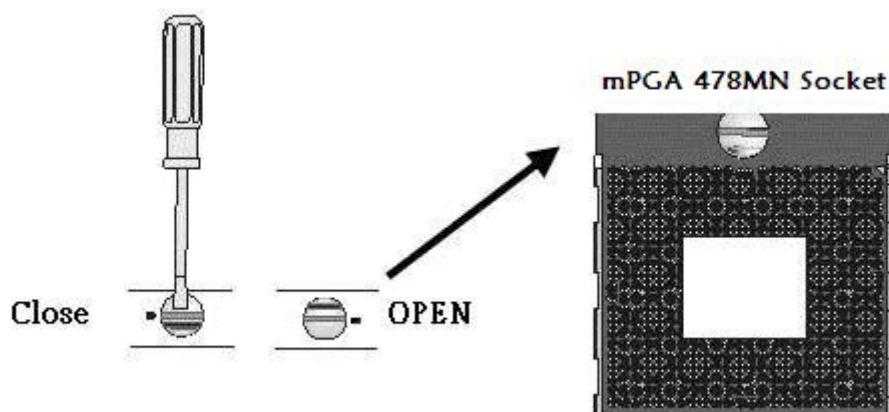


- 2) Align the processor pins with pinholes on the socket. Make sure that the notched corner or dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly. You need to check and rebuild the CPU pin uniformly.



PIN 1

- 3) Push down the lever to lock processor chip into the socket once CPU fits.



- 4) Follow the installation guide of cooling fan or heat sink to mount it on CPU surface and lock it on the mPGA478MN socket.

Removing CPU

- 1) Unlock the cooling fan first.
- 2) Lift the lever of CPU socket outwards and upwards to the other end.
- 3) Carefully lifts up the existing CPU to remove it from the socket.
- 4) Follow the steps of installing a CPU to change to another one or place handling bar to close the opened socket.

Configuring System Bus

WADE-8066 will automatically detect the CPU FSB 533/800MHz used. CPU speed of Intel Core 2 Duo Processor for Mobile and Celeron M can be detected automatically.

3.2 Main Memory

WADE-8066 provide 2 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 4GB 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.

Dual Channel DDR2 SO-DIMM

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.

CPU FSB	Bandwidth
800MHz	6.4GB/s
533MHz	4.2GB/s

Memory Frequency	Dual Channel DDR Bandwidth	Single Channel DDR Bandwidth
667MHz	10.2 GB/s	5.3GB/s
533 MHz	8.5 GB/s	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-8066 supports different memory frequencies depending on the CPU front side bus and the type of DDR2 SO-DIMM.

CPU FSB	Memory Frequency
800MHz	667 / 533MHz
533 MHz	533MHz

3.3 Installing the Single Board Computer

To install your WADE-8066 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-8066 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/ Intel ME/ RAID drivers.



3.3.1 Chipset Component Driver

The chipset on WADE-8066 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 / Server 2003, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in WADE-8066 CD-title.



3.3.2 Intel Integrated Graphics GMCH Chip

Using Intel® GME965 with Media Accelerator (GMA) 3000 High performance graphic integrated chipset is aimed to gain an outstanding graphic performance. Shared 64 accompany it to 160MB system DDR-SDRAM with Total Graphics Memory. This combination makes WADE-8066 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 or PCI Express by 1 VGA card can take over the system display.

Drivers Support

Please find Springdale GMCH driver in the WADE-8066 CD-title. Drivers support Windows-2000, Windows XP.



3.3.3 Intel Gigabit Ethernet Controller

Drivers Support

Please find Intel 82566MM LAN1 driver in /Ethernet directory of WADE-8066 CD-title. The drivers support Windows 2000 /XP / Server 2003.

Intel Ethernet Driver

Install for Windows 2000 /XP System

LED Indicator (for LAN1 status)

WADE-8066 provides two LED indicators to report Intel 82566MM Gigabit Ethernet interface status. Please refer to the table below as a quick reference guide.

82566MM	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

3.3.4 Marvell Gigabit Ethernet Controller

Drivers Support

Please find Marvell 88E8053 LAN2 driver in /Ethernet directory of WADE-8066 CD-title. The drivers support Windows 2000 /XP / Server 2003 / Vista x86 & 64 Multi.

Marvell Yukon Gigabit Ethernet Driver

Install for Windows 2000 /XP System

LED Indicator (for LAN2 status)

WADE-8066 provides two LED indicators to report Marvell 88E8053 Gigabit Ethernet interface status. Please refer to the table below as a quick reference guide.

88E8053	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 ALC883 Audio driver form WADE-8066 CD-title. The drivers support Windows 2000 / XP / Server 2003.



3.3.6 RAID Device

Drivers Support

Please find Intel ICH8M-E driver of WADE-8066 CD-title. The drivers support Vista / Vista x32 / Vista x64 / WindowXP System.



Installing Serial ATA hard disks

The WADE-8066 supports Serial ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install the SATA hard disks for a RAID configuration:

1. Install the SATA hard disks into the drive bays.
2. Connect the SATA signal cables.
3. Connect a SATA power cable to the power connector on each drive.

Intel RAID configurations

This WADE-8066 supports RAID 0, RAID 1 and Intel® Matrix Storage configurations for Serial ATA hard disk drives through the Intel ICH8M-E Southbridge chip.

RAID configurations

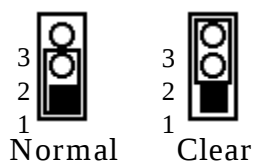
RAID 0 (Data striping) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

RAID 1 (Data mirroring) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

Intel Matrix Storage Manager. The Intel® Matrix Storage technology supported by the ICH8M-E chip allows you to create a RAID 0 and a RAID 1 set using only two identical hard disk drives. The Intel® Matrix Storage technology creates two partitions on each hard disk drive to create a virtual RAID 0 and RAID 1 sets. This technology also allows you to change the hard disk drive partition size without losing any data.

3.4 Clear CMOS Operation

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



JP1	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-8066 allows users to 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 W83627THG 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)

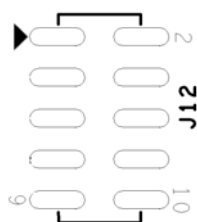
Value of **Time-out Value Register**:

- 1) 0x00 -- Time-out Disable
- 2) 0x01~0xFF -- Value for counting down

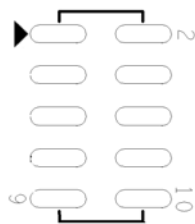
3.6 GPIO

The WADE-8066 provides 16 input/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.

The GPIO ports are located on J12 and J15 shown as follows. Please note: **DO NOT SHORT-CIRCUIT PIN 9 AND 10 OF J12 AND J15!**

J12: 8-bit GPIO pin header 1

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO10(GP10 of W83627THG)	2	GPIO20(GP20 of W83627THG)
3	GPIO11(GP11 of W83627THG)	4	GPIO21(GP21 of W83627THG)
5	GPIO12(GP12 of W83627THG)	6	GPIO22(GP22 of W83627THG)
7	GPIO13(GP13 of W83627THG)	8	GPIO23(GP23 of W83627THG)
9	Ground	10	+5V

J15: 8-bit GPIO pin header 2

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO14(GP14 of W83627THG)	2	GPIO24(GP24 of W83627THG)
3	GPIO15(GP15 of W83627THG)	4	GPIO25(GP25 of W83627THG)
5	GPIO16(GP16 of W83627THG)	6	GPIO26(GP26 of W83627THG)
7	GPIO17(GP17 of W83627THG)	8	GPIO30(GP30 of W83627THG)
9	Ground	10	+5V

All 16 GPIO pins come from W83627THG, Winbond. GP10~GP17, GP20~GP26 and GP30 of W83627THG are connected to J12 and J15. GP10~GP17 are CMOS level Schmitt-triggered bi-directional pins and open-drain outputs with 12 mA sink capability. GP20~GP26 and GP20 are TTL level Schmitt-triggered bi-directional pins and open-drain outputs with 12 mA sink capability.

Users can refer to W83627THG, Winbond datasheet to 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.

Chapter 4

BIOS Setup Information

WADE-8066 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-8066 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 if you want to run SETUP” appears, press 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-8066 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 ▶ 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 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)	Tue, Feb 19 2008	Item Help
Time (hh:mm:ss)	10 : 20 : 30	
► IDE Channel 0 Master	[ST380817AS]	Menu Level ►
► IDE Channel 0 Slave	[None]	
► IDE Channel 1 Master	[None]	Change the day, month, year and century
► IDE Channel 1 Slave	[None]	
Video	[EGA/VGA]	
Base Memory	640K	
Extended Memory	514048K	
Total Memory	515072K	
↑↓→←: 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	Options are in its sub menu	Press <Enter> to enter next page for detail hard drive settings
IDE Channel 0 Slave		
IDE Channel 1 Master		
IDE Channel 1 Slave		
Video	EGA / VGA CGA 40 CGA 80 MONO	Select the default video device
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

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]	Menu Level ▶ To auto-detect the HDD's size, head ... on this channel
Access Mode	[Auto]	
Capacity	80 GB	
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

		Item Help
► CPU Feature	[Press Enter]	Menu Level ►
► Hard Disk Boot Priority	[Press Enter]	
Virus Warning	[Disabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[LS120]	
Boot Other Device	[Enabled]	
Boot up NumLock Status	[On]	
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]	
Summary Screen Show	[Enabled]	
↑↓→←: 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

		Item Help
C1E Function	[Auto]	Menu Level ► CPU C1E Function Select
Execute Disabled Bit	[Enabled]	
Virtualization Technology	[Enabled]	
Core Multi-Processing	[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.

Virtualization Technology

When enable, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology

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, Legacy LAN, B02 D00 Yukon P and Disabled. (請修改字串)

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 be selected.

The choice: Disabled, Enabled.

※Typematic Rate (Chars/sec)

The rate at which a 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.

Summary Screen Show

Show summary screen

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 ***		
PEG Force X1	[Disabled]	
On-Chip Frame Buffer Size	[8MB]	
DVMT Mode	[DVMT]	
DVMT/FIXED Memory Size	[128MB]	
Boot Display	[VBIOS Default]	
Boot Scaling	[Auto]	
Panel Number	[1]	
↑↓→←: 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]	Menu Level ▶
PCI Express Port 3	[Auto]	
PCI Express Port 4	[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		

PEG Force X1

The choice: Enabled, Disabled.

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

DVMT/FIXED Memory Size

The choice: 128MB only.

Boot Display

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

Panel Scaling

The choice: Auto, On, Off.

Panel Number

The choice: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 (請修改)

4.7 Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility Integrated Peripherals

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

Phoenix- AwardBIOS CMOS Setup Utility OnChip IDE Device

IDE HDD Block Mode	[Enabled]	Item Help	
IDE DMA transfer access	[Enabled]		
*** On-Chip Serial ATA Setting ***		Menu Level ► 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.	
SATA Mode	[IDE]		
On-Chip Serial ATA	[Combined Mode]		
*** On-Chip PATA Setting ***			
On-Chip Primary PCI IDE	[Enabled]		
IDE Primary Master PIO	[Auto]		
IDE Primary Slave PIO	[Auto]		
IDE Primary Master UDMA	[Auto]		
IDE Primary Slave UDMA	[Auto]		
On-Chip Secondary PCI IDE	[Enabled]		
IDE Secondary Master PIO	[Auto]		
IDE Secondary Slave PIO	[Auto]		
IDE Secondary Master UDMA	[Auto]		
IDE Secondary Slave UDMA	[Auto]		
↑↓→←: 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.

SATA Mode

The choice: IDE, RAID, AHCI.

On-Chip Serial ATA

[Disabled]: Disabled SATA Controller. [Auto]: Auto arrange by BIOS. [Combined Mode]: PATA and SATA are combined. Max. of 2 IDE drives in each channel. [Enhanced Mode]: Enable both SATA and PATA. Max. of 5 IDE drives are supported. [SATA Only]: SATA is operating in legacy mode. (無此選項，請修改說明)

The choice: Disabled, Combined Mode, Enhanced Mode.

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.

SuperIO DevicePhoenix- AwardBIOS CMOS Setup Utility
SuperIO Device

Onboard Serial Port 1	[3F8/IRQ4]	Item Help
Onboard Serial Port 2	[2F8/IRQ3]	Menu Level ▶
UART Mode Select	[Normal]	
X RxD , TxD Active	Hi , Lo	
X IR Transmission Delay	Enable	
X UR2 Duplex Mode	Half	
XUse IR Pins	IR-Rx2Tx2	
PWRON After PWR-Fail	[Off]	
↑↓→←: 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.

Use IR Pins

The available choices are IR-Rx2Tx2 / Rx2D2, Tx2D2.

The choice: IR-Rx2Tx2 / Rx2D2, Tx2D2.

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

The choice: Off, On, Former-Sts

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.

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

[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 Operation Mode

Auto decides USB device operation mode. [High speed]: If USB device was high speed device, then it operated on high speed mode. If USB device was full/low speed device, then it operated on full/low speed mode; [Full/Low speed]: All of USB device operated on Full/Low speed mode.

The choice: High Speed, Full/Low Speed.

USB Keyboard/Mouse Function

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

The choice: Disabled, Enabled.

USB Storage Function

[Enabled] or [Disabled] Legacy support of USB **USB** Mass Storage. **(請移除USB)**

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]	
Wake-Up by PCI card	[Disabled]	
Power On by Ring	[Disabled]	
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: S3 (STR) only.

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.

Wake-Up By PCI card

The choice: Disabled, Enabled.

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.

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	[128]	
↑↓→←: 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 128.

4.10 PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility PC Health Status

CPU Warning Temperature	[Disabled]	Item Help
Current System Temp	36°C / 96°F	Menu Level ▶
Current CPU Temperature	43°C / 109°F	
System FAN	0 RPM	
CPU FAN	6683RPM	
Vcore	1.21 V	
+12 V	12.03 V	
+1.8 V	1.85 V	
+3.3 V	3.37 V	
+ 5 V	5.07 V	
VBAT(V)	3.31 V	
5VSB	5.02 V	
Smart Fan(CPU) Temperature [Disabled]		
X Fan Tolerance Value	5	

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

CPU Warning Temperature

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 work with “ACPI” power management and “S3 (STR)” suspend type.

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

Smart System / CPU Fan Temp.

The choices : Disabled, 40°C / 104°F, 45°C / 113°F, 50°C / 122°F.

Smart Fan Tolerance Value

The choices: 0~5.

4.11 Frequency/Voltage Control

Phoenix- AwardBIOS CMOS Setup Utility Frequency / Voltage Control

Auto Detect PCI Clk	[Enabled]	Item Help
Spread Spectrum	[Disabled]	
CPU Host / SRC / PCI Clock	[Default]	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		

Auto Detect PCI Clk

The choice: Enabled, Disabled.

Spread Spectrum

This item allows user to enable / disable the spread spectrum modulate.

The choice: Enabled, Disabled.

CPU Host/ SRC/ PCI Clock

The choice: Default, 100 / 100 / 33MHz, 133 / 100 / 33 MHz, 166 / 100 / 33 MHz,
200 / 100 / 33MHz, 266 / 100 / 33 MHz, 333 / 100 / 33 MHz.

4.12 Default Menu

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

Load Fail-Safe Defaults

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.

Load Optimized Defaults

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.

4.13 Supervisor/User Password Setting

Either supervisor or user password can be setup, or both of them. 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.

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 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.

4.14 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 system off. During subsequent 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

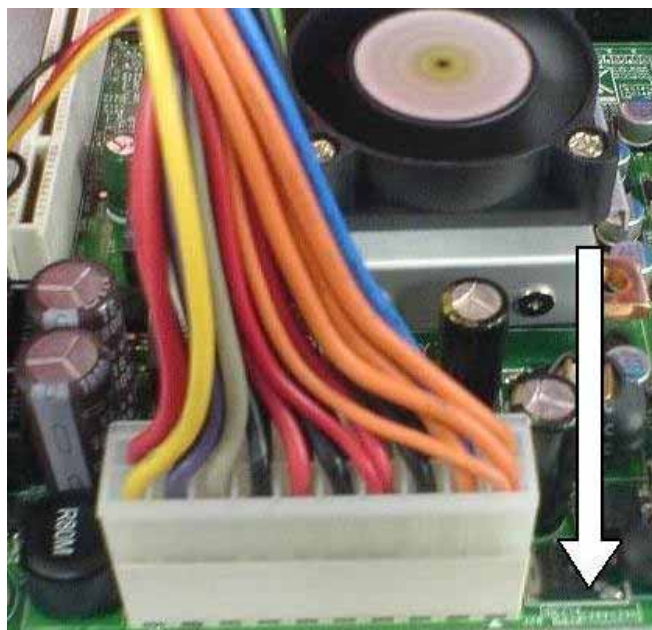
Troubleshooting

This chapter provides a few useful tips to quickly get WADE-8066 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

ATX Power Setting

Unlike other Single board computer, WADE-8066 supports ATX only. Therefore, there is no other setting that really needs to be set up. However, there are only two connectors that must be connected—J28 (20 pins Power Connector) Figure.



Serial ATA Hard Disk Setting for IDE/RAID/AHCI

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; there are total two connectors, J18 and J21. 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 operate IDE, RAID (0/1) and AHCI application for system, please follow up setting guide in BIOS programming (Table 5-1); Furthermore, you can consult chapter 4 partially of "OnChip IDE Device".

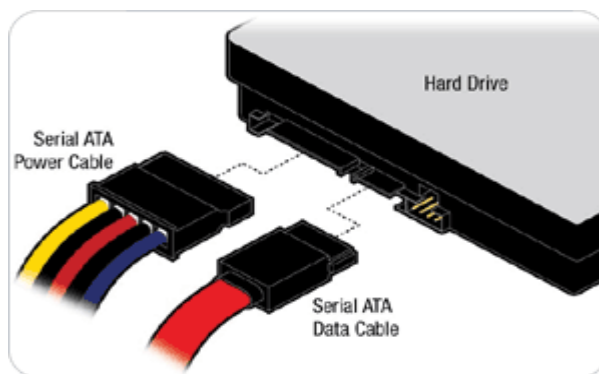
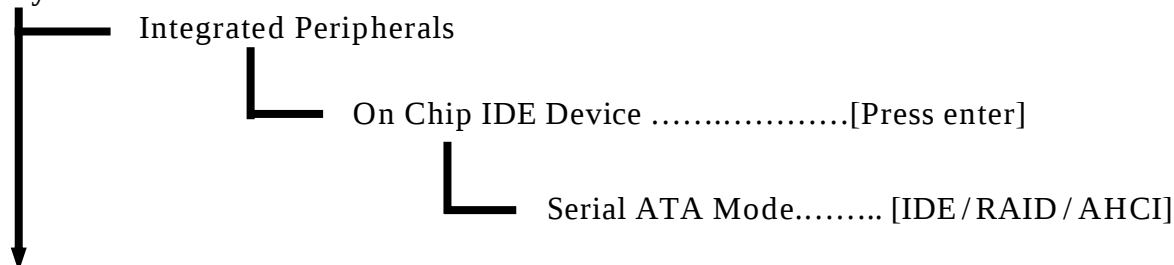


Table. 5-1 SATA Mode setting guide

System BIOS



5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power. CPU, CPU Fan, 200-pin DDR2 SDRAM, keyboard, mouse, floppy drive, SATA hard disk, DVI-I 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-8056, 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 Counter
IRQ #1	Keyboard
IRQ #2	Programmed Controller
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	Display, Network, USB 1.0/1.1 UHCI Controller
IRQ #6	Floppy Disk Controller
IRQ #7	Printer Port (Parallel Port)
IRQ #8	CMOS Clock
IRQ #9	ACPI Controller
IRQ #10	USB 1.0/1.1 UHCI Controller, Multimedia Device
IRQ #11	Network Controller
IRQ #12	SMBus , USB 1.0/1.1 UHCI, USB 2.0 EHCI Controller
IRQ #13	PS/2 mouse
IRQ #14	Data Processor
IRQ #15	Primary IDE Controller

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

PEP-581R/582R

One/Two slots PCI riser card



PEP-581R



PEP-582R

PEP-592R

One PCI and one PCI-E x4 slot riser card



PEP-592R

B9970540

1U active heatsink

B786B270

DVI-I to DVI-D + VGA Y Cable.



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

Installation Problem

Question: How do I connect my keyboard and mouse, as there is only one connector?

Answer: Users may always adopt PS/2 keyboard and mouse over the PS/2 interface, J3 on WADE-8066.

Information & Support

Question: Intel GME965 series Chipset supports Dual Channel Mode, but how can I enable this function?

Answer: you don't have to change any setting. You can simply plug in two DDR2 SO-DIMM Modules, and then system will automatically enable Dual Channel Mode.

Question:What kind of CPU supports?

Answer: Intel Core 2 Duo Processor for Mobile and Celeron M, FSB 533/800 MHz series CPU.

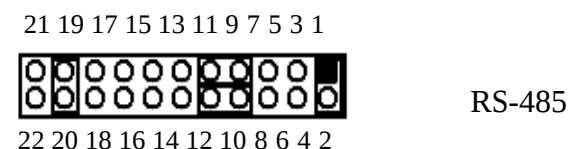
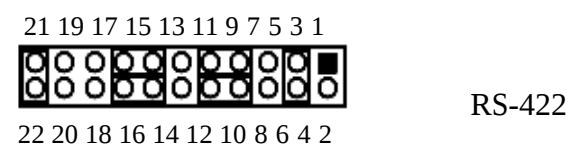
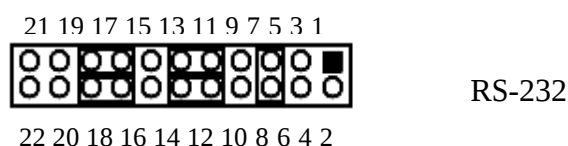
Question:I forget my password of system BIOS, what am I supposed to do?

Answer: You can simply short 2-3 pins on JP1 to clean your password.

Question:How can I change COM port to RS-232/RS-422/RS-485 and TTL mode?

Answer: You can short JP3 pin header to change RS-232/RS-422/RS-485 or short JP2, JP4, JP5 to change TTL mode.

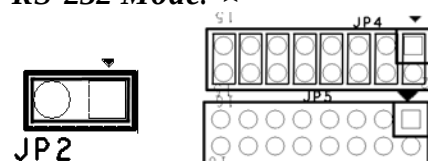
JP3: COM1(J2 Bottom) Interface Selection



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

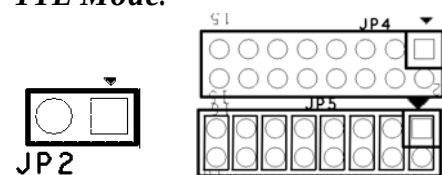
JP2, JP4, JP5: COM2(J2 Top) RS232/TTL Interface Selection

RS-232 Mode: ★



JP2	JP4	JP5
1-2 Short	1-2,3-4,5-6,7-8,9-10,11-12,13-14,15-16 Short	All Open

TTL Mode:



JP2	JP4	JP5
Open	All Open	1-2,3-4,5-6,7-8,9-10,11-12,13-14,15-16 Short

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 will 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

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