

WADE-8022

Mini-ITX Board

User's Manual

Version 1.0

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Table of Contents

How to Use This Manual

Chapter 1 System Overview	1-1
1.1 Introduction	1-1
1.2 Check List.....	1-2
1.3 Product Specification.....	1-2
1.3.1 Mechanical Drawing.....	1-4
1.4 System Architecture.....	1-6
Chapter 2 Hardware Configuration	2-1
2.1 Jumper Setting	2-1
2.2 Connector Allocation.....	2-10
Chapter 3 System Installation.....	3-1
3.1 Intel® Haswell Processor	3-1
3.2 Main Memory	3-1
3.3 Installing the Mini-ITX Board Computer	3-2
3.3.1 Chipset Component Driver	3-2
3.3.2 Intel® Integrated Graphics Controller	3-3
3.3.3 Gigabit Ethernet Controller	3-3
3.3.4 Audio Controller	3-3
3.4 Clear CMOS Operation	3-3
3.5 EC WDT	3-4
3.6 EC GPIO	3-6
Chapter 4 BIOS Setup Information	4-1
4.1 Entering Setup - Launch System Setup.....	4-1
4.2 Main	4-2
4.3 Configuration.....	4-3
4.4 Boot	4-23
4.5 Security	4-25
4.6 Save & Exit	4-26
Chapter 5 Troubleshooting	5-1
5.1 Hardware Quick Installation.....	5-1
5.2 BIOS Setting	5-3
5.3 FAQ.....	5-4

How to Use This Manual

The manual describes how to configure your WADE-8022 system board to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Mini-ITX 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 Mini-ITX Board.

Chapter 2: Hardware Configuration. Show 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. Provide various of useful tips to quickly get WADE-8022 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. The vendor may make supplement or change in the products described in this document at any time.

Chapter 1

System Overview

1.1 Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market and a member of the Intel® Embedded and Communications Alliance (Intel® ECA), announced today the Portwell WADE-8022 adopting the Mini-ITX form factor. The WADE-8022 of the Intel® platform will provide high performance and flexibility for functional expansion, such as Gaming, Kiosk, DS, Medical, Defense, Industrial automation and control applications.

Haswell mobile processors is the next major architecture from Intel®. The WADE-8022 supports the latest Intel® Haswell mobile processors in BGA1364 package which has memory and PCI Express controller integrated to support 2-channel DDR3L memory and PCI Express 3.0 lanes providing great graphics performance. Intel® Haswell mobile processor is one of the most powerful and energy efficient CPU in the world. Portwell have taken advantage of such technology to furnish a series of products that can meet multiple industrial requirements such as cost-effective of CPU performance or industrial systems.

WADE-8022 is based on the Intel® Haswell mobile processor with Intel® QM87 chipset.

The Intel® QM87 Express Chipset, when combined with a processor from the Intel® Dual Core/Quad Core mobile processor family, delivers smart security, cost saving manageability, and Intel® ligent performance for business platforms. WADE-8022 is the first Portwell off-the-shelf product for by Intel® QM87 Express Chipset, it can be an embedded solution and a good platform for customer to integrate it to the embedded system.

WADE-8022 showcased one of Portwell upcoming motherboard for the Intel®'s Haswell mobile processors. The WADE-8022 is based on the forthcoming Intel® QM87 chipset and supports the new BGA1364 type. This board has lots of features, including supports total 4x SATA 6.0 Gbps storage specification , allows RAID 0/1/5 and 10. supports the latest PCIe 3.0 (one PCI-Express x16 slot) devices for double speed and bandwidth which enhances system performance, two long-DIMM memory slot for DDR3L SDRAM up to 16GB, support total 10 USB ports (4x USB 3.0 on rear I/O, 6x USB 2.0 on board header), VGA / HDMI / DVI-D / DP / LVDS, two Gigabit Ethernet and Dual mini-PCIe slot support mSATA and normal storage.

1.2 Check List

The WADE-8022 package should cover the following basic items

- ✓ One WADE-8022 Mini-ITX Main Board
- ✓ One SATA 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**
Intel® mobile BGA processor
- **Chipset**
Intel® QM87 chipset
- **System BIOS**
AMI BIOS
- **Main Memory**
Two 204 -pin DDR3 SODIMM socket support DDR3L up to 16GB dual channel
1333/1600 MHz memory
- **Expansion Interface**
One PCIe x16
 - Two Mini-PCIe slot (support mSATA and normal SSD storage)
 - One PCIe x1 gold finger (include 2x PCI x1 signal)
- **SATA Interface**
Four SATA 6Gb ports
- **Serial Port**
Support total six comports (one RS232 and one RS232/422/485 on rear I/O , three RS232 and one RS232/422/485 on board header)
- **USB Interface**
Support Ten USB (Universal Serial Bus) ports, four USB 3.0 ports on rear I/O and six USB 2.0 ports on board header for internal devices
- **Audio Interface**
Line-Out Audio Jack on Rear I/O, Mic-In, Line-In on board header
- **Real Time Clock/Calendar (RTC)**
Support Y2K Real Time Clock/Calendar

- **Watch Dog Timer**

Support WDT function through software programming for enable/disable and interval setting

- General system reset

- **On-board Ethernet LAN**

Two Gigabit Ethernet (10/100/1000 Mbps/sec) LAN ports using Intel® WGI217LM

WGI210AT GbE Ethernet Controller

- **High Drive GPIO**

One pin-header for 8 bit GPIO(4bit in & 4bit out)

- **System Monitoring Feature**

Monitor system temperature and major power sources.

- **Outline Dimension (L x W)**

170mm(6.69") x 170mm(6.69")

- **Power Requirements**

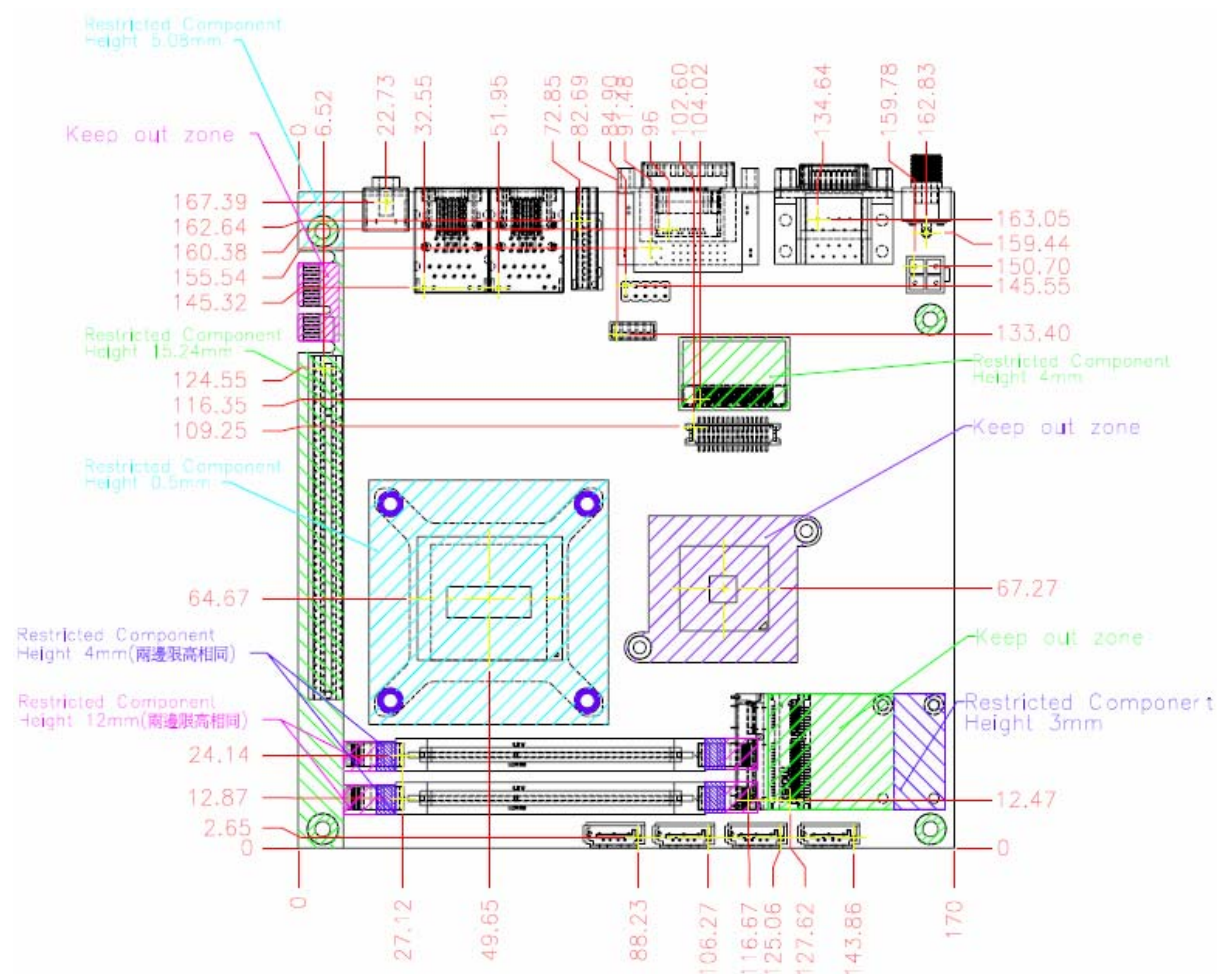
Item	Power ON	Full Loading 10Min	Full Loading 30Min
System +12V	1.71 A	1.98 A	2.23 A
USB Loading Test (2.0)	4.86 V/ 510 mA		
USB Loading Test (3.0)	4.82 V/ 970 mA		

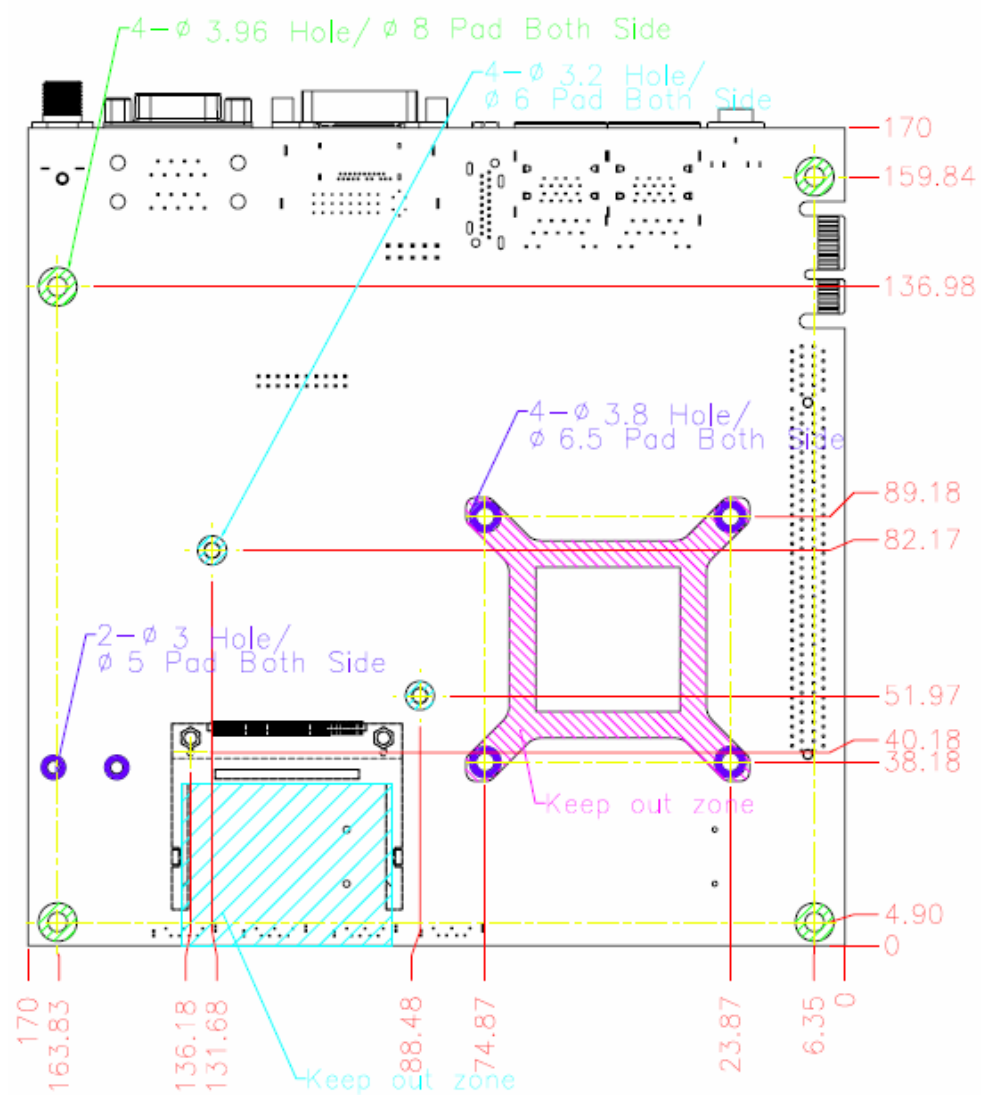
- **Configuration**

CPU Type	Intel® Celeron CPU 2000E @ 2.20GHz L3: 2Mbytes
SBC BIOS	Portwell, Inc. WADE-8022 TEST BIOS (40820T00)
EC Version	40717T00 (07/17/2014)
Memory	WARIS DDR3L SO-DIMM 1600 1.35V/8GB*1 (Skhynix H5TC4G83AFR)
VGA Card	Onboard Intel® HD Graphics
VGA Driver	Intel® HD Graphics Version: 10.18.10.3496
LAN Card	Onboard Intel® Ethernet Connection I217-LM
LAN Driver	Intel® Ethernet Connection I217-LM Version: 12.11.96.1
LAN Card	Onboard Intel® I210AT Gigabit Network Connection
LAN Driver	Intel® I210AT Gigabit Network Connection Version: 12.11.97.0
Audio Card	Onboard Realtek ALC886 High Definition Audio
Audio Driver	Realtek ALC886 High Definition Audio Version: 6.0.1.7246
Chip Driver	Intel® Chipset Device Software Version: 9.4.0.1027
USB 3.0 Driver	Intel® USB3.0 eXtensible Host Controller Version: 6.2.9200.16384
SATA HDD	WD WD1002FAEX 1TB
DVDROM	LION-ON IHAS324 DVD-ROM
Power Supply	Seasonic SSA-0651-1 DC 12V

- **Operating Temperature**
0 °C ~ 60 °C
- **Storage temperature**
-20 ~ 80 °C
- **Relative Humidity**
0% ~ 90%, non-condensing

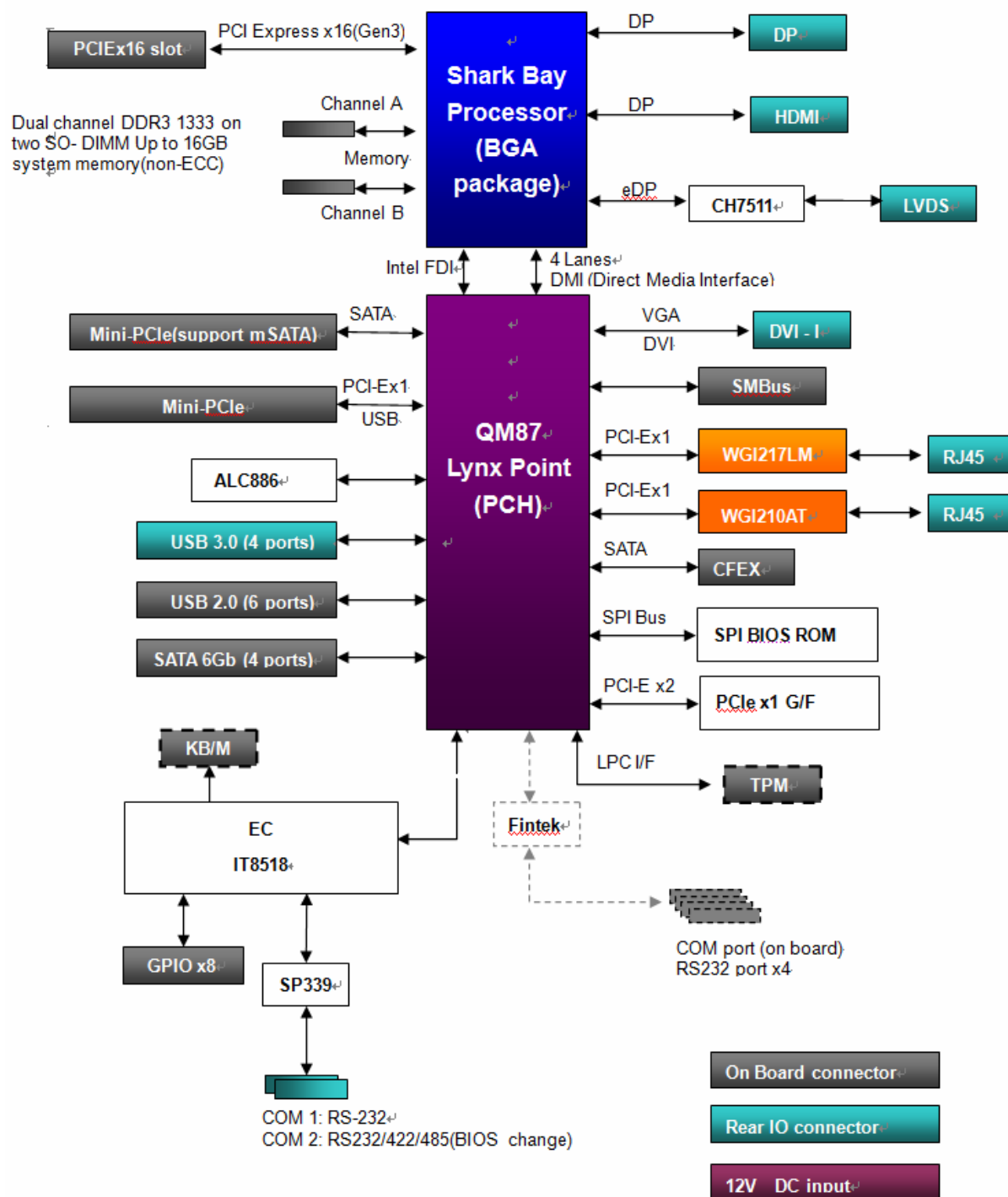
1.3.1 Mechanical Drawing





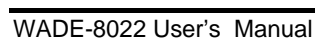
1.4 System Architecture

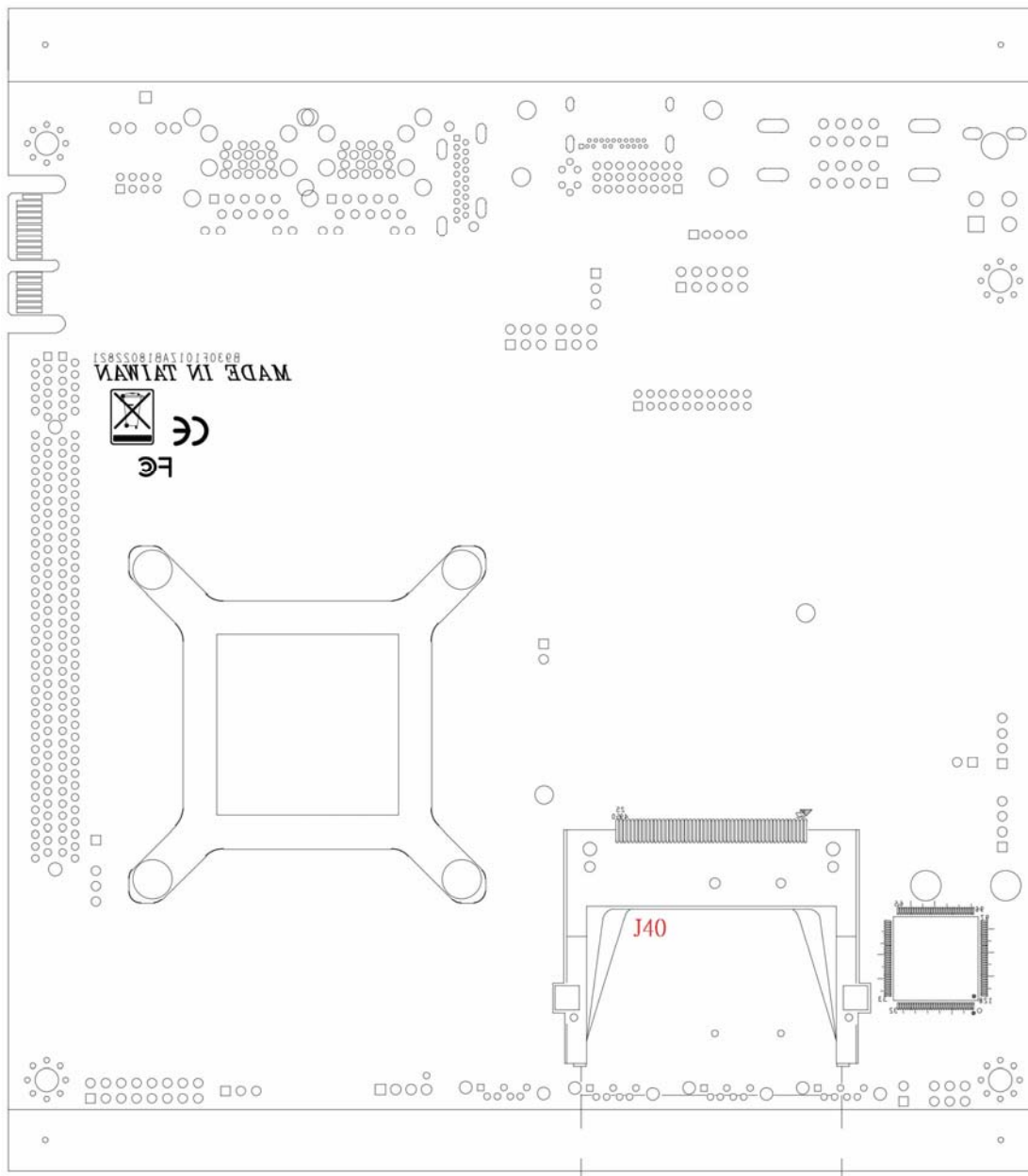
All of details operating relations are shown in WADE-8022 System Block Diagram.



WADE-8022 System Block Diagram

2.1 Jumper Setting





Jump Setting List**★ is mean default****JP1: GPIO Power select Connector**

PIN No.	Signal Description
1-2	5V
2-3	3V (Default) ★

JP2: Dual channel LVDS VDD voltage Select

PIN No.	Signal Description
1-2	VDD voltage 3.3V (Default) ★
5-6	VDD voltage 5V

JP3: LVDS BL Enable voltage Select

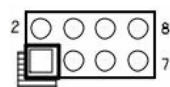
PIN No.	Signal Description
1-3, 2-4	5V, Active High (Default) ★
1-3, 4-6	12V, Active High
3-5, 2-4	5V, Active Low
3-5, 4-6	12V, Active Low

JP4: WDT Function Select

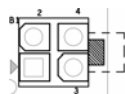
PIN No.	Signal Description
1-2 short	WDT Function enable (Default) ★
1-2 open	WDT Function disable

JP5: ATX / AT Mode Select

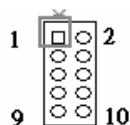
PIN No.	Signal Description
1-2 short	ATX emulation AT mode
1-2 open	ATX mode ★

J9: Audio MIC/Line-in/Line-out Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	MIC- in Left Channel	2	Line-in Left Channel
3	Analog Ground	4	Line-in Right Channel
5	Line-out Left Channel	6	Analog Ground
7	Line-out Right Channel	8	MIC- in Right Channel

J10: ATX 4Pin 12V Power Connector

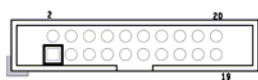
PIN No.	Signal Description
1	Ground
2	Ground
3	+12V
4	+12V

J11: 8Bit GPIO Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	LPC_GPJ0	2	LPC_GPE0
3	LPC_GPJ1	4	LPC_GPE7
5	LPC_GPJ2	6	LPC_GPC0
7	LPC_GPJ3	8	LPC_GPG0
9	GND	10	VCC

J13: LVDS Power Connector

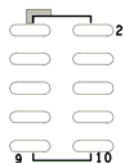
PIN No.	Signal Description
1	VCC
2	BL_BRIGHT
3	+12V
4	Ground
5	BL_ENABLE

J14: TPM(Trusted Platform Module) Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	PCLK_TPM	2	GND
3	LFRAME#	4	N/C
5	SIO2_PLTRST#	6	VCC
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	SMB_CLK_MAIN	14	SMB_DATA_MAIN
15	3VSB	16	SERIRQ
17	GND	18	N/C
19	LPCPD#	20	N/C

J15: Dual channel LVDS Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	VDD	2	VDD
3	LCD1DO0+	4	LCD1DO0-
5	LCD1DO1+	6	LCD1DO1-
7	LCD1DO2+	8	LCD1DO2-
9	LCD1DO3+	10	LCD1DO3-
11	LCD1CLK+	12	LCD1CLK-
13	LCLK1	14	LDATA1
15	Ground	16	Ground
17	LCD2DO0+	18	LCD2DO0-
19	LCD2DO1+	20	LCD2DO1-
21	LCD2DO2+	22	LCD2DO2-
23	LCD2DO3+	24	LCD2DO3-
25	LCD2CLK+	26	LCD2CLK-
27	N/C	28	N/C
29	Ground	30	Ground

J16/J17/J18/J19: COM3/COM4/COM5/COM6 Serial Port Connector

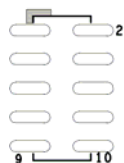
PIN No.	Signal Description	PIN No.	Signal Description
1	DCD (Data Carrier Detect)	2	RXD (Receive Data)
3	TXD (Transmit Data)	4	DTR (Data Terminal Ready)
5	GND (Ground)	6	DSR (Data Set Ready)
7	RTS (Request to Send)	8	CTS (Clear to Send)
9	RI (Ring Indicator)	10	N/C

J20: Clear CMOS

PIN No.	Signal Description
1-2	Normal ★
2-3	Clear CMOS

J22/J26: SATA Power Connector

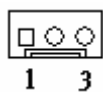
Pin No.	Signal Description
1	+12V
2	GND
3	GND
4	VCC

J23/J24/J25: External USB Connector

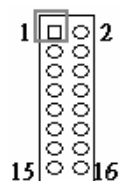
PIN No.	Signal Description	PIN No.	Signal Description
1	5V Dual	2	5V Dual
3	USB-	4	USB-
5	USB+	6	USB+
7	Ground	8	Ground
9		10	N/C

J27: SMBus Connector

PIN No.	Signal Description
1	SMBus_CLK
2	N/C
3	Ground
4	SMBus_DAT
5	+5V

J32: SYSTEM FAN Power Connector

PIN No.	Signal Description
1	Ground
2	Fan speed control
3	Fan on/off output

J37: Front Panel System Connector

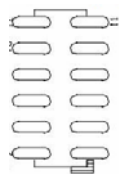
PIN No.	Signal Description	PIN No.	Signal Description
1	PWR_LED(+)	2	Speaker(+)
3	PWR_LED(-)	4	GND
5	J4 LAN1_ACT(+)	6	N / C
7	J4 LAN1_LINK(-)	8	Speaker(-)
9	J5 LAN2_LINK(-)	10	GND
11	J5 LAN2_ACT(+)	12	Power Button
13	HDD_LED(+)	14	RESET Button
15	HDD_LED(-)	16	GND

J38: CPU FAN Power Connector

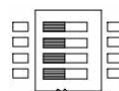
PIN No.	Signal Description
1	Ground
2	+12V
3	Fan on/off output
4	Fan Speed control

J39:PS/2 Keyboard/Mouse Pin Header

PIN No.	Signal Description	PIN No.	Signal Description
1	Mouse Data	2	Keyboard Data
3	N/C	4	N/C
5	Ground	6	Ground
7	PS2 Power	8	PS2 Power
9	Mouse Clock	10	Keyboard Clock

J41: SPI Bus Select Header

PIN No.	Signal Description
1-3, 2-4, 7-9, 8-10	CFEX
3-5, 4-6, 9-11, 10-12	Normal

SW1: LVDS GPIO Switch Select

ON : 0 ; OFF : 1

Default : 0001

Pin No.	Signal Description
1	GP0
2	GP1
3	GP2
4	GP3

GPIO [3:0]	HA (Pixel)	VA (line)	RR (Hz)	PC (MHz)	CD (bit)	Port	HB (Pixel)	HSO (Pixel)	HSPW (Pixel)	VB (line)	VSO (line)	VSPW (line)
0000	800	600	60	38.25	6	Single	224	32	80	24	3	4
0001	1024	768	60	56.00	6	Single	160	48	32	22	3	4
0010	1024	768	60	56.00	8	Single	160	48	32	22	3	4
0011	1280	768	60	68.25	6	Single	160	48	32	22	3	7
0100	1280	800	60	71.00	6	Single	160	48	32	23	3	6
0101	1280	960	60	85.25	6	Single	160	48	32	28	3	4
0110	1280	1024	60	91.00	8	Dual	160	48	32	30	3	7
0111	1366	768	60	72.75	6	Single	160	48	32	23	3	10
1000	1366	768	60	72.25	8	Single	160	48	32	23	3	10
1001	1440	900	60	106.50	8	Dual	464	80	152	34	3	6
1010	1400	1050	60	101.00	8	Dual	160	48	32	30	3	4
1011	1600	900	60	118.25	8	Dual	512	88	168	26	4	8
1100	1680	1050	60	119.00	8	Dual	160	48	32	30	3	6
1101	1600	1200	60	130.25	8	Dual	160	48	32	35	3	4
1110	1920	1080	60	138.50	8	Dual	160	48	32	31	3	5
1111	1920	1200	60	154.00	8	Dual	160	48	32	35	3	6

2.2 Connector Allocation

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

Connector Function List

Connector	Function	Remark
J1	DC Jack	
J2	Audio Line Out Connector	
J3	Serial port Connector (Top-COM2, Bot-COM1)	COM2 Support 232/422/485
J4	Display Port Connector (DP port)	
J5	DVI-I Connector	Support Dual (DVI-D,VGA) Link
J6	HDMI Connector	
J7	USB/100+Giga Lan Connector (LAN2) I210IT	
J8	USB/100+Giga Lan Connector (LAN1) I217LM	
J9	Audio MIC/Line-in/Line-out Connector	
J10	ATX 4Pin 12V Power Connector	
J11	8Bit GPIO Connector	
J13	LVDS Power Connector	
J14	TPM(Trusted Platform Module) Connector	
J15	Dual channel LVDS Connector	
J16、J17、J18、J19	COM3/COM4/COM5/COM6 Serial Port Connector	
J20	Clear CMOS Select HEADER	
J21	PCI-E x16 Slot	Support PCI-E Gen3
J22、J26	SATA Power Connector	
J23、J24、J25	External USB Connector	
J27	SMBus Connector	
J28	Mini PCIe Slot	Only Support Mini PCIe
J29	Mini PCIe Slot	Only Support mSATA
J30、J31	SO-DIMM Slot	Only Support DDR3L Memory
J32	System FAN Power Connector	
J33、J34、J35、J36	SATA Connector(6Gb/s)	
J37	Front Panel System Connector	
J38	CPU FAN Power Connector	
J39	PS/2 Keyboard/Mouse Pin Header	

J40	CFEX Card slot	
J41	SPI Select HEADER	

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® Haswell Processor

The Main Processor of the WADE-8022 is Intel® Celeron Haswell 2000E 2.2GHz Processor (BGA Type)



WADE-8022 can support 4th Generation Mobile Celeron/Core Haswell i3/i5/i7 Processors (BGA Type) by optional.

3.2 Main Memory

WADE-8022 provide 2 x 204 pin DIMM sockets (Dual Channel) which supports Dual channel 1333 DDR3L-SO-DIMM (1.35V) Non-ECC (Error Checking and Correcting), non-register functions as main memory. The maximum memory can be up to 16GB. Memory clock and related settings can be detected by BIOS via SPD interface.

The 2 DIMMs per channel only supported in Quad-Core package (1333 MT/s only)

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

Beware of the connection and lock integrity from memory module to socket. Inserting improperly it will affect the system reliability.

Before locking, make sure that all modules have been fully inserted into the card slots.

Note:

To insure the system stability, please do not change any of DRAM parameters in BIOS setup to modify system the performance without acquired technical information.

3.3 Installing the Mini-ITX Board Computer

To install your WADE-8022 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-8022 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 3.3.4 to install INF/VGA/LAN/Audio drivers.

3.3.1 Chipset Component Driver

WADE-8022 uses Intel® QM87 Lynx Point chipset. It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 7, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in WADE-8022 CD-title.

3.3.2 Intel® Integrated Graphics Controller

WADE-8022 uses Intel® PCH integrated graphic chipset to gain an outstanding graphic performance. WADE-8022 supports DP (3200 x 2000 resolution), HDMI (4096 x 2304 resolution), LVDS (18/24bit single & Dual port, 1920x1200 resolution) from onboard Shark Bay BGA processor, DVI-I (DVI+VGA, 1920 x 1200 resolution) from QM87 PCH display output. Processor integrated 3D graphics Media Accelerator . Supports DX11.1, OpenGL 3.1, MPEG-2, Shader Model 4.0. WADE-8022 can support triple display output.

Drivers Support

Please find the Graphic drivers in the WADE-8022 CD-title. Drivers support Win7.

3.3.3 Gigabit Ethernet Controller

Drivers Support

Please find Intel® WGI217LM and WGI210AT LAN drivers in /Ethernet directory of WADE-8022 CD-title. The drivers support Win7.

3.3.4 Audio Controller

Please find ALC886 (High Definition Audio driver) form WADE-8022 CD-title. The drivers support Win7.

3.4 Clear CMOS Operation

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

J20: Clear CMOS



PIN No.	Signal Description
1-2	Normal★
2-3	Clear CMOS

3.5 EC WDT

Sample code:

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
#include <dos.h>

#define EC_DATA 0x62
#define EC_CMD 0x66
#define EC_CMD_READ 0x80
#define EC_CMD_WRITE 0x81

#define WDT_MODE 0x06 /* WDT Select mode. */
#define WDT_MIN 0x07 /* Minute mode counter */
#define WDT_SEC 0x08 /* Second mode counter */
/* Use port 62 and port 66 to access EC command / data. */

static int IBF_Check()
{
    unsigned char IBF_status;
    do
    {
        delay(2);
        outportb (EC_CMD, IBF_status);
    } while (IBF_status & 0x02);
    return 1;
}

static int OBF_Check ()
{
    unsigned char OBF_status;
    do
    {
        delay(2);
        OBF_status = inportb (EC_CMD);
    } while (!(OBF_status & 0x01));
    return 1;
}

static void Write_EC (unsigned char index, unsigned char data)
{
    IBF_Check ();
    outportb (EC_CMD, EC_CMD_WRITE);
    IBF_Check ();
}
```



```
        outportb (EC_DATA, index);
        IBF_Check ();
        outportb (EC_DATA, data);
    }

static unsigned char Read_EC (unsigned char address)
{
    unsigned char data;
    IBF_Check ();
    outportb (EC_CMD, EC_CMD_READ);
    IBF_Check ();
    outportb (EC_DATA, address);
    OBF_Check();
    data = inportb (EC_DATA);
    return data;
}

void EC_WDT_Trigger ()
{
    /* WDT Counter */
    Write_EC (WDT_SEC, 0x05);
    /* if use minute mode */
    /* Write_EC (WDT_MIN, 0x05); */
    /* 0x01 is second mode */
    /* 0x03 is minute mode */
    Write_EC (WDT_MODE, 0x01);
}

int main ()
{
    int i;
    EC_WDT_Trigger ();
    for (i = 0; i < 5; i++)
    {
        printf ("Reset counter .....%d\n", 5 - i);
        delay (1000);
    }
    return 0;
}
```

3.6 EC GPIO

Sample code:

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
#include <dos.h>

#define EC_DATA 0x62
#define EC_CMD 0x66
#define EC_CMD_READ 0x80
#define EC_CMD_WRITE 0x81

#define GPIO_DIR 0x2B
#define GPIO_DATA 0x2C

static void Write_EC (unsigned char index, unsigned char data)
{
    sleep(1);
    outportb (EC_CMD, EC_CMD_WRITE);
    sleep(1);
    outportb (EC_DATA, index);
    sleep(1);
    outportb (EC_DATA, data);
}

static unsigned char Read_EC (unsigned char address)
{
    unsigned char data;
    sleep(1);
    outportb (EC_CMD, EC_CMD_READ);
    sleep(1);
    outportb (EC_DATA, address);
    sleep(1);
    data = inportb (EC_DATA);
    return data;
}

int main ()
{
    unsigned char d2;
    printf("\n\n");
    printf("WADE-8079 GPIO TEST Program v1.0\n");
    printf("Please short the following pins with 2.54mm-pitched jumper on JP8\n");
```

```
printf("GPIO1 ---- GPIO2\n");
printf("GPIO3 ---- GPIO4\n");
printf("GPIO5 ---- GPIO6\n");
printf("GPIO7 ---- GPIO8\n");
printf("GND   xxxx   Vcc   <==PWR/GND   pins, DO NOT short
them!\n\n");
printf("LED Test Begins...\n");

/* Set GPIO Port In/Out mode */
Write_EC (GPIO_DIR, 0x00);
sleep (2);
printf("Write_EC mode 0x00\n");

/* Set Low or High */
Write_EC (GPIO_DATA, 0xFF);
printf("Write_EC data 0xFF\n");
sleep (2);

/* Set GPIO Port In/Out mode */
Write_EC (GPIO_DIR, 0x00);
sleep (2);
printf("Write_EC mode 0x00\n");

/* Set Low or High */
Write_EC (GPIO_DATA, 0x00);
printf("Write_EC data 0x00\n");
sleep (2);

return 0;
}
```

Chapter 4

BIOS Setup Information

WADE-8022 uses AMI BIOS structure 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-8022 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 - Launch System Setup

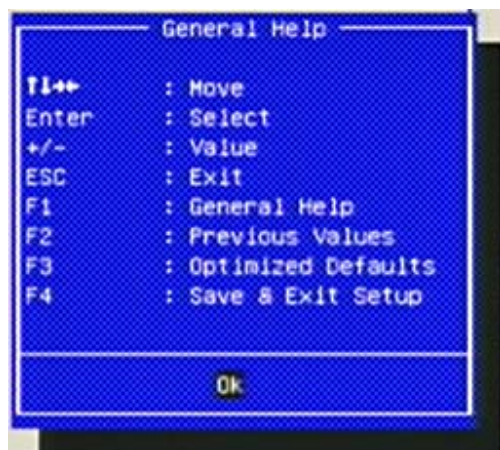
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key will enter BIOS setup screen.

Press to enter SETUP

If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

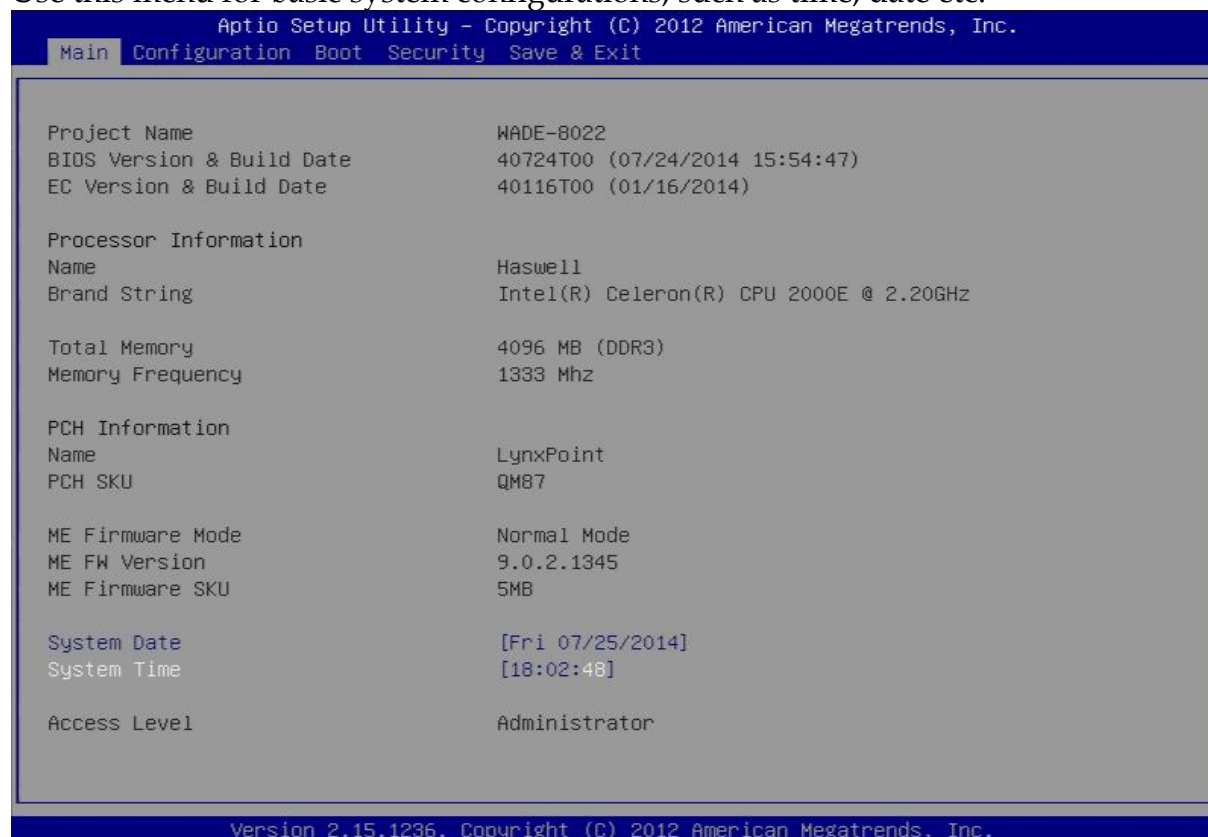
Press <F1> to Run SETUP or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help screen.



4.2 Main

Use this menu for basic system configurations, such as time, date etc.



BIOS Information, Memory Information

These items show the firmware and memory specifications of your system. Read only.

System Date

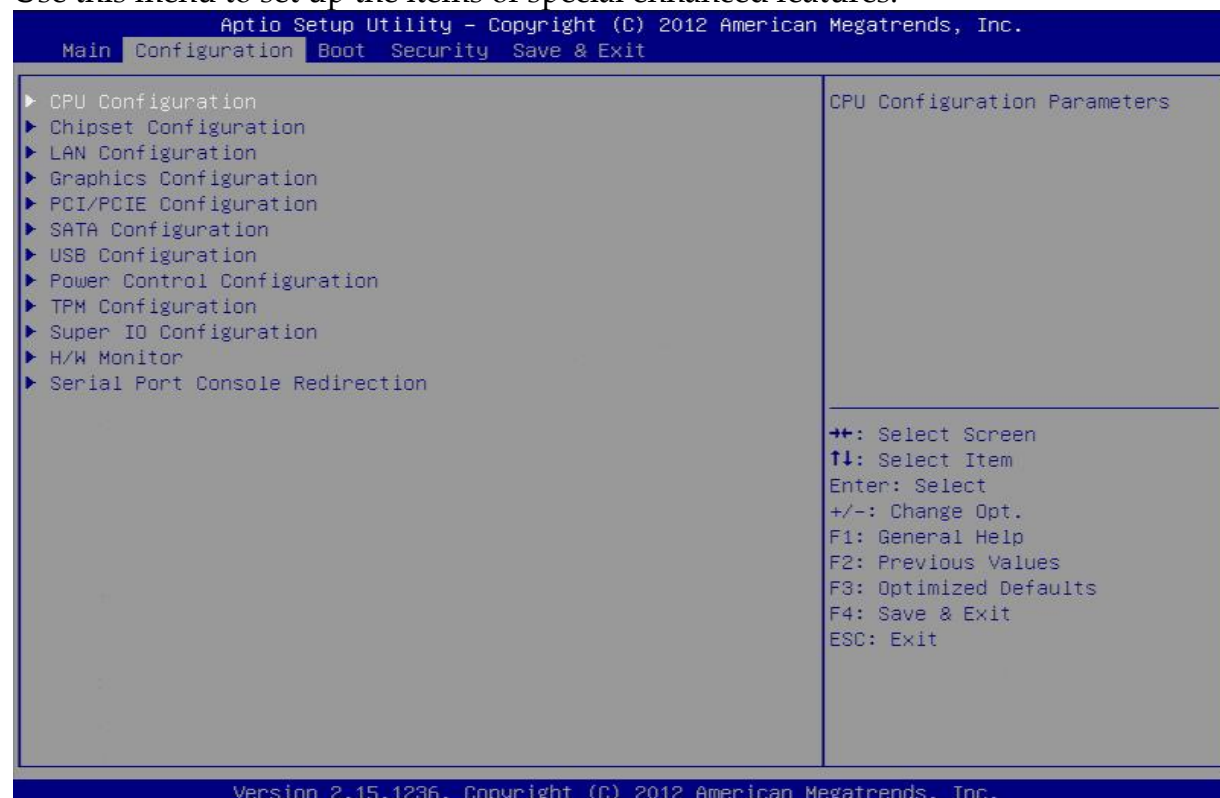
The date format is <Day>, <Month> <Date> <Year>. Use [+] or [-] to configure system Date.

System Time

The time format is <Hour> <Minute> <Second>. Use [+] or [-] to configure system Time.

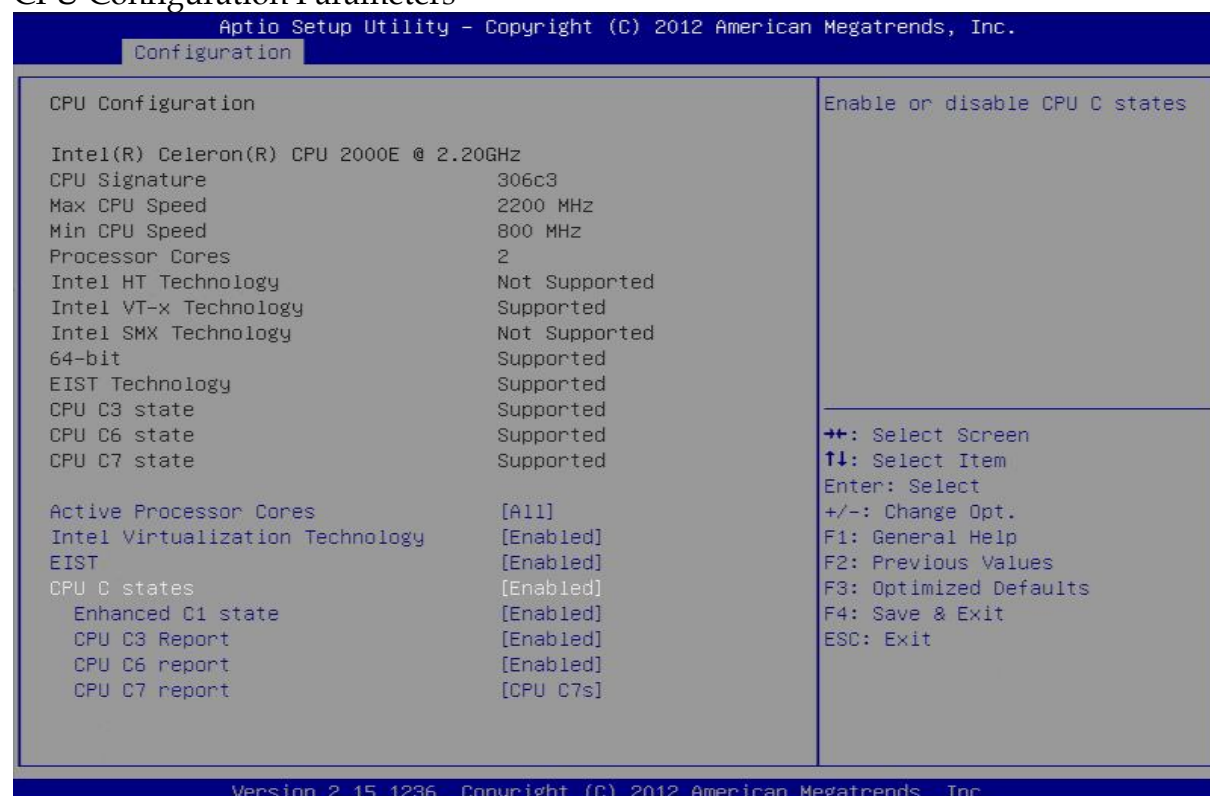
4.3 Configuration

Use this menu to set up the items of special enhanced features.



CPU Configuration

CPU Configuration Parameters



Active Processor Cores

Number of cores to enable in each processor package

Choices: All, 1.

Intel® Virtualization Technology

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

Choices: Disabled, Enabled.

EIST

Enable/Disable Intel® SpeedStep.

Choices: Disabled, Enabled.

CPU C states

Enable or disable CPU C states

Choices: Disabled, Enabled.

Enhanced C1 states (CPU C states Enabled)

Enhance C1 state

Choices: Disabled, Enabled.

CPU C3 Report (CPU C states Enabled)

Enable/Disable CPU C3 report to OS

Choices: Disabled, Enabled.

CPU C6 Report (CPU C states Enabled)

Enable/Disable CPU C6 report to OS

Choices: Disabled, Enabled.

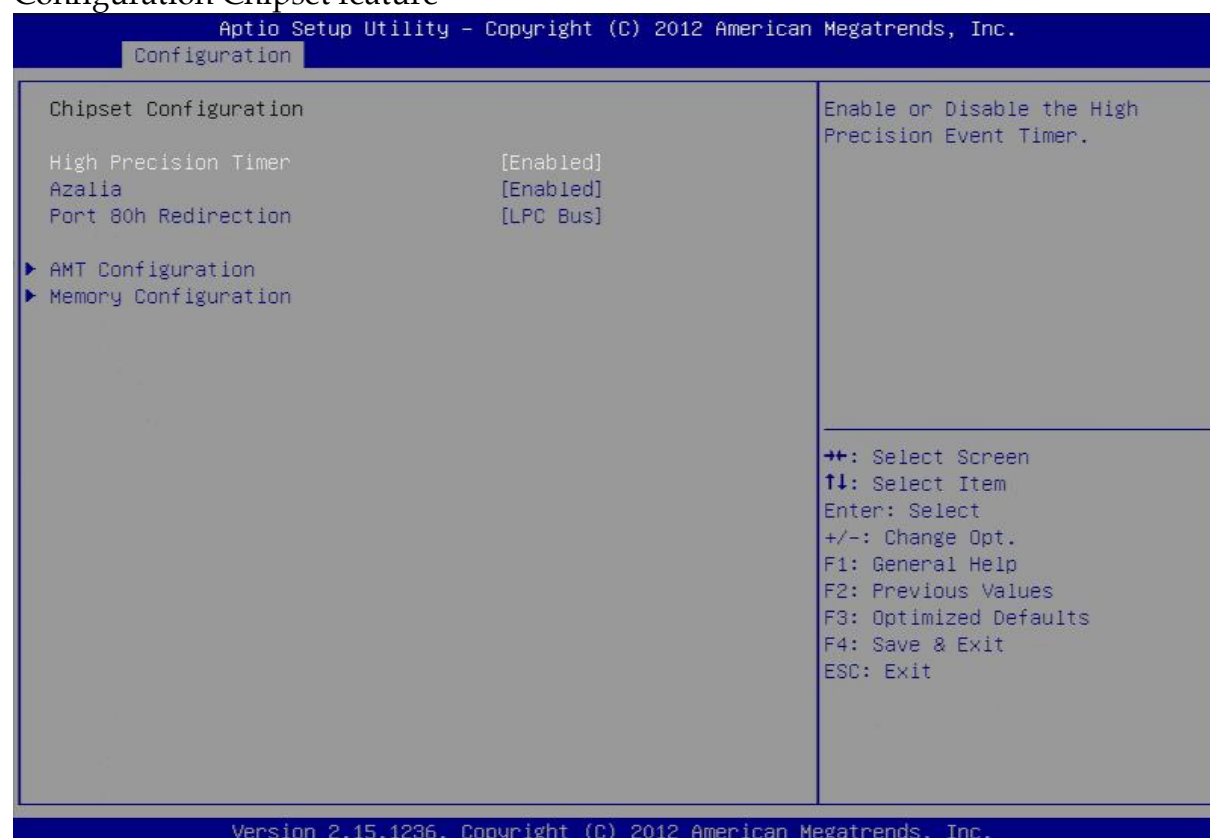
CPU C7 Report (CPU C states Enabled)

Enable/Disable CPU C7 report to OS

Choices: Disabled, CPU C7, CPU C7s.

Chipset Configuration

Configuration Chipset feature



High Precision Timer

Enable or Disable the High Precision Event Timer.

Choices: Disabled, Enabled.

Azalia

Control Detection of the Azalia Device.

Disabled = Azalia will be unconditionally disabled.

Enabled = Azalia will be unconditionally Enabled.

Choices: Disabled, Enabled.

Port 80h Redirection

Control where the Port 80h cycles are sent

[LPC BUS] Forward I/O Port 80 to LPC

[PCIE BUS] Forward I/O Port 80 to PCIE Subtractive device

Choices: LPC BUS, PCIE BUS.

AMT Configuration**Configure Active Management Technology Parameters**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Configuration		
AMT Configuration		Enable/Disable Intel (R) Active Management Technology BIOS Extension. Note : iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device
Intel AMT	[Enabled]	
Un-Configure ME	[Disabled]	
Disable ME	[Disabled]	
		→+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Intel® AMT

Enable/Disable Intel® Active management technology BIOS Extension

Note: iAMT H/W is always enabled.

This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device

Choices: Disabled, Enabled.

Un-configure ME

OEMFlag Bit 15: Un-configure ME without password.

Choices: Disabled, Enabled.

Disable ME

Set ME to Soft Temporary Disabled.

Choices: Disabled, Enabled.

Memory Configuration

Memory Configuration Parameters (Read Only)

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Configuration

Memory Information

Total Memory          4096 MB (DDR3)
DIMM#0                4096 MB (DDR3)
DIMM#1                Not Present

--+: Select Screen
+/: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

```

LAN Configuration

Configuration On Board LAN device.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Configuration	
LAN Configuration	Controls the execution of UEFI and Legacy PXE OpROM
Launch PXE OpROM policy	[Disabled]
Intel(R) Ethernet Connection I217-LM	
Intel LAN I217 Controller	[Enabled]
Wake on LAN I217	[Disabled]
Intel(R) Ethernet Connection I210	
Intel LAN I210 Controller	[Enabled]
Wake on LAN I210	[Enabled]
→+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	

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Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM

Choices: Disabled, UEFI only, Enabled.

Intel® LAN I217 Controller

Enable or disable onboard NIC.

Choices: Enabled, Disabled.

Wake on LAN I217

Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)

Choices: Enabled, Disabled.

Intel® LAN I210 Controller

Enable or disable onboard NIC.

Choices: Enabled, Disabled.

Wake on LAN I210

Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)

Choices: Enabled, Disabled.

Graphic Configuration**Configuration Graphics Settings**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Configuration		
Graphics Configuration		Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
Primary Display	[Auto]	
Primary PCIE	[Auto]	
Internal Graphics	[Enabled]	
Aperture Size	[256MB]	
DVMT Pre-Allocated	[32M]	
DVMT Total Gfx Mem	[256M]	
Primary IGFX Boot Display	[DVI]	
Secondary IGFX Boot Display	[Disabled]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Primary Display

Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.

Choices: Auto, IGFX, PEG, PCIE.

Primary PCIE

Select PCIE4/PCIE5 Graphics device should be Primary PCIE.

Choices: Auto, PCIE4, PCIE5.

Aperture Size

Select the Aperture Size.

Choices: 128MB, 256MB, 512MB.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Choices: 32M, 64M, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, 512M, 1024M.

DVMT Total Gfx Mem

Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphic device.

Choices: 128M, 256MB, MAX.

Primary IGFX Boot Display

Select the Video Device which will be activated during POST. This has no effect if external graphics present.

Secondary boot display will appear based on your selection. VGA modes will be supported only on primary display.

Choices: VBIOS Default, VGA, DP, LVDS, DVI HDMI.

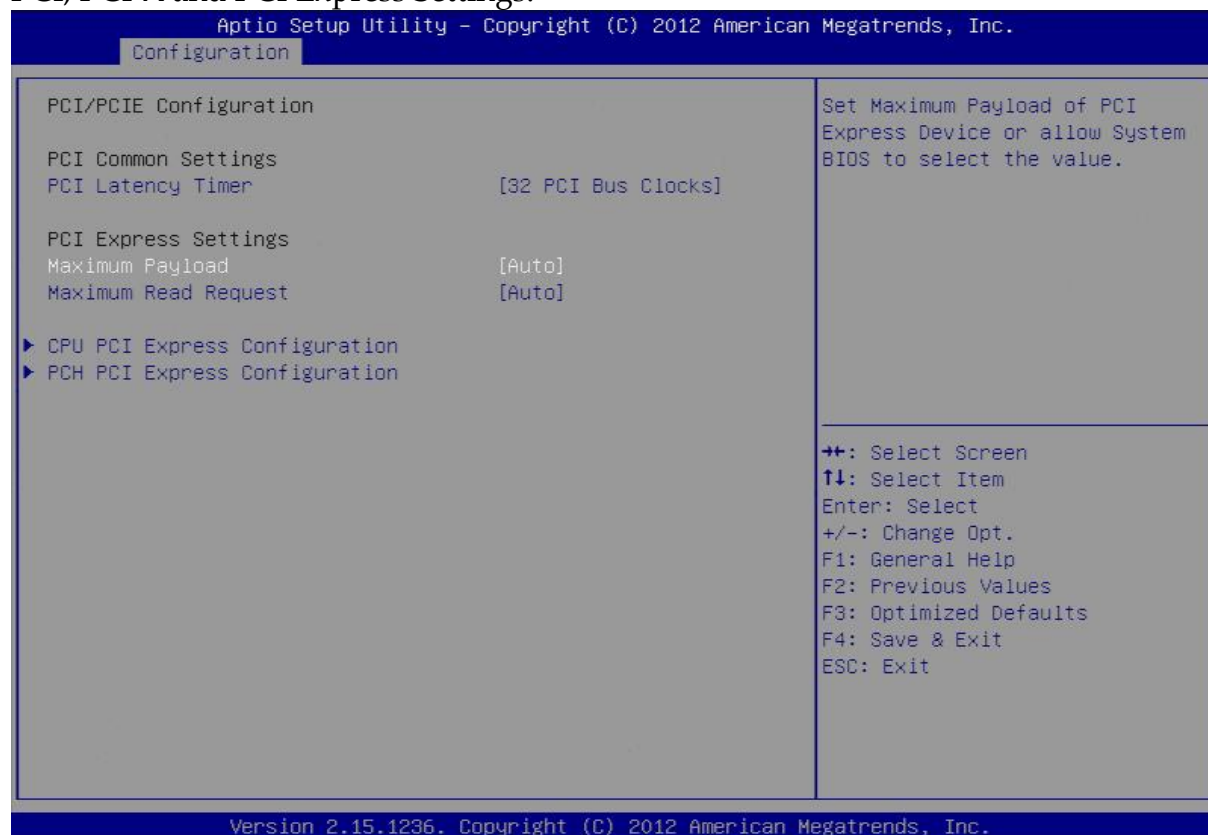
Secondary IGFX Boot Display

Select Secondary IFGX Boot Display Device.

Choices: Disabled, DP, LVDS, DVI, HDMI.

PCI/PCIE Configuration

PCI, PCI-X and PCI Express Settings.

**PCI Latency Timer**

Value to be programmed into PCI Latency Timer Register

Choices: 32 PCI Bus Clocks, 64 PCI Bus Clocks, 96 PCI Bus Clocks, 128 PCI Bus Clocks, 160 PCI Bus Clocks, 192 PCI Bus Clocks, 224 PCI Bus Clocks, 248 PCI Bus Clocks.

Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

Choices: Auto, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes.

Maximum Read Request

Set Maximum Read Request size of PCI Express Device or allow System BIOS to select the value.

Choices: Auto, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes.

CPU PCI Express Configuration**CPU PCI Express Configuration settings**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Configuration	
CPU PCI Express Configuration	
PEG0	Not Present
PEG0 - Gen X	[Auto]
PEG0 - ASPM	[Disabled]
PEG1	Not Present
PEG1 - Gen X	[Auto]
PEG1 - ASPM	[Disabled]
PEG2	Not Present
PEG2 - Gen X	[Auto]
PEG2 - ASPM	[Disabled]
Enable PEG	[Auto]
To enable or disable the PEG.	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

PEG0 - Gen X

Configure PEG0 B0:D1:F0 Gen1-Gen3

Choices: Auto, Gen1, Gen2, Gen3

PEG0 - ASPM

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

Choices: Disabled, Auto, ASPM L0s, ASPM L1, ASPM L0sL1.

PEG1 - Gen X

Configure PEG1 B0:D1:F1 Gen1-Gen3

Choices: Auto, Gen1, Gen2, Gen3

PEG1 - ASPM

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

Choices: Disabled, Auto, ASPM L0s, ASPM L1, ASPM L0sL1.

PEG2 - Gen X

Configure PEG2 B0:D1:F2 Gen1-Gen3

Choices: Auto, Gen1, Gen2, Gen3

PEG2 - ASPM

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

Choices: Disabled, Auto, ASPM L0s, ASPM L1, ASPM L0sL1.

Enable PEG

To enable or disable the PEG

Choices: Disabled, Enabled, Auto.

PCH PCI Express Configuration

PCH PCI Express Configuration settings



PCI Express Root Port 1-5, Port8

PCI Express Root Port 1-5 Settings Port 1-5, Port8 (x1)

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Configuration		
PCI Express Root Port 1	[Enabled]	Control the PCI Express Root Port.
ASPM	[Disabled]	
PCIe Speed	[Auto]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

PCI Express Root Port 1-5, Port8

Control the PCI Express Root Port

Choices: Enabled, Disabled.

ASPM

PCI Express Active State Power Management settings

Choices: Disabled, L0s, L1, L0sL1, Auto

PCIe Speed

Select PCI Express port speed.

Choices: Auto, Gen1, Gen2.

SATA Configuration**SATA Device Options Settings**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Configuration

SATA Configuration		▲ Enable or disable SATA Device.
SATA Controller(s)	[Enabled]	
SATA Mode Selection	[AHCI]	
SATA Controller Speed	[Default]	
Serial ATA Port 0	Empty	
Port 0	[Enabled]	
Hot Plug	[Enabled]	
Mechanical Presence Switch	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
Serial ATA Port 1	Empty	++: Select Screen
Port 1	[Enabled]	↑↓: Select Item
Hot Plug	[Enabled]	Enter: Select
Mechanical Presence Switch	[Disabled]	+/-: Change Opt.
External SATA	[Disabled]	F1: General Help
SATA Device Type	[Hard Disk Drive]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Serial ATA Port 2	Empty	
Port 2	[Enabled]	
Hot Plug	[Enabled]	
Mechanical Presence Switch	[Disabled]	
External SATA	[Disabled]	
Serial ATA Port 3	Empty	
Port 3	[Enabled]	
Hot Plug	[Enabled]	
Mechanical Presence Switch	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
mSATA	Empty	++: Select Screen
Port 4	[Enabled]	↑↓: Select Item
Hot Plug	[Disabled]	Enter: Select
External SATA	[Disabled]	+/-: Change Opt.
SATA Device Type	[Hard Disk Drive]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
CFEX	Empty	
Port 5	[Enabled]	
Hot Plug	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	

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SATA Controller(s)

Enable or disable SATA Device.

Choices: Enabled, Disabled.

SATA Mode Selection

Determines how SATA controller(s) operate.

Choices: IDE, AHCI, RAID.

SATA Controller Speed

Indicates the maximum speed the SATA controller can support.

Choices: Default, Gen1, Gen2, Gen3.

Alternate ID (RAID Mode only)

Report alternate Device ID

Choices: Enabled, Disabled.

Port 0-5

Enable or Disable SATA Port

Choices: Disabled, Enabled.

Hot Plug

Designates this port as Hot Pluggable

Choices: Disabled, Enabled.

Mechanical Presence Switch (For Serial ATA Port 0-3 only)

Controls reporting if this port has an Mechanical Presence Switch.

Note: Requires hardware support.

Choices: Disabled, Enabled.

External SATA

External SATA Support

Choices: Disabled, Enabled.

SATA Device Type

Identify the SATA Port is connected to Solid State Drive or Hard Disk Drive.

Choices: Hard Disk Drive, Solid State Drive.

USB Configuration

USB Configuration Parameters

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Configuration	
USB Configuration USB Devices: 2 Keyboards, 1 Mouse, 2 Hubs Legacy USB Support [Enabled] XHCI Hand-off [Enabled] EHCI Hand-off [Disabled] USB Mass Storage Driver Support [Enabled] ▶ PCH USB Configuration	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. →+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

Legacy USB Support

Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

Choices: Enabled, Disabled, Auto.

XHCI Hand-Off

This is a workaround for OSeS without XHCI hand-off support. The XHCI ownership change should claim by XHCI driver.

Choices: Enabled, Disabled.

EHCI Hand-Off

This is a workaround for OSeS without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.

Choices: Disabled, Enabled.

USB Mass Storage Driver Support

Enable/Disable USN Mass Storage Driver Support.

Choices: Disabled, Enabled.

PCH USB Configuration

PCH USB Configuration settings

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Configuration	
PCH USB Configuration	Disable USB port.
USB Port #0	[Enabled]
USB Port #1	[Enabled]
USB Port #2	[Enabled]
USB Port #3	[Enabled]
USB Port #4	[Enabled]
USB Port #5	[Enabled]
USB Port #6	[Enabled]
USB Port #7	[Enabled]
USB Port #8	[Enabled]
USB Port #9	[Enabled]
USB Port #10	[Enabled]
USB Port #11	[Enabled]
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

USB Port #0-11

Disable USB Port

Choices: Disabled, Enabled.

Power Control Configuration

System Power Control Configuration Parameters

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Configuration		
Power Control Configuration		Enables or Disables System ability to Hibernates (OS/S4 Sleep State). This option may be not effective with some OS.
Enable Hibernation	[Enabled]	
ACPI Sleep State	[S3 only(Suspend to ...)]	
Power Loss Function	[Always OFF]	
Wake system with Fixed Time	[Disabled]	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Wake up Day of Month	0	
Wake up hour	0	
Wake up minute	0	
Wake up second	0	
Wake on Ring	[Disabled]	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Enable Hibernation

Enables or Disables System ability to Hibernates (OS/S4 Sleep State). This option may be not effective with some OS.

Choices: Disabled, Enabled.

ACPI Sleep State

Select the ACPI Sleep state the system will enter when the SUSPEND button is pressed.

Choices: S3 only (Suspend to RAM).

Power Loss Function

Control SIO Power Loss Function, ON is always ON, OFF is always OFF, Last state will depends on last power state.

Choices: Always Off, Always On, Last State.

Wake system with Fixed Time

Enable or disable system wake on alarm event. When enabled, System will wake on the hr::min::sec specified.

Choices: Disabled, Enabled.

Wake up Day of Month

Select 0 for daily system wake up 1-31 for which day of the month that you would like the system wake up.

Choices: 1-31.

Wake up hour

Select 0-23 for example enter 3 for 3am and 15 for 3pm.

Choices: 0-23.

Wake up minute

Choices: 0-59.

Wake up second

Choices: 0-59.

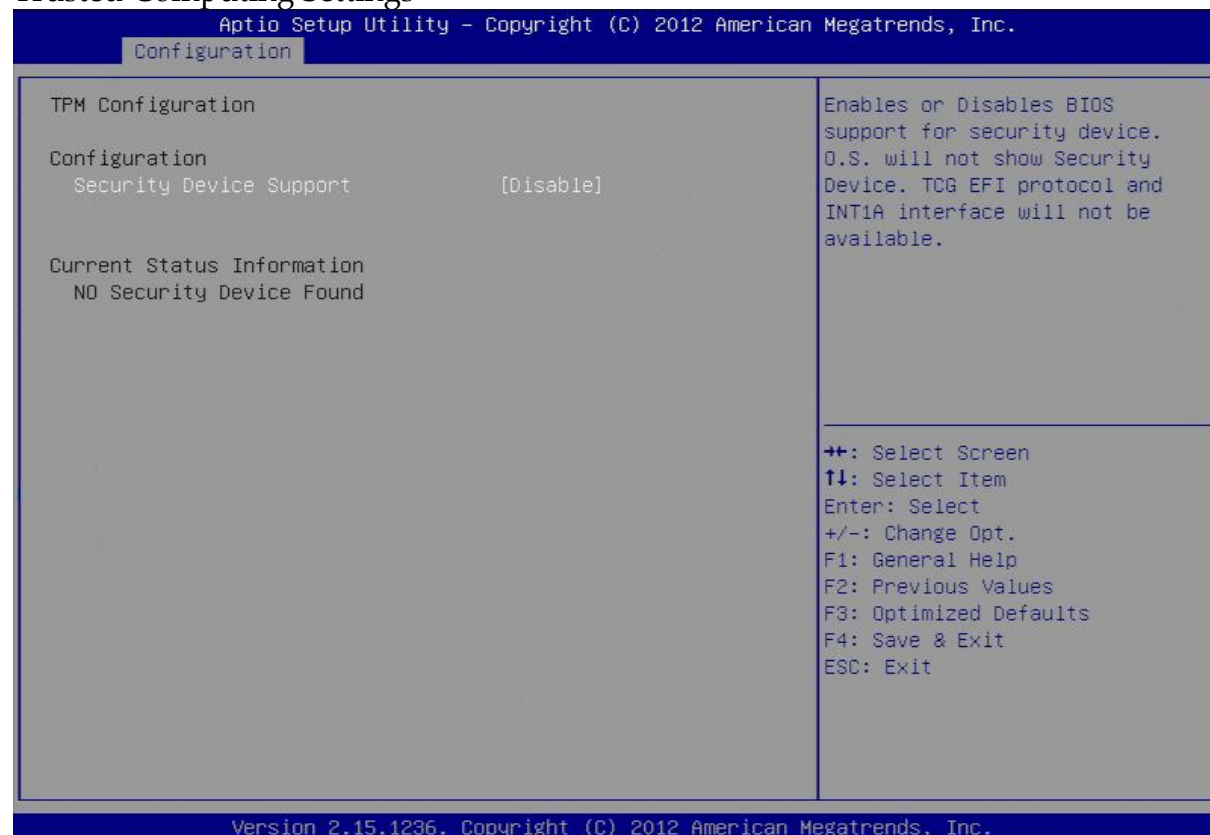
Wake up Ring

Enable or Disable Wake on Ring form OS.

Choices: Disabled, Enabled.

TPM Configuration

Trusted Computing Settings



Security Device Support

Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Choices: Disable, Enable.

Super IO Configuration**System Super IO Chip Parameters**

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Configuration	
Super IO Configuration	Enable/Disable Watch Dog Timer
Watch Dog Timer	[Enabled]
Timer Unit	[Second]
Timer value	20
Serial Port 1	[Enabled]
Device Settings	IO=3F8h; IRQ=4;
Serial Port 2	[Enabled]
RS-232/422/485 Control Option	[RS-232]
Device Settings	IO=2F8h; IRQ=3;
Serial Port 3	[Enabled]
Device Settings	IO=260h; IRQ=11;
Serial Port 4	[Enabled]
Device Settings	IO=268h; IRQ=11;
Serial Port 5	[Enabled]
Device Settings	IO=270h; IRQ=11;
Serial Port 6	[Enabled]
Device Settings	IO=278h; IRQ=11;
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

Watch Dog Timer

Enable/Disable Watch Dog Timer

Choices: Disabled, Enabled.

Timer Unit

Select Timer count unit of WDT.

Choices: Second, Minute.

Timer value

Select WDT Timer value Seconds Range: 10 to 255

Choices: 10-255.

Serial Port 1-6

Enable or Disable Serial Port 1-6 (COM)

Choices: Disabled, Enabled.

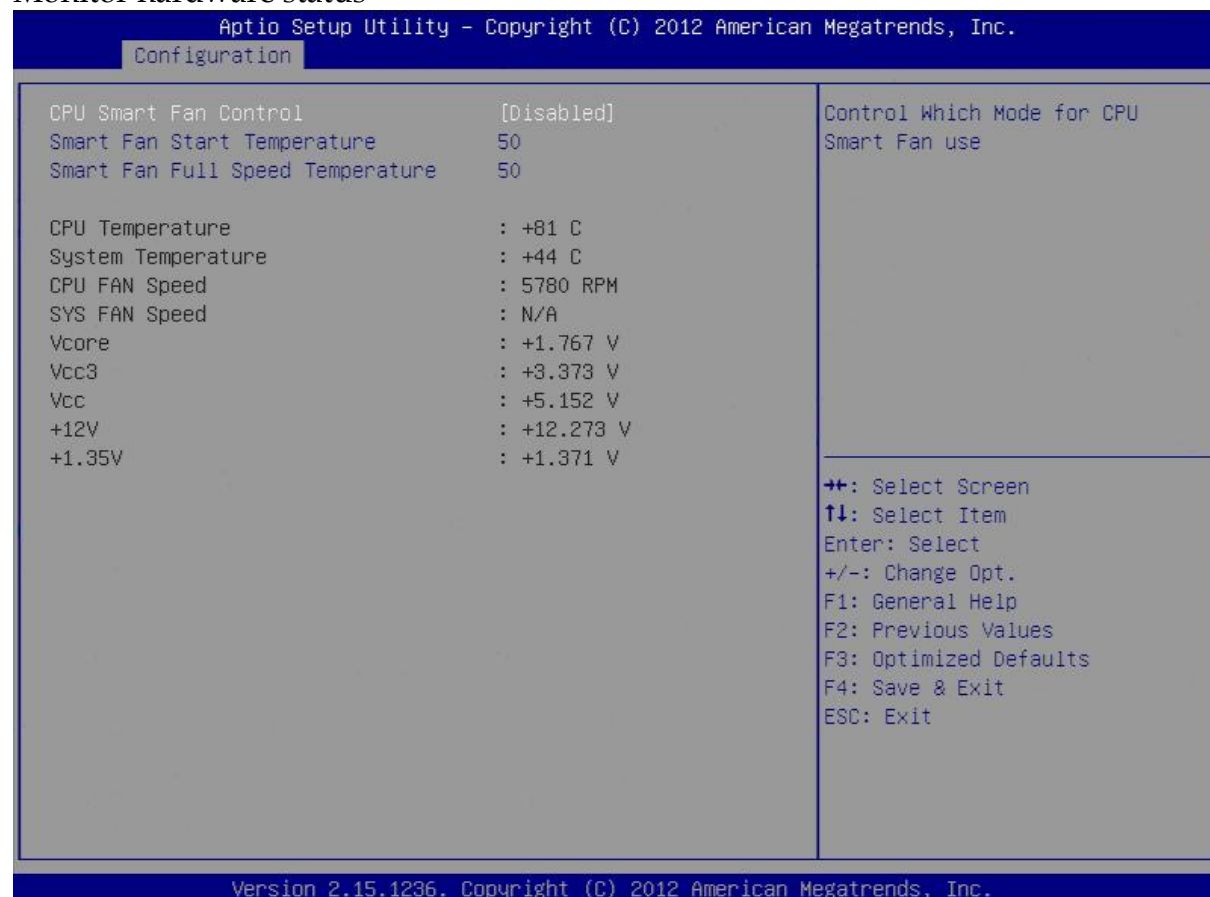
RS-232/422/485 Control Option (For Serial Port2 only)

Serial Port2 RS-232/422/485 Control Option

Choices: RS-232, RS-422, RS-485.

H/W Monitor

Monitor hardware status

**CPU Smart Fan Control**

Control Which Mode for CPU Smart Fan use.

Choices: Disabled, Thermal Cruise Mode.

Smart Fan Start Temperature

Set Temperature for Start CPU Smart Fan (40 to 105)

Choices: 40-105

Smart Fan Full Speed Temperature

Set Temperature for Smart Fan Full Speed (40 to 105)

Choices: 40-105

Serial Port Console Redirection

Serial Port Console Redirection

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Configuration		
Serial Port Console Redirection		Console Redirection Enable or Disable.
Serial Port 1 (Disabled)	Port Is Disabled	
Console Redirection	[Disabled]	
Serial Port 2 (Disabled)	Port Is Disabled	
Console Redirection	[Disabled]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Serial Port 1 (Disabled)

Console Redirection

Console Redirection Enable or Disable

Choices: Disabled, Enabled.

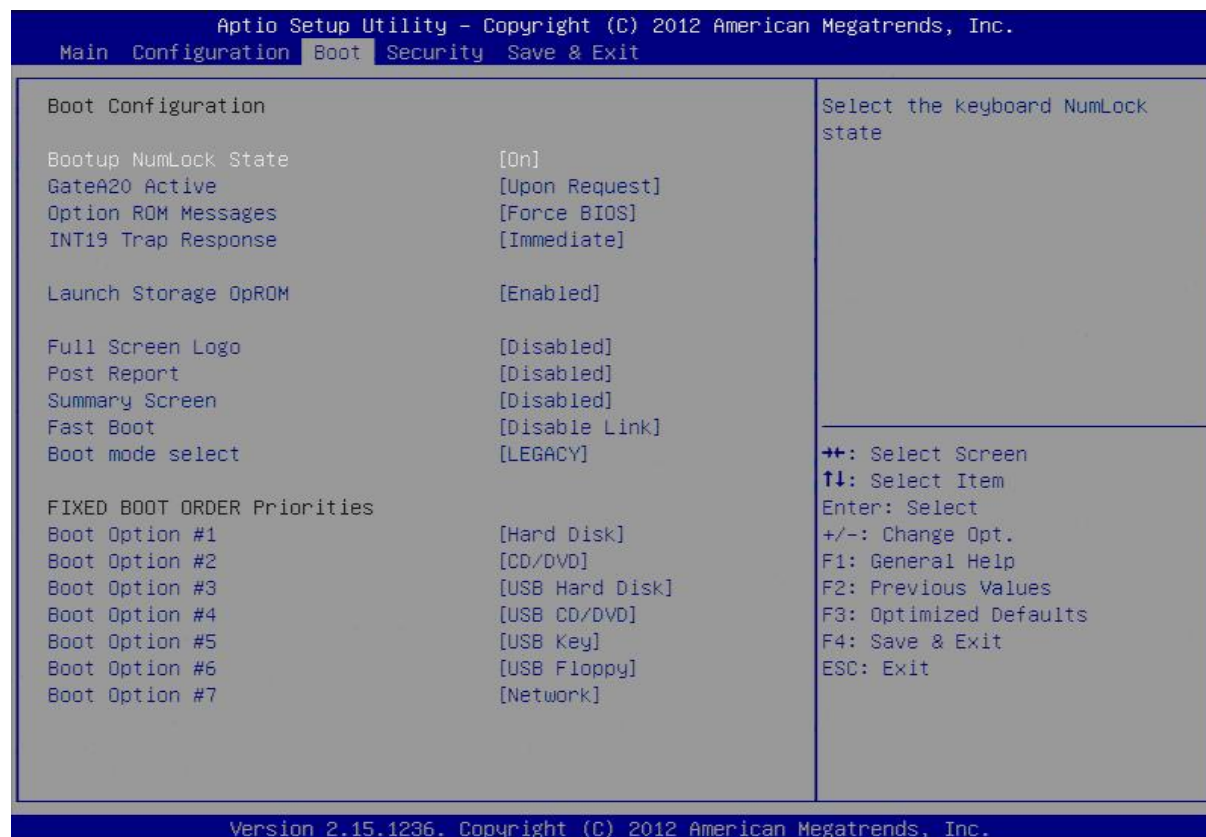
Serial Port 2 (Disabled)

Console Redirection

Console Redirection Enable or Disable

Choices: Disabled, Enabled.

4.4 Boot



Bootup Num-Lock State

Select the keyboard Numlock state.

Choices: On, Off.

GateA20 Active

UPON REQUEST - GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Choices: Upon Request, Always.

Option ROM Messages

Set display mode for Option ROM.

Choices: Force BIOS, Keep Current.

INT19 Trap Response

BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE - execute the trap right away; POSTPONED - execute the trap during legacy boot.

Choices: Immediate, Postponed.

Launch Storage OpROM

BIOS reaction on INT19 trapping by Option ROM:

IMMEDIATE - execute the trap right away; POSTPONED - execute the trap during legacy boot.

Choices: Immediate, Postponed.

Full Screen Logo

Enables or Disables Quiet Boot option and Full screen Logo.

Choices: Disabled, Enabled.

Post Report

Post Report Support Enabled/Disabled.

Choices: Disabled, Enabled.

Summary Screen

Summary Screen Support Enabled/Disabled.

Choices: Disabled, Enabled.

Fast Boot

Enables or Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Choices: Disable Link, Enabled.

Boot mode select

Select boot mode LEGACY/UEFI.

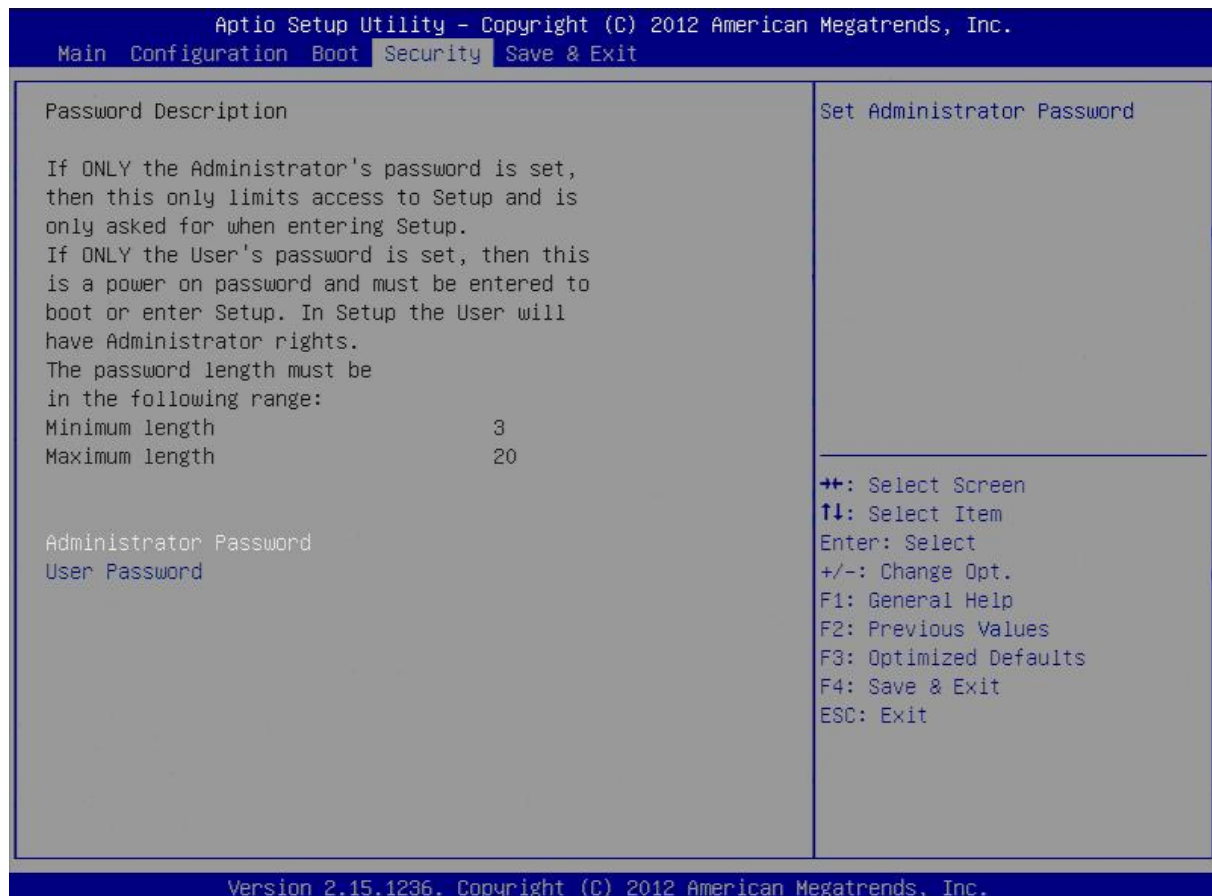
Choices: LEGACY, UEFI.

Boot Option #1-7

Sets the system boot order

Choices: Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy, Network, Disabled.

4.5 Security



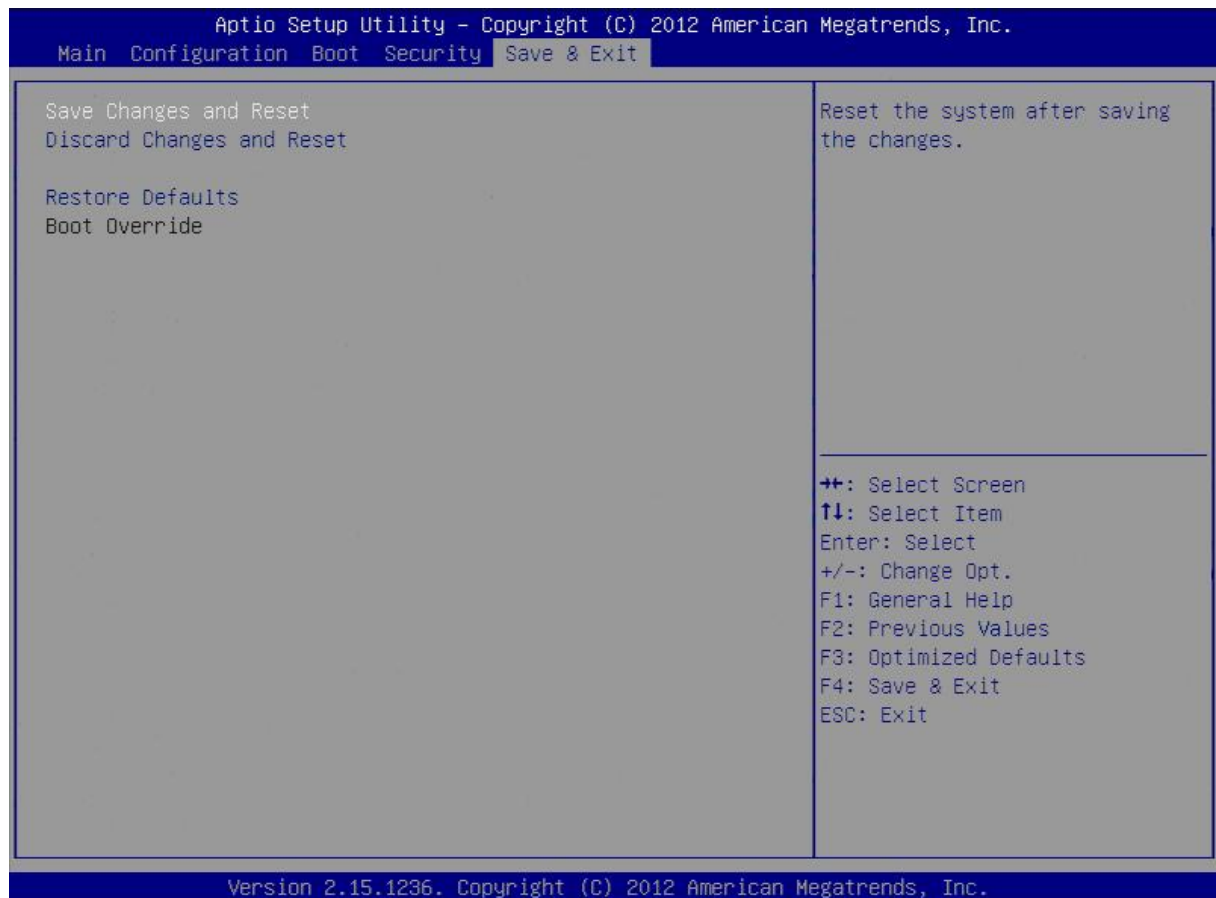
Administrator Password

Set Setup Administrator Password

User Password

Set User Password

4.6 Save & Exit



Save Changes and Reset

Reset the system after saving the changes.

Pressing <Enter> on this item asks for confirmation: Save configuration and reset.

Discard Changes and Exit

Reset system setup without saving any changes.

Restore Defaults

Restore/Load Default values for all the setup options.

Chapter 5

Troubleshooting

This chapter provides a few useful tips to quickly get WADE-8022 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 Mini-ITX board computer, WADE-8022 supports ATX only. Therefore, there is no other setting that really needs to be set up. You must connect to J1 (12V DC Jack) or J10 (ATX 4Pin 12V Power Connector) to let WADE-8022 power on.

ATX Power emulation AT Mode

You can adjust the JP5 to 1-2 short to emulation the AT mode.

It can let system auto power on when J1 or J10 has been detected your power source directly.

JP5: ATX / AT Mode Select

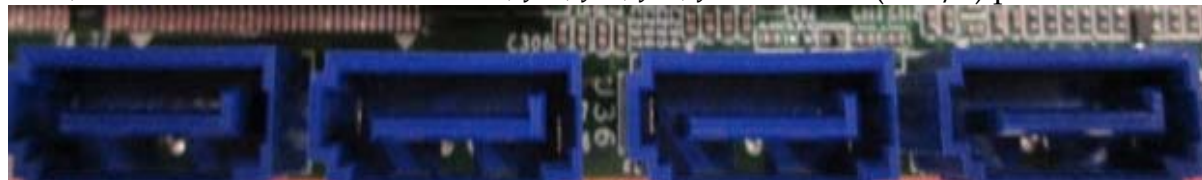


PIN No.	Signal Description
1-2 short	ATX emulation AT mode
1-2 open	ATX mode ★

Please note that you still need to use 12V adapter or ATX power supply to use!!

Serial ATA Hard Disk Setting for IDE/AHCI/RAID

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; there are total four connectors, J33, J34, J35, J36 SATAIII (6Gb/s) ports on-board.



The SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation. All you need to operate IDE, AHCI or RAID (0,1,5,10) application for system, please follow up setting guide in BIOS programming (Table 5-1); Furthermore, you can consult chapter 4.3 Advanced "SATA Configuration" part of the "SATA Mode Selection".

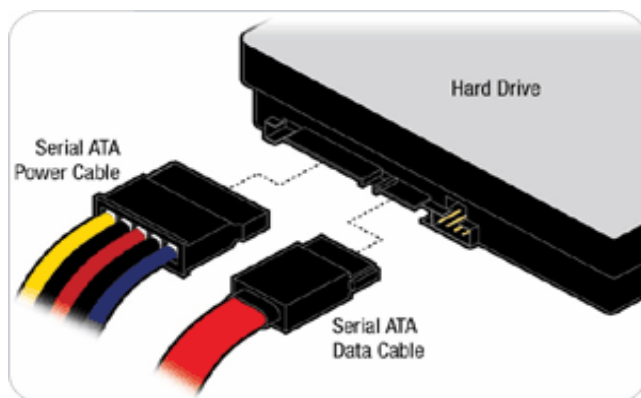
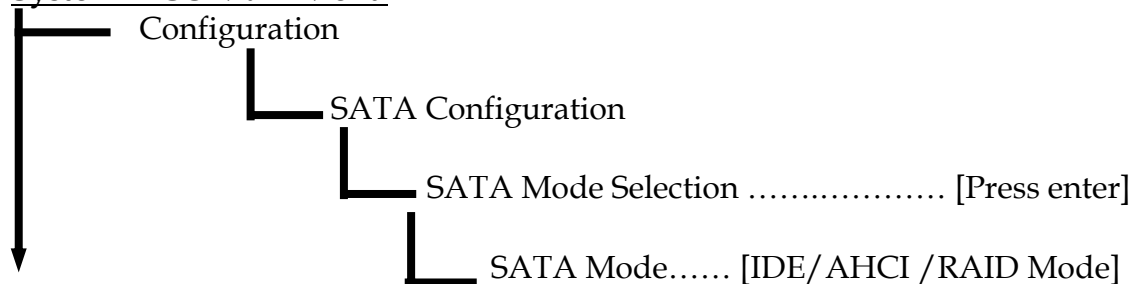


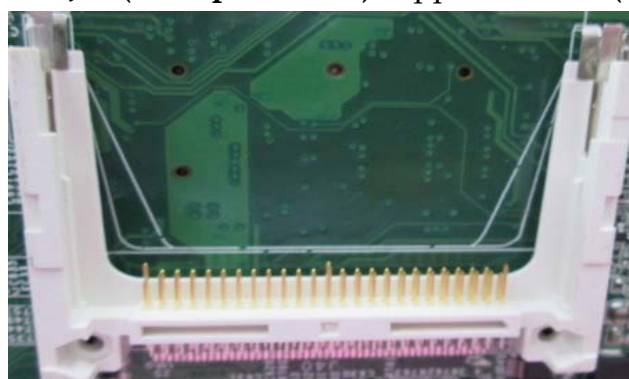
Table. 5-1 SATA Mode setting guide

System BIOS Main Menu



CFEX support

The J40 (CF 50pin socket) supports CFEX. (Has SATA signal).



mSATA device support

The J28 (**Mini-PCIe slot**) has SATA signal can support mSATA device.



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. 204-pin DDR3 SO-DIMM Memory, keyboard, mouse, 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-8022, it is recommended, when going with the boot-up sequence, to hit “Del” or “Esc” 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 “**Restore Defaults**”, press “**Enter**” and select “**Yes**” 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.

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 Serial Port1/ Serial Port 2 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 Serial Port1 to release IRQ #4
Disable Serial Port2 to release IRQ #3
Etc...

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

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 FAQ

Information & Support

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

Answer: You can simply short 2-3 pins on J20 to clean your password.

Question: How to update the BIOS file of the WADE-8022?

Answer:

1. Please visit web site of the Portwell download center as below hyperlink and register an account. **(The E-Mail box should be an existing Company email address that you check regularly.)**
<http://www.portwell.com.tw/member/newmember.php>
2. Input your User name and password to log in the download center.
3. Select the "Search download" to input the keyword "WADE-8022".
4. Find the "BIOS" page to download the ROM file and flash utility.
 5. Execute the zip file to root of the bootable USB pen drive which can boot to DOS mode.
6. Insert your bootable USB pen drive in WADE-8022 board and power-on.
 7. Boot to DOS mode then input the "Update" command to start to update BIOS process.
8. Switch "Off" the Power Supply when you finished the update process.
9. Wait 5 seconds then switch "ON" the Power Supply then press the "Del" or "Esc" key to BIOS to select "Load Setup Defaults" and then select "Exit Saving Changes" option.

Note:

Please visit our Download Center to get the Catalog, User manual, BIOS, and driver files.

http://www.portwell.com.tw/support/download_center.php

If you have other additional technical information or request which is not covered in this manual, please fill in the technical request form as below hyperlink.

http://www.portwell.com.tw/support/problem_report.php

We will do our best to provide a suggestion or solution for you.

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	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 - 9D7F	568K	【 Available 】
First Meg -- Conventional memory end at 630K --		
9D80 - 9EFF	6K	Extended BIOS Area
9F00 - 9FFF	4K	Unused
A000 - AFFF	64K	VGA Graphics
B000 - B7FF	32K	Unused
B800 - BFFF	32K	VGA Text
C000 - CEBF	59K	Video ROM
CEC0 - EFFF	133K	Unused
F000 - FFFF	64K	System ROM
HMA	64K	First 64K Extended

Interrupt Request Lines (IRQ)

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

Interrupt Request Lines IRQ		
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	Video ROM	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