

WADE-8078 (AMI BIOS)

Mini-ITX Board

User's Manual

Version 1.0

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How to Use This Manual

The manual describes how to configure your WADE-8078 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. 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-8078 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

Powell Inc., a world-leading innovator in the Industrial PC (IPC) market and a member of the Intel® Communications Alliance, has launched its new WADE-8078

series in response to market demand for a simplified embedded system board (ESB)

that combines a smaller footprint, lower power consumption, robust computing power and with longevity support.

Built with Intel's latest chipset, WADE-8078 series take advantage of the Intel® Atom™ Valleyview E38XX series processors.

WADE-8078 has lots of features, also features one SATA connectors (SATA 3Gb/s) storage specification , one DDR3 SO-DIMM memory slot for DDR3L ECC SDRAM up to 4GB, support total 3 USB ports (1x USB3.0 on REAR I/O,2x USB2.0 on board), VGA / HDMI display ,one Gigabit Ethernet, and one PCIe x4 slot (PCIe x2 signal) and support CFEX.

WADE-8078's ability to drive two displays simultaneously makes them particularly suitable for lottery and gaming applications. They are also ideal for applications such as point-of-sale (POS), digital signage, kiosks .

1.2 Check List

The WADE-8078 package should cover the following basic items

- ✓ One WADE-8078 Mini-ITX Main Board
- ✓ One 8 Pin Power Cable
- ✓ 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

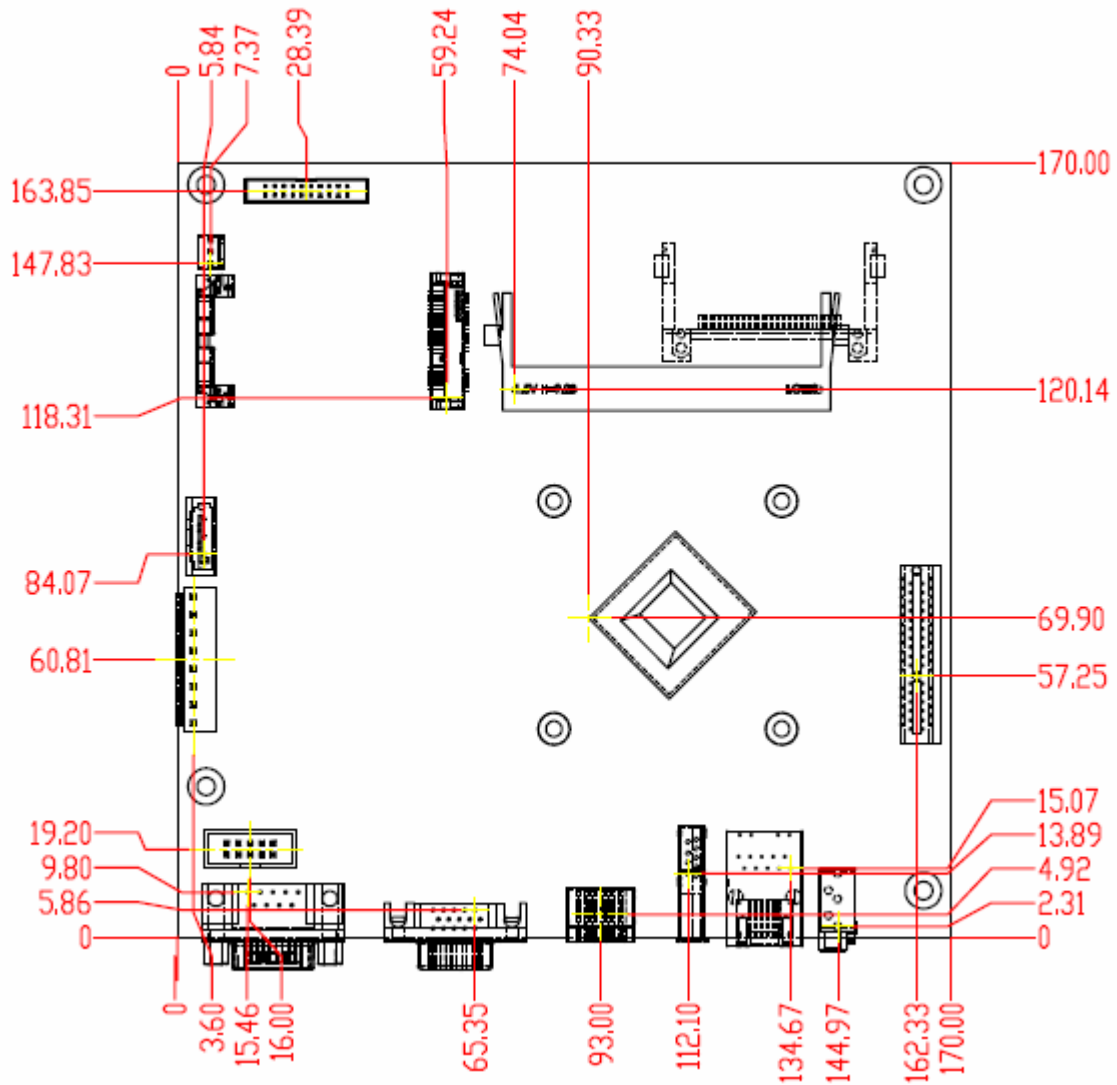
- Main Processor
 - Intel® Atom™ Valleyview E38XX series processor
- System BIOS
 - AMI BIOS
- Main Memory
 - One 204 - pin DDR3 SODIMM socket support DDR3L up to 4GB 1066/1333 MHz ECC memory(only use ECC memory)
 - E3845 / E3827 support 1333MHz memory
 - E3826 / E3825 / E3815 support 1066MHz memory
- Expansion Interface
 - One PCIex4(PCIex2 signal)
- SATA Interface
 - One SATA ports(SATA 3Gb)
- Serial Port
 - Support one RS232 / one RS232/422/485
- USB Interface
 - Support three USB (Universal Serial Bus) ports, one USB3.0 on rear I/O and two USB2.0 on board header for internal devices
- Audio Interface
 - Connector for Line-Out(Line in / Line out / Mic in on board 8 pin 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
 - One Gigabit Ethernet (10/100/1000 Mbits/sec) LAN ports
- High Drive GPIO
- One pin-header for 8 bit GPIO
- System Monitoring Feature
 - Monitor system temperature and major power sources.
- Outline Dimension (L x W)
 - 170mm(6.69'') x 170mm(6.69'')
- Power Requirements

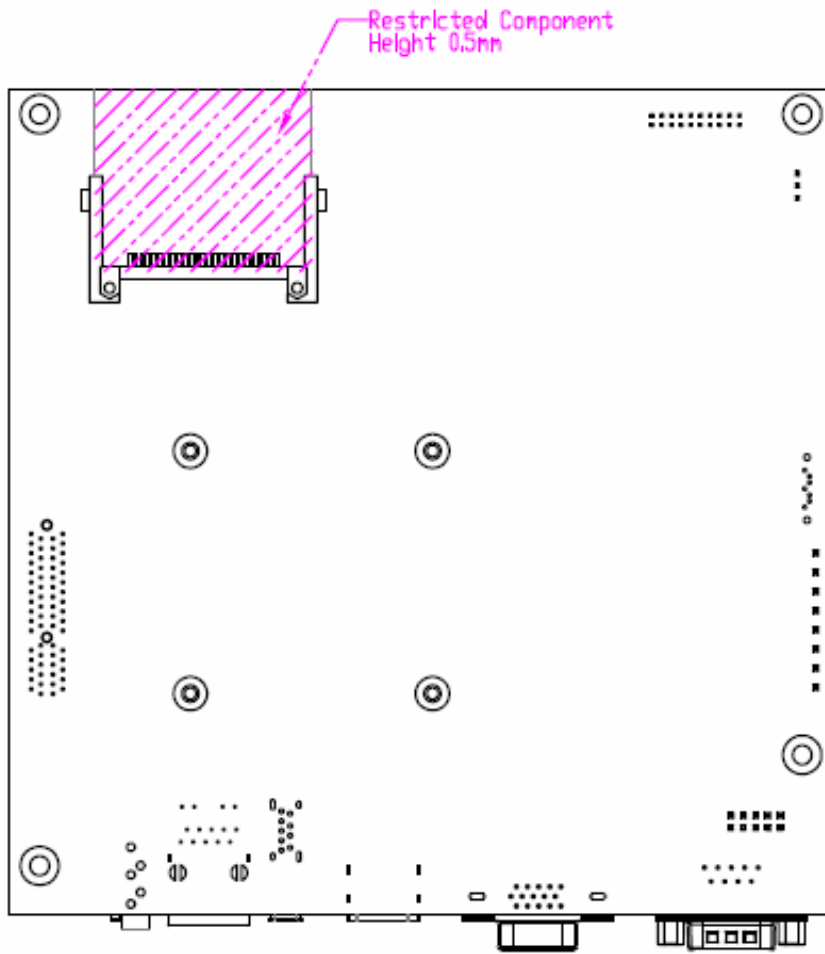
● Configuration

CPU Type	Genuine Intel® CPU@ 1.91 GHz Atom L3 : 2M Bytes
SBC BIOS	Portwell, Inc. WADE-8078 BIOS (30903T00) EVALUATION COPY
ECC Memory	WARIS DDR3L SO-DIMM 1333 4GB*1 (hynix H5TC2G83EFR)
VGA Card	Onboard Intel(R) HD Graphics
VGA Driver	Intel(R) HD Graphics Version : 10.18.10.3266
LAN Card	Onboard Intel(R) I210 Gigabit Network Connection
LAN Driver	Intel(R) I210 Gigabit Network Connection Version : 12.7.28.0
Audio Card	Onboard Realtek High Definition Audio Controller
Audio Driver	Realtek High Definition Audio Version:6.0.1.6873
Chip Driver	Intel (R) Chipset Device Software Version : 9.4.4.1005
USB 3.0 Driver	Intel (R) USB 3.0 eXtensible Host Controller Version : 6.2.9200.16384
3.5" SATA-2 HDD	Western Digital WD5002ABYS 500GB
CFEX	WARIS CFEX 4GB PWG B473D350-002
USB DVD-ROM	Transcend TS8XDVDRW-K
Power Supply	Portwell, ORION-D4601 460W

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

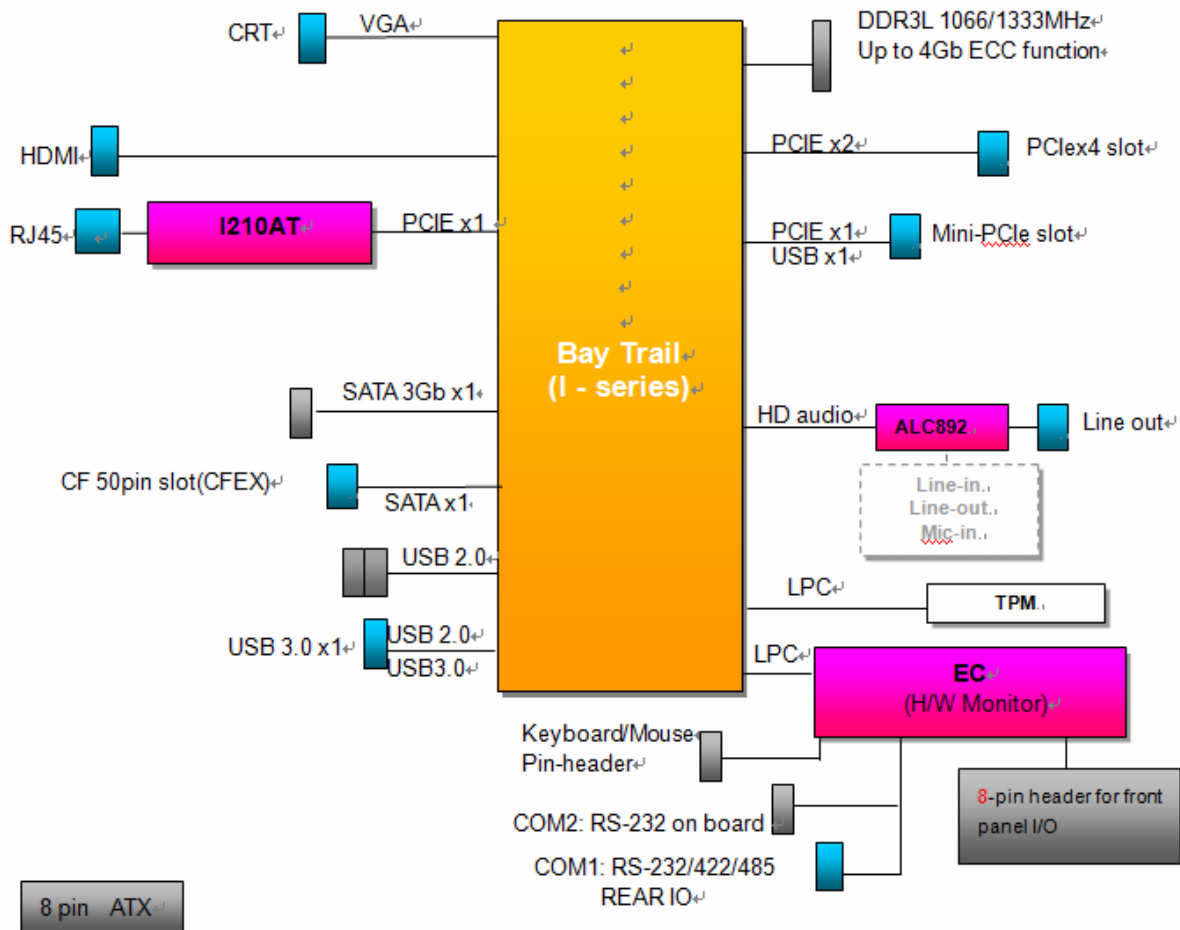
1.3.1 Mechanical Drawing





1.4 System Architecture

All of details operating relations are shown in WADE-8078 System Block Diagram.



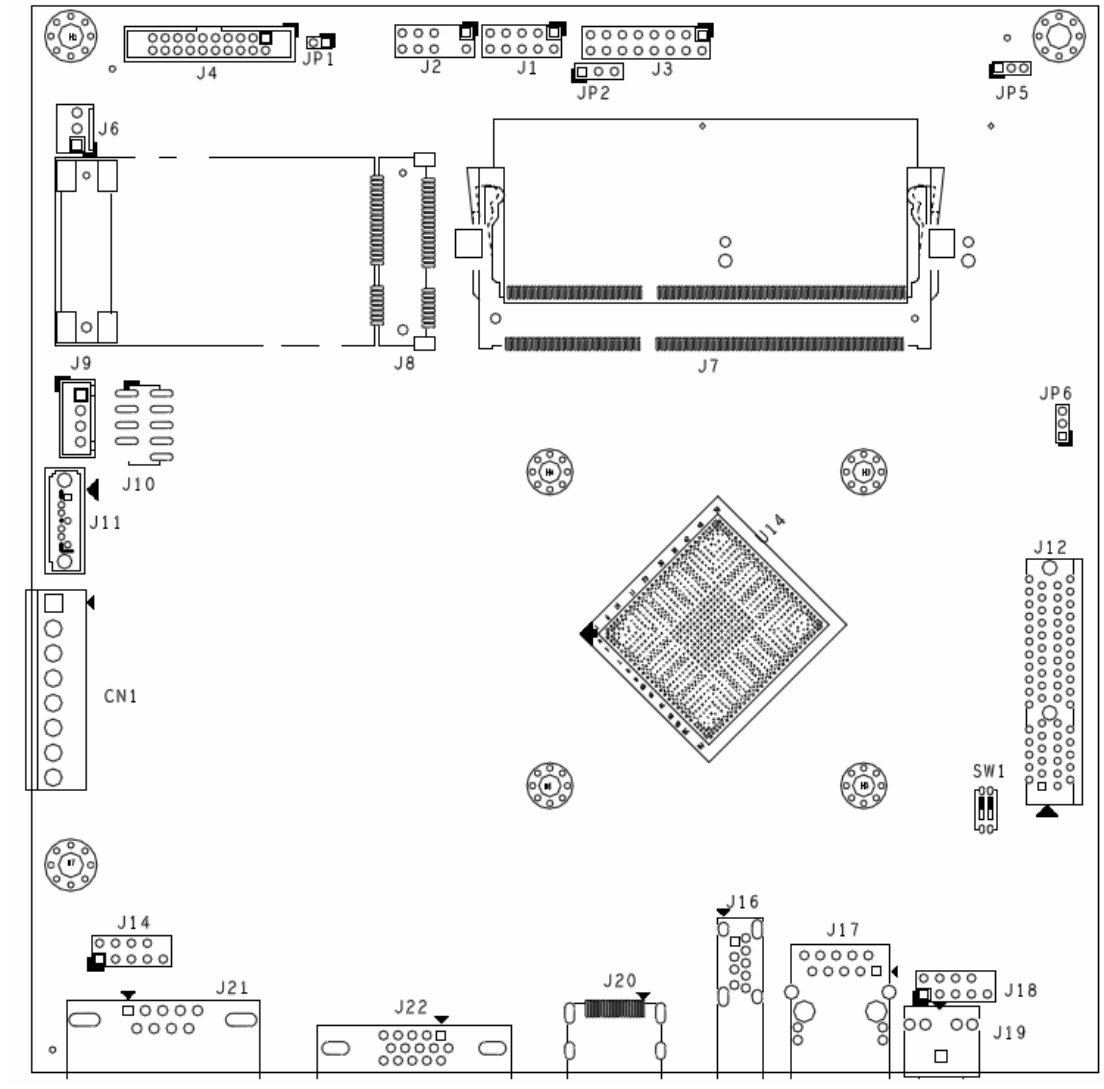
WADE-8078 System Block Diagram

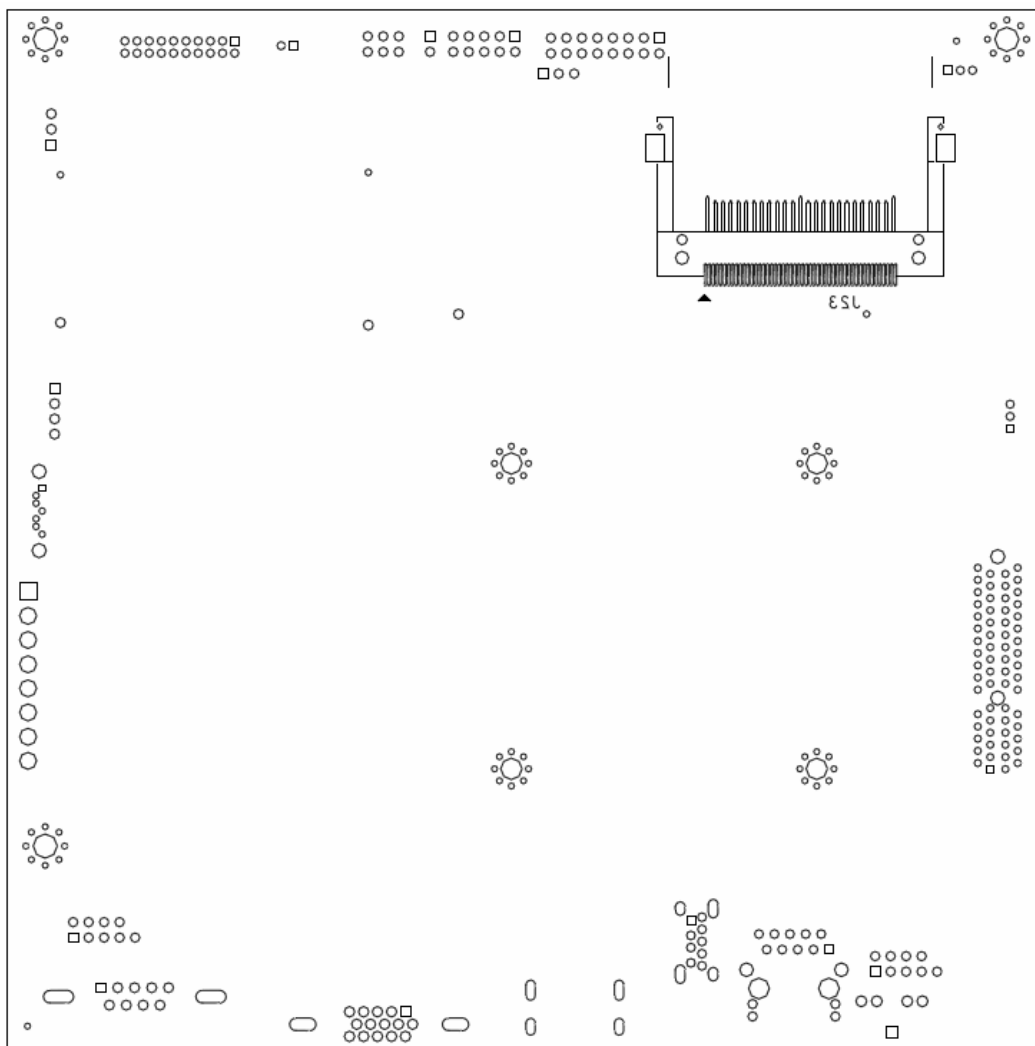
Chapter 2 Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers and connectors. All of the configuration jumpers on WADE-8078 are in the proper position. The default settings shipped from factory are marked with an asterisk (♣).

2.1 Jumper Setting

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





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

JP1: Watch Dog Timer Enable



PIN No	Signal Function
1-2 open	Disable ★
1-2 short	Enable

JP2: GPO Voltage Select



1

PIN No	Signal Function
1-2 short	+5V ★
2-3 short	+3.3V

JP5: BIOS Select



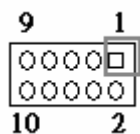
PIN No	Signal Function
1-2 short	SPI Flash ★
2-3 short	CFEX BIOS

JP6: Clear CMOS



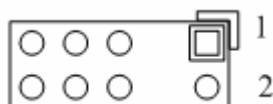
PIN No	Signal Function Function
1-2 short	Normal ★
2-3 short	Clear CMOS

J1: GPIO

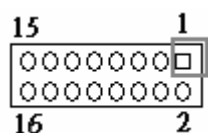


Pin No.	Signal Description	Pin No.	Signal Description
1	LPC_GPIO0 (GPJ0)	2	EC_GPO4 (GPE0)
3	LPC_GPIO1 (GPJ1)	4	EC_GPO5 (GPE7)
5	LPC_GPIO2 (GPJ2)	6	EC_GPO6 (GPC0)
7	LPC_GPIO3 (GPJ3)	8	EC_GPO7 (GPG0)
9	GND	10	+5V

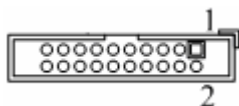
J2: Keyboard & Mouse Pin HDR



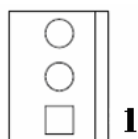
Pin No.	Signal Description	Pin No.	Signal Description
1	Mouse Data	2	Keyboard Date
3	Key(no pin)	4	Key(no pin)
5	Ground	6	Ground
7	+5V_Dual	8	+5V_Dual
9	Mouse Clock	10	Keyboard Clock

J3: Front Panel System Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	PWR_LED(+)	2	Speaker(+)
3	PWR_LED(-)	4	N/C
5	J17 LAN_ACT(+)	6	N/C
7	J17 LAN_LINK(-)	8	Speaker(-)
9	N/C	10	GND
11	N/C	12	Power Button
13	HDD_LED(+)	14	Rest
15	HDD_LED(-)	16	GND

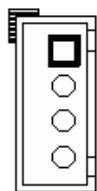
J4: TPM Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	TPM Clock	2	Ground
3	LFRAME#	4	N/C
5	PLTRST#	6	+5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	Ground
13	SMB_CLK	14	SMB_DATA

J6: System FAN Connector

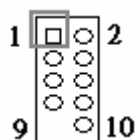
PIN No	Signal Function
1	GND
2	+12V
3	SENSE

J9: SATA Power



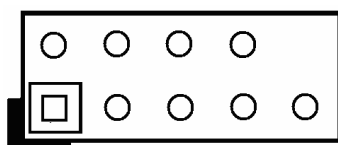
PIN No	Signal Function
1	+12V
2	Ground
3	Ground
4	+5V

J10: External USB Connector



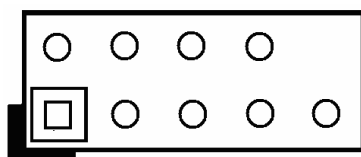
Pin No.	Signal Description	Pin No.	Signal Description
1	5V Dual	2	5V Dual
3	USB-	4	USB-
5	USB+	6	USB+
7	Ground	8	Ground
9		10	N/C

J14: COM2



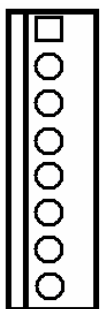
Pin No.	Signal Description	Pin No.	Signal Description
1	Data Carrier Detect	2	Receive Data
3	Transmit Data	4	Data Terminal Ready
5	GND	6	Data Set Ready
7	Request To Send	8	Clear To Send
9	Ring Indicator	10	KEY

J18: Audio MIC/Line-in/Line-out Connector



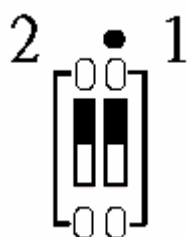
Pin No.	Signal Description	Pin No.	Signal Description
1	MIC with Reference Voltage	2	Analog Ground
3	Line-in Left Channel	4	Analog Ground
5	Line-in Right Channel	6	Analog Ground
7	Line-out Left Channel	8	Analog Ground
9	Line-out Right Channel	10	KEY

CN1: 8 Pin ATX Connector

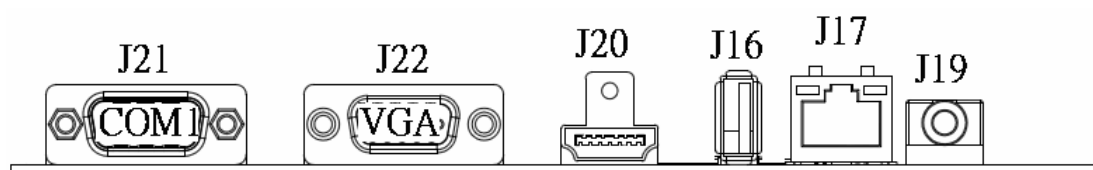


PIN No	Signal Description
1	+5V
2	+5V
3	+5Vsb
4	+12V
5	PS_ON#
6	Ground
7	Ground
8	Ground

SW1: ATX Detect & BIOS Recovery Switch



No.	Signal Description	On	Off
1	ATX Detect	AT Mode	ATX Mode
3	BIOS Recovery	Enable	Disable



J20: HDMI Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	D_HDMI_D0+	2	GND
3	D_HDMI_D0-	4	D_HDMI_D1+
5	GND	6	D_HDMI_D1-
7	D_HDMI_D2+	8	GND
9	D_HDMI_D2-	10	D_HDMI_D3+
11	GND	12	D_HDMI_D3-
13	N/C	14	N/C
15	D_HDMI_DDC_CLK	16	D_HDMI_DDC_DATA
17	GND	18	VCC
19	D_HDMI_HPD_IN	20	

J19: Audio connector

PIN No	Signal Description
Green	Line-Out

J21: COM1 Serial Port Connector

Pin No.	Signal Description		
	RS-232	RS-422 (COM2)	RS-485 (COM2)
1	DCD (Data Carrier Detect)	TX-	DATA-
2	DSR (Data Set Ready)	N/C	N/C
3	RXD (Receive Data)	TX+	DATA+
4	RTS (Request to Send)	N/C	N/C
5	TXD (Transmit Data)	RX+	N/C
6	CTS (Clear to Send)	N/C	N/C
7	DTR (Data Terminal Ready)	RX-	N/C
8	RI (Ring Indicator)	N/C	N/C
9	GND (Ground)	GND	GND
10	N/C	N/C	N/C

J22: VGA Connector

Pin No.	Signal Description	Pin No.	Signal Description
1	CRT_R	9	VCC
2	CRT_G	10	GND
3	CRT_B	11	N/C
4	N/C	12	VGA_DDCDA
5	GND	13	CRT_HS
6	GND	14	CRT_VS
7	GND	15	VGA_DDCCL
8	GND		

2.2 Connector Allocation

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

Connector Function List

Connector	Function	Remark
J1	GPIO	
J2	Keyboard & Mouse Pin HDR	
J3	Front Panel System Connector	
J4	TPM Connector	
J6	System FAN Connector	
J7	DDR3L ECC SO-DIMM Connector	
J8	Mini PCI-E	
J9	SATA Power	
J10	External USB Connector	
J11	SATA Connector	
J12	PCI-E X4 Connector (Only X2 Lan)	
J14	COM 2 Serial Port Connector	Only Support RS-232
J16	USB 3.0 Connector	
J17	LAN Connector	
J18	Audio MIC/Line-in/Line-out Connector	
J19	Audio Jack (Line-Out)	
J20	HDMI Connector	
J21	COM 1 Serial Port Connector	Support RS-232/422/485
J22	VGA Connector	
J23	CFEX Connector	
JP1	Watch Dog Timer Enable	
JP2	GPO Voltage Select	
JP5	BIOS Select	
JP6	Clear CMOS	
SW1	ATX Detect &BIOS Recovery Switch	
U2	EC EEPROM Socket	
U4	BIOS Socket	
U14	Bay Trail-I CPU	

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® Valleyview CPU

Intel® Atom(TM) E3845 CPU (4 Core, 10W, 1.91GHz, 1333MT)

3.2 Main Memory

WADE-8078 provides 1 x 204-pin SO-DIMM sockets which supports DDR3L memory (support ECC function only) as main memory, ECC (Error Checking and Correcting). The maximum memory can be up to 4GB. Memory clock and related settings can be detected by BIOS via SPD interface.

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.

3.3 Installing the Single Board Computer

WADE-8078 provides 1 x 204-pin SO-DIMM sockets which supports DDR3L memory (support ECC function only) as main memory, ECC (Error Checking and Correcting). The maximum memory can be up to 4GB. Memory clock and related settings can be detected by BIOS via SPD interface.

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.

WARNING

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

Note:

Please refer to section 3.3.1 to 3.3.6 to install INF/VGA/LAN/Audio/Sideband Fabric Device/Trusted Execution Engine drivers.

3.3.1 Chipset Component Driver

WADE-8078 uses state-of-art Intel® BayTrail-I 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 8, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in WADE-8078 CD-title

3.3.2 Intel® HD Graphics 4600

WADE-8078 has integrated Intel® HD Graphics 4600 which supports DX11, OpenGL3.2. It is the most advanced design to gain an outstanding graphic performance. WADE-8078 supports VGA and dual display. This combination makes WADE-8078 an excellent piece of multimedia hardware.

Drivers Support

Please find the Graphic driver in the WADE-8078 CD-title. The driver supports Windows 8.

3.3.3 Intel LAN I210IT / I210IAT co-lay Gigabit Ethernet Controller

Drivers Support

Please find Intel LAN I210IT / I210IT co-lay LAN driver in /Ethernet directory of WADE-8078 CD-title. The driver supports Windows 8.

3.3.4 Realtek ALC892 HD Audio Controller

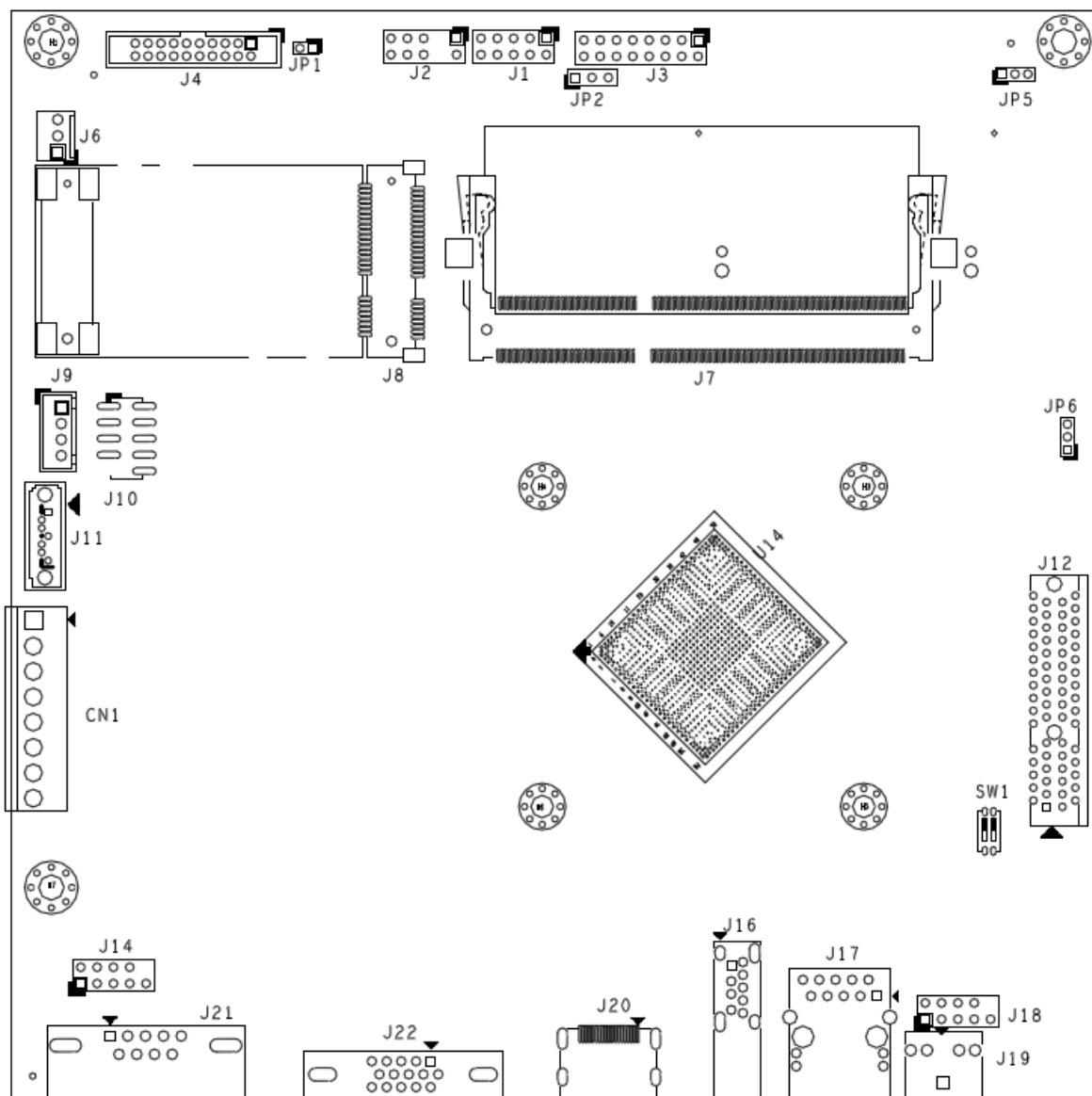
Please find Realtek ALC892 HD Audio driver form WADE-8078 CD-title. The driver supports Windows 8.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumper in the board.

JP6: CMOS Setting

JP1	Jumper Setting Describe
*1-2	Normal
2-3	Clean CMOS



3.5 WDT Function

```

#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()
{
System Installation
WADE-8078 User's Manual 3-4
unsigned char IBF_status;
do
{
pw_udelay (20); // delay 20 us
outportb (EC_CMD, &IBF_status);
} while (IBF_status & 0x02);
return 1;
}
static int OBF_Check ()
{
unsigned char OBF_status;
do
{
pw_udelay (20); // delay 20 us
OBP_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);
```

System Installation

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```
/* if use minute mode */
/* Write_EC (WDT_MIN, 0x05); */
/* 0x01 is second mode */
/* 0x03 is minute mode */
Write_EC (WDT_MODE, 0x01);
}
Write_EC ((b->wdt.ec.count_m_addr & 0xFF), b->wdt.ec.timeout);
Write_EC ((b->wdt.ec.cfg_addr & 0xFF), 0x03); //
WDTCFG[1:0]=11
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 GPIO

```
#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 // GPIO Direction (Input/Output) Reg.
#define GPIO_DATA 0x2C // GPIO High/Low Reg.
// Use port 62 and port 66 to access EC command / data.
static int IBF_Check()
{
unsigned char IBF_status;
do
{
pw_udelay (20); // delay 20 us
System Installation
WADE-8078 User's Manual 3-6
outportb (EC_CMD, &IBF_status);
} while (IBF_status & 0x02);
```

```
return 1;
}
static int OBF_Check ()
{
unsigned char OBF_status;
do
{
pw_udelay (20); // delay 20 us
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;
}
int main ()
{
unsigned char d2;
printf("\n\n");
printf("WADE-8078 GPIO TEST Program v1.0\n");
printf("Please short the following pins with 2.54mm-pitched jumper on
JP8\n");
printf("PIN 1,3,5,7 is output ; PIN 2,4,6,8 is input\n");
System Installation
WADE-8078 User's Manual 3-7
printf("GPIO1 ---- GPIO5\n");
printf("GPIO2 ---- GPIO6\n");
printf("GPIO3 ---- GPIO7\n");
printf("GPIO4 ---- GPIO8\n");
printf("GND xxxx Vcc <==PWR/GND pins, DO NOT short them!\n\n");
```



```
printf("Test Begins...\n");
/* Set GPIO Port In/Out mode */
/* Port 1 ~ 4 Out mode, 5 ~ 8 In mode*/
Write_EC (GPIO_DIR, 0xF0);
delay (5);
/* Set Port 1 ~ 4 Low, 5 ~ 8 High */
outportb (0x22E, 0xF0);
Write_EC (GPIO_DATA, 0xF0);
delay (5);
d2 = Read_EC (GPIO_DIR);
if ((d2 & 0x10) == 0)
printf ("GPIO70->GPIO74 test ok !! (pull low)\n");
else
printf ("GPIO70->GPIO74 test fail (pull high) \n");
if ((d2 & 0x20) == 0)
printf ("GPIO71->GPIO75 test ok !! (pull low)\n");
else
printf ("GPIO71->GPIO75 test fail (pull high)\n");
if ((d2 & 0x40) == 0)
printf ("GPIO72->GPIO76 test ok !! (pull low)\n");
else
printf ("GPIO72->GPIO76 test fail (pull high)\n");
if ((d2 & 0x80) == 0)
printf ("GPIO73->GPIO77 test ok !! (pull low)\n");
else
printf ("GPIO73->GPIO77 test fail (pull high)\n");
return 0;
}
```

Chapter 4

BIOS Setup Information

WADE-8078 is equipped with the Phoenix 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-8078 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

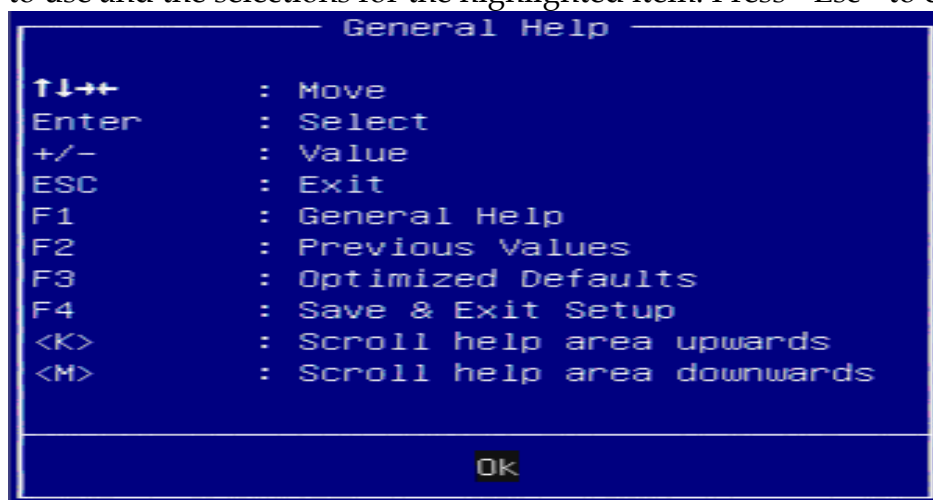
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key will enter BIOS setup screen.

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.

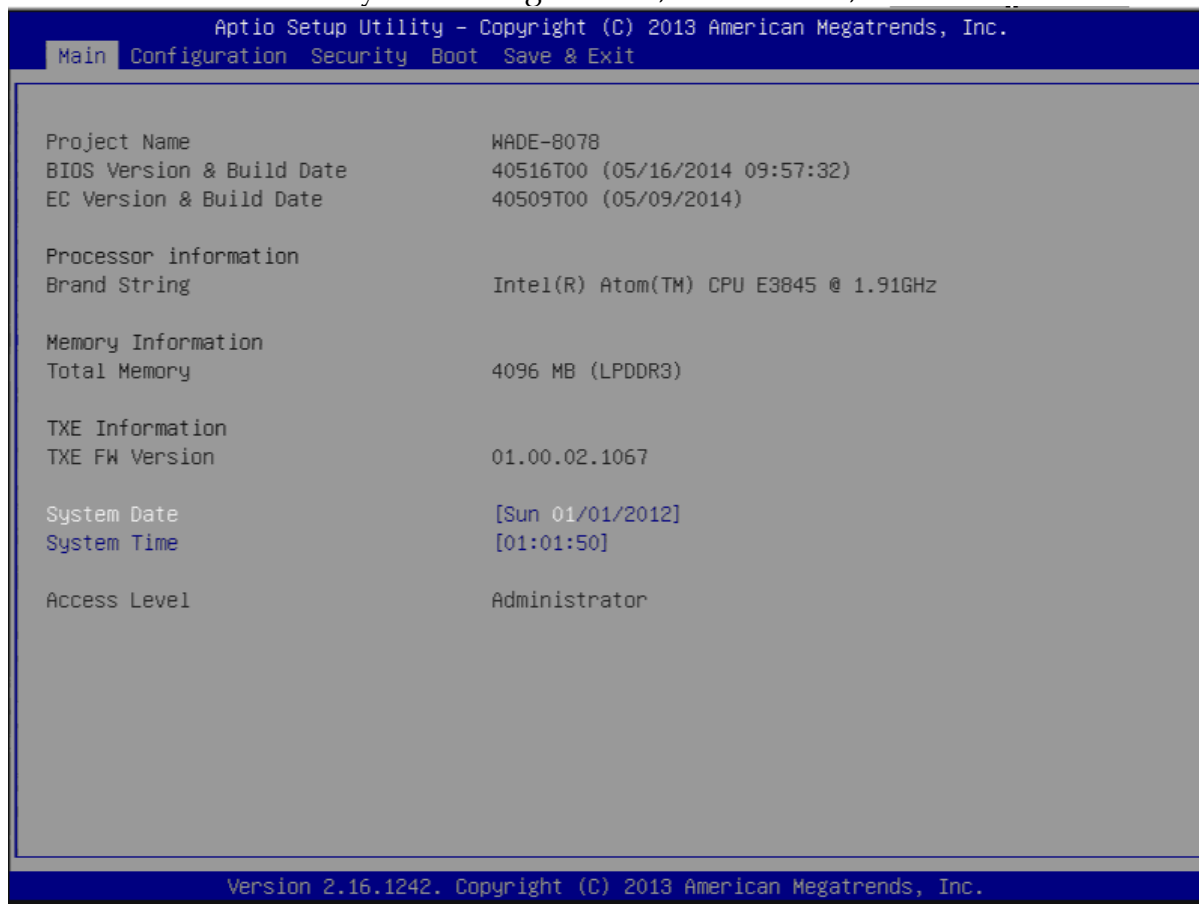
Press <F1> to Run General Help or Resume

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.



System Date

View or set system date

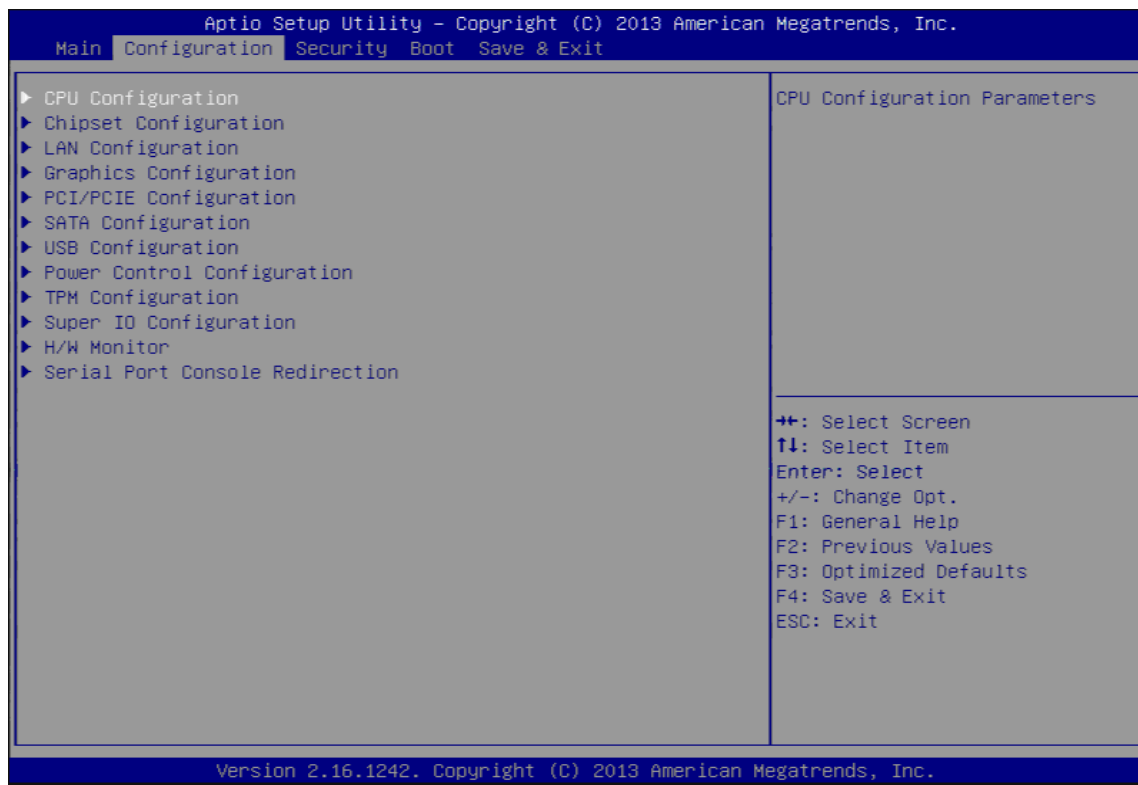
The date format is <Day>, <Month> <Date> <Year>. Use [+] or [-] to configure system Date.

System Time

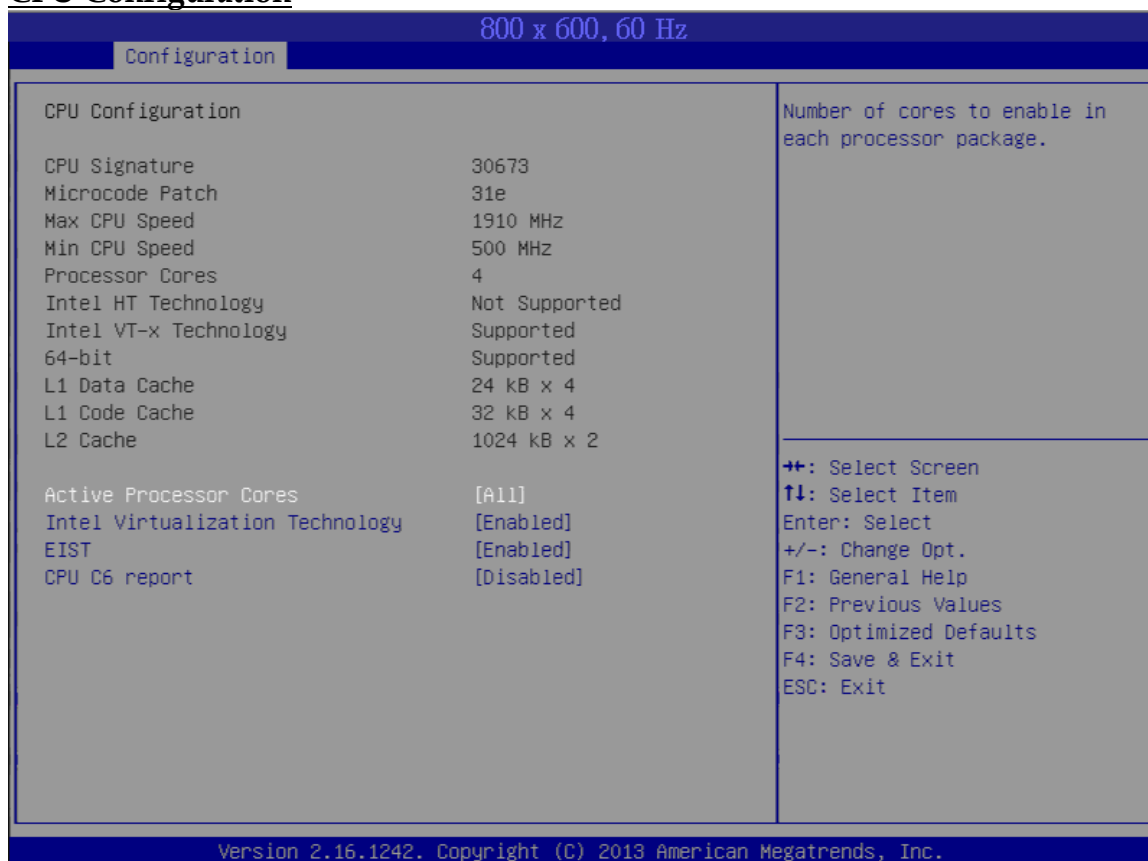
View or set system time

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

4.3 Configuration



CPU Configuration



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: Disable, Enable.

EIST

Enable/Disable Intel SpeedStep

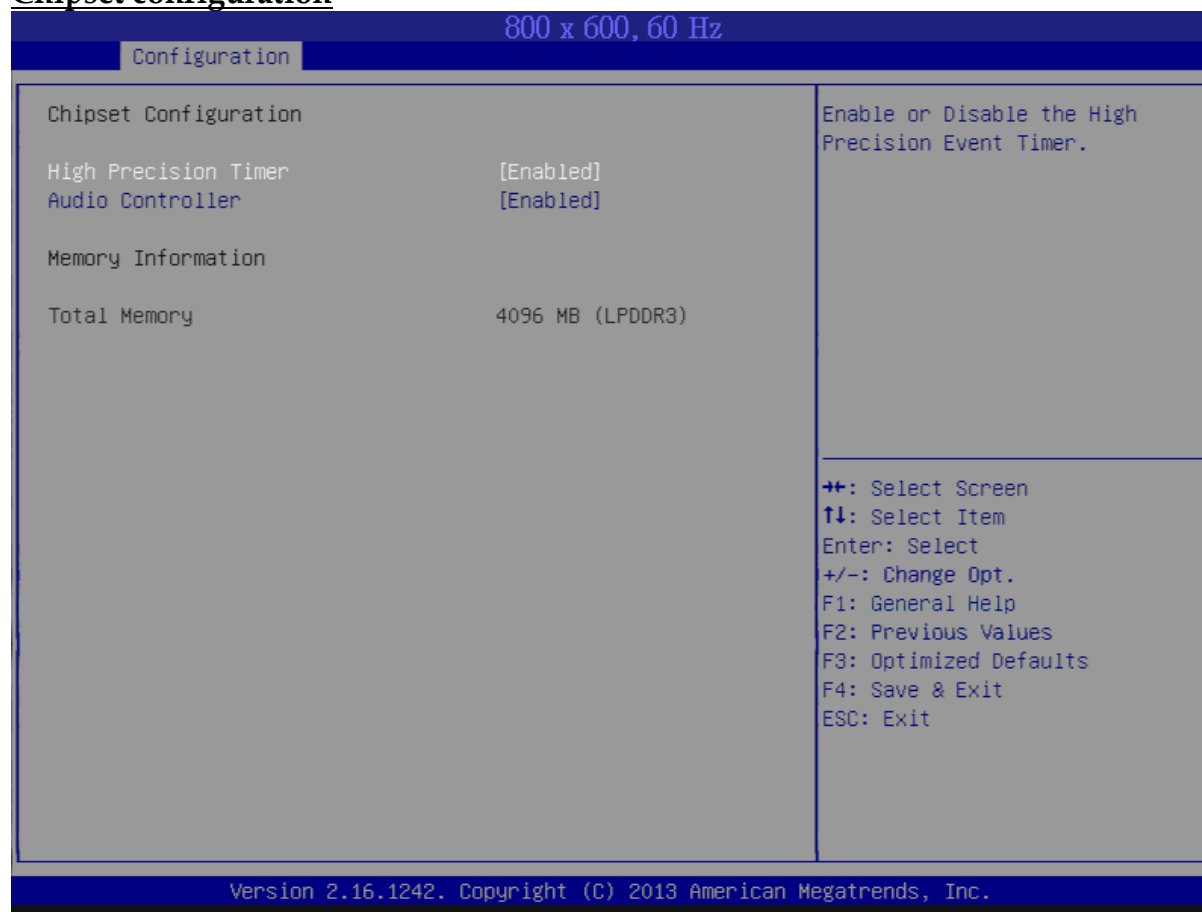
Choices: Disable, Enable.

CPU C6 report

Enable/Disable CPU C6 (ACPI C3) report to OS

Choices: Disable, Enable.

Chipset configuration



High Precision Timer

Enable or Disable the High Precision Event Timer.

Choices: Disable, Enable.

Audio Controller

Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled. Enabled = Azalia will be unconditionally enabled. Auto = Azalia will be enabled if present. Disable otherwise

Choices: Disable, Enable.

LAN Configuration



Launch Legacy PXE Rom

Launch Legacy PXE Rom. [Disable] Not launch Rom, [Enable] Force Launch Rom, [Auto] Auto detect LAN Cable status to Enable/Disable Rom initial.

Choices: Disable, Enable, Auto

Wake On Lan Controller

Enable/Disable Intel Lan WGI210AT wakeup function.

Choices: Disable, Enable

Graphics Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

Configuration

Graphics Configuration		Enable GOP Driver will unload VBIOS; Disbale it will load VBIOS
GOP Configuration GOP Driver [Enabled]		
Intel IGD Configuration Integrated Graphics Device [Enabled] IGD Turbo Enable [Enabled] Primary Display [IGD] DVMT Pre-Allocated [64M] DVMT Total Gfx Mem [256MB]		
IGD Output Display control - GOP Force Lid Status [On] BIA [Auto] ALS Support [Disabled] IGD Flat Panel [Auto] Pannel Scaling [Auto]		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
IGD Output Display control - CSM Primary IGFX Boot Display [CRT] LCD Panel Type [VBIOS Default] Panel Scaling [Auto] Backlight Control [PWM Normal] Active LFP [eDP Port-A]		

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GOP Configuration

GOP Driver

Enable GOP Driver will unload VBIOS; Disable it will load VBIOS
 Choices: Enable, Disable.

Intel IGD Configuration

IGD Turbo Enable

Enable: Enable IGD Turbo Enable. Disable: IGD Turbo Disable.
 Choices: Enable, Disable.

Primary Display

Select which of IGD/PCI Graphics device should be Primary Display.
 Choices: Auto, IGD, PCI, SG.

DVMT Pre-Allocated

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

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

DVMT Total Gfx Mem

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

Choices: 128MB, 256MN, Max.

Primary UGFX Boot Display

Select the video device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your election. VGA modes will be supported only on primary display.

Choices: CRT, EFP.

LCD Panel Type

Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

Choices: VBIOS Default, 640x480 LVDS, 800x600 LVDS, 1024x768 LVDS, 1280x1024 LVDS, 1400x1050 (RB) LVDS, 1400x1050 LVDS, 1600x1200 LVDS, 1366x768 LVDS, 1680x1050 LVDS, 1920x1200 LVDS, 1440x900 LVDS, 1600x900 LVDS..etc.

Panel Scaling

Select the LCD Panel scaling option used by Internal Graphic device

Choices: Auto, Off, Force Scaling.

Backlight Control

Back Light Control Setting

Choices: PWM Inverted, PWM Normal, GMBus Inverted, FMBus Normal.

Active LFP

Select the Active LFP configuration.

Choices: No LVDS, Int-LVDS, SDVD LVDS, Edp Port-A, Edp Port-D

PCI/PCIE Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

Configuration

<p>PCI/PCIE Configuration</p> <p>▶ PCI Express Configuration</p>	<p>PCI Express Configuration settings</p> <hr/> <p> ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit </p>
--	---

Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

Configuration

<p>PCI Express Configuration</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">PCI Express Port 0</td> <td style="width: 30%;">[Enabled]</td> <td style="width: 40%;"></td> </tr> <tr> <td>Speed</td> <td>[Auto]</td> <td></td> </tr> <tr> <td colspan="3"> </td> </tr> <tr> <td>PCI Express Port 1</td> <td>[Enabled]</td> <td></td> </tr> <tr> <td>Speed</td> <td>[Auto]</td> <td></td> </tr> <tr> <td colspan="3"> </td> </tr> <tr> <td>PCI Express Port 2</td> <td>[Enabled]</td> <td></td> </tr> <tr> <td>Speed</td> <td>[Auto]</td> <td></td> </tr> <tr> <td colspan="3"> </td> </tr> <tr> <td>PCI Express Port 3</td> <td>[Enabled]</td> <td></td> </tr> <tr> <td>Speed</td> <td>[Auto]</td> <td></td> </tr> </table>	PCI Express Port 0	[Enabled]		Speed	[Auto]					PCI Express Port 1	[Enabled]		Speed	[Auto]					PCI Express Port 2	[Enabled]		Speed	[Auto]					PCI Express Port 3	[Enabled]		Speed	[Auto]		<p>Enable or Disable the PCI Express Port 0 in the Chipset.</p> <hr/> <p> ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit </p>
PCI Express Port 0	[Enabled]																																	
Speed	[Auto]																																	
PCI Express Port 1	[Enabled]																																	
Speed	[Auto]																																	
PCI Express Port 2	[Enabled]																																	
Speed	[Auto]																																	
PCI Express Port 3	[Enabled]																																	
Speed	[Auto]																																	

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PCI Express Root Port 0-3

Enable or Disable the PCI Express Port 0 in the Chipset.

Choices: Enable, Disable.

Speed

Configuration PCIe Port Speed.

Choices: Auto, Gen2, Gen1

SATA configuration



Serial-ATA (SATA)

Choices: Enable, Disable.

SATA Mode

Choices: IDE Mode, AHCI Mode.

SATA-ATA Port 0-1

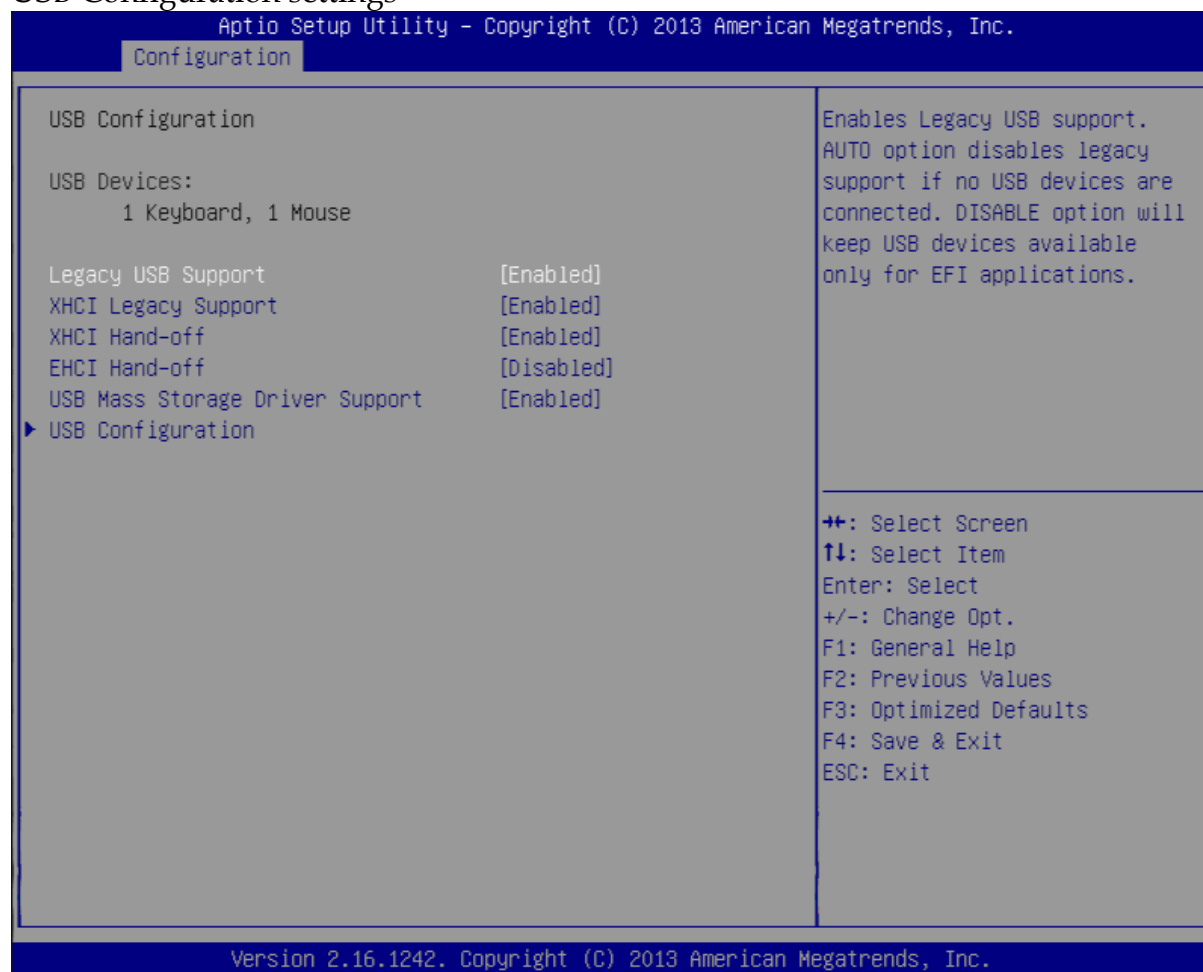
Choices: Enable, Disable.

SATA Port 0-1 Hot Plug

Choices: Enable, Disable.

USB Configuration

USB Configuration settings



Legacy USB Support

Choices: Enable, Disable, Auto.

xHCI Legacy Support

Choices: Enable, Disable.

xHCI Hand-off

Choices: Enable, Disable.

EHCI Hand-off

Choices: Enable, Disable.

USB Mass Storage Driver Support

Choices: Enable, Disable.

USB Configuration

The screenshot shows the BIOS Configuration screen for USB settings. The title bar reads 'Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.' and the current screen is 'Configuration'. The settings are as follows:

Setting	Value	Description
USB Configuration		Enable/Disable USB OTG Support
USB OTG Support	[Disabled]	
USB VBUS	[On]	
XHCI Mode	[Enabled]	
USB2 Link Power Management	[Enabled]	
USB 2.0(EHCI) Support	[Disabled]	
USB Port 0	[Enabled]	
USB Port 1	[Enabled]	
USB Port 2	[Enabled]	
USB Port 3	[Enabled]	

Navigation instructions:

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

Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

USB OTG Support

Enable/Disable USB OTG Support

Choices: Disable, PCI Mode, ACPI Mode.

USB VBUS

Choices: On, off.

XHCI Mode

Choices: Enable, Disable, Auto, Smart Auto.

USB Link Power Management

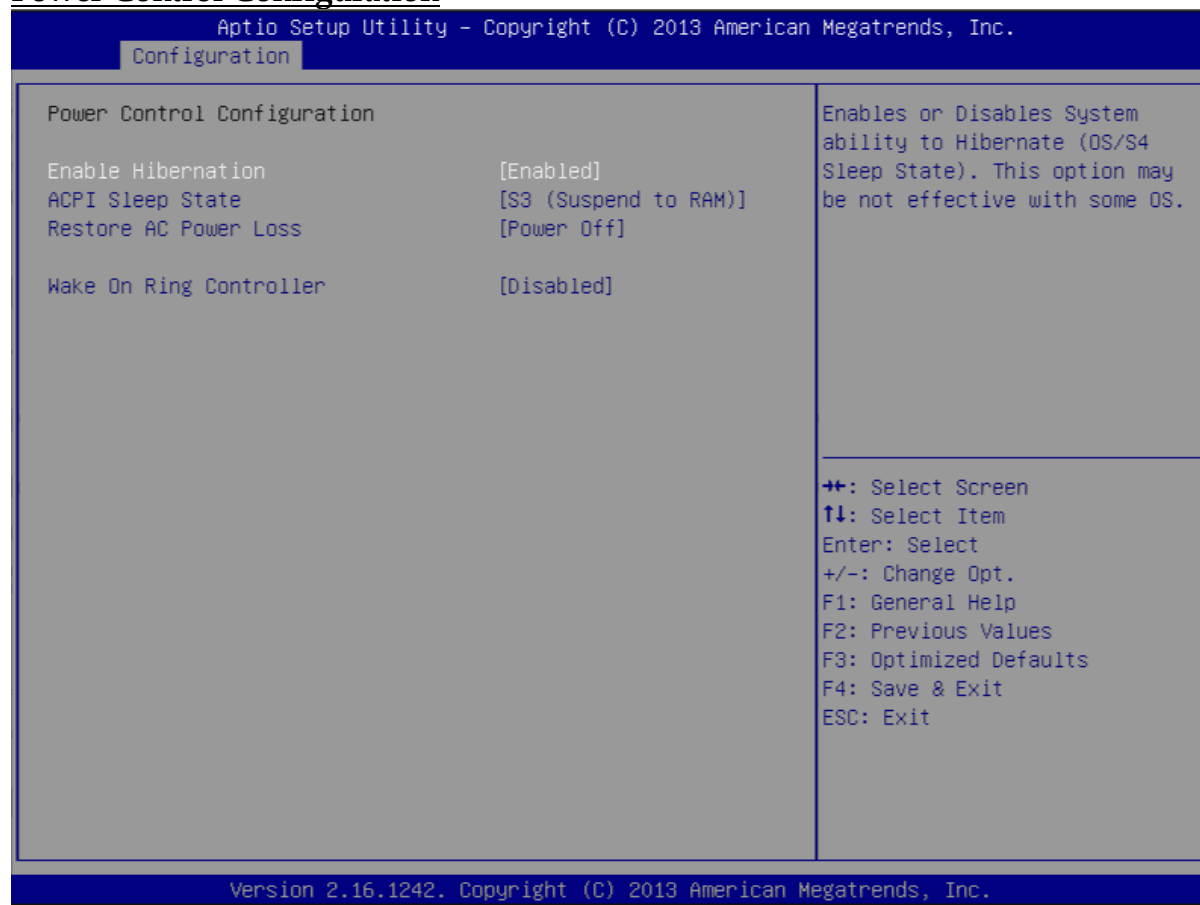
Choices: Enable, Disable.

USB Port #0~#3

Disable USB port

Choices: Disable, Enable

Power Control Configuration



Enable Hibernation

Enable or Disable system ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

Choices: Disable, Enable.

ACPI Sleep state

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

Choices: Suspend Disable, S3 (Suspend to RAM).

Restore AC Power Loss

Select AC power state when power is re-applied after a power failure.

Choices: Power off, Power On.

Wake on Ring Controller

Enable/Disable GPIO wake on ring function.

Choices: Disable, Enable.

TPM

TPM configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Configuration	
TPM Configuration	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.
Security Device Support [Disabled]	
Current Status Information	
NO Security Device Found	
Security Device Support [Disabled]	
Current Status Information	
NO Security Device Found	
	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

Security Device Support

Enable or disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available.
 Choices: Disable, Enable.

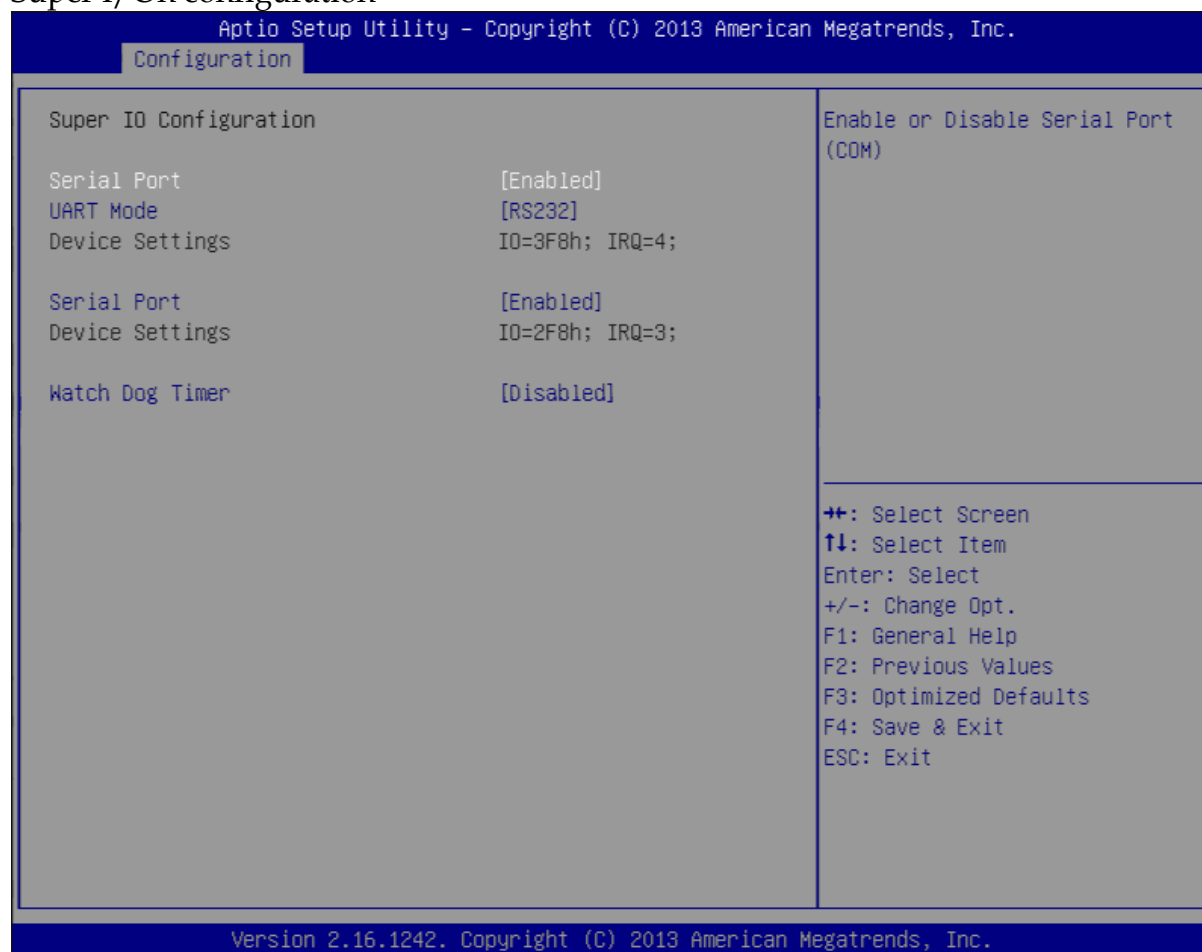
Current Status Information

Security Device Support

Enable or disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available.
 Choices: Disable, Enable.

Super I/O

Super I/On configuration



Serial Port

Enable or Disable serial port (COM).

Choices: Disable, Enable.

UART Mode

Set current UART MODE RS232, RS485, RS485/RS232 FULL DEFLEX.

Watch Dog Timer

Enable or Disable watch dog timer

Choices: Disable, Enable.

PC Health Status

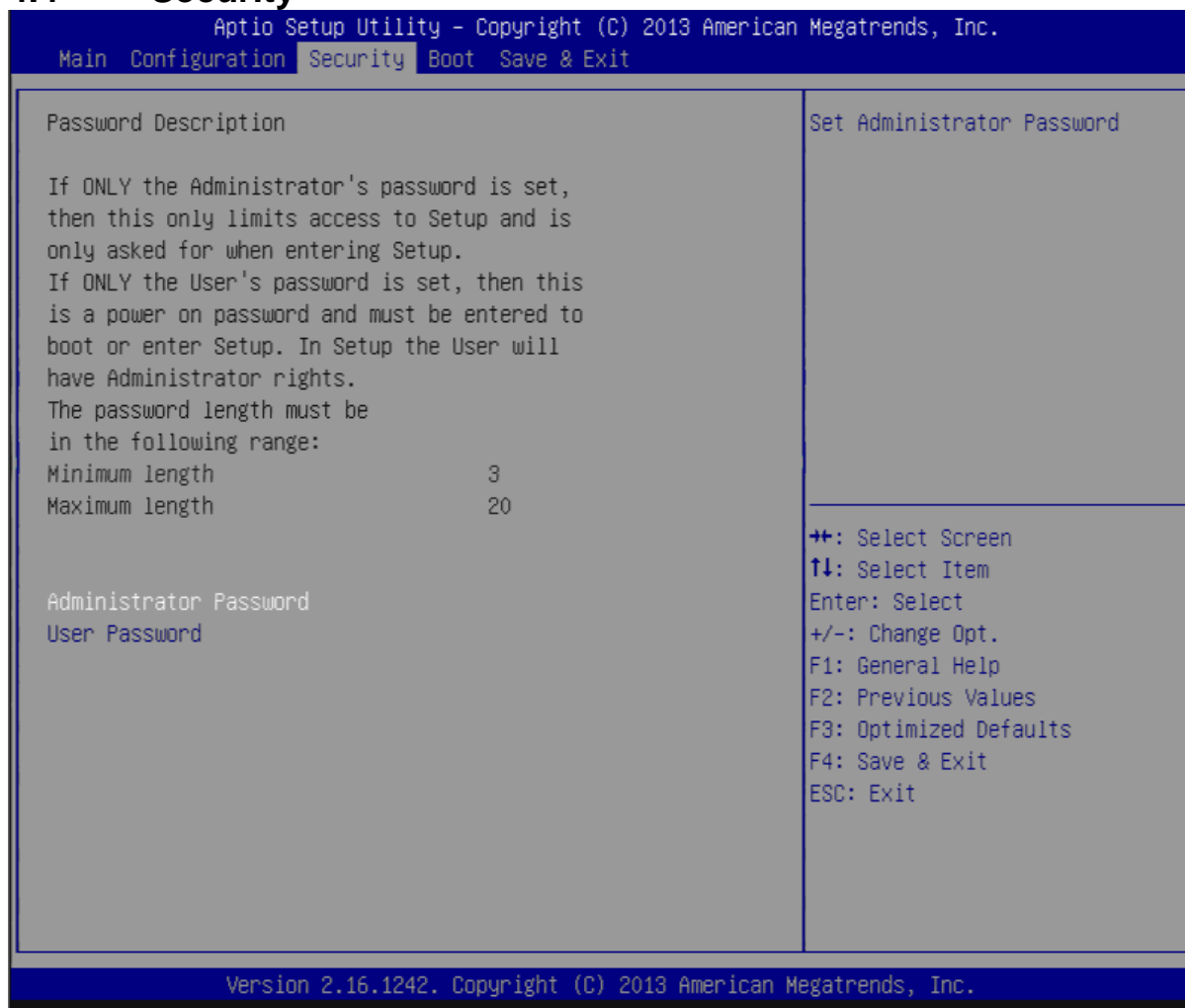
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Configuration	
Pc Health Status	
CPU temperature	: +42 C
System temperature2	: +30 C
Fan1 Speed	: N/A
Vcore	: +0.879 V
+3.3V	: +3.402 V
+5V	: +5.126 V
+12V	: +12.474 V
+1.35V	: +1.392 V
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

Serial Port Console Redirection

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Configuration	
Serial Port Console Redirection	
Console Redirection Enable or Disable.	
COM0 (Disabled)	Port Is Disabled
Console Redirection	[Disabled]
COM1 (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 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

COM 0-1 (Disable)
Console Redirection
 Choices: Disable, Enable.

4.4 Security



Administrator Password
 Set Administrator Password

User Password
 Set User Password

4.5 Boot



Boot configuration

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Choices: 0, 1.etc

Bootup NumLock State

Select the keyboard Numlock state

Choices: On, off.

Post Report

Post report support enable/disable

Choices: Disable, Enable.

Summary Screen

Choices: Disable, Enable.

CSM Support

Choices: Disable, Enable.

GateA20 Active

Choices: Upon Request, Always.

Option ROM Messages

Set display mode for option ROM

Choices: Force BIOS, Keep Current.

INI19 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.

Storage

Controls the execution of UEFI and Legacy Storage opROM

Choices: Do not launch, UEFI only, Legacy only.

Fill Screen Logo

Enable or Disable quiet boot option and full screen logo

Choices: Disable, Enable.

OS Selection

Choices: Windows 8.X, windows 7.

Fast Boot

Enable or disable boot with initialization of a minimal set of devices required to launch active for BBS boot options.

Choices: Disable, Enable.

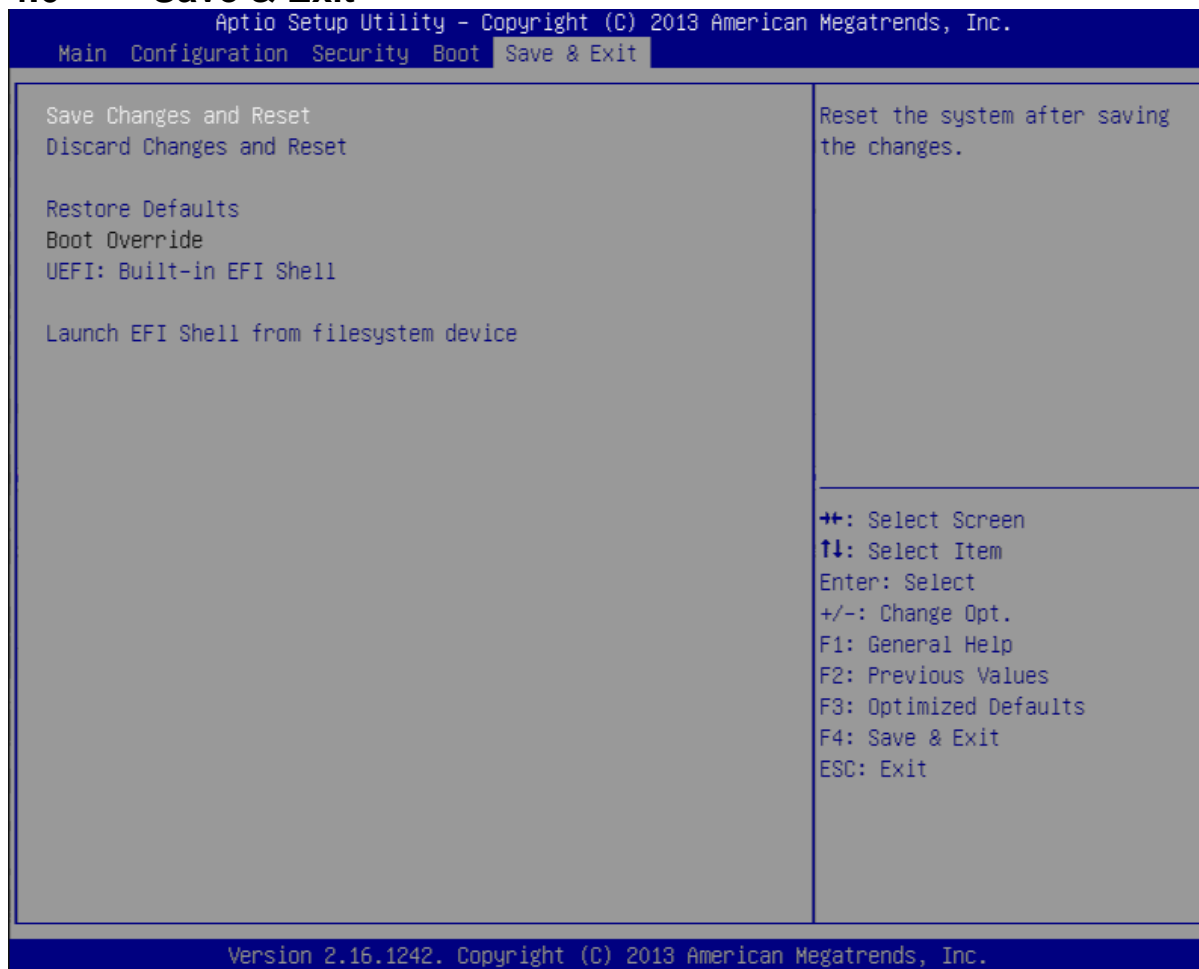
Boot option priorities

Boot Option #1

Sets the system boot order

Choices: UEFI: Built-in EFI Shell, Disable.

4.6 Save & Exit



Save Changes and Reset

Reset the system after saving the changes

Disable Changes and Reset

Reset system setup without saving any changes

Restore Defaults

Restore/Load Default values for all the setup options

Chapter 5

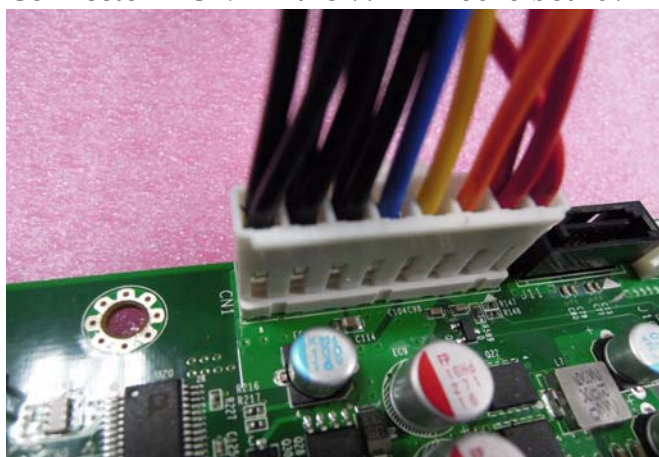
Troubleshooting

This chapter provides a few useful tips to quickly get WADE-8078 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

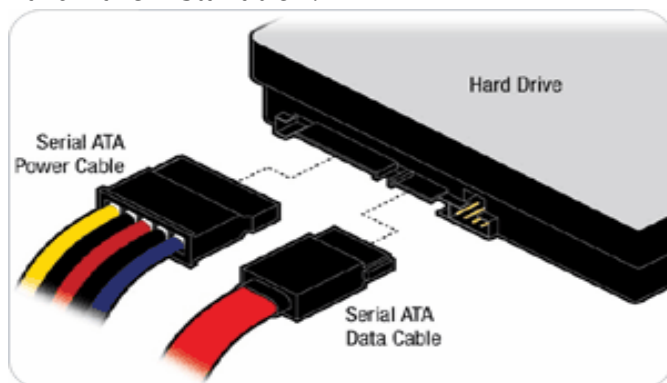
ATX Power Setting

Unlike other Single board computer, WADE-8078 supports ATX only. Therefore, there is no other setting that really needs to be set up. However, there is 8 Pin ATX Connector – CN1 in the WADE-8078 board.



Serial ATA

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; 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.



The WADE-8078 can support two SATA interface (SATAII, 3.0 GB/s) with AHCI or IDE mode. It has two J11 SATA ports in the board.

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 Memory, keyboard, mouse, SATA hard disk, VGA connector, power cable of the device, 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-8078, 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 Setup 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.

5.3 Q&A

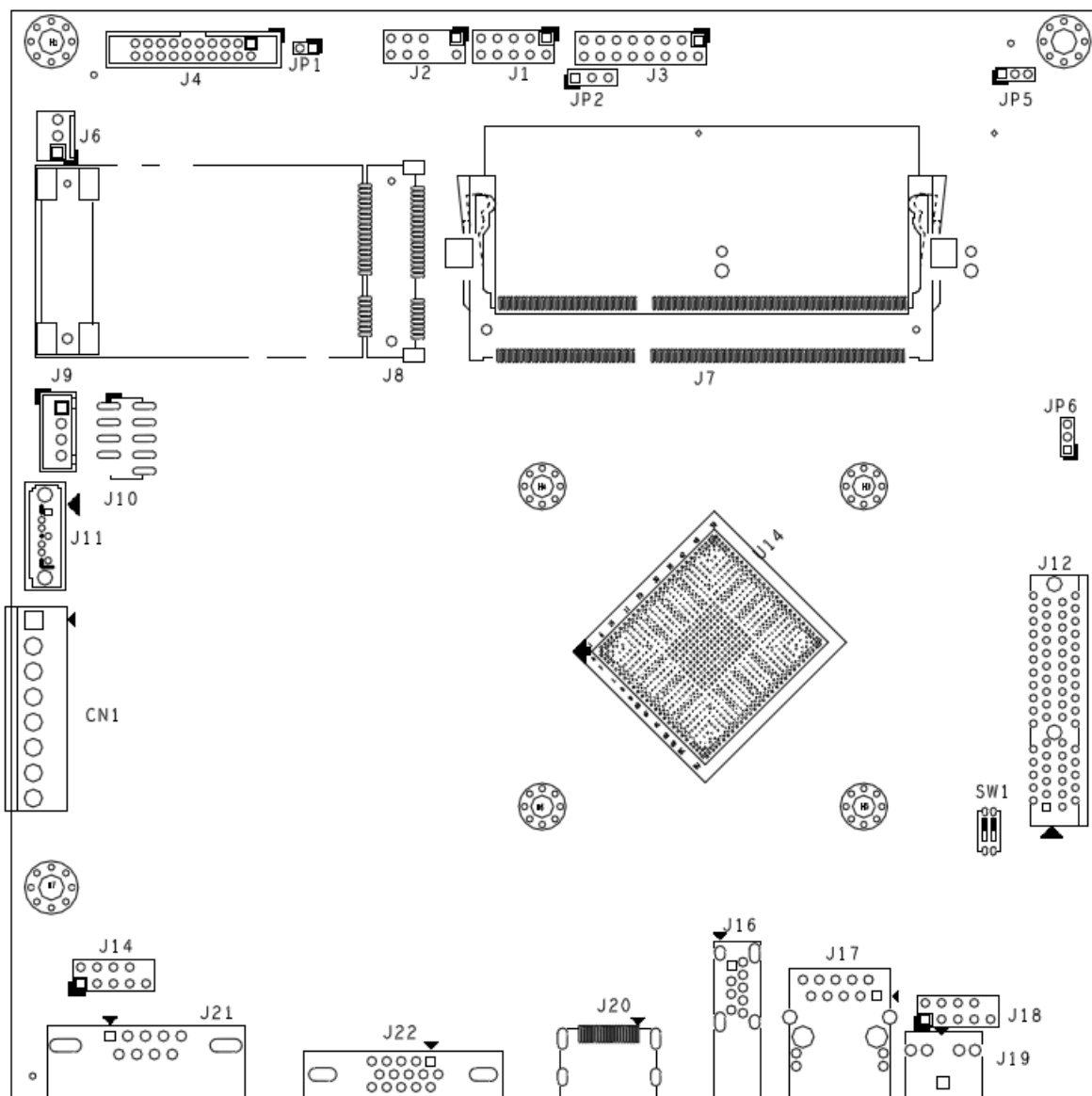
Information & Support

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

Answer: You can switch off your power supply then find the JP6 to set it from 1-2 short to 2-3 short and wait 5 seconds to clean your password then set it back to 1-2 short to switch on your power supply.

JP6 : CMOS Setting

	Jumper Setting Describe
*1-2	Normal
2-3	Clean CMOS



Question: How to update the BIOS file of the WADE-8078?

- Answer:**
1. Please visit web site of the **Portwell download center** as below hyperlink http://www.portwell.com.tw/support/download_center.php
But you must register an account first. (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-8078"**.
 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. You can get the **"Update.efi", "Readme.txt" two** files

6. Insert your USB pen drive in **USB** port of the WADE-8078 board and power-on.

7. Boot to DOS mode then input the **"fs0:"** command to switch to the root of the USB drive.

```

EFI Shell version 2.31 [4660.22136]
Current running mode 1.1.2
Device mapping table
  fs0   :Removable HardDisk - Alias hd24c0b blk0
        Acpi (PNP0A03.0) /Pci (1410) /Usb (2.0) /HD (Part1, Sig004441B1)
  blk0  :Removable HardDisk - Alias hd24c0b fs0
        Acpi (PNP0A03.0) /Pci (1410) /Usb (2.0) /HD (Part1, Sig004441B1)
  blk1  :Removable BlockDevice - Alias (null)
        Acpi (PNP0A03.0) /Pci (1410) /Usb (2.0)

Press ESC in 1 seconds to skip startup.nsh, any other key to continue.
Shell> fs0: _
    
```

8. Type the **"cd update"** command to start flash BIOS processes.

```

fs0:\> cd update
fs0:\Update> _
    
```

9. When it finished all update processes, it will reboot in 5 seconds automatically.

```

AFTER UPDATING COMPLETE!
64 Bit
Intel (R) Flash Programming Tool, Version: 1.0.2.1062
Copyright (c) 2007 - 2013, Intel Corporation. All rights reserved.
Platform: Bay Trail
SpiLoadDevicesFile(fparts.txt)...
Reading HSFSTS register... Flash Descriptor: Valid

--- Flash Devices Found ---
W25Q64DW   ID:0xEF6017   Size: 8192KB (65536Kb)

PDR Region does not exist.
- Erasing Flash Block [0x800000] - 100% complete.
- Programming Flash [0x800000] 8192KB of 8192KB - 100% complete.
- Verifying Flash [0x800000] 8192KB of 8192KB - 100% complete.
RESULT: The data is identical.

FPT Operation Passed

fs0:\Update> _
    
```

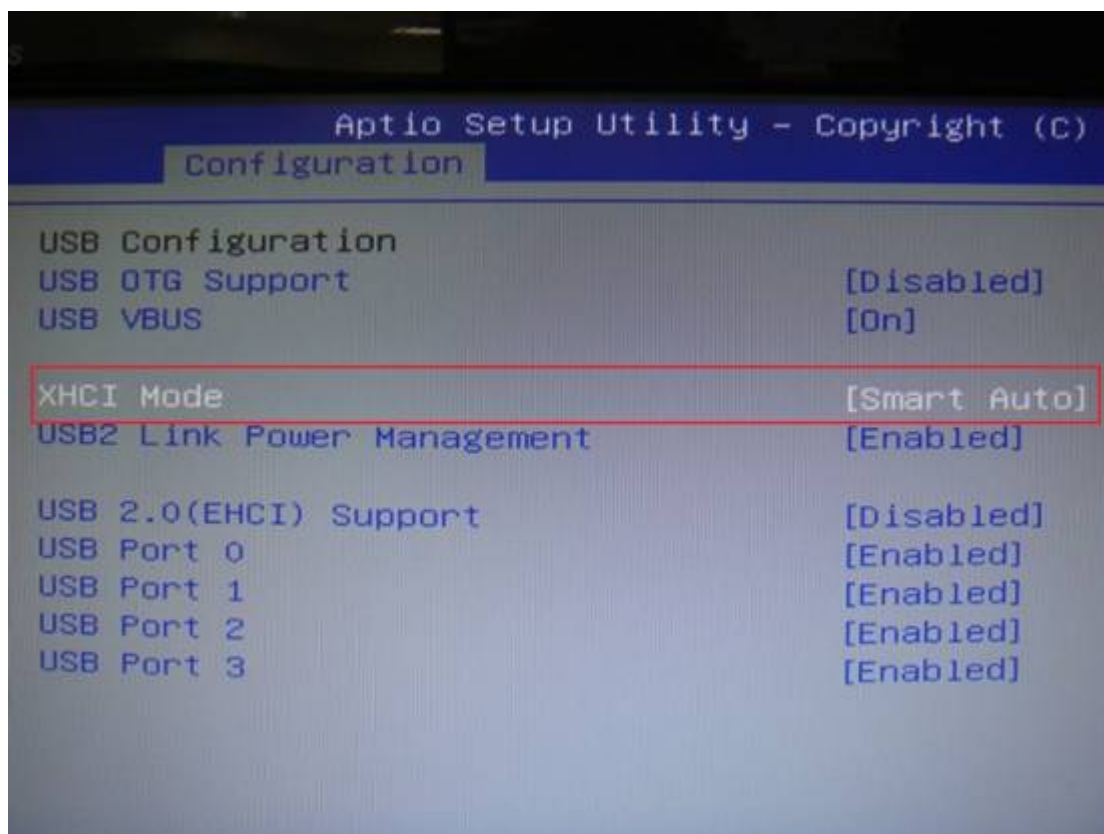

10. Please press the “Del” key to BIOS setup menu to select “Load Setup Defaults” and then select “Exit Saving Changes” option to finish all BIOS flash processes.

Question: How to install Windows 7 on the WADE-8078?

Answer:

Because of the WADE-8078 is Bay Trail platform, you have to adjust the XHCI mode item from BIOS, but windows 8 or Linux OS doesn't.

You must adjust the XHCI mode to [Smart Auto] from BIOS setup menu before install windows 7.



Following this step, it can install the windows 7 OS successfully.

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.

Thanks