AHP-2173

Onboard Intel® Atom™ D2550
1.86 GHz Processor
Touch Panel PC
With 17" TFT LCD

AHP-2173 Manual 1st Ed.
March 26, 2014

Copyright Notice

Acknowledgments

Packing List

Before you begin operating your PC, please make sure that the following materials are enclosed:

- AHP-2173 Touch Panel PC
- Mounting brackets and screws
- DVD-ROM for manual (in PDF format) and drivers

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a firm surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.

d. The equipment does not work well, or you cannot get it to work according to the user's manual.

e. The equipment has been dropped and damaged.

f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 60°C (140°F). IT MAY DAMAGE THE EQUIPMENT.

FCC

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:
There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Below Table for China RoHS Requirements
产品中有毒有害物质或元素名称及含量

AAEON Panel PC/ Workstation

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	×	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 **SJ/T 11363-2006** 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 **SJ/T 11363-2006** 标准规定的限量要求。

备注：
一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
二、上述部件物质中央处理器、内存、硬盘、光驱、触控模块为选购品。

Contents

Appendix C AHCI Setting

Chapter

1

General Information

1.1 Introduction

The AHP-2173 operator panel is an Intel® Atom™ D2550 1.86 GHz processor computer that is designed to serve as a human machine interface (HMI). It is a PC-based system with 17" color TFT LCD display, onboard Ethernet controller, multi-COM port interfaces and an audio controller. With a built-in CFast™ socket, the AHP-2173 is as compact and user friendly as a multi-function computer. In addition, its "fit anywhere" design makes it very flexible and able to be used in many different kinds of installations. It can be Panel/ VESA 100/ wall mounted.

For system integrators, this simple, complete, compact and highly integrated system let you easily build an operator panel into your applications. Common industrial applications include factory automation systems, precision machinery, and production process control. It is also suitable for many non-industrial applications, including vending machine, and car park automation. Our operator panel is a reliable, cost-effective solution to your application's processing requirements.

1.2 Features

- 17” SXGA TFT LED LCD
- Onboard Intel Atom D2550 1.86GHz
- Fanless Operation
- IP65 Rugged Aluminum Front Bezel & Metal Back Chassis
- Supports Windows 7/ Windows XP/ Windows Embedded Standard 7/ Linux

1.3 Specification

System

● CPU	Onboard Intel® Atom™ D2550 1.86 GHz Processor
● System Memory	DDR3 SODIMM x 1, Max. 4 GB (Default is 2 GB)
● Ethernet	10/100/1000Base-TX, RJ-45 x 2
● LCD / CRT Controller	Integrated in Processor
● I/O Port	USB2.0 x 2 RS-232 x 2 RS-232/422/485 x 1 LAN x 2 VGA x 1 Line-out x 1 Power switch x 1
● Storage Disk Drive	2.5” SATA Hard Disk Drive x 1, wide temperature
● Expansion Slot	Mini-PCIe Card x 1
● OS Support	Windows® XP 32 bits, Windows® 7 32 bits, Linux Fedora

Mechanical

● Construction	IP65 aluminum die cast front bezel
● Mounting	Panel/ Wall/ VESA 100

● Dimension	16.56”(W) x 14.08”(H) x 2.87”(D) (420mm x 358mm x 73mm)
● Carton Dimension	26.02”(W) x 19.53”(H) x 8.11”(D) (661mm x 496mm x 206mm)
● Net Weight	13.2 lb (6 kg)
● Gross Weight	18.7 lb (8.5 kg)

Environmental

● Operating Temperature	14°F~131°F (-10°C~55°C) (w/o airflow)
● Storage Temperature	-4°F~158°F (-20°C~70°C)
● Operating Humidity	5% to 95%@ 40°C, non-condensing
● Vibration	1 g rms/ 5-500Hz/ Operation (HDD)
● Shock	20 G peak acceleration (11 msec. duration)
● EMC	CE/FCC Class A
● Power Supply	9~30V DC input ; Over-voltage protection Low-voltage protection Reverse protection

Power Supply

● DC Input	9~30V DC with 3-pin terminal block, ATX power function Over-voltage protection Low-voltage protection

Reverse protection

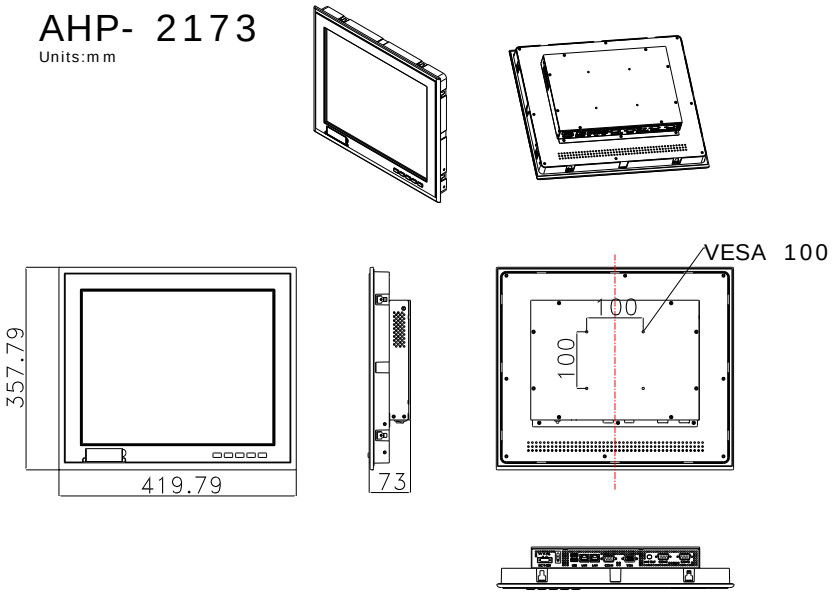
LCD

- Display Type: 17", SXGA TFT LCD
- Max. Resolution: 1280x1024
- Max. Colors: 16.7M colors
- Luminance (cd/m^2): 350 nits
- Viewing Angle: 80^o (H),80^o (V)
- Backlight: LED
- Backlight MTBF (Hours): 50,000

Touch Screen

- Type: 5-wire analog resistive
- Resolution: 2048x2048
- Light Transmission: > 80%
- Lifetime: 10 million activations

1.4 Dimension



Chapter

2

Hardware Installation

2.1 Panelmount Installation

The display panel can be mounted into the wall. You will need the screws along with the mounting brackets, which be packed in the accessory box. Follow the steps below:

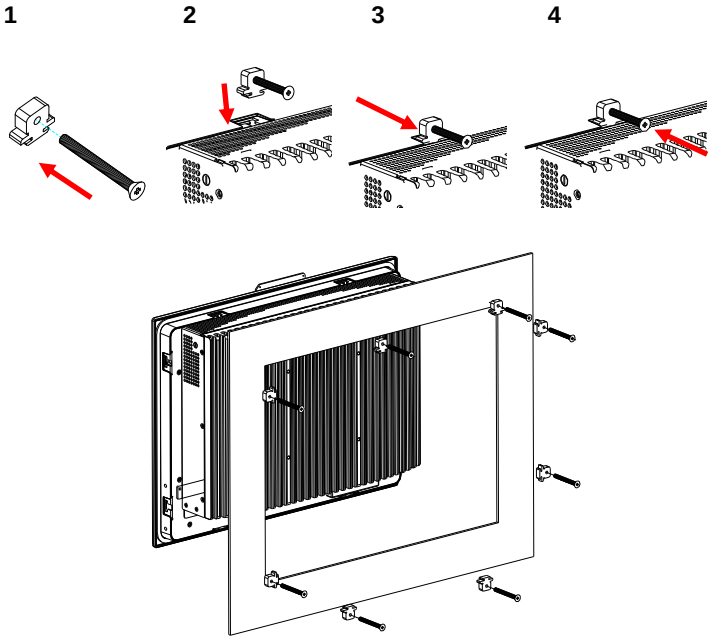
Before you start to follow the instructions, please place the display panel into the wall. See the following illustration on the left.

Step 1: Place the mounting brackets and plug the screw.

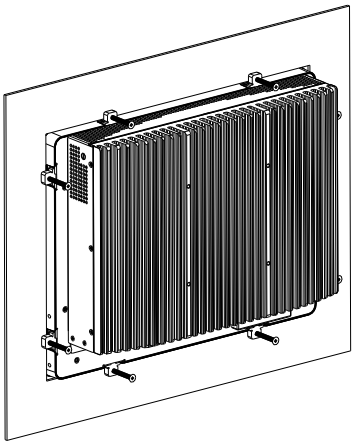
Step 2: Aim the mounting set at the hole on the monitor.

Step 3: Move the mounting set to the narrow gauge and fix it with screws.

Step 4: You've completed the preliminary when the mounting set is tightened. Next, repeat the steps and tighten all mounting set around the monitor until the monitor is firmly mounting on the wall.

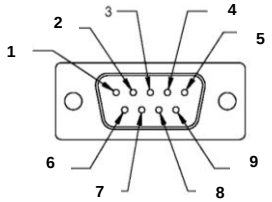


Complete Illustration



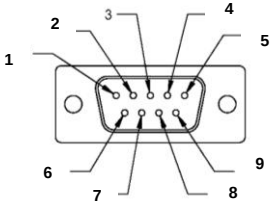
2.2 COM1/2/3 RS-232/422/485 Serial Port Connector

COM1/COM3 RS-232 (D-sub 9 male)



Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

COM2 RS-232/422/485 (D-sub 9 male)



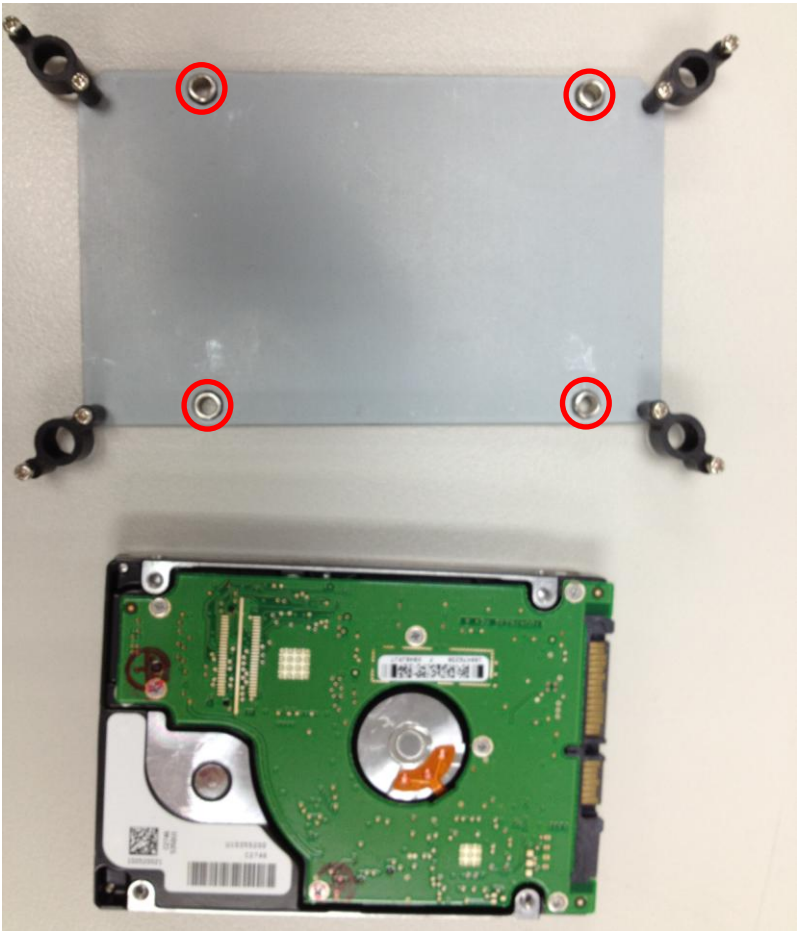
Pin	Signal	Pin	Signal
1	DCD (422TXD-/485DATA-)	2	RXD (422RXD+)
3	TXD (422TXD+/485DATA+)	4	DTR (422RXD-)
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+5Volt/+12Volt		

2.3 Hard Disk Drive Installation

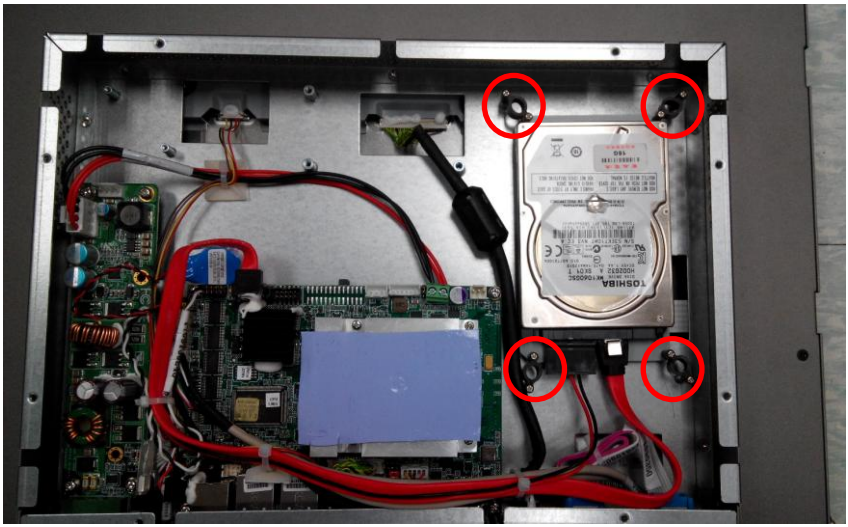
Step 1: Unfasten the screws of the heatsink

Step 2: Get the Bracket of Hard Disk Drive from the package

Step 3: Fasten the Hard Disk onto the bracket



Step 4: Fasten the screws of the hard disk bracket onto the AHP-2173



Chapter

3

AMI BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The AHP-2173 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup
Power on the computer and press <Del> or <F2> immediately. This will allow you to enter Setup.

Main
Set the date, use tab to switch between date elements.

Advanced
Enable disable boot option for legacy network devices.

Chipset
Host bridge parameters.

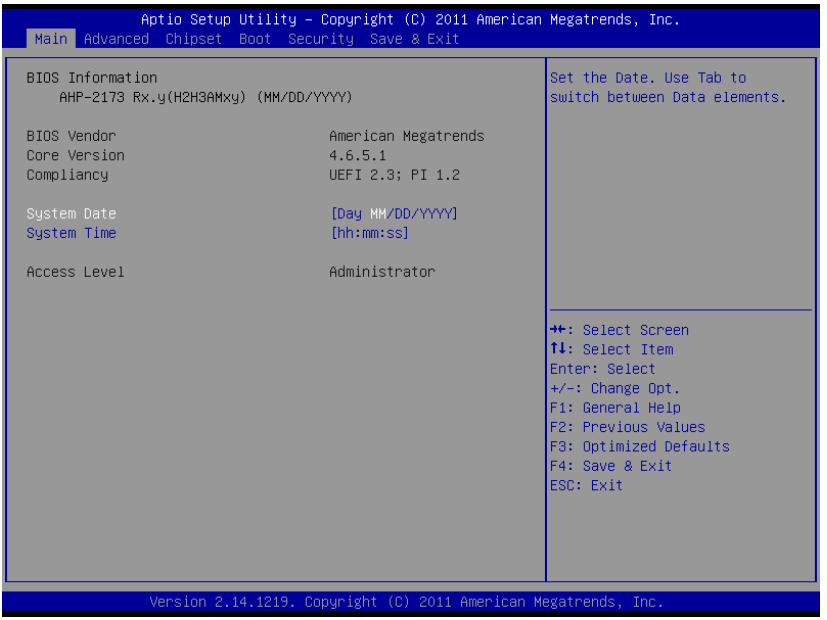
Boot
Enables/disable quiet boot option.

Security
Set setup administrator password.

Save&Exit
Exit system setup after saving the changes.

Setup Menu

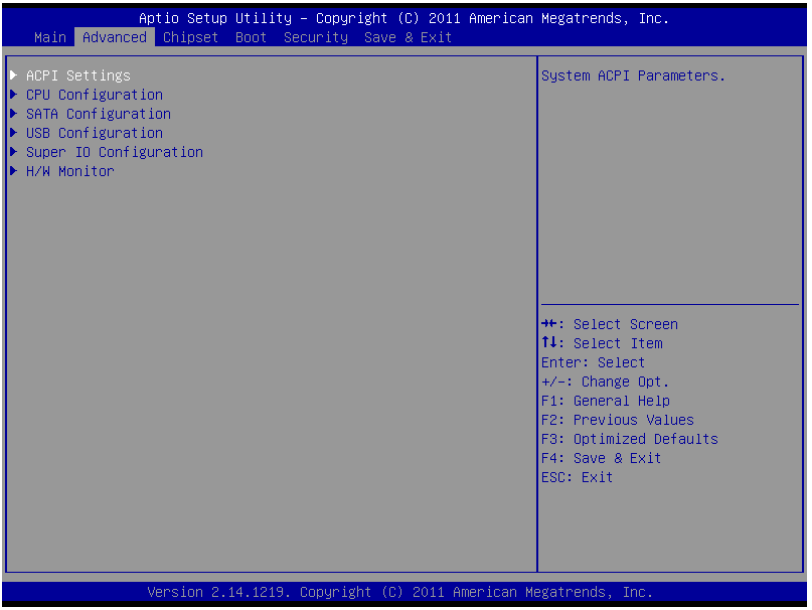
Setup submenu: Main



Options summary: (***default setting***)

System Date	Day MM:DD:YYYY	
Change the month, year and century. The 'Day' is changed automatically.		
System Time	HH : MM : SS	
Change the clock of the system.		

Setup submenu: Advanced

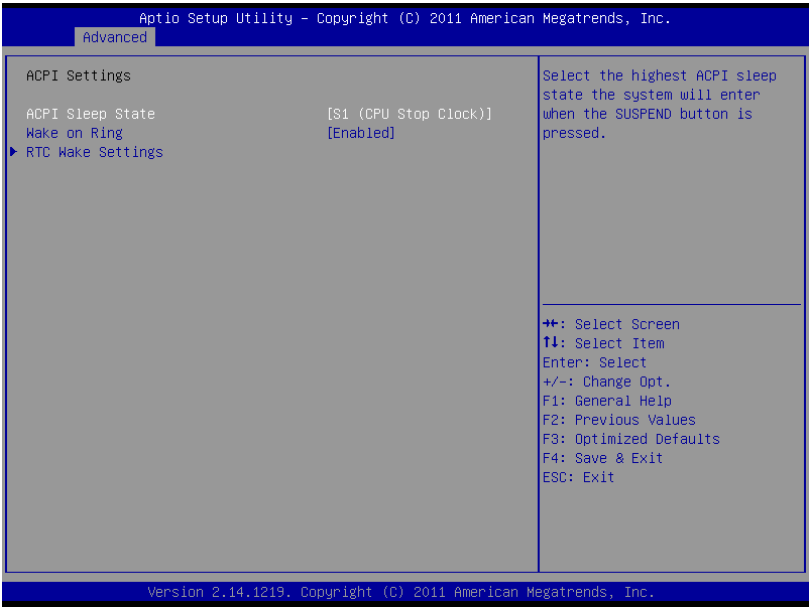


Options summary: (***default setting***)

ACPI Settings		
System ACPI Parameters		
CPU Configuration		
CPU Configuration Parameters		
SATA Configuration		
SATA Device Options Settings		
USB Configuration		
USB Configuration Parameters		

Super IO Configuration		
System Super IO Chip Parameters		
H/W Monitor		
Monitor hardware status		

ACPI Settings

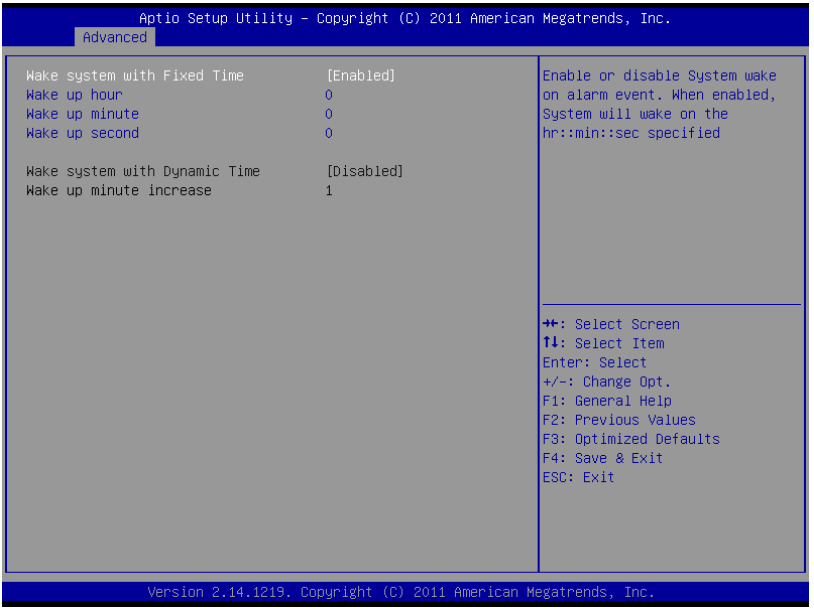


Options summary: (***default setting***)

ACPI Sleep State	Suspend Disabled	
	S1 only(CPU Stop Clock)	
	S3 only(Suspend to RAM)	
Select the ACPI state used for System Suspend		
Wake on Ring	***Enabled***	
	Disabled	
Enabled or disabled wake on ring function.		

RTC Wake Settings		
Enable system to wake from S5 using RTC alarm.		

RTC Wake Settings

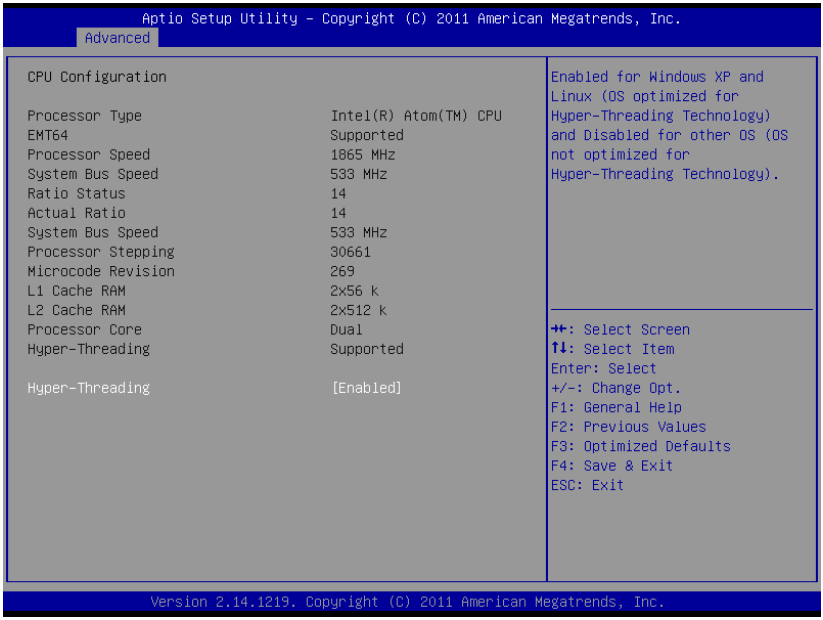


Options summary: (***default setting***)

Wake system with Fixed Time	***Disabled***	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up hour	0-23	

Wake up minute	0-59	
Wake up second	0-59	
Wake system with Dynamic Time	***Disabled***	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

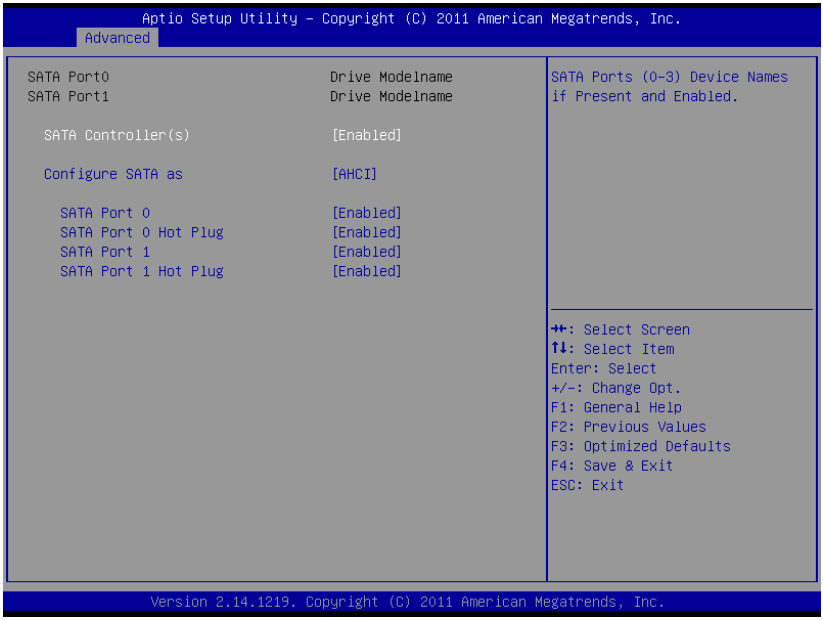
CPU Configuration



Options summary: (***default setting***)

Hyper-Threading	Disabled	
	Enabled	
En/Disable CPU Hyper-Threading function		

SATA Configuration

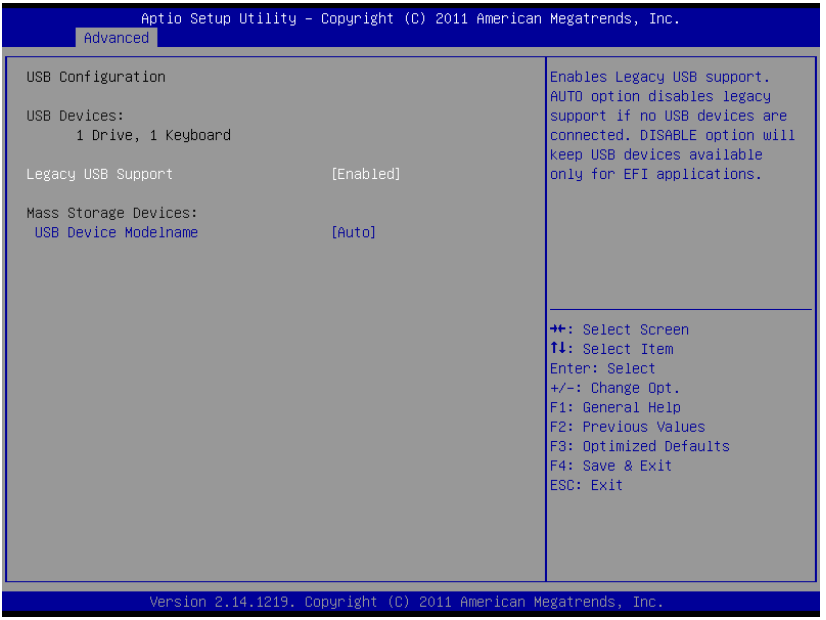


Options summary: (***default setting***)

SATA Controller(s)	Disabled	
	Enabled	
En/Disable SATA controller		
Configure SATA as	***IDE***	
	AHCI	
Configure SATA controller operating as IDE/AHCI mode.		
SATA Port 0/Port 1	Disabled	
	Enabled	
En/Disable the selected port.		

SATA Port 0/Port 1 Hot Plug	Disabled ***Enabled***	
En/Disable Hot Plug feature for specified port.		

USB Configuration

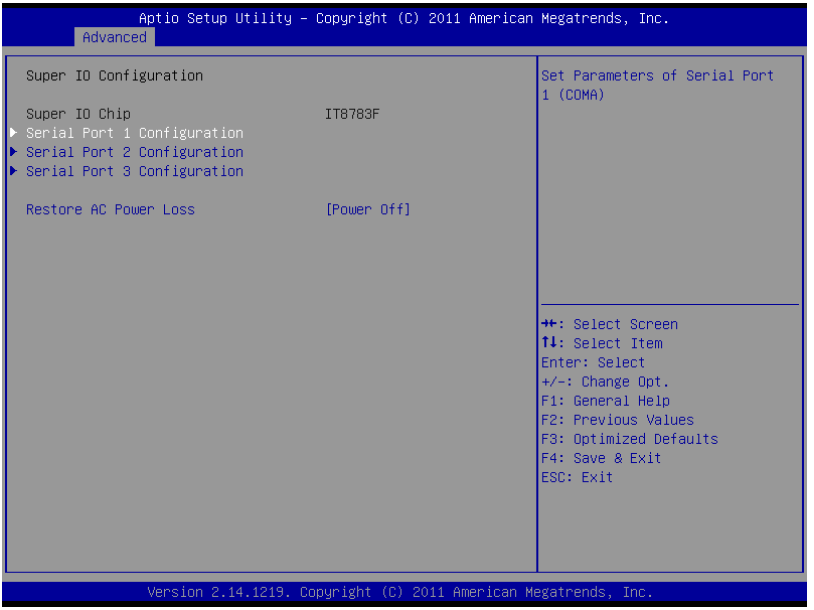


Options summary: (***default setting***)

Legacy USB Support	***Enabled***	
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI application		
Device Name (Emulation Type)	**Auto**	
	Floppy	

	Forced FDD	
	Hard Disk	
	CD-ROM	
If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)		

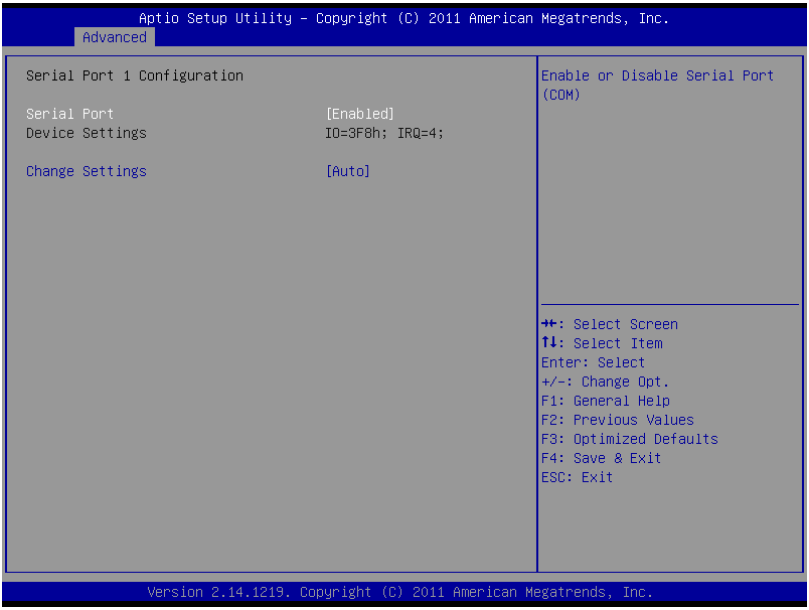
Super IO Configuration



Options summary: (***default setting***)

Serial Port 1/2/3 Configuration		
Set Parameters of Serial Port 1/2/3		
Restore AC Power Loss	***Power Off***	
	Power On	
	Last State	
Select AC power state when power is re-applied after a power failure.		

Serial Port 1 Configuration

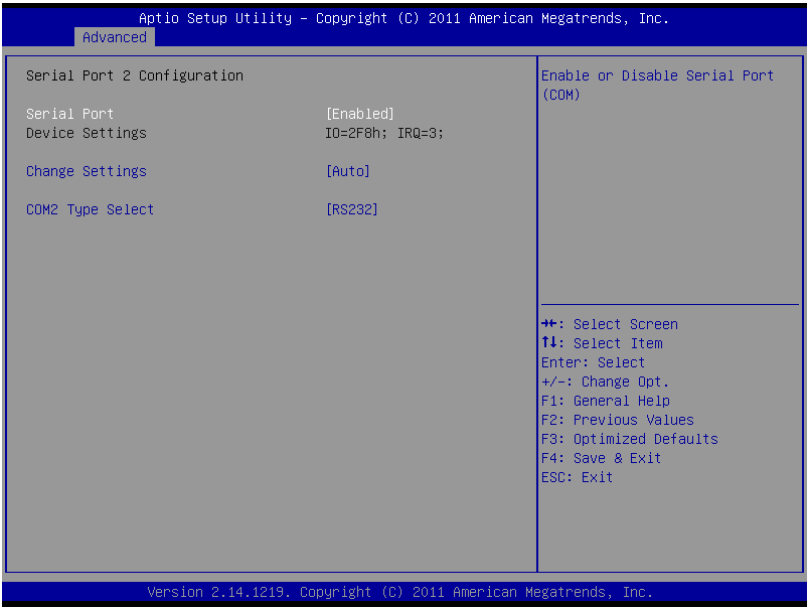


Options summary: (***default setting***)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	***Auto***	
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		

Serial Port 2 Configuration

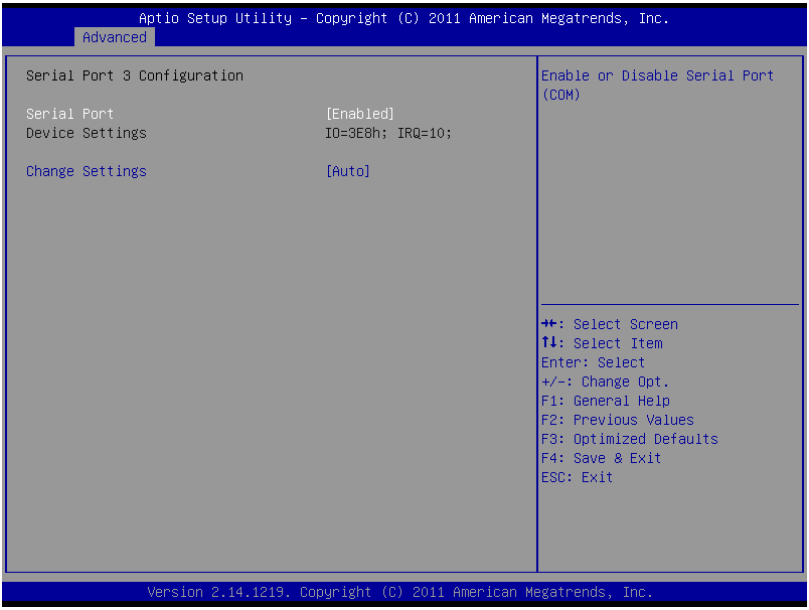


Options summary: (***default setting***)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	***Auto***	
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		
COM2 Type Select	***RS232***	
	RS422	
	RS485	
Configure COM2 operated as RS232, RS422 or RS485.		

Serial Port 3 Configuration

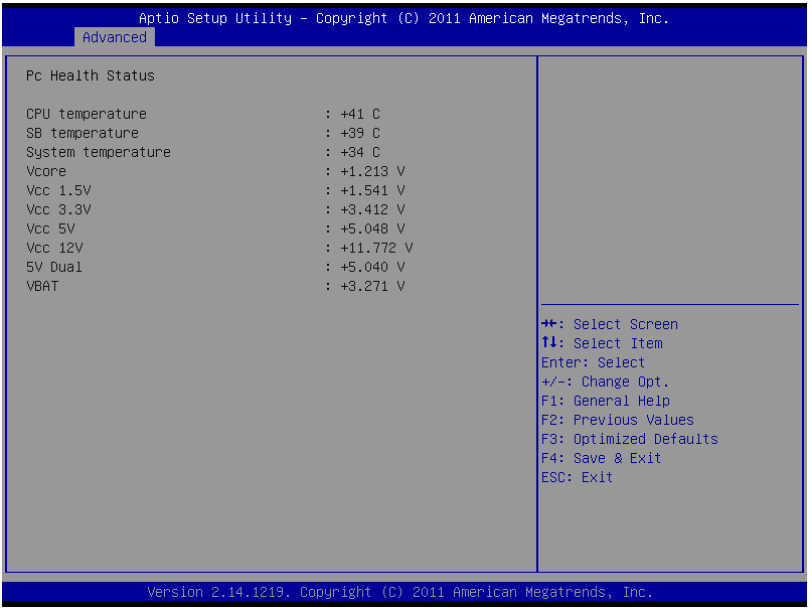


Options summary: (***default setting***)

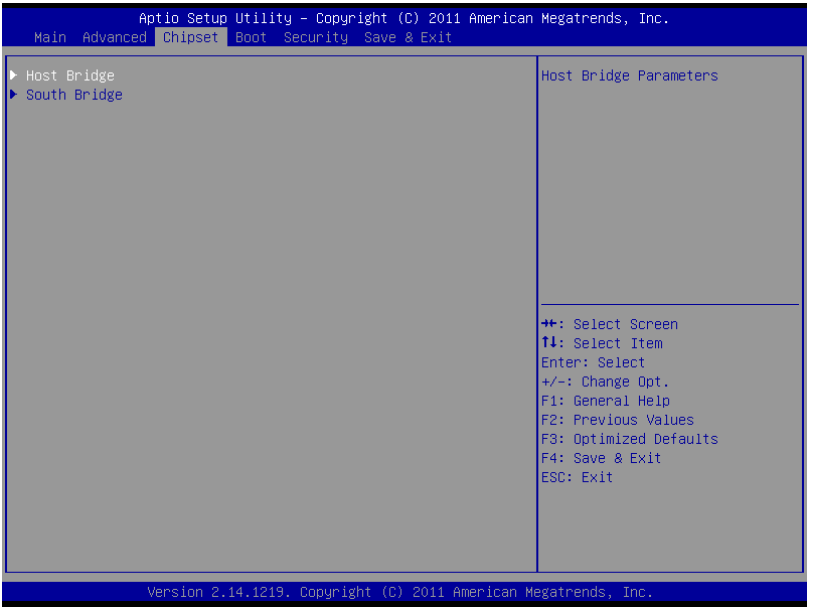
Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	***Auto***	
	IO=3E8h; IRQ=10;	
	IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;	

	IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	
Select a resource setting for Super IO device.		

H/W Monitor


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Pc Health Status
CPU temperature : +41 C
SB temperature : +39 C
System temperature : +34 C
Vcore : +1.213 V
Vcc 1.5V : +1.541 V
Vcc 3.3V : +3.412 V
Vcc 5V : +5.048 V
Vcc 12V : +11.772 V
5V Dual : +5.040 V
VBAT : +3.271 V
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

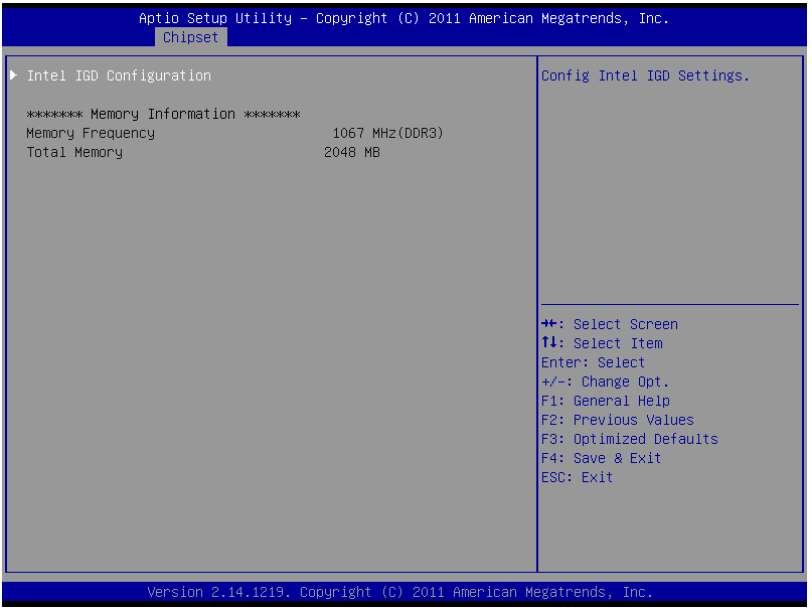
Setup submenu: Chipset



Options summary: (***default setting***)

Host Bridge		
Host Bridge Parameters		
South Bridge		
South Bridge Parameters		

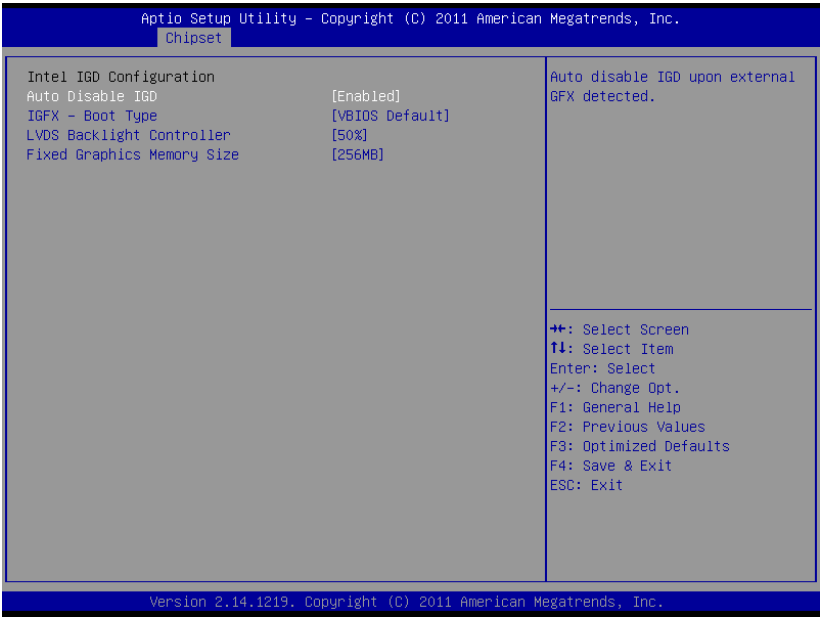
Host Bridge



Options summary: (***default setting***)

Intel IGD Configuration		
Config Intel IGD Settings.		

Intel IGD Configuration

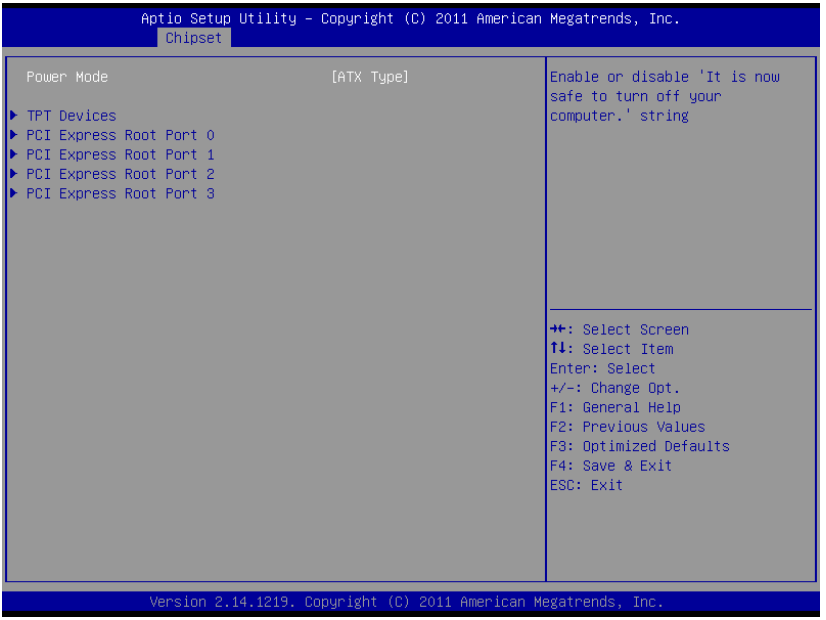


Options summary: (***default setting***)

Auto Disable IGD	***Enabled***	
	Disabled	
Audo disable IGD upon external GFX detected		
IGFX - Boot Type	***VBIOS Default***	
	CRT	
	LVDS	
Select Primary boot display device		
LVDS Backlight Controller	100%	
	75%	

	50%	
	25%	
	0%	
Adjust backlight brightness.		
Fixed Graphics Memory Size	128MB	
	256MB	
Configure Fixed Graphics Memory Size		

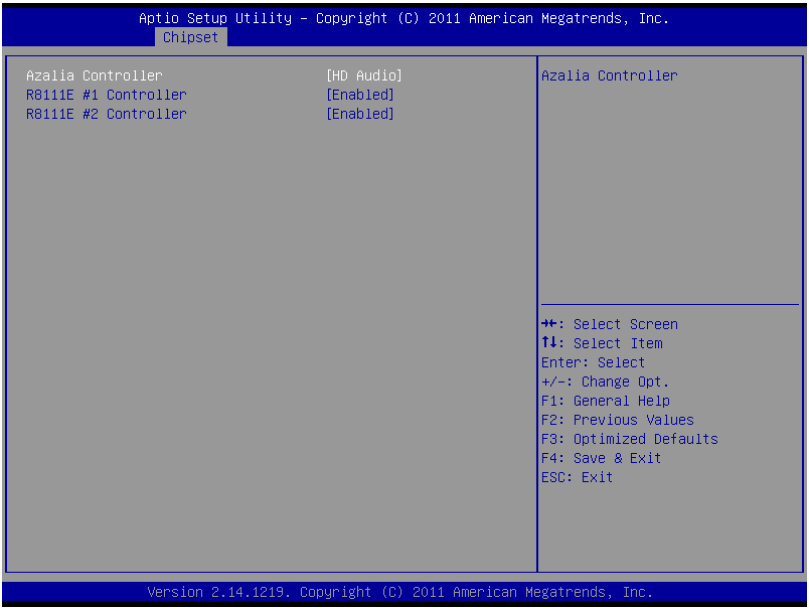
South Bridge



Options summary: (***default setting***)

Power Mode	***ATX Type***	
	AT Type	
Select the power type used on the system		
TPT Devices		
HD audio and onboard LAN Settings.		
PCI Express Root Port		
PCIe root port Settings.		

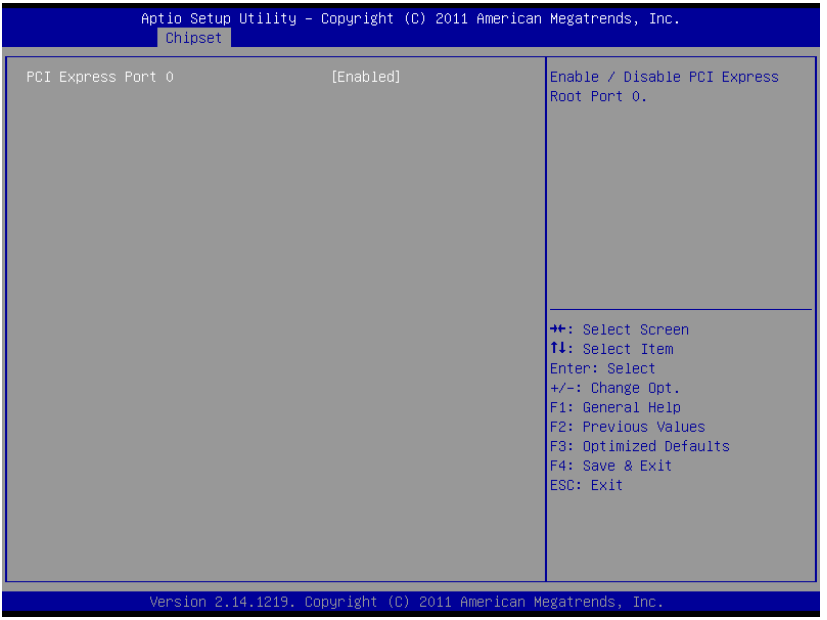
TPT Devices



Options summary: (***default setting***)

Azalia Controller	Disabled	
	HD Audio	
Enable or disabled Azalia controller		
R8111E #1 Controller	Disabled	
	Enabled	
Enable or disable PCIE Lan.		
R8111E #2 Controller	Disabled	
	Enabled	
Enable or disable PCIE Lan.		

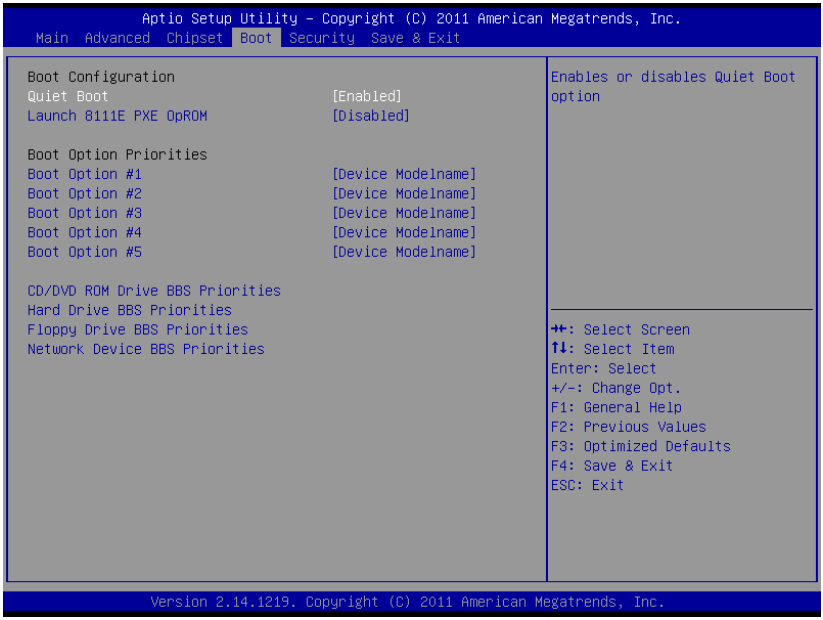
PCI Express Root Port 0/1/2/3



Options summary: (***default setting***)

PCI Express Root Port 0/1/2/3	Disabled	
	Enabled	
Control the PCI Express Root Port.		

Setup submenu: Boot

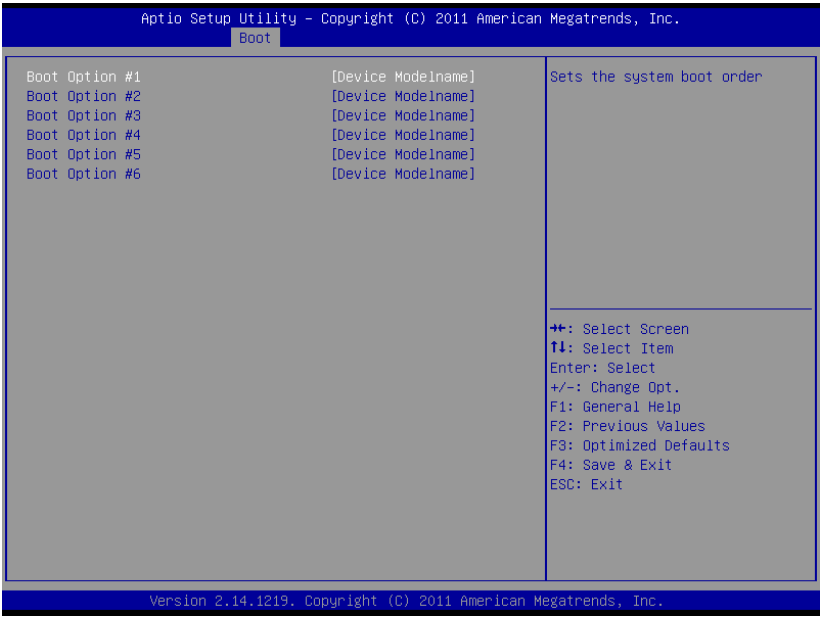


Options summary: (***default setting***)

Quiet Boot	Disabled	
	Enabled	
En/Disable showing boot logo.		
Launch RTL8111E PXE OpROM	***Disabled***	
	Enabled	
En/Disable PXE boot for RTL8111E LAN		
Boot Option #X/ XXXX Drive BBS Priorities		

The order of boot priorities.

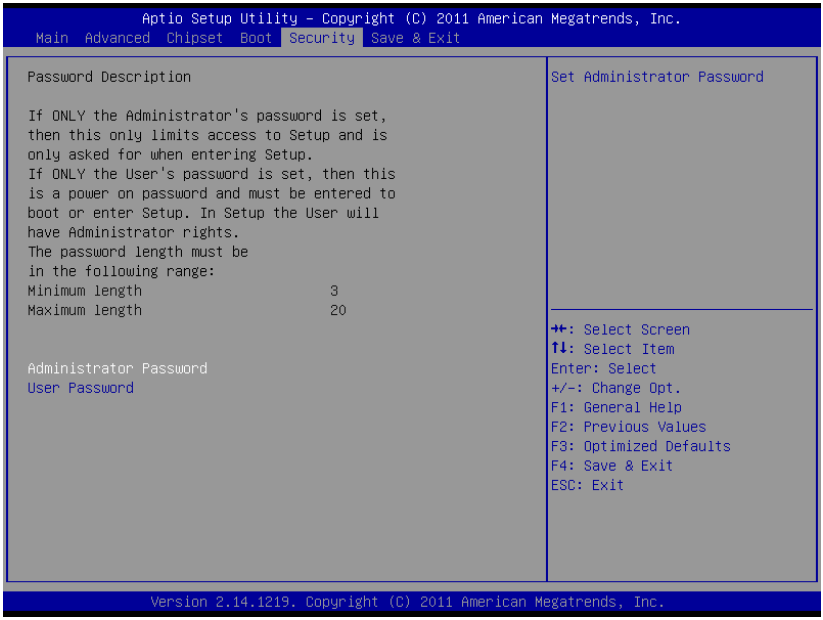
BBS Priorities



Options summary: (***default setting***)

Boot Option #x	Disabled	
	Device name	
Sets the system boot order		

Setup submenu: Security



Options summary: (***default setting***)

Administrator Password/ User Password	***Not set***	

You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

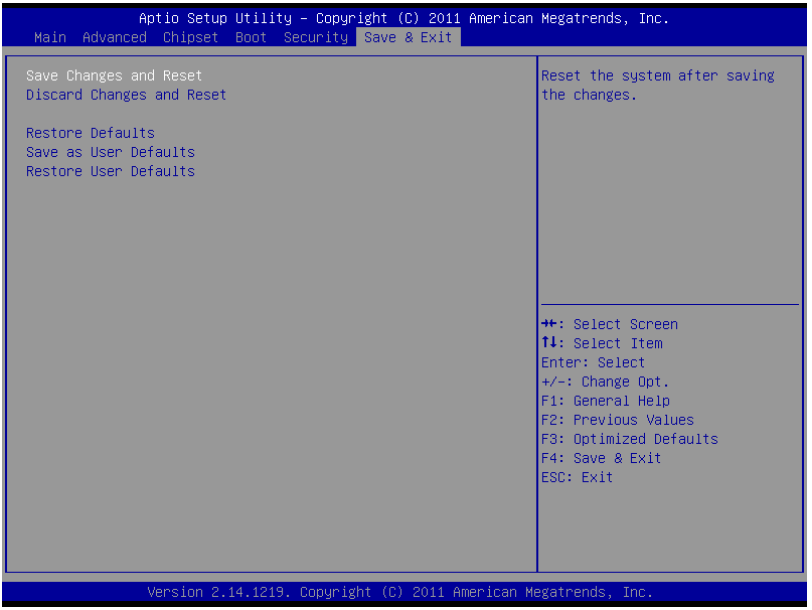
Install the Password:

Press Enter on this item, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password:

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

Setup submenu: Exit



Options summary: (***default setting***)

Save Changes and Reset		
Reset the system after saving the changes		
Discard Changes and Reset		
Reset system setup without saving any changes		
Restore Defaults		
Restore/Load Default values for all the setup options.		
Save as User Defaults		

Save the changes done so far as User Defaults		
Restore User Defaults		
Restore the User Defaults to all the setup options		

Chapter

4

Driver Installation

The AHP-2173 comes with a DVD-ROM that contains all drivers and utilities that meet your needs.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install AHCI Driver (Optional)

Step 6 – Install TPM Driver

Step 7 – Install Touch Panel Driver

Step 8 – Install Serial Port Driver (Optional)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the AHP-2173 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 8 in order.

Step 1 – Install Chipset Driver

1. Click on the ***STEP1-CHIPSET*** and select the OS folder your system is
2. Double click on the ***.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 2 – Install VGA Driver

For Windows® 7

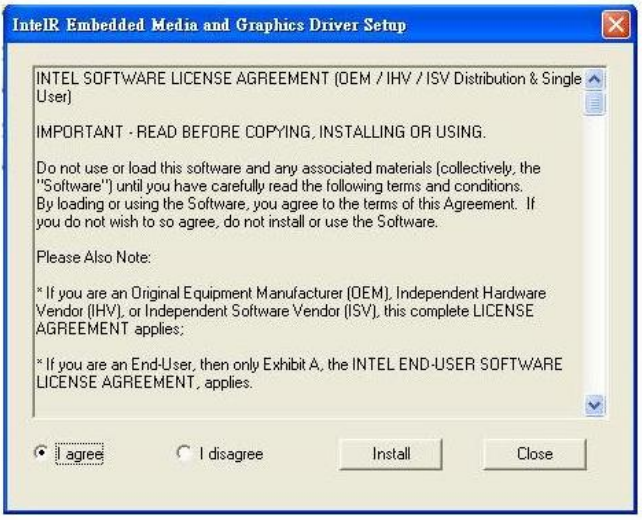
1. Click on the ***STEP2-VGA*** folder and select the folder of ***WIN7_32***
2. Double click on the ***Setup.exe*** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

For Windows® XP

1. Click on the ***STEP2-VGA*** folder and select the folder of ***WINXP_32***
2. Install Framework 3.5
   - Double click on the ***dotnetfx35.exe***
   - Follow the instructions that the window shows
   - The system will help you install the driver

automatically

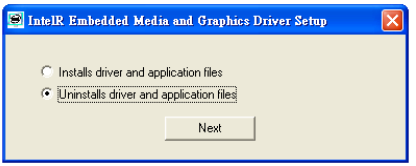
2. Install IEMGD
   - Double click on the ***IEMGDInstall.exe***
   - Select the configuration
   - Follow the instructions that the window shows
   - The system will help you install the driver automatically



If you want to update driver, please uninstall driver first.

Uninstall IEMGD

1. Double click on the ***IEMGDInstall.exe***
2. Follow the instructions that the window shows
3. The system will help you uninstall the driver automatically



Step 3 – Install LAN Driver

1. Click on the ***STEP3-LAN*** folder and select the OS folder your system is
2. Double click on the ***setup.exe*** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 4 – Install Audio Driver

1. Click on the ***STEP4-AUDIO*** folder and select the OS folder your system is
2. Double click on the ***Setup.exe*** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 5 – Install AHCI Driver (optional, for SATA in AHCI mode only)

For Windows® 7:

1. Click on the ***STEP5-AHCI*** folder and select the ***WIN7_32*** folder
2. Double click on the ***setup.exe*** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

For Windows® XP:

Please refer to Appendix C AHCI Setting

Step 6 – Install TPM Driver

1. Click on the ***STEP6-TPM*** folder and select the OS folder your system is
2. Double click on the ***Setup.exe*** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 7 – Install Touch Panel Driver

1. Click on the ***STEP7-TOUCH*** folder and select the OS folder your system is
2. Double click on the ***setup.exe*** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 8 – Install Serial Port Driver (Optional)

1. Click on the ***STEP8-Serial Port Driver (Optional)*** folder and select the OS folder your system is
2. Double click on the ***Serial Patch v1.0.1_Eng.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Note: If the OS is Chinese version, you may click on ***Serial Patch v1.0.1. exe*** file located in each OS folder.

Appendix

A

Programming the Watchdog Timer

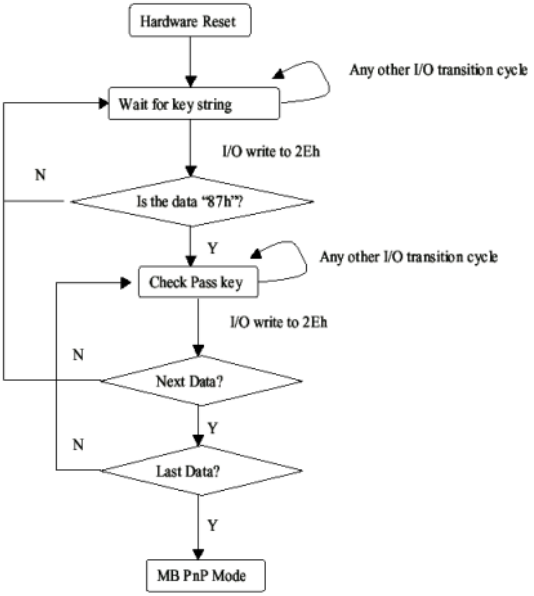
A.1 Programming

AHP-2173 utilizes ITE 8783 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8783 enters the

normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write opera-tions to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02h	W	NA	Configure Control

07h	71h	R/W	00h	Watch Dog Timer Control Register
07h	72h	R/W	001s0000b	Watch Dog Timer Configuration Register
07h	73h	R/W	38h	Watch Dog Timer Time-out Value (LSB) Register
07h	74h	R/W	00h	Watch Dog Timer Time-out Value (MSB) Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	**Reserved**
1	Returns to the "Wait for Key" state. This bit is used when the configuration sequence is completed.
0	Resets all logical devices and restores configuration registers to their power-on states.

Watch Dog Timer 1, 2, 3 Control Register (Index=71h,81h,91h Default=00h)

Bit	Description
7	**WDT Timeout Enable(WTE)** 1: Disable. 0: Enable.
6	**WDT Reset upon Mouse Interrupt(WRKMI)** 0: Disable. 1: Enable.
5	**WDT Reset upon Keyboard Interrupt(WRKBI)** 0: Disable. 1: Enable.
4	**Reserved**
3-2	**Reserved**
1	**Force Time-out(FTO)** This bit is self-clearing.
0	**WDT Status(WS)** 1: WDT value reaches 0. 0: WDT value is not 0.

Watch Dog Timer 1, 2, 3 Configuration Register (Index=72h, 82h, 92h Default=001s0000b)

Bit	Description
7	**WDT Time-out Value Select 1 (WTVS)** 1: Second 0: Minute
6	**WDT Output through KRST (Pulse) Enable(WOKE)** 1: Enable 0: Disable
5	**WDT Time-out value Extra select(WTVES)** 1: 64ms x WDT Timer-out value (default = 4s) 0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	**WDT Output through PWROK (Pulse) Enable(WOPE)** 1: Enable 0: Disable During LRESET#, this bit is selected by JP7 power-on strapping option
3-0	**Select interrupt level [Note1] for WDT(SIL)**

Watch Dog Timer 1,2,3 Time-Out Value (LSB) Register (Index=73h,83h,93h, Default=38h)

Bit	Description
7-0	**WDT Time-out Value 7-0(WTV)**

Watch Dog Timer 1,2,3 Time-Out Value (MSB) Register (Index=74h,84h,94h Default=00h)

Bit	Description
7-0	**WDT Time-out Value 15-8(WTV)**

A.2 ITE8783 Watchdog Timer Initial Program

```
.MODEL SMALL
.CODE
Main:
CALL Enter_Configuration_mode
CALL Check_Chip
mov cl, 7
call Set_Logic_Device
;time setting
mov cl, 10 ; 10 Sec
dec al
Watch_Dog_Setting:
;Timer setting
mov al, cl
mov cl, 73h
call Superio_Set_Reg
;Clear by keyboard or mouse interrupt
mov al, 0f0h
mov cl, 71h
call Superio_Set_Reg
;unit is second.
mov al, 0C0H
mov cl, 72h
```

```
call Superio_Set_Reg
; game port enable
mov cl, 9
call Set_Logic_Device

Initial_OK:
CALL Exit_Configuration_mode
MOV AH,4Ch
INT 21h

Enter_Configuration_Mode PROC NEAR
MOV SI,WORD PTR CS:[Offset Cfg_Port]

MOV DX,02Eh
MOV CX,04h
Init_1:
MOV AL,BYTE PTR CS:[SI]
OUT DX,AL
INC SI
LOOP Init_1
RET
Enter_Configuration_Mode ENDP

Exit_Configuration_Mode PROC NEAR
MOV AX,0202h
```

```
CALL Write_Configuration_Data
RET
Exit_Configuration_Mode ENDP

Check_Chip PROC NEAR

MOV AL,20h
CALL Read_Configuration_Data
CMP AL,87h
JNE Not_Initial

MOV AL,21h
CALL Read_Configuration_Data
CMP AL,81h
JNE Not_Initial

Need_Initial:
STC
RET
Not_Initial:
CLC
RET
Check_Chip ENDP
Read_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
```

```
OUT DX,AL
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP

Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP

Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
```

```
Set_Logic_Device      proc      near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp

;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h
DW 02Eh,02Fh
```

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Appendix

B

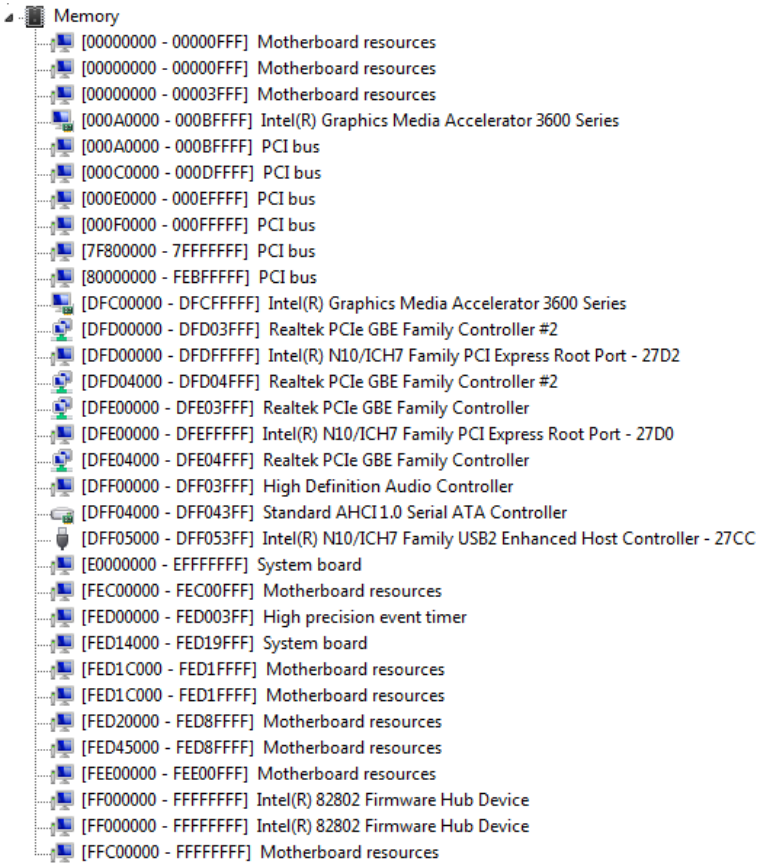
I/O Information

B.1 I/O Address Map

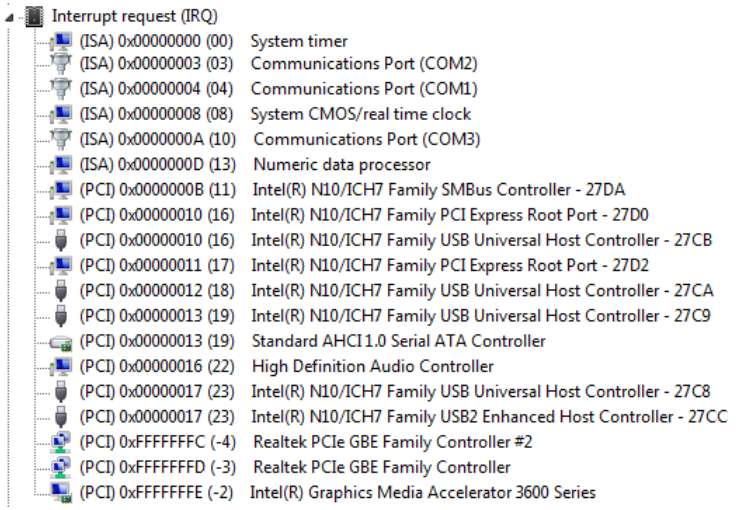
- Input/output (IO)
  - [00000000 - 0000001F] Direct memory access controller
  - [00000000 - 00000CF7] PCI bus
  - [00000010 - 0000001F] Motherboard resources
  - [00000020 - 00000021] Programmable interrupt controller
  - [00000022 - 0000003F] Motherboard resources
  - [00000024 - 00000025] Programmable interrupt controller
  - [00000028 - 00000029] Programmable interrupt controller
  - [0000002C - 0000002D] Programmable interrupt controller
  - [0000002E - 0000002F] Motherboard resources
  - [00000030 - 00000031] Programmable interrupt controller
  - [00000034 - 00000035] Programmable interrupt controller
  - [00000038 - 00000039] Programmable interrupt controller
  - [0000003C - 0000003D] Programmable interrupt controller
  - [00000040 - 00000043] System timer
  - [00000044 - 0000005F] Motherboard resources
  - [0000004E - 0000004F] Motherboard resources
  - [00000050 - 00000053] System timer
  - [00000060 - 00000060] Standard PS/2 Keyboard
  - [00000061 - 00000061] Motherboard resources
  - [00000062 - 00000063] Motherboard resources
  - [00000063 - 00000063] Motherboard resources
  - [00000064 - 00000064] Standard PS/2 Keyboard
  - [00000065 - 00000065] Motherboard resources
  - [00000065 - 0000006F] Motherboard resources
  - [00000067 - 00000067] Motherboard resources
  - [00000070 - 00000070] Motherboard resources
  - [00000070 - 00000077] System CMOS/real time clock
  - [00000072 - 0000007F] Motherboard resources
  - [00000080 - 00000080] Motherboard resources
  - [00000080 - 00000080] Motherboard resources
  - [00000081 - 00000091] Direct memory access controller
  - [00000084 - 00000086] Motherboard resources
  - [00000088 - 00000088] Motherboard resources
  - [0000008C - 0000008E] Motherboard resources
  - [00000090 - 0000009F] Motherboard resources
  - [00000092 - 00000092] Motherboard resources
  - [00000093 - 0000009F] Direct memory access controller
  - [000000A0 - 000000A1] Programmable interrupt controller
  - [000000A2 - 000000BF] Motherboard resources
  - [000000A4 - 000000A5] Programmable interrupt controller
  - [000000A8 - 000000A9] Programmable interrupt controller
  - [000000AC - 000000AD] Programmable interrupt controller

- [000000B0 - 000000B1] Programmable interrupt controller
- [000000B2 - 000000B3] Motherboard resources
- [000000B4 - 000000B5] Programmable interrupt controller
- [000000B8 - 000000B9] Programmable interrupt controller
- [000000BC - 000000BD] Programmable interrupt controller
- [000000C0 - 000000DF] Direct memory access controller
- [000000E0 - 000000EF] Motherboard resources
- [000000F0 - 000000F0] Numeric data processor
- [000002F8 - 000002FF] Communications Port (COM2)
- [000003B0 - 000003BB] Intel(R) Graphics Media Accelerator 3600 Series
- [000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3600 Series
- [000003E8 - 000003EF] Communications Port (COM3)
- [000003F8 - 000003FF] Communications Port (COM1)
- [00000400 - 0000047F] Motherboard resources
- [00000400 - 0000047F] Motherboard resources
- [000004D0 - 000004D1] Motherboard resources
- [000004D0 - 000004D1] Programmable interrupt controller
- [00000500 - 0000053F] Motherboard resources
- [00000500 - 0000057F] Motherboard resources
- [00000600 - 0000061F] Motherboard resources
- [00000680 - 0000069F] Motherboard resources
- [000006A0 - 000006AF] Motherboard resources
- [000006B0 - 000006EF] Motherboard resources
- [00000A00 - 00000A1F] Motherboard resources
- [00000A20 - 00000A2F] Motherboard resources
- [00000A30 - 00000A3F] Motherboard resources
- [00000D00 - 0000FFFF] PCI bus
- [00001000 - 0000100F] Motherboard resources
- [0000D000 - 0000D0FF] Realtek PCIe GBE Family Controller #2
- [0000D000 - 0000DFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
- [0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
- [0000E000 - 0000EFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
- [0000F000 - 0000F01F] Intel(R) N10/ICH7 Family SMBus Controller - 27DA
- [0000F020 - 0000F02F] Standard AHCI 1.0 Serial ATA Controller
- [0000F040 - 0000F05F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
- [0000F060 - 0000F07F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
- [0000F080 - 0000F09F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
- [0000F0A0 - 0000F0BF] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
- [0000F0C0 - 0000F0C3] Standard AHCI 1.0 Serial ATA Controller

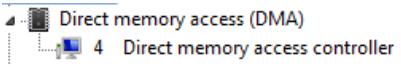
B.2 Memory Address Map



B.3 IRQ Mapping Chart



B.4 DMA Channel Assignments



Appendix

C

AHCI Setting

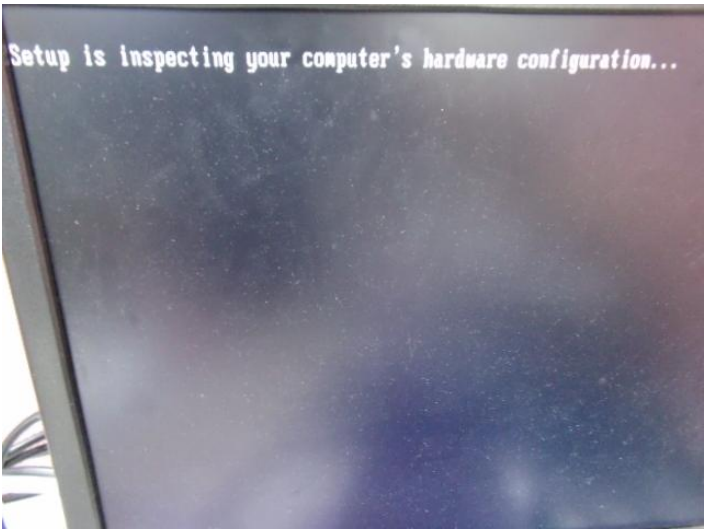
B.1 Setting AHCI

OS installation to setup AHCI Mode.

Step 1: Copy the files below from “Driver CD -> STEP5-AHCI\WINXP_32” to Disk

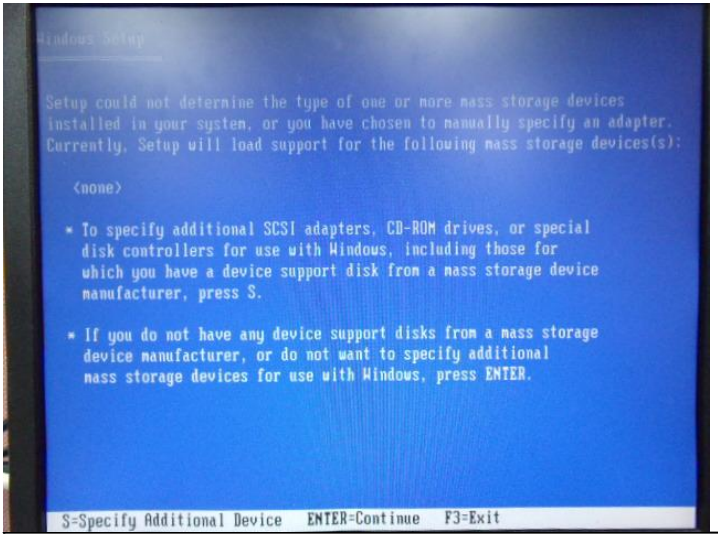
Step 2: Connect the USB Floppy to the system

Step 3: Setup OS

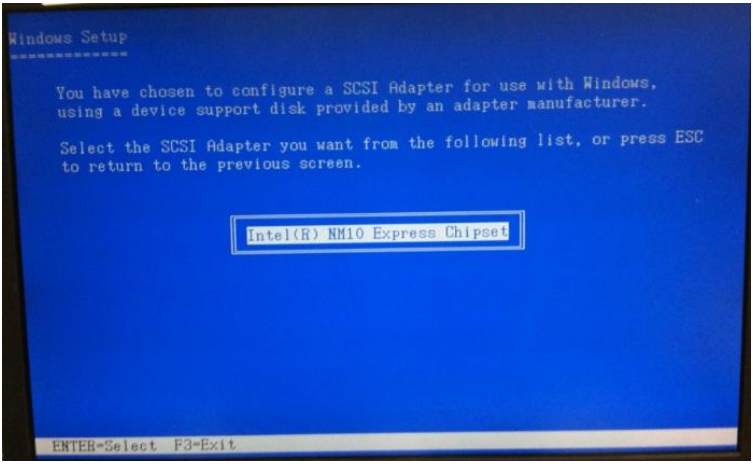


Step 4: Press “**F6**”

Step 5: Choose “**S**”



Step 6: Choose "**Intel(R) NM10 Express Chipset**"



Step 7: It will show the model number you select and then press "**ENTER**

Step 8: Setup is loading files, follow the instruction when it's finished