ACP-5187

18.5" Intel® Core™ i7/ Core™ i5/ Celeron Processor High Brightness Fanless Multi-Touch Panel PC

ACP-5187 Manual 2nd Ed
October 2013

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Packing List

Before you begin installing your Panel PC, please make sure that the following items have been shipped:

- ACP-5187 Infotainment Multi-Touch Panel PC
- Power Adapter x 1
- Product DVD

  Contains User's Manual (in PDF format), Drivers and Utilities

If any of these items are missing or damaged, you should 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 reliable 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 UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4°F) OR ABOVE 60° C (140° F). IT MAY DAMAGE THE EQUIPMENT.

16. External equipment intended for connection to signal input/output or other connectors, shall comply with relevant UL / IEC standard (e.g. UL 1950 for IT equipment and UL 60601-1 / IEC 60601 series for systems – shall comply with the standard IEC 60601-1-1, Safety requirements for medical electrical systems. Equipment not complying with UL 60601-1 shall be kept outside the patient environment, as defined in the standard.

17. When the temperature of CPU is higher than 35°C, the frequency of CPU will be adjusted automatically. For example, if the temperature of Intel Core i7 is 40°C, the frequency of the CPU will be between 1.8~1.3 GHz.

Caution:

It may cause the danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer.

Classification

1. Degree of production against electric shock: not classified
2. Degree of protection against the ingress of water: IPX1
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
4. Mode of operation: Continuous
5. Type of protection against electric shock: Class I 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.

Safety Symbol Description

The following safety symbols are further explanations for your reference.

	*Medical equipment with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1, and CAN/CSA C22.2 NO. 601.1*
	*Attention, consult ACCOMPANYING DOCUMENTS.*
	*Ground wire* *Protective Ground wire.*
	*Medical equipment with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1, and CAN/CSA C22.2 NO. 601.1*

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。

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Appendix D RAID & AHCI Settings

Chapter

1

General Information

1.1 Introduction

The ACP-5187 is a Multi-Touch Infotainment Panel PC with superior onboard Intel® Core™ i7/i5/Celeron® processor-based computer. It is a PC-based system with 18.5" true color TFT LCD display, integrated multimedia functions make them the perfect platforms to build comprehensive lifestyle computing applications.

The ACP-5187 includes all the features of a powerful computer into a slim and attractive chassis. The ACP-5187 has 300 nits TFT display with 1366 x 768 resolution. This model equips two-point (for the OS of Windows® XP, Windows® 7 and Windows® Embedded) Multi-Touch Window design and is easy to clean. Moreover, it is IPX1 100% water-proof that can be installed in harsh environments. Its front bezel is IP-65/NEMA4 for auxiliary water-proof protection. In addition, the ACP-5187 deploys 7H hardness Anti-Scratch Surface to avoid accidental damage.

The ACP-5187 supports one 2.5" SATA Hard Disk Drive and one CFast™ slot for the storage functions, and one Mini-Card expansion. Moreover, it supports Smart Card Reader, RFID, MSR, Bluetooth, Skype phone, and camera to fulfill the demands of versatile applications.

1.2 Features

- 18.5” WXGA (1366 x 768) Fanless TFT LCD Display
- Easy-To-Clean: Multi-Touch Window Design (Two-Point)
- Superior Intel® Core™ i7-3610QE/ Core™ i5-3610ME/ Celeron® 1020E Processor
- IPx1 100% Water-Proof from the Top Plastic Housing
- Anti-Scratch Surface (7H Hardness)
- IPX1 WebCam (Optional)
- USB x 6, COM x 1. DVI-I x 1, LAN x 2, Mini PCIe Card x 1
- Front Access LCD ON/OFF, Brightness UP/DOWN, Volume UP/DOWN

1.3 Specification

System

● Processor	Onboard Intel® Core™ i7/ Core™ i5 / Celeron® Processor
● System Memory	DDR3 SODIMM x 1, Max. 8 GB (Default 2GB)
● LCD / CRT Controller	Integrated graphics in Intel® QM77
● I/O Port	USB x 6 (USB2.0 x 2 on side; USB2.0 x 2 and USB3.0 x 2 on bottom) RS-232 x 1 LAN x 2 Line-out x 1 DVI-I x 1 Power input x 1 2W speaker x 2 ATX power button
● Storage Disk Drive	2.5” SATA Hard Disk Drive bay x 1; CFast™ slot x 1
● Expansion	Mini PCIe Card x 1
● OS Support	Windows® XP (T/S: Single point), Linux Fedora (T/S: Multi-point), Windows®7 (T/S: Multi-point), Windows®8

Mechanical

Construction	IPX1 from the top plastic housing
Mounting	VESA 100
Dimension	18.11”(W) x 12.2”(H) x 3.39”(D) (460mm x 310mm x 86mm)
Carton Dimension	26” x 8.11” x 19.53’’ (661mm x 206mm x 496mm)
Net Weight	15.4 lb (7 kg)
Gross Weight	19.8 lb (9 kg)

Environmental

Operating Temperature	32°F~104°F (0°C~40°C) (Ambient With Airflow)
Storage Temperature	-4°F~158°F (-20°C~70°C)
Storage Humidity	5%~90% @ 40°C, non-condensing
Vibration	1 g rms/ 5-500Hz/ Random Operation (HDD)
Shock	20 G peak acceleration (11 msec. duration) (HDD)
EMC	CE/FCC Class A

Power Supply

DC Input 84W	DC 12V, with AC power adapter with lock

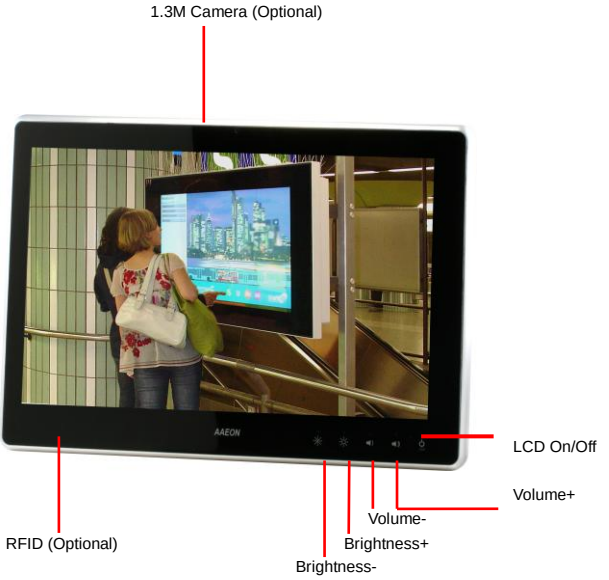
LCD

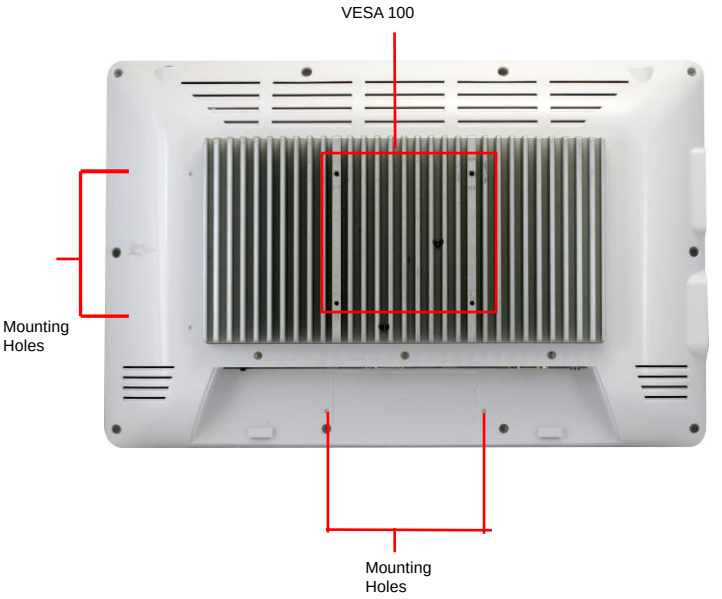
- Display Type 18.5” TFT-LCD, CCFL
- Max. Resolution 1366 x 768
- Max. Colors 16.7 M colors (6/8-bit for R, G, B)
- Luminance (cd/m^2) 300 cd/m^2
- Contrast Ratio 1000:1
- Viewing Angle 85º (H), 80º (V)
- Backlight MTBF (Hours) 50,000

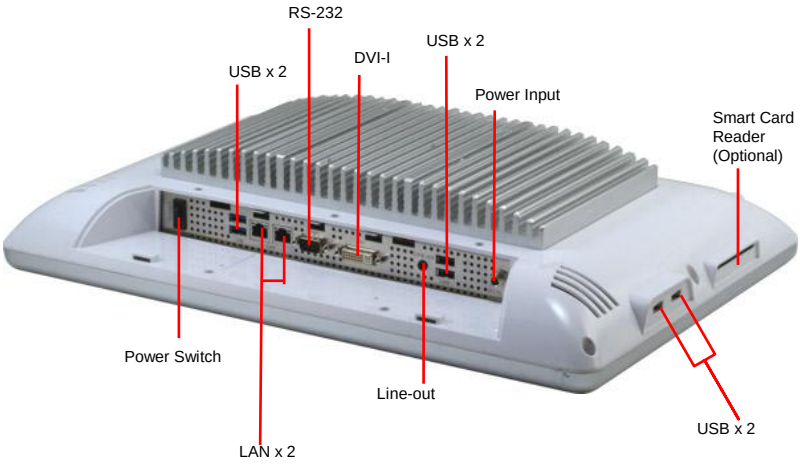
Touchscreen

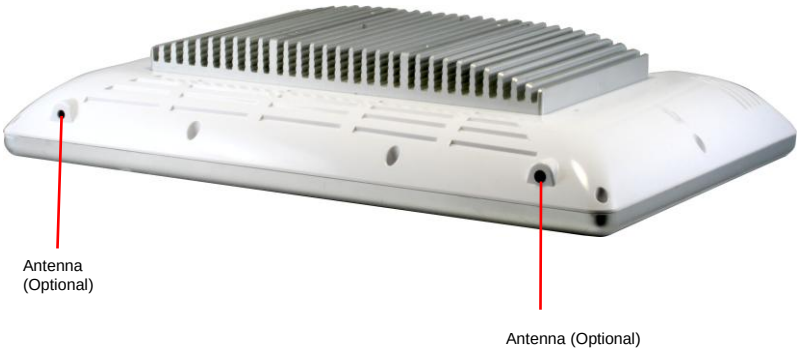
- Type Projected Capacitive Multi-Touch (Two points)
- Resolution 2048x2048
- Light Transmission >90%

1.4 General Information




VESA 100
Mounting Holes
Mounting Holes


RS-232
USB x 2
DVI-I
USB x 2
Power Input
Smart Card
Reader
(Optional)
Power Switch
LAN x 2
Line-out
USB x 2


Antenna
(Optional)
Antenna (Optional)

Chapter

2

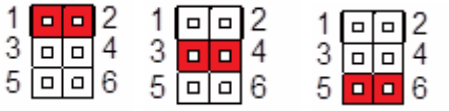
Hardware Installation

2.1 Safety Precautions

Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 COM2 Pin8 Function Selection (JP8)



+12V Ring +5V

JP8	Function
1-2	+12V
3-4	Ring (Default)
5-6	+5V

2.3 Clear CMOS (JP11)

Normal **Clear CMOS**

JP11	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.4 COM Port 2 Connector (CN11)

RS-232

Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±9V

5	TX	OUT	±9V
6	CTS	IN	
7	DTR	OUT	±9V
8	RI/+5V/+12V	IN/ PWR	+5V/+12V
9	GND	GND	

RS-422

Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±5V
2	NC		
3	RS422_RX+	IN	
4	NC		
5	RS422_TX+	OUT	±5V
6	NC		
7	RS422_RX-	IN	
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	

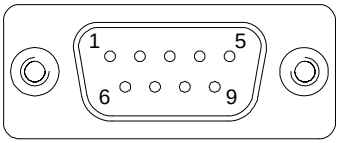
RS-485

Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	NC		
3	NC		
4	NC		
5	RS485_D+	I/O	±5V

6	NC		
7	NC		
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	

Note: COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232. Pin 8 function can be set by JP8.

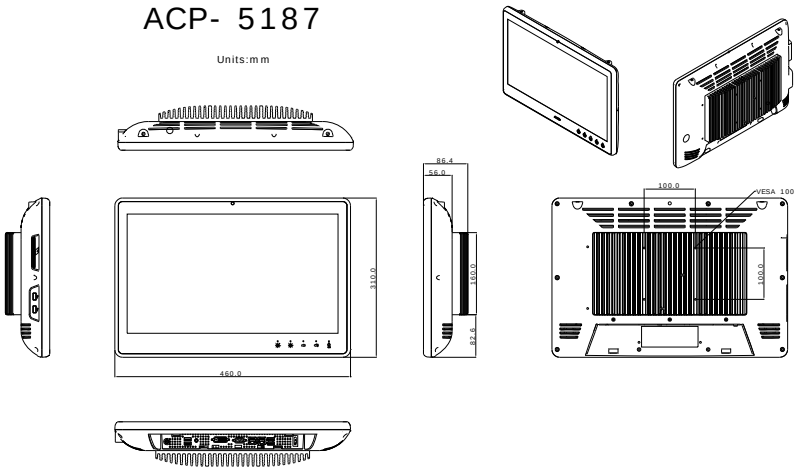
2.5 COM Port 1 (D-SUB 9) (CN27)



Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±9V
4	DTR	OUT	±9V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	

2.6 A Quick Tour of the ACP-5187

Mechanical Drawing



Front

Rear

I/O

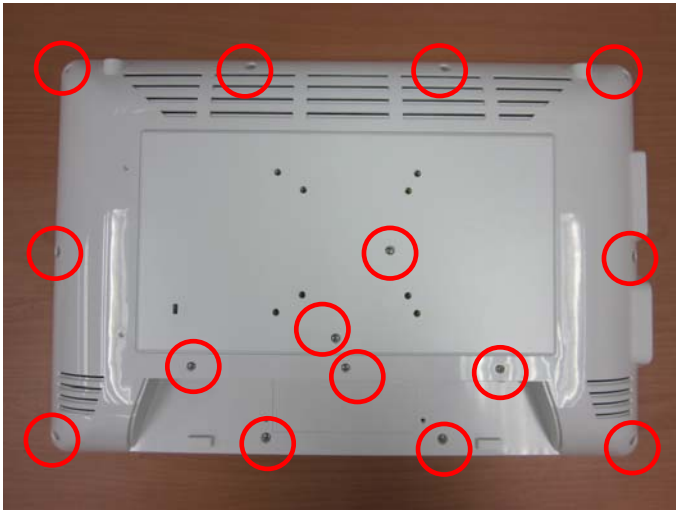
Cable Cover (Optional)

Note 1: You may turn on the power by cutting and destroying the protective cover as it shows below.

Note 2: The “Anti-Drop Kit” can help on preventing the cable drop from the connector

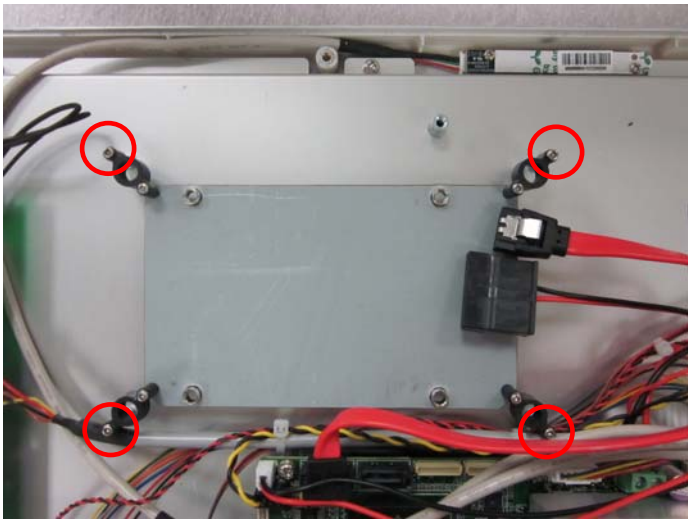
2.7 2.5” Hard Disk Drive (HDD) Installation

Step 1: Unscrew the rear cover screws (15 screws)



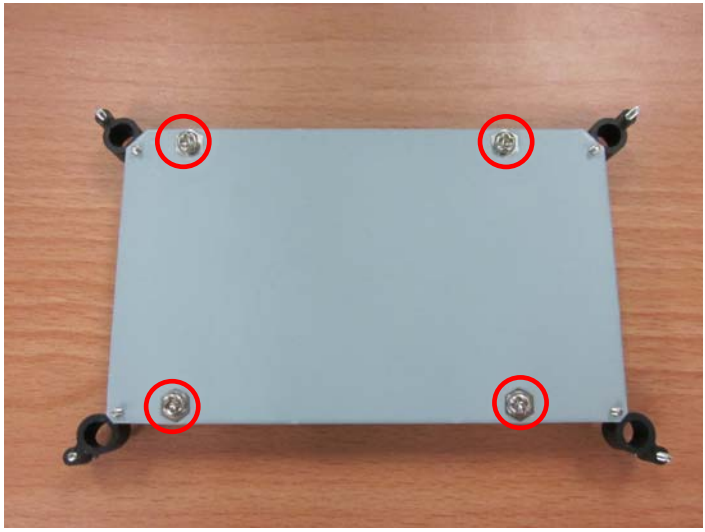
Step 2: Remove EMI Cover (5 screws)

Step 3: Remove HDD Bracket (4 screws)

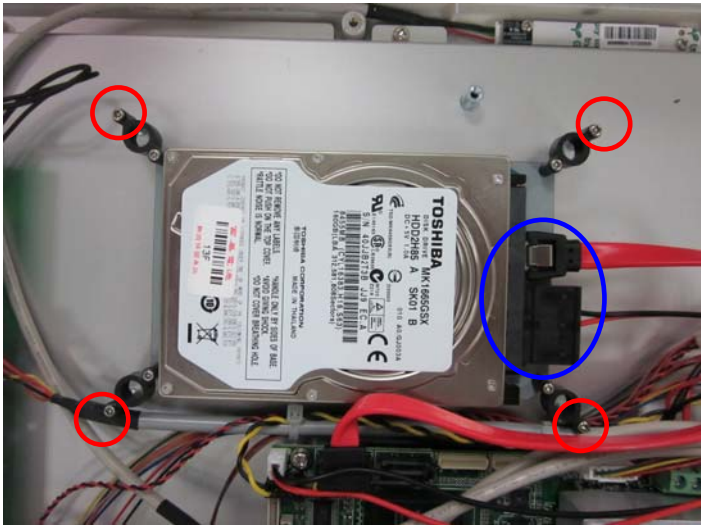


Step 4: Get the HDD and HDD Bracket ready

Step 5: Fasten the four screws to fix HDD Bracket and HDD



Step 6: Connect the SATA and power cables to the HDD and fasten the four screws to fix the HDD Bracket



Chapter

3

AMI BIOS Setup

3.1 System Test and Iinitialization

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 stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

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

The ACP-5187 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 and BIOS NVRAM 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

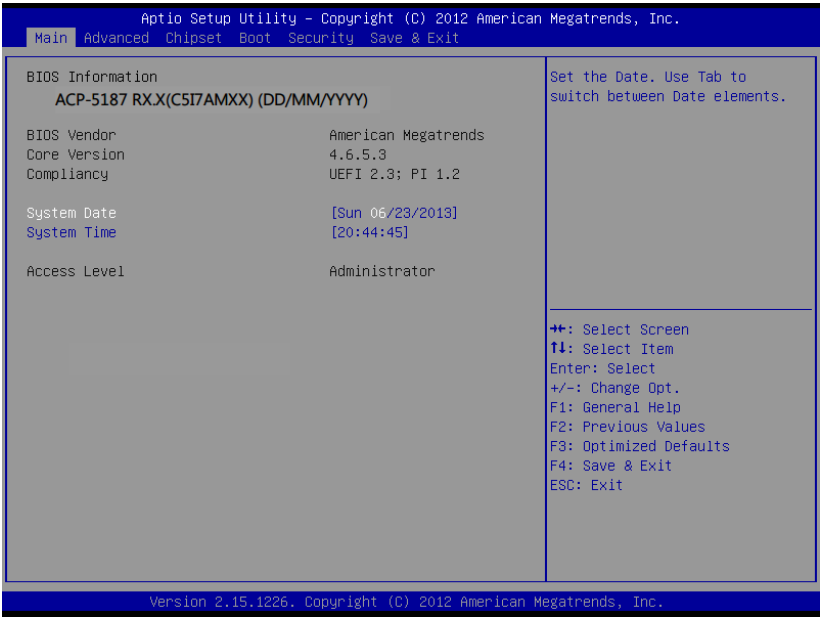
Set setup administrator password.

Save & Exit

Exit system setup after saving the changes.

Setup Menu

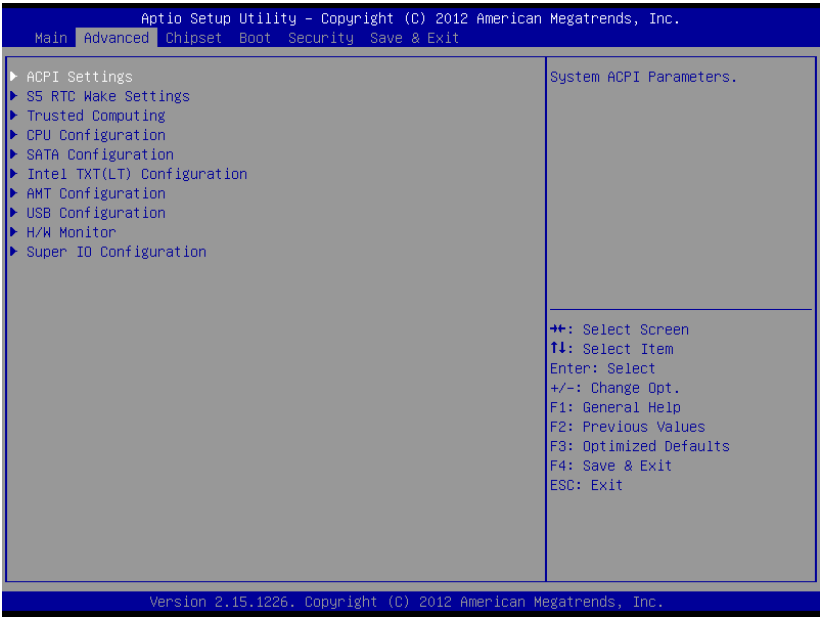
Setup submenu: Main



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

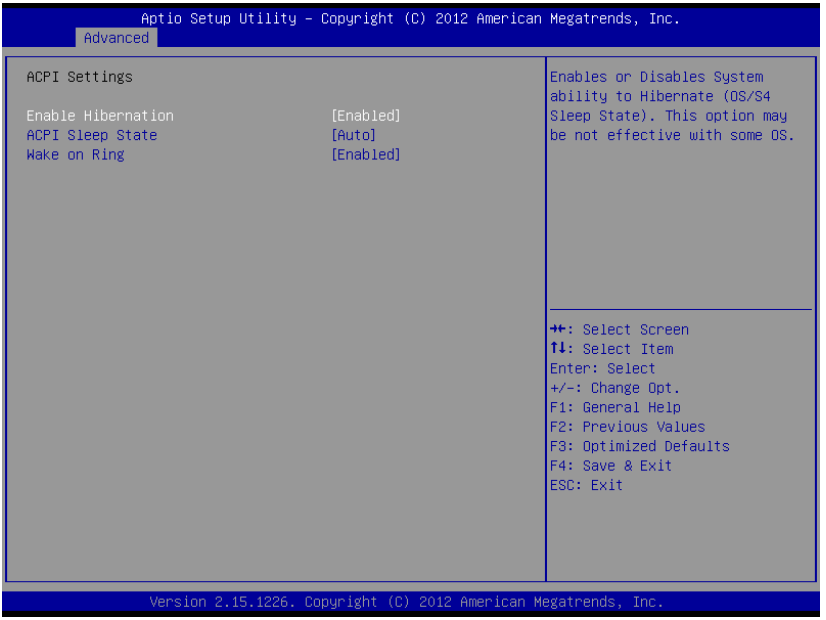


Options summary: (***default setting***)

ACPI Settings		
System ACPI Parameters		
Trusted Computing		
Trusted Computing Settings		
CPU Configuration		
CPU Configuration Parameters		
SATA Configuration		
SATA Device Options Settings		

Intel TXT(LT) Configuration		
Intel Trusted Execution Technology		
AMT Configuration		
AMT Configuration Parameters		
USB Configuration		
USB Configuration Parameters		
H/W Monitor		
Monitor hardware status		
Super IO Configuration		
Super IO Configuration Parameters		

ACPI Settings

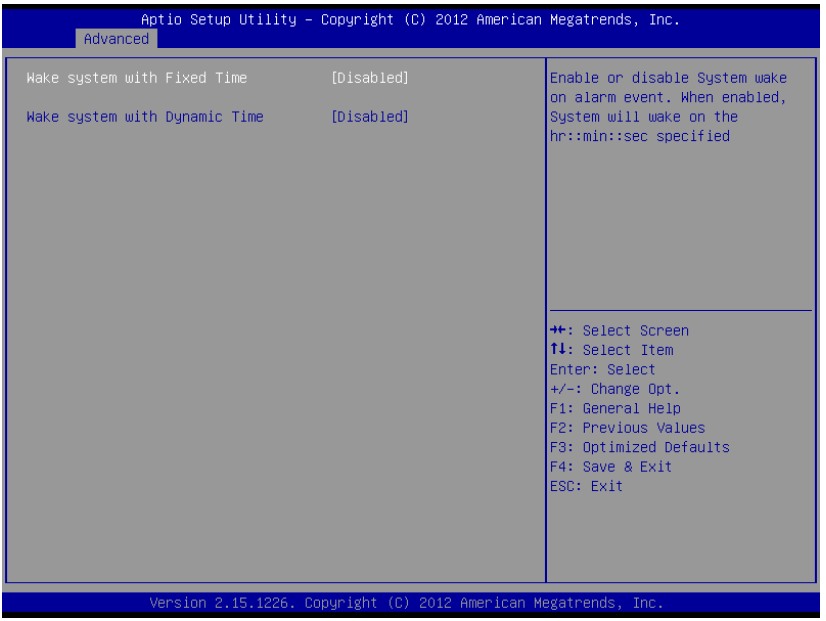


Options summary: (***default setting***)

Enable Hibernation	***Enabled***	
	Disabled	
Enabled or disabled hibernate (OS/S4 Sleep State).		
ACPI Sleep State	Suspend Disabled	
	S1 only(CPU Stop Clock)	
	S3 only(Suspend to RAM)	
	Auto	
Select the ACPI state used for System Suspend		
Wake on Ring	***Enabled***	

	Disabled	
Enabled or disabled wake on ring function.		

RTC Wake Settings

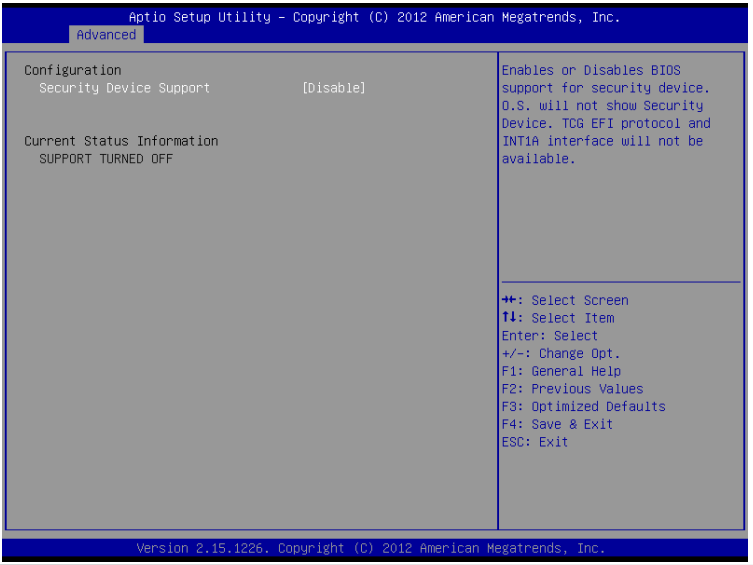


Options summary: (***default setting***)

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 day	0-31	
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	

Trusted Computing



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

Security Device Support	***Disabled***	
	Enabled	
En/Disable TPM support.		
TPM State	***Disabled***	
	Enabled	
En/Disable TPM functionality.		
Pending TPM Operation	***None***	
	Enable Take Ownership	
	Disable Take Ownership	
	TPM Clear	
Select one-time TPM operation. Item value returns to 'None' after next POST.		

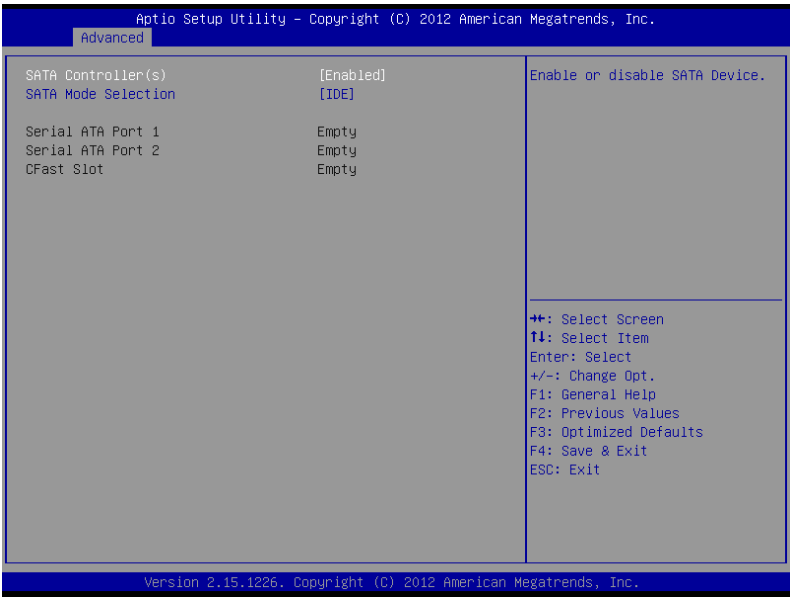
CPU Configuration

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

Hyper-Threading	Disabled	
	Enabled	
En/Disable CPU Hyper-Threading function		
Active Processor Cores	***ALL***	
	1 to Max CPU cores	
Number of CPU cores to be active.		
Limit CPUID Maximum	***Disabled***	
	Enabled	
Disabled for Windows XP		
Execute Disable Bit	Disabled	

	Enabled	
En/Disable XD bit for supporting OS		
Intel Virtualization Technology	***Disabled***	
	Enabled	
En/Disable Intel VT-x function		
EIST	Disabled	
	Enabled	
En/Disable Intel SpeedStep		
Turbo Mode	***Disabled***	
	Enabled	
En/Disable Intel Turbo Mode		

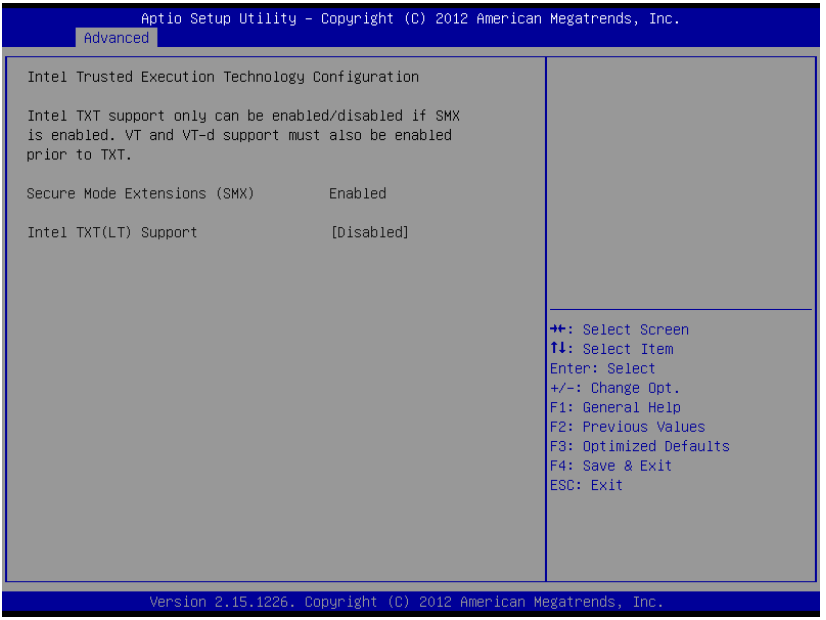
SATA Configuration



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

SATA Controller(s)	Disabled	
	Enabled	
En/Disable SATA controller		
Configure SATA as	***IDE***	
	AHCI	
	RAID	Available for QM77 Sku
Configure SATA controller operating as IDE/AHCI/RAID mode.		
Port 1/Port 2/CFast Slot	Disabled	
	Enabled	
En/Disable the selected port.		
Hot Plug	***Disabled***	
	Enabled	
En/Disable Hot Plug feature for specified port.		

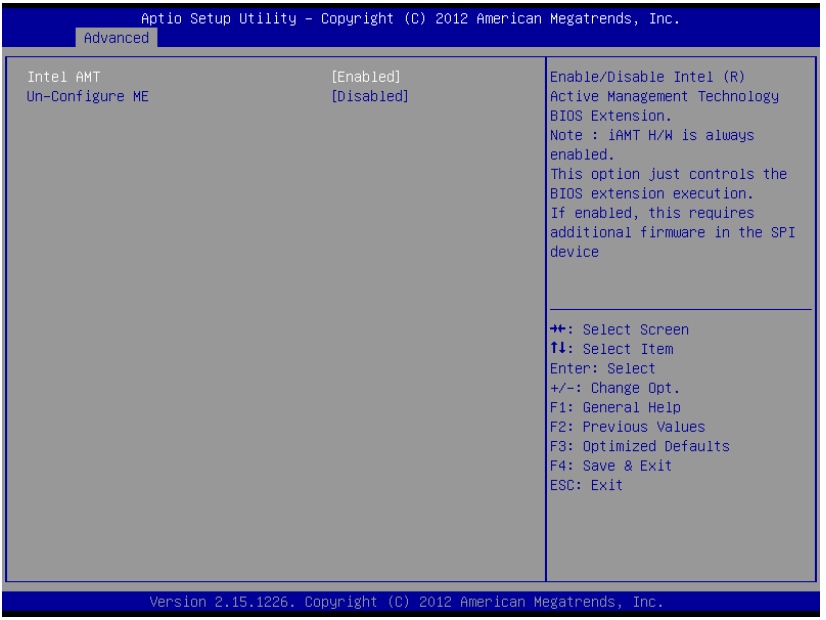
Intel TXT(LT) Configuration



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

Intel TXT(LT) Support	***Disabled***	
	Enabled	
En/Disable Intel TXT function. This function only can be enabled/disabled if SMX, VT-x and VT-d support are enabled prior to it.		

AMT Configuration



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

Intel AMT	***Enabled***	
	Disabled	
En/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		
Un-Configure ME	Enabled	
	Disabled	
OEMFlag Bit 15: Un-Configure ME without password		

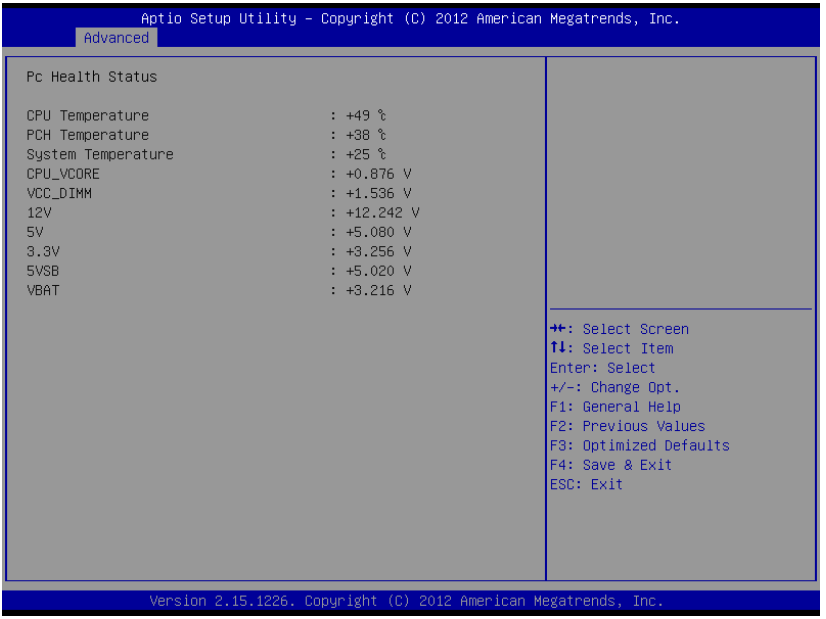
USB Configuration

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

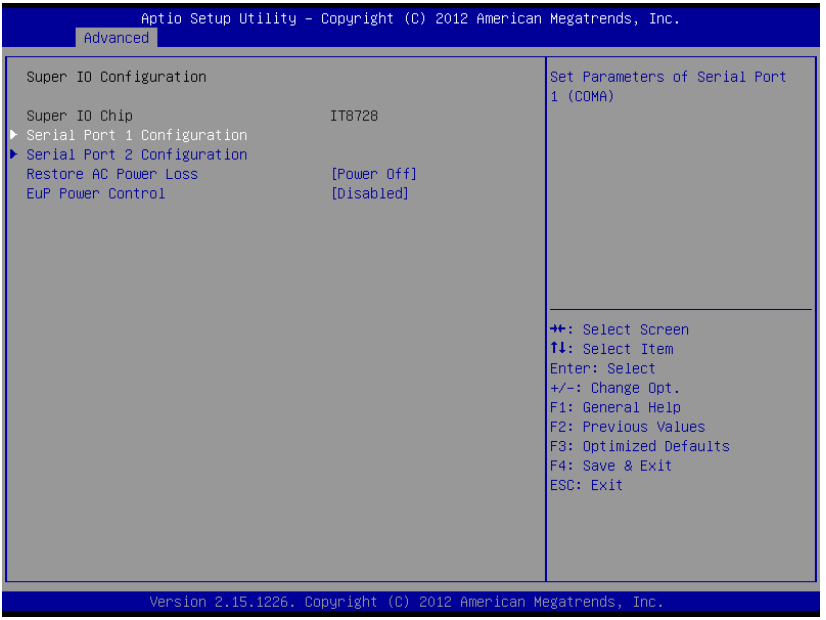
Legacy USB Support	***Enabled***	
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI application		
USB3.0 Support	***Enabled***	
	Disabled	

Enables BIOS Support for USB3.0 (XHCI). When disabled, PCH USB3.0 controller will also be disabled.		
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)		

H/W Monitor



Super IO Configuration

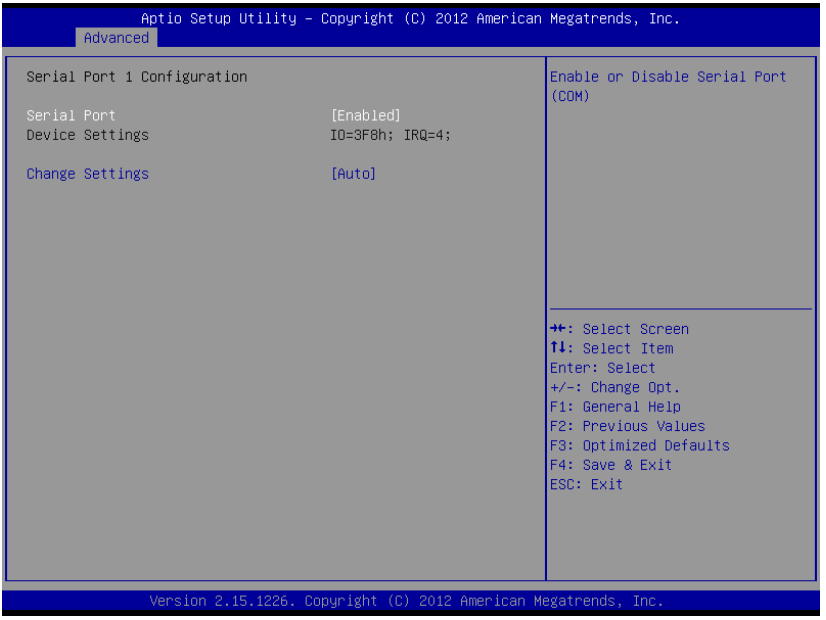


Options summary: (***default setting***)

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

Configure Energy-using Product(EuP) Power Control.

Serial Port 1 Configuration

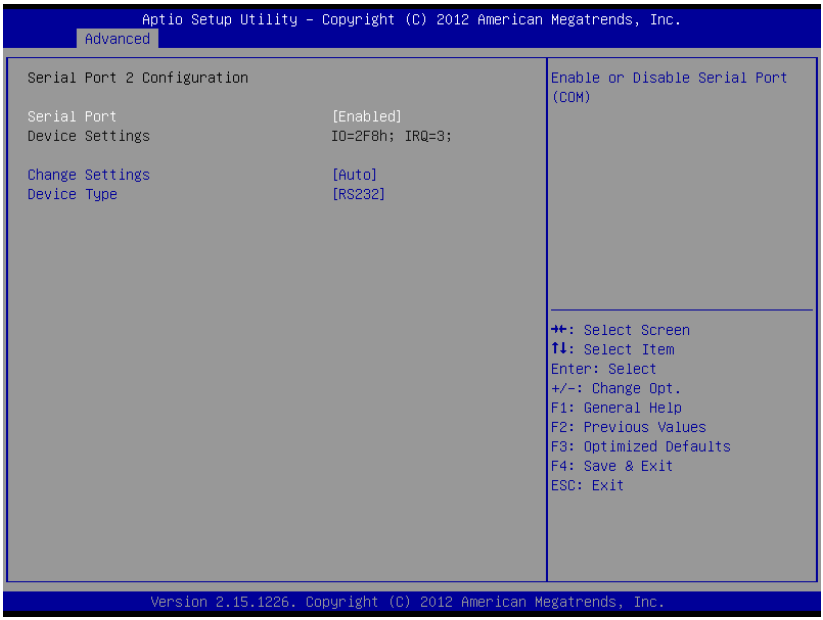


Options summary: (***default setting***)

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

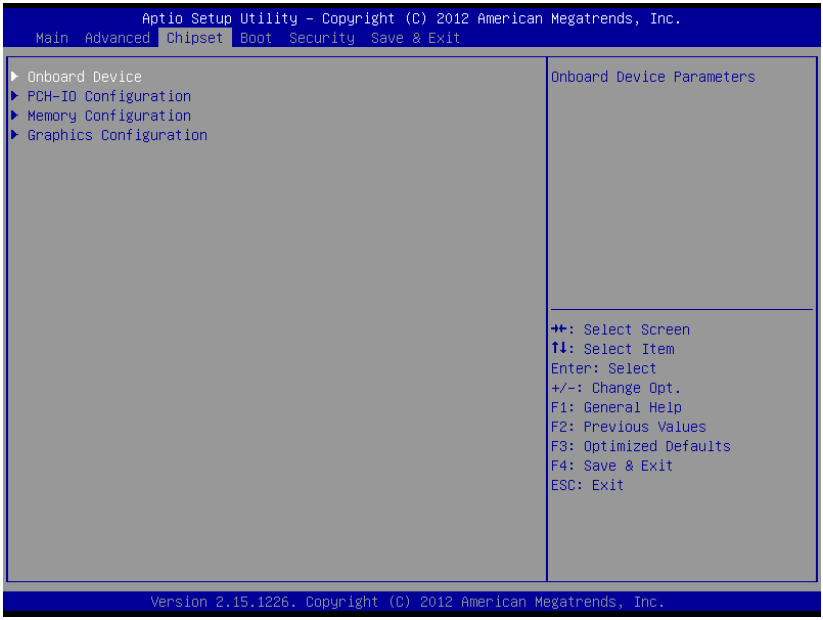


Options summary: (***default setting***)

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.		
Device Type	***RS232***	
	RS422	
	RS485	
Configure COM2 operated as RS232, RS422 or RS485.		

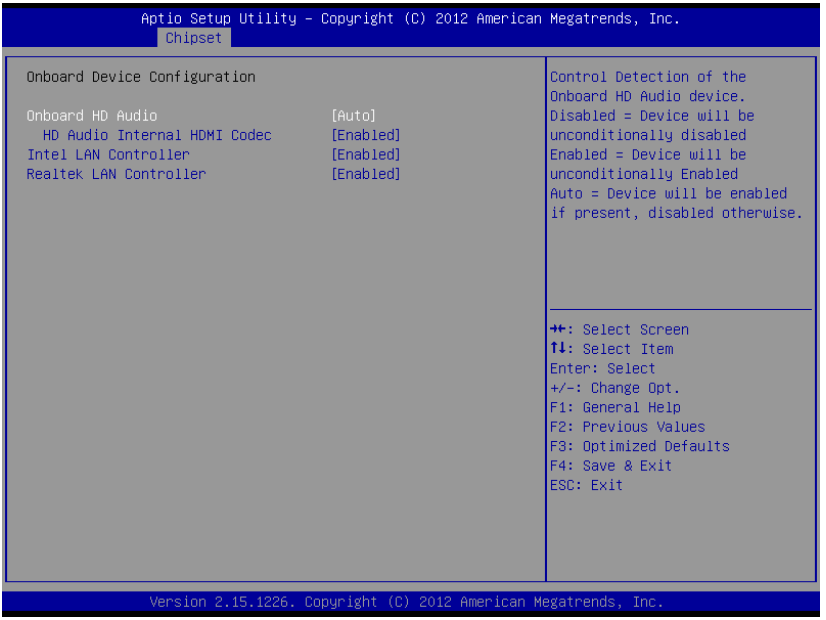
Setup submenu: Chipset



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

Onboard Device		
Configure Onboard Devices		
PCI-IO Configuration		
South Bridge Parameters		
Memory Configuration		
Memory Parameters		
Graphic Configuration		
Graphic Parameters		

Onboard Device

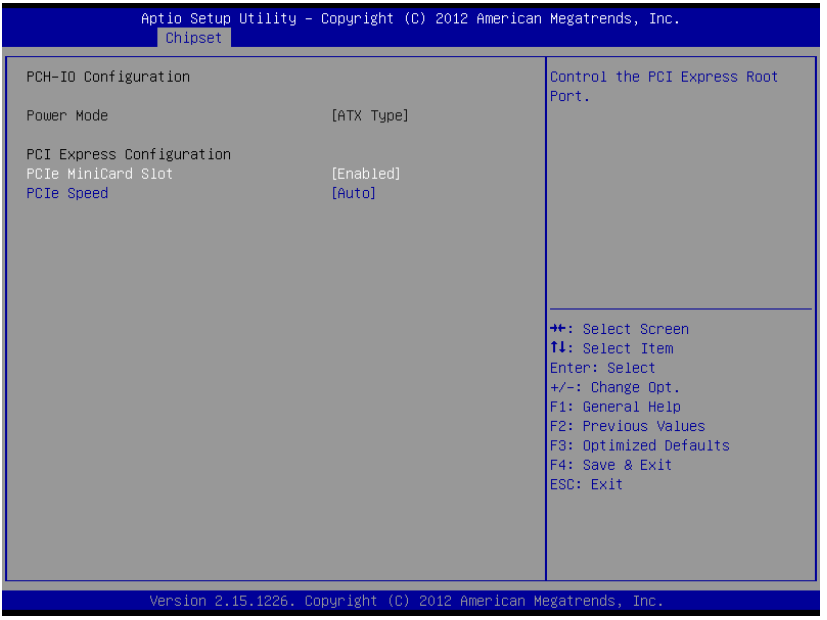


Options summary: (***default setting***)

Onboard HD Audio	Disabled	
	Enabled	
	Auto	
En/Disabled HD Audio controller.		
HD Audio Internal HDMI Codec	***Enabled***	
	Disabled	
En/Disabled internal HDMI codec for HD Audio.		
Intel LAN Controller	***Enabled***	
	Disabled	

En/Disabled Intel i82579 NIC		
Realtek LAN Controller	***Enabled***	
	Disabled	
En/Disabled Realtek RTL8111E NIC		

PCH-IO Configuration

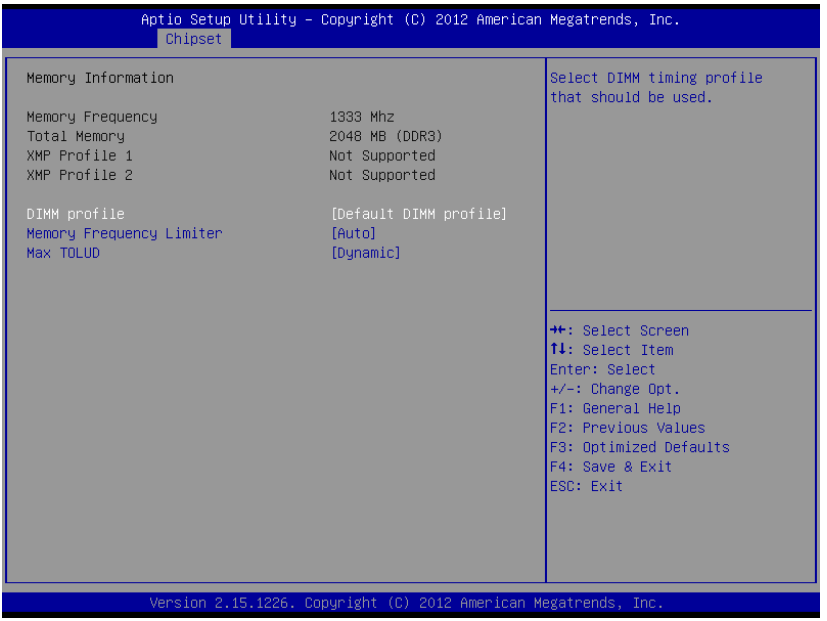


Options summary: (***default setting***)

Power Mode	***ATX Type***	
Select the power type used on the system		
PCIe MiniCard Slot	Disabled	
	Enabled	
Control the PCI Express Root Port.		

PCIe Speed	***Auto***	
	Gen1	
	Gen2	
Select PCI Express port speed. Some PCIe carsd must set to Gen1 for operation.		

Memory Configuration

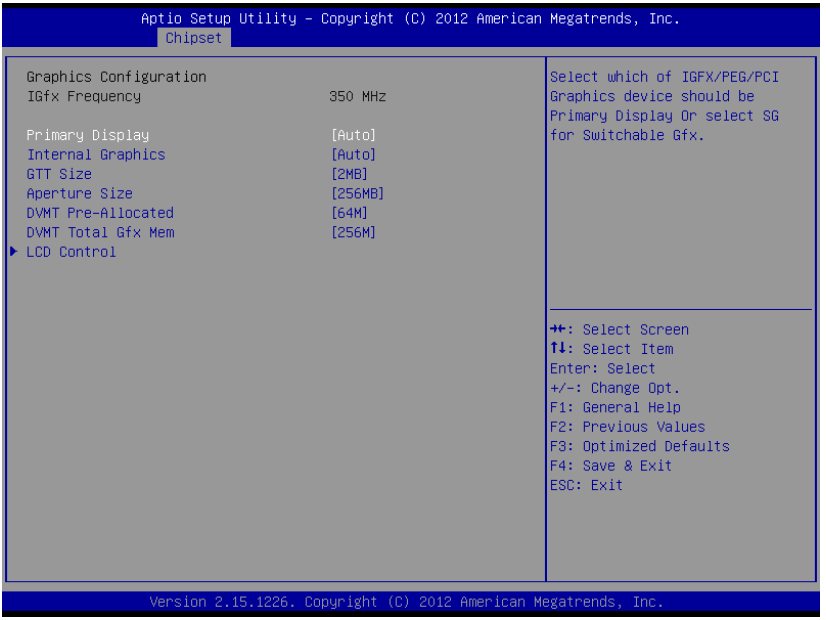


Options summary: (***default setting***)

DIMM Profile	***Default DIMM profile***	
	XMP Profile 1	
	XMP Profile 2	
Select DIMM timing profile that should be used		

Memory Frequency Limiter	***Auto***	
	1067	
	1333	
	1600	
Maximum Memory Frequency Selections in Mhz.		
Max TOLUD	***Dynamic***	
	1 GB	
	1.25 GB	
	1.5 GB	
	1.75 GB	
	2 GB	
	2.25 GB	
	2.5 GB	
	2.75 GB	
	3 GB	
	3.25 GB	
Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of install graphic controller.		

Graphic Configuration

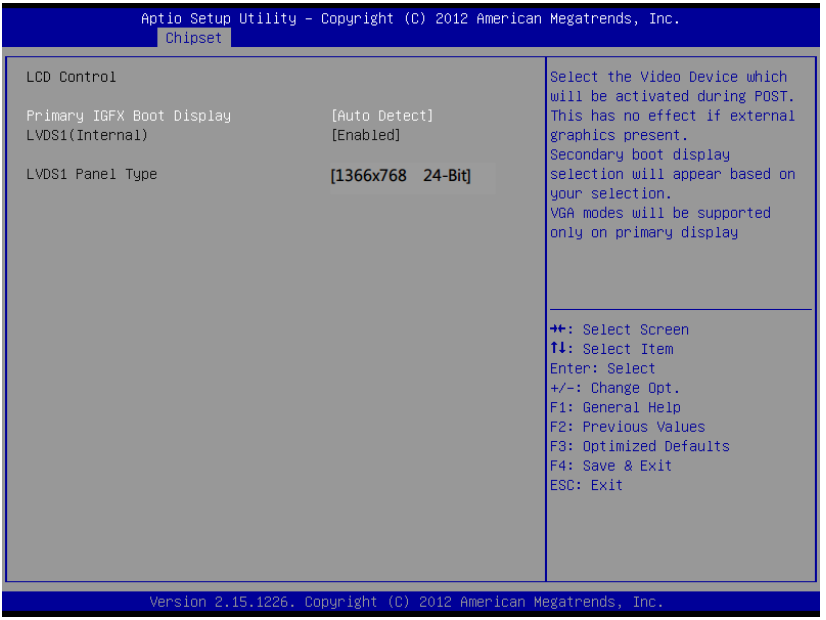


Options summary: (***default setting***)

Primary Display	***Auto***	
	IGFX	
	PCI	
Select graphic adapters to boot		
Internal Graphics	***Auto***	
	Disabled	
	Enabled	
En/Disabled internal graphics device		
GTT Size	1MB	

	2MB	
Select the GTT Size		
Aperture Size	128MB	
	256MB	
	512MB	
Select the Aperture Size		
DVMT Pre-Allocated	***64MB***	
	32MB~1024MB	
Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.		
DVMT Total Gfx Mem	128MB	
	256MB	
	Max	
Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.		

LCD Control

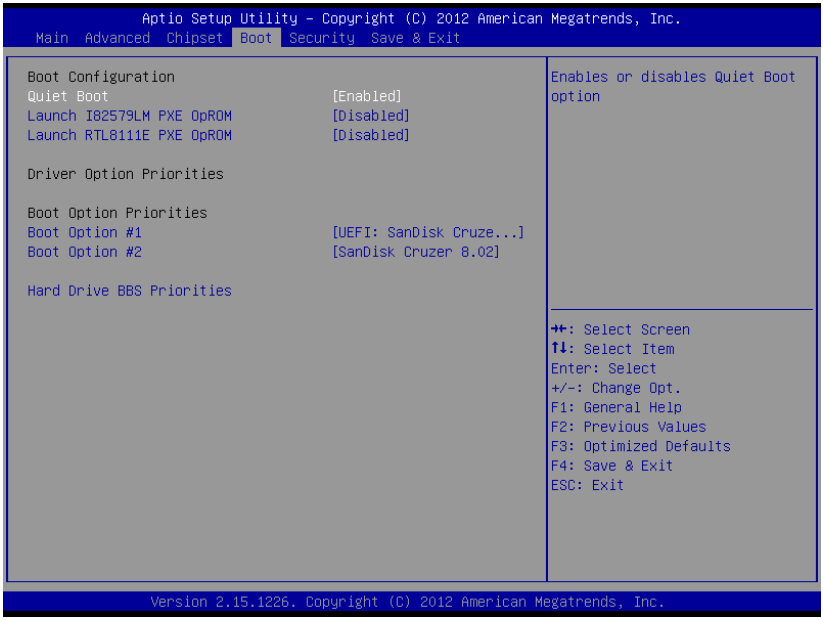


Options summary: (***default setting***)

Primary IGFX Boot Display	***Auto Detect***	
	DVI-A	
	LVDS1	
	DVI-D	
Select Primary IGFX boot display device Note: LVDS1 is the default main display device when this item set to “Auto Detect” and LVDS1 enabled. In this case, DVI will not display under DOS environment unless user set this item to DVI manually.		

LVDS1(Internal)	***Enabled***	
Enable Internal LVDS		
LVDS1 Panel Type	1366x768 24-Bit	
1366x768 24-Bit resolution.		

Setup submenu: Boot

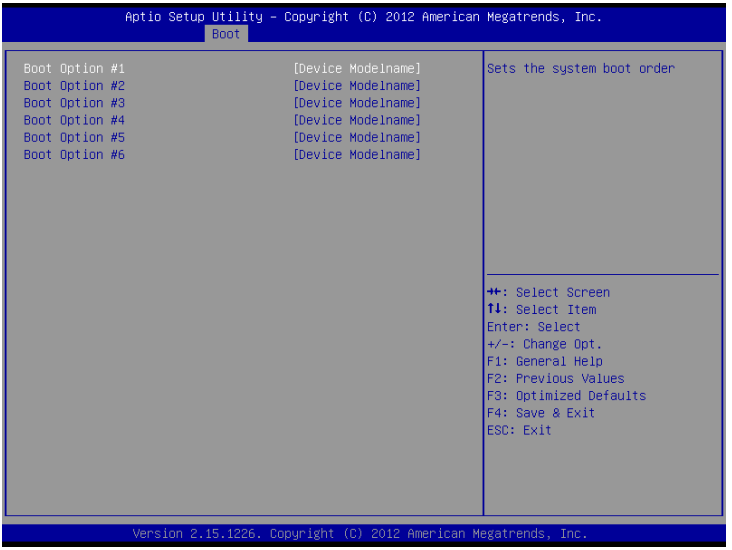


Options summary: (***default setting***)

Quiet Boot	Disabled	
	Enabled	
En/Disable showing boot logo.		
Launch I82579LM/ RTL8111E PXE OpROM	***Disabled***	
	Enabled	
En/Disable PXE boot for I82579LM/RTL8111E LAN		

Boot Option #X/ XXXX Drive BBS Priorities		
The order of boot priorities.		

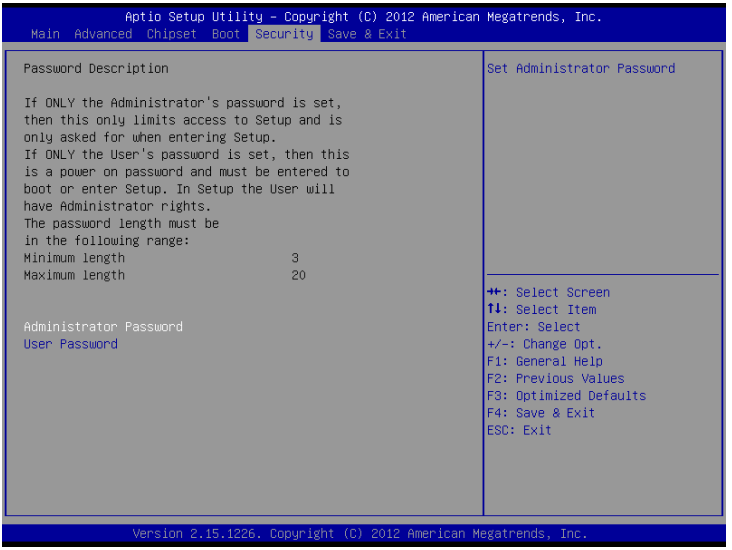
BBS Priorities



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.

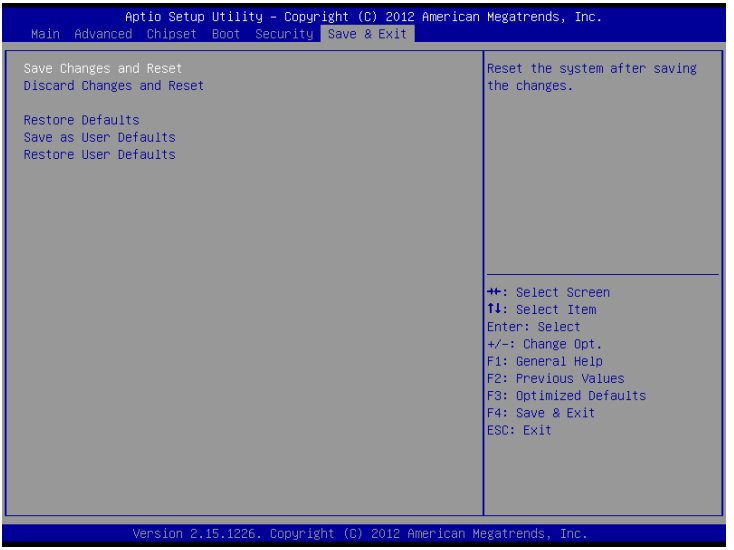
Install the Password:

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 ACP-5187 comes with an AutoRun DVD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver DVD, the driver DVD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN1 Driver (Intel® LAN Chip)

Step 4 – Install LAN2 Driver (Realtek LAN Chip)

Step 5 – Install Audio Driver

Step 6 – Install ME Driver

Step 7 – Install RAID & AHCI Driver

Step 8 – Install TPM Driver

Step 9 – Install Touch Driver

Step 10 – Install USB3.0 Driver (Windows® 7 only)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the ACP-5187 DVD-ROM into the DVD-ROM drive. And install the drivers from Step 1 to Step 10 in order.

Step 1 – Install Chipset Driver

1. Click on the ***STEP 1-CHIPSET*** folder and select the OS folder your system is
2. Double click on the ***infinst_autol.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

1. Click on the ***STEP2-VGA*** folder and select the OS folder your system is
2. Double click on the ***Setup.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 1:

- This motherboard supports VGA and LVDS display devices. In Single Display mode, use the hot keys to switch between VGA to LVDS device or vice versa. By default, press **<Ctrl>+<Alt>+<F1>** to switch to VGA device and press **<Ctrl>+<Alt>+<F3>** to switch to LVDS device.
- Before removing the current display device, connect the display device that you want to use, and then press the hot keys to switch to that device.

Note 2: If the OS is Windows® XP, you have to install the driver of dotNet Framework first. Simply click on ***dotnetfx35.exe*** located in ***dotNet Framwork*** folder.

Step 3 –Install LAN 1 Driver (Intel® LAN Chip)

1. Click on the ***STEP3-LAN1*** folder 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 4 –Install LAN2 Driver (Realtek LAN Chip)

1. Click on the ***STEP4-LAN2*** folder and select the OS folder your system is
2. Double click on the ***setup.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 5 –Install Audio Driver

1. Click on the ***STEP5-AUDIO*** folder 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 6 – Install ME Driver

1. Click on the ***STEP6-ME SW*** folder and select the OS folder your system is
2. Double click on the ***Setup.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 7 – Install RAID & AHCI Driver

Please refer to the ***Appendix D RAID & AHCI Settings***

Step 8 – Install TPM Driver

1. Click on the ***STEP8-TPM*** folder and select the OS folder your system is
2. Double click on the ***Setup.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 9 –Install Touch Driver

1. Click on the ***STEP9-TOUCH*** folder and select the folder of ***WINXP_32***
2. Double click on the ***ModifyDBArea***
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 10 –Install USB3.0 Driver

1. Click on the ***STEP10-USB3.0*** folder and select the OS folder your system is
2. Double click on the ***Setup.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

Appendix

A

Programming the Watchdog Timer

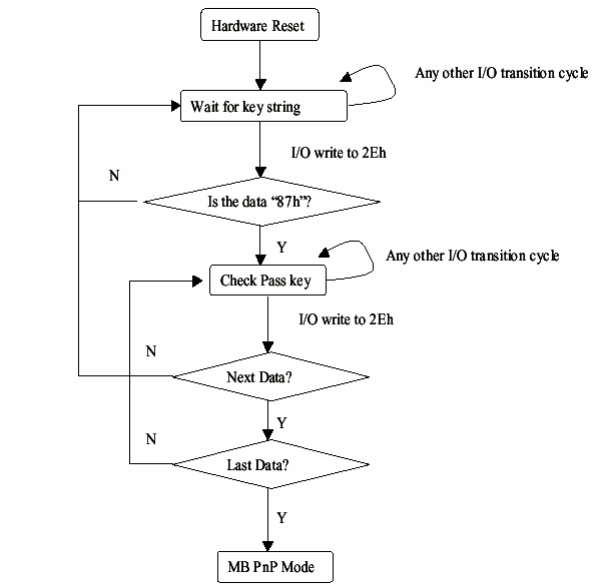
A.1 Programming

ACP-5187 utilizes ITE IT8728F chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEON intial 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 8728F 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 operations 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	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value 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.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level[Note] for WDT

WatchDog Timer Time-out Value Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

A.2 ITE8728F 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,12h
        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

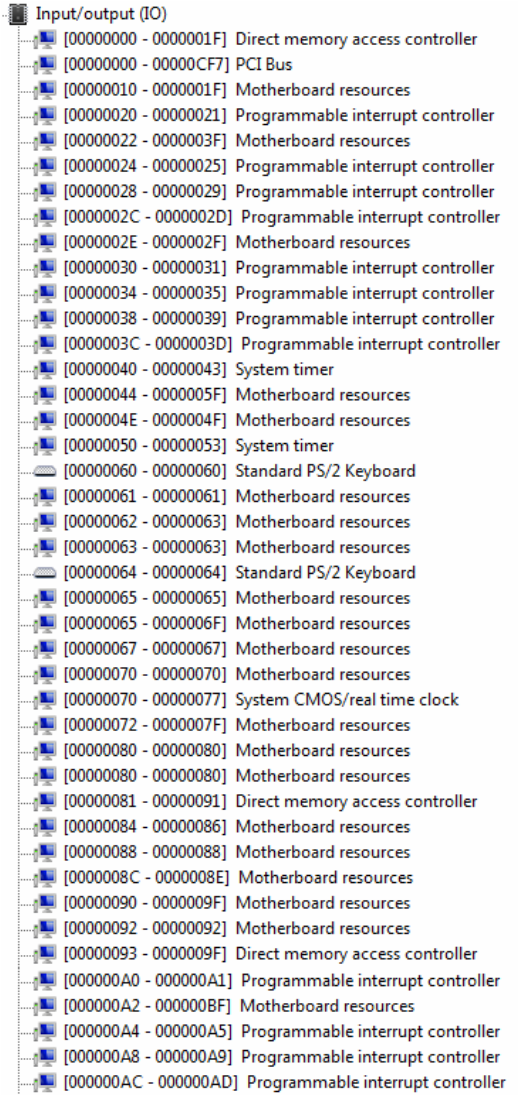
00h: no interrupt selected

Appendix

B

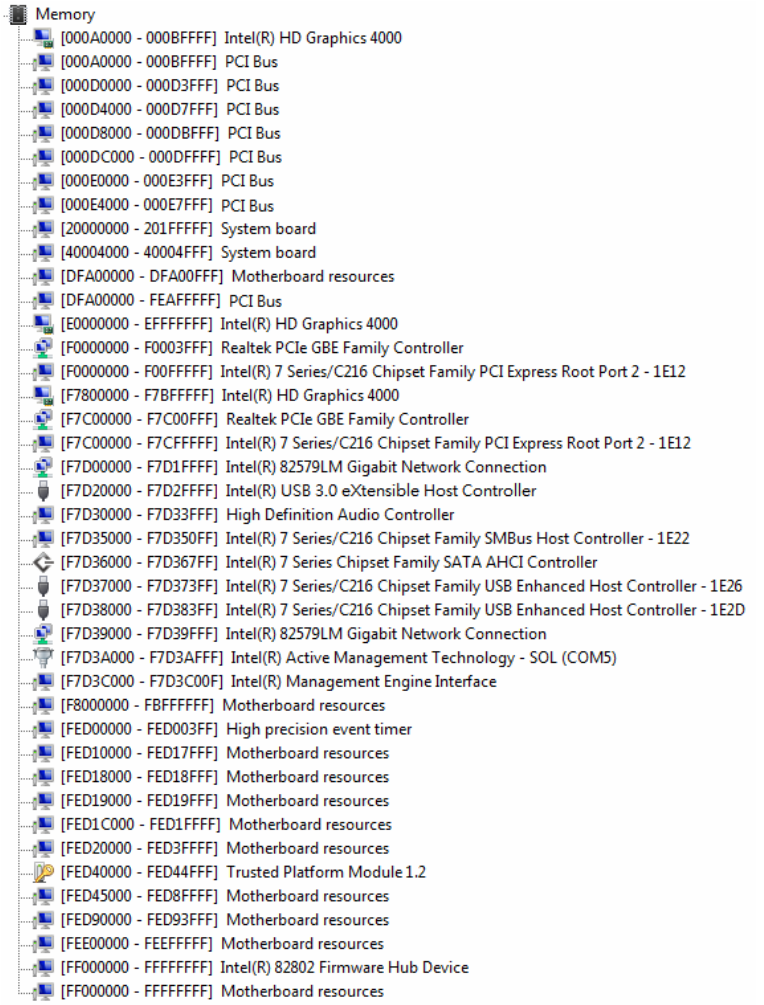
I/O Information

B.1 I/O Address Map

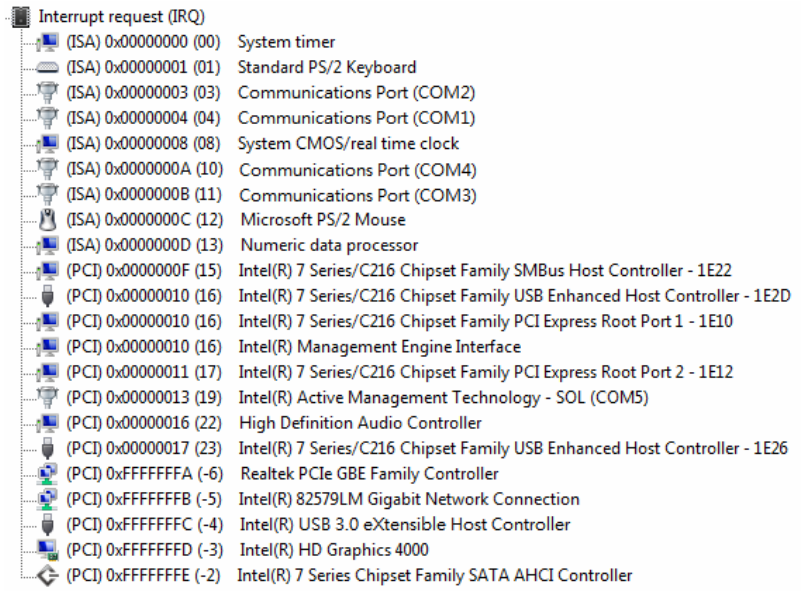


- [000000B0 - 000000B1] Programmable interrupt controller
- [000000B2 - 000000B3] Motherboard resources
- [000000B4 - 000000B5] Programmable interrupt controller
- [000000B8 - 000000B9] Programmable interrupt controller
- [000000BC - 000000BD] Programmable interrupt controller
- [000000C0 - 000000DF] Direct memory access controller
- [000000E0 - 000000EF] Motherboard resources
- [000000F0 - 000000FF] Numeric data processor
- [00000200 - 0000020F] Motherboard resources
- [000002E8 - 000002EF] Communications Port (COM4)
- [000002F8 - 000002FF] Communications Port (COM2)
- [00000378 - 0000037F] Printer Port (LPT1)
- [000003B0 - 000003BB] Intel(R) HD Graphics 4000
- [000003C0 - 000003DF] Intel(R) HD Graphics 4000
- [000003E8 - 000003EF] Communications Port (COM3)
- [000003F8 - 000003FF] Communications Port (COM1)
- [00000400 - 00000453] Motherboard resources
- [00000454 - 00000457] Motherboard resources
- [00000458 - 0000047F] Motherboard resources
- [000004D0 - 000004D1] Motherboard resources
- [000004D0 - 000004D1] Programmable interrupt controller
- [00000500 - 0000057F] Motherboard resources
- [00000680 - 0000069F] Motherboard resources
- [00000A00 - 00000A1F] Motherboard resources
- [00000A20 - 00000A2F] Motherboard resources
- [00000A30 - 00000A3F] Motherboard resources
- [00000D00 - 0000FFFF] PCI Bus
- [00001000 - 00001003] Motherboard resources
- [0000164E - 0000164F] Motherboard resources
- [0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
- [0000E000 - 0000EFFF] Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
- [0000F000 - 0000F03F] Intel(R) HD Graphics 4000
- [0000F040 - 0000F05F] Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
- [0000F060 - 0000F07F] Intel(R) 7 Series Chipset Family SATA AHCI Controller
- [0000F0A0 - 0000F0A3] Intel(R) 7 Series Chipset Family SATA AHCI Controller
- [0000F0B0 - 0000F0B7] Intel(R) 7 Series Chipset Family SATA AHCI Controller
- [0000F0C0 - 0000F0C3] Intel(R) 7 Series Chipset Family SATA AHCI Controller
- [0000F0D0 - 0000F0D7] Intel(R) 7 Series Chipset Family SATA AHCI Controller
- [0000F0E0 - 0000F0E7] Intel(R) Active Management Technology - SOL (COM5)
- [0000FFFF - 0000FFFF] Motherboard resources

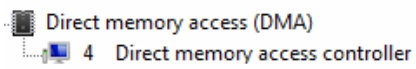
B.2 Memory Address Map



B.3 IRQ Mapping Chart



B.4 DMA Channel Assignments



Appendix

C

Miscellanea

C.1 General Cleaning Tips

You may need the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

1. Never spray or squirt the liquids directly onto any computer component. If you need to clean the device, please rub it with a piece of dry cloth.
2. Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
3. Turn the system off before you start to clean up the component or computer.
4. Never drop the components inside the computer or get circuit board damp or wet.
5. Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
6. Try not to put any food, drinks or cigarettes around the computer.

C.2 Cleaning tools

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may only be able to be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning tips.

- **Cloth** - A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, we still recommend you to rub it with a piece of cloth.
- **Water or rubbing alcohol** – You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.
- **Vacuum cleaner** - Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.

- **Cotton swabs** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.
- **Foam swabs** - Whenever possible it is better to use lint free swabs such as foam swabs.

Note:
We strongly recommended that you should shut down the system before you start to clean any single components.

Please follow the steps below.

1. Close all application programs
2. Close operating software
3. Turn off power switch
4. Remove all device
5. Pull out power cable

C.3 Scrap Computer Recycling

If the computer equipments need the maintenance or are beyond repair, we strongly recommended that you should inform us as soon as possible for the suitable solution. For the computers that are no longer useful or work well, please contact with worldwide distributors for recycling.

The worldwide distributors show on the following website:

http://www.aaeon.com/?TabIndex=Contact&TabID=Distributors

Note:

Follow the national requirements to dispose unit

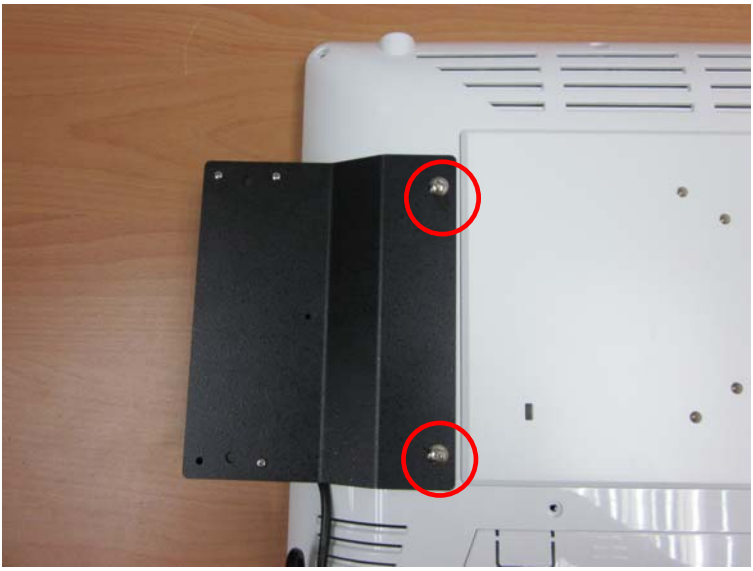
C.4 Installing Accessories

Skype Phone Installation

Step 1: Fasten the two screws(2-SELF TAPPING SCREWS) to fix the Skype Bracket with the ACP-5187

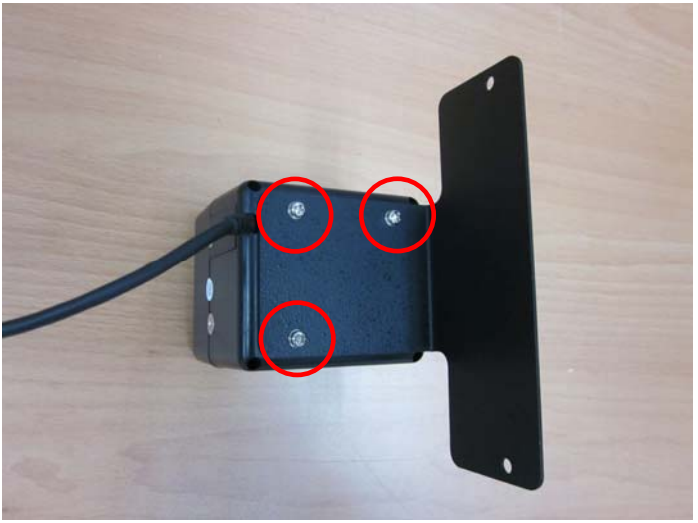
MSR Installation

Step 1: Fasten the two screws (2-SELF TAPPING SCREWS) to fix the MSR Bracket with the ACP-5187



Bar Code Scanner Installation

Step 1: Fasten the three screws to fix the Bar Code Scanner with the backet



Step 2: Fasten the two screws (2-SELF TAPPING SCREWS) to fix the Bar Code Scanner with the ACP-5187

Appendix

D

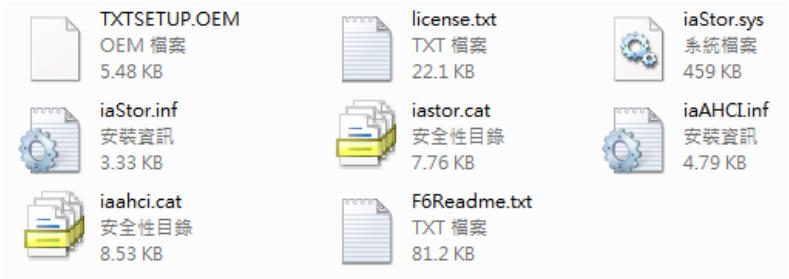
RAID & AHCI Settings

D.1 Setting RAID

OS installation to SETUP RAID Mode

Step 1: Extract the ***f6fly-x86.zip*** from “Driver CD ->

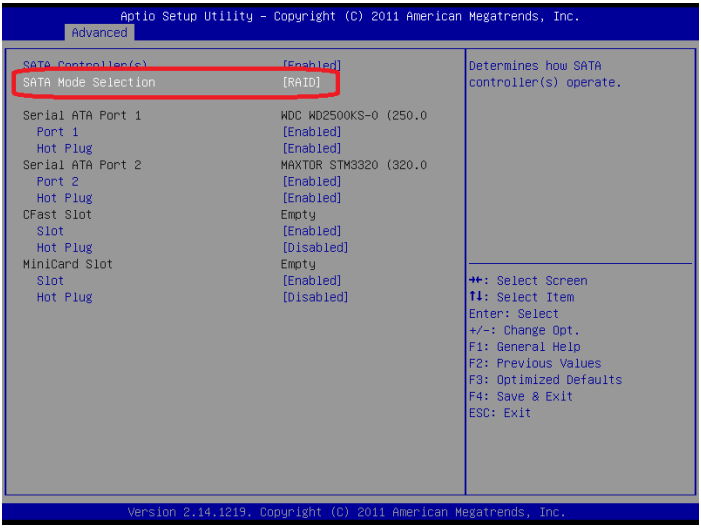
STEP7-RAID&AHCI\WinXP_32” and copy below files to diskette.



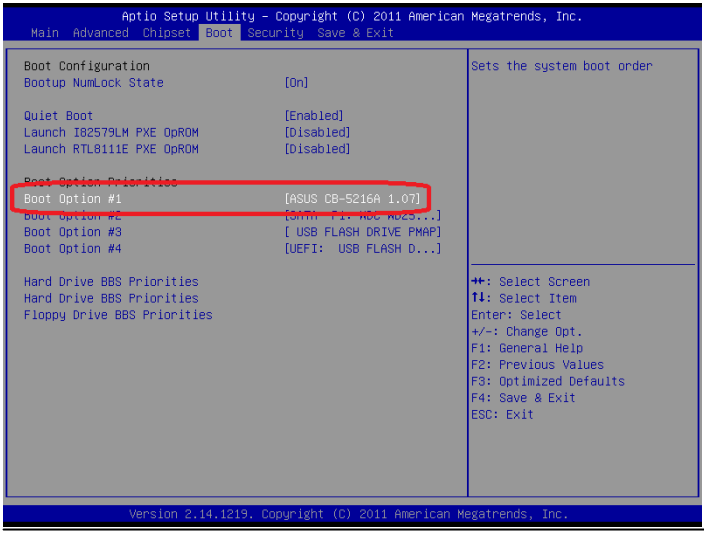
Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu:**

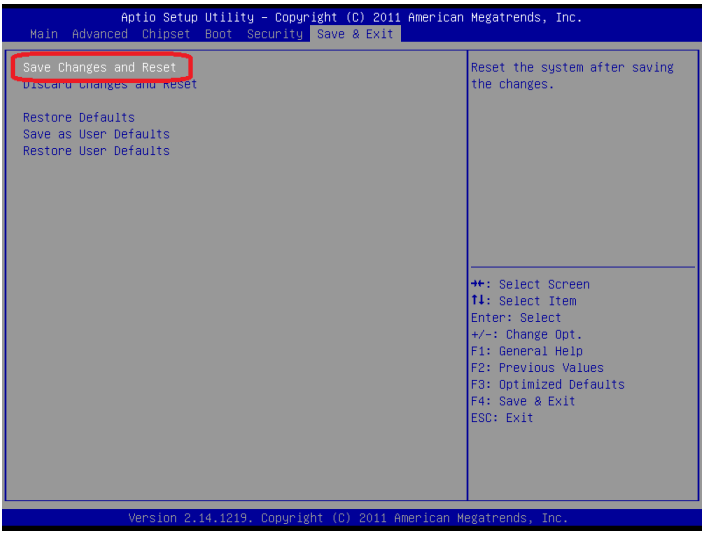
Advanced -> SATA Configuration -> SATA Mode -> RAID Mode



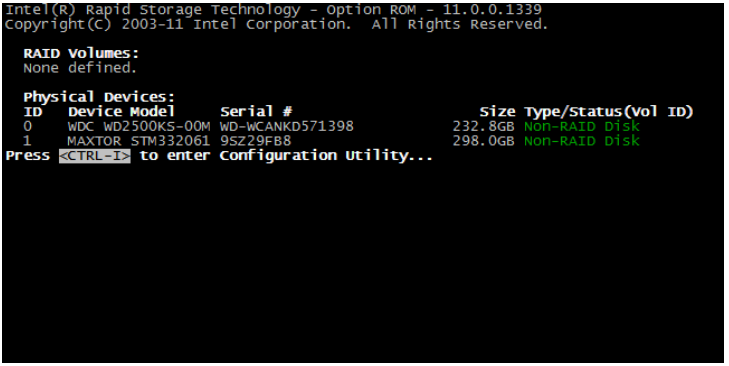
Step 4: Configure DVD/CD-ROM drive as the first boot device.



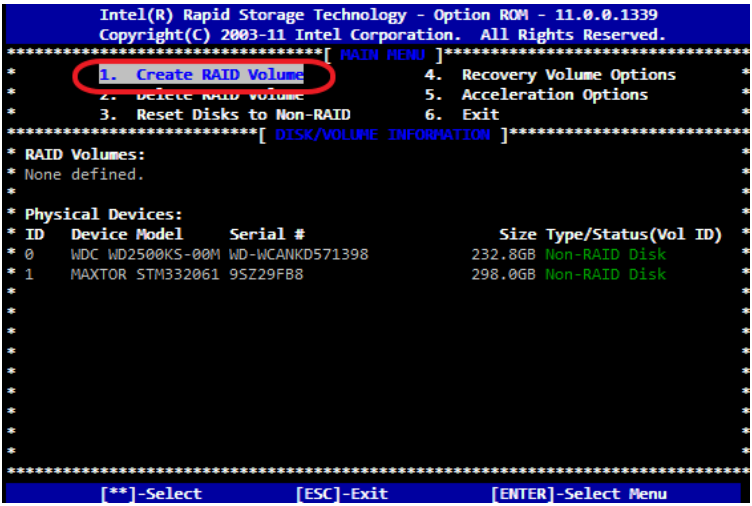
Step 5: Save changes and exit BIOS SETUP



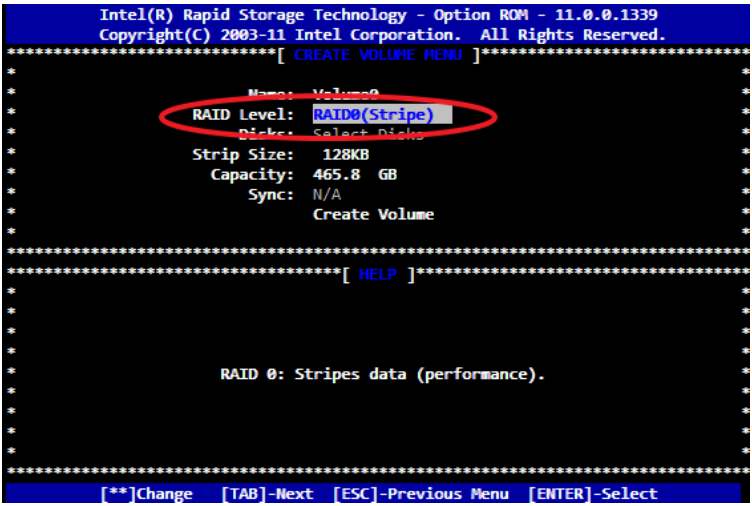
Step 6: Press **CTRL-I** to enter RAID Configuration Utility



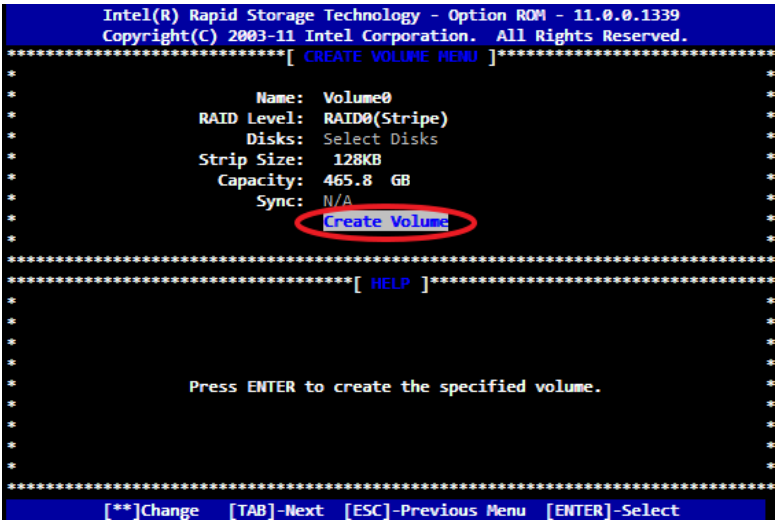
Step 7: Choose **"1. Create RAID Volume"**

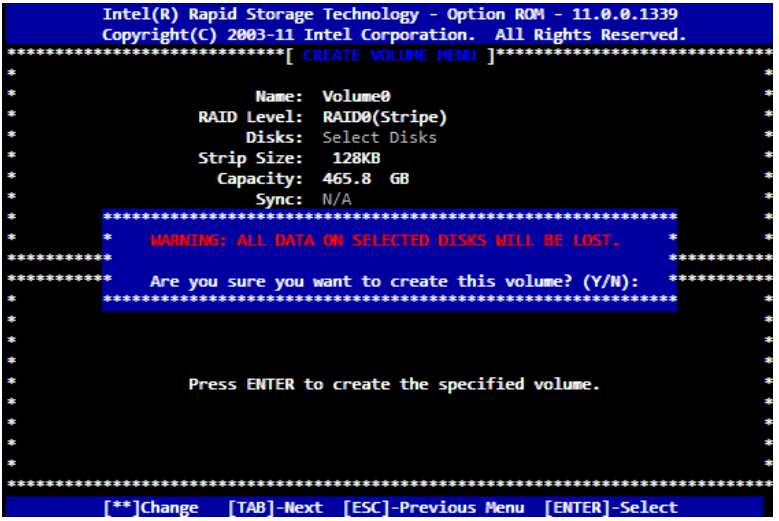


Step 8 – Configure RAID parameters for the system



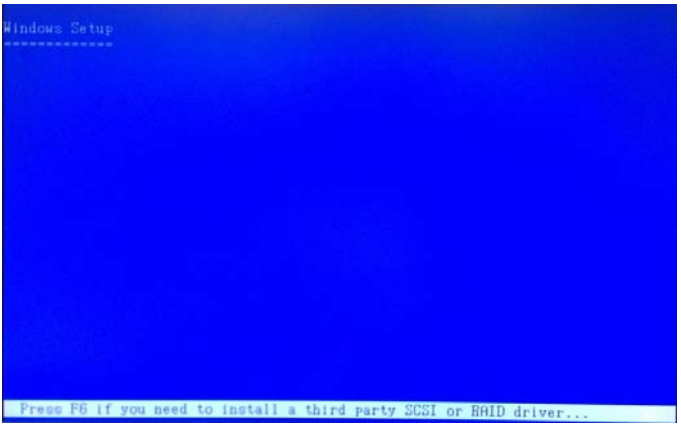
Step 9 – Choose **"Create Volume"** and confirmed in next warning message.



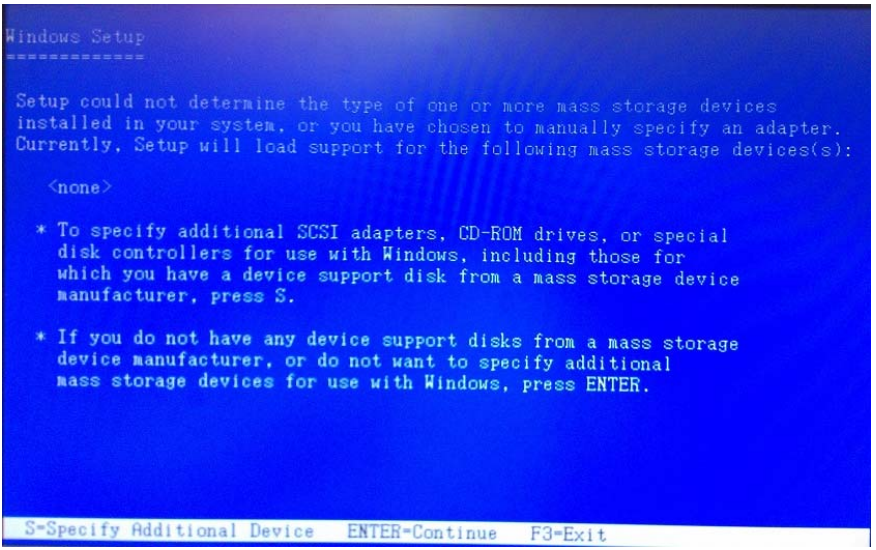


Step 10 – Exit RAID Configuration Utility and Reboot to DVD/CD-ROM device to install OS

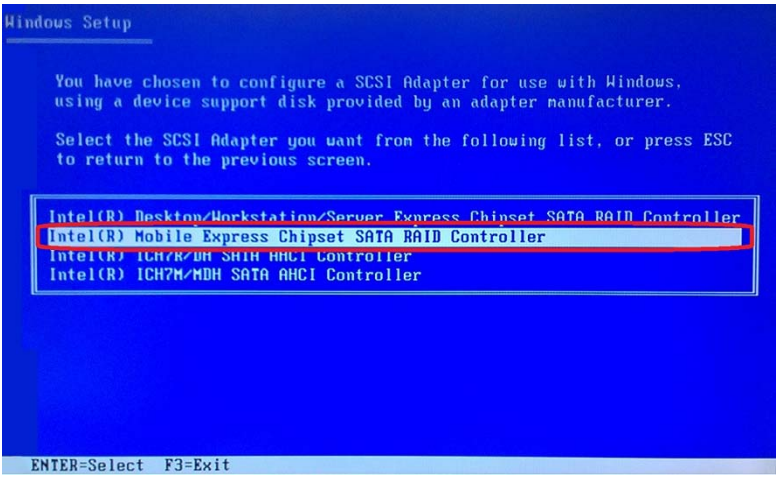
Step 11 – Press **"F6"** to install RAID driver



Step 12 – Press **"S"** to install RAID driver

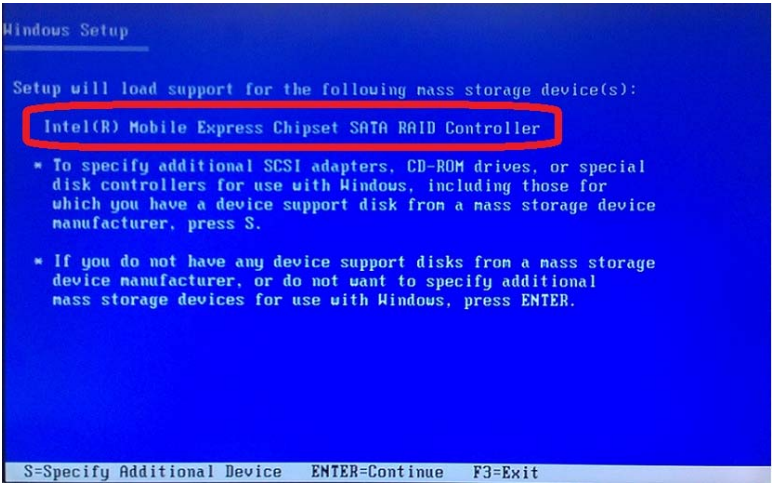


Step 13 – Choose **"Intel(R) Mobile Express Chipset SATA RAID Controller"**



Step 14 – It will show the model you selected and then press **"ENTER"**.

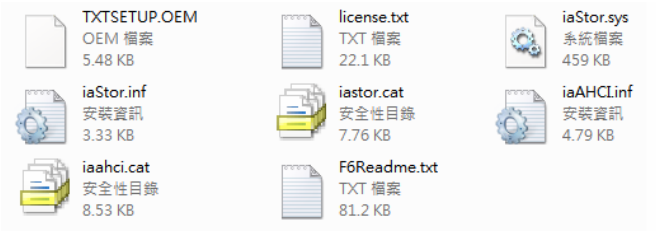
Windows Setup will continue to install OS.



D.2 Setting AHCI

OS installation to SETUP AHCI Mode

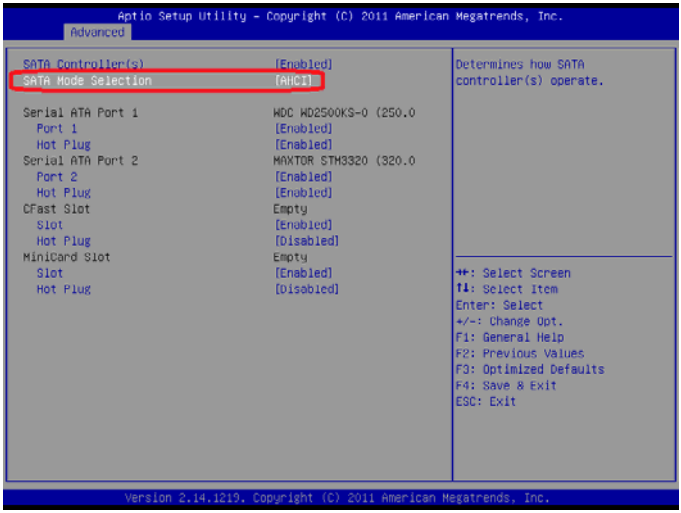
Step 1: Extract the ***f6fly-x86.zip*** from “Driver CD -> STEP7 - RAID&AHCI\WinXP_32” and copy below files to diskette.



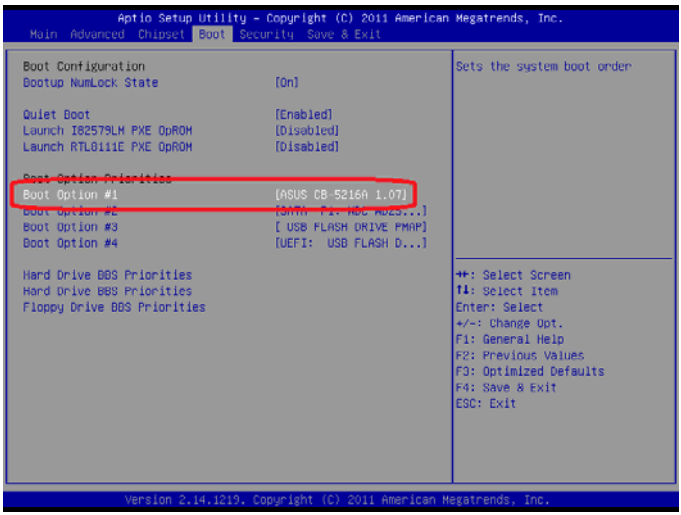
Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

Step 3: Configure SATA Controller to RAID mode in **BIOS SETUP Menu:**

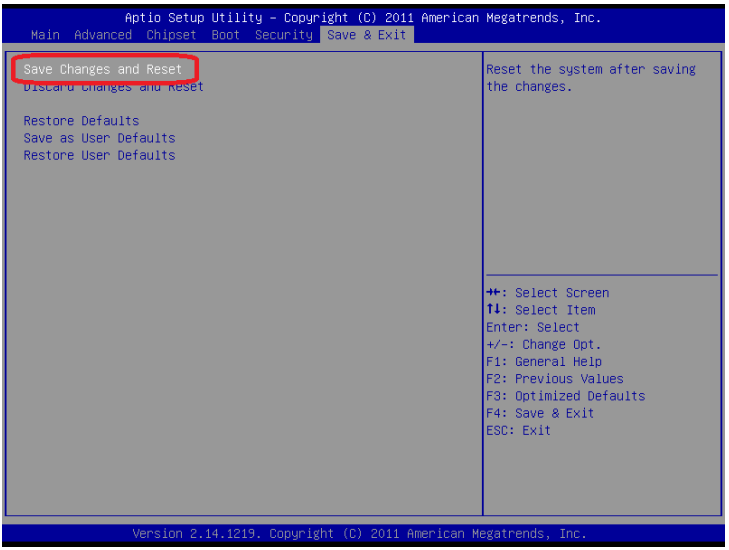
Advanced -> SATA Configuration -> SATA Mode -> AHCI Mode



Step 4: Configure DVD/CD-ROM drive as the first boot device.



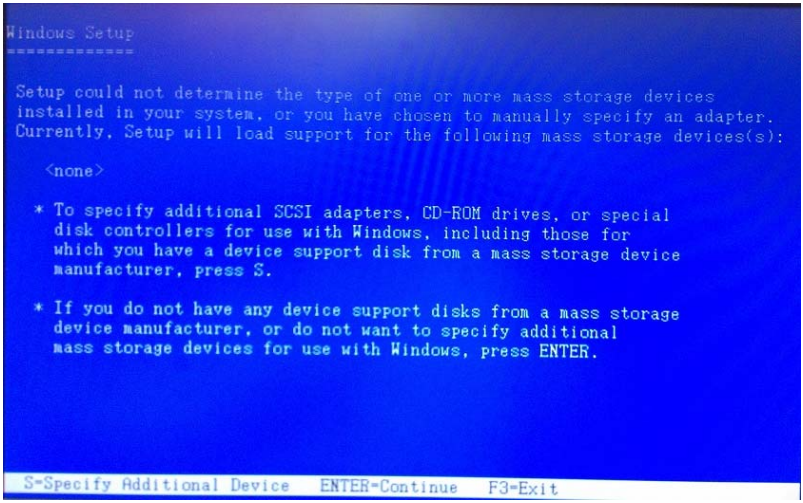
Step 5: Save changes and exit BIOS SETUP



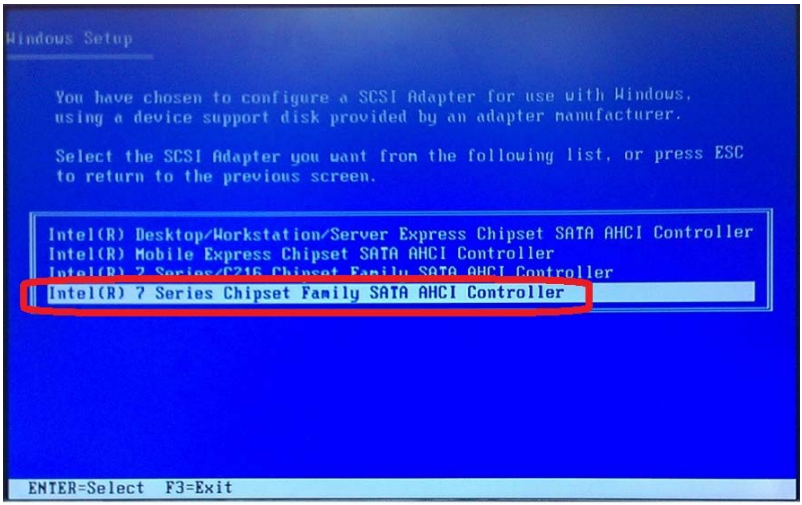
Step 6 – Boot to DVD/CD-ROM device to install OS

Step 7 – Press **"F6"** to install AHCI driver

Step 8 – Press **"S"** to install AHCI driver



Step 9 – Choose **"Intel(R) 7 Series Chipset Family SATA AHCI Controller"**



Step 10 – It will show the model you selected and then press **"ENTER"**.

Windows Setup will continue to install OS.