

# MS-9A62

## *Touch Panel PC*



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## Revision History

Revision	Date
V1.0	2014/04

## Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.



Visit the MSI website for technical guide, BIOS updates, driver updates, and other information:  
<http://www.msi.com/service/download/>



Contact our technical staff at:  
<http://support.msi.com/>

# Safety Instructions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- Keep this equipment away from humidity.
- Lay this equipment on a reliable flat surface before setting it up.
- The openings on the enclosure are for air convection hence protects the equipment from overheating. **DO NOT COVER THE OPENINGS.**
- Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- Always Unplug the Power Cord before inserting any add-on card or module.
- All cautions and warnings on the equipment should be noted.
- Never pour any liquid into the opening that could damage or cause electrical shock.
- If any of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well or you can not get it work according to User's Manual.
  - The equipment has dropped and damaged.
  - The equipment has obvious sign of breakage.
- **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**

## Chemical Substances Information

In compliance with chemical substances regulations, such as the EU REACH Regulation (Regulation EC No. 1907/2006 of the European Parliament and the Council), MSI provides the information of chemical substances in products at:

[http://www.msi.com/html/popup/csr/evmtprrt\\_pcm.html](http://www.msi.com/html/popup/csr/evmtprrt_pcm.html)

## Battery Information

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European Union:

Batteries, battery packs, and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with the local regulations.

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Taiwan:

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

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廢電池請回收

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California, USA:

The button cell battery may contain perchlorate material and requires special handling when recycled or disposed of in California.

For further information please visit:

<http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>

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Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

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## CE Conformity



Hereby, Micro-Star International CO., LTD declares that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.

## FCC-A Radio Frequency Interference Statement



This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

### Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### Notice 2

Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

### VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

This device complies with Part 15 of the 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.

## WEEE Statement



Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

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# 1 Overview

Thank you for choosing the MS-9A62, a high-performance industrial touch panel PC from MSI.

The MS-9A62 is designed for panel mounting, VESA mounting or integration as open-frame chassis in machine and plant engineering. A highly integrated and easy-to-use platform, the MS-9A62 is perfect for heavy duty factory automation, kiosk and more industrial applications like point of sale system, automatic ticket machine, food processing monitoring system, food ordering machine, automated teller machine, etc.

Features include:

- Intel mainstream mobile CPU
- TFT LCD with resistive touch panel
- Flexible storage interfaces (HDD/SSD/mSATA/SATA DOM)
- Fanless design with excellent ventilation
- Support DC-in 12V
- Open-frame panel PC or with bezel (optional)
- IP65 front panel for waterproof applications



The user-friendly touch screen enables effective operation and control of the system on the user's end.



**2****Ventilator**

The ventilator on the enclosure is used for air convection and to prevent the equipment from overheating. Do not cover the ventilator.

**3****Antenna Connector (Optional)**

This connector allows you to connect an external antenna for wireless LAN. Users may find one antenna connector on the bottom I/O panel and two on the left and right sides of the system.

**4****Power Supply Switch**

Press the switch to turn the power supply on or off.

**5****12V DC Power Jack**

Power supplied through this jack supplies power to the system.

**6****Mouse/Keyboard Port**

The standard PS/2 mouse/keyboard DIN connector is for a PS/2 mouse/keyboard.

**7****VGA Port**

The DB15-pin female connector is provided for VGA-interface devices.

**8****DVI-D Port**

The DVI-D (Digital Visual Interface-Digital) connector allows you to connect an LCD monitor. It provides a high-speed digital interconnection between the computer and its display device. To connect an LCD monitor, simply plug your monitor cable into the DVI connector, and make sure that the other end of the cable is properly connected to your monitor (refer to your monitor manual for more information.)

**9****RS-232 Serial Port: COM2**

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. It supports barcode scanners, barcode printers, bill printers, credit card machine, etc.

**10****RS-232/422/485 Serial Port: COM1**

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. It supports barcode scanners, barcode printers, bill printers, credit card machine, etc.

**11****RJ45 LAN Jack**

The standard RJ-45 LAN jack is provided for connection to the Local Area Network (LAN). You can connect a network cable to it.



LED	Color	LED State	Condition
Left	Yellow	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (blinking)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

**12****USB 2.0 Port**

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices. It supports up to 480Mbit/s (Hi-Speed) data transfer rate.

**13****Audio Jack**

- Line-In (Blue) - for external CD player or other audio devices
- Line-Out (Green) - for speakers or headphones
- Mic-In (Pink) - for microphones

**14****System Power LED (Green)**

The power LED glows when the system is turned on and goes off when the system is shut down.

**15****Hard Disk Drive LED (Red)**

This indicator shows the activity status of the HDD. It flashes when the system is accessing data on the HDD and remains off when no disk activity is detected.

**16****System Power Button**

Press the system power button to turn the system on or off.

**17****AT/ATX Switch**

Use this switch to select between AT and ATX power modes.

**18****RS-232 Serial Port: COM3**

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. It supports barcode scanners, barcode printers, bill printers, credit card machine, etc.

**19****RS-232 Serial Port: COM4**

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. It supports barcode scanners, barcode printers, bill printers, credit card machine, etc.

**20****RS-232 Serial Port: COM5**

The serial port is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. It supports barcode scanners, barcode printers, bill printers, credit card machine, etc.

# System Specifications

## Processor

- Intel Atom D2550 processor

## Chipset

- Intel NM10 chipset

## Memory

- 2GB DDR3 1066MHz SO-DIMM

## LAN

- Intel 82574L Gigabit Fast Ethernet controller

## Audio

- Realtek ALC887 High Definition Audio codec

## Storage

- 1 \* 2.5" SATA II HDD bay

## Display

- 17" anti-glare CCFL-backlit LCD display
  - VGA + DVI-D inputs
  - 1280 x 960 resolution


## System I/O & Controls

- 3 \* Antenna Connectors (Optional)
- 1 \* Power Supply Switch
- 1 \* 12V DC-In Power Jack
- 1 \* Mouse/Keyboard Port
- 1 \* VGA Port
- 1 \* DVI-D Port
- 1 \* RS-232/422/485 Serial Port
- 4 \* RS-232 Serial Ports
- 2 \* RJ45 LAN Jacks
- 4 \* USB 2.0 Ports
- 3 \* Audio Jacks
- 1 \* System Power LED
- 1 \* Hard Disk Drive LED
- 1 \* System Power Button
- 1 \* AT/ATX Switch

### Certification

- CE, FCC Class A, VCCI, C-Tick, CB, TUV, RoHS

### Power Supply

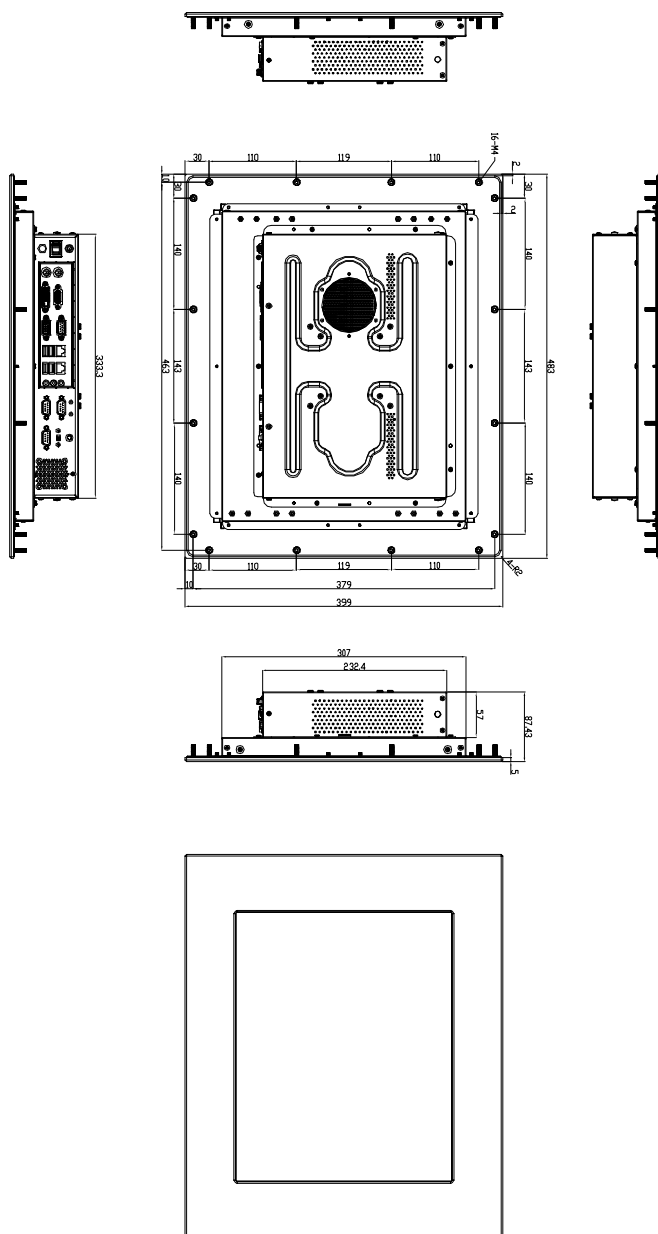
- 84 Watt AC/DC Adapter
- Input: 100-240V~, 1.3A, 50-60Hz
- Output: 12V  7A MAX
- Each COM port outputs 0.5A/Maximum

### OS Support

- Windows XP 32-bit
- Windows 7 32-bit

### Environmental

- Operation Temperature:
  - 0 ~ 45°C for 2.5" HDD
  - 0 ~ 50°C for SSD and mSATA
- Storage Temperature: -20 ~ 80°C
- Relative Humidity: 0 ~ 90%, non-condensing



# 2 Getting Started

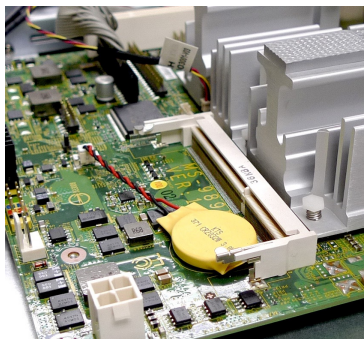


This chapter provides you with the information on hardware setup procedures. While connecting peripheral devices, be careful in holding the devices and use a grounded wrist strap to avoid static electricity.

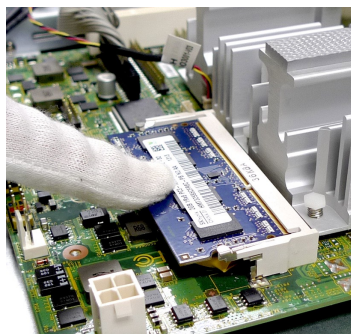
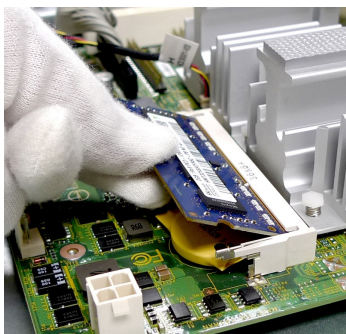
# Installing Components

## ► Installing Memory

1. Locate the memory slot.



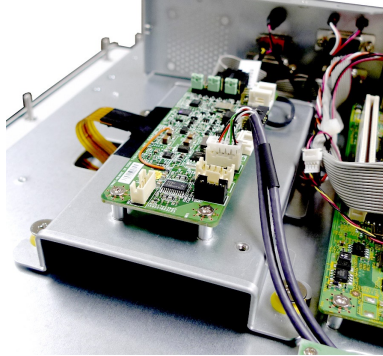
2. Align the notch on the memory with the key on the slot and insert the memory into the slot at a 45-degree angle.
3. Push the memory gently downwards until the slot clips click and lock the memory in place.



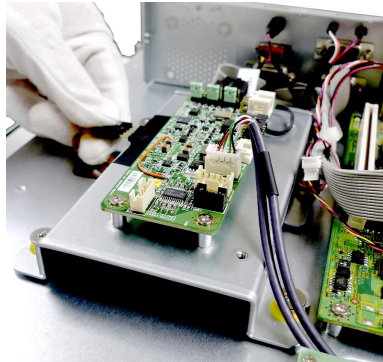


## ► Installing Hard Disk Drive

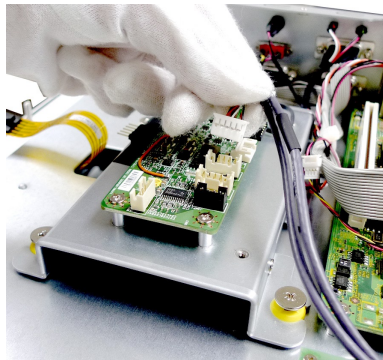
1. Locate the HDD tray. The HDD tray is designed with yellow rubber grommets to cut down on vibrations.



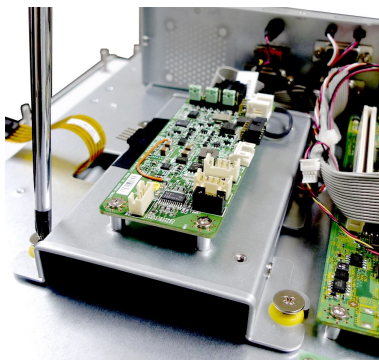
2. To release the HDD tray, first disconnect the monitor cable.



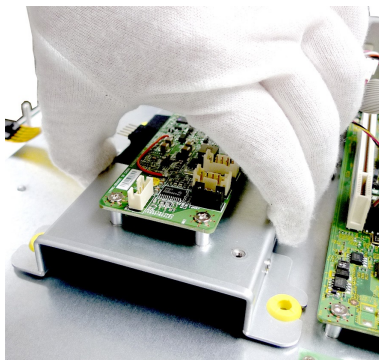
3. And then disconnect the USB cable.



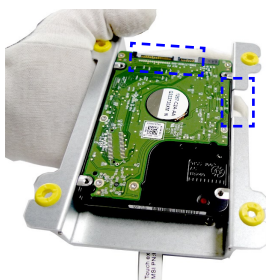
- 
4. Unscrew the HDD tray to free it up for removal.



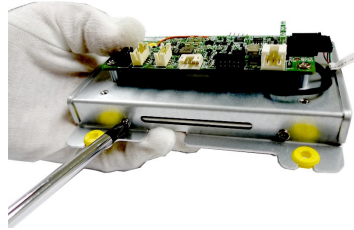
- 
5. Gently remove the HDD tray from the system.



- 
6. Fit the HDD into the tray. Be sure to put the HDD in the correct orientation.



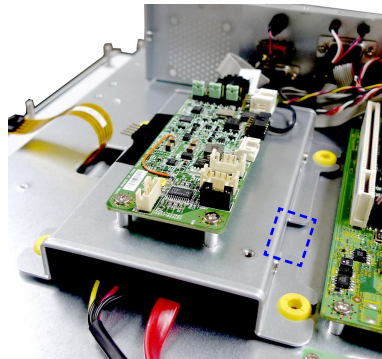
- 
7. Fasten the HDD to the tray with screws.



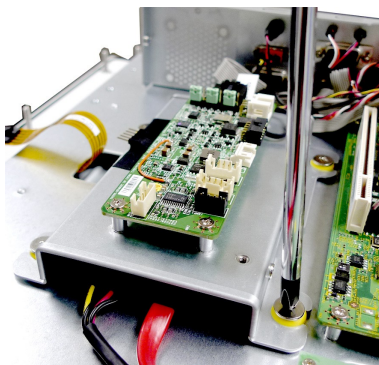
- 
8. The SATA cable comes with a large combined power and data connector for the HDD. Connect the large end of the SATA cable to the HDD.



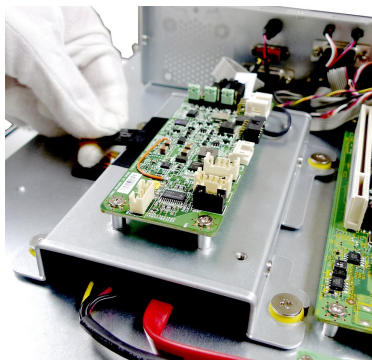
- 
9. Once the HDD has been securely installed onto the tray, place the tray back to the system. Make sure the HDD tray is correctly oriented.



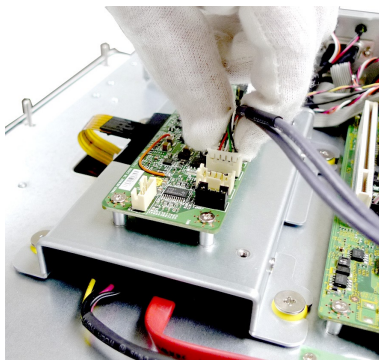
- 
10. After checking the screw holes for correct alignment, fasten the HDD tray to the system with screws.



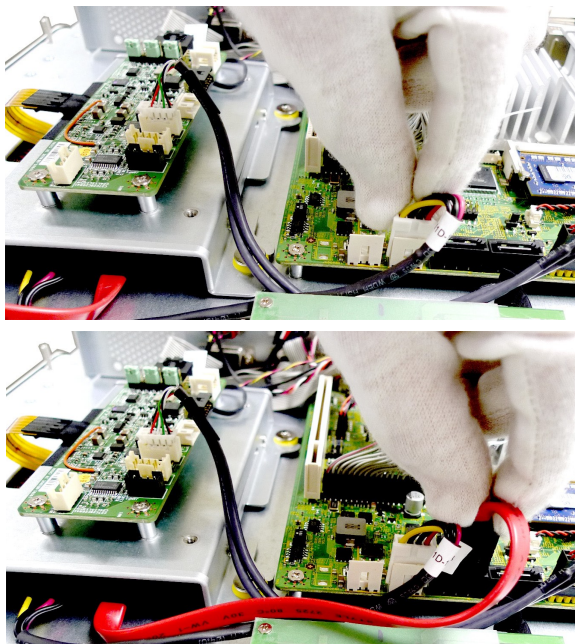
11. Reconnect the monitor cable.



12. Reconnect the USB cable.

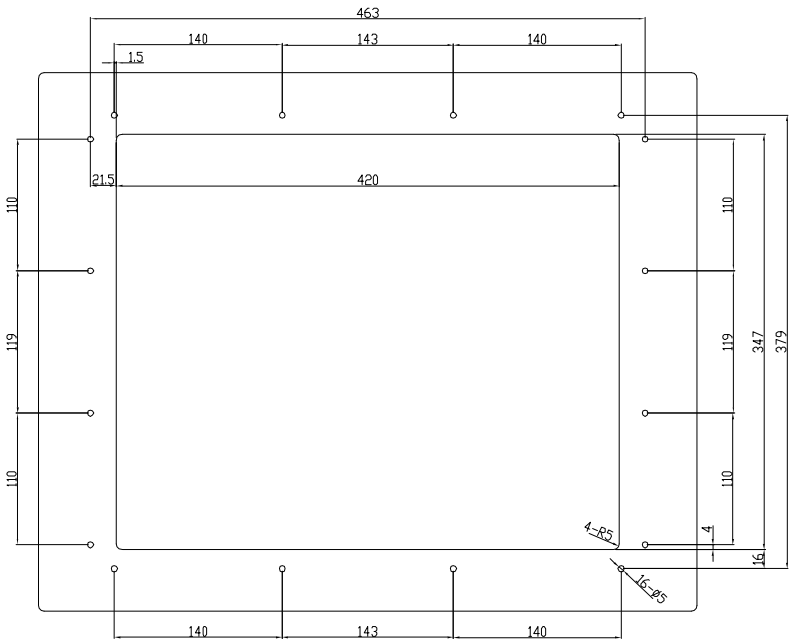


- 
13. To complete the installation, connect the small ends of the SATA cable to the SATA port and SATA power connector on the motherboard.

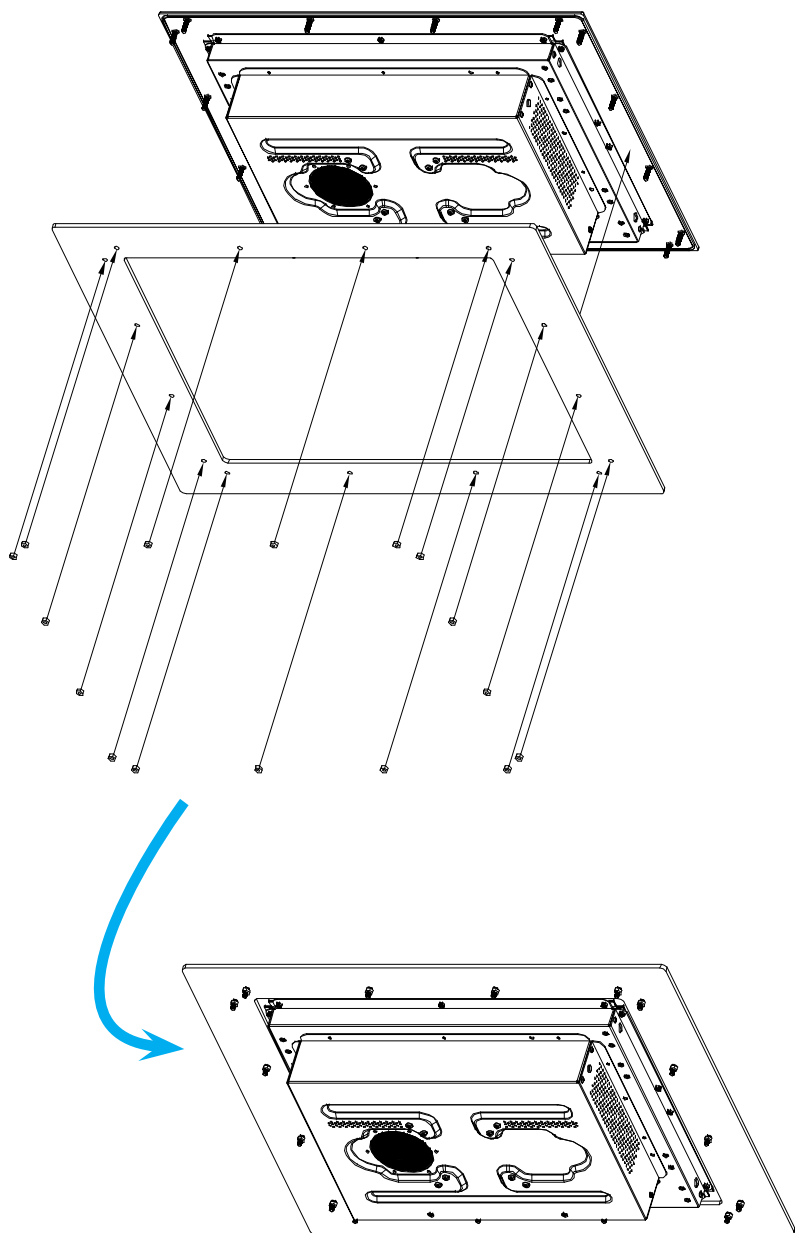


# Mounting the System

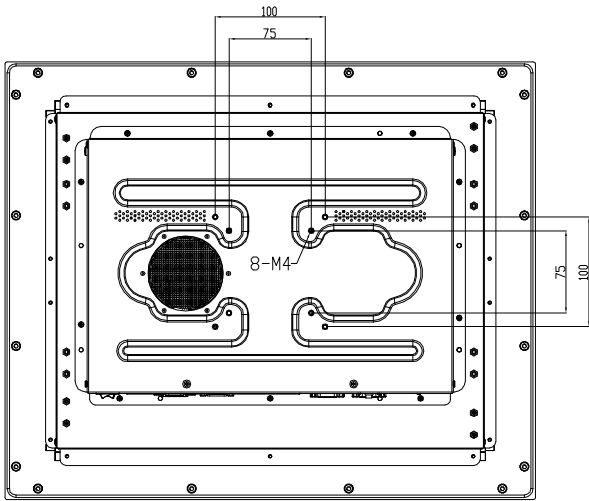
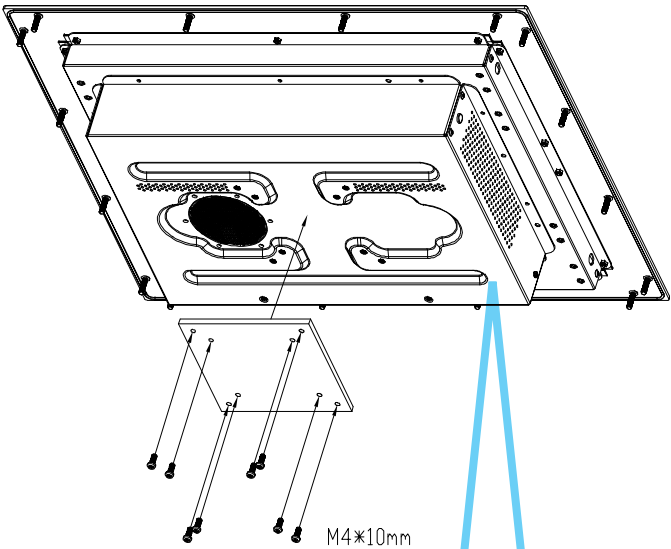
## ► Panel Mounting



Suggested cut out size  
(The flat panel thickness is less than 10mm)



➤ **Wall Mounting**



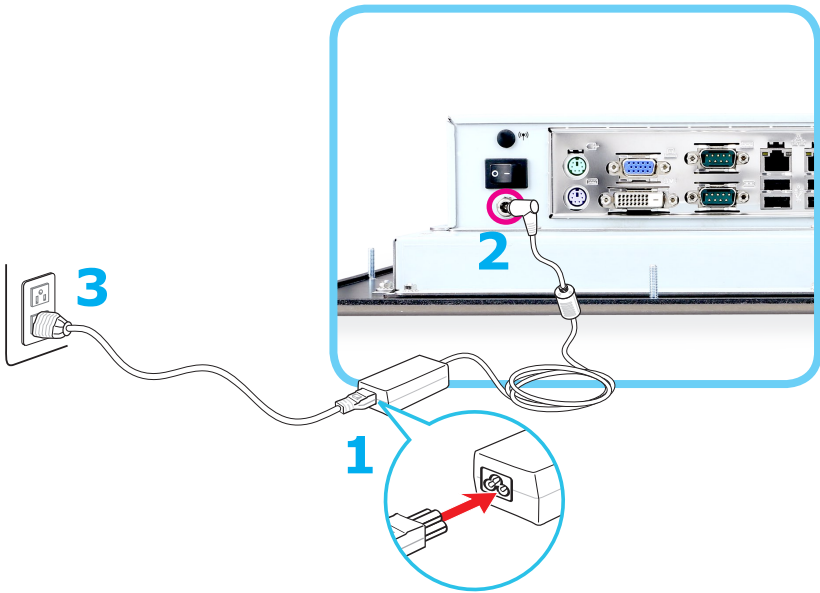


## Connecting Power

### **Important**

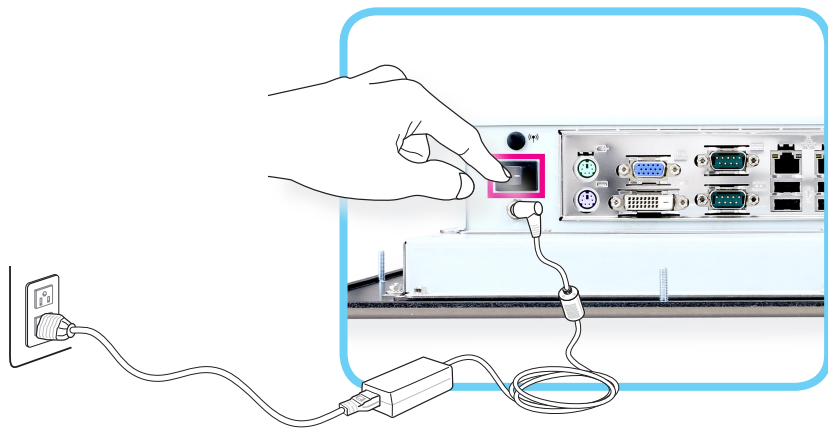
*For safety concerns, we suggest that you connect the AC/DC adapter to the system first and then connect the AC power cord to the electrical outlet.*

1. Assemble the AC/DC adapter and the AC power cord.
2. Plug the DC end of the adapter to the system.
3. Plug the male end of the AC power cord to the electrical outlet.



## Powering on the System

Press the power button to power on the system.



# 3 BIOS Setup

This chapter provides information on the BIOS Setup program and allows users to configure the system for optimal use.

Users may need to run the Setup program when:

- An error message appears on the screen at system startup and requests users to run SETUP.
- Users want to change the default settings for customized features.

## **Important**

- *Please note that BIOS update assumes technician-level experience.*
- *As the system BIOS is under continuous update for better system performance, the illustrations in this chapter should be held for reference only.*

## Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> or <F2> key to enter Setup.

Press <DEL> or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

### **Important**

*The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*

## Control Keys

← →	Select Screen
↑ ↓	Select Item
Enter	Select
+ -	Change Option
F1	General Help
F7	Previous Values
F9	Optimized Defaults
F10	Save & Exit
Esc	Exit

## Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

### Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys ( ↑ ↓ ) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

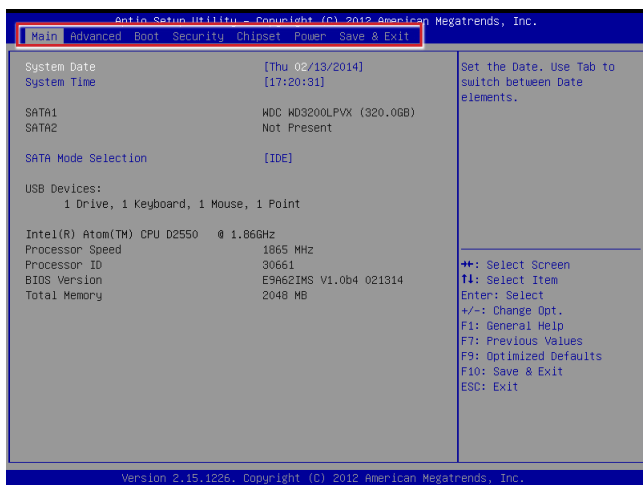
### Sub-Menu

If you find a right pointer symbol appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys ( ↑ ↓ ) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc>.

### General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

# The Menu Bar



## ► Main

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

## ► Advanced

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

## ► Boot

Use this menu to specify the priority of boot devices.

## ► Security

Use this menu to set supervisor and user passwords.

## ► Chipset

This menu controls the advanced features of the onboard chipsets.

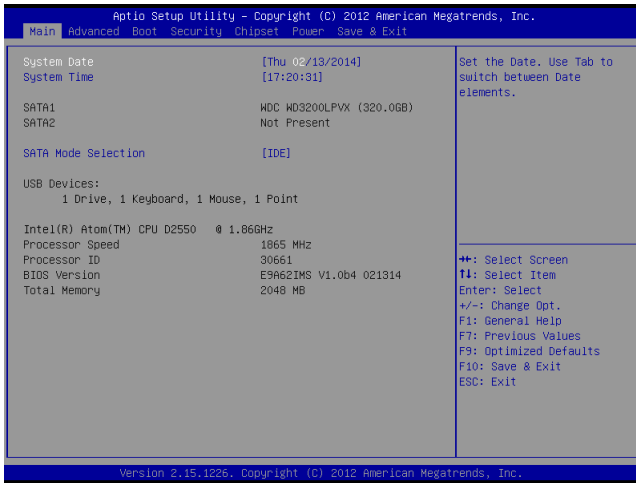
## ► Power

Use this menu to specify your settings for power management.

## ► Save & Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

# Main



## ► System Date

This setting allows you to set the system date. The date format is <Day>, <Month> <Date> <Year>.

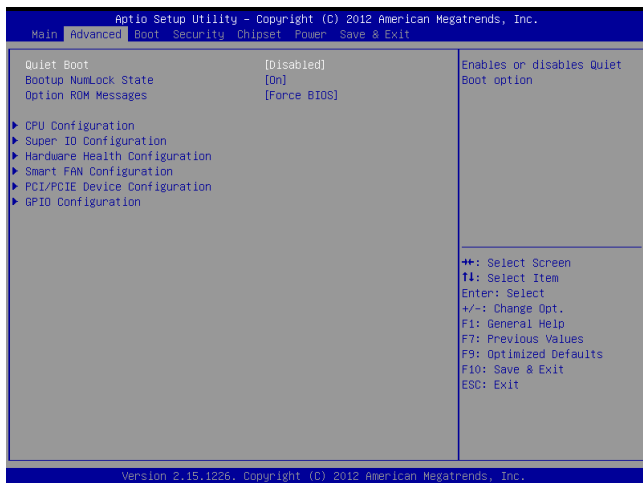
## ► System Time

This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

## ► SATA Mode Selection

This setting specifies the SATA controller mode.

## Advanced



### ► Quiet Boot

This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo.

When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

### ► Bootup NumLock State

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

### ► Option ROM Messages

This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.



## ► CPU Configuration

Advanced	
CPU Configuration	
Intel(R) Atom(TM) CPU D2550 @ 1.86GHz	
EMT64	Not Supported
Processor Speed	1865 MHz
System Bus Speed	533 MHz
Ratio Status	14
Actual Ratio	14
System Bus Speed	533 MHz
Processor Stepping	30661
Microcode Revision	10d
L1 Cache RAM	2x56 k
L2 Cache RAM	2x512 k
Processor Core	Dual
Hyper-Threading	Supported
Hyper-Threading	[Enabled]
Execute Disable Bit	[Enabled]
Limit CPUID Maximum	[Disabled]

### ► Hyper-Threading

The processor uses Hyper-Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. Please disable this item if your operating system doesn't support HT Function, or unreliability and instability may occur.

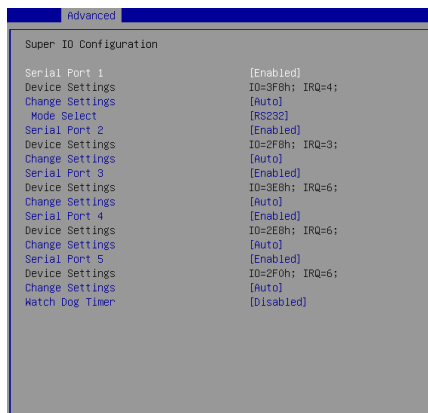
### ► Execute Disable Bit

Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

### ► Limit CPUID Maximum

This feature allows you to circumvent problems with older operating systems that do not support the Intel Pentium 4 processor with Hyper-Threading Technology. When enabled, the processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value. When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

## ► Super IO Configuration



### ► Serial Port 1/ 2/ 3/ 4/ 5

This setting enables/disables the specified serial port.

#### ► Change Settings

This setting is used to change the address & IRQ settings of the specified serial port.

#### ► Mode Select

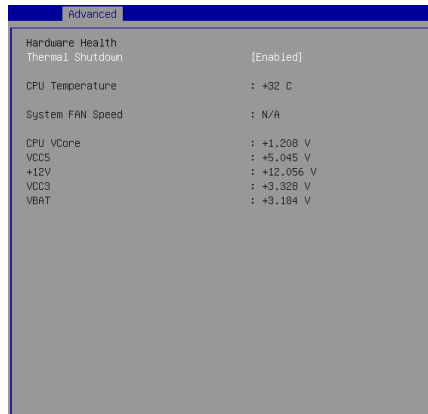
Select an operation mode for the serial port 1.

### ► Watch Dog Timer

You can enable the system watch-dog timer, a hardware timer that generates a reset when the software that it monitors does not respond as expected each time the watch dog polls it.

### ► Hardware Health Configuration

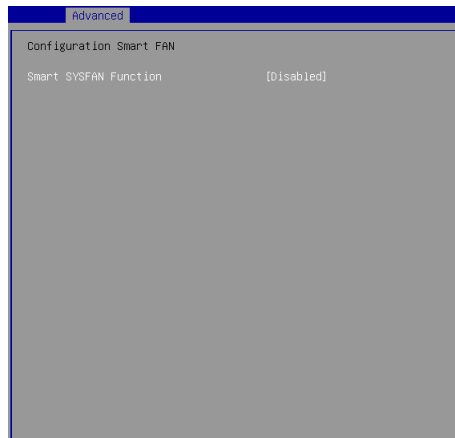
These items display the current status of all monitored hardware devices/components such as voltages, temperatures and all fans' speeds.



### ► Thermal Shutdown

This setting controls the thermal shutdown function to prevent the system from overheating.

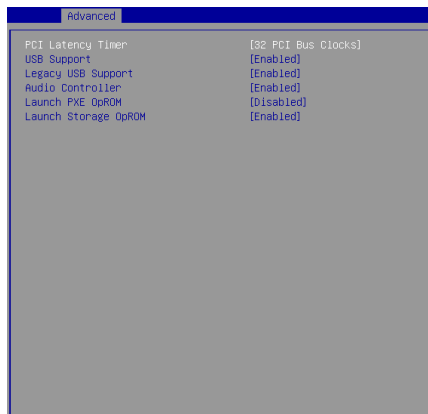
### ► Smart Fan Configuration



### ► Smart SYSFAN Function

These settings enable/disable the Smart Fan function. Smart Fan is an excellent feature which will adjust the CPU/system fan speed automatically depending on the current CPU/system temperature, avoiding the overheating to damage your system.

## ► PCI/PCIE Device Configuration



### ► PCI Latency Timer

This item controls how long each PCI device can hold the bus before another takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth. For better PCI performance, you should set the item to higher values.

### ► USB Support

This setting enables/disables the onboard USB controller.

### ► Legacy USB Support

Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix.

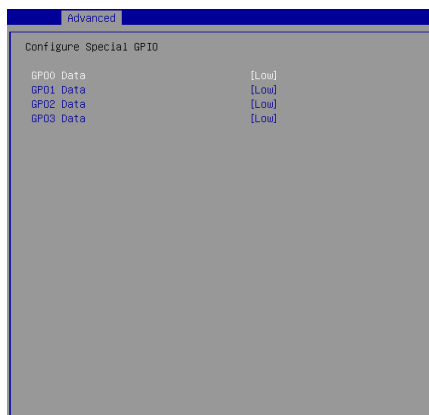
### ► Audio Controller

This setting enables/disables the onboard audio controller.

### ► Launch PXE OpROM, Launch Storage OpROM

This setting enables/disables the initialization of the onboard PXE/storage Boot ROM during bootup. Selecting [Disabled] will speed up the boot process.

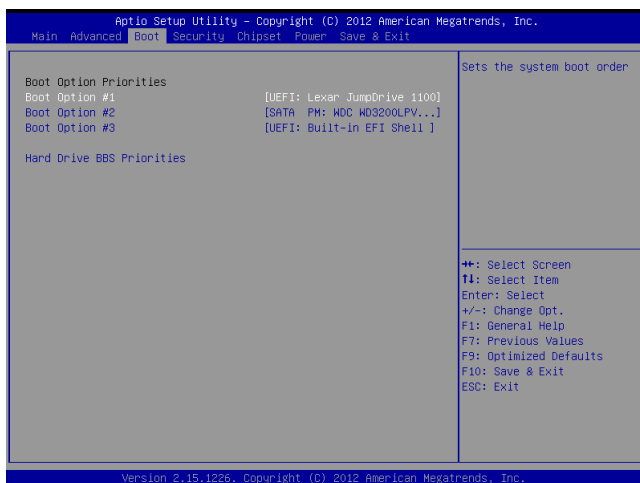
## ► GPIO Configuration



### ► GPD0 ~ GPD3 Data

This setting controls the operation mode of the specified GPIO.

# Boot



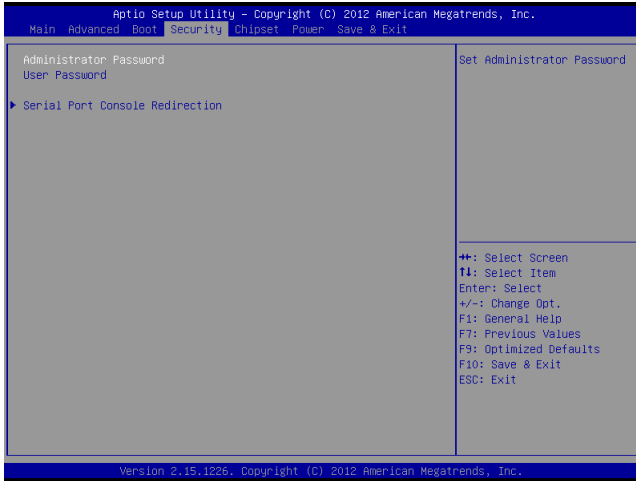
## ► Boot Option Priorities

This setting allows users to set the sequence of boot devices where BIOS attempts to load the disk operating system.

## ► Hard Drive BBS Priorities

This setting allows users to set the priority of the specified devices. First press <Enter> to enter the sub-menu. Then you may use the arrow keys ( ↑↓ ) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

# Security



## ▶ Administrator Password

Administrator Password controls access to the BIOS Setup utility.

## ▶ User Password

User Password controls access to the system at boot and to the BIOS Setup utility.

## ▶ Serial Port Console Redirection



### ► Console Redirection

Console Redirection operates in host systems that do not have a monitor and keyboard attached. This setting enables/disables the operation of console redirection. When set to [Enabled], BIOS redirects and sends all contents that should be displayed on the screen to the serial COM port for display on the terminal screen. Besides, all data received from the serial port is interpreted as keystrokes from a local keyboard.

### ► Console Redirection Settings

Press <Enter> to enter the submenu.

#### ► Terminal Type

To operate the system's console redirection, you need a terminal supporting ANSI terminal protocol and a RS-232 null modem cable connected between the host system and terminal(s). This setting specifies the type of terminal device for console redirection.

#### ► Bits per second, Data Bits, Parity, Stop Bits

This setting specifies the transfer rate (bits per second, data bits, parity, stop bits) of Console Redirection.

#### ► Flow Control

Flow control is the process of managing the rate of data transmission between two nodes. It's the process of adjusting the flow of data from one device to another to ensure that the receiving device can handle all of the incoming data. This is particularly important where the sending device is capable of sending data much faster than the receiving device can receive it.

#### ► VT-UTF8 Combo Key Support

This setting enables/disables VT-UTF8 Combo Key Support.

#### ► Recorder Mode, Resolution 100x31

These settings enable/disable the recorder mode and the resolution 100x31.

#### ► Legacy OS Redirection Resolution

This setting specifies the redirection resolution of legacy OS.

#### ► Putty KeyPad

This setting specifies the type of Putty KeyPad.

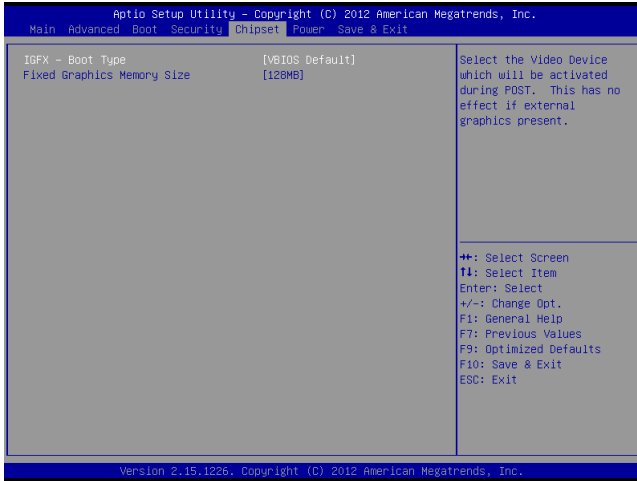
#### ► Redirection After BIOS POST

This setting specifies the Redirection configuration after BIOS POST.

[Disable]	Turn off the redirection after POST
[Boot Loader]	Set the Redirection to be active during POST and Boot Loader
[Always Enable]	Set the Redirection to be always active



# Chipset



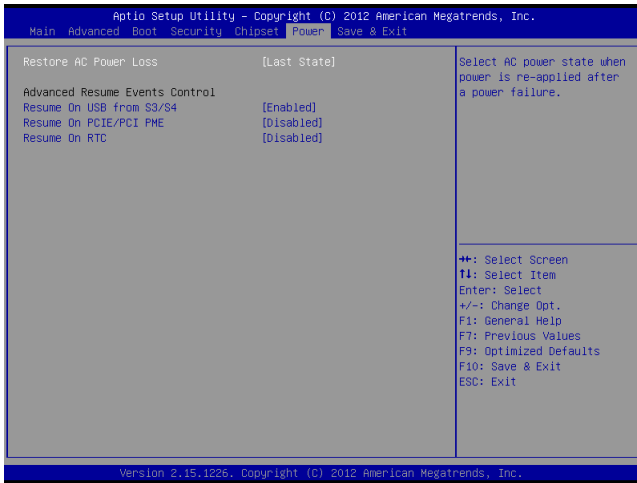
## ► IGFX - Boot Type

Use the field to select the type of device you want to use as the boot display of the system.

## ► Fixed Graphics Memory Size

This setting specifies the size of system memory allocated for video memory.

# Power



## ► Restore AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Power Off]	Leaves the computer in the power off state.
[Power On]	Leaves the computer in the power on state.
[Last State]	Restores the system to the previous status before power failure or interrupt occurred.

## \*\* Advanced Resume Events Control \*\*

### ► Resume On USB from S3/S4

The item allows the activity of the USB device to wake up the system from S3/S4 sleep state.

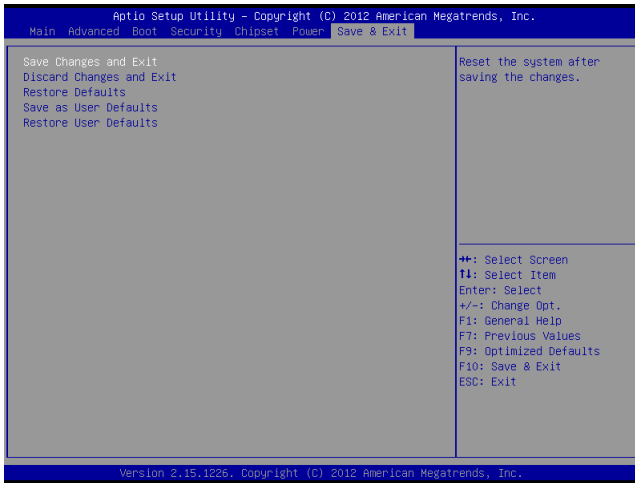
### ► Resume On PCIE/PCI PME

This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard PCIE/PCI PME is detected.

### ► Resume On RTC

When [Enabled], you can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

# Save & Exit



## ► Save Changes and Exit

Save changes to CMOS and exit the Setup Utility.

## ► Discard Changes and Exit

Abandon all changes and exit the Setup Utility.

## ► Restore Defaults

Restore the factory defaults.

## ► Save as User Defaults

Save all changes as the user defaults.

## ► Restore User Defaults

Restore the preset user defaults.



# *Appendix*

# WDT & GPIO



This appendix provides the sample codes of WDT (Watch Dog Timer) and GPIO (General Purpose Input/ Output).

## WDT Sample Code

```

SIO_INDEX_Port    equ 04Eh
SIO_DATA_Port     equ 04Fh
SIO_UnLock_Value  equ 087h
SIO_Lock_Value    equ 0AAh
WatchDog_LDN      equ 007h
WDT_UNIT          equ 60h    ;60h=second, 68h=minute, 40h=Disabled watchdog timer
WDT_Timer         equ 30     ;ex. 30 seconds

```

Sample code:

```

;Enable config mode
mov     dx, SIO_INDEX_Port
mov     al, SIO_UnLock_Value
out     dx, al
jmp     short $+2          ;Io_delay
jmp     short $+2          ;Io_delay
out     dx, al

```

```

;Change to WDT
mov     dx, SIO_INDEX_Port
mov     al, 07h
out     dx, al
mov     dx, SIO_DATA_Port
mov     al, WatchDog_LDN
out     dx, al

```

```

;Active WDT
mov     dx, SIO_INDEX_Port
mov     al, 30h
out     dx, al
mov     dx, SIO_DATA_Port
in      al, dx
or      al, 01h
out     dx, al

```

```

;set timer
mov     dx, SIO_INDEX_Port
mov     al, 0F6h
out     dx, al
mov     dx, SIO_DATA_Port
mov     al, WDT_Timer
out     dx, al

```

```

;set UINT
mov     dx, SIO_INDEX_Port
mov     al, 0F5h
out     dx, al
mov     dx, SIO_DATA_Port
mov     al, WDT_UNIT
out     dx, al

```

```

;enable reset
mov     dx, SIO_INDEX_Port
mov     al, 0FAh
out     dx, al
mov     dx, SIO_DATA_Port
in      al, dx
or      al, 01h
out     dx, al

```

```

;close config mode
mov     dx, SIO_INDEX_Port
mov     al, SIO_Lock_Value
out     dx, al

```

# GPIO Sample Code

## ● GPIO 0 ~ GPI 3

	GPI 0	GPI 1	GPI 2	GPI 3				
IO Address	50Ch	50Ch	50Ch	50Ch				
SIO GPIO Register								
Bit	24	26	27	28				
Sample code	#1	#1	#1	#1				

## ● GPO 0 ~ GPO 3

	GPO 0	GPO 1	GPO 2	GPO 3				
IO Address	538h	538h	538h	538h				
SIO GPIO Register								
Bit	1	2	6	7				
Sample code	#2	#2	#2	#2				

```

GPO_0      equ    00000010b
GPO_1      equ    00000100b
GPO_2      equ    01000000b
GPO_3      equ    10000000b

```

### Sample Code:

#### #1 : Get GPI 0 status

##### *; Get GPI 0/1/2/3 Pin Status Register*

```

mov    dx, 50Ch
in     eax, dx
;eax bit24 = GPI 0 status
;eax bit26 = GPI 1 status
;eax bit27 = GPI 2 status
;eax bit28 = GPI 3 status

```

#### #2 : Set GPO 0/1/2/3 status to high

##### *; Set GPO 0/1/2/3 Status to high(1).*

```

mov    dx, 538h
in     eax, dx
or     eax, GPO_0 + GPO_1 + GPO_2 + GPO_3
out    dx,eax

```

