SI-22 Series

User Manual

2013 Dec V1

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Safety Information

Your SI-22 is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions

Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water.
- Set up the system on a stable surface. Do not secure the system on any unstable plane.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings on the chassis are for ventilation. Do not block or cover these openings. Make sure you leave plenty of space around the system for ventilation. ***Never insert objects of any kind into the ventilation openings***.
- This system should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Use this product in environments with ambient temperatures between 0˚C and 45˚C.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (176° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug all power, and network cables from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not function properly even if you follow the operating instructions.
  - The system was dropped or the cabinet is damaged.

Lithium-Ion Battery Warning

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

WARNING
HAZARDOUS MOVING PARTS
KEEP FINGERS AND OTHER BODY PARTS AWAY

Acknowledgments

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- AMD and ATI are registered trademarks of AMD Corporation.
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CHAPTER 1 INTRODUCTION

1.1 General Description

The “Signature Book™” SI-22 is a professional fanless digital signage system powered by the new AMD Embedded new generation G-Series quad-core APU with DASH compliance for remote control, and compact & slim design. It supports 2x HDMI, 1x RJ45 for LAN, 1x RJ45 for RS232, 1x USB2.0 and 2x USB3.0 ports to give a wide selection for data communication in display applications.

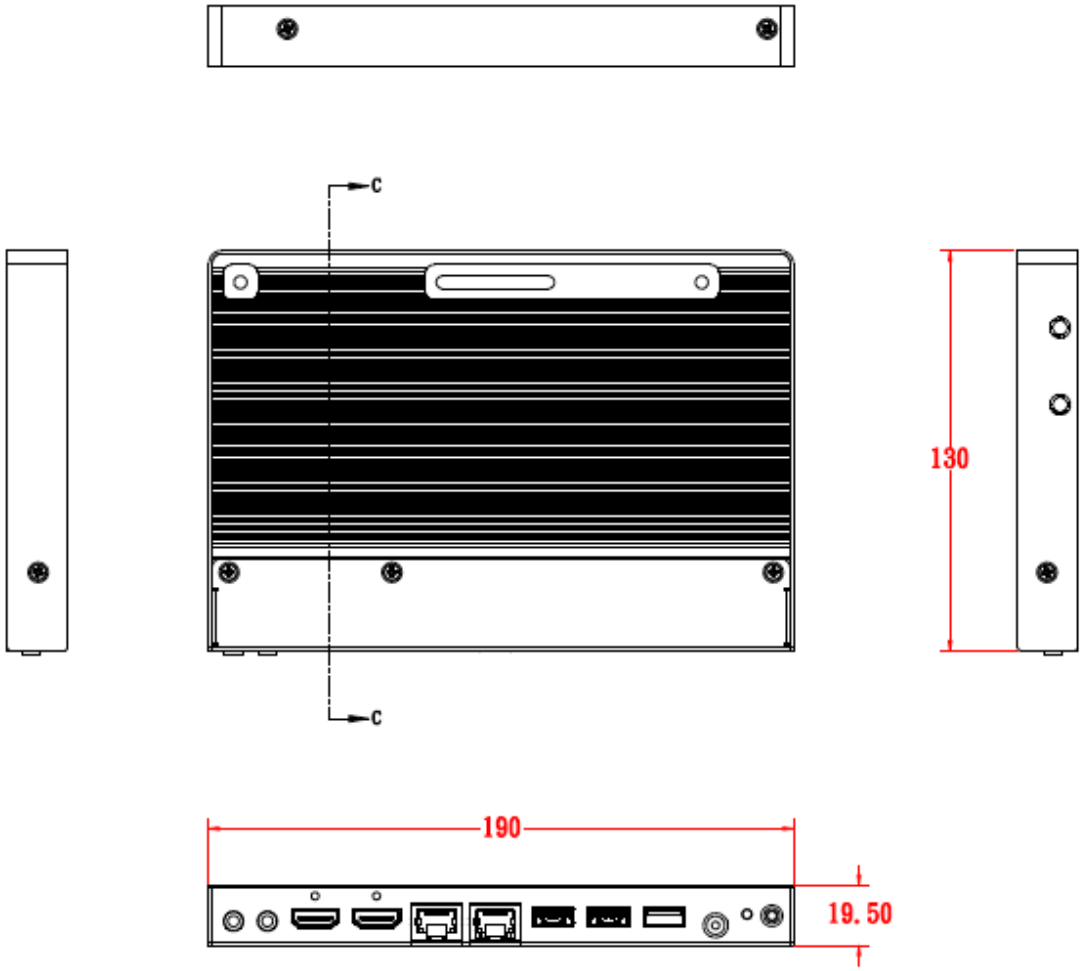
1.2 System Specifications

1.2.1 Hardware Specifications

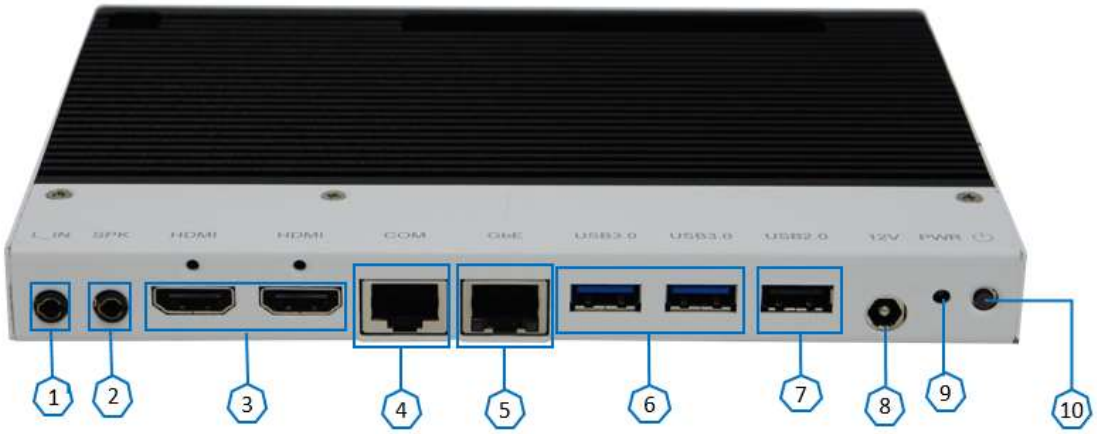
Model Name	SI-22
System Mainboard	IB922
CPU	AMD Embedded G-Series SoC; 4 Cores @ 1.5GHz APU FT3 BGA package
Chipset	SoC Integrated
Memory	1x DDR3 1600 MHz SO-DIMM, Max. 8GB (Non-ECC)
I/O Interface	2x HDMI 1.4a 2x USB 3.0 ports, 1x USB 2.0 port 1x RJ45 for LAN, 1x RJ45 for RS232 2x Microjack audio connectors for Line-in / Line-out Power LED, 1x power on/off button 1x DC jack
Storage	1 x mSATA
Expansion Slots	1x Mini PCI-E(x1) slots for Wi-Fi + Bluetooth, 3G, GPS and TV tuner options
Power Supply	+12V DC-in with 60W power adaptor
Construction	Aluminum + SGCC
Chassis Color	Black & White
Mounting	STD system bracket
Dimensions	190mm(W) x 130mm(D) x 19.5mm(H) 7.5”(W) x 5.1”(D) x 0.77”(H)
Operating Temperature	0°C~ 45°C (32°F~113°F)
Storage Temperature	-20° ~ 80°C (-4°F~176°F)
Relative Humidity	5~90% @45°C (non-condensing)
Vibration	mSATA: 5 Grms/5~500Hz random operation
RoHS	Available
Certification	CE, FCC, UL, CCC

·This specification is subject to change without prior notice.

1.2.2 Dimensions

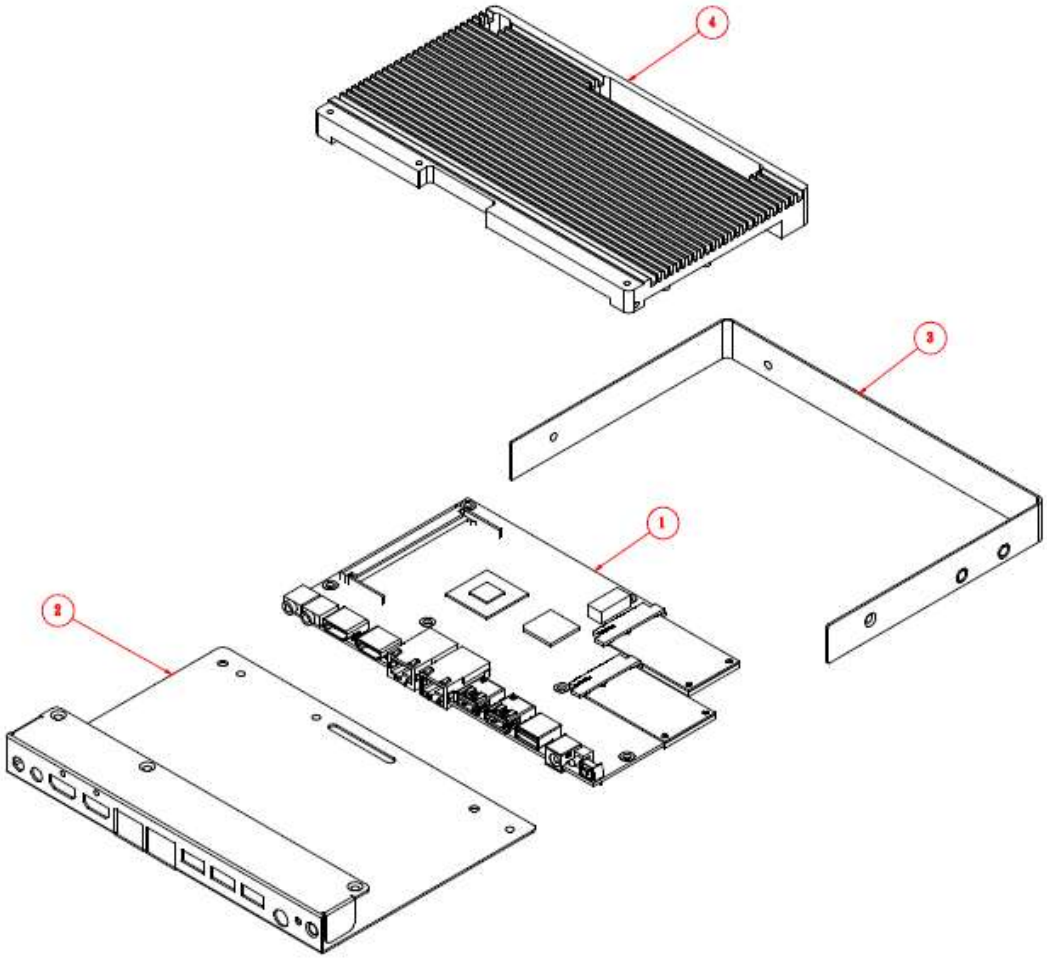


1.2.3 I/O View



Item	Connector	Item	Connector
1	Line-in	6	2x USB 3.0
2	Line-out	7	1x USB 2.0
3	2x HDMI 1.4a	8	DC jack
4	1x RJ45 for RS232	9	Power LED
5	1x RJ45 for LAN	10	Power on/off button

1.3 Exploded View of the SI-22 Assembly



1.3.1 Parts Description

Part No.	Description	Part No.	Description
1	IB922 motherboard	2	SI-22 Base
3	SI-22 Cover	4	SI-22 heatsink

1.4 Packing List

Item No.	Description	Qty
1	Driver CD	1
2	Power adaptor	1
3	Power Cord	1

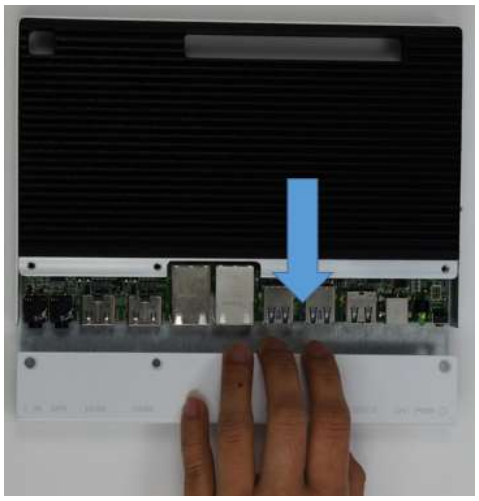
1.4.1 Optional Items

WiFi Solution	Description	
QCOM WiFi module	Wireless LAN Card; 802.11 B/G/N+BT HALF Card [Q802XKN3B] RoHS (A008WIRELESS00700P)	
External Antenna	WiFi Antenna (A055RFA02C2M20800P)	
Internal cable-1/2	From WiFi module to Rear/Front panel (A055RFA0000021000P/A055RFA0000032000P)	 
Bracket	MPCIE-EXT V-B1 Bracket, RoHS; Extend Half to Full size. (SC2MPCIEEXT0B1100P)	
3G Solution	**Description**	
ZU 202	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P)	
ZU 200	Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P)	
Cable	Cable; Antenna-2 30CM P 2pcs (C501ANT0200300000P)	
Antenna	Antenna; 3G, P, 2pcs (A055ANT0921Q2P000P)	
COM Port Cable	**Description**	
EXT-222	Cable; EXT-222 2-HD 7C 150CM; JACK-8=>DSU-9F RoHS (C501EXT2227A12000P)	
EXT-424	Cable; EXT-424 2-HD 8C 90CM; RJ45 JACK-8M=>DSU-9F RoHS (C501EXT4240902000P)	
EDID Dongle	**Description**	
H8246JT021-001	EDID Emulator Dongle (HDMI), ADAPTER; HDMI 19P A/M TO A/F (A025HDMI001010000P)	

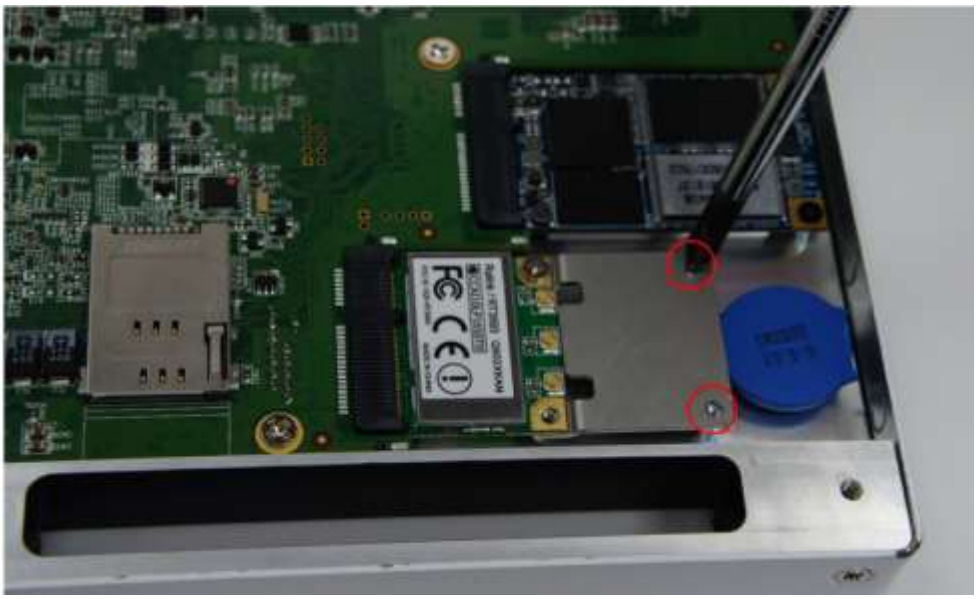
1.5 HARDWARE INSTALLATION

1.5.1 Installing the Wireless Module

1. Remove the six screws on the sides that are used to secure the white cover to the chassis. Once all the screws are removed, from the side, push the cover forward to remove it.

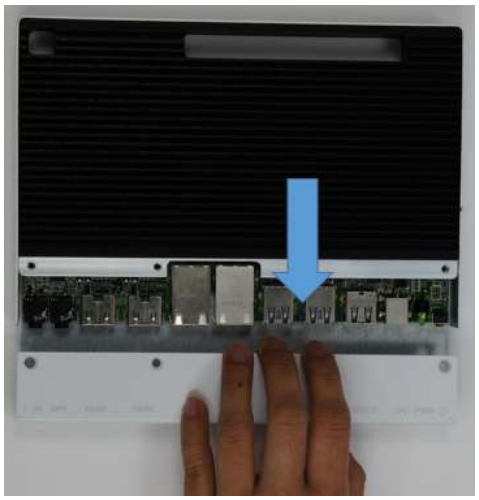


2. Push the WIFI module into the slot. Screw two screws to secure the module in the slot.

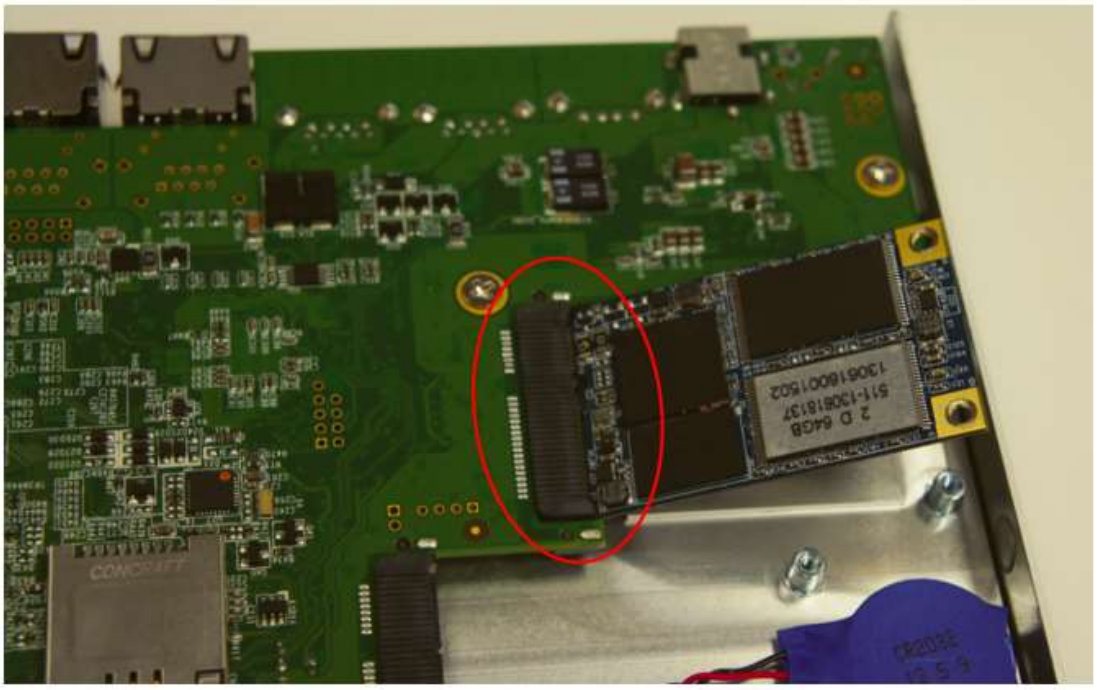


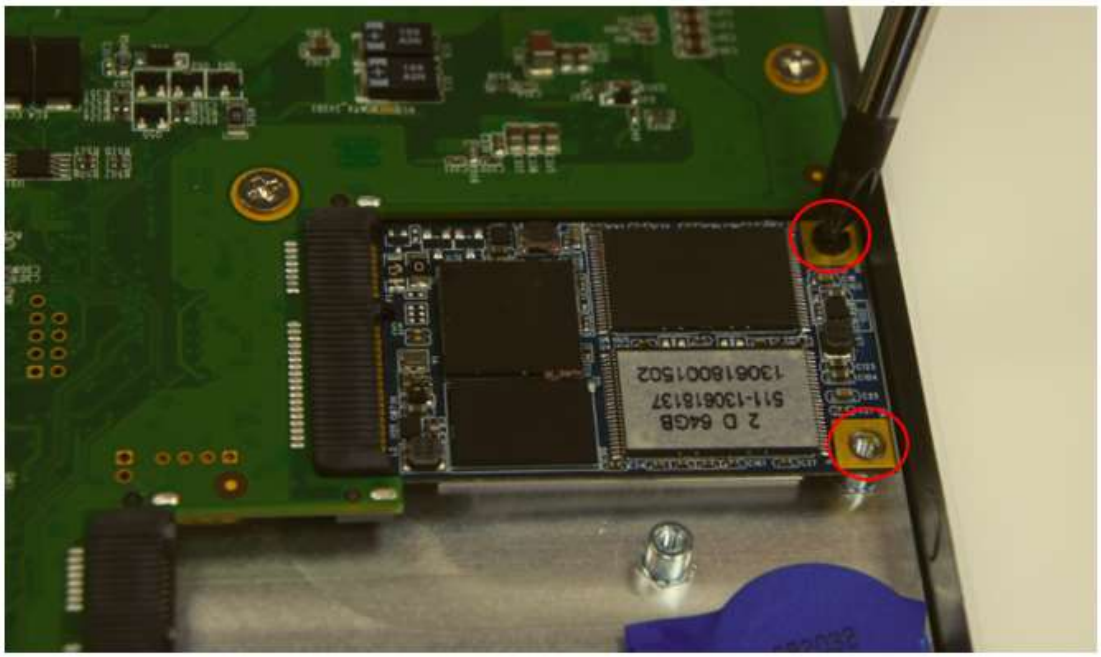
1.5.2 Installing the mSATA Module

1. Remove the six screws on the sides that are used to secure the white cover to the chassis. Once all the screws are removed, from the side, push the cover forward to remove it.



2. Push the mSATA module into the slot. Screw two screws to secure the module in the slot.





CHAPTER 2 MOTHERBOARD INTRODUCTION

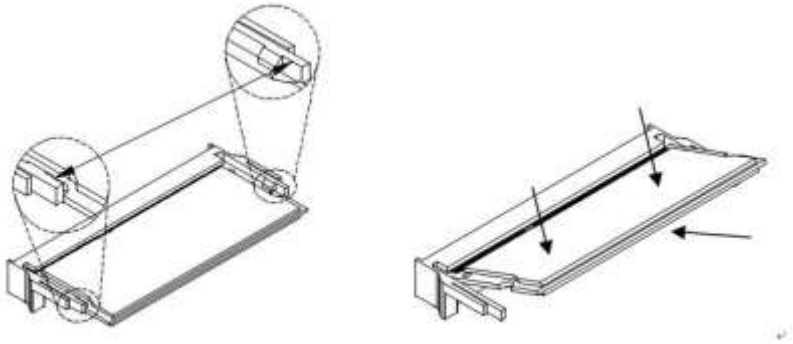
2.1 Installing the Memory

The IB922 board supports one DDR3 memory socket for a maximum total memory of 8GB.

Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

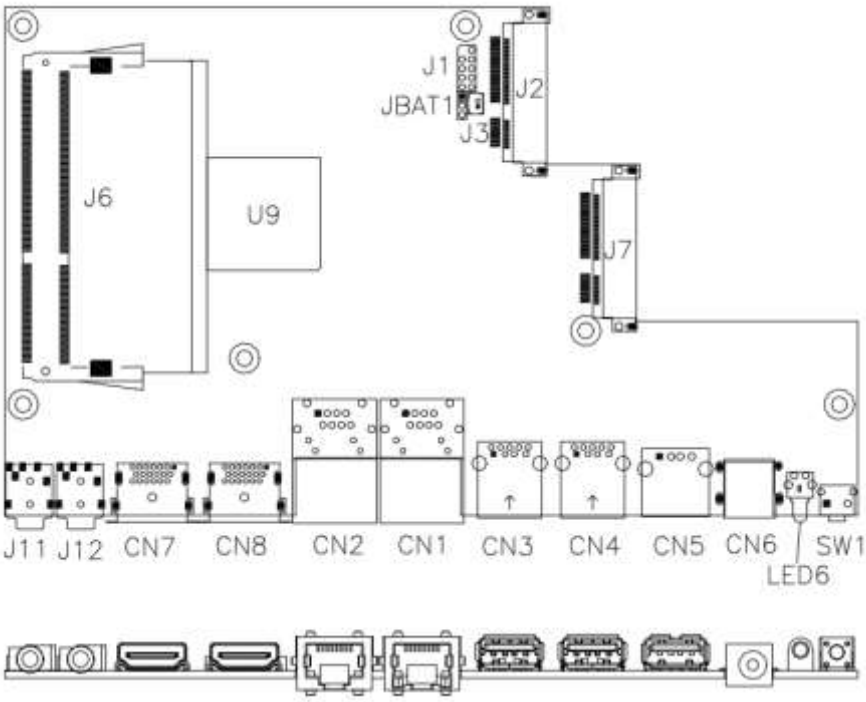
1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
3. To remove the DDR3 module, press the clips with both hands.



2.2 Setting the Jumpers

Jumpers are used on IB922 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the jumper and connectors on IB922 and their respective functions.

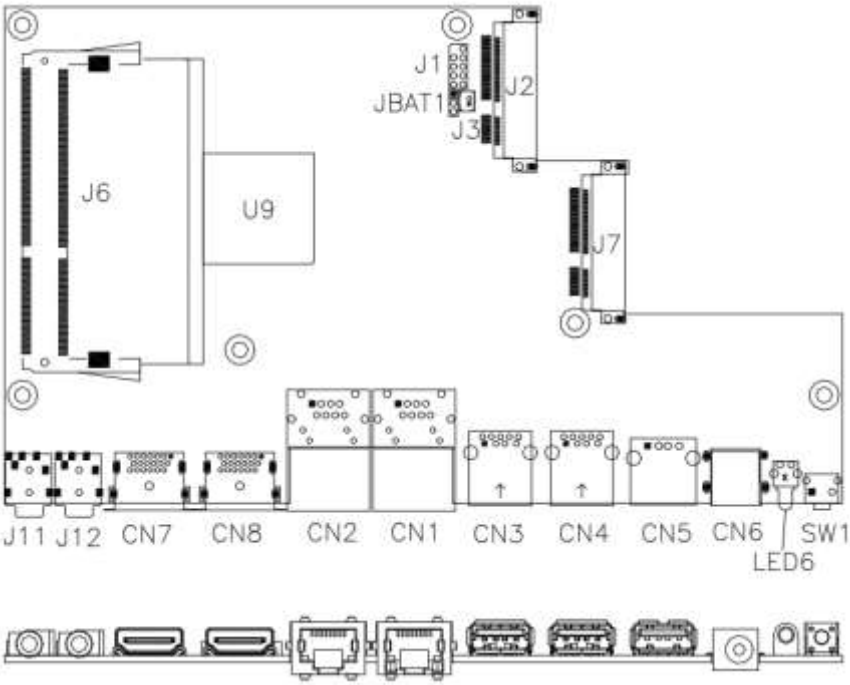
Jumper Locations on IB922



JBAT1: Clear CMOS Contents

JBAT1	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

2.3 Connectors on IB922



SW1: Power On Button

CN1: Gigabit LAN (RTL8111DP)

CN2: COM1/RS232 Serial Port (RJ45 TYPE)

Signal Name	Pin #	Pin #	Signal Name
RTS, Request to send	1	2	Data terminal ready
TXD, Transmit data	3	4	GND, ground
GND, ground	5	6	RXD, Receive data
DSR, Data set ready	7	8	CTS, Clear to send

CN3, CN4: USB 3.0 Connector

CN5: USB 2.0 Connector

CN6: Board Input Power Connector

CN7, CN8: HDMI Connector

J1: SPI Flash Connector (factory use only)

J2: Mini PCIE Connector (with *USB SIMM support*)

J3: Battery Connector

J6: DDR3 SO-DIMM Socket

J7: Mini PCIE Connector (*w/ M-SATA support*)

J11: Audio LINE_IN Connector

J12: Audio LINE_OUT Connector

LED6: Power On LED

CHAPTER 3 BIOS SETUP

This chapter describes the different settings available in the BIOS that comes with the board. The topics covered in this chapter are as follows:

3.1 BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system's ROM provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

3.2 BIOS Setup

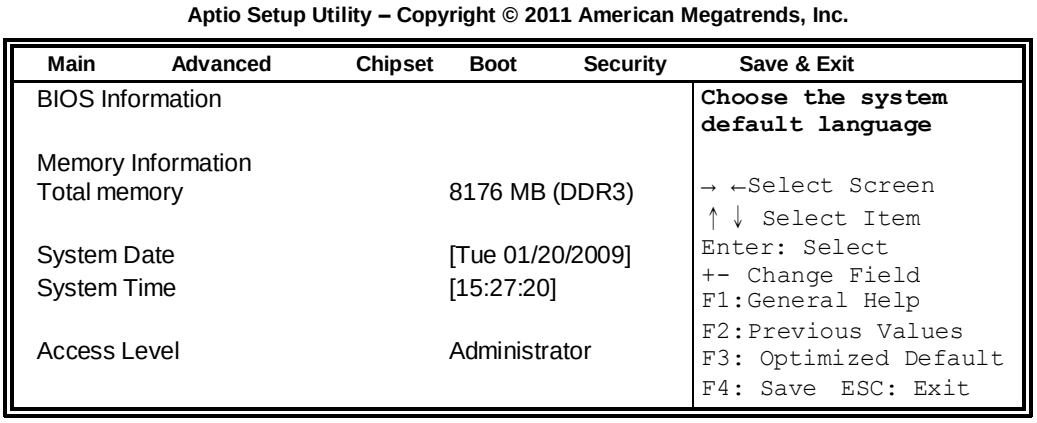
The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press <DEL> or <ESC> to Enter Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Main Settings

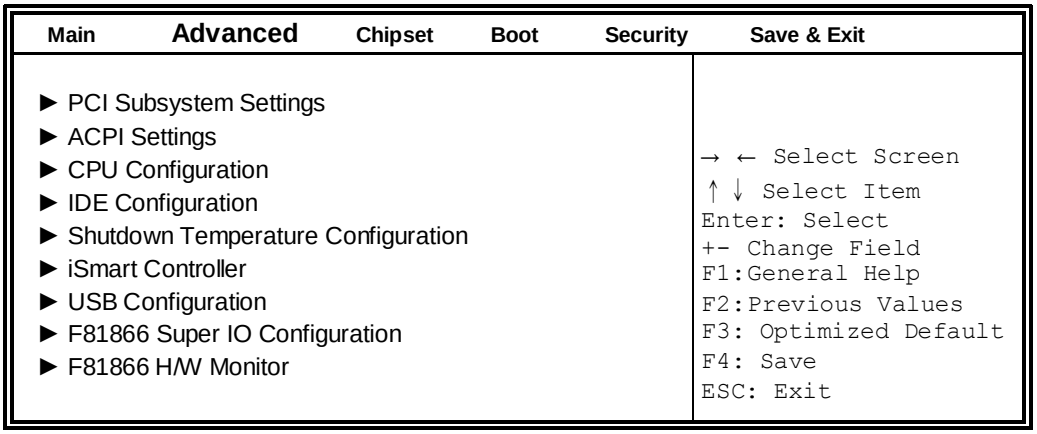


System Date
Set the Date. Use Tab to switch between Data elements.

System Time
Set the Time. Use Tab to switch between Data elements.

Advanced Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



PCI Subsystem Settings

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
PCI Bus Driver Version			V 2.0502		
PCI Common Settings					
PCI Latency Timer			32 PCI Bus Clocks		
VGA Palette Snoop			Disabled		
PERR# Generation			Disabled		
SERR# Generation			Disabled		
► PCI Express Settings					

→ ←Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1:General Help
F2:Previous Values
F3: Optimized Default
F4: Save ESC: Exit

PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.

VGA Palette Snoop

Enables or disables VGA Palette Registers Snooping.

PERR# Generation

Enables or disables PCI device to generate PERR#.

SERR# Generation

Enables or disables PCI device to generate SERR#.

PCI Express Settings

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
PCI Express Device Register Settings					
Relaxed Ordering			Disabled		
Extended Tag			Disabled		
No Snoop			Enabled		
Maximum Payload			Auto		
Maximum Read Request			Auto		
PCI Express Link Register Settings					
ASPM Support			Disabled		
WARNING: Enabling ASPM may cause PCI-E devices to fail			Disabled		
Extended Synch			Disabled		
Link Training Retry			5		
Link Training Timeout (uS)			100		
Unpopulated Links			Keep Link ON		

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1:General Help
F2:Previous Values
F3: Optimized Default
F4: Save ESC: Exit

ACPI Settings

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
ACPI Settings					
Enable ACPI Auto Configuration			Disabled		
Enable Hibernation			Enabled		
ACPI Sleep State			S3 (Suspend to R…)		
Lock Legacy Resources			Disabled		

→ ←Select Screen
↑ ↓Select Item
Enter: Select
+- Change Field
F1:General Help
F2:Previous Values
F3: Optimized Default
F4: Save ESC: Exit

Enable Hibernation

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

ACPI Sleep State

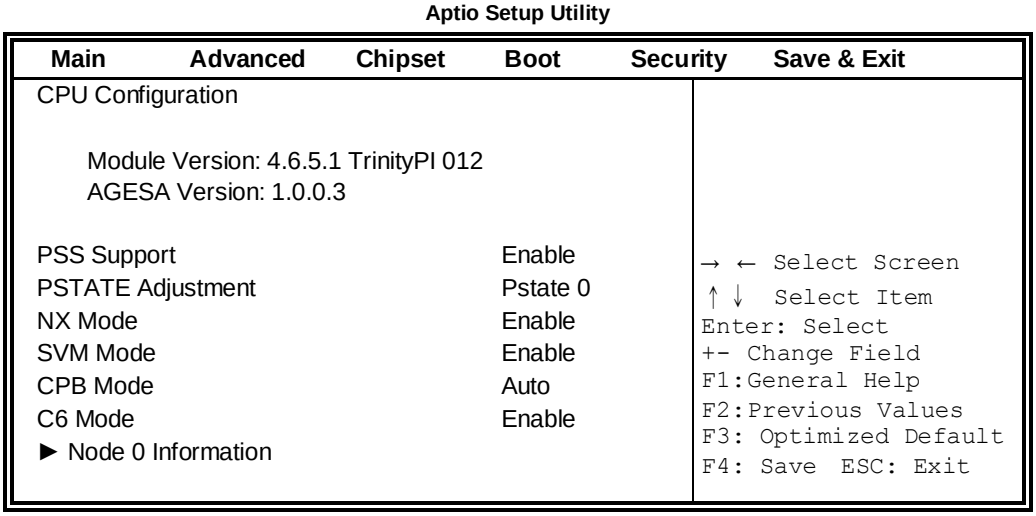
Select ACPI sleep state the system will enter, when the SUSPEND button is pressed.

Lock Legacy Resources

Enabled or Disabled Lock of Legacy Resources.

CPU Configuration

This section shows the CPU configuration parameters.



PSS Support

Enable/disable the generation of ACPI _PPC, _PPC, _PSS, and _PCT objects.

PSTATE Adjustment

Provide to adjust startup P-state level.

PPC Adjustment

Provide to adjust _PPC object.

NX Mode

Enable/disable No-execute page protection function.

SVM Mode

Enable/disable CPU Virtualization.

CPB Mode

Enable/disable CPB.

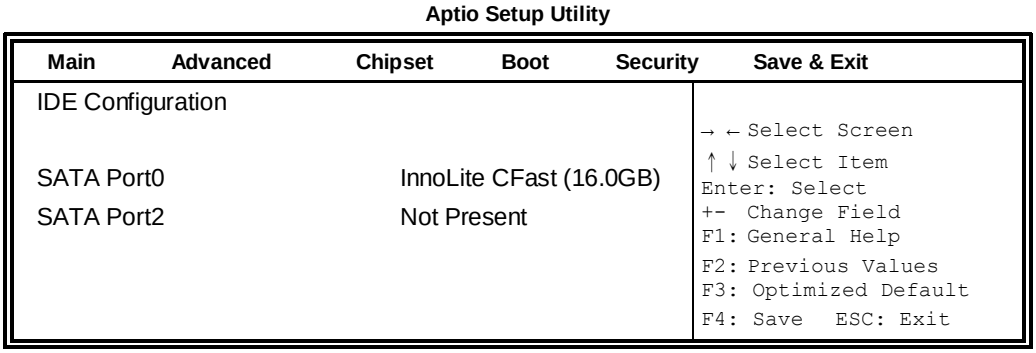
C6 Mode

Auto/disable CPB.

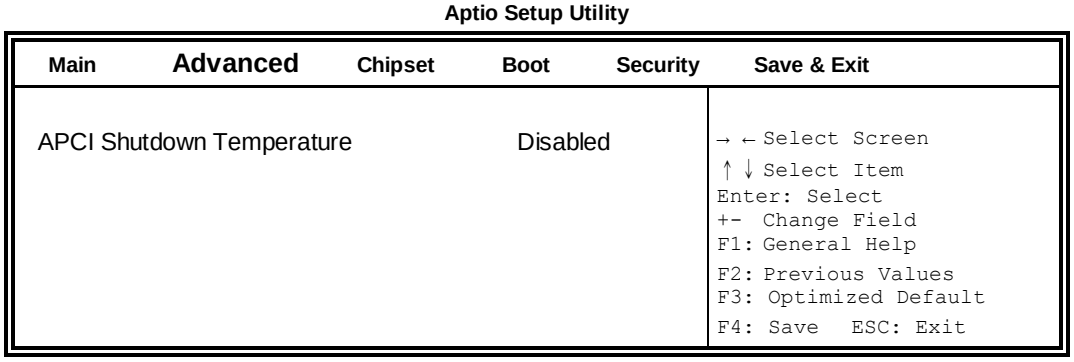
Node 0 Information

View memory information related to Node 0.

IDE Configuration



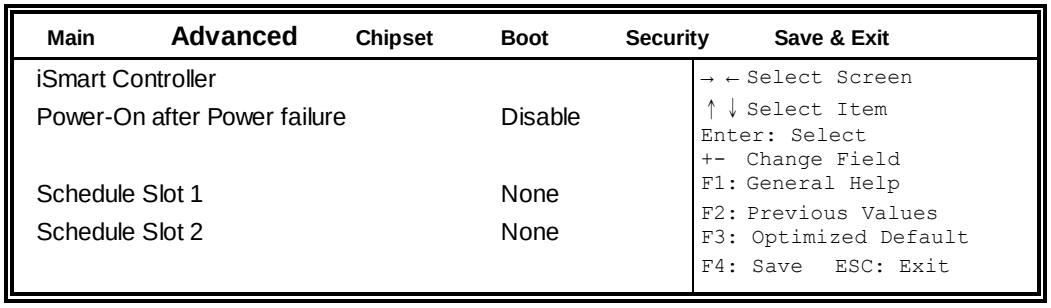
Shutdown Temperature Configuration



ACPI Shutdown Temperature

The default setting is Disabled.

iSmart Controller



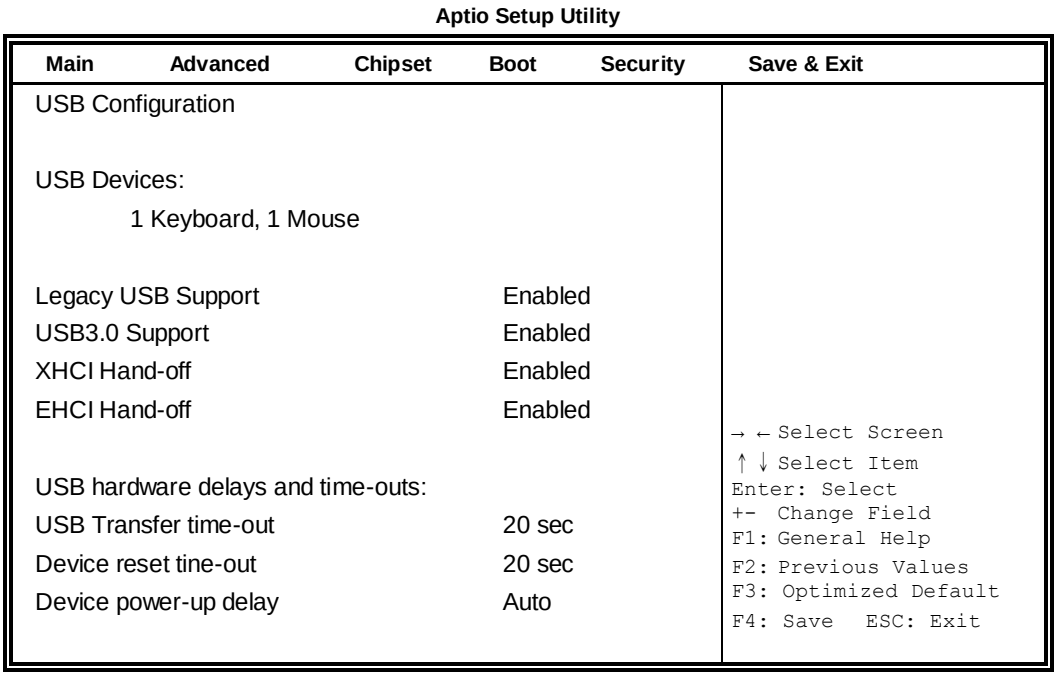
Power-On after Power failure

Enable or Disable.

Schedule Slot 1 / 2

Setup the hour/minute for system power on.

USB Configuration



Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option keeps USB devices available only for EFI applications.

USB3.0 Support

Enable/Disable USB3.0 (XHCI) Controller support.

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

EHCI Hand-off

Enabled/Disabled. This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

USB Transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

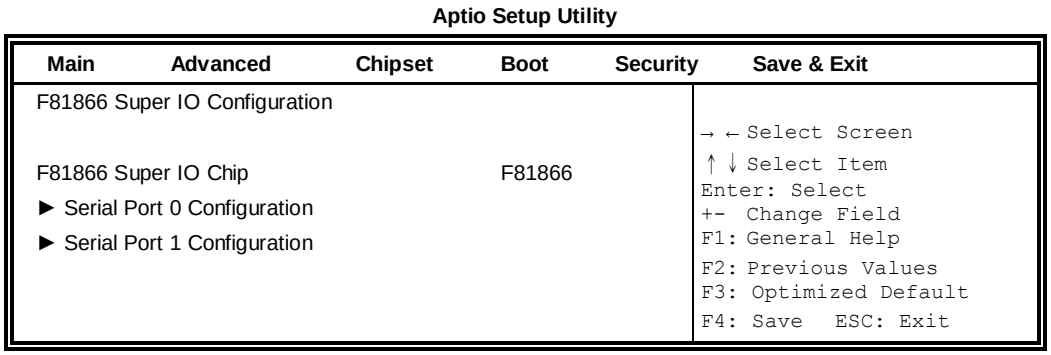
Device reset time-out

USB mass Storage device start Unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

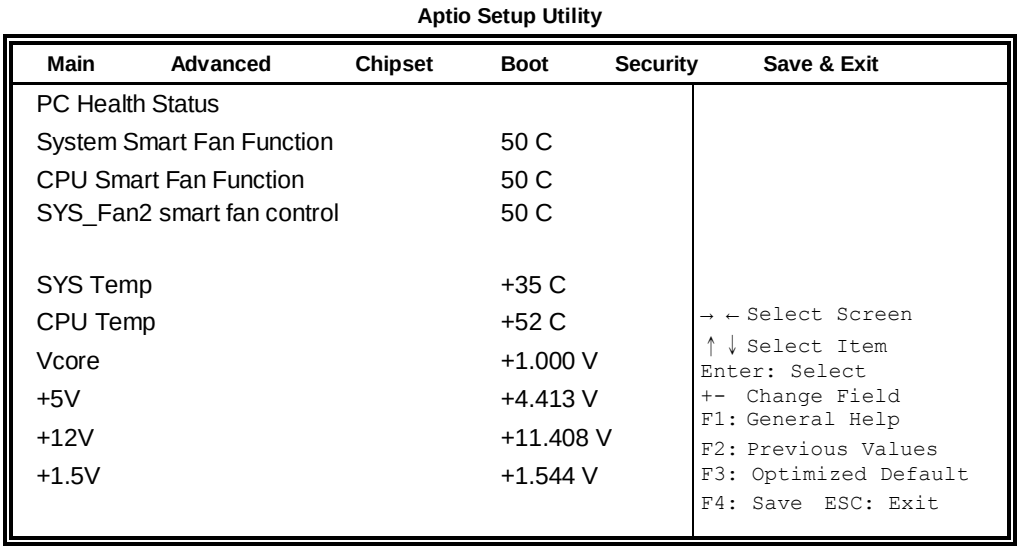
F81866 Super IO Configuration



Serial Port Configuration

Set Parameters of serial ports. User can Enable/Disable the serial port and select an optimal settings for the Super IO device.

F81866 H/W Monitor



Temperatures/Voltages

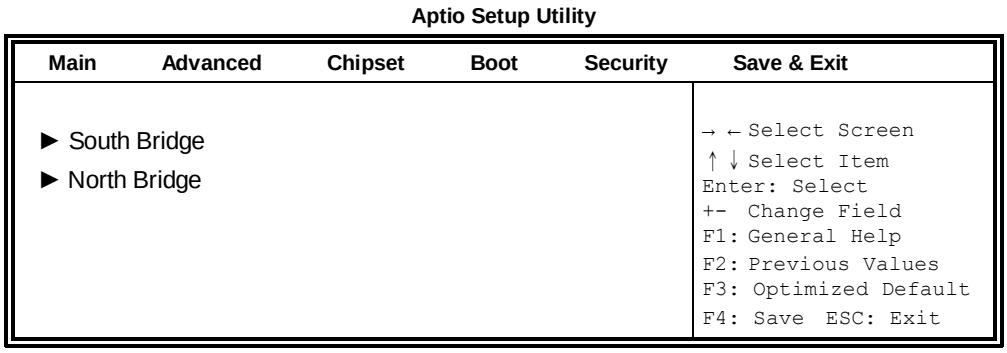
These fields are the parameters of the hardware monitoring function feature of the board. The values are read-only values as monitored by the system and show the PC health status.

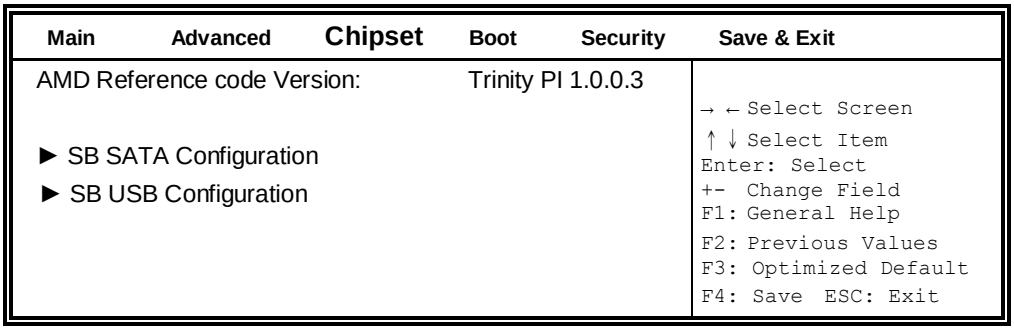
Smart Fan Function

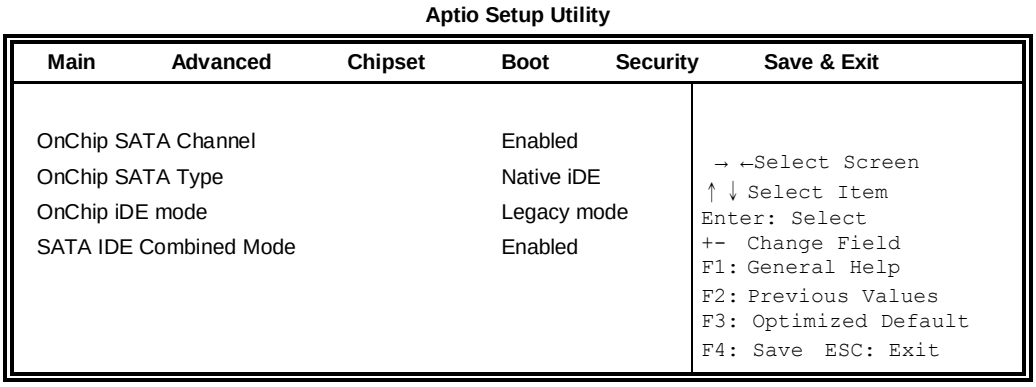
This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.

Chipset Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.







OnChip SATA Channel

Enabled or Disabled.

OnChip SATA Type

Native IDE /n RAID /n AHCI /n AHCI /n Legacy IDE /n IDE->AHCI /n HyperFlash

OnChip IDE mode

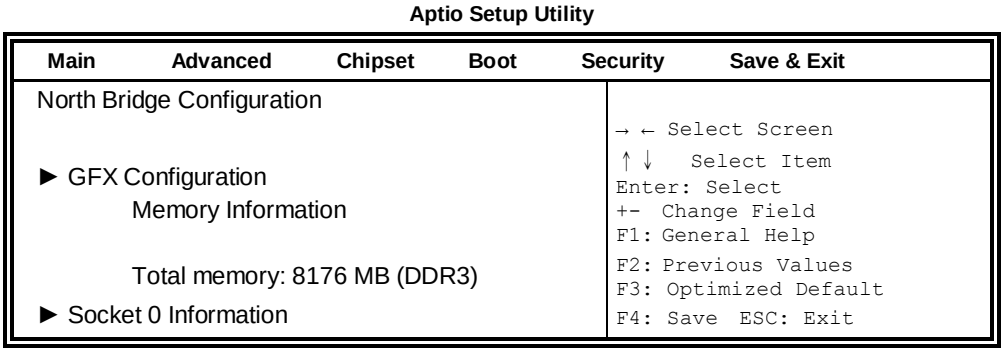
Legacy mode or Native mode

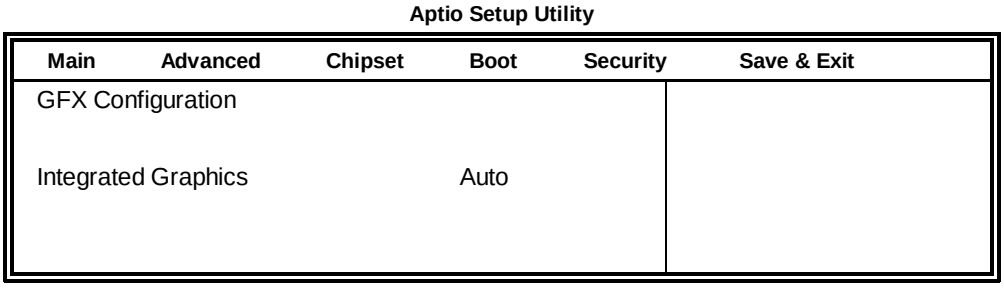
SATA IDE Combined Mode

Enabled or Disabled.

SB USB Configuration Options:

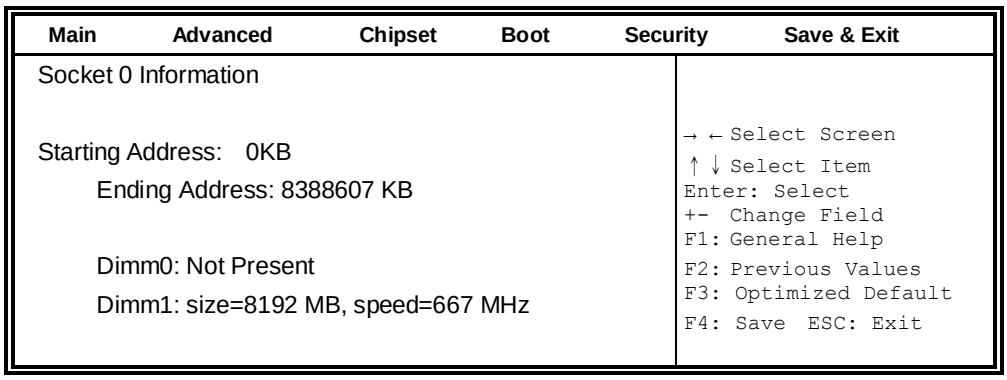
Main	Advanced	Chipset	Boot	Security	Save & Exit
XHCI Controller 0			Enabled		
XHCI Controller 1			Enabled		
DHCI HC(Bus 0 Dev 18 Fn 0)			Enabled		
EHCI HC(Bus 0 Dev 18 Fn 2)			Enabled		
DHCI HC(Bus 0 Dev 19 Fn 0)			Enabled		
EDHCI HC(Bus 0 Dev 19 Fn 0)			Enabled		
DHCI HC(Bus 0 Dev 20 Fn 5)			Enabled		
USB Port 0			Enabled		
USB Port			Enabled		
USB Port			Enabled		
USB Port			Enabled		
USB Port			Enabled		
			Enabled		
USB Port			Enabled		
USB Port			Enabled		
USB Port			Enabled		→ ← Select Screen
USB Port			Enabled		↑ ↓ Select Item
USB Port			Enabled		Enter: Select
					+- Change Field
					F1: General Help
XHCI0 Port 0			Enabled		F2: Previous Values
XHCI0 Port 1			Enabled		F3: Optimized Default
XHCI1 Port 0			Enabled		F4: Save ESC: Exit
XHCI1 Port 1			Enabled		



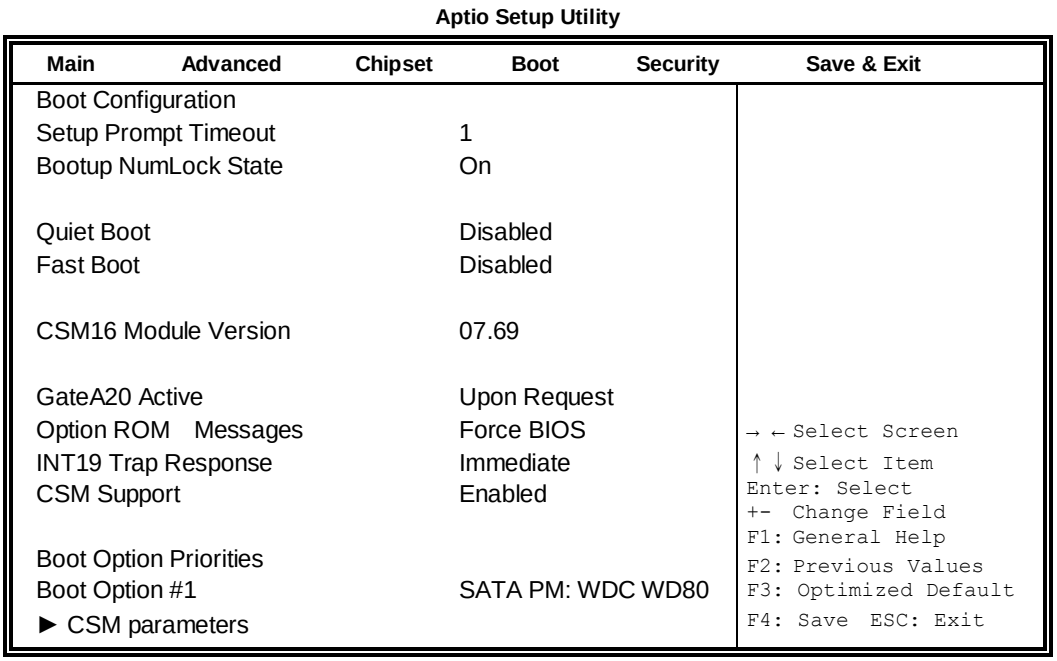


Integrated Graphics

Options are Auto Disabled and Force



Boot Settings



Setup Prompt Timeout

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

Bootup NumLock State

Select the keyboard NumLock state.

Quiet Boot

Enables/Disables Quiet Boot option.

Fast Boot

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

GateA20 Active

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

Option ROM Messages

Set display mode for Option ROM. Options are Force BIOS and Keep Current.

INT19 Trap Response

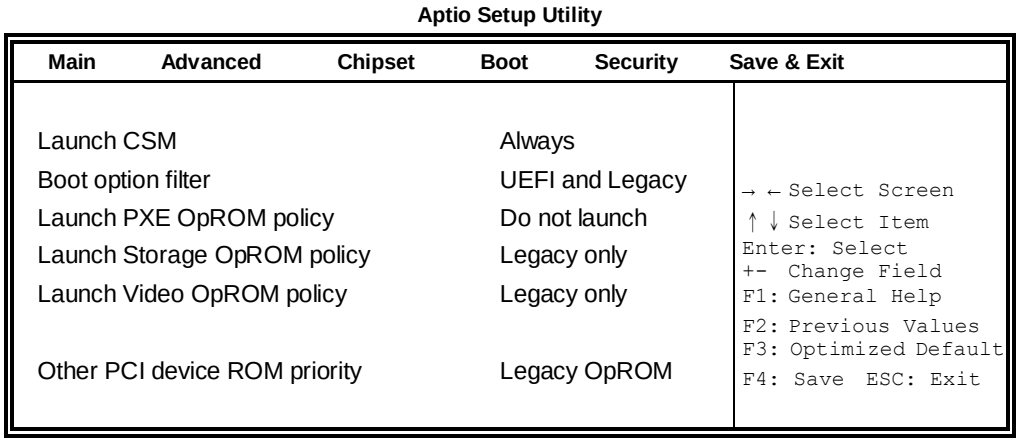
Enable: Allows Option ROMs to trap Int 19.

Boot Option Priorities

Sets the system boot order.

CSM parameters

OpROM execution, boot options, filter, etc.



Launch CSM

This option controls if CSM will be launched.

Boot option filter

This option controls what devices system can boot to.

Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM.

Launch Storatge OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM.

Launch Video OpROM policy

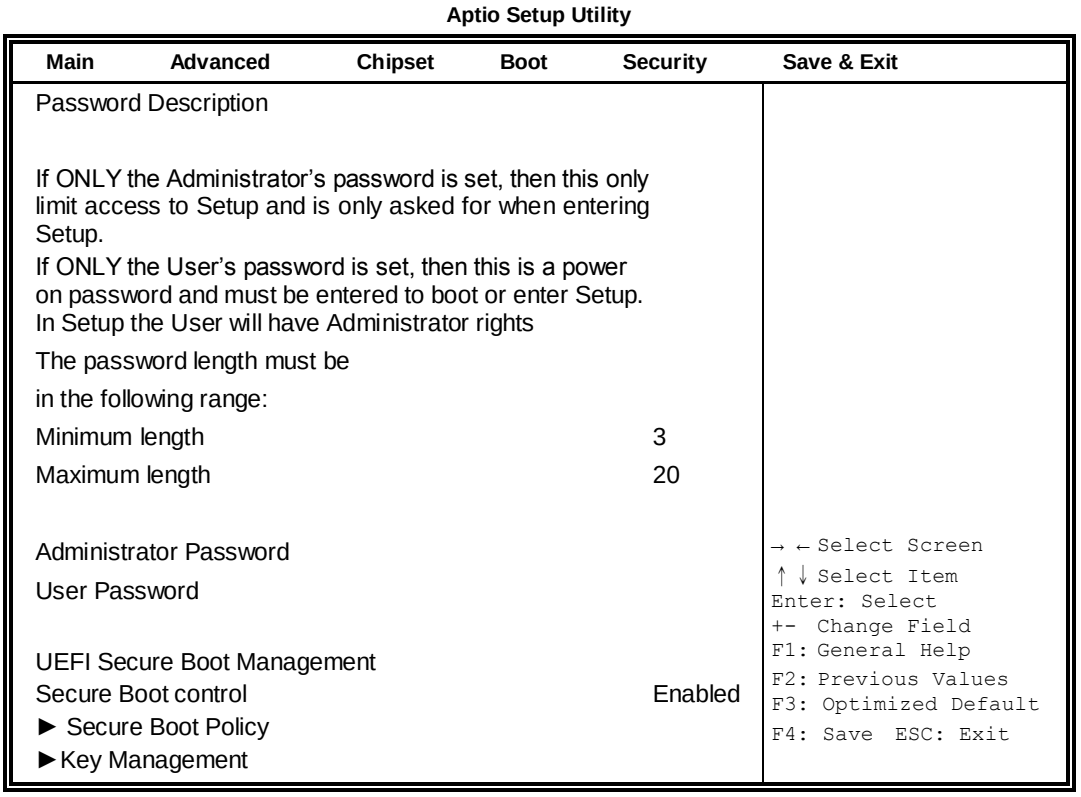
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

Security Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

Secure Boot control

Secure Boot flow control.
Secure Boot is possible only if System runs in User Mode.

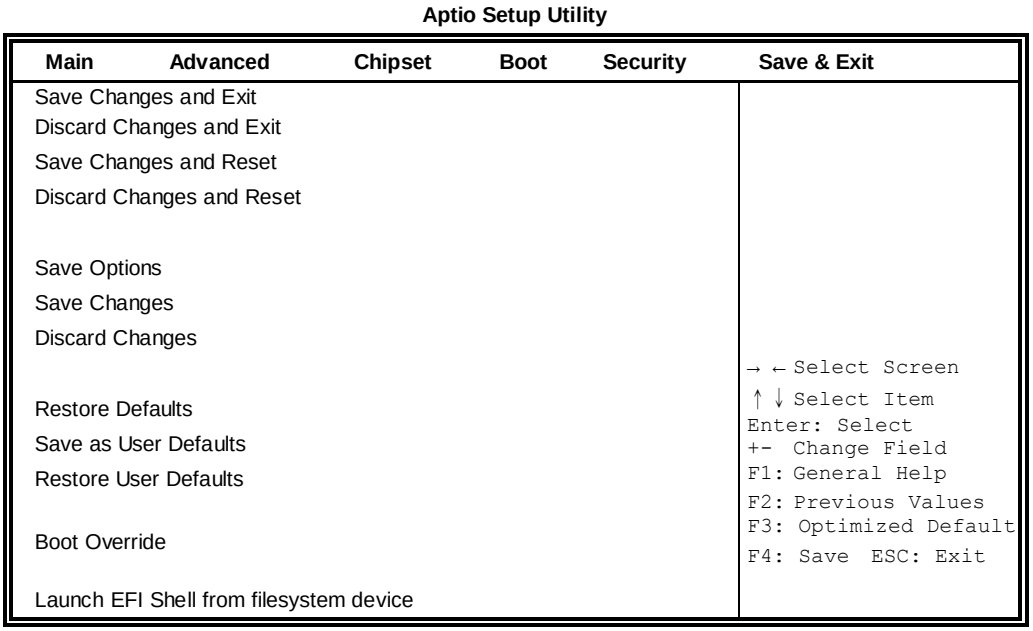
Secure Boot Policy

Select Secure Boot mode extended options: Internal FV, Option ROM, Removable Media, Fixed Media.

Administrator Password

Set Setup Administrator Password.

Save & Exit Settings



Save Changes and Exit
Exit system setup after saving the changes.

Discard Changes and Exit
Exit system setup without saving any changes.

Save Changes and Reset
Reset the system after saving the changes.

Discard Changes and Reset
Reset system setup without saving any changes.

Save Changes
Save Changes done so far to any of the setup options.

Discard Changes
Discard Changes done so far to any of the setup options.

Restore Defaults
Restore/Load Defaults 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.

Launch EFI Shell from filesystem device
Attempts to launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

CHAPTER 4 DRIVERS INSTALLATION

This section describes the installation procedures for software and drivers. The software and drivers are included with your package. If you find the items missing, please contact the vendor where you made the purchase.

IMPORTANT NOTE:

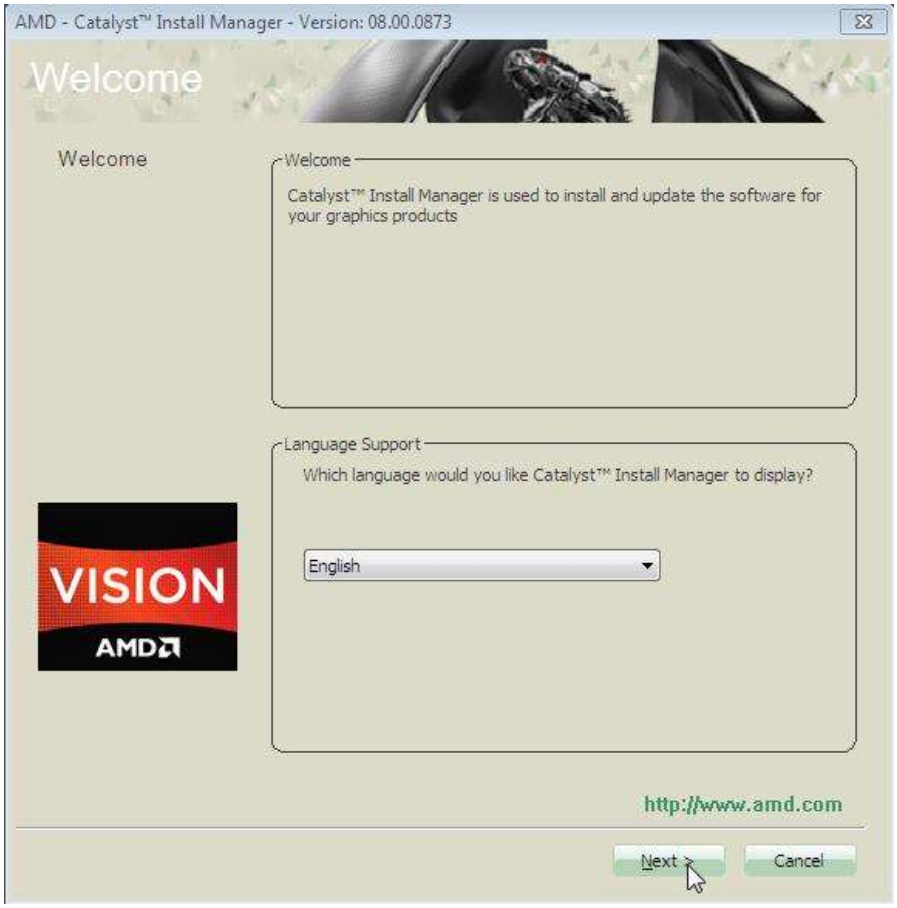
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

4.1 VGA Drivers Installation

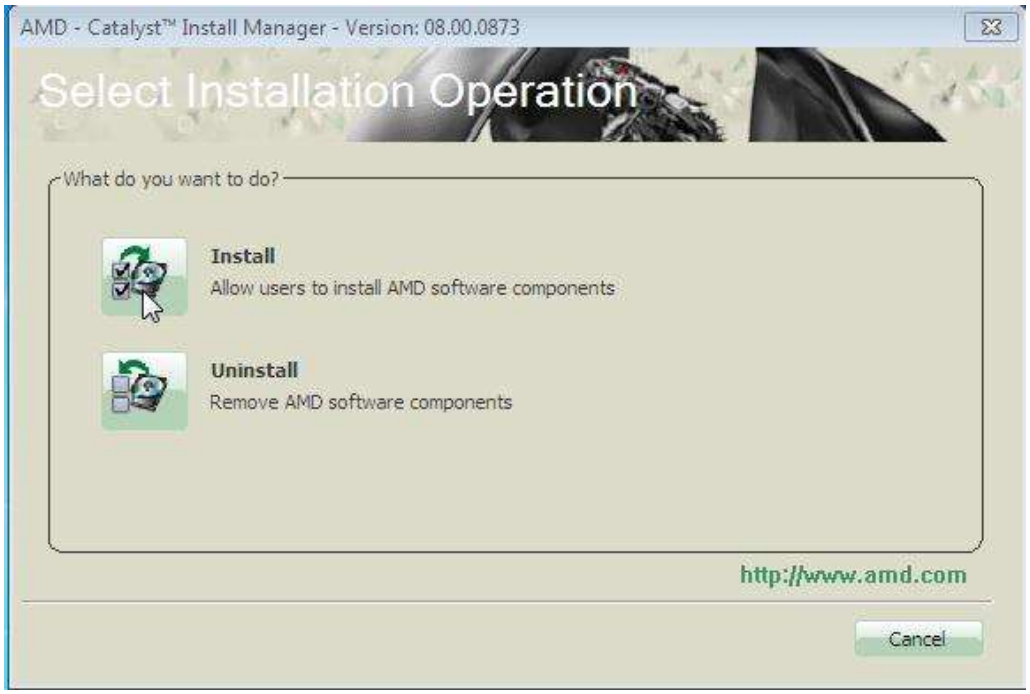
1. Insert the drivers DVD that comes with the board. Click ***AMD***, then ***AMD eKabini Chipset Drivers***.

2. Click ***AMD eKabini Graphics Drivers.***

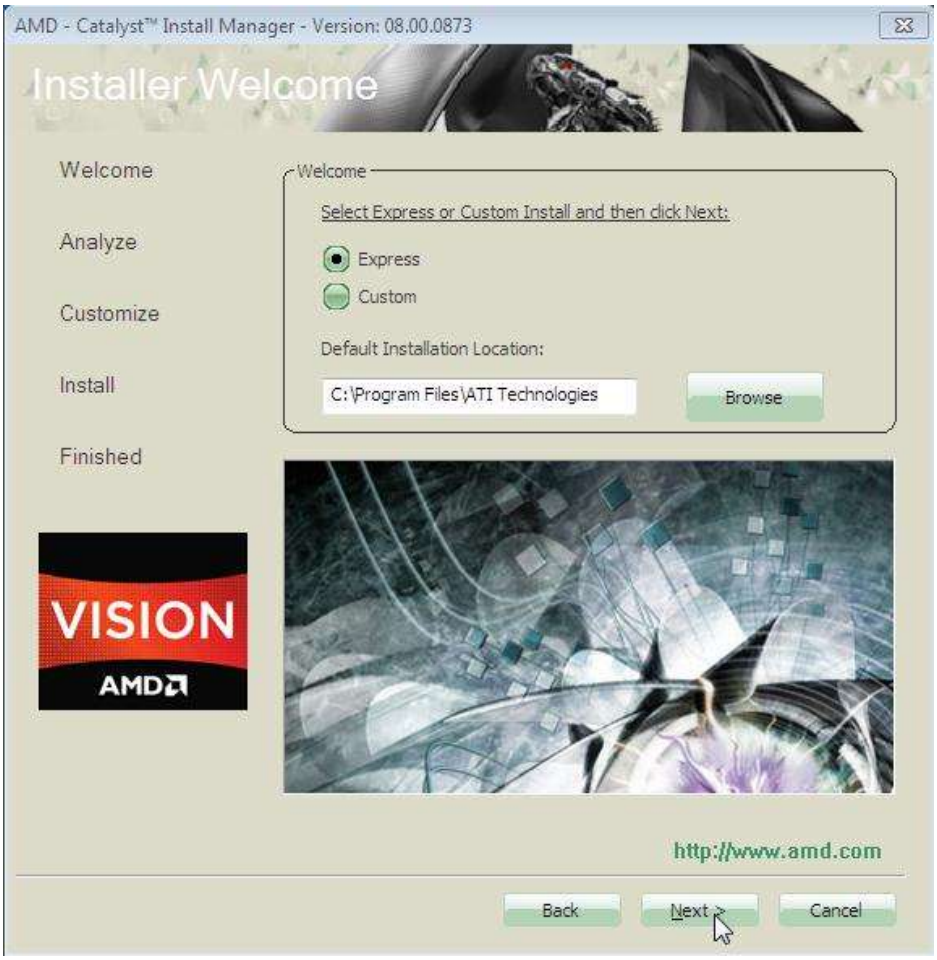
3. When the welcome screen appears, click ***Next***.



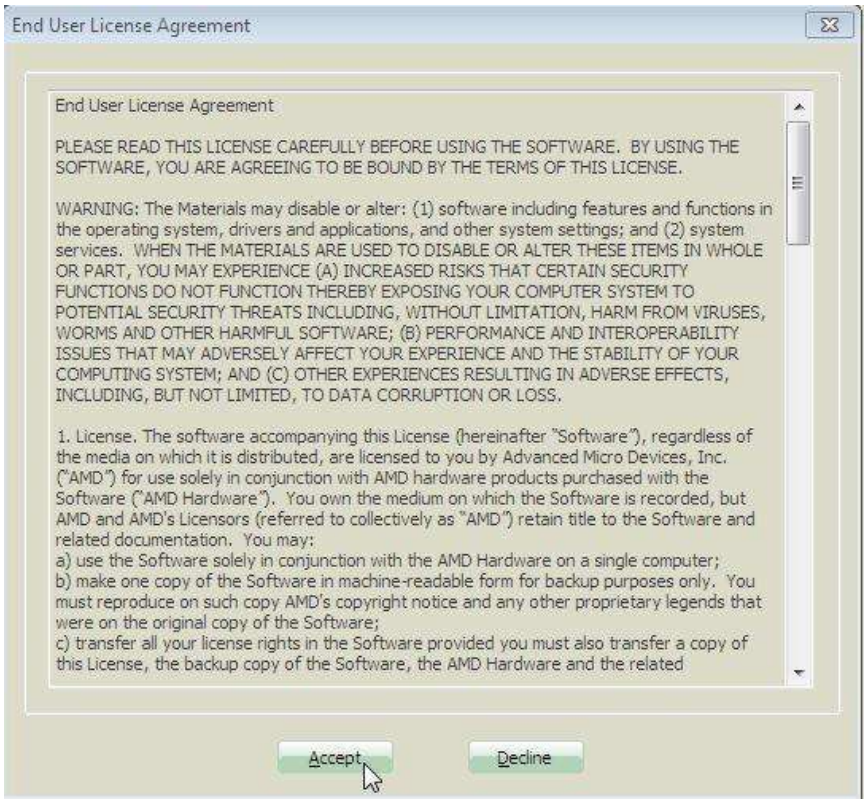
4. Select the language you would like to be displayed and click ***Next***.
5. Click ***Install*** to continue the installation process.



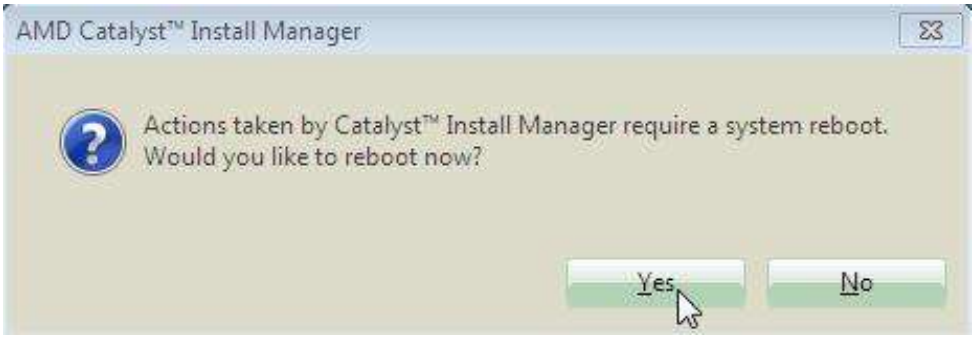
6. Select **Express** and the **installation location** and click ***Next***.



7. Click ***Accept*** to accept the End User License Agreement.



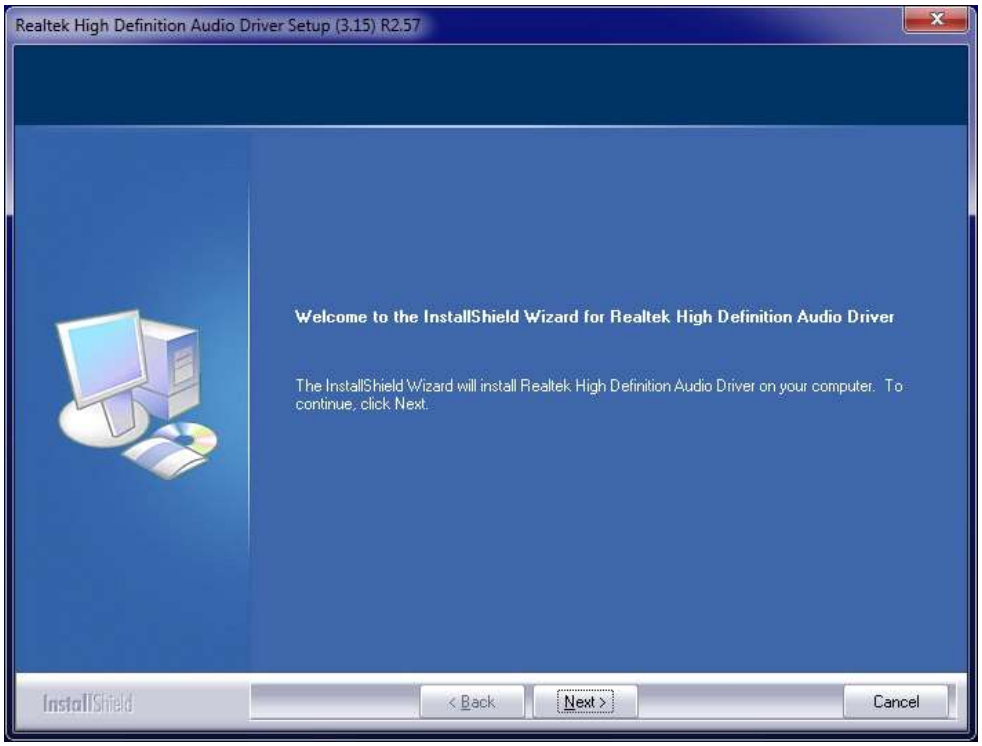
8. To reboot the system, click ***Yes***.



4.2 Realtek HD Audio Driver Installation

1. Click ***Realtek High Definition Audio Driver.***

2. On the Welcome to the InstallShield Wizard screen, click ***Next*** to proceed with and complete the installation process.



3. Restart the computer when prompted.

4.3 LAN Drivers Installation

1. Insert the CD that comes with the board.
2. Click ***LAN Card*** and then ***Realtek RTL8111G LAN Controller Drivers***.

3. In the Welcome screen, click ***Next***.

4. In the License Agreement screen, click ***I accept the terms in license agreement*** and ***Next*** to accept the software license agreement and proceed with the installation process.

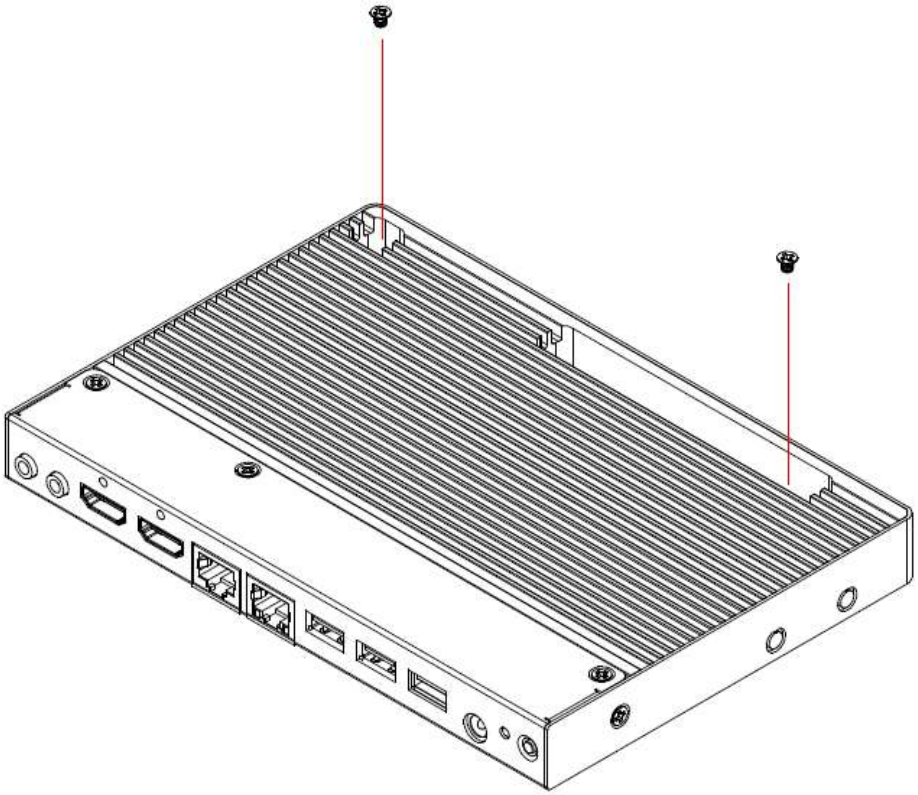
5. Click the checkbox for ***Drivers*** in the Setup Options screen to select it and click ***Next*** to continue.

6. When the Ready to Install the Program screen appears, click ***Install*** to continue.

7. When InstallShield Wizard is complete, click ***Finish***.

Appendix

Mounting SI-22 to the Wall



You can install SI-22 on plastic (LCD monitor), wood, drywall surface over studs, or a solid concrete or metal plane directly. Ensure the installer uses at least two M3 length 6mm screws to secure the system on the wall. ***Four M3 length 6mm screws are recommended to secure the system onto the wall.***

Fasteners are not included with the unit, and must be supplied by the installer. The types of fasteners required are dependent on the type of wall construction. Choose fasteners that are rated either ”Medium Duty“ or ”Heavy Duty.“ To assure proper fastener selection and installation, follow the fastener manufacturer’s recommendations.

Wall Mounting Requirements

Note: *Before mounting the system onto the wall, ensure that you are following all applicable building and electric codes.*

When mounting, ensure that you have enough room for power and signal cable routing and have good ventilation for power adapter. The method of mounting must be able to support the weight of SI-22 plus the suspend weight of all the cables to be attached to the system. Use the following methods for mounting your system:

Mounting to hollow walls

- **Method 1: Wood surface** – A minimum wood thickness – 38mm (1.5in.) by 25.4 cm (10in.) – of high, construction – grade wood is recommended.
  Note: This method provides the most reliable attachment of the unit with little risk that the unit will come loose or require ongoing maintenance.
- **Method 2: Drywall walls** - Drywall over wood studs is acceptable.

Mounting to a solid concrete or brick wall - Mounts on a flat smooth surface.

Selecting the Location

Plan the mounting location thoroughly. Locations such as walkway areas, hallways, and crowded areas are not recommended. Mount the unit to a flat, sturdy, structurally sound column or wall surface.

The best mounting surface is a standard countertop, cabinet, table, or other structure that is minimally the width and length of the unit. This recommendation reduces the risk that someone may accidentally walk into and damage the device. Local laws governing the safety of individuals might require this type of consideration.