User Manual

BPC-3030

Compact Size fanless Box PC solution
withIntel® Bay Trail-D J1900 CPU

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Arestech warrants to you, the original purchaser, that each of its products will befree from defects in materials and workmanship for two years from the date of purchase.This warranty does not apply to any products which have been repaired or altered bypersons other than repair personnel authorized by Arestech, or which have beensubject to misuse, abuse, accident or improper installation. Arestech assumes noliability under the terms of this warranty as a consequence of such events.Because of Arestech's high quality-control standards and rigorous testing, most ofour customers never need to use our repair service. If an Arestech product is defective,it will be repaired or replaced at no charge during the warranty period. For outof-warranty repairs, you will be billed according to the cost of replacement materials,service time and freight. Please consult your dealer for more details.
If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPUspeed, Arestech products used, other hardware and software used, etc.) Noteanything abnormal and list any onscreen messages you get when the problemoccurs.
2. Call your dealer and describe the problem. Please have your manual, product,and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandizeauthorization) number from your dealer. This allows us to process

your returnmore quickly.

4. Carefully pack the defective product, a fully-completed Repair and ReplacementOrder Card and a photocopy proof of purchase date (such as your sales receipt)in a shippable container. A product returned without proof of the purchase dateis not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaidto your dealer.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a dampcloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipmentand must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or lettingit fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipmentfrom overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting theequipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anythingover 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 sourceto avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should beopened only by qualified service personnel.

- If one 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 cannot get it to work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

14. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THESTORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C(140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENTSHOULD BE IN A CONTROLLED ENVIRONMENT.
15. CAUTION: DANGER OF EXPLOSION IF BATTERY IS

INCORRECTLYREPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPERECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIESACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Safty Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electroniccomponents.

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Chapter1.General Introduction

Overview:

The BPC-3030 fanless Box PC is ideal for embedded and automation applications. This embedded hardware platform is designed with the Intel®Celeron® J1900 processor. This processor runs at 2GHz and supports DDR3L-1333SDRAM while maintaining low power consumption and attractive price point. The most feature of BPC-3030 is that it supports up to 8 COM ports while maintaining compact mechanical size. BPC-3030 also has a rugged case designed to protect against electromagnetic interference, extremes of cold and heat, and highlights a passive cooling design for quiet, fanless operation ideal for the Digital Signage, Medical and automation industries.

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Key Features:

(1) Intel® Celeron® J1900 (2M Cache, 2.0 GHz)
(2) DDR3L 1333 MHz SODIMM up to 8 GB
(3) 2 x GigaLAN
(4) 8 x COM Ports
(Standard: 1x RS-232/422/485 ,7xRS-232
Maxima:5x RS-232/422/485,3x RS-232)
(5) 2 x USB3.0, 2 x USB2.0 , 1xInternal USB for Keypro
(6) HDMI& VGA (Dual Display)
(7) Line out
(8) 1 x Mini PCIe (Half size)
(9) Support 1 x 2.5” SATA HDD/SSD
(10) 9~36V DC Input (Phoenix connector), Lockable
(11) -20~60° COperation Temperature

Hardware Specification:

Model		BPC-3030
Processor System	CPU	Intel® Celeron® Processor J1900
	Frequency	Quad-Core 2.0 GHz
	L2 Cache	2 MB
	System Chipset	N/A
	BIOS	UEFI
Memory	Technology	DDR3L 1333 MHz SDRAM
	Max. Capacity	8 GB
	Socket	1 x 204-pin SODIMM
Display	Graphics Engine	Intel® Gen7 Intel Graphics DX 11*, OGL3.2
	VGA	Up to 1920 x 1200
	HDMI	Supports HDMI 1.4a, max resolution 1920 x 1200
	Dual Display	VGA + HDMI
I/O Interface	USB	2 x USB 3.0 , 2 x USB 2.0 , 1 x internal USB (keypro)
	Serial Port	8 x COM (7 x RS-232, 1 x RS-232/422/485)
	Antenna Hole	2 x Antenna Holes (for SMA connector)
Expansion	Mini PCIe	1 x Half-size Mini PCIe
Ethernet	Controller	Dual GbE, 10/100/1000MbpsRealtek RTL8111G-CG
Audio	Chipset	Realtek ALC662 High Definition Audio (HD)

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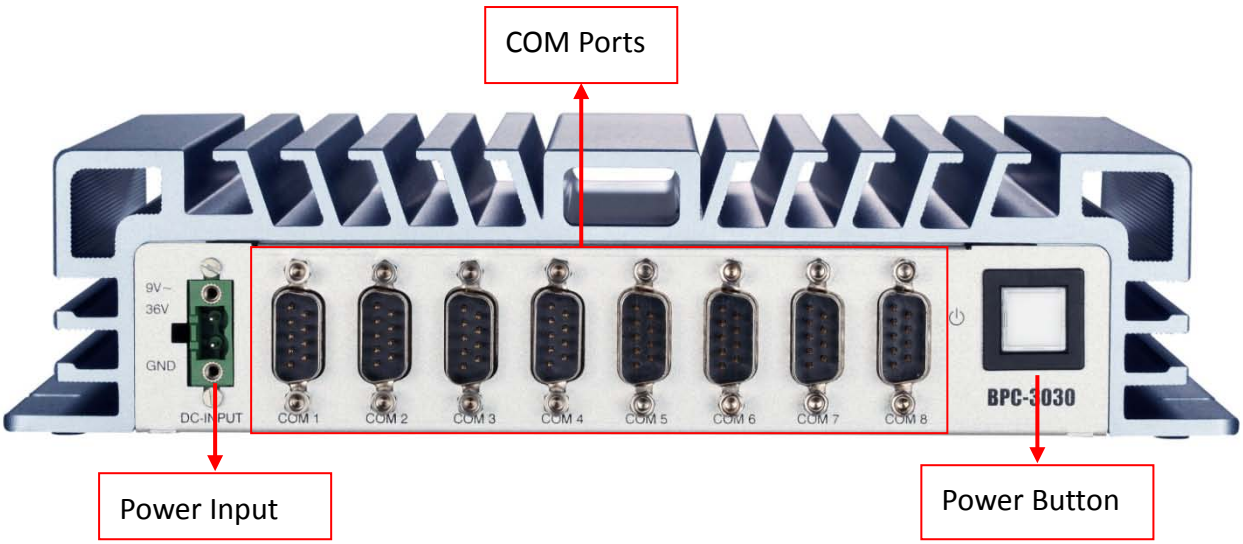
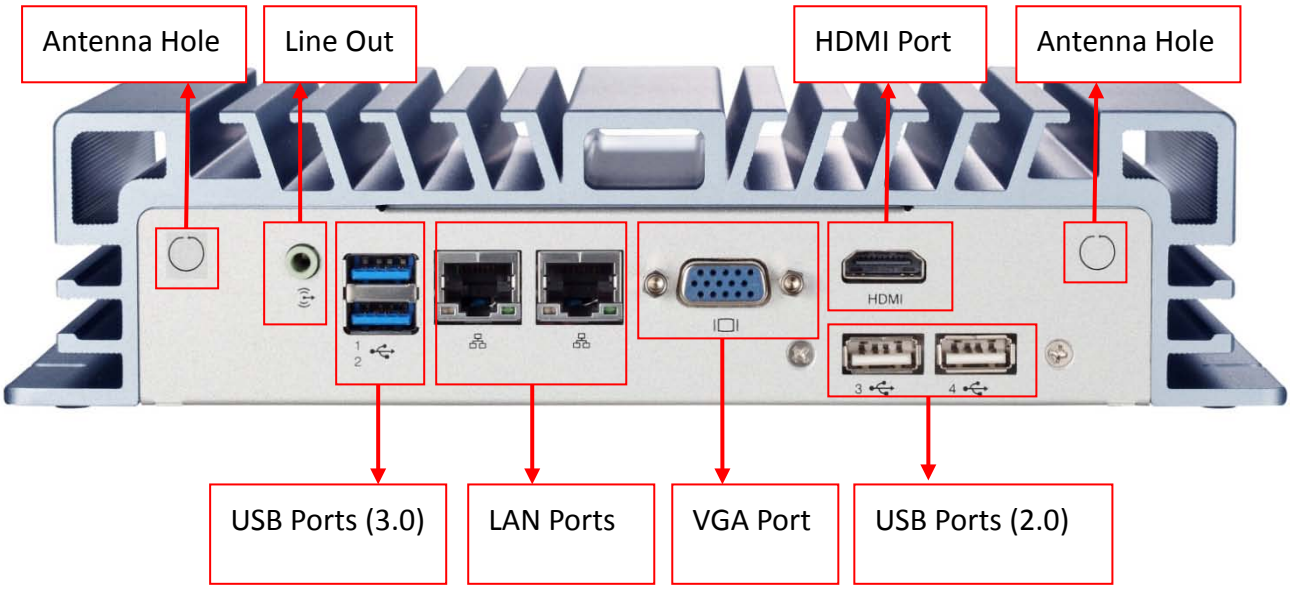
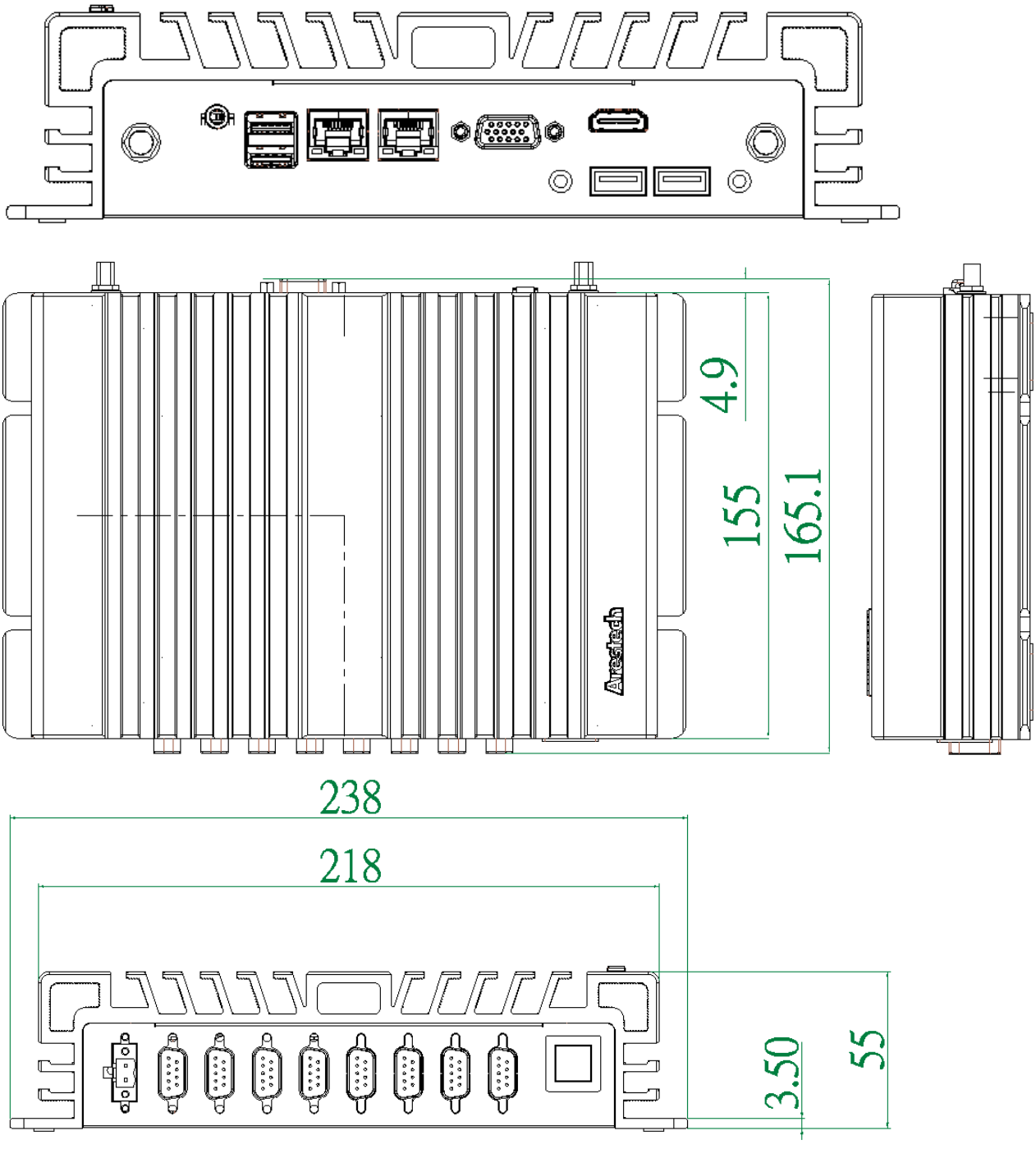
	Connectors	Line out
Storage	SATA	1 x SATA II (Max. Data Transfer Rate 300 MB/s)
Power	Power Input	9~36 V DC-input
	Power Consumption	0.783A@12V(9.4W)
	Power Adaptor	AC-to-DC, 12 V @ 5 A, 60 W
Environment	Operational	-20~ 60° C (-4~ 139° F) w/ 2.5" HDD (Operational humidity: 50° C @ 95% RH Non-Condensing)
Certificate	EMC	CE, FCC Class A
Physical Characteristics	Dimensions	238(W) x 55(H) x 165(D) mm (9.37” x 2.16” x 6.5”)
	Weight	1.8 Kg

Front & Rear Panel Arrangement:





Mechanical Dimensions:



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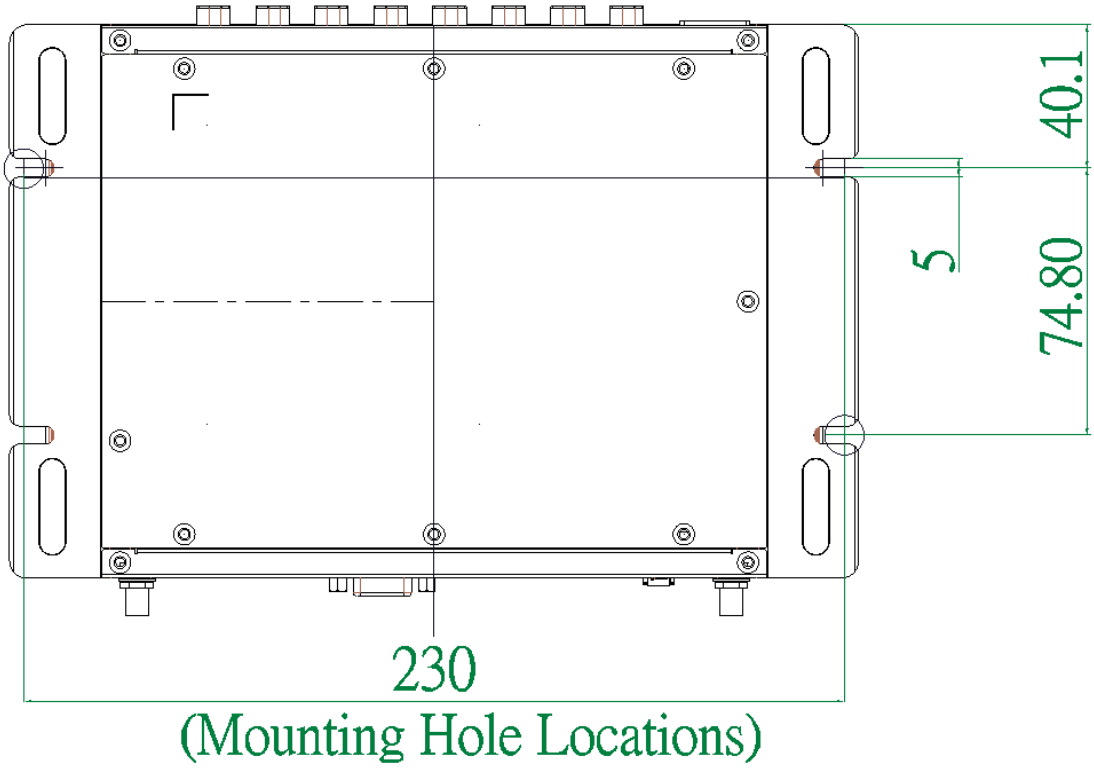

Power Requirement:

Power Input: support 9~36V DC Input

Power adaptor:12V@5A,60W

Environment Specification:

(1) Operating Temperature: 0~50° C (32~140° F)w/ 2.5” HDD

(2) Operational humidity: 50° C @ 95% RH Non-condensing

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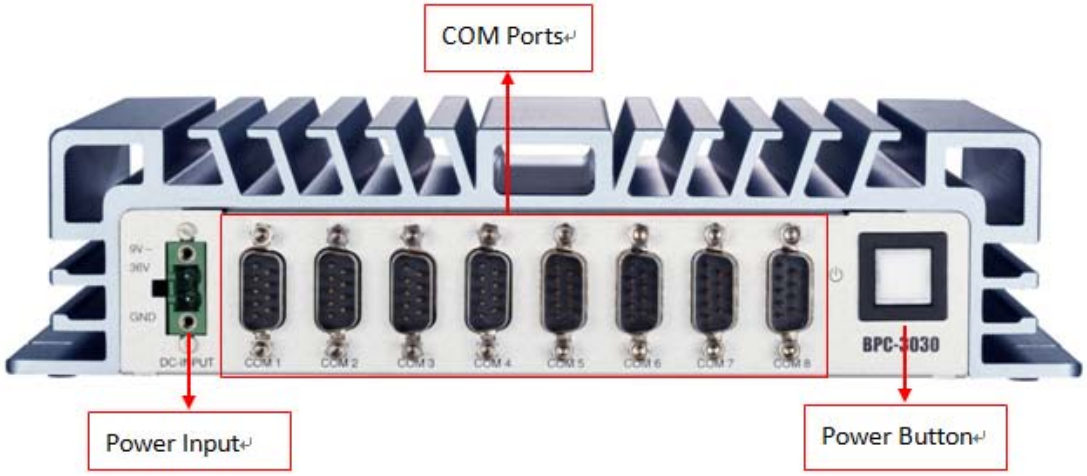
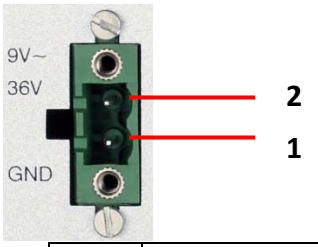
Chapter2.Connector(Pin-Definition)

Part1.ExternalInterface(Front):



Power Input(9~36V DC):



Pin	Definition
1	GND
2	Vin+ (9~36V DC)

COM Ports:

Default: RS232 for COM1 to COM8

Option:RS232/422/485 for COM1

(NOTE: The parameter for COM1 can be set by BIOS setup utility)

RS232 for COM2 to COM4

RS232/RS422/RS485 for COM5 to COM 8

(NOTE: RS232/RS422/RS485 for COM5 to COM8are optional kits for sales)

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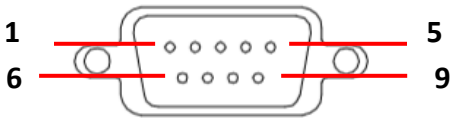

- COM1 Port(RS-232):

Pin	Definition	Pin	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	N/A
5	GND		

- COM1 Port(RS-422):

Pin	Definition	Pin	Definition
1	TX-	6	N/A
2	RX+	7	N/A
3	TX+	8	N/A
4	RX-	9	N/A
5	GND		

-COM1 Port(RS-485):

Pin	Definition	Pin	Definition
1	RTX-	6	N/A
2	N/A	7	N/A
3	RTX+	8	N/A
4	N/A	9	N/A
5	GND		

NOTE: Please refer to Chapter4 BIOS Setting - 2.5.1 COM1 Configuration (page) to set parameters of COM1

-COM2 to COM 4Ports(RS-232):

Pin	Definition	Pin	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS

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4	DTR	9	N/A
5	GND		

- COM 5 to COM 8 Ports(RS-232):

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

- COM 5 to COM 8 Ports (RS-422/485 FULL DUPLEX):

Pin	Definition	Pin	Definition
1	TX-	6	N/A
2	TX+	7	N/A
3	RX+	8	N/A
4	RX-	9	N/A
5	GND		

- COM5 to COM 8 Ports (RS485 HALF DUPLEX):

Pin	Definition	Pin	Definition
1	DATA-	6	N/A
2	DATA+	7	N/A
3	N/A	8	N/A
4	N/A	9	N/A
5	GND		

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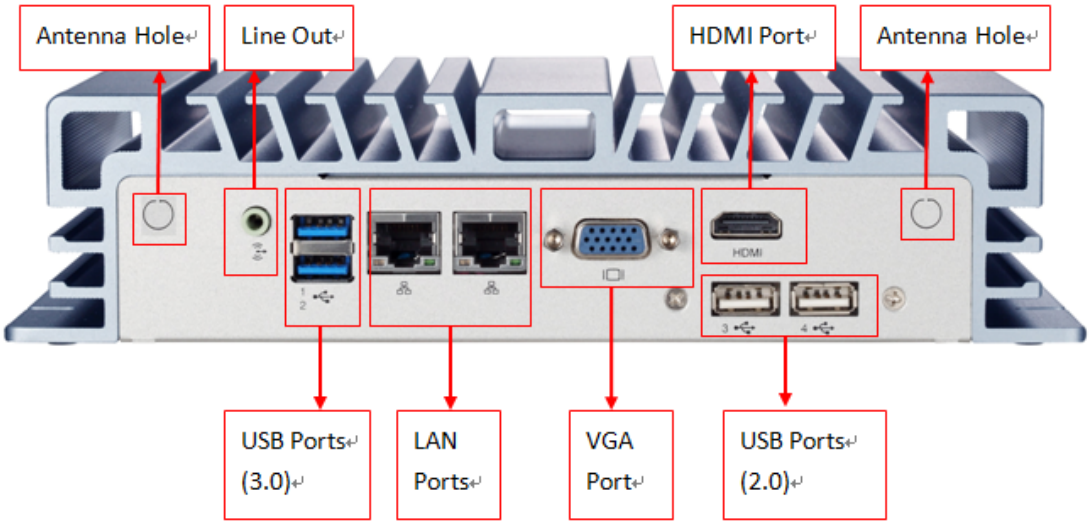
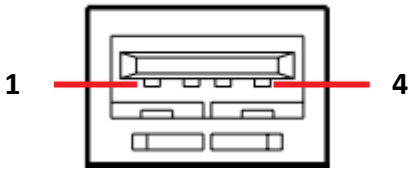
Part2.External Interface(Rear):



Audio Ports:

Pin	Definition
Green	Line_Out

USB Ports(USB2.0):



Pin	Definition
1	+5
2	USB-
3	USB+
4	GND

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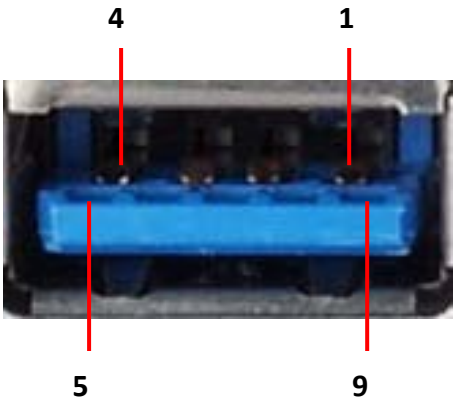
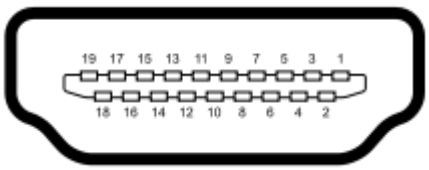
USB Ports(USB3.0):



Pin	Definition
1	+5
2	USB-
3	USB+
4	GND
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX+

HDMI Ports:



Pin	Definition	Pin	Definition
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2 -	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1-
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0-	10	TMDS Clock+

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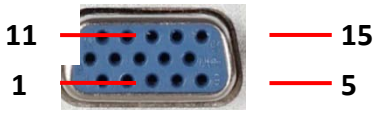
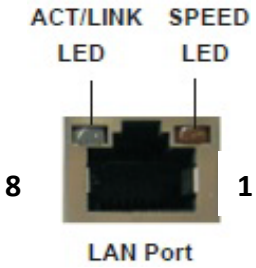
11	TMDS Clock Shield	12	TMDS Clock-
13	Reserved	14	Reserved
15	SCL	16	SDA
17	DDCGround	18	+5 V Power
19	Hot Plug Detect		

VGA Ports:



Pin	Definition	Pin	Definition
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	DAT
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	CLK
8	GND		

LAN Ports:



- Pin Definition:

10/100BASE-T:

Pin	Definition	Pin	Definition
1	TX_D0+	5	NC
2	TX_D0-	6	RX_D1-

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3	RX_D1+	7	NC
4	NC	8	NC

1000BASE-T:

Pin	Definition	Pin	Definition
1	TX_D0+	5	BI_D2-
2	TX_D0-	6	RX_D1-
3	RX_D1+	7	BI_D3+
4	BI_D2+	8	BI_D3-

- LAN Port LED Indications:

Activity/Link LED	
Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED	
Status	Description
Off	10Mbps connection
Off	100Mbps connection
Green	1Gbps connection

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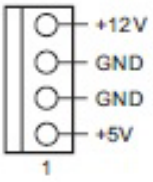
Part3.Internal Interface:

SATA Connector:

Pin	Definition
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

SATA Power Connector:



Pin	Definition
1	+5V
2	GND
3	GND
4	+12V

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Chapter 3. System Installation

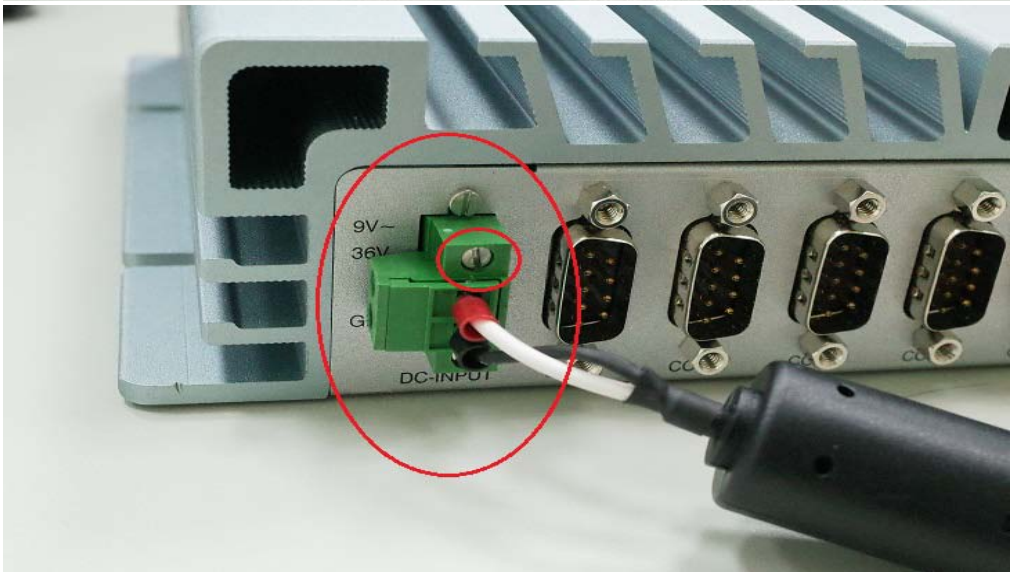
Installation Procedures:

1. Connecting Power Cord

The BOX-PC(BPC-3030) can support wide range DC-input (9~36V). Besure to handle the power cord by holding the plug end only. Follow these proceduresto connect the power cord:

(1) Connect the male end(Phoenix connector) of the power cord to the DC-Input connector ofBPC-3030 and lock it.

(2) Connect the 3-pin male plug of the power cord to an electrical outlet.



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2.Connecting Keyboard and Mouse

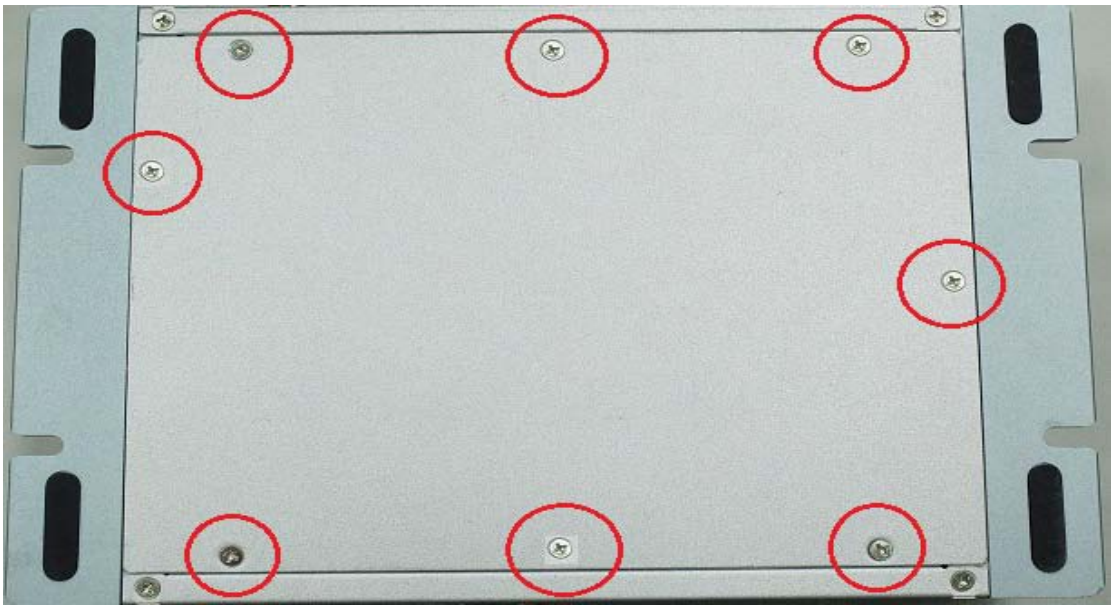
Connect the mouse and keyboard to the USB connector of BPC-3030.

3. Switching on Power

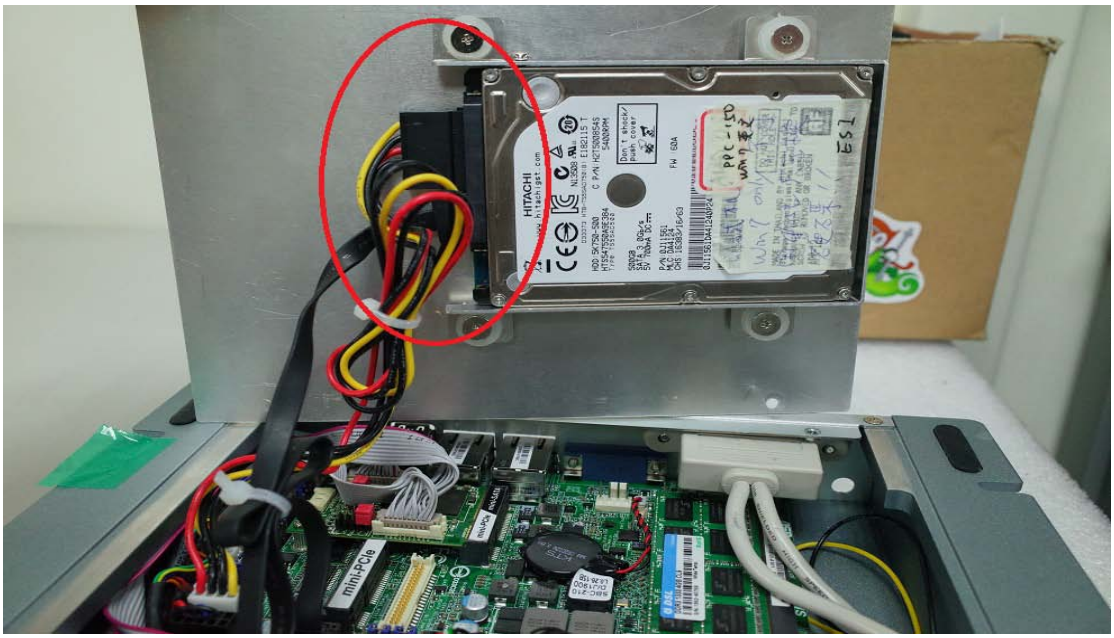
The power button is located at the right side on the front cover of BPC-3030.

Installing HDD/SSD:

1.Unfasten the 8screws on the chassisand open the bottom cover.



2. Unfasten the SATA cable and SATA power cable on the HDD/SSD



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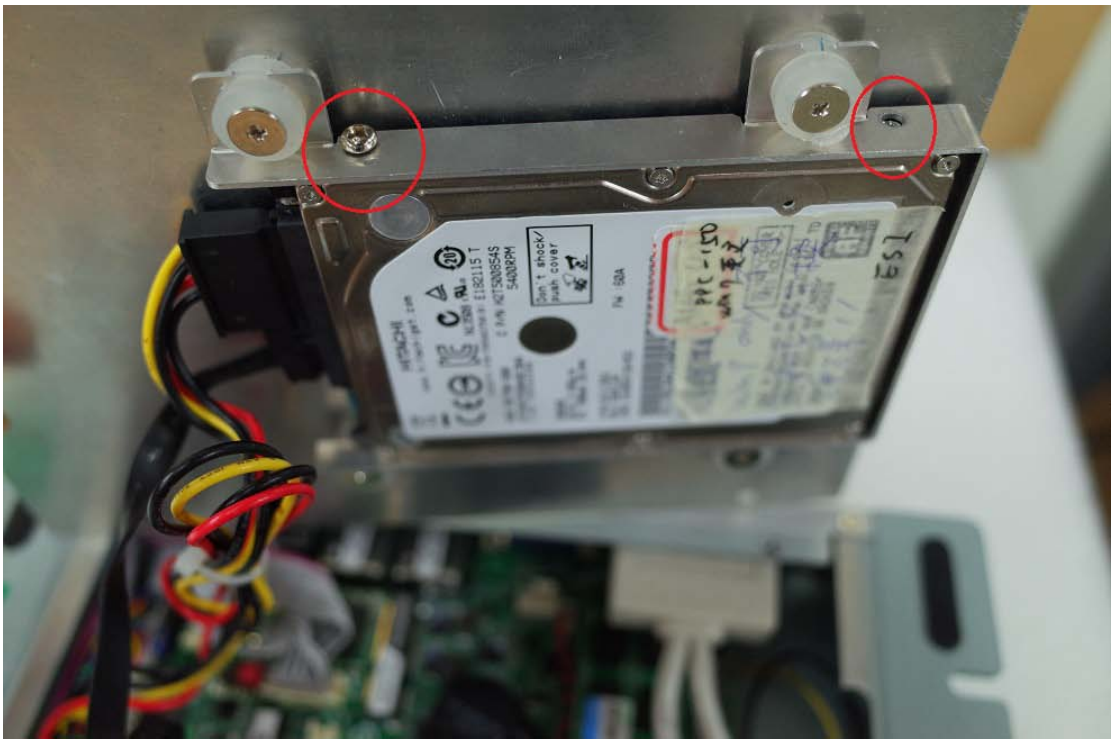
3. Unfasten the 4 screws on the HDD/SSD bracket.



4.Installanother HDD/SSD and fasten all screws.

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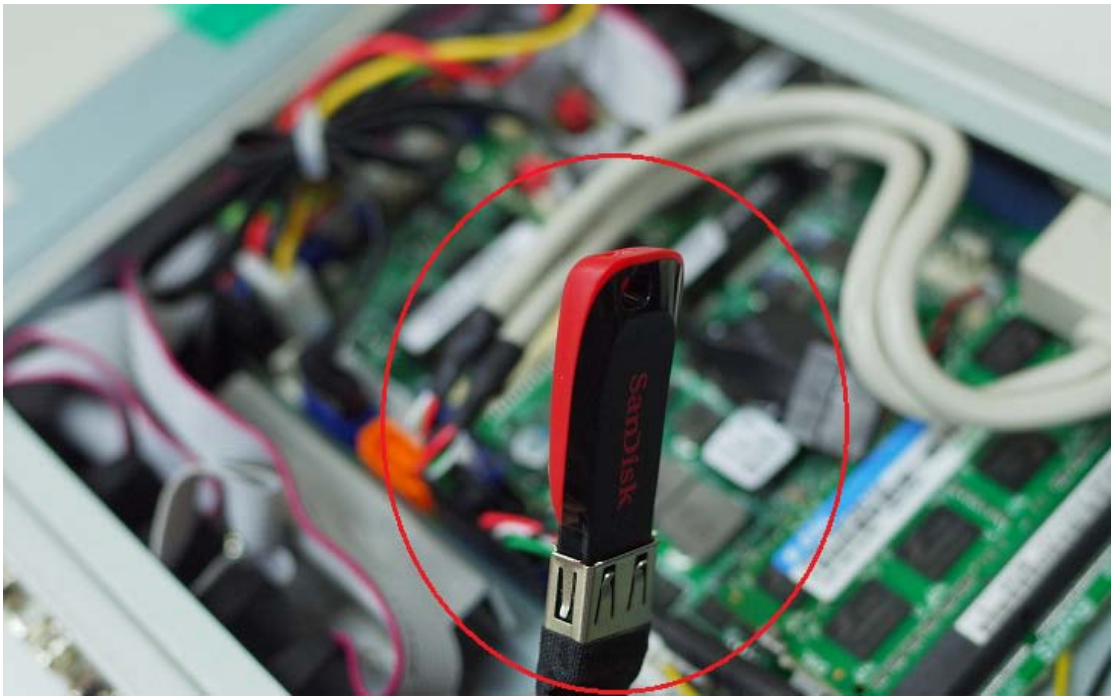
Installing USB dongle inside the Box-PC:

1.Unfasten the 8 screws on the chassis and open the bottom cover.

2. Users will see the internal USB port for Keypro and the USB lock shown in the following picture.

3. Plug users' USB dongle in the internal USB port.



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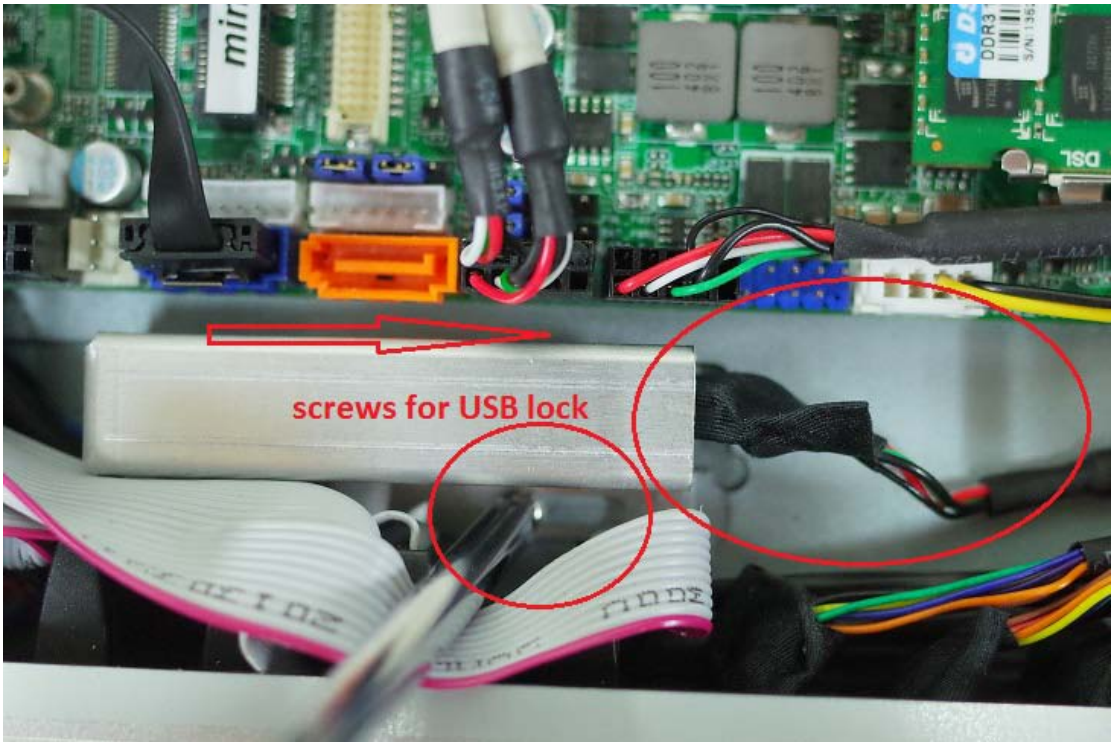
4. Loosen the 2 screwson the USB lock and slide it to right position .
5. Insert the USB dongle into the lock.
6.Slide the USB lock to lock the USB dongle and fasten the 2 screws on the USB lock.



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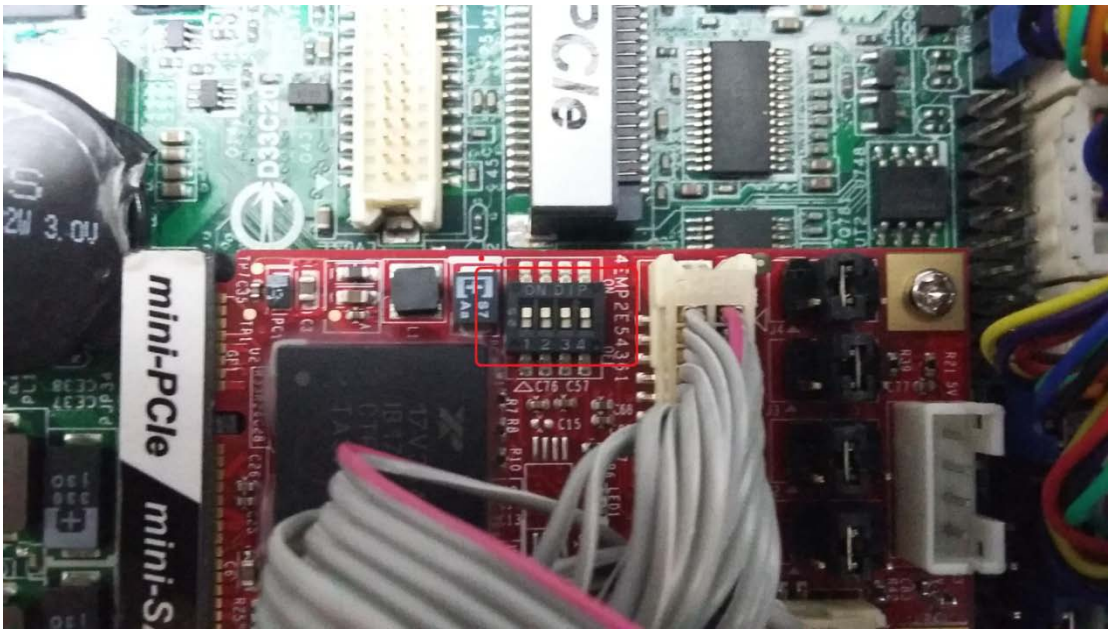
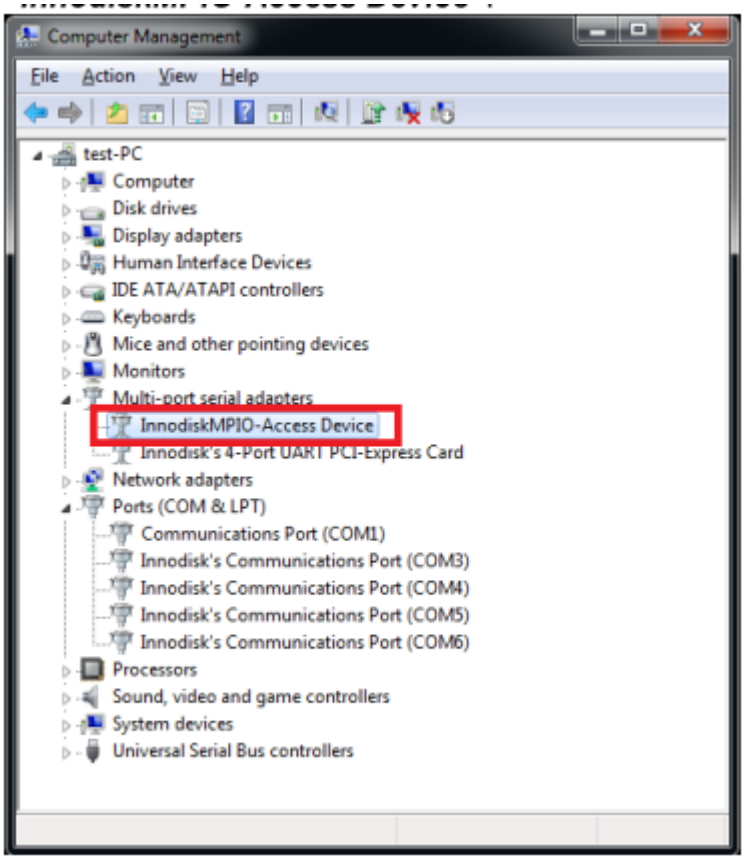
Set up com5~8(RS-232/422/485)

1.Check Jumper Setting,please turn on by RS485 Half



2.Check deviec manager



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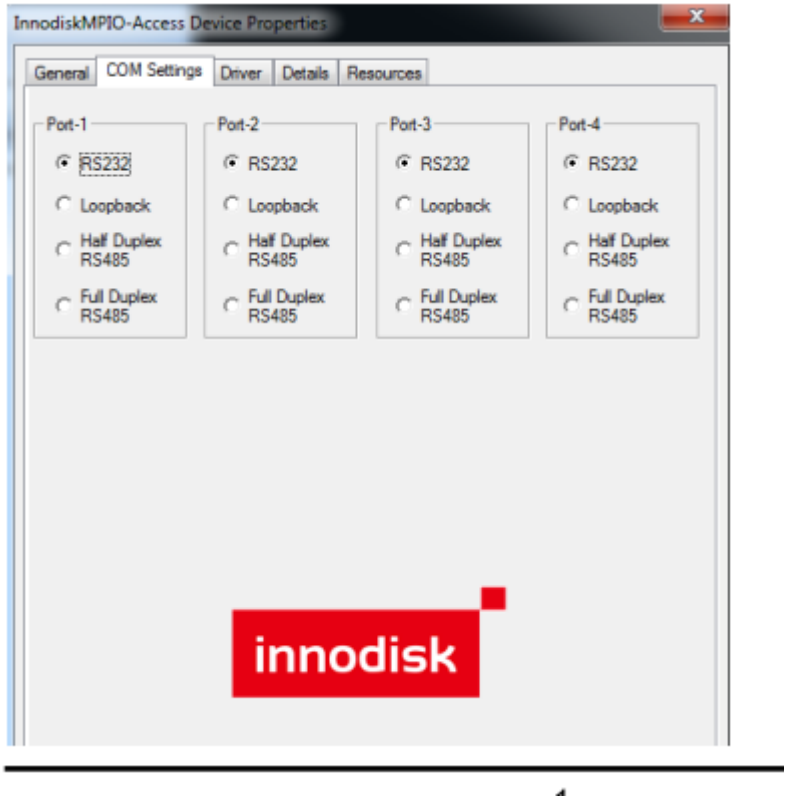
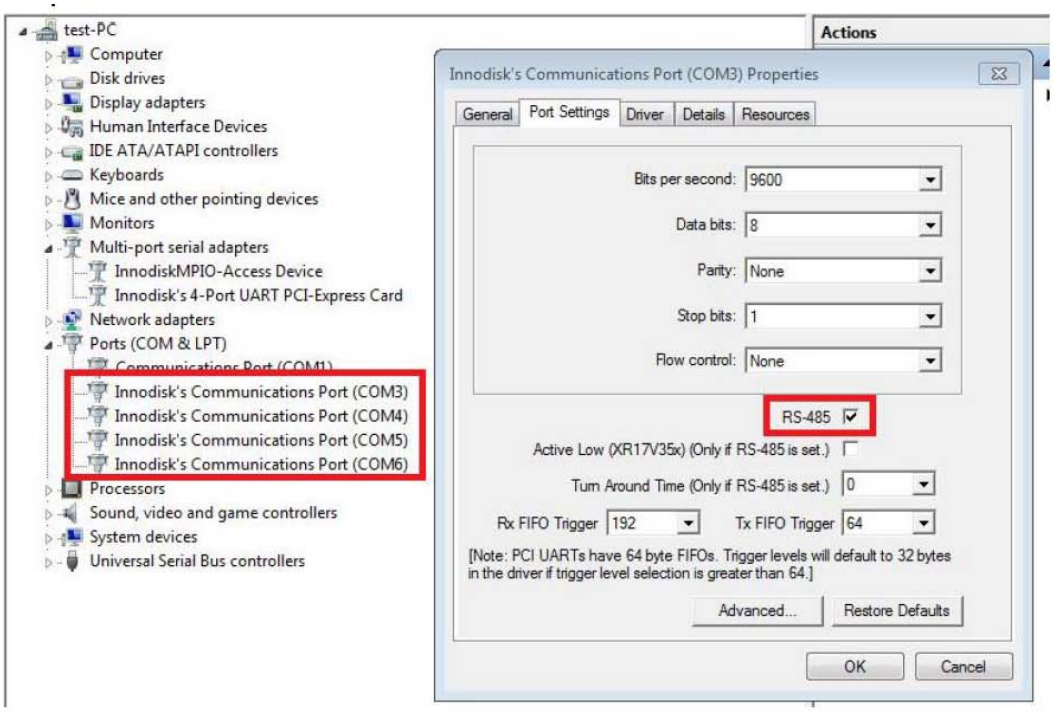
3.comport setting" Half duplex RS-485"



4.



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Chapter 4. BIOS Setting

The BIOS (Basic Input/Output System) installed in yourcomputer system's ROM supports Intel processors. The BIOS providescritical low-level support for a standard device such as disk drives, serialports and parallel ports. It also adds virus and password protection aswell as special support for detailed fine-tuning of the chipset controllingthe entire system.The BIOS provides a Setup utility program for specifying thesystem configurations and settings. The BIOS ROM of the system storesthe Setup utility.

When you turn on the computer, the BIOS isimmediately activated. Pressing the <Del> key immediately allows youto enter the Setup utility.

When you enter the BIOS Setup utility, the top of the screen has a menu bar with the following selections:

- Main To set up the system time/date information

- Advanced To set up the advanced UEFI features

- H/W Monitor To display current hardware status

- Security To set up the security features

- Boot To set up the default system device to locate and load the Operating System

- Exit To exit the current screen or the UEFI SETUP UTILITY

Use ←key or → key to choose among the selections on the menu bar.

Use<Enter>key to get into the sub screen or an item.

Use ↓ key or ↑ key to move cursor down or up to select items.

Use <Exit> key to exit current screen

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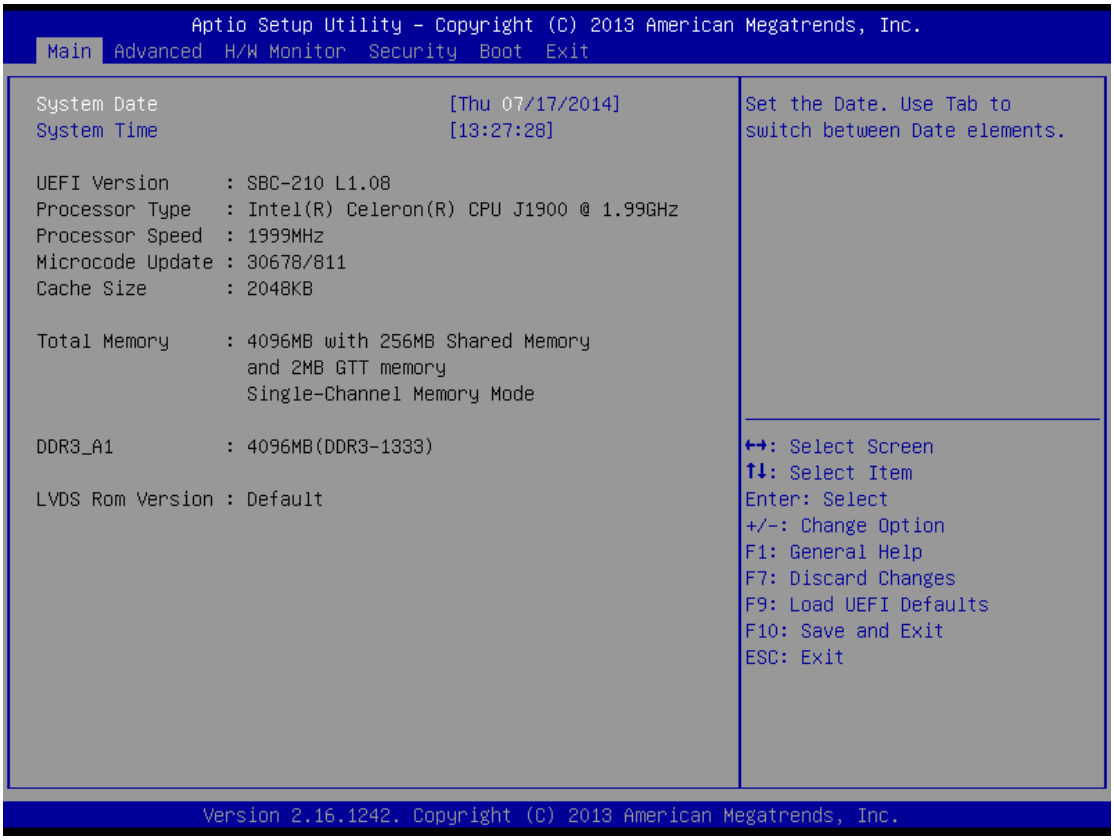
Part1. Main

This section (Main screen) displays the system overview.



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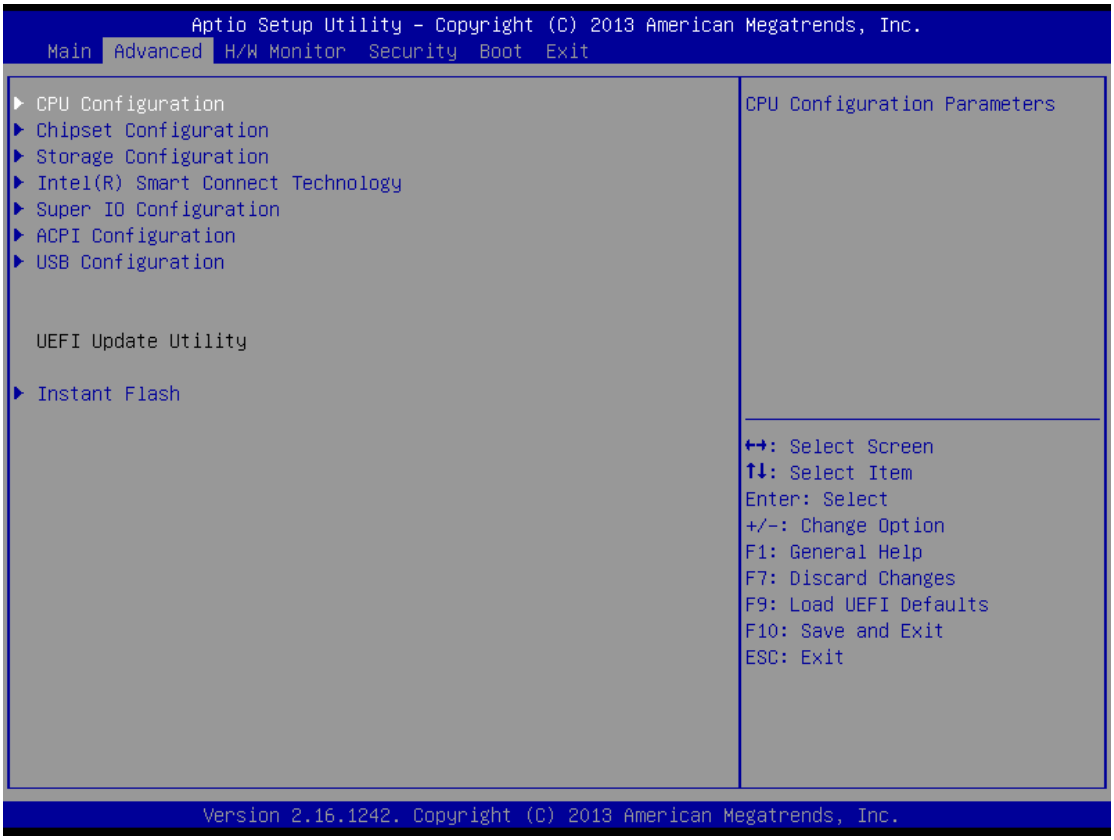
Part2. Advanced

This section allowsusers to set the configurations for the following items:

- **CPU Configuration,**
- **Chipset Configuration,**
- **Storage Configuration,**
- **Intel(R) Smart Connect Technology,**
- **Super IO Configuration,**
- **ACPI Configuration and USB Configuration.**
- **USB Configuration**
- **Instant Flash**



NOTE:

Setting wrong values in this section may cause the system to malfunction.

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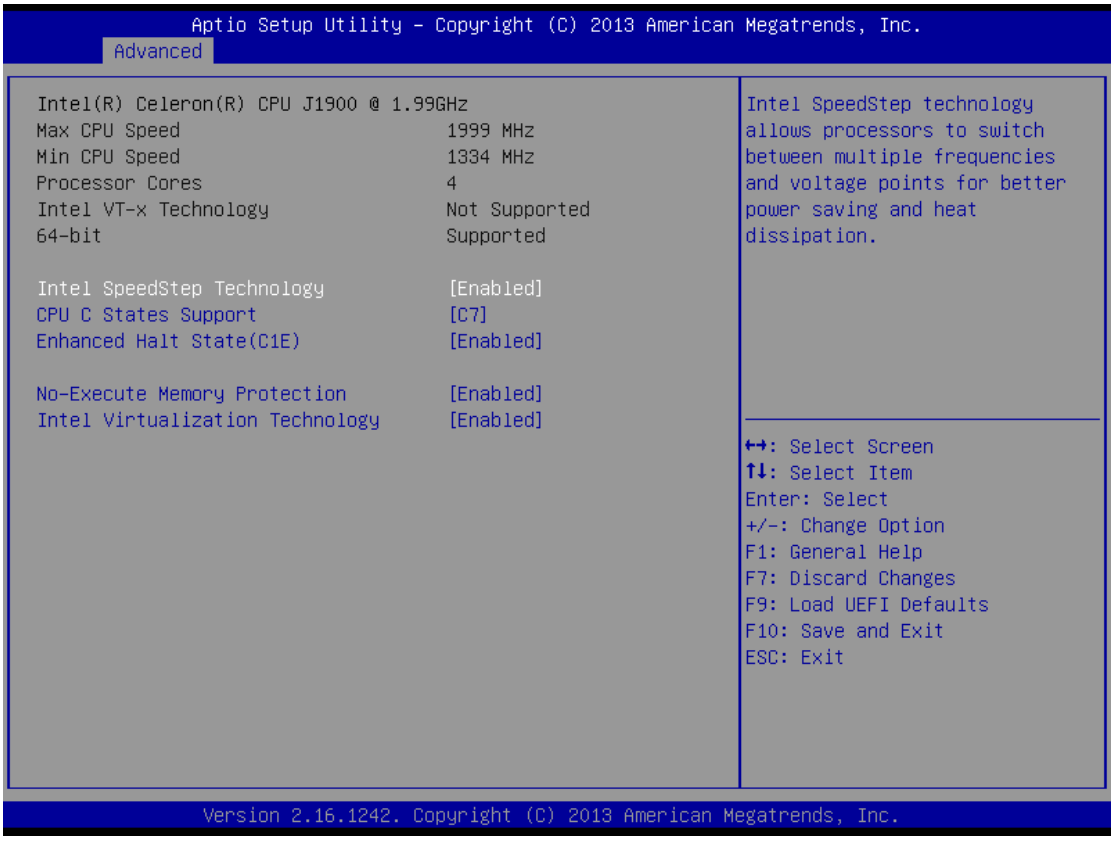
2.1CPU Configuration



2.1.1Intel SpeedStep Technology

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving.

If you install Windows7 / 8 and want to enable this function, please set this item to [Enabled].

**NOTE: Enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.

2.1.2CPU C States Support

EnableCPUCStatesSupportfor powersaving.Itisrecommendedto keep C3 enabled, C6 and C7 disabled.

2.1.3 Enhanced Halt State (C1E)

This item allows users to enable or disable Enhanced Halt State (C1E) for lower power consumption.

2.1.4 No-Excute Memory Protection

No-Execution(NX)MemoryProtectionTechnology is an enhancementto the

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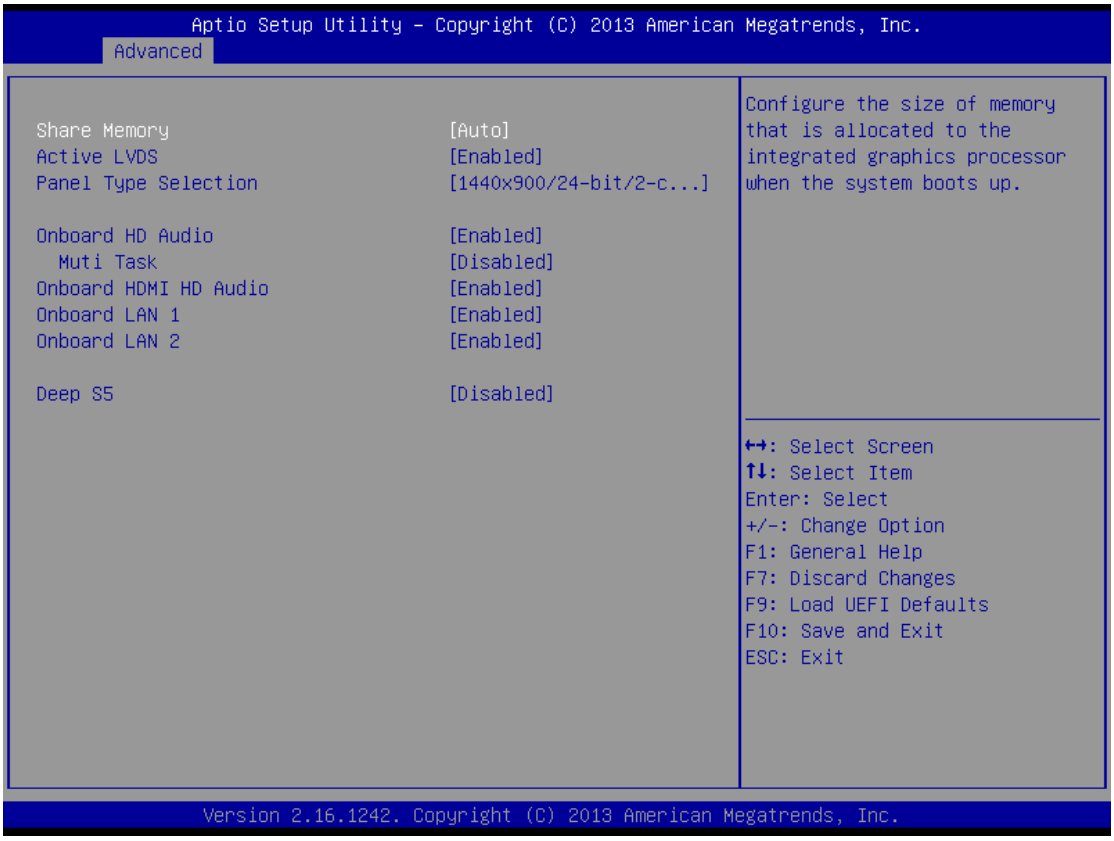
IA-32 Intel Architecture. An IA-32 processor with “No Execute (NX)Memory Protection” can prevent data pages from being used by malicious software to execute code.

2.1.5 Intel Virtualization Technology

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by VanderpoolTechnology.

2.2 Chipset Configuration



2.2.1 Share Memory

This item allows users to configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

2.2.2 Active LVDS

This item allows users toenable or disable the LVDS.

2.2.3 Panel Type Selection

This item allows users to select panel type.

2.2.4 Onboard HD Audio

This item allows users to enable or disablethe onboard HD Audio.

2.2.5 Onboard HDMI HD Audio

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This item allows users to enable or disable the Onboard HDMI HD Audio.

2.2.6 Onboard LAN 1

This item allows users to enable or disable the Onboard LAN 1.

2.2.7 Onboard LAN 2

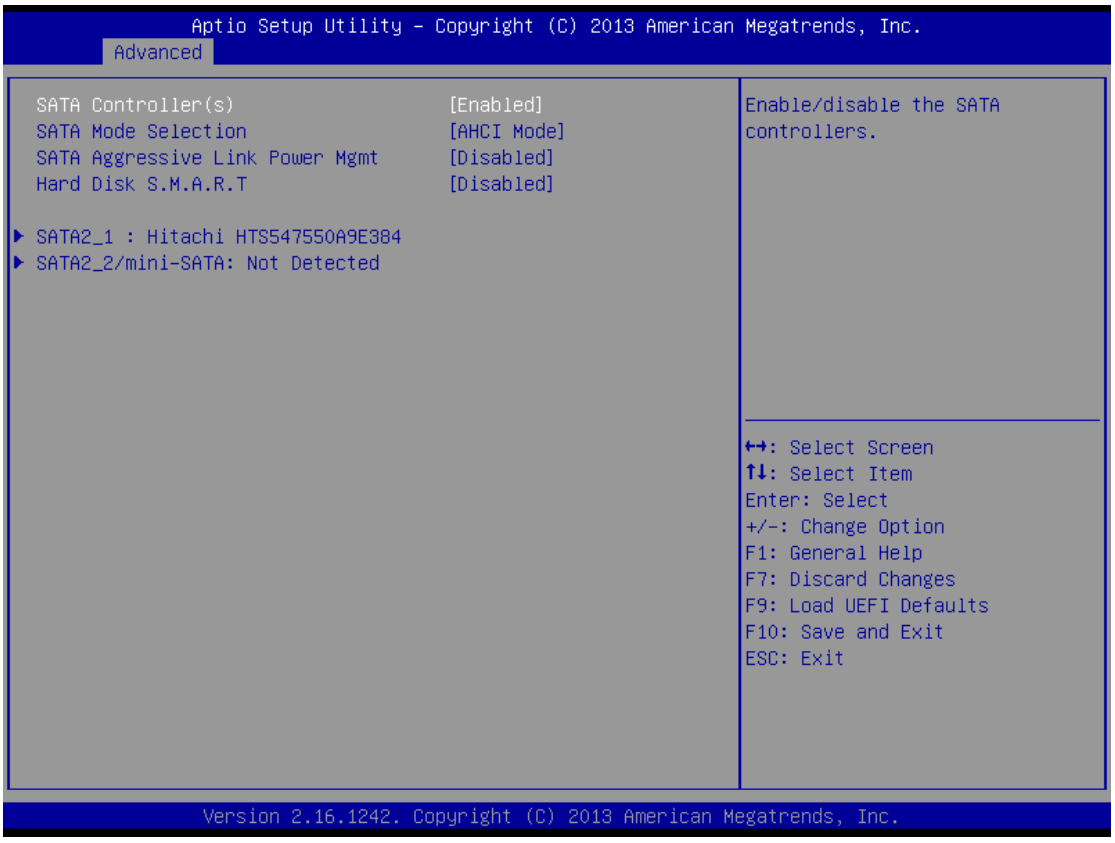
This item allows users to enable or disable the Onboard LAN 2.

2.2.8 Deep S5

This item allows users to enable or disable Deep S5.

[Auto] will disable the deep S5 configuration if RTC/LAN/USB device power on settings enabled.

2.3Storage Configuration



2.3.1 SATA Controller(s)

This item allows users to enable or disable the SATA Controller.

2.3.2 SATA Mode Selection

This item allows users to select SATA mode.

IDE: For better compatibility.

AHCI: Supports new features that improve performance.

**NOTE: AHCI(Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDEmode

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does not have these advantages.

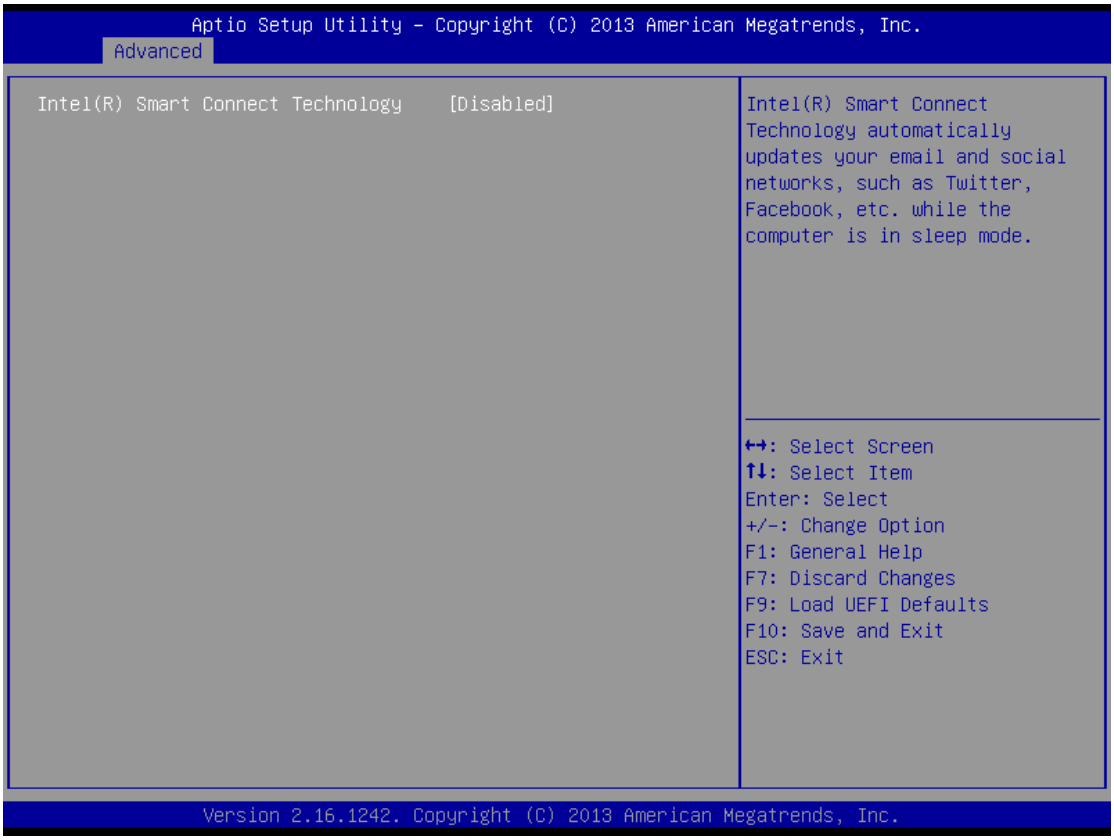
2.3.3 SATA Aggressive Link Power Management

This item allows users to enable or disable SATAAggressiveLinkPower Management.

2.3.4 Hard Disk S.M.A.R.T.

This item allows users to enable or disable the S.M.A.R.T. (Self-Monitoring,Analysis,andReportingTechnology).

2.4. Intel(R) Smart Connect Technology



2.4.1 Intel(R) Smart Connect Technology

This item allows users to enable or disable Intel(R) Smart Connect Technology.

Intel(R) Smart Connect Technology keeps your e-mail and social networks, such as Twitter, Facebook, etc. updated automatically while the computer is in sleep mode.

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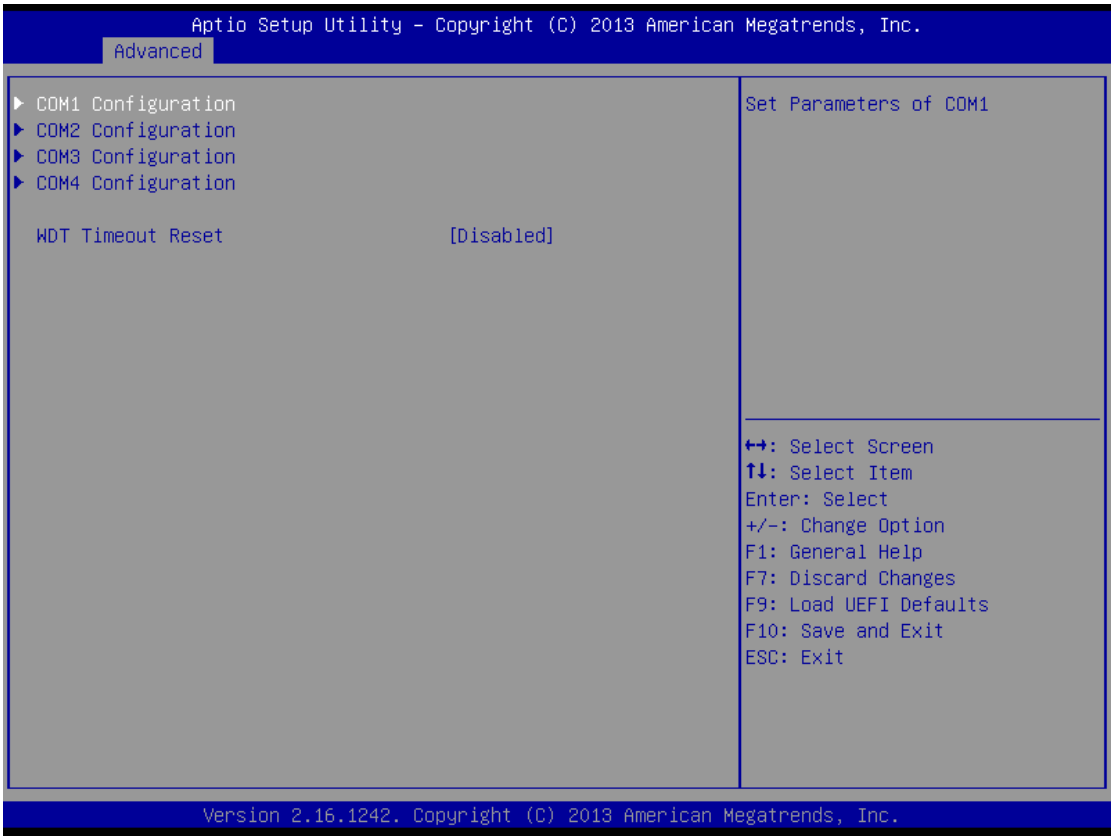
2.5 Super IO Configuration



2.5.1 COM1 Configuration

This item allows users to set parametersof COM1.

SelectCOM1 port type: [RS232],[RS422] , [RS485] or [Disabled].

2.5.2 COM2 Configuration

This item allows users toenable or disable COM2.

2.5.3 COM3 Configuration

This item allows users toenable or disable COM3.

2.5.4 COM4 Configuration

This item allows users toenable or disable COM4.

2.5.5 WDT Timeout Reset

This item allows users toenable or disable the Watch Dog Timer timeout to reset system.

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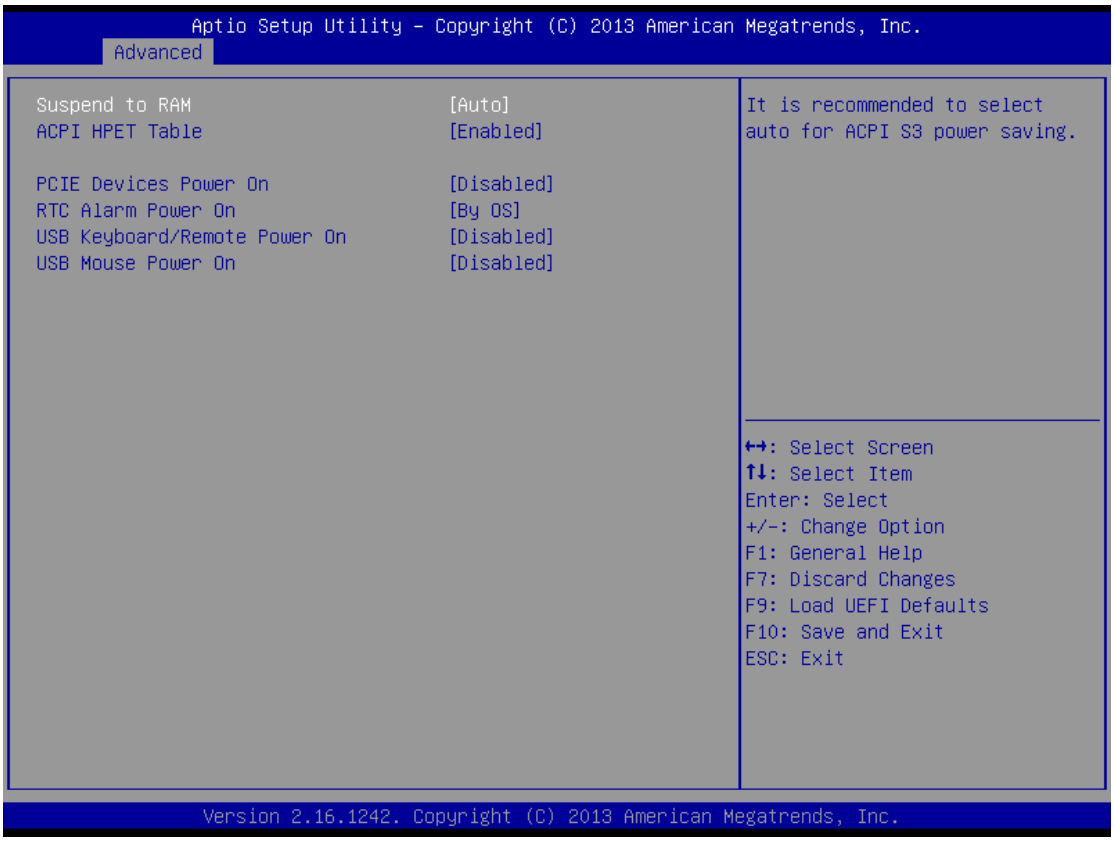
2.6 ACPI Configuration



2.6.1 Suspend to RAM

This item allows users to select whether to auto-detector disable the Suspend-to-RAM feature.

Select [Auto] will enable this feature if the OS supports it.

2.6.2 ACPI HPET Table

This item allows users toto enableor disable ACPI HPET Table.

Please set this option to [Enabled] if you plan to use this motherboard to submit Windows®certification.

2.6.3 PCIE Devices Power On

This item allows users to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

2.6.4 RTC Alarm Power On

This item allows users to enable or disable RTC (Real Time Clock) to power on the system.

When users sets it to [By OS] , system wake-up will be handled by your operating system.

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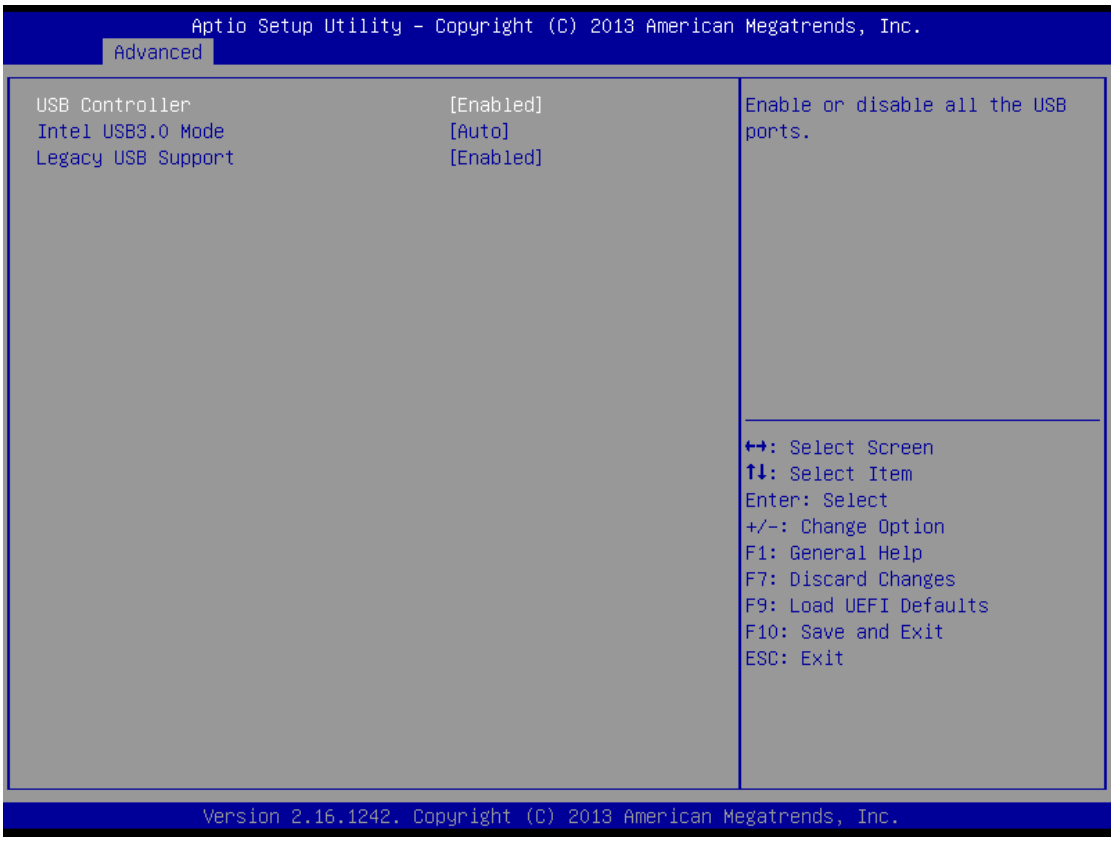
2.6.5 USB Keyboard/Remote Power On

This item allows users to enable or disable USB Keyboard/Remote to power on the system.

2.6.6 USB Mouse Power On

This item allows users to enable or disable USB Mouse to power on the system.

2.7 USB Configuration



2.7.1 USB Controller

This item allows users to enable or disable the use of USB controller.

2.7.2 USB 3.0 Controller

This item allows users to enable or disable the use of USB 3.0 controller.

2.7.3 Legacy USB Support

This item allows users to select legacy support for USB devices.

There are four configuration options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

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2.8 Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

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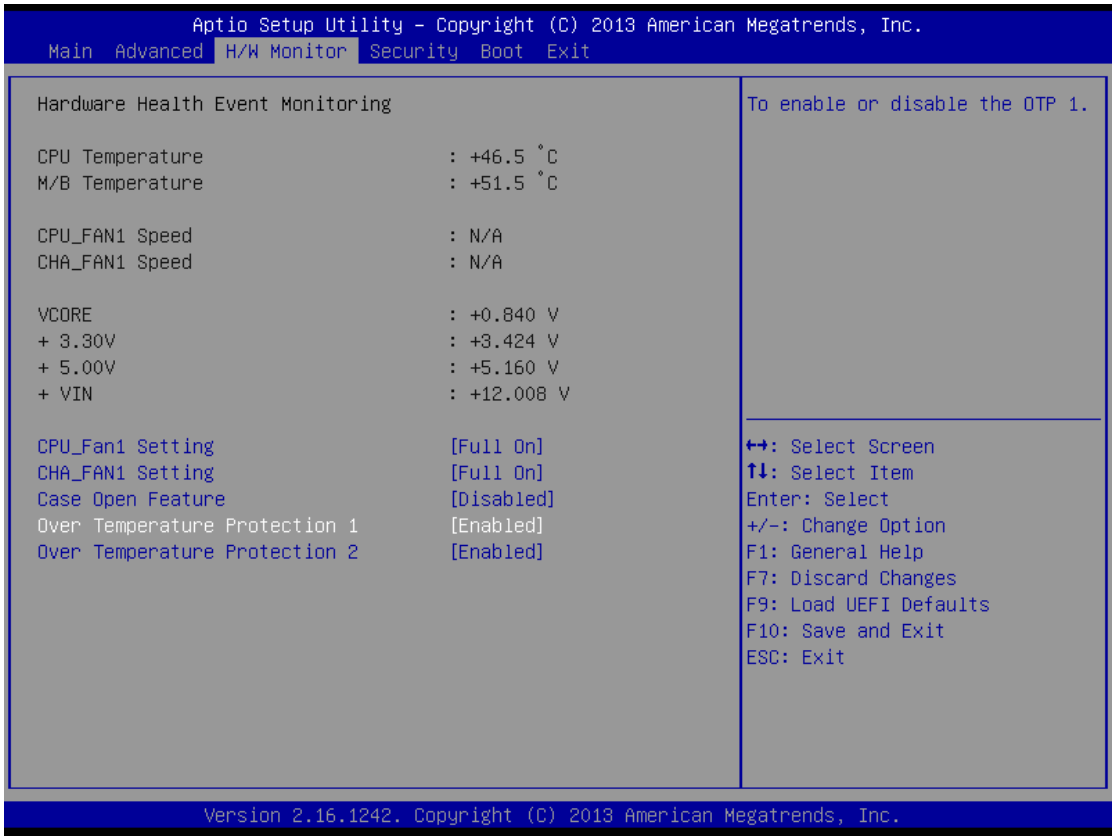
Part3. H/W Monitor

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



3.1 CPU_FAN1 Setting

This item allows users to set CPU fan 1's speed.

The default value is [Full On].

3.2 CHA_FAN1 Setting

This item allows users to set chassis fan 1's speed.

The default value is [Full On].

3.3 Case Open Feature

This item allows users to enable or disable case open detection feature.

The default is value [Disabled].

3.4 Over Temperature Protection 1

This item allows users to enable or disable the OPT 1.

3.5 Over Temperature Protection 2

This item allows users to enable or disable the OPT 2.

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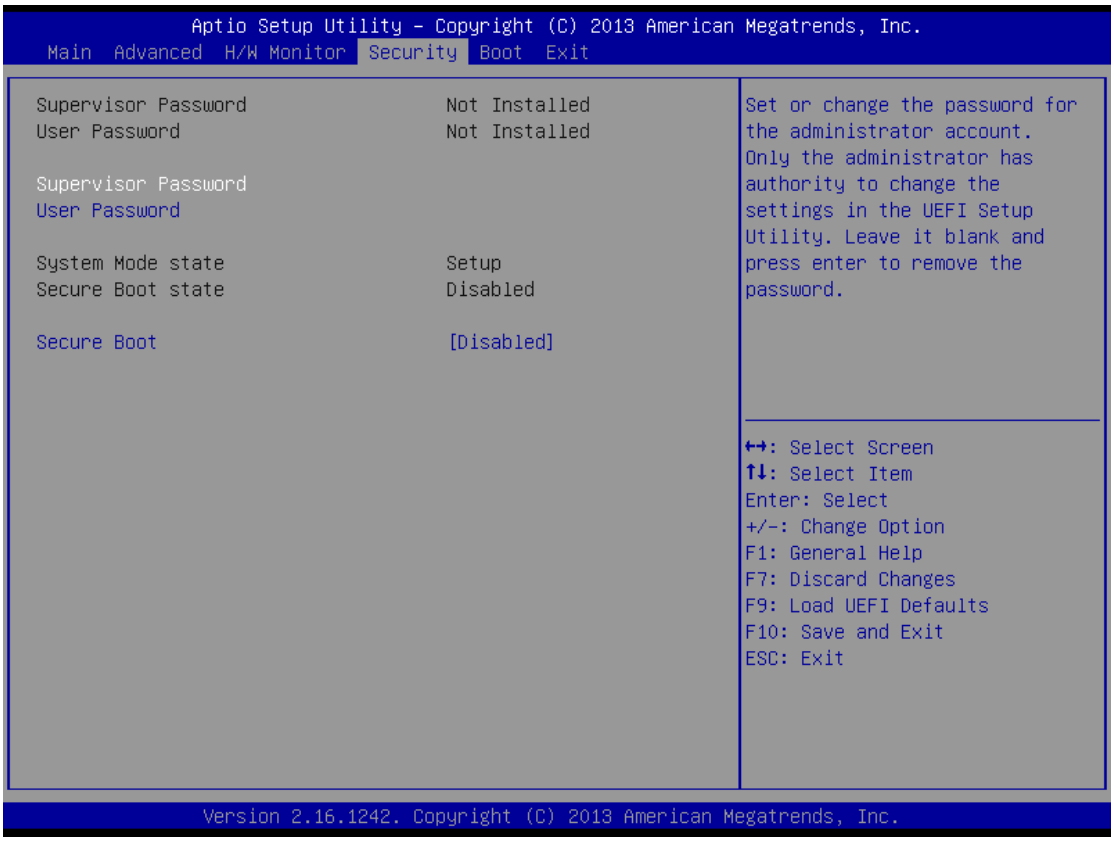
Part4. Security

In this section, you may set, change or clear the supervisor/user password for the system.



4.1 Supervisor Password

Set orchange the password for the administrator account.Only the administrator has authority to change the settings in the UEFI Setup Utility.

Leave it blank and press enter to remove the password.

4.2 User Password

Set or change the password for the user account. Usersare unable to change the settings in the UEFI Setup Utility.

Leave it blank and press enter to remove the password.

4.3 Secure Boot

Set [Enabled] to support Windows 8 Secure Boot.

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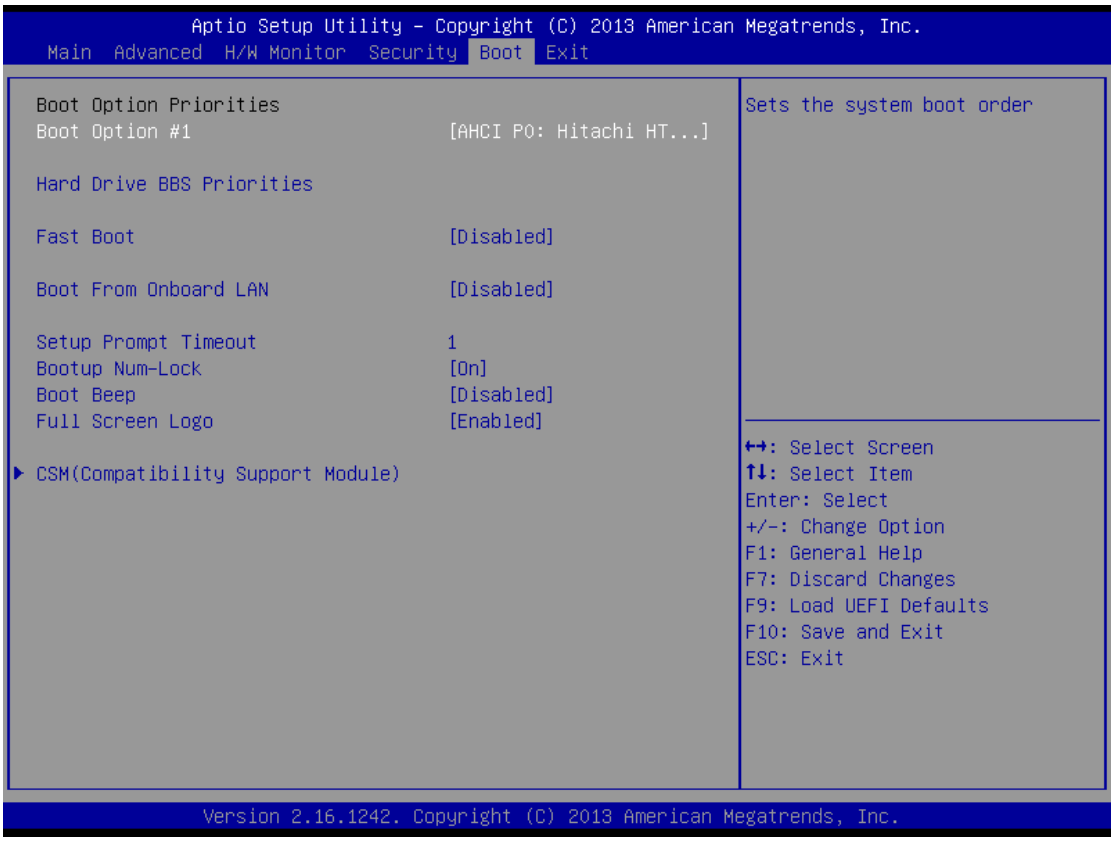
Part5. Boot

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.



5.1 Boot Option #1

This item allows users to set the system boot order.

5.2 Hard Drive BBS Priorities

This item allows users to set the order of the lagacy devices in this group.

5.3 Fast Boot

Fast Boot minimizes your computer's boot time.

In [fast mode] you may not boot from an USB storage device.

[Ultra Fast mode] is only supported by Windows 8 and the VBIOS must support UEFI GOP if you are using an external graphics card.

5.4 Boot From Onboard LAN

This item allows users to enable or disable the Boot From Onboard LAN.

5.5 Setup Prompt Timeout

This item allows users toconfigure the number of seconds to wait for setup activation key.

[65535(0XFFFF)]means indefinite waiting.

5.6 BootupNum-Lock

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If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

5.7 Boot Beep

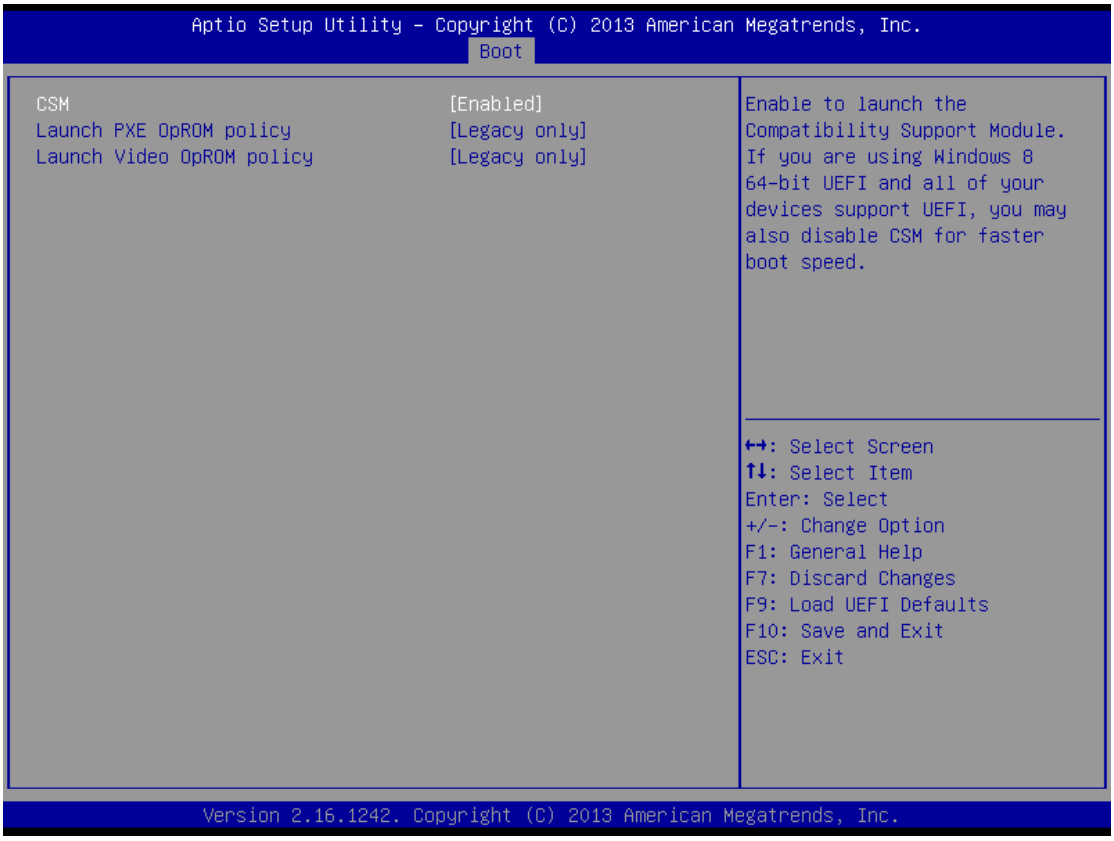
This item allows users toselect whether the Boot Beep should be turned on or off when the system boots up.

Please note that a buzzer is needed.

5.8 Full Screen Logo

This item allows users toenable or disable OEM Logo.

5.9 CSM (Compatibility Support Module)



5.9.1 CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows® 8 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.

5.9.2 Launch PXE OpROM Policy

Select [UEFI only] to run those that support UEFI option ROM only. Select [Legacy only] to run those that support legacy option ROM only.

5.9.3 Launch Video OpROM Policy

Select [UEFI only] to run those that support UEFI option ROM only.

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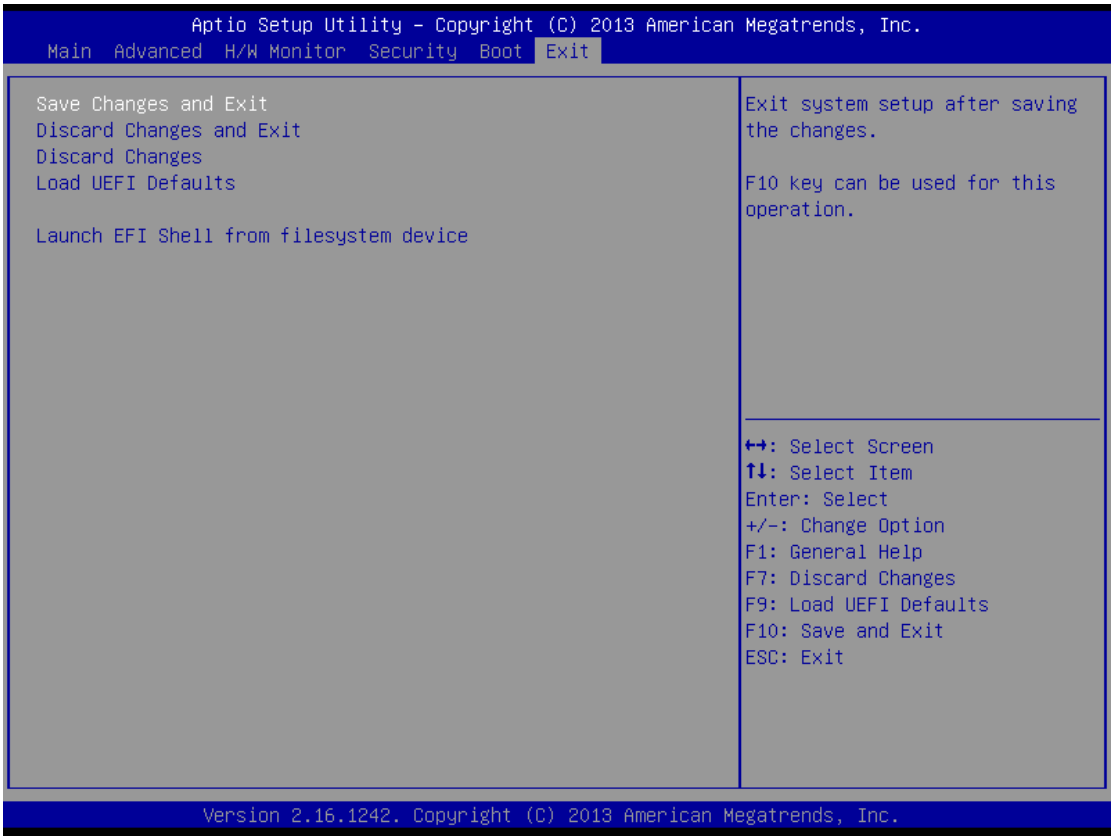
Select [Legacy only] to run those that support legacy option ROM only.

Part6. Exit



6.1 Save Changes and Exit

When you select this option, it will pop-out the following message, “Save configuration changes and exit setup?”

Select [OK] to save the changes and exit the UEFI SETUP UTILITY.

6.2 Discard Changes and Exit

When you select this option, it will pop-out the following message, “Discard changes and exit setup?”

Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

6.3 Discard Changes

When you select this option, it will pop-out the following message, “Discard changes?”

Select [OK] to discard all changes.

6.4 Load UEFI Defaults

Load UEFI default values for all the setup questions.

6.5 Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell64.efi) from one of theavailable filesystem devices.

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About Arestech

Arestech, founded in 2011, employs a highly talented R&D team with over a decade of product development experience in intelligent embedded computing.

With our dynamic expertise in the embedded market, Arestech offers a full range of intelligent systems, including embedded Box PCs, industrial multi-touch displays and multi-touch Panel PCs.

Arestech's dedication to product development is matched by its commitment to world class customer support with a minimum 5-year product lifecycle plan, product longevity, and added value for our partners.

Additionally, Arestech strategically aligns itself with key industry software and system integration partners to deliver top-notch design services and turnkey solutions, enabling our partners to better build and grow their businesses.

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