



**NEXCOM International Co., Ltd.**

**Intelligent Platform & Services Business Unit**

**Embedded Computing (3.5" CPU Board)**

**EBC 355A**

User Manual

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# PREFACE

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## Disclaimer

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## Acknowledgements

EBC 355A is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

## Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

## Declaration of Conformity

### FCC

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

### CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

## RoHS Compliance



### **NEXCOM RoHS Environmental Policy and Status Update**

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

### **How to recognize NEXCOM RoHS Products?**

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

## Warranty and RMA

### NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

### NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the “NEXCOM RMA Service Form” with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the “NEXCOM RMA Service Form” for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as “Out of Warranty.”
- Any products returned by NEXCOM to other locations besides the customers’ site will bear an extra charge and will be billed to the customer.

### Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

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### System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

### Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

## Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

## Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

## Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

## Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.



## Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect the equipment from any AC outlet before cleaning or installing a component inside the chassis. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. To prevent electrostatic build-up, leave the board in its anti-static bag until you are ready to install it.
5. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
6. Keep the board away from humidity.
7. Put the board on a stable surface. Dropping it or letting it fall may cause damage.
8. Wear anti-static wrist strap.
9. Do all preparation work on a static-free surface.
10. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
11. Hold the board only by its edges. Be careful not to touch any of the components, contacts or connections.
12. All cautions and warnings on the board should be noted.
13. Use the correct mounting screws and do not over tighten the screws.
14. Keep the original packaging and the anti-static bag; in case the board has to be returned for repair or replacement.

## Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at [www.nexcom.com](http://www.nexcom.com).
2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
  - Product name and serial number
  - Detailed information of the peripheral devices
  - Detailed information of the installed software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wordings of the error messages

### Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

## Conventions Used in this Manual



### Warning:

Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.



### Caution:

Information to avoid damaging components or losing data.



### Note:

Provides additional information to complete a task easily.

## Global Service Contact Information

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## Package Contents

Before continuing, verify that the EBC 355A package that you received is complete. Your package should have all the items listed in the following table.

Item	Name	Qty
1	EBC 355A	1
2	COM port cable	1
3	SATA + power cable	1

## Optional Accessories

Item	Part Number	Name	Description
1	7400060028X00	Power Adapter	FSP:FSP060-DIBAN2 60W 12V/5A Level VI for McAfee
2	603COM0090X00	COM Port Cable for EBC 355A GREAT IDEAL:YXH17120801	9-pin to Housing 10-pin PIT:2.0mm Pin-10 Sealed L:200mm
3	603USB0084X00	USB Cable for EBC-355A ST:MD-5606151	USB CONx2 + Bracket to Dupont 10P PIT:2.0mm 200mm
4	60233ATA48X00	SATA Cable Best	SATA CON 7P 180D to 180D Connector L:250mm 28AWG

## Ordering Information

The following below provides ordering information for EBC 355A.

### **EBC 355A-N2930 (P/N: 10E00035514X0)**

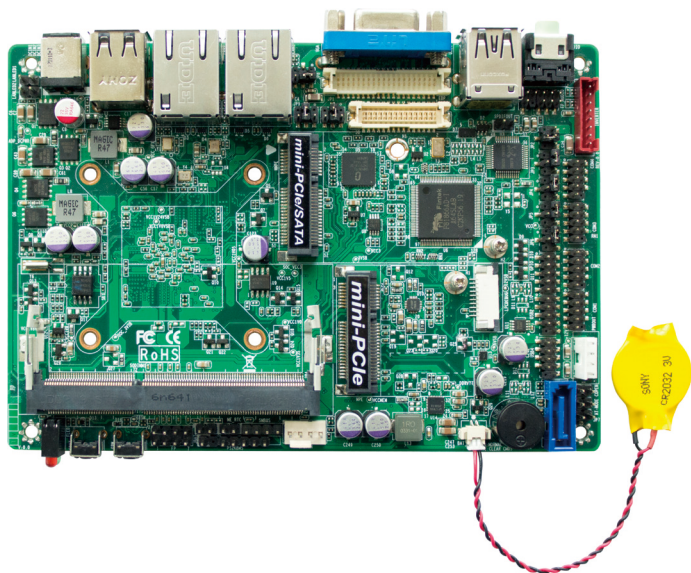
Onboard Intel Atom® Processor N2930, SoC w/DDR3L SO-DIMM, support 1 x VGA, 1 x eDP, 1 x LVDS, 2 x LAN, 1 x SATA, 1 x USB 3.0, 5 x USB 2.0, 1 x Line-out Jack, 1 x full-size mSATA/Mini-PCle, 1 x half-size Mini-PCle, DC +9V~24V input

### **Optional Accessories**

- 12V, 60W power adapter w/o power cord (P/N: 7400060028X00)
- COM port cable (P/N: 6023309105P00)
- USB cable (P/N: 603USB0084X00)

# CHAPTER 1: PRODUCT INTRODUCTION

## Overview



## Key Features

- Onboard Intel Atom® Processor N2930, SoC w/DDR3L SO-DIMM
- Support 1 x VGA, 1 x eDP, 1 x LVDS, 2 x LAN, 1 x SATA, 1 x USB 3.0, 7 x USB 2.0 and 1 x Line-out jack
- Support 1 x full-size mSATA/Mini-PCIe and 1 x half-size Mini-PCIe
- DC +9V~24V input
- 3.5" Fanless
- Optional: Wi-Fi module/mSATA storage

## Hardware Specifications

### CPU Support

- Onboard Intel Atom® Processor N2930 SoC, dual core 1.8GHz, TDP: 7.5W

### Display

- 1 x VGA connector (resolution up to 1920x1200 @ 60Hz)
- 1 x eDP connector (resolution up to 1920x1080 @ 60Hz)
- 1 x LVDS connector (resolution up to 1920x1080 @ 60Hz)

### System

- 1 x DDR3L 1333MHz SO-DIMMs, up to 8GB.
- 2 x GbE LAN: Realtek 8111G GbE
- 4 x RS232, (3 x RS232, 1 x RS232/485/422 by COM1) with 5/12V selectable header
- 1 x USB 3.0, 7 x USB 2.0 ports (3 x connector / 4 in header)
- 1 x HD Audio Jack (Line-out), 1 x SPDIF Out header
- 1 x Front panel audio header
- Watchdog Timer 1~255 sec./min. programmable
- 1 x SMBUS header
- 1 x 8-bit GPIO (4-In/4-Out)
- Support Chassis intrusion
- 1 x DC Jack input

### BIOS

- AMI 64Mb Flash ROM

### Storage Device

- 1 x SATAII 3Gb/s

### Expansion

- 2 x Mini PCI Express slots:  
(Half-size supports PCIe/USB interface)  
(Full-size supports mSATA and PCIe/USB interface)

### Power Requirements

- Single power 9~24V DC input
- AT/ATX mode (by jumper setting, default: ATX)

### Front I/O

- 2 x Button (ATX power on/off & Reset button)
- 2 x LAN LED activity header (Power & HDD LED)

### Rear I/O

- 1 x HD Audio Jack
- 1 x double stack (1 USB 3.0 and 1 USB 2.0)
- 1 x VGA display output
- 1 x double stack USB 2.0
- 2 x RJ45 GbE controller
- 1 x DC jack input

### Mechanical & Environment

- Operating Temperature: 32°F ~ 140°F (0°C ~ 60°C)
- Storage Temperature: -40°F ~ 185°F (-40°C ~ 85°C)
- Relative Humidity: Operating 10%~90%, non-condensing

### Dimension

- Display Head: 3.5" SBC Form Factor (148mm \* 102mm)

### Operating System

- Windows 7, Windows 8.1, Windows 10 (32/64-bit)
- Linux

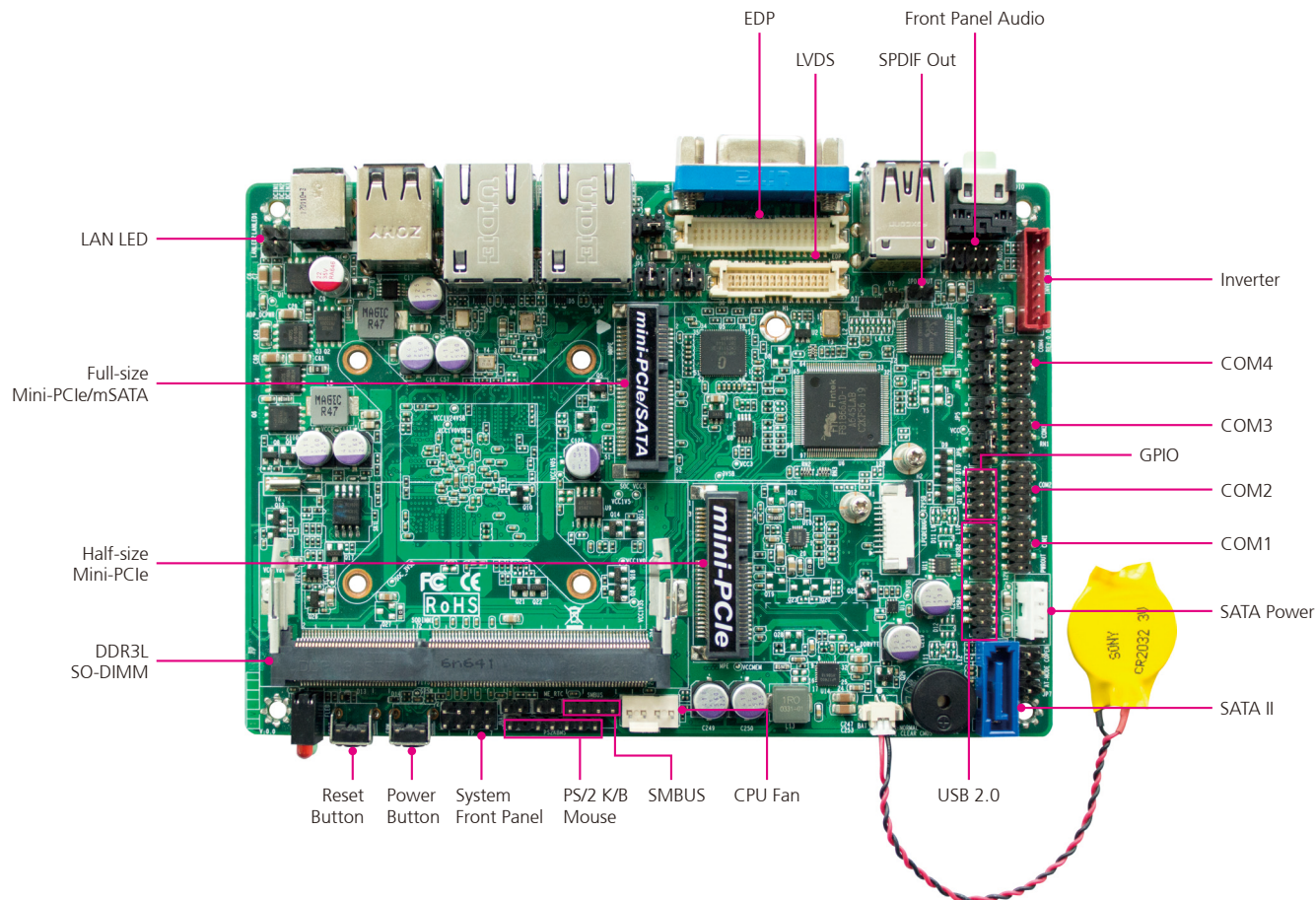
### Certificate

- EMC & Safety
- CE/FCC (Class B)

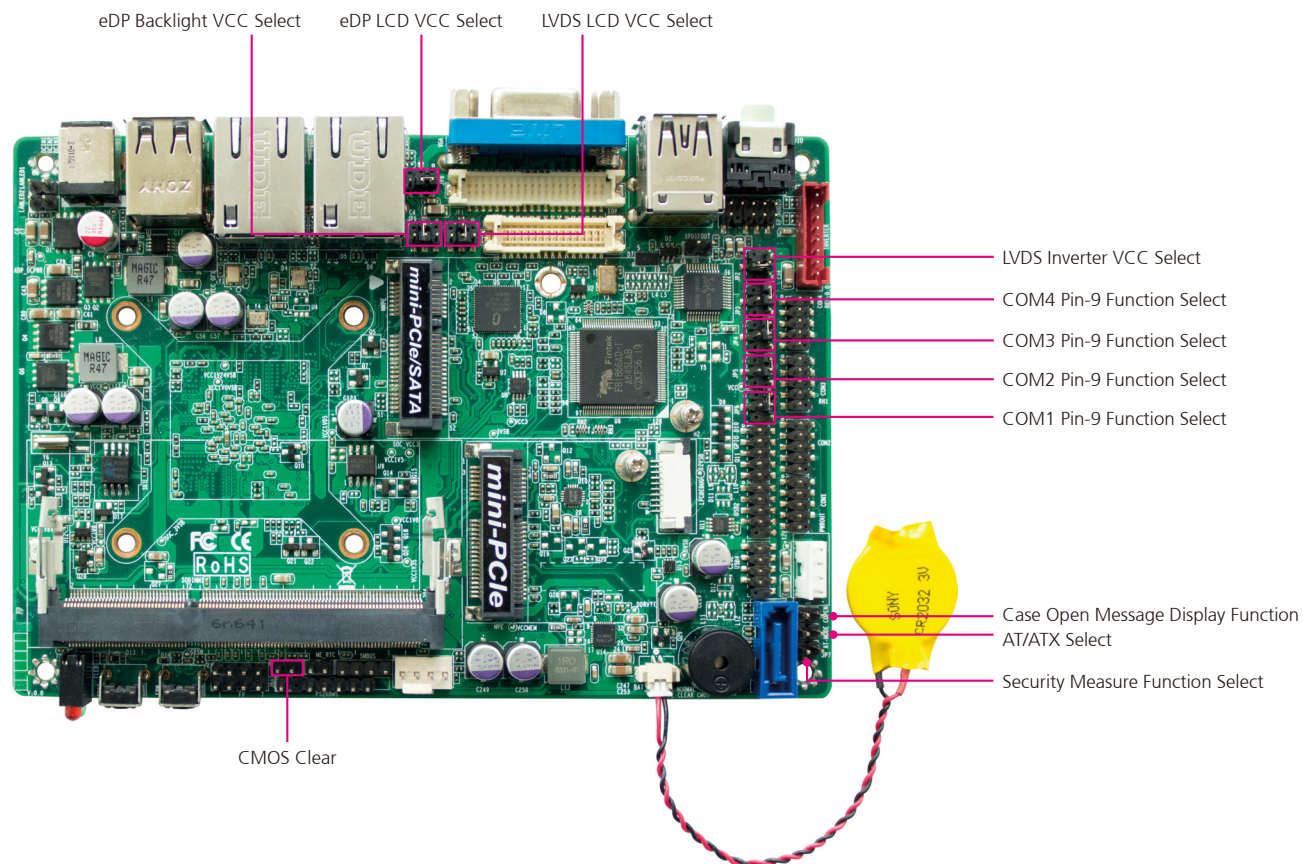


# Knowing Your EBC 355A

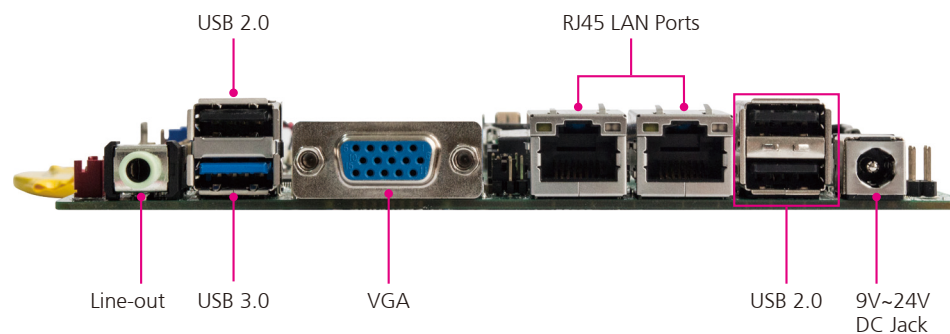
## Location of Connectors and Headers (Top View)



## Location of Jumpers (Top View)



## Edge I/O View



## CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the EBC 355A motherboard.

### Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than

dry environments. A grounding strap is warranted whenever danger of static electricity exists.

### Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

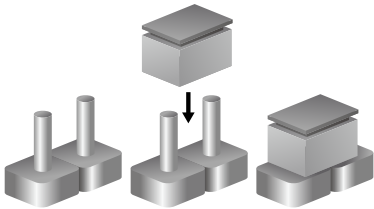
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

## Jumper Settings

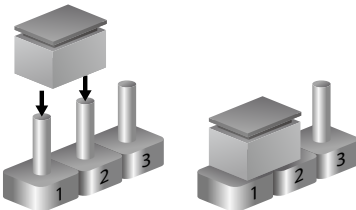
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)

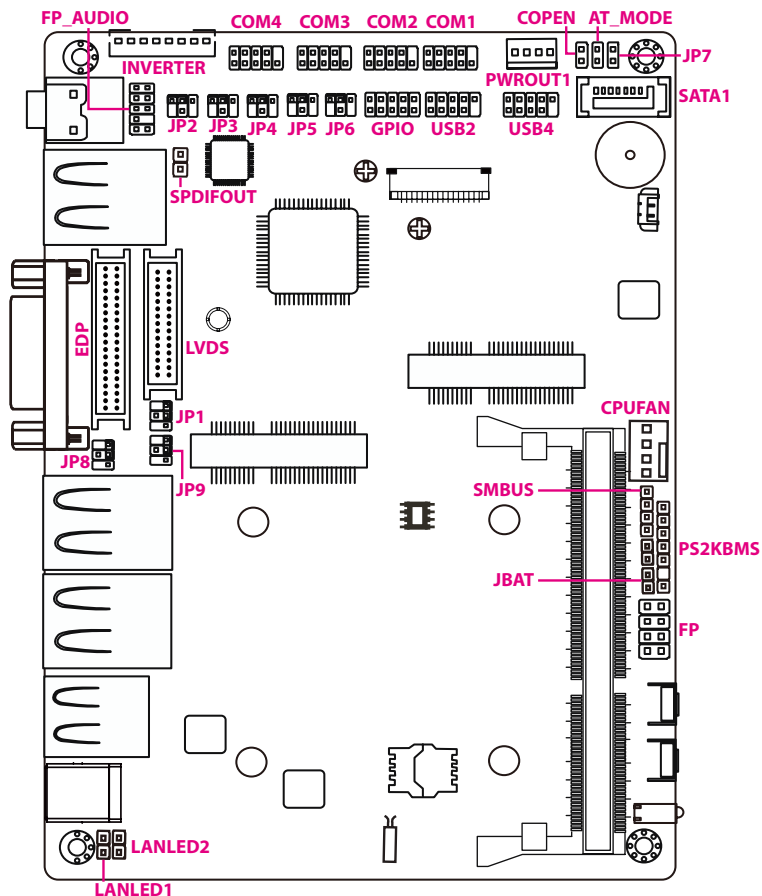


Three-Pin Jumpers: Pins 1 and 2 are Short



## Locations of the Jumpers and Connectors

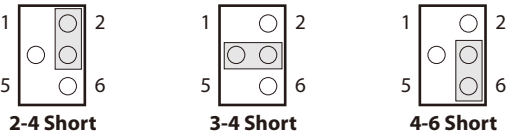
The figure below shows the location of the jumpers and connectors.



Jumpers

LVDS LCD VCC 3.3V/5V/12V Select

Connector type: 2x3 6-pin header  
Connector location: JP1



Pin	Status	Definition
2-4	Short	LCD VCC = 3.3V
3-4	Short	LCD VCC = 5V
4-6	Short	LCD VCC = 12V

LVDS Inverter VCC 5V/12V/Adapter VCC Select

Connector type: 2x3 6-pin header  
Connector location: JP2

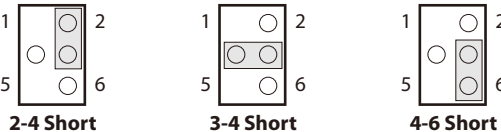


Pin	Status	Definition
2-4	Short	Inverter VCC = 5V
3-4	Short	Inverter VCC = 12V
4-6	Short	Inverter VCC = Adapter VCC



eDP LCD VCC 3.3V/5V/12V Select

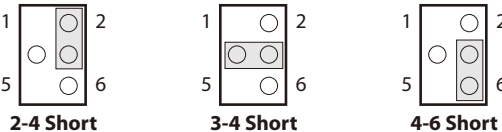
Connector type: 2x3 6-pin header  
Connector location: JP8



Pin	Status	Definition
2-4	Short	eDP LCD VCC = 3.3V
3-4	Short	eDP LCD VCC = 5V
4-6	Short	eDP LCD VCC = 12V

eDP Backlight VCC 3.3V/5V/Adapter VCC Select

Connector type: 2x3 6-pin header  
Connector location: JP9



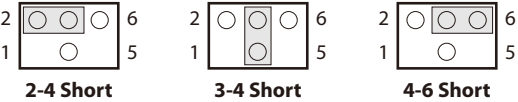
Pin	Status	Definition
2-4	Short	eDP Backlight VCC = 5V
3-4	Short	eDP Backlight VCC = 12V
4-6	Short	eDP Backlight VCC = Adapter VCC





COM4 Header Pin-9 Function Select

Connector type: 2x3 6-pin header  
Connector location: JP3



Pin	Status	Definition
2-4	Short	RI = RS232
3-4	Short	RI = 5V
4-6	Short	RI = 12V

COM3 Header Pin-9 Function Select

Connector type: 2x3 6-pin header  
Connector location: JP4

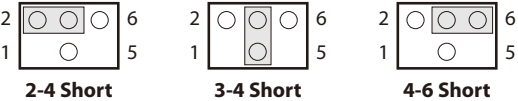


Pin	Status	Definition
2-4	Short	RI = RS232
3-4	Short	RI = 5V
4-6	Short	RI = 12V



COM2 Header Pin-9 Function Select

Connector type: 2x3 6-pin header  
Connector location: JP5



Pin	Status	Definition
2-4	Short	RI = RS232
3-4	Short	RI = 5V
4-6	Short	RI = 12V

COM1 Header Pin-9 Function Select

Connector type: 2x3 6-pin header  
Connector location: JP6



Pin	Status	Definition
2-4	Short	RI = RS232
3-4	Short	RI = 5V
4-6	Short	RI = 12V



### CMOS Clear Select

Connector type: 1x2 2-pin header  
Connector location: JBAT



Pin	Status	Settings
1-2	Open	Normal
1-2	Short	Clear CMOS

### Case Open Message Display Function Select

Connector type: 1x2 2-pin header  
Connector location: COPEN



Pin	Status	Settings
1-2	Open	Disable Case Open Detection
1-2	Short	Enable Case Open Detection

Note: To enable the Case Open Message Display Function, please enter the system BIOS and enable the Case Open Detect option. When enabled, a message will be displayed when the system powers on with the case removed.



### AT/ATX Mode Select

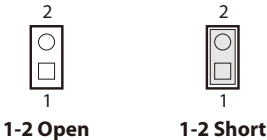
Connector type: 1x2 2-pin header  
Connector location: AT\_MODE



Pin	Status	Settings
1-2	Open	ATX Mode
1-2	Short	AT Mode

### Security Measure Function Select

Connector type: 1x2 2-pin header  
Connector location: JP7



Pin	Status	Settings
1-2	Open	Enable Security Measures in the Flash Descriptor (Default)
1-2	Short	Disable Security Measures in the Flash Descriptor (Override)

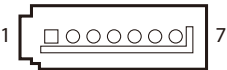


# Connector Pin Definitions

## Internal Connectors

### SATAII Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)  
Connector location: SATA1



Pin	Definition	Pin	Definition
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

### SATA Power Connector

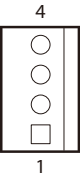
Connector type: 1x4 4-pin header  
Connector location: PWROUT1



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

CPU Fan Connector

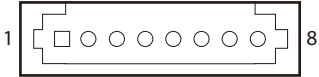
Connector type: 1x4 4-pin header  
Connector location: CPUFAN



Pin	Definition	Pin	Definition
1	GND	2	VCC
3	Fan Clock	4	Control

LVDS Inverter Connector

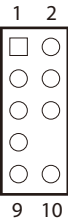
Connector type: 1x8 8-pin header  
Connector location: INVERTER



Pin	Definition	Pin	Definition
1	Backlight Enable	2	Backlight PWM
3	PVCC	4	PVCC
5	GND	6	GND
7	Backlight Up SW	8	Backlight Down SW

Front Panel Audio: Line-out and Mic-in

Connector type: 2x5 10-pin header  
Connector location: FP\_AUDIO



Pin	Definition	Pin	Definition
1	MIC-R	2	GND
3	MIC-L	4	NC
5	Lineout-R	6	NC
7	NC	8	KEY
9	Lineout-L	10	NC

SPDIF Out Header

Connector type: 1x2 2-pin header  
Connector location: SPDIFOUT

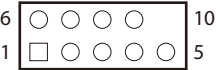


Pin	Settings
1	SPDIFOUT
2	GND



COM1 to COM4 Headers

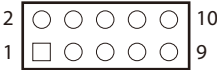
Connector type: 2x5 10-pin header  
Connector location: COM1, COM2, COM3 and COM4



RS232		RS422 (COM1 Only)		RS485 (COM1 Only)	
Pin	Definition	Pin	Definition	Pin	Definition
1	DCD	1	TX-	1	DATA-
2	RXD	2	TX+	2	DATA+
3	TXD	3	RX+	3	NC
4	DTR	4	RX-	4	NC
5	GND	5	GND	5	GND
6	DSR	6	NC	6	NC
7	RTS	7	NC	7	NC
8	CTS	8	NC	8	NC
9	RI	9	NC	9	NC

GPIO Header

Connector type: 2x5 10-pin header  
Connector location: GPIO



Pin	Definition	Pin	Definition
1	GPIO_80	2	GPIO_81
3	GPIO_82	4	GPIO_83
5	GPIO_84	6	GPIO_85
7	GPIO_86	8	GPIO_87
9	GND	10	VCC

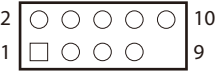






### USB 2.0 Headers

Connector type: 2x5 10-pin header  
Connector location: USB2 and USB4



Pin	Definition	Pin	Definition
1	VCC	2	VCC
3	-DATA	4	-DATA
5	+DATA	6	+DATA
7	GND	8	GND
9		10	NC

### SMBUS Header

Connector type: 1x4 4-pin header  
Connector location: SMBUS



Pin	Definition	Pin	Definition
1	VCC	2	SMBUS_CLK
3	GND	4	SMBUS_DATA





PS/2 Keyboard & Mouse Header

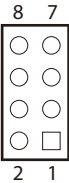
Connector type: 1x7 7-pin header  
Connector location: PS2KBMS



Pin	Definition	Pin	Definition
1	VCC		
3	KB_DATA	4	KB_CLK
5	GND	6	MS_CLK
7	MS_DATA		

Front Panel Header

Connector type: 2x4 8-pin header  
Connector location: FP



Pin	Definition	Pin	Definition
1	HDDLED+	2	PWRLED+
3	HDDLED-	4	PWRLED-
5	RSTSW	6	PWRBTN
7	GND	8	GND



LAN Activity LED Headers

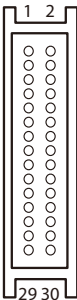
Connector type: 1x2 2-pin header  
Connector location: LAN1LED and LAN2LED



Pin	Definition
1	LED+
2	LED-

24-bit Dual Channel LVDS Header

Connector type: 2x15 30-pin header  
Connector location: LVDS

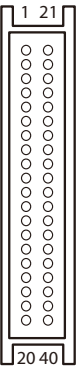


Pin	Definition	Pin	Definition
1	LVDSB_DATAN3	2	LVDSB_DATAP3
3	LVDS_CLKBN	4	LVDS_CLKBP
5	LVDSB_DATAN2	6	LVDSB_DATAP2
7	LVDSB_DATAN1	8	LVDSB_DATAP1
9	LVDSB_DATAN0	10	LVDSB_DATAP0
11	NC/DDC_DATA	12	NC/DDC_CLK
13	GND	14	GND
15	GND	16	GND
17	LVDSA_DATAP3	18	LVDSA_DATAN3
19	LVDS_CLKAP	20	LVDS_CLKAN
21	LVDSA_DATAP2	22	LVDSA_DATAN2
23	LVDSA_DATAP1	24	LVDSA_DATAN1
25	LVDSA_DATAP0	26	LVDSA_DATAN0
27	PVCC	28	PVCC
29	PVCC	30	PVCC



### eDP Header

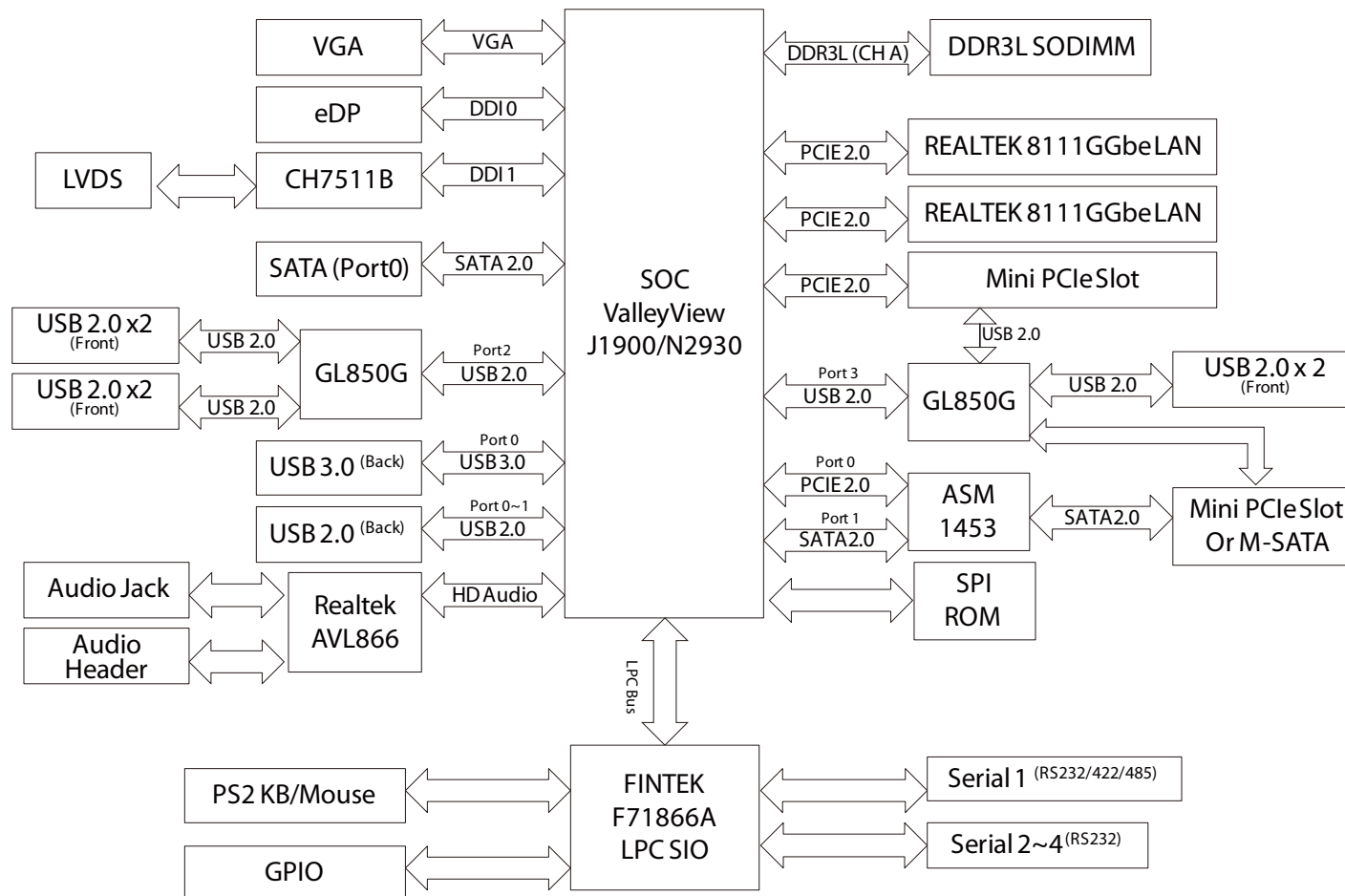
Connector type: 2x20 40-pin header  
Connector location: LVDS



Pin	Definition	Pin	Definition
1	NC	2	GND
3	Lane3_N	4	Lane3_P
5	GND	6	Lane2_N
7	Lane2_P	8	GND
9	Lane1_N	10	Lane1_P
11	GND	12	Lane0_N
13	Lane0_P	14	GND
15	AUX_CH_P	16	AUX_CH_N
17	GND	18	LCD_VCC
19	LCD_VCC	20	LCD_VCC

Pin	Definition	Pin	Definition
21	NC	22	NC
23	GND	24	GND
25	GND	26	GND
27	HPD	28	GND
29	GND	30	GND
31	GND	32	BL_ENABLE
33	BL_PWM_DIM	34	NC
35	NC	36	BL_PWR
37	BL_PWR	38	BL_PWR
39	BL_PWR	40	NC

## Block Diagram



## CHAPTER 3: BIOS SETUP

This chapter describes how to use the BIOS setup program for the EBC 355A. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM website at [www.nexcom.com.tw](http://www.nexcom.com.tw).

### About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

### When to Configure the BIOS

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

# Default Configuration


Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

# Entering Setup












When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup.

Press the  key to enter Setup:


# Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menu or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu

### Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.


### Submenu

When “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .





# BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  to accept or enter the submenu.

## Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



## System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

## System Time

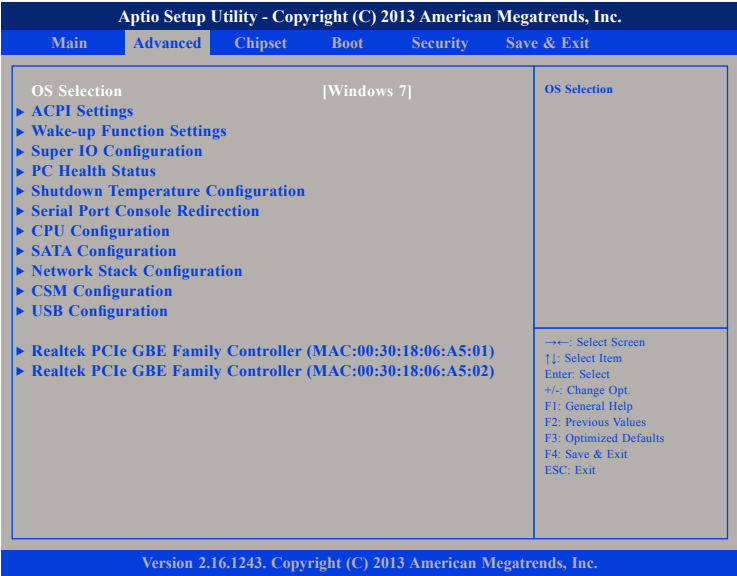
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



Setting incorrect field values may cause the system to malfunction.

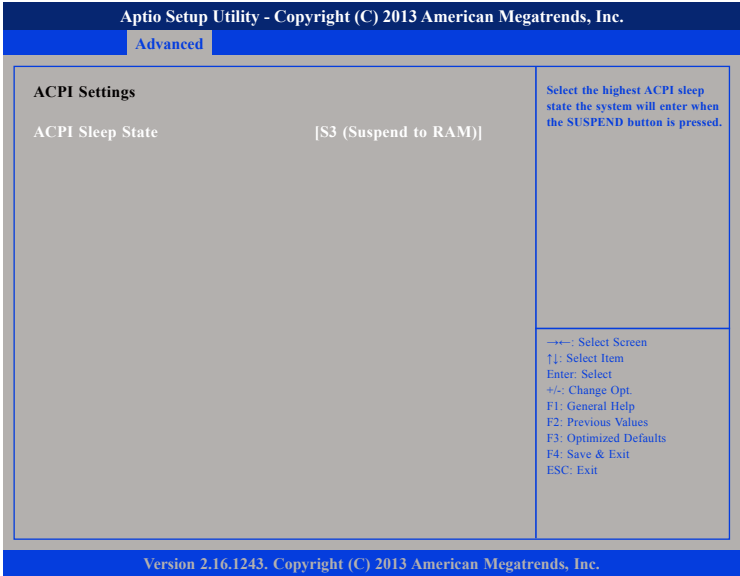


OS Selection

Selects the operating system as Windows or Android.

ACPI Settings

This section is used to configure ACPI settings.



ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

Wake-up Function Settings

This section is used to configure system wake-up settings.



Wake-up System with Fixed Time

Enables or disables system wake on alarm event. When enabled, system will wake on the hr:min:sec specified.

Wake System with Dynamic Time

Enables or disables system wake on alarm event. When enabled, system will wake on the current time + increase minute(s).

PS2 KB/MS Wake-up

Enables or disables PS2 keyboard/mouse wake up from S3/S4/S5 state. Only supported when ERP function is disabled.

USB S3/S4 Wake-up

Enables or disables USB S3/S4 wake up. Only supported when ERP function is disabled.

USB S5 Power

Enables or disables USB power after system shutdown. Only supported when ERP function is disabled.



Super IO Configuration

This section is used to configure the serial ports.



ERP Support

Enables or disables ERP support. Disable ERP to activate all wake-up functions.

OS Select For Serial Port

Configures which operating system to enable serial port support.

WatchDog Timer

Enables or disables Watchdog timer.

Case Open Detect

Enables or disables case open detection feature.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Transmission Mode Select

Configures the serial port mode to RS232, RS422 or RS485.

Mode Speed Select

Configures the speed of the serial port modes.

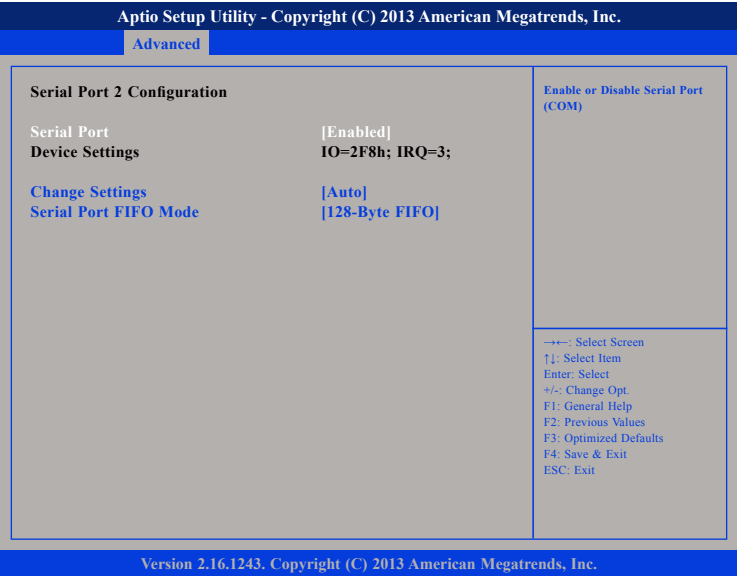
Serial Port FIFO Mode

The options are 16-Byte FIFO, 32-Byte FIFO, 64-Byte FIFO and 128-Byte FIFO.



Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

Enables or disables the serial port.

Change Settings

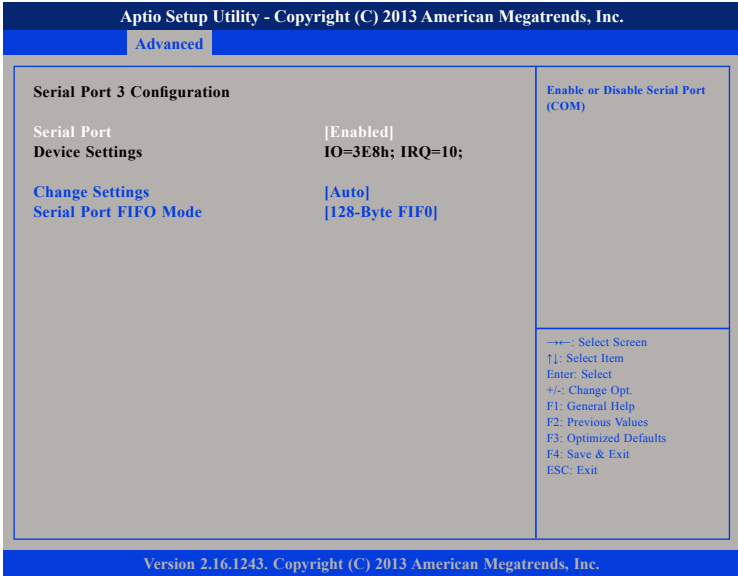
Selects an optimal setting for the Super IO device.

Serial Port FIFO Mode

The options are 16-Byte FIFO, 32-Byte FIFO, 64-Byte FIFO and 128-Byte FIFO.

Serial Port 3 Configuration

This section is used to configure serial port 3.



Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port FIFO Mode

The options are 16-Byte FIFO, 32-Byte FIFO, 64-Byte FIFO and 128-Byte FIFO.



Serial Port 4 Configuration

This section is used to configure serial port 4.



Serial Port

Enables or disables the serial port.

Change Settings

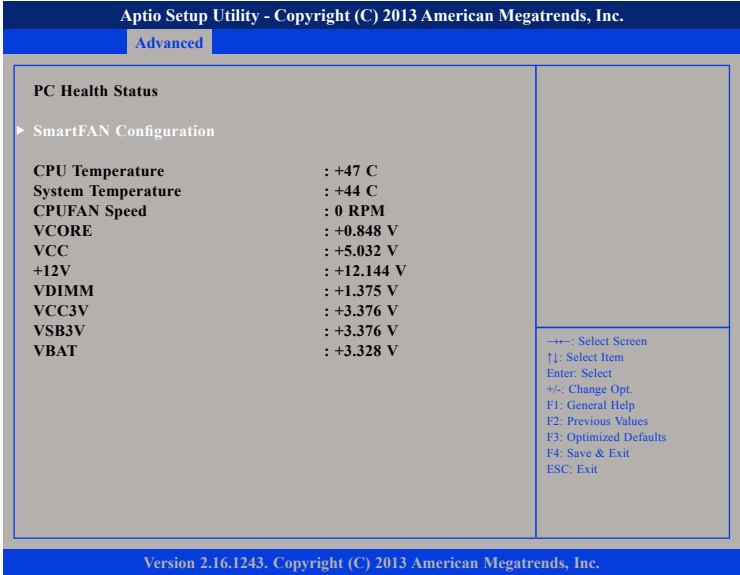
Selects an optimal setting for the Super IO device.

Serial Port FIFO Mode

The options are 16-Byte FIFO, 32-Byte FIFO, 64-Byte FIFO and 128-Byte FIFO.

PC Health Status

This section is used to monitor hardware status such as temperature, fan speed and voltages.



CPU Temperature

Detects and displays the current CPU temperature.

System Temperature

Detects and displays the current system temperature.

CPUFAN Speed

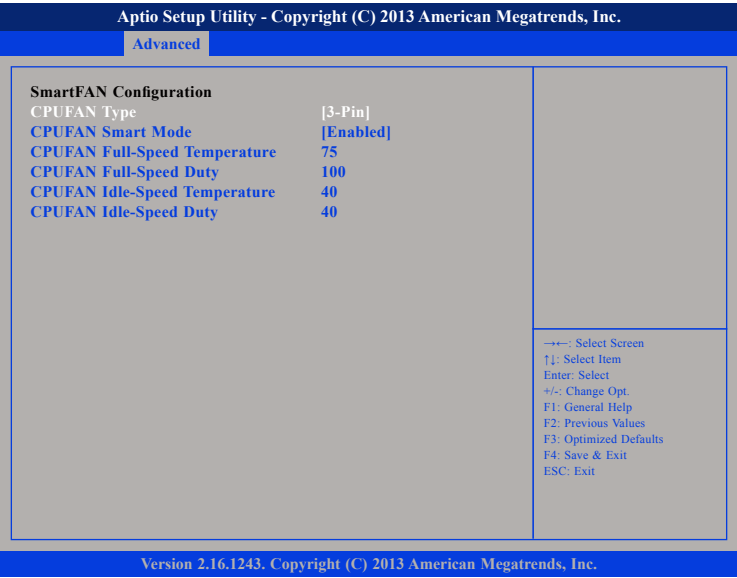
Detects and displays the CPU fan speed.

VCORE to VBAT

Detects and displays the output voltages.



SmartFAN Configuration



CPUFAN Type

Configures the CPU fan type to 3-pin or 4-pin.

CPUFAN Smart Mode

Enables or disables CPU fan smart mode. When enabled, the following sub-menus are available:

CPUFAN Full-Speed Temperature

Configures the temperature threshold of full speed. Fan will activate at full speed when temperature threshold is exceeded.

CPUFAN Full-Speed Duty

Configures the pre-set duty threshold of full speed. Fan will activate at full speed when the pre-set duty is exceeded.

CPUFAN Idle-Speed Temperature

Configures the temperature threshold of idle speed. Fan will activate at idle speed when the temperature is below the threshold.

CPUFAN Idle-Speed Duty

Configures the pre-set duty threshold of idle speed. Fan will activate at idle speed when the pre-set duty is below the threshold.

### Shutdown Temperature Configuration

This section is used to configure the temperature to shutdown the system.

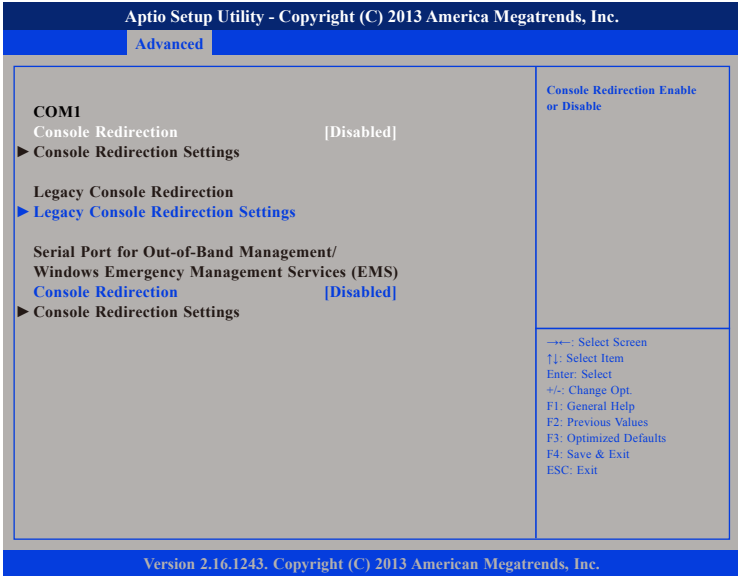


#### Shutdown Temperature

Sets the temperature to shutdown the system. The available options are Disabled, 70°C/158°F, 75°C/167°F, 80°C/176°F and 85°C/185°F.

### Serial Port Console Redirection

This section is used to configure serial port console redirection settings.



#### Console Redirection

Enables or disables console redirection.



CPU Configuration

This section is used to configure the CPU.

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

Advanced

CPU Configuration

Disabled for Windows XP

Intel(R) Celeron(R) CPU J1900 @ 1.99GHz

CPU Signature30678

Microcode Patch815

Max CPU Speed1990 MHz

Min CPU Speed1334 MHz

Processor Cores4

Intel HT TechnologyNot Supported

Intel VT-x TechnologySupported

L1 Data Cache24 kB x 4

L1 Code Cache32 kB x 4

L2 Cache1024 kB x 2

L3 CacheNot Present

64-bitSupported

Limit CPUID Maximum[Disabled]

Execute Disable Bit[Enabled]

Hardware Prefetcher[Enabled]

Adjacent Cache Line Prefetch[Enabled]

Intel Virtualization Technology[Enabled]

EIST[Enabled]

---: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F3: Optimized Defaults

F4: Save & Exit

ESC: Exit

Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur.

Execute Disable Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0.

Hardware Prefetcher

Turns on or off the mid level cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch

Turns on or off prefetching of adjacent cache lines.

Intel® Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

EIST

Enables or disables Intel® SpeedStep.

SATA Configuration

This section is used to configure the SATA drives.



SATA Port

Enables or disables the SATA port.

SATA Mode

- IDE This option configures the Serial ATA drives as Parallel ATA physical storage device.
- AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

SATA Speed Support

Configures the speed of the SATA controller.

SATA Port

Enables or disables the SATA port.

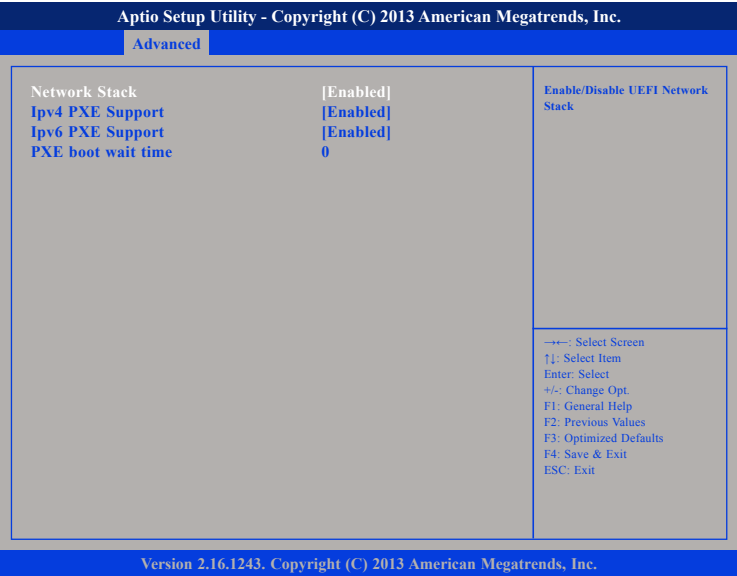
mSATA

Enables or disables the mSATA port.



**Network Stack Configuration**

This section is used to configure the network stack settings.



**PXE boot wait time**

Configures the wait time to press the ESC key to abort the PXE boot.

**Network Stack**

Enables or disables UEFI network stack.

**Ipv4 PXE Support**

Enables or disables Ipv4 PXE boot support. If disabled, Ipv4 PXE boot option will not be created.

**Ipv6 PXE Support**

Enables or disables Ipv6 PXE boot support. If disabled, Ipv6 PXE boot option will not be created.



CSM Configuration

This section is used to configure the compatibility support module features.



Network

Configures the execution of UEFI and legacy PXE OpROM.

Storage

Configures the execution of UEFI and legacy storage OpROM.

Other PCI Devices

Configures the OpROM execution policy for devices other than network, storage or video devices.

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enabled Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disabled Keeps USB devices available only for EFI applications.

XHCI Hand-off

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

**EHCI Hand-off**

This is a workaround for OSs that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

**USB Mass Storage Driver Support**

Enables or disables USB mass storage driver support.

**USB Transfer Time-out**

The time-out value for control, bulk, and Interrupt transfers.

**Device Reset Time-out**

Selects the USB mass storage device's start unit command timeout.

**Device Power-up Delay**

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

**Chipset**

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



**North Bridge**

Enters the North Bridge submenu.

**South Bridge**

Enters the South Bridge submenu.



North Bridge

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Chipset		
<b>Memory Information</b>		Enable/Disable Protected Audio Video Control
Total Memory	2048 MB	
Memory Current Frequency	1333 Mhz	
<b>Intel IGD Configuration</b>		
PAVC	[LITE Mode]	
DVMT Pre-Allocated	[64M]	
DVMT Total Gfx Mem	[256MB]	
Aperture Size	[256MB]	
GTT Size	[2MB]	
IGD Turbo Enable	[Enabled]	
Spread Spectrum clock	[Disabled]	
<b>IGD Boot Type</b>		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
LVDS Panel Type	[1280x800 24bit Single]	
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.		

PAVC

Enables or disables Protected Audio Video Control.

DVMT Pre-Allocated

Selects DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

DVMT Total Gfx Mem

Selects DVMT 5.0 total graphic memory size used by the internal graphics device.

Aperture Size

Selects the Aperture size.

GTT Size

Selects the GTT size.

IGD Turbo Enable

Enables or disables IGD turbo.

Spread Spectrum Clock

Enables or disables spread spectrum clock.

IGD Boot Type

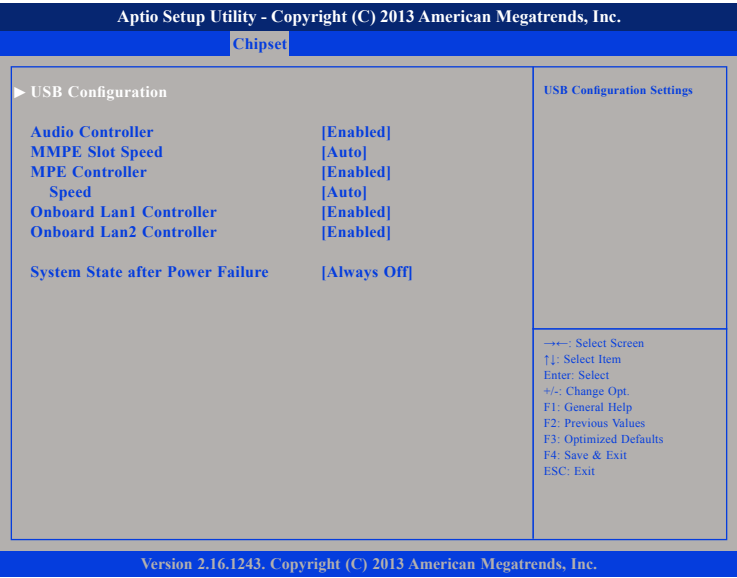
Selects the video device that will be activated during POST. This will not affect any external graphics that may be present.

LVDS Panel Type

Configures the LVDS display resolution.



South Bridge



Azalia

Control detection of the Azalia device.

- Disabled Azalia will be unconditionally disabled.
- Enabled Azalia will be unconditionally enabled.
- Auto Azalia will be enabled if present, disabled otherwise.

MMPE Slot Speed

Configures the MMPE slot speed. The options are Auto, Gen2 and Gen1.

MPE Controller

Enables or disables the MPE controller.

Speed

Configures the PCIe port speed.

Onboard Lan1 to Lan2 Controller

Enables or disables the onboard Lan1 or Lan2 controller.

System State after Power Failure

Select the AC power state when power is re-applied after a power failure.



USB Configuration



USB 3.0 Support

Configures the USB 3.0 operating mode or disables the USB 3.0 controller.

USB 3.0 Link Power Management

Enables or disables USB 3.0 link power management.

Security



Administrator Password

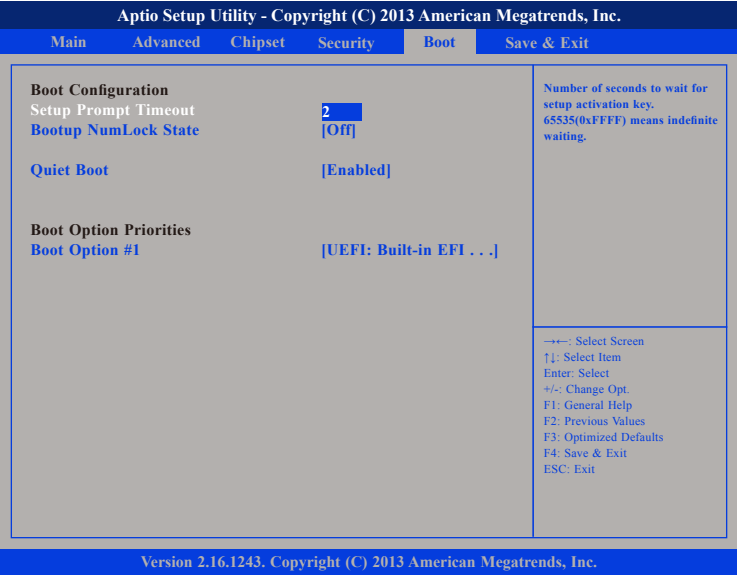
Select this to reconfigure the administrator's password.

User Password

Select this to reconfigure the user's password.



Boot



Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

- Enabled Displays OEM logo instead of the POST messages.
- Disabled Displays normal POST messages.

Boot Option Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

## Save & Exit



### Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Discard Changes and Reset

To exit the Setup utility and reboot the system without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

### Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Save as User Defaults

To use the current configurations as user default settings for the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Restore User Defaults

To restore the BIOS to user default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Boot Override

To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

### Launch EFI Shell from filesystem device

To launch EFI shell from a filesystem device, select this field and press <Enter>.

### Reset System with TXE Disable Mode

To restart the system and boot with TXE disabled, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.