



N3160-NUC IPC

User Manual

Version 1.0

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DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

Contents

1 Introduction	5
1.1 Package Contents	5
1.2 Specifications.....	6
1.3 Motherboard Layout.....	8
1.4 I/O Panel.....	9
2 Installation	10
2.1 Screw Holes.....	10
2.2 Pre-installation Precautions	10
2.3 Installation of Memory Modules (SO-DIMM).....	11
2.4 Expansion Slots	12
2.5 Onboard Headers and Connectors.....	13
3 UEFI SETUP UTILITY.....	15
3.1 Introduction	15
3.1.1 UEFI Menu Bar	15
3.1.2 Navigation Keys	16
3.2 Main Screen.....	16
3.3 Advanced Screen.....	17
3.3.1 CPU Configuration	18
3.3.2 Chipset Configuration.....	19
3.3.3 Storage Configuration	21
3.3.4 Super IO Configuration	22
3.3.5 ACPI Configuration.....	23
3.3.6 USB Configuration	24
3.3.7 Platform Trust Technology.....	25
3.4 Hardware Health Event Monitoring Screen	26
3.5 Security Screen	27
3.6 Boot Screen	28
3.7 Exit Screen	30
4 Software Support	31
4.1 Install Operating System.....	31
4.2 Support CD Information	31
4.2.1 Running Support CD.....	31
4.2.2 Drivers Menu.....	31
4.2.3 Utilities Menu.....	31
4.2.4 Contact Information.....	31

Chapter 1: Introduction

Thank you for purchasing ASRock **N3160-NUC IPC** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD.



Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website <http://www.asrock.com>

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. www.asrock.com/support/index.asp

1.1 Package Contents

ASRock **N3160-NUC IPC** Motherboard (4.09" x 4.02" (104 x 102mm))

ASRock **N3160-NUC IPC** Driver CD

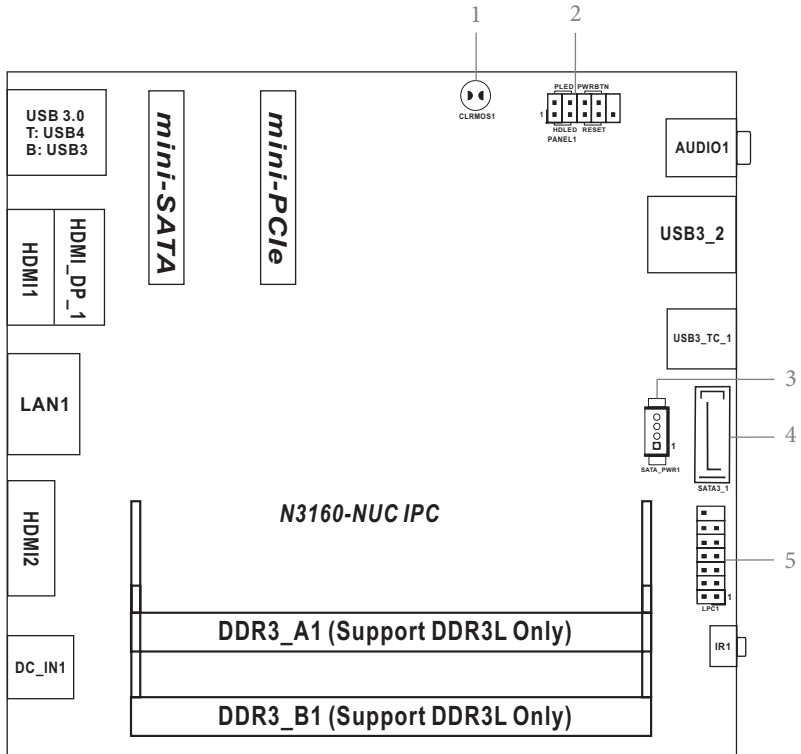
ASRock **N3160-NUC IPC** Jumper setting instruction

1.2 Specifications

Form Factor	Dimensions	4.09" x 4.02" (104 x 102mm)
Processor System	CPU	Intel® Quad Core Braswell N3160 (With FAN) Supports Hyper-Threading Technology
	Core Number	4
	Max Speed	(By CPU)
	L2 Cache	2MB
	Chipset	N/A
	BIOS	UEFI
Expansion Slot	Mini-PCIe	1 (half size, supports PCIe x1 & USB)
	mSATA	1 (Only supports SATA)
Memory	Technology	Dual Channel DDR3L 1066 / 1600 MHz SDRAM
	Max.	16GB
	Socket	2 x SO-DIMM
Graphics	Controller	Intel® Gen8 Intel® Graphics DX 11, OGL3.2
	VRAM	Shared Memory
	VGA	N/A
	DVI	N/A
	LVDS	N/A
	HDMI	Supports HDMI 1.4a, max resolution up to 3840 x 2160@30Hz
	DisplayPort	Supports DP 1.1a, max resolution up to 3840x2160@30Hz
Multi Display	Yes (Triple Display)	
Ethernet	Ethernet	10/100/1000 Mbps
	Controller	GbE LAN: 1x Realtek RTL 8111G
	Connector	1 x RJ-45
SATA	Max Data Transfer Rate	SATA3 (6.0Gb/S)

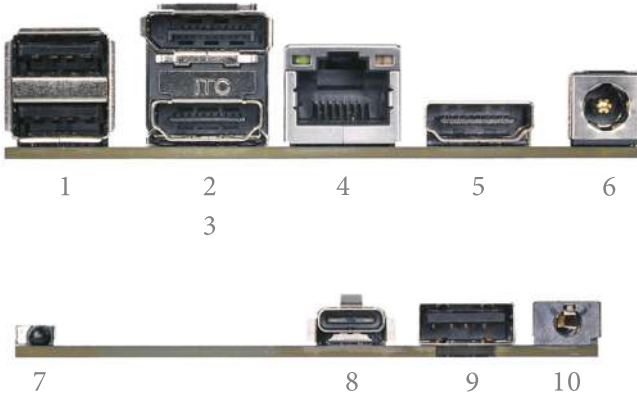
Rear I/O	VGA	0
	DVI	0
	HDMI	2
	DisplayPort	1
	Ethernet	1
	USB	4 (3 x USB 3.0 compliant, 1 x USB 3.0 Type C)
	Audio	1 (Mic-in, Line-out)
	Serial	0
	eSATA	0
	PS/2	0
Internal Connector	USB	0
	LVDS/ inverter	0
	VGA	0
	Serial	0
	SATA	1 x SATA3 (6.0Gb/s)
	Parallel	0
	mSATA	1
	M.2	0
	IrDA	0
	GPIO 8-bit	0
	SATA PWR Output Con	1
	Speaker Header	0
	Watchdog Timer	Output
Interval		0
Power Requirements	Input PWR	12V DC-In (DC Jack)
	Power On	ATX Supported ATX: Press Button to PWR on after Power input ready
Environment	Temperature	0°C – 60°C

1.3 Motherboard Layout



- 1 : Clear CMOS Pad (CLRMO51)
- 2 : System Panel Header (PANEL1)
- 3 : SATA Power Output Connector (SATA_PWR1)
- 4 : SATA3 Connector (SATA3_1)
- 5 : LPC Debug Header (LPC1)

1.4 I/O Panel

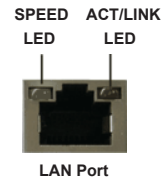


- | | | | |
|---|--------------------------|----|---------------------------------|
| 1 | USB 3.0 Ports (USB3_3_4) | 6 | DC Jack (DC_IN1) |
| 2 | DisplayPort (HDMI_DP_1) | 7 | Infrared LED (IR1) |
| 3 | HDMI Port (HDMI1) | 8 | USB 3.1 Type-C Port (USB3_TC_1) |
| 4 | LAN RJ-45 Port (LAN1)* | 9 | USB 3.0 Port (USB3_2) |
| 5 | HDMI Port (HDMI2) | 10 | Audio Jack (AUDIO1) |

* There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port LED Indications

Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Off	100Mbps connection
On	Link	Green	1Gbps connection



Chapter 2: Installation

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.



Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes to secure the motherboard to the chassis.



Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.



Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.3 Installation of Memory Modules (SO-DIMM)

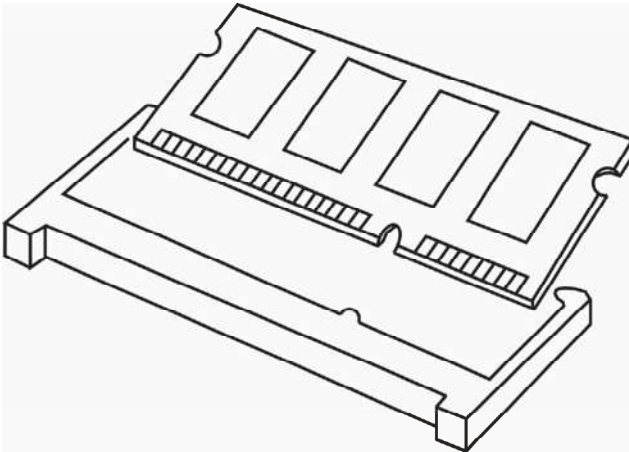
N3160-NUC IPC motherboard provides two 204-pin DDR3 (Double Data Rate 3) SO-DIMM slots, which support Dual Channel DDR3L (low voltage).



1. It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and SO-DIMM may be damaged.
2. Please make sure to disconnect the power supply before adding or removing SO-DIMMs or the system components.
3. The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the SO-DIMM if you force the SO-DIMM into the slot at incorrect orientation.

Installing a SO-DIMM

Step 1. Align a SO-DIMM on the slot such that the notch on the SO-DIMM matches the break on the slot.



Step 2. Firmly insert the SO-DIMM into the slot until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.

2.4 Expansion Slots (mini-PCIe and mini-SATA Slots)

There is 1 mini-PCIe slot and 1 mini-SATA slot on this motherboard.

mini-PCIe slot:

MINI_PCIE1 (mini-PCIe slot; half size) is used for PCI Express mini cards.

mini-SATA slot:

MINI_SATA1 (mini-SATA slot; full size) is used for mSATA cards.

Installing an expansion card

- Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
- Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).
- Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
- Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
- Step 5. Fasten the card to the chassis with screws.
- Step 6. Replace the system cover.

2.5 Onboard Headers and Connectors



Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

Clear CMOS Pad

(CLRSMOS1)

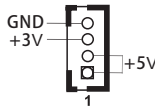
(see p.8, No. 1)



SATA Power Output Connector

(SATA_PWR1)

(see p.8, No. 3)



Please connect a SATA power cable to this connector.

SATA3 Connector

(SATA3_1: see p.8, No. 4)

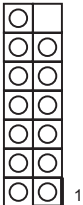


This Serial ATA3 (SATA3) connector supports SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

LPC Debug Header

(13-pin LPC1)

(see p.8, No. 5)



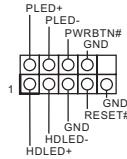
PIN	Signal Name	PIN	Signal Name
14	+3V	13	NC
12	+3V	11	+3V
10	GND	9	GND
8	LAD3	7	LAD2
6	LAD1	5	LAD0
4	LFRAME#	3	RESET#
2	GND	1	CLK

This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

System Panel Header

(9-pin PANEL1)

(see p.8, No. 2)



This header accommodates several system front panel functions.



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):

Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):

Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):

Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Chapter 3: UEFI SETUP UTILITY

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.



Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

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, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

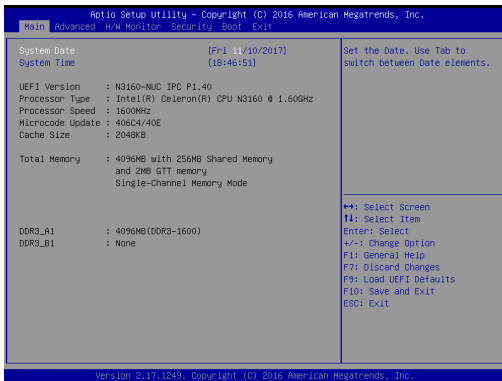
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F7>	Discard changes
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	To jump to the Exit Screen or exit the current screen

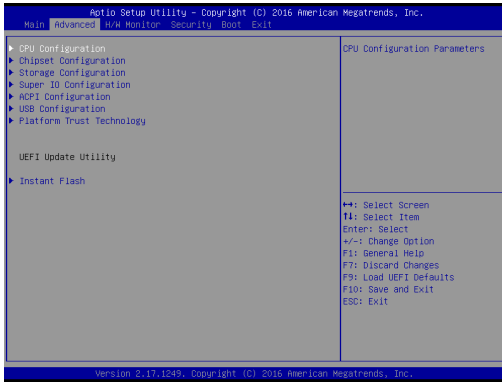
3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration, USB Configuration and Platform Trust Technology.

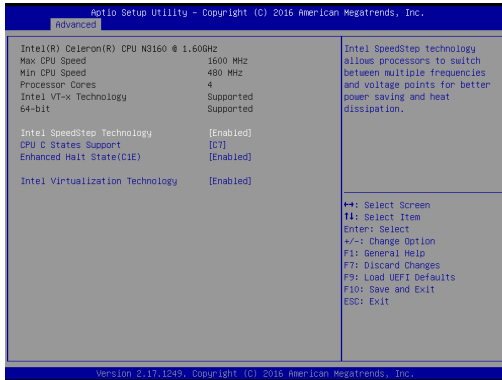


Setting wrong values in this section may cause the system to malfunction.

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.

3.3.1 CPU Configuration



Intel 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. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® OS and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.



Please note that 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.

CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

Intel Virtualization Technology

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

3.3.2 Chipset Configuration



Primary Graphics Adapter

Select a primary VGA.

Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

Onboard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.

Onboard HDMI HD Audio

This allows you to enable or disable the Onboard HDMI HD Audio feature.

Onboard LAN

This allows you to enable or disable the Onboard LAN feature.

Deep Sleep

Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. The default value is [Disabled].

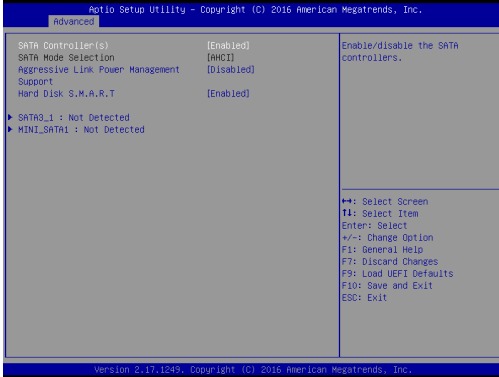
Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers. If [LAST STATE] is selected, the AC/power restores to the last power state when the power recovers.

Good Night LED

By enabling Good Night LED, the Power/HDD LEDs will be switched off when the system is on. It will also automatically switch off the Power and Keyboard LEDs when the system enters into Standby/Hibernation mode.

3.3.3 Storage Configuration



SATA Controller(s)

Use this item to enable or disable the SATA Controller feature.

SATA Mode Selection

Use this to select SATA mode. The default value is [AHCI Mode].



AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

SATA Aggressive Link Power Management

Use this item to configure SATA Aggressive Link Power Management.

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

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled] and [Enabled].

3.3.4 Super IO Configuration



CIR Controller

Enable or disable CIR Controller.

3.3.5 ACPI Configuration



PCIE Devices Power On

Use this item to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

CIR Power On

Use this item to enable or disable CIR to power on the system.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

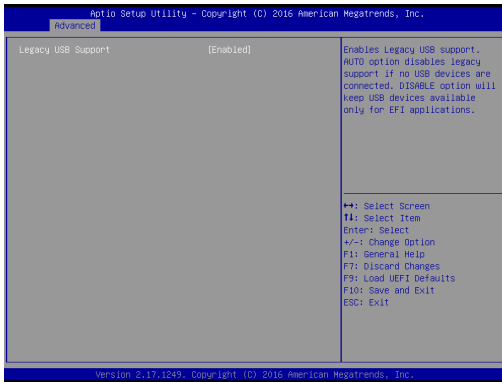
USB Keyboard/Remote Power On

Use this item to enable or disable USB Keyboard/Remote to power on the system.

USB Mouse Power On

Use this item to enable or disable USB Mouse to power on the system.

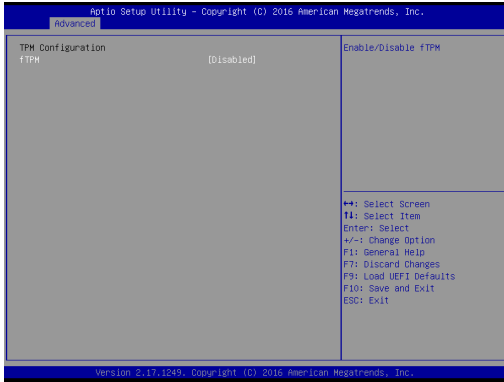
3.3.6 USB Configuration



Legacy USB Support

Enable or disable Legacy OS Support for USB 2.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support. Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

3.3.7 Platform Trust Technology

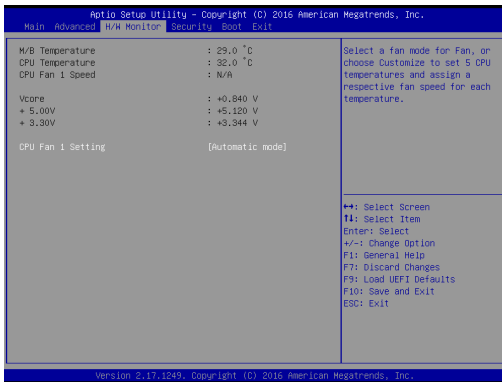


fTPM

Enable or disable fTPM.

3.4 Hardware Health Event Monitoring Screen

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.

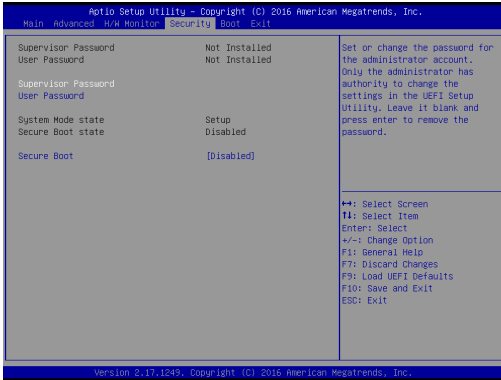


CPU Fan 1 Setting

Select a fan mode for CPU Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

3.5 Security Screen

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



Supervisor Password

Set or change 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.

User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Enable to support Windows Secure Boot.

3.6 Boot Screen

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



Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

Bootup Num-Lock

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

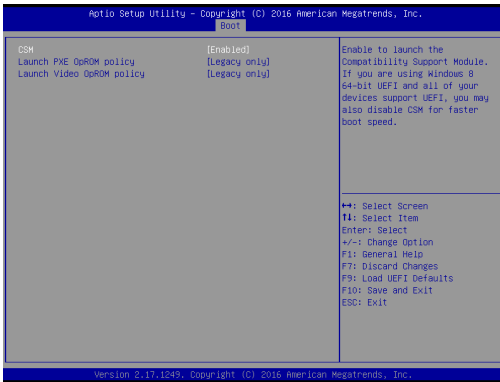
Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

Boot Failure Guard Message

If the computer fails to boot for a number of times the system automatically restores the default settings.

CSM (Compatibility Support Module)



CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows 8.1 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.

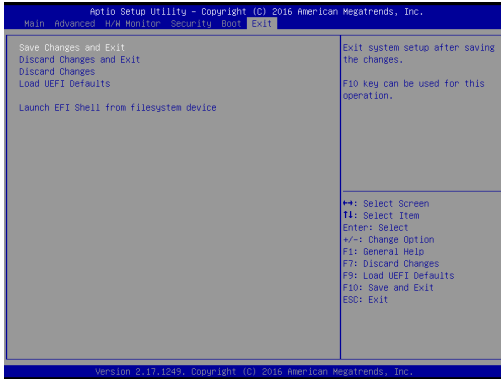
Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

Launch Video 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. Select Do not launch to not execute both legacy and UEFI option ROM.

3.7 Exit Screen



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.

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.

Discard Changes

When you select this option, it will pop-out the following message, "Discard changes?" Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

Launch EFI Shell from filesystem device

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

Chapter 4: Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 10 32-bit / 10 64-bit / 8.1 32-bit / 8.1 64-bit / 7 32-bit / 7 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASRSETUP.EXE" from the BIN folder in the Support CD to display the menus.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information.