

N100DC-ITX

User Manual

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ASRock Incorporation

e-mail: info@asrock.com.tw

ASRock EUROPE B.V.

e-mail: sales@asrock.nl

ASRock America, Inc.

e-mail: sales@asrockamerica.com



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Contents

Chapter 1 Introduction 1			
1.1	Package Contents	1	
1.2	Specifications	2	
1.3	Motherboard Layout	4	
1.4	I/O Panel	6	
1.5	Block Diagram	8	
Chap	oter 2 Installation	9	
2.1	Installing Memory Module (DIMM)	10	
2.2	Connecting the Front Panel Header	12	
2.3	Installing the I/O Panel Shield	13	
2.4	Installing the Motherboard	14	
2.5	Installing SATA Drives	15	
2.6	Installing a Graphics Card	17	
2.7	Connecting Peripheral Devices	19	
2.8	Power On	20	
2.9	Jumpers Setup	21	
2.10	Onboard Headers and Connectors	22	
2.11	Intel® CNVi (Integrated WiFi/BT) Installation Guide	28	
2.12	M.2 SSD Module Installation Guide (M2 1)	30	

Chapter 1 Introduction

Thank you for purchasing ASRock N100DC-ITX 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.



Because the motherboard specifications and the BIOS software might be updated, the content of this documentation will be subject to change without notice. In case any modifications of this documentation occur, the updated version will be available on ASRock's website without further notice. If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. You may find the latest VGA cards and CPU support list on ASRock's website as well. ASRock website http://www.asrock.com.

1.1 Package Contents

- ASRock N100DC-ITX Motherboard (Mini-ITX Form Factor)
- · ASRock N100DC-ITX User Manual
- 2 x Serial ATA (SATA) Data Cables (Optional)
- 1 x SATA Power Cable (Optional)
- · 2 x Screws for M.2 Sockets (Optional)
- · 1 x I/O Panel Shield

1.2 Specifications

Platform	Mini-ITX Form FactorSolid Capacitor design
CPU	 Intel® Quad-Core Processor N100 (up to 3.4 GHz) Supports Intel® Turbo Boost Technology
Memory	 1 x DDR4 DIMM Slot Supports DDR4 non-ECC, un-buffered memory up to 3200* * Please refer to Memory Support List on ASRock's website for more information. (http://www.asrock.com/) Supports ECC UDIMM memory modules (operate in non-ECC mode) Max. capacity of system memory: 32GB
Expansion Slot	 1 x PCIe 3.0 x4 Slot (PCIE1), supports x2 mode* 1 x M.2 Socket (Key E), supports type 2230 Intel® CNVio (Integrated WiFi/BT) * Supports NVMe SSD as boot disks
Graphics	 Integrated Intel® UHD Graphics: 24 EUs inside (Up to 750MHz) 1 x HDMI 2.1 TMDS Compatible, supports HDCP 2.2 and max. resolution up to 4K 60Hz 1 x D-Sub, supports max. resolution up to Full HD (1920x1080) 60Hz
Audio	• 7.1 CH HD Audio (Realtek ALC897 Audio Codec)
LAN	Gigabit LAN 10/100/1000 Mb/sRealtek 8111H
USB	 4 x USB 3.2 Gen1 (2 Rear, 2 Front) 8 x USB 2.0 (4 Rear, 4 Front) * All USB ports support ESD Protection

Rear Panel

• 1 x DC Jack (Compatible with the 19V power adapter)

I/O

• 2 x Antenna Mounting Points

- 1 x PS/2 Mouse/Keyboard Port
- · 1 x Serial Port: COM1
- · 1 x D-Sub Port
- 1 x HDMI Port
- · 2 x USB 3.2 Gen1 Ports
- 4 x USB 2.0 Ports
- · 1 x RJ-45 LAN Port
- HD Audio Jacks: Line in / Front Speaker / Microphone

Storage

- 1 x M.2 Socket (M2_1, Key M), supports type 2280 PCIe Gen3x2 (16 Gb/s) mode*
- 2 x SATA3 6.0 Gb/s Connectors
- * Supports NVMe SSD as boot disks

Connector

- · 1 x Print Port Header
- · 1 x SPI TPM Header
- 1 x Chassis Intrusion and Speaker Header
- 2 x Chassis Fan Connectors (4-pin)
- · 1 x Front Panel Audio Connector
- 2 x USB 2.0 Headers (Support 4 USB 2.0 ports)
- 1 x USB 3.2 Gen1 Header (Supports 2 USB 3.2 Gen1 ports)

BIOS Feature

· AMI UEFI Legal BIOS with GUI support

os

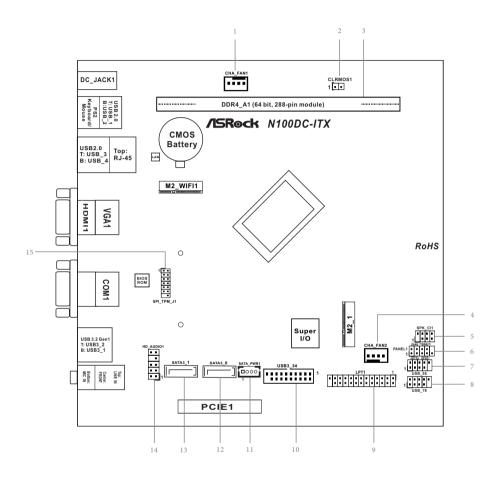
Microsoft® Windows® 10 64-bit / 11 64-bit

^{*} For detailed product information, please visit our website: <u>http://www.asrock.com</u>



Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

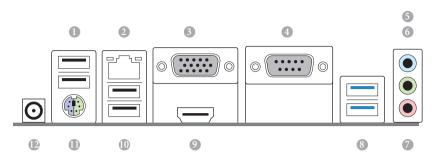
1.3 Motherboard Layout



No. Description Chassis Fan Connector (CHA_FAN1) 1 Clear CMOS Jumper (CLRMOS1) 3 288-pin DDR4 DIMM Slot (DDR4 A1) 4 Chassis Fan Connector (CHA_FAN2) Chassis Intrusion and Speaker Header (SPK_CI1) 5 System Panel Header (PANEL1) USB 2.0 Header (USB_56) 7 USB 2.0 Header (USB 78) 9 Print Port Header (LPT1) USB 3.2 Gen1 Header (USB3_34) SATA Power Connector (SATA_PWR1) 11 12 SATA3 Connector (SATA3_0) SATA3 Connector (SATA3_1) 13 14 Front Panel Audio Header (HD_AUDIO1)

15 SPI TPM Header (SPI_TPM_J1)

1.4 I/O Panel



No.	Description	No.	Description
1	USB 2.0 Ports (USB_12)	7	Microphone (Pink)**
2	LAN RJ-45 Port*	8	USB 3.2 Gen1 Type-A Ports (USB3_12)
3	D-Sub Port	9	HDMI Port
4	COM Port	10	USB 2.0 Ports (USB_34)
5	Line In (Light Blue)**	11	PS/2 Mouse/Keyboard Port
6	Front Speaker (Lime)**	12	DC Jack***

 $^{{}^*\}textit{There are two LEDs on the LAN port. Please refer to the table below for the LAN port LED indications.}$



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

 $^{{\}it ***} \ \underline{Function\ of\ the\ Audio\ Ports\ in\ 7.1-channel\ Configuration}:$

Port	Function
Light Blue (Rear panel)	Rear Speaker Out
Lime (Rear panel)	Front Speaker Out
Pink (Rear panel)	Central /Subwoofer Speaker Out
Lime (Front panel)	Side Speaker Out

*** Please use a 19V power adapter for the DC jack. This jack accepts dual barrel plugs with an inner diameter of 2.5 mm and an outer diameter of 5.5 mm, where the inner contact is +19V (±10%) DC and the shell is GND.

Please refer to below hardware configuration for the estimated adapter power.

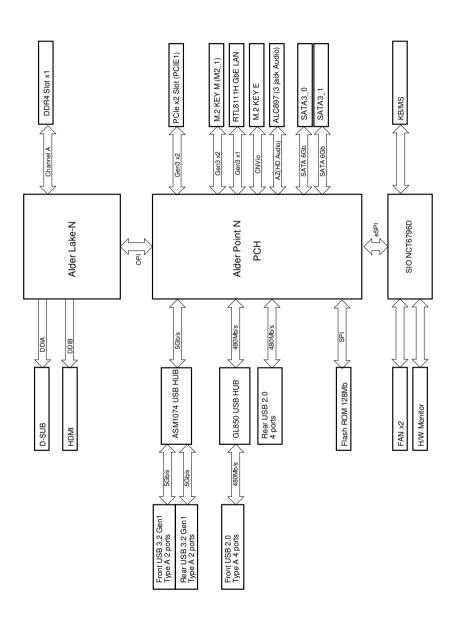
DRAM	HDD	PCIe Card	Estimated Adapter Power
1	1	0	35W
1	2	0	50W
1	1	<20W	60W
1	2	<20W	75W
1	1	<40W	85W



If you install 4 HDDs, please use the 90W DC-in 19V power adapter.

When you use the DC-in power adapter, please use the onboard SATA power connector to get the power for HDDs.

1.5 Block Diagram



Chapter 2 Installation

This is a Mini-ITX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Pre-installation Precautions

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

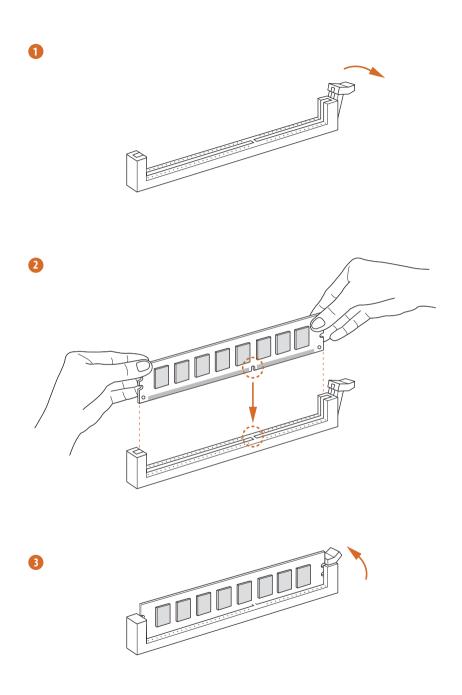
- Make sure to unplug the power cord before installing or removing the motherboard components. Failure to do so may cause physical injuries and damages to motherboard components.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
- Hold components by the edges and do not touch the ICs.
- Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
- When placing screws to secure the motherboard to the chassis, please do not overtighten the screws! Doing so may damage the motherboard.

2.1 Installing Memory Module (DIMM)

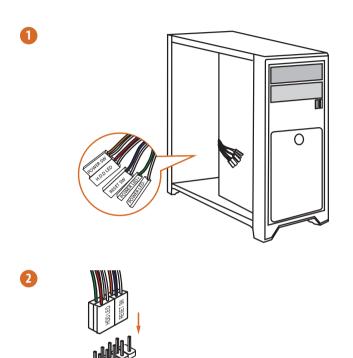
This motherboard provides a 288-pin DDR4 (Double Data Rate 4) DIMM slot.

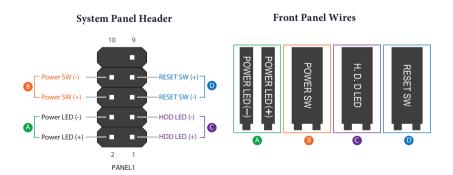


- It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and DIMM may be damaged.
- The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

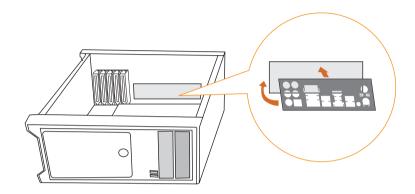


2.2 Connecting the Front Panel Header

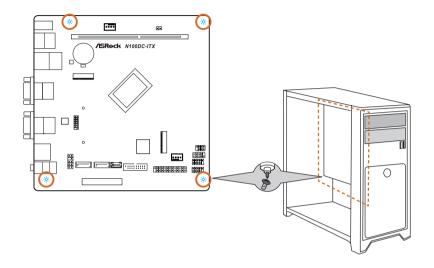




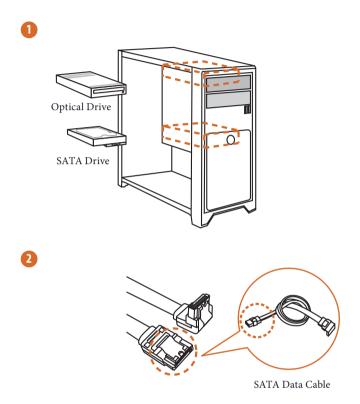
2.3 Installing the I/O Panel Shield

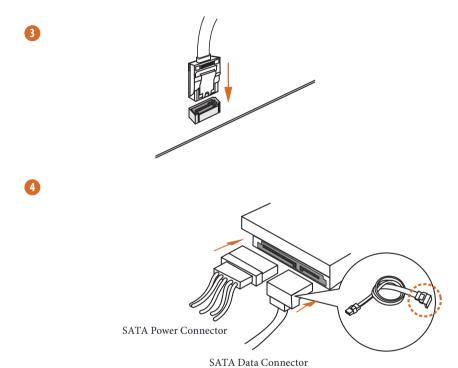


2.4 Installing the Motherboard

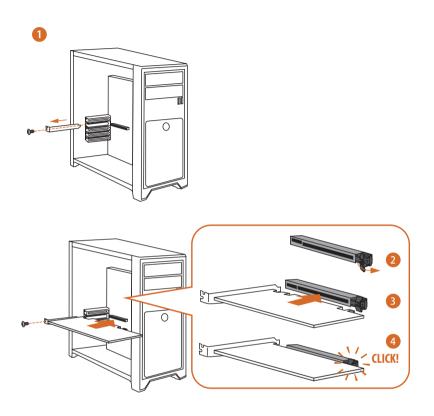


2.5 Installing SATA Drives





2.6 Installing a Graphics Card



Expansion Slot (PCIe Slot)

There is 1 PCI Express slot on the motherboard.

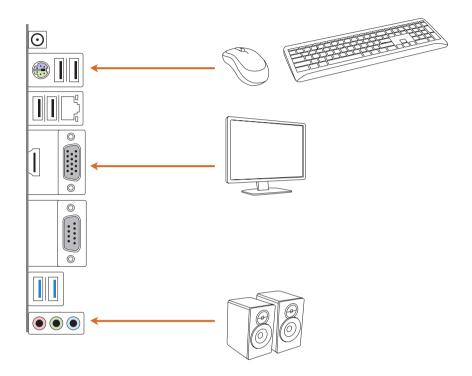


Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

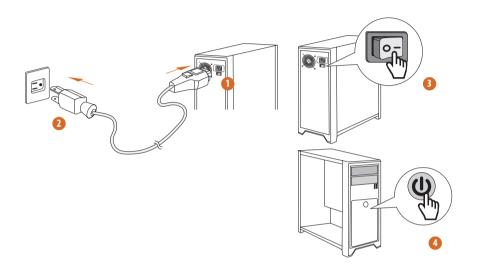
PCIe slot:

PCIE1 (PCIe 3.0 x4 slot) is used for PCIe x2 lane width graphics cards.

2.7 Connecting Peripheral Devices



2.8 Power On



2.9 Jumpers Setup

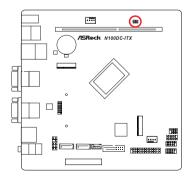
The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open".





Clear CMOS Jumper (CLRMOS1) (see p.4, No. 2)

CLRMOS1 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord, then use a jumper cap to short the pins on CLRMOS1 for 3 seconds. Please remember to remove the jumper cap after clearing the CMOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action.



CLRMOS1



2-pin Jumper

Short: Clear CMOS

Open: Default

2.10 Onboard Headers and Connectors

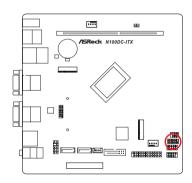


Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.

System Panel Header

(9-pin PANEL1) (see p.4, No. 6)

Connect the power button, reset button 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.





HDLED



PWRBTN (Power Button):

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

RESET (Reset Button):

Connect to the reset button on the chassis front panel. Press the reset button 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):

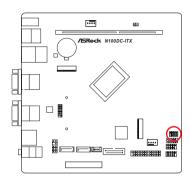
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

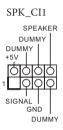
The front panel design may differ by chassis. A front panel module mainly consists of power button, reset button, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Chassis Intrusion and Speaker Header

(7-pin SPK_CI1) (see p.4, No. 5)

Please connect the chassis intrusion and the chassis speaker to this header.





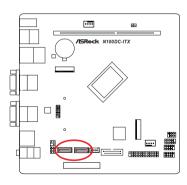
Serial ATA3 Connectors

Vertical:

(SATA3_0) (see p.4, No. 12)

(SATA3_1) (see p.4, No. 13)

These two SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.



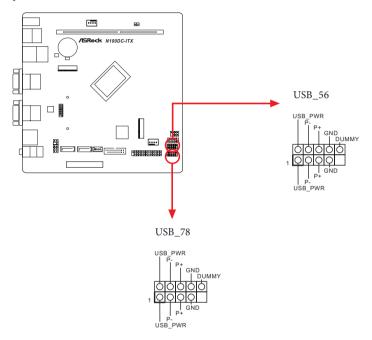


USB 2.0 Headers

(9-pin USB_56) (see p.4, No. 7)

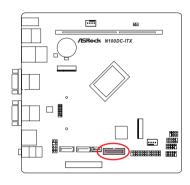
(9-pin USB_78) (see p.4, No. 8)

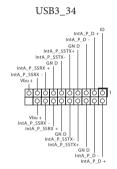
There are two headers on this motherboard. Each USB 2.0 header can support two ports.



USB 3.2 Gen1 Header (19-pin USB3_34) (see p.4, No. 10)

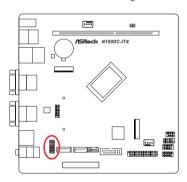
There is one header on this motherboard. This USB 3.2 Gen1 header can support two ports.





Front Panel Audio Header (9-pin HD_AUDIO1) (see p.4, No. 14)

This header is for connecting audio devices to the front audio panel.







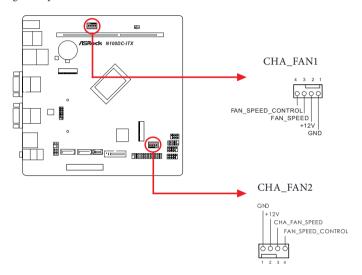
High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.

Chassis Fan Connectors

(4-pin CHA_FAN1) (see p.4, No. 1)

(4-pin CHA_FAN2) (see p.4, No. 4)

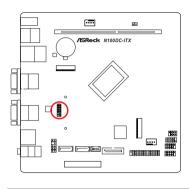
Please connect fan cable to the fan connector and match the black wire to the ground pin.

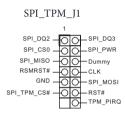


SPI TPM Header

(13-pin SPI_TPM_J1) (see p.4, No. 15)

This connector supports SPI 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.

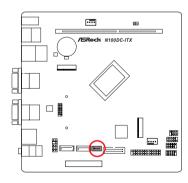


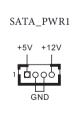


SATA Power Connector

(4-pin SATA_PWR1) (see p.4, No. 11)

Please connect a SATA power cable.





2.11 Intel® CNVi (Integrated WiFi/BT) Installation Guide

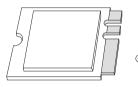
The M.2 is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2 Socket (Key E) supports type 2230 Intel® CNVi (Integrated WiFi/BT).

* The M.2 socket does not support SATA M.2 SSDs.



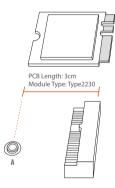
Before you install Intel* Integrated Connectivity (CNVi) module, be sure to turn off the AC power.

Installing the WiFi/BT module or Intel® CNVi (Integrated WiFi/BT)



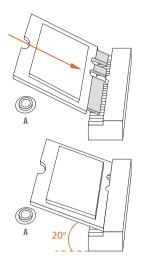
Step 1

Prepare a type 2230 Intel® CNVi (Integrated WiFi/BT) and the screw.



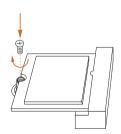
Step 2

Find the nut location to be used.



Step 3

Gently insert the Intel* CNVi (Integrated WiFi/BT) into the M.2 slot. Please be aware that the module only fits in one orientation.



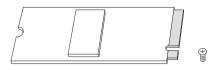
Step 4

Tighten the screw with a screwdriver to secure the module into place.
Please do not overtighten the screw as this might damage the module.

2.12 M.2 SSD Module Installation Guide (M2_1)

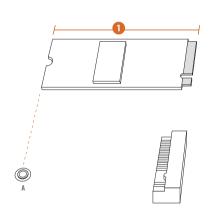
The M.2 is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2 Socket (M2_1, Key M) supports type 2280 PCIe Gen3x2 (16 Gb/s) mode.

Installing the M.2 SSD Module



Step 1

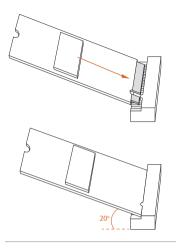
Prepare a M.2 SSD module and the screw.



No. 1 Nut Location A PCB Length 8cm Module Type Type2280

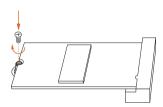
Step 2

Depending on the PCB type and length of your M.2 SSD module, find the corresponding nut location to be used.



Step 4

Align and gently insert the M.2 SSD module into the M.2 slot. Please be aware that the M.2 SSD module only fits in one orientation.



Step 5

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

For the latest updates of M.2 SSD module support list, please visit our website for details: $\underline{\text{http://www.asrock.com}}$

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Licensee's specific rights may vary from country to country.

WARNING



THIS PRODUCT CONTAINS A BUTTOON BATTERY If swallowed, a button battery can cause serious injury or death.

Please keep batteries out of sight or reach of children.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

"Perchlorate Material-special handling may apply, see <u>www.dtsc.ca.gov/hazardouswaste/perchlorate</u>"

AUSTRALIA ONLY

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage caused by our goods. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you require assistance please call ASRock Tel: +886-2-28965588 ext.123 (Standard International call charges apply)



ASRock INC. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related UKCA Directives. Full text of UKCA declaration of conformity is available at: http://www.asrock.com



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ASRock follows the green design concept to design and manufacture our products, and makes sure that each stage of the product life cycle of ASRock product is in line with global environmental regulations. In addition, ASRock disclose the relevant information based on regulation requirements.

 $Please \ refer \ to \ \underline{https://www.asrock.com/general/about.asp?cat=Responsibility} \ for \ information \ disclosure \ based \ on \ regulation \ requirements \ ASRock \ is \ complied \ with.$



DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.