



X570D4I-2T

User Manual

Version 1.0

Published February 2020

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Chapter 1 Introduction

Thank you for purchasing ASRock Rack **X570D4I-2T** motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contains 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 Rack website without further notice. You may find the latest memory and CPU support lists on ASRock Rack website as well. ASRock Rack's Website: www.ASRockRack.com

*If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
<http://www.asrockrack.com/support/>*

1.1 Package Contents

- ASRock Rack X570D4I-2T Motherboard
(Mini ITX Form Factor: 6.7-in x 6.7-in, 17.02 cm x 17.02 cm)
- 1 x SATA Power Cable (80cm)
- 1 x ATX 4P to 24P Power Cable
- 1 x I/O Shield
- 1 x Screw for M.2 Socket
- Quick Installation Guide



If any items are missing or appear damaged, contact your authorized dealer.

1.2 Specifications

X570D4I-2T	
MB Physical Status	
Form Factor	Mini ITX
Dimension	6.7" x 6.7" (17.02cm x17.02 cm)
Processor System	
CPU	AMD Ryzen™ 3 rd Generation Series Processors* <i>*We recommend using the CPU HS listed in the Cooler QVL section on our ASRock Rack website.</i>
Chipset	AMD X570
System Memory	
Capacity	4 x DDR4 DIMM slots
Type	- Dual Channel memory technology, 2DPC - 4 x 260-pin DDR4 ECC/SO-DIMM slots
DIMM Size Per DIMM	ECC/SO-DIMM: 32GB, 16GB, 8GB, 4GB
DIMM Frequency	ECC/SO-DIMM: 2933/2666/2400/2133/1866 MHz
Voltage	1.2V
Expansion Slot	
PCIe 4.0/3.0 x16	1 slot
Storage	
SATA Controller	AMD X570: 2x OCULINK (support 4x SATA or PCIe4 from OCU1, 4x SATA or PCIe4 from OCU2)
M.2	1 M.2 M-key(NGFF 2280) (1 SATA 6Gb/s or PCIe4.0/3.0 x4)
Ethernet	
Interface	10000/1000 /100 Mbps
LAN	- 2 x RJ45 10G base-T by Intel® X550-AT2 - 1 x RJ45 Dedicated IPMI LAN port by RTL8211E - Supports Wake-On-LAN - Supports Energy Efficient Ethernet 802.3az - Supports Dual LAN with Teaming function - Supports PXE - LAN1 supports NCSI
Graphics	
Controller	ASPEED AST2500
VRAM	16MB DDR4
Rear Panel I/O	
VGA Port	1 x D-Sub
USB 3.0 Port	2
LAN Port	- RJ45: 2x 10GLAN(by Intel® X550-AT2) - LAN Ports with LED (ACT/LINK LED and SPEED LED)

Management LAN Port	1
UID	1
Internal Connector	
ITX_AUX_	1
PANEL1	
PANEL1	1
TR1	1
TPM Header	1
Fan Header	3x (4-pin)
ATX power DC-IN	1x (8-pin)
4 to 24P Power	1x (4-pin)
SATA Power	1x (4-pin)
OCuLink	2
USB 3.0 Header	1 (supports 2 USB3.0)
ClearCMOS	1 (short pad)
COM Header	1
IPMB	1
PWR SMB	1
BMC_SMB	1
NCSI1	1
OH/FanFail LED	3
System BIOS	
BIOS Type	256Mb AMI UEFI Legal BIOS
BIOS Features	- Plug and Play (PnP) - ACPI 2.0 Compliance Wake Up Events - SMBIOS 2.8.0 Support - ASRock Rack Instant Flash
Hardware Monitor	
Temperature	- CPU/PCH/DDR/LAN/Storage Temperature Sensing - MB/Card side/TR1 Temperature Sensing
Fan	- CPU/Rear/Front Fan Tachometer - CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature) - CPU/Rear/Front Fan Multi-Speed Control

Voltage	Voltage Monitoring: 3VSB, 5VSB, VCPU, VSOC, VCCM, APU VDDP, PM VDD CLDO, PM VDDCR S5, PM VDDCR, BAT, 3V, 5V, 12V
Support OS	
OS	Microsoft® Windows® - Server 2016 (64 bit) - Server 2019 (64 bit) Linux® - RedHat Enterprise Linux Server 6.10 (64 bit) / 7.5 (64 bit) - SUSE Enterprise Linux Server 11 SP4 (64 bit) / 12 SP3 (64 bit) - Ubuntu 16.04 (64 bit)/ 18.04 (64 bit) Virtual - VMWare® ESXi 6.5 u1 - Win hyper-V Server 2016 <i>* Please refer to our website for the latest OS support list.</i>
Environment	
Temperature	Operation temperature: 10°C ~ 35°C / Non operation temperature: -40°C ~ 70°C



This motherboard supports Wake from on Board LAN. To use this function, please make sure that the "Wake on Magic Packet from power off state" is enabled in Device Manager > Intel® Ethernet Connection > Power Management. And the "PCI Devices Power On" is enabled in UEFI SETUP UTILITY > Advanced > ACPI Configuration. After that, onboard LAN1&2 can wake up S5 under OS.

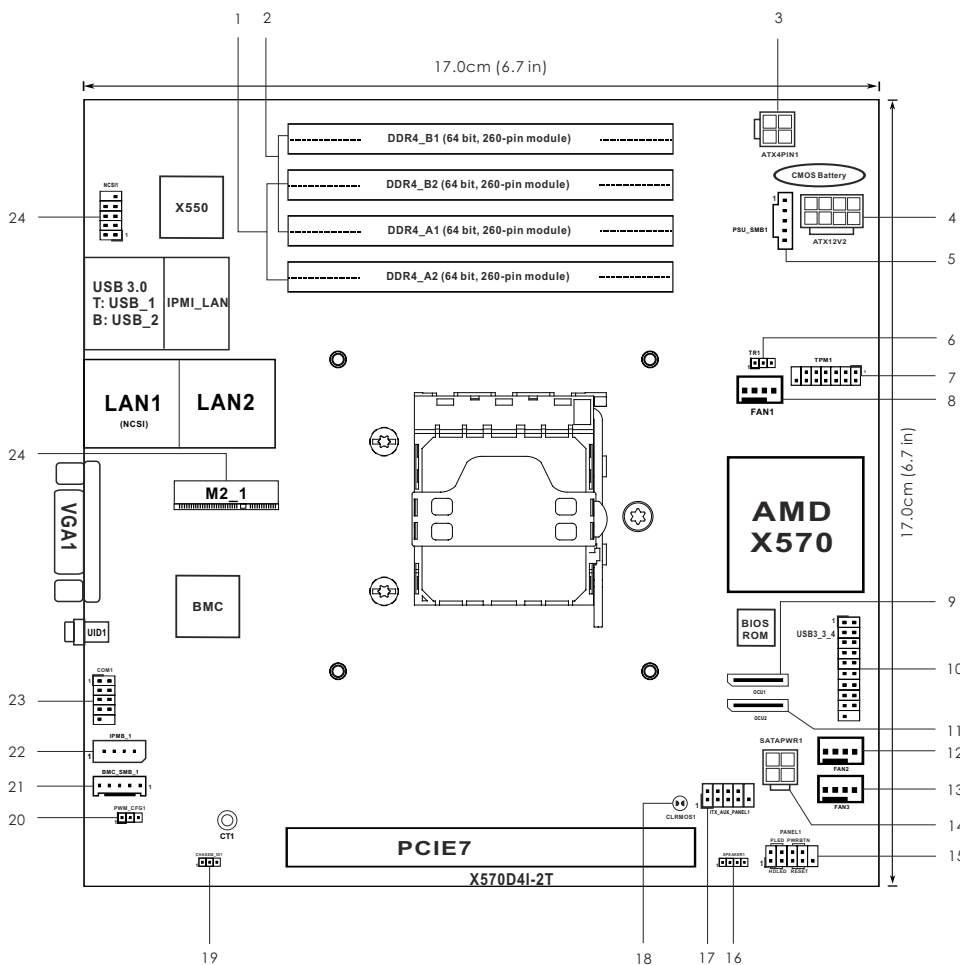


If you install Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If you install the drivers only, it will pass the WHQL tests.

1.3 Unique Features

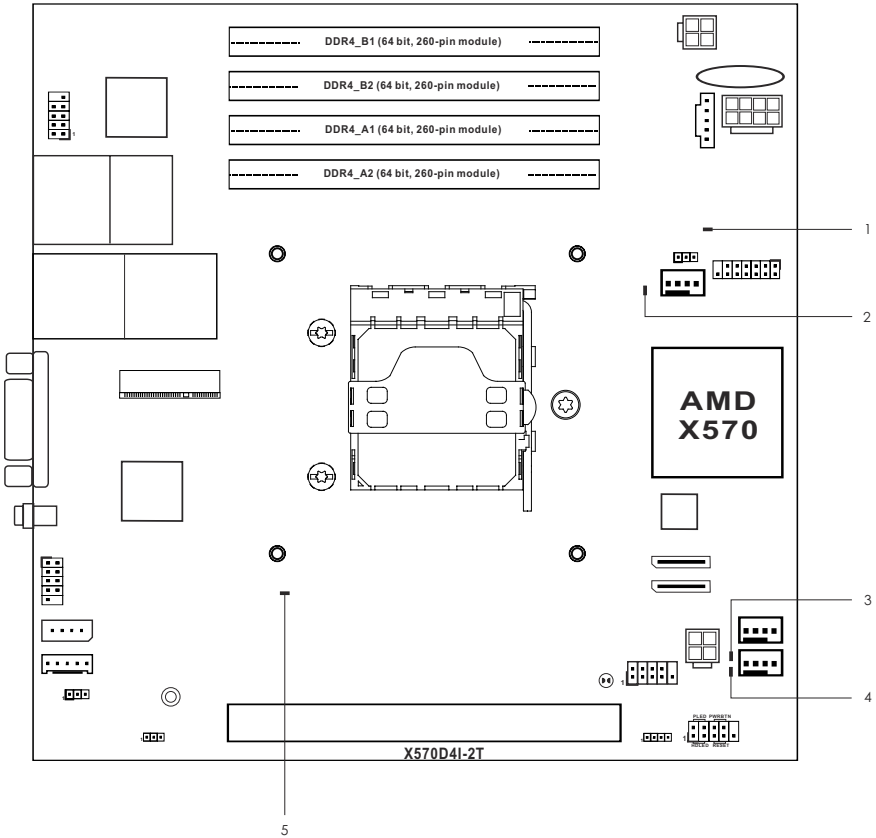
ASRock Rack Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows[®]. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Rack Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS 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.

1.4 Motherboard Layout



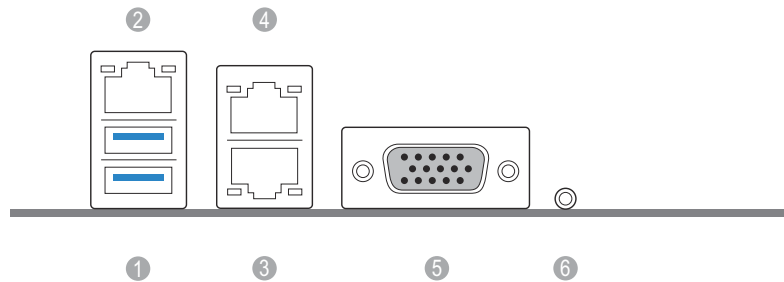
No.	Description
1	2 x 260-pin DDR4 SO-DIMM Slots (DDR4_A2, DDR4_B2)
2	2 x 260-pin DDR4 SO-DIMM Slots (DDR4_A1, DDR4_B1)
3	4 to 24P Power Connector (ATX4PIN1)
4	ATX 12V Power Connector (ATX12V2)
5	PSU SMBus (PSU_SMB1)
6	Thermal Sensor Header (TR1)
7	TPM Header (TPM1)
8	System Fan Connector (FAN1)
9	OCuLink x4 Connector (OCU1)
10	USB 3.0 Header (USB3_3_4)
11	OCuLink x4 Connector (OCU2)
12	System Fan Connector (FAN2)
13	System Fan Connector (FAN3)
14	SATA Power Connector (SATAPWR1)
15	System Panel Header (PANEL1)
16	Speaker Header (SPEAKER1)
17	Auxiliary Panel Header (ITX_AUX_PANEL1)
18	Clear CMOS Pad (CLRMOS1)
19	Chassis ID Jumper (CHASSIS_ID1)
20	PWM Configuration Header (PWM_CFG1)
21	BMC SMBus Header (BMC_SMB_1)
22	Intelligent Platform Management Bus header (IPMB_1)
23	COM Port Header (COM1)
24	M.2 Socket (M2_1) (Type 2280)
25	NCSI Header (NCSII)

1.5 Onboard LED Indicators



No.	Item	Status	Description
1	SB_PWR1_LED	Green	STB PWR ready
2	LED_FAN1	Amber	FAN1 failed
3	LED_FAN2	Amber	FAN2 failed
4	LED_FAN3	Amber	FAN3 failed
5	BMC_LED1	Green	BMC heartbeat LED

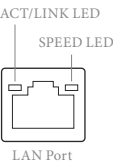
1.6 I/O Panel



No.	Description	No.	Description
1	USB 3.0 Ports (USB3_1_2)	4	10G LAN RJ-45 Port (LAN2)**
2	LAN RJ-45 Port (IPMI_LAN)*	5	VGA Port (VGA1)
3	10G LAN RJ-45 Port (LAN1)**	6	UID Switch (UID1)

LAN Port LED Indications

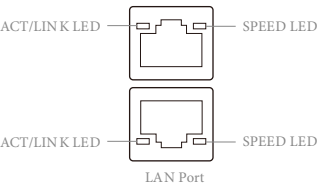
*There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.



Dedicated IPMI LAN Port LED Indications

Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection or no link
Blinking Yellow	Data Activity	Yellow	100Mbps connection
On	Link	Green	1Gbps connection

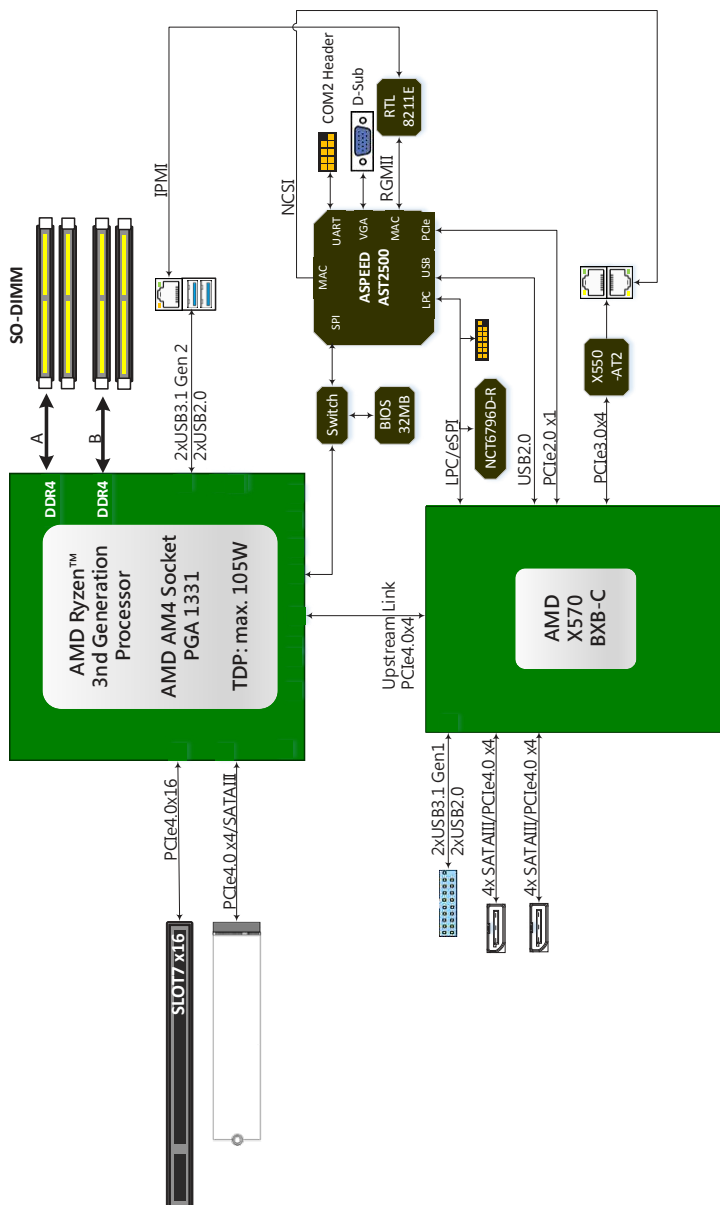
**There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.



10G LAN Port (LAN1, LAN2) LED Indications

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

1.7 Block Diagram



Chapter 2 Installation

This is a mini ITX form factor (6.7" x 6.7", 17.02 cm x 17.02 cm) motherboard. 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 indicated by circles 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 components.
2. To avoid damaging the motherboard's 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 the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.



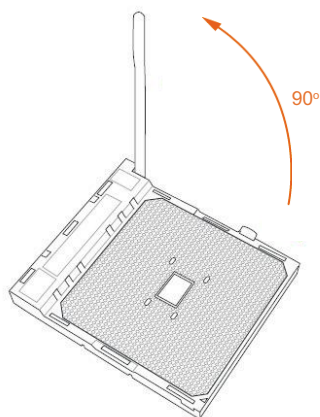
Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.3 Installing the CPU

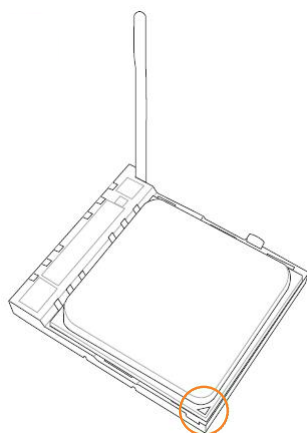


Unplug all power cables before installing the CPU.

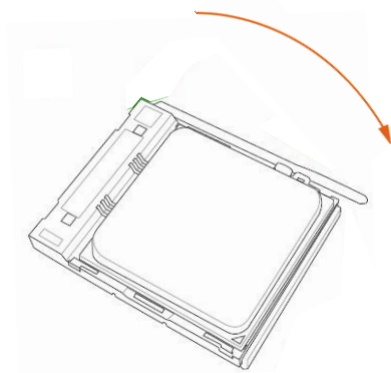
1



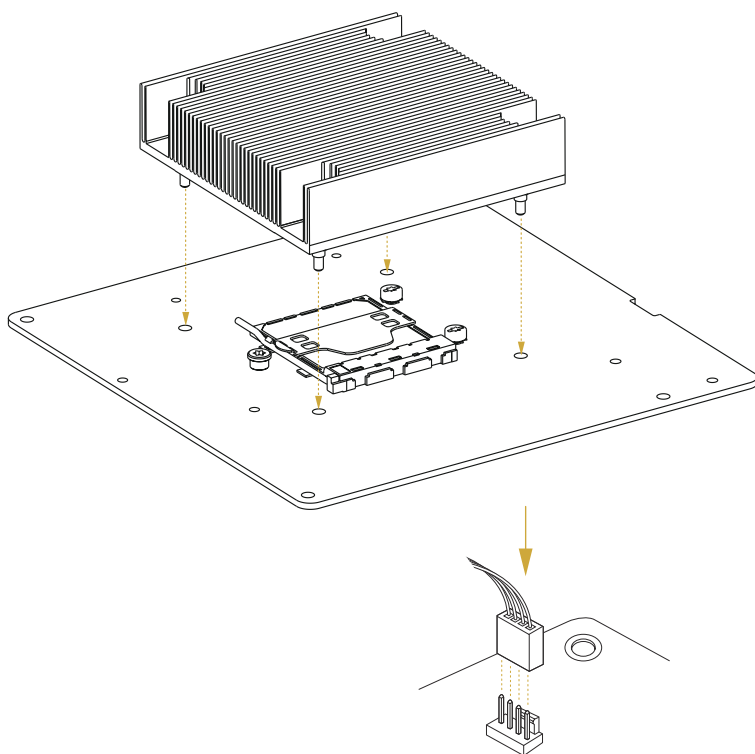
2



3



2.4 Installing the CPU Fan and Heatsink



2.5 Installation of Memory Modules (DIMM)

This motherboard provides four 260-pin DDR4 (Double Data Rate 4) DIMM slots.

A single memory module should be installed in the A1 or B1 socket.

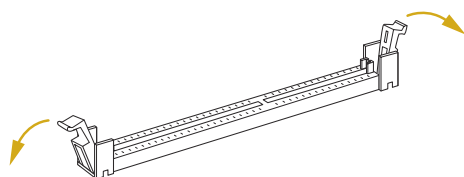
Two memory modules should be installed in the A1+B1, A1+A2, or B1+B2 sockets.

	Priority	A1	A2	B1	B2
1 DIMM	1	Populated			
	2			Populated	
2 DIMMS	1	Populated		Populated	
	2	Populated	Populated		
	3			Populated	Populated
4 DIMMS	1	Populated	Populated	Populated	Populated

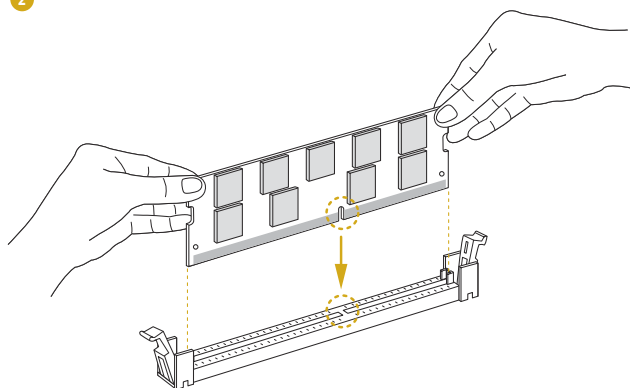


1. It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and DIMM may be damaged.
2. The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

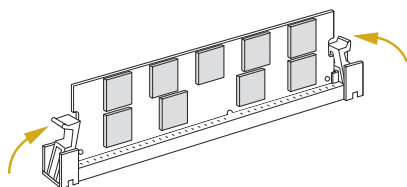
1



2



3



2.6 Expansion Slot (PCI Express Slot)

There is a PCI Express slot on this motherboard.

PCIe slot:

PCIe7 (PCIe 3.0/4.0 x16 slot) is used for PCI Express x16 lane width cards.

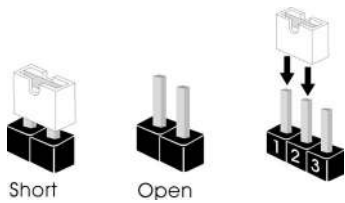
Slot	Generation	Mechanical	Electrical	Source
PCIe 7	3.0/4.0	x16	x16	CPU

Installing an expansion card

- Step 1. 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.
- 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.

2.7 Jumper 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”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when a jumper cap is placed on these 2 pins.



CHASSIS ID Jumper
(3-pin CHASSIS_ID1)
(see p.6, No. 19)



Board Level SKU (Default)



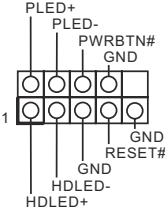
Reserved for system level
use

2.8 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.6, No. 15)



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly 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):

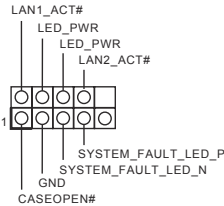
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED is off when the system is in S4 sleep state or powered off (S5).

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.

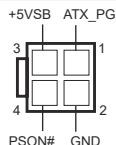
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Auxiliary Panel Header
(9-pin
ITX_AUX_PANEL1)
(see p.6, No. 17)



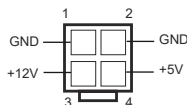
This header supports multiple functions on the front panel, including front panel SMB, internet status indicator.

4 to 24P Power Connector
(4-pin ATX4PIN1)
(see p.6, No. 3)



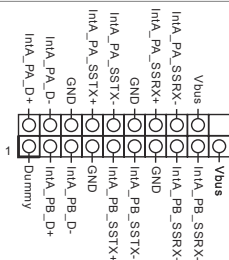
This motherboard provides a 4-pin 4 to 24P power connector.

SATA Power Connector
(4-pin SATAPWR1)
(see p.6, No. 14)



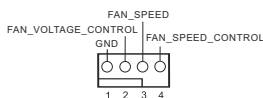
Please use a SATA power cable to connect this SATA Power Connector and your SATA HDD for supplying power from the motherboard, when using DC_IN mode without SATA power supply.

USB 3.0 Header
(19-pin USB3_3_4)
(see p.6, No. 10)



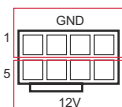
Besides two default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. This USB 3.0 header can support two USB 3.0 ports.

System Fan Connectors
(4-pin FAN1)
(see p.6, No. 8)
(4-pin FAN2)
(see p.6, No. 12)
(4-pin FAN3)
(see p.6, No. 13)



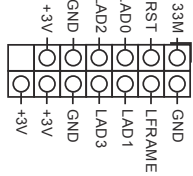
Please connect fan cables to the fan connector and match the black wire to the ground pin. All fans support Fan Control.

ATX 12V Power Connector
(8-pin ATX12V2)
(see p.6, No. 4)



This motherboard provides one 8-pin ATX 12V power connector.

TPM Header
(13-pin TPM1)
(see p.6, No. 7)



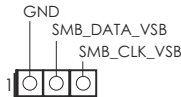
This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Thermal Sensor Header
(3-pin TR1)
(see p.6, No. 6)



Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device which you wish to monitor its temperature.

PWM Configuration Header
(3-pin PWM_CFG1)
(see p.6, No. 20)



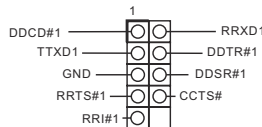
This header is used for PWM configurations.

OCuLink Connectors
(OCU1)
(see p.6, No.9)
(OCU2)
(see p.6, No. 11)



Please connect PCIE SSDs or OCulink-to-SATA x4 cable to the connectors.

Serial Port Header
(9-pin COM1)
(see p.6, No. 23)



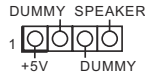
This COM header supports a serial port module.

Clear CMOS Pad
(CLRMOS1)
(see p.6, No. 18)



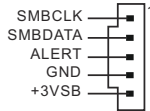
CLRMOS1 allows you to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.

Chassis Speaker Header
(4-pin SPEAKER1)
(see p.6, No. 16)



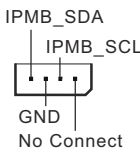
Please connect the chassis speaker to this header.

PSU SMBus
(PSU_SMB1)
(see p.6, No. 5)



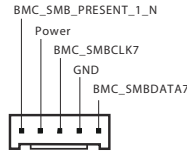
PSU SMBus monitors the status of the power supply, fan and system temperature.

Intelligent Platform
Management Bus Header
(4-pin IPMB_1)
(see p.6, No. 22)



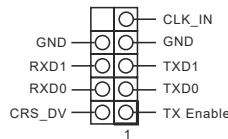
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Baseboard Management
Controller SMBus Header
(5-pin BMC_SMB_1)
(see p.6, No. 21)



The header is used for the SMBUS devices.

NCSI Header
(9-pin NCSI1)
(see p.6, No. 25)



The onboard NCSI header is used for external connections.

2.9 Unit Identification purpose LED/Switch

With the UID button, You are able to locate the server you're working on from behind a rack of servers.

Unit Identification
purpose LED/Switch
(UID1)



When the UID button on the front or rear panel is pressed, the front/rear UID blue LED indicator will be turned on. Press the UID button again to turn off the indicator.

2.10 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

2.11 Dual LAN and Teaming Operation Guide

Dual LAN with Teaming enabled on this motherboard allows two single connections to act as one single connection for twice the transmission bandwidth, making data transmission more effective and improving the quality of transmission of distant images. Fault tolerance on the dual LAN network prevents network downtime by transferring the workload from a failed port to a working port.



The speed of transmission is subject to the actual network environment or status even with Teaming enabled.

Before setting up Teaming, please make sure whether your Switch (or Router) supports Teaming (IEEE 802.3ad Link Aggregation). You can specify a preferred adapter in Intel PROSet. Under normal conditions, the Primary adapter handles all non-TCP/IP traffic. The Secondary adapter will receive fallback traffic if the primary fails. If the Preferred Primary adapter fails, but is later restored to an active status, control is automatically switched back to the Preferred Primary adapter.

Step 1

From **Device Manager**, open the properties of a team.

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

Select the adapter you want to be the primary adapter and click the **Set Primary** button.

If you do not specify a preferred primary adapter, the software will choose an adapter of the highest capability (model and speed) to act as the default primary. If a failover occurs, another adapter becomes the primary. The adapter will, however, rejoin the team as a non-primary.

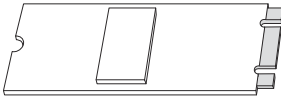
2.12 M.2_SSD (NGFF) Module Installation Guide (M2_1)

The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. This M.2_SSD (NGFF) Socket 3 can accommodate a SATA3 6.0 Gb/s module or a PCI Express module up to Gen4 x4 (64 Gb/s) only.

Installing the M.2_SSD (NGFF) Module

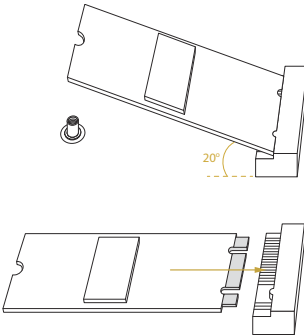
Step 1

Prepare a M.2_SSD (NGFF) module and the screw.



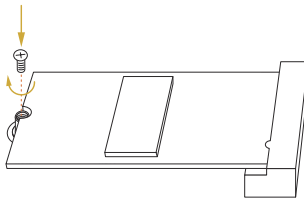
Step 2

Gently insert the M.2 (NGFF) SSD module into the M.2 slot. Please be aware that the M.2 (NGFF) SSD module only fits in one orientation.



Step 3

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



M.2_SSD (NGFF) Module Support List

For the latest updates of M.2_SSD (NFGG) module support list, please visit our website for details: <http://www.asrockrack.com>