



## Getting Started with reServer



reServer, as a milestone product of reThings family, is extremely compact and powerful. This smart tiny server is able to work easily and efficiently from the edge to the cloud.

reServer is based on an ODYSSEY X86 v2 board and powered by the latest Intel® Core™ 11<sup>th</sup> Gen. processor and Intel® UHD Graphics or Intel® Iris Xe Graphics, which delivers high CPU and AI performance for various applications. It has two high-speed 2.5-Gigabit Ethernet ports and supports hybrid connectivity including 5G, LoRa, BLE and WiFi. Meanwhile, reServer is of compact design to work efficiently in almost any scenario. The neat structure of reServer also makes it simple to access to the hard drives, memory and PCIe slots which allows easy installation, upgrades and maintenance.

Having dual SATA III 6.0Gbps data connectors, reServer is able to equip up to two 3.5"/2.5" SATA internal hard disk drives to acquire more storage. It also has M.2 connectors to connect to various SSDs for faster read and write speeds.

## Features

- Compact design for a server with an overall dimension of 132mm x124mm x233mm
- Powered by the latest 11<sup>th</sup> Gen Intel® Core™ CPU and Intel® UHD Graphics or Intel® Iris Xe Graphics.
- Rich peripherals including dual® 2.5-Gigabit Ethernet ports, USB 3.2 Type-A port, USB 2.0 Type-A port, HDMI port and DP port
- Support hybrid connectivity including 5G, LoRa, BLE and WiFi (5G and LoRa need additional modules)
- Dual SATA III 6.0 Gbps data connectors for 3.5"/2.5" SATA hard disk drives with enough space inside the enclosure to store them both
- M.2 B-Key/ M-Key/ E-Key for expandability such as SSD, 4G/5G modules, WiFi 6
- Quiet cooling fan with a large VC heat sink for excellent heat dissipation
- Easy to install, upgrade and maintain with ease of access to the internal components after opening the enclosure
- Pre-installed Windows 10 Enterprise(Unactivated), also support other Windows OS and Linux OS

## Specifications






Versions		Basic Versions			High Performance Versions	
Platform	Processor	Intel® Core™ 11th Gen. i3 1115G4	Intel® Core™ 11th Gen. i3 1125G4	Intel® Core™ 11th Gen. i5 1135G7	Intel® Core™ vPro® 11th Gen. i5 1145GRE	Intel® Core™ vPro® 11th Gen. i7 1185GRE
	Cores/Threads of processor	2C/4T	4C/8T	4C/8T	4C/8T	4C/8T

Versions		Basic Versions			High Performance Versions	
	Co-processor	Microchip® ATSAMD21G18 32-Bit ARM® Cortex-M0+ @ 48MHz			Raspberry Pi® RP2040 32-Bit Dual ARM Cortex-M0+ @ 133MHz	
Memory	Technology	Dual Channels DDR4-3200				
	Capacity	8GB; 16GB (Support up to 64GB)			Support up to 64GB	
	ECC Memory Supported	NO			YES	
Graphics	Controller	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® Iris Xe Graphics G7 80EUs(400-1300MHz)	Intel® Iris Xe Graphics G7 80EUs(400-1300MHz)	Intel® Iris Xe Graphics G7 96EUs(400-1300MHz)
Advanced Technologies	Intel® vPro®	NO			YES	
	Intel® Total Memory Encryption	NO			YES	
Network	Controller	Intel® Ethernet Controller I225-V			Intel® Ethernet Controller I225-LM	
Wireless	WiFi	M.2 E-Key(PCIE & CNVi Support), Intel® Wi-Fi 6 AX201(Optional)				
	Bluetooth	Bluetooth 5.0, BLE(Optional)				
Display	LCD	eDP 40-Pin 4 Lane Connector				
	HDMI	1 x HDMI 2.0b, up to 4Kx2Kx24bpp@60Hz				
	DP	1 x DP1.4a 7680x4320x24bpp@60Hz				
	Multiple Display	4 simultaneous displays with each display interface combination				
External I/O	Ethernet	2 x 2.5GbE LAN ports (RJ45, supports 10/100/1000/2500 Mbps), Intel® i225				
	HDMI/DP	One/One				

Versions		Basic Versions	High Performance Versions
	USB Type-C	N/A	USB PD / USB 4.0 / Thunderbolt 4
	USB Type-A	USB2.0 Type A x1 ; USB3.2 Type A x1	USB2.0 Type A x2 ; USB3.2 Type A x1
	LED	Power Status	
	Power Supply	1x5.5x2.5mm DC Jack / Wafer 2.0mm 8pin	
	Micro Sim Card Slot	1	
Internal I/O	SATA	2 x SATA Gen III 6.0 Gb/s Data Connectors + 3 x SATA Power Connectors	
	COM Port	1 x RS-232/422/485, 1 x RS-232	
	GPIO	28-Pin Arduino Co-processor 2.54mm header	30-Pin Raspberry Pi Co-processor 2.54mm header
	Audio	Realtek High Definition Audio, Microphone + headphone Combo Connector	
	USB2.0	USB2.0 9-pin Header x2 480Mbps	
	Fan	2 x 12V 4-wire Fan header, PWM Control	
	Front Panel Control	Power-on, Reset, Power Status LED, SATA Status LED	
	S/PDIF	3-Pin 2.54mm Header	
	SATA Power	WAFER4-Pin 2.0 pitch Connector	
	Co-CPU. Debug Port	6-Pin 0.5mm FPC Connector (SWD)	
Expansion	M.2 M-Key	1 x M-Key 2242/2280(PCIe 3.0 x4 )	
	M.2 E-Key	1 x E-Key 2230(PCIe 3.0 x1; USB2.0 x1;Intel CNVi)	
	M.2 B-Key	1 x B-Key2242/2252/2280(PCIe 3.0 x2; USB2.0 x1)	
	High Speed I/O	1 X PCIe x4 Gen4	1 X PCIe 3.0 x4/SMBus/LPC/USB 2.0/CPU GPIO etc.
Power	Supply Voltage	DC Jack: 12V	DC Jack: 12V-19V

Versions		Basic Versions	High Performance Versions
	RTC Battery	Lithium 3V/210mAH	
Certification	EMC	CE,FCC,TELEC	
Mechanical	Dimension	132mm*124mm*233mm	
	Thermal Solution	Heat Pipe Assemblies/Heat Spreading Vapor Chamber Assemblies	
	Weight	1800g	

## Comparison

Version	Basic Versions			High Performance Versions	
Appearance					
Processor	Intel® Core™ 11th Gen. i3 1115G4	Intel® Core™ 11th Gen. i3 1125G4	Intel® Core™ 11th Gen. i5 1135G7	Intel® Core™ vPro® 11th Gen. i5 1145GRE	Intel® Core™ vPro® 11th Gen. i7 1185GRE
Cores/Threads of processor	2C/4T	4C/8T	4C/8T	4C/8T	4C/8T
Co-processor	Microchip® ATSAM D21G18 32-Bit ARM® Cortex-M0+ @ 48MHz			Raspberry Pi® RP2040 32-Bit Dual ARM Cortex-M0+ @ 133MHz	
Intel® vPro®	NO			YES	
Intel® Total Memory Encryption	NO			YES	
Graphics	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® Iris Xe Graphics G7 80EUs(400-1300MHz)	Intel® Iris Xe Graphics G7 80EUs(400-1300MHz)	Intel® Iris Xe Graphics G7 96EUs(400-1300MHz)
Memory	Dual Channels DDR4-3200(Support up to 64GB in total)				
ECC Memory Supported	NO			YES	

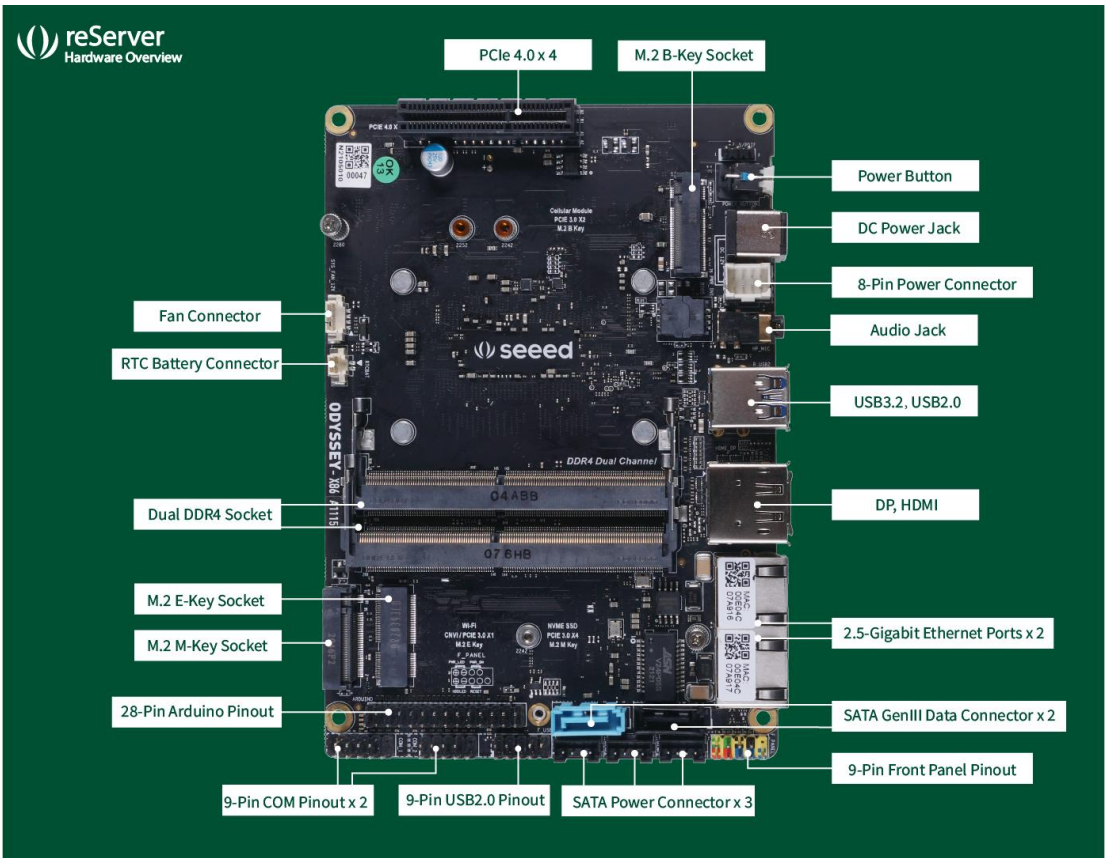
Version	Basic Versions	High Performance Versions
Network Controller	Intel® Ethernet Controller I225-V	Intel® Ethernet Controller I225-LM
Expansion	M.2 M-Key; M.2 B-Key; M.2 E-Key; 1 X PCIe x4 Gen4	M.2 M-Key; M.2 B-Key; M.2 E-Key; 1 X PCIe 3.0 x4/SMBus/LPC/USB 2.0/CPU GPIO etc.
External I/O	USB Type-A(USB2.0 Type-A x1 ; USB3.2 Type-A x1); HDMI; DP; 2.5GbE LAN ports x2; Audio Jack; DC Jack(12V);	USB Type-C(USB PD / USB 4.0 / Thunderbolt 4); USB Type-A(USB2.0 Type-A x2 ; USB3.2 Type-A x1); HDMI;DP; 2.5GbE LAN ports x2; Audio Jack; DC Jack(12V-19V);
WirelessConnectivity	WIFI, BLE and Support LTE/4G/5G/LoRaWAN	

### Hardware Overview

There are two different versions of reServer, Basic version and High performance version, which have different hardware configurations.

#### Basic version





High performance version



## Dimensions

Both versions have the same dimensions.



## Quick Start with reServer

If you want to get started with reServer in the fastest and easiest way, you can follow the guide below.

### Hardware Required

You need to prepare the following hardware before getting started with reServer ◦

- reServer
- Power Adapter(provided)
- External monitor
- HDMI/DP cable
- Keyboard and Mouse

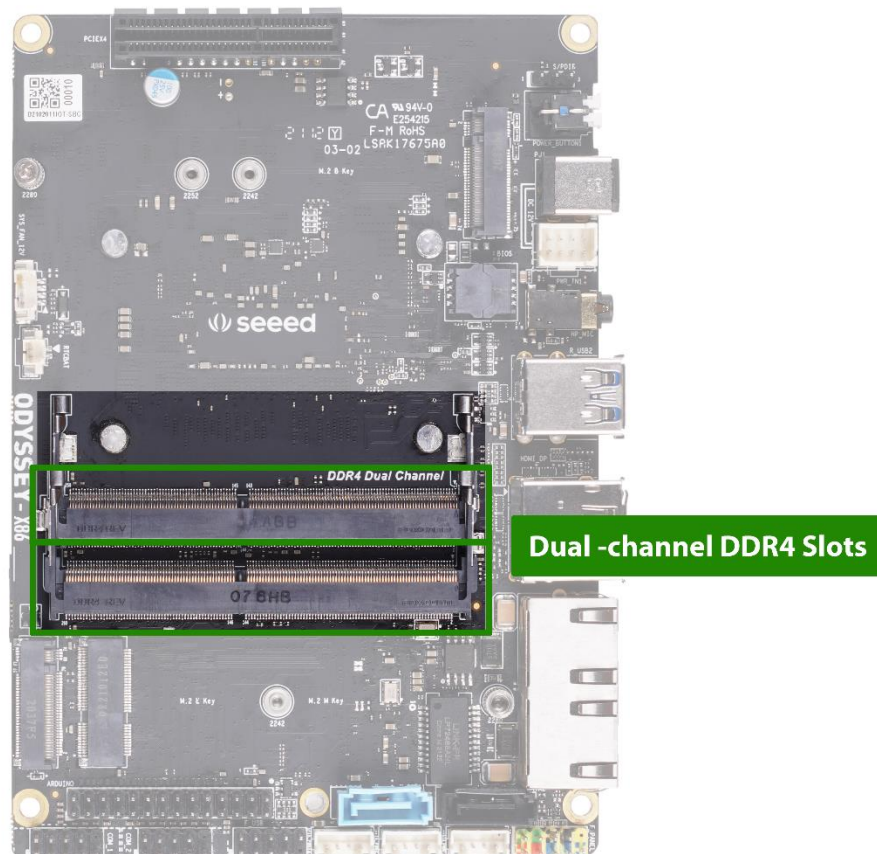


## Hardware Installation

For this part, we will introduce how to install or replace some hardware inside reServer. If there are no needs for you, please skip it. You might follow the **Assembly Guide Manual** attached at the end of this page to access to the main board of reServer before reading this part.

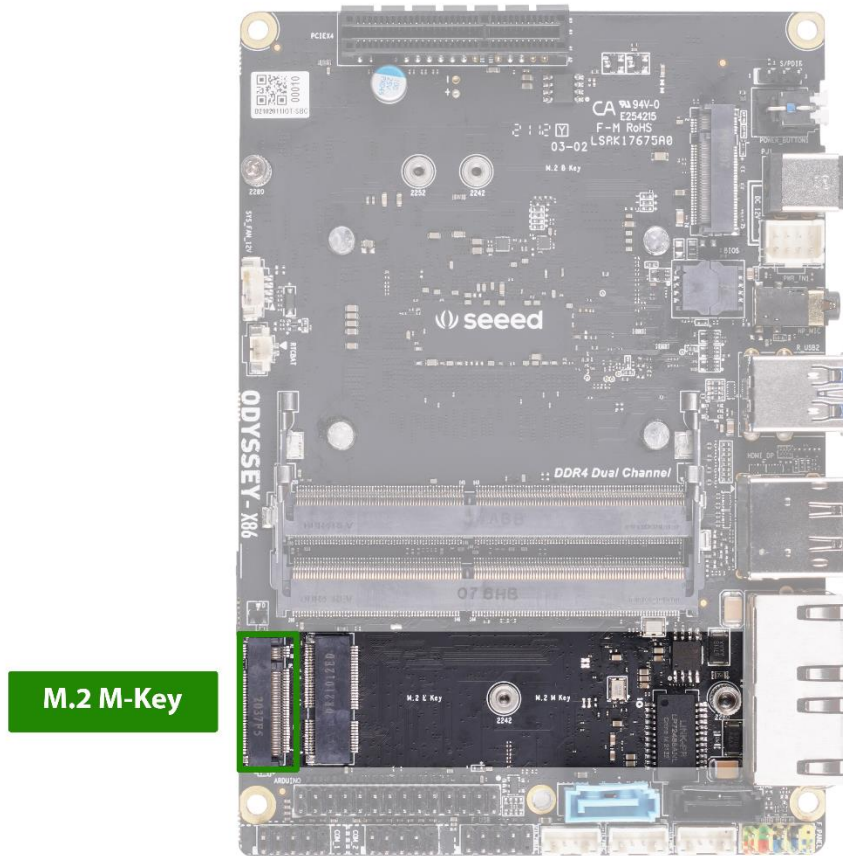
### DDR4 Installation

**DDR4-3200MT/s has been pre-installed for all versions of reServer** but you can also add a new DDR4 to the other channel or replace the pre-installed one with your own to expand memory. The dual-channel SO-DIMM slots support DDR4-3200MT/s up to 64GB in total.



## SSD Installation

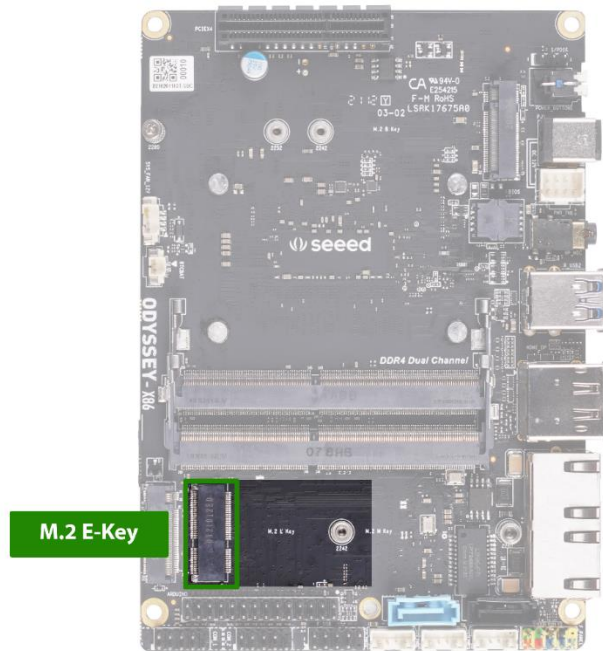
**A NVMe SSD has been pre-installed for all versions of reServer, while, still, the M.2 M-Key 2242/2280(PCIe 3.0 x4) allows you to replace it with the SSD you desire.**



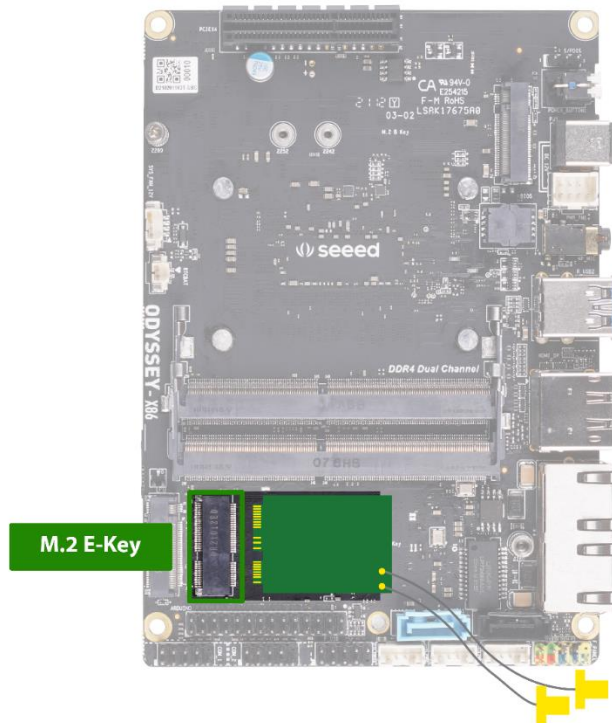
## WiFi Module Installation

**All versions of reServer have installed 2230 Dual Band WiFi 6 AX201(CNVio) Module at M.2 E-Key 2242/2280(PCIe 3.0x4). If you want to replace the pre-installed WiFi Module, feel free to follow the steps below.**

- **Step 1.** Remove the SSD from M.2 M-Key slot.
- **Step 2.** Take off the WiFi antenna cable and remove the pre-installed WiFi Module from M.2 E-Key.



- **Step 3.** Install the new WiFi Module and connect the WiFi antenna cable back to it.
- **Step 4.** Install the SSD back to M.2 M-Key.



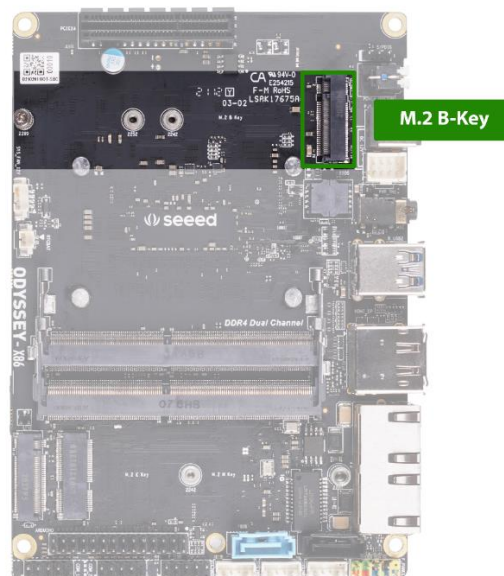
**Note:** reServer is shipped with two 2.4GHz WiFi Antennas, you can attach the antenna to the adapter which connects with the antenna cable of the WiFi module inside the reServer to achieve better WiFi connectivity.



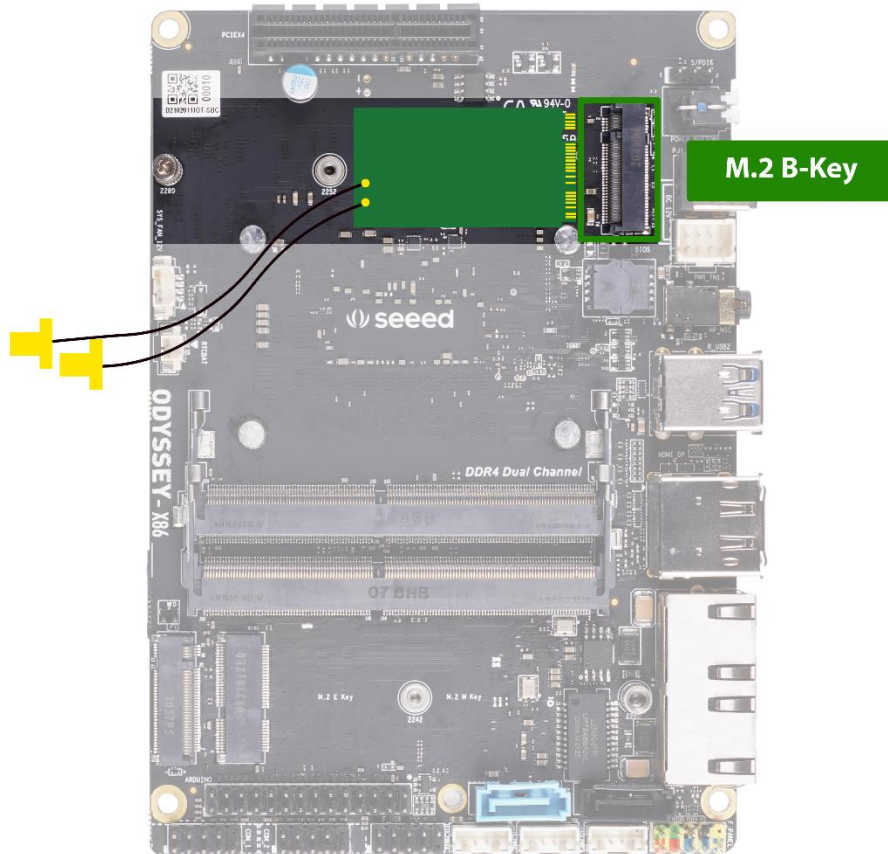
### 4G/5G/LoRaWAN Module Installation

reServer supports installing 4G/5G/LoRaWAN Module at M.2 B-Key 2242/2252/2280(PCIe 3.0 x2; USB2.0 x1). **(4G/5G/LoRaWAN Module is not included in reServer)** Please feel free to follow the steps to add 4G/5G/LoRaWAN Module.

- **Step 1.** Install 4G/5G/LoRaWAN Module to M.2 B-Key.



- **Step 2.** Connect the antenna cable to the Module.



**Note:** You have to insert a standard SIM card into the micro SIM card slot to enable 5G/4G.

### *HDD Installation*

reServer supports installing two 3.5"/2.5" internal hard disk drives to acquire more storage. **(The HDDs are not included in reServer)** Please follow the steps to install the HDDs. - **Step 1.** Remove the screws and pull out the brackets

- **Step 2.** Attach the HDDs to the brackets with screws
- **Step 3.** Push the HDD brackets down to connect the HDDs with the SATA ports.
- **Step 4.** Fix the HDD brackets with screws



## Hardware Connection

For this part, we will introduce the interface connection of reServer. There are two versions of reServer. Please note that different versions might have different interfaces.

### *Display Connection*

There are three methods for reServer to connect to a display while the third method is only for High-performing versions. **Method 1.** HDMI Port ·

**Method 2. DP Port**

**Method 3. USB Type-C(Available with High-performing versions only)**

Basic version



High performance version



## Keyboard and Mouse Connection

Connect keyboard and mouse through USB ports. There are one USB 3.2 port and one USB 2.0 port for Basic versions while there are one USB 3.2 port and two USB 2.0 ports for High-performing versions. Basic version



High performance version





## Audio Connection

For Basic versions, the Audio Jack is on the left side I/O panel, while, for High-performing versions, it's on the right side I/O panel for High-performing versions

Basic version



High performance version



## Power Connection

There are two methods to power up reServer, and the second one is only for High-performing versions.

**Method 1.** Simply connect AC-DC power adapter(included in the product box) with AC power cord(Out of the product box but still in the package), then connect it to 12V DC Jack of reServer.

**Method 2.** Connect USB Type-C charging cable(Not included in reServer) to the Thunderbolt 4 USB Type-C port(This port is only available with High-performing versions)

Basic version



High performance version



## Operation System Installation

For all versions of reServer, Windows 10 Enterprise(Unactivated) has been pre-installed, you can simply boot it up and activate the OS. However, reServer still supports other Windows OS and, also, Linux OS, so you can cover the pre-installed OS with the one you want.

## Resources

- [\[PDF\] reServer Assembly Guide](#)
- [\[PDF\] Atmel-SAMD21-datasheet](#)

## Tech Support

Please submit any technical issue into our [forum](#).