

Neosys Technology Inc.

PCIe-PoE464at

User Manual
Revision 1.0

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FCC Conformity This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Conformity 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.

Safety Precautions

Read these instructions carefully before you install, operate, or transport the system.

- Install the system or DIN rail associated with, at a sturdy location
- Install the power socket outlet near the system where it is easily accessible
- Secure each system module(s) using its retaining screws
- Place power cords and other connection cables away from foot traffic.
- Do not place items over power cords and make sure they do not rest against data cables
- Shutdown, disconnect all cables from the system and ground yourself before touching internal modules
- Ensure that the correct power range is being used before powering the device
- Should a module fail, arrange for a replacement as soon as possible to minimize down-time
- If the system is not going to be used for a long time, disconnect it from mains (power socket) to avoid transient over-voltage

Service and Maintenance

- ONLY qualified personnel should service the system
- Shutdown the system, disconnect the power cord and all other connections before servicing the system
- When replacing/ installing additional components (expansion card, memory module, etc.), insert them as gently as possible while assuring proper connector engagement

ESD Precautions

- Handle add-on module, motherboard by their retention screws or the module's frame/ heat sink.
- Avoid touching the PCB circuit board or add-on module connector pins
- Use a grounded wrist strap and an anti-static work pad to discharge static electricity when installing or maintaining the system
- Avoid dust, debris, carpets, plastic, vinyl and styrofoam in your work area.
- Do not remove any module or component from its anti-static bag before installation

About This Manual

This manual introduces and describes how to setup/ install Neosys Technology PCIe-PoE464at. A four port 5GBASE-T frame grabber card with 802.3at PoE+, it is designed applications utilizing high-res inspection and AI machine vision in high-speed production with multiple cameras.

Revision History

Version	Date	Description
1.0	Jul. 2026	Initial release

1 Introduction

PCIe-PoE464at is a fanless, four-port 5GBASE-T frame-grabber card with 802.3at PoE+, designed for the growing adoption of 5G industrial cameras in machine vision. As 5GBASE-T cameras move into high-resolution inspection, AI vision, multi-camera capture, and high-speed production lines, PCIe-PoE464at provides the bandwidth, power delivery, and synchronization needed for reliable 5G vision deployment.

Compared with USB3 vision systems, 5GBASE-T delivers high-bandwidth image transmission while supporting cable lengths of up to 100 meters over standard Ethernet cabling. The longer reach gives system integrators more flexibility in camera placement, factory layout, and control cabinet design, reducing the deployment limits often caused by shorter USB3 cable runs.



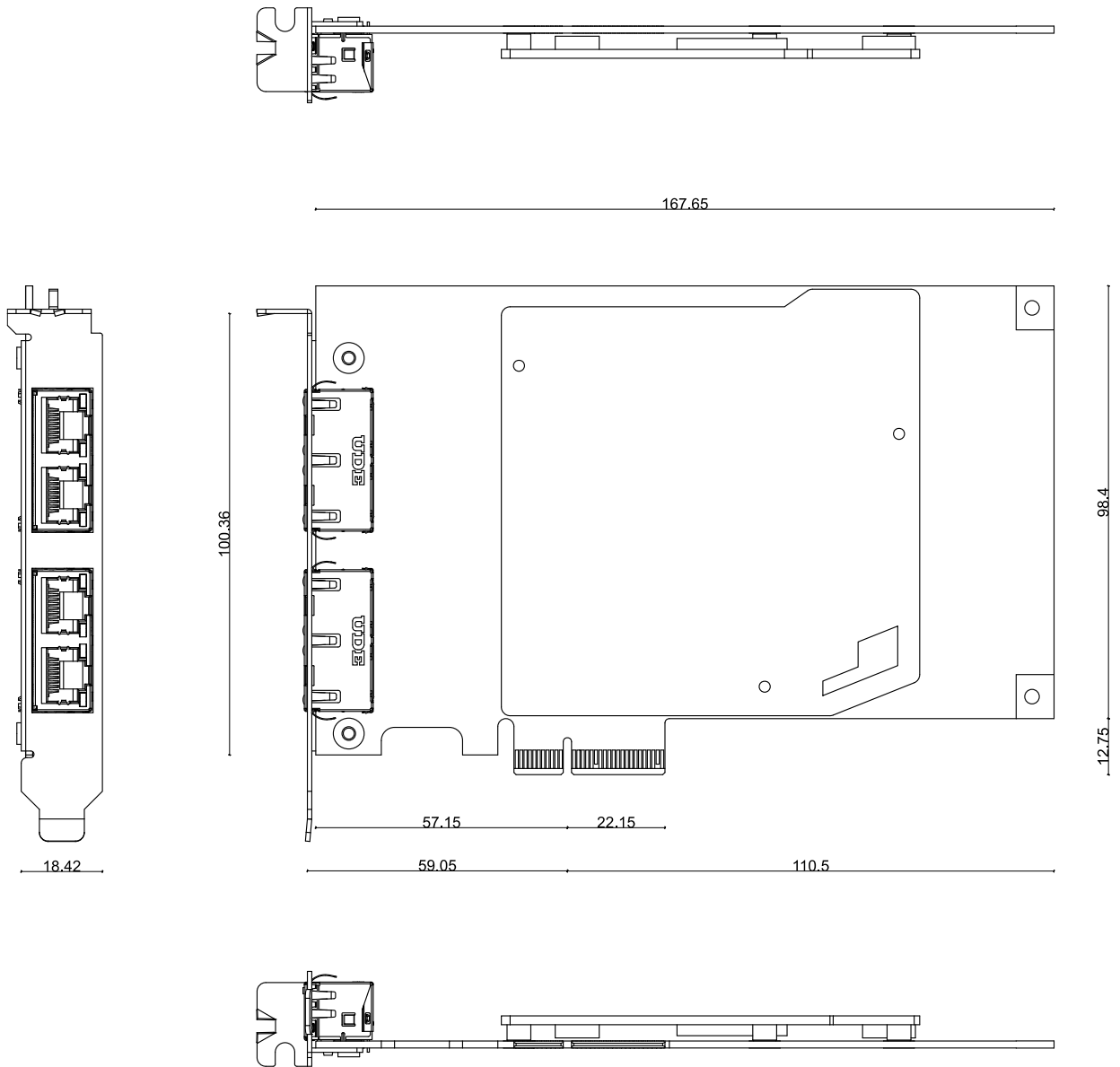
PCIe-PoE464at integrates four Realtek RTL8126 controllers, providing 5 Gb/s per port, 16 KB jumbo frame support, and compatibility with 2.5 GbE and 1 GbE links for flexible camera migration. To optimize both weight and thermal performance, PCIe-PoE464at uses a heat spreader to enhance heat dissipation while helping prevent bracket bending during long-term operation. 802.3at PoE+ reduces external power adapters and wiring cost, while IEEE 1588 PTP keeps image capture, inspection timing, and motion axes accurately synchronized.

Designed for 5G multi-camera machine vision, PCIe-PoE464at is well suited for high-resolution AOI, electronics assembly inspection, AI-based defect detection, multi-angle object inspection, high-speed logistics imaging, and large-field-of-view inspection. Its synchronized 5GBASE-T channels deliver stable, no-frame-loss image acquisition for applications requiring higher resolution, longer cable reach, reliable deployment, and precise timing control.

1.1 PCIe-PoE464at Specification

Bus interface	4-lanes, Gen3 PCI Express interface
Ethernet Port	4x 5GBASE-T Ethernet ports by four Realtek RTL-8126 5G controllers
Supported Network Protocol	IEEE802.3 Ethernet interface supporting 5G/ 2.5GBASE-T, 1000GBASE-T, 100BASE-TX, and 10BASE-Te
PoE Capability	In compliance with IEEE 802.3at-2009 (PoE+), each port delivers up to 25.5 W
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximum
Power requirement	Maximum 5.5A @ 12V (66W) from PCIe gold finger connector
EMC	CE Class A, according to EN 55032/55035 FCC Class A, according to FCC Part 15, Subpart B
Operating temperature	0°C ~ 55°C with airflow
Dimension	167.7 mm (W) x 111.2 mm (H)

1.2 Dimension



NOTE

All measurements are in millimeters (mm).

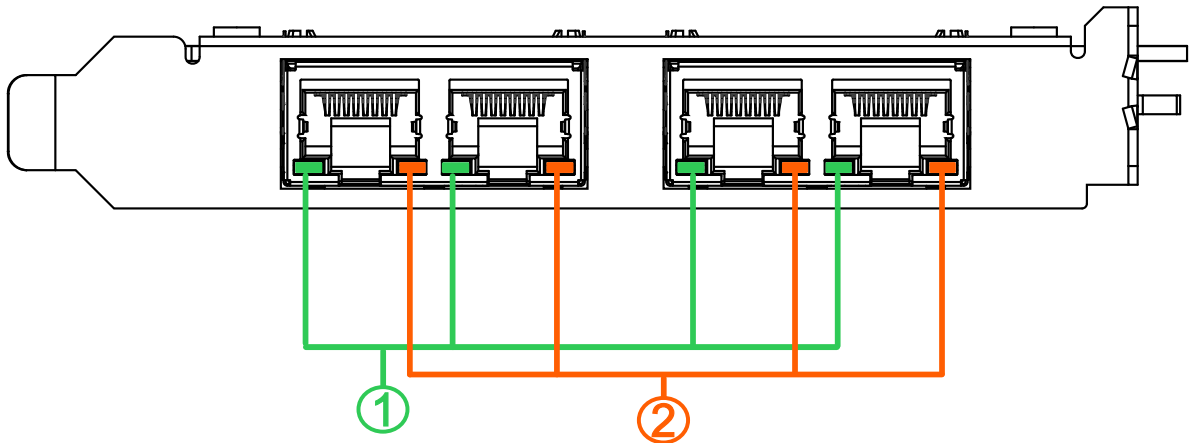
2 Setting Up Your PCIe-PoE464at Card

2.1 Unpacking Your PCIe-PoE464at

Upon receiving the PCIe-PoE464at package, please check immediately if the package contains all the items listed in the following table. If any item is missing or damaged, please contact your local dealer or Neousys Technology.

Item	Description	Qty
1	PCIe-PoE464at	1
2	Standoff pack (for multi-card installation)	1

2.2 Status LEDs



Speed LED (1)

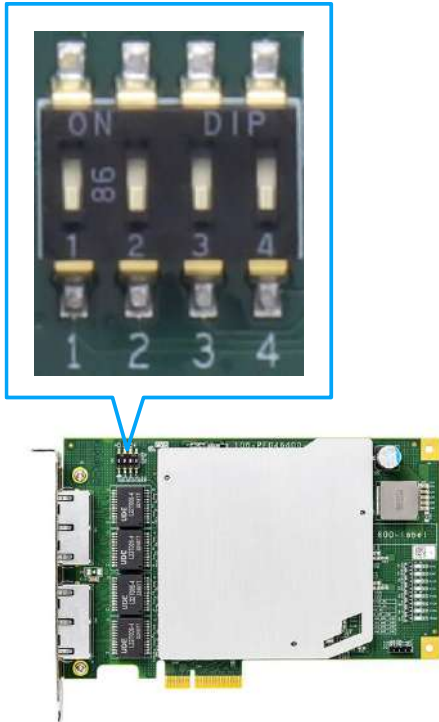
LED Color	Status	Description
Green or Orange	Green	5000 Mbps
	Orange	2500 Mbps
	Orange	1000 Mbps
	Orange	100 Mbps

Active/Link LED (2)

LED Color	Status	Description
Orange	Off	Ethernet port is disconnected
	On	Ethernet port is connected and no data transmission
	Flashing	Ethernet port is connected and data is transmitting/receiving


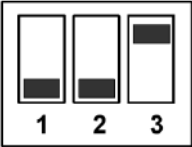
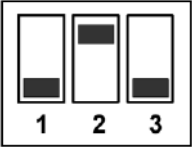
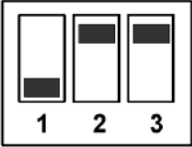
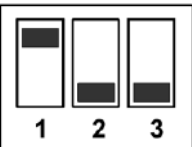
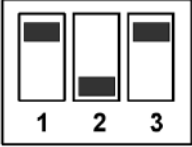
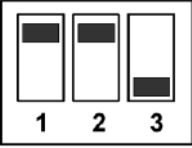
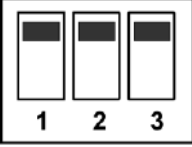
2.3 DIP Switches

PCIe-PoE464at features individual per-port power on/off control via Neosys' API so you may manually cut off or resume the power delivery to the connected PoE device. This feature is designed for failure recovery in the field to reset connected devices. In case you have installed multiple cards, there is a set of DIP switches (indicated in **blue**) for users to configure board ID. The board ID can be used as a parameter in API to specify the card.



2.3.1 Board ID Settings

The following illustrations describe DIP switch board ID settings. When installing multiple cards, please remember to set a different ID for each card.

Board ID	DIP Switch Position (P1 ~ P3)
0	
1	
2	
3	
4	
5	
6	
7	

3 PCIe-PoE464at Card Installation

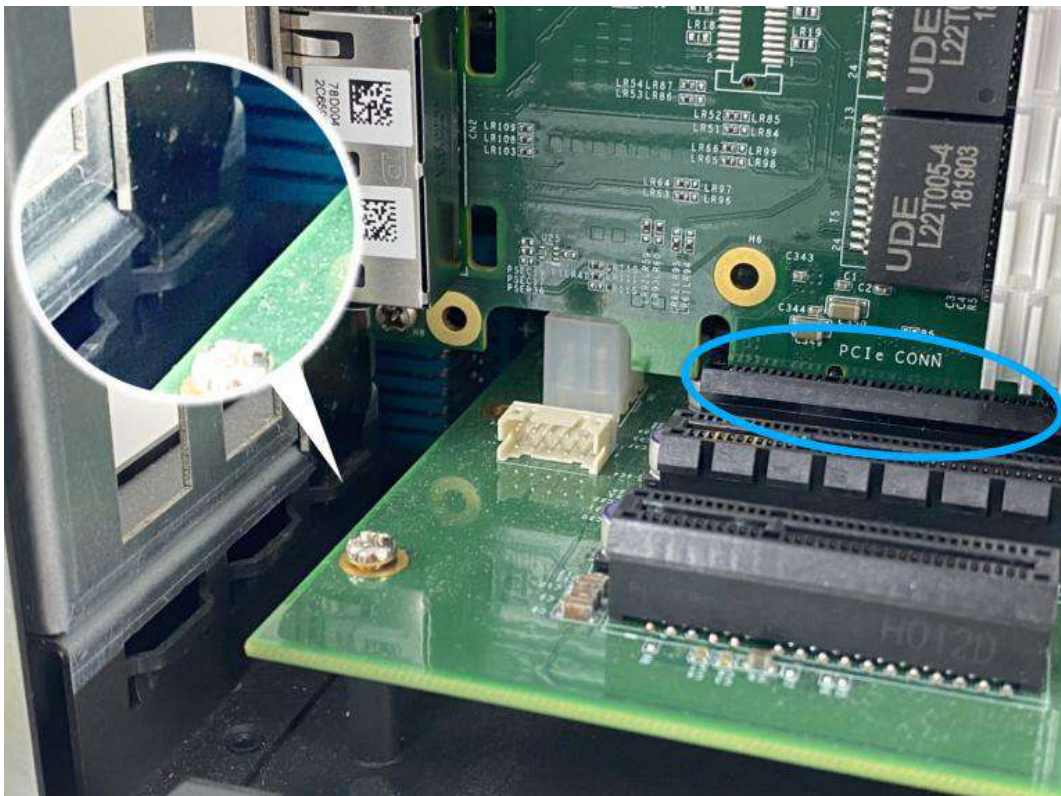
Once you have set up the DIP switch ID of your PCIe-PoE464at for multi-card installation, then you are ready to install the PCIe-PoE464at into the system. Please refer to the following installation procedures.

Before disassembling the system enclosure and installing the card, please read the following instructions:

- **DO NOT** remove the card out of the anti-static until you are ready to install it into the system.
- It is recommended that only qualified service personnel should install and service this product to avoid injury or damage to the system.
- Please observe all ESD procedures at all times to avoid damaging the equipment.
- Before disassembling your system, please make sure the system has powered off, all cables and antennae (power, video, data, etc.) are disconnected.
- Place the system on a flat and sturdy surface (remove from mounts or out of server cabinets) before proceeding with the installation/ replacement procedure.

3.1 Hardware Installation

1. Save and close all work in progress.
2. Power off and unplug the power cable from the system you wish to install to.
3. Open the chassis (side panel) of the computer you wish to install the PCIe-PoE464at into.
4. Locate the x4 PCIe slot or a spare and compatible x16/ x8 PCIe slot.
5. Align and insert PCIe-PoE464at's gold finger into the PCIe slot.



- Secure the PCIe-PoE464at to the chassis with a screw.



- Reinstall the system's chassis (panel) to complete the hardware installation process.

3.2 Software Installation

Some operating systems may have built-in drivers included and automatically complete the installation upon entering the system. However, it is still recommended to run and install drivers provided by Neosys to take advantage of all the functions offered. To install the software component, please refer to the following:

[Realtek driver download](#)

[PTP-Enabled Linux driver](#)

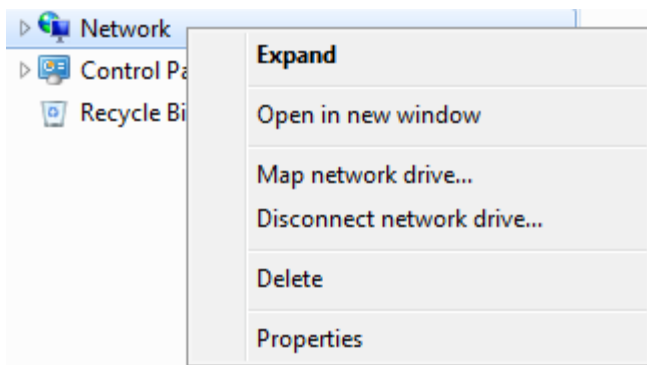
4 Driver and Network Settings

PCIe-PoE464at offers 5 Gigabit Ethernet connectivity. When connecting to a high-speed PoE device, such as a 5G/ GigE camera, you can configure driver settings for optimum transmission throughput and connection stability. You may also refer to this [link](#) for recommended setup/ installation configuration.

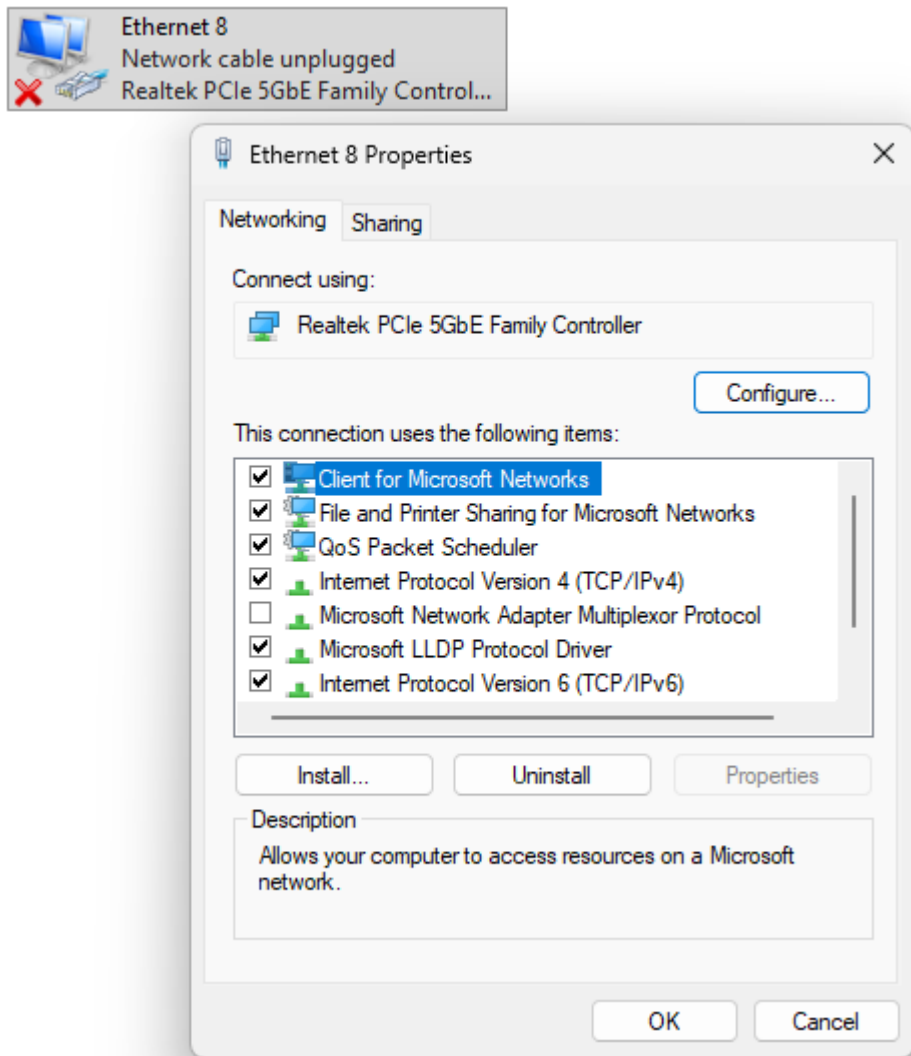
4.1 Jumbo Frame

Jumbo frames are Ethernet frames with more than 1500 bytes of payload. By increasing the payload size, large data packets can be transferred with less interruption, which reduces CPU utilization and increases overall data throughput. The controller supports jumbo frame size of up to 16.3 Kbytes. Once the driver is installed, you may configure jumbo frame settings by executing the following steps:

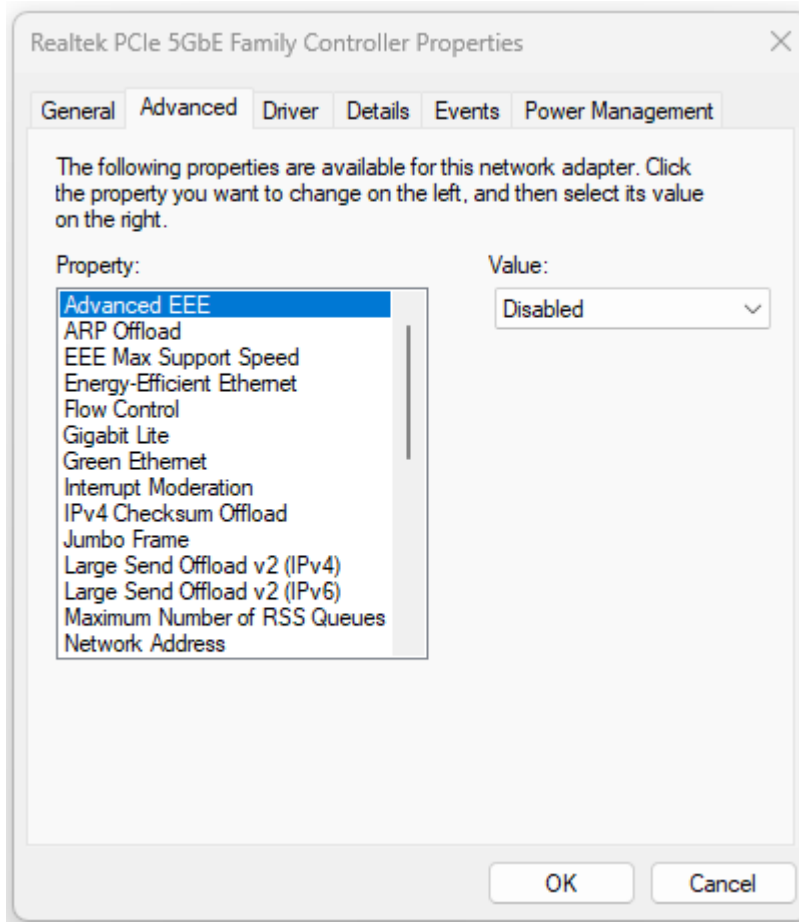
1. On your keyboard, press **Windows key + E**, right click on **Network** and select **Properties**.



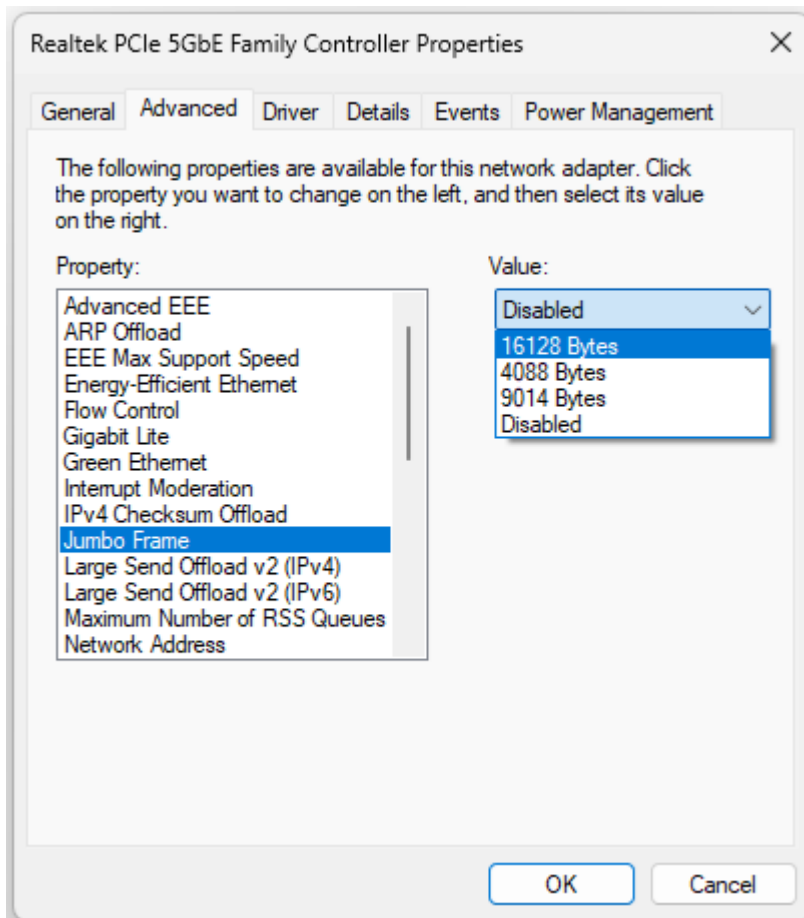
- Right click on the corresponding **Local Area Connection** (Realtek PCIe 5GbE Family Control ...) and click on **Properties**.



- Click on the **Configure** button, the following dialog appears and click on the **Advanced** tab.



4. Highlight **Jumbo Frame** and select a jumbo frame size from the Value drop-down list (16128 Bytes is recommended for connecting devices with high data rate).

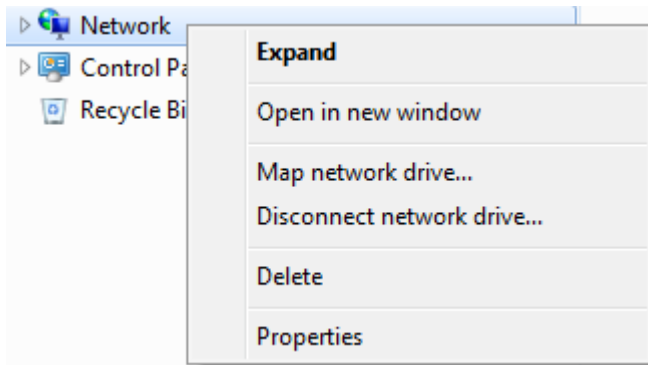


4.2 Receive Buffers

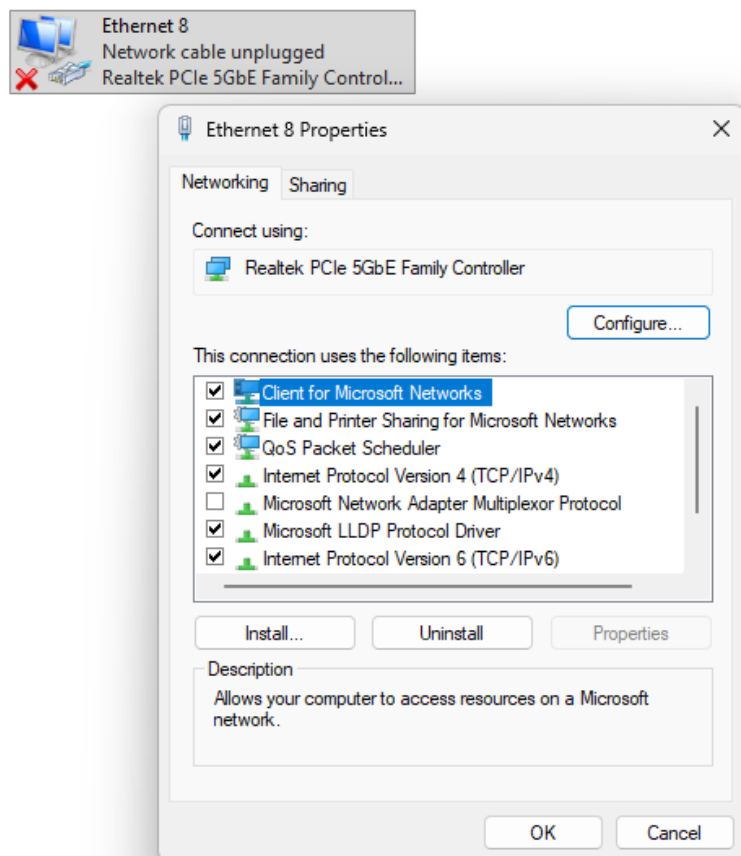
Receive Buffers is another option which can affect data throughput. It determines the size of memory buffer allocated for receiving data. Increasing the size of Receive Buffers can improve the performance of receiving data. The default setting of Receive Buffers is 256 bytes. When connecting to an Ethernet device that generates large amount of data, you can set this option to a larger value (maximum 4096 bytes) for better performance.

To configure Receive Buffers settings, please refer to the following:

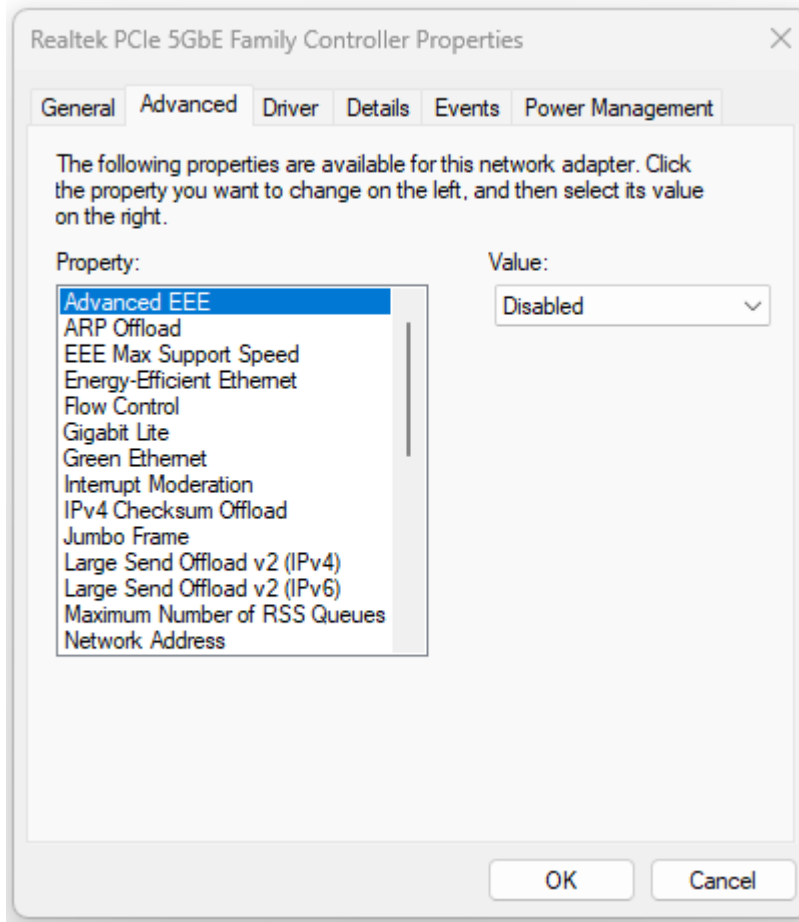
1. On your keyboard, press **Windows key + E**, right click on **Network** and select **Properties**.



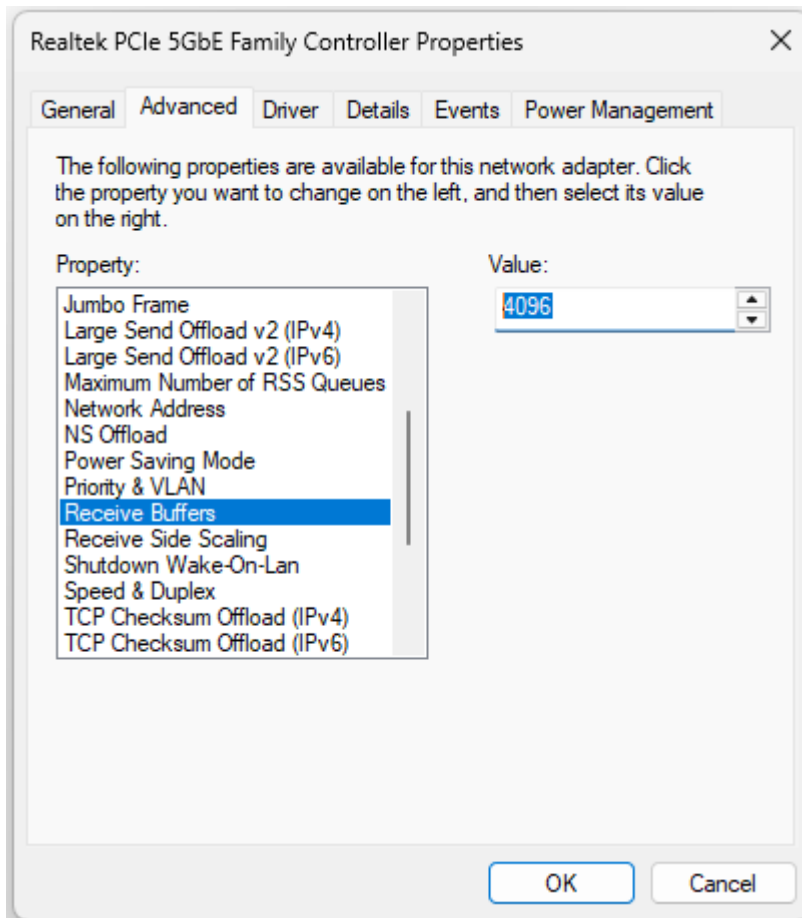
2. Right click on the corresponding **Local Area Connection** (Intel I350 Gigabit Network) and click on **“Properties”**.



3. Click on the **Configure** button, the following dialog appears and click on the **Advanced** tab.



4. Scroll down the Property list and highlight **Receive Buffers** and enter a setting into the **Value** column (4096 Bytes is recommended for connecting devices with high data rate).

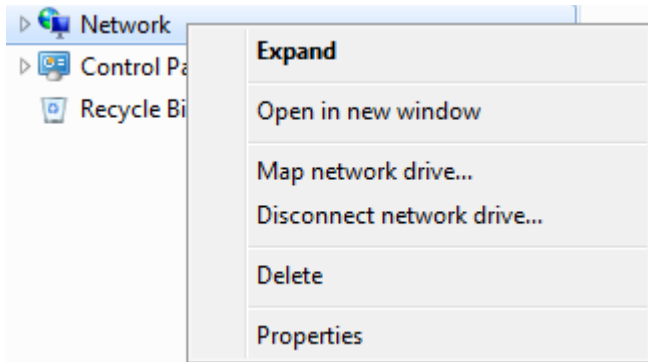


4.3 Transmit Buffers

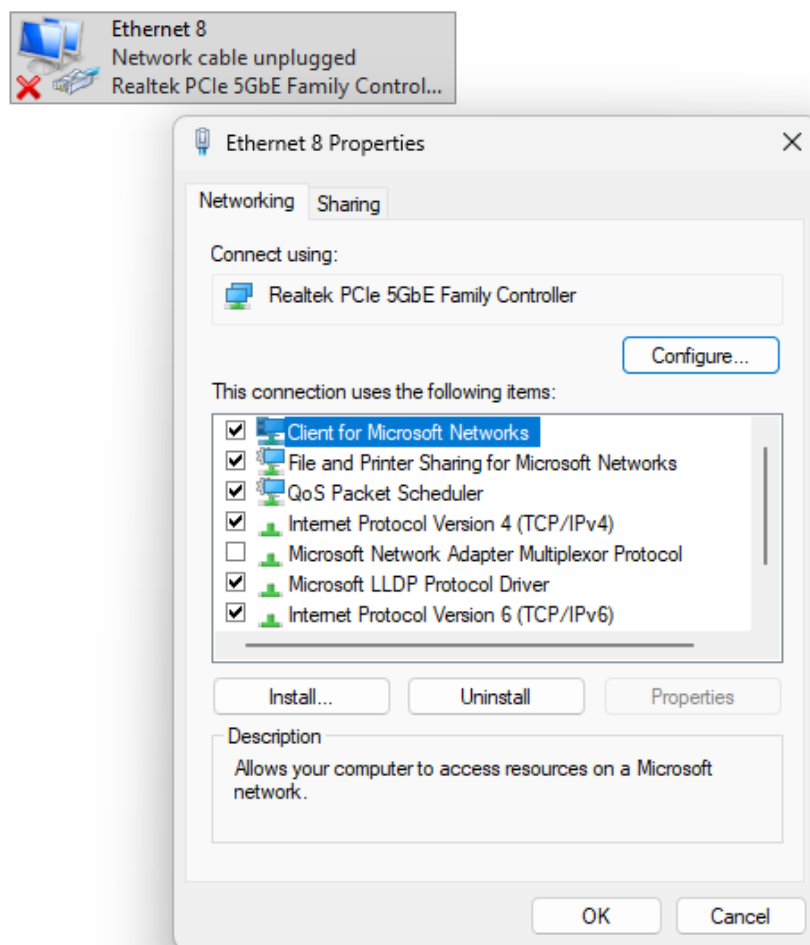
Like Receive Buffers, Transmit Buffers can affect the transmission performance. The default setting of Transmit Buffers is 512 bytes. If you encounter a performance issue while transmitting data, you can adjust the size of Transmit Buffers to a larger value (maximum 8184 bytes) for better performance.

To configure Transmit Buffers settings, please refer to the following:

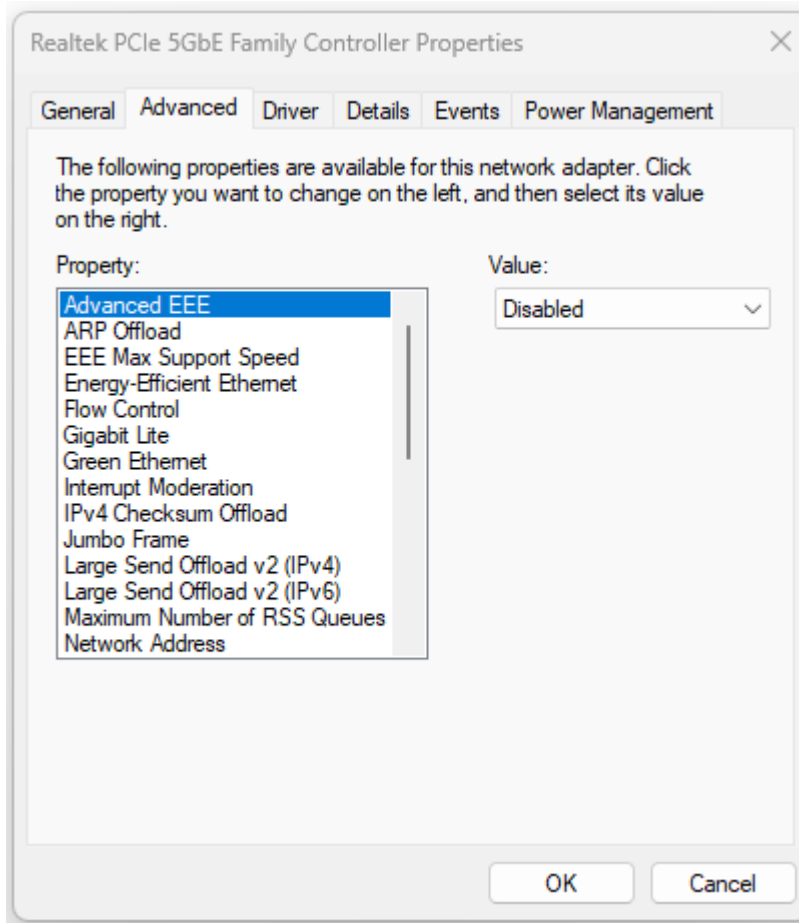
1. On your keyboard, press **Windows key + E**, right click on **Network** and select **Properties**.



2. Right click on the corresponding **Local Area Connection** (Intel I350 Gigabit Network) and select **Properties**.



3. Click **Configure** button, the following dialog appears and click on the **Advanced** tab.



4. Scroll down and highlight **Transmit Buffers** and enter a setting into the **Value** column (4096 Bytes is recommended for connecting devices with high data rate).

