

PE-2001H USER Manual

PCI Express IEEE 802.3bt Compliant
Intel® I210 PoE⁺⁺ PCIe Expansion Card

Record of Revision

| Version | Date | Page | Description | Remark |
|---------|------------|---------|------------------|--------|
| 1.00 | 2024/01/04 | All | Official Release | |
| 1.10 | 2024/12/13 | 1, 4, 5 | Update | |
| 1.20 | 2025/04/02 | All | Update | |

Order Information

| Part Number | Description |
|-------------|--|
| PE-2001H | 1-port GigE High Power PoE PCI Express Expansion Card with Intel® I210 IT Controller |

Recommended Accessories

| Part Number | Description |
|----------------|---|
| 61-1400003-0G5 | ATX 8-pin to 6-pincable for RCX Series |
| 61-1300020-100 | ATX 6-pin to 6-pin cable for ECX Series |

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Declaration of Conformity

FCC 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 it is not installed and used in accordance with the instruction manual, it 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 The products 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.

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1

GENERAL INTRODUCTION

1.1 Overview

The Vecow PE-2001H is a full-height PCIe card that integrates 1 GigE LAN and Type 4 PoE⁺⁺ capability. Powered by the built-in Intel[®] Ethernet Controller I210 and featuring high-power PoE with a max 90W power output, the PE-2001H supports gigabit data rates of 1Gbps/100Mbps/10Mbps. This makes it suitable for demanding applications, such as Medical Vision, Video Streaming, Real-time Inspection and Scientific Research.

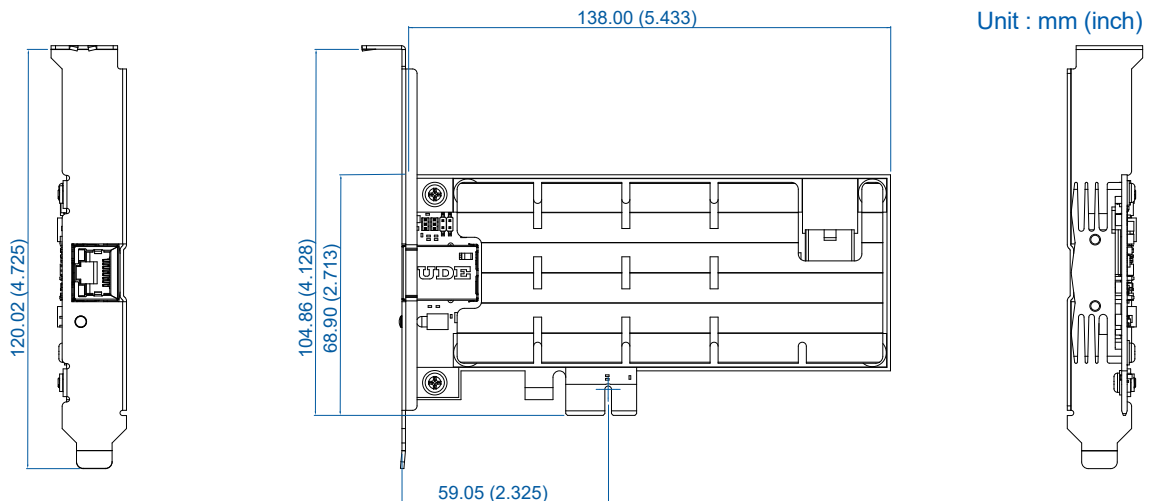
1.2 Features

- Intel[®] I210 1GBASE-T Ethernet Controller supports up to 1Gbps data transfer
- PCI Express x1 interface, Full Height
- IEEE 802.3bt Power over Ethernet (High-Powered PoE, PoE⁺⁺ PSE),
- RJ45 connector, max 90W Power Output at 54V DC, with PoE On/Off Control
- Supports up to 9728 bytes Jumbo Frame
- -25°C to 60°C Operating Temperature

1.3 Product Specification

| Ethernet | |
|-----------------------|--|
| Interface | PCI Express x1 |
| Controller | Intel® Ethernet Controller I210 |
| Controller Qty | 1 |
| Data Rate | 1Gbps/100Mbps/10Mbps |
| Number of Port | 1 |
| Connector | RJ45 |
| PoE Standard | IEEE 802.3bt Type 3 and Type 4 compliant IEEE 802.3at and 802.3af compliant |
| Power Requirements | |
| Output | <ul style="list-style-type: none"> Up to 90W Power Output @54V DC per port LED for PoE On/Off Mode |
| Power Connector | 1 6-pin 12V ATX Power Connector |
| Software Support | |
| OS | Windows 11/10, Linux |
| Environment | |
| Operating Temperature | -25°C to 60°C (-13°F to 140°F) with airflow |
| Storage Temperature | -40°C to 85°C (-40°F to 185°F) |
| Humidity | 5% to 95% Humidity, non-condensing |
| Relative Humidity | 95% @ 60°C |
| Certifications | CE, FCC |
| Mechanical | |
| Dimension (W x D x H) | 138mm x 68.9mm (5.43" x 2.71") |
| Bracket | Full height |

1.4 Mechanical Dimension



2

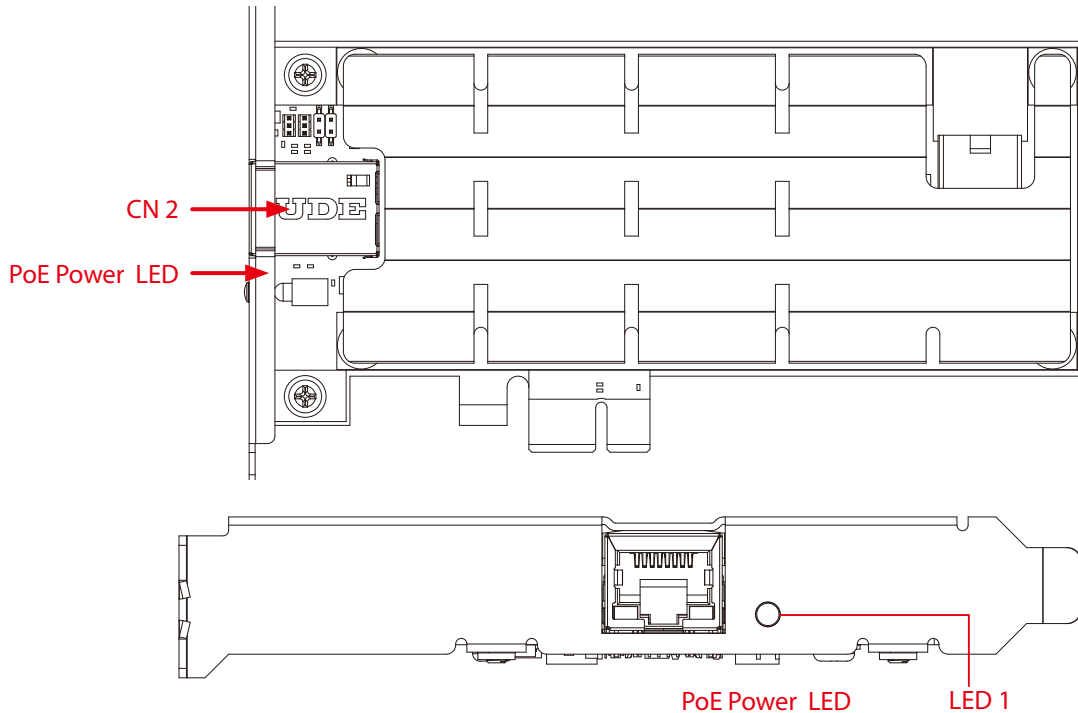
GETTING TO KNOW YOUR PE-2001H

2.1 Packing List

| Item | Description | Qty |
|------|--|-----|
| 1 | PE-2001H, 1-port GigE High Power PoE PCI Express Expansion Card with Intel® I210 IT Controller | 1 |

2.2 PE-2001H I/O and Indication

2.2.1 PoE (Power over Ethernet) Ports



PE-2001H is equipped with one IEEE 802.3bt PoE++ ports for transmitting power as much as 90W / 54V per port and 10/100/1000Mbps data signals over standard Ethernet CAT-5/CAT-6 cable.

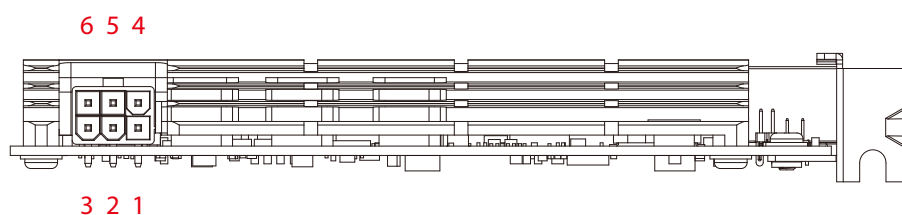
The PoE connection is powered by Intel® I210 10/100/1000Mbps Ethernet.

Controller and independent PCI express interface to connect with multi-core processor for networking and data transmit optimization. Only when PoE port starts to supply power to power devices, the dedicated LED will be lightened.

The pin-outs of CN2 is listed as follows :

| Pin No. | 10/100 Mbps | 1000Mbps | PoE |
|---------|-------------|----------|------|
| 1 | E_TX+ | MDI0_P | PoE- |
| 2 | E_TX- | MDI0_N | PoE- |
| 3 | E_RX+ | MDI1_P | PoE+ |
| 4 | ---- | MDI2_P | PoE+ |
| 5 | ---- | MDI2_N | PoE+ |
| 6 | E_RX- | MDI1_N | PoE+ |
| 7 | ---- | MDI3_P | PoE- |
| 8 | ---- | MDI3_N | PoE- |

2.2.2 Power Input



PE-2001H requires an external 6-pin power supply by default to support PoE Power supply.

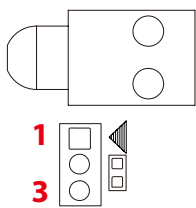
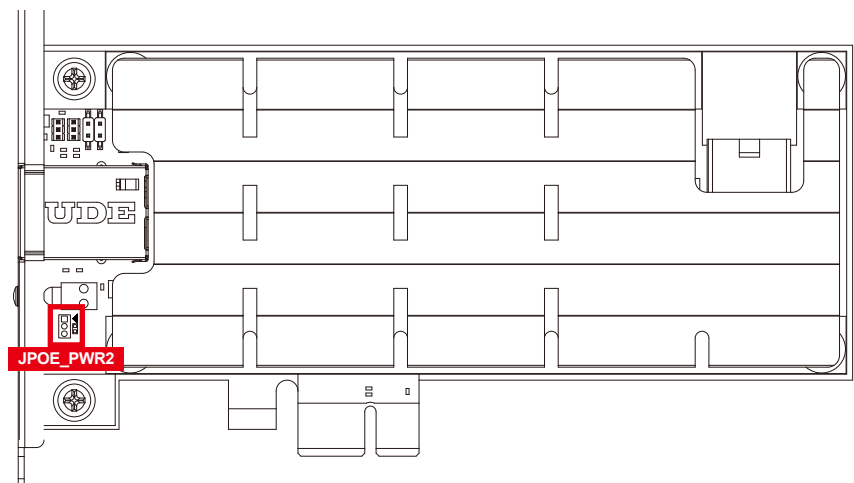
Please always confirm the polarity before you plug into the onboard 6-pin power plug.

CN1 :

| Pin No. | Definition | Pin No. | Definition |
|---------|---------------|---------|------------|
| 1 | +12V (8A max) | 4 | GND |
| 2 | +12V (8A max) | 5 | GND |
| 3 | +12V (8A max) | 6 | GND |

If device run on AT/AF mode. The 25W power obtained from the PCIe bus is sufficient for PoE devices, and JUMP(JPOE_PWR2) can be adjusted to switch the power supply to that provided by the PCIe bus.

JPOE_PWR2 :



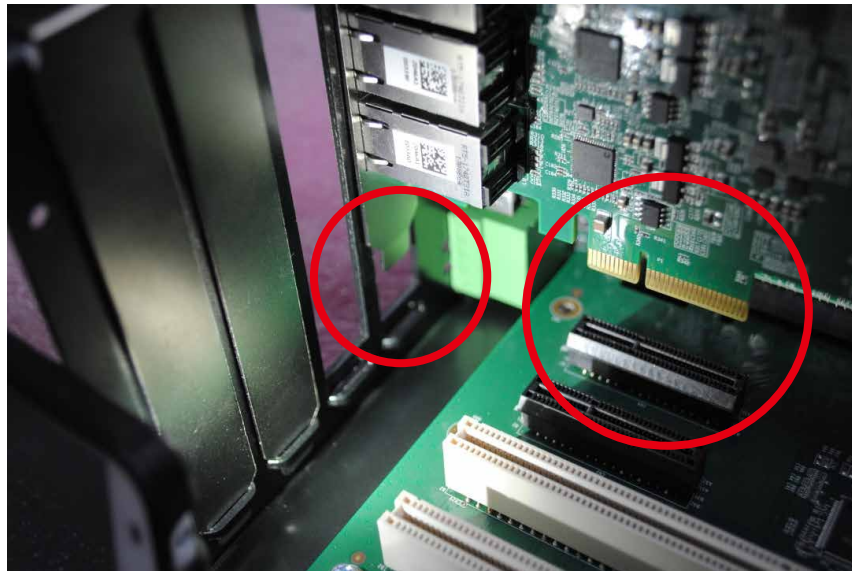
| Location | Description | Function |
|-----------|-------------|--|
| JPOE_PWR2 | 1-2 | PoE Power supply provided by the PCIe bus 12V. (25W only) |
| | 2-3 | PoE Power supply provided by the External 6-pin 12V. (Default) |

3

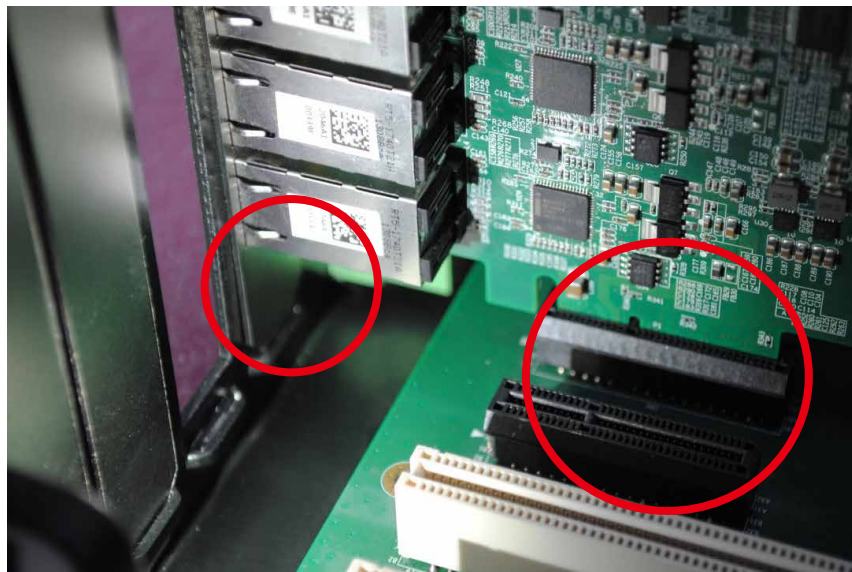
GETTING START

3.1 Installing PE-2001H

Step 1. Insert edge-finger and PCI Express I/O bracket into PCI Express vertical edge card connector carefully.



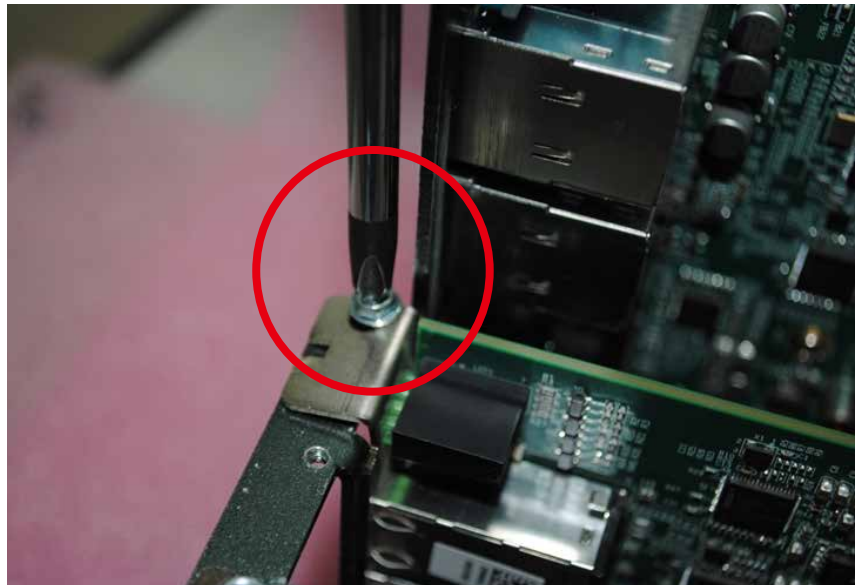
Step 2. Make sure edge-finger and PCI Express I/O bracket are inserted smoothly.



Step 3. Make sure PCI Express I/O bracket aligns screw hole.



Step 4. Fasten the M3 or #6-32 screw.



4


DRIVER INSTALLATION AND SETTING

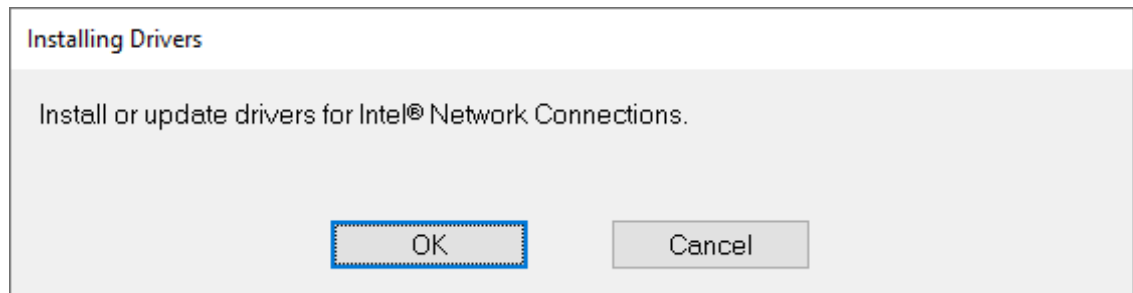
4.1 Driver Installation

4.1.1 PE-2001H Install Driver

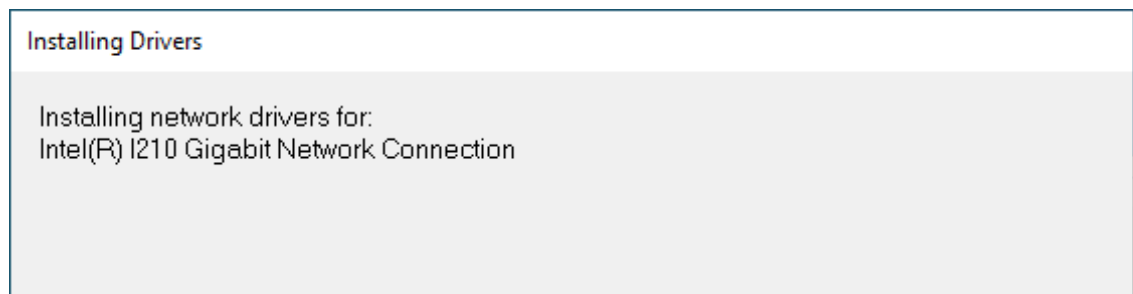
This section describes :
How to install drivers for PE-2001H PoE Card.

System OS :
Windows 10-64bit

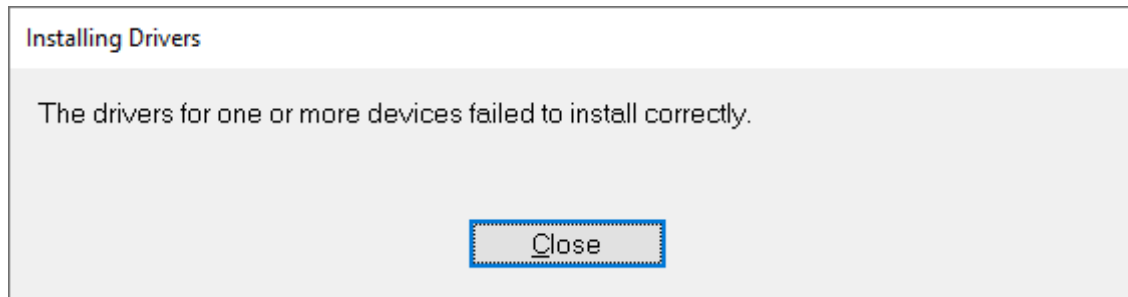
Step 1. Execute "  Wired_driver_28.2_x64.exe" and then go "OK" step.



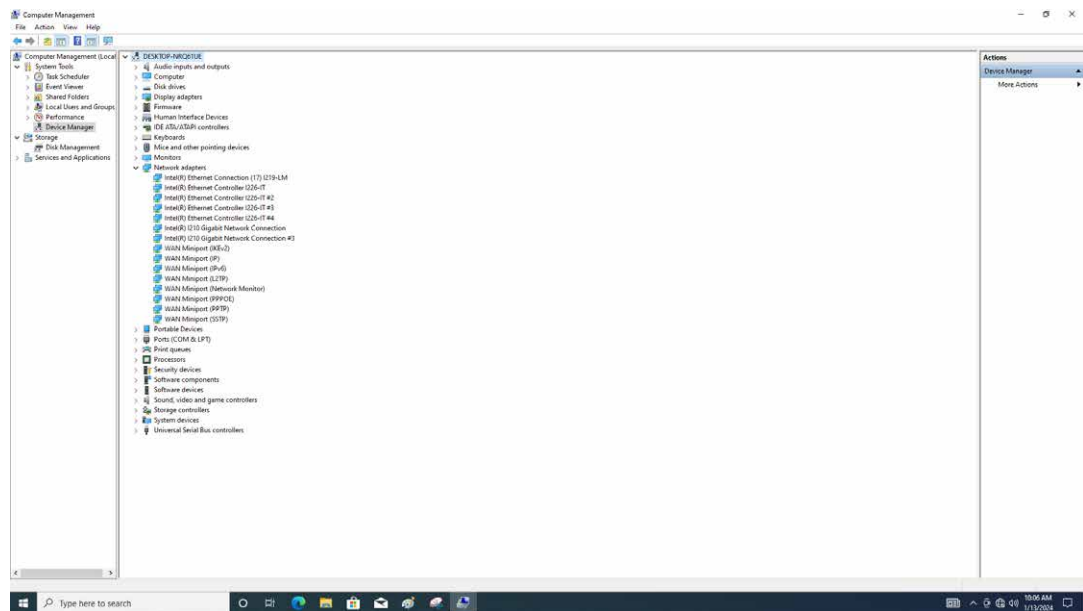
Step 2. Installing Drivers.



Step 3. Select "Close" step.



Step 4. Auto Detect in "Intel® I210 Gigabit Network Connection #3".

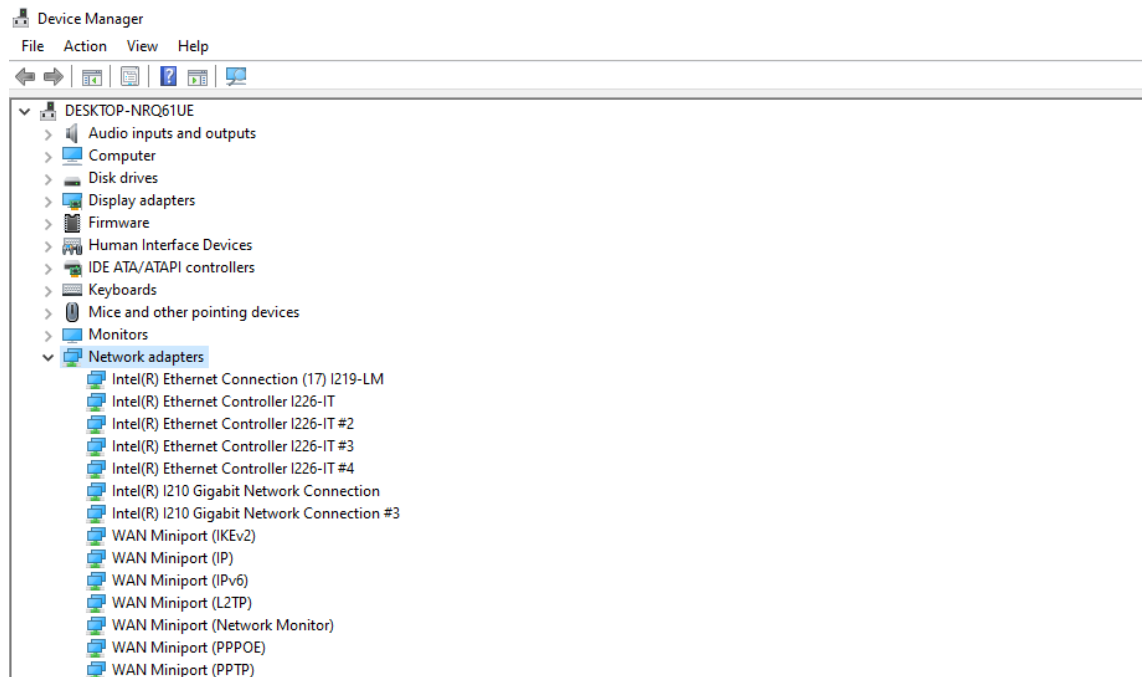


4.2 Jumbo Frame

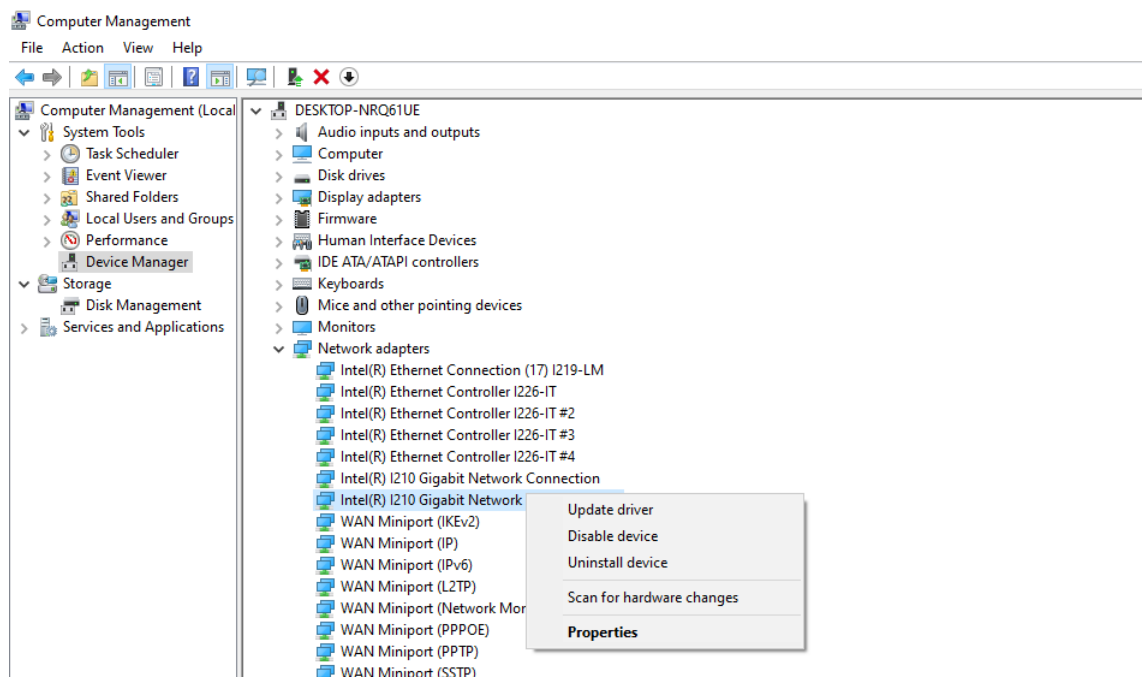
4.2.1 PE-2001H Jumbo Frame

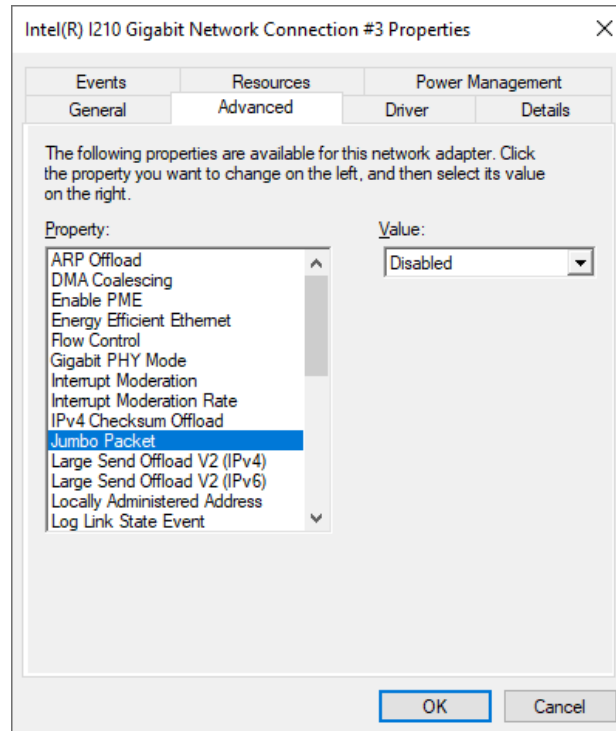
After installing the driver for Intel® I210 controller, you can get the enhance function that called jumbo frame, please find more instruction as below.

Step 1. "Right-click  → Device Manager → Network adapters".

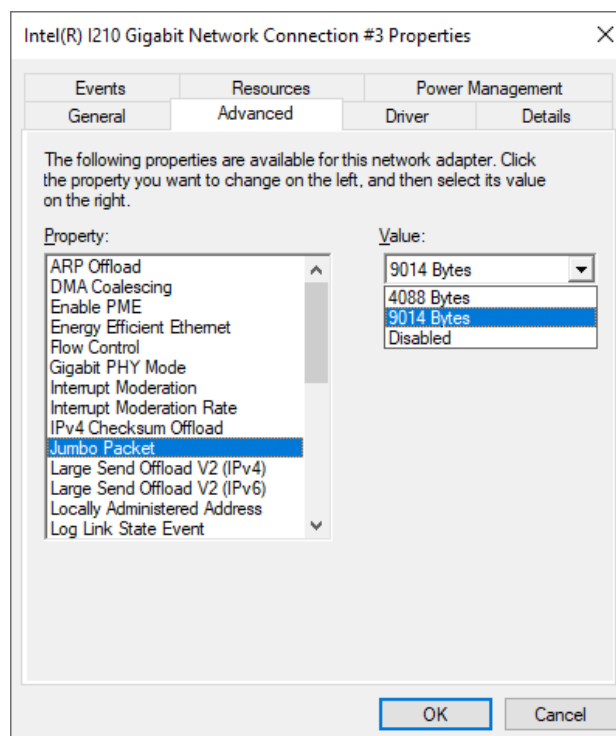


Step 2. Select anyone "Intel® I210 Gigabit Network Connection #3", right Click and select "Properties", a property dialog appears and Click on the Advanced page.





Step 3. Select the "Jumbo Packet", settings, and select the expected jumbo frame size and then go "OK" Finish.

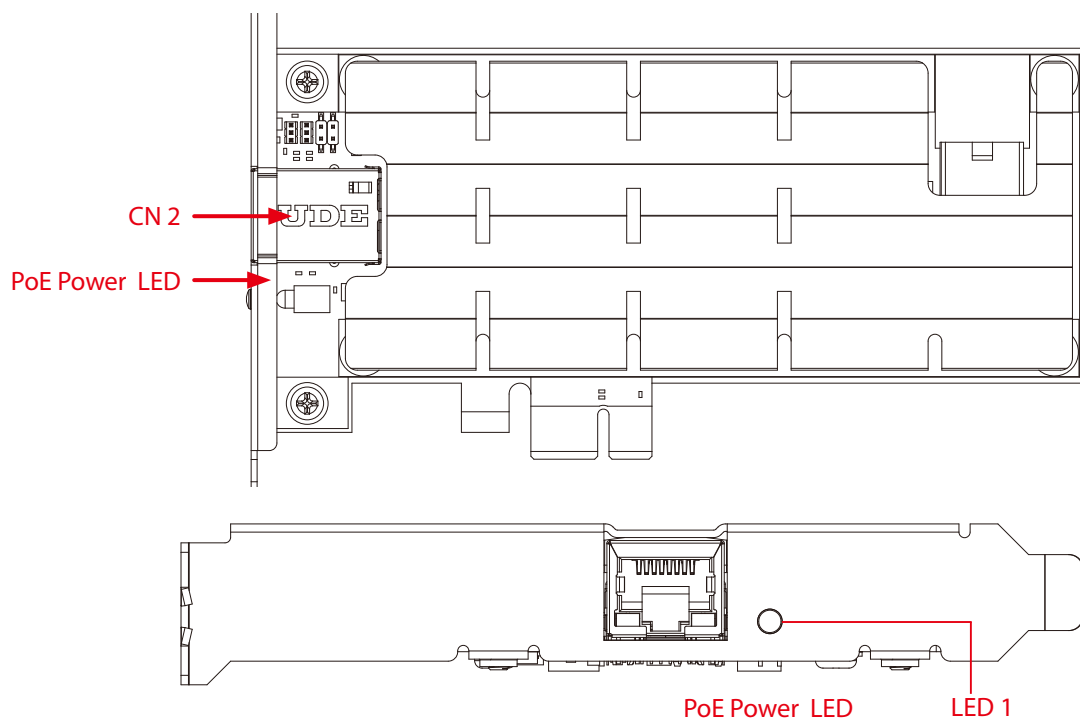


A

APPENDIX A : PoE Guide

A.1 Function Description

The PE-2001H series offers a 1port PoE⁺⁺.



| Pin No. | Definition |
|---------|------------|
| LAN1 | POE 0 |

Do NOT use these functions in below :

1. ECS-4000 : DIO1 (ID = 2), POE (ID = 0)
2. ECS-4500, ECS-9000, ECS-9200, ECS-9700, IVH-7700, IVH-9000, IVH-9200 : POE (ID = 0)
3. RCS-7000 : GPIO (ID = 0)
4. PE-2000 : DIO1 (ID is the same, ID = 0 ~ 7), POE (ID = 0)
5. UE-1000 : USB (IDUE-1000 = IDPE-3000 >> 1 & 3 | IDPE-3000 << 2 & 4)

Default Address : 0x44(8bit),0x22(7bit)

PE-2001H controls JWH7294 PoE Power ON/OFF via SMBUS

A.2 Software Package Contain

Distribution folder include x32 and x64 versions, use batch file for installation.

There are included as followed :

Win10_32.bat, and Win10_64.bat :

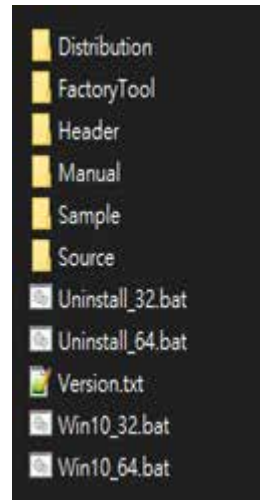
Installation for driver, and

Uninstall_32.bat, and Uninstall_64.bat :

Uninstallation for driver Run

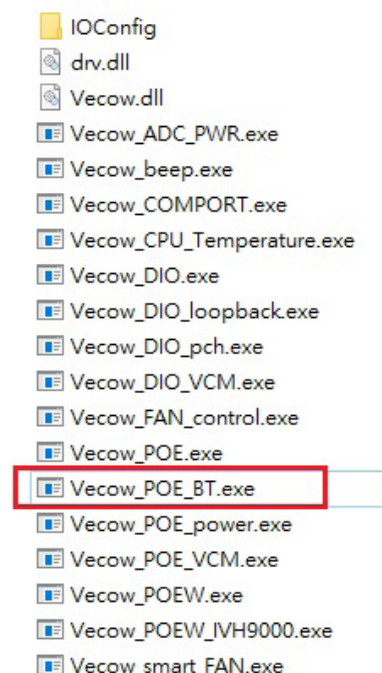
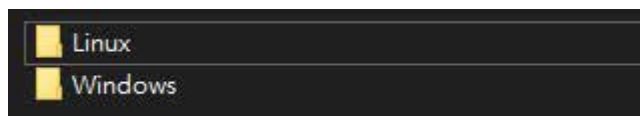
Make sure Windows version before installation.

Runtime folder include head file for software developer or System Integration. Sample folder include sample program, driver library, and API library. Source folder include sample program source code that compile on Visual Studio 2008.



A.3 Sample

Sample folder include Windows and linux, x32 and x64 versions, as shown below :



PE-2001H default is Auto power detect mode, you can use the following software control to switch to manual mode.

```
C:\Users\aaa\Desktop\VecowHWMSample_v1.6.0724\Sample\Windows\x64\Vecow_POE_BT.exe
POE sample version : v1.0.0906.0000
Load Vecow.dll at least v1.8.1409.0608
Vecow.dll Version : v1.34.1026.0000
MACHINE_SERIES=E3200CX

Initial POE success!
Usable slave address ID : 0 2 3
Select slave address ID : 2                      default address 0x44,select 2
Slave address : 0x44                     
Choose POE BT port : (0~1, 2 = All port) 0                      Only one port,select port 0
Set Manual/Auto mode : (0/1) 0                      Select Manual or Auto Mode
Set POE port OFF/ON : (0/1) 1
Set POE success!
請按任意鍵繼續 . . . _
```

On linux os :

```
vecow@vecow-NONE:~/Desktop/VecowHWMSample_v1.6.0724/Sample/Linux/x64$ sudo ./Vecow_POE_BT
POE sample version : v1.0.0906.0000
libvecow.so Version : v1.36.1128.0000
MACHINE_SERIES=E3200CX

Initial POE success!
Usable slave address ID : 0 2 3
Select slave address ID : 0
Slave address : 0x40
Choose POE BT port : (0~1, 2 = All port) 0
Set Manual/Auto mode : (0/1) 1
Set POE success!
```

B

APPENDIX B : Software Functions

B.1 Driver API Guide

In Header folder, Vecow.h and VecowLinux.h contain usable API for Windows/Linux.

BOOL initial_POE(BYTE Scan, BYTE ID)

Initial card for POE

Scan : POE ID scan type

2 : Auto scan; 1: Manual setup.

ID ([3:0]) : POE ID by manual setting

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Driver not exists, or version is too old, or out of range error)

BOOL get_POE_configuration(BYTE ID, BYTE *Auto, BYTE *Mask)

Get POE configuration (by variable)

ID : POE ID.

Range:0~15.

Auto ([3:0]) : Auto mode, pin setting by hexadecimal bitmask

1 : Auto;

0 : Manual

Mask ([3:0]): DC Enable/Disable, pin setting by hexadecimal bitmask

1 : Enable;

0 : Disable

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or call by pointer error, or hardware problem)

BOOL set_POE_BT(BYTE ID, BYTE CH, BYTE Mode, BYTE POE)

Set POE state.

ID : POE ID

Range:2(default address:0x44)

CH : port number

Range:0

Mode : Manual/Auto

0: Manual

1: Auto

POE ([3:0]): POE state

1: On;

0: Off

Return :

TRUE (1) : Success;

FALSE (0) : Fail (Initial error, or out of range error, or hardware problem)



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