PE-2001H

USER Manual

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

Vecow

Record of Revision

Version	Date	Page	Description	Remark
1.00	2024/01/04	All	Official Release	

Order Information

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

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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 100W 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 Heigth

- IEEE 802.bt Power over Ethernet (High-Powered PoE, PoE^{++} PSE),

- RJ45 conncetor, max 100W Power Output at 48V 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	• Up to 100W Power Output @48V 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

138.00 (5.433)

Unit : mm (inch)

120.02 (4.725)

104.86 (4.128)

68.90 (2.713)

59.05 (2.325)
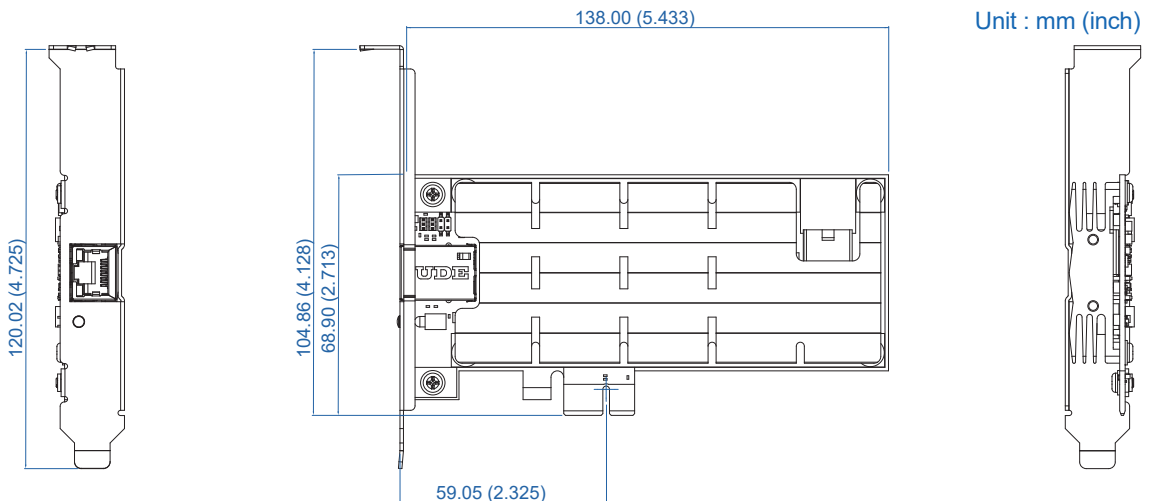
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GETTING TO KNOW YOUR PE-2001H

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

CN 2

PoE Power LED

PoE Power LED   LED 1
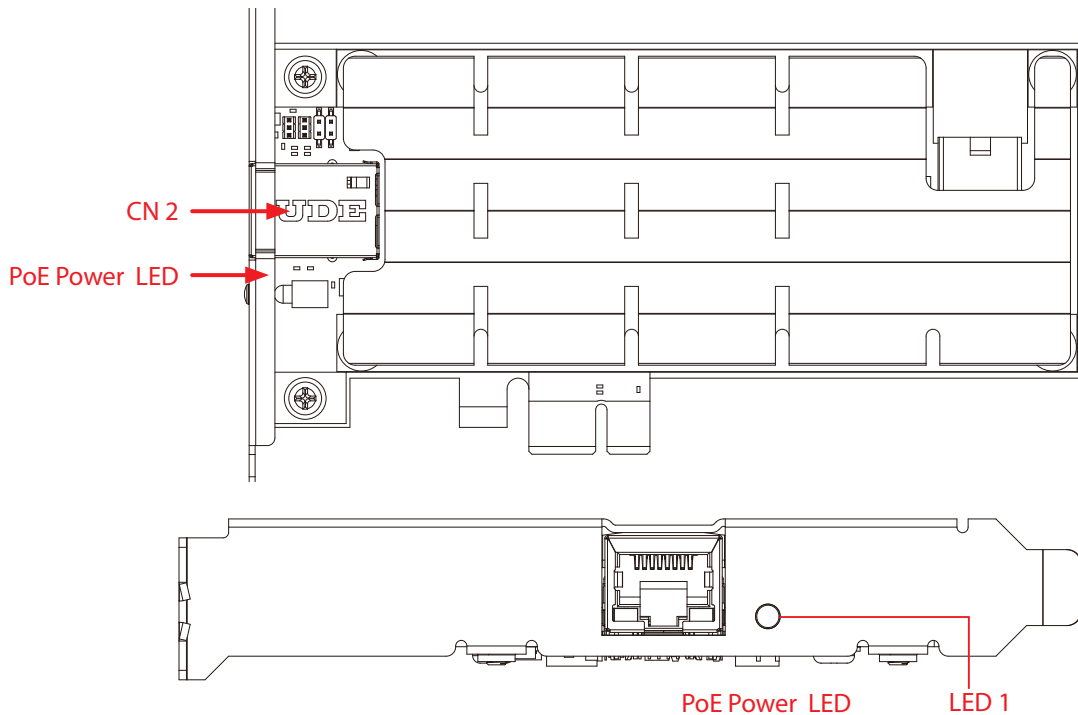
PE-2001H is equipped with one IEEE 802.3bt PoE$^+$ ports for transmitting power as much as 100W / 54V per port and 10/100/1000Mbps data signals over standard Ethernet CAT-5/CAT-6 cable.

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
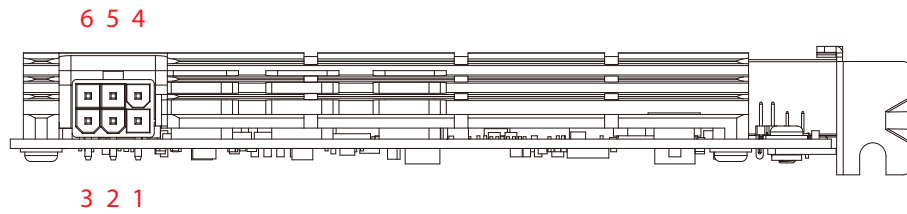
The PE-2001H is also equipped with one 6-pin power plug for additional power supply. For most cases, the power obtained from PCIe bus is sufficient for the PoE devices, and you do not need to supply extra power to the card. In case the external power is needed, you can use 6-pin ATX power connector . Please always confirm the polarity before you plug into the onboard 6-pin power plug.
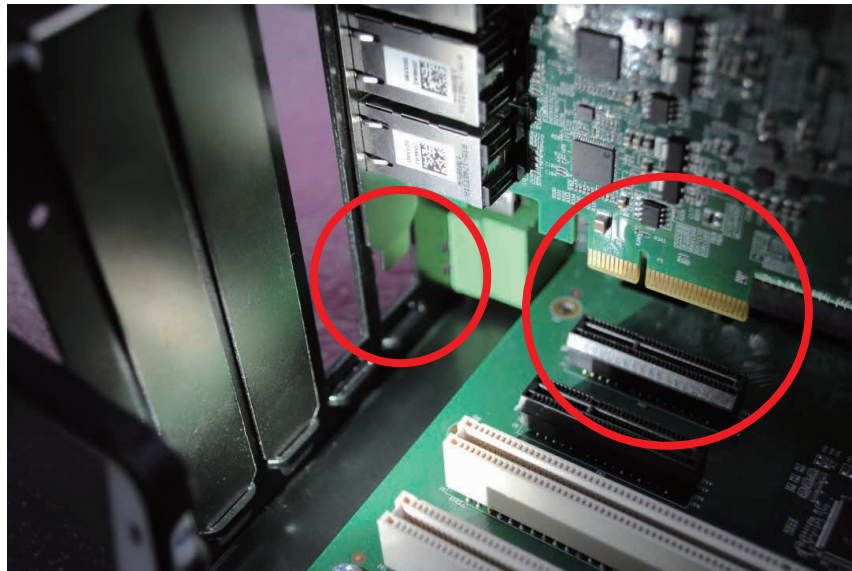
CN1 :

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

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.
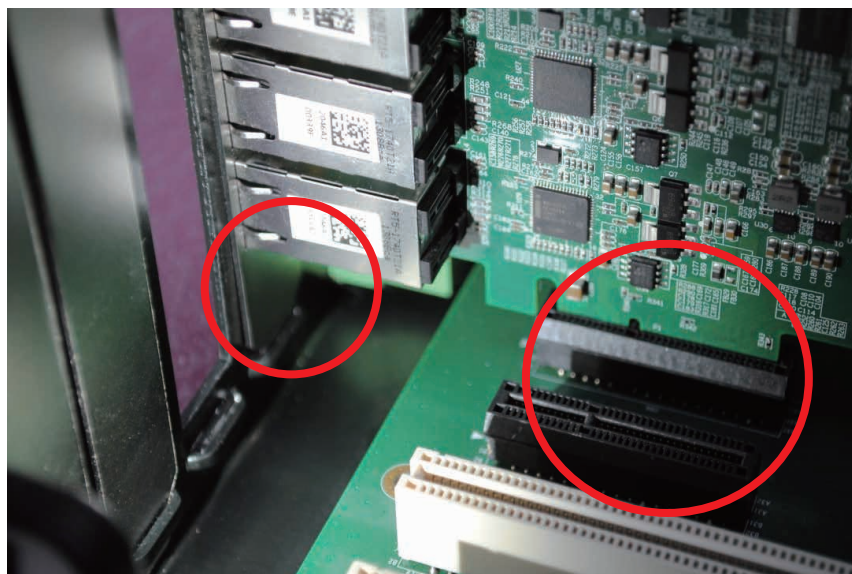
Step 3. Make sure PCI Express I/O bracket aligns screw hole.
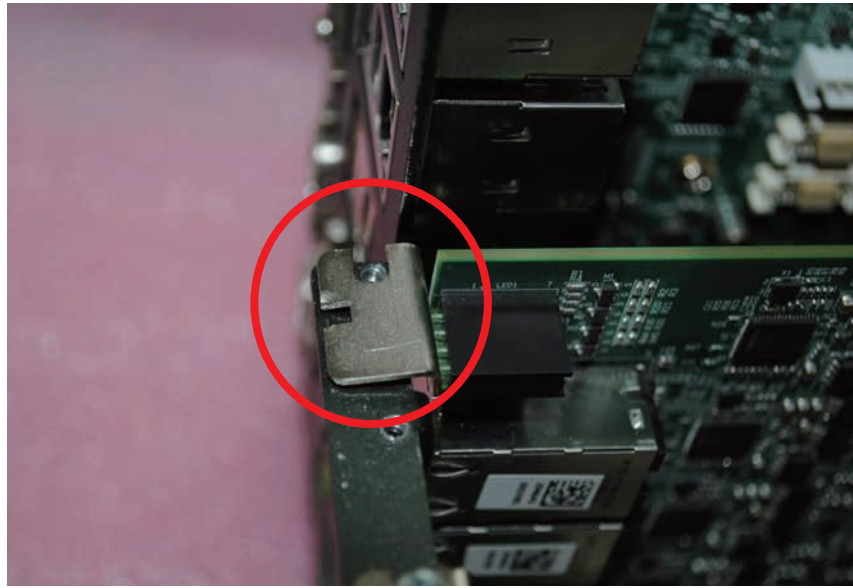
Step 4. Fasten the M3 or #6-32 screw.
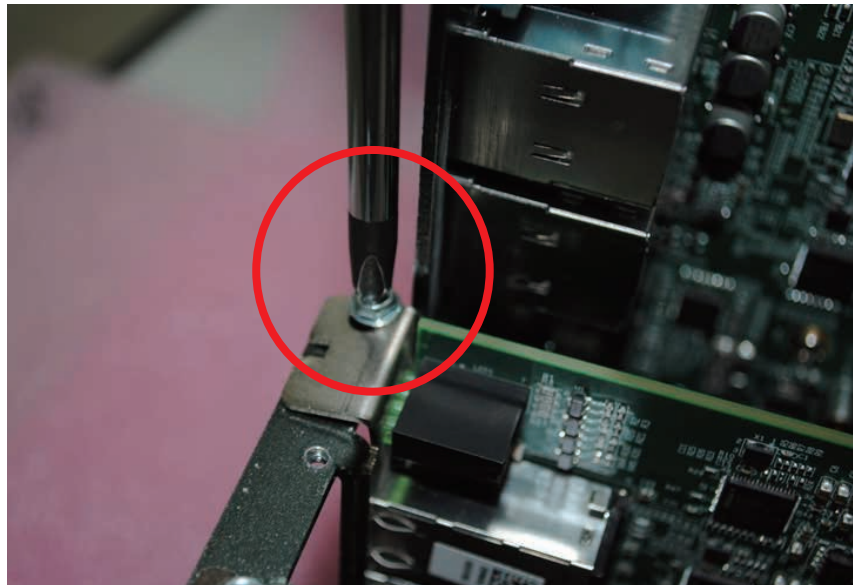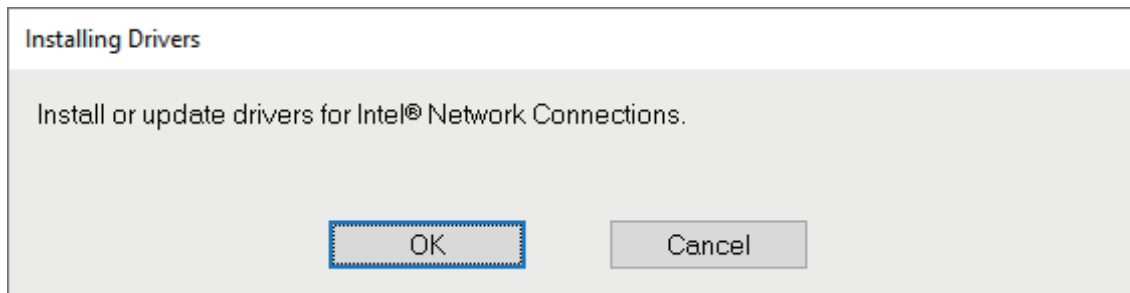
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DRIVER INSTALLATION AND SETTING

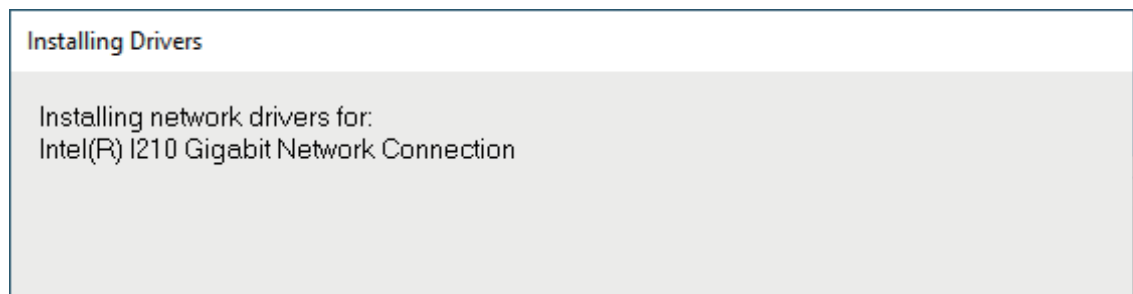## 4.1 Driver Installation

4.1.1 PE-2001H Install Driver

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

System OS :
Windows 10-64bit

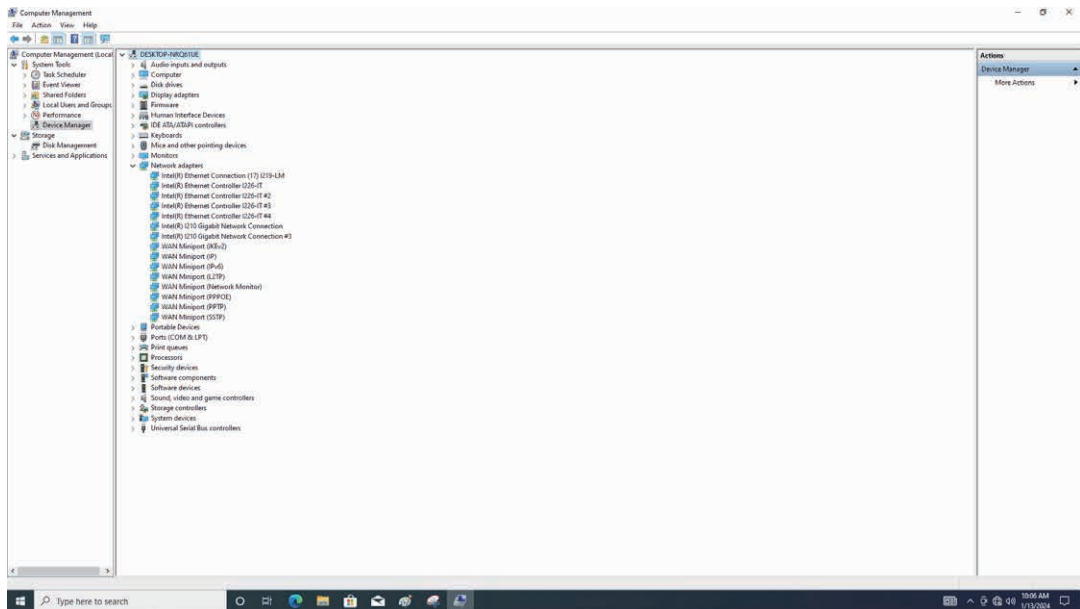**Step 1.** Execute " Wired_driver_28.2_x64.exe" and then go "OK" step.

Step 2. Installing Drivers.

Step 3. Select "Close" step.
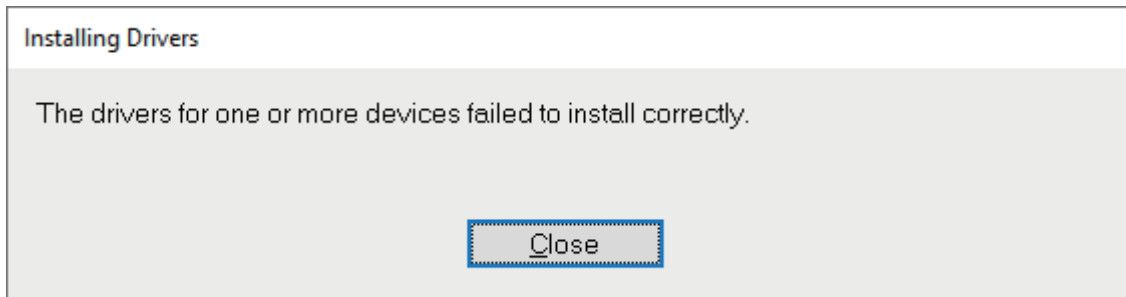
Step 4. Auto Detect in "Intel® I210 Gigabit Network Connection #3".
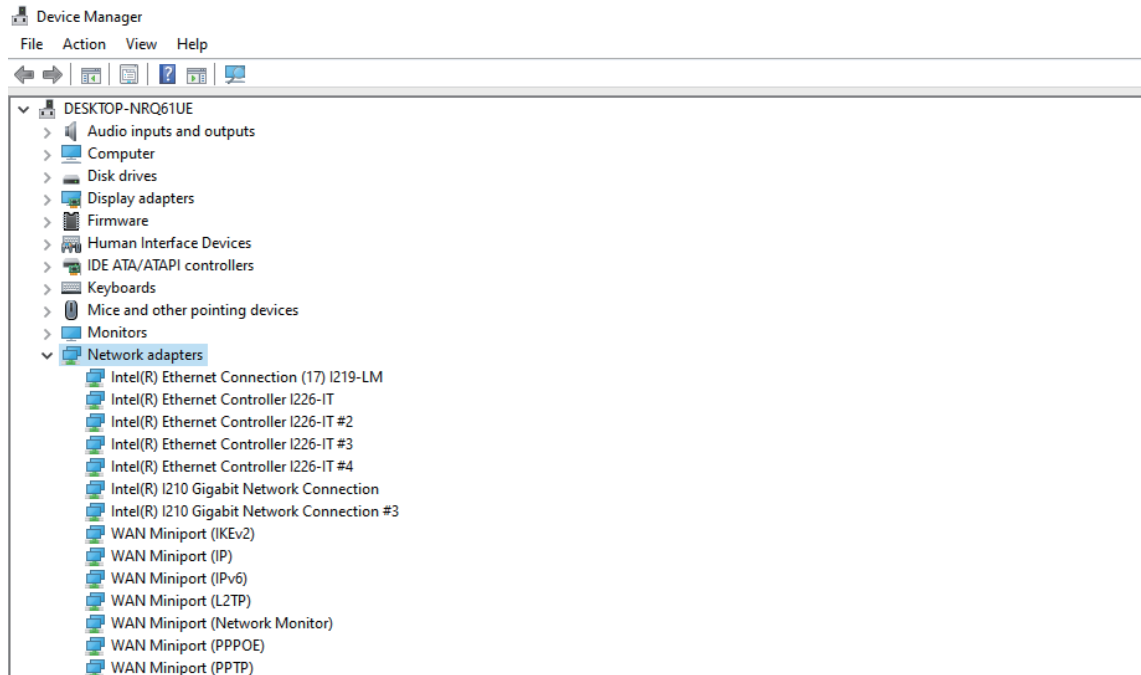
4.2 Jumbo Frame
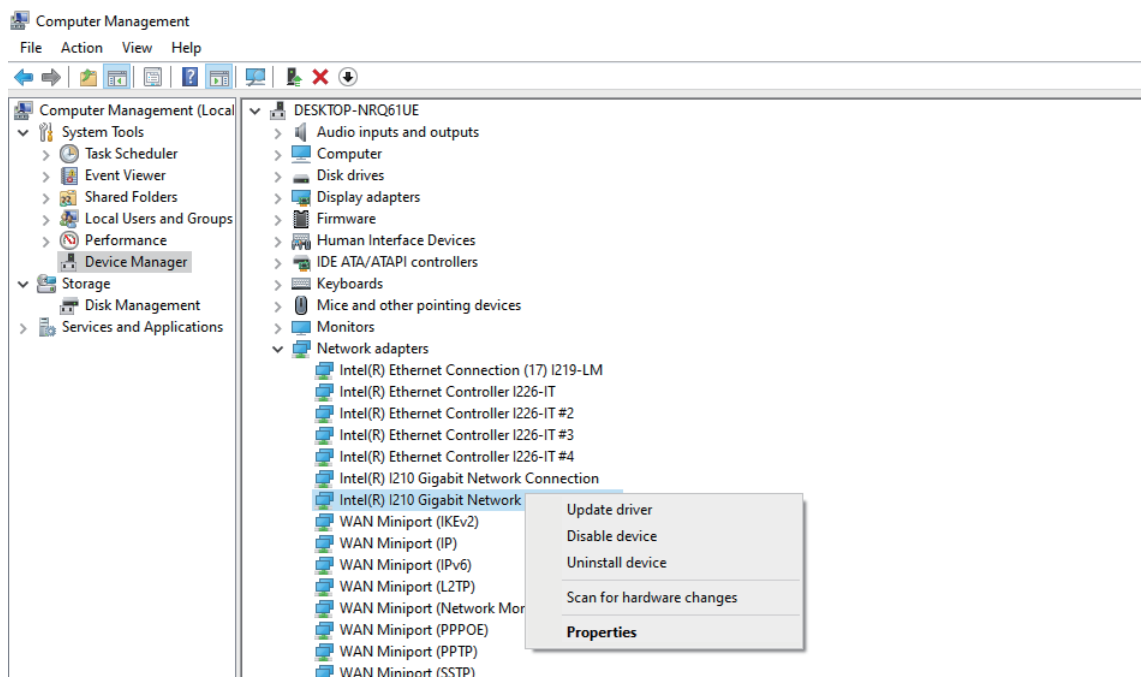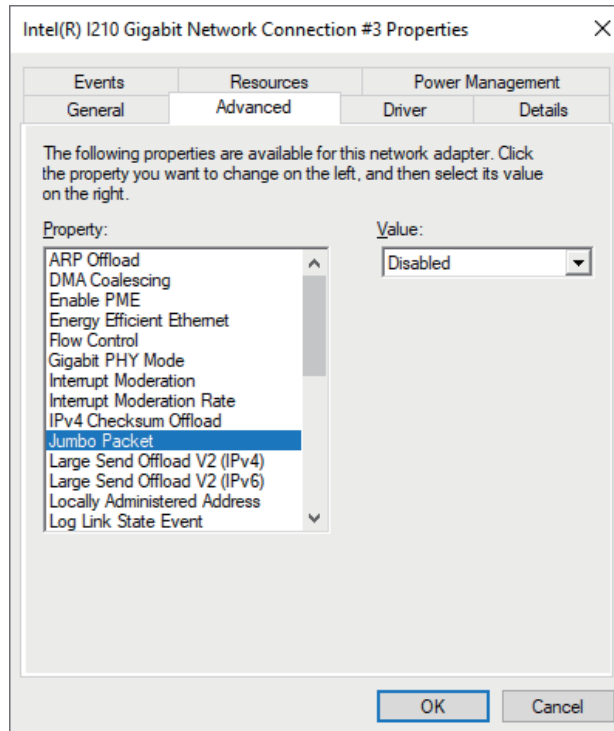
4.2.1 PE-2001H Jumbo Frame

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

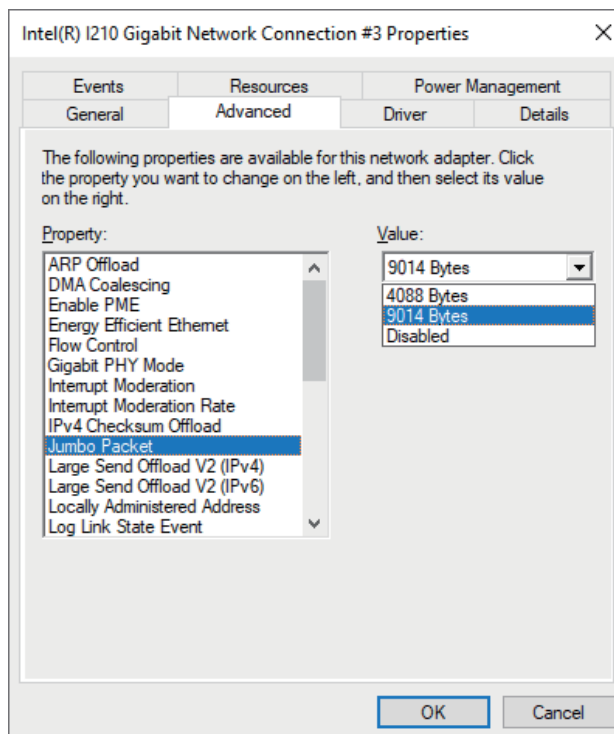**Step 1.** "Right-click ▢ → Device Manager → Network adapters".

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.
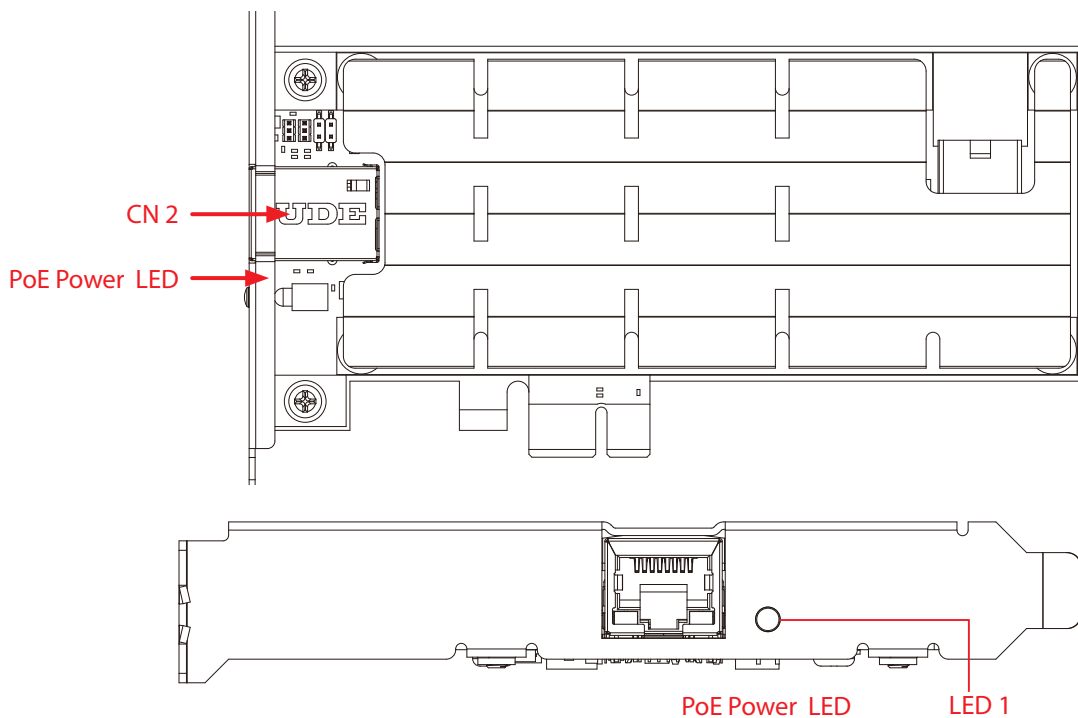
A

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 fallowed :
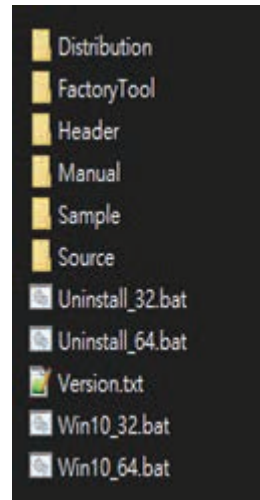 Win10_32.bat, and Win10_64.bat :
    Installation for driver, and
  Uninstall_32.bat, and Uninstall_64.bat :
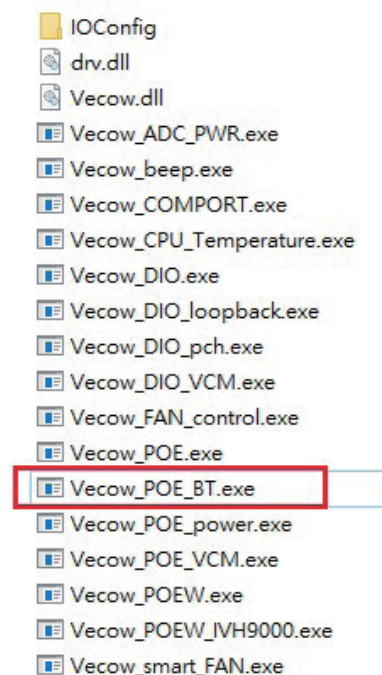   Uninstallation for driver Run
Make sure Windows version before installation.

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.

Distribution
FactoryTool
Header
Manual
Sample
Source
Uninstall_32.bat
Uninstall_64.bat
Version.txt
Win10_32.bat
Win10_64.bat

A.3 Sample

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

Linux
Windows

Win32
x64

IOConfig
drv.dll
Vecow.dll
Vecow_ADC_PWR.exe
Vecow_beep.exe
Vecow_COMPORT.exe
Vecow_CPU_Temperature.exe
Vecow_DIO.exe
Vecow_DIO_loopback.exe
Vecow_DIO_pch.exe
Vecow_DIO_VCM.exe
Vecow_FAN_control.exe
Vecow_POE.exe
Vecow_POE_BT.exe
Vecow_POE_power.exe
Vecow_POE_VCM.exe
Vecow_POEW.exe
Vecow_POEW_IVH9000.exe
Vecow_smart_FAN.exe

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

On linux os :

B

APPENDIX B : Software Functions

B.1 Driver API Guide

In Header folder, Vecow.h and VecowLinux.h contain usabled 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)

Vecow

For further support information, please visit www.vecow.com