

PE-2000 USER

PCI Express x4, 2-channel/ 4-channel Gigabit LAN,
IEEE 802.3at Compliant Intel® I210 PoE+ Expansion Card

Manual

Record of Revision

Version	Date	Page	Description	Remark
1.0	07/13/2015	All	Official Release	
1.1	06/20/2023	5	Update	
1.1	08/12/2024	1	Update	

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- 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 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** 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.

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Order Information

Part Number	Description
PE-2002	Intel® I210 2-CH PCI Express PoE ⁺ Expansion Card
PE-2004	Intel® I210 4-CH PCI Express PoE ⁺ Expansion Card

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1

GENERAL INTRODUCTION

1.1 Overview

PE-2000 is a series of gigabit Ethernet (GigE) card, up to 4 independent channels, and compatible with IEEE 802.3at PoE⁺ for power sourcing equipment (PSE) devices. Just simply by RJ45 connection, Vecow PE-2000 is enabled to provide not only 10/ 100/ 1000 Mbps gigabit data rate but also up to 25.5W at 48V DC power delivery.

Supporting link aggregation (LAG), 9.5KB Jumbo Frame, IEEE 1588 Precision Time Protocol (PTP) and easy maintenance, PE-2000 is a great solution for Gigabit Ethernet Intelligent Surveillance, Machine Vision, Intelligent Transportation System (ITS), Industrial Automation, Logistic System and any real-time video analytics applications.

1.2 Features

- PCI Express x4 Interface
- IEEE 802.3at compliant for PoE⁺
- IEEE 1588 Precision Time Protocol (PTP)
- Up to 4 Independent Intel[®] I210 Gigabit LAN
- Up to 25.5W Power Output at 48V DC per port
- -25°C to 70°C Operating Temperature
- 9.5KB Jumbo Frame
- Link Aggregation
- 16 Isolated DIO for 8 DI & 8 DO (Optional)

1.3 Product Specification

1.3.1 Specifications of Vecow PE-2002

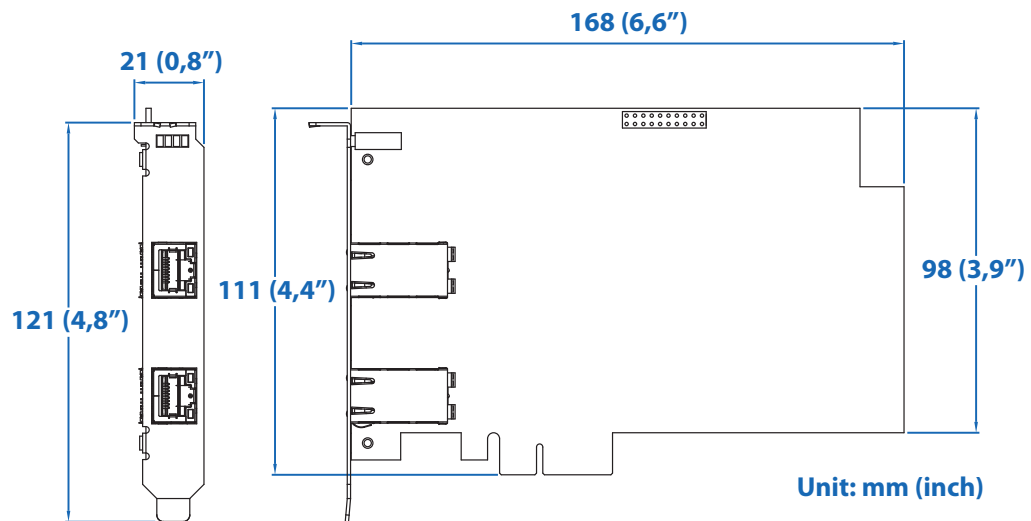
Ethernet	
Interface	PCI Express x4
Chipset	2 Intel® I210 Gigabit LAN
Data Rate	10/ 100/ 1000 Mbps (Vary by attached Ethernet device)
Jumbo Frame	9.5KB
Link Aggregation (LAG)	Present
Connector	8-pin RJ45
PoE Standard	IEEE 802.3at compliant
Power Requirements	
Output	2 PoE Ports, up to 25.5W Power Output at 48V DC per port
Power Connector	1 4-pin ATX 12V Power Connector
DIO	16 Isolated DIO for 8 DI & 8 DO (Optional)
Environment	
Operating Temperature	-25°C to 70°C (-13°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Certifications	FCC, CE, RoHS compliant
Mechanical	
Dimension (W x D x H)	168mm x 121mm x 21mm (6.6" x 4.8" x 0.8")

1.3.2 Specifications of Vecow PE-2004

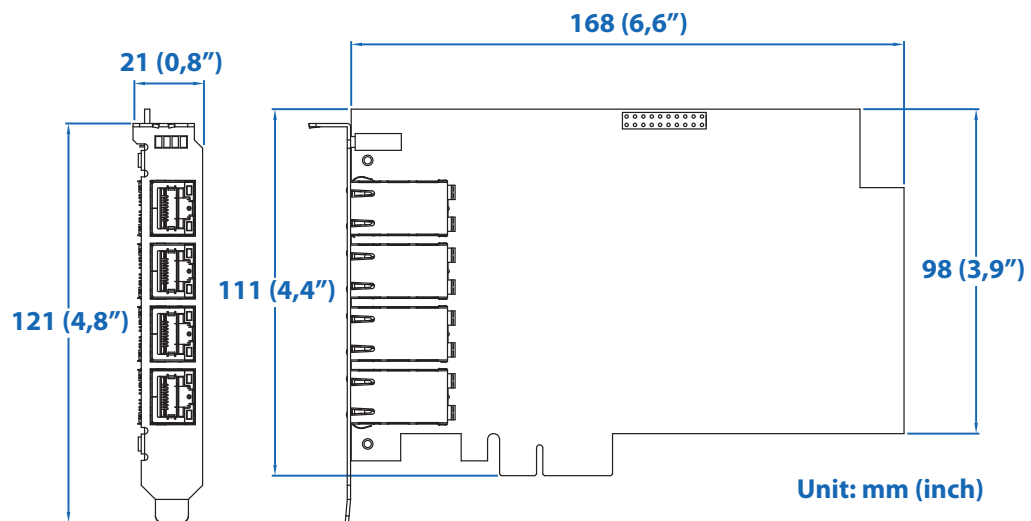
Ethernet	
Interface	PCI Express x4
Chipset	4 Intel® I210 Gigabit LAN
Data Rate	10/ 100/ 1000 Mbps (Vary by attached Ethernet device)
Jumbo Frame	9.5KB
Link Aggregation (LAG)	Present
Connector	8-pin RJ45
PoE Standard	IEEE 802.3at compliant
Power Requirements	
Output	4 PoE Ports, up to 25.5W Power Output at 48V DC per port
Power Connector	1 4-pin ATX 12V Power Connector
DIO	16 Isolated DIO for 8 DI & 8 DO (Optional)
Environment	
Operating Temperature	-25°C to 70°C (-13°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Certifications	FCC, CE, RoHS compliant
Mechanical	
Dimension (W x D x H)	168mm x 121mm x 21mm (6.6" x 4.8" x 0.8")

1.4 Mechanical Dimension

1.4.1 PE-2002



1.4.2 PE-2004



2

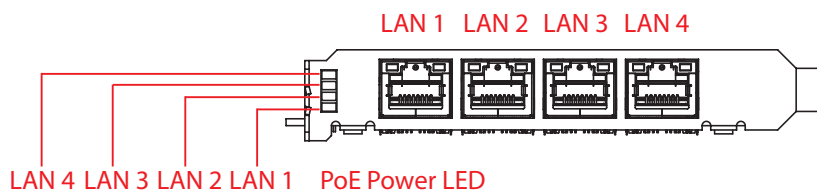
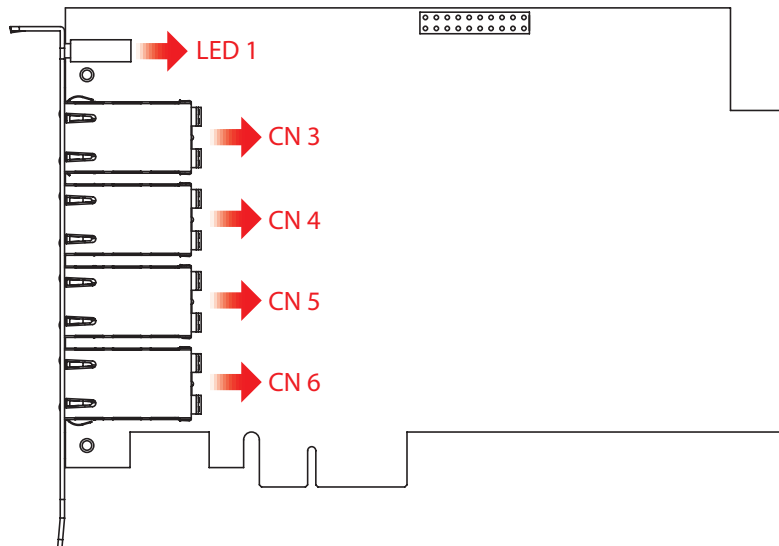
GETTING TO KNOW YOUR PE-2000

2.1 Packing List

Item	Description	Qty
1	PE-2000, PCI Express x4 PoE ⁺ , 2-Channel/ 4-Channel, Gigabit, IEEE 802.3at Compliant Intel [®] I210 PCI Express Expansion Card (According to the configuration you order.)	1

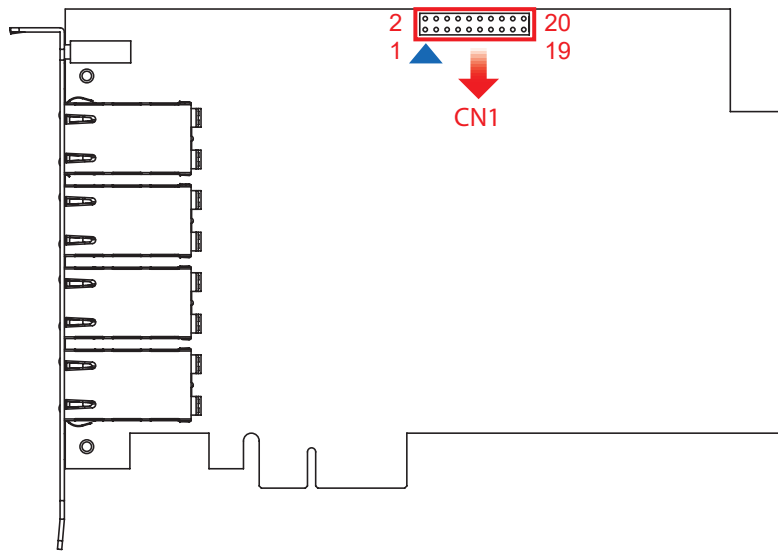
2.2 I/O and Indication

2.2.1 LED1 CN3 CN4 CN5 CN6



PE-2000 equipped with 4 IEEE 802.3at PoE⁺ ports for transmitting power as much as 25.5W / 48V per port and 1000BASE-T gigabit data signals over standard Ethernet CAT-5/CAT-6 cable. Every PoE port applies one Intel[®] I210 Gigabit Ethernet controller and independent PCI express interface to connect with multi-core processor for network and data transmit optimization. Only when PoE port starts to supply power to power devices, the dedicated LED will be light on.

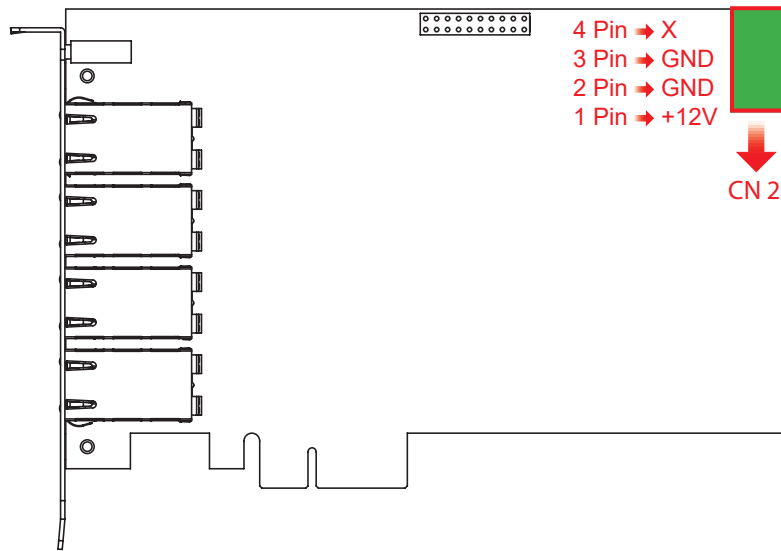
2.2.2 CN1



The PE-2000 offers a 16-bit Isolated DIO (8-DI / 8-DO) connector. Each bit of DI and DO equipped with a photo-coupler for protection. A power buffer device TPD2007F integrated in 8-DO circuit for industrial applications.

Pin No.	Definition	Pin No.	Definition
1	INPUT 0	11	OUTPUT 0
2	INPUT 1	12	OUTPUT 1
3	INPUT 2	13	OUTPUT 2
4	INPUT 3	14	OUTPUT 3
5	INPUT 4	15	OUTPUT 4
6	INPUT 5	16	OUTPUT 5
7	INPUT 6	17	OUTPUT 6
8	INPUT 7	18	OUTPUT 7
9	DI_COM	19	N.C.
10	GND	20	External 24VDC Input

2.2.3 CN2



The PE-2000 also equipped with one 4-pin power plug (12V, 6A max) 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 4-pin ATX power connector (+5V/Red, GND/Black, GND/Black, +12V/Yellow) inside the host computer. Please always confirm the polarity before you plug into the onboard 4-pin power plug.

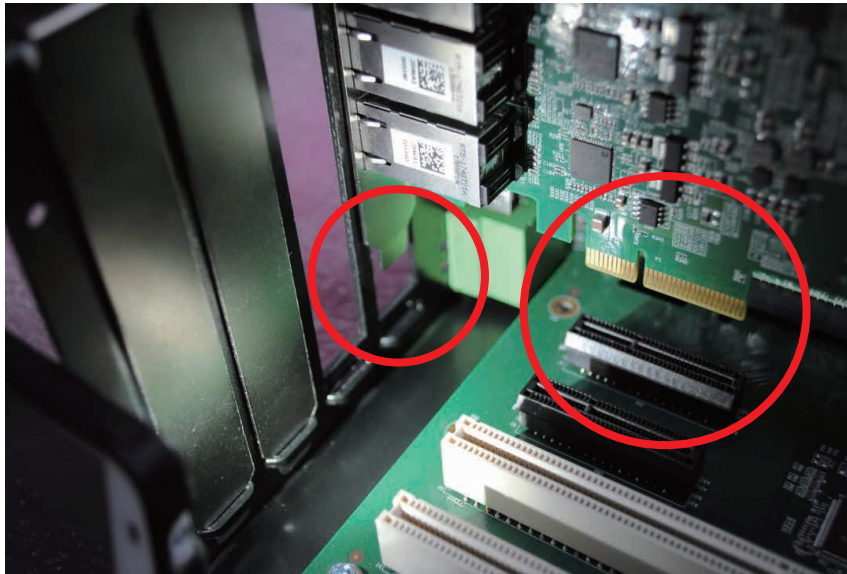
Pin No.	Definition
1	+12V
2	GND
3	GND
4	X

3

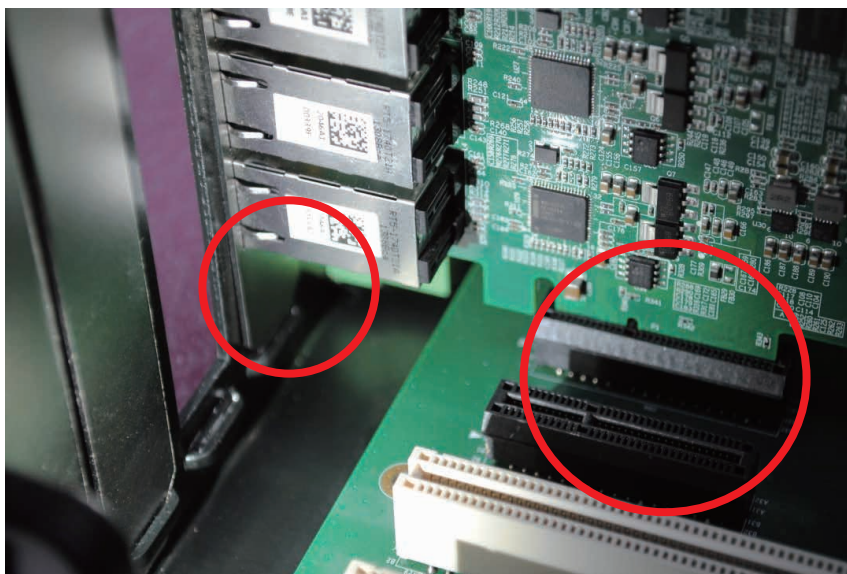
GETTING START

3.1 Installing PE-2002/ PE-2004

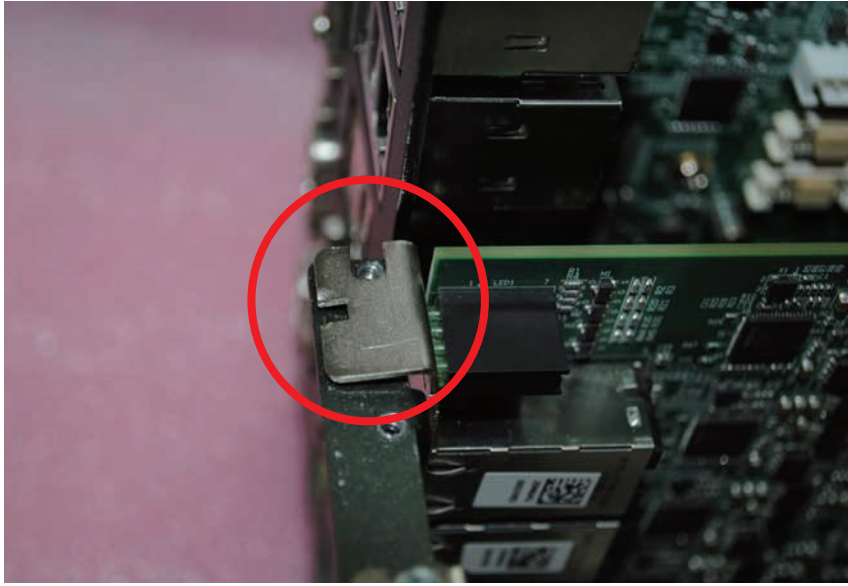
Step 1. Insert PE-2000 golden finger and PCI bracket into PCIe socket carefully.



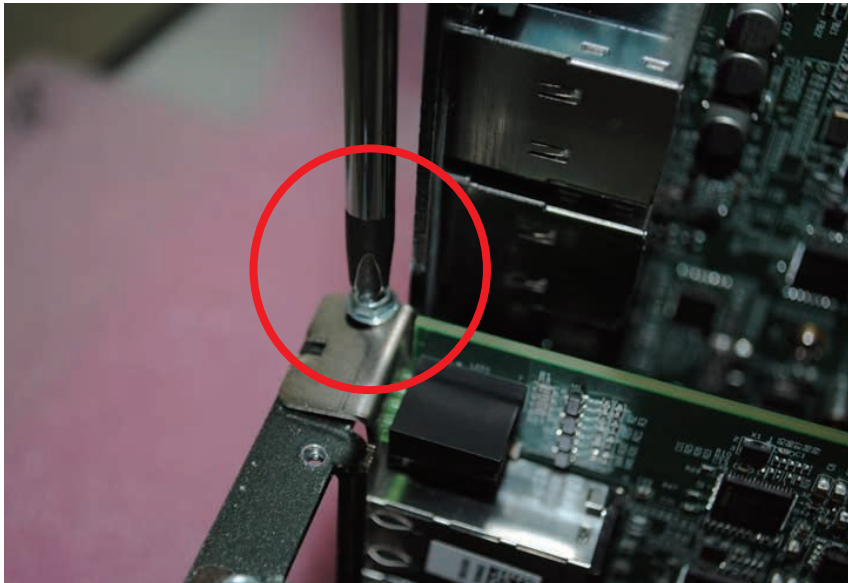
Step 2. Make sure golden finger and PCI bracket was inserted smoothly.



Step 3. Make sure the bracket aligns screw hole.



Step 4. Fasten the M3 screw.



4

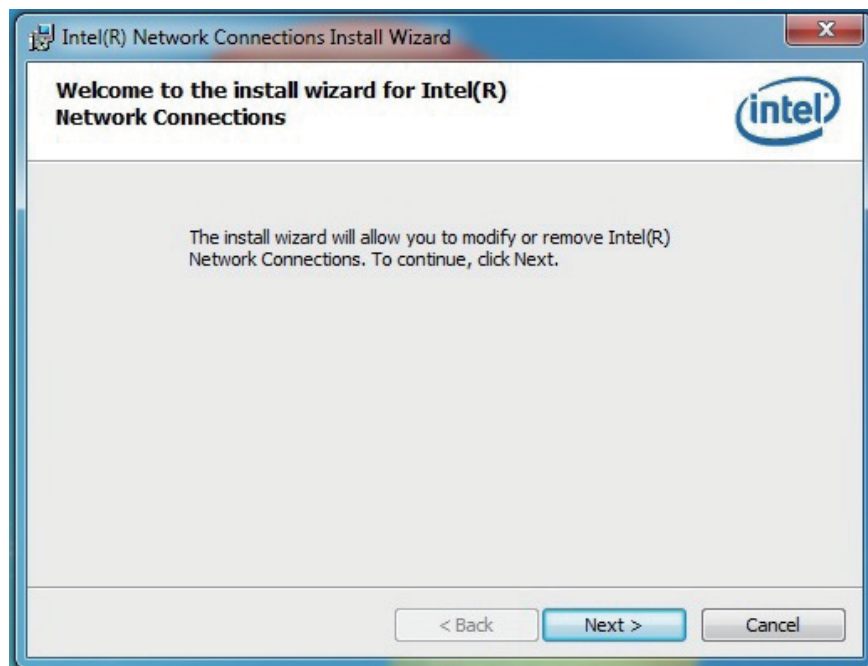
DRIVER INSTALLATION AND SETTING

4.1 Driver Installation

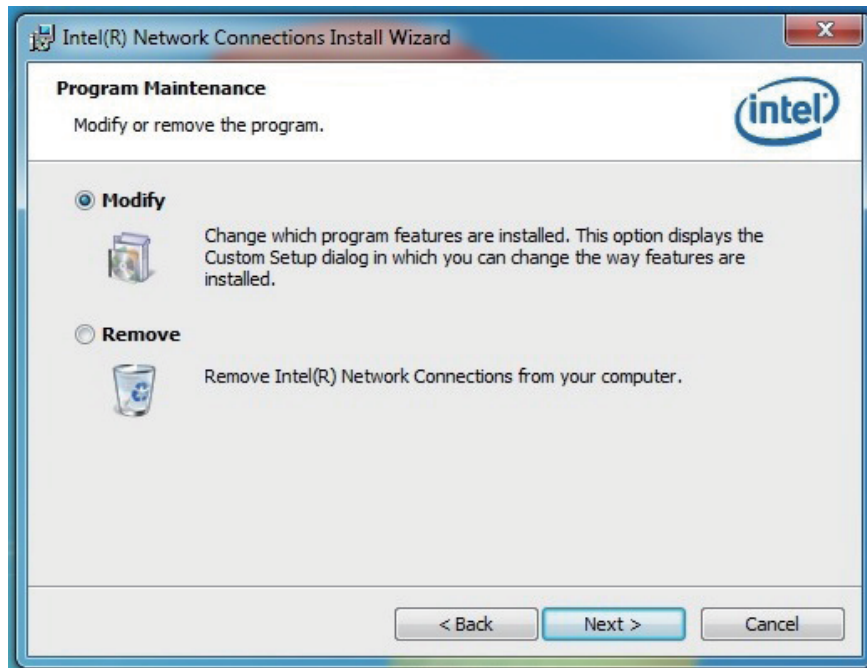
This section describes:
How to install drivers for PE-2002/ PE-2004 PoE Card.

System OS:
Windows XP, Windows 7 32-bit, Windows 7 64-bit, Windows 8.

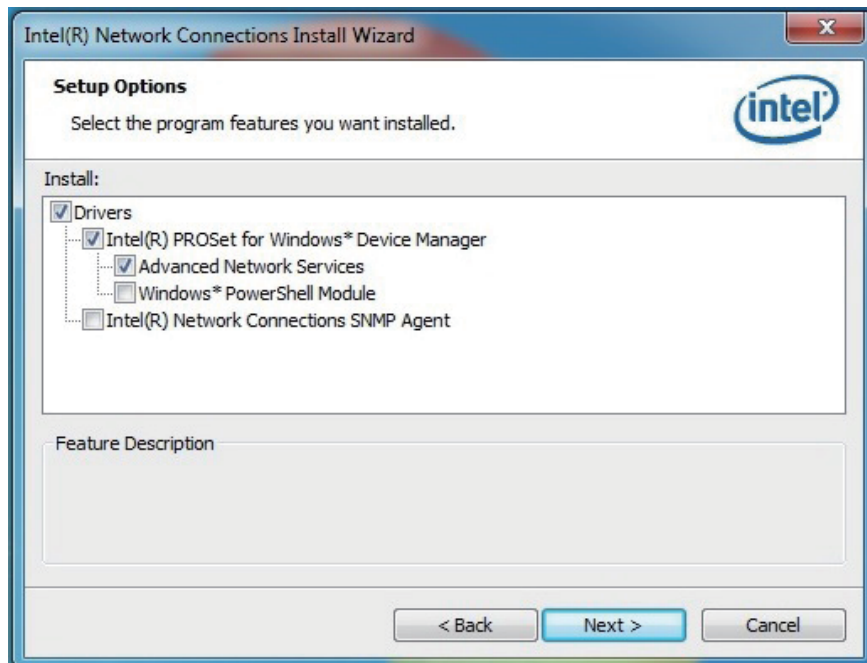
Step 1. Execute [Intel_i210_PROWin64.exe](#) and then go "Next" step.



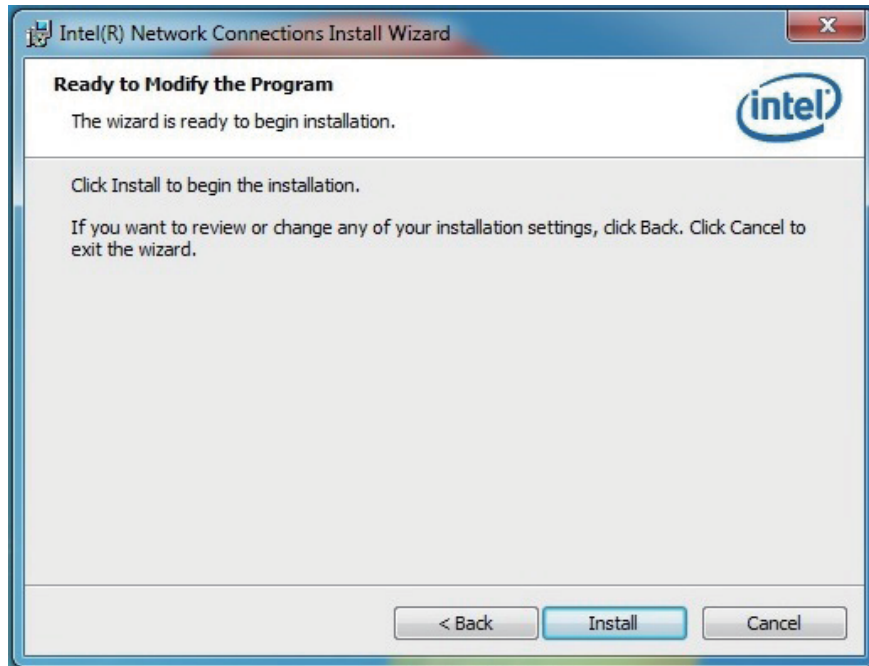
Step 2. Select "Modify" and then go to "Next" step.



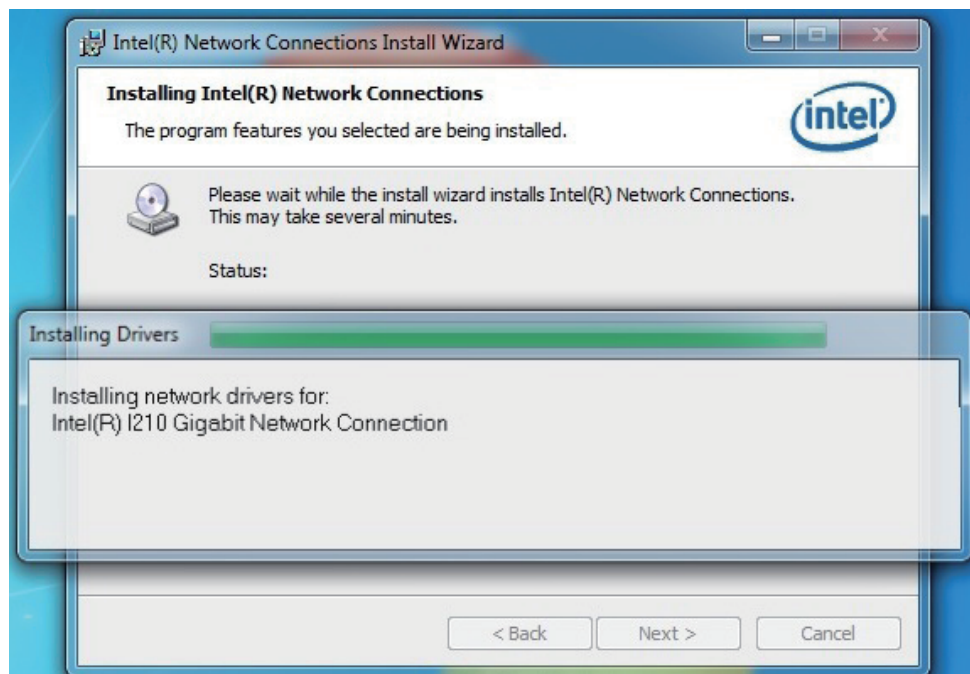
Step 3. Select program features.

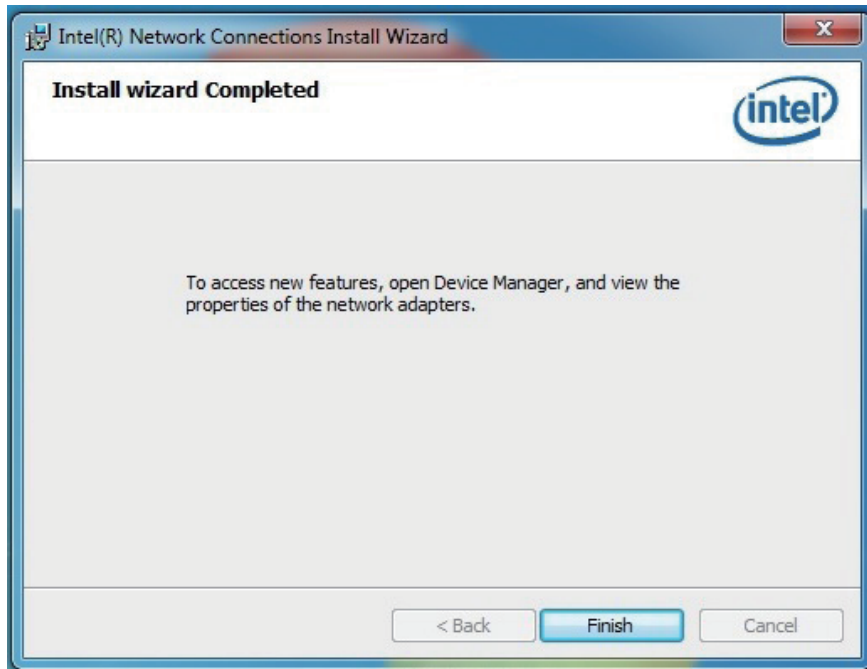


Step 4. Click the "Install" icon to begin the installation.



Step 5. Install wizard completed.





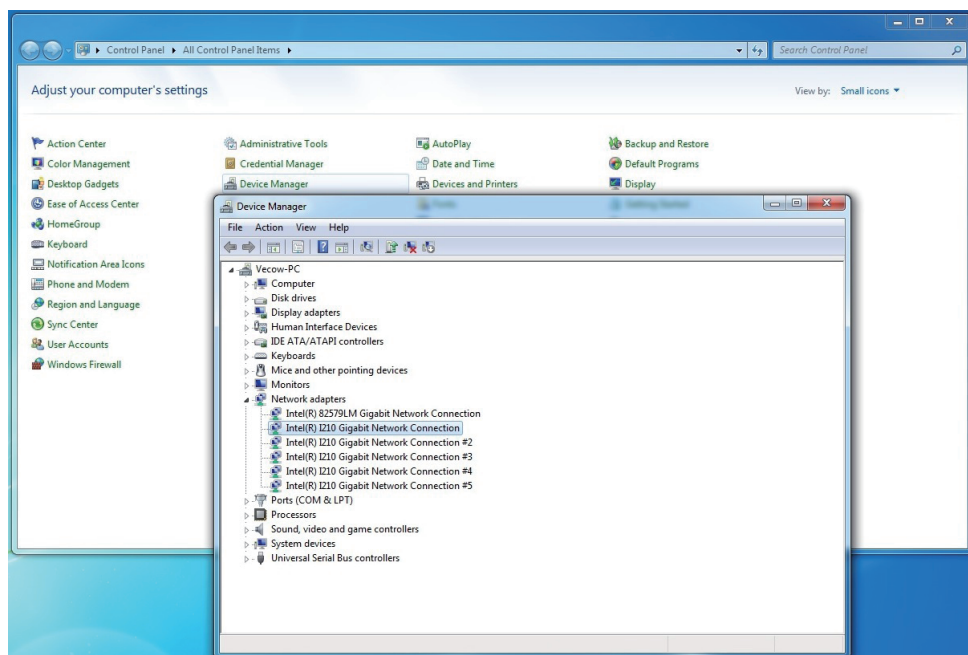
Once you need this network driver , you could remove this program on Control panel directly.

4.2 Jumbo Frame

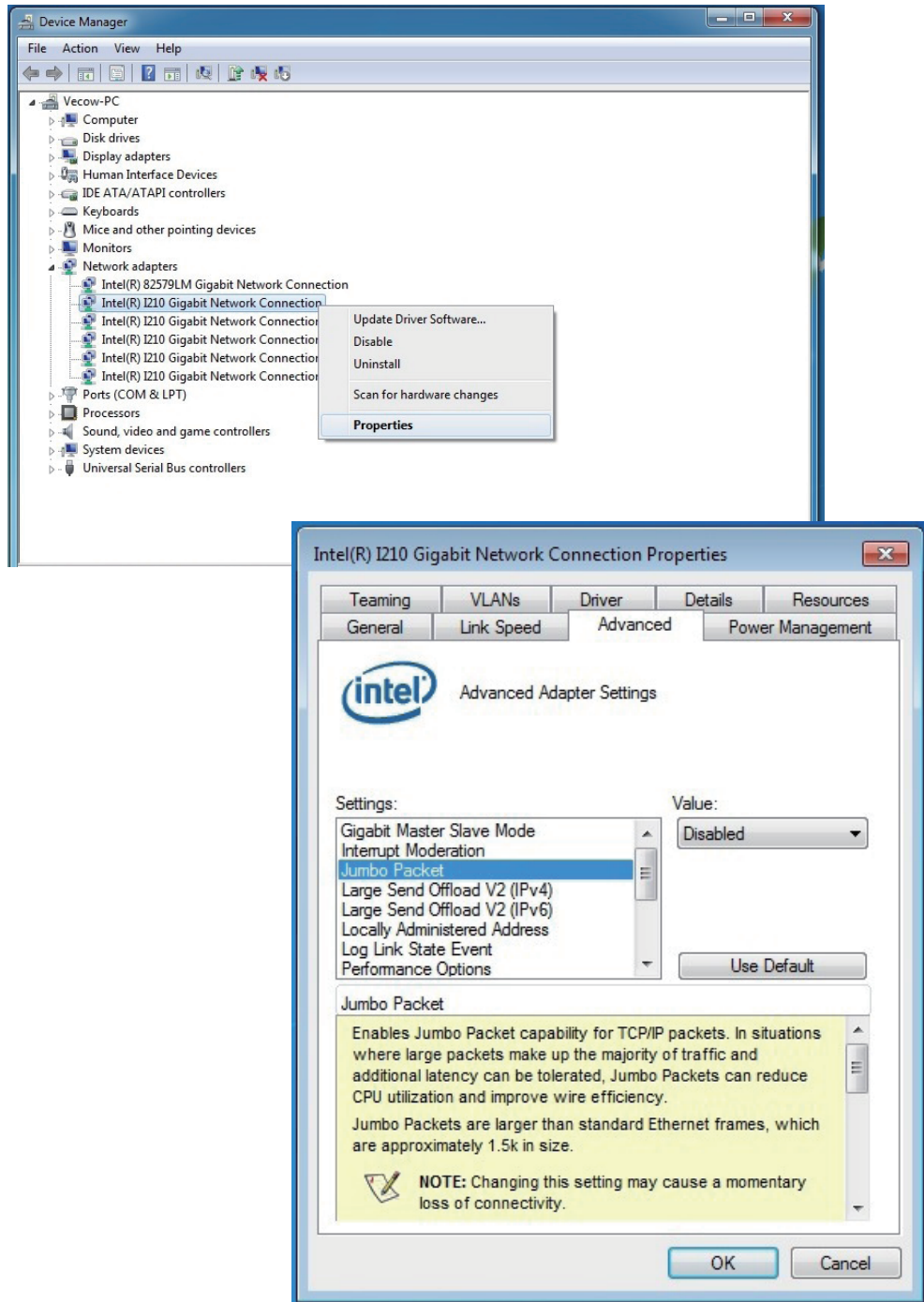
After installing the driver for Intel® I210 GbE controller, you can get the enhance function that called jumbo frame, please find more instruction as below.

Step 1.

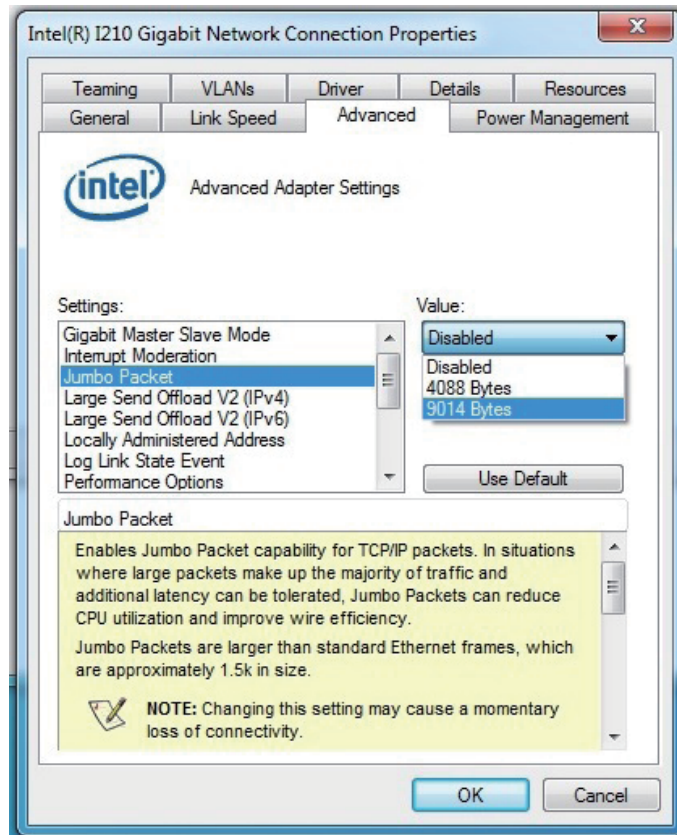
Open the "[Control Panel](#) → [Device Manager](#) → [Network adapters](#)".



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



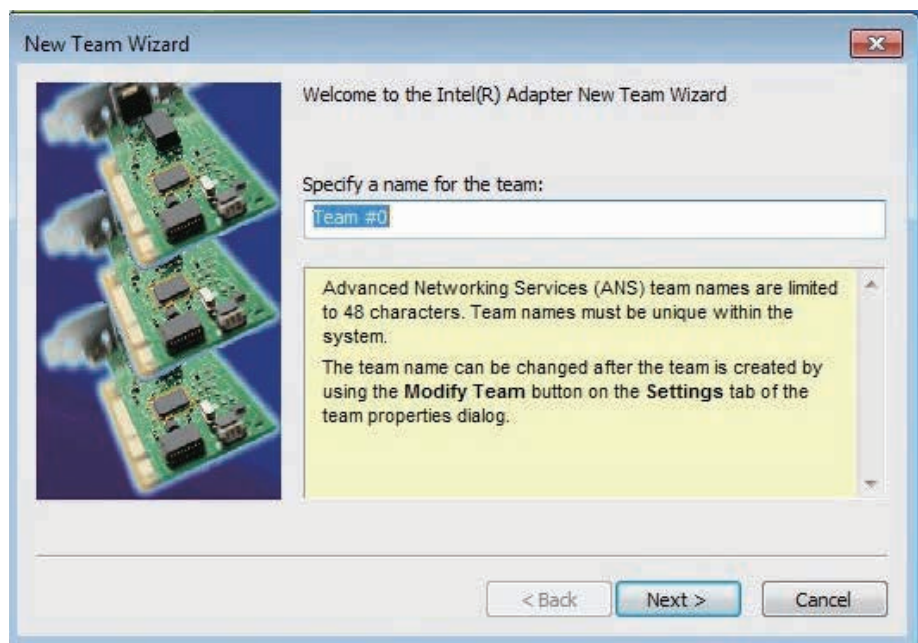
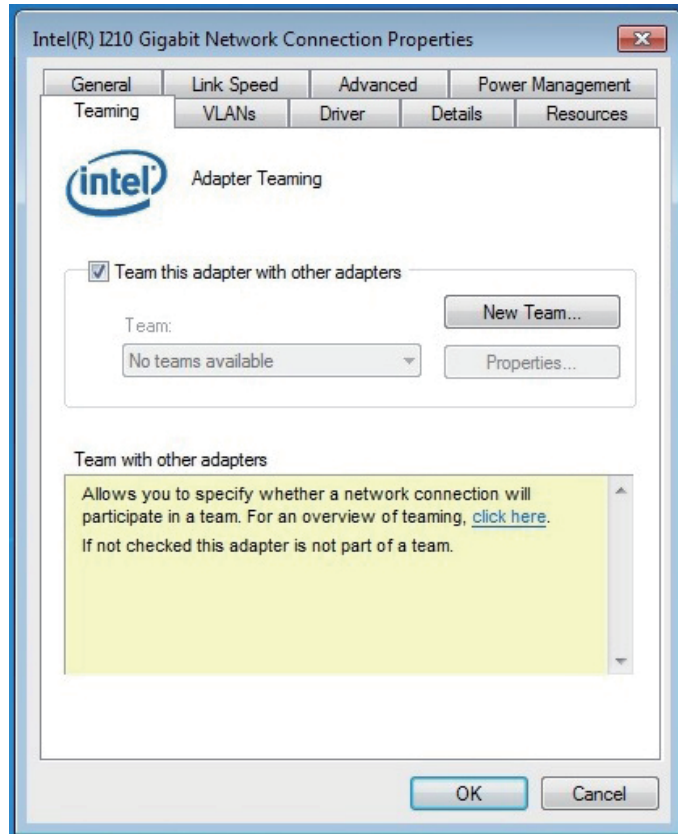
Step 3. Select the "Jumbo Packet", settings, and select the expected jumbo frame size.



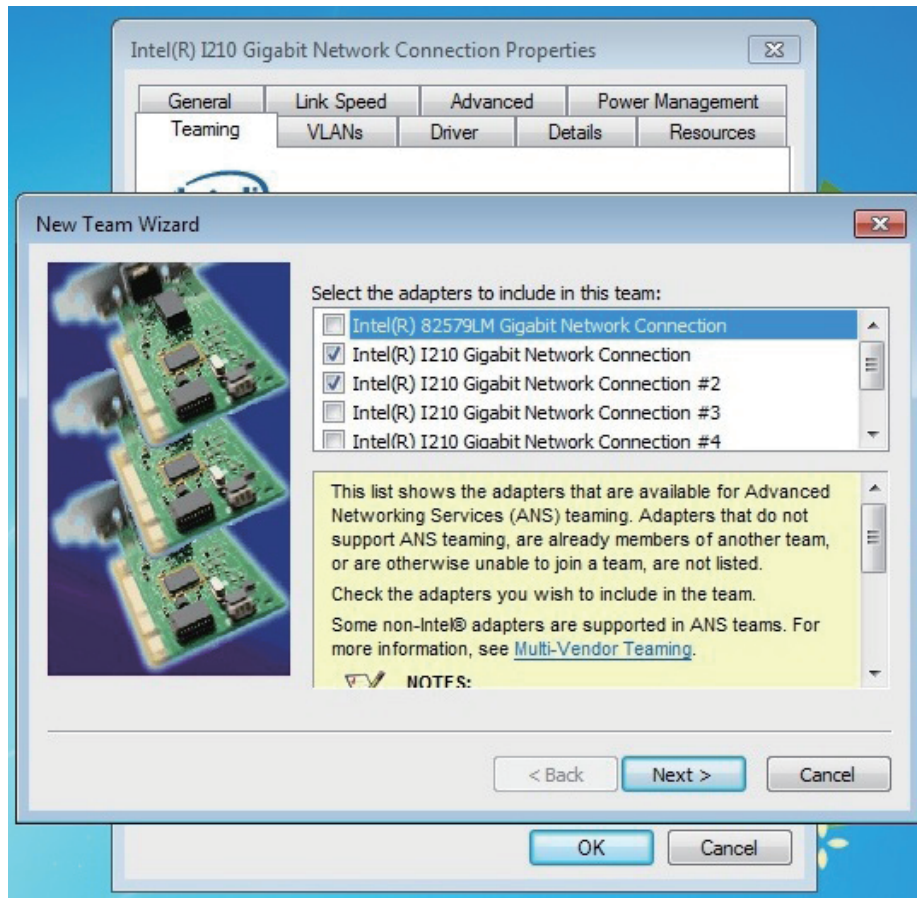
4.3 Link Aggregation

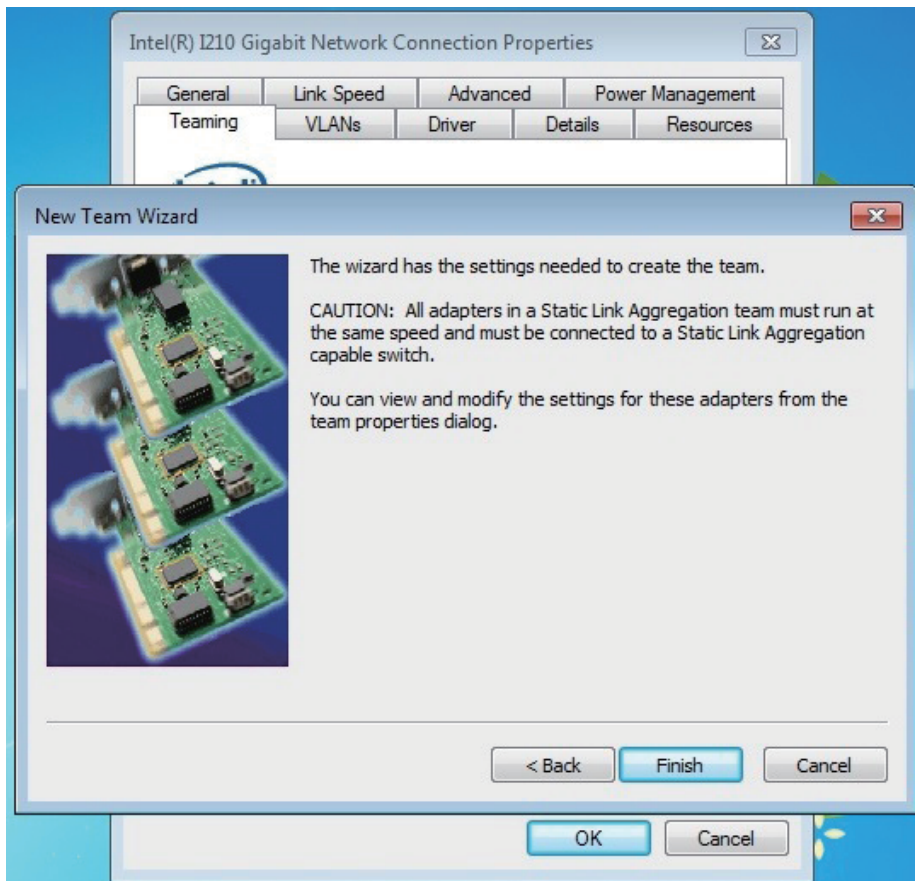
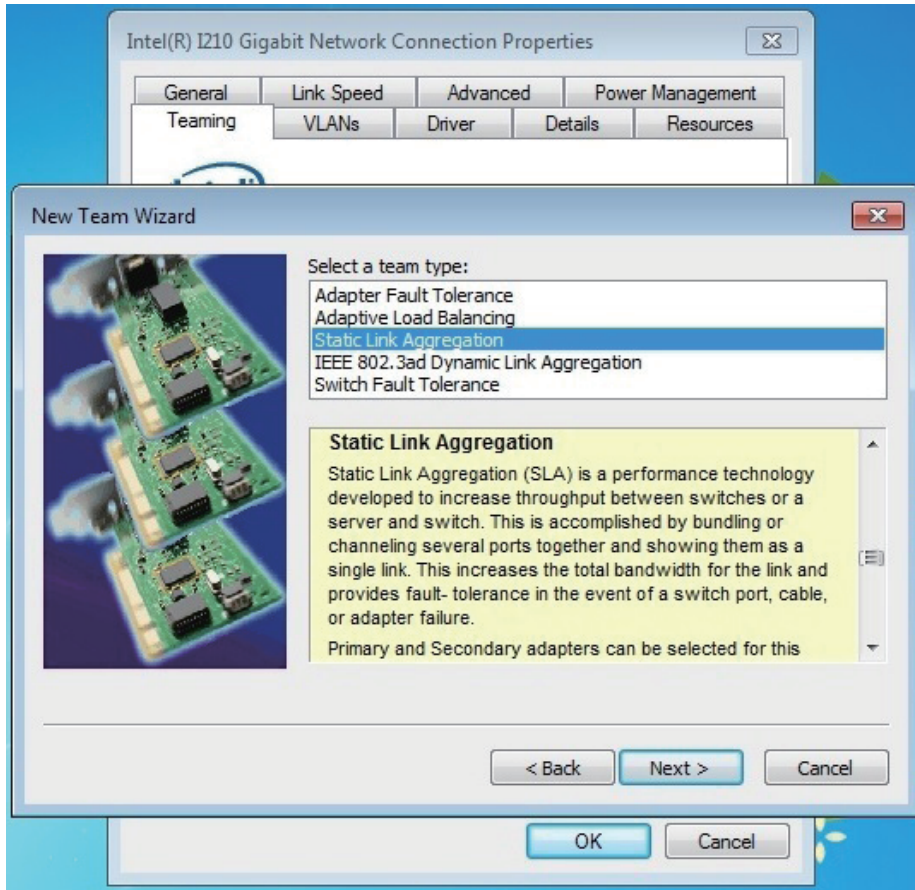
Step 1.

Here shows another enhance network function "Teaming".



Step 2. You could multi-select network device to get a high performance net







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

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