

SE-1000 USER

PCI Express x1/4-channel Gigabit LAN, IEEE 802.3at Compliant
Intel® I210 PoE+/LAN Bypass Expansion Card

Manual

Record of Revision

Version	Date	Page	Description	Remark
0.1	08/31/2018	All	Preliminary Release	
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1.1	06/21/2023	5	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 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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Part Number	Description
SE-1004	Intel® I210 4-Channel PCI Express LAN Switch Card with PoE ⁺
SE-1014	Intel® I210 4-Channel PCI Express LAN Switch Card with advanced LAN Bypass

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1

GENERAL INTRODUCTION

1.1 Overview

SE-1000 is a series 4-channel Gigabit Ethernet (GigE) PCIe expansion card supporting 4-port Gigabit IEEE 802.3at PoE⁺, or dual LAN Bypass mode. Powered by Intel[®] Ethernet Controller I210, 4-port Gigabit LAN Switch/IEEE 802.3at PoE⁺, hardware LAN bypass mode, IEEE 802.3az Energy Efficient Ethernet (EEE) and DMA Coalescing (DMAC) Power Management functions, up to 1000Mbps data rate each port with teaming functions, link aggregation (LAG), 9.7K Jumbo Frame, IEEE 1588 Precision Time Protocol (PTP), IEEE 802.3AS, Industrial-grade -40°C to 85°C Operating Temperature and easy maintenance, Vecow SE-1000 series expansion card is your flexible solution for Intelligent Surveillance, In-Vehicle Management, ITS (Intelligent Transportation System), Industrial Ethernet, Mobile DVR/NVR or any industrial-grade networking applications.

1.2 Features

- Intel[®] Ethernet Controller I210 supports full-featured LAN functions, up to 1000Mbps data rate
- All-in-one, fully-integrated single-chip GigE switching solution with lower power consumption
- Industrial-grade, -40°C to 85°C Operating Temperature
- PCI Express x1 Interface
- IEEE 802.3at Power over Ethernet (PoE⁺) compliant
- Supports hardware LAN Bypass mode
- IEEE 1588 Precision Time Protocol (PTP) & IEEE 802.1AS Precision Time Synchronization compliant
- IEEE 802.3az Energy Efficient Ethernet (EEE) compliant
- IEEE 802.1Qav traffic shaper compliant
- Up to 9728 bytes Jumbo Frame
- Link Aggregation (LAG)

1.3 Product Specification

1.3.1 Specifications of Vecow SE-1004

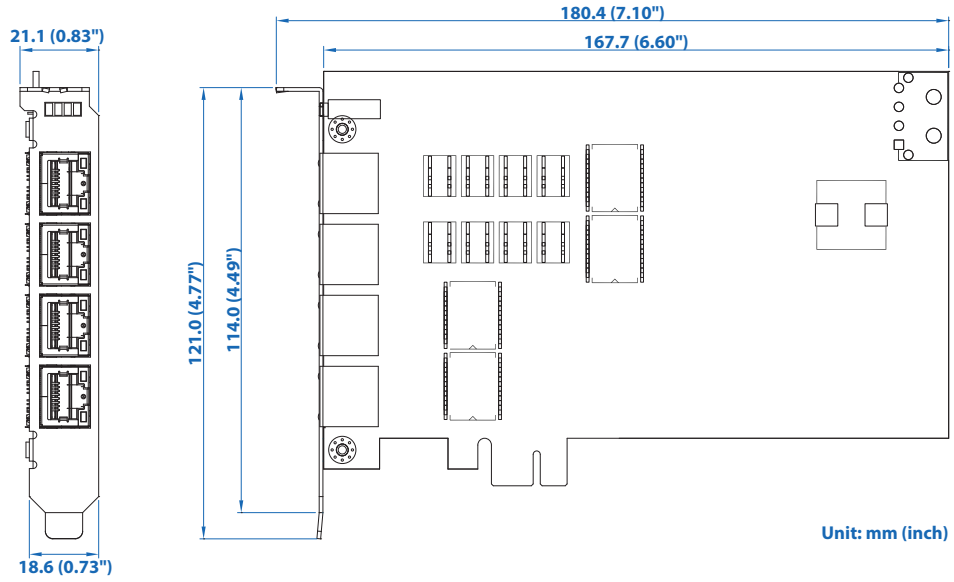
Ethernet	
Interface	PCI Express x1
Chipset	1 Intel® Ethernet Controller I210
Data Rate	10/100/1000 Mbps
Jumbo Frame	Up to 9728 byte
Link Aggregation (LAG)	Present
Connector	8-pin RJ45
PoE Standard	IEEE 802.3at compliant
Power Requirements	
Output	<ul style="list-style-type: none">• 4 RJ45 PoE Port• Up to 25.5W Power Output at 48V DC per port
Power Connector	1 4-pin ATX 12V Power Connector
Environment	
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
EMC	CE, FCC
Mechanical	
Dimension	168mm x 121mm x 21mm (6.6" x 4.8" x 0.8")

1.3.2 Specifications of Vecow SE-1014

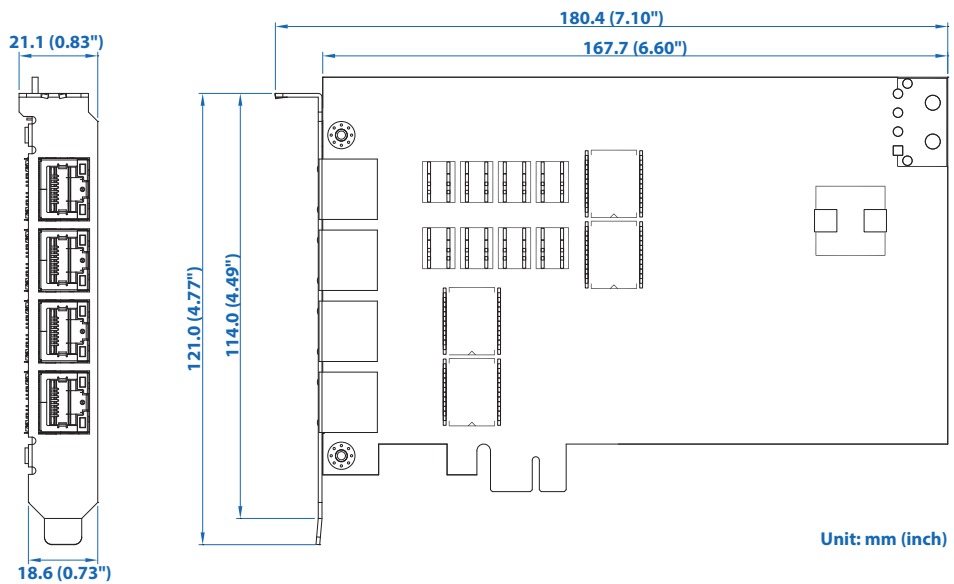
Ethernet	
Interface	PCI Express x1
Chipset	1 Intel® Ethernet Controller I210
Data Rate	10/100/1000 Mbps
Jumbo Frame	Up to 9728 byte
Link Aggregation (LAG)	Present
Connector	8-pin RJ45
Environment	
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
EMC	CE, FCC
Mechanical	
Dimension	168mm x 121mm x 21mm (6.6" x 4.8" x 0.8")

1.4 Mechanical Dimension

1.4.1 SE-1004



1.4.2 SE-1014



2

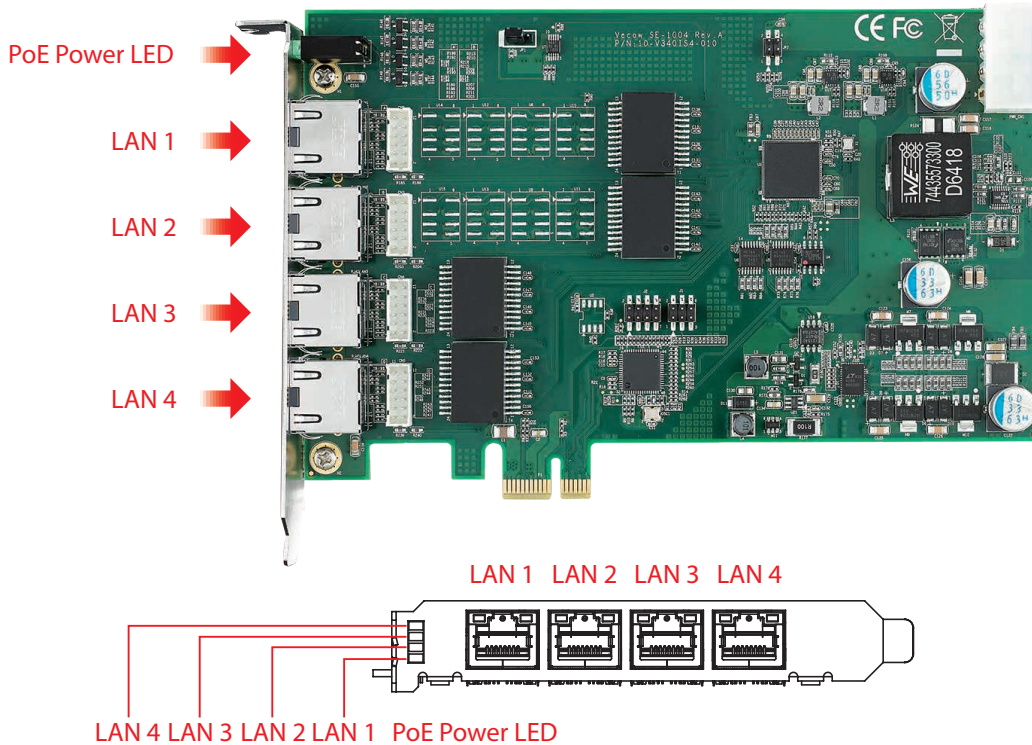
GETTING TO KNOW YOUR SE-1000

2.1 Packing List

Item	Description	Qty
1	SE-1000, PCI Express x1 PoE ⁺ /LAN Bypass, 4-Channel, GigE, IEEE 802.3at Compliant Intel [®] I210 PCI Express Expansion Card (It is based on the configuration you ordered.)	1

2.2 SE-1004 I/O and Indication

2.2.1 PoE (Power over Ethernet) Ports



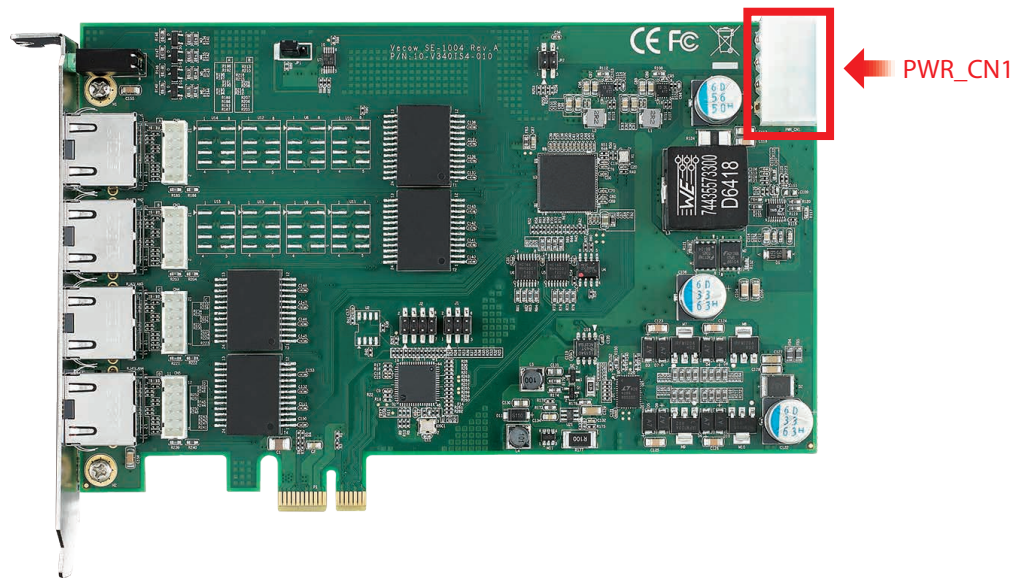
SE-1004 is equipped with 4 IEEE 802.3at PoE⁺ ports for transmitting power as much as 25.5W/48V per port and 1000BASE-T gigabit data signals over standard Ethernet CAT-5/CAT-6 cable.

Each PoE connection is powered by Intel[®] I210 Gigabit 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 LAN 1 and LAN 4 are listed as follows :

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

2.2.2 Power Input



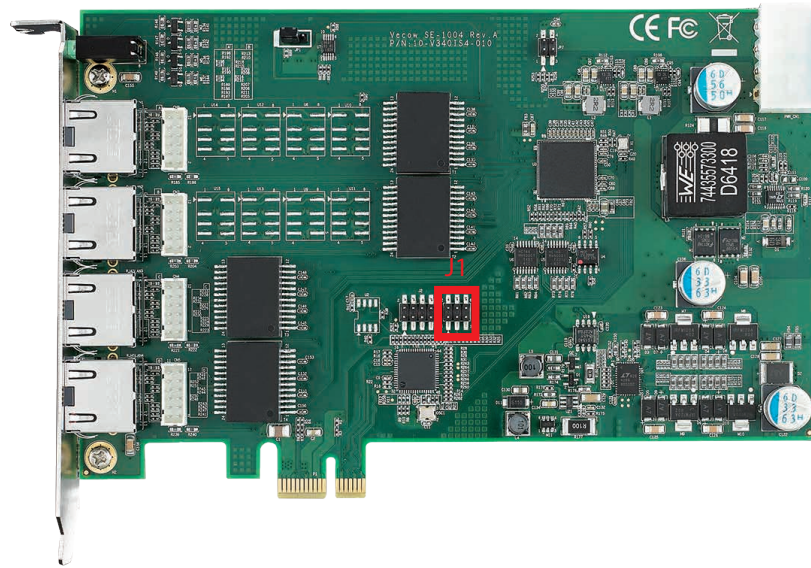
The SE-1004 is also equipped with one 4-pin power plug (12V, 6A max) for additional power supply. For most cases, the power obtained from PCIe bus is sufficient for the PoE devices, and you do not need to supply extra power to the card.

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.

CN3 :

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

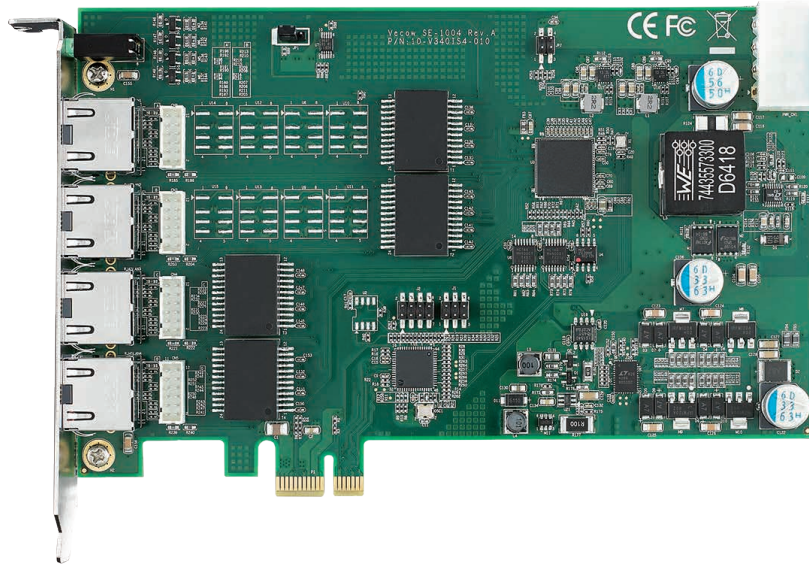
2.2.3 IEEE 1588



Intel I210 supports a header for IEEE 1588 related applications.

Pin No.	Description	Pin No.	Description
1	SPD0	2	SPD1
3	SPD2	4	SPD3
5	Ground	6	Ground

2.2.4 PoE Power On/Off

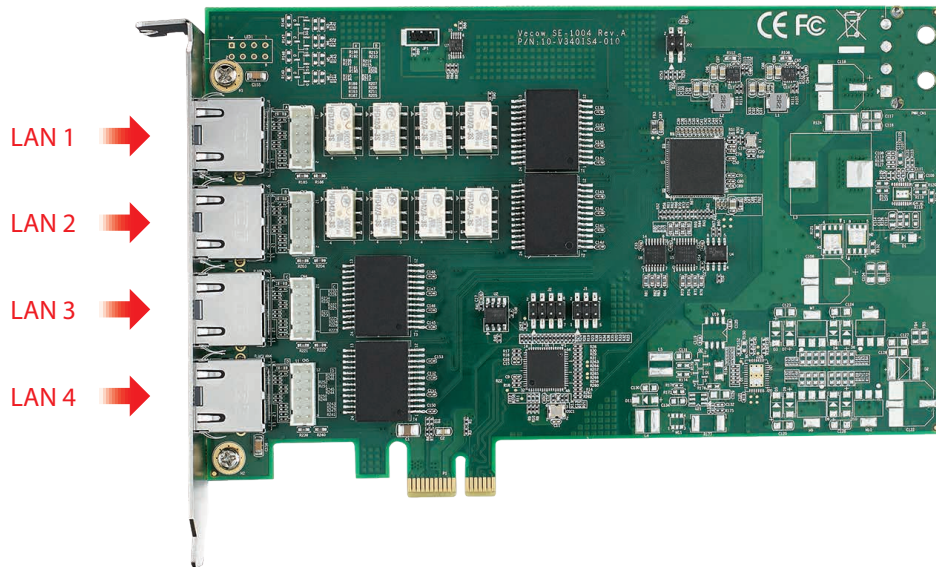


SE-1004 controls LTC4266 PoE Power ON/OFF Address as below :

A3	A2	A1	A0	Address
0	0	0	0	0x40

2.3 SE-1014 I/O and Indication

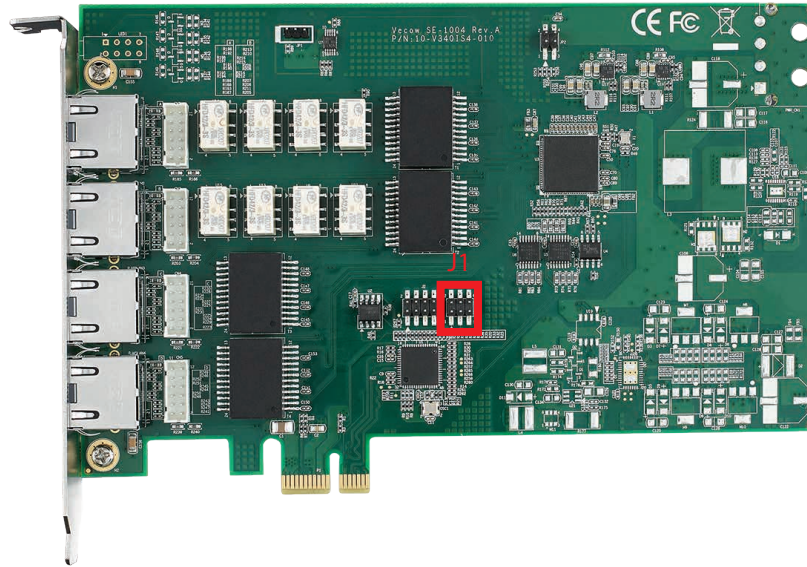
2.3.1 Ethernet Connections



There are four 8-pin RJ-45 jacks supporting 10/100/1000 Mbps Ethernet connections in SE-1014.

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

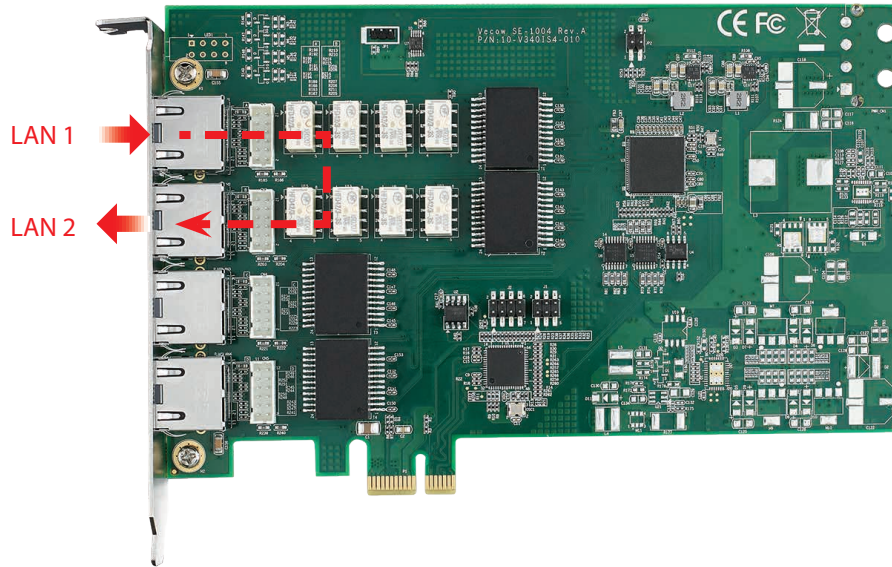
2.3.2 IEEE 1588



Intel I210 supports a header for IEEE 1588 related applications.

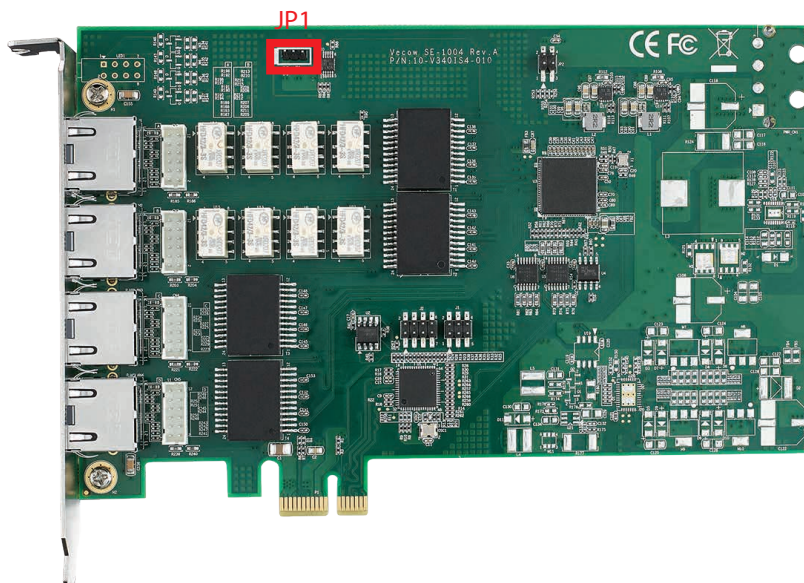
Pin No.	Description	Pin No.	Description
1	SPD0	2	SPD1
3	SPD2	4	SPD3
5	Ground	6	Ground

2.3.3 LAN Bypass Function



SE-1014 supports LAN bypass mode. If SE-1014 does not insert with power cord or malfunctions, LAN 1 will bypass LAN 2.

2.3.4 LAN Bypass Enable and Disable Jumper Setting



JP1 controls LAN bypass enabling and disabling. Jumper Setting :

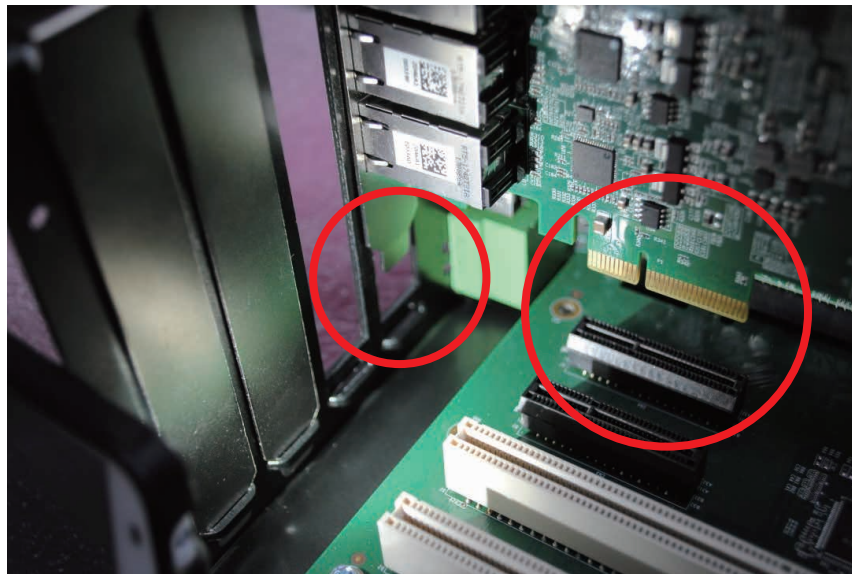
Jumper	Setting	Description
JP1	1-2	*LAN 1 LAN 2 LAN bypass Enable
	2-3	LAN 1 LAN 2 LAN bypass Disable

3

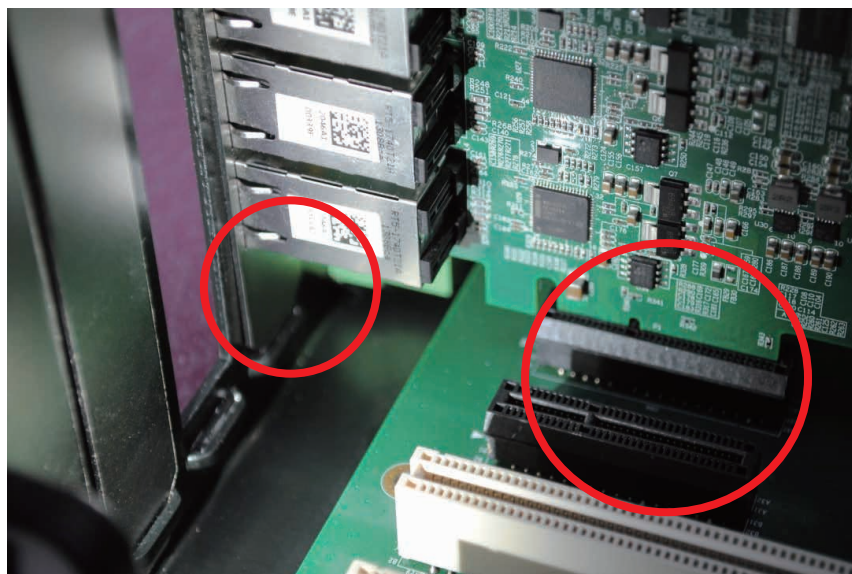
GETTING START

3.1 Installing SE-1000

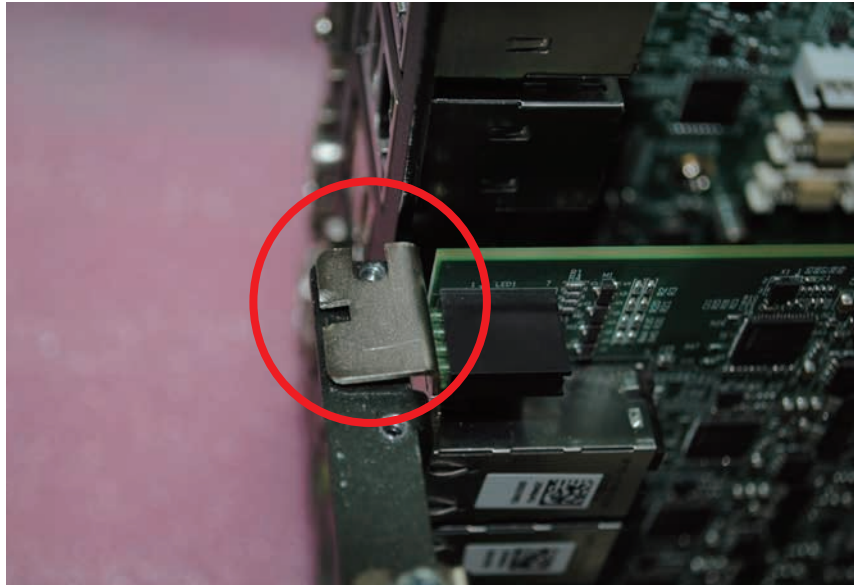
Step 1. Insert SE-1000 golden finger and PCI bracket into PCIe socket carefully.



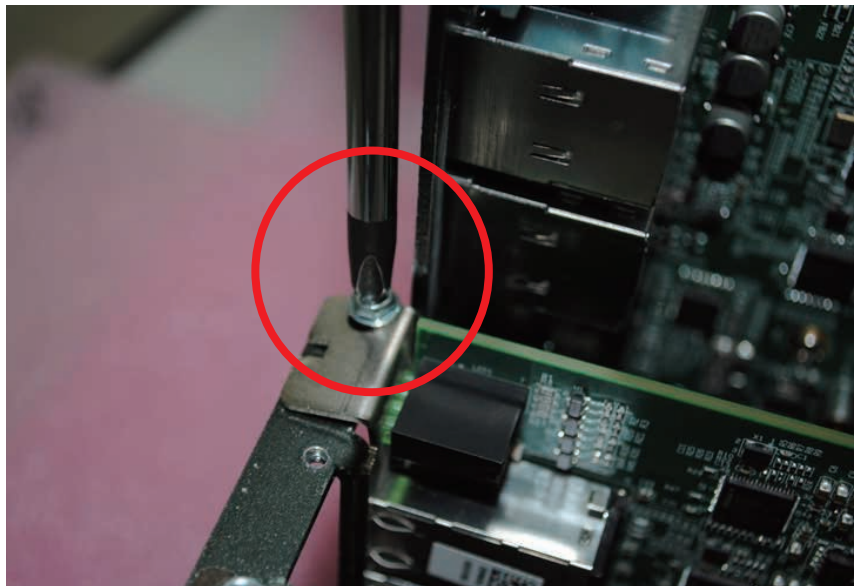
Step 2. Make sure golden finger and PCI bracket are inserted smoothly.



Step 3. Make sure the bracket aligns screw hole.



Step 4. Fasten the M3 screw.

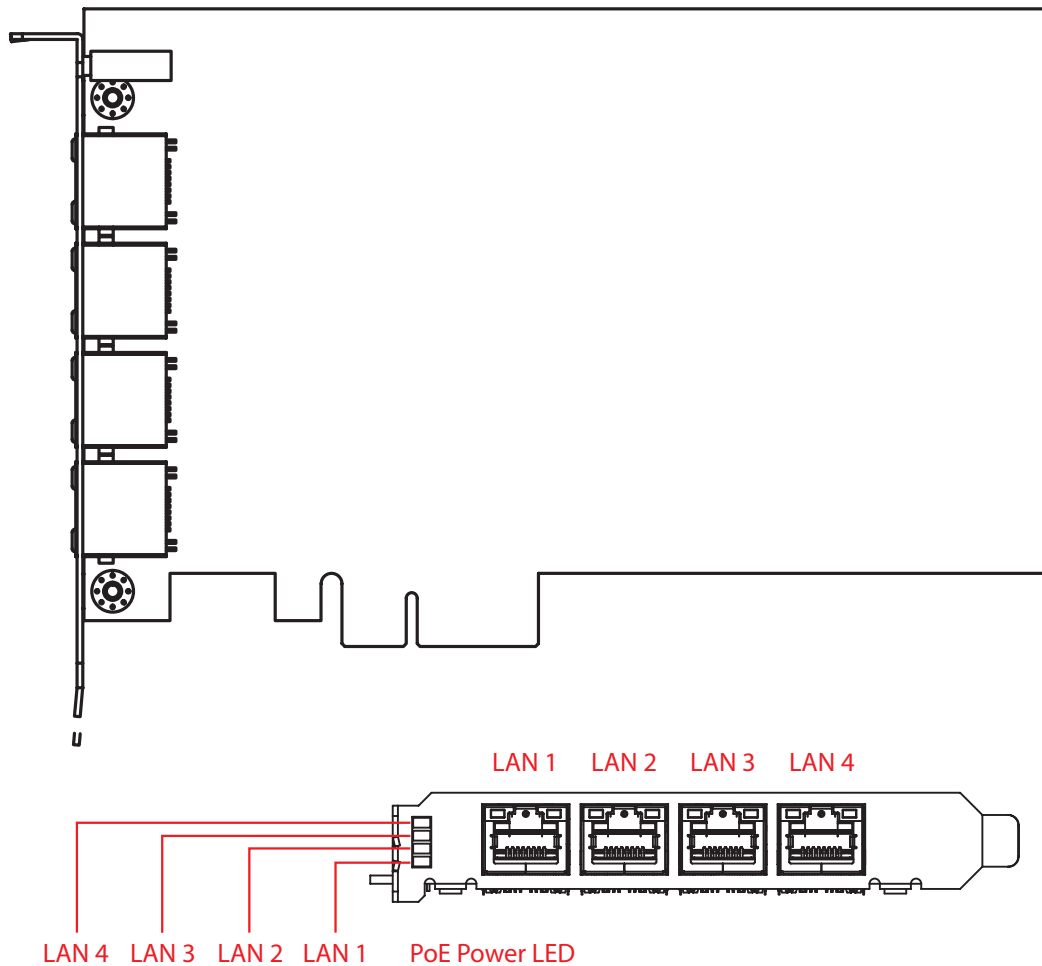


A

APPENDIX A : PoE Guide (SE-1004)

A.1 Function Description

The SE-1000 offers a 4-port PoE or dual LAN Bypass.



Pin No.	Definition	Pin No.	Definition
LAN 1	POE 0	LAN 3	POE 2
LAN 2	POE 1	LAN 4	POE 3



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

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