PER-T481

Intel® GbE LAN PCI-E [x4] Frame Grabber Card
PoE PCI-E [x4] Frame Grabber Card

User's Manual 3rd Ed

Last Updated: January 15, 2019

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● PER-T481	1
● Utility CD	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any power supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls.
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
18. Do not leave this device in an uncontrolled environment with temperatures beyond the device's permitted storage temperatures (see chapter 1) to prevent damage.
19. Do NOT disassemble the motherboard so as not to damage the system or void your warranty.
20. If the thermal pad had been damaged, please contact AAEON's salesperson to purchase a new one. Do NOT use those of other brands.
21. The Hex Cylinder Coppers on the front panel are not removable.
22. Repeatedly assemble and disassemble the system may cause damages to the exterior paint and surface and screw holes.
23. Use the right size screwdriver.
24. Use the screwdriver correctly to remove screws from the system.

FCC Statement

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Embedded Box PC/ Industrial System

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	○	○	○	○	○	○
外部信号连接器及线材	○	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器与内存	○	○	○	○	○	○
硬盘	○	○	○	○	○	○
电源	○	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注：
一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
二、上述部件物质中央处理器、内存、硬盘、电源为选购品。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Embedded Box PC/ Industrial System

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	O	O	O	O	O	O
Wires & Connectors for External Connections	O	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	O	O	O	O	O	O
Hard Disk	O	O	O	O	O	O
PSU	O	O	O	O	O	O

O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

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Chapter 1

Product Specifications

1.1 PER-T481 Specifications

System	
Bus Interface	PCI-Express® [x4], Gen 2 PCI-Express Specification Revision 2.0 at 5GT/s
USB	—
USB Connector	—
Ethernet	LAN: Intel® i211AT Ethernet Controller x 4 (A10) Intel® i211AT Ethernet Controller x 2 (A20) Fully compliant with IEEE 802.3 and IEEE 802.3u Support IEEE 1588 precision time synchronization POE: Intel® i211AT Ethernet Controller x 4 (A30) Intel® i211AT Ethernet Controller x 2 (A40) Fully compliant with IEEE 802.3 and IEEE 802.3u Support IEEE 1588 precision time synchronization Support IEEE 802.3 at
OS Support	LAN: Windows® 10(32/64-bit), Windows® 8.1 (32/64-bit), Windows® 7(32/64-bit), Linux POE: Windows® 10(32/64-bit), Windows® 8.1 (32/64-bit), Windows® 7(32/64-bit)
Power Supply	
Power Requirement	LAN: Max. 10W

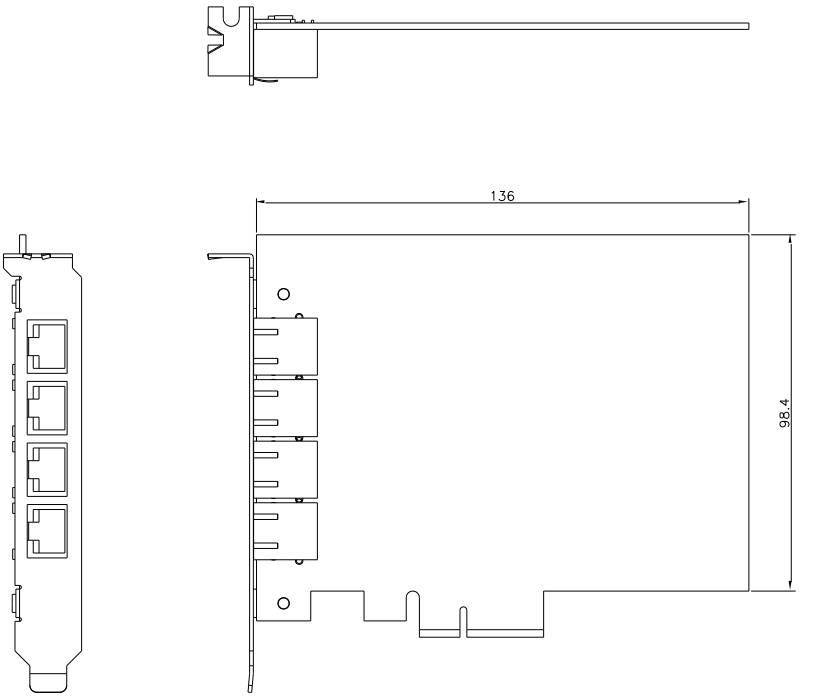
	POE: 4POE DUAL SATA Power (15 pin) DC Input 12~24V,Max. 90W for 4ports (A30) 2POE DUAL SATA Power (15 pin) DC Input 12~24V,Max. 60W for 2ports (A40)
Mechanical	
Dimensions (W x D)	LAN: 110mm(W) x 136mm(D) POE: 112mm(W) x 150mm(D)
Environmental	
Operating Temperature	LAN: -4°F ~ 140°F(-20°C ~ 60°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices) POE: -4°F ~ 131°F(-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; 90W loading) (A30) -4°F ~ 131°F(-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; 60W loading) (A40)
Storage Temperature	-49°F ~ 185°F(-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing

Chapter 2

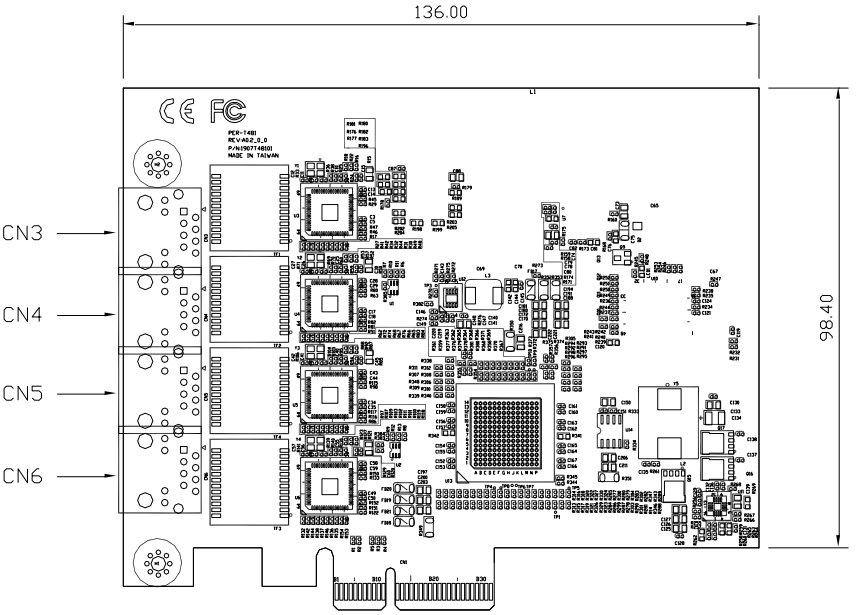
Hardware Information

2.1 PER-T481-A10

2.1.1 Dimensions



2.1.2 Jumpers and Connectors



2.1.3 List of Connectors

Please refer to the table below for all of the system's connectors that you can configure for your application

Label	Function	Connector Type
CN3	LAN Connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN4	LAN Connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN5	LAN Connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN6	LAN Connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D

2.1.3.1 LAN Connector (CN3)

PIN	Pin Name
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.1.3.2 LAN Connector (CN4)

PIN	Function
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.1.3.3 LAN Connector (CN5)

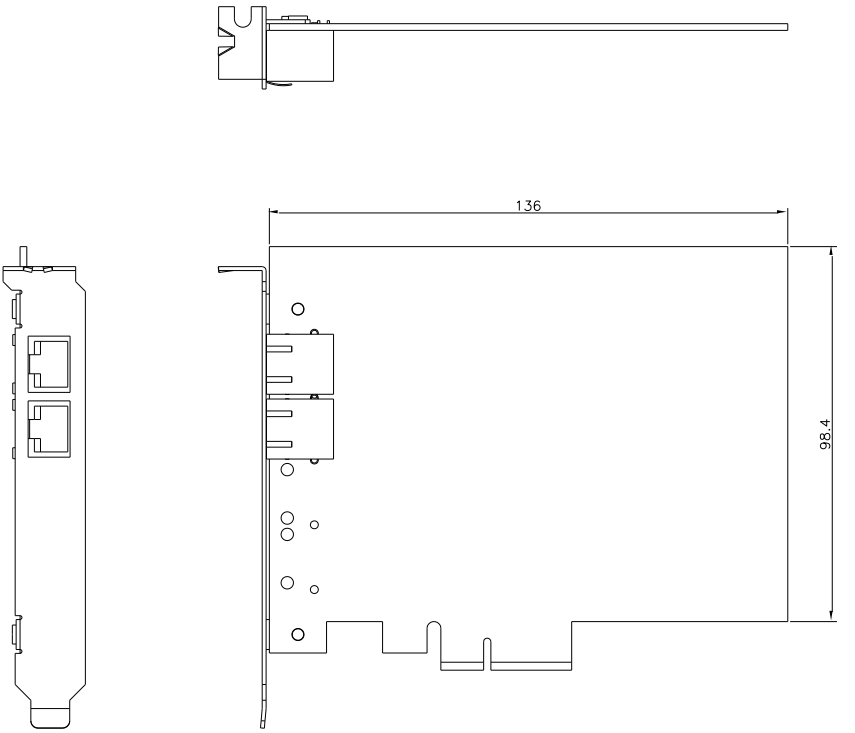
PIN	Pin Name
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.1.3.4 LAN Connector (CN6)

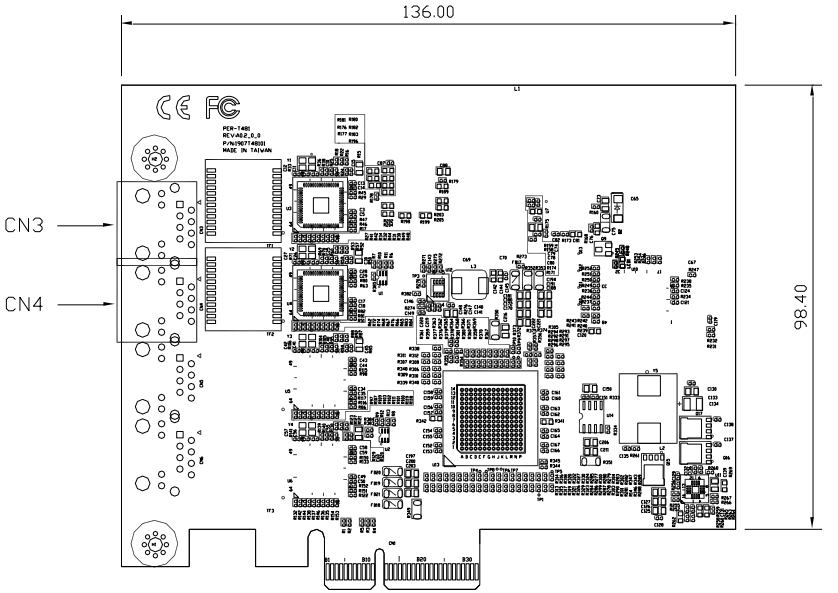
PIN	Function
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.2 PER-T481-A20

2.2.1 Dimensions



2.2.2 Jumpers and Connectors



2.2.3 List of Connectors

Please refer to the table below for all of the system's connectors that you can configure for your application

Label	Function	Connector Type
CN3	LAN Connector	RJ45.12P90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN4	LAN Connector	RJ45.12P90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D

2.2.3.1 LAN Connector (CN3)

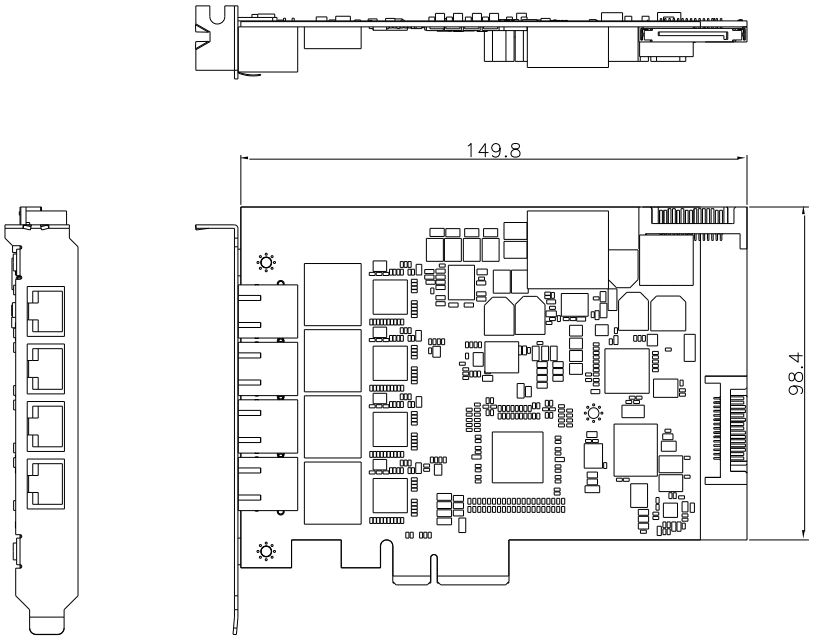
PIN	Pin Name
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.2.3.2 LAN Connector (CN4)

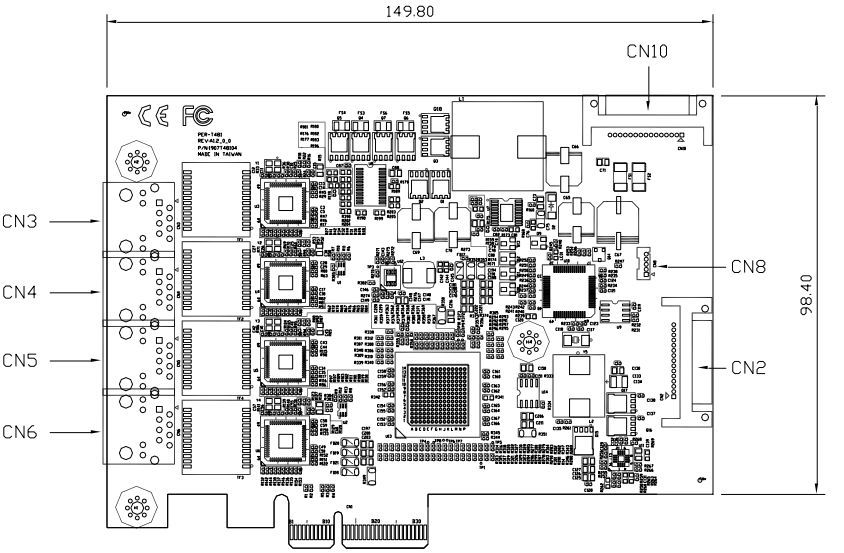
PIN	Function
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.3 PER-T481-A30

2.3.1 Dimensions



2.3.2 Jumpers and Connectors



2.3.3 List of Connectors

Please refer to the table below for all of the system's connectors that you can configure for your application

Label	Function	Connector Type
CN2	SATA connector	SATA CONNECTOR.15P.90D(M).DIP.1.27mm.TECHBEST.J09-0404-01
CN3	LAN connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN4	LAN connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN5	LAN connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN6	LAN connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN8	USB connector	WAFER BOX.5P.180D(M).DIP.1.25mm.PINREX.712-H71-055W01
CN10	SATA connector	SATA CONNECTOR.15P.90D(M).DIP.1.27mm.TECHBEST.J09-0404-01

2.3.3.1 SATA Connector (CN2)

PIN	Pin Name
1	N/A
2	N/A
3	N/A
4	GND
5	GND
6	GND
7	N/A
8	N/A
9	N/A
10	GND
11	GND
12	GND
13	PWR_IN(12-24V)
14	PWR_IN(12-24V)
15	PWR_IN(12-24V)

2.3.3.2 LAN Connector (CN3)

PIN	Pin Name
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.3.3.3 LAN Connector (CN4)

PIN	Function
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.3.3.4 LAN Connector (CN5)

PIN	Pin Name
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.3.3.5 LAN Connector (CN6)

PIN	Function
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.3.3.6 USB Connector (CN8)

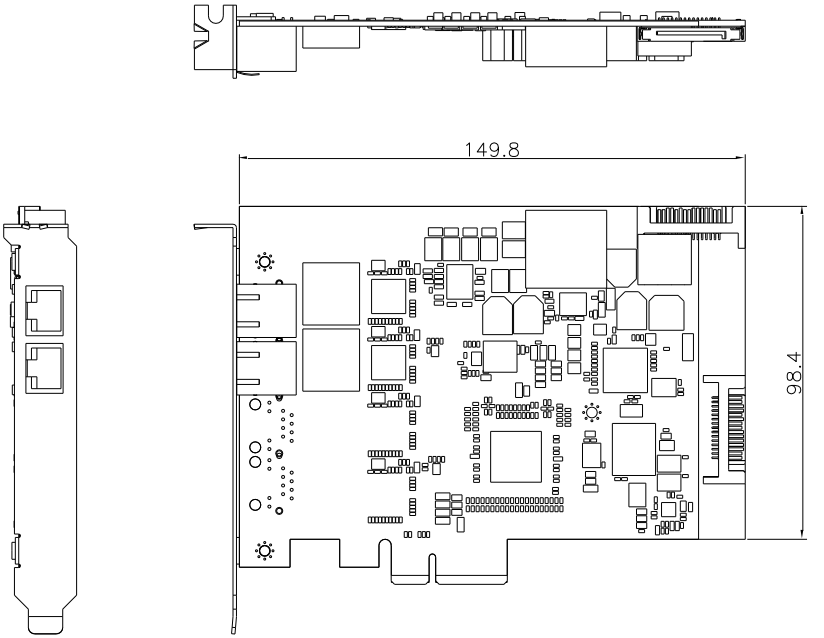
PIN	Function
1	+5V
2	D-
3	D+
4	GND
5	GND

2.3.3.7 SATA Connector (CN10)

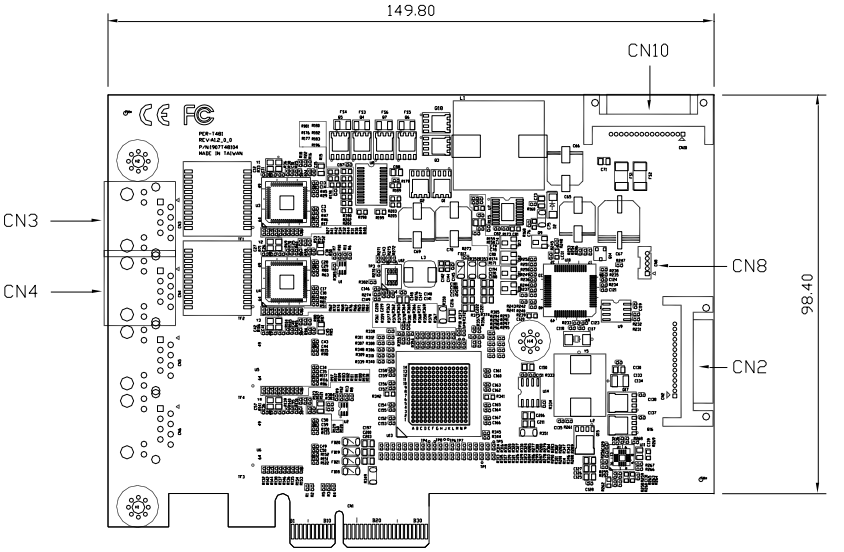
PIN	Pin Name
1	N/A
2	N/A
3	N/A
4	GND
5	GND
6	GND
7	N/A
8	N/A
9	N/A
10	GND
11	GND
12	GND
13	PWR_IN(12-24V)
14	PWR_IN(12-24V)
15	PWR_IN(12-24V)

2.4 PER-T481-A40

2.4.1 Dimensions



2.4.2 Jumpers and Connectors



2.4.3 List of Connectors

Please refer to the table below for all of the system's connectors that you can configure for your application

Label	Function	Connector Type
CN2	SATA connector	SATA CONNECTOR.15P.90D(M).DIP.1.27mm.TECHBEST.J09-0404-01
CN3	LAN connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN4	LAN connector	RJ45.12P.90D(F).Notch down.W/LED(L-G:R-O/G).DIP.UDE.RC1-1Q00000D
CN8	USB connector	WAFER BOX.5P.180D(M).DIP.1.25mm.PINREX.712-H71-055W01
CN10	SATA connector	SATA CONNECTOR.15P.90D(M).DIP.1.27mm.TECHBEST.J09-0404-01

2.4.3.1 SATA Connector (CN2)

PIN	Pin Name
1	N/A
2	N/A
3	N/A
4	GND
5	GND
6	GND
7	N/A
8	N/A
9	N/A
10	GND
11	GND
12	GND
13	PWR_IN(12-24V)
14	PWR_IN(12-24V)
15	PWR_IN(12-24V)

2.4.3.2 LAN Connector (CN3)

PIN	Pin Name
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.4.3.3 LAN Connector (CN4)

PIN	Function
1	MID0+
2	MID0-
3	MID1+
4	MID1-
5	MID2+
6	MID2-
7	MID3+
8	MID3-

2.4.3.4 USB Connector (CN8)

PIN	Function
1	+5V
2	D-
3	D+
4	GND
5	GND

2.4.3.5 SATA Connector (CN10)

PIN	Pin Name
1	N/A
2	N/A
3	N/A
4	GND
5	GND
6	GND
7	N/A
8	N/A
9	N/A
10	GND
11	GND
12	GND
13	PWR_IN(12-24V)
14	PWR_IN(12-24V)
15	PWR_IN(12-24V)

Chapter 3

Driver Installation

3.1 Driver Installation

The PER-T481 comes with a product CD that contains all the drivers and utilities you need to set up your product. Insert the CD and follow the steps in the autorun program to install the drivers.

In case the program does not start, follow the sequence below to install the drivers.

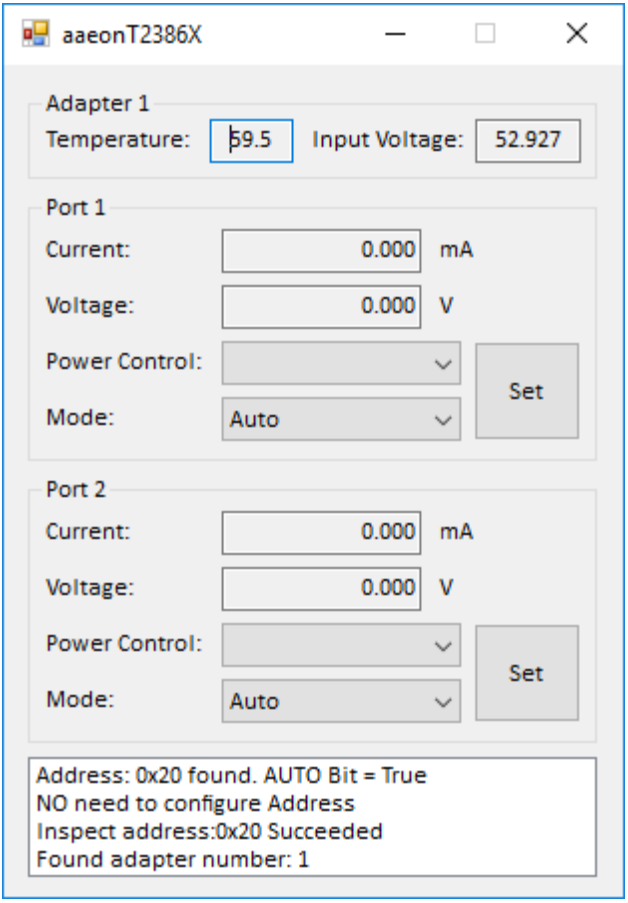
Install LAN Driver

1. Open the folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

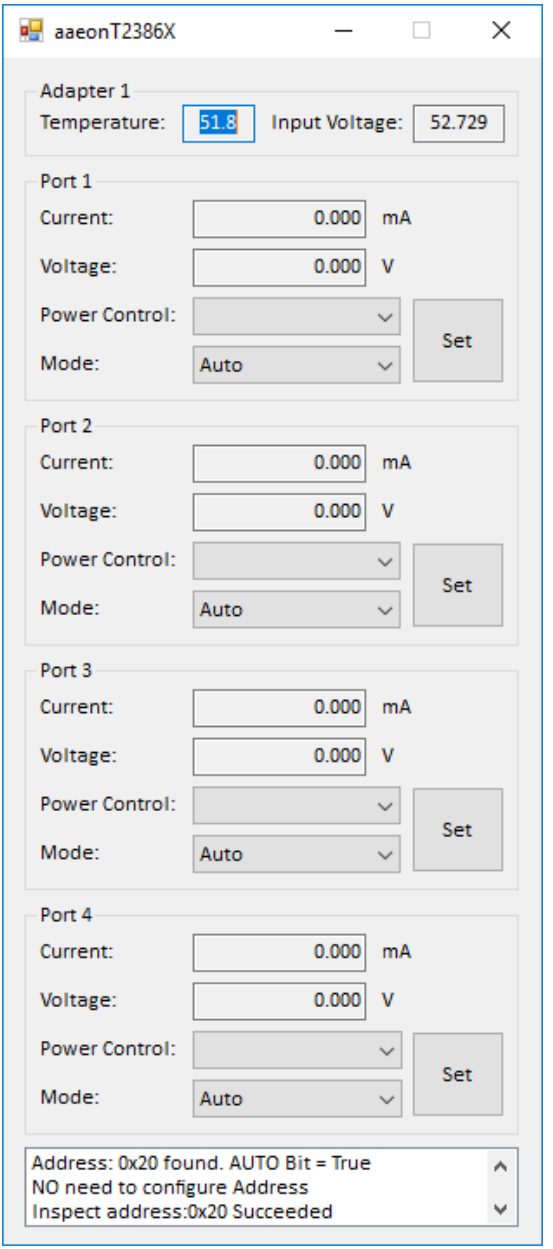
3.2 Smart PoE Application

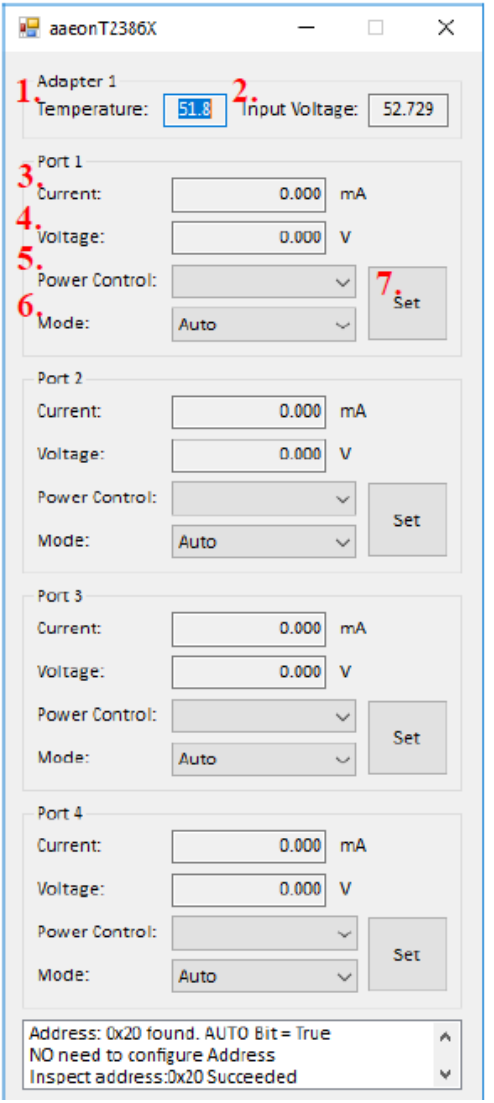
The application UI show different layouts according to POE hardware configuration.

2-port PoE



4-port PoE


aaeonT2386X
Adapter 1
Temperature:
51.8
Input Voltage:
52.729
Port 1
Current:
0.000
mA
Voltage:
0.000
V
Power Control:
Mode:
Auto
Set
Port 2
Current:
0.000
mA
Voltage:
0.000
V
Power Control:
Mode:
Auto
Set
Port 3
Current:
0.000
mA
Voltage:
0.000
V
Power Control:
Mode:
Auto
Set
Port 4
Current:
0.000
mA
Voltage:
0.000
V
Power Control:
Mode:
Auto
Set
Address: 0x20 found. AUTO Bit = True
NO need to configure Address
Inspect address:0x20 Succeeded



1. POE adapter temperature
2. POE adapter input voltage
3. Instantaneous current of the corresponding POE port
4. Instantaneous voltage of the corresponding POE port
5. Power ON | OFF of the corresponding POE port
6. POE Mode: Off, Manual, Semi-Auto, Auto

   Off: The port is off and there is neither detection nor classification

   Manual: There is no automatic state change

   Semi-Auto: Detection and classification are automated but not the port power on

   Auto: All three are automated
7. Set button for writing setting to POE chip