AI Core XP4/XP8

PER-TAIX4-A10-PCIE
PER-TAIX8-A10-PCIE
Intel® Myriad™ X PCIe [x4] AI Card

User's Manual 1st Ed

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Packing List

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

Item	Quantity
● AI Core XP PCIe [x4] Card	1
● AI Core XM2280 M.2 Module Card	2 (XP4) 4 (XP8)

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 product page on 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 AI Core XP PCIe [x4] Specifications

System	
IC	2 to 8 Intel® Movidius™ Myriad™ X VPU, MA2485 (Supports 1 to 4 AI Core XM2280 modules, each with 2x Intel® Myriad™ X VPU)
Expansion	4 x M.2 22x80mm slots
Supported Frameworks	TensorFlow Caffe MXNet
Supported OS	Windows 10 Ubuntu 16.04 with Intel OpenVINO

Others	
Form Factor	PCIe [x4] full size, low profile card
Dimension	167.7mm x 111.2mm* *Does not include PCIe [x4] Gold Finger
Certification	CE/FCC Class A
Operating Temperature	0~60°C
Operating Humidity	10%~80%RH, non-condensing

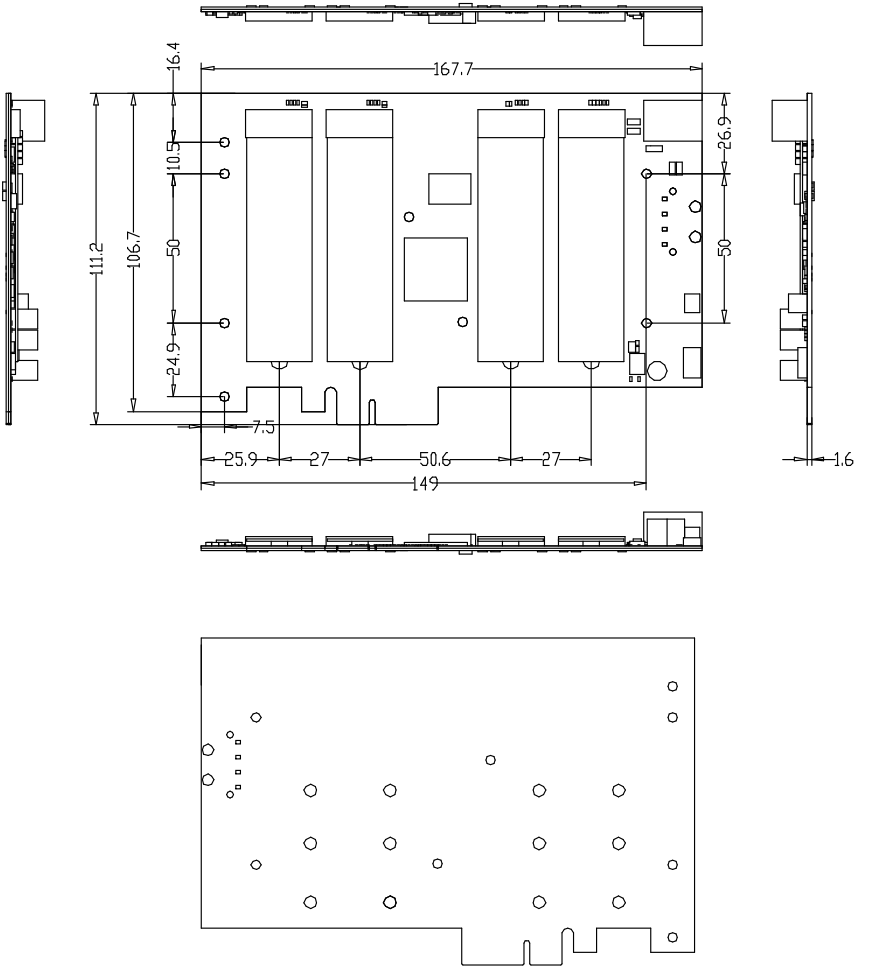
Configuration	
AI Core XP4	PCIe [x4] full size, low profile card with 4x Intel
PER-TAIX4-A10-PCIE	Myriad X VPU (2x AI Core XM2280)
AI Core XP8	PCIe [x4] full size, low profile card with 8x Intel
PER-TAIX8-A10-PCIE	Myriad X VPU (4x AI Core XM2280)

Note: Please refer to AI Core XM2280 manual for information regarding this product.

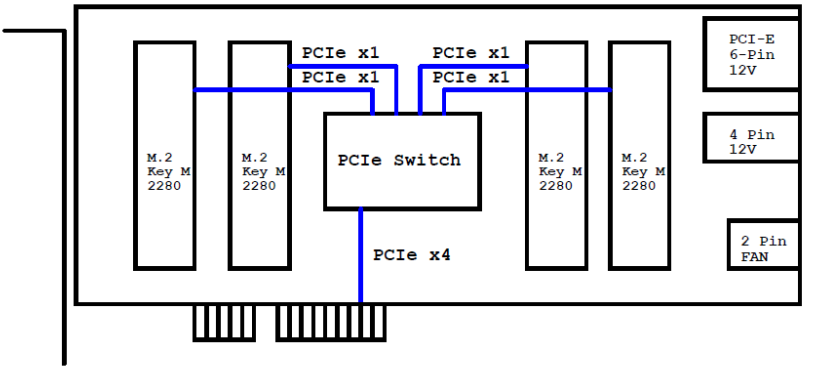
Chapter 2

Hardware Information

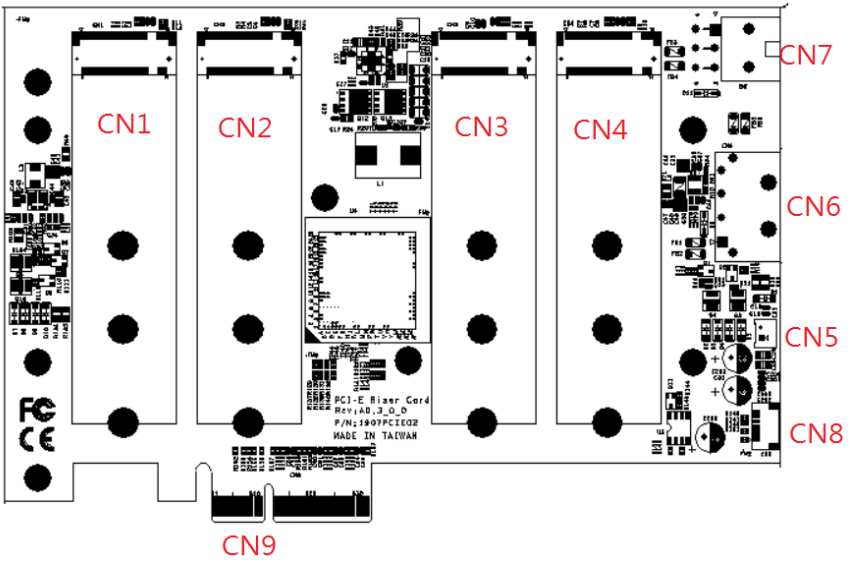
2.1 Dimensions



2.2 Block Diagram



2.3 Board Design

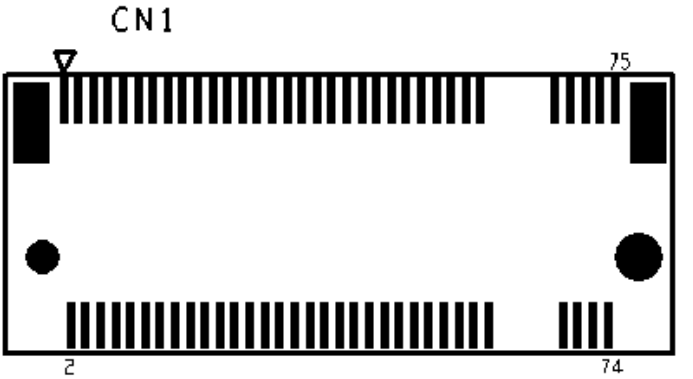


2.4 List of Connectors

This section details the connectors featured on the AI Core X module. This is a reference to help with setup and configuration for your application.

Label	Function	Connector Type
CN1	M.2 Key M	(TF)M.2 KeyM Slot.H=3.2mm.conn.75P.90D(F).BLACK.SMD.FOXCONN.AS0BC21-S30BM-7H
CN2	M.2 Key M	
CN3	M.2 Key M	
CN4	M.2 Key M	
CN5	FAN Power	(TF)WAFER BOX.2P.180D(M).DIP.2.0mm.w/LOCK.PINREX.721-81-02TW00
CN6	4P Power Supply	(TF)HOUSING.4P.90D.(M).DIP.5.08mm.W/LOCK.何迪.5082-WR
CN7	PCIe Power Supply	(TF)PCI-E Power Conn.3P*2.90D(M).DIP.Pitch=4.2mm.Astron.6652206-T0002T-H.Black
CN9	PCIe [x4] Gold Finger	N/A

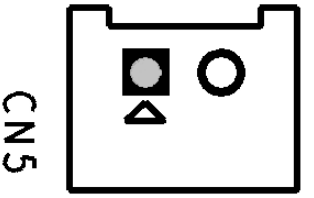
2.4.1 M.2 Key M (CN1, 2, 3, 4)



Pin	Signal Description	Pin	Signal Description
1	GND	2	+3.3V_NGFF4
3	GND	4	+3.3V_NGFF4
5	NC	6	NC
7	NC	8	NC
9	GND	10	NC
11	NC	12	+3.3V_NGFF4
13	NC	14	+3.3V_NGFF4
15	GND	16	+3.3V_NGFF4
17	NC	18	+3.3V_NGFF4
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC

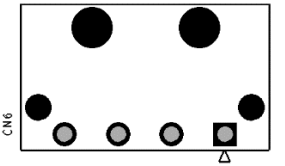
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	DEVSLP_4
39	GND	40	NC
41	DPE_RXN11_R	42	NC
43	DPE_RXP11_R	44	NC
45	GND	46	NC
47	DPE_TXN11_C	48	NC
49	DPE_TXP11_C	50	DPE_RSTN
51	GND	52	DPE_CLKREQN5
53	DPE_CLKN5_R	54	PCIE_WAKE#
55	DPE_CLKP5_R	56	NC
57	GND	58	NC
59	Key M	60	Key M
61	Key M	62	Key M
63	Key M	64	Key M
65	Key M	66	Key M
67	NC	68	TP49
69	NC	70	+3.3V_NGFF4
71	GND	72	+3.3V_NGFF4
73	GND	74	+3.3V_NGFF4
75	GND	76	GND
77	GND		

2.4.2 FAN Power (CN5)



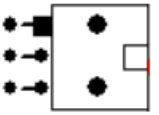
Pin	Signal Description	Pin	Signal Description
1	+12V	2	GND

2.4.3 4P Power Supply (Option) (CN6)



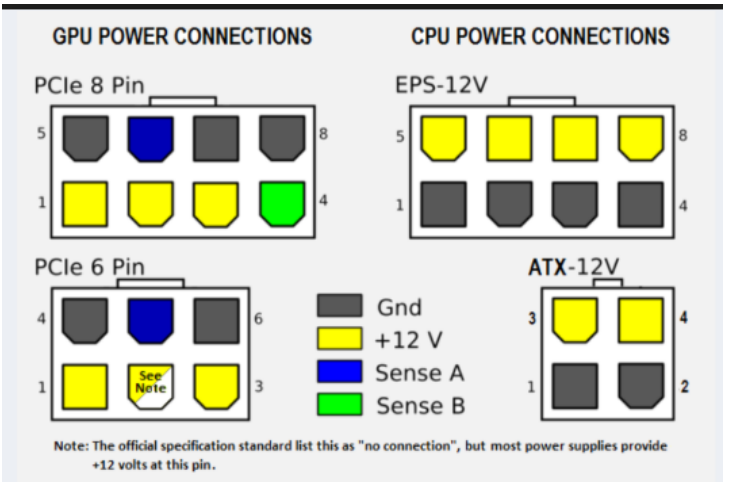
Pin	Signal Description	Pin	Signal Description
1	+ATX_12V	2	GND
3	GND	4	NC
H1	NC	H2	NC
H3	NC	H4	NC

2.4.4 PCIe Power Supply (CN7)



Pin	Signal Description	Pin	Signal Description
1	+ATX_12V	2	+ATX_12V
3	+ATX_12V	4	GND
5	GND	6	GND

NOTE: CN7 is powered by PCIe, not EPS/ATX. Do not confuse with CPU Power.



2.4.5 PCIe [x4] Gold Finger (CN9)

CN9

Pin	Signal Description	Pin	Signal Description
A1	PRSNT	B1	+PCIE_12V
A2	+PCIE_12V	B2	+PCIE_12V
A3	+PCIE_12V	B3	+PCIE_12V
A4	GND	B4	GND
A5	NC	B5	SMB_CLK_R
A6	NC	B6	SMB_DATA_R
A7	NC	B7	GND
A8	NC	B8	+V3.3_PCIE
A9	+V3.3_PCIE	B9	NC
A10	+V3.3_PCIE	B10	+3.3VAUX
A11	PLT_RST#	B11	PCIE_Wake#
A12	GND	B12	RSVD
A13	PCIESLOT_CLK	B13	GND
A14	PCIESLOT_CLK#	B14	CPETP0
A15	GND	B15	CPETN0
A16	CPERP0	B16	GND
A17	CPERN0	B17	PRSNT2
A18	GND	B18	GND
A19	NC	B19	CPETP1
A20	GND	B20	CPETN1
A21	CPERP1	B21	GND

Pin	Signal Description	Pin	Signal Description
A22	CPERN1	B22	GND
A23	GND	B23	CPETP2
A24	GND	B24	CPETN2
A25	CPERP2	B25	GND
A26	CPERN2	B26	GND
A27	GND	B27	CPETP3
A28	GND	B28	CPETN3
A29	CPERP3	B29	GND
A30	CPERN3	B30	NC
A31	GND	B31	PRSNT2
A32	NC	B32	GND

Chapter 3

Software Installation

3.1 Intel OpenVINO Toolkit

The AI Core XP4/XP8 works with Intel OpenVINO toolkit and does not require any drivers to be installed. Visit the OpenVINO website to download and install the software.

https://software.intel.com/en-us/openvino-toolkit