

UP Xtreme i12 Edge

Maker Board System
UPX-EDGE-ADLP

User's Manual 2nd Ed

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Packing List

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

Item	Quantity
● UPX-EDGE-ADLP (UP Xtreme i12 Edge)	1
● SATA Cable	1
● SATA Power Cable	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 product page at 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 AC 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.**

Warning!



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 System

QQ4-381 Rev.A2

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	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：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 GB/T 26572 标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了 GB/T 26572 的限量要求，然而该部件仍符合欧盟指令 2011/65/EU 的规范。

环保使用期限(EFUP (Environmental Friendly Use Period))：10 年

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、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

China RoHS Requirement (EN)

Name and content of hazardous substances in product

AAEON System

QO4-381 Rev.A2

Part Name	Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCB Assemblies	×	○	○	○	○	○
Connector and Cable	×	○	○	○	○	○
Chassis	○	○	○	○	○	○
CPU and Memory	×	○	○	○	○	○
Hard Disk	×	○	○	○	○	○
LCD Modules	×	○	○	○	○	○
CD-ROM/DVD-ROM	×	○	○	○	○	○
Touch Modules	×	○	○	○	○	○
Power	×	○	○	○	○	○
Battery	×	○	○	○	○	○

The table is prepared in accordance with the provisions of SJ/T 11364.
 ○ : Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.
 × : Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572. But this product still be compliance with 2011/65/EU Directive (allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1).
 EFUP (Environment Friendly Use Period) value: 10 years.
 Notes:
 1. This product defined period of use is under normal condition.
 2. In above part, CPU/Memory/ Hard Disk/CD-ROM/DVD-ROM/ Power are optional.
 3. In above part, LCD Modules/ Touch Modules are for all-in-one product model.

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Chapter 1

Product Specifications

1.1 Specifications

System

CPU	12th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1270PE Intel® Core™ i7-1260P Intel® Core™ i5-1250PE Intel® Core™ i5-1240P Intel® Core™ i3-1220PE Intel® Celeron® Processor 7305E 13th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1370PE Intel® Core™ i7-1360P Intel® Core™ i5-1340PE Intel® Core™ i3-1320PE
Memory	Up to 32GB onboard LPDDR5
Graphics	Intel® Iris® Xe graphics
Storage	M.2 2280 M-Key x 2 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1
Ethernet	Intel® I226-IT x 1 (TSN) Intel® I219 x 1 (vPRO)
Wi-Fi/BT	Optional with M.2 2230 E-Key x 1
Expansion	40-pin GPIO x 1 M.2 2230 E-Key x 1 M.2 2280 M-Key x 2 (PCIe Gen 4 [x4]) SATA 6Gb/s x 1 M.2 3052 B-Key x 1 Nano SIM Slot x 1

System

Security	Onboard TPM 2.0
OS Support	Windows® 10 Enterprise 2021 LTSC Ubuntu 22.04 Yocto 4.0

I/O

USB	USB 2.0 (Type-A) x 1 USB 3.2 Gen 2 (Type-A) x 3 USB 4.0 (Type-C) x 1
Display Port	HDMI 2.0b x 1 DP 1.4a x 1 DP 1.4a x 1 (via USB Type-C) eDP 1.4b x 1
Ethernet	RJ-45 x 2
COM	RS-232/422/485 x 2
Audio	Audio Jack x 1 (Mic-in+Line-out)
GPIO	16-pin terminal block connector x 1

Power Supply

Power Requirement	12~36V DC-in (Lockable plug)
Power Supply Type	AT/ATX (Default: ATX)
Power Consumption (Typical)	Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 5.86A @+12V (Typical) Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 8.05A @+12V (Max)

Mechanical

Mounting	VESA Mount/Wall Mount (optional)
Dimensions (W x H x D)	5.98" x 4.87" x 2.81" (152mm x 123.8mm x 71.5mm)
Net Weight	2.95 lb. (1.34Kg)
Gross Weight	3.88 lb. (1.76Kg)

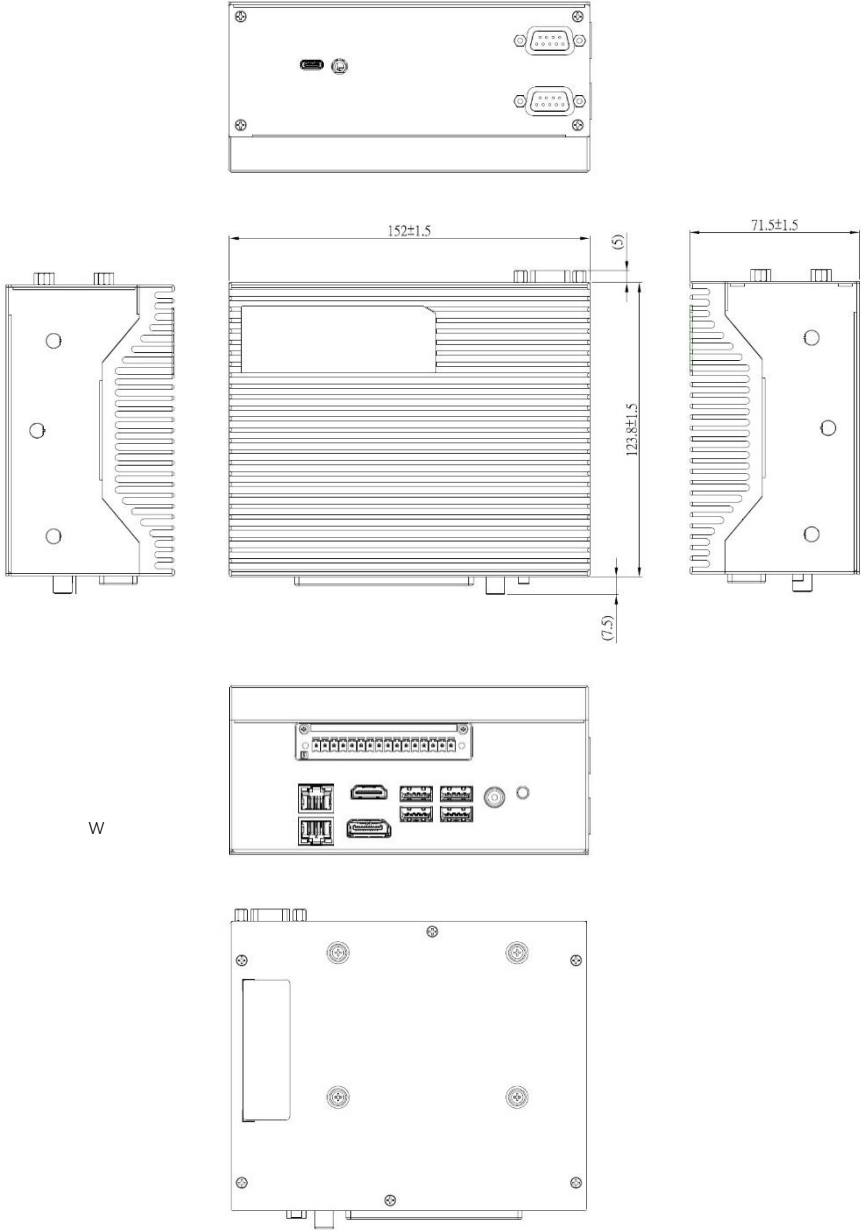
Environmental

Operating Temperature	32°F ~ 140°F (0°C - 60°C) with air flow 0.5m/s
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
MTBF	366,810 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

Chapter 2

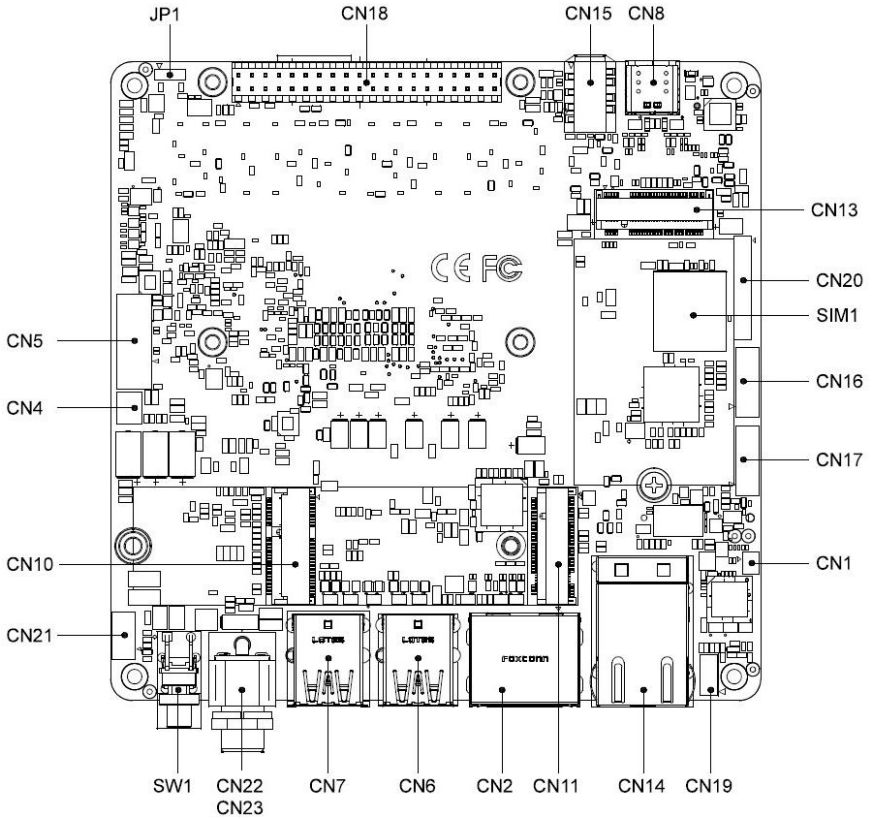
Hardware Information

2.1 Dimensions

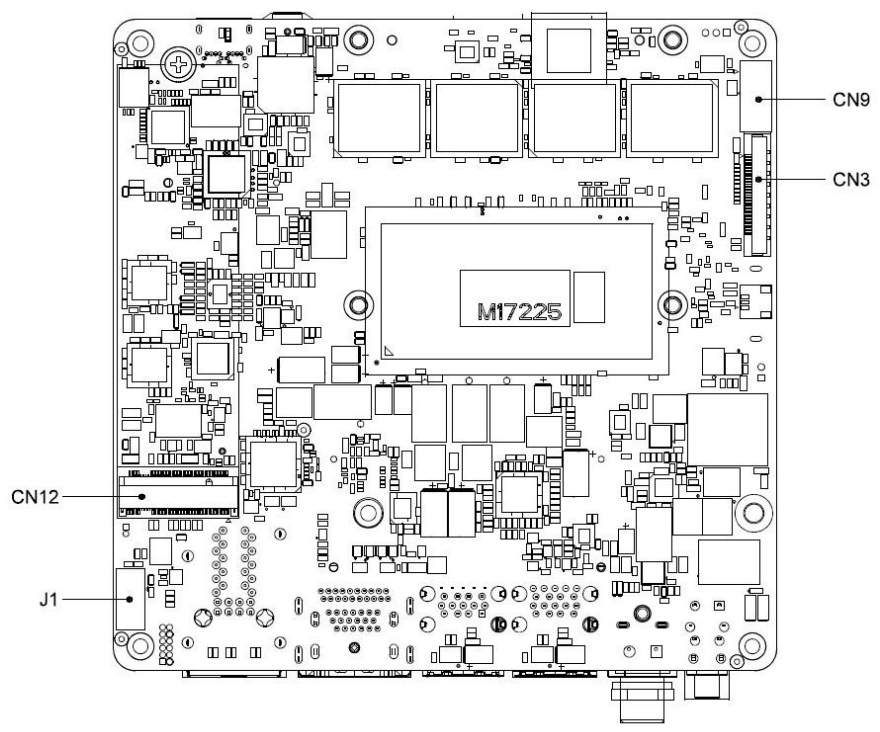


2.2 Jumpers and Connectors

Top:



Bottom:



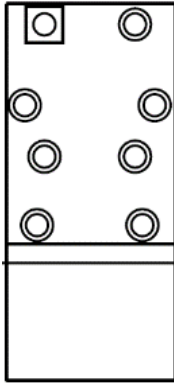
2.3 List of Jumpers and Connectors

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

Label	Function
SW1	PWR Button
CN1	RTC Connector
CN2	HDMI/DP
CN3	eDP
CN4	SATA Power
CN5	SATA Connector
CN6	Dual USB Type A
CN7	Dual USB Type A
CN8	USB Type-C
CN9	USB 2.0/UART 1x10P Wafer
CN10	M.2 2230 E-Key Slot
CN11	M.2 2280 M-Key Slot
CN12	M.2 2280 M-Key Slot
CN13	M.2 3052 B-Key Slot
CN14	Dual LAN Port
CN15	Φ3.5mm Audio Jack
CN16	RS-232/422/485 1x10P Wafer for COM 3
CN17	RS-232/422/485 1x10P Wafer for COM 4
CN18	40-Pin HAT Connector (Connected with Terminal block)
CN19	CPLD and BIOS update
CN21	Front Panel 1x6P Wafer
CN22	DC Power Jack

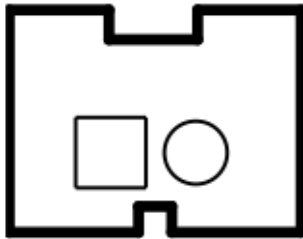
Label	Function
CN23	DC Terminal Block
J1	Fan Connector
JP1	AT/ATX Mode
SIM1	Nano SIM Card
Terminal Block	GPIO

2.3.1 Power Button (SW1)



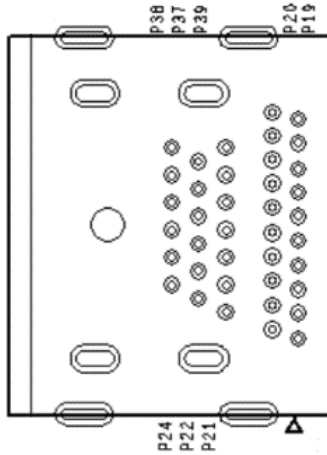
Pin	Signal	Pin	Signal	Pin	Signal
1	PWR_SW#	2	PWR_SW#	3	GND
4	GND	5	GND	6	GND
L1	SW1_LED_P	L2	SW1_LED_N		

2.3.2 RTC (CN1)



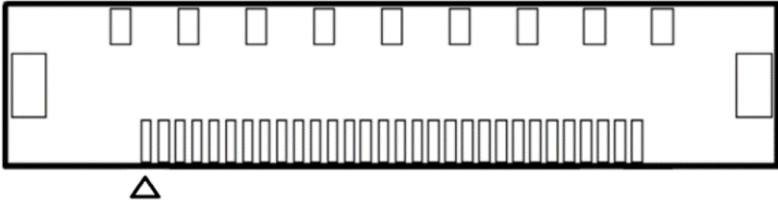
Pin	Signal	Pin	Signal
1	RTC_VCC	2	GND

2.3.3 HDMI/DP Port (CN2)



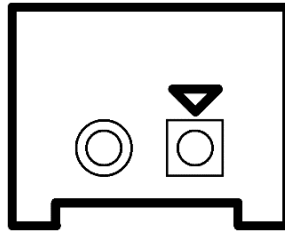
Pin	Signal	Pin	Signal	Pin	Signal
P1	DP_TXP0	P2	GND	P3	DP_TXN0
P4	DP_TXP1	P5	GND	P6	DP_TXN1
P7	DP_TXP2	P8	GND	P9	DP_TXN2
P10	DP_CLK+	P11	GND	P12	DP_CLK-
P13	CONFIG1	P14	CONFIG2	P15	DP_AUX_P
P16	GND	P17	DP_AUX_N	P18	DP_HPD
P19	GND	P20	3.3V	P21	HDMI_TXP2
P22	GND	P23	HDMI_TXN2	P24	HDMI_TXP1
P25	GND	P26	HDMI_TXN1	P27	HDMI_TXP0
P28	GND	P29	HDMI_TXN0	P30	HDMI_CLK+
P31	GND	P32	HDMI_CLK-	P33	HDMI_CEC
P34	NC	P35	DDC_CLK	P36	DDC_DATA
P37	GND	P38	5V	P39	HDMI_HPD

2.3.4 eDP (CN3)



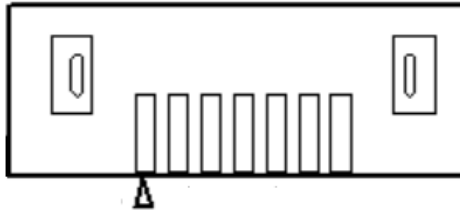
Pin	Signal	Pin	Signal
1	+VDD_3V3	2	+VDD_3V3
3	NC	4	GND
5	EDP_TXN2	6	EDP_TXP2
7	GND	8	EDP_TXN1
9	EDP_TXP1	10	GND
11	EDP_TXN0	12	EDP_TXP0
13	GND	14	EDP_TXN3
15	EDP_TXP3	16	GND
17	EDP_AUXN	18	EDP_AUXP
19	GND	20	BKLT_CTRL
21	NC	22	BKLT_EN
23	EDP_HPD	24	GND
25	GND	26	GND
27	+10V	28	+10V
29	+10V	30	+10V

2.3.5 SATA Power (CN4)



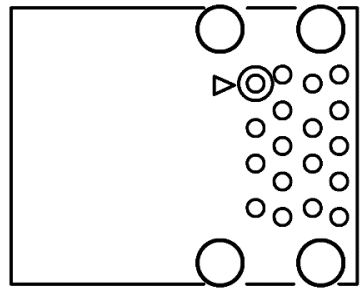
Pin	Signal	Pin	Signal
1	5V	2	GND

2.3.6 SATA Connector (CN5)



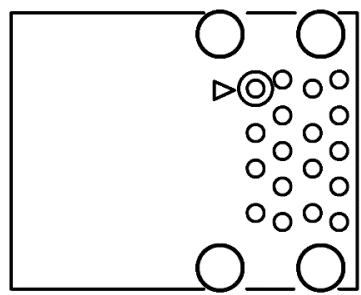
Pin	Signal	Pin	Signal
1	GND	2	SATA_TXP0
3	SATA_TXN0	4	GND
5	SATA_RXN0	6	SATA_RXP0
7	GND	-	-

2.3.7 Dual USB Type A Port (CN6)



Pin	Signal	Pin	Signal	Pin	Signal
1	+5V	2	USB2_D1-	3	USB2_D1+
4	GND	5	USB3_RX1-	6	USB3_RX1+
7	GND	8	USB3_TX1-	9	USB3_TX1+
10	+5V	11	USB2_D2-	12	USB2_D2+
13	GND				

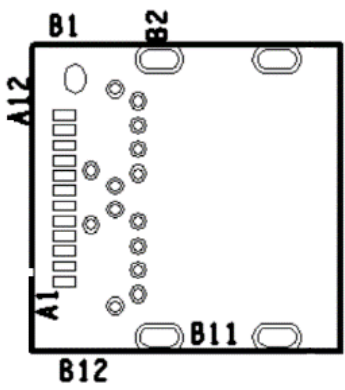
2.3.8 Dual USB Type A Port (CN7)



Pin	Signal	Pin	Signal	Pin	Signal
1	+5V	2	USB2_D3-	3	USB2_D3+
4	GND	5	USB3_RX3-	6	USB3_RX3+
7	GND	8	USB3_TX3-	9	USB3_TX3+
10	+5V	11	USB2_D4-	12	USB2_D4+

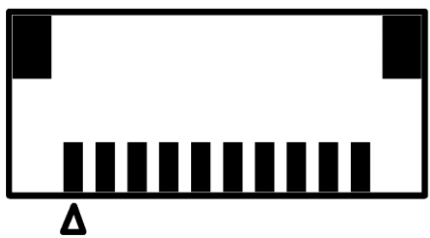
Pin	Signal	Pin	Signal	Pin	Signal
13	GND	14	USB3_RX4-	15	USB3_RX4+
16	GND	17	USB3_TX4-	18	USB3_TX4+

2.3.9 USB Type C Port (CN8)



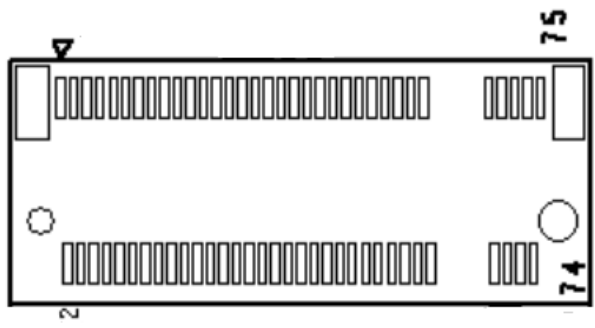
Pin	Signal	Pin	Signal	Pin	Signal
A1	GND	A2	SSTXP1	A3	SSTXN1
A4	+5V	A5	CC1	A6	DP1
A7	DN1	A8	SBU1	A9	+5V
A10	SSRXN2	A11	SSRXP2	A12	GND
B1	GND	B2	SSTXP2	B3	SSTXN2
B4	+5V	B5	CC2	B6	DP2
B7	DN2	B8	SBU2	B9	+5V
B10	SSRXN1	B11	SSRXP1	B12	GND

2.3.10 USB 2.0/UART 1x10P Wafer (CN9)



Pin	Signal	Pin	Signal	Pin	Signal
1	+5V	2	USB2_D5-	3	USB2_D5+
4	GND	5	+5V	6	USB2_D6-
7	USB2_D6+	8	GND	9	UART_RX
10	UART_TX				

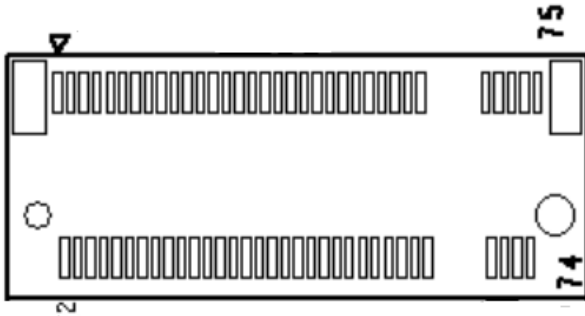
2.3.11 M.2 2230 E-Key Slot (CN10)



Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	+3.3V	3	USB2_D10+
4	+3.3V	5	USB2_D10-	6	NC
7	GND	8	NC	9	CNV_WR_LANE1_DN
10	CNV_RF_RST#	11	CNV_WR_LANE1_DP	12	NC

Pin	Signal	Pin	Signal	Pin	Signal
13	GND	14	CNV_CLKREQ_R	15	CNV_WR_LANE0_DN
16	NC	17	CNV_WR_LANE0_DP	18	GND
19	GND	20	NC	21	CNV_WR_CLK_DN
22	CNV_RGI_RSP_R	23	CNV_WR_CLK_DP	24	NC
25	NC	26	NC	27	NC
28	NC	29	NC	30	NC
31	NC	32	CNV_RGI_DT	33	GND
34	CNV_RGI_RSP	35	PCIE9_TXP	36	CNV_BRI_DT
37	PCIE9_TXN	38	NC	39	GND
40	NC	41	PCIE9_RXP	42	NC
43	PCIE9_RXN	44	NC	45	GND
46	NC	47	PCIE5_CLKP	48	NC
49	PCIE5_CLKN	50	SUS_CLK	51	GND
52	WIFI_RST#	53	PCIE_CLKREQ#	54	BT_EN
55	PCIE_WAKE#	56	WIFI_EN	57	GND
58	NC	59	CNV_WT_LANE1_DN	60	NC
61	CNV_WT_LANE1_DP	62	NC	63	GND
64	NC	65	CNV_WT_LANE0_DN	66	NC
67	CNV_WT_LANE0_DP	68	NC	69	GND
70	NC	71	CNV_WT_CLK_DN	72	+3.3V
73	CNV_WT_CLK_DP	74	+3.3V	75	GND

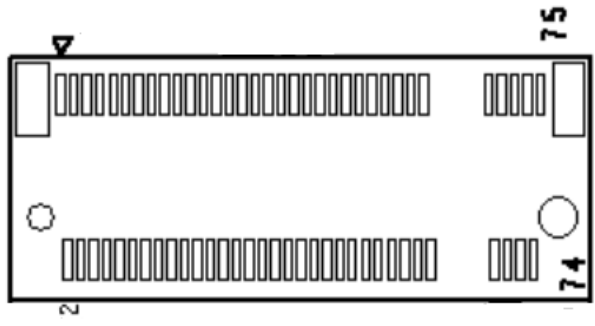
2.3.12 M.2 2280 M-Key Slot (CN11)



Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	+3.3V	3	NC
4	+3.3V	5	PCIE4_A_RXN3	6	FULL_CARD_POWER
7	PCIE4_A_RXP3	8	NC	9	GND
10	NC	11	PCIE4_A_TXN3	12	+3.3V
13	PCIE4_A_TXP3	14	+3.3V	15	GND
16	+3.3V	17	PCIE4_A_RXN2	18	+3.3V
19	PCIE4_A_RXP2	20	NC	21	GND
22	NC	23	PCIE4_A_TXN2	24	NC
25	PCIE4_A_TXP2	26	NC	27	GND
28	NC	29	PCIE4_A_RXN1	30	NC
31	PCIE4_A_RXP1	32	NC	33	GND
34	NC	35	PCIE4_A_TXN1	36	NC
37	PCIE4_A_TXP1	38	NC	39	GND
40	SMB_CLK_1V8	41	PCIE4_A_RXN0	42	SMB_DATA_1V8
43	PCIE4_A_RXP0	44	NC	45	GND
46	NC	47	PCIE4_A_TXN0	48	NC
49	PCIE4_A_TXP0	50	PLT_RST#	51	GND

Pin	Signal	Pin	Signal	Pin	Signal
52	PCIE_CLKREQ#	53	PCIE4_A_CLK_DN	54	PCIE_WAKE#
55	PCIE4_A_CLK_DP	56	NC	57	GND
58	NC	59	NC	60	NC
61	NC	62	NC	63	NC
64	NC	65	NC	66	NC
67	NC	68	NC	69	NC
70	+3.3V	71	GND	72	+3.3V
73	GND	74	+3.3V	75	GND

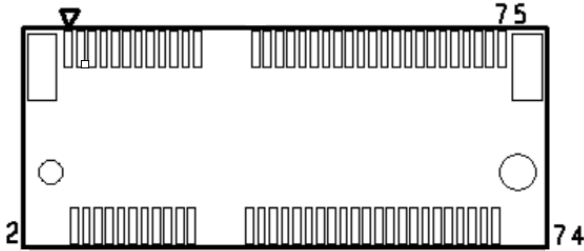
2.3.13 M.2 2280 M-Key Slot (CN12)



Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	+3.3V	3	NC
4	+3.3V	5	PCIE4_B_RXN3	6	FULL_CARD_POWER
7	PCIE4_B_RXP3	8	NC	9	GND
10	NC	11	PCIE4_B_TXN3	12	+3.3V
13	PCIE4_B_TXP3	14	+3.3V	15	GND
16	+3.3V	17	PCIE4_B_RXN2	18	+3.3V
19	PCIE4_B_RXP2	20	NC	21	GND

Pin	Signal	Pin	Signal	Pin	Signal
22	NC	23	PCIE4_B_TXN2	24	NC
25	PCIE4_B_TXP2	26	NC	27	GND
28	NC	29	PCIE4_B_RXN1	30	NC
31	PCIE4_B_RXP1	32	NC	33	GND
34	NC	35	PCIE4_B_TXN1	36	NC
37	PCIE4_B_TXP1	38	NC	39	GND
40	SMB_CLK_1V8	41	PCIE4_B_RXN0	42	SMB_DATA_1V8
43	PCIE4_B_RXP0	44	NC	45	GND
46	NC	47	PCIE4_B_TXN0	48	NC
49	PCIE4_B_TXP0	50	PLT_RST#	51	GND
52	PCIE_CLKREQ#	53	PCIE4_B_CLK_DN	54	PCIE_WAKE#
55	PCIE4_B_CLK_DP	56	NC	57	GND
58	NC	59	NC	60	NC
61	NC	62	NC	63	NC
64	NC	65	NC	66	NC
67	NC	68	NC	69	NC
70	+3.3V	71	GND	72	+3.3V
73	GND	74	+3.3V	75	GND

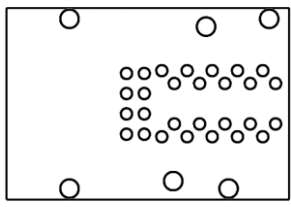
2.3.14 M.2 3052 B-Key Slot (CN13)



Pin	Signal	Pin	Signal	Pin	Signal
1	NC	2	+3.3V	3	GND
4	+3.3V	5	GND	6	FULL_CARD_PWR_OFF#(1.8V)
7	USB2_D8+	8	W_DISABLE#1	9	USB2_D8-
10	NC	11	GND	12	NC
13	NC	14	NC	15	NC
16	NC	17	NC	18	NC
19	NC	20	NC	21	NC
22	NC	23	NC	24	NC
25	NC	26	NC	27	GND
28	NC	29	USB3_RX-	30	UIM_RST
31	USB3_RX+	32	UIM_CLK	33	GND
34	UIM_DAT	35	USB3_PX-	36	UIM_PWR
37	USB3_PX+	38	NC	39	GND
40	NC	41	PCIE10_RXN	42	NC
43	PCIE10_RXP	44	NC	45	GND
46	NC	47	PCIE10_TXN	48	NC
49	PCIE10_TXP	50	PLT_RST#(3.3V)	51	GND
52	PCIE_CLKREQ#	53	PCIE4_CLKN	54	PCIE_WAKE#

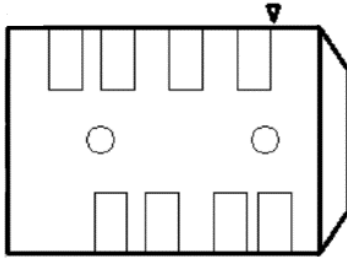
Pin	Signal	Pin	Signal	Pin	Signal
55	PCIE4_CLKP	56	NC	57	GND
58	NC	59	NC	60	NC
61	NC	62	NC	63	NC
64	NC	65	NC	66	NC
67	PLT_RST#(1.8V)	68	NC	69	NC
70	+3.3V	71	GND	72	+3.3V
73	GND	74	+3.3V	75	GND

2.3.15 Dual LAN Port (CN14)



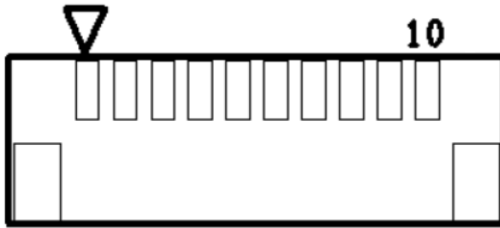
Pin	Signal	Pin	Signal	Pin	Signal
R1A	LAN1_MDI0+	R2A	LAN1_MDI0-	R3A	LAN1_MDI1+
R4A	LAN1_MDI1-	R5A	LAN1_MDI2+	R6A	LAN1_MDI2-
R7A	LAN1_MDI3+	R8A	LAN1_MDI3-	R9A	Center TAP
R10A	GND	L1A	LAN1_ACTLED-	L2A	LAN1_ACTLED+
L3A	LAN1_LINK100#	L4A	LAN1_LINK1000#	R1B	LAN2_MDI0+
R2B	LAN2_MDI0-	R3B	LAN2_MDI1+	R4B	LAN2_MDI1-
R5B	LAN2_MDI2+	R6B	LAN2_MDI2-	R7B	LAN2_MDI3+
R8B	LAN2_MDI3-	R9B	Center TAP	R10B	GND
L1B	LAN2_ACTLED-	L2B	LAN2_ACTLED+	L3B	LAN2_LINK100#
L4B	LAN2_LINK1000#				

2.3.16 Φ 3.5mm Audio Jack Audio Jack (CN15)



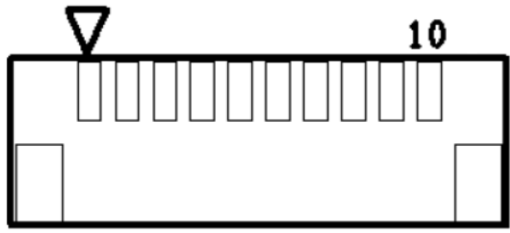
Pin	Signal	Pin	Signal
1	MIC_LR	2	GND
3	LOUT_R	4	NC
5	NC	6	AUDIO-JD
7	NC	8	LOUT_L

2.3.17 RS-232/422/485 1x10P Wafer for COM 3 (CN16)



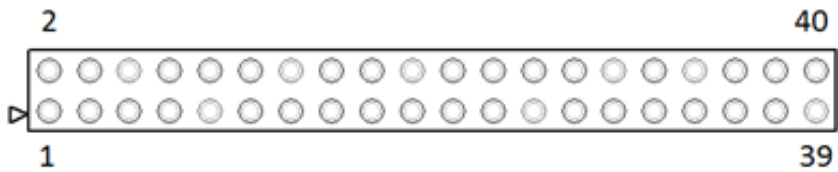
Pin	Signal	Pin	Signal
1	DCD / RS422TX- / S485-	2	RX / RS422TX+ / RS485+
3	TX / RS422RX+	4	DTR / RS422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

2.3.18 RS-232/422/485 1x10P Wafer for COM 4 (CN17)



Pin	Signal	Pin	Signal
1	DCD / RS422TX- / S485-	2	RX / RS422TX+ / RS485+
3	TX / RS422RX+	4	DTR / RS422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

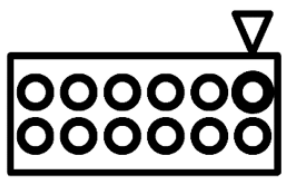
2.3.19 40-Pin HAT Connector (CN18)



Pin	Signal	Pin	Signal
1	+3.3V	2	+5V
3	I2C1_DAT / GPIO1	4	+5V
5	I2C1_CLK / GPIO2	6	GND
7	ANALOG_DATA / GPIO3	8	UART_TX / GPIO16
9	GND	10	UART_RX / GPIO17
11	GPIO4	12	I2S_BCLK / GPIO18
13	GPIO5 / TIME_SYNC0	14	GND
15	GPIO6 / TIME_SYNC1	16	GPIO19

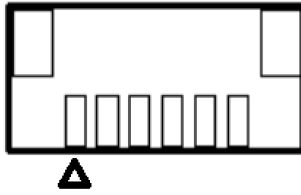
Pin	Signal	Pin	Signal
17	+3.3V	18	GPIO20
19	SPI_MOSI / GPIO7	20	GND
21	SPI_MISO / GPIO8	22	GPIO21
23	SPI_CLK / GPIO9	24	SPI_CS0 / GPIO22
25	GND	26	GPIO23
27	I2C0_DAT / GPIO10	28	I2C0_CLK / GPIO24
29	GPIO11	30	GND
31	GPIO12	32	PWM0 / GPIO25
33	PWM1 / GPIO13	34	GND
35	I2S_SYNC / GPIO14	36	GPIO26
37	GPIO15	38	I2S_SDI / GPIO27
39	GND	40	I2S_SDO / GPIO28

2.3.20 CPLD and BIOS Update (CN19)



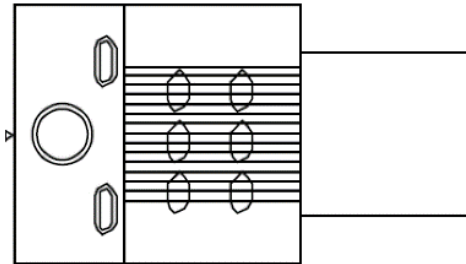
Pin	Signal	Pin	Signal	Pin	Signal
1	JTAG_TCK	2	GND	3	JTAG_TDO
4	1.8V	5	JTAG_TMS	6	SPI_CS
7	SPI_CLK	8	SPI_MISO	9	JTAG_TDI
10	GND	11	SPI_MOSI	12	SPI_HOLD

2.3.21 Front Panel (CN21)



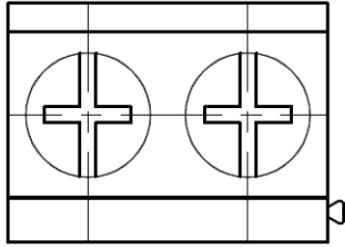
Pin	Signal	Pin	Signal
1	GND	2	RESET
3	GND	4	POWER S/W
5	GND	6	+3.3V

2.3.22 DC Jack (CN22)



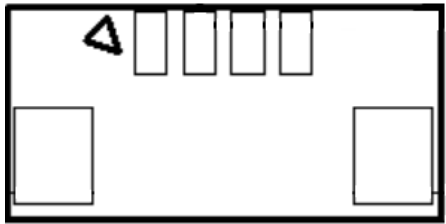
Pin	Signal	Pin	Signal
1	DC_IN	2	GND
3	GND	-	-

2.3.23 DC Terminal Block (CN23)



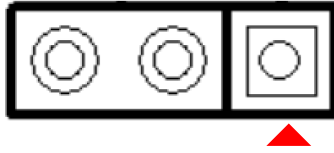
Pin	Signal	Pin	Signal
1	DC_IN	2	GND

2.3.24 Fan Connector (J1)

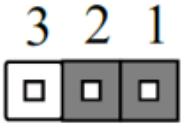


Pin	Signal	Pin	Signal
1	PWM	2	TACH
3	GND	4	10V

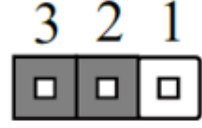
2.3.25 AT/ATX Mode (JP1)



Pin	Signal	Pin	Signal
1	ATX_MODE	2	PWRBTN
3	AT_MODE	-	-

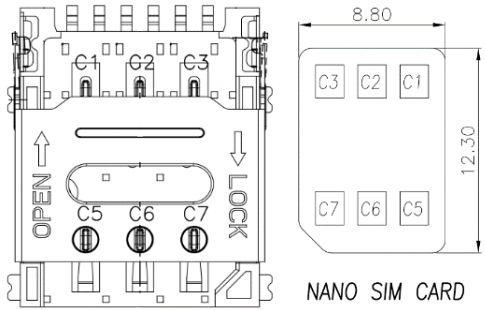


ATX Mode (Default)



AT Mode

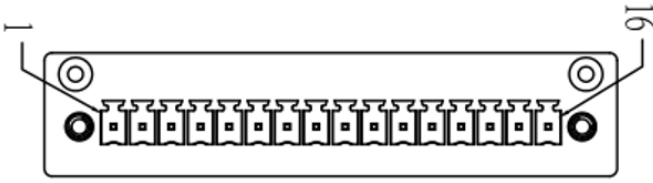
2.3.26 Nano SIM Slot (SIM1)



NANO SIM CARD

Pin	Signal	Pin	Signal
C1	VCC	C2	RST
C3	CLK	C5	GND
C6	VPP	C7	I/O

2.3.27 GPIO Terminal Block



Pin	Signal	Pin	Signal
1	PIN1 (3.3V)	2	PIN2 (5V)
3	PIN3 (I2C_SDA)	4	PIN5 (I2C_SCL)
5	PIN6 (GND)	6	PIN9 (GND)
7	PIN12 (GPIO)	8	PIN13 (GPIO)
9	PIN15 (GPIO)	10	PIN16 (GPIO)
11	PIN18 (GPIO)	12	PIN19 (GPIO)
13	PIN21 (GPIO)	14	PIN22 (GPIO)
15	PIN32 (PWM0)	16	PIN33 (PWM1)

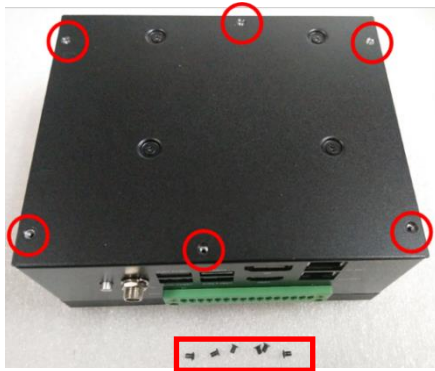
Note: PWM function (PIN32, PIN33) only supported with UP Framework SDK.

2.4 Hardware Installation

This section details the steps needed to install various hardware components for the UP Xtreme i12 Edge. It is recommended that you read through each step before beginning installation and to make sure you have all necessary tools and components.

2.4.1 Wi-Fi Module (M.2 2230 E-Key Slot) Installation

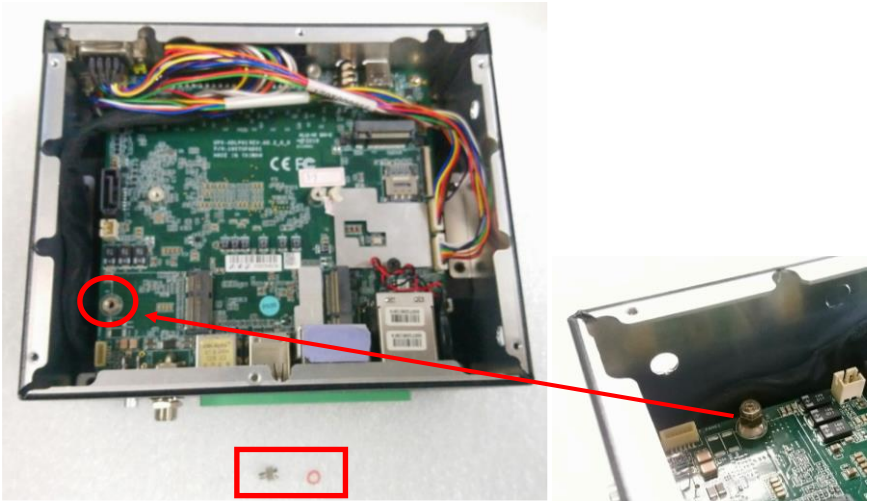
Step 1: Remove the six (6) screws on the bottom plate.



Step 2: Remove the metal cover on the ANT Wi-Fi/BT antenna holes (2 holes on the left and right sides of the system).

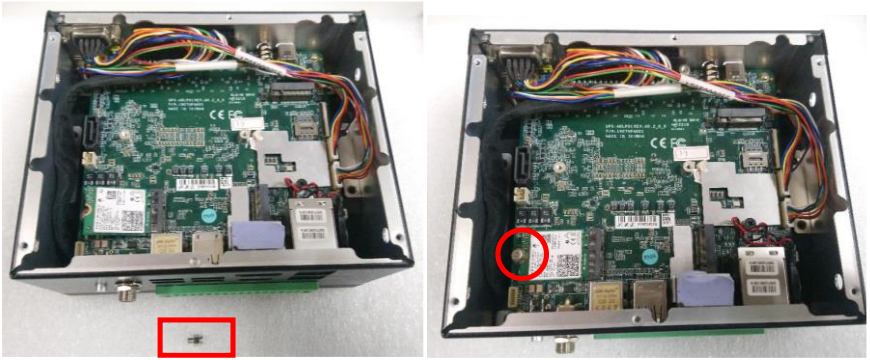


Step 3: Remove the M.2 nut and orange washer.

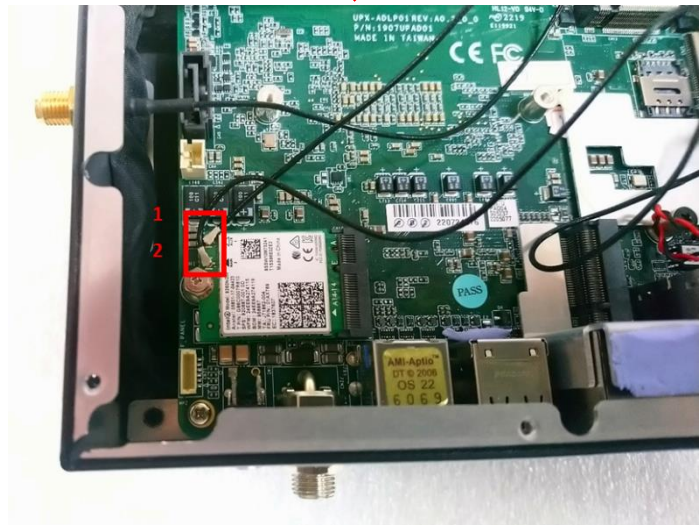


Step 4: Install the M.2 2230 Wi-Fi module and secure with the M.2 nut.

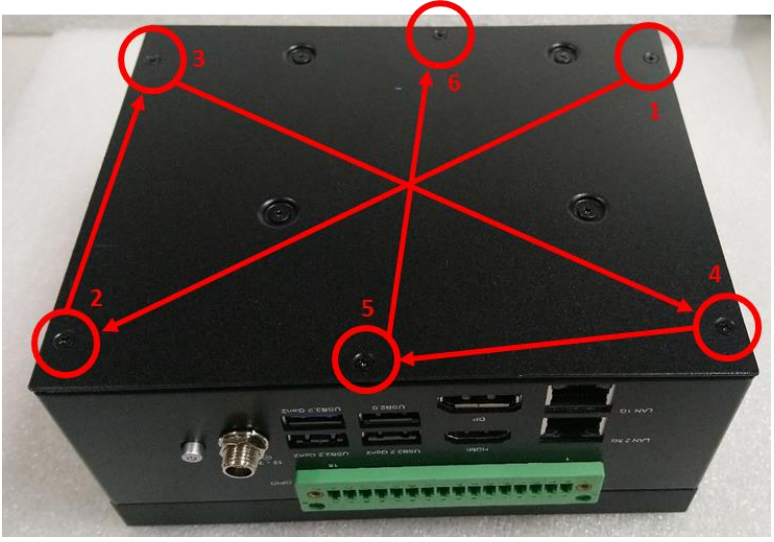
Note: The orange washer does not need to be used when securing the M.2 nut.



Step 5: Install the two antenna cables, then lock them in place with the external nut and washer. Install the antenna IPEX connector onto the Wi-Fi card in the sequence shown and affix with glue. Please use hot-melt adhesive with UL94 V-0 certification.



Step 6: Reaffix the screws that were removed during step 1 to the bottom of the plate, in the order shown.

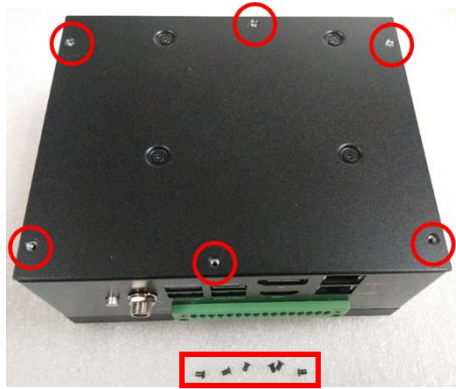


Step 7: Lock the external antennas, as shown.

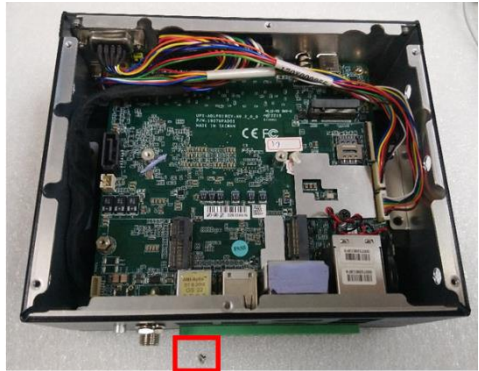


2.4.2 PCIe Module 1 (M.2 2280 M-Key Slot) I/O Side Installation

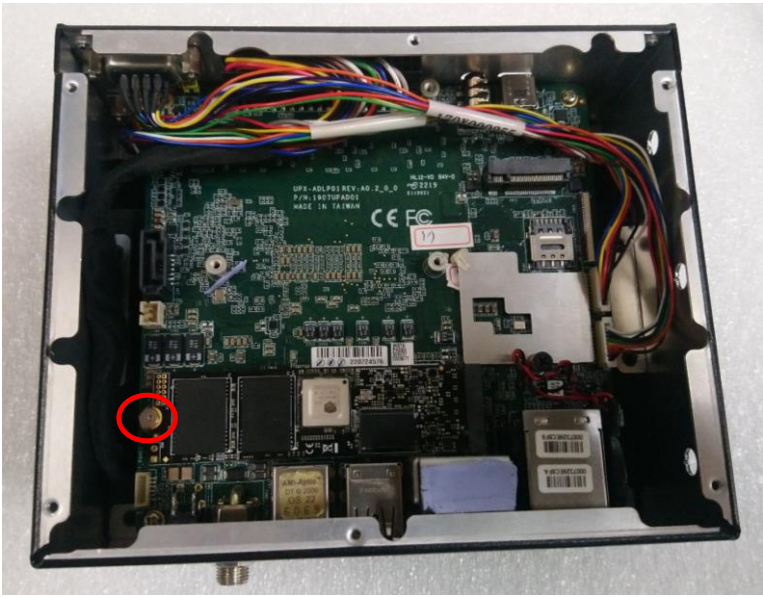
Step 1: Remove the six (6) screws on the bottom plate.



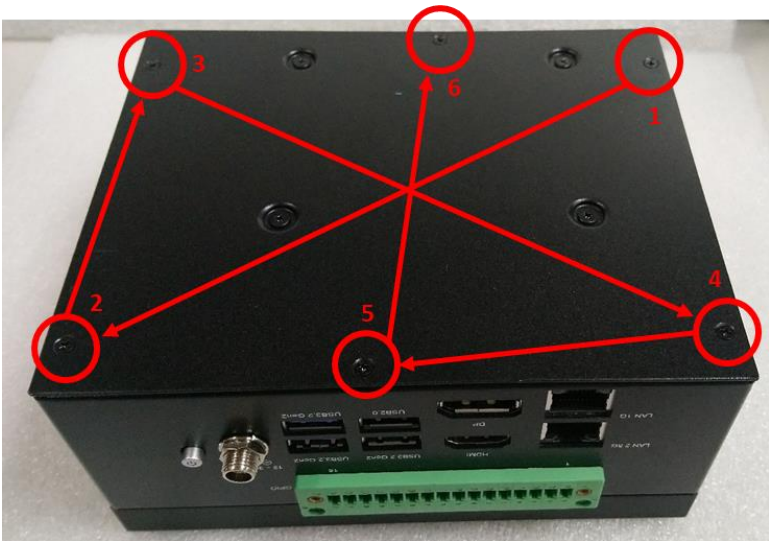
Step 2: Remove the M.2 screw.



Step 3: Install the M.2 2280 module and secure with the M.2 nut.

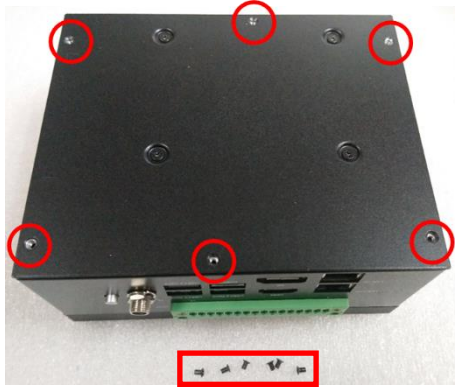


Step 4: Reaffix the screws that were removed during step 1 to the bottom of the plate, in the order shown.



2.4.3 PCIe Module 2 (M.2 2280 M-Key Slot) CPU Side Installation

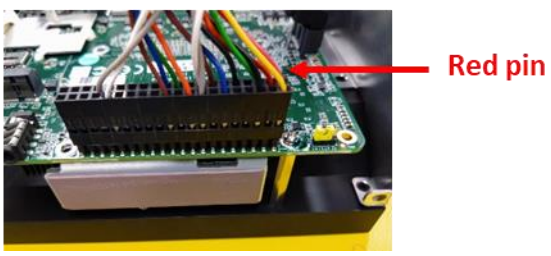
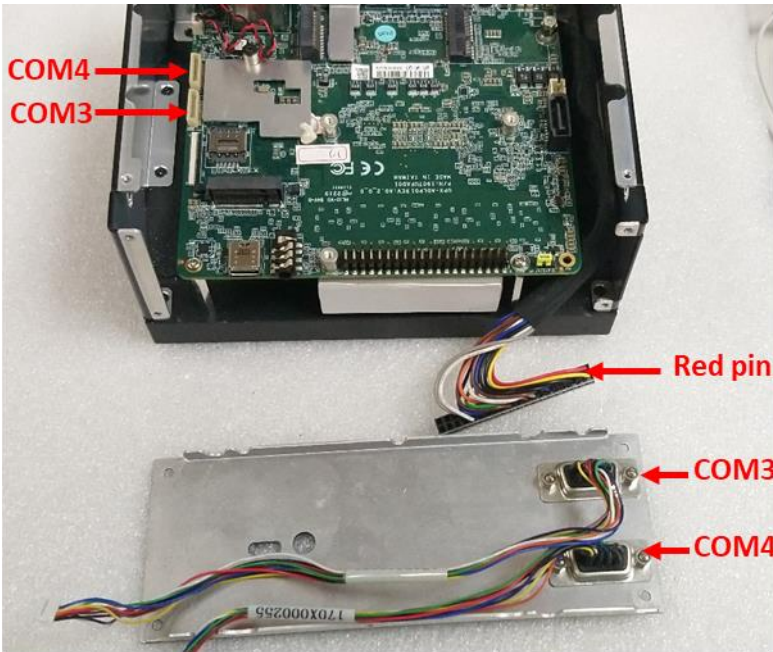
Step 1: Remove the six (6) screws on the bottom plate.



Step 2: Remove the four (4) rear cover screws.



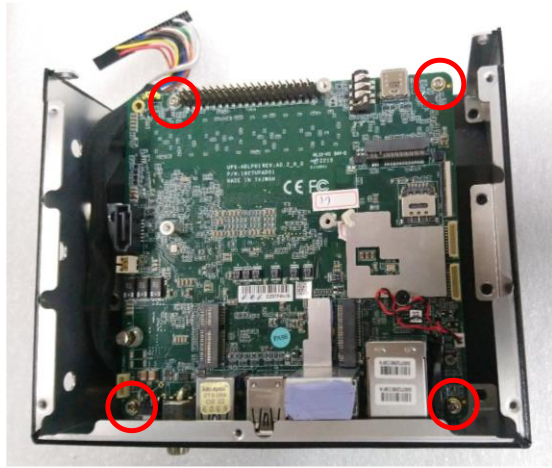
Step 3: Remove the cable (be sure to follow the corresponding cable position when reinstalling).



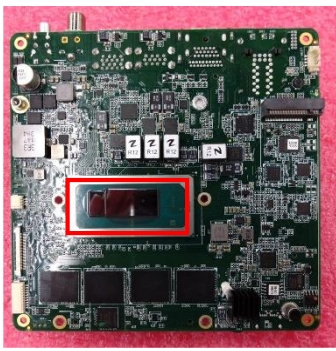
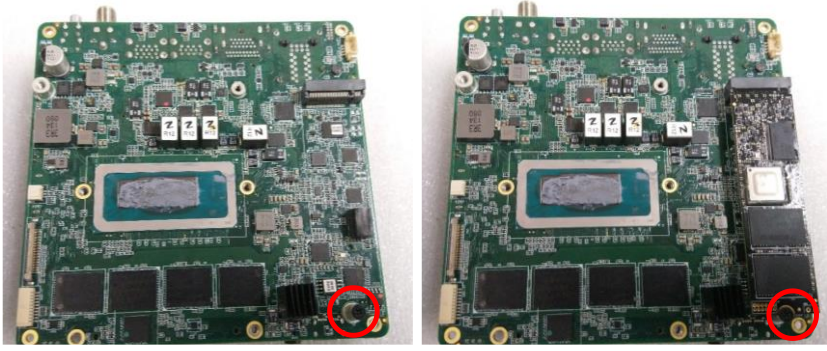
Step 4: Remove the outer nut and washer on the Power Jack.



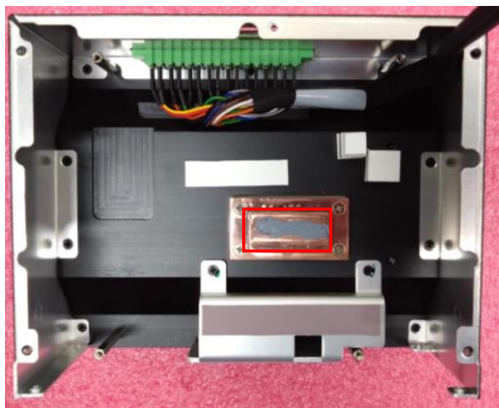
Step 5: Remove the PCB screws, as shown.



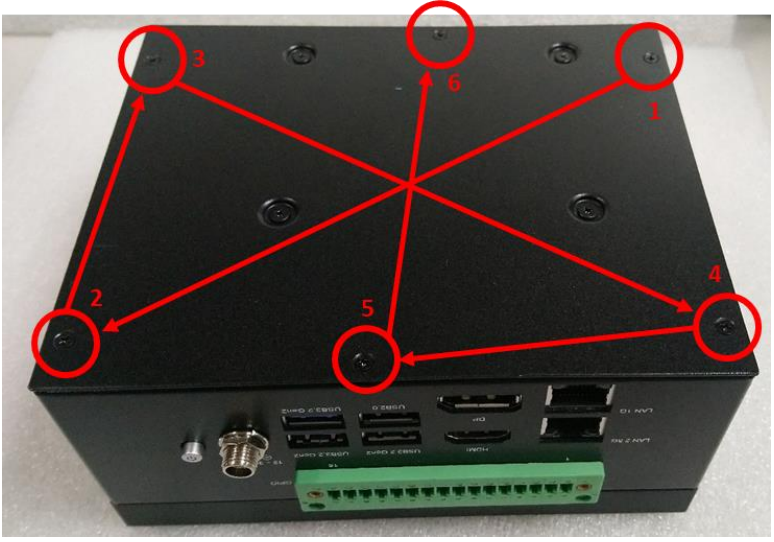
Step 6: Remove the M.2 screws and install the M.2 2280 module, then clean the thermal paste to remove it from the CPU.



Step 7: Clean and reapply the thermal paste on the CPU block.

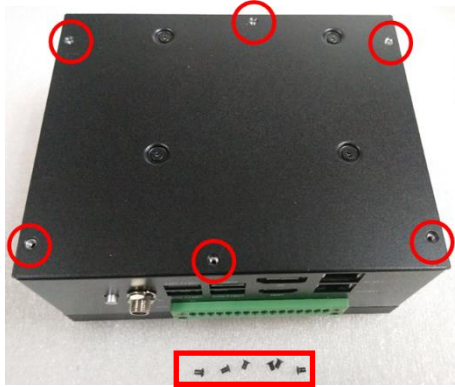


Step 8: Follow steps 1 – 5 in reverse order to reinstall the hardware, then reattach the screws that were removed during step 1 to the bottom of the plate, in the order shown.

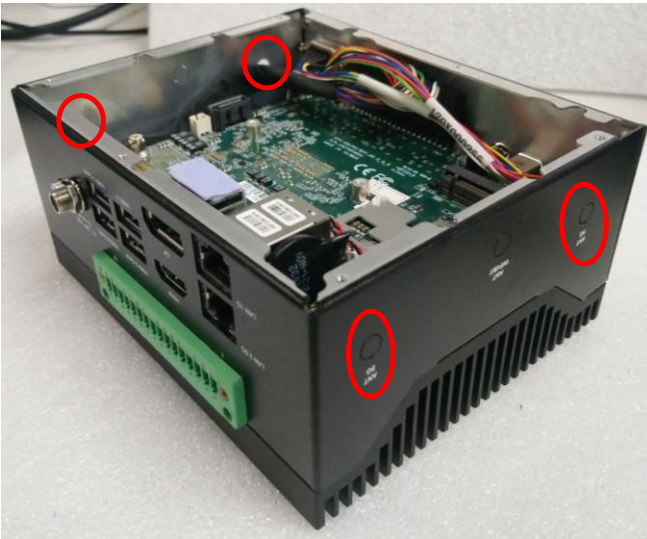


2.4.4 5G Module (M.2 3052 B-Key Slot) Installation

Step 1: Remove the six (6) screws on the bottom plate.



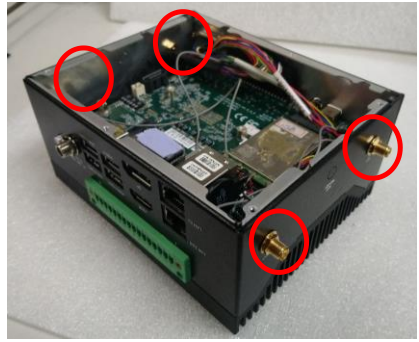
Step 2: Remove the metal cover on the 5G ANT antenna holes (4 holes on the left and right sides of the system).



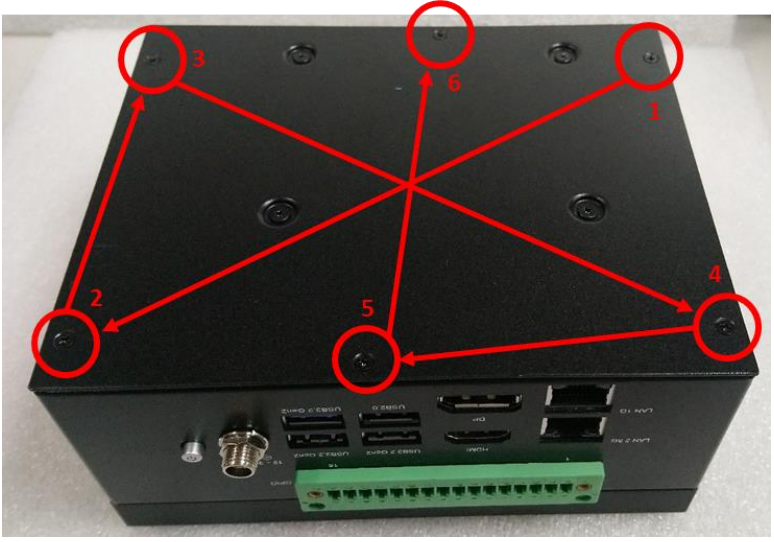
Step 3: Remove the M.2 screw.



Step 4: Install the M.2 3052 5G module and secure with the M.2 nut. Then, install the four (4) antenna cables, and lock the outer nut and washer. Install the antenna IPEX connector on the 5G card in sequence and affix it with glue.



Step 5: Reaffix the screws that were removed during step 1 to the bottom of the plate, in the order shown.

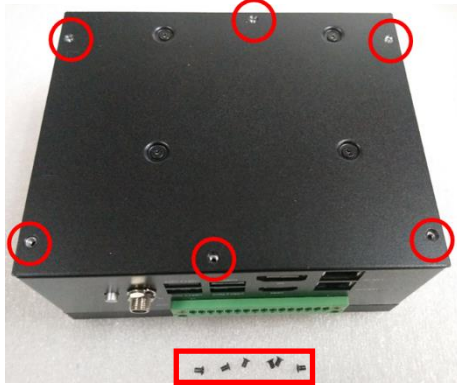


Step 6: Lock the external antennas, as shown.

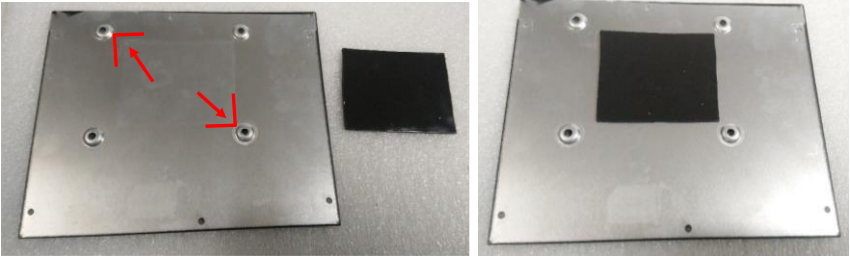


2.4.5 2.5" SATA Drive Installation

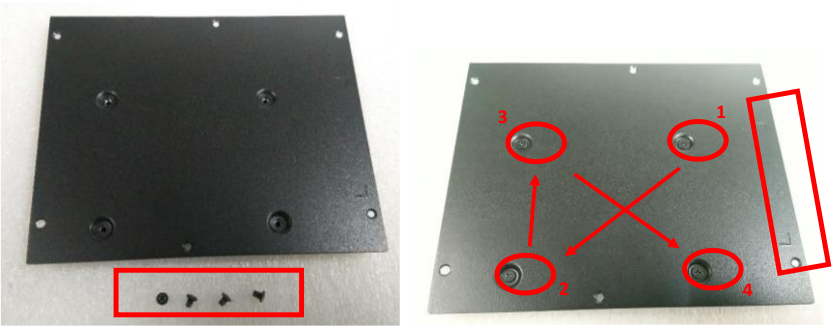
Step 1: Remove the six (6) screws on the bottom plate.



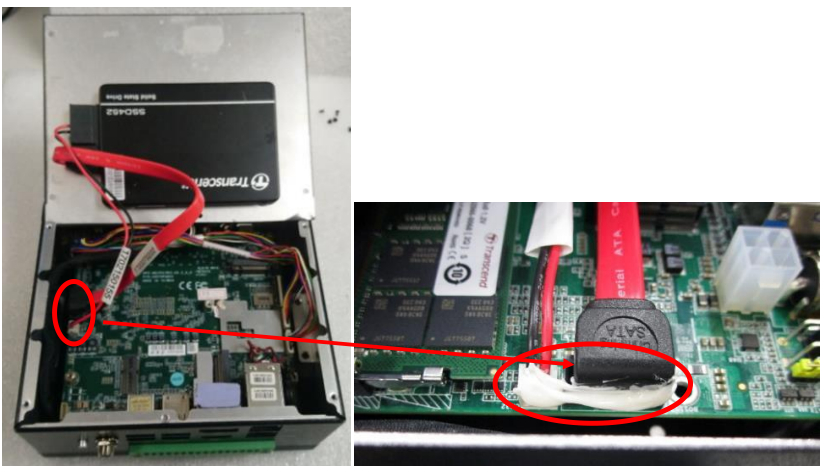
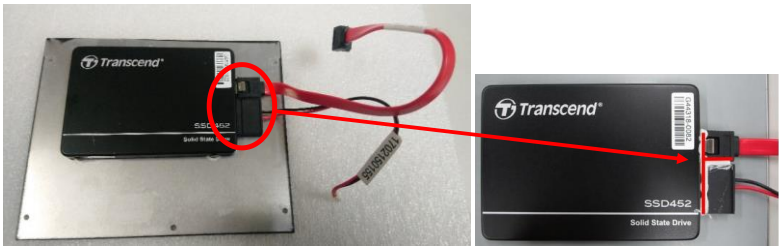
Step 2: Paste the HDD Pad according to the positioning marked below.



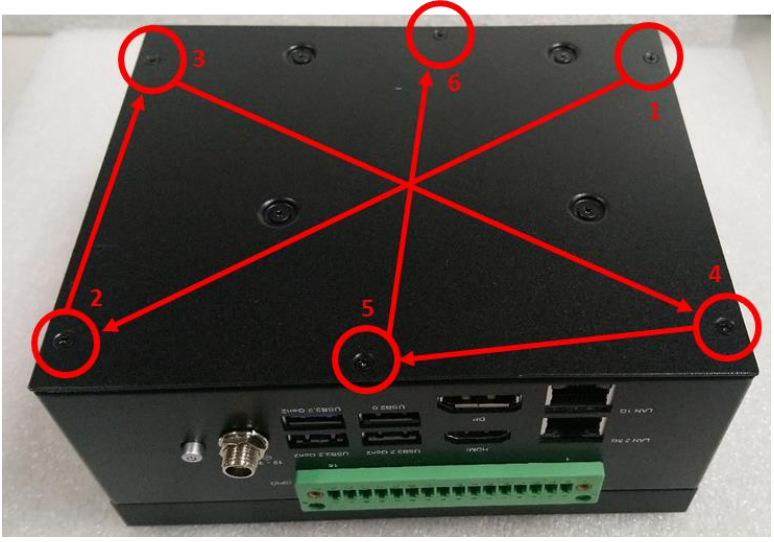
Step 3: Assemble the HDD, ensuring it is aligned with the screw holes on the back cover (the cable end should face the direction of the mark), then lock the HDD screws in the sequence shown.



Step 4: Lock the screws in the order shown, then plug the 2.5" HDD/SSD cable and affix it with glue. Please use hot-melt adhesive with UL94 V-0 certification.

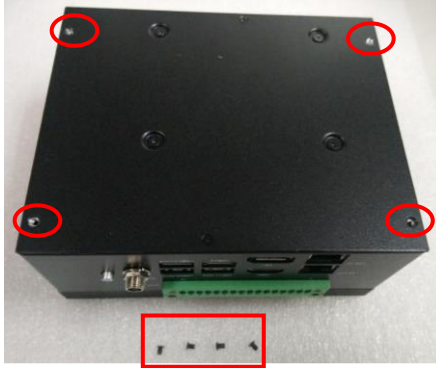


Step 5: Reaffix the screws that were removed during step 1 to the bottom of the plate, in the order shown.



2.4.6 VESA Mount Installation

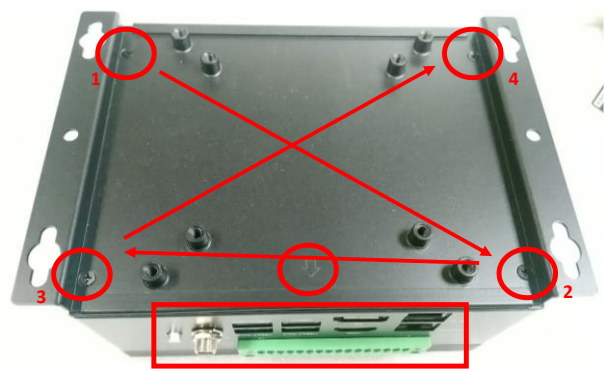
Step 1: Remove the four (4) screws on the bottom plate.



Step 2: Prepare the VESA Wall mount bracket screw accessories.



Step 3: With the arrow mark facing the front I/O, use the screws to lock the VESA bracket in the following sequence.



Chapter 3

Software Installation

3.1 Linux Setup

The UP Xtreme i12 Edge supports Linux operating systems (see Chapter 1 for specifications). For instructions on how to install a Linux OS onto your UP Xtreme i12 Edge, you can find several guides and tutorials in the wiki section of the UP Bridge the Gap website at <https://up-board.org> for both installing supported distributions as well as porting your own Linux build.

3.2 Windows Drivers Installation

Drivers for the UP Xtreme i12 Edge can be downloaded from the UP Bridge the Gap website by following the link <https://up-board.org> and navigating to the Downloads section, then clicking on the UP Xtreme i12 Edge to find all relevant drivers. Windows drivers for the UP Xtreme i12 Edge can also be found on the product page of the AAEON website at

<https://www.aaeon.com/en/p/up-system-intel-12th-gen-alder-lake-up-xtreme-i12-edge#downloads>.

3.3 Dummy Driver Information

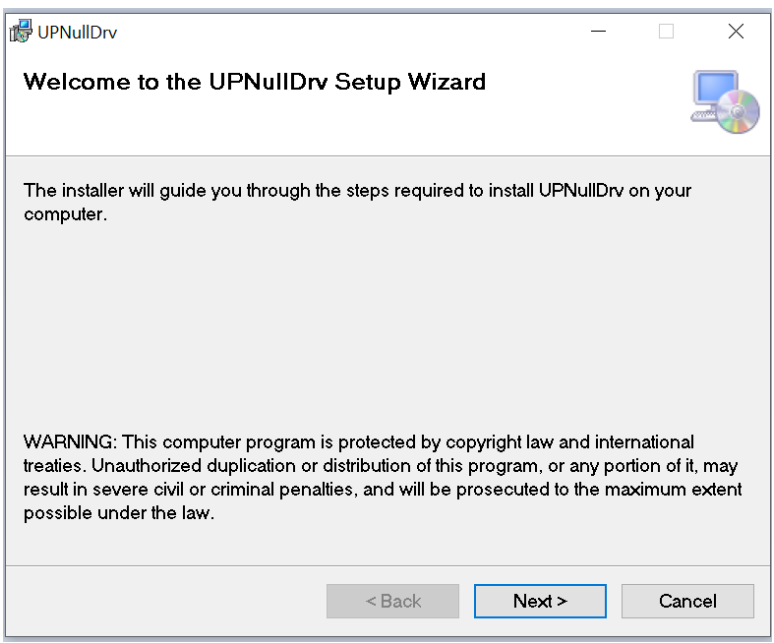
3.3.1 Dummy Driver Installation

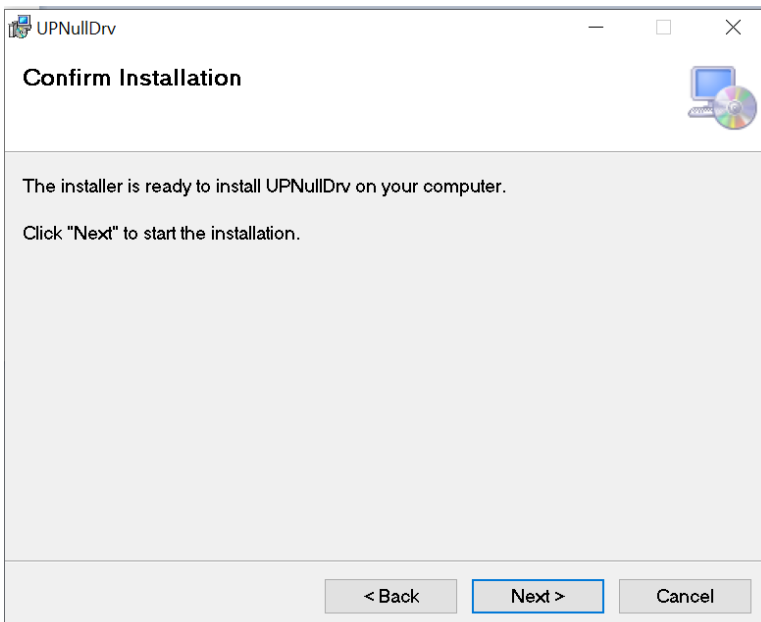
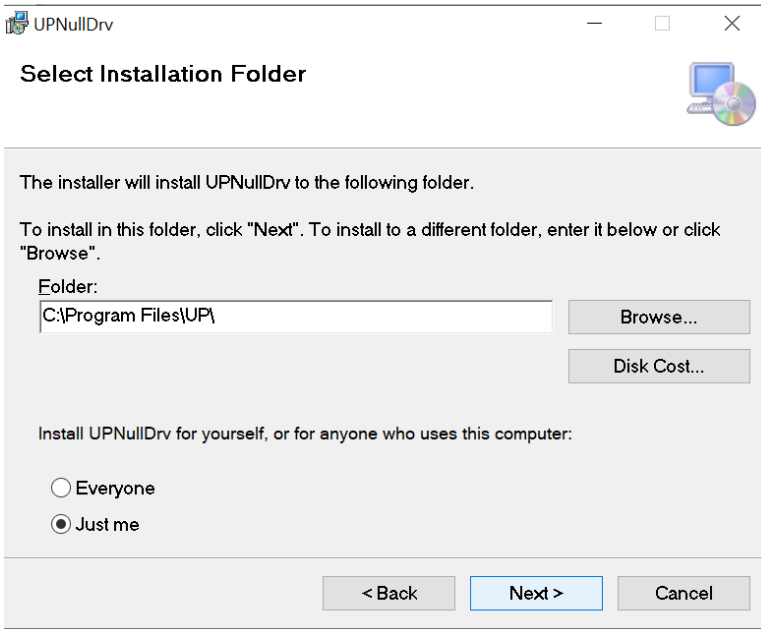
The following instructions detail how to install the dummy driver for your UP Xtreme i12 Edge (UPX-EDGE-ADLP).

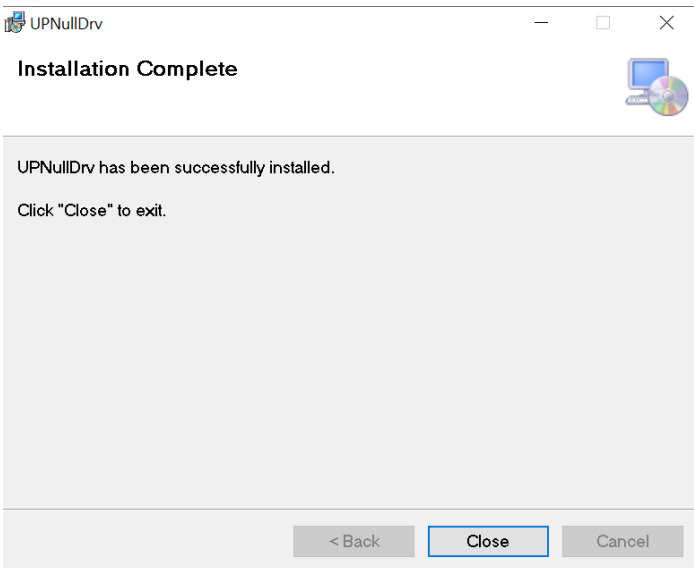
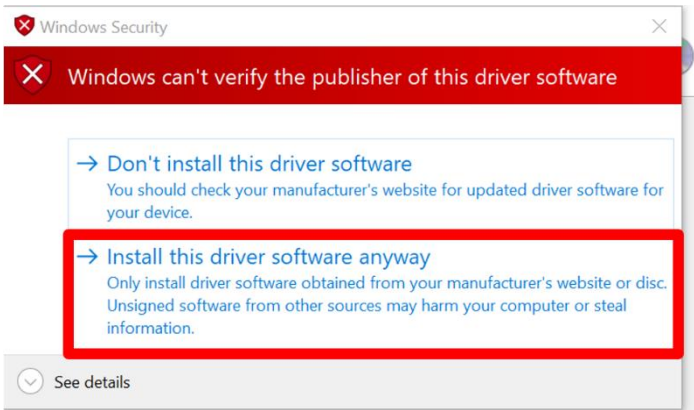
Step 1 – Download UPNullDrv.msi.



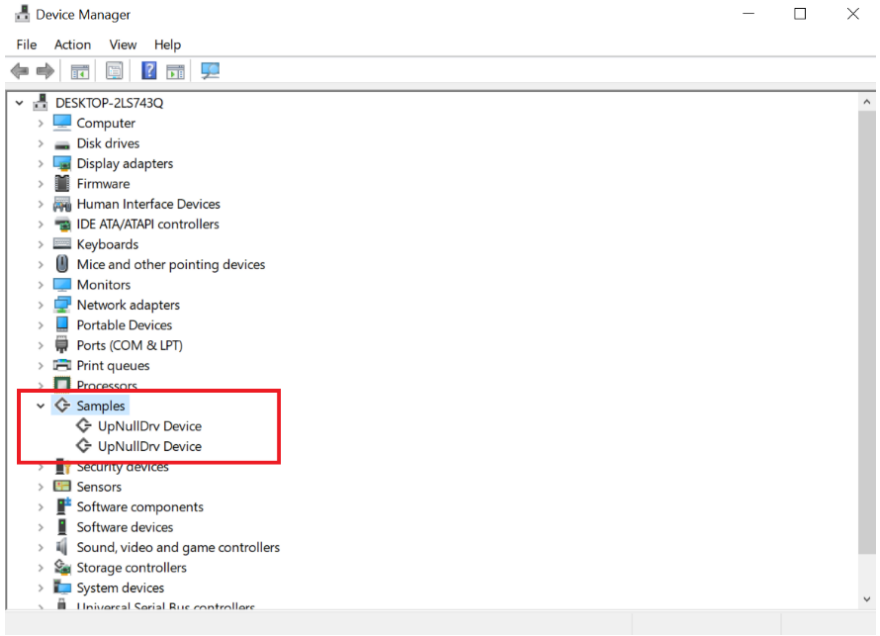
Step 2 – Click UPNullDrv.msi and follow the steps as per the below images to install Driver.





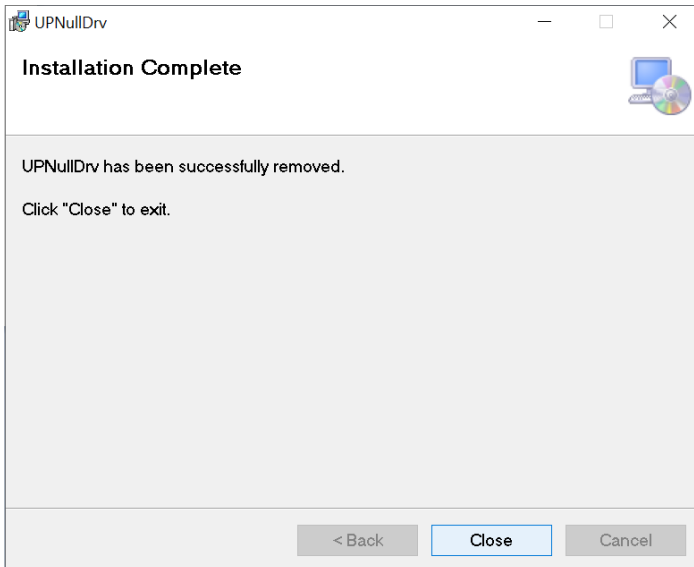
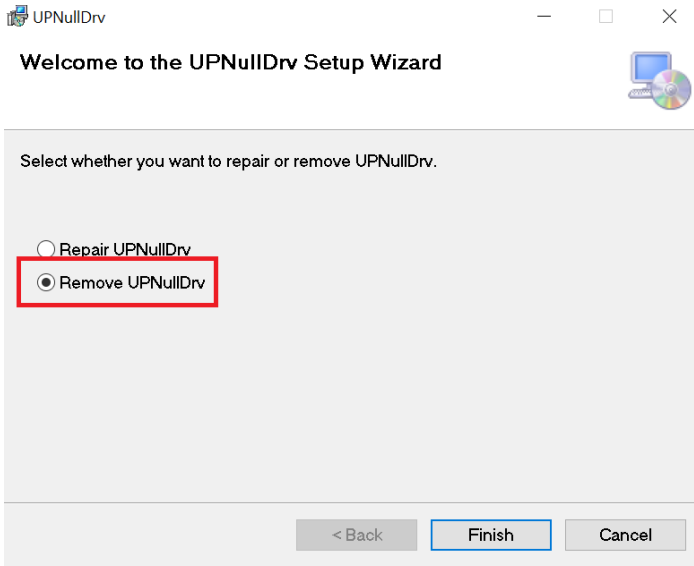


Once you have successfully installed the dummy driver, you will be able to locate it via your system's Device Manager, as shown below.



3.3.2 Uninstalling the Dummy Driver

Click **UPNullDrv.msi** to uninstall driver, then select **Remove UPNullDrv**.



Appendix A

UP Framework SDK Installation

A.1 Introduction

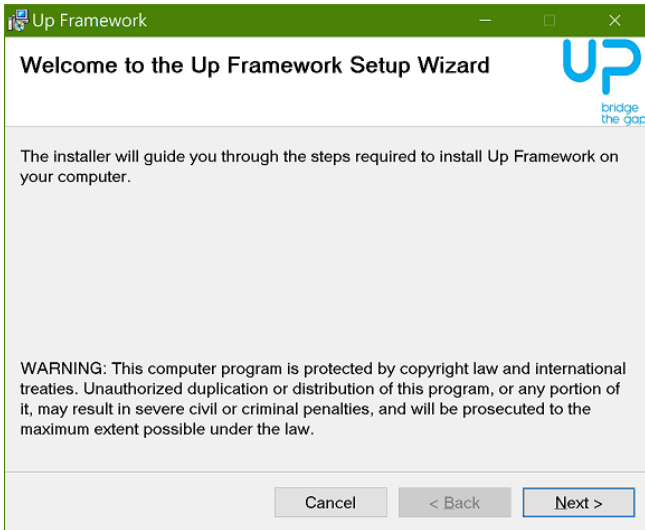
This section provides instructions for the installation of the UP Framework SDK. Instructions are provided for Windows 10 and Windows IoT Core. You can download the latest version of UP Framework SDK from the UP community:

<https://downloads.up-community.org/download/up-sdk-for-windows-10-and-windows-iot/>

A.2 Installation for Windows 10

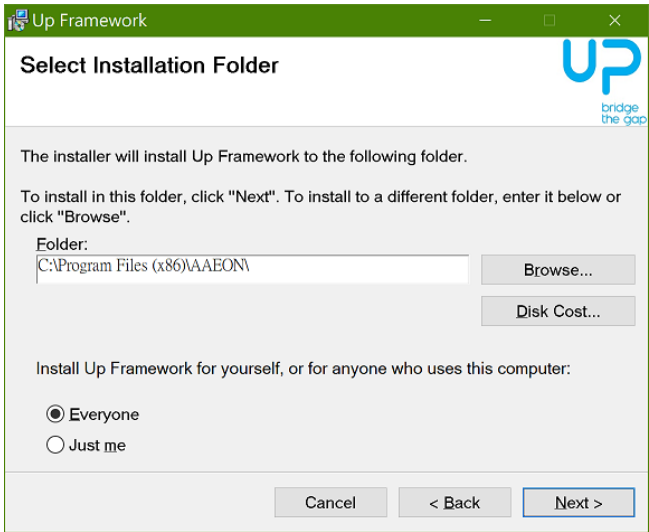
Step 1

Locate the downloaded file UpFrameworkSetup.msi and run the installer. Press “Next” to begin the setup process.



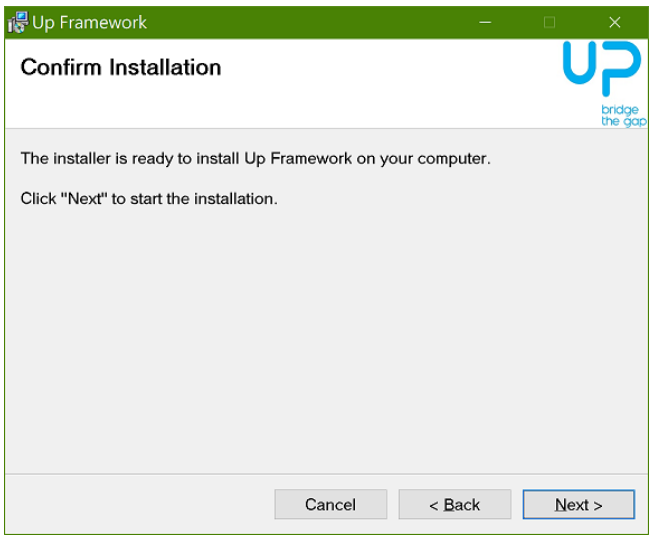
Step 2

Select the installation folder. Default destination path is C:\Program Files(x86)\AAEON\
You may also choose to install the UP Framework SDK for all users or only the current user. Press "Next" to continue installation.



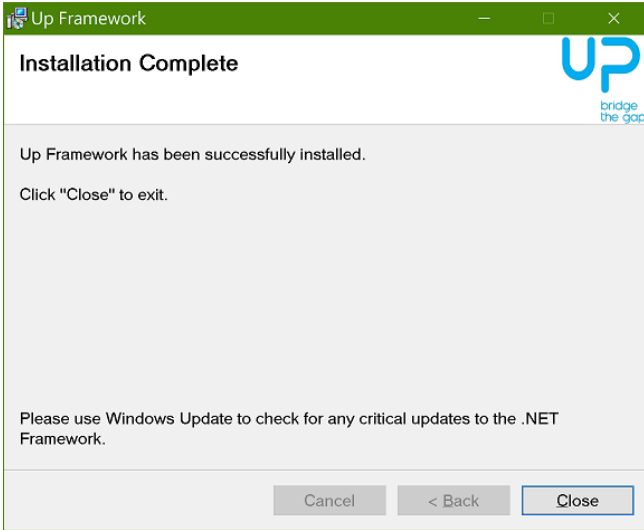
Step 3

Press "Next" to confirm the installation.



Step 4

Press "Close" to exit once setup is complete.



A.3 Installation for Windows IoT Core

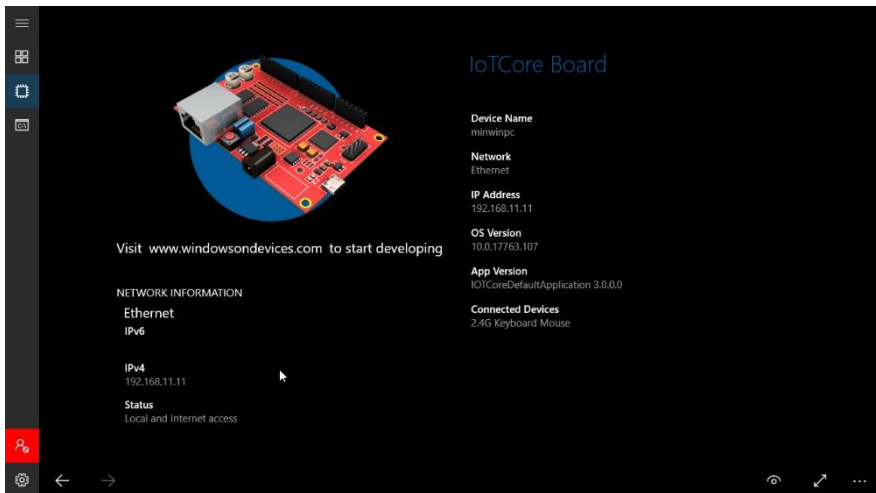
Before you begin, make sure you have downloaded and installed the latest version of the Windows IoT Core image from the UP community.

Installation requires using a connected PC with the UP Framework SDK software downloaded and saved.

Note: Make sure the UP IoT Core device is connected to the same network as the PC you are using to install the software from.

Step 1

Turn on your UP IoT Core device and note the IP address at the home screen.



Step 2

Download the UP Framework SDK to your PC and unzip the files.

Open PowerShell as an Administrator. Enter the command

RemoteInstallation.ps1 to install the UP Framework SDK on the UP IoT Core device.

Enter the IP address of the UP IoT Core device when prompted.

```

    系统管理员: Windows PowerShell
    PS D:\UpFramework\1V19_08_27\iot> .\RemoteInstallation.ps1
    The requested service has already been started.

    More help is available by typing NET HELPMSG 2182.

    Enter IP address: 192.168.11.11

    CMDKEY: Credential added successfully.
    No devices were removed.
    ***** WARNING *****
    This Devcon command should only be used for development/testing purposes.

    Driver package INF files should be added/updated into the offline OS image
    using the supported offline package deployment process in order to ensure
    that they are properly configured and integrated into the Windows OS state.

    Updating driver package INF files from within the runtime environment of
    this OS product may lead to unexpected OS state conflicts, resulting in the
    inability to apply future updates to core OS components and/or drivers on
    retail/consumer systems.

    ***** WARNING *****
    Device node created. Install is complete when drivers are installed..
    ***** WARNING *****
    This Devcon command should only be used for development/testing purposes.

    Driver package INF files should be added/updated into the offline OS image
    using the supported offline package deployment process in order to ensure
    that they are properly configured and integrated into the Windows OS state.

    Updating driver package INF files from within the runtime environment of
    this OS product may lead to unexpected OS state conflicts, resulting in the
    inability to apply future updates to core OS components and/or drivers on
    retail/consumer systems.

    ***** WARNING *****
    Updating drivers for root\upframework from c:\windows\system32\upframework.inf.
  
```

Note: you must connect Up IoT Core and PC in the same network.

Appendix B

Cables and Connectors

B.1 Cables and Connectors

This table provides detailed information about the cables and connectors used by the UP Xtreme i12 Edge (UPX-EDGE-ADLP). If you have any questions about the configuration of your board, please contact your AAEON sales representative.

Label	Connector PN	Description	Mating Cable PN	Mating Cable Description
CN1	1655X00019	RTC Battery Connector	175011301K	Lithium Battery. CR2032H.3V.240mAH.w/cable 90mm. DIP.Battery power.BP-CR2032-M90-001
CN2	1654403931	HDMI 2.0 + DP 1.2	-	-
CN3	1653530130	eDP Connector	-	-
CN4	1655302025	WAFER BOX.2P. SATA power (DC 5V)	1702150155	Power Cable.15P SATA(F).2P 2.0mm Housing(PH).15cm
CN5	1654907009	SATA CONN	1700070200	SATA CABLE.7P 180D(F) w/lock.to 7P 90D(F) w/o lock SATA.20cm
CN6	1654801330	Type A.USB3.2 x1 + USB2.0 x1	-	-
CN7	1654801832	Type A.USB3.2 x2	-	-
CN8	16548X0015	Type C.USB4.0 Connector	-	-
CN9	1655X00031	USB 2.0/UART 1x10P Wafer	170010015G	(TF)USB Cable.10P 1.0mm Housing.USB A(F). 15cm
CN10	1654207533	M.2 Key-E Slot	-	-
CN11	165420753B	M.2 Key-M Slot	-	-
CN12	165420753B	M.2 Key-M Slot	-	-
CN13	165420753A	M.2 Key-B Slot	-	-
CN14	16528X0015	GbE RJ-45 x2	-	-
CN15	1652708203	Audio Jack(Line out + Mic in)	-	-
CN16	1655901000	Wafer Box.10P. COM port	170X000255	COM Port.9P.COM Cable to VGA.210mm.FLYINGWAY.FW AA-1375.

Label	Connector PN	Description	Mating Cable PN	Mating Cable Description
CN17	16530X0041	Wafer Box.10P. COM port	170X000255	COM Port.9P.COM Cable to VGA.210mm.FLYINGWAY.FW AA-1375.
CN18	1653006205	40-pin HAT Connector	170X000277	Cable.40PPitch=3.81mm.16P-to-40P header.300mm.FLYINGWAY.FWAA-1418
CN21	165250320K	Wafer Box.6P. Front Panel (Power on + Reset)	-	-
CN22	1652602105	DC Power Jack	-	-
CN23	1655803131	DC terminal block	-	-
J1	1655804030	WAFER BOX.4P. Fan Connector	-	-
SW1	1601615600	Power Button with LED	-	-
SIM1	1654900693	Nano SIM Card Connector	-	-