

UP 4000 M.2 Plus

Carrier Board
UP-APL03CB

User's Manual 2nd Ed

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Acknowledgement

All other products' name or trademarks are properties of their respective owners.

Packing List

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

Item	Quantity
● UP-APL03CB (UP 4000 M.2 Plus Carrier Board)	1
● FPC Cable	1
● Screws (pack)	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 Main Board/ Daughter Board/ Backplane

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	X	X	○	○	○	○
外部信号 连接器及线材	X	X	○	○	○	○
<p>○: 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。</p> <p>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。</p> <p>备注: 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。</p>						

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

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	X	X	○	○	○	○
Wires & Connectors for External Connections	X	X	○	○	○	○
<p>○: 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.</p> <p>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.</p> <p>Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p>						

Table of Contents

Chapter 1 - Product Specifications	1
1.1 Specifications	2
Chapter 2 – Hardware Information	3
2.1 UP-APL03-A10-0001 (M.2 B/E-Key) Dimensions.....	4
2.2 UP-APL03-A10-0001 (M.2 B/E-Key) Jumpers and Connectors	5
2.3 UP-APL03-A10-0001 (M.2 B/E-Key) List of Jumpers and Connectors	5
2.4 UP-APL03-A10-0001 (M.2 B/E-Key) Connector Index	6
2.4.1 FPC/FFC Connector (CN1).....	6
2.4.2 M.2 B-Key (CN2)	8
2.4.3 M.2 E-Key (CN5)	10
2.4.4 Nano SIM Card Socket (U2).....	12
2.5 UP-APL03-A10-0002 (M.2 M-Key) Dimensions	13
2.6 UP-APL03-A10-0002 (M.2 M-Key) Jumpers and Connectors.....	14
2.7 UP-APL03-A10-0002 (M.2 M-Key) List of Jumpers and Connectors.....	14
2.8 UP-APL03-A10-0002 (M.2 M-Key) Connector Index	14
2.8.1 FPC/FFC Connector (CN1).....	15
2.8.2 M.2 M-Key (CN3).....	16
2.9 UP-APL03-A10-0003 (M.2 E-Key) Dimensions.....	18
2.10 UP-APL03-A10-0003 (M.2 E-Key) Jumpers and Connectors	19
2.11 UP-APL03-A10-0003 (M.2 E-Key) List of Jumpers and Connectors	19
2.12 UP-APL03-A10-0003 (M.2 E-Key) Connector Index.....	19
2.12.1 FPC/FFC Connector (CN1).....	20
2.12.2 M.2 E-Key (CN5)	21
Chapter 3 – Module Installation	23
3.1 UP 4000 M.2 Plus Module Installation	24

Chapter 1

Product Specifications

1.1 Specifications

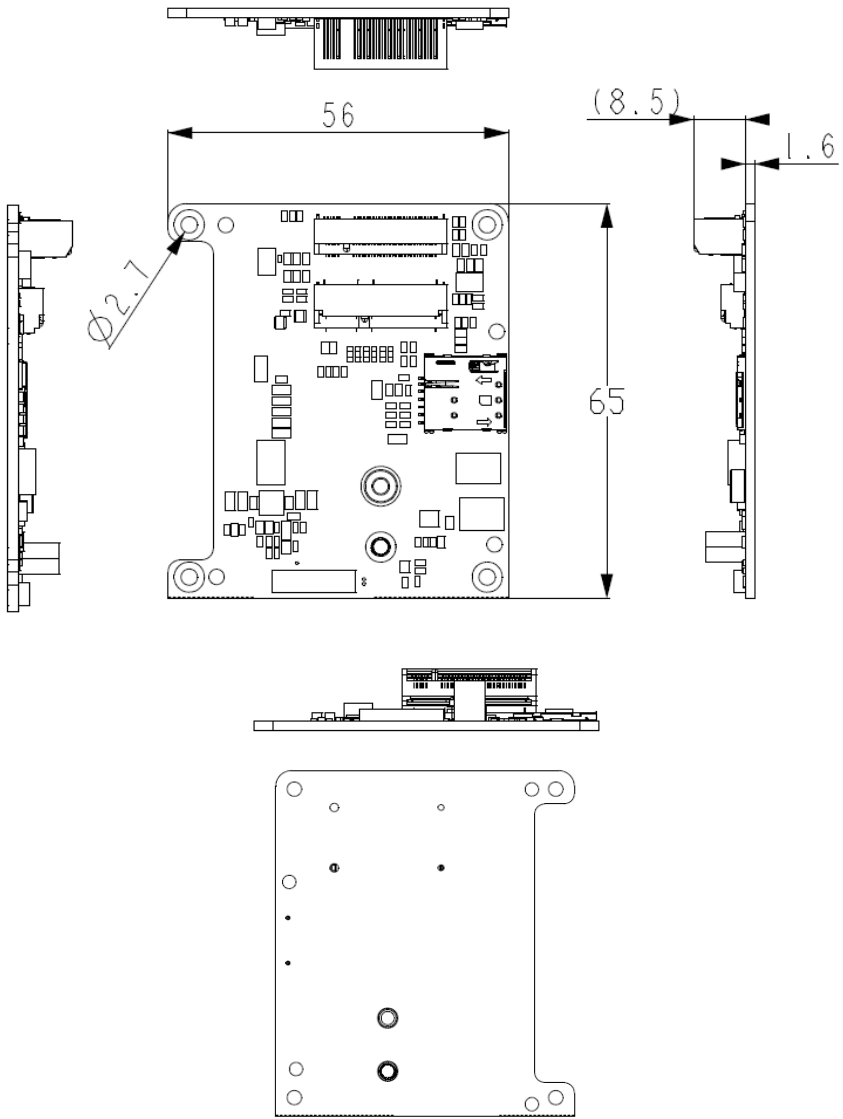
I/O Placements

I/O	UP-APL03CB-A10-0001:
	M.2 3052/3042 B-Key x 1 (USB 3.0)
	M.2 2230 E-Key x 1 (PCIe [x1]) (w/o Bluetooth)
	Push-push Nano SIM card x 1
	41-Pin FPC Connector x 1
	UP-APL03CB-A10-0002:
	M.2 2280 M-Key x 1 (PCIe [x1])
	41-Pin FPC Connector x 1
	UP-APL03CB-A10-0003:
M.2 2230 E-Key x 1 (PCIe [x1], USB 2.0 x 1)	
41-Pin FPC Connector x 1	
Dimension	UP-APL03CB-A10-0001: 2" x 2.36" (51mm x 60mm)
	UP-APL03CB-A10-0002: 2" x 3.5" (51mm x 89mm)
	UP-APL03CB-A10-0003: 2" x 2.36" (51mm x 60mm)
Net Weight	UP-APL03CB-A10-0001: 0.035 lb. (0.016Kg)
	UP-APL03CB-A10-0002: 0.041 lb. (0.019Kg)
	UP-APL03CB-A10-0003: 0.033 lb. (0.015Kg)
Gross Weight	UP-APL03CB-A10-0001: 0.12 lb. (0.055Kg)
	UP-APL03CB-A10-0002: 0.12 lb. (0.058Kg)
	UP-APL03CB-A10-0003: 0.12 lb. (0.054Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant

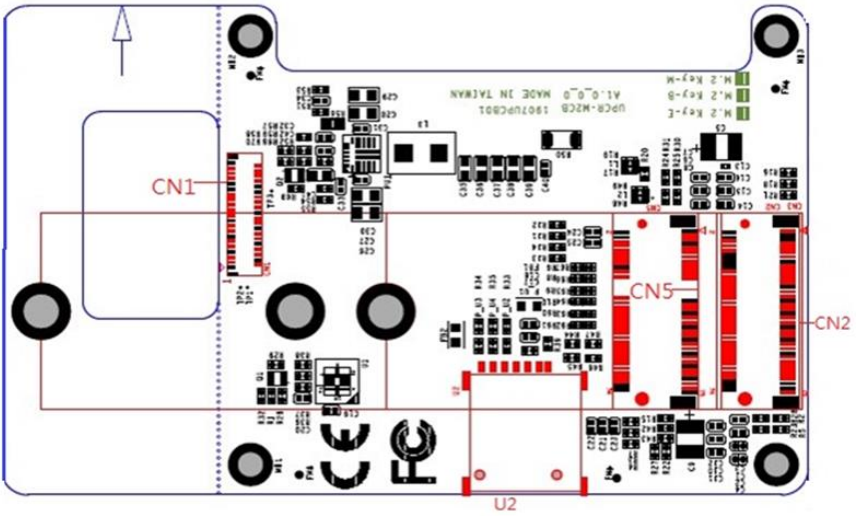
Chapter 2

Hardware Information

2.1 UP-APL03-A10-0001 (M.2 B/E-Key) Dimensions



2.2 UP-APL03-A10-0001 (M.2 B/E-Key) Jumpers and Connectors



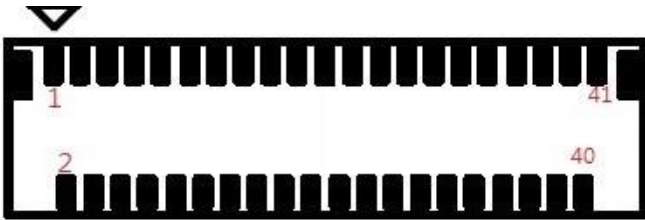
2.3 UP-APL03-A10-0001 (M.2 B/E-Key) List of Jumpers and Connectors

Label	Functional Description
CN1	FPC/FFC Conn
CN2	M.2 B-Key
CN5	M.2 E-Key
U2	Nano SIM Card Socket

2.4 UP-APL03-A10-0001 (M.2 B/E-Key) Connector Index

Reference Designation	Functional Description	Connector Type
CN1	FPC/FFC Conn	(TF)FPC/FFC Conn.41P90D(F).SMD .0.6mm.Hirose.FH35C-41S-0.3SHW(50)
CN2	M.2 B-Key	(TF)M.2 KEY-B SLOT.75P90D(F).SMD.H =8.5mm.FOXCONN.2E0BC21-S85BB-7H
CN5	M.2 E-Key	(TF)M.2 Key-E Slot.H=4.0mm conn.75P.90D(F). BLACK.SMD.FOXCONN.AS0BC21-S40BE-7H
U2	Nano SIM Card Socket	(AOH)(TF)Nano SIM Card Socket.7P.90D(F). SMD.Push-Push type.TRONTEK.TH63-SIM07-137

2.4.1 FPC/FFC Connector (CN1)



Pin	Signal Description	Pin	Signal Description
1	GND	2	NC
3	NC	4	GND
5	USB3_RXN	6	USB3_RXP
7	GND	8	USB3_TXN
9	USB3_TXP	10	GND
11	USB2_DN	12	USB2_DP
13	GND	14	PCIE_Clock_N
15	PCIE_Clock_P	16	GND

Pin	Signal Description	Pin	Signal Description
17	PCIE_RXP	18	PCIE_RXN
19	GND	20	PCIE_TXN
21	PCIE_TXP	22	GND
23	PCIe wake	24	Suspend clock
25	SMBus ALERT	26	SMBus Clock
27	SMBus Data	28	Platform reset
29	Platform sleep S3(3.3V)	30	Platform sleep S0(3.3V)
31	GND	32	+1.8V
33	+1.8V	34	+12V
35	+12V	36	+12V
37	+12V	38	+12V
39	+12V	40	+12V
41	GND	H1	GND
H2	GND	-	-

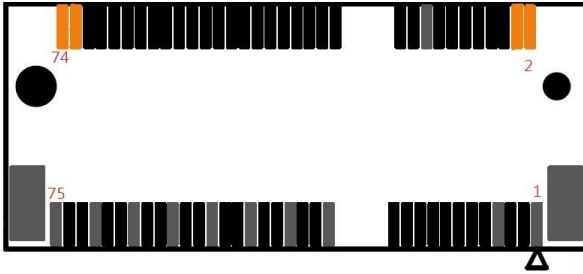
2.4.2 M.2 B-Key (CN2)



Pin	Signal Description	Pin	Signal Description
1	NC	2	+3.3V
3	GND	4	+3.3V
5	GND	6	Full card power
7	USB2_DP	8	5G power Enable
9	USB2_DN	10	NC
11	GND	20	NC
21	NC	22	NC
23	5G wake	24	NC
25	NC	26	NC
27	GND	28	NC
29	USB3_RXN	30	UIM_Reset
31	USB3_RXP	32	UIM_Clock
33	GND	34	UIM_Data
35	USB3_TXN	36	UIM_Power
37	USB3_TXP	38	NC
39	GND	40	NC
41	NC	42	NC

Pin	Signal Description	Pin	Signal Description
43	NC	44	NC
45	GND	46	NC
47	NC	48	NC
49	NC	50	Platform reset
51	GND	52	PCIe clock request
53	NC	54	M.2 wake
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	SIM_Detect
67	WWAN_RESET	68	NC
69	NC	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND	H1	NC
H2	NC	H3	GND
H4	GND	-	-

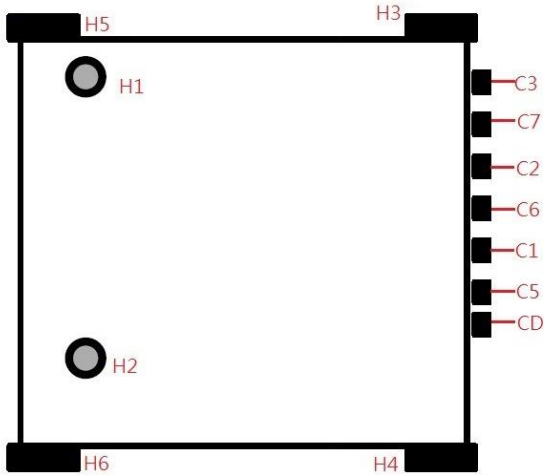
2.4.3 M.2 E-Key (CN5)



Pin	Signal Description	Pin	Signal Description
1	GND	2	+3.3V
3	NC	4	+3.3V
5	NC	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC	32	NC
33	GND	34	NC
35	PCIE_TXP	36	NC
37	PCIE_TXN	38	NC
39	GND	40	NC
41	PCIE_RXP	42	NC

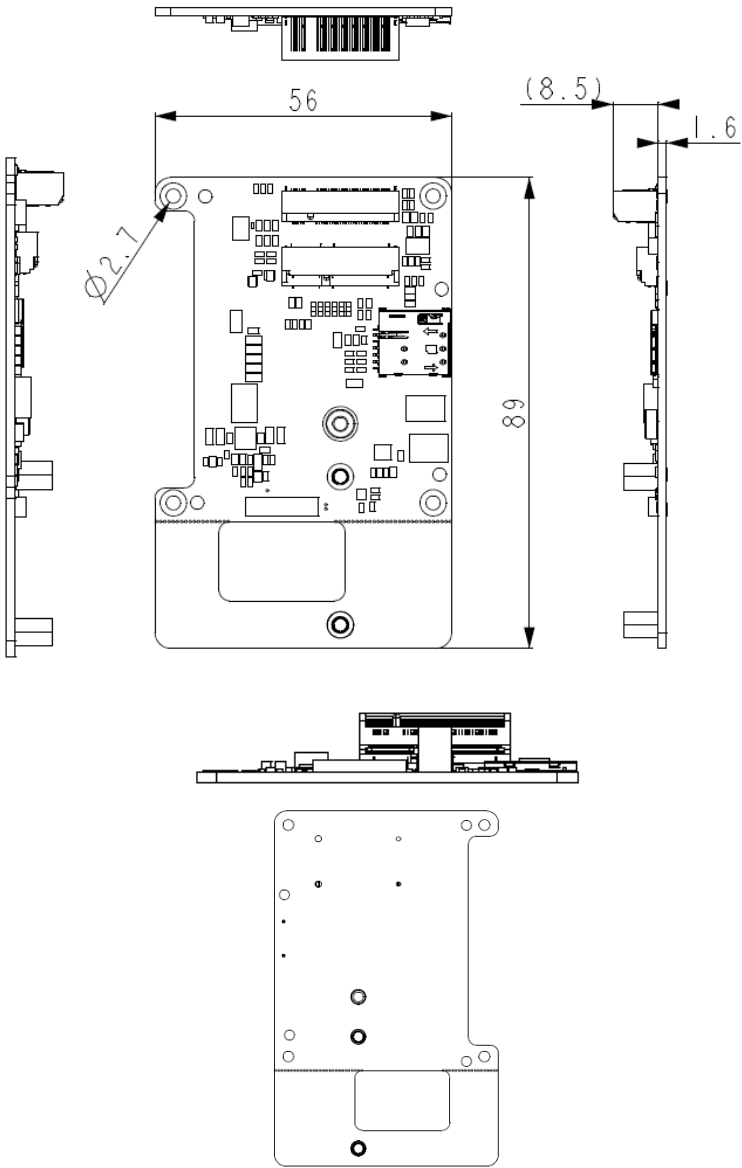
Pin	Signal Description	Pin	Signal Description
43	PCIE_RXN	44	NC
45	GND	46	NC
47	PCIE_Clock_P	48	NC
49	PCIE_Clock_N	50	Suspend clock
51	GND	52	WIFI_RST#
53	M.2 Clock request	54	Bluetooth enable (internal pull high to 3.3V)
55	PCIe Wake	56	Wi-Fi enable (internal pull high to 3.3V)
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC
71	NC	72	+3.3V
73	NC	74	+3.3V
75	GND	H1	NC
H2	NC	H3	GND
H4	GND	-	-

2.4.4 Nano SIM Card Socket (U2)

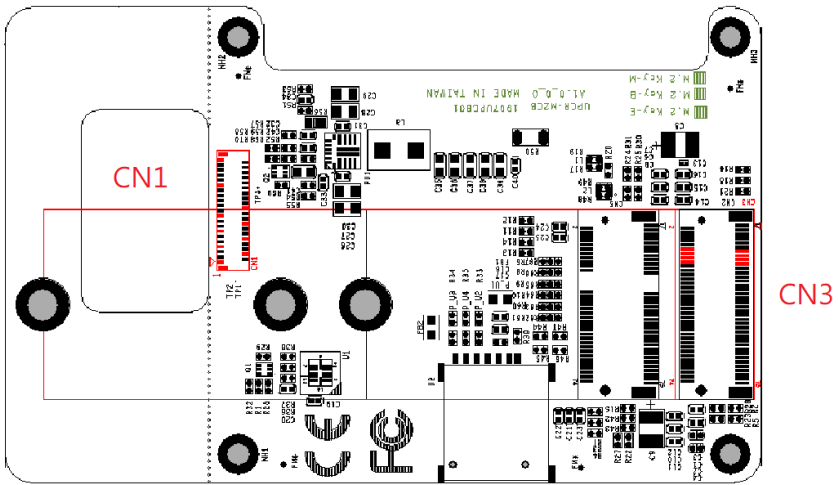


Pin	Signal Description	Pin	Signal Description
C1	UIM_Power	C2	UIM_Reset
C3	UIM_Clock	C5	GND_UIM
C6	NC	C7	UIM_Data
CD	SIM_DETECT	H1	GND_UIM
H2	GND_UIM	H3	GND_UIM
H4	GND_UIM	H5	GND_UIM
H6	GND_UIM	-	-

2.5 UP-APL03-A10-0002 (M.2 M-Key) Dimensions



2.6 UP-APL03-A10-0002 (M.2 M-Key) Jumpers and Connectors



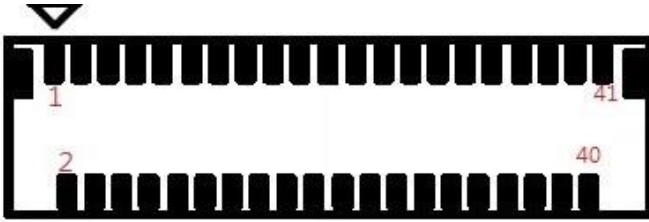
2.7 UP-APL03-A10-0002 (M.2 M-Key) List of Jumpers and Connectors

Label	Functional Description
CN1	FPC/FFC Connector
CN3	M.2 M-Key

2.8 UP-APL03-A10-0002 (M.2 M-Key) Connector Index

Reference Designation	Functional Description	Connector Type
CN1	FPC/FFC Conn	(TF)FPC/FFC Conn.41P90D(F).SMD.0.6mm.Hirose .FH35C-41S-0.3SHW(50)
CN3	M.2 M-Key	(TF)M.2 Key-M Slot.75P90D(F).Standardtype .BLACK.SMD.H=8.5mm conn.FOXCONN.2E0BC21-S85BM-7H

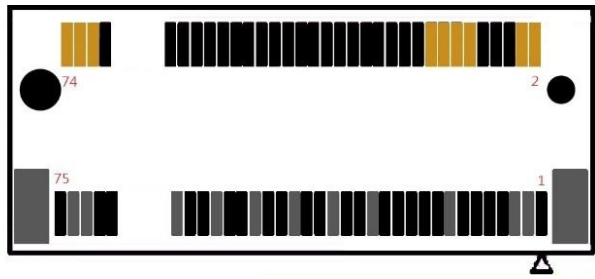
2.8.1 FPC/FFC Connector (CN1)



Pin	Signal Description	Pin	Signal Description
1	GND	2	NC
3	NC	4	GND
5	NC	6	NC
7	GND	8	NC
9	NC	10	GND
11	NC	12	NC
13	GND	14	PCIE_Clock_N
15	PCIE_Clock_P	16	GND
17	PCIE_RXP0	18	PCIE_RXN0
19	GND	20	PCIE_TXN0
21	PCIE_TXP0	22	GND
23	PCIe Wake(1.8V)	24	Suspend clock
25	SMBus ALERT	26	SMBus Clock
27	SMBus Data	28	Platform reset
29	Sleep S3(3.3V)	30	Sleep S0(3.3V)
31	GND	32	+1.8V
33	+1.8V	34	+12V
35	+12V	36	+12V

Pin	Signal Description	Pin	Signal Description
37	+12V	38	+12V
39	+12V	40	+12V
41	GND	H1	GND
H2	GND	-	-

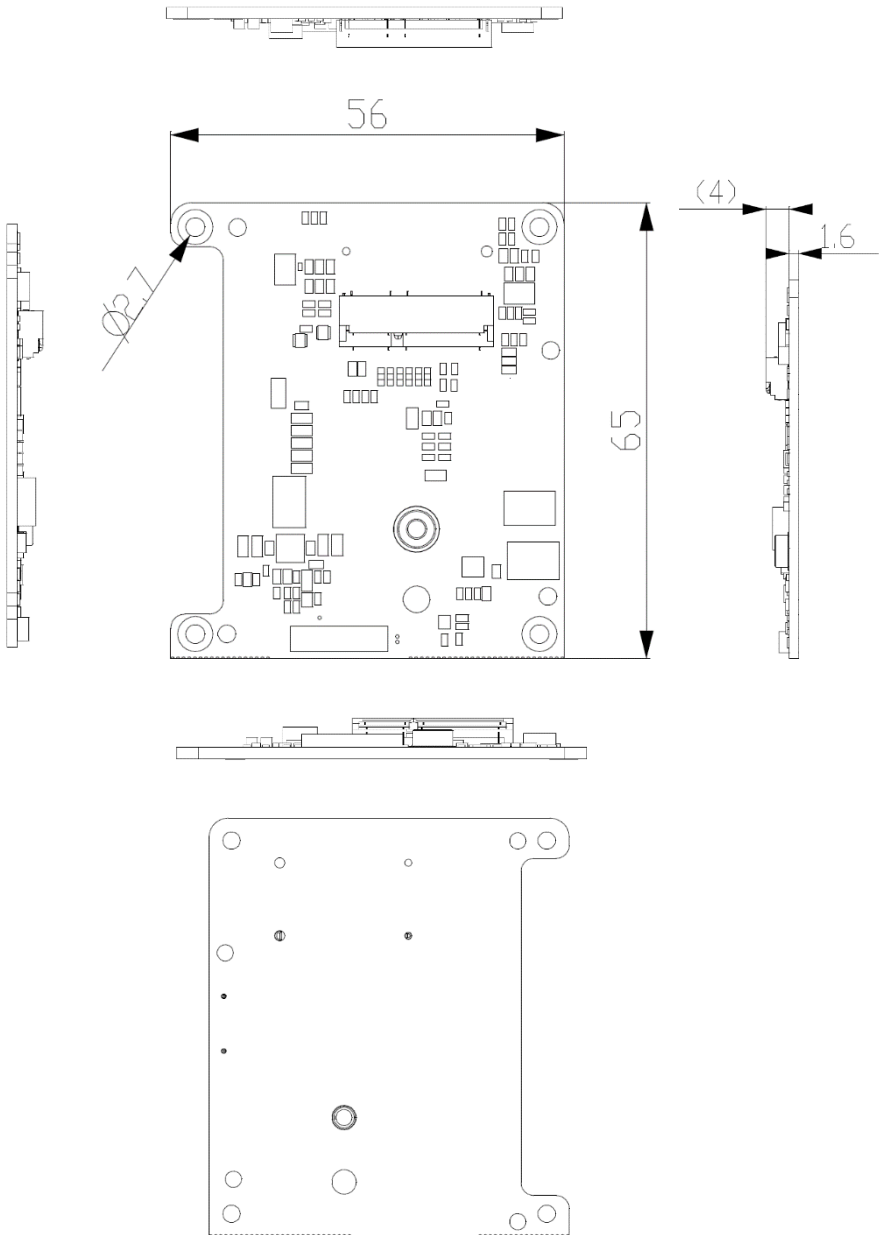
2.8.2 M.2 M-Key (CN3)



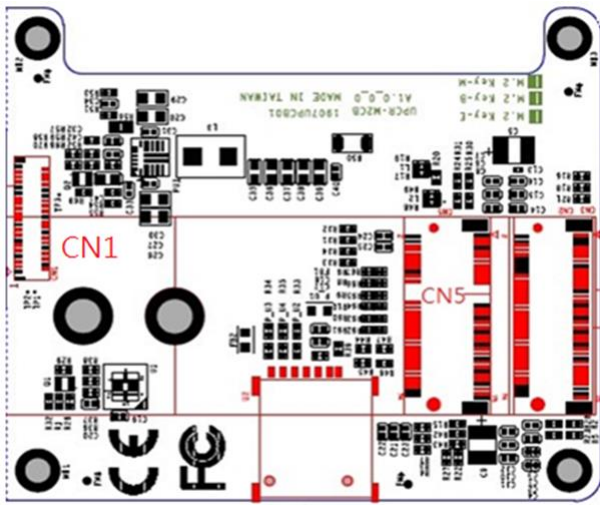
Pin	Signal Description	Pin	Signal Description
1	GND	2	+3.3V
3	GND	4	+3.3V
5	GND	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	+3.3V
13	NC	14	+3.3V
15	GND	16	+3.3V
17	NC	18	+3.3V
19	NC	20	NC
21	GND	22	NC

Pin	Signal Description	Pin	Signal Description
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	NC
39	GND	40	SMBus Data
41	PCIE_RXN	42	SMBus Clock
43	PCIE_RXP	44	SMBus ALERT#
45	GND	46	NC
47	PCIE_TXN	48	NC
49	PCIE_TXP	50	Platform reset
51	GND	52	NC
53	PCIE_REFCLK0_N	54	PCIe Wake
55	PCIE_REFCLK0_P	56	NC
57	GND	58	NC
67	NC	68	Suspend clock
69	NC	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND	H1	NC
H2	NC	H3	GND
H4	GND	-	-

2.9 UP-APL03-A10-0003 (M.2 E-Key) Dimensions



2.10 UP-APL03-A10-0003 (M.2 E-Key) Jumpers and Connectors



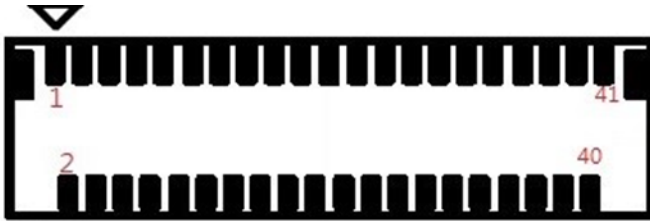
2.11 UP-APL03-A10-0003 (M.2 E-Key) List of Jumpers and Connectors

Label	Functional Description
CN1	FPC/FFC Connector
CN5	M.2 E-Key

2.12 UP-APL03-A10-0003 (M.2 E-Key) Connector Index

Reference Designation	Functional Description	Connector Type
CN1	FPC/FFC Conn	(TF)FPC/FFC Conn.41P:90D (F).SMD.0.6mm.Hirose.FH35C-41S-0.3SHW(50)
CN5	M.2 M-Key	(TF)M.2 Key-E Slot.H=4.0mm conn.75P:90D(F) .BLACK.SMD.FOXCONN.AS0BC21-S40BE-7H

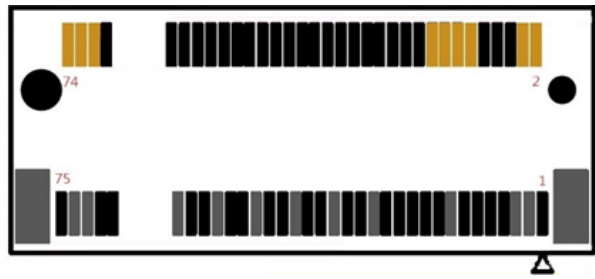
2.12.1 FPC/FFC Connector (CN1)



Pin	Signal Description	Pin	Signal Description
1	GND	2	NC
3	NC	4	GND
5	PCIE RXN1	6	PCIE RXP1
7	GND	8	PCIE TXN1
9	PCIE TXP1	10	GND
11	USB2.0 DN	12	USB2.0 DP
13	GND	14	PCIE Clock N
15	PCIE Clock P	16	GND
17	PCIE RXP0	18	PCIE RXN0
19	GND	20	PCIE TXN0
21	PCIE TXP0	22	GND
23	PCIE Wake	24	Suspend Clock
25	SMBus ALERT	26	SMBus Clock
27	SMBus Data	28	Platform reset
29	Sleep S3(3.3)	30	Sleep S0(3.3)
31	GND	32	+1.8V
33	+1.8V	34	+12V
35	+12V	36	+12V

Pin	Signal Description	Pin	Signal Description
37	+12V	38	+12V
39	+12V	40	+12V
41	GND	H1	GND
H2	GND	-	-

2.12.2 M.2 E-Key (CN5)



Pin	Signal Description	Pin	Signal Description
1	GND	2	+3.3V
3	USB2.0 DP	4	+3.3V
5	USB2.0 DM	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC

Pin	Signal Description	Pin	Signal Description
23	NC	32	NC
33	GND	34	NC
35	PCIE TXP0	36	NC
37	PCIE TXN0	38	NC
39	GND	40	NC
41	PCIE RXP0	42	NC
43	PCIE RXN0	44	NC
45	GND	46	NC
47	PCIE Clock_P	48	NC
49	PCIE Clock_N	50	Suspend Clock
51	GND	52	WI-FI Reset
53	PCI Clock Request	54	Bluetooth enable
55	PCIE Wake	56	WI-FI Enable
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC
71	NC	72	+3.3V
73	NC	74	+3.3V
75	GND	H1	NC
H2	NC	H3	GND
H4	GND	-	-

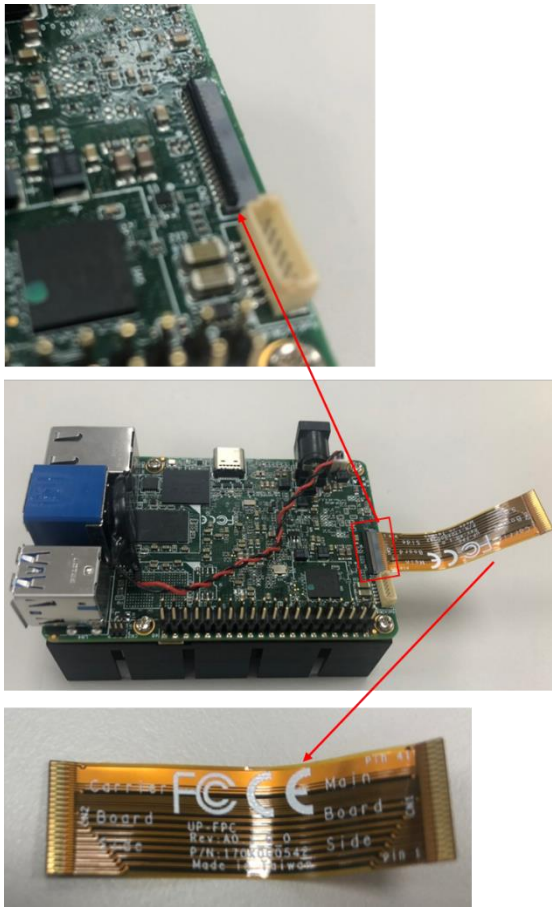
Chapter 3

Module Installation

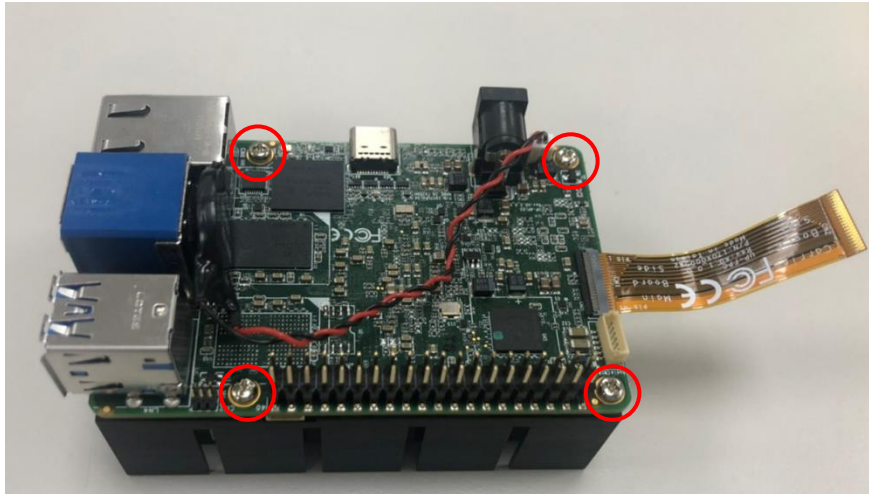
3.1 UP 4000 M.2 Plus Module Installation

For this process you will need a Phillips head screwdriver.

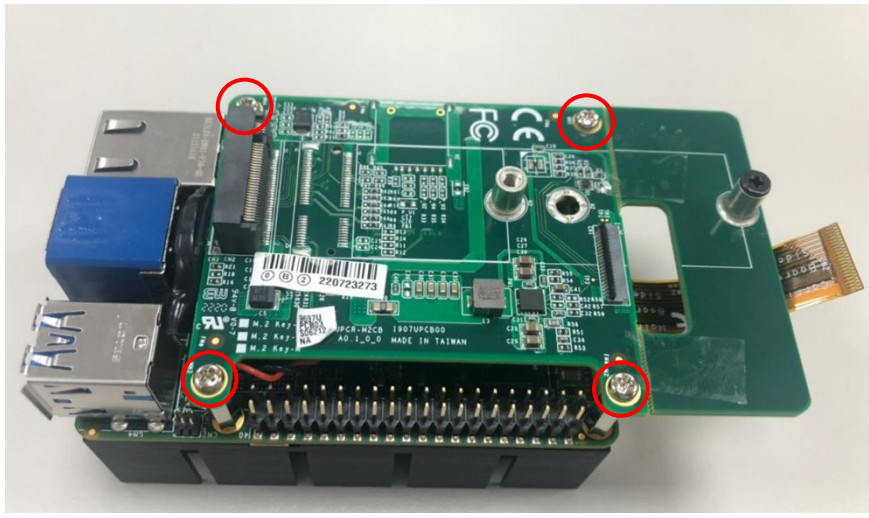
Step 1: First, make sure to unlock the UP 4000's FPC connector, then plug the FPC cable into the FPC connector, noting the direction of the FPC cable.



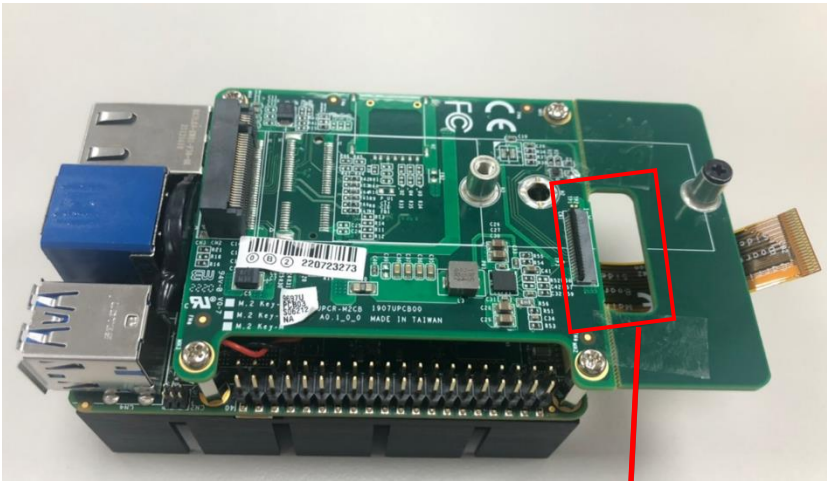
Step 2: Remove the four screws and lock the four pillars.



Step 3: Reaffix the four screws with the UP 4000 M.2 Plus.



Step 4: Unlock the FPC connector, the plug the FPC cable into it.



Step 5: Assemble the 2230/3042/3052/2280 card as needed.

