UP 710S Edge

Maker Board System
UP-EDGE-ASL02

User's Manual 1st Ed

Last Updated: April 15, 2025

Copyright Notice

Acknowledgement

Packing List

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

Item	Quantity
● UP-EDGE-ASL02 (UP 710S Edge)	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.

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 System QO4-381 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	×	O	O	O	O	O
Connector and Cable	×	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU and Memory	×	O	O	O	O	O
Hard Disk	×	O	O	O	O	O
LCD Modules	×	O	O	O	O	O
CD-ROM/DVD-ROM	×	O	O	O	O	O
Touch Modules	×	O	O	O	O	O
Power	×	O	O	O	O	O
Battery	×	O	O	O	O	O

The table is prepared in accordance with the provisions of SJ/T 11364.

O：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.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
CPU	Intel® Processor N200 Intel® Processor N97 Intel® Processor N100 Intel® Processor N50 (formerly Alder Lake-N)
Memory	Up to 8GB LPDDR5
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Storage	Up to 64GB eMMC
Ethernet	1GbE RJ-45 x 1
Wi-Fi/BT	Optional with M.2 2230 E-Key x 1
Expansion Slot	M.2 2230 E-Key x 1 (PCIe [x1], USB 2.0 x 1)
Security	Onboard TPM 2.0
OS Support	Microsoft Windows 10/11 Ubuntu 22.04 LTS Yocto 5.1

I/O	
USB	USB 3.2 Gen 2 (Type-A) x 3
Display Port	HDMI 1.4b x 1
Ethernet	1GbE RJ-45 x 1
COM	RS-232/422/485 x 1
Audio	—
GPIO	GPIO x 8 (Optional: PWM x 1, I2C x 1, SPI x 1; by project base, please contact AAEON sales)

Power Supply

Power Requirement	12V DC-in, 5A
Power Supply Type	AT/ATX
Power Consumption (Typical)	30W~36W

Mechanical

Mounting	DIN Rail, VESA
Dimensions	3.62" x 3.03" x 1.51" (92mm x 77mm x 38.5mm)
Gross Weight	0.78 lb. (0.35Kg)
Net Weight	0.67 lb. (0.30Kg)

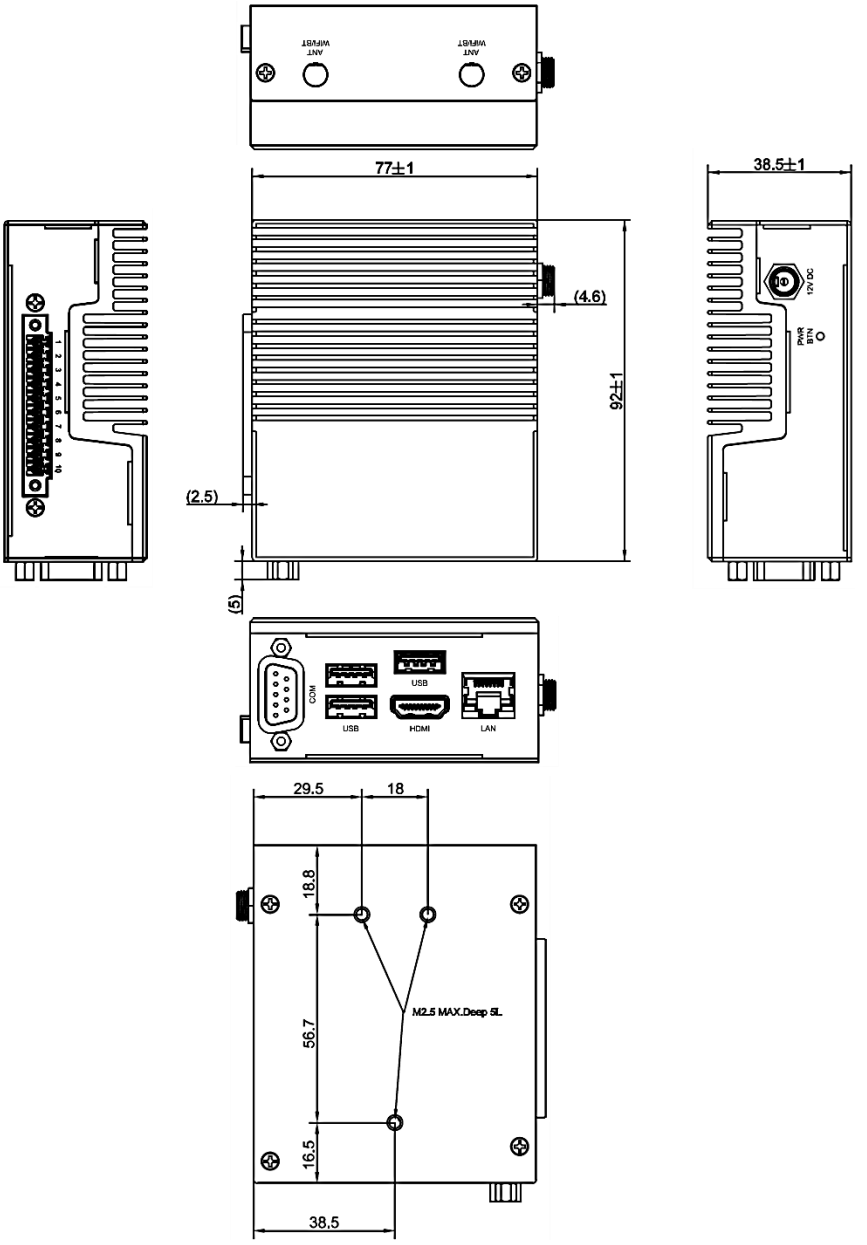
Environmental

Operating Temperature	23°F ~ 140°F (-5°C ~ 60°C) with 0.5m/s air flow
Storage Temperature	10% ~ 80% relative humidity, non-condensing
Operating Humidity	-4°F ~ 158°F (-20°C ~ 70°C)
MTBF	685,218
Certification	CE/FCC Class A, RoHS Compliant, REACH

Chapter 2

Hardware Information

2.1 Dimensions

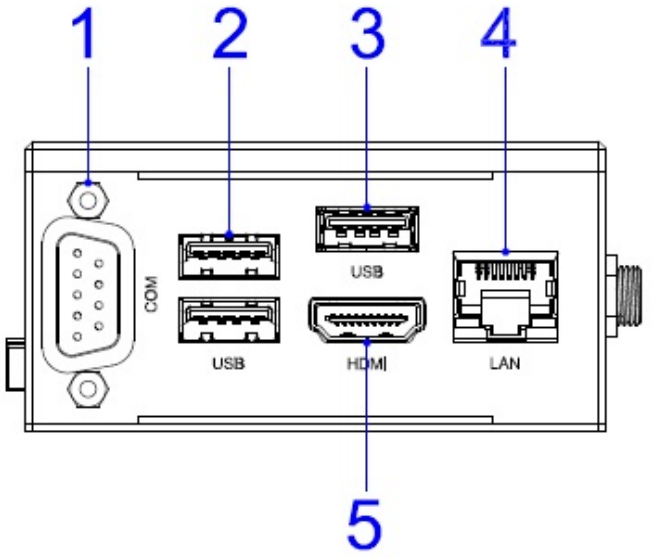


2.2 Jumpers and Connectors

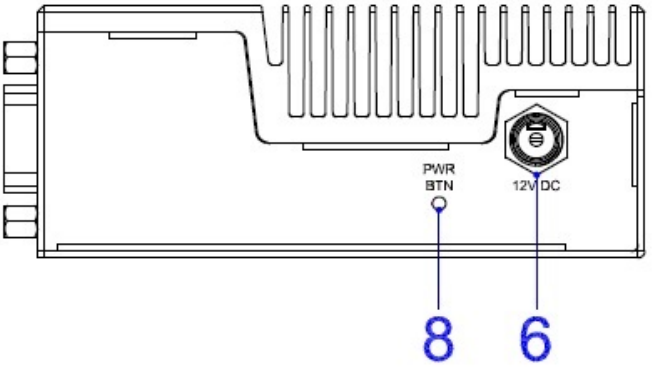
System Level

Label	Function
1	COM Port
2	Dual USB Port (Type-A)
3	USB Port (Type-A)
4	LAN Port
5	HDMI Port
6	DC Power Jack
7	DIO
8	Power Button

Front I/O:



Right I/O:



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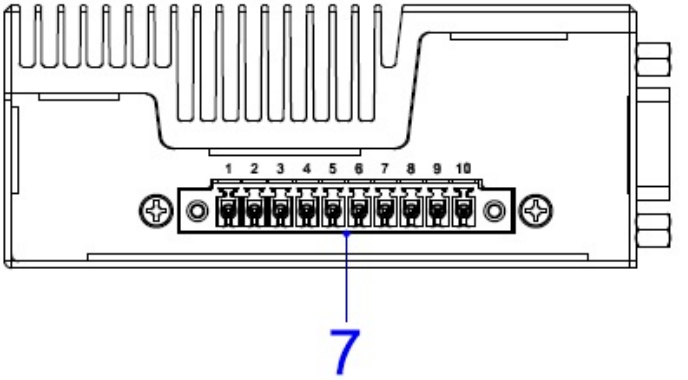
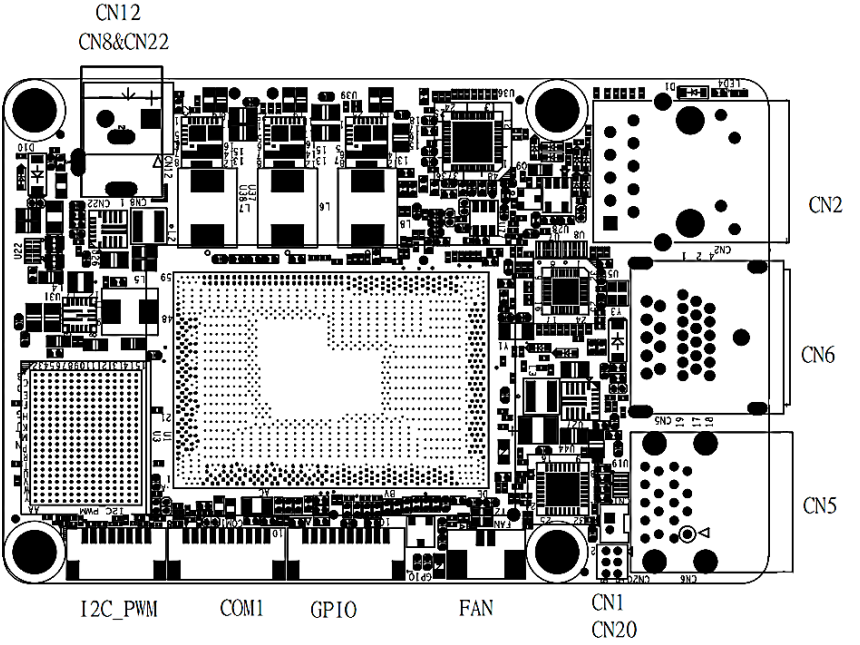
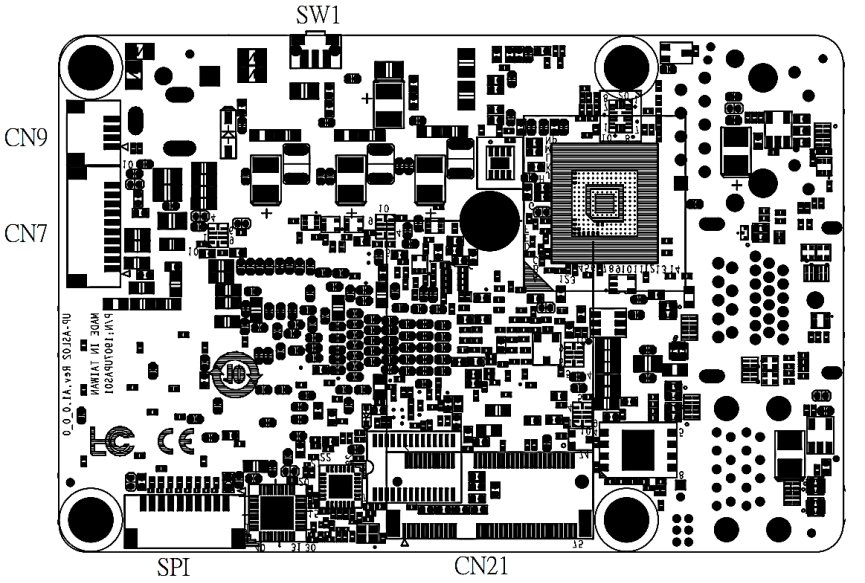


PCB Level

Top:



Bottom:



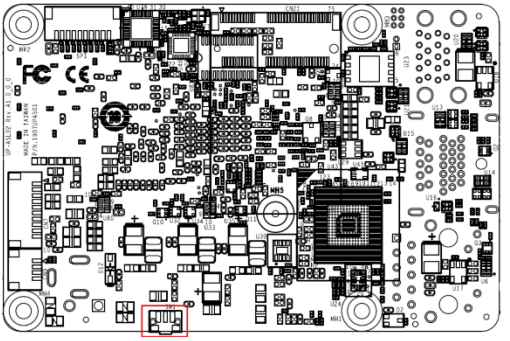
2.3 List of Jumpers and Connectors

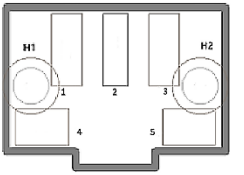
Please refer to the table below for all of the board's jumpers and connectors that you can configure for your application

Label	Function
SW1	Power Button
CN1	RTC
CN2	LAN Port
CN5	HDMI/USB Type-A
CN6	Dual USB Type-A Port
CN7	USB 2.0/UART 1x10P Wafer
CN8	DC Power Jack
CN9	Front Panel 1x4P Wafer
CN12	DC Terminal Block
CN20	BIOS Update
CN21	M.2 2280 E-Key Slot
CN22	DC Power Jack
FAN	Fan Connector
SPI	SPI x 2
COM1	RS-232/422/485
GPIO	GPIO x 8
I2C_PWM	I2C x 2 & PWM x 1

Note: Not all PCB-level internal connector pins are accessible via edge system external ports.

2.3.1 Power Button (SW1)

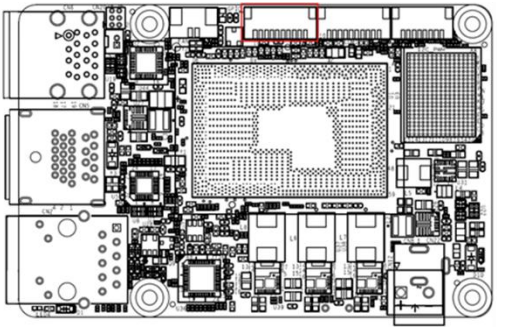


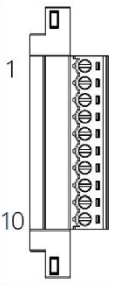


Pin	Signal	Pin	Signal
1	GND	2	Power Button Signal
3	GND	4	GND
5	GND		

2.3.2 GPIO (GPIO)

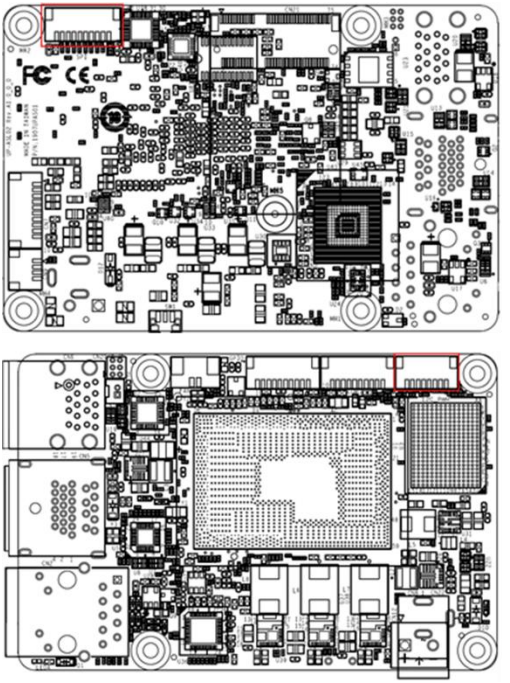
Default SKU: GPIO x 8

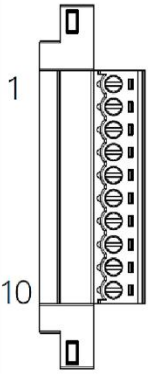




Pin	Signal	Pin	Signal	Pin	Signal
1	5V @0.5A	2	GPIO0	3	GPIO1
4	GPIO2	5	GPIO3	6	GPIO4
7	GPIO5	8	GPIO6	9	GPIO7
10	GND				

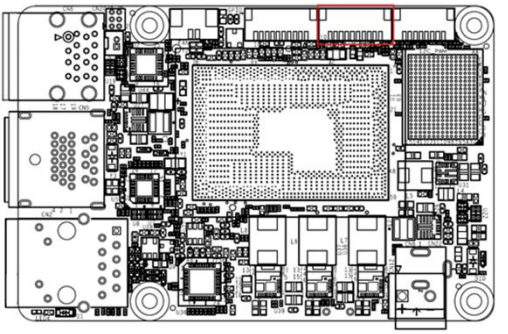
Optional SKU: PWM x 1, I2C x 1, SPI x 1 (by project base, please contact AAEON sales)

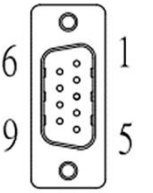




Pin	Signal	Pin	Signal	Pin	Signal
1	3.3V@0.5A	2	SPI2 _CS0#	3	SPI2 _CLK
4	SPI2 _MOSI	5	SPI2 _MISO	6	I2C_SCL0
7	I2C_SDA0	8	PWM0	9	PWM1
10	GND				

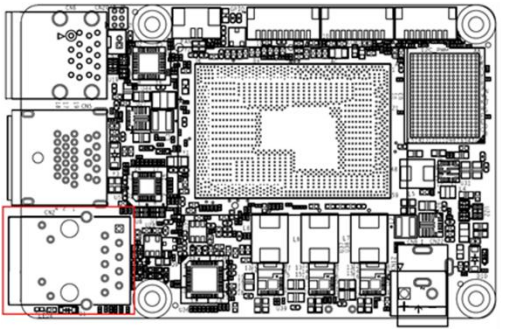
2.3.3 COM Port (COM1)

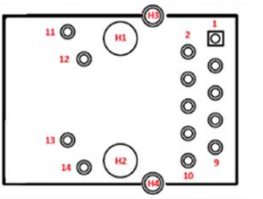




Pin	Signal	Pin	Signal
1	NC	2	RIA
3	CTSA	4	RTSA
5	DSRA	6	GND
7	DTRA / RS422RX-	8	TXA / RS422RX+
9	RXA/RS422TX+/ RS485+	10	DCDA/RS422TX-/RS485-

2.3.4 RJ-45 (CN2)

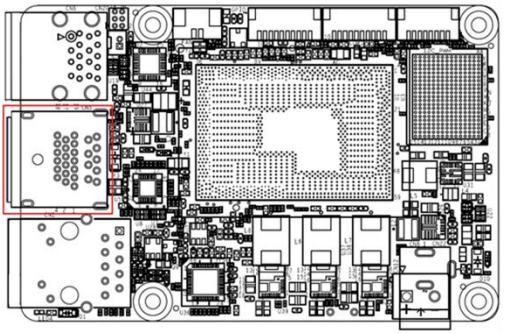


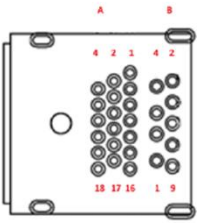


Pin	Signal	Pin	Signal
1	LAN1_MDI0+	2	LAN1_MDI0-
3	LAN1_MDI1+	4	LAN1_MDI1-
5	CT_GND	6	CT_GND
7	LAN1_MDI2+	8	LAN1_MDI2-
9	LAN1_MDI3+	10	LAN1_MDI3-
11	LAN Link LED 1000#	12	LAN Link LED 100#
13	LAN Active LED_N	14	LAN Active LED_P
H1	NC	H2	NC

Pin	Signal	Pin	Signal
H3	Chassis GND	H4	Chassis GND

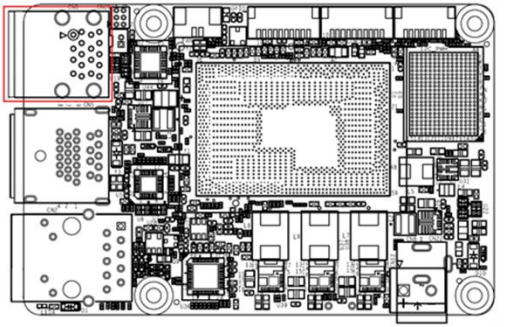
2.3.5 HDMI/USB Type-A (CN5)

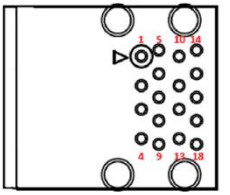




Pin	Signal	Pin	Signal
A1	HDMI_TMDS_TXP2	A2	GND
A3	HDMI_TMDS_TXN2	A4	HDMI_TMDS_TXP1
A5	GND	A6	HDMI_TMDS_TXN1
A7	HDMI_TMDS_TXP0	A8	GND
A9	HDMI_TMDS_TXN0	A10	HDMI_TMDS_Clock_P
A11	GND	A12	HDMI_TMDS_Clock_N
A13	NC	A14	NC
A15	HDMI_DDC_Clock	A16	HDMI_DDC_Data
A17	GND	A18	5V@1A for HDMI
A19	HDMI Hot Plug detect pin		
B1	5V@0.9A for USB 3.2	B2	USB2.0_DN3
B3	USB2.0_DP3	B4	GND
B5	USB3.2_RXN3	B6	USB3.2_RXP3
B7	GND	B8	USB3.2_TXN3
B9	USB3.2_TXP3		

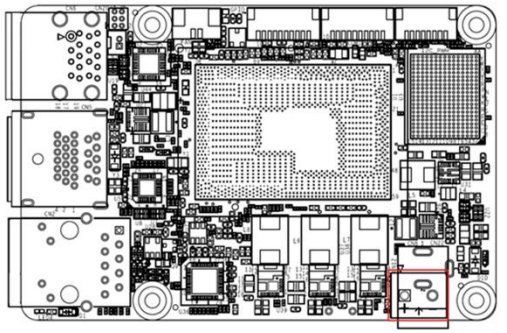
2.3.6 Dual USB Type-A Port (CN6)

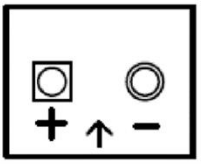




Pin	Signal	Pin	Signal
1	5V@0.9A for USB 3.2	2	USB2.0_DN1
3	USB2.0_DP1	4	GND
5	USB3.2_RXN1	6	USB3.2_RXP1
7	GND	8	USB3.2_TXN1
9	USB3.2_TXP1	10	5V@0.9A for USB 3.2
11	USB2.0_DN2	12	USB2.0_DP2
13	GND	14	USB3.2_RXN2
15	USB3.2_RXP2	16	GND
17	USB3.2_TXN2	18	USB3.2_TXP2
H1	GND	H2	GND
H3	GND	H4	GND

2.3.7 DC Terminal Block (CN12)





Pin	Signal	Pin	Signal
1	+12V	2	GND

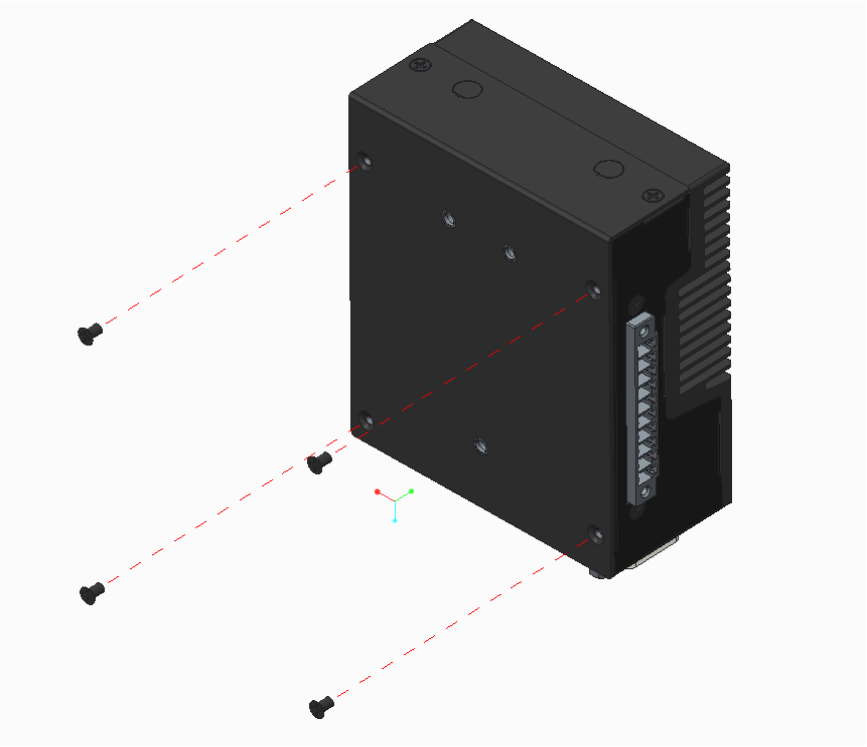
2.4 Hardware Installation

This section details the steps needed to install various hardware components for the UP 710S Edge. It is recommended that you read through each step before beginning installation and to make sure you have all necessary tools and components

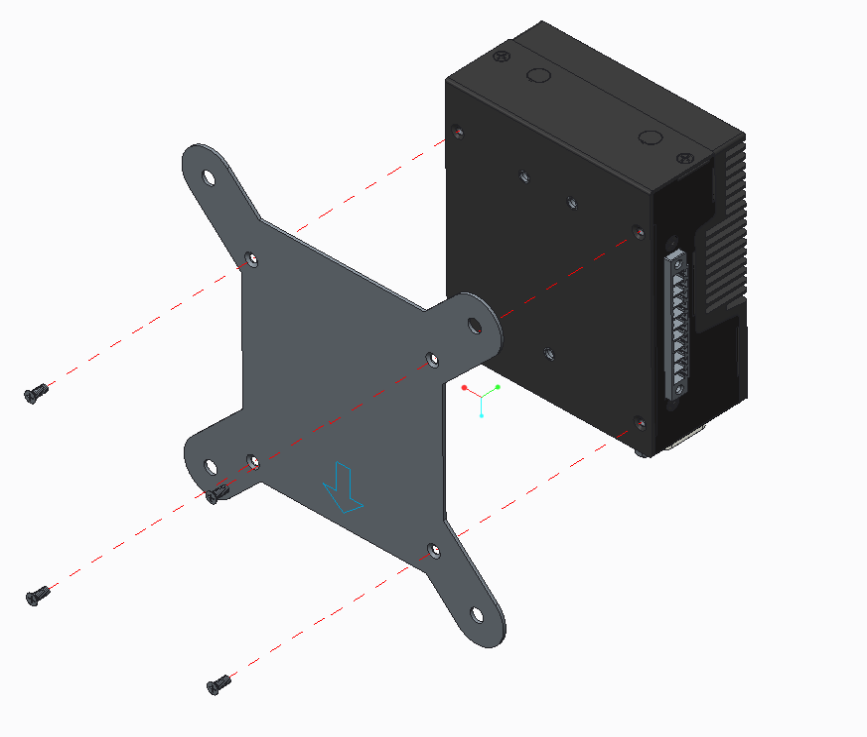
2.4.1 VESA Mount Installation

For this process you will need a Phillips-head screwdriver.

Step 1: Remove the four (4) M2.5 × 4L screws from the designated mounting points.



Step 2: Align the VESA bracket so that the arrow marking faces the I/O side of the device. Secure the bracket using four (4) M2.5 × 5L screws. Tighten the screws evenly to ensure proper installation.



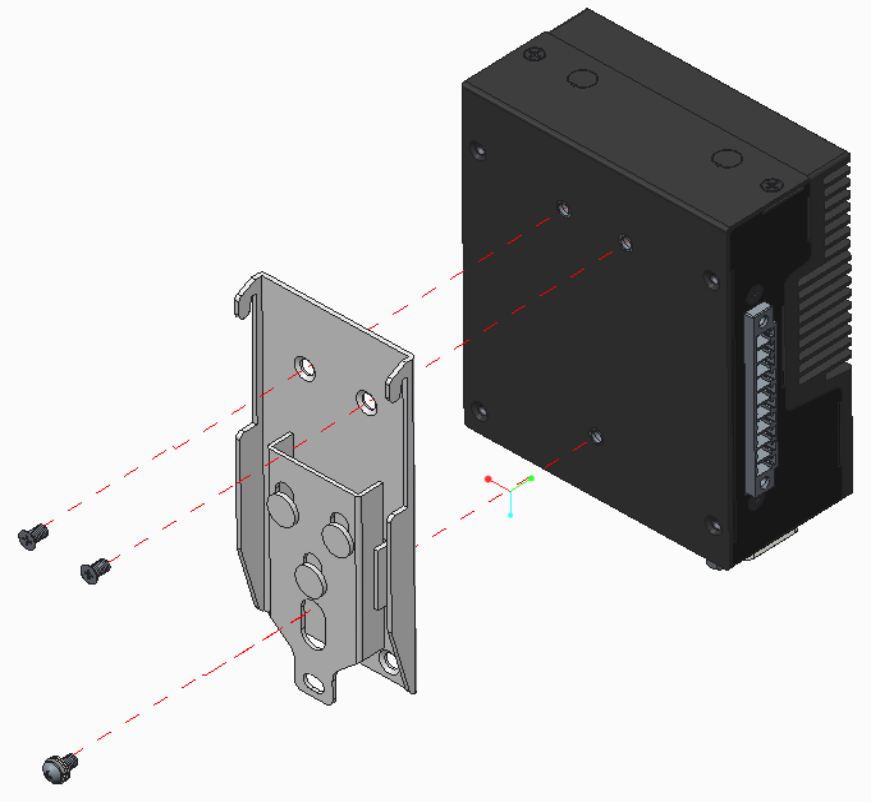
2.4.2 DIN Rail Installation

For this process you will need a Phillips-head screwdriver.

Install and tighten the following screws at the specified mounting points:

- M3 × 5L screws × 2
- M3 × 6L screw × 1

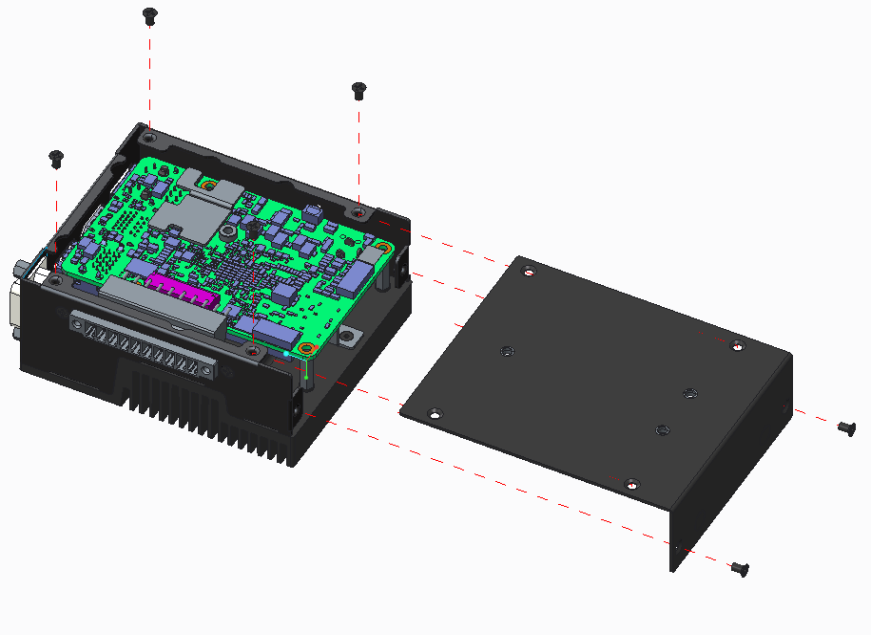
Ensure all screws are properly aligned and securely fastened without over-tightening.



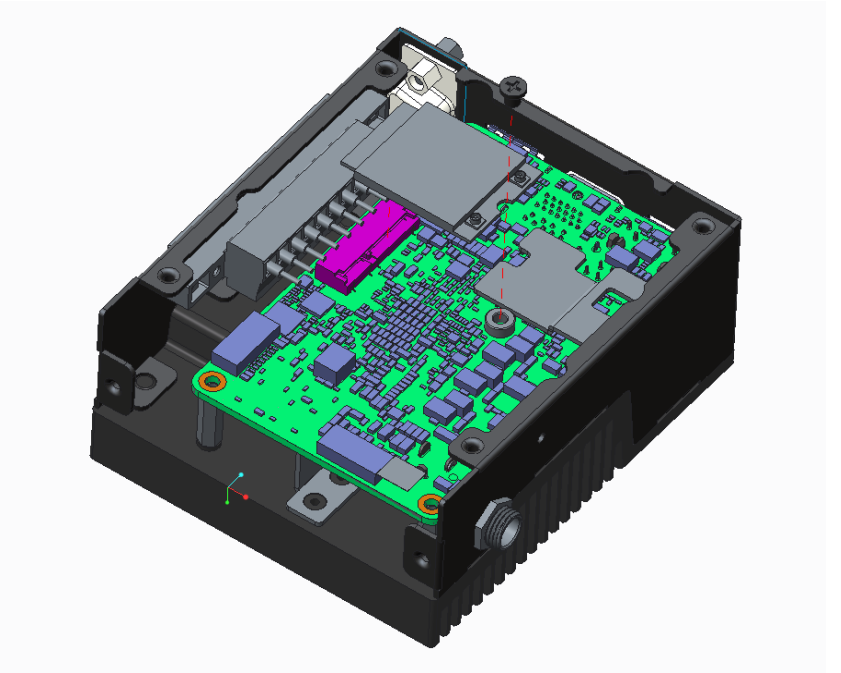
2.4.3 Wireless Module and Antenna Installation

For this process you will need a Phillips-head screwdriver. For IPEX connector handling, using ESD-safe tweezers is recommended.

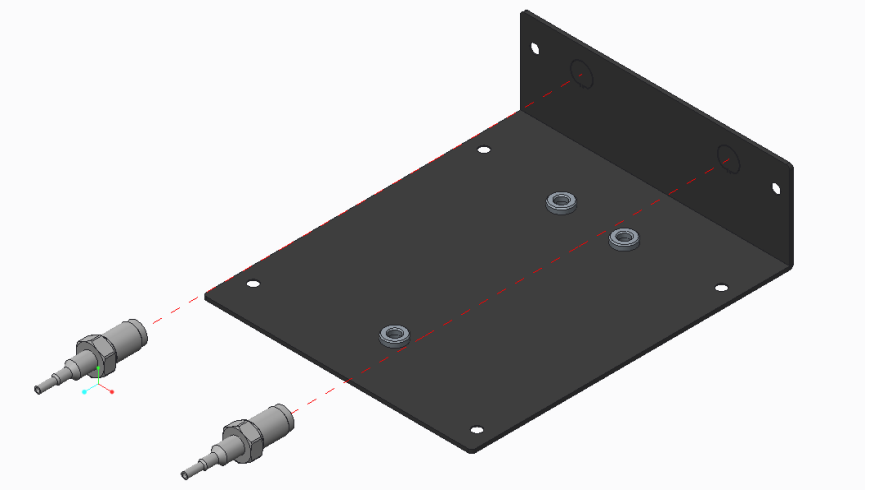
Step 1: Remove six (6) M2.5 × 4L screws from the designated bottom cover area.



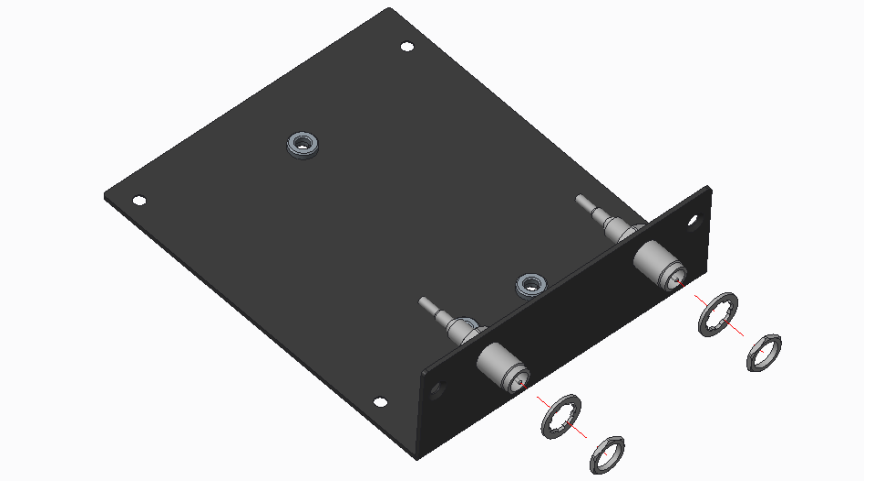
Step 2: Insert the M.2 2230 module into the socket at a 30-degree angle. Secure it with one (1) M3 × P0.5 × 3L screw.



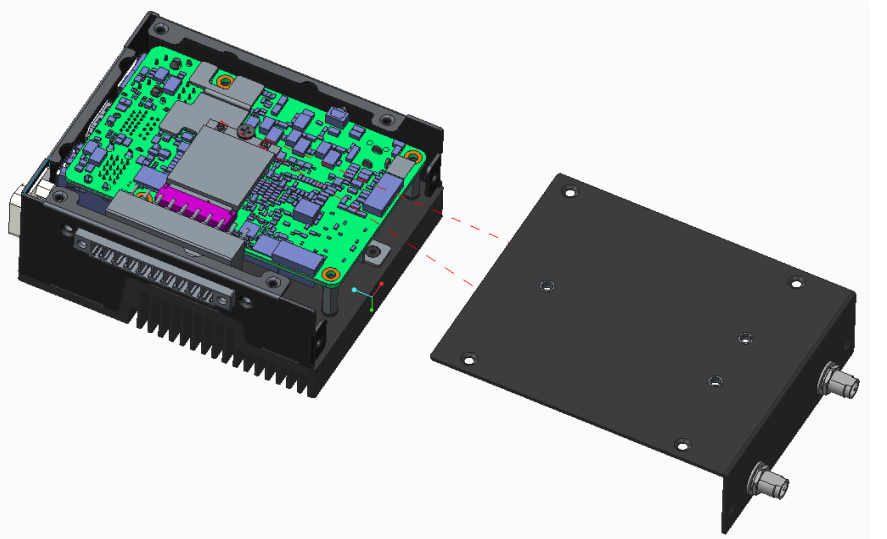
Step 3: Connect two (2) antenna cables to the chassis mounting points.



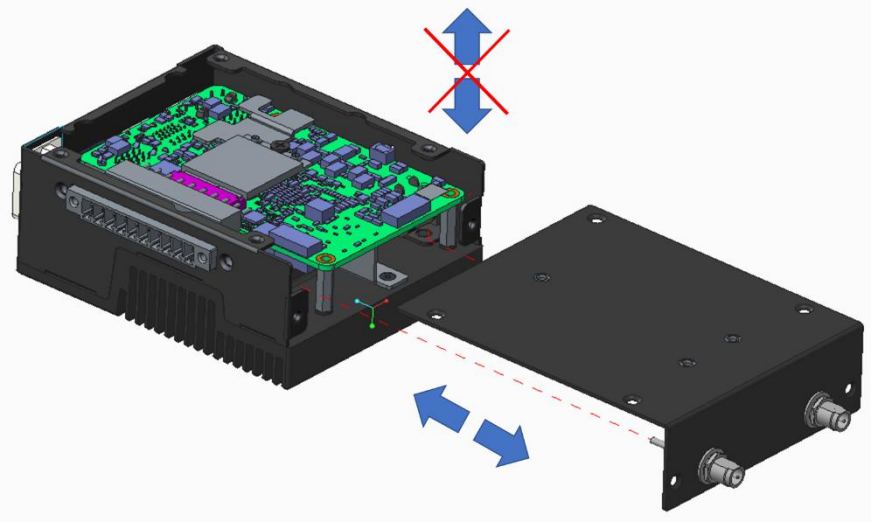
Step 4: Tighten the external antenna mounting nuts and washers to fix the antenna cables in place on the chassis.



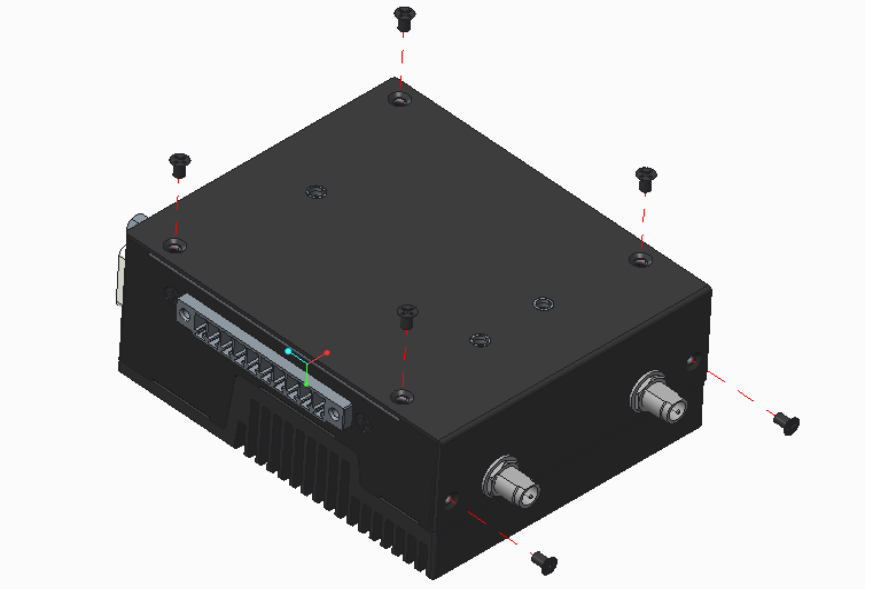
Step 5: Carefully attach the two (2) IPEX connectors to the Wi-Fi card terminals. Apply adhesive to fix and secure the connectors in place (optional but recommended for vibration resistance).



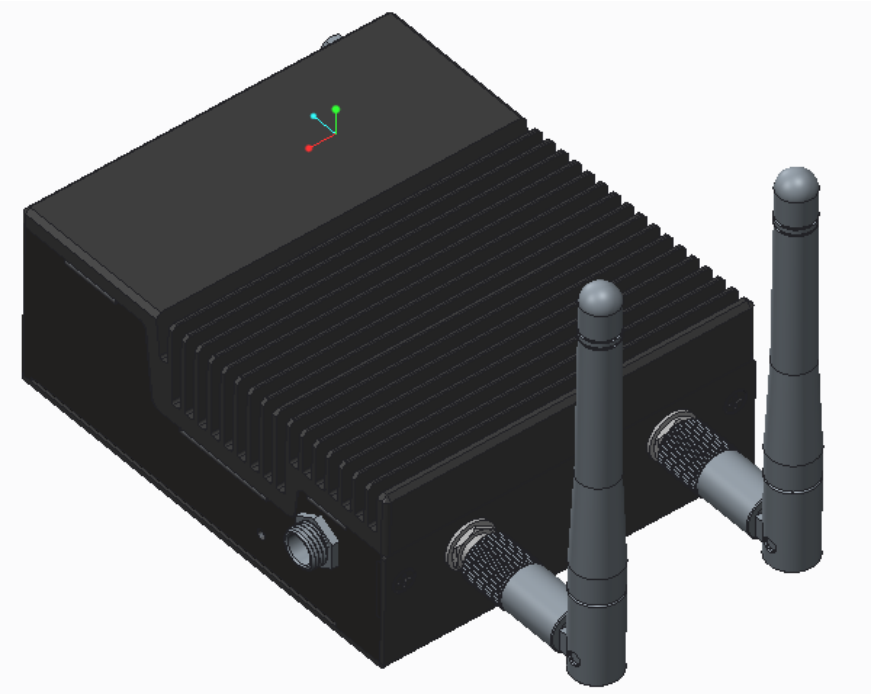
Step 6: Slide the bottom cover into position in a horizontal (parallel) motion.



Step 7: Secure the bottom cover using six (6) M2.5 × 4L screws.



Step 8: Attach and secure the two (2) external antennas to the previously mounted connectors.



Chapter 3

Software Installation

3.1 Linux Setup

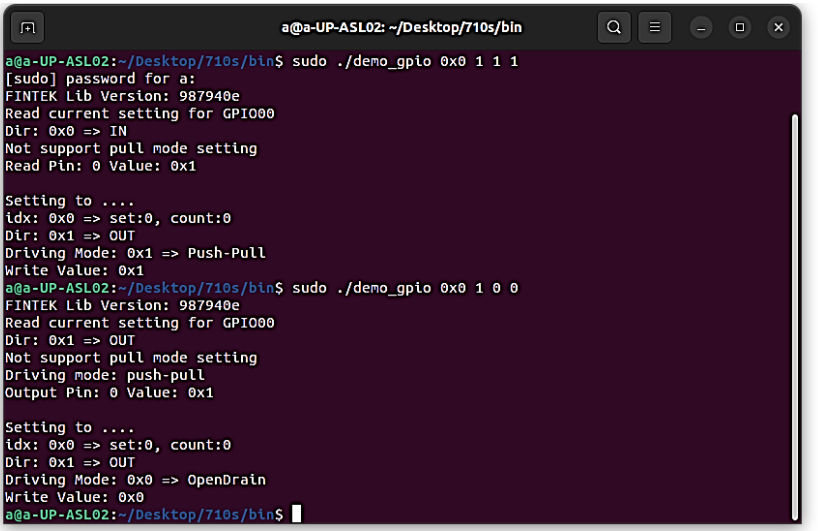
3.1.1 GPIO

To test GPIO functionality, execute the **demo_gpio** binary file using the following command:

```
sudo ./demo_gpio <idx>(0x0~0x7) <dir> <type> <value>
```

Parameter Definitions:

- idx: Specifies the GPIO number. For example, GPIO17 is represented as idx=0x17.
- dir: Sets the direction of the GPIO.
  0: Input, 1: Output
- type: Configures the output type.
  0: Open Drain, 1: Push-Pull
- value: Specifies the output state.
  For single GPIO mode, use 0 or 1., for group GPIO mode, use bitwise values.



3.1.2 SPI

Wiring

Connect the jumper wire:

- From Pin 3 (SPI1_MOSI) to Pin 2 (SPI1_MISO).
- From Pin 7 (SPI2_MOSI) to Pin 6 (SPI2_MISO).

Install and run spi-pipe tool:

- Install the spi-tools package, command:

```
sudo apt-get -y install spi-tools
```

SPI1

- Open a new terminal.
- Run the following command to test SPI1:

```
printf '\x11\x22\x33' | sudo spi-pipe -d /dev/spidev1.0 | hexdump -C
```

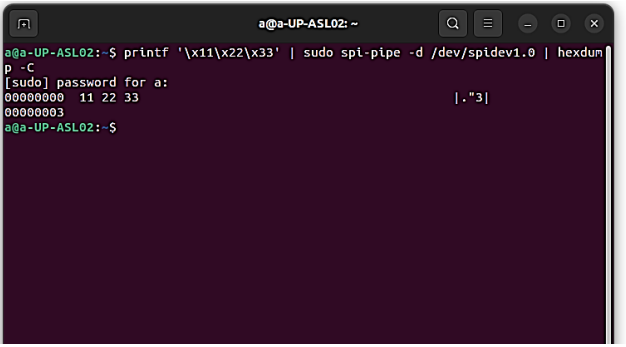
Verify that the sequence of sent bytes matches the received bytes. If the output matches, Pin 3 (SPI1_MOSI), Pin 2 (SPI1_MISO), and Pin 4 (SPI1_CLK) are functioning correctly.

SPI2

To test SPI2, change the device in the command to `/dev/spidev2.0`:

```
printf '\x11\x22\x33' | sudo spi-pipe -d /dev/spidev2.0 | hexdump -C
```

The remaining steps are the same as above. Verify that the bytes are transmitted and received correctly.



3.1.3 I2C

I2C Configuration and Testing

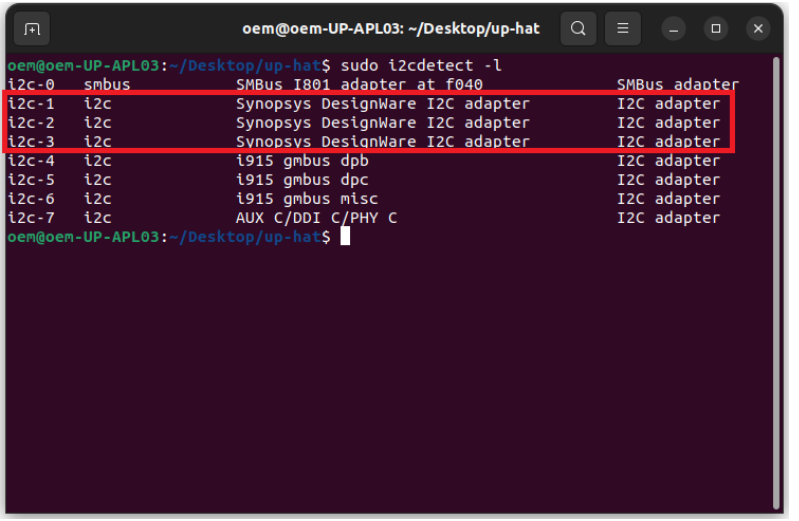
To detect the I2C address of the ADXL345 module, follow these wiring and setup instructions.

Wiring Instructions:

- Connect the jumper wire as follows:
  1. Pin 1 (Ground) to GND on the ADXL345 module.
  2. Pin 8 (3.3V) to VCC on the ADXL345 module.
  3. Pin 4 (I2C_SDA0) to SDA on the ADXL345 module.
  4. Pin 5 (I2C_SCL0) to SCL on the ADXL345 module.

Install and run i2cdetect tool:

```
sudo apt-get -y install i2c-tools
sudo i2cdetect -l
```



Test the Synopsys DesignWare I2C adapter (replace [I2CBUS] with the specific bus number identified from the previous command):

```
sudo i2cdetect -y -r [I2CBUS]
```

The ADXL345 module should appear at the default I2C address, 0x53.

3.1.4 PWM

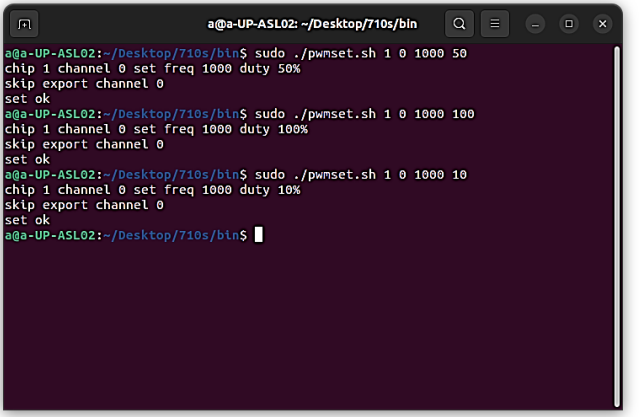
Installation

Run the following command to install the PWM setup:

```
sudo ./install.sh
```

To test PWM functionality, refer to the bin file:

```
sudo ./pwmset.sh <chip> <channel> <frequence> <duty>(0~99)
```

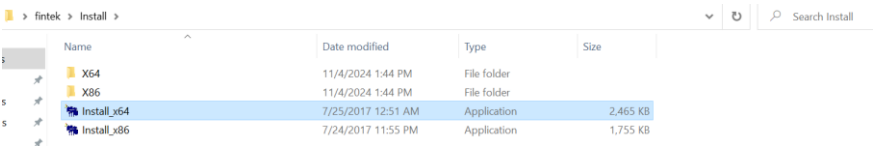


3.2 Windows Setup

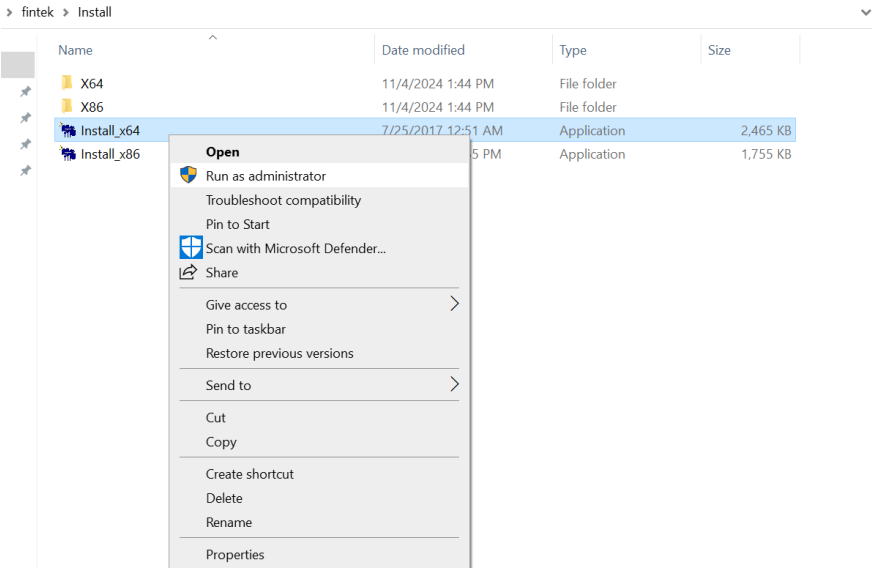
Drivers for the UP 710S Edge can be downloaded from the UP website by following the link https://www.aaeon.com/en/product/detail/up-system-up-710s-edge/download

3.2.1 GPIO Installation

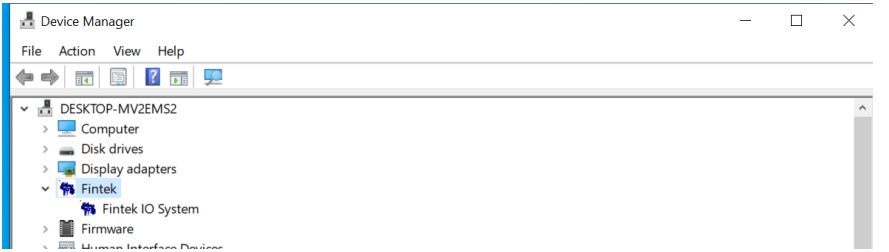
1. Enter the "**install**" folder.



2. Right-click and select "**Run as administrator**" to install driver.

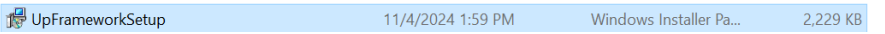


3. When installation is complete, open device manager to locate device:

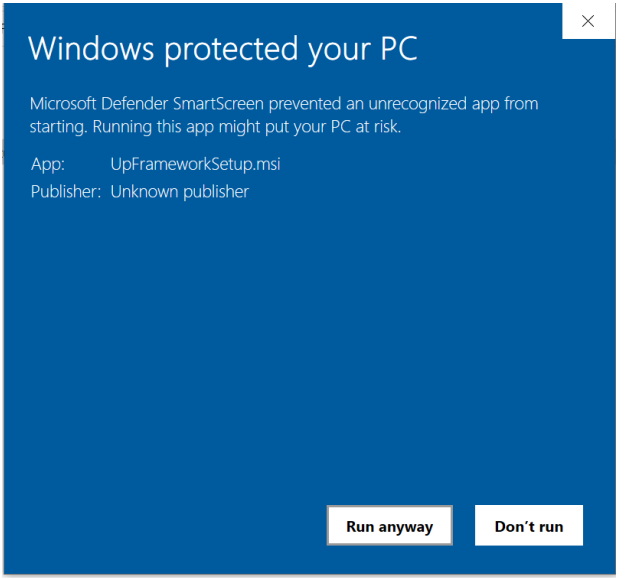


3.2.2 UPFramework Setup

1. Download driver and double-click to install

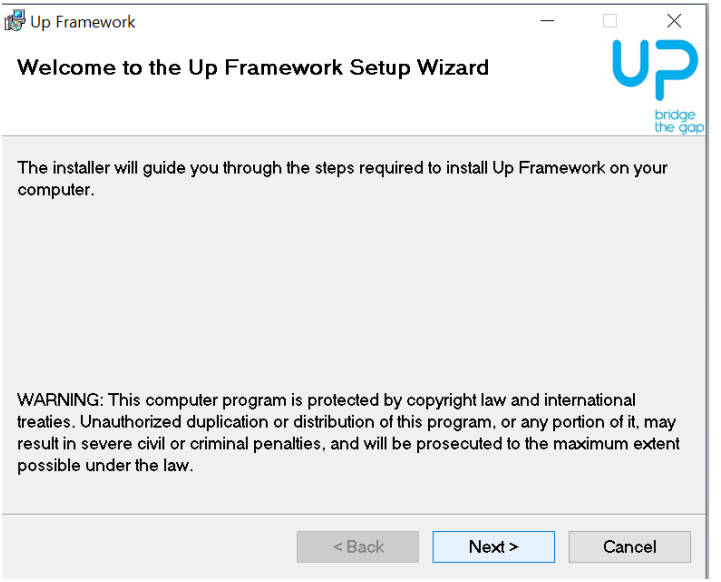


2. Click "**Run anyway**"



3. Locate the downloaded UpFrameworkSetup.msi file and run the installer.

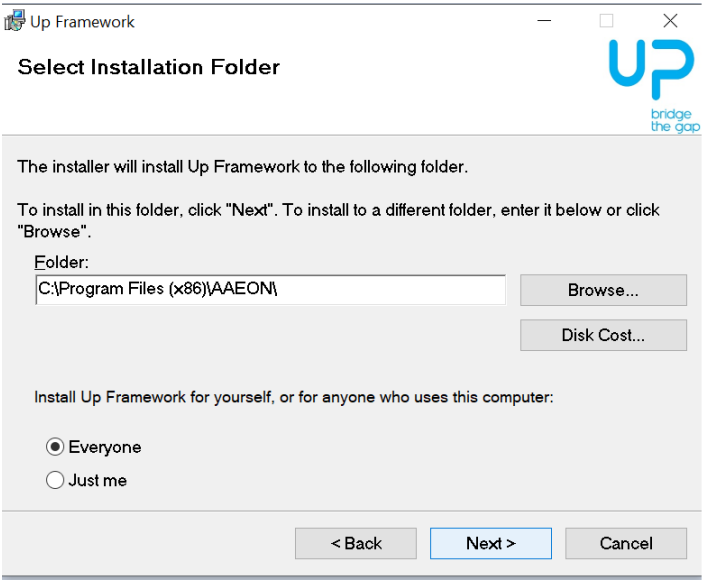
   Press "Next" to begin the setup process.



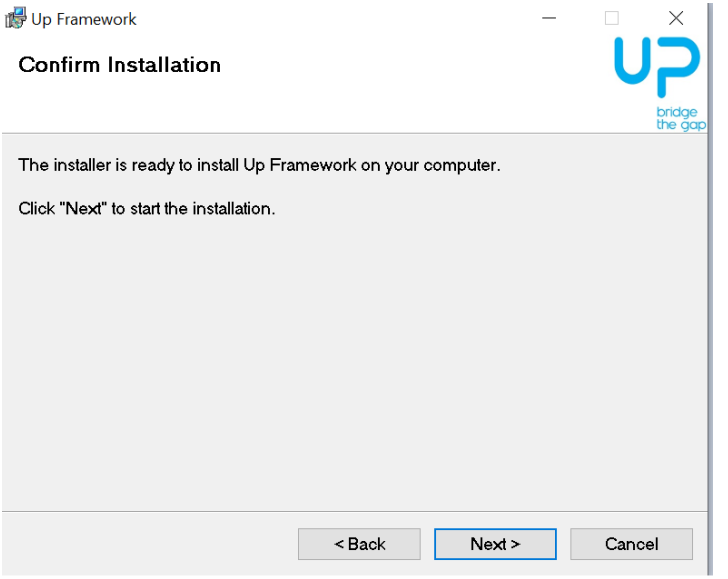
4. Select the installation folder.

   Default destination path is C:\Program Files(x86)\AAEON\.

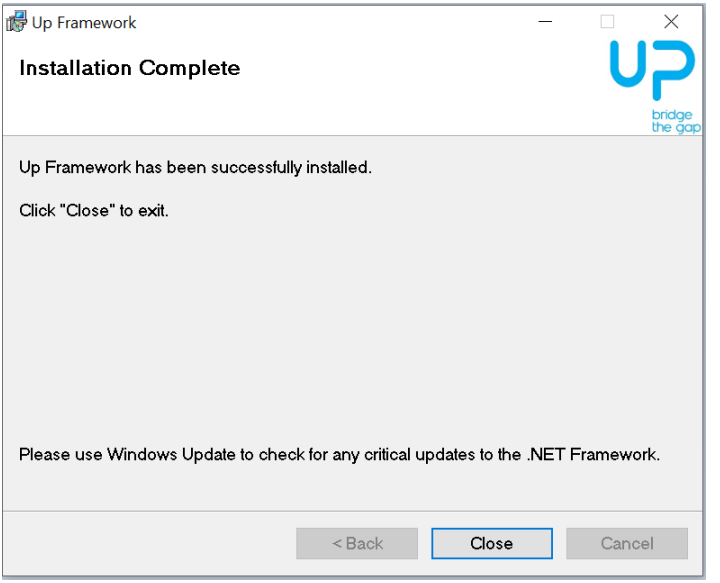
   You may also choose to install the UP Framework SDK for all users or only the current user. Press "Next" to continue installation.



5. Press "Next" to confirm the installation.



Press "Close" to exit once setup is complete.



6. When installation is complete, open device manager to locate device:

Appendix A

Cables and Connectors

A.1 Cables and Connectors

This table provides detailed information about the cables and connectors used by the UP 710S Edge. If you have any questions about the configuration of your system, please contact your AAEON sales representative.

Label	Function	Mating Connector		Cable
		Vendor	Model No.	AAEON P/N
COM1	COM Port	PINREX	710-74-10TWRG.NY9T	1701100180
GPIO	GPIO	PINREX	710-74-10TWRG.NY9T	
I2C_PWM	I2C+PWM	PINREX	710-74-08TWR6	
SPI	SPI	PINREX	710-74-10TWRG.NY9T	