

EMU-210

IoT Gateway User's Manual



Manual Rev.: 1.0

Revision Date: June 20, 2024

Part No: 50M-19701-1000

Revision History

Revision	Release Date	Description of Change(s)
1.0	2024-06-20	Initial release

Preface

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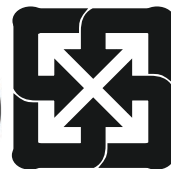
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Battery Labels (for products with battery)



Li-ion



廢電池請回收

California Proposition 65 Warning



WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris(1,3-dichloro-2-propyl)phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



NOTE:

Additional information, aids, and tips that help users perform tasks.



CAUTION:

Information to prevent **minor** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



WARNING:

Information to prevent **serious** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

The EMU-210 IoT Energy Gateway provides communication conversion between different Ethernet or serial-based protocols allowing for wider integration of devices into a network with the ability to send data to the cloud. It is designed to work under a large variety of applications such as monitoring energy consumption, electric vehicle charging control and monitoring, renewable energy monitoring, and smart manufacturing.

The EMU-210 is an i.MX8M Plus based high-performance IoT gateway with a Quad Core processor open platform design, two RS-232/422/485 isolated serial ports, two 10/100/1000 Ethernet ports, two USB 3.0 port and an operating temperature range of -20~70°C. It offers two M.2 slots for integrating Wi-Fi/4G/5G modules. The EMU-210 enables system integrators to develop applications precisely for renewable energy, EV charging, smart cities and factories that require massive data collection, a cloud-based application and video related monitoring solutions.

1.1 Features

- ▶ NXP i.MX8M Plus Cortex A53 Quad Core 1.8GHz
- ▶ LPDDR4 2GB RAM, 32GB eMMC for system storage
- ▶ 2x RS-232/422/485 isolated serial ports
- ▶ 2x 10/100/1000 Ethernet ports
- ▶ 1x M.2 E-key for Wi-Fi
- ▶ 1x M.2 B-key for 5G or 4G/LTE
- ▶ Operating Temperature: -20°C to 70°C

1.2 Packing List

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK. Ensure that the following items are included in the package.

- ▶ 1x EMU-210 IoT Gateway
- ▶ DIN rail mount kit with 2x flat head screws
- ▶ Wall mount kit with 4x pan head screws
- ▶ Quick Start Guide

1.3 Optional Accessories

- ▶ 12V/240W power adaptor (P/N: 31-62164-0010-A0)
- ▶ 24V/90W power adapter (P/N: 31-62187-1000-A0)

1.4 Specifications

Model	EMU-210
System	
Processor	i.MX8M Plus ARM Cortex A53 Quad Core 1.8GHz
Memory	LPDDR4 2GB
Main Storage	32 GB eMMC
Storage Slot	1x microSD
TPM	TPM2.0
RTC	Monthly difference max.180 sec.
WDT	Supported
I/O Interfaces	
Ethernet	2x GbE
Serial Ports	2x RS-232/422/485, 4-wire
USB	2x USB 3.0 Type-A
Display	1x HDMI
Wi-Fi/BT	1x M.2 E-key
Expanded I/F	1x M.2 B-key (USB 3.0) for 5G or 4G/LTE
Mechanical	
Dimensions	110.90 (L) x 40 (W) x 131.4 (H) mm
Mounting	DIN rail kit / wall mount kit
Housing	Metal, IP40
Cooling	Fanless
Power Supply	
DC Input	12-24V DC
Environmental	
Operating Temperature	-20°C to 70°C
Storage Temperature	-25°C to 80°C
Humidity	approx. 95% @ 40°C (non-condensing)

Model	EMU-210
Vibration Resistance	1. Test Standard: Referenced from IEC 60068-2-64 2. Test Mode: Random wave 3. Frequency: 5-500 Hz 4. Acceleration: 2 Grms 5. Direction: X, Y, Z axis 6. Duration: 60 min/axis
Shock Resistance	1. Test Standard: Referenced from IEC 60068-2-27 2. Acceleration: 20G 3. Pulse width: 11ms 4. System condition: Operation mode 5. Test faces: -X,-Y,-Z, X, Y, Z axis 6. Test times: 3 times per axis
Certifications	
EMC	CE / UKCA / RCM / KC / FCC EN/IEC 61000-6-4:2019; EN/IEC 61000-6-2:2019 47 CFR FCC Part 15 Subpart B, class B
UL	IEC 62368-1:2014; EN 62368-1:2014+A11:2017 UL 61010-1; CSA C22.2 No.61010-1 UL 61010-2-201; CSA C22.2 No.61010-2-201

1.5 Functional Block Diagram

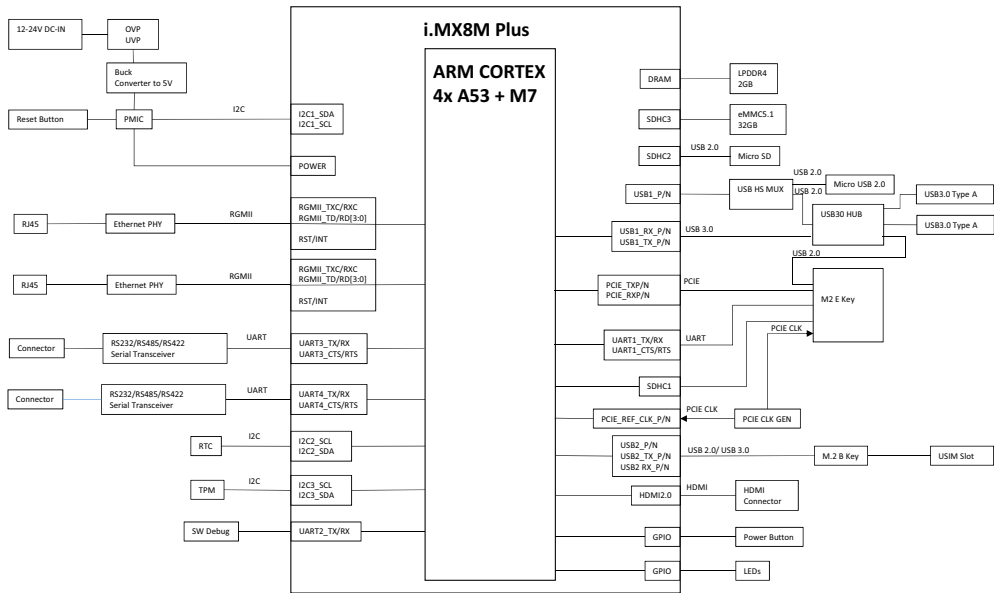


Figure 1-1: Functional Block Diagram

1.6 Mechanical Drawings



NOTE:

All dimensions are in millimeters unless noted.

1.6.1 Dimensions

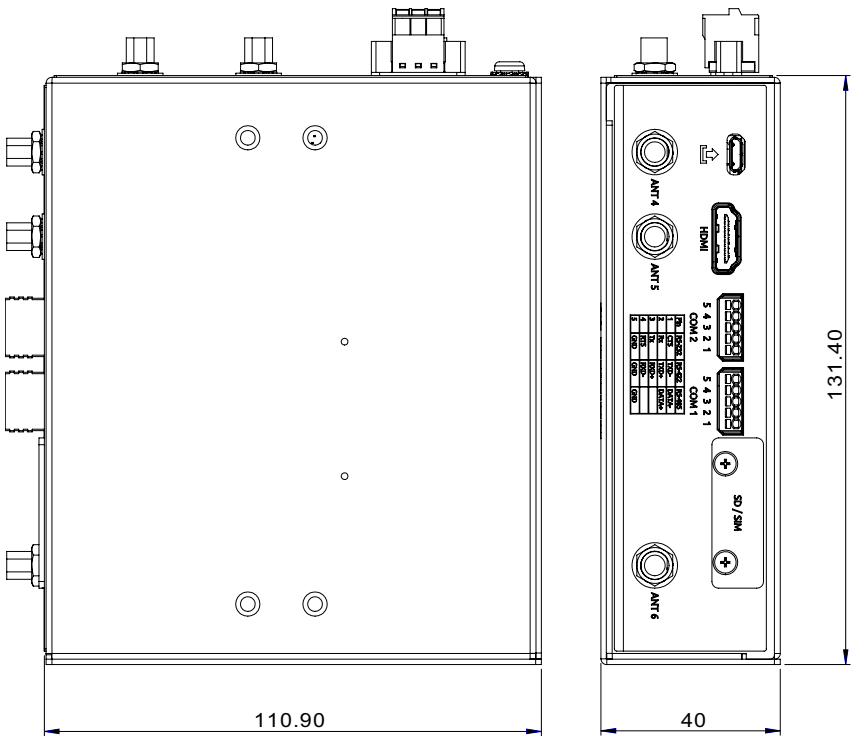


Figure 1-2: EMU-210 Dimensions

1.6.2 DIN Rail Mounting

The DIN rail mount can be attached to the EMU-210 with two screws included in the wall mounting kit.

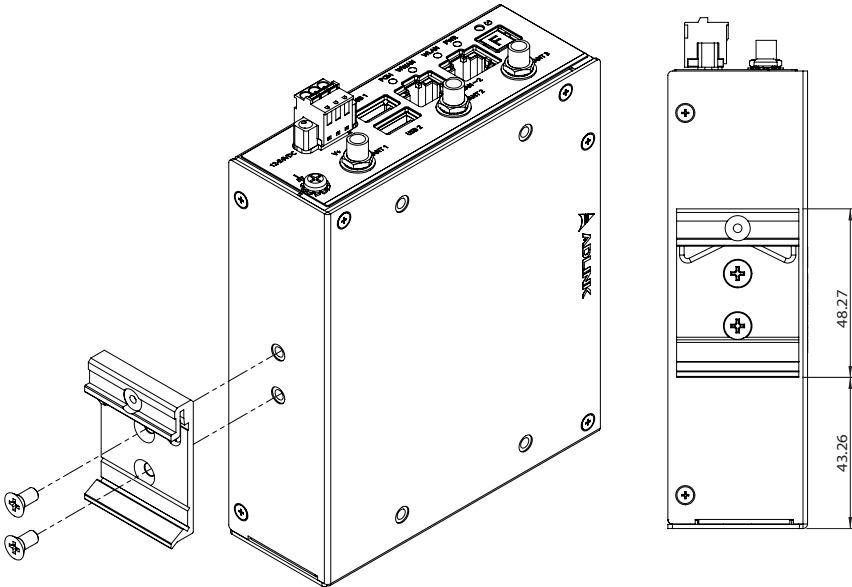


Figure 1-3: DIN Rail Mount 1

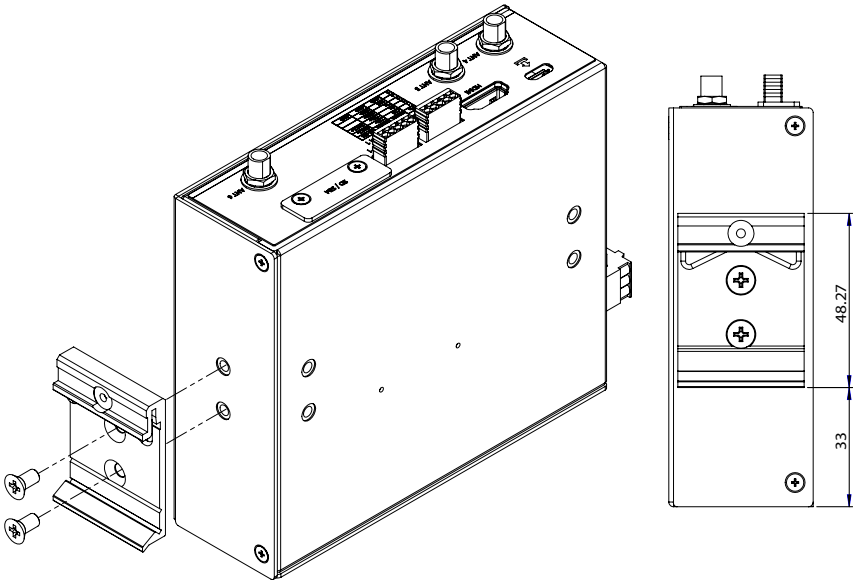


Figure 1-4: DIN Rail Mount 2

1.6.3 Wall Mounting

Each wall mount bracket can be attached to the EMU-210 with two screws included in the wall mounting kit.

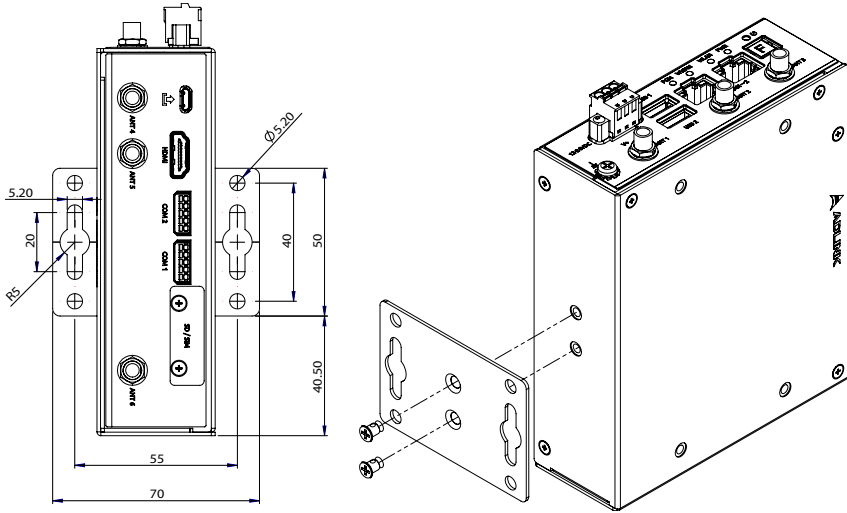


Figure 1-5: Wall Mount 1

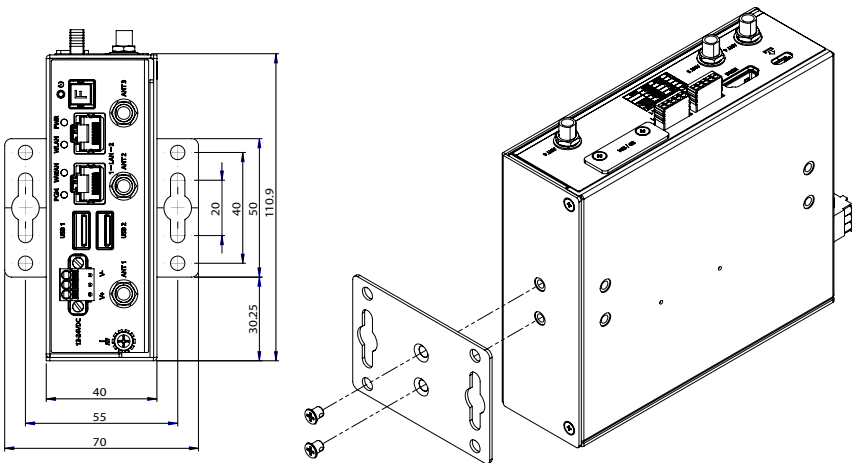


Figure 1-6: Wall Mount 2

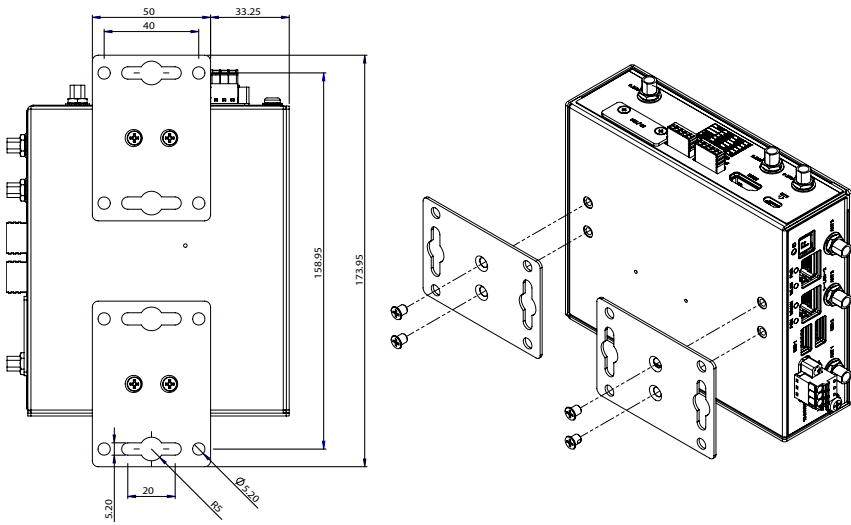


Figure 1-7: Wall Mount 3

1.7 I/O Connectors

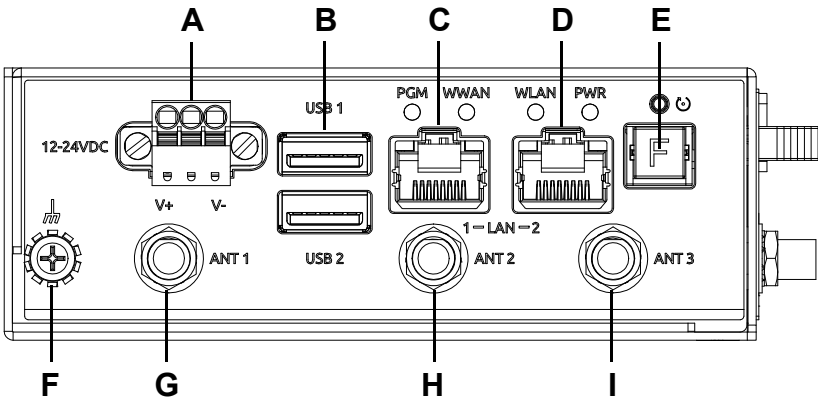


Figure 1-8: Front View

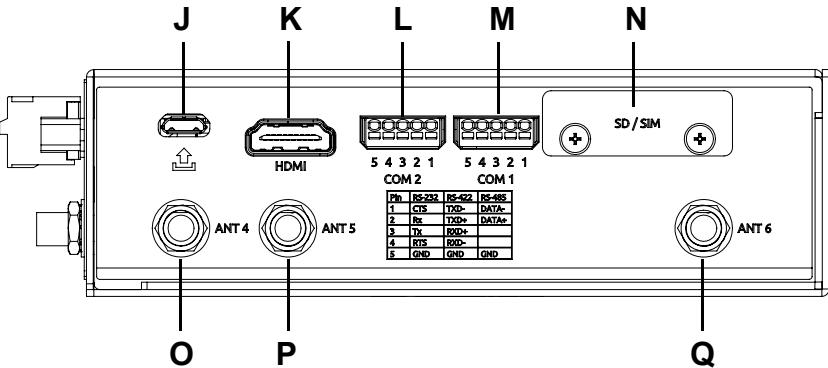


Figure 1-9: Side View

Item	Description
A	DC power input
B	USB 3.0 Type-A
C, D	Gigabit Ethernet (GbE, RJ45)
E	Function button
F	Ground screw
G, H, I, O, P, Q	Antenna connector (optional for Wi-Fi/4G/5G/GPS)
J	Micro USB Connector
K	HDMI
L, M	RS-232/422/485, 4-wire
N	microSD and SIM slot

Table 1-1: I/O Connector Legend

LED	Description
PWR LED	The LED will light up when the system is powered.
WLAN LED	When a Wi-Fi module is installed, the LED will light up after the system loads, otherwise the LED will not light up.
WWAN LED	When a 5G/4G/LTE module is installed, the LED will light up after the system loads, otherwise the LED will not light up.
PGM LED	The LED will light up when flashing the BSP to the eMMC via an SD card.

Table 1-2: I/O Connector Legend

1.7.1 DC Power Input

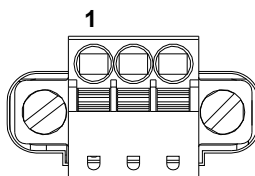


Figure 1-10: DC Power Input

Pin	Signal
1	V+ (DC_IN)
2	GND
3	V-

1.7.2 USB 3.0 Ports

The USB 3.0 Type-A ports support are compatible with SuperSpeed, Hi-Speed, full-speed and low-speed USB devices, with support for multiple boot devices, including USB flash, USB external HDD, and USB CD-ROM drivers, and boot priority and boot device configured in BIOS.

1.7.3 Gigabit Ethernet Ports

There are two Gigabit Ethernet (GbE) ports on the front panel with two MAC address. Either port can be used for connecting to a host PC

- ▶ LAN1: The default is DHCP
- ▶ LAN2: The default static IP address is 192.168.50.2

1.7.4 Reboot Button

Pressing the reboot button will cause the system to reboot.

1.7.5 Function Key

Restore the EMU-210 to factory default settings by pressing the function button until the device reboots.

Item	Default Value
username	root
password	adlink
COM Port 1	RS-485/9600/N/8/1
COM Port 2	RS-485/9600/N/8/1
LAN 1	DHCP
LAN 2	Static IP:192.168.50.2
WiFi	▶ Disconnect WiFi network connection ▶ Clean all parameters
Cellular (optional)	▶ Disconnect cellular network connection ▶ Clean all parameters

1.7.6 Antenna Ports

Antenna ports ANT1-6 support the functions listed in Appendix B: Accessory Installation on page 67.

1.7.7 HDMI Connector

An HDMI Type-A socket is provided to connect a monitor to the system.

1.7.8 Micro-SIM Slot

Insert a micro-SIM card into the slot. Make sure it is properly aligned and inserted all the way. Once the card is inserted, the EMU-210 can connect to a cellular network and access the Internet.

1.7.9 COM Port Connectors

The EMU-210 provides two COM ports through 5-pin connectors. The COM1 & COM2 ports support RS-232/422/485 modes.

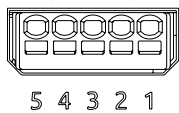


Figure 1-11: COM Port Pin Definition

Pin	Signal		
	RS-232	RS-422	RS-485
1	CTS	TXD-	DATA-
2	Rx	TXD+	DATA+
3	Tx	RXD+	
4	RTS	RXD-	
5	GND	GND	GND

Table 1-3: 5-pin Signal Function of COM Ports

1.7.10 microSD Slot

Insert a microSD card into the slot for additional storage.

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2 Getting Started

2.1 Unpacking the EMU-210

Ensure that the following items are included in the package. If any items are missing, contact your sales representative for assistance.

- ▶ EMU-210
- ▶ DIN rail mount kit with 2x flat head screws
- ▶ Wall mount kit with 4x pan head screws
- ▶ Quick Start Guide



Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK.

Déballage de la EMU-210

Assurez-vous que les éléments suivants sont inclus dans le colis. Si des éléments sont manquants, veuillez contacter votre représentant commercial pour obtenir de l'aide.

- ▶ EMU-210
- ▶ Kit de montage sur rail DIN avec 2 vis à tête plate
- ▶ Kit de montage mural avec 4 vis à tête cylindrique
- ▶ Guide de Démarrage Rapide



AVERTISSEMENT: Avant de déballer, vérifiez l'emballage d'expédition pour tout dommage. Si l'emballage d'expédition et/ou le contenu sont endommagés, informez immédiatement votre revendeur. Conservez l'emballage d'expédition et les matériaux d'emballage pour inspection. Obtenez l'autorisation de votre revendeur avant de retourner tout produit à ADLINK.

2.2 Connecting DC Power

DC power source output rating:

- ▶ Voltage: 12 to 24 VDC
- ▶ Current: 5A to 2.5A minimum

Follow these steps to connect power to the EMU-210:

- 1 Before turning on the power source, connect the positive and negative wires from a 12 to 24V DC power source to the terminal block.
2. Turn on the power source. If the power was connected correctly, the front panel green PWR LED will light up.



- ▶ Only use an IEC or UL certified power source.
- ▶ The maximum operating altitude is 5000m whose output meets LPS and SELV (ES1) circuits.

If the EMU-210 needs to be shut down, turn off the power source.

To remove the power wires, use a flat head screwdriver to push the orange slots on the terminal block and then pull out the wires.



- ▶ Ensure the power source is turned off before connecting or removing the power wires.
 - ▶ Before providing DC power to the apparatus, ensure the voltage and polarity provided are compatible with the DC input. Improper input voltage and/or polarity can be responsible for system damage.
-

Connexion de l'alimentation CC

Valeur nominale de sortie de la source d'alimentation CC:

- ▶ Tension: 12 à 24 VCC
- ▶ Courant: 5A à 2,5A minimum

Suivez ces étapes pour connecter l'alimentation à l'EMU-210:

- 1 Avant d'allumer la source d'alimentation, connectez les fils positifs et négatifs d'une source d'alimentation de 12 à 24 V CC au bornier.
2. Allumez la source d'alimentation. Si l'alimentation a été correctement connectée, la LED verte PWR du panneau avant s'allumera.



- ▶ Utilisez uniquement une source d'alimentation certifiée IEC ou UL.
 - ▶ L'altitude maximale de fonctionnement est de 5 000 m dont la sortie répond aux circuits LPS et SELV (ES1).
-

Si l'EMU-210 doit être arrêté, coupez la source d'alimentation.

Pour retirer les fils d'alimentation, utilisez un tournevis à tête plate pour pousser les fentes orange du bornier puis retirez les fils.



- ▶ Assurez-vous que la source d'alimentation est éteinte avant de connecter ou de retirer les fils d'alimentation.
 - ▶ Avant de fournir une alimentation CC à l'appareil, assurez-vous que la tension et la polarité fournies sont compatibles avec l'entrée CC. Une tension d'entrée et/ou une polarité incorrecte peuvent être responsables d'endommagements du système.
-

2.3 Connecting to the EMU-210

1. When power is supplied, the PWR LED will initially blink green while the system boots up, then change to a solid green indicating the device has successfully booted up.
2. Connect LAN2 of the EMU-210 to the host computer.
3. Set the network domain of the host computer to 192.168.50.xx.
4. Open a web browser (Google Chrome is recommended) on the host computer and enter <http://192.168.50.2> to access EGiFlow (Figure 3-1).
5. Enter **admin** as the username and **adlink** as the password (Figure 3-1).
6. After logging in, EGiFlow displays. (Figure 3-2).

3 EGiFlow

This chapter describes how to use the built-in EGiFlow to configure the EMU-210 and start different kind of applications.

3.1 EGiFlow Login

After the EMU-210 has been successfully powered on, access EGiFlow via one of the default following options.

Option 1: With a host PC connected to the EMU-210 LAN2 port, do the following:

1. Set the host PC's network setting to Static IP mode.
2. Modify the host PC's IP address to be on the same network segment as the device (192.168.50.x).
3. Open a web browser (Google Chrome is recommended) on the host PC to access EGiFlow: <http://192.168.50.2>, or enter the EMU-210 hostname in the address bar (e.g., <http://emu210-2361100lba.local/>)

Option 2: With a host PC connected to the EMU-210 LAN1 port, do the following:

1. Set the host PC's network setting to DHCP mode.
2. Open a web browser (Google Chrome is recommended) on the host PC to access EGiFlow by entering the EMU-210 hostname in the address bar (e.g., <http://emu210-2361100lba.local/>)

Option 3: Connect the LAN1 port of the EMU-210 to a network component (switch/router) with DNS functionality:

1. Set the host PC's network setting to DHCP mode and connect to network component (switch/router).
2. Open a web browser (Google Chrome is recommended) on the host PC to access EGiFlow by entering the EMU-210 hostname in the address bar (e.g., <http://emu210-2361100lba.local/>)

A unique default hostname is generated for each EMU-210 device and can be found on the label of the chassis it was shipped in. The hostname can be changed from EGiFlow (default username: **admin**, default password: **adlink**).

 **ADLINK**
LEADING EDGE COMPUTING

Username

Username

Password

⊗Password

Sign In

Figure 3-1: EGiFlow Login Page

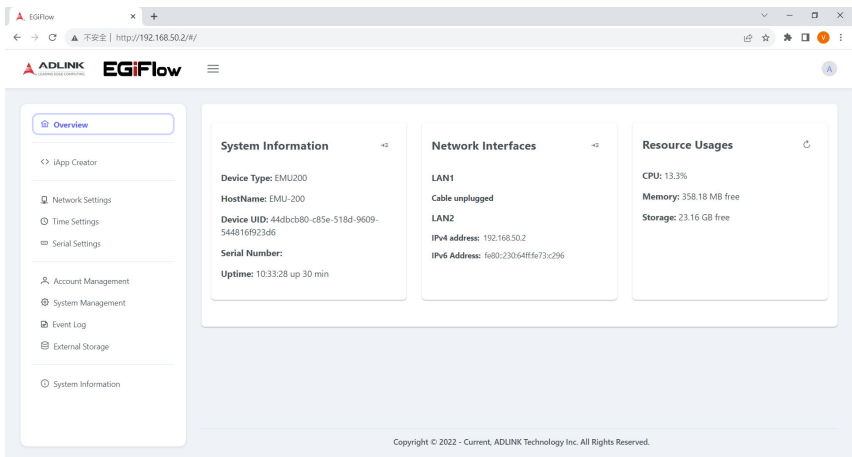


Figure 3-2: EGiFlow Main Page

3.2 EGiFlow Menu

EGiFlow includes the following items for configuration and protocol translation in different field applications.

- ▶ EGiFlow iApp
 - ▷ Modbus TCP/RTU to AWS and Azure
 - ▷ Modbus TCP/RTU to MQTT
 - ▷ Modbus TCP/RTU to RESTful
 - ▷ Modbus RTU to Modbus TCP
 - ▷ OPCUA to AWS
- ▶ Python iApp
 - ▷ Development
 - ▷ Deploy and Run
- ▶ Gateway Configuration & Management
 - ▷ Network Setting (LAN) (IPv4 IPv6)
 - ▷ Network Setting (WiFi) (IPv4 IPv6)"
 - ▷ Network Setting (Cellular) (IPv4 IPv6)"
 - ▷ Time Sync Setting, NTP
 - ▷ Account Management
 - ▷ System Management
 - ▷ Event Log
 - ▷ External Storage
 - ▷ System Information
 - ▷ Serial Settings

3.2.1 EGiFlow iApp

EGiFlow iApp provides an intuitive and straightforward configuration method, allowing the EMU-210 to acquire the required sensor data for measurement through various communication protocols. It then converts and transmits the data to various services, including edge servers, local SCADA, or the cloud, for applications such as energy monitoring in buildings, factories, smart factories, and for energy storage monitoring.

Below are a few commonly used scenarios to illustrate how to create and use EGiFlow iApp to complete the conversion and data transmission of various communication protocols.

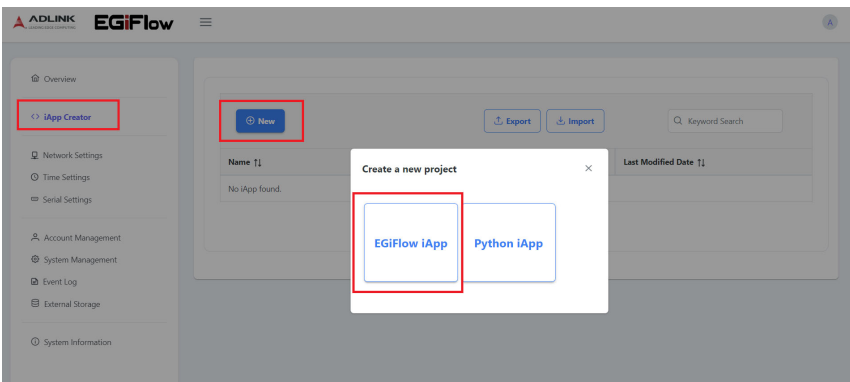


Figure 3-3: Create EGiFlow iApp

Modbus TCP/RTU to AWS and Azure

The overall architecture of the application is shown below, aiming to acquire sensor data from the Modbus interface and send it to cloud services such as Azure and AWS.

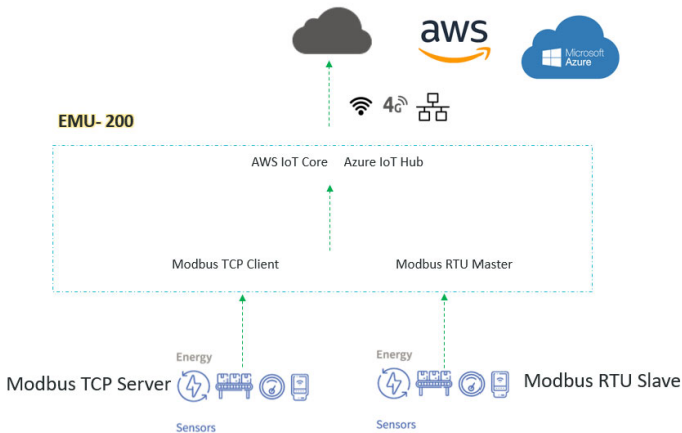


Figure 3-4: Modbus TCP/RTU to Cloud

To achieve this, you can utilize EGiFlow iApp as a middleware component.

- 1. Modbus TCP Client (Master):** Use EGiFlow iApp's intuitive setup to create and configure the Modbus TCP client (master) functionality. Specify the Modbus server's IP address, port number, and other necessary parameters. EGiFlow iApp provides an interface to define the data registers to be read from the Modbus server.

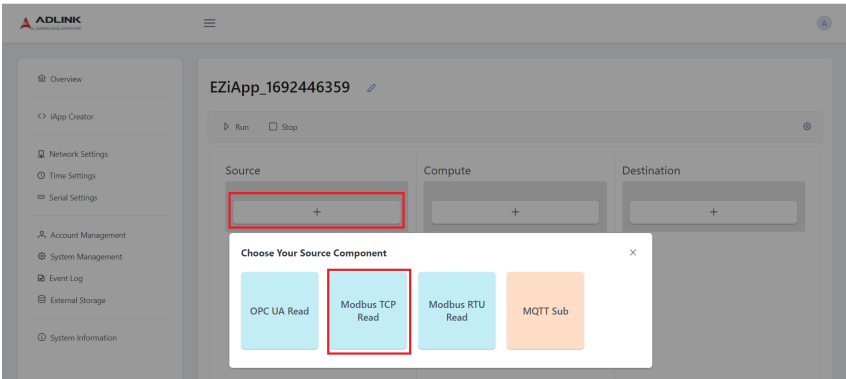


Figure 3-5: Create Modbus TCP

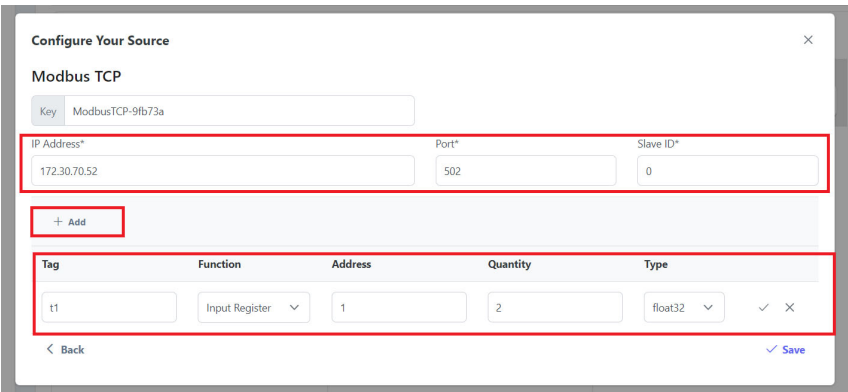


Figure 3-6: Configure Modbus TCP

- 2. **Modbus RTU Master:** Use EGiFlow iApp's setup to create and configure the Modbus RTU Master functionality. Determine the serial parameters required for communication, such as baud rate, parity, data bits, and stop bits. EGiFlow iApp provides an interface to define the data registers to be read from the Modbus slave.

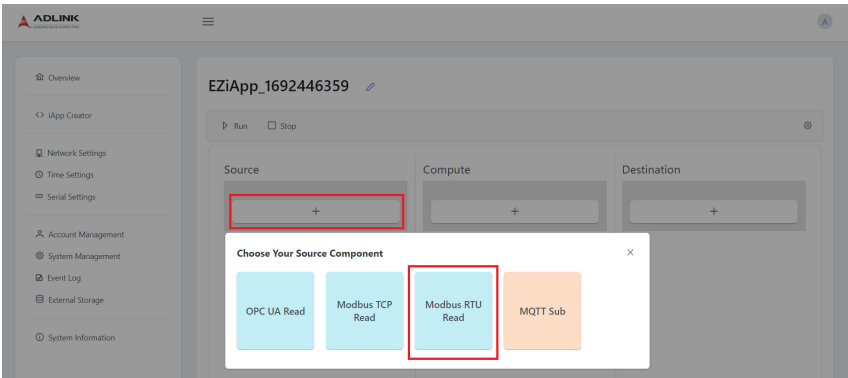


Figure 3-7: Create Modbus RTU

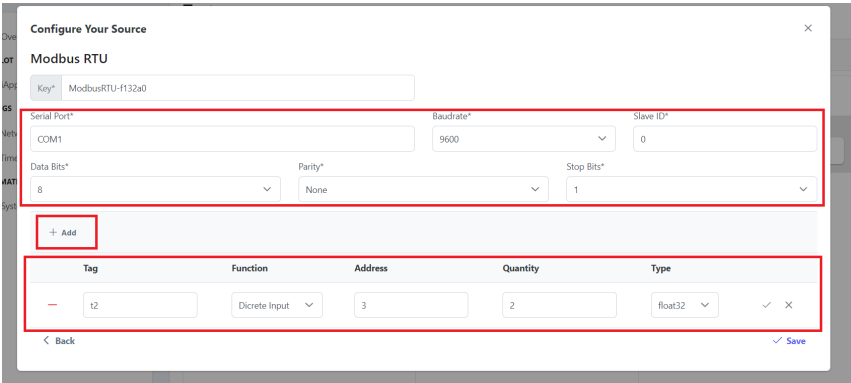


Figure 3-8: Configure Modbus RTU

3. **Data Conversion by Compute:** Upon receiving the sensor data from the Modbus server/slave, EGiFlow iApp can perform any required data conversions or formatting as per the specific requirements of Azure and AWS. This may include transforming the data into the appropriate format, applying data preprocessing or aggregation, and ensuring compatibility with the cloud service APIs.

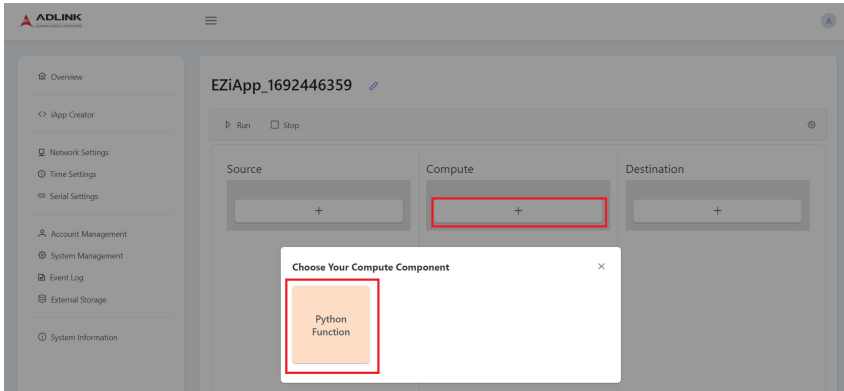


Figure 3-9: Create Compute

Configure Your Compute



Python Function

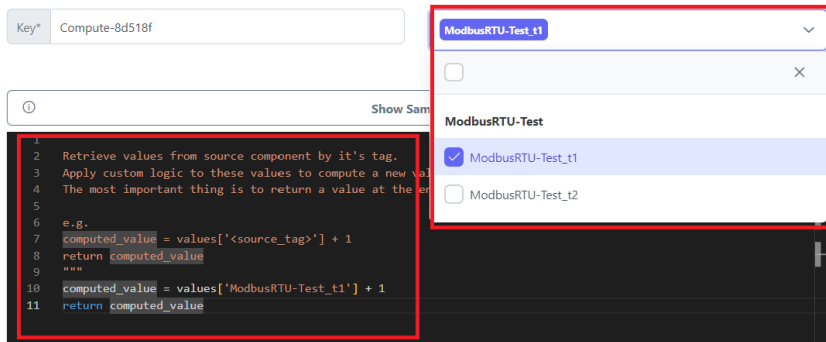


Figure 3-10: Develop Customized Data Conversion

4. **Data Transmission to Azure:** EGiFlow iApp can utilize Azure IoT Hub to securely transmit the converted sensor data. It establishes a connection with Azure and publishes the data to the desired Azure endpoint.

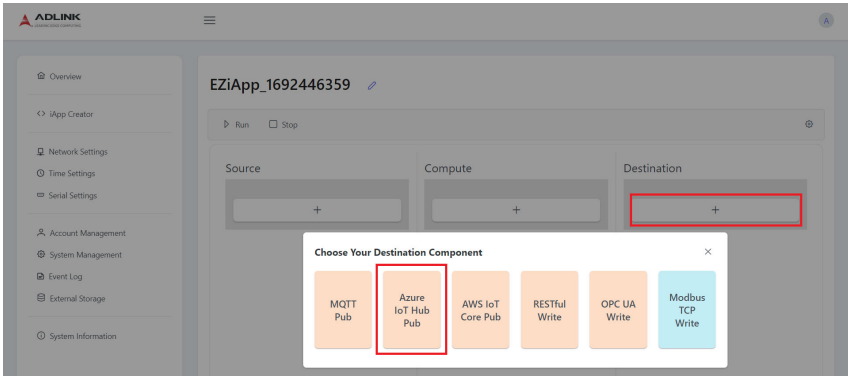


Figure 3-11: Create Azure

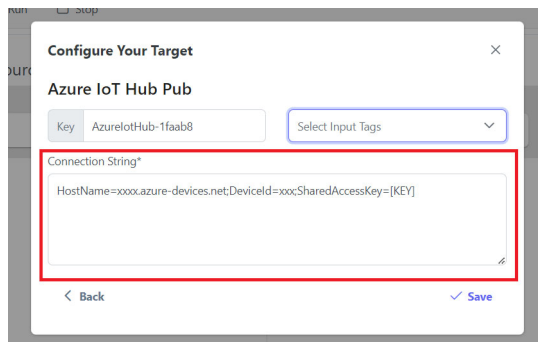


Figure 3-12: Configure Azure

5. **Data Transmission to AWS:** Similarly, EGIFlow iApp can leverage AWS IoT Core to securely transmit the converted sensor data. It establishes a connection with AWS and publishes the data to the desired AWS end-point.

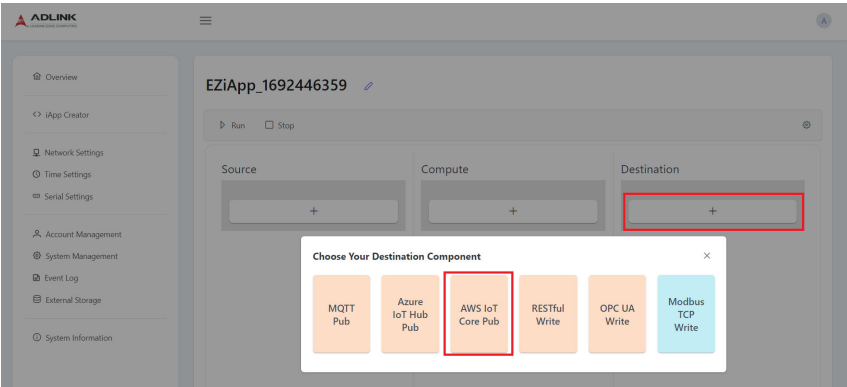


Figure 3-13: Create AWS

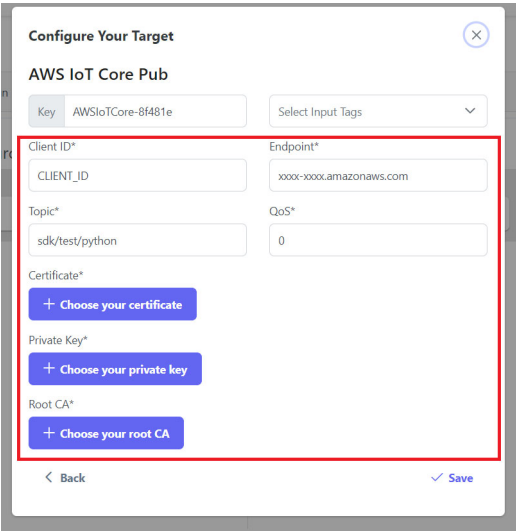


Figure 3-14: Configure AWS

6. **Run and Deploy:** Click **Run** and wait for the deployment to finish.

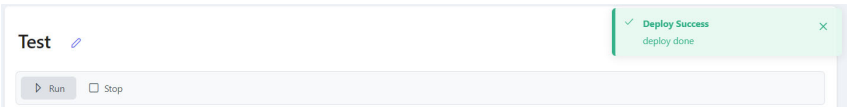


Figure 3-15: Run and Deploy

Modbus TCP/RTU to MQTT

The overall architecture of the application is in Figure 3-16, with the objective of acquiring sensor data from the Modbus interface and transmitting it via MQTT to an Edge Server or Local SCADA.

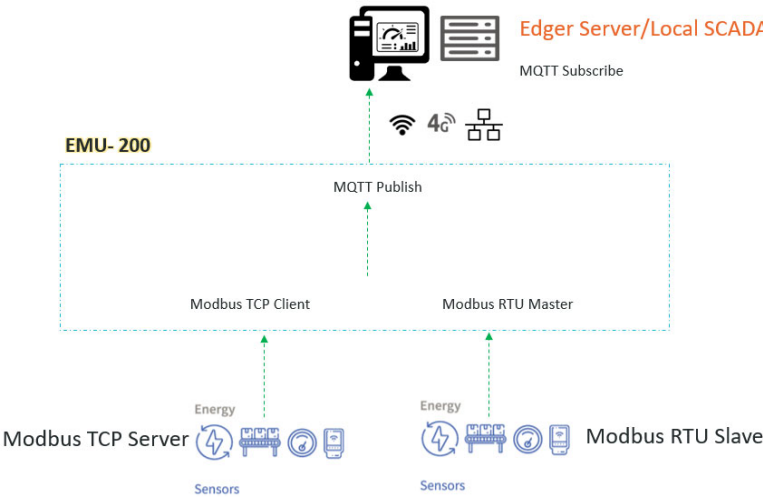


Figure 3-16: Modbus TCP/RTU to MQTT

To accomplish this, you can follow the steps below using EGiFlow iApp:

1. **Modbus TCP Client (Master):** Use EGiFlow iApp's setup to create and configure the Modbus TCP client (master) functionality. Specify the Modbus server's IP address, port number, and other necessary parameters. EGiFlow iApp provides an interface to define the data registers to be read from the Modbus server. (See Figure 3-5 and Figure 3-6)
2. **Modbus RTU Master:** Use EGiFlow iApp's setup to create and configure the Modbus RTU Master functionality. Determine the serial parameters required for communication, such as baud rate, parity, data bits, and stop bits. EGiFlow iApp provides an interface to define the data registers to be read from the Modbus slave. (See Figure 3-7 and Figure 3-8)
3. **Data Conversion by Compute:** Upon receiving the sensor data from the Modbus server/slave, EGiFlow iApp can perform any necessary data conversion or formatting to ensure compatibility with MQTT. This may involve transforming the data into a suitable format, applying any required preprocessing or aggregation, and ensuring adherence to the MQTT payload structure. (See Figure 3-10)

4. **MQTT Communication:** EGiFlow iApp integrates MQTT functionality to connect to an MQTT broker. It establishes a connection with the broker and publishes the converted sensor data as MQTT messages. The MQTT broker can be located on the Edge Server or within the Local SCADA environment.

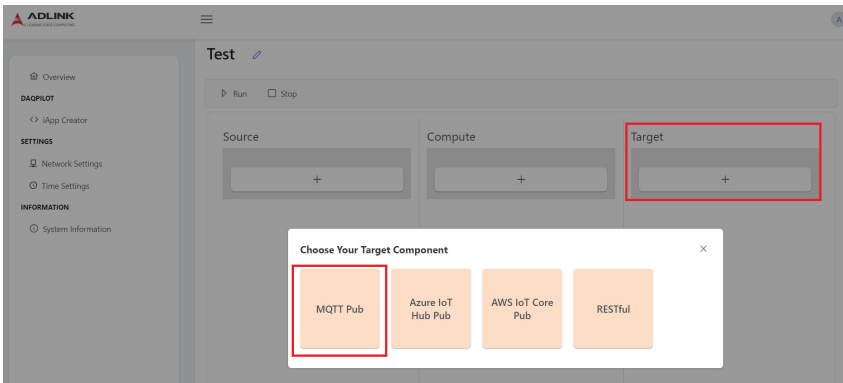


Figure 3-17: Create MQTT Publish

Configure Your Destination ×

MQTT Pub

Key* Compute-427f98

Broker Address* Topic*

Username Password

< Back ✓ Save

Figure 3-18: Configure MQTT Publish

5. **Run and Deploy:** Click **Run** and wait for the deployment to finish. (See Figure 3-15)

Modbus TCP/RTU to RESTful

The overall architecture of the application is in Figure 3-19, with the objective of acquiring sensor data from the Modbus interface and transmitting it via RESTful API to an Edge Server or Local SCADA.

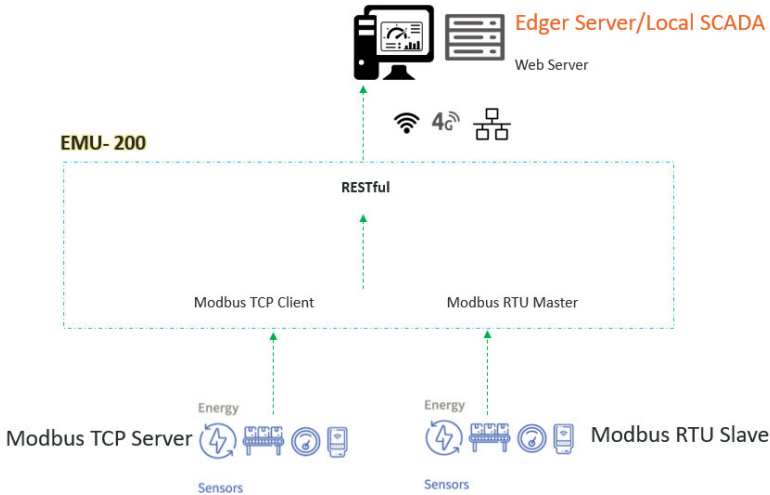


Figure 3-19: Modbus TCP/RTU to RESTful

To achieve this, you can follow the steps below using EGiFlow iApp:

1. **Modbus TCP Client (Master):** Use EGiFlow iApp's setup to create and configure the Modbus TCP client (master) functionality. Specify the Modbus server's IP address, port number, and other necessary parameters. EGiFlow iApp provides an interface to define the data registers to be read from the Modbus server. (See Figure 3-5 and Figure 3-6)
2. **Modbus RTU Master:** Use EGiFlow iApp's setup to create and configure the Modbus RTU Master functionality. Determine the serial parameters required for communication, such as baud rate, parity, data bits, and stop bits. EGiFlow iApp provides an interface to define the data registers to be read from the Modbus slave. (See Figure 3-7 and Figure 3-8)

3. **Data Conversion by Compute:** Upon receiving the sensor data from the Modbus server/slave, EGiFlow iApp can perform any required data conversion or formatting to prepare it for RESTful API transmission. This may involve transforming the data into a compatible format, applying preprocessing or aggregation, and organizing it according to the RESTful API payload structure. (See Figure 3-9)
4. **RESTful API Communication:** EGiFlow iApp integrates RESTful API functionality to connect to the Edge Server or Local SCADA system. It establishes an HTTP/HTTPS connection with the designated API endpoint and sends the converted sensor data as RESTful API requests. The API endpoint should be configured to receive and process the incoming data accordingly.

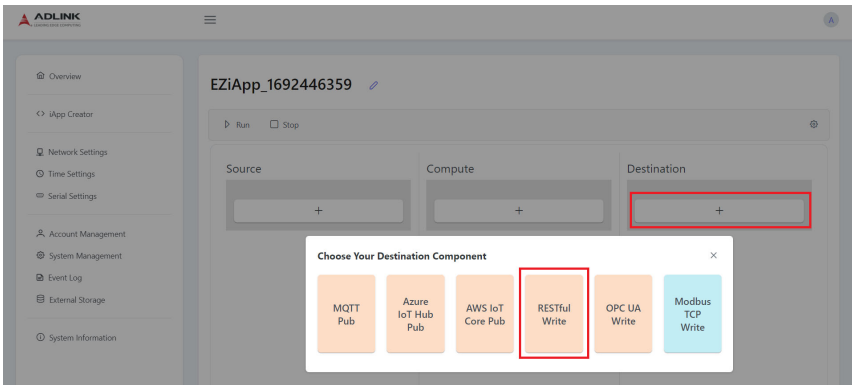


Figure 3-20: Create RESTful

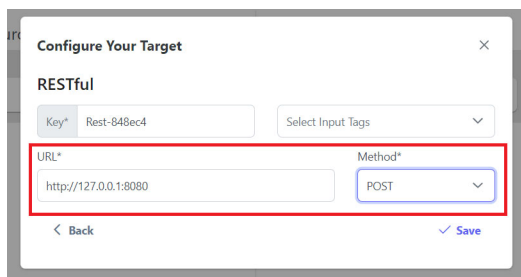


Figure 3-21: Configure RESTful

5. **Run and Deploy:** Click **Run** and wait for the deployment to finish. (See Figure 3-15)

Modbus RTU to Modbus TCP

The overall architecture of the application, as shown in Figure 3-22, aims to convert Modbus RTU to Modbus TCP.

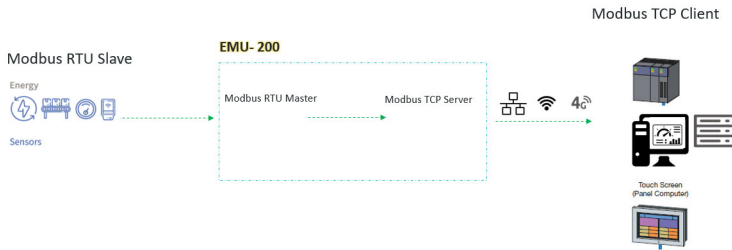


Figure 3-22: Modbus RTU to Modbus TCP

1. **Modbus RTU Master:** Use EGiFlow iApp's setup to create and configure the Modbus RTU Master functionality. Determine the serial parameters required for communication, such as baud rate, parity, data bits, and stop bits. EGiFlow iApp provides an interface to define the data registers to be read from the Modbus slave. (See Figure 3-7 and Figure 3-8)

- 2. **Modbus TCP Conversion:** Modbus RTU requests are recieved from the RTU devices and converted into Modbus TCP requests.

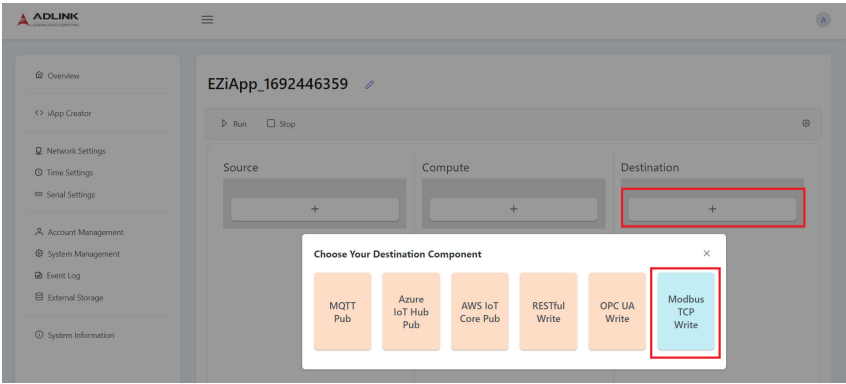


Figure 3-23: Create Modbus TCP Write

Configure Your Destination ✕

Modbus TCP Write

Key: ModbusTcpWrite-4c9334

IP Address*
127.0.0.1

Port*
502

Slave ID*
0

Test Connection ▶

+ Add

Tag	Function	Address	Quantity	Input Tag
t1	Holding Registers (HR) ▾	1	1	ModbusRTU-Test_t1 ▾
t2	Holding Registers (HR) ▾	2	1	ModbusRTU-Test_t2 ▾

< Back ✓ Save

Figure 3-24: Configure Modbus TCP Write

OPC UA to AWS

The overall architecture of the application is in Figure 3-25.

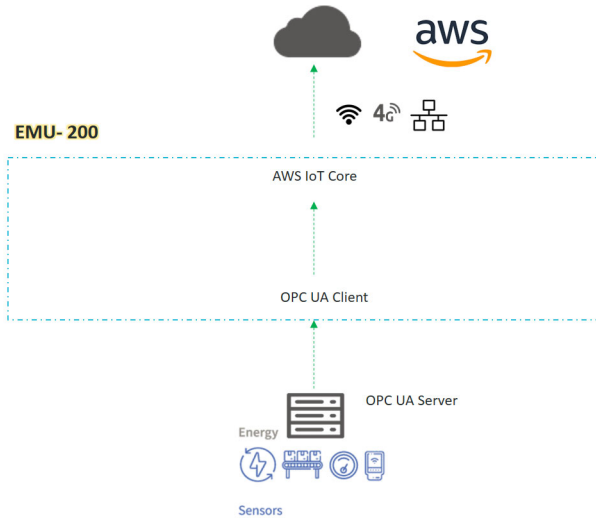


Figure 3-25: OPC UA to AWS

To achieve this, you can follow the steps below using EGiFlow iApp:

1. **OPC UA Client:** Use EGIFlow iApp's intuitive setup to create and configure the OPC UA client functionality. Specify the OPC UA server's IP address, port number, and other necessary parameters. EGIFlow iApp provides an interface to browse node information from the server.

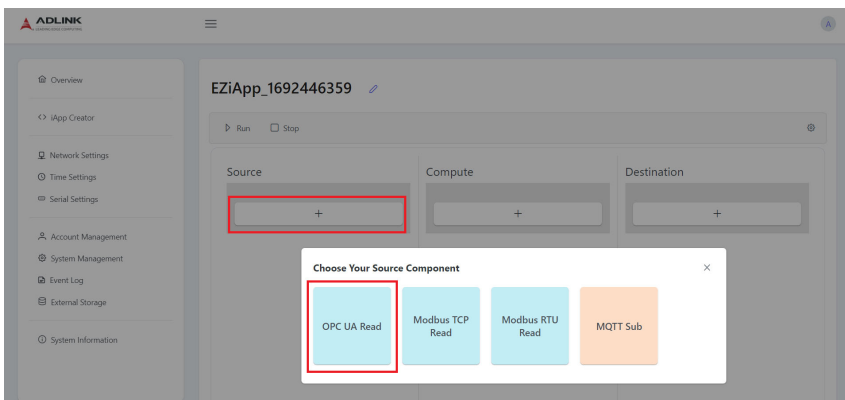


Figure 3-26: Create OPC UA

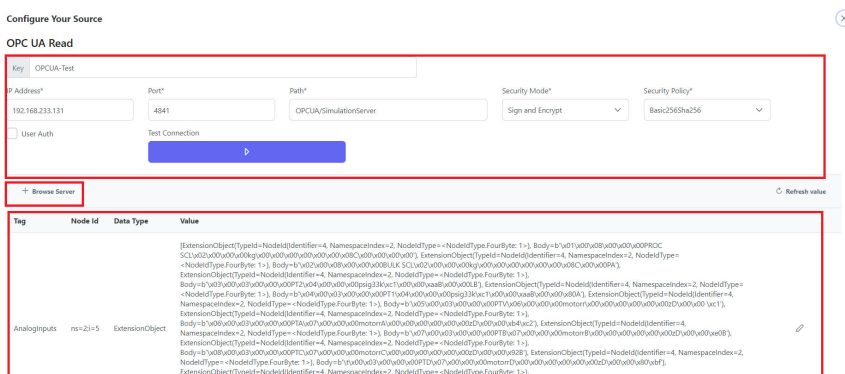


Figure 3-27: Configure OPC UA

2. **Data Conversion by Compute:** Use EGiFlow iApp's setup to create python functions, import OPC UA server data from the drop-down menu, reference sample code or write your own algorithms.

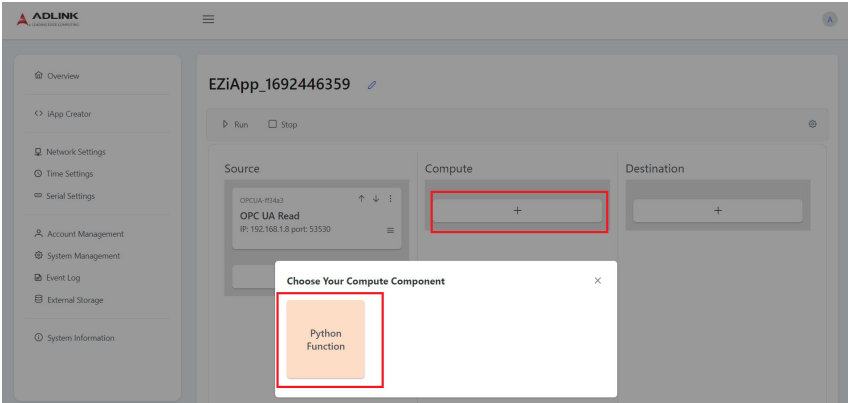


Figure 3-28: Create Compute

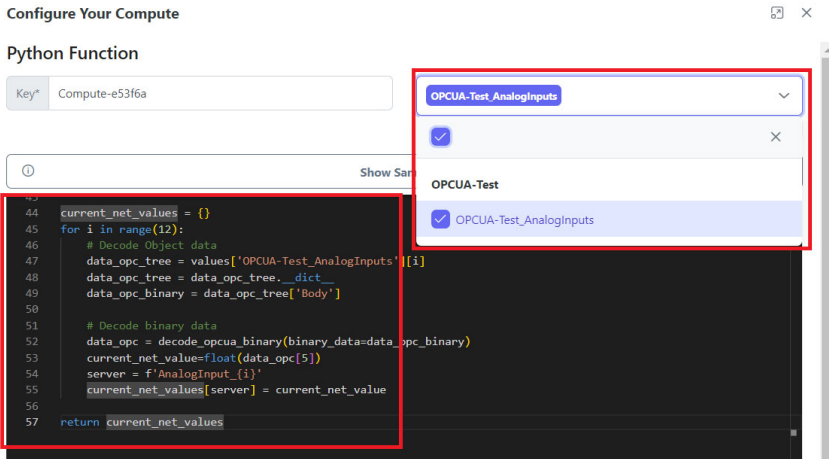


Figure 3-29: Develop Customized Data Conversion

3. **Data Transmission to AWS:** Establishes a connection with AWS and publishes data to the desired AWS endpoint.

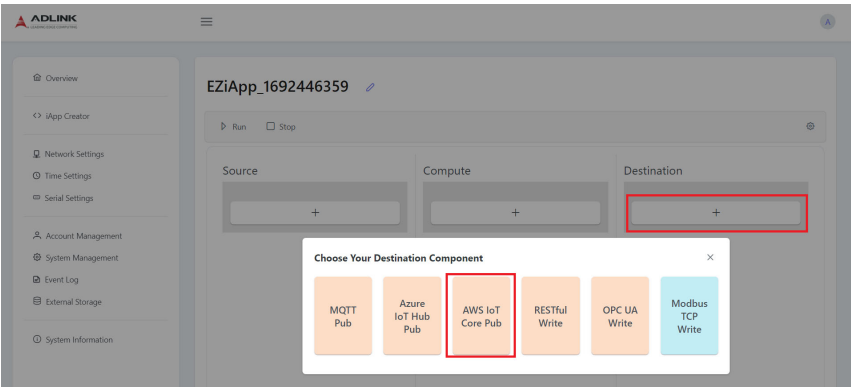


Figure 3-30: Create AWS

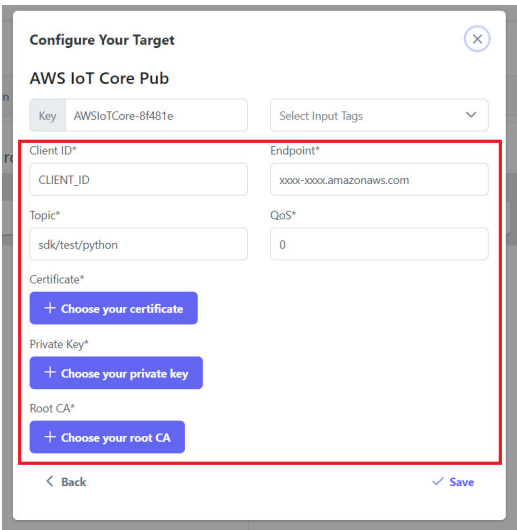


Figure 3-31: Configure AWS

4. **Run and Deploy:** Click **Run** and wait for the deployment to finish. (See Figure 3-15)

3.2.2 Python iApp

This section includes a tutorial on how to create an iApp before deployment. iApps are saved in a repository and can be deployed to devices.

1. **Create and Development:** Click **iApp Creator** from the left sidebar and select **Python iApp**.
2. Select an iApp template and enter a name for it and then click **Create**. After creation, the a new iApp will be automatically loaded into the editor where it can be edited as necessary.

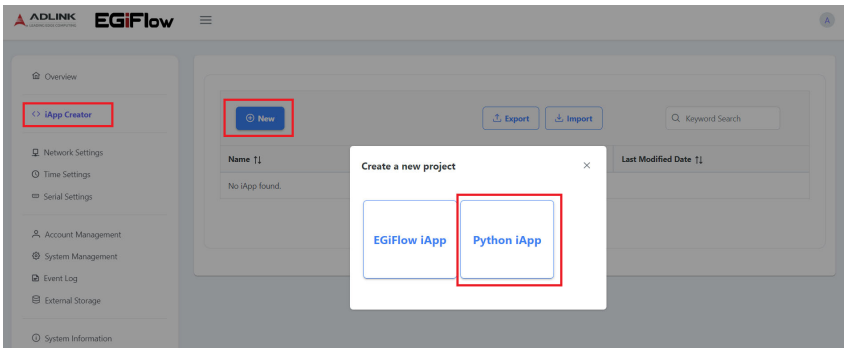


Figure 3-32: Create Python iApp

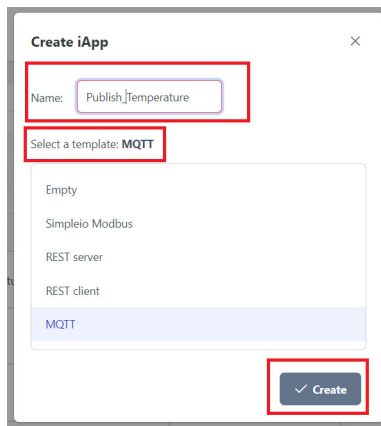


Figure 3-33: Select a template and enter a name

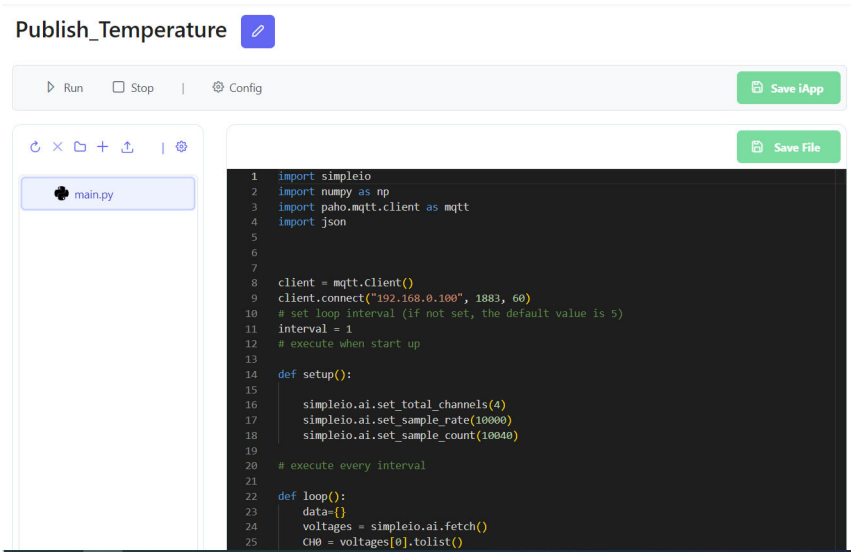


Figure 3-34: The new iApp can be edited

3. **Run and Deploy:** Click **Run** and wait for the deployment to finish.

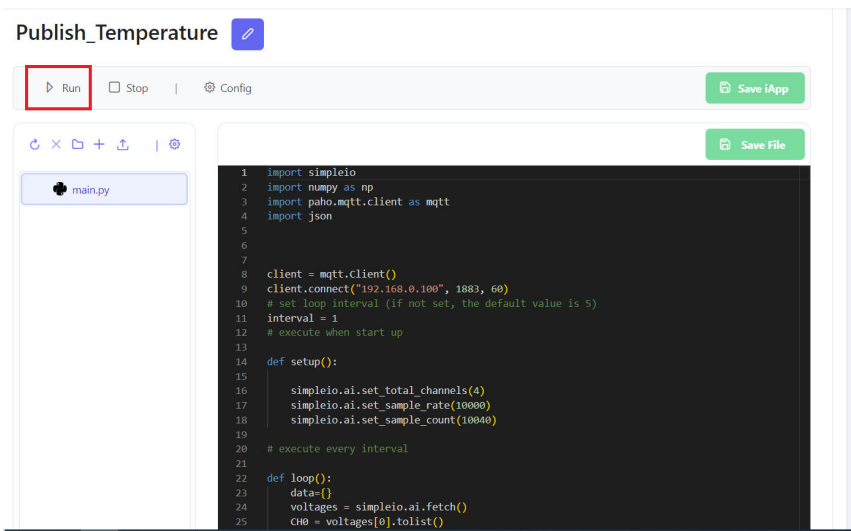


Figure 3-35: Run a new iApp

3.2.3 Gateway Configuration & Management

LAN Network Settings

The EMU-210 has two Ethernet ports that can be configured to support IPv4 and IPv6 network modes.

1. Open the **Network Settings** page.

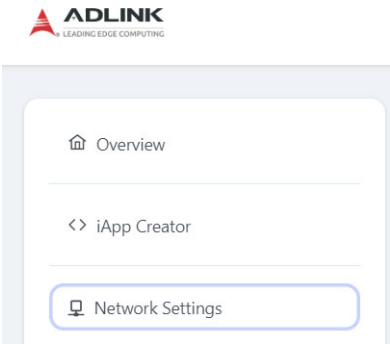


Figure 3-36: Network Settings

2. Select a LAN Port to set the wired network information.

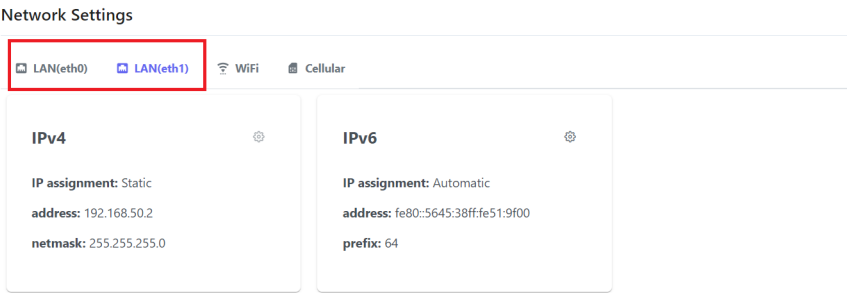


Figure 3-37: Select LAN Port

3. Configure the DHCP or static IP settings.

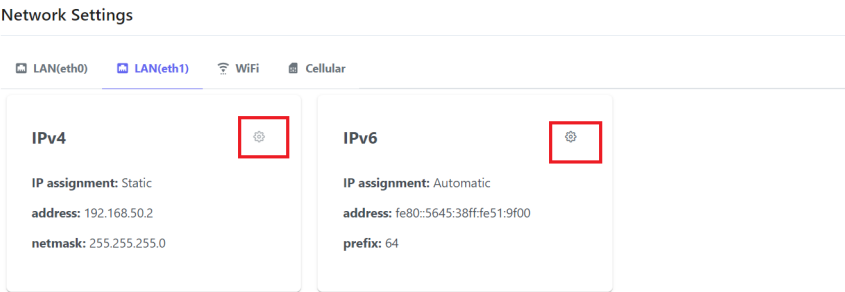


Figure 3-38: Configure LAN Port

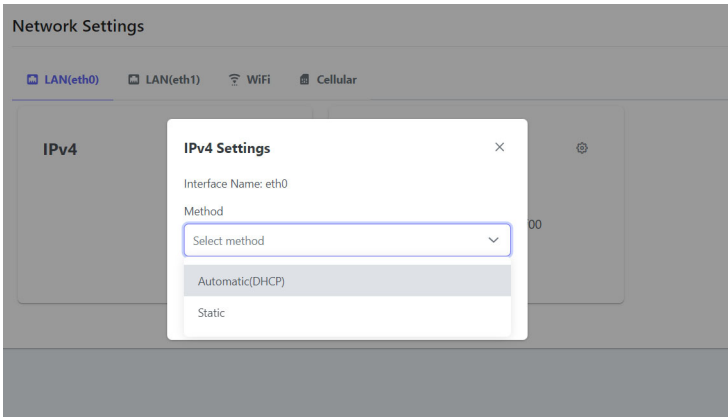
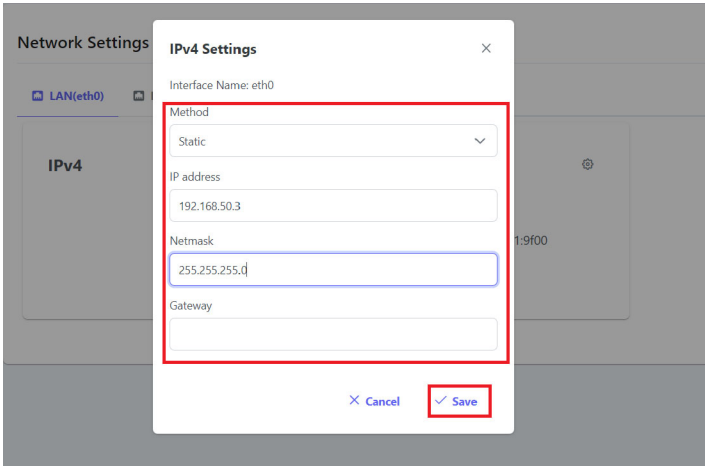
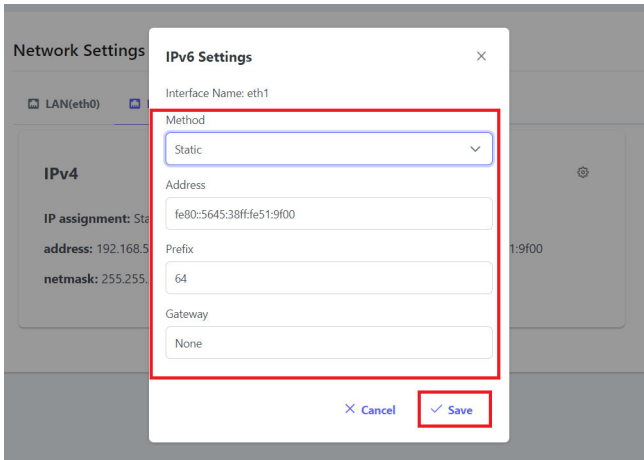


Figure 3-39: Select DHCP or Static



The screenshot shows the 'IPv4 Settings' dialog box in a network configuration application. The dialog is titled 'IPv4 Settings' and has a close button (X) in the top right corner. It contains the following fields: 'Interface Name: eth0', 'Method' (a dropdown menu set to 'Static'), 'IP address' (192.168.50.3), 'Netmask' (255.255.255.0), and 'Gateway' (empty). At the bottom, there are 'Cancel' and 'Save' buttons. A red rectangular box highlights the 'Method' dropdown, the 'IP address' field, the 'Netmask' field, and the 'Save' button. The background shows a 'Network Settings' window with 'LAN(eth0)' selected and an 'IPv4' section.

Figure 3-40: Configure Static IP (IPv4)



The screenshot shows the 'IPv6 Settings' dialog box in a network configuration application. The dialog is titled 'IPv6 Settings' and has a close button (X) in the top right corner. It contains the following fields: 'Interface Name: eth1', 'Method' (a dropdown menu set to 'Static'), 'Address' (fe80:5645:38ff:fe51:9f00), 'Prefix' (64), and 'Gateway' (None). At the bottom, there are 'Cancel' and 'Save' buttons. A red rectangular box highlights the 'Method' dropdown, the 'Address' field, the 'Prefix' field, and the 'Save' button. The background shows a 'Network Settings' window with 'LAN(eth0)' selected and an 'IPv4' section.

Figure 3-41: Configure Static IP (IPv6)

4. For DNS settings, The DNS server will be used first.

IPv4 Settings

Interface Name: eth1

Method: Static

IP address: 192.168.50.2

Netmask: 255.255.255.0

Gateway:

DNS Server:

Cancel Save

Figure 3-42: DNS Settings (IPv4)

WiFi Network Settings

Similar to the Ethernet port, the WiFi network client mode also supports IPv4 and IPv6 network mode settings.

1. Open the **Network Settings** page.

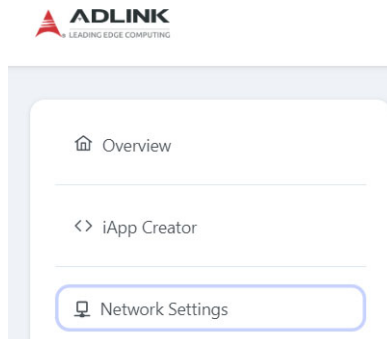


Figure 3-43: Network Settings

2. Select to set WiFi network information.

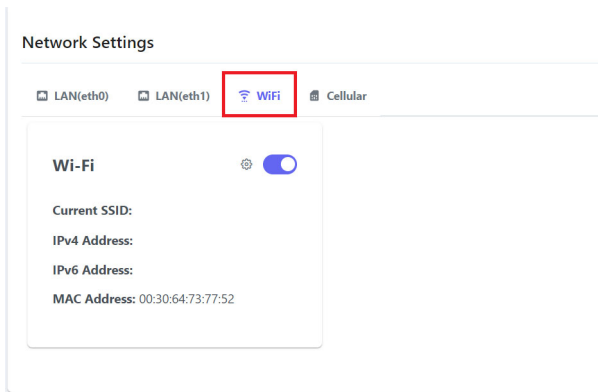


Figure 3-44: WiFi Network Information

3. Users need to select the Country Code, SSID name and security of the WLAN to join the network.

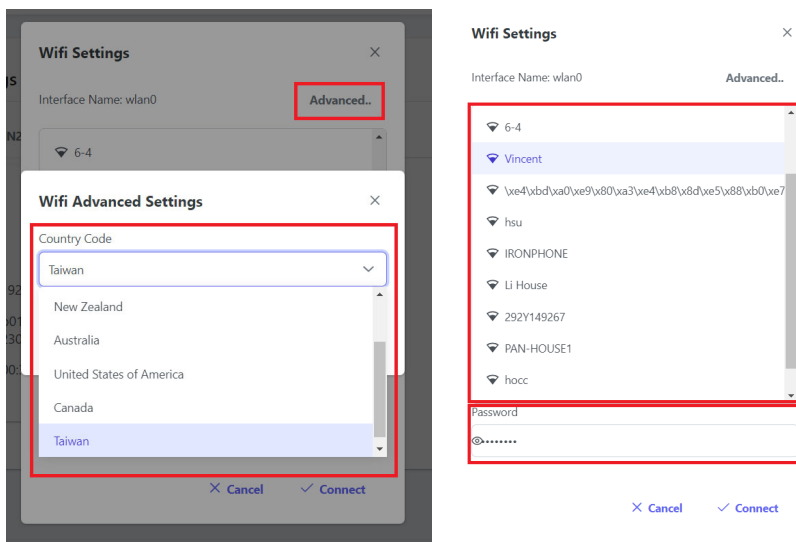


Figure 3-45: Select Country Code and SSID Name

4. Click **Apply** to complete the configuration.

Cellular Network Settings (Optional)

1. Open the **Network Settings** page, and select to set Cellular network information.

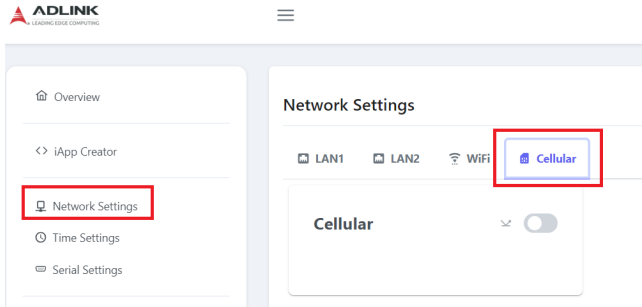


Figure 3-46: Cellular Network

2. Make sure the system has a 5G/4G/LTE module and SIM card installed, and then enable the cellular network.

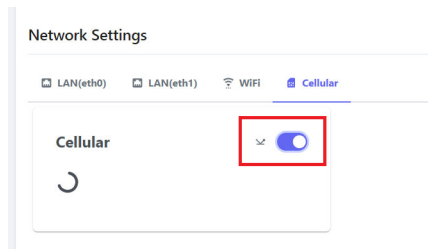


Figure 3-47: Enable Cellular Network

Time Sync Setting, NTP

Users can adjust the time synchronization settings.

1. Double click **Time Settings** to enter the configuration page.

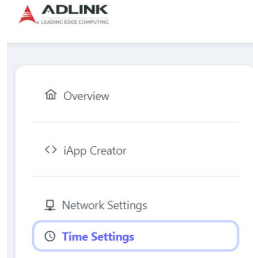


Figure 3-48: Select Time Settings

2. The selection of **synchronization with the NTP server** allows the device to synchronize with a source, and the address of the source can be a domain name or an IP address.

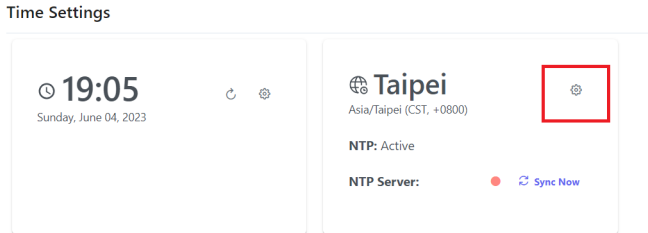


Figure 3-49: Configure Time Settings

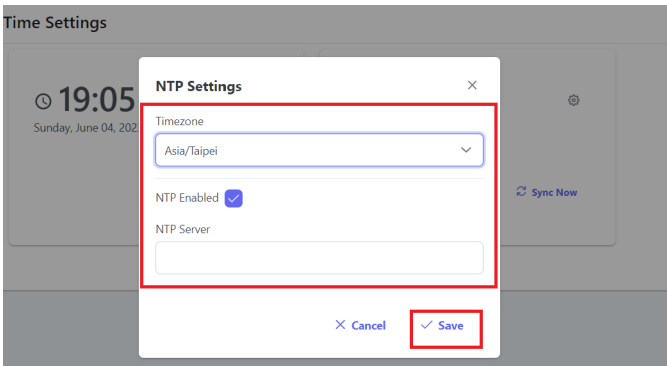


Figure 3-50: Configure NTP Settings

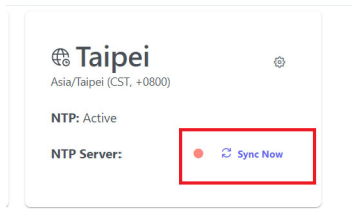


Figure 3-51: Synchronize Time

- 3. Check **serve as a NTP server** to enable the device to be a time synchronization source for other devices to synchronize their time with this device.

Serial Settings

This page manages serial settings.

1. Double click **Serial Settings** to enter the configuration page.

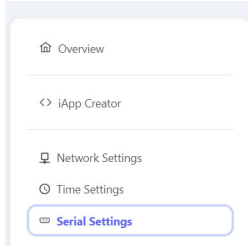


Figure 3-52: Serial Settings

2. Select the serial port to configure it.

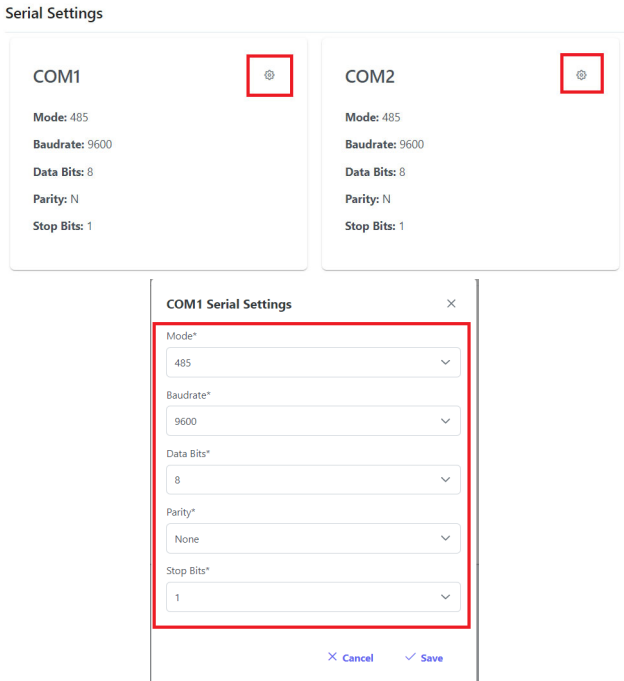


Figure 3-53: Configure Serial Port

Account Management

This page manages user accounts.

1. Double click **Account Management** to enter the configuration page.

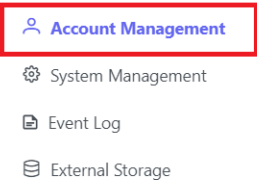


Figure 3-54: Account Management

2. Create user accounts and access privileges.

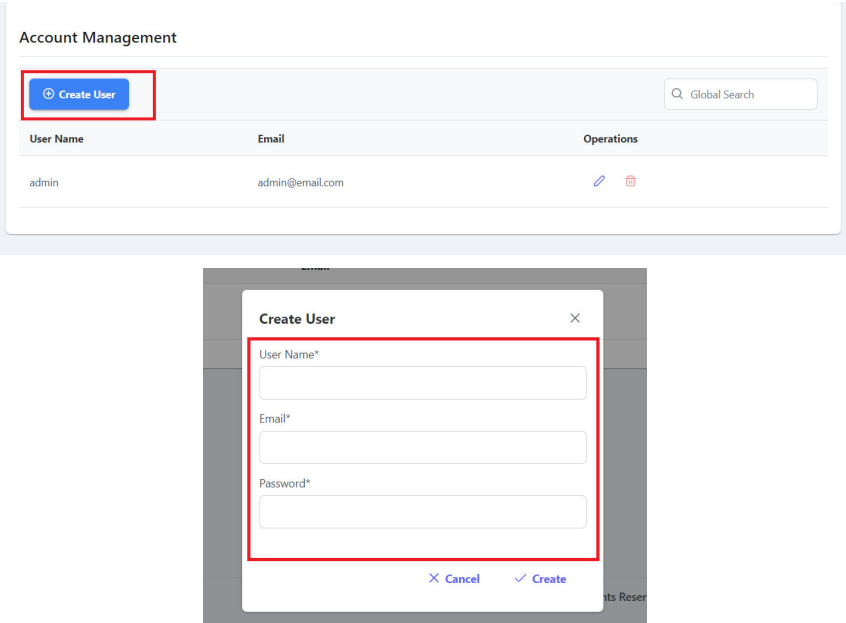


Figure 3-55: Create User Accounts

System Management

This page manages restoring to factory defaults and firmware upgrades.

1. Double click **System Management** to enter the configuration page.

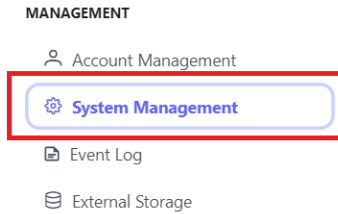


Figure 3-56: System Management

2. **Factory default:** Restores the EMU-210 to factory default settings.
3. **Firmware upgrade:** A firmware upgrade file can be uploaded to the EMU-210 through this feature. These files will periodically be provided through the product web page: https://www.adlinktech.com/Products/Industrial_IoT_and_Cloud_solutions/IoTGateway/EMU-210_Series.

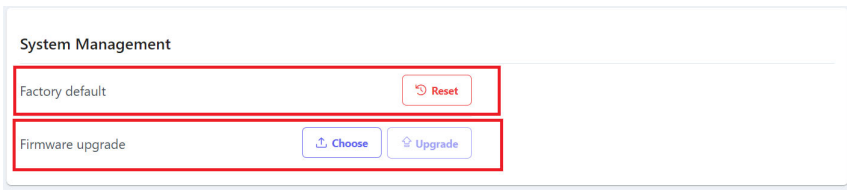


Figure 3-57: Factory Default and Firmware Upgrade

Event Log

This page manages the system log.

- 1. Double click **Event Log** to enter the page.

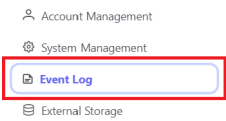


Figure 3-58: Event Log

- 2. The log information includes Date Time, Level, Module and Message.

Event Log			
Global Search			
Date Time	Level	Module	Message
2022-12-22 19:59:59	SUCCESS	Account Management	admin authenticated successfully.
2023-07-14 13:54:53	SUCCESS	Account Management	admin authenticated successfully.
2023-07-14 16:23:28	ERROR	Time Settings	NTP sync status read failed. Command 'timedatectl timesync-status' returned non-zero exit status 1.
2023-07-19 13:49:52	WARNING	Account Management	admin authenticated failed.
2023-07-19 13:50:00	SUCCESS	Account Management	admin authenticated successfully.
2023-07-19 14:11:21	ERROR	Time Settings	NTP sync status read failed. Command 'timedatectl timesync-status' returned non-zero exit status 1.
2023-07-21 17:46:01	WARNING	Account Management	admin authenticated failed.
2023-07-21 17:46:09	SUCCESS	Account Management	admin authenticated successfully.
2023-07-21 18:20:41	SUCCESS	Account Management	admin authenticated successfully.
2023-07-21 18:35:15	ERROR	Time Settings	NTP sync status read failed. Command 'timedatectl timesync-status' returned non-zero exit status 1.
<< < 1 > >>			

Figure 3-59: Event Log Information

External Storage

This page manages external storage.

1. Double click **External Storage** to enter the page.

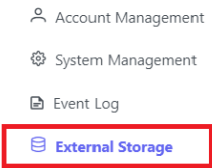


Figure 3-60: External Storage

2. Manage external storage.

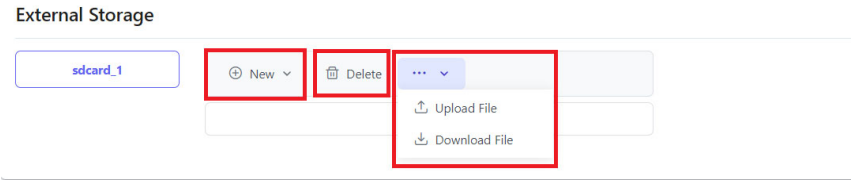


Figure 3-61: Manage External Storage

System Information

This page manages system information.

1. Double click **System Information** to enter the page.

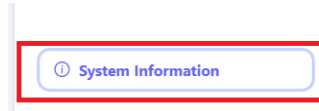


Figure 3-62: System Information

2. System information includes device information and software version.

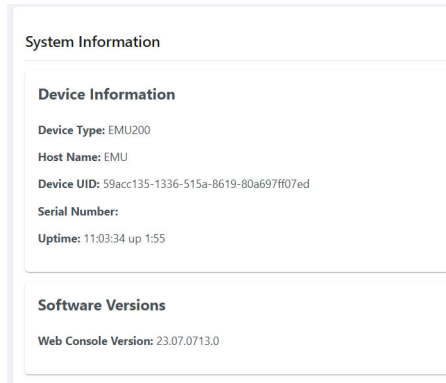


Figure 3-63: Device Information and Software Version

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Appendix A Debian Linux OS

Debian Linux is used as the EMU-210 operating system for system integrators to develop customization applications. This appendix includes information on the following items.

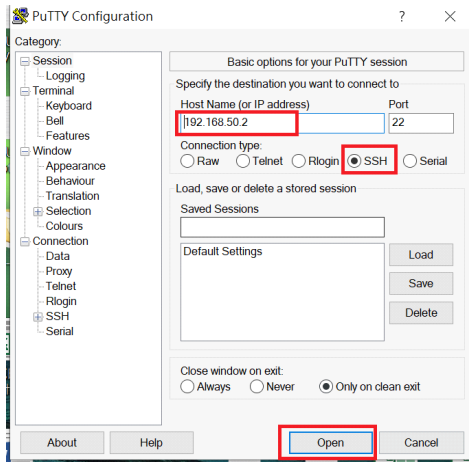
- ▶ Hardware Setup
- ▶ Connecting and Logging in via SSH
- ▶ LED Function
- ▶ Serial Port Configuration
- ▶ Network Settings
- ▶ 5G/4G/LTE Module Configuration
- ▶ WiFi Configuration and Connection

A.1 Hardware Setup

1. LAN1 (DHCP) connects to the network. LAN2 (Static IP) connects to the EMU-210 via SSH.
2. Connect the EMU-210 to a 12-24V DC power supply.
3. The EMU-210 will power on automatically.

A.2 Connecting and Logging in via SSH

1. Set the network domain of the host computer that will be connected to the EMU-210 to 192.168.50.xx.
2. Open Putty on the host computer and enter the IP address of the EMU-210: 192.168.50.2.



3. Log in with the username (**root**) and password (**adlink**).
4. You have successfully connected to the EMU-210.

```
192.168.50.2 - PuTTY
login as: root
root@192.168.50.2's password:
Linux EMU-210 5.15.52-emu-210.1v1.0.0+b11bfb49c45e #1 SMP PREEMPT Wed Mar 20 11:
01:01 CST 2024 aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Thu Mar 21 06:46:48 2024 from 192.168.50.100
root@EMU-210:~#
```

A.3 LED Function

- ▶ **PWR LED:** The LED will light up when powered.
- ▶ **WLAN LED:** When a Wi-Fi module is installed in the slot, the LED will light up after the system loads. If the hardware does not have a Wi-Fi module installed, the LED will not light up.
- ▶ **WWAN LED:** When a 5G LTE module is installed in the slot, the LED will light up after the system loads. If the hardware does not have a 5G LTE module installed, the LED will not light up.
- ▶ **PGM LED:** The LED will light up when flashing the BSP to the eMMC via an SD card.

A.4 Serial Port Configuration

Use the following commands to query the current COM1/COM2 serial settings.

```
$ cat /sys/class/gpio_switch/com1Mode
$ cat /sys/class/gpio_switch/com2Mode
```

Use the following commands to set the COM1/COM2 serial settings to RS-232/422/485.

```
$ echo RS232 > /sys/class/gpio_switch/com1Mode
$ echo RS232 > /sys/class/gpio_switch/com2Mode

$ echo RS422 > /sys/class/gpio_switch/com1Mode
$ echo RS422 > /sys/class/gpio_switch/com2Mode

$ echo RS485 > /sys/class/gpio_switch/com1Mode
$ echo RS485 > /sys/class/gpio_switch/com2Mode
```

Use the following commands to set the COM1/COM2 serial paths.

```
COM1: /dev/ttymx2
COM2: /dev/ttymx3
```

A.5 Network Settings

Use the following command to Modify LAN1 (eth0).

```
$ vi /etc/systemd/network/10-eth.network.conf
```

Use the following command to Modify LAN2 (eth1).

```
$ vi /etc/systemd/network/11-eth1.network.conf
```

A.6 5G/4G/LTE Module Configuration

1. Enter the following command to check the interface status.

```
$ nmcli d
```

```
root@EMU-210:~# nmcli d
```

DEVICE	TYPE	STATE	CONNECTION
wlan0	wifi	connected	ADLINKTECH
cdc-wdm0	gsm	disconnected	--
p2p-dev-wlan0	wifi-p2p	disconnected	--
dummy0	dummy	unmanaged	--
eth0	ethernet	unmanaged	--
eth1	ethernet	unmanaged	--
lo	loopback	unmanaged	--

2. Add a connection.

```
$ nmcli c add type gsm ifname cdc-wdm0 con-name
cellular
```

```
root@EMU-210:~# nmcli c add type gsm ifname cdc-wdm0 con-name cellular
Warning: There are 3 other connections with the name 'cellular'. Reference the connection by its uuid
'b0456del-8858-4a8a-ae0e-7fd7345f86'
Connection 'cellular' (b0456del-8858-4a8a-ae0e-7fd7345f86) successfully added.
```

3. Check the connection status.

```
$ nmcli c show cellular
```

4. Activate the connection.

```
$ nmcli c up cellular
```

```
root@EMU-210:~# nmcli c up cellular
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/6)
root@EMU-210:~#
```

5. Check if the network interface (wwan0) is present.

```
$ ifconfig
```

```
wwan0: flags=4291<UP,BROADCAST,RUNNING,NOARP,MULTICAST> mtu 1500
inet 10.131.44.140 netmask 255.255.255.248 broadcast 10.131.44.143
inet6 2001:b400:e3db:7b17:909b:f846:edf2:4278 prefixlen 64 scopeid 0x0<global>
ether da:ee:52:5e:92:7e txqueuelen 1000 (Ethernet)
RX packets 294 bytes 29244 (28.5 KiB)
RX errors 46 dropped 0 overruns 0 frame 0
TX packets 494 bytes 54865 (53.5 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

6. Perform network connectivity test (ping Google DNS).

```
$ ping -I wwan0 8.8.8.8
```

```
root@EMU-210:~# ping -I wwan0 8.8.8.8
PING 8.8.8.8 (8.8.8.8) from 10.131.44.140 wwan0: 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=55 time=1089 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=55 time=144 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=55 time=14.6 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=55 time=22.3 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=55 time=25.3 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=55 time=13.2 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=55 time=27.4 ms
64 bytes from 8.8.8.8: icmp_seq=8 ttl=55 time=14.2 ms
64 bytes from 8.8.8.8: icmp_seq=9 ttl=55 time=32.2 ms
64 bytes from 8.8.8.8: icmp_seq=10 ttl=55 time=21.4 ms
64 bytes from 8.8.8.8: icmp_seq=11 ttl=55 time=31.8 ms
64 bytes from 8.8.8.8: icmp_seq=12 ttl=55 time=13.6 ms
64 bytes from 8.8.8.8: icmp_seq=13 ttl=55 time=25.9 ms
64 bytes from 8.8.8.8: icmp_seq=14 ttl=55 time=24.6 ms
64 bytes from 8.8.8.8: icmp_seq=15 ttl=55 time=26.3 ms
64 bytes from 8.8.8.8: icmp_seq=16 ttl=55 time=24.3 ms
64 bytes from 8.8.8.8: icmp_seq=17 ttl=55 time=30.9 ms
64 bytes from 8.8.8.8: icmp_seq=18 ttl=55 time=16.8 ms
```

7. Close the connection.

```
$ nmcli c down cellular
```

```
root@EMU-210:~# nmcli c down cellular
Connection 'cellular' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/7)
root@EMU-210:~#
```

A.7 Wi-Fi Configuration and Connection

1. Enter the following to connect to the Wi-Fi AP.

```
$ nmcli dev wifi connect "Your AP SSID" password
"Your Password"
```

```
root@EMU-210:~# nmcli dev wifi connect ADLINKTECH password adlink6166
Device 'wlan0' successfully activated with '9d7f20ab-bdf3-4c2d-84e7-41ff89eeec11'
root@EMU-210:~#
```

2. Check if the Wi-Fi network interface (wlan0) is present.

```
wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 172.30.202.182 netmask 255.255.252.0 broadcast 172.30.203.255
inet6 fe80::413c:2383:2f98:7fef prefixlen 64 scopeid 0x20<link>
ether 2c:33:58:f3:7e:b5 txqueuelen 1000 (Ethernet)
RX packets 1183 bytes 75726 (73.9 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 1151 bytes 93612 (91.4 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

3. Enter the following command to execute a Wi-Fi connectivity function test (ping Google DNS).

```
$ ping -I wlan0 8.8.8.8
```

```
192.168.50.2 - PuTTY
64 bytes from 8.8.8.8: icmp_seq=463 ttl=57 time=89.7 ms
64 bytes from 8.8.8.8: icmp_seq=464 ttl=57 time=112 ms
64 bytes from 8.8.8.8: icmp_seq=465 ttl=57 time=135 ms
64 bytes from 8.8.8.8: icmp_seq=481 ttl=57 time=166 ms
64 bytes from 8.8.8.8: icmp_seq=482 ttl=57 time=86.0 ms
64 bytes from 8.8.8.8: icmp_seq=483 ttl=57 time=110 ms
64 bytes from 8.8.8.8: icmp_seq=484 ttl=57 time=132 ms
64 bytes from 8.8.8.8: icmp_seq=504 ttl=57 time=270 ms
64 bytes from 8.8.8.8: icmp_seq=505 ttl=57 time=83.3 ms
64 bytes from 8.8.8.8: icmp_seq=506 ttl=57 time=213 ms
64 bytes from 8.8.8.8: icmp_seq=507 ttl=57 time=132 ms
64 bytes from 8.8.8.8: icmp_seq=509 ttl=57 time=158 ms
64 bytes from 8.8.8.8: icmp_seq=510 ttl=57 time=78.7 ms
64 bytes from 8.8.8.8: icmp_seq=511 ttl=57 time=104 ms
64 bytes from 8.8.8.8: icmp_seq=512 ttl=57 time=48.2 ms
64 bytes from 8.8.8.8: icmp_seq=520 ttl=57 time=156 ms
64 bytes from 8.8.8.8: icmp_seq=522 ttl=57 time=84.3 ms
64 bytes from 8.8.8.8: icmp_seq=523 ttl=57 time=106 ms
64 bytes from 8.8.8.8: icmp_seq=524 ttl=57 time=132 ms
64 bytes from 8.8.8.8: icmp_seq=531 ttl=57 time=970 ms
64 bytes from 8.8.8.8: icmp_seq=532 ttl=57 time=175 ms
64 bytes from 8.8.8.8: icmp_seq=533 ttl=57 time=97.5 ms
64 bytes from 8.8.8.8: icmp_seq=534 ttl=57 time=117 ms
```

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Appendix B Accessory Installation

B.1 Wi-Fi Module

1. Remove 8 screws from chassis.



2. Remove the top cover



3. Remove the appropriate antenna covers based on the Wi-Fi module used. There are two positions to choose from, depending on whether you will upgrade to a 4G module or a 5G module. If you will not upgrade the system, choose the first option.

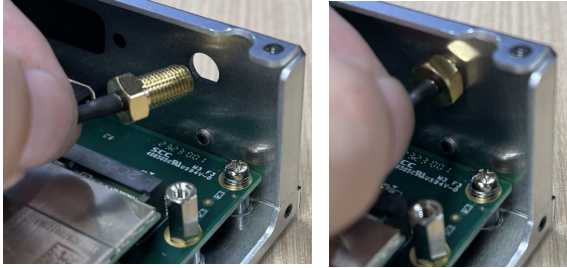
Antenna covers for 4G modules Sierra EM7421 and Quectel EM05-G



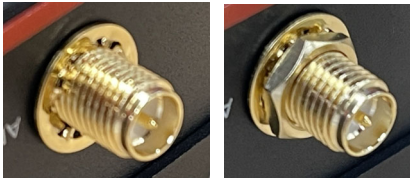
Antenna covers for 5G module: TELIT MV32-W-AD



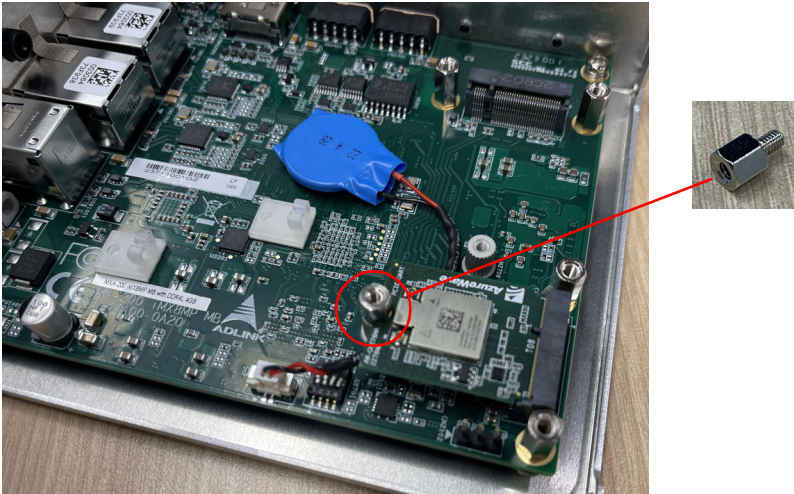
4. Install two RF Cables. Thread the SMA connector through the antenna hole.



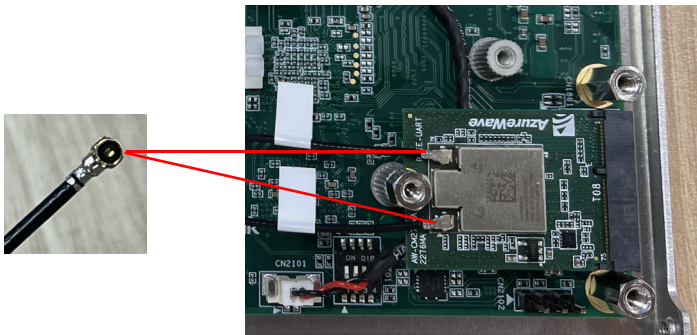
5. Insert the washer and install the hex nut (torque value = 6-8kgf.cm).



6. Install the Wi-Fi module and secure with a hex standoff (torque value = 4-5kgf.cm).

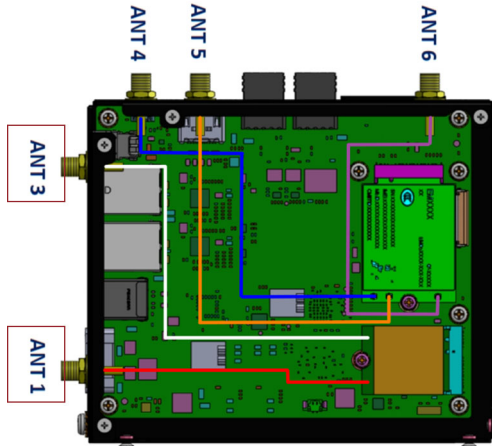


7. Attach the RF cable connector to the module.

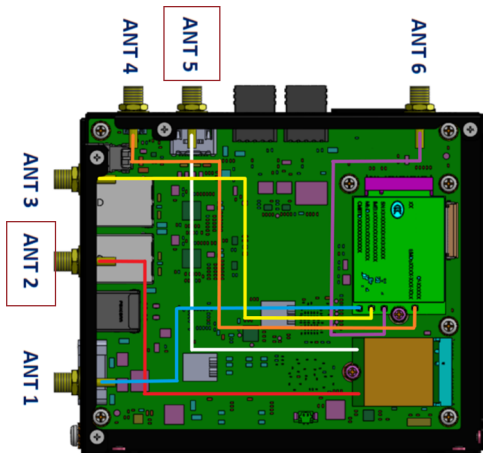


8. RF Cable routing. There are two positions to choose from.

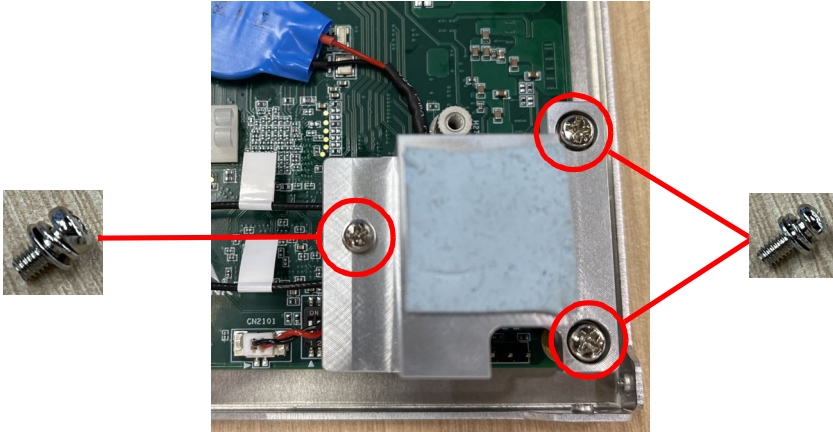
Cable routing for 4G modules Sierra EM7421 and Quectel EM05-G



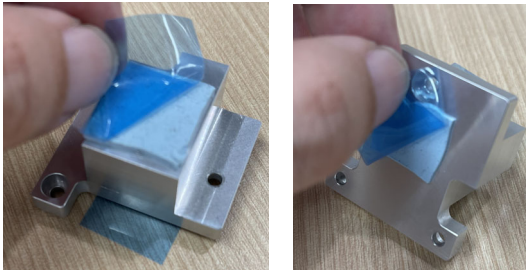
Cable routing for 5G module TELIT MV32-W-AD



9. Install the thermal conductive aluminum block and tighten the M2.5 screw and two M3 screws (torque value = 3.5-4kgf.cm).



The thermal conductive aluminum block has release paper on both sides, which needs to be removed before installation.



10. Replace the top cover and original screws.

B.2 4G Module

1. Remove 8 screws from chassis.



2. Remove the top cover



3. Remove the appropriate antenna covers based on the 4G module used. There are two positions to choose from, depending on the 4G module used.

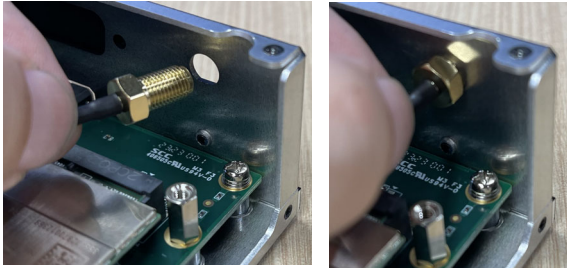
Antenna covers for 4G module Sierra EM7421



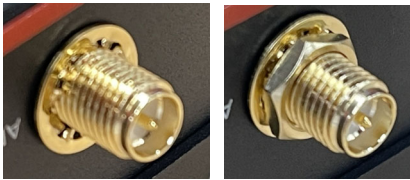
Antenna covers for 4G module Quectel EM05-G



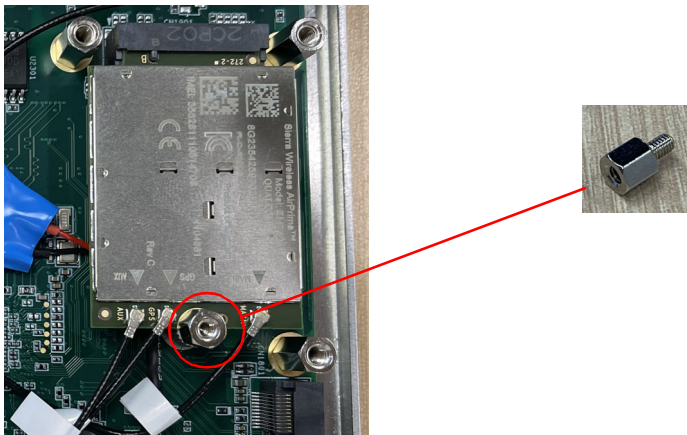
4. Install the RF Cables. Thread the SMA connector through the antenna hole.



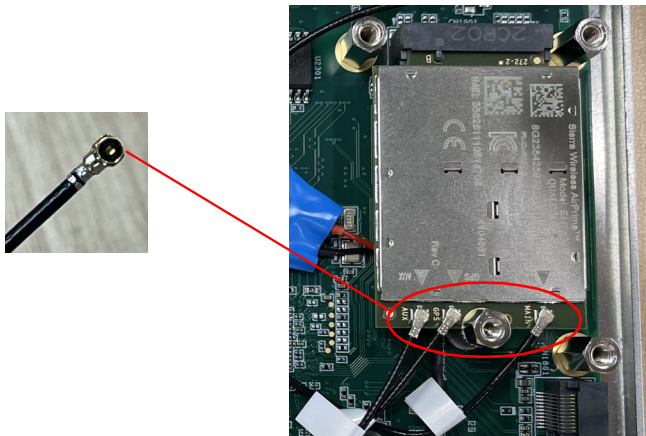
5. Insert the washer and install the hex nut (torque value = 6-8kgf.cm).



6. Install the 4G module and secure with a hex standoff (torque value = 4-5kgf.cm).

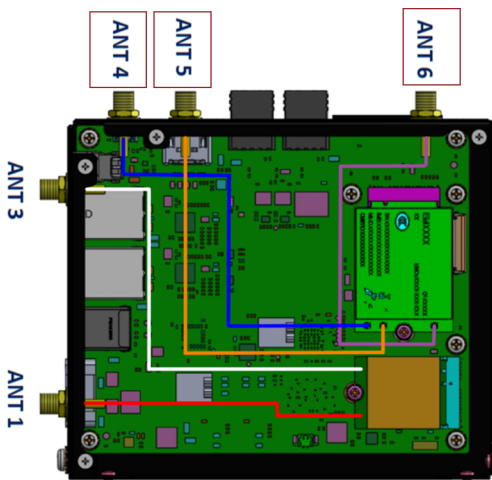


7. Attach the RF cable connectors to the module.

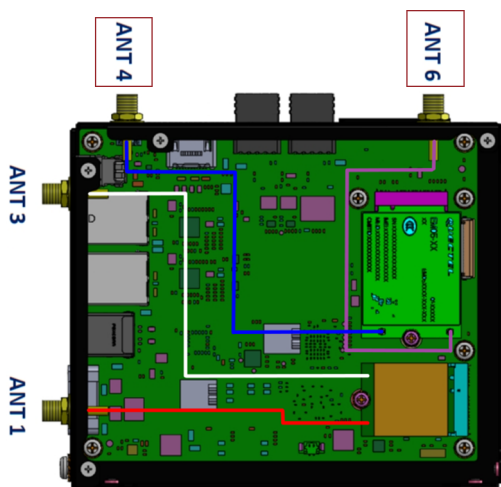


8. RF Cable routing. There are two positions to choose from.

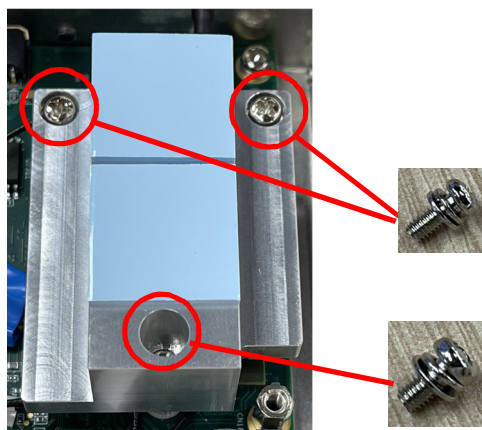
Cable routing for 4G module Sierra EM7421



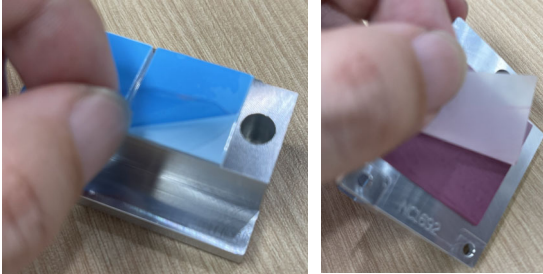
Cable routing for 4G module Quectel EM05-G



9. Install the thermal conductive aluminum block and tighten the M2.5 screw and two M3 screws (torque value = 3.5-4kgf.cm).



The thermal conductive aluminum block has release paper on both sides, which needs to be removed before installation.



10. Replace the top cover and original screws.

B.3 5G Module

1. Remove 8 screws from chassis.



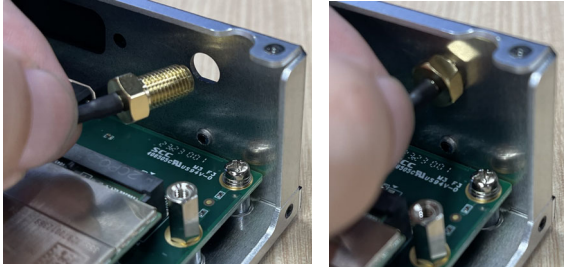
2. Remove the top cover



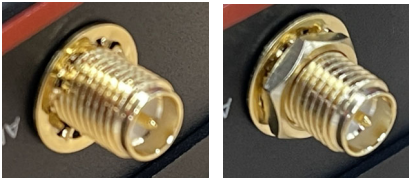
3. Remove four antenna covers.



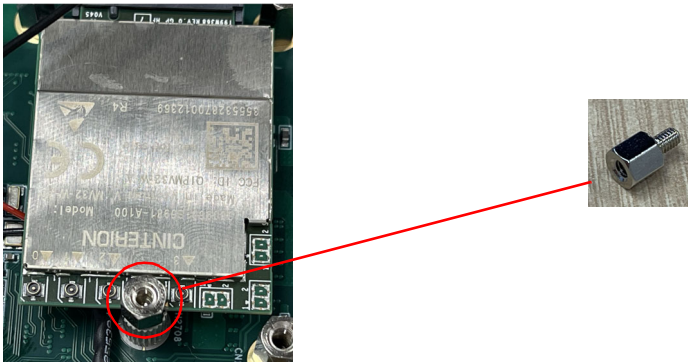
4. Install the RF Cables. Thread the SMA connector through the antenna hole.



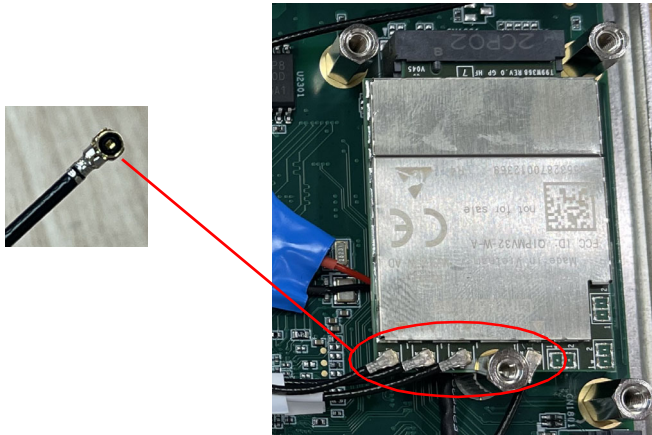
5. Insert the washer and install the hex nut (torque value = 6-8kgf.cm).



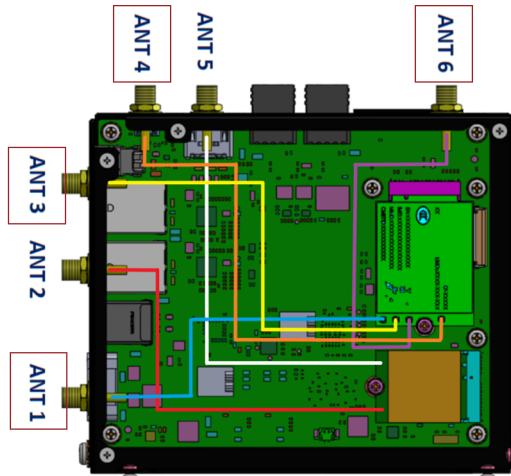
6. Install the 5G module and secure with a hex standoff (torque value = 4-5kgf.cm).



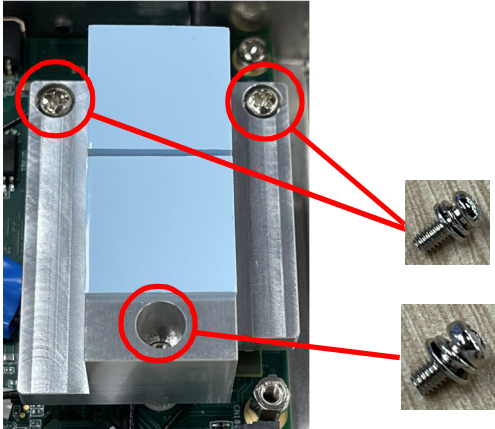
7. Attach the RF cable connectors to the module.



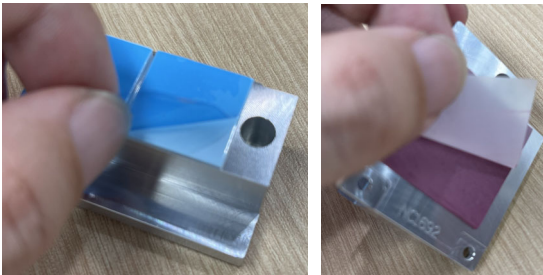
8. RF Cable routing.



9. Install the thermal conductive aluminum block and tighten the M2.5 screw and two M3 screws (torque value = 3.5-4kgf.cm).



The thermal conductive aluminum block has release paper on both sides, which needs to be removed before installation.



10. Replace the top cover and original screws.

Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

- ▶ Read these safety instructions carefully.
- ▶ Keep the User's Manual for future reference.
- ▶ Read the Specifications section of this manual for detailed information on the recommended operating environment.
- ▶ The device can be operated at an ambient temperature of 5°C to 50°C.
- ▶ It is recommended that the device be installed in Information Technology Rooms that are in accordance with Article 645 of the National Electrical Code and NFPA 75.
- ▶ When installing/mounting or uninstalling/removing device:
 - ▷ Turn off power and unplug any power cords/cables.
 - ▷ Reinstall all chassis covers before restoring power.
- ▶ To avoid electrical shock and/or damage to device:
 - ▷ Keep device away from water or liquid sources.
 - ▷ Keep device away from high heat or humidity.
 - ▷ Keep device properly ventilated (do not block or cover ventilation openings).
 - ▷ Always use recommended voltage and power source settings.
 - ▷ Always install and operate device near an easily accessible electrical outlet.
 - ▷ Secure the power cord (do not place any object on/over the power cord).
 - ▷ Only install/attach and operate device on stable surfaces and/or recommended mountings.
 - ▷ This apparatus is powered by adapter or DC source. Please ensure the adapter or DC source has a grounded connection.
- ▶ If the device will not be used for long periods of time, turn off and unplug it from its power source
- ▶ Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools

- ▶ A Lithium-type battery may be provided for uninterrupted backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.

Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- ▶ The device must be serviced by authorized technicians when:
 - ▷ The power cord or plug is damaged.
 - ▷ Liquid has entered the device interior.
 - ▷ The device has been exposed to high humidity and/or moisture.
 - ▷ The device is not functioning or does not function according to the User's Manual.
 - ▷ The device has been dropped and/or damaged and/or shows obvious signs of breakage.
- ▶ Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up.
- ▶ Terminal block wires should be fixed tightly by an authorized technician with the recommendation wire range: 16-24, str, sol, wire type: copper.
- ▶ It is recommended that the device be installed only in a server room or computer room where access is:
 - ▷ Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required.
 - ▷ Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location.



BURN HAZARD

Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.

RISQUE DE BRÛLURES

*Ne touchez pas cette surface, cela pourrait entraîner des blessures.
Pour éviter tout danger, laissez la surface refroidir avant de la toucher.*

Consignes de Sécurité Importantes

Pour la sécurité de l'utilisateur, veuillez lire et suivre toutes les instructions, avertissements, mises en garde et notes marqués dans ce manuel et sur l'appareil associé avant de manipuler/ d'utiliser l'appareil, afin d'éviter toute blessure ou tout dommage.

- ▶ *Lisez attentivement ces consignes de sécurité*
- ▶ *Conservez le manuel de l'utilisateur pour pouvoir le consulter ultérieurement*
- ▶ *Lisez la section Spécifications de ce manuel pour des informations détaillées sur l'environnement d'exploitation recommandé*
- ▶ *L'appareil peut être utilisé à une température ambiante de 5°C à 50°C.*
- ▶ *Il est recommandé d'installer l'appareil dans Information Salles technologiques conformes à l'article 645 du Code national de l'électricité et NFPA 75.*
- ▶ *Lorsque l'installation/le montage ou la désinstallation/le retrait du périphérique est requis:
Lorsque l'installation/le montage ou la désinstallation/le retrait du périphérique est nécessaire:*
 - ▷ *Mettez l'appareil hors tension et débranchez tous les cordons/câbles d'alimentation*
 - ▷ *Réinstallez tous les couvercles de châssis avant de rétablir l'alimentation*
- ▶ *Pour éviter les chocs électriques et/ou d'endommager l'appareil:*
 - ▷ *Tenez l'appareil à l'écart de toute source d'eau ou de liquide*
 - ▷ *Tenez l'appareil à l'écart d'une forte chaleur ou d'une humidité élevée*
 - ▷ *Maintenez l'appareil correctement ventilé (n'obstruer ou ne couvrez pas les ouvertures de ventilation)*
 - ▷ *Utilisez toujours les réglages de tension et de source d'alimentation recommandés*
 - ▷ *Installez et utilisez toujours l'appareil près d'une prise de courant facilement accessible*

- ▷ *Fixez le cordon d'alimentation (ne placez aucun objet sur le cordon d'alimentation)*
- ▷ *Installez/fixez et utilisez l'appareil uniquement sur des surfaces stables et/ou sur les fixations recommandées*
- ▷ *Cet appareil est alimenté par un adaptateur ou une source DC. Veuillez vous assurer que l'adaptateur ou la source DC est relié à la terre s'il dispose d'une mise à la terre de protection.*
- ▶ *Si l'appareil ne doit pas être utilisé pendant de longues périodes, éteignez-le et débranchez-le de sa source d'alimentation*
- ▶ *N'essayez jamais de réparer l'appareil, qui ne doit être réparé que par un personnel technique qualifié à l'aide d'outils appropriés*
- ▶ *Une batterie de type Lithium peut être fournie pour une alimentation de secours ininterrompue ou d'urgence.*



Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- ▶ *L'appareil doit être entretenu par des techniciens agréés lorsque:*
 - ▷ *Le cordon d'alimentation ou la prise est endommagé(e)*
 - ▷ *Un liquide a pénétré à l'intérieur de l'appareil*
 - ▷ *L'appareil a été exposé à une forte humidité et/ou de la buée*
 - ▷ *L'appareil ne fonctionne pas ou ne fonctionne pas selon le manuel de l'utilisateur*
 - ▷ *L'appareil est tombé et/ou a été endommagé et/ou présente des signes évidents de dommage*
- ▶ *Débranchez le cordon d'alimentation avant de desserrer les vis à oreilles et serrez toujours les vis à oreilles avec un tournevis avant de mettre le système en marche*
- ▶ *Le fil du bornier doit être fixé fermement par un technicien agréé et recommandé pour la gamme de fils : 16-24, str, sol, type de fil: Cu*

- *Il est recommandé d'installer l'appareil uniquement dans une salle de serveurs ou une salle informatique où l'accès est:*
 - ▷ *Réservé au personnel de service qualifié ou aux utilisateurs familiarisés avec les restrictions appliquées à l'emplacement, aux raisons de ces restrictions et toutes les précautions requises*
 - ▷ *Uniquement autorisé par l'utilisation d'un outil, d'une serrure et d'une clé, ou d'un autre moyen de sécurité, et contrôlé par l'autorité responsable de l'emplacement*



RISQUE DE BRÛLURES

Ne touchez pas cette surface, cela pourrait entraîner des blessures.

Pour éviter tout danger, laissez la surface refroidir avant de la toucher.

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Getting Service

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