

EC3320 User Manual_V1.0

EC3320 Series AI Edge Computer

User Manual

Version 1.0, September 2024

www.inhand.com



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1. General Introduction

1.1. Introduction

The EC3320 series is equipped with the RK3588 platform, providing Hailo-8 AI computing power expansion, ideal for edge AI computing applications. The system provides 2 RS-232 serial interfaces, 2 RS-485 serial interfaces, 1 CAN LAN controller, 4 digital inputs and 4 digital outputs, 1 network indicator, 1 STATUS system status indicator, 1 USER user indicator, 1 PWR power indicator, 2 network interfaces, 1 USB Type-C 3.0 OTG, 4 USB 3.0, 2 HDMI video outputs for user connection, 1 microphone connector, 1 SPK power output connector, 1 SIM card slot to support 2 Nano cards, 1 RESET system reset button, 1 ON/OFF switch button.

1.2. Product Features

1.2.1. Key Features

1.2.1.1. Hardware Platform

Table 1: Processor	
	Core
CPU	ARM Cortex-A76 (4-core), Cortex-A55 (4-core), max frequency up to 2.4GHz

NPU	6 TOPS (INT8), support INT4 / INT8 / INT16 / FP16
GPU	Mali-G610 GPU, supports OpenGL ES 3.2, OpenCL 2.2, Vulkan 1.1, embedded high-performance 2D, 3D acceleration hardware
RAM	8G
FLASH	64GB eMMC

1.2.1.2. System Peripheral Interfaces

2 x 10 / 100 / 1000 Mbps Ethernet, The ETH1 interface is a standalone Ethernet interface, and the ETH2 interface has two external switch ports

2 x RS-232, 5PIN industrial terminals

2 x RS-485, 5PIN industrial terminals

1 x CAN 2.0A/B, max rate up to 1Mbps

4 x DI, Isolated Digital Inputs, Supports Wet and Dry Nodes

4 x DO, Isolated Digital Outputs, Supports 40 VDC sink voltage and 0.2 A max sink current

4 x LEDs, 1 network indication LED, 1 system status LED, 1 programmable LED, 1 power LED

1 x USB 3.0 OTG, Type-C connector

4 x USB 3.0 Host, Type-A connector

2 x HDMI with maximum resolution of 4096 x 2304 @60Hz

1 x MIC, 3.5mm microphone audio jack

1 x SPK, Speaker Out, supports 2 x 8Ω/5W

1 x SIM card slot, supports 2 Nano SIMs

1 x RESET pinhole button for system reset

1 x ON/OFF flick switch button for device power on/off

7 x SMA, 1 for GNSS, 4 for cellular modules, 2 for Wi-Fi

1 x Trusted Platform Module, TPM 2.0

1 x Wi-Fi/BLE Module

1 x Cellular Module

1 x RTC, Coin Cell

1 x Hardware Watchdog

1.2.1.3. System Expandable Interfaces

1 x Hailo-8 AI Module, M.2 M-KEY 2242/2280

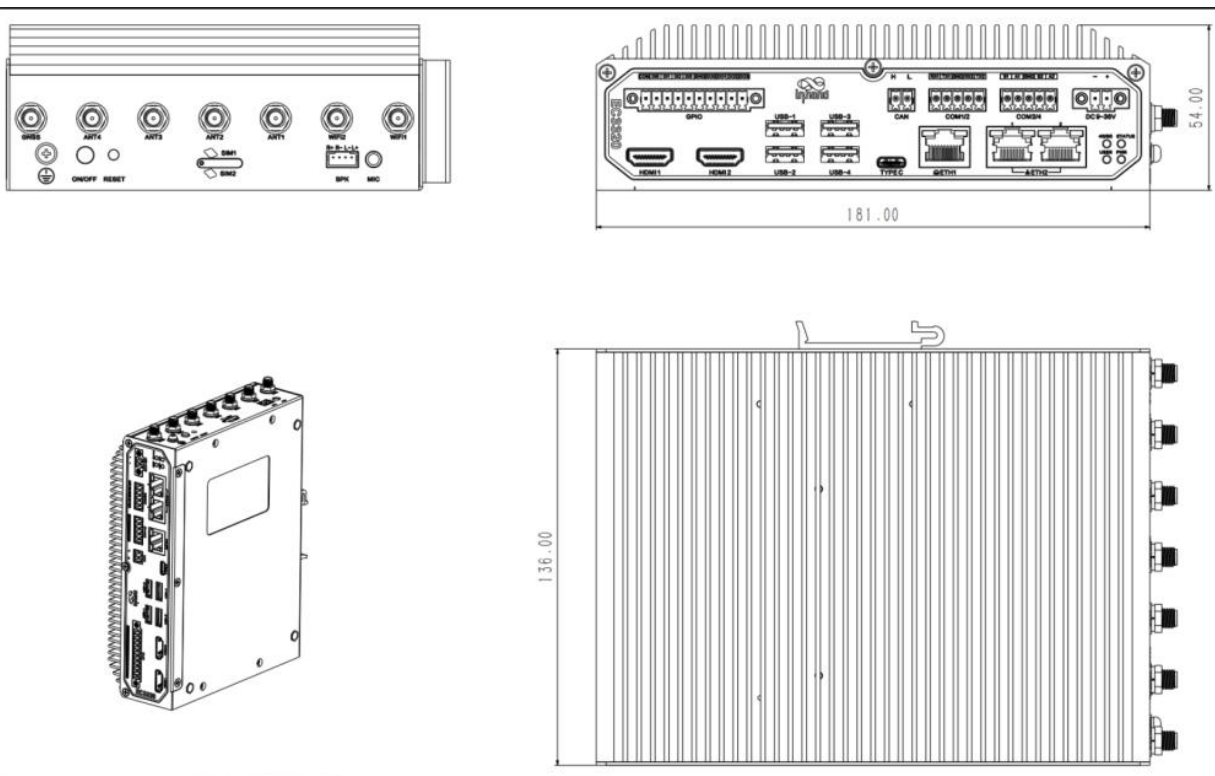
1 x NVME SSD, M.2 B-KEY 2242

1.3. Mechanical Specifications

Standard size: 189 x 135 x 54 mm

Reference weight: 1.35 kg (excluding package and power adapter)

Installation: The equipment adopts two installation methods: rail mounting and wall mounting, and the installation height is generally less than 2m.



1.4. Power Supply Specifications

Power input: DC 9-36 V, Max power $\leq 60\text{W}$, The input power should be less than 100W.

Idle power consumption: 5W

Full load power consumption: 30W

1.5. Environmental Specifications

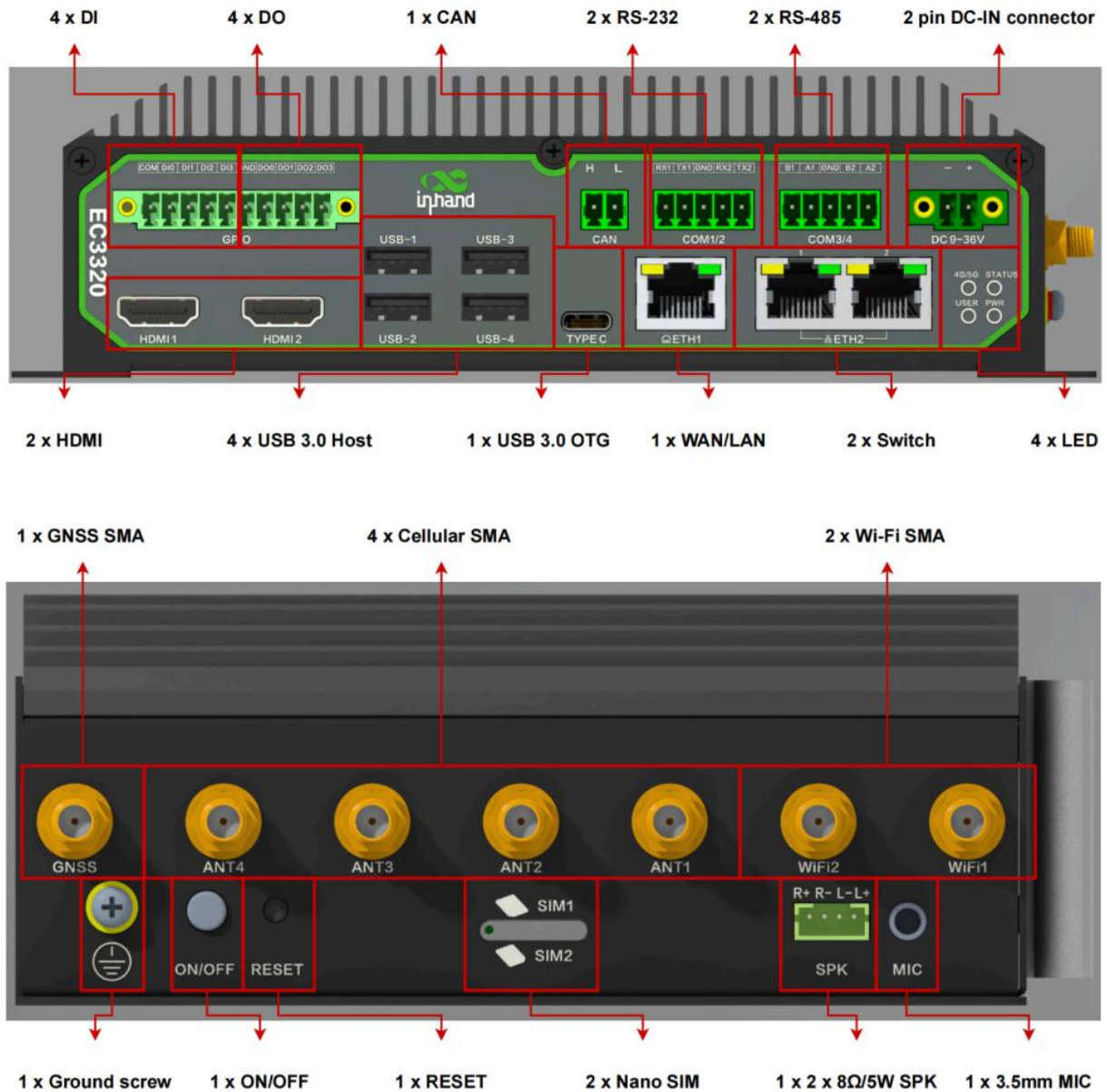
Working temperature: $-20 \sim 60^{\circ}\text{C}$

Operating humidity: 95%@40°C (non-condensing)

Storage temperature: $-40 \sim 85^{\circ}\text{C}$

2. System Interface Information

2.1. System Interface Overview



2.2. Interfaces

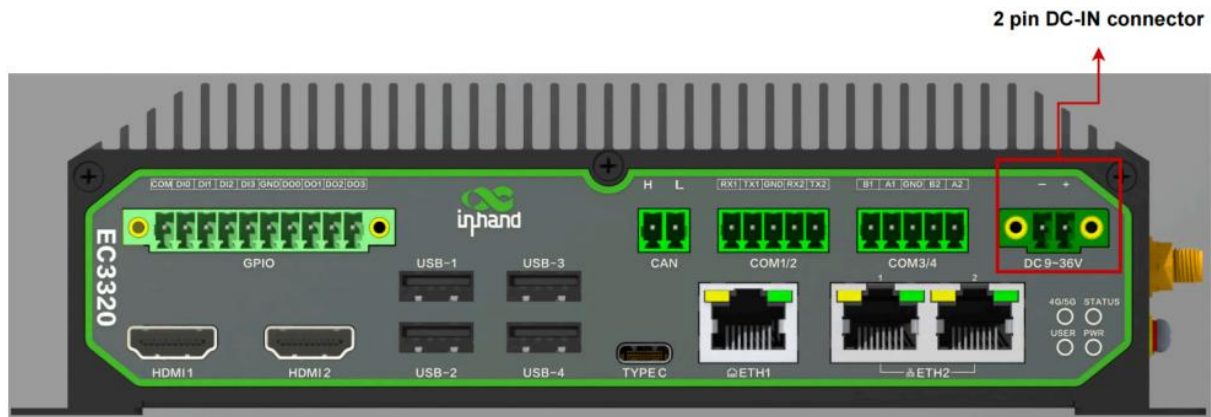
2.2.1. Indicator lights



The front panel is equipped with 4 LEDs, which are:

1. PWR Power On/Off Indicator (red), this light indicates the startup state of the system, when the PWR LED is on it means that the system handles the power on state, and when the PWR LED is off it means that the system is in the power off state;
2. STATUS system operation status indicator (green), the light can indicate the system operation status, when the STATUS LED flashes (frequency 1Hz) indicates that the system is running normally, STATUS LED off indicates that the system is not running;
3. 4G/5G Network Status Indicator (green), this light indicates the cellular network connection status, when the 4G/5G LED is on it means that the cellular network is connected successfully, and the 4G/5G LED is flashing means that the cellular network is not connected;
4. USER Programmable indicator (green LED), which is user-programmable for LED status logic.

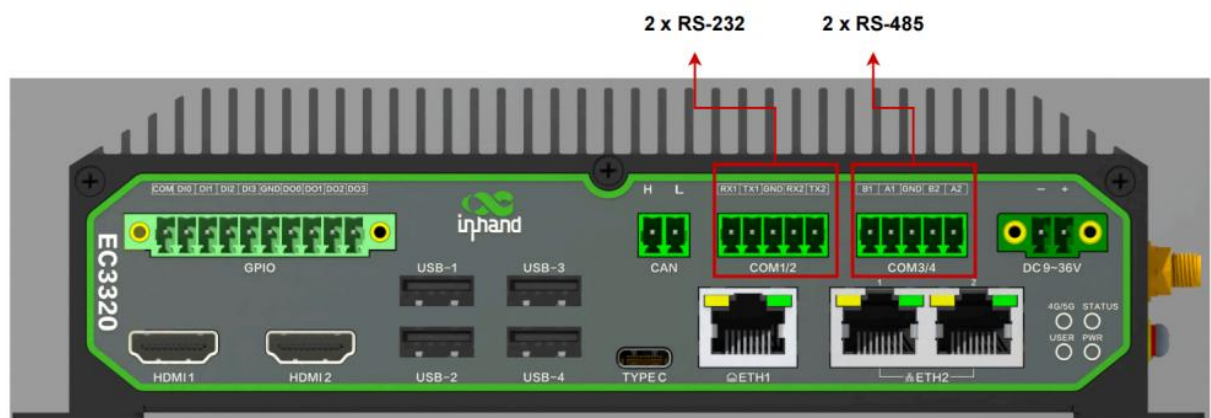
2.2.2. DC-IN Connector



DC power input connector on the front panel of the system

1. Must be installed by a skilled person.
2. Use copper conductors only.
3. Choose appropriate wire diameter.
4. The voltage for the system is 9 VDC to 36 VDC.
5. Recommended power supply power $\geq 36W$.

2.2.3. Serial Port



The device provides two RS-232 and two RS-485 serial ports on the front panel, and the function definitions are described in the following table.

Table 2: Serial Interface		
	RS-232	RS-485
COM1	RX1	
	TX1	
	GND	
COM2	RX2	
	TX2	
	GND	
COM3		B1
		A1
		GND
COM4		B2
		A2
		GND

2.2.4. Ethernet (WAN/LAN)

The device provides 2 network interfaces on the front panel, and there are two LEDs above each of them, the green LED indicates the network connection rate, the green LED lights up when the network is Link up and the interface

rate is 1000Mbps, otherwise, the green LED is off; the orange LED indicates the network communication, if there is data communication in network Link up, the orange LED blinks, otherwise, the orange LED is off; ETH1 is a standalone Ethernet interface, while The ETH2 interface has 2 switch ports

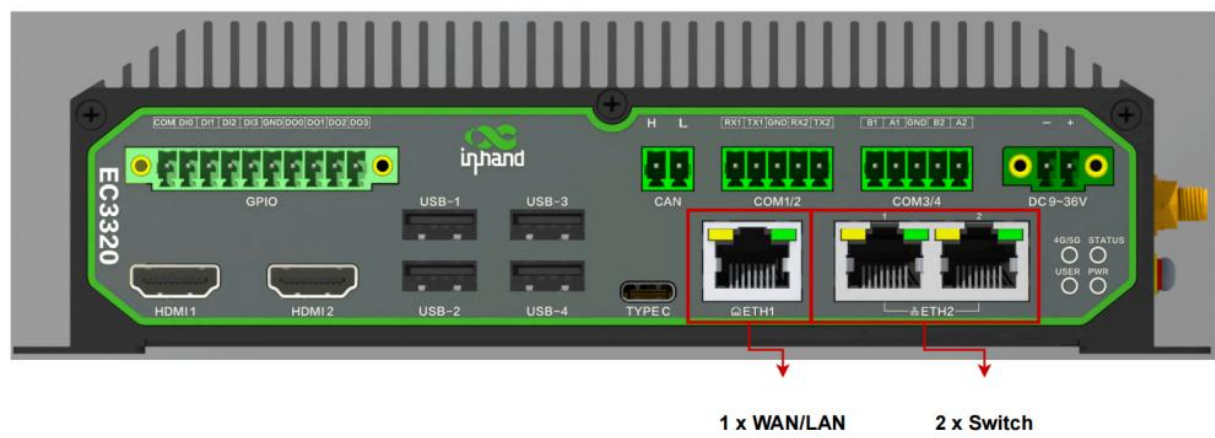
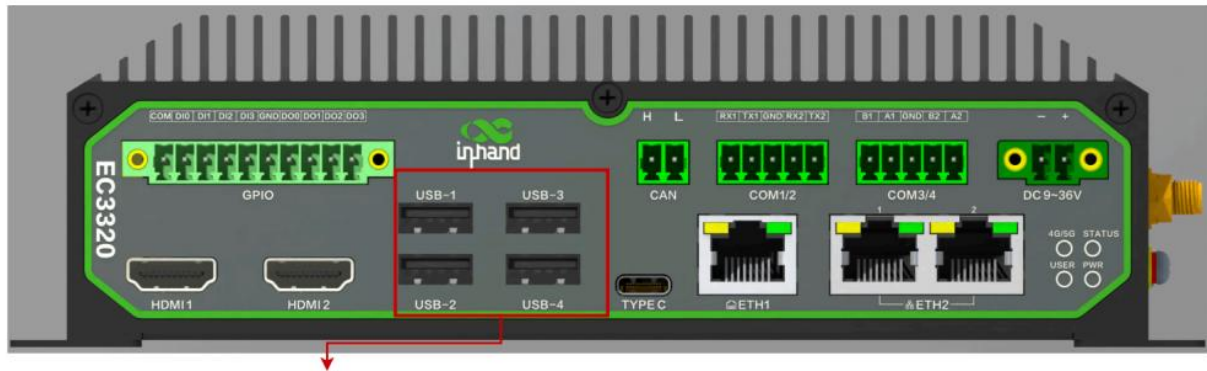


Table 3: Ethernet		
Green LED		
OFF	ON	Blinking
1. No connection		
2. Speed 10Mbps	Speed 1000Mbps	—
3. Speed 100Mbps		
Orange LED		
OFF	ON	Blinking
1. No connection	—	Activity on this port
2. No activity on this port		

2.2.5. USB 3.0 Host

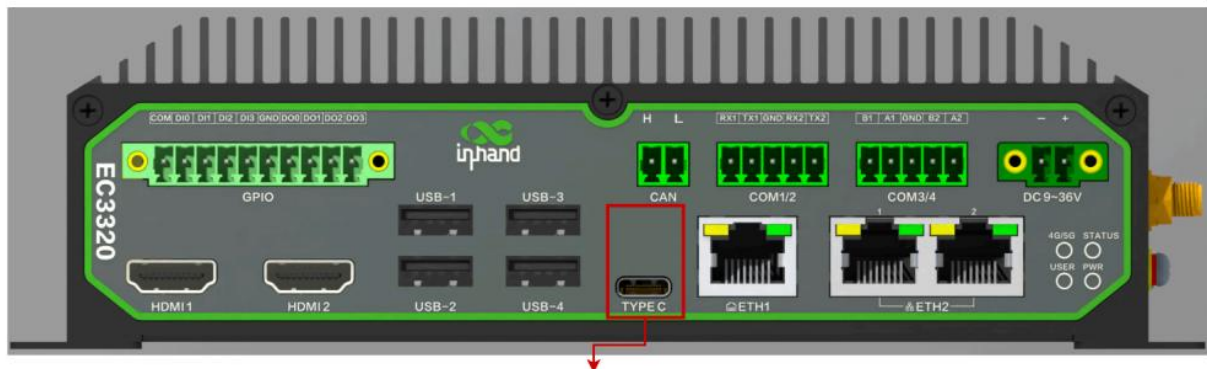
The device provides four USB 3.0 Host Type-A ports on the front panel, each USB can provide a maximum power of 5W(5V/1A).



4 x USB 3.0 Host

2.2.6. USB 3.0 OTG

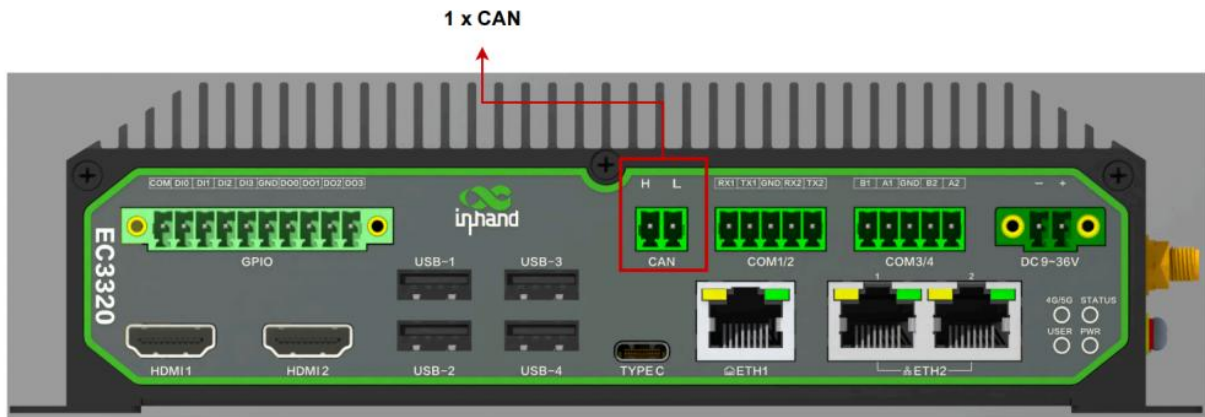
The device provides 1 USB 3.0 OTG Type-C port on the front panel.



1 x USB 3.0 OTG

2.2.7. CAN

The device provides one CAN 2.0 interface on the front panel, which supports CAN 2.0A/B with a maximum rate of 1Mbps.



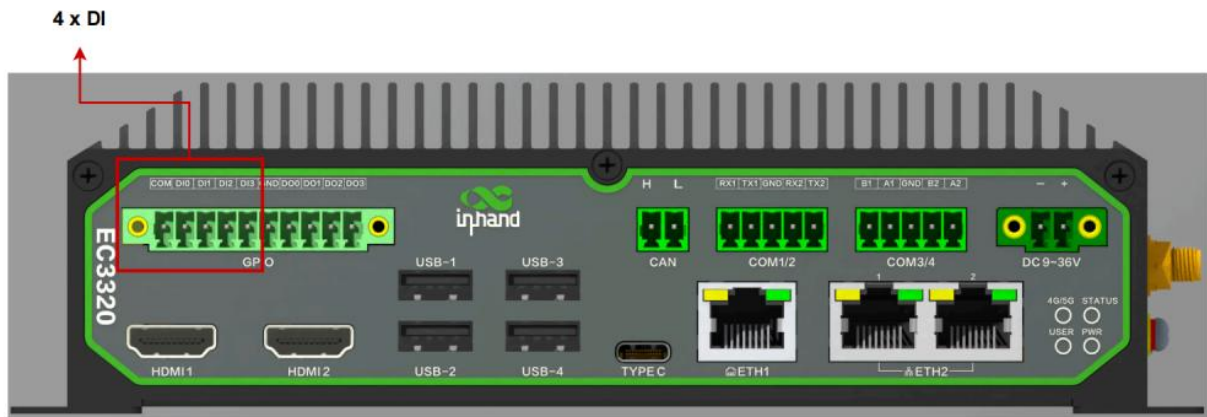
2.2.8. HDMI

The device provides 2 HDMI ports on the front panel for external screens with a maximum resolution of 4096 x 2304 @60Hz (4K @60Hz).



2.2.9. Digital Inputs

The device has four isolated digital inputs on the front panel that support wet and dry contacts.



The wiring is as follows:

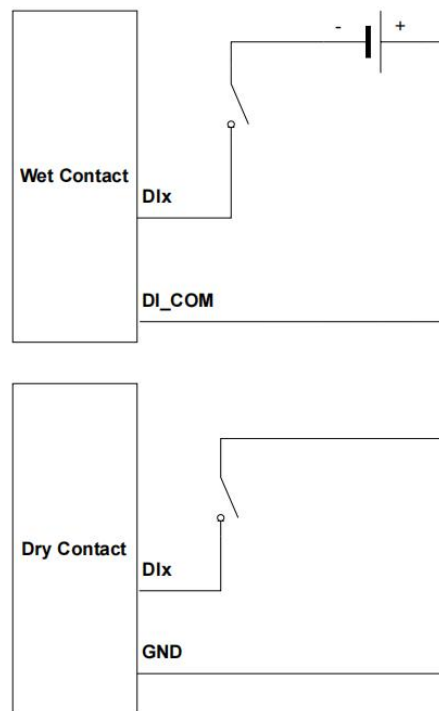


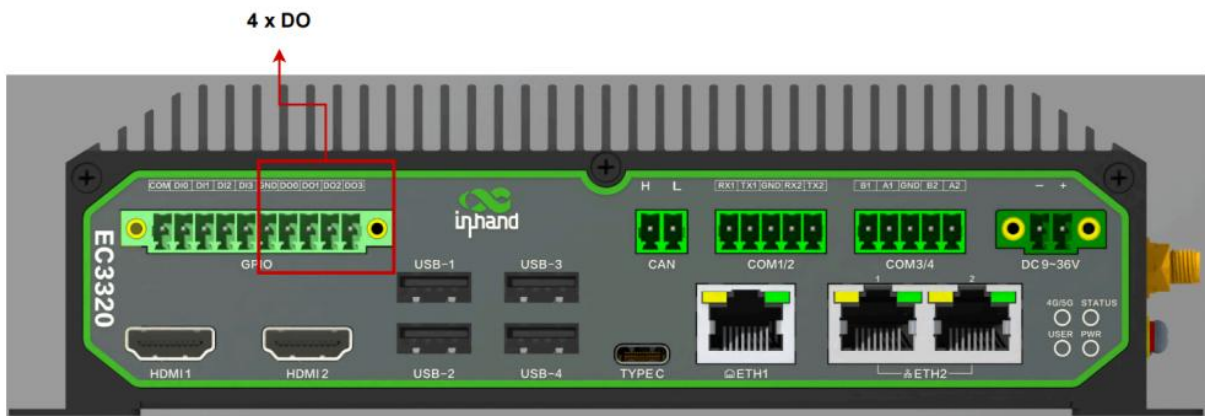
Table 4: Isolated Digital Inputs

Number of Input Channels	4
Optical Isolation	2500 VDC
Input Voltage	Dry contact.

	Logic 1: Open
	Logic 0: Close to ground
	Wet contact.
	$V_{IH}(\text{max.}) = 60 \text{ VDC}$
	$V_{IH}(\text{min.}) = 5 \text{ VDC}$
	$V_{IL}(\text{max.}) = 2 \text{ VDC}$

2.2.10. Digital Outputs

The device has four isolated digital output connectors on the front panel in open-drain output mode.



The wiring is as follows:

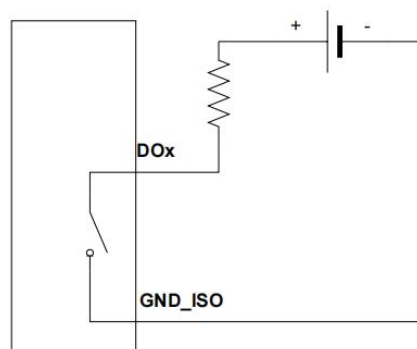


Table 5: Isolated Digital Outputs

Number of Output Channels	4
Optical Isolation	500 VDC
Supply Voltage	Sink 40 VDC
Sink Current	0.2 A max. /Channel

2.2.11. Microphone

The device has 1 microphone connector on the right panel and supports 3.5mm standard audio input.



2.2.12. Speaker Output

The device has 1 speaker output interface SPK on the right panel. It supports 2 x 8 Ω /5W.



Table 6: Speaker Outputs

R+	Right channel positive
R-	Right channel negative
L-	Left channel negative
L+	Left channel positive

2.2.13. SIM Card Slot

The device has 1 SIM card slot on the right panel which supports 2 Nano SIM cards, please insert at least 1 available SIM card when using the cellular function.



2.2.14. RESET Pinhole Button

The device has a RESET pinhole button on the right panel. During normal system operation, press and hold RESET for 10 seconds and wait for the system status light to change from blinking to constantly on and release it, the device will enter the system reset state (restoring the system to the factory state).



2.2.15. ON/OFF flick switch buttons

The device has 1 ON/OFF flick switch button on the right panel, touch ON/OFF button when the system is running normally, the system will prompt yes/no shutdown, click on the display to confirm that the system will be shut down (no selection within 60 seconds of the countdown will be forced to shut down), long press ON/OFF button for more than 6 seconds will be forced to shut down the system when the system is running normally. When the system is off, touch ON/OFF button, the system will start.



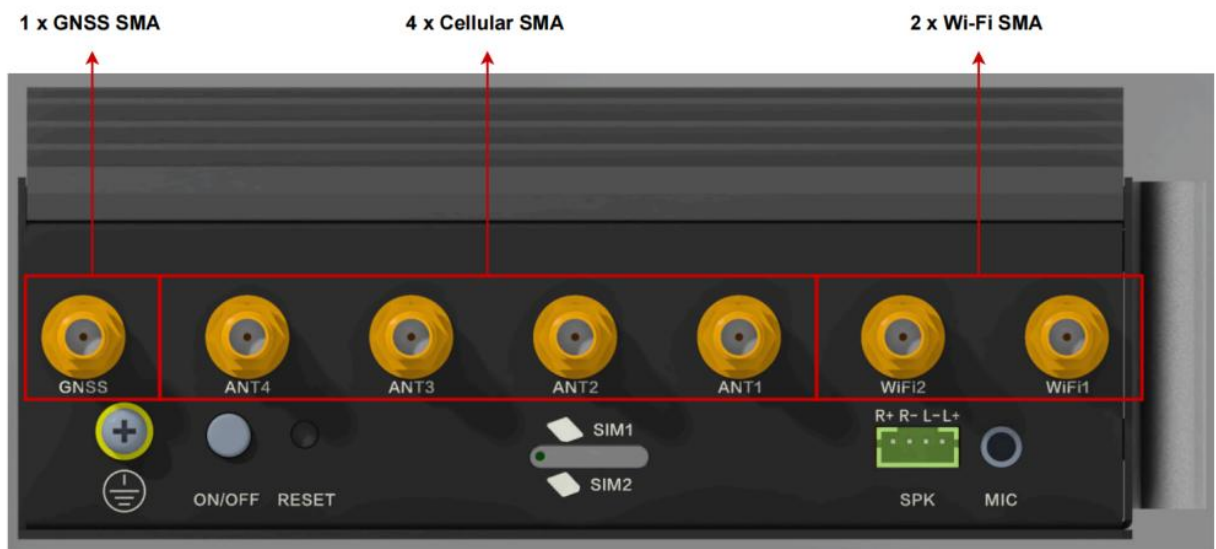
2.2.16. Grounding Connection

There is 1 system grounding screw on the right panel of the device, please use a green-yellow grounding wire (16AWG) and ground it with the system grounding screw.



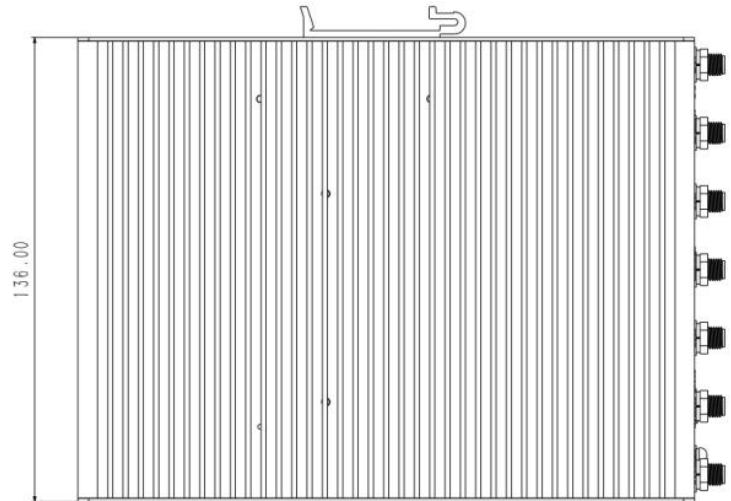
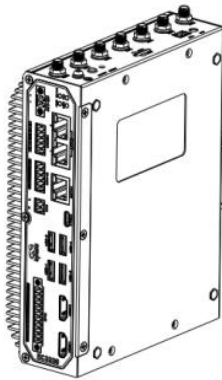
2.2.17. SMA

The right panel of the device provides up to 7 SMA connectors, different models are equipped with different types and numbers of 4G/5G/Wi-Fi/GNSS antennas, users can select the device according to their own needs, the specific antenna support can be found in the "Ordering Guide" section of the "EC3320 Series Edge AI Computer Product Specification".

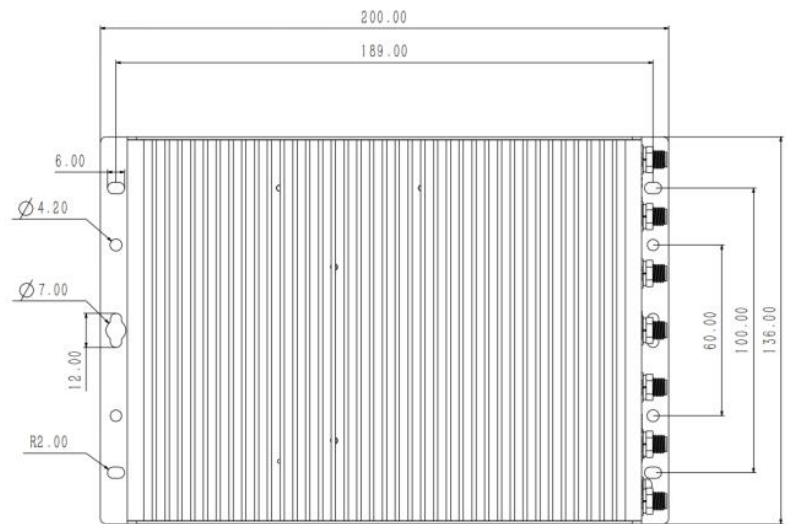


3. Installation

3.1. Rail Mounting Installation



3.2. Wall-mounted Installation



4. Getting Started

4.1. Connecting to Equipment

4.1.1. Connecting to Device via HDMI

4.1.1.1. Connecting HDMI and Peripherals

Connect the device to the monitor via the HDMI1 or HDMI2 port, plug the keyboard and mouse into the USB 3.0 Host port of the device, power up the device and wait for the device to finish booting. Check the nameplate on the bottom of the device to find the default system username and password.

Edge Computer

Model :

P / N :

S / N :

MAC :

IMEI :

Input :

ETH(1-3):

System User/Password:

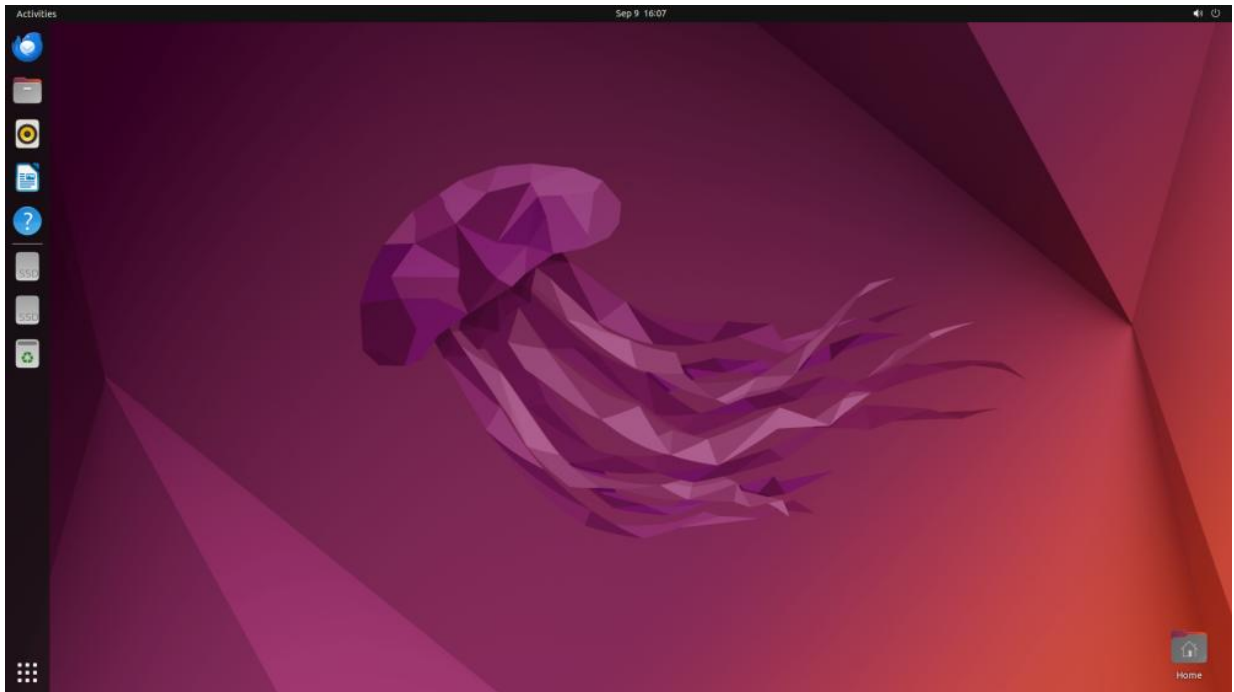
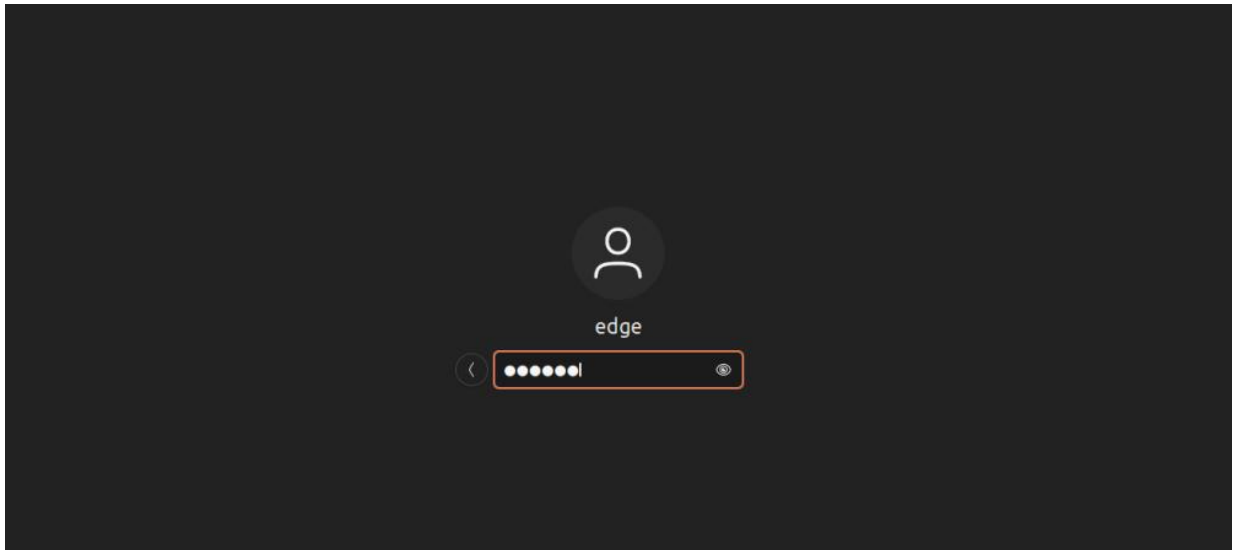


Date:

Manufacturer:

4.1.1.2. Logging in Equipment

On the login screen, select the account corresponding to "System User" and log in after entering the password.



4.1.2. Connecting via SSH

4.1.2.1. Connecting to the Network

Connecting to the device using SSH requires ensuring that the device network is accessible. Check the nameplate on the bottom of the device to find the system default Ethernet address and configure the host and device to be on the same network segment.

Edge Computer

Model :

P / N :

S / N :

MAC :

IMEI :

Input :

ETH(1-3):

System User/Password:

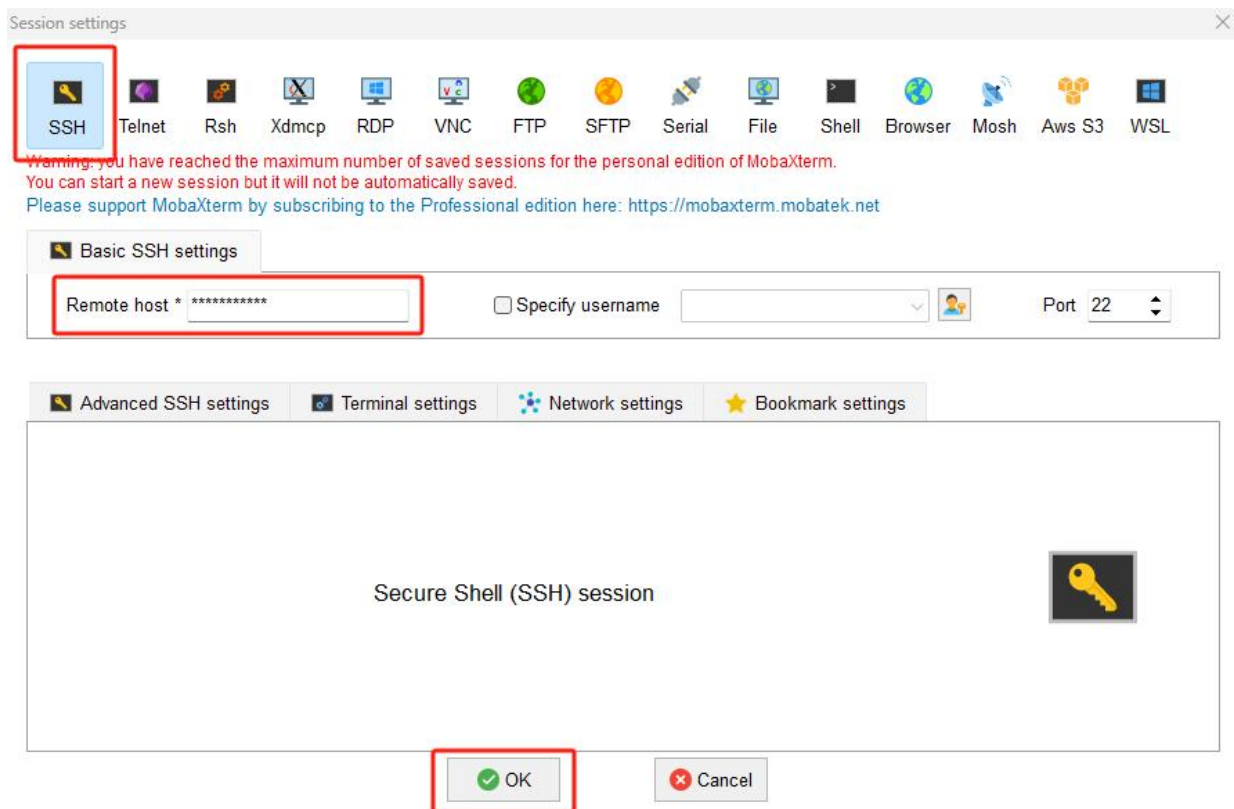


Date:

Manufacturer:

4.1.2.2. Access to Equipment

Open the SSH terminal tool (MobaXterm for example), enter the device address and click Connect.



```
login as: edge
edge@      's password: █
```

```
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 5.15.136-tegra aarch64)

* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/pro

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.

Expanded Security Maintenance for Applications is not enabled.

270 updates can be applied immediately.
199 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

27 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

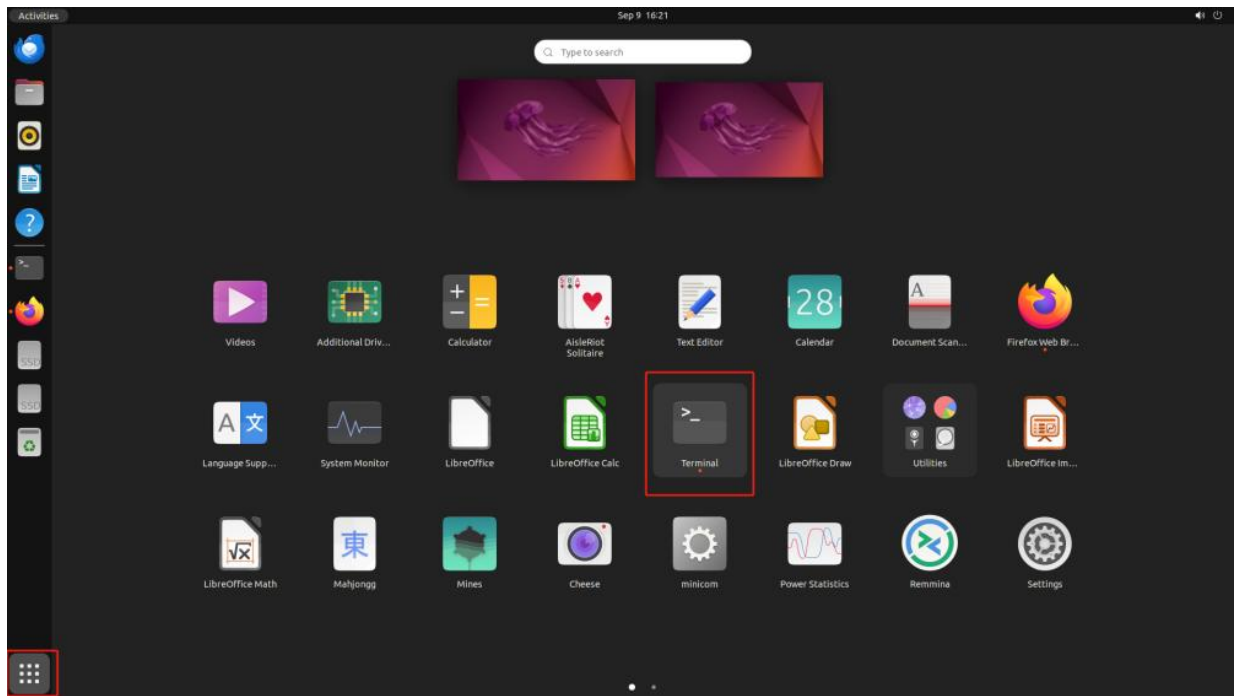
Last login: Tue Sep  3 06:32:53 2024 from
edge@edge-computer:~$ █
```

4.2. Version Query

Click "Show Applications->Terminal" or right-click and select "Open in Terminal" and enter the following command.

```
# Query version number only
sudo ecversion

# Query detailed version information
sudo ecversion -all
```



```
edge@edge-computer:~$ sudo ecversion
EC3000 version V2.0.0-beta.1
edge@edge-computer:~$
edge@edge-computer:~$ sudo ecversion -all
EC3000 version V2.0.0-beta.1 Build:2024-09-09 04:04:46 UTC
edge@edge-computer:~$
```

4.3. User management

4.3.1. Creating Users

Click "Show Applications->Terminal" or right click "Open in Terminal" and enter the following commands, follow the prompts to enter the password and user information, please make sure the user exists before creating, for the user that already exists, create again will prompt "The user 'username' already exists".

```
# check if the test account exists
id test
# create test account
```

```
sudo adduser test
```

```
edge@edge-computer:~$ id test
id: 'test': no such user
edge@edge-computer:~$
edge@edge-computer:~$ sudo adduser test
Adding user `test' ...
Adding new group `test' (1002) ...
Adding new user `test' (1002) with group `test' ...
The home directory `/home/test' already exists. Not copying from `/etc/skel'.
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for test
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] Y
```

4.3.2. Delete Users

Click "Show Applications->Terminal" or right-click and click "Open in Terminal" and enter the following command to delete the user, before deleting the user, please make sure the user exists or not, if you delete a non-existing user, it will prompt "The user 'username' does not exist".

```
# Check if the test account exists

id test

# Delete the test account

sudo deluser test
```

```
edge@edge-computer:~$ id test
uid=1002(test) gid=1002(test) groups=1002(test),29(audio),44(video),104(render),116(i2c),135(gdm),999(gpio),996(weston-launch)
edge@edge-computer:~$
edge@edge-computer:~$ sudo deluser test
Removing user `test' ...
Warning: group `test' has no more members.
Done.
edge@edge-computer:~$
```

4.3.3. Disable and Enable Users

Click "Show Applications->Terminal" or right-click and click "Open in Terminal" and enter the following commands to disable/enable the user, before disable/enable the user, please make sure the user exists, if the user does not exist, it will prompt "The user 'username' does not exist".

```
# Check if the test account exists
id test

# Disable the test account

sudo passwd -l test

# Enable test account

sudo passwd -u test

# Query the status of the test account (L disabled/P enabled)

sudo passwd -S test
```

```
edge@edge-computer:~$ id test
uid=1002(test) gid=1002(test) groups=1002(test),29(audio),44(video),104(render),116(i2c),135(gdm),999(gpio),996(weston-launch)
edge@edge-computer:~$
edge@edge-computer:~$ sudo passwd -l test
passwd: password expiry information changed.
edge@edge-computer:~$
edge@edge-computer:~$ sudo passwd -S test
test L 09/04/2024 0 99999 7 -1
edge@edge-computer:~$
edge@edge-computer:~$ sudo passwd -u test
passwd: password expiry information changed.
edge@edge-computer:~$
edge@edge-computer:~$ sudo passwd -S test
test P 09/04/2024 0 99999 7 -1
edge@edge-computer:~$
```

4.3.4. Advanced Extension of User Management

Reference:

1. [Ubuntu Manpage: adduser, addgroup](#) – add a user or group to the system
2. [Ubuntu Manpage: deluser, delgroup](#) – remove a user or group from the system

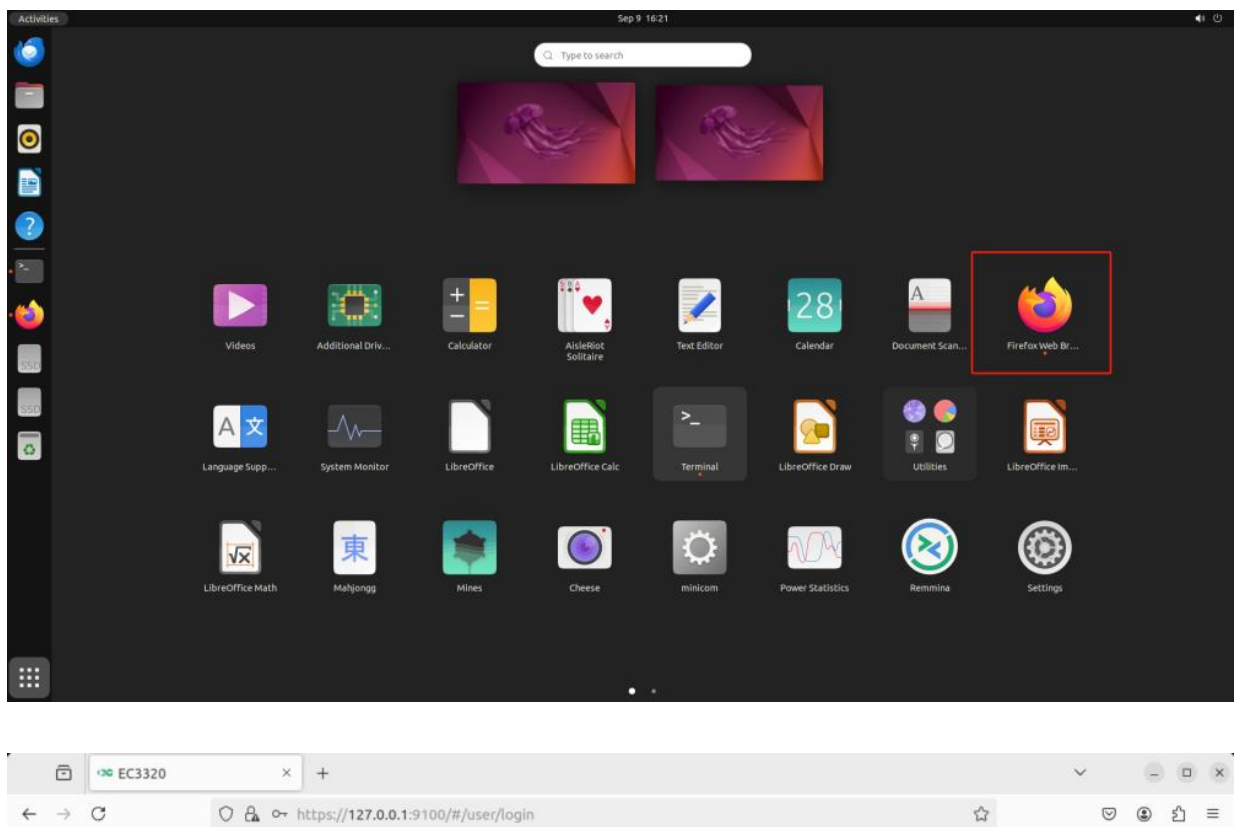
3. Ubuntu Manpage: passwd - change user password
4. Ubuntu Manpage: usermod - modify a user account

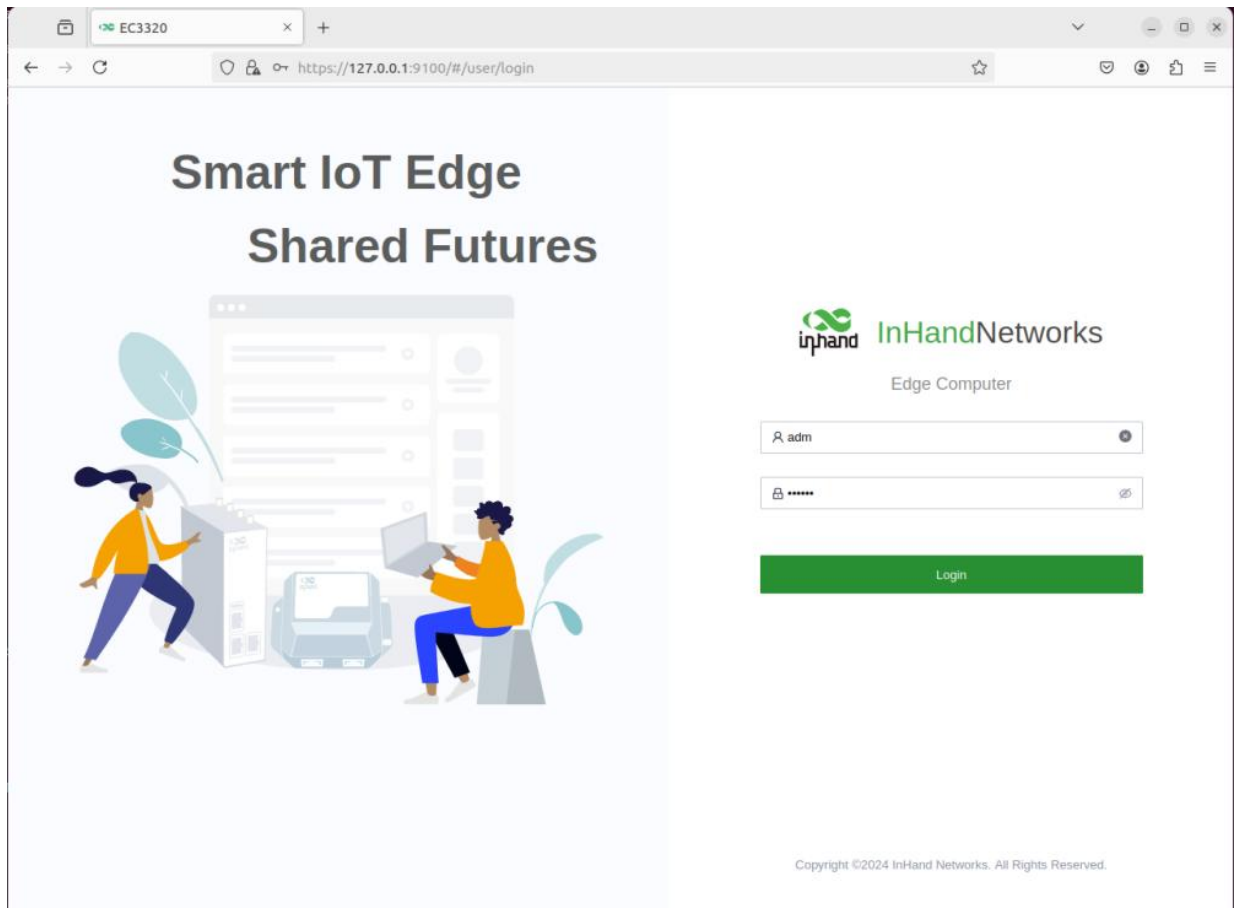
4.4. Network Settings

4.4.1. Ethernet Settings

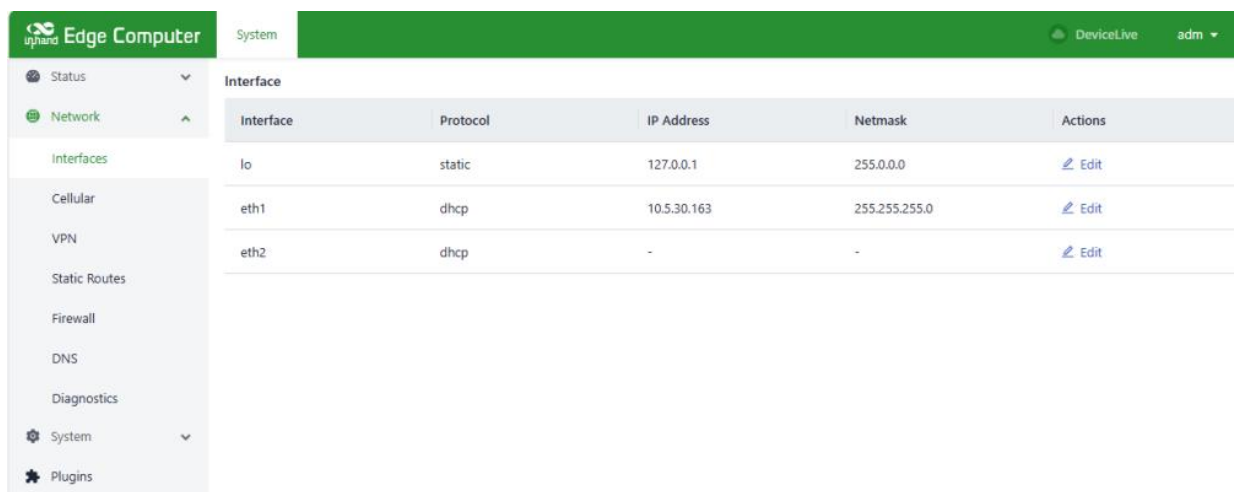
4.4.1.1. Settings Management

1. Click "Show Applications->Firefox Web Browser" on your desktop system, enter `https://127.0.0.1:9100` or access the device's WEB configuration page through an external network. , open the browser and enter `https://IP:9100`.



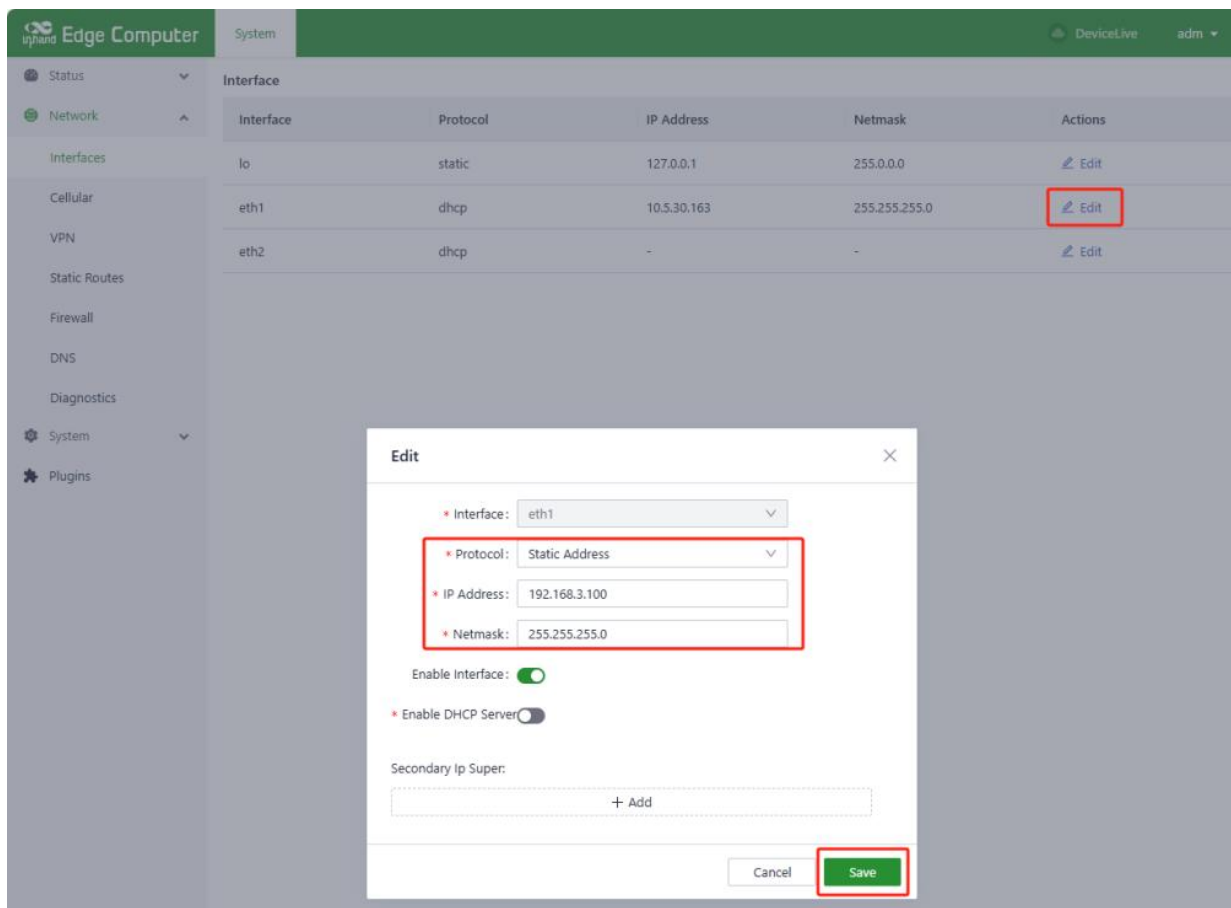


2. Enter the username and password and click Login to log in to the device.
After successful login, select “Network -> Interfaces” and select the corresponding Ethernet interface.



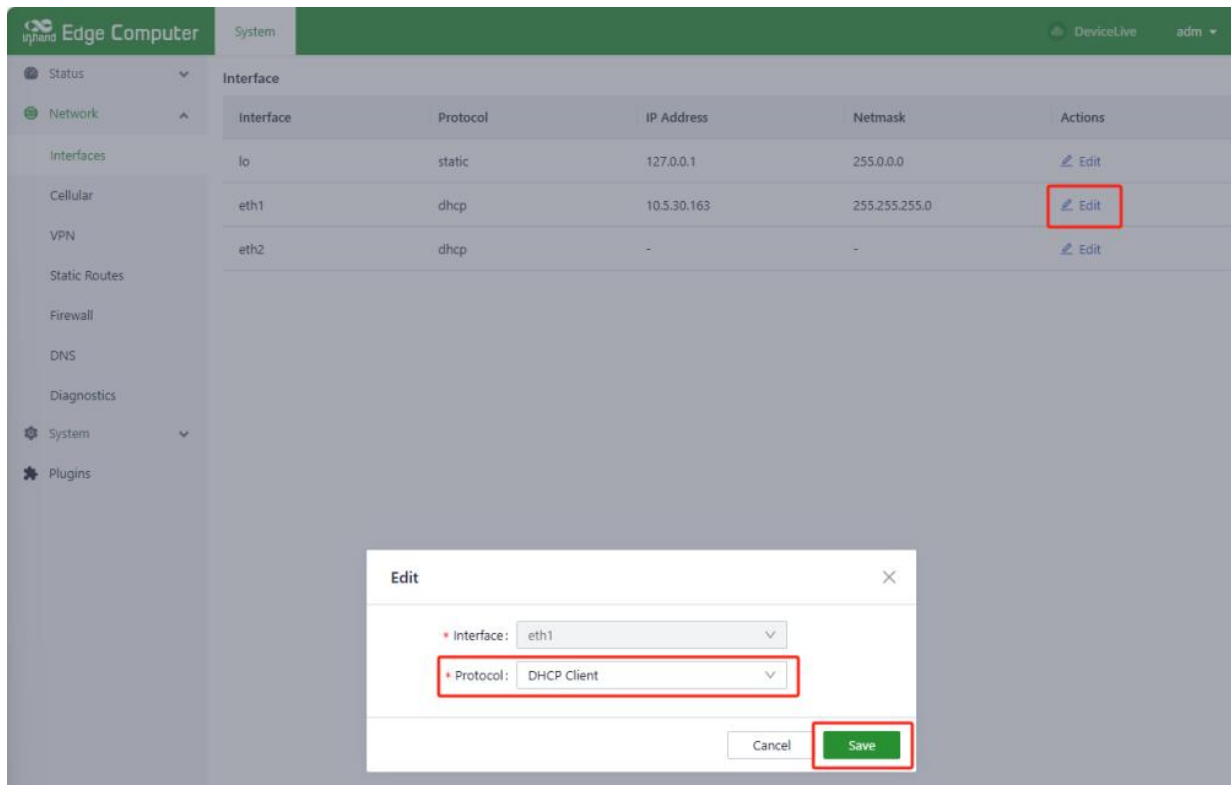
4.4.1.2. Static Configuration

Click Edit in the Ethernet interface, select “Protocol->Static Address”, add a static IP in the IP Address field, add a mask in the netmask and click Save, then the network will be reset.



4.4.1.3. Dynamic Configuration

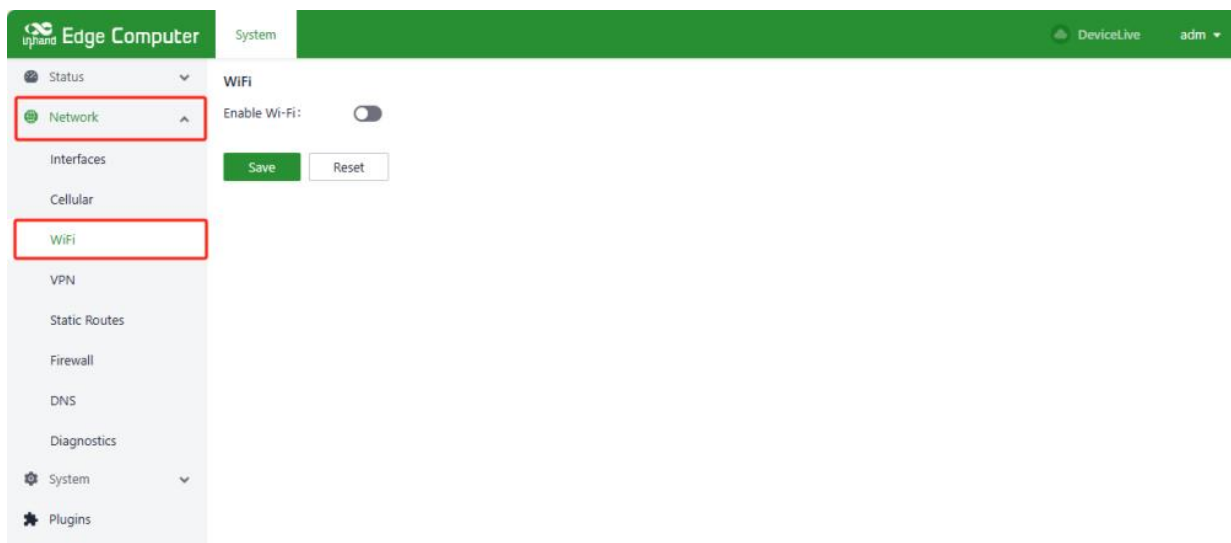
Click Edit in the Ethernet interface, select “Protocol->DHCP Client” and click Save, then the network will be reset.



4.4.2. Wi-Fi Settings

4.4.2.1. Settings Management

After logging in successfully, select Network -> WiFi.



4.4.2.2. Scanning

Click Enable Wi-Fi on the WiFi page and click Scan.

Edge Computer System DeviceLive adm

WiFi

Enable Wi-Fi: ☒

Station Role: ☒ Client ☐ AP

* Client SSID:

Enable Default Route: ☒

* Metric:

Auth Method:

Network Type: ☐ Static Ip ☒ Dynamic Address

Icmp Probes: ☒

* Timeout: Seconds (1-3600)

Enable custom probe ☐

SSID Scan

Channel	SSID	BSSID	Security	Signal(dBm)	Actions
No data					

4.4.2.3. Connection

Click the scanned Wi-Fi Actions -> Connect and enter the Client SSID and key (WPA/WPA2 PSK Key), click Save; you can select Static IP or Dynamic Address in the Network Type of the connection.

Edge Computer

System

DeviceLive adm

Status

Network

Interfaces

Cellular

WiFi

VPN

Static Routes

Firewall

DNS

Diagnostics

System

Plugins

WiFi

Enable Wi-Fi:

Station Role: Client AP

Client SSID:

Scan

Enable Default Route:

Metric: 201

Auth Method: WPA2-PSK

Encrypt Mode: CCMP

WPA/WPA2 PSK Key:

Network Type: Static Ip Dynamic Address

Icmp Probes:

Timeout: 10 Seconds (1-3600)

Enable custom probe:

SSID Scan

Channel	SSID	BSSID	Security	Signal(dBm)	Actions
149			WPA2 PSK (CCMP)	-43	Connect
149			WPA2 PSK (CCMP)	-46	Connect
60			WPA2 PSK (CCMP)	-61	Connect

4.4.2.4. Status Query

Click Status -> WiFi page to check Wi-Fi status.

Edge Computer

System

DeviceLive adm

Status

Device Info

Cellular

WiFi

DHCP

VPN

Routes

Firewall

Logs

Network

System

Plugins

WiFi Status

Station Role: STA

IP Address: 10.5.63.95

Gateway: 10.5.63.254

Signal strength: -67 dBm

Status: Connected

Netmask: 255.255.255.0

DNS: 63.139.2.69 183.221.253.100

Interface Name: wlan0

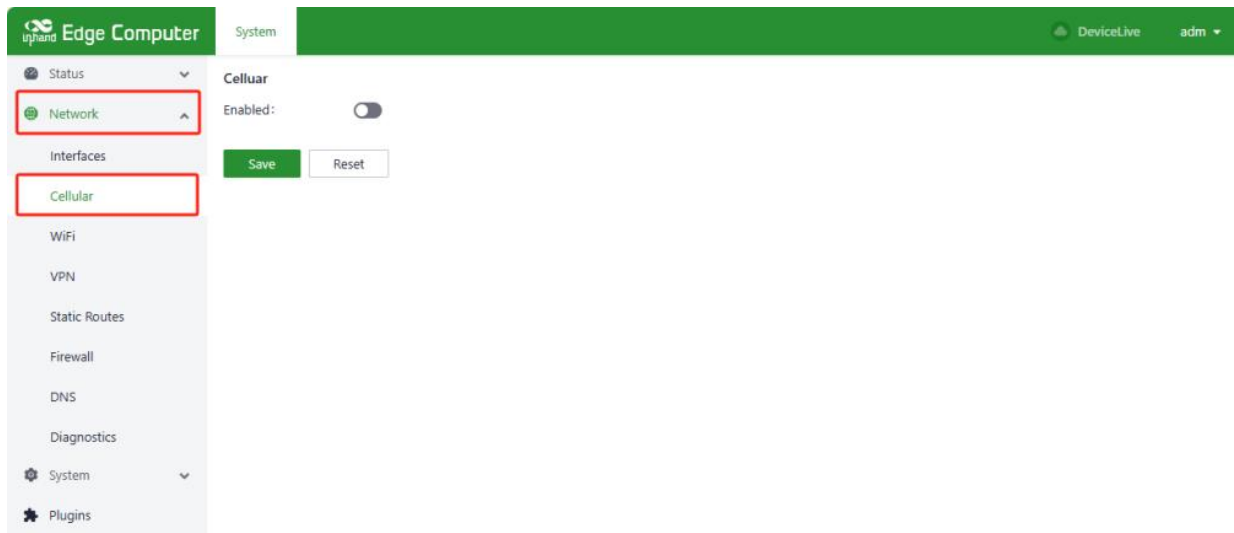
Connected Time: 16 minutes 26 seconds

MTU: 1500

4.4.3. Cellular Network Settings

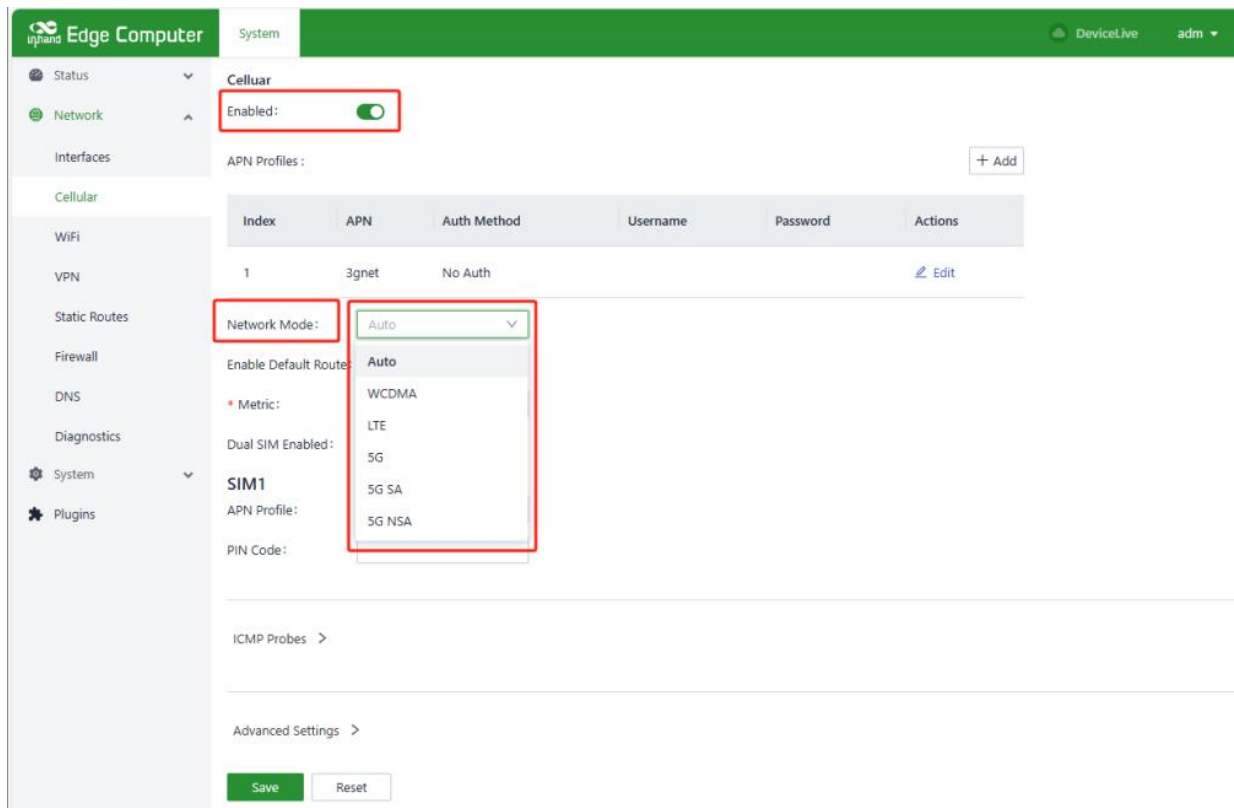
4.4.3.1. Settings Management

After logging in successfully, select Network -> Cellular and click Enabled.



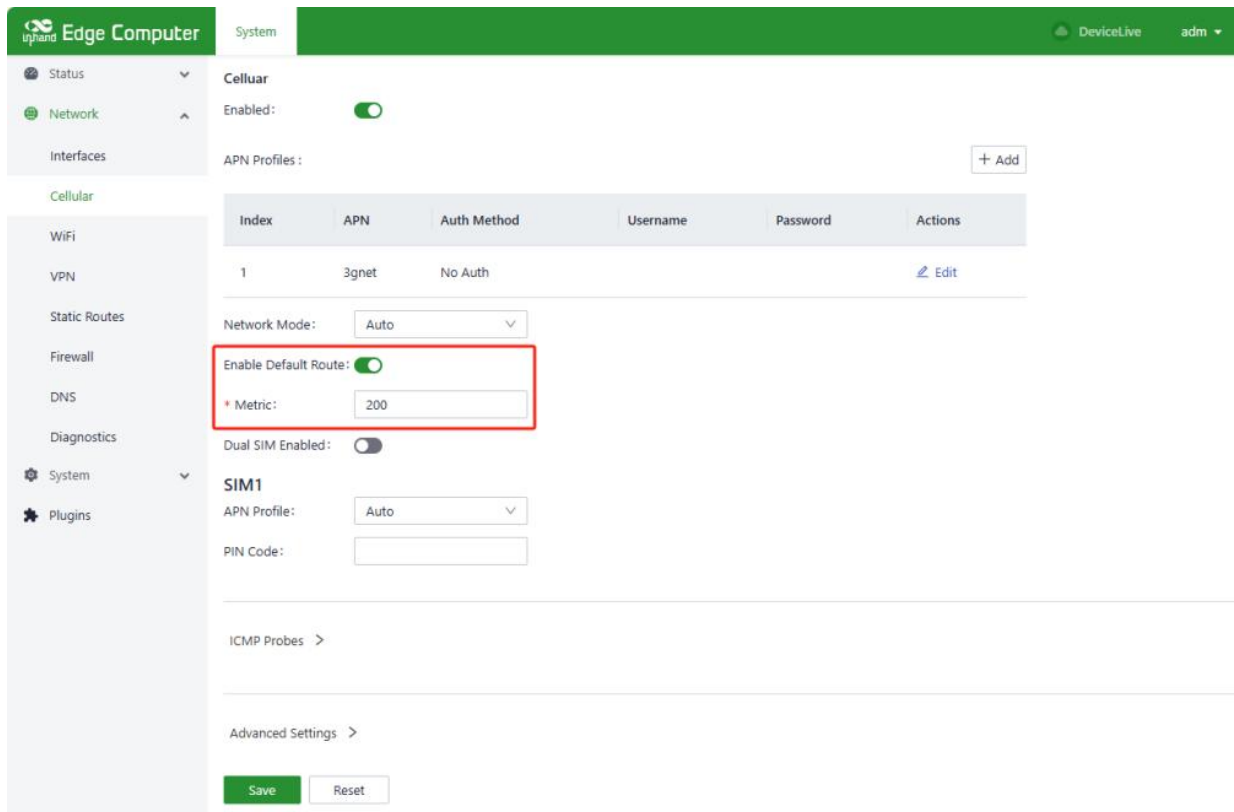
4.4.3.2. Network Mode Selection

Click Cellular Settings page -> Network Mode. The available network modes are Auto, WCDMA, LTE, 5G, 5G SA, and 5G NSA.



4.4.3.3. Adding a Default Route

Click Cellular page -> Enable Default Route. you can enter a metric value up to 2-255 in the Route Metric.



4.4.3.4. SIM Card Selection and Settings

Click Cellular page -> Dual SIM Enabled, select Main SIM from SIM1 or SIM2, configure Max Number of Dials, configure APN parameters and PIN Code for SIM1 and SIM2.

Edge Computer

System

DeviceLive adm

Status

Network

Interfaces

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VPN

Static Routes

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DNS

Diagnostics

System

Plugins

Cellular

Enabled: ☒

APN Profiles: [+ Add](#)

Index	APN	Auth Method	Username	Password	Actions
1	3gnet	No Auth			Edit

Network Mode:

Auto

Enable Default Route: ☒

* Metric:

200

Dual SIM Enabled: ☒

Main SIM:

SIM1

Max. Number of Dials:

3

SIM1

APN Profile:

Auto

PIN Code:

SIM2

APN Profile:

Auto

PIN Code:

ICMP Probes [>](#)

Advanced Settings [>](#)

Save

Reset

4.4.3.5. Status Query

Click Status -> Cellular to view the cellular status.

Edge Computer

System

Device Supervisor

DeviceLive adm

Status

Device Info

Cellular

WiFi

GPS

DHCP

VPN

Routes

Firewall

Logs

Network

System

Plugins

Modem Status

Present SIM: SIM 1

IMEI:

IMSI:

ICCID:

Signal Strength:

Registration Status: Network registered

Operator:

PLMN: 46001

Network Mode: LTE/FDD LTE B3

LAC:

Cellular ID:

Cellular Interface

Status: Connected

IP Address: 10.171.19.6

Netmask: 255.255.255.252

Gateway: 10.171.19.5

DNS: 119.7.7.7 119.6.6.6

MTU: 1500

Connected Time: 52 minutes 47 seconds

4.4.4. CAN

Open Terminal and enter the following command to configure the CAN interface.

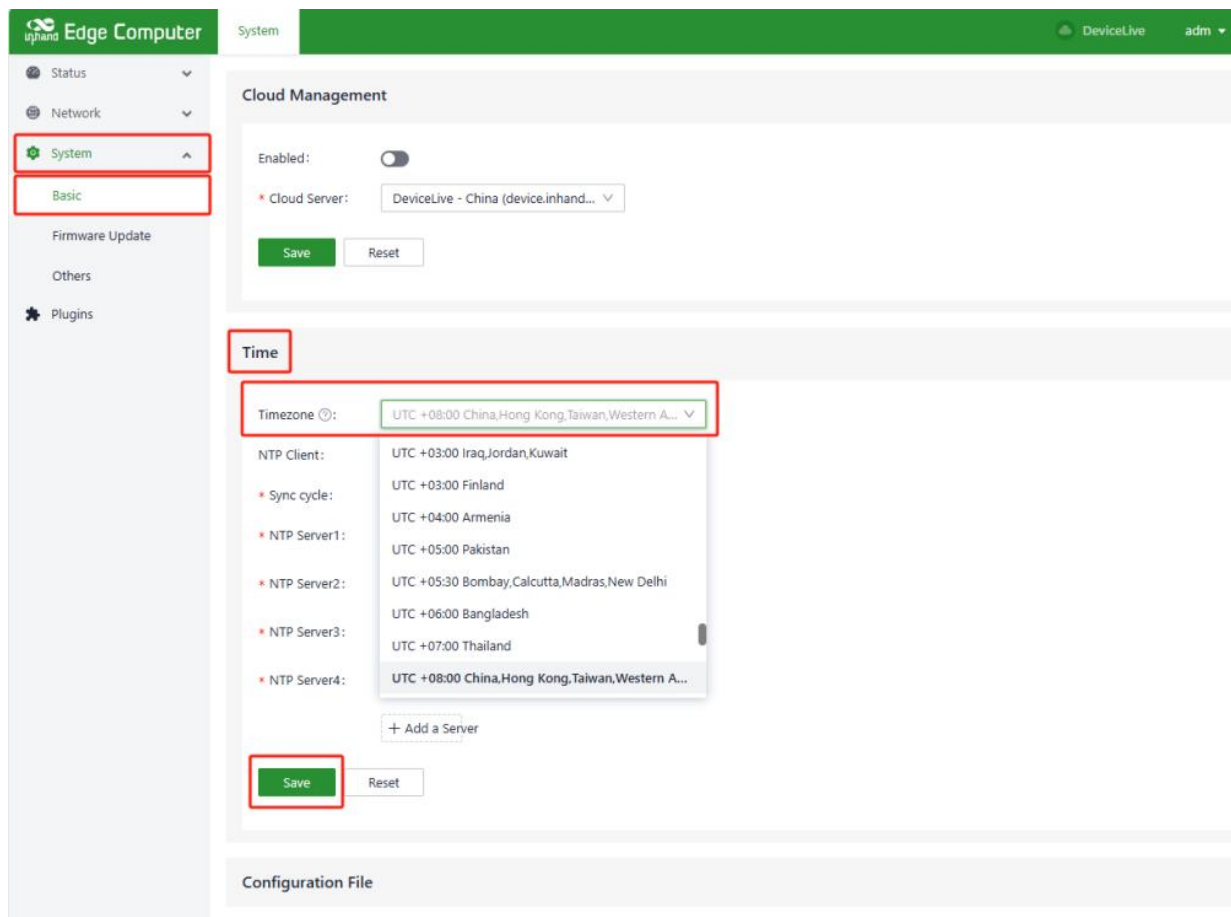
```
# Link up CAN interface  
sudo ip link set can0 up type can bitrate 1000000 fd off
```

```
edge@edge-computer:~$ sudo ip link set can0 up type can bitrate 1000000 fd off  
edge@edge-computer:~$ ifconfig can0  
can0: flags=193<UP,RUNNING,NOARP> mtu 16  
    unspec 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00 txqueuelen 10  (UNSPEC)  
    RX packets 0   bytes 0 (0.0 B)  
    RX errors 0   dropped 0   overruns 0   frame 0  
    TX packets 0   bytes 0 (0.0 B)  
    TX errors 0   dropped 0 overruns 0   carrier 0   collisions 0  
    device interrupt 77  
edge@edge-computer:~$
```

4.5. Time Settings

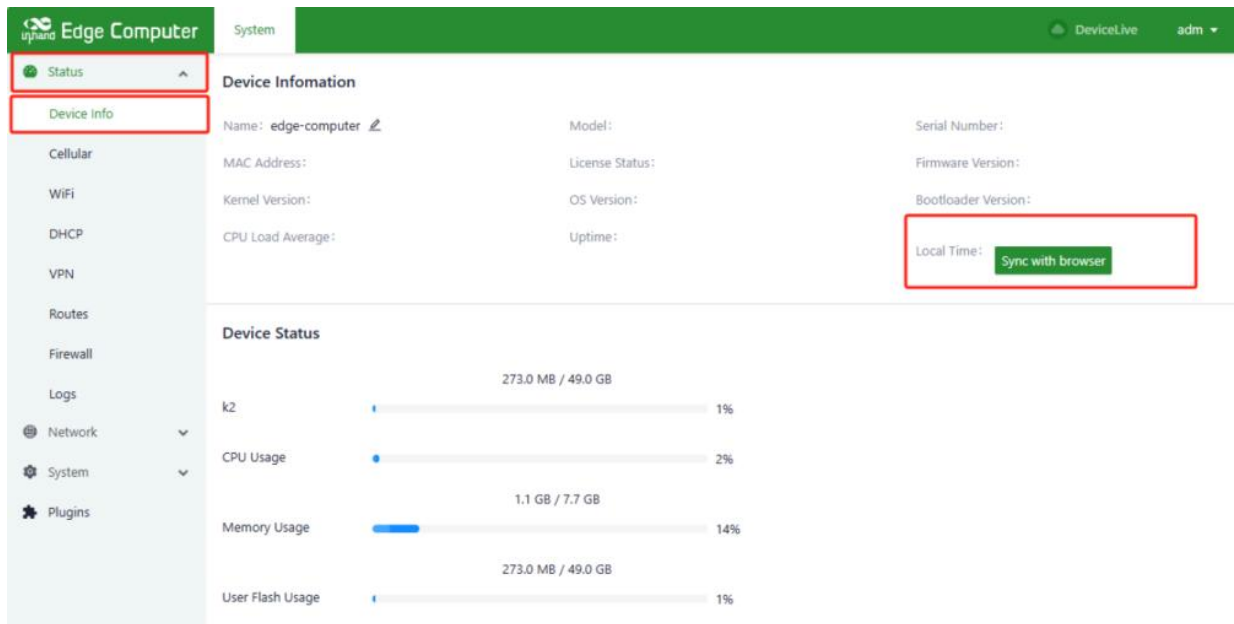
4.5.1. Setting the Timezone

After logging in successfully, select System->Basic->Time->Timezone, select the corresponding time zone and click Save.



4.5.2. Adjustment Time

Click "Status -> Device Info -> Sync with browser" to write the local time to the device.



4.6. Peripheral Configuration

4.6.1. Serial Port Management

The device supports two RS-232 and two RS-485 serial ports corresponding to device nodes `/dev/ttyCOM1`, `/dev/ttyCOM2`, `/dev/ttyCOM3` and `/dev/ttyCOM4`.

Table 7: Serial Port Mapping

COM1	<code>/dev/ttyCOM1</code>
COM2	<code>/dev/ttyCOM2</code>
COM3	<code>/dev/ttyCOM3</code>
COM4	<code>/dev/ttyCOM4</code>

4.6.2. Digital Input/Output Management

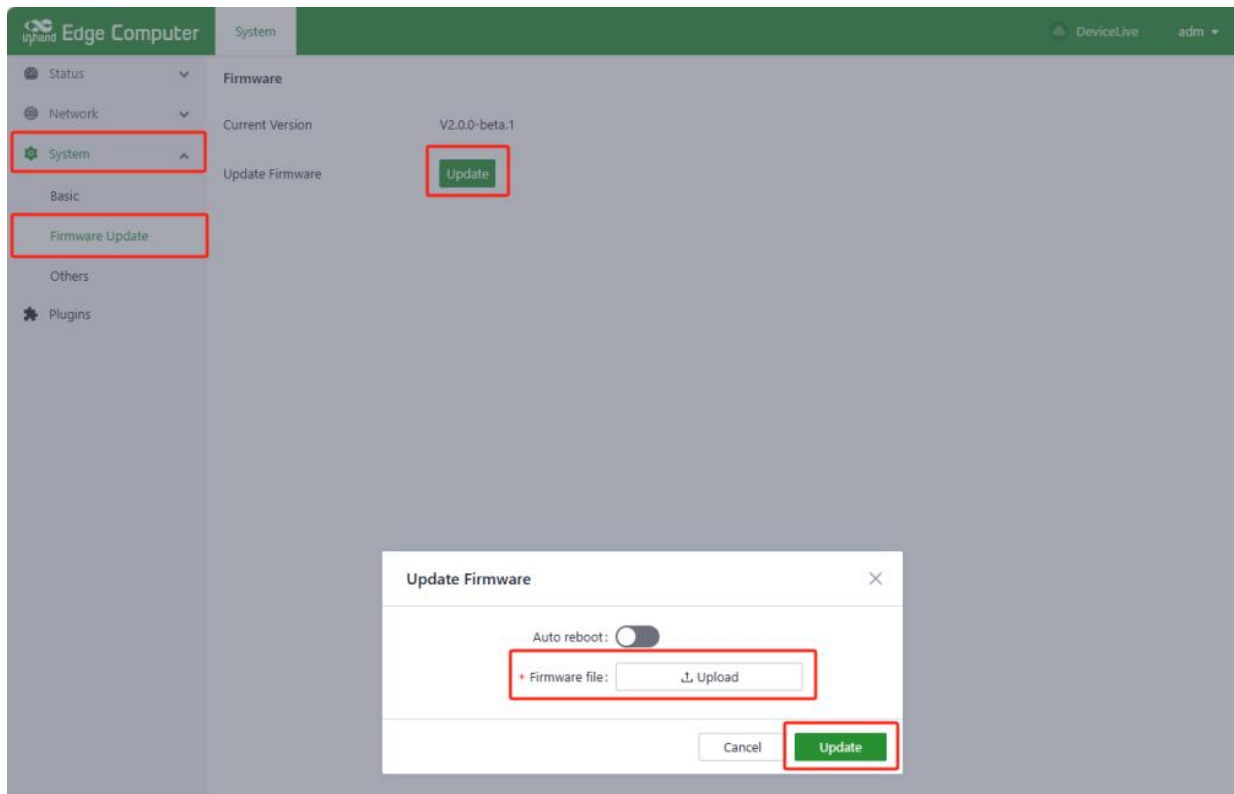
The device supports 4 isolated digital inputs and 4 isolated digital outputs.

Table 8: Digital Inputs/Outputs		
DI	DI0	/sys/class/gpio/gpio498/value
	DI1	/sys/class/gpio/gpio497/value
	DI2	/sys/class/gpio/gpio496/value
	DI3	/sys/class/gpio/gpio495/value
DO	D00	/sys/class/gpio/gpio494/value
	D01	/sys/class/gpio/gpio493/value
	D02	/sys/class/gpio/gpio499/value
	D03	/sys/class/gpio/gpio500/value

5. Advanced

5.1. System Updates

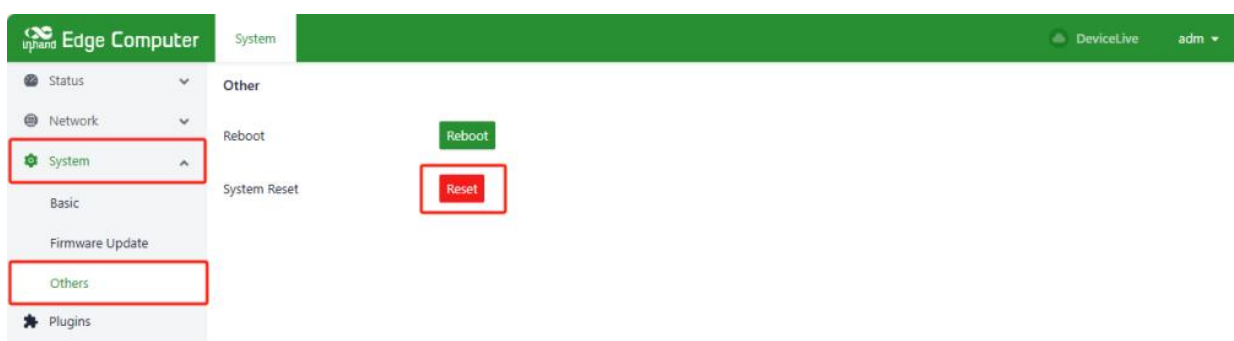
Click System -> Firmware Update, select Update Firmware -> Update, select the upgrade image and click Update, wait for the upgrade to finish.



5.2. System Reset

5.2.1. Factory Reset via WEB

Click System -> Others and select System Reset -> Reset.



5.2.2. Hardware-based Factory Reset

- The device has a RESET pinhole button on the right panel. During normal system operation, press and hold RESET for 10 seconds and wait for the system status light to change from blinking to constantly on and release

it, the device will enter the system reset state (restoring the system to the factory state).

- You can also hold down the RESET button before turning on the power, and then hold it down for more than 5 seconds after the power has been turned on and release it. The appliance will enter a system reset state (return to the factory system state).

5.2.3. Factory Reset via Command

Open Terminal and use the update command to perform a system reset.

```
sudo update reset
```

```
1
```



```
edge@edge-computer:~$ sudo update reset
Do you want to reset the system (yes/no)[no]!:yes
```

6. Security (TPM 2.0)

The device supports Trusted Platform Module 2.0 (TPM2.0) and comes with the pre-installed `tpm2-tools` tool, which allows you to operate the TPM2.0 module directly using commands to implement security functions.

Reference:

1. [tpm2-tools](#)
2. [tpm2-tools/man at master · tpm2-software/tpm2-tools \(github.com\)](#)

7. Programming Guide

Reference:

1. [Journey Develop a SW for Hailo-8 | Hailo](#)
2. [Hailo AI Demos: Experience the Future Of Edge AI Technology](#)

Warning: There is a button cell battery inside our EC3320, The cautions for its use are as follows:

1. not available
2. Do not ingest battery, Chemical Burn Hazard, If the button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.
3. Keep new and used batteries away from children. If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.
4. The operating temperature of the battery is -20°C to +60°C, The product should be installed in an environment that does not exceed this temperature range
5. Disposal of a BATTERY into fire or a hot oven, or mechanically crushing or cutting of a BATTERY, that can result in an EXPLOSION;
6. Leaving a BATTERY in an extremely high temperature surrounding environment that can result in an EXPLOSION or the leakage of flammable liquid or gas;
7. A BATTERY subjected to extremely low air pressure that may result in an EXPLOSION or the leakage of flammable liquid or gas.

FCC STATEMENT

This device complies with Part 15 of the 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.

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF Exposure

The equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The availability of some specific channels and/or operational frequency bands is country dependent and firmware programmed at the factory to match the intended destination.

The firmware setting is not accessible by the end user.

IC STATEMENT

This device complies with Industry Canada license-exempt RSS standard(s):
Operation is subject to the following Two conditions:

- (1) this device may not cause interference, and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (B)

Avis d'Industrie Canada Le présent appareil est conforme aux CNR d'industrie Canada applicables aux appareils radio exem pts de licence
L'exploitation est autorisée aux deux conditions suivantes:

- 1) L'appareil ne doit pas produire de brouillage; et
- 2) L'utillsateur de l'appareil doit accepter brouillage radioélectrique subi meme si le brouillage est susceptible d'en compromettre le fonctionnement. mauvais fonctionnement de l'appareil.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

CAN NMB-3 (B)

Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps.