

# AES-IMX8Ex

## ARM-IoT Gateway Series

- *NXP i.MX 8M Plus Quad-core Cortex-A53/M7*



## User Manual

Acrosser Technology Co., Ltd.  
[www.acrosser.com](http://www.acrosser.com)

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## Packing List

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

Item	Quantity
AES-IMX8Ex	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

## About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at [ACROSSER.com](http://ACROSSER.com) for the latest version of this document.

## Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references.

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running.
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
17. If any of the following situations arises, please the contact our service personnel:
  - i. Damaged power cord or plug
  - ii. Liquid intrusion to the device
  - iii. Exposure to moisture
  - iv. Device is not working as expected or in a manner as described in this manual
  - v. The device is dropped or damaged
  - vi. Any obvious signs of damage displayed on the device
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

## FCC Statement

**Warning!**

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

**Caution:**

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

**Attention:**

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.

Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

# China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

ACROSSER System

QO4-381 Rev.A0

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	X	O	O	O	O	O
外部信号连接器及线材	X	O	O	O	O	O
外壳	O	O	O	O	O	O
中央处理器与内存	X	O	O	O	O	O
硬盘	X	O	O	O	O	O
液晶模块	X	X	O	O	O	O
光驱	X	O	O	O	O	O
触控模块	X	O	O	O	O	O
电源	X	O	O	O	O	O
电池	X	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制。

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。

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

备注：

- 一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
- 二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。
- 三、上述部件物质液晶模块、触控模块仅一体机产品适用。

# China RoHS Requirements (EN)

## Hazardous and Toxic Materials List

ACROSSER System

QO4-381 Rev.A0

Component Name	Hazardous or Toxic Materials or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBs)	Polybrominated diphenyl ethers (PBDEs)
PCB and Components	X	O	O	O	O	O
Wires & Connectors for Ext. Connections	X	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	X	O	O	O	O	O
HDD Drive	X	O	O	O	O	O
LCD Module	X	X	O	O	O	O
Optical Drive	X	O	O	O	O	O
Touch Control Module	X	O	O	O	O	O
PSU	X	O	O	O	O	O
Battery	X	O	O	O	O	O

This form is prepared in compliance with the provisions of SJ/T 11364.

- O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.
- X: The level of toxic of hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1. The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.
2. Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.
3. LCD Module and Touch Control Module only applies to certain products which feature these components.

Ver: 110

Date: Apr. 1, 2024

**To read this User Manual on your smart phone, you will have to install an APP that can read PDF file format first. Please find the APP you prefer from the APP Market.**

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# 1. Product Specifications

## 1.1. Specifications

### System

<b>CPU</b>	<ul style="list-style-type: none"> <li>• ARM Cortex-A53 1.6 GHz Processor</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• Onboard DDR4L 2GB (AES-IM8XE1)</li> <li>• Onboard DDR4L 4GB (AES-IM8XE2)</li> <li>• Onboard DDR4L 8GB (AES-IM8XE3)</li> </ul>
<b>Storage</b>	<ul style="list-style-type: none"> <li>• eMMC 16GB (AES-IM8XE1)</li> <li>• eMMC 32GB (AES-IM8XE2, AES-IM8XE3)</li> </ul>
<b>Real Time Clock</b>	<ul style="list-style-type: none"> <li>• 1x RTC, with 3V CR2032 Lithium Battery</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• TPM 2.0</li> </ul>
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• 7x Programmable LED Control</li> </ul>
<b>Cellular</b>	<ul style="list-style-type: none"> <li>• 1x Mini PCIe Connector (USB Signal)</li> </ul>
<b>Wireless LAN</b>	<ul style="list-style-type: none"> <li>• 1x Mini PCIe Connector (PCIe, USB Signal)</li> </ul>
<b>Operating System</b>	<ul style="list-style-type: none"> <li>• Debian 11, Yocto kirkstone 5.15, Ubuntu 22.04 (optional)</li> </ul>
<b>Support Protocol</b>	<ul style="list-style-type: none"> <li>• Modbus / MQTT Library (by request)</li> </ul>

### I/O

<b>Ethernet</b>	<ul style="list-style-type: none"> <li>• 2x RJ-45 Gigabit Ethernet</li> </ul>
<b>USB</b>	<ul style="list-style-type: none"> <li>• 2x USB 3.0 Type-A</li> </ul>
<b>Serial Ports</b>	<ul style="list-style-type: none"> <li>• 2x RS-232/422/485 Switchable, Phoenix Connector</li> </ul>
<b>CAN Bus</b>	<ul style="list-style-type: none"> <li>• CAN-FD x 2 CH, Phoenix Connector</li> </ul>
<b>Display</b>	<ul style="list-style-type: none"> <li>• 1x HDMI (Output)</li> </ul>
<b>Power Connector</b>	<ul style="list-style-type: none"> <li>• 2-Pin 3.81mm Pitch Terminal Block</li> </ul>
<b>Debug Port</b>	<ul style="list-style-type: none"> <li>• 1x Micro USB</li> </ul>
<b>Expansion Slot</b>	<ul style="list-style-type: none"> <li>• 1x SIM Card Slot</li> <li>• 1x Micro SD Slot</li> </ul>

### Power Supply

<b>Power Requirement</b>	<ul style="list-style-type: none"> <li>• DC 9-36V</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• 9.36W (Full Loading)</li> </ul>
<b>MTBF (Hours)</b>	<ul style="list-style-type: none"> <li>• 479,374</li> </ul>

## Environmental

---

<b>Operation Temperature</b>	• -4 °F ~ 158 °F (-20 °C ~ 70 °C)
<b>Operation Humidity</b>	• 10% ~ 95% relative humidity, non-condensing
<b>Storage Temperature</b>	• -40 °F ~ 176 °F (-40 °C ~ 80 °C)
<b>Dimension</b>	• 5.54" x 3.86" x 1.89" (140.76mm x 98.2mm x 48mm)
<b>Weight</b>	• 2.1 lbs. (0.95Kg)
<b>Mount Options</b>	• Wall Mount, Din Rail (Optional)

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## Certification

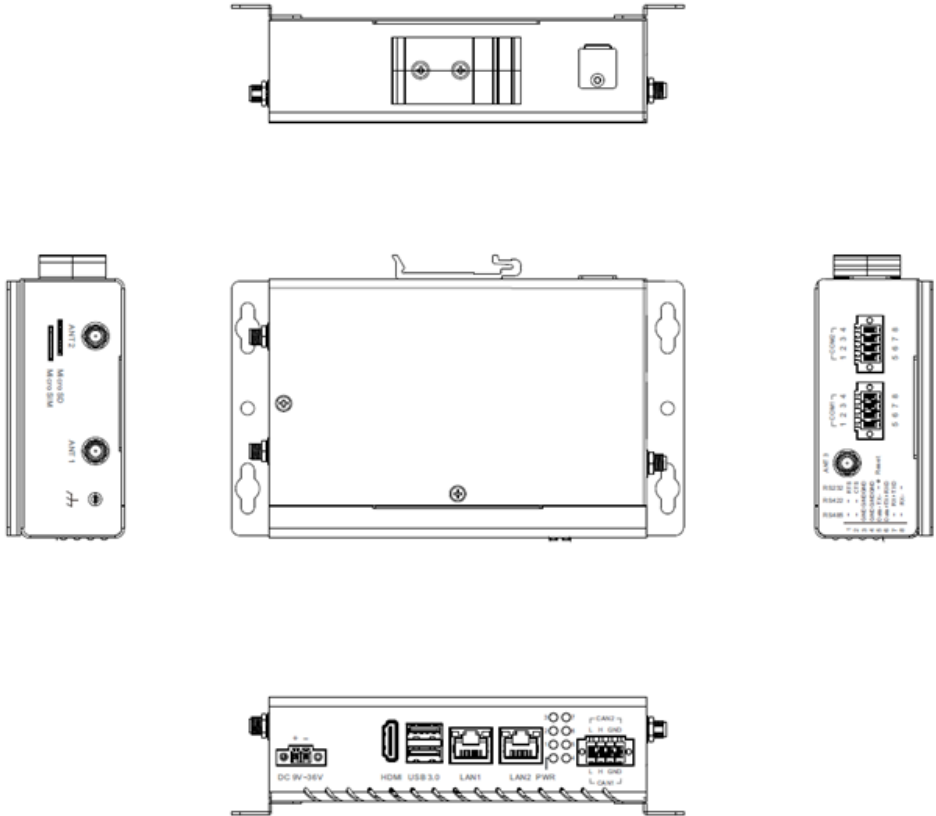
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<b>Vibration</b>	• 3Grms/ 5~500 Hz operation – eMMC, MicroSD (IEC68-2-64)
<b>Shock</b>	• 30G peak acceleration (11 msec. Duration) • IEC 68-2-27
<b>CE/FCC</b>	• CE/FCC

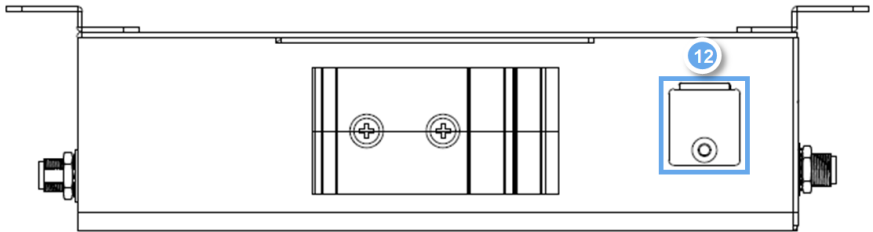
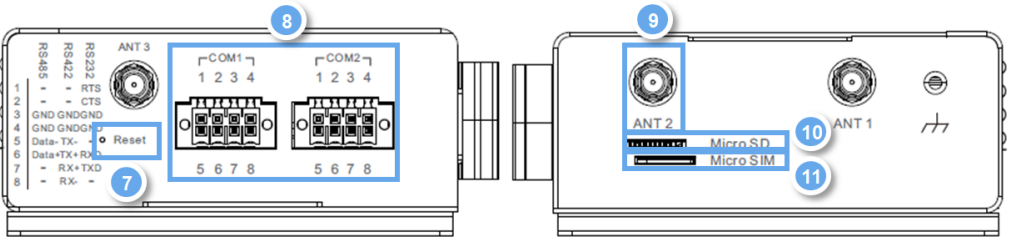
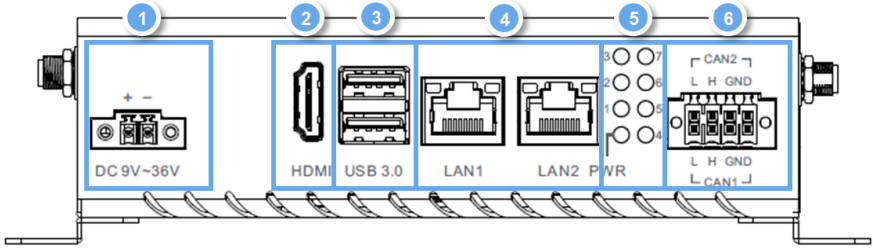
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## 2. Hardware Information

### 2.1. Dimensions



## 2.2. I/O Location

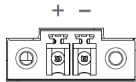


## 2.3. List of Connector

The AES-IMX8E features several connectors which can be configured for your application. This section details those connections and their specifications.

Label	Function
1	DC Power
2	HDMI Port
3	USB 3.0 Port
4	Giga LAN Port
5	Indicators Light
6	CAN-FD Port
7	Reset Button
8	RS-232/422/485 Port
9	Antenna x 3
10	Micro SD Slot
11	Micro SIM Slot
12	Debug Port

### 2.3.1. (1) DC Power



DC 9V~36V

The gateway can accept DC 9-36V input through 2-pin phoenix connector.

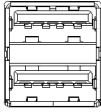
### 2.3.2. (2) HDMI Port



HDMI

The HDMI support port enables video output to an external display.

### 2.3.3. (3) USB 3.0 Port

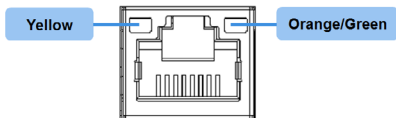


USB 3.0

The USB 3.0 is a type A connector, and can also support USB mass storage.

### 2.3.4. (4) Giga LAN Port

The standard RJ-45 LAN jack is provided the connection to the Local Area Network (LAN).



LED	Function	Status
Yellow	Active status	ON: LAN link is established. OFF: LAN link is not established. Blink: Data received and transmitted.
Orange/ Green	Link Speed status	Green on: 100Mbps. Orange on: 1000Mbps.

### 2.3.5. (5) Indicators Light

User can control the 7 LED via the GPIO.

The control command for LED 1-7:



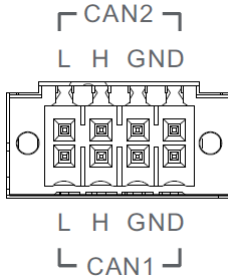
PWR

Control Command	
Turn On	<code>m0cli -c 0 -i 1 -v 1</code>
Turn Off	<code>m0cli -c 0 -i 1 -v 0</code>

**Note:** i: LED number.

### 2.3.6. (6) CAN-FD Port

Provides two phoenix CANbus ports for external device connection.



Check chapter 3 for more information.

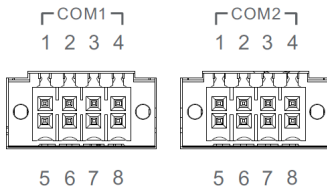
### 2.3.7. (7) Reset Button

- Reset

Press the button to reboot the OS.

### 2.3.8. (8) RS-232/422/485 Port

Provides two phoenix connectors for RS-232/422/485 interface.



Check chapter 3 for more information.

### 2.3.9. (9) Antenna



The 3 Antenna configurations are Wi-Fi, 4G, or LTE.

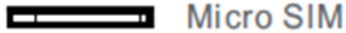
### 2.3.10. (10) Micro SD Slot



Micro SD

User can increase the available storage by inserting the micro SD card.

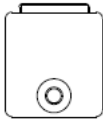
### 2.3.11. (11) Micro SIM Slot



User can insert the micro SIM card into the slot when using an LTE module via the mini card slot.

### 2.3.12. (12) Debug Port

Log into the gateway's Linux OS via SSH via debug port (Micro USB type).



Serial Port Settings	
Baud rate	115200 bps
Parity	None
Data bits	8
Stop bits	1
Flow Control	None

See next chapter (Gateway Setup and Configuration) for further information.



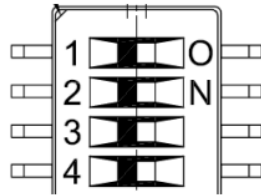
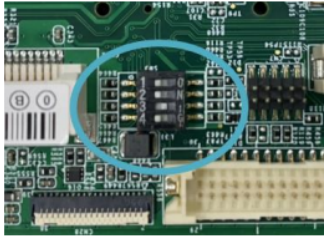
# 3. Gateway Setup and Configuration

## 3.1. Connecting to System

When connecting a PC or laptop to the AES-IMX8E system, using PuTTY with Windows 10 is recommended. Users can download the software from the PuTTY website.

Step 1: Download the PuTTY tools: <https://www.putty.org/>

Step 2: Switch jumper (SW3) to 0010. (Factory default settings).

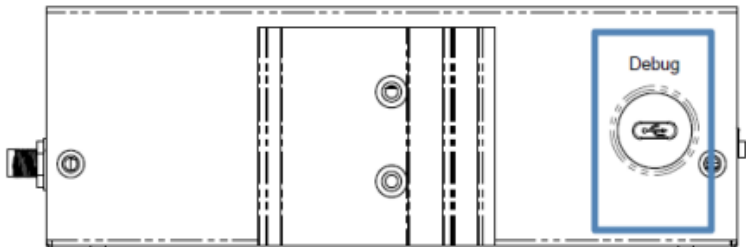


**PIN 1, 2, 4:** Switch to OFF.

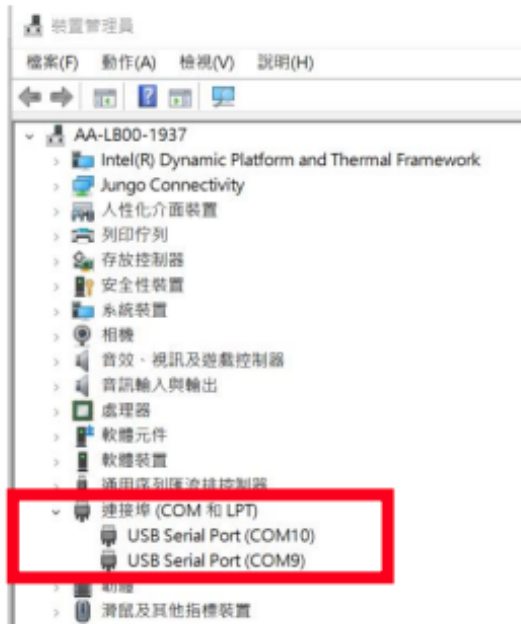
**PIN 3:** Switch to ON.

Step 3: Connect the gateway via a USB cable.

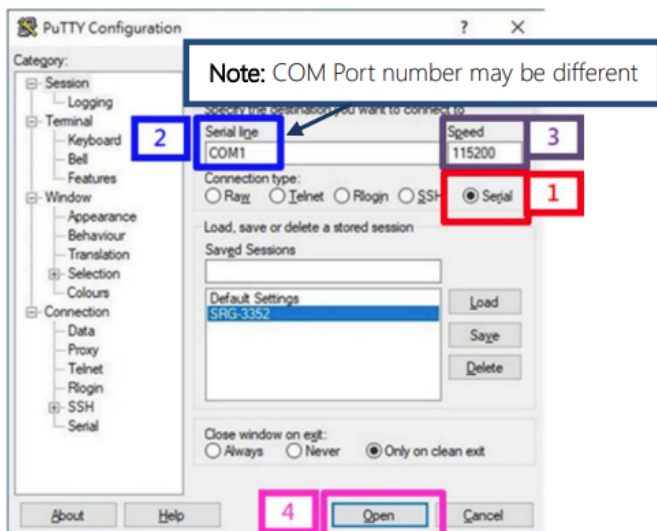
Connect your computer to the AES-IMX8E using the micro USB port. (Debug port is at the same side as din rail mounting holes), please see diagram below.

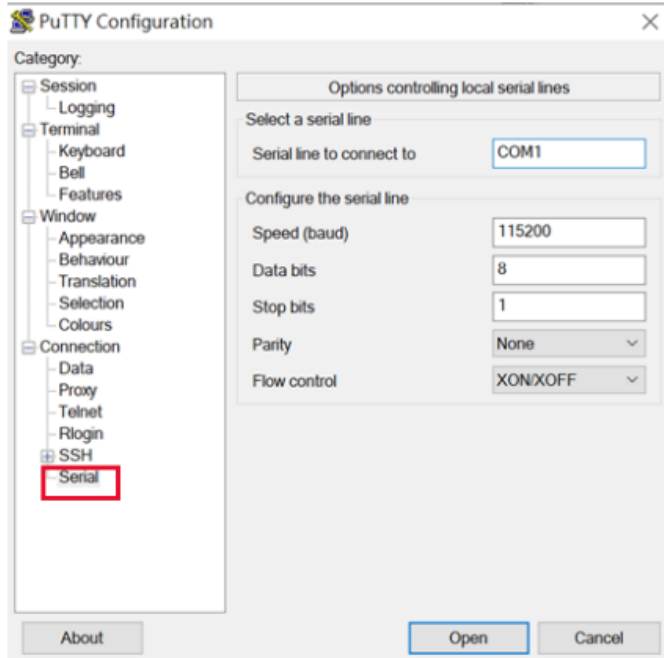


- Step 4: Open Device Manager and locate Multifunction Composite Gadget. Double click on the device. A pop-up should appear, with a notice that the CDC Serial is unrecognized.



- Step 5: Open the PuTTY application. In the configuration menu, type in the COM port and type 115200 in the Speed column. Select "Serial" under the Connection Type heading, then click the Open button to run PuTT.





Step 6: Log into the system using the below credentials.

**Username:** root

**Password:** root

You will see a welcome message when you have successfully connected to the gateway.

## 3.2. User Account Management

This section will show you how to manage to user accounts on this system.

### 3.2.1. To Add User Account

Command Line:

```
$ sudo useradd USERACCOUNT
```

E.g. Creat an account of “jonny”

```
$ sudo adduser jonny
```

```
user@IMX8:~$ sudo adduser jonny
[sudo] password for user:
Adding user `jonny' ...
Adding new group `jonny' (1001) ...
Adding new user `jonny' (1001) with group `jonny' ...
Creating home directory `/home/jonny' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
```

### 3.2.2. To Delete User Account

Command Line:

```
$ sudo userdel USERACCOUNT
```

E.g. Delete an account of “jonny”

```
$ sudo userdel jonny
```

## 3.3. I/O Management

This section will show you how to operate the I/O function.

### Control GPIO

Command:

```
gpionum: 85
```

### Set GPIO direction:

E.g.

```
echo 85 > /sys/class/gpio/export
```

```
echo "out" > /sys/class/gpio/gpio85/direction
```

**Set GPIO ON:**

E.g.

```
echo 1 > /sys/class/gpio/gpio85/value
```

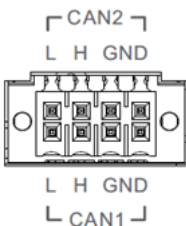
**Set GPIO OFF:**

E.g.

```
echo 0 > /sys/class/gpio/gpio85/value
```

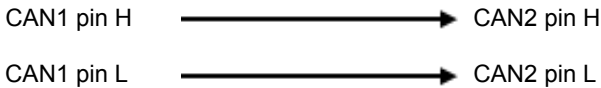
When successful, output will display as below.

### 3.4. CAN-FD Pin Definition

System Name	Position	Pin Definition				
		Pin No.				
CAN1/CAN2		2	4	6	8	
		<b>CAN 2</b>	L	H	GND	GND
		Pin No.	1	3	5	7
		<b>CAN 1</b>	L	H	GND	GND

**CAN Bus Read/Write**

The two ports can be connected to each other, as below:



Command:

**Run can bus script:**

***ifconfig can0 down***

***ip link set can0 type can loopback off***

***ip link set can0 type can bitrate 1000000 triple-sampling on***

***ifconfig can1 down***

***ip link set can1 type can loopback off***

***ip link set can1 type can bitrate 1000000 triple-sampling on***

***ifconfig can0 up***

***ifconfig can1 up***

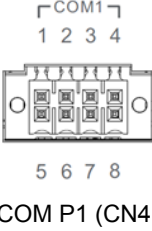
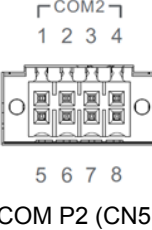
***candump can0&***

***candump can1&***

***cansend can0 111#1122334455667788***

***cansend can1 111#8877665544332211***

### 3.5. Pin Definition: RS-232/422/485 x 2

System Name	Position
/dev/ttyM xc0	<div style="text-align: center;">  <p>COM1 1 2 3 4</p> <p>5 6 7 8</p> <p>COM P1 (CN4)</p> </div>
/dev/ttyM xc2	<div style="text-align: center;">  <p>COM2 1 2 3 4</p> <p>5 6 7 8</p> <p>COM P2 (CN5)</p> </div>

Pin	RS232	RS422	RS485
1	RTS	-	-
2	CTS	-	-
3	GND		
4			
5	-	TX-	Data-
6	RXD	TX+	Data+
7	TXD	RX+	-
8	-	RX-	-

#### 3.5.1. Check/Switch RS-232/422/485 Mode

##### COM P1 (CN4):

Mode 0 = GPIO85 signal inversion					
Mode 1 = GPIO86 signal inversion					
Switch Function	Mode 0	Mode 1	GPIO85	GPIO86	Function
Signal (High/Low)	1	0	0	1	RS232
Signal (High/Low)	0	1	1	0	RS485
Signal (High/Low)	1	1	0	0	RS485/ RS422

**COM P2 (CN5):**

Mode 0 = GPIO87 signal inversion					
Mode 1 = GPIO12 signal inversion					
Switch Function	Mode 0	Mode 1	GPIO87	GPIO12	Function
Signal (High/Low)	1	0	0	1	RS232
Signal (High/Low)	0	1	1	0	RS485
Signal (High/Low)	1	1	0	0	RS485/ RS422

**RS232 mode GPIO control:**

```
echo 0 > /sys/class/gpio/gpio85/value
```

```
echo 1 > /sys/class/gpio/gpio86/value
```

```
echo 0 > /sys/class/gpio/gpio87/value
```

```
echo 1 > /sys/class/gpio/gpio12/value
```

**RS485 mode GPIO control:**

```
echo 1 > /sys/class/gpio/gpio85/value
```

```
echo 0 > /sys/class/gpio/gpio86/value
```

```
echo 1 > /sys/class/gpio/gpio87/value
```

```
echo 0 > /sys/class/gpio/gpio12/value
```

**RS422 mode GPIO control:**

```
echo 0 > /sys/class/gpio/gpio85/value
```

```
echo 0 > /sys/class/gpio/gpio86/value
```

```
echo 0 > /sys/class/gpio/gpio87/value
```

```
echo 0 > /sys/class/gpio/gpio12/value
```



## 3.6. Network Settings

This section will show you how to check and setup the network settings.



### 3.6.1. Check the Network Status

Command:

```
$ nmcli dev status
```

```
user@IMX8:~$ nmcli dev status
DEVICE   TYPE          STATE          CONNECTION
eth1     ethernet     connected     Wired connection 1
eth0     ethernet     unavailable   --
can0     can          unmanaged     --
can1     can          unmanaged     --
lo       loopback     unmanaged     --
```

NETWORKPROFILE -> It should be:

Profile	Support Hardware
LAN1	<p>LAN 1</p> 
LAN0	<p>LAN 2</p> 
Modem	4G LTE module

### 3.6.2. Add the network connection information

Check the connection file if existed.

Command:

```
$ ls /etc/NetworkManager/system-connections/
```

Notes. If there are no connection file existed, add new connection as follows:

Add ethernet connection of eth0/eth1 before IP settings.

Command:

```
$ sudo nmcli connection add con-name eth0 type ethernet ifname eth0
```

```
user@IMX8:~$ sudo nmcli connection add con-name eth0 type ethernet ifname eth0
[sudo] password for user:
Connection 'eth0' (c0412ae3-db45-4d83-82a0-f925af13fcbb) successfully added.
```

```
$ sudo nmcli connection add con-name eth1 type ethernet ifname eth1
```

```
user@IMX8:~$ sudo nmcli connection add con-name eth1 type ethernet ifname eth1  
Connection 'eth1' (d2a76294-65d4-425c-b799-ebf71c4a255b) successfully added.
```

Check the connection file again. User would see eth0.nmconnection and eth1.nmconnection file.

Command:

```
$ ls /etc/NetworkManager/system-connections/
```

```
user@IMX8:~$ ls /etc/NetworkManager/system-connections/  
eth0.nmconnection eth1.nmconnection
```

### 3.6.3. Modify the connection to Static IP

Command:

```
$ sudo nmcli connection mod eth0 ipv4.method manual ip4 192.16.12.21/24
```

```
$ sudo nmcli connection up eth0
```

```
$ sudo nmcli connection mod eth1 ip4 192.16.12.26/24
```

```
$ sudo nmcli connection up eth1
```

Check the status of all network interface:

```
$ sudo nmcli dev sh
```

### 3.6.4. Modify the connection to Dynamic IP

Command:

```
$ sudo nmcli connection mod eth0 ipv4.method auto
```

```
$ sudo nmcli con mod eth0 -ipv4.addresses "192.16.12.21/24"
```

```
$ sudo nmcli connection up eth0
```

```
$ sudo nmcli connection mod eth1 ipv4.method auto
```

```
$ sudo nmcli con mod eth1 -ipv4.addresses "192.16.12.26/24"
```

```
$ sudo nmcli connection up eth1
```

Check the status of all network interface:

```
$ sudo nmcli dev sh
```

## 3.7. Cellular Network Settings (Optional)

This section will show you how to check and setup the cellular network setting.

### 3.7.1. Check the Cellular Module Status

Step 1: Leave Command:

```
$ apt-get install minicom
```

Then press 'Y'.

Step 2: Leave Command:

```
$ minicom -s
```

Step 3: Choose "Serial port setup", then press "A" to settings.

Step 4: Leave Command:

```
$/dev/ttyUSB3
```

Finish setting configuration, then press "Enter"

Step 5: Choose "Exit" to leave the dialog.

### 3.7.2. Check Module Information in Minicom

**Check if module is connected to the serial port:**

Command:

```
$ AT
```

**Check the SIM card status:**

Command:

```
$ AT+CPIN?
```

**Check module manufacturer information:**

Command:

```
$ ATI
```

**Check setting APN:**

Command:

```
$ AT+CGDCONT=1,"IPV4V6","internet"
```

**Check 4G signal quality:**

Command:

```
$ AT+CGDCONT?
```

```
$ AT+CSQ
```

### 3.7.2.1. Leave Minicom

- Step 1: Press “Ctrl +A”.
- Step 2: Press “X”.
- Step 3: Choose “Yes” then select “Enter” to leave Minicom.

### 3.7.3. Dial-up Cellular Module

#### Check the cellular module status

Command:

```
$ sudo su  
# systemctl enable ModemManager  
# sudo systemctl start ModemManager  
# mmcli --list-modems  
# mmcli -m 0
```

Cellular module will show “register” status when module is ready.

#### Enable the cellular module

Command:

```
# mmcli -m 0 -e
```

#### Dial up the cellular module

Command:

```
# nmcli -a  
# nmcli c add con-name test type gsm ifname ttyUSB2 apn internet
```

#### Check the cellular module connection

Command:

```
# ifconfig  
# ping 8.8.8.8
```

## 3.8. System Management

This section will show you how to check and setup system settings such as the OS version, RTC, etc.

### 3.8.1. Check OS Version

Command:

```
$ cat /etc/os-release
```

### 3.8.2. Check Storage Status

Command:

```
$ df -h
```

```
$ lsblk
```

```
user@IMX8:~$ lsblk
NAME                                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
mmcblk2                             179:0    0 29.1G  0 disk
├─mmcblk2p1                          179:1    0 83.2M  0 part
└─mmcblk2p2                          179:2    0 29.1G  0 part
mmcblk2boot0                        179:32   0    4M    1 disk
mmcblk2boot1                        179:64   0    4M    1 disk
mmcblk1                              179:96   0 14.7G  0 disk
├─mmcblk1p1                          179:97   0 83.2M  0 part /media/boot
└─mmcblk1p2                          179:98   0  7.8G  0 part /
```

### 3.8.3. Shutdown the System

Command:

```
$ sudo shutdown now
```

### 3.8.4. Date and Time Setting

#### 3.8.4.1. Check the Current Date and Time

Command:

```
$ hwclock
```

```
user@IMX8:~$ sudo hwclock
2024-03-26 09:42:04.623597+00:00
```

### 3.8.4.2. Set a New Date and Time

Command:

```
$ date -s "YYYYMMDD hh:mm:ss"; hwclock -w
```

**YYYY->Year**

**MM->Month**

**DD->Date**

**hh->Hour**

**mm->Minute**

**ss->Second**

E.g.

```
$ date -s "20220803 15:30:00"; hwclock -w
```

## 3.9. Boot from Micro SD card

Flashing image of Ubuntu 22.04

Release date: 2023.9.22

Update date: 2023.11.20

Preparatory work: Micro SD card and USB

### 3.9.1. Burn Debian image

Using Etcher to burn SPG-NX8P\_Debian10\_v1.1.0.img.zip (on Windows)

Image download Link: Debian image: [SPG-NX8P\\_Debian10\\_v1.1.0.img.zip](#)



### 3.9.2. Burn custom build of bootloader file

Step 1: Using SDK to modify the bootloader which already built, and burn in.

Step 2: Open the terminal and using the following commands. (on Ubuntu)

Command:

```
sudo dd if= imx-boot-imx8mpevk-sd.bin-flash_evk_8gb of=/dev/  
sd<x> bs=1k seek=32 conv=fsync
```

Notes. Use the command "lsblk" to get the " x " value.

### 3.9.3. Insert the SD card into the device

Insert the SD card with the flashed Debian image into the device.

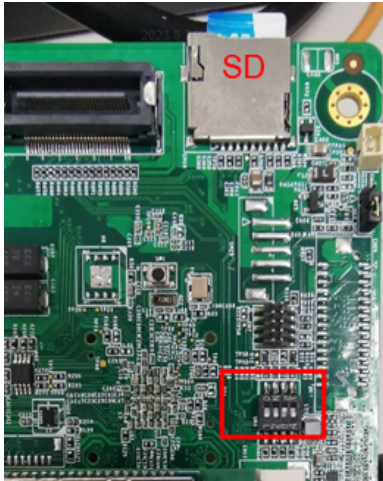
### 3.9.4. Insert the USB into the device

Step 1: Create a directory into the USB for files. Ex: `mkdir imx8image`

Step 2: Put image and script under the directory, then insert it into the device.

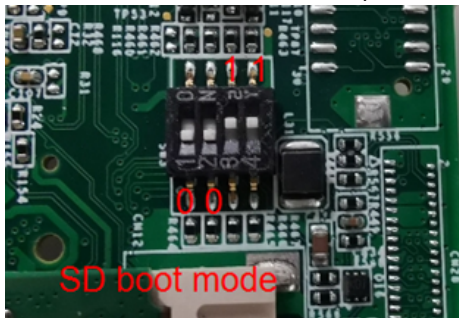
	Debian 10	Ubuntu 22.04
Account	root	user
Password	root	user

Step 3: Toggle the switch position to boot up



Switch Position	Boot Mode
0011	SD boot mode
0010	eMMC boot mode

Step 4: Switch to the SD boot mode, and power on.





Step 5: Login Debian 10.

Step 6: Confirm the USB path.

Command: **lsusb**

```
user@IMX8:~$ lsblk
NAME                                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda                                  8:0      1 57.8G  0 disk
├─sda1                                8:1      1 57.7G  0 part /media/U22
mmcbblk2                             179:0     0 29.1G  0 disk
├─mmcbblk2p1                          179:1     0 83.2M  0 part
├─mmcbblk2p2                          179:2     0 29.1G  0 part
mmcbblk2boot0                       179:32    0   4M   1 disk
mmcbblk2boot1                       179:64    0   4M   1 disk
mmcbblk1                             179:96    0 14.7G  0 disk
├─mmcbblk1p1                         179:97    0 83.2M  0 part /media/boot
└─mmcbblk1p2                         179:98    0  7.8G  0 part /
```

The usb storage name is “U22” in this example.

If the file is in the USB imx8image directory, the path will be /media/U22/imx8image

Check the directory files: **ls -l /media/U22/imx8image**

```
user@IMX8:~$ ls -l /media/U22/imx8image
total 934752
-rw-rw-rw- 1 root users      1208 Aug 24 2023 flash-to-emmc.sh
-rw-rw-rw- 1 root users    1545712 Aug 25 2023 imx-boot-imx8mpevk-sd.bin-flash_evk_23-08-25-143159
-rw-rw-rw- 1 root users   955489569 Aug 25 2023 imx-image-desktop-imx8mpevk_23-08-25-143159.wic.gz
-rw-rw-rw- 1 root users       402 Aug 24 2023 resize-emmc-rootfs.sh
```

Step 7: Burn in

Command: **emmc\_ubuntu\_flasher.sh <image path> < file timestamp >**

E.g. **emmc\_ubuntu\_flasher.sh /media/U22/imx8image 23-08-25-143159**

```
root@IMX8:~# emmc_ubuntu_flasher.sh /media/U22/imx8image 23-08-25-143159
Flash image /media/U22/imx8image/imx-image-desktop-imx8mpevk_23-08-25-143159.wic.gz to device /dev/mmcbl
73702400 bytes (74 MB, 70 MiB) copied, 2 s, 36.9 MB/s
```

And wait a few minutes for completion.

Complete Result:

```
8282521+0 records in
8282521+0 records out
8481301504 bytes (8.5 GB, 7.9 GiB) copied, 270.211 s, 31.4 MB/s
Write wic file complete

Flash bootloader /media/U22/imx8image/imx-boot-imx8mpevk-sd.bin-flash_evk_23-08-25-143159 to device /dev
[ 1703.605342] mmcblk2: p1 p2
1509+1 records in
1510+0 records out
1546240 bytes (1.5 MB, 1.5 MiB) copied, 0.0992102 s, 15.6 MB/s
Write bootloader complete
Job complete
```

Step 8: Resize rootfs

The original mmcblk2p2 partition is almost 8GB

Command: **lsblk**

```
root@IMX8:~# lsblk
NAME                MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda                  8:0    1  57.8G  0 disk
├─sda1                8:1    1  57.8G  0 part /media/U22
├─mmcblk2             179:0   0  29.1G  0 disk
│ └─mmcblk2p1        179:1   0   83.2M  0 part
│   └─mmcblk2p2      179:2   0    7.8G  0 part
├─mmcblk2boot0       179:32  0     4M   1 disk
├─mmcblk2boot1       179:64  0     4M   1 disk
├─mmcblk1            179:96  0   14.8G  0 disk
│ └─mmcblk1p1        179:97  0    208M  0 part
│   └─mmcblk1p2      179:98  0     3.5G  0 part /
```

Command: **resize-emmc-rootfs.sh**

```
root@SPG-NX8P:~# resize-emmc-rootfs.sh
[  496.290078] mmcblk2: p1 p2
[  496.300023] mmcblk2: p1 p2
CHANGED: partition=2 start=196608 old: size=16368434 end=16565042 new: size=60923871,end=61120479
resize2fs 1.44.5 (15-Dec-2018)
Resizing the filesystem on /dev/mmcblk2p2 to 7615483 (4k) blocks.
The filesystem on /dev/mmcblk2p2 is now 7615483 (4k) blocks long.

Job complete
root@SPG-NX8P:~# █
```

Confirm that the mmcblk2p2 partition has been expanded.

Command: **lsblk**

Result:

```
root@IMX8:~# resize-emmc-rootfs.sh
[  972.584179] mmcblk2: p1 p2
[  972.591972] mmcblk2: p1 p2
CHANGED: partition=2 start=196608 old: size=16368434 end=16565042 new: size=60923871,end=61120479
resize2fs 1.44.5 (15-Dec-2018)
Resizing the filesystem on /dev/mmcblk2p2 to 7615483 (4k) blocks.
The filesystem on /dev/mmcblk2p2 is now 7615483 (4k) blocks long.

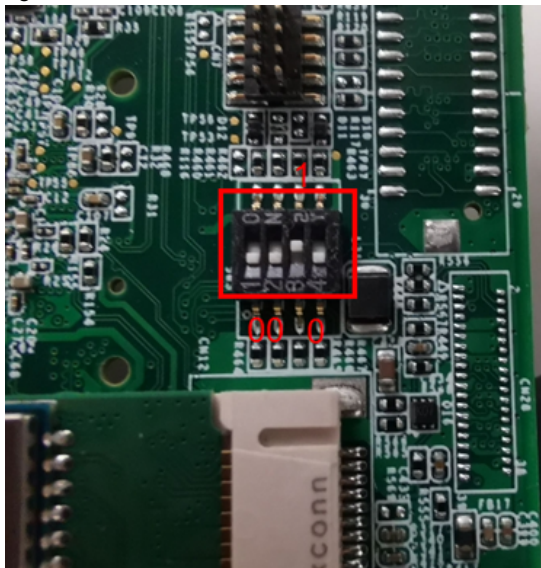
Job complete
```

Confirm that the mmcblk2p2 partition has been expanded.

Command: **lsblk**

```
root@IMX8:~# lsblk
NAME                MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda                  8:0    1  57.8G  0 disk
└─sda1                8:1    1  57.8G  0 part /media/U22
mmcblk2              179:0    0  29.1G  0 disk
├─mmcblk2p1          179:1    0   83.2M  0 part
└─mmcblk2p2          179:2    0  29.1G  0 part
mmcblk2boot0         179:32   0     4M    1 disk
mmcblk2boot1         179:64   0     4M    1 disk
mmcblk1              179:96   0  14.8G  0 disk
├─mmcblk1p1          179:97   0    208M  0 part
└─mmcblk1p2          179:98   0     3.5G  0 part /
```

Step 9: After powering off, toggle the switch to emmc boot mode, then power on again.



## Technical Support Form

We deeply appreciate your purchase of Acrosser products. Please find the “**tech\_form.doc**” file in our utility CD. If you have any questions or problems about Acrosser products, please fill in the following information. We will answer your questions in the shortest time possible.

### Describe Your Info and Acrosser System Info

- Your Company Name: \_\_\_\_\_
- Your Contact Info: \_\_\_\_\_ Phone Number: \_\_\_\_\_
- Your E-Mail Address: \_\_\_\_\_
- Your Company Address: \_\_\_\_\_  
\_\_\_\_\_
- Acrosser Model Name: \_\_\_\_\_
- Acrosser Serial Number: \_\_\_\_\_

### Describe System Configuration

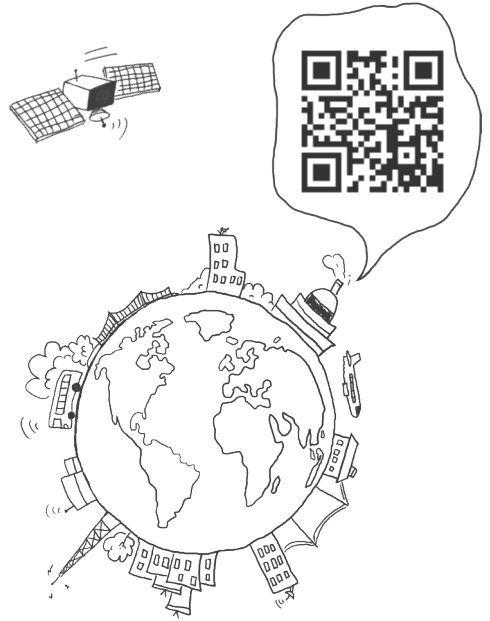
- CPU Type: \_\_\_\_\_
- Memory Size: \_\_\_\_\_
- Storage Device (e.g. HDD, CF, or SSD): \_\_\_\_\_
- Additional Peripherals (e.g. Graphic Card): \_\_\_\_\_
- Operating System & Version (e.g. Windows 7 Embedded): \_\_\_\_\_
- Special API or Driver: \_\_\_\_\_  
(If yes, please provide it for debug.)
- Running Applications: \_\_\_\_\_
- Others: \_\_\_\_\_

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