UP Xtreme 7100 Edge

Maker Board System
UPX-EDGE-ASL01

User's Manual 2nd Ed

Last Updated: April 8, 2024

Copyright Notice

Acknowledgement

Packing List

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

Item	Quantity
● UP Xtreme 7100 Edge (UPX-EDGE-ASL01)	1
● DC in Phoenix Block Connector	1
● RS-232/422/485 Block	1
● DIO/GPIO Phoenix Connector	1
● CAN Phoenix Connector	2

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

About this Document

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

Users may refer to the product page at AAEON.com for the latest version of this document.

Safety Precautions

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

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

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

Caution:

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

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur.
Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON System QO4-381 Rev.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	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

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

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

备注：

一、此产品所标示之环保使用期限，系指在一般正常使用状况下。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

China RoHS Requirement (EN)

Hazardous and Toxic Materials List

AAEON 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	O	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.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
CPU	Intel® Core™ i3-N305 Processor
	Intel® Processor N97
Memory	Up to 16GB LPDDR5
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Storage	Up to 64GB eMMC
Ethernet	2.5GbE x 2 (Intel® Ethernet Controller I226-IT)
WIFI/BT	Optional with M.2 2230 E-Key x 1
Expansion	M.2 3052 B-Key x 1 with Nano SIM Slot (USB 3.0)
	M.2 2230 E-Key x 1 (USB 2.0/PCIe)
	M.2 2280 M-Key x 1 (PCIe Gen 3 [x2])
	24V 8-in/8-out Digital I/O x 1 via Terminal Block
	(Output current: 500mA per channel)
	6-pin 2-Channel CAN 2.0B x 1 via Terminal Block (10 ~
	1000 kbps)
	SATA 6Gb/s x 1
Security	Onboard TPM 2.0
OS Support	Ubuntu 22.04 LTS (Kernel 5.15 and kernel 5.19)
Others	CAN LED Indicator x 2
	DIP Switch for CANBus function x 1

I/O	
USB	USB 3.2 (Type-A) x 2
	USB 2.0 (Type-A) x 2
	USB 3.2 Gen 2 (Type-C) x 1 (Supports DP alt mode)
Display Port	DP 1.4a x 1 (via USB Type-C)

I/O

Ethernet	RJ-45 x 2
COM	RS-232/422/485 x 1 (Terminal Block, Default RS-232)
Audio	—
GPIO	6-pin GPIO x 1 via Terminal Block

Power Supply

Power Requirement	9 ~ 36V
Power Supply Type	AT/ATX (AT as default)
Power Consumption	52W ~ 55W

Mechanical

Mounting	75mm x 75mm VESA Mount
	Wall Mount Kit (Optional)
Dimensions (W x H x D)	5.98" x 4.8" x 1.7" (152mm x 124mm x 40mm)
Net Weight	2.21 lb. (1.0Kg)
Gross Weight	3.31 lb. (1.5Kg)

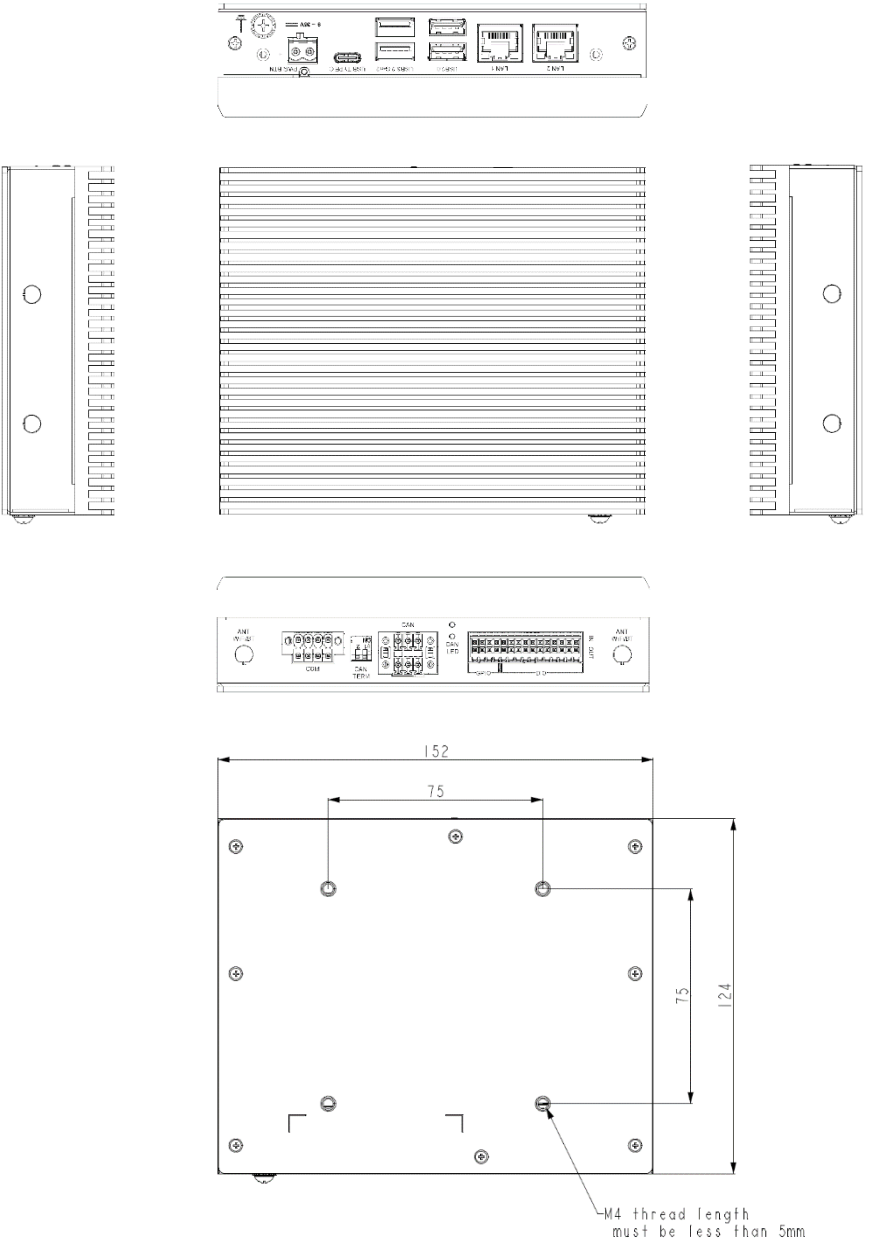
Environmental

Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)/0.5m/s airflow
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	421,998
Certification	CE/FCC Class A, RoHS Compliant, REACH

Chapter 2

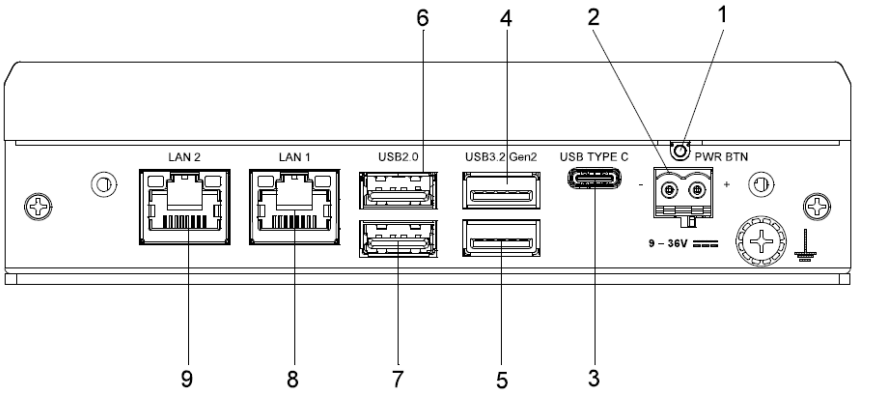
Hardware Information

2.1 Dimensions

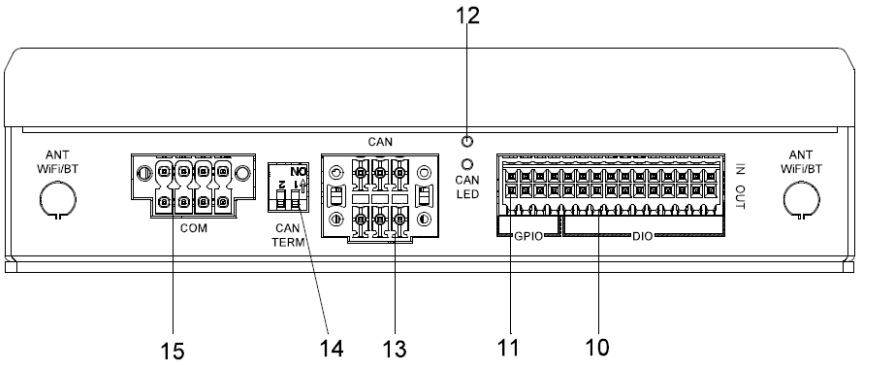


2.2 Jumpers and Connectors

Front I/O



Rear I/O



2.3 List of Jumpers and Connectors

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

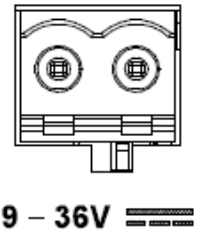
Label	Function
1	Power Button
2	9-36V DC in
3	USB Type C (DP 1.4a)
4	USB 3.2 Type A-1
5	USB 3.2 Type A-2
6	USB 2.0 Type A-1
7	USB 2.0 Type A-2
8	LAN 1
9	LAN 2
10	8-in/8-out Digital I/O
11	6-pin GPIO
12	CAN LED
13	CAN
14	CAN Switch
15	COM Port

Note: Please refer to the user manual of UP Xtreme 7100 for the detailed PCBA-level internal connector pin definition.

2.3.1 Power Button (1)

Power button can be used to switch system on/off.

2.3.2 9-36V DC in (2)



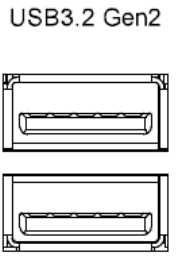
One DC two-pole terminal block supporting a DC power range of 9 ~ 36V.

Pin	Signal	Pin	Signal
1	9 – 36V DC_IN	2	GND

2.3.3 USB 3.2 (Type-C) (3)

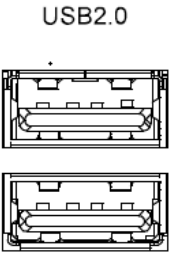
The USB Type-C port provides one USB 3.2 signal with Display Port 1.4a support.

2.3.4 USB 3.2 Gen 2 (Type-A) (4/5)



The port provides two USB 3.2 Gen 2 interfaces.

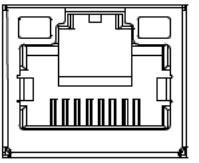
2.3.5 USB 2.0 (6/7)



The port provides two USB 2.0 interfaces.

2.3.6 LAN 1 (Intel® Ethernet Controller I226-IT) (8)

LAN 1

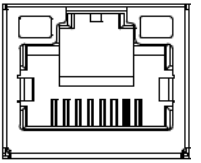


LAN Speed		Link / Speed LED	Active LED
2.5G	2.5G		
	1G		
	100/10M		

Note: The controller provides Gigabit ethernet ports with 10/100/1000/2500 Base.

2.3.7 LAN 2 (Intel® Ethernet Controller I226-IT) (9)

LAN 2



LAN Speed		Link / Speed LED	Active LED
2.5G	2.5G		
	1G		
	100/10M		

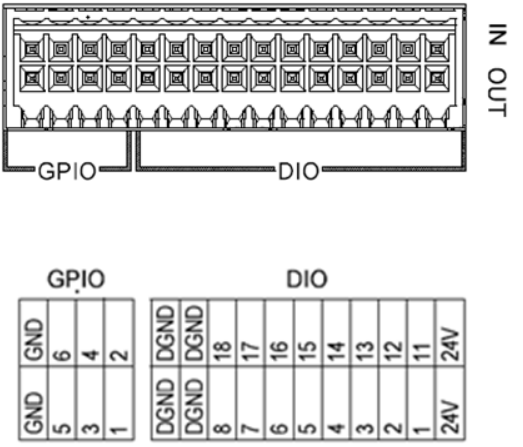
2.3.8 Digital I/O & GPIO (10/11)

The controller provides one 8-in/8-out Digital I/O & 6-pin GPIO via Terminal Block interface.

2.3.8.1 Digital I/O (10)

The controller provides one 8-in/8-out Digital I/O function via Terminal Block interface. Please note pin 1 ~ 4 is SINK; pin 5 ~ 8 is SRC.

Pin Definition

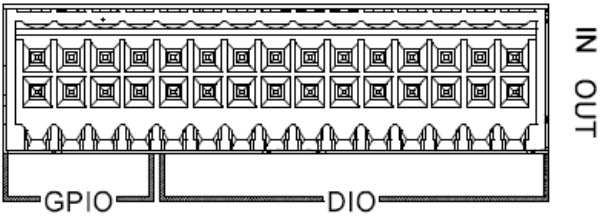


	Pin	Signal	Pin	Signal
		24V (External)		24V (External)
SINK	1	DOUT1	11	DIN1
	2	DOUT2	12	DIN2
	3	DOUT3	13	DIN3
	4	DOUT4	14	DIN4

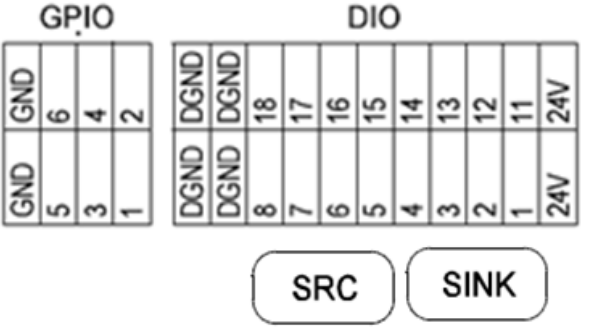
	Pin	Signal	Pin	Signal
SRC	5	DOUT5	15	DIN5
	6	DOUT6	16	DIN6
	7	DOUT7	17	DIN7
	8	DOUT8	18	DIN8
		DGND		DGND
		DGND		DGND

2.3.8.2 GPIO (11)

The controller provides 6-pin GPIO function via Terminal Block interface.



Pin Definition

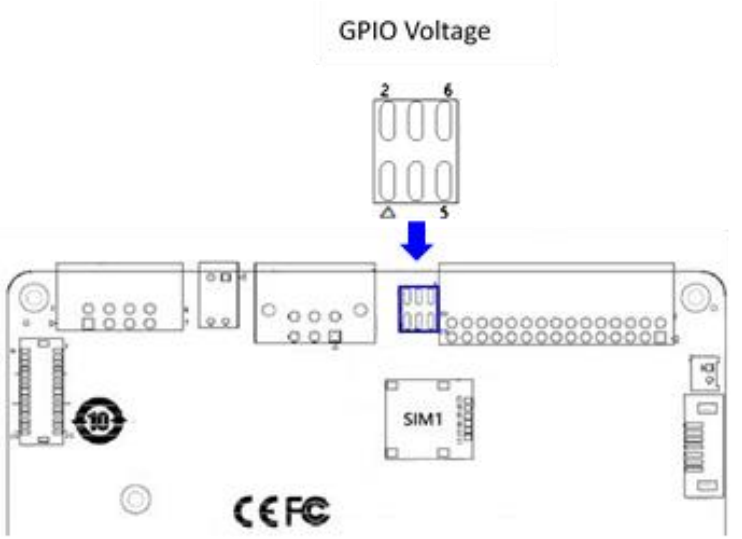


Pin	Signal	Pin	Signal
1	GPIO1	2	GPIO2
3	GPIO3	4	GPIO4
5	GPIO5	6	GPIO6
	GND		GND

GPIO Voltage Level

The controller provides a jumper to change the GPIO voltage level. The default is 3.3V (pin 1-2).

To change GPIO voltage settings, please remove chassis and allocate jumper base on following table

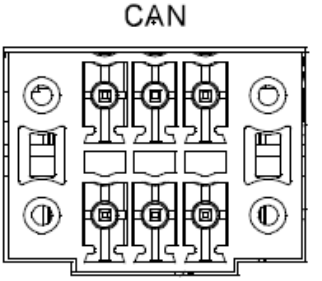


Pin	Signal	Pin	Signal
1	V3P3_GPIO	2	VGPIO
3	V5_GPIO	4	VGPIO
5	V12_GPIO	6	VGPIO

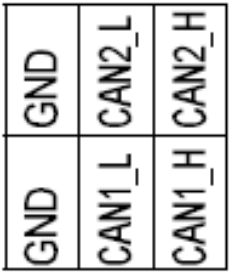
2.3.9 CAN (13)

The controller provides one 6-pin terminal block for 2-channel CAN 2.0B protocol

There are two LED on UPX-ADNL01-AMR Edge with LED assignment and description are shown as follows:



Pin Definition



Pin Definition Table

Pin	Signal	Pin	Signal
1	CAN1_H	2	CAN2_H
3	CAN1_L	4	CAN2_L
-	GND	-	GND

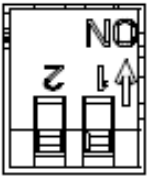
LED Assignment:

	LED Name	LED Color	Description
CAN 2 CAN 1 CAN LED	CAN 1	Green	LED flashing while CAN transmission
		Red	LED flashing while error occurred
	CAN 2	Green	LED flashing while CAN transmission
		Red	LED flashing while error occurred

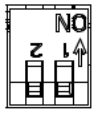
2.3.10 CAN Term (DIP Switch) (14)

The controller provides one built-in 120Ω terminal resistor for CAN 1/CAN 2 ports, users can decide if it is enabled or not.

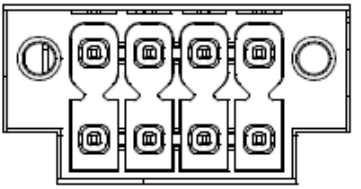
The following DIP switch status presents the condition if the terminal resistor is active (default) or inactive.



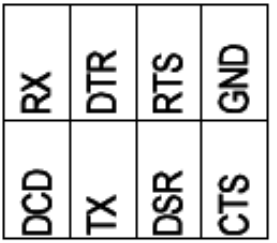
CAN TERM

	Pin No	Description
ON 	1	ON: Active CAN1 terminal resistor (default) OFF: Inactive CAN1 terminal resistor
	2	ON: Active CAN2 terminal resistor (default) OFF: Inactive CAN2 terminal resistor

2.3.11 COM (15)



Terminal block interface for RS-232/422/485 function. Default setting is RS-232. Please see the hardware pin assignment and table below.



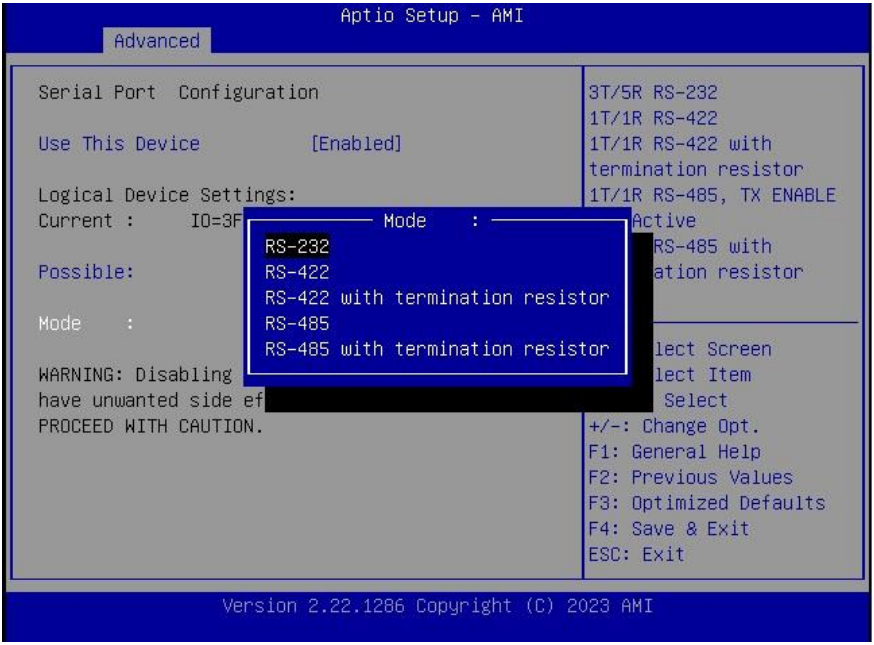
Pin	Signal	Pin	Signal
1	DCD/RS422TX-/RS485-	2	RX/RS422TX+/ RS485+
3	TX / RS422RX+	4	DTR / RS422RX-
5	DSR	6	RTS
7	CTS	8	GND

To change the Serial Port Configuration setting, please follow the steps below:

Step 1: Reboot system and press "**Deletei**" to access BIOS settings.

Step 2: Select **Advanced** and chose **Serial Port Configuration**.

Step 3: Select Mode and chose configuration, as per the image below.



Step 4: Press "F4" to save the configuration and exit.

2.4 List of Internal Slots

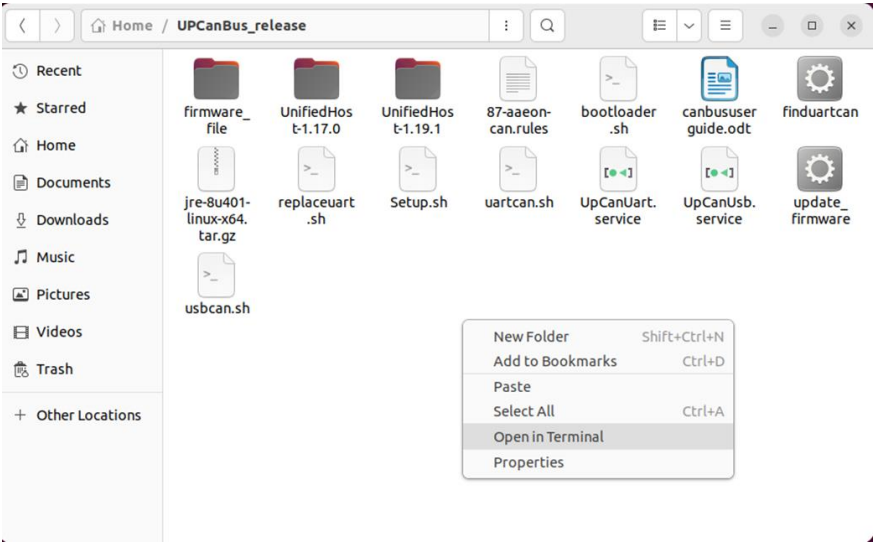
Slot	Function
Wi-Fi Slot	M.2 2230 E-Key (USB 2.0/PCIe Gen 3 [x1] interface)
Storage Slot	M.2 2280 M-Key (PCIe Gen 3 [x2] interface)
LTE Module Slot	M.2 3052 B-Key (USB 3.0 only)
SIM Slot	Nano SIM Slot

Chapter 3

CANBus User Guide

3.1 Installation Instructions

Step 1: In the folder, right-click to select Open in Terminal.



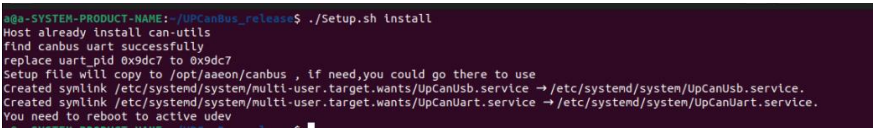
Step 2: Enter command:

```
sudo chmod 777
```

Step 3: Ensure Ethernet is connected.

Step 4: Input command:

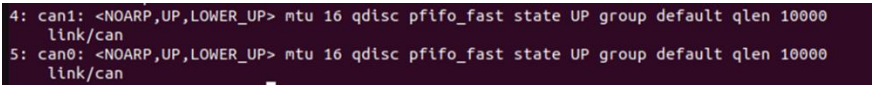
```
./Setup.sh install
```



Step 5: Following reboot, CANBus will be usable.

Optional: Check CANBus via command:

```
ip a
```



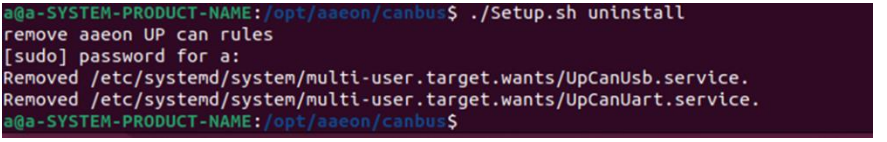
3.2 Uninstalling CAN

Step 1: Open terminal and navigate to the appropriate folder using the following command:

```
cd /opt/aaeon/canbus/
```

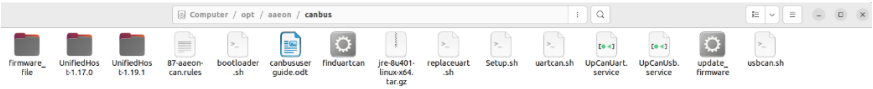
Step 2: To uninstall, use following command:

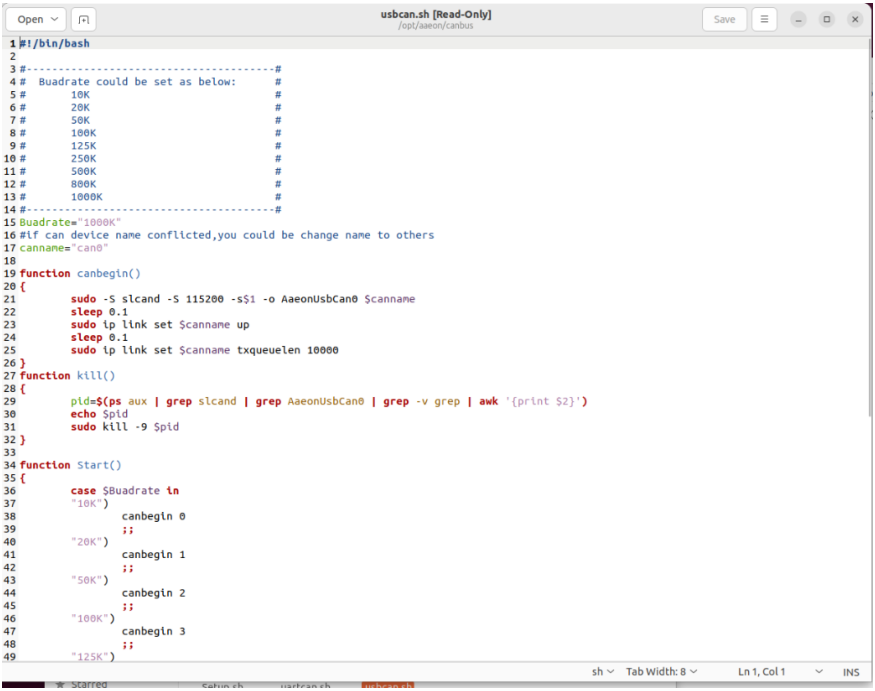
```
./Setup.sh uninstall
```

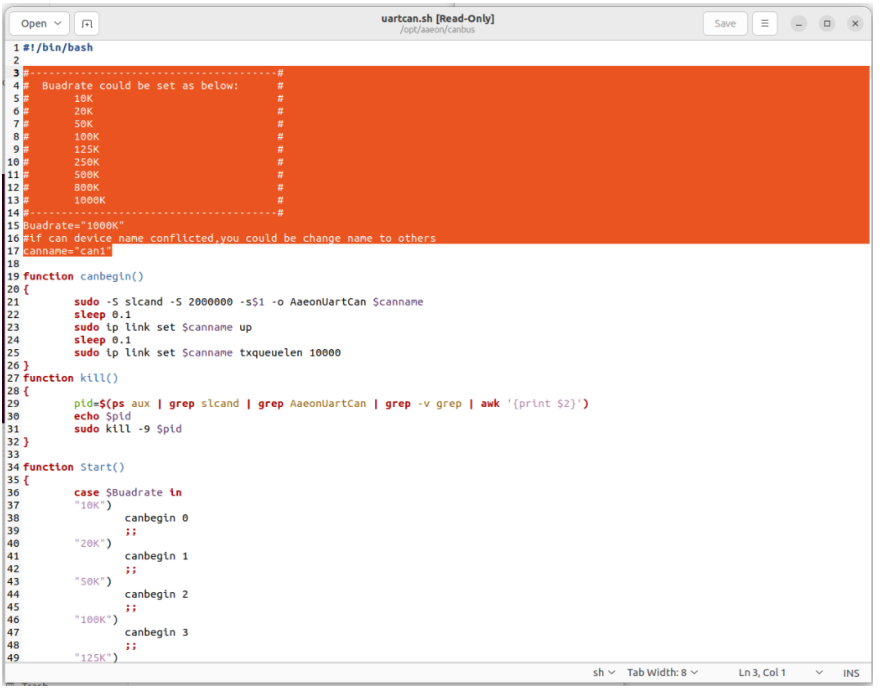


3.3 Change Baud Rate and CAN Interface Name

To change the naming configuration of **uartcan.sh** or **usbcan.sh** you must first navigate to the below folder. Note that changing interface name(s) requires super user permissions.







Once file names have been changed, the following command is required to restart service.

If USB CANBus file name has been changed, enter command:

```
sudo systemctl stop UpCanUsb.service
sudo systemctl start UpCanUsb.service
```

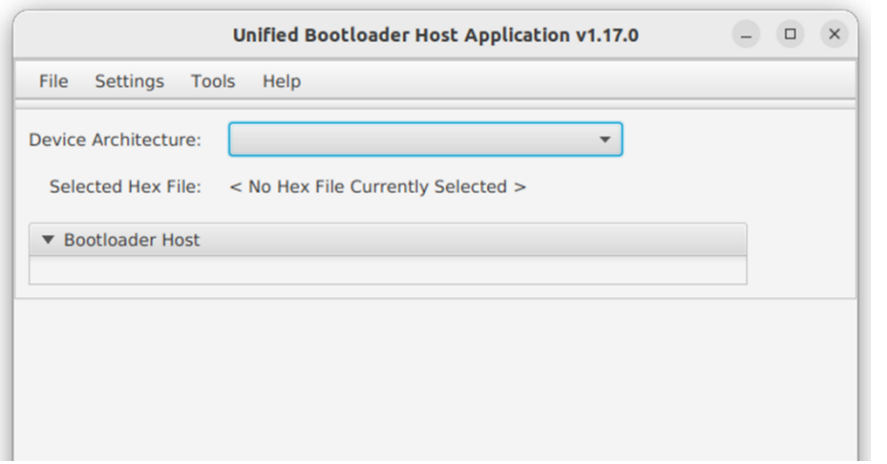
If UART CANBus file name has been changed, enter command:

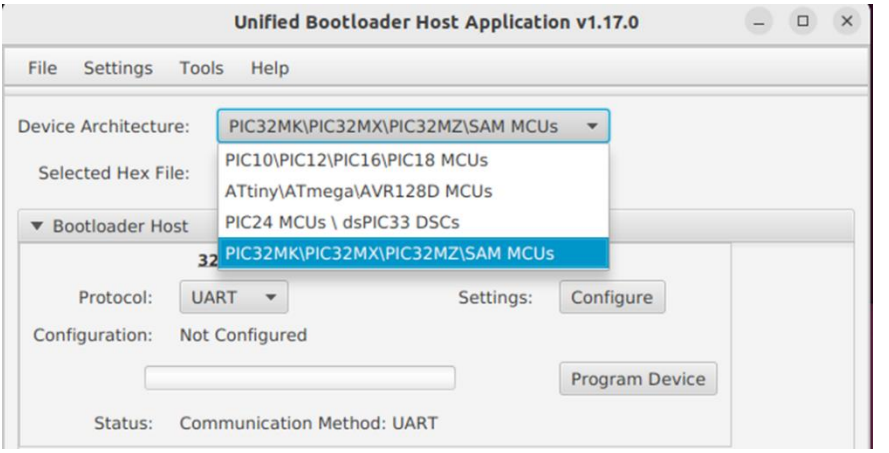
```
sudo systemctl stop UpCanUart.service
sudo systemctl start UpCanUart.service
```

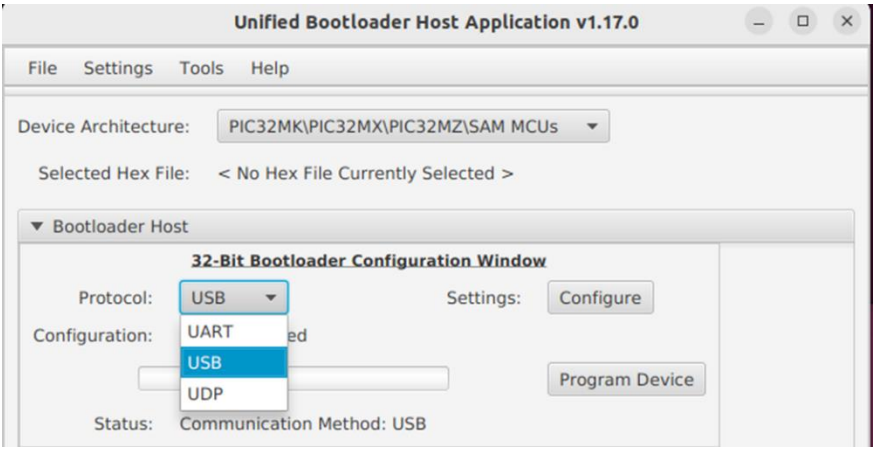
3.4 Update Tool

Type the following command to run script:

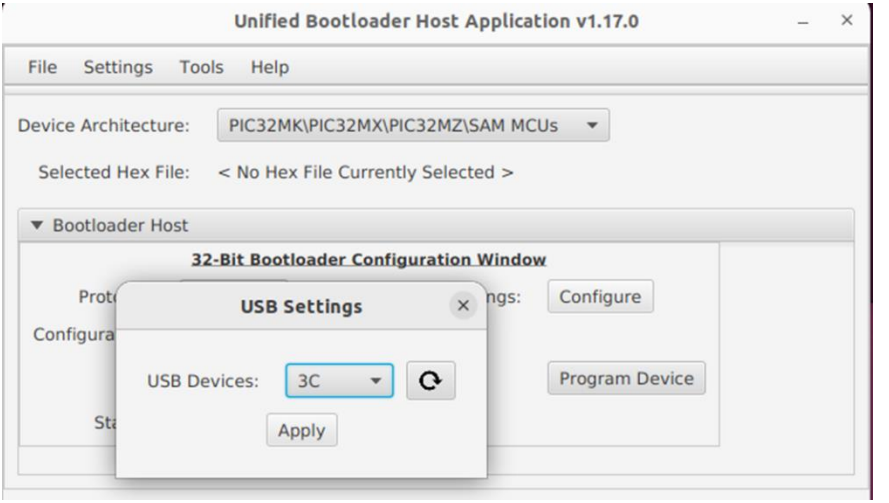
```
sudo ./bootloader.sh
```



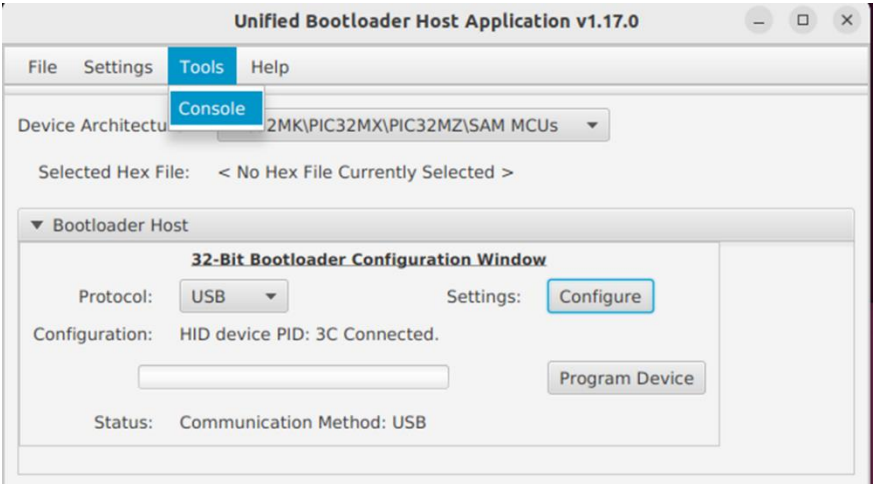




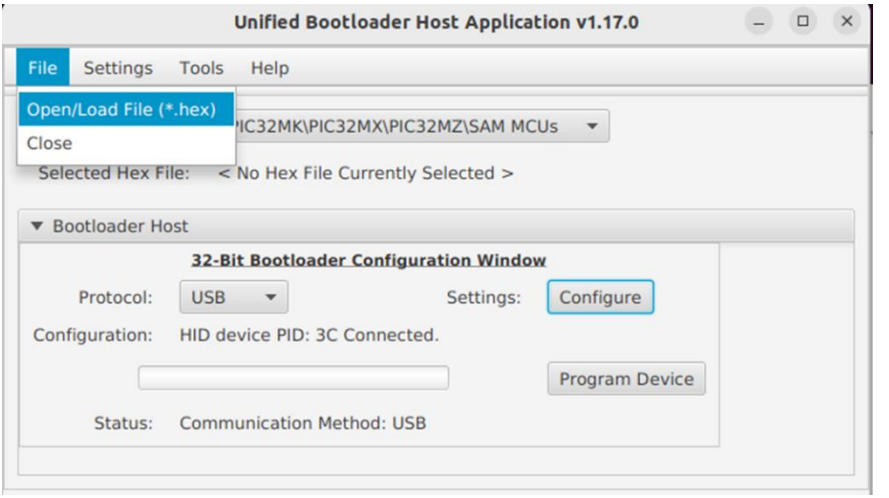
Click Configure and Select "3C" to Apply.



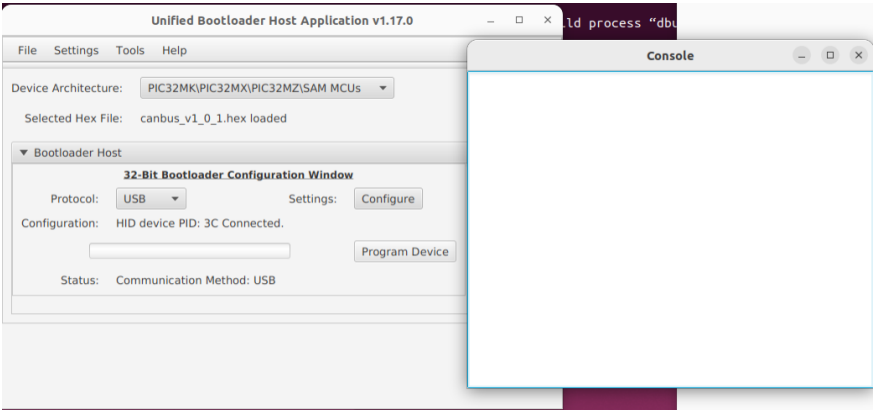
Open "Console".

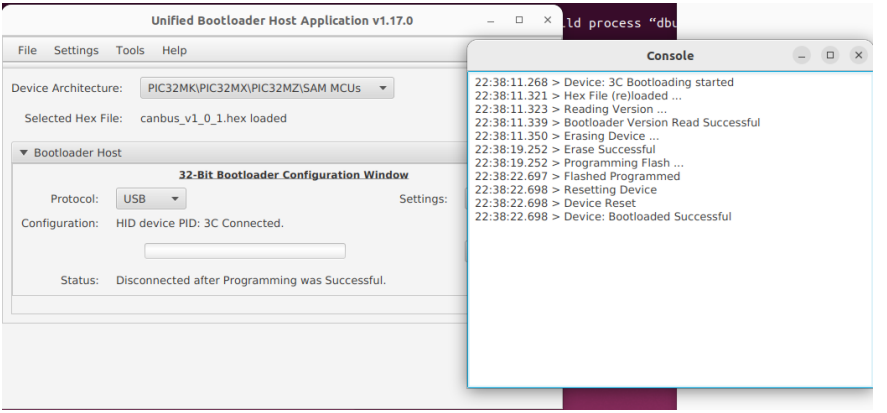


Select bin file to record.



Click Program Device to record.





Appendix A

Cables and Connectors

A.1 List of Cables and Connectors

This table provides detailed information about the cables and connectors used by UPX-EDGE-ASL01 (UP Xtreme 7100 Edge) If you have any questions about the configuration, please contact your AAEON sales representative.

Function Description	Mating Cable P/N	Mating Cable Description
DC In	165260210A	Block.2P.90D(M).DIP.5.00mm.DINKLE.5ESDV-02P
RS232/422/485	16522X0055	Phoenix Connector. DIP.90D.4*2P.Pitch=3.5mm.H=22.55mm.FEMALE.PLUG IN Black.DINKLE.0159-0108
DIO/GPIO	16522X0064	Phoenix Connector.DIP.90D.15*2P.Pitch=2.54mm. H=19.7mm.FEMALE.BLACK.PLUG IN.DINKLE.0156-1B30-BK
CAN	16522X0063	Phoenix Connector.DIP.90D.3P.Pitch=3.50mm .H=22.9mm.FEMALE.BLACK.W/ Screw Flange.PLUG IN.DINKLE.0221-2803-BK

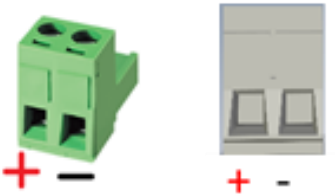
Appendix B

Power Adapter Configuration

B.1 Connecting 2-Pin DC Connector with DC Adapter

Step 1: Locate DC connector with 2-pin Phoenix DC connector provided in the UP Xtreme 7100 Edge packing box.

Pin Definition:



Step 2: Connect the cable from the adapter (note that power cable must connect to the red "+" and ground cable must be inserted to black "—")

Step 3: Affix both cable and 2-pin DC connector together.

Step 4: Connect adapter and power cord with the UP Xtreme 7100 Edge to power up device.