UP CANBus Carrier Board

Carrier Board

User's Manual 2nd Ed

Last Updated: April 9, 2024

Copyright Notice

Acknowledgement

- Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.
- Ubuntu and Canonical are registered trademarks of Canonical Ltd.

All other products' name or trademarks are properties of their respective owners.

Packing List

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

Item	Quantity
● CAN Bus Carrier Board	1
● Connection Cable	1
● CAN Connector	1
● Screw/Stud Pack	1

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

About this Document

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

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

Safety Precautions

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

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

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

FCC Statement

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

Caution:

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

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

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	X	O	O	O	O
外部信号连接器及线材	X	X	O	O	O	O

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 SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注：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。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	X	X	O	O	O	O
Wires & Connectors for External Connections	X	X	O	O	O	O

O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

Table of Contents

Chapter 1

Product Specifications

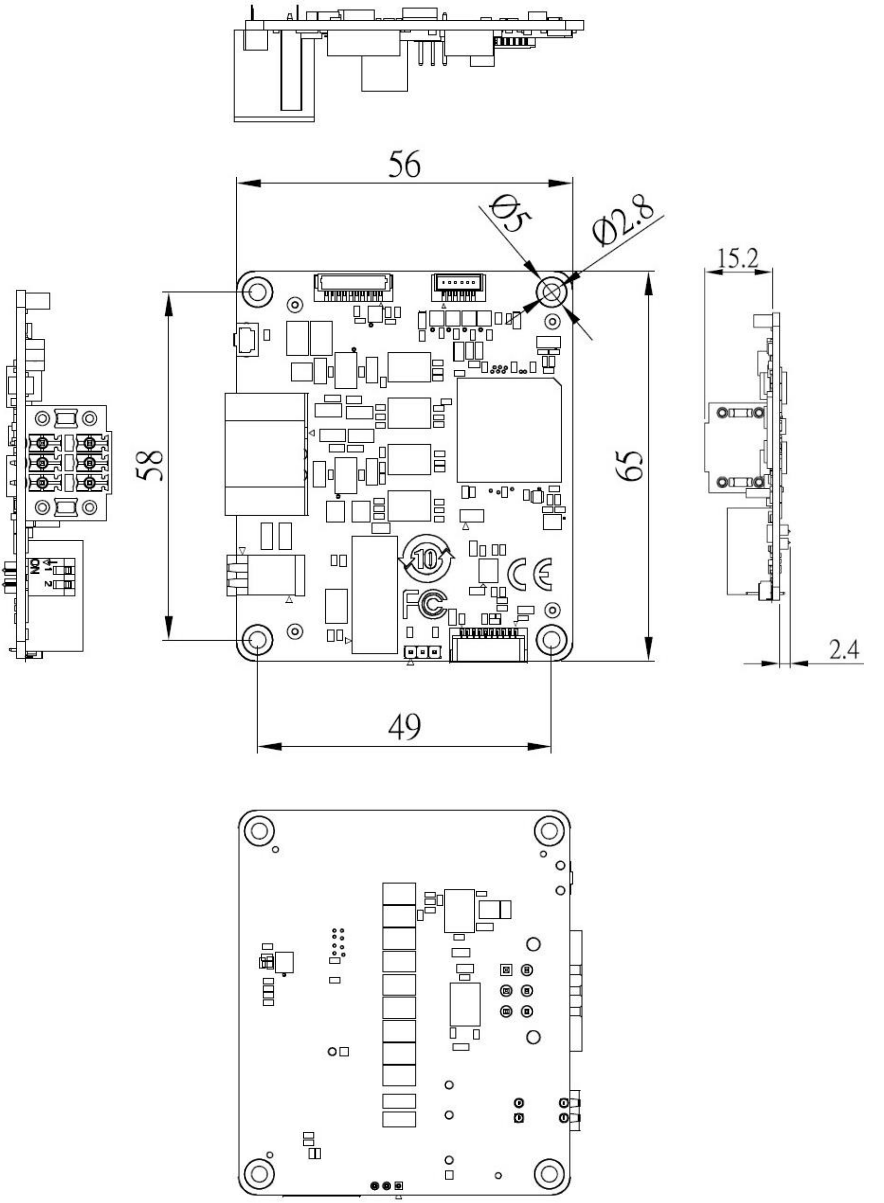
1.1 Specifications

System	
I/O	UP Board Connector x 1
	6-pin Terminal Block x 1
	6-pin LED Wafer x 1
	Termination Resistor DIP Switch x 1
	Reset Button x 1
Dimension	2.56" x 2.20" (65mm x 56mm)
Net Weight	0.066 lb. (0.03Kg)
Gross Weight	0.13 lb. (0.06Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

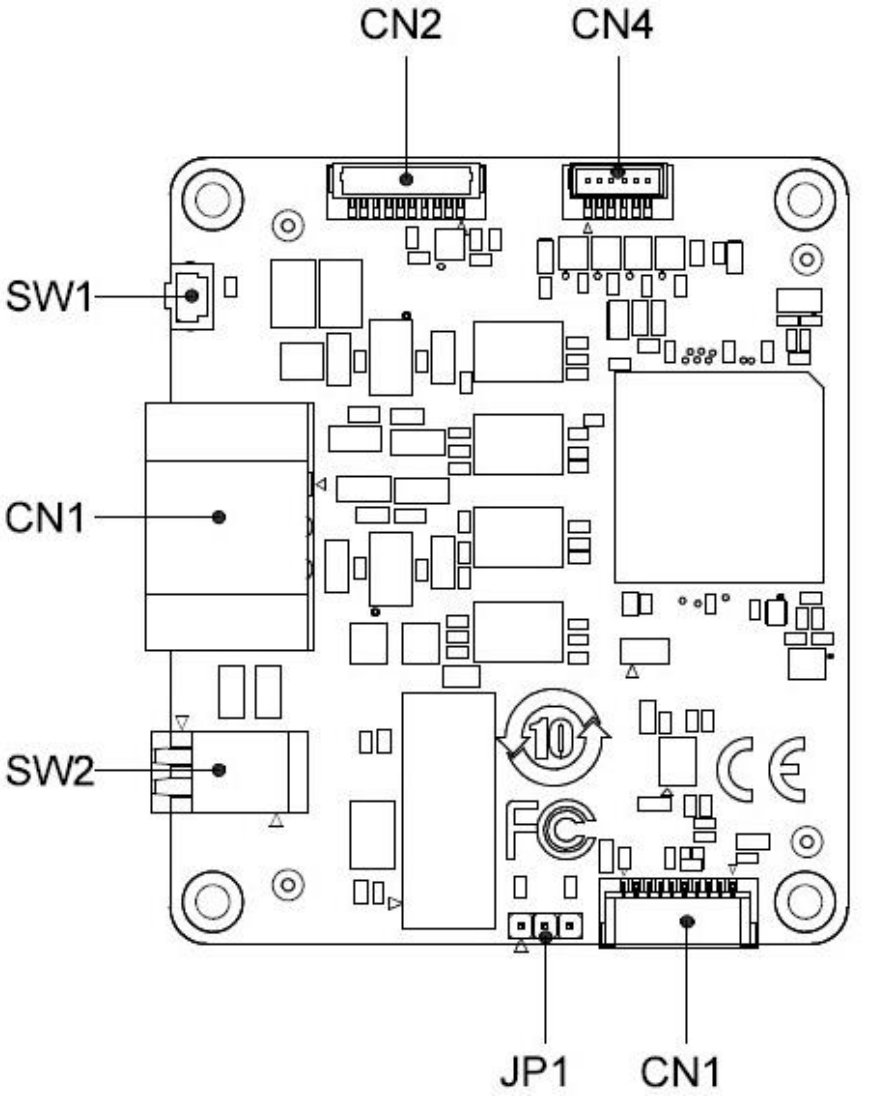
Chapter 2

Hardware Information

2.1 Dimensions



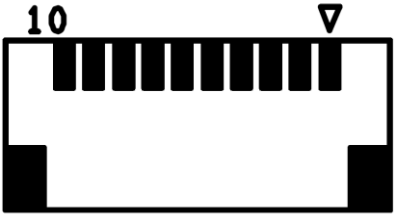
2.2 Board Layout



2.3 List of Jumpers and Connectors

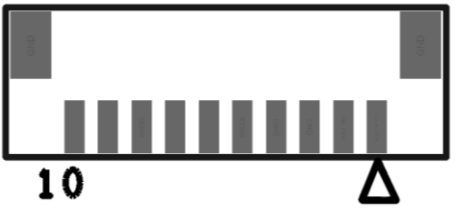
Label	Functional Description
CN1	USB & UART
CN2	MCU Debug
CN3	CANBus
CN4	LED Wafer
SW1	Reset Button
SW2	DIP Switch
JP1	MCU Bootloader

2.3.1 USB & UART (CN1)



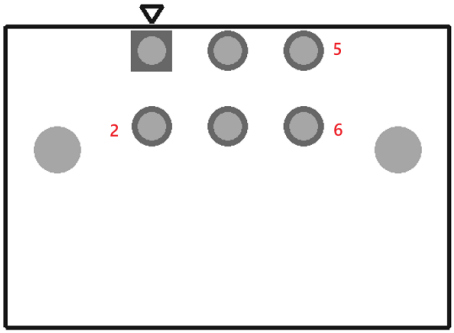
Pin	Signal Description	Pin	Signal Description
1	5V	2	USB2_DN
3	USB2_DP	4	GND
5	5V	6	NC
7	NC	8	GND
9	UART_RX	10	UART_TX

2.3.2 MCU Debug (CN2)



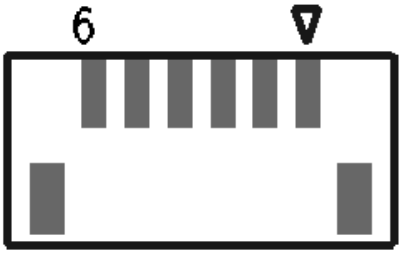
Pin	Signal Description	Pin	Signal Description
1	TARGET_RESETN	2	+VDD_DBG
3	GND	4	SWO
5	SWCLK	6	NC
7	NC	8	SWDIO
9	NC	10	NC

2.3.3 CANBus (CN3)



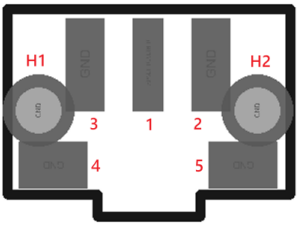
Pin	Signal Description	Pin	Signal Description
1	CAN1_H	2	CAN2_H
3	CAN1_L	4	CAN2_L
5	GND	6	GND

2.3.4 LED Wafer (CN4)



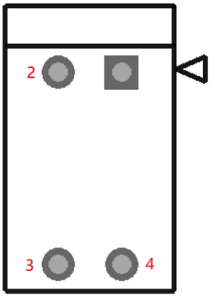
Pin	Signal Description	Pin	Signal Description
1	GND	2	CAN2_ST
3	CAN1_ST	4	CAN2_ TXRX
5	CAN1_ TXRX	6	5V

2.3.5 Reset Button (SW1)



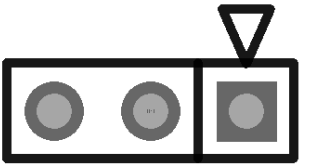
Pin	Signal Description	Pin	Signal Description
1	GND	2	PWR_SW#_CTL
3	GND	4	GND
5	GND		
H1	GND	H2	GND

2.3.6 DIP Switch (SW2)



Pin	Signal Description	Pin	Signal Description
1	CAN1_L	2	CAN2_L
3	CAN2_H (120 ohm)	4	CAN1_H (120 ohm)

2.3.7 MCU Bootloader (JP1)



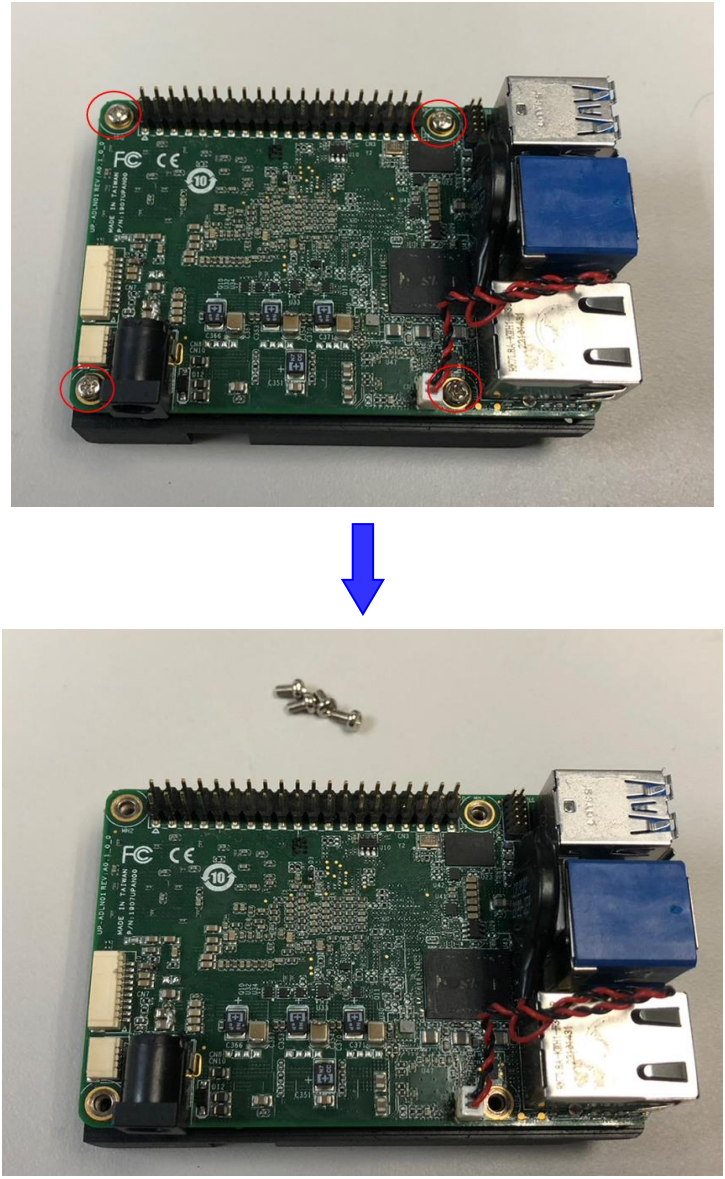
Pin	Signal Description	Pin	Signal Description
1	3.3V	2	INIT
3	GND		

Chapter 3

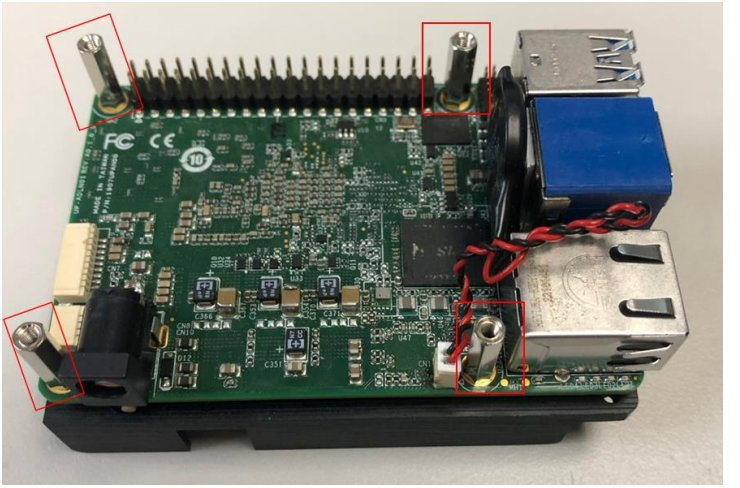
Hardware & Software Installation

3.1 Hardware Installation

Step 1: Remove the four (4) screws from the outer edges of the board.

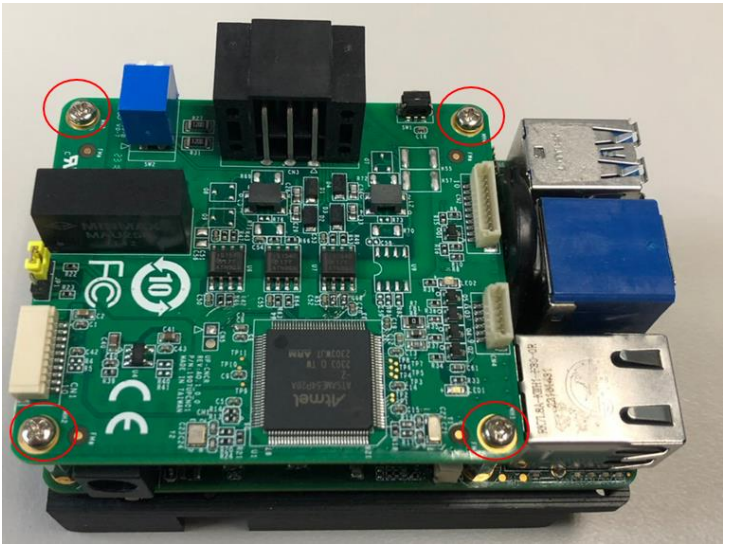


Step 2: Affix and lock the four (4) pillars to the board.

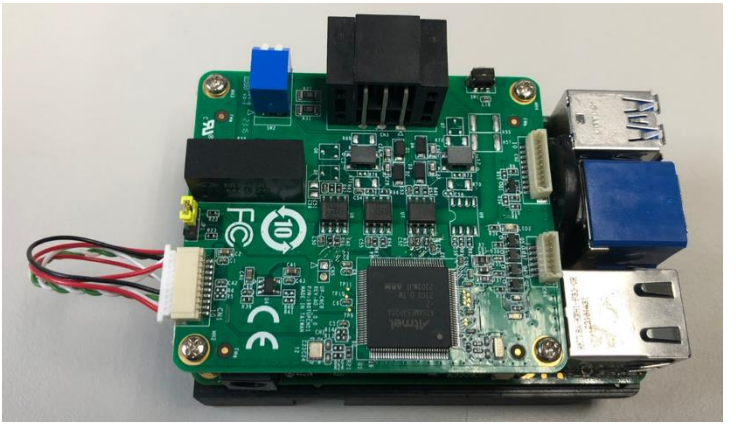


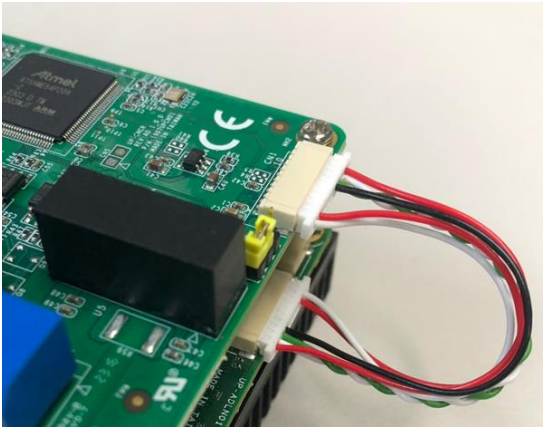
Step 3: Put CANBus Board on top of the pillars and affix and lock screws.

Board assembly direction reference photo:



Step 4: Plug in cable with the board.





3.2 Ubuntu OS Driver Settings

3.2.1 Installing Ubuntu

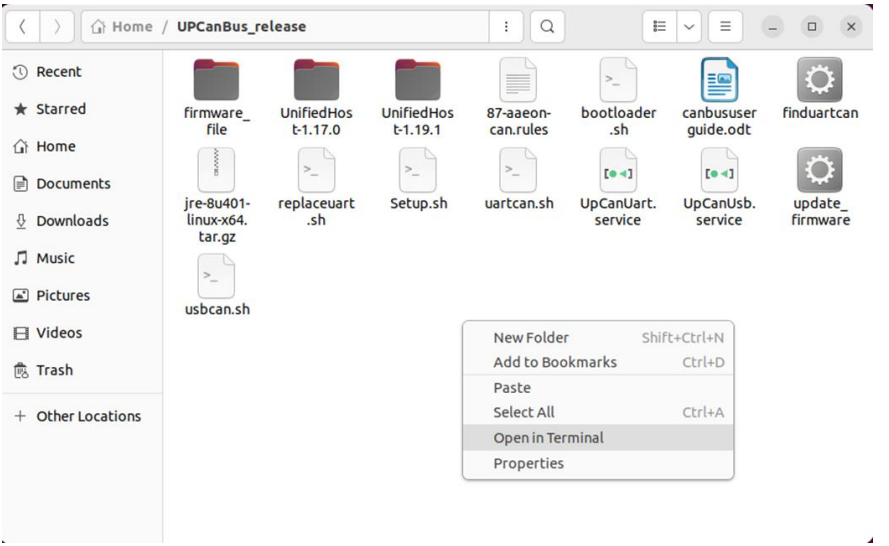
Ubuntu can be downloaded from the official website here:

https://ubuntu.com/download/desktop and navigating to the Downloads section.

3.3 CANBus User Guide

3.3.1 Installation Instructions

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



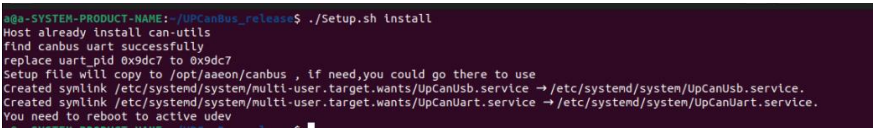
Step 2: Enter command:

sudo chmod 777

Step 3: Ensure Ethernet is connected.

Step 4: Input command:

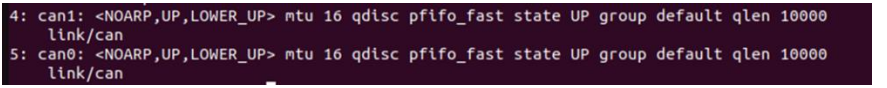
./Setup.sh install



Step 5: Following reboot, CANBus will be usable.

Optional: Check CANBus via command:

ip a



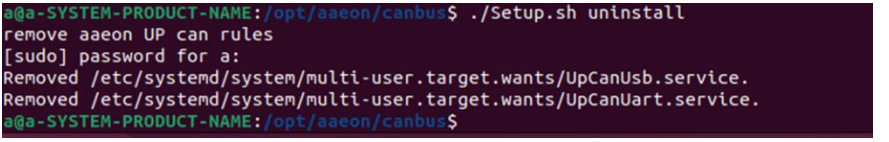
3.3.2 Uninstalling CAN

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

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

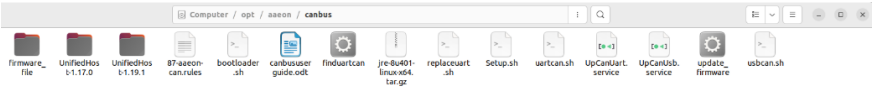
Step 2: To uninstall, use following command:

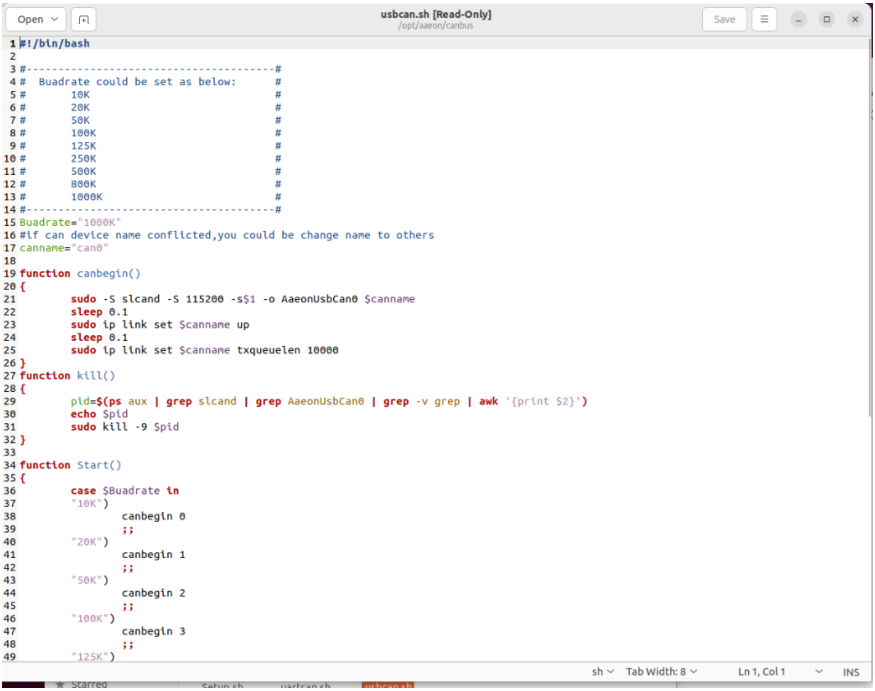
```
./Setup.sh uninstall
```

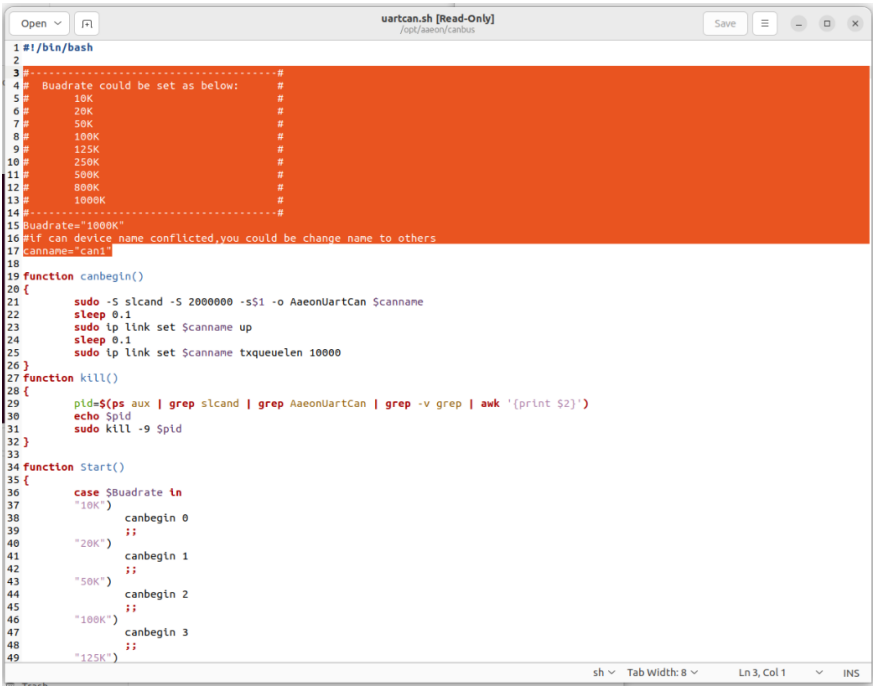


3.3.3 Change Baud Rate and CAN Interface Name

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
```

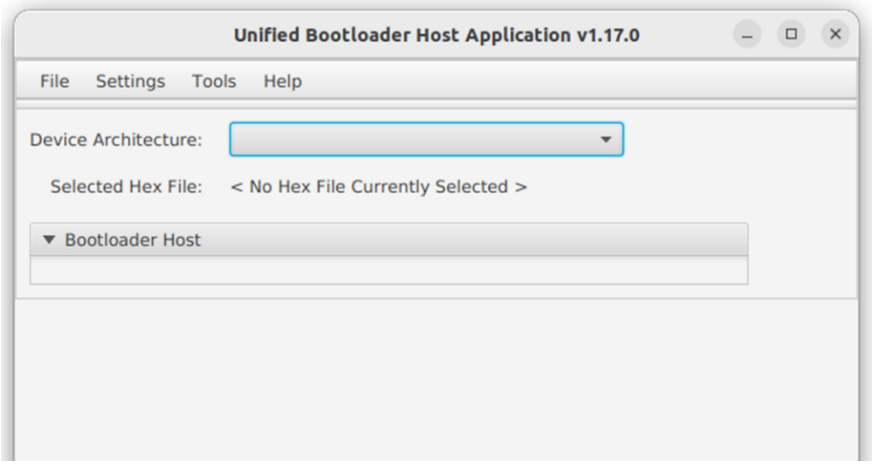
If UART CANBus file name has been changed, enter command:

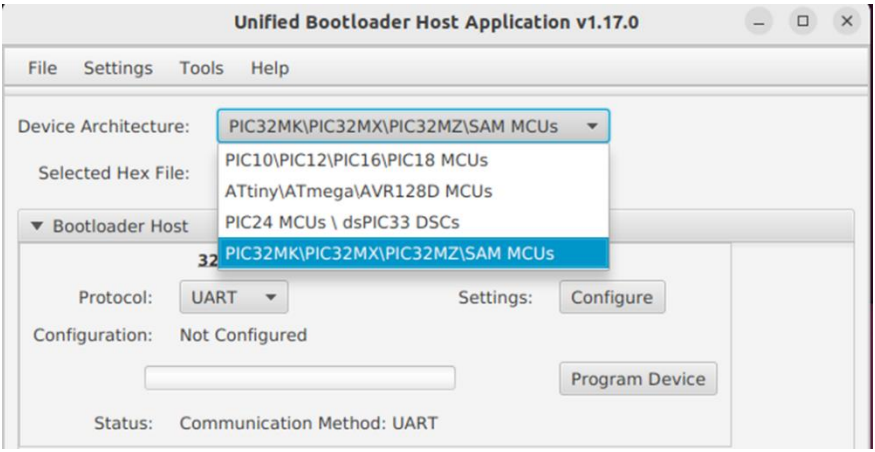
```
sudo systemctl stop UpCanUart.service
sudo systemctl start UpCanUart.service
```

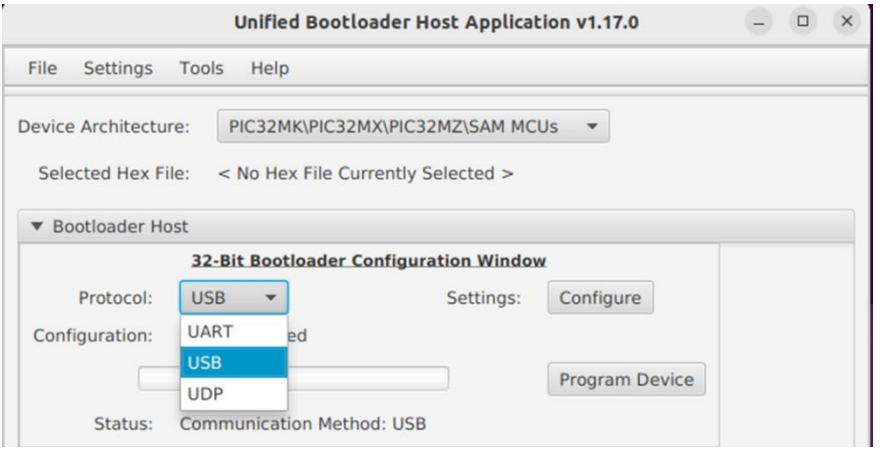
3.3.4 Update Tool

Type the following command to run script:

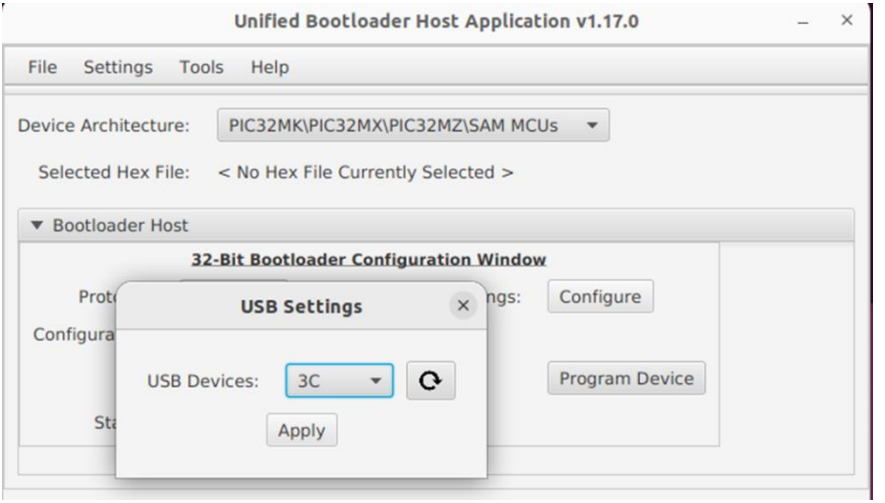
```
sudo ./bootloader.sh
```



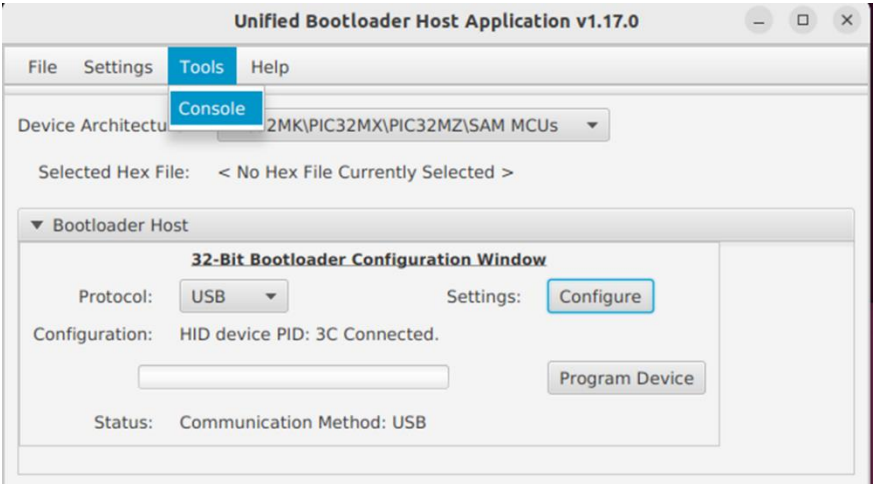




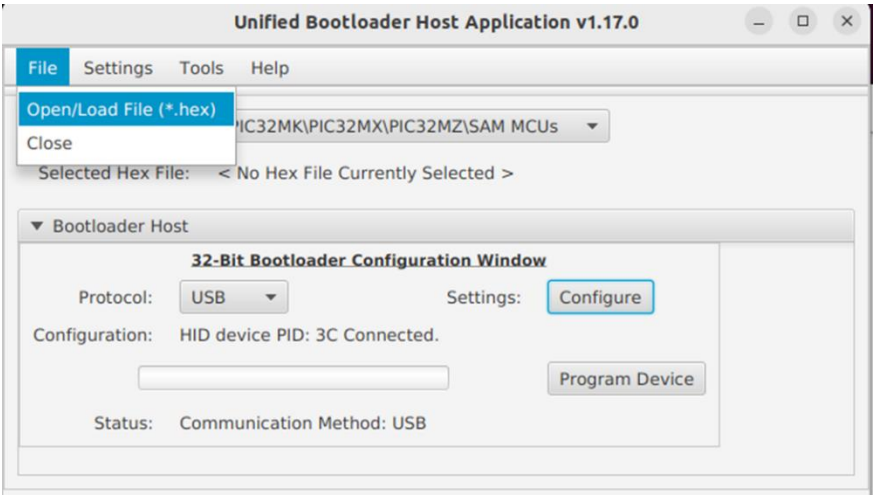
Click Configure and Select "3C" to Apply.



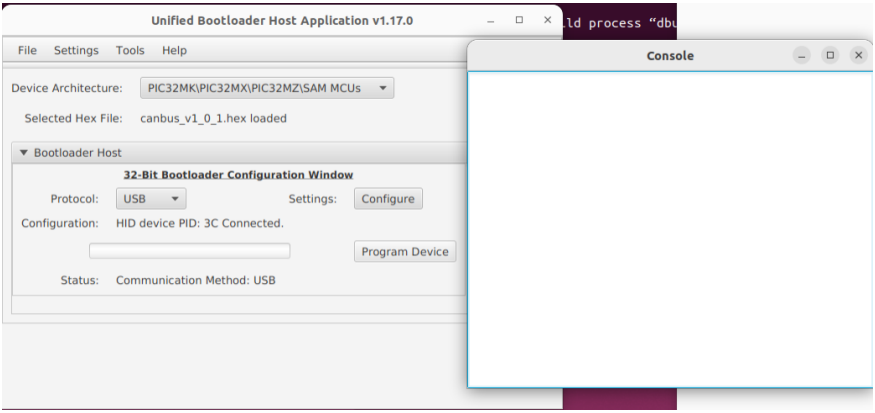
Open "Console".

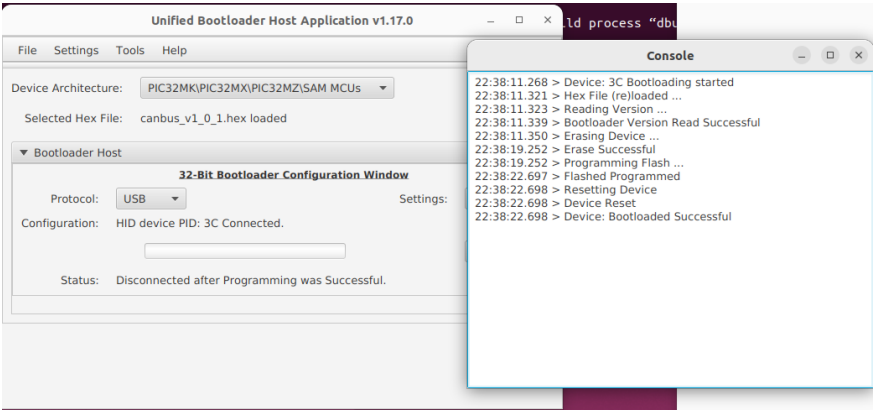


Select bin file to record.



Click Program Device to record.





Appendix A

Connectors

A.1 Connectors

This table provides detailed information about the cables and connectors used by the CAN Bus Carrier Board. If you have any questions about the configuration of your board, please contact your AAEON sales representative.

Label	Description	Connector Type
CN1	USB & UART	Wafer.SMD.Pitch=1.0mm.10P.90D.MALE.BOX NON LOCK.PINREX.710-74-10TWRG.NY9T
CN2	MCU Debug	Wafer Box.10P.180D(M).SMD.1.0mm.w/ CAP.CATCH.1204-700-10SMR
CN3	CAN Bus	Phoenix Connector.DIP.90D.3*2P.Pitch=3.50mm.H=15.2 mm.MALE.BLACK.W/ Screw Flange.DINKLE.0221-3506L
CN4	LED Wafer	Wafer.SMD.1.0mm.6P.180D.MALE.BOX W/LOCK.CAP.CATCH.1204-700-06SMR
SW1	Reset Button	Push Button Switch.3P.12VDC.50mA.500mohm.Black.SMD.HCH.PTS-099
SW2	DIP Switch	DIP Switch.DIP.4P.90D.Standard.2S.SPST.ECE.EPG102A
JP1	MCU Bootloader	PIN HEADER.3*1P.180D(M).DIP.2.0mm.PINREX.220-96-03GB01