

# UP-AUDIO

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Audio HAT for UP Board

User's Manual 1<sup>st</sup> Ed

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## Packing List

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

Item	Quantity
● UP-AUDIO	1

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

## About this Document

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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 on [AAEON.com](http://AAEON.com) for the latest version of this document.

## Safety Precautions

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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

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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, 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.
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- Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.
  - This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.
  - End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.



This equipment complies with FCC 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.

This device complies with Part 15 of 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.

## 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	○	○	○	○	○	○
外部信号 连接器及线材	○	○	○	○	○	○
<p>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。</p> <p>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。</p> <p>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。</p>						

## 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	○	○	○	○	○	○
Wires & Connectors for External Connections	○	○	○	○	○	○
<p>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.</p> <p>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.</p> <p><b>Note:</b> The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p>						

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# Chapter 1

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Product Specifications

## 1.1 Specifications

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### System

IC Realtek ALC5672 x 1

### I/O

External Ports Line out x 1

MIC x 1

Internal connector HAT 40 GPIO male (1 x I2C, 5 x I2S, 1 x PWM, 3V3, 5V, GND) x 1

Speaker x 2

D-MIC x 2

Buzzer x 1

### Miscellaneous

Form Factor 85 mm x 56 mm

Certification CE / FCC Class A

Operating Temperature 0°C ~ 60°C

OS Support UP: WIN 10, Ubuntu 16.04.2, Android 6.X

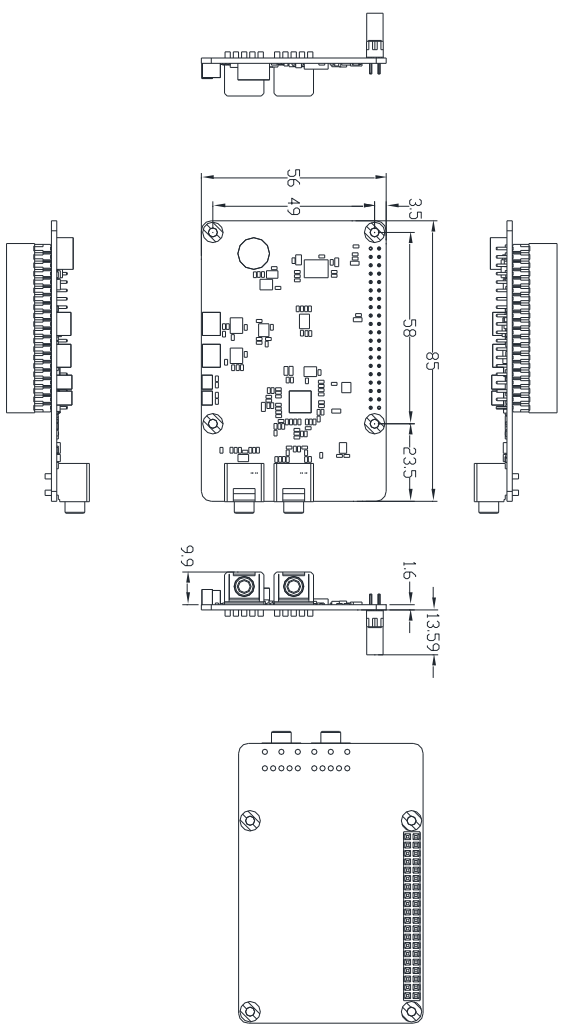
**Warning:** To avoid resonance between D-MIC and speaker, DO NOT turn on “listen to this device.”

# Chapter 2

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Hardware Information

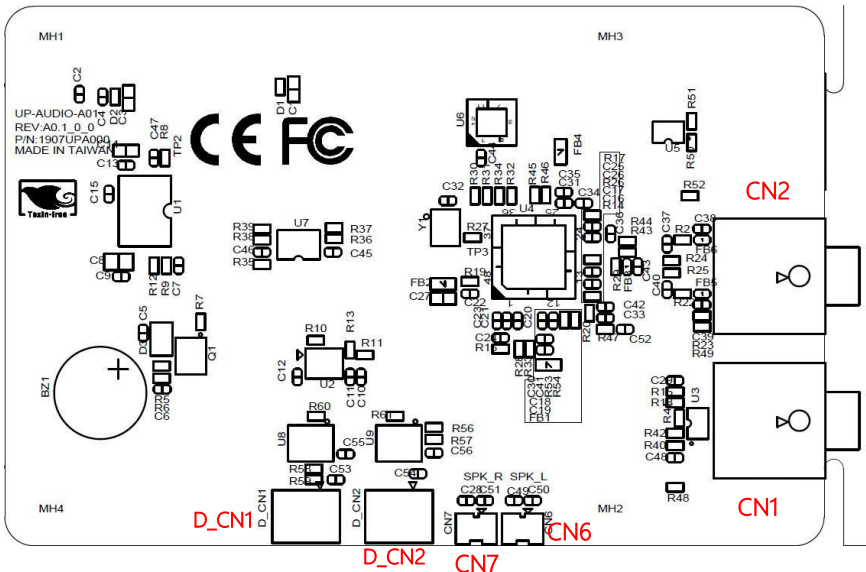
## 2.1 Dimensions



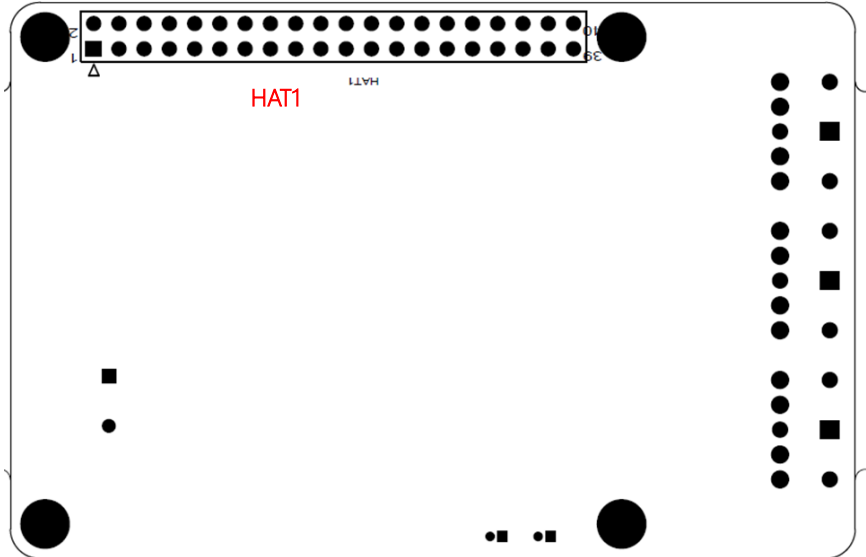


## 2.2 Jumpers and Connectors

### Top side



### Bottom side



## 2.3 List of Switches and Connectors

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

Reference	Function	Connector Type
CN1	MIC Jack	5P C1F2R1-560-R 90D
CN2	Line Out Jack	5P C1F2R1-570-R 90D
D_CN1	DMIC_L	4P 710-73-04TWE0
D_CN2	DMIC_R	4P 710-73-04TWE0
CN6	Speaker L	2P 712-71-02TW01
CN7	Speaker R	2P 712-71-02TW01
HAT1	HAT40	20*2P 22N8562-40SA2B-01G

### 2.3.1 MIC Jack (CN1)

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Pin	Signal
1	H_GND_AUDIO
2	MIC_R
3	H_GND_AUDIO
4	H_HP_DET
5	MIC_L

### 2.3.2 Line Out Jack (CN2)

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Pin	Signal
1	H_GND_AUDIO
2	H_HP_OUT_R
3	H_GND_AUDIO
4	H_HP_DET
5	H_HP_OUT_L

### 2.3.3 DMIC\_L Wafer (D\_CN1)

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Pin	Signal	Pin	Signal
1	DMIC_PW	2	DMIC_SDA
3	DMIC_SCL	4	H_GND
5	H_GND	6	H_GND

### 2.3.4 DMIC\_R Wafer (D\_CN2)

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Pin	Signal	Pin	Signal
1	DMIC_PW	2	DMIC_SDA
3	DMIC_SCL	4	H_GND
5	H_GND	6	H_GND

### 2.3.5 Speaker L Wafer (CN6)

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Pin	Signal	Pin	Signal
1	H_SPO_LP	2	H_SPO_LN

### 2.3.6 Speaker R Wafer (CN7)

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Pin	Signal	Pin	Signal
1	H_SPO_RP	2	H_SPO_RN

### 2.3.7 HAT 40-Pin Connector (HAT1)

Pin	Signal	Pin	Signal
1	+V3P3A	2	+V5A
3	H_HAT_I2C1_SDA	4	+V5A
5	H_HAT_I2C1_SCL	6	H_GND
7	NC	8	NC
9	H_GND	10	NC
11	NC	12	H_HAT_I2S6_BCLK
13	NC	14	H_GND
15	NC	16	NC
17	+V3P3A	18	NC
19	NC	20	H_GND
21	NC	22	NC
23	NC	24	NC
25	H_GND	26	H_ALC5672_JD
27	NC	28	NC
29	NC	30	H_GND
31	NC	32	H_HAT_PWM0
33	NC	34	H_GND
35	H_HAT_I2S6_WS_SYNC	36	NC
37	NC	38	H_HAT_I2S6_SDI
39	H_GND	40	H_HAT_I2S6_SDO

# Chapter 3

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Installation Guide

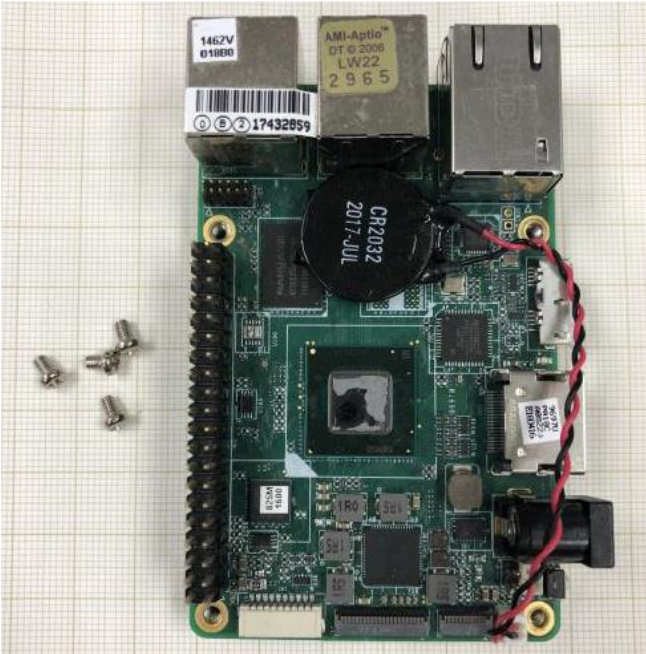
### 3.1 UP-AUDIO Installation

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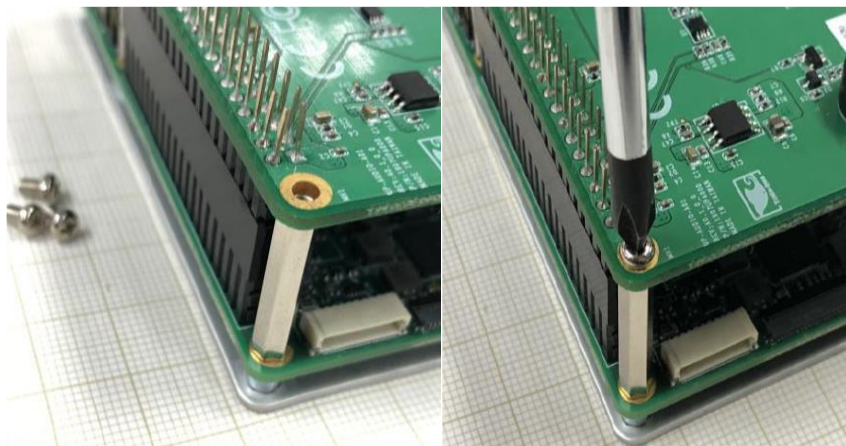
This section details the steps to install the UP-AUDIO Audio HAT onto your UP Board.

**Step 1:** Make sure your UP Board, UP-AUDIO and all accessories needed are ready.

**Step 2:** Remove any screws attached to the UP Board.



**Step 3:** Attach the standoffs to your UP Board. Then, attach the UP-AUDIO, making sure to connect the HAT1 connector to the GP bus. Finally, secure the UP-AUDIO to the standoffs using screws.



Installation is complete! You can now power on your UP Board. Proceed to the next section for software installation.





## 3.2 Software Installation

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*\*Please visit <https://www.up-community.org> and go to the Downloads section to find the relevant drivers.*

For software installation, please follow the steps according to your operating system:

### **Linux, Ubuntu**

Please refer to file "UP-Audio Linux Ubuntu driver for UP-CHT01.zip" and follow "RT5672\_Installation\_Guide\_V1.0.pdf" to install the drivers.

### **Windows 10**

Please refer to file "UP-Audio WIN10 driver for UP-CHT01.zip" and follow "UP-Audio install Drivers SOP 20180413.pdf" to install the driver.