

# UP-CHT01

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Maker Board

User's Manual 2nd 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-CHT01	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 [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.**

### **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

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>○: 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

- **Form Factor** 85.6 x 56.5 mm (3.4 x 2.2")
- **CPU** Intel® Atom™ x5-Z8350 Processor
- **CPU Frequency** Up to 1.84 GHz
- **Chipset** Processor integrated
- **Memory Type** Onboard DDR3L-1600
- **Max Memory Capacity** 4 GB
- **BIOS** SPI BIOS – 64Mb flash
- **Power Requirement** 5V3A or 5V4A
- **Power Supply Type** DC-In
- **Power Consumption (Typical)** <6W (SoC SDP <2W)
- **Dimensions (L x W)** 85.6 x 56.5 mm (3.4 x 2.2")
- **Operating Temperature** 0 ~ 60°C (32 ~ 140°F)
- **Operation Humidity** 10 ~ 80% relative humidity, non-condensing
- **Certification** CE/FCC Class A

### Display

- **VGA/LCD Controller** Intel® HD Graphics

### I/O

- **Ethernet** Realtek RTL8111G-CG

- Audio HDMI I2S
- USB USB 2.0 x 4  
USB 3.0 x 1 (MicroUSB Type B, support USB 3.0 OTG)
- Onboard eMMC 16 GB / 32 GB / 64 GB
- Expansion Slot HAT 40 GPIO Pin for  
Serial Port x 1  
DIO 7 pin x 1  
I2C x 2  
SPI x 4

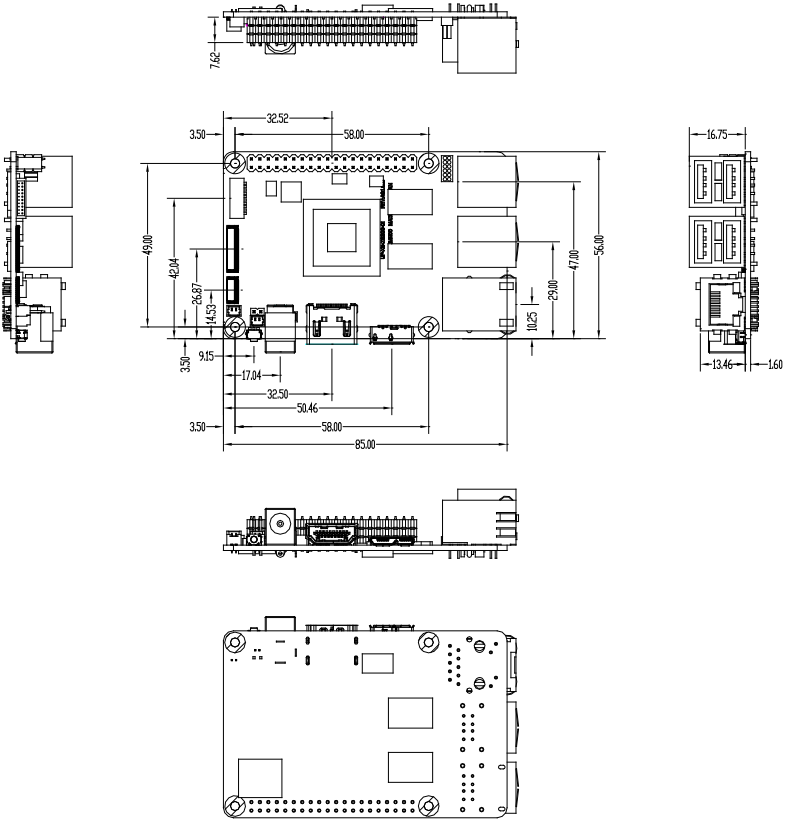
# Chapter 2

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Hardware Information

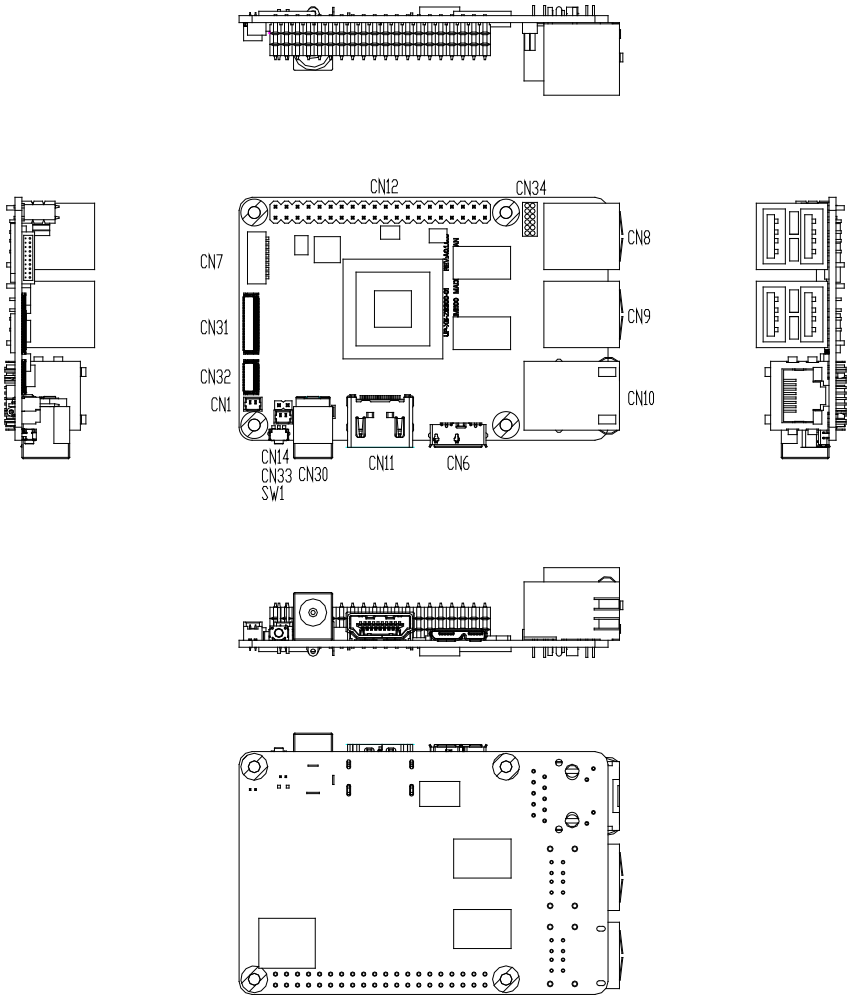
## 2.1 Dimensions

### Component Side





## 2.2 Jumpers and Connectors



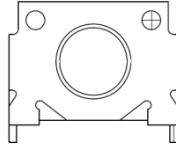
## 2.3 List of Switches and Connectors

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

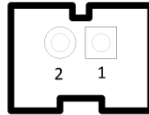
Label	Function
SW1	Power Button Wafer
CN1	RTC Battery
CN6	USB 3.0 Micro Connector
CN7	USB 2.0 1x10P Wafer
CN8	USB Type A Connector 1
CN9	USB Type A Connector 2
CN10	RJ45 LAN Connector
CN11	HDMI Connector
CN12	HAT 40 GPIO Connector
CN14	Reset Pin Header
CN30	DC Jack
CN31	MIPI DSI Connector
CN32	MIPI CSI Connector
CN33	Power Button Wafer
CN34	Update CPLD Header

### 2.3.1 Power Button (SW1)



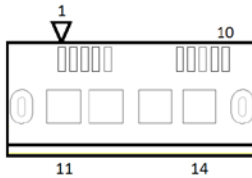
Position	Function
SW1 1	Power off (default)
SW1 0	Power on

### 2.3.2 RTC Battery Wafer (CN1)



Pin	Signal
1	+V_COIN_BAT
2	GND

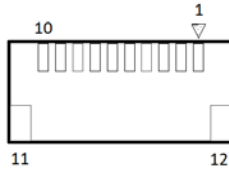
### 2.3.3 USB 3.0 Micro Connector (CN6)



Pin	Signal	Pin	Signal
1	USB_VCC	8	GND
2	USB2_D-	9	CROSSBAR_TX1_N
3	USB2_D+	10	CROSSBAR_TX1_P
4	USB2_ID	11	GND

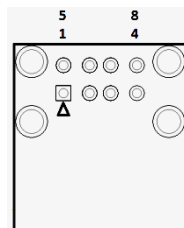
5	GND	12	GND
6	CROSSBAR_RX1_N	13	GND
7	CROSSBAR_RX1_P	14	GND

### 2.3.4 USB 2.0 x 10P Wafer (CN7)



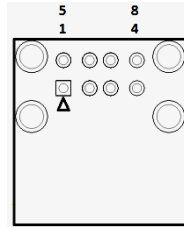
Pin	Signal	Pin	Signal
1	USB_VCC	7	USB_HSIC_P4_D+
2	USB_HSIC_P3_D-	8	GND
3	USB_HSIC_P3_D+	9	UART0_RXD
4	GND	10	UART0_TXD
5	USB_VCC	11	GND
6	USB_HSIC_P4_D-	12	GND

### 2.3.5 Dual USB Type A Connector 1 (CN8)



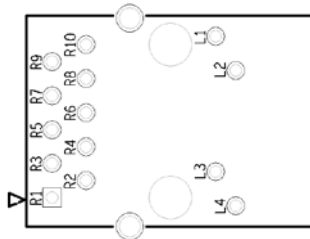
Pin	Signal	Pin	Signal
1	USB_VCC	5	USB_VCC
2	USB2_P1_D-	6	USB2_P2_D-
3	USB2_P1_D+	7	USB2_P2_D+

### 2.3.6 Dual USB Type A Connector 2 (CN9)



Pin	Signal	Pin	Signal
1	USB_VCC	5	USB_VCC
2	USB2_P3_D-	6	USB_HSIC_P2_D-
3	USB2_P3_D+	7	USB_HSIC_P2_D+
4	GND	8	GND

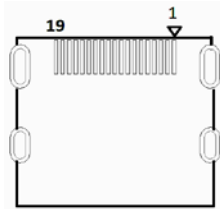
### 2.3.7 RJ-45 LAN Connector (CN10)



Pin	Signal	Pin	Signal
R1	LAN1_MDI0+	R8	LAN1_MDI2-
R2	LAN1_MDI0-	R9	LAN1_MDI3+
R3	LAN1_MDI1+	R10	LAN1_MDI3-
R4	LAN1_MDI1-	L1	LAN_ACTLED P
R5	LAN1_MDI2+	L2	LAN_ACTLED N

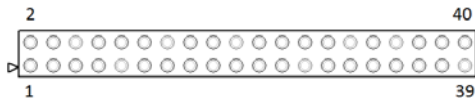
R6	LAN1_MDI2-	L3	LAN_LINK100#
R7	LAN1_MDI2+	L4	LAN_LINK100#

### 2.3.8 HDMI Connector (CN11)



Pin	Signal	Pin	Signal
1	DDI2_TX0_HDMI_DP+	11	GND
2	GND	12	DDI2_CLK_HDMI_DN-
3	DDI2_TX0_HDMI_DN-	13	HDMI_CEC_D
4	DDI2_TX1_HDMI_DP+	14	NC
5	GND	15	DDI2_DDC_CLK
6	DDI2_TX1_HDMI_DN-	16	DDI2_DDC_DAT
7	DDI2_TX2_HDMI_DP+	17	GND
8	GND	18	+5V_HDMI
9	DDI2_TX2_HDMI_DN-	19	DDI2_TYPE_C_HPDP
10	DDI2_CLK_HDMI_DP+		

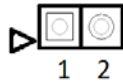
### 2.3.9 HAT 40 GPIO Connector (CN12)



Pin	Signal	Pin	Signal
1	+3.3V	2	+5V

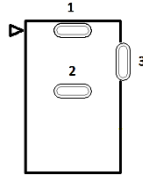
3	I2C1_SDA	4	+5V
5	I2C1_SCL	6	GND
7	ISH_GPIO0	8	UART_TX
9	GND	10	UART_RX
11	SD2_CMD	12	I2S2_CLK
13	SD2_CLK	14	GND
15	SD2_SD0	16	SD2_SD1
17	+3.3V	18	SD2_SD2
19	SPI2_MOSI	20	GND
21	SPI2_MISO	22	SD2_SD3
23	SPI2_CLK	24	ISH_SPI2_CS0
25	GND	26	ISH_SPI2_CS1
27	I2C0_SDA	28	I2C0_SCL
29	ISH_GPIO2	30	GND
31	ISH_GPIO3	32	PWM0
33	PWM1	34	GND
35	I2S2_FRM	36	GPIO27
37	GPIO13	38	I2S2_RX
39	GND	40	I2S2_TX

### 2.3.10 Reset Pin Header (CN14)



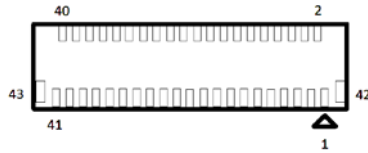
Pin	Signal
1	PMU_RSTBTN_N
2	GND

### 2.3.11 DC Jack (CN30)



Pin	Signal
1	+V5
2	GND
3	GND

### 2.3.12 MIPI DSI Connector (CN31)

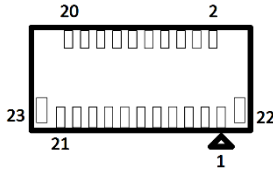


Pin	Signal	Pin	Signal	Pin	Signal
1	MDSI_A_DATA1_DN	16	DDIO_TX0_DP	31	DDIO_HPD_CONN
2	MDSI_A_DATA1_DP	17	DDIO_TX0_DN	32	DDIO_BKLT_R_CTRL
3	GND	18	GND	33	DDIO_VDD_EN
4	MDSI_A_CLK_DN	19	DDIO_TX1_DP	34	DDIO_BKLT_EN
5	MDSI_A_CLK_DP	20	DDIO_TX1_DN	35	NC
6	GND	21	GND	36	NC
7	MDSI_A_DATA0_DN	22	DDIO_TX2_DP	37	+3.3V
8	MDSI_A_DATA0_DP	23	DDIO_TX2_DN	38	+3.3V
9	GND	24	GND	39	+3.3V
10	I2C2_3P3_SCL	25	DDIO_TX3_DP	40	+3.3V
11	I2C2_3P3_SDA	26	DDIO_TX3_DN	41	+3.3V
12	GND	27	GND	42	GND



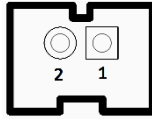
13	DDI1_DDC_C_CLK	28	DDI0_AUX_DP	43	GND
14	DDI1_DDC_C_DAT	29	DDI0_AUX_DN		
15	GND	30	GND		

### 2.3.13 MIPI CSI Connector (CN32)



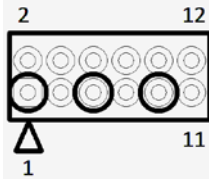
Pin	Signal	Pin	Signal
1	GND	13	GND
2	MCSI_1_DATA1_DN	14	CAM_MCLK
3	MCSI_1_DATA1_DP	15	GND
4	GND	16	I2C2_SOC_SCL
5	MCSI_1_CLK_DN	17	I2C2_SOC_SDA
6	MCSI_1_CLK_DP	18	CAM_RST_N
7	GND	19	FLASH_RESET_N
8	MCSI_1_DATA0_DN	20	+2.8V
9	MCSI_1_DATA0_DP	21	GND_CAM
10	GND	22	GND
11	+1.2V	23	GND
12	+1.8V		

### 2.3.14 Power Button Wafer (CN33)



Pin	Signal
1	PWR_SW#_CTL_R
2	GND

### 2.3.15 Update CPLD Header (CN34)



Pin	Signal	Pin	Signal
1	CHT_GPIO_TMS	2	CPLD_TMS
3	CHT_GPIO_TDI	4	CPLD_TDI
5	CHT_GPIO_TCK	6	CPLD_TCK
7	CHT_GPIO_TDO	8	CPLD_TDO
9	FAN_PWM	10	+1.8V
11	+5V	12	GND

# Chapter 3

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Drivers Installation

## 3.1 Driver Download and Installation

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### Step 1 – Download the drivers

1. Click **Driver** tab in the Downloads section of UP page of AAEON website at: <http://www.aaeon.com/en/p/up-board-computer-board-for-professional-makers#downloads>
2. Download the **Step 1 - Chipset and peripherals Driver**, **Step 2 - TXE Driver**, **Step 3 - LAN Driver** and **Step 4- Dummy driver (Manual)** and open the self-extracting EXE files.
3. Assign a destination folder and click **Install**.
4. The driver folders will be extracted to the destination folder.

### Step 2 – Install Chipset and peripherals Driver

1. Open the **Step1 - Chipset and peripherals** folder
2. Open the subfolder based on you OS
3. Open the **Setup.exe** file in the folder
4. Follow the instructions
5. Drivers will be installed automatically

### Step 2 – Install TXE Driver

1. Open the **Step2 - TXE** folder
2. Open the subfolder based on you OS
3. Open the **SetupTXE.exe** file in the folder
4. Follow the instructions
5. Drivers will be installed automatically

### Step 3 – Install LAN Driver

1. Open the **Step3 - LAN** folder
2. Open the subfolder based on you OS

3. Open the **Setup.exe** file in the folder
4. Follow the instructions
5. Drivers will be installed automatically

#### **Step 4 – Install Dummy Driver\***

1. Open the **Step4 - Dummy Driver (Manual)** folder
2. Extract the **UP\_DDriver.rar** file to a new folder
3. Open the **Install\_Dummy\_Driver\_on\_UP.docx** file in the new folder
4. Follow the instructions to manually update the driver

*\* Some virtual devices required for Linux to function properly will appear as unknown devices in Windows Device Manager. Updating these devices with the dummy driver will resolve the problem.*

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