

# Rockchip Battery EVB User Guide

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## Preface

### Overview

This document is going to introduce the usage and precautions of battery EVB boards. Aiming to help customers get started with low-power related products developing more easily, such as: battery IPC, smart doorbell, smart peephole, smart door lock, etc.

### Product Version

Chipset	Kernel Version
RV1109, RV1126	Linux 4.19

### Intended Audience

This document (this guide) is mainly intended for:

Technical support engineers

Software development engineers

### Revision History

Version	Author	Date	Revision History
V1.0.0	LLDM	2021-06-21	Initial version

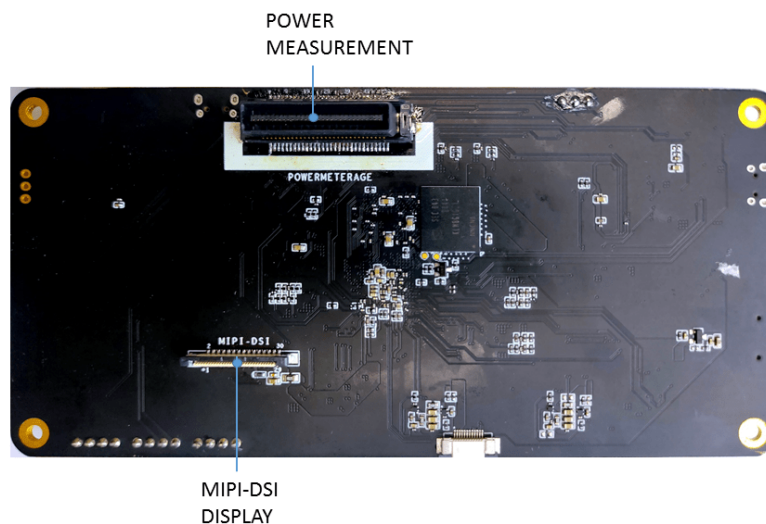
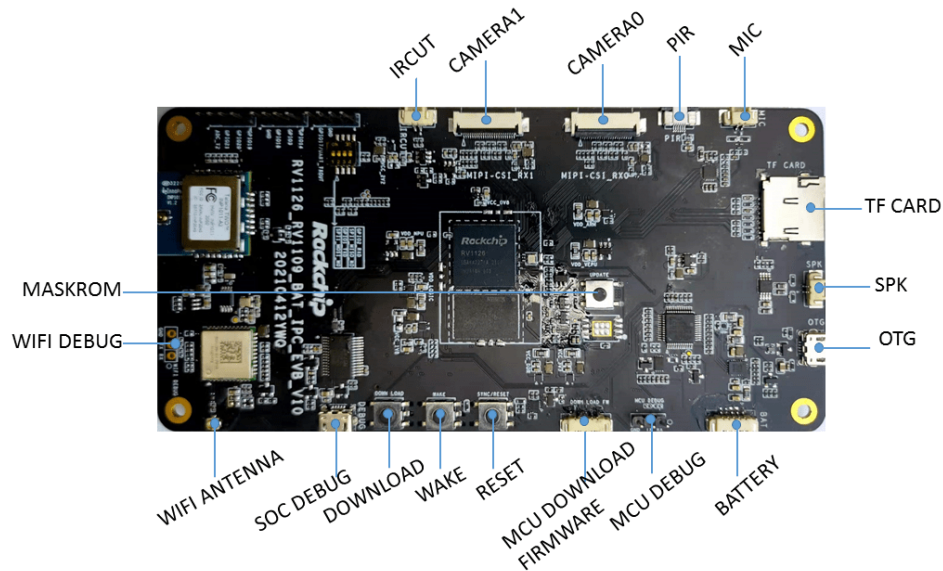
## Revision History

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# 1. Hardware Introduction

## 1.1 Power-on Introduction



It can be powered by USB or battery. **However, only using USB power supply may be unstable, for it may cause restart probably, on the other hand, using USB power supply cannot enter sleep mode automatically.**

## 1.2 Flashing Introduction

You have to connect a serial port cable and micro-USB cable to the board, with the serial port baud rate 1500000, enter the reboot loader command, and use RKDevTool for flashing.

If the device cannot enter the loader mode, you can press and hold the update button in the middle of the board and power on to enter the maskrom mode to flash.

For how to use RKDevTool, please refer to this document:

SDK\tools\windows\RKDevTool\RKDevTool\_Release\RKDevTool\_manual\_v1.2\_en.pdf.

## 1.3 Keys Introduction

The RESET key is used to restart.

WAKE key is used to wake up and enter [Network Configuration Process](#).

The DOWN LOAD key is used to enter the loader mode.

## 1.4 PIR Introduction

PIR is triggered when someone passes by within a certain distance. If the device is in sleep state, the device will be awakened by PIR. The PIR sensitivity is currently controlled by an external MCU.

## 2. Certification Process

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**Currently, Tuya Cloud IoT devices must be bound with a triplet certificate to connect to the cloud.** The triplet certificate is currently stored in the Vendor partition.

There are two ways to write the number. **Both of them need to ensure that the triplet of each device is unique.**

1. Use tools\windows\RKDevInfoWriteTool in the SDK directory. Set the ID of the custom item to 254 in the settings, make the device enter the loader or maskrom mode, and then input the following string, note: the triplet need to be replaced with the actual ones.

```
1 { "pid": "4wrrx6gmxlczhcv", "uuid": "tuya88c63af77f74850e", "authkey": "Zur6gYvXyIB182IjpgM8CJhEDuWUEzF2" }
```

2. Using the serial port or ADB, input the following commands on the device, note: the triplet need to be replaced with actual ones.

```
1 vendor_storage -w VENDOR_CUSTOM_ID_FE -t string -i
{"pid": "\"4wrrx6gmxlczhcv\"", \"uuid\": \"tuya88c63af77f74850e\", \"authkey\": \"Zur6gYvXyIB182IjpgM8CJhEDuWUEzF2\" }
```

## 3. Network Configuration Process

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You have to download the Tuya Smart APP, which can be downloaded from each application store or official website.

### 3.1 QR Code Network Configuration

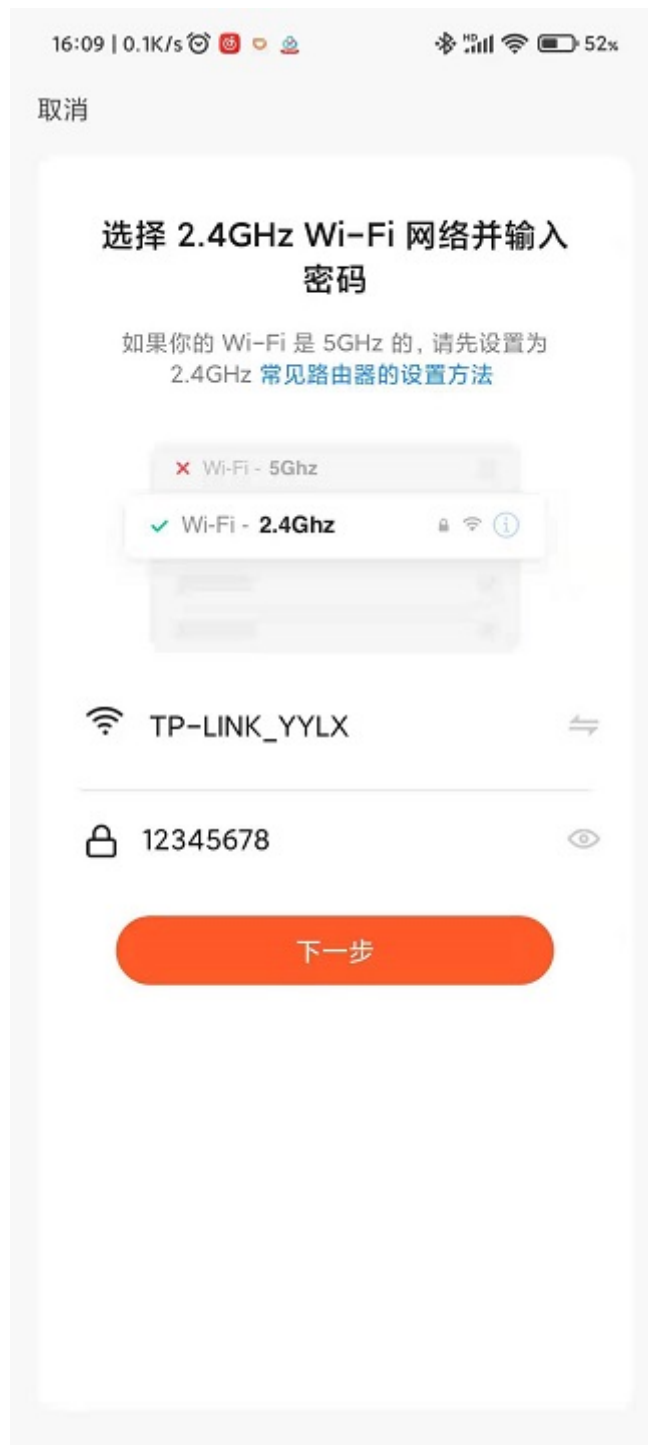
1. Enters the main interface of the APP, click the the "+" icon in the upper right corner---> manual add--->security monitoring--->smart camera (Wi-Fi).



2. Then click "select the QR code to configure the network" on the upper right corner. There is no need to reset the device at present, just check and enter the next step.



3. Select a Wi-Fi and enter the password, and then click Next, a QR code will be generated.

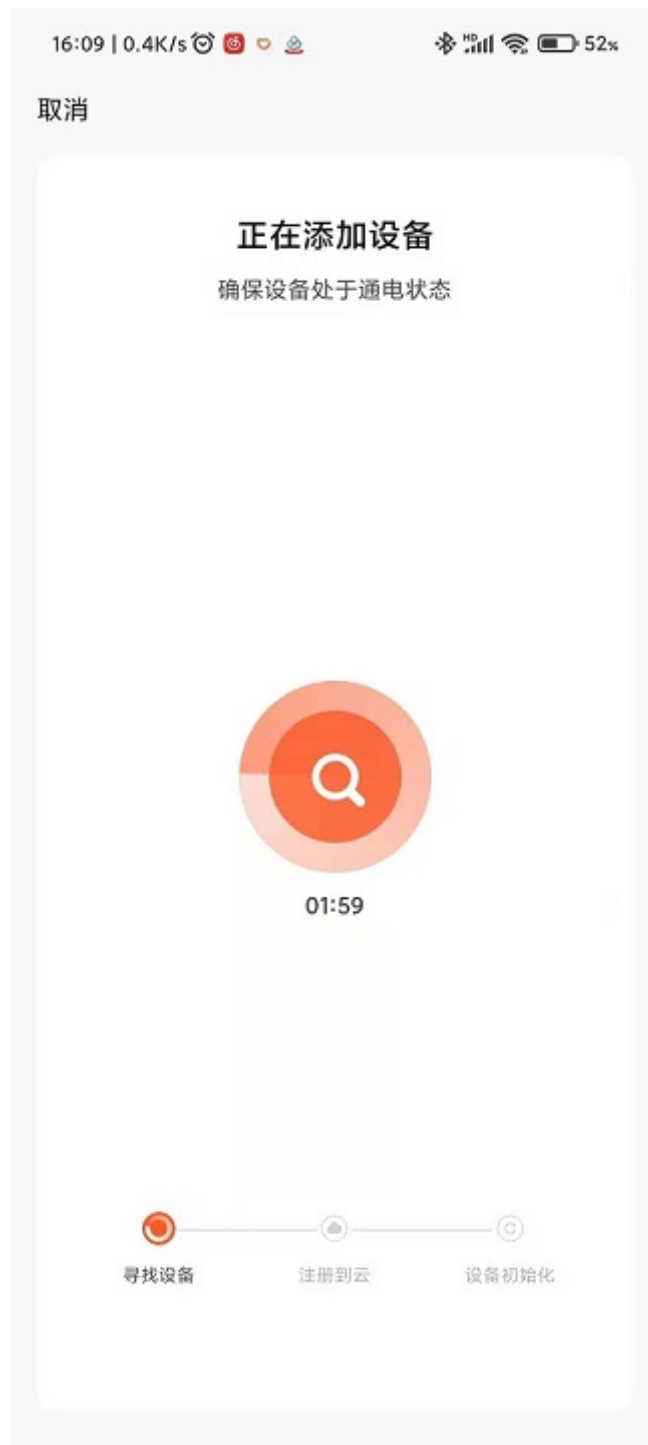


4. Note: The generated QR code is with a time limit. If it exceeds 5 minutes, you have to go back and regenerate the QR code.





5. Short press the wake button on the board to enter the 5-second network configuration process. Please face the QR code directly to the camera with a distance of 20~30 cm. **If the QR code is recognized, there will be a indication voice**, indicating that it is connecting to Wi-Fi.
6. **If the network configuration is successful, you can click "Heard the indication voice" and continue the binding device process.**



7. After the device is registered to the cloud and the initialization is complete, return to the main interface of the APP and click on the device to preview.

## 3.2 Configuration Network by Command Line

Enter the following command through the serial port:

```
1 insmod /vendor/lib/modules/cywdhd.ko
2 cp /etc/wpa_supplicant.conf /tmp
3 sed -i "s/SSID/ssid/g" /tmp/wpa_supplicant.conf # ssid and psk are the Wi-Fi
   name and password
4 sed -i "s/PASSWORD/psk/g" /tmp/wpa_supplicant.conf
5 sleep 1
6 wpa_supplicant -B -i wlan0 -c /tmp/wpa_supplicant.conf
7 sleep 1
8 udhcpc -i wlan0
```

If the provided firmware is with the keepalive tool, you can use the following command:

```
1 keepalive -i wlan0 -s ssid -k psk -a 192.168.1.101 -p 5150
```

### 3.3 Change Network

If the network is changed, you have to re-configure the network following one of the above two ways.

## 4. Shutdown Process

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Currently, there are two conditions for triggering shutdown:

1. No one previews within 90 seconds of booting up.
2. 5 seconds after the preview exits.

**Notice:**

**It cannot enter sleep mode under USB power supply.**

## 5. Wake-up Process

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### 5.1 Wake-up by APP

Clicks on the device in the APP to enter the preview interface. If the device is in the sleep state at this time, the APP will send a wake-up command automatically.



Notice: Due to network problems, the APP may not be able to obtain the media stream in time after waking up. You have to return to the main interface and click the device again to enter.

## 5.2 Wake up by Keys

The wake-up key and the network configuration key are multiplexed, please refer to [Keys Introduction](#).

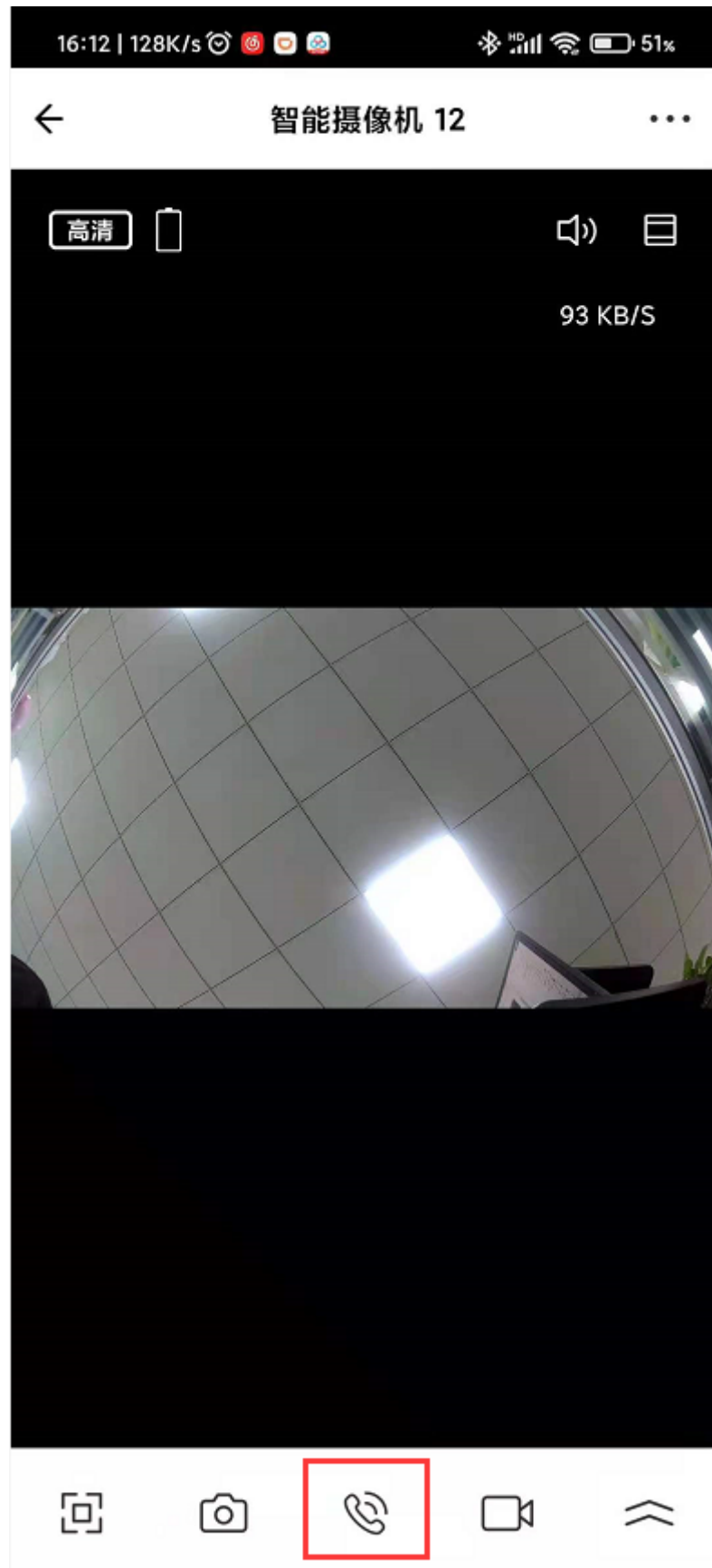
## 5.3 Wake up by PIR

When the PIR peripheral is connected and the MCU program is running normally, and PIR detects an infrared object passing by, it will trigger the wake-up process.

## 6. Two-way Intercom

Enters the preview interface of the APP, click on the intercom icon to start two-way intercom.

Please make sure that the microphone and speakers of the device are normal.



## 7. LAN Preview (RTSP)

It is supported to preview the device in the same local area network. After the device is connected to the Internet, use the RTSP software on the PC to open the network stream and enter:

```
1 | rtsp://(IP address of this device)/live/video0
```



You can preview the image of the camera:



## 8. Notices

1. Please ensure that the connection between the network and the Tuya Cloud server is normal. Some networks may restrict access and cause errors in the APP operation process.
2. If the device is not in use, please unplug the battery to prevent the battery from over-discharging due to frequent wake-up of PIR.
3. As there are too many types of routers, there may be unknown compatibility issues. It is recommended to use a personal router for testing.
4. After the first binding, due to cloud problems, the video may always fail to preview, which need manually restart the device before previewing.
5. If the device wakes up automatically after sleep, you can connected to the serial port of the MCU to check the wake-up reason.

## 9. Debug

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In order to save power consumption and reduce boot time, log printing is turned off by default. If you need to debug, you can connect to the serial port (baud rate 1500000) and enter the following command:

```
echo "7 4 1 7"> /proc/sys/kernel/printk
```

Reproduce the problem and save the log, commit the log to Rockchip's redmine system, our FAE will assign the corresponding engineer to follow up.

## 10. Peripheral Functions Verification

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### 10.1 PIR

```
1 | cat /sys/bus/iio/devices/iio:device1/in_illuminance_input
```

### 10.2 LED

```
1 | echo 255 > /sys/class/leds/white/brightness
```

### 10.3 MIC

```
1 | arecord -D hw:0,0 -f S16_LE /tmp/test.wav -d 5 -r 16000 -c 2 -vv
```

### 10.4 SPK

```
1 | aplay -Dhw:0,0 -r 16000 -c 2 -f S16_LE /tmp/test.wav -vv
```

## 10.5 Wi-Fi

Please refer to [Network Configuration Process](#).

## 10.6 TF Card

```
1 | mount -t vfat /dev/mmcblk2p1 /userdata/sd
```

## 10.7 RTC

```
1 | cat /proc/driver/rtc
```

## 10.8 Fuel Gauge

```
1 | cat /sys/class/power_supply/rk-bat/capacity
```