RE5V1C Application Guide

Version 1.0

About This Manual

This manual introduces the application guide and product parameters of the RE5V1C, containing the following chapters.

Chapter	Title	Content
Chapter 1	Product brief introduction	Overview of the features and applications of RE5V1C
Chapter 2	Electrical characteristics	Introduce the basic parameters, PIN definitions, and wiring methods.
Chapter 3	Radio frequency index	Introduce the radio frequency index of the module
Chapter 4	Function description	Describe module functions and specific instructions
Chapter 5	Dimensions	Provide module size diagram

1. Product Introduction

RE5V1C is a single-channel switch based on ESP8285 Wi-Fi SOC. It does not require other peripheral circuits, and the module can work normally after power supply. It can be connected to a Wi-Fi wireless network for Internet or LAN communication to achieve remote control. It is designed for mobile devices and Internet of Things applications.

Product Features:

- 5V DC power supply, maximum working current 250mA
- Support wireless 802.11 b/g/n standard
- Wi-Fi @2.4 GHz, support WPA/WPA2 security mode
- +20.5dBm maximum output power in 802.11b mode
- Support device button control
- Support timer schedule
- Support Wi-Fi remote control
- APP supports Android & iOS
- Main application areas: occasions where remote control switches are required

2. Electrical Characteristics

2.1 Rated parameters

Conditions: VDD=3.3V±10% , GND=0V; test at room temperature 25°C.

Parameters	Minimum	Typical value	Max	Unit
Voltage	4.75	5	7	V
Working current	-	80	250	mA
Load	-	-	10	A

2.2 Wi-Fi parameters

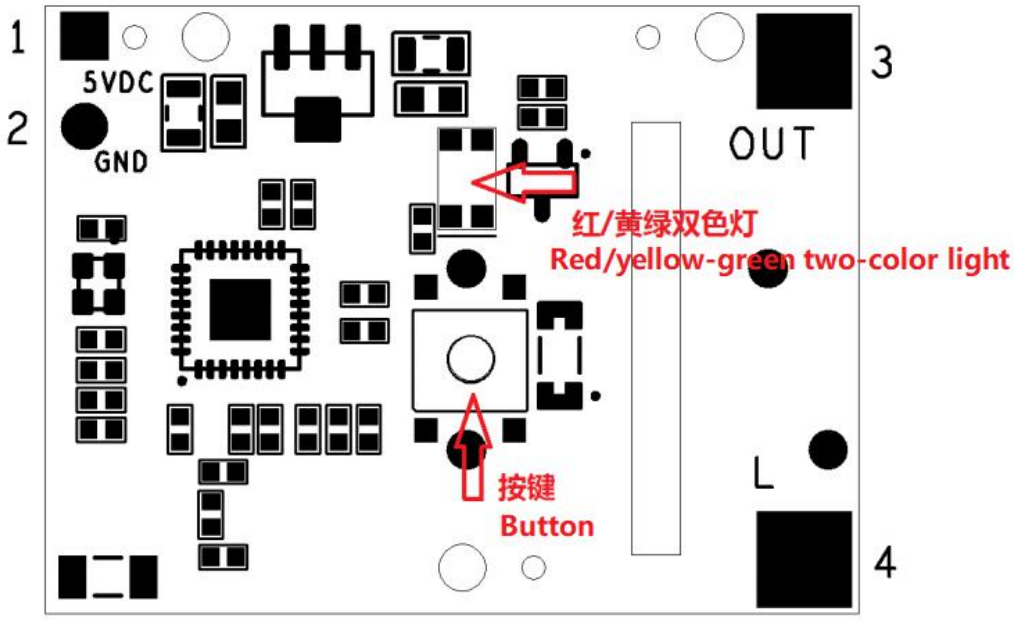
Type	Parameters
Wireless standard	IEEE 802.11b/g/n
Main chip	ESP8285
Frequency range	2.412GHz-2.484GHz
Transmit power	802.11b: 20±2dBm (@11Mbps) 802.11g: 17±2dBm (@54Mbps) 802.11n: 14±2dBm (@HT20, MCS7)
Receiving sensitivity	802.11b: -91 dBm (@11 Mbps, CCK) 802.11g: -75 dBm (@54Mbps, OFDM) 802.11n: -72 dBm (MCS7)

Antenna type	2.4GHz ceramic antenna

2.3 Interface definition

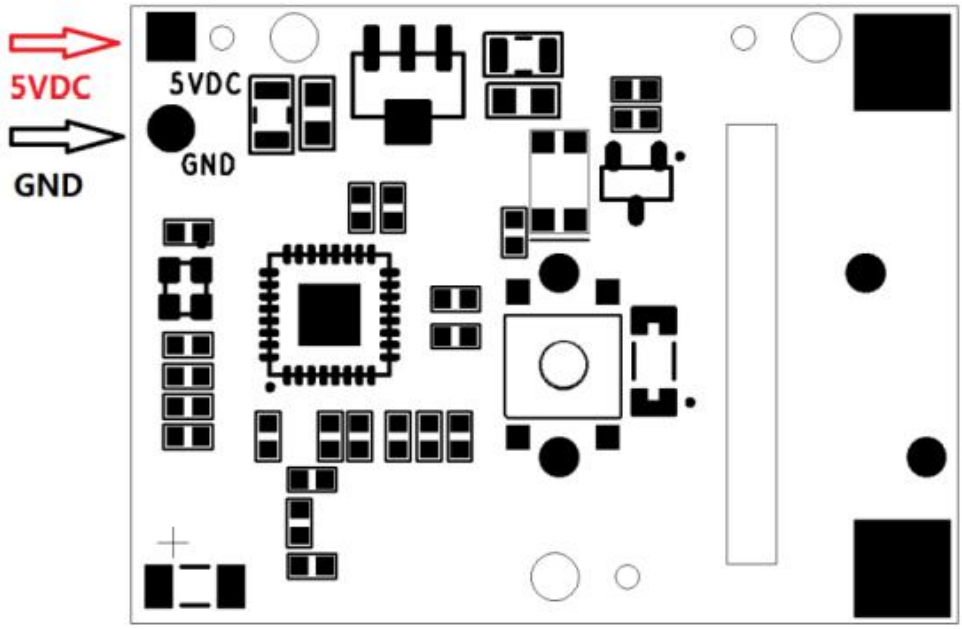
Pin	Name	Features
1	5V DC	DC power supply positive
2	GND	DC power supply negative
3	OUT	Output load
4	L	AC L end interface

Interface definition diagram:

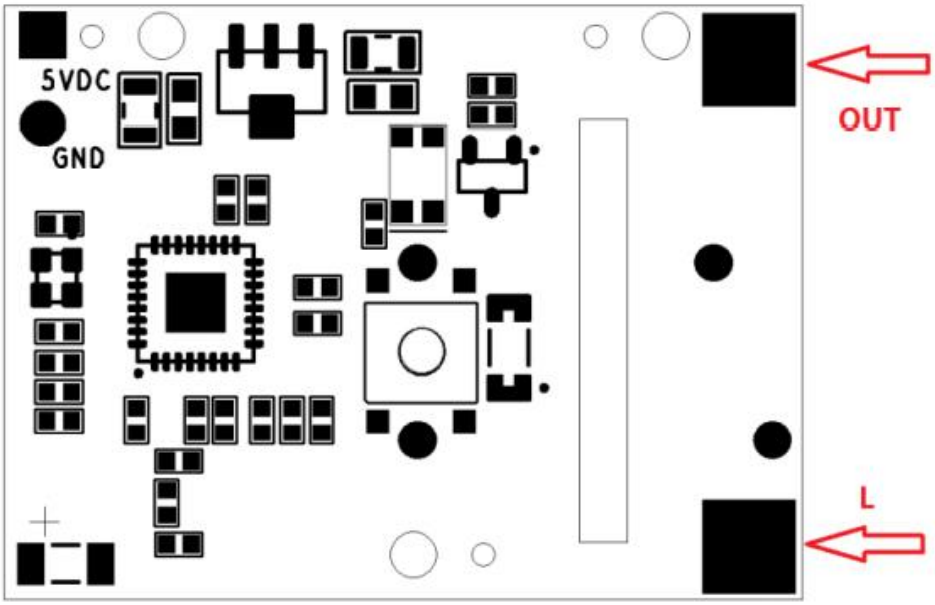


2.4 Wiring

DC (DC5V/500mA) power supply:



Load:



3. Radio Frequency Index

Conditions: VDD=3.3V±10% , GND=0V ; test at room temperature 25°C.

Description	Minimum	Typical value	Max	Unit
Input frequency	2412	-	2484	MHz
Output impedance	-	50	-	Ω
Solid wave loss	-	-	-10	dB
PA output peak value power when at 72.2Mbps	15.5	16.5	17.5	dBm
PA output peak value power in 802.11b mode	19.5	20.5	21.5	dBm

Sensitivity:

Description	Minimum	Typical value	Max	Unit mA
CCK 1Mbps		-98		dBm
CCK 11Mbps		-91		dBm
6Mbps(1/2BPSK)		-93		dBm
54Mbps (3/4 64-QAM)		-75		dBm
HT20, MCS7 (65Mbps, 72.2Mbps)		-72		dBm

Adjacent frequency suppression

Description	Minimum	Typical value	Max	Unit mA
OFDM, 6Mbps		37		dB
OFDM, 54Mbps		21		dB
HT20, MCS0		37		dB
HT20, MCS7		20		dB

Note:

1. 72.2Mbps is measured in the 802.11n mode, the MCS =7, the GI = 200uS.
2. Up to + 21.5dBm output power in 802.11b mode.

4. Function Description

4.1. Module function

RE5V1C module can be used as a single-channel switch, which can control the switch locally or remotely through APP.

The following is the function description:

1. Pairing method: quick pairing mode / compatible pairing mode. Press and hold the button for more than 5s to enter the quick pairing mode. When it is in the quick pairing mode, press the button for more than 5s again to enter the compatible pairing mode. APP can be configured in both modes.
2. Switch:

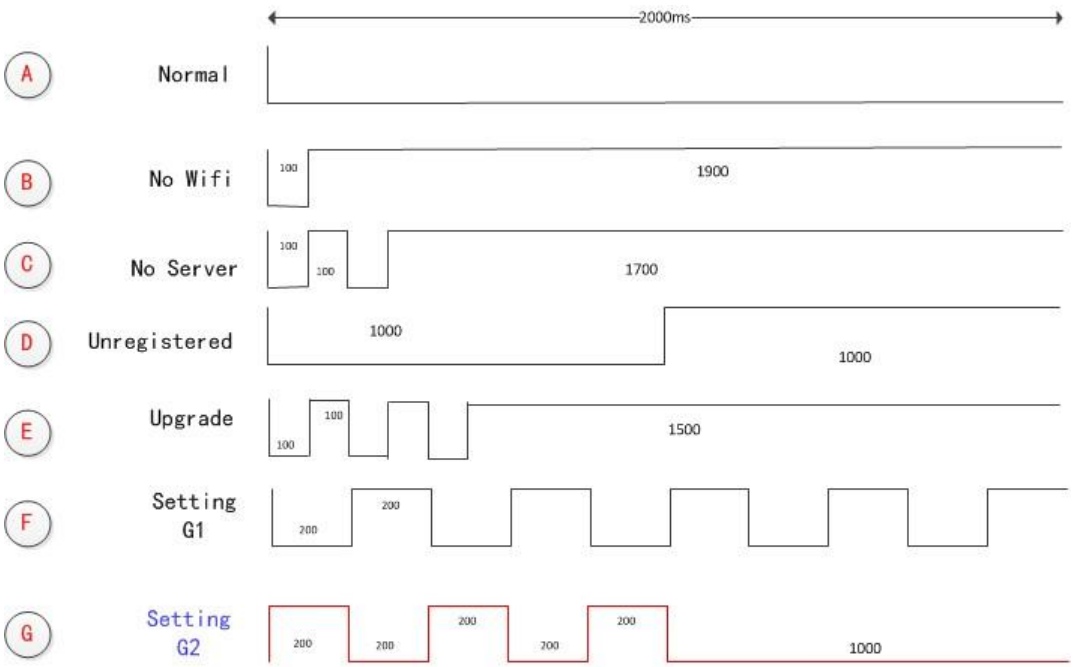
a) In the normal state: click the button to control the relay on and off. The red light is on, the relay is on, otherwise the relay is off.

b) In the pairing mode: click the button to exit the pairing mode.

3. Timer: including single, count down, repeat, and loop timer.
4. Power-on status configuration: The power-on switch status can be configured on or off through the APP, and the default power-on status is off.

4.2. Wi-Fi status indicator light description

The flashing mode of the Wi-Fi status light (yellow & green) on the device represents the its current network working status. The specific status includes the following seven types:



状态灯定义(2秒钟为一个周期，低电平灯亮、高电平灯灭)

The flashing of the Wi-Fi status light is in a cycle of 2 seconds, as shown in the figure, the low-level light is on and the high-level light is off. Detailed explanation of each status:

A. Normal: The device is working normally and the connection to the cloud server is normal. The device can be only controlled through the APP in this mode.

B. NO Wi-Fi: The device cannot connect to the router.

C. No Server: The device has been connected to the router, but it cannot connect to the server (also known as "cannot access the Internet").

D. Unregistered: The device has not been bound to account. The device needs to be bound to the eWeLink account to connect to the cloud

server. You can bind the device by tap “Add Device” in the eWeLink APP.

E. Upgrade: Indicates that the device is upgrading the firmware.

F. Setting G1: Indicates that the device is in compatible pairing mode. The device obtains the necessary information provided by the APP to join the service network, including router SSID, password, server IP, port number, etc in the setting mode.

G. Setting G2: Indicates that the device is in quick pairing mode. The device obtains the necessary information provided by the APP to join the service network, including router SSID, password, server IP, port number, etc in the setting mode.

The device obtains information in different ways in the two modes, read below section for details.

4.3 The Wi-Fi module basic workflow

1. Configuration

a) Compatible pairing mode: The mobile terminal joins the device AP as a station to form a local area network to realize data interaction. When the device is in the quick pairing mode (G state,

see details in 4.2 Wi-Fi status indicator light description), press and hold the pairing button for 5S, the device enters the compatible pairing mode. Click “add device” on the eWeLink APP, connect the device hot spot in the phone setting page manually with SSID: ITEA 10000XXXX and password12345678 to connect the device to the Internet.

b) Quick pairing mode: The Wi-Fi module is in promiscuous mode, and the encrypted message containing information such as SSID and password from the mobile terminal is obtained by empty packet capture. The device enters the quick pairing mode by pressing the pairing button for 5S when it is in the A~D flashing modes. Click “add device” on the eWeLink APP, enter the SSID and password of the router to connect the device to the Internet.

2. Online

The module goes through the following process from power-on to connecting to the server:

1. Join the configured router and connect to the Internet.

2. Connect to the server.

3. Register the device and bind it to the eWeLink account.

4. Obtain device application parameters and stay online.

When the connection/acquisition fails in the above steps, there are corresponding back-off strategies and reconnection mechanisms to ensure that the device is stable and keep online.

3. Upgrade

The module connects to the upgrade server, downloads and updates to the latest version of the firmware to realizes the online upgrade of the device.

4.4 Timer function

The timer function is configured through the APP, and the timer is divided into the following four types:

1. Single timer: execute at a specified time.
2. Count down timer: execute after the setting time.
3. Repeat timer: repeat the operation every week.
4. Loop timer: repeat the operation every setting time.

4.5 Timer function description

RE5V1C supports timer. The eWeLink APP provides four timing modes to facilitate the use in more scenarios.

1. Single timer: This is the most common timing setting, allowing users to set the work schedule of the device. For example, turn on/off the device at 8:30 am every Wednesday, etc. It is similar to the setting of an alarm clock, timing is very convenient to use especially for devices that are repeatedly running at certain moments.

2. Count down timer: The count down is to facilitate the user to perform one-time timing operations, such as turn on/off the device after 30 minutes. It is very convenient to turn off a device after running a period of time. This device supports up to 24 hours of count down.
3. Repeat timer: Repeat the operation every week. For example, set an alarm clock for working time. After the time is set, select execute dates (a week optional), and the alarm clock will turn on at the set time within the selected days.
4. Loop timer: The loop timing released by eWeLink allows the device to execute continuously from a certain time. For example, let the tank's oxygen pump open once every hour from now, and close after 20 minutes of running, and then repeat the automatic cycle to ensure sufficient oxygen of the fish tank without manual intervention.

5. Dimensions