

Smart Plug User Guide



Version 1.2
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About This Guide

This document introduces to users the example of ESP IOT Platform applications — Espressif Smart Plug. The document includes the following sections:

Chapter	Title	Subject
Chapter 1	Concept Introduction	Introduces related concepts developed by Espressif.
Chapter 2	Device Configuration	Introduces how to configure and operate Smart Plug in Smart Configuration mode and Direct Connection mode.

Release Notes

Date	Version	Release notes
2015.07	V1.1	First release.
2016.04	V1.2	Updated Chapter 2.

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1. Concept Introduction

1.1. ESP8266 IOT Platform

ESP SDK provides users with a simple, fast and efficient development platform for Internet of Things (IoT) products. The ESP8266 IOT Platform is based on the FreeRTOS ESP SDK with added commonly-used functionalities. An example of the application is Smart Plug. Smart Plug uses ESP-Touch protocol to realize smart configuration. The communication protocols are JSON and HTTP REST. The Android mobile APK is a basic template for users.

1.2. ESP-Touch

ESP-Touch is a protocol developed by Espressif to configure Wi-Fi devices to connect to router. ESP-Touch can only configure the devices when they are in Smart Configuration Mode. For details of the configuration procedure, please refer to Chapter 2 Device Configuration.

1.3. IOT Espressif App

IOT Espressif App (hereinafter referred to as IOT App) is a smartphone application developed by Espressif. It realizes local and remote control of Wi-Fi devices including smart lights and smart plugs. The App is open source on Github: [IOT Espressif App](#).

1.4. Local and Cloud Device

1.4.1. Local Device

If you configure a device to connect to the router by ESP-Touch, but not activate it on the server-side, then the device is a local device, as shown in Figure 1-1. Such device is accessible over Wi-Fi when the mobile app is on Wi-Fi network, but not over the cloud platform.

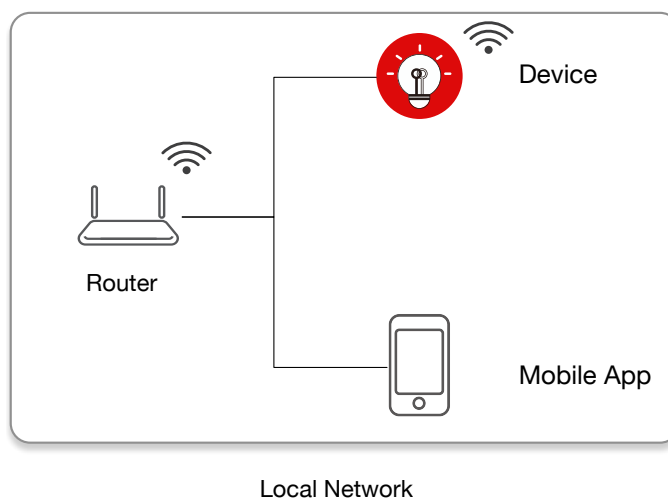


Figure 1-1. Local Network



1.4.2. Cloud Device

If you configure a device to connect to the router by ESP-Touch and activate it on the server-side, then the device is a cloud device, as shown in Figure 1-2. There are three possible connection statuses: cloud status, online status, and offline status.

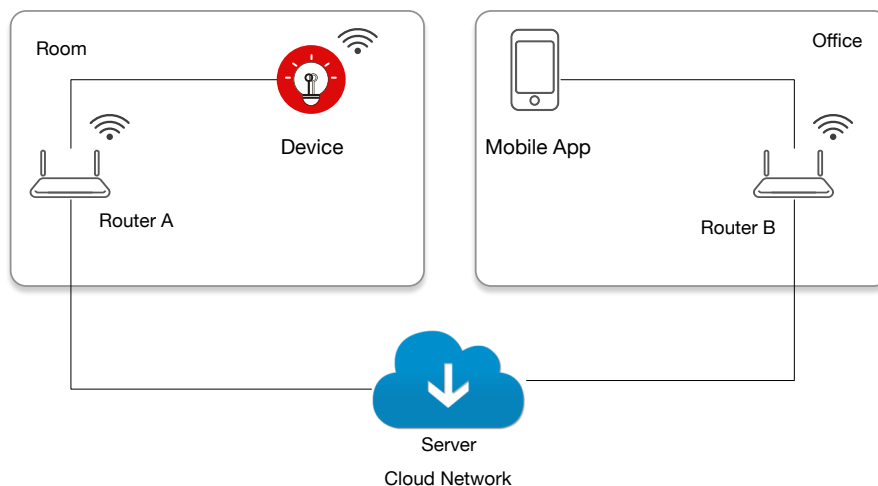


Figure 1-2. Cloud Network



2. Device Configuration

2.1. Overview

You can configure Smart Plug via IOT App or browser, as shown in Figure 2-1.

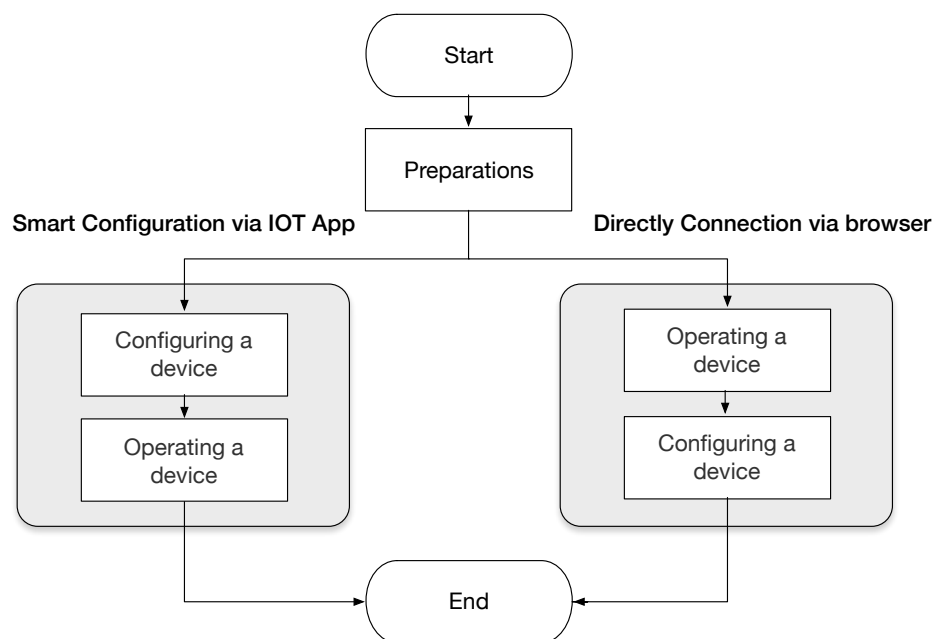


Figure 2-1. Configuration Process

There are two modes for Smart Plug:

- Smart Configuration Mode: You can configure Smart Plug via IOT App in this mode.
- Direct Connection Mode: You can connect and operate the device by browser in this mode.

2.2. Preparations

You need the following preparations.

2.2.1. Client Software

- A mobile phone with IOT App, or
- a mobile phone with browser, or
- a PC with browser.

2.2.2. Micro-USB Cable

ESP8266 Development Board connects to a power supply with micro-USB cable and a power adapter.



2.2.3. Router (Optional)

A router that can connect to the internet. If you only need to operate a local device, you don't need to connect the router to the internet.

2.2.4. Smart Plug Firmware

Smart Plug firmware is based on the FreeRTOS ESP8266 SDK with added commonly-used functionalities.

Notes:

- You can download FreeRTOS ESP8266 SDK here: [FreeRTOS ESP8266 SDK](#).
- For more information on ESP8266 IOT Platform, please go to: [ESP8266 IOT Platform](#).

⚠ Notice:

We use ESP8266 Development Board with the Smart Plug firmware to show the process. The Smart Plug firmware can work with any ESP module.

ESP8266 Development Board with related buttons and LED indicator lights are shown as in Figure 2-2 and Table 2-1.

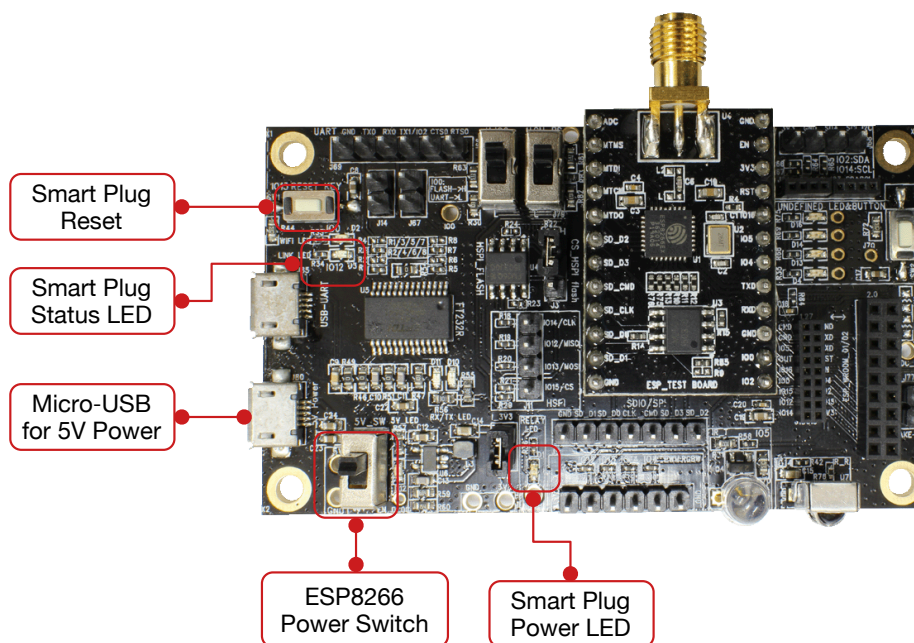


Figure 2-2. ESP8266 Development Board

Table 2-1. ESP8266 Development Board Description

Name	Description	GPIO
Smart Plug Reset	The reset button of Smart Plug.	GPIO 13



Name	Description	GPIO
Smart Plug Status LED	Blue light that indicates the status of Smart Plug. There are 3 statuses: <ul style="list-style-type: none">• Blue light flashes slowly.• Blue light flashes quickly.• Blue light is on.	GPIO 12
Micro-USB for 5V Power	The Micro-USB power jack for 5V power.	-
ESP8266 Power On/Off	The power switch of ESP8266.	-
Smart Plug Power LED	The LED light that indicates the power status.	GPIO 15

Note:

You can modify user_plug.h file to change the GPIOs.

2.3. Smart Configuration Mode

2.3.1. Configure Smart Plug

When you want to operate Smart Plug with IOT App, you need to configure it first. Please follow the steps below.

1. Add your mobile phone to the Wi-Fi that Smart Plug connects to.
2. Enter IOT App. Figure 2-3 shows the login interface.

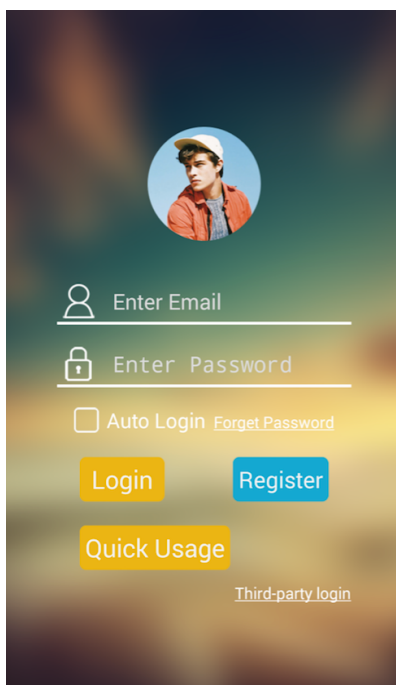


Figure 2-3. IOT Espressif App Login Interface

**Notes:**

- If you are a new user, touch **Register** to create a new account.
- You can touch **Quick Usage** to operate the local device.
- If you want to operate the cloud device, please log in IOT App first.

3. Log in with your account and password. The system shows the operation interface as in Figure 2-4.

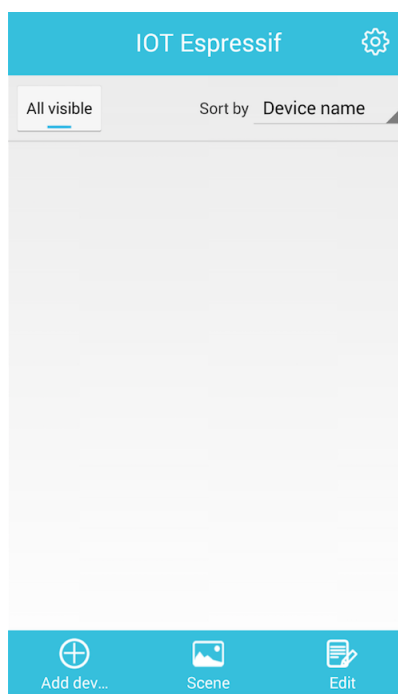


Figure 2-4. IOT Espressif App Operation Interface

Note:

If you are a new user, the lists are empty. After you have become a registered user, your devices can be saved and synchronized on different smartphones.

4. Touch **+** to enter the **Add devices** page as Figure 2-5, then input the Wi-Fi password. Table 2-2 provides the descriptions of the options on this page.

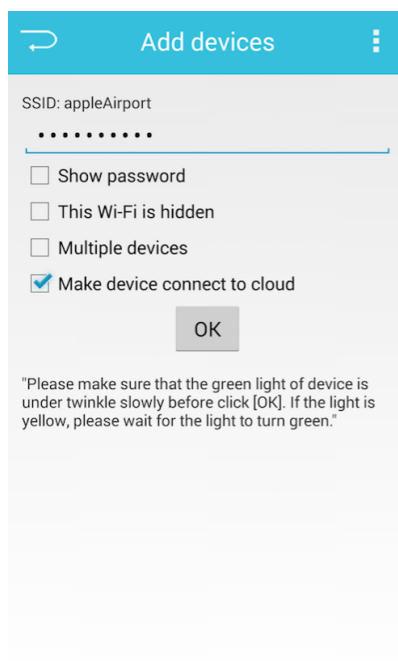


Figure 2-5. Add Devices Interface

Table 2-1. Different Options Descriptions

SSID	The SSID of the Wi-Fi to which the smartphone connects. You can change it in Settings of your smartphone.
Show password	Choose this item to check the password you have entered. If checked, the Wi-Fi password shows in plaintext.
This Wi-Fi is hidden	Choose this item if the Wi-Fi is hidden. Most of the Wi-Fis are not hidden.
Multiple devices	<ul style="list-style-type: none">• If you want to configure one device, don't choose Multiple devices. It takes dozens of seconds to configure one device.• If you want to configure multiple devices at the same time, choose Multiple devices. It takes less than 1 minute to configure multiple devices.
Make device connect to cloud	<p>Choose this item so that you can configure the device and activate it on the server-side.</p> <ul style="list-style-type: none">• If you want to configure a local device, don't check the box. It takes about 1 minute to configure a local device.• If you want to configure a cloud device, check the box. It takes about 1 to 2 minutes to configure a cloud device.

Note:

The system will remember the password, so you don't need to enter the password again for the same Wi-Fi SSID if you have entered it before. Make sure the smartphone connects to Wi-Fi network, or you can not add devices.

5. Turn on Smart Plug and wait till the blue light flashes slowly. For details on Smart Plug Status LED, please refer to Table 2-2.

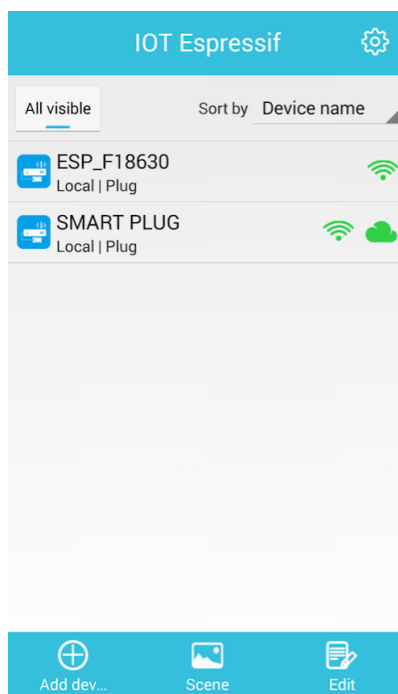
**Table 2-2. Different Device Statuses**

Smart Plug Status LED	Device status
Blue light flashes slowly	Smart Plug is in the Smart Configuration Mode. You can configure it via IOT App.
Blue light flashes quickly	You are configuring Smart Plug via IOT App.
Blue light is on	You have configured Smart Plug via IOT App or web browser.

Notes:

- When you power on Smart Plug for the first time, it will enter the Smart Configuration Mode by default.
- If Smart Plug is not in the Smart Configuration Mode:
Please press and hold the reset button for at least 5 seconds until the blue light flashes slowly.

6. Touch **OK**, and the system shows **Configuring....**
7. When the configuration is completed, the system shows the device has been configured.
 - If the configuration is completed, the system shows Configuration completed.
 - If the configuration fails, the system shows Configuration failed.
8. Hold and slide down the screen to refresh the device list. The system shows Smart Plug online status as in Figure 2-6.

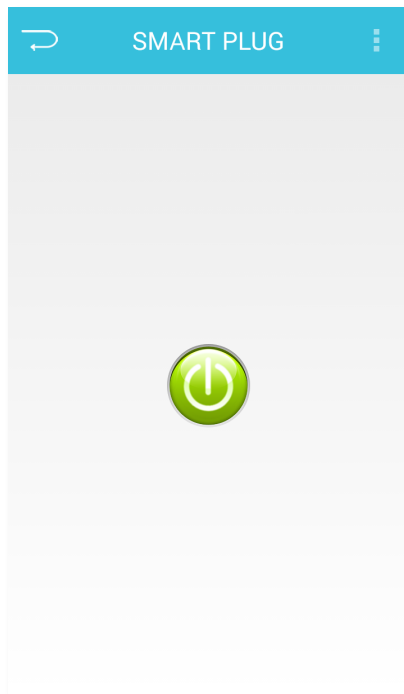
**Figure 2-6. Smart Plug Online Status**







2.3.2. Operate Smart Plug

After you have added Smart Plug to IOT App, you can operate it. Please follow the steps below.

1. Touch **SMART PLUG** to see the operation page.



2. Touch  to power on/off Smart Plug.
 - : Smart Plug is power off (Power LED is off).
 - : Smart Plug is power on (Power LED is on).
3. Touch  to set the timer.

2.4. Direct Connection Mode

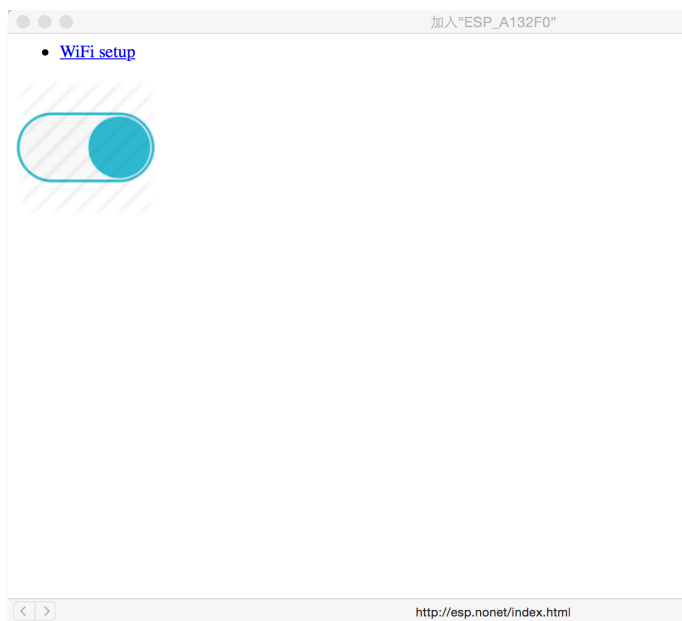
2.4.1. Operate Smart Plug


You can operate Smart Plug directly through browser. Please follow the steps below.

1. Power off Smart Plug.
2. Hold and press the reset button for at least 3 seconds, and then switch Smart Plug without releasing the reset button.
3. Release the reset button.
Smart Plug enters the Direct Connection Mode and the blue light is on.
4. Connect the mobile phone or the PC to the Wi-Fi of Smart Plug.
The SSID of Smart Plug is named as:
ESP + _ + the last 24 bits of the MAC address
e.g. ESP_A132F0



5. The browser shows the operation page. The URL is <http://esp.nonet/index.html>.

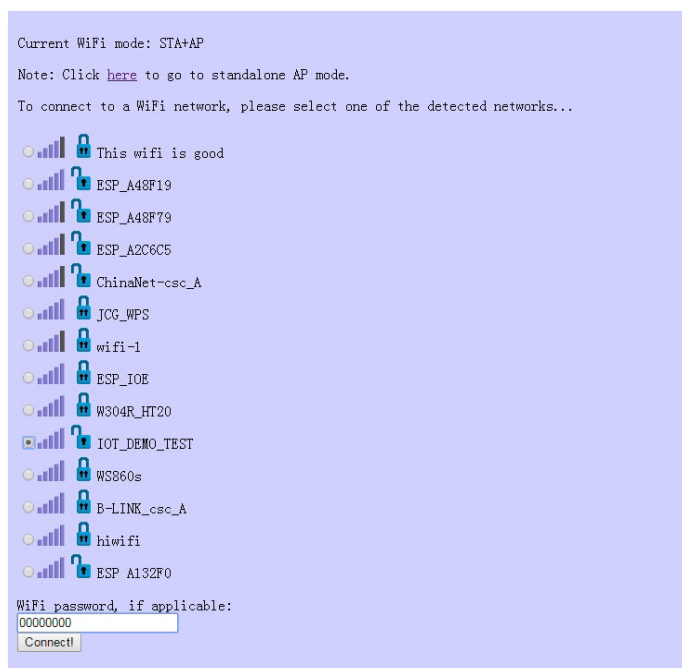


6. Click/Touch  to turn on/off Smart Plug.

2.4.2. Configure Smart Plug

In the Direct Connection Mode, you can configure Smart Plug to connect to a Wi-Fi network via browser. Please follow the steps below.

1. After Step 5 in 2.4.1 Operate Smart Plug, click/touch the **WiFi setup** link. You will see the following page.
2. Choose a Wi-Fi SSID and enter the password.





3. Click/Touch **Connect**.

You will see the following page. If your mobile phone is in the same network then you can control Smart Plug via IOT App.

Connecting to AP...

Status:

Connected! Got IP 192.168.1.166. If you're in the same network, you can access it [here](#).



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