

Smart Plug User Guide



Version 1.2
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About This Guide

This document introduces to users an example of ESP IOT Platform applications, the 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 a Smart Plug in SmartConfig 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. Smart Plug is an application that is included in the ESP8266 IOT Platform. Smart Plug uses an ESP-TOUCH protocol in order to realize a 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, which configures Wi-Fi devices connecting to a router. ESP-TOUCH can only configure such devices when they are in SmartConfig Mode. For details on the configuration procedure, please refer to Chapter 2, “Device Configuration”.

1.3. IOT Espressif App

The 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. This is an open-source App which can be found 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 do 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 a Wi-Fi network, but not over the cloud platform.

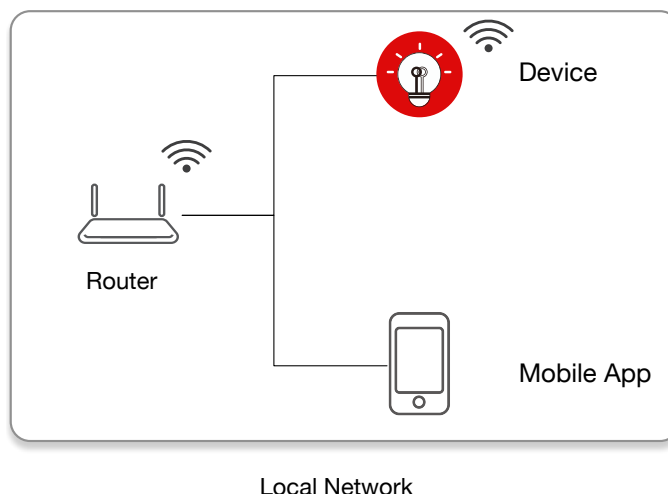




Figure 1-1. Local Network

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.

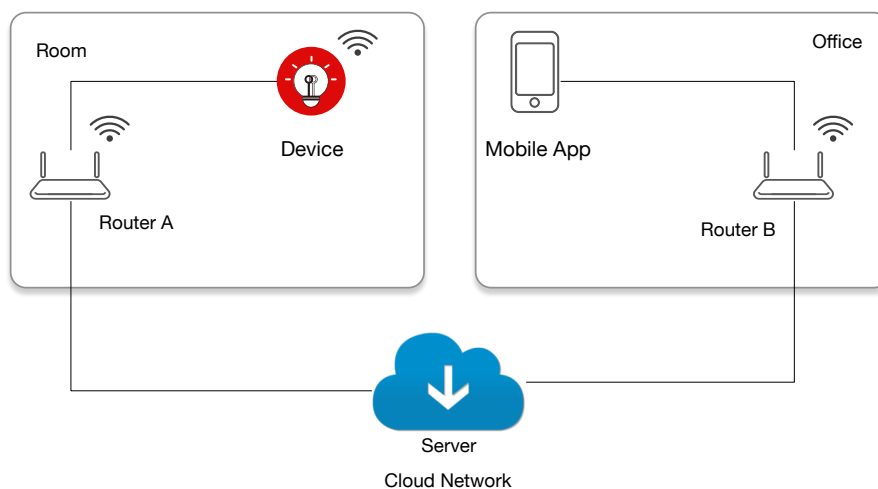


Figure 1-2. Cloud Network



2. Device Configuration

2.1. Overview

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

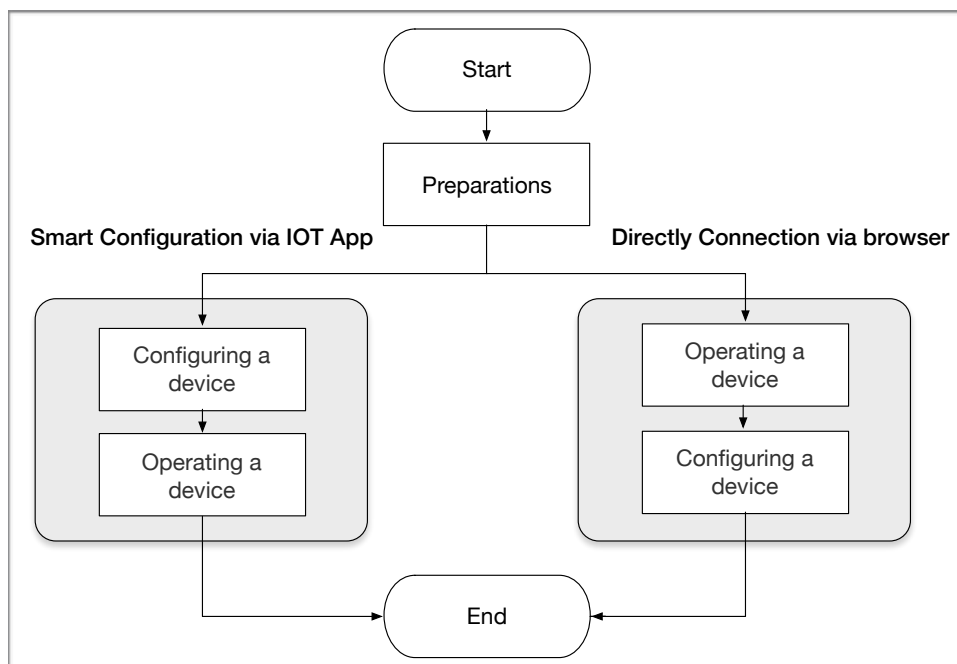


Figure 2-1. Configuration Process

There are two modes for a Smart Plug:

- SmartConfig Mode: configure a Smart Plug via the IOT app in this mode.
- Direct Connection Mode: connect and operate the device through your browser in this mode.

2.2. Preparations

You need to make the following preparations.

2.2.1. Client Software and Hardware

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

2.2.2. Micro-USB Cable

The ESP8266 Development Board can get connected to a power supply with a 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 do not need to connect the router to the internet.

2.2.4. Smart Plug Firmware

The 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 the ESP8266 IOT Platform, please go to: [ESP8266 IOT Platform](#).

△ Notice:

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

The ESP8266 Development Board with all of its buttons and LED indicator lights are shown in Figure 2-2, while Table 2-1 gives short descriptions of them.

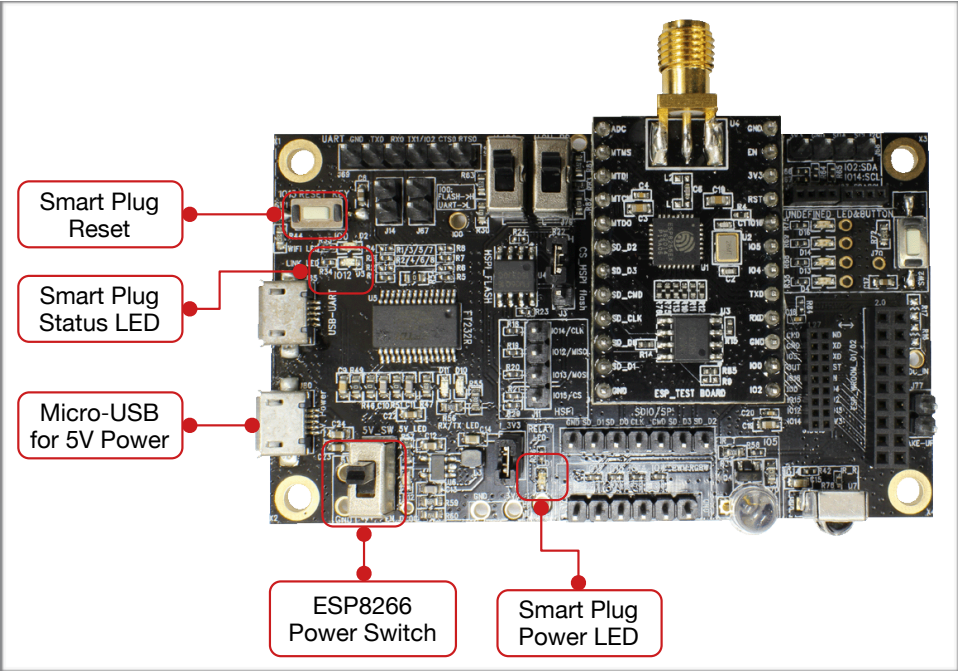


Figure 2-2. ESP8266 Development Board

Table 2-1. ESP8266 Development Board Description

Name	Description	GPIO
Smart Plug Reset	This is the reset button of the Smart Plug.	GPIO 13



Name	Description	GPIO
Smart Plug Status LED	This is a blue light that indicates the status of the Smart Plug. There are three 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	This is the Micro-USB power jack for 5V.	-
ESP8266 Power On/Off	This is the power switch of ESP8266.	-
Smart Plug Power LED	The LED indicates the power status.	GPIO 15

Note:

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

2.3. Smart Configuration Mode

2.3.1. Configuring the Smart Plug

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

1. Add the mobile phone to the Wi-Fi that the Smart Plug will connect to.
2. Enter the IOT app. Figure 2-3 shows the login interface.

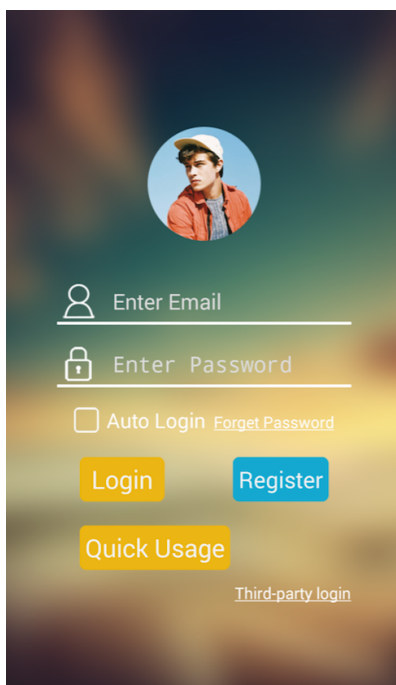


Figure 2-3. IOT Espressif App Login Interface

**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.

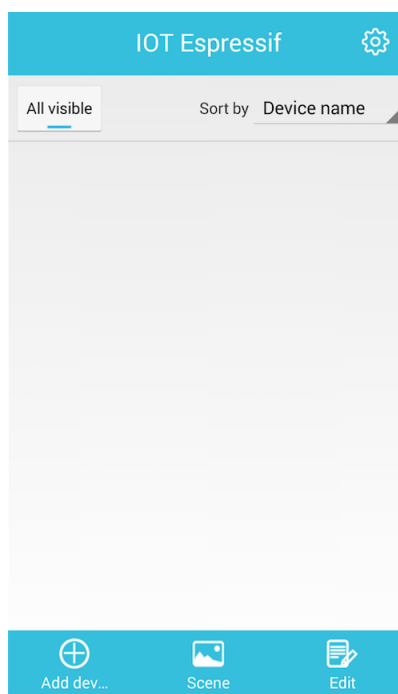


Figure 2-4. IOT Espressif App Operation Interface

Note:

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

4. Touch **+** to enter the **Add devices** page, as shown in Figure 2-5, then input the Wi-Fi password. Following this, table 2-2 provides explanations for the options displayed in Figure 2-5.

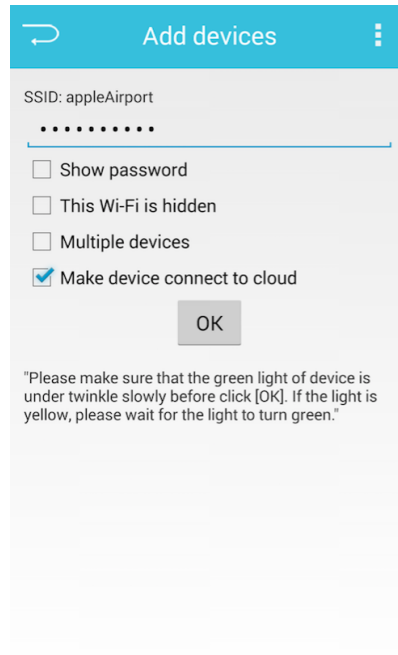


Figure 2-5. Add Devices Interface

Table 2-2. Different Options Descriptions

SSID	This is the SSID of the Wi-Fi to which the smartphone connects. You can change it through the settings of your smartphone.
Show password	Choose this item to check the password you have entered. If checked, the Wi-Fi password appears in plaintext.
This Wi-Fi is hidden	Choose this item if the Wi-Fi is hidden. Most of the Wi-Fi networks , however, are not hidden.
Multiple devices	<ul style="list-style-type: none">• If you want to configure one device, do not choose Multiple devices. It takes dozens of seconds to configure one device.• If you want to configure multiple devices at the same time, choose the relevant option. It takes less than one 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, do not check the box. It takes about one minute to configure a local device.• If you want to configure a cloud device, check the box. It takes about one to two minutes to configure a cloud device.

Note:

The system will remember the password, and, once you enter it, you do not need to enter it again for the same Wi-Fi SSID. Make sure, though, your smartphone remain connected to the Wi-Fi network, or else you will not add any other devices.

5. Turn on the Smart Plug and wait till the blue light flashes slowly. For details on the Smart Plug Status LED, please refer to Table 2-3.

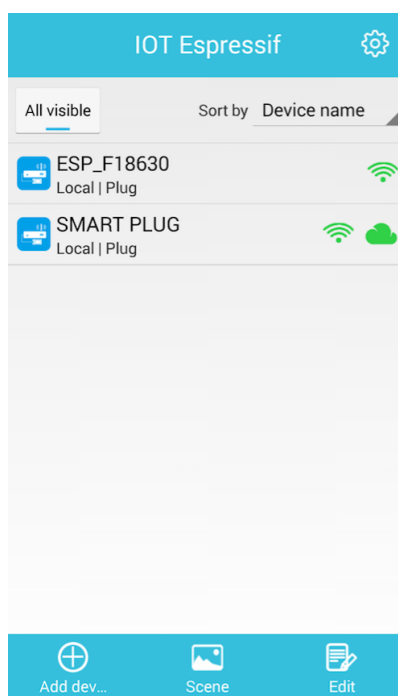
**Table 2-2. Different Device Statuses**

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

Notes:

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

6. Touch **OK**, and the system shows **Configuring...**
7. When configuration is completed, the system shows that 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 the Smart Plug online status, as in Figure 2-6.

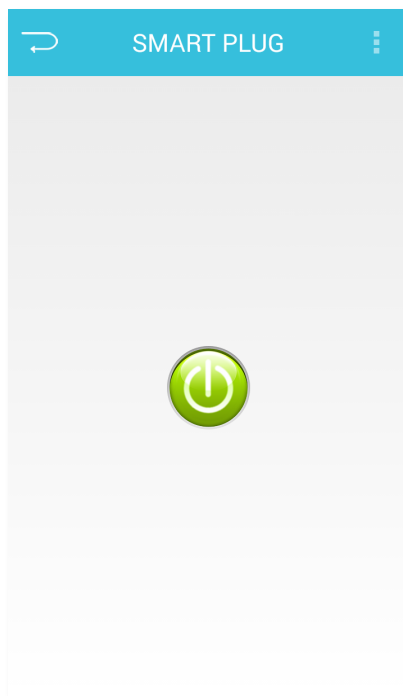
**Figure 2-6. Smart Plug Online Status**







2.3.2. Operating Smart Plug

After you have added “Smart Plug” to the 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 the Smart Plug.
 - : Smart Plug is powered off (Power LED is off).
 - : Smart Plug is powered on (Power LED is on).
3. Touch  to set the timer.

2.4. Direct Connection Mode

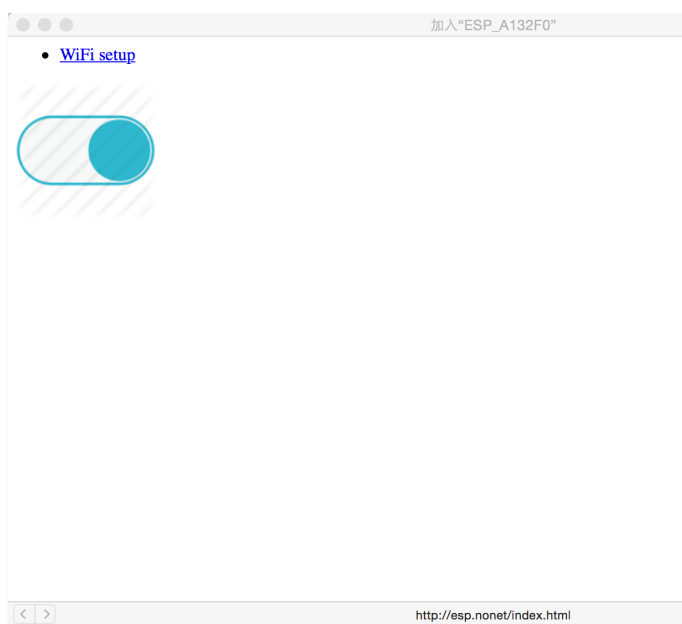
2.4.1. Operating the Smart Plug

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

1. Power off the Smart Plug.
2. Hold and press the reset button for at least three seconds, and then switch the Smart Plug back on, without releasing the reset button.
3. Release the reset button.
The Smart Plug enters the Direct Connection Mode and the blue light is on.
4. Connect the mobile phone or the PC to the same Wi-Fi as the Smart Plug.
The Smart Plug SSID 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>.

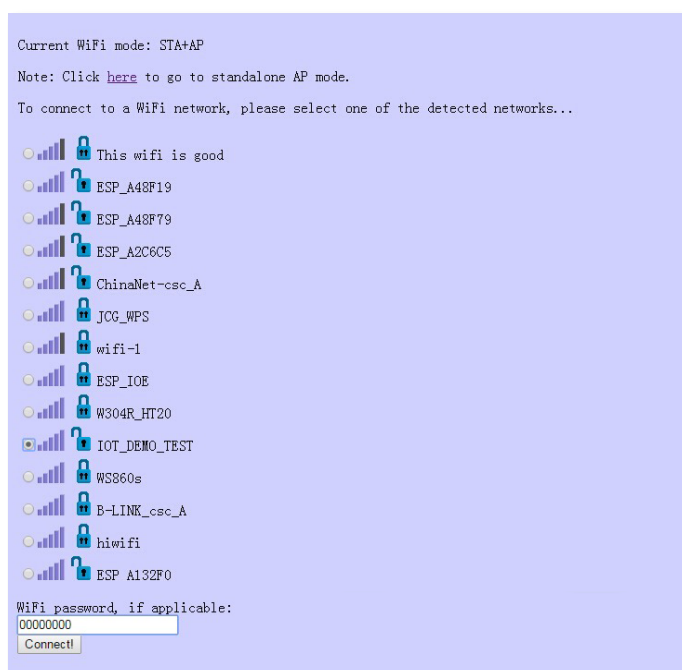


6. Click/Touch  to turn on/off Smart Plug.

2.4.2. Configuring Smart Plug

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

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





3. Click/Touch **Connect**.

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