Tasmota-Plus Smart Plug with Power Monitor

SP-Plug-AU User Guide

Latest Version of this document available at:
https://github.com/UBWH/ubwh.github.io/blob/master/assets/UserGuides

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Introduction

The SP-Plug-AU is a WiFi connected Smart Plug, with **Tasmota-Plus**[1] installed.

Common Smart Devices

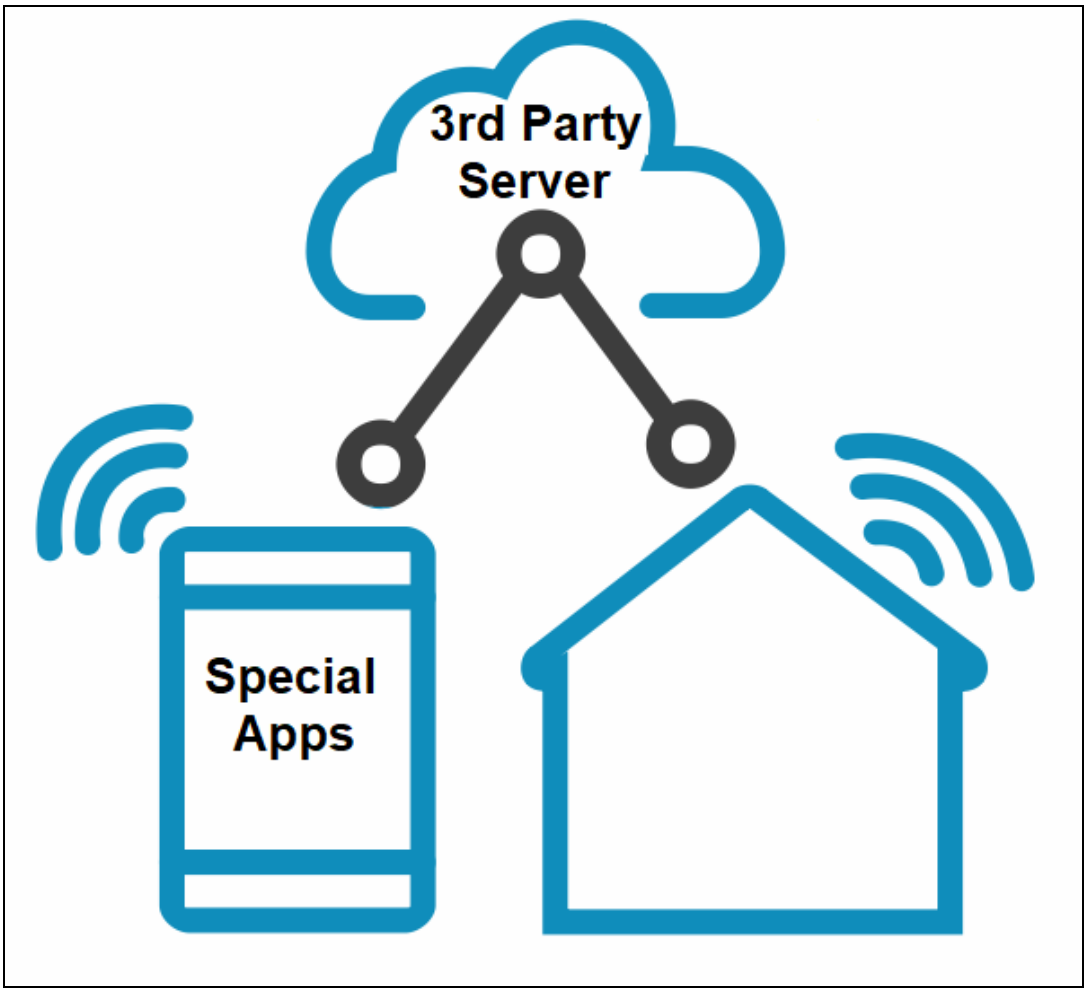


Figure 1 - Common Smart devices require a 3rd Party server, and special apps.

Common Smart devices are designed to only work via the manufacturer's server and with special apps; the user never communicates directly with the device.

While this works well for home users, power users may prefer to directly control the device using a simple http:// (web) interface.

[1] An enhanced version of Tasmota (https://tasmota.github.io/docs/)

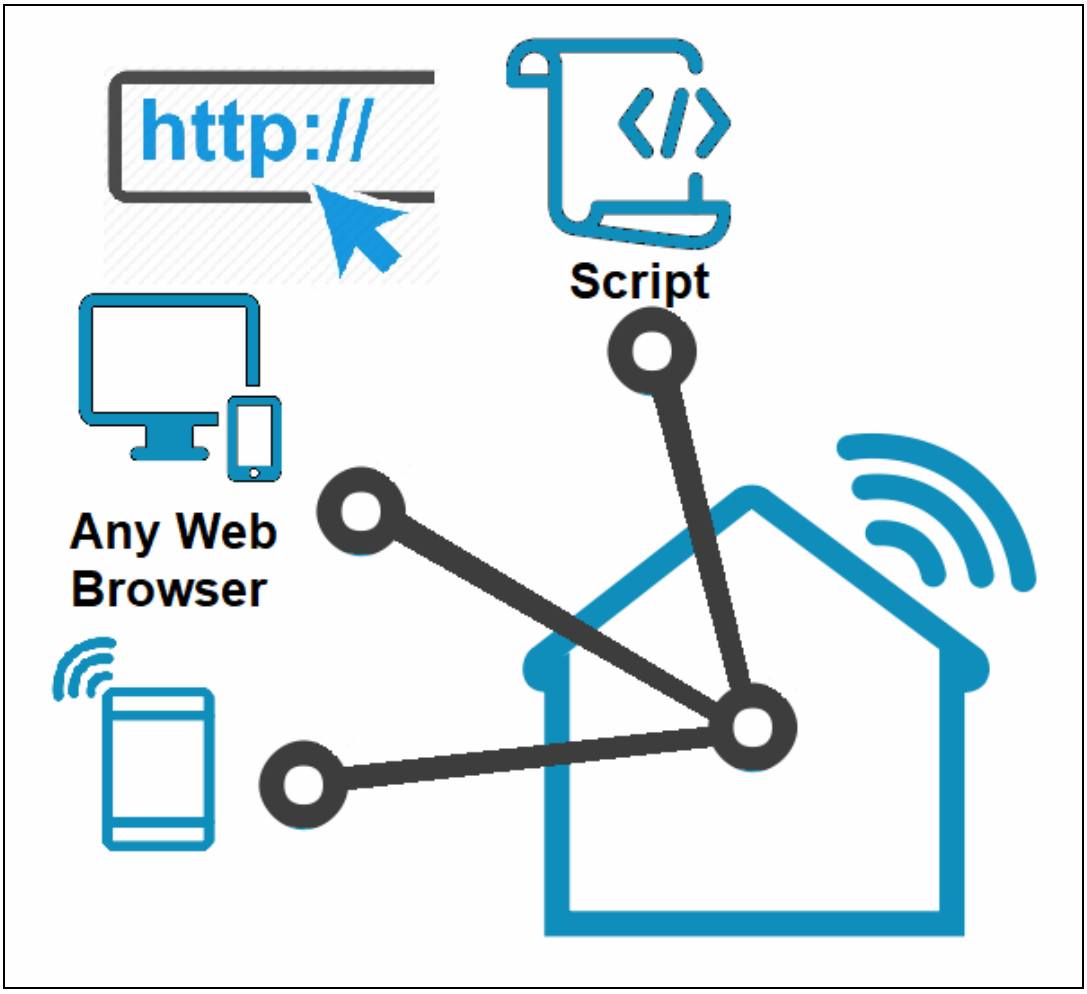


Figure 2 - Tasmota Smart devices can be directly controlled. No special app or server required.

Tasmota gives direct access to the device via simple http:// web access.

The value of this for power users is that the device can be controlled using:

- Web browser interface.
- `http://` Command Interface. Ideal for control by external scripts.

More information: https://tasmota.github.io/docs/

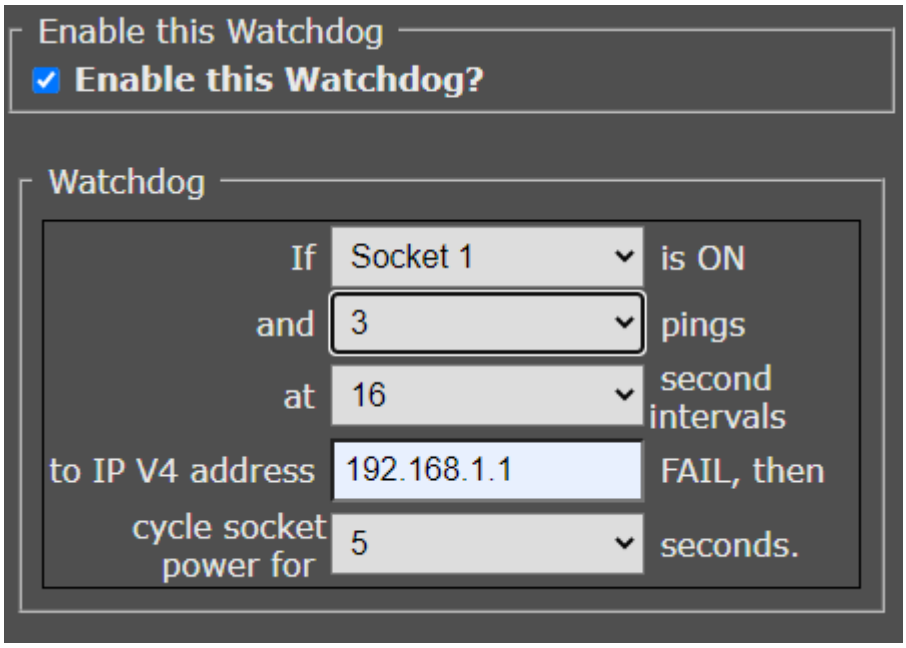
Tasmota-Plus Smart Devices

Figure 3 – Tasmota-Plus Smart devices have extra features

Tasmota-Plus adds the following features to standard Tasmota.

Ping Watchdog

There are 4 Ping Watchdogs for use. These are configured using the **Configure Watchdog** page.



Enable this Watchdog?
Only enabled Watchdogs operate.

Socket Number
If the selected socket is not ON, then the Watchdog is disabled.

Number of Pings at **Interval (seconds)**
The device will continuously send the requested number of Pings at the requested intervals. If ALL Pings fail, the Watchdog fires. If any of the Pings succeed, the Watchdog resets and starts a new cycle.

IP V4 Address
A valid IPV4 address must be entered here.
IPV6 addresses & host names are not supported.

Cycle Seconds
If the Watchdog fires (i.e. the Pings failed), then the specified socket will be powered down for the requested seconds, then powered up.

WAN Security

Tasmota supports remote commands, with optional login credentials, that can query and change parameters. For example this URL will turn the power ON:

`http://<LAN.device.ip.address>/cm?user=admin&password=joker&cmnd=power1%20on`

If the device is to be managed remotely, a port forwarding firewall rule can be created. e.g. WAN Port 8080 ➔ LAN.address.of.device:80

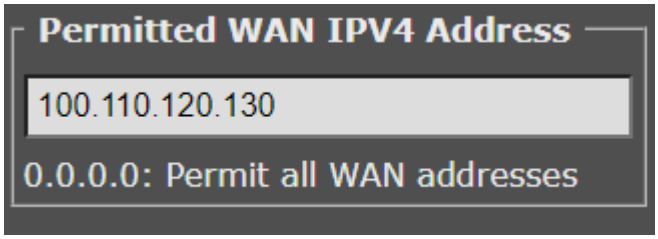
In this case the following URL will also work:

`http://<WAN.ip.address>:8080/cm?user=admin&password=joker&cmnd=power1%20`

However there is a new risk in that the credentials are sent in clear text.

Tasmota-Plus has a WAN Security feature where WAN requests not originating from a specified IP address can be blocked.

This is configured using the **Configure Other** page.



A request looks like:

```
http://<device.ip.address>/
http://<device.ip.address>/cm?cmnd=xxxxx
etc.
```

Examples

Permitted WAN IP4 Address	Requests from …	Result
0.0.0.0	**Anywhere**	**Accepted**
100.110.120.130	**50.60.70.80**	**Rejected**
	100.110.120.1	**Rejected**
	100.110.120.130	**Accepted**
	Local LAN	**Accepted**

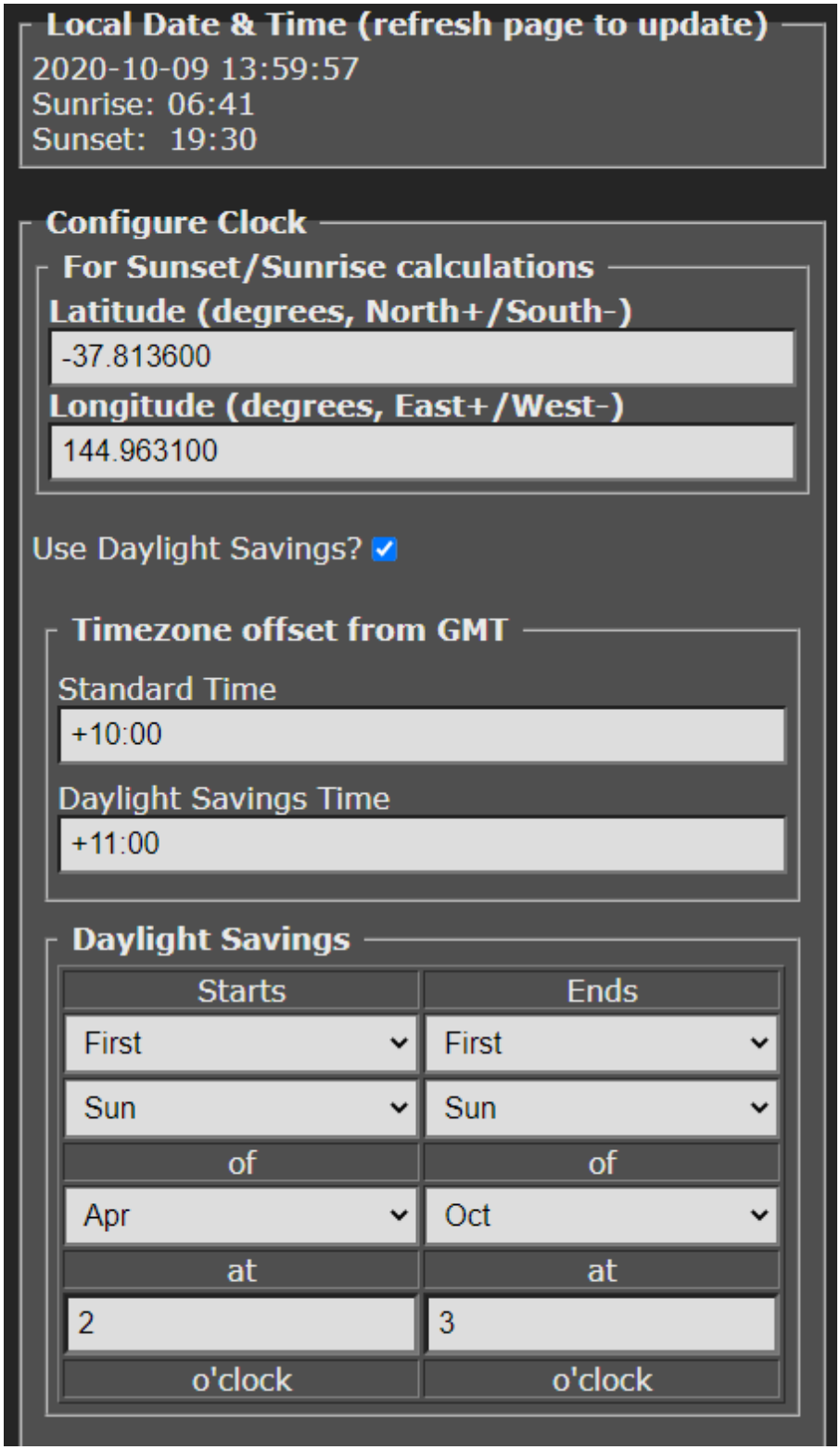
WiFi Signal Indicator

Much like a smart phone, **Tasmota-Plus** shows the received WiFi signal strength in the top-right corner of the Main page.

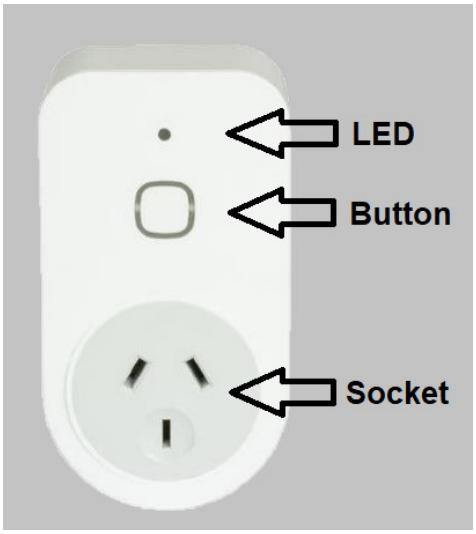
Clock Configuration Page

Standard Tasmota has no configuration page to set the parameters necessary to correctly calculate the local time, and local sunrise/sunset times.

Tasmota-Plus has a **Configure Clock** page as shown below.



Hardware



LED	Off On Rapid blink	Socket is OFF Socket is ON Device is in *Initial Setup Mode*[2]
Button	Short press Long press (45 Seconds)	Toggle Socket On ➔➔ Off Factory default ➔ Initial Setup Mode
Socket	Max.	240 V, 10 A appliance load

Requirements

The SP-Plug-AU requires:

- **Initial Setup**
  - A device with a Web Browser & WiFi interface, located close to the SP-Plug-AU. A smart-phone, or tablet will usually be sufficient.
- **Operation**
  - A WiFi Access Point (AP) connected to the local LAN[3], within the WiFi Range[4] of the SP-Plug-AU.
  - A DHCP[5] server on the LAN.
- **Ongoing Management**
  - Any device with a Web browser and connected to the same LAN as the SP-Plug-AU.

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[2] See page 19

[3] Local Area Network. See https://en.wikipedia.org/wiki/Local_area_network

[4] See Specifications, page 20

[5] Dynamic Host Configuration Protocol: See https://en.wikipedia.org/wiki/Dynamic_Host_Configuration_Protocol

Web Browser Interface

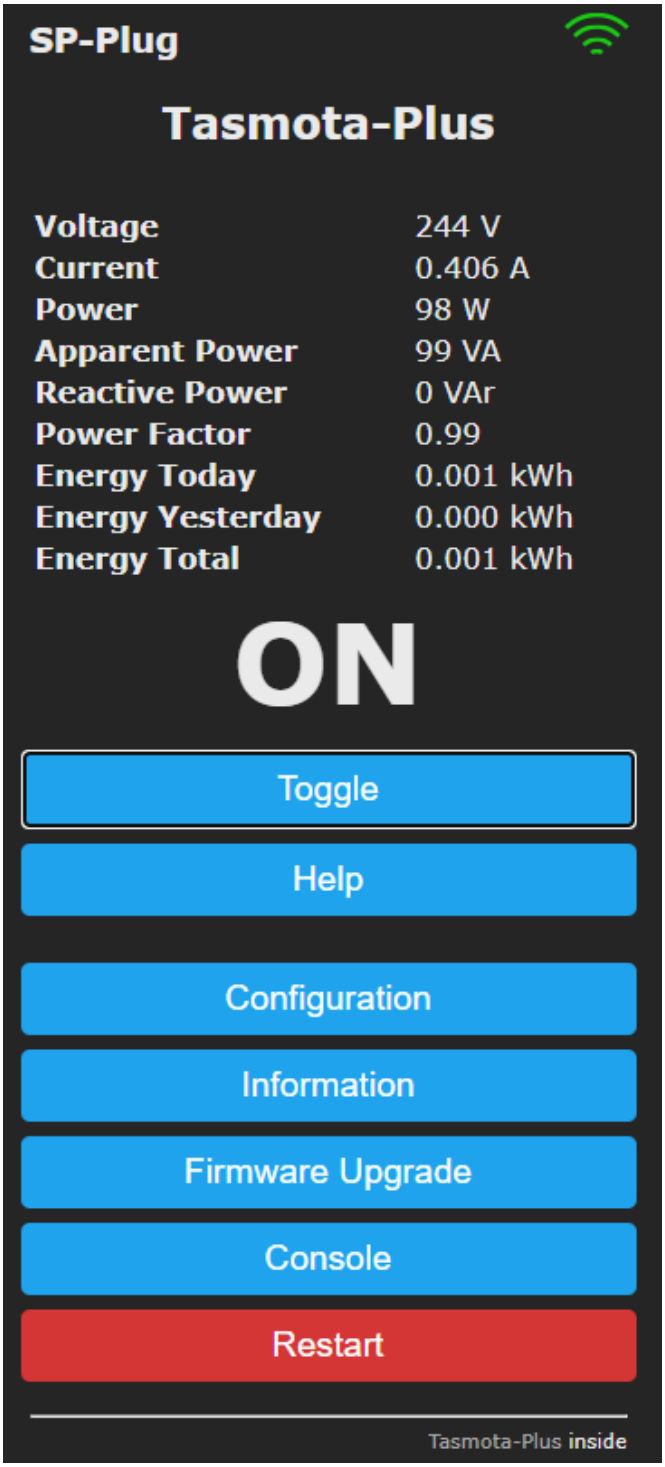
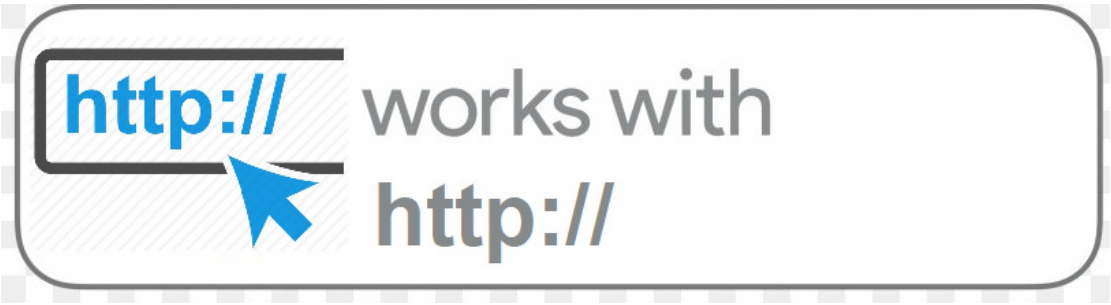


Figure 4 - The Tasmota Web Interface is available from any Web browser

Simply use any web browser to open the web page
`http://<device.ip.address>/`

See documentation here: `https://tasmota.github.io/docs/WebUI/`

http:// Command Interface



Simple commands as below will (e.g.) turn the Smart Plug ON.

Note: %20 in a URL = Space character

From Web Browser

```
http://<device.ip.address>/cm?cmnd=power1%20on
```

From Windows or Linux command/terminal window

```
curl http://<device.ip.address>/cm?cmnd=power1%20on
```

From a Windows Batch file (*.bat file)

```
curl http://<device.ip.address>/cm?cmnd=power1%%20on
```

Note: need double **%** characters if in a batch file

From a PHP script (*.php file)

```
file_get_contents(
 'http://<device.ip.address>/cm?cmnd=power1%20on');
```

You can retrieve the power monitoring status as below.

```
http://<device.ip.address>/cm?cmnd=status%208
```

A typical JSON response looks like:

```
    {"Time":"2020-06-15T13:30:15",
    "ENERGY":{
          "TotalStartTime":"2020-06-15T09:41:18",
          "Total":0.001,
          "Yesterday":0.000,
          "Today":0.001,
          "Power":99,
          "ApparentPower":101,
          "ReactivePower":18,
          "Factor":0.98,
          "Voltage":239,
          "Current":0.421
          }
    }
```

More information:
https://tasmota.github.io/docs/Commands/#power-monitoring

Getting Started

1. Plug the SP-Plug-AU into a 240V AC power socket and apply power.

2. When in Factory Default state, the device powers up in **Initial Setup Mode**[6]. Search for a WiFi network named tasmota_xxxxxx-yyyy using your smartphone, tablet, …

NOTE: If you do not see this WiFi network: Reset the device to Factory Default. See page 19.

3. Connect to that WiFi network. On connection to the network, you may get a warning that there is no Internet connection and be prompted to connect to a different network. Do not allow your mobile device to select a different network.

4. After you have connected to the Tasmota WiFi AP, open http://192.168.4.1 in a web browser on the smartphone (or whatever device you used). Depending on the phone, it will take you to the Tasmota configuration page automatically, or you will get a prompt to sign in to WiFi network or authorise. Tapping on the AP name should also open the configuration page (shown below).

[6] See page 19.

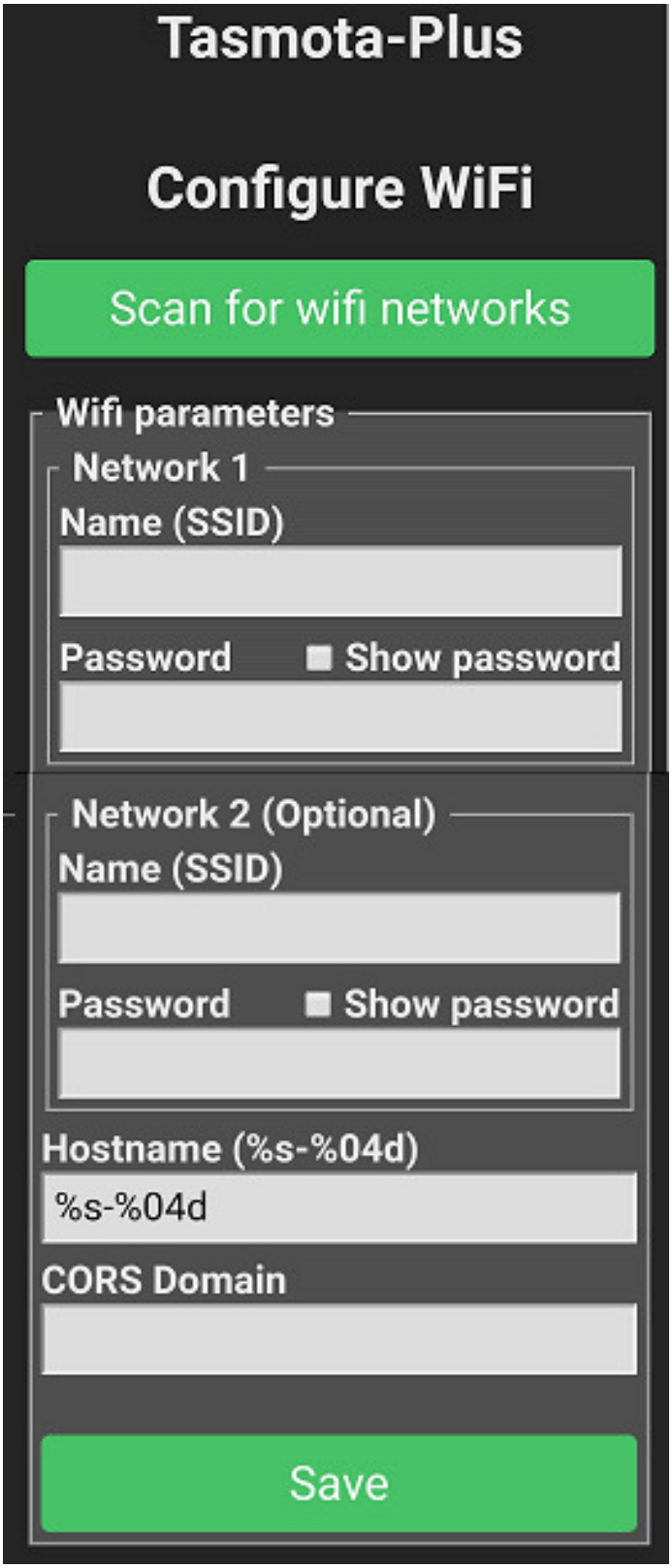


Figure 5 - A device in Factory Default mode displays this page.

On this page you can either:

- **Scan** for available WiFi networks. Select the right network from the list; or
- **Manually Enter** the **Network 1 Name (SSID)** - your WiFi network name (case sensitive)

Network 1 Password - password for your WiFi network (Required)
The password has to be under 32 characters and without special characters (e.g. asterisks) or white spaces

Recommended*:*
Network 2 Name (SSID) - alternative WiFi network SSID, in case connection to Network 1 fails.
Network 2 Password - password for your alternative WiFi network

Click the **Show password** checkbox(s) to see the password(s) you enter to ensure that it is correct and that your mobile device has not inadvertently capitalised the first letter nor autocorrected from what you entered.
~~**Double**~~ **Triple** check the WiFi credentials.

Click

The Tasmota-Plus device will restart and connect to your WiFi network.
The tasmota_xxxxx WiFi network will not longer exist, so your smartphone will automatically connect back to its normal WiFi network.

5. The next step is to learn the IP address assigned by your local DHCP server to your Tasmota device. There are a number of ways to do this. You will look for a device with a name similar to this.
   i.e. **tasmota-_xxxxxx-yyyy**

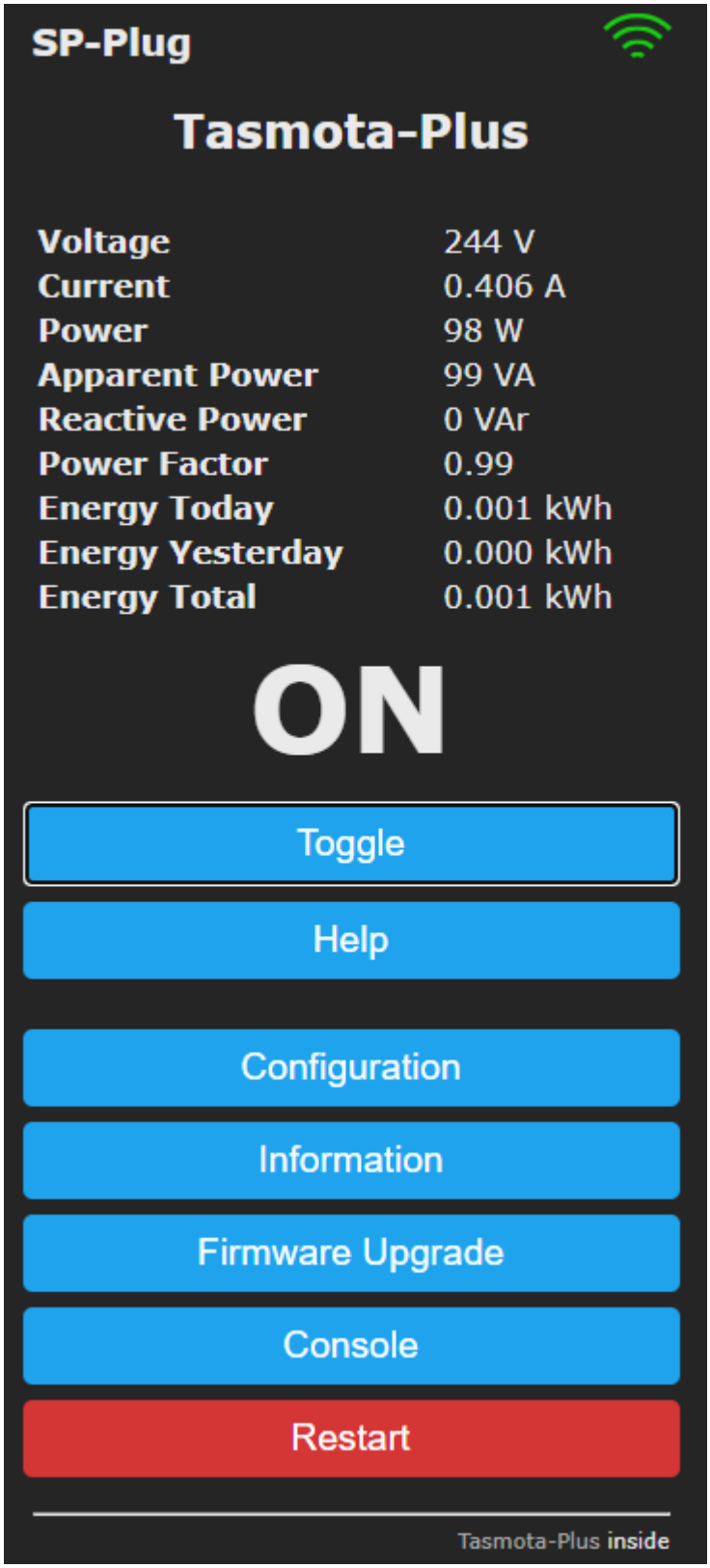
   - **Your router** – Look in DHCP leases.
   - **Fing** – for Android or iOS
     `https://www.fing.com/products/`

   - **Angry IP Scanner** – open source for Linux, Windows and Mac.
     `https://angryip.org/`
   - **SuperScan** – Windows only (free)
     `https://sectools.org/tool/superscan/`

6. Using your web browser, visit the device's IP address, as discovered in the step above.

NOTE: Do NOT visit http**s**:// (no 's')

`http://<device.ip.address>/`



Using the Web Interface

Standard Tasmota Web Interface

This is documented here:
`https://tasmota.github.io/docs/WebUI/`

Tasmota Plus Features

See **Tasmota-Plus Smart Devices** page 5 in this document.

Firmware

From time to time, new Tasmota-Plus firmware may be released for your device.

Checking the installed version

Open the Information page and note the **Program Version** currently installed.

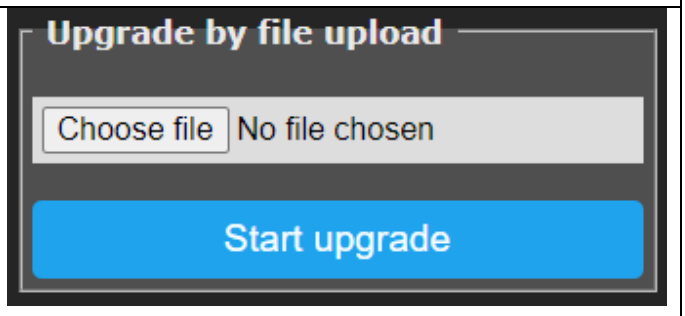
Checking the latest released version

Use your web browser to visit:

http://ubwh.com.au/tasmota/Tasmota-Plus/SP-Plug-ReleaseNotes.php

Updating

If you choose to update the firmware to the latest version, there are two methods.

Over The Air (OTA) This is the simplest. Open the Firmware Upgrade page. Enter this OTA Url: http://ubwh.com.au/tasmota/Tasmota-Plus/tasmota-SP-Plug.bin.gz Click **Start upgrade**	
File Upload With a web browser on your local PC, visit http://ubwh.com.au/tasmota/Tasmota-Plus/tasmota-SP-Plug.bin.gz Save the file on your local computer. Open the Firmware Upgrade page. Choose the file just downloaded. Click **Start upgrade**	

Initial Setup Mode

When in this mode, the device can not connect to a WiFi network as is does not know which network to connect to.

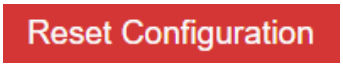
The device WiFi is in Access Point (AP) mode, broadcasting with a WiFi Network name of *tasmota_xxxxxx-yyyy*

The device is in Initial Setup Mode when it is in **Factory Default** state.

Factory Reset Procedure

When the settings have been cleared, the device is in *Initial Setup Mode* and can not connect to a WiFi network.

There are a number of ways to into clear (reset) all settings and get the device into *Initial Setup Mode*.

1. Web Browser Interface ➔ Configuration
   

2. Press and hold the button on the device for 45 seconds, then release.

3. Power off the device.
   Repeat 6 times: Power on for 1 second, then power off.
   Power on the device.

Power Monitoring Calibration

As delivered, and after a Factory Reset, the power monitoring values (Volts, Current, Power, …) are not fully calibrated and may be off by a few percent.

User calibration is possible. See this page:
`https://tasmota.github.io/docs/Power-Monitoring-Calibration/`

Specifications

Working Voltage	240 VAC
Max. Current	10 A
Max. VA	2400 VA
Max. Power load	2400 W (real)
Power Monitoring Values	AC Volts (V) AC Current (A) AC Power real (W) reactive (VA) total (VA) Cumulative Energy today (kWh) yesterday (kWh) total (kWh) Power Factor
Power Monitoring Accuracy **- Factory Default** **- User Calibrated**	 +/- 2% +/- 0%
WiFi Standards	802.11b/g/n (2.4 GHz)
WiFi Range	No walls: 20m With walls: Less than 20m
Manufacturer's warranty	1 year
Hardware manufacturer	Kogan
Manufacturer's model	KASPEMHA
Firmware	Tasmota-Plus (customised)
Works with http://	Yes
Works with Amazon Alexa	No
Works with Google Assistant	No