

Tuya Smart Dimmers

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Overview

We will detail the steps required to flash the open source Tasmota firmware on a Tuya Smart dimmer and configure it to work with Homebridge.

Hardware

CE Smart Home Wifi Smart Dimmer Light Switch (TYWE1S) Model [WF500D](#)



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Tuya Hardware

The TYWE3S module mostly takes care of Wi-Fi and software features while the MCU controls the actual hardware (buttons, relays, dimmer, power measurement, etc). The MCU is interfaced to TYWE3S using the serial interface which connects to the Rx and Tx pins.

Install Tuya Convert on a Raspberry Pi

See <https://github.com/ct-Open-Source/tuya-convert>

Flash Device

Detailed instructions can be found: <https://github.com/ct-Open-Source/tuya-convert>

> ./start_flash.sh

```
pi@raspberrypi:~/tuya-convert $ ./start_flash.sh
Checking for network interface wlan0... Found.
Checking UDP port 53... Available.
Checking UDP port 67... Available.
Checking TCP port 80... Available.
Checking TCP port 443... Available.
Checking UDP port 6666... Available.
Checking UDP port 6667... Available.
Checking TCP port 1883... Available.
Checking TCP port 8886... Available.
=====
Starting AP in a screen
Starting web server in a screen
Starting Mosquitto in a screen
Starting PSK frontend in a screen
Starting Tuya Discovery in a screen
=====

IMPORTANT
1. Connect any other device (a smartphone or something) to the WIFI vtrust-flash
   This step is IMPORTANT otherwise the smartconfig may not work!
2. Put your IoT device in autoconfig/smartconfig/pairing mode (LED will blink fast). This is usually done by
   pressing and holding the primary button of the device
   Make sure nothing else is plugged into your IoT device while attempting to flash.
3. Press ENTER to continue

=====
Starting smart config pairing procedure
Waiting for the device to install the intermediate firmware
Put device in EZ config mode (blinking fast)
Sending SSID          vtrust-flash
Sending wifiPassword
Sending token          00000000
Sending secret         0101
.....
SmartConfig complete.
Resending SmartConfig Packets
.....
IoT-device is online with ip 10.42.42.42
Fetching firmware backup
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100 1024k  100 1024k    0     0  29735      0  0:00:35  0:00:35 --:--:-- 28574
curl: Saved to filename 'firmware-703769.bin'
=====
Getting Info from IoT-device
VTRUST-FLASH 1.5
(c) VTRUST GMBH https://www.vtrust.de/35c3/
READ FLASH: http://10.42.42.42/backup
ChipID: 703769
MAC: 80:7D:3A:70:37:69
BootVersion: 4
BootMode: normal
FlashMode: 1M QIO @ 40MHz
FlashChipId: 1440c8
FlashChipRealSize: 1024K
Active Userspace: user2 0x81000
=====
Ready to flash third party firmware!

For your convenience, the following firmware images are already included in this repository:
```

Tasmota v7.0.0.3 (wifiman)
ESPurna 1.13.5 (base)

You can also provide your own image by placing it in the /files directory
Please ensure the firmware fits the device and includes the bootloader
MAXIMUM SIZE IS 512KB

Available options:

- 0) return to stock
- 1) flash espurna.bin
- 2) flash tasmota.bin
- q) quit; do nothing

Please select 0-2: 2

Are you sure you want to flash tasmota.bin? This is the point of no return [y/N] y

Attempting to flash tasmota.bin, this may take a few seconds...

Flashed http://10.42.42.1/files/tasmota.bin successfully in 7835ms, rebooting...

Look for a tasmota-xxxx SSID to which you can connect and configure

Be sure to configure your device for proper function!

HAVE FUN!

=====

Do you want to flash another device? [y/N]

Configuring Dimmer

Configuring WIFI

Connect to the flashed device by looking for it's SSID - tasmota-####

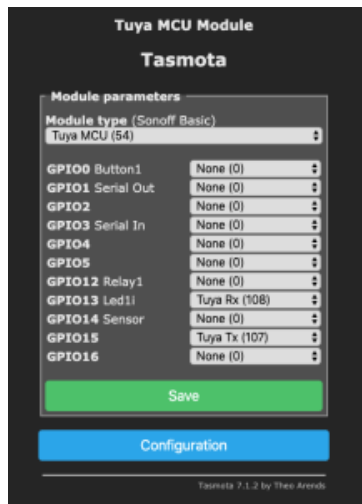
Browse to <http://192.168.4.1/>

Configure the SSID and password.

The dimmer will reboot and connect to your wifi network. Check your router to find out it's IP address and connect to it via your browser.

Set the GPIOs

CE Dimmer:



Moes Dimmer:



Configuring TuyaMCU

We can turn on the weblog in order to get more information.

From console, enter the following:

> weblog 4

```
00:19:34 CMD: weblog 4
00:19:34 RSL: stat/tasmota/RESULT = {"WebLog":4}
00:19:34 CFG: Saved to flash at F7, Count 177, Bytes 4096
00:19:43 TYA: Send "55aa00000000ff"
00:19:43 {"TuyaReceived":{"Data":"55AA0000000010101","Cmd":0,"CmdData":"01"}}
00:19:43 TYA: Heartbeat
00:19:47 WIF: Checking connection...
00:19:47 WIF: Connected
00:19:47 RSL: tele/tasmota/STATE = {"Time":"2019-12-20T00:19:47","Uptime":"0T00:10:09","UptimeSec":609,"Heap":27,"SleepMode":"Dynamic","Sleep":50,"LoadAvg":20,"MqttCount":0,"POWER":"OFF","Wifi":{"AP":1,"SSID":"mehan1","BSSID":"38:D5:47:DB:DA:BA","Channel":11,"RSSI":100,"LinkCount":1,"Downtime":"0T00:00:08"}}
00:19:54 TYA: Send "55aa00000000ff"
00:19:54 {"TuyaReceived":{"Data":"55AA0000000010101","Cmd":0,"CmdData":"01"}}
00:19:54 TYA: Heartbeat
```

CE Dimmer

For the CE dimmer, we issue the following commands from the console:

> TuyaMCU 21,3

> DimmerRange 25, 255

Moes Dimmer

For the Moes dimmer, we issue the following commands from the console:

> TuyaMCU 21,2

> DimmerRange 150, 1000

Homebridge Config

For integration with Homebridge, we are going to use the mqttthing plugin and run all of the commands through an mqtt server.

Tasmota Setup:

Tuya MCU Module
Tasmota

MQTT parameters

Host ()

192.168.1.60

Port (1883)

1883

Client (DVES_703769)

dimmer2

User (DVES_USER)

dimmer2

Password

....

Topic = %topic% (tasmota)

dimmer2

Full Topic (%prefix%/ %topic%/)

%prefix%/ %topic%/

Save

Homebridge Config File:

```
{
  {
    "accessory": "mqttthing",
    "type": "lightbulb",
    "name": "dimmer2",
    "url": "http://192.168.X.X:1883",
    "username": "homebridge",
    "password": "pass",
    "topics":
    {
      "getOn": "stat/dimmer2/POWER",
      "setOn": "cmnd/dimmer2/POWER",
      "getBrightness": {
        "topic": "stat/dimmer2/RESULT",
        "apply": "return JSON.parse(message).Dimmer;"
      },
      "setBrightness": "cmnd/dimmer2/Dimmer"
    },
    "onValue": "ON",
    "offValue": "OFF",
    "startPub":
    {
      "cmnd/dimmer2/POWER": "",
      "cmnd/dimmer2/Dimmer": ""
    },
    "confirmationPeriodms": 1000
  }
}
```

Reference

Reference	URL
Tuya Convert	https://github.com/ct-Open-Source/tuya-convert
*Lasted Docs on Tuya MCU for Tasmota	https://tasmota.github.io/docs/#!/TuyaMCU?id=tuyamcu-command
*How to setup a Tuya MCU Dimmer (Video)	https://www.youtube.com/embed/_3WW4NVYHrU
* List of supported Tuya Convert devices	https://github.com/ct-Open-Source/tuya-convert/wiki/Compatible-devices-(HTTP-firmware)
* Video showing how to configure Treatlife 3way	https://www.youtube.com/watch?v=9LiADN7Nx2E
Tasmota Templates	https://templates.blakadder.com/switch.html
Tuya MCU Based Dimmers and Switches	https://github.com/arendst/Tasmota/wiki/MCU-Based-Tuya-Dimmers-and-Switches
Custom Dimmer Tasmota Firmware	https://github.com/digiblur/TuyaDimmer-Tasmota
CE Smart Home Wifi Smart Dimmer Light Switch (TYWE1S) Model WF500D	https://github.com/arendst/Tasmota/issues/4003
CE Dimmer Manual	https://fccid.io/ZZH-WF500D/User-Manual/Users-Manual-3846958#download
Tasmota - Tuya Convert	https://tasmota.github.io/docs/#!/Tuya-Convert
Tasmota - Other Supported Devices	https://github.com/arendst/Tasmota/wiki/Other-devices
Video - Setup	https://www.youtube.com/watch?v=KOg5qwO3Rh4