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Wanesy Wave

Firmware update over Wi-Fi

PTA

KERLINK

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1 Introduction

This document describes the update mechanism of the Wanesy Wave firmware over Wi-Fi. Both STM32 and ESP32 firmwares can be updated over Wi-Fi.

2 Description of procedure

2.1 [Step 1] Connect to Wi-Fi SSID

The default SSID broadcasted by the Wanesy Wave is named: ***optout_klk***
Please contact KERLINK to know the Wi-Fi password.

In order to guarantee the possibility of connecting to a given Wanesy Wave via Wi-Fi, we need to avoid that several devices use the same SSID.

So when the Wanesy Wave starts up, the surrounding SSIDs are scanned. If the SSID that we want to use is already taken, a counter is incremented and placed in suffix of the SSID (i.e. if "optout_klk" is used, we will try "optout_klk_1", and so on until finding a suffixed SSID free).

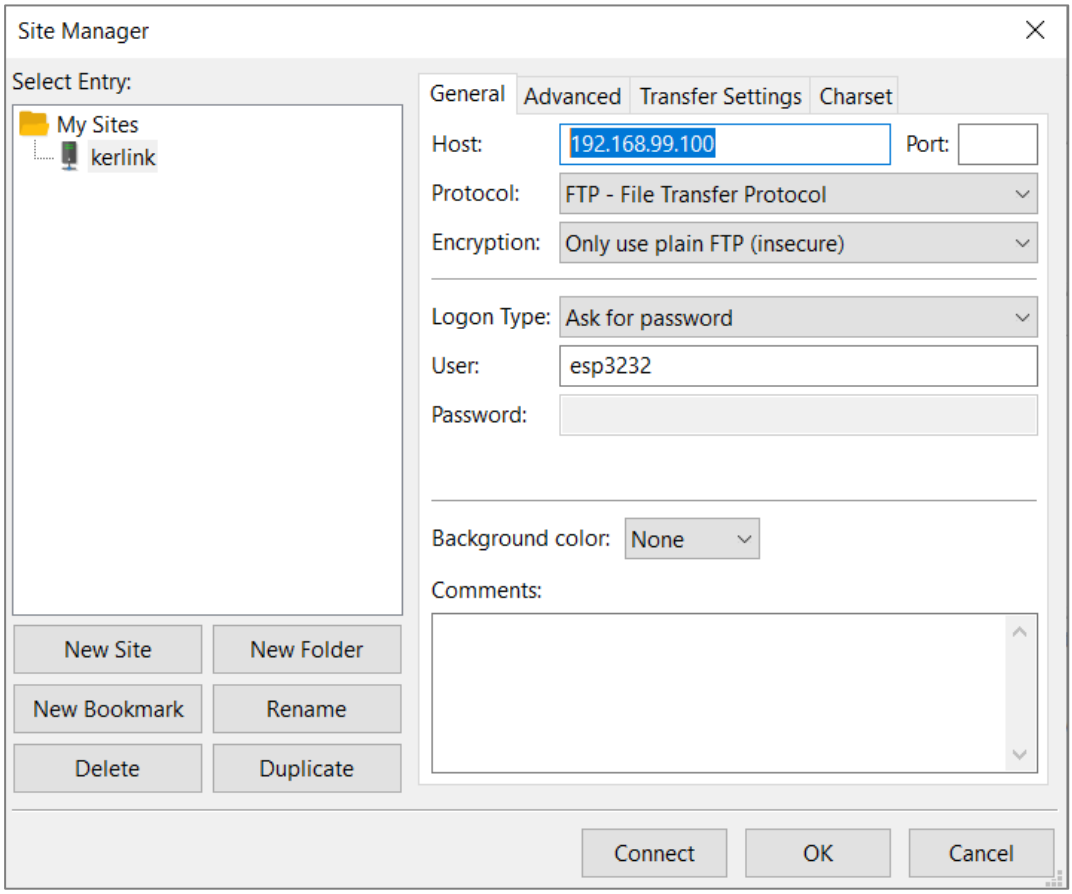
2.2 [Step 2] Configure FTP client

Once connected to the Wi-Fi network, open an FTP client and create a new “site” entry.

Any FTP client can be used (for example FileZilla or WinSCP), the only requirement is to use PASSIVE MODE connection.

The Wanesy Wave host IP address is always: ***192.168.99.100***

The embedded pseudo FTP server is accessible using the following username: ***esp3232***
Please contact KERLINK to know the FTP server password.



An informative file ***device_info.txt*** is available on FTP server, see example below:

```
7076FF9900410025,wanesywave_EU868 (ver. 1.7.0),JOINED
```

This file contains the product ID allowing you to verify that you are connected to the right Wanesy Wave in case there are several in the same sector (and therefore multiple optout_klk_x SSIDs).

2.3 [Step 3] Update firmware

2.3.1 ESP32 firmware update

In order to trigger an update of the ESP32 firmware, simply put or drop (depending of the FTP client you have chosen) the firmware binary you want to load to the root directory of the FTP server.

The only requirement is that the firmware name starts with “esp” in order to trigger and activate the correct update route in the device. If this is not the case, simply rename firmware binary before placing it onto the FTP server.

The Wanesy Wave will begin automatically updating the ESP32 firmware which should take roughly 1 minute to complete. You will be disconnected from the Wanesy Wave Wi-Fi.

After 2 minutes have elapsed, you could re-connect to the Wanesy Wave via FTP then check the file ***esp32_version.txt*** just created to ensure that the new ESP32 firmware version has been successfully installed. See example below:

```
'Kerlink wanesywave Ver. 1.3.0' running from partition ota_1 starting @ 001E0000
```

2.3.2 STM32 firmware update

2.3.2.1 KBIN encapsulation – step not needed for Wanesy Wave

Before feeding the STM32 update binary to the device, it needs to be encapsulated with a Kerlink proprietary format (“KBIN”).

This encapsulation is done using the ***kbin_maker.py*** script located in ***tools/kbin_manager/***.

Preparing the firmware can be done using the following command:

```
python3 kbin_maker.py -b <STM32_IMG> -H <HW_VER> -s 256 -d 0x10 -a 0x44000
```

Where:

- STM32_IMG is the image file to be uploaded onto the device.
- HW_VER is the hardware version of the Wanesy Wave this firmware is dedicated to (“DA” for EU868, “DB” for US915) combined with the revision (“a”, “b”, “c” ...). Several versions can be targeted by the same file, in this case simply use as many “-H” options as needed.

Example targeting the first 3 revisions of the EU868 hardware version:

```
python3 kbin_maker.py -b smart_traffik_app.img -H DAa -H DAb -H DAc -s 256 -d
0x10 -a 0x44000
```

The script will generate a “data” file and a “part” file. This “part” file will be used to update the STM32 MCU over Wi-Fi.

2.3.2.2 Firmware update

In order to trigger an update of the STM32 firmware, simply put or drop (depending of the FTP client you have chosen) the “part” file you generated using the ***kbin_maker*** tool to the root directory of the FTP server.

The only requirement is that this filename starts with “stm” in order to trigger and activate the correct update route in the device. If this is not the case, simply rename your “part” file before placing it onto the FTP server.

The Wanesy Wave will begin automatically updating the STM32 firmware which should take roughly 1 minute to complete. You will be disconnected from the Wanesy Wave Wi-Fi.

After 2 minutes have elapsed, you could re-connect to the Wanesy Wave via FTP then check the file ***device_info.txt*** to ensure that the new STM32 firmware version has been successfully installed.

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