**by ⓢignify**

# Trulifi 6002 - User Manual

## USB Key and Access Point configuration

## 1 Package contents

The Trulifi 6002 USB Key package contains:
1. User manual (this document)
2. Trulifi 6002 USB Key
3. USB-C cable
4. USB flash drive with the following contents:
   a. User manual
   b. Trulifi 6002 System datasheet
   c. Open source license
   d. Open source code

## 2 Supported devices

Currently the following desktop and laptop operating systems are supported:
- Windows 7
- Windows 8.x
- Windows 10
- macOS 10.14.x and higher
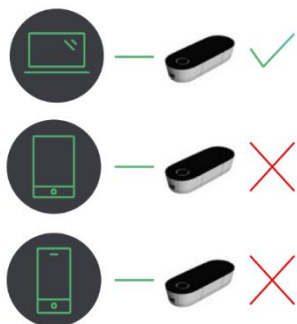


## 3 Getting started

This section describes the necessary steps to connect your desktop or laptop to the LiFi network.

### 3.1 Connecting the USB Key to your computer

1. Connect the Trulifi 6002 USB key to your computer using the USB-C cable.
2. Insert the USB flash drive to computer.
3. Follow the driver installation instructions that correspond to your operating system, either Windows or macOS.

### 3.2 Driver installation for Windows

A standard Windows 10 installation includes the driver for the Trulifi 6002 USB Key. Older versions of Windows do not include this driver.

Irrespective of which Windows version you are using, it is highly recommended to install the latest driver version provided on the USB flash drive.

**Step 1**
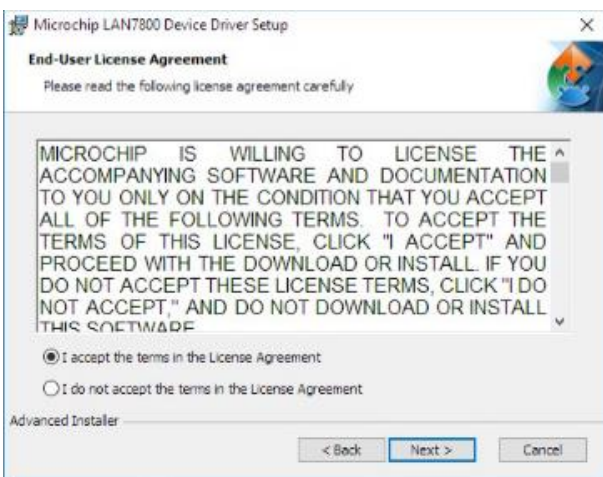Double click Trulifi-v2.0.exe file located on the USB flash drive.

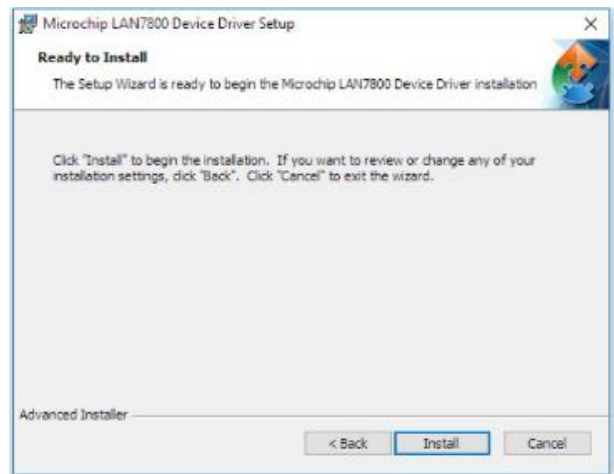Click 'YES' when asked 'Do you want to allow the following program to make changes to this computer?

**Step 2**
When the installer opens, click 'next'.



**Step 3**
Select the 'I accept the terms in the License Agreement' button and click 'next'.



**Step 4**
Launch the installation by clicking on 'Install' button.



**Step 5**
Click 'Install' to complete the installation.



Once the installation process has been completed, you are ready to use the USB Key to connect to the LiFi network.

### 3.3 Driver installation for macOS

Depending on your macOS version, a different driver version is required. You can find the appropriate drivers on https://www.signify.com/global/innovation/trulifi/downloads

It is recommended to copy the LAN78xx.pkg zip-file belonging to your MacOS version to your Mac desktop.

Double click the zip-file and a folder appears on your Mac desktop. This folder contains a text file and package file

This describes how to install the driver for macOS Mojave (macOS 10.14) or higher and perform troubleshooting. The screenshots may be slightly different, depending on your operating system
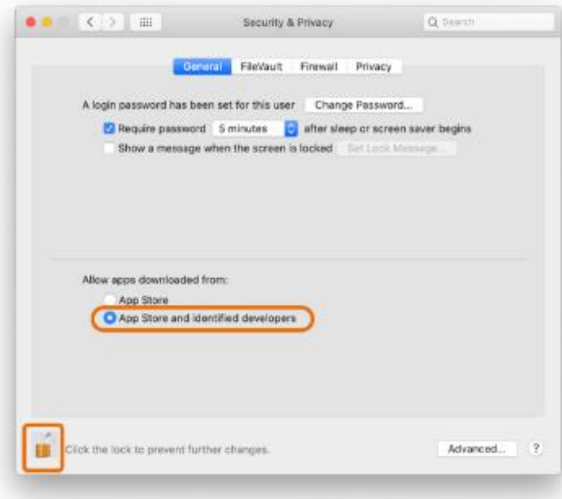
• DO NOT connect the USB key to your computer until you have reached Step 8.

• Quit any running applications. A computer restart might be performed during driver installation.

• Make sure you have admin rights on your device.

**Step 1**
Start computer with all USB cables disconnected, except the keyboard and mouse.

**Step 2**
Allow the driver to be installed from another source than the App Sore. In "System Preferences," click "Security & Privacy".



**Step 3**
Click the [ General ] tab.



By default, the security and privacy preferences of your Mac are set to allow only apps from the App Store. To install the Trulifi driver, you will need to allow apps from b both the App Store and identified developers.

**Step 4**
- In System Preferences under General tab, click the lock and enter your password to make changes.
- Select "App Store and identified developers" under the header "Allow apps downloaded from"
- Click the lock to close the window.



**Step 5**
Double click truLiFi-x.x.pkg file belonging to your MacOS-version.



**Step 6**
Accept all messages in the dialogue boxes by clicking `[Continue]`. Follow the instructions in the dialogue boxes to proceed.

If the message "System Extension Blocked" appears, click [ OK ].



**Step 7**
When the "The installation was successful" message appears, click [ close ].
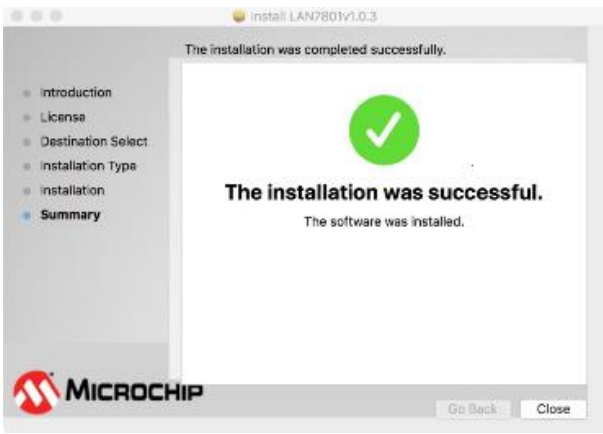
For systems with Big Sur operating system a restart is required. Click **[Restart]**. (See Release notes!!)
Once the installation process has been completed, you can plug the USB Key to your Mac.

Click the Microchip Icon to install the driver



### Step 8
Next, allow the driver to be loaded. When you are installing the driver under macOS Catalina (10.15) or Big Sur, permission to load the driver is required. If this permission is not given, the computer does not recognize the unit when it is connected. Be sure to follow the procedure below to allow loading of the driver. Plug your Trulifi USB key if not already done.
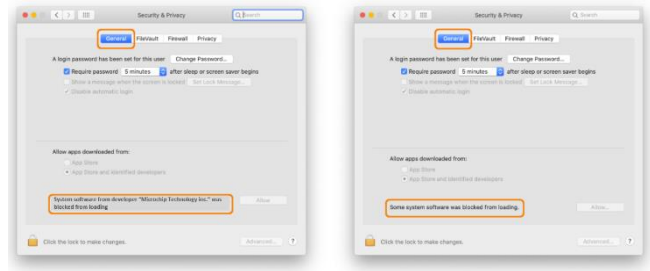
In "System Preferences", click "Security & Privacy".



### Step 9
Click the [ General ] tab.
Make sure the message 'System software from developer "Microchip Technology Inc." was blocked from loading' is

displayed. In some cases, the message "Some system software was blocked from loading." might be displayed instead.



The message about being blocked is displayed for **only 30 minutes after installing the driver**. When 30 minutes have passed after installing, the message is no longer displayed.

If the message is not displayed, restart from step 5. In some cases, no warning message is displayed and loading of the driver is permitted. This happens:
- When a driver that has previously been allowed is reinstalled.
- When you are using a machine on which the driver was installed before updating to macOS Catalina (macOS 10.15)
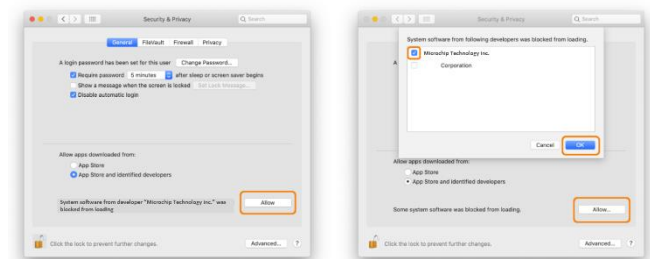
### Step 10
Change the settings to allow loading the driver:
- Click the lock icon at the lower left of the "Security & Privacy" screen. You are prompted to enter the password for the administrator account.
- Enter "User Name" and "Password," then click **[ OK ]**.

### Step 11
Make sure "Microchip Technology Inc." or "LAN7800App" is displayed as the developer and click **[ Allow ]**. If system software from more than one developer is blocked from loading, clicking **[ Allow ]** displays a list of the developers.

Select "Microchip Technology Inc." and click **[ OK ]**.



If a message prompting you to restart is displayed, click [ OK ]. Restarting is not necessary right now.

This completes installation of the driver.

### Step 12: Checking the Installed Status of the Driver
When the Trulifi USB key is plugged and correctly installed, it will appear into the network interface list of your Mac.

Open the network interface list. In "System Preferences", click "Network".

In the Network screen, on top of the left column list, you should see "LAN7801". The button next to "LAN7801" can have 3 colours:

- **Red**: Trulifi USB key is not detected due to the following cases:
  - USB key is not correctly connected to your Mac
    => verify the USB key and the USB cable connection
  - The driver is not allowed to be loaded.
    => restart from step 8 and check if the message about being blocked has disappeared. If you don't see any message, restart the installation procedure from step 5.

- **Orange**: Trulifi USB key is running correctly on your Mac, but no LiFi connection or internet connection is established.
   => verify your ethernet connection on your Trulifi Access Point and check your internet setting
   => check the status LED on your Trulifi USB key (see section 3.4)

- **Green**: Trulifi USB key is running, and internet connection is established on your Mac
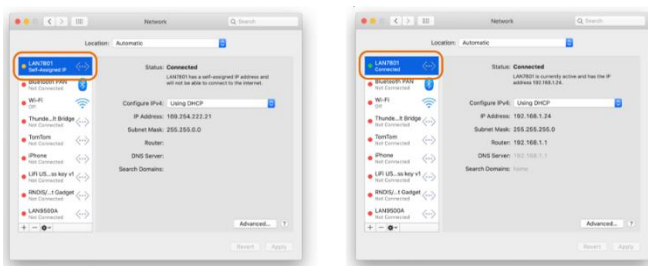


In case of questions, please contact:
customercare.trulifi@signify.com

## 3.4 Status LED

A green LED on the top of the USB Key indicates the status of the LiFi connection.

- **Status LED off**: Trulifi 6002 USB has no connection to a Trulifi 6002 Transceiver device.

- Ensure that the Trulifi 6002 USB Key as a direct light of sight to the Trulifi 6002 Transceiver. Place the USB Key directly underneath a Trulifi 6002 Transceiver
- Ensure that USB Key is connected to a compatible desktop or laptop computer.

- **Status LED blinking**: Trulifi 6002 USB Key has a LiFi connection to a Trulifi 6002 Access point, but no connection to the LAN network.
  - Ensure that the Trulifi 6002 Access Point is correctly connected to the LAN network.

- **Status LED on**: Trulifi 6002 USB is fully connected to the LAN network.

## 3.5 USB key MAC address

The PC will recognize the USB key as an Ethernet interface (network adaptor). The USB key has two MAC addresses, one for the USB-to-Ethernet converter and one for the LiFi baseband. This is depicted in the below schematic diagram.
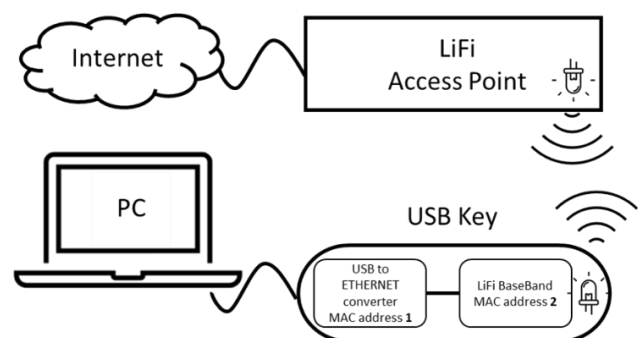


**MAC Address 1**: This is the MAC address which the PC sees as Ethernet Interface

**MAC Address 2**: This is the MAC address which the LiFi Access point sees as Ethernet Interface

The MAC address is also printed on the USB-key. There may be either 1 or 2 MAC-addresses printed on the USB key.

- In case 1 MAC address is printed on the USB key this will be MAC address 1 (USB to Ethernet convertor).

- In case 2 MAC address are printed on the USB; MAC address 1 will be for the USB to Ethernet convertor and MAC address 2 will be for the LiFi Baseband.

# 4 Advanced configuration

If necessary, use the Trulifi 6002 web configuration system to configure specific operating parameters, for example to change the LiFi encryption password or to update the firmware of the devices.

Note: The web configuration system is designed for IT managers and requires a basic understanding of LAN network configuration.

## 4.1 Factory default IP configuration

Out of the box the Trulifi 6002 Access Points and USB keys are pre-configured with DHCP enabled. With DHCP enabled, the device will automatically receive an IP address and subset mask. In

addition to this automatically assigned IP address, the Access Point and USB key also have a static IP address, even when DHCP is enabled. This can be helpful in case you are unable to retrieve what address has been assigned by the DHCP server. The default static IP address is:

- 192.168.1.10 (6002Access Points)
- 192.168.1.20 (6002 USB key)

The corresponding default subset mask is:

- 255.255.255.0

In case your LAN network configuration uses different IP configuration settings, you must temporarily apply the IP settings described above to configure your Access Point and USB Key, and switch back afterwards.

Once you have logged in to the web configuration system, the IP settings can be changed, for example to apply a different static IP address and subnet, or to enable dynamic addressing using DHCP. These settings are described in section 4.7.2.

## 4.2 Logging in to the Web configuration system

To access the web configuration system, please open a standard web browser and enter the correct IP address of the device.

Enter the Security password in the pop-up dialog. Default password:

- Trulifi 6002.0 USB Key: trulifi%2019
- Trulifi 6002.1 USB Key: serial number printed on the back side of the device

- Trulifi 6002.0 Access Point: trulifi%2019
- Trulifi 6002.1 and 6002.2 Access Point: serial number is printed on the top cover of the device
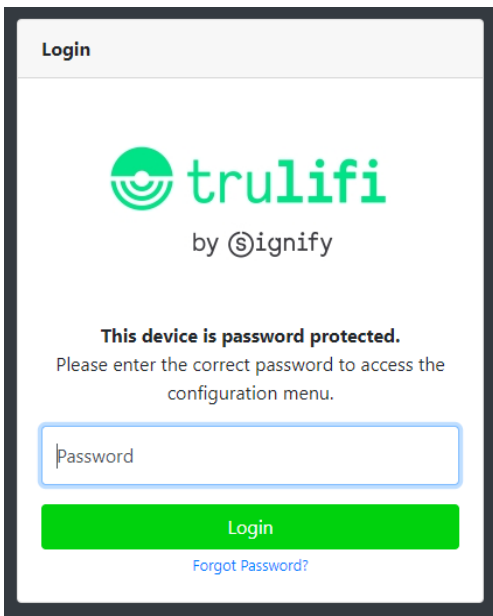


**Note**: On the Trulifi 6002.0 USB Key this password is fixed. On the Trulifi 6002.1 USB Key this password can be changed by the user in the Settings tab.

After entering the password successfully, the main overview window opens. On the left side of this window there are several menu tabs to view and change system configuration parameters.

**Note**: For systems with Firmware v3.3.1 (or higher) the password required to return the system (for Access Point and for USB key) to the factory default settings is:
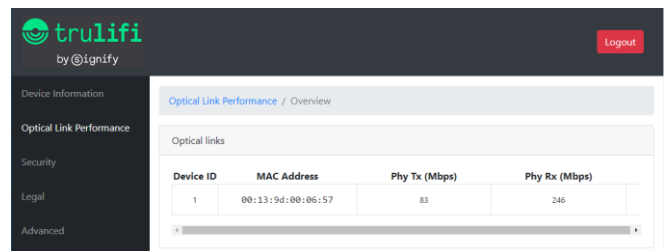**trulifi%2019**

## 4.3 Device Information

The Device Information tab shows various static information about the USB Key and the LiFi connection. The information in this tab cannot be changed.
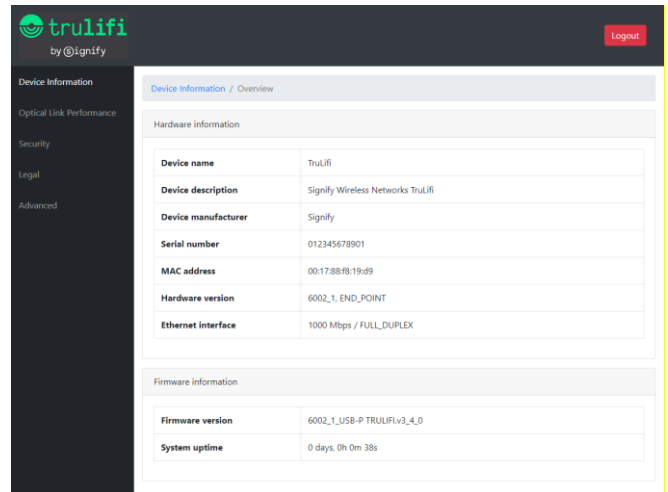


## 4.4 Optical Link Performance tab

The Optical Link Performance tab displays the MAC-address of the devices connected as well as the optical link performance.



## 4.5 Security tab

The security tab allows to change the preconfigured LiFi encryption password to restrict access to the LiFi network. Note that the LiFi encryption password is independent from the password to log in to the Web configuration system.

- The default password to access the Web UI for the Trulifi 6002.1 USB Key is the serial number which is printed on the back of the device
- The default LiFi encryption password is: **trulifi**
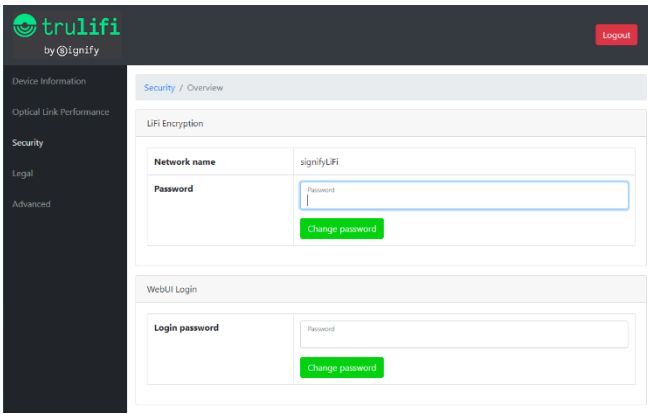
### Changing the LiFi encryption password
The LiFi encryption password must be identical on the Access Point and all USB Keys. Any difference in the password will result in a loss of LiFi connection between the Access Point and the USB Key.

### Change the LiFi encryption password of the Access Point
1. Disconnect your USB Key from your computer. Make sure that your computer is connected to the Access Point via the Access Point's LAN connection (instead of the LiFi connection).
2. Use your web browser to open the web configuration system of the Access Point. Log in using the correct password and switch to the Security tab
3. Change the LiFi encryption password. Simply type a new password into the "Password" field and click on "Change password".
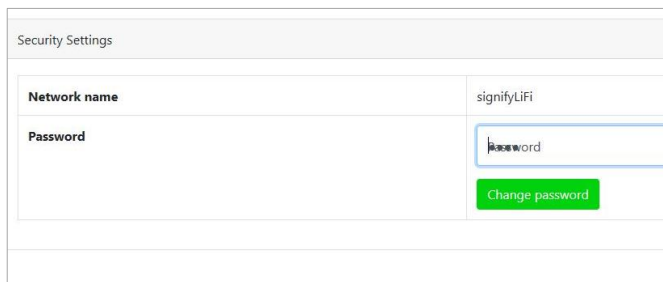


### Change the LiFi encryption password of the USB Key
4. Reconnect your USB Key. You will notice that the connection between to Access Point will not be established because the encryption passwords are different at this moment.
5. Ensure that your computer's IP address configuration is correctly set, as described in sections 4.1 and 4.4..
   o Note that because you reconnected the USB Key, your computer can no longer reach the DHCP server in your network.
   o If you are using the factory default static IP address as described in section 4.1, you may have to manually assign a temporary static IP address 192.169.1.x (with x unequal to 10 or 20) to your computer's Wireless LAN adaptor and set the subdomain to 255.255.255.0. (In Windows, go to Control Panel, Network and Internet, Wi-Fi, Change Adaptor options).
6. Open the web configuration system of the USB Key using your web browser at correct IP address. Log in using the correct password and switch to the Security tab
7. Change the LiFi encryption password. Use the same LiFi encryption password as you have used for the Access Point and click on "Change password".

8. Restart the USB Key by disconnecting and reconnecting the USB-C cable. The LiFi connection will now be established.
9. If you changed your computer's IP configuration, don't forget to set it back to its original values. The green status LED on the USB Key will remain ON.

## 4.6 Legal tab
The Legal tab displays the End User License Agreement for using the device and associated software.
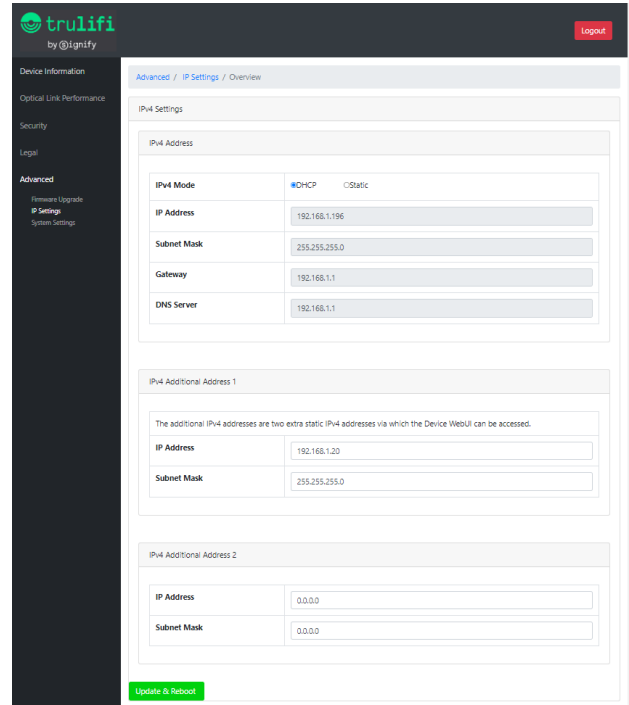


## 4.7 Advanced tab
The advanced tab is divided in 3 sections:
- Firmware Upgrade
- IP Settings
- System Settings.

### 4.7.1 Firmware upgrade
This screen displays the current firmware version and offers the opportunity to update the firmware to a newer version. The latest firmware version can be downloaded from:
https://www.signify.com/global/innovation/trulifi/downloads

After downloading the latest firmware store the file on a convenient location, e.g. Desktop.
Select **[Choose File]** and browse to the location where the new firmware version is saved. Select **[Upgrade]**

**Note:** The upgrade takes approximately 2 minutes. **Please wait at least 2 minutes** before rebooting the system manually.
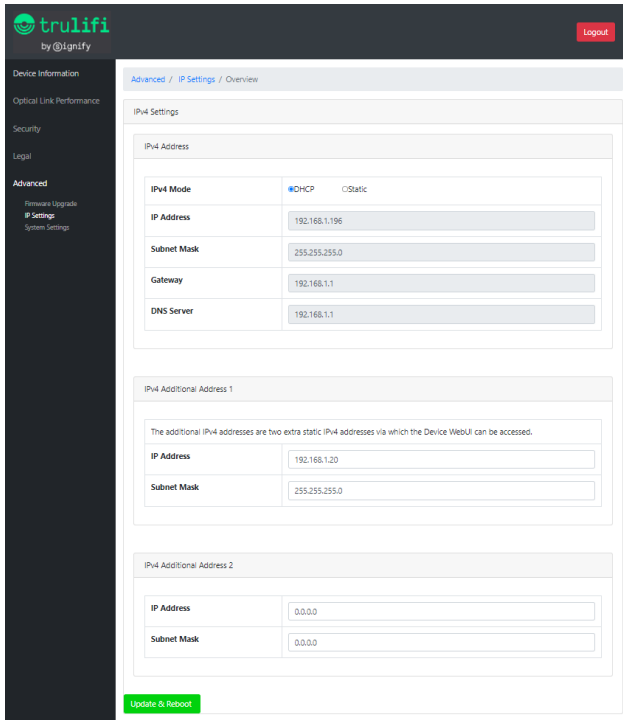
Once the upgrade process has started, you will be redirected to the "Login" page automatically.

In case a non-valid file is selected to upload, the following error message will be displayed.
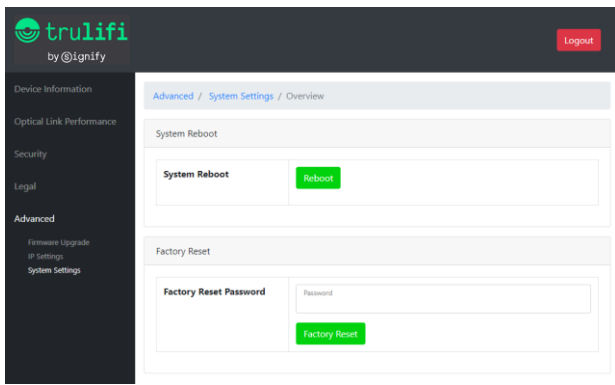
### 4.7.2 IP Settings

This screen displays the IP settings of the device. Either static IP addresses can be configured, or the device can be configured in



To disable the [ **IPv4 Additional Address 1 ]**, please enter [ **0.0.0.0** ] in the field [ **IP Address** ].
Select **[Update & Reboot]** after completing the configuration.

### 4.7.3 System Settings

This screen displays the System Settings of the device.

The **[Reboot]** button allows to reboot the system in case required (e.g., after a Firmware update).

The "system settings" page has provisions to perform a System reboot and a Factory Reset and restore the initial factory setting at time of shipment. When using the factory reset option, all system configuration settings will be lost.

The factory reset password is: **trulifi%2019**

DHCP mode (=Default). In case dynamic IP addressing is used, the device will connect to your DHCP server to configure the IP settings automatically.

If DHCP is enabled, additional static IP addresses can be configured in case the device needs to be accessed from a different subnet.

In case of static IP settings, the fields for IP address, subnet mask, Gateway and DNS server must be filled in manually.

**Note**: If you are using DHCP, it is recommended to use *DHCP address reservations* in your DHCP server. This gives you control over which IP address will be reserved for each MAC address, making it easier to identify your USB keys and Access Points.

## 4.8 Forgot password

On the Trulifi 6002.1 USB Key, the password to access the web configuration system can be reset to its default value in case you forgot it.

1.  In the first login/password window, click on "Forgot Password?" to navigate to the reset password window.
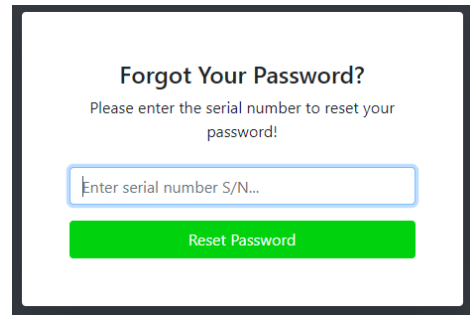


2.  Enter the product serial number. This can be found on the back side of the Trulifi 6002.1 USB Key or on the top cover of the Trulifi 6002.1 or Trulifi 6002.2 Access Point.
3.  After entering the serial number, click on the **Reset Password** button.
4.  If the serial number is correct, the login password and the LiFi encryption password will be reset to the default password (default password: see section 4.2 and 4.5) and the login/password window will appear. If the serial number is incorrect, you will be prompted to enter the serial number again.

**WARNING:** All settings (IP-settings, LiFi encryption password, UI access, and other settings) will be returned to the factory default value.