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*
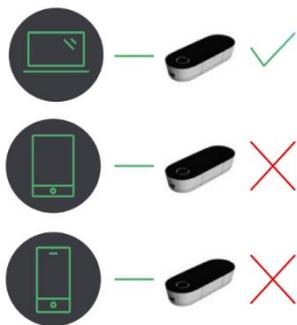
MacOS 11.xx (Big Sur) is not yet supported. For other operating systems please contact the Trulifi Support team: lifi.systems@signify.com

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
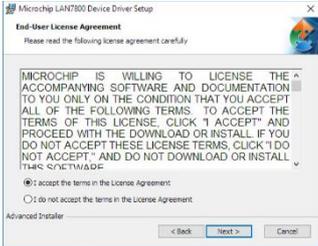
Select the 'I accept the terms in the License Agreement' button and click 'next'

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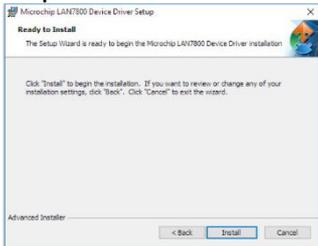
Launch the installation by clicking on 'Install' button

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

This describes how to install the driver for macOS Catalina (macOS 10.15) and perform troubleshooting. The USB key driver is not yet supported on Big Sur (macOS 11.xx)

- 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.

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-v2.0 driver, you will need to choose to allow apps from 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-v2.0.pkg file located on the USB flash drive or previously copied on your Mac.

Step 6

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].

Once the installation process has been completed, you can plug the USB Key to your Mac.

Step 8

Next, allow the driver to be loaded. When you're installing the driver under macOS Catalina (10.15), permission to load the driver is necessary. If this permission is not given, the computer does not recognize the unit when it's connected. Be sure to follow the procedure below to allow loading of the driver. Plug your Trulifi USB key if it is 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're 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." 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." to place a check mark by it, then click [OK].
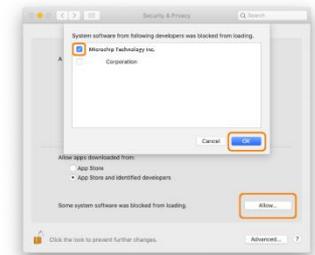
If a message prompting you to restart is displayed, click [OK]. Restarting is not necessary right now.

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.

To 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

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.
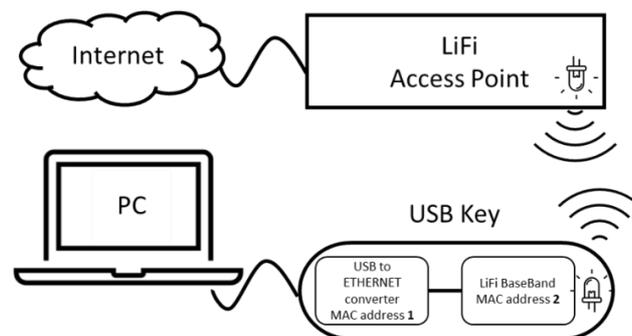
MAC Address 1 : This is the MAC address which the PC sees as Ethernet Interface
MAC Address 2 : This is the MAC address which the LiFi Access point sees as Ethernet Interface

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.

MAC address 2 is the MAC address of the USB key seen by the Access Point.

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

When accessing the web configuration system for the first time, the IP configuration is set to its factory default values.

The factory default IP addresses are static:
- For Trulifi 6002 Access Point: 192.168.1.10
- For Trulifi 6002 USB Key: 192.168.1.20

By default, the subnet is set to 255.255.255.0.

To access the web configuration system from your computer, your computer's IP address must be in the range 192.168.1.x, where x is not equal to 10 or 20.

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 4.4.

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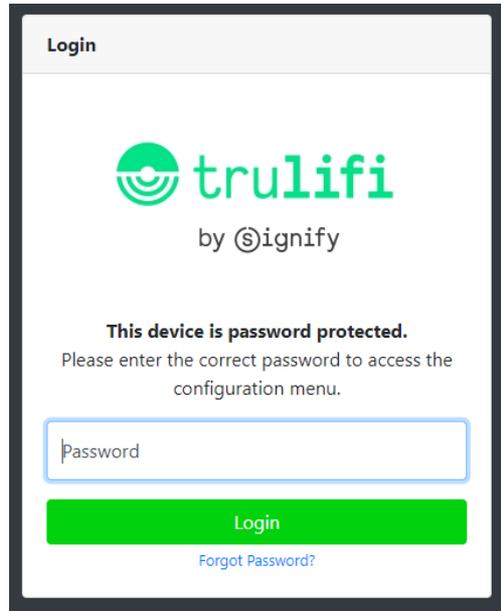
Note: On the Trulifi 6002.0 USB Key this password is fixed. On the Trulifi 6002.1 USB Key this password can be changed by the user in the Settings tab.

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.

4.3 Home tab

The Home tab shows various static information about the USB Key and the LiFi connection.
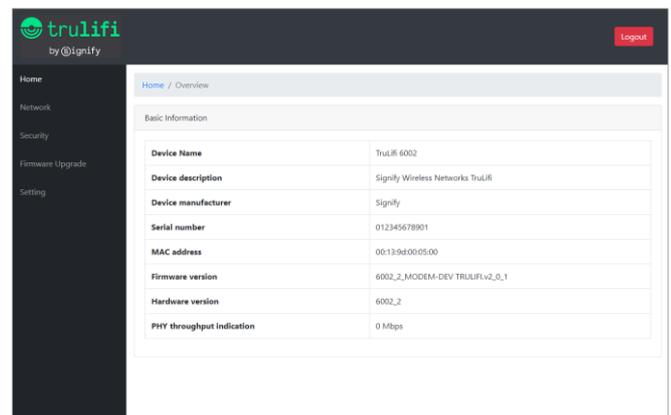
4.4 Network tab

The factory default IP settings are described in section 4.1, but the Network tab allows you to change the IP settings if needed.
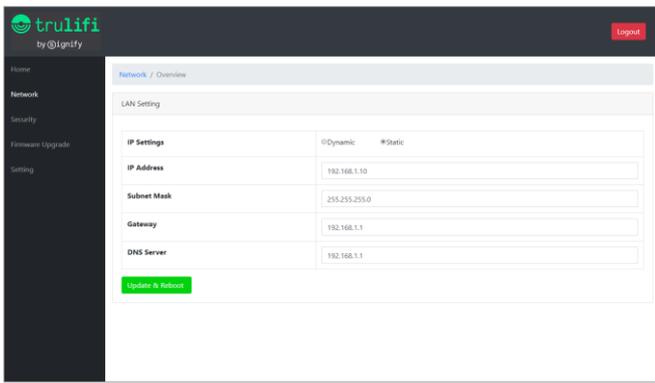
The IP settings can be static, in which case the fields for IP address, subnet mask, Gateway and DNS server must be filled in manually. In case dynamic IP addressing is used, the device will connect to your DHCP server to configure the IP settings automatically.

After having changed the settings, click 'Update & Reboot'. The device will reboot, and the new settings will be applied.

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.

4.5 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.

Note: The default LiFi encryption password is: trulifi
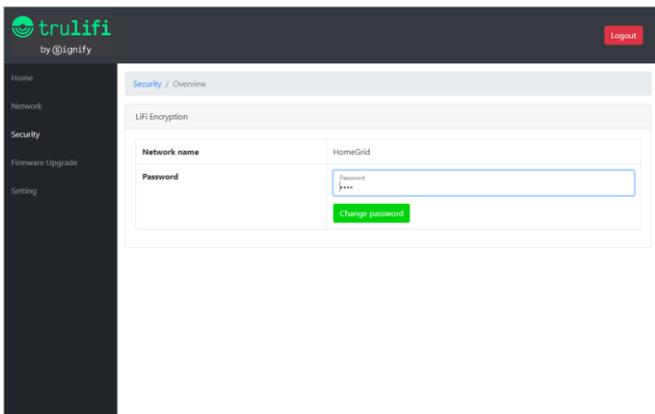
4.6 Changing the LiFi encryption password

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.

4.7 Firmware Upgrade tab

The Firmware Upgrade tab displays the current firmware version used by the device. It is possible to upgrade the firmware using a compatible file. For this, click on "Browse", select the file and click on "Upgrade".
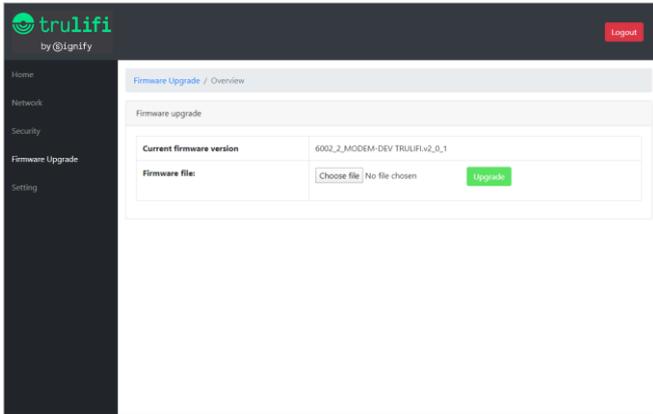
Note: The upgrade takes approximately 2 minutes. **Please wait at least 2 minutes** before rebooting the system manually.

Once the upgrade process has started, you will be redirected to the "Login" page automatically.

4.8 Settings tab

On the Trulifi 6002.1 USB key, the login password to access the web configuration system can be changed in the Settings tab.
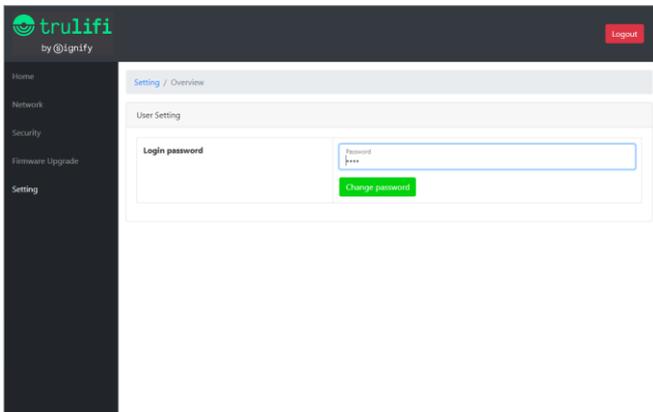
4.9 Forgot password

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.
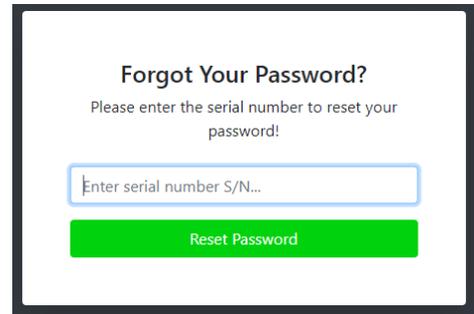
2. Enter the product serial number. This can be found on the back side of the Trulifi 6002.1 USB Key or on the top cover of the Trulifi 6002.1 or Trulifi 6002.2 Access Point.
3. After entering the serial number, click on the **Reset Password** button.
4. If the serial number is correct, the login password 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.