



Point to Multi Point System

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?



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.

Completing the Microchip LAN7800 Device Driver Setup Wizard
Click the "Finish" button to exit the Setup Wizard.

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/downlo ads

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.

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.

	FleVault Firewall Pri	vacy
A login password has b	een set for this user Change Par	seword
🖸 Require passwo	rd – 5 minutes 🗧 after sleep or	screen saver begins
Allow apps downloaded	I from:	

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.

A login passwor	rd has been set for this user Change	Password
🔽 Require :	password Sminutes 📴 after sleep	p or screen saver begins
Show a r	message when the screen is locked	et Lock Mensege
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Allow apps dow App Stor	mloaded from:	
Allow apps dow App Stor	mloaded from: re re and identified developers	
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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].



(s)ignify

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.

Provide Provide Privacy	Fervare Prevare Prevar
A login password has been set for this user Change Password.	A login password has been set for this user Change Password
Repute passered (* Instanta, B) after sleep or somer some begin Repute ansatzende sleep in the foreigness of the state of the	Device presented (0 minute, 10 minute,
Alton app downloaded fran: Alto Time App Data and Alexistral downloans	Allow apps downloaded from:
System software from developer "Missochig Technology loc." may bicked from loading	Some system software was blocked from feading.

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].



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

	Location:	Automatic	8				Location:	Automatic		3	
LANTED1 Tel-Managenet (#) Dist# Schweistenet Wi-F: OT Thurdon_H Bridge Intel Conventionet Tel Conventionet Intel Conve		Status: Configure IPvet: IP Address: Submet Mask: Router DNS Server: Search Domains:	Connected LANTO has a cell-angued a wind the data base of the cell test of the data base of the cell test of the cell the cell test of the cell the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of the cell test of test o	Pathons and horsonat	Even Even	21 and 25. FAN reacted an E Bridge reacted marched marched as key v1 Codget reacted 00A 	0 0 0 0 0	Status Configure IPvet IP Address Subret Mask Router DNS Server Search Domains	Connected LANSID is commity at a abless 1921 (65.124) Using DVCP 192.106.1.24 265.255.255.0 192.106.1.1 192.106.1.1 192.106.1.1 192.106.1.1	ne and has the #	

In case of questions, please contact: <u>customercare.trulifi@signify.com</u>

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

Login	
by (Signify	
This device is password protected. Please enter the correct password to access the configuration menu.	
Password	
Login	
Forgot Password?	

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.



trulifi		Logout
Device Information	Device Information / Overview	
Optical Link Performance	Hardware information	
Security	Device name	TruLifi
Legal	Device description	Signify Wireless Networks TruLifi
Advanced	Device manufacturer	Signify
	Serial number	012345678901
	MAC address	00:17:88:f8:19:d9
	Hardware version	6002_1, END_POINT
	Ethernet interface	1000 Mbps / FULL_DUPLEX
	Firmware information	
	Firmware version	6002_1_USB+P TRULIFI.v3_4_0
	System uptime	0 days, 0h 0m 38s

4.4 Optical Link Performance tab

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

trulifi				Logout
Device Information	Optical Link P	erformance / Overview		
Optical Link Performance	Optical links			
Security	Device ID	MAC Address	Phy Tx (Mbps)	Phy Rx (Mbps)
Legal	1	00:13:9d:00:06:57	83	246
Advanced	¢			,

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

trulifi		tunput
Device Information	Security / Overview	
Optical Link Performance	LiFi Encryption	
Security		
Legal	Network name	signifyLiFi
Advanced	Password	Password
Auvalueu		Change password
	WebUI Login	
	Login password	Password
		Change password

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

- 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".

twork name	signifyLiFi
issword	
	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..
 - Note that because you reconnected the USB Key, your computer can no longer reach the DHCP server in your network.
 - 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".
- 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.

trulifi		Logat
Device Information	Advanced / IP Settings / Overview	
Optical Link Performance	IPv4 Settings	
Security	IPv4 Address	
Advanced	IPv4 Mode	#DHCP OStatic
Firmware Upgrade IP Sattings System Settings	IP Address	192.168.1.196
	Subnet Mask	255.255.255.0
	Gateway	192.168.1.1
	DNS Server	192.168.1.1
	IPv4 Additional Address 1 The additional IPv4 addresses are 1	two extra static IPv4 addresses via which the Device WebUI can be accessed.
	IP Address	192.168.1.20
	Subnet Mask	255.255.255.0
	IPv4 Additional Address 2	
	IP Address	0.0.0.0
	Subnet Mask	0.0.0.0
	Update & Reboot	

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/downlo ads

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.

trulifi			Logout
Device Information	Advanced / System Settings /	Overview	
Optical Link Performance	System Reboot		
Security			
Legal	System Reboot	Reboot	
Advanced			
Firmware Upgrade IP Settings System Settings	Factory Reset		
	Factory Reset Password	Password	
		Factory Reset	

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 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.



trulifi			Logout
Device Information	Advanced / IP Settings / Overview		
Optical Link Performance	IPv4 Settings		
Security	Ded below		
Legal	IPv4 Address		
Advanced	IPv4 Mode	CHCP OStatic	
Firmware Upgrade IP Settings System Settings	IP Address	192.168.1.196	
	Subnet Mask	255.255.255.0	
	Gateway	192.168.1.1	
	DNS Server	192.168.1.1	
	IPv4 Additional Address 1 The additional IPv4 addresses are two ID Address	extra static IPv4 addresses via which the Device WebUI can be accessed.	
	ir Autos	192.168.1.20	
	Subnet Mask	255.255.255.0	
	IPv4 Additional Address 2		
	IP Address	0.0.0	
	Subnet Mask	0.0.0	
	Update & Reboot		

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

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.

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

Forgot Your Password? Please enter the serial number to reset your password!	
Enter serial number S/N	
Reset Password	

- 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.

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