

LILYGO T-Internet-POE Ethernet Adapter User Guide

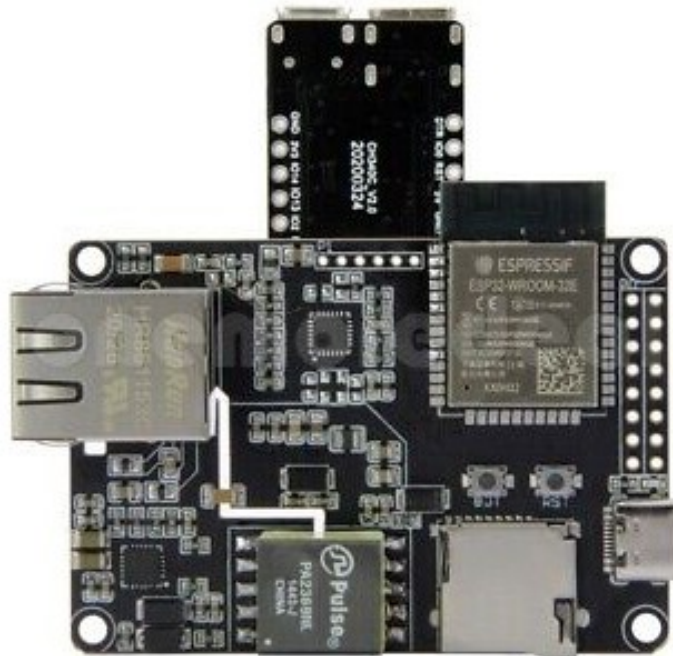
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LILYGO T-Internet-POE Ethernet Adapter



Product Information

- This product is designed to comply with part 15 of the FCC Rules, which means it meets the requirements for operating in the United States. It has been tested and approved for use without causing harmful interference to other devices and can accept any interference received.
- The equipment also complies with FCC radiation exposure limits for an uncontrolled environment. It should be installed and operated with a minimum distance of 20cm between the radiator and your body to ensure safe usage.
- Please note that any changes or modifications not approved by the responsible party could void the user's authority to operate the equipment.

Product Usage Instructions

1. Ensure that the product is placed at least 20cm away from your body during operation.
2. Avoid modifying or making any changes to the product without proper approval, as it may affect its compliance and functionality.
3. Do not operate the product in conjunction with any other antenna or transmitter.
4. If you experience any interference issues, try repositioning the product or adjusting its settings.
5. Follow all additional instructions provided in the user manual for optimal performance and safety.

About This Guide

This document is intended to help users set up the basic software development environment for developing applications using hardware based on the T-Internet-POE. Through a simple example, this document illustrates how to use Arduino, including the menu based configuration wizard, compiling the Arduino and firmware download to the ESP32 module.

Introduction

T-Internet-POE

- T-Internet-POE is a development board. It can work independently.
- It consists of ESP32 MCU supporting Wi-Fi + BT+ BLE communication protocol and motherboard PCB.
- It also has hr861153c network port, TF card function.
- For applications ranging from low-power sensor networks to the most demanding tasks.
- At the core of this module is the ESP32-WROOM-32 chip.
- ESP32 integrates Wi-Fi (2.4 GHz band and Bluetooth 4.2 solutions on a single chip, along with dual high performance cores and many other versatile peripherals. Powered by 40 nm technology, ESP32 provides a robust, highly integrated platform to meet the continuous demands for efficient power usage, compact design, security.
- Xinyuan provides the basic hardware and software resources that empowers application developers to build their ideas around the ESP32 series hardware. The software development framework provided by Xinyuan is intended for rapidly developing Internet- of-Things (IoT) applications, with Wi-Fi, Bluetooth, flexible power management and other advanced system features.

Arduino

A set of cross-platform applications written in Java. The Arduino Software IDE is derived from the Processing programming language and the integrated development environment of the Wiring program. Users can develop applications in Windows/Linux/ MacOS based on Arduino. It is recommended to use Windows 10. Windows OS has been used as an example in this document for illustration purposes.

Preparation

To develop applications for ESP32 you need:

- PC loaded with either Windows, Linux or Mac operating system
- Toolchain to build the Application for ESP32
- Arduino that essentially contains API for ESP32 and scripts to operate the Toolchain
- The ESP32 board itself and a USB cable to connect it to the PC

Get Started

Download the Arduino Software

The quickest how to install the Arduino Software (IDE) on Windows machines

1. Quick Start Guide


The website provides a quick start tutorial

- **Windows:** <https://www.arduino.cc/en/Guide/Windows>
- **Linux:** <https://www.arduino.cc/en/Guide/Linux>
- **Mac OS X:** <https://www.arduino.cc/en/Guide/MacOSX>

2. Installation steps for Windows platform Arduino

Enter the download interface, select Windows installer to install directly






Search the Arduino Website

HomeBuyDownloadProductsLearningForumSupportBlogLOG INSIGN UP

DOWNLOADENGLISH

Download the Arduino Software



ARDUINO 1.8.1

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board. Refer to the [Getting Started](#) page for Installation instructions.

Windows Installer
Windows ZIP file for non admin install

Windows app [Get](#)

Mac OS X 10.7 Lion or newer

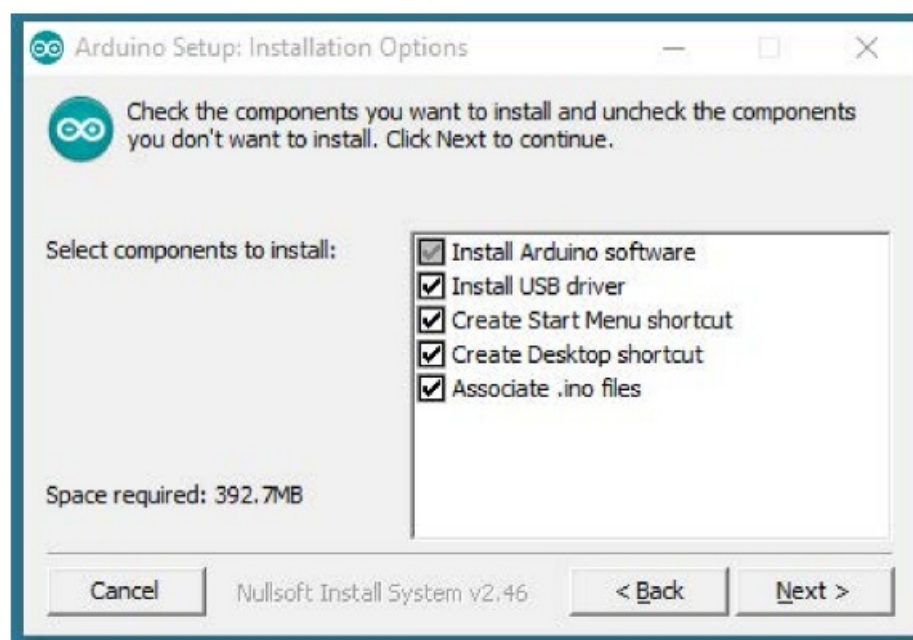
Linux 32 bits
Linux 64 bits
Linux ARM

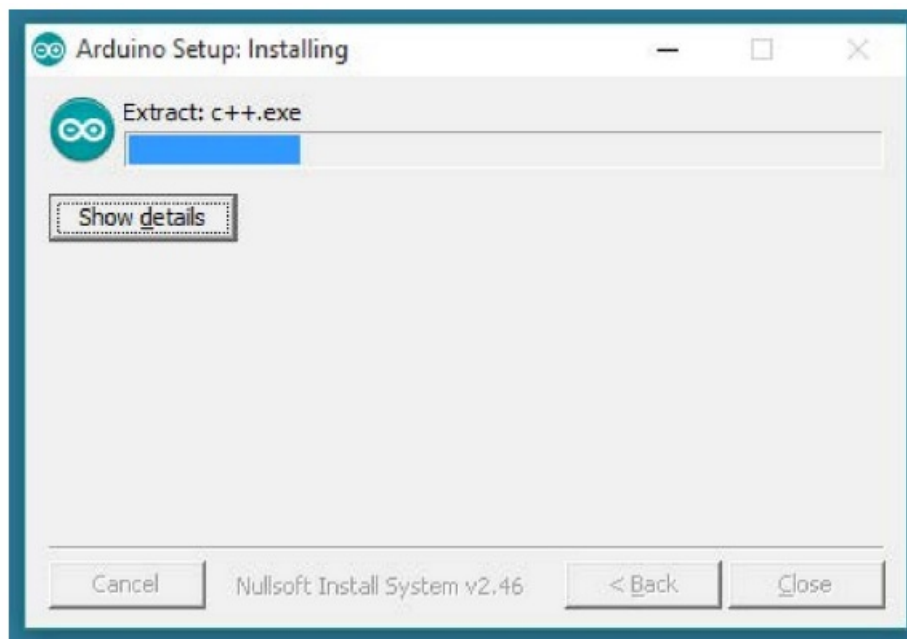
Release Notes
Source Code
Checksums (sha512)

Connect, Collaborate, Create. [Learn more about the Create platform.](#)

Try out the new
Arduino Web Editor

Install the Arduino Software



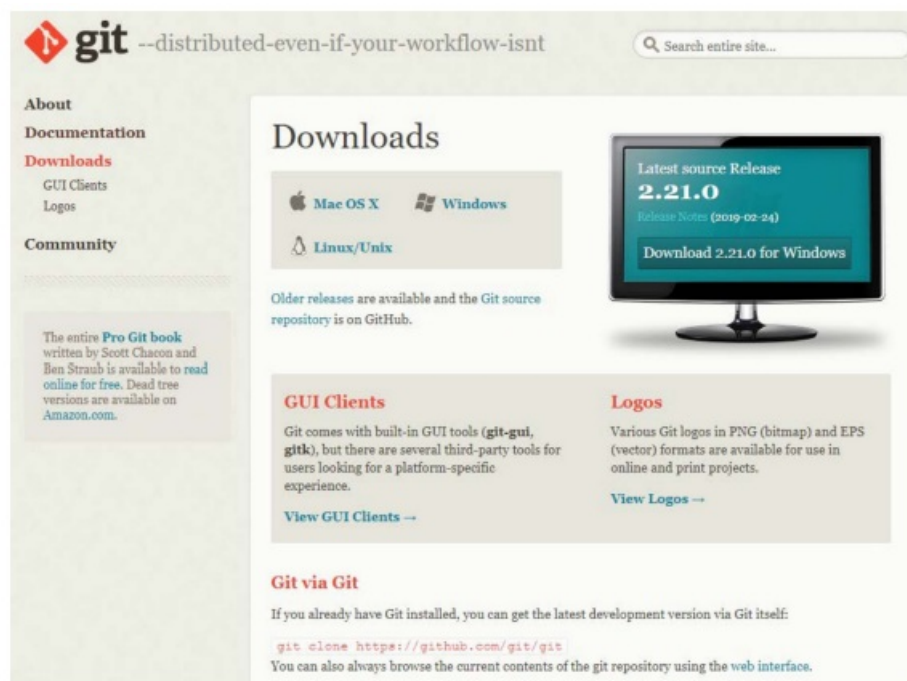


Wait for installation

Configure

Download Git

Download the installation package Git.exe



Pre-build configuration

- Click Arduino icon, then right click and select "Open folder where "
- Select hardware ->
- Mouse ** Right click ** ->
- Click Git Bash Here

Cloning a remote repository

```

$ mkdir espressif

$ cd espressif

$ git clone --recursive https://github.com/espressif/arduino-esp32.git esp32

```

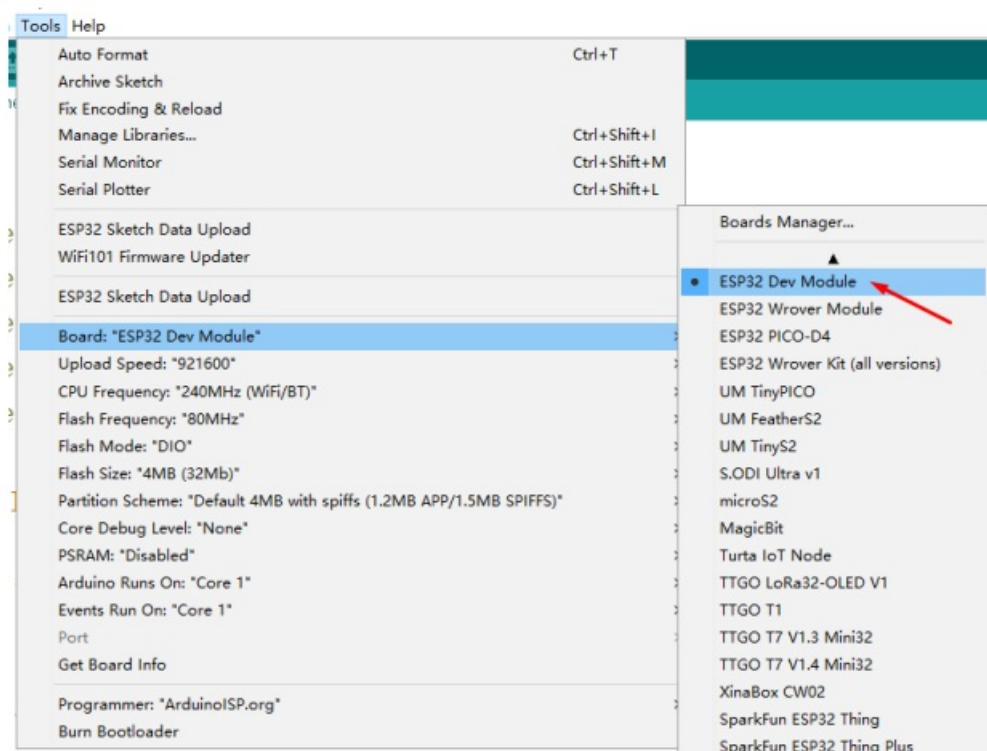
Connect

You are almost there. To be able to proceed further, connect ESP32 board to PC, check under what serial port the board is visible and verify if serial communication works.

Select Board

Select Board

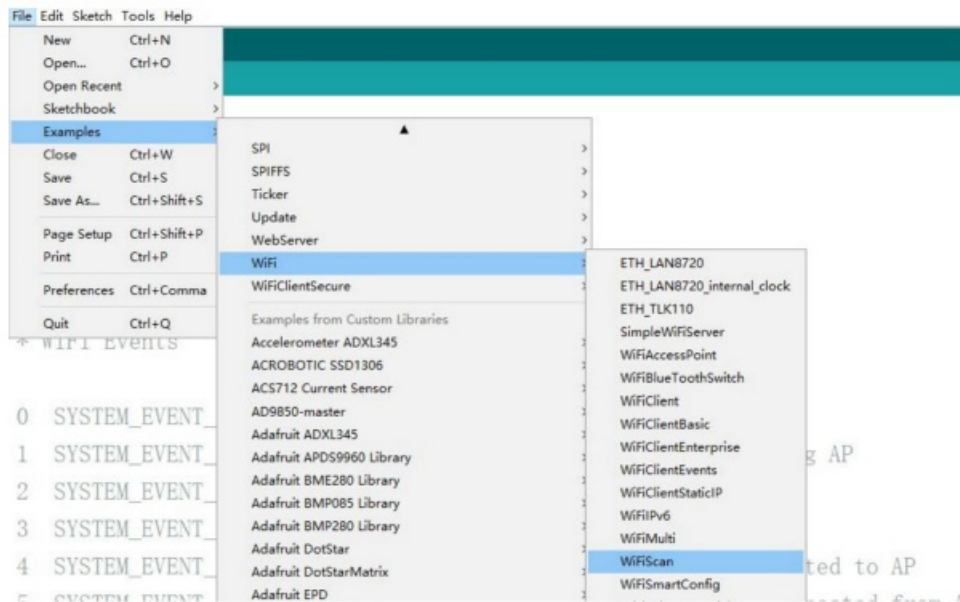
Tools<<Board<<ESP32 Dev Module



Test Demo 1

1. Wi-Fi Test

Select File>>Example>>WiFi>>WiFiScan

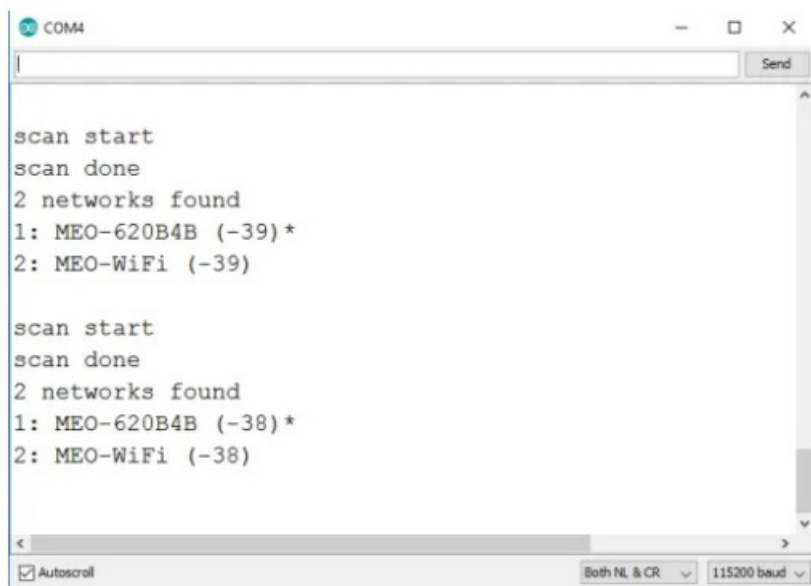


2. Upload

Sketch << Upload

3. Test Result

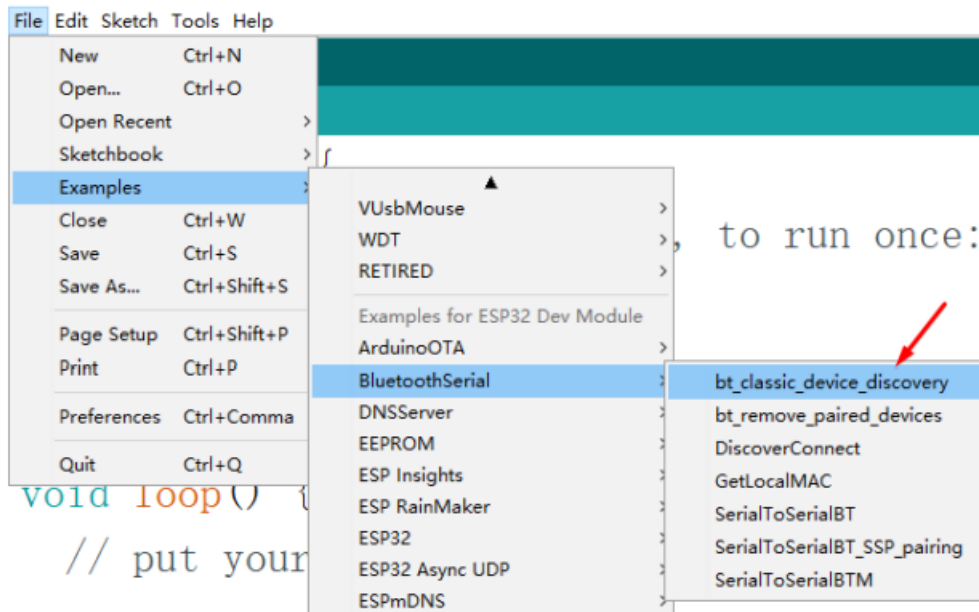
Tools << Serial Monitor



Test Demo 2

1. Bluetooth Test

Select File >> Example >> ESP32 BLE Arduino >> BLE_scan



2. Upload

Sketch >> Upload

3. Test Result

Tools >> Serial Monitor

```
The device started, now you can pair it with bluetooth!
Starting discoverAsync...Findings will be reported in "btAdvertisedDeviceFound"
Found a device asynchronously: Name: Mi, Address: 60:ab:67:72:71:ce, cod: 58987, rssi: -66
Found a device asynchronously: Name: Redmi 9, Address: 94:17:00:d6:0e:0f, cod: 58987, rssi: -88
Found a device asynchronously: Name: , Address: 80:30:49:df:29:2e, cod: 27527, rssi: -98
Found a device asynchronously: Name: OnePlus 10 Pro, Address: 48:74:12:18:1f:58, cod: 58987, rssi: -68
Found a device asynchronously: Name: , Address: ac:73:52:18:c3:c2, cod: 58987, rssi: -86
Stopping discoverAsync... stopped
Starting discover...
>> Dump scan results: 6
- 1: Name: , Address: 48:74:12:18:1f:58, cod: 58987, rssi: -66
- 2: Name: Mi, Address: 60:ab:67:72:71:ce, cod: 58987, rssi: -64
- 3: Name: LAPTOP-U2V0GQ70, Address: 80:30:49:47:2a:a0, cod: 27527, rssi: -84
- 4: Name: Redmi 9, Address: 94:17:00:d6:0e:0f, cod: 58987, rssi: -84
- 5: Name: , Address: ac:73:52:18:c3:c2, cod: 58987, rssi: -84
- 6: Name: , Address: f8:c4:ae:f9:83:54, cod: 58987, rssi: -91
-- Dump finished --
```

SSC Command Reference

Here lists some common Wi-Fi commands for you to test the module.

op

• Description

op commands are used to set and auerv the Wi-Fi mode of the svstem.

• Example

```
op -Q
op -S -o wmode
```

- **Parameter**

Table 6-1. op Command Parameter

Parameter	Description
-Q	Query Wi-Fi mode.
-S	Set Wi-Fi mode.
wmode	There are 3 Wi-Fi modes: <ul style="list-style-type: none"> • mode = 1: STA mode • mode = 2: AP mode • mode = 3: STA+AP mode

Sta

- **Description**

sta commands are used to scan the STA network interface, connect or disconnect AP, and query the connecting status of STA network interface.

- **Example**

```
sta -S [-s ssid] [-b bssid] [-n channel] [-h]
sta -Q
sta -C [-s ssid] [-p password]
sta -D
```

- **Parameter**

Table 6-2. sta Command Parameter

Parameter	Description
-S scan	Scan Access Points.

Parameter	Description
-s ssid	Scan or connect Access Points with the ssid.
-b bssid	Scan the Access Points with the bssid.
-n channel	Scan the channel.
-h	Show scan results with hidden ssid Access Points.
-Q	Show STA connect status.
-D	Disconnected with current Access Points.

ap

- **Description**

ap commands are used to set the parameter of AP network interface.

- **Example**

```
ap -S [-s ssid] [-p password] [-t encrypt] [-n channel] [-h] [-m max_sta]
ap -Q
ap -L
```

- **Parameter**

Table 6-3. ap Command Parameter

Parameter	Description
-S	Set AP mode.
-s ssid	Set AP ssid.
-p password	Set AP password.
-t encrypt	Set AP encrypt mode.
-h	Hide ssid.
-m max_sta	Set AP max connections.
-Q	Show AP parameters.
-L	Show MAC Address and IP Address of the connected station.

mac

- **Description**

mac commands are used to query the MAC address of the network interface.

- **Example**

```
mac -Q [-o mode]
```

- **Parameter**

Table 6-4. mac Command Parameter

Parameter	Description
-Q	Show MAC address.
-o mode	<ul style="list-style-type: none">• mode = 1: MAC address in STA mode.• mode = 2: MAC address in AP mode.

dhcp

- **Description**

dhcp commands are used to enable or disable hop server/client.

- **Example**

```
dhcp -S [-o mode]
dhcp -E [-o mode]
dhcp -Q [-o mode]
```

• Parameter

Table 6-5. dhcp Command Parameter

Parameter	Description
-S	Start DHCP (Client/Server).
-E	End DHCP (Client/Server).
-Q	show DHCP status.
-o mode	<ul style="list-style-type: none"> mode = 1 : DHCP client of STA interface. mode = 2 : DHCP server of AP interface. mode = 3 : both.

ip

• Description

ip command are used to set and query the IP address of the network interface.

• Example

```
ip -Q [-o mode]
ip -S [-i ip] [-o mode] [-m mask] [-g gateway]
```

• Parameter

Table 6-6. ip Command Parameter

Parameter	Description
-Q	Show IP address.
-o mode	<ul style="list-style-type: none"> mode = 1 : IP address of interface STA. mode = 2 : IP address of interface AP. mode = 3 : both
-S	Set IP address.
-i ip	IP address.
-m mask	Subnet address mask.
-g gateway	Default gateway.

reboot

• Description

reboot command is used to reboot the board.

• Example

reboot

ram

ram command is used to query the size of the remaining heap in the system.

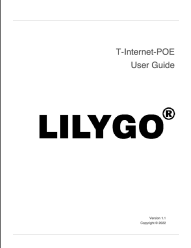
Example

ram

FCC NOTE

- Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1)
- This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- **Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Documents / Resources

	LILYGO T-Internet-POE Ethernet Adapter [pdf] User Guide 2ASYE-T-POE, 2ASYETPOE, T-Internet-POE, T-Internet-POE Ethernet Adapter, Ethernet Adapter, Adapter
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