LILYGO T-Encoder Pro User Guide

Manualsum, simplified manuals

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Shenzhen Xin Yuan Electronic Technology T-Encoder pro User Manual

LILYGO®

About This Guide

This document is intended to help users set up the basic software development environment for developing app using hardware based on the T-Encoder pro. 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-S3 module.

Introduction

T-Encoder pro

T-Encoder pro is a development board. It can work independently.

It consists of ESP32-S3 MCU supporting Wi-Fi + BLE communication protocol and motherboard PCB. The screen is 2.04 inch AMOLED.

ESP32-S3 integrates Wi-Fi (2.4 GHz band) and Bluetooth 5.0 solutions on a single chip, along with dual high performance cores and many other versatile peripherals. Powered by 40 nm technology, ESP32-S3 provides a robust, highly integrated platform to meet the continuous demands for efficient power usage, compact design, security, high performance, and reliability.

Xinyuan provides the basic hardware and software resources that empowers application developers to build their ideas around the ESP32-S3 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.

The T-Encoder pro manufacturer is Xin Yuan Electronic Technology Co., Ltd.

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-S3 you need:

- PC loaded with either Windows, Linux or Mac operating system
- Toolchain to build the Application for ESP32-S3
- Arduino that essentially contains API for ESP32-S3 and scripts to operate the Toolchain
- The ESP32-S3 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

Quick Start Guide

The website provides a quick start tutorial

- Windows:

  https://www.arduino.cc/en/Guide/Windows

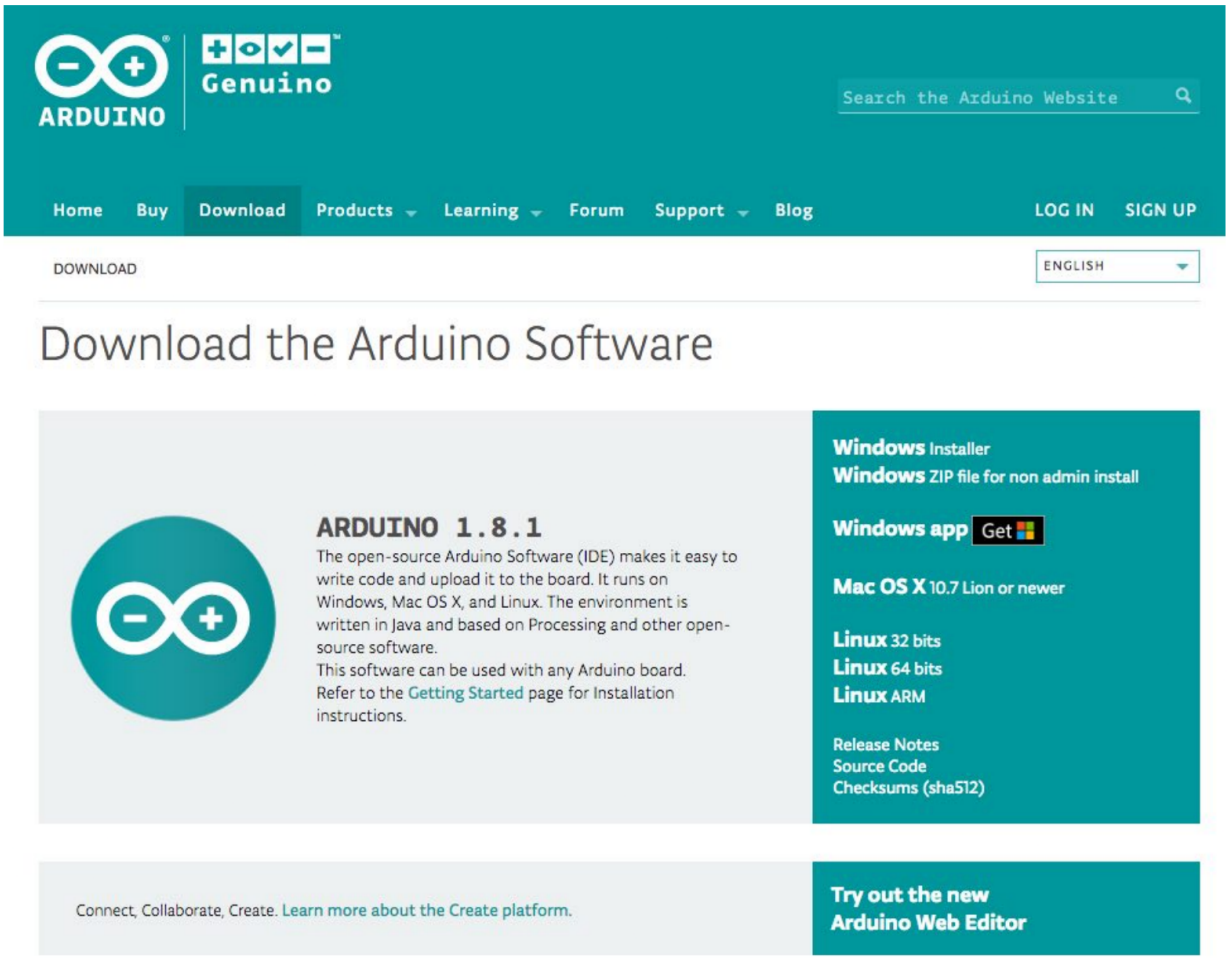
- Linux:

  https://www.arduino.cc/en/Guide/Linux

- Mac OS X:

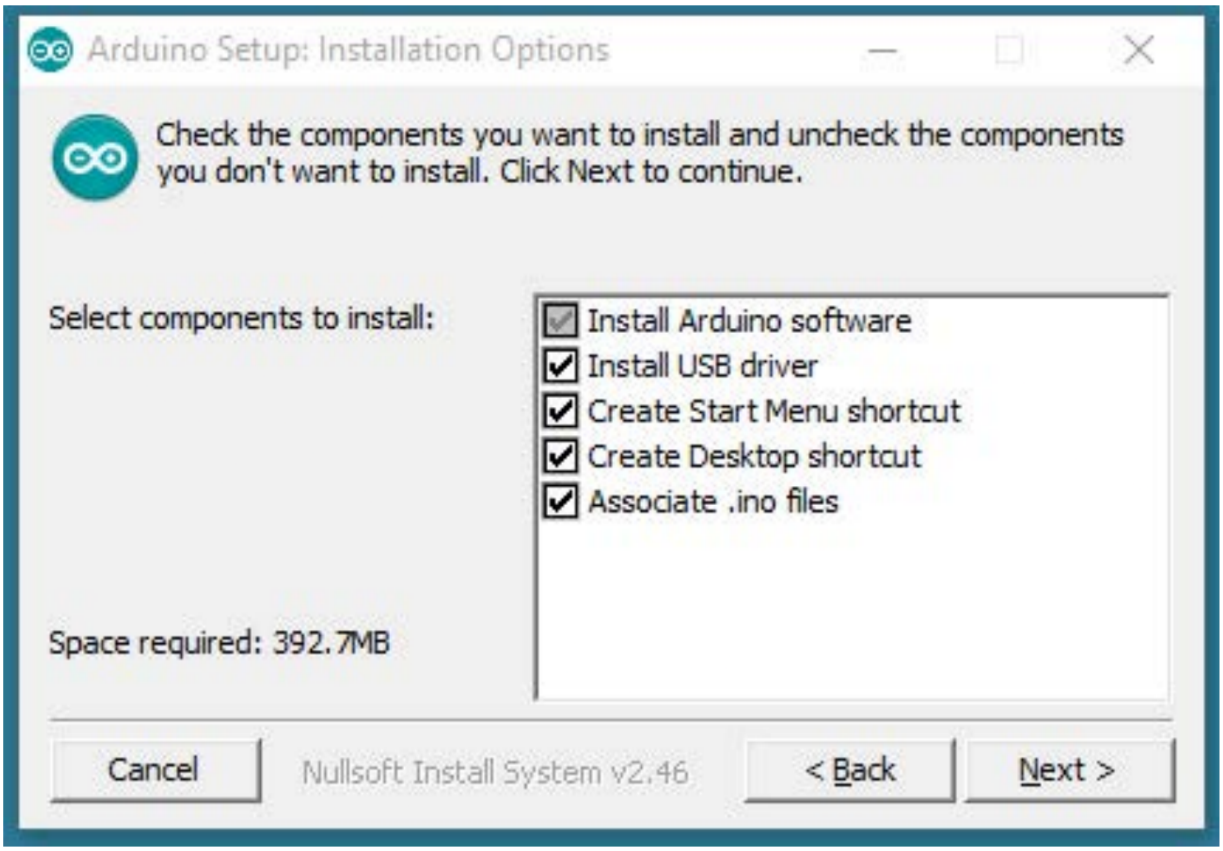
  https://www.arduino.cc/en/Guide/MacOSX

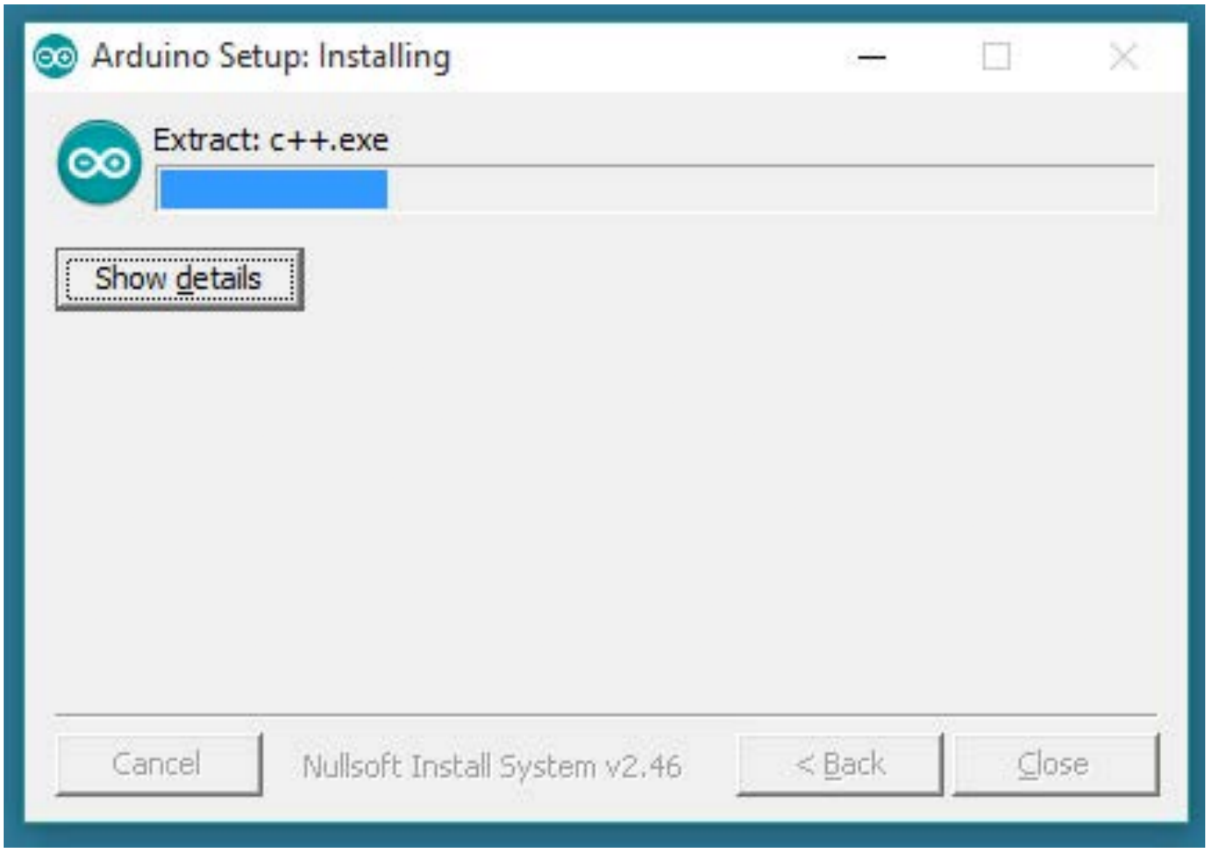
Installation steps for Windows platform Arduino



Enter the download interface, select **Windows installer** to install directly

Install the Arduino Software



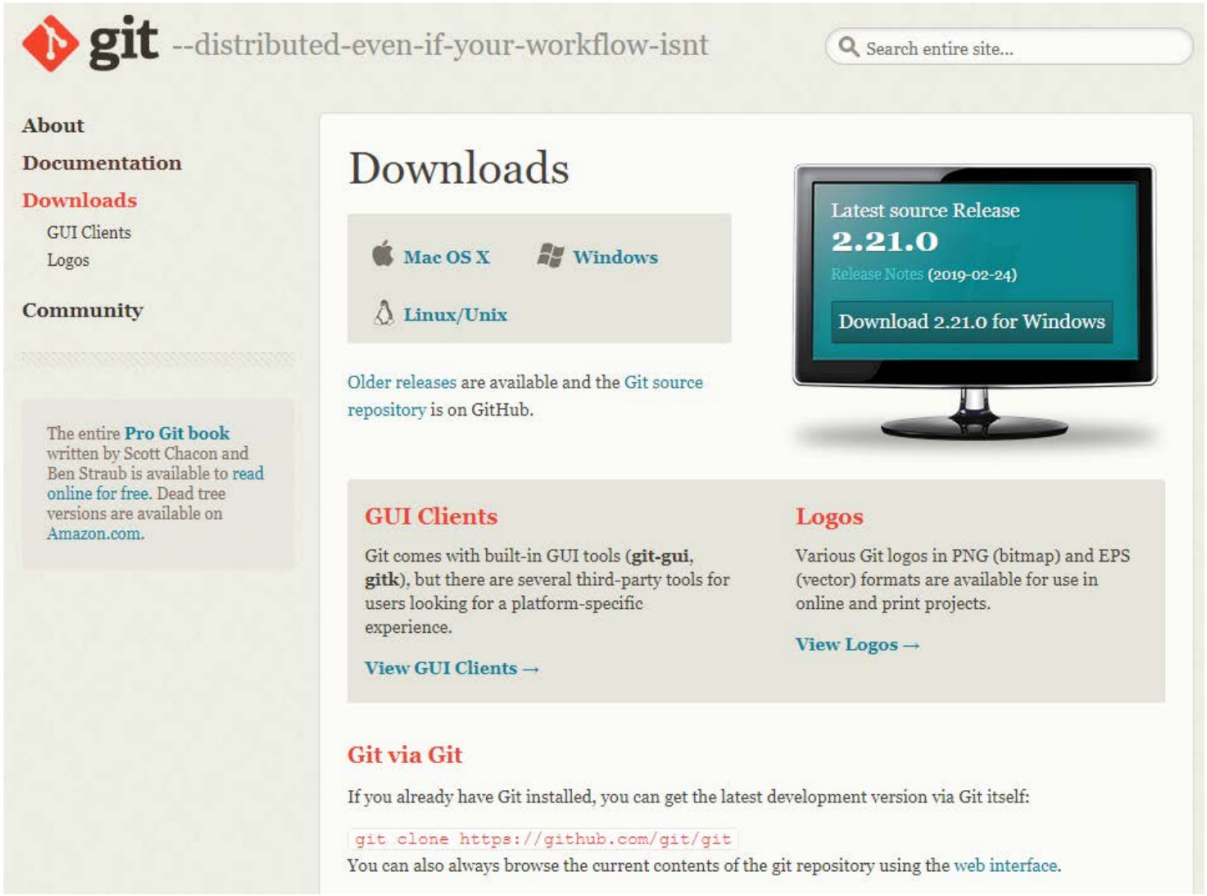


Wait for installation

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

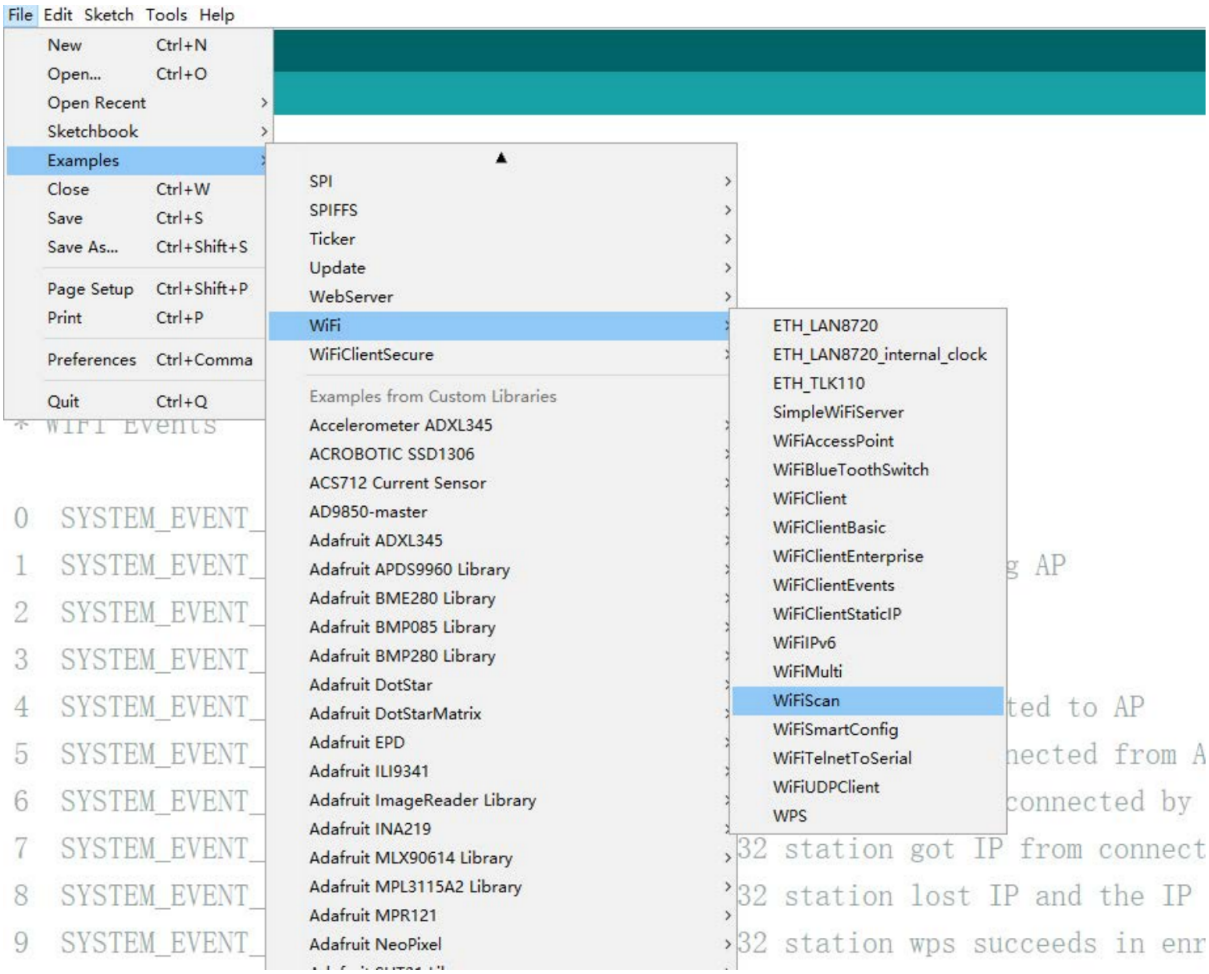
$ git clone –recursive https://github.com/espressif/arduino-esp32.git esp32

You are almost there. To be able to proceed further, connect ESP32-S3 board to PC, check under what serial port the board is visible and verify if serial communication works.

After connecting USB to power on. The screen can directly display the electronic label for 3 seconds.

Test Demo

Select File>>Example>>WiFi>>WiFiScan



Upload Sketch

Select Board

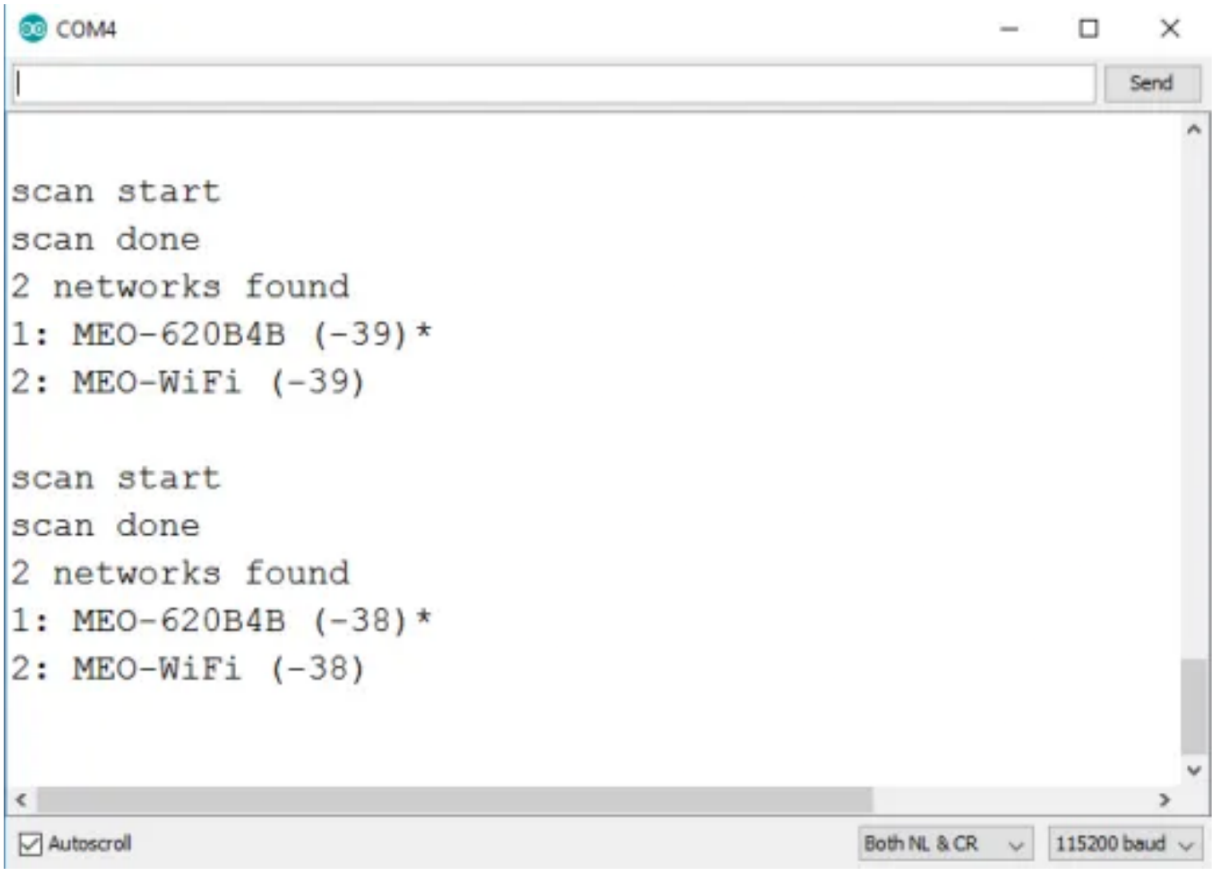
Tools -> Board -> ESP32S3 Dev Module

Upload

Sketch -> Upload

Serial Monitor

Tools ->Serial Monitor



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 query the Wi-Fi mode of the system.

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.
wmdoe	There are 3 Wi-Fi modes: • 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.
-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 stutus.
-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	• mode = 1: MAC address in STA mode. • mode = 2: MAC address in AP mode.

dhcp

Description

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

Example

dchp -S [-o0 mode]

dhcp -E [-0 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	• 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	• 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.

ram