# **ESP32-C3 USER GUIDE**

## **SUPPORT**

If you require assistance, please feel free to contact us at tourdeuscs@gmail.com.

### **OVERVIEW**

The ESP32 development board is designed based on the ESP32-C3 chip from Espressif Systems.

It has a small form factor and stamp hole design, making it convenient for developers to use. The board supports multiple interfaces, including UART, GPIO, SPI, I2C, ADC, and PWM, and is ideal for mobile devices, wearable electronics, and IoT applications with low-power performance.

It can function as a standalone system or peripheral device to the main MCU, providing Wi-Fi and Bluetooth functions through SPI/SDIO or I2C/UART interfaces.

#### **ON BOARD RESOURCE**

- This development board has one SPI flash with 4MB storage capacity, which can be expanded up to 16MB.
- It features 2 UART interfaces, UARTO and UART1, with UARTO serving as the download port.
- There is a 5-channel 12-bit ADC on this board, with a maximum sampling rate of 100KSPS.
- A low-speed SPI interface is also included in master mode.
- There is an IIC controller on this board.
- It has 4 PWM interfaces that can use any GPIO.
- There are 15 external GPIO pins that can be multiplexed.
- Additionally, it includes two SMD LED indicators, a reset button, a BOOT button, and a USB to TTL download debug port.





## **DIMENSIONS** (CLICK FOR DETAILS)

## 0.83 INCHES



## **2.01 INCHES**



## NOTES ON USE

- To avoid the ESP32 from entering download mode, the BOOT (IO09) pin should not be pulled down before powering up.
- It is not recommended to externally pull down the IO08 pin when designing, as this may prevent downloading via serial port when the pin is low during the download and burning process.
- In QIO mode, IO12 (GPIO12) and IO13 (GPIO13) are multiplexed for SPI signals SPIHD and SPIWP, but for increased GPIO availability, the development board uses 2-wire SPI in DIO mode, and as such, IO12 and IO13 are not connected to flash. When using self-compiled software, flash must be configured to DIO mode accordingly.
- Since the VDD of the external SPI flash is already connected to the 3.3V power supply system, there is no requirement for additional power supply configuration, and it can be accessed using the standard 2-wire SPI communication mode.
- By default, GPIO11 serves as the VDD pin of the SPI flash, and thus requires configuration before it can be utilized as a GPIO.

## SCHEMATIC

Please click the following link for reference. <u>https://cdn.openluat-luatcommunity.openluat.com/attachment/20220609213416069\_CORE-ESP32-A12.pd</u> f

# **DEVELOPMENT ENVIRONMENT CONFIGURATION**

Note: The following development system is Windows by default.

#### **ARDUINO**

NOTE: Please ensure that you have uninstalled any previous versions of the ESP32 package before using this installation package.

You can do this by navigating to the folder "%LOCALAPPDATA%/Arduino15/packages" in the file manager, and deleting the folder named "esp32".

1. Open the official software download webpage, and choose the corresponding system and system bits to download.

## Downloads



2. You can choose "Just Download", or "Contribute & Download".



- 3. Run to install the program and install it all by default.
- 4. Install arduino-esp32
- Find the "espressif/arduino-esp32" repository on GitHub and click on the "Installing" link.

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pressif / arduino-esp32	Public Search and find the "espressif/arduino-esp32" repository on GitHub.	D Watch 474 → 😵 Fork 6.6k → 🏠 Star 10.4k →
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₽ master - ₽ 11 branches	s 🛇 42 tags Go to file 🛛 Add file 👻 🔷	Code - About
		Arduino core for the ESP32
VojtechBartoska Add v2.0.7	in issue template (#7871)	commits arduino esp32 platformio esp-idf
.github	Add v2.0.7 in issue template (#7871) la	st month
cores/esp32	WString Fix int64_t (#7765) la	st month LGPL-2.1 license
docs	fixed the function header (#7674) la	st month 😵 Code of conduct
ibraries	WiFiUDP:parsePacket() Crashfix (#7847) la	st month 0 10.4k stars
package	Support JTAG debugging in Arduino IDE 2.0 (#7295) 3 mc	onths ago 9 6.6k forks
tests	Added TOUCH test sketch + test script (#7413) 4 mc	onths ago
tools	Expand path to tinuf2 image when checking existence in platformio-bui la	st month Releases 41
variants	Updated pins_arduino.h and board.txt of Deneyap Development Boards ( la	st month
	ConsulTAG files only if it's anabled in the board manu (#7655) 2 ms	on Feb 20
Latest Development Releas	e release v2.0.7 release date february downloads@latest 198k	
Development Plannir Our Development is fully tr	1 <b>g</b> racked on this public Roadmap 🏂	
For even more information	you can take a look at Sprint Meeting notes or join Monthly Community Mee	tings
Documentation		
You can use the Arduino-Es	SP32 Online Documentation to get all information about this project.	
Getting Started		
Installing (Windows, Li	nux and macOS)	
Libraries		
Arduino as an ESP-IDF	component	
• FAQ		
<ul><li>FAQ</li><li>Troubleshooting</li></ul>		
• FAQ • Troubleshooting Supported Chips		

• Look for a URL named development release link and copied.

Troublesh Contribut

E First Steps	This is the way to install Arduino-ESP32 directly from the Arduino IDE.
How to Install	0 Note
Before Installing Installing using Arduino IDE Installing using PlatformIO	For overview of SoC's support, take a look on Supported Soc's table where you can find if the particular chip is under stable or development release.
Windows (manual installation) Linux	Stable release link:
macOS Development Boards	https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.js
Examples	Development release link:

macOS	рани и полити и полит
Development Boards	https://raw.githubusercontent.com/espressit/arduino-esps2/gn-pages/package_esp32_index.json
Examples	Development release link:
Datasheet	ß
Resources	https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_dev_index.350
ibraries	( )
Guides	Note
utorials	Starting with the Arduine IDE version 1.6.4. Arduine allows installation of third party platform
dvanced Utilities	packages using Boards Manager. We have packages available for Windows, macOS, and Linux.
AQ	Frankos
roubleshooting	To start the installation process using the Boards Managaer, follow these steps:
Contributing	
	- Install the surront upstream Arduine IDE at the 1.9 level or later. The surront version is at the

In the Arduino IDE, click on File > Preferences > Additional boards manager URLs and add the URL that you found in step 2.

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Automatic 100 %
Light (Arduino) 🗸
English V (Reload required)
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All 🗸
s https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_e

• Now, go back to Boards Manager and install the "ESP32" package.

File	Edit Sketch Tools Help	
	ESP32C3 Dev Module -	
P	BOARDS MANAGER	
-	ESP32	
Ē	Type: All	
	esp32 by Espressif Systems Version 2.0.6	IT.
	SparkFun ESP32 MicroMod, Noduino Quantum, Adafruit QT Py ESP32, BPI-Leaf-S3, Franzininho W ESP32 PICO D4, Nana32, WT32 ETH01 Ethornet Medule, ATMoraZora ESP32 S2, Boo Mation Mic	ViFi,

- After installation, select Tools > Board and choose "ESP32C3 Dev Module" from the list.
- Finally, change the flash mode to DIO by going to Tools > Flash Mode, and change USB CDC on Boot to Enable.

Your ESP32 setup is now ready to go! To test it, you can run a demonstration program to ensure everything is working correctly.