Getting Started

About Arduino ESP32

Welcome to the Arduino ESP32 support documentation! Here you will find important information on how to use the project.

First Things First

Note

Before continuing, we must be clear that this project is supported by Espressif Systems and the community. Everyone is more than welcome to contribute back to this project.

ESP32 is a single 2.4 GHz Wi-Fi-and-Bluetooth SoC (System On a Chip) designed by Espressif Systems.

ESP32 is designed for mobile, wearable electronics, and Internet-of-Things (IoT) applications. It features all the state-of-the-art characteristics of low-power chips, including fine-grained clock gating, multiple power modes,and dynamic power scaling. For instance, in a low-power IoT sensor hub application scenario, ESP32 is woken-up periodically and only when a specified condition is detected. Low-duty cycle is used to minimize the amount of energy that the chip expends.

The output of the power amplifier is also adjustable, thus contributing to an optimal trade-off between communication range, data rate and power consumption.

The ESP32 series is available as a chip or module.

Supported SoC's

Here are the ESP32 series supported by the Arduino-ESP32 project:

SoC	Stable	Development	Datasheet
ESP32	Yes	Yes	ESP32

SoC	Stable	Development	Datasheet
ESP32-C3	Yes	Yes	ESP32-C3
ESP32-C6	Yes	Yes	ESP32-C6
ESP32-H2	Yes	Yes	ESP32-H2
ESP32-P4	Yes	Yes	ESP32-P4
ESP32-S2	Yes	Yes	ESP32-S2
ESP32-S3	Yes	Yes	ESP32-S3

Note

ESP32-C2 is also supported by Arduino-ESP32 but requires using Arduino as an ESP-IDF component or rebuilding the static libraries. For more information, see the Arduino as an ESP-IDF component documentation or the Lib Builder documentation, respectively.

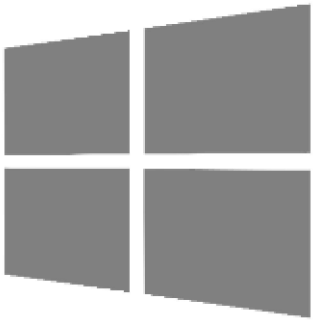
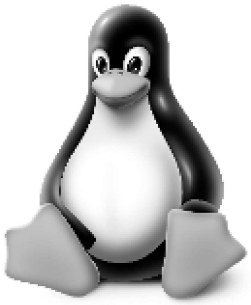
See Boards for more details about ESP32 development boards.

Arduino Core Reference

This documentation is built on the ESP32 and we are not going to cover the common Arduino API. To see the Arduino reference documentation, please consider reading the official documentation.

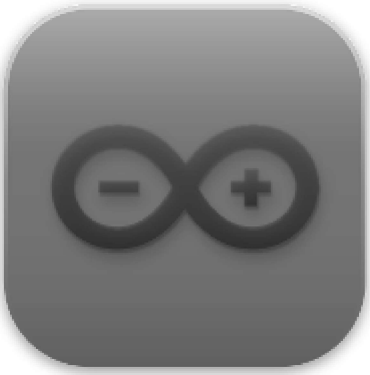
Arduino Official Documentation: Arduino Reference.

Supported Operating Systems

		
Windows	Linux	macOS

Supported IDEs

Here is the list of supported IDE for Arduino ESP32 support integration.



Arduino IDE

See Installing Guides for more details on how to install the Arduino ESP32 support.

Support

This is an open project and it's supported by the community. Fell free to ask for help in one of the community channels.

Community

The Arduino community is huge! You can find a lot of useful content on the Internet. Here are some community channels where you may find information and ask for some help, if needed.

- ESP32 Forum: Official Espressif Forum.
- ESP32 Forum - Arduino: Official Espressif Forum for Arduino related discussions.
- ESP32 Forum - Hardware: Official Espressif Forum for Hardware related discussions.
- Espressif Developer Portal: Official Espressif Developer Portal with tutorials, examples, workshops, and more.
- Arduino Core for Espressif (Discord): Official Espressif Discord channel for the Arduino Core.
- Espressif MCUs (Discord)
- ESP32 on Reddit

Issues Reporting

Before opening a new issue, please read this:

Be sure to search for a similar reported issue. This avoids duplicating or creating noise in the GitHub Issues reporting. We also have the troubleshooting guide to save your time on the most common issues reported by users.

For more details about creating new Issue, see the Issue Template.

If you have any new idea, see the Feature request Template.

First Steps

Here are the first steps to get the Arduino ESP32 support running.

To install Arduino-ESP32, please see the dedicated section on the Installation guide. We recommend you install it using the boards manager.

Examples

After installing the toolchain into your environment, you will be able to see all the dedicated examples for the ESP32. These examples are located in the examples menu or inside each library folder.

> https://github.com/espressif/arduino-esp32/tree/master/libraries

There is also a list of examples managed outside of Espressif, so check them out.

Datasheet

- ESP32 (Datasheet)
- ESP32-C2 (Datasheet)

- ESP32-C3 (Datasheet)
- ESP32-C6 (Datasheet)
- ESP32-H2 (Datasheet)
- ESP32-P4 (Datasheet)
- ESP32-S2 (Datasheet)
- ESP32-S3 (Datasheet)

Resources