

Software

Firmware Burning

[Beginner's Guide to Flashing Firmware](#)

For beginners, it is recommended to directly use the development free environment burning tool, without the need to set up a complex environment. The configuration can be completed in three steps:

1. Download the flashing tool (ESP32S3 FLASH DOWNLOAD TOOL V3.9.8) and the corresponding firmware.
2. Follow the tutorial to select the port (default COM port), baud rate (115200), and firmware file (refer to address 0x0 for the corresponding address).
3. Click "**START**" to begin flashing and wait for the progress to complete.

Development Environment

- Development Tools: Cursor or VSCode
- Essential Plugins: ESP-IDF plugin (recommended version 5.4+)
- System Requirements: Linux (recommended for fast compilation speed and no driver issues) / Windows 10+ / macOS 12+
- Code Specifications: Follow Google C++ code style; must pass code inspection tools before submission.
- Dependency Management: Use pip to manage Python dependencies and CMake to manage C++ project builds.

Core Protocol Documents

- [Complete MQTT Protocol Description](#) - Learn the communication specifications between devices and the platform.
- [WebSocket Streaming Conversation Interface Document](#) - Master the implementation method of real-time voice conversations.
- [Custom Development Board Guide](#) - Development tutorial for adapting to exclusive hardware.
- [Device Control Coding Manual](#) - Understand control command coding and function mapping.
- [Multilingual Configuration Instructions](#) - Configure the language types supported by the device.