



STM32StepByStep:STM32 step by step overview



A quality version of this page, approved on 20 July 2021, was based off this revision.



STM32 step-by-step is designed for anyone interested in getting started on building projects with the STM32 microcontroller and its powerful ecosystem of development boards and software programming tools.

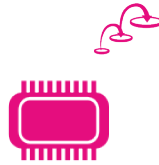
Whether you are an experienced embedded programmer or an enthusiastic beginner, learn in 5 tutorials from the basics of the STM32 ecosystem installation to advanced software development with sensors, UART messages and Bluetooth communication.

If you want to extend your knowledge, try advanced steps on various topics such as **motor control**, **analog**...

Start now and quickly become a professional STM32 developer!



1 STM32 basic



STM32 microcontrollers basic

Find the academic and basic knowledge for microcontrollers.





2 STM32 step by step



Step 1: Tools installation and first test

Install the main tools to program STM32 and run a first example:

1. Install STM32CubeMX
2. Install STM32CubeIDE
3. Install STM32CubeProg
4. Download STM32CubeL4 Firmware package
5. Launch STM32CubeIDE in debug mode and run my first program



Step 2: Blinking LED with STM32CubeMX and HAL

Learn how to use STM32CubeMX tool to configure the pins, start the peripherals, build and generate your starting projects with initialization C code using HAL:

1. Create New Project using STM32CubeMX
2. Pinout Configuration
3. Clock Configuration
4. GPIO Configuration
5. Configure project and generate source Code
6. Edit main.c to Toggle the LED
7. Build the Project
8. Debug the Project



Step 3: UART and new board introduction

Learn how to get trace on UART and go further with a new board.

1. Introduction to the UART I/F on NUCLEO-L476RG
2. Introduction to the UART I/F on B-L475E-IOT01A (IoT Node)



Step 4: Sensors usage with B-L475E-IOT01A

The purpose of this tutorial is to explain how to get measurements using sensors available in the STM32L4 Discovery kit: a step-by-step configuration for a temperature sensor of B-L475E-IOT01A will be described.

1. Sensors usage with B-L475E-IOT01A
 - 1.1 Hardware description
 - 1.2 Example: Get temperature values using the HTS221 sensor and display them on a terminal
2. Appendix: Porting an AC6 example to STM32CubeIDE
 - 2.1 Hardware description
 - 2.2 Example: Get temperature values using the HTS221 sensor and display them on terminal (Porting from AC6 to STM32CubeIDE)



Step 5: Build an IOT system

This tutorial shows how to program and use the Bluetooth interface to perform data communication between the STM32L4 Discovery kit IoT node (B-L475E-IOT01A) and an Android application running on a mobile.

1. Import and convert the HeartRate project from the STM32Cube package
 2. Build and execute the HeartRate Project
 3. Install the Android application on a mobile
 4. Connect to the IoT node
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3 STM32 step by step advance



Advance analog tutorial

In this tutorial, learn how to capture, filter and record sound with a **STM32F769I-DISCO** board. Go further and apply the cross correlation algorithm in order to estimate the direction of the sound.



Advance MotorControl tutorial

In this tutorial, learn how to install and use **ST Profiler / STM32 Motor Control SDK** and increase your skills by running an engine.



4 Go further

STM32 CubeMCU Packages

STM32Cube_MCU_Package

Go further with STM32Cube MCU Package. Use examples, libraries, helps are available and embedded on STM32 MCU Package



Development zone

Get help to start developing applications and share projects



Software tools

For a first contact with the tools