

# STM32 Starter Kit

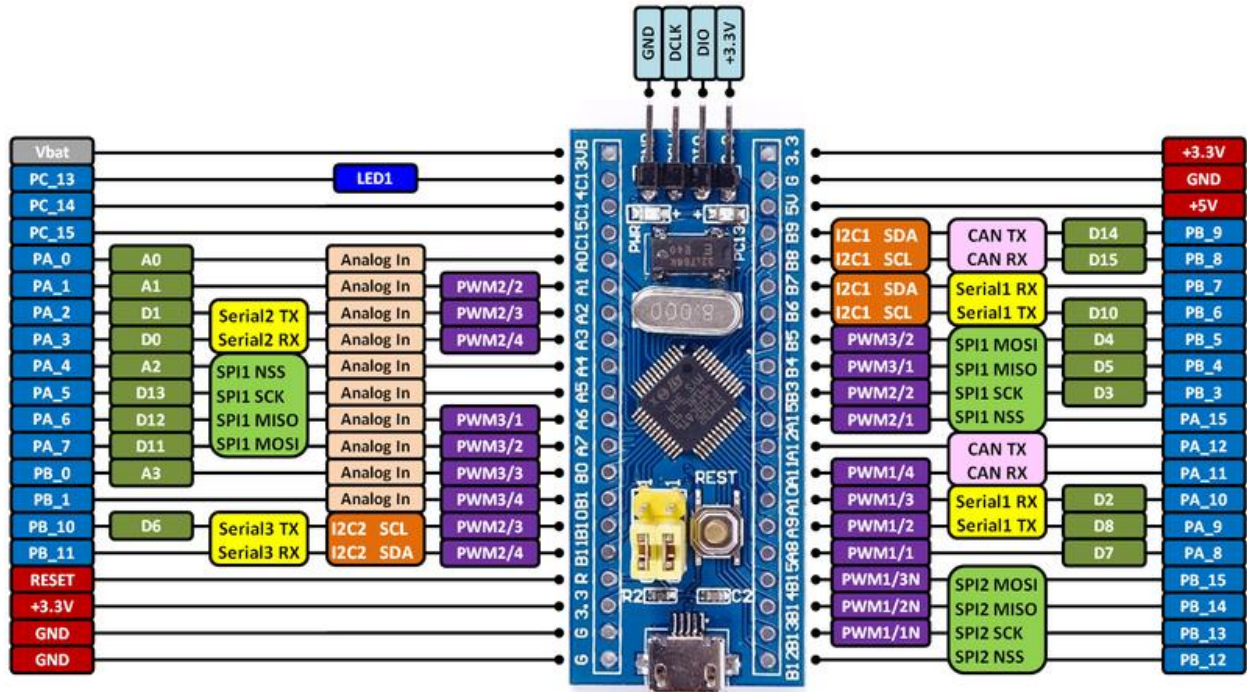
This document details the STM32 Starter Kit parts and components. This will be used as a design reference for the PCB and Components assembly.

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# 1. STM32 Microcontroller

The STM32F103 Bluepill will be used



## 2. GPIO Digital Inputs

Digital inputs include the following

- User/Wakeup push button
- Tamper push button
- Joystick push button (indirect)
- Slide switch x2

STM32 pinouts table:

Functionality	STM32 pin	Comments
User/Wakeup	PA0	
Tamper	PC13	
Joystick	PB3	
Slide Switch 1	PA8	
Slide Switch 2	PA15	

### 3. GPIO Digital Outputs

We have 4 digital outputs, 4 LEDs.

Functionality	STM32 pin	Comments
LED1 - Green	PB13	TIM1-CH1N: OC Output
LED2 - Red	PB14	TIM1-CH2N: OC Output

## 4. Analog Inputs

We have 3 Analog inputs; Potentiometer, 2-axis joystick, and an electret microphone

Functionality	STM32 pin	Comments
Potentiometer	PA1	
Joystick - x	PA2	
Joystick – y/Electret Mic	PA3	This pin is shared between Microphone and Joystick - y

## **5. Boot configuration**

Add a push button to hold Boot-0 pin high momentarily while reset. Have boot pin connector to PCB via jumper wire.

We require Boot-0 pin to be jumped to PCB via a single wire, then have a button that pulls it high momentarily. Also have an adjacent reset button.

## 6. Counter Display

A 4-bit 7-segment of a cool color will be used as a counter display and for displaying RTC Time.



The following are the required pinouts:

Functionality	STM32 pin	Comments
CLK	PB10	I2C but without Slave Address
DIO	PB11	

## 7. RGB LED

RGB LED is used to demonstrate PWM functionality. The following are its pinouts:

Functionality	STM32 pin	Comments
<b>R</b>	PB4	TIM3_CH1 PWM
<b>G</b>	PB5	TIM3_CH2
<b>B</b>	PB0	TIM3_CH3



## 8. Rotary Encoder

Rotary encoder will be used to demonstrate the TIM-IC capability. The following are the required pinouts:

Functionality	STM32 pin	Comments
A	PB6	TIM4_CH1
B	PB7	TIM4_CH2

## 9. TTL To USB Converter

TTL to USB converter will be used to enable PC VCP.

Functionality	STM32 pin	Comments
<b>RXD</b>	PA9	USART1_TX
<b>TXD</b>	PA10	USART1_RX

## 10. RFID Module

RFID is an SPI device. The following are its pinouts:

Functionality	STM32 pin	Comments
CS	PA4	
SCK	PA5	Shared with SD Card
MOSI	PA7	
MISO	PA6	

## 11. MPU6050 IMU

The IMU sensor is used to demonstrate I2C functionality. The following are its pinouts:

Functionality	STM32 pin	Comments
SCL	PB8	
SDA	PB9	
INT	PB12	

## 12. SD Card

SD Card is connected through SPI, shared with RFID interface SPI. The following are the pinouts:

Functionality	STM32 pin	Comments
SPI_SCK	PA5	SPI is shared with RFID
SPI_MISO	PA6	
SPI_MOSI	PA7	
SPI_CS	PB1	