

The Blue Pill is a development board based on ST Microelectronics' STM32F103C9T6 microcontroller that has an **ARM Cortex-M3** core that runs at 72MHz max. Software libraries are available that allow users to program the chip using the [Arduino](#) IDE.

STM32F103C8T6 Blue Pill Pin Configuration

Category	Pin Name	Details
Power	3.3V, 5V, GND	<ul style="list-style-type: none"> 3.3V – Regulated output voltage from the onboard regulator (drawing current is not recommended), can also be used to supply the chip. 5V from USB or onboard regulator can be used to supply the onboard 3.3V regulator. GND – Ground pins
Analog Pins	PA0 – PA7 PB0 – PB1	Pins act as ADCs with 12-bit resolution
Input/output pins	PA0 – PA15 PB0 – PB15 PC13 – PC15	37 General-purpose I/O pins.
Serial	TX1, RX1 TX2, RX2 TX3, RX3	UART with RTS and CTS pins
External interrupts	PA0 – PA15 PB0 – PB15 PC13 – PC15	All digital pins have interrupt capability
PWM	PA0 – PA3 PA6 – PA10 PB0 - PB1 PB6 – PB9	15 PWM pins total
SPI	MISO0, MOSI0, SCK0, CS0 MISO1, MOSI1, SCK1, CS0	2 SPI
Inbuilt LED	PC13	LED to act as a general-purpose GPIO indicator
I²C	SCL1, SDA1 SCL2, SDA2	Inter-Integrated Circuit communication ports
CAN	CAN0TX, CAN0RX	CAN bus ports

STM32F103C8T6 Technical Specifications

Microcontroller	STM32F103C8T6
Operating voltage	3.3V
Analog inputs	10
Digital I/O pins	37
DC source/sink from I/O pins	6mA
Flash memory (KB)	64/128
SRAM	20KB
Frequency (clock speed)	72MHz max.
Communication	I ² C, SPI, UART, CAN, USB

Understanding Blue Pill

The Blue Pill is a 32-bit **Arduino compatible development board** that features the STM32F103C8T6, a member of the STM32 family of ARM Cortex-M3 core microcontrollers. This board aims to bring the **32-bit ARM core microcontrollers** to the hobbyist market with the Arduino style form factor.

Powering your Blue Pill:

There are three ways of powering your Blue Pill development board:

- Using the built-in USB micro connector.
- Supplying 5V to the 5V pin as external supply.
- Supplying 3.3V directly to the 3.3V pin.

Input/Output:

The Blue Pill has 37 GPIO pins spread across four ports – A and B (16 pins), C (3 pins) and D (2 pins). Each pin has a current sink/source ability of 6mA. Pull-up and pull-down resistors can be enabled on each of the pins.

Most pins have extra functionality as well:

- Serial ports – receive and transmit data via the UART protocol
- I²C ports – two-wire communication via the IIC protocol
- SPI – serial communication
- PWM
- Pin 13 has a built-in LED

These special functions and their respective pins are illustrated in the **Blue Pill pin diagram** shown above.

How to Use the STM32 Development Board?

The Blue Pill can be programmed in two ways –

- Using an external USB/Serial converter connected to UART1 pins, which is the default bootloader for this family of boards. It can be programmed using the Arduino software this way.
- STLink USB Dongle – this uses the single-wire debug interface to communicate with the board. This allows it to be programmed using advanced software like Keil/CubeMX. It also allows memory access using the STLink software.

Before programming, it is important to connect the BOOT0 jumper to 1 and press the reset button to put the chip in 'programming mode'.

LEGEND

POWER
GROUND
PHYSICAL PIN
PIN NAME
CONTROL
ANALOG
TIMER & CHANNEL
USART
SPI
I2C
CAN BUS
USB
MISC
BOARD HARDWARE
• 5V tolerant
□ Not 5V tolerant
~ FMM pin
— Alternate function
— PC13, PC14, PC15: Sink max 3mA, source 0mA, max 2MHz, max 30pF
Absolute MAX 150mA total source/sink for entire CPU
Max ±20mA per pin, ±8mA recommended

THE GENERIC STM32F103 PINOUT DIAGRAM

