1. Description

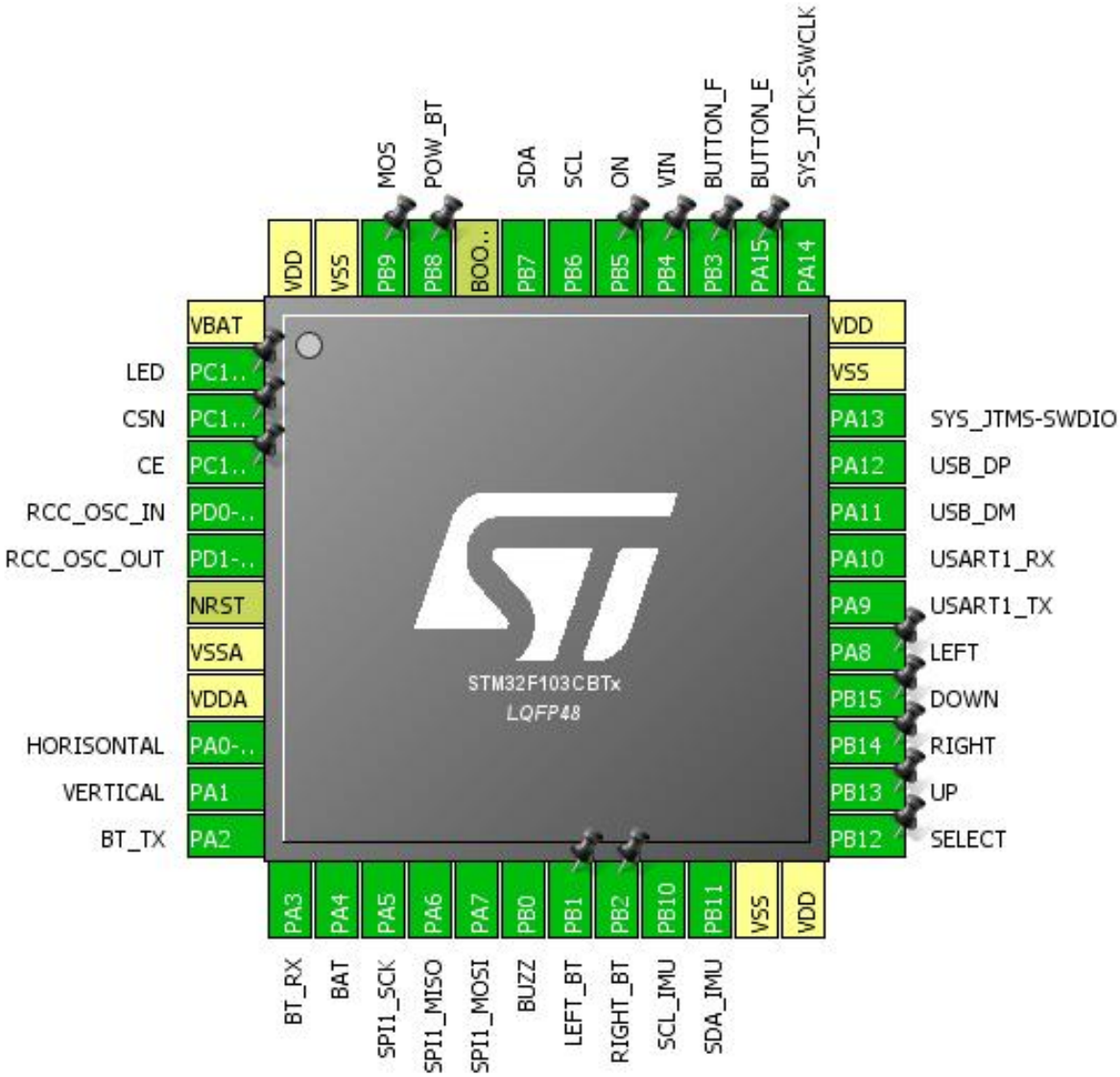
1.1. Project

Project Name	stm
Board Name	No information
Generated with:	STM32CubeMX 4.24.0
Date	03/05/2020

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103CBTx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration



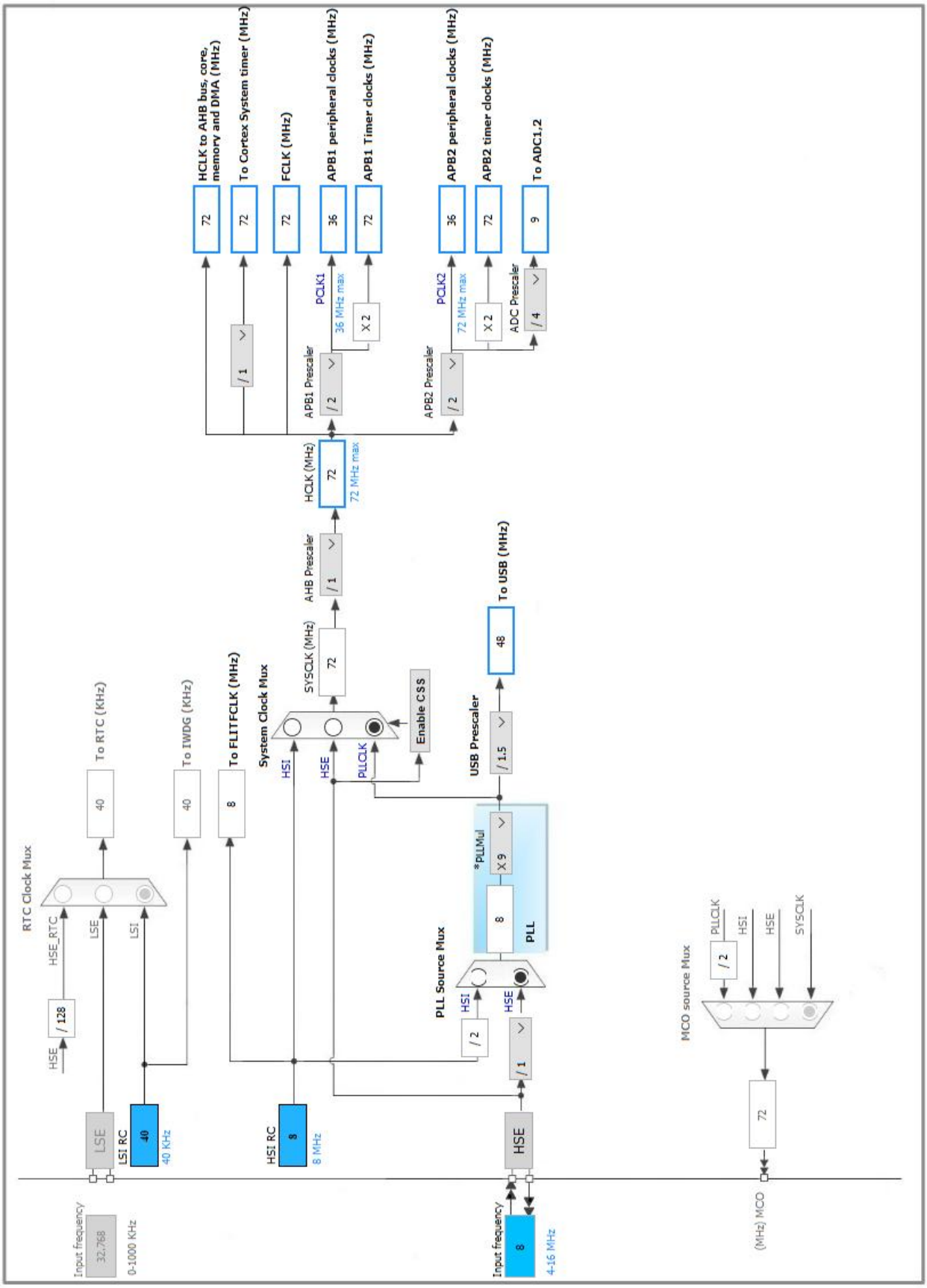
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC *	I/O	GPIO_Output	LED
3	PC14-OSC32_IN *	I/O	GPIO_Output	CSN
4	PC15-OSC32_OUT *	I/O	GPIO_Output	CE
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0-WKUP	I/O	ADC1_IN0	HORISONTAL
11	PA1	I/O	ADC1_IN1	VERTICAL
12	PA2	I/O	USART2_TX	BT_TX
13	PA3	I/O	USART2_RX	BT_RX
14	PA4	I/O	ADC1_IN4	BAT
15	PA5	I/O	SPI1_SCK	
16	PA6	I/O	SPI1_MISO	
17	PA7	I/O	SPI1_MOSI	
18	PB0	I/O	TIM3_CH3	BUZZ
19	PB1 *	I/O	GPIO_Input	LEFT_BT
20	PB2 *	I/O	GPIO_Input	RIGHT_BT
21	PB10	I/O	I2C2_SCL	SCL_IMU
22	PB11	I/O	I2C2_SDA	SDA_IMU
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Input	SELECT
26	PB13 *	I/O	GPIO_Input	UP
27	PB14 *	I/O	GPIO_Input	RIGHT
28	PB15 *	I/O	GPIO_Input	DOWN
29	PA8 *	I/O	GPIO_Input	LEFT
30	PA9	I/O	USART1_TX	
31	PA10	I/O	USART1_RX	
32	PA11	I/O	USB_DM	
33	PA12	I/O	USB_DP	
34	PA13	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
37	PA14	I/O	SYS_JTCK-SWCLK	
38	PA15 *	I/O	GPIO_Input	BUTTON_E
39	PB3 *	I/O	GPIO_Input	BUTTON_F
40	PB4 *	I/O	GPIO_Input	VIN
41	PB5 *	I/O	GPIO_Output	ON
42	PB6	I/O	I2C1_SCL	SCL
43	PB7	I/O	I2C1_SDA	SDA
44	BOOT0	Boot		
45	PB8 *	I/O	GPIO_Input	POW_BT
46	PB9 *	I/O	GPIO_Output	MOS
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: IN0

mode: IN1

mode: IN4

5.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
Rank	1
Channel	Channel 0
Sampling Time	1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.2. I2C1

I2C: I2C

5.2.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

Slave Features:

Clock No Stretch Mode	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0
General Call address detection	Disabled

5.3. I2C2

I2C: I2C

5.3.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

Slave Features:

Clock No Stretch Mode	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0
General Call address detection	Disabled

5.4. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.4.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

5.5. SPI1

Mode: Full-Duplex Master

5.5.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**18.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.6. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.7. TIM3

Channel3: PWM Generation CH3

5.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

5.8. USART1

Mode: Asynchronous

5.8.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

5.9. USART2

Mode: Asynchronous

5.9.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

5.10. USB

mode: Device (FS)

5.10.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Endpoint 0 Max Packet size	8 Bytes

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled
Battery Charging	Disabled

5.11. USB_DEVICE

Class For FS IP: Human Interface Device Class (HID)

5.11.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SUPPORT_USER_STRING (Enable user string descriptor)	Disabled
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

5.11.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	STMicroelectronics

Device Descriptor FS:

PID (Product IDentifier)	22315
PRODUCT_STRING (Product Identifier)	STM32 Human interface
SERIALNUMBER_STRING (Serial number)	00000000001A

CONFIGURATION_STRING (Configuration Identifier)	HID Config
INTERFACE_STRING (Interface Identifier)	HID Interface

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA0-WKUP	ADC1_IN0	Analog mode	n/a	n/a	HORISONTAL
	PA1	ADC1_IN1	Analog mode	n/a	n/a	VERTICAL
	PA4	ADC1_IN4	Analog mode	n/a	n/a	BAT
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	SCL
	PB7	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	SDA
I2C2	PB10	I2C2_SCL	Alternate Function Open Drain	n/a	**High ***	SCL_IMU
	PB11	I2C2_SDA	Alternate Function Open Drain	n/a	**High ***	SDA_IMU
RCC	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	n/a	**High ***	
	PA6	SPI1_MISO	Input mode	No pull-up and no pull-down	**n/a**	
	PA7	SPI1_MOSI	Alternate Function Push Pull	n/a	**High ***	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM3	PB0	TIM3_CH3	Alternate Function Push Pull	n/a	Low	BUZZ
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	**High ***	
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	**n/a**	
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	**High ***	BT_TX
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	BT_RX
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PC13-TAMPER-RTC	GPIO_Output	Output Push Pull	n/a	Low	LED
	PC14-OSC32_IN	GPIO_Output	Output Push Pull	n/a	Low	CSN
	PC15-	GPIO_Output	Output Push Pull	n/a	Low	CE

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	OSC32_OUT					
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	LEFT_BT
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RIGHT_BT
	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SELECT
	PB13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	UP
	PB14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RIGHT
	PB15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DOWN
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	LEFT
	PA15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BUTTON_E
	PB3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BUTTON_F
	PB4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	VIN
	PB5	GPIO_Output	Output Push Pull	n/a	Low	ON
	PB8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	POW_BT
	PB9	GPIO_Output	Output Push Pull	n/a	Low	MOS

6.2. DMA configuration

nothing configured in DMA service

6.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Prefetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
System service call via SWI instruction	true	0	0
Debug monitor	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
USB low priority or CAN RX0 interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		
USB high priority or CAN TX interrupts	unused		
TIM3 global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
I2C2 event interrupt	unused		
I2C2 error interrupt	unused		
SPI1 global interrupt	unused		
USART1 global interrupt	unused		
USART2 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103CBTx
Datasheet	13587_Rev17

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Pack Report