1. Description

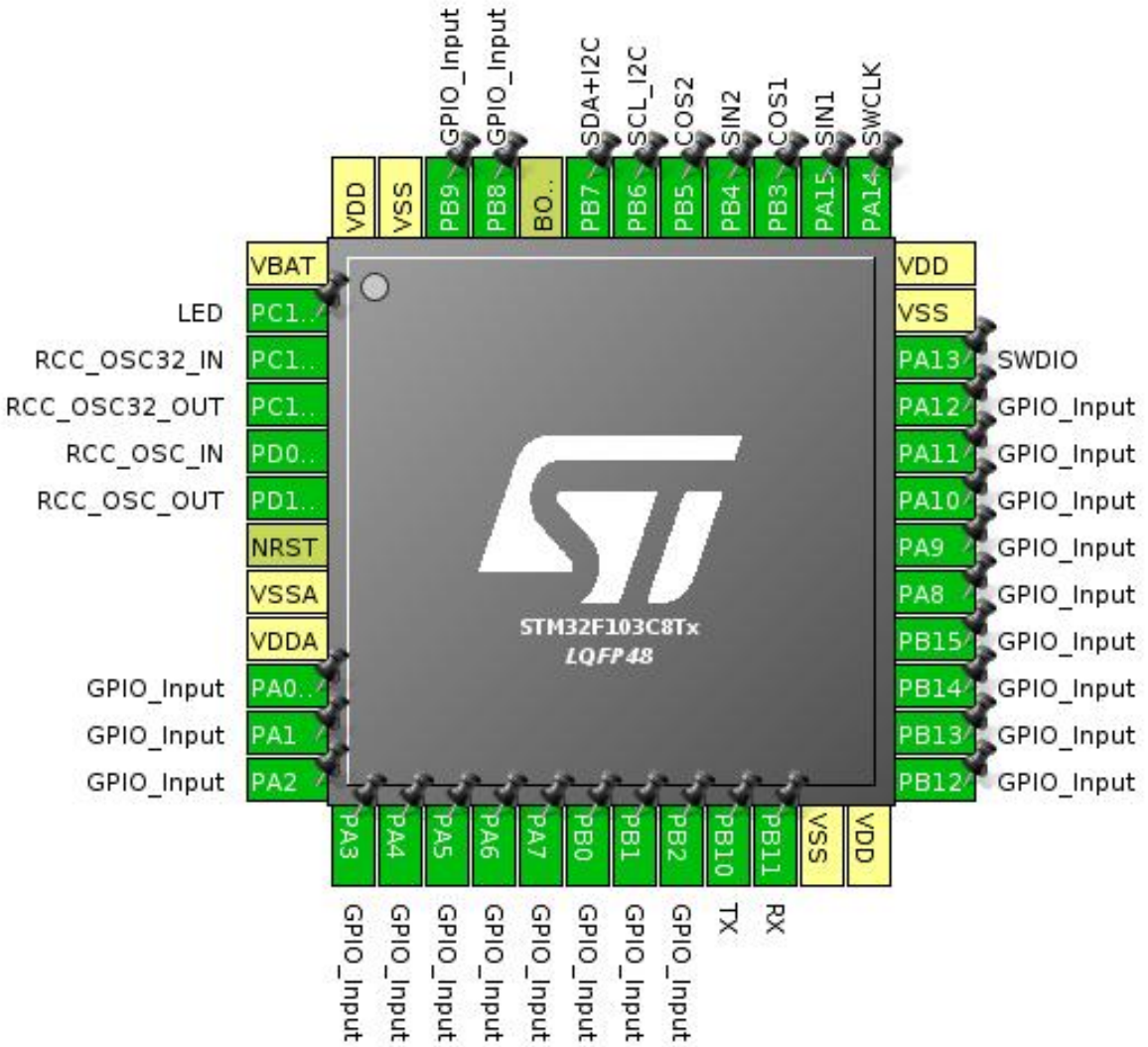
1.1. Project

Project Name	nucleo-103
Board Name	nucleo-103
Generated with:	STM32CubeMX 4.17.0
Date	12/17/2016

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103C8Tx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration



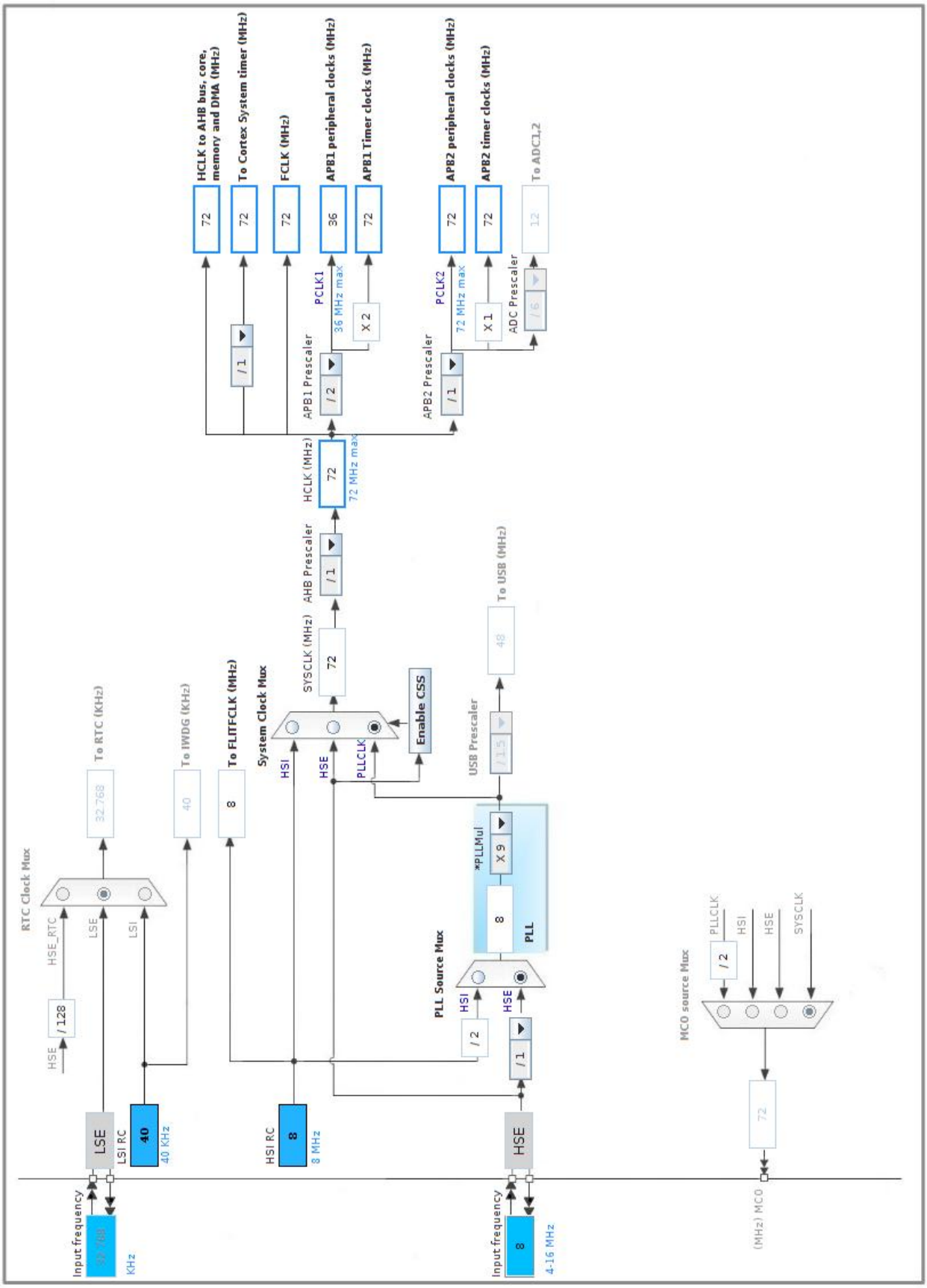
3. Pins Configuration

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	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
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	GPIO_Input	
11	PA1 *	I/O	GPIO_Input	
12	PA2 *	I/O	GPIO_Input	
13	PA3 *	I/O	GPIO_Input	
14	PA4 *	I/O	GPIO_Input	
15	PA5 *	I/O	GPIO_Input	
16	PA6 *	I/O	GPIO_Input	
17	PA7 *	I/O	GPIO_Input	
18	PB0 *	I/O	GPIO_Input	
19	PB1 *	I/O	GPIO_Input	
20	PB2 *	I/O	GPIO_Input	
21	PB10	I/O	USART3_TX	TX
22	PB11	I/O	USART3_RX	RX
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Input	
26	PB13 *	I/O	GPIO_Input	
27	PB14 *	I/O	GPIO_Input	
28	PB15 *	I/O	GPIO_Input	
29	PA8 *	I/O	GPIO_Input	
30	PA9 *	I/O	GPIO_Input	
31	PA10 *	I/O	GPIO_Input	
32	PA11 *	I/O	GPIO_Input	
33	PA12 *	I/O	GPIO_Input	
34	PA13	I/O	SYS_JTMS-SWDIO	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	SWCLK
38	PA15	I/O	TIM2_CH1	SIN1
39	PB3	I/O	TIM2_CH2	COS1
40	PB4	I/O	TIM3_CH1	SIN2
41	PB5	I/O	TIM3_CH2	COS2
42	PB6	I/O	I2C1_SCL	SCL_I2C
43	PB7	I/O	I2C1_SDA	SDA+I2C
44	BOOT0	Boot		
45	PB8 *	I/O	GPIO_Input	
46	PB9 *	I/O	GPIO_Input	
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. I2C1

I2C: I2C

5.1.1. Parameter Settings:

Master Features:

I2C Speed Mode	**Fast Mode ***
I2C Clock Speed (Hz)	**100000 ***
Fast Mode Duty Cycle	Duty cycle Tlow/Thigh = 2

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

5.2. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator
Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.2.1. 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

5.3. SYS

Debug: Serial Wire

Timebase Source: TIM1

5.4. TIM2

Combined Channels: Encoder Mode

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**65535 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Encoder:

Encoder Mode	**Encoder Mode TI2 ***
____ Parameters for Channel 1 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	**10 ***
____ Parameters for Channel 2 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	**10 ***

5.5. TIM3

Combined Channels: Encoder Mode

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0

Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**65535 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Encoder:

Encoder Mode	**Encoder Mode TI2 ***
____ Parameters for Channel 1 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	**5 ***
____ Parameters for Channel 2 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	**5 ***

5.6. TIM4

mode: Clock Source

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**60000 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**120 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.7. USART3

Mode: Asynchronous

5.7.1. 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

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	SCL_I2C
	PB7	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	SDA+I2C
RCC	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
TIM2	PA15	TIM2_CH1	Input mode	**Pull-down ***	n/a	SIN1
	PB3	TIM2_CH2	Input mode	**Pull-down ***	n/a	COS1
TIM3	PB4	TIM3_CH1	Input mode	**Pull-down ***	n/a	SIN2
	PB5	TIM3_CH2	Input mode	**Pull-down ***	n/a	COS2
USART3	PB10	USART3_TX	Alternate Function Push Pull	n/a	**High ***	TX
	PB11	USART3_RX	Input mode	No pull-up and no pull-down	**n/a**	RX
GPIO	PC13-TAMPER-RTC	GPIO_Output	**Output Open Drain ***	n/a	Low	LED
	PA0-WKUP	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA1	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA2	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA3	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA4	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA5	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA6	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA7	GPIO_Input	Input mode		n/a	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
				Pull-down *		
	PB0	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB1	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB2	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB12	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB13	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB14	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB15	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA8	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA9	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA10	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA11	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PA12	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB8	GPIO_Input	Input mode	**Pull-down ***	n/a	
	PB9	GPIO_Input	Input mode	**Pull-down ***	n/a	

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
TIM1 update interrupt	true	0	0
TIM2 global interrupt	true	0	0
TIM3 global interrupt	true	0	0
TIM4 global interrupt	true	0	0
USART3 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103C8Tx
Datasheet	13587_Rev17

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	nucleo-103
Project Folder	/home/baygozin/projects/nucleo-103
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F1 V1.4.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	Yes
Backup previously generated files when re-generating	No
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No