1. Description

1.1. Project

Project Name	source
Board Name	source
Generated with:	STM32CubeMX 4.21.0
Date	10/10/2018

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103RCTx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration
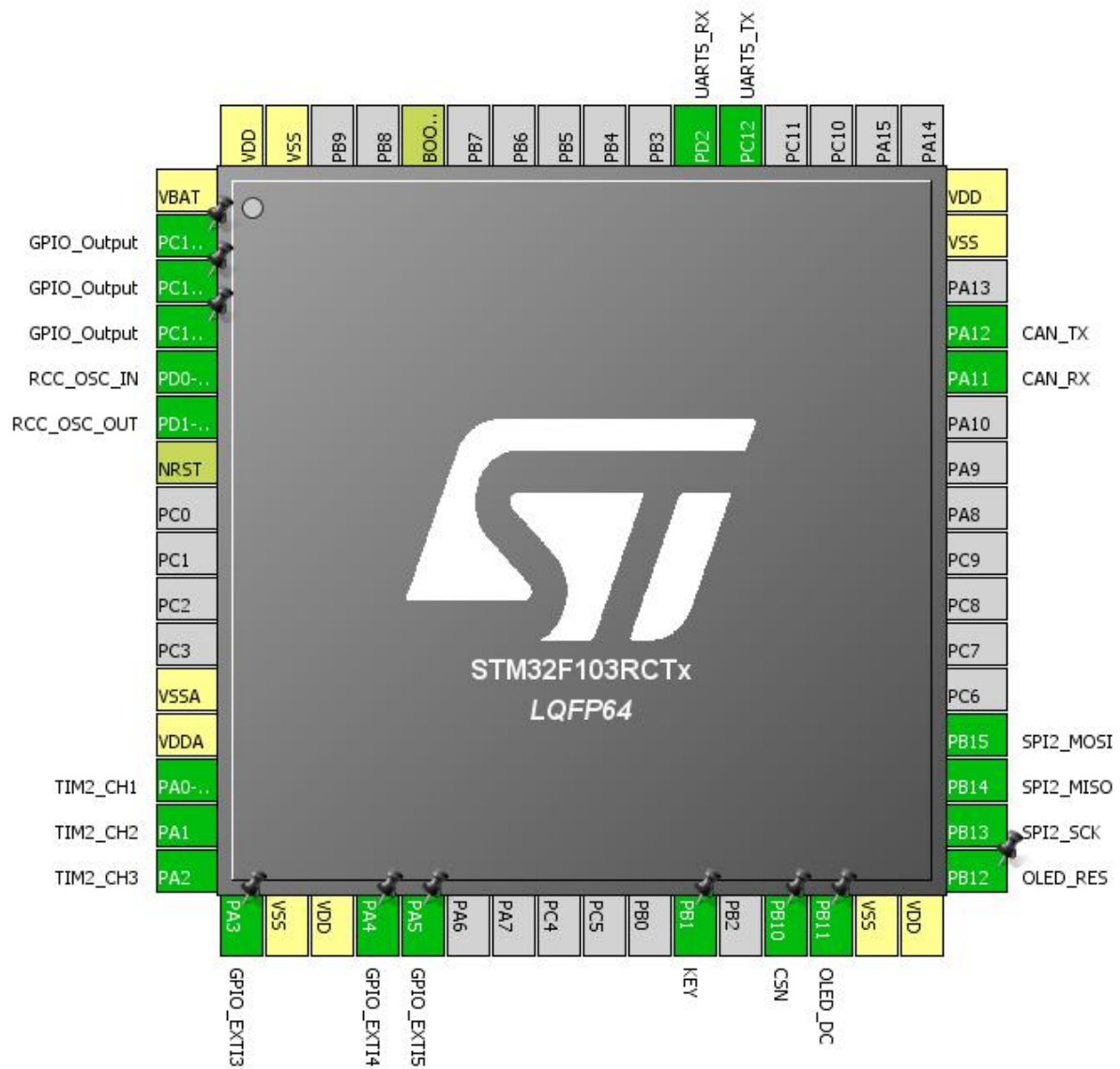
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC *	I/O	GPIO_Output	
3	PC14-OSC32_IN *	I/O	GPIO_Output	
4	PC15-OSC32_OUT *	I/O	GPIO_Output	
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
12	VSSA	Power		
13	VDDA	Power		
14	PA0-WKUP	I/O	TIM2_CH1	
15	PA1	I/O	TIM2_CH2	
16	PA2	I/O	TIM2_CH3	
17	PA3	I/O	GPIO_EXTI3	
18	VSS	Power		
19	VDD	Power		
20	PA4	I/O	GPIO_EXTI4	
21	PA5	I/O	GPIO_EXTI5	
27	PB1 *	I/O	GPIO_Input	KEY
29	PB10 *	I/O	GPIO_Output	CSN
30	PB11 *	I/O	GPIO_Output	OLED_DC
31	VSS	Power		
32	VDD	Power		
33	PB12 *	I/O	GPIO_Output	OLED_RES
34	PB13	I/O	SPI2_SCK	
35	PB14	I/O	SPI2_MISO	
36	PB15	I/O	SPI2_MOSI	
44	PA11	I/O	CAN_RX	
45	PA12	I/O	CAN_TX	
47	VSS	Power		
48	VDD	Power		
53	PC12	I/O	UART5_TX	
54	PD2	I/O	UART5_RX	
60	BOOT0	Boot		
63	VSS	Power		
64	VDD	Power		

 * The pin is affected with an I/O function

4. Clock Tree Configuration
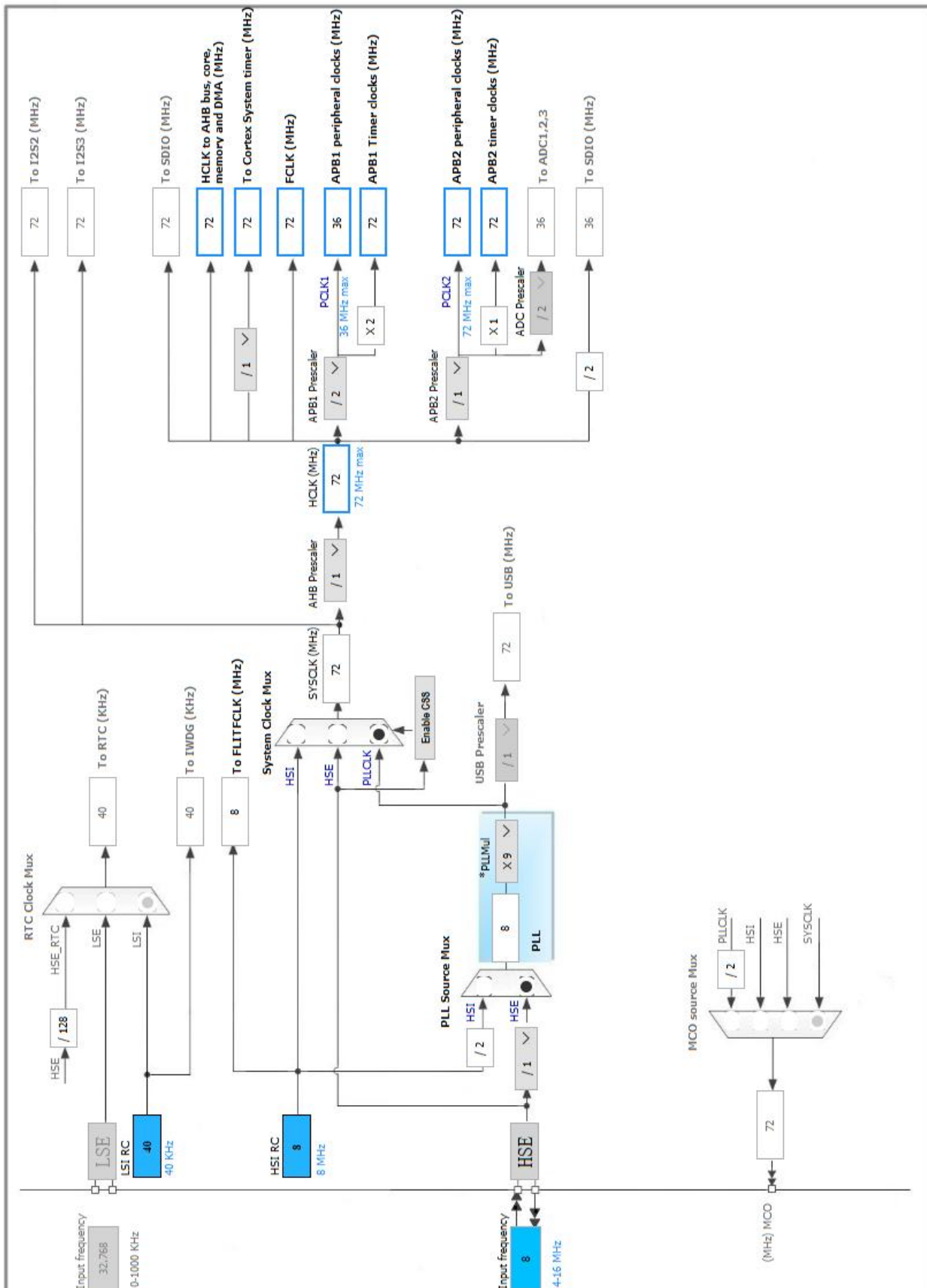
5. IPs and Middleware Configuration

5.1. CAN
mode: Mode

5.1.1. Parameter Settings:

Bit Timings Parameters:

Prescaler (for Time Quantum)	**3 ***
Time Quantum	**83.33333333333334 ***
Time Quanta in Bit Segment 1	**9 Times ***
Time Quanta in Bit Segment 2	**2 Times ***
Time for one Bit	1000
ReSynchronization Jump Width	1 Time

Basic Parameters:

Time Triggered Communication Mode	Disable
Automatic Bus-Off Management	Disable
Automatic Wake-Up Mode	Disable
No-Automatic Retransmission	Disable
Receive Fifo Locked Mode	Disable
Transmit Fifo Priority	Disable

Advanced Parameters:

Operating Mode	Normal

5.2. RCC
High Speed Clock (HSE): 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. SPI2

Mode: Full-Duplex Master

5.3.1. 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

5.4. SYS

Debug: No Debug

Timebase Source: SysTick

5.5. TIM2

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

Channel3: PWM Generation CH3

5.5.1. 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

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)

PWM Generation Channel 1:

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

PWM Generation Channel 2:

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

PWM Generation Channel 3:

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

5.6. TIM6
mode: Activated

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.7. TIM7
mode: Activated

5.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)   0

Counter Mode   Up

Counter Period (AutoReload Register - 16 bits value)   0

Trigger Output (TRGO) Parameters:

Trigger Event Selection   Reset (UG bit from TIMx_EGR)

5.8. UART5

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

* User modified value

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
CAN	PA11	CAN_RX	Input mode	No pull-up and no pull-down	n/a	
	PA12	CAN_TX	Alternate Function Push Pull	n/a	**High ***	
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	
SPI2	PB13	SPI2_SCK	Alternate Function Push Pull	n/a	**High ***	
	PB14	SPI2_MISO	Input mode	No pull-up and no pull-down	**n/a**	
	PB15	SPI2_MOSI	Alternate Function Push Pull	n/a	**High ***	
TIM2	PA0-WKUP	TIM2_CH1	Alternate Function Push Pull	n/a	Low	
	PA1	TIM2_CH2	Alternate Function Push Pull	n/a	Low	
	PA2	TIM2_CH3	Alternate Function Push Pull	n/a	Low	
UART5	PC12	UART5_TX	Alternate Function Push Pull	n/a	**High ***	
	PD2	UART5_RX	Input mode	No pull-up and no pull-down	**n/a**	
GPIO	PC13-TAMPER-RTC	GPIO_Output	Output Push Pull	n/a	Low	
	PC14-OSC32_IN	GPIO_Output	Output Push Pull	n/a	Low	
	PC15-OSC32_OUT	GPIO_Output	Output Push Pull	n/a	Low	
	PA3	GPIO_EXTI3	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PA4	GPIO_EXTI4	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PA5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PB1	GPIO_Input	Input mode	**Pull-up ***	n/a	KEY
	PB10	GPIO_Output	Output Push Pull	**n/a**	Low	CSN
	PB11	GPIO_Output	Output Push Pull	**n/a**	Low	OLED_DC
	PB12	GPIO_Output	Output Push Pull	**n/a**	Low	OLED_RES

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
EXTI line3 interrupt	true	1	0
EXTI line4 interrupt	true	1	0
USB low priority or CAN RX0 interrupts	true	0	0
EXTI line[9:5] interrupts	true	1	0
UART5 global interrupt	true	3	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USB high priority or CAN TX interrupts	unused		
CAN RX1 interrupt	unused		
CAN SCE interrupt	unused		
TIM2 global interrupt	unused		
SPI2 global interrupt	unused		
TIM6 global interrupt	unused		
TIM7 global interrupt	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103RCTx
Datasheet	14611_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	source
Project Folder	D:\\brushless\source
Toolchain / IDE	EWARM
Firmware Package Name and Version	STM32Cube FW_F1 V1.4.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy all used libraries into the project folder
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