1. Description

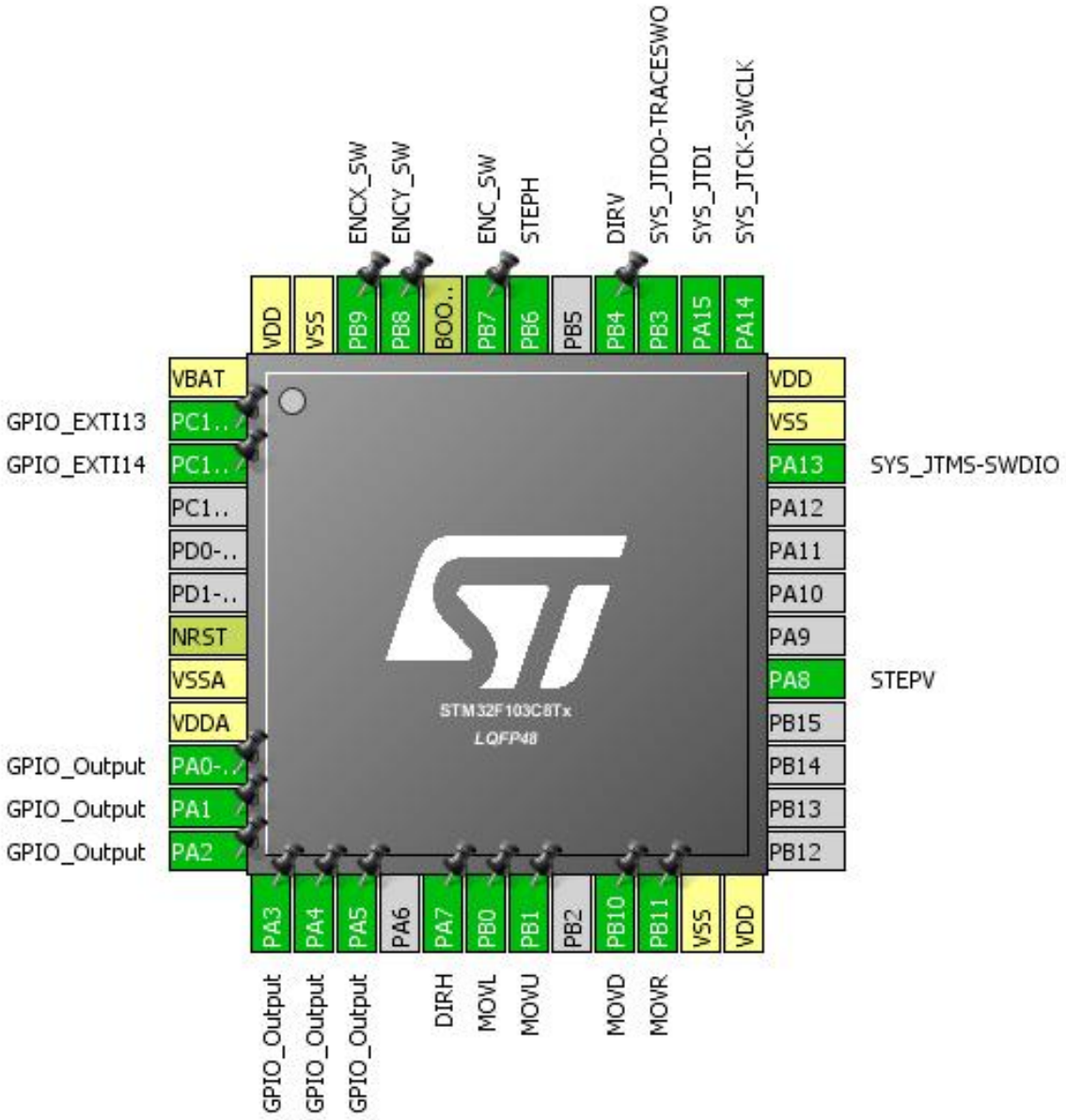
1.1. Project

Project Name	lathe
Board Name	custom
Generated with:	STM32CubeMX 4.27.0
Date	10/28/2018

1.2. MCU

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

2. Pinout Configuration

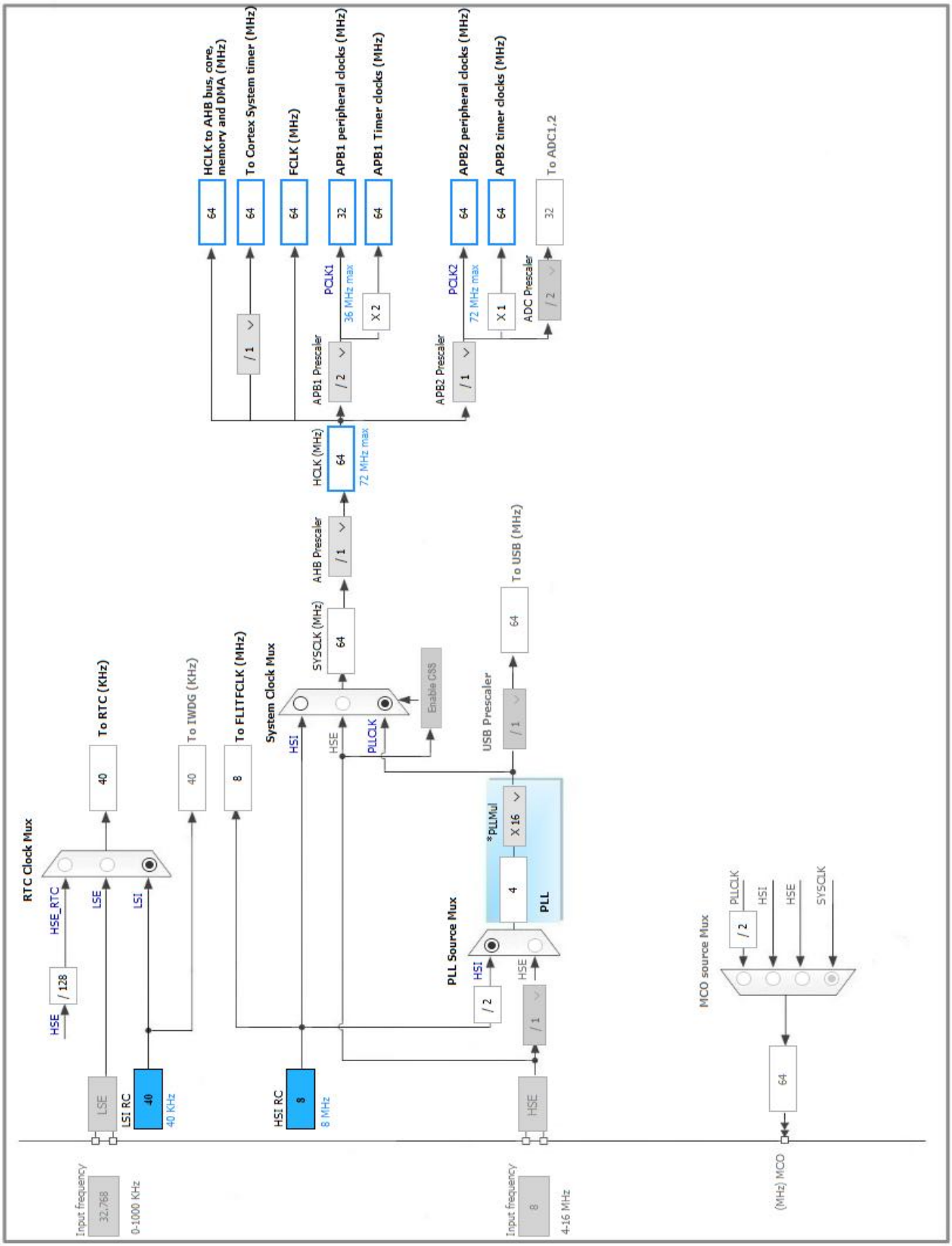


3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC	I/O	GPIO_EXTI13	
3	PC14-OSC32_IN	I/O	GPIO_EXTI14	
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0-WKUP *	I/O	GPIO_Output	
11	PA1 *	I/O	GPIO_Output	
12	PA2 *	I/O	GPIO_Output	
13	PA3 *	I/O	GPIO_Output	
14	PA4 *	I/O	GPIO_Output	
15	PA5 *	I/O	GPIO_Output	
17	PA7 *	I/O	GPIO_Output	DIRH
18	PB0	I/O	GPIO_EXTI0	MOVL
19	PB1	I/O	GPIO_EXTI1	MOVU
21	PB10	I/O	GPIO_EXTI10	MOVD
22	PB11	I/O	GPIO_EXTI11	MOVR
23	VSS	Power		
24	VDD	Power		
29	PA8	I/O	TIM1_CH1	STEPV
34	PA13	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14	I/O	SYS_JTCK-SWCLK	
38	PA15	I/O	SYS_JTDI	
39	PB3	I/O	SYS_JTDO-TRACESWO	
40	PB4 *	I/O	GPIO_Output	DIRV
42	PB6	I/O	TIM4_CH1	STEPH
43	PB7	I/O	GPIO_EXTI7	ENC_SW
44	BOOT0	Boot		
45	PB8	I/O	GPIO_EXTI8	ENCY_SW
46	PB9	I/O	GPIO_EXTI9	ENCX_SW
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. RTC

mode: Activate Clock Source

RTC OUT: No RTC Output

5.1.1. Parameter Settings:

Calendar Time:

Data Format	BCD data format
Hours	0
Minutes	0
Seconds	0

General:

Auto Predivider Calculation	Enabled
Asynchronous Predivider value	Automatic Predivider Calculation Enabled
Output	No output on the TAMPER pin

Calendar Date:

Week Day	Monday
Month	January
Date	1
Year	0

5.2. SYS

Debug: JTAG (4 pins)

Timebase Source: SysTick

5.3. TIM1

Clock Source : Internal Clock

Channel1: PWM Generation CH1

5.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**16000 ***
Internal Clock Division (CKD)	**Division by 4 ***
Repetition Counter (RCR - 8 bits value)	**10 ***

auto-reload preload	**Enable ***

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	**8000 ***
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

5.4. TIM4

mode: Clock Source

Channel1: PWM Generation CH1

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**16000 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	**Enable ***

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 1:

Mode	PWM mode 1
Pulse (16 bits value)	**8000 ***
Fast Mode	Disable
CH Polarity	High

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
	PA15	SYS_JTDI	n/a	n/a	n/a	
	PB3	SYS_JTDO-TRACESWO	n/a	n/a	n/a	
TIM1	PA8	TIM1_CH1	Alternate Function Push Pull	n/a	**High ***	STEPV
TIM4	PB6	TIM4_CH1	Alternate Function Push Pull	n/a	**High ***	STEPH
GPIO	PC13-TAMPER-RTC	GPIO_EXTI13	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	
	PC14-OSC32_IN	GPIO_EXTI14	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	
	PA0-WKUP	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA7	GPIO_Output	**Output Open Drain ***	**Pull-up ***	**High ***	DIRH
	PB0	GPIO_EXTI0	**External Interrupt Mode with Rising/Falling edge**	**Pull-up ***	**n/a**	MOVL
	PB1	GPIO_EXTI1	**External Interrupt Mode with Rising/Falling edge**	**Pull-up ***	**n/a**	MOVU
	PB10	GPIO_EXTI10	**External Interrupt Mode with Rising/Falling edge**	**Pull-up ***	**n/a**	MOVD
	PB11	GPIO_EXTI11	**External Interrupt Mode with Rising/Falling edge**	**Pull-up ***	**n/a**	MOVR
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	DIRV

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB7	GPIO_EXTI7	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	ENC_SW
	PB8	GPIO_EXTI8	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	ENCY_SW
	PB9	GPIO_EXTI9	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	ENCX_SW

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 line0 interrupt	true	0	0
EXTI line1 interrupt	true	0	0
EXTI line[9:5] interrupts	true	0	0
TIM1 update interrupt	true	0	0
EXTI line[15:10] interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
RTC global interrupt	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM4 global interrupt	unused		
RTC alarm interrupt through EXTI line 17	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	lathe
Project Folder	D:\GitHub\lathe_stm32f103\lathe
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.1

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

9. Software Pack Report