1. Description

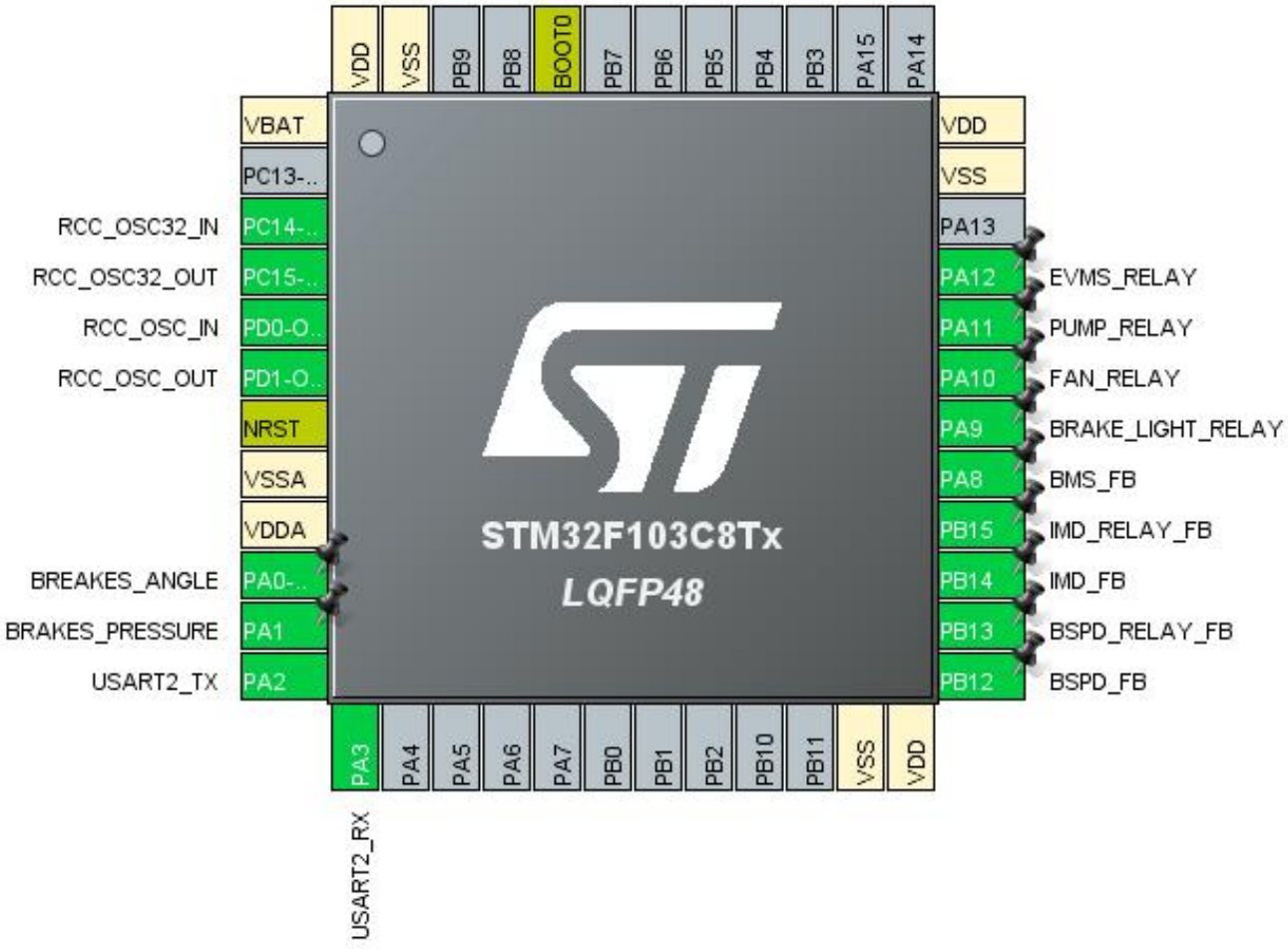
1.1. Project

Project Name	CURT 2020 SECOND EVMS
Board Name	custom
Generated with:	STM32CubeMX 5.4.0
Date	12/28/2020

1.2. MCU

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

2. Pinout Configuration

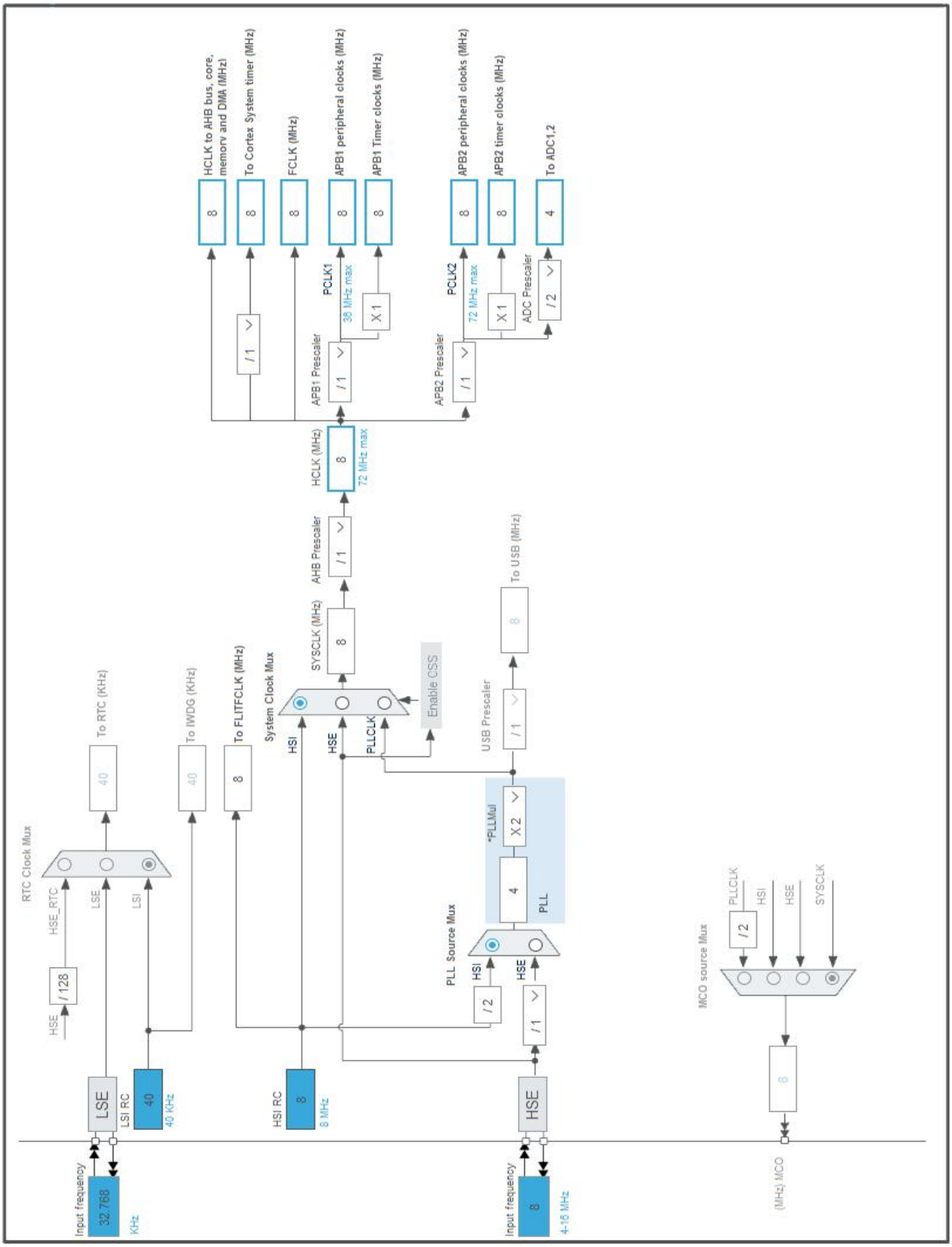


3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
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	ADC1_IN0	BREAKES_ANGLE
11	PA1	I/O	ADC1_IN1	BRAKES_PRESSURE
12	PA2	I/O	USART2_TX	
13	PA3	I/O	USART2_RX	
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Input	BSPD_FB
26	PB13 *	I/O	GPIO_Input	BSPD_RELAY_FB
27	PB14 *	I/O	GPIO_Input	IMD_FB
28	PB15 *	I/O	GPIO_Input	IMD_RELAY_FB
29	PA8 *	I/O	GPIO_Input	BMS_FB
30	PA9 *	I/O	GPIO_Output	BRAKE_LIGHT_RELAY
31	PA10 *	I/O	GPIO_Output	FAN_RELAY
32	PA11 *	I/O	GPIO_Output	PUMP_RELAY
33	PA12 *	I/O	GPIO_Output	EVMS_RELAY
35	VSS	Power		
36	VDD	Power		
44	BOOT0	Boot		
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	CURT 2020 SECOND EVMS
Project Folder	E:\cubeMX\CURT 2020 SECOND EVMS
Toolchain / IDE	EWARM V8.32
Firmware Package Name and Version	STM32Cube FW_F1 V1.8.3

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	No
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

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103C8Tx
Datasheet	13587_Rev17

6.2. Parameter Selection

Temperature	25
Vdd	3.3

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN0

mode: IN1

7.1.1. 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:

Enable Injected Conversions	Disable

WatchDog:

Enable Analog WatchDog Mode	false

7.2. GPIO

7.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

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

7.4. SYS

Debug: No Debug

Timebase Source: SysTick

7.5. USART2

Mode: Asynchronous

7.5.1. Parameter Settings:

Basic Parameters:

Baud Rate	**9600 ***
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**

8. System Configuration

8.1. 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	BREAKES_ANGLE
	PA1	ADC1_IN1	Analog mode	n/a	n/a	BRAKES_PRESSURE
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	
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	**High ***	
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	
GPIO	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BSPD_FB
	PB13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BSPD_RELAY_FB
	PB14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IMD_FB
	PB15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IMD_RELAY_FB
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BMS_FB
	PA9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	BRAKE_LIGHT_RELAY
	PA10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FAN_RELAY
	PA11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PUMP_RELAY
	PA12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EVMS_RELAY

8.2. DMA configuration

nothing configured in DMA service

8.3. 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
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		
USART2 global interrupt	unused		

*** User modified value**

9. Software Pack Report