1. Description

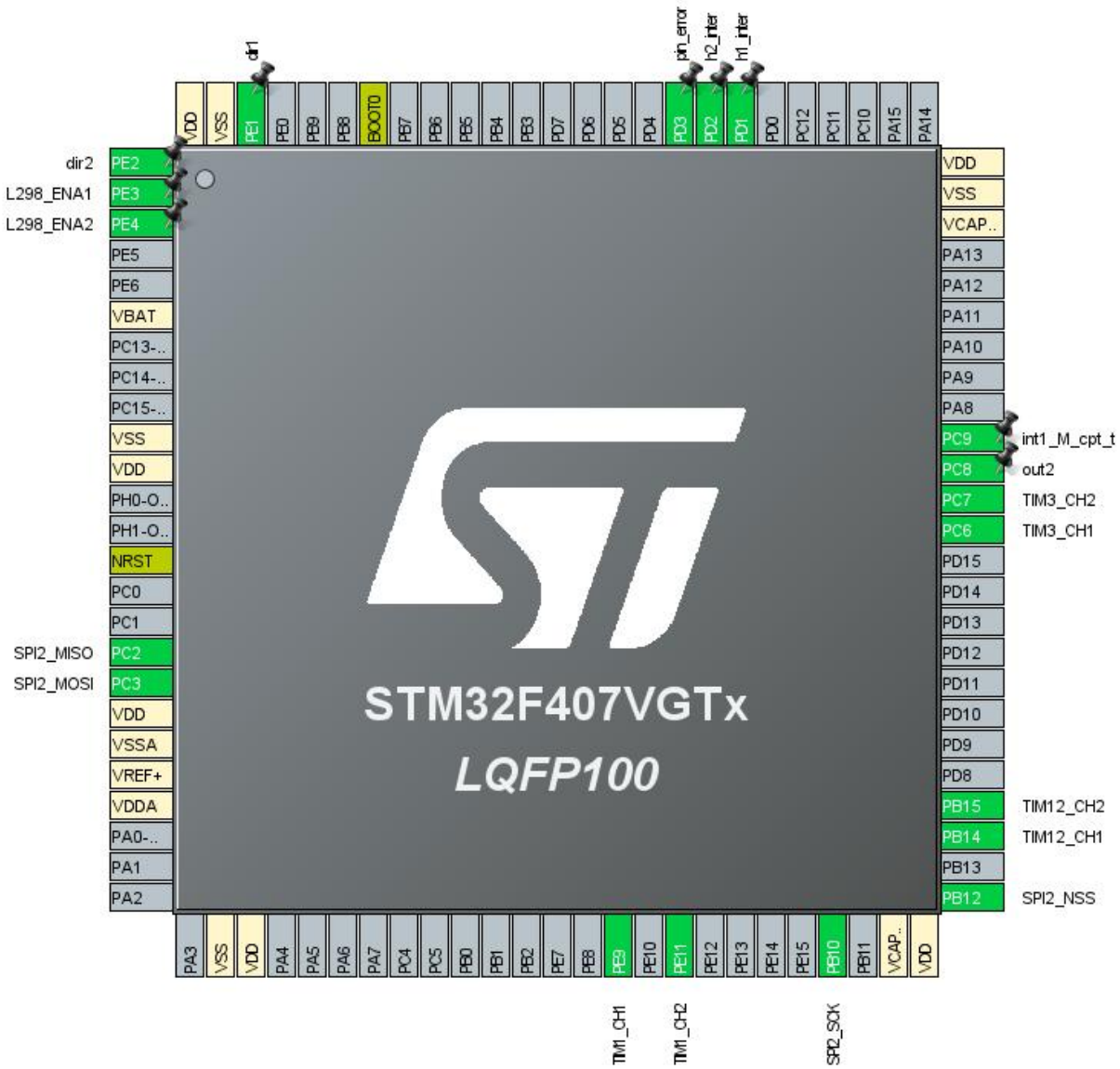
1.1. Project

Project Name	Esclavo
Board Name	STM32F407G-DISC1
Generated with:	STM32CubeMX 5.4.0
Date	02/05/2020

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F407/417
MCU name	STM32F407VGTx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



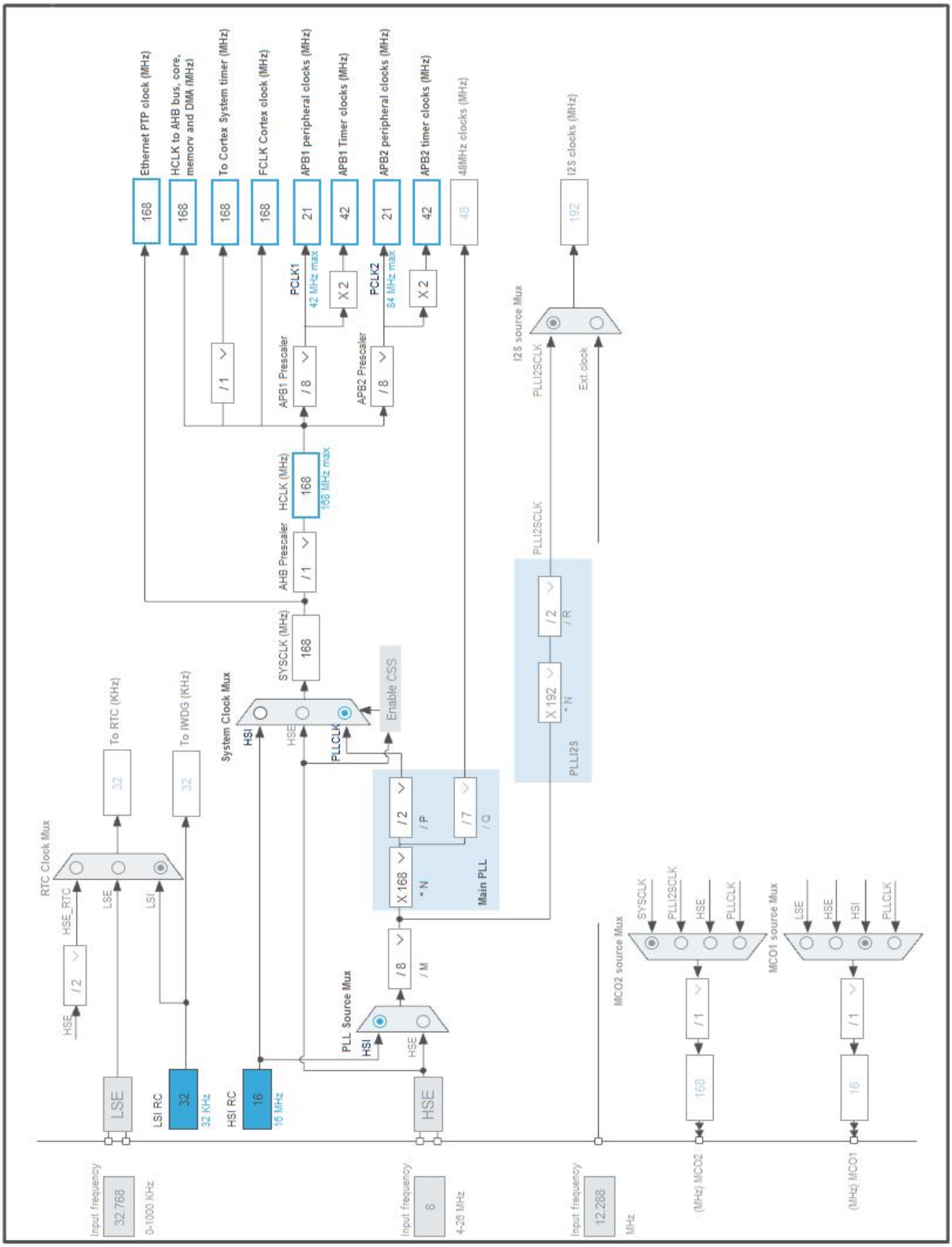
3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Output	dir2
2	PE3 *	I/O	GPIO_Output	L298_ENA1
3	PE4 *	I/O	GPIO_Output	L298_ENA2
6	VBAT	Power		
10	VSS	Power		
11	VDD	Power		
14	NRST	Reset		
17	PC2	I/O	SPI2_MISO	
18	PC3	I/O	SPI2_MOSI	
19	VDD	Power		
20	VSSA	Power		
21	VREF+	Power		
22	VDDA	Power		
27	VSS	Power		
28	VDD	Power		
40	PE9	I/O	TIM1_CH1	
42	PE11	I/O	TIM1_CH2	
47	PB10	I/O	SPI2_SCK	
49	VCAP_1	Power		
50	VDD	Power		
51	PB12	I/O	SPI2_NSS	
53	PB14	I/O	TIM12_CH1	
54	PB15	I/O	TIM12_CH2	
63	PC6	I/O	TIM3_CH1	
64	PC7	I/O	TIM3_CH2	
65	PC8 *	I/O	GPIO_Output	out2
66	PC9 *	I/O	GPIO_Output	int1_M_cpt_t
73	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		
82	PD1	I/O	GPIO_EXTI1	h1_inter
83	PD2	I/O	GPIO_EXTI2	h2_inter
84	PD3	I/O	GPIO_EXTI3	pin_error
94	BOOT0	Boot		
98	PE1 *	I/O	GPIO_Output	dir1
99	VSS	Power		

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
100	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	Esclavo
Project Folder	C:\Users\rodry\Documents\GitHub\Micro\Esclavo
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F4 V1.24.2

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	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

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F4
Line	STM32F407/417
MCU	STM32F407VGTx
Datasheet	022152_Rev8

6.2. Parameter Selection

Temperature	25
Vdd	3.3

7. IPs and Middleware Configuration

7.1. GPIO

7.2. RCC

7.2.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	Enabled
Flash Latency(WS)	5 WS (6 CPU cycle)

RCC Parameters:

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

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

7.3. SPI2

Mode: Full-Duplex Slave

Hardware NSS Signal: Hardware NSS Input Signal

7.3.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Input Hardware

7.4. SYS

Timebase Source: SysTick

7.5. TIM1

Combined Channels: Encoder Mode

7.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**65535 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
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)

Encoder:

Encoder Mode	Encoder Mode TI1
____ Parameters for Channel 1 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	0
____ Parameters for Channel 2 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	0

7.6. TIM3

Combined Channels: Encoder Mode

7.6.1. 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	**Enable ***

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	**Enable (Trigger delayed for master/slaves simultaneous start) ***
Trigger Event Selection	**Output Compare (OC2REF) ***

Encoder:

Encoder Mode	Encoder Mode TI1
____ Parameters for Channel 1 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	**Division by 2 ***
Input Filter	0
____ Parameters for Channel 2 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	**Division by 2 ***
Input Filter	0

7.7. TIM9

mode: Clock Source

Channel1: Output Compare No Output

7.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**4199 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Output Compare No Output Channel 1:

Mode	Frozen (used for Timing base)
Pulse (16 bits value)	0
Output compare preload	Disable
CH Polarity	High

7.8. TIM12

mode: Clock Source

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

7.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**2799 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

PWM Generation Channel 1:

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

PWM Generation Channel 2:

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

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SPI2	PC2	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PC3	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PB10	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PB12	SPI2_NSS	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
TIM1	PE9	TIM1_CH1	Alternate Function Push Pull	**Pull-up ***	**High ***	
	PE11	TIM1_CH2	Alternate Function Push Pull	**Pull-up ***	**High ***	
TIM3	PC6	TIM3_CH1	Alternate Function Push Pull	**Pull-up ***	**High ***	
	PC7	TIM3_CH2	Alternate Function Push Pull	**Pull-up ***	**High ***	
TIM12	PB14	TIM12_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB15	TIM12_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PE2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	dir2
	PE3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	L298_ENA1
	PE4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	L298_ENA2
	PC8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	out2
	PC9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	int1_M_cpt_t
	PD1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	**Pull-down ***	n/a	h1_inter
	PD2	GPIO_EXTI2	External Interrupt Mode with Rising edge trigger detection	**Pull-down ***	n/a	h2_inter
	PD3	GPIO_EXTI	External Interrupt	**Pull-down ***	n/a	pin_error

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
		3	Mode with Rising edge trigger detection			
	PE1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	dir1

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
Pre-fetch 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 line1 interrupt	true	1	0
EXTI line2 interrupt	true	1	0
EXTI line3 interrupt	true	1	0
TIM1 break interrupt and TIM9 global interrupt	true	1	0
TIM3 global interrupt	true	1	0
SPI2 global interrupt	true	1	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 update interrupt and TIM10 global interrupt	unused		
TIM1 trigger and commutation interrupts and TIM11 global interrupt	unused		
TIM1 capture compare interrupt	unused		
TIM8 break interrupt and TIM12 global interrupt	unused		
FPU global interrupt	unused		

*** User modified value**

9. Software Pack Report