1. Description

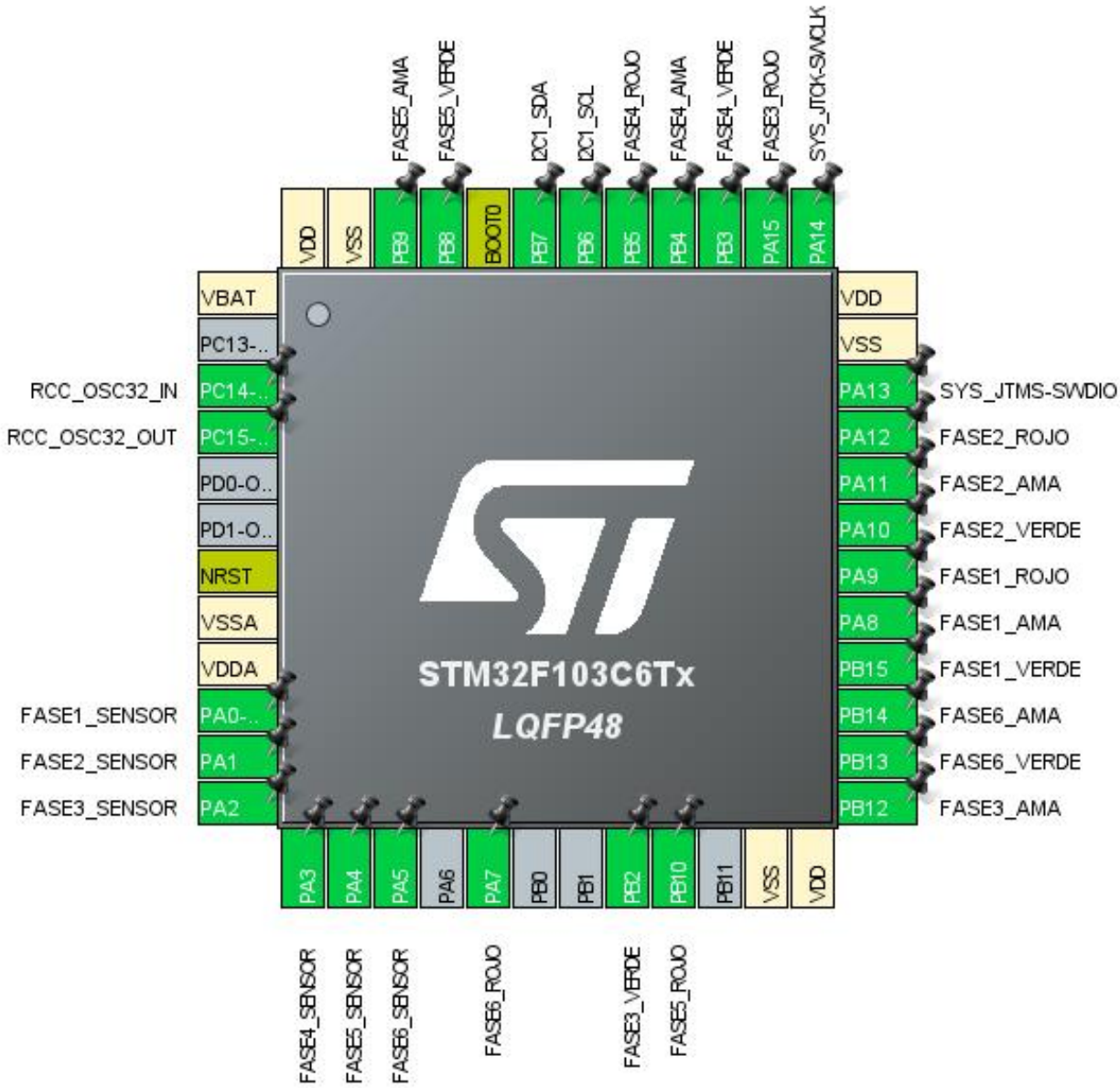
1.1. Project

Project Name	Cubex
Board Name	custom
Generated with:	STM32CubeMX 5.6.0
Date	06/30/2020

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103C6Tx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration



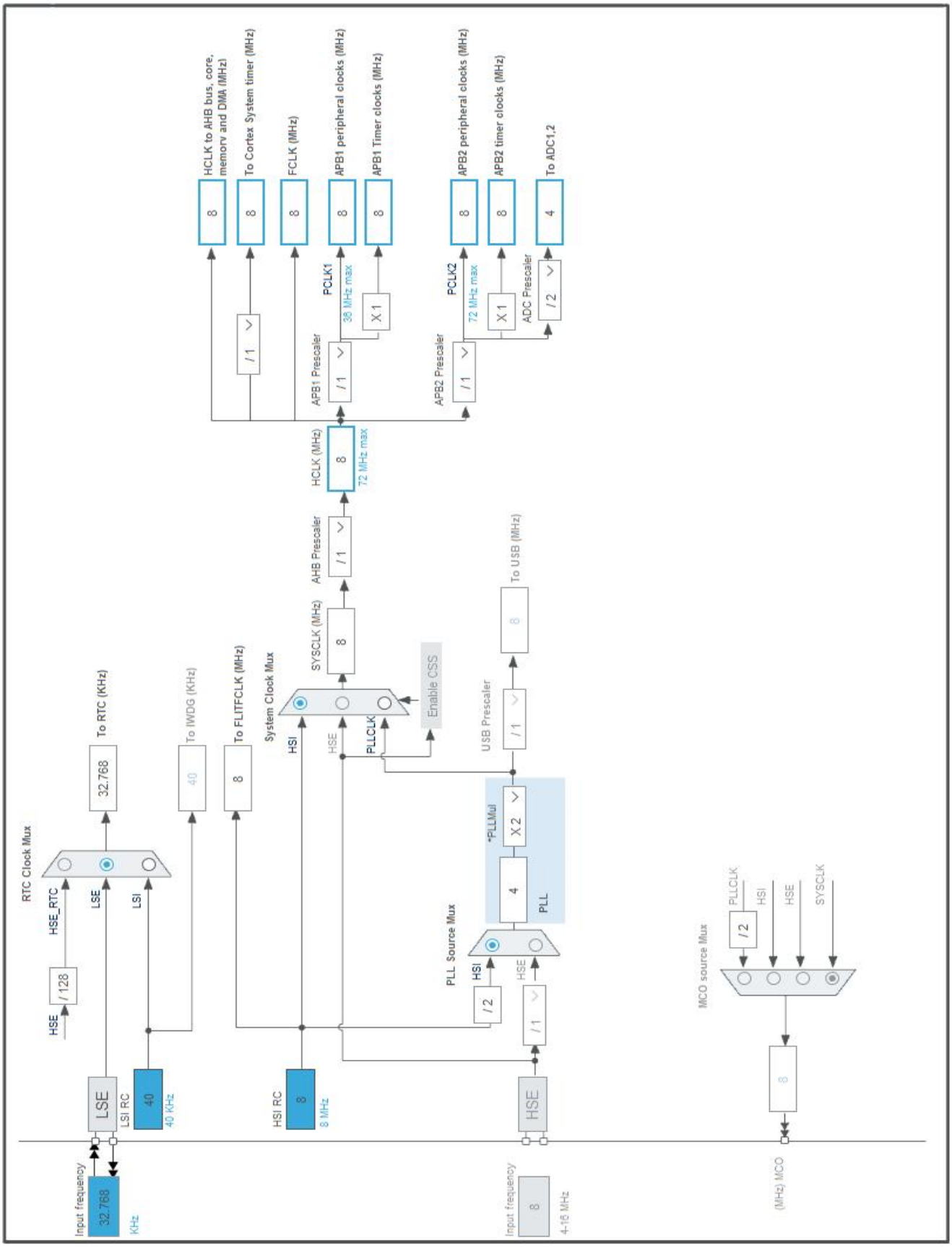
3. Pins Configuration

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	
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0-WKUP	I/O	ADC1_IN0	FASE1_SENSOR
11	PA1	I/O	GPIO_Analog, ADC1_IN1	FASE2_SENSOR
12	PA2	I/O	GPIO_Analog, ADC1_IN2	FASE3_SENSOR
13	PA3	I/O	GPIO_Analog, ADC1_IN3	FASE4_SENSOR
14	PA4	I/O	GPIO_Analog, ADC1_IN4	FASE5_SENSOR
15	PA5	I/O	GPIO_Analog, ADC1_IN5	FASE6_SENSOR
17	PA7 *	I/O	GPIO_Output	FASE6_ROJO
20	PB2 *	I/O	GPIO_Output	FASE3_VERDE
21	PB10 *	I/O	GPIO_Output	FASE5_ROJO
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Output	FASE3_AMA
26	PB13 *	I/O	GPIO_Output	FASE6_VERDE
27	PB14 *	I/O	GPIO_Output	FASE6_AMA
28	PB15 *	I/O	GPIO_Output	FASE1_VERDE
29	PA8 *	I/O	GPIO_Output	FASE1_AMA
30	PA9 *	I/O	GPIO_Output	FASE1_ROJO
31	PA10 *	I/O	GPIO_Output	FASE2_VERDE
32	PA11 *	I/O	GPIO_Output	FASE2_AMA
33	PA12 *	I/O	GPIO_Output	FASE2_ROJO
34	PA13	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14	I/O	SYS_JTCK-SWCLK	
38	PA15 *	I/O	GPIO_Output	FASE3_ROJO
39	PB3 *	I/O	GPIO_Output	FASE4_VERDE
40	PB4 *	I/O	GPIO_Output	FASE4_AMA
41	PB5 *	I/O	GPIO_Output	FASE4_ROJO
42	PB6	I/O	I2C1_SCL	
43	PB7	I/O	I2C1_SDA	

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
44	BOOT0	Boot		
45	PB8 *	I/O	GPIO_Output	FASE5_VERDE
46	PB9 *	I/O	GPIO_Output	FASE5_AMA
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	Cubex
Project Folder	C:\Users\valery\Desktop\Cube\Cubex2
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F1 V1.8.0

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)	Yes

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103C6Tx
Datasheet	15060_Rev7

6.2. Parameter Selection

Temperature	25
Vdd	3.3

6.3. Battery Selection

Battery	Li-SOCL2(A3400)
Capacity	3400.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	100.0 mA
Max Pulse Current	200.0 mA
Cells in series	1
Cells in parallel	1

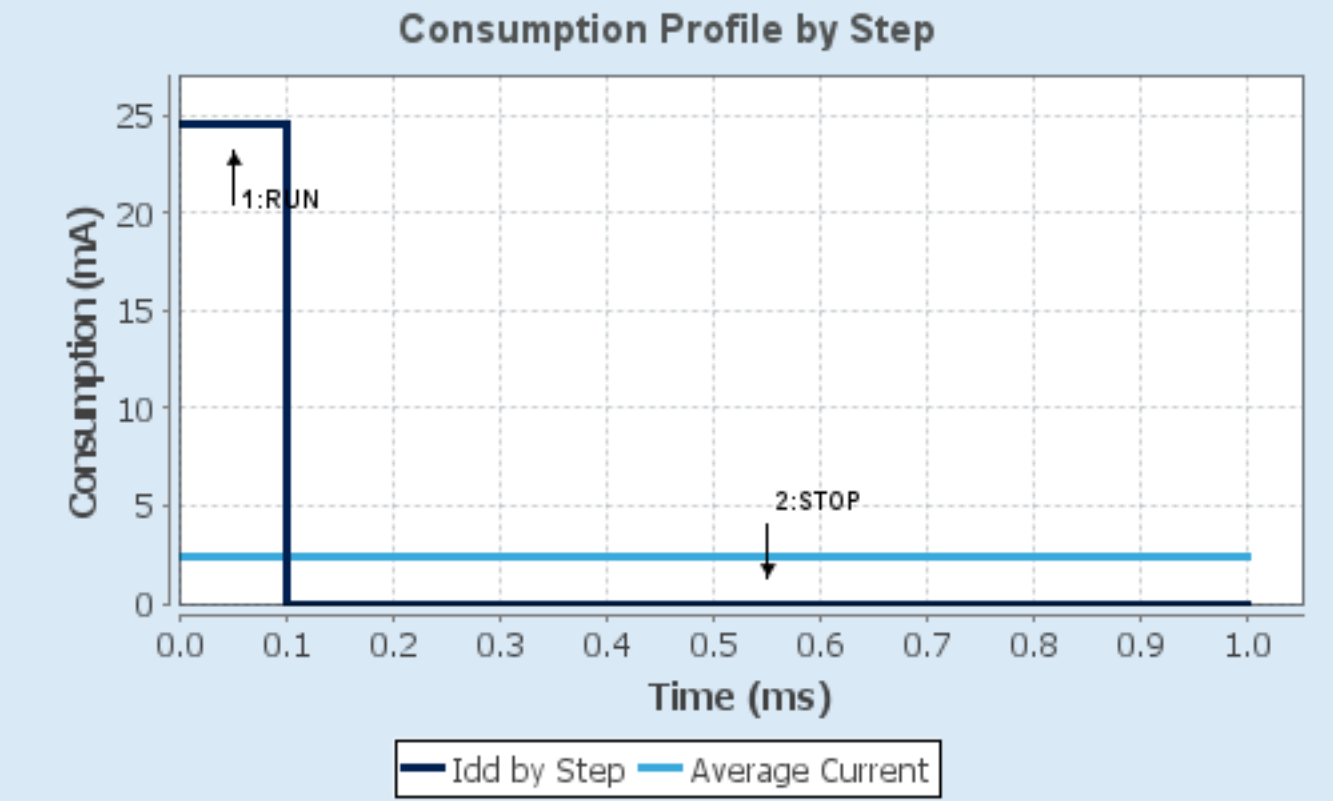
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.3	3.3
Voltage Source	Battery	Battery
Range	No Scale	No Scale
Fetch Type	FLASH	n/a
CPU Frequency	72 MHz	0 Hz
Clock Configuration	HSE PLL	Regulator_LP
Clock Source Frequency	8 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	24.5 mA	11.7 µA
Duration	0.1 ms	0.9 ms
DMIPS	90.0	0.0
Ta Max	100.55	105
Category	In DS Table	In DS Table

6.5. RESULTS

Sequence Time	1 ms	Average Current	2.46 mA
Battery Life	1 month, 27 days, 1 hour	Average DMIPS	61.0 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
25
20
15
10
5
0
1:RUN
2:STOP
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Time (ms)
Idd by Step
Average Current

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN0

mode: IN1

mode: IN2

mode: IN3

mode: IN4

mode: IN5

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 1 ***
Sampling Time	1.5 Cycles

ADC_Injected_ConversionMode:

Enable Injected Conversions	Disable

WatchDog:

Enable Analog WatchDog Mode	false

7.2. GPIO

7.3. I2C1

I2C: I2C

7.3.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

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

7.4. RCC

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.4.1. 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

7.5. RTC

mode: Activate Clock Source

mode: Activate Calendar

7.5.1. 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	Alarm pulse signal on the TAMPER pin

Calendar Date:

Week Day	Monday
Month	January
Date	1
Year	0

7.6. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.7. TIM2

Clock Source : Internal Clock

7.7.1. 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	Disable

Trigger Output (TRGO) Parameters:

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

*** 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	FASE1_SENSOR
	PA1	ADC1_IN1	Analog mode	n/a	n/a	FASE2_SENSOR
	PA2	ADC1_IN2	Analog mode	n/a	n/a	FASE3_SENSOR
	PA3	ADC1_IN3	Analog mode	n/a	n/a	FASE4_SENSOR
	PA4	ADC1_IN4	Analog mode	n/a	n/a	FASE5_SENSOR
	PA5	ADC1_IN5	Analog mode	n/a	n/a	FASE6_SENSOR
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	Pull-up	n/a	
	PB7	I2C1_SDA	Alternate Function Open Drain	Pull-up	n/a	
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	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
GPIO	PA1	GPIO_Analog	Analog mode	n/a	n/a	FASE2_SENSOR
	PA2	GPIO_Analog	Analog mode	n/a	n/a	FASE3_SENSOR
	PA3	GPIO_Analog	Analog mode	n/a	n/a	FASE4_SENSOR
	PA4	GPIO_Analog	Analog mode	n/a	n/a	FASE5_SENSOR
	PA5	GPIO_Analog	Analog mode	n/a	n/a	FASE6_SENSOR
	PA7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE6_ROJO
	PB2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE3_VERDE
	PB10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE5_ROJO
	PB12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE3_AMA
	PB13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE6_VERDE
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE6_AMA
	PB15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE1_VERDE
	PA8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE1_AMA
	PA9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE1_ROJO
	PA10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE2_VERDE
	PA11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE2_AMA
	PA12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE2_ROJO
	PA15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE3_ROJO

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE4_VERDE
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE4_AMA
	PB5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE4_ROJO
	PB8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE5_VERDE
	PB9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FASE5_AMA

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
RCC global interrupt	true	0	0
ADC1 and ADC2 global interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
RTC global interrupt	unused		
Flash global interrupt	unused		
TIM2 global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		

*** User modified value**

9. Predefined Views - Category view : Current

10. Software Pack Report