
STM32
CubeMX

1. Description

1.1. Project

Project Name	Wokie_Android
Board Name	custom
Generated with:	STM32CubeMX 6.2.1
Date	07/17/2021

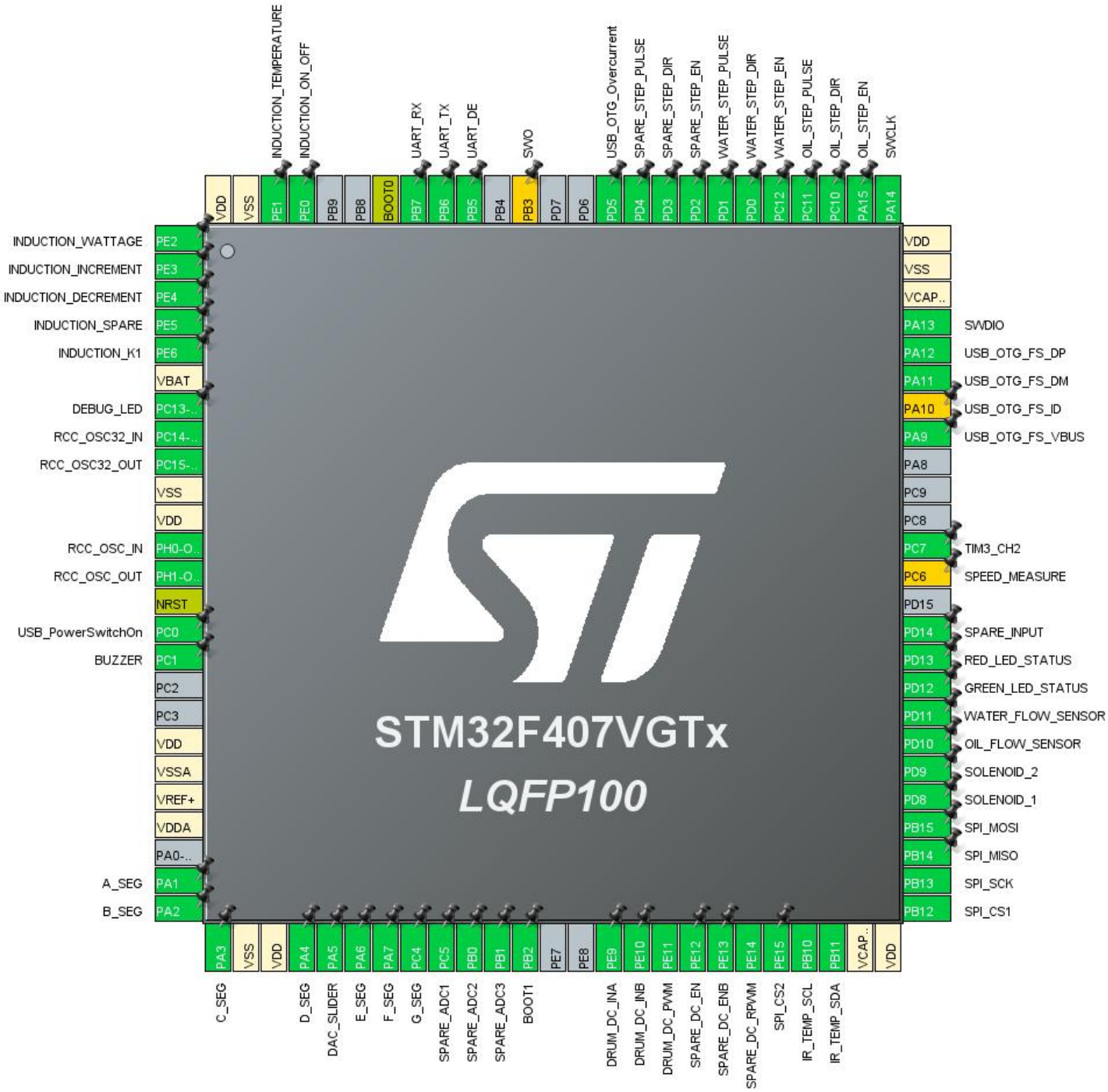
1.2. MCU

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

1.3. Core(s) information

Core(s)	Arm Cortex-M4

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_EXTI2	INDUCTION_WATTAGE
2	PE3	I/O	GPIO_EXTI3	INDUCTION_INCREMENT
3	PE4	I/O	GPIO_EXTI4	INDUCTION_DECREMENT
4	PE5	I/O	GPIO_EXTI5	INDUCTION_SPARE
5	PE6 *	I/O	GPIO_Output	INDUCTION_K1
6	VBAT	Power		
7	PC13-ANTI_TAMP *	I/O	GPIO_Output	DEBUG_LED
8	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
9	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
10	VSS	Power		
11	VDD	Power		
12	PH0-OSC_IN	I/O	RCC_OSC_IN	
13	PH1-OSC_OUT	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Output	USB_PowerSwitchOn
16	PC1 *	I/O	GPIO_Output	BUZZER
19	VDD	Power		
20	VSSA	Power		
21	VREF+	Power		
22	VDDA	Power		
24	PA1 *	I/O	GPIO_Input	A_SEG
25	PA2 *	I/O	GPIO_Input	B_SEG
26	PA3 *	I/O	GPIO_Input	C_SEG
27	VSS	Power		
28	VDD	Power		
29	PA4 *	I/O	GPIO_Input	D_SEG
30	PA5	I/O	DAC_OUT2	DAC_SLIDER
31	PA6 *	I/O	GPIO_Input	E_SEG
32	PA7 *	I/O	GPIO_Input	F_SEG
33	PC4 *	I/O	GPIO_Input	G_SEG
34	PC5	I/O	ADC1_IN15	SPARE_ADC1
35	PB0	I/O	ADC1_IN8	SPARE_ADC2
36	PB1	I/O	ADC1_IN9	SPARE_ADC3
37	PB2 *	I/O	GPIO_Input	BOOT1
40	PE9 *	I/O	GPIO_Output	DRUM_DC_INA
41	PE10 *	I/O	GPIO_Output	DRUM_DC_INB

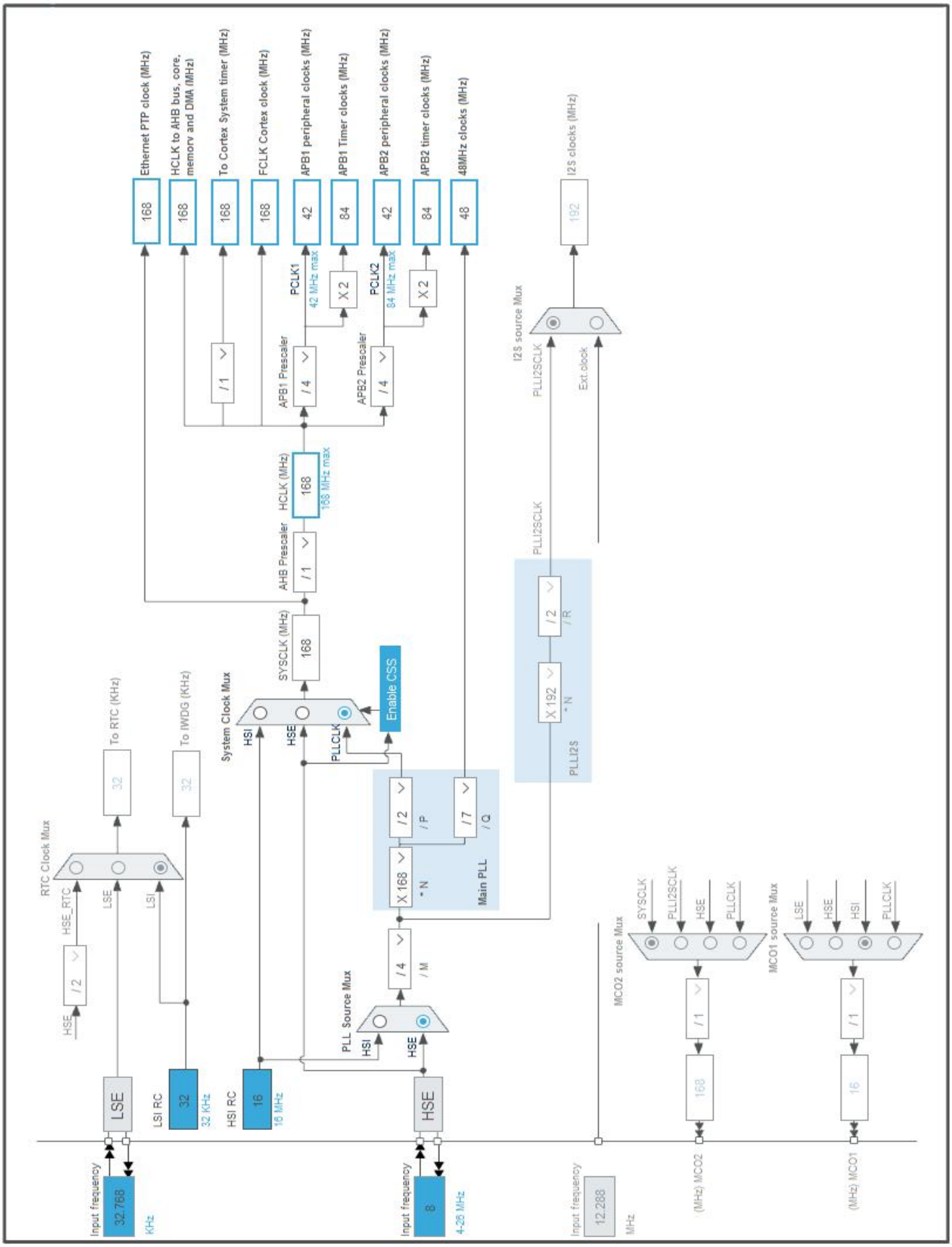
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
42	PE11	I/O	TIM1_CH2	DRUM_DC_PWM
43	PE12 *	I/O	GPIO_Output	SPARE_DC_EN
44	PE13 *	I/O	GPIO_Output	SPARE_DC_ENB
45	PE14	I/O	TIM1_CH4	SPARE_DC_RPWM
46	PE15 *	I/O	GPIO_Output	SPI_CS2
47	PB10	I/O	I2C2_SCL	IR_TEMP_SCL
48	PB11	I/O	I2C2_SDA	IR_TEMP_SDA
49	VCAP_1	Power		
50	VDD	Power		
51	PB12	I/O	SPI2_NSS	SPI_CS1
52	PB13	I/O	SPI2_SCK	SPI_SCK
53	PB14	I/O	SPI2_MISO	SPI_MISO
54	PB15	I/O	SPI2_MOSI	SPI_MOSI
55	PD8 *	I/O	GPIO_Output	SOLENOID_1
56	PD9 *	I/O	GPIO_Output	SOLENOID_2
57	PD10 *	I/O	GPIO_Input	OIL_FLOW_SENSOR
58	PD11 *	I/O	GPIO_Input	WATER_FLOW_SENSOR
59	PD12 *	I/O	GPIO_Input	GREEN_LED_STATUS
60	PD13 *	I/O	GPIO_Input	RED_LED_STATUS
61	PD14 *	I/O	GPIO_Input	SPARE_INPUT
63	PC6 **	I/O	TIM3_CH1	SPEED_MEASURE
64	PC7	I/O	TIM3_CH2	
68	PA9	I/O	USB_OTG_FS_VBUS	
69	PA10 **	I/O	USB_OTG_FS_ID	
70	PA11	I/O	USB_OTG_FS_DM	
71	PA12	I/O	USB_OTG_FS_DP	
72	PA13	I/O	SYS_JTMS-SWDIO	SWDIO
73	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	SWCLK
77	PA15 *	I/O	GPIO_Output	OIL_STEP_EN
78	PC10 *	I/O	GPIO_Output	OIL_STEP_DIR
79	PC11 *	I/O	GPIO_Output	OIL_STEP_PULSE
80	PC12 *	I/O	GPIO_Output	WATER_STEP_EN
81	PD0 *	I/O	GPIO_Output	WATER_STEP_DIR
82	PD1 *	I/O	GPIO_Output	WATER_STEP_PULSE
83	PD2 *	I/O	GPIO_Output	SPARE_STEP_EN
84	PD3 *	I/O	GPIO_Output	SPARE_STEP_DIR

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
85	PD4 *	I/O	GPIO_Output	SPARE_STEP_PULSE
86	PD5 *	I/O	GPIO_Input	USB_OTG_Overcurrent
89	PB3 **	I/O	SYS_JTDO-SWO	SWO
91	PB5 *	I/O	GPIO_Output	UART_DE
92	PB6	I/O	USART1_TX	UART_TX
93	PB7	I/O	USART1_RX	UART_RX
94	BOOT0	Boot		
97	PE0	I/O	GPIO_EXTI0	INDUCTION_ON_OFF
98	PE1	I/O	GPIO_EXTI1	INDUCTION_TEMPERATURE
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

** The pin is affected with a peripheral function but no peripheral mode is activated

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	Wokie_Android
Project Folder	C:\Users\Varun\STM32CubeIDE\Wokie\Wokie_Android
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F4 V1.26.1
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

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	No
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	MX_GPIO_Init	GPIO
2	MX_DMA_Init	DMA
3	SystemClock_Config	RCC
4	MX_I2C2_Init	I2C2
5	MX_SPI2_Init	SPI2
6	MX_ADC1_Init	ADC1
7	MX_DAC_Init	DAC
8	MX_TIM1_Init	TIM1
9	MX_TIM3_Init	TIM3
10	MX_USART1_UART_Init	USART1
11	MX_USB_DEVICE_Init	USB_DEVICE

Rank	Function Name	Peripheral Instance Name
12	MX_TIM6_Init	TIM6

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F4
Line	STM32F407/417
MCU	STM32F407VGTx
Datasheet	DS8626_Rev8

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

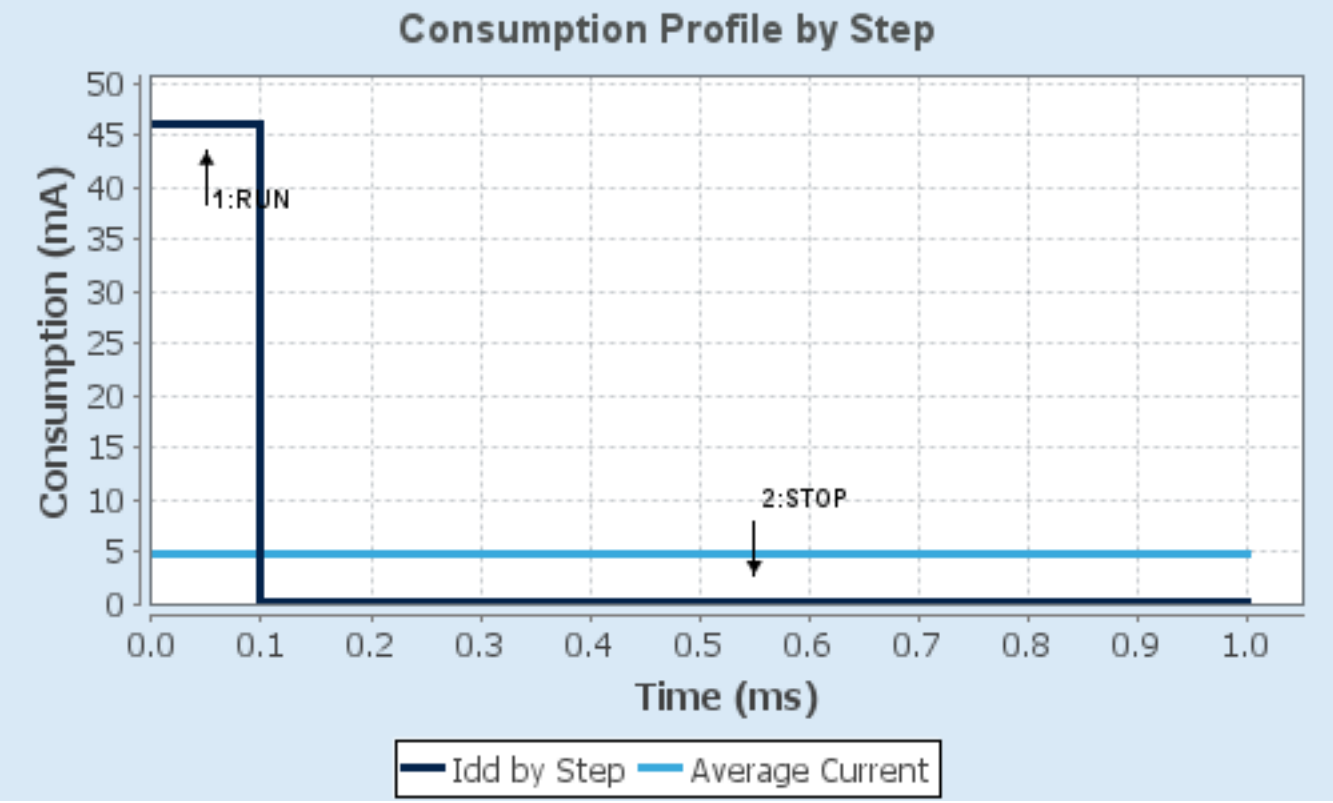
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.3	3.3
Voltage Source	Battery	Battery
Range	Scale1-High	No Scale
Fetch Type	FLASH	n/a
CPU Frequency	168 MHz	0 Hz
Clock Configuration	HSE PLL	Regulator_LP Flash-PwrDwn
Clock Source Frequency	4 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	46 mA	280 µA
Duration	0.1 ms	0.9 ms
DMIPS	210.0	0.0
Ta Max	98.47	104.96
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	4.85 mA
Battery Life	29 days, 4 hours	Average DMIPS	210.0 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
50
45
40
35
30
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. Peripherals and Middlewares Configuration

7.1. ADC1

mode: IN8

mode: IN9

mode: IN15

7.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Clock Prescaler	PCLK2 divided by 2
Resolution	12 bits (15 ADC Clock cycles)
Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	**Enabled ***
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	**Enabled ***
End Of Conversion Selection	EOC flag at the end of single channel conversion

ADC_Regular_ConversionMode:

Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Rank	1
Channel	**Channel 15 ***
Sampling Time	**144 Cycles ***

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

7.2. DAC

mode: OUT2 Configuration

7.2.1. Parameter Settings:

DAC Out2 Settings:

Output Buffer	Enable
Trigger	None

7.3. I2C2

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

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.4.1. 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

7.5. SPI2

Mode: Full-Duplex Slave

Hardware NSS Signal: Hardware NSS Input Signal

7.5.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Clock Polarity (CPOL)	**High ***
Clock Phase (CPHA)	**2 Edge ***

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Input Hardware

7.6. SYS

Debug: Serial Wire

Timebase Source: TIM2

7.7. TIM1

Clock Source : Internal Clock

Channel2: PWM Generation CH2

Channel4: PWM Generation CH4

7.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**42-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**100-1 ***
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)

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 2:

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

PWM Generation Channel 4:

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

7.8. TIM3

Clock Source : Internal Clock

Channel2: Input Capture direct mode

7.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**8400-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
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)

Input Capture Channel 2:

Polarity Selection	**Falling Edge ***
IC Selection	Direct
Prescaler Division Ratio	No division

Input Filter (4 bits value)	0

7.9. TIM6

mode: Activated

7.9.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**4200-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**100-1 ***
auto-reload preload	**Enable ***

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

7.10. USART1

Mode: Asynchronous

7.10.1. 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

7.11. USB_OTG_FS

Mode: Device_Only

mode: Activate_VBUS

7.11.1. Parameter Settings:

Speed	Device Full Speed 12MBit/s
Low power	Disabled
Link Power Management	Disabled

VBUS sensing	Enabled
Signal start of frame	Disabled

7.12. FREERTOS

Interface: CMSIS_V2

7.12.1. Config parameters:

API:

FreeRTOS API	CMSIS v2

Versions:

FreeRTOS version	10.3.1
CMSIS-RTOS version	2.00

MPU/FPU:

ENABLE_MPU	Disabled
ENABLE_FPU	Disabled

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	56
MINIMAL_STACK_SIZE	128
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Enabled
USE_COUNTING_SEMAPHORES	Enabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Disabled
USE_TICKLESS_IDLE	Disabled
USE_TASK_NOTIFICATIONS	Enabled
RECORD_STACK_HIGH_ADDRESS	Disabled

Memory management settings:

Memory Allocation	Dynamic / Static
TOTAL_HEAP_SIZE	**30720 ***
Memory Management scheme	heap_4

Hook function related definitions:

USE_IDLE_HOOK	Disabled
USE_TICK_HOOK	Disabled
USE_MALLOC_FAILED_HOOK	Disabled
USE_DAEMON_TASK_STARTUP_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Disabled

Run time and task stats gathering related definitions:

GENERATE_RUN_TIME_STATS	Disabled
USE_TRACE_FACILITY	Enabled
USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Enabled
TIMER_TASK_PRIORITY	2
TIMER_QUEUE_LENGTH	10
TIMER_TASK_STACK_DEPTH	256

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

Added with 10.2.1 support:

MESSAGE_BUFFER_LENGTH_TYPE	size_t
USE_POSIX_ERRNO	Disabled

CMSIS-RTOS V2 flags:

USE_OS2_THREAD_SUSPEND_RESUME	Enabled
USE_OS2_THREAD_ENUMERATE	Enabled
USE_OS2_EVENTFLAGS_FROM_ISR	Enabled
USE_OS2_THREAD_FLAGS	Enabled
USE_OS2_TIMER	Enabled
USE_OS2_MUTEX	Enabled

7.12.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Enabled
vTaskDelay	Enabled

xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Enabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Enabled
xTaskGetCurrentTaskHandle	Enabled
eTaskGetState	Enabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Enabled
xTaskAbortDelay	Disabled
xTaskGetHandle	Disabled
uxTaskGetStackHighWaterMark2	Disabled

7.12.3. Advanced settings:

Newlib settings (see parameter description first):

USE_NEWLIB_REENTRANT	Disabled

Project settings (see parameter description first):

Use FW pack heap file	Enabled

7.13. USB_DEVICE

Class For FS IP: Communication Device Class (Virtual Port Com)

7.13.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

Class Parameters:

USB CDC Rx Buffer Size	2048
USB CDC Tx Buffer Size	2048

7.13.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	1155

LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	STMicroelectronics

Device Descriptor FS:

PID (Product IDentifier)	22336
PRODUCT_STRING (Product Identifier)	STM32 Virtual ComPort
CONFIGURATION_STRING (Configuration Identifier)	CDC Config
INTERFACE_STRING (Interface Identifier)	CDC Interface

*** 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	PC5	ADC1_IN15	Analog mode	No pull-up and no pull-down	n/a	SPARE_ADC1
	PB0	ADC1_IN8	Analog mode	No pull-up and no pull-down	n/a	SPARE_ADC2
	PB1	ADC1_IN9	Analog mode	No pull-up and no pull-down	n/a	SPARE_ADC3
DAC	PA5	DAC_OUT2	Analog mode	No pull-up and no pull-down	n/a	DAC_SLIDER
I2C2	PB10	I2C2_SCL	Alternate Function Open Drain	Pull-up	**Very High ***	IR_TEMP_SCL
	PB11	I2C2_SDA	Alternate Function Open Drain	Pull-up	**Very High ***	IR_TEMP_SDA
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	
	PH0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI2	PB12	SPI2_NSS	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	SPI_CS1
	PB13	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	SPI_SCK
	PB14	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	SPI_MISO
	PB15	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	SPI_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
TIM1	PE11	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	DRUM_DC_PWM
	PE14	TIM1_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPARE_DC_RPWM
TIM3	PC7	TIM3_CH2	Alternate Function Push Pull	**Pull-up ***	**Very High ***	
USART1	PB6	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	UART_TX
	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High**	UART_RX

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
					*	
USB_OTG_FS	PA9	USB_OTG_FS_VBUS	Input mode	No pull-up and no pull-down	n/a	
	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
Single Mapped Signals	PC6	TIM3_CH1	Alternate Function Push Pull	**Pull-up ***	**Very High ***	SPEED_MEASURE
	PA10	USB_OTG_FS_ID	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PB3	SYS_JTDO-SWO	n/a	n/a	**n/a**	SWO
GPIO	PE2	GPIO_EXTI2	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	INDUCTION_WATTAGE
	PE3	GPIO_EXTI3	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	INDUCTION_INCREMENT
	PE4	GPIO_EXTI4	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	INDUCTION_DECREMENT
	PE5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	INDUCTION_SPARE
	PE6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	INDUCTION_K1
	PC13-ANTI_TAMP	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	DEBUG_LED
	PC0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	USB_PowerSwitchOn
	PC1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	BUZZER
	PA1	GPIO_Input	Input mode	**Pull-down ***	n/a	A_SEG
	PA2	GPIO_Input	Input mode	**Pull-down ***	n/a	B_SEG
	PA3	GPIO_Input	Input mode	**Pull-down ***	n/a	C_SEG
	PA4	GPIO_Input	Input mode	**Pull-down ***	n/a	D_SEG
	PA6	GPIO_Input	Input mode	**Pull-down ***	n/a	E_SEG
	PA7	GPIO_Input	Input mode	**Pull-down ***	n/a	F_SEG
	PC4	GPIO_Input	Input mode	**Pull-down ***	n/a	G_SEG
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BOOT1
	PE9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	DRUM_DC_INA
	PE10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	DRUM_DC_INB
	PE12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPARE_DC_EN
	PE13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPARE_DC_ENB
	PE15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI_CS2

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PD8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SOLENOID_1
	PD9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SOLENOID_2
	PD10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	OIL_FLOW_SENSOR
	PD11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	WATER_FLOW_SENSOR
	PD12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	GREEN_LED_STATUS
	PD13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RED_LED_STATUS
	PD14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SPARE_INPUT
	PA15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OIL_STEP_EN
	PC10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OIL_STEP_DIR
	PC11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OIL_STEP_PULSE
	PC12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	WATER_STEP_EN
	PD0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	WATER_STEP_DIR
	PD1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	WATER_STEP_PULSE
	PD2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPARE_STEP_EN
	PD3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPARE_STEP_DIR
	PD4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPARE_STEP_PULSE
	PD5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB_OTG_Overcurrent
	PB5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	UART_DE
	PE0	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	INDUCTION_ON_OFF
	PE1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	INDUCTION_TEMPERATURE

8.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA2_Stream0	Peripheral To Memory	Low

ADC1: DMA2_Stream0 DMA request Settings:

Mode:	**Circular ***
Use fifo:	Disable
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	**Word ***
Memory Data Width:	**Word ***

8.3. NVIC configuration

8.3.1. NVIC

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	15	0
System tick timer	true	15	0
EXTI line0 interrupt	true	5	0
EXTI line1 interrupt	true	5	0
EXTI line2 interrupt	true	5	0
EXTI line3 interrupt	true	5	0
EXTI line4 interrupt	true	5	0
EXTI line[9:5] interrupts	true	5	0
TIM1 break interrupt and TIM9 global interrupt	true	5	0
TIM1 update interrupt and TIM10 global interrupt	true	5	0
TIM1 trigger and commutation interrupts and TIM11 global interrupt	true	5	0
TIM1 capture compare interrupt	true	5	0
TIM2 global interrupt	true	0	0
TIM3 global interrupt	true	5	0
TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts	true	5	0
DMA2 stream0 global interrupt	true	5	0
USB On The Go FS global interrupt	true	5	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1, ADC2 and ADC3 global interrupts	unused		
I2C2 event interrupt	unused		
I2C2 error interrupt	unused		
SPI2 global interrupt	unused		
USART1 global interrupt	unused		
FPU global interrupt	unused		

8.3.2. NVIC Code generation

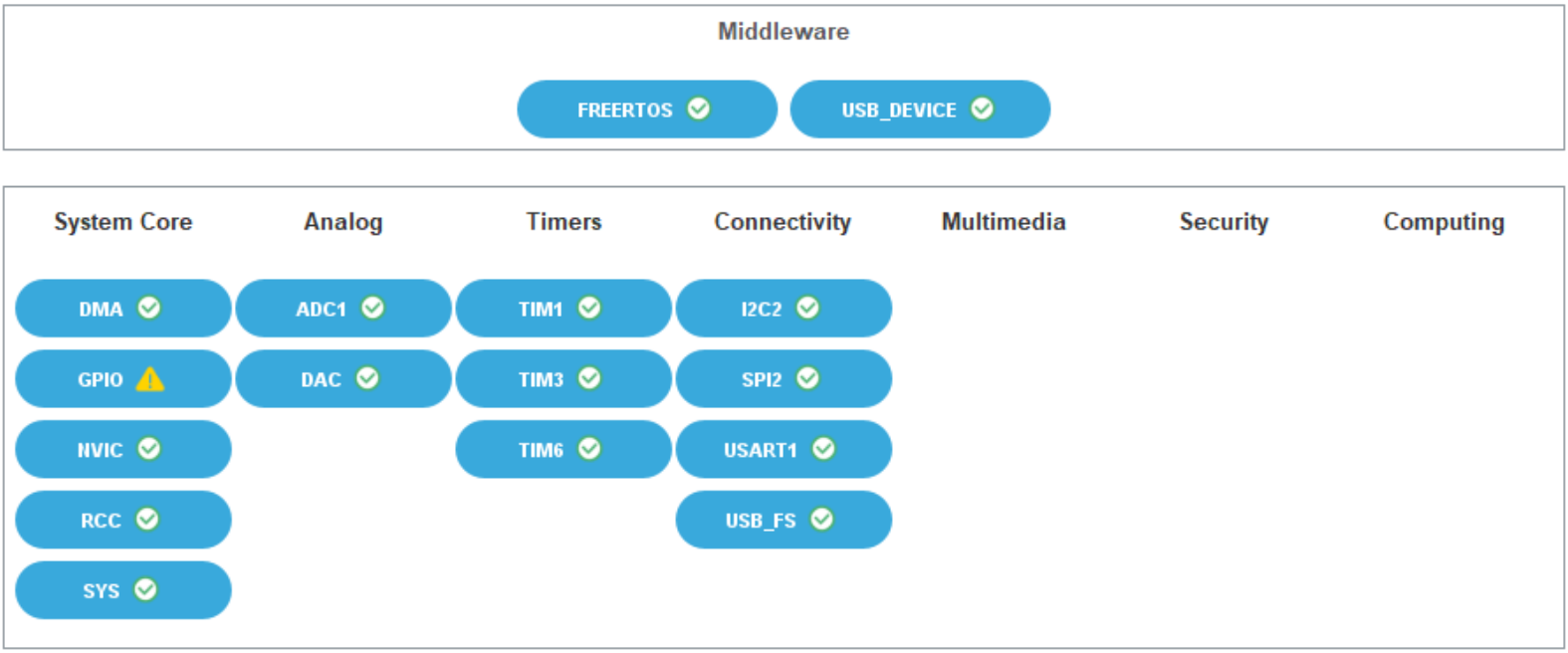
Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Pre-fetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
System service call via SWI instruction	false	false	false
Debug monitor	false	true	false
Pendable request for system service	false	false	false
System tick timer	false	false	true
EXTI line0 interrupt	false	true	true
EXTI line1 interrupt	false	true	true
EXTI line2 interrupt	false	true	true
EXTI line3 interrupt	false	true	true
EXTI line4 interrupt	false	true	true
EXTI line[9:5] interrupts	false	true	true
TIM1 break interrupt and TIM9 global interrupt	false	true	true
TIM1 update interrupt and TIM10 global interrupt	false	true	true
TIM1 trigger and commutation interrupts and TIM11 global interrupt	false	true	true
TIM1 capture compare interrupt	false	true	true
TIM2 global interrupt	false	true	true
TIM3 global interrupt	false	true	true
TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts	false	true	true
DMA2 stream0 global interrupt	false	true	true
USB On The Go FS global interrupt	false	true	true

*** User modified value**

9. System Views

9.1. Category view

9.1.1. Current



10. Docs & Resources

Type	Link
Datasheet	http://www.st.com/resource/en/datasheet/DM00037051.pdf
Reference manual	http://www.st.com/resource/en/reference_manual/DM00031020.pdf
Programming manual	http://www.st.com/resource/en/programming_manual/DM00046982.pdf
Errata sheet	http://www.st.com/resource/en/errata_sheet/DM00037591.pdf
Application note	http://www.st.com/resource/en/application_note/CD00167594.pdf
Application note	http://www.st.com/resource/en/application_note/CD00211314.pdf
Application note	http://www.st.com/resource/en/application_note/CD00249778.pdf
Application note	http://www.st.com/resource/en/application_note/CD00259245.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264321.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264342.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264379.pdf
Application note	http://www.st.com/resource/en/application_note/DM00024853.pdf
Application note	http://www.st.com/resource/en/application_note/DM00025071.pdf
Application note	http://www.st.com/resource/en/application_note/DM00040802.pdf
Application note	http://www.st.com/resource/en/application_note/DM00040808.pdf
Application note	http://www.st.com/resource/en/application_note/DM00042534.pdf
Application note	http://www.st.com/resource/en/application_note/DM00046011.pdf
Application note	http://www.st.com/resource/en/application_note/DM00050879.pdf
Application note	http://www.st.com/resource/en/application_note/DM00072315.pdf
Application note	http://www.st.com/resource/en/application_note/DM00073742.pdf
Application note	http://www.st.com/resource/en/application_note/DM00073853.pdf
Application note	http://www.st.com/resource/en/application_note/DM00080497.pdf
Application note	http://www.st.com/resource/en/application_note/DM00081379.pdf
Application note	http://www.st.com/resource/en/application_note/DM00115714.pdf
Application note	http://www.st.com/resource/en/application_note/DM00123028.pdf

Application note	http://www.st.com/resource/en/application_note/DM00129215.pdf
Application note	http://www.st.com/resource/en/application_note/DM00154959.pdf
Application note	http://www.st.com/resource/en/application_note/DM00160482.pdf
Application note	http://www.st.com/resource/en/application_note/DM00213525.pdf
Application note	http://www.st.com/resource/en/application_note/DM00220769.pdf
Application note	http://www.st.com/resource/en/application_note/DM00257177.pdf
Application note	http://www.st.com/resource/en/application_note/DM00272912.pdf
Application note	http://www.st.com/resource/en/application_note/DM00226326.pdf
Application note	http://www.st.com/resource/en/application_note/DM00236305.pdf
Application note	http://www.st.com/resource/en/application_note/DM00263732.pdf
Application note	http://www.st.com/resource/en/application_note/DM00281138.pdf
Application note	http://www.st.com/resource/en/application_note/DM00296349.pdf
Application note	http://www.st.com/resource/en/application_note/DM00327191.pdf
Application note	http://www.st.com/resource/en/application_note/DM00354244.pdf
Application note	http://www.st.com/resource/en/application_note/DM00373474.pdf
Application note	http://www.st.com/resource/en/application_note/DM00315319.pdf
Application note	http://www.st.com/resource/en/application_note/DM00380469.pdf
Application note	http://www.st.com/resource/en/application_note/DM00395696.pdf
Application note	http://www.st.com/resource/en/application_note/DM00431633.pdf
Application note	http://www.st.com/resource/en/application_note/DM00493651.pdf
Application note	http://www.st.com/resource/en/application_note/DM00536349.pdf
Application note	http://www.st.com/resource/en/application_note/DM00725181.pdf