1. Description

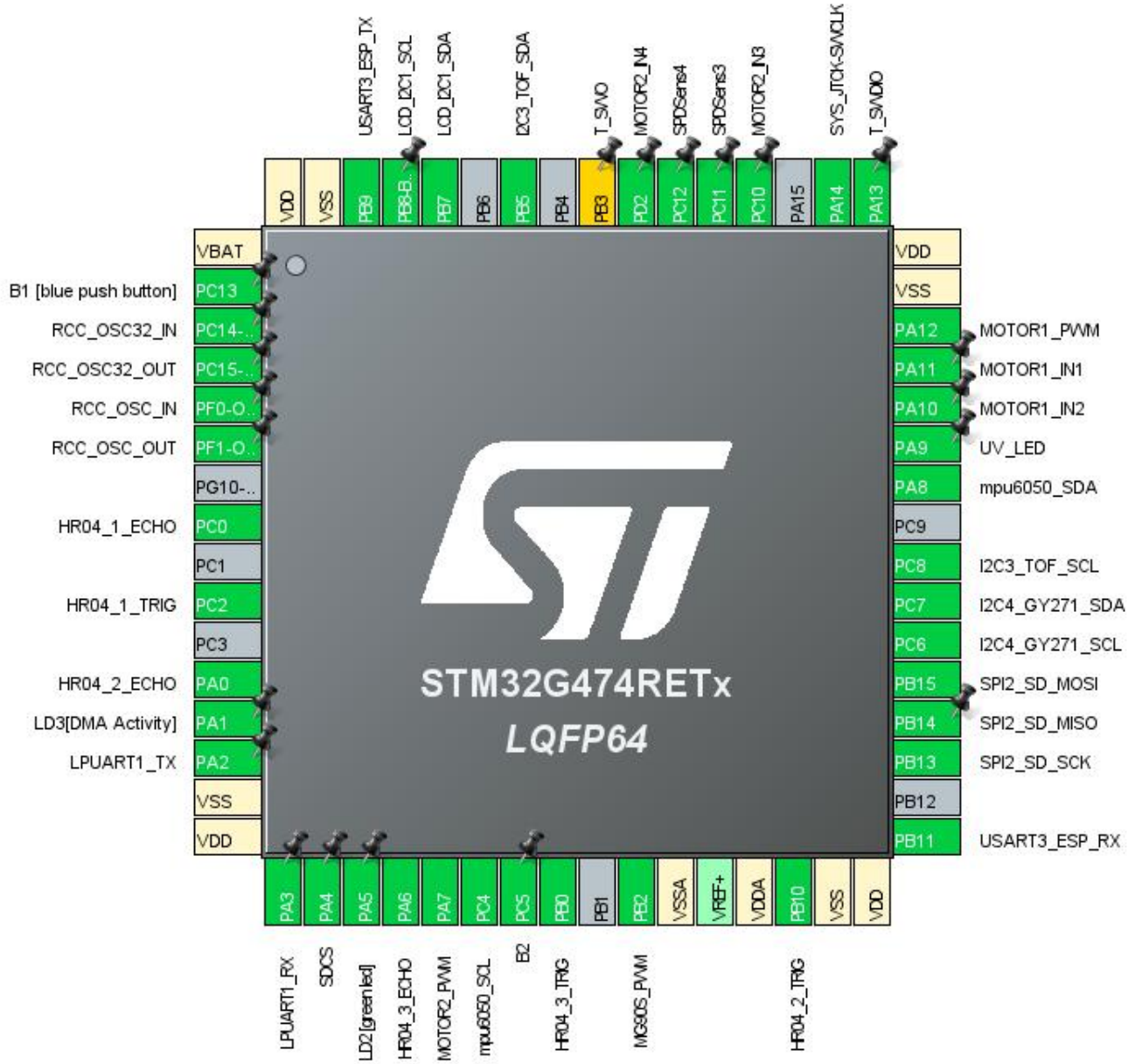
1.1. Project

Project Name	Alinea_STM32_474RE
Board Name	NUCLEO-G474RE
Generated with:	STM32CubeMX 5.6.1
Date	05/08/2020

1.2. MCU

MCU Series	STM32G4
MCU Line	STM32G4x4
MCU name	STM32G474RETx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



3. Pins Configuration

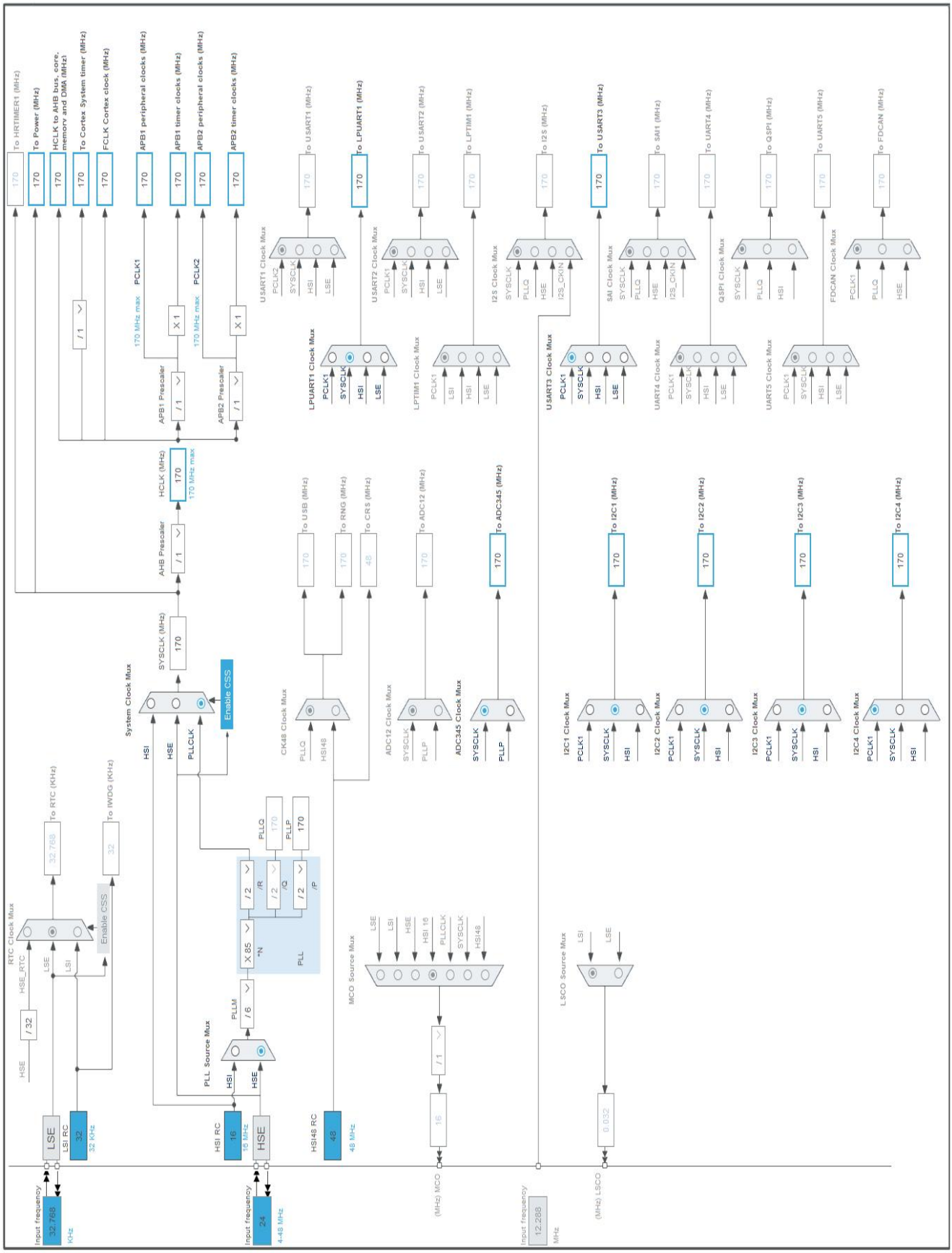
Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13	I/O	GPIO_EXTI13	B1 [blue push button]
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
5	PF0-OSC_IN	I/O	RCC_OSC_IN	
6	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
8	PC0	I/O	TIM1_CH1	HR04_1_ECHO
10	PC2	I/O	TIM1_CH3	HR04_1_TRIG
12	PA0	I/O	TIM2_CH1	HR04_2_ECHO
13	PA1 *	I/O	GPIO_Output	LD3[DMA Activity]
14	PA2	I/O	LPUART1_TX	
15	VSS	Power		
16	VDD	Power		
17	PA3	I/O	LPUART1_RX	
18	PA4 *	I/O	GPIO_Output	SDCS
19	PA5 *	I/O	GPIO_Output	LD2 [green led]
20	PA6	I/O	TIM3_CH1	HR04_3_ECHO
21	PA7	I/O	TIM17_CH1	MOTOR2_PWM
22	PC4	I/O	I2C2_SCL	mpu6050_SCL
23	PC5	I/O	GPIO_EXTI5	B2
24	PB0	I/O	TIM3_CH3	HR04_3_TRIG
26	PB2	I/O	TIM5_CH1	MG90S_PWM
27	VSSA	Power		
29	VDDA	Power		
30	PB10	I/O	TIM2_CH3	HR04_2_TRIG
31	VSS	Power		
32	VDD	Power		
33	PB11	I/O	USART3_RX	USART3_ESP_RX
35	PB13	I/O	SPI2_SCK	SPI2_SD_SCK
36	PB14	I/O	SPI2_MISO	SPI2_SD_MISO
37	PB15	I/O	SPI2_MOSI	SPI2_SD_MOSI
38	PC6	I/O	I2C4_SCL	I2C4_GY271_SCL
39	PC7	I/O	I2C4_SDA	I2C4_GY271_SDA
40	PC8	I/O	I2C3_SCL	I2C3_TOF_SCL
42	PA8	I/O	I2C2_SDA	mpu6050_SDA
43	PA9 *	I/O	GPIO_Output	UV_LED

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
44	PA10 *	I/O	GPIO_Output	MOTOR1_IN2
45	PA11 *	I/O	GPIO_Output	MOTOR1_IN1
46	PA12	I/O	TIM16_CH1	MOTOR1_PWM
47	VSS	Power		
48	VDD	Power		
49	PA13	I/O	SYS_JTMS-SWDIO	T_SWDIO
50	PA14	I/O	SYS_JTCK-SWCLK	
52	PC10 *	I/O	GPIO_Output	MOTOR2_IN3
53	PC11	I/O	GPIO_EXTI11	SPDSens3
54	PC12	I/O	GPIO_EXTI12	SPDSens4
55	PD2 *	I/O	GPIO_Output	MOTOR2_IN4
56	PB3 **	I/O	SYS_JTDO-SWO	T_SWO
58	PB5	I/O	I2C3_SDA	I2C3_TOF_SDA
60	PB7	I/O	I2C1_SDA	LCD_I2C1_SDA
61	PB8-BOOT0	I/O	I2C1_SCL	LCD_I2C1_SCL
62	PB9	I/O	USART3_TX	USART3_ESP_TX
63	VSS	Power		
64	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	Alinea_STM32_474RE
Project Folder	F:\Documents\STM32CubeWSP\alinea\STM32_G474RE
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_G4 V1.2.0

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)	No

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32G4
Line	STM32G4x4
MCU	STM32G474RETx
Datasheet	DS12288_Rev0

6.2. Parameter Selection

Temperature	25
Vdd	3.0

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

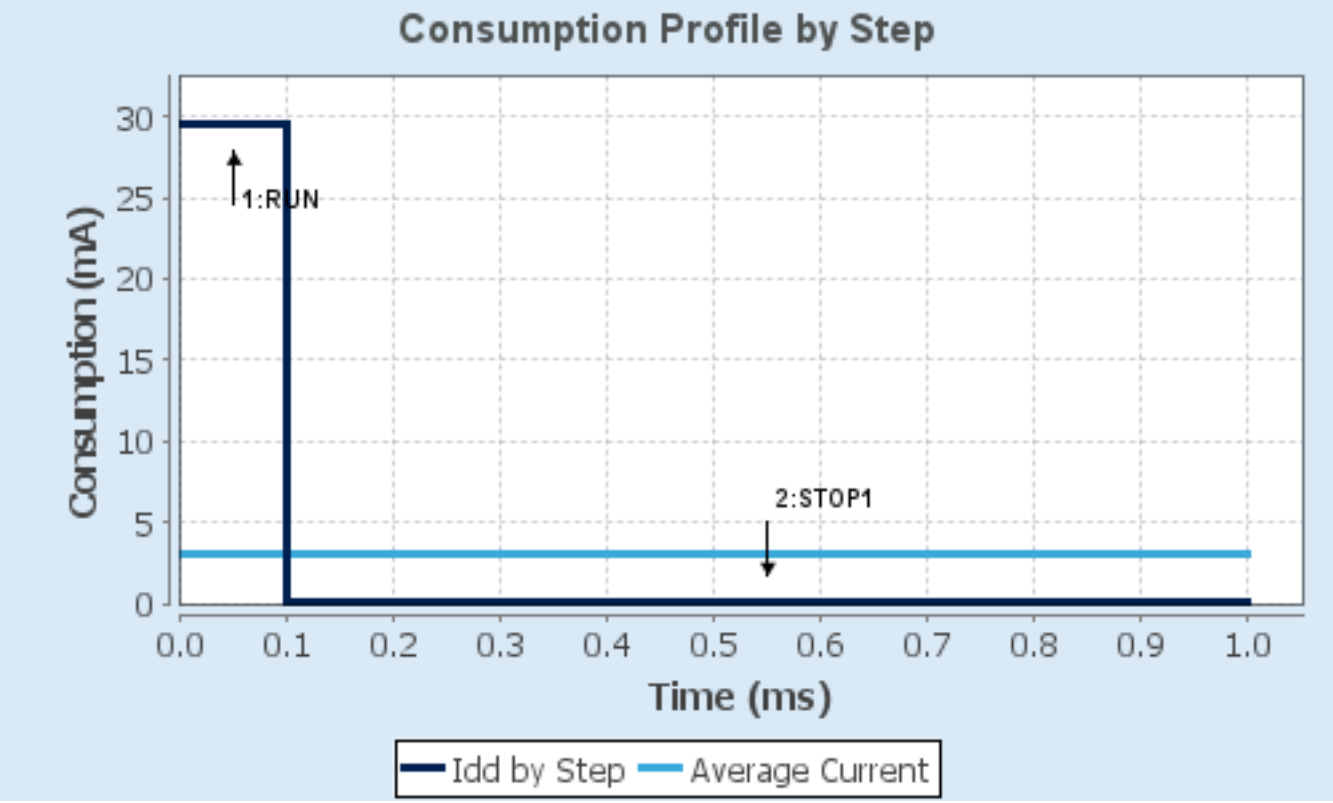
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP1
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-Boost	NoRange
Fetch Type	FLASH/DualBank/ART	NA
CPU Frequency	170 MHz	0 Hz
Clock Configuration	HSE BYP PLL	ALL CLOCKS OFF
Clock Source Frequency	4 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	29.5 mA	80.5 µA
Duration	0.1 ms	0.9 ms
DMIPS	213.0	0.0
Ta Max	124.25	129.98
Category	In DS Table	In DS Table

6.5. RESULTS

Sequence Time	1 ms	Average Current	3.02 mA
Battery Life	1 month, 16 days, 9 hours	Average DMIPS	212.5 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
30
25
20
15
10
5
0
1:RUN
2:STOP1
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. ADC5

mode: Temperature Sensor Channel

mode: Vbat Channel

mode: Vrefint Channel

7.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Asynchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Gain Compensation	0
Scan Conversion Mode	Enabled
End Of Conversion Selection	End of single conversion
Low Power Auto Wait	Disabled
Continuous Conversion Mode	**Enabled ***
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
Overrun behaviour	Overrun data preserved

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Enable Regular Oversampling	Disable
Number Of Conversion	**3 ***
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Rank	1
Channel	Channel Temperature Sensor
Sampling Time	**92.5 Cycles ***
Offset Number	No offset
Rank	**2 ***
Channel	**Channel Vbat ***
Sampling Time	**92.5 Cycles ***
Offset Number	No offset
Rank	**3 ***
Channel	**Channel Vrefint ***
Sampling Time	**92.5 Cycles ***
Offset Number	No offset

ADC_Injected_ConversionMode:

Enable Injected Conversions	Disable

Analog Watchdog 1:

Enable Analog WatchDog1 Mode	false

Analog Watchdog 2:

Enable Analog WatchDog2 Mode	false

Analog Watchdog 3:

Enable Analog WatchDog3 Mode	false

7.2. GPIO

7.3. I2C1

I2C: I2C

7.3.1. Parameter Settings:

Timing configuration:

Custom Timing	Disabled
I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x30A0A7FB ***

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.4. I2C2

I2C: I2C

7.4.1. Parameter Settings:

Timing configuration:

Custom Timing	Disabled

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x30A0A7FB ***

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.5. I2C3

I2C: I2C

7.5.1. Parameter Settings:

Timing configuration:

Custom Timing	Disabled
I2C Speed Mode	**Fast Mode ***
I2C Speed Frequency (KHz)	400
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x10802D9B ***

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.6. I2C4

I2C: I2C

7.6.1. Parameter Settings:

Timing configuration:

Custom Timing	Disabled
I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x30A0A7FB ***

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.7. LPUART1

Mode: Asynchronous

7.7.1. 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
Single Sample	Disable
Prescaler	clock /1
Fifo Mode	FIFO mode disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

Advanced Features:

TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX pins Swapping	Disable

Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

7.8. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.8.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	8WS (7 CPU cycle)

RCC Parameters:

HSI Calibration Value	64
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1 boost

Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE

7.9. SPI2

Mode: Full-Duplex Master

7.9.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	**8 Bits ***
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**4 ***
Baud Rate	**42.5 MBits/s ***
Clock Polarity (CPOL)	Low

Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

7.10. SYS

Debug: Serial Wire

Timebase Source: TIM7

mode: save power of non-active UCPD - deactive Dead Battery pull-up

7.11. TIM1

Slave Mode: Reset Mode

Trigger Source: TI1FP1

Clock Source : Internal Clock

Channel1: Input Capture direct mode

Channel2: Input Capture indirect mode

Channel3: PWM Generation CH3

7.11.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**170-1 ***
Counter Mode	Up
Dithering	Disable
Counter Period (AutoReload Register - 16 bits value)	**0xffff-1 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 16 bits value)	0
auto-reload preload	Disable
Slave Mode Controller	Reset Mode

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)
Trigger Event Selection TRGO2	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0

BRK Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable
- COMP3	Disable
- COMP4	Disable
- COMP5	Disable
- COMP6	Disable
- COMP7	Disable

Break And Dead Time management - BRK2 Configuration:

BRK2 State	Disable
BRK2 Polarity	High
BRK2 Filter (4 bits value)	0
BRK2 Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable
- COMP3	Disable
- COMP4	Disable
- COMP5	Disable
- COMP6	Disable
- COMP7	Disable

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

Clear Input:

Clear Input Source	Disable

Pulse On Compare (Common for Channel 3 and 4):

Pulse Width Prescaler	0
Pulse Width	0

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

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

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (16 bits value)	**10 ***
Output compare preload	Enable
Fast Mode	**Enable ***
CH Polarity	High
CH Idle State	Reset

7.12. TIM2

Slave Mode: Reset Mode
Trigger Source: TI1FP1
Clock Source : Internal Clock
Channel1: Input Capture direct mode
Channel2: Input Capture indirect mode
Channel3: PWM Generation CH3

7.12.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**170-1 ***
Counter Mode	Up
Dithering	Disable
Counter Period (AutoReload Register - 32 bits value)	**0xffff-1 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable
Slave Mode Controller	Reset Mode

Trigger Output (TRGO) Parameters:

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

Clear Input:

Clear Input Source	Disable

Pulse On Compare (Common for Channel 3 and 4):

Pulse Width Prescaler	0
Pulse Width	0

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

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

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (32 bits value)	**10 ***
Output compare preload	Enable
Fast Mode	**Enable ***
CH Polarity	High

7.13. TIM3

Slave Mode: Reset Mode
Trigger Source: TI1FP1
Clock Source : Internal Clock
Channel1: Input Capture direct mode
Channel2: Input Capture indirect mode
Channel3: PWM Generation CH3

7.13.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**170-1 ***
Counter Mode	Up
Dithering	Disable
Counter Period (AutoReload Register - 16 bits value)	**0xffff-1 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable
Slave Mode Controller	Reset Mode

Trigger Output (TRGO) Parameters:

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

Clear Input:

Clear Input Source	Disable

Pulse On Compare (Common for Channel 3 and 4):

Pulse Width Prescaler	0
Pulse Width	0

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

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

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (16 bits value)	**10 ***
Output compare preload	Enable
Fast Mode	**Enable ***
CH Polarity	High

7.14. TIM5

Channel1: PWM Generation CH1

7.14.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**3400-1 ***
Counter Mode	Up
Dithering	Disable
Counter Period (AutoReload Register - 32 bits value)	**1000-1 ***
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 TRGO	Reset (UG bit from TIMx_EGR)

Clear Input:

Clear Input Source	Disable

Pulse On Compare (Common for Channel 3 and 4):

Pulse Width Prescaler	0
Pulse Width	0

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (32 bits value)	0
Output compare preload	Enable

Fast Mode	Disable
CH Polarity	High

7.15. TIM16

mode: Activated

Channel1: PWM Generation CH1

7.15.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**17000-1 ***
Counter Mode	Up
Dithering	Disable
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	Disable

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0
BRK Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable
- COMP3	Disable
- COMP4	Disable
- COMP5	Disable
- COMP6	Disable
- COMP7	Disable

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)	**10 ***
Output compare preload	Enable
Fast Mode	Disable

CH Polarity	High
CH Idle State	Reset

7.16. TIM17

mode: Activated

Channel1: PWM Generation CH1

7.16.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**17000-1 ***
Counter Mode	Up
Dithering	Disable
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	Disable

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0
BRK Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable
- COMP3	Disable
- COMP4	Disable
- COMP5	Disable
- COMP6	Disable
- COMP7	Disable

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)	**10 ***
Output compare preload	Enable
Fast Mode	Disable

CH Polarity	High
CH Idle State	Reset

7.17. USART3

Mode: Asynchronous

7.17.1. 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
Single Sample	Disable
ClockPrescaler	clock /1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

7.18. FATFS

mode: User-defined

7.18.1. Set Defines:

Version:

FATFS version	R0.12c

Function Parameters:

FS_READONLY (Read-only mode)	Disabled
FS_MINIMIZE (Minimization level)	Disabled
USE_STRFUNC (String functions)	Enabled with LF -> CRLF conversion
USE_FIND (Find functions)	Disabled
USE_MKFS (Make filesystem function)	Enabled
USE_FASTSEEK (Fast seek function)	Enabled
USE_EXPAND (Use f_expand function)	Disabled
USE_CHMOD (Change attributes function)	Disabled
USE_LABEL (Volume label functions)	Disabled
USE_FORWARD (Forward function)	Disabled

Locale and Namespace Parameters:

CODE_PAGE (Code page on target)	Latin 1
USE_LFN (Use Long Filename)	Disabled
MAX_LFN (Max Long Filename)	255
LFN_UNICODE (Enable Unicode)	ANSI/OEM
STRF_ENCODE (Character encoding)	UTF-8
FS_RPATH (Relative Path)	Disabled

Physical Drive Parameters:

VOLUMES (Logical drives)	1
MAX_SS (Maximum Sector Size)	512
MIN_SS (Minimum Sector Size)	512
MULTI_PARTITION (Volume partitions feature)	Disabled
USE_TRIM (Erase feature)	Disabled
FS_NOFSINFO (Force full FAT scan)	0

System Parameters:

FS_TINY (Tiny mode)	Disabled
FS_EXFAT (Support of exFAT file system)	Disabled
FS_NORTC (Timestamp feature)	Dynamic timestamp
FS_REENTRANT (Re-Entrancy)	Enabled
FS_TIMEOUT (Timeout ticks)	1000
USE_MUTEX	Disabled
SYNC_t (O/S sync object)	osSemaphoreId_t
FS_LOCK (Number of files opened simultaneously)	2

7.18.2. Advanced Settings:

User Defined:

Diskio code	User

7.19. FREERTOS

Interface: CMSIS_V2

7.19.1. Config parameters:

API:

FreeRTOS API	CMSIS v2

Versions:

FreeRTOS version	10.2.1
CMSIS-RTOS version	2.00

MPU/FPU:

ENABLE_MPU	Disabled
ENABLE_FPU	**Enabled ***

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	56
MINIMAL_STACK_SIZE	**256 ***
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	**4096 ***
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	512

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

7.19.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	**Enabled ***
vTaskSuspend	Enabled
vTaskDelayUntil	Enabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Enabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Enabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Enabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Enabled
xTaskAbortDelay	Disabled

xTaskGetHandle	Disabled
uxTaskGetStackHighWaterMark2	Disabled

7.19.3. Advanced settings:

Newlib settings (see parameter description first):

USE_NEWLIB_REENTRANT	Disabled

Project settings (see parameter description first):

Use FW pack heap file	Enabled

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PB7	I2C1_SDA	Alternate Function Open Drain	Pull-up	Low	LCD_I2C1_SDA
	PB8-BOOT0	I2C1_SCL	Alternate Function Open Drain	Pull-up	Low	LCD_I2C1_SCL
I2C2	PC4	I2C2_SCL	Alternate Function Open Drain	Pull-up	Low	mpu6050_SCL
	PA8	I2C2_SDA	Alternate Function Open Drain	Pull-up	Low	mpu6050_SDA
I2C3	PC8	I2C3_SCL	Alternate Function Open Drain	Pull-up	Low	I2C3_TOF_SCL
	PB5	I2C3_SDA	Alternate Function Open Drain	Pull-up	Low	I2C3_TOF_SDA
I2C4	PC6	I2C4_SCL	Alternate Function Open Drain	Pull-up	Low	I2C4_GY271_SCL
	PC7	I2C4_SDA	Alternate Function Open Drain	Pull-up	Low	I2C4_GY271_SDA
LPUART1	PA2	LPUART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA3	LPUART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
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	
	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PF1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI2	PB13	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI2_SD_SCK
	PB14	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI2_SD_MISO
	PB15	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI2_SD_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	T_SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM1	PC0	TIM1_CH1	Alternate Function Push Pull	**Pull-down ***	**High ***	HR04_1_ECHO
	PC2	TIM1_CH3	Alternate Function Push Pull	**Pull-down ***	**Very High ***	HR04_1_TRIG
TIM2	PA0	TIM2_CH1	Alternate Function Push Pull	**Pull-down ***	**High ***	HR04_2_ECHO
	PB10	TIM2_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	HR04_2_TRIG

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
TIM3	PA6	TIM3_CH1	Alternate Function Push Pull	**Pull-down ***	**High ***	HR04_3_ECHO
	PB0	TIM3_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	HR04_3_TRIG
TIM5	PB2	TIM5_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	MG90S_PWM
TIM16	PA12	TIM16_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	MOTOR1_PWM
TIM17	PA7	TIM17_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	MOTOR2_PWM
USART3	PB11	USART3_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	USART3_ESP_RX
	PB9	USART3_TX	Alternate Function Push Pull	**Pull-down ***	**High ***	USART3_ESP_TX
Single Mapped Signals	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	T_SWO
GPIO	PC13	GPIO_EXTI13	External Interrupt Mode with Rising edge trigger detection	**Pull-down ***	n/a	B1 [blue push button]
	PA1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3[DMA Activity]
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SDCS
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD2 [green led]
	PC5	GPIO_EXTI5	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	B2
	PA9	GPIO_Output	Output Push Pull	**Pull-up ***	Low	UV_LED
	PA10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOTOR1_IN2
	PA11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOTOR1_IN1
	PC10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOTOR2_IN3
	PC11	GPIO_EXTI11	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	SPDSens3
	PC12	GPIO_EXTI12	**External Interrupt Mode with Falling edge trigger detection**	**Pull-up ***	n/a	SPDSens4
	PD2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOTOR2_IN4

8.2. DMA configuration

DMA request	Stream	Direction	Priority
I2C1_RX	DMA1_Channel3	Peripheral To Memory	Low
I2C1_TX	DMA1_Channel4	Memory To Peripheral	Low
ADC5	DMA1_Channel1	Peripheral To Memory	Low

I2C1_RX: DMA1_Channel3 DMA request Settings:

Mode:	**Circular ***
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

I2C1_TX: DMA1_Channel4 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

ADC5: DMA1_Channel1 DMA request Settings:

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

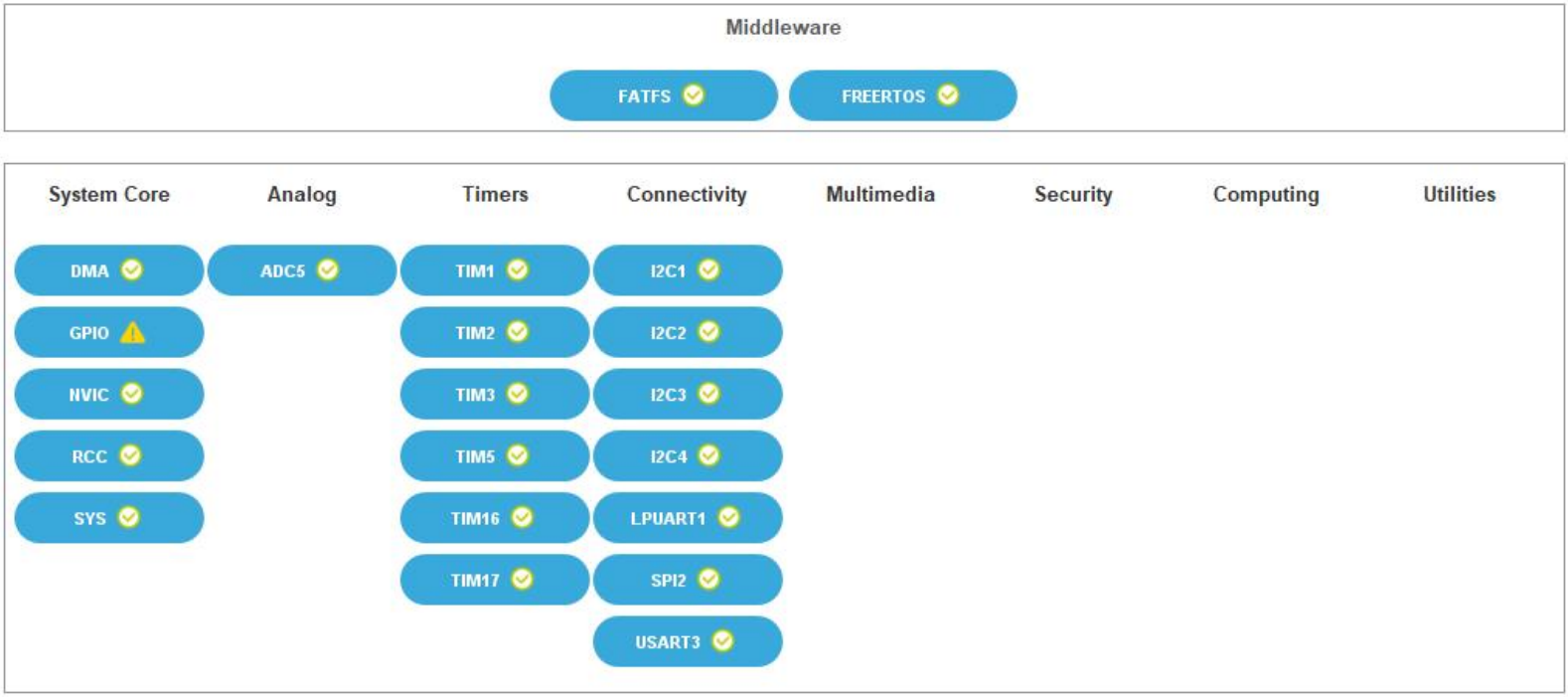
8.3. NVIC configuration

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	15	0
System tick timer	true	15	0
DMA1 channel1 global interrupt	true	5	0
DMA1 channel3 global interrupt	true	5	0
DMA1 channel4 global interrupt	true	5	0
EXTI line[9:5] interrupts	true	5	0
TIM1 capture compare interrupt	true	5	0
TIM2 global interrupt	true	5	0
TIM3 global interrupt	true	5	0
I2C1 event interrupt / I2C1 wake-up interrupt through EXTI line 23	true	5	0
I2C1 error interrupt	true	5	0
USART3 global interrupt / USART3 wake-up interrupt through EXTI line 28	true	5	0
EXTI line[15:10] interrupts	true	5	0
TIM7 global interrupt, DAC2 and DAC4 channel underrun error interrupts	true	0	0
ADC5 global interrupt	true	5	0
LPUART1 global interrupt	true	5	0
PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/38/39/40/41	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break interrupt and TIM15 global interrupt	unused		
TIM1 update interrupt and TIM16 global interrupt	unused		
TIM1 trigger and commutation interrupts and TIM17 global interrupt	unused		
I2C2 event interrupt / I2C2 wake-up interrupt through EXTI line 24	unused		
I2C2 error interrupt	unused		
SPI2 global interrupt	unused		
TIM5 global interrupt	unused		

Interrupt Table	Enable	Preenmption Priority	SubPriority
FPU global interrupt	unused		
I2C4 event interrupt / I2C4 wake-up interrupt through EXTI line 42	unused		
I2C4 error interrupt	unused		
I2C3 event interrupt / I2C3 wake-up interrupt through EXTI line 27	unused		
I2C3 error interrupt	unused		

*** User modified value**

9. Predefined Views - Category view : Current



10. Software Pack Report

10.1. Software Pack selected

Vendor	Name	Version	Component
STMicroelectronics	FreeRTOS	0.0.1	Class : RTOS Group : Core Version : 10.2.0