

1. Description

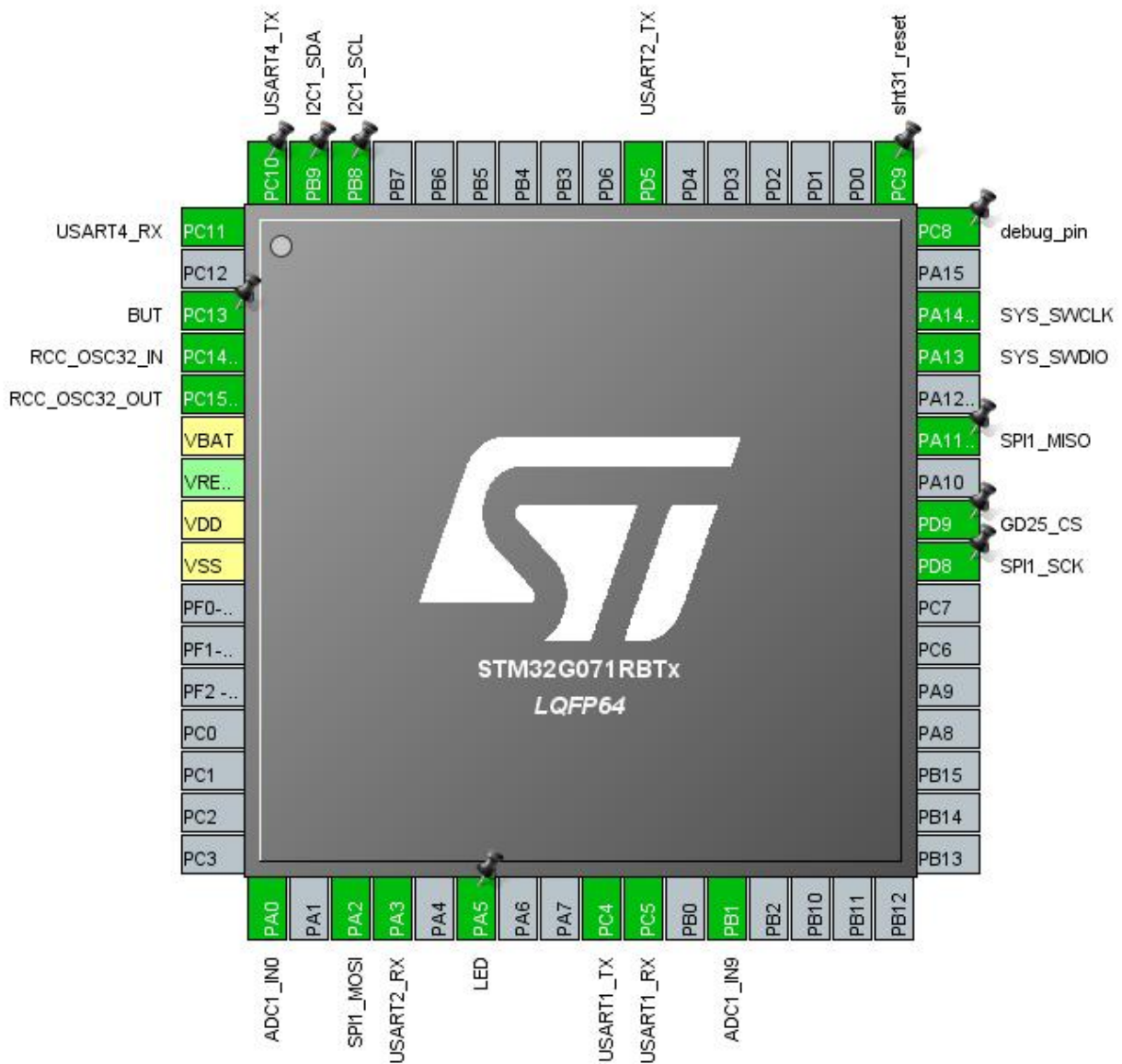
1.1. Project

Project Name	multisensor_STM32G071RB
Board Name	NUCLEO-G071RB
Generated with:	STM32CubeMX 5.1.0
Date	03/26/2019

1.2. MCU

MCU Series	STM32G0
MCU Line	STM32G0x1
MCU name	STM32G071RBTx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration

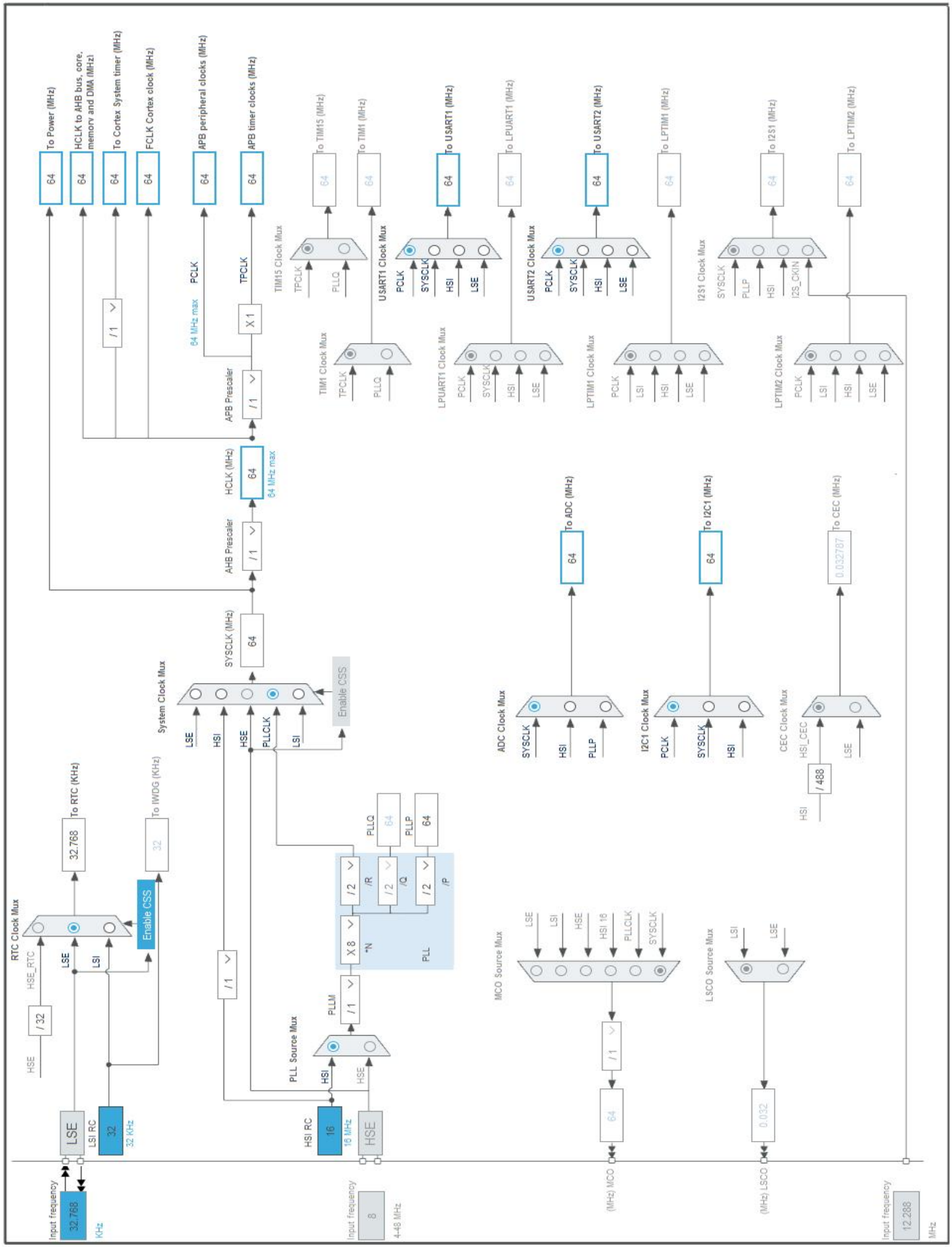


3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PC11	I/O	USART4_RX	
3	PC13 *	I/O	GPIO_Input	BUT
4	PC14-OSC32_IN (PC14)	I/O	RCC_OSC32_IN	
5	PC15-OSC32_OUT (PC15)	I/O	RCC_OSC32_OUT	
6	VBAT	Power		
8	VDD	Power		
9	VSS	Power		
17	PA0	I/O	ADC1_IN0	
19	PA2	I/O	SPI1_MOSI	
20	PA3	I/O	USART2_RX	
22	PA5 *	I/O	GPIO_Output	LED
25	PC4	I/O	USART1_TX	
26	PC5	I/O	USART1_RX	
28	PB1	I/O	ADC1_IN9	
40	PD8	I/O	SPI1_SCK	
41	PD9 *	I/O	GPIO_Output	GD25_CS
43	PA11 [PA9]	I/O	SPI1_MISO	
45	PA13	I/O	SYS_SWDIO	
46	PA14-BOOT0	I/O	SYS_SWCLK	
48	PC8 *	I/O	GPIO_Output	debug_pin
49	PC9 *	I/O	GPIO_Output	sht31_reset
55	PD5	I/O	USART2_TX	
62	PB8	I/O	I2C1_SCL	
63	PB9	I/O	I2C1_SDA	
64	PC10	I/O	USART4_TX	

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	multisensor_STM32G071RB
Project Folder	C:\STM32G0Workshop\HandsOn\multisensor_STM32G071RB
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_G0 V1.1.0

5.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	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
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	STM32G0
Line	STM32G0x1
MCU	STM32G071RBTx
Datasheet	DS12232_Rev0

6.2. Parameter Selection

Temperature	25
Vdd	null

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN0

mode: IN9

7.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Synchronous clock mode divided by 2
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Sequencer	Sequencer set to fully configurable
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Low Power Auto Wait	Disabled
Auto Off	Disabled
Oversampling Mode	Disabled

ADC_Regular_ConversionMode:

SamplingTime Common 1	1.5 Cycles
SamplingTime Common 2	1.5 Cycles
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Trigger Frequency	High frequency
Rank	1
Channel	Channel 0
Sampling Time	Sampling time common 1

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. CRC

mode: Activated

7.2.1. Parameter Settings:

Basic Parameters:

Default Polynomial State	Disable *
CRC Length	8-bit *
CRC Generating Polynomial	X2+X1+X0
Default Init Value State	Enable

Advanced Parameters:

Input Data Inversion Mode	None
Output Data Inversion Mode	Disable
Input Data Format	Bytes

7.3. I2C1

I2C: I2C

7.3.1. 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	0x00602173 *

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. RCC

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.4.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

HSI Calibration Value	64
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000
LSE Drive Capability	LSE oscillator low drive capability

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1
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Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE
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7.5. RTC

mode: Activate Clock Source

mode: Activate Calendar

7.5.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	127
Synchronous Predivider value	255

Calendar Time:

Data Format	Binary data format *
Hours	0
Minutes	0
Seconds	0
SubSeconds	0
Day Light Saving: value of hour adjustment	Daylightsaving None
Store Operation	Storeoperation Reset

Calendar Date:

Week Day	Monday
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Month January
Date 1
Year 0

7.6. SPI1

Mode: Full-Duplex Master

7.6.1. Parameter Settings:

Basic Parameters:

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

Clock Parameters:

Prescaler (for Baud Rate) **32 ***
Baud Rate **2.0 MBits/s ***
Clock Polarity (CPOL) **High ***
Clock Phase (CPHA) **2 Edge ***

Advanced Parameters:

CRC Calculation Disabled
NSS Signal Type Software

7.7. SYS

mode: Debug

Timebase Source: TIM17

7.8. TIM6

mode: Activated

7.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value) **1 ***
Counter Mode Up
Counter Period (AutoReload Register - 16 bits value) **60000 ***
auto-reload preload **Enable ***

Trigger Output (TRGO) Parameters:

Trigger Event Selection

Reset (UG bit from TIMx_EGR)

7.9. USART1

Mode: Asynchronous

7.9.1. Parameter Settings:

Basic Parameters:

Baud Rate	9600 *
Word Length	9 Bits (including Parity) *
Parity	Even *
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

7.10. USART2

Mode: Asynchronous

7.10.1. Parameter Settings:

Basic Parameters:

Baud Rate	9600 *
Word Length	9 Bits (including Parity) *

Parity	Even *
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

7.11. USART4

Mode: Asynchronous

7.11.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	9 Bits (including Parity) *
Parity	Even *
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:

TX Pin Active Level Inversion	Disable
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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

7.12. FREERTOS

Interface: CMSIS_V1

7.12.1. Config parameters:

API:

FreeRTOS API CMSIS v1

Versions:

FreeRTOS version 10.0.1

CMSIS-RTOS version 1.02

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	7
MINIMAL_STACK_SIZE	64 *
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Disabled
USE_COUNTING_SEMAPHORES	Disabled
QUEUE_REGISTRY_SIZE	16 *
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	8192 *
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	Enabled *
USE_TRACE_FACILITY	Disabled
USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Disabled
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Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	3
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	3

7.12.2. Include parameters:

Include definitions:

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

* 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	ADC1_IN0	Analog mode	No pull-up and no pull-down	n/a	
	PB1	ADC1_IN9	Analog mode	No pull-up and no pull-down	n/a	
I2C1	PB8	I2C1_SCL	Alternate Function Open Drain	Pull-up	Low	
	PB9	I2C1_SDA	Alternate Function Open Drain	Pull-up	Low	
RCC	PC14-OSC32_IN (PC14)	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT (PC15)	RCC_OSC32_OUT	n/a	n/a	n/a	
SPI1	PA2	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD8	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA11 [PA9]	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14-BOOT0	SYS_SWCLK	n/a	n/a	n/a	
USART1	PC4	USART1_TX	Alternate Function Push Pull	Pull-up	Low	
	PC5	USART1_RX	Alternate Function Push Pull	Pull-up	Low	
USART2	PA3	USART2_RX	Alternate Function Push Pull	Pull-up	Low	
	PD5	USART2_TX	Alternate Function Push Pull	Pull-up	Low	
USART4	PC11	USART4_RX	Alternate Function Push Pull	Pull-up	Low	
	PC10	USART4_TX	Alternate Function Push Pull	Pull-up	Low	
GPIO	PC13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BUT
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED
	PD9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very High *	GD25_CS
	PC8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very High *	debug_pin
	PC9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	sht31_reset

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
System service call via SWI instruction	true	0	0
Pendable request for system service	true	3	0
System tick timer	true	3	0
TIM6, DAC1 and LPTIM1 interrupts (LPTIM1 interrupt through EXTI line 29)	true	3	0
TIM17 global interrupt	true	0	0
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	true	3	0
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26	true	3	0
USART3, USART4 and LPUART1 interrupts / LPUART1 wake-up interrupt through EXTI line 28	true	3	0
PVD interrupt through EXTI line 16		unused	
Flash global interrupt		unused	
RCC global interrupt		unused	
ADC1, COMP1 and COMP2 interrupts (COMP interrupts through EXTI lines 17 and 18)		unused	
I2C1 event global interrupt / I2C1 wake-up interrupt through EXTI line 23		unused	
SPI1 global interrupt		unused	

* User modified value

9. Software Pack Report