

STM32 CubeMX

1. Description

1.1. Project

Project Name	Lab05
Board Name	STM32F3DISCOVERY
Generated with:	STM32CubeMX 6.16.1
Date	02/10/2026

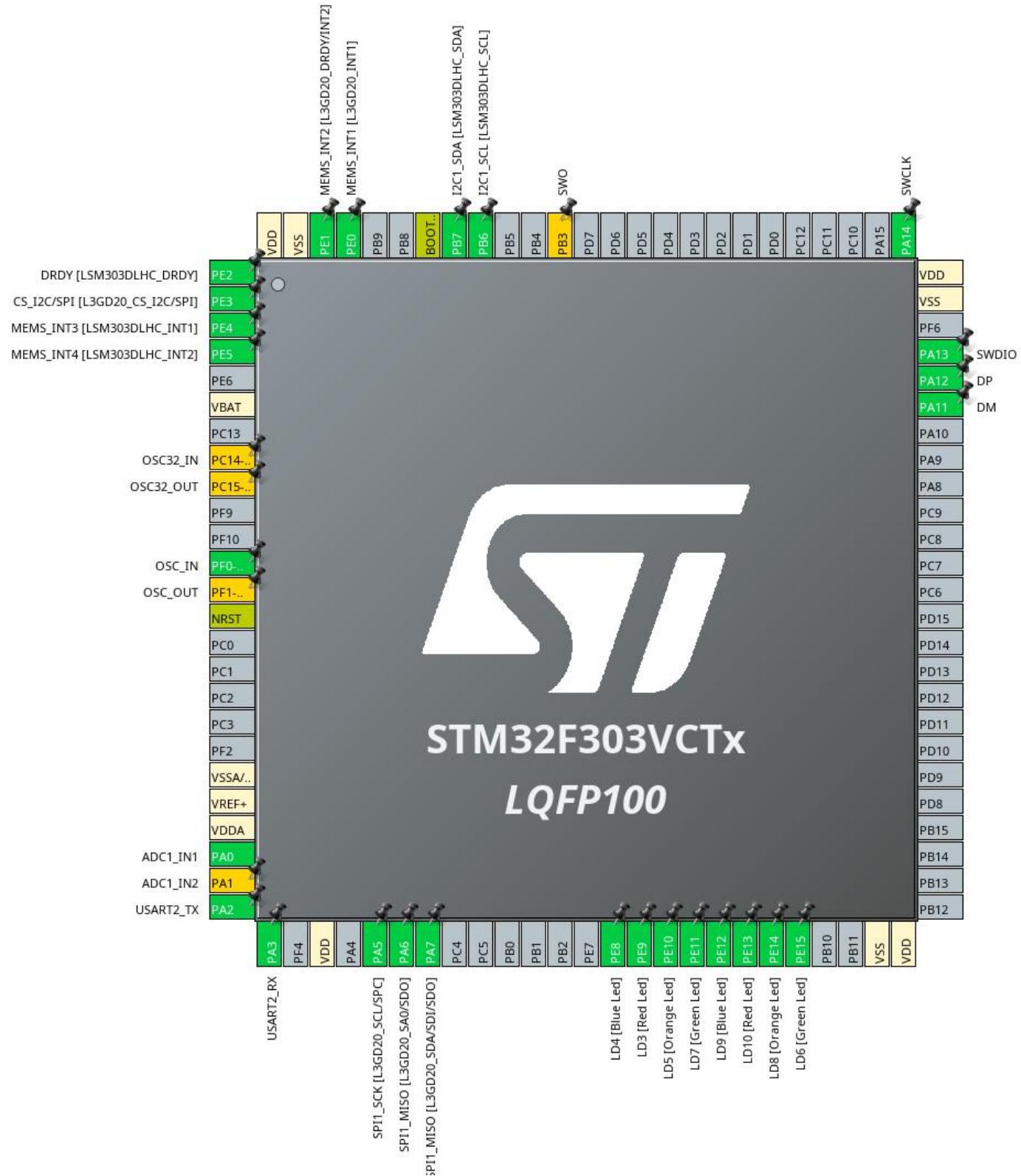
1.2. MCU

MCU Series	STM32F3
MCU Line	STM32F303
MCU name	STM32F303VCTx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	Arm Cortex-M4
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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	DRDY [LSM303DLHC_DRDY]
2	PE3 *	I/O	GPIO_Output	CS_I2C/SPI [L3GD20_CS_I2C/SPI]
3	PE4	I/O	GPIO_EXTI4	MEMS_INT3 [LSM303DLHC_INT1]
4	PE5	I/O	GPIO_EXTI5	MEMS_INT4 [LSM303DLHC_INT2]
6	VBAT	Power		
8	PC14-OSC32_IN **	I/O	RCC_OSC32_IN	OSC32_IN
9	PC15-OSC32_OUT **	I/O	RCC_OSC32_OUT	OSC32_OUT
12	PF0-OSC_IN	I/O	RCC_OSC_IN	OSC_IN
13	PF1-OSC_OUT **	I/O	RCC_OSC_OUT	OSC_OUT
14	NRST	Reset		
20	VSSA/VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
23	PA0	I/O	ADC1_IN1	
24	PA1 **	I/O	ADC1_IN2	
25	PA2	I/O	USART2_TX	
26	PA3	I/O	USART2_RX	
28	VDD	Power		
30	PA5	I/O	SPI1_SCK	SPI1_SCK [L3GD20_SCL/SPC]
31	PA6	I/O	SPI1_MISO	SPI1_MISO [L3GD20_SA0/SDO]
32	PA7	I/O	SPI1_MOSI	SPI1_MISO [L3GD20_SDA/SDI/SDO]
39	PE8 *	I/O	GPIO_Output	LD4 [Blue Led]
40	PE9 *	I/O	GPIO_Output	LD3 [Red Led]
41	PE10 *	I/O	GPIO_Output	LD5 [Orange Led]
42	PE11 *	I/O	GPIO_Output	LD7 [Green Led]
43	PE12 *	I/O	GPIO_Output	LD9 [Blue Led]
44	PE13 *	I/O	GPIO_Output	LD10 [Red Led]
45	PE14 *	I/O	GPIO_Output	LD8 [Orange Led]
46	PE15 *	I/O	GPIO_Output	LD6 [Green Led]
49	VSS	Power		

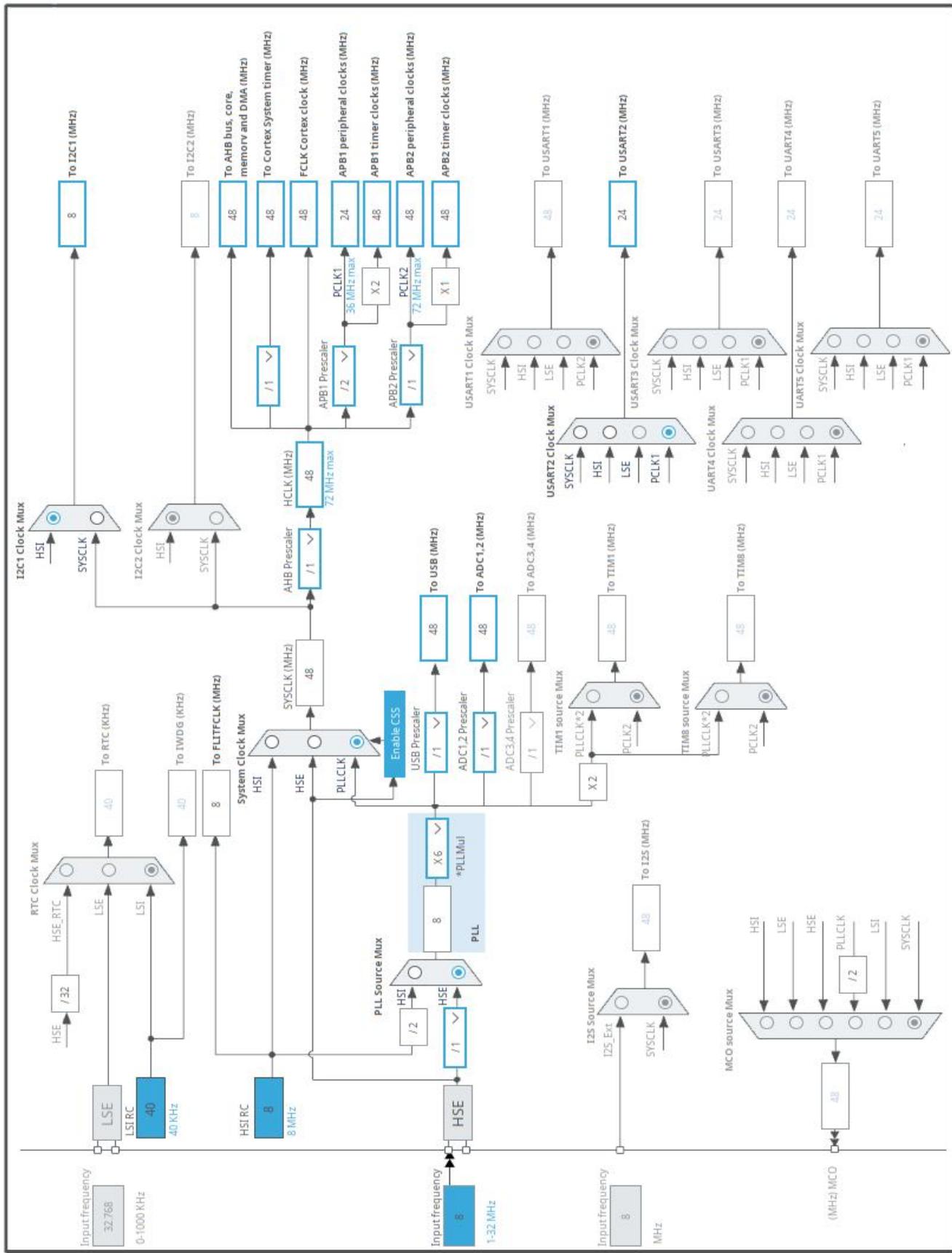
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Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
50	VDD	Power		
70	PA11	I/O	USB_DM	DM
71	PA12	I/O	USB_DP	DP
72	PA13	I/O	SYS_JTMS-SWDIO	SWDIO
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	SWCLK
89	PB3 **	I/O	SYS_JTDO-TRACESWO	SWO
92	PB6	I/O	I2C1_SCL [LSM303DLHC_SCL]	I2C1_SCL [LSM303DLHC_SCL]
93	PB7	I/O	I2C1_SDA	I2C1_SDA [LSM303DLHC_SDA]
94	BOOT0	Boot		
97	PE0	I/O	GPIO_EXTI0	MEMS_INT1 [L3GD20_INT1]
98	PE1	I/O	GPIO_EXTI1	MEMS_INT2 [L3GD20_DRDY/INT2]
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



1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32F3
Line	STM32F303
MCU	STM32F303VCTx
Datasheet	DS9118_Rev13

1.2. Parameter Selection

Temperature	25
Vdd	3.6

1.3. 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

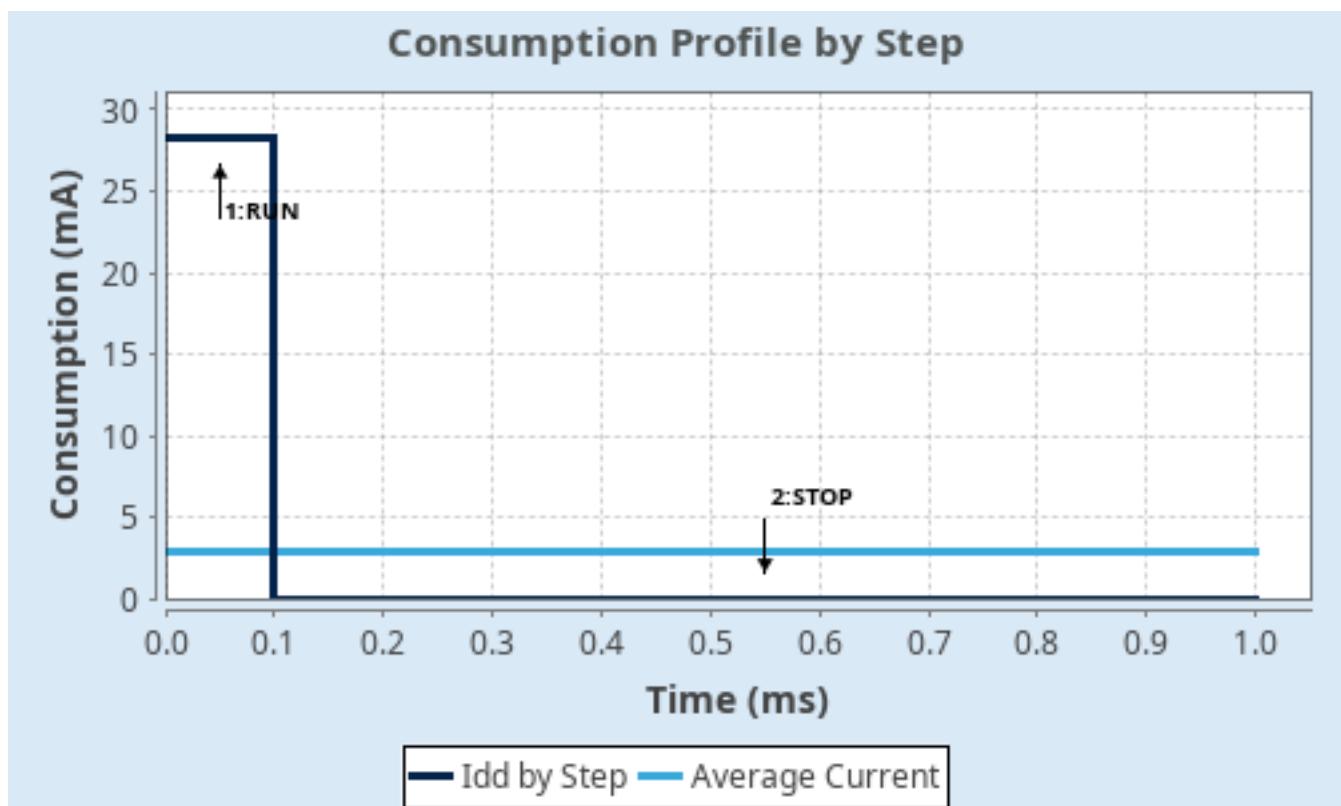
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.6	3.6
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	28.24 mA	10.85 µA
Duration	0.1 ms	0.9 ms
DMIPS	63.0	0.0
T_a Max	100.83	105
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	2.83 mA
Battery Life	1 month, 19 days, 12 hours	Average DMIPS	63.0 DMIPS

1.6. Chart



2. Software Project

2.1. Project Settings

Name	Value
Project Name	Lab05
Project Folder	/home/hadi-abbas/Desktop/work/MCI/Lab05/task2
Toolchain / IDE	CMake
Firmware Package Name and Version	STM32Cube FW_F3 V1.11.5
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

2.2. 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

2.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_ADC1_Init	ADC1
4	MX_I2C1_Init	I2C1
5	MX_SPI1_Init	SPI1
6	MX_USB_PCD_Init	USB
7	MX_USART2_UART_Init	USART2

3. Peripherals and Middlewares Configuration

3.1. ADC1

IN1: IN1 Single-ended

3.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode Independent mode

ADC_Settings:

Clock Prescaler	ADC Asynchronous clock mode
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
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 overwritten
Low Power Auto Wait	Disabled

ADC-Regular_ConversionMode:

Enable Regular Conversions	Enable
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
SequencerNbRanks	1
<u>Rank</u>	1
Channel	Channel 1
Sampling Time	1.5 Cycles
Offset Number	No offset
Offset	0

ADC_Injected_ConversionMode:

Enable Injected Conversions	Enable
Number Of Conversions	0

Analog Watchdog 1:

Enable Analog WatchDog1 Mode	false
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Analog Watchdog 2:

Enable Analog WatchDog2 Mode	false
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Analog Watchdog 3:

Enable Analog WatchDog3 Mode	false
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3.2. I2C1

I2C: I2C

3.2.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	100
Fall Time (ns)	100
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x00201D2B *

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

3.3. RCC

High Speed Clock (HSE): BYPASS Clock Source

3.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	1 WS (2 CPU cycle)

RCC Parameters:

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

3.4. SPI1

Mode: Full-Duplex Master

3.4.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	4 *
Baud Rate	12.0 MBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

3.5. SYS

Debug: Serial Wire

Timebase Source: SysTick

3.6. USART2

Mode: Asynchronous

3.6.1. Parameter Settings:

Basic Parameters:

Baud Rate	38400
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

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

3.7. USB

mode: Device (FS)

3.7.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Physical interface	Internal Phy

Power Parameters:

Low Power	Disabled
Battery Charging	Disabled

* User modified value

4. System Configuration

4.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA0	ADC1_IN1	Analog mode	No pull-up and no pull-down	n/a	
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	Pull-up *	High *	I2C1_SCL [LSM303DLHC_SCL]
	PB7	I2C1_SDA	Alternate Function Open Drain	Pull-up *	High *	I2C1_SDA [LSM303DLHC_SDA]
RCC	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	OSC_IN
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	High *	SPI1_SCK [L3GD20_SCL/SPC]
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	High *	SPI1_MISO [L3GD20_SA0/SDO]
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	High *	SPI1_MISO [L3GD20_SDA/SDI/SDO]
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
USART2	PA2	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	High *	
	PA3	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	High *	
USB	PA11	USB_DM	Alternate Function Push Pull	No pull-up and no pull-down	High *	DM
	PA12	USB_DP	Alternate Function Push Pull	No pull-up and no pull-down	High *	DP
Single Mapped Signals	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	OSC32_IN
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	OSC32_OUT
	PF1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	OSC_OUT
	PA1	ADC1_IN2	Analog mode	No pull-up and no pull-down	n/a	
	PB3	SYS_JTDO-TRACESWO	n/a	n/a	n/a	SWO
GPIO	PE2	GPIO_EXTI2	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	DRDY [LSM303DLHC_DRDY]
	PE3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CS_I2C/SPI [L3GD20_CS_I2C/SPI]
	PE4	GPIO_EXTI4	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	MEMS_INT3 [LSM303DLHC_INT1]

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IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PE5	GPIO_EXTI5	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	MEMS_INT4 [LSM303DLHC_INT2]
	PE8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD4 [Blue Led]
	PE9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Red Led]
	PE10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD5 [Orange Led]
	PE11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD7 [Green Led]
	PE12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD9 [Blue Led]
	PE13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD10 [Red Led]
	PE14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD8 [Orange Led]
	PE15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD6 [Green Led]
	PE0	GPIO_EXTI0	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	MEMS_INT1 [L3GD20_INT1]
	PE1	GPIO_EXTI1	External Event Mode with Rising edge trigger detection *	No pull-up and no pull-down	n/a	MEMS_INT2 [L3GD20_DRDY/INT2]

4.2. DMA configuration

nothing configured in DMA service

4.3. NVIC configuration

4.3.1. NVIC

Interrupt Table	Enable	Preenemption 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
ADC1 and ADC2 interrupts	true	0	0
PVD interrupt through EXTI line16		unused	
Flash global interrupt		unused	
RCC global interrupt		unused	
USB high priority or CAN_TX interrupts		unused	
USB low priority or CAN_RX0 interrupts		unused	
I2C1 event global interrupt / I2C1 wake-up interrupt through EXTI line 23		unused	
I2C1 error interrupt		unused	
SPI1 global interrupt		unused	
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26		unused	
USB high priority interrupt remap		unused	
USB low priority interrupt remap		unused	
Floating point unit interrupt		unused	

4.3.2. 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	true	false
Debug monitor	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true

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Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
ADC1 and ADC2 interrupts	false	true	true

* User modified value

5. System Views

5.1. Category view

5.1.1. Current

Middleware

System Core	Analog	Timers	Connectivity	Multimedia	Computing
DMA	ADC1		I2C1		
GPIO			SPI1		
NVIC			USART2		
RCC			USB		
SYS					

6. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32f3_bsdl.zip
System View	https://www.st.com/resource/en/svd/stm32f3-svd.zip
Description	
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf
Brochures	https://www.st.com/resource/en/brochure/products-and-solutions-for-plcs-and-smart-i-os.pdf
Brochures	https://www.st.com/resource/en/brochure/expansion-boards-for-intelligent-power-switches.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flpowerstbd.pdf
Flyers	https://www.st.com/resource/en/flyer/fldpstpf11120.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32_authentication_can.pdf
Security Bulletin	https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products

stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an3371-using-the-hardware-realtime-clock-rtc-in-stm32-f0-f2-f3-f4-and-l1-series-of-mcus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4045-stm32f3-series-in-application-programming-iap-using-the-usart-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4076-two-or-three-shunt-resistor-based-current-sensing-circuit-design-in-3phase-inverters-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4099-implementation-of-transmitters-and-receivers-for-infrared-remote-control-protocols-with-mcus-of-the-stm32f0-and-stm32f3-series-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4195-stm32f30x-adc-modes-and-application-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4206-getting-started-with-stm32f3-series-hardware-development-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4228-migrating-from-stm32f1-series-to-stm32f3-series-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4232-getting-started-with-analog-comparators-for-stm32f3-series-and-stm32g4-series-devices-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4296-use-stm32f3stm32g4-ccm-sram-with-iar-embedded-workbench-keil-mdkarm-stmicroelectronics-stm32cubeide-and-other-gnubased-toolchains-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4538-power-consumption-optimization-with-stm32f3xx-microcontrollers

stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4651-stm32f3-series-peripheral-interconnect-matrix-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4734-stm32cube-firmware-examples-for-stm32f3-series-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4776-generalpurpose-timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4807-migrating-between-stm32f303-and-stm32f302-line-products-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4832-migrating-from-stm32f303-line-to-stm32l4-series-and-stm32l4-series-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4989-stm32-microcontroller-debug-toolbox-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5027-interfacing-pdm-digital-microphones-using-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5310-guideline-for-using-analog-features-of-stm32g4-series-versus-stm32f3-series-devices-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5094-migrating-between-stm32f334303-lines-and-stm32g431xxg474xxg491xx-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4899-stm32-microcontroller-gpio-hardware-settings-and-lowpower-consumption-stmicroelectronics.pdf

- Application Notes https://www.st.com/resource/en/application_note/an5612-esd-protection-of-stm32-mcus-and-mpus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an4991-how-to-wake-up-an-stm32-microcontroller-from-lowpower-mode-with-the-usart-or-the-lpuart-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an4838-introduction-to-memory-protection-unit-management-on-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an4879-introduction-to-usb-hardware-and-pcb-guidelines-using-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5225-introduction-to-usb-typec-power-delivery-for-stm32-mcus-and-mpus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5537-how-to-use-adc-oversampling-techniques-to-improve-signaltonoise-ratio-on-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5036-guidelines-for-thermal-management-on-stm32-applications-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5978-introduction-to-mb1971-ilc-hat-12-v-to-75-v1-a-for-f334-g474-nucleo-board-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an2548-introduction-to-dma-controller-for-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3236-how-to-increase-the-number-of-touchkeys-for-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3960-guidelines-for-esd-for-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf
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