



1. Description

1.1. Project

Project Name	STM32G431CBU6_Cmake_vscode_env
Board Name	custom
Generated with:	STM32CubeMX 6.14.1
Date	06/08/2025

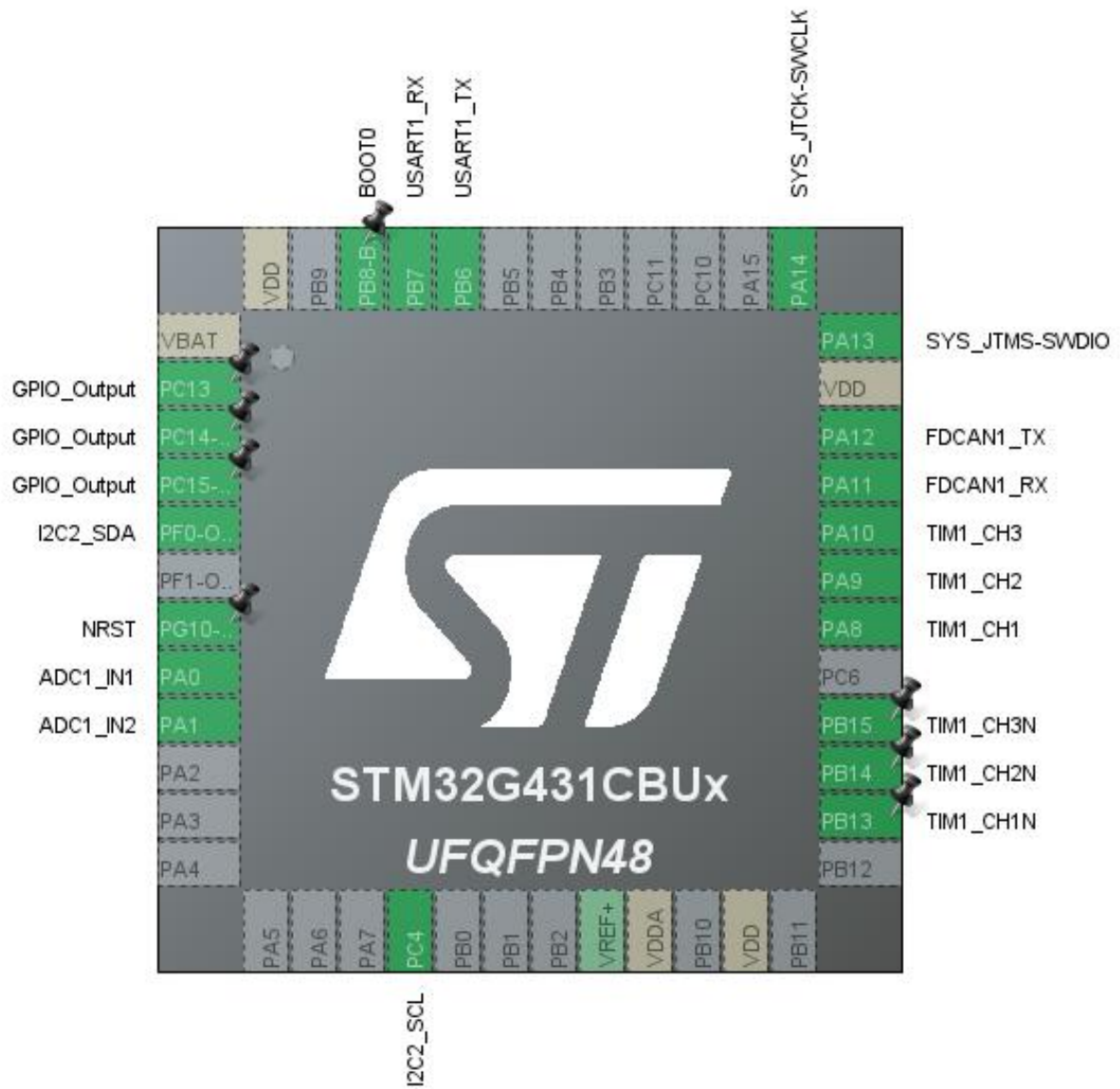
1.2. MCU

MCU Series	STM32G4
MCU Line	STM32G4x1
MCU name	STM32G431CBUx
MCU Package	UFQFPN48
MCU Pin number	48

1.3. Core(s) information

Core(s)	ARM Cortex-M4
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2. Pinout Configuration

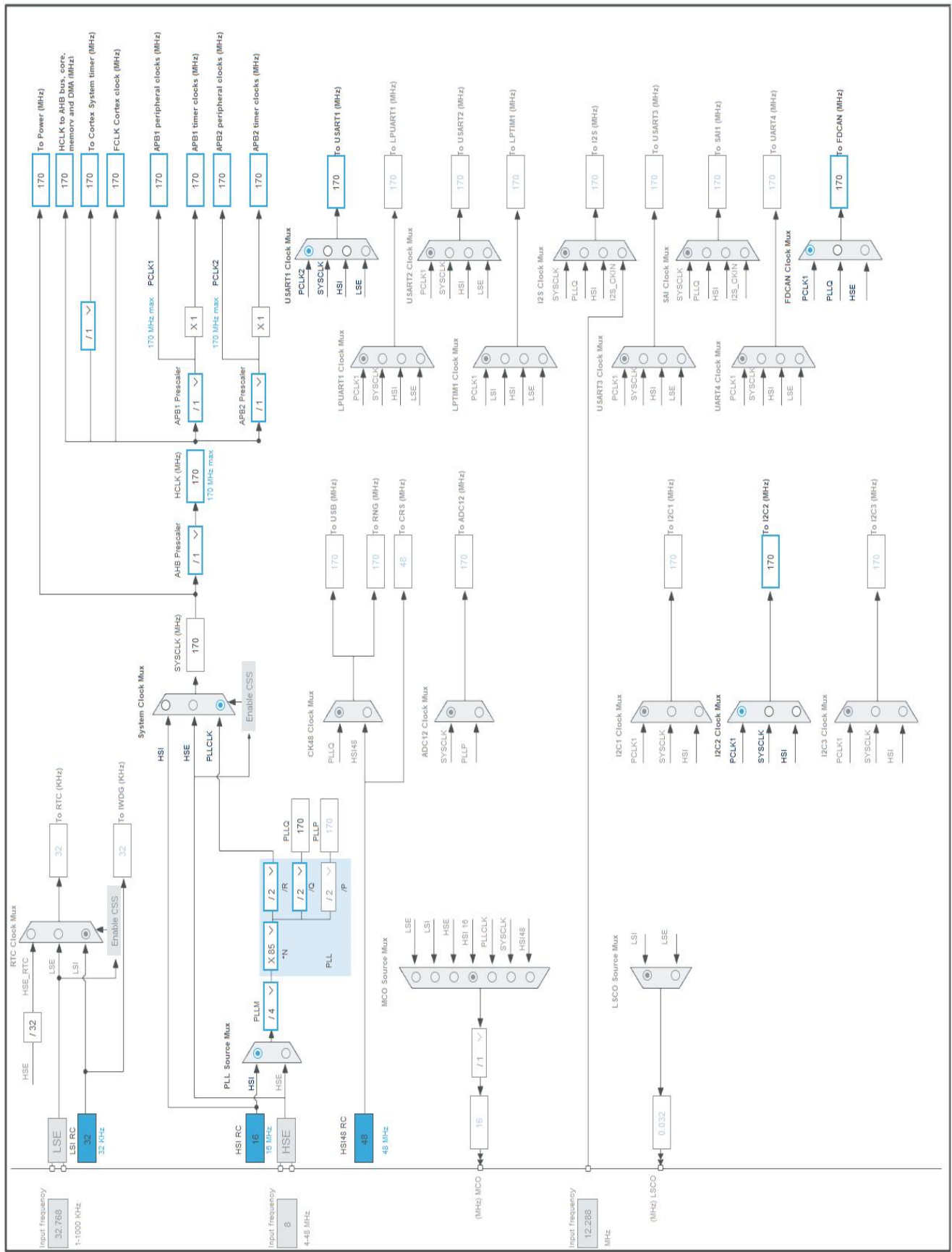


3. Pins Configuration

Pin Number UFQFPN48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13 *	I/O	GPIO_Output	
3	PC14-OSC32_IN *	I/O	GPIO_Output	
4	PC15-OSC32_OUT *	I/O	GPIO_Output	
5	PF0-OSC_IN	I/O	I2C2_SDA	
7	PG10-NRST *	I/O	GPIO_Input	NRST
8	PA0	I/O	ADC1_IN1	
9	PA1	I/O	ADC1_IN2	
16	PC4	I/O	I2C2_SCL	
21	VDDA	Power		
23	VDD	Power		
26	PB13	I/O	TIM1_CH1N	
27	PB14	I/O	TIM1_CH2N	
28	PB15	I/O	TIM1_CH3N	
30	PA8	I/O	TIM1_CH1	
31	PA9	I/O	TIM1_CH2	
32	PA10	I/O	TIM1_CH3	
33	PA11	I/O	FDCAN1_RX	
34	PA12	I/O	FDCAN1_TX	
35	VDD	Power		
36	PA13	I/O	SYS_JTMS-SWDIO	
37	PA14	I/O	SYS_JTCK-SWCLK	
44	PB6	I/O	USART1_TX	
45	PB7	I/O	USART1_RX	
46	PB8-BOOT0 *	I/O	GPIO_Input	BOOT0
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32G4
Line	STM32G4x1
MCU	STM32G431CBUx
Datasheet	DS12589_Rev0

1.2. Parameter Selection

Temperature	25
Vdd	3.0

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

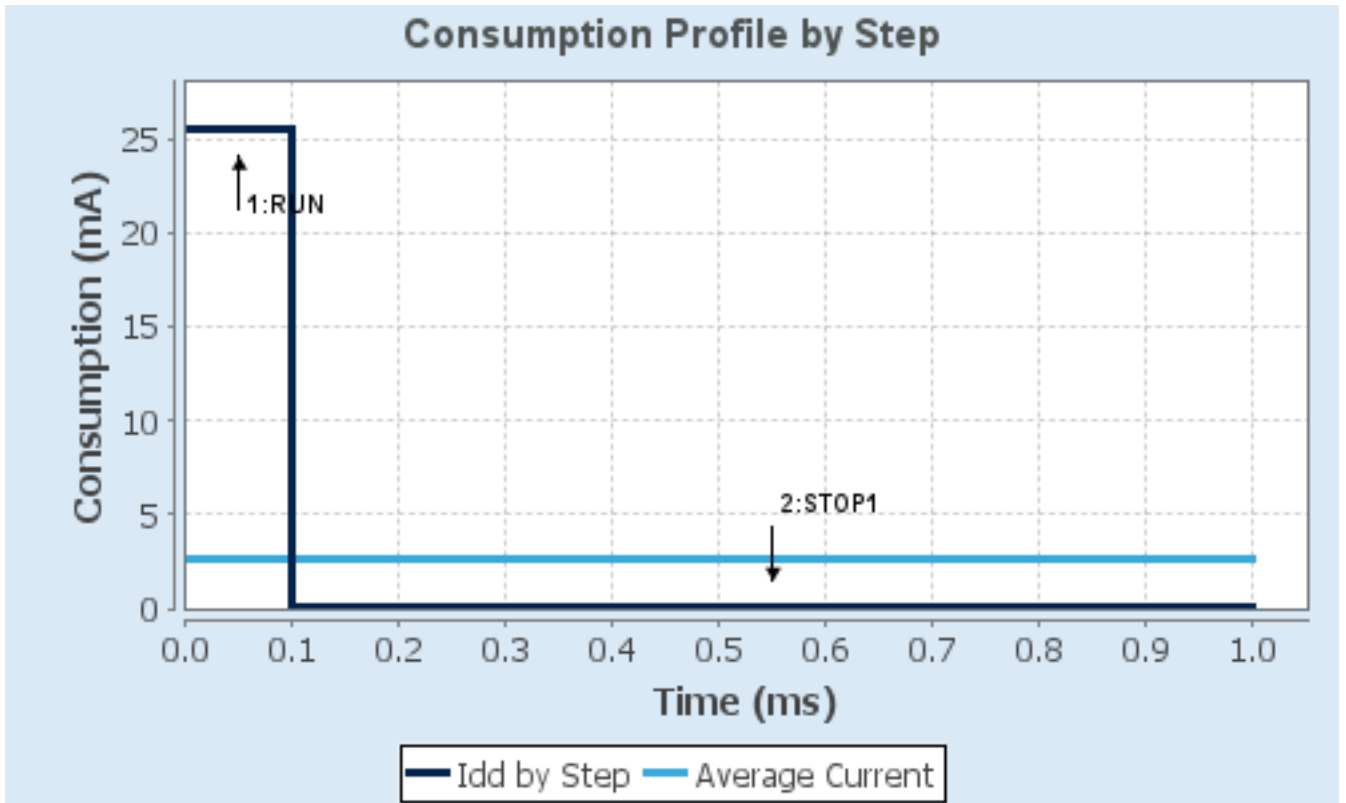
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP1
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-Boost	NoRange
Fetch Type	FLASH/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	25.5 mA	59 μ A
Duration	0.1 ms	0.9 ms
DMIPS	213.0	0.0
Ta Max	127.71	129.99
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	2.6 mA
Battery Life	1 month, 23 days, 22 hours	Average DMIPS	212.5 DMIPS

1.6. Chart



2. Software Project

2.1. Project Settings

Name	Value
Project Name	STM32G431CBU6_Cmake_vscode_env
Project Folder	C:\Users\dennis\Desktop\workspace\github_projects\FOC_L\TsFoc\Tsloc_Soft\T
Toolchain / IDE	CMake
Firmware Package Name and Version	STM32Cube FW_G4 V1.6.1
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x2000
Minimum Stack Size	0x4000

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	Yes
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_DMA_Init	DMA
4	MX_ADC1_Init	ADC1
5	MX_FDCAN1_Init	FDCAN1
6	MX_TIM1_Init	TIM1
7	MX_I2C2_Init	I2C2
8	MX_USART1_UART_Init	USART1

3. Peripherals and Middlewares Configuration

3.1. ADC1

IN1: IN1 Single-ended

IN2: IN2 Single-ended

3.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode Independent mode

ADC_Settings:

Clock Prescaler Synchronous clock mode divided by 4

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 Disabled

Discontinuous Conversion Mode Disabled

DMA Continuous Requests **Enabled ***

Overrun behaviour Overrun data preserved

ADC_Regular_ConversionMode:

Enable Regular Conversions Enable

Enable Regular Oversampling Disable

Number Of Conversion **2 ***

External Trigger Conversion Source Regular Conversion launched by software

External Trigger Conversion Edge None

Rank 1

Channel Channel 1

Sampling Time **6.5 Cycles ***

Offset Number No offset

Rank **2 ***

Channel **Channel 2 ***

Sampling Time **6.5 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

3.2. FDCAN1

mode: Activated

3.2.1. Parameter Settings:

Basic Parameters:

Clock Divider	Divide kernel clock by 1
Frame Format	Classic mode
Mode	Normal mode
Auto Retransmission	Disable
Transmit Pause	Disable
Protocol Exception	Disable
Nominal Sync Jump Width	1
Data Prescaler	1
Data Sync Jump Width	1
Data Time Seg1	1
Data Time Seg2	1
Std Filters Nbr	0
Ext Filters Nbr	0
Tx Fifo Queue Mode	FIFO mode

Bit Timings Parameters:

Nominal Prescaler	16
Nominal Time Quantum	94.11764705882354 *
Nominal Time Seg1	1
Nominal Time Seg2	1
Nominal Time for one Bit	282 *
Nominal Baud Rate	3541666 *

3.3. I2C2

I2C: I2C

3.3.1. Parameter Settings:

Timing configuration:

Custom Timing Disabled

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	0x40B285C2 *

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

3.4. RCC

3.4.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	4 WS (5 CPU cycle)

RCC Parameters:

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

Power Parameters:

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

Generate the peripherals clock configuration	TRUE
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3.5. SYS

Debug: Serial Wire

Timebase Source: SysTick

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

3.6. TIM1

Channel1: PWM Generation CH1 CH1N

Channel2: PWM Generation CH2 CH2N

Channel3: PWM Generation CH3 CH3N

3.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Dithering	Disable
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 16 bits value)	0
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)
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

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

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
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Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off
DeadTime Preload	Disable
Dead Time	0
Asymmetrical DeadTime	Disable
Falling Dead Time	0

Clear Input:

Clear Input Source	Disable
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PWM Generation Channel 1 and 1N:

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

PWM Generation Channel 2 and 2N:

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

PWM Generation Channel 3 and 3N:

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

3.7. USART1

Mode: Asynchronous

3.7.1. 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
Over Sampling	16 Samples
Single Sample	Disable
ClockPrescaler	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

*** 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	
	PA1	ADC1_IN2	Analog mode	No pull-up and no pull-down	n/a	
FDCAN1	PA11	FDCAN1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA12	FDCAN1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
I2C2	PF0-OSC_IN	I2C2_SDA	Alternate Function Open Drain	No pull-up and no pull-down	Low	
	PC4	I2C2_SCL	Alternate Function Open Drain	No pull-up and no pull-down	Low	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM1	PB13	TIM1_CH1N	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB14	TIM1_CH2N	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB15	TIM1_CH3N	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA8	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA9	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA10	TIM1_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USART1	PB6	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PC13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PC14-OSC32_IN	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PC15-OSC32_OUT	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PG10-NRST	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	NRST
	PB8-BOOT0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BOOT0

4.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA1_Channel1	Peripheral To Memory	Low
USART1_RX	DMA1_Channel2	Peripheral To Memory	Low

ADC1: DMA1_Channel1 DMA request Settings:

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

USART1_RX: DMA1_Channel2 DMA request Settings:

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

4.3. NVIC configuration

4.3.1. 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
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	15	0
DMA1 channel1 global interrupt	true	0	0
DMA1 channel2 global interrupt	true	0	0
ADC1 and ADC2 global interrupt	true	0	0
FDCAN1 interrupt 0	true	0	0
FDCAN1 interrupt 1	true	0	0
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	true	0	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		
TIM1 capture compare interrupt	unused		
I2C2 event interrupt / I2C2 wake-up interrupt through EXTI line 24	unused		
I2C2 error interrupt	unused		
FPU global 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
Prefetch fault, memory access fault	false	true	false

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
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
DMA1 channel1 global interrupt	false	true	true
DMA1 channel2 global interrupt	false	true	true
ADC1 and ADC2 global interrupt	false	true	true
FDCAN1 interrupt 0	false	true	true
FDCAN1 interrupt 1	false	true	true
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	false	true	true

* User modified value

5. System Views

5.1. Category view

5.1.1. Current

Middleware							
System Core	Analog	Timers	Connectivity	Multimedia	Security	Computing	Utilities
DMA	ADC1	TIM1	FDCAH1				
GPIO			I2C2				
IIVIC			USART1				
RCC							
SYS							

6. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32g4_bsd.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32g4_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32g4_svd.zip
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-usb-c-pd-solutions-presentation.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
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32g4-series-product-overview.pdf
Brochures	https://www.st.com/resource/en/brochure/products-and-solutions-for-plcs-and-smart-i-os.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32g4.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32trust.pdf
Flyers	https://www.st.com/resource/en/flyer/flstpfc11120.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/an2606-stm32-microcontroller-system-memory-boot-mode-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/an4221-i2c-protocol-used-in-the-stm32-bootloader-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/an4286-spi-protocol-used-in-the-stm32-bootloader-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/an4566-extending-the-dac-performance-of-stm32-microcontrollers-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/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/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/an5093-getting-started-with-stm32g4-series--hardware-development-boards-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5306-operational-amplifier-opamp-usage-in-stm32g4-series-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/an5315-stm32cube-firmware-examples-for-stm32g4-series-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5346-stm32g4-adc-use-tips-and-recommendations-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/an5738-stm32g4-series-lifetime-estimates-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/an5325-how-to-use-the-cordic-to-perform-mathematical-functions-on-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/an4894-how-to-use-eeeprom-emulation-on-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5537-how-to-use-adc-oversampling-techniques-to-improve-signal-to-noise-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/an5405-how-to-use-fdcan-bootloader-protocol-on-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5978-introduction-to-mb1971-llc-hat-12-v-to-75-v-1-a-for-f334-g474-nucleo-board-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an5690-how-to-use-vrefbuf-peripheral-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an4230-introduction-to-random-number-generation-validation-using-the-nist-statistical-test-suite-for-stm32-mcus-and-mpus-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/an4013-introduction-to-timers-for-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an4277-how-to-use-pwm-shutdown-for-motor-control-and-digital-power-conversion-on-stm32-mcus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an4635-how-to-optimize-lpuart-power-consumption-on-stm32-mcus-stmicroelectronics.pdf
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