

# 1. Description

## 1.1. Project

Project Name	4-UART
Board Name	custom
Generated with:	STM32CubeMX 6.12.1
Date	02/02/2025

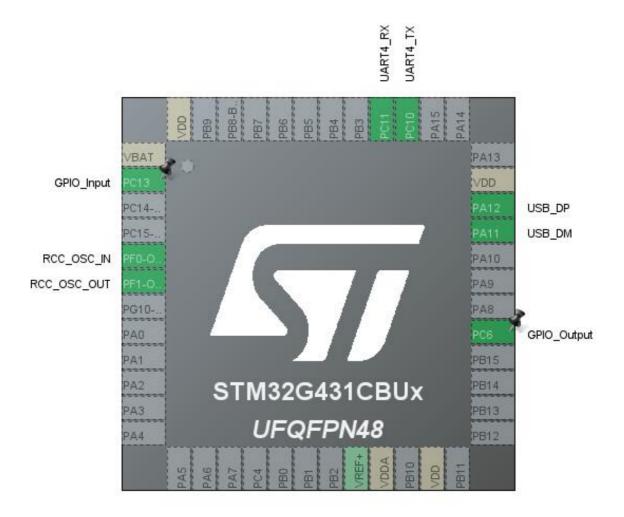
### 1.2. MCU

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

# 2. Pinout Configuration

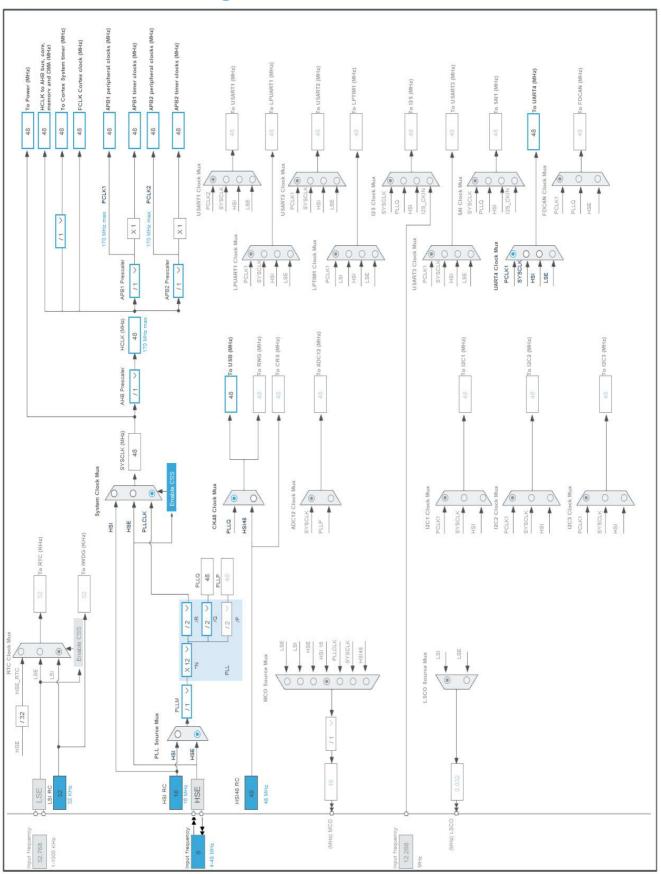


# 3. Pins Configuration

Pin Number UFQFPN48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13 *	I/O	GPIO_Input	
5	PF0-OSC_IN	I/O	RCC_OSC_IN	
6	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
21	VDDA	Power		
23	VDD	Power		
29	PC6 *	I/O	GPIO_Output	
33	PA11	I/O	USB_DM	
34	PA12	I/O	USB_DP	
35	VDD	Power		
39	PC10	I/O	UART4_TX	
40	PC11	I/O	UART4_RX	
48	VDD	Power		

<sup>\*</sup> The pin is affected with an I/O function

# 4. Clock Tree Configuration



Page 4

# 1. Power Consumption Calculator report

#### 1.1. Microcontroller Selection

Series	STM32G4
Line	STM32G4x1
мси	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

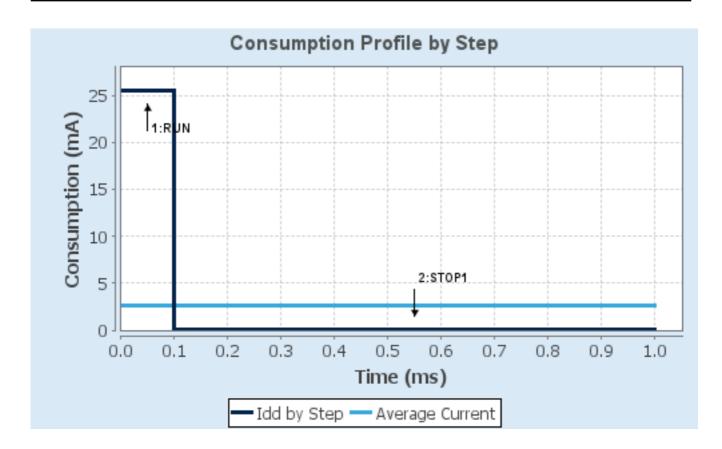
## 1.4. Sequence

	a	a
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 μA
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,	Average DMIPS	212.5 DMIPS
	22 hours		

### 1.6. Chart



# 2. Software Project

### 2.1. Project Settings

Name	Value
Project Name	4-UART
Project Folder	C:\Users\leagu\STM32CubeIDE\workspace_1.16.1\4-UART
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_G4 V1.6.1
Application Structure	Advanced
Generate Under Root	Yes
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_UART4_Init		UART4
4	MX_USB_Device_Init	USB_DEVICE

## 3. Peripherals and Middlewares Configuration

#### 3.1. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

3.1.1. Parameter Settings:

**System Parameters:** 

VDD voltage (V) 3.3
Instruction Cache Enabled
Prefetch Buffer Disabled
Data Cache Enabled

Flash Latency(WS) 1 WS (2 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

**Peripherals Clock Configuration:** 

Generate the peripherals clock configuration TRUE

3.2. SYS

Timebase Source: SysTick

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

3.3. UART4

Mode: Asynchronous

3.3.1. 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 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 Disable **RX Pin Active Level Inversion** Disable **Data Inversion** TX and RX Pins Swapping Disable Enable Overrun DMA on RX Error Enable MSB First Disable

#### 3.4. USB

mode: Device (FS)

#### 3.4.1. Parameter Settings:

#### **Basic Parameters:**

Speed Full Speed 12MBit/s

Physical interface Internal Phy
Sof Enable Disabled

**Power Parameters:** 

Low PowerDisabledLink Power ManagementDisabledBattery ChargingDisabled

#### 3.5. USB\_DEVICE

#### Class For FS IP: Download Firmware Update Class (DFU)

#### 3.5.1. 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\_SUPPORT\_USER\_STRING\_DESC (Enable user string descriptor)

Enabled
USBD\_SELF\_POWERED (Enabled self power)

Enabled

USBD\_DEBUG\_LEVEL (USBD Debug Level) 0: No debug message

USBD\_LPM\_ENABLED (Link Power Management)

1: Link Power Management supported

**Class Parameters:** 

USBD\_DFU\_MAX\_ITF\_NUM (DFU maximum interface numbers)

USBD\_DFU\_XFER\_SIZE

USBD\_DFU\_APP\_DEFAULT\_ADD (Base Address 0x)

USBD\_DFU\_MEDIA Interface

0x08000000 \*

1

1024

@Internal Flash

/0x08000000/03\*016Ka,01\*016Kg,01\*06 4Kg,07\*128Kg,04\*016Kg,01\*064Kg,07\*1

#### 3.5.2. Device Descriptor:

#### **Device Descriptor:**

VID (Vendor IDentifier)

LANGID\_STRING (Language Identifier)

MANUFACTURER\_STRING (Manufacturer Identifier)

#### **Device Descriptor FS:**

PID (Product IDentifier)

PRODUCT\_STRING (Product Identifier)

CONFIGURATION\_STRING (Configuration Identifier)

INTERFACE\_STRING (Interface Identifier)

1155

English(United States)

STMicroelectronics

57105

5/105

STM32 DownLoad Firmware Update

DFU Config

DFU Interface

<sup>\*</sup> User modified value

# 4. System Configuration

## 4.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull	Max	User Label
				down	Speed	
RCC	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PF1-	RCC_OSC_OUT	n/a	n/a	n/a	
	OSC_OUT					
UART4	PC10	UART4_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC11	UART4_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PC13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PC6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	

## 4.2. DMA configuration

nothing configured in DMA service

## 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		
USB low priority interrupt remap	true	0	0		
UART4 global interrupt / UART4 wake-up interrupt through EXTI line 34	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				
USB high priority interrupt remap	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
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
USB low priority interrupt remap	false	true	true
UART4 global interrupt / UART4 wake-up interrupt through EXTI line 34	false	true	true

#### \* User modified value

# 5. System Views

5.1. Category view

5.1.1. Current



## 6. Docs & Resources

Type Link

BSDL files https://www.st.com/resource/en/bsdl\_model/stm32g4\_bsdl.zip

IBIS models https://www.st.com/resource/en/ibis\_model/stm32g4\_ibis.zip

System View https://www.st.com/resource/en/svd/stm32g4\_svd.zip

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**User Manuals** 

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