1. Description

1.1. Project

Project Name	UPS-2_G030
Board Name	custom
Generated with:	STM32CubeMX 5.6.1
Date	05/13/2020

1.2. MCU

MCU Series	STM32G0
MCU Line	STM32G0x0 Value line
MCU name	STM32G030F6Px
MCU Package	TSSOP20
MCU Pin number	29

2. Pinout Configuration
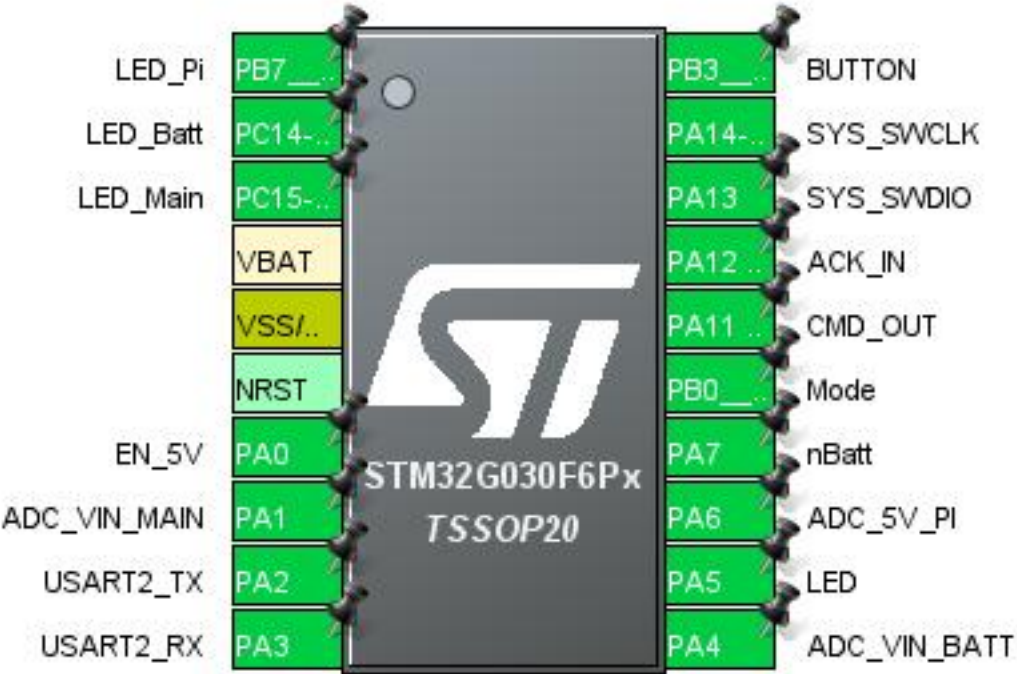
3. Pins Configuration

Pin Number TSSOP20	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PB7 *	I/O	GPIO_Output	LED_Pi
2	PB9 *	I/O	GPIO_Output	LED_Batt
3	PC15-OSC32_OUT (PC15) *	I/O	GPIO_Output	LED_Main
4	VBAT	Power		
5	VSS/VSSA	MonoIO		
7	PA0 *	I/O	GPIO_Output	EN_5V
8	PA1	I/O	ADC1_IN1	ADC_VIN_MAIN
9	PA2	I/O	USART2_TX	
10	PA3	I/O	USART2_RX	
11	PA4	I/O	ADC1_IN4	ADC_VIN_BATT
12	PA5 *	I/O	GPIO_Output	LED
13	PA6	I/O	ADC1_IN6	ADC_5V_PI
14	PA7 *	I/O	GPIO_Input	nBatt
15	PA8 *	I/O	GPIO_Input	Mode
16	PA11 [PA9] *	I/O	GPIO_Output	CMD_OUT
17	PA12 [PA10] *	I/O	GPIO_Input	ACK_IN
18	PA13	I/O	SYS_SWDIO	
19	PA14-BOOT0	I/O	SYS_SWCLK	
20	PB6 *	I/O	GPIO_Input	BUTTON

* The pin is affected with an I/O function

4. Clock Tree Configuration
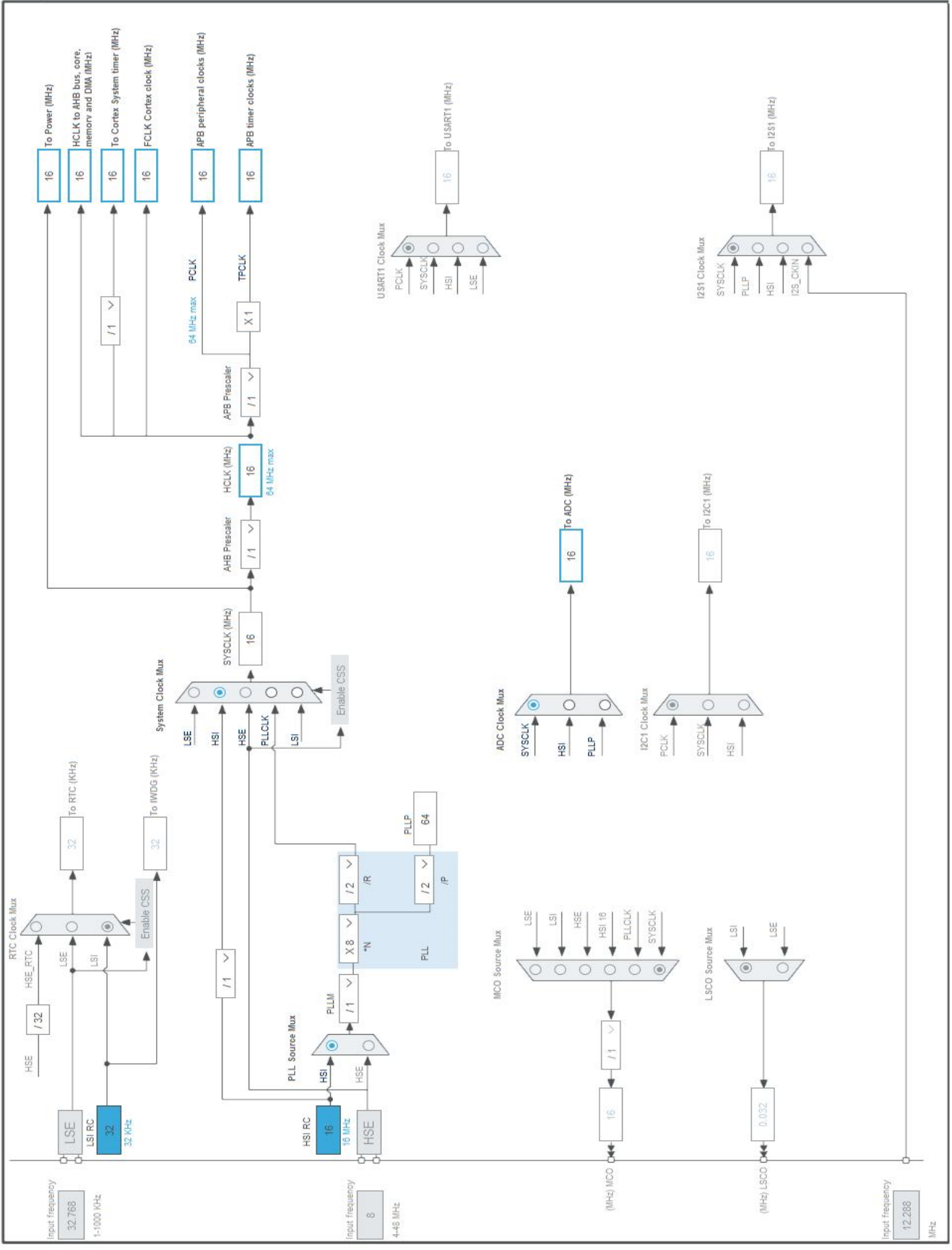
5. Software Project

5.1. Project Settings

Name	Value
Project Name	UPS-2_G030
Project Folder	F:\Projekte\STM32-G0-WS\UPS-2_G030
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_G0 V1.3.0

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	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	STM32G0x0 Value line
MCU	STM32G030F6Px
Datasheet	DS12991_Rev1

6.2. Parameter Selection

Temperature	25
Vdd	3.0

6.3. Battery Selection

Battery	Li-SOCL2(AAA700)
Capacity	700.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	10.0 mA
Max Pulse Current	30.0 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-High	NoRange
Fetch Type	FLASH	Flash-PowerDown
CPU Frequency	64 MHz	16 MHz
Clock Configuration	HSI PLL	HSI
Clock Source Frequency	16 MHz	16 MHz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	5.77 mA	3.7 µA
Duration	0.1 ms	0.9 ms
DMIPS	80.0	0.0
Ta Max	128.68	130
Category	In DS Table	In DS Table

6.5. RESULTS

Sequence Time	1 ms	Average Current	580.33 µA
Battery Life	1 month, 19 days, 18 hours	Average DMIPS	80.0 DMIPS

6.6. Chart

Consumption Profile by Step

Consumption Profile by Step chart with Consumption (mA) on the y-axis (0 to 6) and Time (ms) on the x-axis (0.0 to 1.0). Annotations: 1:RUN, 2:STOP1. Legend: Idd by Step, Average Current.
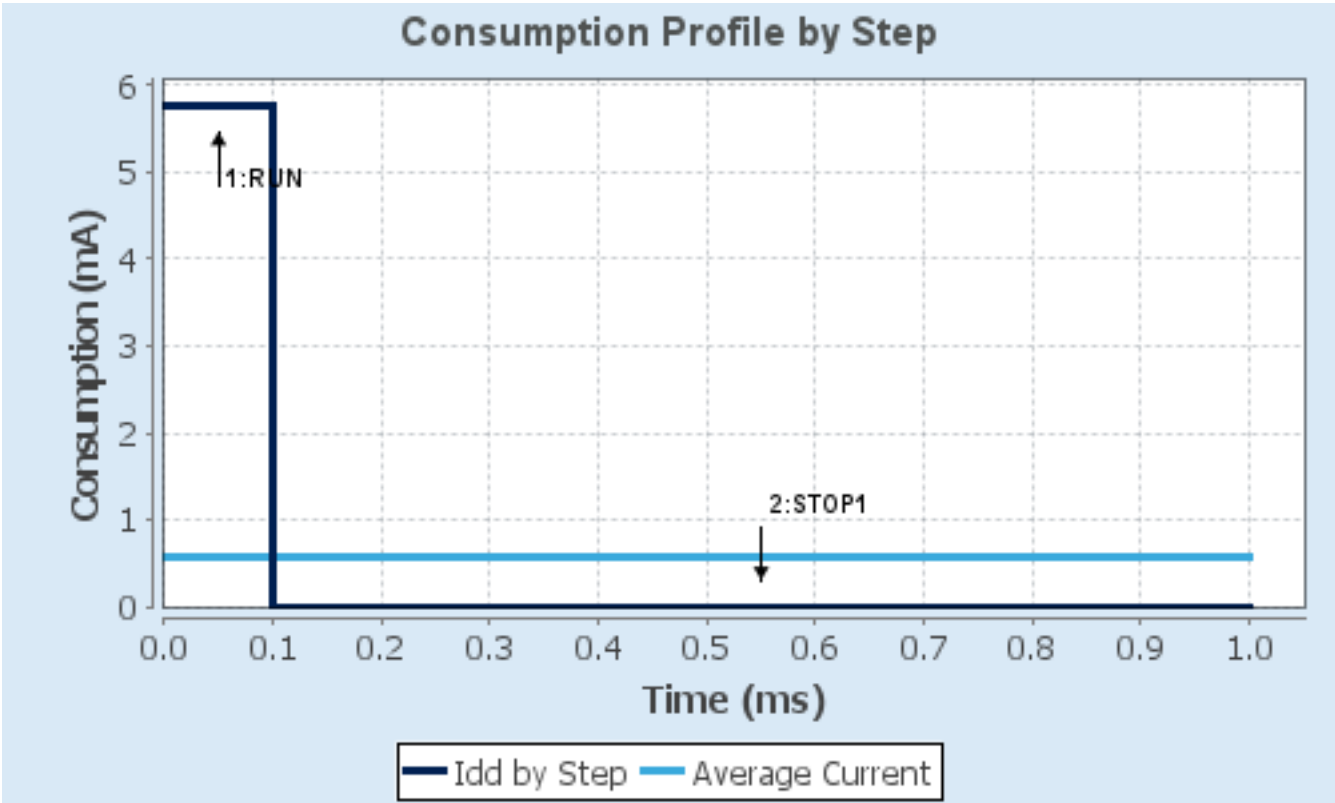
7. IPs and Middleware Configuration

7.1. ADC1

mode: IN1

mode: IN4

mode: IN6

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	**39.5 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 1
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. GPIO

7.3. RCC

7.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	0 WS (1 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

7.4. SYS

mode: Debug
Timebase Source: SysTick

7.5. TIM3

mode: Clock Source
7.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**8000 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**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)

7.6. USART2

Mode: Asynchronous

7.6.1. 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
ClockPrescaler	clock /1

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

* 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	PA1	ADC1_IN1	Analog mode	No pull-up and no pull-down	n/a	ADC_VIN_MAIN
	PA4	ADC1_IN4	Analog mode	No pull-up and no pull-down	n/a	ADC_VIN_BATT
	PA6	ADC1_IN6	Analog mode	No pull-up and no pull-down	n/a	ADC_5V_PI
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14-BOOT0	SYS_SWCLK	n/a	n/a	n/a	
USART2	PA2	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA3	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_Pi
	PB9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_Batt
	PC15-OSC32_OUT (PC15)	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_Main
	PA0	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	Low	EN_5V
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED
	PA7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	nBatt
	PA8	GPIO_Input	Input mode	**Pull-up ***	n/a	Mode
	PA11 [PA9]	GPIO_Output	**Output Open Drain ***	**Pull-up ***	Low	CMD_OUT
	PA12 [PA10]	GPIO_Input	Input mode	**Pull-up ***	n/a	ACK_IN
	PB6	GPIO_Input	Input mode	**Pull-up ***	n/a	BUTTON

8.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA1_Channel1	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

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	0	0
System tick timer	true	0	0
DMA1 channel 1 interrupt	true	0	0
ADC1 interrupt	true	0	0
TIM3 global interrupt	true	0	0
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		

* User modified value

9. Predefined Views - Category view : Current

Middleware

System Core	Analog	Timers	Connectivity	Multimedia	Computing
DMA ✓	ADC1 ✓	TIM3 ✓	USART2 ✓		
GPIO ✓					
NVIC ✓					
RCC ✓					
SYS ✓					

10. Software Pack Report