1. Description

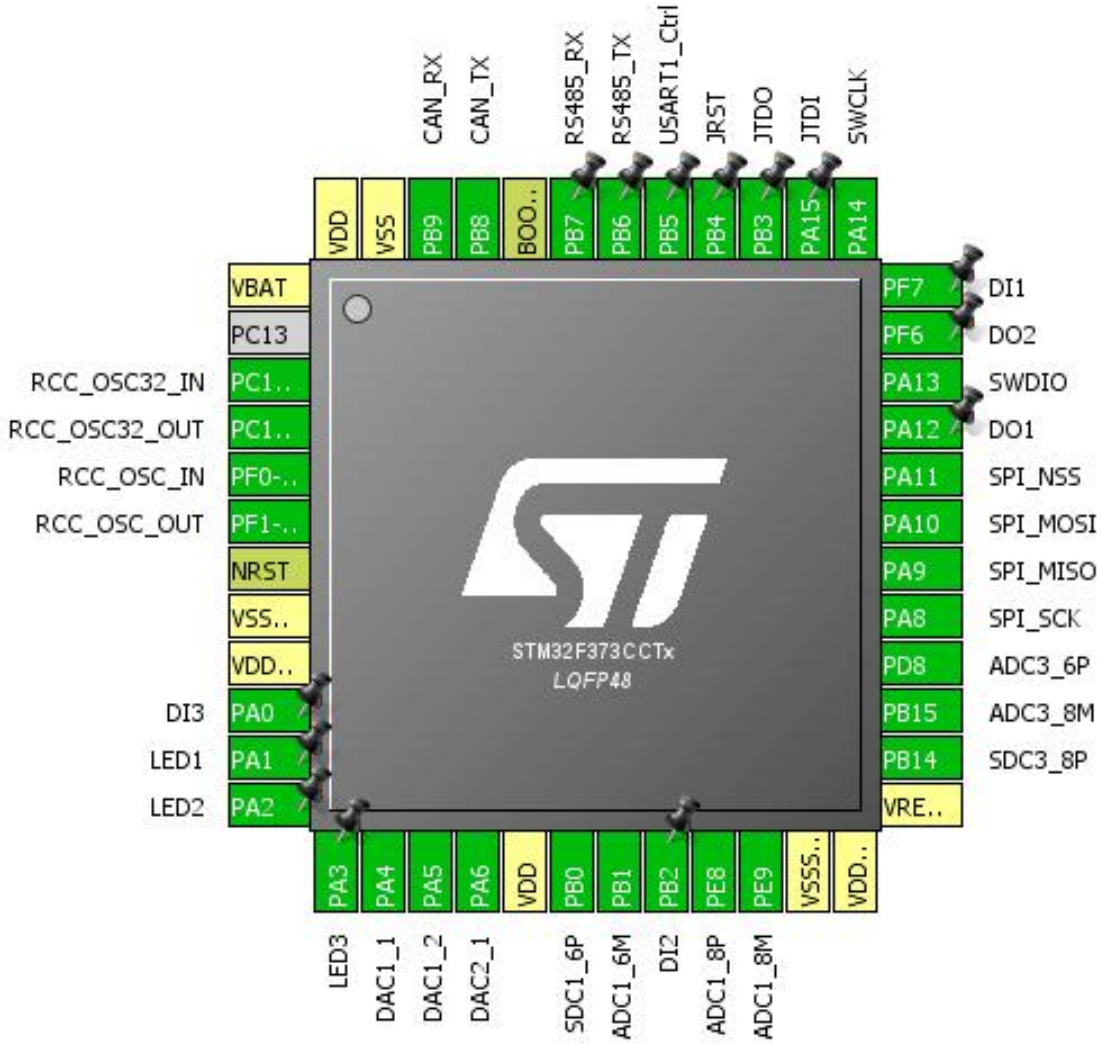
1.1. Project

Project Name	Communication
Board Name	custom
Generated with:	STM32CubeMX 4.26.0
Date	12/03/2018

1.2. MCU

MCU Series	STM32F3
MCU Line	STM32F373
MCU name	STM32F373CCTx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration



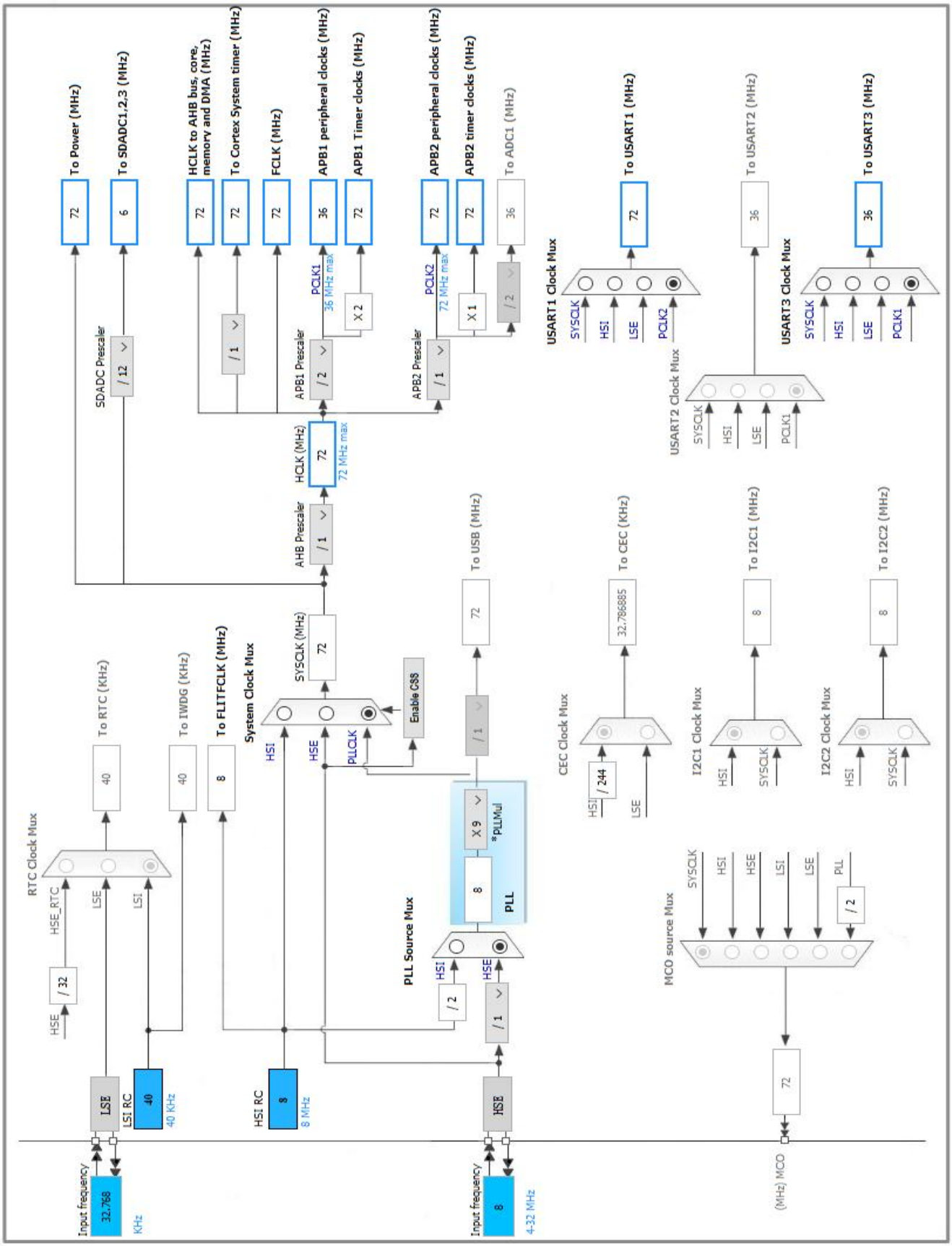
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
5	PF0-OSC_IN	I/O	RCC_OSC_IN	
6	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	VSSA/VREF-	Power		
9	VDDA/VREF+	Power		
10	PA0 *	I/O	GPIO_Input	DI3
11	PA1 *	I/O	GPIO_Output	LED1
12	PA2 *	I/O	GPIO_Output	LED2
13	PA3 *	I/O	GPIO_Output	LED3
14	PA4	I/O	DAC1_OUT1	DAC1_1
15	PA5	I/O	DAC1_OUT2	DAC1_2
16	PA6	I/O	DAC2_OUT1	DAC2_1
17	VDD	Power		
18	PB0	I/O	SDADC1_AIN6P	SDC1_6P
19	PB1	I/O	SDADC1_AIN6M	ADC1_6M
20	PB2 *	I/O	GPIO_Input	DI2
21	PE8	I/O	SDADC1_AIN8P	ADC1_8P
22	PE9	I/O	SDADC1_AIN8M	ADC1_8M
23	VSSSD/VREFSD-	Power		
24	VDDSD	Power		
25	VREFSD+	Power		
26	PB14	I/O	SDADC3_AIN8P	SDC3_8P
27	PB15	I/O	SDADC3_AIN8M	ADC3_8M
28	PD8	I/O	SDADC3_AIN6P	ADC3_6P
29	PA8	I/O	SPI2_SCK	SPI_SCK
30	PA9	I/O	SPI2_MISO	SPI_MISO
31	PA10	I/O	SPI2_MOSI	SPI_MOSI
32	PA11	I/O	SPI2_NSS	SPI_NSS
33	PA12 *	I/O	GPIO_Output	DO1
34	PA13	I/O	SYS_JTMS-SWDIO	SWDIO
35	PF6 *	I/O	GPIO_Output	DO2
36	PF7 *	I/O	GPIO_Input	DI1
37	PA14	I/O	SYS_JTCK-SWCLK	SWCLK

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
38	PA15	I/O	SYS_JTDI	JTDI
39	PB3	I/O	SYS_JTDO-TRACESWO	JTDO
40	PB4	I/O	SYS_NJTRST	JRST
41	PB5 *	I/O	GPIO_Output	USART1_Ctrl
42	PB6	I/O	USART1_TX	RS485_TX
43	PB7	I/O	USART1_RX	RS485_RX
44	BOOT0	Boot		
45	PB8	I/O	USART3_TX	CAN_TX
46	PB9	I/O	USART3_RX	CAN_RX
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. DAC1

mode: OUT1 Configuration

mode: OUT2 Configuration

5.1.1. Parameter Settings:

DAC Out1 Settings:

Output Buffer	Enable
Trigger	None

DAC Out2 Settings:

Output Buffer	Enable
Trigger	None

5.2. DAC2

mode: OUT1 Configuration

5.2.1. Parameter Settings:

DAC Out1 Settings:

Output Buffer	Enable
Trigger	None

5.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.3.1. Parameter Settings:

System Parameters:

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

RCC Parameters:

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

5.4. SDADC1

IN6: IN6-Differential

IN8: IN8-Differential

mode: Conversion Configuration 0

5.4.1. Parameter Settings:

General Settings:

Low Power Mode	None
Fast Conversion Mode	Disable
Slow Clock Mode	Disable
Reference Voltage	Forced externally using VREF pin

Conversion Configuration 0:

Input Mode	Differential mode
Gain	equal to 1
Common Mode	SDADC VSSA
Offset	0

SDADC Regular Conversions Settings:

Enable Regular Conversion	Disable

SDADC Injected Conversions Settings:

Enable Injected Conversion	**Enable ***
Number of Channels To be converted	**2 ***
Trigger type	Software trigger
Injected Delay	Disable
Injected Mulimode type	Disable
Continuous Mode	**Enabled ***
Channel Configuration	1
Channel	Channel 6
Configuration Index	Configuration 0
Channel Configuration	**2 ***
Channel	Channel 8
Configuration Index	Configuration 0

5.5. SDADC3

IN6: IN6-Single-Ended

IN8: IN8-Differential
mode: Conversion Configuration 0
5.5.1. Parameter Settings:

General Settings:

Low Power Mode	None
Fast Conversion Mode	Disable
Slow Clock Mode	Disable
Reference Voltage	Forced externally using VREF pin

Conversion Configuration 0:

Input Mode	Differential mode
Gain	equal to 1
Common Mode	SDADC VSSA
Offset	0

SDADC Regular Conversions Settings:

Enable Regular Conversion	Disable

SDADC Injected Conversions Settings:

Enable Injected Conversion	**Enable ***
Number of Channels To be converted	**1 ***
Trigger type	Software trigger
Injected Delay	Disable
Continuous Mode	**Enabled ***
Channel Configuration	1
Channel	**Channel 8 ***
Configuration Index	Configuration 0

5.6. SPI2
Mode: Full-Duplex Master
Hardware NSS Signal: Hardware NSS Input Signal
5.6.1. Parameter Settings:

Basic Parameters:

Frame Format	**TI ***
Data Size	4 Bits

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**18.0 MBits/s ***

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Input Hardware

5.7. SYS

Debug: JTAG (5 pins)

Timebase Source: SysTick

5.8. USART1

Mode: Asynchronous

5.8.1. Parameter Settings:

Basic Parameters:

Baud Rate	**9600 ***
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

5.9. USART3

Mode: Asynchronous

5.9.1. Parameter Settings:

Basic Parameters:

Baud Rate	**9600 ***
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

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
DAC1	PA4	DAC1_OUT1	Analog mode	No pull up pull down	n/a	DAC1_1
	PA5	DAC1_OUT2	Analog mode	No pull up pull down	n/a	DAC1_2
DAC2	PA6	DAC2_OUT1	Analog mode	No pull up pull down	n/a	DAC2_1
RCC	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PF1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SDADC1	PB0	SDADC1_AIN6P	Analog mode	No pull up pull down	n/a	SDC1_6P
	PB1	SDADC1_AIN6M	Analog mode	No pull up pull down	n/a	ADC1_6M
	PE8	SDADC1_AIN8P	Analog mode	No pull up pull down	n/a	ADC1_8P
	PE9	SDADC1_AIN8M	Analog mode	No pull up pull down	n/a	ADC1_8M
SDADC3	PB14	SDADC3_AIN8P	Analog mode	No pull up pull down	n/a	SDC3_8P
	PB15	SDADC3_AIN8M	Analog mode	No pull up pull down	n/a	ADC3_8M
	PD8	SDADC3_AIN6P	Analog mode	No pull up pull down	n/a	ADC3_6P
SPI2	PA8	SPI2_SCK	Alternate Function Push Pull	No pull up pull down	**High ***	SPI_SCK
	PA9	SPI2_MISO	Alternate Function Push Pull	No pull up pull down	**High ***	SPI_MISO
	PA10	SPI2_MOSI	Alternate Function Push Pull	No pull up pull down	**High ***	SPI_MOSI
	PA11	SPI2_NSS	Alternate Function Push Pull	No pull up pull down	**High ***	SPI_NSS
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
	PA15	SYS_JTDI	n/a	n/a	n/a	JTDI
	PB3	SYS_JTDO-TRACESWO	n/a	n/a	n/a	JTDO
	PB4	SYS_NJTRST	n/a	n/a	n/a	JRST
USART1	PB6	USART1_TX	Alternate Function Push Pull	No pull up pull down	**High ***	RS485_TX
	PB7	USART1_RX	Alternate Function Push Pull	No pull up pull down	**High ***	RS485_RX
USART3	PB8	USART3_TX	Alternate Function Push Pull	No pull up pull down	**High ***	CAN_TX
	PB9	USART3_RX	Alternate Function Push Pull	No pull up pull down	**High ***	CAN_RX
GPIO	PA0	GPIO_Input	Input mode	No pull up pull down	n/a	DI3
	PA1	GPIO_Output	Output Push Pull	No pull up pull down	Low	LED1

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA2	GPIO_Output	Output Push Pull	No pull up pull down	Low	LED2
	PA3	GPIO_Output	Output Push Pull	No pull up pull down	Low	LED3
	PB2	GPIO_Input	Input mode	No pull up pull down	n/a	DI2
	PA12	GPIO_Output	Output Push Pull	No pull up pull down	Low	DO1
	PF6	GPIO_Output	Output Push Pull	No pull up pull down	Low	DO2
	PF7	GPIO_Input	Input mode	No pull up pull down	n/a	DI1
	PB5	GPIO_Output	Output Push Pull	No pull up pull down	Low	USART1_Ctrl

6.2. DMA configuration

DMA request	Stream	Direction	Priority
SPI2_RX	DMA1_Channel4	Peripheral To Memory	Low
SPI2_TX	DMA1_Channel5	Memory To Peripheral	Low
USART3_RX	DMA1_Channel3	Peripheral To Memory	Low
USART3_TX	DMA1_Channel2	Memory To Peripheral	Low
SDADC1	DMA2_Channel3	Peripheral To Memory	Low
SDADC3	DMA2_Channel5	Peripheral To Memory	Low

SPI2_RX: DMA1_Channel4 DMA request Settings:

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

SPI2_TX: DMA1_Channel5 DMA request Settings:

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

USART3_RX: DMA1_Channel3 DMA request Settings:

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

USART3_TX: DMA1_Channel2 DMA request Settings:

Mode: Normal
Peripheral Increment: Disable
Memory Increment: **Enable ***

Peripheral Data Width:	Byte
Memory Data Width:	Byte

SDADC1: DMA2_Channel3 DMA request Settings:

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

SDADC3: DMA2_Channel5 DMA request Settings:

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

6.3. NVIC configuration

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	0	0
DMA1 channel2 global interrupt	true	0	0
DMA1 channel3 global interrupt	true	0	0
DMA1 channel4 global interrupt	true	0	0
DMA1 channel5 global interrupt	true	0	0
TIM18 global interrupt and DAC2 underrun error interrupt	true	0	0
SPI2 global interrupt	true	0	0
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	true	0	0
USART3 global interrupt / USART3 wake-up interrupt through EXTI line 28	true	0	0
TIM6 global interrupt and DAC1 underrun error interrupts	true	0	0
DMA2 channel3 global interrupt	true	0	0
DMA2 channel5 global interrupt	true	0	0
SDADC1 global interrupt	true	0	0
SDADC3 global interrupt	true	0	0
PVD interrupt through EXTI line16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
Floating point unit interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F3
Line	STM32F373
MCU	STM32F373CCTx
Datasheet	022691_Rev7

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	Communication
Project Folder	E:\STM32_wrok\F373\Com\Communication
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F3 V1.9.1

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	Yes
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

9. Software Pack Report