



1. Description

1.1. Project

Project Name	W5100_new_lib
Board Name	custom
Generated with:	STM32CubeMX 6.6.1
Date	09/13/2022

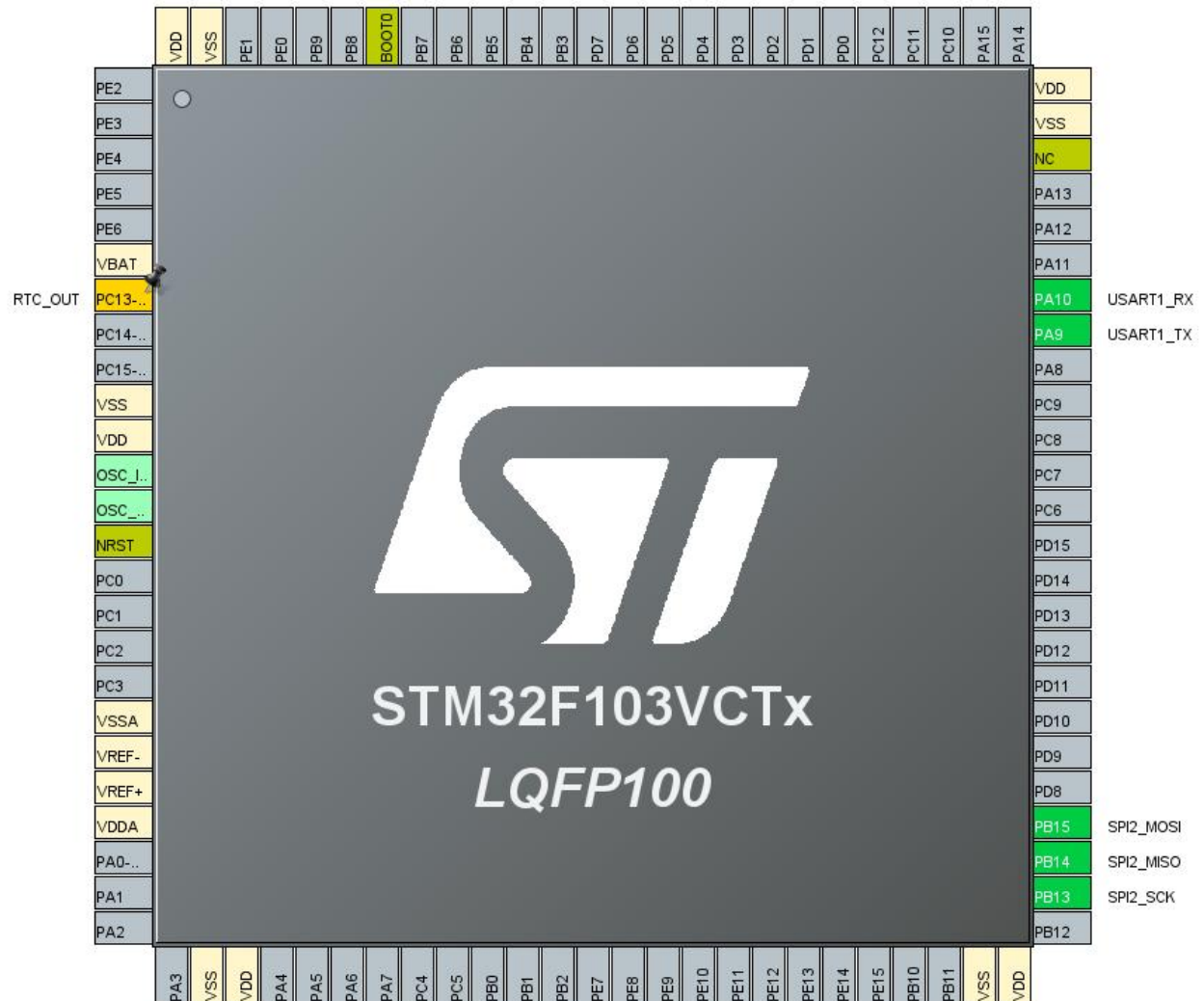
1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103VCTx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	Arm Cortex-M3
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2. Pinout Configuration

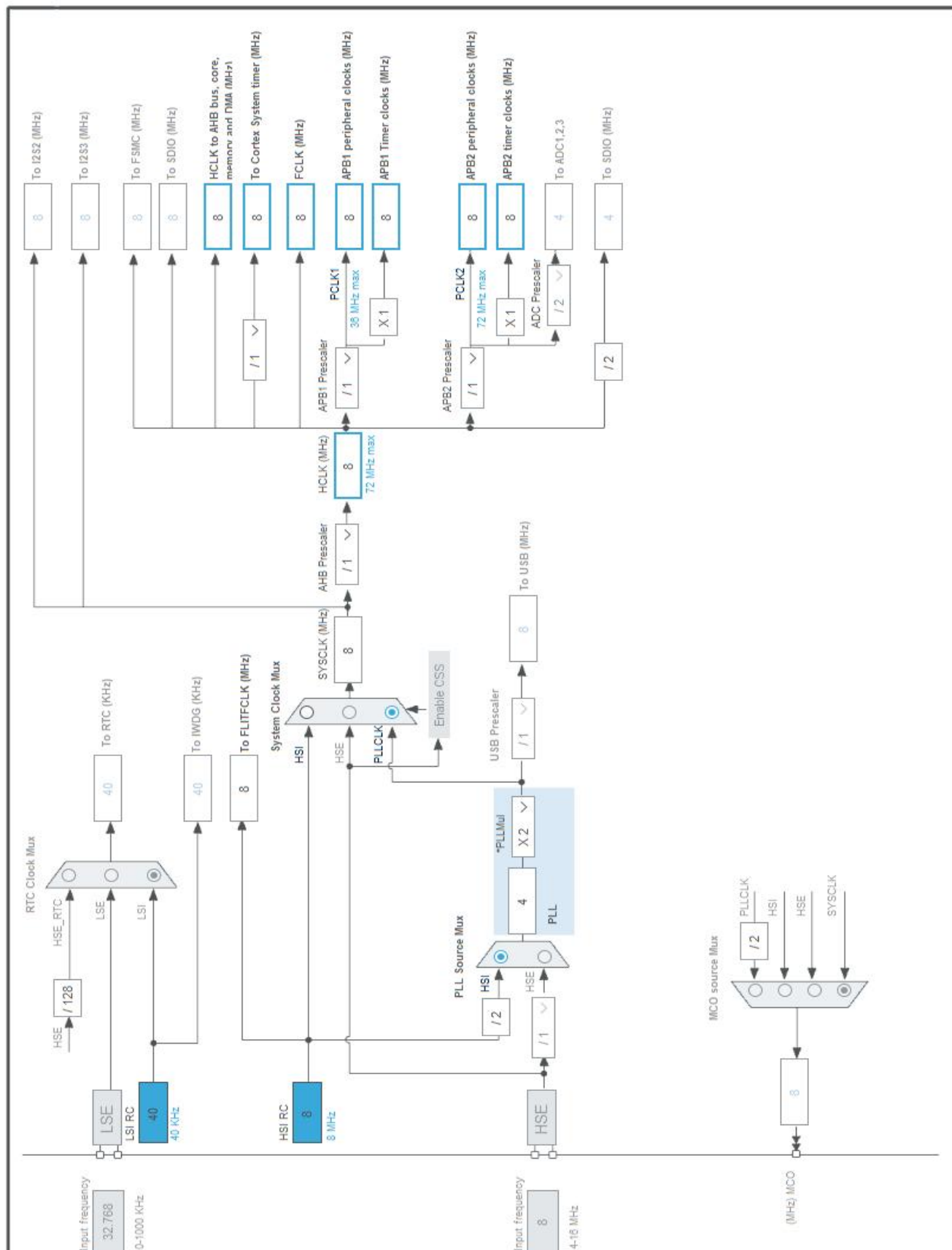


3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
7	PC13-TAMPER-RTC *	I/O	RTC_OUT	
10	VSS	Power		
11	VDD	Power		
14	NRST	Reset		
19	VSSA	Power		
20	VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
27	VSS	Power		
28	VDD	Power		
49	VSS	Power		
50	VDD	Power		
52	PB13	I/O	SPI2_SCK	
53	PB14	I/O	SPI2_MISO	
54	PB15	I/O	SPI2_MOSI	
68	PA9	I/O	USART1_TX	
69	PA10	I/O	USART1_RX	
73	NC	NC		
74	VSS	Power		
75	VDD	Power		
94	BOOT0	Boot		
99	VSS	Power		
100	VDD	Power		

* The pin is affected with a peripheral function but no peripheral mode is activated

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	W5100_new_lib
Project Folder	C:\Users\scarlet\STM32CubeIDE\workspace_1.10.1\W5100_new_lib
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F1 V1.8.4
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

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
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

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_USART1_UART_Init	USART1
4	MX_SPI2_Init	SPI2

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103VCTx
Datasheet	DS5792_Rev12

6.2. Parameter Selection

Temperature	25
Vdd	3.3

6.3. 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

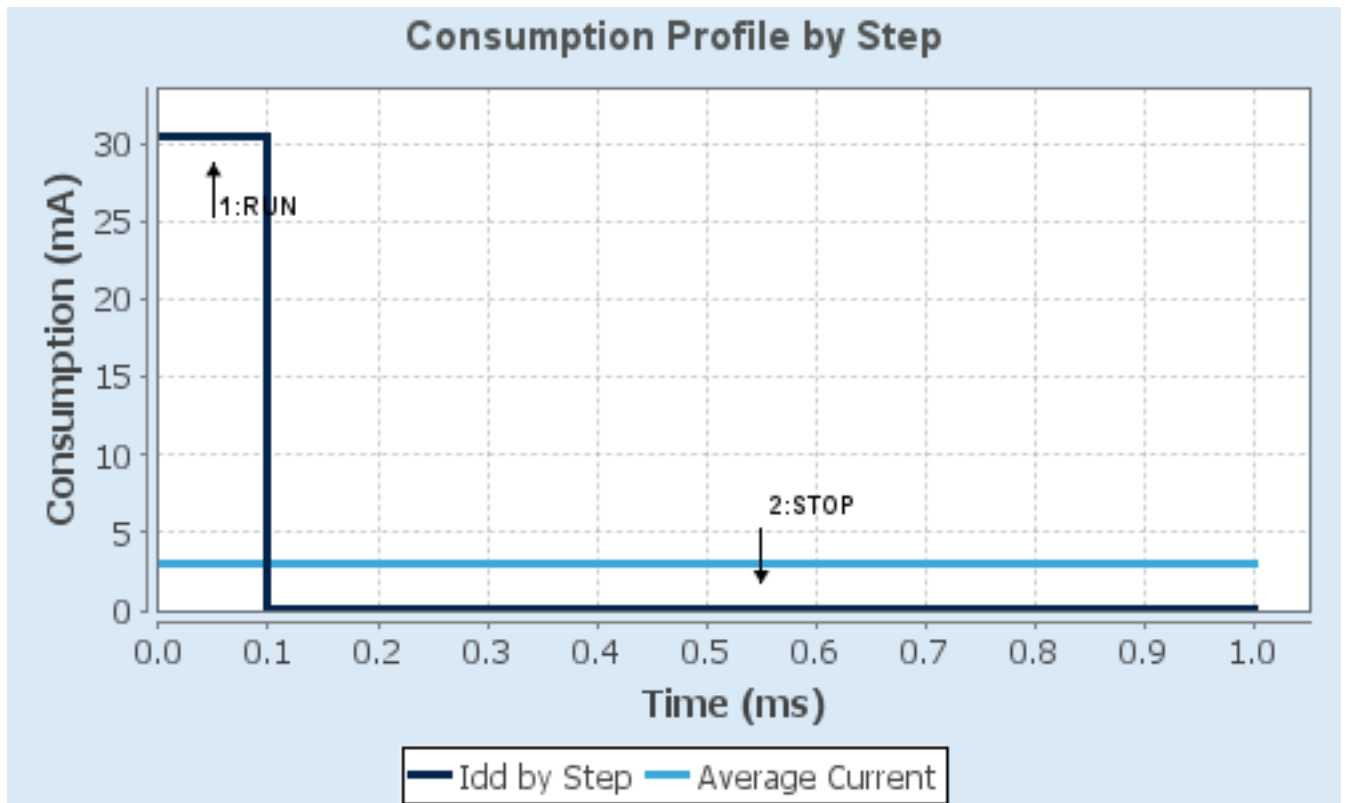
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.3	3.3
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	30.5 mA	25 μ A
Duration	0.1 ms	0.9 ms
DMIPS	90.0	0.0
Ta Max	100.37	105
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	3.07 mA
Battery Life	1 month, 15 days, 15 hours	Average DMIPS	61.0 DMIPS

6.6. Chart



7. Peripherals and Middlewares Configuration

7.1. RCC

7.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

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

7.2. SPI2

Mode: Full-Duplex Master

7.2.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	4 *
Baud Rate	2.0 MBits/s *
Clock Polarity (CPOL)	High *
Clock Phase (CPHA)	2 Edge *

Advanced Parameters:

CRC Calculation	Enabled *
CRC Polynomial	X1+X3
NSS Signal Type	Software

7.3. USART1

Mode: Asynchronous

7.3.1. 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

* User modified value

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SPI2	PB13	SPI2_SCK	Alternate Function Push Pull	n/a	High *	
	PB14	SPI2_MISO	Input mode	No pull-up and no pull-down	n/a	
	PB15	SPI2_MOSI	Alternate Function Push Pull	n/a	High *	
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	High *	
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	n/a	
Single Mapped Signals	PC13-TAMPER-RTC	RTC_OUT	n/a	n/a	n/a	

8.2. DMA configuration

nothing configured in DMA service

8.3. NVIC configuration

8.3.1. 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
USART1 global interrupt	true	1	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
SPI2 global interrupt	unused		

8.3.2. 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
USART1 global interrupt	false	true	true

* User modified value

9. System Views

9.1. Category view

9.1.1. Current

Middleware					
System Core	Analog	Timers	Connectivity	Multimedia	Computing
DMA			SPI2		
GPIO			USART1		
NVIC					
RCC					

10. Docs & Resources

Type	Link
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
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Training Material	https://www.st.com/resource/en/sales_guide/sg_sc2155.pdf
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Flyers	https://www.st.com/resource/en/flyer/flnucleolrwan.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
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Flyers	https://www.st.com/resource/en/flyer/fldpstpf11120.pdf
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microcontroller-applications-from-stm32f1-to-stm32l1-series-
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for related Tools [iolink-communication-master-transceiver-demonstration-board-](https://www.st.com/resource/en/application_note/an4075-stevalifp016v2-iolink-communication-master-transceiver-demonstration-board-)

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& Software

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