1. Description

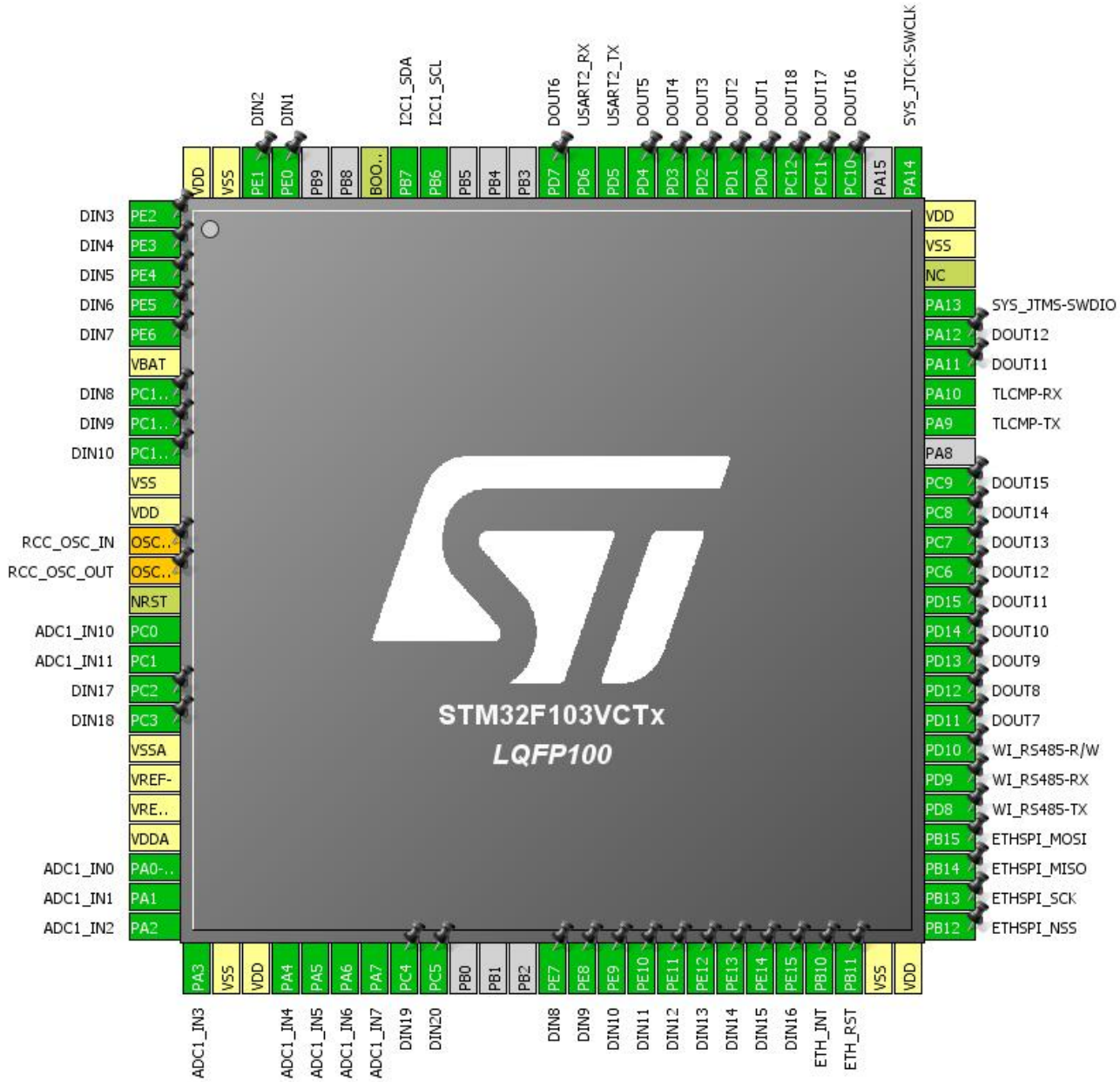
1.1. Project

Project Name	SnowMaker_V1
Board Name	No information
Generated with:	STM32CubeMX 4.22.0
Date	09/13/2017

1.2. MCU

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

2. Pinout Configuration



3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Input	DIN3
2	PE3 *	I/O	GPIO_Input	DIN4
3	PE4 *	I/O	GPIO_Input	DIN5
4	PE5 *	I/O	GPIO_Input	DIN6
5	PE6 *	I/O	GPIO_Input	DIN7
6	VBAT	Power		
7	PC13-TAMPER-RTC *	I/O	GPIO_Input	DIN8
8	PC14-OSC32_IN *	I/O	GPIO_Input	DIN9
9	PC15-OSC32_OUT *	I/O	GPIO_Input	DIN10
10	VSS	Power		
11	VDD	Power		
12	OSC_IN **	I/O	RCC_OSC_IN	
13	OSC_OUT **	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0	I/O	ADC1_IN10	
16	PC1	I/O	ADC1_IN11	
17	PC2 *	I/O	GPIO_Input	DIN17
18	PC3 *	I/O	GPIO_Input	DIN18
19	VSSA	Power		
20	VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
23	PA0-WKUP	I/O	ADC1_IN0	
24	PA1	I/O	ADC1_IN1	
25	PA2	I/O	ADC1_IN2	
26	PA3	I/O	ADC1_IN3	
27	VSS	Power		
28	VDD	Power		
29	PA4	I/O	ADC1_IN4	
30	PA5	I/O	ADC1_IN5	
31	PA6	I/O	ADC1_IN6	
32	PA7	I/O	ADC1_IN7	
33	PC4 *	I/O	GPIO_Input	DIN19
34	PC5 *	I/O	GPIO_Input	DIN20
38	PE7 *	I/O	GPIO_Input	DIN8
39	PE8 *	I/O	GPIO_Input	DIN9

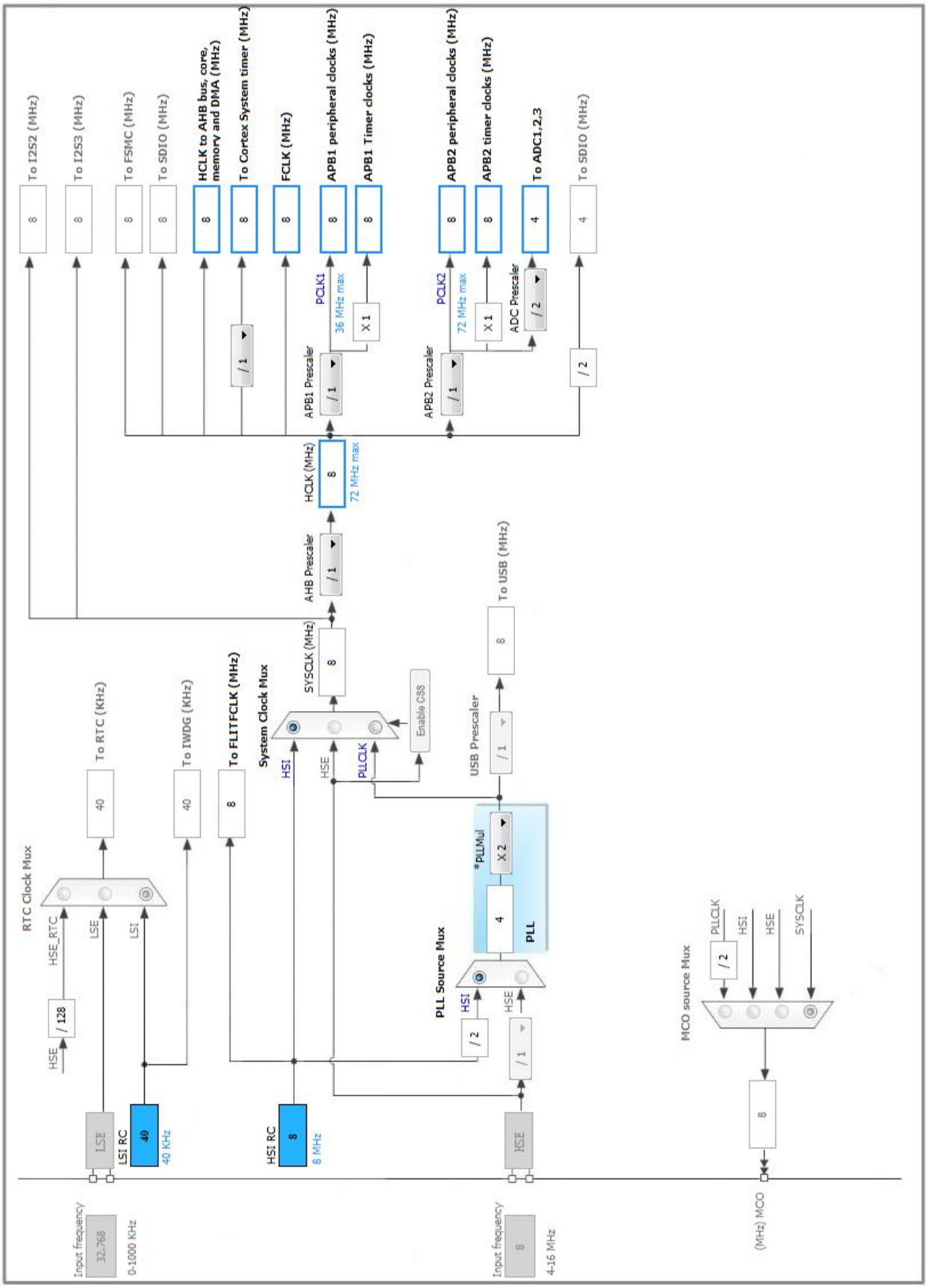
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
40	PE9 *	I/O	GPIO_Input	DIN10
41	PE10 *	I/O	GPIO_Input	DIN11
42	PE11 *	I/O	GPIO_Input	DIN12
43	PE12 *	I/O	GPIO_Input	DIN13
44	PE13 *	I/O	GPIO_Input	DIN14
45	PE14 *	I/O	GPIO_Input	DIN15
46	PE15 *	I/O	GPIO_Input	DIN16
47	PB10 *	I/O	GPIO_Input	ETH_INT
48	PB11 *	I/O	GPIO_Output	ETH_RST
49	VSS	Power		
50	VDD	Power		
51	PB12	I/O	SPI2_NSS	ETHSPI_NSS
52	PB13	I/O	SPI2_SCK	ETHSPI_SCK
53	PB14	I/O	SPI2_MISO	ETHSPI_MISO
54	PB15	I/O	SPI2_MOSI	ETHSPI_MOSI
55	PD8	I/O	USART3_TX	WI_RS485-TX
56	PD9	I/O	USART3_RX	WI_RS485-RX
57	PD10 *	I/O	GPIO_Output	WI_RS485-R/W
58	PD11 *	I/O	GPIO_Output	DOUT7
59	PD12 *	I/O	GPIO_Output	DOUT8
60	PD13 *	I/O	GPIO_Output	DOUT9
61	PD14 *	I/O	GPIO_Output	DOUT10
62	PD15 *	I/O	GPIO_Output	DOUT11
63	PC6 *	I/O	GPIO_Output	DOUT12
64	PC7 *	I/O	GPIO_Output	DOUT13
65	PC8 *	I/O	GPIO_Output	DOUT14
66	PC9 *	I/O	GPIO_Output	DOUT15
68	PA9	I/O	USART1_TX	TLCMP-TX
69	PA10	I/O	USART1_RX	TLCMP-RX
70	PA11 *	I/O	GPIO_Output	DOUT11
71	PA12 *	I/O	GPIO_Output	DOUT12
72	PA13	I/O	SYS_JTMS-SWDIO	
73	NC	NC		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	
78	PC10 *	I/O	GPIO_Output	DOUT16
79	PC11 *	I/O	GPIO_Output	DOUT17
80	PC12 *	I/O	GPIO_Output	DOUT18

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
81	PD0 *	I/O	GPIO_Output	DOUT1
82	PD1 *	I/O	GPIO_Output	DOUT2
83	PD2 *	I/O	GPIO_Output	DOUT3
84	PD3 *	I/O	GPIO_Output	DOUT4
85	PD4 *	I/O	GPIO_Output	DOUT5
86	PD5	I/O	USART2_TX	
87	PD6	I/O	USART2_RX	
88	PD7 *	I/O	GPIO_Output	DOUT6
92	PB6	I/O	I2C1_SCL	
93	PB7	I/O	I2C1_SDA	
94	BOOT0	Boot		
97	PE0 *	I/O	GPIO_Input	DIN1
98	PE1 *	I/O	GPIO_Input	DIN2
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

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

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: IN0
mode: IN1
mode: IN2
mode: IN3
mode: IN4
mode: IN5
mode: IN6
mode: IN7
mode: IN10
mode: IN11
mode: Temperature Sensor Channel

5.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
Rank	1
Channel	**Channel 7 ***
Sampling Time	1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.2. I2C1

I2C: I2C

5.2.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

Slave Features:

Clock No Stretch Mode	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0
General Call address detection	Disabled

5.3. SPI2

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Output Signal

5.3.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**4.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Output Hardware

5.4. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.5. USART1

Mode: Asynchronous

5.5.1. 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

5.6. USART2

Mode: Asynchronous

5.6.1. 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

5.7. USART3

Mode: Asynchronous

5.7.1. 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

5.8. WWDG

mode: Activated

5.8.1. Parameter Settings:

Watchdog Clocking:

WWDG counter clock prescaler	1
WWDG window value	64
WWDG free-running downcounter value	64

Watchdog Interrupt:

EWI Mode	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
ADC1	PC0	ADC1_IN10	Analog mode	n/a	n/a	
	PC1	ADC1_IN11	Analog mode	n/a	n/a	
	PA0-WKUP	ADC1_IN0	Analog mode	n/a	n/a	
	PA1	ADC1_IN1	Analog mode	n/a	n/a	
	PA2	ADC1_IN2	Analog mode	n/a	n/a	
	PA3	ADC1_IN3	Analog mode	n/a	n/a	
	PA4	ADC1_IN4	Analog mode	n/a	n/a	
	PA5	ADC1_IN5	Analog mode	n/a	n/a	
	PA6	ADC1_IN6	Analog mode	n/a	n/a	
	PA7	ADC1_IN7	Analog mode	n/a	n/a	
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	
	PB7	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	
SPI2	PB12	SPI2_NSS	Alternate Function Push Pull	n/a	**High ***	ETHSPI_NSS
	PB13	SPI2_SCK	Alternate Function Push Pull	n/a	**High ***	ETHSPI_SCK
	PB14	SPI2_MISO	Input mode	No pull-up and no pull-down	**n/a**	ETHSPI_MISO
	PB15	SPI2_MOSI	Alternate Function Push Pull	n/a	**High ***	ETHSPI_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	**High ***	TLCMP-TX
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	**n/a**	TLCMP-RX
USART2	PD5	USART2_TX	Alternate Function Push Pull	n/a	**High ***	
	PD6	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	
USART3	PD8	USART3_TX	Alternate Function Push Pull	n/a	**High ***	WI_RS485-TX
	PD9	USART3_RX	Input mode	No pull-up and no pull-down	**n/a**	WI_RS485-RX
Single Mapped Signals	OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
GPIO	PE2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN3
	PE3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN4

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PE4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN5
	PE5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN6
	PE6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN7
	PC13-TAMPER-RTC	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN8
	PC14-OSC32_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN9
	PC15-OSC32_OUT	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN10
	PC2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN17
	PC3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN18
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN19
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN20
	PE7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN8
	PE8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN9
	PE9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN10
	PE10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN11
	PE11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN12
	PE12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN13
	PE13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN14
	PE14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN15
	PE15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN16
	PB10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ETH_INT
	PB11	GPIO_Output	Output Push Pull	n/a	Low	ETH_RST
	PD10	GPIO_Output	Output Push Pull	n/a	Low	WI_RS485-R/W
	PD11	GPIO_Output	Output Push Pull	n/a	Low	DOUT7
	PD12	GPIO_Output	Output Push Pull	n/a	Low	DOUT8
	PD13	GPIO_Output	Output Push Pull	n/a	Low	DOUT9
	PD14	GPIO_Output	Output Push Pull	n/a	Low	DOUT10
	PD15	GPIO_Output	Output Push Pull	n/a	Low	DOUT11
	PC6	GPIO_Output	Output Push Pull	n/a	Low	DOUT12
	PC7	GPIO_Output	Output Push Pull	n/a	Low	DOUT13
	PC8	GPIO_Output	Output Push Pull	n/a	Low	DOUT14
	PC9	GPIO_Output	Output Push Pull	n/a	Low	DOUT15
	PA11	GPIO_Output	Output Push Pull	n/a	Low	DOUT11
	PA12	GPIO_Output	Output Push Pull	n/a	Low	DOUT12
	PC10	GPIO_Output	Output Push Pull	n/a	Low	DOUT16
	PC11	GPIO_Output	Output Push Pull	n/a	Low	DOUT17
	PC12	GPIO_Output	Output Push Pull	n/a	Low	DOUT18

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PD0	GPIO_Output	Output Push Pull	n/a	Low	DOUT1
	PD1	GPIO_Output	Output Push Pull	n/a	Low	DOUT2
	PD2	GPIO_Output	Output Push Pull	n/a	Low	DOUT3
	PD3	GPIO_Output	Output Push Pull	n/a	Low	DOUT4
	PD4	GPIO_Output	Output Push Pull	n/a	Low	DOUT5
	PD7	GPIO_Output	Output Push Pull	n/a	Low	DOUT6
	PE0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN1
	PE1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIN2

6.2. DMA configuration

nothing configured in DMA service

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
Window watchdog interrupt	unused		
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
SPI2 global interrupt	unused		
USART1 global interrupt	unused		
USART2 global interrupt	unused		
USART3 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103VCTx
Datasheet	14611_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.3