1. Description

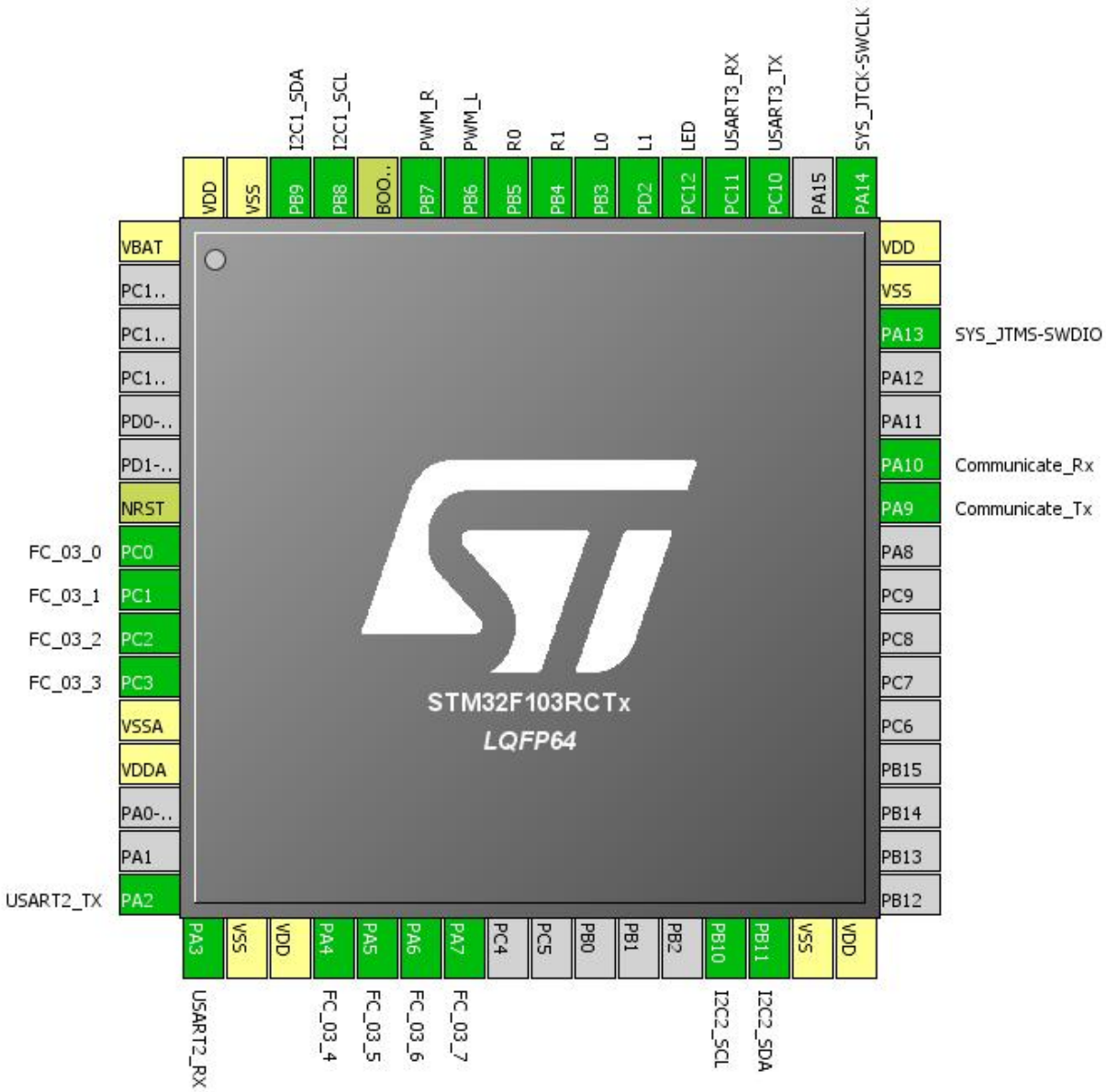
1.1. Project

Project Name	BetaRust
Board Name	BetaRust
Generated with:	STM32CubeMX 4.16.1
Date	10/07/2016

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103RCTx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



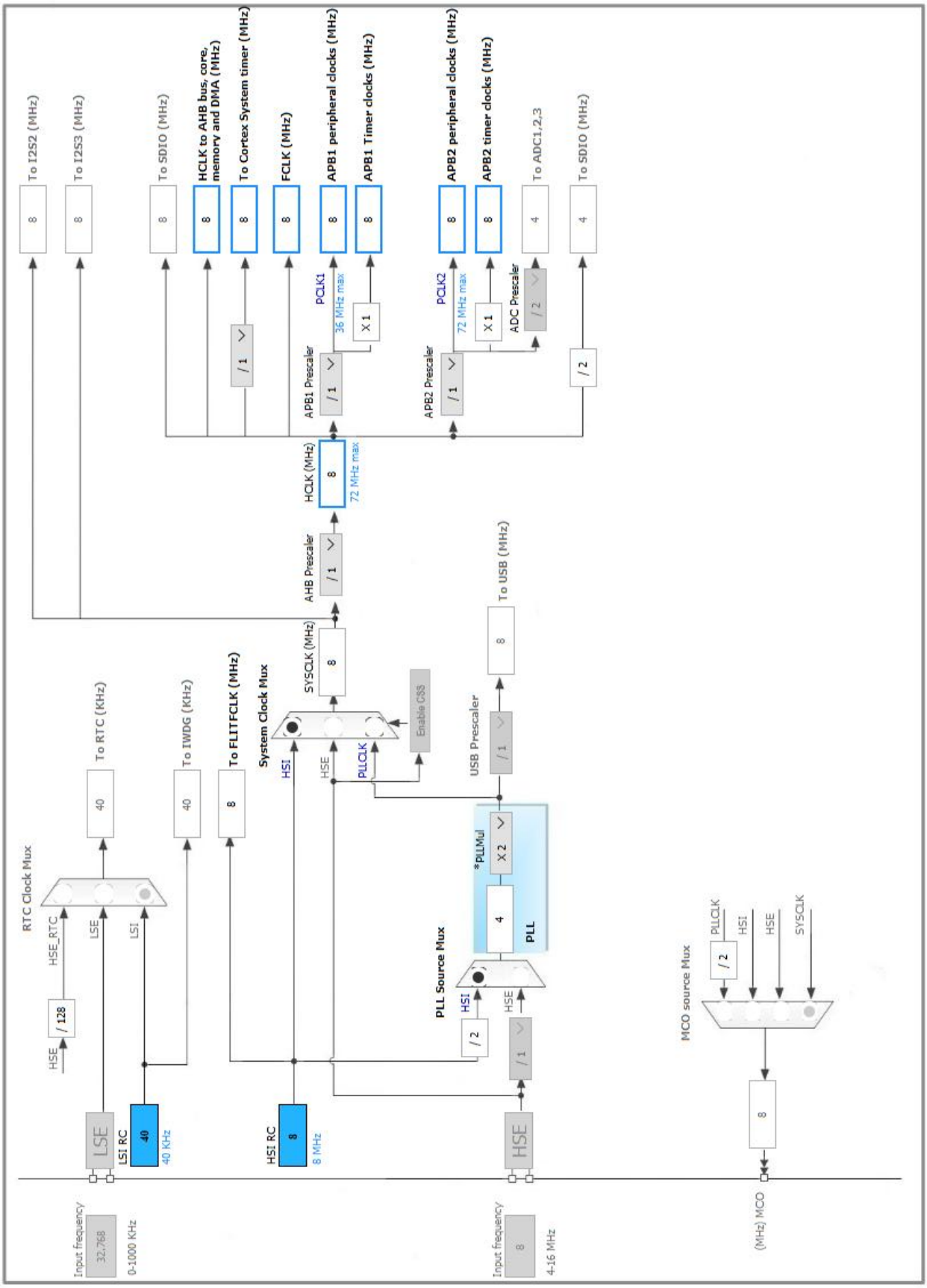
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
7	NRST	Reset		
8	PC0	I/O	GPIO_EXTI0	FC_03_0
9	PC1	I/O	GPIO_EXTI1	FC_03_1
10	PC2	I/O	GPIO_EXTI2	FC_03_2
11	PC3	I/O	GPIO_EXTI3	FC_03_3
12	VSSA	Power		
13	VDDA	Power		
16	PA2	I/O	USART2_TX	
17	PA3	I/O	USART2_RX	
18	VSS	Power		
19	VDD	Power		
20	PA4 *	I/O	GPIO_Input	FC_03_4
21	PA5 *	I/O	GPIO_Input	FC_03_5
22	PA6 *	I/O	GPIO_Input	FC_03_6
23	PA7 *	I/O	GPIO_Input	FC_03_7
29	PB10	I/O	I2C2_SCL	
30	PB11	I/O	I2C2_SDA	
31	VSS	Power		
32	VDD	Power		
42	PA9	I/O	USART1_TX	Communicate_Tx
43	PA10	I/O	USART1_RX	Communicate_Rx
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	
51	PC10	I/O	USART3_TX	
52	PC11	I/O	USART3_RX	
53	PC12 *	I/O	GPIO_Output	LED
54	PD2 *	I/O	GPIO_Output	L1
55	PB3 *	I/O	GPIO_Output	L0
56	PB4 *	I/O	GPIO_Output	R1
57	PB5 *	I/O	GPIO_Output	R0
58	PB6	I/O	TIM4_CH1	PWM_L
59	PB7	I/O	TIM4_CH2	PWM_R
60	BOOT0	Boot		

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
61	PB8	I/O	I2C1_SCL	
62	PB9	I/O	I2C1_SDA	
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. I2C1

I2C: I2C

5.1.1. 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

5.2. I2C2

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. SYS

Debug: Serial Wire
Timebase Source: SysTick

5.4. TIM1

Clock Source : Internal Clock

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**3 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1999 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.5. TIM2

Clock Source : Internal Clock

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**3 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1999 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.6. TIM3

Clock Source : Internal Clock

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**3 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1999 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.7. TIM4

mode: Clock Source
Channel1: PWM Generation CH1
Channel2: PWM Generation CH2

5.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**3 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1999 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable

CH Polarity	High

5.8. TIM5

mode: Clock Source

5.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**3 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1999 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.9. TIM6

mode: Activated

5.9.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.10. TIM7

mode: Activated

5.10.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.11. TIM8

Clock Source : Internal Clock

5.11.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**3 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1999 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

5.12. USART1

Mode: Asynchronous

5.12.1. 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

5.13. USART2

Mode: Asynchronous

5.13.1. 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

5.14. USART3

Mode: Asynchronous

5.14.1. 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**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PB8	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	
	PB9	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	
I2C2	PB10	I2C2_SCL	Alternate Function Open Drain	n/a	**High ***	
	PB11	I2C2_SDA	Alternate Function Open Drain	n/a	**High ***	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM4	PB6	TIM4_CH1	Alternate Function Push Pull	n/a	Low	PWM_L
	PB7	TIM4_CH2	Alternate Function Push Pull	n/a	Low	PWM_R
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	**High ***	Communicate_Tx
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	**n/a**	Communicate_Rx
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	**High ***	
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	
USART3	PC10	USART3_TX	Alternate Function Push Pull	n/a	**High ***	
	PC11	USART3_RX	Input mode	No pull-up and no pull-down	**n/a**	
GPIO	PC0	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	FC_03_0
	PC1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	FC_03_1
	PC2	GPIO_EXTI2	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	FC_03_2
	PC3	GPIO_EXTI3	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	FC_03_3
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FC_03_4
	PA5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FC_03_5
	PA6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FC_03_6
	PA7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FC_03_7
	PC12	GPIO_Output	Output Push Pull	n/a	Low	LED
	PD2	GPIO_Output	Output Push Pull	n/a	Low	L1
	PB3	GPIO_Output	Output Push Pull	n/a	Low	L0

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB4	GPIO_Output	Output Push Pull	n/a	Low	R1
	PB5	GPIO_Output	Output Push Pull	n/a	Low	R0

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
EXTI line0 interrupt	true	0	0
EXTI line1 interrupt	true	0	0
EXTI line2 interrupt	true	0	0
EXTI line3 interrupt	true	0	0
TIM2 global interrupt	true	0	0
TIM3 global interrupt	true	0	0
TIM4 global interrupt	true	0	0
TIM5 global interrupt	true	0	0
TIM6 global interrupt	true	0	0
TIM7 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break interrupt	unused		
TIM1 update interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
I2C2 event interrupt	unused		
I2C2 error interrupt	unused		
USART1 global interrupt	unused		
USART2 global interrupt	unused		
USART3 global interrupt	unused		
TIM8 break interrupt	unused		
TIM8 update interrupt	unused		
TIM8 trigger and commutation interrupts	unused		
TIM8 capture compare interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103RCTx
Datasheet	14611_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	BetaRust
Project Folder	C:\Users\Zero Weight\Documents\A-Heaven_Sent-Chance\BetaRust
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F1 V1.4.0

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	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No