1. Description

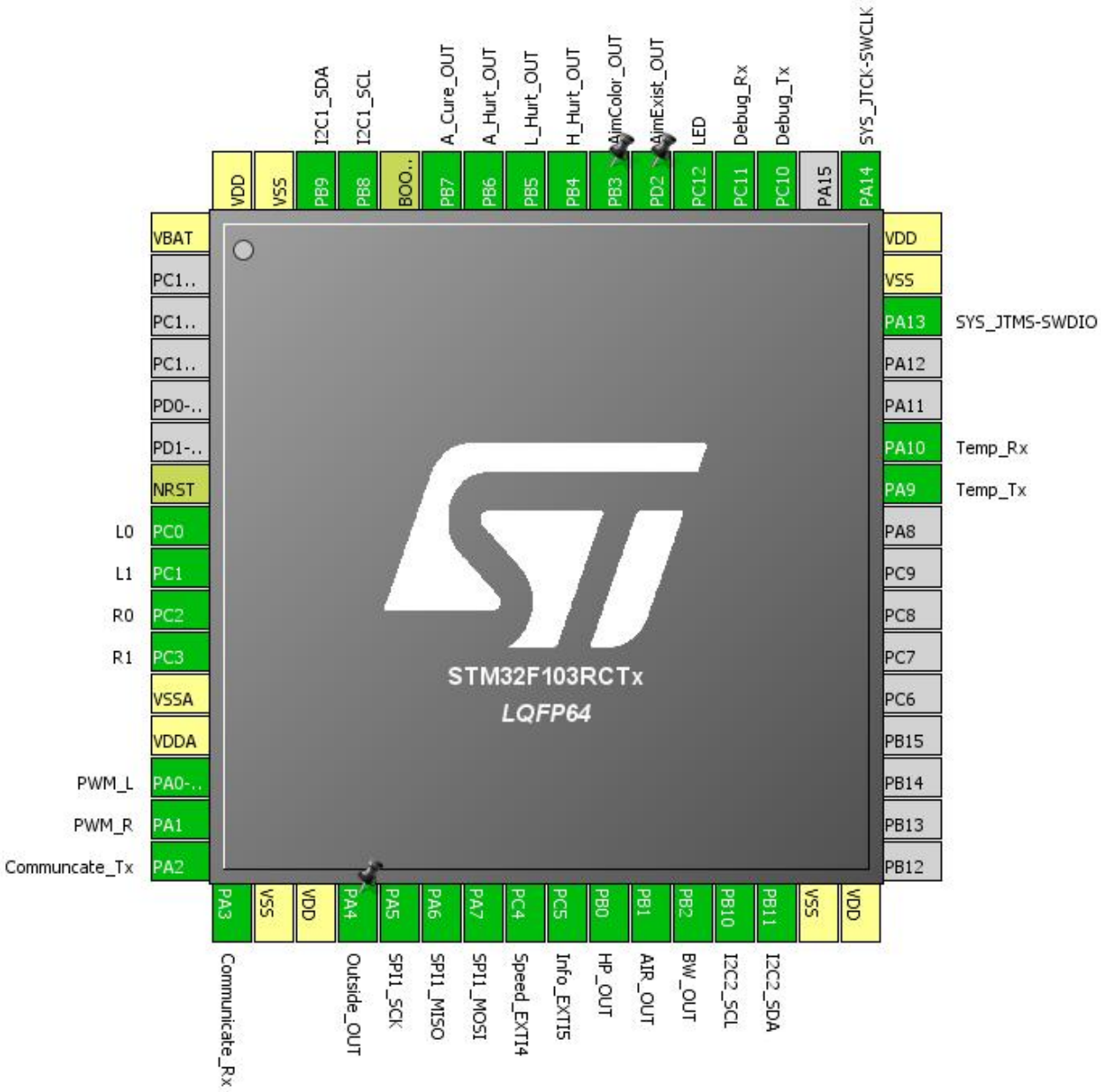
1.1. Project

Project Name	BetaRust_Slave
Board Name	BetaRust_Slave
Generated with:	STM32CubeMX 4.16.1
Date	10/19/2016

1.2. MCU

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

2. Pinout Configuration



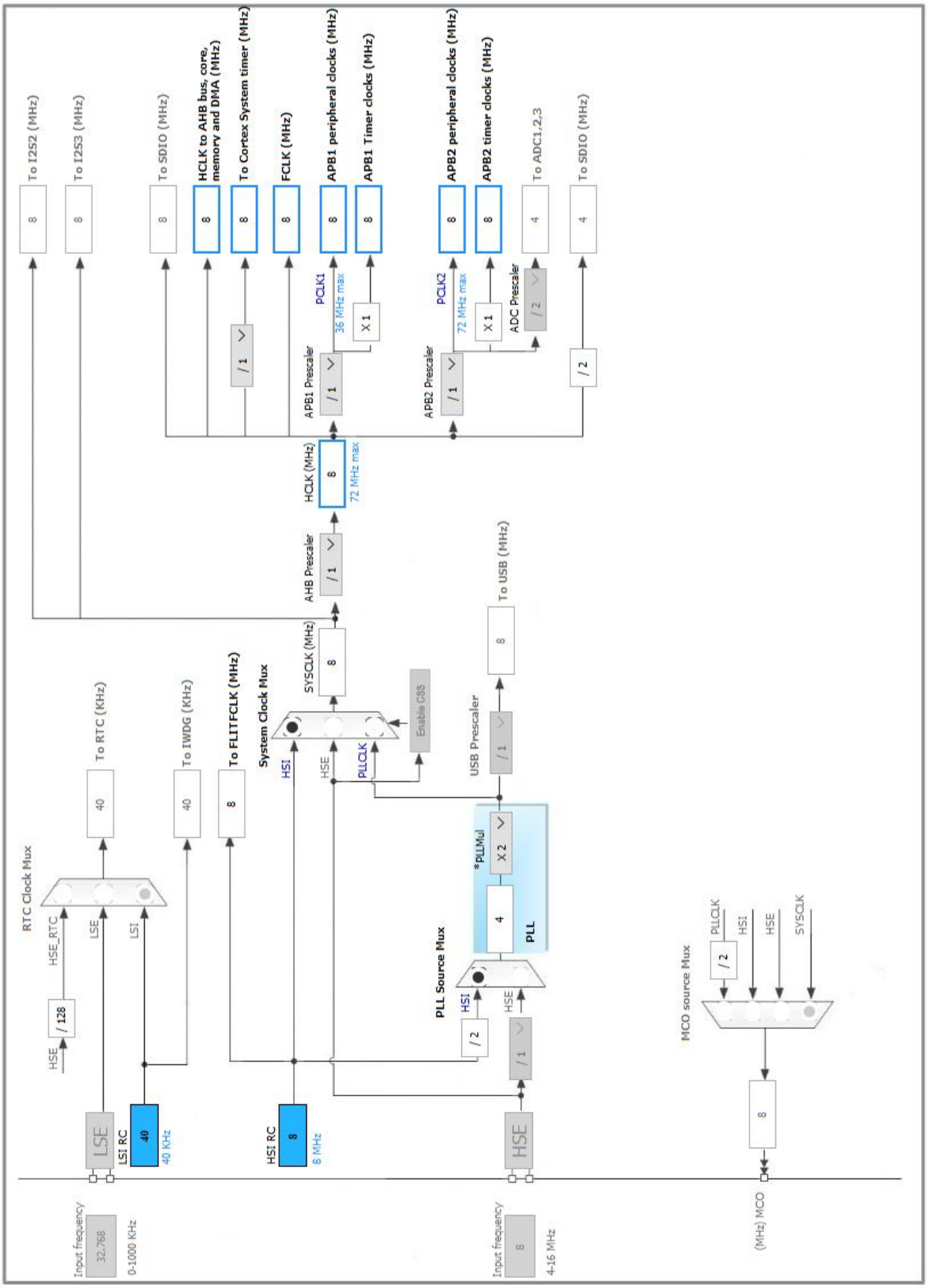
3. Pins Configuration

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_Output	L0
9	PC1 *	I/O	GPIO_Output	L1
10	PC2 *	I/O	GPIO_Output	R0
11	PC3 *	I/O	GPIO_Output	R1
12	VSSA	Power		
13	VDDA	Power		
14	PA0-WKUP	I/O	TIM2_CH1	PWM_L
15	PA1	I/O	TIM2_CH2	PWM_R
16	PA2	I/O	USART2_TX	Communcate_Tx
17	PA3	I/O	USART2_RX	Communicate_Rx
18	VSS	Power		
19	VDD	Power		
20	PA4 *	I/O	GPIO_Output	Outside_OUT
21	PA5	I/O	SPI1_SCK	
22	PA6	I/O	SPI1_MISO	
23	PA7	I/O	SPI1_MOSI	
24	PC4	I/O	GPIO_EXTI4	Speed_EXTI4
25	PC5	I/O	GPIO_EXTI5	Info_EXTI5
26	PB0 *	I/O	GPIO_Output	HP_OUT
27	PB1 *	I/O	GPIO_Output	AIR_OUT
28	PB2 *	I/O	GPIO_Output	BW_OUT
29	PB10	I/O	I2C2_SCL	
30	PB11	I/O	I2C2_SDA	
31	VSS	Power		
32	VDD	Power		
42	PA9	I/O	USART1_TX	Temp_Tx
43	PA10	I/O	USART1_RX	Temp_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	Debug_Tx
52	PC11	I/O	USART3_RX	Debug_Rx
53	PC12 *	I/O	GPIO_Output	LED

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
54	PD2 *	I/O	GPIO_Output	AimExist_OUT
55	PB3 *	I/O	GPIO_Output	AimColor_OUT
56	PB4 *	I/O	GPIO_Output	H_Hurt_OUT
57	PB5 *	I/O	GPIO_Output	L_Hurt_OUT
58	PB6 *	I/O	GPIO_Output	A_Hurt_OUT
59	PB7 *	I/O	GPIO_Output	A_Cure_OUT
60	BOOT0	Boot		
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. SPI1

Mode: Full-Duplex Master

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	Software

5.4. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.5. TIM2

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**4 ***
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)	**1000 ***
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	**1000 ***
Fast Mode	Disable
CH Polarity	High

5.6. USART1

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. USART2

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. USART3

Mode: Asynchronous

5.8.1. 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 ***	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	n/a	**High ***	
	PA6	SPI1_MISO	Input mode	No pull-up and no pull-down	**n/a**	
	PA7	SPI1_MOSI	Alternate Function Push Pull	n/a	**High ***	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM2	PA0-WKUP	TIM2_CH1	Alternate Function Push Pull	n/a	Low	PWM_L
	PA1	TIM2_CH2	Alternate Function Push Pull	n/a	Low	PWM_R
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	**High ***	Temp_Tx
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	**n/a**	Temp_Rx
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	**High ***	Communcate_Tx
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	Communicate_Rx
USART3	PC10	USART3_TX	Alternate Function Push Pull	n/a	**High ***	Debug_Tx
	PC11	USART3_RX	Input mode	No pull-up and no pull-down	**n/a**	Debug_Rx
GPIO	PC0	GPIO_Output	Output Push Pull	n/a	Low	L0
	PC1	GPIO_Output	Output Push Pull	n/a	Low	L1
	PC2	GPIO_Output	Output Push Pull	n/a	Low	R0
	PC3	GPIO_Output	Output Push Pull	n/a	Low	R1
	PA4	GPIO_Output	Output Push Pull	n/a	Low	Outside_OUT
	PC4	GPIO_EXTI4	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Speed_EXTI4
	PC5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Info_EXTI5
	PB0	GPIO_Output	Output Push Pull	n/a	Low	HP_OUT
	PB1	GPIO_Output	Output Push Pull	n/a	Low	AIR_OUT

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB2	GPIO_Output	Output Push Pull	n/a	Low	BW_OUT
	PC12	GPIO_Output	Output Push Pull	n/a	Low	LED
	PD2	GPIO_Output	Output Push Pull	n/a	Low	AimExist_OUT
	PB3	GPIO_Output	Output Push Pull	n/a	Low	AimColor_OUT
	PB4	GPIO_Output	Output Push Pull	n/a	Low	H_Hurt_OUT
	PB5	GPIO_Output	Output Push Pull	n/a	Low	L_Hurt_OUT
	PB6	GPIO_Output	Output Push Pull	n/a	Low	A_Hurt_OUT
	PB7	GPIO_Output	Output Push Pull	n/a	Low	A_Cure_OUT

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 line4 interrupt	true	0	0
EXTI line[9:5] interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM2 global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
I2C2 event interrupt	unused		
I2C2 error interrupt	unused		
SPI1 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	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_Slave
Project Folder	C:\Users\Zero Weight\Documents\A-Heaven_Sent-Chance\BetaRust_Slave
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