

1. Description

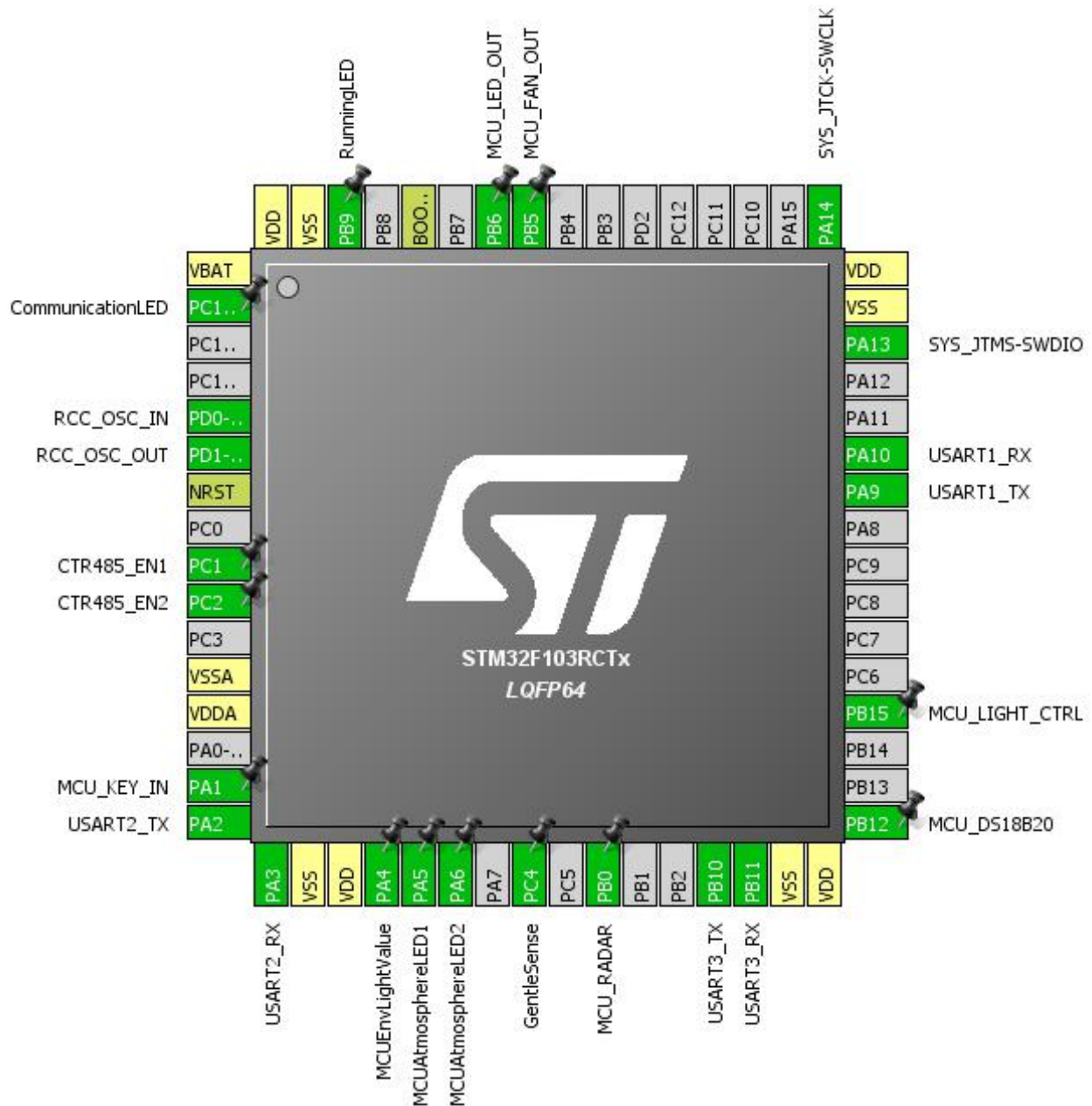
1.1. Project

Project Name	DSv1
Board Name	DSv1.1
Generated with:	STM32CubeMX 4.22.1
Date	11/09/2017

1.2. MCU

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

2. Pinout Configuration



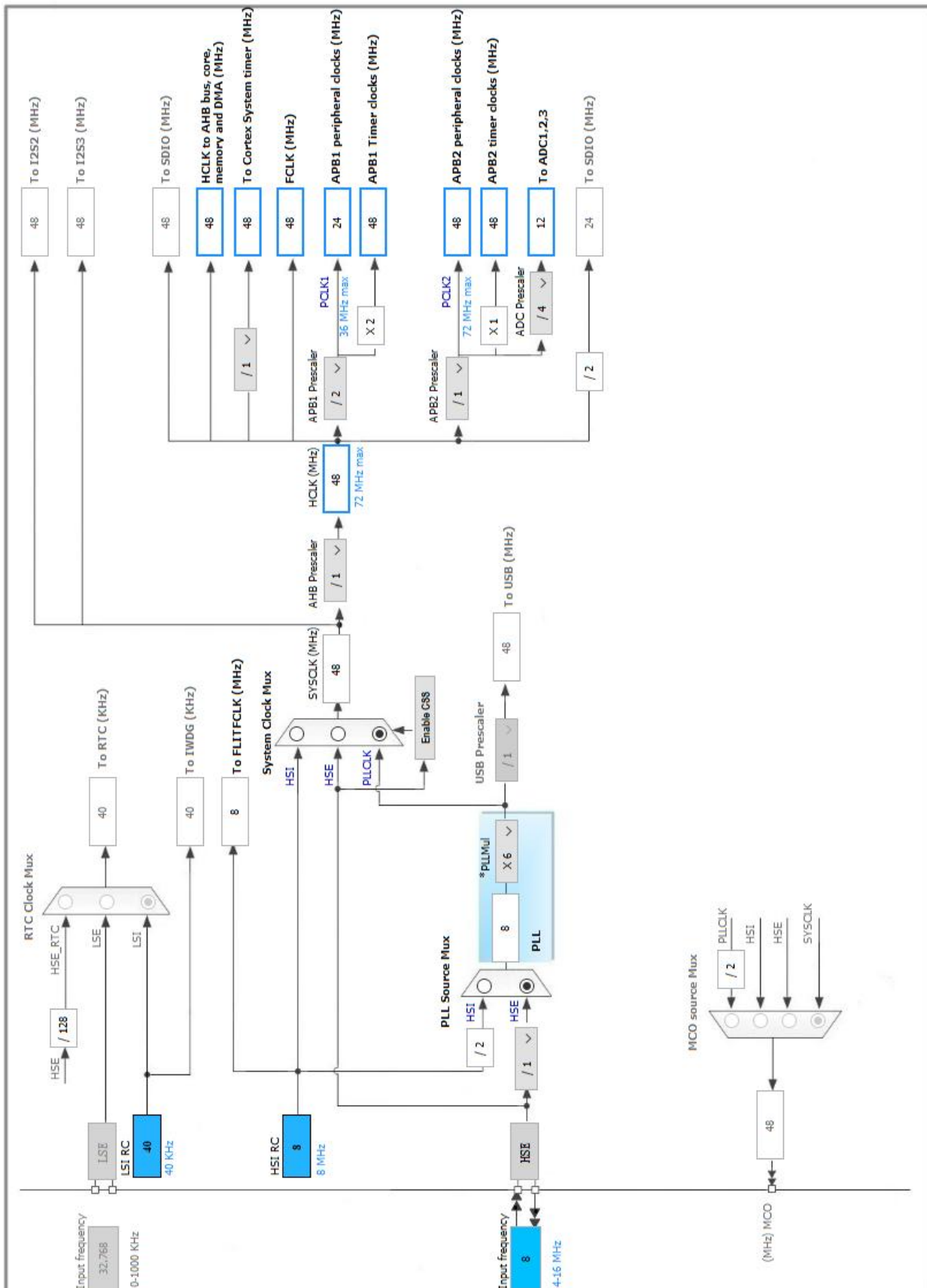
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC *	I/O	GPIO_Output	CommunicationLED
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
9	PC1 *	I/O	GPIO_Output	CTR485_EN1
10	PC2 *	I/O	GPIO_Output	CTR485_EN2
12	VSSA	Power		
13	VDDA	Power		
15	PA1	I/O	GPIO_EXTI1	MCU_KEY_IN
16	PA2	I/O	USART2_TX	
17	PA3	I/O	USART2_RX	
18	VSS	Power		
19	VDD	Power		
20	PA4	I/O	ADC1_IN4	MCUEnvLightValue
21	PA5 *	I/O	GPIO_Output	MCUAtmosphereLED1
22	PA6 *	I/O	GPIO_Output	MCUAtmosphereLED2
24	PC4	I/O	GPIO_EXTI4	GentleSense
26	PB0 *	I/O	GPIO_Input	MCU_RADAR
29	PB10	I/O	USART3_TX	
30	PB11	I/O	USART3_RX	
31	VSS	Power		
32	VDD	Power		
33	PB12 *	I/O	GPIO_Output	MCU_DS18B20
36	PB15 *	I/O	GPIO_Input	MCU_LIGHT_CTRL
42	PA9	I/O	USART1_TX	
43	PA10	I/O	USART1_RX	
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	
57	PB5 *	I/O	GPIO_Output	MCU_FAN_OUT
58	PB6 *	I/O	GPIO_Output	MCU_LED_OUT
60	BOOT0	Boot		
62	PB9 *	I/O	GPIO_Output	RunningLED
63	VSS	Power		

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: IN4

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 4

Sampling Time 1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions 0

WatchDog:

Enable Analog WatchDog Mode false

5.2. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.2.1. Parameter Settings:

System Parameters:

VDD voltage (V) 3.3

Prefetch Buffer Enabled

Flash Latency(WS) 1 WS (2 CPU cycle)

RCC Parameters:

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

5.3. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.4. TIM4

mode: Clock Source

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	48-1 *
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	1000-1 *
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

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. TIM5

mode: Clock Source

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	48-1 *
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	1000-1 *
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode
Trigger Event Selection

Disable (no sync between this TIM (Master) and its Slaves
Reset (UG bit from TIMx_EGR)

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
ADC1	PA4	ADC1_IN4	Analog mode	n/a	n/a	MCUEnvLightValue
RCC	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
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 *	
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	n/a	
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	PB10	USART3_TX	Alternate Function Push Pull	n/a	High *	
	PB11	USART3_RX	Input mode	No pull-up and no pull-down	n/a	
GPIO	PC13-TAMPER-RTC	GPIO_Output	Output Push Pull	n/a	Low	CommunicationLED
	PC1	GPIO_Output	Output Push Pull	n/a	Low	CTR485_EN1
	PC2	GPIO_Output	Output Push Pull	n/a	Low	CTR485_EN2
	PA1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	MCU_KEY_IN
	PA5	GPIO_Output	Output Push Pull	n/a	Low	MCUAtmosphereLED1
	PA6	GPIO_Output	Output Push Pull	n/a	Low	MCUAtmosphereLED2
	PC4	GPIO_EXTI4	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	GentleSense
	PB0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	MCU_RADAR
	PB12	GPIO_Output	Output Push Pull	n/a	Low	MCU_DS18B20
	PB15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	MCU_LIGHT_CTRL
	PB5	GPIO_Output	Output Push Pull	n/a	Low	MCU_FAN_OUT
	PB6	GPIO_Output	Output Push Pull	n/a	Low	MCU_LED_OUT
	PB9	GPIO_Output	Output Push Pull	n/a	Low	RunningLED

6.2. DMA configuration

DMA request	Stream	Direction	Priority
USART1_RX	DMA1_Channel5	Peripheral To Memory	Low

USART1_RX: DMA1_Channel5 DMA request Settings:

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

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
PVD interrupt through EXTI line 16	true	0	0
EXTI line1 interrupt	true	0	0
EXTI line4 interrupt	true	0	0
DMA1 channel5 global interrupt	true	0	0
TIM4 global interrupt	true	0	0
USART1 global interrupt	true	0	0
USART2 global interrupt	true	0	0
USART3 global interrupt	true	0	0
TIM5 global interrupt	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	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	DSv1.1
Project Folder	C:\Users\NewStar-Bert\Desktop\DSDome\DSv1.1
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.0

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