

1. Description

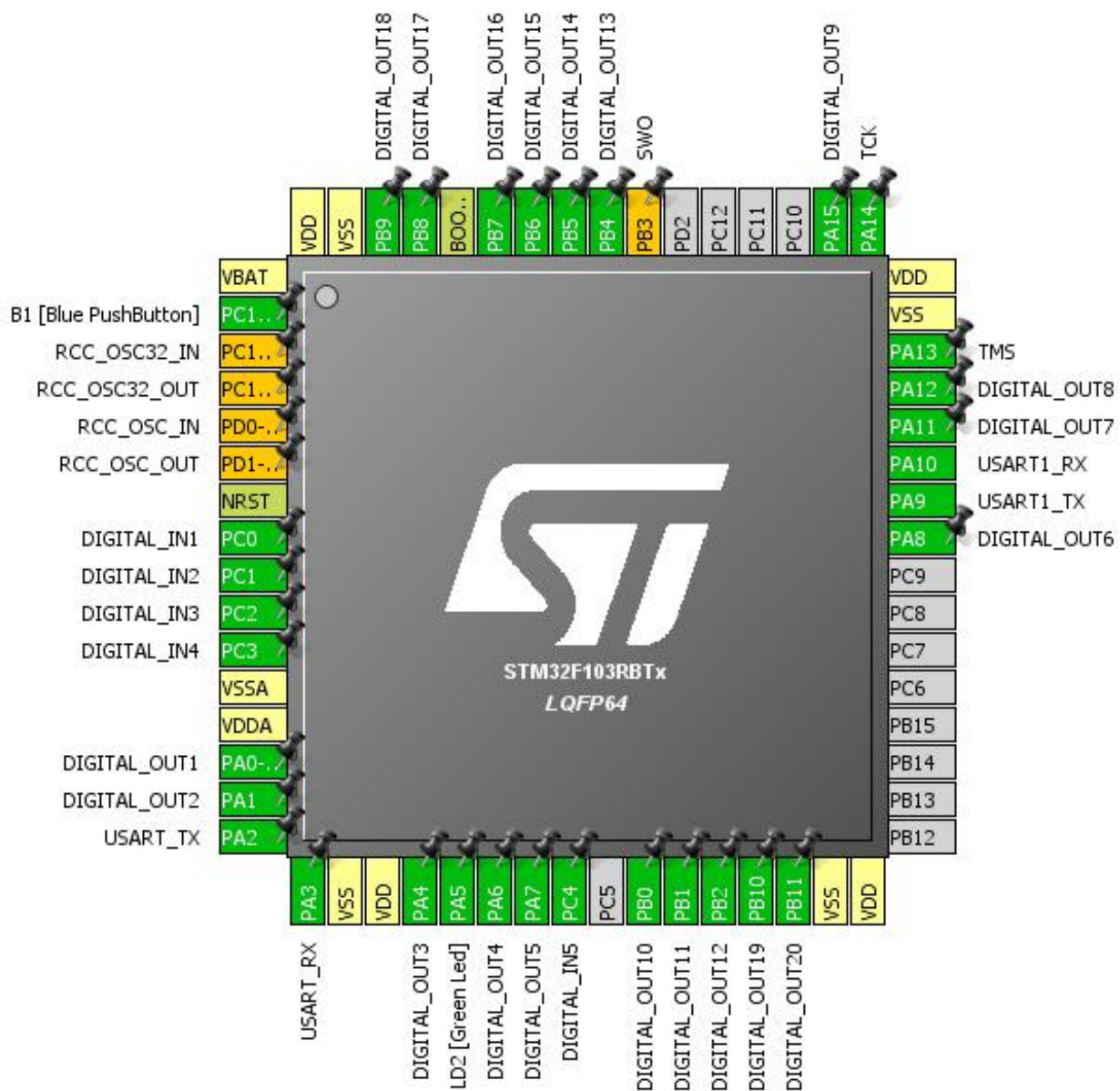
1.1. Project

Project Name	gigaprojekt_freertos
Board Name	NUCLEO-F103RB
Generated with:	STM32CubeMX 4.23.0
Date	12/25/2017

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103RBTx
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_EXTI13	B1 [Blue PushButton]
3	PC14-OSC32_IN *	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT *	I/O	RCC_OSC32_OUT	
5	PD0-OSC_IN *	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT *	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	PC0 **	I/O	GPIO_Input	DIGITAL_IN1
9	PC1 **	I/O	GPIO_Input	DIGITAL_IN2
10	PC2 **	I/O	GPIO_Input	DIGITAL_IN3
11	PC3 **	I/O	GPIO_Input	DIGITAL_IN4
12	VSSA	Power		
13	VDDA	Power		
14	PA0-WKUP **	I/O	GPIO_Output	DIGITAL_OUT1
15	PA1 **	I/O	GPIO_Output	DIGITAL_OUT2
16	PA2	I/O	USART2_TX	USART_TX
17	PA3	I/O	USART2_RX	USART_RX
18	VSS	Power		
19	VDD	Power		
20	PA4 **	I/O	GPIO_Output	DIGITAL_OUT3
21	PA5 **	I/O	GPIO_Output	LD2 [Green Led]
22	PA6 **	I/O	GPIO_Output	DIGITAL_OUT4
23	PA7 **	I/O	GPIO_Output	DIGITAL_OUT5
24	PC4 **	I/O	GPIO_Input	DIGITAL_IN5
26	PB0 **	I/O	GPIO_Output	DIGITAL_OUT10
27	PB1 **	I/O	GPIO_Output	DIGITAL_OUT11
28	PB2 **	I/O	GPIO_Output	DIGITAL_OUT12
29	PB10 **	I/O	GPIO_Output	DIGITAL_OUT19
30	PB11 **	I/O	GPIO_Output	DIGITAL_OUT20
31	VSS	Power		
32	VDD	Power		
41	PA8 **	I/O	GPIO_Output	DIGITAL_OUT6
42	PA9	I/O	USART1_TX	
43	PA10	I/O	USART1_RX	
44	PA11 **	I/O	GPIO_Output	DIGITAL_OUT7
45	PA12 **	I/O	GPIO_Output	DIGITAL_OUT8

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
46	PA13	I/O	SYS_JTMS-SWDIO	TMS
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	TCK
50	PA15 **	I/O	GPIO_Output	DIGITAL_OUT9
55	PB3 *	I/O	SYS_JTDO-TRACESWO	SWO
56	PB4 **	I/O	GPIO_Output	DIGITAL_OUT13
57	PB5 **	I/O	GPIO_Output	DIGITAL_OUT14
58	PB6 **	I/O	GPIO_Output	DIGITAL_OUT15
59	PB7 **	I/O	GPIO_Output	DIGITAL_OUT16
60	BOOT0	Boot		
61	PB8 **	I/O	GPIO_Output	DIGITAL_OUT17
62	PB9 **	I/O	GPIO_Output	DIGITAL_OUT18
63	VSS	Power		
64	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

5. IPs and Middleware Configuration

5.1. CRC

mode: Activated

5.2. RTC

mode: Activate Clock Source

mode: Activate Calendar

RTC OUT: No RTC Output

5.2.1. Parameter Settings:

Calendar Time:

Data Format	BCD data format
Hours	1
Minutes	0
Seconds	0

General:

Auto Predivider Calculation	Enabled
Asynchronous Predivider value	Automatic Predivider Calculation Enabled
Output	No output on the TAMPER pin

Calendar Date:

Week Day	Monday
Month	January
Date	1
Year	0

5.3. SYS

Debug: Serial Wire

Timebase Source: TIM2

5.4. USART1

Mode: Asynchronous

5.4.1. 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

5.5. USART2

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. FREERTOS

mode: Enabled

5.6.1. Config parameters:

Versions:

FreeRTOS version	9.0.0
CMSIS-RTOS version	1.02

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock

TICK_RATE_HZ	1000
MAX_PRIORITIES	7
MINIMAL_STACK_SIZE	64 *
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Disabled
USE_COUNTING_SEMAPHORES	Disabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Enabled
USE_TICKLESS_IDLE	Disabled
USE_TASK_NOTIFICATIONS	Enabled

Memory management settings:

Memory Allocation	Dynamic
TOTAL_HEAP_SIZE	7168 *
Memory Management scheme	heap_4

Hook function related definitions:

USE_IDLE_HOOK	Enabled *
USE_TICK_HOOK	Enabled *
USE_MALLOC_FAILED_HOOK	Enabled *
USE_DAEMON_TASK_STARTUP_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Option2 *

Run time and task stats gathering related definitions:

GENERATE_RUN_TIME_STATS	Enabled *
USE_TRACE_FACILITY	Disabled
USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Enabled *
TIMER_TASK_PRIORITY	2
TIMER_QUEUE_LENGTH	10
TIMER_TASK_STACK_DEPTH	128

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

5.6.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Enabled *
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Disabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Disabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Disabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Disabled
xTaskAbortDelay	Disabled
xTaskGetHandle	Enabled *

* User modified value

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	TMS
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	TCK
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	Low	USART_TX
	PA3	USART2_RX	*	No pull-up and no pull-down	n/a	USART_RX
Single Mapped Signals	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
	PB3	SYS_JTDO-TRACESWO	n/a	n/a	n/a	SWO
GPIO	PC13-TAMPER-RTC	GPIO_EXTI13	External Interrupt Mode with Falling edge trigger detection	No pull-up and no pull-down	n/a	B1 [Blue PushButton]
	PC0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN1
	PC1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN2
	PC2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN3
	PC3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN4
	PA0-WKUP	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT1
	PA1	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT2
	PA4	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT3
	PA5	GPIO_Output	Output Push Pull	n/a	Low	LD2 [Green Led]
	PA6	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT4
	PA7	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT5
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN5
	PB0	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT10
	PB1	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT11

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB2	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT12
	PB10	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT19
	PB11	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT20
	PA8	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT6
	PA11	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT7
	PA12	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT8
	PA15	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT9
	PB4	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT13
	PB5	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT14
	PB6	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT15
	PB7	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT16
	PB8	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT17
	PB9	GPIO_Output	Output Push Pull	n/a	Low	DIGITAL_OUT18

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	15	0
System tick timer	true	15	0
USART1 global interrupt	true	5	0
USART2 global interrupt	true	5	0
PVD interrupt through EXTI line 16	unused		
RTC global interrupt	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM2 global interrupt	unused		
EXTI line[15:10] interrupts	unused		
RTC alarm interrupt through EXTI line 17	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103RBTx
Datasheet	13587_Rev17

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	gigaprojekt_freertos
Project Folder	C:\Users\Narnia\Documents\workspace\Projekt - NPC-\FREErtos szkielet
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy only the necessary library files
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)	Yes