# 1. Description

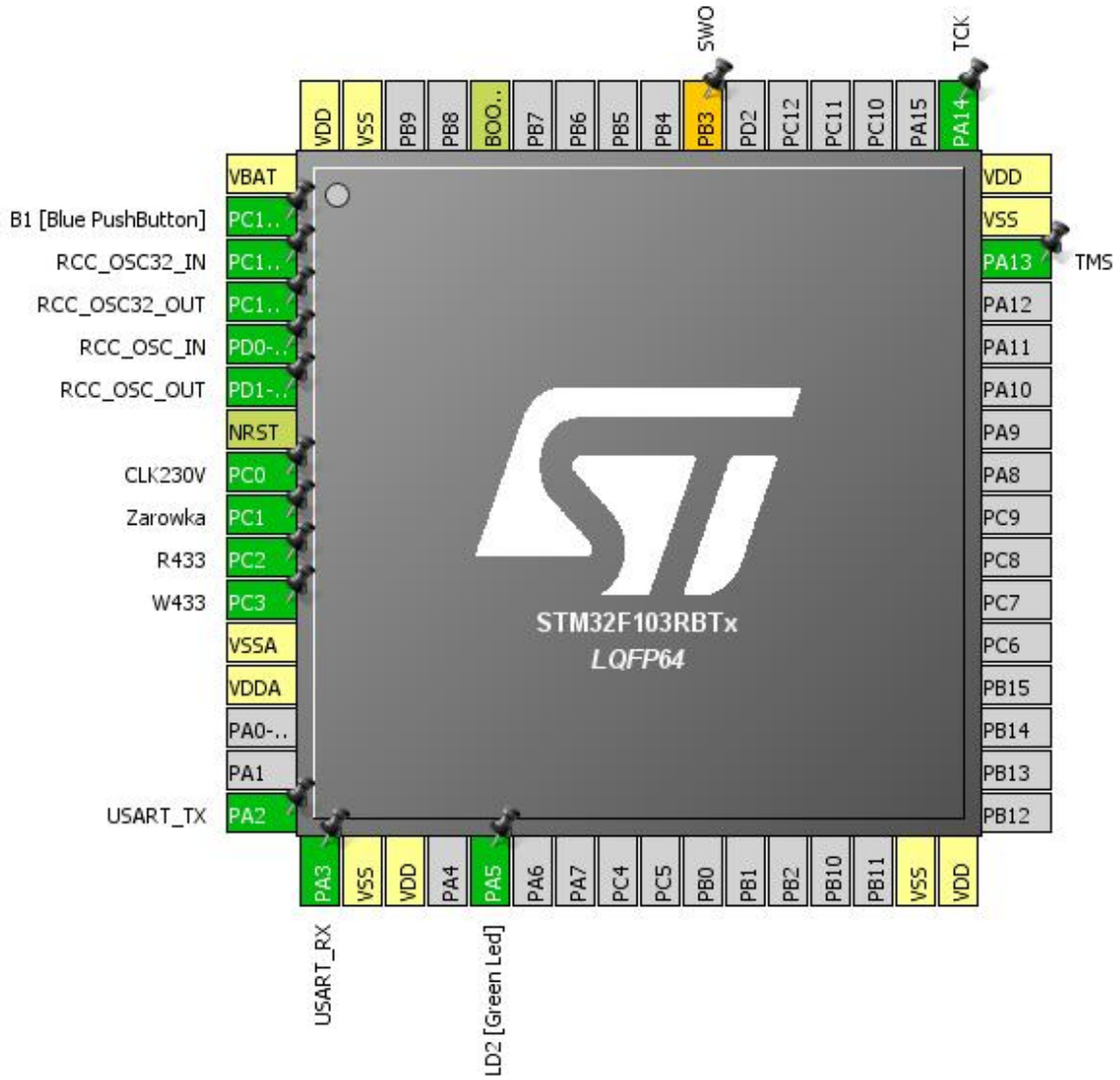
## 1.1. Project

| | |
|---|---|
| Project Name | swiatlo_nucle |
| Board Name | NUCLEO-F103RB |
| Generated with: | STM32CubeMX 4.24.0 |
| Date | 06/12/2018 |

## 1.2. MCU

| | |
|---|---|
| MCU Series | STM32F1 |
| MCU Line | STM32F103 |
| MCU name | STM32F103RBTx |
| MCU Package | LQFP64 |
| MCU Pin number | 64 |

# 2. Pinout Configuration



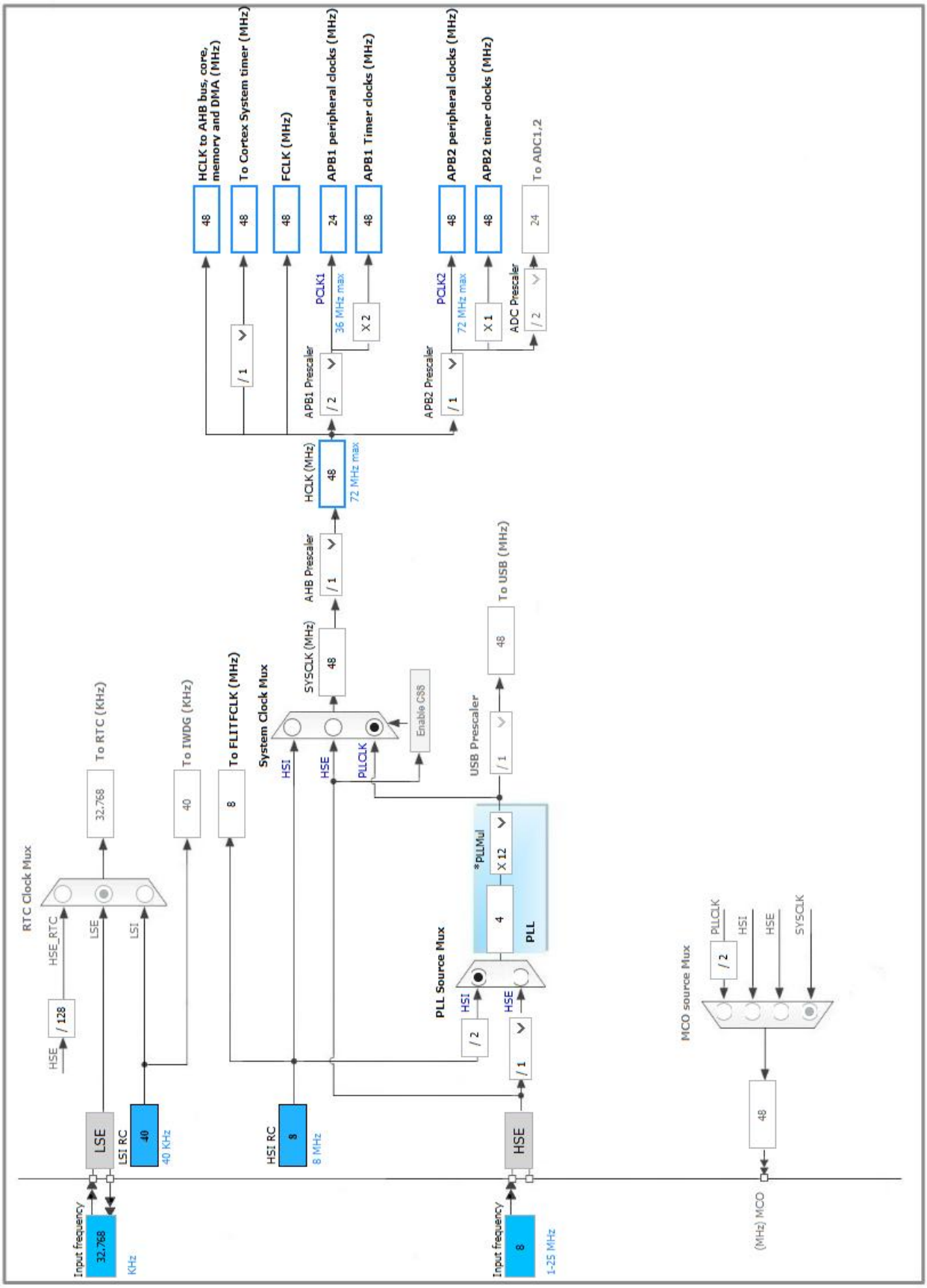
# 3. Pins Configuration

| 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_EXTI0 | CLK230V |
| 9 | PC1 * | I/O | GPIO_Output | Zarowka |
| 10 | PC2 * | I/O | GPIO_Input | R433 |
| 11 | PC3 * | I/O | GPIO_Output | W433 |
| 12 | VSSA | Power | | |
| 13 | VDDA | Power | | |
| 16 | PA2 | I/O | USART2_TX | USART_TX |
| 17 | PA3 | I/O | USART2_RX | USART_RX |
| 18 | VSS | Power | | |
| 19 | VDD | Power | | |
| 21 | PA5 * | I/O | GPIO_Output | LD2 [Green Led] |
| 31 | VSS | Power | | |
| 32 | VDD | Power | | |
| 46 | PA13 | I/O | SYS_JTMS-SWDIO | TMS |
| 47 | VSS | Power | | |
| 48 | VDD | Power | | |
| 49 | PA14 | I/O | SYS_JTCK-SWCLK | TCK |
| 55 | PB3 ** | I/O | SYS_JTDO-TRACESWO | SWO |
| 60 | BOOT0 | Boot | | |
| 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

# 4. Clock Tree Configuration



# 5. IPs and Middleware Configuration

## 5.1. RCC

**High Speed Clock (HSE): BYPASS Clock Source**
**Low Speed Clock (LSE) : Crystal/Ceramic Resonator**

### 5.1.1. 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 Timout Value (ms) | 100 |
| LSE Startup Timout Value (ms) | 5000 |

## 5.2. SYS

**Debug: Serial Wire**
**Timebase Source: SysTick**

## 5.3. TIM4

**Slave Mode: Reset Mode**
**Trigger Source: ITR0**
**mode: Clock Source**

### 5.3.1. Parameter Settings:

| **Counter Settings:** | |
|---|---|
| Prescaler (PSC - 16 bits value) | **130 *** |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value ) | **36 *** |
| Internal Clock Division (CKD) | No Division |
| auto-reload preload | Disable |
| Slave Mode Controller | Reset Mode |

**Trigger Output (TRGO) Parameters:**

| | |
|---|---|
| Master/Slave Mode (MSM bit) | Disable (Trigger input effect not delayed) |
| Trigger Event Selection | Reset (UG bit from TIMx_EGR) |

## *5.4. USART2*

### 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 |

*** User modified value**

# 6. System Configuration

## 6.1. GPIO configuration

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|---|---|---|---|---|---|---|
| RCC | 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 | |
| SYS | PA13 | SYS_JTMS-SWDIO | n/a | n/a | n/a | TMS |
| | PA14 | SYS_JTCK-SWCLK | n/a | n/a | n/a | TCK |
| 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 | PB3 | SYS_JTDO-TRACESWO | n/a | n/a | n/a | SWO |
| GPIO | PC13-TAMPER-RTC | GPIO_EXTI13 | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a | B1 [Blue PushButton] |
| | PC0 | GPIO_EXTI0 | **External Interrupt Mode with Falling edge trigger detection** | **Pull-up *** | n/a | CLK230V |
| | PC1 | GPIO_Output | Output Push Pull | **n/a** | Low | Zarowka |
| | PC2 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | R433 |
| | PC3 | GPIO_Output | Output Push Pull | n/a | Low | W433 |
| | PA5 | GPIO_Output | Output Push Pull | n/a | Low | LD2 [Green Led] |

## 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 |
| TIM4 global interrupt | true | 0 | 0 |
| EXTI line[15:10] interrupts | true | 0 | 0 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| USART2 global interrupt | 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 | swiatlo_nucle |
| Project Folder | D:\projekty\swiatlo_nucle |
| Toolchain / IDE | TrueSTUDIO |
| Firmware Package Name and Version | STM32Cube FW_F1 V1.6.1 |

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

# 9. Software Pack Report