# 1. Description

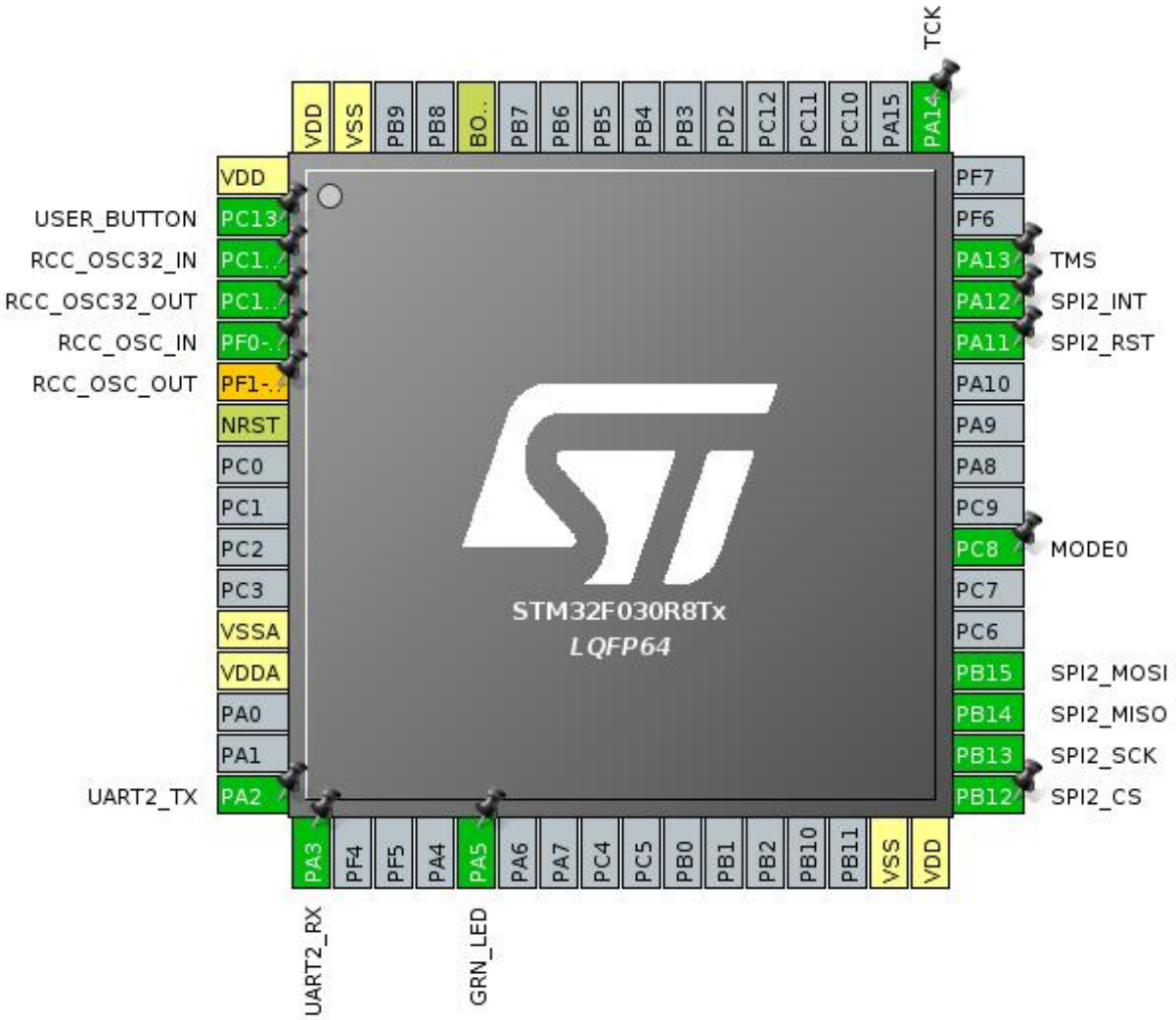
## 1.1. Project

| | |
|---|---|
| Project Name | nucleo_F030R8_rfm96_cubemx |
| Board Name | NUCLEO-F030R8 |
| Generated with: | STM32CubeMX 5.0.1 |
| Date | 11/16/2019 |

## 1.2. MCU

| | |
|---|---|
| MCU Series | STM32F0 |
| MCU Line | STM32F0x0 Value Line |
| MCU name | STM32F030R8Tx |
| MCU Package | LQFP64 |
| MCU Pin number | 64 |

## 2. Pinout Configuration



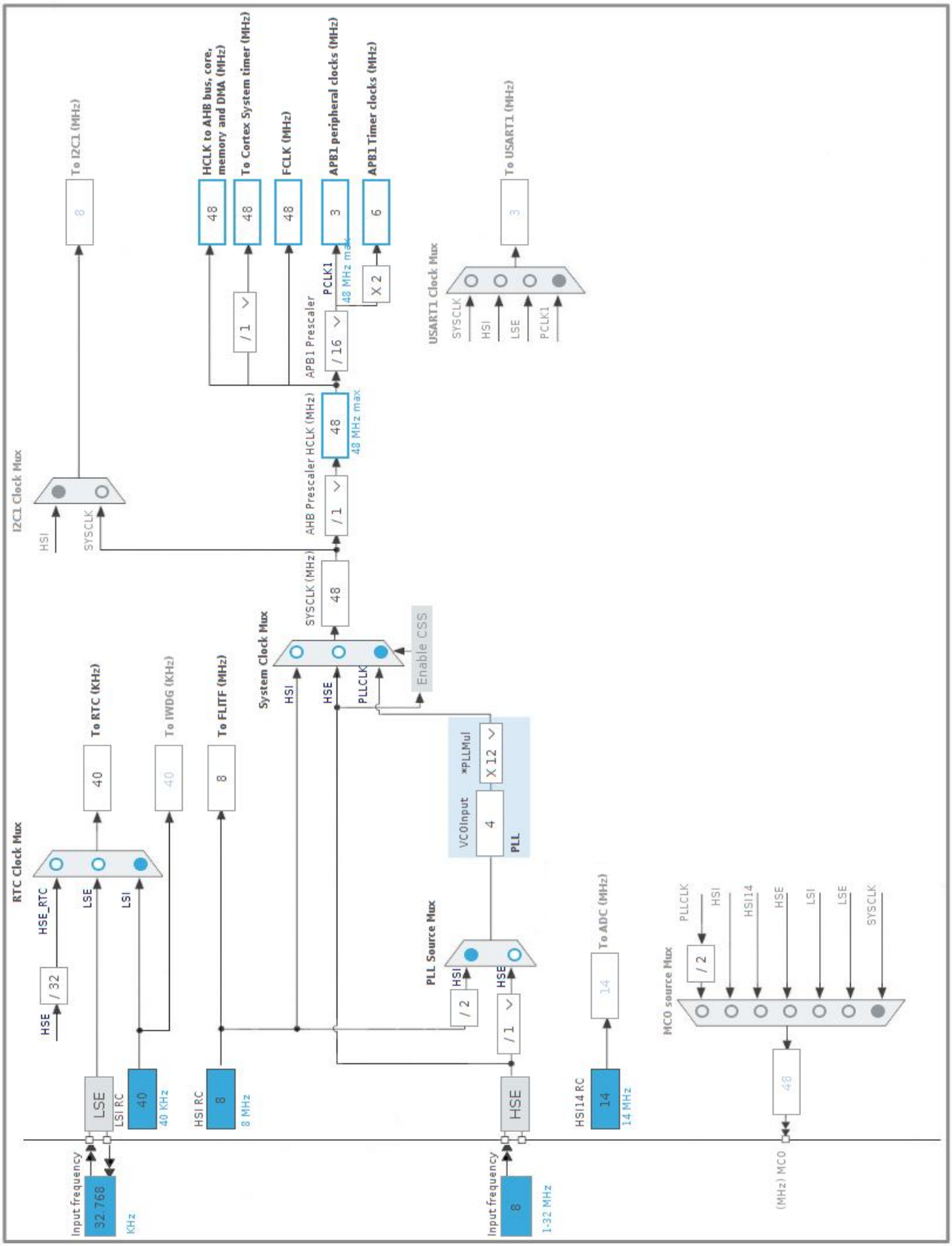
# 3. Pins Configuration

| Pin Number LQFP64 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 1 | VDD | Power | | |
| 2 | PC13 * | I/O | GPIO_Input | USER_BUTTON |
| 3 | PC14-OSC32_IN | I/O | RCC_OSC32_IN | |
| 4 | PC15-OSC32_OUT | I/O | RCC_OSC32_OUT | |
| 5 | PF0-OSC_IN | I/O | RCC_OSC_IN | |
| 6 | PF1-OSC_OUT ** | I/O | RCC_OSC_OUT | |
| 7 | NRST | Reset | | |
| 12 | VSSA | Power | | |
| 13 | VDDA | Power | | |
| 16 | PA2 | I/O | USART2_TX | UART2_TX |
| 17 | PA3 | I/O | USART2_RX | UART2_RX |
| 21 | PA5 * | I/O | GPIO_Output | GRN_LED |
| 31 | VSS | Power | | |
| 32 | VDD | Power | | |
| 33 | PB12 * | I/O | GPIO_Output | SPI2_CS |
| 34 | PB13 | I/O | SPI2_SCK | |
| 35 | PB14 | I/O | SPI2_MISO | |
| 36 | PB15 | I/O | SPI2_MOSI | |
| 39 | PC8 * | I/O | GPIO_Input | MODE0 |
| 44 | PA11 * | I/O | GPIO_Output | SPI2_RST |
| 45 | PA12 * | I/O | GPIO_Input | SPI2_INT |
| 46 | PA13 | I/O | SYS_SWDIO | TMS |
| 49 | PA14 | I/O | SYS_SWCLK | TCK |
| 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. Software Project

## 5.1. Project Settings

| Name | Value |
|---|---|
| Project Name | nucleo_F030R8_rfm96_cubemx |
| Project Folder | /home/john/code/stm32/nucleo_F030R8_rfm96_cubemx |
| Toolchain / IDE | SW4STM32 |
| Firmware Package Name and Version | STM32Cube FW_F0 V1.9.0 |

## 5.2. 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 | No |
| 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 |

# 6. Power Consumption Calculator report

6.1. Microcontroller Selection

| | |
|---|---|
| Series | STM32F0 |
| Line | STM32F0x0 Value Line |
| MCU | STM32F030R8Tx |
| Datasheet | 024849_Rev2 |

6.2. Parameter Selection

| | |
|---|---|
| Temperature | 25 |
| Vdd | 3.6 |

# 7. IPs and Middleware Configuration

## 7.1. RCC

**High Speed Clock (HSE): BYPASS Clock Source**

**Low Speed Clock (LSE) : Crystal/Ceramic Resonator**

### 7.1.1. 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 |

## 7.2. RTC

**mode: Activate Clock Source**

### 7.2.1. Parameter Settings:

**General:**

| | |
|---|---|
| Hour Format | Hourformat 24 |
| Asynchronous Predivider value | 127 |
| Synchronous Predivider value | 255 |

## 7.3. SPI2

**Mode: Full-Duplex Master**

### 7.3.1. Parameter Settings:

**Basic Parameters:**

| | |
|---|---|
| Frame Format | Motorola |
| Data Size | **8 Bits *** |
| First Bit | MSB First |

**Clock Parameters:**

| | |
|---|---|
| Prescaler (for Baud Rate) | **256 *** |
| Baud Rate | **11.718 KBits/s *** |

| | |
|---|---|
| Clock Polarity (CPOL) | Low |
| Clock Phase (CPHA) | 1 Edge |

**Advanced Parameters:**

| | |
|---|---|
| CRC Calculation | Disabled |
| NSSP Mode | Enabled |
| NSS Signal Type | Software |

## 7.4. SYS

**mode: Debug Serial Wire**

**Timebase Source: SysTick**

## 7.5. USART2

**Mode: Asynchronous**

### 7.5.1. Parameter Settings:

**Basic Parameters:**

| | |
|---|---|
| Baud Rate | 38400 |
| Word Length | 8 Bits (including Parity) |
| Parity | None |
| Stop Bits | 1 |

**Advanced Parameters:**

| | |
|---|---|
| Data Direction | Receive and Transmit |
| Over Sampling | 16 Samples |
| Single Sample | Disable |

**Advanced Features:**

| | |
|---|---|
| TX Pin Active Level Inversion | Disable |
| RX Pin Active Level Inversion | Disable |
| Data Inversion | Disable |
| TX and RX Pins Swapping | Disable |
| Overrun | Enable |
| DMA on RX Error | Enable |
| MSB First | Disable |

*** User modified value**

# 8. System Configuration

## 8.1. 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 | |
| | PF0-OSC_IN | RCC_OSC_IN | n/a | n/a | n/a | |
| SPI2 | PB13 | SPI2_SCK | Alternate Function Push Pull | No pull-up and no pull-down | **High *** | |
| | PB14 | SPI2_MISO | Alternate Function Push Pull | No pull-up and no pull-down | **High *** | |
| | PB15 | SPI2_MOSI | Alternate Function Push Pull | No pull-up and no pull-down | **High *** | |
| SYS | PA13 | SYS_SWDIO | n/a | n/a | n/a | TMS |
| | PA14 | SYS_SWCLK | n/a | n/a | n/a | TCK |
| USART2 | PA2 | USART2_TX | Alternate Function Push Pull | No pull-up and no pull-down | Low | UART2_TX |
| | PA3 | USART2_RX | Alternate Function Push Pull | No pull-up and no pull-down | Low | UART2_RX |
| Single Mapped Signals | PF1-OSC_OUT | RCC_OSC_OUT | n/a | n/a | n/a | |
| GPIO | PC13 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | USER_BUTTON |
| | PA5 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | GRN_LED |
| | PB12 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | SPI2_CS |
| | PC8 | GPIO_Input | Input mode | **Pull-up *** | n/a | MODE0 |
| | PA11 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | SPI2_RST |
| | PA12 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | SPI2_INT |

## 8.2. DMA configuration

nothing configured in DMA service

## 8.3. NVIC configuration

| Interrupt Table | Enable | Preenmption Priority | SubPriority |
|---|---|---|---|
| Non maskable interrupt | true | 0 | 0 |
| Hard fault interrupt | true | 0 | 0 |
| System service call via SWI instruction | true | 0 | 0 |
| Pendable request for system service | true | 0 | 0 |
| System tick timer | true | 0 | 0 |
| SPI2 global interrupt | true | 0 | 0 |
| USART2 global interrupt | true | 0 | 0 |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |

*** User modified value**

# 9. Software Pack Report