
STM32
CubeMX

# 1. Description

## 1.1. Project

| | |
|---|---|
| Project Name | Nucleo H7A3ZIQ |
| Board Name | custom |
| Generated with: | STM32CubeMX 6.2.1 |
| Date | 06/02/2021 |

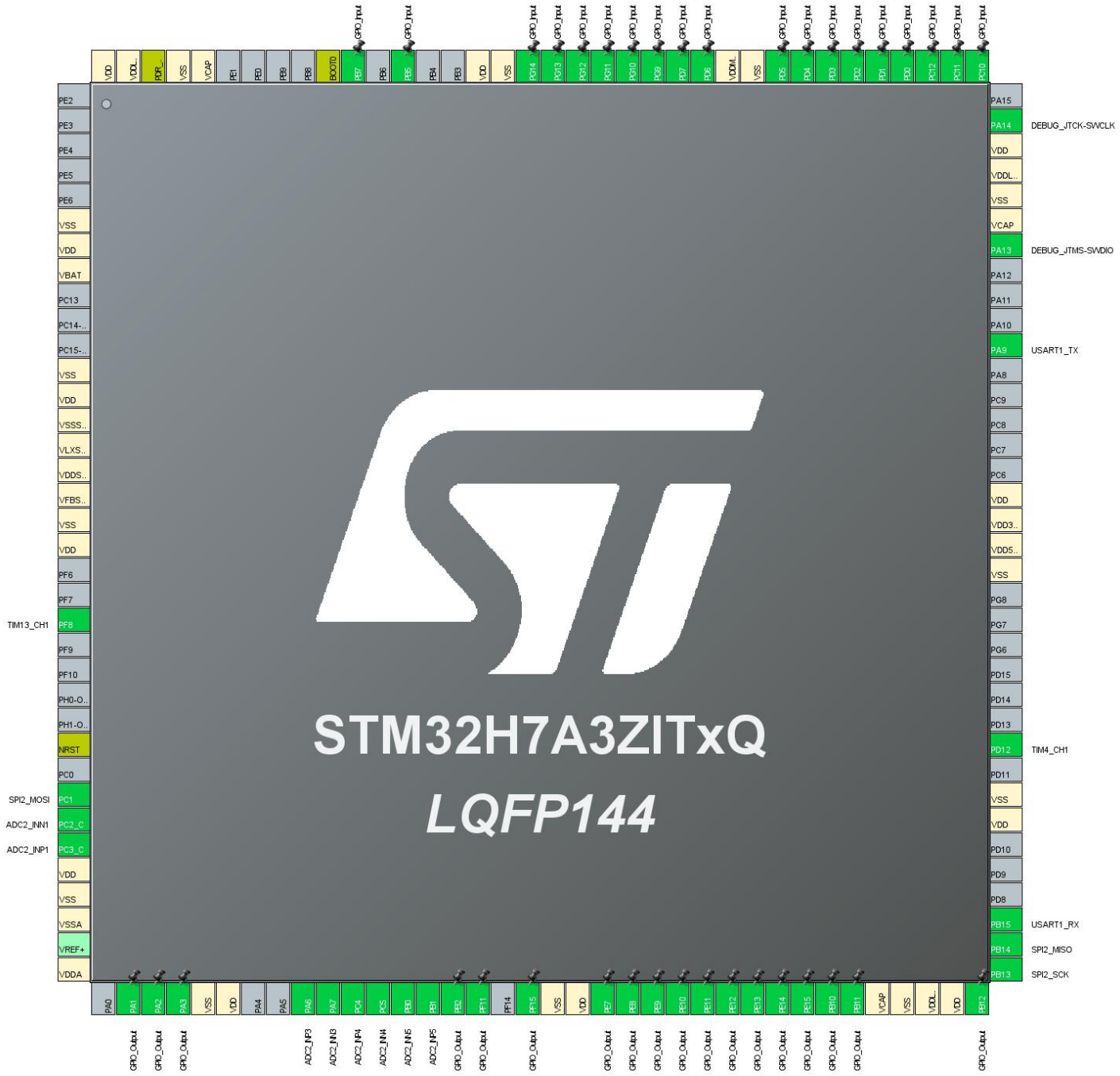
## 1.2. MCU

| | |
|---|---|
| MCU Series | STM32H7 |
| MCU Line | STM32H7A3/7B3 |
| MCU name | STM32H7A3ZITxQ |
| MCU Package | LQFP144 |
| MCU Pin number | 144 |

## 1.3. Core(s) information

| | |
|---|---|
| Core(s) | Arm Cortex-M7 |

## 2. Pinout Configuration



# 3. Pins Configuration

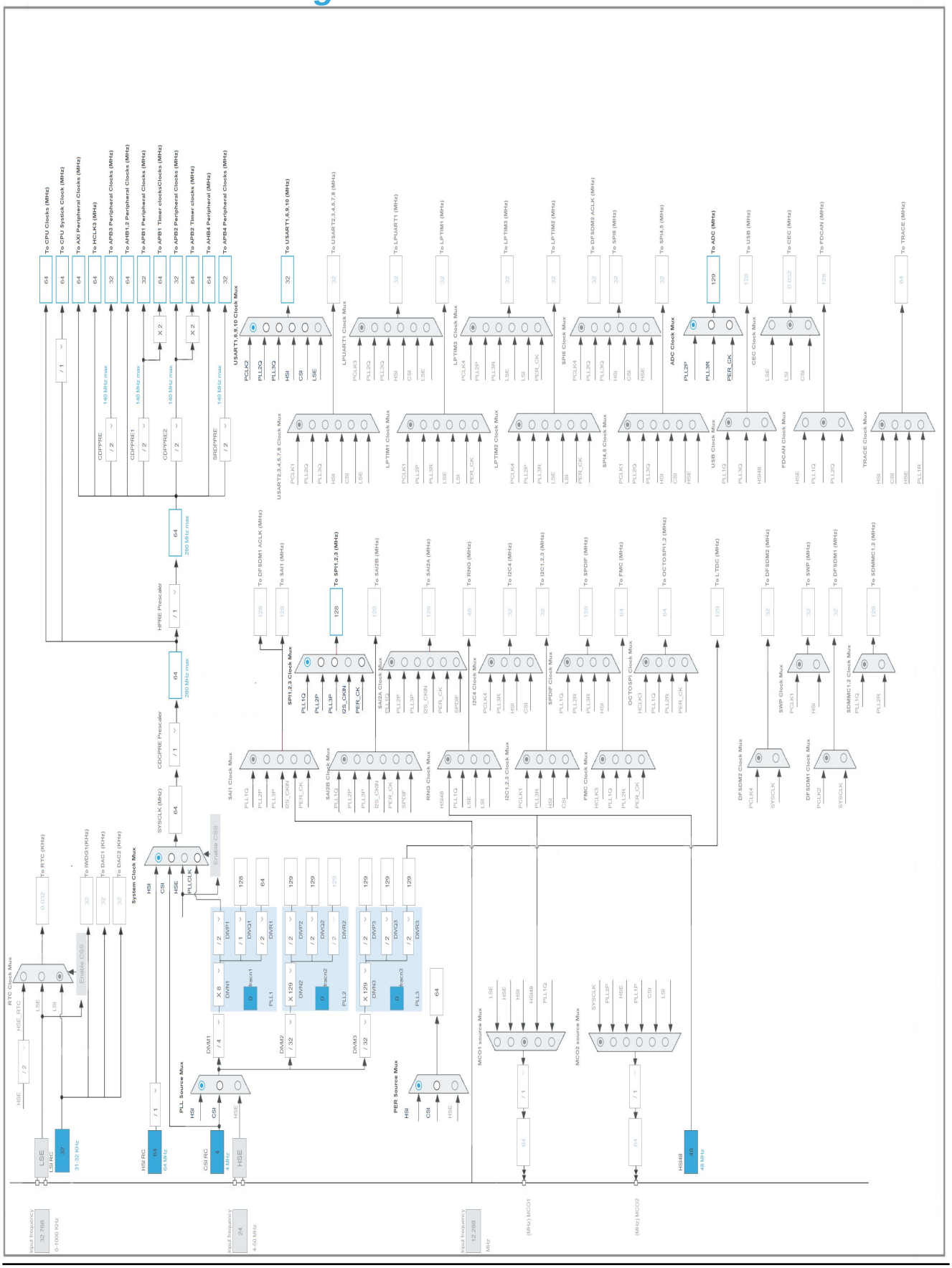
| Pin Number LQFP144 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 6 | VSS | Power | | |
| 7 | VDD | Power | | |
| 8 | VBAT | Power | | |
| 12 | VSS | Power | | |
| 13 | VDD | Power | | |
| 14 | VSSSMPS | Power | | |
| 15 | VLXSMPS | Power | | |
| 16 | VDDSMPS | Power | | |
| 17 | VFBSMPS | Power | | |
| 18 | VSS | Power | | |
| 19 | VDD | Power | | |
| 22 | PF8 | I/O | TIM13_CH1 | |
| 27 | NRST | Reset | | |
| 29 | PC1 | I/O | SPI2_MOSI | |
| 30 | PC2_C | I/O | ADC2_INN1 | |
| 31 | PC3_C | I/O | ADC2_INP1 | |
| 32 | VDD | Power | | |
| 33 | VSS | Power | | |
| 34 | VSSA | Power | | |
| 36 | VDDA | Power | | |
| 38 | PA1 * | I/O | GPIO_Output | |
| 39 | PA2 * | I/O | GPIO_Output | |
| 40 | PA3 * | I/O | GPIO_Output | |
| 41 | VSS | Power | | |
| 42 | VDD | Power | | |
| 45 | PA6 | I/O | ADC2_INP3 | |
| 46 | PA7 | I/O | ADC2_INN3 | |
| 47 | PC4 | I/O | ADC2_INP4 | |
| 48 | PC5 | I/O | ADC2_INN4 | |
| 49 | PB0 | I/O | ADC2_INN5 | |
| 50 | PB1 | I/O | ADC2_INP5 | |
| 51 | PB2 * | I/O | GPIO_Output | |
| 52 | PF11 * | I/O | GPIO_Output | |
| 54 | PF15 * | I/O | GPIO_Output | |
| 55 | VSS | Power | | |
| 56 | VDD | Power | | |

| Pin Number LQFP144 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 57 | PE7 * | I/O | GPIO_Output | |
| 58 | PE8 * | I/O | GPIO_Output | |
| 59 | PE9 * | I/O | GPIO_Output | |
| 60 | PE10 * | I/O | GPIO_Output | |
| 61 | PE11 * | I/O | GPIO_Output | |
| 62 | PE12 * | I/O | GPIO_Output | |
| 63 | PE13 * | I/O | GPIO_Output | |
| 64 | PE14 * | I/O | GPIO_Output | |
| 65 | PE15 * | I/O | GPIO_Output | |
| 66 | PB10 * | I/O | GPIO_Output | |
| 67 | PB11 * | I/O | GPIO_Output | |
| 68 | VCAP | Power | | |
| 69 | VSS | Power | | |
| 70 | VDDLDO | Power | | |
| 71 | VDD | Power | | |
| 72 | PB12 * | I/O | GPIO_Output | |
| 73 | PB13 | I/O | SPI2_SCK | |
| 74 | PB14 | I/O | SPI2_MISO | |
| 75 | PB15 | I/O | USART1_RX | |
| 79 | VDD | Power | | |
| 80 | VSS | Power | | |
| 82 | PD12 | I/O | TIM4_CH1 | |
| 89 | VSS | Power | | |
| 90 | VDD50_USB | Power | | |
| 91 | VDD33_USB | Power | | |
| 92 | VDD | Power | | |
| 98 | PA9 | I/O | USART1_TX | |
| 102 | PA13 | I/O | DEBUG_JTMS-SWDIO | |
| 103 | VCAP | Power | | |
| 104 | VSS | Power | | |
| 105 | VDDLDO | Power | | |
| 106 | VDD | Power | | |
| 107 | PA14 | I/O | DEBUG_JTCK-SWCLK | |
| 109 | PC10 * | I/O | GPIO_Input | |
| 110 | PC11 * | I/O | GPIO_Input | |
| 111 | PC12 * | I/O | GPIO_Input | |
| 112 | PD0 * | I/O | GPIO_Input | |
| 113 | PD1 * | I/O | GPIO_Input | |
| 114 | PD2 * | I/O | GPIO_Input | |

| Pin Number LQFP144 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 115 | PD3 * | I/O | GPIO_Input | |
| 116 | PD4 * | I/O | GPIO_Input | |
| 117 | PD5 * | I/O | GPIO_Input | |
| 118 | VSS | Power | | |
| 119 | VDDMMC | Power | | |
| 120 | PD6 * | I/O | GPIO_Input | |
| 121 | PD7 * | I/O | GPIO_Input | |
| 122 | PG9 * | I/O | GPIO_Input | |
| 123 | PG10 * | I/O | GPIO_Input | |
| 124 | PG11 * | I/O | GPIO_Input | |
| 125 | PG12 * | I/O | GPIO_Input | |
| 126 | PG13 * | I/O | GPIO_Input | |
| 127 | PG14 * | I/O | GPIO_Input | |
| 128 | VSS | Power | | |
| 129 | VDD | Power | | |
| 132 | PB5 * | I/O | GPIO_Input | |
| 134 | PB7 * | I/O | GPIO_Input | |
| 135 | BOOT0 | Boot | | |
| 140 | VCAP | Power | | |
| 141 | VSS | Power | | |
| 142 | PDR_ON | Reset | | |
| 143 | VDDLDO | Power | | |
| 144 | VDD | Power | | |

* The pin is affected with an I/O function

# 4. Clock Tree Configuration



# 5. Software Project

## 5.1. Project Settings

| Name | Value |
|---|---|
| Project Name | Nucleo H7A3ZIQ |
| Project Folder | C:\Users\yael\source\repos\EcoMilk\Nucleo H7A3ZIQ |
| Toolchain / IDE | EWARM V8.32 |
| Firmware Package Name and Version | STM32Cube FW_H7 V1.9.0 |
| Application Structure | Advanced |
| Generate Under Root | No |
| Do not generate the main() | No |
| Minimum Heap Size | 0x200 |
| Minimum Stack Size | 0x400 |

## 5.2. Code Generation Settings

| Name | Value |
|---|---|
| STM32Cube MCU packages and embedded software | Copy all used libraries into the project folder |
| Generate peripheral initialization as a pair of '.c/.h' files | No |
| Backup previously generated files when re-generating | No |
| Keep User Code 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 |
| Enable Full Assert | No |

## 5.3. Advanced Settings - Generated Function Calls

| Rank | Function Name | Peripheral Instance Name |
|---|---|---|
| 1 | MX_GPIO_Init | GPIO |
| 2 | SystemClock_Config | RCC |
| 3 | MX_USART1_UART_Init | USART1 |
| 4 | MX_TIM4_Init | TIM4 |
| 5 | MX_ADC2_Init | ADC2 |
| 6 | MX_SPI2_Init | SPI2 |
| 7 | MX_TIM13_Init | TIM13 |

# 6. Power Consumption Calculator report

## 6.1. Microcontroller Selection

| | |
|---|---|
| Series | STM32H7 |
| Line | STM32H7A3/7B3 |
| MCU | STM32H7A3ZITxQ |
| Datasheet | DS13139_Rev0 |

## 6.2. Parameter Selection

| | |
|---|---|
| Temperature | 25 |
| Vdd | 3.0 |

## 6.3. Battery Selection

| | |
|---|---|
| Battery | Li-SOCL2(A3400) |
| Capacity | 3400.0 mAh |
| Self Discharge | 0.08 %/month |
| Nominal Voltage | 3.6 V |
| Max Cont Current | 100.0 mA |
| Max Pulse Current | 200.0 mA |
| Cells in series | 1 |
| Cells in parallel | 1 |

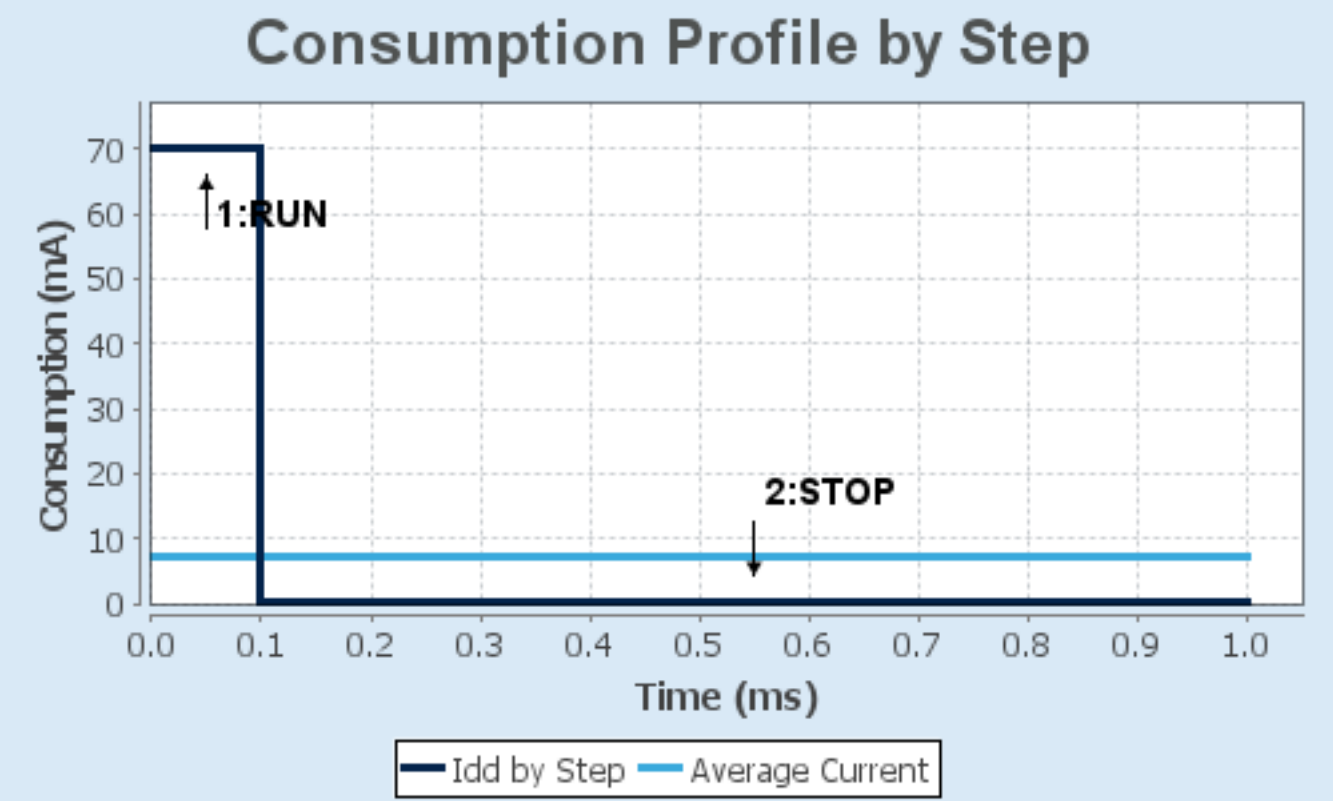
## 6.4. Sequence

| ***Step*** | Step1 | Step2 |
|---|---|---|
| ***Mode*** | RUN | STOP |
| ***Vdd*** | 3.0 | 3.0 |
| ***Voltage Source*** | Battery | Battery |
| ***Range*** | VOS0 | SVOS5 |
| ***SRDomain*** | DRUN | DSTOP |
| ***n/a*** | SRDRUN | SRDSTOP |
| ***Fetch Type*** | ITCM/DTCM/Cache | NA |
| ***CPU Frequency*** | 280 MHz | 64 MHz |
| ***Clock Configuration*** | HSE PLL | HSI Flash-ON |
| ***Clock Source Frequency*** | 16 MHz | 64 MHz |
| ***Peripherals*** | | |
| ***Additional Cons.*** | 0 mA | 0 mA |
| ***Average Current*** | 69.92 mA | 263.82 µA |
| ***Duration*** | 0.1 ms | 0.9 ms |
| ***DMIPS*** | 599.0 | 0.0 |
| ***Ta Max*** | 115.77 | 124.97 |
| ***Category*** | In DS Table | In DS Table |

## 6.5. Results

| Sequence Time | 1 ms | Average Current | 7.23 mA |
|---|---|---|---|
| Battery Life | 19 days, 14 hours | Average DMIPS | 599.2 DMIPS |

## 6.6. Chart


Consumption Profile by Step
Consumption (mA)
70
60
50
40
30
20
10
0
1:RUN
2:STOP
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Time (ms)
Idd by Step
Average Current

# 7. Peripherals and Middlewares Configuration

## 7.1. ADC2

### IN1: IN1 Differential

### IN3: IN3 Differential

### IN4: IN4 Differential

### IN5: IN5 Differential

#### 7.1.1. Parameter Settings:

**ADCs_Common_Settings:**

| | |
|---|---|
| Mode | Independent mode |

**ADC_Settings:**

| | |
|---|---|
| Clock Prescaler | Asynchronous clock mode divided by 1 |
| Resolution | ADC 16-bit resolution |
| Scan Conversion Mode | Disabled |
| Continuous Conversion Mode | Disabled |
| Discontinuous Conversion Mode | Disabled |
| End Of Conversion Selection | End of single conversion |
| Overrun behaviour | Overrun data preserved |
| Left Bit Shift | No bit shift |
| Conversion Data Management Mode | Regular Conversion data stored in DR register only |
| Low Power Auto Wait | Disabled |

**ADC_Regular_ConversionMode:**

| | |
|---|---|
| Enable Regular Conversions | Enable |
| Enable Regular Oversampling | Disable |
| Number Of Conversion | 1 |
| External Trigger Conversion Source | Regular Conversion launched by software |
| External Trigger Conversion Edge | None |
| Rank | 1 |
| Channel | Channel 1 |
| Sampling Time | 1.5 Cycles |
| Offset Number | No offset |
| Offset Signed Saturation | Disable |

**ADC_Injected_ConversionMode:**

| | |
|---|---|
| Enable Injected Conversions | Disable |

**Analog Watchdog 1:**

| | |
|---|---|
| Enable Analog WatchDog1 Mode | false |

**Analog Watchdog 2:**

| | |
|---|---|
| Enable Analog WatchDog2 Mode | false |

**Analog Watchdog 3:**

| | |
|---|---|
| Enable Analog WatchDog3 Mode | false |

## 7.2. DEBUG

### Debug: Serial Wire

## 7.3. RCC

### 7.3.1. Parameter Settings:

**Power Parameters:**

| | |
|---|---|
| SupplySource | PWR_DIRECT_SMPS_SUPPLY |
| Power Regulator Voltage Scale | Power Regulator Voltage Scale 3 |

**RCC Parameters:**

| | |
|---|---|
| TIM Prescaler Selection | Disabled |
| HSE Startup Timout Value (ms) | 100 |
| LSE Startup Timout Value (ms) | 5000 |
| CSI Calibration Value | 16 |
| HSI Calibration Value | 32 |

**System Parameters:**

| | |
|---|---|
| VDD voltage (V) | 3.3 |
| Flash Latency(WS) | 2 WS (3 CPU cycle) |

**PLL range Parameters:**

| | |
|---|---|
| PLL1 input frequency range | Between 8 and 16 MHz |
| PLL2 input frequency range | Between 2 and 4 MHz |
| PLL1 clock Output range | Wide VCO range |
| PLL2 clock Output range | Wide VCO range |

## 7.4. SPI2

### Mode: Full-Duplex Master

### 7.4.1. Parameter Settings:

**Basic Parameters:**

| | |
|---|---|
| Frame Format | Motorola |
| Data Size | 4 Bits |
| First Bit | MSB First |

**Clock Parameters:**

| | |
|---|---|
| Prescaler (for Baud Rate) | 2 |
| Baud Rate | **64.0 MBits/s *** |

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

**Advanced Parameters:**

| | |
|---|---|
| CRC Calculation | Disabled |
| NSSP Mode | Enabled |
| NSS Signal Type | Software |
| Fifo Threshold | Fifo Threshold 01 Data |
| Tx Crc Initialization Pattern | All Zero Pattern |
| Rx Crc Initialization Pattern | All Zero Pattern |
| Nss Polarity | Nss Polarity Low |
| Master Ss Idleness | 00 Cycle |
| Master Inter Data Idleness | 00 Cycle |
| Master Receiver Auto Susp | Disable |
| Master Keep Io State | Master Keep Io State Disable |
| IO Swap | Disabled |

## 7.5. SYS

## Timebase Source: SysTick

## 7.6. TIM4

## Channel1: PWM Generation CH1

### 7.6.1. Parameter Settings:

**Counter Settings:**

| | |
|---|---|
| Prescaler (PSC - 16 bits value) | **64 *** |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value ) | **1000 *** |
| Internal Clock Division (CKD) | No Division |
| auto-reload preload | Disable |

**Trigger Output (TRGO) Parameters:**

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

**Clear Input:**

| | |
|---|---|
| Clear Input Source | Disable |

**PWM Generation Channel 1:**

| | |
|---|---|
| Mode | PWM mode 1 |
| Pulse (16 bits value) | **500 *** |
| Output compare preload | Enable |
| Fast Mode | Disable |

| | |
|---|---|
| CH Polarity | High |

## 7.7. TIM13
## mode: Activated
## Channel1: PWM Generation CH1
### 7.7.1. Parameter Settings:

**Counter Settings:**

| | |
|---|---|
| Prescaler (PSC - 16 bits value) | 0 |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value ) | 65535 |
| Internal Clock Division (CKD) | No Division |
| auto-reload preload | Disable |

**Clear Input:**

| | |
|---|---|
| Clear Input Source | Disable |

**PWM Generation Channel 1:**

| | |
|---|---|
| Mode | PWM mode 1 |
| Pulse (16 bits value) | 0 |
| Output compare preload | Enable |
| Fast Mode | Disable |
| CH Polarity | High |

## 7.8. USART1
## Mode: Asynchronous
### 7.8.1. 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 |
| Single Sample | Disable |
| ClockPrescaler | 1 |
| Fifo Mode | Disable |

| | |
|---|---|
| Txfifo Threshold | 1 eighth full configuration |
| Rxfifo Threshold | 1 eighth full configuration |

### Advanced Features:

| | |
|---|---|
| Auto Baudrate | Disable |
| 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 |
|---|---|---|---|---|---|---|
| ADC2 | PC2_C | ADC2_INN1 | Analog mode | No pull-up and no pull-down | n/a | |
| | PC3_C | ADC2_INP1 | Analog mode | No pull-up and no pull-down | n/a | |
| | PA6 | ADC2_INP3 | Analog mode | No pull-up and no pull-down | n/a | |
| | PA7 | ADC2_INN3 | Analog mode | No pull-up and no pull-down | n/a | |
| | PC4 | ADC2_INP4 | Analog mode | No pull-up and no pull-down | n/a | |
| | PC5 | ADC2_INN4 | Analog mode | No pull-up and no pull-down | n/a | |
| | PB0 | ADC2_INN5 | Analog mode | No pull-up and no pull-down | n/a | |
| | PB1 | ADC2_INP5 | Analog mode | No pull-up and no pull-down | n/a | |
| DEBUG | PA13 | DEBUG_JTMS-SWDIO | n/a | n/a | n/a | |
| | PA14 | DEBUG_JTCK-SWCLK | n/a | n/a | n/a | |
| SPI2 | PC1 | SPI2_MOSI | Alternate Function Push Pull | No pull-up and no pull-down | Low | |
| | PB13 | SPI2_SCK | Alternate Function Push Pull | No pull-up and no pull-down | Low | |
| | PB14 | SPI2_MISO | Alternate Function Push Pull | No pull-up and no pull-down | Low | |
| TIM4 | PD12 | TIM4_CH1 | Alternate Function Push Pull | No pull-up and no pull-down | Low | |
| TIM13 | PF8 | TIM13_CH1 | Alternate Function Push Pull | No pull-up and no pull-down | Low | |
| USART1 | PB15 | USART1_RX | Alternate Function Push Pull | No pull-up and no pull-down | Low | |
| | PA9 | USART1_TX | Alternate Function Push Pull | No pull-up and no pull-down | Low | |
| GPIO | PA1 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PA2 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PA3 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PB2 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PF11 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PF15 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE7 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE8 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE9 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE10 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE11 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE12 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE13 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE14 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE15 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PB10 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PB11 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PB12 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|---|---|---|---|---|---|---|
| | PC10 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PC11 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PC12 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD0 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD1 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD2 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD3 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD4 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD5 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD6 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PD7 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PG9 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PG10 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PG11 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PG12 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PG13 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PG14 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PB5 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |
| | PB7 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | |

### 8.2. DMA configuration

nothing configured in DMA service

### 8.3. BDMA1 configuration

nothing configured in DMA service

### 8.4. BDMA2 configuration

nothing configured in DMA service

### 8.5. MDMA configuration

nothing configured in DMA service

## 8.6. NVIC configuration

### 8.6.1. NVIC

| Interrupt Table | Enable | Preenmption Priority | SubPriority |
|---|---|---|---|
| Non maskable interrupt | true | 0 | 0 |
| Hard fault interrupt | true | 0 | 0 |
| Memory management fault | true | 0 | 0 |
| Pre-fetch 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 and PVM interrupts through EXTI line | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| ADC1 and ADC2 global interrupts | unused | | |
| TIM4 global interrupt | unused | | |
| SPI2 global interrupt | unused | | |
| USART1 global interrupt | unused | | |
| TIM8 update interrupt and TIM13 global interrupt | unused | | |
| FPU global interrupt | unused | | |
| HSEM1 global interrupt | unused | | |
| ECC diagnostic Global Interrupt | unused | | |

### 8.6.2. NVIC Code generation

| Enabled interrupt Table | Select for init sequence ordering | Generate IRQ handler | Call HAL handler |
|---|---|---|---|
| Non maskable interrupt | false | true | false |
| Hard fault interrupt | false | true | false |
| Memory management fault | false | true | false |
| Pre-fetch fault, memory access fault | false | true | false |
| Undefined instruction or illegal state | false | true | false |
| System service call via SWI instruction | false | true | false |
| Debug monitor | false | true | false |
| Pendable request for system service | false | true | false |
| System tick timer | false | true | true |

*** User modified value**

# 9. System Views

## 9.1. Category view

### *9.1.1. Current*

## 10. Docs & Resources

| Type | Link |
|---|---|
| Datasheet | http://www.st.com/resource/en/datasheet/DM00674683.pdf |
| Reference manual | http://www.st.com/resource/en/reference_manual/DM00463927.pdf |
| Programming manual | http://www.st.com/resource/en/programming_manual/DM00237416.pdf |
| Errata sheet | http://www.st.com/resource/en/errata_sheet/DM00598144.pdf |
| Application note | http://www.st.com/resource/en/application_note/CD00167594.pdf |
| Application note | http://www.st.com/resource/en/application_note/CD00211314.pdf |
| Application note | http://www.st.com/resource/en/application_note/CD00259245.pdf |
| Application note | http://www.st.com/resource/en/application_note/CD00264342.pdf |
| Application note | http://www.st.com/resource/en/application_note/CD00264379.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00042534.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00072315.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00073742.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00073853.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00081379.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00129215.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00151811.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00160482.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00220769.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00257177.pdf |
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| Application note | http://www.st.com/resource/en/application_note/DM00226326.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00236305.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00327191.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00287603.pdf |

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| Application note | http://www.st.com/resource/en/application_note/DM00393275.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00354244.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00315319.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00407776.pdf |
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