
STM32
CubeMX

# 1. Description

## 1.1. Project

| | |
|---|---|
| Project Name | Run_Fire |
| Board Name | NUCLEO-F746ZG |
| Generated with: | STM32CubeMX 6.3.0 |
| Date | 09/28/2021 |

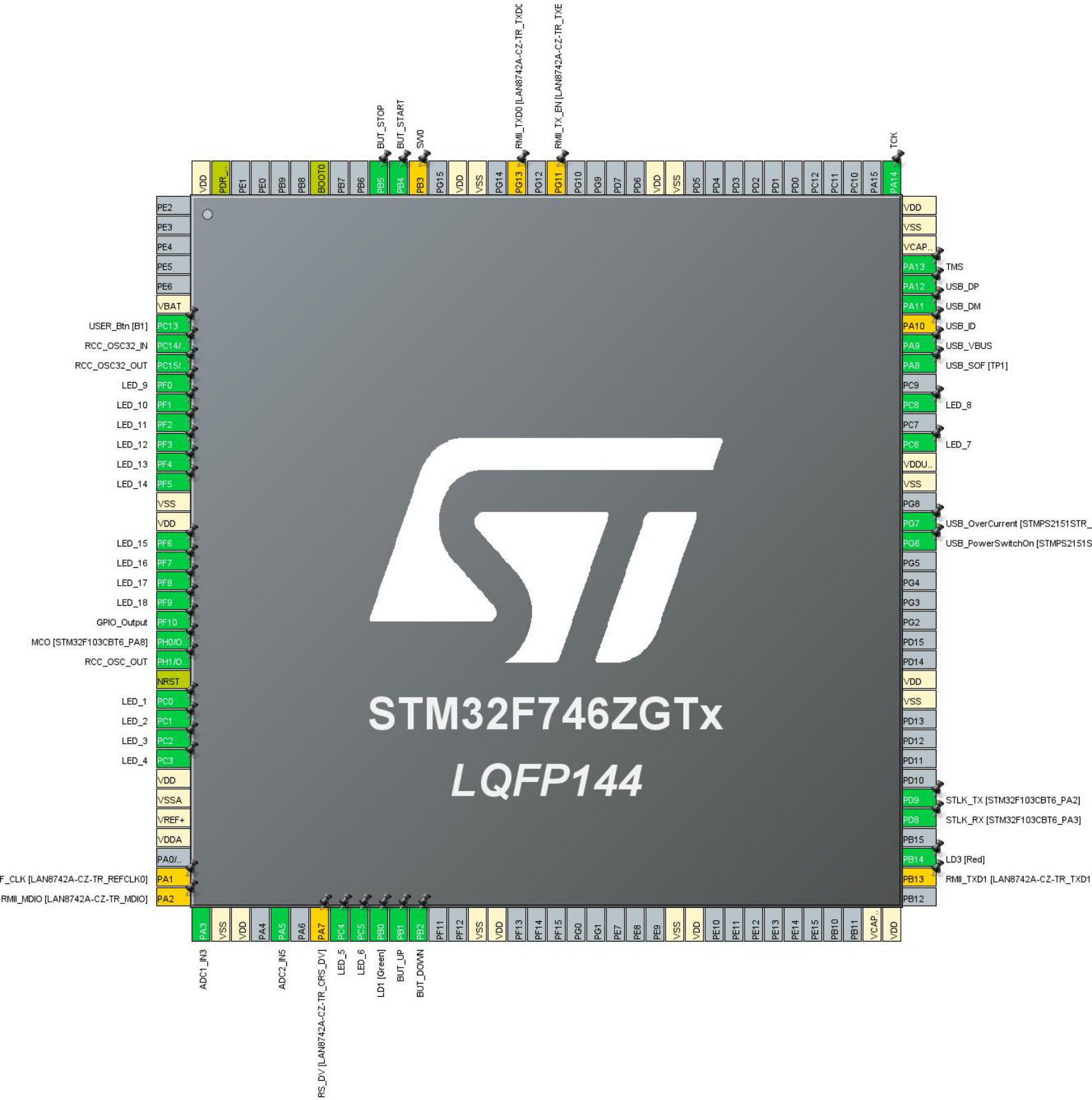
## 1.2. MCU

| | |
|---|---|
| MCU Series | STM32F7 |
| MCU Line | STM32F7x6 |
| MCU name | STM32F746ZGTx |
| 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 | VBAT | Power | | |
| 7 | PC13 | I/O | GPIO_EXTI13 | USER_Btn [B1] |
| 8 | PC14/OSC32_IN | I/O | RCC_OSC32_IN | |
| 9 | PC15/OSC32_OUT | I/O | RCC_OSC32_OUT | |
| 10 | PF0 * | I/O | GPIO_Output | LED_9 |
| 11 | PF1 * | I/O | GPIO_Output | LED_10 |
| 12 | PF2 * | I/O | GPIO_Output | LED_11 |
| 13 | PF3 * | I/O | GPIO_Output | LED_12 |
| 14 | PF4 * | I/O | GPIO_Output | LED_13 |
| 15 | PF5 * | I/O | GPIO_Output | LED_14 |
| 16 | VSS | Power | | |
| 17 | VDD | Power | | |
| 18 | PF6 * | I/O | GPIO_Output | LED_15 |
| 19 | PF7 * | I/O | GPIO_Output | LED_16 |
| 20 | PF8 * | I/O | GPIO_Output | LED_17 |
| 21 | PF9 * | I/O | GPIO_Output | LED_18 |
| 22 | PF10 * | I/O | GPIO_Output | |
| 23 | PH0/OSC_IN | I/O | RCC_OSC_IN | MCO [STM32F103CBT6_PA8] |
| 24 | PH1/OSC_OUT | I/O | RCC_OSC_OUT | |
| 25 | NRST | Reset | | |
| 26 | PC0 * | I/O | GPIO_Output | LED_1 |
| 27 | PC1 * | I/O | GPIO_Output | LED_2 |
| 28 | PC2 * | I/O | GPIO_Output | LED_3 |
| 29 | PC3 * | I/O | GPIO_Output | LED_4 |
| 30 | VDD | Power | | |
| 31 | VSSA | Power | | |
| 32 | VREF+ | Power | | |
| 33 | VDDA | Power | | |
| 35 | PA1 ** | I/O | ETH_REF_CLK | RMII_REF_CLK [LAN8742A-CZ-TR_REFCLK0] |
| 36 | PA2 ** | I/O | ETH_MDIO | RMII_MDIO [LAN8742A-CZ-TR_MDIO] |
| 37 | PA3 | I/O | ADC1_IN3 | |
| 38 | VSS | Power | | |

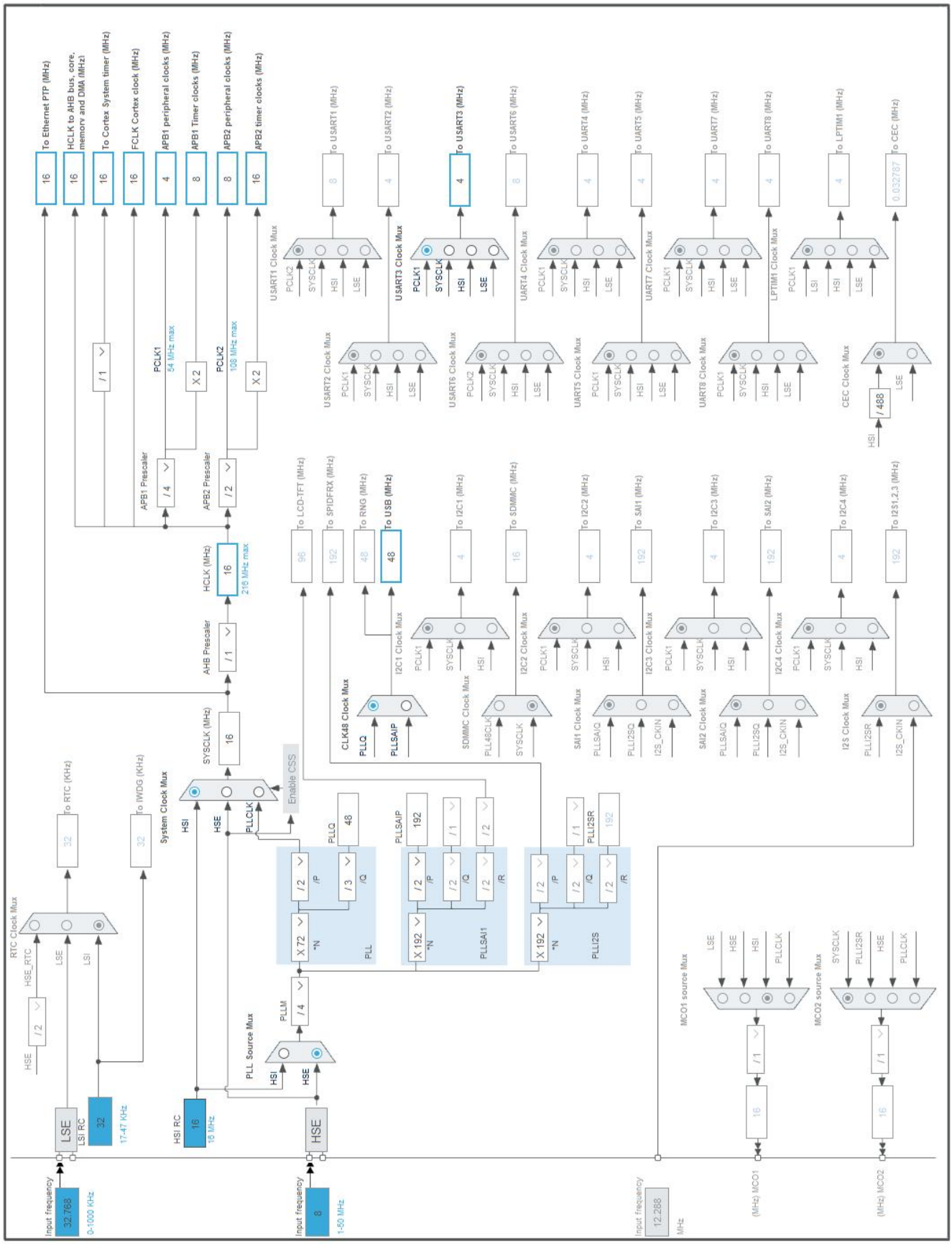
| Pin Number LQFP144 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 39 | VDD | Power | | |
| 41 | PA5 | I/O | ADC2_IN5 | |
| 43 | PA7 ** | I/O | ETH_CRS_DV | RMII_CRS_DV [LAN8742A-CZ-TR_CRS_DV] |
| 44 | PC4 * | I/O | GPIO_Output | LED_5 |
| 45 | PC5 * | I/O | GPIO_Output | LED_6 |
| 46 | PB0 * | I/O | GPIO_Output | LD1 [Green] |
| 47 | PB1 * | I/O | GPIO_Input | BUT_UP |
| 48 | PB2 * | I/O | GPIO_Input | BUT_DOWN |
| 51 | VSS | Power | | |
| 52 | VDD | Power | | |
| 61 | VSS | Power | | |
| 62 | VDD | Power | | |
| 71 | VCAP_1 | Power | | |
| 72 | VDD | Power | | |
| 74 | PB13 ** | I/O | ETH_TXD1 | RMII_TXD1 [LAN8742A-CZ-TR_TXD1] |
| 75 | PB14 * | I/O | GPIO_Output | LD3 [Red] |
| 77 | PD8 | I/O | USART3_TX | STLK_RX [STM32F103CBT6_PA3] |
| 78 | PD9 | I/O | USART3_RX | STLK_TX [STM32F103CBT6_PA2] |
| 83 | VSS | Power | | |
| 84 | VDD | Power | | |
| 91 | PG6 * | I/O | GPIO_Output | USB_PowerSwitchOn [STMPS2151STR_EN] |
| 92 | PG7 * | I/O | GPIO_Input | USB_OverCurrent [STMPS2151STR_FAULT] |
| 94 | VSS | Power | | |
| 95 | VDDUSB | Power | | |
| 96 | PC6 * | I/O | GPIO_Output | LED_7 |
| 98 | PC8 * | I/O | GPIO_Output | LED_8 |
| 100 | PA8 | I/O | USB_OTG_FS_SOF | USB_SOF [TP1] |
| 101 | PA9 | I/O | USB_OTG_FS_VBUS | USB_VBUS |
| 102 | PA10 ** | I/O | USB_OTG_FS_ID | USB_ID |
| 103 | PA11 | I/O | USB_OTG_FS_DM | USB_DM |
| 104 | PA12 | I/O | USB_OTG_FS_DP | USB_DP |
| 105 | PA13 | I/O | SYS_JTMS-SWDIO | TMS |
| 106 | VCAP_2 | Power | | |
| 107 | VSS | Power | | |

| Pin Number LQFP144 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 108 | VDD | Power | | |
| 109 | PA14 | I/O | SYS_JTCK-SWCLK | TCK |
| 120 | VSS | Power | | |
| 121 | VDD | Power | | |
| 126 | PG11 ** | I/O | ETH_TX_EN | RMII_TX_EN [LAN8742A-CZ-TR_TXEN] |
| 128 | PG13 ** | I/O | ETH_TXD0 | RMII_TXD0 [LAN8742A-CZ-TR_TXD0] |
| 130 | VSS | Power | | |
| 131 | VDD | Power | | |
| 133 | PB3 ** | I/O | SYS_JTDO-SWO | SW0 |
| 134 | PB4 * | I/O | GPIO_Input | BUT_START |
| 135 | PB5 * | I/O | GPIO_Input | BUT_STOP |
| 138 | BOOT0 | Boot | | |
| 143 | PDR_ON | Reset | | |
| 144 | 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 | Run_Fire |
| Project Folder | F:\RUNNING_FIRE\Run_Fire |
| Toolchain / IDE | MDK-ARM V5.32 |
| Firmware Package Name and Version | STM32Cube FW_F7 V1.16.1 |
| Application Structure | Advanced |
| Generate Under Root | No |
| Do not generate the main() | No |
| Minimum Heap Size | 0x2000 |
| Minimum Stack Size | 0x4000 |

## 5.2. Code Generation Settings

| Name | Value |
|---|---|
| STM32Cube MCU packages and embedded software | Add necessary library files as reference in the toolchain project configuration file |
| 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_ADC1_Init | ADC1 |
| 4 | MX_USART3_UART_Init | USART3 |
| 5 | MX_TIM7_Init | TIM7 |
| 6 | MX_USB_OTG_FS_PCD_Init | USB_OTG_FS |
| 7 | MX_ADC2_Init | ADC2 |

# 6. Power Consumption Calculator report

## 6.1. Microcontroller Selection

| | |
|---|---|
| Series | STM32F7 |
| Line | STM32F7x6 |
| MCU | STM32F746ZGTx |
| Datasheet | DS10916_Rev4 |

## 6.2. Parameter Selection

| | |
|---|---|
| Temperature | 25 |
| Vdd | 3.3 |

## 6.3. Battery Selection

| | |
|---|---|
| Battery | Alkaline(9V) |
| Capacity | 625.0 mAh |
| Self Discharge | 0.3 %/month |
| Nominal Voltage | 9.0 V |
| Max Cont Current | 200.0 mA |
| Max Pulse Current | 0.0 mA |
| Cells in series | 1 |
| Cells in parallel | 1 |

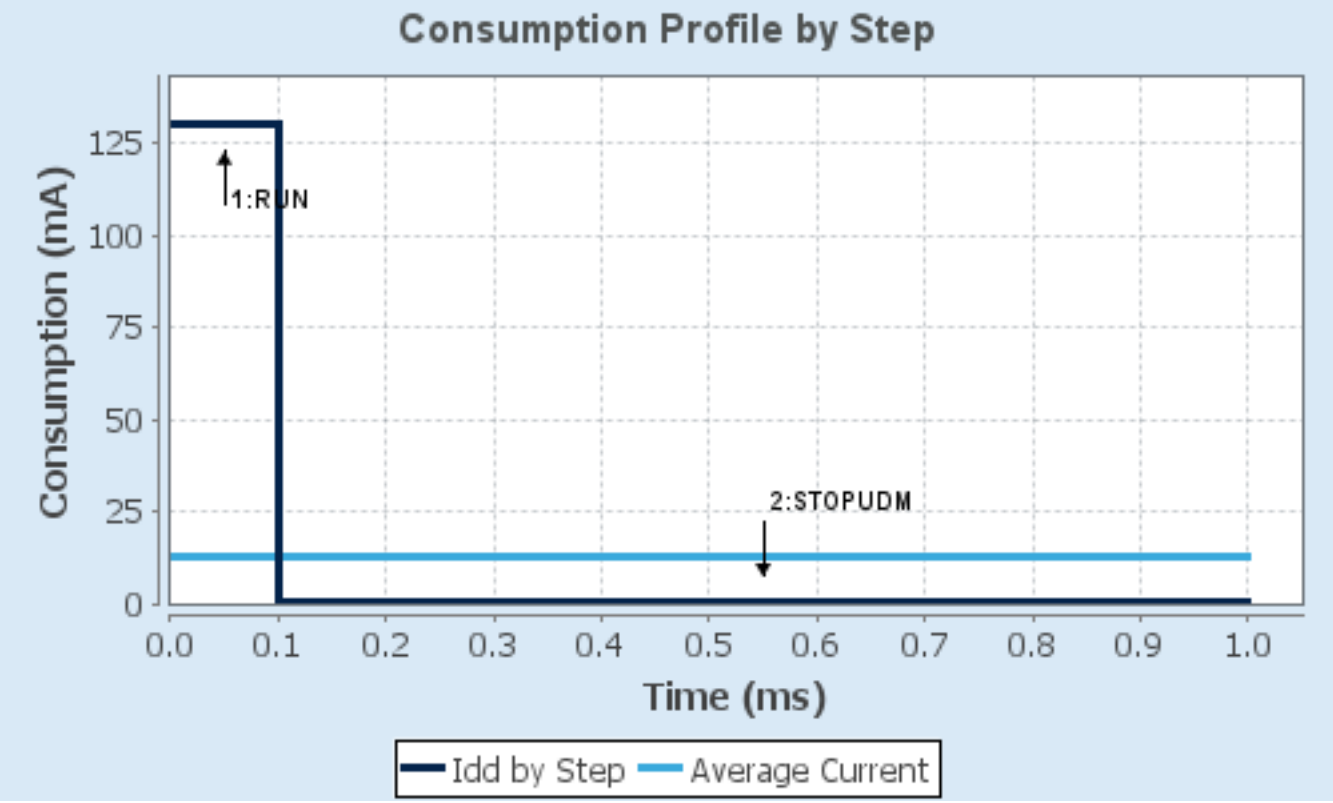
## 6.4. Sequence

| ***Step*** | Step1 | Step2 |
|---|---|---|
| ***Mode*** | RUN | STOP_UDM (Under Drive) |
| ***Vdd*** | 3.3 | 3.3 |
| ***Voltage Source*** | Battery | Battery |
| ***Range*** | Scale1-High | No Scale |
| ***Fetch Type*** | ITCM/FLASH/REGON | n/a |
| ***CPU Frequency*** | 216 MHz | 0 Hz |
| ***Clock Configuration*** | HSE PLL | Regulator_LP Flash-PwrDwn |
| ***Clock Source Frequency*** | 4 MHz | 0 Hz |
| ***Peripherals*** | | |
| ***Additional Cons.*** | 0 mA | 0 mA |
| ***Average Current*** | 130 mA | 100 µA |
| ***Duration*** | 0.1 ms | 0.9 ms |
| ***DMIPS*** | 462.0 | 0.0 |
| ***Ta Max*** | 87.84 | 104.99 |
| ***Category*** | In DS Table | In DS Table |

## 6.5. Results

| Sequence Time | 1 ms | Average Current | 13.09 mA |
|---|---|---|---|
| Battery Life | 1 day, 23 hours | Average DMIPS | 462.24005 DMIPS |

## 6.6. Chart


Consumption Profile by Step
Consumption (mA)
125
100
75
50
25
0
1:RUN
2:STOPUDM
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. ADC1

### mode: IN3

#### 7.1.1. Parameter Settings:

**ADCs_Common_Settings:**

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

**ADC_Settings:**

| | |
|---|---|
| Clock Prescaler | PCLK2 divided by 2 |
| Resolution | 12 bits (15 ADC Clock cycles) |
| Data Alignment | Right alignment |
| Scan Conversion Mode | Disabled |
| Continuous Conversion Mode | **Enabled *** |
| Discontinuous Conversion Mode | Disabled |
| DMA Continuous Requests | Disabled |
| End Of Conversion Selection | EOC flag at the end of single channel conversion |

**ADC_Regular_ConversionMode:**

| | |
|---|---|
| Number Of Conversion | 1 |
| External Trigger Conversion Source | Regular Conversion launched by software |
| External Trigger Conversion Edge | None |
| Rank | 1 |
| Channel | Channel 3 |
| Sampling Time | 3 Cycles |

**ADC_Injected_ConversionMode:**

| | |
|---|---|
| Number Of Conversions | 0 |

**WatchDog:**

| | |
|---|---|
| Enable Analog WatchDog Mode | false |

## 7.2. ADC2

### mode: IN5

#### 7.2.1. Parameter Settings:

**ADCs_Common_Settings:**

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

**ADC_Settings:**

| | |
|---|---|
| Clock Prescaler | PCLK2 divided by 2 |
| Resolution | 12 bits (15 ADC Clock cycles) |
| Data Alignment | Right alignment |

| | |
|---|---|
| Scan Conversion Mode | Disabled |
| Continuous Conversion Mode | Enabled |
| Discontinuous Conversion Mode | Disabled |
| DMA Continuous Requests | Disabled |
| End Of Conversion Selection | EOC flag at the end of single channel conversion |

**ADC_Regular_ConversionMode:**

| | |
|---|---|
| Number Of Conversion | 1 |
| External Trigger Conversion Source | Regular Conversion launched by software |
| External Trigger Conversion Edge | None |
| Rank | 1 |
| Channel | Channel 5 |
| Sampling Time | 3 Cycles |

**ADC_Injected_ConversionMode:**

| | |
|---|---|
| Number Of Conversions | 0 |

**WatchDog:**

| | |
|---|---|
| Enable Analog WatchDog Mode | false |

## 7.3. RCC

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

## Low Speed Clock (LSE) : BYPASS Clock Source

### 7.3.1. Parameter Settings:

**System Parameters:**

| | |
|---|---|
| VDD voltage (V) | 3.3 |
| Flash Latency(WS) | 0 WS (1 CPU cycle) |

**RCC Parameters:**

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

**Power Parameters:**

| | |
|---|---|
| Power Over Drive | Disabled |
| Power Regulator Voltage Scale | Power Regulator Voltage Scale 3 |

## 7.4. SYS

## Debug: Serial Wire

**Timebase Source: TIM11**

## 7.5. TIM7

**mode: Activated**

### 7.5.1. Parameter Settings:

**Counter Settings:**

| | |
|---|---|
| Prescaler (PSC - 16 bits value) | **15 *** |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value ) | **1999 *** |
| auto-reload preload | Disable |

**Trigger Output (TRGO) Parameters:**

| | |
|---|---|
| Trigger Event Selection | Reset (UG bit from TIMx_EGR) |

## 7.6. USART3

**Mode: Asynchronous**

### 7.6.1. 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 |
| Single Sample | Disable |

**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 |

## 7.7. USB_OTG_FS
## Mode: Device_Only
## mode: Activate_VBUS
## mode: Activate_SOF

### 7.7.1. Parameter Settings:

| | |
|---|---|
| Speed | Full Speed 12MBit/s |
| Low power | Disabled |
| Link Power Management | Disabled |
| VBUS sensing | Enabled |
| Signal start of frame | Enabled |

## 7.8. FREERTOS
## Interface: CMSIS_V2

### 7.8.1. Config parameters:

**API:**

| | |
|---|---|
| FreeRTOS API | CMSIS v2 |

**Versions:**

| | |
|---|---|
| FreeRTOS version | 10.2.1 |
| CMSIS-RTOS version | 2.00 |

**MPU/FPU:**

| | |
|---|---|
| ENABLE_MPU | Disabled |
| ENABLE_FPU | Disabled |

**Kernel settings:**

| | |
|---|---|
| USE_PREEMPTION | Enabled |
| CPU_CLOCK_HZ | SystemCoreClock |
| TICK_RATE_HZ | 1000 |
| MAX_PRIORITIES | 56 |
| MINIMAL_STACK_SIZE | 128 |
| MAX_TASK_NAME_LEN | 16 |
| USE_16_BIT_TICKS | Disabled |
| IDLE_SHOULD_YIELD | Enabled |
| USE_MUTEXES | Enabled |
| USE_RECURSIVE_MUTEXES | Enabled |
| USE_COUNTING_SEMAPHORES | Enabled |
| QUEUE_REGISTRY_SIZE | 8 |
| USE_APPLICATION_TASK_TAG | Disabled |

| | |
|---|---|
| ENABLE_BACKWARD_COMPATIBILITY | Enabled |
| USE_PORT_OPTIMISED_TASK_SELECTION | Disabled |
| USE_TICKLESS_IDLE | Disabled |
| USE_TASK_NOTIFICATIONS | Enabled |
| RECORD_STACK_HIGH_ADDRESS | Disabled |

**Memory management settings:**

| | |
|---|---|
| Memory Allocation | Dynamic / Static |
| TOTAL_HEAP_SIZE | 15360 |
| Memory Management scheme | heap_4 |

**Hook function related definitions:**

| | |
|---|---|
| USE_IDLE_HOOK | Disabled |
| USE_TICK_HOOK | Disabled |
| USE_MALLOC_FAILED_HOOK | Disabled |
| USE_DAEMON_TASK_STARTUP_HOOK | Disabled |
| CHECK_FOR_STACK_OVERFLOW | Disabled |

**Run time and task stats gathering related definitions:**

| | |
|---|---|
| GENERATE_RUN_TIME_STATS | Disabled |
| USE_TRACE_FACILITY | Enabled |
| 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 | 256 |

**Interrupt nesting behaviour configuration:**

| | |
|---|---|
| LIBRARY_LOWEST_INTERRUPT_PRIORITY | 15 |
| LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY | 5 |

**Added with 10.2.1 support:**

| | |
|---|---|
| MESSAGE_BUFFER_LENGTH_TYPE | size_t |
| USE_POSIX_ERRNO | Disabled |

## 7.8.2. Include parameters:

**Include definitions:**

| | |
|---|---|
| vTaskPrioritySet | Enabled |
| uxTaskPriorityGet | Enabled |
| vTaskDelete | Enabled |
| vTaskCleanUpResources | Disabled |

| | |
|---|---|
| vTaskSuspend | Enabled |
| vTaskDelayUntil | Enabled |
| vTaskDelay | Enabled |
| xTaskGetSchedulerState | Enabled |
| xTaskResumeFromISR | Enabled |
| xQueueGetMutexHolder | Enabled |
| xSemaphoreGetMutexHolder | Disabled |
| pcTaskGetTaskName | Disabled |
| uxTaskGetStackHighWaterMark | Enabled |
| xTaskGetCurrentTaskHandle | Disabled |
| eTaskGetState | Enabled |
| xEventGroupSetBitFromISR | Disabled |
| xTimerPendFunctionCall | Enabled |
| xTaskAbortDelay | Disabled |
| xTaskGetHandle | Disabled |
| uxTaskGetStackHighWaterMark2 | Disabled |

### 7.8.3. Advanced settings:

**Newlib settings (see parameter description first):**

| | |
|---|---|
| USE_NEWLIB_REENTRANT | Disabled |

**Project settings (see parameter description first):**

| | |
|---|---|
| Use FW pack heap file | Enabled |

*** User modified value**

# 8. System Configuration

## 8.1. GPIO configuration

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|---|---|---|---|---|---|---|
| ADC1 | PA3 | ADC1_IN3 | Analog mode | No pull-up and no pull-down | n/a | |
| ADC2 | PA5 | ADC2_IN5 | Analog mode | No pull-up and no pull-down | n/a | |
| 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 | |
| | PH0/OSC_IN | RCC_OSC_IN | n/a | n/a | n/a | MCO [STM32F103CBT6_PA8] |
| | PH1/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 |
| USART3 | PD8 | USART3_TX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | STLK_RX [STM32F103CBT6_PA3] |
| | PD9 | USART3_RX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | STLK_TX [STM32F103CBT6_PA2] |
| USB_OTG_FS | PA8 | USB_OTG_FS_SOF | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | USB_SOF [TP1] |
| | PA9 | USB_OTG_FS_VBUS | Input mode | No pull-up and no pull-down | **n/a** | USB_VBUS |
| | PA11 | USB_OTG_FS_DM | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | USB_DM |
| | PA12 | USB_OTG_FS_DP | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | USB_DP |
| Single Mapped Signals | PA1 | ETH_REF_CLK | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | RMII_REF_CLK [LAN8742A-CZ-TR_REFCLK0] |
| | PA2 | ETH_MDIO | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | RMII_MDIO [LAN8742A-CZ-TR_MDIO] |
| | PA7 | ETH_CRS_DV | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | RMII_CRS_DV [LAN8742A-CZ-TR_CRS_DV] |
| | PB13 | ETH_TXD1 | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | RMII_TXD1 [LAN8742A-CZ-TR_TXD1] |
| | PA10 | USB_OTG_FS_I | Alternate Function Push Pull | No pull-up and no pull-down | **Very High** | USB_ID |

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|---|---|---|---|---|---|---|
| | | D | | | * | |
| | PG11 | ETH_TX_EN | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | RMII_TX_EN [LAN8742A-CZ-TR_TXEN] |
| | PG13 | ETH_TXD0 | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | RMII_TXD0 [LAN8742A-CZ-TR_TXD0] |
| | PB3 | SYS_JTDO-SWO | n/a | n/a | **n/a** | SW0 |
| GPIO | PC13 | GPIO_EXTI13 | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a | USER_Btn [B1] |
| | PF0 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_9 |
| | PF1 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_10 |
| | PF2 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_11 |
| | PF3 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_12 |
| | PF4 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_13 |
| | PF5 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_14 |
| | PF6 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_15 |
| | PF7 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_16 |
| | PF8 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_17 |
| | PF9 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_18 |
| | PF10 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PC0 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_1 |
| | PC1 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_2 |
| | PC2 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_3 |
| | PC3 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_4 |
| | PC4 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_5 |
| | PC5 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_6 |
| | PB0 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LD1 [Green] |
| | PB1 | GPIO_Input | Input mode | **Pull-up *** | n/a | BUT_UP |
| | PB2 | GPIO_Input | Input mode | **Pull-up *** | n/a | BUT_DOWN |
| | PB14 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LD3 [Red] |
| | PG6 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | USB_PowerSwitchOn [STMPS2151STR_EN] |
| | PG7 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | USB_OverCurrent [STMPS2151STR_FAULT] |
| | PC6 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_7 |
| | PC8 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED_8 |
| | PB4 | GPIO_Input | Input mode | **Pull-up *** | n/a | BUT_START |
| | PB5 | GPIO_Input | Input mode | **Pull-up *** | n/a | BUT_STOP |

### 8.2. DMA configuration

nothing configured in DMA service

## 8.3. NVIC configuration

### 8.3.1. 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 | 15 | 0 |
| System tick timer | true | 15 | 0 |
| RCC global interrupt | true | 5 | 0 |
| ADC1, ADC2 and ADC3 global interrupts | true | 5 | 0 |
| TIM1 trigger and commutation interrupts and TIM11 global interrupt | true | 15 | 0 |
| TIM7 global interrupt | true | 5 | 0 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| USART3 global interrupt | unused | | |
| EXTI line[15:10] interrupts | unused | | |
| USB On The Go FS global interrupt | unused | | |
| FPU global interrupt | unused | | |

### 8.3.2. 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 | false | false |
| Debug monitor | false | true | false |
| Pendable request for system service | false | false | false |
| System tick timer | false | false | true |
| RCC global interrupt | false | true | false |
| ADC1, ADC2 and ADC3 global interrupts | false | true | true |
| TIM1 trigger and commutation interrupts and TIM11 global interrupt | false | true | true |
| | | | |

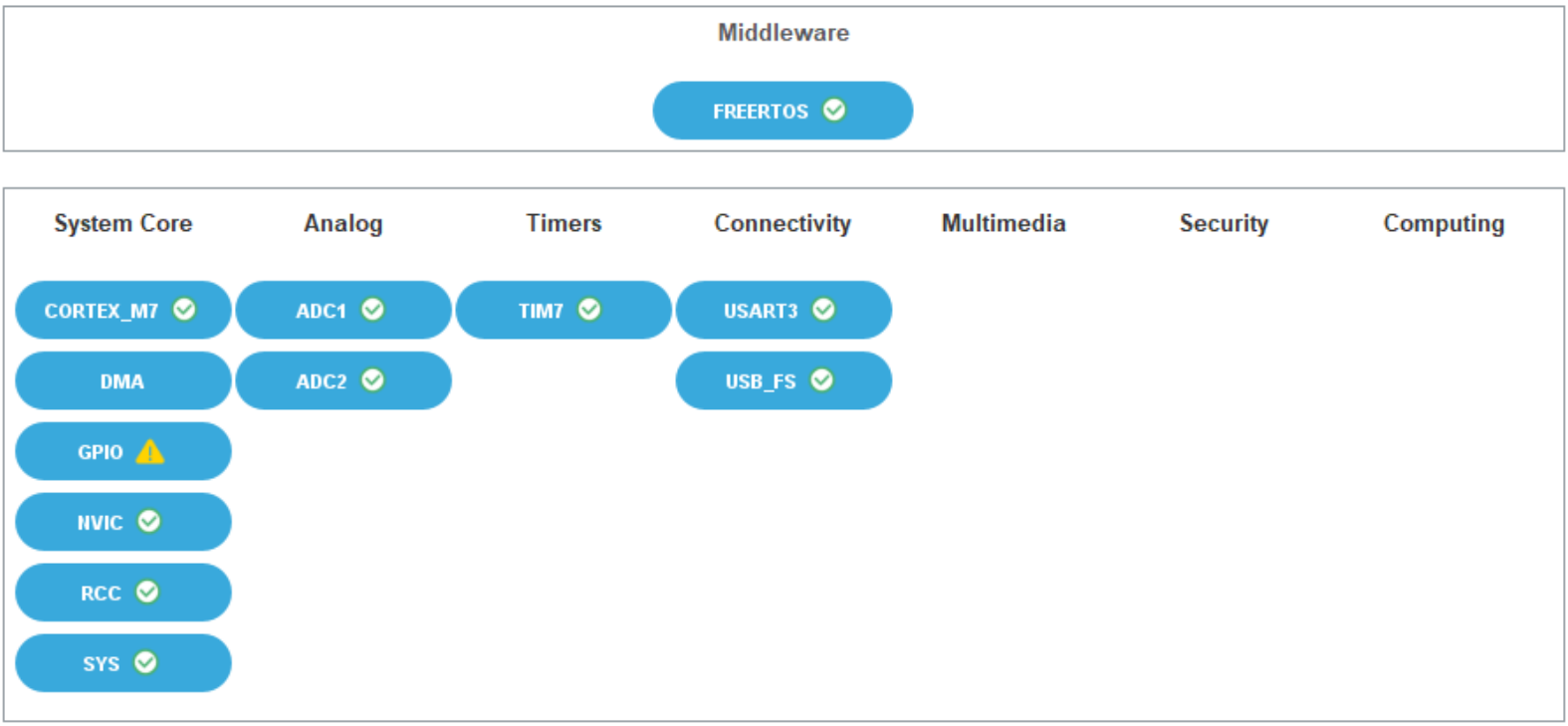
| Enabled interrupt Table | Select for init sequence ordering | Generate IRQ handler | Call HAL handler |
|---|---|---|---|
| TIM7 global interrupt | false | true | true |

*** 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/DM00166116.pdf |
| Reference manual | http://www.st.com/resource/en/reference_manual/DM00124865.pdf |
| Programming manual | http://www.st.com/resource/en/programming_manual/DM00237416.pdf |
| Errata sheet | http://www.st.com/resource/en/errata_sheet/DM00145382.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/CD00264321.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/DM00046011.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/DM00080497.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/DM00160482.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00164538.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00164549.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00173083.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00210367.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00220769.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00226326.pdf |

| | |
|---|---|
| Application note | http://www.st.com/resource/en/application_note/DM00227538.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00236305.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00257177.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00272912.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00272913.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00281138.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00287603.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00296349.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00315319.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00327191.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00337702.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00340311.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00354244.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00373474.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00380469.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00395696.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00431633.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00493651.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00536349.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00600614.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00725181.pdf |