
STM32
CubeMX

# 1. Description

## 1.1. Project

| | |
|---|---|
| Project Name | BMScableL431 |
| Board Name | custom |
| Generated with: | STM32CubeMX 6.3.0 |
| Date | 08/17/2021 |

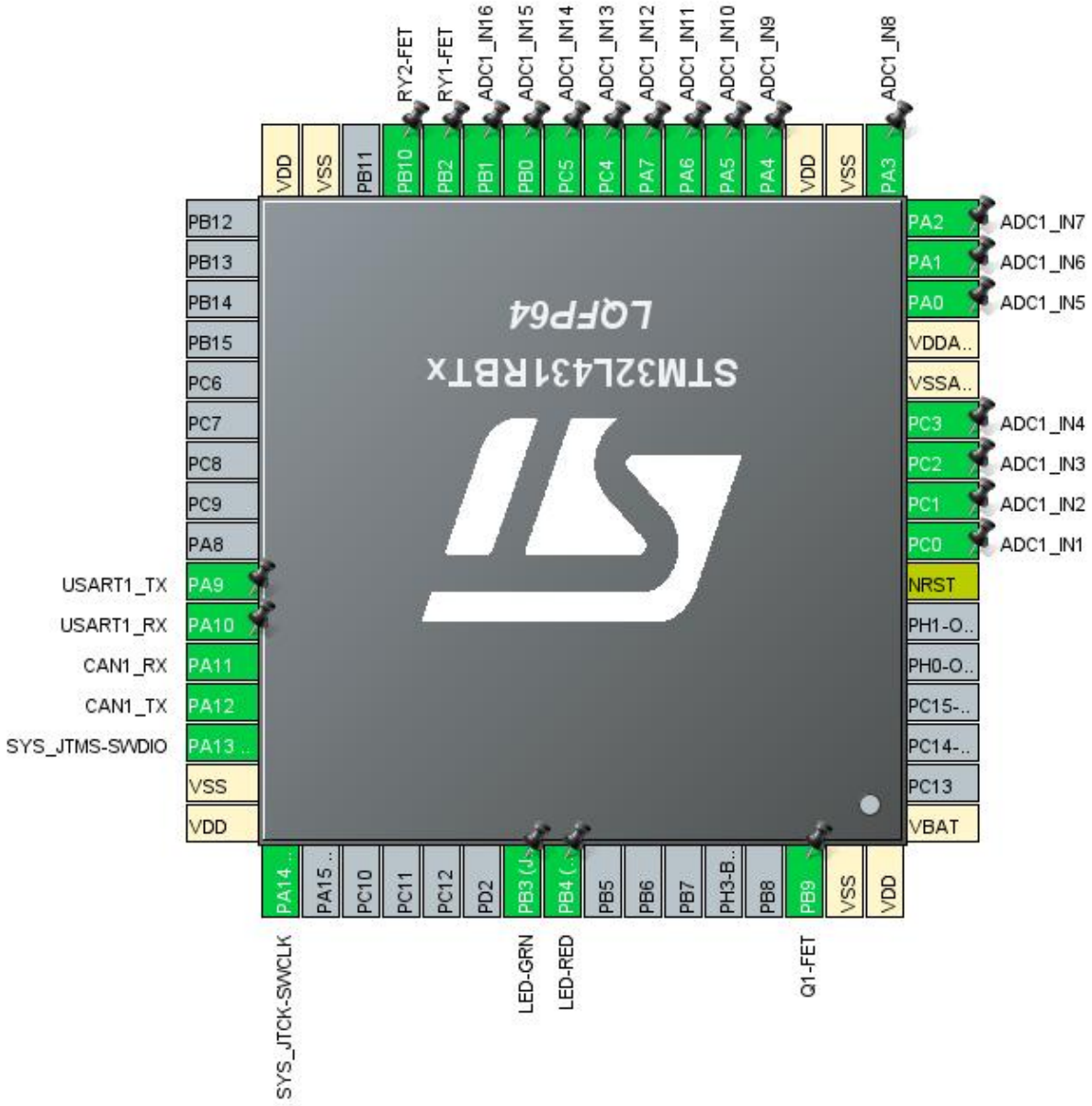
## 1.2. MCU

| | |
|---|---|
| MCU Series | STM32L4 |
| MCU Line | STM32L4x1 |
| MCU name | STM32L431RBTx |
| MCU Package | LQFP64 |
| MCU Pin number | 64 |

## 1.3. Core(s) information

| | |
|---|---|
| Core(s) | Arm Cortex-M4 |

## 2. Pinout Configuration




**(Rotated +180°)**

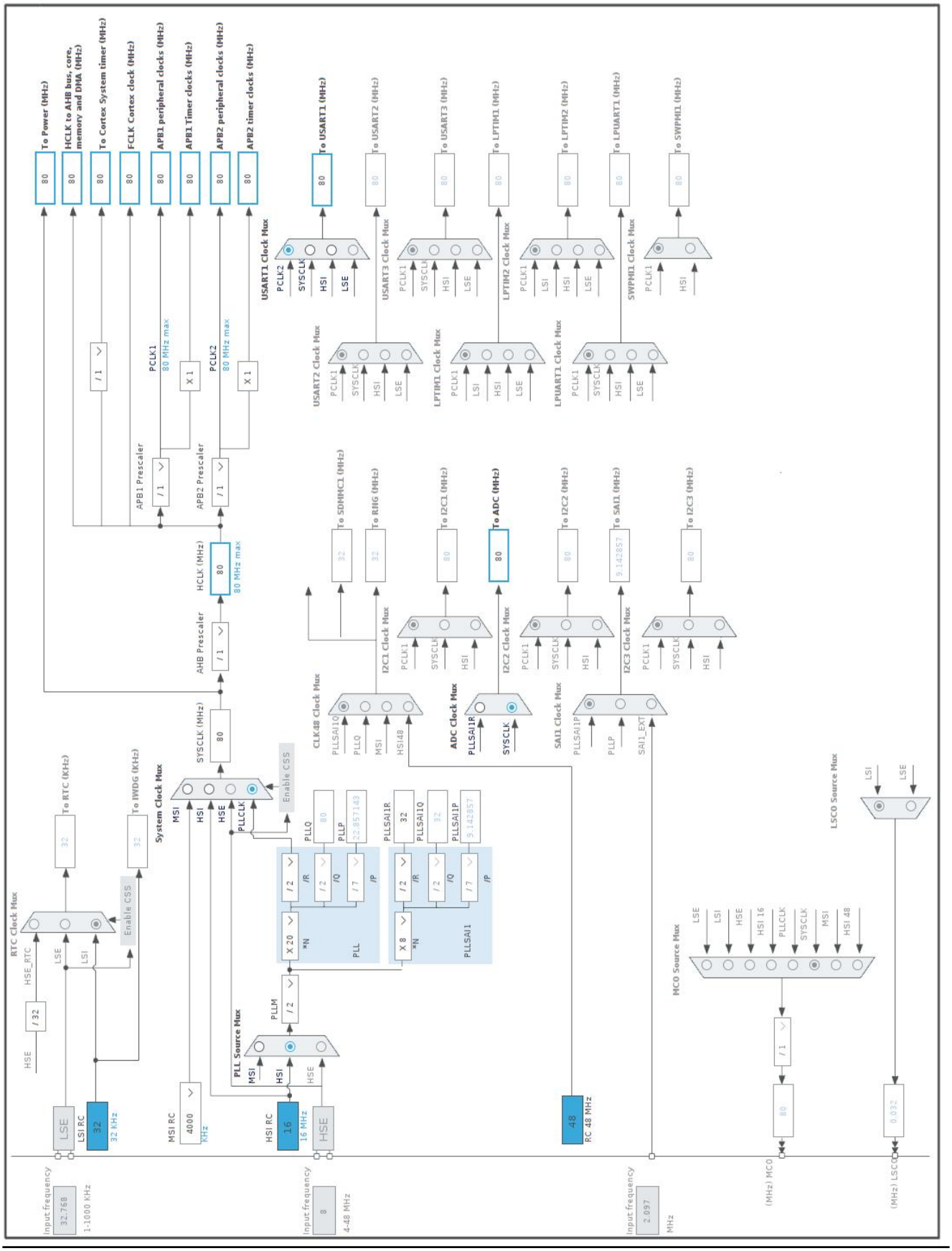
# 3. Pins Configuration

| Pin Number LQFP64 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 1 | VBAT | Power | | |
| 7 | NRST | Reset | | |
| 8 | PC0 | I/O | ADC1_IN1 | |
| 9 | PC1 | I/O | ADC1_IN2 | |
| 10 | PC2 | I/O | ADC1_IN3 | |
| 11 | PC3 | I/O | ADC1_IN4 | |
| 12 | VSSA/VREF- | Power | | |
| 13 | VDDA/VREF+ | Power | | |
| 14 | PA0 | I/O | ADC1_IN5 | |
| 15 | PA1 | I/O | ADC1_IN6 | |
| 16 | PA2 | I/O | ADC1_IN7 | |
| 17 | PA3 | I/O | ADC1_IN8 | |
| 18 | VSS | Power | | |
| 19 | VDD | Power | | |
| 20 | PA4 | I/O | ADC1_IN9 | |
| 21 | PA5 | I/O | ADC1_IN10 | |
| 22 | PA6 | I/O | ADC1_IN11 | |
| 23 | PA7 | I/O | ADC1_IN12 | |
| 24 | PC4 | I/O | ADC1_IN13 | |
| 25 | PC5 | I/O | ADC1_IN14 | |
| 26 | PB0 | I/O | ADC1_IN15 | |
| 27 | PB1 | I/O | ADC1_IN16 | |
| 28 | PB2 * | I/O | GPIO_Output | RY1-FET |
| 29 | PB10 * | I/O | GPIO_Output | RY2-FET |
| 31 | VSS | Power | | |
| 32 | VDD | Power | | |
| 42 | PA9 | I/O | USART1_TX | |
| 43 | PA10 | I/O | USART1_RX | |
| 44 | PA11 | I/O | CAN1_RX | |
| 45 | PA12 | I/O | CAN1_TX | |
| 46 | PA13 (JTMS-SWDIO) | I/O | SYS_JTMS-SWDIO | |
| 47 | VSS | Power | | |
| 48 | VDD | Power | | |
| 49 | PA14 (JTCK-SWCLK) | I/O | SYS_JTCK-SWCLK | |
| 55 | PB3 (JTDO-TRACESWO) * | I/O | GPIO_Output | LED-GRN |
| 56 | PB4 (NJTRST) * | I/O | GPIO_Output | LED-RED |

| Pin Number LQFP64 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 62 | PB9 * | I/O | GPIO_Output | Q1-FET |
| 63 | VSS | Power | | |
| 64 | 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 | BMScableL431 |
| Project Folder | /home/deh/GliderWinchItems/BMScable/pcb/BMScableL431 |
| Toolchain / IDE | Makefile |
| Firmware Package Name and Version | STM32Cube FW_L4 V1.17.0 |
| 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 | MX_DMA_Init | DMA |
| 3 | SystemClock_Config | RCC |
| 4 | MX_ADC1_Init | ADC1 |
| 5 | MX_USART1_UART_Init | USART1 |
| 6 | MX_CAN1_Init | CAN1 |

# 6. Power Consumption Calculator report

## 6.1. Microcontroller Selection

| | |
|---|---|
| Series | STM32L4 |
| Line | STM32L4x1 |
| MCU | STM32L431RBTx |
| Datasheet | DS11453_Rev1 |

## 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 |

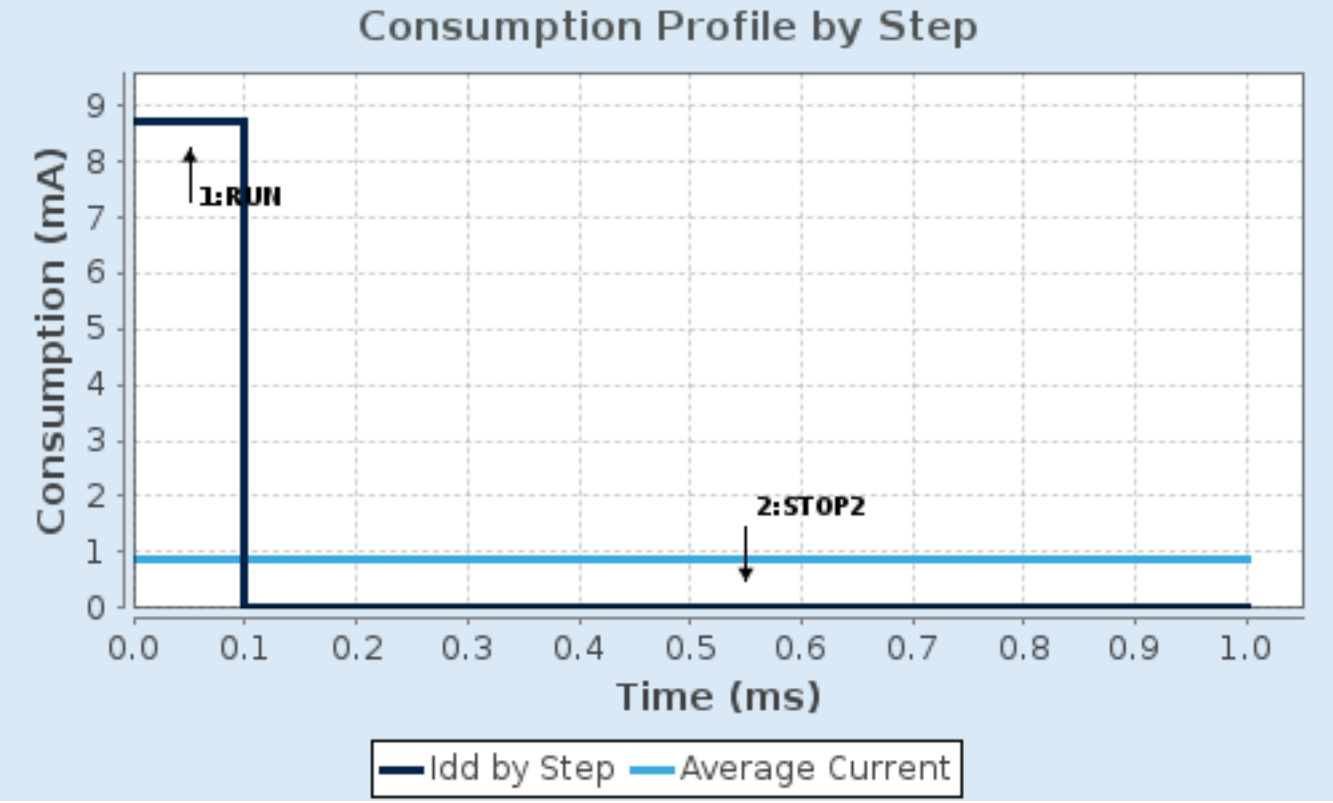
## 6.4. Sequence

| ***Step*** | Step1 | Step2 |
|---|---|---|
| ***Mode*** | RUN | STOP2 |
| ***Vdd*** | 3.0 | 3.0 |
| ***Voltage Source*** | Battery | Battery |
| ***Range*** | Range1-High | NoRange |
| ***Fetch Type*** | SRAM2 | n/a |
| ***CPU Frequency*** | 80 MHz | 0 Hz |
| ***Clock Configuration*** | HSE BYP PLL | ALL CLOCKS OFF |
| ***Clock Source Frequency*** | 4 MHz | 0 Hz |
| ***Peripherals*** | | |
| ***Additional Cons.*** | 0 mA | 0 mA |
| ***Average Current*** | 8.71 mA | 1.06 µA |
| ***Duration*** | 0.1 ms | 0.9 ms |
| ***DMIPS*** | 100.0 | 0.0 |
| ***Ta Max*** | 103.82 | 105 |
| ***Category*** | In DS Table | In DS Table |

## 6.5. Results

| Sequence Time | 1 ms | Average Current | 871.95 µA |
|---|---|---|---|
| Battery Life | 5 months, 9 days, 16 hours | Average DMIPS | 100.0 DMIPS |

## 6.6. Chart


Consumption Profile by Step
Consumption (mA)
9
8
7
6
5
4
3
2
1
0
1:RUN
2:STOP2
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

**IN1: IN1 Single-ended**
**IN2: IN2 Single-ended**
**IN3: IN3 Single-ended**
**IN4: IN4 Single-ended**
**IN5: IN5 Single-ended**
**IN6: IN6 Single-ended**
**IN7: IN7 Single-ended**
**IN8: IN8 Single-ended**
**IN9: IN9 Single-ended**
**IN10: IN10 Single-ended**
**IN11: IN11 Single-ended**
**IN12: IN12 Single-ended**
**IN13: IN13 Single-ended**
**IN14: IN14 Single-ended**
**IN15: IN15 Single-ended**
**mode: IN16 Single-ended**
**IN17: Temperature Sensor Channel**
**mode: Vrefint Channel**

### 7.1.1. Parameter Settings:

**ADC_Settings:**

| | |
|---|---|
| Clock Prescaler | **Asynchronous clock mode divided by 6 *** |
| Resolution | ADC 12-bit resolution |
| Data Alignment | Right alignment |
| Scan Conversion Mode | Enabled |
| Continuous Conversion Mode | **Enabled *** |
| Discontinuous Conversion Mode | Disabled |
| DMA Continuous Requests | **Enabled *** |
| End Of Conversion Selection | **End of sequence of conversion *** |
| Overrun behaviour | Overrun data preserved |
| Low Power Auto Wait | Disabled |

**ADC_Regular_ConversionMode:**

| | |
|---|---|
| Enable Regular Conversions | Enable |
| Enable Regular Oversampling | **Enable *** |
| Oversampling Right Shift | No bit shift for oversampling |

| | |
|---|---|
| Oversampling Ratio | **Oversampling ratio 8x *** |
| Regular Oversampling Mode | Oversampling Resumed Mode |
| Triggered Regular Oversampling | Single trigger for all oversampled conversions |
| Number Of Conversion | **16 *** |
| External Trigger Conversion Source | Regular Conversion launched by software |
| External Trigger Conversion Edge | None |
| Rank | 1 |
| Channel | **Channel 7 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **2 *** |
| Channel | **Channel 16 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **3 *** |
| Channel | **Channel 8 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **4 *** |
| Channel | **Channel 15 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **5 *** |
| Channel | **Channel 5 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **6 *** |
| Channel | **Channel 13 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **7 *** |
| Channel | **Channel 6 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **8 *** |
| Channel | **Channel 14 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |

| | |
|---|---|
| Rank | **9 *** |
| Channel | **Channel 3 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **10 *** |
| Channel | **Channel 11 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **11 *** |
| Channel | **Channel 4 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **12 *** |
| Channel | **Channel 12 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **13 *** |
| Channel | Channel 1 |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **14 *** |
| Channel | **Channel 9 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **15 *** |
| Channel | **Channel 2 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Rank | **16 *** |
| Channel | **Channel 10 *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |

**ADC_Injected_ConversionMode:**

| | |
|---|---|
| Enable Injected Conversions | **Enable *** |
| Enable Injected Oversampling | **Enable *** |
| Oversampling Right Shift | No bit shift for oversampling |
| Oversampling Ratio | **Oversampling ratio 8x *** |
| Number Of Conversions | |

| | |
|---|---|
| | **2 *** |
| External Trigger Source | External Trigger on injected channels are disabled (Auto-injection mode selected) |
| External Trigger Conversion Edge | None |
| Injected Conversion Mode | **Auto Injected Mode *** |
| Injected Queue | Injected Queue Disable |
| Rank | 1 |
| Channel | **Channel Vrefint *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Monitored by | None |
| Rank | **2 *** |
| Channel | **Channel Temperature Sensor *** |
| Sampling Time | **247.5 Cycles *** |
| Offset Number | No offset |
| Monitored by | None |
| **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. CAN1

## mode: Activated

### 7.2.1. Parameter Settings:

| | |
|---|---|
| **Bit Timings Parameters:** | |
| Prescaler (for Time Quantum) | **20 *** |
| Time Quantum | **250.0 *** |
| Time Quanta in Bit Segment 1 | **2 Times *** |
| Time Quanta in Bit Segment 2 | **5 Times *** |
| Time for one Bit | **2000.00 *** |
| Baud Rate | **500000 *** |
| ReSynchronization Jump Width | 1 Time |
| **Basic Parameters:** | |
| Time Triggered Communication Mode | Disable |
| Automatic Bus-Off Management | Disable |

| | |
|---|---|
| Automatic Wake-Up Mode | Disable |
| Automatic Retransmission | Disable |
| Receive Fifo Locked Mode | Disable |
| Transmit Fifo Priority | **Enable *** |

**Advanced Parameters:**

| | |
|---|---|
| Operating Mode | Normal |

## 7.3. RCC

### 7.3.1. Parameter Settings:

**System Parameters:**

| | |
|---|---|
| VDD voltage (V) | 3.3 |
| Instruction Cache | Enabled |
| Prefetch Buffer | Disabled |
| Data Cache | Enabled |
| Flash Latency(WS) | 4 WS (5 CPU cycle) |

**RCC Parameters:**

| | |
|---|---|
| HSI Calibration Value | 16 |
| MSI Calibration Value | 0 |
| MSI Auto Calibration | Disabled |
| HSE Startup Timout Value (ms) | 100 |
| LSE Startup Timout Value (ms) | 5000 |

**Power Parameters:**

| | |
|---|---|
| Power Regulator Voltage Scale | Power Regulator Voltage Scale 1 |

## 7.4. SYS

**Debug: Serial Wire**

**Timebase Source: TIM15**

## 7.5. USART1

**Mode: Asynchronous**

### 7.5.1. 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 |
| 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 |

## 7.6. FREERTOS

## Interface: CMSIS_V2

### 7.6.1. Config parameters:

**API:**

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

**Versions:**

| | |
|---|---|
| FreeRTOS version | 10.3.1 |
| CMSIS-RTOS version | 2.00 |

**MPU/FPU:**

| | |
|---|---|
| ENABLE_MPU | Disabled |
| ENABLE_FPU | **Enabled *** |

**Kernel settings:**

| | |
|---|---|
| USE_PREEMPTION | Enabled |
| CPU_CLOCK_HZ | SystemCoreClock |
| TICK_RATE_HZ | 1000 |
| MAX_PRIORITIES | 56 |
| MINIMAL_STACK_SIZE | 128 |
| MAX_TASK_NAME_LEN | **32 *** |
| 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 | **Enabled *** |

### Memory management settings:

| | |
|---|---|
| Memory Allocation | Dynamic / Static |
| TOTAL_HEAP_SIZE | **16384 *** |
| Memory Management scheme | **heap_3 *** |

### 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 |

### CMSIS-RTOS V2 flags:

| | |
|---|---|
| USE_OS2_THREAD_SUSPEND_RESUME | Enabled |
| USE_OS2_THREAD_ENUMERATE | Enabled |
| USE_OS2_EVENTFLAGS_FROM_ISR | Enabled |
| USE_OS2_THREAD_FLAGS | Enabled |
| USE_OS2_TIMER | Enabled |

| | |
|---|---|
| USE_OS2_MUTEX | Enabled |

## 7.6.2. Include parameters:

**Include definitions:**

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

## 7.6.3. Advanced settings:

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

| | |
|---|---|
| USE_NEWLIB_REENTRANT | **Enabled *** |

**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 | PC0 | ADC1_IN1 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PC1 | ADC1_IN2 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PC2 | ADC1_IN3 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PC3 | ADC1_IN4 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA0 | ADC1_IN5 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA1 | ADC1_IN6 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA2 | ADC1_IN7 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA3 | ADC1_IN8 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA4 | ADC1_IN9 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA5 | ADC1_IN10 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA6 | ADC1_IN11 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PA7 | ADC1_IN12 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PC4 | ADC1_IN13 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PC5 | ADC1_IN14 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PB0 | ADC1_IN15 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| | PB1 | ADC1_IN16 | Analog mode for ADC conversion | No pull-up and no pull-down | n/a | |
| CAN1 | PA11 | CAN1_RX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | |
| | PA12 | CAN1_TX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | |
| SYS | PA13 (JTMS-SWDIO) | SYS_JTMS-SWDIO | n/a | n/a | n/a | |
| | | | | | | |

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|---|---|---|---|---|---|---|
| | PA14 (JTCK-SWCLK) | SYS_JTCK-SWCLK | n/a | n/a | n/a | |
| USART1 | PA9 | USART1_TX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | |
| | PA10 | USART1_RX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | |
| GPIO | PB2 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | RY1-FET |
| | PB10 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | RY2-FET |
| | PB3 (JTDO-TRACESWO) | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED-GRN |
| | PB4 (NJTRST) | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED-RED |
| | PB9 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | Q1-FET |

## 8.2. DMA configuration

| DMA request | Stream | Direction | Priority |
|---|---|---|---|
| ADC1 | DMA1_Channel1 | Peripheral To Memory | Low |
| USART1_RX | DMA1_Channel5 | Peripheral To Memory | Low |
| USART1_TX | DMA1_Channel4 | Memory To Peripheral | Low |

*ADC1: DMA1_Channel1 DMA request Settings:*

| | |
|---|---|
| Mode: | **Circular *** |
| Peripheral Increment: | Disable |
| Memory Increment: | **Enable *** |
| Peripheral Data Width: | Half Word |
| Memory Data Width: | Half Word |

*USART1_RX: DMA1_Channel5 DMA request Settings:*

| | |
|---|---|
| Mode: | **Circular *** |
| Peripheral Increment: | Disable |
| Memory Increment: | **Enable *** |
| Peripheral Data Width: | Byte |
| Memory Data Width: | Byte |

*USART1_TX: DMA1_Channel4 DMA request Settings:*

| | |
|---|---|
| Mode: | Normal |
| Peripheral Increment: | Disable |
| Memory Increment: | **Enable *** |
| Peripheral Data Width: | Byte |
| Memory Data Width: | Byte |

## 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 |
| 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 |
| DMA1 channel1 global interrupt | true | 5 | 0 |
| DMA1 channel4 global interrupt | true | 5 | 0 |
| DMA1 channel5 global interrupt | true | 5 | 0 |
| ADC1 global interrupt | true | 5 | 0 |
| TIM1 break interrupt and TIM15 global interrupt | true | 15 | 0 |
| USART1 global interrupt | true | 5 | 0 |
| PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| CAN1 TX interrupt | unused | | |
| CAN1 RX0 interrupt | unused | | |
| CAN1 RX1 interrupt | unused | | |
| CAN1 SCE 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 |
| Prefetch 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 |
| | | | |

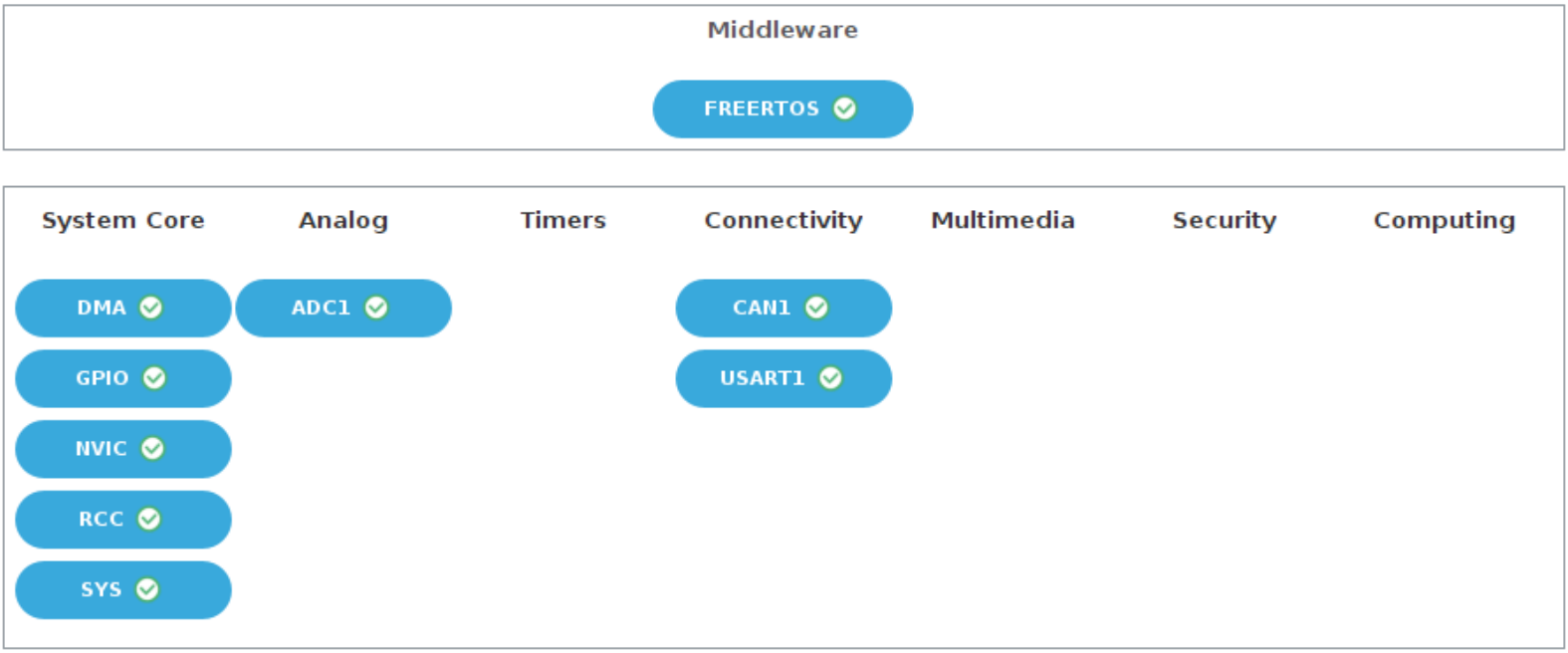
| Enabled interrupt Table | Select for init sequence ordering | Generate IRQ handler | Call HAL handler |
|---|---|---|---|
| DMA1 channel1 global interrupt | false | true | true |
| DMA1 channel4 global interrupt | false | true | true |
| DMA1 channel5 global interrupt | false | true | true |
| ADC1 global interrupt | false | true | true |
| TIM1 break interrupt and TIM15 global interrupt | false | true | true |
| USART1 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/DM00257211.pdf |
| Reference manual | http://www.st.com/resource/en/reference_manual/DM00151940.pdf |
| Programming manual | http://www.st.com/resource/en/programming_manual/DM00046982.pdf |
| Errata sheet | http://www.st.com/resource/en/errata_sheet/DM00218224.pdf |
| Application note | http://www.st.com/resource/en/application_note/CD00160362.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/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/DM00085385.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00087593.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00125306.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00129215.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00141025.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00144612.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00148033.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00150423.pdf |

| | |
|---|---|
| Application note | http://www.st.com/resource/en/application_note/DM00151811.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00156964.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00160482.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00209748.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00209768.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00209772.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00216518.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/DM00260952.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00263732.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00269143.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00269146.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00272912.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00311483.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/DM00354244.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00354333.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00355687.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00367673.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/DM00445657.pdf |
| Application note | http://www.st.com/resource/en/application_note/DM00476869.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/DM00660597.pdf |

Application note http://www.st.com/resource/en/application_note/DM00725181.pdf