



## 1. Description

### 1.1. Project

Project Name	H753_CPP_AS6C4008_FMC_Daug hterBoard_02
Board Name	NUCLEO-H753ZI
Generated with:	STM32CubeMX 6.14.1
Date	03/25/2026

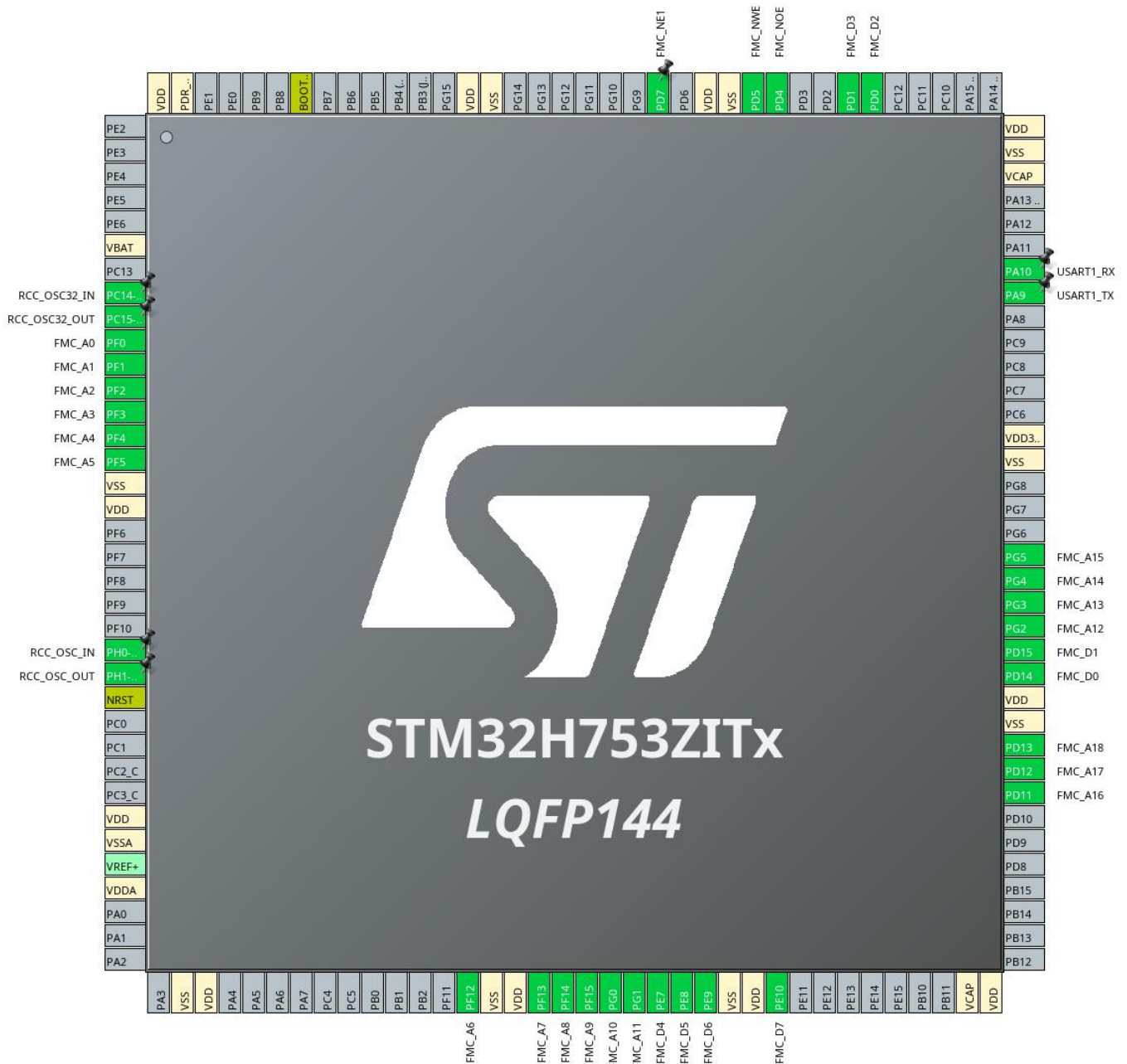
### 1.2. MCU

MCU Series	STM32H7
MCU Line	STM32H743/753
MCU name	STM32H753ZITx
MCU Package	LQFP144
MCU Pin number	144

### 1.3. Core(s) information

Core(s)	ARM Cortex-M7
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## 2. Pinout Configuration

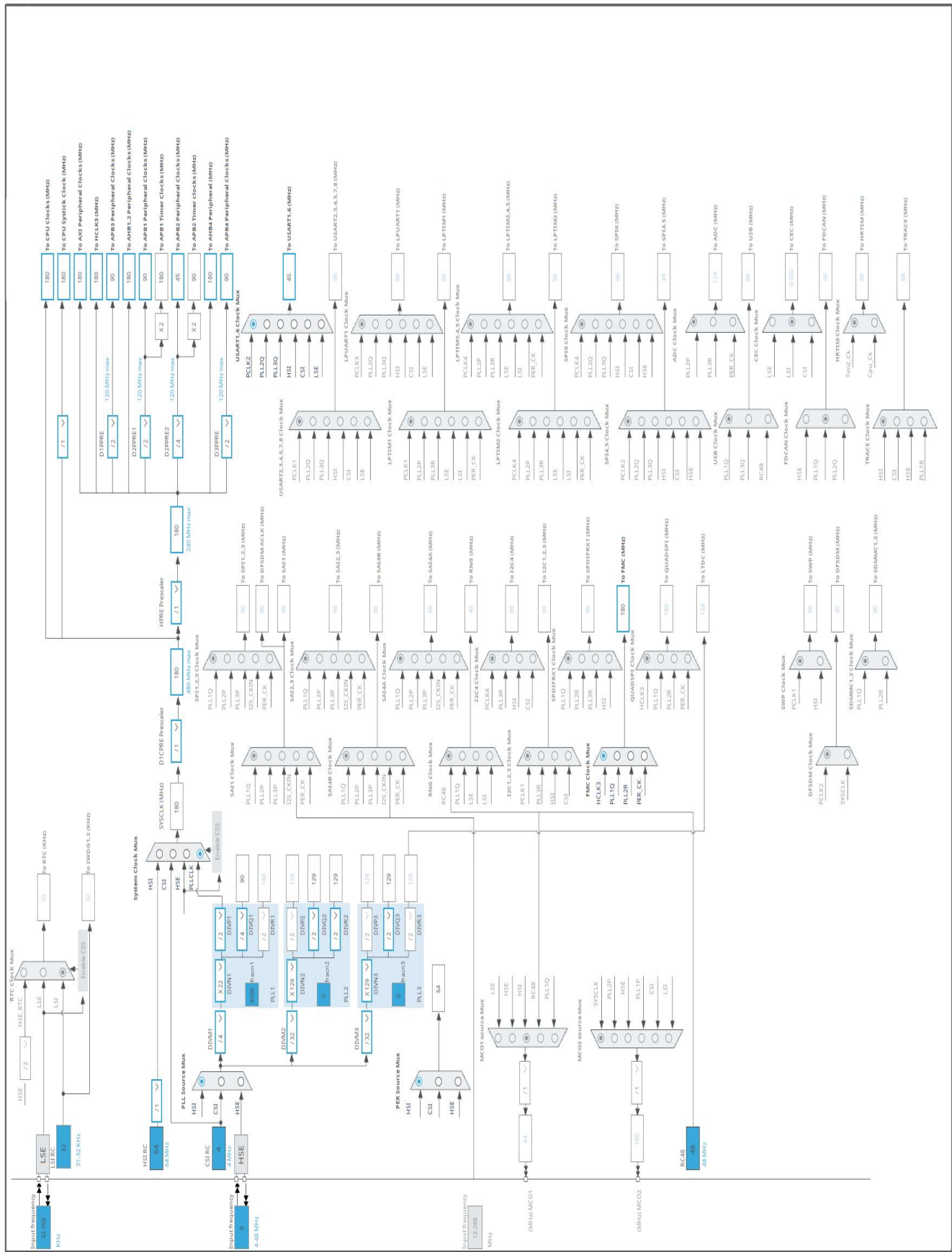


### 3. Pins Configuration

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
8	PC14-OSC32_IN (OSC32_IN)	I/O	RCC_OSC32_IN	
9	PC15-OSC32_OUT (OSC32_OUT)	I/O	RCC_OSC32_OUT	
10	PF0	I/O	FMC_A0	
11	PF1	I/O	FMC_A1	
12	PF2	I/O	FMC_A2	
13	PF3	I/O	FMC_A3	
14	PF4	I/O	FMC_A4	
15	PF5	I/O	FMC_A5	
16	VSS	Power		
17	VDD	Power		
23	PH0-OSC_IN (PH0)	I/O	RCC_OSC_IN	
24	PH1-OSC_OUT (PH1)	I/O	RCC_OSC_OUT	
25	NRST	Reset		
30	VDD	Power		
31	VSSA	Power		
33	VDDA	Power		
38	VSS	Power		
39	VDD	Power		
50	PF12	I/O	FMC_A6	
51	VSS	Power		
52	VDD	Power		
53	PF13	I/O	FMC_A7	
54	PF14	I/O	FMC_A8	
55	PF15	I/O	FMC_A9	
56	PG0	I/O	FMC_A10	
57	PG1	I/O	FMC_A11	
58	PE7	I/O	FMC_D4	
59	PE8	I/O	FMC_D5	
60	PE9	I/O	FMC_D6	
61	VSS	Power		
62	VDD	Power		
63	PE10	I/O	FMC_D7	
71	VCAP	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
72	VDD	Power		
80	PD11	I/O	FMC_A16	
81	PD12	I/O	FMC_A17	
82	PD13	I/O	FMC_A18	
83	VSS	Power		
84	VDD	Power		
85	PD14	I/O	FMC_D0	
86	PD15	I/O	FMC_D1	
87	PG2	I/O	FMC_A12	
88	PG3	I/O	FMC_A13	
89	PG4	I/O	FMC_A14	
90	PG5	I/O	FMC_A15	
94	VSS	Power		
95	VDD33_USB	Power		
101	PA9	I/O	USART1_TX	
102	PA10	I/O	USART1_RX	
106	VCAP	Power		
107	VSS	Power		
108	VDD	Power		
114	PD0	I/O	FMC_D2	
115	PD1	I/O	FMC_D3	
118	PD4	I/O	FMC_NOE	
119	PD5	I/O	FMC_NWE	
120	VSS	Power		
121	VDD	Power		
123	PD7	I/O	FMC_NE1	
130	VSS	Power		
131	VDD	Power		
138	BOOT0	Boot		
143	PDR_ON	Power		
144	VDD	Power		

## 4. Clock Tree Configuration



## 1. Power Consumption Calculator report

### 1.1. Microcontroller Selection

Series	STM32H7
Line	STM32H743/753
MCU	STM32H753ZITx
Datasheet	DS12117_Rev7

### 1.2. Parameter Selection

Temperature	25
Vdd	3.0

### 1.3. 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

#### 1.4. Sequence

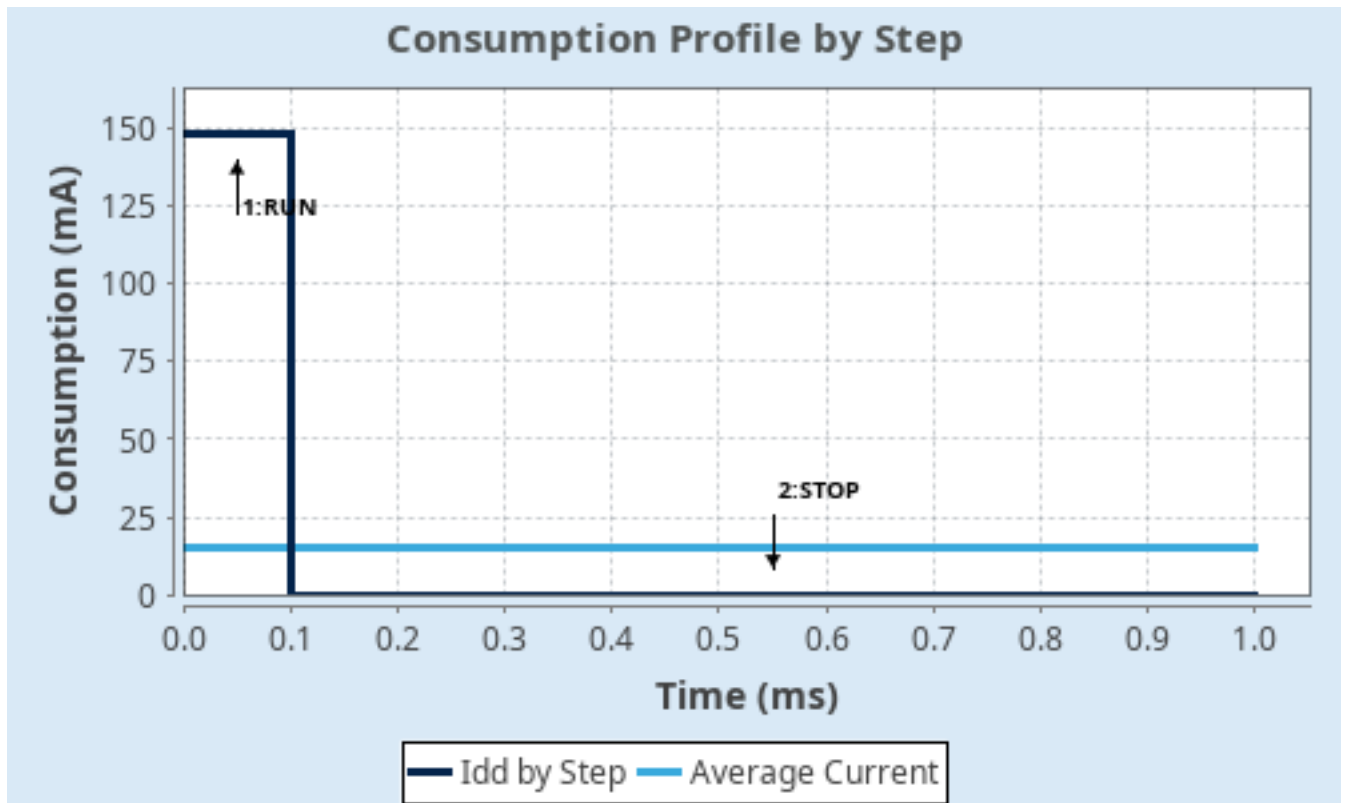
<b>Step</b>	Step1	Step2
<b>Mode</b>	RUN	STOP
<b>Vdd</b>	3.0	3.0
<b>Voltage Source</b>	Battery	Battery
<b>Range</b>	VOS0: Scale0-High	SVOS5: System-Scale5
<b>D1 Mode</b>	DRUN/CRUN	DSTANDBY
<b>D2 Mode</b>	DRUN	DSTANDBY
<b>D3 Mode</b>	DRUN	DSTOP
<b>Fetch Type</b>	ITCM	NA
<b>CPU Frequency</b>	480 MHz	0 Hz
<b>Clock Configuration</b>	HSE BYP PLL	Flash-OFF
<b>Clock Source Frequency</b>	24 MHz	0 Hz
<b>Peripherals</b>		
<b>Additional Cons.</b>	0 mA	0 mA
<b>Average Current</b>	148 mA	150 $\mu$ A
<b>Duration</b>	0.1 ms	0.9 ms
<b>DMIPS</b>	1027.0	0.0
<b>Ta Max</b>	105.46	124.98
<b>Category</b>	In DS Table	In DS Table

#### 1.5. Results

Sequence Time	1 ms	Average Current	14.94 mA
Battery Life	1 day, 17 hours	Average DMIPS	1027.2001 DMIPS

#### 1.6. Chart





## 2. Software Project

### 2.1. Project Settings

Name	Value
Project Name	H753_CPP_AS6C4008_FMC_DaughterBoard_02
Project Folder	/home/johng/workbench6/H753_CPP_AS6C4008_FMC_DaughterBoard_02
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_H7 V1.12.1
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

### 2.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	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
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

### 2.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_USART1_UART_Init	USART1
4	MX_FMC_Init	FMC

## 3. Peripherals and Middlewares Configuration

### 3.1. FMC

NOR Flash/PSRAM/SRAM/ROM/LCD 1

**Chip Select: NE1**

**Memory type: SRAM**

**Address: 19 bits**

**Data: 8 bits**

#### 3.1.1. NOR/PSRAM 1:

##### **NOR/PSRAM control:**

Memory type	SRAM
Bank	Bank 1 NOR/PSRAM 1
Write operation	<b>Enabled *</b>
Write FIFO	<b>Disabled *</b>
Extended mode	Disabled

##### **NOR/PSRAM timing:**

Address setup time in FMC clock cycles	<b>4 *</b>
Data setup time in FMC clock cycles	<b>10 *</b>
Bus turn around time in FMC clock cycles	<b>1 *</b>

#### 3.1.2. Bank Mapping:

##### **Mapping parameters:**

FMC bank mapping	Default mapping
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### 3.2. MEMORYMAP

**mode: Activated**

### 3.3. RCC

**High Speed Clock (HSE): Crystal/Ceramic Resonator**

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

#### 3.3.1. Parameter Settings:

##### **Power Parameters:**

SupplySource	PWR_LDO_SUPPLY
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Power Regulator Voltage Scale

**Power Regulator Voltage Scale 2 \***

**RCC Parameters:**

TIM Prescaler Selection	Disabled
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000
CSI Calibration Value	32
HSI Calibration Value	64

**System Parameters:**

VDD voltage (V)	3.3
Flash Latency(WS)	3 WS (4 CPU cycle)
Product revision	rev.V

**PLL range Parameters:**

PLL1 clock Input range	Between 8 and 16 MHz
PLL1 clock Output range	Wide VCO range

### 3.4. SYS

**Timebase Source: SysTick**

### 3.5. USART1

**Mode: Asynchronous**

#### 3.5.1. Parameter Settings:

**Basic Parameters:**

Baud Rate	<b>19200 *</b>
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**

## 4. System Configuration

### 4.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
FMC	PF0	FMC_A0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF1	FMC_A1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF2	FMC_A2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF3	FMC_A3	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF4	FMC_A4	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF5	FMC_A5	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF12	FMC_A6	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF13	FMC_A7	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF14	FMC_A8	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF15	FMC_A9	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PG0	FMC_A10	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PG1	FMC_A11	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE7	FMC_D4	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE8	FMC_D5	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE9	FMC_D6	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PE10	FMC_D7	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD11	FMC_A16	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD12	FMC_A17	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD13	FMC_A18	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD14	FMC_D0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD15	FMC_D1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PG2	FMC_A12	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PG3	FMC_A13	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PG4	FMC_A14	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PG5	FMC_A15	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD0	FMC_D2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD1	FMC_D3	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD4	FMC_NOE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD5	FMC_NWE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD7	FMC_NE1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
RCC	PC14-OSC32_IN (OSC32_IN)	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PH0-	RCC_OSC_IN	n/a	n/a	n/a	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	OSC_IN (PH0)					
	PH1-OSC_OUT (PH1)	RCC_OSC_OUT	n/a	n/a	n/a	
USART1	PA9	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA10	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	

#### 4.2. DMA configuration

nothing configured in DMA service

#### 4.3. BDMA configuration

nothing configured in DMA service

#### 4.4. MDMA configuration

nothing configured in DMA service

## 4.5. NVIC configuration

### 4.5.1. 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 AVD interrupts through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USART1 global interrupt	unused		
FPU global interrupt	unused		
HSEM1 global interrupt	unused		

### 4.5.2. 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






## 5. System Views

### 5.1. Category view

#### 5.1.1. Current

Category view    Power Domain view

   Choose filters ...

... by Power Domain

☐ D1   ☐ D2   ☐ D3   ☒ None

#### Middleware

#### System Core

#### Analog

#### Timers

#### Connectivity

#### Multimedia

#### Security

#### Computing

#### Trace and Debug   Power and Thermal

#### Bsp

#### Other

BDMA

CORTEX\_M7 ✓

DMA

GPIO ✓

MDMA

NVIC ✓

RCC ✓




SYS ✓

FMC ✓

USART1 ✓

### 5.1.2. Without filters

Category view    Power Domain view

   Choose filters ...

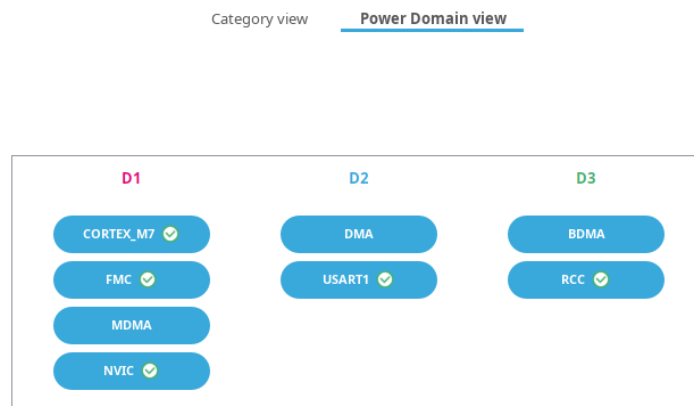
... by Power Domain

☐ D1   ☐ D2   ☐ D3   ☒ None

#### Middleware

System Core	Analog	Timers	Connectivity	Multimedia	Security	Computing	Trace and Debug	Power and Thermal	Bsp	Other
BDMA			FMC ✓							
CORTEX_M7 ✓			USART1 ✓							
DMA										
GPIO ✓										
MDMA										
NVIC ✓										
RCC ✓										
SYS ✓										

## 5.2. Power Domain view



## 6. Docs & Resources

Type	Link
BSDL files	<a href="https://www.st.com/resource/en/bsdl_model/stm32h7_bsdل.zip">https://www.st.com/resource/en/bsdl_model/stm32h7_bsdل.zip</a>
IBIS models	<a href="https://www.st.com/resource/en/ibis_model/stm32h7_ibis.zip">https://www.st.com/resource/en/ibis_model/stm32h7_ibis.zip</a>
System View Description	<a href="https://www.st.com/resource/en/svd/stm32h7-svd.zip">https://www.st.com/resource/en/svd/stm32h7-svd.zip</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/microcontrollers_stm32h7_series_product_overview.pdf">https://www.st.com/resource/en/product_presentation/microcontrollers_stm32h7_series_product_overview.pdf</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf">https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf">https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf">https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf">https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf">https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf</a>
Presentations	<a href="https://www.st.com/resource/en/product_presentation/microcontrollers-stm32h7rs-lines-overview.pdf">https://www.st.com/resource/en/product_presentation/microcontrollers-stm32h7rs-lines-overview.pdf</a>
Brochures	<a href="https://www.st.com/resource/en/brochure/brstm32h7.pdf">https://www.st.com/resource/en/brochure/brstm32h7.pdf</a>
Flyers	<a href="https://www.st.com/resource/en/flyer/flstm32nucleo.pdf">https://www.st.com/resource/en/flyer/flstm32nucleo.pdf</a>
Flyers	<a href="https://www.st.com/resource/en/flyer/flstm32trust.pdf">https://www.st.com/resource/en/flyer/flstm32trust.pdf</a>
Flyers	<a href="https://www.st.com/resource/en/flyer/flpowerstbd.pdf">https://www.st.com/resource/en/flyer/flpowerstbd.pdf</a>
Flyers	<a href="https://www.st.com/resource/en/flyer/flstm32h7rs.pdf">https://www.st.com/resource/en/flyer/flstm32h7rs.pdf</a>
Security Bulletin	<a href="https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf">https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf</a>
Security Bulletin	<a href="https://www.st.com/resource/en/security_bulletin/sb0023-eucleak-protection-statement-for-stmicroelectronics-certified-products-stmicroelectronics.pdf">https://www.st.com/resource/en/security_bulletin/sb0023-eucleak-protection-statement-for-stmicroelectronics-certified-products-stmicroelectronics.pdf</a>

Application Notes [https://www.st.com/resource/en/application\\_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an3155-uart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an3155-uart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4539-hrtim-cookbook-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4539-hrtim-cookbook-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4776-generalpurpose-timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4776-generalpurpose-timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4839-level-1-cache-on-stm32f7-series-and-stm32h7-series-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4839-level-1-cache-on-stm32f7-series-and-stm32h7-series-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4891-stm32h72x-stm32h73x-and-singlecore-stm32h74x75x-system-architecture-and-performance-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4891-stm32h72x-stm32h73x-and-singlecore-stm32h74x75x-system-architecture-and-performance-stmicroelectronics.pdf)

Application Notes [https://www.st.com/resource/en/application\\_note/an4936-migration-of-microcontroller-applications-from-stm32f7-series-to-stm32h743753-line-stmicroelectronics.pdf](https://www.st.com/resource/en/application_note/an4936-migration-of-microcontroller-applications-from-stm32f7-series-to-stm32h743753-line-stmicroelectronics.pdf)

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