

# STM32CubeMX Board Selector

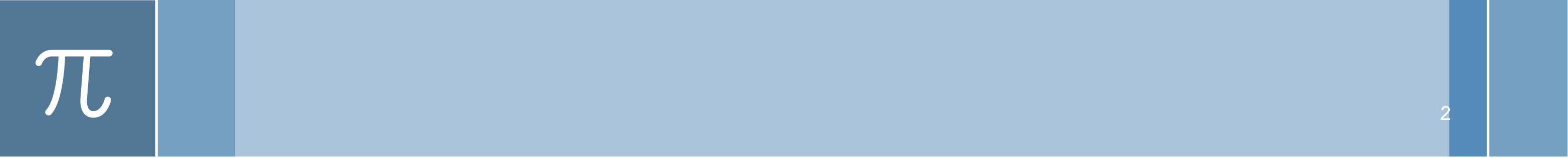
Microcontroller Application and Development 2565

Sorayut Glomglome

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Nucleo-F767



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# Select Board

MX New Project from a Board

MCU/MPU Selector Board Selector Cross Selector

Board Filters

1

Part Number Search

2

Vendor

Type

MCU/MPU Series

Other

Price = 23.0

Oscillator Freq. = 0 (MHz)

Peripheral

Accelerometer 0 0

Analog I/O 0 0

Arduino Form Factor 0 0

Audio Line In 0 0

Audio Line Out 0 0

Battery

Button 0 2

CAN 0 0

Camera

Compass

Custom Form Factor 0 0

Digital I/O 0 244

Ethernet

Gyroscope

Features

Large Picture

Docs & Resources

Datasheet

Buy

4

Start Project

★ NUCLEO-F767ZI

STM32 F7

STMicroelectronics NUCLEO-F767ZI Board Support and Examples

ACTIVE Active

Product is in mass production

Unit Price (US\$): 23.0

Mounted device: STM32F767ZITx

The STM32 Nucleo-144 boards provide an affordable and flexible way for users to try out new concepts and build prototypes by choosing from the various combinations of performance and power consumption features, provided by the STM32 microcontroller. For the compatible boards, the internal or external SMPS significantly reduces power consumption in Run mode. The ST Zio connector, which extends the Arduino™ Uno V3 connectivity, and the ST morpho headers

Boards List: 1 item

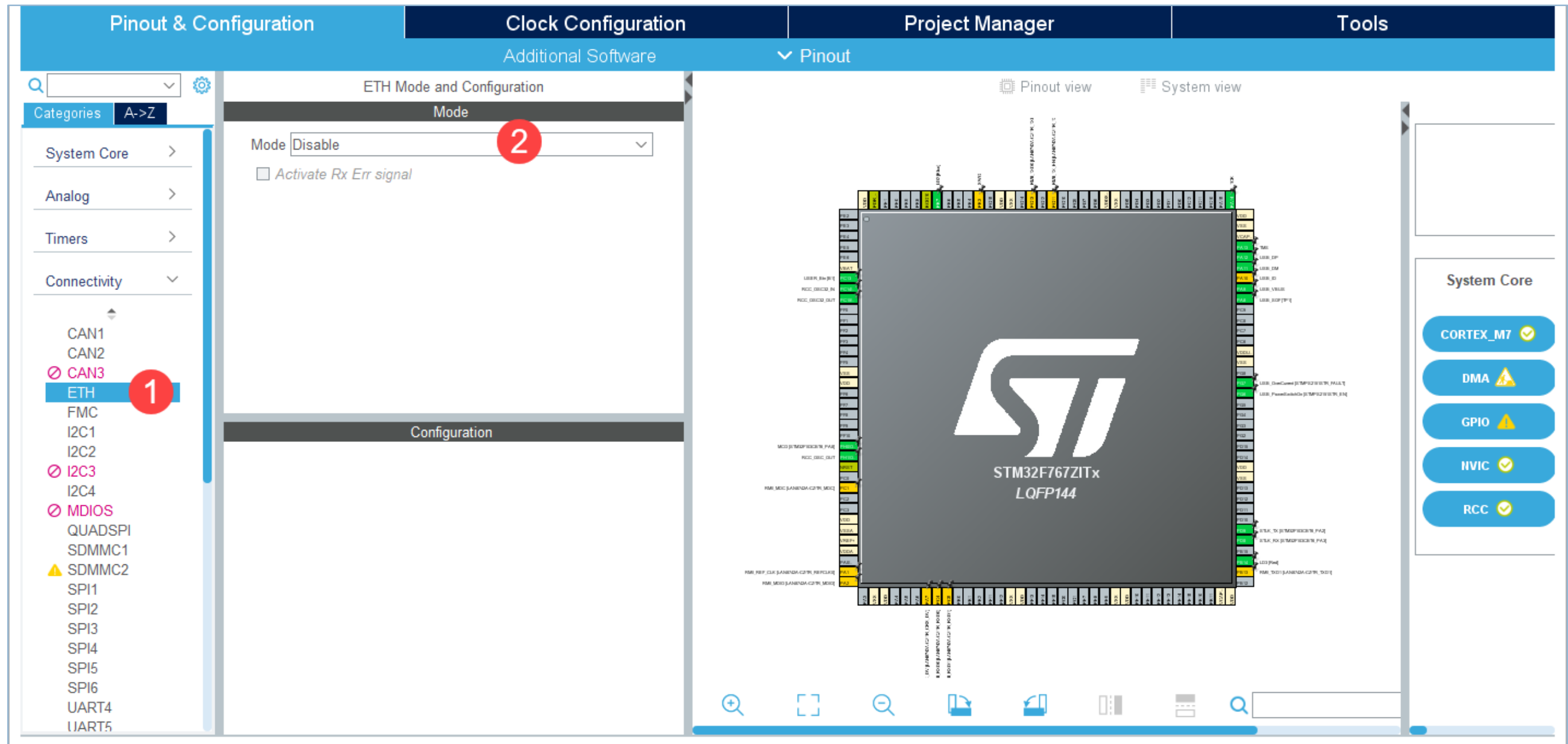
*	Overview	Part No	Type	Marketing Status	Unit Price (US\$)	Mounted Device	MCU/MPU Ser...	Battery
★		NUCLEO-F767ZI 3	Nucleo144	Active	23.0	STM32F767ZITx	STM32F7	0

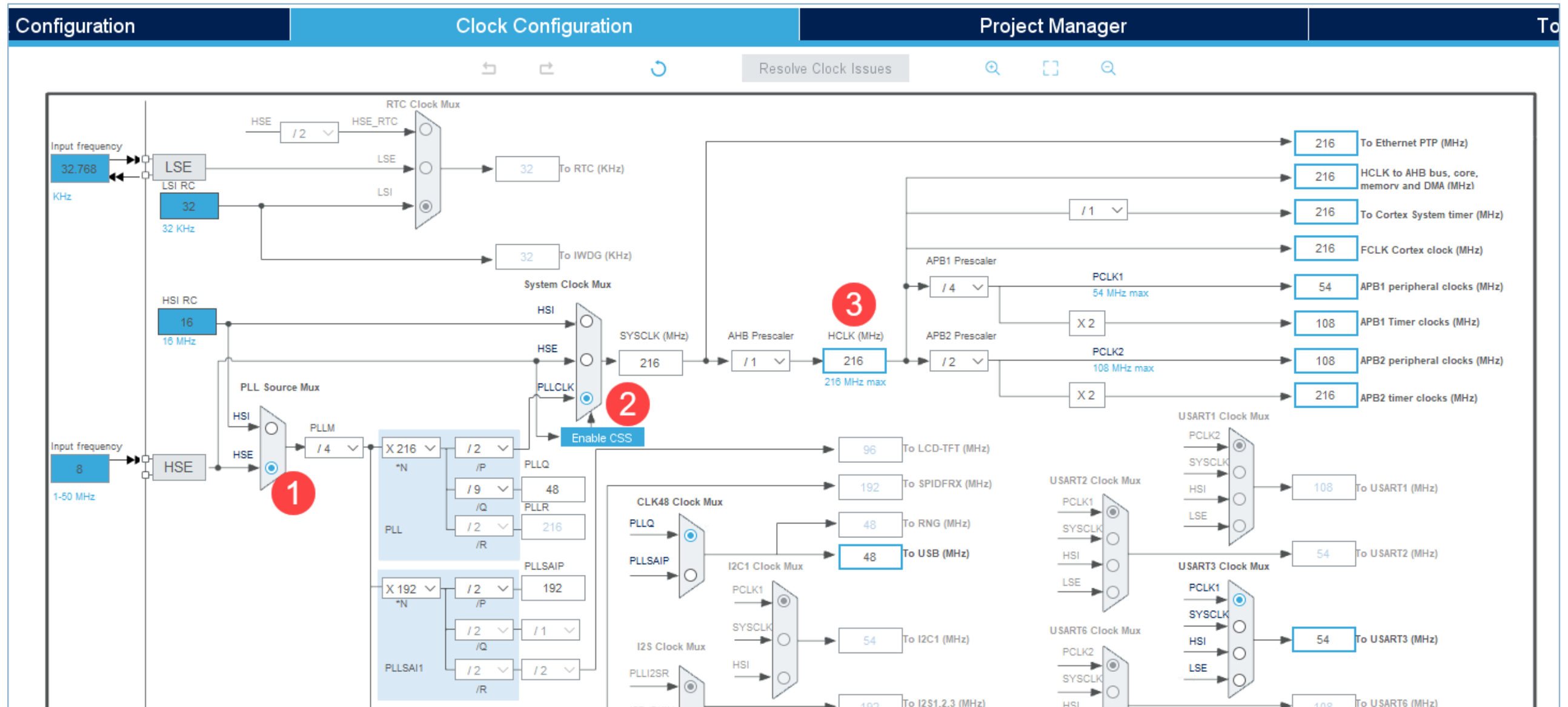
MX Board Project Options: NUCLEO-F767ZI

? Initialize all peripherals with their default Mode ?

1 Yes No

# Disable Ethernet - caused slow init





# ADC with TIM - Nucleo-F767

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# Config ADC1

ADC1 Mode and Configuration

Mode

- ☐ IN2
- ☒ IN3
- ☐ IN4
- ☐ IN5

Configuration

Reset Configuration

☒ User Constants ☒ NVIC Settings ☒ DMA Settings ☒ GPIO Settings

☒ Parameter Settings

Configure the below parameters :

Search (Ctrl+F)

ADCs\_Common\_Settings

Mode

Independent mode

ADC\_Settings

Clock Prescaler

PCLK2 divided by 4

Resolution

12 bits (15 ADC Clock cycles)

Data Alignment

Right alignment

Scan Conversion Mode

Disabled

Continuous Conversion Mode

Disabled

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

Timer 2 Trigger Out event

External Trigger Conversion Edge

Trigger detection on the rising edge

Rank

1

Channel

Channel 3

Sampling Time

28 Cycles

ADC\_Injected\_ConversionMode

Number Of Conversions

0

WatchDog

Enable Analog WatchDog Mode

☐

# Config TIM2

**TIM2 Mode and Configuration**

**Mode**

- Slave Mode: Disable
- Trigger Source: Disable
- Clock Source: Internal Clock (2)
- Channel1: Disable
- Channel2: Disable
- Channel3: Disable
- Channel4: Disable
- Combined Channels: Disable
- ☐ Use ETR as Clearing Source
- ☐ XOR activation
- ☐ One Pulse Mode

**Configuration**

Reset Configuration

Parameter Settings | User Constants | NVIC Settings | DMA Settings

Configure the below parameters :

Search (Ctrl+F)

**Counter Settings**

- Prescaler (PSC - 16 bits value): 10800-1 (3) **count for 1 S**
- Counter Mode: Up
- Counter Period (AutoReload Register - 32 ...): 10000-1
- 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: Update Event (4)



# Config NVIC

Search

Categories A->Z

- FMC
- FREERTOS
- GFXSIMULATOR
- GPIO
- GRAPHICS
- HDMI\_CEC
- I2C1
- I2C2
- ⊗ I2C3
- I2C4
- I2S1
- I2S2
- I2S3
- IWDG
- JPEG
- LIBJPEG
- LPTIM1
- ⊗ LTDC
- LWIP
- MBEDTLS
- ⊗ MDIOS
- NVIC** 1
- PDM2PCM
- QUADSPI
- ▲ RCC
- RNG
- RTC
- SAI1

NVIC Mode and Configuration

Configuration

✓ NVIC ✓ Code generation

Priority Group 2 bits for pre-emption priority 2 bits for ... ☐ Sort by Preemption Priority and Sub Priority

Search  Search (Ctrl+F)   ☐ Show only enabled interrupts

NVIC Interrupt Table	Enabled	Preemption Priority	Sub Priority
Non maskable interrupt	<input checked="" type="checkbox"/>	0	0
Hard fault interrupt	<input checked="" type="checkbox"/>	0	0
Memory management fault	<input checked="" type="checkbox"/>	0	0
Pre-fetch fault, memory access fault	<input checked="" type="checkbox"/>	0	0
Undefined instruction or illegal state	<input checked="" type="checkbox"/>	0	0
System service call via SWI instruction	<input checked="" type="checkbox"/>	0	0
Debug monitor	<input checked="" type="checkbox"/>	0	0
Pendable request for system service	<input checked="" type="checkbox"/>	0	0
Time base: System tick timer	<input checked="" type="checkbox"/>	0	0
PVD interrupt through EXTI line 16	<input type="checkbox"/>	0	0
Flash global interrupt	<input type="checkbox"/>	0	0
RCC global interrupt	<input type="checkbox"/>	0	0
ADC1, ADC2 and ADC3 global interrupts	<input checked="" type="checkbox"/>	2	0
TIM2 global interrupt	<input type="checkbox"/>	1	0
USART3 global interrupt	<input type="checkbox"/>	0	0
EXTI line[15:10] interrupts	<input type="checkbox"/>	0	0
USB On The Go FS global interrupt	<input type="checkbox"/>	0	0
FPU global interrupt	<input type="checkbox"/>	0	0

2

# Start TIM2 & ADC\_IT in main.c

```
/* USER CODE BEGIN 2 */  
HAL_TIM_Base_Start(&htim2);  
HAL_ADC_Start_IT(&hadc1);  
/* USER CODE END 2 */  
  
/* Infinite loop */  
/* USER CODE BEGIN WHILE */  
while (1)  
{  
    /* USER CODE END WHILE */  
  
    /* USER CODE BEGIN 3 */  
}  
/* USER CODE END 3 */
```

# ADC Callback in main.c

- Read ADC value
- Show result by UART3

```
/* USER CODE BEGIN 4 */  
void HAL_ADC_ConvCpltCallback(ADC_HandleTypeDef* hadc)  
{  
    uint32_t adcVal;  
    char adcResult[30];  
  
    HAL_GPIO_TogglePin(GPIOB, GPIO_PIN_7);  
  
    adcVal = HAL_ADC_GetValue(hadc);  
  
    sprintf(adcResult, "ADC_Val = 0x%010X\n\r", adcVal);  
    HAL_UART_Transmit(&huart3, (uint8_t *) adcResult, strlen(adcResult), 100);  
}  
/* USER CODE END 4 */
```