1. Description

1.1. Project

Project Name	exixe12
Board Name	exixe12
Generated with:	STM32CubeMX 4.22.0
Date	08/06/2017

1.2. MCU

MCU Series	STM32F0
MCU Line	STM32F0x2
MCU name	STM32F042K6Tx
MCU Package	LQFP32
MCU Pin number	32

2. Pinout Configuration
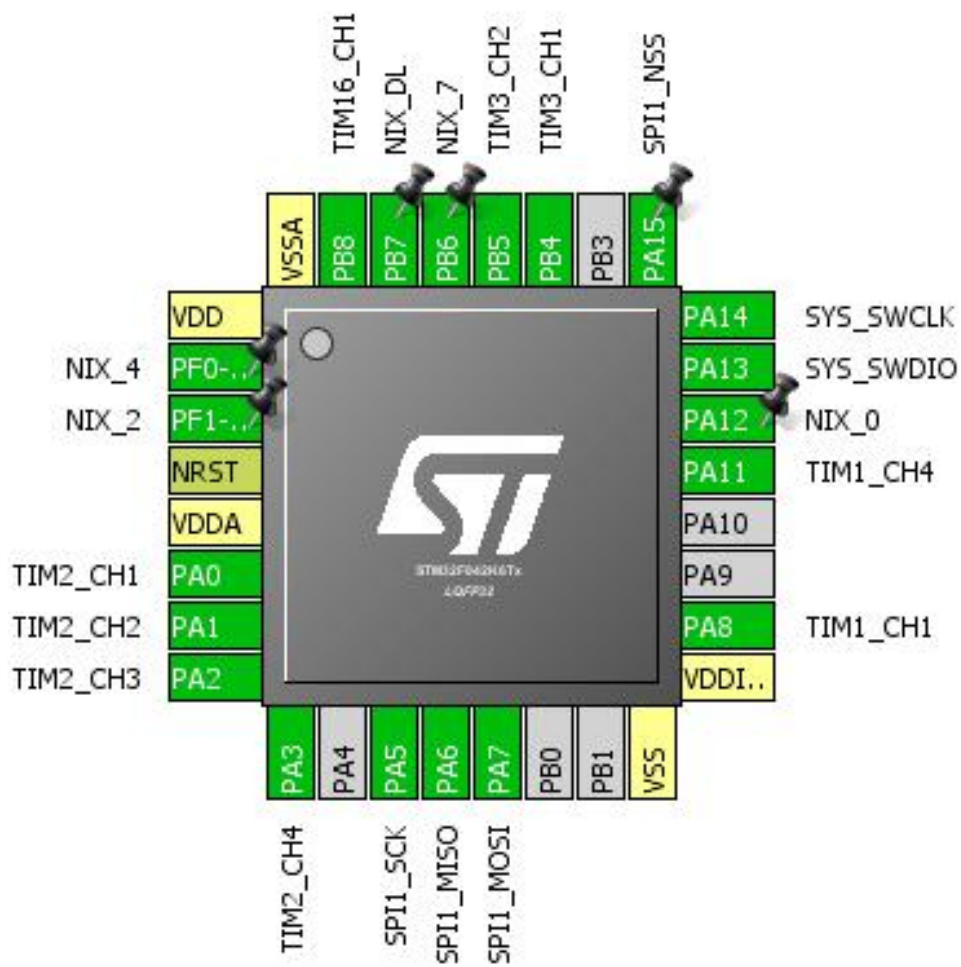
3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PF0-OSC_IN *	I/O	GPIO_Output	NIX_4
3	PF1-OSC_OUT *	I/O	GPIO_Output	NIX_2
4	NRST	Reset		
5	VDDA	Power		
6	PA0	I/O	TIM2_CH1	
7	PA1	I/O	TIM2_CH2	
8	PA2	I/O	TIM2_CH3	
9	PA3	I/O	TIM2_CH4	
11	PA5	I/O	SPI1_SCK	
12	PA6	I/O	SPI1_MISO	
13	PA7	I/O	SPI1_MOSI	
16	VSS	Power		
17	VDDIO2	Power		
18	PA8	I/O	TIM1_CH1	
21	PA11	I/O	TIM1_CH4	
22	PA12 *	I/O	GPIO_Output	NIX_0
23	PA13	I/O	SYS_SWDIO	
24	PA14	I/O	SYS_SWCLK	
25	PA15	I/O	SPI1_NSS	
27	PB4	I/O	TIM3_CH1	
28	PB5	I/O	TIM3_CH2	
29	PB6 *	I/O	GPIO_Output	NIX_7
30	PB7 *	I/O	GPIO_Output	NIX_DL
31	PB8	I/O	TIM16_CH1	
32	VSSA	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration
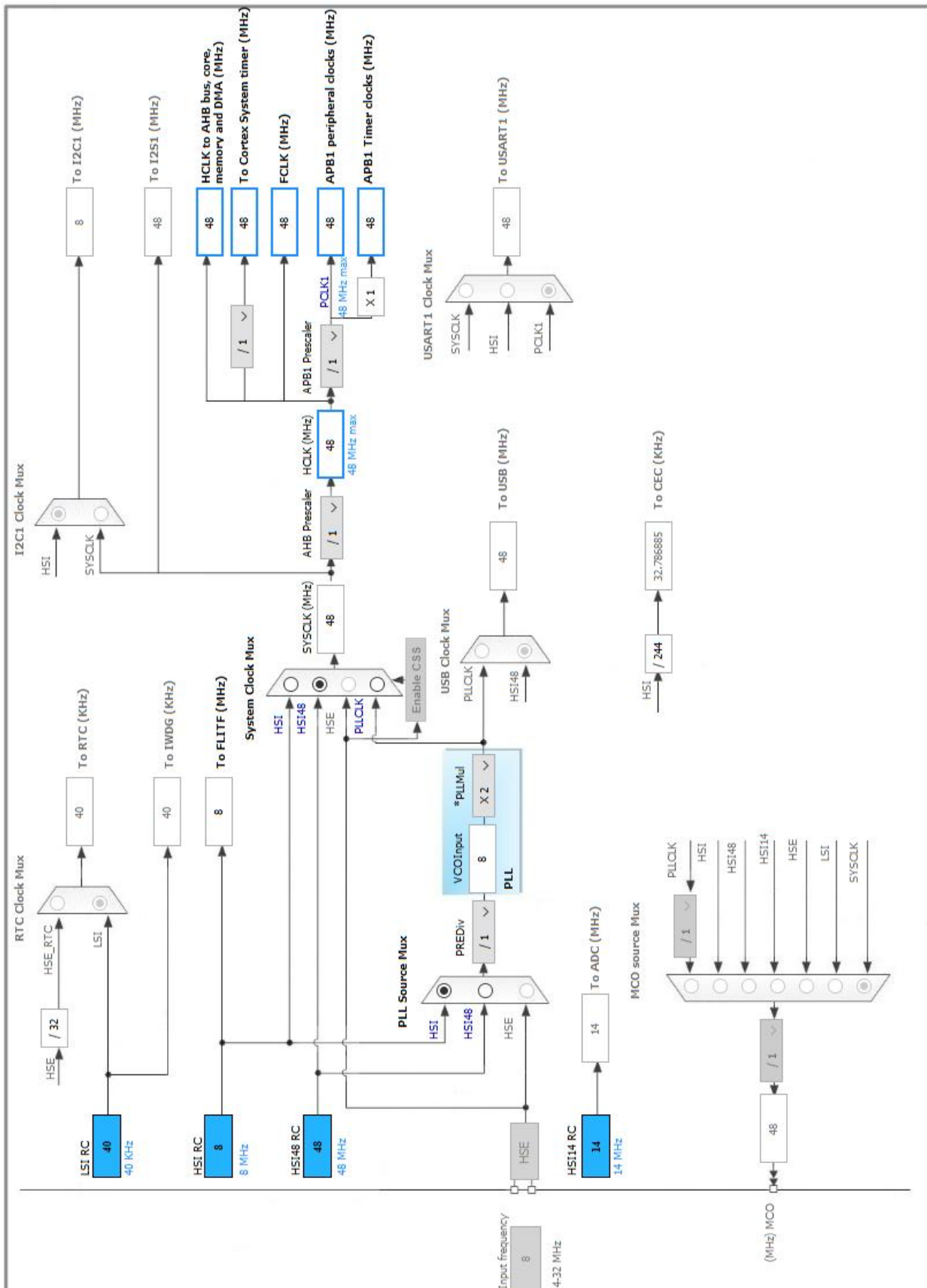
5. IPs and Middleware Configuration

5.1. SPI1

Mode: Full-Duplex Slave
Hardware NSS Signal: Hardware NSS Input Signal

5.1.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	**8 Bits ***
First Bit	MSB First

Clock Parameters:

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

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Input Hardware

5.2. SYS

mode: Debug Serial Wire
Timebase Source: SysTick

5.3. TIM1

Clock Source   : Internal Clock
Channel1: PWM Generation CH1
Channel4: PWM Generation CH4

5.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1920 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**127 ***
Internal Clock Division (CKD)	No Division

Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

5.4. TIM2

Clock Source   : Internal Clock
Channel1: PWM Generation CH1
Channel2: PWM Generation CH2
Channel3: PWM Generation CH3
Channel4: PWM Generation CH4

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1920 ***
Counter Mode	Up

Counter Period (AutoReload Register - 32 bits value)	**127 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

5.5. TIM3

mode: Clock Source

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1920 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**127 ***

Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

5.6. TIM16

mode: Activated

Channel1: PWM Generation CH1

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1920 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**127 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

5.7. TIM17

mode: Activated

5.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**47 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**10 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

* User modified value

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA15	SPI1_NSS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14	SYS_SWCLK	n/a	n/a	n/a	
TIM1	PA8	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA11	TIM1_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM2	PA0	TIM2_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA1	TIM2_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA2	TIM2_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA3	TIM2_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM3	PB4	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB5	TIM3_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM16	PB8	TIM16_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PF0-OSC_IN	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NIX_4
	PF1-OSC_OUT	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NIX_2
	PA12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NIX_0
	PB6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NIX_7
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NIX_DL

6.2. DMA configuration

DMA request	Stream	Direction	Priority
SPI1_RX	DMA1_Channel2	Peripheral To Memory	**High ***

SPI1_RX: DMA1_Channel2 DMA request Settings:

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

6.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
System service call via SWI instruction	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
DMA1 channel 2 and 3 interrupts	true	0	0
TIM17 global interrupt	true	3	0
PVD and VDDIO2 supply comparator interrupts through EXTI lines 16 and 31	unused		
Flash global interrupt	unused		
RCC and CRS global interrupts	unused		
TIM1 break, update, trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM2 global interrupt	unused		
TIM3 global interrupt	unused		
TIM16 global interrupt	unused		
SPI1 global interrupt	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x2
MCU	STM32F042K6Tx
Datasheet	025832_Rev4

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	exixe12
Project Folder	C:\Users\Allen\Desktop\repos\exixe\firmware\exixe12_firmware
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F0 V1.8.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	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
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No