1. Description

1.1. Project

Project Name	CNCcontroller
Board Name	NUCLEO-F303K8
Generated with:	STM32CubeMX 5.0.0
Date	01/02/2019

1.2. MCU

MCU Series	STM32F3
MCU Line	STM32F303
MCU name	STM32F303K8Tx
MCU Package	LQFP32
MCU Pin number	32

2. Pinout Configuration
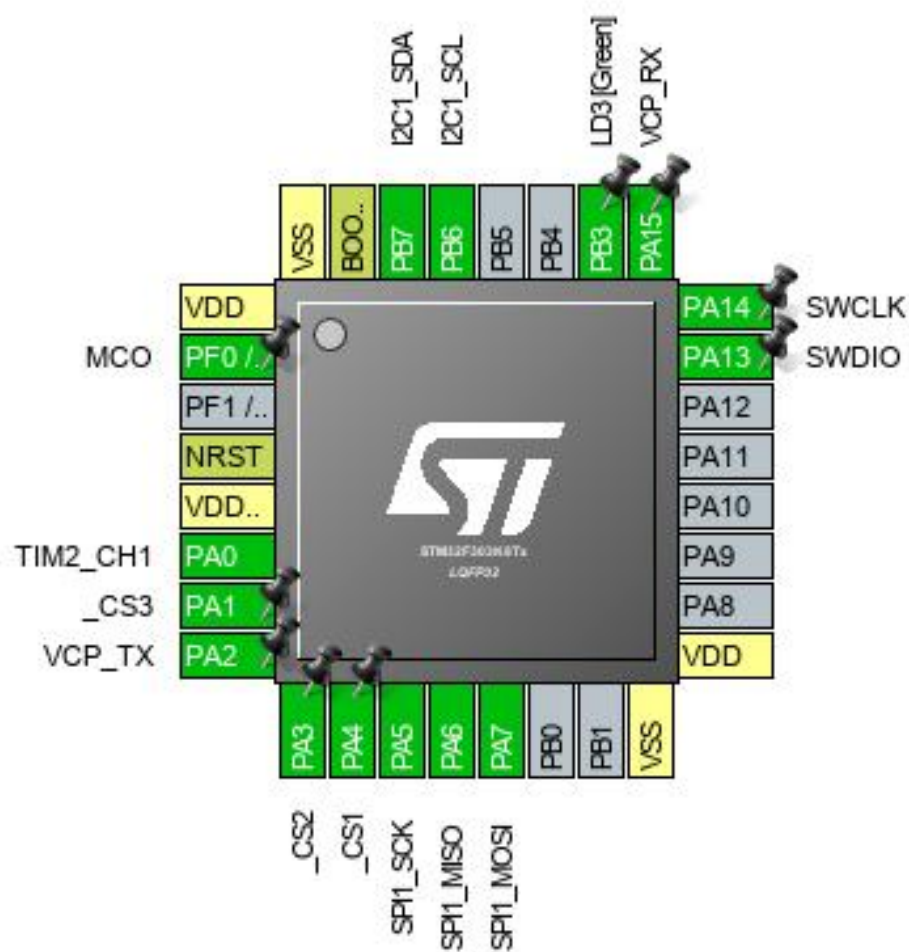
3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PF0 / OSC_IN	I/O	RCC_OSC_IN	MCO
4	NRST	Reset		
5	VDDA/VREF+	Power		
6	PA0	I/O	TIM2_CH1	
7	PA1 *	I/O	GPIO_Output	_CS3
8	PA2	I/O	USART2_TX	VCP_TX
9	PA3 *	I/O	GPIO_Output	_CS2
10	PA4 *	I/O	GPIO_Output	_CS1
11	PA5	I/O	SPI1_SCK	
12	PA6	I/O	SPI1_MISO	
13	PA7	I/O	SPI1_MOSI	
16	VSS	Power		
17	VDD	Power		
23	PA13	I/O	SYS_JTMS-SWDIO	SWDIO
24	PA14	I/O	SYS_JTCK-SWCLK	SWCLK
25	PA15	I/O	USART2_RX	VCP_RX
26	PB3 *	I/O	GPIO_Output	LD3 [Green]
29	PB6	I/O	I2C1_SCL	
30	PB7	I/O	I2C1_SDA	
31	BOOT0	Boot		
32	VSS	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	CNCcontroller
Project Folder	/home/evaota/CNCcontroller
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_F3 V1.10.0

5.2. Code Generation Settings

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

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F3
Line	STM32F303
MCU	STM32F303K8Tx
Datasheet	025083_Rev5

6.2. Parameter Selection

Temperature	25
Vdd	3.6

6.3. Battery Selection

Battery	Alkaline(AAA LR03)
Capacity	1250.0 mAh
Self Discharge	0.3 %/month
Nominal Voltage	1.5 V
Max Cont Current	400.0 mA
Max Pulse Current	0.0 mA
Cells in series	1
Cells in parallel	1

7. IPs and Middleware Configuration

7.1. I2C1

I2C: I2C

7.1.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	**Fast Mode ***
I2C Speed Frequency (KHz)	400
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x0000020B ***

Slave Features:

Clock No Stretch Mode	**Enabled ***
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.2. RCC

High Speed Clock (HSE): BYPASS Clock Source

7.2.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

7.3. SPI1

Mode: Full-Duplex Master
7.3.1. Parameter Settings:

Basic Parameters:

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

Clock Parameters:

Prescaler (for Baud Rate)	**4 ***
Baud Rate	**18.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

7.4. SYS

Debug: Serial Wire
Timebase Source: SysTick

7.5. TIM1

Clock Source   : Internal Clock
7.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**18 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000 ***
Internal Clock Division (CKD)	**Division by 4 ***
Repetition Counter (RCR - 16 bits value)	0
auto-reload preload	**Enable ***

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)
Trigger Event Selection TRGO2	Reset (UG bit from TIMx_EGR)

7.6. TIM2

Clock Source   : Internal Clock
Channel1: PWM Generation CH1
7.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	**900 ***
Internal Clock Division (CKD)	**Division by 4 ***
auto-reload preload	**Enable ***

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 1:

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

7.7. USART2

Mode: Asynchronous
7.7.1. 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:

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

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	Pull up	High *	
	PB7	I2C1_SDA	Alternate Function Open Drain	Pull up	High *	
RCC	PF0 / OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	MCO
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	No pull up pull down	High *	
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull up pull down	High *	
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull up pull down	High *	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
TIM2	PA0	TIM2_CH1	Alternate Function Push Pull	No pull up pull down	Low	
USART2	PA2	USART2_TX	Alternate Function Push Pull	No pull up pull down	High *	VCP_TX
	PA15	USART2_RX	Alternate Function Push Pull	No pull up pull down	High *	VCP_RX
GPIO	PA1	GPIO_Output	Output Push Pull	Pull up *	High *	_CS3
	PA3	GPIO_Output	Output Push Pull	Pull up *	High *	_CS2
	PA4	GPIO_Output	Output Push Pull	Pull up *	High *	_CS1
	PB3	GPIO_Output	Output Push Pull	No pull up pull down	High *	LD3 [Green]

8.2. DMA configuration

DMA request	Stream	Direction	Priority
I2C1_RX	DMA1_Channel3	Peripheral To Memory	**Medium ***
I2C1_TX	DMA1_Channel2	Memory To Peripheral	**Medium ***
SPI1_RX	DMA1_Channel4	Peripheral To Memory	**High ***
SPI1_TX	DMA1_Channel5	Memory To Peripheral	**High ***
USART2_RX	DMA1_Channel6	Peripheral To Memory	**Medium ***
USART2_TX	DMA1_Channel7	Memory To Peripheral	**Medium ***

I2C1_RX: DMA1_Channel3 DMA request Settings:

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

I2C1_TX: DMA1_Channel2 DMA request Settings:

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

SPI1_RX: DMA1_Channel4 DMA request Settings:

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

SPI1_TX: DMA1_Channel5 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable

Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

USART2_RX: DMA1_Channel6 DMA request Settings:

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

USART2_TX: DMA1_Channel7 DMA request Settings:

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

8.3. NVIC configuration

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
DMA1 channel2 global interrupt	true	0	0
DMA1 channel3 global interrupt	true	0	0
DMA1 channel4 global interrupt	true	0	0
DMA1 channel5 global interrupt	true	0	0
DMA1 channel6 global interrupt	true	0	0
DMA1 channel7 global interrupt	true	0	0
TIM1 update and TIM16 interrupts	true	0	0
TIM2 global interrupt	true	0	0
I2C1 event global interrupt / I2C1 wake-up interrupt through EXT line 23	true	0	0
I2C1 error interrupt	true	0	0
SPI1 global interrupt	true	0	0
USART2 global interrupt / USART2 wake-up interrupt through EXT line 26	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break and TIM15 interrupts	unused		
TIM1 trigger and commutation and TIM17 interrupts	unused		
TIM1 capture compare interrupt	unused		
Floating point unit interrupt	unused		

* User modified value

9. Software Pack Report