1. Description

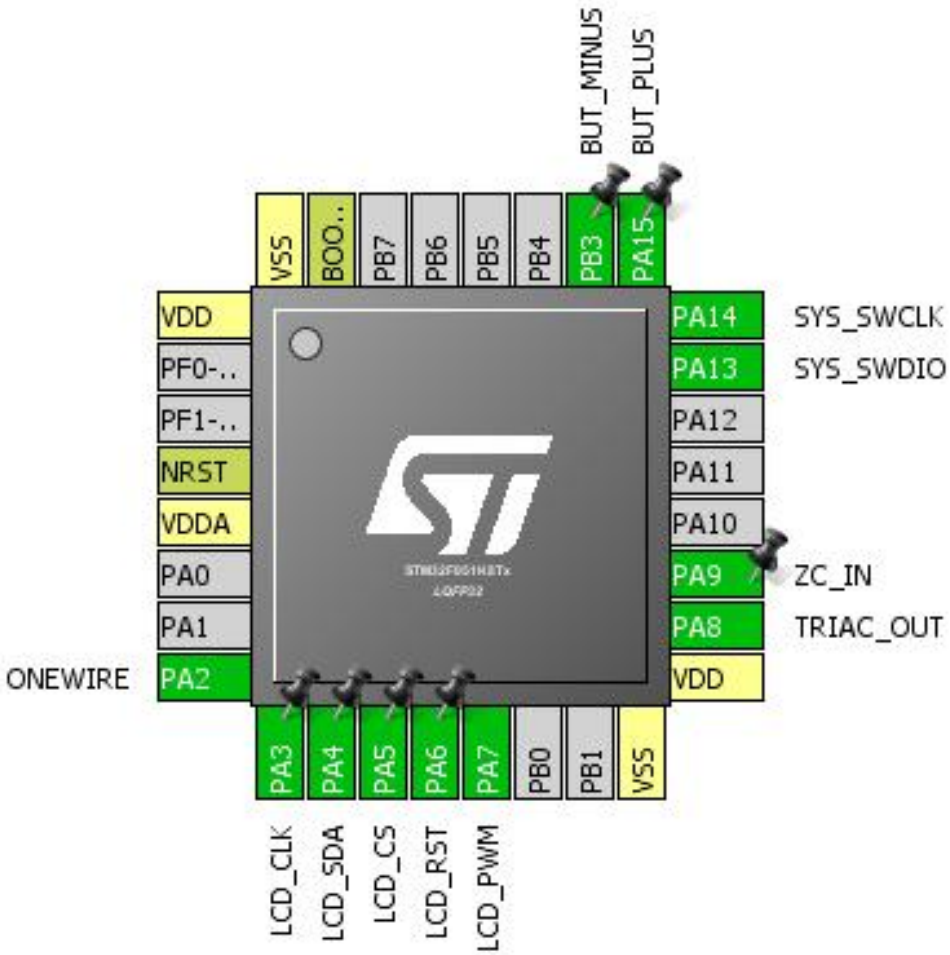
1.1. Project

Project Name	floorctrl
Board Name	floorctrl
Generated with:	STM32CubeMX 4.26.1
Date	08/24/2018

1.2. MCU

MCU Series	STM32F0
MCU Line	STM32F0x1
MCU name	STM32F051K8Tx
MCU Package	LQFP32
MCU Pin number	32

2. Pinout Configuration

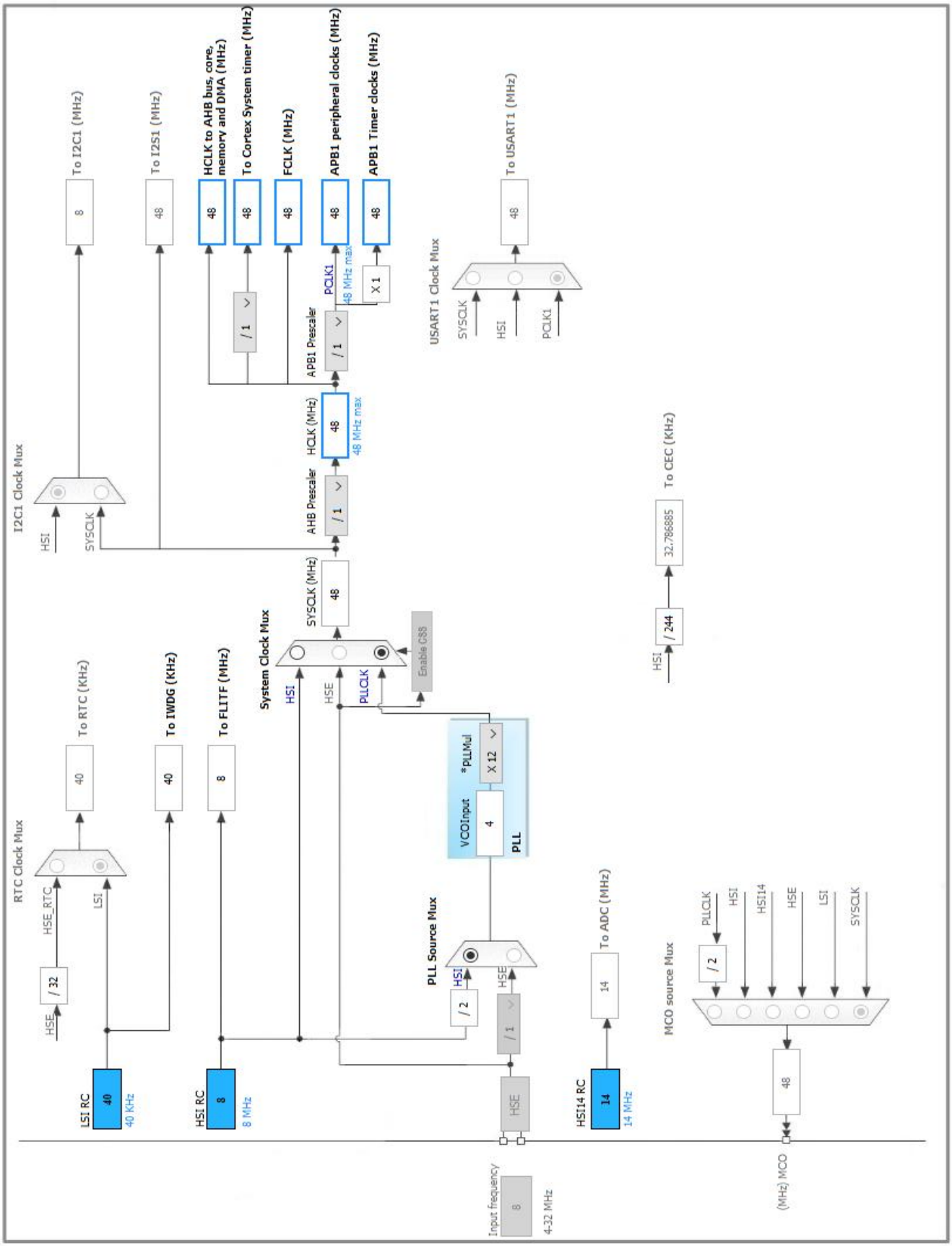


3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
4	NRST	Reset		
5	VDDA	Power		
8	PA2	I/O	USART2_TX	ONEWIRE
9	PA3 *	I/O	GPIO_Output	LCD_CLK
10	PA4 *	I/O	GPIO_Output	LCD_SDA
11	PA5 *	I/O	GPIO_Output	LCD_CS
12	PA6 *	I/O	GPIO_Output	LCD_RST
13	PA7	I/O	TIM3_CH2	LCD_PWM
16	VSS	Power		
17	VDD	Power		
18	PA8	I/O	TIM1_CH1	TRIAC_OUT
19	PA9	I/O	GPIO_EXTI9	ZC_IN
23	PA13	I/O	SYS_SWDIO	
24	PA14	I/O	SYS_SWCLK	
25	PA15 *	I/O	GPIO_Input	BUT_PLUS
26	PB3 *	I/O	GPIO_Input	BUT_MINUS
31	BOOT0	Boot		
32	VSS	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. IWDG

mode: Activated

5.1.1. Parameter Settings:

Watchdog Clocking:

IWDG counter clock prescaler	4
IWDG window value	4095
IWDG down-counter reload value	4095

5.2. SYS

mode: Debug Serial Wire

Timebase Source: SysTick

5.3. TIM1

Clock Source : Internal Clock

Channel1: PWM Generation CH1

5.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**48 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**11000 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 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	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

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 1:

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

5.4. TIM3

mode: Clock Source

Channel2: PWM Generation CH2

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**48 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**256 ***
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	Reset (UG bit from TIMx_EGR)

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 2:

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

5.5. USART2

Mode: Single Wire (Half-Duplex)

5.5.1. Parameter Settings:

Basic Parameters:

Baud Rate	38400
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

5.6. FREERTOS

mode: Enabled

5.6.1. Config parameters:

Versions:

FreeRTOS version	9.0.0
CMSIS-RTOS version	1.02

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	7
MINIMAL_STACK_SIZE	128
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Disabled
USE_COUNTING_SEMAPHORES	Disabled
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

Memory management settings:

Memory Allocation	Dynamic
TOTAL_HEAP_SIZE	**5000 ***
Memory Management scheme	heap_4

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	Disabled
USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Disabled

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	3
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	3

5.6.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Disabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Disabled

xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Disabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Disabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Disabled
xTaskAbortDelay	Disabled
xTaskGetHandle	Disabled

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
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	TRIAC_OUT
TIM3	PA7	TIM3_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	LCD_PWM
USART2	PA2	USART2_TX	Alternate Function Open Drain	Pull-up	**High ***	ONEWIRE
GPIO	PA3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_CLK
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_SDA
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_CS
	PA6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_RST
	PA9	GPIO_EXTI9	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	ZC_IN
	PA15	GPIO_Input	Input mode	**Pull-up ***	n/a	BUT_PLUS
	PB3	GPIO_Input	Input mode	**Pull-up ***	n/a	BUT_MINUS

6.2. DMA configuration

DMA request	Stream	Direction	Priority
USART2_RX	DMA1_Channel5	Peripheral To Memory	Low
USART2_TX	DMA1_Channel4	Memory To Peripheral	Low

USART2_RX: DMA1_Channel5 DMA request Settings:

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

USART2_TX: DMA1_Channel4 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	3	0
System tick timer	true	3	0
EXTI line 4 to 15 interrupts	true	3	0
DMA1 channel 4 and 5 interrupts	true	3	0
PVD interrupt through EXTI Line16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break, update, trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM3 global interrupt	unused		
USART2 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x1
MCU	STM32F051K8Tx
Datasheet	022265_Rev7

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	floorctrl
Project Folder	C:\Users\User\Documents\floor_ctrl\FW
Toolchain / IDE	EWARM
Firmware Package Name and Version	STM32Cube FW_F0 V1.9.0

8.2. 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

9. Software Pack Report