1. Description

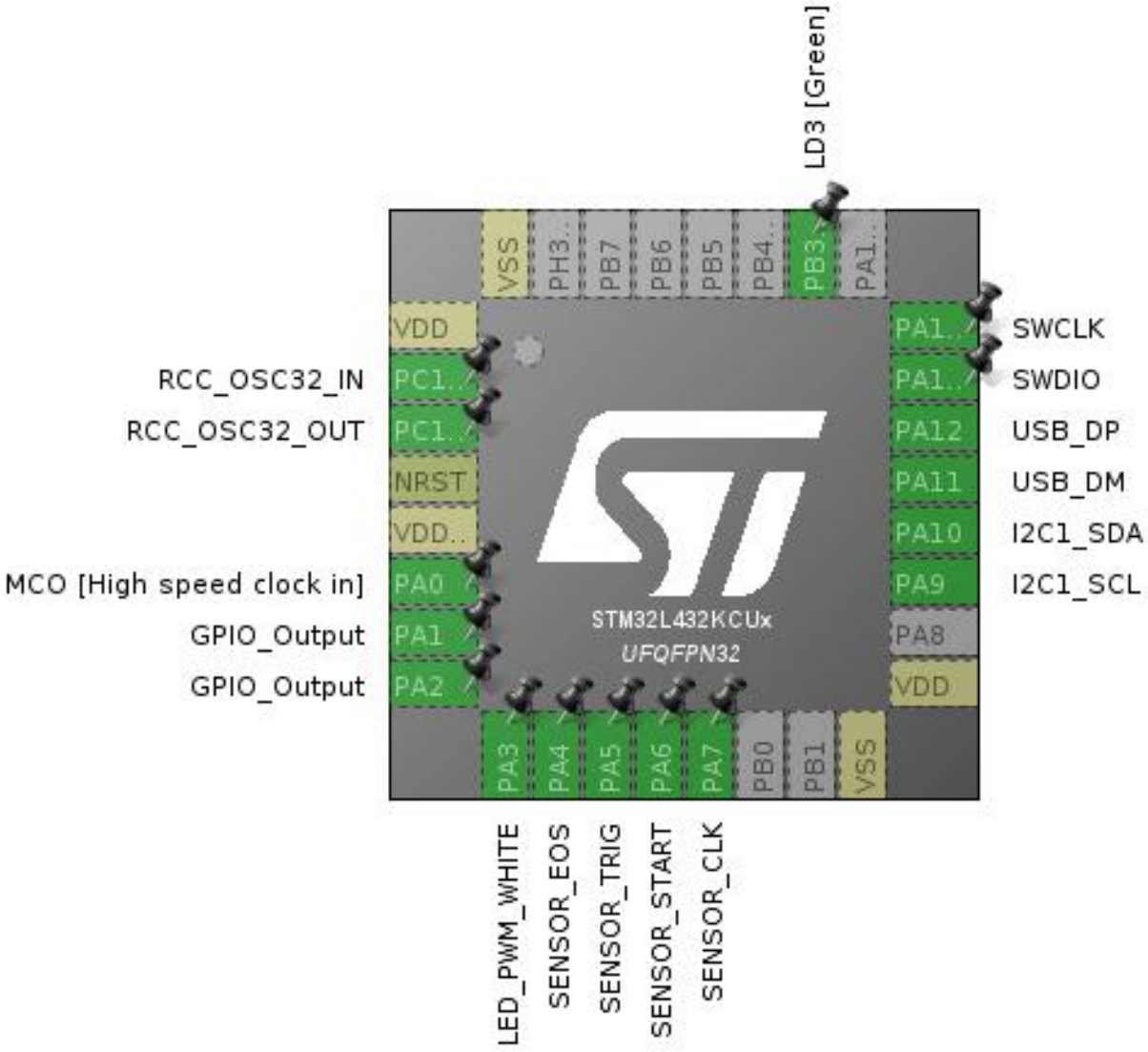
1.1. Project

Project Name	firmware
Board Name	NUCLEO-L432KC
Generated with:	STM32CubeMX 4.25.1
Date	06/20/2018

1.2. MCU

MCU Series	STM32L4
MCU Line	STM32L4x2
MCU name	STM32L432KCUx
MCU Package	UFQFPN32
MCU Pin number	32

2. Pinout Configuration

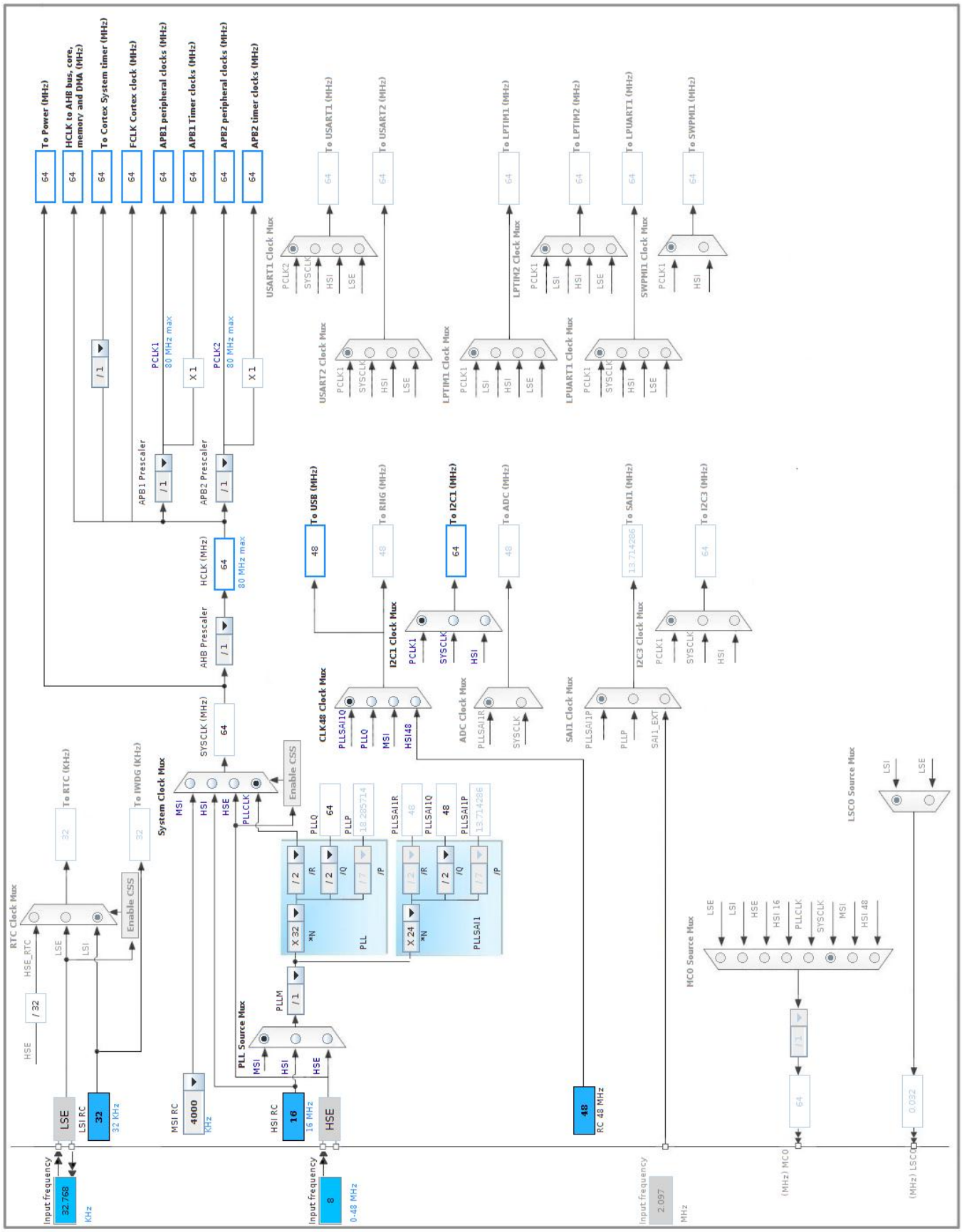


3. Pins Configuration

Pin Number UFQFPN32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PC14-OSC32_IN (PC14)	I/O	RCC_OSC32_IN	
3	PC15-OSC32_OUT (PC15)	I/O	RCC_OSC32_OUT	
4	NRST	Reset		
5	VDDA/VREF+	Power		
6	PA0	I/O	RCC_CK_IN	MCO [High speed clock in]
7	PA1 *	I/O	GPIO_Output	
8	PA2 *	I/O	GPIO_Output	
9	PA3	I/O	TIM2_CH4	LED_PWM_WHITE
10	PA4 *	I/O	GPIO_Input	SENSOR_EOS
11	PA5	I/O	GPIO_EXTI5	SENSOR_TRIG
12	PA6 *	I/O	GPIO_Output	SENSOR_START
13	PA7	I/O	TIM1_CH1N	SENSOR_CLK
16	VSS	Power		
17	VDD	Power		
19	PA9	I/O	I2C1_SCL	
20	PA10	I/O	I2C1_SDA	
21	PA11	I/O	USB_DM	
22	PA12	I/O	USB_DP	
23	PA13 (JTMS-SWDIO)	I/O	SYS_JTMS-SWDIO	SWDIO
24	PA14 (JTCK-SWCLK)	I/O	SYS_JTCK-SWCLK	SWCLK
26	PB3 (JTDO-TRACESWO) *	I/O	GPIO_Output	LD3 [Green]
32	VSS	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. I2C1

I2C: I2C

5.1.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	**Fast Mode Plus ***
I2C Speed Frequency (KHz)	1000
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x00300B29 ***

Slave Features:

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

5.2. RCC

mode: High Speed Clock (HSE)

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.2.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	3 WS (4 CPU cycle)

RCC Parameters:

HSI Calibration Value	16

MSI Calibration Value	0
MSI Auto Calibration	Enabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
LSE Drive Capability	LSE oscillator low drive capability

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

5.3. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.4. TIM1

Clock Source : Internal Clock

Channel1: PWM Generation CH1N

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**640-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**125-1 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

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)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0
BRK Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable

Break And Dead Time management - BRK2 Configuration:

BRK2 State	Disable
BRK2 Polarity	High
BRK2 Filter (4 bits value)	0
BRK2 Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable

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 1N:

Mode	PWM mode 1
Pulse (16 bits value)	**63-1 ***
Fast Mode	Disable
CHN Polarity	High
CHN Idle State	Reset

5.5. TIM2

Clock Source : Internal Clock

Channel4: PWM Generation CH4

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**32-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	**4096-1 ***
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	Reset (UG bit from TIMx_EGR)

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 4:

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

5.6. USB

mode: Device (FS)

5.6.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Endpoint 0 Max Packet size	64 Bytes
Physical interface	Internal Phy
Sof Enable	Disabled

Power Parameters:

Low Power	**Enabled ***
Link Power Management	Disabled
Battery Charging	Disabled

5.7. USB_DEVICE

Class For FS IP: Communication Device Class (Virtual Port Com)

5.7.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SUPPORT_USER_STRING (Enable user string descriptor)	Disabled
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message
USBD_LPM_ENABLED (Link Power Management)	1: Link Power Management supported

Class Parameters:

USB CDC Rx Buffer Size	1000
USB CDC Tx Buffer Size	1000

5.7.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	**0x7331 ***
LANGID_STRING (Language Identifier)	**German (Standard) ***
MANUFACTURER_STRING (Manufacturer Identifier)	**Dr. Green ***

Device Descriptor FS:

PID (Product IDentifier)	**0x1337 ***
PRODUCT_STRING (Product Identifier)	**VIS Specrometer ***
SERIALNUMBER_STRING (Serial number)	**000000000001 ***
CONFIGURATION_STRING (Configuration Identifier)	CDC Config
INTERFACE_STRING (Interface Identifier)	**Serial Interface ***

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PA9	I2C1_SCL	Alternate Function Open Drain	Pull-up	**Very High ***	
	PA10	I2C1_SDA	Alternate Function Open Drain	Pull-up	**Very High ***	
RCC	PC14-OSC32_IN (PC14)	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT (PC15)	RCC_OSC32_OUT	n/a	n/a	n/a	
	PA0	RCC_CK_IN	n/a	n/a	n/a	MCO [High speed clock in]
SYS	PA13 (JTMS-SWDIO)	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14 (JTCK-SWCLK)	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
TIM1	PA7	TIM1_CH1N	Alternate Function Push Pull	No pull-up and no pull-down	Low	SENSOR_CLK
TIM2	PA3	TIM2_CH4	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	LED_PWM_WHITE
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PA1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SENSOR_EOS
	PA5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	SENSOR_TRIG
	PA6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SENSOR_START
	PB3 (JTDO-TRACESWO)	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Green]

6.2. DMA configuration

nothing configured in DMA service

6.3. 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
Prefetch 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
EXTI line[9:5] interrupts	true	0	0
USB event interrupt through EXTI line 17	true	0	0
PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break interrupt and TIM15 global interrupt	unused		
TIM1 update interrupt and TIM16 global interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM2 global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
FPU global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32L4
Line	STM32L4x2
MCU	STM32L432KCUx
Datasheet	028798_Rev2

7.2. Parameter Selection

Temperature	25
Vdd	null

8. Software Pack Report

9. Software Project

9.1. Project Settings

Name	Value
Project Name	firmware
Project Folder	/home/harry/Dokumente/Development/Private/migration/drgreen/c12800ma-
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_L4 V1.11.0

9.2. 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