1. Description

1.1. Project

Project Name	STM32L011
Board Name	NUCLEO-L011K4
Generated with:	STM32CubeMX 5.4.0
Date	12/10/2019

1.2. MCU

MCU Series	STM32L0
MCU Line	STM32L0x1
MCU name	STM32L011K4Tx
MCU Package	LQFP32
MCU Pin number	32

2. Pinout Configuration
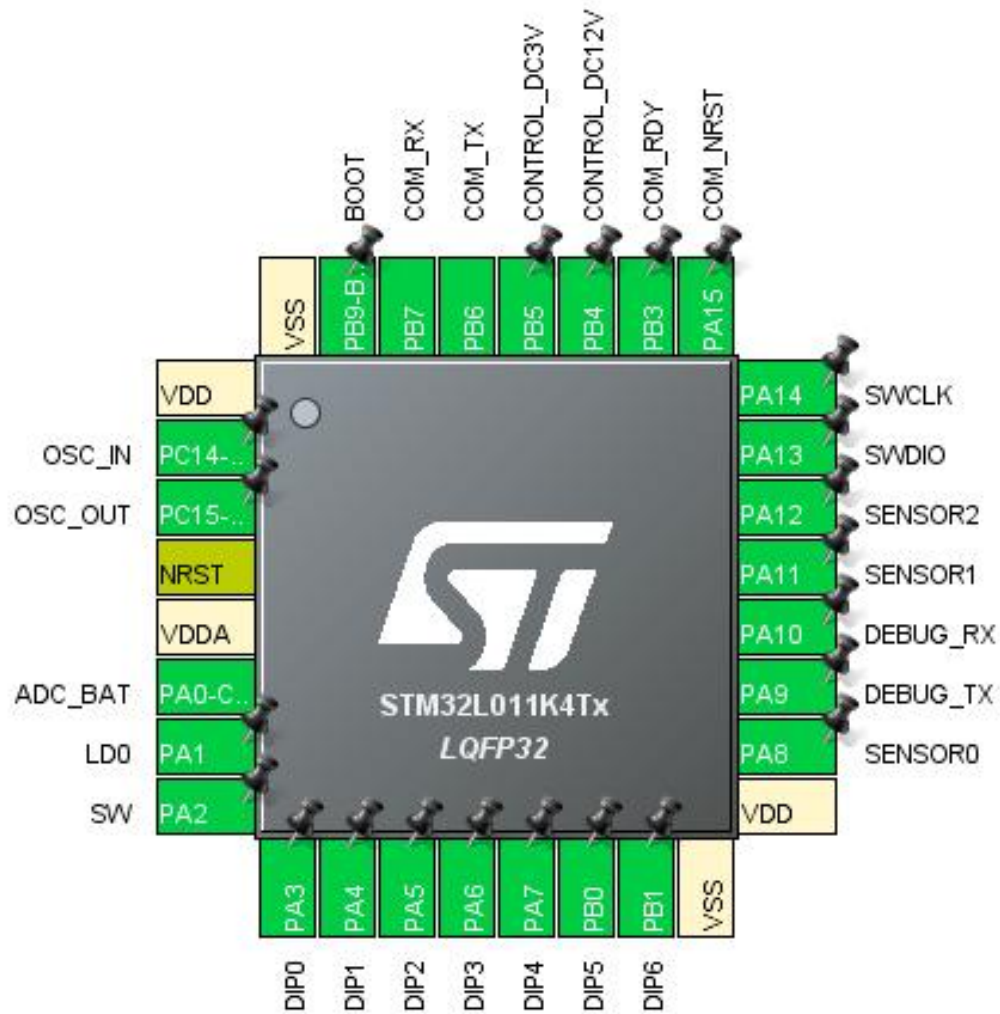
3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PC14-OSC32_IN	I/O	RCC_OSC32_IN	OSC_IN
3	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	OSC_OUT
4	NRST	Reset		
5	VDDA	Power		
6	PA0-CK_IN	I/O	ADC_IN0	ADC_BAT
7	PA1 *	I/O	GPIO_Output	LD0
8	PA2 *	I/O	GPIO_Input	SW
9	PA3 *	I/O	GPIO_Input	DIP0
10	PA4 *	I/O	GPIO_Input	DIP1
11	PA5 *	I/O	GPIO_Input	DIP2
12	PA6 *	I/O	GPIO_Input	DIP3
13	PA7 *	I/O	GPIO_Input	DIP4
14	PB0 *	I/O	GPIO_Input	DIP5
15	PB1 *	I/O	GPIO_Input	DIP6
16	VSS	Power		
17	VDD	Power		
18	PA8 *	I/O	GPIO_Input	SENSOR0
19	PA9	I/O	USART2_TX	DEBUG_TX
20	PA10	I/O	USART2_RX	DEBUG_RX
21	PA11 *	I/O	GPIO_Input	SENSOR1
22	PA12 *	I/O	GPIO_Input	SENSOR2
23	PA13	I/O	SYS_SWDIO	SWDIO
24	PA14	I/O	SYS_SWCLK	SWCLK
25	PA15 *	I/O	GPIO_Input	COM_NRST
26	PB3 *	I/O	GPIO_Input	COM_RDY
27	PB4 *	I/O	GPIO_Output	CONTROL_DC12V
28	PB5 *	I/O	GPIO_Output	CONTROL_DC3V
29	PB6	I/O	LPUART1_TX	COM_TX
30	PB7	I/O	LPUART1_RX	COM_RX
31	PB9-BOOT0 *	I/O	GPIO_Input	BOOT
32	VSS	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration
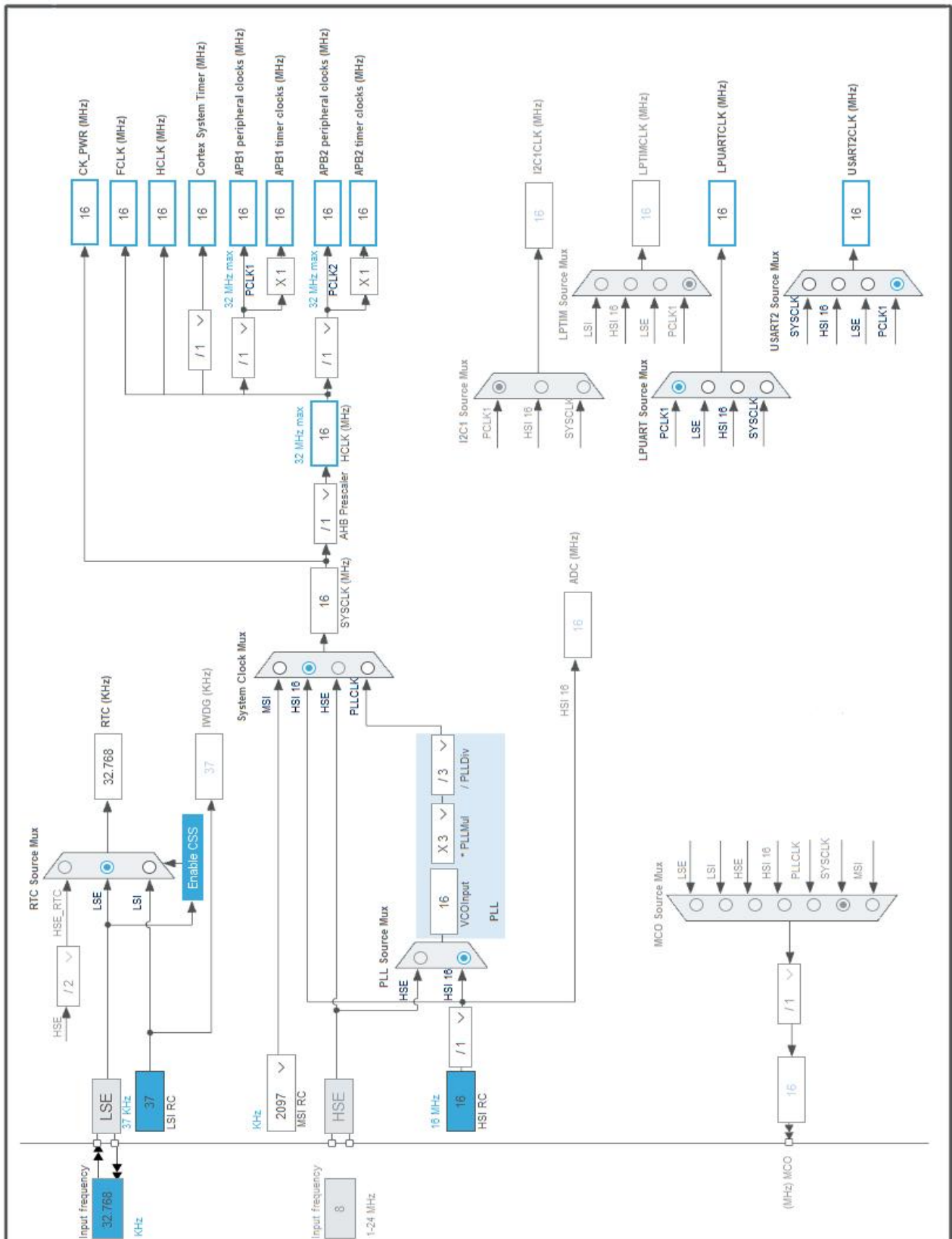
5. Software Project

5.1. Project Settings

Name	Value
Project Name	STM32L011
Project Folder	G:\ \CloudStation\Alba\DW1903_LowPowerSensingBoard\SRC\STM32L011K4
Toolchain / IDE	EWARM V8.32
Firmware Package Name and Version	STM32Cube FW_L0 V1.11.2

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	Yes
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	STM32L0
Line	STM32L0x1
MCU	STM32L011K4Tx
Datasheet	027973_Rev4

6.2. Parameter Selection

Temperature	25
Vdd	3.0

7. IPs and Middleware Configuration

7.1. ADC

mode: IN0

7.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Synchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Direction	Forward
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Low Power Auto Wait	Disabled
Low Frequency Mode	Disabled
Auto Off	Disabled
Oversampling Mode	Disabled

ADC_Regular_ConversionMode:

Sampling Time	1.5 Cycles
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None

WatchDog:

Enable Analog WatchDog Mode	false

7.2. GPIO

7.3. LPUART1

Mode: Asynchronous

7.3.1. Parameter Settings:

Basic Parameters:

Baud Rate	**115200 ***
Word Length	7 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
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

7.4. RCC

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.4.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Buffer Cache	Enabled
Prefetch	Disabled
Preread	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
MSI Calibration Value	0
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

7.5. RTC

mode: Activate Clock Source

WakeUp: Internal WakeUp

7.5.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	127
Synchronous Predivider value	255

Wake UP:

Wake Up Clock	RTCCLK / 16
Wake Up Counter	0

7.6. SYS

mode: Debug Serial Wire
Timebase Source: SysTick

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
ADC	PA0-CK_IN	ADC_IN0	Analog mode	No pull-up and no pull-down	n/a	ADC_BAT
LPUART1	PB6	LPUART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	COM_TX
	PB7	LPUART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	COM_RX
RCC	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	OSC_IN
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	OSC_OUT
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_SWCLK	n/a	n/a	n/a	SWCLK
USART2	PA9	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	DEBUG_TX
	PA10	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	DEBUG_RX
GPIO	PA1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD0
	PA2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SW
	PA3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIP0
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIP1
	PA5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIP2
	PA6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIP3
	PA7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIP4
	PB0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIP5
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIP6
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SENSOR0
	PA11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SENSOR1
	PA12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SENSOR2
	PA15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	COM_NRST
	PB3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	COM_RDY
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CONTROL_DC12V
	PB5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CONTROL_DC3V
	PB9-BOOT0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BOOT

8.2. DMA configuration

DMA request	Stream	Direction	Priority
LPUART1_RX	DMA1_Channel3	Peripheral To Memory	Low
USART2_RX	DMA1_Channel5	Peripheral To Memory	Low

LPUART1_RX: DMA1_Channel3 DMA request Settings:

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

USART2_RX: DMA1_Channel5 DMA request Settings:

Mode:	**Circular** *
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
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 channel 3 interrupts	true	0	0
DMA1 channel 4 and channel 5 interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
RTC global interrupt through EXTI lines 17, 19 and 20 and LSE CSS interrupt through EXTI line 19	unused		
Flash and EEPROM global interrupt	unused		
RCC global interrupt	unused		
ADC, COMP1 and COMP2 interrupts (COMP interrupts through EXTI lines 21 and 22)	unused		
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26	unused		
LPUART1 global interrupt / LPUART1 wake-up interrupt through EXTI line 28	unused		

* User modified value

9. Software Pack Report