1. Description

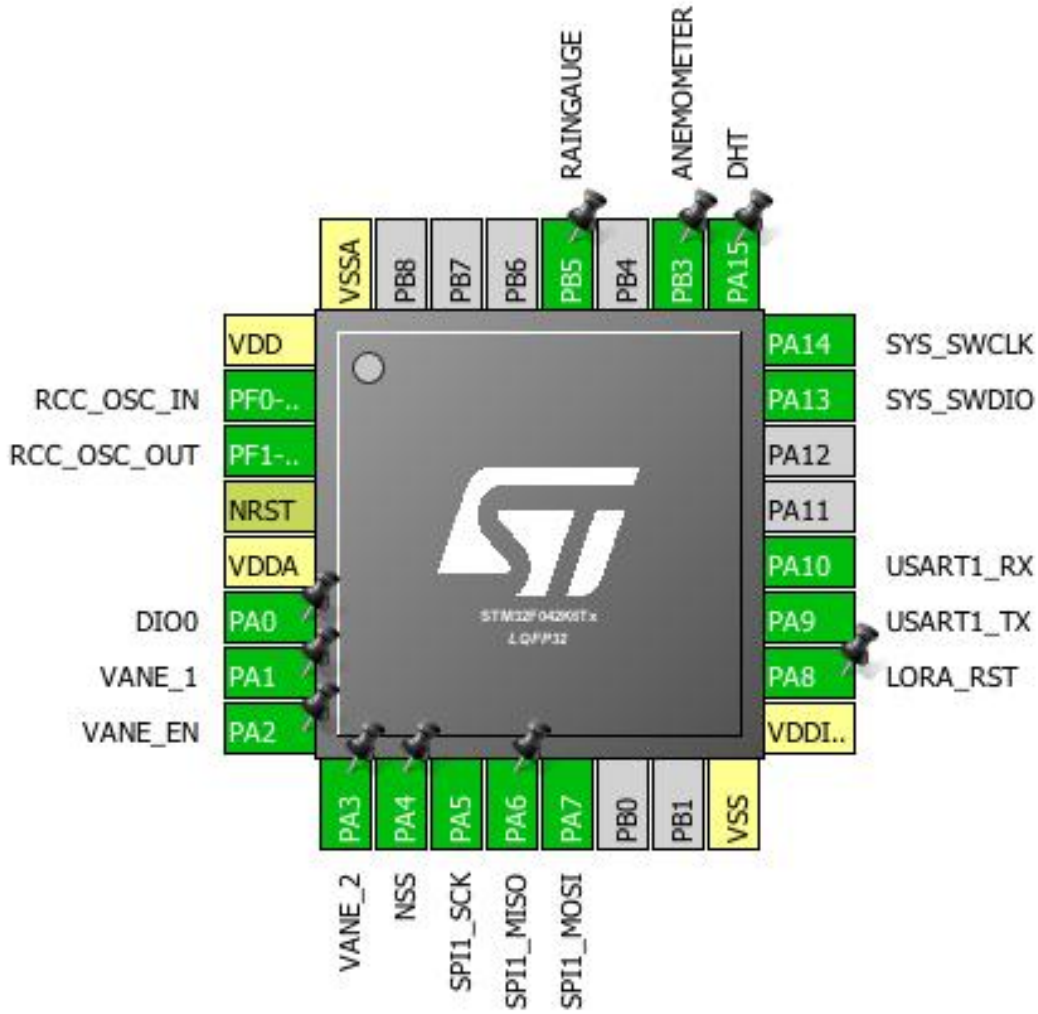
1.1. Project

Project Name	Weather_Station_Remote
Board Name	Weather_Station_Remote
Generated with:	STM32CubeMX 4.26.0
Date	08/04/2018

1.2. MCU

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

2. Pinout Configuration

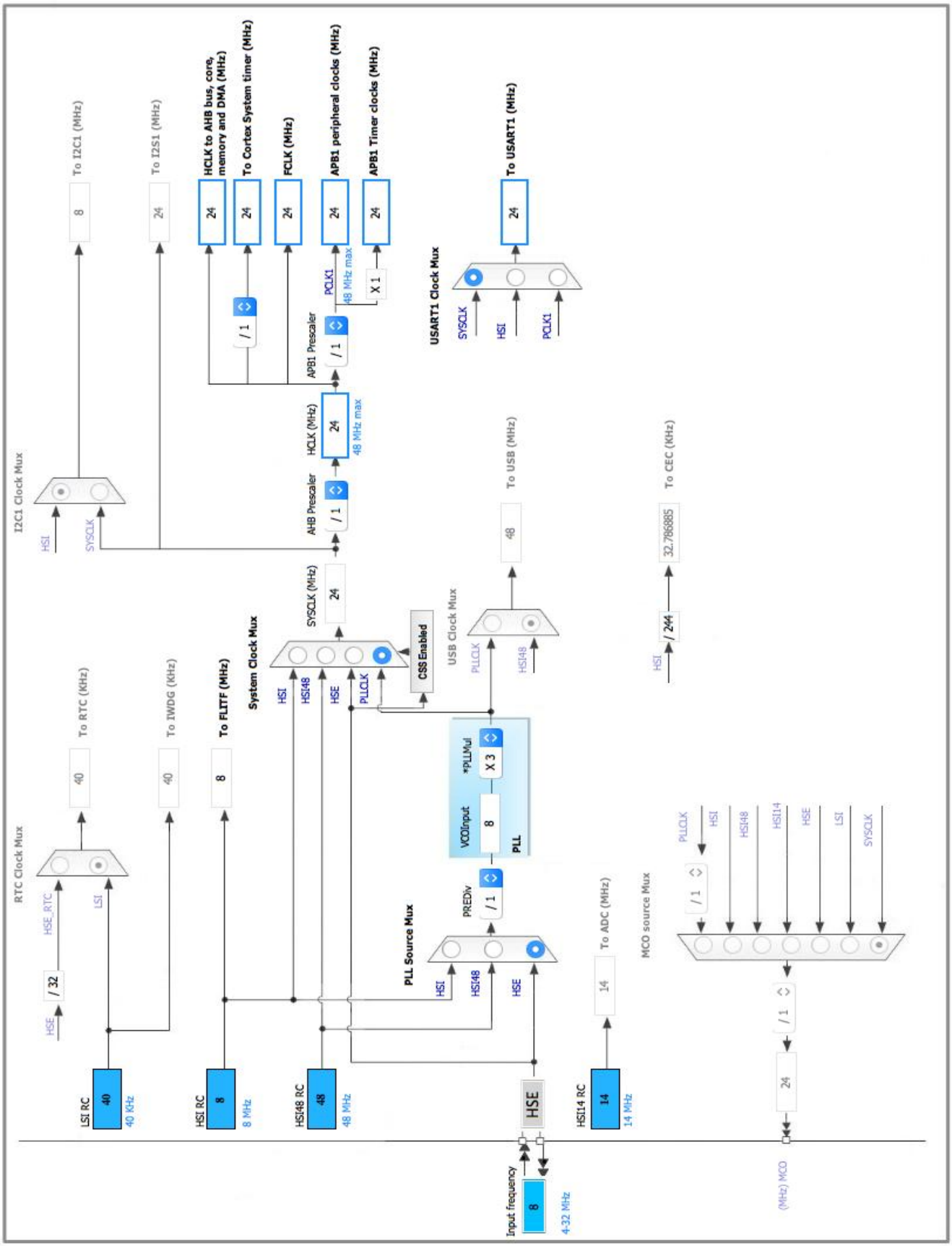


3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PF0-OSC_IN	I/O	RCC_OSC_IN	
3	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
4	NRST	Reset		
5	VDDA	Power		
6	PA0	I/O	GPIO_EXTI0	DIO0
7	PA1	I/O	ADC_IN1	VANE_1
8	PA2 *	I/O	GPIO_Output	VANE_EN
9	PA3	I/O	ADC_IN3	VANE_2
10	PA4 *	I/O	GPIO_Output	NSS
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	GPIO_Output	LORA_RST
19	PA9	I/O	USART1_TX	
20	PA10	I/O	USART1_RX	
23	PA13	I/O	SYS_SWDIO	
24	PA14	I/O	SYS_SWCLK	
25	PA15 *	I/O	GPIO_Input	DHT
26	PB3	I/O	TIM2_CH2	ANEMOMETER
28	PB5	I/O	GPIO_EXTI5	RAINGAUGE
32	VSSA	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC

mode: IN1

mode: IN3

mode: Vrefint Channel

5.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	**Synchronous clock mode divided by 4 ***
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Conversion Mode	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 Power Auto Power Off	Disabled

ADC_Regular_ConversionMode:

Sampling Time	**239.5 Cycles ***
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None

WatchDog:

Enable Analog WatchDog Mode	false

5.2. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.2.1. Parameter Settings:

System Parameters:

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

RCC Parameters:

HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

5.3. SPI1

Mode: Full-Duplex Master

5.3.1. Parameter Settings:

Basic Parameters:

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

Clock Parameters:

Prescaler (for Baud Rate)	**4 ***
Baud Rate	**6.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

5.4. SYS

mode: Debug Serial Wire

Timebase Source: SysTick

5.5. TIM2

Clock Source : Internal Clock

Channel2: Input Capture direct mode

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**24999 ***
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	**4999 ***
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)

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	**15 ***

5.6. TIM14

mode: Activated

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**23999 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**60000 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

5.7. TIM17

mode: Activated

5.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**23 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**0xffff ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	**Enable ***

5.8. USART1

Mode: Asynchronous

5.8.1. 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:

Auto Baudrate	Disable
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**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC	PA1	ADC_IN1	Analog mode	No pull-up and no pull-down	n/a	VANE_1
	PA3	ADC_IN3	Analog mode	No pull-up and no pull-down	n/a	VANE_2
RCC	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PF1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
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 ***	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14	SYS_SWCLK	n/a	n/a	n/a	
TIM2	PB3	TIM2_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	ANEMOMETER
USART1	PA9	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA10	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
GPIO	PA0	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	DIO0
	PA2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	VANE_EN
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NSS
	PA8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LORA_RST
	PA15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DHT
	PB5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	RAINGAUGE

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
System service call via SWI instruction	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
EXTI line 4 to 15 interrupts	true	0	0
TIM2 global interrupt	true	0	0
TIM14 global interrupt	true	0	0
PVD and VDDIO2 supply comparator interrupts through EXTI lines 16 and 31	unused		
Flash global interrupt	unused		
RCC and CRS global interrupts	unused		
EXTI line 0 and 1 interrupts	unused		
ADC interrupt	unused		
TIM17 global interrupt	unused		
SPI1 global interrupt	unused		
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x2
MCU	STM32F042K6Tx
Datasheet	025832_Rev5

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Pack Report

9. Software Project

9.1. Project Settings

Name	Value
Project Name	Weather_Station_Remote
Project Folder	/Users/fadhlika/Repos/Weather-Station-Remote
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_F0 V1.9.0

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	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)	Yes