

1. Description

1.1. Project

Project Name	poot
Board Name	poot
Generated with:	STM32CubeMX 4.14.0
Date	05/20/2016

1.2. MCU

MCU Series	STM32F0
MCU Line	STM32F0x0 Value Line
MCU name	STM32F030R8Tx
MCU Package	LQFP64
MCU Pin number	64

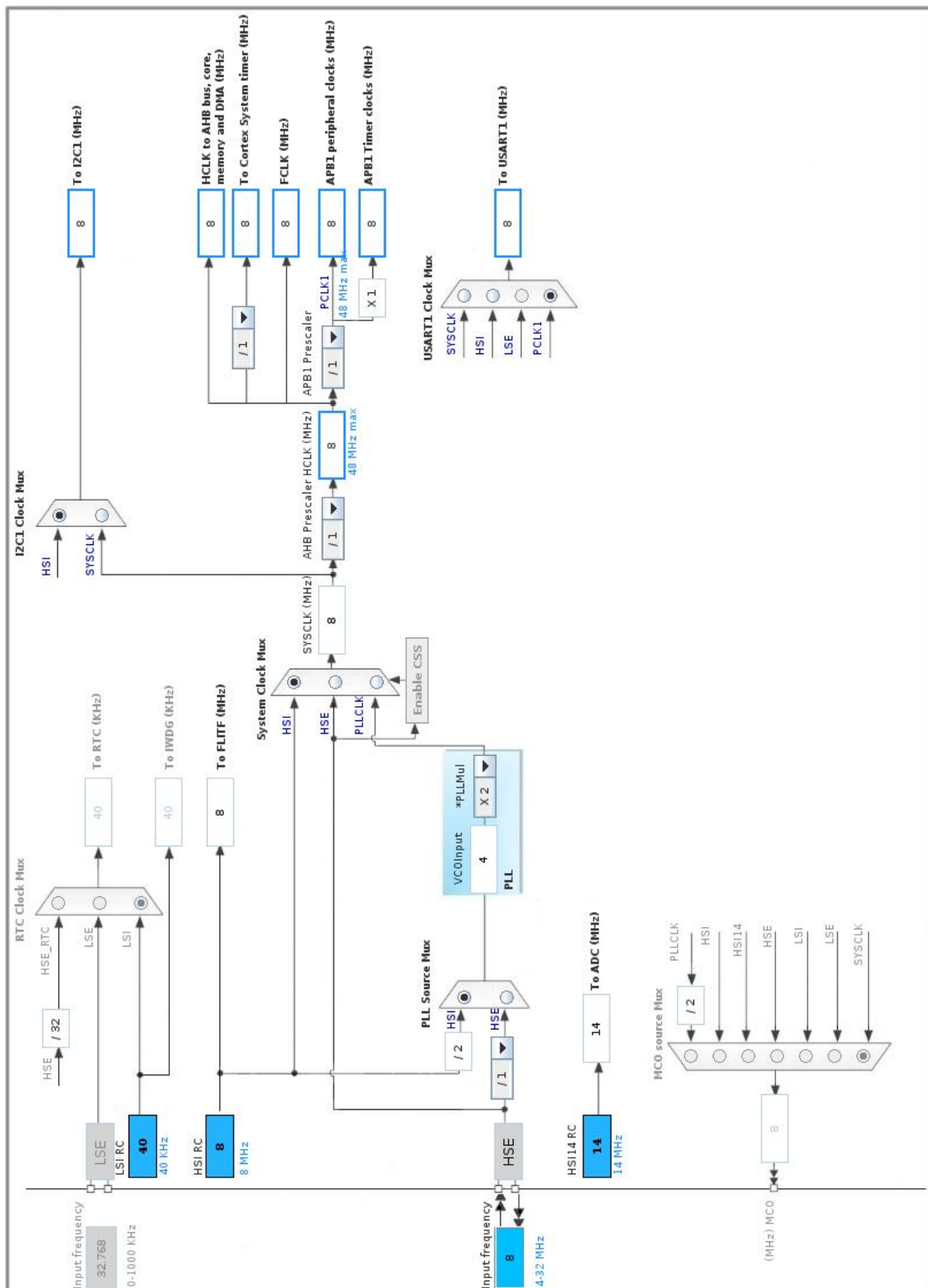
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
5	PF0-OSC_IN	I/O	RCC_OSC_IN	
6	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	PC0	I/O	ADC_IN10	hal_1 (ADC_IN10)
9	PC1	I/O	ADC_IN11	hal_2 (ADC_IN11)
10	PC2	I/O	ADC_IN12	hal_3 (ADC_IN12)
11	PC3	I/O	ADC_IN13	id_resistor (ADC_IN13)
12	VSSA	Power		
13	VDDA	Power		
14	PA0 *	I/O	GPIO_Output	leg_sense
15	PA1 *	I/O	GPIO_Output	wheel_sense
16	PA2	I/O	TIM15_CH1	fan_1_drive (TIM15_CH1)
17	PA3	I/O	TIM15_CH2	fan_2_drive (TIM15_CH2)
19	PF5 *	I/O	GPIO_Input	leg_actuate
20	PA4	I/O	ADC_IN4	v_motor_l (ADC_IN4)
21	PA5	I/O	ADC_IN5	v_motor_r (ADC_IN5)
22	PA6	I/O	TIM3_CH1	relative_encoder_A (TIM3_CH1)
23	PA7	I/O	TIM1_CH1N	h_bridge_ll (TIM1_CH1N)
24	PC4	I/O	ADC_IN14	v_batt (ADC_IN14)
25	PC5	I/O	ADC_IN15	motor_current (ADC_IN15)
26	PB0	I/O	TIM1_CH2N	h_bridge_rl (TIM1_CH2N)
27	PB1 *	I/O	GPIO_Input	motor_current_fault
29	PB10	I/O	I2C2_SCL	internal_SCL (I2C2_SCL)
30	PB11	I/O	I2C2_SDA	internal_SDA (I2C2_SDA)
31	VSS	Power		
32	VDD	Power		
38	PC7	I/O	TIM3_CH2	relative_encoder_B (TIM3_CH2)
41	PA8	I/O	TIM1_CH1	h_brdige_lh (TIM1_CH1)
42	PA9	I/O	TIM1_CH2	h_bridge_rh (TIM1_CH2)
43	PA10	I/O	USART1_RX	
46	PA13	I/O	SYS_SWDIO	
49	PA14	I/O	SYS_SWCLK	
58	PB6	I/O	USART1_TX	

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
59	PB7	I/O	I2C1_SDA	zebrobus_SDA (I2C1_SDA)
60	BOOT0	Boot		
61	PB8	I/O	I2C1_SCL	zebrobus_SCL (I2C1_SCL)
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC

mode: IN4

mode: IN5

mode: IN10

mode: IN11

mode: IN12

mode: IN13

mode: IN14

mode: IN15

5.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Asynchronous clock mode
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	1.5 Cycles
External Trigger Conversion Edge	None

WatchDog:

Enable Analog WatchDog Mode	false
-----------------------------	-------

5.2. I2C1

I2C: I2C

5.2.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x2000090E

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

5.3. I2C2

mode: I2C

5.3.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x2000090E

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

5.4. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.4.1. Parameter Settings:

System Parameters:

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

RCC Parameters:

HSI Calibration Value	16
HSI14 Calibration Value	16

5.5. SYS

mode: Serial-WireDebug

Timebase Source: SysTick

5.6. TIM1

Clock Source : Internal Clock

Channel1: PWM Generation CH1 CH1N

Channel2: PWM Generation CH2 CH2N

5.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
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
Dead Time	0

PWM Generation Channel 1 and 1N:

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

PWM Generation Channel 2 and 2N:

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

5.7. TIM3

Clock Source : Internal Clock

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

5.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

5.8. TIM15

mode: Clock Source

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

5.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves)
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

PWM Generation Channel 1:

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

CH Polarity	High
CH Idle State	Reset
PWM Generation Channel 2:	
Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

5.9. USART1

Mode: Asynchronous

5.9.1. 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:

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	PC0	ADC_IN10	Analog mode	No pull-up and no pull-down	n/a	hal_1 (ADC_IN10)
	PC1	ADC_IN11	Analog mode	No pull-up and no pull-down	n/a	hal_2 (ADC_IN11)
	PC2	ADC_IN12	Analog mode	No pull-up and no pull-down	n/a	hal_3 (ADC_IN12)
	PC3	ADC_IN13	Analog mode	No pull-up and no pull-down	n/a	id_resistor (ADC_IN13)
	PA4	ADC_IN4	Analog mode	No pull-up and no pull-down	n/a	v_motor_l (ADC_IN4)
	PA5	ADC_IN5	Analog mode	No pull-up and no pull-down	n/a	v_motor_r (ADC_IN5)
	PC4	ADC_IN14	Analog mode	No pull-up and no pull-down	n/a	v_batt (ADC_IN14)
	PC5	ADC_IN15	Analog mode	No pull-up and no pull-down	n/a	motor_current (ADC_IN15)
I2C1	PB7	I2C1_SDA	Alternate Function Open Drain	Pull-up	High *	zebrobus_SDA (I2C1_SDA)
	PB8	I2C1_SCL	Alternate Function Open Drain	Pull-up	High *	zebrobus_SCL (I2C1_SCL)
I2C2	PB10	I2C2_SCL	Alternate Function Open Drain	Pull-up	High *	internal_SCL (I2C2_SCL)
	PB11	I2C2_SDA	Alternate Function Open Drain	Pull-up	High *	internal_SDA (I2C2_SDA)
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	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14	SYS_SWCLK	n/a	n/a	n/a	
TIM1	PA7	TIM1_CH1N	Alternate Function Push Pull	No pull-up and no pull-down	Low	h_bridge_ll (TIM1_CH1N)
	PB0	TIM1_CH2N	Alternate Function Push Pull	No pull-up and no pull-down	Low	h_bridge_rl (TIM1_CH2N)
	PA8	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	h_brdige_lh (TIM1_CH1)
	PA9	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	h_bridge_rh (TIM1_CH2)
TIM3	PA6	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	relative_encoder_A (TIM3_CH1)
	PC7	TIM3_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	relative_encoder_B (TIM3_CH2)
TIM15	PA2	TIM15_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	fan_1_drive (TIM15_CH1)
	PA3	TIM15_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	fan_2_drive (TIM15_CH2)
USART1	PA10	USART1_RX	Alternate Function Push Pull	Pull-up	High *	
	PB6	USART1_TX	Alternate Function Push Pull	Pull-up	High *	
GPIO	PA0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	leg_sense
	PA1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	wheel_sense

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PF5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	leg_actuate
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	motor_current_fault

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 tick timer	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC global interrupt	unused		
TIM1 break, update, trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM3 global interrupt	unused		
TIM15 global interrupt	unused		
I2C1 global interrupt	unused		
I2C2 global interrupt	unused		
USART1 global interrupt	unused		

* User modified value

7. Power Plugin report

7.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x0 Value Line
MCU	STM32F030R8Tx
Datasheet	024849_Rev2

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	poot
Project Folder	/tmp/poot
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F0 V1.5.0

8.2. 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