1. Description

1.1. Project

Project Name	EEZ DIB DCM220 r2B8
Board Name	custom
Generated with:	STM32CubeMX 5.5.0
Date	01/31/2020

1.2. MCU

MCU Series	STM32F3
MCU Line	STM32F373
MCU name	STM32F373C8Tx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration
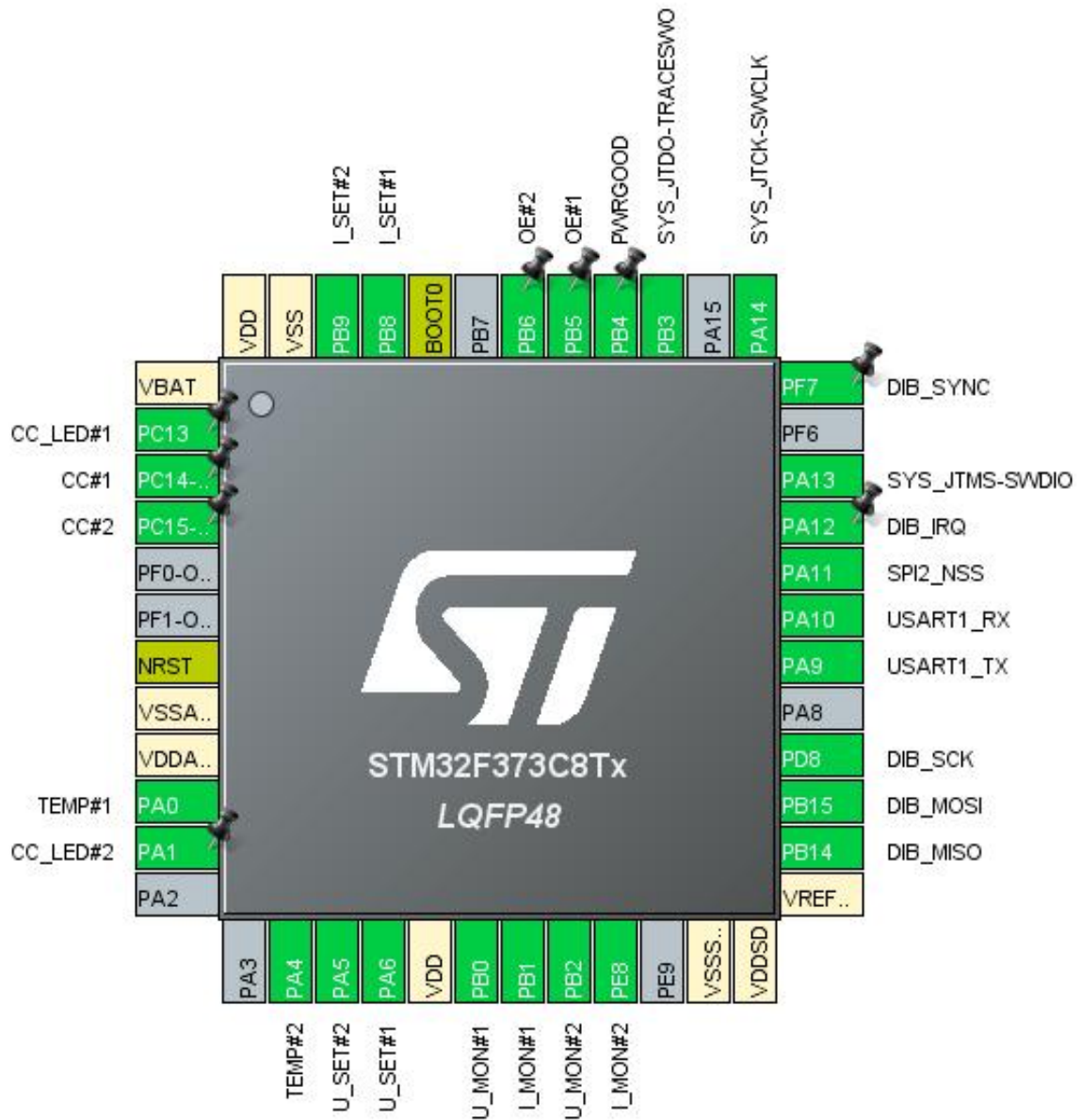
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13 *	I/O	GPIO_Output	CC_LED#1
3	PC14-OSC32_IN	I/O	GPIO_EXTI14	CC#1
4	PC15-OSC32_OUT	I/O	GPIO_EXTI15	CC#2
7	NRST	Reset		
8	VSSA/VREF-	Power		
9	VDDA/VREF+	Power		
10	PA0	I/O	ADC1_IN0	TEMP#1
11	PA1 *	I/O	GPIO_Output	CC_LED#2
14	PA4	I/O	ADC1_IN4	TEMP#2
15	PA5	I/O	DAC1_OUT2	U_SET#2
16	PA6	I/O	DAC2_OUT1	U_SET#1
17	VDD	Power		
18	PB0	I/O	SDADC1_AIN6P	U_MON#1
19	PB1	I/O	SDADC1_AIN5P	I_MON#1
20	PB2	I/O	SDADC1_AIN4P	U_MON#2
21	PE8	I/O	SDADC1_AIN8P	I_MON#2
23	VSSSD/VREFSD-	Power		
24	VDDSD	Power		
25	VREFSD+	Power		
26	PB14	I/O	SPI2_MISO	DIB_MISO
27	PB15	I/O	SPI2_MOSI	DIB_MOSI
28	PD8	I/O	SPI2_SCK	DIB_SCK
30	PA9	I/O	USART1_TX	
31	PA10	I/O	USART1_RX	
32	PA11	I/O	SPI2_NSS	
33	PA12 *	I/O	GPIO_Output	DIB_IRQ
34	PA13	I/O	SYS_JTMS-SWDIO	
36	PF7	I/O	GPIO_EXTI7	DIB_SYNC
37	PA14	I/O	SYS_JTCK-SWCLK	
39	PB3	I/O	SYS_JTDO-TRACESWO	
40	PB4	I/O	GPIO_EXTI4	PWRGOOD
41	PB5 *	I/O	GPIO_Output	OE#1
42	PB6 *	I/O	GPIO_Output	OE#2
44	BOOT0	Boot		
45	PB8	I/O	TIM16_CH1	I_SET#1

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
46	PB9	I/O	TIM17_CH1	I_SET#2
47	VSS	Power		
48	VDD	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	EEZ DIB DCM220 r2B8
Project Folder	/home/denis/BACKUP/EEZ/Digital control/MCU/STM32/Projects/EEZ DIB
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F3 V1.11.0

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	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

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F3
Line	STM32F373
MCU	STM32F373C8Tx
Datasheet	022691_Rev7

6.2. Parameter Selection

Temperature	25
Vdd	3.6

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN0

mode: IN4

mode: Temperature Sensor Channel

7.1.1. Parameter Settings:

ADC_Settings:

Data Alignment	Right alignment
Scan Conversion Mode	Enabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Number Of Conversion	**3 ***
External Trigger Conversion Source	Regular Conversion launched by software
<u>Rank</u>	1
Channel	Channel 0
Sampling Time	**239.5 Cycles ***
<u>Rank</u>	**2 ***
Channel	**Channel 4 ***
Sampling Time	**239.5 Cycles ***
<u>Rank</u>	**3 ***
Channel	**Channel Temperature Sensor ***
Sampling Time	**239.5 Cycles ***

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

7.2. CRC

mode: Activated

7.2.1. Parameter Settings:

Basic Parameters:

Default Polynomial State	Enable

Default Init Value State	Enable

Advanced Parameters:

Input Data Inversion Mode	None
Output Data Inversion Mode	Disable
Input Data Format	Bytes

7.3. DAC1

mode: OUT2 Configuration

7.3.1. Parameter Settings:

DAC Out2 Settings:

Output Buffer	Enable
Trigger	None

7.4. DAC2

mode: OUT1 Configuration

7.4.1. Parameter Settings:

DAC Out1 Settings:

Output Buffer	Enable
Trigger	None

7.5. GPIO

7.6. SDADC1

IN4: IN4-Single-Ended zero reference

IN5: IN5-Single-Ended zero reference

IN6: IN6-Single-Ended zero reference

IN8: IN8-Single-Ended zero reference

mode: Conversion Configuration 0

mode: Conversion Configuration 1

7.6.1. Parameter Settings:

General Settings:

Low Power Mode	None
Fast Conversion Mode	Disable
Slow Clock Mode	Disable
Reference Voltage	Forced externally using VREF pin

Conversion Configuration 0:

Input Mode	**Single-ended zero-volt reference mode ***
Gain	equal to 1
Common Mode	SDADC VSSA
Offset	0

Conversion Configuration 1:

Input Mode	**Single-ended zero-volt reference mode ***
Gain	**equal to 2 ***
Common Mode	SDADC VSSA
Offset	0

SDADC Regular Conversions Settings:

Enable Regular Conversion	Disable

SDADC Injected Conversions Settings:

Enable Injected Conversion	Disable

7.7. SPI2

Mode: Full-Duplex Slave
Hardware NSS Signal: Hardware NSS Input Signal
7.7.1. Parameter Settings:

Basic Parameters:

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

Clock Parameters:

Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Input Hardware

7.8. SYS

Debug: Trace Asynchronous Sw
Timebase Source: SysTick

7.9. TIM16

mode: Activated
Channel1: PWM Generation CH1
7.9.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1439 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

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
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

7.10. TIM17

mode: Activated

Channel1: PWM Generation CH1

7.10.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1439 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

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
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

7.11. USART1

Mode: Asynchronous

7.11.1. 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

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA0	ADC1_IN0	Analog mode	No pull up pull down	n/a	TEMP#1
	PA4	ADC1_IN4	Analog mode	No pull up pull down	n/a	TEMP#2
DAC1	PA5	DAC1_OUT2	Analog mode	No pull up pull down	n/a	U_SET#2
DAC2	PA6	DAC2_OUT1	Analog mode	No pull up pull down	n/a	U_SET#1
SDADC1	PB0	SDADC1_AIN6P	Analog mode	No pull up pull down	n/a	U_MON#1
	PB1	SDADC1_AIN5P	Analog mode	No pull up pull down	n/a	I_MON#1
	PB2	SDADC1_AIN4P	Analog mode	No pull up pull down	n/a	U_MON#2
	PE8	SDADC1_AIN8P	Analog mode	No pull up pull down	n/a	I_MON#2
SPI2	PB14	SPI2_MISO	Alternate Function Push Pull	No pull up pull down	**High ***	DIB_MISO
	PB15	SPI2_MOSI	Alternate Function Push Pull	No pull up pull down	**High ***	DIB_MOSI
	PD8	SPI2_SCK	Alternate Function Push Pull	No pull up pull down	**High ***	DIB_SCK
	PA11	SPI2_NSS	Alternate Function Push Pull	No pull up pull down	**High ***	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
	PB3	SYS_JTDO-TRACESWO	n/a	n/a	n/a	
TIM16	PB8	TIM16_CH1	Alternate Function Push Pull	No pull up pull down	Low	I_SET#1
TIM17	PB9	TIM17_CH1	Alternate Function Push Pull	No pull up pull down	Low	I_SET#2
USART1	PA9	USART1_TX	Alternate Function Push Pull	No pull up pull down	**High ***	
	PA10	USART1_RX	Alternate Function Push Pull	No pull up pull down	**High ***	
GPIO	PC13	GPIO_Output	Output Push Pull	No pull up pull down	Low	CC_LED#1
	PC14-OSC32_IN	GPIO_EXTI14	**External Interrupt Mode with Rising/Falling edge**	No pull up pull down	n/a	CC#1
	PC15-OSC32_OUT	GPIO_EXTI15	**External Interrupt Mode with Rising/Falling edge**	No pull up pull down	n/a	CC#2
	PA1	GPIO_Output	Output Push Pull	No pull up pull down	Low	CC_LED#2
	PA12	GPIO_Output	Output Push Pull	No pull up pull down	Low	DIB_IRQ
	PF7	GPIO_EXTI7	External Interrupt Mode with Rising edge trigger detection	No pull up pull down	n/a	DIB_SYNC
	PB4	GPIO_EXTI4	**External Interrupt Mode with**	**Pull-up ***	n/a	PWRGOOD

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
			Rising/Falling edge			
	PB5	GPIO_Output	Output Push Pull	No pull up pull down	Low	OE#1
	PB6	GPIO_Output	Output Push Pull	No pull up pull down	Low	OE#2

8.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA1_Channel1	Peripheral To Memory	Low
SPI2_RX	DMA1_Channel4	Peripheral To Memory	Low
SPI2_TX	DMA1_Channel5	Memory To Peripheral	Low

ADC1: DMA1_Channel1 DMA request Settings:

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

SPI2_RX: DMA1_Channel4 DMA request Settings:

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

SPI2_TX: DMA1_Channel5 DMA request Settings:

Mode:	Normal
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
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 line4 interrupt	true	0	0
DMA1 channel1 global interrupt	true	0	0
DMA1 channel4 global interrupt	true	0	0
DMA1 channel5 global interrupt	true	0	0
ADC1 interrupt	true	0	0
EXTI line[9:5] interrupts	true	0	0
EXTI line[15:10] interrupts	true	0	0
PVD interrupt through EXTI line16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM16 global interrupt	unused		
TIM17 global interrupt	unused		
TIM18 global interrupt and DAC2 underrun error interrupt	unused		
SPI2 global interrupt	unused		
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	unused		
TIM6 global interrupt and DAC1 underrun error interrupts	unused		
SDADC1 global interrupt	unused		
Floating point unit interrupt	unused		

* User modified value

9. Software Pack Report