

1. Description

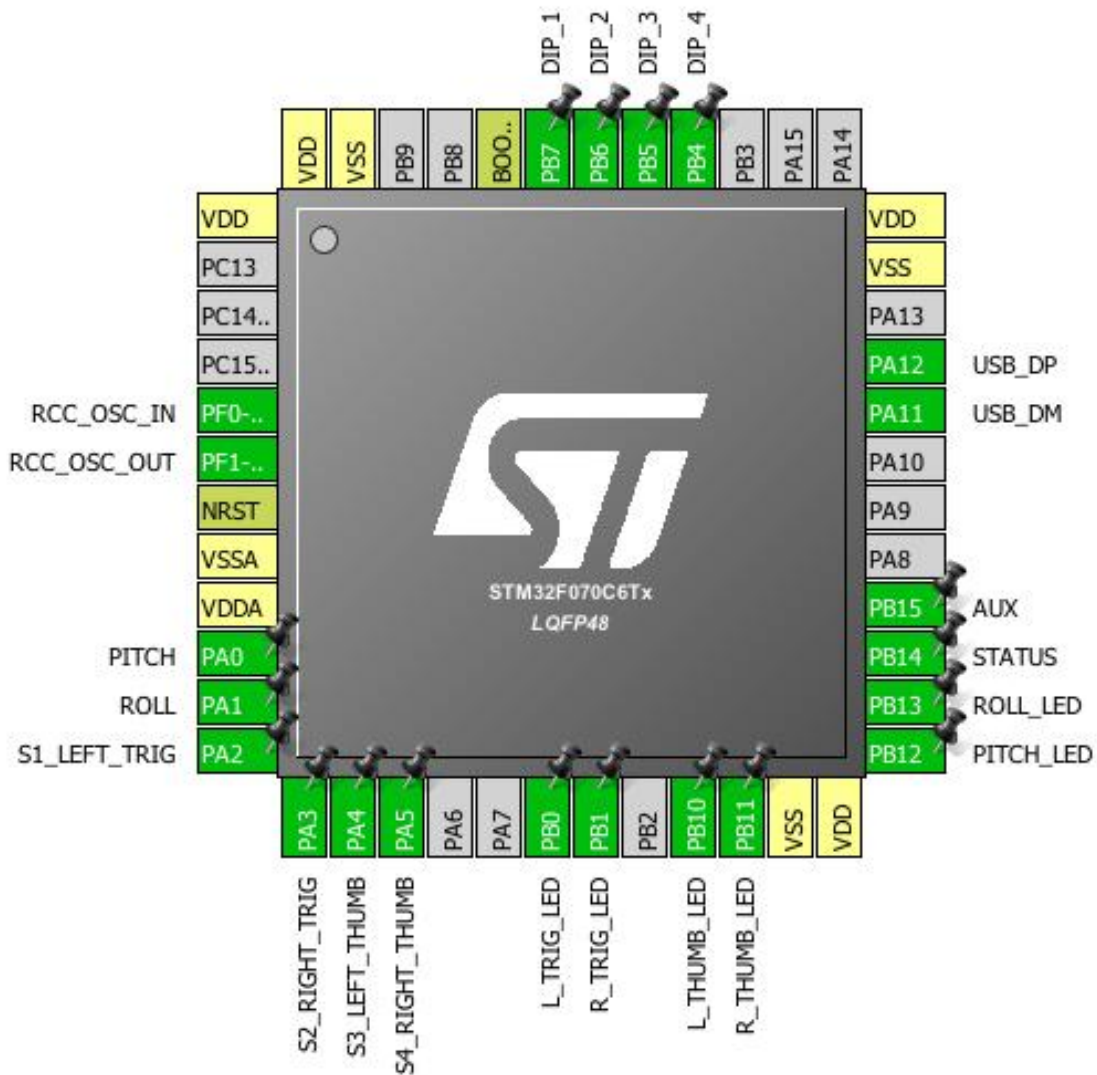
1.1. Project

Project Name	Atari_Yoke
Board Name	Atari_Yoke
Generated with:	STM32CubeMX 4.22.0
Date	12/30/2017

1.2. MCU

MCU Series	STM32F0
MCU Line	STM32F0x0 Value Line
MCU name	STM32F070C6Tx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration

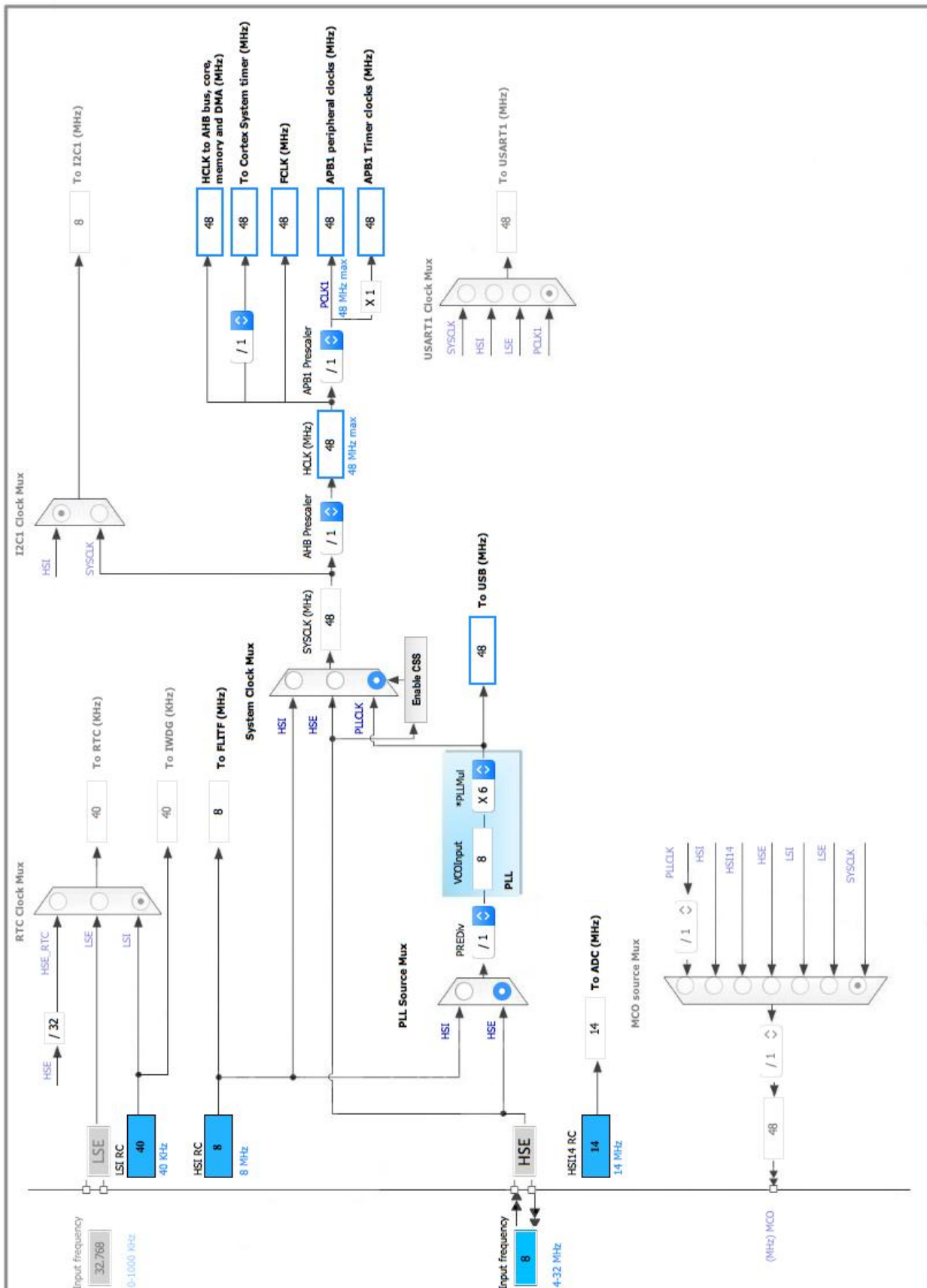


3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
5	PF0-OSC_IN	I/O	RCC_OSC_IN	
6	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0	I/O	GPIO_Analog, ADC_IN0	PITCH
11	PA1	I/O	GPIO_Analog, ADC_IN1	ROLL
12	PA2 *	I/O	GPIO_Input	S1_LEFT_TRIG
13	PA3 *	I/O	GPIO_Input	S2_RIGHT_TRIG
14	PA4 *	I/O	GPIO_Input	S3_LEFT_THUMB
15	PA5 *	I/O	GPIO_Input	S4_RIGHT_THUMB
18	PB0 *	I/O	GPIO_Output	L_TRIG_LED
19	PB1 *	I/O	GPIO_Output	R_TRIG_LED
21	PB10 *	I/O	GPIO_Output	L_THUMB_LED
22	PB11 *	I/O	GPIO_Output	R_THUMB_LED
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Output	PITCH_LED
26	PB13 *	I/O	GPIO_Output	ROLL_LED
27	PB14 *	I/O	GPIO_Output	STATUS
28	PB15 *	I/O	GPIO_Output	AUX
32	PA11	I/O	USB_DM	
33	PA12	I/O	USB_DP	
35	VSS	Power		
36	VDD	Power		
40	PB4 *	I/O	GPIO_Input	DIP_4
41	PB5 *	I/O	GPIO_Input	DIP_3
42	PB6 *	I/O	GPIO_Input	DIP_2
43	PB7 *	I/O	GPIO_Input	DIP_1
44	BOOT0	Boot		
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC

mode: IN0

mode: IN1

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	Enabled *
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Enabled *
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	28.5 Cycles *
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None

WatchDog:

Enable Analog WatchDog Mode	false
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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)	1 WS (2 CPU cycle)

RCC Parameters:

HSI14 Calibration Value	16
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

5.3. SYS

Timebase Source: SysTick

5.4. USB

mode: Device (FS)

5.4.1. Parameter Settings:

Basic Parameters:

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

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled

5.5. USB_DEVICE

Class For FS IP: Human Interface Device Class (HID)

5.5.1. 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)	Disabled *
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

5.5.2. Device Descriptor:

Device Descriptor:

VID (Vendor Identifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	STMicroelectronics

Device Descriptor FS:

PID (Product Identifier)	22315
PRODUCT_STRING (Product Identifier)	STM32 Human interface
SERIALNUMBER_STRING (Serial number)	00000000001A
CONFIGURATION_STRING (Configuration Identifier)	HID Config
INTERFACE_STRING (Interface Identifier)	HID 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
ADC	PA0	ADC_IN0	Analog mode	No pull-up and no pull-down	n/a	PITCH
	PA1	ADC_IN1	Analog mode	No pull-up and no pull-down	n/a	ROLL
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	
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PA0	GPIO_Analog	Analog mode	No pull-up and no pull-down	n/a	PITCH
	PA1	GPIO_Analog	Analog mode	No pull-up and no pull-down	n/a	ROLL
	PA2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S1_LEFT_TRIG
	PA3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S2_RIGHT_TRIG
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S3_LEFT_THUMB
	PA5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S4_RIGHT_THUMB
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	L_TRIG_LED
	PB1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	R_TRIG_LED
	PB10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	L_THUMB_LED
	PB11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	R_THUMB_LED
	PB12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PITCH_LED
	PB13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ROLL_LED
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	STATUS
	PB15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	AUX
	PB4	GPIO_Input	Input mode	Pull-up *	n/a	DIP_4
	PB5	GPIO_Input	Input mode	Pull-up *	n/a	DIP_3
	PB6	GPIO_Input	Input mode	Pull-up *	n/a	DIP_2
	PB7	GPIO_Input	Input mode	Pull-up *	n/a	DIP_1

6.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC	DMA1_Channel1	Peripheral To Memory	High *

ADC: DMA1_Channel1 DMA request Settings:

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

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
DMA1 channel 1 interrupt	true	0	0
USB global Interrupt / USB wake-up interrupt through EXTI line 18	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC interrupt	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x0 Value Line
MCU	STM32F070C6Tx
Datasheet	027114_Rev2

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	Atari_Yoke
Project Folder	/Users/mitchellbond/Documents/workspace/Atari_Yoke
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F0 V1.8.0

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