1. Description

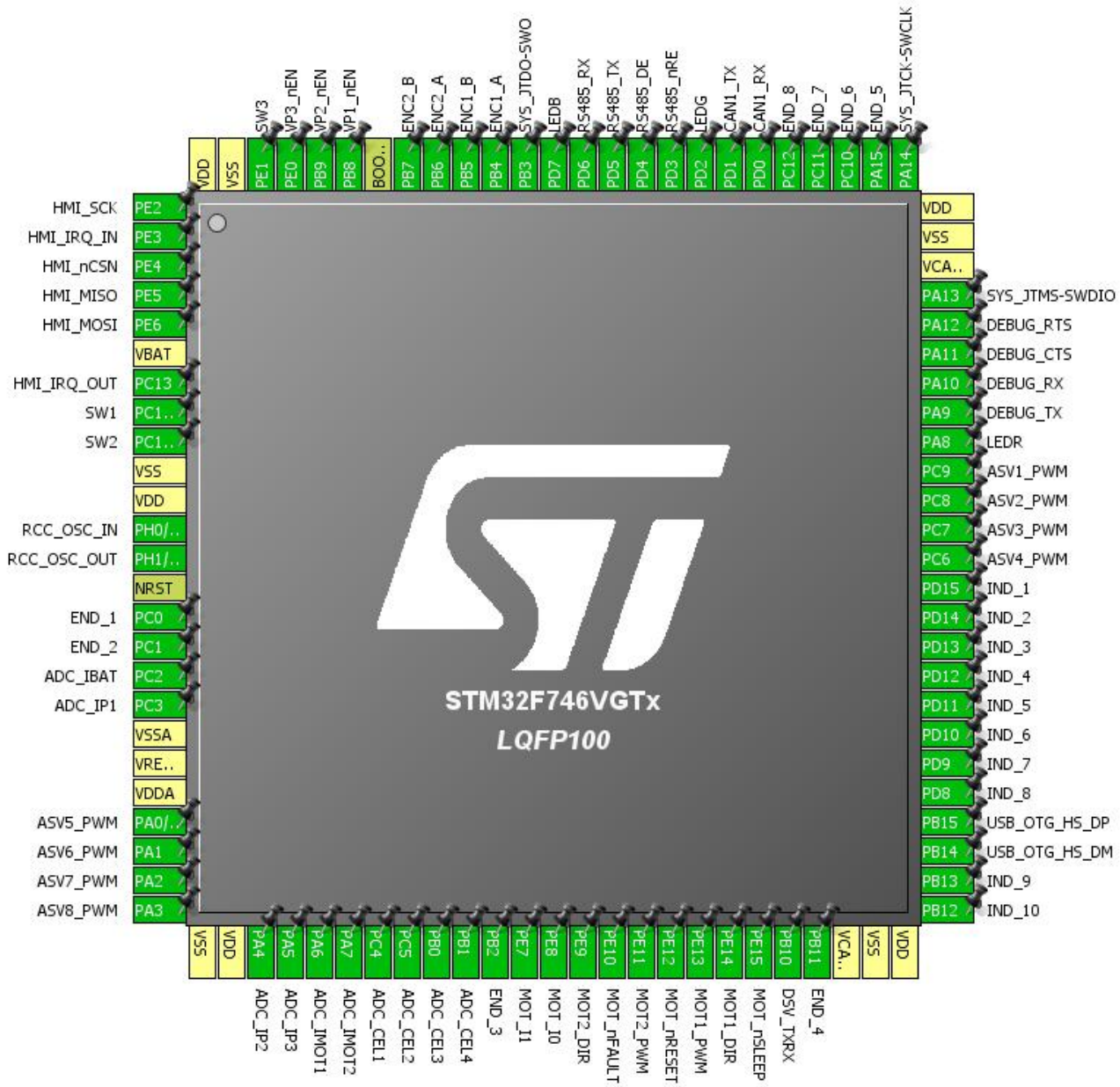
1.1. Project

Project Name	BlueBoard
Board Name	BlueBoard
Generated with:	STM32CubeMX 4.12.0
Date	01/02/2016

1.2. MCU

MCU Series	STM32F7
MCU Line	STM32F7x6
MCU name	STM32F746VGTx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



3. Pins Configuration

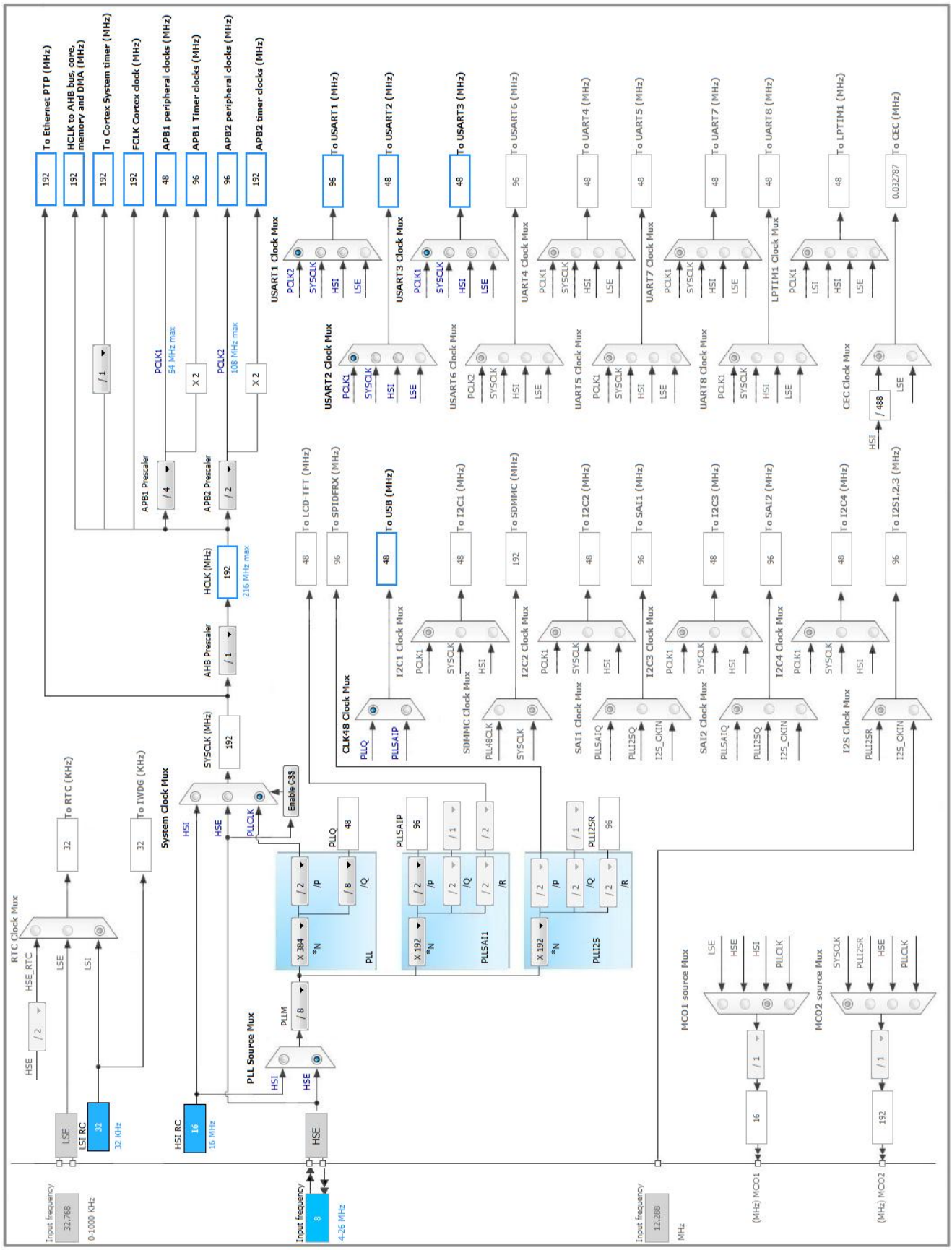
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2	I/O	SPI4_SCK	HMI_SCK
2	PE3 *	I/O	GPIO_Input	HMI_IRQ_IN
3	PE4	I/O	SPI4_NSS	HMI_nCSN
4	PE5	I/O	SPI4_MISO	HMI_MISO
5	PE6	I/O	SPI4_MOSI	HMI_MOSI
6	VBAT	Power		
7	PC13 *	I/O	GPIO_Output	HMI_IRQ_OUT
8	PC14/OSC32_IN *	I/O	GPIO_Input	SW1
9	PC15/OSC32_OUT *	I/O	GPIO_Input	SW2
10	VSS	Power		
11	VDD	Power		
12	PH0/OSC_IN	I/O	RCC_OSC_IN	
13	PH1/OSC_OUT	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Input	END_1
16	PC1 *	I/O	GPIO_Input	END_2
17	PC2	I/O	ADC1_IN12	ADC_IBAT
18	PC3	I/O	ADC1_IN13	ADC_IP1
19	VSSA	Power		
20	VREF+	Power		
21	VDDA	Power		
22	PA0/WKUP	I/O	TIM5_CH1	ASV5_PWM
23	PA1	I/O	TIM5_CH2	ASV6_PWM
24	PA2	I/O	TIM5_CH3	ASV7_PWM
25	PA3	I/O	TIM5_CH4	ASV8_PWM
26	VSS	Power		
27	VDD	Power		
28	PA4	I/O	ADC1_IN4	ADC_IP2
29	PA5	I/O	ADC1_IN5	ADC_IP3
30	PA6	I/O	ADC1_IN6	ADC_IMOT1
31	PA7	I/O	ADC1_IN7	ADC_IMOT2
32	PC4	I/O	ADC1_IN14	ADC_CEL1
33	PC5	I/O	ADC1_IN15	ADC_CEL2
34	PB0	I/O	ADC1_IN8	ADC_CEL3
35	PB1	I/O	ADC1_IN9	ADC_CEL4
36	PB2 *	I/O	GPIO_Input	END_3

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
37	PE7 *	I/O	GPIO_Output	MOT_I1
38	PE8 *	I/O	GPIO_Output	MOT_I0
39	PE9	I/O	TIM1_CH1	MOT2_DIR
40	PE10 *	I/O	GPIO_Input	MOT_nFAULT
41	PE11	I/O	TIM1_CH2	MOT2_PWM
42	PE12 *	I/O	GPIO_Output	MOT_nRESET
43	PE13	I/O	TIM1_CH3	MOT1_PWM
44	PE14	I/O	TIM1_CH4	MOT1_DIR
45	PE15 *	I/O	GPIO_Output	MOT_nSLEEP
46	PB10	I/O	USART3_TX	DSV_TXRX
47	PB11 *	I/O	GPIO_Input	END_4
48	VCAP_1	Power		
49	VSS	Power		
50	VDD	Power		
51	PB12 *	I/O	GPIO_Input	IND_10
52	PB13 *	I/O	GPIO_Input	IND_9
53	PB14	I/O	USB_OTG_HS_DM	
54	PB15	I/O	USB_OTG_HS_DP	
55	PD8 *	I/O	GPIO_Input	IND_8
56	PD9 *	I/O	GPIO_Input	IND_7
57	PD10 *	I/O	GPIO_Input	IND_6
58	PD11 *	I/O	GPIO_Input	IND_5
59	PD12 *	I/O	GPIO_Input	IND_4
60	PD13 *	I/O	GPIO_Input	IND_3
61	PD14 *	I/O	GPIO_Input	IND_2
62	PD15 *	I/O	GPIO_Input	IND_1
63	PC6	I/O	TIM8_CH1	ASV4_PWM
64	PC7	I/O	TIM8_CH2	ASV3_PWM
65	PC8	I/O	TIM8_CH3	ASV2_PWM
66	PC9	I/O	TIM8_CH4	ASV1_PWM
67	PA8 *	I/O	GPIO_Output	LEDR
68	PA9	I/O	USART1_TX	DEBUG_TX
69	PA10	I/O	USART1_RX	DEBUG_RX
70	PA11	I/O	USART1_CTS	DEBUG_CTS
71	PA12	I/O	USART1_RTS	DEBUG_RTS
72	PA13	I/O	SYS_JTMS-SWDIO	
73	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
76	PA14	I/O	SYS_JTCK-SWCLK	
77	PA15 *	I/O	GPIO_Input	END_5
78	PC10 *	I/O	GPIO_Input	END_6
79	PC11 *	I/O	GPIO_Input	END_7
80	PC12 *	I/O	GPIO_Input	END_8
81	PD0	I/O	CAN1_RX	
82	PD1	I/O	CAN1_TX	
83	PD2 *	I/O	GPIO_Output	LEDG
84	PD3 *	I/O	GPIO_Output	RS485_nRE
85	PD4 *	I/O	GPIO_Output	RS485_DE
86	PD5	I/O	USART2_TX	RS485_TX
87	PD6	I/O	USART2_RX	RS485_RX
88	PD7 *	I/O	GPIO_Output	LEDB
89	PB3	I/O	SYS_JTDO-SWO	
90	PB4	I/O	TIM3_CH1	ENC1_A
91	PB5	I/O	TIM3_CH2	ENC1_B
92	PB6	I/O	TIM4_CH1	ENC2_A
93	PB7	I/O	TIM4_CH2	ENC2_B
94	BOOT0	Boot		
95	PB8 *	I/O	GPIO_Output	VP1_nEN
96	PB9 *	I/O	GPIO_Output	VP2_nEN
97	PE0 *	I/O	GPIO_Output	VP3_nEN
98	PE1 *	I/O	GPIO_Input	SW3
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: IN4
mode: IN5
mode: IN6
mode: IN7
mode: IN8
mode: IN9
mode: IN12
mode: IN13
mode: IN14
mode: IN15

5.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Clock Prescaler	**PCLK2 divided by 8 ***
Resolution	12 bits (15 ADC Clock cycles)
Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	**EOC flag at the end of all conversions ***

ADC_Regular_ConversionMode:

Number Of Conversion	1
External Trigger Conversion Edge	None
Rank	1
Channel	Channel 4
Sampling Time	3 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.2. CAN1

mode: Mode

5.2.1. Parameter Settings:

Bit Timings Parameters:

Prescaler (for Time Quantum)	16
Time Quantum	**333.3333333333333 ***
Time Quanta in Bit Segment 1	**6 Times ***
Time Quanta in Bit Segment 2	**5 Times ***
Time for one Bit	**4000 ***
ReSynchronization Jump Width	**3 Times ***

Basic Parameters:

Time Triggered Communication Mode	Disable
Automatic Bus-Off Management	Disable
Automatic Wake-Up Mode	Disable
No-Automatic Retransmission	Disable
Receive Fifo Locked Mode	Disable
Transmit Fifo Priority	Disable

Advanced Parameters:

Operating Mode	Normal

5.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	6 WS (7 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled

Power Parameters:

Power Over Drive	Enabled

Power Regulatror Voltage Scale	Power Regulator Voltage Scale 1

5.4. SPI4

Mode: Full-Duplex Master

mode: Hardware NSS Signal

5.4.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	**16 Bits ***
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**256 ***
Baud Rate	**375.0 KBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Output Hardware

5.5. SYS

Debug: SWD and Asynchronous Trace

5.6. TIM1

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

Channel3: PWM Generation CH3

Channel4: PWM Generation CH4

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 - 16 bits value)	0

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)
Trigger Event Selection TRGO2	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0

Break And Dead Time management - BRK2 Configuration:

BRK2 State	Disable
BRK2 Polarity	High
BRK2 Filter (4 bits value)	0

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

Clear Input:

Clear Input Source	Disable

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

PWM Generation Channel 3:

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

PWM Generation Channel 4:

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

5.7. TIM3

Combined Channels: Encoder 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 TRGO	Reset (UG bit from TIMx_EGR)

Encoder:

Encoder Mode	Encoder Mode TI1
____ Parameters for Channel 1 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	0
____ Parameters for Channel 2 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	0

5.8. TIM4

Combined Channels: Encoder Mode

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

Trigger Output (TRGO) Parameters:

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

Encoder:

Encoder Mode	Encoder Mode TI1
____ Parameters for Channel 1 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	0
____ Parameters for Channel 2 ____	
Polarity	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter	0

5.9. TIM5

Channel1: PWM Generation CH1
Channel2: PWM Generation CH2
Channel3: PWM Generation CH3
Channel4: PWM Generation CH4

5.9.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 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 TRGO	Reset (UG bit from TIMx_EGR)

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (32 bits value)	0
Fast Mode	Disable
CH Polarity	High

5.10. TIM8

Trigger Source: ITR0
Clock Source : Internal Clock
Channel1: PWM Generation CH1
Channel2: PWM Generation CH2
Channel3: PWM Generation CH3
Channel4: PWM Generation CH4

5.10.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**192 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**9999 ***

Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 16 bits value)	0
Slave Mode Controller	Slave mode disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves
Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)
Trigger Event Selection TRGO2	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0

Break And Dead Time management - BRK2 Configuration:

BRK2 State	Disable
BRK2 Polarity	High
BRK2 Filter (4 bits value)	0

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

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	**999 ***
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	**1999 ***
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (16 bits value)	**4999 ***
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (16 bits value)	**7999 ***
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

5.11. USART1

Mode: Asynchronous

Hardware Flow Control (RS232): CTS/RTS

5.11.1. 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

5.12. USART2

Mode: Asynchronous

5.12.1. 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

5.13. USART3

Mode: Single Wire (Half-Duplex)

5.13.1. Parameter Settings:

Basic Parameters:

Baud Rate	**1000000 ***
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

5.14. USB_OTG_HS

Internal FS Phy: Device_Only

5.14.1. Parameter Settings:

Speed	Device Full Speed 12MBit/s
Endpoint 0 Max Packet size	64 Bytes
Enable internal IP DMA	Disabled
Physical interface	Internal Phy
Low power	Disabled
Link Power Management	Disabled
Use dedicated end point 1 interrupt	Disabled
VBUS sensing	Disabled

5.15. FREERTOS

mode: Enabled

5.15.1. Config parameters:

Versions:

CMSIS-RTOS version	1.02
FreeRTOS version	8.2.1

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	7
MINIMAL_STACK_SIZE	128
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled

USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Enabled
USE_COUNTING_SEMAPHORES	Enabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
TOTAL_HEAP_SIZE	15360
Memory Management scheme	heap_4
USE_ALTERNATIVE_API	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Disabled
USE_TICKLESS_IDLE	Disabled

Hook function related definitions:

USE_IDLE_HOOK	Disabled
USE_TICK_HOOK	Disabled
USE_MALLOC_FAILED_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Disabled

Run time and task stats gathering related definitions:

USE_TRACE_FACILITY	Enabled
GENERATE_RUN_TIME_STATS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Disabled
TIMER_TASK_PRIORITY	2
TIMER_QUEUE_LENGTH	10

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

5.15.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Disabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled

xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Disabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Disabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Disabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Disabled

5.16. USB_DEVICE

Class For HS IP: Communication Device Class (Virtual Port Com)

5.16.1. 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)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message
USBD_LPM_ENABLED (Link Power Management)	1: Link Power Management supported

Class Parameters:

USBD_CDC_INTERVAL (Number of micro-frames interval)	1000

5.16.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	**IGreBot ***

Device Descriptor HS:

PID (Product IDentifier)	22336
PRODUCT_STRING (Product Identifier)	**BlueBoard ***
SERIALNUMBER_STRING (Serial number)	00000000001A
CONFIGURATION_STRING (Configuration Identifier)	CDC Config
INTERFACE_STRING (Interface Identifier)	CDC 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
ADC1	PC2	ADC1_IN12	Analog mode	No pull-up and no pull-down	n/a	ADC_IBAT
	PC3	ADC1_IN13	Analog mode	No pull-up and no pull-down	n/a	ADC_IP1
	PA4	ADC1_IN4	Analog mode	No pull-up and no pull-down	n/a	ADC_IP2
	PA5	ADC1_IN5	Analog mode	No pull-up and no pull-down	n/a	ADC_IP3
	PA6	ADC1_IN6	Analog mode	No pull-up and no pull-down	n/a	ADC_IMOT1
	PA7	ADC1_IN7	Analog mode	No pull-up and no pull-down	n/a	ADC_IMOT2
	PC4	ADC1_IN14	Analog mode	No pull-up and no pull-down	n/a	ADC_CEL1
	PC5	ADC1_IN15	Analog mode	No pull-up and no pull-down	n/a	ADC_CEL2
	PB0	ADC1_IN8	Analog mode	No pull-up and no pull-down	n/a	ADC_CEL3
	PB1	ADC1_IN9	Analog mode	No pull-up and no pull-down	n/a	ADC_CEL4
CAN1	PD0	CAN1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PD1	CAN1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
RCC	PH0/OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1/OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI4	PE2	SPI4_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	HMI_SCK
	PE4	SPI4_NSS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	HMI_nCSN
	PE5	SPI4_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	HMI_MISO
	PE6	SPI4_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	HMI_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	
TIM1	PE9	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	MOT2_DIR
	PE11	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	MOT2_PWM
	PE13	TIM1_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	MOT1_PWM
	PE14	TIM1_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	MOT1_DIR
TIM3	PB4	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	ENC1_A
	PB5	TIM3_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	ENC1_B
TIM4	PB6	TIM4_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	ENC2_A
	PB7	TIM4_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	ENC2_B

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
TIM5	PA0/WKUP	TIM5_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV5_PWM
	PA1	TIM5_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV6_PWM
	PA2	TIM5_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV7_PWM
	PA3	TIM5_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV8_PWM
TIM8	PC6	TIM8_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV4_PWM
	PC7	TIM8_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV3_PWM
	PC8	TIM8_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV2_PWM
	PC9	TIM8_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASV1_PWM
USART1	PA9	USART1_TX	Alternate Function Push Pull	Pull-up	**High ***	DEBUG_TX
	PA10	USART1_RX	Alternate Function Push Pull	Pull-up	**High ***	DEBUG_RX
	PA11	USART1_CTS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	DEBUG_CTS
	PA12	USART1_RTS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	DEBUG_RTS
USART2	PD5	USART2_TX	Alternate Function Push Pull	Pull-up	**High ***	RS485_TX
	PD6	USART2_RX	Alternate Function Push Pull	Pull-up	**High ***	RS485_RX
USART3	PB10	USART3_TX	Alternate Function Open Drain	Pull-up	**High ***	DSV_TXRX
USB_OTG_HS	PB14	USB_OTG_HS_DM	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PB15	USB_OTG_HS_DP	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
GPIO	PE3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	HMI_IRQ_IN
	PC13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	HMI_IRQ_OUT
	PC14/OSC32_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SW1
	PC15/OSC32_OUT	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SW2
	PC0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_1
	PC1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_2
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_3
	PE7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_I1
	PE8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_I0
	PE10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	MOT_nFAULT
	PE12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_nRESET
	PE15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_nSLEEP
	PB11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_4
	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_10
	PB13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_9
	PD8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_8
	PD9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_7
	PD10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_6

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PD11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_5
	PD12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_4
	PD13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_3
	PD14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_2
	PD15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	IND_1
	PA8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LEDR
	PA15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_5
	PC10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_6
	PC11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_7
	PC12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	END_8
	PD2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LEDG
	PD3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RS485_nRE
	PD4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RS485_DE
	PD7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LEDB
	PB8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	VP1_nEN
	PB9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	VP2_nEN
	PE0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	VP3_nEN
	PE1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SW3

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
System tick timer	true	15	0
USB On The Go HS global interrupt	true	5	0
Hard fault interrupt	unused		
Memory management fault	unused		
Pre-fetch fault, memory access fault	unused		
Undefined instruction or illegal state	unused		
Debug monitor	unused		
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1, ADC2 and ADC3 global interrupts	unused		
CAN1 TX interrupts	unused		
CAN1 RX0 interrupts	unused		
CAN1 RX1 interrupt	unused		
CAN1 SCE interrupt	unused		
TIM1 break interrupt and TIM9 global interrupt	unused		
TIM1 update interrupt and TIM10 global interrupt	unused		
TIM1 trigger and commutation interrupts and TIM11 global interrupt	unused		
TIM1 capture compare interrupt	unused		
TIM3 global interrupt	unused		
TIM4 global interrupt	unused		
USART1 global interrupt	unused		
USART2 global interrupt	unused		
USART3 global interrupt	unused		
TIM8 break interrupt and TIM12 global interrupt	unused		
TIM8 update interrupt and TIM13 global interrupt	unused		
TIM8 trigger and commutation interrupts and TIM14 global interrupt	unused		
TIM8 capture compare interrupt	unused		
TIM5 global interrupt	unused		
USB On The Go HS End Point 1 Out global interrupt	unused		
USB On The Go HS End Point 1 In global interrupt	unused		
SPI4 global interrupt	unused		

*** User modified value**

7. Power Plugin report

7.1. Microcontroller Selection

Series	STM32F7
Line	STM32F7x6
MCU	STM32F746VGTx
Datasheet	027590_Rev1

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	BlueBoard
Project Folder	C:\Users\Paul\Documents\Work\Igrebot\SVN\trunk\Elec\2016\BlueBoard v1\ioc
Toolchain / IDE	TrueSTUDIO
Firmware Package Name and Version	STM32Cube FW_F7 V1.3.1

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy all used libraries into the project folder
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