1. Description

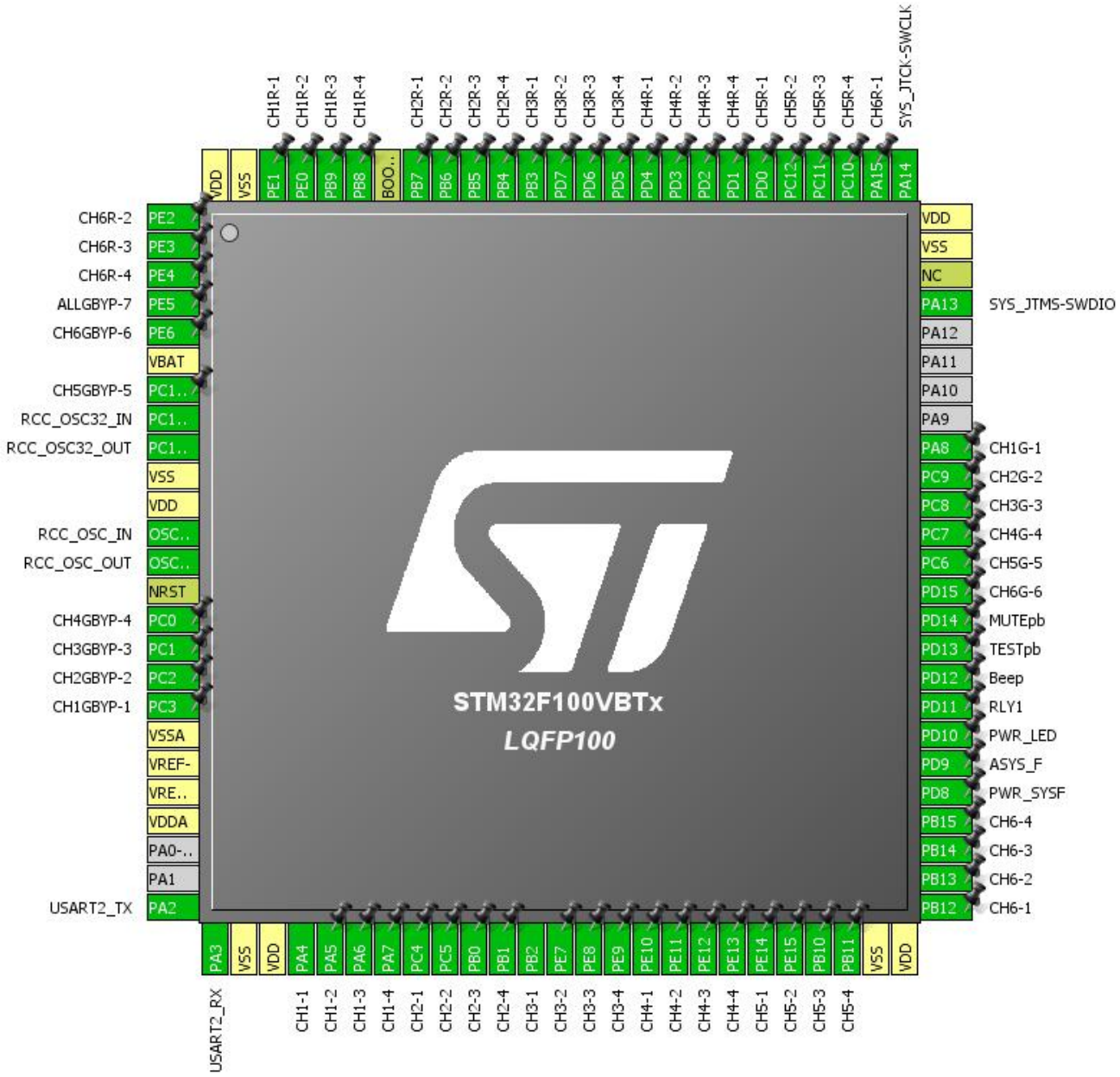
1.1. Project

Project Name	GAS_ALARM_BOARD
Board Name	GAS_ALARM_BOARD
Generated with:	STM32CubeMX 4.22.0
Date	08/21/2017

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F100 Value Line
MCU name	STM32F100VBTx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



3. Pins Configuration

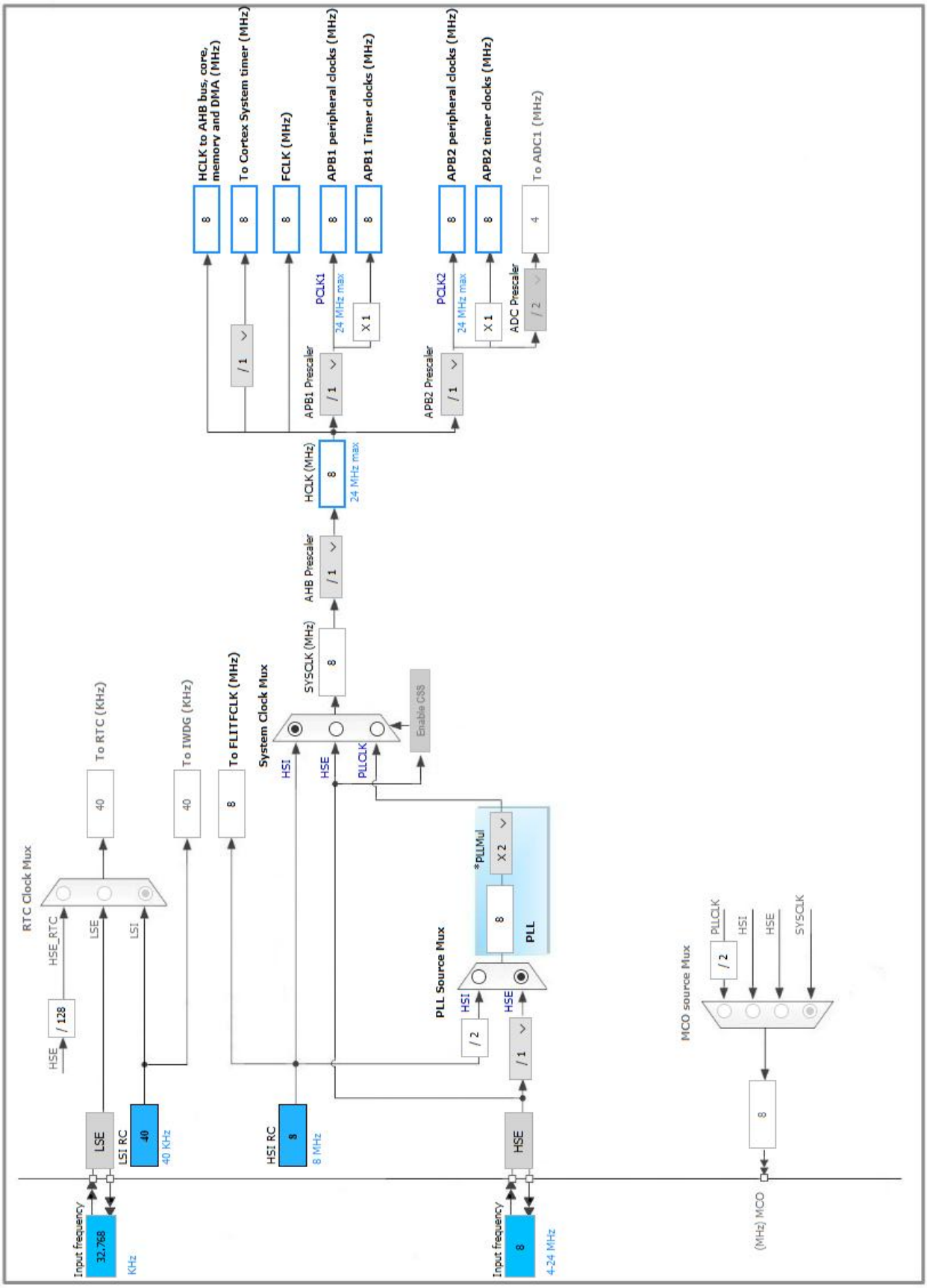
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Output	CH6R-2
2	PE3 *	I/O	GPIO_Output	CH6R-3
3	PE4 *	I/O	GPIO_Output	CH6R-4
4	PE5 *	I/O	GPIO_Output	ALLGBYP-7
5	PE6 *	I/O	GPIO_Output	CH6GBYP-6
6	VBAT	Power		
7	PC13-TAMPER-RTC *	I/O	GPIO_Output	CH5GBYP-5
8	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
9	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
10	VSS	Power		
11	VDD	Power		
12	OSC_IN	I/O	RCC_OSC_IN	
13	OSC_OUT	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Output	CH4GBYP-4
16	PC1 *	I/O	GPIO_Output	CH3GBYP-3
17	PC2 *	I/O	GPIO_Output	CH2GBYP-2
18	PC3 *	I/O	GPIO_Output	CH1GBYP-1
19	VSSA	Power		
20	VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
25	PA2	I/O	USART2_TX	
26	PA3	I/O	USART2_RX	
27	VSS	Power		
28	VDD	Power		
29	PA4 *	I/O	GPIO_Input	CH1-1
30	PA5 *	I/O	GPIO_Input	CH1-2
31	PA6 *	I/O	GPIO_Input	CH1-3
32	PA7 *	I/O	GPIO_Input	CH1-4
33	PC4 *	I/O	GPIO_Input	CH2-1
34	PC5 *	I/O	GPIO_Input	CH2-2
35	PB0 *	I/O	GPIO_Input	CH2-3
36	PB1 *	I/O	GPIO_Input	CH2-4
37	PB2 *	I/O	GPIO_Input	CH3-1
38	PE7 *	I/O	GPIO_Input	CH3-2

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
39	PE8 *	I/O	GPIO_Input	CH3-3
40	PE9 *	I/O	GPIO_Input	CH3-4
41	PE10 *	I/O	GPIO_Input	CH4-1
42	PE11 *	I/O	GPIO_Input	CH4-2
43	PE12 *	I/O	GPIO_Input	CH4-3
44	PE13 *	I/O	GPIO_Input	CH4-4
45	PE14 *	I/O	GPIO_Input	CH5-1
46	PE15 *	I/O	GPIO_Input	CH5-2
47	PB10 *	I/O	GPIO_Input	CH5-3
48	PB11 *	I/O	GPIO_Input	CH5-4
49	VSS	Power		
50	VDD	Power		
51	PB12 *	I/O	GPIO_Input	CH6-1
52	PB13 *	I/O	GPIO_Input	CH6-2
53	PB14 *	I/O	GPIO_Input	CH6-3
54	PB15 *	I/O	GPIO_Input	CH6-4
55	PD8 *	I/O	GPIO_Output	PWR_SYSF
56	PD9 *	I/O	GPIO_Output	ASYS_F
57	PD10 *	I/O	GPIO_Output	PWR_LED
58	PD11 *	I/O	GPIO_Output	RLY1
59	PD12 *	I/O	GPIO_Output	Beep
60	PD13 *	I/O	GPIO_Output	TESTpb
61	PD14 *	I/O	GPIO_Output	MUTEpb
62	PD15 *	I/O	GPIO_Output	CH6G-6
63	PC6 *	I/O	GPIO_Output	CH5G-5
64	PC7 *	I/O	GPIO_Output	CH4G-4
65	PC8 *	I/O	GPIO_Output	CH3G-3
66	PC9 *	I/O	GPIO_Output	CH2G-2
67	PA8 *	I/O	GPIO_Output	CH1G-1
72	PA13	I/O	SYS_JTMS-SWDIO	
73	NC	NC		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	
77	PA15 *	I/O	GPIO_Output	CH6R-1
78	PC10 *	I/O	GPIO_Output	CH5R-4
79	PC11 *	I/O	GPIO_Output	CH5R-3
80	PC12 *	I/O	GPIO_Output	CH5R-2
81	PD0 *	I/O	GPIO_Output	CH5R-1

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
82	PD1 *	I/O	GPIO_Output	CH4R-4
83	PD2 *	I/O	GPIO_Output	CH4R-3
84	PD3 *	I/O	GPIO_Output	CH4R-2
85	PD4 *	I/O	GPIO_Output	CH4R-1
86	PD5 *	I/O	GPIO_Output	CH3R-4
87	PD6 *	I/O	GPIO_Output	CH3R-3
88	PD7 *	I/O	GPIO_Output	CH3R-2
89	PB3 *	I/O	GPIO_Output	CH3R-1
90	PB4 *	I/O	GPIO_Output	CH2R-4
91	PB5 *	I/O	GPIO_Output	CH2R-3
92	PB6 *	I/O	GPIO_Output	CH2R-2
93	PB7 *	I/O	GPIO_Output	CH2R-1
94	BOOT0	Boot		
95	PB8 *	I/O	GPIO_Output	CH1R-4
96	PB9 *	I/O	GPIO_Output	CH1R-3
97	PE0 *	I/O	GPIO_Output	CH1R-2
98	PE1 *	I/O	GPIO_Output	CH1R-1
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. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.1.1. Parameter Settings:

System Parameters:

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

RCC Parameters:

HSI Calibration Value	16
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

5.2. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.3. USART2

Mode: Asynchronous

5.3.1. 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

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
RCC	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	**High ***	
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	**n/a**	
GPIO	PE2	GPIO_Output	Output Push Pull	n/a	Low	CH6R-2
	PE3	GPIO_Output	Output Push Pull	n/a	Low	CH6R-3
	PE4	GPIO_Output	Output Push Pull	n/a	Low	CH6R-4
	PE5	GPIO_Output	Output Push Pull	n/a	Low	ALLGBYP-7
	PE6	GPIO_Output	Output Push Pull	n/a	Low	CH6GBYP-6
	PC13-TAMPER-RTC	GPIO_Output	Output Push Pull	n/a	Low	CH5GBYP-5
	PC0	GPIO_Output	Output Push Pull	n/a	Low	CH4GBYP-4
	PC1	GPIO_Output	Output Push Pull	n/a	Low	CH3GBYP-3
	PC2	GPIO_Output	Output Push Pull	n/a	Low	CH2GBYP-2
	PC3	GPIO_Output	Output Push Pull	n/a	Low	CH1GBYP-1
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH1-1
	PA5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH1-2
	PA6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH1-3
	PA7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH1-4
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH2-1
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH2-2
	PB0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH2-3
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH2-4
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH3-1
	PE7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH3-2

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PE8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH3-3
	PE9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH3-4
	PE10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH4-1
	PE11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH4-2
	PE12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH4-3
	PE13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH4-4
	PE14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH5-1
	PE15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH5-2
	PB10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH5-3
	PB11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH5-4
	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH6-1
	PB13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH6-2
	PB14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH6-3
	PB15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	CH6-4
	PD8	GPIO_Output	Output Push Pull	n/a	Low	PWR_SYSF
	PD9	GPIO_Output	Output Push Pull	n/a	Low	ASYS_F
	PD10	GPIO_Output	Output Push Pull	n/a	Low	PWR_LED
	PD11	GPIO_Output	Output Push Pull	n/a	Low	RLY1
	PD12	GPIO_Output	Output Push Pull	n/a	Low	Beep
	PD13	GPIO_Output	Output Push Pull	n/a	Low	TESTpb
	PD14	GPIO_Output	Output Push Pull	n/a	Low	MUTEpb
	PD15	GPIO_Output	Output Push Pull	n/a	Low	CH6G-6
	PC6	GPIO_Output	Output Push Pull	n/a	Low	CH5G-5
	PC7	GPIO_Output	Output Push Pull	n/a	Low	CH4G-4
	PC8	GPIO_Output	Output Push Pull	n/a	Low	CH3G-3
	PC9	GPIO_Output	Output Push Pull	n/a	Low	CH2G-2
	PA8	GPIO_Output	Output Push Pull	n/a	Low	CH1G-1
	PA15	GPIO_Output	Output Push Pull	n/a	Low	CH6R-1
	PC10	GPIO_Output	Output Push Pull	n/a	Low	CH5R-4
	PC11	GPIO_Output	Output Push Pull	n/a	Low	CH5R-3
	PC12	GPIO_Output	Output Push Pull	n/a	Low	CH5R-2
	PD0	GPIO_Output	Output Push Pull	n/a	Low	CH5R-1
	PD1	GPIO_Output	Output Push Pull	n/a	Low	CH4R-4
	PD2	GPIO_Output	Output Push Pull	n/a	Low	CH4R-3
	PD3	GPIO_Output	Output Push Pull	n/a	Low	CH4R-2
	PD4	GPIO_Output	Output Push Pull	n/a	Low	CH4R-1
	PD5	GPIO_Output	Output Push Pull	n/a	Low	CH3R-4
	PD6	GPIO_Output	Output Push Pull	n/a	Low	CH3R-3
	PD7	GPIO_Output	Output Push Pull	n/a	Low	CH3R-2
	PB3	GPIO_Output	Output Push Pull	n/a	Low	CH3R-1

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB4	GPIO_Output	Output Push Pull	n/a	Low	CH2R-4
	PB5	GPIO_Output	Output Push Pull	n/a	Low	CH2R-3
	PB6	GPIO_Output	Output Push Pull	n/a	Low	CH2R-2
	PB7	GPIO_Output	Output Push Pull	n/a	Low	CH2R-1
	PB8	GPIO_Output	Output Push Pull	n/a	Low	CH1R-4
	PB9	GPIO_Output	Output Push Pull	n/a	Low	CH1R-3
	PE0	GPIO_Output	Output Push Pull	n/a	Low	CH1R-2
	PE1	GPIO_Output	Output Push Pull	n/a	Low	CH1R-1

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
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
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USART2 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F100 Value Line
MCU	STM32F100VBTx
Datasheet	16455_Rev8

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	GAS_ALARM_BOARD
Project Folder	C:\Users\Tze Wei\Desktop\GAS_ALARM_BOARD
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.0

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