
STM32
CubeMX

1. Description

1.1. Project

Project Name	CubeMX
Board Name	custom
Generated with:	STM32CubeMX 6.6.1
Date	12/29/2022

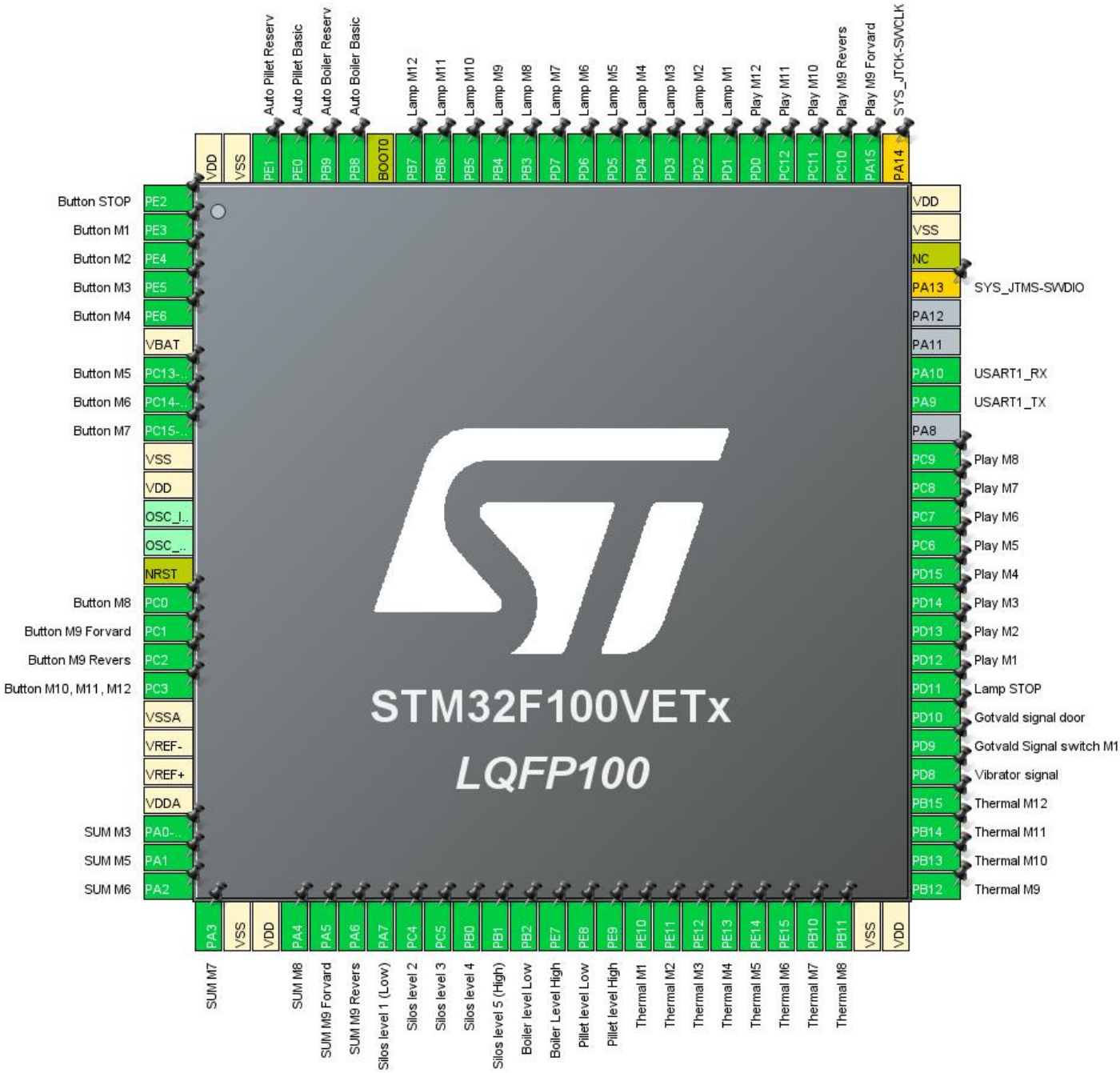
1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F100 Value Line
MCU name	STM32F100VETx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	Arm Cortex-M3

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_Input	Button STOP
2	PE3 *	I/O	GPIO_Input	Button M1
3	PE4 *	I/O	GPIO_Input	Button M2
4	PE5 *	I/O	GPIO_Input	Button M3
5	PE6 *	I/O	GPIO_Input	Button M4
6	VBAT	Power		
7	PC13-TAMPER-RTC *	I/O	GPIO_Input	Button M5
8	PC14-OSC32_IN *	I/O	GPIO_Input	Button M6
9	PC15-OSC32_OUT *	I/O	GPIO_Input	Button M7
10	VSS	Power		
11	VDD	Power		
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Input	Button M8
16	PC1 *	I/O	GPIO_Input	Button M9 Forvard
17	PC2 *	I/O	GPIO_Input	Button M9 Revers
18	PC3 *	I/O	GPIO_Input	Button M10, M11, M12
19	VSSA	Power		
20	VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
23	PA0-WKUP *	I/O	GPIO_Input	SUM M3
24	PA1 *	I/O	GPIO_Input	SUM M5
25	PA2 *	I/O	GPIO_Input	SUM M6
26	PA3 *	I/O	GPIO_Input	SUM M7
27	VSS	Power		
28	VDD	Power		
29	PA4 *	I/O	GPIO_Input	SUM M8
30	PA5 *	I/O	GPIO_Input	SUM M9 Forvard
31	PA6 *	I/O	GPIO_Input	SUM M9 Revers
32	PA7 *	I/O	GPIO_Input	Silos level 1 (Low)
33	PC4 *	I/O	GPIO_Input	Silos level 2
34	PC5 *	I/O	GPIO_Input	Silos level 3
35	PB0 *	I/O	GPIO_Input	Silos level 4
36	PB1 *	I/O	GPIO_Input	Silos level 5 (High)
37	PB2 *	I/O	GPIO_Input	Boiler level Low
38	PE7 *	I/O	GPIO_Input	Boiler Level High

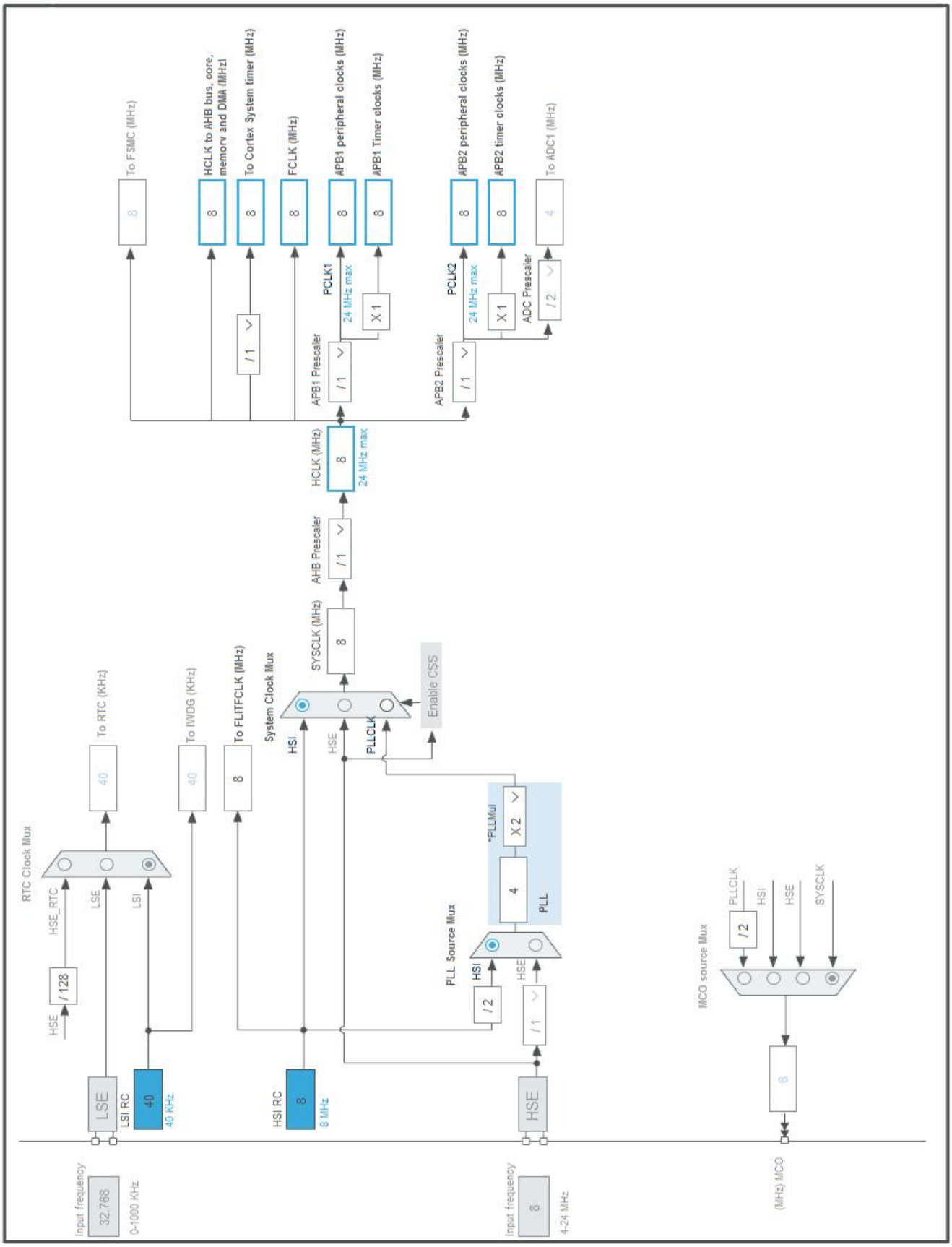
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
39	PE8 *	I/O	GPIO_Input	Pillet level Low
40	PE9 *	I/O	GPIO_Input	Pillet level High
41	PE10 *	I/O	GPIO_Input	Thermal M1
42	PE11 *	I/O	GPIO_Input	Thermal M2
43	PE12 *	I/O	GPIO_Input	Thermal M3
44	PE13 *	I/O	GPIO_Input	Thermal M4
45	PE14 *	I/O	GPIO_Input	Thermal M5
46	PE15 *	I/O	GPIO_Input	Thermal M6
47	PB10 *	I/O	GPIO_Input	Thermal M7
48	PB11 *	I/O	GPIO_Input	Thermal M8
49	VSS	Power		
50	VDD	Power		
51	PB12 *	I/O	GPIO_Input	Thermal M9
52	PB13 *	I/O	GPIO_Input	Thermal M10
53	PB14 *	I/O	GPIO_Input	Thermal M11
54	PB15 *	I/O	GPIO_Input	Thermal M12
55	PD8 *	I/O	GPIO_Input	Vibrator signal
56	PD9 *	I/O	GPIO_Input	Gotvald Signal switch M1
57	PD10 *	I/O	GPIO_Input	Gotvald signal door
58	PD11 *	I/O	GPIO_Output	Lamp STOP
59	PD12 *	I/O	GPIO_Output	Play M1
60	PD13 *	I/O	GPIO_Output	Play M2
61	PD14 *	I/O	GPIO_Output	Play M3
62	PD15 *	I/O	GPIO_Output	Play M4
63	PC6 *	I/O	GPIO_Output	Play M5
64	PC7	I/O	GPIO_EXTI7	Play M6
65	PC8 *	I/O	GPIO_Output	Play M7
66	PC9 *	I/O	GPIO_Output	Play M8
68	PA9	I/O	USART1_TX	
69	PA10	I/O	USART1_RX	
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	Play M9 Forvard
78	PC10 *	I/O	GPIO_Output	Play M9 Revers
79	PC11 *	I/O	GPIO_Output	Play M10
80	PC12 *	I/O	GPIO_Output	Play M11

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
81	PD0 *	I/O	GPIO_Output	Play M12
82	PD1 *	I/O	GPIO_Output	Lamp M1
83	PD2 *	I/O	GPIO_Output	Lamp M2
84	PD3 *	I/O	GPIO_Output	Lamp M3
85	PD4 *	I/O	GPIO_Output	Lamp M4
86	PD5 *	I/O	GPIO_Output	Lamp M5
87	PD6 *	I/O	GPIO_Output	Lamp M6
88	PD7 *	I/O	GPIO_Output	Lamp M7
89	PB3 *	I/O	GPIO_Output	Lamp M8
90	PB4 *	I/O	GPIO_Output	Lamp M9
91	PB5 *	I/O	GPIO_Input	Lamp M10
92	PB6 *	I/O	GPIO_Input	Lamp M11
93	PB7 *	I/O	GPIO_Input	Lamp M12
94	BOOT0	Boot		
95	PB8 *	I/O	GPIO_Input	Auto Boiler Basic
96	PB9 *	I/O	GPIO_Input	Auto Boiler Reserv
97	PE0 *	I/O	GPIO_Input	Auto Pillet Basic
98	PE1 *	I/O	GPIO_Input	Auto Pillet Reserv
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

** The pin is affected with a peripheral function but no peripheral mode is activated

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	CubeMX
Project Folder	D:\job\Project_silos\mcprogramm\CubeMX
Toolchain / IDE	EWARM V8.32
Firmware Package Name and Version	STM32Cube FW_F1 V1.8.4
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	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
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_USART1_UART_Init	USART1

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F1
Line	STM32F100 Value Line
MCU	STM32F100VETx
Datasheet	DS5944_Rev10

6.2. Parameter Selection

Temperature	25
Vdd	3.3

6.3. Battery Selection

Battery	Li-SOCL2(A3400)
Capacity	3400.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	100.0 mA
Max Pulse Current	200.0 mA
Cells in series	1
Cells in parallel	1

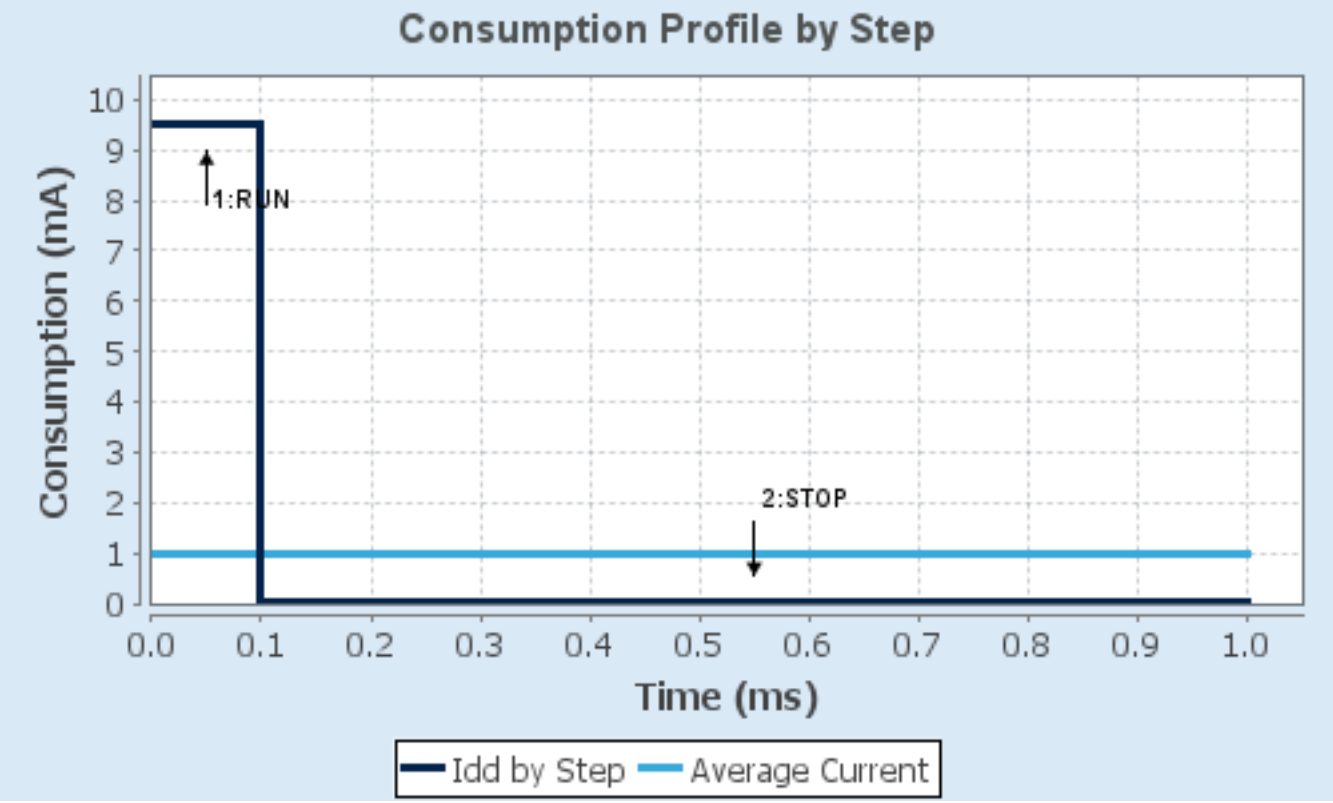
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.3	3.3
Voltage Source	Battery	Battery
Range	No Scale	No Scale
Fetch Type	FLASH	n/a
CPU Frequency	24 MHz	0 Hz
Clock Configuration	HSE PLL	Regulator_LP
Clock Source Frequency	8 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	9.5 mA	24 µA
Duration	0.1 ms	0.9 ms
DMIPS	30.0	0.0
Ta Max	103.75	105
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	971.6 µA
Battery Life	4 months, 23 days, 13 hours	Average DMIPS	30.0 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
10
9
8
7
6
5
4
3
2
1
0
1:RUN
2:STOP
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Time (ms)
Idd by Step
Average Current

7. Peripherals and Middlewares Configuration

7.1. RCC

7.1.1. 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

7.2. SYS

Debug: No Debug

Timebase Source: SysTick

7.3. USART1

Mode: Asynchronous

7.3.1. Parameter Settings:

Basic Parameters:

Baud Rate	**9600 ***
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**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	**High ***	
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	**n/a**	
Single Mapped Signals	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
GPIO	PE2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button STOP
	PE3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M1
	PE4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M2
	PE5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M3
	PE6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M4
	PC13-TAMPER-RTC	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M5
	PC14-OSC32_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M6
	PC15-OSC32_OUT	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M7
	PC0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M8
	PC1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M9 Forvard
	PC2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M9 Revers
	PC3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Button M10, M11, M12
	PA0-WKUP	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SUM M3
	PA1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SUM M5
	PA2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SUM M6
	PA3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SUM M7
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SUM M8
	PA5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SUM M9 Forvard
	PA6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SUM M9 Revers
	PA7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Silos level 1 (Low)
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Silos level 2
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Silos level 3
	PB0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Silos level 4
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Silos level 5 (High)
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Boiler level Low
	PE7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Boiler Level High

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	Pillet level Low
	PE9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Pillet level High
	PE10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M1
	PE11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M2
	PE12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M3
	PE13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M4
	PE14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M5
	PE15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M6
	PB10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M7
	PB11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M8
	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M9
	PB13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M10
	PB14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M11
	PB15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Thermal M12
	PD8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Vibrator signal
	PD9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Gotvald Signal switch M1
	PD10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Gotvald signal door
	PD11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp STOP
	PD12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M1
	PD13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M2
	PD14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M3
	PD15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M4
	PC6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M5
	PC7	GPIO_EXTI7	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	Play M6
	PC8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M7
	PC9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M8
	PA15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M9 Forvard
	PC10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M9 Revers
	PC11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M10
	PC12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M11
	PD0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Play M12
	PD1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M1
	PD2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M2
	PD3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M3
	PD4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M4
	PD5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M5
	PD6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M6
	PD7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M7
	PB3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M8
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	Lamp M9

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Lamp M10
	PB6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Lamp M11
	PB7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Lamp M12
	PB8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Auto Boiler Basic
	PB9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Auto Boiler Reserv
	PE0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Auto Pillet Basic
	PE1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	Auto Pillet Reserv

8.2. DMA configuration

nothing configured in DMA service

8.3. NVIC configuration

8.3.1. NVIC

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	15	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
EXTI line[9:5] interrupts	unused		
USART1 global interrupt	unused		

8.3.2. NVIC Code generation

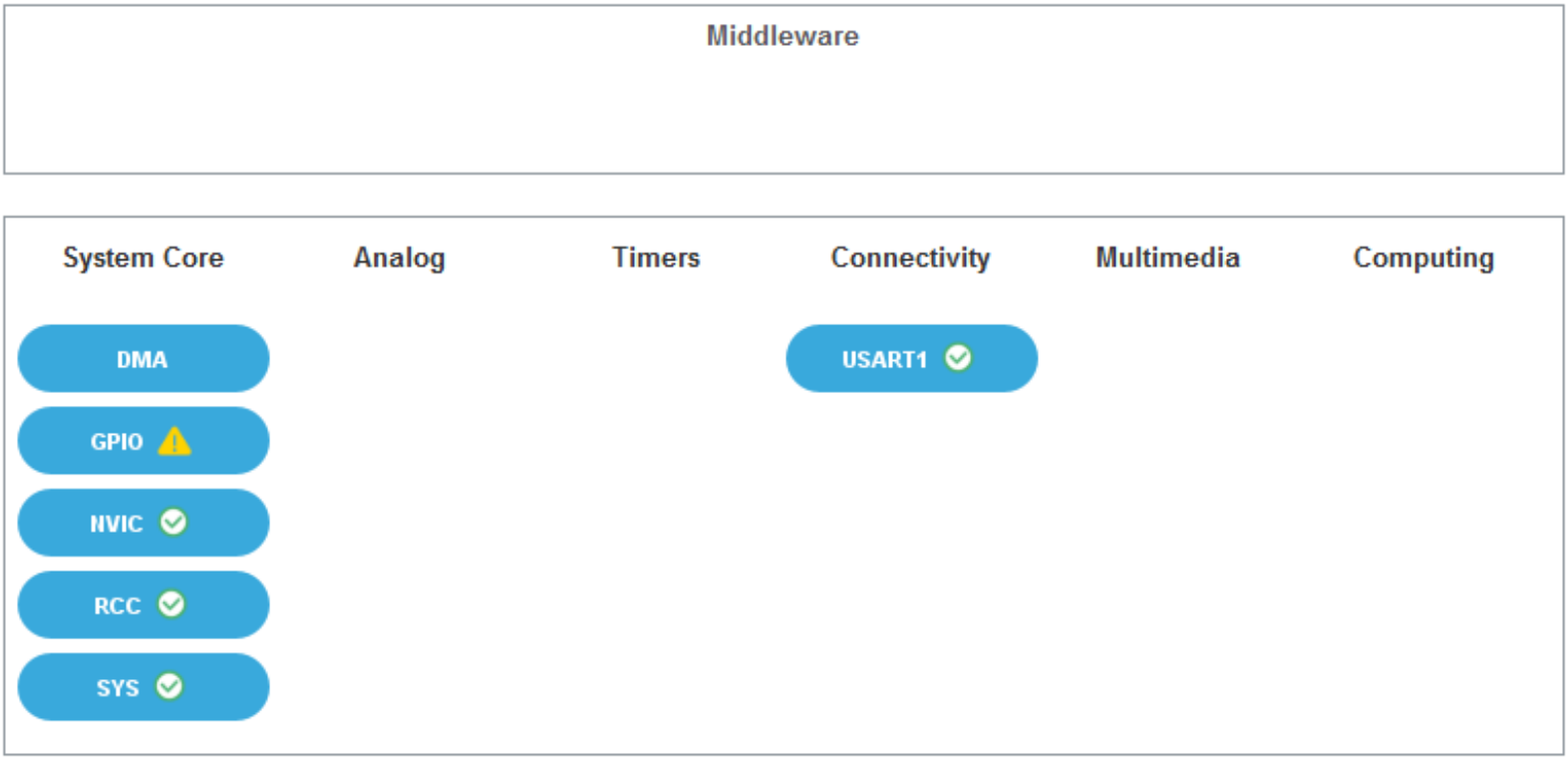
Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Prefetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
System service call via SWI instruction	false	true	false
Debug monitor	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true

*** User modified value**

9. System Views

9.1. Category view

9.1.1. Current



10. Docs & Resources

Type	Link