16/04/2024

1. Description

1.1. Project

Project Name	KM3000_V1R0_A0
Board Name	custom
Generated with:	STM32CubeMX 6.11.0
Date	04/16/2024

1.2. MCU

MCU Series	STM32L4
MCU Line	STM32L4x6
MCU name	STM32L496VGTx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	Arm Cortex-M4

2. Pinout Configuration
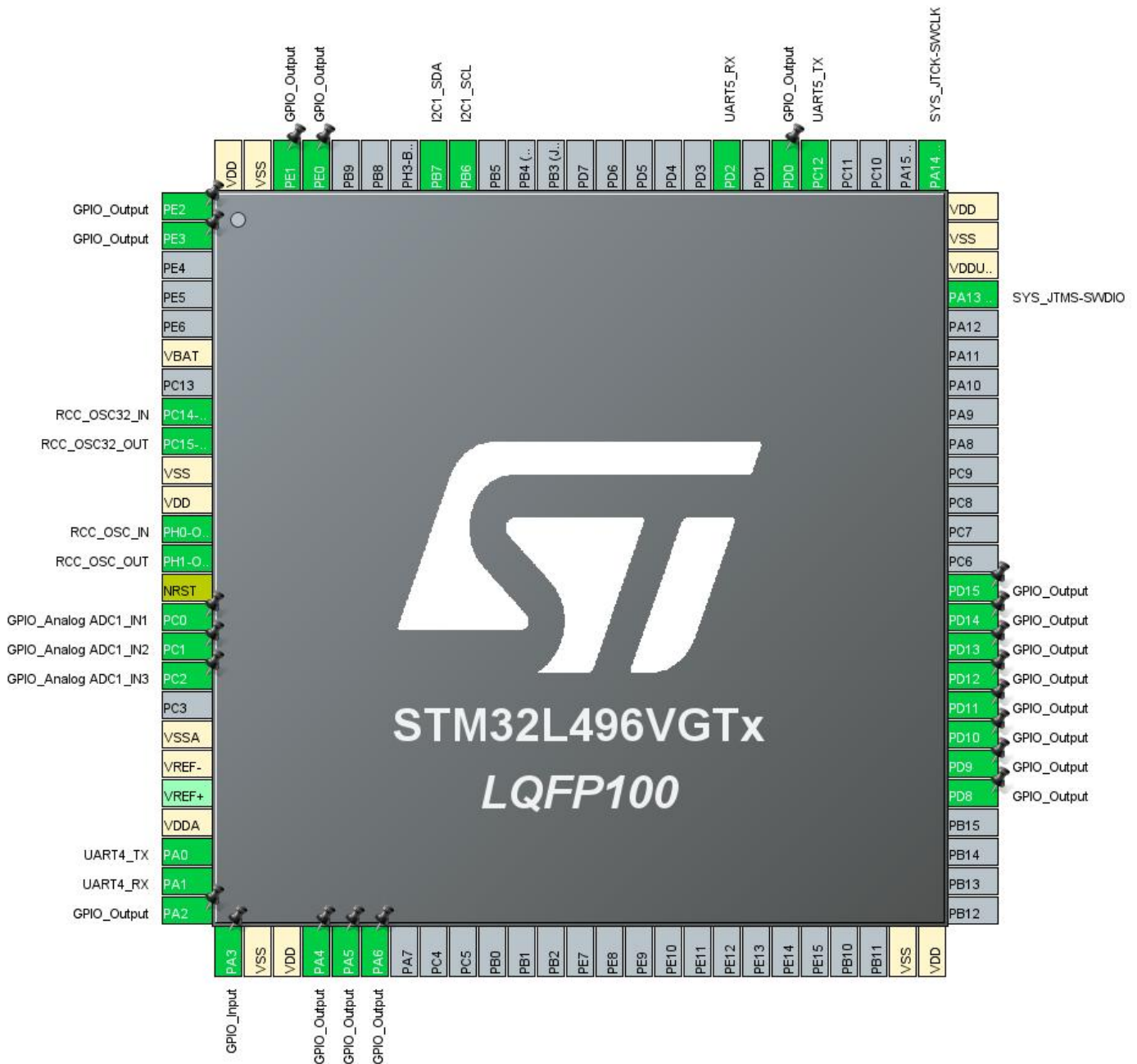
3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Output	
2	PE3 *	I/O	GPIO_Output	
6	VBAT	Power		
8	PC14-OSC32_IN (PC14)	I/O	RCC_OSC32_IN	
9	PC15-OSC32_OUT (PC15)	I/O	RCC_OSC32_OUT	
10	VSS	Power		
11	VDD	Power		
12	PH0-OSC_IN (PH0)	I/O	RCC_OSC_IN	
13	PH1-OSC_OUT (PH1)	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0	I/O	GPIO_Analog, ADC1_IN1	
16	PC1	I/O	GPIO_Analog, ADC1_IN2	
17	PC2	I/O	GPIO_Analog, ADC1_IN3	
19	VSSA	Power		
20	VREF-	Power		
22	VDDA	Power		
23	PA0	I/O	UART4_TX	
24	PA1	I/O	UART4_RX	
25	PA2 *	I/O	GPIO_Output	
26	PA3 *	I/O	GPIO_Input	
27	VSS	Power		
28	VDD	Power		
29	PA4 *	I/O	GPIO_Output	
30	PA5 *	I/O	GPIO_Output	
31	PA6 *	I/O	GPIO_Output	
49	VSS	Power		
50	VDD	Power		
55	PD8 *	I/O	GPIO_Output	
56	PD9 *	I/O	GPIO_Output	
57	PD10 *	I/O	GPIO_Output	
58	PD11 *	I/O	GPIO_Output	
59	PD12 *	I/O	GPIO_Output	
60	PD13 *	I/O	GPIO_Output	
61	PD14 *	I/O	GPIO_Output	
62	PD15 *	I/O	GPIO_Output	
72	PA13 (JTMS/SWDIO)	I/O	SYS_JTMS-SWDIO	

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
73	VDDUSB	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14 (JTCK/SWCLK)	I/O	SYS_JTCK-SWCLK	
80	PC12	I/O	UART5_TX	
81	PD0 *	I/O	GPIO_Output	
83	PD2	I/O	UART5_RX	
92	PB6	I/O	I2C1_SCL	
93	PB7	I/O	I2C1_SDA	
97	PE0 *	I/O	GPIO_Output	
98	PE1 *	I/O	GPIO_Output	
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration
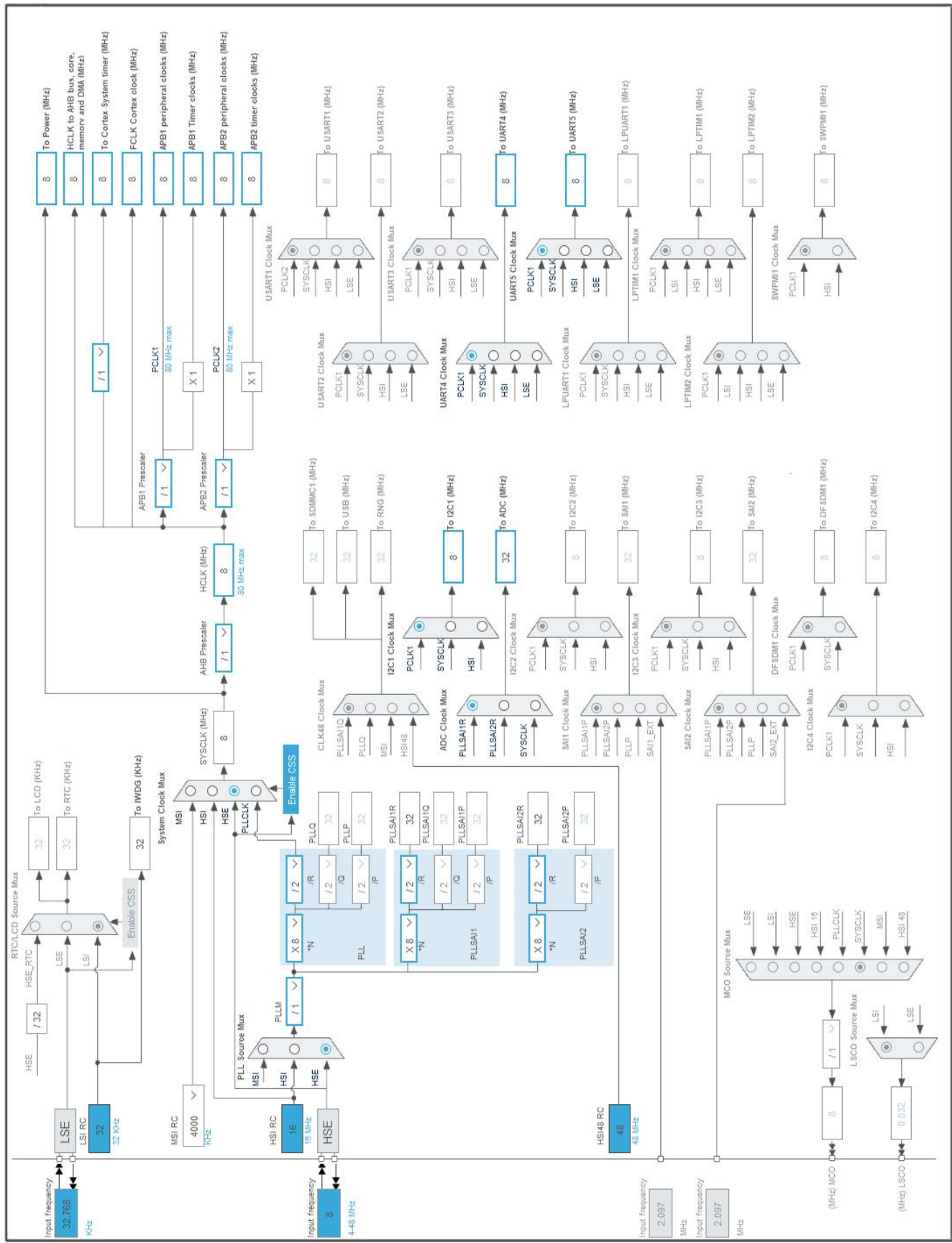
5. Software Project

5.1. Project Settings

Name	Value
Project Name	KM3000_V1R0_A0.0
Project Folder	D:\Krea Mining\MAC2\src\KM3000_V1R0_A0.0
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_L4 V1.18.0
Application Structure	Advanced
Generate Under Root	Yes
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 only the necessary library files
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_DMA_Init	DMA
4	MX_UART4_Init	UART4
5	MX_UART5_Init	UART5
6	MX_I2C1_Init	I2C1
7	MX_TIM6_Init	TIM6
8	MX_ADC1_Init	ADC1
9	MX_IWDG_Init	IWDG

1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32L4
Line	STM32L4x6
MCU	STM32L496VGTx
Datasheet	DS11585_Rev2

1.2. Parameter Selection

Temperature	25
Vdd	3.0

1.3. 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

1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP2
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-High	NoRange
Fetch Type	FLASH	n/a
CPU Frequency	80 MHz	0 Hz
Clock Configuration	HSE BYP PLL Flash-ON	ALL CLOCKS OFF
Clock Source Frequency	4 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	10 mA	2.69 µA
Duration	0.1 ms	0.9 ms
DMIPS	100.0	0.0
Ta Max	103.74	105
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	1 mA
Battery Life	4 months, 19 days, 3 hours	Average DMIPS	100.0 DMIPS

1.6. Chart

Consumption Profile by Step
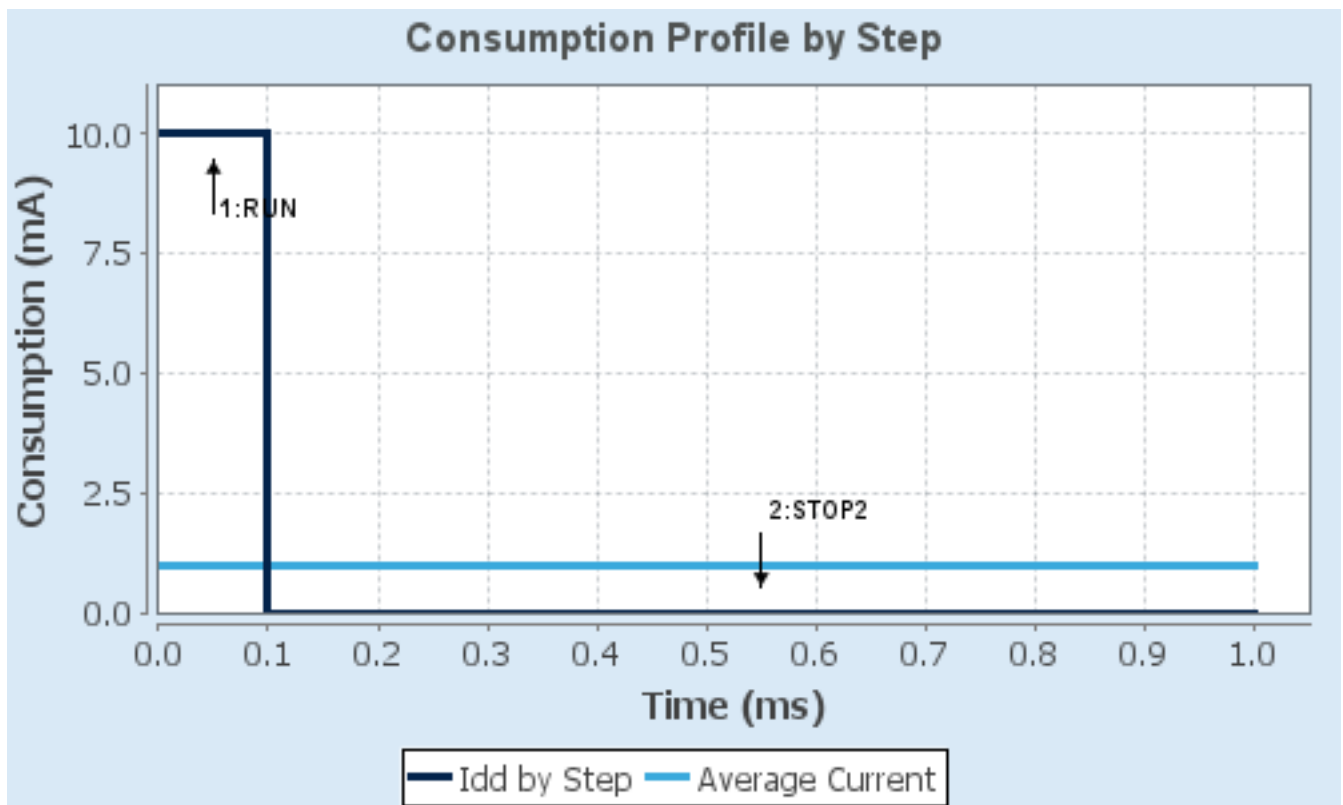
2. Peripherals and Middlewares Configuration

2.1. ADC1

IN1: IN1 Single-ended

IN2: IN2 Single-ended

IN3: IN3 Single-ended

2.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Clock Prescaler	Asynchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Conversion Mode	Enabled
Continuous Conversion Mode	**Enabled ***
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Low Power Auto Wait	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Enable Regular Oversampling	Disable
Number Of Conversion	**3 ***
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Rank	1
Channel	Channel 1
Sampling Time	**24.5 Cycles ***
Offset Number	No offset
Rank	**2 ***
Channel	**Channel 2 ***
Sampling Time	**24.5 Cycles ***
Offset Number	No offset
Rank	**3 ***
Channel	**Channel 3 ***
Sampling Time	**24.5 Cycles ***
Offset Number	No offset

ADC_Injected_ConversionMode:

Enable Injected Conversions   Disable

Analog Watchdog 1:

Enable Analog WatchDog1 Mode   false

Analog Watchdog 2:

Enable Analog WatchDog2 Mode   false

Analog Watchdog 3:

Enable Analog WatchDog3 Mode   false

2.2. I2C1
I2C: I2C
2.2.1. Parameter Settings:

Timing configuration:

Custom Timing   Disabled
I2C Speed Mode   Standard Mode
I2C Speed Frequency (KHz)   100
Rise Time (ns)   0
Fall Time (ns)   0
Coefficient of Digital Filter   0
Analog Filter   Enabled
Timing   **0x2000090E ***

Slave Features:

Clock No Stretch Mode   Disabled
General Call Address Detection   Disabled
Primary Address Length selection   7-bit
Dual Address Acknowledged   Disabled
Primary slave address   0

2.3. IWDG
mode: Activated
2.3.1. Parameter Settings:

Watchdog Clocking:

IWDG counter clock prescaler   4
IWDG window value   **399 ***
IWDG down-counter reload value   **4000 ***

2.4. RCC
High Speed Clock (HSE): Crystal/Ceramic Resonator
Low Speed Clock (LSE) : Crystal/Ceramic Resonator
2.4.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

HSI Calibration Value	64
MSI Calibration Value	0
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

2.5. SYS
Debug: Serial Wire
Timebase Source: SysTick

2.6. TIM6
mode: Activated
2.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**799 ***
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

2.7. UART4
Mode: Asynchronous
2.7.1. Parameter Settings:

Basic Parameters:

Baud Rate	**57600 ***
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:

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

2.8. UART5
Mode: Asynchronous
2.8.1. 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:

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

3. System Configuration

3.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PC0	ADC1_IN1	Analog mode	No pull-up and no pull-down	n/a	
	PC1	ADC1_IN2	Analog mode	No pull-up and no pull-down	n/a	
	PC2	ADC1_IN3	Analog mode	No pull-up and no pull-down	n/a	
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	No pull-up and no pull-down	**Very High** *	
	PB7	I2C1_SDA	Alternate Function Open Drain	No pull-up and no pull-down	**Very High** *	
RCC	PC14-OSC32_IN (PC14)	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15-OSC32_OUT (PC15)	RCC_OSC32_OUT	n/a	n/a	n/a	
	PH0-OSC_IN (PH0)	RCC_OSC_IN	n/a	n/a	n/a	
	PH1-OSC_OUT (PH1)	RCC_OSC_OUT	n/a	n/a	n/a	
SYS	PA13 (JTMS/SWDIO)	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14 (JTCK/SWCLK)	SYS_JTCK-SWCLK	n/a	n/a	n/a	
UART4	PA0	UART4_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PA1	UART4_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
UART5	PC12	UART5_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
	PD2	UART5_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High** *	
GPIO	PE2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PE3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PC0	GPIO_Analog	Analog mode	No pull-up and no pull-down	n/a	
	PC1	GPIO_Analog	Analog mode	No pull-up and no pull-down	n/a	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PC2	GPIO_Analog	Analog mode	No pull-up and no pull-down	n/a	
	PA2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PE0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PE1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	

3.2. DMA configuration

DMA request	Stream	Direction	Priority
UART4_RX	DMA2_Channel5	Peripheral To Memory	Low
UART4_TX	DMA2_Channel3	Memory To Peripheral	Low
UART5_RX	DMA2_Channel2	Peripheral To Memory	**Medium ***
UART5_TX	DMA2_Channel1	Memory To Peripheral	Low
I2C1_RX	DMA1_Channel7	Peripheral To Memory	Low
I2C1_TX	DMA1_Channel6	Memory To Peripheral	Low
ADC1	DMA1_Channel1	Peripheral To Memory	Low

UART4_RX: DMA2_Channel5 DMA request Settings:

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

UART4_TX: DMA2_Channel3 DMA request Settings:

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

UART5_RX: DMA2_Channel2 DMA request Settings:

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

UART5_TX: DMA2_Channel1 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable

Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

I2C1_RX: DMA1_Channel7 DMA request Settings:

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

I2C1_TX: DMA1_Channel6 DMA request Settings:

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

ADC1: DMA1_Channel1 DMA request Settings:

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

3.3. NVIC configuration

3.3.1. 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
DMA1 channel1 global interrupt	true	0	0
DMA1 channel6 global interrupt	true	0	0
DMA1 channel7 global interrupt	true	0	0
ADC1 and ADC2 interrupts	true	0	0
I2C1 event interrupt	true	0	0
I2C1 error interrupt	true	0	0
UART4 global interrupt	true	0	0
UART5 global interrupt	true	0	0
TIM6 global interrupt, DAC channel1 and channel2 underrun error interrupts	true	0	0
DMA2 channel1 global interrupt	true	0	0
DMA2 channel2 global interrupt	true	0	0
DMA2 channel3 global interrupt	true	0	0
DMA2 channel5 global interrupt	true	0	0
PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
FPU global interrupt	unused		

3.3.2. 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

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
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
DMA1 channel1 global interrupt	false	true	true
DMA1 channel6 global interrupt	false	true	true
DMA1 channel7 global interrupt	false	true	true
ADC1 and ADC2 interrupts	false	true	true
I2C1 event interrupt	false	true	true
I2C1 error interrupt	false	true	true
UART4 global interrupt	false	true	true
UART5 global interrupt	false	true	true
TIM6 global interrupt, DAC channel1 and channel2 underrun error interrupts	false	true	true
DMA2 channel1 global interrupt	false	true	true
DMA2 channel2 global interrupt	false	true	true
DMA2 channel3 global interrupt	false	true	true
DMA2 channel5 global interrupt	false	true	true

* User modified value

4. System Views

4.1. Category view

4.1.1. Current

5. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32l4_bsdl.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32l4_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32l4_svd.zip
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32l4_marketing-pres.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf
Brochures	https://www.st.com/resource/en/brochure/brstm32ulp.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32l4.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstmcsuite.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32trust.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32gui.pdf
Magazine Articles	https://www.st.com/resource/en/magazine/design-elektronik_august2017.pdf
Magazine Articles	https://www.st.com/resource/en/magazine/design-elektronik_october2016.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/sesip-2000002-01-cert.pdf

Product Certifications	https://www.st.com/resource/en/certification_document/sesip-2000002-01-st2.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/psa-certificate_stm32l4.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2867-oscillator-design-guide-for-stm8afals-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3154-can-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3236-increase-the-number-of-touchkeys-for-touch-sensing-applications-on-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3960-esd-considerations-for-touch-sensing-applications-on-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4013-stm32-crossseries-timer-overview-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4221-i2c-protocol-

used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4229-how-to-
implement-a-vocoder-solution-using-stm32-microcontrollers-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4277-using-stm32-
device-pwm-shutdown-features-for-motor-control-and-digital-power-
conversion-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4286-spi-protocol-
used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4299-improve-
conducted-noise-robustness-for-touch-sensing-applications-on-mcus-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4310-sampling-
capacitor-selection-guide-for-touch-sensing-applications-on-mcus-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4312-design-with-
surface-sensors-for-touch-sensing-applications-on-mcus-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4316-tuning-a-touch-
sensing-application-on-mcus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4555-getting-started-
with-stm32l4-series-and-stm32l4-series-hardware-development-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4566-extending-the-
dac-performance-of-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4612-migrating-from-
stm32l1-series-to-stm32l4-series-and-stm32l4-series-microcontrollers-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4616-migrating-from-
stm32f401-and-stm32f411-lines-to-stm32l4-series-and-stm32l4-series-
microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4621-stm32l4-and-
stm32l4-ultralowpower-features-overview-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4629-adc-hardware-oversampling-for-microcontrollers-of-the-stm32-l0-and-l4-series-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4635-minimization-of-power-consumption-using-lpuart-for-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4649-migrating-from-stm32f1-series-to-stm32l4-series--stm32l4-series-microntrollers-stmicroelectronics.pdf

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