



1. Description

1.1. Project

Project Name	FW
Board Name	custom
Generated with:	STM32CubeMX 6.13.0
Date	04/18/2025

1.2. MCU

MCU Series	STM32WB
MCU Line	STM32WBxM Modules
MCU name	STM32WB5MMGHx
MCU Package	LGA86
MCU Pin number	86

1.3. Core(s) information

Core(s)	ARM Cortex-M4
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2. Pinout Configuration



LGA86 (Top view)

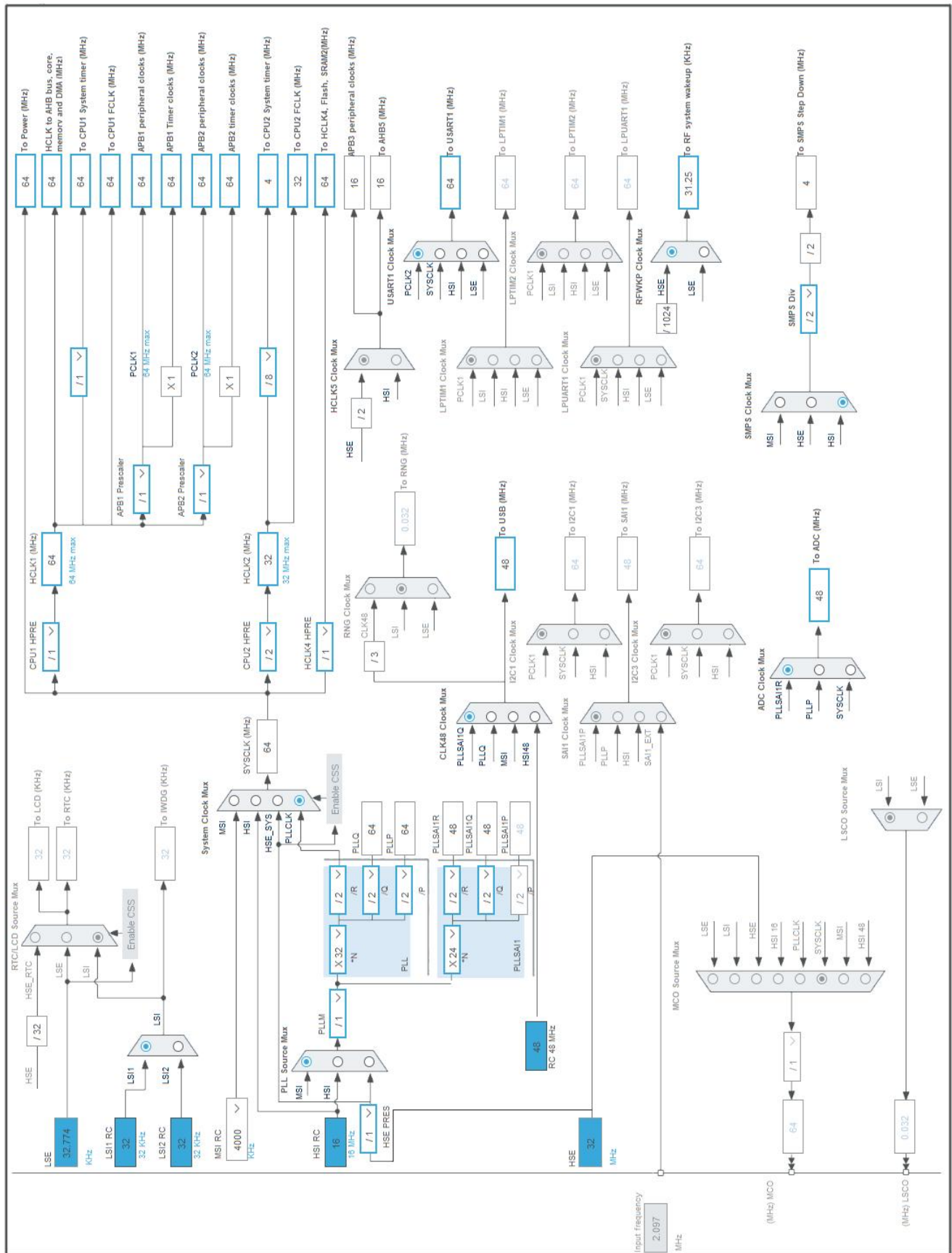
3. Pins Configuration

Pin Number LGA86	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
2	PA1	I/O	SPI1_SCK	BARO_SPI_SCK
5	VSS	Power		
6	VDDA	Power		
7	PC3	I/O	SPI2_MOSI	EPD_SPI_MOSI
8	PC2 *	I/O	GPIO_Input	STAT_NCP
9	PC1 *	I/O	GPIO_Output	EPD_NRST
10	NRST	Reset		
11	PB9	I/O	SPI2_NSS	EPD_SPI_NSS
12	PC0	I/O	ADC1_IN1	BAT_MON
13	PH3-BOOT0 *	I/O	GPIO_Input	
15	VBAT	Power		
16	VSSSMPS	Power		
17	VDDSMPS	Power		
18	PB7	I/O	USART1_RX	
19	PB5	I/O	SPI1_MOSI	BARO_SPI_MISO
20	PB4	I/O	SPI1_MISO	BARO_SPI_MISO
21	PB3	I/O	SYS_JTDO-SWO	
22	PC10 *	I/O	GPIO_Input	BT_UP
23	PC11 *	I/O	GPIO_Input	BT_DN
25	PA13	I/O	SYS_JTMS-SWDIO	
26	PA14	I/O	SYS_JTCK-SWCLK	
27	PA15	I/O	SPI1_NSS	BARO_SPI_NSS
29	PA12	I/O	USB_DP	
30	PA11	I/O	USB_DM	
31	VSS	Power		
32	VDDUSB	Power		
34	PD1	I/O	SPI2_SCK	EPD_SPI_SCK
37	PB14 *	I/O	GPIO_Output	EPD_BS
38	PB15	I/O	GPIO_EXTI15	BARO_INT
39	PB6	I/O	USART1_TX	
41	PB12 *	I/O	GPIO_Input	EDP_BUSY
42	PE4 *	I/O	GPIO_Output	BAT_MON_EN
45	PC5 *	I/O	GPIO_Output	LATCH_1_8
46	PB11 *	I/O	GPIO_Output	LATCH_3_3
49	PC4 *	I/O	GPIO_Output	BEEP_SHDN
50	PA8	I/O	TIM1_CH1	BEEP_SIGNAL

Pin Number LGA86	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
57	VSS	Power		
60	VSS	Power		
70	PD3	I/O	SPI2_MISO	EPD_SPI_MISO
84	VSS	Power		
86	VSS	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32WB
Line	STM32WBxM Modules
MCU	STM32WB5MMGHx
Datasheet	DS13252_Rev3

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

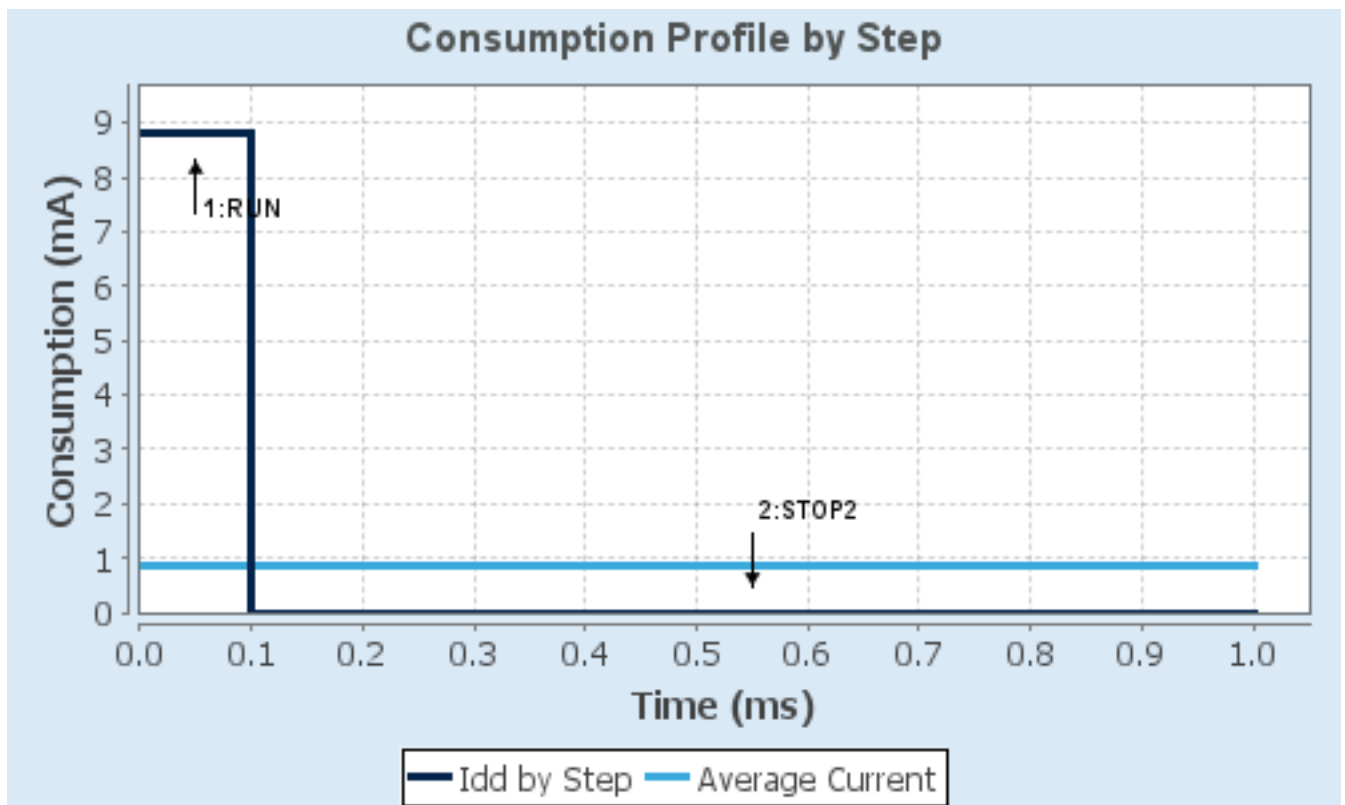
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP2
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-High	NoRange
Fetch Type	SRAM1/Flash-PowerDown	FLASH/ART/CACHE
CPU Frequency	64 MHz	0 Hz
Clock Configuration	HSI PLL Regulator_ON	ALL CLOCKS OFF Regulator_ON
Clock Source Frequency	16 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	8.8 mA	1.85 μ A
Duration	0.1 ms	0.9 ms
DMIPS	80.0	0.0
Ta Max	104	105
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	881.66 μ A
Battery Life	5 months, 7 days, 21 hours	Average DMIPS	8.0 DMIPS

1.6. Chart



2. Software Project

2.1. Project Settings

Name	Value
Project Name	FW
Project Folder	D:\dev\bt_alti\FW
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_WB V1.21.0
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

2.2. 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	Yes
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)	Yes
Enable Full Assert	No

2.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_ADC1_Init	ADC1
4	MX_IPCC_Init	IPCC
5	MX_SPI1_Init	SPI1
6	MX_USART1_UART_Init	USART1
7	MX_USB_Device_Init	USB_DEVICE
8	MX_SPI2_Init	SPI2
9	MX_TIM1_Init	TIM1

3. *Peripherals and Middlewares Configuration*

3.1. ADC1

IN1: IN1 Single-ended

mode: Temperature Sensor Channel

mode: Vbat Channel

mode: Vrefint Channel

3.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Asynchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
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	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
<u>Rank</u>	1
Channel	Channel Temperature Sensor *
Sampling Time	2.5 Cycles
Offset Number	No offset

ADC_Injected_ConversionMode:

Enable Injected Conversions	Disable
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Analog Watchdog 1:

Enable Analog WatchDog1 Mode	false
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Analog Watchdog 2:

Enable Analog WatchDog2 Mode	false
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Analog Watchdog 3:

Enable Analog WatchDog3 Mode	false
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3.2. HSEM

mode: Activated

3.3. IPCC

mode: Activated

3.4. MEMORYMAP

mode: Activated

3.5. RCC

mode: High Speed Clock (HSE)

mode: Low Speed Clock (LSE)

3.5.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	Enabled
Flash Latency(WS)	3 WS (4 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
MSI Calibration Value	0
MSI Auto Calibration	Enabled
MSI State	Enabled
HSI State	Enabled
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000
LSE Drive Capability	LSE oscillator medium high drive capability

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1
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Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE
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3.6. RF

mode: Activate RF

3.7. SPI1

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Output Signal

3.7.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	32.0 MBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Output Hardware

3.8. SPI2

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Input Signal

3.8.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	32.0 MBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled

NSS Signal Type

Input Hardware

3.9. SYS

Debug: Trace Asynchronous Sw

Timebase Source: SysTick

3.10. TIM1

Channel1: PWM Generation CH1

3.10.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
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
BRK Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable

Break And Dead Time management - BRK2 Configuration:

BRK2 State	Disable
BRK2 Polarity	High
BRK2 Filter (4 bits value)	0
BRK2 Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
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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
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PWM Generation Channel 1:

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

3.11. USART1

Mode: Asynchronous

3.11.1. 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
ClockPrescaler	1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

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

3.12. USB

mode: Device (FS)

3.12.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Physical interface	Internal Phy
Sof Enable	Disabled

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled
Battery Charging	Disabled

3.13. USB_DEVICE

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

3.13.1. 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_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:

USB CDC Rx Buffer Size	2048
USB CDC Tx Buffer Size	2048

3.13.2. 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)	22336
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PRODUCT_STRING (Product Identifier)

STM32 Virtual ComPort

CONFIGURATION_STRING (Configuration Identifier)

CDC Config

INTERFACE_STRING (Interface Identifier)

CDC Interface

*** User modified value**

4. System Configuration

4.1. 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	BAT_MON
SPI1	PA1	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	BARO_SPI_SCK
	PB5	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	BARO_SPI_MISO
	PB4	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	BARO_SPI_MISO
	PA15	SPI1_NSS	Alternate Function Push Pull	No pull-up and no pull-down	Low	BARO_SPI_NSS
SPI2	PC3	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	EPD_SPI_MOSI
	PB9	SPI2_NSS	Alternate Function Push Pull	No pull-up and no pull-down	Low	EPD_SPI_NSS
	PD1	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	EPD_SPI_SCK
	PD3	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	EPD_SPI_MISO
SYS	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	
	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM1	PA8	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	BEEP_SIGNAL
USART1	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB6	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USB	PA12	USB_DP	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA11	USB_DM	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PC2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	STAT_NCP
	PC1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EPD_NRST
	PH3-BOOT0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PC10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BT_UP
	PC11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BT_DN
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EPD_BS
	PB15	GPIO_EXTI15	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	BARO_INT
	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	EDP_BUSY
	PE4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	BAT_MON_EN
	PC5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LATCH_1_8
	PB11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LATCH_3_3
	PC4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	BEEP_SHDN

4.2. DMA configuration

nothing configured in DMA service

4.3. NVIC configuration

4.3.1. 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
USB low priority interrupt, USB wake-up interrupt through EXTI line 28	true	0	0
EXTI line[15:10] interrupts	true	0	0
HSEM global interrupt	true	0	0
PVD/PVM0/PVM2 interrupts through EXTI lines 16/31/33	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 global interrupt	unused		
USB high priority interrupt	unused		
CPU2 SEV interrupt through EXTI line 40 and PWR CPU2 HOLD wake-up interrupt	unused		
TIM1 break interrupt	unused		
TIM1 update interrupt and TIM16 global interrupt	unused		
TIM1 trigger and commutation interrupts and TIM17 global interrupt	unused		
TIM1 capture compare interrupt	unused		
SPI1 global interrupt	unused		
SPI2 global interrupt	unused		
USART1 global interrupt	unused		
PWR switching on the fly, end of BLE activity, end of 802.15.4 activity, end of critical radio phase interrupt	unused		
IPCC RX occupied interrupt	unused		
IPCC TX free interrupt	unused		
FPU global interrupt	unused		

4.3.2. NVIC Code generation

Enabled interrupt Table	Select for init	Generate IRQ	Call HAL handler
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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
USB low priority interrupt, USB wake-up interrupt through EXTI line 28	false	true	true
EXTI line[15:10] interrupts	false	true	true
HSEM global interrupt	false	true	true

* User modified value

5. System Views

5.1. Category view

5.1.1. Current

Middleware								
USB_DEVICE ✓								
System Core	Analog	Timers	Connectivity	Multimedia	Security	Computing	Utilities	Other
DMA	ADC1 ✓	TIM1 ✓	RF ✓					
GPIO ✓			SPI1 ✓					
HSEM ✓			SPI2 ✓					
IPCC ✓			USART1 ✓					
IVIC ✓			USB ✓					
RCC ✓								
SYS ✓								

6. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32wb_bsd.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32wb_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32wb_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/stm32-stm8_software_development_tools.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers_stm32wbxm_wireless-modules_product_overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-entry-level-graphics.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32wb.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32trust.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32wbvl.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32matter.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32wbxm.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32zigbee.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb-rf-certificates.pdf
Product	https://www.st.com/resource/en/certification_document/stm32wb5mxx-

Certifications	ble-rf-phy-5-3.pdf
Product	https://www.st.com/resource/en/certification_document/eu-declaration-of-conformity-stm32wb5mmg.pdf
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmd-srrc-certificate.pdf
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-ce-test-reports.zip
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-fcc-ised-certificates-and-test-reports.zip
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-japan-certificate-and-test-report.zip
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-kc-certificate-and-test-report.zip
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-nnc-test-reports.zip
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-reach-and-rohs-test-reports.zip
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-ukca-declaration-of-conformity.zip
Certifications	
Product	https://www.st.com/resource/en/certification_document/ble-thread-ftd-dynamic-thread-device-interoperability-certificate.pdf
Certifications	
Product	https://www.st.com/resource/en/certification_document/full-thread-device-interoperability-certification.pdf
Certifications	
Product	https://www.st.com/resource/en/certification_document/minimal-thread-device-interoperability-certification.pdf
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-india-eta.pdf
Certifications	
Product	https://www.st.com/resource/en/certification_document/stm32wb5mmg-thailand-declaration-conformity.zip
Certifications	
Security Advisory	https://www.st.com/resource/en/security_advisory/sa0024-potential-isolation-issue-between-cpu1-and-cpu2-on-stm32wb5x-stm32wb3x-stm32wb1x-and-stm32wl5x-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/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-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/an4221-i2c-protocol-used-in-the-stm32-bootloader-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/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4776-generalpurpose-timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5027-interfacing-pdm-digital-microphones-using-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5071-stm32wb-series-microcontrollers-ultralowpower-features-overview-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5105-getting-started-with-touch-sensing-control-on-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5155-stm32cube-mcu-package-examples-for-stm32wb-series-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5247-overtheair-application-and-wireless-firmware-update-for-stm32wb-series

microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5378-stm32wb-series-microcontrollers-bringup-procedure-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5379-examples-of-at-commands-on-stm32wb-series-microcontrollers-stmicroelectronics.pdf

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