
STM32
CubeMX

1. Description

1.1. Project

Project Name	CubeMX-UFBGA176+25
Board Name	custom
Generated with:	STM32CubeMX 6.16.1
Date	01/29/2026

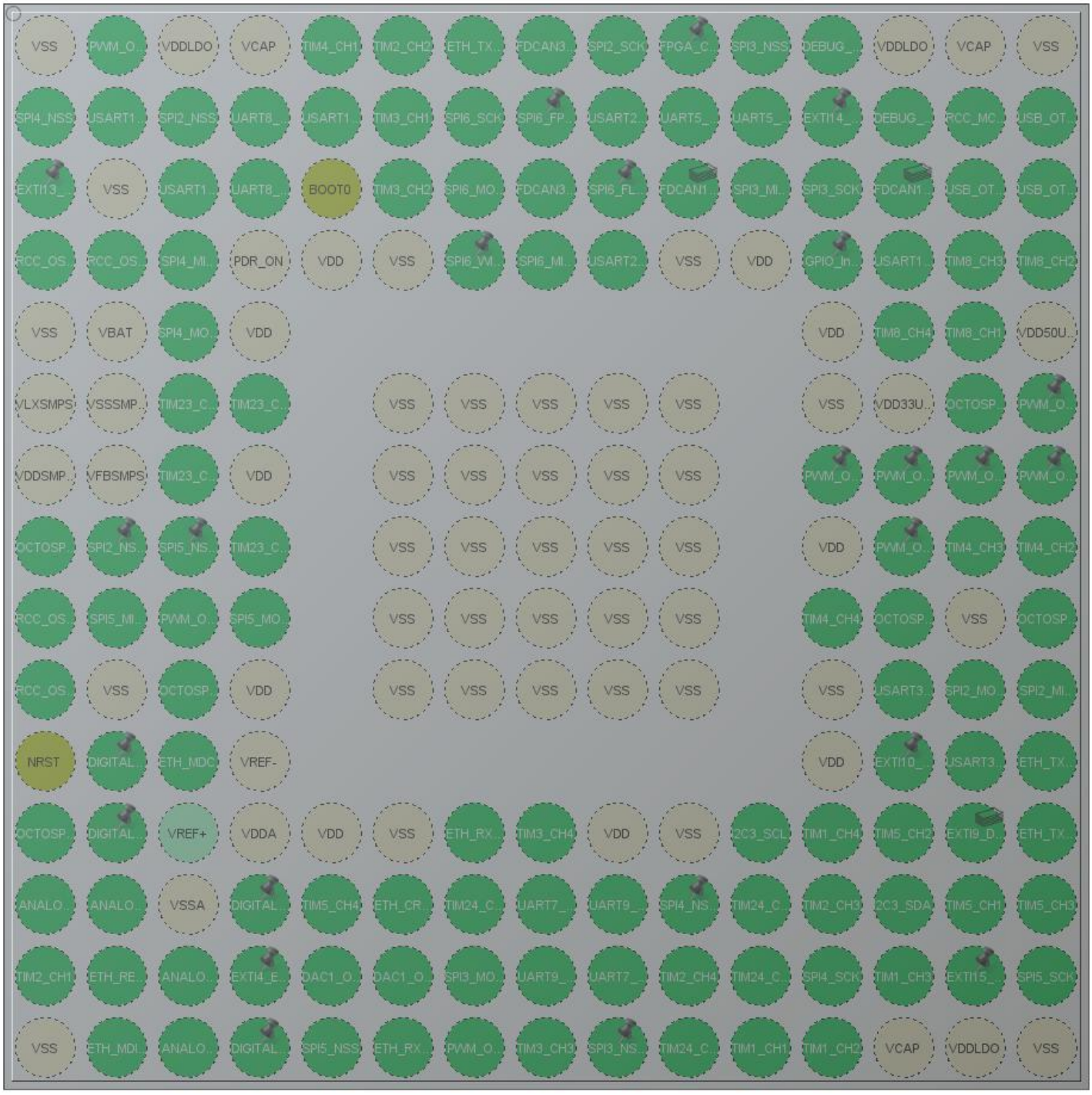
1.2. MCU

MCU Series	STM32H7
MCU Line	STM32H725/735
MCU name	STM32H725IGKx
MCU Package	UFBGA176
MCU Pin number	201

1.3. Core(s) information

Core(s)	Arm Cortex-M7

2. Pinout Configuration



UFBGA176 +25 (Top view)

3. Pins Configuration

Pin Number UFBGA176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
A1	VSS	Power		
A2	PB8	I/O	TIM16_CH1	PWM_OUT_D1
A3	VDDLDO	Power		
A4	VCAP	Power		
A5	PB6	I/O	TIM4_CH1	
A6	PB3(JTDO/TRACESWO)	I/O	TIM2_CH2	
A7	PG11	I/O	ETH_TX_EN	
A8	PG9	I/O	FDCAN3_TX	
A9	PD3	I/O	SPI2_SCK	
A10	PD1 *	I/O	GPIO_Output	FPGA_CRESET_B
A11	PA15(JTDI)	I/O	SPI3_NSS	
A12	PA14(JTCK/SWCLK)	I/O	DEBUG_JTCK-SWCLK	
A13	VDDLDO	Power		
A14	VCAP	Power		
A15	VSS	Power		
B1	PE4	I/O	SPI4_NSS	
B2	PE3	I/O	USART10_TX	
B3	PB9	I/O	SPI2_NSS	
B4	PE0	I/O	UART8_RX	
B5	PB7	I/O	USART1_RX	
B6	PB4(NJTRST)	I/O	TIM3_CH1	
B7	PG13	I/O	SPI6_SCK	
B8	PD7 *	I/O	GPIO_Output	SPI6_FPGA_CS
B9	PD5	I/O	USART2_TX	
B10	PD2	I/O	UART5_RX	
B11	PC12	I/O	UART5_TX	
B12	PH14	I/O	GPIO_EXTI14	EXTI14_FPGA_CDONE
B13	PA13(JTMS/SWDIO)	I/O	DEBUG_JTMS-SWDIO	
B14	PA8	I/O	RCC_MCO_1	
B15	PA12	I/O	USB_OTG_HS_DP	
C1	PC13	I/O	GPIO_EXTI13	EXTI13_WIFI
C2	VSS	Power		
C3	PE2	I/O	USART10_RX	
C4	PE1	I/O	UART8_TX	
C5	BOOT0	Boot		
C6	PB5	I/O	TIM3_CH2	

Pin Number UFBGA176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
C7	PG14	I/O	SPI6_MOSI	
C8	PG10	I/O	FDCAN3_RX	
C9	PD4 *	I/O	GPIO_Output	SPI6_FLASH_CS
C10	PD0	I/O	FDCAN1_RX, UART4_RX	
C11	PC11	I/O	SPI3_MISO	
C12	PC10	I/O	SPI3_SCK	
C13	PH13	I/O	FDCAN1_TX, UART4_TX	
C14	PA10	I/O	USB_OTG_HS_ID	
C15	PA11	I/O	USB_OTG_HS_DM	
D1	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
D2	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
D3	PE5	I/O	SPI4_MISO	
D4	PDR_ON	Power		
D5	VDD	Power		
D6	VSS	Power		
D7	PG15 *	I/O	GPIO_Output	SPI6_WIFI_CS
D8	PG12	I/O	SPI6_MISO	
D9	PD6	I/O	USART2_RX	
D10	VSS	Power		
D11	VDD	Power		
D12	PH15 *	I/O	GPIO_Input	
D13	PA9	I/O	USART1_TX	
D14	PC8	I/O	TIM8_CH3	
D15	PC7	I/O	TIM8_CH2	
E1	VSS	Power		
E2	VBAT	Power		
E3	PE6	I/O	SPI4_MOSI	
E4	VDD	Power		
E12	VDD	Power		
E13	PC9	I/O	TIM8_CH4	
E14	PC6	I/O	TIM8_CH1	
E15	VDD50USB	Power		
F1	VLXSMPS	Power		
F2	VSSSMPS	Power		
F3	PF1	I/O	TIM23_CH2	
F4	PF0	I/O	TIM23_CH1	
F6	VSS	Power		
F7	VSS	Power		
F8	VSS	Power		

Pin Number UFBGA176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
F9	VSS	Power		
F10	VSS	Power		
F12	VSS	Power		
F13	VDD33USB	Power		
F14	PG6	I/O	OCTOSPIM_P1_NCS	
F15	PG5 *	I/O	GPIO_Output	PWM_OUT_A4
G1	VDDSMPS	Power		
G2	VFBSMPS	Power		
G3	PF2	I/O	TIM23_CH3	
G4	VDD	Power		
G6	VSS	Power		
G7	VSS	Power		
G8	VSS	Power		
G9	VSS	Power		
G10	VSS	Power		
G12	PG8 *	I/O	GPIO_Output	PWM_OUT_A6
G13	PG7 *	I/O	GPIO_Output	PWM_OUT_A5
G14	PG4 *	I/O	GPIO_Output	PWM_OUT_A3
G15	PG2 *	I/O	GPIO_Output	PWM_OUT_A1
H1	PF6	I/O	OCTOSPIM_P1_IO3	
H2	PF4 *	I/O	GPIO_Output	SPI2_NSS_2
H3	PF5 *	I/O	GPIO_Output	SPI5_NSS_2
H4	PF3	I/O	TIM23_CH4	
H6	VSS	Power		
H7	VSS	Power		
H8	VSS	Power		
H9	VSS	Power		
H10	VSS	Power		
H12	VDD	Power		
H13	PG3 *	I/O	GPIO_Output	PWM_OUT_A2
H14	PD14	I/O	TIM4_CH3	
H15	PD13	I/O	TIM4_CH2	
J1	PH0-OSC_IN	I/O	RCC_OSC_IN	
J2	PF8	I/O	SPI5_MISO	
J3	PF7	I/O	TIM17_CH1	PWM_OUT_C1
J4	PF9	I/O	SPI5_MOSI	
J6	VSS	Power		
J7	VSS	Power		
J8	VSS	Power		

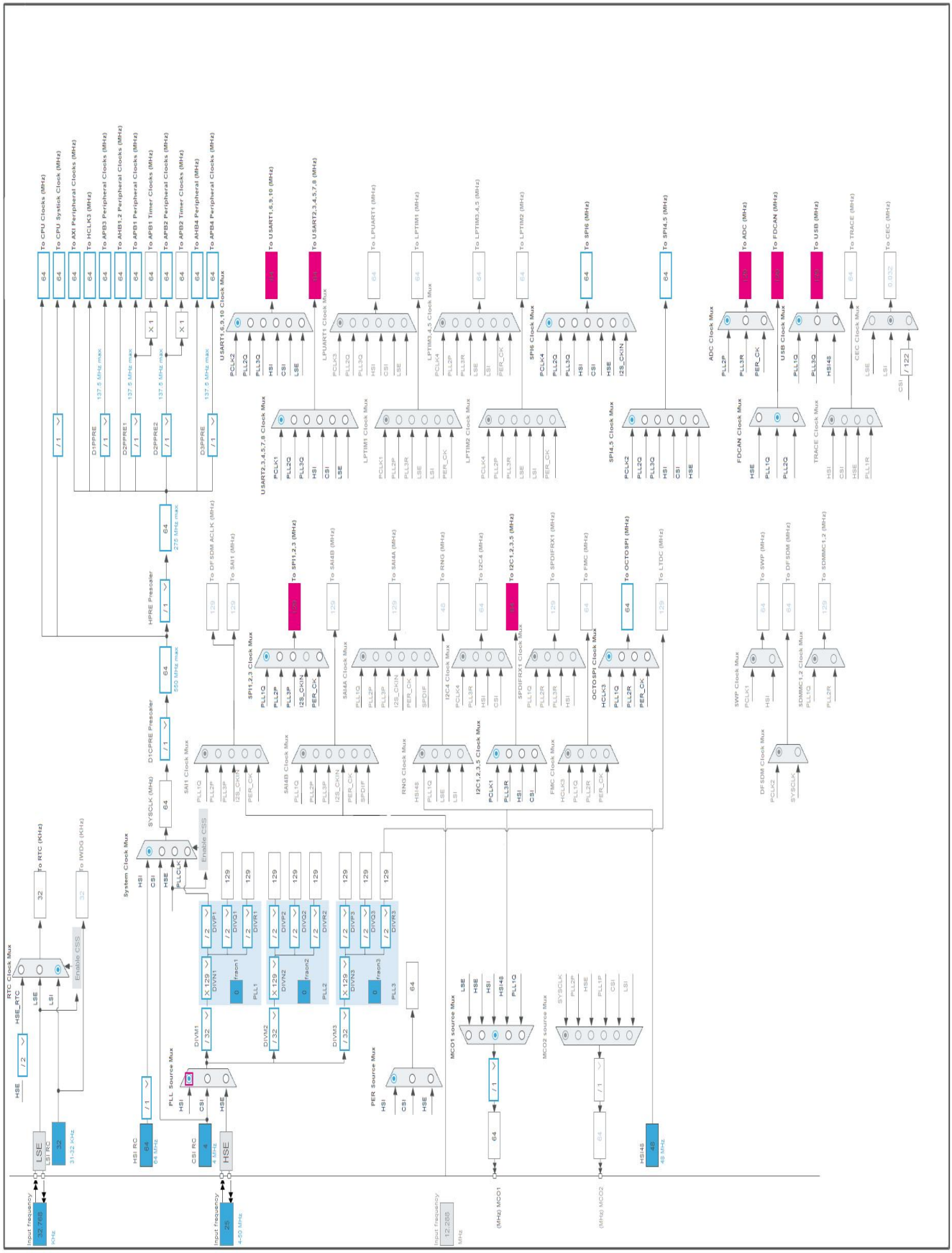
Pin Number UFBGA176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
J9	VSS	Power		
J10	VSS	Power		
J12	PD15	I/O	TIM4_CH4	
J13	PD11	I/O	OCTOSPIM_P1_IO0	
J14	VSS	Power		
J15	PD12	I/O	OCTOSPIM_P1_IO1	
K1	PH1-OSC_OUT	I/O	RCC_OSC_OUT	
K2	VSS	Power		
K3	PF10	I/O	OCTOSPIM_P1_CLK	
K4	VDD	Power		
K6	VSS	Power		
K7	VSS	Power		
K8	VSS	Power		
K9	VSS	Power		
K10	VSS	Power		
K12	VSS	Power		
K13	PD9	I/O	USART3_RX	
K14	PB15	I/O	SPI2_MOSI	
K15	PB14	I/O	SPI2_MISO	
L1	NRST	Reset		
L2	PC0 *	I/O	GPIO_Input	DIGITAL_IN_1
L3	PC1	I/O	ETH_MDC	
L4	VREF-	Power		
L12	VDD	Power		
L13	PD10	I/O	GPIO_EXTI10	EXTI10_STEPPERS
L14	PD8	I/O	USART3_TX	
L15	PB13	I/O	ETH_TXD1	
M1	PC2	I/O	OCTOSPIM_P1_IO2	
M2	PC3 *	I/O	GPIO_Input	DIGITAL_IN_4
M4	VDDA	Power		
M5	VDD	Power		
M6	VSS	Power		
M7	PC5	I/O	ETH_RXD1	
M8	PB1	I/O	TIM3_CH4	
M9	VDD	Power		
M10	VSS	Power		
M11	PH7	I/O	I2C3_SCL	
M12	PE14	I/O	TIM1_CH4	
M13	PH11	I/O	TIM5_CH2	

Pin Number UFBGA176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
M14	PH9	I/O	GPIO_Input, DAC1_EXTI9	EXTI9_DAC
M15	PB12	I/O	ETH_TXD0	
N1	PC2_C	I/O	ADC3_INP0	ANALOG_IN_3
N2	PC3_C	I/O	ADC3_INP1	ANALOG_IN_4
N3	VSSA	Power		
N4	PH2 *	I/O	GPIO_Input	DIGITAL_IN_2
N5	PA3	I/O	TIM5_CH4	
N6	PA7	I/O	ETH_CRS_DV	
N7	PF11	I/O	TIM24_CH1	
N8	PE8	I/O	UART7_TX	
N9	PG1	I/O	UART9_TX	
N10	PF15 *	I/O	GPIO_Output	SPI4_NSS_2
N11	PF13	I/O	TIM24_CH3	
N12	PB10	I/O	TIM2_CH3	
N13	PH8	I/O	I2C3_SDA	
N14	PH10	I/O	TIM5_CH1	
N15	PH12	I/O	TIM5_CH3	
P1	PA0	I/O	TIM2_CH1	
P2	PA1	I/O	ETH_REF_CLK	
P3	PA1_C	I/O	ADC1_INP1	ANALOG_IN_1
P4	PH4 *	I/O	GPIO_Input	EXTI4_EMERGENCY_STOP
P5	PA4	I/O	DAC1_OUT1	
P6	PA5	I/O	DAC1_OUT2	
P7	PB2	I/O	SPI3_MOSI	
P8	PG0	I/O	UART9_RX	
P9	PE7	I/O	UART7_RX	
P10	PB11	I/O	TIM2_CH4	
P11	PF12	I/O	TIM24_CH2	
P12	PE12	I/O	SPI4_SCK	
P13	PE13	I/O	TIM1_CH3	
P14	PE15	I/O	GPIO_EXTI15	EXTI15_FPGA
P15	PH6	I/O	SPI5_SCK	
R1	VSS	Power		
R2	PA2	I/O	ETH_MDIO	
R3	PA0_C	I/O	ADC1_INP0	ANALOG_IN_2
R4	PH3 *	I/O	GPIO_Input	DIGITAL_IN_3
R5	PH5	I/O	SPI5_NSS	
R6	PC4	I/O	ETH_RXD0	

Pin Number UFBGA176	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
R7	PA6	I/O	TIM13_CH1	PWM_OUT_B1
R8	PB0	I/O	TIM3_CH3	
R9	PE10 *	I/O	GPIO_Output	SPI3_NSS_2
R10	PF14	I/O	TIM24_CH4	
R11	PE9	I/O	TIM1_CH1	
R12	PE11	I/O	TIM1_CH2	
R13	VCAP	Power		
R14	VDDLDO	Power		
R15	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	STM32H7
Line	STM32H725/735
MCU	STM32H725IGKx
Datasheet	DS13311_Rev1

1.2. Parameter Selection

Temperature	25
Vdd	3.0

1.3. Battery Selection

Battery	Alkaline(9V)
Capacity	625.0 mAh
Self Discharge	0.3 %/month
Nominal Voltage	9.0 V
Max Cont Current	200.0 mA
Max Pulse Current	0.0 mA
Cells in series	1
Cells in parallel	1

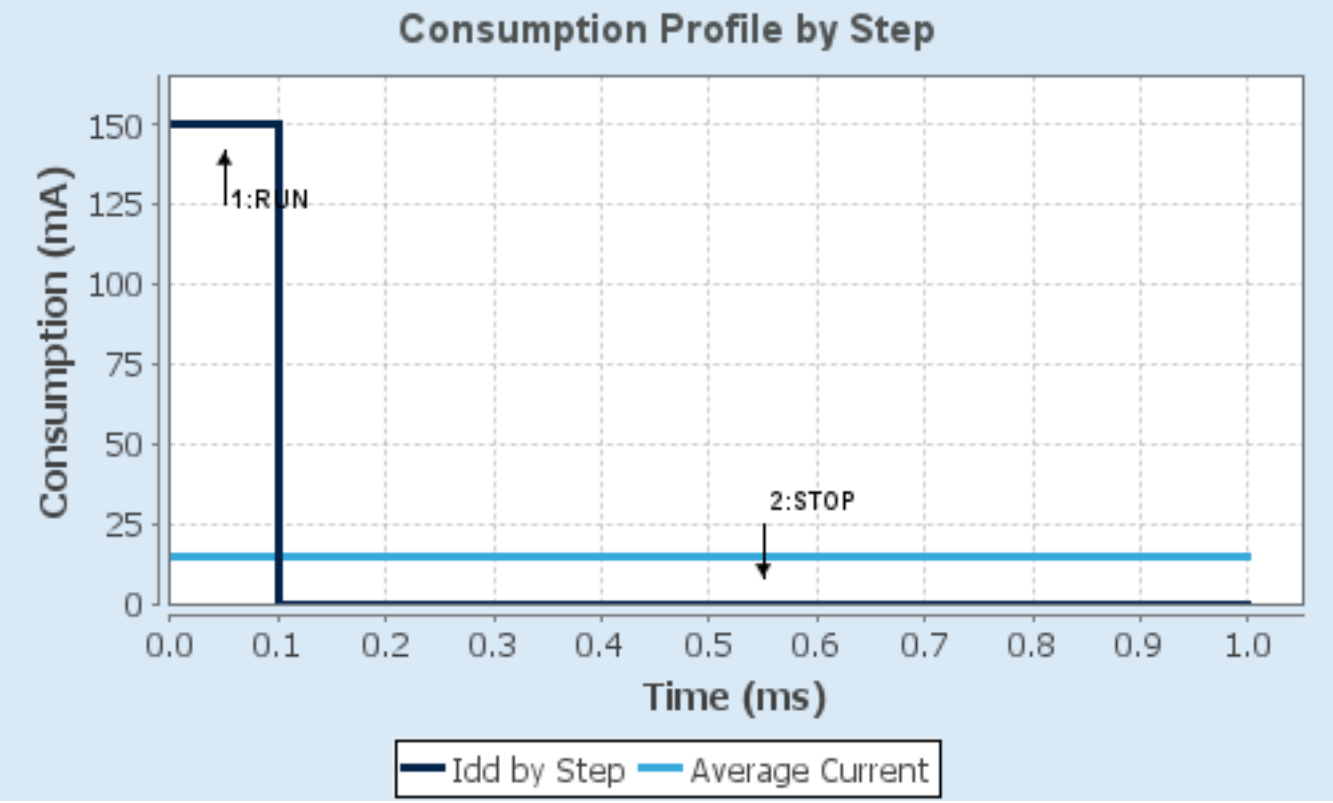
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	VOS0: Scale0/Boost	SVOS3: System-Scale3/SMPS-LDO
D1 Mode	DRUN	DSTANDBY
D2 Mode	DRUN	DSTANDBY
D3 Mode	DRUN	DSTOP
Fetch Type	SRAM1/FlashMode-ON/Cache	NA
CPU Frequency	550 MHz	0 Hz
Clock Configuration	HSE BYP PLL	LSE LowDrive RTC
Clock Source Frequency	8 MHz	32.768 kHz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	150 mA	2.5 µA
Duration	0.1 ms	0.9 ms
DMIPS	1177.0	0.0
Ta Max	107.9	125
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	15 mA
Battery Life	1 day, 17 hours	Average DMIPS	1177.0 DMIPS

1.6. Chart


Consumption Profile by Step
Consumption (mA)
150
125
100
75
50
25
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

2. Software Project

2.1. Project Settings

Name	Value
Project Name	CubeMX-UFBGA176+25
Project Folder	D:\Users\Hydra\Documents\DipTrace\Projects\MakerPnPControl\CubeMX
Toolchain / IDE	EWARM V8.50
Firmware Package Name and Version	STM32Cube FW_H7 V1.12.1
Application Structure	Advanced
Generate Under Root	No
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 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

2.3. 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_DAC1_Init	DAC1
5	MX_ETH_Init	ETH
6	MX_FDCAN3_Init	FDCAN3
7	MX_SPI2_Init	SPI2
8	MX_SPI3_Init	SPI3
9	MX_SPI4_Init	SPI4
10	MX_SPI5_Init	SPI5
11	MX_TIM1_Init	TIM1

Rank	Function Name	Peripheral Instance Name
12	MX_TIM2_Init	TIM2
13	MX_TIM5_Init	TIM5
14	MX_TIM8_Init	TIM8
15	MX_TIM12_Init	TIM12
16	MX_TIM13_Init	TIM13
17	MX_TIM14_Init	TIM14
18	MX_TIM15_Init	TIM15
19	MX_TIM16_Init	TIM16
20	MX_TIM17_Init	TIM17
21	MX_TIM23_Init	TIM23
22	MX_TIM24_Init	TIM24
23	MX_UART5_Init	UART5
24	MX_UART7_Init	UART7
25	MX_UART8_Init	UART8
26	MX_UART9_Init	UART9
27	MX_USART1_UART_Init	USART1
28	MX_USART2_UART_Init	USART2
29	MX_USART3_UART_Init	USART3
30	MX_USART10_UART_Init	USART10
31	MX_USB_OTG_HS_USB_Init	USB_OTG_HS
32	MX_ADC1_Init	ADC1
33	MX_ADC3_Init	ADC3
34	MX_FDCAN1_Init	FDCAN1
35	MX_I2C3_Init	I2C3
36	MX_OCTOSPI1_Init	OCTOSPI1
37	MX_RTC_Init	RTC
38	MX_TIM3_Init	TIM3
39	MX_TIM4_Init	TIM4
40	MX_TIM6_Init	TIM6
41	MX_TIM7_Init	TIM7
42	MX_SPI6_Init	SPI6

3. Peripherals and Middlewares Configuration

3.1. ADC1

mode: IN0

IN1: IN1 Single-ended

3.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Clock Prescaler	Asynchronous clock mode divided by 4
Resolution	ADC 16-bit resolution
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Left Bit Shift	No bit shift
Conversion Data Management Mode	Regular Conversion data stored in DR register only
Low Power Auto Wait	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Enable Regular Oversampling	Disable
Oversampling Ratio	1
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Rank	1
Channel	Channel 0
Sampling Time	1.5 Cycles
Offset Number	No offset
Offset Signed Saturation	Disable

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

3.2. ADC3

mode: IN0

IN1: IN1 Single-ended

mode: Vbat Channel

mode: Temperature Sensor Channel

mode: Vrefint Channel

3.2.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Asynchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Scan Conversion Mode	Disabled
Data Alignment	Right alignment
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
Left Bit Shift	No bit shift
Conversion Data Management Mode	Regular Conversion data stored in DR register only
Low Power Auto Wait	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Enable Regular Oversampling	Disable
Oversampling Ratio	Oversampling ratio 2x
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Sampling Mode	Normal
Rank	1
Channel	**Channel Vrefint ***
Sampling Time	2.5 Cycles
Offset Number	No offset
Offset Sign	Offset Sign Negative

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

3.3. CORTEX_M7

3.3.1. Parameter Settings:

Speculation default mode Settings:

Speculation default mode	**Enabled ***

Cortex Interface Settings:

CPU ICache	Disabled
CPU DCache	Disabled

Cortex Memory Protection Unit Control Settings:

MPU Control Mode	Background Region Privileged accesses only + MPU Disabled during hard fault, NMI and FAULTMASK handlers

Cortex Memory Protection Unit Region 0 Settings:

MPU Region	Enabled
MPU Region Base Address	**0x0 ***
MPU Region Size	4GB
MPU SubRegion Disable	**0x87 ***
MPU TEX field level	level 0
MPU Access Permission	ALL ACCESS NOT PERMITTED
MPU Instruction Access	DISABLE
MPU Shareability Permission	ENABLE
MPU Cacheable Permission	DISABLE
MPU Bufferable Permission	DISABLE

Cortex Memory Protection Unit Region 1 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 2 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 3 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 4 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 5 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 6 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 7 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 8 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 9 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 10 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 11 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 12 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 13 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 14 Settings:

MPU Region	Disabled

Cortex Memory Protection Unit Region 15 Settings:

MPU Region	Disabled

3.4. DAC1

OUT1 connected to: both external pin and on chip analog peripherals

OUT2 connected to: both external pin and on chip analog peripherals

3.4.1. Parameter Settings:

DAC Out1 Settings:

Mode selected	Normal Mode
Output Buffer	Enable
Trigger	None
User Trimming	Factory trimming
On chip peripheral(s)	not yet connected

DAC Out2 Settings:

Mode selected	Normal Mode
Output Buffer	Enable
Trigger	None
User Trimming	Factory trimming
On chip peripheral(s)	not yet connected

3.5. DEBUG

Debug: Serial Wire

3.6. ETH

Mode: RMII

3.6.1. Parameter Settings:

General : Ethernet Configuration:

Warning	Ethernet RX and Tx descriptors needs to be placed in a RAM memory accessible by the dedicated Ethernet DMA
Ethernet MAC Address	00:80:E1:00:00:00
Tx Descriptor Length	4
First Tx Descriptor Address	**0x30000080 ***
Rx Descriptor Length	4
First Rx Descriptor Address	**0x30000000 ***
Rx Buffers Address	**0x30000100 ***
Rx Buffers Length	1536

3.7. FDCAN1

mode: Activated

3.7.1. Parameter Settings:

Clock Calibration Unit:

Clock Calibration	Disable

Bit Timings Parameters:

Nominal Prescaler	16
Nominal Time Quantum	**124.03100775193798 ***
Nominal Time Seg1	1
Nominal Time Seg2	1
Nominal Time for one Bit	**372 ***
Nominal Baud Rate	**2687500 ***

3.8. FDCAN3

mode: Activated

3.8.1. Parameter Settings:

Clock Calibration Unit:

Clock Calibration	Disable

Bit Timings Parameters:

Nominal Prescaler	16
Nominal Time Quantum	**124.03100775193798 ***
Nominal Time Seg1	1
Nominal Time Seg2	1
Nominal Time for one Bit	**372 ***
Nominal Baud Rate	**2687500 ***

3.9. I2C3

I2C: I2C

3.9.1. 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	0x10707DBC

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

3.10. MEMORYMAP

mode: Activated

3.11. OCTOSPI1

Mode: Quad SPI

Clock: Port1 CLK

Chip Select: Port1 NCS

Data [3:0]: Port1 IO[3:0]

3.11.1. Parameter Settings:

Generic:

Fifo Threshold	1
Dual Quad mode	Disable
Memory Type	Micron
Device Size	32
Chip Select High Time	1
Free Running Clock	Disable
Clock Mode	Low
Wrap Size	Not Supported
Clock Prescaler	1
Sample Shifting	None
Delay Hold Quarter Cycle	Disable
Chip Select Boundary	0
Delay Block	Disable
Maximum Transfer	0
Refresh Rate	0

3.12. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

mode: Master Clock Output 1

3.12.1. Parameter Settings:

Power Parameters:

SupplySource	PWR_DIRECT_SMPS_SUPPLY
Power Regulator Voltage Scale	Power Regulator Voltage Scale 3

RCC Parameters:

TIM Prescaler Selection	Disabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
CSI Calibration Value	16

HSI Calibration Value	64

System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	1 WS (2 CPU cycle)

PLL range Parameters:

PLL1 input frequency range	Between 2 and 4 MHz
PLL2 input frequency range	Between 2 and 4 MHz
PLL1 clock Output range	Wide VCO range
PLL2 clock Output range	Wide VCO range

3.13. RTC

mode: Activate Clock Source

3.13.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	127
Synchronous Predivider value	255

3.14. SPI2

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Output Signal

3.14.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**64.5 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Output Hardware

Fifo Threshold	Fifo Threshold 01 Data
Tx Crc Initialization Pattern	All Zero Pattern
Rx Crc Initialization Pattern	All Zero Pattern
Nss Polarity	Nss Polarity Low
Master Ss Idleness	00 Cycle
Master Inter Data Idleness	00 Cycle
Master Receiver Auto Susp	Disable
Master Keep Io State	Master Keep Io State Disable
IO Swap	Disabled

3.15. SPI3

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Output Signal

3.15.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**64.5 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Output Hardware
Fifo Threshold	Fifo Threshold 01 Data
Tx Crc Initialization Pattern	All Zero Pattern
Rx Crc Initialization Pattern	All Zero Pattern
Nss Polarity	Nss Polarity Low
Master Ss Idleness	00 Cycle
Master Inter Data Idleness	00 Cycle
Master Receiver Auto Susp	Disable
Master Keep Io State	Master Keep Io State Disable
IO Swap	Disabled

3.16. SPI4

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Output Signal

3.16.1. 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
Fifo Threshold	Fifo Threshold 01 Data
Tx Crc Initialization Pattern	All Zero Pattern
Rx Crc Initialization Pattern	All Zero Pattern
Nss Polarity	Nss Polarity Low
Master Ss Idleness	00 Cycle
Master Inter Data Idleness	00 Cycle
Master Receiver Auto Susp	Disable
Master Keep Io State	Master Keep Io State Disable
IO Swap	Disabled

3.17. SPI5

Mode: Full-Duplex Master

Hardware NSS Signal: Hardware NSS Input Signal

3.17.1. 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
Fifo Threshold	Fifo Threshold 01 Data
Tx Crc Initialization Pattern	All Zero Pattern
Rx Crc Initialization Pattern	All Zero Pattern
Nss Polarity	Nss Polarity Low
Master Ss Idleness	00 Cycle
Master Inter Data Idleness	00 Cycle
Master Receiver Auto Susp	Disable
Master Keep Io State	Master Keep Io State Disable
IO Swap	Disabled

3.18. SPI6

Mode: Full-Duplex Master

3.18.1. 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	Software
Fifo Threshold	Fifo Threshold 01 Data
Tx Crc Initialization Pattern	All Zero Pattern
Rx Crc Initialization Pattern	All Zero Pattern

Nss Polarity	Nss Polarity Low
Master Ss Idleness	00 Cycle
Master Inter Data Idleness	00 Cycle
Master Receiver Auto Susp	Disable
Master Keep Io State	Master Keep Io State Disable
IO Swap	Disabled

3.19. SYS

Timebase Source: SysTick

3.20. TIM1

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.20.1. 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 - 16 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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

3.21. TIM2

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.21.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	4294967295
Internal Clock Division (CKD)	No Division
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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct

Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

3.22. TIM3

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.22.1. 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
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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

3.23. TIM4

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.23.1. 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
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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge

IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

3.24. TIM5

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.24.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	4294967295
Internal Clock Division (CKD)	No Division
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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division

Input Filter (4 bits value)	0

3.25. TIM6

mode: Activated

3.25.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

3.26. TIM7

mode: Activated

3.26.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)

3.27. TIM8

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.27.1. 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 - 16 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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

3.28. TIM12

Channel1: Output Compare No Output

Channel2: Output Compare No Output

3.28.1. 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
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Clear Input:

Clear Input Source	Disable

Output Compare No Output Channel 1:

Mode	Frozen (used for Timing base)
Pulse (16 bits value)	0
Output compare preload	Disable
CH Polarity	High

Output Compare No Output Channel 2:

Mode	Frozen (used for Timing base)
Pulse (16 bits value)	0
Output compare preload	Disable
CH Polarity	High

3.29. TIM13

mode: Activated

Channel1: PWM Generation CH1

3.29.1. 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
auto-reload preload	Disable

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 1:

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

3.30. TIM14

mode: Activated

3.30.1. 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
auto-reload preload	Disable

3.31. TIM15

Channel1: Output Compare No Output

Channel2: Output Compare No Output

3.31.1. 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	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
- DFSDM	Disable

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

Output Compare No Output Channel 1:

Mode	Frozen (used for Timing base)
Pulse (16 bits value)	0
Output compare preload	Disable
CH Polarity	High
CH Idle State	Reset

Output Compare No Output Channel 2:

Mode	Frozen (used for Timing base)
Pulse (16 bits value)	0
Output compare preload	Disable
CH Polarity	High
CH Idle State	Reset

3.32. TIM16

mode: Activated

Channel1: PWM Generation CH1

3.32.1. 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

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
- DFSDM	Disable

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

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

3.33. TIM17

mode: Activated

Channel1: PWM Generation CH1

3.33.1. 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

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
- DFSDM	Disable

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

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

3.34. TIM23

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.34.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	4294967295
Internal Clock Division (CKD)	No Division
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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

3.35. TIM24

Channel1: Input Capture direct mode

Channel2: Input Capture direct mode

Channel3: Input Capture direct mode

Channel4: Input Capture direct mode

3.35.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	4294967295
Internal Clock Division (CKD)	No Division
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)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 2:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 4:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

3.36. UART5

Mode: Asynchronous

3.36.1. 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	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

3.37. UART7

Mode: Asynchronous

3.37.1. 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	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

3.38. UART8

Mode: Asynchronous

3.38.1. 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	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

3.39. UART9

Mode: Asynchronous

3.39.1. 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	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

3.40. USART1

Mode: Asynchronous

3.40.1. 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

3.41. USART2

Mode: Asynchronous

3.41.1. 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

3.42. USART3

Mode: Asynchronous

3.42.1. 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

3.43. USART10

Mode: Asynchronous

3.43.1. 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

3.44. USB_OTG_HS

Internal FS Phy: OTG/Dual_Role_Device

3.45. VREFBUF

VREFBUF Mode: External voltage reference

*** 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	PA1_C	ADC1_INP1	Analog mode	No pull-up and no pull-down	n/a	ANALOG_IN_1
	PA0_C	ADC1_INP0	Analog mode	No pull-up and no pull-down	n/a	ANALOG_IN_2
ADC3	PC2_C	ADC3_INP0	Analog mode	No pull-up and no pull-down	n/a	ANALOG_IN_3
	PC3_C	ADC3_INP1	Analog mode	No pull-up and no pull-down	n/a	ANALOG_IN_4
DAC1	PH9	DAC1_EXTI9	Input mode	No pull-up and no pull-down	n/a	EXTI9_DAC
	PA4	DAC1_OUT1	Analog mode	No pull-up and no pull-down	n/a	
	PA5	DAC1_OUT2	Analog mode	No pull-up and no pull-down	n/a	
DEBUG	PA14(JTCK/SWCLK)	DEBUG_JTCK-SWCLK	n/a	n/a	n/a	
	PA13(JTMS/SWDIO)	DEBUG_JTMS-SWDIO	n/a	n/a	n/a	
ETH	PG11	ETH_TX_EN	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC1	ETH_MDC	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PB13	ETH_TXD1	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC5	ETH_RXD1	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PB12	ETH_TXD0	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PA7	ETH_CRS_DV	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PA1	ETH_REF_CLK	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PA2	ETH_MDIO	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC4	ETH_RXD0	Alternate Function Push Pull	No pull-up and no pull-down	High	
FDCAN1	PD0	FDCAN1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PH13	FDCAN1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
FDCAN3	PG9	FDCAN3_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PG10	FDCAN3_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
I2C3	PH7	I2C3_SCL	Alternate Function Open Drain	No pull-up and no pull-down	Low	
	PH8	I2C3_SDA	Alternate Function Open Drain	No pull-up and no pull-down	Low	
OCTOSPI1	PG6	OCTOSPIM_P1_NCS	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF6	OCTOSPIM_P1_IO3	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD11	OCTOSPIM_P1_IO0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PD12	OCTOSPIM_P1_IO1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
	PF10	OCTOSPIM_P1_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Very High	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PC2	OCTOSPIM_P1_IO2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	
RCC	PA8	RCC_MCO_1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC15-OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PC14-OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PH0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI2	PD3	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB9	SPI2_NSS	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB15	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB14	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SPI3	PA15(JTDI)	SPI3_NSS	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC11	SPI3_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC10	SPI3_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB2	SPI3_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SPI4	PE4	SPI4_NSS	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE5	SPI4_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE6	SPI4_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE12	SPI4_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SPI5	PF8	SPI5_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PF9	SPI5_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PH6	SPI5_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PH5	SPI5_NSS	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SPI6	PG13	SPI6_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PG14	SPI6_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PG12	SPI6_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM1	PE14	TIM1_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE13	TIM1_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE9	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE11	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM2	PB3(JTDO/TRACESWO)	TIM2_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB10	TIM2_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA0	TIM2_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB11	TIM2_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM3	PB4(NJTRST)	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PB5	TIM3_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB1	TIM3_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB0	TIM3_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM4	PB6	TIM4_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD14	TIM4_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD13	TIM4_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD15	TIM4_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM5	PH11	TIM5_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA3	TIM5_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PH10	TIM5_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PH12	TIM5_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM8	PC8	TIM8_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC7	TIM8_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC9	TIM8_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC6	TIM8_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM13	PA6	TIM13_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	PWM_OUT_B1
TIM16	PB8	TIM16_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	PWM_OUT_D1
TIM17	PF7	TIM17_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	PWM_OUT_C1
TIM23	PF1	TIM23_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PF0	TIM23_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PF2	TIM23_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PF3	TIM23_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM24	PF11	TIM24_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PF13	TIM24_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PF12	TIM24_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PF14	TIM24_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
UART5	PD2	UART5_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC12	UART5_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
UART7	PE8	UART7_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE7	UART7_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
UART8	PE0	UART8_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE1	UART8_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
UART9	PG1	UART9_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PG0	UART9_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USART1	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA9	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USART2	PD5	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD6	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USART3	PD9	USART3_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD8	USART3_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
USART10	PE3	USART10_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PE2	USART10_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USB_OTG_HS	PA12	USB_OTG_HS_DP	n/a	n/a	n/a	
	PA10	USB_OTG_HS_ID	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA11	USB_OTG_HS_DM	n/a	n/a	n/a	
GPIO	PD1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	FPGA_CRESET_B
	PD7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI6_FPGA_CS
	PH14	GPIO_EXTI14	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	EXTI14_FPGA_CDONE
	PC13	GPIO_EXTI13	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	EXTI13_WIFI
	PD4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI6_FLASH_CS
	PG15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI6_WIFI_CS
	PH15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PG5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PWM_OUT_A4
	PG8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PWM_OUT_A6
	PG7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PWM_OUT_A5
	PG4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PWM_OUT_A3
	PG2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PWM_OUT_A1
	PF4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI2_NSS_2
	PF5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI5_NSS_2
	PG3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PWM_OUT_A2
	PC0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN_1
	PD10	GPIO_EXTI10	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	EXTI10_STEPPERS
	PC3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN_4
	PH9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	EXTI9_DAC
	PH2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN_2
	PF15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI4_NSS_2
	PH4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	EXTI4_EMERGENCY_STOP
	PE15	GPIO_EXTI15	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	EXTI15_FPGA
	PH3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIGITAL_IN_3
	PE10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SPI3_NSS_2

4.2. DMA configuration

DMA request	Stream	Direction	Priority
TIM15_UP	DMA1_Stream0	Memory To Peripheral	**Medium ***
TIM6_UP	DMA1_Stream1	Memory To Peripheral	Low
TIM7_UP	DMA1_Stream2	Peripheral To Memory	Low

TIM15_UP: DMA1_Stream0 DMA request Settings:

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

TIM6_UP: DMA1_Stream1 DMA request Settings:

Mode:	Normal
Use fifo:	Disable
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Half Word
Memory Data Width:	Half Word

TIM7_UP: DMA1_Stream2 DMA request Settings:

Mode:	Normal
Use fifo:	Disable
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Half Word
Memory Data Width:	Half Word

4.3. BDMA configuration

nothing configured in DMA service

4.4. MDMA configuration

nothing configured in DMA service

4.5. NVIC configuration

4.5.1. 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
Pre-fetch 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 stream0 global interrupt	true	0	0
DMA1 stream1 global interrupt	true	0	0
DMA1 stream2 global interrupt	true	0	0
EXTI line[15:10] interrupts	true	0	0
PVD/AVD through EXTI Line detection Interrupt	unused		
Tamper and TimeStamp interrupts through the EXTI line	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		
FDCAN1 interrupt 0	unused		
FDCAN1 interrupt 1	unused		
TIM1 break interrupt	unused		
TIM1 update interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM2 global interrupt	unused		
TIM3 global interrupt	unused		
TIM4 global interrupt	unused		
SPI2 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		

Interrupt Table	Enable	Preenmption Priority	SubPriority
SPI3 global interrupt	unused		
UART5 global interrupt	unused		
TIM6 global interrupt, DAC1_CH1 and DAC1_CH2 underrun error interrupts	unused		
TIM7 global interrupt	unused		
Ethernet global interrupt	unused		
Ethernet wake-up interrupt through EXTI line 86	unused		
FDCAN calibration unit interrupt	unused		
I2C3 event interrupt	unused		
I2C3 error interrupt	unused		
FPU global interrupt	unused		
UART7 global interrupt	unused		
UART8 global interrupt	unused		
SPI4 global interrupt	unused		
SPI5 global interrupt	unused		
SPI6 global interrupt	unused		
OCTOSPI1 global interrupt	unused		
TIM15 global interrupt	unused		
TIM16 global interrupt	unused		
TIM17 global interrupt	unused		
HSEM1 global interrupt	unused		
ADC3 global interrupt	unused		
UART9 global interrupt	unused		
USART10 global interrupt	unused		
FDCAN3 interrupt 0	unused		
FDCAN3 interrupt 1	unused		
TIM23 global interrupt	unused		
TIM24 global interrupt	unused		

4.5.2. 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
Pre-fetch 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

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
DMA1 stream0 global interrupt	false	true	true
DMA1 stream1 global interrupt	false	true	true
DMA1 stream2 global interrupt	false	true	true
EXTI line[15:10] interrupts	false	true	true

*** User modified value**

5. System Views

5.1. Category view

5.1.1. Current

6. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32h7_bsdl.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32h7_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32h7-svd.zip
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers_stm32h7_series_product_overview.pdf
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_stm32h72x-3x_line_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-stm32h7rs-lines-overview.pdf
Brochures	https://www.st.com/resource/en/brochure/brstm32h7.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32trust.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32h7rs.pdf
Security Bulletin	https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf
Security Bulletin	https://www.st.com/resource/en/security_bulletin/sb0023-eucleak-protection-statement-for-stmicroelectronics-certified-products-

	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/an4839-level-1-cache-on-stm32f7-series-and-stm32h7-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4891-stm32h72x-stm32h73x-and-singlecore-stm32h74x75x-system-architecture-and-performance-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4989-stm32-microcontroller-debug-toolbox-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4990-getting-started-with-sigmadelta-digital-interface-on-applicable-stm32-microcontrollers-

	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/an5033-stm32cube-mcu-package-examples-for-stm32h7-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5073-receiving-spdif-audio-stream-with-the-stm32f4f7h7-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5419-getting-started-with-stm32h723733-stm32h725735-and-stm32h730-value-line-hardware-development-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4899-stm32-microcontroller-gpio-hardware-settings-and-lowpower-consumption-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5612-esd-protection-of-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5293-migration-guide-from-stm32f7-series-to-stmh74x75x-stm32h72x73x-and-stmh7a37bx-devices-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4991-how-to-wake-up-an-stm32-microcontroller-from-lowpower-mode-with-the-usart-or-the-lpuart-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4838-introduction-to-memory-protection-unit-management-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5325-how-to-use-the-cordic-to-perform-mathematical-functions-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5927-i3c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5225-introduction-to-usb-typec-power-delivery-for-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5342--how-to-use-

	error-correction-code-ecc-management-for-internal-memories-protection-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5537-how-to-use-adc-oversampling-techniques-to-improve-signaltonoise-ratio-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5036-guidelines-for-thermal-management-on-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5405-how-to-use-fdcan-bootloader-protocol-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5690-how-to-use-vrefbuf-peripheral-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4230-introduction-to-random-number-generation-validation-using-the-nist-statistical-test-suite-for-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2867-guidelines-for-oscillator-design-on-stm8afals-and-stm32-mcusmpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4013-introduction-to-timers-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4277-how-to-use-pwm-shutdown-for-motor-control-and-digital-power-conversion-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4635-how-to-optimize-lpuart-power-consumption-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4759-introduction-to-using-the-hardware-realtime-clock-rtc-and-the-tamper-management-unit-tamp-with-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4861-introduction-to-lcdtft-display-controller-ltdc-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4908-getting-started-with-usart-automatic-baud-rater-detection-for-stm32-mcus-stmicroelectronics.pdf

Application Notes	https://www.st.com/resource/en/application_note/an4943-how-to-use-chromart-accelerator-to-refresh-an-lcdtft-display-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5156-introduction-to-security-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5224-introduction-to-dmamux-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5507-how-to-use-crc-to-check-the-integrity-of-the-internal-flash-memory-on-stm32h7-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5543-guidelines-for-enhanced-spi-communication-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5050-getting-started-with-octospi-hexadecaspi-and-xspi-interface-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5337-guidelines-for-estimating-stm32h7-mcus-lifetime-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5348-introduction-to-fdcan-peripherals-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/cd00211314-how-to-optimize-the-adc-accuracy-in-the-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack2-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5020-introduction-to-digital-camera-interface-dcmi-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4566-how-to-extend-the-dac-performance-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5647-the-goertzel-algorithm-to-compute-individual-terms-of-the-discrete-fourier-transform-dft-in-stm32-products-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2606-introduction-to-

	system-memory-boot-mode-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5200-getting-started-with-the-stm32h7-mcu-sdmmc-host-controller-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4323-getting-started-with-stemwin-library-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4435-guidelines-for-obtaining-ulcsaiec-607301603351-class-b-certification-in-any-stm32-application-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4657-stm32-inapplication-programming-iap-using-the-usart-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4841-digital-signal-processing-for-stm32-microcontrollers-using-cmsis-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4891-stm32h72x-stm32h73x-and-singlecore-stm32h74x75x-system-architecture-and-performance-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5001-stm32cube-expansion-package-for-stm32h7-series-mdma-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5014-stm32h7x3-smart-power-management-expansion-package-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5033-stm32cube-mcu-package-examples-for-stm32h7-series-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5056-integration-guide-for-the-xcubesbsfu-stm32cube-expansion-package-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5360-getting-started-with-projects-based-on-the-stm32mp1-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5361-getting-started-

for related Tools & Software	with-projects-based-on-dualcore-stm32h7-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5394-getting-started-with-projects-based-on-the-stm32l5-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5418-how-to-build-a-simple-usbpd-sink-application-with-stm32cubemx-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5426-migrating-graphics-middleware-projects-from-stm32cubemx-540-to-stm32cubemx-550-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5534-stm32h735gdk-firmware-upgrade-for-atbased-emw3080-wifi-module-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5564-getting-started-with-projects-based-on-dualcore-stm32wl-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4865-lowpower-timer-lptim-applicative-use-cases-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5698-adapting-the-xcubestl-functional-safety-package-for-stm32-iec-61508-compliant-to-other-safety-standards-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5731-stm32cubemx-and-stm32cubeide-threadsafe-solution-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5450-stm32h7a37b3-lines-and-stm32h7b0-value-line-smart-power-management-expansion-package-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4502-stm32-smbuspmbus-expansion-package-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools	https://www.st.com/resource/en/application_note/an5952-how-to-use-cmake-in-stm32cubeide-stmicroelectronics.pdf

& Software	
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4635-how-to-optimize-lpuart-power-consumption-on-stm32-mcus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5054-how-to-perform-secure-programming-using-stm32cubeprogrammer-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6088-how-to-use-mce-for-encryptiondecryption-on-stm32-mcus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6179-how-to-integrate-the-stl-firmware-into-a-time-critical-user-application-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6127-getting-started-with-stm32h7rx7sx-mcus-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6265-getting-started-with-stm32n6-mcus-in-stm32cubeide-stmicroelectronics.pdf
Design Notes & Tips	https://www.st.com/resource/en/design_tip/dt0117-microphone-array-beamforming-in-the-pcm-and-pdm-domain-stmicroelectronics.pdf
Errata Sheets	https://www.st.com/resource/en/errata_sheet/es0491-stm32h72xx73xx-device-errata-stmicroelectronics.pdf
Datasheet	https://www.st.com/resource/en/datasheet/dm00701017.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0253-stm32f7-series-and-stm32h7-series-cortexm7-processor-programming-manual-stmicroelectronics.pdf
Reference Manuals	https://www.st.com/resource/en/reference_manual/rm0468-stm32h723733-stm32h725735-and-stm32h730-value-line-advanced-armbased-32bit-mcus-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1163-description-of-wlcsp-for-microcontrollers-and-recommendations-for-its-use-stmicroelectronics.pdf

Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1204-tape-and-reel-shipping-media-for-stm32-microcontrollers-in-bga-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1205-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-fpn-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1206-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-qfp-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1207-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-so-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1208-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-tssop-and-ssop-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1433-reference-device-marking-schematics-for-stm32-microcontrollers-and-microprocessors-stmicroelectronics.pdf
User Manuals	https://www.st.com/resource/en/user_manual/um2840-stm32h7-dualcore-series-safety-manual-stmicroelectronics.pdf
User Manuals	https://www.st.com/resource/en/user_manual/um2331-stm32h7-singlecore-series-safety-manual-stmicroelectronics.pdf
User Manuals	https://www.st.com/resource/en/user_manual/um3252-stm32h7-series-ulcsaiec-607301603351-selftest-library-user-guide-stmicroelectronics.pdf