



## 1. Description

### 1.1. Project

Project Name	f756-test-LwIP-002
Board Name	NUCLEO-F756ZG
Generated with:	STM32CubeMX 6.4.0
Date	01/04/2022

### 1.2. MCU

MCU Series	STM32F7
MCU Line	STM32F7x6
MCU name	STM32F756ZGTx
MCU Package	LQFP144
MCU Pin number	144

### 1.3. Core(s) information

Core(s)	Arm Cortex-M7
---------	---------------



### 3. Pins Configuration

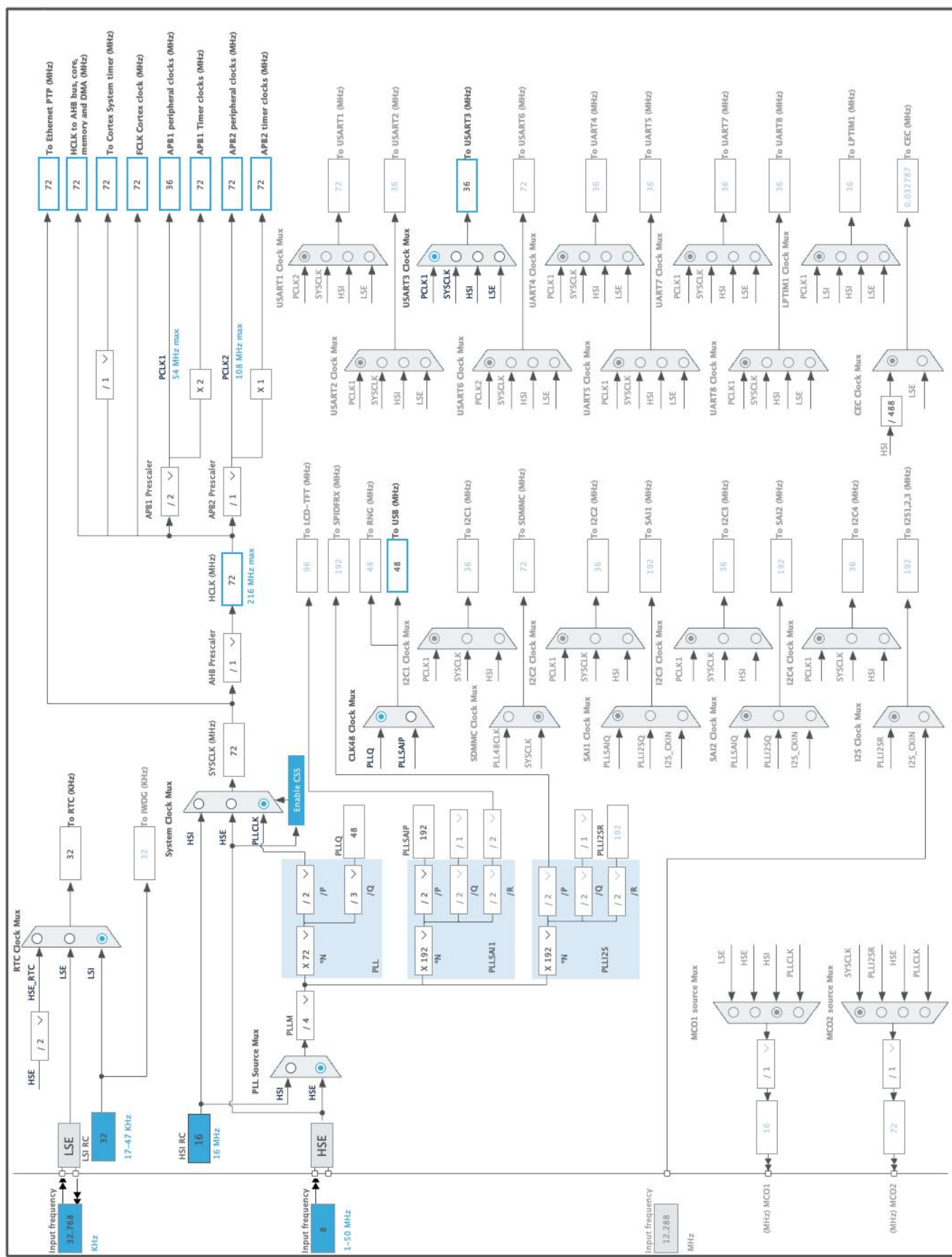
Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
7	PC13	I/O	GPIO_EXTI13	USER_Btn [B1]
8	PC14/OSC32_IN	I/O	RCC_OSC32_IN	
9	PC15/OSC32_OUT	I/O	RCC_OSC32_OUT	
16	VSS	Power		
17	VDD	Power		
23	PH0/OSC_IN	I/O	RCC_OSC_IN	MCO [STM32F103CBT6_PA8]
24	PH1/OSC_OUT	I/O	RCC_OSC_OUT	
25	NRST	Reset		
27	PC1	I/O	ETH_MDC	RMII_MDC [LAN8742A-CZ- TR_MDC]
30	VDD	Power		
31	VSSA	Power		
32	VREF+	Power		
33	VDDA	Power		
35	PA1	I/O	ETH_REF_CLK	RMII_REF_CLK [LAN8742A-CZ- TR_REFCLK0]
36	PA2	I/O	ETH_MDIO	RMII_MDIO [LAN8742A-CZ- TR_MDIO]
37	PA3	I/O	ADC1_IN3	
38	VSS	Power		
39	VDD	Power		
40	PA4	I/O	DAC_OUT1	
43	PA7	I/O	ETH_CRSDV	RMII_CRSDV [LAN8742A-CZ- TR_CRSDV]
44	PC4	I/O	ETH_RXD0	RMII_RXD0 [LAN8742A-CZ- TR_RXD0]
45	PC5	I/O	ETH_RXD1	RMII_RXD1 [LAN8742A-CZ- TR_RXD1]
46	PB0 *	I/O	GPIO_Output	LD1 [Green]
51	VSS	Power		
52	VDD	Power		
61	VSS	Power		
62	VDD	Power		
71	VCAP_1	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
72	VDD	Power		
74	PB13	I/O	ETH_TXD1	RMII_TXD1 [LAN8742A-CZ- TR_TXD1]
75	PB14 *	I/O	GPIO_Output	LD3 [Red]
77	PD8	I/O	USART3_TX	STLK_RX [STM32F103CBT6_PA3]
78	PD9	I/O	USART3_RX	STLK_TX [STM32F103CBT6_PA2]
83	VSS	Power		
84	VDD	Power		
91	PG6 *	I/O	GPIO_Output	USB_PowerSwitchOn [STMPS2151STR_EN]
92	PG7 *	I/O	GPIO_Input	USB_OverCurrent [STMPS2151STR_FAULT]
94	VSS	Power		
95	VDDUSB	Power		
100	PA8	I/O	USB_OTG_FS_SOF	USB_SOF [TP1]
101	PA9	I/O	USB_OTG_FS_VBUS	USB_VBUS
102	PA10 **	I/O	USB_OTG_FS_ID	USB_ID
103	PA11	I/O	USB_OTG_FS_DM	USB_DM
104	PA12	I/O	USB_OTG_FS_DP	USB_DP
105	PA13	I/O	SYS_JTMS-SWDIO	TMS
106	VCAP_2	Power		
107	VSS	Power		
108	VDD	Power		
109	PA14	I/O	SYS_JTCK-SWCLK	TCK
120	VSS	Power		
121	VDD	Power		
126	PG11	I/O	ETH_TX_EN	RMII_TX_EN [LAN8742A- CZ-TR_TXEN]
128	PG13	I/O	ETH_TXD0	RMII_TXD0 [LAN8742A-CZ- TR_TXD0]
130	VSS	Power		
131	VDD	Power		
133	PB3 **	I/O	SYS_JTDO-SWO	SW0
137	PB7 *	I/O	GPIO_Output	LD2 [Blue]
138	BOOT0	Boot		
143	PDR_ON	Reset		
144	VDD	Power		

\* The pin is affected with an I/O function

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

## 4. Clock Tree Configuration



## 5. Software Project

### 5.1. Project Settings

Name	Value
Project Name	f756-test-LwIP-002
Project Folder	/Users/jordanvrtanoski/STM32CubeIDE/workspace_1.8.0/f756-test-LwIP-002
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F7 V1.16.2
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

### 5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

### 5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	MX_GPIO_Init	GPIO
2	SystemClock_Config	RCC
3	MX_USART3_UART_Init	USART3
4	MX_USB_OTG_FS_PCD_Init	USB_OTG_FS
5	MX_LWIP_Init	LWIP
6	MX_ADC1_Init	ADC1
7	MX_DAC_Init	DAC
8	MX_RTC_Init	RTC



## 6. Power Consumption Calculator report

### 6.1. Microcontroller Selection

Series	STM32F7
Line	STM32F7x6
MCU	STM32F756ZGTx
Datasheet	DS10915_Rev4

### 6.2. Parameter Selection

Temperature	25
Vdd	3.3

### 6.3. 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

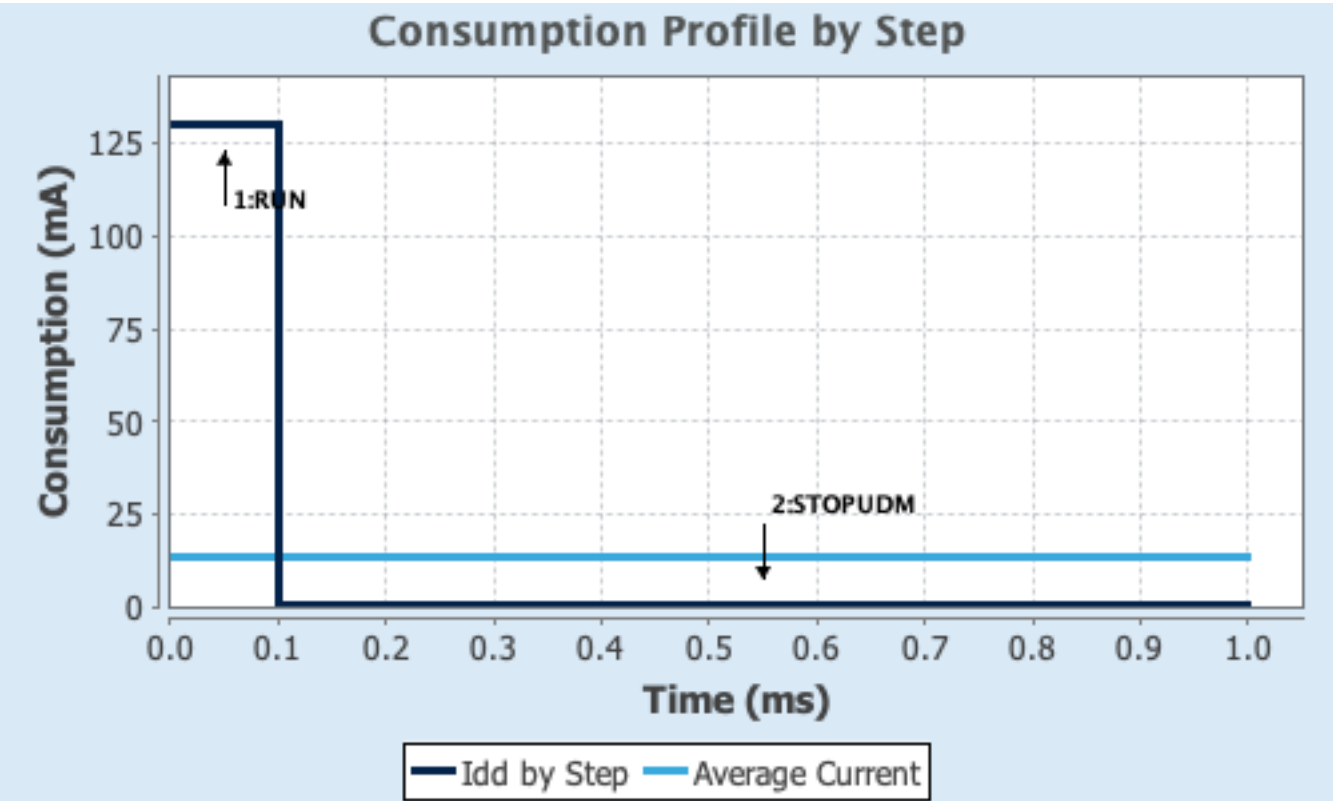
#### 6.4. Sequence

<b>Step</b>	Step1	Step2
<b>Mode</b>	RUN	STOP UDM (Under Drive)
<b>Vdd</b>	3.3	3.3
<b>Voltage Source</b>	Battery	Battery
<b>Range</b>	Scale1-High	No Scale
<b>Fetch Type</b>	ITCM/FLASH/REGON	n/a
<b>CPU Frequency</b>	216 MHz	0 Hz
<b>Clock Configuration</b>	HSE PLL	Regulator LP Flash-PwrDwn
<b>Clock Source Frequency</b>	4 MHz	0 Hz
<b>Peripherals</b>		
<b>Additional Cons.</b>	0 mA	0 mA
<b>Average Current</b>	130 mA	100 $\mu$ A
<b>Duration</b>	0.1 ms	0.9 ms
<b>DMIPS</b>	462.0	0.0
<b>Ta Max</b>	87.84	104.99
<b>Category</b>	In DS Table	In DS Table

#### 6.5. Results

Sequence Time	1 ms	Average Current	13.09 mA
Battery Life	1 day, 23 hours	Average DMIPS	462.24005 DMIPS

#### 6.6. Chart



## 7. Peripherals and Middlewares Configuration

### 7.1. ADC1

**mode: IN3**

#### 7.1.1. Parameter Settings:

##### **ADCs\_Common\_Settings:**

Mode Independent mode

##### **ADC\_Settings:**

Clock Prescaler PCLK2 divided by 2

Resolution 12 bits (15 ADC Clock cycles)

Data Alignment Right alignment

Scan Conversion Mode Disabled

Continuous Conversion Mode Disabled

Discontinuous Conversion Mode Disabled

DMA Continuous Requests Disabled

End Of Conversion Selection EOC flag at the end of single channel conversion

##### **ADC\_Regular\_ConversionMode:**

Number Of Conversion 1

External Trigger Conversion Source Regular Conversion launched by software

External Trigger Conversion Edge None

Rank 1

Channel Channel 3

Sampling Time 3 Cycles

##### **ADC\_Injected\_ConversionMode:**

Number Of Conversions 0

##### **WatchDog:**

Enable Analog WatchDog Mode false

### 7.2. DAC

**mode: OUT1 Configuration**

#### 7.2.1. Parameter Settings:

##### **DAC Out1 Settings:**

Output Buffer Enable

Trigger None

## 7.3. ETH

### Mode: RMII

#### 7.3.1. Parameter Settings:

##### **Advanced : Ethernet Media Configuration:**

Auto Negotiation	Enabled
Speed	100 MBits/s
Duplex Mode	Full Duplex

##### **General : Ethernet Configuration:**

Ethernet MAC Address	00:80:E1:00:00:00
PHY Address	<b>0 *</b>

##### **Ethernet Basic Configuration:**

Rx Mode	Interrupt Mode
TX IP Header Checksum Computation	By hardware

#### 7.3.2. Advanced Parameters:

##### **External PHY Configuration:**

PHY	LAN8742A_PHY_ADDRESS
PHY Address Value	0
PHY Reset delay these values are based on a 1 ms Systick interrupt	<b>0x000000FF *</b>
PHY Configuration delay	<b>0x00000FFF *</b>
PHY Read TimeOut	<b>0x0000FFFF *</b>
PHY Write TimeOut	<b>0x0000FFFF *</b>

##### **Common : External PHY Configuration:**

Transceiver Basic Control Register	<b>0x00 *</b>
Transceiver Basic Status Register	<b>0x01 *</b>
PHY Reset	<b>0x8000 *</b>
Select loop-back mode	<b>0x4000 *</b>
Set the full-duplex mode at 100 Mb/s	<b>0x2100 *</b>
Set the half-duplex mode at 100 Mb/s	<b>0x2000 *</b>
Set the full-duplex mode at 10 Mb/s	<b>0x0100 *</b>
Set the half-duplex mode at 10 Mb/s	<b>0x0000 *</b>
Enable auto-negotiation function	<b>0x1000 *</b>
Restart auto-negotiation function	<b>0x0200 *</b>
Select the power down mode	<b>0x0800 *</b>

Isolate PHY from MII	0x0400 *
Auto-Negotiation process completed	0x0020 *
Valid link established	0x0004 *
Jabber condition detected	0x0002 *

#### Extended : External PHY Configuration:

PHY special control/status register Offset	0x10 *
PHY Speed mask	0x0002 *
PHY Duplex mask	0x0004 *
PHY Interrupt Source Flag register Offset	0x001D *
PHY Link down interrupt	0x000B *

## 7.4. RCC

### High Speed Clock (HSE): BYPASS Clock Source

### Low Speed Clock (LSE) : Crystal/Ceramic Resonator

#### 7.4.1. Parameter Settings:

##### System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	2 WS (3 CPU cycle)

##### RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

##### Power Parameters:

Power Over Drive	Disabled
Power Regulator Voltage Scale	Power Regulator Voltage Scale 3

## 7.5. RTC

### mode: Activate Clock Source

#### 7.5.1. Parameter Settings:

##### General:

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

## 7.6. SYS

**Debug: Serial Wire**

**Timebase Source: TIM1**

## 7.7. USART3

**Mode: Asynchronous**

### 7.7.1. Parameter Settings:

#### **Basic Parameters:**

Baud Rate	115200
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

#### **Advanced Parameters:**

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

#### **Advanced Features:**

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

## 7.8. USB\_OTG\_FS

**Mode: Device\_Only**

**mode: Activate\_VBUS**

**mode: Activate\_SOF**

### 7.8.1. Parameter Settings:

Speed	Full Speed 12MBit/s
Low power	Disabled
Link Power Management	Disabled

VBUS sensing	Enabled
Signal start of frame	Enabled

## 7.9. FREERTOS

### Interface: CMSIS\_V1

#### 7.9.1. Config parameters:

##### API:

FreeRTOS API	CMSIS v1
--------------	----------

##### Versions:

FreeRTOS version	10.2.1
CMSIS-RTOS version	1.02

##### MPU/FPU:

ENABLE_MPU	Disabled
ENABLE_FPU	Disabled

##### Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	7
MINIMAL_STACK_SIZE	128
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Disabled
USE_COUNTING_SEMAPHORES	Disabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Enabled
USE_TICKLESS_IDLE	Disabled
USE_TASK_NOTIFICATIONS	Enabled
RECORD_STACK_HIGH_ADDRESS	Disabled

##### Memory management settings:

Memory Allocation	Dynamic / Static
TOTAL_HEAP_SIZE	15360
Memory Management scheme	heap_4

##### Hook function related definitions:

USE_IDLE_HOOK	Disabled
---------------	----------



USE_TICK_HOOK	Disabled
USE_MALLOC_FAILED_HOOK	Disabled
USE_DAEMON_TASK_STARTUP_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Disabled

**Run time and task stats gathering related definitions:**

GENERATE_RUN_TIME_STATS	<b>Enabled *</b>
USE_TRACE_FACILITY	Enabled
USE_STATS_FORMATTING_FUNCTIONS	<b>Enabled *</b>

**Co-routine related definitions:**

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

**Software timer definitions:**

USE_TIMERS	Disabled
------------	----------

**Interrupt nesting behaviour configuration:**

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

**Added with 10.2.1 support:**

MESSAGE_BUFFER_LENGTH_TYPE	size_t
USE_POSIX_ERRNO	Disabled

7.9.2. Include parameters:

**Include definitions:**

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Disabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Disabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Disabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Disabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Disabled
xTaskAbortDelay	Disabled

xTaskGetHandle	Disabled
uxTaskGetStackHighWaterMark2	Disabled

### 7.9.3. Advanced settings:

#### **Newlib settings (see parameter description first):**

USE_NEWLIB_REENTRANT	Enabled *
----------------------	-----------

#### **Project settings (see parameter description first):**

Use FW pack heap file	Enabled
-----------------------	---------

## **7.10. LWIP**

### **mode: Enabled**

Advanced parameters are not listed except if modified by user.

### 7.10.1. General Settings:

#### **LwIP Version:**

LwIP Version (Version of LwIP supported by CubeMX ** CubeMX specific **)	2.1.2
--	-------

#### **IPv4 - DHCP Options:**

LWIP_DHCP (DHCP Module)	Enabled
-------------------------	---------

#### **RTOS Dependency:**

WITH_RTOS (Use FREERTOS ** CubeMX specific **)	Enabled
CMSIS_VERSION (CMSIS API Version used)	CMSIS v1

#### **Protocols Options:**

LWIP_ICMP (ICMP Module Activation)	Enabled
LWIP_IGMP (IGMP Module)	Disabled
LWIP_DNS (DNS Module)	Disabled
LWIP_UDP (UDP Module)	Enabled
MEMP_NUM_UDP_PCB (Number of UDP Connections)	4
LWIP_TCP (TCP Module)	Enabled
MEMP_NUM_TCP_PCB (Number of TCP Connections)	5

### 7.10.2. Key Options:

#### **Infrastructure - OS Awareness Option:**

NO_SYS (OS Awareness)	OS Used
-----------------------	---------

#### **Infrastructure - Timers Options:**

LWIP_TIMERS (Use Support For sys_timeout)	Enabled
---	---------

### Infrastructure - Core Locking and MPU Options:

SYS\_LIGHTWEIGHT\_PROT (Memory Functions Protection) Enabled

### Infrastructure - Heap and Memory Pools Options:

MEM\_SIZE (Heap Memory Size) 16360 \*

### Infrastructure - Internal Memory Pool Sizes:

MEMP\_NUM\_PBUF (Number of Memory Pool struct Pbufs) 16  
MEMP\_NUM\_RAW\_PCB (Number of Raw Protocol Control Blocks) 4  
MEMP\_NUM\_TCP\_PCB\_LISTEN (Number of Listening TCP Connections) 8  
MEMP\_NUM\_TCP\_SEG (Number of TCP Segments simultaneously queued) 16  
MEMP\_NUM\_LOCALHOSTLIST (Number of Host Entries in the Local Host List) 1

### Pbuf Options:

PBUF\_POOL\_SIZE (Number of Buffers in the Pbuf Pool) 16  
PBUF\_POOL\_BUFSIZE (Size of each pbuf in the pbuf pool) 592

### IPv4 - ARP Options:

LWIP\_ARP (ARP Functionality) Enabled

### Callback - TCP Options:

TCP\_TTL (Number of Time-To-Live Used by TCP Packets) 255  
TCP\_WND (TCP Receive Window Maximum Size) 2144  
TCP\_QUEUE\_OOSEQ (Allow Out-Of-Order Incoming Packets) Enabled  
LWIP\_TCP\_SACK\_OUT (Allow Sending Selective Acknowledgements) Disabled  
TCP\_MSS (Maximum Segment Size) 536  
TCP\_SND\_BUF (TCP Sender Buffer Space) 1072  
TCP\_SND\_QUEUELEN (Number of Packet Buffers Allowed for TCP Sender) 9

### Network Interfaces Options:

LWIP\_NETIF\_STATUS\_CALLBACK (Callback Function on Interface Status Changes) Disabled  
LWIP\_NETIF\_EXT\_STATUS\_CALLBACK (Extended Callback Function for several netif) Disabled  
LWIP\_NETIF\_LINK\_CALLBACK (Callback Function on Interface Link Changes) Enabled

### NETIF - Loopback Interface Options:

LWIP\_NETIF\_LOOPBACK (NETIF Loopback) Disabled

### Infrastructure - Threading Options:

TCPIP\_THREAD\_NAME (TCPIP Thread Name) "tcpip\_thread"  
TCPIP\_THREAD\_STACKSIZE (TCPIP Thread Stack Size) 1024  
TCPIP\_THREAD\_PRIO (TCPIP Thread Priority Level) 3  
TCPIP\_MBOX\_SIZE (TCPIP Mailbox Size) 6  
DEFAULT\_THREAD\_NAME (Default LwIP Thread Name) "lwip"  
DEFAULT\_THREAD\_STACKSIZE (Default LwIP Thread Stack Size) 1024  
DEFAULT\_THREAD\_PRIO (Default LwIP Thread Priority Level) 3  
DEFAULT\_RAW\_RECVMBOX\_SIZE (Default Mailbox Size on a NETCONN Raw) 0  
DEFAULT\_TCP\_RECVMBOX\_SIZE (Default Mailbox Size on a NETCONN TCP) 6  
DEFAULT\_ACCEPTMBOX\_SIZE (Default Mailbox Size for Incoming Connections) 6

### Thread Safe APIs - Netconn Options:

LWIP\_NETCONN (NETCONN API) Enabled

**Thread Safe APIs - Socket Options:**

LWIP\_SOCKET (Socket API) Enabled

LWIP\_COMPAT\_SOCKETS (BSD-style Socket Functions Names) 1

LWIP\_SOCKET\_OFFSET (Socket Offset Number) 0

LWIP\_SOCKET\_SELECT (Select for Socket) Enabled

LWIP\_SOCKET\_POLL (Poll for Socket) Enabled

7.10.3. PPP:

**PPP Options:**

PPP\_SUPPORT (PPP Module) Disabled

7.10.4. IPv6:

**IPv6 Options:**

LWIP\_IPV6 (IPv6 Protocol) Disabled

7.10.5. HTTPD:

**HTTPD Options:**

LWIP\_HTTPD (LwIP HTTPD Support \*\* CubeMX specific \*\*) Disabled

7.10.6. SNMP:

**SNMP Options:**

LWIP\_SNMP (LwIP SNMP Agent) Enabled \*

7.10.7. SNTP/SMTP:

**SNTP Options:**

LWIP\_SNTP (LWIP SNTP Support \*\* CubeMX specific \*\*) Disabled

**SMTP Options:**

LWIP\_SMTP (LWIP SMTP Support \*\* CubeMX specific \*\*) Disabled

7.10.8. MDNS/TFTP:

**MDNS Options:**

LWIP\_MDNS (Multicast DNS Support \*\* CubeMX specific \*\*) Disabled

**TFTP Options:**

LWIP\_TFTP (TFTP Support \*\* CubeMX specific \*\*) Disabled

7.10.9. Perf/Checks:

**Sanity Checks:**

LWIP\_DISABLE\_TCP\_SANITY\_CHECKS (TCP Sanity Checks) Disabled

LWIP\_DISABLE\_MEMP\_SANITY\_CHECKS (MEMP Sanity Checks) Disabled

**Performance Options:**

LWIP\_PERF (Performace Testing for LwIP) Disabled

7.10.10. Statistics:

**Debug - Statistics Options:**

LWIP\_STATS (Statistics Collection) Enabled

7.10.11. Checksum:

**Infrastructure - Checksum Options:**

CHECKSUM\_BY\_HARDWARE (Hardware Checksum \*\* CubeMX specific \*\*) Enabled

LWIP\_CHECKSUM\_CTRL\_PER\_NETIF (Generate/Check Checksum per Netif) Disabled

CHECKSUM\_GEN\_IP (Generate Software Checksum for Outgoing IP Packets) Disabled

CHECKSUM\_GEN\_UDP (Generate Software Checksum for Outgoing UDP Packets) Disabled

CHECKSUM\_GEN\_TCP (Generate Software Checksum for Outgoing TCP Packets) Disabled

CHECKSUM\_GEN\_ICMP (Generate Software Checksum for Outgoing ICMP Packets) Disabled

CHECKSUM\_GEN\_ICMP6 (Generate Software Checksum for Outgoing ICMP6 Packets) Disabled

CHECKSUM\_CHECK\_IP (Generate Software Checksum for Incoming IP Packets) Disabled

CHECKSUM\_CHECK\_UDP (Generate Software Checksum for Incoming UDP Packets) Disabled

CHECKSUM\_CHECK\_TCP (Generate Software Checksum for Incoming TCP Packets) Disabled

CHECKSUM\_CHECK\_ICMP (Generate Software Checksum for Incoming ICMP Packets) Disabled

CHECKSUM\_CHECK\_ICMP6 (Generate Software Checksum for Incoming ICMP6 Packets) Disabled

7.10.12. Debug:

**LwIP Main Debugging Options:**

LWIP\_DBG\_MIN\_LEVEL (Minimum Level) All

**\* User modified value**

## 8. System Configuration

### 8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA3	ADC1_IN3	Analog mode	No pull-up and no pull-down	n/a	
DAC	PA4	DAC_OUT1	Analog mode	No pull-up and no pull-down	n/a	
ETH	PC1	ETH_MDC	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_MDC [LAN8742A-CZ-TR_MDC]
	PA1	ETH_REF_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_REF_CLK [LAN8742A-CZ-TR_REFCLK0]
	PA2	ETH_MDIO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_MDIO [LAN8742A-CZ-TR_MDIO]
	PA7	ETH_CRS_DV	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_CRS_DV [LAN8742A-CZ-TR_CRS_DV]
	PC4	ETH_RXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_RXD0 [LAN8742A-CZ-TR_RXD0]
	PC5	ETH_RXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_RXD1 [LAN8742A-CZ-TR_RXD1]
	PB13	ETH_TXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TXD1 [LAN8742A-CZ-TR_TXD1]
	PG11	ETH_TX_EN	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TX_EN [LAN8742A-CZ-TR_TXEN]
	PG13	ETH_TXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TXD0 [LAN8742A-CZ-TR_TXD0]
RCC	PC14/OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15/OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PH0/OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	MCO [STM32F103CBT6_PA8]
	PH1/OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	TMS
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	TCK
USART3	PD8	USART3_TX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	STLK_RX [STM32F103CBT6_PA3]
	PD9	USART3_RX	Alternate Function Push Pull	No pull-up and no pull-down		STLK_TX

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
					<b>Very High</b> *	[STM32F103CBT6_PA2]
USB_OTG_FS	PA8	USB_OTG_FS_SOF	Alternate Function Push Pull	No pull-up and no pull-down	<b>Very High</b> *	USB_SOF [TP1]
	PA9	USB_OTG_FS_VBUS	Input mode	No pull-up and no pull-down	<b>n/a</b>	USB_VBUS
	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	<b>Very High</b> *	USB_DM
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	<b>Very High</b> *	USB_DP
Single Mapped Signals	PA10	USB_OTG_FS_ID	Alternate Function Push Pull	No pull-up and no pull-down	<b>Very High</b> *	USB_ID
	PB3	SYS_JTDO-SWO	n/a	n/a	<b>n/a</b>	SW0
GPIO	PC13	GPIO_EXTI13	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	USER_Btn [B1]
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD1 [Green]
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Red]
	PG6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	USB_PowerSwitchOn [STMPS2151STR_EN]
	PG7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB_OverCurrent [STMPS2151STR_FAULT]
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD2 [Blue]

## 8.2. DMA configuration

nothing configured in DMA service



### 8.3. NVIC configuration

#### 8.3.1. NVIC

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
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	15	0
System tick timer	true	15	0
TIM1 update interrupt and TIM10 global interrupt	true	15	0
Ethernet global interrupt	true	5	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1, ADC2 and ADC3 global interrupts	unused		
USART3 global interrupt	unused		
EXTI line[15:10] interrupts	unused		
TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts	unused		
Ethernet wake-up interrupt through EXTI line 19	unused		
USB On The Go FS global interrupt	unused		
FPU global interrupt	unused		

#### 8.3.2. NVIC Code generation

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Pre-fetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
System service call via SWI instruction	false	false	false
Debug monitor	false	true	false
Pendable request for system service	false	false	false
System tick timer	false	false	true
TIM1 update interrupt and TIM10 global interrupt	false	true	true

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Ethernet global interrupt	false	true	true

\* User modified value

## 9. System Views

### 9.1. Category view

#### 9.1.1. Current

Middleware						
<div>FREERTOS ✓LWIP ✓</div>						
System Core	Analog	Timers	Connectivity	Multimedia	Security	Computing
CORTEX_M7 ✓	ADC1 ✓	RTC ✓	ETH ✓			
DMA	DAC ✓		USART3 ✓			
GPIO ⚠			USB_FS ✓			
NVIC ✓						
RCC ✓						
SYS ✓						

## 10. Docs & Resources

Type	Link
Datasheet	<a href="http://www.st.com/resource/en/datasheet/DM00166114.pdf">http://www.st.com/resource/en/datasheet/DM00166114.pdf</a>
Reference manual	<a href="http://www.st.com/resource/en/reference_manual/DM00124865.pdf">http://www.st.com/resource/en/reference_manual/DM00124865.pdf</a>
Programming manual	<a href="http://www.st.com/resource/en/programming_manual/DM00237416.pdf">http://www.st.com/resource/en/programming_manual/DM00237416.pdf</a>
Errata sheet	<a href="http://www.st.com/resource/en/errata_sheet/DM00145382.pdf">http://www.st.com/resource/en/errata_sheet/DM00145382.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/CD00167594.pdf">http://www.st.com/resource/en/application_note/CD00167594.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/CD00211314.pdf">http://www.st.com/resource/en/application_note/CD00211314.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/CD00259245.pdf">http://www.st.com/resource/en/application_note/CD00259245.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/CD00264321.pdf">http://www.st.com/resource/en/application_note/CD00264321.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/CD00264342.pdf">http://www.st.com/resource/en/application_note/CD00264342.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/CD00264379.pdf">http://www.st.com/resource/en/application_note/CD00264379.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00042534.pdf">http://www.st.com/resource/en/application_note/DM00042534.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00046011.pdf">http://www.st.com/resource/en/application_note/DM00046011.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00072315.pdf">http://www.st.com/resource/en/application_note/DM00072315.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00073742.pdf">http://www.st.com/resource/en/application_note/DM00073742.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00073853.pdf">http://www.st.com/resource/en/application_note/DM00073853.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00080497.pdf">http://www.st.com/resource/en/application_note/DM00080497.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00081379.pdf">http://www.st.com/resource/en/application_note/DM00081379.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00129215.pdf">http://www.st.com/resource/en/application_note/DM00129215.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00160482.pdf">http://www.st.com/resource/en/application_note/DM00160482.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00164538.pdf">http://www.st.com/resource/en/application_note/DM00164538.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00164549.pdf">http://www.st.com/resource/en/application_note/DM00164549.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00173083.pdf">http://www.st.com/resource/en/application_note/DM00173083.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00210367.pdf">http://www.st.com/resource/en/application_note/DM00210367.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00220769.pdf">http://www.st.com/resource/en/application_note/DM00220769.pdf</a>
Application note	<a href="http://www.st.com/resource/en/application_note/DM00226326.pdf">http://www.st.com/resource/en/application_note/DM00226326.pdf</a>

Application note [http://www.st.com/resource/en/application\\_note/DM00227538.pdf](http://www.st.com/resource/en/application_note/DM00227538.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00236305.pdf](http://www.st.com/resource/en/application_note/DM00236305.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00257177.pdf](http://www.st.com/resource/en/application_note/DM00257177.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00272912.pdf](http://www.st.com/resource/en/application_note/DM00272912.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00272913.pdf](http://www.st.com/resource/en/application_note/DM00272913.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00281138.pdf](http://www.st.com/resource/en/application_note/DM00281138.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00287603.pdf](http://www.st.com/resource/en/application_note/DM00287603.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00296349.pdf](http://www.st.com/resource/en/application_note/DM00296349.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00315319.pdf](http://www.st.com/resource/en/application_note/DM00315319.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00327191.pdf](http://www.st.com/resource/en/application_note/DM00327191.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00337702.pdf](http://www.st.com/resource/en/application_note/DM00337702.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00340311.pdf](http://www.st.com/resource/en/application_note/DM00340311.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00354244.pdf](http://www.st.com/resource/en/application_note/DM00354244.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00373474.pdf](http://www.st.com/resource/en/application_note/DM00373474.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00380469.pdf](http://www.st.com/resource/en/application_note/DM00380469.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00395696.pdf](http://www.st.com/resource/en/application_note/DM00395696.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00431633.pdf](http://www.st.com/resource/en/application_note/DM00431633.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00493651.pdf](http://www.st.com/resource/en/application_note/DM00493651.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00536349.pdf](http://www.st.com/resource/en/application_note/DM00536349.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00600614.pdf](http://www.st.com/resource/en/application_note/DM00600614.pdf)

Application note [http://www.st.com/resource/en/application\\_note/DM00725181.pdf](http://www.st.com/resource/en/application_note/DM00725181.pdf)