NUCLEO-L073RZ

I. DESCRIPTION

The **SMT32 NUCLEO-L073RZ evaluation board**[1] is part of the NUCLEO-64 series, which is the lead product of the ST evaluation kits for its ARM-based processors.
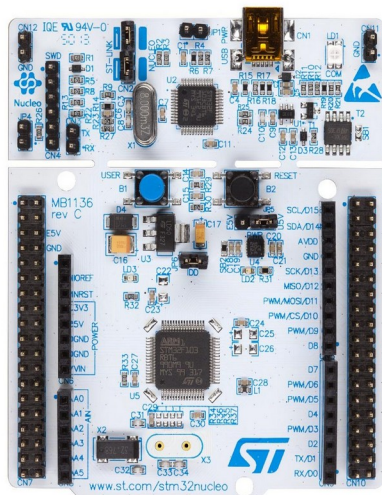
This board includes the STM32L073RZ MCU and a programming and debugging probe.

Plus this board contains a push-button, a LED, and Arduino and ST Morpho (76 pins) connectors. It is also equipped with the STLink VCP (*Virtual COM Port*) that emulates a serial communication through the board's USB port (see section II).

All of those functionalities make it easier for the developer to quickly create embedded applications.

This board's target MCU is **STM32L073RZ microcontroller**[2]. It is based on a **ARM** CPU, but the MCU is manufactured by **STMicroelectonics**.

The STM32L0 series is part of the numerous STMicroelectronics solutions that use a 32-bit ARM Cortex-M core. The aim of this L0 series is to offer ultra-low power devices, when compared to other STM32 MCUs.

STM32L0 MCU Series - 32-bit Arm® Cortex®-M0+

	Product line	Flash (KB)	RAM (KB)	EE - PROM (Bytes)	Power supply	PVD [2]	TEMP sensor	2x ULP COMP	2x 12-bit DAC	Touch sense	TRNG	USB 2.0 FS Crys-tal-less	Segment LCD Driver
• Ultra low leakage process • Dynamic voltage scaling • 14 to 100-pin • 5 clock sources • Advanced RTC w/ calibration	STM32L0x0 Value line	Up to 128	Up to 20	Up to 512	Down to 1.8V								
• 12-bit ADC 1.14 Msps • Multiple USART, SPI, I²C • Multiple 16-bit timers	STM32L0x1 Access	Up to 192	Up to 20	Up to 6K	Down to 1.65V	•	•	•					
• LP UART1 • LP Timers1 • 2 watchdogs • Reset circuitry POR/PDR	STM32L0x2 USB	Up to 192	Up to 20	Up to 6K	Down to 1.65V	•	•	•	•	•	•	•	
• Brown-out Reset • DMA • AES-128	STM32L0x3 USB & LCD	Up to 192	Up to 20	Up to 6K	Down to 1.65V	•	•	•	•	•	•	•	Up to 4x52 or 8x48

Note 1: Low-power peripherals available in ultra-low-power modes
Note 2: PVD = Programmable voltage detector

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1 https://www.st.com/en/evaluation-tools/nucleo-l073rz.html
2 https://www.st.com/en/microcontrollers-microprocessors/stm32l073rz.html

II. UART AND STLINK VIRTUAL COM PORT

By default on Nucleo-64 boards, the MCU USART2 peripheral pins are not physically linked to the board connectors. That is because they are connected to the **STLink *Virtual Com Port* (VCP)**, in the red rectangles on the figure below 'CN2, CN3 and CN4 connectors). The VCP is an serial communication emulated through the Nucleo-64's USB port. This is the reason why it is possible for the MCU to exchange data with a computer with no additional hardware, only its own USART2 peripheral.
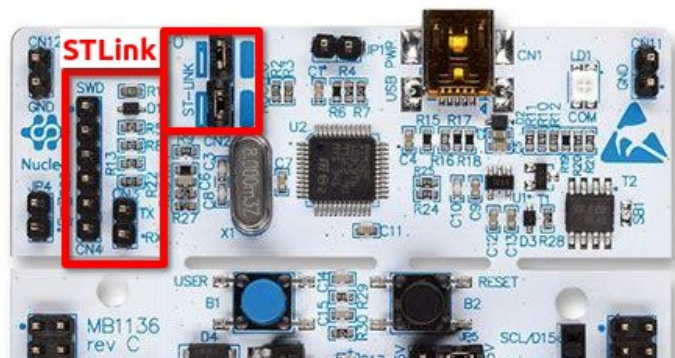
It is possible to use any other USART peripheral with the user connectors, as long as their pins are not already used by other peripherals. For instance, the USART1 peripheral uses by default the PA10 and PA9 for Rx and Tx, respectively.

However it can happen (depending on the applications requirements and/or the available pins) that the USART2 peripheral must be used by the application and not for debugging purposes. In this case it is still possible to modify the Nucleo-64 board configuration:

- Remove the *solder bridges* SB13 and SB14 (0 Ω resistors) to disconnect the USART2 pins from the STLink.

- Place the *solder bridges* SB62 and SB63 to connect the USART2 pins to the Arduino and Morpho connectors.

This operation can be reverted and is not harmful (except for your fingers, maybe).

For such operations, the related documents can be useful:
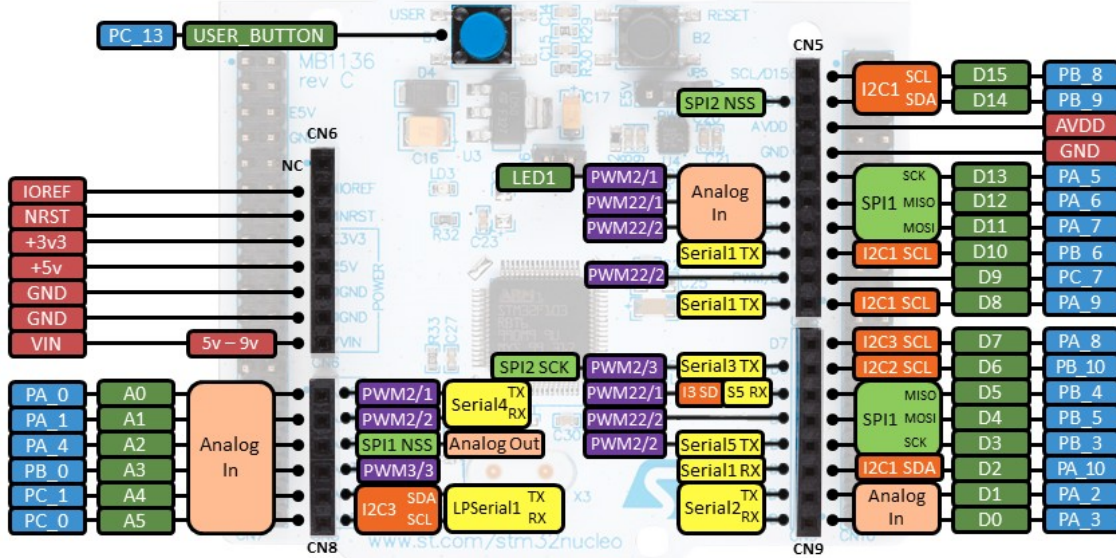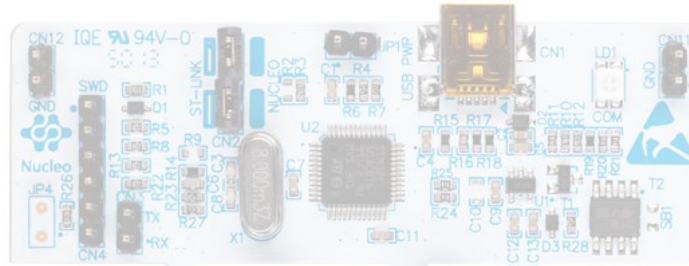
- `en.MB1136-DEFAULT-<C03/C04/C05>_Schematic`
    - the schematic version number (C03, C04 or C05) is written on the board
    - the boards in a yellow PLA case are C04
- UM1724 - STM32 Nucleo-64 boards (MB1136).

III. PINOUT DIAGRAM