

PA Pool Project – Requirements Document

EQUIPHILLO

High Level Requirements

[SHLR_0100]

- The BLE Keyboard project shall leverage FreeRTOS libraries for task creation, scheduling, and efficient management of concurrent processes.
Covers: [SR_0040]

[SHLR_0110]

- The BLE Keyboard project shall use FreeRTOS to implement semaphores and mutexes for effective synchronization between tasks.
Covers: [SR_0040]

[SHLR_0120]

- The BLE Keyboard project shall employ FreeRTOS to manage interruptions efficiently and ensure timely response in real-time scenarios.
Covers: [SR_0040]

[SHLR_0130]

- The BLE Keyboard project shall utilize the STM32 peripheral libraries to interact seamlessly with GPIO, UART, and Bluetooth modules.
Covers: [SR_0050]

[SHLR_0140]

- The BLE Keyboard project shall implement a matrix keyboard keypress and debouncing logic to ensure accurate and reliable input processing.
Covers: [SR_0060]

[SHLR_0150]

- The BLE Keyboard project shall incorporate Bluetooth stack libraries that adhere to the Bluetooth stack protocol specified for the BLUENRG-M2SP Bluetooth processor.
Covers: [SR_0025], [SR_0030]

[SHLR_0160]

- The BLE Keyboard project shall include data streaming capabilities using Bluetooth for the wireless transmission of keyboard inputs.
Covers: [SR_0080]

[SHLR_0170]

- The BLE Keyboard project shall integrate security features such as encryption and authentication to ensure the confidentiality and integrity of Bluetooth communication.
Covers: [SR_0090]

[SHLR_0180]

- The BLE Keyboard project shall be designed to receive power constantly through the board mini B connector (CN1 ST-LINK USB).
Covers: [SR_0130]

[SHLR_0190]

- The BLE Keyboard project shall include safeguards in the code to handle unexpected errors and exceptions, ensuring robustness and reliability.
Covers: N/A (This is a general requirement for system robustness)

[SHLR_0200]

- The BLE Keyboard project shall provide a user-friendly interface for Bluetooth pairing and configuration settings.
Covers: N/A (This is a usability requirement)

[SHLR_0210]

- The BLE Keyboard project shall include documentation that comprehensively outlines system architecture, configurations, and usage instructions.
Covers: N/A (This is a documentation requirement).

[SHLR_0220]

- The SPI communication between the board and the expansion shall be made using the ports for SPI1 on the NUCELO Board.

[SHLR_0230]

- The HCI interface shall be the configuration for a Keyboard.

[SHLR_0240]

- The software shall interpret each keypress and send it to the receiver device.

[SHLR_0250]

- The software shall go to sleep mode if no key was pressed after 30 ± 2 seconds.

[SHLR_0260]

- The software shall deliver the received messages every 50 ± 5 millisecond.

[SHLR_0270]

- When pressing the off button or when the power signal is lost, the Ble Keyboard shall go to power off mode.

[SHLR_0280]

- If the mode is Sleep mode and a key is pressed is the detected, the BLE Keyboard shall go to Active mode and send the pressed key.

[SHLR_0290]

- When a device is connected to the BLE Keyboard, the green led (LD1) shall flash 5 times.

