# STM32WBx0 VALUE LINE Bluetooth LE 5.2 & IEEE 802.15.4





The STM32WBx0 is a dual-core wireless MCU based on an Arm<sup>®</sup> Cortex<sup>®</sup>-M4 core running at 64 MHz and an Arm<sup>®</sup> Cortex<sup>®</sup>-M0+ core at 32 MHz

#### A wireless dual-core brain

The STM32WBx0 Value Line is an entry-level solution, extending our portfolio to allow developers to define the right level of features for cost-efficient design to meet the requirement of a broad range of industrial and consumer IoT applications. Thanks to its low-power stop and standby modes and bestin-class RF performance, the STM32WBx0 Value Line provides application connectivity with an extended battery life, making it ideal for point to point or meshed applications such as innovative location-based services in retail marketing, asset tracking, beaconing...

# Bluetooth<sup>®</sup> LE 5.2 & IEEE 802.15.4\*

Value Line of wireless microcontrollers addresses Bluetooth<sup>®</sup> LE 5.2-certified stack, with Mesh 1.0 and multiple profiles. It also supports several IEEE 802.15.4 meshed protocols with Zigbee<sup>®</sup> PRO and its wide set of Zigbee 3.0 Clusters, as well as OpenThread.

## **IP Protection**

STM32WB devices offer device integrity and industrial IP protection features to meet manufacturers' increasing demand for brand protection.

Note : \* Features availability or caracteristics depend on STM32WB reference

Features*	Benefits
Dual-core solution in a single die	Dual-core solution with independent clock trees ensures real-time RF execution and optimized PCB and BOM
+4dBm max output power BLE: -96 dBm (all value line references) 802.15.4: -100 dBm (STM32WB30 & STM32WB50)	Comfortable and robust operating distance of connection
Integrated balun Easy package integration	Reduces BOM cost and 2 layers PCB footprint
Up to 1MB flash, 30 GPIOs, RTC, high resolution ADC and multi communication interfaces	A 2 in 1 effective centric solution for wireless platforms

www.st.com/stm32wbvl

#### STM32WB50 BLOCK DIAGRAM

		Memory
	Control Arm <sup>®</sup> Cortex <sup>®</sup> -M4 FPU/DSP 64 MHz	1-Mbyte Flash memory
Control		128-Kbyte SRAM
Power supply 2.0V to 3.6 V (LDO) POR/PDR/PVD/BOR		Boot ROM
	Nested Vector Interrupt Controller (NVIC)	Secure boot loader
Crystal oscillators 32 MHz (Radio) 32.769 KHz (LSE)	Memory Protected Unit (MPU)	Connectivity
	JTAG/SW debug	1 x SPI, 1 x I <sup>2</sup> C
Internal PC oscillators		
32 KHz (LSI)		Timers
16 MHz (HSI)	ART Accelerator™	3 x 16-bit 32-bit timers
	AHB Bus matrix	
RTC/AWU/CSS	1 x DMA 7 channels	2 X ULP TO-DIL UITIETS
PLL/FLL	Multi-protocol RF stack	Security
SysTick timer	Bluetooth®I F	PKA
2 watchdogs		
(WWDG/IWĎG)	IEEE 002.13.4	
30 GPIOs		
48 pins QFN	Arm <sup>®</sup> Cortex <sup>®</sup> -M0+	Analog
Cyclic redundancy check	32 MHz	1 x 12-bit ADC SAR 4.1 MSPS
	Nested Vector Interrupt Controller (NVIC)	Temperature sensor

# STANDARD PROTOCOL



# STM32WBx0 PORTFOLIO



#### Companion chin

STMicroelectronics' integrated matching RF components are tailored for STM32WB packages : MLPF-WB-01E3.

### HARDWARE TOOLS

This STM32 Nucleo pack is the most cost-effective way to quickly get started developing STM32WB-based prototypes.





Order code: P-NUCLEO-WB55

Order codes: NUCLEO-WB55RG NUCLEO-WB15CC

#### **EMBEDDED SOFTWARE**

The STM32CubeWB package includes the STM32Cube hardware abstraction layer (HAL) and low-layer (LL) APIs peripheral drivers, a consistent set of middleware components (RTOS, FatFS), as well as Bluetooth® LE 5.2, OpenThread and Zigbee 3.0 connectivity stacks. All embedded software components come with a full set of examples running on STMicroelectronics boards.

# **SOFTWARE TOOLS**

#### STM32CubeMX

Enables faster development thanks to its MCU pinout and clock configurator, power consumption calculator and code generation tools.



**STM**32

**Cube**IDE

#### STM32CubeIDE

Is an Eclipse-based IDE which integrates the features of the STM32CubeMX configuration tool.

#### STM32CubeMonitor

Is a development tool dedicated to wireless connectivity (STM32CubeMonRF) STM32 which helps reduce time-to-market by enabling radio testing and beaconing.

#### STM32CubeProg

Is an all-in-one software tool for programming STM32 devices which can be easily used to interact with the memory of the STM32WB, including secure programming of the RF stacks.



**Cube**Monitor

#### STM32WB ONLINE TRAINING

www.st.com/stm32wb-online-training



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