

# STM32WBA 32-BIT MCU WIRELESS SERIES



## Bluetooth® Low Energy 5.3 +10dBm, high security level



The **STM32WBA** series brings designers the performance, efficiency, and security required for Bluetooth® Low Energy 5.3 applications.

Certified for Bluetooth® Low Energy 5.3 protocol, this product series allows non-expert developers to easily add wireless communication to their device, at an affordable cost.

Based on the Arm® Cortex®-M33 core featuring TrustZone® technology, the STM32WBA series provides a high level of security, protecting data, IP, and preventing hacks or device cloning. The STM32WBA wireless MCU embeds 1 Mbyte of flash memory and 128 Kbytes of RAM.

Leveraging the STM32U5 architecture, the STM32WBA series offers the same digital and analog peripherals, suitable for many applications, from industrial, to smart home and consumer markets.

### STM32WBA enabling features

A 2 Mbits/sec high data rate

Ensure fast and reliable data transfer

500 Kbits/sec and 125 Kbits /sec (long range) data rate

Increase far end communications range

A low-power messaging capability

Increase battery life with the advertising extension for device communication

### NEW FEATURES FOR EMBEDDED DEVELOPERS

- Support for latest protocol
- Enhanced security
- Low-power consumption
- High output power
- Reduce bill of materials



[www.st.com/stm32wba](http://www.st.com/stm32wba)

## Security

The STM32WBA targets PSA Certified Level 3 and SESIP 3 IoT security standards.

Security is at the heart of many applications, protecting data for safe resource monitoring and anti-hacking, like in medical and industrial fields, including predictive maintenance applications or device fleet management. Thanks to the Arm® Cortex®-M33 core with Arm® TrustZone® technology, the STM32WBA5 isolates and protects code and IPs whenever required using isolation capability and TF-M library included in the product ecosystem.

The 2.4 GHz wireless STM32WBA series provides an integrated solution to help developers streamline their design journey, while addressing market requirements.

## STM32WBA block diagram

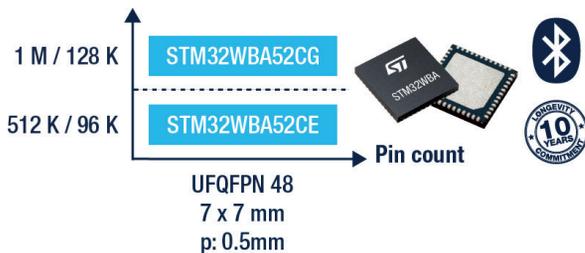
STM32WBA52

<b>System</b> Power supply 1.71 V to 3.6 V (LDO) POR/PDR/PVD/BOR  Crystal oscillators 32 MHz (Radio and HSE) 32.768 KHz (LSE)  Internal RC oscillators 32.768 KHz (+/-5%) RTC/AWU/CSS PLL/FLL SysTick timer 2x watchdogs (WWDG/IWDG) 35 GPIOs Cyclic redundancy check (CRC) Voltage scaling (2 modes)	Arm® Cortex®-M33 FPU/DSP 100 MHz + TrustZone®  Nested vector interrupt controller (NVIC)  Memory protected unit (MPU)  JTAG/SW debug  ART Accelerator™  AHB Bus Matrix  1x LP-DMA  48 Pins (UFQFPN)	<b>Total Memory</b> Up to 1 Mbyte Flash Up to 128 Kbytes SRAM Secure boot loader  <b>Connectivity</b> 2x SPI, 2x I2C 2x USART  <b>Control</b> 1x 32-bit timer 4x 16-bit timer (1x MC) 2x 16-bit timer (UPL)
<b>Security</b> TZ, HUK, AES 256-bit, HASH, PKA, TRNG, SHA-1/2	Multi-Protocol Radio Bluetooth® Low Energy 5.3 Long range, 2Msps Flexible master/slave setting Extended advertising	<b>Analog</b> 1x 12-bit ADC SAR 2Msps  <b>Sensing</b> Capacitive touch

Legend:   Side channel attack resistant  
  Active anti-tamper protection

## STM32WBA portfolio

Flash memory size / RAM size (bytes)



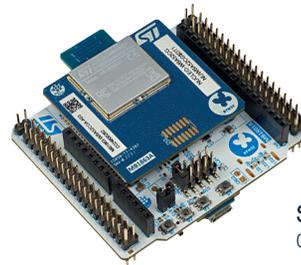
## Standard protocol



### KEY APPLICATIONS

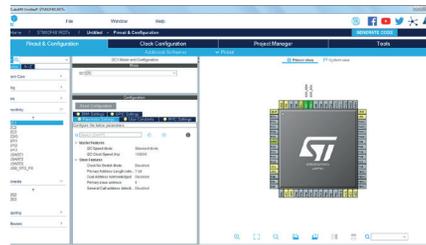


## Hardware tools



STM32 Nucleo-64 board  
Order code: NUCLEO-WBA52CG

## Embedded software and software tools



- **STM32CubeMX** is a free STM32 tool for configuration, code generation and power calculation.
- **STM32CubeWBA** is the STM32Cube MCU package the STM32WBA series (HAL and Low-Layer peripheral drivers, CMSIS, File system, RTOS, BLE stacks - and examples running on ST boards).
- **STM32CubeMonitor-RF** allows you to test and monitor the RF performance of your product.
- **STM32CubeProgrammer** is a programming tool.



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