

STM32WBA 32-BIT MCU WIRELESS SERIES



Multiprotocol versatility

Bluetooth® Low Energy/Matter/Zigbee/Thread



Supporting the latest protocols, the STM32WBA series brings designers the performance, efficiency, and security required for short-range applications.

Certified for Bluetooth® Low Energy 5.4 and IEEE 802.15.4 (Zigbee®, Thread, and Matter) protocols, this product series allows 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 is an ultra-low-power platform that extends battery life and provides a high level of security to protect data and IP while complying with regulations.

The STM32WBA wireless MCU embeds up to 2 Mbytes of flash memory and up to 512 Kbytes of RAM. It supports the latest Bluetooth® Low Energy features, including Auracast, Unicast, and AoA/AoD.

STM32WBA enabling features

From coded-phy up to
2 Mbits/sec high data rate

Ensure fast and reliable data transfer

Up to +10dBm output power

Extended communication range capabilities

Audio Auracast and
Unicast support

Enables audio sharing and enhanced user experience with better efficiency

NEW FEATURES FOR EMBEDDED DEVELOPERS

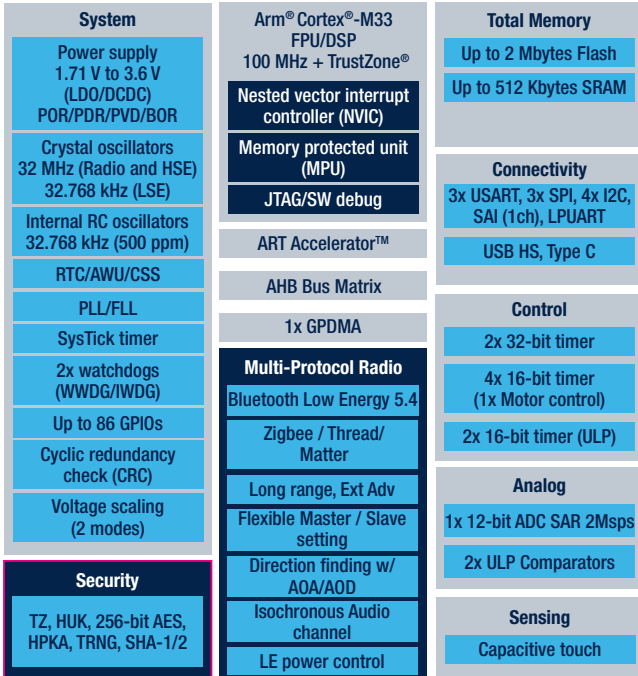
- Support for latest protocols
- Enhanced security
- Low-power consumption
- High output power
- Reduce bill of materials



Security

The STM32WBA targets PSA Certified Level 3 and SESIP3 IoT security standards and is ready to address the EU Radio Equipment Directive (RED) regulations. Security is central to many applications, protecting data for safe resource monitoring and anti-hacking in medical and industrial fields, including predictive maintenance and device fleet management. Thanks to the Arm Cortex®-M33 core with TrustZone® technology, the STM32WBA isolates and protects code and IPs whenever required using its isolation capability and the 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.

STM32WBA6x block diagram



Legend:

Side channel attack resistant

STM32WBA portfolio

Advanced features	STM32WBA65/64	STM32WBA55/54
	*Multi-protocol + audio Flash up to 2 Mbytes RAM up to 512 Kbytes SMPS/LDO	*Multi-protocol + audio Flash up to 1 Mbytes RAM up to 128 Kbytes SMPS/LDO
Pin-to-pin compatible cross-series	STM32WBA63	STM32WBA55
	*Multi-protocol + audio Flash up to 2 Mbytes RAM up to 512 Kbytes SMPS/LDO Compatible with STM32WBA55Cx (UFQFPN48)	*Multi-protocol + audio Flash up to 1 Mbytes RAM up to 128 Kbytes SMPS/LDO Compatible with STM32WBA63 (UFQFPN48)
Essential features	STM32WBA62	STM32WBA52
	**Bluetooth® LE Flash up to 2 Mbytes RAM up to 512 Kbytes LDO	**Bluetooth® LE Flash up to 1 Mbytes RAM up to 128 Kbytes LDO
Value line	STM32WBA60	STM32WBA50
	**Bluetooth® LE Flash 1 Mbytes RAM 64 Kbytes LDO	**Bluetooth® LE Flash 1 Mbytes RAM 64 Kbytes LDO
Module line	STM32WBA6M	STM32WBA5M
	Available in Q4 2025	Available in Q1 2025

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, Bluetooth Low Energy, Zigbee, Thread 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.
- Easy migration from WBA5 to WBA6 by using the same ecosystem.

Start developing now with X-CUBE-MATTER

X-CUBE-MATTER
firmware package



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Hardware tools



NUCLE0-WBA65RI



STM32WBA651-DK1



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