

# STM32WBxM WIRELESS MODULES



## Bluetooth LE 5.2, Zigbee 3.0 and Thread



**With a fully integrated reference design, ST's ready-to-use STM32WBxM module eases RF design for faster market introduction of wireless devices**

Built on the dual-core, multi-protocol and ultra-low power STM32WB55 MCU, the STM32WB5M wireless module features the MCU's full reference design, antenna included. It provides access to all the peripherals embedded in the WLCSP100 package on which it is based.

It supports Bluetooth® LE 5.2, as well as IEEE 802.15.4 protocols (in single, and concurrent modes) covering a wide spectrum of IoT application needs.

### KEY FEATURES & BENEFITS

- Fully certified for all protocols and regulations to speed up time to market and reduce overall cost
- Small form factor
- Smart pinout to allow cost-effective PCB manufacturing
- Fully integrated solution with a ready-to-use package
- Easy platform integration
  - No radio expertise required
- Up to 75m communication range for wide application convenience
- 1Mbyte Flash / 256 Mbytes RAM: large memory to address the requirements of high-end devices
- Security features for anti-cloning and IP protection

- Various peripherals : USB FS, LCD, TSC
- Concurrent modes supported: allows multiple standards to run at the same time for innovative use cases

### KEY APPLICATIONS

Suitable for multiple point-to-point or Mesh applications :

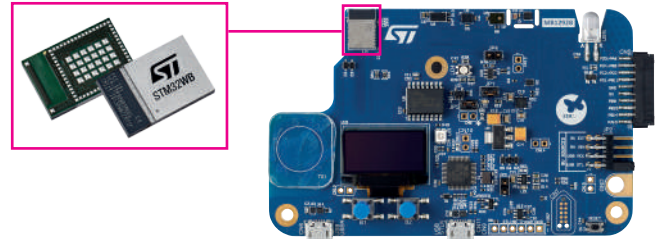
- Healthcare & medical devices
- Trackers
- Building and home automation
- Retail and advertising beacons
- Industrial

## STM32WB5M block diagram

<b>Control</b>	Arm® Cortex®-M4 FPU/DSP 64 MHz  Nested vector interrupt controller (NVIC) Memory protected unit (MPU) JTAG/SW debug  ART Accelerator™ AHB Bus matrix 2 x DMA 7 channels  <b>Multi-protocol RF stack</b> Bluetooth 5 IEEE 802.15.4 AES  Arm® Cortex®-M0+ 32 MHz  Nested vector interrupt controller (NVIC)	<b>Memory</b>
Power supply 1.8 to 3.6 V w/ DC/DC + POR/PDR/PVD/BOR		1-Mbyte Flash memory 256-Kbyte SRAM Boot ROM Secure boot loader
Xtal oscillators 32 MHz (RF) 32.769 kHz (LSE)		<b>Connectivity</b>
Internal RC oscillators 32 kHz+ 4 ~ 48 MHz + 16 MHz (HSI) + 48 MHz ± 1% acc. over V and T(°C)		2 x SPI, 2 x I²C  1 x USART, LIN, Smartcard, IrDA Modem control  1 x ULP UART USB 2.0 FS - Xtal less Quad-SPI (XIP) SAI (full duplex)
RTC/AWU/CSS		<b>Timers</b>
PLL/FLL		4 x 16-bit 32-bit timers 2 x ULP 16-bit timers
SysTick timer		<b>Sensing</b>
2 watchdogs (WWDG/IWDG)		16-key capacitive touch
Up to 68 GPIOs		<b>Encryption/security</b>
Cyclic redundancy check		256-bit AES/PKA TRNG/PCROP FUS/CKS
<b>Analog</b>	<b>Display</b>	
2 x ULP comparators	8 x 40 LCD driver	
1 x 12-bit ADC SAR 4.25 Msps		
Temperature sensor		

## Hardware tools

This STM32WB Discovery Kit is the most cost-effective way to quickly start developing with STM32WB5M module.



Note : \*available in Q1/2021

Order code : STM32WB5MM-DK\*

## 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, USB, FatFS and STM32 touch sensing), 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 ST boards.

## Software tools

### STM32CubeMX

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



### 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) 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.



## Standard protocols



## STM32WBxM portfolio

Flash memory / RAM size (bytes)



**STM32WB ONLINE TRAINING**  
[www.st.com/stm32wb-online-training](http://www.st.com/stm32wb-online-training)

