STM32WBxM
WIRELESS SERIES
Bluetooth LE 5.4, Zigbee 3.0 and Thread

Deliver best-in class IoT solutions for Bluetooth LE, Zigbee and Thread applications, security features, OTA firmware and radio update

A wireless MCU module
The STM32WB series is a dual-core, multi-protocol and ultra-low-power 2.4 GHz MCU system-on-chip. It supports Bluetooth® LE 5.4 as well as IEEE 802.15.4 protocols (in Single and Concurrent modes) covering a wide spectrum of IoT application needs. The STM32WBxM are ready-to-use and embeds the full reference design up to the antenna. They delivers access to all peripheral sets from the WLCSP100 on which they are built.

KEY FEATURES AND BENEFITS*
• Fully certified whatever protocols and regulations to fasten time to market and reduce overall cost
• Small form factor
• Smart pinout to allow low-cost PCB manufacturing
• Fully integrated solution as ready to use package
• Easy platform integration
• No radio expertise required
• Up to 75 m communication range for wide application convenience
• Up to 1 MB Flash/256 KB RAM
• Large memory availability to cover high-end devices
• Security features for anti-cloning and IP protection

• Various peripherals : USB FS, LCD, TSC
• Smart complementary features to support wireless devices
• Concurrent modes supported
• Adress standards combination for new application use cases

KEY APPLICATIONS
Suitable for whatever point to point or meshed applications :
• Health & medical devices
• Trackers
• Building and home automation
• Retail and advertising beacons
• Industrial

* feature set depending on module

www.st.com/stm32wb-modules
### STM32WB5M BLOCK DIAGRAM

**Control**
- Power supply 1.8 to 3.6 V
- w/ DC/DC + POR/POR/PVD/BOR
- Xtal oscillators 32 MHz (RF) 32.768 kHz (LSI)
- Internal RC oscillators 32 kHz 4 to 48 MHz 16 MHz (HSI) 48 MHz 1/8, over V and T (C)
- RTC/AWI/CSS
- PLL/PLL
- SysTick timer
- 2 watchdogs (WRST/WDDS)
- Up to 68 GPIOs
- Cyclic redundancy check
- Voltage scaling (2 modes)

**Analog**
- 2 x ULPI comparators
- 1 x 12-bit ADC
- 5AR 1.25 Msps
- Temperature sensor

**STM32WB5M BLOCK DIAGRAM**

**Memory**
- 1-Mbyte Flash memory
- 512-Kbyte SRAM
- Boot ROM
- Secure boot loader

**Connectivity**
- 2 x SPI 2 x I2C
- 1 x USART, LIN, Smartcard, JTAG
- Modem control
- 1 x ULP UART
- USB 2.0 FS - Xtal less
- Quad-SPI
- SAI (full duplex)

**Timers**
- 4 x 16-bit 32-bit timers
- 2 x ULPI 16-bit timers

**Sensing**
- 16-key capacitive touch

**Encryption/security**
- 256-bit AES/PKA
- TRNG/RCRCP
- FUS/KCS

**Display**
- 8 x 40 LCD driver

### STM32WBxM PORTFOLIO

<table>
<thead>
<tr>
<th>Flash memory / RAM size (bytes)</th>
<th>Pin count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 M / 256 K</td>
<td>77-pin LGA (0.450 mm pitch)</td>
</tr>
<tr>
<td>320 K / 48 K</td>
<td>86-pin LGA (0.450 mm pitch)</td>
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</tbody>
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### HARDWARE TOOLS

These STM32WB Discovery Kit and CEB board are the most cost-effective way to quickly start developing with STM32WB5M and STM32WB1M modules.

1. STM32WB5MM-DK
2. B-WB1M-WPAN1
   * SMA Connector not assembled by default

### STANDARD PROTOCOL

- **Bluetooth**
- **OpenThread**
- **mbed**
- **thread**
- **Z-Wave**

### START DEVELOPING NOW!

STM32Cube ecosystem

More than 1 million developers have chosen STM32Cube, making it the reference in the industry.

- STM32CubeWB firmware package
- STM32WB Online Training
- Discover our wiki site on STM32 connectivity solutions

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