STM32WB0 WIRELESS MCU SERIES

Bluetooth® Low Energy 5.4 communications

Wireless performance in a compact, energy-efficient design

The STM32WB0 microcontroller series enables reliable wireless performance in a compact, energy-efficient design.

Certified for Bluetooth® Low Energy 5.4, the STM32WB0 offers a best-in-class 2.4 GHz radio and low-power features that are ideal for cost- and energy-sensitive wireless applications.

KEY FEATURES AND BENEFITS

High wireless performance

- Arm® Cortex® -M0+ core up to 64 MHz
- Best-in-class radio enabling robust and stable connectivity

Certified Bluetooth® Low Energy 5.4

- Upgradable, highly modular, and robust Bluetooth® Low Energy stack, developed and maintained by ST

Longer battery life for IoT devices

- State-of-the-art radio efficiency (4.9 mA TX peak current / 3.6 mA RX peak current for STM32WB09)
- Power control options, 14.5 µA/MHz for the Arm® Cortex® -M0+ core for STM32WB09

Lower costs

- Affordable price point and high integration in tiny packages (balun, capacitor-less 32 MHz crystal)
- Enables 2-layer PCBs for reduced BOM and simplified circuitry

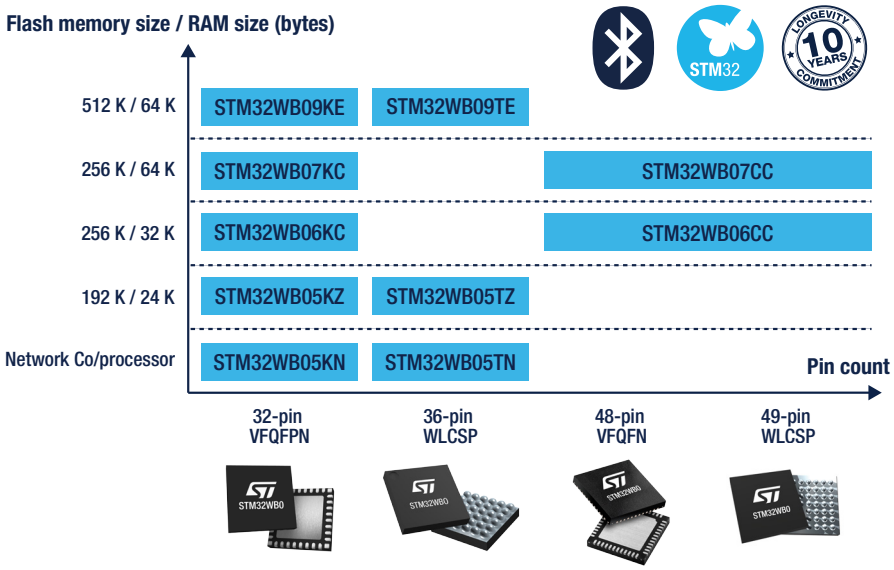
Extensive wireless design ecosystem

- Streamlined project development with unified ecosystem throughout the STM32WBx portfolio
- RF reference design, IPD chip for easy impedance matching
- Bluetooth® Low Energy and mesh stacks, tools, and resources

The STM32WB0 microcontroller offers best-in-class power consumption, making it ideal for energy-efficient IoT, wearables, and other portable applications requiring an extended battery lifetime.

All the STM32WB0 lines, including the STM32WB06xx and STM32WB07xx lines support long range, 2 Msps, extended advertising and PAwR.

The STM32WB05xZ line and the Bluetooth® Low Energy network co-/processor STM32WB05xN line support direction finding (AoA/AoD) and PAwR. The STM32WB09xx line supports direction finding (AoA/AoD), isochronous channels, and PAwR.



System
- Crystal oscillators 32 MHz (Radio and HSE) 32.768 KHz (LSE)
- Internal RC oscillators 32.768 KHz (+/-5%)
- PLL
- SysTick timer
- 1x watchdog (IWDG)
- Up to 32 GPIOs

Connectivity
- 1x LPUART
- 1x USART
- 1x I²C
- 1x SPI / I2S
- 1x PDM

Control
- Up to 3x 16-bits timer (6 PWM channels)
- RTC

Arm® Cortex®-M0+ 64 MHz
- Nested vector interrupt controller (NVIC)
- Memory protected unit (MPU)
- Security & hardware accelerators
- Flash 192 to 512 KB
- RAM 24 to 64 KB
- 8 Ch. DMA engine
- Secure bootloader

Bluetooth® Low Energy radio
- 2.4 GHz Radio Driver
- Long range, 2 Msps
- Extended advertising
- Direction finding (AoA/AoD)
- Isochronous channels
- PAwR
- Packet input / output
- Balun

Power management unit
- Regulator (LDO)
- DC-DC converter (SMPS)
- Power supply 1.7 to 3.6 V

Analog front end 8 Ch. ADC
- Battery monitoring
- Analog watchdog
- Analog Mic interface with PGA

Legend: Available on specific lines

USEFUL FEATURES FOR APPLICATION SEGMENT

Tracking and monitoring

- -104 dBm Rx sensitivity (long range), +8 dBm Tx output power
- <0.8 uA Sleep mode
- Affordability

Consumer

- ST sensors can be easily integrated with STM32WB0
- Rx: 3.6 mA and Tx: 4.9 mA (STM32WB09 peak consumption)
- Affordability

Industrial

- 10-year longevity commitment
- Bluetooth® Low Energy connectivity plug-in
- Bluetooth® Low Energy proprietary radio driver output power

Order code: FL2407STM32WB0

For more information on ST products and solutions, visit www.st.com