STM32WB WIRELESS SERIES

Bluetooth® Low Energy 5.4 & IEEE 802.15.4

Deliver best-in class IoT solutions with built-in key storage, OTA firmware updates and protocol concurrency control

A wireless dual-core brain

The STM32WB series is a dual-core, multi-protocol and ultra-low-power 2.4 GHz MCU system-on-chip.

It supports Bluetooth® Low Energy 5.4 as well as IEEE 802.15.4 protocols (in Single and Concurrent modes) covering a wide spectrum of IoT application needs.

Based on ST's best-in-class, ultra-low-power MCU with wide peripheral set, the STM32WB series reduces development time, BOM cost, and extends application battery life. STM32WB inspires innovation.

Bluetooth® Low Energy 5.4 & IEEE 802.15.4

The STM32WB SoC offers multi-protocol stacks including Bluetooth® Low Energy 5.4, OpenThread, Zigbee 3.0, proprietary protocols and concurrent mode, for best in-class RF performance.

Dedicated core to radio activity provides SW flexibility and better user experience.

IP Protection

STM32WB devices offer device integrity and industrial IP protection feawtures to meet manufacturers' increasing demand for brand protection.

STANDARD PROTOCOLS

OPENTHREAD
released by Google

Bluetooth™

zigbee

matter

STM32WB55 BLOCK DIAGRAM

Control

Power supply 1.7 to 3.6 V w/ DC/DC + LDO POR/PDR/PVD/BOR
Xtal oscillators 32 MHz (RF) 32.769 kHz (LSE)
Internal RC oscillators 32 kHz+ 4 ~ 48 MHz + 16 MHz (HSI) + 48 MHz ± 1% acc. over V and T(°C)
RTC/AWU/CSS
PLL/FLL
SysTick timer
2 watchdogs (WWDG/IWDG)
Up to 72 GPIOs
Cyclic redundancy check
Voltage scaling (2 modes)

Encryption/security

256-bit AES/PKA
TRNG/PCROP
FUS/CKS

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

Multi-protocol RF stack

Bluetooth® Low Energy
IEEE 802.15.4
AES

Arm® Cortex®-M0+ 32 MHz

Nested vector interrupt controller (NVIC)

Timers

4 x 16-bit 32-bit timers
2 x ULP 16-bit timers

Memory

Up to 1-Mbyte Flash memory
Up to 256-Kbyte SRAM
Boot ROM
Secure boot loader

Connectivity

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)

Analog

2 x ULP comparators
1 x 12-bit ADC SAR 4.25 Msps
Temperature sensor

Display

8 x 40 LCD driver

Sensing

| 16-key capacitive touch |
| --- |

Features	Benefits
Dual-core solution in a single die	Dual-core solution with independent clock trees ensures real-time RF execution and optimized PCB and BOM
TX: 5.2 mA, RX: 4.5 mA BLE: −96 dBm, 802.15.4: −100 dBm	Extended battery life time. Perfect fit for coin cell battery Comfortable and robust operating distance of connection
Integrated balun, USB 2.0 crystal-less, LCD driver	Reduces BOM cost and PCB footprint
OTA firmware updates, customer key storage	Easy fleet maintenance, brand and IP protection

Note* Features availability or caracteristics depend on STM32WB reference
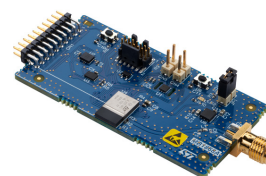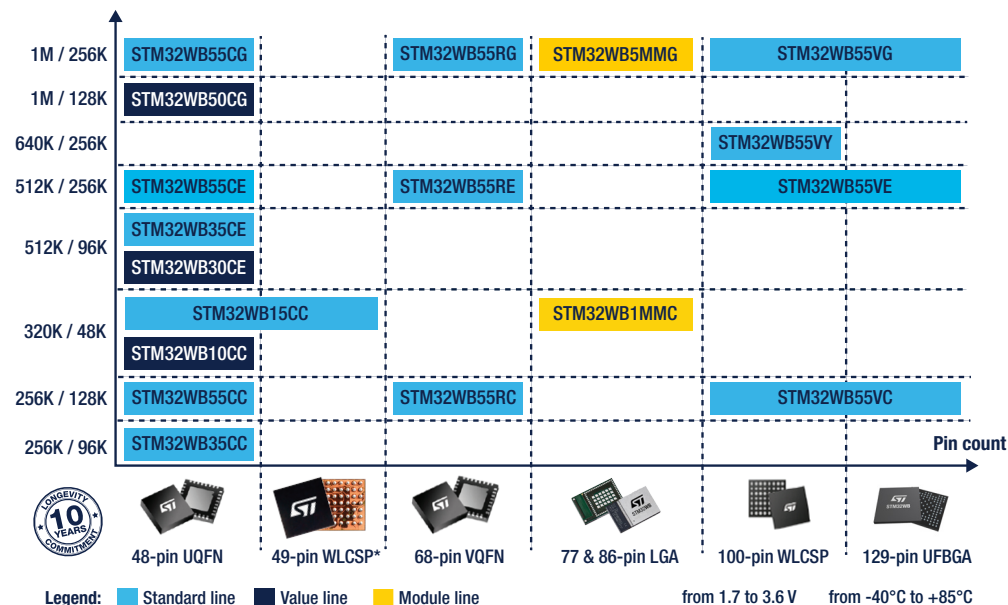
HARDWARE TOOLS
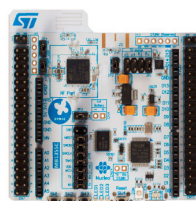
NUCLEO-WB55RG
NUCLEO-WB15CG
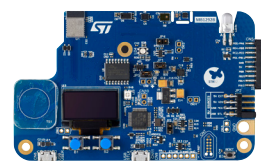
NUCLEO-WB5MM-DK

B-WB1M-WPAN1
SMA Connector not assembled by default

STM32WB PORTFOLIO

Flash memory size / RAM size (bytes)

1M / 256K	STM32WB55CG		STM32WB55RG	STM32WB5MMG	STM32WB55VG
1M / 128K	STM32WB50CG				
640K / 256K					STM32WB55VY
512K / 256K	STM32WB55CE		STM32WB55RE		STM32WB55VE
512K / 96K	STM32WB35CE STM32WB30CE				
320K / 48K	STM32WB15CC STM32WB10CC			STM32WB1MMC	
256K / 128K	STM32WB55CC		STM32WB55RC		STM32WB55VC
256K / 96K	STM32WB35CC				

Pin count

10 YEARS LONGEVITY COMMITMENT

48-pin UQFN | 49-pin WLCSP* | 68-pin VQFN | 77 & 86-pin LGA | 100-pin WLCSP | 129-pin UFBGA

Legend: ▮ Standard line ▮ Value line ▮ Module line   from 1.7 to 3.6 V   from -40°C to +85°C

START DEVELOPING NOW!

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

STM32CubeWB firmware package

STM32 Cube

MIX
Paper from responsible sources
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www.fsc.org