

# STM32WL WIRELESS SERIES



The world's first SoC enabling  
LoRa<sup>®</sup>, (G)FSK, (G)MSK, BPSK



**STM32WL series: the STM32 pioneer in Sub-GHz wireless connectivity.  
Easy-to-use, reliable and tailored for a wide range of RF applications.**

The STM32WL series supports multi-modulation and delivers outstanding ultra-low-power performance.

This makes it an ideal choice for LPWAN and IoT developments.

Embedding an Arm<sup>®</sup> Cortex<sup>®</sup>-M4 core, an optional Cortex<sup>®</sup>-M0+ and a Sub-GHz transceiver in one single chip, the STM32WL series ensures wireless application flexibility with LoRaWAN<sup>®</sup> and is compatible with Sigfox, W-MBUS or many other proprietary protocols, in a fully open way.

## WIRELESS CONNECTIVITY

Designed for Sub-GHz LPWANs, the STM32WL series comes with a LoRaWAN<sup>®</sup> stack and Sigfox stack, available free of charge on [st.com](http://st.com) in STM32CubeWL.

Thanks to a deep integration, the innovative and open architecture is optimized for flexible resource use, power management and helps lower BOM cost while offering a better user experience.

Developed using the same technology as the one implemented in our ultra-low-power STM32L4 microcontrollers, the STM32WL series, with its integrated Sub-GHz transceiver, provides similar digital and analog peripherals for basic or complex

application use cases requiring an extended battery life and a long RF range.

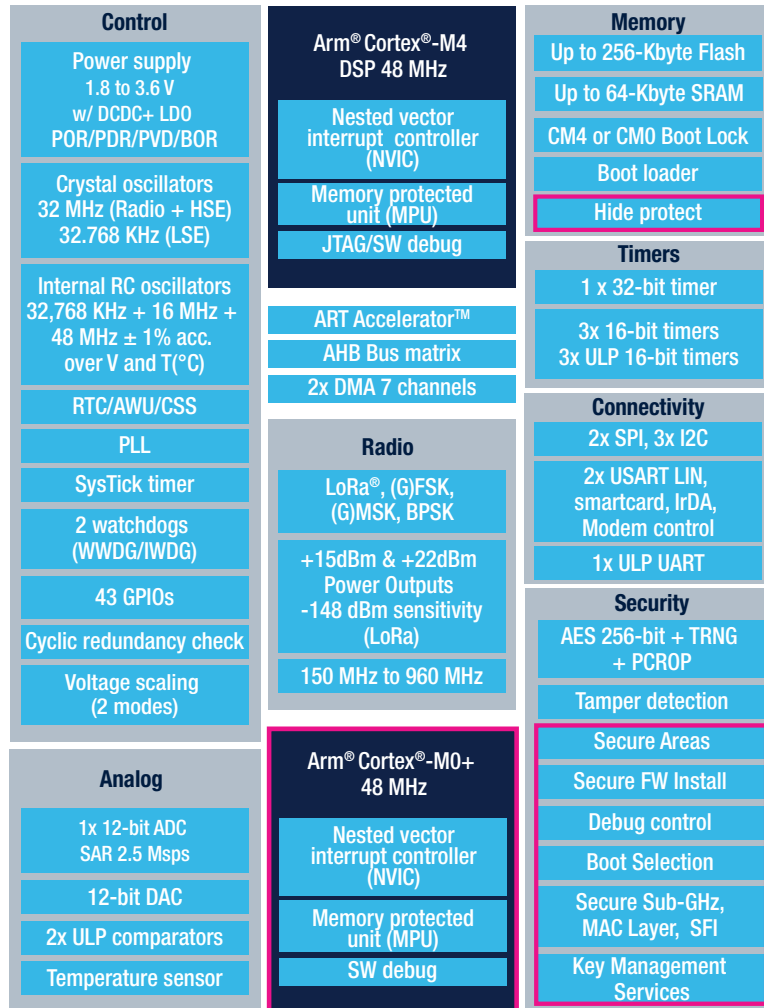
## SYSTEM PERIPHERALS

- Modulations: LoRa<sup>®</sup>, (G)FSK, (G)MSK, BPSK
- Linear Frequency Range: 150 to 960 MHz
- Dual-power Outputs: up to 22 dBm and up to 15 dBm (Embedded PAs)
- Up to 43 GPIOs
- Embedded SMPS and LDO
- Multiple low-power modes to maximize battery life

## Security & ID

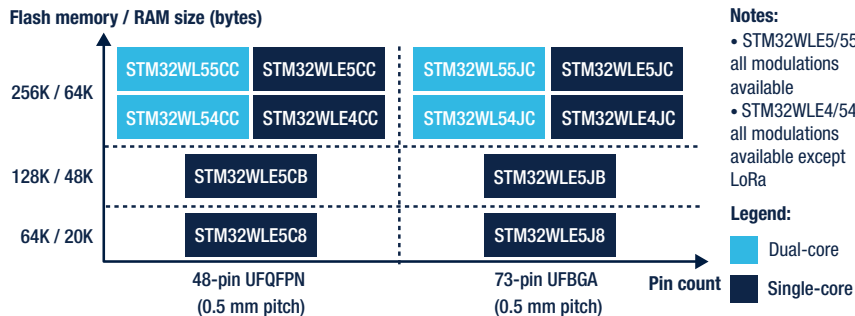
In addition to its wireless and ultra-low-power features, STM32WL microcontrollers include embedded security hardware functions such as 128- / 256-bit AES hardware encryption, PCROP read / write protection, and public-key cryptography with an elliptic curve encryption engine. The dual-core line STM32WL5x also provides advanced security features.

## STM32WL block diagram



Legend :  Features available only in the STM32WL5x dual-core line

## STM32WL portfolio



Companion chip  
 STMicroelectronics' integrated matching RF components are tailored for STM32WL BGA, QFN, CSP packages:  
 RF IPDs products STM32WL companion chip: BALFxB-WL-xxxx

## Standard protocol



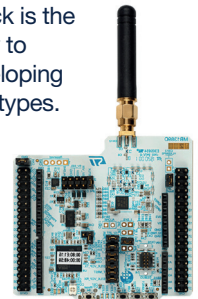
## Hardware tools

This STM32 Nucleo pack is the most cost-effective way to quickly get started developing STM32WL-based prototypes.

Order codes

NUCLEO-WL55JC1  
(868/915/923 MHz)

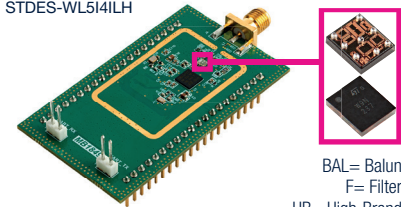
NUCLEO-WL55JC2  
(433/470 MHz)



## Reference designs and IPD (balun)

Order code

STDES-WL5I4ILH



BAL= Balun  
 F= Filter  
 HB= High-Brand  
 LB= Low-Brand  
 WL= STM32WL  
 D3= CSP Package

## Embedded software



### MULTIMEDIA

- Online Training WL:  
[www.st.com/stm32wl-online-training](http://www.st.com/stm32wl-online-training)
- Wireless YouTube Playlist:  
[youtube.com/@stmicroelectronics](https://youtube.com/@stmicroelectronics)
- STM32WL blog articles:  
[www.blog.st.com](http://www.blog.st.com)

