STM32WL3x lines

Wireless MCUs for efficient long-range communications

Low-power sub-GHz wireless MCU for long-range IoT connectivity

Based on the Arm® Cortex®-M0+ core, up to 64 MHz, the STM32WL3x lines integrate a sub-GHz dual radio for high flexibility and reduced BoM costs.

Offering up to 256 Kbytes of flash memory, the STM32WL3x lines come in compact packages down to 5 x 5 mm. It includes two radios, analog sensing peripherals, and an LCD driver.

With low-power consumption and a dedicated wake-up radio, the STM32WL3x lines ensure extended battery life for IoT devices.

STM32WL3x enabling features

Enables longer battery lifetime

- Main radio down to 5.6 mA (RX) and 10 mA (TX @ 10 dbm)
- Additional wake up receiver down to 4 µA in always on mode
- MCU low-power mode down to 450 nA with RAM retention
- Shutdown mode down to 14 µA with 6 wakeup pins

Offers flexible & multi-modulation support

- Multiple modulation, IQ interface and H/W packet handler
- Worldwide deployments: 413-479 MHz, 826-958 MHz, 159-185 MHz (on STM32WL3xxxxxA P/N), 276-319 MHz (only for STM32WL3R)

Reduces design complexity

- Lower BOM costs thanks to high integration
- SoC integrating MCU + dual radio + LCD and LCSC (fluid flow sensing controller)
- Internal balun: single-ended radio

Standard protocols

M-Bus wireless, LoWPAN, sigfox 0G Technology, mioty, Wi-SUN

www.st.com/stm32wl3x

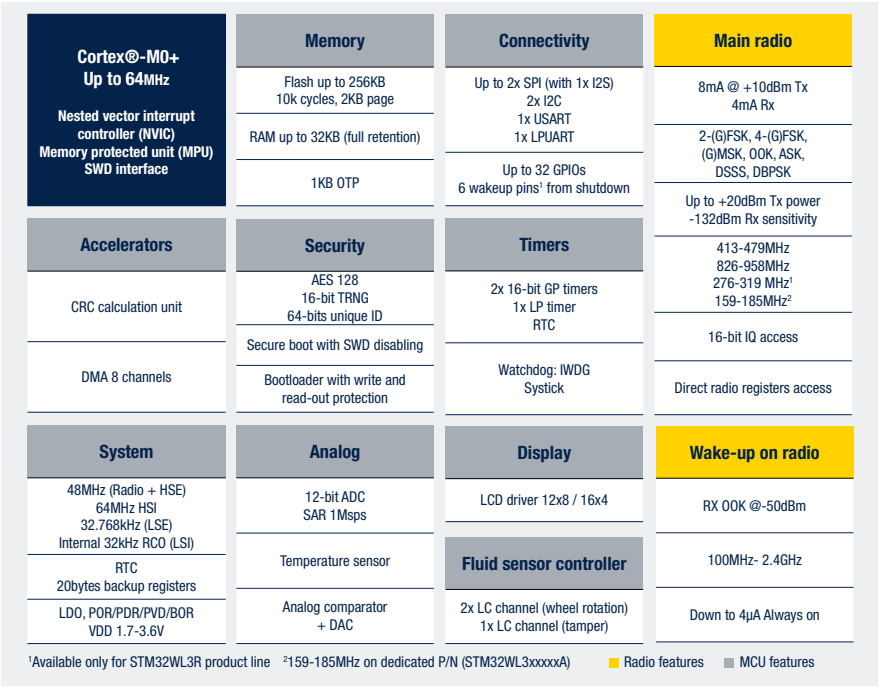
STM32WL3x portfolio, now supporting multiple markets

	Applications	Flash	Package	Radio	SPI/ UART	I2C	ADC	LCD/LCSC/ COMP/DAC	RF Bands
STM32WL33x Metering line	Water/ Gas meters Heat cost allocators	64 KB 128 KB 256 KB	QFN32 and QFN48	Main radio[2] + wake-up radio	Yes	Yes	Yes	Yes	169 MHz[1] 433 MHz 868/920 MHz
STM32WL31x IoT line	IoT sensors IoT asset tracking	64 KB 128 KB	QFN32 and QFN48	Main radio	Yes	Yes	Yes	-	433 MHz 868/920 MHz
STM32WL3Rx (new) Remote control line	Remote controls Call/Bell System	64 KB 128 KB	QFN32 up to 6 wake-up pins	Main radio[2]	Yes	Yes	2ch	-	315 MHz 433 MHz 868/920 MHz
STM32WL30x Modem line	Open Co-processor	64 KB 128 KB	QFN32	Main radio	Yes	-	-	-	433 MHz 868/920 MHz

[1] Available on dedicated P/N (STM32WL3xxxxxA)

[2] TX-only version available

STM32WL3x block diagram and ecosystem



Nucleo boards

NUCLEO-WL33CC1
NUCLEO-WL3RKB1
High band: 826-958 MHz

NUCLEO-WL33CC2
NUCLEO-WL3RKB2
Low band: 413-479 MHz

Reference designs

STDES-WL3xxxxx

Resources as: schematics, layout, BoM and firmware examples to get you started

Start developing now!

STM32 CubeWL3

More than 1 million developers have chosen **STM32Cube**, making it the reference in the industry.
Wireless M-Bus link layers supporting modes T2, C2, S2

Radio development tools: WISE Studio

The **STM32CubeWISEre** is a graphical user interface to interact with the STM32WL3x and evaluate their radio capabilities.
The **STM32CubeWISEcg** is a PC application to build flowgraph to define radio actions using the sequencer driver.

MLPF-WL-0xD3 RF IPDs

The STM32WL3's IPD portfolio, helps in reducing PCB footprint and achieving optimal RF performance by integrating the RF BoM of harmonic filters and impedance matching into a tiny footprint.

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