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STM32WL5M module line

A tiny, certified LoRaWAN® device for simplified integration and faster time-to-market

STM32

The STM32 portfolio

Five product categories

- **Wireless MCU** — Short- and long-range connectivity
- **Ultra-low-power MCU**
- **Mainstream MCU**
- **High-performance MCU**

32-bit general-purpose microcontrollers: from 75 to 3,224 CoreMark score

- **Embedded MPU** — 32- and 64-bit microprocessors





Enabling edge AI solutions

Scalable security

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MPU portfolio

MCU portfolio

sub-GHz connectivity is everywhere

Smart industries

Smart cities

Smart agriculture

Smart homes

Asset tracking

Metering

Alarm systems

Heat cost allocators

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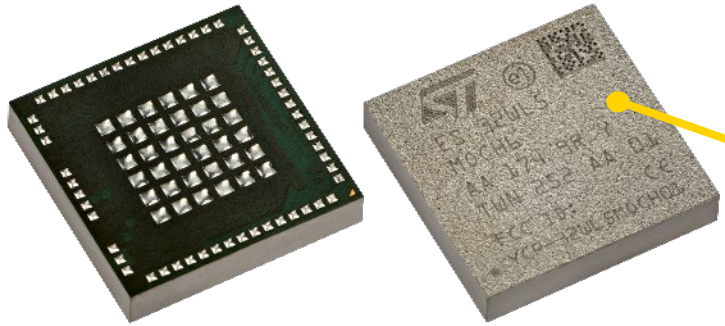
What the STM32WL5M module line offers

Faster development for power-efficient, long-range wireless devices



Dual-core Arm® Cortex®-M0 and Arm® Cortex®-M4 up to 48 MHz + sub-GHz radio transceiver

High integration, small footprint

- Embedded dual-core STM32WL55JC MCU
- 256 Kbytes of flash memory, 64 Kbytes of SRAM with sub-GHz radio transceiver
- Integrated 32 MHz radio TCXO and 32 kHz RTC crystals
- All RF components for transmission and reception matching network, incl. default antenna filter
- STSAFE-A110 secure element (optional)

Flexible wireless radio

- Certified for LoRaWAN® and Sigfox protocols
- Simple and ultra flexible platform with multiple modulation support: LoRa®, (G)FSK, (G)MSK and BPSK

Expanding battery life for IoT devices

- Low power consumption radio down to 4.82 mA (Rx) and 15 mA (Tx at 10 dBm) (radio only)

LoRaWAN CERTIFIED

sigfox verified

LONGEVITY 10 YEARS COMMITMENT

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STM32WL5M: one step further in integration

All-in-one sub-Ghz SoC

STM32**WL55JC**

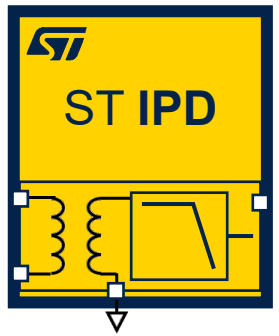
Dual-core MCU +
Multi-modulation RF

256KB FLASH
37 GPIOs

Integrated Crystals

32Mhz TCXO
32Khz XO

Integrated Passive device

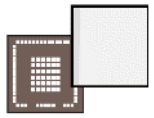


Matching network
Antenna filter

Integrated RF Switch

RX/TX
Switch

+ Optional STSAFE



Packed in a tiny
10 x 10 mm module

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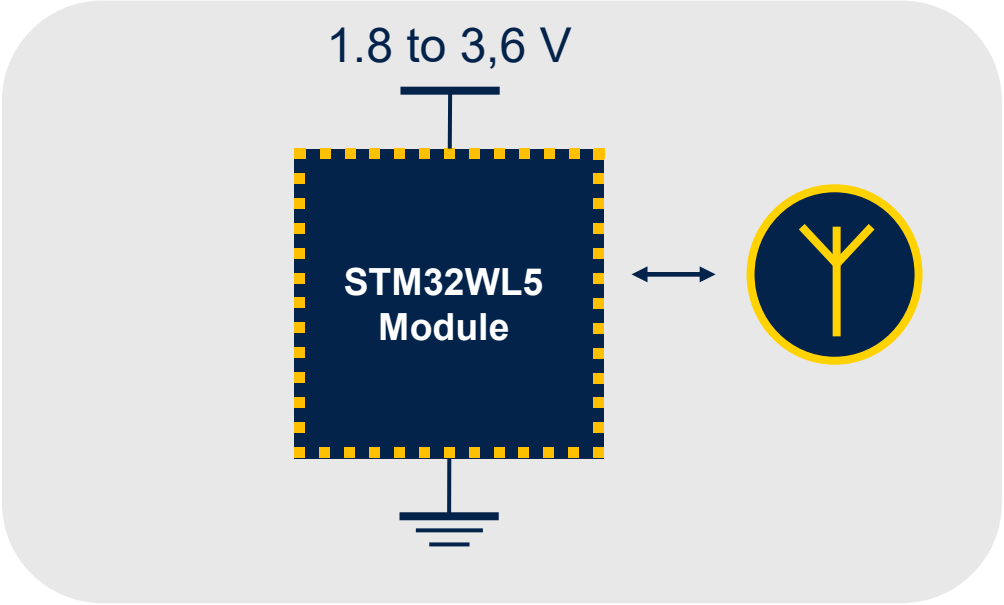
STM32WL5M: a simplified approach to lower BOM costs



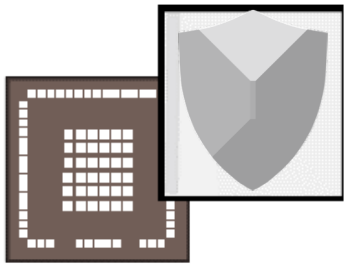
Simple PCB: no external components required

Easy to layout: enabling 2-layer PCBs

Internal antenna matching

Direct connection to VDD: internal SMPS components

STM32WL5M more robustness



EMC protected: molded module

Stable power supply: embedded power-supply filters

Robust RF Link: embedded default antenna filters

-40 to 85 °C temperature range

STM32WL5M offers a flexible radio configuration

High band frequency

From 868 to 928 MHz

Multimodulation

LoRa®, (G)FSK,
(G)MSK, and BPSK.

Adjustable output power

Up to 22 dBm

Dual output power

Selectable externally
by solder bridge or switch

Low power output
(up to 15 dBm)
Current consumption optimized

High power output
(up to 22 dBm)
long range optimized

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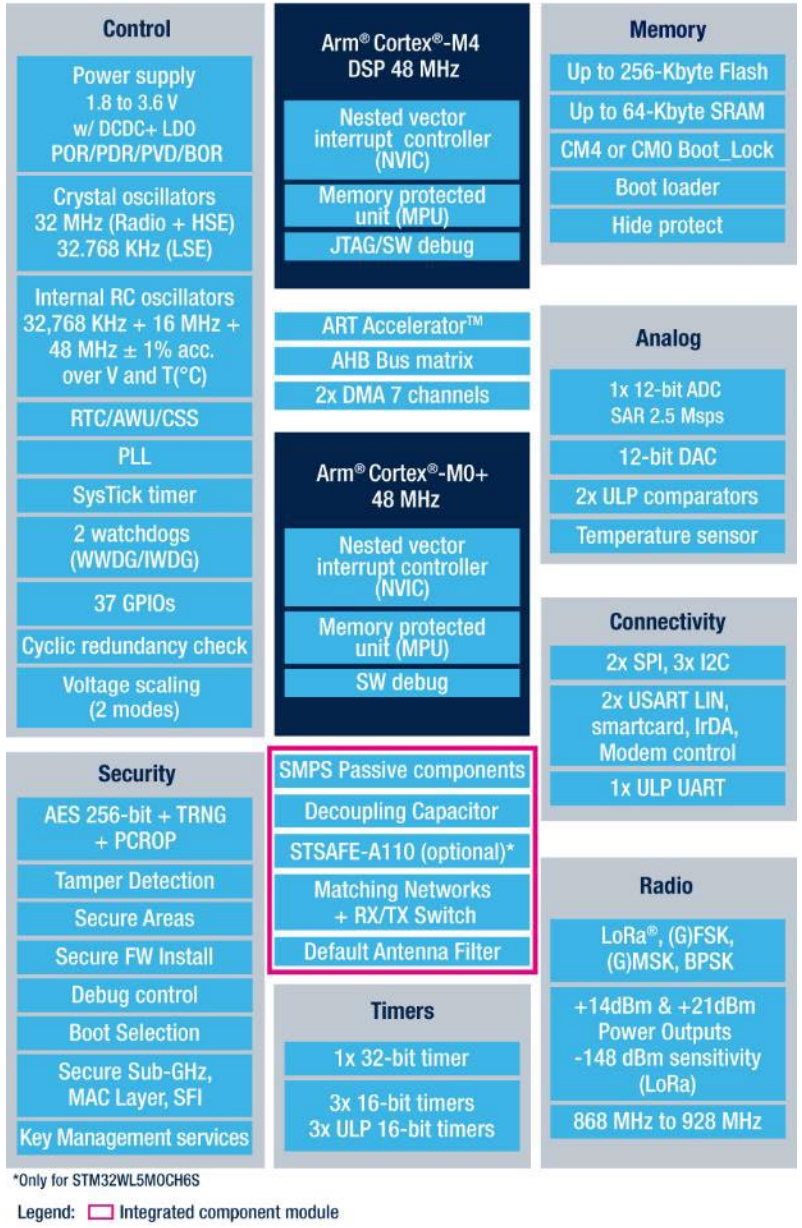
STM32WL5MOC block diagram

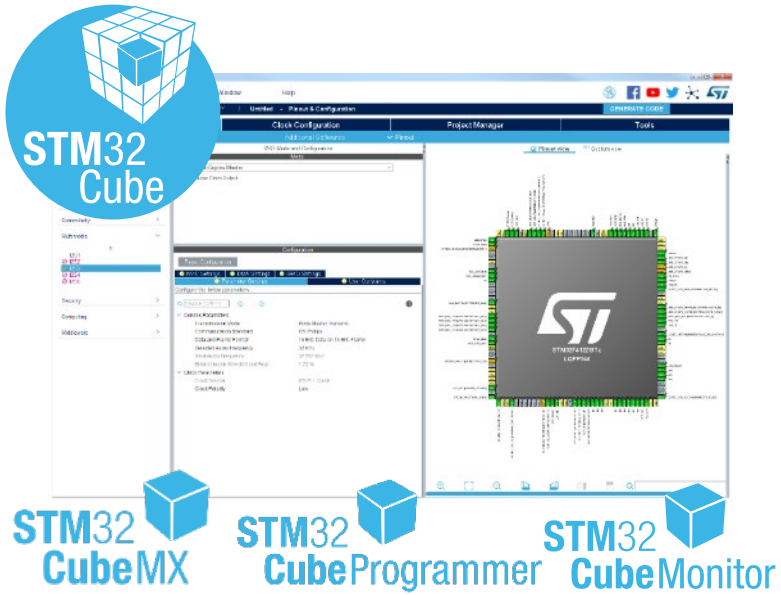


Dual cores: Arm® Cortex®-M0 and Arm® Cortex®-M4

- **Open module** (AT commands firmware available)
- **HF bands:** 864 to 928 MHz
- **Selectable PA**: low power (up 15 dBm) / high power (up 22 dBm)
- **External Antenna**
- **Full BOM integrated**: crystals, decoupling, matching, filters
- **Allows 2-layer PCB**
- **Tiny form factor: 10 x 10 mm** with 0.5 mm pitch
- Operating range: -40 to -85°C / 1.8 to 3.6V
- STSAFE secure element (unmounted component)

Accelerate your design journey using the STM32WL5M development ecosystem

Development



Available in STM32CubeMX
Straightforward firmware migration

Certification

Open stack and available from st.com/STM32CubeWL

LoRaWAN CERTIFIED

sigfox verified + Monarch

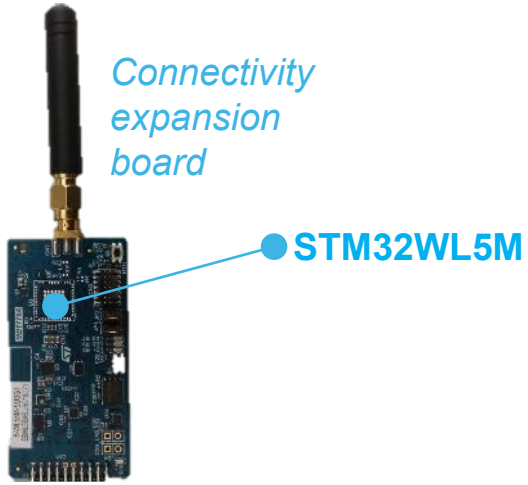
+ Stack available from partners

M-Bus wireless

CE FC IC RoHS

Open and certified module
Certification by similarity

Prototyping



Evaluation board
with sensors & connectors

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Releasing your creativity

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