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## STM32U0 series

The latest generation of entry-level  
ultra-low-power MCUs





# The STM32 portfolio

## Five product categories



Wireless  
MCU

Short- and long-range connectivity



Ultra-low-power  
MCU

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



Mainstream  
MCU



High-performance  
MCU



Embedded  
MPU

32- and 64-bit microprocessors



Enabling edge AI solutions



Scalable security





# What the STM32U0 series offers

**The ideal combination  
between energy  
consumption, features,  
and cost.**

**Enabling more design  
freedom in entry-level,  
battery-operated devices.**

## **Energy savings & longer product usage**

- Best-in-class static consumption.
- Many ultra-low-power modes for greater flexibility.

## **Integrated features**

- High integration, incl. LCD driver, MSI internal oscillator, ART Accelerator, security, and more.

## **Cost effectiveness**

- Lower BOM costs thanks to high integration.
- Attractive price point.
- Building on the proven STM32 ULP series for a faster time to market.



# Designed for battery-powered applications



## Industrial

Thermostats, smoke detectors,  
heat cost allocators, door locks

## Medical

Insulin pumps, glucose  
meters



## Smart metering

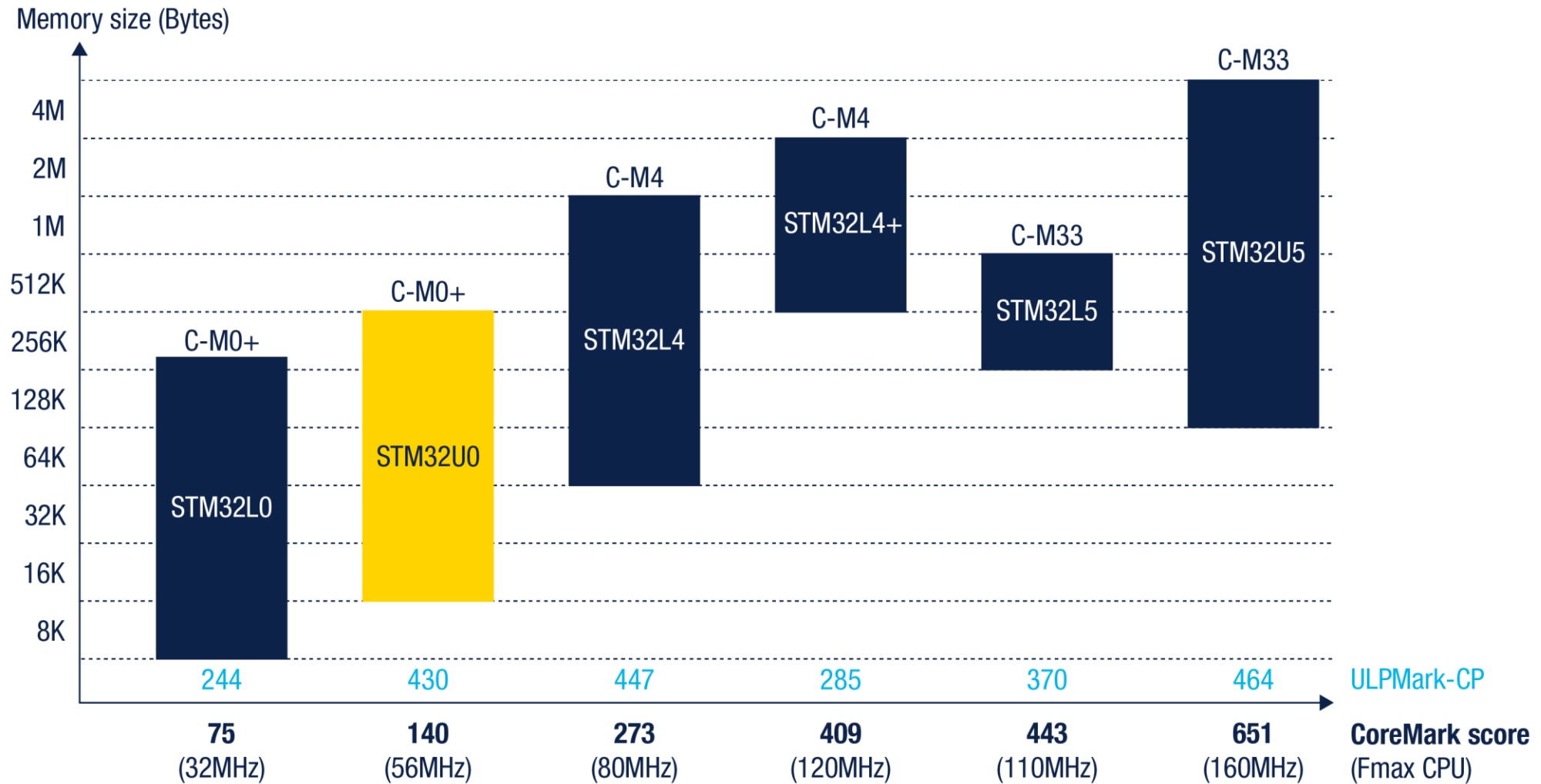
Water, gas, electricity  
meters, smart home  
gateways

## Consumer

Activity trackers, GPS,  
headphones



# STM32U0: the latest generation of entry-level, ultra-low-power MCU



# STM32U0 contributes to a more sustainable approach

**By reducing power consumption in end devices, STM32U0 contributes to reducing their carbon footprint.**



## Energy savings

STM32U0 requires less energy than previous product generations.



## Longer product lifetime

Expanding battery usage. Enabling batteries to last up to twice as long depending on the application.



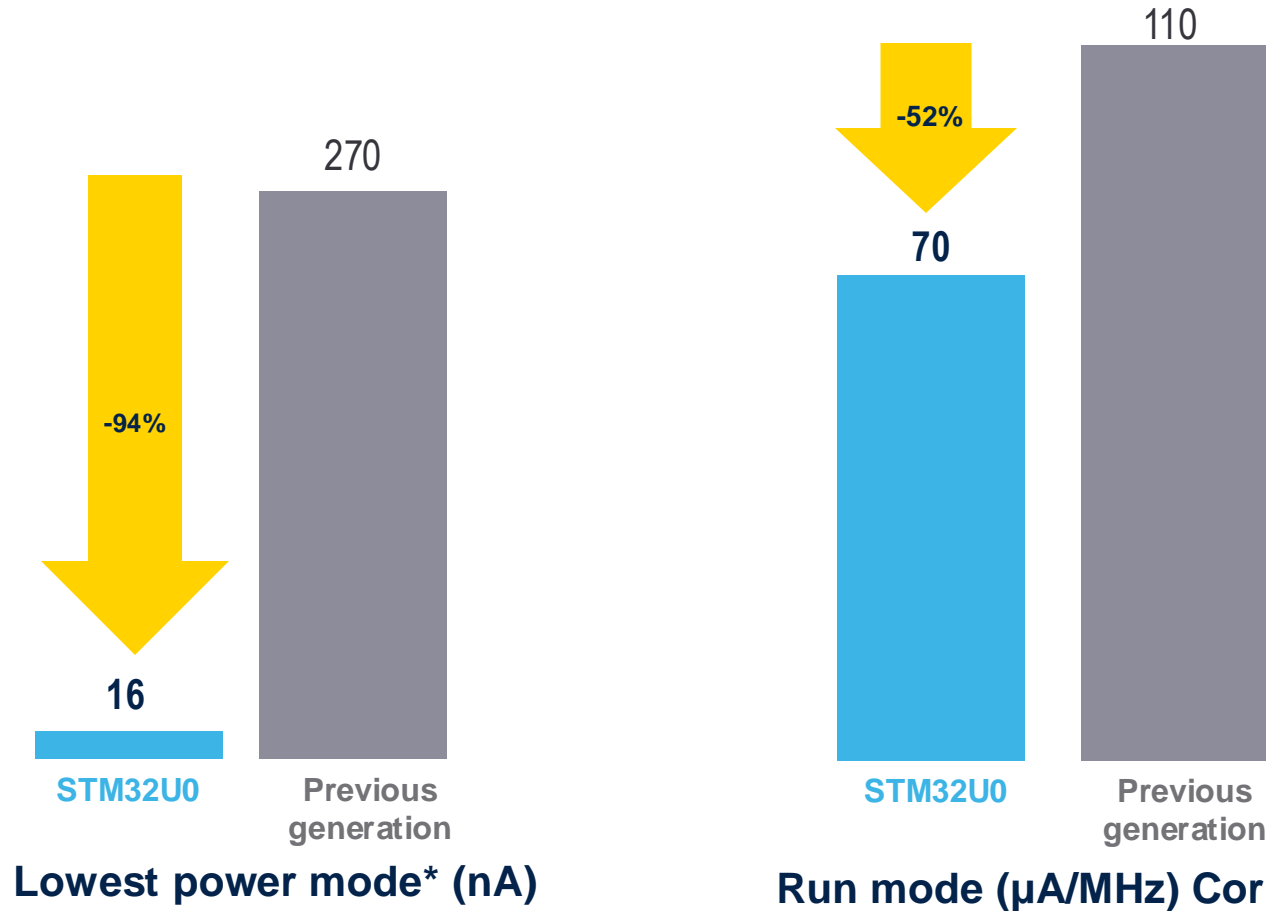
**SUSTAINABLE  
TECHNOLOGY**

[Find out more](#)

## STM32U0 is labeled Sustainable Technology

It was designed in an eco-friendly way and contributes to making applications more sustainable. For more information on responsible products, [visit st.com](https://www.st.com)

# STM32U0 reduces power consumption compared to previous product generations



**Up to 52% energy savings versus previous product generation**

- Water metering: 44%
- Industrial sensors: 51%



**STATIC PRODUCT CONSUMPTION**

**DYNAMIC PRODUCT CONSUMPTION**

\*shutdown mode

# STM32U0 efficiency proven by benchmarks

Excellent ultra-low-power performance for an entry-level MCU



**430 ULPMark-CP**

True energy cost of deep-sleep modes



**167 ULPMark-PP**

Common peripherals' energy impact on deep-sleep



**20 ULPMark-CM**

Active power, using CoreMark as the workload



# STM32U0 offers high integration for lower BOM costs

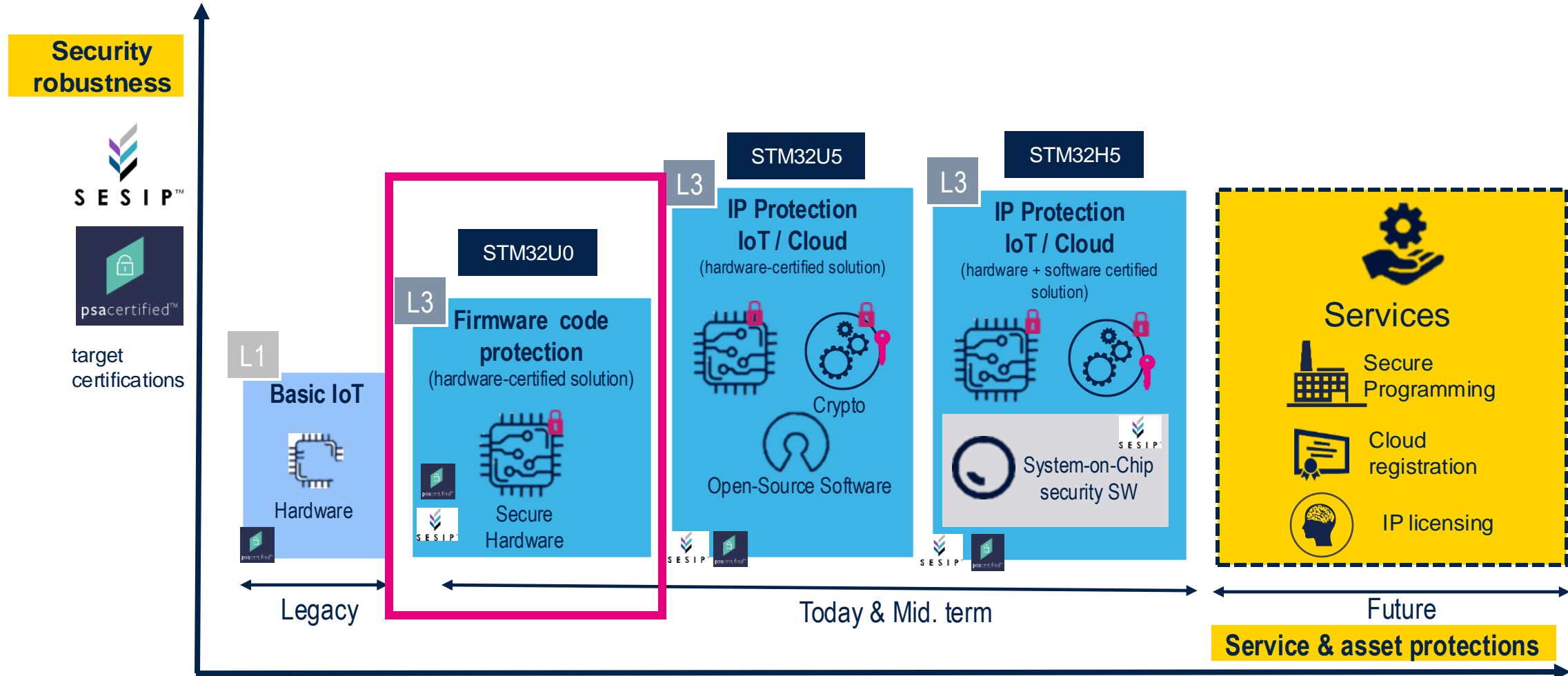


Numerous integrated peripherals

Analog

Flexible memory

# Security target: firmware code protection



# STM32U0 security for protecting your assets

**First MCU running on an Arm® Cortex®-M0+ targeting SESIP Level 3, PSA-Certified Level 1, and NIST certifications**

## Memory protections against illegal access control

- OTP, HDP, WRP, RDP, MPU
- RDP: 3 protection level states
- Password-based regression (128-bit PSWD)
- Secure boot

## Cryptographic accelerator for hardware robustness

- AES: 128/256-bit key encryption hardware acceleration
- True random number generator (NIST SP800-90B)



# STM32U0 helps cuts down costs

## Lower BOM costs

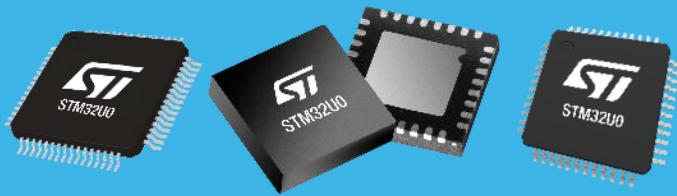
### High integration

- Segment LCD controller
- Many analog peripherals: DAC/ ADC - OPAMP – ULP comparator
- No crystal required for USB and high-speed clock source
- ULP timers input capture in stop mode
- VBAT battery charging
- Touch controller

## Proven technology for faster time to market

Leveraging several features already embedded in STM32L0, STM32L4, and STM32U5. Pin-to-pin compatibility with STM32L0, STM32L4 series.

# Many options available to streamline costs



**10 different packages**

TSSOP 20 pins  
UFQFPN 32 pins  
LQFP 48 pins  
LQFP 64 pins  
UFQFPN 48 pins

UFBGA 64 pins  
WLCSP 27 and 42 pins  
LQFP 80 pins  
UFBGA 81 pins

Product lines	FLASH (KB)	RAM (KB)	LCD Segment Display Controller 8x48/ 4x52	USB 2.0 crystal-less device mode	ULP Comparators	ULP timers with input capture	ULP UART	AES 128/256
STM32U031	16 to 64	12			1	2	1	
STM32U073	64 to 256	40	•	•	2	3	2	
STM32U083	256	40	•	•	2	3	2	•





# Accelerate your development with a full ecosystem



## Tools and software supporting you during all your design steps

Evaluation,  
prototyping  
and selection

Hardware and  
software  
configuration

Application development and debug

Code and hardware  
options  
programming

Run-time  
application  
monitoring

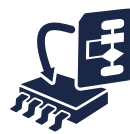


STM32  
Finder

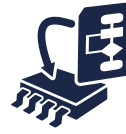
STM32  
boards



STM32  
CubeMX



STM32  
Cube MCU Packages



STM32  
Cube Expansion  
&  
Verticals and  
partner solutions



STM32  
Cube IDE  
&  
Partner IDEs



STM32  
Cube Programmer  
&  
Programmers from partners

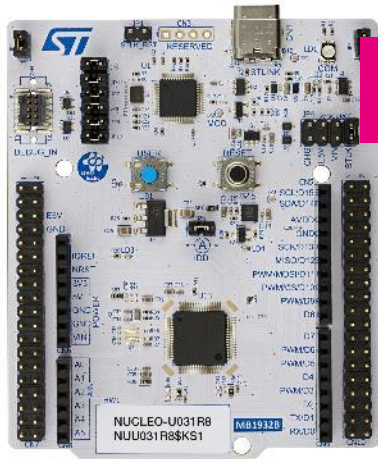


STM32  
Cube Monitor

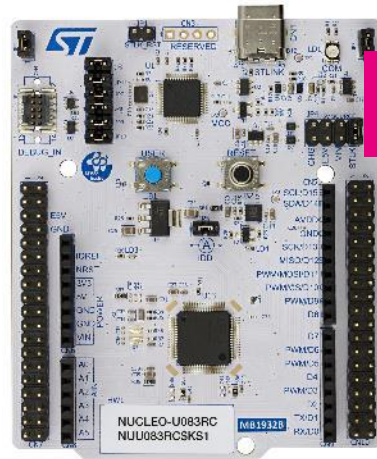
Worldwide support channels

# Development tools for the STM32U0 series

Speed-up evaluation, prototyping, and design



\*\$10



\*\$10



\*\$20

## Highly affordable NUCLEO-U031R8 & NUCLEO-U083RC

64 Kbytes flash with  
LQFP48/64 package

256 Kbytes flash with  
LQFP48/64 package

## Discovery kit STM32U083C-DK

256 Kbytes of flash in LQFP80

Enabling ultra-low-power designs  
and typical use cases

# STM32CubeMX, a GUI-based code generation tool

**Accelerate and simplify your development**



**Move from idea to implementation in no time.**

Use a pre-configured project template for STM32U0 Nucleo board including BSP and ready-to-use services.

**Develop faster.  
Achieve more.**

- Set up your pinout and clock
- Configure all the MCU features
- Generate ready-to-use code for your preferred IDE

# User-friendly energy profiler

## Compatible with STM32U0 series

**Debug code and measure energy consumption at the same time**

STLINK-V3PWR



STM32  
CubeMonitor-Power



Visualize energy consumption with  
STM32CubeMonPwr software tool

Current measurement with wide dynamic range  
(a few nA-500 mA)

High accuracy (down to  $\pm 0.5\%$ )  
Resolution down to 1.5 nA

Programmable output voltage source  
1.6 - 3.6 V (up to 2 A)

Direct support of Keil and IAR IDEs  
for power profiling

Programmer with multi-path bridge



# Releasing your creativity



[/STM32](#)



[@ST\\_World](#)



[community.st.com](#)



[www.st.com/STM32U0](#)



[wiki.st.com/stm32mcu](#)



[github.com/stm32-hotspot](#)



[STM32 MCU Developer Zone](#)

# Our technology starts with You



Find out more at [www.st.com/STM32U0](http://www.st.com/STM32U0)

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