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# Nuvoton Technology Unveils M2L31 MCU: Enhanced Energy Efficiency and Performance

## *Arm Cortex-M23: Extremely Low Power Consumption, Combined With Surprisingly Fast Performance*

**Hsinchu, Taiwan – 20 June 2024 –** In an era where energy efficiency is paramount, Nuvoton Technology is proud to announce the launch of its new Arm Cortex-M23 M2L31 microcontroller series. Designed to meet the growing demand for sustainable high-performance embedded computing power, the M2L31 series stands out for its low power consumption and efficiency, with its running speed of up to 72MHz still providing great processing capability.  
  
Nuvoton’s NuMicro M2L31 microcontroller, with an Arm Cortex-M23 core and various configurations featuring 64 to 512 Kbytes of ReRAM (Resistive Random-Access Memory) and 40 to 168 Kbytes of SRAM, is a low-power product designed for sustainability and energy efficiency. The M2L31 series supports two CAN FD and two USB Type-C PD 3.0 ports and prioritizes robust security features to safeguard valuable data.

### The MCU for Low Power, High-Performance Applications

The NuMicro M2L31 series is a game-changer for applications such as battery management, industrial automation, and consumer peripheral devices, where energy efficiency is necessary. Remarkable low-power capability significantly enhances battery life, reducing the need for frequent battery replacement.   
  
Developers will appreciate the M2L31's three low-power modes: normal shutdown, standby shutdown, and deep shutdown. These modes are tailored to minimize energy consumption based on application needs, with targeted power reduction that avoids compromising functionality. The microcontroller's typical operating current is impressively low at 60μA/MHz in normal mode but then drops to a mere 0.5μA in deep shutdown mode. Its ability to independently handle peripheral data acquisition and process data through low-power serial interfaces without CPU intervention sets a new standard for power-efficient automation.

### On-chip ReRAM is Better Than Traditional Flash Memory

The M2L31 series leaps ahead of old-style MCUs, integrating ReRAM (Resistive Random Access Memory), based on process technology developed in collaboration with TSMC. This new non-volatile memory format accelerates write operations by avoiding the time-consuming ‘erase before write’ process of traditional flash memory and offers lower energy consumption and better durability than flash memory.  
  
Previously, ReRAM was mainly used in the DRAM or NAND flash memory market. With the launch of Nuvoton Technology's next-generation M2L31 microcontroller, developers in the industrial and consumer sectors can also enjoy the many benefits of ReRAM.

### Wide Peripheral and Development Support

Catering to diverse design requirements and reducing platform size and cost, the M2L31 series supports a comprehensive set of I/O and peripherals, including UART, I²C, SPI/I²S, and multiple USB options, along with support for up to 16 channels of capacitive touch. Multiple chip packaging choices ensure compatibility with other Nuvoton products and meet most application demands.  
  
Nuvoton Technology is committed to supporting developers with a robust ecosystem, including the M2L31 NuMaker evaluation board and Nu-Link debugger. The M2L31 series is compatible with various IDEs, such as Keil MDK, IAR EWARM, and NuEclipse IDE with the GNU GCC compiler. It also supports multiple program update methods like ISP and IAP, simplifying system upgrades and software updates and maximizing flexibility and availability for developers and users.   
  
For more details of Nuvoton’s M2L31 series, please see:  
<https://www.nuvoton.com/products/microcontrollers/arm-cortex-m23-mcus/m2l31-series>  
  
There’s also a short introductory video of Nuvoton’s M2L31 series at:  
<https://www.youtube.com/watch?v=1NCstio8T7I>

### About Nuvoton Technology

Nuvoton Technology Corporation (Nuvoton) was founded to bring innovative semiconductor solutions to the market. Nuvoton was spun-off as a Winbond Electronics affiliate in July 2008 and went public in September 2010 on the Taiwan Stock Exchange (TWSE). Nuvoton focuses on the development of microcontroller, microprocessor, smart home, cloud security IC, battery monitoring IC, components, visual sensing and IoT with security. The company has a strong market share in Industrial, Automotive, Communication, Consumer and Computer markets. Nuvoton owns 6-inch wafer fabs equipped with diversified processing technologies to provide professional wafer foundry services. Nuvoton provides products with a high performance/cost ratio for its customers by leveraging flexible technology, advanced design capability, and integration of digital and analog technologies. Nuvoton values long term relationships with its partners and customers and is dedicated to continuous innovation of its products, processes, and services. Nuvoton has established subsidiaries in the USA, China, Israel, India, Singapore, Korea and Japan to strengthen regional customer support and global management. For more information, please visit [https://www.nuvoton.com](https://www.nuvoton.com/).