

Renesas' New RZ/T2L Industrial MPU Enables Fast and Accurate Real-Time Control with EtherCAT Communication

Software Compatibility with Other Renesas MPUs/MCUs Allows Developers to Seamlessly Implement Scalable Design

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RZ/T2L MPU for Accurate Real-Time Control with EtherCAT

Product Lineup for Industrial Ethernet

| Motor Control | | PLC, Gateway | | Network Controller, Remote I/O | |
|----------------------------------|---------------------------------|--|--|--|--|
| RZ/T1 Cortex-M4 Cortex-M33 | RZ/T2L Cortex-M55 | RZ/T2M Cortex-M55 | RZ/N1 Cortex-A7T or Cortex-M55 | RZ/N3L Cortex-M72 | R-IN22M3-EC Cortex-M55 |
| Control methods: EtherCAT | Fast EtherCAT (FEC) EtherCAT | Fast EtherCAT (FEC) EtherCAT TSN | Fast EtherCAT (FEC) EtherCAT TSN | Fast EtherCAT (FEC) EtherCAT TSN | Fast EtherCAT (FEC) EtherCAT TSN |
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Product lineup for Industrial Ethernet

TOKYO, Japan — Renesas Electronics Corporation (TSE:6723), a premier supplier of advanced semiconductor solutions, today announced a new industrial microprocessor (MPU) that supports the EtherCAT communication protocol, achieving high-speed, accurate real-time control for industrial systems. The RZ/T2L MPU inherits the hardware architecture of its higher-end product, the RZ/T2M, and provides optimized solutions for the fast-growing EtherCAT communication market. The new MPU delivers high-speed and accurate real-time processing performance required for AC servo drives, inverters, industrial robots, collaborative robots and others, while reducing the chip size by up to 50% compared to the RZ/T2M. The new device is ideal for factory automation (FA) and

a broad range of applications such as medical equipment and building automation (BA), where EtherCAT is increasingly becoming adopted.

“Accurate real-time control is essential to improving productivity and product quality in industrial systems,” said **Hitoshi Shirakabe, Vice President of Renesas' Industrial Automation Business Division**. “Our RZ/T2L can make this a reality, and with its support for the rapidly expanding EtherCAT market, it will elevate the performance to the next level and accelerate the automation of factories and buildings, as well as medical devices.”

“For decades we are committed to providing engineers with the best in class development tools for the latest Renesas MCUs and MPUs to enable their embedded innovations of tomorrow,” said **Norbert Weiss, Managing Director of Lauterbach GmbH**, leading supplier of debug and trace tools. “Thanks to our great partnership with Renesas, industrial customers of the RZ/T2L MPU will also get highly reliable tools and excellent support from the beginning.”

Single-Chip Solution for Accurate Real-time Control and EtherCAT Communication

The RZ/T2L is equipped with an Arm® Cortex®-R52 CPU with a maximum operating frequency of 800 MHz and a proven EtherCAT slave controller designed by Beckhoff Automation for Ethernet communication. All internal RAM of the RZ/T2L is equipped with the ECC (Error Correction Code) function as required by industrial applications. Additionally, the large (576 KB) memory directly connected to the CPU reduces unpredictability in execution time that can be caused by cache memory and enables reliable, deterministic processing. The RZ/T2L also offers peripheral functions such as multi-protocol encoder interfaces for angle sensors, Sigma-Delta interfaces, and A/D converters. These are arranged on a dedicated low-latency peripheral port (LLPP) bus directly connected to the CPU to achieve fast and accurate real-time control capabilities.

Scalable Product Deployment for a Wide Range of End Systems

The RZ/T2L uses the same architecture including the CPU, peripheral functions, and internal bus, as Renesas' most high-end motor control MPU, RZ/T2M to realize the same performance level. In addition, Renesas offers the Flexible Software Package (FSP) and software development environment that are compatible with other RZ Family MPUs and RA Family MCUs, allowing engineers to preserve their software assets. This reduces development efforts and costs and facilitates scalable development of a wide array of products.

Functional Safety and Security Function Support for Industrial Equipment

The RZ/T2L can be used as a functional safety MPU to meet the growing processing requirements to realize functional safety in industrial equipment. Renesas will provide self-diagnostic software and SIL3 system software kits in Q4/2023, which allow customers to reduce development efforts and costs to develop functional safety systems. In addition, the RZ/T2L supports various security functions such as secure boot, secure firmware update, JTAG authentication, unique ID, and cryptographic accelerator to reduce the risk of data breach and tampering of user programs. Renesas will offer the security software package as part of a security solution in May 2023.

RZ/T2L Winning Combinations

Renesas has showcased the capability and features of the RZ/T2L by combining with various Renesas devices such as power management ICs, photocouplers, Sigma-Delta modulators, and EEPROM to provide an optimized [AC Servo Solution](#) with integrated high-precision motor control and EtherCAT. This solution comes with reference circuits, Gerber files, and sample program code to accelerate product development for applications such as AC servos, industrial gateways, and remote I/O. Renesas' Winning Combinations are built on technically vetted system architectures of mutually compatible devices that work together seamlessly to create an optimized, low-risk design for a faster time to market. Renesas offers more than 300 Winning Combinations with a wide range of products. For more information, visit: <https://www.renesas.com/win>.

Availability

The RZ/T2L is available today. The RZ/T2L is one of the products supported by Renesas' [Product Longevity Program \(PLP\)](#) for industrial equipment that requires long life cycles.

For more information on the product, please visit: <https://www.renesas.com/rzt2l>

This product contributes to improving the environment by reducing energy consumption and increasing productivity in factory automation.

About Renesas Electronics Corporation

Renesas Electronics Corporation ([TSE: 6723](#)) empowers a safer, smarter and more sustainable future where technology helps make our lives easier. A leading global provider of microcontrollers, Renesas combines our expertise in embedded processing, analog, power and connectivity to deliver complete semiconductor solutions. These

Winning Combinations accelerate time to market for automotive, industrial, infrastructure and IoT applications, enabling billions of connected, intelligent devices that enhance the way people work and live. Learn more at [renesas.com](https://www.renesas.com). Follow us on [LinkedIn](#), [Facebook](#), [Twitter](#), [YouTube](#), and [Instagram](#).

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