**News Release**

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**Renesas Launches RX72T Group to Expand Microcontroller Options for Servo Control in Industrial Robots**

*32-Bit RX72T Group Achieves Highest CoreMark® Benchmark Level for 5V MCUs, Offer Dedicated Hardware Accelerators and Advanced Control for Servo Motor Class*

**Düsseldorf, May 16, 2019** – Renesas Electronics Corporation (TSE:6723), a premier supplier of advanced semiconductor solutions, today introduced the RX72T Group of 32-bit motor control microcontrollers (MCUs) with dedicated hardware accelerator IP to perform the complex, high-speed computations required for motor control in robots and other industrial equipment. The RX72T Group delivers superior performance, achieving an 1160 CoreMark score as measured by EEMBC® Benchmarks (Note 1) – the highest level for a 5V MCU operating at 200 MHz.

“The RX72T Group brings leading performance to our extensive lineup of MCUs optimized for industrial robotics and motor control, with built-in IP, safety and security functions, and advanced control,” **said Akira Denda, Vice President, Industrial Automation Business Division, Renesas Electronics Corporation.** ”The new MCU group extends an easy migration path across the RX family that creates new possibilities for extremely low-cost designs in compact industrial robots, and we are excited to accelerate the deployment of these applications to improve manufacturing efficiencies in industrial environments.”

**Key Features of the RX72T Group of MCUs**

Servo systems are becoming increasingly popular and the demand for compact industrial robots is also rising. To implement the complex motions required by industrial robots, high-precision control of the position, direction, speed, and torque of the motor is required.

The RX72T MCUs include dedicated accelerator hardware that enables the high-speed position control and speed control calculations required for implementing servo motor control in compact industrial robots. This allows the current control loop calculation to be performed in less than 1.5 µs (Note 2), providing a new option for users to independently develop servo systems where previously they only had the option of purchasing existing servo systems.

Implementing calculations in software can require excessive computing time. However, completely hardware-based calculations can adversely affect the flexibility to implement unique user control operations. With the RX72T MCUs, Renesas resolves the issue by implementing only the single-precision floating point trigonometric function (sin, cos, arctan, hypot) and a register bank save function in hardware as dedicated IP. This retains the flexibility while increasing the calculation speed. Furthermore, the register bank save function increases the speed and precision of interrupt handling, improving the device computation performance. The MCUs also include 200 MHz PWM inverter control timers with up to 4 channels of 3-phase control, 2 channels of 5-phase control or 10 channels of single-phase control.

Customers working with Renesas' [Failure Detection e-AI Solutions](https://www.renesas.com/support/videos/solutions/e-ai-failure-prediction-becomes-standard-operation.html) for motors to improve production and productivity can pair these solutions with the new RX72T MCUs. Characteristic data (current and speed values) that indicate the motor state can be used directly to implement motor control and e-AI-based failure detection with a single MCU. The MCUs also feature hardware-based system failsafe functions and a hardware cryptography module that can be used to encrypt/decrypt communications data.

Renesas provides programs that implement sensorless vector control and encoder vector control. Renesas provides the [Renesas Motor Workbench 2.0](https://www.renesas.com/software/D3017970.html) for real-time debugging and an RX72T CPU card that supports the [24 V motor control evaluation kit](https://www.renesas.com/products/software-tools/boards-and-kits/starter-kits/24v-motor-control-evaluation-system-for-rx23t.html).

With the new RX72T MCUs, Renesas offers system manufacturers an extensive lineup of 5V operation motor control MCUs with superlative software compatibility. This provides a smooth migration path from the new high-end MCUs out to the [RX23T](https://www.renesas.com/products/microcontrollers-microprocessors/rx/rx200/rx23t.html) (40 MHz), [RX24T](https://www.renesas.com/products/microcontrollers-microprocessors/rx/rx200/rx24t.html) (80 MHz), and [RX66T](https://www.renesas.com/products/microcontrollers-microprocessors/rx/rx600/rx66t.html) (160 MHz) MCUs, offering design flexibility within the RX MCU environment. The RX72T Group is also fully compatible with the RX66T Group incorporating the RXv3 core.

**Pricing and Availability**

The MCUs will be available in mass production quantities beginning in Q4 2019. The 512 KB flash, 100-pin R5F572TFBDFP device will be priced at US$4.06 in 10,000-unit quantities. Additional pricing will vary based on memory and pin-count configuration. (Pricing and availability are subject to change without notice).

**More Information**

To learn more about the new Renesas RX72T MCUs, visit <https://www.renesas.com/products/microcontrollers-microprocessors/rx/rx700/rx72t.html>.

To learn more about Renesas' motor control solutions, visit <https://www.renesas.com/solutions/proposal/motor-control.html>.

**Notes**

1. CoreMark: A benchmark test designed specifically for evaluating CPU core performance by the Embedded Microprocessor Benchmark Consortium ([EEMBC®](https://www.eembc.org/)) of the United States.

2. The execution time for the current control loop calculations in Renesas' research (phase current value acquisition, Clarke transform, Park transform, current PI control, inverse Park transform, inverse Clarke transform, space vector modulation, and setting PWM values).

**About Renesas Electronics Corporation**

Renesas Electronics Corporation ([TSE: 6723](http://www.jpx.co.jp/english/)) delivers trusted embedded design innovation with complete semiconductor solutions that enable billions of connected, intelligent devices to enhance the way people work and live. A [global](https://www.renesas.com/en-hq/about/company/profile/global.html) leader in microcontrollers, analog, power, and SoC products, Renesas provides comprehensive solutions for a broad range of automotive, industrial, home electronics, office automation, and information communication technology applications that help shape a limitless future. Learn more at [renesas.com](http://www.renesas.com/).

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