**News Release**

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**Renesas Expands RZ/V Series with Built-in Vision AI Accelerator for Accurate Image Recognition and Multi-Camera Image Support**

*New RZ/V2MA MPU Features an OpenCV Accelerator for Image Processing and Offers TVM-based Deep Learning Compiler*

**Düsseldorf, September 29, 2022 ―** Renesas Electronics Corporation (TSE: 6723), a premier supplier of advanced semiconductor solutions, has expanded its AI-capable RZ/V Series of microprocessors (MPUs), with a new device that enables AI processing of image data from multiple cameras, offering a new level of highly accurate image recognition for vision AI applications. Equipped with two 64-bit Arm® Cortex®-A53 cores, the new device is capable of delivering high computing performance with a maximum operating frequency of 1GHz. The RZ/V2MA features a proprietary low power DRP-AI (Dynamically Reconfigurable Processor) accelerator which can process vision AI at 1 TOPS/W (tera operations per second, per watt) class performance.

The RZ/V2MA device offers high-speed interfaces such as Ethernet, USB, and PCI Express that allow image input from multiple external cameras. In addition to the DRP-AI accelerator, the RZ/V2MA includes an OpenCV accelerator that allows rule-based image processing simultaneously. These features bring highly accurate image recognition capabilities for machine vision products such as AI-equipped gateways, video servers, security gates, POS terminals and robotic arms.

The new RZ/V2MA offers a full suite of development tools to aid vision AI system design. In addition to the existing DRP-AI Translator, the new device adds DRP-AI TVM (Note 1), which is based on the open-source deep learning compiler Apache TVM technology (Note 2). While DRP AI Translator is designed to convert AI models into DRP-AI executables, the DRP-AI TVM compiler lets the DRP-AI accelerator work together with the CPU, allowing DRP-AI to convert and generate more AI models than ever before. As a first phase, Renesas supports ONNX and PyTorch AI models and plans to support Tensorflow in the future.

"One of the challenges for embedded systems developers who want to implement machine learning is to keep up with the latest AI models that are constantly evolving,” said **Shigeki Kato, Vice President of Renesas' Enterprise Infrastructure Business Division**. “With the new DRP-AI TVM tool, we are offering designers the option to expand AI frameworks and AI models that can be converted to executable formats, allowing them to bring the latest image recognition capabilities to embedded devices using new AI models.”

"Renesas' RZ/V series is ideal for embedded devices since it does not need fans or heat sinks, due to its extremely low power consumption and low heat capability when running AI,” said **Chiharu Nakabayashi, President of amnimo Inc.**, a provider of IoT and AI-based services and a wholly owned subsidiary of Yokogawa Electric Corporation. “With these devices, we are confident that we can develop powerful image AI gateways that can be installed anywhere."

**Key Features of the RZ/V2MA**

* Two 64-bit Arm Cortex-A53 cores with a maximum operating frequency of 1 GHz
* AI accelerator DRP-AI (1 TOPS/W class), achieving 52 fps (frames per second) when executing TinyYoloV3 programs
* OpenCV accelerator for rule-based image processing
* Ethernet, USB, and PCI Express interfaces for image input from external cameras
* Video codecs (H.265 and H.264)
* DRP-AI TVM tool for converting AI models based on TVM technology. Support ONNX and PyTorch formats initially.
* High-speed memory interfaces include LPDDR4 (3200Mbps), USB 3.1 (up to 5Gbps), and PCI Express (2 lanes)
* Available in 15mm square BGA package

**Vision AI Gateway Solution with RZ/V2MA**

Renesas has developed the "[Vision AI Gateway Solution](https://www.renesas.com/application/key-technology/artificial-intelligence/vision-ai-gateway-solution?utm_campaign=soc_rzv2ma&utm_source=press_release&utm_medium=press_release&utm_content=rzv2ma_wc)," which is an AI-based object detection and recognition platform that uses multiple cameras to collect and efficiently transmit data wirelessly. This high-speed processing solution combines the RZ/V2MA MPU with complimentary Renesas products such as power ICs, VersaClock clock generator, and communication modules for Wi-Fi, Bluetooth, and LTE. This solution not only provides flexible connectivity options but has an optimized power supply system and has been tested to accelerate development of robust AI gateway devices. This solution is part of Renesas’ Winning Combinations, which optimally combine mutually compatible Renesas devices that work together seamlessly to reduce user design risk and shorten time to market. Renesas offers more than 300 other Winning Combinations with a wide range of products from its portfolio. More information is available at: [https://www.renesas.com/win](https://www.renesas.com/win?utm_campaign=soc_rzv2ma&utm_source=press_release&utm_medium=press_release&utm_content=wc).

**Availability**

The RZ/V2MA and development tools are available now. More information can be found here: [https://www.renesas.com/rzv2ma](https://www.renesas.com/products/microcontrollers-microprocessors/rz-mpus/rzv2ma-tentative-ai-only-accelerator-drp-ai-4k-compatible-image-signal-processor-isp-vision-ai-assp-real?utm_campaign=soc_rzv2ma&utm_source=press_release&utm_medium=press_release&utm_content=rzv2ma_lp)

A video of an AI edge gateway demo is also available on amnimo’s website:

<https://youtu.be/OUpY2w0VdNk>

This product is designed to use less power and contributes to energy savings within the system.

(Note 1) DRP-AI TVM is powered by EdgeCortix MERATM Compiler Framework

(Note 2) For more information on Apache TVM, please refer to <https://tvm.apache.org>

**About Renesas Electronics Corporation**

Renesas Electronics Corporation ([TSE: 6723](http://www.jpx.co.jp/english/)) empowers a safer, smarter and more sustainable future where technology helps make our lives easier. A leading [global](https://www.renesas.com/about/company/profile/global.html) 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](http://www.renesas.com/). Follow us on [LinkedIn](https://www.linkedin.com/company/renesas/), [Facebook](https://www.facebook.com/RenesasElectronics/), [Twitter](https://twitter.com/renesasglobal), [YouTube](https://www.youtube.com/user/RenesasPresents) and [Instagram](https://www.instagram.com/renesas_global/).

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