

BASED ON CAN FD MPUS

## For voice-controlled AI vision applications

Renesas and Syntiant announced the joint development of a voice-controlled solution for image processing in vision AI-based (artificial intelligence) Internet of Things and edge systems.



*The solution is dedicated for self-checkout machines, security cameras, video conference systems, and smart appliances such as robotic cleaning devices (Source: Renesas, Syntiant)*

The solution combines the CAN FD capable Renesas RZ/V micro-processor unit (MPU) series and the Syntiant NDP120 neural decision processor. It performs object recognition, facial recognition, and other vision-based tasks that are critical functions in security cameras and other systems. For example, while user-defined voice cues drive activation and system operation, vision AI recognition tracks operator behavior and controls operation or issues a warning when suspicious actions are detected. Always-on functionality with voice-triggered activation from standby mode is provided.

The Renesas RZ/V series consists of RZ/V2M and RZ/V2L variants. The latter includes two CAN FD interfaces. Up to 64 x 2 receive message buffers are shared among the two CAN FD channels. 16 transmit message buffers per channel are available. The MPU is equipped with a single- or dual-core 1,2-GHz Cortex-A55 CPU (central processing unit). It incorporates the company's DRP-AI (dynamically reconfigurable processor-AI) accelerator for vision applications. It also provides a 16-bit DDR3L/DDR4 memory interface with memory error detection/correction (ECC). Further features are the built-in 3D graphics engine, a camera interface, a display interface, two USB, and two 1-Gbit/s Ethernet channels. The RZ/V2L is package- and pin-compatible with the [RZ/G2L](#), which allows RZ/G2L users to upgrade to RZ/V2L without to modify the system configuration.

The Syntiant NDP120 chip incorporates AI capabilities that can be used to implement voice functions, including speaker recognition, keyword detection, multiple wake words, and local command recognition. The processor can run multiple applications simultaneously while minimizing power consumption to 1-mW battery power.

"Voice-based user interfaces will make it possible for customers to deliver new user experiences that bring the next generation of innovative ideas from concept to reality, said Syntiant CEO Kurt Busch. "We've already shipped more than 15 millions of our deep learning NDPs globally to enable always-on voice in a wide variety of consumer and industrial Internet of Things applications. Our collaboration with Renesas delivers a powerful, low-power voice and image solution that is certain to accelerate traction among a global customer base in a variety of devices and use cases."

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