Provides industrial network interfaces

Renesas has announced the RZ/N series of industrial networking communication microprocessors (MPUs) that enables network-based application development. CANopen is supported.

(Photo: Renesas)

The RZ/N series is designed for use in industrial network devices such as network switches, gateways, programmable logic controllers (PLCs), operator terminals, and remote I/O units. The RZ/N brings together multiple industrial networking technologies within a single chip, enabling system manufacturers to develop systems supporting a variety of industrial network protocols and network redundancy protocols in less time. Serial networks require real-time control and use real-time industrial network protocols such as CANopen, Ethercat, Ethernet/IP, Ethernet Powerlink, Profinet, and Sercos. In contrast, control networks, which prioritize reliability, use network redundancy protocols such as Rapid Spanning Tree Protocol (RSTP), Parallel Redundancy Protocol (PRP), and High-Availability Seamless Redundancy (HSR). In addition, to facilitate the task of implementing industrial network protocols such as CANopen on new devices, Renesas is working with protocol vendors to make available to system developers protocol stacks from Port, TMG Technologie und Engineering, Cannon-Automata, and Net Module, among others.

Renesas also delivers ecosystem support to facilitate system manufacturers' software development by offering a general application programmable interface (API) that provides a support for network protocol stacks implemented by Renesas partners, in addition to compiler and OS environments. The RZ/N lineup comprises three product groups for scalability: the RZ/N1D group for high-end applications, the RZ/N1S group for mid-range applications, and the RZ/N1L group for low-end applications.

With the recent advancement of Industry 4.0 to implement network connections in factories for increased efficiency, there are growing demands for network devices with support for industrial network protocols enabling real-time processing, protocol gateway functionality, protected networking functionality, and support for network redundancy protocols to ensure highly reliable and efficient communication.

Due to factors such as differing time constraints and network control technologies, existing factory networks consist of field networks, which implement communication between control devices and other devices, and control networks, which implement communication between control devices and other control devices.

Thus far, there has been little development in unifying these two types of networks, which meant that when developing network devices, it was necessary to use components supporting one or another of the available protocols. The RZ/N series was developed in response to this situation as a single-chip solution that enables development of industrial network devices by providing support for both field network real time protocols and control network redundancy protocols. The RZ/N series integrates the R-IN Engine employing an ARM Cortex-M3 processor and a five-port Ethernet switch. This enables both real-time processing of communication data and redundancy protocol operation.

Renesas will provide a Generic Abstraction layer API that will deliver unified support for a variety of industrial network protocols without performance tradeoffs. Using such API will enable system developers to combine supported protocols as needed with minimal impact on the application software, and to shorten the development time of industrial network devices by as much as 50 percent, said the company. System manufacturers can choose the processor that meets the specific needs of their applications with the knowledge that they can easily reuse existing software resources.

The RZ/N1D group features a dual ARM Cortex-A7 and is suitable for high-end applications such as network switches, PLCs, and gateways. The RZ/N1S group features a single ARM Cortex-A7 and is intended for mid-range applications such as nano-PLCs and operator terminals. Finally, the RZ/N1L group is suitable mainly for applications such as industrial equipment communication blocks or slave devices such as remote I/O units and enables system developers to develop devices that are more compact and low cost.

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