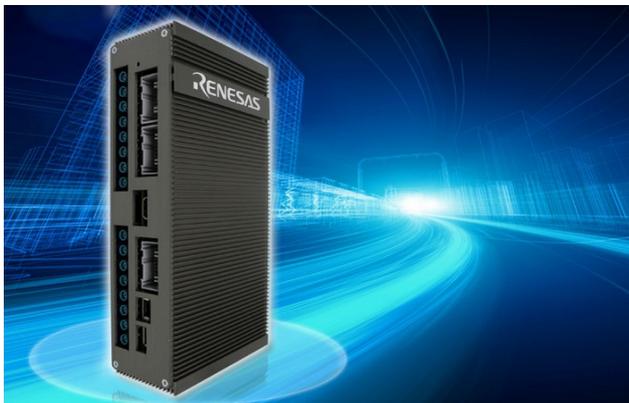


DRIVING SOLUTION KIT

## Development of autonomous-driving vehicles

Renesas introduced its autonomous driving system based on the company's automotive dedicated ISO 26262 ASIL-B SoC and ISO 26262 ASIL-D MCU for development of safe ECUs. It comes with six CAN FD interfaces.



The HAD solution kit comes with six CAN FD interfaces (Photo: Renesas)

Renesas Electronics announced a highly automated driving (HAD) solution kit. It delivers computing performance targeted at automotive functional safety to reduce development time of electronic control units (ECUs). The solution kit connects two Renesas' R-Car H3 system-on-chip (SoC)-based starter kits and one RH850 P1H-C micro-controller through on-board interfaces and provides connection to peripherals using multiple external interfaces, such as CAN FD, Flexray, and Ethernet.

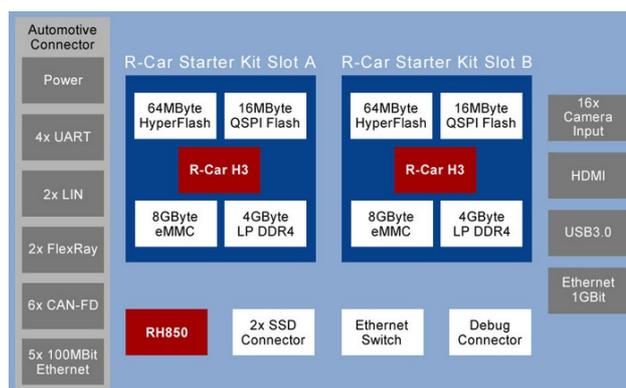
Therefore the product is compliant with both ISO 26262 ASIL-B functionality safety standard and the ISO 26262 ASIL-D standard. The solution kit enables system developers to evaluate functions and software in an environment that is similar to the actual development of ECUs, thereby reduces developers' time and efforts when porting software to the actual ECUs.

The automotive market is moving rapidly to make highly autonomous driving a reality for consumers by 2020. However, this is a challenging path as autonomous driving level 3 and beyond requires high computing power while maintaining safety and ensuring quality. During the initial development of autonomous driving systems, OEM and Tier-1 system developers first create prototype systems and test them using PCs. To adapt a prototype system to fit the actual vehicle, features such as low power consumption and high performance, and operation under high temperature must all be aligned. Therefore, the step to adapt a newly developed system into the actual vehicle is known to be challenging.

The HAD solution kit supports software development and software verification that Tier-1s and OEMs are using for automotive ECUs. This is being integrated in a housing with multiple interfaces such as CAN that provides rich connectivity close to actual automotive ECUs. The solution kit simplifies software development for mass production ECUs by allowing evaluation of the development using the HAD solution kit in the vehicle. The design of the housing allows testing in the lab as well as in test drives that meet automotive requirements.

### Multiple interfaces

The development of autonomous driving systems involves a continual process of collecting and analyzing test data in an environment connected to various sensors, which requires high bandwidth capabilities. The HAD solution kit supports multiple interfaces, including Classical CAN and CAN FD, Ethernet, and Flexray. In addition, up to 16 camera inputs are available to allow direct connection and image processing by the R-Car H3. The multi-interface approach combines data from surround view cameras with pre-processed objects from lidar, radar, and front cameras to provide a view of the vehicle's surroundings to enable a safer driving experience. The data logging function is complemented by a solid state drive (SSD) support as well as a USB 3.0 connection to enable the recording of test drive data. It also provides high-definition multimedia interface (HDMI) output for the visualization.



The HAD solution kit kit structure (Photo: Renesas)