**News Release**

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**Renesas Electronics Simplifies Home Appliance Maintenance with Failure Detection e-AI Solution for Motor-Equipped Home Appliances**

*e-AI Development Environment Makes it Easy to Add Abnormality-Detection AI Functionality to RX66T Motor Control MCU for Failure Detection and Predictive Maintenance*

Düsseldorf, January 21, 2019 – Renesas Electronics Corporation (TSE: 6723), a premier supplier of advanced semiconductor solutions, today announced the launch of its Failure Detection e-AI Solution for motor-equipped home appliances, featuring the Renesas [RX66T 32-bit microcontroller](https://www.renesas.com/products/microcontrollers-microprocessors/rx/rx600/rx66t.html) (MCU). This solution with embedded AI (e-AI) enables failure detection of home appliances -- such as refrigerators, air conditioners, and washing machines -- due to motor abnormality. Property data showing the motor’s current or rotation rate status can be used directly for abnormality detection, making it possible to implement both motor control and e-AI–based abnormality detection with a single MCU. Using the RX66T eliminates the need for additional sensors, thereby reducing a customer’s bill of materials (BOM) cost.

When a home appliance malfunctions, the motor operation typically appears abnormal when running and being monitored for fault detection in real-time. By implementing e-AI-based motor control-based detection, the failure detection results can be applied not only to trigger alarms when a fault occurs, but also for preventive maintenance. For example, e-AI can estimate when repairs and maintenance should be performed, and it can identify the fault locations. This capability provides home appliance manufacturers the means to boost maintenance operations efficiency and improve product safety by adding functionality that predicts faults before they occur in their products.

The Renesas Failure Detection e-AI Solution for motor-equipped home appliances can control up to four motors because it utilizes the high-performance RX66T MCU. Today’s washing machines typically incorporate three motors: One to rotate the washing tub, one to drive the water circulation pump, and one to drive the drying fan. The Renesas Failure Detection e-AI Solution can therefore be used to control these three motors with a single RX66T chip while at the same time monitoring all three motors for faults.

The new solution utilizes the [Renesas Motor Control Evaluation System](https://www.renesas.com/products/software-tools/boards-and-kits/renesas-solution-starter-kits/24v-motor-control-evaluation-system-for-rx23t.html) and an [RX66T CPU card](https://www.renesas.com/products/software-tools/boards-and-kits/renesas-solution-starter-kits/24v-motor-control-evaluation-system-for-rx23t-options-cpu-card-rx23t-rx24t.html). This hardware is combined with a set of sample program files that run on the RX66T MCU as well as a GUI tool that enables collecting and analyzing property data indicating motor states. In order to detect faults, it is necessary to learn the characteristics of the normal state. Using the GUI tool, system engineers can immediately begin developing AI learning and optimized fault detection functionality. Once the AI models are developed, the [e-AI development environment](https://www.renesas.com/solutions/key-technology/e-ai/tool.html) (composed of an e-AI Translator, e-AI Checker, and e-AI Importer) can be easily used to import the learned AI models into the RX66T.

“Leveraging its extensive expertise in developing solutions for use in home appliances, Renesas has now developed a solution capable of detecting failures that affect the system based on detecting abnormal motor operation,” **said Toru Moriya, Vice President of Home Business Division, Industrial Solutions Business Unit, at Renesas.** “Even in cases where a fault occurs in the motor itself, it can be difficult to localize the source to determine whether there is an abnormality in the motor or in the inverter circuit. The new solution makes it possible to identify the fault location quickly, which has the potential to dramatically decrease the maintenance burden for customers.”

Moving forward, Renesas will continue to work toward the realization of a smart society by supporting the development of smart home appliances through enhanced endpoint intelligence in the operating technology (OT) field.

**Availability**

The Failure Detection e-AI Solution for Motor-Equipped Home Appliances is available now.

**For more information on this solution, please visit:**

<http://www.renesas.com/solutions/key-technology/e-ai/e-ai-motor-failure-detection.html>

**About Renesas Electronics Corporation**

Renesas Electronics Corporation ([TSE: 6723](https://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—securely and safely. A [global](https://www.renesas.com/en-hq/about/company/profile/global.html) leader in microcontrollers, analog, power, SoC products and integrated platforms, Renesas provides the expertise, quality, and comprehensive solutions for a broad range of Automotive, Industrial, Home Electronics, Office Automation and Information Communication Technology applications to help shape a limitless future. Learn more at [renesas.com](https://www.renesas.com).

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**Company contact for reader and customer inquiries:**Simone Kremser-Czoer

Renesas Electronics Europe GmbH, Karl-Hammerschmidt-Str. 42, 85609 Aschheim-Dornach

Tel.: +49 89 38070-216  
Email: simone.kremser-czoer@renesas.com  
Web: [www.renesas.com](http://www.renesas.com)

**Agency contact for further media information, text and graphics or to discuss feature article opportunities:**

Alexandra Janetzko / Martin Stummer

HBI Helga Bailey GmbH (PR agency), Stefan-George-Ring 2, 81929 Munich, Germany

Tel.: +49 89 99 38 87-32 / -34

Fax: +49 89 930 24 45

Email: [alexandra\_janetzko@hbi.de](mailto:alexandra_janetzko@hbi.de) / [martin\_stummer@hbi.de](mailto:martin_stummer@hbi.de)

Web: [www.hbi.de](http://www.hbi.de/)