

[Featured Tools] RX660

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32-bit MCUs with High Performance and Excellent Noise Tolerance for 5V Power Supply: Features and Development Tools

Outline

This news introduces the features and development tools for the 32-bit microcontroller RX660 Group that is the first high-end RX microcontrollers that support 5 V power supply and incorporate the CAN FD for home appliances and industrial equipment.

RX660 incorporates the RXv3 core (6.00 CoreMark/MHz) with a maximum operating frequency of 120 MHz and realizes high computing performance and lower power consumption during operation. It is equipped with large-scale memory, such as ROM (maximum of 1 MB) and RAM (128 KB), and various packages (48-pin to 144-pin) are available. In particular, the number of valid pins for general-purpose I/O has been increased by approximately 10% from the legacy product RX210 that supports 5 V. The 144-pin package has 134 valid pins (11 more pins than RX210). This contributes to facilitating system upgrading by, for example, increasing the number of sensors that can be connected to the same package.



1. Features

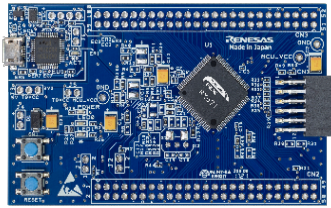
<p>Performance</p>	<p>High-performance MCU for system control with <b>2.7 to 5.5V operation</b>                  Max. operating frequency <b>120MHz with ROM access with No wait on RXv3 cores</b> (709 Coremark)                  Support for Single precision floating point (FPU), Register bank save function, and Trigonometric function calculator (TFU)</p>
<p>Memory &amp; Peripherals</p>	<p>Built-in memory (<b>MAX 1MB flash memory, 128KB SRAM</b>)                  Enhanced peripheral functions for system control (<b>equipped with remote control circuitry and real-time clock</b>)  <b>CAN-FD</b> support, <b>HBS</b> (Home Bus System) communication support</p>
<p>Compatibility</p>	<p>Wide range of packages from high pin (144, 100) to small pin (48)                  Resolve GPIO shortage by <b>expanding pin terminals</b> while maintaining <b>compatibility of functions and pin layout</b> with pre-existing products.                  RX660,700's first high-end product with <b>1% accuracy of HOCO</b>. *2.5% for existing products</p>

Product web page: <https://www.renesas.com/RX660>

## 2. Evaluation Boards

### Target Board for RX660 (RTK5RX6600C00000BJ)

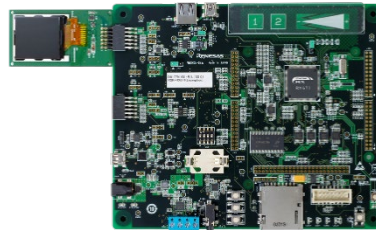
An inexpensive evaluation board on which RX660 (100-pin) is mounted. This board is suitable for initial deployment. It is equipped with an emulator circuit, making it possible to start development of applications immediately just by connecting to the debug PC via a USB cable.



[RTK5RX6600C00000BJ - Target Board for RX660 | Renesas](#)

### Renesas Starter Kit for RX660 (RTK556609HS00000BE)

RX660 (144-pin) is mounted on the board and all functions of RX660 can be evaluated. Components, such as communication connectors and the Pmod connector mounted on the board allow evaluation of the cloud connection and PoC of IoT devices to be performed easily and quickly by connecting a Wi-Fi module or sensor module.



[RX660-Starter-Kit - Renesas Starter Kit for RX660 | Renesas](#)

## 3. Development Tools

Renesas Electronics provides a variety of development tools for RX660.

The Renesas website "[Getting Started with the RX Family Development Environment](#)" provides a tutorial video on how to install integrated development environments. Refer the video for building a development environment.

Table 1: Software development tools

Development tool	Summary
C/C++ Compiler Package for RX Family (Changeable. Trial period provided)	In development of embedded systems, C/C++ Compilers for the RX Family offer powerful optimizations for enhancing execution speed and code efficiency, and the utilities to increase productivity.
e <sup>2</sup> studio IDE (Free of charge)	e <sup>2</sup> studio is an Eclipse-based integrated development environment (IDE) for Renesas MCUs. In addition to Eclipse's own powerful code editor, e <sup>2</sup> studio offers a rich range of extended functions. e <sup>2</sup> studio covers all development processes, from the downloading of sample code to debugging.
Flash memory programming software Renesas Flash Programmer (Chargeable. Evaluation edition provided)	This software can write data to the flash memory of applicable Renesas MCUs. Even if a program is divided into multiple sets of data, data to be written can be selected and written in a single operation.

These tools are available for download at [Getting Started with the RX Family Development Environment](#).

Table 2: Documents about the evaluation boards

Document	Summary
Target Board for RX660 User's Manual (R01UH0937)	Describes the hardware specifications, how to configure switches etc., and basic procedures for setting up.

Document	Summary
RX660 Group Target Board for RX660 LED Blink Control Program (R20AN0658)	Sample program for blink control of users LED implemented on the Target Board for RX660.
Renesas Starter Kit for RX660 User's Manual (R20UT5017)	Describes the hardware specifications, how to configure switches etc., and basic procedures for setting up.
RX660 Renesas Starter Kit – Program (R20AN0636)	Sample program for blink control of users LED implemented on the RX660 Renesas Starter Kit.
Initial Setting Program (R01AN6015)	Sample program for initial settings such as CPU settings.
RX660 vs RX210 Difference APN (R01AN6123)	Data for comparison of pins and registers with those of legacy products.

RX660 development environments by partners

### ■ Flash Programmer

Company	Minato Advanced Technologies Inc.	URL	<a href="https://www.minatoat.co.jp/en/">https://www.minatoat.co.jp/en/</a>
Product/service	Gang programmer & conversion adapter		
Message from the partner	<p>Our programmers support RX660 of the RX Family.</p> <p>Depending on your needs, they can be used for any application such as simultaneous programming of 4 to 16 MCUs, evaluation, and mass production.</p> <p>Supported programmers are the MODEL 500 series, MODEL 400 series, and MODEL 308. For mass production, we recommend our automatic programmers.</p>		

### ■ Compiler

Company	IAR Systems	URL	<a href="https://www.iar.com/">https://www.iar.com/</a>
Product/service	IAR Embedded Workbench® for RX		
Message from the partner	<p>IAR Embedded Workbench® for RX is the most widely used C/C++ integrated development environment in the world as a high-performance and highly reliable commercial embedded software development tool.</p> <p>Our proprietary compilers generate the fastest and most compact code in the industry. All functionalities are seamlessly integrated to maximize development efficiency.</p> <p>Furthermore, by adding the static analysis and dynamic analysis add-on feature, you can dramatically improve code quality at low cost.</p> <p>A functional safety edition (suitable for development of a functional safety system) is also available.</p>		

### 4. Purchasing the Product

Target Board for RX660 (RTK5RX6600C00000BJ) and Renesas Starter Kit for RX660 (RTK556609HS00000BE) can be purchased from online distributors.

[Product Availability Results \(Renesas Electronics Corporation\)](#)

To order the C/C++ Compiler Package for RX Family or Renesas Flash Programmer, contact your local Renesas Electronics sales office or distributor.

Regarding the product names, refer to the following web pages.

C/C++ Compiler Package for RX Family

[https://www.renesas.com/rx\\_c](https://www.renesas.com/rx_c)

Renesas Flash Programmer

<https://www.renesas.com/software-tool/renesas-flash-programmer-programming-gui>

**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	Dec.16.22	-	First edition issued

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**Corporate Headquarters**

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan

[www.renesas.com](http://www.renesas.com)

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