# [Notification]
# Start RX74M/RX74N System Development Immediately!
# Development Software and Tools Designed to Maximize RXv3e Core Performance

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## Outline

This Tool News introduces the development environment for RX74M/RX74N microcontrollers featuring the RXv3e core.
By effectively using high-quality software that helps shorten development time, boards and kits that improve system design efficiency, and advanced yet easy-to-use tools, developers can achieve efficient system development.

## 1. Features

### 1.1 RX Family Development Environment for Efficient Development of Systems Featuring the Innovative RXv3e Core

The RXv3e core increases the CoreMark®/MHz score of Renesas' proven RX CPU core architecture to as high as 6.0, as measured using the EEMBC® benchmark, delivering industry-leading performance, power efficiency, and responsiveness.

Renesas provides a comprehensive development environment for the RX Family, including an integrated development environment (IDE), the RX Flexible Software Package (RX FSP), programming tools, and more. By supporting every stage of RX application development, these tools enable efficient and streamlined development. In addition, the IDE allows users to perform the entire development workflow, from coding and building to debugging, through an intuitive interface, helping to reduce system development time.

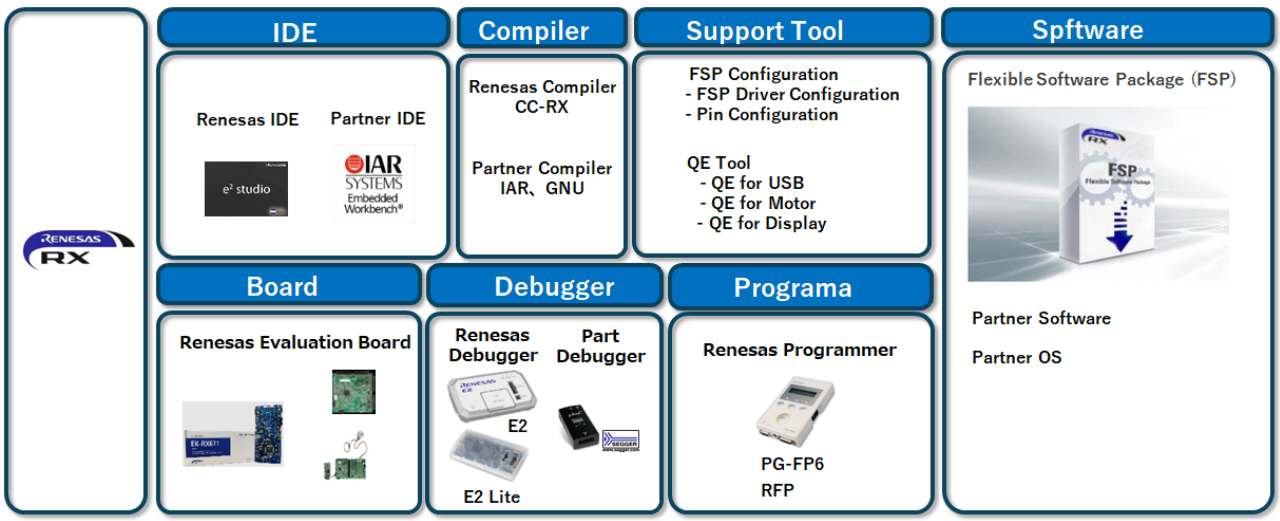



Figure 1-1 RX Family Development Environment

Users familiar with the RX Family development environment for RXv1 and RXv2 cores can continue to develop embedded systems using the same familiar environment when adopting MCUs equipped with the RXv3 or RXv3e core.

The RXv3 and RXv3e cores adopt the same CPU core instruction set as the RXv2 and RXv1 CPU cores in the RX Family, providing binary compatibility. As a result, applications developed for previous-generation RXv2 and RXv1 cores can be used without modification when migrating to RXv3-based MCUs. This allows developers to leverage existing design assets while focusing their efforts on implementing new features and functionality.

## 1.2 Accelerate Application Development with the RX Flexible Software Package (RX FSP)

The RX Flexible Software Package (RX FSP) is a software package designed for embedded system development using RX Family microcontrollers, including the RX74M/RX74N Group.

RX FSP provides a Board Support Package (BSP), peripheral drivers, middleware, and sample projects, helping developers build high-quality software while reducing overall development time.

In addition, RX FSP supports system designs that prioritize reliability and security by leveraging the Protect Zone feature available on the RX74M/RX74N devices. It also supports both FreeRTOS and Azure RTOS, providing a flexible software environment for real-time application development.

RX FSP adopts a flexible software platform based on an open software ecosystem. In addition to bare-metal programming, it supports real-time system development using FreeRTOS and Azure RTOS (Eclipse ThreadX). Furthermore, it enables integration with open-source software, including Zephyr RTOS, allowing customers to combine their existing software assets and various middleware components to develop highly flexible embedded systems.

Key Features

- Comprehensive BSP and peripheral driver support for the RX74M/RX74N Group
- Facilitates the development of highly reliable and secure systems using the Protect Zone feature
- Compatible with FreeRTOS and Azure RTOS (Eclipse ThreadX) for real-time application development
- Supports integration with open-source software, including Zephyr RTOS
- Rich middleware offerings, including USB and Ethernet stacks
- Streamlined software configuration with Smart Configurator
- Seamless development workflow with e² studio integration
- Extensive sample projects and documentation to accelerate development
- Open software delivery and collaboration through GitHub

## 1.3 Unlock the Full Performance of the RXv3e CPU Core with the CC-RX V3 C/C++ Compiler Package for the RX Family

CC-RX V3 is a compiler that supports microcontrollers incorporating the RXv3 and RXv3e(*) CPU cores. It supports the instruction sets, pipeline architectures, and other specifications of the RXv3 and RXv3e cores, generating highly efficient code optimized for both execution performance and ROM size.

* Support for RXv3e-core microcontrollers is available from **CC-RX V3.08.00** and later.

The combination of CC-RX V3 and the RXv3e core achieves a CoreMark®/MHz score exceeding 6.0.

For microcontrollers based on the RXv1 and RXv2 cores, CC-RX V3 maintains functional and operational compatibility with the previous CC-RX V1 and CC-RX V2 compilers. In addition, CC-RX V3 introduces new features and enhancements that enable more convenient and efficient code generation.

For detailed information about the CC-RX C/C++ Compiler Package for the RX Family, please refer to the following website:

https://www.renesas.com/rx_c

To help users quickly evaluate the performance of the RXv3e core, a free evaluation version of CC-RX is available.

For information on purchasing CC-RX V3 and taking advantage of the special upgrade offer from the CC-RX V2 compiler, please refer to the Tool News articles listed above.

# 2. Development Environment for Quickly Getting Started with RXv3e Core-Based Microcontrollers

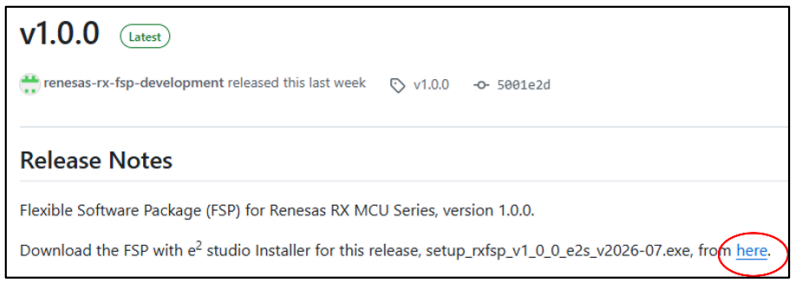
## 2.1 Easy-to-Use and Customizable Integrated Development Environment

RX Flexible Software Package (RX FSP) provides a variety of tools designed to improve development efficiency for projects targeting Renesas RX Family microcontrollers. In conjunction with the e² studio integrated development environment (IDE), it offers a familiar and unified development environment that centrally manages key development tasks, including project creation, module selection and configuration, code development, code generation, and debugging.

RX FSP features a graphical user interface (GUI) that simplifies the selection and configuration of software modules and their associated APIs, as well as code generation and application development. By streamlining these tasks, RX FSP significantly accelerates the development process, enabling developers to quickly start system development using the RX74M/RX74N Group microcontrollers.

For more information about the RX Flexible Software Package (RX FSP), including documentation and installer downloads, please refer to the following resources.

- ✓ RX FSP Web site : https://www.renesas.com/rx-fsp
  Detailed information about the RX Flexible Software Package (RX FSP)
- ✓ FSP Releases: https://github.com/renesas/rx-fsp/releases
  RX FSP installer packages.
- ✓ Download the installer by clicking the area outlined in red in the figure below.



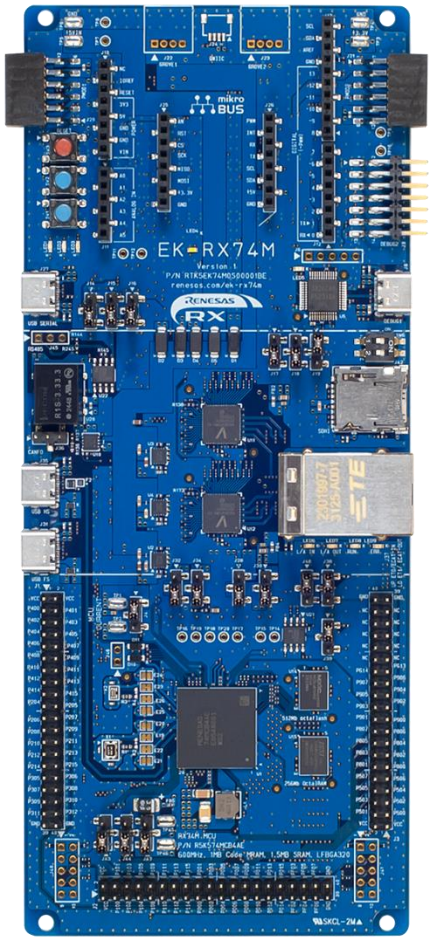

This installer includes all required software packages, including e² studio. Therefore, there is no need to install e² studio separately.

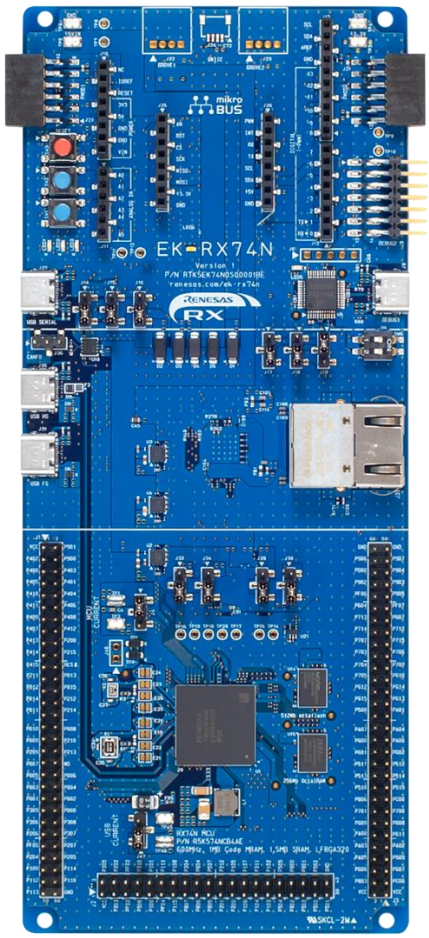
- ✓ FSP Documentation: https://renesas.github.io/rx-fsp
  RX FSP documentation.
- ✓ Example Projects: https://github.com/renesas/rx-fsp-examples
  RX FSP example projects.

## 2.2 Easy Start Up with Ready-to-Use Starter Kit

The **Evaluation Kit for RX74M/RX74N**, an ideal evaluation kit for users getting started with the RX74M/RX74N, is now available. The Evaluation Board Kit for RX74M/RX74N enables easy evaluation of the RX74M/RX74N MCU's features and supports embedded application development using Renesas' proprietary **Flexible Software Package (FSP)** and the **e² studio** integrated development environment (IDE).

In addition, by using the **Example Project Bundle** available for download from the evaluation kit website, users can quickly evaluate the major peripheral functions of the RX74M/RX74N MCU. Furthermore, since demonstration software is pre-programmed into the board, users can begin evaluating the functionality and performance of the RX74M/RX74N MCU immediately after unpacking the kit.




For detailed information, please refer to the following websites:

Evaluation Board Kit for RX74M:
https://www.renesas.com/ek-rx74m

Evaluation Board Kit for RX74N:
https://www.renesas.com/ek-rx74n

## 2.3 On-chip Debugging Emulators to Fit Your Development Pattern and Scale

Two types of on-chip debugging emulators are available for the RX74M/RX74N Group.

The E2 emulator is a feature-rich emulator designed to improve development efficiency, while the E2 emulator Lite provides a cost-effective alternative. Users can choose the product that best suits their application requirements and project scale.

For more information, please visit:

https://www.renesas.com/ocd

To use the E2 or E2 Lite emulator, you must use e² studio with RX FSP installed, as introduced in Section 2.1. The E2 and E2 Lite emulators are not supported with the RX74M/RX74N Group in e² studio environments where RX FSP is not installed.

## 2.4 Flash Programming Tools for Different Usage Scenes

- Renesas Flash Programmer on-board programming software - for development, prototyping, and small-volume programming

Renesas Flash Programmer is on-board programming software that programs RX Family microcontrollers using an E2 or E2 Lite on-chip debugging emulator, or an RX Family serial or USB interface. It is ideal for flash programming during prototyping, development, and small-volume production.

https://www.renesas.com/rfp

The RX74M/RX74N Group is now supported by Renesas Flash Programmer V3.24.00

For details, refer to the tool news below.

https://www.renesas.com/document/tnr/upgrade-revision-renesas-flash-programmer-v32400

- PG-FP6 Flash Memory Programmer - Support programming without using PC -

This high-speed flash programmer enables fast programming in a standalone environment without requiring a PC. It is well suited for production-line programming and field updates.
See the following URL for details.

https://www.renesas.com/pg-fp6

The RX74M/RX74N Group is supported by the PG-FP6 Programming GUI, FP6 Terminal V1.21.00.

For details, refer to the tool news below.

https://www.renesas.com/document/tnr/upgrade-revision-programming-gui-pg-fp6-fp6-terminal-v12100

## 2.5 Supporting Application Development with QE (Quick and Effective)

QE (Quick and Effective) is a tool solution that supports the development of various applications by incorporating application-specific development expertise into the integrated development environment (IDE). Guided workflows and simple configuration enable users to efficiently implement application-specific functions. For more information about QE, please visit:

https://www.renesas.com/qe

## 2.6 Related Tools and Software

| Category | Product Name | Version | Remarks |
|---|---|---|---|
| IDE | Renesas Extensions for Visual Studio Code | TBC (Under Development) | Planned for Q4 CY2026 |
| Compiler | GCC | 14.2.0.202607 or later | |
| Emulator | J-Link | TBC (Under Development) | Planned for Q4 CY2026 |
| Security | Security Key Management Tool | V1.12.0 (Under Development) | Planned for Q4 CY2026 |
| | FreeRTOS | 202212.01+renesas.2 | Bundled with RX FSP |
| | Azure RTOS (Eclipse ThreadX) | v6.4.0 | |
| | Zephyr RTOS | V4.5 | Zephyr RTOS: https://www.zephyrproject.org/<br>Renesas Zephyr Partner Page: https://www.renesas.com/en/design-resources/partners/zephyr-project/zephyr-rtos |
| | ITRON | TBC (Under Development) | Partner RTOS support (eForce Co., Ltd., UC Technology Corp., Ubiquitous AI Corporation, etc.).<br>Support from eForce Co., Ltd. is planned for Q4 CY2026. |

FreeRTOS™ is a trademark of Amazon Web Services, Inc. (AWS).
Azure® is a registered trademark of Microsoft Corporation; however, the operating system is now named Eclipse ThreadX™, a trademark of the Eclipse Foundation.
Zephyr® RTOS is a trademark of the Linux Foundation.

## 3. Development Software and Tools from Renesas Partners

Our ecosystem partners also provide development environment support for the RX74M/RX74N Group. We will continue to expand this support in collaboration with our partners to meet future development needs.

- Integrated development environment

| Company | IAR Systems | URL | http://www.iar.com/ |
|---|---|---|---|
| Product/Service | IAR Embedded Workbench® for RX | | |
| Message from the partner | **IAR Embedded Workbench® for RX** is one of the most widely used commercial C/C++ integrated development environments (IDEs) for embedded software development worldwide, recognized for its high performance and reliability.<br>Its proprietary compiler generates highly optimized code, delivering industry-leading execution speed and compact code size. All development functions are seamlessly integrated into a single environment, enabling developers to maximize productivity throughout the entire development process.<br>In addition, direct support from the IAR Japan office provides users with confidence when adopting the tool. Furthermore, by adding optional static analysis and dynamic analysis capabilities, significant improvements in software quality can be achieved at a reasonable cost.<br>For more information about **IAR Embedded Workbench® for RX**, please refer to the IAR website. | | |

- Multi-measurement and calibration tool

| Company | DTS Insight Corp. | URL | https://www.dts-insight.co.jp/ |
|---|---|---|---|
| Product/Service | RAMScope-EXG GT170 series | | |
| Message from the partner | The RAMScope-EXG GT170 series is a multi-measurement and calibration tool for verifying control algorithms.<br>Microcontroller variables (RAM values) can be sampled in real time at intervals as short as 5 µs, allowing synchronized measurement, recording, and analysis with external analog signals and CAN communications.<br>In actual motor testing, variables can be measured and parameters calibrated while the motor is operating, without adding measurement overhead to the control program.<br>The tool is well suited for functional analysis, performance validation, and resolving control-system issues. | | |

## 4. Obtaining the Product

Please refer to the table below for information on downloading the evaluation version and product version, as well as purchasing procedures.When placing an order, please contact your local Renesas sales representative or authorized distributor with the product name and ordering part number.
For pricing information, please contact them in the same manner.

| Product/Service | Obtaining the product | Notes<br>Adding support for RX74M/RX74N to your product/service |
|---|---|---|
| Evaluation Kit for RX74M/RX74N | Refer to the URL in Section 2.2 for details. | |
| RX Flexible Software Package (RX FSP)<br>e² studio integrated development environment | Refer to the URL in Section 2.1 for details.<br>*1 | Do not update your current e² studio installation. Instead, install RX FSP in a separate folder. |
| CS+ integrated development environment | CS+ for CC is not supported for the RX74M/RX74N Group. Please refer to the information below for details.<br>[Notification] CS+ for CC Information on Support for New RX Family Devicesily-devices?language=ja | Unavailable. See the tool news on the left for details. |
| C/C++ Compiler Package for RX Family (CC-RX V3) | Purchase [Free evaluation edition available]<br>Refer to “How to Purchase a Product” in the tool news.<br>[Upgrade to Revision]C/C++ Compiler Package for RX Family V3.08.00 | If you have CC-RX V2 license, you will need to purchase CC-RX V3 license.<br>See the tool news (left) for details. |
| E2 emulator | Purchase<br>See the URL below for details.<br>E2 emulator Lite [RTE0T0002LKCE00000R] \| Renesas | No update required. |
| E2 emulator Lite | Purchase<br>See the URL below for details.<br>E2 emulator Lite [RTE0T0002LKCE00000R] \| Renesas | No update required. |
| Renesas Flash Programmer (Programming GUI) | Purchase [Free evaluation edition available *2<br>Refer to “Purchasing the Product” in the tool news.<br>https://www.renesas.com/search/keyword-search.html#genre=document&q=r20ts0419<br>This evaluation edition is available for download at the URL below.<br>https://www.renesas.com/rfp_download | Update available.<br>See the tool news (left) for details. |
| PG-FP6 | Purchase<br>For details, refer to the following URL and the tool news.<br>https://www.renesas.com/pg-fp6#ordershttps://www.renesas.com/search/keyword-search.html#genre=document&q=r20ts0418 | Update for Programming GUI (FP6 Terminal) available.<br>See the tool news (left) for details. |

*1: Available free of charge, including for commercial product development.

*2: For details about the free evaluation edition, refer to the following URL.
https://www.renesas.com/rfp

## Revision History

| Rev. | Date | Description | |
|---|---|---|---|
| | | Page | Summary |
| 1.00 | Oct.22.26 | - | First edition issued |
| 1.01 | Oct.23.26 | 1 | Correction of a typo in the title |
| | | | |

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URLs in Tool News also may be subject to change or become invalid without prior notice.

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