RZ/G3E Evaluation Board Kit

Quick Start Guide

This document provides quick-start instructions for setting up the RZ/G3E Evaluation Board Kit (EVK) and booting Linux.

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1. EVK Information

1.1 How to Get the EVK

To purchase the RZ/G3E EVK, go to the RZ/G3E EVK product page RTK9947E57S01000BE and click *Buy/Quote* under *Product Options* (Buy Direct).

1.2 EVK Contents

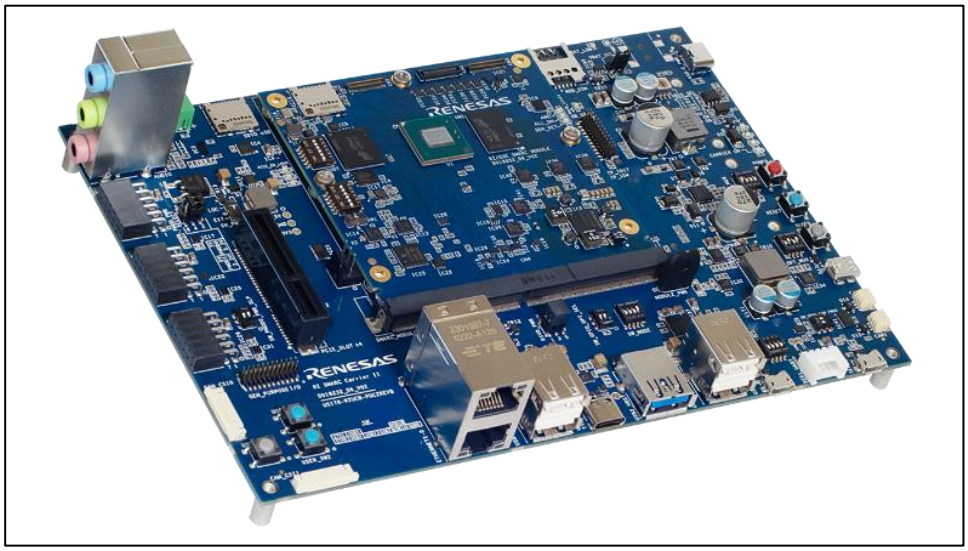


Figure 1. RZ/G3E Module Board & Carrier Board

The RZ/G3E Evaluation Board Kit consists of a module board (SOM) and a carrier board, ideal for evaluating the features of the RZ/G3E MPU. The module board complies with the SMARC v2.1 standard.

Main Contents:

- RZ/G3E module board (SMARC 2.1)
- RZ SMARC series carrier board II
- Various adapter boards, cables, screws, and other accessories

2. Quick Start Procedure

The **HMI SDK (Human Machine Interface Software Development Kit)**, **VLP (Verified Linux Package)**, and **BSP Plus (Board Support Package Plus)** are available for this guide, and you may choose based on your usage. If you are not sure of the differences, you can also refer to **Renesas RZ Linux Solutions** for more information about the Linux software solutions available.

If you are new to the RZ/G platform, start with the HMI SDK for initial evaluation, as it provides a quicker and easier setup and enables you to experience the basic HMI functionality.

2.1 Quick Start with the HMI SDK

For users who require **a quick evaluation and HMI development environment**, the **RZ/G HMI SDK** is available, providing a ready-to-use system and demo applications. In this section, refer to **Renesas RZ/G HMI SDK** website.

The RZ/G HMI SDK is an all-in-one Linux-based development environment for the RZ/G EVK.

The HMI SDK provides a Yocto-based Linux environment with development tools, system libraries, graphics and multimedia support, and HMI frameworks such as HTML5, LVGL, or Flutter, making it easy to create and run HMI applications.

Recommendations:

We recommend starting with the **Getting Started** to begin using the **HMI SDK package**.

Using the pre-built image included in the package, you can create a bootable microSD card for the EVK and boot the Linux environment immediately. Demo applications and a toolchain installer are also included.

To explore the HMI applications, refer to **HMI Applications** section after completing all steps in the Getting Started.

Note: To run the HMI applications, the following items of equipment are also required. Please refer to **Hardware Setup** for more information.

- HDMI Display & HDMI Cable (to display the demo applications)
- USB Hub (to connect multiple USB devices)
- USB Keyboard & Mouse (to operate the demo applications)
- USB Camera (for video input)
- Audio Speaker (for audio output)

Optional:

For users who require system customization, a **HMI SDK Yocto Build Package** is also available, enabling the Linux environment and HMI components to be built from source. For detailed procedures, refer to **Building the HMI SDK with Yocto**.

2.2 Advanced Linux Development Options

In addition to the HMI SDK quick start flow, the VLP and BSP Plus are also available for users who require further customization or prefer to build the Linux environment from source.

VLP:

For users who do not require the prebuilt HMI applications and need **long-term Linux kernel maintenance** as well as greater customization, the **RZ MPU VLP** is available, providing a validated and stable Linux environment.

You can download the latest VLP from the link below and follow the "*Linux Start-up Guide*" included in the downloaded **RZ MPU Verified Linux Package** (ZIP) to build the VLP.

RZ MPU Verified Linux Package [6.1-CIP] | Renesas

BSP:

For expert users who want to start development with **the latest LTS kernel** and require a higher level of customization, the **Board Support Package** is available.

You can download the latest BSP from the link below and follow the "*Linux Start-up Guide*" included in the downloaded **RZ/G3E Board Support Package** (ZIP) to build the BSP.

RZ/G3E Board Support Package | Renesas

3. Revision History

Revision	Date	Description
1.00	Aug 25, 2025	Initial release.
2.00	Mar 30, 2026	Updated the content to include the HMI SDK.
2.01	Nov 12, 2026	Updated the RZ/G VLP.

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General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Precaution against Electrostatic Discharge (ESD)
   A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.
2. Processing at power-on
   The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.
3. Input of signal during power-off state
   Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.
4. Handling of unused pins
   Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.
5. Clock signals
   After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.
6. Voltage application waveform at input pin
   Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).
7. Prohibition of access to reserved addresses
   Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.
8. Differences between products
   Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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