

# RZ/A

## Release Note for RZ/A Initial Program Loader

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### Introduction

This is the release note of the Initial Program Loader (hereinafter, referred to as IPL) for booting the RZ/A series.

This document contains release information for the IPL. Please read the application note for how to use it.

### Target Device

RZ/A3 series

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## 1. Release Notes

Initial Program Loader (IPL) for Renesas RZ/A MPU version 1.2.0.

You can download the IPL for this release from GitHub ([Link](#)).

With respect to the usage of IPL, setup instructions, hardware details, and related links, please refer to the Initial Program Loader Application Note for the MPU you want to use ([Link](#)).

## 2. Tools

- e<sup>2</sup> studio 2022-10
- GCC cross-toolchain for A-profile cores: 10.3-2021.10 – AArch64 bare-metal target (aarch64-none-elf)

## 3. Supported RZ/A MPU Kits

The kits supported by the current IPL version are shown below.

### RZ/A3UL MPU:

- RZ/A3UL-Evaluation-Board-Kit (QSPI version)
- RZ/A3UL-Evaluation-Board-Kit (Octal-SPI version)

## 4. Features Added

**Table 4.1 List of Features Added**

Rev	Features
1.0.0	<ul style="list-style-type: none"> <li>• Initialization of ARM® Cortex®-A Core</li> <li>• Initialization of the following peripheral modules               <ul style="list-style-type: none"> <li>• CPG (Clock Pulse Generator)</li> <li>• GPIO (General Purpose Input Output)</li> <li>• SYC (System Counter)</li> <li>• SCIFA (Serial Communications Interface with FIFO)</li> <li>• SPIBSC (SPI Multi I/O Bus Controller)</li> <li>• MEMC (DDR3L/DDR4 SDRAM Memory Controller)</li> </ul> </li> <li>• MMU settings</li> <li>• Initialization of Serial Flash Memory</li> <li>• Initialization of DDR SDRAM</li> <li>• Copy the FSP application image from Serial Flash Memory to the application execution area</li> <li>• Jump to the entry point of the FSP application</li> </ul>
1.1.0	<ul style="list-style-type: none"> <li>• Initialization of Octa Flash Memory</li> <li>• Initialization of Octa RAM</li> </ul>
1.2.0	None

## 5. Improvements

Table 5.1 List of Improvements

Rev	Improvements
1.0.0	None
1.1.0	None
1.2.0	<ul style="list-style-type: none"><li>In the previous version of IPL, boot processing was continued if access timing adjustment (calibration process) between the SPI Multi I/O Bus Controller and Serial Flash memory did not end normally. If the calibration process did not end normally, the IPL boot process ends as an error. Same behavior as above for Octa Flash and Octa RAM connected to Octa Memory Controller.</li></ul>

## 6. Bug Fixes

Table 6.1 List of Bug Fixes

Rev	Bug Fixes
1.0.0	None
1.1.0	<ul style="list-style-type: none"><li>Fixed the process of failing to clear the bit of the CPG register in the CPG driver.</li></ul>
1.2.0	None

## 7. Limitations

- Unsupported DDR mode of Serial Flash memory.

## 8. Known Issues

- None

**Revision History**

Rev.	Date	Description	
		Page	Summary
1.0.0	Jul.28.22	-	-
1.1.0	Sep.30.22	2	Table4.1 Add features
		3	Table 7.1 Add Bug Fix information
1.2.0	Dec.9.22	2	2. Tools Add this chapter
		2	3. How to use the IPL project Delete chapter Usage of IPL is Summarized in 1. Release Note
		3	5. Features Modified Delete chapter
		3	5. Improvement Add this chapter
		3	Table 5.1 Add calibration error process information
		3	6. Feature Removed Delete chapter
		3	7. Limitations Add this chapter
		3	Table 7.1 Add information of limitation of communication for Serial Flash memory.

# 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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(Rev.5.0-1 October 2020)

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