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R20TS0711EJ0100

Rev.1.00

# RZ Family RZ/A2M Software Package for GR-MANGO V2.00

Jun. 01, 2021

## Overview

As a derivative package of the RZ/A2M Software Package, a software development kit for the RZ/A2M group, the RZ/A2M Software Package for GR-MANGO V2.00 that supports GR-MANGO boards developed by CORE CORPORATION is now available for download.

This product is available free of charge.

## 1. Features

### (1) What is an RZ/A2M Software Package for GR-MANGO?

The RZ/A2M Software Package for GR-MANGO is a software development kit for the RZ/A2M group that consistently supports camera input, display output, and image adjustment.

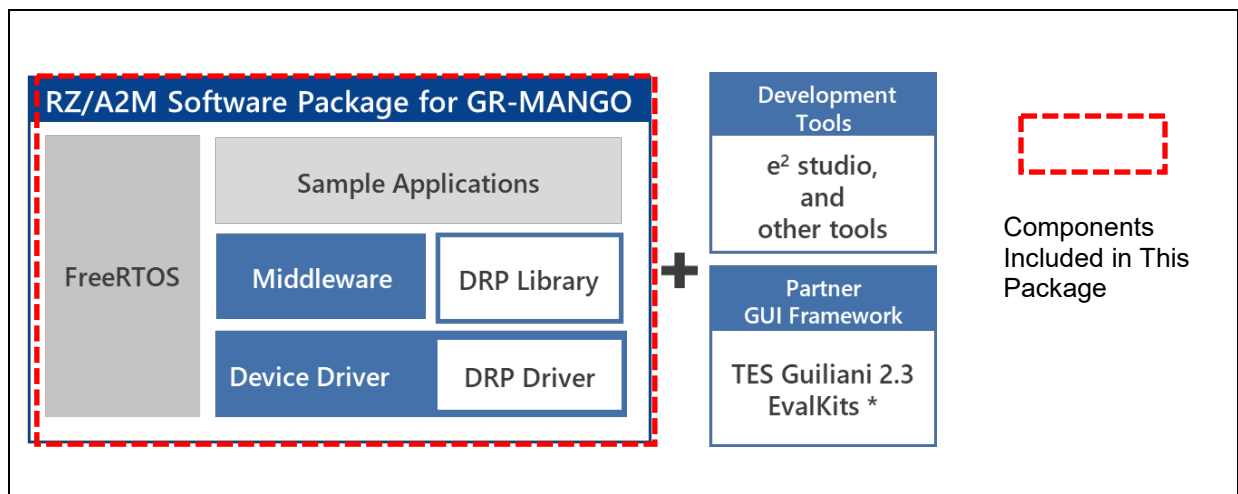


Figure 1. Structure of the RZ/A2M Software Package for GR-MANGO

\*: By combining this RZ/A2M Software Package for GR-MANGO with Guiliani EvalKits, a GUI framework kit developed by TES Electronic Solutions, you can easily develop GUIs for HMI applications, leveraging the RZ/A2M group functions.

TES Guiliani 2.3 EvalKits is available from the following URL:

<https://www.guiliani.de/mediawiki/index.php?title=Downloads:EvalKits>

### (2) Details of the update

The details of the update by RZ/A2M Software Package for GR-MANGO V2.00 are as follows.

- The following applications have been added to the Simple Applications Package.
  - RS-CANFD sample program
  - SCIFA Using DMAC sample program
  - Ethernet sample program
  - Firmware Update sample program
  - GPT-PWM sample program
  - JPEG Codec Unit (JCU) sample program
  - Low power consumption mode sample program
  - RTC counter sample program
  - Sprite Engine sample program
  - USB function CDC class sample program
  - USB host MSC class sample program
- The following application packages have been added.
  - RZ/A2M 2D Barcode Package for GR-MANGO
  - RZ/A2M IRIS Package for GR-MANGO
  - RZ/A2M Graphics RGA Package for GR-MANGO

## 2. GR-MANGO

A GR-MANGO is a Gadget Renesas (GR) board made by CORE CORPORATION for the RZ family RZ/A2M group.

Pin-compatible with Raspberry Pi and designed for use in the Mbed™ development environment provided by Arm®, it enables you to develop programs through your Web browser utilizing a rich set of libraries. In addition to the previous development environment for GR-MANGO, this package provides a development environment that utilizes FreeRTOS™.

A GR-MANGO includes a 4MB on-chip RAM and computing capability of ARM® Cortex®-A9, making it suitable for rapid prototyping of IoT devices utilizing HMI including graphics, a touch panel, camera input, and audio. In addition, by including a dynamically reconfigurable processor (DRP) which processes input images at high speed, the RZ/A2M group can process images more than ten times faster<sup>(Note)</sup> than CPU-based software processing and can be applied to image recognition applications for a wide variety of systems from home appliances to industrial equipment.

In this board, since you can just drag and drop to download a program, you can easily try out an RZ/A2M group MPU without an in-circuit emulator.

Note: As an example, in an image edge detection algorithm called Canny Edge Detection, it is observed that a DRP can process 13.5 times faster per frame than a CPU.

- Software processing by a CPU: 110.6 ms/frame
- Hardware processing by a DRP: 8.17 ms/frame

See Gadget Renesas: <https://www.renesas.com/products/gadget-renesas.html>

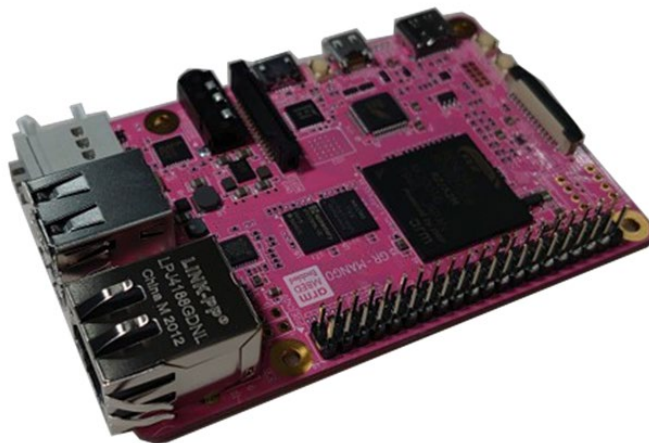


Figure 2. GR-MANGO Image

### 3. Supported Devices

RZ/A2M group

### 4. Operating Environment

The following shows the main operating environment.

- Integrated development environment: e<sup>2</sup> studio 2021- 04

<https://www.renesas.com/e2studio>

- Compiler: GNU Arm Embedded Toolchain (6-2017-q2)

<https://developer.arm.com/tools-and-software/open-source-software/developer-tools/gnu-toolchain/gnu-rm/downloads>

- Supported board: GR-MANGO

<https://www.renesas.com/products/gadget-renesas/boards/gr-mango.html>

### 5. Obtaining the Package

Obtain the package from the URL below.

<https://www.renesas.com/rza2-software-development-kit-free-rtos>

### 6. Using the Package

Download the package from the URL shown in section 5. Decompress the zip file, then start building your project in e<sup>2</sup> studio.

## Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Jun.01.21	-	First edition issued

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