[New release]

# The E2 Emulator, a New On-Chip Debugging Emulator

R20TS0120EJ0100
Rev.1.00
Feb. 16, 2017

## Outline

We are releasing the hardware tool described below.

1. The E2 emulator (abbreviated name: E2), a new on-chip debugging emulator

## 1. Overview

The E2 emulator is an advanced on-chip debugging emulator and also flash programmer which is provided with debug functions equivalent to the existing E1 emulator and is established based on a concept of "improvement of development efficiency".

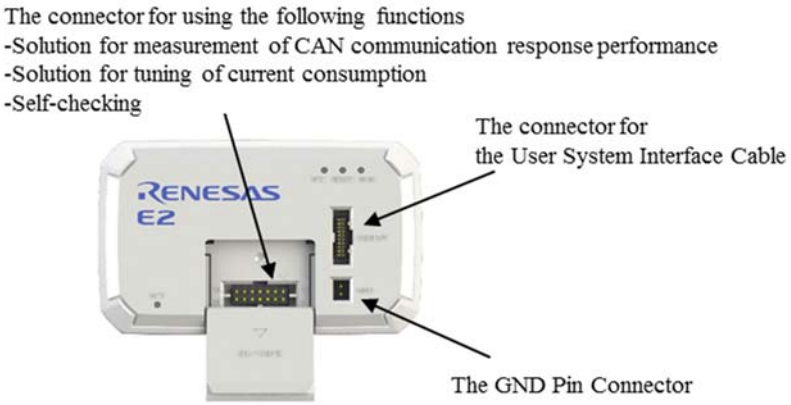
E2 features an improved program download performance with speeds up to twice that of E1 and provides solution for measurement of CAN communication response performance and tuning of current consumption.

This product supports the R-Car D1, an automotive SoC with ARM core, specialized for 3D graphics clusters, and also supports MCUs of the RH850 family. In the future, MCUs of the RL78(*1) and RX(*2) families will be supported.

*1: Support is scheduled to start in July, 2017.

*2: The support schedule is under consideration.


Appearance




Connectors for use

## 2. Features

- Improvement of download performance

  Download performance whose speed has been doubled at maximum(*1) as compared with that of E1 allows you to easily debug even large-scale programs.

  *1: Depends on the MCU.

- Solution for measurement of CAN communication response performance

  This solution can reduce the debugging time for determining the cause when the interruption response time for CAN communication does not fall within the specification value range. This reduction is achieved by stopping the program, and recording and displaying the trace of the occurrence location of the CAN communication reception and CAN communication interruption response along with the program operation.

  Note: This solution will be provided as a function for the RH850 family through a free update of the integrated development environment from July 2017.

- Solution for tuning of current consumption

  This solution allows the program operation and change in the current consumption to be simultaneously displayed. Additionally, this solution makes it easy to determine the cause of increased current consumption in the program and reduces the operation time for tuning of current consumption, for longer battery life by stopping the program when the current consumption exceeds a certain value.

  Note: This solution will be provided as a function for the RL78 family through a free update of the integrated development environment. from July 2017.

- Support for hot plug adapters as standard

  Although the E1 emulator required an optional hot plug adapter sold separately to use the hot plug-in function, the E2 emulator does not need it.

- Maintenance of compatibility with the E1 emulator

  - The E2 emulator supports both serial connection and JTAG connection, as is the case with the E1 emulator, uses USB2.0 interfacing with PCs, and operates by USB bus drive.
  - The E2 emulator can be connected to the user system that was designed for the E1 emulator because the pin arrangement to be connected to the user system has compatibility with the E1 emulator.
  - The following options of the E1 emulator are available:

    Conversion adapter, isolator, debug MCU board, low-voltage OCD board(*1)

    *1: When the RL78 family is supported

The details and new release of the product are available at our Web site:

The details of the product:
https://www.renesas.com/e2

The news release of the product:
https://www.renesas.com/en-hq/about/press-center/news/2017/news20170209.html

## 3. Specifications

| Item | Description |
|---|---|
| Emulator type | E2 emulator<br>Type name: RTE0T00020KCE00000R |
| PC interface | USB 2.0 (high speed/full speed) |
| Target interface | 20-pin (1.27-mm pin spacing) connector<br>Part number: FTSH-110-01-L-DV-K (Samtec) |
| | When using the conversion adapter:<br>14-pin (2.54-mm pin spacing) connector<br>7614-6002 from 3M Japan Limited (in Japan)<br>2514-6002 from 3M Limited (in other countries) |
| Power voltage for the emulator | USB-bus power supply (VBUS 4.5 V min. / 500 mA max.) |
| Power supply for the target device | Supplied from the user system or<br>Supplied from the emulator (200 mA max. *) |
| Correspondence user system voltage | Within 1.8 V to 5.0 V, and in the range of the MCU operating power supply voltage |
| External dimension (main body) | 105.9 mm × 64.0 mm × 19.5 mm |
| Weight | 75 g (not including cables) |
| Operating temperature | 5 to 35°C (no condensation) |
| Storage temperature | -10 to 60°C (no condensation) |
| EMC | EU: EN 55022 Class A, EN 55024<br>USA: FCC part 15 Class A |

Note: If you can supply 500 mA from USB VBUS

## 4. Integrated Development Environment and Compiler

(1) Integrated development environment

IDEs to be supported are as follows.

- From Renesas Electronics Corporation (except for R-Car D1):

  CS+ V5.00.00 or later

  e$^2$ studio (To be supported)
- From Green Hills Software, Inc.(*1):

  MULTI Integrated Development Environment
- From IAR SYSTEMS.(*1):

  IAR Embedded Workbench

(2) Compiler

Compilers to be supported are as follows.

- From Renesas Electronics Corporation:

  C compiler package (with IDE) for the RH850 Family (CC-RH)
- From Green Hills Software, Inc.(*1):

  MULTI Integrated Development Environment
- From IAR SYSTEMS.(*1):

  IAR Embedded Workbench

(3) Flash programmer

Flash programmers to be supported are as follows.

- From Renesas Electronics Corporation:

  Renesas Flash Programmer V3.02.01 or later

*1: For details of the products from the partner companies, refer to the URL below:
From Green Hills Software, Inc.: http://www.ghs.com/
From IAR SYSTEMS: https://www.iar.com/

## 5. Purchasing the Product

For product ordering, contact your local Renesas Electronics marketing office or distributor with the following information.

For product pricing, make inquiries in the same manner.

| Product model name | Order model name |
|---|---|
| RTE0T00020KCE00000R | As at left |

## 6. Remark

We will continue to sell and support the E1 emulator after the E2 emulator goes on sale.

## Revision History

| Rev. | Date | Description | |
|---|---|---|---|
| | | Page | Summary |
| 1.00 | Feb. 16, 2017 | - | First edition issued |
| | | | |

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■Inquiry
https://www.renesas.com/contact/