[Notification]

Detect Program Errors Easily in GHS MULTI

by Linking with an External Measuring Instrument

E2 Emulator External Trigger Input and Output Function

Outline

This document introduces E2 emulator's 'external trigger input and output function'.

When connected with an external measuring instrument, the E2 emulator provides an external trigger I/O function that stops program and waveform measurement. This function enables debugging with the program and external signals linked with an external measuring instrument, allowing for easy fault finding in the event of a failure.

This solution is implemented by the combination of the E2 emulator and the MULTI® integrated development environment (GHS MULTI) from Green Hills Software or CS+ integrated development environment from Renesas.

For details about GHS MULTI, visit the Green Hills Software, LLC. website.

https://www.ghs.com/

1. Features

The E2 emulator provides external trigger input and output functions (two channels each) as its basic functions. The functions can be used just by connecting the E2 extended interface pin of the E2 emulator to the external measuring instrument with a test lead (included with the E2 emulator)
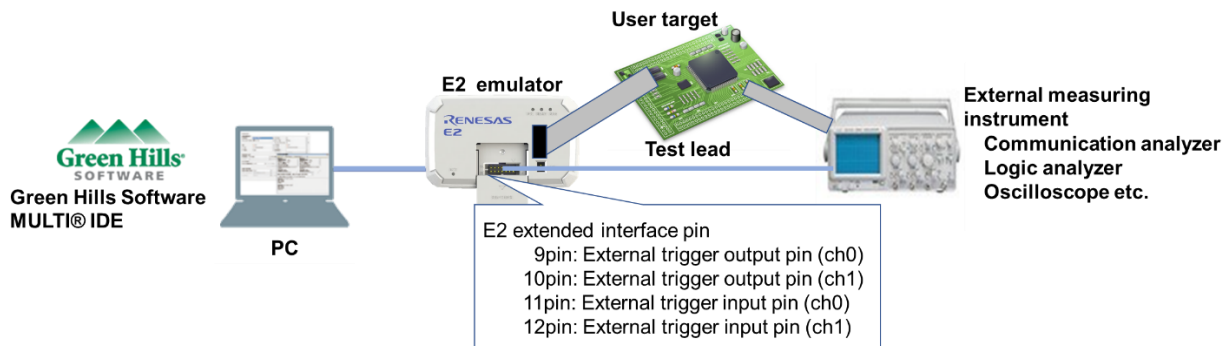
GHS MULTI or CS+ (hereinafter called the debugger) stops the program and waveform measurement of the external measuring instrument, linking the debugger with the external measuring instrument using the I/O of the external trigger as the condition. Thus, the debugger allows for easy fault finding in the event of a failure.

2. Use Cases of the External Trigger I/O Functions

2.1 External Trigger Input Function

When detecting a signal change (failure or specific state) on the user target, use this function to stop the program for verification.
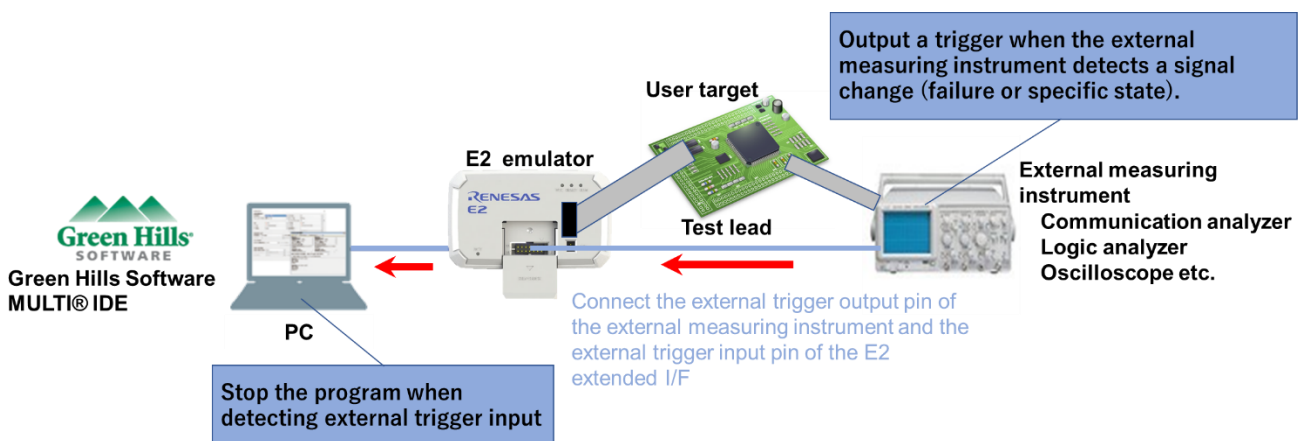
The following is the general procedure.

(1) Make the following settings in the debugger and the external measuring instrument, and then connect them.

· Debugger: Set "external trigger input" as the program stop condition.

· External measuring instrument: Set the signal change (failure or specific state) trigger signal as an output.

(2) When detecting "external trigger input" via the E2 emulator during program execution, the debugger stops the program execution.

(3) Check and verify the execution log (trace) for the program stop location.

2.2 External Trigger Output Function

When detecting a program error, use this function to stop the waveform measurement and commutation log recording in the external measuring instrument, and then perform verification.

The following is the general procedure.

(1) Make the following settings in the debugger and the external measuring instrument, and then connect them.

· Debugger: Set "event (external trigger output)" for a program error location.

· External measuring instrument: Set the trigger signal from the E2 emulator as an input.

(2) Upon detecting a "trigger signal" input via the E2 emulator, the external measuring instrument stops waveform measurement and communication log recording.

(3) Check and verify the data of the external measuring instrument for the time when the program error is detected.
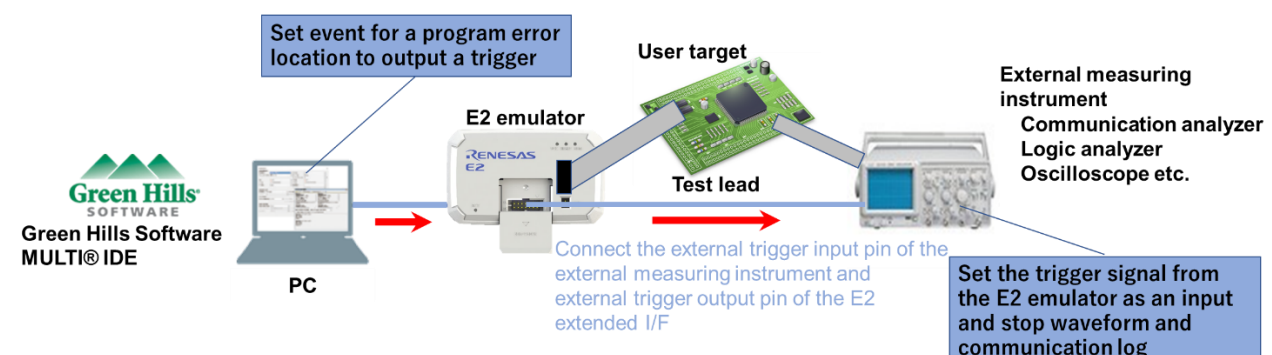
2.3 Linking with the CAN Communication Time Measurement Solution

The CAN communication time can be measured in combination with the CAN communication time measurement solution, which is one of the E2 emulator's features.

As a useful aid in debugging and performance verification, the CAN communication time can be measured by linking with the external measuring instrument with not only the "CAN frame detection/software trace detection" but also "external trigger I/O" (when using the E2 emulator) as the start and end conditions.

Learn more about the CAN communication measurement solution in the tool news below.

https://www.renesas.com/search/keyword-search.html#genre=document&q=r20ts0504
[Notification]
Quickly Resolve the Reception Processing Time Problem in CAN Communications in GHS MULTI
CAN Communication Time Measurement Solution in the E2 Emulator

3. E2 Emulator

3.1 Product Overview

The E2 emulator is an advanced on-chip debugging emulator and flash programmer designed for the purpose of improving development efficiency.

The maximum download speed is twice that of the E1 emulator. The E2 emulator shares the same pin-out convention as E1 and can therefore be connected to a user system designed for the E1 emulator.

For details about the E2 emulator, see the URL below.

https://www.renesas.com/e2

3.2 Purchasing the Product

For product ordering, contact your local Renesas Electronics sales office or distributor with the following information. For product pricing, make inquiries in the same manner.

Product name	E2 emulator
Orderable part number	RTE0T00020KCE00000R

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Dec.01.19	-	First edition issued

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version of a document, or your nearest sales office, please visit:

www.renesas.com/contact/

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