

e² studio 2024-01.1 (2024-01.1.R20240125-1623)

R20UT5406EG0101

Rev.1.01

Release Note

29th January 2024

Introduction

This document outlines the device support, new features added in 2024-01, fixed issues and open issues in e² studio 2024-01.

Contents

1. Product Information	3
1.1 Supported Operating Systems	3
1.1.1 Windows 64-bit product version	3
1.1.2 System requirements	4
1.1.3 Linux version	5
1.1.4 Mac OS version	6
1.2 Supported Toolchains – Windows Hosted	10
1.3 Supported Toolchains – Linux Hosted	12
1.4 Supported Toolchains – Mac OS Hosted	12
2. Device Support	13
2.1 Project Generator Support	13
2.2 Code Generator Support – Windows Host Only	22
2.3 Smart Configurator Support	25
3. Smart Manual Support	29
4. Patch notes for 2024-01.1	31
5. What is new in this release?	32
6. Useful workarounds and information for this e² studio release	35
7. Linux version	51
7.1 How to install	51
7.2 How to run	51
7.3 Register toolchain to e ² studio	51
7.3.1 GNU ARM Embedded	51
7.3.2 Linaro	52
7.4 How to build and debug RA applications Overview	53
7.4.1 Build	53
7.4.2 Debug	53
7.5 How to build and debug RZ Linux application Overview	54
7.5.1 How to add gdb-server to RZ/A Linux root file system	54
7.5.2 Linux C/C++ Project generation and build	55

7.5.3 GDB debug by using serial port communication	56
8. Open Issues	58
9. Appendix.....	59
9.1 Website and Support	59
9.2 Web Access and Privacy Policy	59

1. Product Information

1.1 Supported Operating Systems

These operating systems are officially supported by e² studio:

- Windows 10 64-bit
- Windows 11 64-bit

In addition, another official product build is available for Linux. This version supports:

- Ubuntu 20.04 LTS
- Ubuntu 22.04 LTS

Note: No other Linux distributions are officially supported by e² studio.

In addition, another official product build is available for Mac OS. This version supports:

- Mac OS 13 (Ventura)

Only RA and DA are supported in this release for Mac OS.

e² studio now runs on Java 17 & does not support older Java versions.

1.1.1 Windows 64-bit product version

Please note that 2020-04 and later versions are 64-bit product build versions of the tool.

We would like to state that the workspaces and projects from 7.x versions (32-bit) of e² studio are compatible with 64-bit e² studio.

When opening a workspace from 7.x you will be shown a warning, and this is standard Eclipse behavior. This is shown because some metadata in the workspace can change between versions so a workspace will not always work with older versions of the tool.

- Projects are forward & backward compatible,
- Workspaces work when upgrading but it is not guaranteed to 100% work if you return the workspace to 7.8.

The switch to 64-bit has unfortunately meant that some functions have now been deprecated from the tooling due to this move for the base platform. The removed functionality is listed below:

- HEW Project Convertor
- Renesas RTOS views
- Mylyn integration
- Subversion integration

If you need this functionality, then please remain on e² studio 7.8.

Linux tools are now only available in the Linux host version of e² studio.

1.1.2 System requirements

For Windows 64-bit version

- System: x64 based processor, 2 GHz or faster, CPU has dual cores or more
 - Windows® 11 (64-bit version)
 - Windows® 10 (64-bit version)
- Memory capacity: We recommend 8 GB or more. At least 4 GB.
- Capacity of hard disk: At least 2 GB of free space.
- Display: Graphics resolution should be at least 1024 x 768, and the mode should display at least 65,536 colors.
- Interface: USB 2.0
- Microsoft Visual C++ 2010 SP1 runtime library ^{*1}
- Microsoft Visual C++ 2015-2019 runtime library ^{*1}

*1. This software will be installed at the same time as the e² studio.

For Linux

- System: x64 based processor, 2 GHz or faster, CPU has dual cores or more
 - Ubuntu 20.04 LTS Desktop (64-bit version)
 - Ubuntu 22.04 LTS Desktop (64-bit version)
- Memory capacity: We recommend 2 GB or more.
- Capacity of hard disk: At least 2 GB of free space.

For Mac OS

- System: 1.8 GHz or faster 64-bit processor. Dual-core or better recommended. Apple Silicon (arm64) processors are only supported.
- Memory capacity: 4 GB of RAM; 8 GB of RAM recommended.
- Capacity of hard disk: At least 2 GB of free space.
- A screen resolution of 1280 x 800 or higher.

1.1.3 Linux version

The Linux product version of e² studio is based on the same content as the Windows release.

Therefore, documents of e² studio will be helpful for common usages. There are some differences, the Linux version only supports some different levels of tooling.

The Linux product supports RX, RL78, RH850, RA, RZ and DA.

Synergy, RE and RISC-V MCU are not supported under Linux host OS.

RX, RH850, RL78 are added in 2023-01 for the first time for Linux host OS. The feature set for these families are reduced under Linux.

- RX: Toolchain supports only GCC, debug support E2/E2 Lite Emulator and Segger J-link. No Renesas simulator support.
- RL78: Toolchain supports only GCC and LLVM, debug support for E2/E2 Lite Emulator. No Renesas simulator support.
- RH850: No toolchain support apart from Green Hills and IAR. Debug support for E2 Emulator.

The Code Generator is not supported under the Linux host OS.

For information on how to install the Linux product please refer to FAQ in below URL.

English: <https://en-support.renesas.com/knowledgeBase/19934358>

Japanese: <https://ja-support.renesas.com/knowledgeBase/19934356>

Supported device comparison:

Device Family	Windows Product Support	Linux Product Support
EC-1	Yes	No
RA	Yes	Yes
RE	Yes	No
RH850	Yes	Yes
RL78	Yes	Yes
RX	Yes	Yes
RZ	Yes (No RZ/G Linux Platform Tools)	Yes
Synergy	Yes	No
DA	Yes	Yes
RISC-V MCU	Yes	No

1.1.4 Mac OS version

The Mac OS product version of e² studio is based on the same content as the Windows release.

The MacOS product version only supports the ARM architecture of Apple devices (Apple Silicon).

Therefore, documents of e² studio will be helpful for common usages. There are some differences, the Mac OS version only supports some different levels of tooling.

The Mac OS product supports RA and DA.

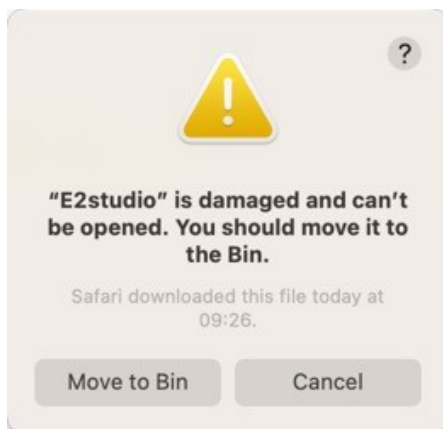
- RA: Toolchain supports GCC and LLVM, debug support is Segger J-link.
- DA: Toolchain supports only GCC, debug support is Segger J-link.

To install the e2 studio on Mac OS follow these instructions:

Installation steps

- Download e² studio for macOS.
- Open the browser's download list and locate the downloaded app or archive.
- Extract the archive contents. Use double-click for some browsers or select the 'magnifying glass' icon with Safari.
- Drag the e2studio.app to the Applications folder, making it available in the macOS Launchpad.
- Open e² studio from the Applications folder, by double clicking the icon.
- Add e² studio to your Dock by right-clicking on the icon, located in the Dock, to bring up the context menu and choosing Options, Keep in Dock.

When executing the e2 studio application you may see the following error.



Typically, the problem here is that when the archive file has been download from the web on macOS, macOS's security system is categorizing the application as suspect and is blocking it.

You can avoid this problem by using the following terminal command to mark the application as "valid" after extracting it from the archive file:

```
xattr -d com.apple.quarantine /path/to/E2studio.app
```

replacing `"/path/to/E2studio.app"` with the actual location of your e2studio application. One easy way of doing this is to drag the E2studio.app icon from your Filer window into the Terminal window, right after typing the initial part of the command.

Once this terminal command is executed, you should be able to double click on "E2Studio.app" again and successfully start the application.

For more details on this issue, please see:

- <https://www.howtogeek.com/803598/app-is-damaged-and-cant-be-opened/>

FSP setup steps

You may also like to install the FSP packs for RA or RZ in the e2 studio.

If developing for RA MCUs, it is now necessary to download and install FSP.

Open a browser on:

- <https://github.com/renesas/fsp>

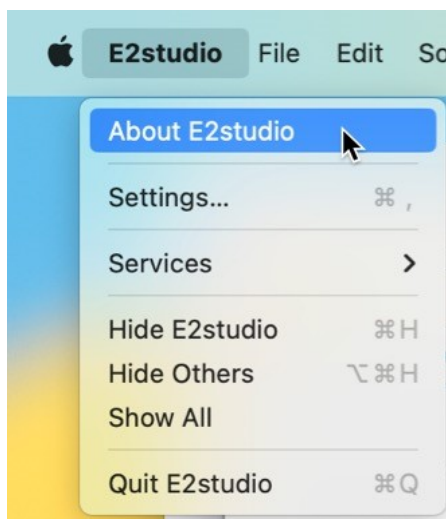
and download the ZIP file containing the packs for the current release – this must be FSP 4.6.0 or later to contain appropriate support for debugging on macOS.

Next steps mean these packs need to be installed to the e2 studio internal support files directory.

This can be manually forced by running the e² studio application and opening the project generator and working through the project generator wizard pages. The project generator can be accessed via the New->Renesas C/C++ project menu entry for the device you are using.

The support files directory is generated for the local machine you are running on. To get this location we can retrieve this from the “About E2studio” dialog. Please see the steps below:

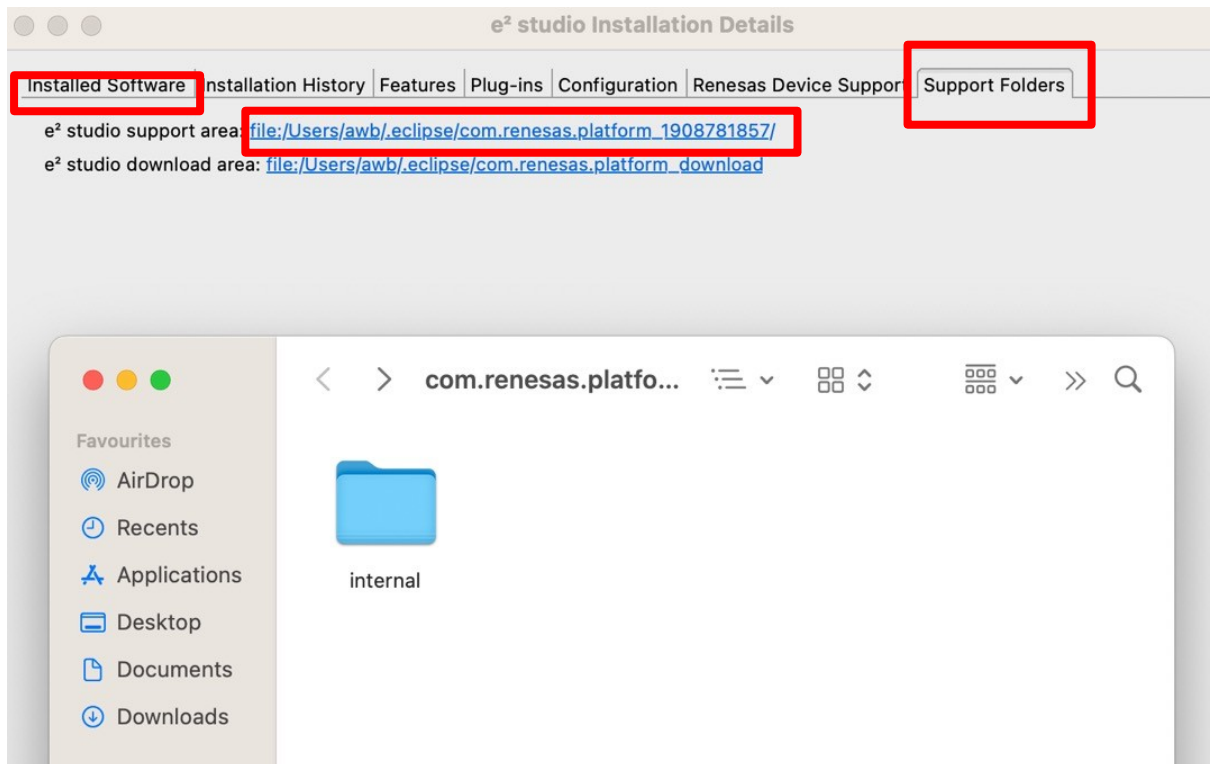
Open the About E2studio dialog:



And click on “Installation Details”:

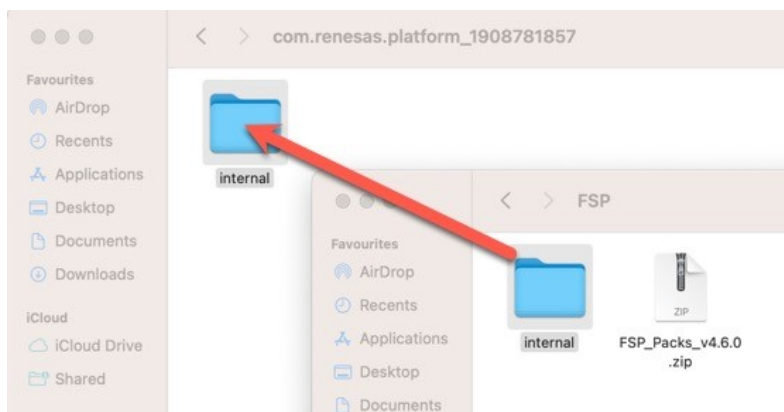


Then select the “Support Folders” tab, and then click on the “e² studio support area:” link to open a Filer window. You should see an “internal folder” here:



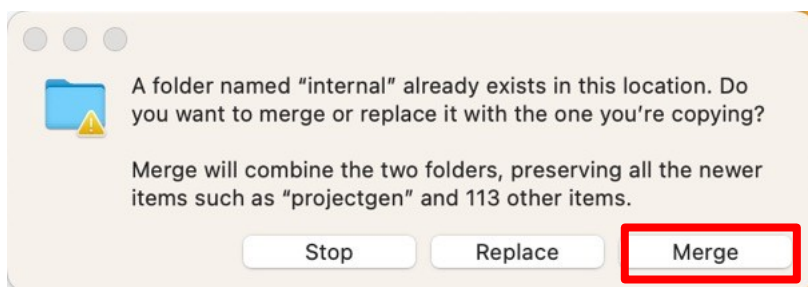
At this point, close the e² studio application.

Now copy the “internal” folder from the temporary directory that you previously extracted the contents of to the “internal” folder in the e² studio support files folder:



[Note that you can copy rather than moving in Filer by drag and dropping with Option key pressed.]

When prompted, select the Merge option:



Pack installation should then be completed, and you can restart the e2 studio application.

Supported device comparison:

Device Family	Windows Product Support	Mac OS Product Support
EC-1	Yes	No
RA	Yes	Yes
RE	Yes	No
RH850	Yes	No
RL78	Yes	No
RX	Yes	No
RZ	Yes (No RZ/G Linux Platform Tools)	No
Synergy	Yes	No
DA	Yes	Yes
RISC-V MCU	Yes	No

1.2 Supported Toolchains – Windows Hosted

The following toolchains are supported in e² studio.

	Renesas	GNU Arm Embedded (*2)	Renesas GCC/ GNURZ/ARM (*3)	IAR (*4)	Green Hills (*5)	LLVM (*6)	
RL78	Yes (CC-RL)	No	Yes	Yes	No	Yes	
Device Family	RX	Yes (CC-RX)	No	Yes	No	No	
	RH850	Yes (CC-RH)	No	Yes	Yes	No	
	RZ/ARM	No	No (*1)	Yes	Yes	No	
	Synergy/ARM	No	Yes	No	Yes	No	
	RA/ARM	No	Yes	No	Yes	Yes	
	RE/ARM	No	Yes	No	Yes	No	
	DA/ARM	No	Yes	No	No	No	
	RISC-V MCU	No	No	No	No	No	Yes

Note:

*1: Project converter is available to convert from GNUARM RZ/none to GNU ARM Embedded toolchain.

*2: The GCC toolchains for RZ Family and Renesas Synergy™ are distributed via Arm Developer at <https://developer.arm.com/open-source/gnu-toolchain/gnu-rm> or Launchpad.net at: <https://launchpad.net/gcc-arm-embedded>. They are also available using the “Additional components” page in the e² studio installer. Supported ARM GCC versions vary from device family to device family. Please see the following table for more information:

*3: Legacy GNUARM toolchains are available from <https://llvm-gcc-renesas.com/>. In addition, the latest RX and RL78 Renesas GCC toolchains are available from this website. Also LLVM for RL78 is available from <https://llvm-gcc-renesas.com/>.

*4: The IAR toolchain plugins are available via the “Help”->” IAR Embedded Workbench plugin manager” menu in e² studio. These Eclipse plugins are provided by IAR and are not supported by Renesas.

*5: The Green Hills toolchain plugins are available within the e² studio product. These plugins are provided by Green Hills and are not supported by Renesas.

*6: The RISC-V LLVM toolchain will be available from <https://llvm-gcc-renesas.com/>.

Device Family	GCC distribution and version
RZ/A1, A2	9.3.1 (2020 q2)
RZ/A3UL	FSP 1.0.0: AArch64 bare-metal 10.3.2021.07 FSP 1.1.0: AArch64 bare-metal 10.3.2021.07 FSP 1.2.0: AArch64 bare-metal 10.3.2021.07 FSP 1.2.1: AArch64 bare-metal 10.3.2021.07 FSP 2.0.0: AArch64 bare-metal 10.3.2021.07
RZ/G1, G2 (Cortex-A)	Linaro 7.4.1
RZ/G2L (Cortex-M33)	FSP 1.0.0: 9.2.1(2019q4) FSP 1.1.0: 9.2.1(2019q4) FSP 1.2.0: 9.2.1(2019q4)
RZ/N2L	FSP 1.0.0: 9.3.1(2020q2) FSP 1.1.0: 9.3.1(2020q2) FSP 1.2.0: 9.3.1(2020q2)
RZ/T2M	FSP 1.0.0: 9.3.1(2020q2) FSP 1.1.0: 9.3.1(2020q2) FSP 1.2.0: 9.3.1(2020q2)
RZ/T2L	FSP 1.2.0: 9.3.1(2020q2)
RZ/V2L	FSP 1.0.0: 9.2.1(2019q4) FSP 1.1.0: 9.2.1(2019q4)
Synergy	SSP 1.6.x: 7.2.1 SSP 1.7.x: 7.2.1 SSP 2.0, 2.1, 2.2 <-> 2.2: 9.2.1 and 7.2.1 SSP 2.3, 2.4: 10.3-2021.10
RA	FSP 3.5.0: 10.3-2021.10 FSP 3.6.0: 10.3-2021.10 FSP 3.7.0: 10.3-2021.10 FSP 3.8.0: 10.3-2021.10 FSP 3.9.0: 10.3-2021.10 FSP 4.0.0: 10.3-2021.10 FSP 4.1.0: 10.3-2021.10 FSP 4.2.0: 10.3-2021.10 FSP 4.3.0: 10.3-2021.10 FSP 4.4.0: 10.3-2021.10 FSP 4.5.0: 10.3-2021.10 FSP 4.6.0: 10.3-2021.10
RE	RE SDK 1.1.0: 6.3.1(2017 q2)

1.3 Supported Toolchains – Linux Hosted

The following toolchains are supported in e² studio:

- Linaro GCC – tested version 7.3.1-201805
- GNU Arm Embedded – tested version 7.3.1.2018.06022
- GNU Tools for ARM Embedded Processors for RA 9.3.1.20200408 (2020-q2-update)
- GNU Tools for ARM Embedded Processors for RA 10.3-2021.10
- GCC for Renesas 8.3.0.202204-GNURX Linux Toolchain (ELF)
- LLVM for Renesas RL78 10.0.0.202301 Linux Toolchain (ELF Format)

1.4 Supported Toolchains – Mac OS Hosted

The following toolchains are supported in e² studio:

- ARM GNU Toolchains for Mac OS
<https://developer.arm.com/downloads/-/arm-gnu-toolchain-downloads>

2. Device Support

2.1 Project Generator Support

Note: The Renesas SH device family is no longer supported in e² studio.

Family	Group	Devices
DA	DA1453x	DA14531(DA14531-00), DA14531-01, DA14533, DA14535,(Debug Support Only)
	DA1458x	DA14585, DA14586,(Debug Support Only)
	DA1459x	DA14595,(Debug Support Only)
	DA1469x	DA14691, DA14695, DA14697, DA14699,(Debug Support Only)
	DA1470x	DA14701, DA14705, DA14706, DA14708,(Debug Support Only)
	DA16200	DA16200,(Debug Support Only)
	DA16600	DA16600,(Debug Support Only)
EC-1	EC-1	R9A06G043
RA	RA2	R7FA2A1AB, R7FA2E1A5, R7FA2E1A7, R7FA2E1A8, R7FA2E1A9, R7FA2E2A3, R7FA2E2A5, R7FA2E2A7, R7FA2E305, R7FA2E307, R7FA2L1A9, R7FA2L1AB
	RA4	R7FA4E10B, R7FA4E10D, R7FA4E2B9, R7FA4M1AB, R7FA4M2AB, R7FA4M2AC, R7FA4M2AD, R7FA4M3AD, R7FA4M3AE, R7FA4M3AF, R7FA4T1B9, R7FA4T1BB, R7FA4W1AD
	RA6	R7FA6E10D, R7FA6E10F, R7FA6E2B9, R7FA6E2BB, R7FA6M1AD, R7FA6M2AD, R7FA6M2AF, R7FA6M3AF, R7FA6M3AH, R7FA6M4AD, R7FA6M4AE, R7FA6M4AF, R7FA6M5AG, R7FA6M5AH, R7FA6M5BF, R7FA6M5BG, R7FA6M5BH, R7FA6T1AB, R7FA6T1AD, R7FA6T2AB, R7FA6T2AD, R7FA6T2BB, R7FA6T2BD, R7FA6T3BB
	RA8	R7FA8D1AF, R7FA8D1AH, R7FA8D1BF, R7FA8D1BH, R7FA8M1AF, R7FA8M1AH, R7FA8T1AF, R7FA8T1AH
RE	RE01B	R7F0E01BD2DNB
	RE01_1500KB	R7F0E014D2CFB, R7F0E014D2CFP, R7F0E015D2CFB, R7F0E015D2CFP, R7F0E016D2DBN, R7F0E017D2DBN
	RE01_256KB	R7F0E01082CFM, R7F0E01082CFP, R7F0E01082DBH, R7F0E01082DBR, R7F0E01082DNG, R7F0E01182CFM, R7F0E01182CFP, R7F0E01182DBH, R7F0E01182DBR, R7F0E01182DNG
RH850	C1H	R7F701260, R7F701270
	C1M	R7F701263, R7F701271
	C1M-A1	R7F701278
	C1M-A2	R7F701275
	D1L1	R7F701401, R7F701421
	D1L2	R7F701402, R7F701422
	D1M1	R7F701404, R7F701405
	D1M1-V2	R7F701442, R7F701462
	D1M2	R7F701408, R7F701410, R7F701428, R7F701430
	E1L	R7F701201, R7F701205
	E1M-S	R7F701202, R7F701204
	E1M-S2	R7F701215, R7F701216
	-	R7F701Z05, R7F701Z06, R7F701Z07

F1H	R7F701501, R7F701502, R7F701503, R7F701506, R7F701507, R7F701508, R7F701511, R7F701512, R7F701513, R7F701526, R7F701527, R7F701528, R7F701529, R7F701530, R7F701531, R7F701534
-	R7F701521, R7F701522, R7F701524, R7F701525
F1K	R7F701542, R7F701543, R7F701546, R7F701547, R7F701557, R7F701560, R7F701561, R7F701562, R7F701563, R7F701566, R7F701567, R7F701577, R7F701580, R7F701581, R7F701582, R7F701583, R7F701586, R7F701587, R7F701597, R7F701602, R7F701603, R7F701610, R7F701611, R7F701612, R7F701613, R7F701620, R7F701621, R7F701622, R7F701623
F1KH	R7F701708, R7F701709, R7F701710, R7F701711, R7F701714, R7F701715
F1KM	R7F701644, R7F701645, R7F701646, R7F701647, R7F701648, R7F701649, R7F701650, R7F701651, R7F701652, R7F701653, R7F701684, R7F701685, R7F701686, R7F701687, R7F701688, R7F701689, R7F701690, R7F701691, R7F701692, R7F701693, R7F701694, R7F701695, R7F701760, R7F701762, R7F701764, R7F701A55, R7F701A56, R7F701A57, R7F701A58, R7F701A59, R7F701A60, R7F701A64, R7F701A65, R7F701A66, R7F701A67, R7F701A68, R7F701A69, R7F701A70, R7F701A71, R7F701A72, R7F701A73, R7F701A74, R7F701A75, R7F701A76, R7F701A77, R7F701A78, R7F701A79, R7F701A80, R7F701A81, R7F701A82, R7F701A83, R7F701A84
F1L	R7F701002xAFP, R7F701003xAFP, R7F701006xAFP, R7F701007xAFP, R7F701008xAFP, R7F701009xAFP, R7F701010xAFP, R7F701011xAFP, R7F701012xAFP, R7F701013xAFP, R7F701014xAFP, R7F701015xAFP, R7F701016xAFP, R7F701017xAFP, R7F701018xAFP, R7F701019xAFP, R7F701020xAFP, R7F701021xAFP, R7F701022xAFP, R7F701023xAFP, R7F701024xAFP, R7F701025xAFP, R7F701026xAFP, R7F701027xAFP, R7F701028xAFP, R7F701029xAFP, R7F701030xAFP, R7F701032xAFP, R7F701033xAFP, R7F701034xAFP, R7F701040, R7F701041, R7F701042, R7F701043, R7F701044, R7F701045, R7F701046, R7F701047, R7F701048, R7F701049, R7F701050, R7F701051, R7F701052, R7F701053, R7F701054, R7F701055, R7F701056, R7F701057
F1M	R7F701544, R7F701545, R7F701548, R7F701549, R7F701552, R7F701553, R7F701564, R7F701565, R7F701568, R7F701569, R7F701572, R7F701573
P1H-C	R7F701370AEEBG, R7F701371EABG, R7F701372EABG, R7F701396EABG
P1L-C	R7F701388, R7F701389, R7F701390, R7F701391
P1M	R7F701304, R7F701305, R7F701310, R7F701311, R7F701312, R7F701313, R7F701314, R7F701315, R7F701318, R7F701319, R7F701320, R7F701321, R7F701322, R7F701323
P1M-C	R7F701373xABG, R7F701374xAFP, R7F701397xABG
P1M-E	R7F701375, R7F701376, R7F701377, R7F701378, R7F701379, R7F701380, R7F701381, R7F701382, R7F701383, R7F701384, R7F701385, R7F701386

	-	R7F701060xAFP, R7F701062xAFP, R7F701064xAFP, R7F701065xAFP, R7F701067xAFP, R7F701069xAFP, R7F701071xAFP
	U2A-EVA	R7F702Z19A, R7F702Z19B
	U2A16	R7F702300, R7F702300A, R7F702300B
	U2A6	R7F702302
	U2A8	R7F702301, R7F702301A, R7F702301B
	U2B10	R7F70254x_Fusa, R7F70254x_Performance, R7F702Z21, R7F702Z26
	U2B24	R7F702Z23, R7F702Z28
	U2B6	R7F70255x, R7F702Z22
RISC-V MCU	G021	R9A02G021
	D1A	R5F10CGB, R5F10CGC, R5F10CGD, R5F10CLD, R5F10CMD, R5F10CME, R5F10DGC, R5F10DGD, R5F10DGE, R5F10DLD, R5F10DLE, R5F10DMD, R5F10DME, R5F10DMF, R5F10DMG, R5F10DMJ, R5F10DPE, R5F10DPF, R5F10DPG, R5F10DPJ, R5F10DPK, R5F10DPL, R5F10DSJ, R5F10DSK, R5F10DSL, R5F10TPJ
	F12	R5F10968, R5F1096A, R5F1096B, R5F1096C, R5F1096D, R5F1096E, R5F109AA, R5F109AB, R5F109AC, R5F109AD, R5F109AE, R5F109BA, R5F109BB, R5F109BC, R5F109BD, R5F109BE, R5F109GA, R5F109GB, R5F109GC, R5F109GD, R5F109GE, R5F109LA, R5F109LB, R5F109LC, R5F109LD, R5F109LE
	F13	R5F10A6A, R5F10A6C, R5F10A6D, R5F10A6E, R5F10AAA, R5F10AAC, R5F10AAD, R5F10AAE, R5F10ABA, R5F10ABC, R5F10ABD, R5F10ABE, R5F10AGA, R5F10AGC, R5F10AGD, R5F10AGE, R5F10AGF, R5F10AGG, R5F10ALC, R5F10ALD, R5F10ALE, R5F10ALF, R5F10ALG, R5F10AME, R5F10AMF, R5F10AMG, R5F10BAC, R5F10BAD, R5F10BAE, R5F10BAF, R5F10BAG, R5F10BBC, R5F10BBD, R5F10BBE, R5F10BBF, R5F10BBG, R5F10BGC, R5F10BGD, R5F10BGE, R5F10BGF, R5F10BGG, R5F10BLC, R5F10BLD, R5F10BLE, R5F10BLF, R5F10BLG, R5F10BME, R5F10BMF, R5F10BMG
RL78	F14	R5F10PAD, R5F10PAE, R5F10PBD, R5F10PBE, R5F10PGD, R5F10PGE, R5F10PGF, R5F10PGG, R5F10PGH, R5F10PGJ, R5F10PLE, R5F10PLF, R5F10PLG, R5F10PLH, R5F10PLJ, R5F10PME, R5F10PMF, R5F10PMG, R5F10PMH, R5F10PMJ, R5F10PPE, R5F10PPF, R5F10PPG, R5F10PPH, R5F10PPJ
	F15	R5F113GK, R5F113GL, R5F113LK, R5F113LL, R5F113MK, R5F113ML, R5F113PG, R5F113PH, R5F113PJ, R5F113PK, R5F113PL, R5F113TG, R5F113TH, R5F113TJ, R5F113TK, R5F113TL
	F1A	R5F114GC, R5F114GD, R5F114GE, R5F114GF, R5F114GG
	F1E	R5F11KLE, R5F11KLF, R5F11KLG, R5F11LLE, R5F11LLF, R5F11LLG
	F23	R7F123FBG, R7F123FGG, R7F123FLG, R7F123FMG, (Debug Support Only)
	F24	R7F124FBJ, R7F124FGJ, R7F124FLJ, R7F124FMJ, R7F124FPJ
	FGIC	RAJ240055, RAJ240057, RAJ240090, RAJ240100, RAJ240310, (Debug Support Only)

G10	R5F10Y14, R5F10Y16, R5F10Y17, R5F10Y44, R5F10Y46, R5F10Y47
G11	R5F1051A, R5F1054A, R5F1056A, R5F1057A, R5F1058A
G12	R5F10266, R5F10267, R5F10268, R5F10269, R5F1026A, R5F10277, R5F10278, R5F10279, R5F1027A, R5F102A7, R5F102A8, R5F102A9, R5F102AA, R5F10366, R5F10367, R5F10368, R5F10369, R5F1036A, R5F10377, R5F10378, R5F10379, R5F1037A, R5F103A7, R5F103A8, R5F103A9, R5F103AA
G13	R5F1006A, R5F1006C, R5F1006D, R5F1006E, R5F1007A, R5F1007C, R5F1007D, R5F1007E, R5F1008A, R5F1008C, R5F1008D, R5F1008E, R5F100AA, R5F100AC, R5F100AD, R5F100AE, R5F100AF, R5F100AG, R5F100BA, R5F100BC, R5F100BD, R5F100BE, R5F100BF, R5F100BG, R5F100CA, R5F100CC, R5F100CD, R5F100CE, R5F100CF, R5F100CG, R5F100EA, R5F100EC, R5F100ED, R5F100EE, R5F100EF, R5F100EG, R5F100EH, R5F100FA, R5F100FC, R5F100FD, R5F100FE, R5F100FF, R5F100FG, R5F100FH, R5F100FJ, R5F100FK, R5F100FL, R5F100GA, R5F100GC, R5F100GD, R5F100GE, R5F100GF, R5F100GG, R5F100GH, R5F100GJ, R5F100GK, R5F100GL, R5F100JC, R5F100JD, R5F100JE, R5F100JF, R5F100JG, R5F100JH, R5F100JJ, R5F100JK, R5F100JL, R5F100LC, R5F100LD, R5F100LE, R5F100LF, R5F100LG, R5F100LH, R5F100LJ, R5F100LK, R5F100LL, R5F100MF, R5F100MG, R5F100MH, R5F100MJ, R5F100MK, R5F100ML, R5F100PF, R5F100PG, R5F100PH, R5F100PJ, R5F100PK, R5F100PL, R5F100SH, R5F100SJ, R5F100SK, R5F100SL, R5F1016A, R5F1016C, R5F1016D, R5F1016E, R5F1017A, R5F1017C, R5F1017D, R5F1017E, R5F1018A, R5F1018C, R5F1018D, R5F1018E, R5F101AA, R5F101AC, R5F101AD, R5F101AE, R5F101AF, R5F101AG, R5F101BA, R5F101BC, R5F101BD, R5F101BE, R5F101BF, R5F101BG, R5F101CA, R5F101CC, R5F101CD, R5F101CE, R5F101CF, R5F101CG, R5F101EA, R5F101EC, R5F101ED, R5F101EE, R5F101EF, R5F101EG, R5F101EH, R5F101FA, R5F101FC, R5F101FD, R5F101FE, R5F101FF, R5F101FG, R5F101FH, R5F101FJ, R5F101FK, R5F101FL, R5F101GA, R5F101GC, R5F101GD, R5F101GE, R5F101GF, R5F101GG, R5F101GH, R5F101GJ, R5F101GK, R5F101GL, R5F101JC, R5F101JD, R5F101JE, R5F101JF, R5F101JG, R5F101JH, R5F101JJ, R5F101JK, R5F101JL, R5F101LC, R5F101LD, R5F101LE, R5F101LF, R5F101LG, R5F101LH, R5F101LJ, R5F101LK, R5F101LL, R5F101MF, R5F101MG, R5F101MH, R5F101MJ, R5F101MK, R5F101ML, R5F101PF, R5F101PG, R5F101PH, R5F101PJ, R5F101PK, R5F101PL, R5F101SH, R5F101SJ, R5F101SK, R5F101SL
G13A	R5F140FK, R5F140FL, R5F140GK, R5F140GL, R5F140LK, R5F140LL, R5F140PK, R5F140PL

G14	R5F104AA, R5F104AC, R5F104AD, R5F104AE, R5F104AF, R5F104AG, R5F104BA, R5F104BC, R5F104BD, R5F104BE, R5F104BF, R5F104BG, R5F104CA, R5F104CC, R5F104CD, R5F104CE, R5F104CF, R5F104CG, R5F104EA, R5F104EC, R5F104ED, R5F104EE, R5F104EF, R5F104EG, R5F104EH, R5F104FA, R5F104FC, R5F104FD, R5F104FE, R5F104FF, R5F104FG, R5F104FH, R5F104FJ, R5F104GA, R5F104GC, R5F104GD, R5F104GE, R5F104GF, R5F104GG, R5F104GH, R5F104GJ, R5F104GK, R5F104GL, R5F104JC, R5F104JD, R5F104JE, R5F104JF, R5F104JG, R5F104JH, R5F104JJ, R5F104LC, R5F104LD, R5F104LE, R5F104LF, R5F104LG, R5F104LH, R5F104LJ, R5F104LK, R5F104LL, R5F104MF, R5F104MG, R5F104MH, R5F104MJ, R5F104MK, R5F104ML, R5F104PF, R5F104PG, R5F104PH, R5F104PJ, R5F104PK, R5F104PL
G15	R5F12007, R5F12008, R5F12017, R5F12018, R5F12047, R5F12048, R5F12067, R5F12068
G16	R5F1211A, R5F1211C, R5F1214A, R5F1214C, R5F1216A, R5F1216C, R5F1217A, R5F1217C, R5F121BA, R5F121BC
G1A	R5F10E8A, R5F10E8C, R5F10E8D, R5F10E8E, R5F10EBA, R5F10EBC, R5F10EBD, R5F10EBE, R5F10EGA, R5F10EGC, R5F10EGD, R5F10EGE, R5F10ELC, R5F10ELD, R5F10ELE
G1C	R5F10JBC, R5F10JGC, R5F10KBC, R5F10KGC
G1D	R5F11AGG, R5F11AGH, R5F11AGJ
G1E	R5F10FLC, R5F10FLD, R5F10FLE, R5F10FMC, R5F10FMD, R5F10FME
G1F	R5F11B7C, R5F11B7E, R5F11BBC, R5F11BBE, R5F11BCC, R5F11BCE, R5F11BGC, R5F11BGE, R5F11BLC, R5F11BLE
G1G	R5F11EA8, R5F11EAA, R5F11EB8, R5F11EBA, R5F11EF8, R5F11EFA
G1H	R5F11FLJ, R5F11FLK, R5F11FLL
G1K	R5F11VBG, R5F11VLG
G1M	R5F11W67, R5F11W68
G1N	R5F11Y67, R5F11Y68
G1P	R5F11Z7A, R5F11ZBA
G22	R7F102G4C, R7F102G4E, R7F102G6C, R7F102G6E, R7F102G7C, R7F102G7E, R7F102G8C, R7F102G8E, R7F102GAC, R7F102GAE, R7F102GBC, R7F102GBE, R7F102GCC, R7F102GCE, R7F102GEC, R7F102GEE, R7F102GFC, R7F102GFE, R7F102GGC, R7F102GGE
G23	R7F100GAF, R7F100GAG, R7F100GAH, R7F100GAJ, R7F100GBF, R7F100GBG, R7F100GBH, R7F100GBJ, R7F100GCF, R7F100GCG, R7F100GCH, R7F100GCJ, R7F100GEF, R7F100GEG, R7F100GEH, R7F100GEJ, R7F100GFF, R7F100GFG, R7F100GFH, R7F100GFJ, R7F100GFK, R7F100GFL, R7F100GFN, R7F100GGF, R7F100GGG, R7F100GGH, R7F100GGJ, R7F100GGK, R7F100GGL, R7F100GGN, R7F100GJF, R7F100GJG, R7F100GJH, R7F100GJJ, R7F100GJK, R7F100GJL, R7F100GJN, R7F100GLF, R7F100GLG, R7F100GLH, R7F100GLJ, R7F100GLK, R7F100GLL, R7F100GLN, R7F100GMG, R7F100GMH, R7F100GMJ, R7F100GMK, R7F100GML, R7F100GMN, R7F100GPG, R7F100GPH, R7F100GPJ, R7F100GPK, R7F100GPL, R7F100GPN, R7F100GSJ, R7F100GSK, R7F100GSL, R7F100GSN

RX	G24	R7F101G6E, R7F101G6G, R7F101G7E, R7F101G7G, R7F101G8E, R7F101G8G, R7F101GAE, R7F101GAG, R7F101GBE, R7F101GBG, R7F101GEE, R7F101GEG, R7F101GFE, R7F101GFG, R7F101GGE, R7F101GGG, R7F101GJE, R7F101GJG, R7F101GLE, R7F101GLG
	H1D	R5F11NGF, R5F11NGG, R5F11NLF, R5F11NLG, R5F11NME, R5F11NMF, R5F11NMG, R5F11PLF, R5F11PLG, R5F11RMG
	I1A	R5F1076C, R5F107AC, R5F107AE, R5F107DE
	I1B	R5F10MME, R5F10MMG, R5F10MPE, R5F10MPG
	I1C	R5F10NLE, R5F10NLG, R5F10NME, R5F10NMG, R5F10NMJ, R5F10NML, R5F10NML_DUAL, R5F10NPG, R5F10NPJ, R5F10NPL, R5F10NPL_DUAL
	I1C-2	R5F11TLE, R5F11TLG
	I1D	R5F11768, R5F1176A, R5F11778, R5F1177A, R5F117A8, R5F117AA, R5F117AC, R5F117BA, R5F117BC, R5F117GA, R5F117GC
	I1E	R5F11CBC, R5F11CCC
	L12	R5F10RB8, R5F10RBA, R5F10RBC, R5F10RF8, R5F10RFA, R5F10RFC, R5F10RG8, R5F10RGA, R5F10RGC, R5F10RJ8, R5F10RJA, R5F10RJC, R5F10RLA, R5F10RLC
	L13	R5F10WLA, R5F10WLC, R5F10WLD, R5F10WLE, R5F10WLF, R5F10WLG, R5F10WMA, R5F10WMC, R5F10WMD, R5F10WME, R5F10WMF, R5F10WMG
	L1A	R5F11MMD, R5F11MME, R5F11MMF, R5F11MPE, R5F11MPF, R5F11MPG
	L1C	R5F110ME, R5F110MF, R5F110MG, R5F110MH, R5F110MJ, R5F110NE, R5F110NF, R5F110NG, R5F110NH, R5F110NJ, R5F110PE, R5F110PF, R5F110PG, R5F110PH, R5F110PJ, R5F111ME, R5F111MF, R5F111MG, R5F111MH, R5F111MJ, R5F111NE, R5F111NF, R5F111NG, R5F111NH, R5F111NJ, R5F111PE, R5F111PF, R5F111PG, R5F111PH, R5F111PJ
	110	R5F51101, R5F51103, R5F51104, R5F51105, R5F5110H, R5F5110J
	111	R5F51111, R5F51113, R5F51114, R5F51115, R5F51116, R5F51117, R5F51118, R5F5111J
	113	R5F51135, R5F51136, R5F51137, R5F51138
	130	R5F51303, R5F51305, R5F51305B, R5F51306, R5F51306B, R5F51307, R5F51308
	13T	R5F513T3, R5F513T5
	140	R5F51403, R5F51405, R5F51406
	210	R5F52103, R5F52104, R5F52105, R5F52106, R5F52107, R5F52108, R5F5210A, R5F5210B
21A	R5F521A6, R5F521A7, R5F521A8	
220	R5F52201, R5F52203, R5F52205, R5F52206	
230	R5F52305, R5F52306	
231	R5F52315, R5F52316, R5F52317, R5F52318	
23E-A	R5F523E5A, R5F523E5S, R5F523E6A, R5F523E6S	
23E-B	R5F523E5B, R5F523E6B	
23T	R5F523T3, R5F523T5	
23W	R5F523W7, R5F523W8	
24T	R5F524T8, R5F524TA, R5F524TB, R5F524TC, R5F524TE	
24U	R5F524UB, R5F524UC, R5F524UE	

26T	R5F526T8, R5F526T9, R5F526TA, R5F526TB, R5F526TF, R5F526TF_DUAL
610	R5F56104, R5F56106, R5F56107, R5F56108
621	R5F56216, R5F56217, R5F56218
62G	R5F562G7, R5F562GA
62N	R5F562N7, R5F562N8
62T	R5F562T6, R5F562T7, R5F562TA
630	R5F56307, R5F56308, R5F5630A, R5F5630B, R5F5630D, R5F5630E
631	R5F56316, R5F56317, R5F56318, R5F5631A, R5F5631B, R5F5631D, R5F5631E, R5F5631F, R5F5631G, R5F5631J, R5F5631K, R5F5631M, R5F5631MF, R5F5631N, R5F5631P, R5F5631PF, R5F5631W, R5F5631Y, R5S56310
634	R5F5634B, R5F5634B_5V, R5F5634D, R5F5634D_5V, R5F5634E, R5F5634E_5V
63N	R5F563NA, R5F563NB, R5F563ND, R5F563NE, R5F563NF, R5F563NK, R5F563NW, R5F563NY
63T	R5F563T4, R5F563T5, R5F563T6, R5F563TB, R5F563TB_5V, R5F563TC, R5F563TC_5V, R5F563TE, R5F563TE_5V
64M	R5F564MF, R5F564MG, R5F564MJ, R5F564ML
651	R5F56514, R5F56517, R5F56519, R5F5651C, R5F5651C_DUAL, R5F5651E, R5F5651E_DUAL R5F56519DMB, R5F5651EDMB, R5F5651EDMB_DUAL,(Debug Support Only)
65N	R5F565N4, R5F565N7, R5F565N9, R5F565NC, R5F565NC_DUAL, R5F565NE, R5F565NE_DUAL R5F565N9DMB, R5F565NEDMB, R5F565NEDMB_DUAL,(Debug Support Only)
65W-A	R5F565WE, R5F565WE_DUAL,
660	R5F56604A, R5F56604B, R5F56604C, R5F56604D, R5F56604E, R5F56604F, R5F56604G, R5F56604H, R5F56609A, R5F56609B, R5F56609C, R5F56609D, R5F56609E, R5F56609F, R5F56609G, R5F56609H
66N	R5F566ND, R5F566ND_DUAL, R5F566NN, R5F566NN_DUAL
66T	R5F566TA, R5F566TAXXFL, R5F566TE, R5F566TEXXFL, R5F566TF, R5F566TK
671	R5F56719, R5F56719_DUAL, R5F5671C, R5F5671C_DUAL, R5F5671E, R5F5671E_DUAL
71M	R5F571MF, R5F571MG, R5F571MJ, R5F571ML
72M	R5F572MD, R5F572MD_DUAL, R5F572MN, R5F572MN_DUAL
72N	R5F572ND, R5F572ND_DUAL, R5F572NN, R5F572NN_DUAL
72T	R5F572TF, R5F572TK
-	R0E5571MLDMBXX,(Debug Support Only)

	A1	R7S721000, R7S721000_DualSPI, R7S721001, R7S721001_DualSPI, R7S721010, R7S721010_DualSPI, R7S721011, R7S721011_DualSPI, R7S721020, R7S721020_DualSPI, R7S721021, R7S721021_DualSPI, R7S721030, R7S721030_DualSPI, R7S721031, R7S721031_DualSPI, R7S721034, R7S721034_DualSPI
	A2	R7S921040, R7S921041, R7S921042, R7S921043, R7S921045, R7S921046, R7S921047, R7S921048, R7S921051, R7S921052, R7S921053, R7S921056, R7S921057, R7S921058
	A3UL	R9A07G063U01GBG, R9A07G063U02GBG,(Debug Support Only)
	G1E	R8A77450, R8A77450_Core1,(Debug Support Only)
	G1M	R8A77430, R8A77430_Core1,(Debug Support Only)
	G2L	R9A07G044C12GBG_CM33, R9A07G044C22GBG_CM33, R9A07G044L13GBG_CM33, R9A07G044L14GBG_CM33, R9A07G044L23GBG_CM33, R9A07G044L24GBG_CM33, R9A07G044LC_M33, R9A07G044L_M33
	G2UL	R9A07G043U11GBG_CM33, R9A07G043U12GBG_CM33
	N2L	R9A07G084M04, R9A07G084M08
RZ	T1	R7S910001, R7S910002, R7S910006, R7S910007, R7S910011, R7S910013, R7S910015, R7S910015_M3, R7S910016, R7S910016_M3, R7S910017, R7S910017_M3, R7S910018, R7S910018_M3, R7S910025, R7S910026, R7S910027, R7S910028, R7S910035, R7S910036, R7S910101, R7S910102, R7S910106, R7S910107, R7S910111, R7S910113, R7S910115, R7S910115_M3, R7S910116, R7S910116_M3, R7S910117, R7S910117_M3, R7S910118, R7S910118_M3, R7S910125, R7S910126, R7S910127, R7S910128, R7S910135, R7S910136
	T1-M	R7S910020, R7S910021, R7S910022, R7S910023, R7S910120, R7S910121, R7S910122, R7S910123
	T2L	R9A07G074M01, R9A07G074M04, R9A07G074M05, R9A07G074M08
	T2M	R9A07G075M01, R9A07G075M05, R9A07G075M21_CPU0, R9A07G075M21_CPU1, R9A07G075M22_CPU0, R9A07G075M22_CPU1, R9A07G075M24_CPU0, R9A07G075M24_CPU1, R9A07G075M26_CPU0, R9A07G075M26_CPU1, R9A07G075M27_CPU0, R9A07G075M27_CPU1, R9A07G075M28_CPU0, R9A07G075M28_CPU1
	V2L	R9A07G054L13GBG_CM33, R9A07G054L13_M33, R9A07G054L14GBG_CM33, R9A07G054L14_M33, R9A07G054L23GBG_CM33, R9A07G054L23_M33, R9A07G054L24GBG_CM33, R9A07G054L24_M33
	S1JA	R7FS1JA783A01CFM, R7FS1JA783A01CNE, R7FS1JA783A01CNF, R7FS1JA782A01CBT, R7FS1JA783A01CFJ
	S124	R7FS124762A01CLM, R7FS124763A01CFL, R7FS124763A01CFM, R7FS124772A01CLM, R7FS124773A01CFL, R7FS124773A01CFM, R7FS124773A01CNB, R7FS124773A01CNE, R7FS124773A01CNF
	S128	R7FS128782A01CLM, R7FS128783A01CFJ, R7FS128783A01CFL, R7FS128783A01CFM, R7FS128783A01CNE, R7FS128783A01CNG
Synergy	S3A1	R7FS3A17C2A01CLK, R7FS3A17C3A01CFB, R7FS3A17C2A01CBJ, R7FS3A17C2A01CLJ, R7FS3A17C3A01CFM, R7FS3A17C3A01CFP, R7FS3A17C3A01CNB
	S3A3	R7FS3A37A2A01CLK, R7FS3A37A3A01CFB, R7FS3A37A2A01CBJ, R7FS3A37A2A01CLJ, R7FS3A37A3A01CFP, R7FS3A37A3A01CFM, R7FS3A37A3A01CNB

S3A6	R7FS3A6782A01CLJ, R7FS3A6783A01CFL, R7FS3A6783A01CFM, R7FS3A6783A01CFP, R7FS3A6783A01CNE, R7FS3A6783A01CNF
S3A7	R7FS3A77C2A01CLK, R7FS3A77C3A01CFB, R7FS3A77C2A01CBJ, R7FS3A77C3A01CFP, R7FS3A77C2A01CLJ, R7FS3A77C3A01CFM, R7FS3A77C2A01CNE, R7FS3A77C3A01CNB
S5D3	R7FS5D37A2A01CLJ, R7FS5D37A3A01CFP, R7FS5D37A3A01CFM, R7FS5D37A3A01CNE
S5D5	R7FS5D57A2A01CLK, R7FS5D57A3A01CFB, R7FS5D57A3A01CFP, R7FS5D57C2A01CLK, R7FS5D57C3A01CFB, R7FS5D57C3A01CFP
S5D9	R7FS5D97C2A01CBG, R7FS5D97C3A01CFC, R7FS5D97C2A01CLK, R7FS5D97C3A01CFB, R7FS5D97C3A01CFP, R7FS5D97E2A01CBG, R7FS5D97E3A01CFC, R7FS5D97E2A01CLK, R7FS5D97E3A01CFB, R7FS5D97E3A01CFP
S7G2	R7FS7G27H2A01CBD, R7FS7G27G2A01CBD, R7FS7G27H2A01CBG, R7FS7G27G2A01CBG, R7FS7G27H2A01CFC, R7FS7G27H3A01CFC, R7FS7G27G2A01CFC, R7FS7G27G3A01CFC, R7FS7G27H2A01CLK, R7FS7G27G2A01CLK, R7FS7G27H3A01CFB, R7FS7G27G3A01CFB, R7FS7G27G3A01CFP

2.2 Code Generator Support – Windows Host Only

Family	Group	Devices
	D1A	R5F10CGB, R5F10CGC, R5F10CGD, R5F10CLD, R5F10CMD, R5F10CME, R5F10DGC, R5F10DGD, R5F10DGE, R5F10DLA, R5F10DLE, R5F10DMD, R5F10DME, R5F10DMF, R5F10DMG, R5F10DMJ, R5F10DPE, R5F10DPF, R5F10DPG, R5F10DPJ, R5F10TPJ
	F12	R5F10968, R5F1096A, R5F1096B, R5F1096C, R5F1096D, R5F1096E, R5F109AA, R5F109AB, R5F109AC, R5F109AD, R5F109AE, R5F109BA, R5F109BB, R5F109BC, R5F109BD, R5F109BE, R5F109GA, R5F109GB, R5F109GC, R5F109GD, R5F109GE, R5F109LA, R5F109LB, R5F109LC, R5F109LD, R5F109LE
RL78	F13	R5F10A6A, R5F10A6C, R5F10A6D, R5F10A6E, R5F10AAA, R5F10AAC, R5F10AAD, R5F10AAE, R5F10ABA, R5F10ABC, R5F10ABD, R5F10ABE, R5F10AGA, R5F10AGC, R5F10AGD, R5F10AGE, R5F10AGF, R5F10AGG, R5F10ALC, R5F10ALD, R5F10ALE, R5F10ALF, R5F10ALG, R5F10AME, R5F10AMF, R5F10AMG, R5F10BAC, R5F10BAD, R5F10BAE, R5F10BAF, R5F10BAG, R5F10BBC, R5F10BBD, R5F10BBE, R5F10BBF, R5F10BBG, R5F10BGC, R5F10BGD, R5F10BGE, R5F10BGF, R5F10BGG, R5F10BLC, R5F10BLD, R5F10BLE, R5F10BLF, R5F10BLG, R5F10BME, R5F10BMF, R5F10BMG
	F14	R5F10PAD, R5F10PAE, R5F10PBD, R5F10PBE, R5F10PGD, R5F10PGE, R5F10PGF, R5F10PGG, R5F10PGH, R5F10PGJ, R5F10PLE, R5F10PLF, R5F10PLG, R5F10PLH, R5F10PLJ, R5F10PME, R5F10PMF, R5F10PMG, R5F10PMH, R5F10PMJ, R5F10PPE, R5F10PPF, R5F10PPG, R5F10PPH, R5F10PPJ
	F15	R5F113GK, R5F113GL, R5F113LK, R5F113LL, R5F113MK, R5F113ML, R5F113PG, R5F113PH, R5F113PJ, R5F113PK, R5F113PL, R5F113TG, R5F113TH, R5F113TJ, R5F113TK, R5F113TL
	F1E	R5F11KLE, R5F11KLF, R5F11KLG, R5F11LLE, R5F11LLF, R5F11LLG
	G10	R5F10Y14, R5F10Y16, R5F10Y17, R5F10Y44, R5F10Y46, R5F10Y47
	G11	R5F1051A, R5F1054A, R5F1056A, R5F1057A, R5F1058A
	G12	R5F10266, R5F10267, R5F10268, R5F10269, R5F1026A, R5F10277, R5F10278, R5F10279, R5F1027A, R5F102A7, R5F102A8, R5F102A9, R5F102AA, R5F10366, R5F10367, R5F10368, R5F10369, R5F1036A, R5F10377, R5F10378, R5F10379, R5F1037A, R5F103A7, R5F103A8, R5F103A9, R5F103AA

	H1D	R5F11NGF, R5F11NGG, R5F11NLF, R5F11NLG, R5F11NME, R5F11NMF, R5F11NMG, R5F11PLF, R5F11PLG, R5F11RMG
	I1A	R5F1076C, R5F107AC, R5F107AE, R5F107DE
	I1B	R5F10MME, R5F10MMG, R5F10MPE, R5F10MPG
	I1C	R5F10NLE, R5F10NLG, R5F10NME, R5F10NMG, R5F10NMJ, R5F10NML, R5F10NML_DUAL, R5F10NPG, R5F10NPJ, R5F10NPL, R5F10NPL_DUAL
	I1C-2	R5F11TLE, R5F11TLG
	I1D	R5F11768, R5F1176A, R5F11778, R5F1177A, R5F117A8, R5F117AA, R5F117AC, R5F117BA, R5F117BC, R5F117GA, R5F117GC
	I1E	R5F11CBC, R5F11CCC
	L12	R5F10RB8, R5F10RBA, R5F10RBC, R5F10RF8, R5F10RFA, R5F10RFC, R5F10RG8, R5F10RGA, R5F10RGC, R5F10RJ8, R5F10RJA, R5F10RJC, R5F10RLA, R5F10RLC
	L13	R5F10WLA, R5F10WLC, R5F10WLD, R5F10WLE, R5F10WLF, R5F10WLG, R5F10WMA, R5F10WMC, R5F10WMD, R5F10WME, R5F10WMF, R5F10WMG
	L1A	R5F11MMD, R5F11MME, R5F11MMF, R5F11MPE, R5F11MPF, R5F11MPG
	L1C	R5F110ME, R5F110MF, R5F110MG, R5F110MH, R5F110MJ, R5F110PE, R5F110PF, R5F110PG, R5F110PH, R5F110PJ, R5F111ME, R5F111MF, R5F111MG, R5F111MH, R5F111MJ, R5F111PE, R5F111PF, R5F111PG, R5F111PH, R5F111PJ
	110	R5F51101, R5F51103, R5F51104, R5F51105, R5F5110H, R5F5110J
	111	R5F51111, R5F51113, R5F51114, R5F51115, R5F51116, R5F51117, R5F51118, R5F5111J
	113	R5F51135, R5F51136, R5F51137, R5F51138
	130	R5F51303, R5F51305
	230	R5F52305, R5F52306
RX	231	R5F52315, R5F52316, R5F52317, R5F52318
	23T	R5F523T3, R5F523T5
	24T	R5F524T8, R5F524TA, R5F524TB, R5F524TC, R5F524TE
	24U	R5F524UB, R5F524UC, R5F524UE
	64M	R5F564MF, R5F564MG, R5F564MJ, R5F564ML
	651	R5F56514, R5F56517, R5F56519
	65N	R5F565N4, R5F565N7, R5F565N9
	71M	R5F571MF, R5F571MG, R5F571MJ, R5F571ML
RZ	T1	R7S910001, R7S910002, R7S910006, R7S910007, R7S910011, R7S910013, R7S910015, R7S910016, R7S910017, R7S910018, R7S910025, R7S910026, R7S910027, R7S910028, R7S910035, R7S910036, R7S910101, R7S910102, R7S910106, R7S910107, R7S910111, R7S910113, R7S910115, R7S910116, R7S910117, R7S910118, R7S910125, R7S910126, R7S910127, R7S910128, R7S910135, R7S910136

2.3 Smart Configurator Support

Family	Group	Devices	
RH850	C1M-A2	R7F701275	
	F1KH	R7F701708, R7F701709, R7F701710, R7F701711, R7F701714, R7F701715	
		R7F701644, R7F701645, R7F701646, R7F701647, R7F701648, R7F701649, R7F701650, R7F701651, R7F701652, R7F701653, R7F701684, R7F701685, R7F701686, R7F701687, R7F701688, R7F701689, R7F701690, R7F701691, R7F701692, R7F701693, R7F701694, R7F701695, R7F701760, R7F701762, R7F701764	
	F1KM	R7F701694, R7F701695, R7F701760, R7F701762, R7F701764	
	U2A16	R7F702300, R7F702300A, R7F702300B	
	U2A6	R7F702302	
	U2A8	R7F702301, R7F702301A, R7F702301B	
	U2B6	R7F70255x	
RISC-V MCU	G021	R9A02G021	
	F23	R7F123FBG, R7F123FGG, R7F123FLG, R7F123FMG	
	F24	R7F124FBJ, R7F124FGJ, R7F124FLJ, R7F124FMJ, R7F124FPJ	
	G15	R5F12007, R5F12008, R5F12017, R5F12018, R5F12047, R5F12048, R5F12067, R5F12068	
		R5F1211A, R5F1211C, R5F1214A, R5F1214C, R5F1216A, R5F1216C, R5F1217A, R5F1217C, R5F121BA, R5F121BC	
	G16	R7F102G4C, R7F102G4E, R7F102G6C, R7F102G6E, R7F102G7C, R7F102G7E, R7F102G8C, R7F102G8E, R7F102GAC, R7F102GAE, R7F102GBC, R7F102GBE, R7F102GCC, R7F102GCE, R7F102GEC, R7F102GEE, R7F102GFC, R7F102GFE, R7F102GGC, R7F102GGE	
	G22	R7F100GAF, R7F100GAG, R7F100GAH, R7F100GAJ, R7F100GBF, R7F100GBG, R7F100GBH, R7F100GBJ, R7F100GCF, R7F100GCG, R7F100GCH, R7F100GCJ, R7F100GEF, R7F100GEG, R7F100GEH, R7F100GEJ, R7F100GFF, R7F100GFG, R7F100GFH, R7F100GFJ, R7F100GFK, R7F100GFL, R7F100GFN, R7F100GGF, R7F100GGG, R7F100GGH, R7F100GGJ, R7F100GGK, R7F100GGL, R7F100GGN, R7F100GJF, R7F100GJG, R7F100GJH, R7F100GJJ, R7F100GJK, R7F100GJL, R7F100GJN, R7F100GLF, R7F100GLG, R7F100GLH, R7F100GLJ, R7F100GLK, R7F100GLL, R7F100GLN, R7F100GMG, R7F100GMH, R7F100GMJ, R7F100GMK, R7F100GML, R7F100GMN, R7F100GPG, R7F100GPH, R7F100GPJ, R7F100GPK, R7F100GPL, R7F100GPN, R7F100GSJ, R7F100GSK, R7F100GSL, R7F100GSN	
		G23	R7F101G6E, R7F101G6G, R7F101G7E, R7F101G7G, R7F101G8E, R7F101G8G, R7F101GAE, R7F101GAG, R7F101GBE, R7F101GBG, R7F101GEE, R7F101GEG, R7F101GFE, R7F101GFG, R7F101GGE, R7F101GGG, R7F101GJE, R7F101GJG, R7F101GLE, R7F101GLG
			G24
		110	R5F51101, R5F51103, R5F51104, R5F51105, R5F5110H, R5F5110J
111		R5F51111, R5F51113, R5F51114, R5F51115, R5F51116, R5F51117, R5F51118, R5F5111J	
113		R5F51135, R5F51136, R5F51137, R5F51138	
RX		130	R5F51303, R5F51305, R5F51305B, R5F51306, R5F51306B, R5F51307, R5F51308
	R5F513T3, R5F513T5		
	140	R5F51403, R5F51405, R5F51406	
	230	R5F52305, R5F52306	
	231	R5F52315, R5F52316, R5F52317, R5F52318	
	23E-A	R5F523E5A, R5F523E5S, R5F523E6A, R5F523E6S	
		R5F523E5A, R5F523E5S, R5F523E6A, R5F523E6S	

	23E-B	R5F523E5B, R5F523E6B
	23T	R5F523T3, R5F523T5
	23W	R5F523W7, R5F523W8
	24T	R5F524T8, R5F524TA, R5F524TB, R5F524TC, R5F524TE
	24U	R5F524UB, R5F524UC, R5F524UE
	26T	R5F526T8, R5F526T9, R5F526TA, R5F526TB, R5F526TF, R5F526TF_DUAL
	64M	R5F564MF, R5F564MG, R5F564MJ, R5F564ML
	651	R5F56514, R5F56517, R5F56519, R5F5651C, R5F5651C_DUAL, R5F5651E, R5F5651E_DUAL
	65N	R5F565N4, R5F565N7, R5F565N9, R5F565NC, R5F565NC_DUAL, R5F565NE, R5F565NE_DUAL
	660	R5F56604A, R5F56604B, R5F56604C, R5F56604D, R5F56604E, R5F56604F, R5F56604G, R5F56604H, R5F56609A, R5F56609B, R5F56609C, R5F56609D, R5F56609E, R5F56609F, R5F56609G, R5F56609H
	66N	R5F566ND, R5F566ND_DUAL, R5F566NN, R5F566NN_DUAL
	66T	R5F566TA, R5F566TE, R5F566TF, R5F566TK
	671	R5F56719, R5F56719_DUAL, R5F5671C, R5F5671C_DUAL, R5F5671E, R5F5671E_DUAL
	71M	R5F571MF, R5F571MG, R5F571MJ, R5F571ML
	72M	R5F572MD, R5F572MD_DUAL, R5F572MN, R5F572MN_DUAL
	72N	R5F572ND, R5F572ND_DUAL, R5F572NN, R5F572NN_DUAL
	72T	R5F572TF, R5F572TK
	A2	R7S921040, R7S921041, R7S921042, R7S921043, R7S921045, R7S921046, R7S921047, R7S921048, R7S921051, R7S921052, R7S921053, R7S921056, R7S921057, R7S921058
	A3UL	R9A07G063U01GBG, R9A07G063U02GBG
	N2L	R9A07G084M04, R9A07G084M08
	T2L	R9A07G074M01, R9A07G074M04, R9A07G074M05, R9A07G074M08
RZ	T2M	R9A07G075M01, R9A07G075M05, R9A07G075M21_CPU0, R9A07G075M21_CPU1, R9A07G075M22_CPU0, R9A07G075M22_CPU1, R9A07G075M24_CPU0, R9A07G075M24_CPU1, R9A07G075M26_CPU0, R9A07G075M26_CPU1, R9A07G075M27_CPU0, R9A07G075M27_CPU1, R9A07G075M28_CPU0, R9A07G075M28_CPU1
	G2L	R9A07G044C12GBG_CM33, R9A07G044C22GBG_CM33, R9A07G044L13GBG_CM33, R9A07G044L14GBG_CM33, R9A07G044L23GBG_CM33, R9A07G044L24GBG_CM33, R9A07G044LC_M33, R9A07G044L_M33
	G2UL	R9A07G043U11GBG_CM33, R9A07G043U12GBG_CM33
	V2L	R9A07G054L13GBG_CM33, R9A07G054L13_M33, R9A07G054L14GBG_CM33, R9A07G054L14_M33, R9A07G054L23GBG_CM33, R9A07G054L23_M33, R9A07G054L24GBG_CM33, R9A07G054L24_M33
Synergy	S1JA	R7FS1JA783A01CFM, R7FS1JA783A01CNE, R7FS1JA783A01CNF, R7FS1JA782A01CBT, R7FS1JA783A01CFJ

	S124	R7FS124762A01CLM, R7FS124763A01CFL, R7FS124763A01CFM, R7FS124772A01CLM, R7FS124773A01CFL, R7FS124773A01CFM, R7FS124773A01CNB, R7FS124773A01CNE, R7FS124773A01CNF
	S128	R7FS128782A01CLM, R7FS128783A01CFJ, R7FS128783A01CFL, R7FS128783A01CFM, R7FS128783A01CNE, R7FS128783A01CNG
	S3A1	R7FS3A17C2A01CLK, R7FS3A17C3A01CFB, R7FS3A17C2A01CBJ, R7FS3A17C2A01CLJ, R7FS3A17C3A01CFM, R7FS3A17C3A01CFP, R7FS3A17C3A01CNB
	S3A3	R7FS3A37A2A01CLK, R7FS3A37A3A01CFB, R7FS3A37A2A01CBJ, R7FS3A37A2A01CLJ, R7FS3A37A3A01CFP, R7FS3A37A3A01CFM, R7FS3A37A3A01CNB
	S3A6	R7FS3A6782A01CLJ, R7FS3A6783A01CFL, R7FS3A6783A01CFM, R7FS3A6783A01CFP, R7FS3A6783A01CNB, R7FS3A6783A01CNE, R7FS3A6783A01CNF
	S3A7	R7FS3A77C2A01CLK, R7FS3A77C3A01CFB, R7FS3A77C2A01CBJ, R7FS3A77C3A01CFP, R7FS3A77C2A01CLJ, R7FS3A77C3A01CFM, R7FS3A77C2A01CNB, R7FS3A77C3A01CNB
	S5D3	R7FS5D37A2A01CLJ, R7FS5D37A3A01CFP, R7FS5D37A3A01CFM, R7FS5D37A3A01CNB
	S5D5	R7FS5D57A2A01CLK, R7FS5D57A3A01CFB, R7FS5D57A3A01CFP, R7FS5D57C2A01CLK, R7FS5D57C3A01CFB, R7FS5D57C3A01CFP
	S5D9	R7FS5D97C2A01CBG, R7FS5D97C3A01CFC, R7FS5D97C2A01CLK, R7FS5D97C3A01CFB, R7FS5D97C3A01CFP, R7FS5D97E2A01CBG, R7FS5D97E3A01CFC, R7FS5D97E2A01CLK, R7FS5D97E3A01CFB, R7FS5D97E3A01CFP
	S7G2	R7FS7G27H2A01CBD, R7FS7G27G2A01CBD, R7FS7G27H2A01CBG, R7FS7G27G2A01CBG, R7FS7G27H2A01CFC, R7FS7G27H3A01CFC, R7FS7G27G2A01CFC, R7FS7G27G3A01CFC, R7FS7G27H2A01CLK, R7FS7G27G2A01CLK, R7FS7G27H3A01CFB, R7FS7G27G3A01CFB, R7FS7G27G3A01CFP
	RA2	R7FA2A1AB, R7FA2E1A5, R7FA2E1A7, R7FA2E1A8, R7FA2E1A9, R7FA2E2A3, R7FA2E2A5, R7FA2E2A7, R7FA2E305, R7FA2E307, R7FA2L1A9, R7FA2L1AB"B
	RA4	R7FA4E10B, R7FA4E10D, R7FA4E2B9, R7FA4M1AB, R7FA4M2AB, R7FA4M2AC, R7FA4M2AD, R7FA4M3AD, R7FA4M3AE, R7FA4M3AF, R7FA4T1B9, R7FA4T1BB, R7FA4W1AD
RA	RA6	R7FA6E10D, R7FA6E10F, R7FA6E2B9, R7FA6E2BB, R7FA6M1AD, R7FA6M2AD, R7FA6M2AF, R7FA6M3AF, R7FA6M3AH, R7FA6M4AD, R7FA6M4AE, R7FA6M4AF, R7FA6M5AG, R7FA6M5AH, R7FA6M5BF, R7FA6M5BG, R7FA6M5BH, R7FA6T1AB, R7FA6T1AD, R7FA6T2AB, R7FA6T2AD, R7FA6T2BB, R7FA6T2BD, R7FA6T3BB
	RA8	R7FA8D1AF, R7FA8D1AH, R7FA8D1BF, R7FA8D1BH, R7FA8M1AF, R7FA8M1AH, R7FA8T1AF, R7FA8T1AH
	RE01B	R7F0E01BD2DNB
RE	RE01_1500KB	R7F0E014D2CFB, R7F0E014D2CFP, R7F0E015D2CFB, R7F0E015D2CFP, R7F0E016D2DBN, R7F0E017D2DBN

RE01_256KB R7F0E01082CFM, R7F0E01082CFP, R7F0E01082DBH,
R7F0E01082DBR, R7F0E01082DNG, R7F0E01182CFM,
R7F0E01182CFP, R7F0E01182DBH, R7F0E01182DBR,
R7F0E01182DNG

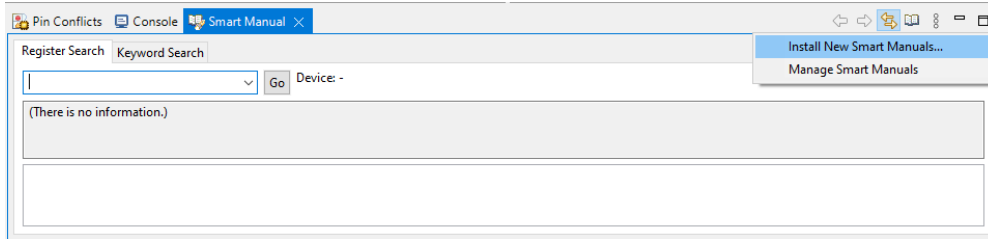
3. Smart Manual Support

Smart manual support is delivered independently of e² studio releases when available. The following devices are available as of January 2023:

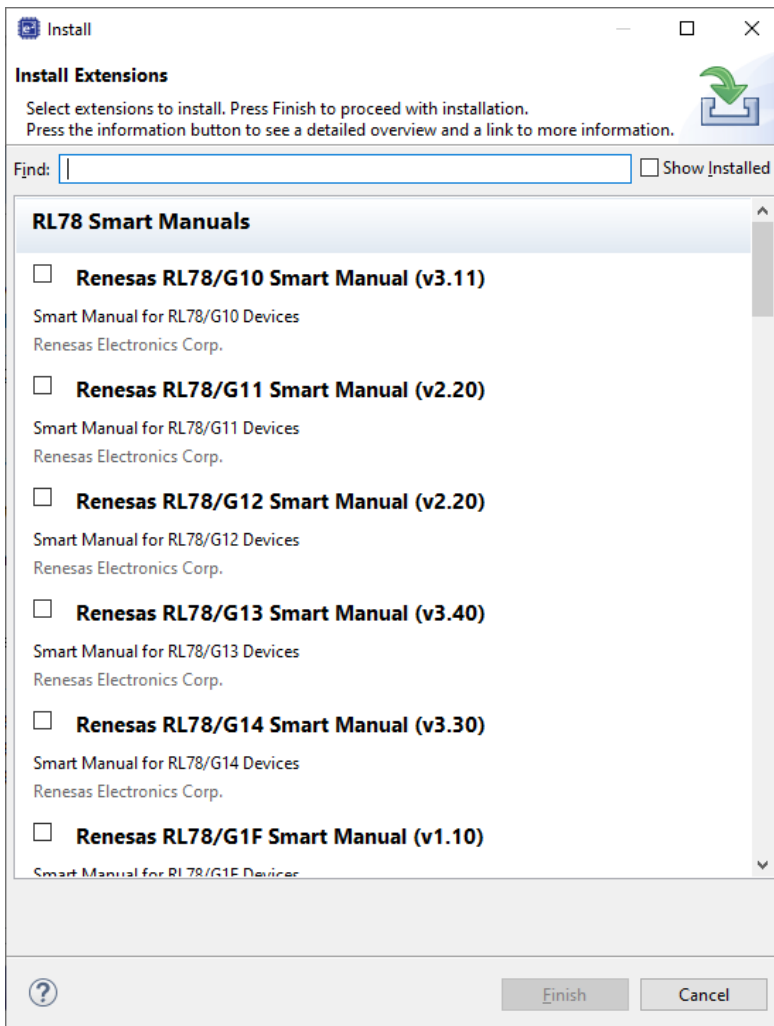
- RX110
- RX111
- RX113
- RX130
- RX13T
- RX140
- RX210
- RX220
- RX230
- RX231
- RX23E-A
- RX23W
- RX24T
- RX24U
- RX26T
- RX62G
- RX62T
- RX631
- RX63N
- RX63T
- RX64M
- RX651
- RX65N
- RX660
- RX66T
- RX66N
- RX671
- RX71M
- RX72M
- RX72N
- RX72T
- RL78/G10
- RL78/G11
- RL78/G12
- RL78/G13
- RL78/G14
- RL78/G15
- RL78/G16
- RL78/G1F
- RL78/G22
- RL78/G23
- RL78/G24
- RL78/L12
- RL78/L13
- RZ/A1H
- RZ/A1L
- RZ/A2M
- RZ/T1
- RZ/T2L
- RZ/T2M
- RZ/N2L
- RA2E1
- RA2E2
- RA2L1
- RA4E1
- RA4E2
- RA4M2
- RA4M3
- RA4T1
- RA6E1
- RA6E2
- RA6M4
- RA6M5
- RA6T2
- RA6T3

To view the Smart Manual support in e² studio please use the following method:

1. Please open the Smart Manual view. Available on the Renesas Views->Solution Toolkit->Smart Manual menu from the Menu bar.
2. Then use the “Install new Smart Manual...” option seen in the figure below:



3. A dialog is then displayed which shows all available Smart Manuals.

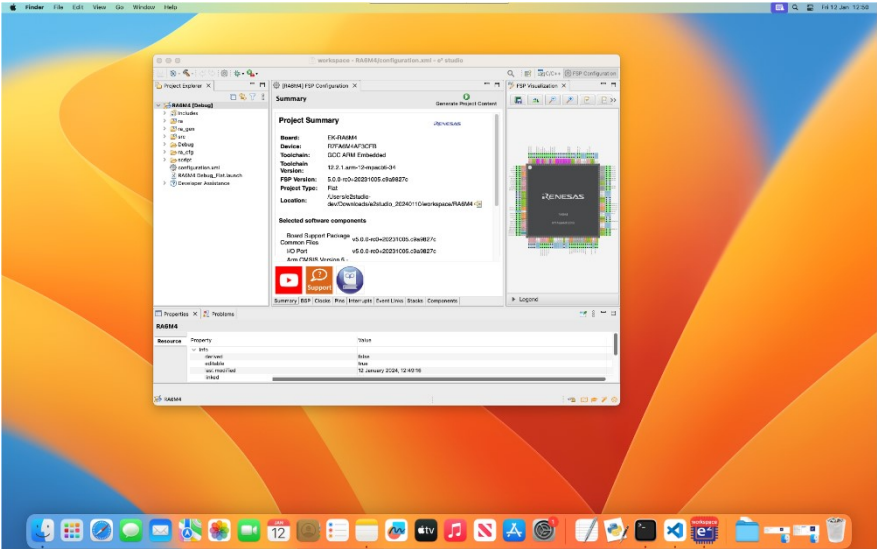
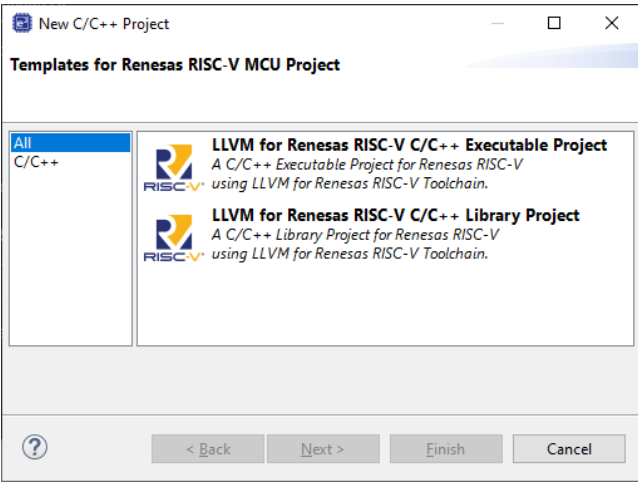


4. Patch notes for 2024-01.1

Two problems were noted with the 2024-01 release. We have fixed these and replaced 2024-01 with 2024-01.1. The following information details the fixes made to 2024-01.1.

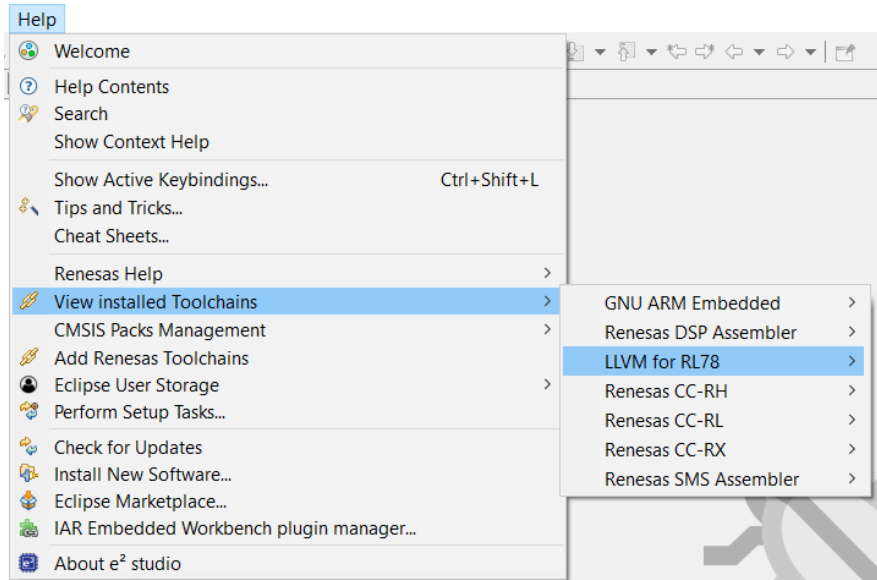
Component	Device	Description
Installer	RX, RL78	<p>In 2024-01 when only installing the RX or RL78 device family in the installer, if also selecting the Reality AI components it will cause the installation to fail.</p> <p>If you select all the device families for installation, then this error did not occur in 2024-01.</p>
FSP Smart Configurator	RZ, RA	<p>When using the FSP Smart Configurator for RA and RZ it is possible to trigger the "Changes in the CMSIS Packs folder have been detected" message.</p> <p>When this happens pressing Yes or No makes no difference to the system as the reload message is being triggered incorrectly.</p> <p>In e2 studio 2024-01 this can be seen frequently when you have 2 e2 studio instances running.</p>

5. What is new in this release?

Component	Device	Description
		<p>e² studio now supports Mac OS.</p> <p>The only supported families for this release are RA and DA.</p> <p>The officially supported Mac OS version for this version is macOS 13. (Ventura)</p>
Application	DA, RA	
		<p>The RISC-V MCU Device family is now supported. The first device is the G021.</p> <p>The RISC-V LLVM toolchain is supported:</p> <p>Supported debuggers are E2/E2 Lite and Segger J-Link.</p>
Application	RISC-V MCU	
Application	All	<p>It is now possible to quickly access Toolchain user manuals from the help menu.</p> <p>A new feature has been added to open the documents folder of the</p>

currently installed toolchains.

Currently this is only implemented for the LLVM for RL78 toolchain. Other toolchains will be added in subsequent releases.



The Smart Configurator for RL has been updated to V1.9.

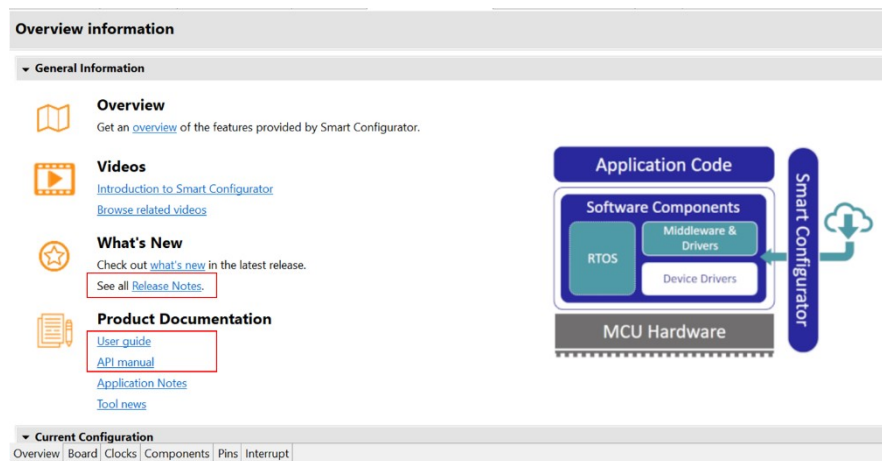
* BSP (Board Support Package) revision update

BSP rev1.62 is supported and will be added as the default BSP when creating Smart Configurator project.

* UX improvement on [Overview]page

- Added a new link to "See all Release Notes"
- Changed "User manual and release note" to "User Guide" link
- Added "API manual" link

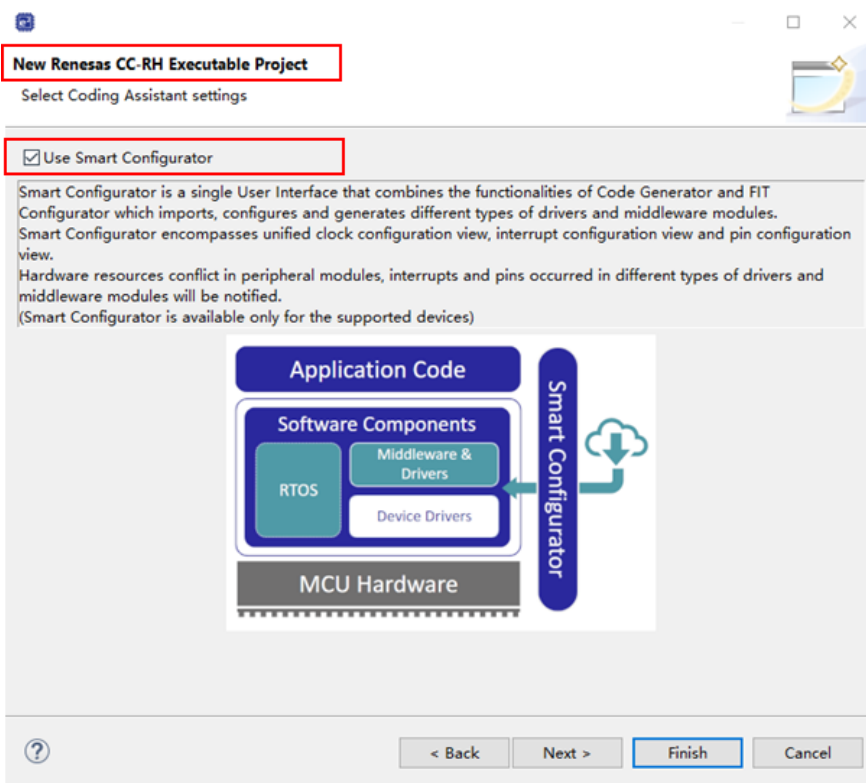
Smart Configurator RL



The Smart Configurator for RH (version 1.10) has been added to e² studio.

* Smart configurator can now be selected when creating a Renesas CC-RH Executable Project.

Smart Configurator RH



ARM GCC Builder RA, DA

A new GCC build option was added for the ARM family in GCC version 12. This is -Oz, optimize aggressively for size.

DA Importer DA

DA supported device list has been expanded to include:

- * DA14531
- * DA14531-01
- * DA14535
- * DA14533
- * DA14585
- * DA14586

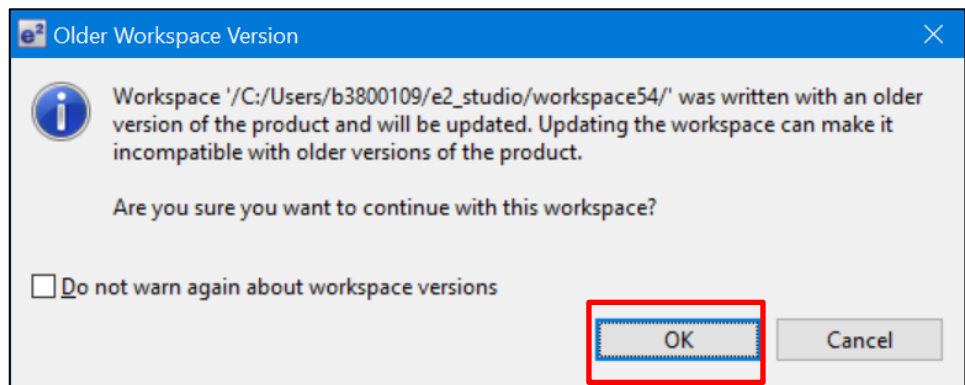
6. Useful workarounds and information for this e² studio release

Please visit the Renesas FAQ for e² studio for the latest up to date information:

[Online FAQ link.](#)

ID	Component	Workaround or information
	Application	When using the check for updates feature within e ² studio and updating from 7.0.x to 7.1.x the initial restart after the update fails. An error message is displayed. Subsequent launches of e ² studio work without issue. This is caused by the update to Java.
	SH support	The Renesas SH device family is no longer supported in e ² studio. If you need to use the SH device support, please use e ² studio 5.4 or earlier.
	Importing old projects into 6.x	All projects being migrated into the latest e ² studio from e ² studio 5.4 and earlier versions will need to be migrated to the new builder plugins. The new builder plugins have different user interface pages and different option IDs.

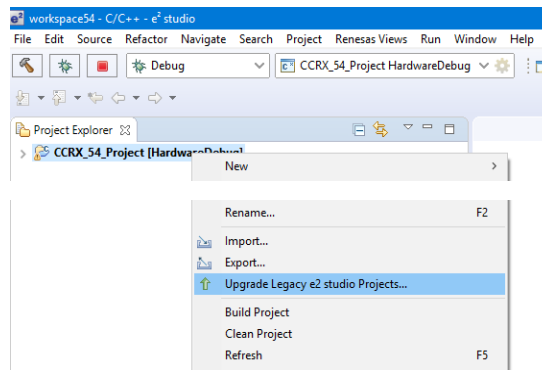
Upon opening an older workspace, the following dialog would be displayed:



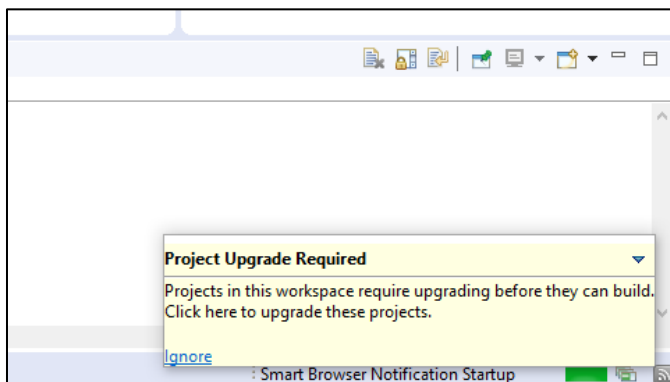
Clicking OK will update the workspace to the newer e² studio.

Importing an existing project to the workspace or opening a workspace with old projects will automatically start the legacy project upgrade procedure.

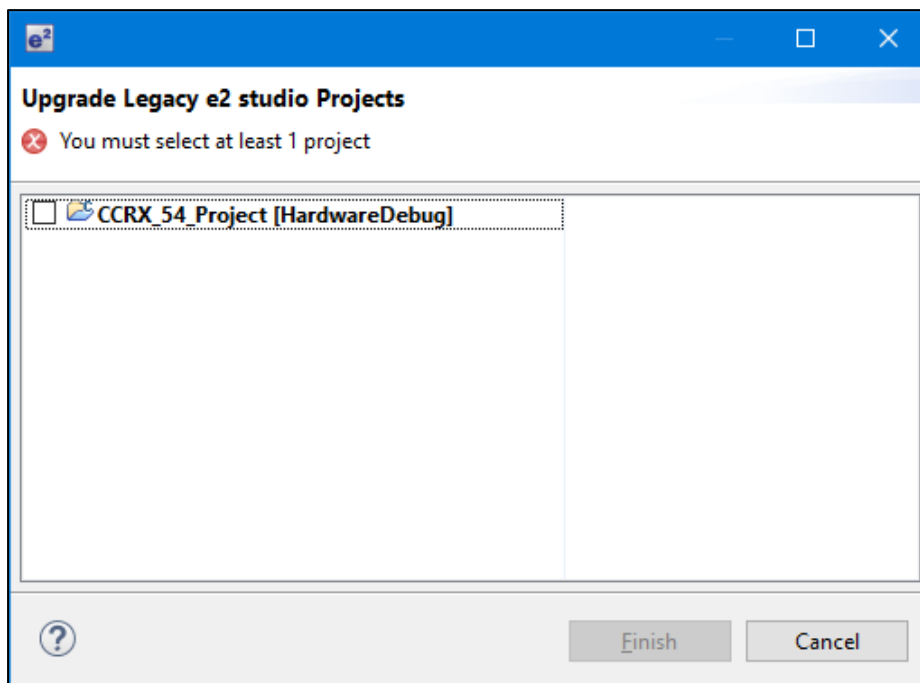
If for some reason this process does not start it is also possible to launch the “Upgrade Legacy of e2 studio Projects...” from the project context menu.



The automatic system pops up a message bubble in the bottom left of the e² studio application window.



After selecting the menu item or clicking the bubble the following dialog will be shown:

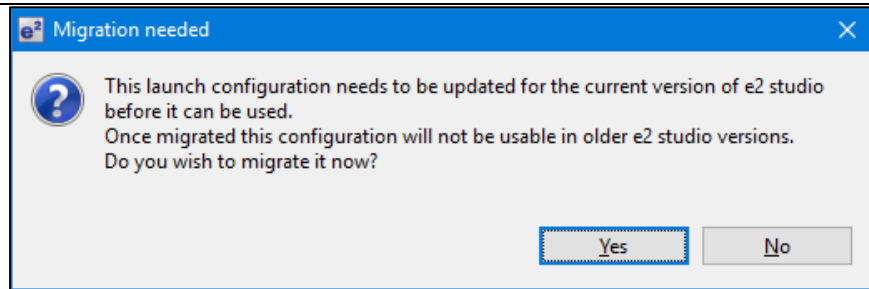


To upgrade the project, click the corresponding check box and then click Finish. Note, this will update the project to the latest build plugins and options. Before doing this, you should ensure your project is backed up as this operation is not reversible.

It is possible to upgrade multiple projects in a single operation.

For the GCC toolchains for RX, RL78 and GNUARM-NONE have been made to the build options which mean we cannot guarantee the same binary output after upgrade. Please consider this before upgrading.

Another consideration for migration is that debug configurations when opened in 6.0 will also need to be migrated. The following message will be displayed.



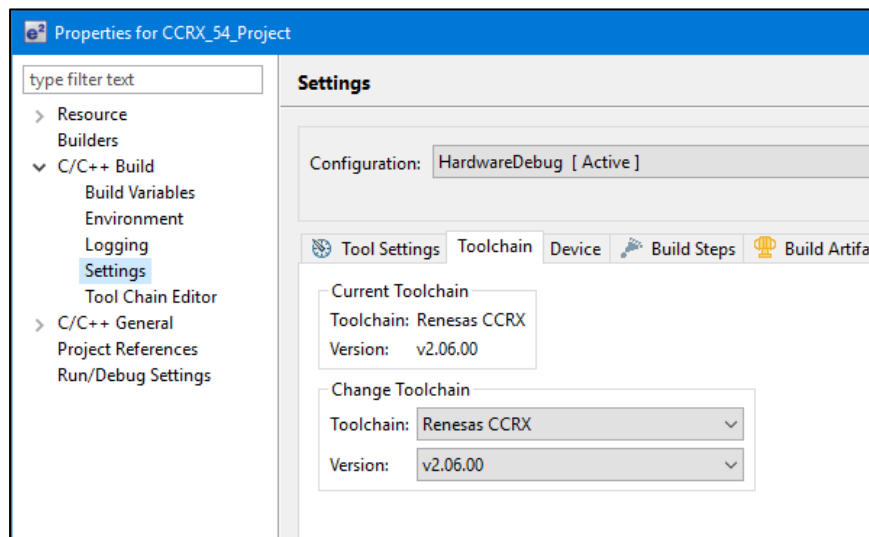
Please ensure that your projects are backed up or in revision control before migration allowing you to return to older versions if required.

Toolchain Management

Before e² studio 6.0 the toolchain management facility automatically upgraded or downgraded the imported project to the latest tools installed on the host machine.

This no longer happens in the latest e² studio. Instead the toolchain remains the same and user operation is the only way to change the toolchain version.

This operation is now available within the build settings on the toolchain tab. An example of CCRX is shown below:



If the particular toolchain version does not exist and build is performed, then an error message is displayed, and the build will fail.

RZ Toolchain

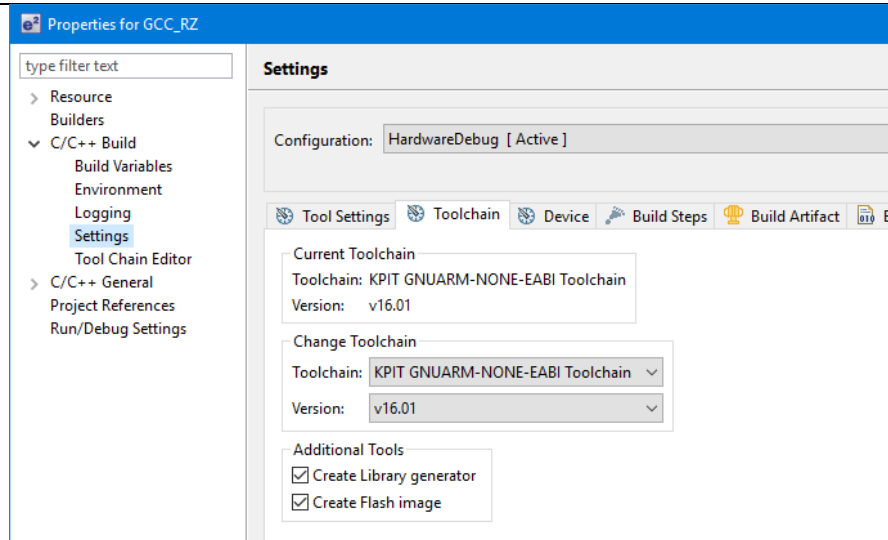
The now legacy KPIT GNU ARM-NONE toolchain is still supported within the e² studio product but now using the gnuarmeclipse plugins.

In addition RZ within e² studio now supports the GNU ARM Launchpad toolchain. Available from <https://launchpad.net/gcc-arm-embedded>.

One drawback of this toolchain is that it does not have a standard library builder provided in the same manner as the legacy KPIT ARM-NONE toolchain. To use this feature for ARM Launchpad and gain access to the more efficient optlib libraries a further download is required.

This can be downloaded within the e² studio installer or directly from here: <https://lvm-gcc-renesas.com/rz/rz-download-toolchains/>

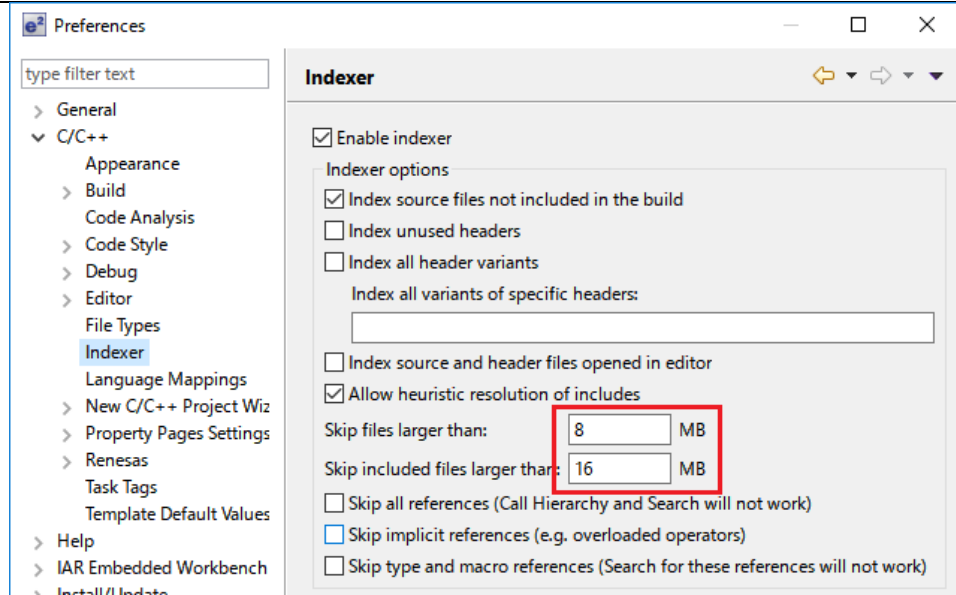
Once integrated it is possible to integrate the library generator from the toolchain tab of the build settings page.



See “Create Library generator” option. Once checked the library generator (libgen) is added to the available tool settings.

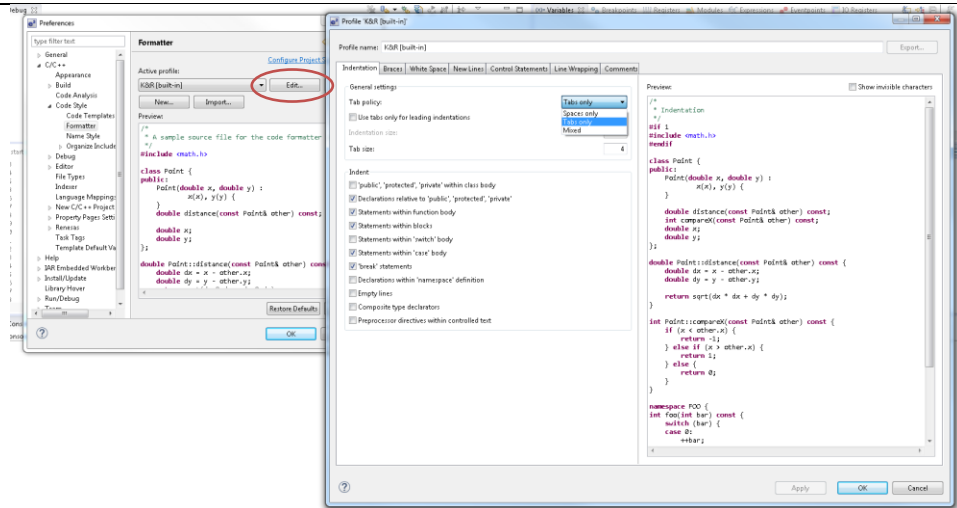
QE compatibility	If QE for TCP/IP V1.0.0 is used, please update it to V1.0.1. Other QE series can be used with e ² studio 6.0.
	<p>What is QE? https://www.renesas.com/qe</p>
	<p>Details of QE for TCP/IP https://www.renesas.com/qe-tcpip</p>
5954 Application	<p>If you experience the error message “org.eclipse.swt.SWTErrror: No more handles” this can be caused by certain multi-monitor software and the Eclipse framework.</p> <p>If this error occurs there are 2 workarounds:</p> <ol style="list-style-type: none"> 1. Use a single monitor display. 2. Uninstall the multiple monitor software from your graphics chipset vendor and revert to the standard Windows multi-monitor feature.
6981 RL78 Debugging	<p>When debugging IAR C source file with an OCD emulator (E1), the Monitor program area (0x00002-0x00003) is used.</p> <p>Therefore, this area must be excluded from usable address space. Please add '-HFF' in the linker option.</p> <ol style="list-style-type: none"> 1. Open Property. 2. Select [C/C++ build]-[Settings] at left side. 3. Select 'IAR RL78 Xlink linker' at right side, add '-HFF' at the textbox 'command'. <p>Not doing this will cause problems with connection and download when using interrupts.</p>
NA Application	<p>If you are experiencing slow building of projects within e² studio there are some possibilities to improve.</p> <p>The system environment will attempt to find the make.exe tool via the system environment. If you ensure the directory, make resides in is at the start of the path variable it will find it more quickly. Especially important if there are network drives in the path.</p>

		In the project properties, C/C++ Build tab, behavior tab you can switch on parallel build. This will take advantage of the multi-cores on your host machine if it has them.
NA	RZ GCC	<p>In 3.0 the KPIT GCC RZ toolchain was supported at version 14.01. This version is no longer supported within e² studio.</p> <p>KPIT modified the name of their ARM toolchain to be ARM-none-eabi to follow standard ARM naming convention like other GCC toolchain vendors.</p> <p>The ARM-none toolchain is available at versions 14.01, 14.02 and 16.01 from the www.gcc-renesas.com website. The binaries in the 14.01 version are identical to those used in the 14.01 RZ toolchain.</p> <p>Once the toolchain is installed your projects will be imported and ported to ensure there is as little disruption as possible due to this change.</p>
NA	KPIT GCC	<p>The KPIT toolchains are now no longer supported by the www.kpitgnu tools.com website. Support is now available from the llvm-gcc-renesas.com website.</p> <p>In addition, there are two new releases for the GNU toolchains for RX and RL78. These are now named Renesas GCC for RX and Renesas GCC for RL78.</p> <p>Both integrate into e² studio and can be selected from the project wizard.</p>
1922	Application	<p>Symptoms: Project fails to build in first instance after archive project import (not from HEW)</p> <p>Conditions: If an archived project is imported, it may fail to build the first time, due to a residual .d file.</p> <p>Workaround: Clean and Build a second time.</p>
2762	CODAN	<p>When using assembly code within a C source file, CODAN errors can be observed in the editor. Even though the project builds successfully, or even after rebuild index.</p> <p>Indexer buffer can be insufficient to process whole project. Please try giving larger values for the following configurations.</p> <p>Open preferences dialog through “Window”->” Preferences” menu. In “C/C++” -> “Indexer” tree, you will indexer configuration as shown below:</p>



Put larger values for each red-framed variables, then rebuild project or rebuild index.

2728	GDB	<p>Step into does not always work when using the CC-RX 1.02.01 toolchain.</p> <p>To ensure this behaves correctly you will need to use CC-RX 2.00.00 or greater as this issue with the debug information is corrected in this release.</p>
NA	Eventpoints	<p>If eventpoints do not always work just after they are set, you can use the "Apply to Target" toolbar button in the Eventpoint view to send the Eventpoints to the target manually. This will always ensure the debugger target has all the required eventpoint updates before execution starts.</p>
5772	IAR Plugins	<p>The IAR Plugin Manager is included in e² studio and provides support for RX, RL78, RH850 and RZ (ARM).</p> <p>This tool simplifies installation and configuration of IAR toolchain plugins. You can access this through Help -> IAR Embedded Workbench plugin manager.</p>
6184	RL78/CC-RL debugging	<p>When the load module for RL78/G10 which created at CC-RL is debugged in E1, please specify the following option:</p> <p>[Linker] -> [Device] -> "Set enable/disable on-chip debug by link option"</p>
7217	Application	<p>The restore default settings does not restore all the options set during project generation. Instead, it sets the defaults to the base settings for the device family in use.</p>
7524	RZ/T1 Debugging	<p>In a RZ/T1 RAM-based project, the "Reload" function does not work.</p> <p>Reloading or re-downloading during debugging resets the device and the RAM content is erased.</p> <p>To continue the debugging, disconnect and connect the debugger again.</p>
	Use spaces as tabs	<p>Eclipse and CDT both have settings for use spaces as tabs. The option on the Editor preferences page conflicts with the CDT formatter settings.</p> <p>To change the use spaces as tabs option in e² studio please use this page:</p>

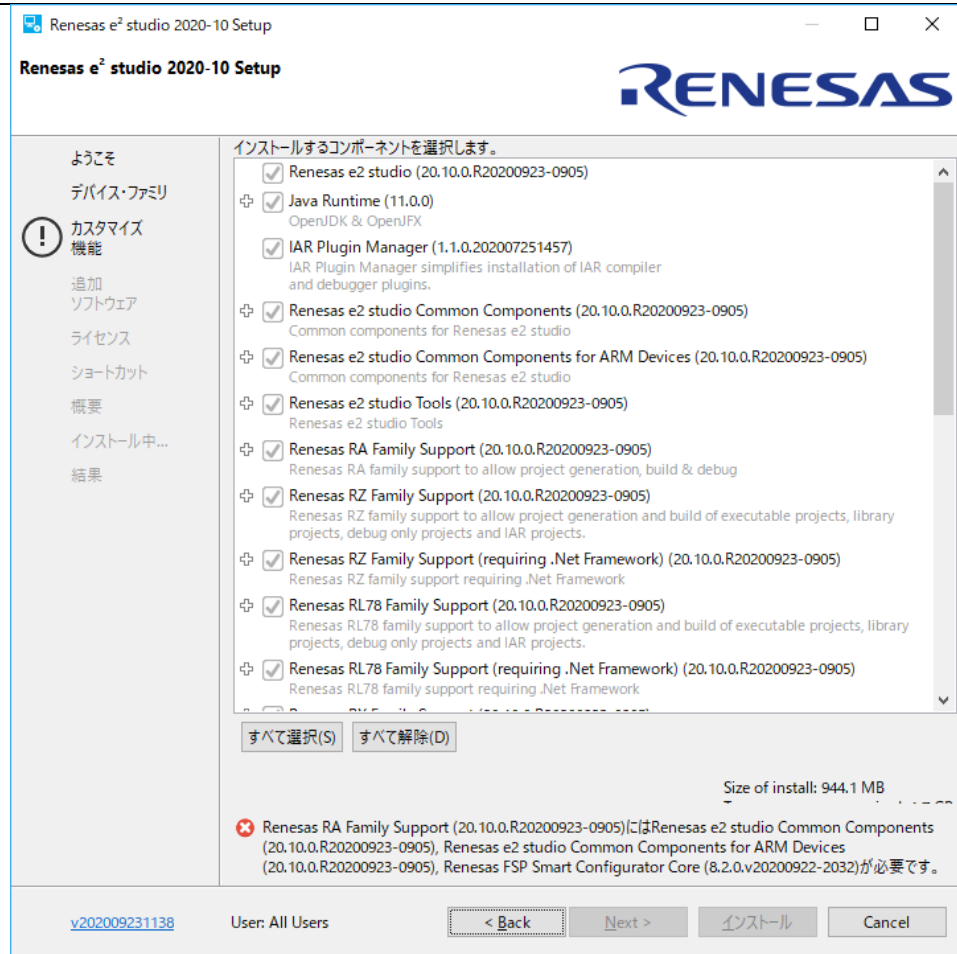


<p>Installer problems</p>	<p>In some situations, the AVG virus checker appears to interfere with the e² studio installation process. If you experience such a problem, please temporarily disable the AVG tool and try the installation again.</p>
<p>Antivirus</p>	<p>In some situations, the Norton anti-virus tool can interfere with the building of Renesas Synergy projects. If possible, please disable the antivirus program when building Renesas Synergy projects on systems with Norton Antivirus installed.</p>
<p>Green Hills RH850 Projects</p>	<p>When debugging the RH850 object built with the Green Hills compiler in e² studio, specify the following option for the compiler option: -gtws</p> <p>The GUI setting menu is as follows. [GHS C Compiler for V800 Standalone]-[Debugging Option] "Generate Target-Walkable Stack" -> On</p> <p>If this option is not specified, Step Over and Step Return may not work properly.</p>
<p>17052 Debugging</p>	<p>When debugging using a project with duplicate filenames that are in different source folders problems can be seen with breakpoint setting.</p> <p>When a breakpoint is set at a source line in this file it will also stop at the same source line in the other same named file when execution passes through.</p>
<p>18505 RZ debugging</p>	<p>When debugging with RZ/T1 in certain situations you may experience problems stepping:</p> <p>If the following conditions are met:</p> <ol style="list-style-type: none"> 1. Code is located close to address 0x0 2. There is very little library code included into the project 3. There are unused functions in the program <p>The possibility arises that the code cannot be debugged. This due to --gc-sections linker option which removes the unused functions but not the related debug information.</p> <p>There are several solutions to this problem:</p> <ol style="list-style-type: none"> a. disable --gc-sections until those functions are used b. remove the unused functions

RZ GCC Build	<p>In the latest e² studio, the RZ import functionality has been improved. However, there are still possibilities of older projects causing problems when imported into e² studio.</p> <p>In older versions of the RZ build plugins the FPU option was not being handled correctly. When setting the “Soft” Floating point ABI the command line was still receiving <code>-mfpu=vfpv3</code> incorrectly. This can now cause problems with older start-up code in older RZ projects.</p> <p>After import if you see an error relating to this please add <code>-mfpu=vfpv3</code> to the “Other Assembler Flags” page of the Assembler tool.</p> <p>In addition, when migrating some RZ/A1 projects you may experience import problems unless you build the project in 5.4 first.</p>	
RZ DS-5 Project Import	<p>When a DS-5 project is imported into e² studio the environment variables for Path and TCInstall are copied from the DS-5 environment.</p> <p>This is not correct. The way to correct this problem is to delete both paths and replace them with correct values to your toolchain. If you are unsure how to correct this, please create a new project and copy the values from this to the converted project.</p>	
RX & RL78 GCC Project Import	<p>When importing a KPIT RL78/RX Library C/C++ project from e² studio 5.4 or before the build artifact settings are not correct.</p> <p>The output prefix should be set to “lib” but is in fact empty.</p>	
RZ/G debug	<p>In the case of debugging Linux application for RZ/G, the following error messages are shown in GDB server console when pushing [Step in] button or [Step Over] button.</p> <p>These messages can be ignored because the Step debugging should work properly even with these messages.</p> <p>Examples of error messages:</p> <pre>PassthroughTargetCommunication::sendResponse error 42 46 PassthroughTargetCommunication::sendResponse error 10 15 PassthroughTargetCommunication::sendResponse error 42 46</pre>	
21863	RX & RL78 Debugging	<p>In previous releases there were some problems with stepping in some situations when using the CCRX and CCRL toolchains.</p> <p>A fix has been made to the debug object converter. To see this improvement please clean and rebuild the project. The debug information will then be updated, and the stepping will be more correct and reliable.</p>
Code Generator registration	<p>When using multiple installations of e² studio on your machine you may find that subsequent installations do not work correctly with the code generator.</p> <p>The effect is that the code generator cannot be created or added to projects. Existing projects can be used by the code generator views appear empty.</p> <p>If this is the case, then the code generator must be manually registered. To do this execute the following tool:</p> <p>e.g.</p> <pre>C:\Renesas\e2_studip\eclipse\plugins\com.renesas.cg_2.11.0.v20180601-1047\CodeGenerator\Tools\register COM.bat</pre>	

25278	Synergy debugging	<p>When loading Symbols from multiple .elf files compiled using the IAR toolchain, the user will need to add ".text" before place in FLASH_region command inside the .icf Script.</p> <p>e.g.</p> <pre> .text": place in FLASH_region { block LOCK_LOOKUP, ro, ro section .rodata, block QSPI_NON_RETENTIVE_INIT_BLOCK, block RAM_INIT_CODE, block USB_DEV_DESC_BLK }; </pre>
25273	RZ Device Migration	<p>When changing the device from a RZ/A1 and attempting to swap to a RZ/T1 the device migration is not successful.</p> <p>The source code is not migrated successfully, and the build fails. This is due to the different start-up code structure between these devices.</p> <p>In this case please create a new project and copy the required source to the newly created project.</p>
25195	RZ/A2M Smart Configurator	<p>When creating a project of RZ / A2M, the following Warning is displayed in the Problems view for the src / renesas / configuration folder.</p> <p>"Invalid project path: Include path not found"</p> <p>[Workaround]</p> <p>Delete the specification of this folder with the compile option include path setting.</p>
24883	R2/A2M	<p>RZ / A2M project generated by e² studio does not support GCC ARM 7.x or later. Please use GCC ARM 6.3.</p>
27913	GDB server RL78	<p>When debugging with an EZ cube, real-time refresh significantly slows down debugging features and it makes e² studio look like suspended.</p>
12123	Linker Script Editor	<p>The Linker Script Editor may report errors when using some Wild Identifiers such as 1file.o and *filename.o .</p> <p>Although these are valid file names and valid identifiers according to the Linker Script syntax, they need to be quoted when using the Linker Script Editor.</p> <p>(e.g. "1file.o" and "*filename.o").</p>
RZ/G Linux Platform Tools	<p>When using RZ/G Linux Platform Tools, gnu.io.rtxx plug-ins should be installed same as Nebula plug-ins.</p> <p>Please follow the below steps to install gnu.io.rtxx plug-ins.</p> <p>Start the e² studio and select [Help] -> [Install New Software] from the menu bar to open the [Install] dialog box.</p> <p>Click on the [Add] button, enter "GNU RXTX Plugin Update Site" as a name and "http://rtxx.qbang.org/eclipse/" as a location, and click on the [OK] button.</p> <p>Select [RXTX 2.1-7r4] -> [RXTX End-User Runtime] from the list, click on the [Next] button, confirm the license, and install the plug-ins.</p>	

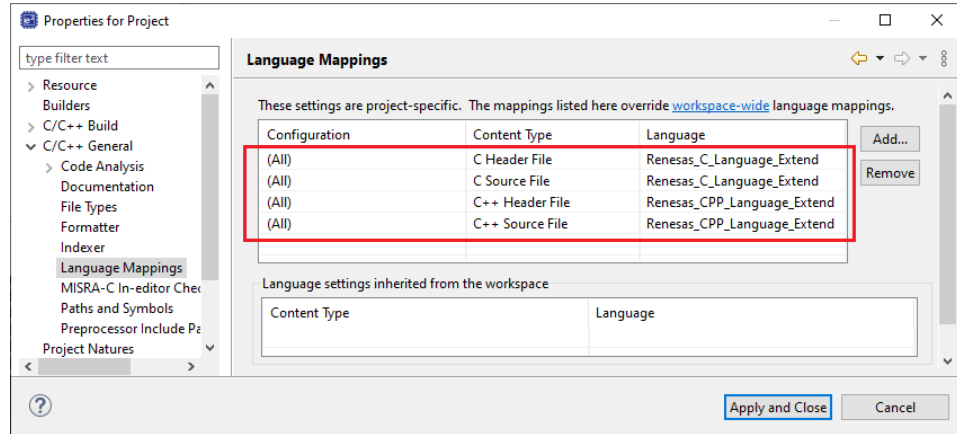
32564	MyRenesas	<p>Due to differences in the login data between 7.8 and the 2020-04 e² studio (or later) version the FreeRTOS download feature does not work in 7.7/8 if the user has logged into MyRenesas or changed their login data details using 2020-04. If you previously used 7.7/8 prior to using 2020-04 and have not changed your login details, then both versions will work correctly.</p> <p>If you need to use MyRenesas in older versions of e² studio after logging in using 2020-04 then you will need to close all e² studio instances and delete the file "%USERPROFILE%\eclipse\org.eclipse.equinox.security\secure_storage". Be aware that doing this will remove stored passwords for any Eclipse-based application.</p>
32543	QE	<p>When updating e² studio versions using an installer any installed QE tools are removed and then must be reinstalled. To preserve QE tools during an update use the "Check for Updates" function in the "Help" menu to perform an in-place online update.</p>
30613	RH850	<p>When viewing flash memory in the Memory View, it can be confusing as the values for this memory type can be random for unwritten blank flash memory regions.</p> <p>This can then result in many false positives for memory changes, resulting in more memory changes than expected. (red text)</p> <p>To fix this the debugger supports detection and filling of blank addresses areas with a user specified hex byte value.</p> <p>There is currently no user interface support for this feature. So, you need to add the following command parameters to the additional commands section of the debug configuration. The GDB command line option is: - uBlankFlashFill=BB with the blank fill value being 0xBB. Specifying this value enables the feature, by default it is off.</p>
37443	RA (Linux)	CMSIS Pack Import feature does not work for RA on Linux
36999	RA	Deleting the Debug folder from an NS project causes build failure when reference NSC guard functions.
36007	RA	<p>When debugging a secure and non-secure project - the Non-secure callable functions do not have debug information.</p> <p>This means you cannot set breakpoints in the secure function.</p>
35767	RA, RZ (Linux)	When importing an image using the "Image" Rendering on Linux Host the action fails. If you need to import an image on Linux please use the Raw Image memory rendering instead.
38324	RA	<p>When upgrading an e² studio 2020-04 or 2020-07 containing RA Family support to 2020-10 or later using the installer you may encounter on the features page.</p> <p>To avoid this, you either need to re-select RA on the Device Family selection page or uncheck and check again "Renesas FSP Smart Configuration Core" on the Features page.</p>



<p>IDE- 39932</p>	<p>RX</p>	<p>The Renesas ITRON debug views is only supported with e² studio 32bit version such as 7.8.0 currently. Enabling the Renesas ITRON debug views on e² studio 64bit version is under planning.</p>
<p>IDE- 42025</p>	<p>RL78</p>	<p>After conversion of legacy GCC projects to LLVM, the generated linker_script and start.S files should be moved to src folder. "generate" folder needs to be deleted and the path to the linker script from Settings-> Linker-> Linkerscript should be change to "\${ProjDirPath}/src/linker_script.ld"</p>
	<p>RA</p>	<p>When migrating from FSP versions before 3.0 the way pin configuration files are handled has changed. Previously the projects maintained ".pincfg" files within the project directory which contained the pin data. When migrating to FSP 3.0 and the subsequently saving the migrated configuration.xml the pin data is migrated from these files to the configuration.xml file. The ".pincfg" files will still appear in the pin tab until they are subsequently removed.</p>
<p>IDE- 44277</p>	<p>All</p>	<p>From e² studio 2021-07 the RTOS debugging integration has been switched off by default due to some debug stability problems. This feature can be unstable with some RA projects. If you wish to switch this back as it may work for you, you can do so from the debug configuration settings pages. This can be accessed via the Run->Debug Configurations menu item or via the project context menu Debug As->Debug Configurations.</p>

IDE-43524

Symbols of inline assembler instruction could not be resolved on C/CPP standard language. They can be resolved on Renesas C/CPP Language Extend. +Renesas C/CPP Language Extends are added in Language Mappings of new project on e² studio v2021-07. +Renesas C/CPP Language Extends need to be added manually, if old project is imported to e² studio v2021-07.



IDE-43405 RA, Synergy

Microsoft have updated and improved the TraceX tool which can now be downloaded from the Microsoft Store. If you are using a new version of TraceX when configuring the tool, ensure you have checked the "Use TraceX installed from Microsoft Store" option. If you are using an older version, then uncheck this box. The configuration dialog is available in the preferences dialog. (Window->Preferences) (Renesas->TraceX category)

IDE-34814 RL78, RX

The CCRX and CCRL build components now support multiple output formats for Converter tool instead of one format as previous version. If you migrate an old project to the new e² studio and then return to the old e² studio with the old output format. You will need to modify the settings as desired.

IDE-43454 RA, RZ

The Linux installer for e² studio cannot be run as root by default, including using "sudo". If you wish to run it as root, then you need to add "--appimage-extract-and-run" as the 1st argument. e.g., "sudo ./e2studio_installer-2021-07.AppImage --appimage-extract-and-run"

IDE-47790 RH850

Synchronous mode is supported in e² studio 2022-01 for debugging RH850 multi-core devices.

There is no need to manually switch between synchronous mode and asynchronous mode, and the mode automatically switches to the optimum mode depending on the debug operation.

Basic specifications for mode switching:

When all cores are stopped and [Resume All], the operation mode becomes synchronous mode.

Resume for one core switches to asynchronous mode and continues in asynchronous mode until all cores have stopped.

Always use sync mode under the following conditions:

* In that case, the operation of the [Resume] button will be the same as the operation of the [Resume All] button.

- Software breakpoint has been set.
- Connected with a hot plugin connection.
- Connected with a Initial Stop State debugging enabled.

Synchronous mode specifications:

- The [Resume All] button executes all cores.
- When a core is suspended due to a breakpoint or the [Suspend] button, all cores are suspend.
- For the [Step Into] button, all cores will step in.
- For the [Step Over] button, all cores will be executed. Then, when the currently active core completes the step over execution, all cores will be suspend.
- For the [Step Return] button, all cores will be executed. Then, when the currently active core completes the step return execution, all cores will be suspend.

Asynchronous mode specifications:

- [Resume] button executes the currently active core.
- Suspend on one core due to a breakpoint or the [Suspend] button does not affect the behavior of the other cores.
- Unable to set software breakpoints.

Specifications of each button related to execution control:

[Resume] button: Switch to asynchronous mode and run the core currently being debugged.

[Suspend] button: In asynchronous mode, stop the core currently being debugged. In synchronous mode, stop all cores.

[Resume all] button: Switch to synchronous mode and run all cores.

[Suspend all] button: Stop all cores and switch to synchronous mode.

Limitations:

- When use Step Into in synchronous mode, cores that are not debugged are also stepped, but the execution addresses of those cores are not reflected in the debug view. Check the register view for the correct PC value.

IDE- RX
48013

The following BSP packages have been removed from the RX Smart Configurator:

- r_bsp_gcc_v1.00.zip
- r_bsp_gcc_v1.10.zip
- r_bsp_gcc_v1.20.zip
- r_bsp_gcc_v1.30.zip
- r_bsp_iar_v1.00.zip
- r_bsp_iar_v1.10.zip
- r_bsp_iar_v1.20.zip
- r_bsp_user_v1.10.zip
- r_bsp_user_v1.20.zip
- r_bsp_user_v1.30.zip
- r_bsp_v3.80.zip
- r_bsp_v3.91.zip
- r_bsp_v4.00.zip

- r_bsp_v4.01.zip
- r_bsp_v5.20.zip
- r_bsp_v5.21.zip
- r_bsp_v5.40.zip
- r_bsp_v5.50.zip
- r_bsp_v5.61.zip
- r_bsp_v5.62.zip
- r_bsp_v5.63.zip
- r_bsp_v5.64.zip

To continue using the above listed BSP packages, please use the download function in Smart Configurator to download the exact version.

IDE-46896	GCC Plugins	<p>Projects imported from Windows fail when being built in Linux.</p> <p>If copying a project with its build output directory between Windows & Linux, or moving it to a new location, you need to do a clean and rebuild to avoid build errors.</p> <p>If storing a project under version control avoid including the build output directories. At a minimum exclude the *.d files which may contain system specific paths.</p>
FSP Smart Configurator	<p>When using the FSP Smart Configurator the linker script is now generated in the build configuration folder rather than the script folder.</p> <p>This change should be automatically picked up when the project content is generated from the FSP Smart Configurator tool. This should ensure that existing projects continue to work as expected.</p> <p>When using the IAR toolchain for your project this new behavior can cause issues. In this case the IAR linker uses the "memory_regions.icf" file available in the script folder rather than the script file generated in the build configurations folder. To work around this please delete the file present in the script folder, then the tool will use the file in the build configuration folder.</p>	
IDE-55553	RL78 GCC	<p>The RL78 GCC toolchain has been deprecated in favor of the RL78 LLVM toolchain. This toolchain offers much better performance and is recommended for new projects.</p>
IDE-59034	Synergy Configurator	<p>The Synergy Package view will need to be opened manually from version 2023-01 onwards, as it is not opened by default (since Synergy now uses a different Pin Configurator than in earlier e² studio versions). The Synergy Package view is named "Synergy Package (experimental)".</p>

Synergy Configurator	Renesas Synergy no longer supports Synergy Software Platform (SSP) version 1.x.
	<p>Only Synergy Software Platform (SSP) version 2.0 and later will be available for new Synergy projects. Existing Synergy 1.x projects will prompt to upgrade upon opening them in the Synergy Configurator, if a later version (2.0 or later) is available.</p> <p>This means that it is no longer possible to build SSP 1.x projects in e² studio 2023-01.</p>
Synergy Configurator	<p>The Pin Editor component for Renesas Synergy projects has been modified to use the same pin configurator as the RA device family.</p> <p>Any existing projects that were using the Synergy Pin Editor will have their projects automatically upgraded upon opening them in the Renesas Synergy Configurator.</p> <p>This will allow Synergy users to access the more advanced feature set of the RA pin configurator and enjoy an updated user experience.</p>
IDE-62045	<p>GreenHills</p> <p>Plugins for GHS Multi are no longer installed with e² studio. Please see the GHS Multi manual for instructions on how to install the plugins if you want to use them.</p>
IDE-61688	<p>Application</p> <p>Toolbar buttons with functions that are accessible via a menu item have been hidden by default for new workspaces. You can add them back via Windows -> Perspective -> Customize Perspective This change will not impact perspectives in existing workspaces unless the perspective is reset.</p>
IDE-56105	<p>FAA RL78 support</p> <p>For RL78 FAA LLVM project, FAA source level debug is not available. Please use Disassembly view for FAA debugging.</p>
IDE-66781	<p>Reality AI integration</p> <p>The base production URL of Reality AI is changed. So e2 studio 2023-01, 2023-04 and 2023-07 versions can no longer use Reality AI functionalities.</p>
IDE-59440	<p>Debugging RA</p> <p>Disconnect an RA board with the "Continue" option (allowing the user code to execute after disconnecting from JLink) does not work when using semihosting.</p> <p>To work around this, make sure you have conditional code for when the debugger is not connected, e.g.</p> <pre> semihosting_printf(...) { if (CoreDebug->DHCSR & CoreDebug_DHCSR_C_DEBUGEN_Msk) { printf(...); } } #ifdef semihosting #SAFE_PRINTF(...) semihosting_printf(...) #else #SAFE_PRINTF(...) printf(...) #endif </pre>

Additionally, the use of an updated hard-fault handler to catch this situation would also help.

IDE- 68935 Installer

Installation for all users and running e2 studio from the installer can cause problems with access to support files and workspace locations.

This issue occurs when a local administration user installs e2 studio and runs for the first time. If this user also creates a workspace, subsequent different users with lower privileges may experience problems when trying to open that workspace.

Depending on installation configuration you may see an error like "Error extracting synergy support files". To avoid this issue subsequent users should create a new workspace.

IDE- 69167 Installer

When installing the platform installer for RA on Windows you may experience issues with GCC toolchain compilation if e2 studio is installed in a long path.

Examples problems include not being able to find system include header files. The workaround for this issue is to install e2 studio in shorter directory structure.

e.g.,
c:\users\username\appdata\local\programs\renesas\e2_studio\toolchains\gcc_arm\arm-gnu-toolchain-12.2.mpacbti-rel1-mingw-w64-i686-arm-none-eabi
to
c:\renesas\e2_studio\toolchains\gcc_arm\arm-gnu-toolchain-12.2.mpacbti-rel1-mingw-w64-i686-arm-none-eabi

7. Linux version

7.1 How to install

For information on how to install the Linux product please refer to FAQ below.

English : <https://en-support.renesas.com/knowledgeBase/19934358>

Japanese : <https://ja-support.renesas.com/knowledgeBase/19934356>

7.2 How to run

- A. Run ‘terminal’ application of Linux.
- B. Move installed directory and Run ‘e² studio’ binary file.

7.3 Register toolchain to e² studio

7.3.1 GNU ARM Embedded

Install the GNU ARM Embedded toolchain to a shared folder as follows:

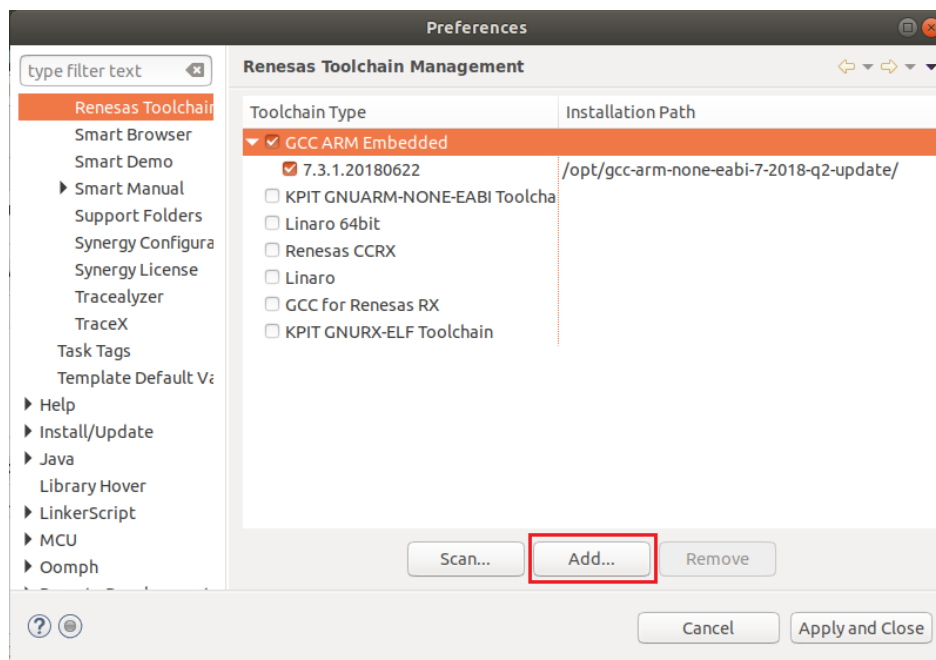
```
sudo mkdir -p /opt
```

```
cd /opt
```

```
sudo tar jxf ~/Downloads/gcc-arm-none-eabi-7-2018-q2-update-linux.tar.bz2
```

(assuming the toolchain has been downloaded to your Downloads folder)

On first invocation you will be prompted to specify a workspace location, you will also be advised that there are no new toolchains available for integration. Open the Renesas Toolchain Management preference page using the Help → Add Renesas Toolchains menu item, then click on the Add... button and navigate to the root folder of the GNU ARM Embedded toolchain installation at /opt/gcc-arm-none-eabi-7-2018-q2-update in order to register the toolchain with e² studio:



7.3.2 Linaro

- A. Download and extract a toolchain package file to arbitrary directory.
- B. Run 'e² studio' and select 'Help – Add Renesas Toolchains'
- C. Select 'Toolchain Type' and 'Add' Location of toolchain.

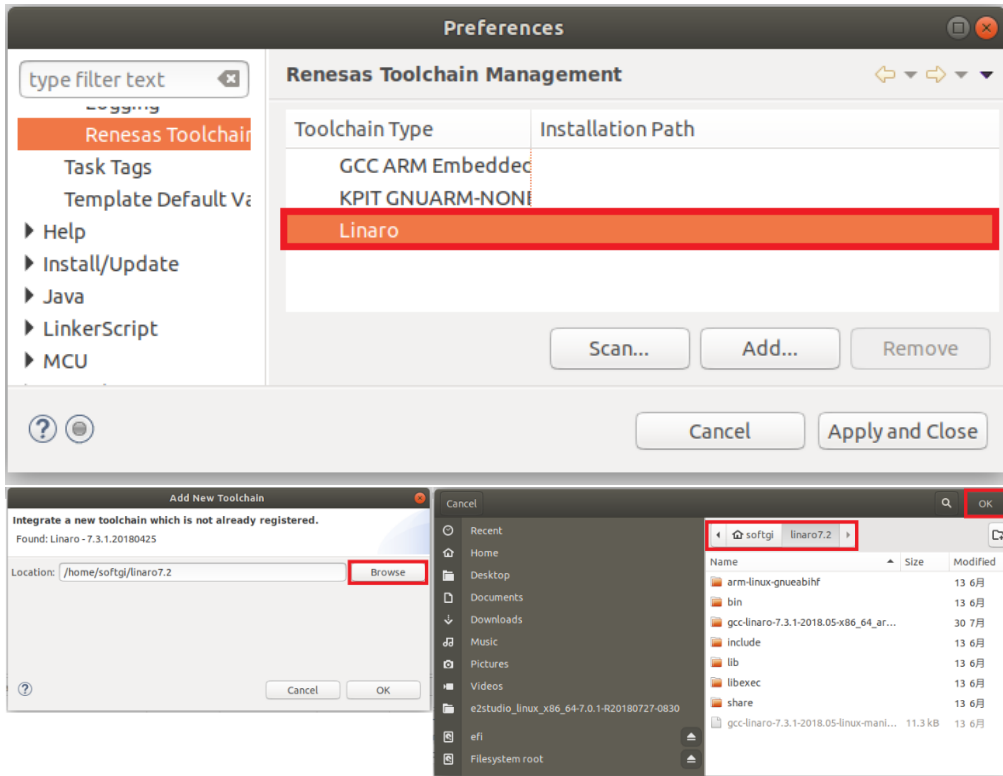


Figure 2. Register Toolchain: Browse toolchain location

- D. Click checkbox of added toolchain and restart e² studio.

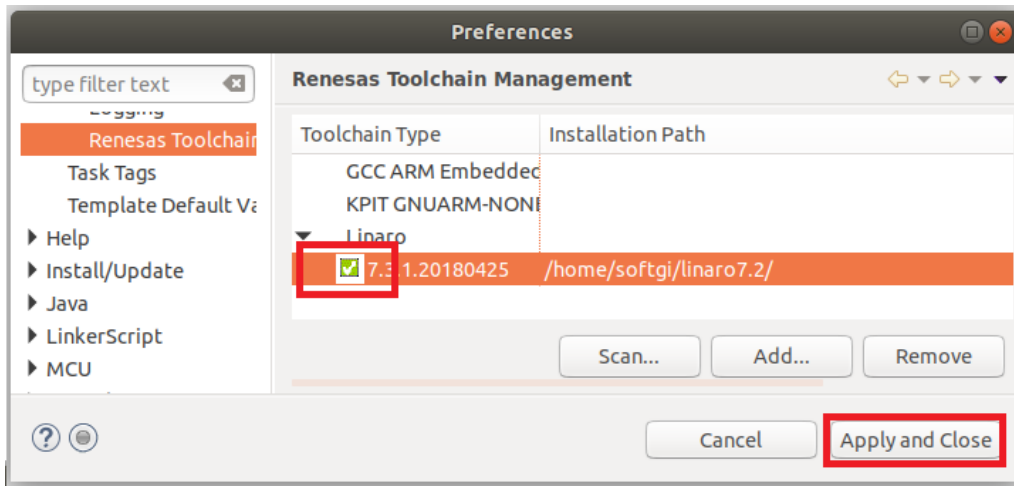


Figure 3. Register Toolchain: ex) Linaro

7.4 How to build and debug RA applications Overview

7.4.1 Build

Open the New project wizard and choose an RA project.

If this is unavailable it is likely the FSP has not been installed correctly. In this case, quit e² studio, reinstall the pack(s) and restart e² studio again.

Once the wizard completes a sample project will have been created, as well as a debug configuration for connecting the debugger.

7.4.2 Debug

Once the project has successfully built and produced a build artefact for debug, open the Debug Configurations dialog and a browse to the Renesas Hardware Debug section.

The debug configuration will match the project name – check that the settings are correct and hit Debug to connect to the device.

Checks if connection fails.

If the debug connection fails, it is often for one of two reasons:

1. If using a virtual machine, make sure that the device is tied into the VM rather than the host machine.
2. If the Segger library has not installed as part of the FSP correctly open the “/home/user/.eclipse/com.renesas.platform_XXXXXXX/DebugComp/RA/ARM/Segger” folder and copy and paste the 'liblinkarm.so' into the other Segger folders - e.g. 'Segger_v6.50.1'. Alternatively, take the latest file from the Segger Tools installation folder and install it in the same place.

7.5 How to build and debug RZ Linux application Overview

e² studio for Linux supports building and debugging Linux applications for devices of RZ/A Group and RZ/G Group. For debugging by GDB (the GNU Project Debugger), please add Linux programs gdb-server program to Linux file system of devices and run as background process automatically. (ssh-server, tcf-agent will be needed for connection between host system and target device.) For detail about building Linux image for RZ family devices, refer to embedded Linux wiki pages (<https://elinux.org>) or Renesas Rulz web pages about RZ family (<https://community.renesas.com/>). Descriptions in below is based on RZ/A1H case.

7.5.1 How to add gdb-server to RZ/A Linux root file system

- Build root file system of RZ/A1 Linux-4.9 BSP.
(path example: ~/rza_linux-4.9_bsp/, command example: ./build.sh buildroot)
- Move to 'buildroot-***' directory in 'output'.
(path example: ~/rza_linux-4.9_bsp/output/buildroot-2017.02)
- Run menuconfig (make menuconfig) and add gdb-server.
(Select 'Toolchain—Copy gdb server to the Target' menu)

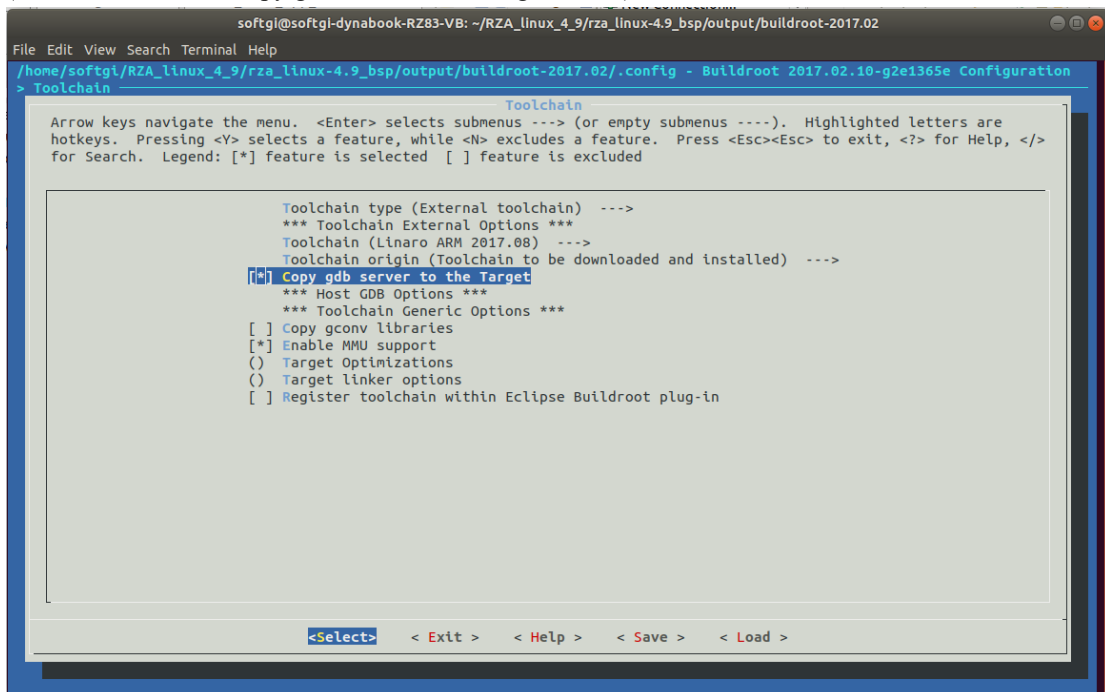


Figure 4. Menuconfig: set 'copy gdb server to the target'

- Move to 'target' directory in 'output' of 'buildroot-****'.
(path example: ~/rza_linux-4.9_bsp/output/buildroot-2017.02/output/target)
- Add new file with a line as command at '/etc/init.d' directory

```
File name: S51gdbserver
Command: /usr/bin/gdbserver --multi --remote-debug /dev/ttySC0
```

- Delete or disable below contents from etc/inittab.

```
# Put a getty on the serial port
# ttySC0::respawn:/sbin/getty -L ttySC0 115200 vt100 # GENERIC_SERIAL
```

- Move 'Linux-4.9 BSP root' (path example: ~/rza_linux-4.9_bsp/) and build root file system again. Download root file system at target device.

7.5.2 Linux C/C++ Project generation and build

- A. Connect target device which is run as Linux, via Serial port.
- B. Select ‘File – New - RZ Linux C/C++ project’ menu and make new RZ/A1H Linux C/C++ project. In phase of ‘RZ Linux connection settings’, the serial port which is used for connecting target device, will be selected automatically.

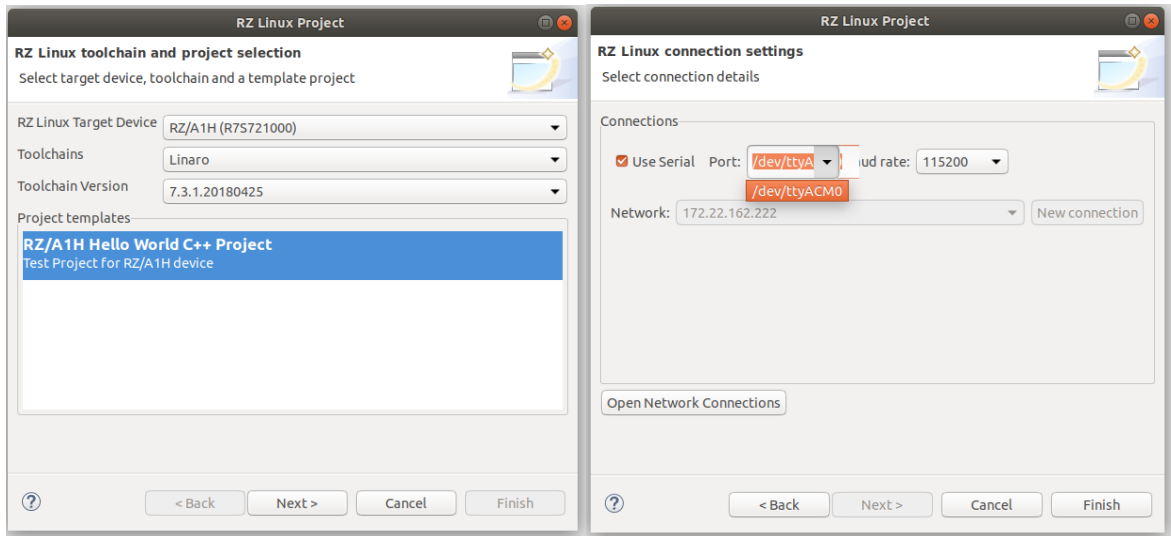


Figure 5. New RZ Linux project & connection setting: Serial port

- C. After editing codes, build by selecting ‘Build Project’ in right-click menu or push  button.

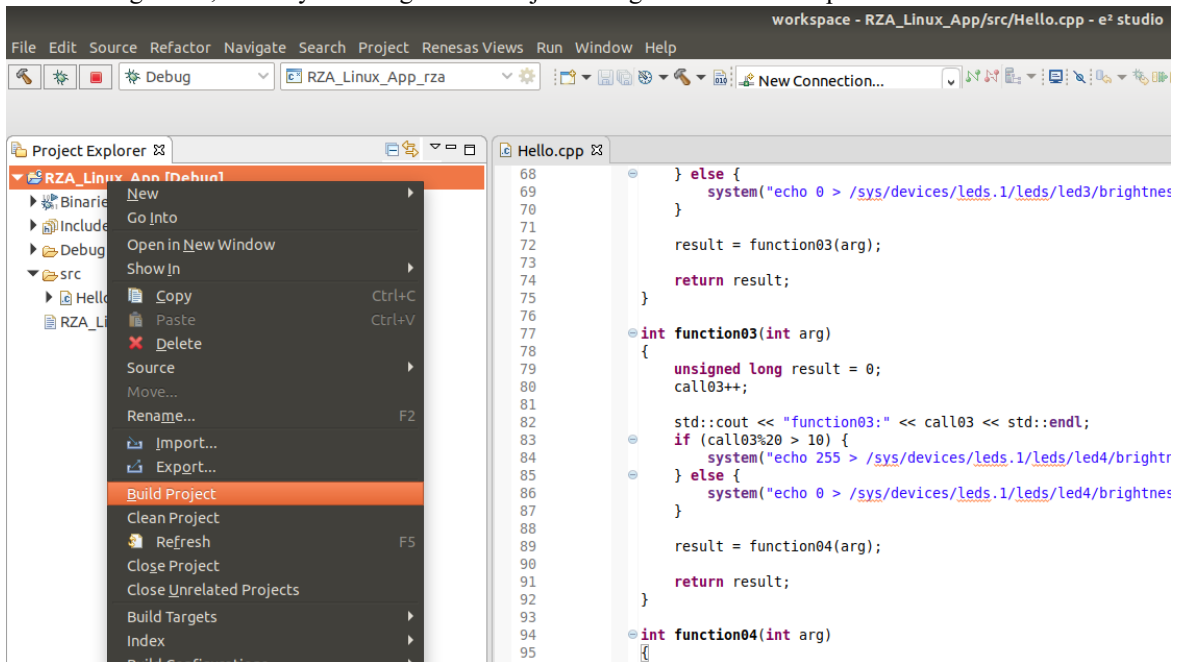


Figure 6. Build Project

7.5.3 GDB debug by using serial port communication

- A. Terminate all processes use serial port communication such as Minicom.
- B. Open ‘Configuration’ and check ‘Serial’ is selected as ‘Connection’.

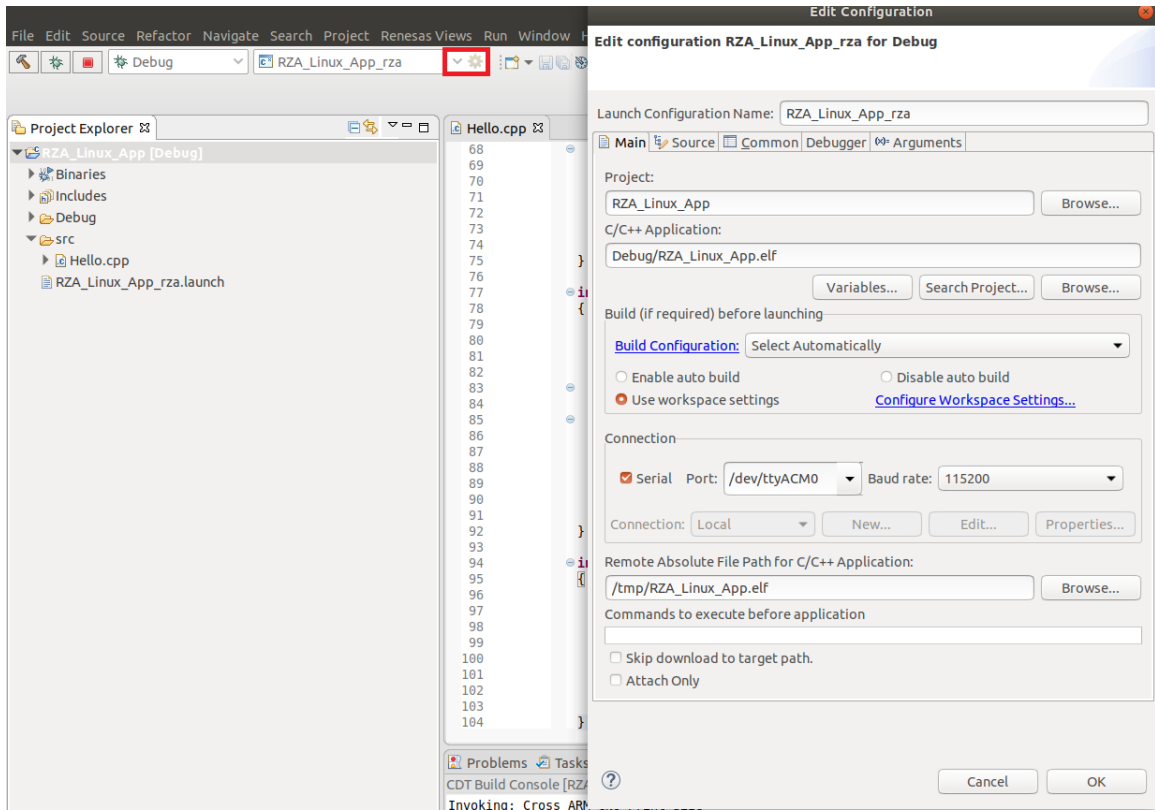



Figure 7. Connection configuration: Serial

- C. Run debug by push button . It takes 10 or more seconds for transferring binary files to target device. Pop up message for switching to debug perspective will be shown after transferring binary files.

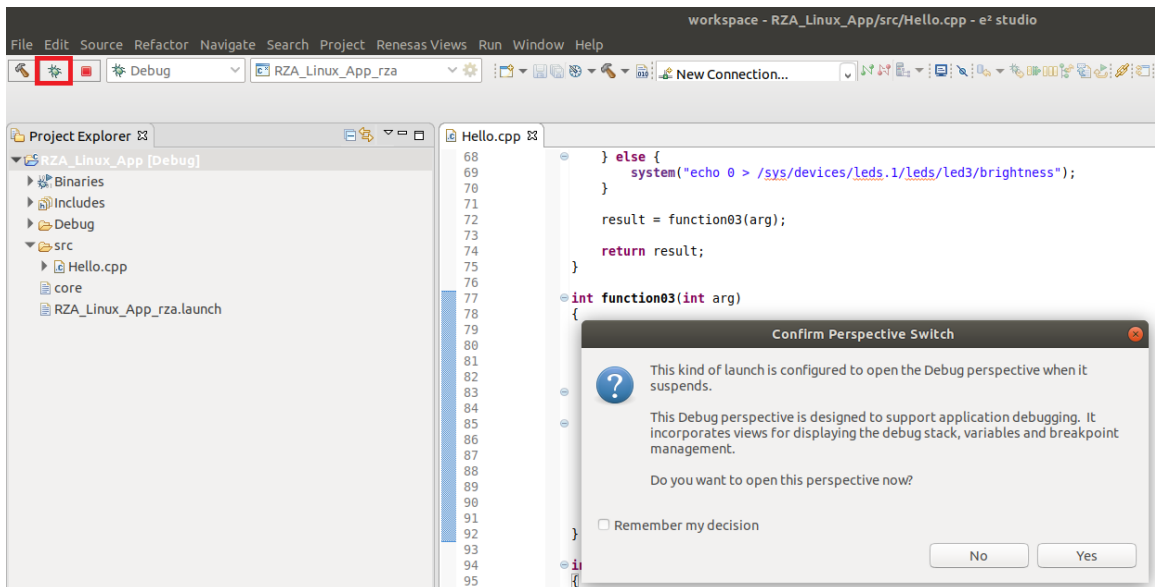


Figure 8. Debug: Perspective Switch

D. ‘Debug Perspective’ provide ways for flow controls and configurations.

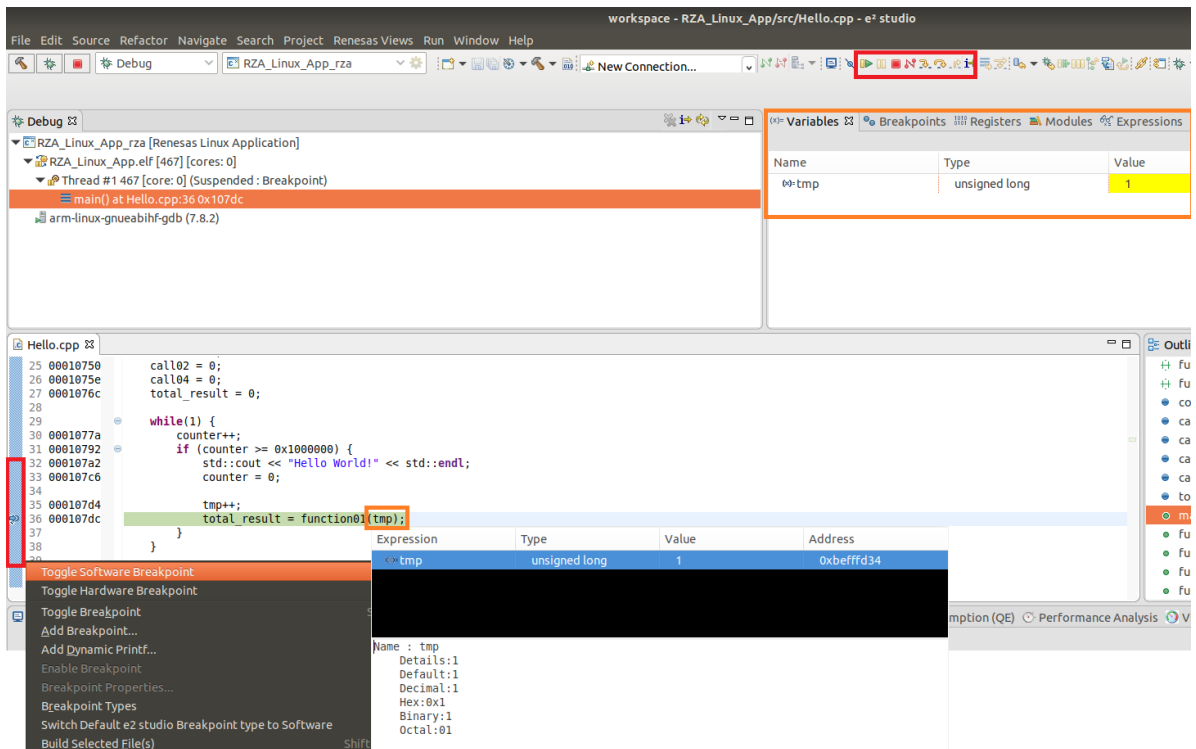


Figure 9. Debug: Control buttons, views, setting break point

8. Open Issues

[Open issues in the e² studio product will be kept up to date here:](#)

Please visit to see the latest open issue list.

9. Appendix

9.1 Website and Support

Renesas Electronics Website

<http://www.renesas.com/>

Inquiries

<http://www.renesas.com/contact/>

9.2 Web Access and Privacy Policy

Collection of User Information Applications included in this package may access the Renesas Web site. In such cases, the following information is collected and recorded to Renesas server as a log.

- Date and time of access
- Access to URLs and files
- The unique certificate number linked to your account for MyRenesas (only when you log in to MyRenesas)
- The unique identification number linked to cookies for the Web browser (for cookies, refer to the privacy policy page stated below).

Logs are managed based on our privacy policy.

Refer to our privacy policy on the following Web page.

Privacy Policy:

<https://www.renesas.com/privacy.html>

All trademarks and registered trademarks are the property of their respective owners.

“FreeRTOS™ is the trademark of Amazon Web Services, Inc.

AWS™, Amazon Web Services™ is the trademark of Amazon Web Services, Inc.”

GITHUB® is the trademark registered in the United States by GitHub, Inc.

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
5. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
6. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.

"Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.

"High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.

Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.

7. No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION ("Vulnerability Issues"). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
8. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
12. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
13. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
14. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.

(Note2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.5.0-1 October 2020)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan

www.renesas.com

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:

www.renesas.com/contact/.