

Quick Start Guide for the Linux Hosted Version of the e² studio

1. Overview

This quick start guide describes how to install the Linux version of the e² studio to run under Linux on a PC to serve as a host and to register the related toolchains and the e² studio. The target engineers of this guide are those who are developing software for Renesas MCUs or MPUs by using the e² studio in a Linux environment and who have already learned the basics of operating Ubuntu. This guide explains the steps from installing the Linux host through to construction of the environment. The methods for operating the e² studio after having started it are the same as those for the Windows version. For those methods, refer to the quick start guide for the Windows version with the title given below on the product page of the e² studio (https://www.renesas.com/e2studio).

Title: "e² studio Quick Start Guide for RX/RL78/RH850/RISC-V MCU Family"

2. Differences between the e² studio for Linux and the e² studio for Windows

The e² studio for Linux and the e² studio for Windows differ in the following ways.

	For Windows	For Linux
Supported	RA, RL78, RX, RZ, RH850 families and	RA, RL78, RX, RZ, RH850 families and
devices	DA devices, RISC-V MCU	DA devices
Supported	Compilers from Renesas	Compilers from Renesas
toolchains	— CC-RH	— CC-RH
	— CC-RL	— CC-RL
	— CC-RX	— CC-RX
	Open-source toolchains	Open-source toolchains
	— GCC for RL78	— GCC for RL78
	— LLVM for RL78	— LLVM for RL78
	— GCC for RX	— GCC for RX
	 ARM GNU for RA and RZ families 	 ARM GNU for RA and RZ families
	— LLVM Embedded Toolchain for Arm	— LLVM Embedded Toolchain for Arm
Supported	Emulators from Renesas	Emulators from Renesas
emulators*	— E2 emulator	— E2 emulator
	— E2 emulator Lite	— E2 emulator Lite
	— E1 emulator	
	— E20 emulator	
	Emulator from partners	Emulator from partners
	— J-Link from Segger	— J-Link from Segger

 Table 1
 Range of Support by the e² studio for Windows and for Linux (Based on the 2024-04 Versions)

Note: For details on the emulators for each device and family, see "Additional Details" on the product pages of the e² studio for individual families listed in table 2.

Table 2 List of Product Pages of the e² studio for Individual Families

Family Name	URL for the Product Page of the e ² studio for Individual Families
RA family	https://www.renesas.com/software-tool/e2studio-information-ra-family
RH850 family	https://www.renesas.com/software-tool/e2studio-information-rh850-family
RL78 family	https://www.renesas.com/software-tool/e2studio-information-rl78-family
RX family	https://www.renesas.com/software-tool/e2studio-information-rx-family
RZ family	https://www.renesas.com/software-tool/e2studio-information-rz-family
DA Devices	https://www.renesas.com/software-tool/e-studio



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3. Operating Environment

The following operating environments were used in creating this quick start guide.

- e² studio 2024-04 Linux: https://www.renesas.com/software-tool/e-studio
- Ubuntu Desktop 22.04 LTS: <u>https://ubuntu.com/download/desktop</u>

4. Installation

4.1 Downloading an Installer

If you are using a product of the RL78 family, RX family, RZ family, RH850 family or DA devices, download the e² studio for Linux from the following product page.

https://www.renesas.com/software-tool/e-studio



Figure 1 Product Page of the e² studio



For the users of MCUs of the RA family, we recommend downloading the platform installer from the tag page of the Flexible Software Package (FSP) version you will use on the FSP page for the RA family among the Renesas GitHub pages. The page is shown below.

https://github.com/renesas/fsp



Figure 2 Flexible Software Package (FSP) Page for the RA Family (Example of the v5.2.0 Tag Page)



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4.2 Installing the Required Libraries

The following Linux libraries are required for operation of the e² studio for Linux.

- Python library version 2.7
- Python library version 3.10 (when executing the e² studio 2023-07 or a later version under Ubuntu LTS 20.24)
- New curses library version 5

Install the libraries by entering the following commands from a terminal.

sudo add-apt-repository ppa:deadsnakes/ppa sudo apt update sudo apt install libpython2.7 libncurses5 libncurses5:i386 sudo apt install libpython3.10



Figure 3 Installing the Required Libraries



4.3 Running the Installer

Double-click on the downloaded installer file or enter the name of the installer file in the terminal.



Figure 4 Running the Installer in a Terminal under Ubuntu (Example: Entering the Name of the Installer File)

If the installer does not run, confirm that permission for execution has been given for the e² studio installer file. If not, enter the following chmod command to set permission for execution of the installer file.

```
chmod + x <name of the e<sup>2</sup> studio installer file>
```



Figure 5 Confirming the Permission for Execution of the Installer File and Setting it with the 'chmod' Command



4.4 Starting Installation

(1) Selecting an installation type

Launch the e² studio installer. For e² studio 2023-07 and later, there are three (Lite/Standard/Custom) types of new installations. Select any of the items and click [Install].

- Lite installs the minimum functionality required to build and debug your project.
- Standard can install extended functionality.
- Any function can be installed in Custom.

Clicking on the "Click here" link displayed on the first page of the installer will show a list of the functions that will be installed by Lite and Standard, so please confirm it before proceeding.

Activities 🔣 SWT	4月1616:31	- ••) ()
	Renesas e² studio 2024-04 Setup x	
	Renesas e' studio 2024-04 Setup	
	Install Type Please select the e ² studio installation type. <u>Click here</u> for help selecting a type and to see what features are included.	
	Select Install Type:	
	Lite Install (Recommended) This installs e ³ studio in Lite Mode. This mode offers a simplified experience focused on simple code editing & debugging with only important features.	
	Standard installe * studio in Advanced Mode. This mode offers all extended debugging functionality and other advanced features C state heads like	
	Custom Install Custom Install of e ⁸ studio This mode is allows you to select which features are installed	
	v202404151546 User:jongookoh <back next=""> Cancel Install</back>	
		100

Figure 6-1 Selecting an Installation Type (Common Installer)

For users of RA family devices, select "Quick Install".

Activities 🛛 SWT	4月16 16:33 🛔 🚸 🕐
	Renesas RA Flexible Software Package (FSP) v5.2.0 with e ² studio 2024-01.1 Setup x
1. 1. 1. 1. 1. 11	Renesas RA Flexible Software Package (FSP) v5.2.0 with e ² studio 2024-01.1 Setup
	Install Type
	Select Install Type:
	Quick Install Default installation of e ² studio, FSP, Arm GNU Toolchain & LLVM Embedded Toolchain for Arm Concident leaful
	Custom installation of e ² studio, FSP, Arm GNU Toolchain & LLVM Embedded Toolchain for Arm
	v202402230120 User: jongookoh <back next=""> Cancel Install</back>

Figure 6-2Selecting an Installation Type (Platform Installer)



(2) [Welcome]

Click on [Change...] if you wish to specify a different installation directory, then click on [Next >].

Note: If you have run the installer of the platform for the RA family, go to "(7) [Licenses]".



Figure 7 [Welcome]

- Notes: 1. If you wish to install multiple versions of the e² studio, click on [Change...] to specify the installation directory.
 - 2. Specify a folder path including English characters, numeric characters, and underscores for the installation directory.

If an account name for Ubuntu includes characters other than English characters, numeric characters, and underscores, the e² studio may malfunction. Accordingly, we also recommend using only English characters, numeric characters, and underscores in the account name for Ubuntu.



(3) [Device Families]

- You can select multiple device families for installation. Select the checkboxes and click on [Next >].
- Note: If you have run the installer of the platform for the RA family, this window will only display the RA family.

Activities 📓 SWT		4月 16 16:48	1 40 C
	Ren	esas e² studio 2024-04 Setup ×	
	Renesas e ² studio 2024-04 Setup Select the device families you wish to install s		
	Welcome Device Families Additional Software Licenses Shortcuts Summary Installing Results	RA Build, Debug & Code Generation support for Renesas RA devices RZ Build, Debug & Code Generation support for Renesas R2 devices RI Build, Debug & Code Generation support for Renesas RL78 devices RX Build, Debug & Code Generation support for Renesas RX devices RX Build, Debug & Code Generation support for Renesas RX devices RR Build, Debug & Code Generation support for Renesas RX devices RE Debug support for Renesas RH350 devices	
	v CO2404151546 User:	RE Build & Debug support for Renesas RE devices Linux on Renesas RZ Build & Debug support for Linux on Renesas RZ devices DA Build & Debug support for Renesas DA devices Build & Debug support for Renesas DA devices	

Figure 8 Selecting Device Families

(4) [Extra Features]

Select the additional components to be installed (language packs or support for Git). Click on [Next >].

Note: Specify the Japanese language pack if you wish to view the menus in Japanese.

Activities 🔤 SWT		4月 16 17:00	ま 🕪 ひ
		Renesas e² studio 2024-04 Setup	×
	Renesas e ² studio 2024-04 Setup Select the extra features you wish to	install	SAS
	Welcome Device Families	Japanese Language Support Chinese (Simplified) Language Support	
	Customise Features	Chinese (Traditional) Language Support	
	Additional Software	Git Integration Git SCM Support	
	Shortcuts Summary	ANSI/vt102 compatible Terminal support for Serial, ssh and	JTelnet
	Results		
	Select	u	
	<u>v202404151546</u> User:	<back next=""> Cancel</back>	install

Figure 9 [Extra Features]



(5) Components

All required components for the selections in [Device Families] are automatically selected. Confirm the selected components and click on [Next >].



Figure 10 [Customise Features]

(6) [Additional Software]

In this stage, you can select additional software such as the Renesas FSP, Renesas AI and ARM GNU toolchain (indicated as GCC ARM Embedded in the installer).

In general, the required software for the device family which was selected in "(3) [Device Families]" is selected. Click on [Next >] and go to the next step.

If you will be using the ARM GNU toolchain or another version of the Renesas FSP which is not included in the list, install them. Refer to chapter 6, Custom Installation and Registration of Toolchains.

Renesas e ² studio 2024-04 Setup Select the additional software you wish to install Welcome Device Families Extra Features Customise Features Software Shortcuts Shortcuts Summary Installing	Activities 📓 SWT		4月 16 17:04		
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Welcome Renessa QE Device Families Renessa Reality Al for RA Ranesas Al Navigator Ranesas Al Navigator Ranesas Al Navigator Ranesas Tolchains & Utilities Cott Condchains & Utilities GNU ARM Embedded 10.3 2021.01 Ranesas 1.00.02 GNU ARM Embedded 10.3 2021.01 Ranesas Pailty Al for RA Ranesas FSP Renesas FSP Renesas FSP Renesas FSP V5.2.0 Ranesas FSP Renesas FSP V5.1.0 FSP XI TON FSP XI TON FSP XI TON TON TON TON TON TON TON TON TON TON		Select the additional soft	tware you wish to install		3/13
Customise Features © Renease Reality Al for RX 23.10.0 Image: Software Licenses Image: Software Sof		Welcome Device Families Extra Features	Renesas QE Renesas AI Renesas Reality AI for RA Renesas Reality AI for RL78	23.10.0 23.10.0	
Software 		Customise Features Additional	 ✓ Renesas Reality AI for RX ✓ Renesas AI Navigator ✓ RZ/V AI TLT 	23.10.0 1.00.0 1.00.0	
Summary GNU ARM Embedded 12.3-Rel1 13.2.1arm-13-7 236.MB Installing GNU ARM Embedded 12.2-Rel1 12.2.1arm-13-7 236.MB Results GNU ARM Embedded 12.2-Rel1 12.2.1arm-13-7 100 B GNU ARM Embedded 10.3 2021.01 10.3.12010424 1000 B GNU ARM Embedded 10.3 2021.01 10.3.12010424 1000 B GNU ARM Embedded 10.3 2021.01 10.3.12021042 1000 B GCC ARM A-Profile (Arch64 bare-metal) 10.3 2021.07 10.3.0201.07 1000 B LUXM Embedded 50.Idhain for Arm 17.0.1 T.0.1 636.0 MB Renesas FSP Renesas FSP v5.2.0 5.2.0 123.5 MB Renesas FSP v5.1.0 697.3 MB download requirt 697.3 MB download requirt		Licenses	 ☑ DRP-AI TVM Tool ☑ Renesas Toolchains && Utilities ☑ GCC Toolchains && Utilities 	1.00.0	
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☑ Renesas FSP v5.2.0 5.2.0 123.5 MB □ Renesas FSP v5.1.0 5.1.0 117.7 MB 697.3 MB download require 697.3 MB download require			CGC ARM A-Profile (AArch64 bare-metal) 10.3 2021. LLVM Embedded Toolchain for Arm 17.0.1	07 10.3.0.2021-07 17.0.1	1000 B 636.0 MB
			Renesas FSP v5.2.0	5.2.0 5.1.0 697.3 MB dowr	123.5 MB 117.7 MB lload required

Figure 11 [Additional Software]



(7) [Licenses]

After you have read and agreed with the license agreement, click on [Next >].

If you do not agree with the license agreement, you cannot continue with installation.



Figure 12 [Licenses]

(8) [Shortcuts]

Select the [In the application launcher] checkbox and click on [Next >].



Figure 13 [Shortcuts]



(9) [Summary], [Installing], and [Results] Click on [Install] to install the e² studio.

SWT		4月1617:10		
	Renesas	e² studio 2024-04 Setup	×	
Renes	isas e ² studio 2024-04 Setup	í	Renesas	
	Welcome Ready to in Device Families Software t Extra Features - Java Ru Customise - Renesa Features - Renesa Additional - Renesa Software - Renesa Softwares - Renesa Softwares - Renesa Software - Renesa Shortcuts - Renesa 'Summary - Renesa Installing - Renesa Results - Renesa - Renesa - Renesa	stall install: ie 2 studio v24.4.0.R20240415-1426 intime v17.0.0 in Manager V1.10.202007251457 ie 2 studio Common Components (e 2 studio Tools v24.4.0.R20240415 e 2 studio Tools v24.4.0.R20240415 e 2 studio Tools v24.4.0.R20240415 e 2 studio Tools v24.4.0.R2024 RC Family Support Fallor and SSL V RC Family Support Fallor and SSL V RC Family Support Fallor And VSL V RC Family Support Fallor And V	Like) v24.4.0.R20240415-1426 Full) v24.4.0.R20240415-1426 or ARM Devices 1-1426 M15-1426 M415-1426 M415-1426 M415-1426 M415-1426 0.40415-1426 0.40415-1426 0.40240409-1306 0.402240409-1306 0.402240409-1306 0.402240415-1426 M10-14	

Figure 14 [Summary]

When installation has finished, the results are displayed. Confirm that there are no error messages.

When toolchains such as the FSP or GCC ARM Embedded have been installed, link paths to the folders where they have been installed are displayed.

Clicking on [OK] finishes the installation process.

 Rerease e[*] studio 2024-04 Setup Rerease e[*] studio 2224-04 Rerease e[*] studio 224-04 Rerease e[*]	vities	🗟 SWT		4月 16 17:23	
Renease a ² studio 2024-04 Setup Installation of e2 studio is complete. Welcome Installation of e2 studio is complete. Device Families Please click OK to close. Extra Features Customise Customise Is aunch e2 studio! Features Is aunch e2 studio! Additional Software Licenses Shortcuts Shortcuts GCC ARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ grc. arm/13_2_Rell GCC ARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ mstalling $\bigcirc CC ARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ grc. arm/10_3_2_20_1_10 GCC ARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ grc. arm/10_3_2_20_1_10 GCC ARM Arbrofile (AArch64 bare- metal)./home/jongookoh/.local/share/renesas/e2_studio/toolchains/ grc. arm/10_3_2_20_1_10 GCC ARM Arbrofile (AArch64 bare- metal)./home/jongookoh/.local/share/renesas/e2_studio/toolchains/ $				Renesas e² studio 2024-04 Setup	×
Welcome Installation of e2 studio's complete. Device Families Please click OK to close. Extra Features □ Launch e2 studio'? Customise □ Launch e2 studio? Features □ Wew Release Notes? Additional O View What's New? Software Useful Links: Licenses GCC ARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ Summary GCC CARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ Installing GCC CARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ Merciting GCC CARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ gcc.arm(13_2_Rell) GCC CARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ gcc.arm(10_3_2_21_10) GCC CARM Embedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ gcc.arm(10_3_2_21_10) GCC CARM Ambedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ gcc.arm(10_3_2_22_1_10) GCC CARM Ambedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ gcc.arm(10_3_2_22_1_10) GCC CARM Ambedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ gcc.arm(10_3_2_22_1_10) GCC ARM Ambedded: /home/jongookoh/.local/share/renesas/e2_studio/toolchains/ <th></th> <th></th> <th>Renesas e² studio 2024-0</th> <th>4 Setup</th> <th>ENESAS</th>			Renesas e ² studio 2024-0	4 Setup	ENESAS
			Welcome Device Families Extra Features Customise Features Additional Schorteuts Summary Installing (C) Results	Installation of e2 studio is complete. Please click OK to close. Launch e2 studio? View Release Notes? Vseful Links: GCC ARM Embedded: /home/jongookoh/.local/share/r gcc.arm/13_2.Rel1 GCC ARM Embedded: /home/jongookoh/.local/share/r gcc.arm/13_2.Rel1	enesas/e2_studio/toolchains/ enesas/e2_studio/toolchains/ enesas/e2_studio/toolchains/ enesas/e2_studio/toolchains/ okoh/.local/share/renesas/

Figure 15 [Results]



5. Running the e² studio

Open a terminal window. Go to the path where the e² studio has been installed and enter the command for the executable file.

Example:

cd ~/renesas/e2_studio/eclipse ./e2studio



Figure 16 Running the e² studio: Entering the Command

If you created a shortcut during installation, you can also run the e² studio by clicking on the icon for the e² studio in the [Show Applications] menu shown below.



Figure 17 Running the e² studio: Double-clicking on the lcon



After you run the e² studio, specify the path for the workspace for use in [Workspace] (example: /home/user/e2_studio/workspace) and click on [Launch].

ctivities 🖻 E2studio	5月 29 17:09	î •••) ()
+ user@Ul	puntu: ~/renesas/e2_studio/eclipse Q = ×	
<pre>user@Ubuntu:~\$ cd renesas/e2 user@Ubuntu:~/renesas/e2_stud artifacts.xml dropins e2st configuration e2studio feat user@Ubuntu:~/renesas/e2_stud</pre>	<pre>studio/eclipse/ io/eclipse\$ ls udio.ini icon.xpm p2 readme ures notice.html plugins io/eclipse\$./e2studio</pre>	
	e² studio Launcher ×	
	Select a directory as workspace e ² studio uses the workspace directory to store its preferences and development artifacts.	
	Workspace: /home/user/e2_studio/workspace Browse Browse	
	Use this as the default and do not ask again Recent Workspaces	
	Cancel	

Figure 18 Running the e² studio: Selecting a Workspace



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6. Custom Installation and Registration of Toolchains

In the following cases, you will need to obtain an installer for the toolchain and install and register it with the e^2 studio.

(1) You will be using RL78, RX, RH850 family devices.

e² studio

(2) You will be using a version of the FSP that is not included in the installer for the e² studio.

(3) You will be using a version of the ARM GNU toolchain that is not included in the installer for the e² studio.

6.1 Installing Renesas License Manager

To use the Renesas compilers, it is necessary to install the Linux version of Renesas License Manager. It is available from the Renesas compilers product pages below.

- C Compiler Package for RH850 Family [CC-RH] https://www.renesas.com/software-tool/c-compiler-package-rh850-family
- C Compiler Package for RL78 Family [CC-RL] https://www.renesas.com/software-tool/c-compiler-package-rl78-family

Refer to the release notes of the Renesas License Manager or the "Renesas Compiler Installation Guide" web page (<u>https://www.renesas.com/software-tool/compiler_installation_guide</u>) about installation.

```
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                                                                                                                         Q
                                       softgi@softgiUbuntu: /usr/local/renesas-mcutools/bin
                                                                                                                              Ξ
total 155196
drwxr-xr-x 2 softgi softgi
                                      4096 Apr 22 15:39
                                     4096 Apr 22 15:39 .
drwxr-x--- 35 softgi softgi
rw-rw-r-- 1 softgi softgi 17682140 Apr 3 10:02 cc-rh-20601_2.06.01_amd64.deb
-rw-rw-r-- 1 softgi softgi 47017172 Apr 3 10:03 cc-rl-11301_1.13.01_amd64.deb
-rw-rw-r-- 1 softgi softgi 20854700 Apr 3 10:03 cc-rx-30601_3.06.01_amd64.deb
-rw-rw-r-- 1 softgi softgi 73347036 Apr 17 09:32 license-manager_2.07.00_amd64.deb
softgi@softgiUbuntu:~/Downloads$ sudo apt-get update
[sudo] password for softqi:
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Get:2 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Hit:3 http://jp.archive.ubuntu.com/ubuntu jammy InRelease
Get:4 http://jp.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Hit:5 https://ppa.launchpadcontent.net/deadsnakes/ppa/ubuntu jammy InRelease
Hit:6 http://jp.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:7 http://jp.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [616 kB]
Get:8 http://jp.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1597 kB]
Get:9 http://jp.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1070 kB]
Fetched 3513 kB in 7s (480 kB/s)
Reading package lists... Done
softgi@softgiUbuntu:~/Downloads$ sudo dpkg -i license-manager_2.07.00_amd64.deb
Selecting previously unselected package license-manager.
(Reading database ... 204266 files and directories currently installed.)
Preparing to unpack license-manager_2.07.00_amd64.deb ...
Unpacking license-manager (2.07.00.04)
Setting up license-manager (2.07.00.04)
Processing triggers for man-db (2.10.2-1) ..
softgi@softgiUbuntu:~/Downloads$ cd /usr/local/
bin/
                    games/
                                          lib/
                                                                renesas-mcutools/ share/
etc/
                     include/
                                          man/
                                                                sbin/
                                                                                     src/
softgi@softgiUbuntu:~/Downloads$ cd /usr/local/renesas-mcutools/bin/
softgi@softgiUbuntu:/usr/local/renesas-mcutools/bin$ ls -al
total 196360
                               4096 Apr 22 15:40
drwxr-xr-x 2 root root
drwxr-xr-x 3 root root
                               4096 Apr 22 15:40
-rwxr-xr-x 1 root root
                               609 Feb 29 13:09 clear-common-license.sh
                           609 Feb 29 13:09 Ctear-comment
1271 Feb 29 12:22 clear-user-license.sh
-rwxr-xr-x 1 root root
 rwxr-xr-x 1 root root 67006677 Mar 15 06:07 init-license
 rwxr-xr-x 1 root root 67013785 Mar 15 06:07 lc
 rwxr-xr-x 1 root root 67029416 Mar 15 06:08 license-manager
softgi@softgiUbuntu:/usr/local/renesas-mcutools/bin$
```

Figure 19 Installation example of the Renesas License Manager



C Compiler Package for RX Family [CC-RX] https://www.renesas.com/software-tool/cc-compiler-package-rx-family



Figure 20 License key registration example of the Renesas License Manager

6.2 Toolchains for the RL78 Family

e² studio

When a software product for use on a device of the RL78 family is to be built in the e² studio, CC-RL, GCC for Renesas RL78 or LLVM for Renesas RL78 is required.

The CC-RL installer is available from Renesas product page (<u>https://www.renesas.com/software-tool/c-compiler-package-rl78-family</u>). In addition, the Renesas License Manager is necessary to use CC-RL. Please refer to chapter 6.1 for installation of the Renesas License Manager.

Installers of GCC for Renesas RL78 and LLVM for Renesas RL78 are available from the "Open Source Tools for Renesas" site (<u>https://llvm-gcc-renesas.com/</u>, downloading some toolchains requires user registration).

6.2.1 Installing and Registering the CC-RL

Please refer to the "Readme" file enclosed in the CC-RL installer or the "Renesas Compiler Installation Guide" web page (<u>https://www.renesas.com/software-tool/compiler_installation_guide</u>) for CC-RL installation.



Figure 21 Installation example of the CC-RL



After the installation is complete, start e² studio, execute the [Help – Add Renesas Toolchains] menu, and select "Add..."Press the button and enter the path where CC-RL is installed to register.

		workspace - e ² studio	×	
Ed		Preferences		×
type filter text	Renesas Toolchain Management			$\diamond \star \diamond \star \$$
→ General	Toolchain Type	Installation Path		
OCV+ Help Install/Update Java Language Servers Library Hover Oomph PyDev Remote Developme	✓ GNU ARM Embedded ✓ 13.2.1.arm.13-7 ✓ 12.2.1.arm.13-7 ✓ 12.2.1.arm.12-24 ✓ 10.3.1.20210824 └unar0 Reneasa DSP Assembler KPIT GNURL78-ELF Toolchain Þoky G4bit Embedded Linux KPIT GNUR4.ELF Toolchain	Instaliation Path /home/jongookoh/.local/share/renesas/e2_studio/toolchains/gcc_arm/13_2-Rel1/arm-gnu-toolchain-13.2.Rel /home/jongookoh/.local/share/renesas/e2_studio/toolchains/gcc_arm/12_2-Rel1/arm-gnu-toolchain-12.2.reli /home/jongookoh/.local/share/renesas/e2_studio/toolchains/gcc_arm/10_3_2021_10/gcc-arm-none-eabi-10.:		.64-arm-none-eabi/ 64-arm-none-eabi/ .10/
 Remote Systems Renesas 	GCC ARM A-Profile (AArch64 bare-metal)	Add New Toolchain	× m 10 2 2021 07	vR6 64 parch64 papa alf/
Breakpoints Device add-ins Su FSP	 I 0.3.1.20210621 LLVM Embedded Toolchain for Arm LLVM for RL78 Renesas CC-RH 	Integrate a new toolchain which is not already registered. Found: Renesas CC-RL - v1.13.01	1110.3202107	x00_0+ darch0+ none-chy
Logging Module Download Module Download My Renesas Reality AI Authen Renesas QE Renesas Dokhal Smart Browser I Smart Configurat Smart Demo Smart Manual Support Folders Tracealyzer TraceX	MinGW KPIT GNUARM-NONE-EABI Toolchain Linaro 64bit Reneasa CC-RL Reneasa CC-RL CC for Renesas RX GCC for Renesas RX GCC for Renesas RL78	Indextories /usr/local/Renesas/CC-RL/V1.13.01 Image: Transmission of the state of	Cancel	
▶ Run/Debug		Download		
? 1 4 0			Can	cel Apply and Close
		(答 rhg	PEOkost	

Figure 22 Registering CC-RL



6.2.2 Installing and Registering the LLVM for Renesas RL78



Figure 23 Open Source Tools for Renesas: LLVM for Renesas RL78

After downloading the installer, confirm the permission to execute it. Enter the required command and then run the installer.

Example:

cd ~/Downloads chmod +x llvm-10.0.0.202303-rl78-elf.run ./llvm-10.0.0.202303-rl78-elf.run



Quick Start Guide for the Linux Hosted Version of the e2 studio



Figure 24 Running the Installer for LLVM for Renesas RL78

After the installation has finished, register the installer by starting the e² studio, selecting the [Help] menu and the [Add Renesas Toolchains] item, clicking on the [Add...] button with [LLVM for RL78] selected, and entering the path where LLVM for Renesas RL78 has been installed.

	workspace - e ²	studio	×		
File Edit Source Ref	actor Navigate Search Project Renesas Vie	ws Run Window	Help		
	±α τ 0. τ : Επ. σ		🛞 Welcome		
Project Explorer X Project Explorer X Project Explorer X There are no projects in workspace. To add a project: Create a new Make Project in a directo containing existing Create a new C or project Create a new C or project Create a new C or Cr	□ □ ▽ 8 i your □ file. □ 02. code C++ □	0	⑦ Help Contents ☞ Search Show Context Help Show Active Keybindings Cheat Sheets Renesas Help CMDS Forder Management ✓ Add Renesas Toolchains ☞ Ectipser OSET Storage ֎ Perform Setup Tase	Shift+Ctrl+L	
Create a project			🍫 Check for Updates		
		Pre	ferences		×
type filter text	Renesas Toolchain Management				⇔ ▼ ⇔ ▼ 🕴
 General C/C++ Help Install/Update Java 	▼ SOUCHAIN Type ▼ SOUCHAIN Embedded ■ 10.3.1.20210824 ■ Renesas DSP Assembler ▶ KPIT CAULED ASSEMBLET	Installation Path	Add New Integrate a new toolchain which is not alrea Found: LLVM for RL78 - 10.0.0.202303	Toolchain dy registered.	×
 Language Servers Library Hover Oomph Remote Developme Renesas 	 KHT GHOLED ELE TOOLCHAIN KPIT GNURX-ELF Toolchain ✓ GCC ARM A-Profile (AArch64 bare-metal) ☑ 10.3.1.20210621 ☑ LLVM for RL78 	/home/user/renesas	Location: /home/user/toolchains/llvm_10.0.0.	.202303_rl78-elf	Browse e-elf/
 Language Servers Library Hover Oomph Remote Developme Renesas Breakpoints Device add-ins Si FSP Launch Settings Logging Module Downloac My Renesas Reality AI Authen 	KPIT GNURX-ELF Dolchain KPIT GNURX-ELF Dolchain GCC ARM A-Profile (AArch64 bare-metal) 10.3.1.20210621 LLVM for RL78 Renesas CC-RH KPIT GNUARM-NONE-EABI Toolchain xPack GNU ARM Embedded Renesas CC-RL GCC for Renesas RX Renesas SMS Assembler GCC for Renesas RL78	/home/user/renesa	Location: //home/user/toolchains/flvm_10.0.0	.202303_rl78-elf Cancel	Browse e-elf/

Figure 25 Registering LLVM for Renesas RL78

In the case of GCC for Renesas RL78, also download the installer from the "Open Source Tools for Renesas" site and register it by following the same procedure as that described above.

e² studio



6.3 Toolchains for the RX Family

When a software product for use on a device of the RX family is to be built in the e² studio, CC-RX or GCC for RX is required.

The CC-RX installer is available from Renesas product page (<u>https://www.renesas.com/software-tool/cc-compiler-package-rx-family</u>). In addition, the Renesas License Manager is necessary to use CC-RX. Please refer to chapter 6.1 for installation of the Renesas License Manager.

Installer of GCC for RX is available from the "Open Source Tools for Renesas" site (<u>https://llvm-gcc-renesas.com/</u>, downloading some toolchains requires user registration).

6.3.1 Installing and Registering the CC-RX

Please refer to the "Readme" file enclosed in the CC-RX installer or the "Renesas Compiler Installation Guide" web page (<u>https://www.renesas.com/software-tool/compiler installation guide</u>) for CC-RX installation.



Figure 26 Installation example of the CC-RX



Quick Start Guide for the Linux Hosted Version of the e2 studio

After the installation is complete, start e² studio, execute the [Help – Add Renesas Toolchains] menu, and select "Add..."Press the button and enter the path where CC-RX is installed to register.

10 m					
HIE EC			Preferences		
	type filter text	Renesas Toolchain Management			\$\
Proje	General	Toolchain Type	Installation Path		
There To add	C/C++	SOUCHAIN Hype			
n Cr	▶ Heip ▶ Install/Update	2 13.2.1.arm-13-7	/home/jongookoh/.local/share/renesas/e2_s	studio/toolchains/gcc_arm/13_2-Rel1/arm-	gnu-toolchain-13.2.Rel1-x86_64-arm-none-eabi/
dir	▶ Java	✓ 12.2.1.arm-12-24	/home/jongookoh/.local/share/renesas/e2_s	studio/toolchains/gcc_arm/12_2-Rel1/arm-	gnu-toolchain-12.2.rel1-x86_64-arm-none-eabi/
	Language Servers Library House	Linaro	/nome/jongookon/.iocal/share/renesas/ez_s	studio/toolchains/gcc_arm/10_3_2021_10/	gcc-arm-none-eabi-10.5-2021.10/
🖂 im	 Oomph 	Renesas DSP Assembler			
	PyDev	KPIT GNURL Bolov 64bit 5	Add New Toolchain	×	
	Remote Developme	KPIT GNUR	chain which is not already registered.		
	 Renesas 	▼ GCC ARM A. Found: Renesas CC-F	RX - v3.06.01		
	Breakpoints	✓ 10.3.1.20	Renesas/CC-RX/V3.06.01	Browse arm_aarch64/10_20	21_07/gcc-arm-10.3-2021.07-x86_64-aarch64-none-
	Device add-ins St	LLVM for RL			
	Launch Settings	Renesas CC			
	Logging	KPIT GNUAF			
	My Renesas	Linaro 64bit			
	Reality AI Authen	Reports CC			
	Renesas QE Renesas Toolchai	Renesas CC	Cancel	ок	
	Smart Browser	GCC for Renesas RX			
	Smart Configurat	Renesas SMS Assembler			
	Smart Demo				
	Support Folders				
	Tracealyzer				
	TraceX		Download Scan	Add Remove	
	? 🏊 🖆 🐵				Cancel Apply and Cl

Figure 27 Registering CC-RX



6.3.2 Installing and Registering the GCC for Renesas RX

In the case of GCC for Renesas RX, also download the installer from the "Open Source Tools for Renesas" site and register it with the e² studio by following the same procedure as that described in section 6.1.

			Ŷ
\rightarrow C	O 🔒 https://llvm-gcc-renesas.com/rx-download-toolchains/	公	⊠ ຢ
	HOME LOG IN REGISTER ABOUT US CONTACT US SITEMAP LAN	IGUAGE: 🎇 »	
	COOPen Source Tools		
	for RENESAS	Search	
	GENERAL SERVICES PRODUCTS SUPPORT HELP LINKS	» DOCUMENTATION »	
	Download Latest Toolchains	Language:	
	Renesas RX	◆ 羅English → ● 日本語	
	GCC for Renesas 8.3.0.202204-GNURX Toolchain ?	News Calendar	
	Release Description Download	File Size Search Q	
	30-11-2022 GCC for Renesas 8.3.0.202204-GNURX Windows	47 MB MAY 2023	
	30-11-2022 GCC for Renesas 8.3.0.202204-GNURX Windows Toolchain (ELF) Download 1	L47 MB MAY 2023 M T W T F S S	

Figure 28 Open Source Tools for Renesas: GCC for Renesas RX

After downloading the installer, confirm the permission to execute it. Enter the required command and then run the installer.

Example:

cd ~/Downloads chmod +x gcc-8.3.0.202204-GNURX-ELF.run ./gcc-8.3.0.202204-GNURX-ELF.run



Figure 29 Running the Installer for GCC for Renesas RX



Quick Start Guide for the Linux Hosted Version of the e2 studio



Figure 30 Registering GCC for Renesas RX



6.4 Toolchain for RH850 Family

When a software product for use on a device of the RH850 family is to be built in the e² studio, CC-RH is required.

The CC-RH installer is available from Renesas product page (<u>https://www.renesas.com/software-tool/c-compiler-package-rh850-family</u>). In addition, the Renesas License Manager is necessary to use CC-RH. Please refer to chapter 6.1 for installation of the Renesas License Manager.

6.4.1 Installing and Registering the CC-RH

Please refer to the "Readme" file enclosed in the CC-RH installer or the "Renesas Compiler Installation Guide" web page (<u>https://www.renesas.com/software-tool/compiler_installation_guide</u>) for CC-RH installation.

Ð	softgi@softgiUbuntu: ~/Downloads Q		×
soft cc-rh cc-rh lit:2 Hit:2 Hit:2 Hit:2 Hit:3 Hit:4 Readi Builo Readi Builo Readi Builo Readi Builo Readi Soft Q Readi Soft Soft Soft Soft Soft Soft Soft Soft	<pre>gi@softgiUbuntu:-/Downloads\$ ls h-20601_2.06.01_amd64.deb cc-rx-30601_3.06.01_amd64.deb license-manager_2.07.00_amd64.deb l-11301_1.13.01_amd64.deb e2studio_installer-2024-04_linux_host.run gi@softgiUbuntu:-/Downloads\$ sudo apt-get update l https://jp.archive.ubuntu.com/ubuntu jammy InRelease 2 http://jp.archive.ubuntu.com/ubuntu jammy-security InRelease 3 http://jp.archive.ubuntu.com/ubuntu jammy-backports InRelease 5 http://parchive.ubuntu.com/ubuntu jammy-backports InRelease 6 https://pa.launchpadcontent.net/deadsnakes/ppa/ubuntu jammy InRelease ing package lists Done gi@softgiUbuntu:-/Downloads\$ sudo apt-get install ./cc-rh-20601_2.06.01_amd64.deb ing package lists Done ding dependency tree Done ing state information Done , selecting 'cc-rh-20601' instead of './cc-rh-20601_2.06.01_amd64.deb' following NEW packages will be installed: -rh-20601 graded. 1 newly installed, 0 to remove and 436 not upgraded. to get 0 B/17.7 MB of archives. r this operation, 0 B of additional disk space will be used. 1 /home/softgi/Downloads/cc-rh-20601_2.06.01_amd64.deb cc-rh-20601_amd64 2.06.01 [17.7 MB] onfiguring packages cting previously unselected package cc-rh-20601. ding database 204936 files and directories currently installed.) aring to unpack/cc-rh-20601_2.06.01_amd64.deb cking cc-rh-20601 [2.06.01] ing up cc-rh-20601 [2.06.01] ing up cc-rh-20601 [2.06.01] ing up cc-rh-20601 [2.06.01] ownload is performed unsandboxed as root as file '/home/softgi/Downloads/cc-rh-20601_2.06.01_amd64.deb 'co essed by user '_apt' pkgAcguire::Run (13: Permission denied)</pre>	ouldn	t be
	green regressing a second s		

Figure 31 Installation example of the CC-RH



After the installation is complete, start e² studio, execute the [Help – Add Renesas Toolchains] menu, and select "Add..."Press the button and enter the path where CC-RH is installed to register.

File EC			Preferences		
	type filter text	Renesas Toolchain Management			\$ ₹ \$
heroje	General				
There To add	▶ C/C++	Toolchain Type	Installation Path		
- Cr	Help	✓ GNO AKM Embedded ✓ 13.2.1.arm-13-7	/home/jongookoh/.local/share/renesas/e2 studio/toolchai	ins/gcc arm/13 2-Rel1/arm-gnu-to	oolchain-13.2.Rel1-x86 64-arm-none-eabi/
🖻 🖬	Install/Update	2 12.2.1.arm-12-24	/home/jongookoh/.local/share/renesas/e2_studio/toolchai	ins/gcc_arm/12_2-Rel1/arm-gnu-te	oolchain-12.2.rel1-x86_64-arm-none-eabi/
🔂 🖸	Language Servers	2 10.3.1.20210824	/home/iongookoh/.local/share/renesas/e2_studio/toolchai	ins/acc arm/10 3 2021 10/gcc-ar	m-none-eabi-10.3-2021.10/
📑 🖸	Library Hover	Linaro	Add New Toolchain	×	
🔤 İm	Oomph	Renesas DSP Assembler	ate a new toolchain which is not already registered.		
	PyDev	KPIT GNURL78-ELF Toolchain	: Renesas CC-RH - v2.06.01		
	Remote Developme	KPIT GNUBX-ELE Toolchain			
	Remote Systems	GCC ARM A-Profile (AArch64 Locatio	n: /usr/local/Renesas/CC-RH/V2.06.01	Browse	
	Renesas Reakpoints	10.3.1.20210621		_2021_07	/gcc-arm-10.3-2021.07-x86_64-aarch64-non
	Device add-ins St	LLVM Embedded Toolchain fe			
	FSP	LLVM for RL78			
	Launch Settings	Renesas CC-RH			
	Logging	MinGW			
	Module Download	KPIT GNUARM-NONE-EABI TC			
	My Renesas	Linaro 64bit	Cancel	ОК	
	Reality AI Authen	Reperts CC-RI			
	Renesas QE	Benesas CC-RX			
	Renesas Toolchai	GCC for Renesas RX			
	Smart Browser	Renesas SMS Assembler			
	Smart Demo	GCC for Renesas RL78			
	Smart Manual				
	Support Folders				
	Tracealyzer				
	TraceX				
	Run/Debug		Download Scan Add		
	? 🏊 🖆 🛞				Cancel Apply and C

Figure 32 Registering CC-RH



Quick Start Guide for the Linux Hosted Version of the e2 studio

6.5 Installing and Registering the FSP

When a version of the FSP that is not included in the installer for the e² studio Linux is to be installed, unzip the zip-format package file obtained from the FSP page, copy the folder "internal" and its contents to the installation directory of the e² studio, and restart the e² studio.

Example:

cd ~/Downloads unzip FSP_Packs_v5.2.0.zip cp ./internal ~/renesas/e2_studio/ -rf



6.6 Installing and Registering the ARM GNU Toolchain

When a version of the ARM GNU toolchain that is not included in the installer for the e² studio is to be installed, register it through the following method.

Download the ARM GNU toolchain obtained from the Web page of ARM (https://developer.arm.com/downloads/-/arm-gnu-toolchain-downloads).



Figure 33 Example: Linux Installer for the x86_64 Architecture of the 9-2020-q2-update ARM GNU Toolchain

Extract the downloaded compressed file to the appropriate path.

Example:

```
cd ~/Downloads
tar -xvf gcc-arm-none-eabi-9-2020-q2-update-x86_64-linux.tar.bz2 -C ~/toolchains/
```

Downloads GNU Arm × +								~	×
← → C 🛨	user@Ubuntu: ~/Downloads	Q = ×			E	1		± ੯] ≡
CITM Develo user@Ubuntu:~\$ cd ~/Dow x.tar.bz2 -C ~/toolchai	nloads/ \$ tar -xvf gcc-arm-none-eabi-9-2020-q ns/∎	2-update-x86_64-linu	er Document	ation D	Downloads	Community	Support	ΙQ	Ŋ
Developing on Arm ~ gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man1/arm-none						0 🎽	
Home / Downloads / (gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/manl/arm-none							
GNU Ar gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/manl/arm-none							
gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man1/arm-none							
Overview cc-arm-none-eabi-9-202 -eabi-windmc.1	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man1/arm-none							
gcc-arm-none-eabi-9-202 -eabi-gcov.1	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man1/arm-none	*	+	*	+	*	*	*
gcc-arm-none-eabi-9-202 -eabi-g++.1 This c-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man1/arm-none							
gcc-arm-none-eabi-9-202 gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man5/arm-none							
See A gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man5/arm-none	5						
gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea 0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man7/ bi/man/man7/gfdl.7							*
gcc-arm-none-eabi-9-202 gcc-arm-none-eabi-9-202	0-q2-update/share/doc/gcc-arm-none-ea 0-q2-update/share/doc/gcc-arm-none-ea	bi/man/man7/gpl.7 bi/man/man7/fsf-fund							F
ing.7 user@Ubuntu:~/Downloads	\$ cd ~/toolchains/								edba
user@Ubuntu:~/toolchain gcc_8.3.0.202204_rx_elf	s\$ ls llvm_10.0.0.202303_rl78-	elf							÷
gcc-arm-none-eabi-9-202 user@Ubuntu:~/toolchain	0-q2-update								

Figure 34 Example of Extraction of a Compressed File: 'tar' Command



Quick Start Guide for the Linux Hosted Version of the e2 studio

After having extracted the compressed file, register the toolchain by starting the e² studio, selecting the [Help] menu and the [Add Renesas Toolchains] item, clicking on the [Add...] button with [GNU ARM Embedded] selected, and entering the path where the GNU ARM toolchain has been extracted.

	works	pace - e² studio x			
ile Edit Source Re	factor Navigate Search Project R	enesas Views Run Window Help			
🛛 🛛 🛪 🔨 🕶 🛛 🗙	k ▼ 9<u>4</u> ▼ i Bi 11	🚳 Welcome			
Project Explorer ×		 ⑦ Help Contents ※ Search 			
E 4	7 8	Show Context Help			
There are no projects	in your	Show Active Keybindings	Shift+Ct	rl+L	
workspace. To add a project:		Cheat Sheets			
Graata a project.	- file	Renesas Help			
project in a direct		CMSIS Packs Management			
containing existin	g code	💋 Add Renesas Toolchains			
Create a new C or project	<u>C++</u>	C Eclipse User Storage Integrate non-integrated toolchains Perform Setup Tasks			
Create a project	.	🍫 Check for Updates			
mport projects		Preferences			
		T elefences		^	
type filter text	Renesas Toolchain Management			⇔ ▼ ⇔ ▼ 🖇	
General	Toolchain Type	Installation Path			
C/C++					
Help	GNU ARM Embedded	/hema/user/reperse/o2_studie/tealshaips/gcs_arm/10_2_2021_1	Olace arm pape an	bi 10 3 2021 10/	
Install/Update	Renesas DSP Assembler	/iome/user/renesas/ez_studio/tooichains/gcc_am/10_5_2021_1	o/gcc-arm-none-ea	bi-10.3-2021.10/	
Java	KPIT GNUBL78-ELE Toolchain	Add New Toolchain	×		
Language Servers	KPIT GNURX-ELF Toolchain	Integrate a new toolchain which is not already registered.			
Library Hover	👻 🗹 GCC ARM A-Profile (AArch64 ba	Found: GNU ARM Embedded - 9.3.1.20200408			
Remote Developme	✓ 10.3.1.20210621			.3-2021.07-x86_64-aarch64-none-elf/	
Renesas	🕆 🛃 LLVM for RL78	Location: /home/user/toolchains/gcc-arm-none-eabi-9-2020-q2-update	Browse		
Breakpoints	✓ 10.0.0.202303				
Device add-ins St	Renesas CC-RH		_		
FSP FSP	KPIT GNUARM-NONE-EABI Toolo				
Launch Settings	xPack GNU ARM Embedded				
Logging	Reflesas CC-RL				
Module Download	Reflesas CC-RX				
My Renesas	✓ 8.3.0.202204	(?) Cancel	ок		
Reality AI Authen	Renesas SMS Assembler				
Renesas QE	GCC for Renesas RL78				
Reflesas looichai					
Smart Browcor		Download Scan Add Remove			
 Smart Browser Smart Configurat 					
Smart Browser Smart Configurat					

Figure 35 Registering the ARM GNU Toolchain



6.7 Installing Libgen Update

We provide "Libgen Update for GNU ARM Embedded Toolchains" for the building of newlib by users of the ARM GNU toolchain. It can be obtained from the "Open Source Tools for Renesas" site (<u>https://llvm-gcc-renesas.com/</u>; downloading some toolchains requires user registration).



Figure 36 Open Source Tools for Renesas: Libgen Update for GNU ARM Embedded Toolchains

After downloading the installer, confirm the permission to execute it. Enter the required command and then run the installer.

Example:

cd ~/Downloads chmod +x LibgenUpdateInstall_v1.2022.09.run sudo ./LibgenUpdateInstall_v1.2022.09.run < Enter the path where the ARM GNU toolchain has been installed. Example: /home/user/toolchains/gcc-arm-none-eabi-9-2020-q2-update/ >

Activities 🕟 Terminal	6月 1 15:21	÷ ∎0) (*
Ð	user@Ubuntu: ~/Downloads	Q = ×
user@Ubuntu:~/Downloads\$ s	udo ./LibgenUpdateInstall_v1.2022.09.run	
Libgen Update for GNU ARM Launch date: 4th of Septem Copyright (c) 2015-2022 by Get FREE worldwide support	Embedded Toolchains Installer (version v1.2022.09) uber, 2022 / CyberTHOR Studios Ltd. All Rights Reserved. t at https://llvm-gcc-renesas.com	
Please specify a path wher The Libgen update will be Please make sure that you before continuing the inst	e to install the Libgen update to: /home/user/toolchains/gcc-arm-none-eabi-9- installed in: /home/user/toolchains/gcc-arm-none-eabi-9-2020-q2-update/ have permissions to write to the "/home/user/toolchains/gcc-arm-none-eabi-9-2 callation process.	2020-q2-update/ 2020-q2-update/" folder
Are you sure you want to c Attempting to install Libg Permissions have been veri	:ontinue? [y/n] (default 'n') y jen update in "/home/user/toolchains/gcc-arm-none-eabi-9-2020-q2-update/" ffied.	
Please wait, extracting fi Detecting Libgen version Please wait, decompressing	.les . version 3.3.0 detected g data	
Libgen Update for GNU ARM Installation complete! user@Ubuntu:~/Downloads\$	Embedded Toolchains has been installed successfully!	

Figure 37 Running Libgen Update



7. Installing Emulator Drivers

When you are using an emulator for debugging, install a Linux driver for the emulator.

7.1 E2 emulator and E2 emulator Lite

Download the E2 emulator driver for Linux from the product page of the E2 emulator.

E2 emula	ator [RTEOTOC × +	v ×
← → C	○ A https://www.renesas.com/us/en/software-tool/e2-emulator-rte0t00020kce00000r#overview □ ☆	ල දු ≡
	Overview Downloads Documentation Design & Development Product Options Support Videos & Training Additional Details	
	* Downloads	
	Type to filter results by title Q All types	
	E2 emulator Self Check Program V.1.02.00 創 ZIP 3.47 MB 日本語 Software & Tools - Other Feb 6, 2021	
	E2 emulator, E2 emulator Lite Linux driver Software & Tools - Other Oct 1, 2020	
	USB Driver for Renesas MCU Tools V2.77.00 (for 64-bit version of Windows OS) Upgrade - IDE Jan 21, 2019 會 ZIP 3.25 MB 日本語	
	USB Driver for Renesas MCU Tools(E2,E2 Lite,IE850,IE850A,PG-	
	FP5) V2.77.00(for 32-bit version of Windows OS) Upgrade - IDE Jan 21, 2019 ● ZIP 3.09 MB 日本語 日本語	
	FP5) V2.77.00(for 32-bit version of Windows OS) Upgrade - IDE Jan 21, 2019 自 zIP 3.09 MB 日本語 External Hash Definition Editor V.1.00 Release 01 Upgrade - Programmer Mar 5, 2012 自 ZIP 730 KB 日本語 Upgrade - Programmer Mar 5, 2012	

Figure 38 Downloading an Emulator Driver

Unzip the downloaded zip file and register the driver with Linux, referring to the user's manual (.md file). Example:



After the emulator has been connected to the PC, run the lsusb command to confirm the state of the emulator having been recognized.



Figure 39 Confirming the State of the Emulator Having been Recognized



7.2 Segger J-Link

Download the J-Link driver for Linux from the product page of Segger.

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J-Link Software and Documer All-in-one debugging solution Can be downloaded and used model. Not all features of it may be av Updated frequently Beleeas Notes More information	tation pack free of charge by any owner of a SEGGER <u>J-Link, J-Trace</u> or <u>Flasher</u> railable on all J-Link / J-Trace / Flasher models.	[2023-05-24]	Windows <u>\$ 64-bit Installer</u> Windows ARM <u>\$ 64-bit Installer</u> Linux <u>\$ 64-bit DEB Installer</u> <u>\$ 64-bit TGZ Archive</u> Linux ARM <u>\$ 64-bit TGZ Archive</u> macOS	

Figure 40Downloading a J-Link driver for Linux

After downloading the installer, confirm the permission to execute it. Enter the required command and then run the installer.

Example:

cd ~/Downloads chmod +x JLink_Linux_V788d_x86_64.deb sudo apt install ./JLink_Linux_V788d_x86_64.deb

After the emulator has been connected to the PC, run the lsusb command to confirm the state of the emulator having been recognized.

Ð	user@Ubuntu: ~/Downloads	Q = ×
user@Ubuntu:~/Downloads\$	ush	
Bus 002 Device 001: ID 1d6b	:0003 Linux Foundation 3.0 root	hub
Bus 001 Device 003: ID 8087	:0a2a Intel Corp. Bluetooth wir	eless interface
Bus 001 Device 002: ID 31D2 Bus 001 Device 004: ID 1366	:0010 KIMICTO KI USB AUGIO	
Bus 001 Device 001: ID 166b	:0002 Linux Foundation 2.0 root	hub
user@Ubuntu:~/Downloads\$		

Figure 41 Confirming the State of the Emulator Having been Recognized



e² studio

Quick Start Guide for the Linux Hosted Version of the e2 studio

Revision History

		Descript	ion
Rev.	Date	Page	Summary
1.0	Jun.30.23		First Edition issued
1.01	Oct.11.23	—	Fixed Page Layout (No correction of contents)
1.02	Apr.25.24	—	Revised based on e ² studio 2024-04
			(addition of DA devices, etc.)
			Added how to install CC-RL, RX, RH



General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Precaution against Electrostatic Discharge (ESD)

A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

2. Processing at power-on

The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power is supplied until the power is supplied until the power reaches the level at which resetting is specified.

3. Input of signal during power-off state

Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

4. Handling of unused pins

Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.

5. Clock signals

After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.
6. Voltage application waveform at input pin

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).

7. Prohibition of access to reserved addresses

Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

8. Differences between products

Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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