Integrated Development Environment e² studio

How to use IAR Systems compiler in e² studio

Introduction

When you will install IAR Eclipse plugins on the e^2 studio, you can develop projects (create projects, configure Build options, and execute Build) on the e^2 studio using the IAR Systems compilers.

This document describes the procedure for using the IAR Systems compiler on the e^2 studio.

Contents

1. Overview

1.1 Purpose

e² studio is an integrated development environment for Renesas microcontrollers based on the open source "Eclipse". By embedding various plugins of Eclipse, e² studio is possible to realize work with external tool and add/extend features.

If you want to develop projects (create projects, configure Build options, and execute Build) on the e² studio using the IAR Systems compilers, you need to install IAR Embedded Workbench on your PC and then install the IAR Eclipse plugins on the e² studio.

This document describes the setup procedure for using IAR Systems compilers on the e² studio, as well as the procedures for creating a project, configuring Build options, and executing Build using IAR Systems compilers.

- As an example, the case of using IAR ARM compiler for RA project on the e² studio is described.
- The IAR Eclipse plugins support various Renesas devices other than the RA family.

  Refer to the following page for supported devices and compilers.

  IAR Embedded Workbench for Eclipse
- The basic procedures are the same when using compilers for devices other than the RA family. When using a compiler for non-RA family devices, please read to replace the device name and compiler name.
- When incorporating a Flexible Software Package (FSP) into a project for the RA or RZ family that uses the IAR Systems compilers, we recommend using a standalone FSP configurator (RA Smart Configurator: RASC or RZ Smart Configurator: FSP SC) in combination with IAR Embedded Workbench.

  The standalone FSP configurator is available on the page (Software - Middleware, Drivers, OS | Renesas) of each FSP.

  If using RASC with IAR Embedded Workbench or Keil MDK, see RASC User Guide for MDK and IAR.

  RA Flexible Software Package Documentation: Starting Development (renesas.github.io)

[IAR Eclipse plugins]

IAR Eclipse plugins control IAR Systems compilers on the e² studio, allowing you to create projects, configure Build options, and execute Build of IAR Systems compilers on the e² studio.

1.2 Environment

This content is described based on the following environment:

[OS]

- Windows10 64bits

[Tool]

- e² studio 2024-07
- IAR Eclipse plugins
- IAR Embedded Workbench (include ARM Compiler)

In advance, please install the e² studio to your PC.

This is a usage of combination with the products of IAR Systems, Renesas does not guarantee operation.

Please ask IAR Systems (and its distributors) for detailed specifications and usage of IAR Systems compilers, IAR Eclipse plugins, and C-SPY debuggers.

2. Install IAR Embedded Workbench

Purchase or obtain IAR Embedded Workbench for Arm from IAR Systems and install it.

You can download the evaluation version of IAR Embedded Workbench for Arm from IAR Systems web site (https://www.iar.com/). However, user registration is required to download.

If you want to create a project for devices other than the RA family, please purchase or obtain IAR Embedded Workbench for your device.

3. Install IAR Eclipse plugins

This chapter describes how to install IAR Eclipse plugins on the e² studio.

- If the installation of the IAR Eclipse plugins fails by following the instructions described in this chapter, please download plugins by yourself from IAR Embedded Workbench for Eclipse and install it referring to the following page.

  How to Install a Generic Eclipse Plug-in on e² studio | Renesas Customer Hub

1) Launch e² studio after finish installing IAR Embedded Workbench.
2) Select menu item [Help] > [IAR Embedded Workbench plugin manager…].
3) The [Progress Information] message appears, confirming the existing plugins.

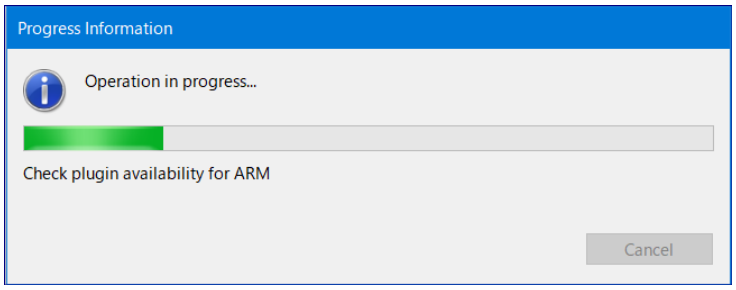

Figure 1

4) The [IAR Embedded Workbench plugin manager] dialog appears after finish confirming the existing plugins. Choose an installed version of IAR Embedded Workbench for Arm with the [Supported targets] list box and the [Available IAR Embedded Workbench installations] list box. And press the [Install] button.

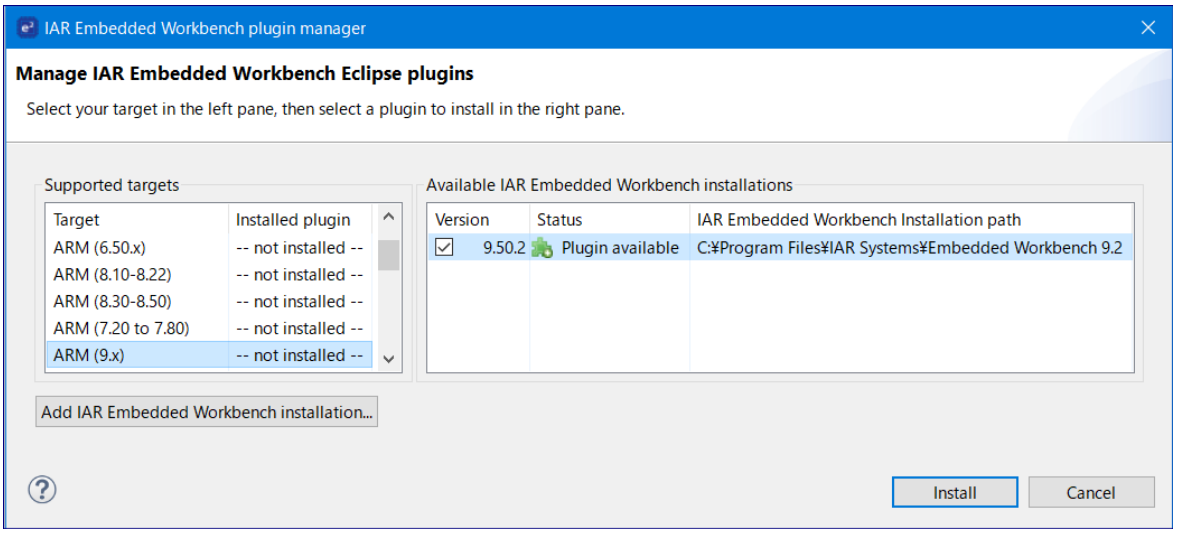

Figure 2

5) The download of plugins will begin. The download will proceed in the background. And the progress will be displayed on the status bar. Press the [Shows background operations in Progress view] button, [Progress] view is opened.

   Note: Downloading plugins takes time.

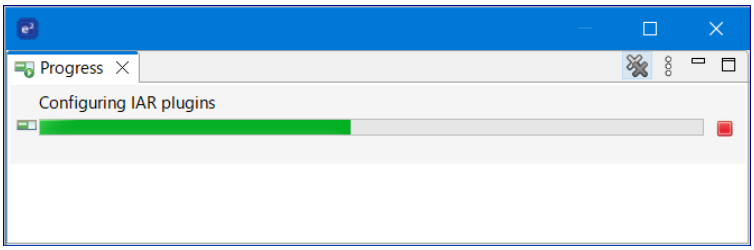

Figure 3

6) The [Install - Install] dialog appears after finish downloading plugins. Press the [Next >] button.

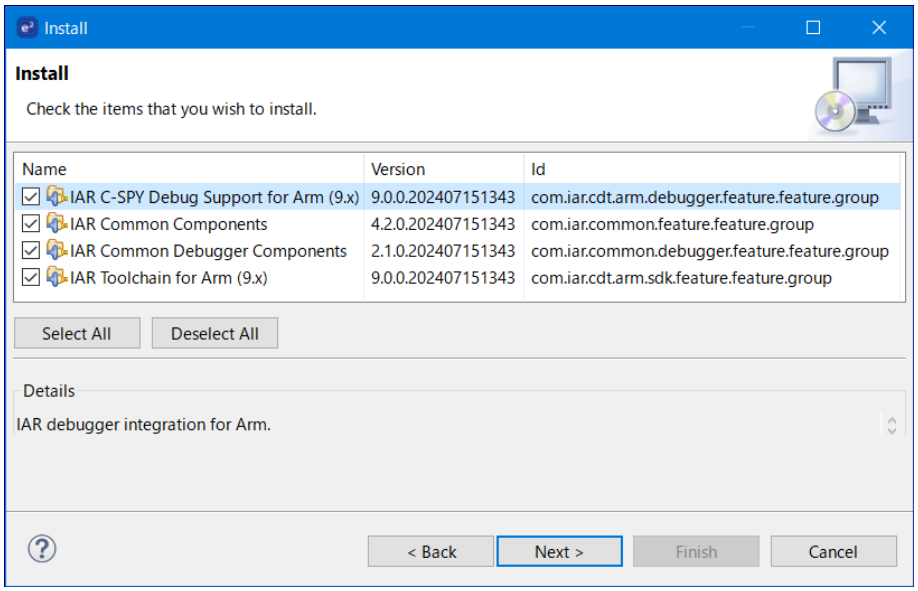

Figure 4

7) The [Install - Install Details] dialog appears. Press the [Next >] button.

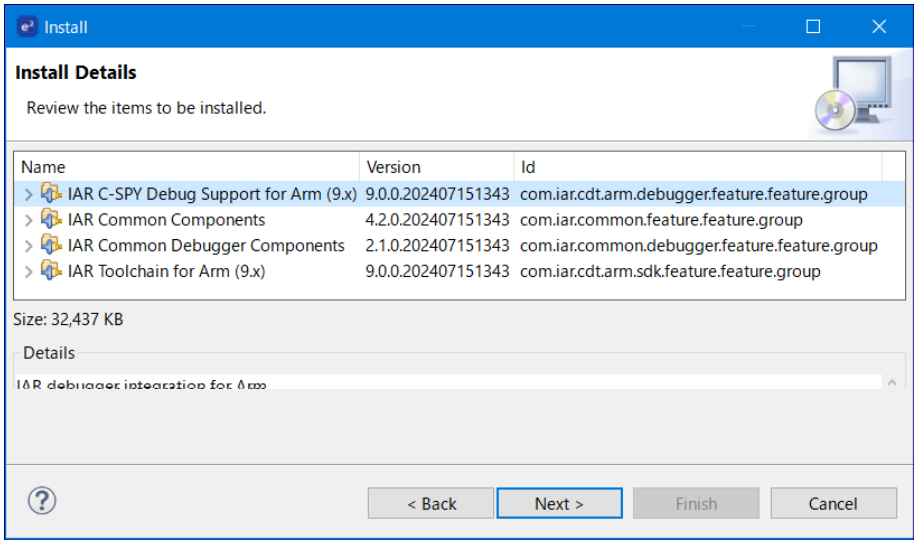

Figure 5

8) The [Install - Review Licenses] dialog appears. Accept terms of license agreement and turn on the check box "I accept terms of the license agreements". Then, press the [Finish] button in order to start the install of plugins.

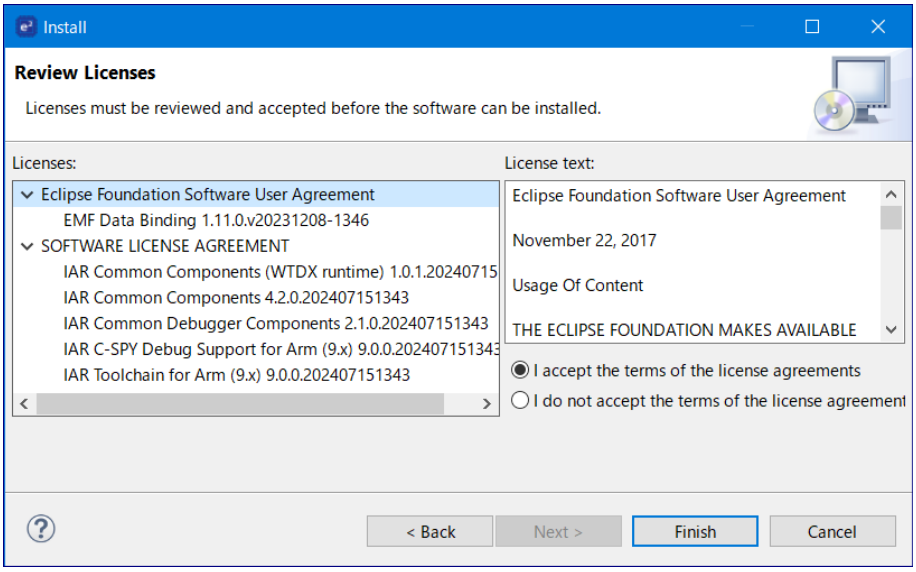

Figure 6

9) The install of the plugins will start. The installation will proceed in the background.

   Note: Installing plugins takes time.

10) The [Trust Authorities] message appears during installation. Press the [Select All] button and press the [Trust Selected] button.

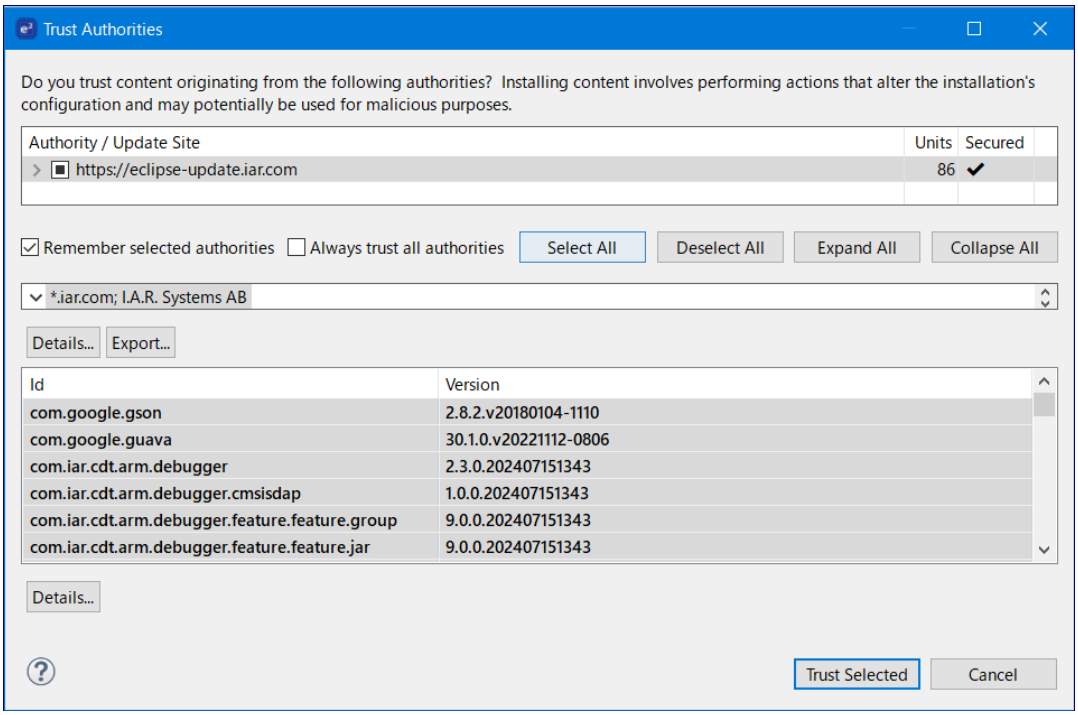

Figure 7

11) The [Trust Authorities] message appears again during installation. Press the [Select All] button and press the [Trust Selected] button.

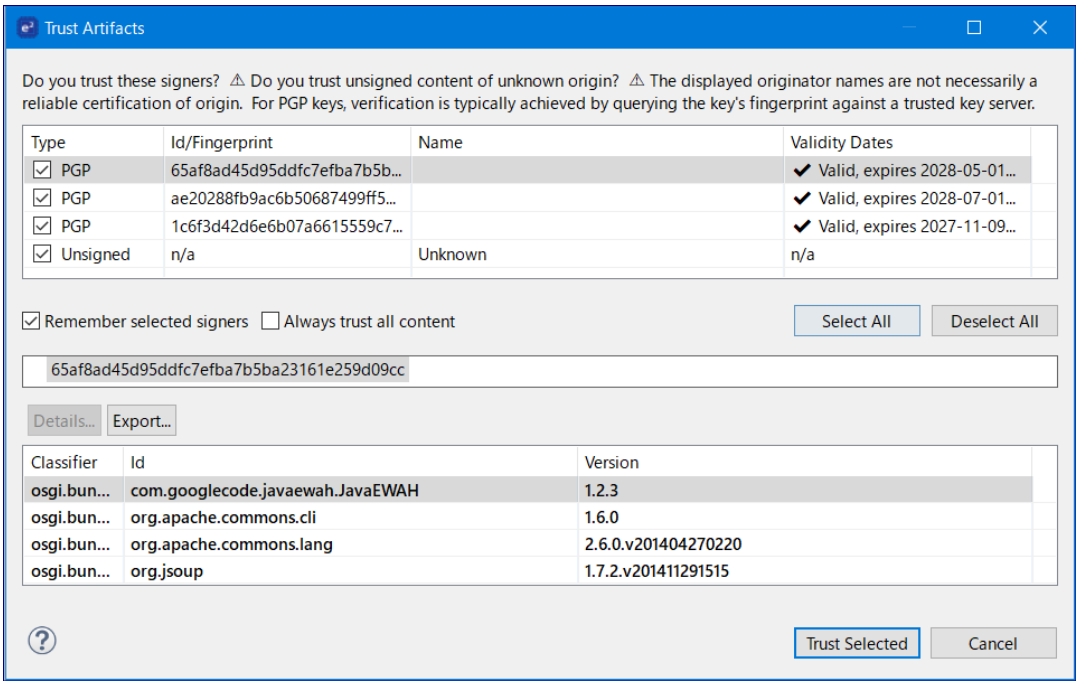

Figure 8

12) When the installation is completed, the following message appears to install e² studio. Press the [Restart Now] button.

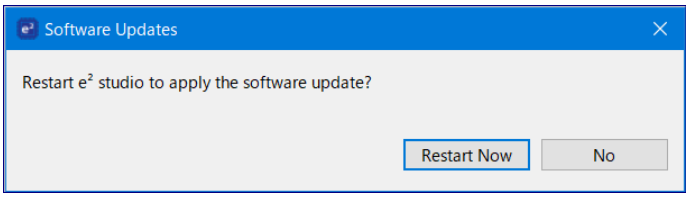

Figure 9

13) After restart e² studio, select menu item [Help] > [IAR Embedded Workbench plugin manager…] again.

If the plugins have been successfully installed, version number is displayed on "Installed plugin" in [Supported targets] list box. Press the [Cancel] button.

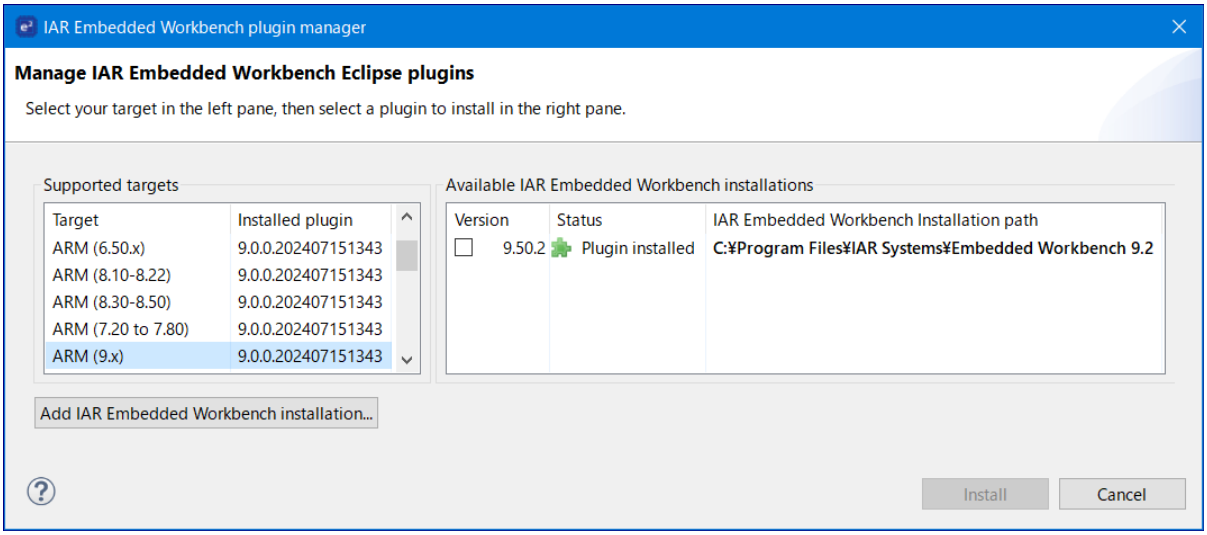

Figure 10

4. Creating a project

When IAR Eclipse plugins installation is complete, you can create RA family projects for using IAR Systems compiler, configure Build options, and execute Build for that project.

This chapter describes how to create a project.

1) Select the menu [File] > [New] > [Renesas C/C++ Project] > [RA Project].

2) The [New C/C++ Project - Templates for RA Project] dialog appears. Choose the "Renesas RA C/C++ Project". And press the [Next >] button.

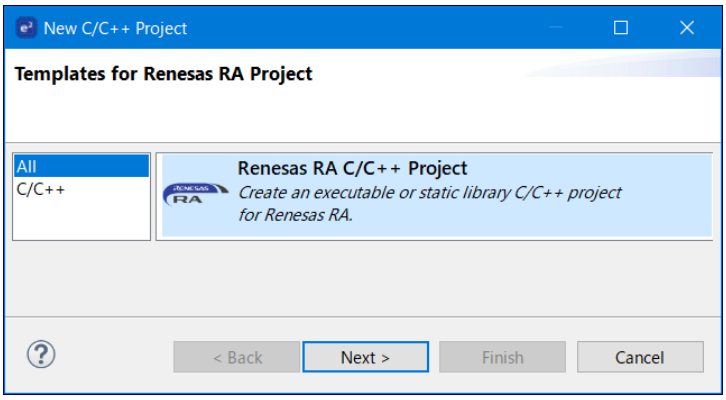

Figure 11

3) The [Renesas RA C/C++ Project - Project Name and Location] dialog appears. Input project name in the [Project name] textbox. And press the [Next >] button.

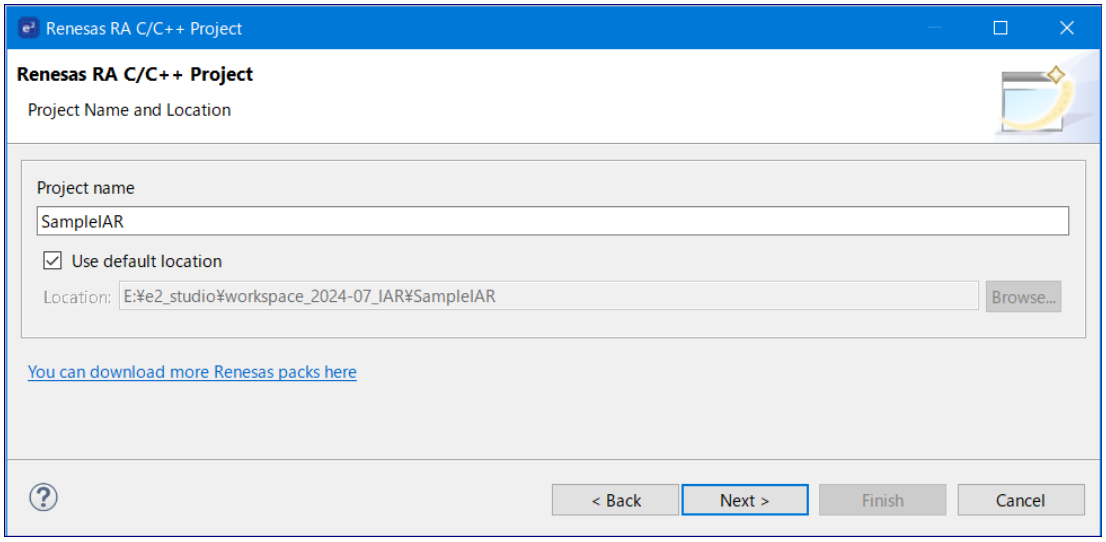

Figure 12

4) The [Renesas RA C/C++ Project - Devices and Tools Selection] dialog appears. Choose the suitable board and device for your project. And choose the "IAR Toolchain for Arm - (9.x)" in the [Toolchains] list box. Next, press the [Next >] button.

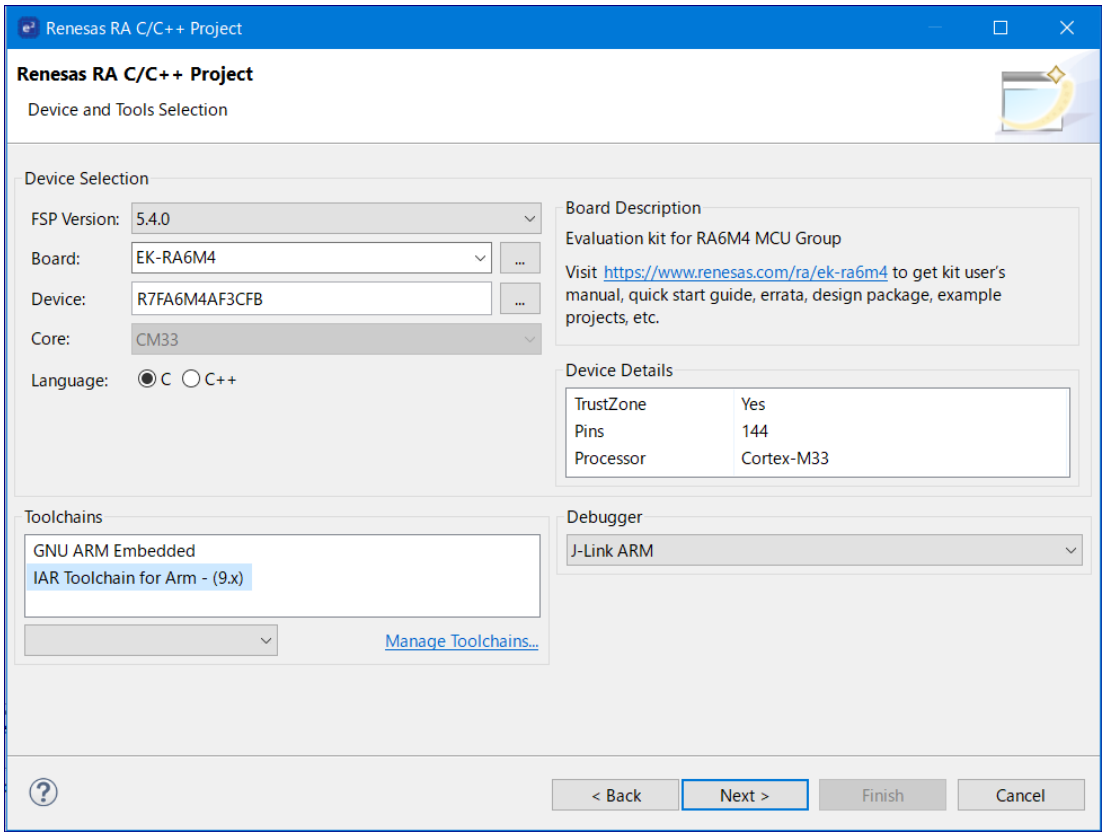

Figure 13

5) For the next page and any following pages, please set the suitable values for your project and press the [Finish] button on the last page.

6) The created project is shown on the [Project Explorer] view.

5. Configuring Build options

To configure Build options for the Compiler, Assembler, Linker, and more, select your project in the [Project Explorer] view and perform one of the following operations.

- Select the menu [Project] > [C/C++ Project Settings].
- Select the context menu [C/C++ Project Settings].

The [Tool Settings] tab in the [Properties] dialog appears. You can configure Build options.

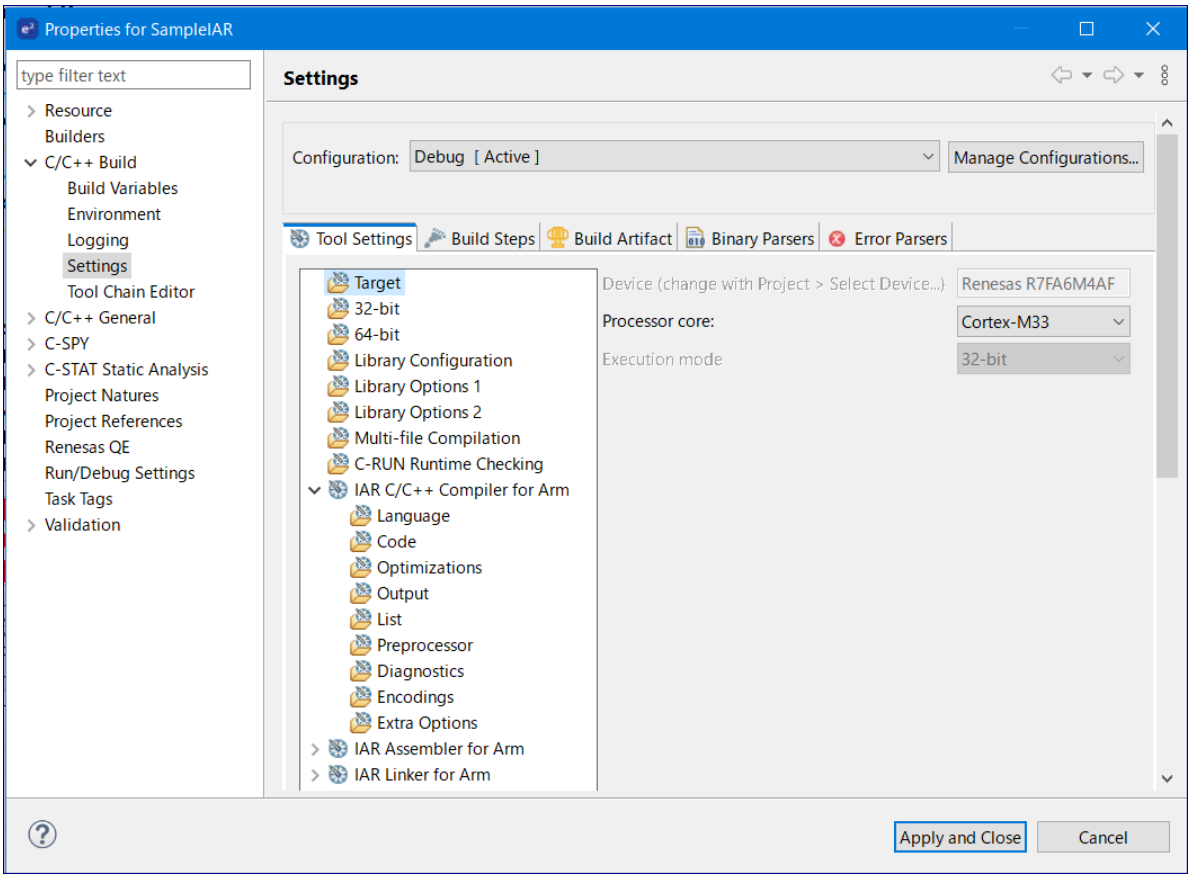

Figure 14

6. Executing Build

To execute the Build, select your project in the [Project Explorer] view and perform one of the following operations.

- Select the menu [Project] > [Build Project].
- Select the context menu [Build Project]

Notes:

To use IAR Systems compiler, you need to register a license. If the license is not registered, the following error will occur at execute Build time.

```
Fatal error[LMS001]: License check failed. Use the IAR License manager to resolve the
problem.
```

Register the license from "IAR License Manager". "IAR License Manager" is installed together with "IAR Embedded Workbench".

7. Reference information

7.1 Web site

- IAR Systems
  https://www.iar.com/

Revision History

Rev.	Date	Description	
		Page	Summary
Rev.1.00	Oct.03.23	-	First edition
Rev.1.01	Jul.03.24	Page2	1.1 Purpose Added recommended method for using FSP with RA/RZ family.
Rev.2.00	Sep.13.24	All	Changed the example project from RX family to RA family.

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

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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 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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