Quick Start Guide

RA2L2 Group

Evaluation Kit for RA2L2 Microcontroller Group
EK-RA2L2
Quick Start Guide

Renesas RA Family
RA2 Series

All information contained in these materials, including products and product specifications, represents information on the product at the time of publication and is subject to change by Renesas Electronics Corp. without notice. Please review the latest information published by Renesas Electronics Corp. through various means, including the Renesas Electronics Corp. website (https://www.renesas.com).

Renesas Electronics
www.renesas.com

Rev.1.10 Jan 2026

Downloaded from Arrow.com.

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/.

© 2026 Renesas Electronics Corporation. All rights reserved.

Downloaded from Arrow.com.

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 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.

Downloaded from Arrow.com.

Renesas EK-RA2L2 Disclaimer

By using this EK-RA2L2, the User accepts the following terms, which are in addition to, and control in the event of disagreement, with Renesas' General Terms and Conditions available at https://www.renesas.com/en-us/legal/disclaimer.html.

The EK-RA2L2 is not guaranteed to be error free, and the entire risk as to the results and performance of the EK-RA2L2 is assumed by the User. The EK-RA2L2 is provided by Renesas on an "as is" basis without warranty of any kind whether express or implied, including but not limited to the implied warranties of good workmanship, fitness for a particular purpose, title, merchantability, and non-infringement of intellectual property rights. Renesas expressly disclaims any implied warranty.

Renesas does not consider the EK-RA2L2 to be a finished product and therefore the EK-RA2L2 may not comply with some requirements applicable to finished products, including, but not limited to recycling, restricted substances and electromagnetic compatibility regulations. Refer to Certifications section, for information about certifications and compliance information for the EK-RA2L2. It is the kit User's responsibility to make sure the kit meets any local requirements applicable to their region.

Renesas or its affiliates shall in no event be liable for any loss of profit, loss of data, loss of contract, loss of business, damage to reputation or goodwill, any economic loss, any reprogramming or recall costs (whether the foregoing losses are direct or indirect) nor shall Renesas or its affiliates be liable for any other direct or indirect special, incidental or consequential damages arising out of or in relation to the use of this EK-RA2L2, even if Renesas or its affiliates have been advised of the possibility of such damages.

Renesas has used reasonable care in preparing the information included in this document, but Renesas does not warrant that such information is error free nor does Renesas guarantee an exact match for every application or parameter to part numbers designated by other vendors listed herein. The information provided in this document is intended solely to enable the use of Renesas products. No express or implied license to any intellectual property right is granted by this document or in connection with the sale of Renesas products. Renesas reserves the right to make changes to specifications and product descriptions at any time without notice. Renesas assumes no liability for any damages incurred by you resulting from errors in or omissions from the information included herein. Renesas cannot verify, and assumes no liability for, the accuracy of information available on another company's website.

Precautions

This Evaluation Kit is only intended for use in a laboratory environment under ambient temperature and humidity conditions. A safe separation distance should be used between this and any sensitive equipment. Its use outside the laboratory, classroom, study area, or similar such area invalidates conformity with the protection requirements of the Electromagnetic Compatibility Directive and could lead to prosecution.

The product generates, uses, and can radiate radio frequency energy and may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off or on, you are encouraged to try to correct the interference by one or more of the following measures:

• Ensure attached cables do not lie across the equipment.

• Reorient the receiving antenna.

• Increase the distance between the equipment and the receiver.

• Connect the equipment into an outlet on a circuit different from that which the receiver is connected.

• Power down the equipment when not in use.

• Consult the dealer or an experienced radio/TV technician for help.

Note: It is recommended that wherever possible shielded interface cables are used.

The product is potentially susceptible to certain EMC phenomena. To mitigate against them it is recommended that the following measures be undertaken:

• The user is advised that mobile phones should not be used within 10 m of the product when in use.

• The user is advised to take ESD precautions when handling the equipment.

The Evaluation Kit does not represent an ideal reference design for an end product and does not fulfill the regulatory standards for an end product.

Proprietary Notice

All text, graphics, photographs, trademarks, logos, artwork, and computer code, collectively known as content, contained in this document is owned, controlled, or licensed by or to Renesas, and is protected by trade dress, copyright, patent and trademark laws, and other intellectual property rights and unfair competition laws. Except as expressly provided herein, no part of this document or content may be copied, reproduced, republished, posted, publicly displayed, encoded, translated, transmitted, or distributed in any other medium for publication or distribution or for any commercial enterprise, without prior written consent from Renesas.

USB 2.0 Type-C™ is a registered trademark of the USB Implementers Forum.

Other brands and names mentioned in this document may be the trademarks or registered trademarks of their respective holders.

Downloaded from Arrow.com.

Renesas RA Family

EK-RA2L2

Contents

Corporate Headquarters 2

Contact information 2

Trademarks 2

1. Introduction 7
1.1 Assumptions and Advisory Notes 7

2. Kit Contents 7

3. Overview of the Quick Start Example Project 8
3.1 Quick Start Example Project Flow 8

4. Running the Quick Start Example Project 9
4.1 Connecting and Powering Up the EK-RA2L2 Board 9
4.2 Running the Quick Start Example Project 9

5. Customizing the Quick Start Example Project 13
5.1 Downloading and Installing Software and Development Tools 13
5.2 Downloading and Importing the Quick Start Example Project 13
5.3 Modifying, Generating, and Building the Quick Start Example Project 17
5.4 Setting Up Debug Connection between the EK-RA2L2 board and Host PC 20
5.5 Downloading and Running the Modified Quick Start Example Project 21
5.6 Firewall Dialog 23

6. Next Steps 24

7. Website and Support 24

Revision History 25

Figures

Figure 1. EK-RA2L2 Kit Contents 7
Figure 2. Quick Start Example Project Flow 8
Figure 3. Connecting the EK-RA2L2 Board to the Host PC via USB Full Speed Port 9
Figure 4. USB Serial Device in Windows Device Manager 10
Figure 5. Selecting the Serial Port on Tera Term 10
Figure 6. Select 115200 on the Speed Pulldown 11

Downloaded from Arrow.com.

Figure 7. Welcome and Main Menu 11
Figure 8. Kit Information 12
Figure 9. Next Steps 12
Figure 10. Creating a New Workspace 14
Figure 11. Launching the Workspace 14
Figure 12. Importing the Project 15
Figure 13. Importing Existing Projects into the Workspace 16
Figure 14. Clicking Next to Import Existing Projects into the Workspace 16
Figure 15. Finishing Importing the Quick Start Example Project 17
Figure 16. Opening the Configurator 18
Figure 17. Open Perspective 19
Figure 18. Modifying the Configuration Settings 19
Figure 19. Saving the Configuration Changes 20
Figure 20. Building the Project 20
Figure 21. Successful Build Output 20
Figure 22. Connecting the EK-RA2L2 Board to the Host PC via USB Debug Port 21
Figure 23. Selecting the Debug Option 21
Figure 24. Selecting the Debug Image 22
Figure 25. Selecting the Debug hardware 22
Figure 26. Opening the Debug Perspective 23
Figure 27. Executing the Project 23

Downloaded from Arrow.com.

1. Introduction

This Quick Start Guide (QSG) provides:

- An overview of the Quick Start example project that the EK-RA2L2 board comes pre-programmed with.
- Instructions for running the Quick Start example project.
- Instructions for importing, modifying, and building the Quick Start example project using Flexible Software Package (FSP) and e² studio Integrated Development Environment (IDE).

1.1 Assumptions and Advisory Notes

1. Tool experience: It is assumed that the user has prior experience working with IDEs such as e² studio and terminal emulation programs such as Tera Term.
2. Subject knowledge: It is assumed that the user has basic knowledge about microcontrollers, embedded systems, and FSP to modify the example project described in this document.
3. Prior to running the Quick Start example project or programming the EK-RA2L2 board, default jumper settings must be used. Refer to the EK-RA2L2 user's manual for the default jumper settings.
4. The screen shots provided throughout this document are for reference. The actual screen content may differ depending on the version of software and development tools used.

2. Kit Contents

The following components are included in the kit:

1. EK-RA2L2 board
2. Micro USB device cable (type-A male to micro-B male)
3. USB 2.0 Type-C™ device cable (USB 2.0 Type-C™ male to USB 2.0 Type-C™ male)

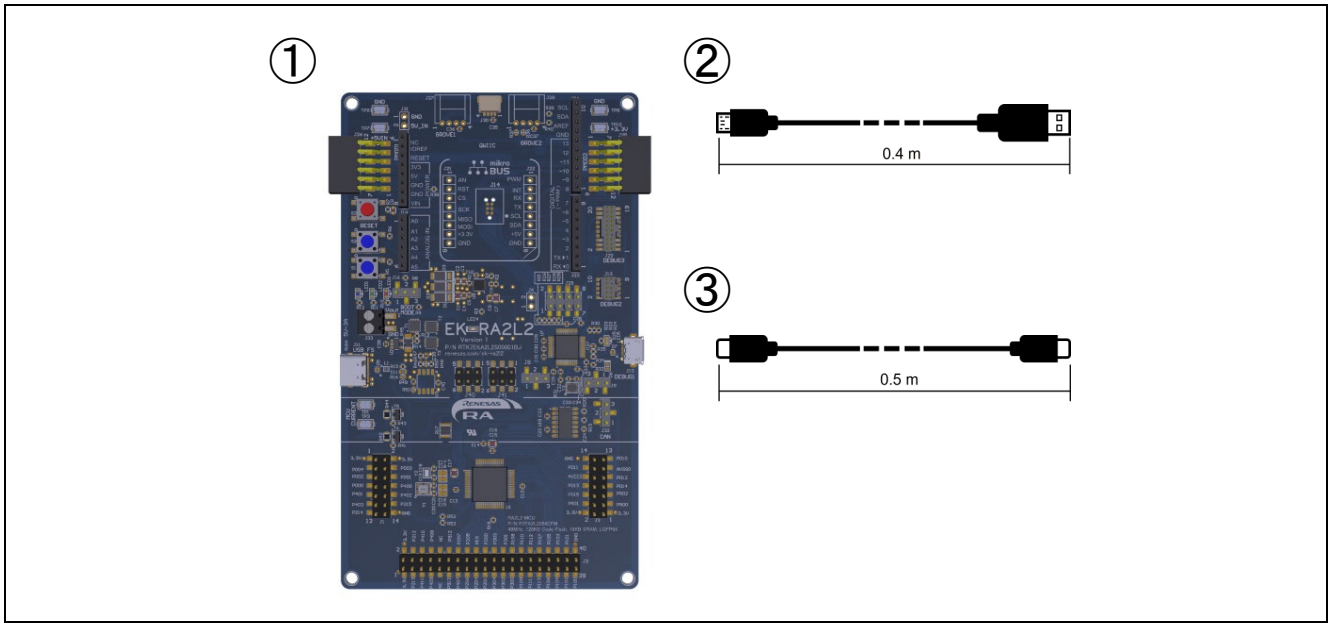


Figure 1. EK-RA2L2 Kit Contents

Downloaded from Arrow.com.

3. Overview of the Quick Start Example Project

The Quick Start example project allows the user to change the frequency and intensity of the on-board user LED1 (blue) using the user buttons (S1 and S2). The supported frequencies are 1 Hz, 5 Hz, and 10 Hz and the supported intensities are 10%, 50%, and 90%.

When the EK-RA2L2 board running the Quick Start example project is connected to a host PC via USB as a Full Speed CDC Device, the kit information, MCU die temperature, and user LED blinking frequency are displayed on a terminal console.

3.1 Quick Start Example Project Flow

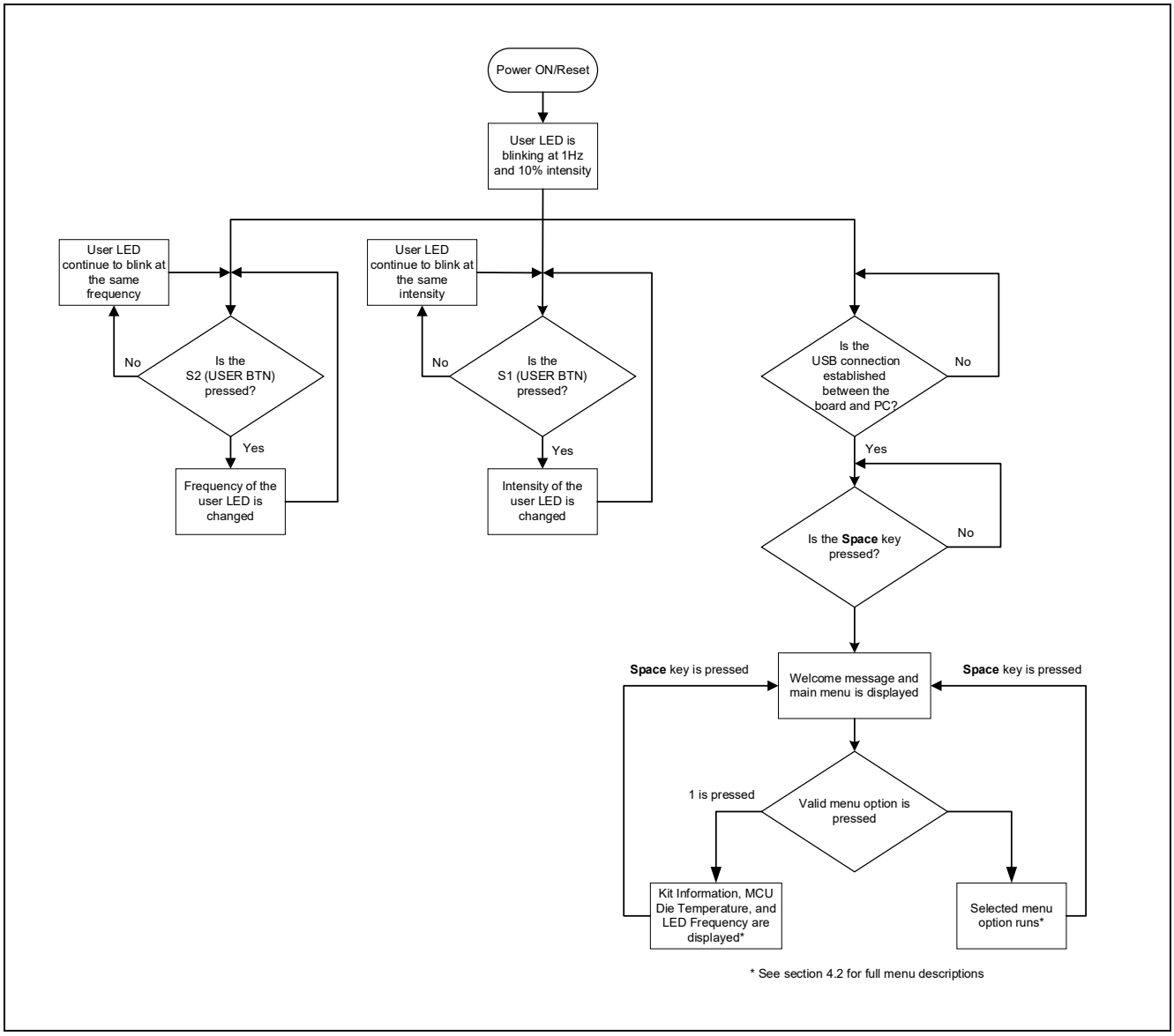


Figure 2. Quick Start Example Project Flow

Downloaded from Arrow.com.

4. Running the Quick Start Example Project

This section lists the requirements and instructions to power up the EK-RA2L2 board and run the Quick Start example project.

Hardware Requirements

- EK-RA2L2 board
- USB 2.0 Type-C™ device cable
- A PC with at least 1 USB Type-C port

Software Requirements

- Windows® 10 operating system
- USB Serial Drivers (included in Windows 10)
- Tera Term (or similar) terminal console application

4.1 Connecting and Powering Up the EK-RA2L2 Board

1. Connect the USB Type-C end of the USB Type-C device cable to USB Full Speed port (J11, USB FS) of the EK-RA2L2 board.
2. Connect the other end of this cable to the USB Type-C port of the host PC. Power LED (LED4) on the EK-RA2L2 board lights up white, indicating that the EK-RA2L2 board is powered on.

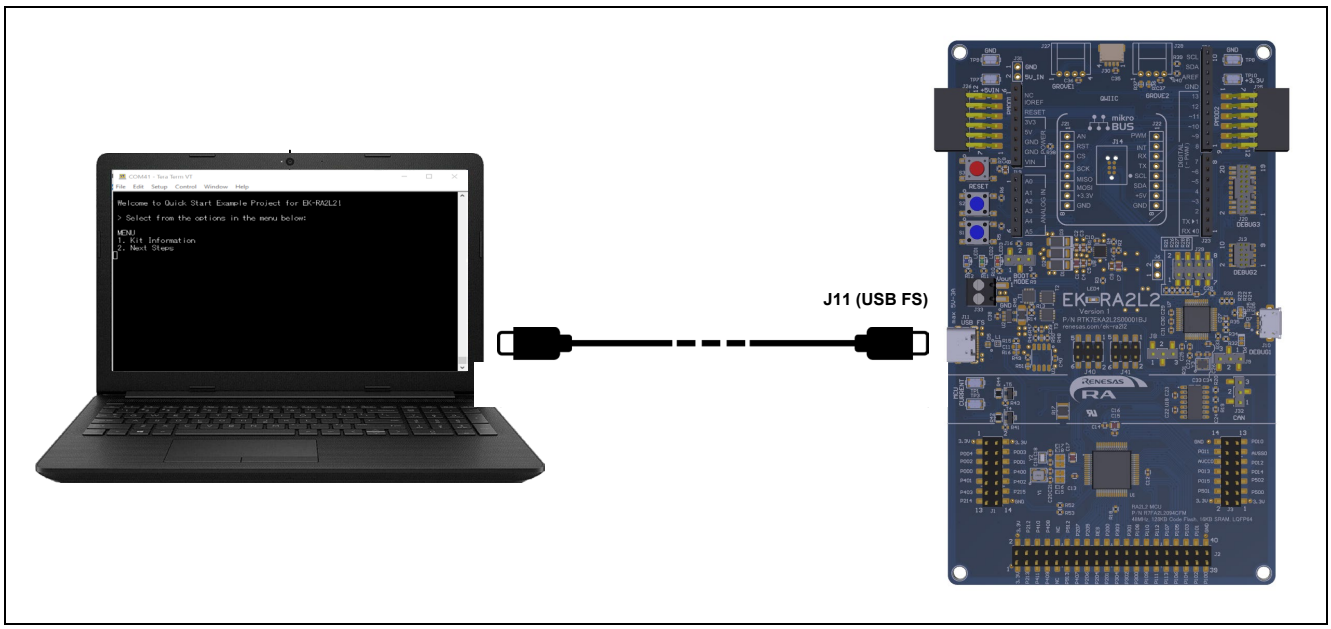


Figure 3. Connecting the EK-RA2L2 Board to the Host PC via USB Full Speed Port

4.2 Running the Quick Start Example Project

To run the Quick Start example project, use the following instructions:

1. On power up or RESET, the three user LEDs will take on the following states:
   - LED1 Blue - Blinking at 1 Hz frequency and at 10% intensity
   - LED2 Green – Steady, full intensity
   - LED3 Red – Off
2. Press the user button (S1) on the board to change the intensity of the user LED1. With every press of the user button (S1), the intensity will switch from 10% to 50% to 90% and cycle back.
3. Press the user button (S2) on the EK-RA2L2 board to change the blinking frequency of the user LED1 (blue). With every press of the first user button (S2), the frequency will switch from 1 Hz to 5 Hz to 10 Hz and cycle back.
4. On the host PC, open Windows Device Manager, Expand **Ports (COM & LPT)**, locate **USB Serial Device (COMxx)** and note down the COM port number for reference in the next step.

Downloaded from Arrow.com.

Note: USB Serial Device drivers are required to communicate between the EK-RA2L2 board and the terminal application on the host PC. These are already included in Windows 10.

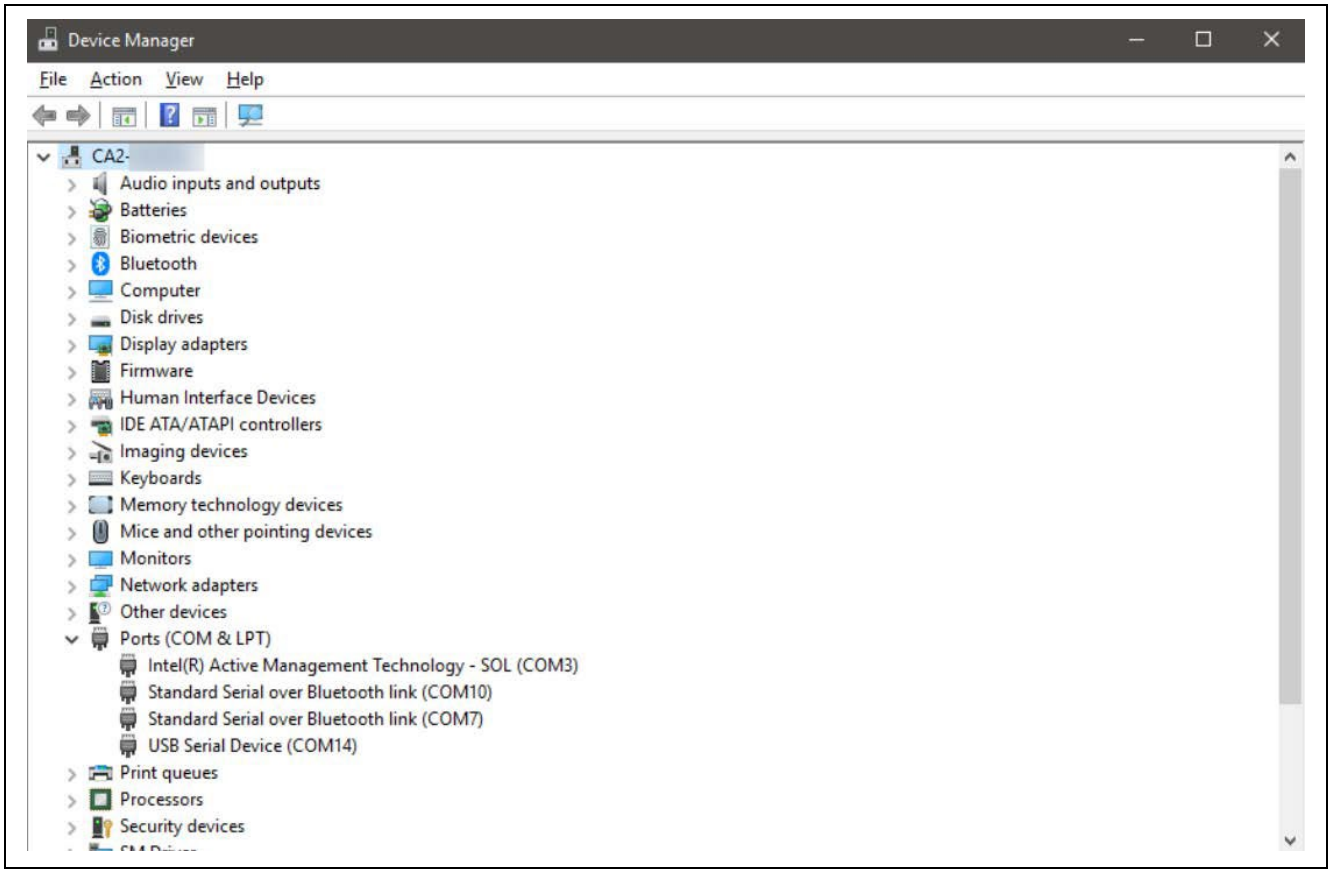


Figure 4. USB Serial Device in Windows Device Manager

5. Open Tera Term, select **Serial** and **COMxx: USB Serial Device (COMxx)** and click **OK**.

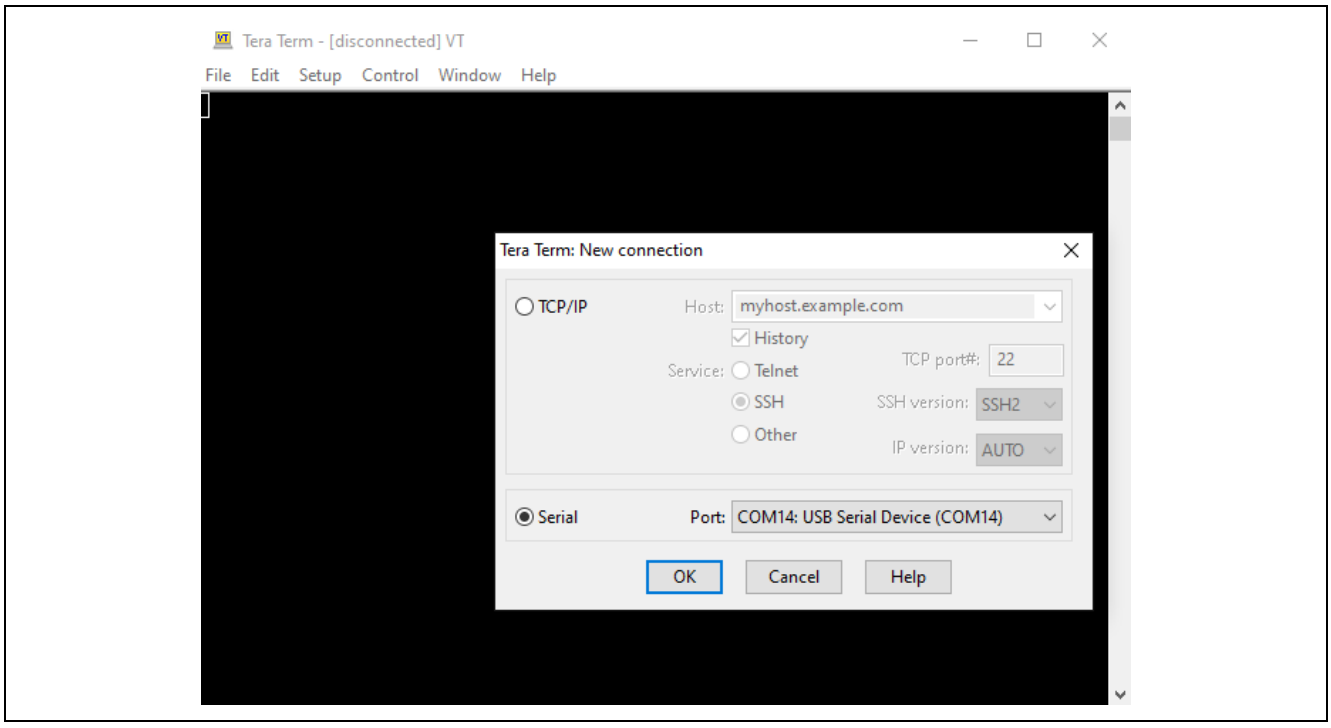


Figure 5. Selecting the Serial Port on Tera Term

6. Using the **Setup** menu pull-down, select **Serial port…** and ensure that the speed is set to

Downloaded from Arrow.com.

115200, as shown below.

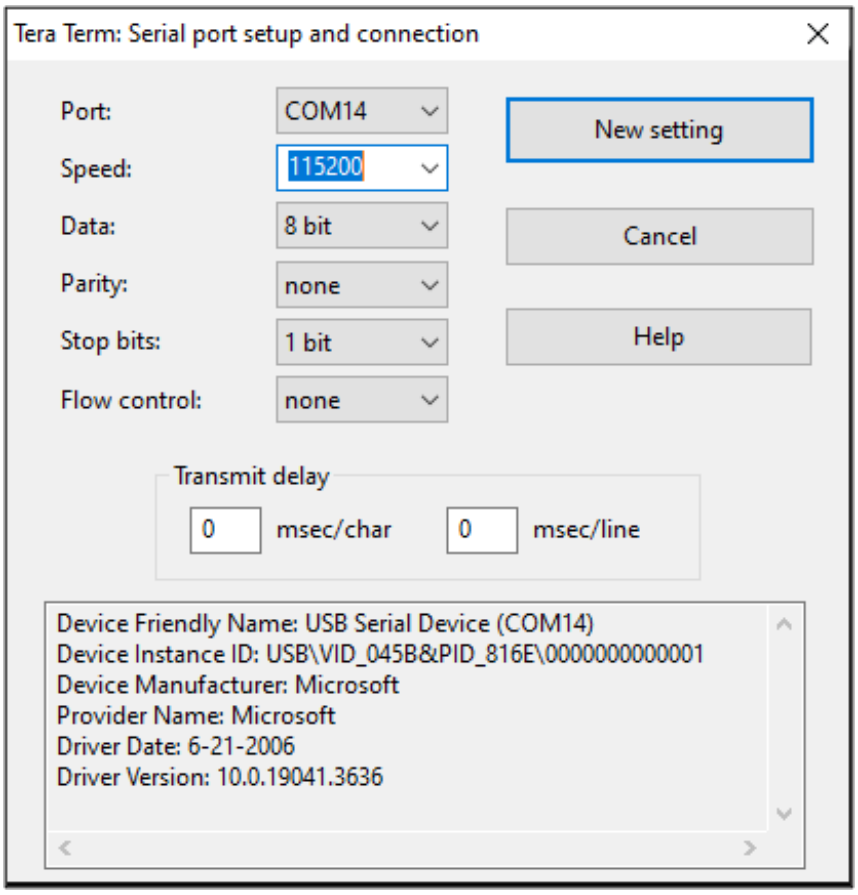


Figure 6. Select 115200 on the Speed Pulldown

7. Press **Space** key. The **Welcome Menu** will be displayed.

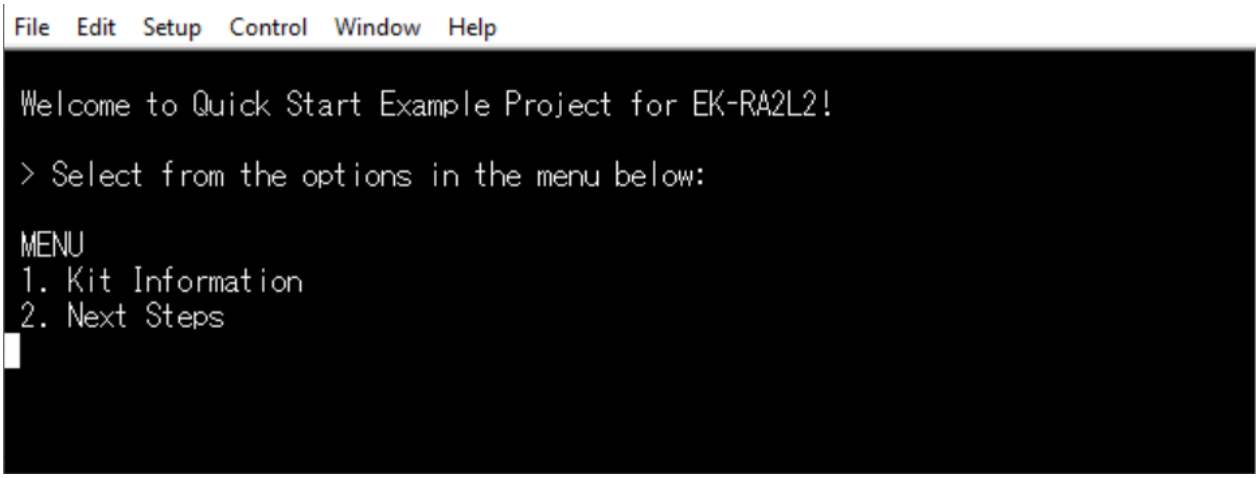


Figure 7. Welcome and Main Menu

8. Press **1** to display the **Kit Information** including the kit name, part number, MCU ID, mcu die

Downloaded from Arrow.com.

temperature, user LED's current blinking frequency and the user LED blinking intensity.

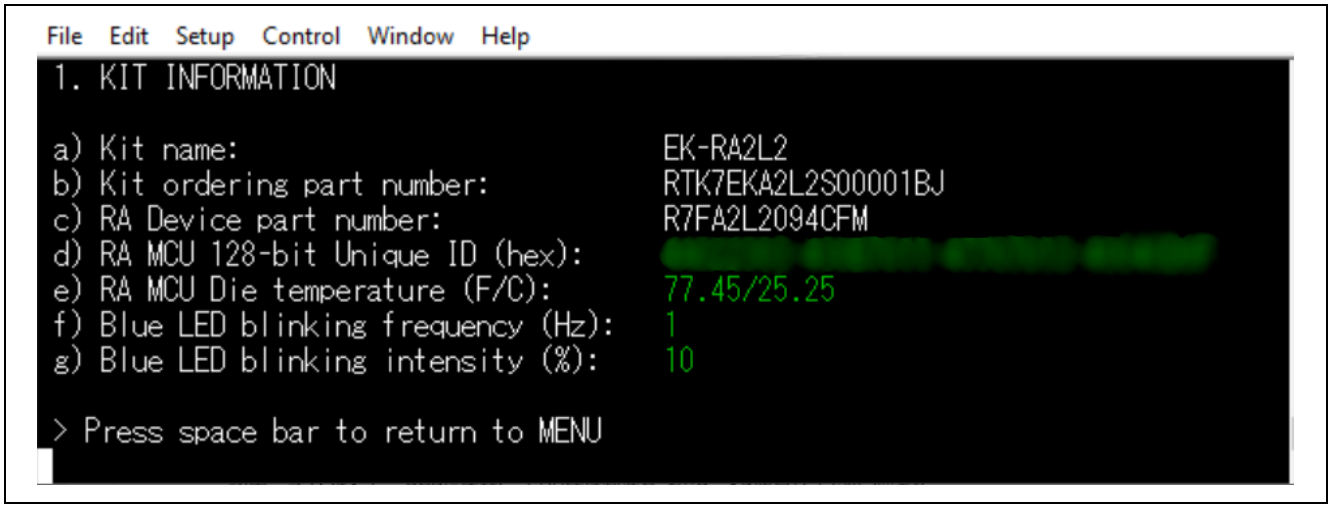


Figure 8. Kit Information

9. Press **2** to display **Next Steps**.

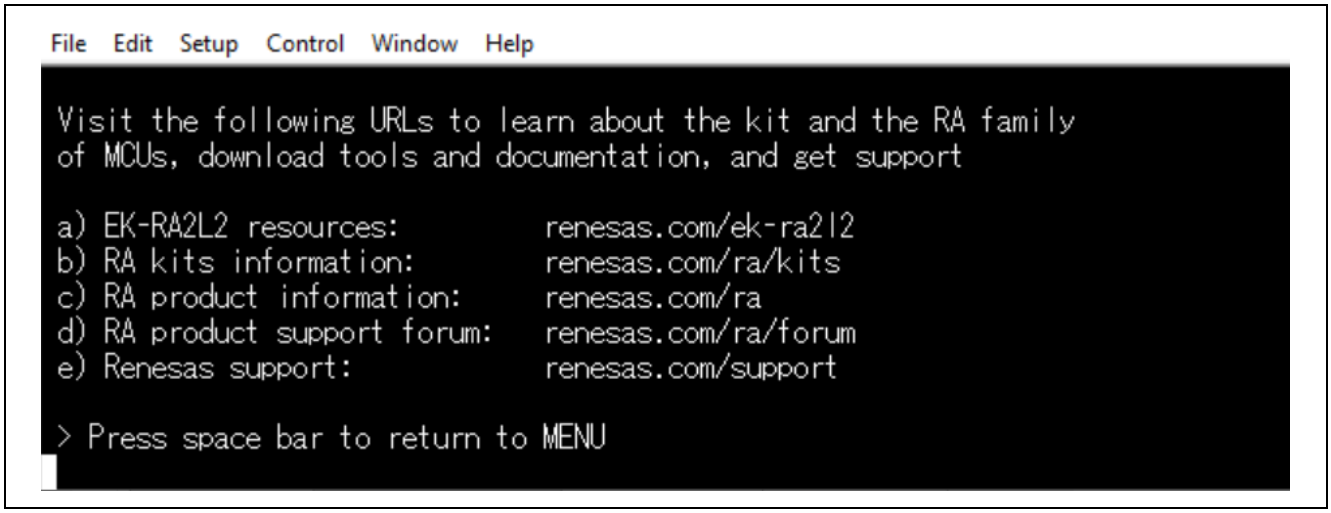


Figure 9. Next Steps

10. Press **space** to return to the **Welcome menu**.

Downloaded from Arrow.com.

5. Customizing the Quick Start Example Project

This section lists the requirements and instructions for customizing the Quick Start example project.

Hardware Requirements

- EK-RA2L2 board
- Micro USB device cable
- A PC with at least 1 USB port

Software Requirements

- Windows® 10 operating system
- e² studio IDE
- SEGGER J-Link® USB drivers
- FSP
- Quick Start example project

5.1 Downloading and Installing Software and Development Tools

Before the Quick Start example project can be modified, it is necessary to download and install software and development tools on the host PC.

The FSP, J-Link® USB drivers, and e² studio are bundled in a downloadable platform installer available on the FSP webpage at renesas.com/ra/fsp. New users are recommended to use the **Quick Install** option provided in the installation wizard, to minimize the amount of manual configuration needed.

There is no need to download and install software, development tools, and drivers separately.

5.2 Downloading and Importing the Quick Start Example Project

1. Download and extract the Quick Start example project to a local directory on the host PC.
   - The Quick Start example project (source code and project files) is available in the EK-RA2L2 Example Projects Bundle that is available in the Downloads tab of EK-RA2L2 webpage at renesas.com/ek-ra2l2
   - Download and extract the example projects bundle (`xxxxxxxxxxxxxxx-ek-ra2l2-exampleprojects.zip`) to a local directory on the host PC.
   - Browse to the Quick Start example project at `xxxxxxxxxxxxxxx-ek-ra2l2-exampleprojects\ek_ra2l2\_quickstart\quickstart_ek_ra2l2_ep`
2. Launch e² studio.
3. Browse to the Workspace where the project file is to be imported. Enter the name in the Workspace dialog box to create a new workspace.

Downloaded from Arrow.com.

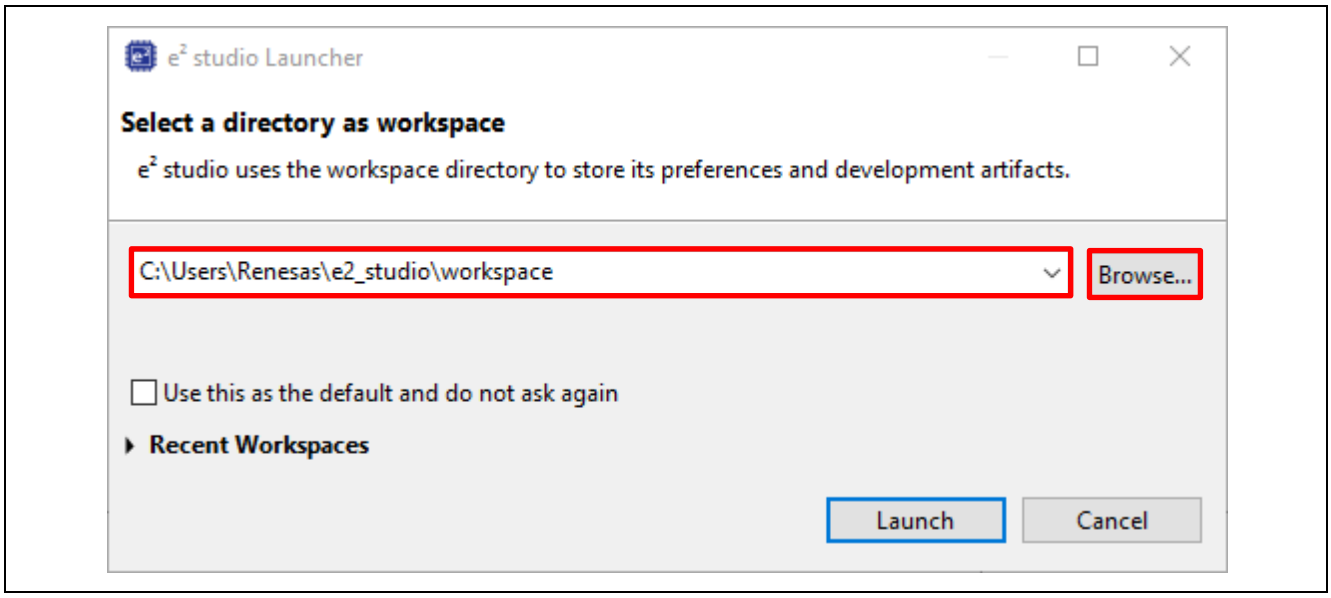


Figure 10. Creating a New Workspace

4. Click **Launch.**

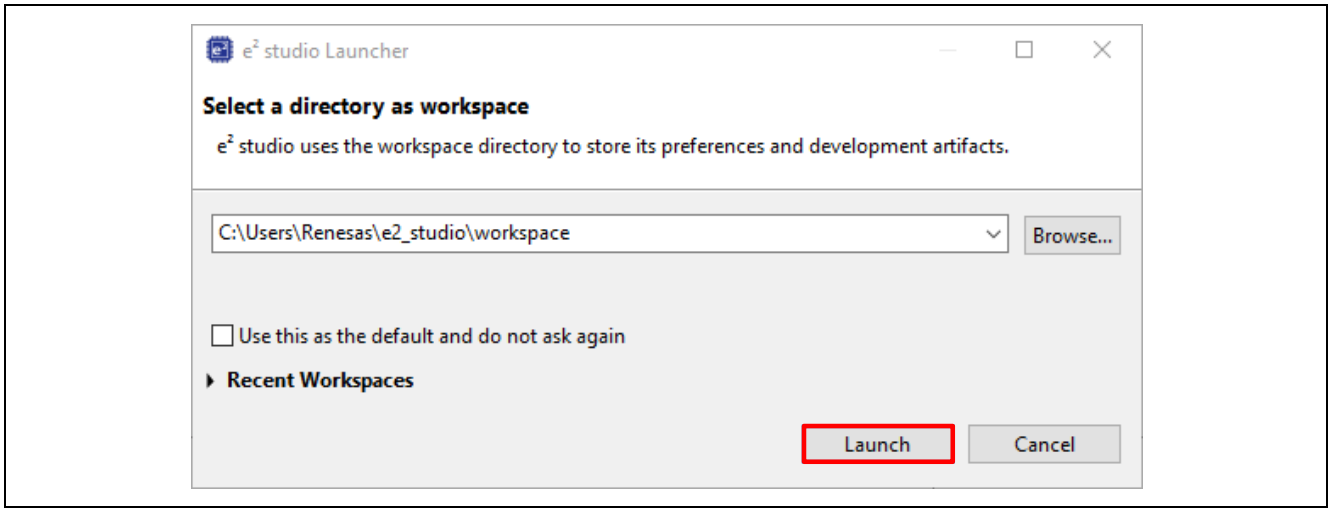


Figure 11. Launching the Workspace

5. Click **Import** from the **File** drop-down menu.

Downloaded from Arrow.com.

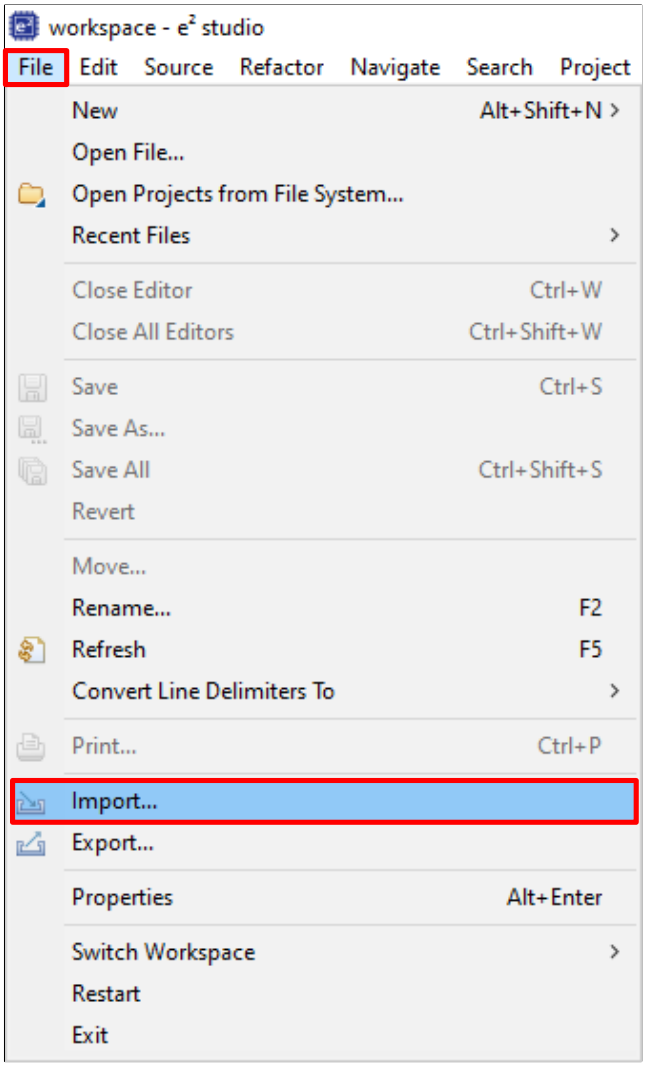


Figure 12. Importing the Project

Downloaded from Arrow.com.

6. In the **Import** dialog box, select **General**, and then select **Existing Projects into Workspace.**

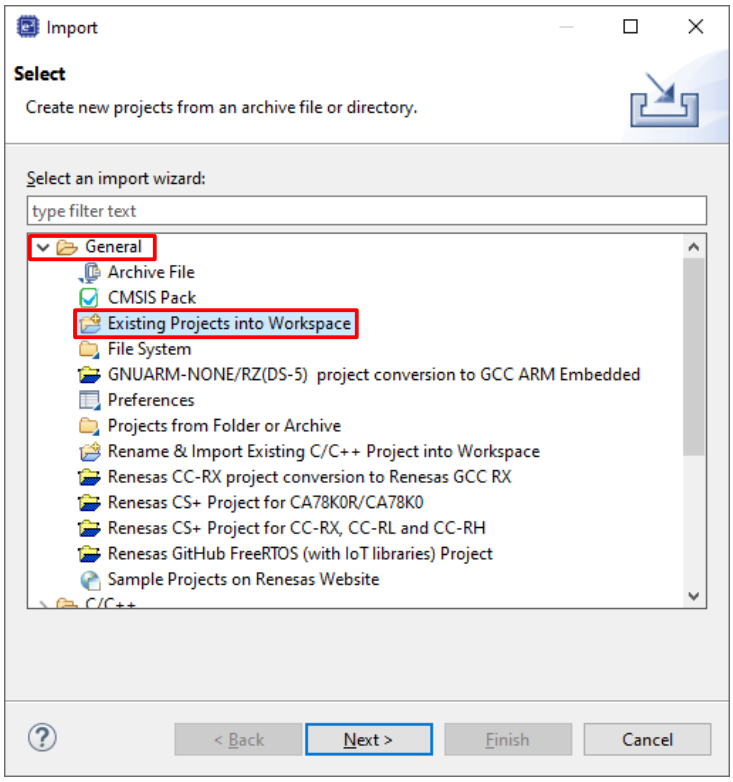


Figure 13. Importing Existing Projects into the Workspace

7. Click **Next**.

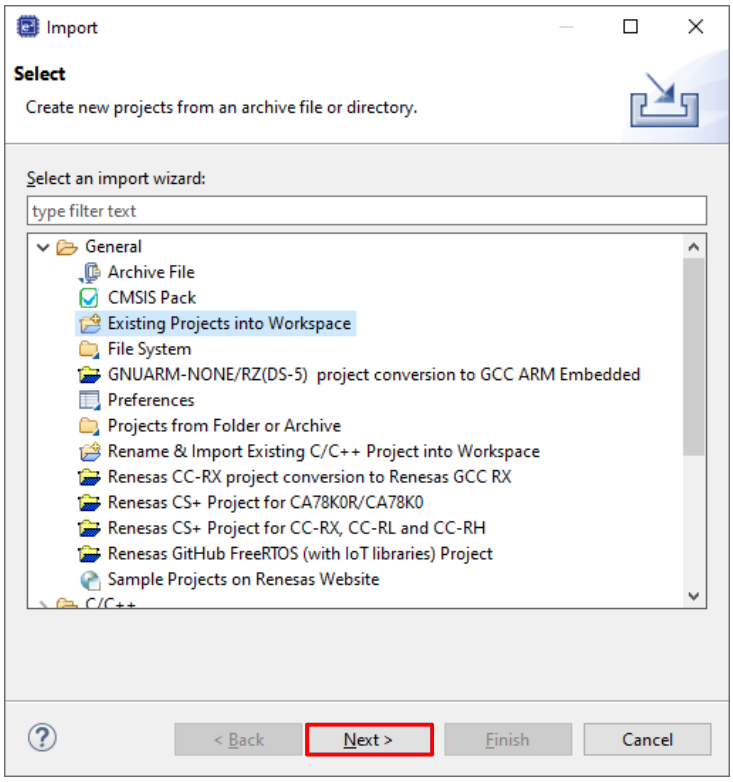


Figure 14. Clicking Next to Import Existing Projects into the Workspace

Downloaded from Arrow.com.

8. Click **Select root directory** and click **Browse** to go to the location of the Quick Start example project folder.
   Your location may differ from the example in Figure 14. The project directory should exist within the 'workspace' directory. If it does not exist to this location, then check the '**Copy projects into workspace'** option.
9. Select the Quick Start example project and click **Finish.**

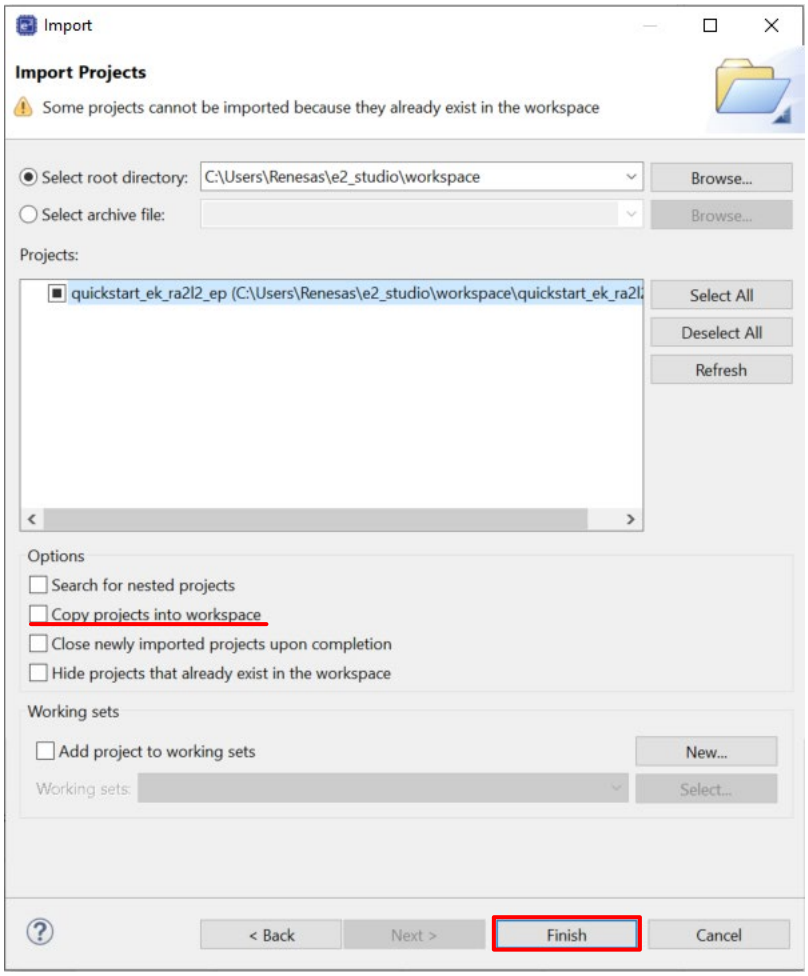


Figure 15. Finishing Importing the Quick Start Example Project

5.3 Modifying, Generating, and Building the Quick Start Example Project

This section provides instructions to modify the Quick Start example project. The Quick Start example project can be modified by editing the source code and reconfiguring the properties of the MCU peripherals, pins, clocks, interrupts, and so forth.

Note: The specific modifications that can be performed to the Quick Start example project are not prescribed in this QSG. User discretion is advised while modifying the Quick Start example project.

Downloaded from Arrow.com.

1. Once the Quick Start example project is imported, click the **configuration.xml** file to open the configurator. The configurator provides an easy to use interface to configure the properties of the MCU peripherals.

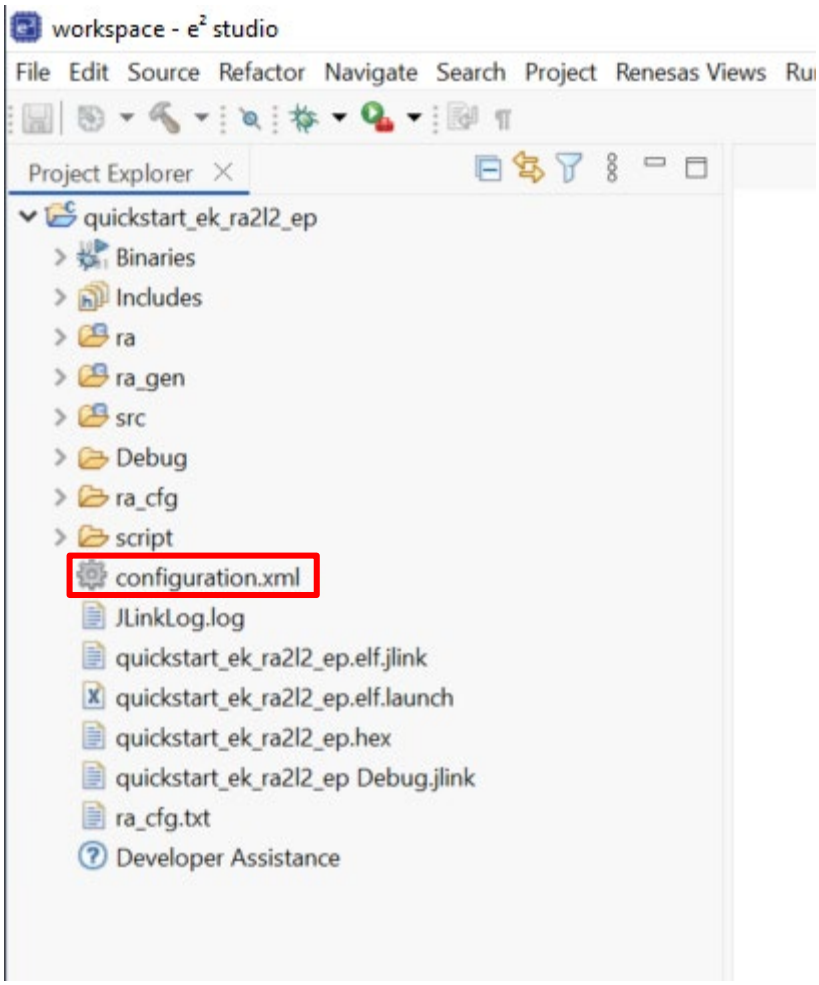


Figure 16. Opening the Configurator

Downloaded from Arrow.com.

2. For example, in the **Stacks** tab of the configurator, the user can click to select modules to modify the configuration settings, as required, in the **Properties** tab. The following screen shot illustrates modifying the **ADC** driver configuration.

   Note: To access the stack component properties, the view must be set to **FSP Configuration** perspective, by selecting the **View** button, which by default will appear at the top right or the IDE.

   If not visible, it may be invoked using the **Open Perspectives** button.

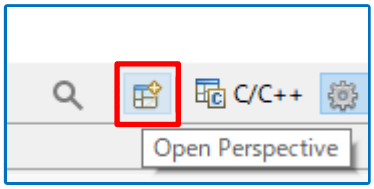


Figure 17. Open Perspective

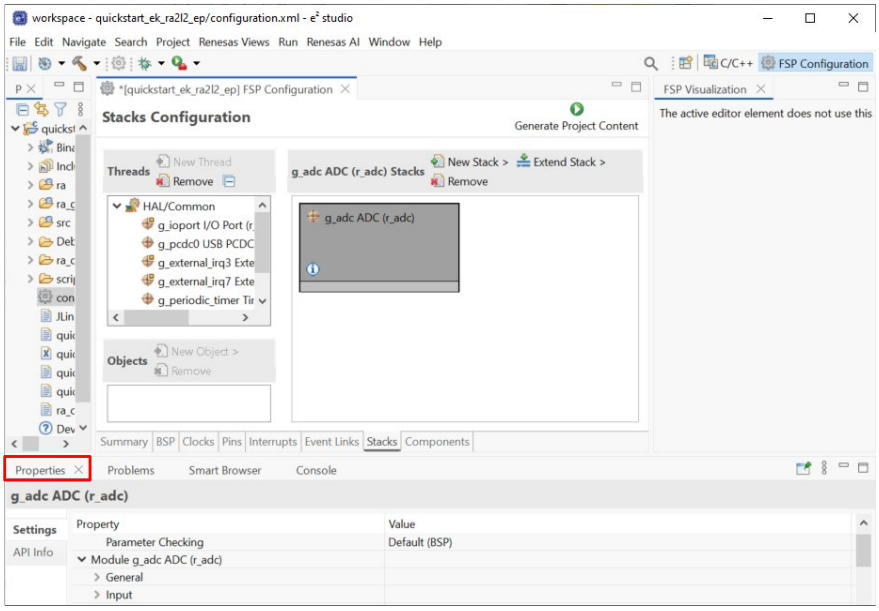


Figure 18. Modifying the Configuration Settings

3. After the desired modifications are made, click **Generate Project**. This will produce the auto-generated code within the project.

   A dialog box may appear with an option of saving the configuration changes. Click **Proceed**.

Downloaded from Arrow.com.

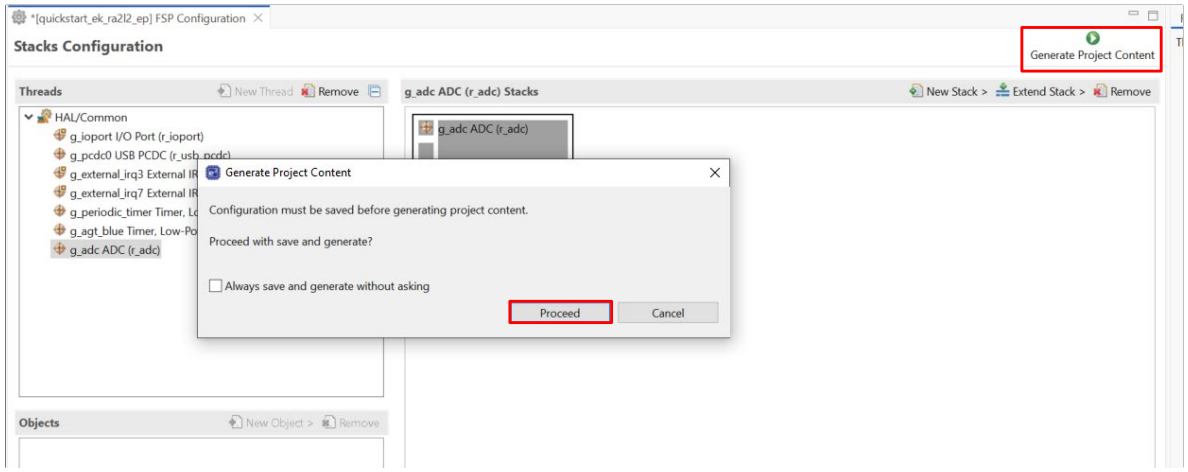


Figure 19. Saving the Configuration Changes

4. Modify the source files in the **/src** folder as needed and save the changes.
5. Build the project by clicking the build icon.

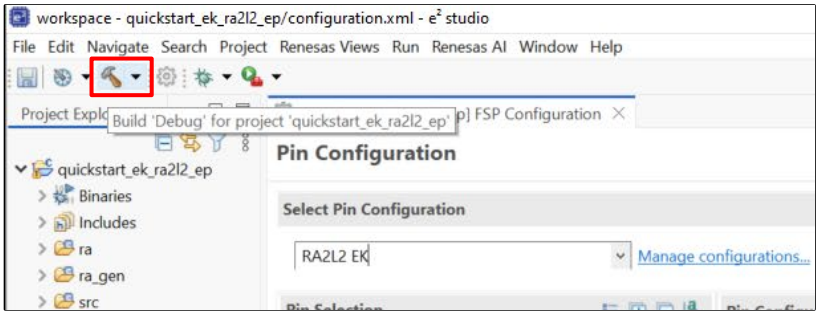


Figure 20. Building the Project

6. A successful build produces an output as follows.

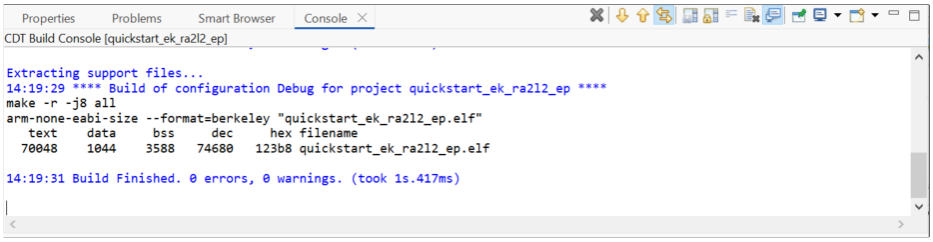


Figure 21. Successful Build Output

5.4 Setting Up Debug Connection between the EK-RA2L2 board and Host PC

To program the modified Quick Start example project on to the EK-RA2L2 board, a debug connection is necessary between the EK-RA2L2 board and host PC.

Downloaded from Arrow.com.

1. Disconnect the USB Type-C device cable from USB Full Speed port (J11) and connect the micro USB device cable from the PC to the micro-B USB debug port (J10) of the EK-RA2L2 board.

   Note: The EK-RA2L2 board supports 3 debugging modes. In this section and the following sections, default debugging mode, Debug On-Board, is used. More information on debugging modes is available in EK-RA2L2 user's manual.

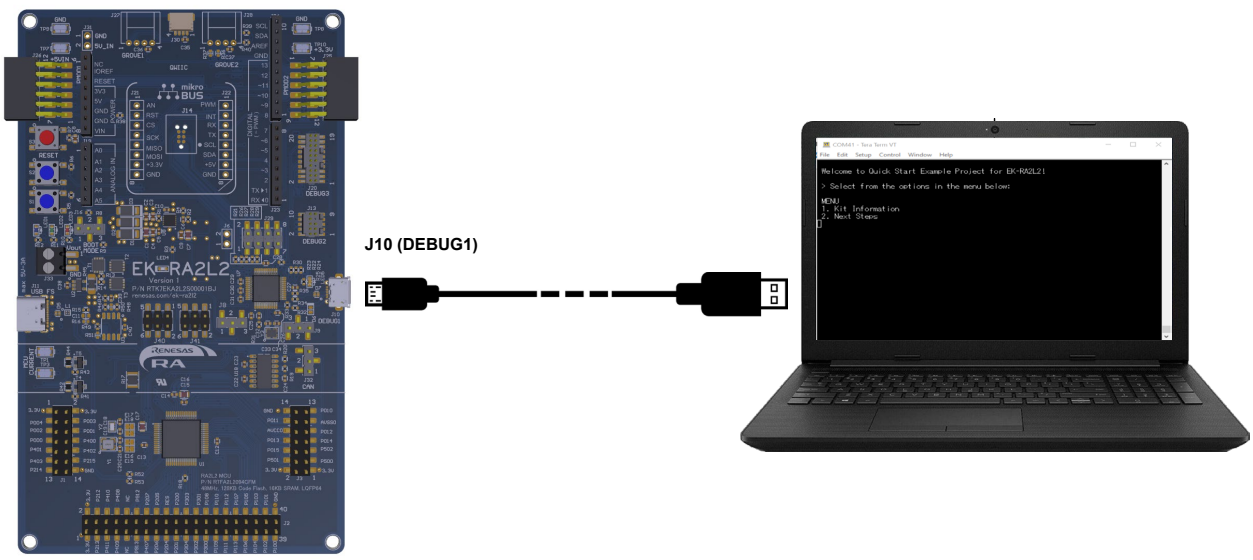


Figure 22. Connecting the EK-RA2L2 Board to the Host PC via USB Debug Port

2. Verify that the debug LED (LED5) stops blinking and lights up orange indicating that the J-Link drivers are detected by the EK-RA2L2 board.

   Note: The debug LED (LED5) continues to blink when J-Link drivers are not detected by the EK-RA2L2 board. In that case, make sure that the EK-RA2L2 board is connected to the host PC through the micro-B USB debug port (J10) and that J-Link drivers are installed on the host PC by checking in the Windows Device Manager (expand **Universal Serial Bus devices**, and locate **BULK interface**).

5.5 Downloading and Running the Modified Quick Start Example Project

1. In e^2 studio, click the drop-down menu for the debug icon, select **Debug Configurations** option.

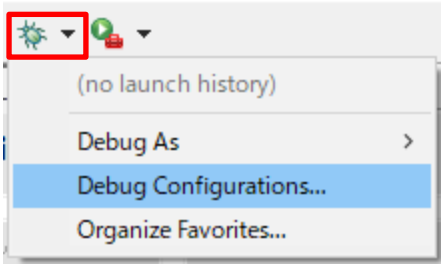


Figure 23. Selecting the Debug Option

Downloaded from Arrow.com.

2. In the menu on the left-hand panel, expand the **Renesas GDB Hardware Debugger** and select the built image to debug. In this case, the **quickstart_ek_ra2l2_ep Debug**.

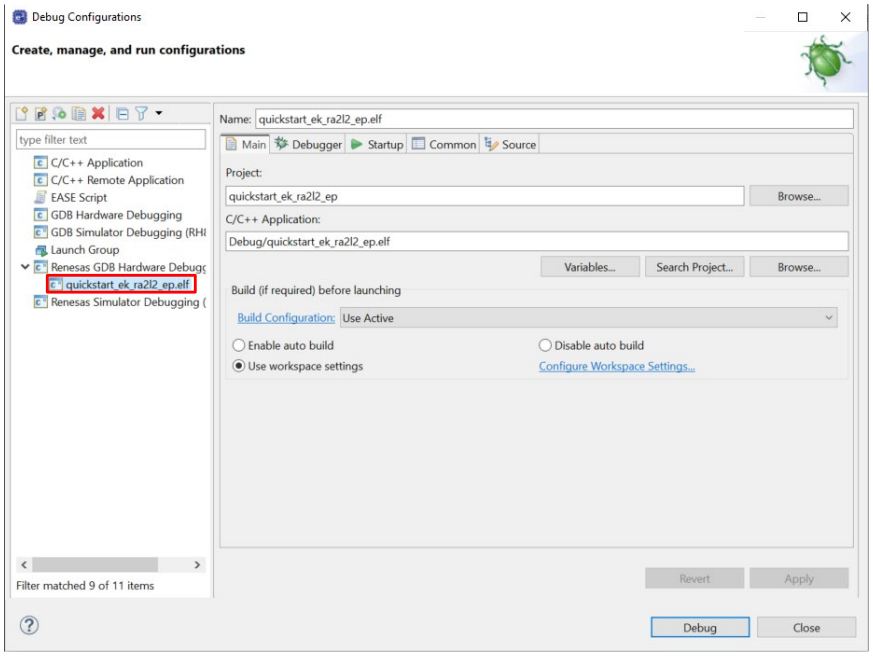


Figure 24. Selecting the Debug Image

3. In the **debugger** tab, select the debug hardware. In this case, the **J-Link ARM**.

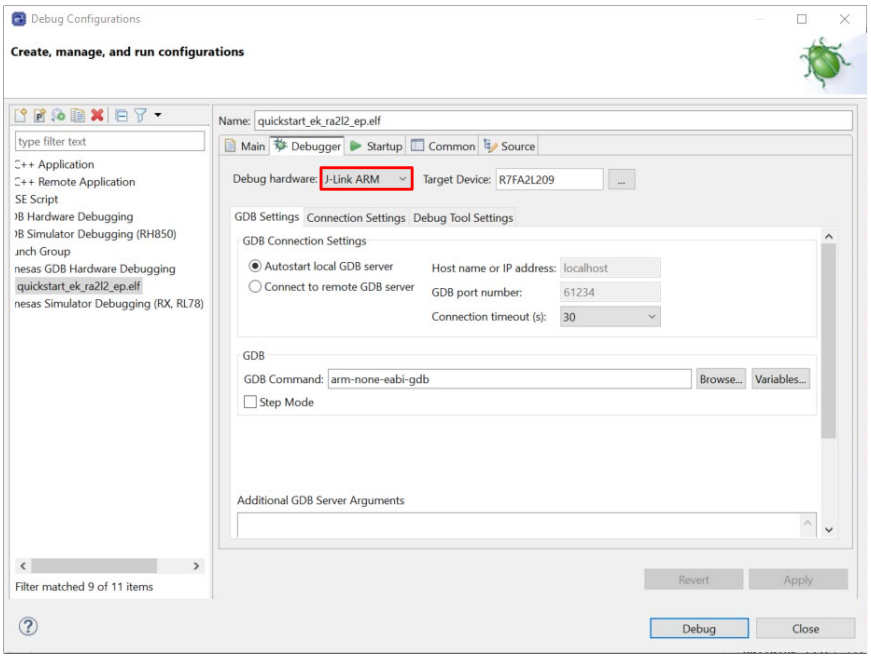


Figure 25. Selecting the Debug hardware

Downloaded from Arrow.com.

5.6 Firewall Dialog

1. A firewall warning may be displayed for **'e2- server-gdb.exe**'. Check the '**Private networks, such as my home or work network**' box and click '**Allow access**'.
2. A user account control dialog may be displayed. Enter the administrator password and click **Yes**.
3. A dialog box may appear. Click **Yes**.
4. A dialog offering to switch to the Debug perspective may appear. This view is useful for debugging operations. Users will find it helpful to select **Switch**. (Manually switch back to the **C/C++** view, and **FSP Configuration** view, as required.)

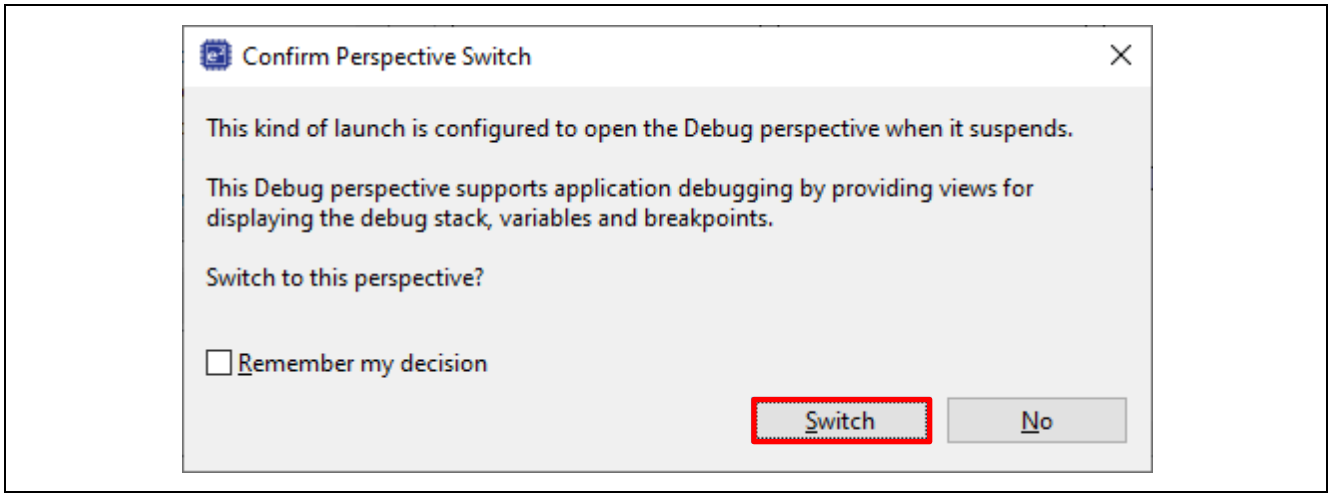


Figure 26. Opening the Debug Perspective

5. Press **F8** or click **Resume** icon to begin executing the project.

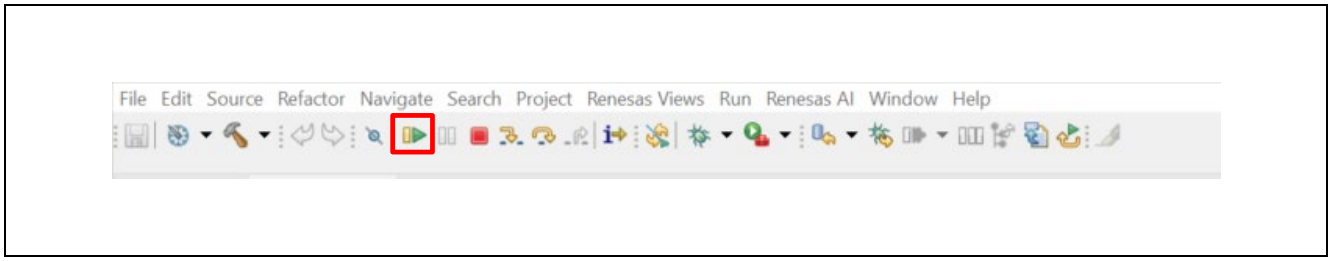


Figure 27. Executing the Project

6. The modified Quick Start example project is programmed into the EK-RA2L2 board and is running. The project can be paused, stopped, or resumed using the debug controls.

Downloaded from Arrow.com.

6. Next Steps

1. To learn more about the EK-RA2L2 kit, refer to the EK-RA2L2 user's manual and design package available in the Documentation tab respectively of the EK-RA2L2 webpage at renesas.com/ek-ra2l2
2. Renesas provides several example projects that demonstrate different capabilities of the RA MCUs. These example projects can serve as a good starting point for users to develop custom applications. Example projects (source code and project files) for the EK-RA2L2 kit are available in the EK-RA2L2 Example Projects Bundle. The example projects bundle is available in the **Documentation** tab of EK-RA2L2 webpage.
   - Download and extract the example projects bundle (`xxxxxxxxxxxxxxx-ek-ra2l2-exampleprojects.zip`) to a local directory on the host PC.
   - Refer to the list of all example projects (`xxxxxxxxxxxxxxx-ek-ra2l2-exampleprojects.pdf`) available inside the example projects bundle.
   - Browse to the desired example project (for example: adc_ek_ra2l2_ep) in the example projects bundle:
     (`xxxxxxxxxxxxxxx-ek-ra2l2-exampleprojects\ek_ra2l2\adc\adc_ek_ra2l2_ep`)
   - For help on using example projects, refer to `Example Project Usage Guide.pdf` in the RA Example Repository on GitHub at : github.com/renesas/ra-fsp- examples/tree/master/example_projects.
   - The archived versions of the source code of the example projects are available the example project repository.

7. Website and Support

Visit the following URLs to learn about the kit and the RA family of microcontrollers, download tools and documentation, and get support.

EK-RA2L2 Resources	renesas.com/ek-ra2l2
RA Kit Information	renesas.com/ra/kits
RA Product Information	renesas.com/ra
RA Product Support Forum	community.renesas.com/mcu-mpu/ra/
RA Videos	renesas.com/ra/videos
Renesas Support	renesas.com/support

Downloaded from Arrow.com.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	May.01.25	—	Initial release
1.10	Jan.28.26	11	In Chapter4.2, For step 7. of the operation procedure, corrected the condition for displaying the Welcome menu from ‘when communication is established’ to ‘when the Space key is pressed.’”

Downloaded from Arrow.com.

EK-RA2L2 – Quick Start Guide

Publication Date: Jan.28.26

Published by: Renesas Electronics Corporation

Downloaded from Arrow.com.

EK-RA2L2 – Quick Start Guide

Renesas Electronics Corporation

R20QS0085EJ0110

Downloaded from Arrow.com.