QE for Lighting & Power V2.0.0

Release Note

Thank you very much for using the QE for Lighting & Power V2.0.0, a QE (Quick and Effective Tool Solution) product of Renesas Solution Toolkit - Development Support Tool for Various Applications.

This release note covers product installation, restrictions, and so on. Please read this document before using the product.

Contents

1. About QE for Lighting & Power

1.1 Summary

QE for Lighting & Power is an assistance tool for smart lighting system solution development, which seamlessly integrates with Renesas' lighting system libraries, solution programs, various compilers, and evaluation boards. Using this tool, you can configure lighting communication setting and adjust the power control parameters in real-time. Therefore, it makes the development of the smart lighting solution simple, quick, and efficient.

1.2 Functions

The main functions and support scenarios are listed in Table 1-1:

Table 1-1

Functions	Using Renesas Board	Using Custom Board
Configure dimming protocol parameters with graphical UI	Support	Support
Simulate power control parameters without equipment	Support	Not support
Evaluate power control parameters on the board	Support	Support
Generate the source code using various compilers	Support	Support
Build and program the lighting system solution to the evaluation board	Support	Not Support

1.3 New Functions

1.3.1 Support application program download function

From QE for Lighting & Power V2.0.0, users can download the application program from web site.

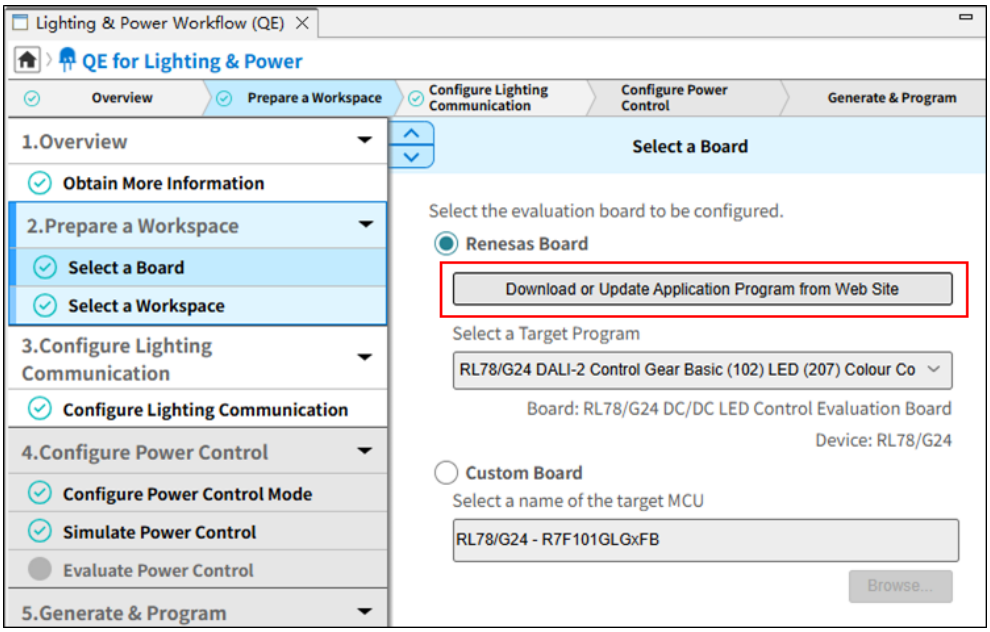

Figure 1-1 [Download or Update Application Program from Web Site] button

1.3.2 Support simulation function

In the previous version, simulation was supported through an external tool. From QE for Lighting & Power V2.0.0, the simulation function is built-in, allowing users to launch the simulation dialog with a single click. Both parameter configuration and simulation results are displayed within this dialog.

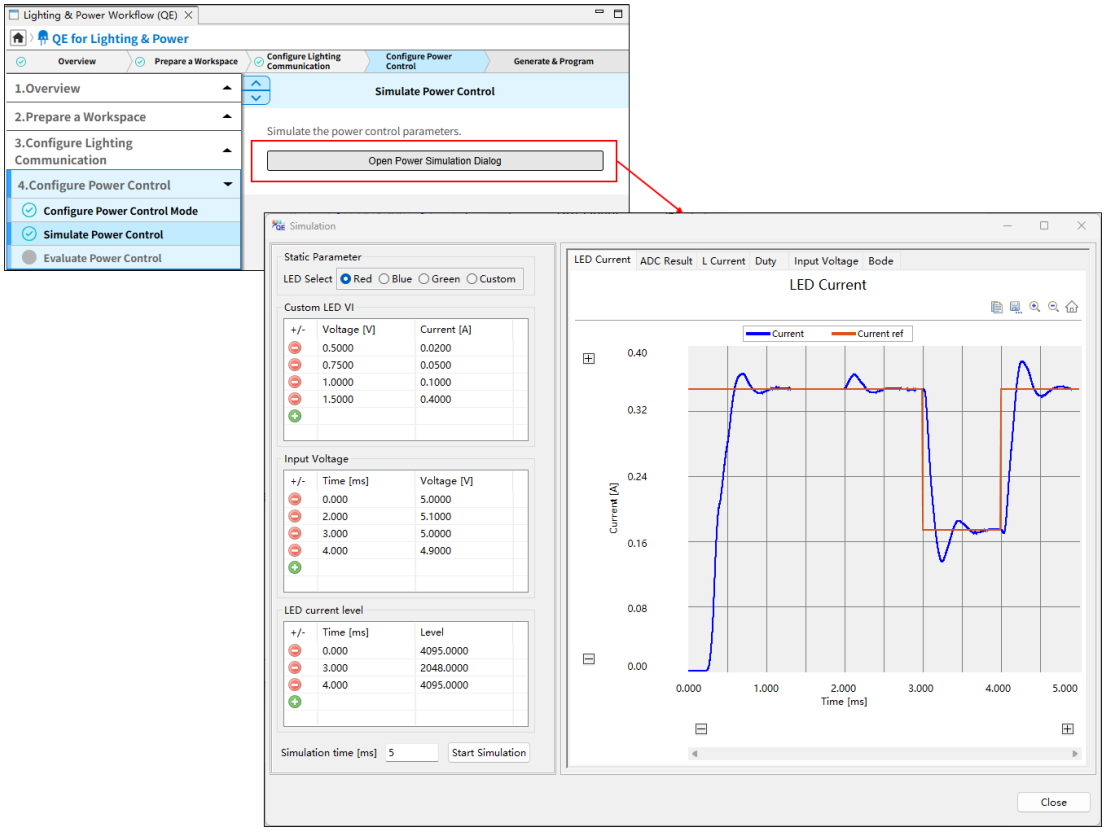

Figure 1-2 Power control simulation function

1.3.3 Support e² studio project

Form QE for Lighting & Power V2.0.0, e² studio project is supported in this tool. If the application program includes e² studio project, it can be utilized directly within the QE for Lighting & Power tool.

Before using e² studio project, specify e2 studio installation location through “[Windows] > [Preferences] > [QE for Lighting & Power] menu.

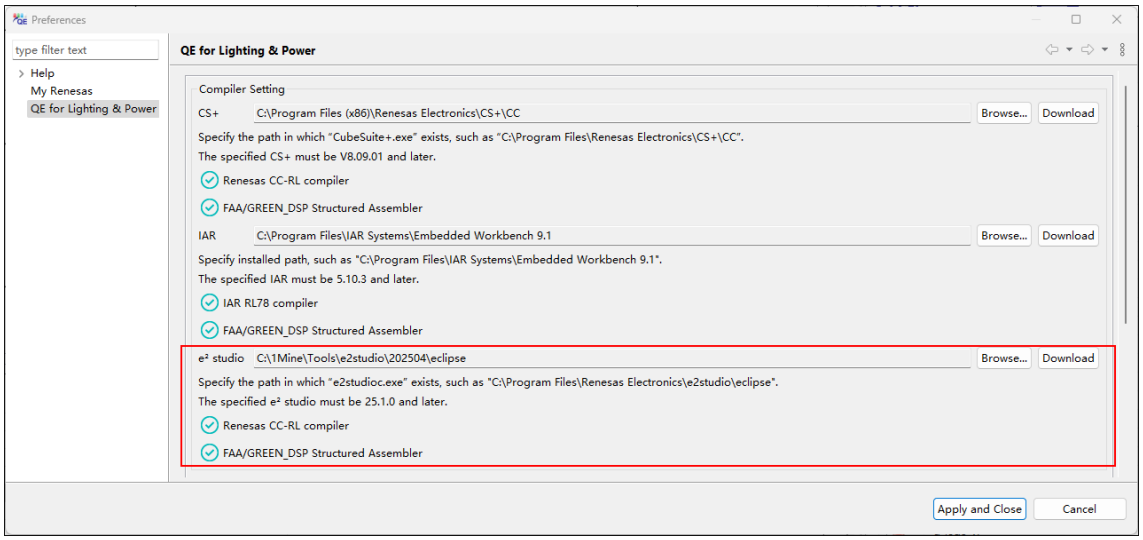

Figure 1-3. To specify e² studio installation location

1.3.4 Support custom board evaluation function

From QE for Lighting & Power V2.0.0, this tool provides a communication program that users can manually integrate into their own project. After integration, users can run it on custom boards and utilize this tool to monitor changes of global or static variables in real time.

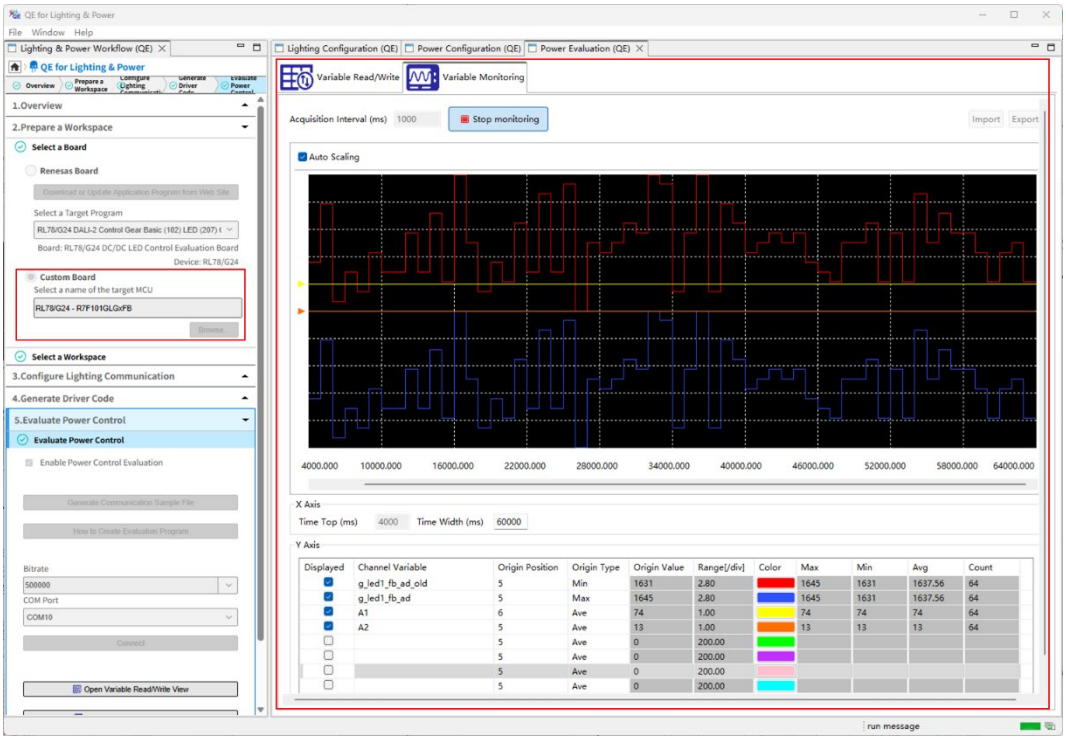

Figure 1-4 Custom board evaluation function

1.3.5 Improve power configuration and power evaluation view

In the previous version, power configuration is in the “Power Evaluation (QE)” view. From V2.0.0, a new “Power Configuration (QE)” view is added. This enhancement streamlines the “Configuration → Simulation → Evaluation” workflow and makes it easier to operation.

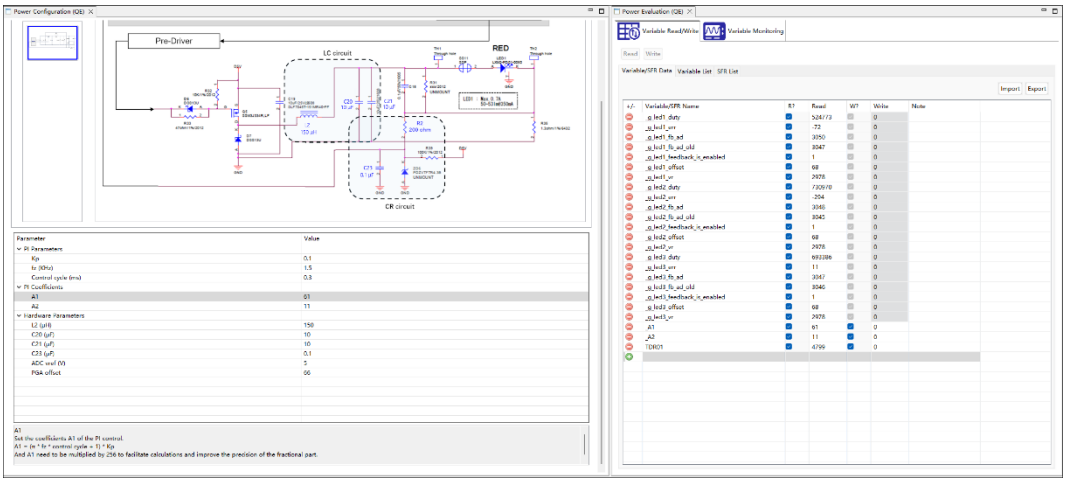

Figure 1-5 [Power Configuration (QE)] and [Power Evaluation (QE)] view

1.3.6 Eliminate the limitation of using IAR compiler

From V2.0.0, this tool supports IAR license validity checks and stops compilation if the license is invalid, avoid becoming stuck due to an invalid IAR license during proceeding the following operations:

1) Click on [Write the Evaluation Program on Board] button in the workflow.

2) Click on [Build Source Code] button in the workflow.

1.3.7 Eliminate the limitation of writing the evaluation program on board

From V2.0.0, the evaluation program can be successfully written to board without keeping [Power Evaluation (QE)] view open.

1.4 Supported Environment

- Windows 11 (64-bit version)
- Renesas Flash Programmer V3.11.02
- Smart Configurator for RL78 V1.12.0

1.5 Supported Microcontrollers and Boards

The supported microcontrollers and their corresponding boards are listed in Table 1-2:

Table 1-2

Microcontrollers	Boards
• RL78/G24	RL78/G24 DC/DC LED Control Evaluation Board (P/N: R7F101GLG2DFB)
	RL78/G24 Interleaved PFC + LLC Board 400W
	Custom Board
• RL78/G22 • RL78/G23 • RL78/L23	Custom Board

2. Installation and Uninstallation

2.1 Installing This Product

QE for Lighting & Power is provided as a compressed package (.zip). Follow the procedure below to use this product.

1. Extract ".zip" file to a user-specified location on the PC.
   Note: Please do not put the tool under OS program folder (C:\Program Files)
2. Start this product by double clicking "\QE-Lighting-Power\eclipse\qe-lighting-power.exe".
3. For the first time this product starts, there is a dialog of license agreement. After checking the license, you can select "Agree" or "Disagree".

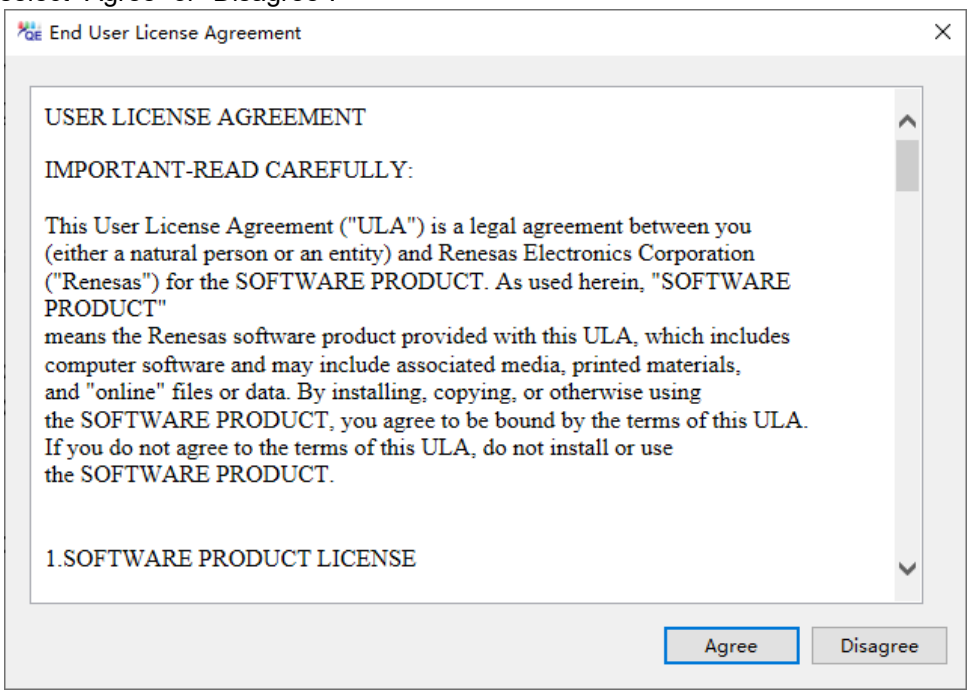

Figure 2-1. License agreement dialog

4. If "Agree" is selected in above step, the product is launched then you can use it; if "Disagree" is selected in above step, the product won't be launched.

2.2 Updating This Product

If you have already used this product, you can update it in the same way as the procedure for installation.

2.3 Uninstalling This Product

Delete the entire folder which .zip package is extracted.

3. Notes / Restrictions

3.1 Usage Considerations

Please pay attention to the following items.

3.1.1 Notes on power control evaluation

1) [Only for RL78/G24 DC/DC LED Control Evaluation Board] When selecting FAA program type, it is possible to monitor up to 4 power control parameters. Please add no more than 4 parameters in [Variable Tuning] tab. When selecting CPU program type, it is possible to monitor up to 8 power control parameters.

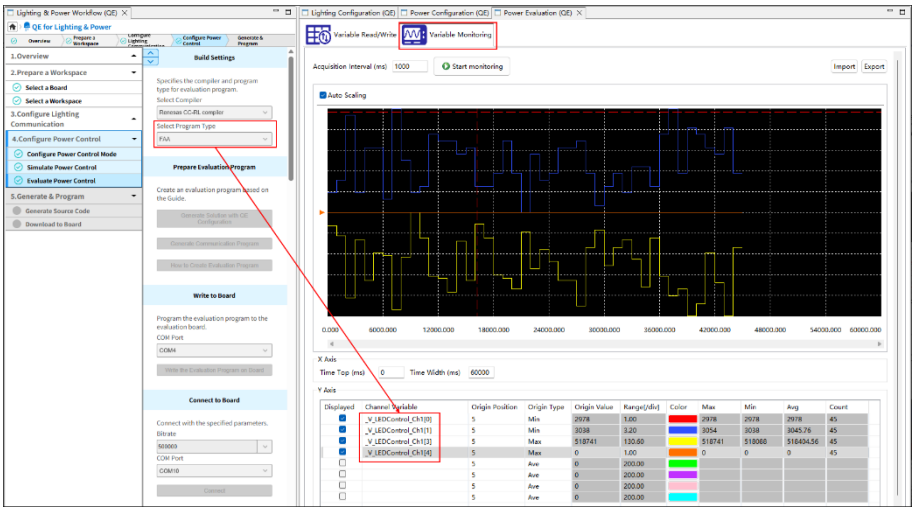

Figure 3-1 (1). Variable tuning when FAA program type is selected

2) When the [Acquisition Interval] is set to a smaller value, the sampling rate increases, resulting in a larger amount of tuning data. This large volume of data may affect the monitoring stop operation. To ensure timely stopping after clicking the [Stop monitoring] button, it is recommended to set the [Acquisition Interval] to one of the following values: 1000ms, 500ms, or 200ms.

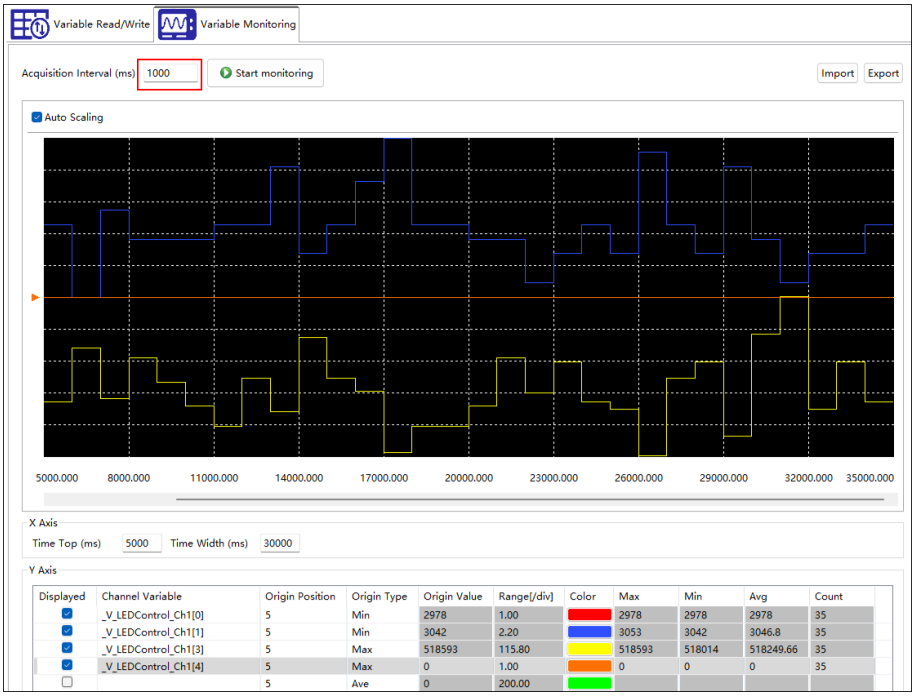

Figure 3-1 (2). [Acquisition Interval] option

If a smaller [Acquisition Interval] is set, the message “[Error]STOP command failed to execute.” is output in console view. In this situation, please click [Stop monitoring] button manually.

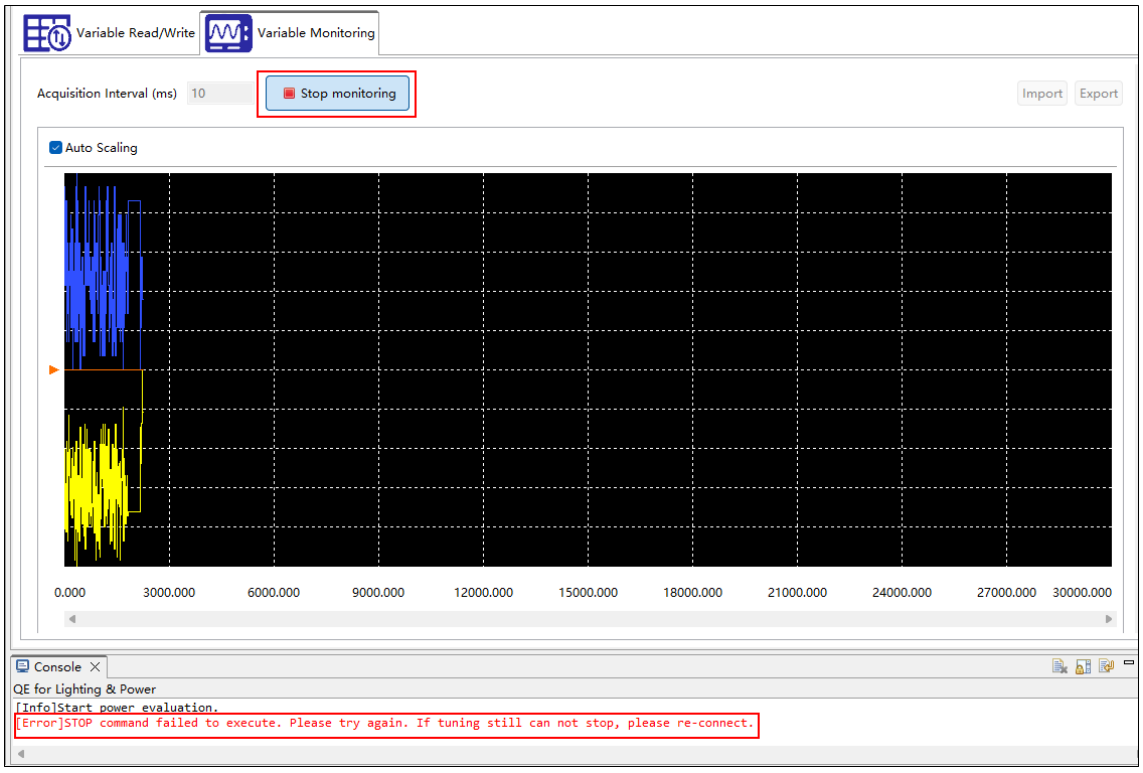

Figure 3-1 (3). Stop monitoring manually.

3.1.2 Notes on DALI configuration default value and generated program

Both the default value on the DALI configuration UI and the generated program are based on RL78/G24 Sample Application (R01AN7043EJ0100). When modifying DALI configuration, please consider the change matches the DALI standard (IEC 62386), modify the user-defined part in the generated code according to the user's purpose if necessary, and evaluate it thoroughly.

3.1.3 Notes on opening [Lighting & Power Workflow (QE)] view

The workflow cannot be opened if WebView2 Runtime is not installed on your PC.

[Workaround]

Download and install WebView2 (x64 version) from the Microsoft web page. (FAQ: 3000670)

3.1.4 Notes on integrated Renesas libraries

The following Renesas libraries are integrated into the QE for Lighting & Power tool.

- RL78 Family DALI-2 Control Gear Library User's Manual: Basic (R01US0535EJ0102)
- RL78 Family DALI-2 Control Gear Library User's Manual: LED (R01US0536EJ0102)
- RL78 Family DALI-2 Control Gear Library User's Manual: Colour Control (R01US0537EJ0102)
- Renesas Flash Driver RL78 Type 01 Package V1.20 for RL78/G2x

3.1.5 Notes on using the Smart Configurator

When using custom board, before clicking [Generate Driver Code via Smart Configurator] button in the workflow, please ensure the Smart Configurator tool path is correctly set via “[Windows] > [Preferences] > [QE for Lighting & Power] menu.

If the specified installation path is invalid, this operation will cause Smart Configurator to fail to launch and the message “Failed to open Smart Configurator, please try again.” is output in console view.

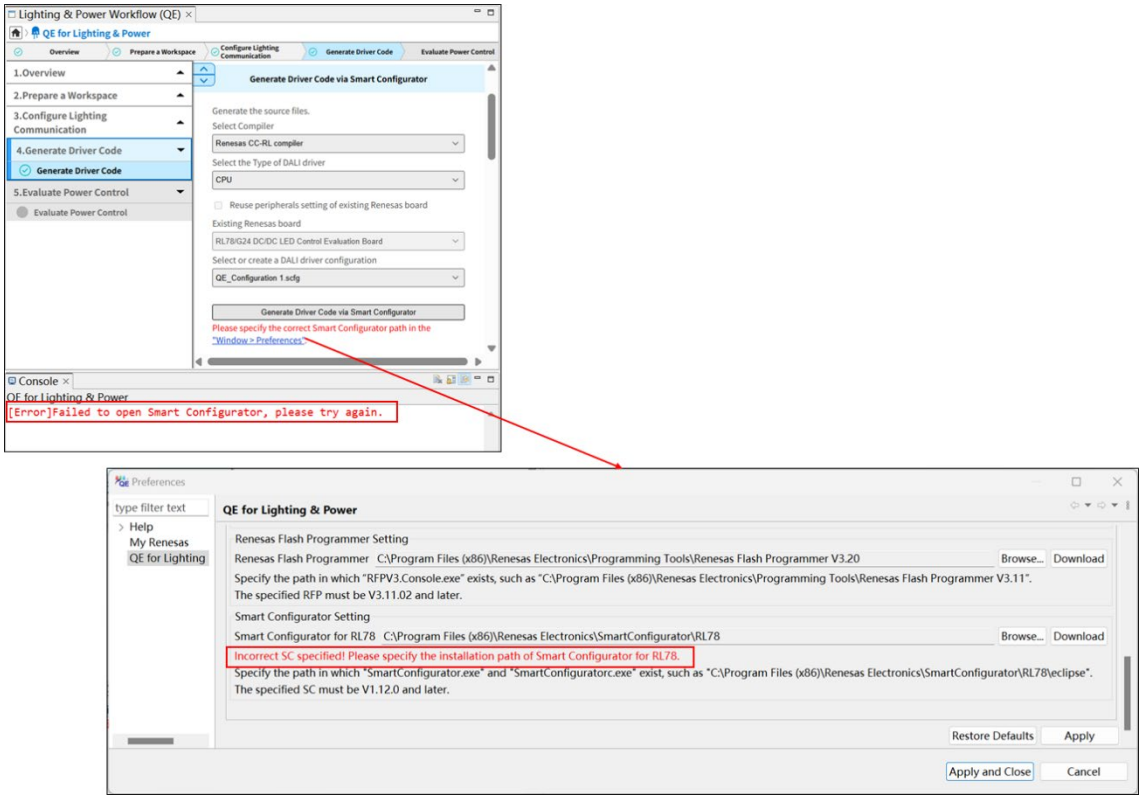

Figure 3-2. Error message when Smart Configurator tool path in Preferences is invalid

3.1.6 Notes on power control simulation time

When the [Simulation time] is set to a large value, it generates a significant amount of simulation data. This can affect the following 2 aspects.

1) The simulation execution time will increase.
2) The memory usage will rise. If the simulation time is excessively long, it may eventually lead to an out-of -memory error.

Therefore, it is recommended to set the [Simulation time] below 5000ms.

3.1.7 Notes on IDE usage for building

The following 3 IDEs are available for building function when using Renesas board.

1) CS+ for CC
2) IAR Embedded Workbench for Renesas RL78
3) e^2 studio

Before using any of these IDEs, please refer to the corresponding application notes and set the IDE path correctly in the Preferences.

And please ensure that the IDE version matches the version specified in the APN. Otherwise, the [Variable Read/Write] function may not operate correctly.

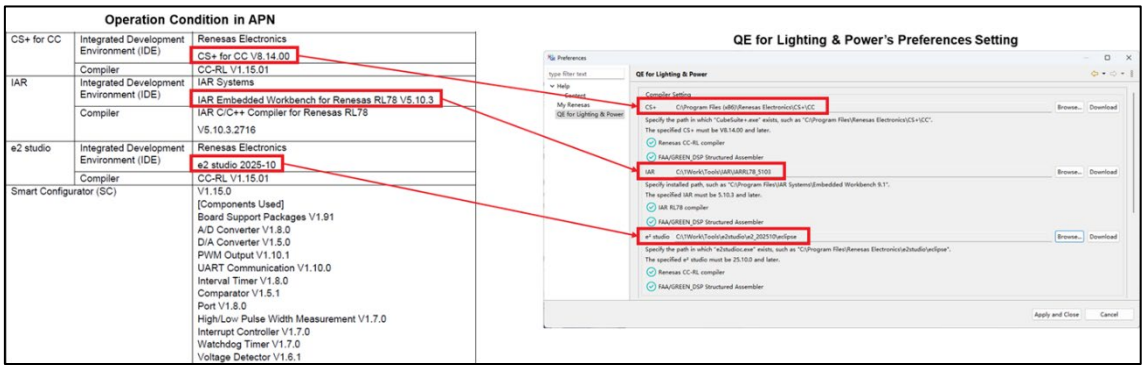

Figure 3-3. IDE settings that matched with the APN conditions

3.1.8 Notes on sample code license

The license applied to the sample code generated by this tool is BSD-3-Clause.

BSD 3-Clause License

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3.1.9 Notes on e² studio build function

When building a project using the “Renesas CCRL compiler (e² studio)”, an “E2studioc” dialog box may appear. This behavior may be caused by one of the following reasons.

1) The target program contains compilation errors.

   [Phenomenon]

   After closing the “E2studioc” dialog box, compilation error messages are displayed in the Console view.

   - Note. When the target project is compiled for the first time, compilation error messages may not be displayed. In this case, run the build again to make the error messages visible in the Console view.

   [Workaround]

   Fix the issues reported in the Console output and rebuild the project using this tool.

2) An unexpected issue occurred in the e² studio workspace.

   [Workaround]

   Manually delete the folder “<workspace>\qeLighting_gen\e2_qeBuild” and retry the build.

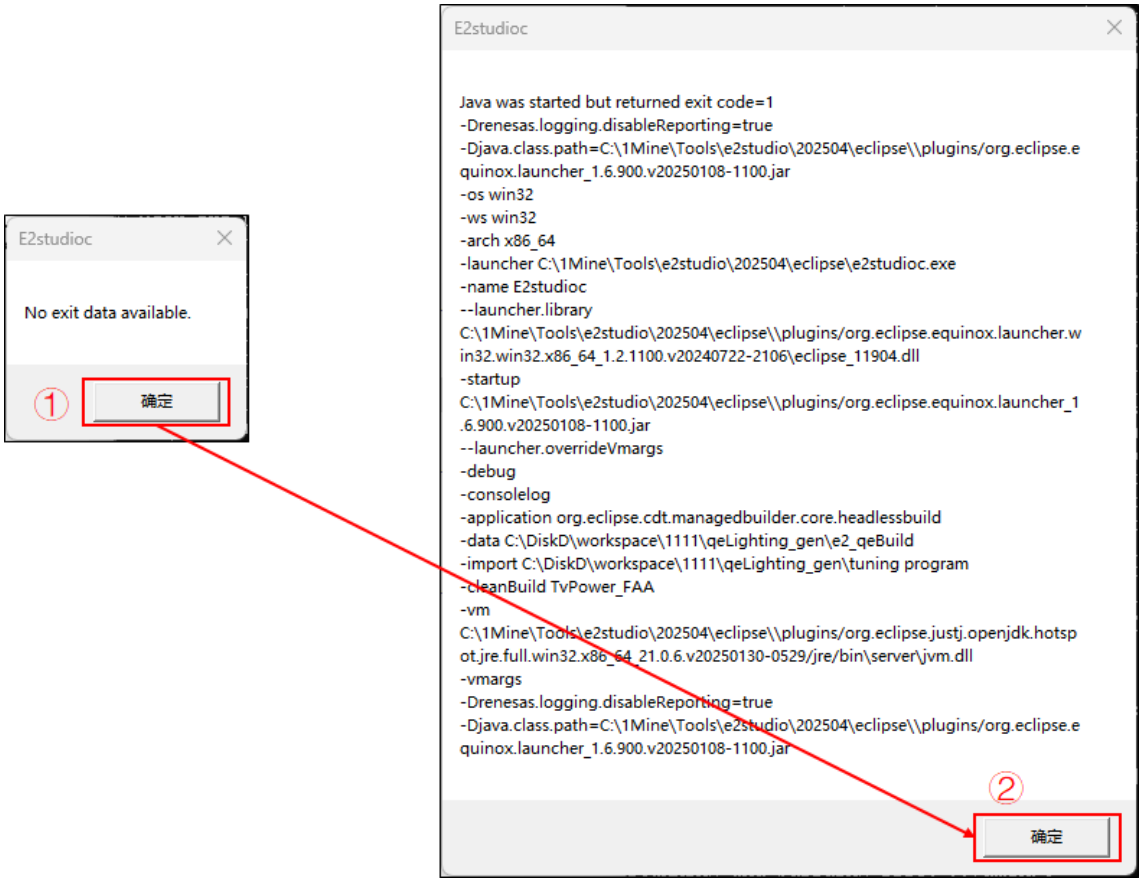

Figure 3-4. Error dialog when using “Renesas CCRL compiler (e2 studio)” for building

3.1.10 Notes on application program download function

Application programs can be downloaded only after they have been published on Renesas website.

At the initial release of V2.0, no APN is available, so the [Console] view displays the following message.

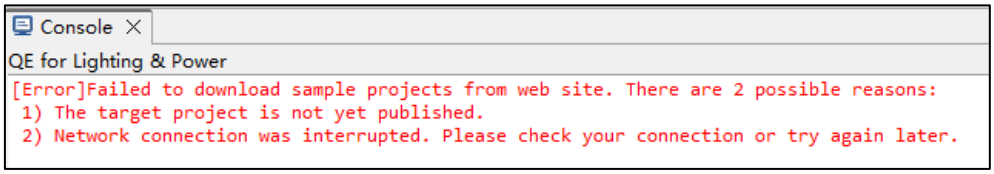

Figure 3-5 (1). Console message when application program download is not available

In this case, you can use either the pre-installed “RL78/G24 DALI-2 Control Gear Basic (102) LED (207) Colour Control (209) Sample Application” or choose a custom board.

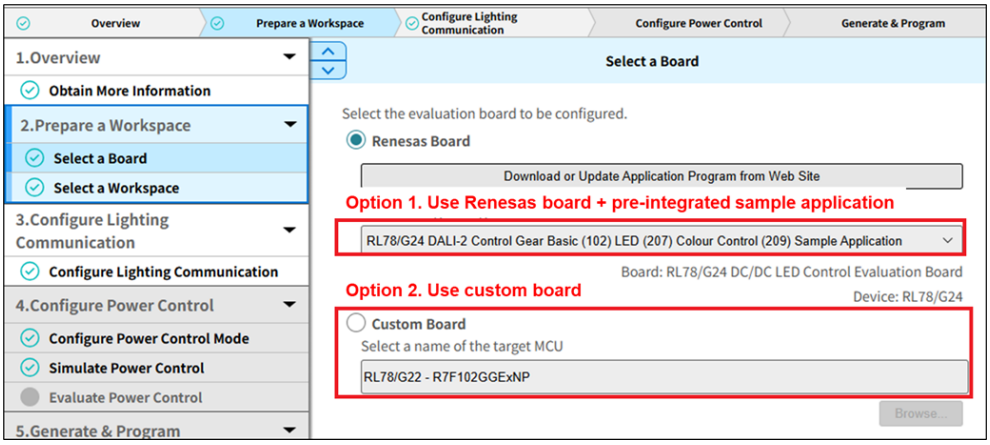

Figure 3-5 (2). Available options when application program download is not available

3.2 Functional Restrictions

There are no restriction in QE for Lighting & Power V2.0.0.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Apr.15.26	-	First edition issued.

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.

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