

QE for Display[RX] V3.3.0 Standalone Version

Standalone Version

Release Note

Thank you very much for your interest in QE for Display[RX] V3.3.0.

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

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1. About QE for Display[RX] V3.3.0

1.1 Summary

QE for Display[RX] V3.3.0 is a standalone version that you can use to easily create and adjust LCD display projects for CS+ and third-party IDEs .

In the following embedded system development, this product allows for easy initial adjustment of display connection (display timing adjustment and image quality adjustment) and create GUI. This shortens the development period.

- Display GUI on LCD using Graphic LCD Controller (a display controller mounted on the RX family of MCUs) image display function, emWin GUI software package and Aeropoint GUI for RX.
- Display GUI on a serial-connected LCD using serial communication in the RX family and the emWin GUI software package.

1.2 New Functions

1.2.1 Supported a standalone version

QE for Display[RX] V3.3.0 supports easily creating and adjusting LCD display projects under CS+ or IAR EW for Renesas RX. Users can adjust the LCD display in real-time via serial communication.

1.3 Supported Environment

- Windows 10, Windows 11
- CS+ for CC V8.12.00 (or later)
- IAR EW for Renesas RX V5.10.1 (or later)
- RX Smart Configurator V2.22.0 (or later)

1.4 Supported Microcontroller

■ GLCDC Function

RX family

- RX600 Series RX65N groups*, RX651 groups*, RX66N groups
(* ROM capacity: 1.5 MB to 2 MB only)
- RX700 Series RX72M groups*, RX72N groups
(* 100-pin is not supported.)

■ Serial Connection Function

All RX family*

(*Only microcontrollers supported by Smart Configurator.)

1.5 Supported Software

■ RX Firmware Integration Technology (FIT)

- Graphic LCD Controller Module: r_glcdc_rx V1.60 (or later)
- QE for Display Middleware Module: r_qe_display_rx V1.00 (or later)
- emWin v6.34 Module: r_emwin_rx V1.10 (V6.34.a.1.10) (or later)
- Aeropoint Module: r_aeropoint_rx V1.00 (or later)

1.6 Supported LCD Controller for Serial Connection

- ST7715
- ILI9341

1.7 Supported Evaluation Board

■ GLCDC Function

- Renesas Starter Kit+ for RX65N-2MB
- Renesas Starter Kit+ for RX72N
- RX65N Envision Kit
- RX72N Envision Kit

■ Serial Connection Function

- Renesas Starter Kit for RX130-512KB
- Renesas Starter Kit for RX140
- Renesas Starter Kit for RX231
- Renesas Solution Starter Kit for RX23W
- Renesas Starter Kit+ for RX64M
- Renesas Starter Kit for RX660
- Renesas Starter Kit+ for RX671
- Renesas Starter Kit+ for RX71M
- Target Board for RX130
- Target Board for RX231
- Target Board for RX23W
- Target Board for RX23W module
- Target Board for RX65N
- Target Board for RX660
- Target Board for RX671

The following LCD is connected to the evaluation board.

- Renesas Starter Kit / Renesas Solution Starter Kit: OKAYA - RH128128T-1X44WN-B2 (Included in Starter Kit.)
- Target Board: Kuongshun Electronic - MSP2807 (OEM products are also available.)

2. Installation and Uninstallation

2.1 Installing 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-Display\eclipse\qe-display.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".

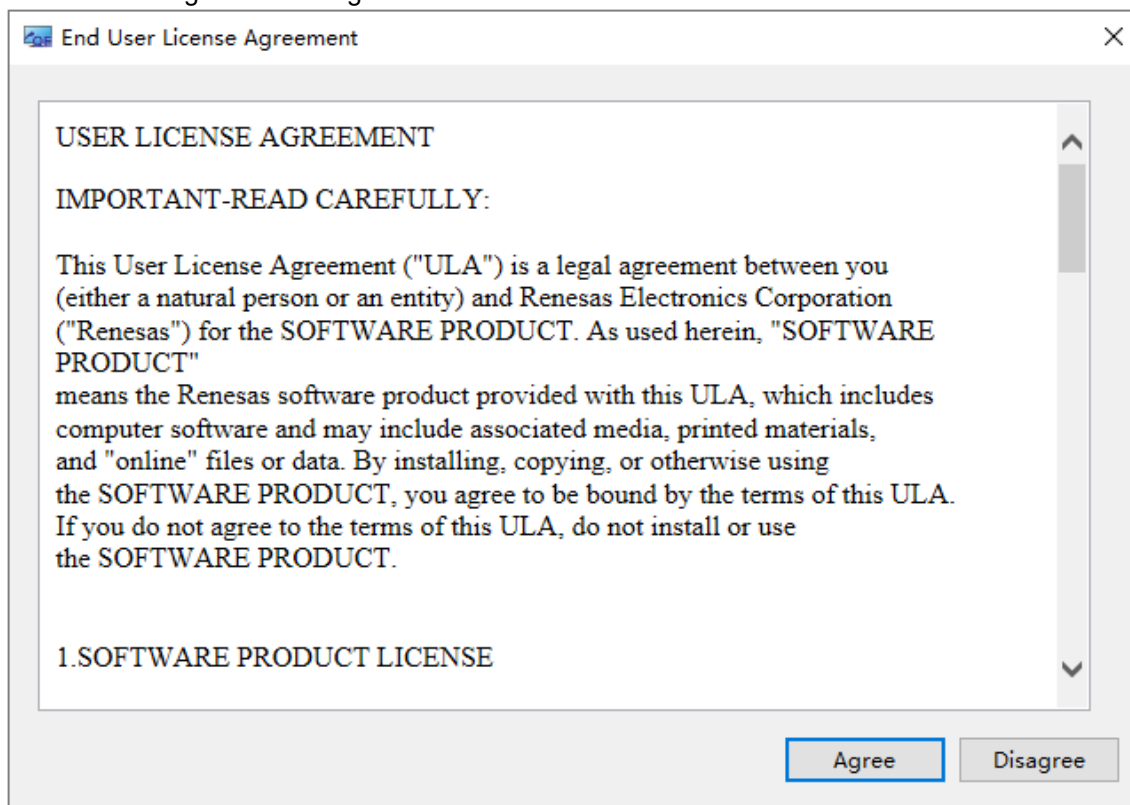


Figure 2-1 License Agreement Dialog

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 installed this product, you can update it in the same way as the procedure for installation 2.1

2.3 Uninstalling This Product

Delete the entire folder which .zip package is extracted.

3. Notes / Restrictions

3.1 Usage Considerations

3.1.1 How to transfer the data from plug-in version to standalone version

To transfer the configuration data from the plug-in version, copy the configuration file from the plug-in version project's storage location below to the standalone version project's storage location.

Plug-in version side:

- Storage location of the previous version's configuration data

<workspace>/metadata/.plugins/com.renesas.apltool.glcdc

- Storage location of the V2.0.0 or later configuration data

<project>/settings/.plugin/com.renesas.apltool.glcdc

Standalone version side:

- Storage location of configuration data

<project>/settings/.plugin/com.renesas.apltool.glcdc

3.1.2 About PLLCLK and Panel clock frequency setting

In the standalone version, you need to enter the value of "PLL Circuit Frequency [MHz]" in the "Timing Adjustment" page according to the setting in the Smart Configurator clock page. Also, select the value of "Panel Clock Frequency [MHz]" according to the prompt after the control.

3.1.3 Note on using the Aeropoint GUI (Library Setting)

When you use the RXv2 instruction set architecture on RX66N, RX72M, and RX72N, change the library set in the linker options to the following.

1. libcri_AeropointLite_RXv2_CCRX.lib
2. libcri_Atom_Multiplayer_RXv3_CCRX.lib

3.1.4 Note on display settings of PC monitor

If the GUI text is overlapped or blocked as shown in the figure below on your PC, please set up your PC monitor according to the following recommended settings.

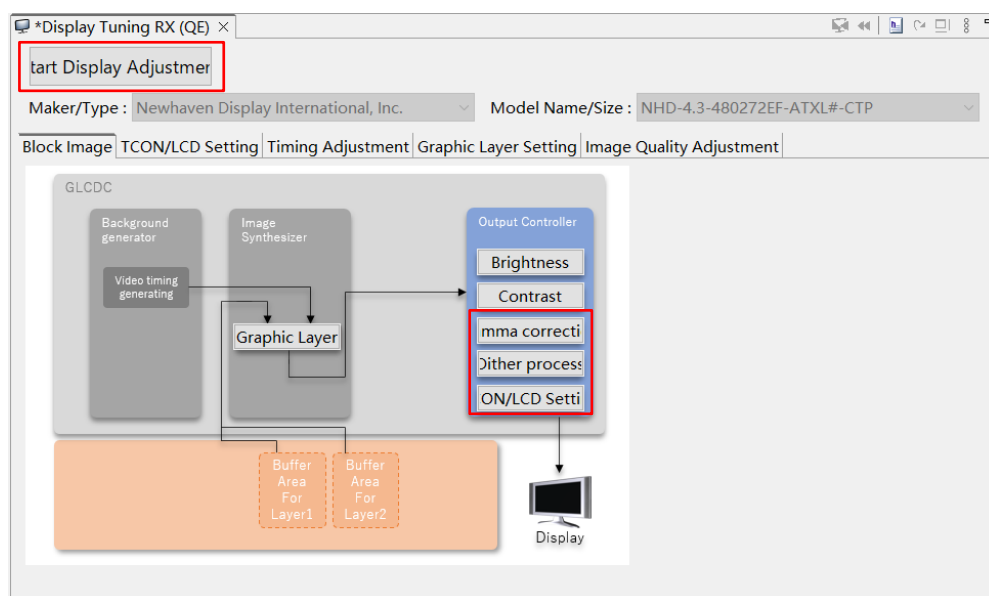


Figure 3-1 GUI with Overlapped or Blocked Text

Recommended monitor settings:

- Scale: 100%
- Display resolution: 1920 x 1080

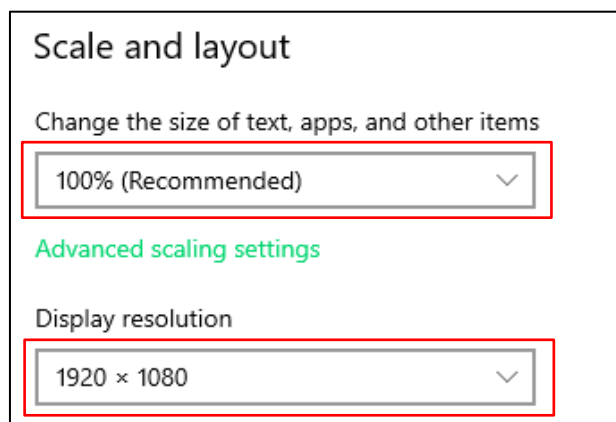


Figure 3-2 Recommended Monitor Settings

3.1.5 Note on LCD 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](#))

3.1.6 Note on baud rate setting when using standalone version

Due to the limitation of the communication speed of the USB-to-serial IC (RL78G1C) installed on the Renesas Starter Kit and Envision Kit boards, for projects using these two types of Evaluation boards, if you use the USB-to-serial resources on the board, the maximum communication baud rate set in the standalone version cannot exceed 115200.

3.1.7 Note on using emWin as the GUI drawing tool

When using emWin as the GUI drawing tool, DTC is not supported in display tuning communication. Please don't set DTC in r_sci_rx FIT module.

3.1.8 Note on using "Set the registers in Real-time when the Parameters are Changed" mode

After "Start Display Adjustment", please don't move the mouse focus out of the "Display Tuning RX (QE)" view. Otherwise, when the mouse focus returns to the view, some communication error messages and redundant messages will appear in the console view. Please ignore these messages.

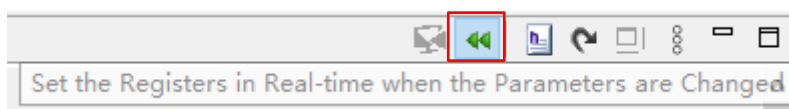
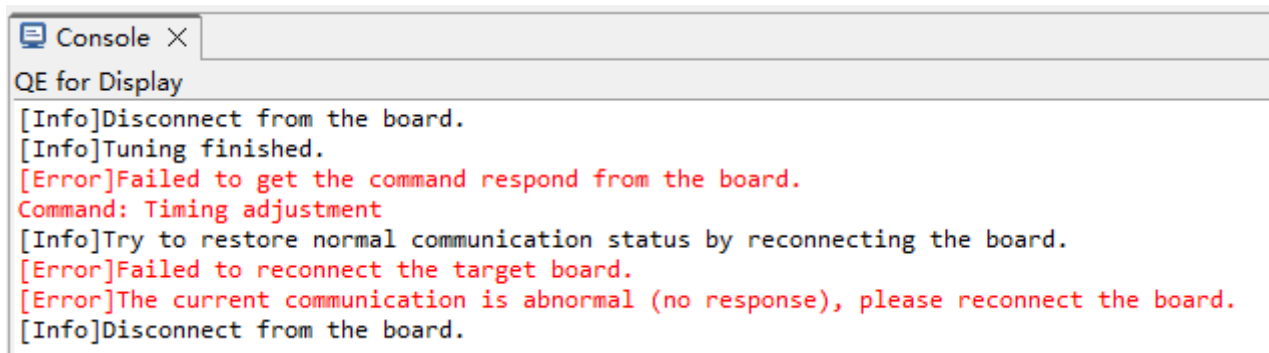


Figure 3-3 "Set the registers in Real-time when the Parameters are Changed" button



```

Console X
QE for Display
[Info]Disconnect from the board.
[Info]Tuning finished.
[Error]Failed to get the command respond from the board.
Command: Timing adjustment
[Info]Try to restore normal communication status by reconnecting the board.
[Error]Failed to reconnect the target board.
[Error]The current communication is abnormal (no response), please reconnect the board.
[Info]Disconnect from the board.

```

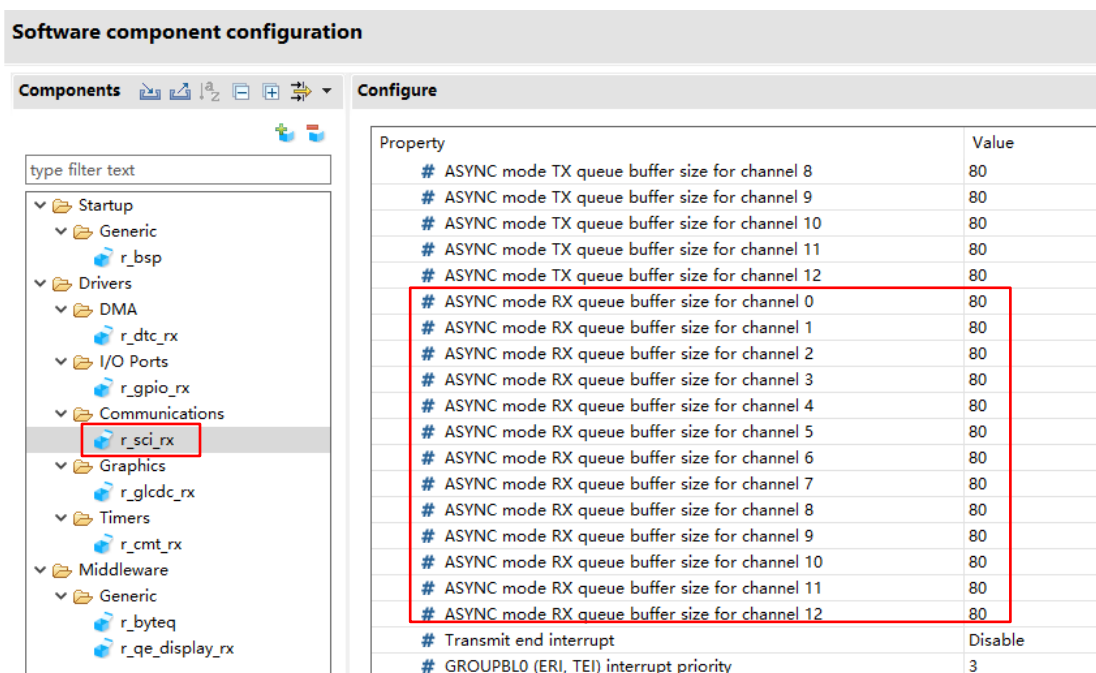
Figure 3-4 Example of command communication error messages

3.2 Functional Restrictions

3.2.1 Restriction on ASYNC mode RX queue buffer size setting in r_sci_rx FIT module

In r_sci_rx FIT module, please don't set the following values to the "ASYNC mode RX queue buffer size for channel n":

- 2, 3, 4, 6, 7, 8, 10, 14, 15, 32, 42, 63, 83, 94, 124, 187, 247



Property	Value
# ASYNC mode TX queue buffer size for channel 8	80
# ASYNC mode TX queue buffer size for channel 9	80
# ASYNC mode TX queue buffer size for channel 10	80
# ASYNC mode TX queue buffer size for channel 11	80
# ASYNC mode TX queue buffer size for channel 12	80
# ASYNC mode RX queue buffer size for channel 0	80
# ASYNC mode RX queue buffer size for channel 1	80
# ASYNC mode RX queue buffer size for channel 2	80
# ASYNC mode RX queue buffer size for channel 3	80
# ASYNC mode RX queue buffer size for channel 4	80
# ASYNC mode RX queue buffer size for channel 5	80
# ASYNC mode RX queue buffer size for channel 6	80
# ASYNC mode RX queue buffer size for channel 7	80
# ASYNC mode RX queue buffer size for channel 8	80
# ASYNC mode RX queue buffer size for channel 9	80
# ASYNC mode RX queue buffer size for channel 10	80
# ASYNC mode RX queue buffer size for channel 11	80
# ASYNC mode RX queue buffer size for channel 12	80
# Transmit end interrupt	Disable
# GROUPBLO (ERI, TEI) interrupt priority	3

Figure 3-5 ASYNC mode RX queue buffer size for channel n setting

Otherwise, in certain cases, the following message will display in the console window and can't stop.

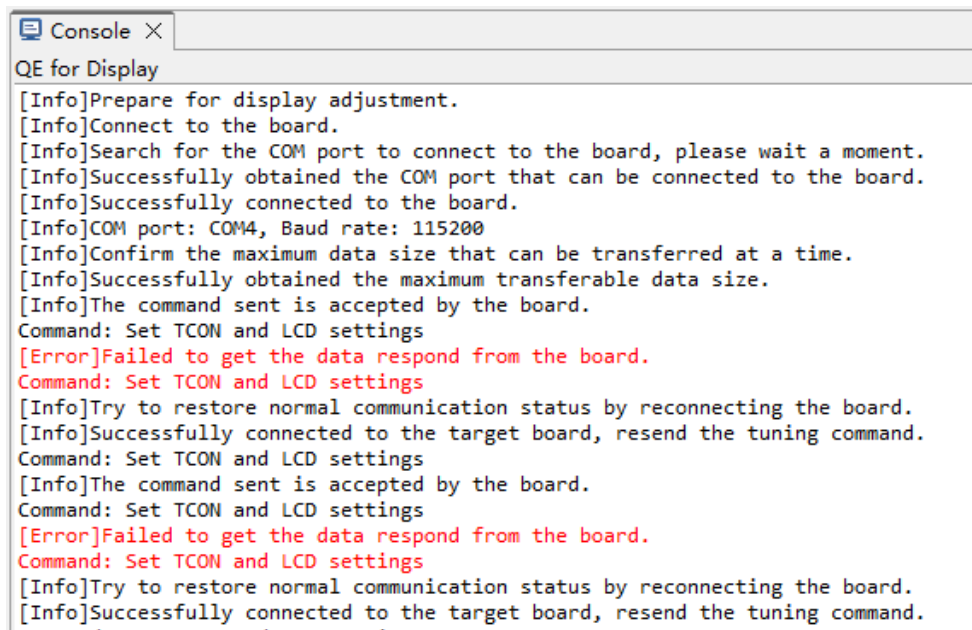


Figure 3-6 Display tuning command communication anomalies

[Workaround]

When you encounter this case, please click “Finish Display Adjustment” button to stop the adjustment.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Jul.01.24	-	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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