

## ISL9122 Family

This manual provides installation procedures, features, and user information for the graphical user interface (GUI) evaluation software used by the ISL9122 product family.

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## 1. System Requirements

Following are the minimum system requirements for the evaluation software

- **Operating System** – PC or virtual Windows machine with Windows 7 or greater
- **.NET Framework** – 4.5 or greater, and 3.5 (CLR 2)
- **RAM** – 30MB RAM
- **Hard Disk** – 10MB free disk space

*Note:* No special drivers are required for the Renesas USB Dongle (ISLUSBMINIZEVAL1Z), it operates as a Human Interface Device (HID).

## 2. Software Installation

The following steps describe installing the PC software.

*Note:* This evaluation software is a single evaluation tool for the ISL9122 product family.

1. Download the installer file from the website or from the USB drive.
2. The installer file named ISL9122\_Installer\_vX.Y.Z.exe, where X.Y.Z is the version number of the evaluation software, will be downloaded into the system or user designated download folder.
3. Run the installer file.
4. Follow the installation wizard to install the evaluation software.
5. Read the license agreement, choose the accept option, and click **Next** to continue with the evaluation software installation.

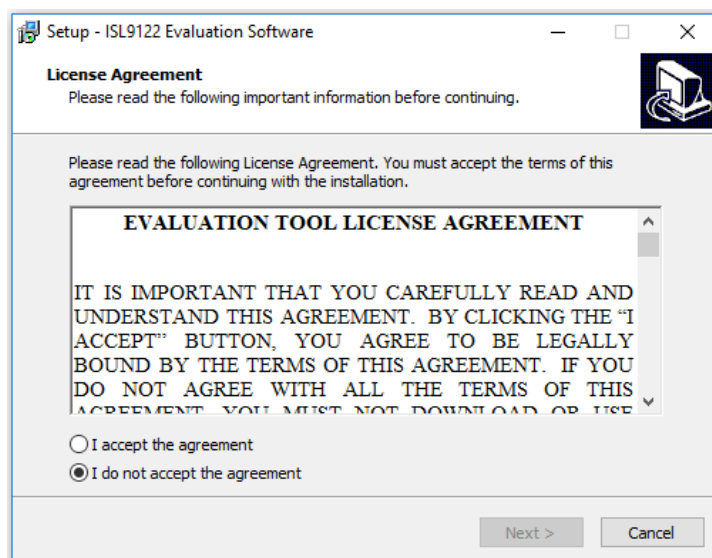


Figure 1. License Agreement

6. The default directory is C:\Program Files (x86)\Renesas\ISL9122. To change the default folder, click the **Browse** button. Click **Next** to continue to Select Start Menu Folder.

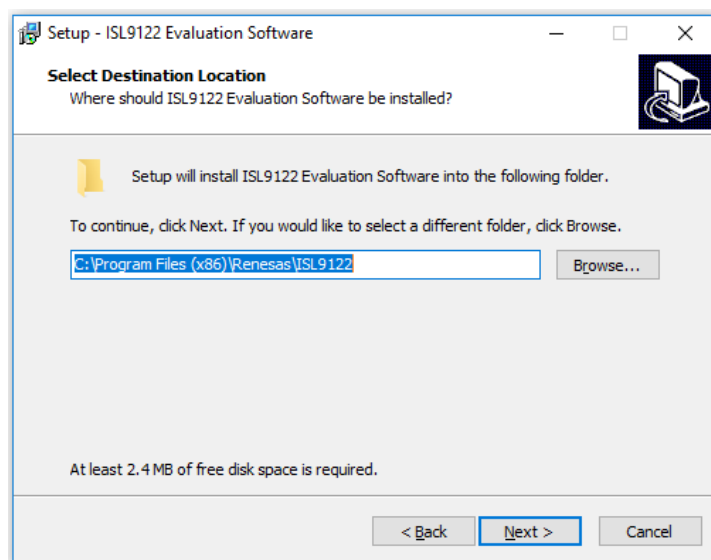


Figure 2. Select Evaluation Software Installation Folder

7. To change the default location, click the **Browse** button. Click **Next** to create the Renesas folder in the Start Menu. Click **Next** to continue to Ready to Install.

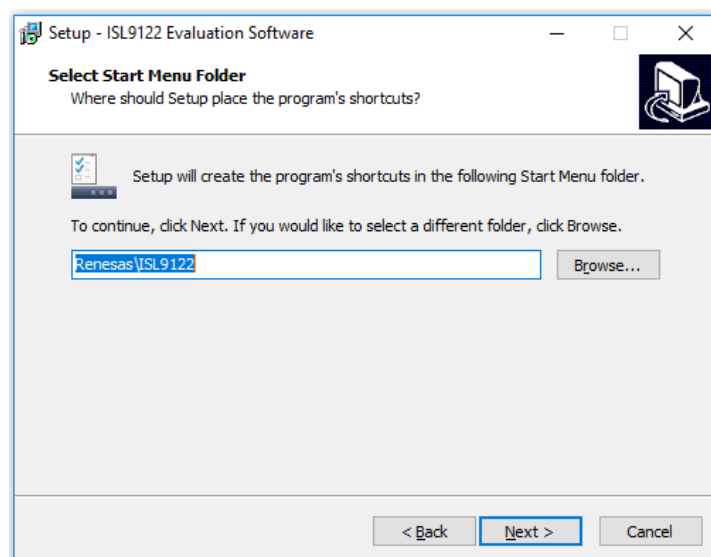


Figure 3. Select Start Menu Folder

- Click **Install** to complete the installation process.

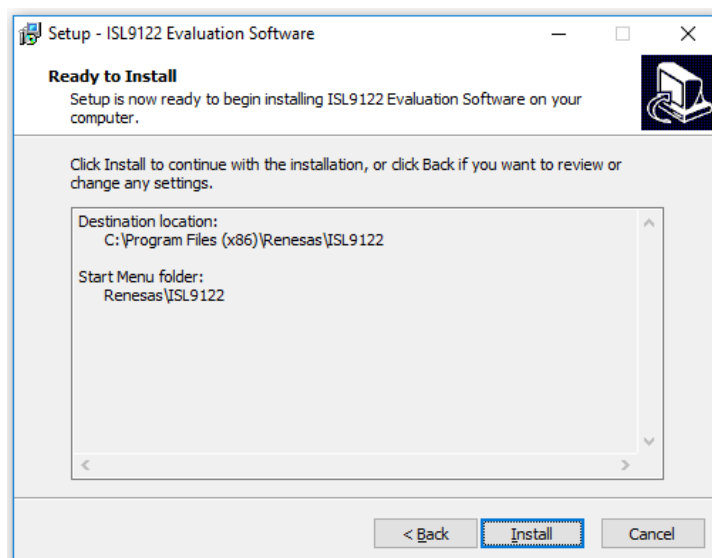


Figure 4. Ready to Install

- Click **Finish** to exit setup. If the "Launch ISL9122" check box is checked, the evaluation software automatically runs.

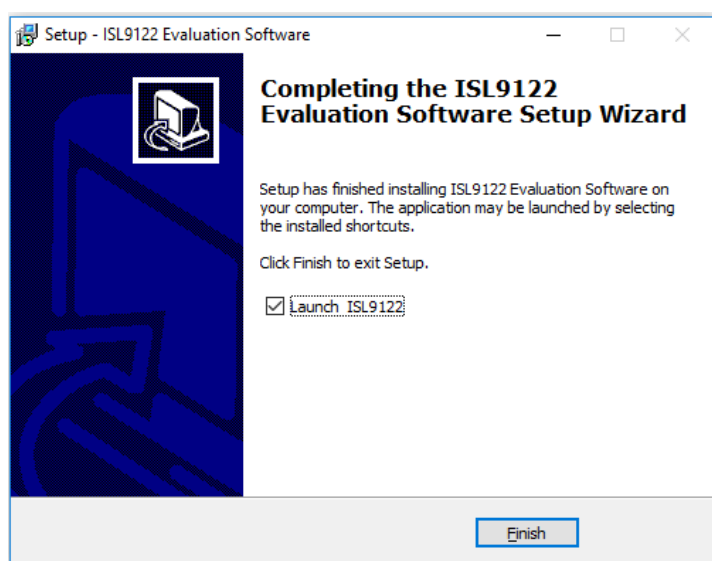


Figure 5. Exit Setup

## 3. Using the Software

### 3.1 Open Software

Open (“run”) the evaluation software from the Windows Start menu. Unless changed during the installation process, the program resides under the “Renesas” folder.

### 3.2 Evaluation Software Initialization

During initialization, an attempt is made to establish connection to the HID dongle (ISLUSBMINIEVAL1Z). If the connection is successful the main GUI form opens and the HID Status button becomes green. The default product selection is 9122A as displayed in [Figure 6](#).

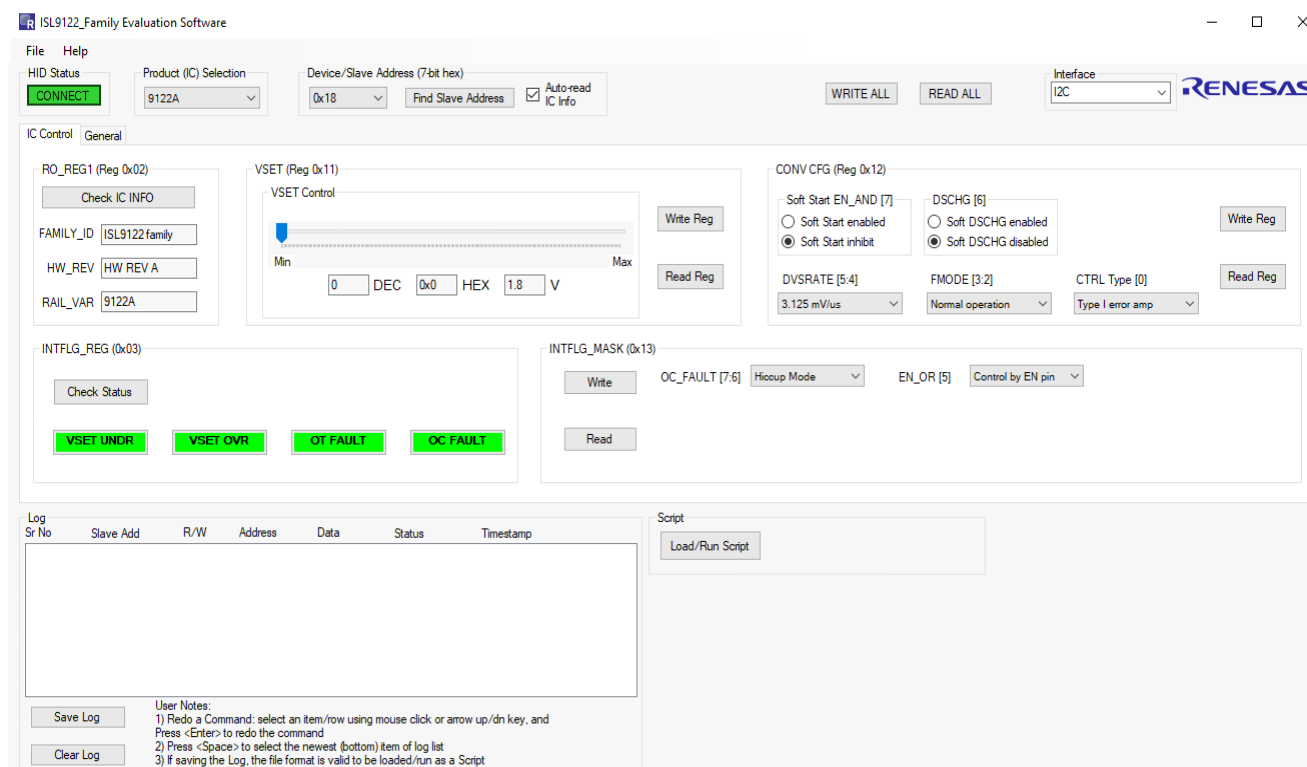


Figure 6. Default Evaluation Software UI

[Figure 7](#) shows the Renesas HID dongle.

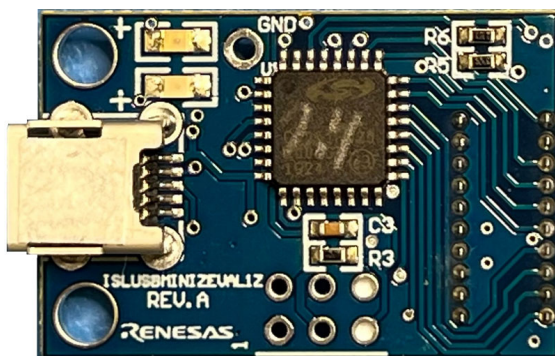


Figure 7. Renesas HID Dongle

If the connection attempt is unsuccessful a warning message appears (see [Figure 8](#)) prior to the main GUI form being displayed.

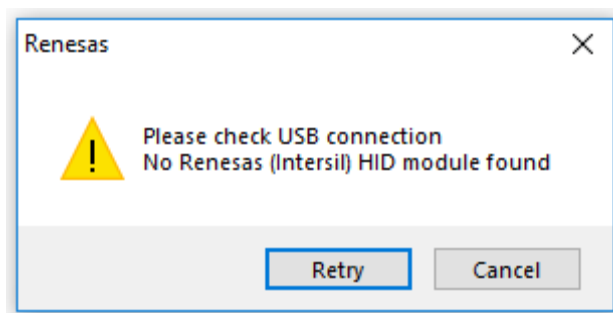


Figure 8. No HID Dongle Error Message

After the dongle is connected to the PC, click **Retry**; if successful the default GUI form displays (see [Figure 6](#)). Alternatively, clicking **Cancel** closes the warning message and opens the main GUI form to run in “off-line” mode, where no serial communication can occur until the HID connection is successfully (re)established.

### 3.3 Device/Slave Address

The first step after installing the evaluation software is to click **Find Slave Address**. If the Auto-read IC Info box is checked, the feature searches for an ISL9122 family device on the I<sup>2</sup>C bus, and sets the correct slave addresses to be used by the GUI. If the Auto-read IC Info box is unchecked, only the slave address of the IC connected is searched. The routine searches for an I<sup>2</sup>C acknowledge (“ACK”) by attempting I<sup>2</sup>C commands with incrementing slave address from 0x00 to 0x7F. If an address is ACK’d, the routine does a qualified command to verify a qualified command to verify an ISL9122 family device. If an ISL9122 family device is located, it will read back the slave addresses programmed to the device, set those to the GUI, and a message box with the I<sup>2</sup>C slave address (see [Figure 9](#)). If the evaluation software cannot find the device on the bus, a message box with an error message appears (see [Figure 16](#)).

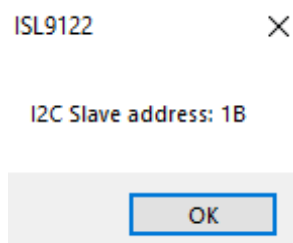


Figure 9. Slave Address Found

### 3.4 ISL9122 Specific GUI Tab and User Controls

#### 3.4.1 IC Control

The IC Control tab has all the device specific registers. [Figure 10](#) shows the IC control tab for the ISL9122A device. The IC Control tab for each product in the family varies slightly from the one shown below. The IC Control tab updates automatically as discussed in [Product \(IC\) Selection](#). Details of the IC Control tab can be found in the product specific evaluation manual.

Figure 10. ISL9122A IC Control

## 3.5 Supplementary Support Features

The evaluation software has supplementary features such as data-logging and script execution, read and write of all registers, finding or changing a slave address, and others as shown in Figure 11. These features are accessible from both the IC Control and General tabs.

| Sr No | Slave Add | R/W   | Address | Data | Status | Timestamp                |
|-------|-----------|-------|---------|------|--------|--------------------------|
| 15    | 0x0F      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 16    | 0x10      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 17    | 0x11      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 18    | 0x12      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 19    | 0x13      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 20    | 0x14      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 21    | 0x15      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 22    | 0x16      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 23    | 0x17      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 24    | 0x18      | Write | 0x02    | 0x00 | 0      | I2C: 2021/12/06 16:09:29 |
| 25    | 0x18      | Read  | 0x02    | 0x18 | 0      | I2C: 2021/12/06 16:09:29 |

Figure 11. Supplementary Features

### 3.5.1 File Menu

#### 3.5.1.1 Save

The **Save** option saves all the register settings, as currently *shown in the GUI*, into a text file (see [Figure 12](#)).

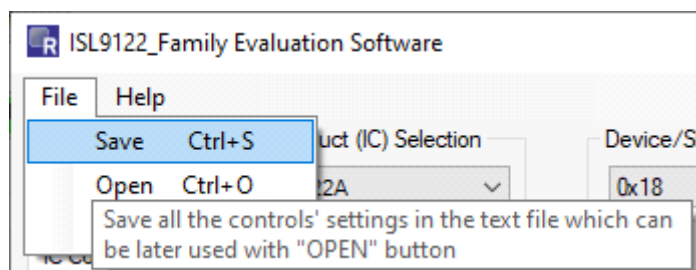


Figure 12. File > Save

The text file generated has 8-bit data values in hexadecimal format for the 0x00 to 0xFF register space. Each line of the text file corresponds to register address (n - 1). For example, line one of the text file contains data from register address 0, and line 256d contains data from register address 255d (0xFF).

It is acceptable to manually add notes or comments to any line in a text load file, when they are placed *after* the 8-bit hexadecimal data value (two characters) – no special delimiters are required.

#### 3.5.1.2 Open

The **Open** option (re)loads all the register settings from a properly formatted text load file into the evaluation software (see [Figure 13](#)) and updates the GUI display.

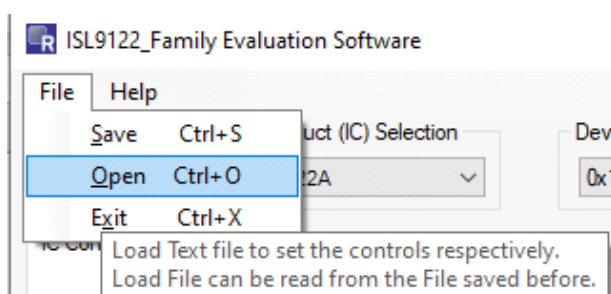


Figure 13. File > Open

**Note:** By default the evaluation software does not automatically write the data loaded from the text file into the IC registers. To write all register data click [Write All](#) after File > Open.

#### 3.5.1.3 Exit

The **Exit** options closes the application window and exits the program. Functionally, this is the same as clicking the "X" in the upper right of the GUI window to close the program.

### 3.5.2 HID Status and Connection

The HID Status displays the state of the connection between the software/PC and Renesas HID dongle. The software automatically detects removal and insertion of the HID dongle to the PC. The **CONNECT** button is colored green when the HID dongle is connected and red when disconnected. Clicking the **CONNECT** button resets the HID connection and attempts to reestablish it.



If the dongle is disconnected while the evaluation software is running, a message box appears (see [Figure 14](#)). Click **Retry** to manually attempt to reconnect, or click **Cancel** to return to the GUI.

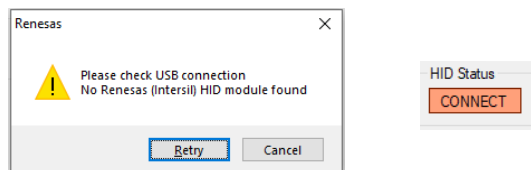


Figure 14. No HID Dongle

### 3.5.3 I<sup>2</sup>C ACK/NACK

Successful I<sup>2</sup>C communication contains acknowledge bits (ACK) at the end of each byte. No special notification or action is provided by the GUI for an ACK. However, the GUI monitors for unsuccessful I<sup>2</sup>C communication in the form of a not acknowledge (NACK) bit. If a NACK is encountered, the GUI notifies the user with a message box (see [Figure 15](#)) and generally terminates the current operation.

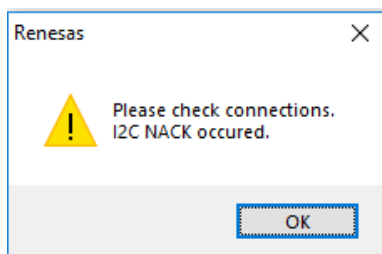


Figure 15. I2C NACK

### 3.5.4 Product (IC) Selection

This is a drop-down list that allows you to choose a product from the ISL9122 family. After choosing a product, the evaluation software updates accordingly. Alternatively, the Find Slave Address feature searches for the connected device and updates the evaluation software to match that connected device to the PC.

### 3.5.5 Find Device/Slave Address

This feature searches for an ISL9122 device on the I<sup>2</sup>C bus, and sets the correct slave addresses to be used by the GUI. Click **Find Slave Address** to initiate the search. It searches for an I<sup>2</sup>C ACK by attempting I<sup>2</sup>C commands with incrementing slave address from 0x00 to 0x7F. If the ISL9122 family device is found, a message box with the I<sup>2</sup>C slave address appears (see [Figure 9](#)). If the evaluation software cannot find the ISL9122 family device on the bus, a message box with an error message appears (see [Figure 16](#)).

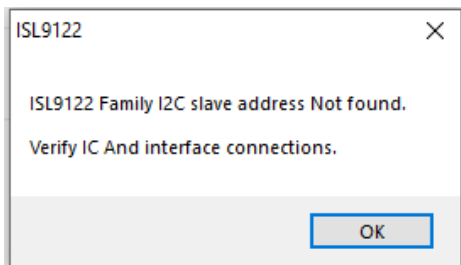


Figure 16. Slave Address Not Found

### 3.5.5.1 Auto-Read IC Information

If the Auto-read IC Information check-box is set, the evaluation software updates itself to the ISL9122 family device found on the bus. If the check-box is not set, the evaluation software does not update itself to match the device found on the bus.

### 3.5.6 Write All

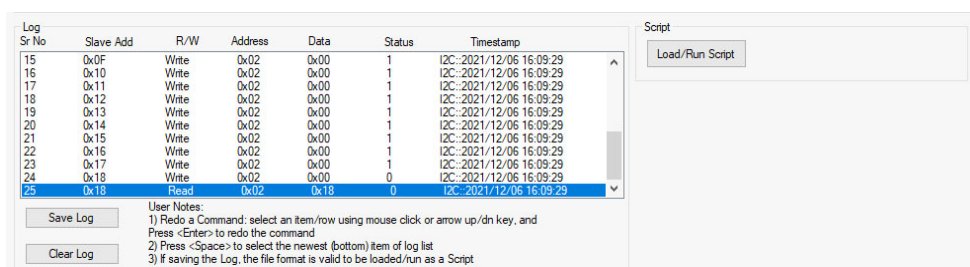
The **Write All** button writes data to all the valid registers of the IC based on the settings shown on the evaluation software GUI. The currently selected slave address(es) in the GUI are used for the operation. If an incorrect slave address is chosen in the drop-down menu or an I<sup>2</sup>C NACK is encountered the routine terminates immediately.

### 3.5.7 Read All

The **Read All** button reads all the valid registers and updates the evaluation software GUI settings based on the read-back data from the IC registers - this synchronizes the IC/device under test with the GUI display. It is always recommended to read-all whenever the evaluation software is first run and/or a device under test is (re)started (e.g. power cycled, reset or memory recalled). The currently selected slave address from the Device/Slave address drop-down is used for the operation. If an incorrect slave address is chosen in the drop-down menu or an I<sup>2</sup>C NACK is encountered and the routine terminates immediately.

### 3.5.8 I<sup>2</sup>C Log

The evaluation software has a live I<sup>2</sup>C log that updates when an I<sup>2</sup>C read or write transaction is performed (see [Figure 17](#)).



| Sr No | Slave Add | R/W   | Address | Data | Status | Timestamp                |
|-------|-----------|-------|---------|------|--------|--------------------------|
| 15    | 0x0F      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 16    | 0x10      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 17    | 0x11      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 18    | 0x12      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 19    | 0x13      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 20    | 0x14      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 21    | 0x15      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 22    | 0x16      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 23    | 0x17      | Write | 0x02    | 0x00 | 1      | I2C: 2021/12/06 16:09:29 |
| 24    | 0x18      | Write | 0x02    | 0x00 | 0      | I2C: 2021/12/06 16:09:29 |
| 25    | 0x18      | Read  | 0x02    | 0x10 | 0      | I2C: 2021/12/06 16:09:29 |

User Notes:  
 1) Redo a Command: select an item/row using mouse click or arrow up/dn key, and Press <Enter> to redo the command  
 2) Press <Space> to select the newest (bottom) item of log list  
 3) If saving the Log, the file format is valid to be loaded/run as a Script

Script  
Load/Run Script

Figure 17. I<sup>2</sup>C Log

To redo a given command select the row using a mouse click or using the arrow up/down keys and press <Enter>. press <Space> to jump to the most recently logged item (bottom of the list).

#### 3.5.8.1 Save Log

All the transactions in the log are saved into a specifically formatted text file using the **Save Log** option.

#### 3.5.8.2 Clear Log

The transactions in the log can be cleared by using the **Clear Log** option.

#### 3.5.8.3 Load/Run Script

A saved log file (see [Save Log](#)) can be loaded and executed as a script. The I<sup>2</sup>C transactions execute in sequential order as provided by the log file. Both I<sup>2</sup>C read and write is supported. *Note:* If the log file has an incorrect slave address or line format, the script routine is terminated and a message box notifies the user of the error encountered (see [Figure 18](#)).

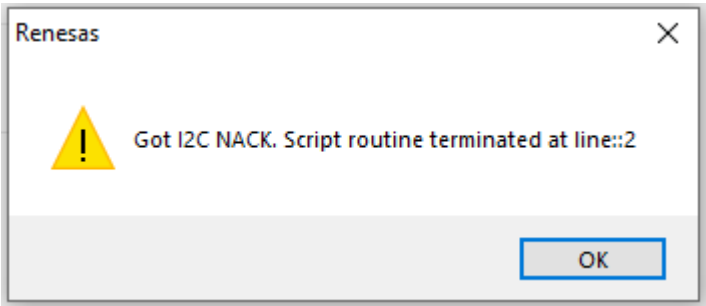


Figure 18. Script Termination

3.6 General Tab

The General tab contain ancillary controls to help user interaction with the IC, dongle and GUI (see Figure 19). The following sections describe the available controls.

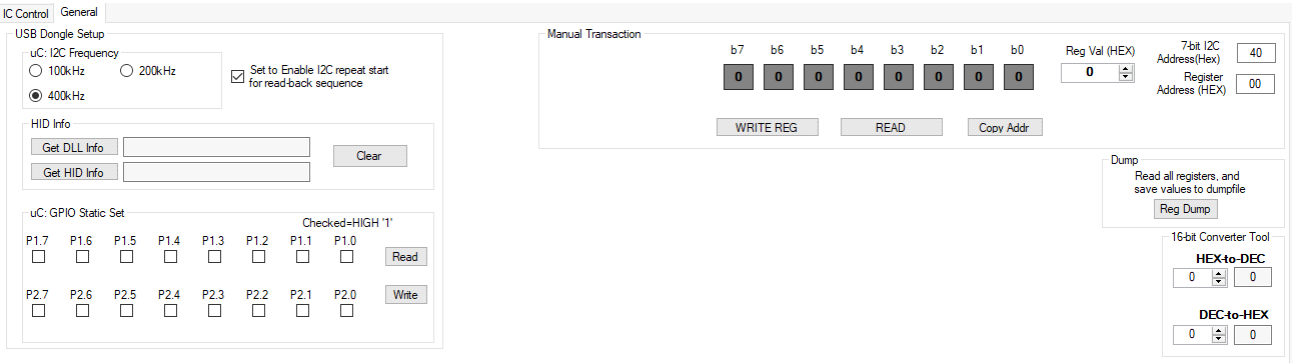


Figure 19. General Tab

3.6.1 Manual Transaction

The General tab includes an independent Manual Transaction section that is used to perform a user configured, standard I<sup>2</sup>C transaction, see Figure 20. This feature operates independently from the main (IC specific) GUI tabs and controls. Register data read and written though this mechanism is not automatically reflected in the main GUI controls. Specific GUI register control(s) can subsequently be updated (synchronized) by a register specific read or read-all operation on the main GUI, see Read All.

The Manual transaction is a useful debug tool and can be used to communicate with the Renesas device under test, and/or other I<sup>2</sup>C compliant devices on the bus.



Figure 20. Manual Transaction

### 3.6.1.1 7-Bit I<sup>2</sup>C Address Text Box

The slave address of the target IC is entered into the 7-bit I<sup>2</sup>C Address box. Valid entries are hexadecimal 0 to 7F, other values or characters are not accepted.

### 3.6.1.2 Register Address Text Box

The 8-bit register address is entered into the Register Address box. Valid entries are hexadecimal 0 to FF, other values or characters are not accepted.

### 3.6.1.3 Reg Val (HEX) Numeric Text Box

The 8-bit register value is entered into Register Val box. Valid entries are hexadecimal 0 to FF, other values or characters are not accepted. The Reg Val (HEX) box work bi-directionally with the bit buttons.

#### 3.6.1.3.1 Bit Buttons

The **Bit Buttons** beneath each b7~b0 labels show '0' or '1' and gray or green, respectively, to visually represent the value shown in the Reg Val (HEX) box. The user may also click the bit buttons to toggle the bit values, and the updated total register value will be updated accordingly in the Reg Val (HEX) box.

### 3.6.1.4 Copy Addr Button

The **Copy Addr** button copies the currently selected slave address from the Device Address (Main) and sets it to the 7-bit I<sup>2</sup>C address box.

### 3.6.1.5 Read Button

The **Read** button performs an I<sup>2</sup>C read transaction from the register address entered into the Register Address box and populates the value in the Reg Val box. The slave address for the transaction is used from the 7-bit I<sup>2</sup>C Address box. A message box appears if the I<sup>2</sup>C transaction encounters NACK (see [Figure 15](#)).

### 3.6.1.6 Write Reg Button

The **Write Reg** button performs an I<sup>2</sup>C write transaction to the register address entered into the Register Address box with the value in the Reg Val box. The slave address for the transaction is used from the 7-bit I<sup>2</sup>C Address box. A message box appears if the I<sup>2</sup>C transaction encounters NACK (see [Figure 15](#)).

### 3.6.2 USB Dongle Setup

The USB Dongle Setup section, located on the General tab, provides setup and control of the micro-controller (MCU) on the HID dongle board (see [Figure 21](#)).

Figure 21. USB Dongle Setup

#### 3.6.2.1 I<sup>2</sup>C Frequency Radio Button

The I<sup>2</sup>C frequency radio buttons allow changing the SCL frequency.

#### 3.6.2.2 Enable I<sup>2</sup>C Repeat Start Check box

The dongle supports both I<sup>2</sup>C Stop-Start and Repeated Start read transactions. Checking the box (default) enables repeated start option.

#### 3.6.2.3 HID Info

This is an informational section that reports the Renesas DLL and HID dongle firmware details.

#### 3.6.2.4 GPIO Static Set

The MCU has general purpose open-collector output port pins with weak pull-up to 3.3V. These output pins are controlled manually from the GPIO Static Set GUI controls. A checked box for a pin (or pins) chooses logic HIGH. An unchecked box for a pin (or pins) chooses logic LOW. To apply the check box selections to the HID dongle click the **Write** button. The **Read** button reads back the current state of all the dongle pins and updates the GUI.

*Note:* More than one pin can be checked or unchecked at the same time.

Only ports P1.0 to P1.7, P2.0 and P2.1 are branched out from the dongle connector (see [Figure 22](#)).

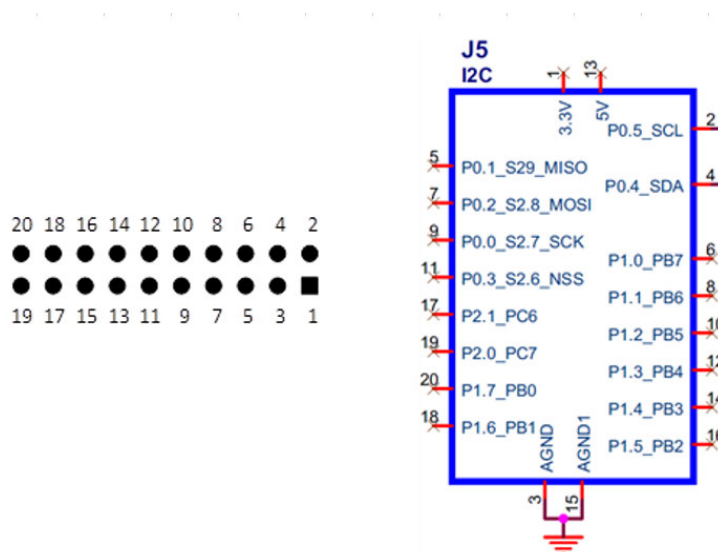


Figure 22. General Purpose Outputs

### 3.6.3 16-Bit Converter Tool

This tool converts 16-bit hexadecimal and decimal numbers as shown in [Figure 23](#). The maximum hexadecimal allowed is 0xFFFF, and the maximum decimal allowed is 65536.

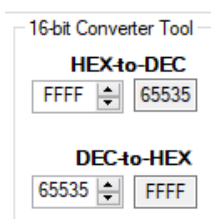


Figure 23. 16-bit Converter Tool

### 3.6.4 Register Dump

The register dump button reads back all necessary registers from the IC and creates a text file with a dump of register data. The text file generated has 8-bit data values in hexadecimal format for the 0x00 to 0xFF register space. Each line of the text file corresponds to register address (n - 1). For example, line one of the text file contains data from register address 0, and line 256 contains data from register address 255 (0xFF). The dump file format is compatible with the File > Open operation (see [File Menu](#)), thus it can be (re)loaded to the GUI.

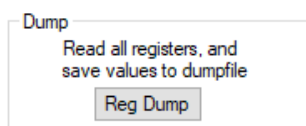


Figure 24. Register Dump

## 4. Software Uninstall Process

The evaluation software can be uninstalled in a few simple steps. Navigate to the program in the Windows Start menu under the “Renesas” folder. Right-click on the program name and choose **Uninstall**. This opens the Windows Control Panel “Programs and Features”, where the program can be selected and uninstalled.

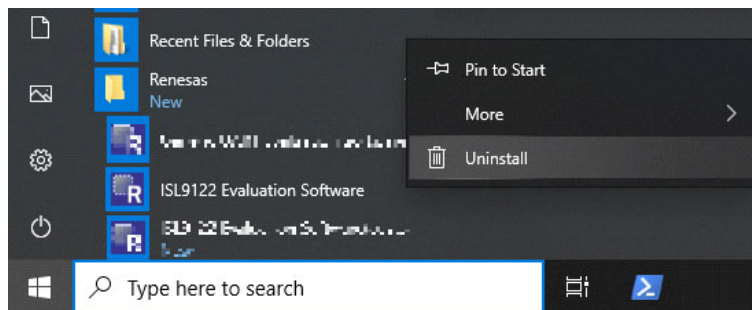


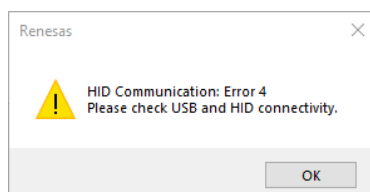
Figure 25. Evaluation Software - Uninstall

## 5. Troubleshooting Tips

Listed below are common troubleshooting tips for users experiencing issues while installing or using the evaluation software.

- Issues with installing or running program
  - Try running installer and/or opening the program with administrative rights (right-click and Run As Administrator)
  - If Run As Administrator does not resolve the issue, the issue could be related to a third-party restriction such as corporate security policy or anti-virus. Contact your local IT administrator for further help.
  - Ensure the proper .NET frameworks are installed on the machine. Both .NET common runtime language (CLR) 4 and CLR 2 are required. This assembly targets .NET 4.5. .NET framework 4.5 or greater is required, which inherently runs CLR 4. Additionally, newer OS (such as Windows 10) also need to have .NET framework 3.5 enabled.
- Evaluation software text is enlarged, cut-off or missing
  - The evaluation software does not support non-native scaling or dynamic resizing, therefore, verify that the PC display settings are set to a 100% scale factor. This setting is in the Display Settings of a Windows PC.
  - The evaluation software is sized optimally for display resolution of 1366x768 or higher.
- Evaluation software cannot connect to the Renesas HID dongle
  - The USB cable is not connected to the PC USB port and/or Renesas HID dongle. Connect the cable to both the PC USB port and Renesas HID dongle.
  - The USB cable is damaged. Replace the USB cable.
  - Bad USB port. Ensure the USB device is recognized by the machine. This can be checked in the Windows Device Manager. The connection/cable and port are good if different audible tones can be heard from PC when plugging the cable in and out.
  - Another Renesas HID dongle is already connected to the machine.
- Issues with updating to newer version of the evaluation software
  - Uninstall the existing software as described in the [Software Uninstall Process](#); next, reinstall the newer version.
- Evaluation software text looks different than the images in the manual

- The evaluation software was developed in Windows 10 with a default system font for the English (United States) language setting. Other regions might use a different default system font for English, which affects the appearance of the evaluation software but not its operation.
- HID communication error message:
  - The GUI can report various HID USB communication errors using a message box (see [Figure 26](#)). The message box will report an error code number. Check all physical connections, restart the IC, and exit/re-open GUI.
  - If the issue persists, contact Renesas support to help diagnose the problem.



**Figure 26. HID Communication Error Example**

## 6. Revision History

| Revision | Date         | Description                                                                   |
|----------|--------------|-------------------------------------------------------------------------------|
| 1.01     | Mar 23, 2023 | Updated System Requirements section.<br>Updated Troubleshooting Tips section. |
| 1.00     | Apr 1, 2022  | Initial release                                                               |



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