User's Manual

DMX512 Master Controller GUI

User's Manual

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How to Use This Manual

Readers

This manual describes the DMX512 Master Controller GUI.
This manual is intended for users who have general knowledge of Windows.
The descriptions in this manual are based on an example using the DMX512 Master Controller GUI in “Windows 7”.

Purpose

This manual is intended to help users understand the basic specifications of the DMX512 Master Controller GUI, how to use it, and to be used as a reference for developing hardware and software of the system that uses the DMX512 Master Controller GUI.

Structure

This manual consists of the following chapters:

- **CHAPTER 1 OVERVIEW**
- **CHAPTER 2 INSTALLING .NET Framework**
- **CHAPTER 3 INSTALLING Visual C++ REDISTRIBUTABLE PACKAGE**
- **CHAPTER 4 INSTALLING THE DMX512 MASTER CONTROLLER GUI**
- **CHAPTER 5 STARTING AND CLOSING THE DMX512 MASTER CONTROLLER GUI**
- **CHAPTER 6 USING THE DMX512 MASTER CONTROLLER GUI**
- **CHAPTER 7 WINDOW AND DIALOG BOX REFERENCE**

How to Read This Manual

It is assumed that the readers of this manual have general knowledge of electrical engineering, logic circuits, and microcontrollers.

- To learn about the functions of DMX512 Master Controller GUI
  → Read from **CHAPTER 1 OVERVIEW** sequentially.
- To gain a general understanding of functions:
  → Read this manual in the order of the **CONTENTS**. The mark "<R>" shows major revised points. The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what" field.

Conventions

The following signals are used in this manual.

Data significance:	Higher digits on the left and lower digits on the right
Note:	Footnote for item marked with Note in the text
Caution:	Information requiring particular attention
Remark:	Supplementary information
Numeric representation:	Binary... xxxx or xxxxB
	Decimal... xxxx
	Hexadecial... xxxxH

Related Documents

The related documents indicated in this publication may include preliminary versions.

However, preliminary versions are not marked as such.

DMX512 Master Controller GUI User's Manual (This Manual)

RL78/I1A Lighting Communication Master Evaluation Board User's Manual

Additionally a company name of mentioning and a product name are a registered trademark or a trademark of each company.

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CHAPTER 1. OVERVIEW

1. 1 Overview

The DMX512 Master Controller GUI (graphical user interface) controls RL78/I1A Lighting Communication Master Evaluation Board that enables communication conforming to the DMX512 standard.

The DMX512 Master Controller GUI has the following features:

- Specifying a scene setting of at least 0.1 seconds
- Saving and loading the scene setting in CSV format
- Easily checking operation

For details about RL78/I1A Lighting Communication Master Evaluation Board, see RL78/I1A Lighting Communication Master Evaluation Board User's Manual.

1. 1. 1 Operating environment

(1) Host

OS:	Windows 7 (32bit or 64bit)
CPU:	1 [GHz] or faster
Memory:	2 [GB] or more

(2) RL78/I1A Lighting Communication Master Evaluation Board

The Use of DMX512 Master Controller GUI needs RL78 / I1A Lighting Communication Master Evaluation Board.

Caution It does not support Lighting Communication Master Evaluation Board (EZ-0008).

(3) Additional components

When using the DMX512 Master Controller GUI, the following software must be installed in advance. It is recommended that the latest Service Pack be installed for any OS or component.

Download each component from the Microsoft websites.

- Microsoft .NET Framework 4.5 or later
- Microsoft .NET Framework 4.5 Language pack
- Visual Studio 2013 Visual C++ Redistributable Package

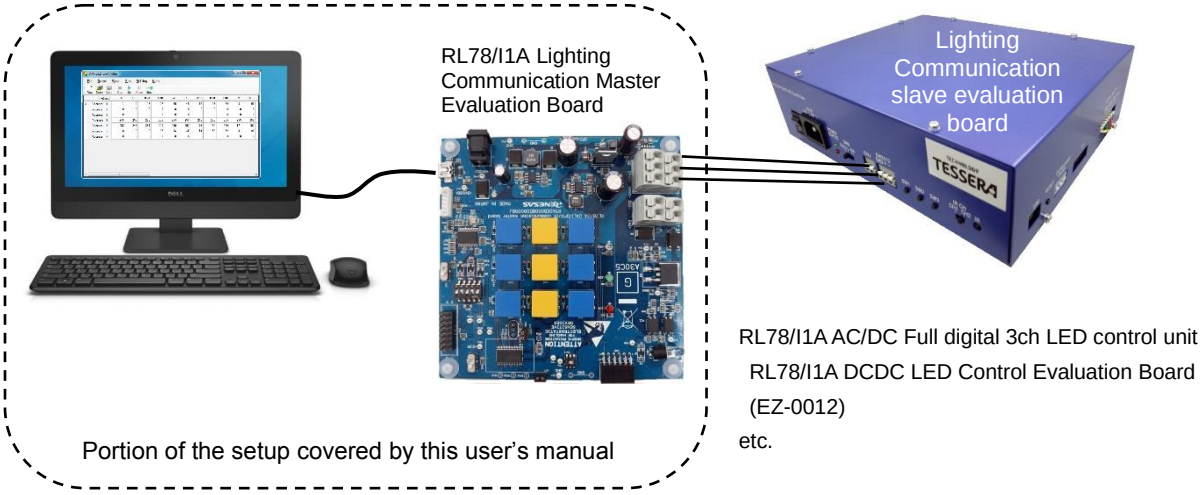
To use .NET Framework in language other than English of Windows, a language pack is required.
For details about how to install .NET Framework 4.5, see CHAPTER 3 INSTALLING Visual C++ REDISTRIBUTABLE PACKAGE.

For details about Visual Studio 2013 Visual C++ Redistributable Package, see CHAPTER 3 INSTALLING Visual C++ REDISTRIBUTABLE PACKAGE.

1. 1. 2 System setup

An example of the system setup is shown below.

Figure 1-1 System Setup



1. 1. 3 DMX512 communication

Serial communication between the PC and RL78/I1A Lighting Communication Master Evaluation Board is performed by using virtual COM-to-USB.

RL78/I1A Lighting Communication Master Evaluation Board can control a lighting communication slave evaluation board (such as RL78/I1A DCDC LED Control Evaluation Board (EZ-0012) or RL78/I1A AC/DC Full digital 3ch LED control unit) by using DMX512 communication.

1. 2 Setup Procedure

The setup procedure is shown below.

<1> Install .NET Framework to the PC

(See CHAPTER 2 INSTALLING .NET Framework)

<2> Install Visual C++ Redistributable Package

(See CHAPTER 3 INSTALLING Visual C++ REDISTRIBUTABLE PACKAGE)

<3> Install the DMX512 Master Controller GUI to the PC

(See CHAPTER 4 INSTALLING THE DMX512 MASTER CONTROLLER GUI)

<4> Install the driver

Toggle the switch of RL78/I1A Lighting Communication Master Evaluation Board to **Element operation mode**.

Connect RL78/I1A Lighting Communication Master Evaluation Board to the PC by using a USB cable.

Install the driver to the PC. (See CHAPTER 4 INSTALLING THE DMX512 MASTER CONTROLLER GUI)

<5> Specify a COM port

Double click the [DMX512 Master Controller GUI] icon to display “DMX512 Controller”.

(See CHAPTER 5 STARTING AND CLOSING THE DMX512 MASTER CONTROLLER GUI)

The COM port is set to “Unset” and “250000” bps by default.

In the case of initial start, the message “Can’t open serialport” is displayed as follows by all means.

Click [OK].

Specify a COM port in the Serial dialog box.

The port (COM1 to COM255) differs depending on the PC to connect.

<6> For details about how to use the GUI, see CHAPTER 6 USING THE DMX512 MASTER CONTROLLER GUI**.**

For details about the displayed windows and dialog boxes, see CHAPTER 7 WINDOW AND DIALOG BOX REFERENCE**.**

<R>

CHAPTER 2. INSTALLING .NET Framework

This chapter describes how to install .NET Framework in Windows 7.

2. 1 Required Files

The following two files are required.

Download these files from the Microsoft website.

(1) .NET Framework 4.5Web installer

NDP452-KB2901954-Web.exe：Web installer

(When a web access is possible, use a Web installer. Using a web installer, Language Pack which matches the language of the OS is also installed.)

(2) .NET Framework 4.5 offline installer & Language pack installer

NDP452-KB2901907-x86-x64-AllOS-ENU.exe：Offline installer

(When a web access is not possible, use an offline installer. Using an offline installer, Language Pack is not installed.For using in language other than English of Windows, install Language Pack after installing.NET Framework 4.5 by an offline installer.)

2. 2 Installing .NET Framework

Install .NET Framework, which is required for using the DMX512 Master Controller GUI.

This step is described offline installation of .NET Framework 4.5 on Windows 7.

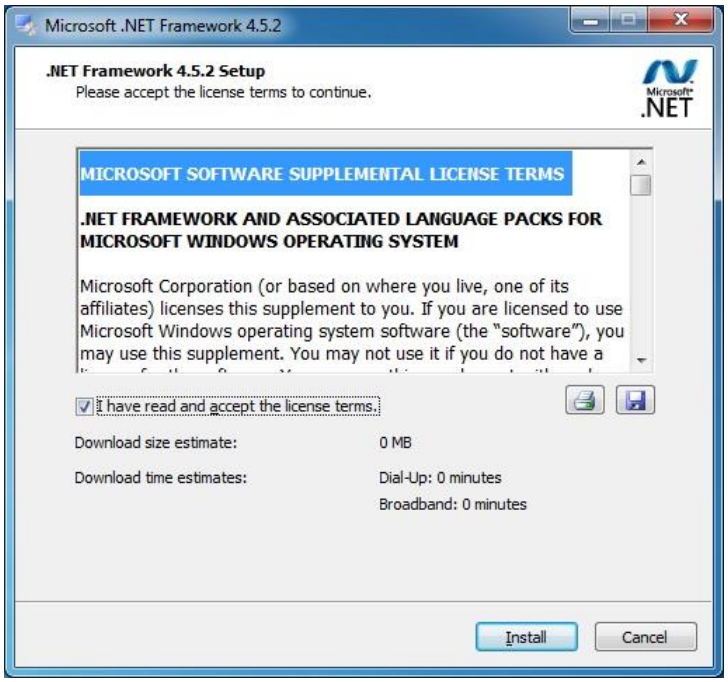
It is necessary to install Language Pack separately from the .NET Framework 4.5 by the offline installation.

<1> When "NDP452-KB2901907-x86-x64-AllOS-ENU.exe" is double-clicked, "User Account Control" dialog box is displayed. Click [Yes].

Figure 2-1 Open File – Security Warning

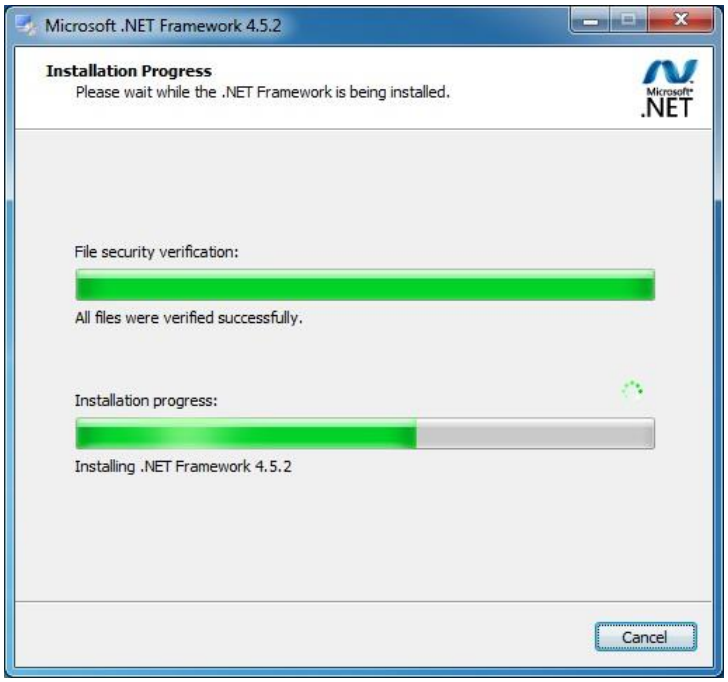
<2> ”Microsoft .NET Framework 4.5 Setup” dialog box is displayed.
After confirming the license terms, when agreeing, check "I have read and accept the license terms" and click [Install].

Figure 2-2 Microsoft .NET Framework 4.5 Setup (1)



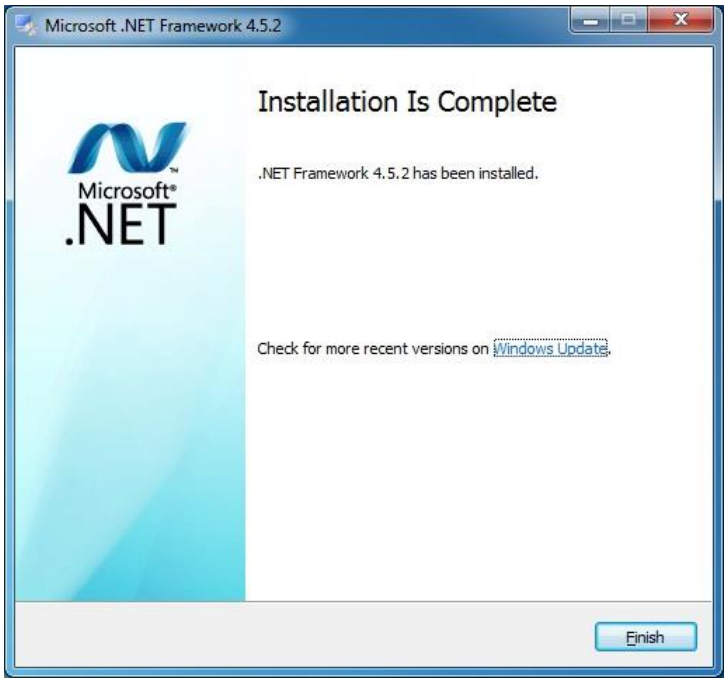
<3> Install .NET Framework according to the procedure below.

Figure 2-3 Microsoft .NET Framework 4.5 Setup (2)



<4> Click [Finish] when the installation is completed.

Figure 2-4 Microsoft .NET Framework 4.5 Setup (3)



<5> When using the language other than English of Windows, install the Language Pack.

Caution If a new service pack is released, install that service pack by using Microsoft Update.

<R>

CHAPTER 3. INSTALLING Visual C++ REDISTRIBUTABLE PACKAGE

This chapter describes how to install Visual Studio 2013 Visual C++ Redistributable Package.

3. 1 Required Files

The following file is required.

Download this file from the Microsoft website.

(1) Visual Studio 2013 Visual C++ Redistributable Package installer

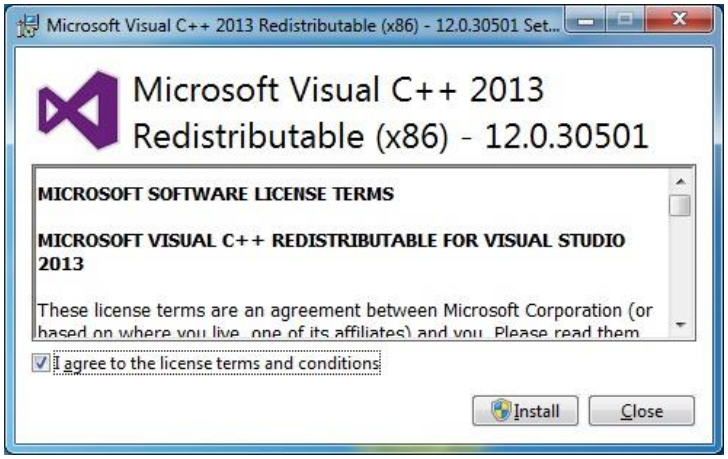
Vcredist_x86.exe

3. 2 Installing Visual C++ Redistributable Package

Install Visual C++ redistributable package, which is required for using the DMX512 Master Controller GUI.

<1> When "Vcredist_x86.exe" is double-clicked,”Visual C++ redistributable package Setup” dialog box is displayed. After confirming the license terms, when agreeing, check "I agree to the license terms and conditions" and click [Install].

Figure 3-1 Visual C++ Redistributable Package Setup (1)

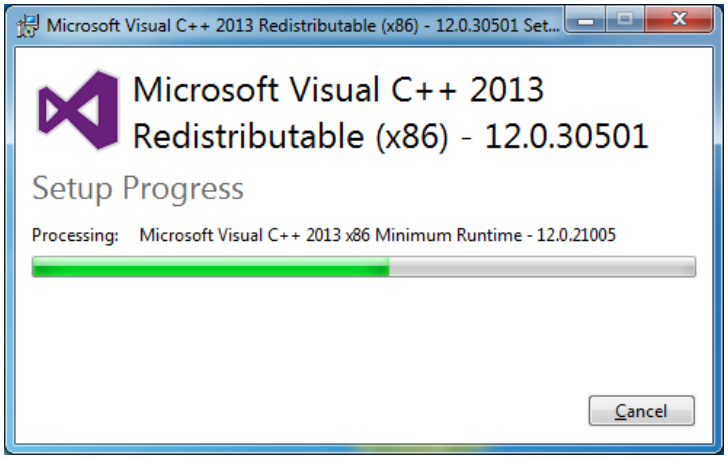


<2> "User Account Control" dialog box is displayed. Click [Yes].

Figure 3-2 Open File – Security Warning

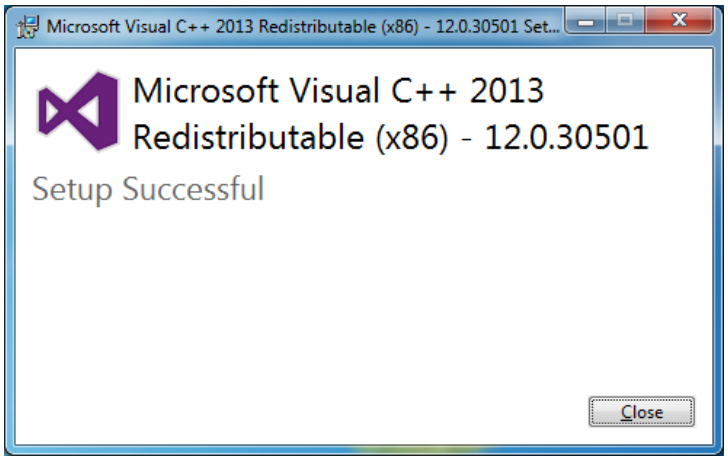
<3> Install according to the procedure below.

Figure 3-3 Visual C++ Redistributable Package Setup (2)



<4> Click [Close] when the installation is completed.

Figure 3-4 Visual C++ Redistributable Package Setup (3)



<R> CHAPTER 4. INSTALLING THE DMX512 MASTER CONTROLLER GUI

This chapter describes how to install the DMX512 Master Controller GUI in Windows 7.

4. 1 Installer

The following installer is provided with the DMX512 Master Controller GUI.

Double click the installer to install the DMX512 Master Controller GUI.

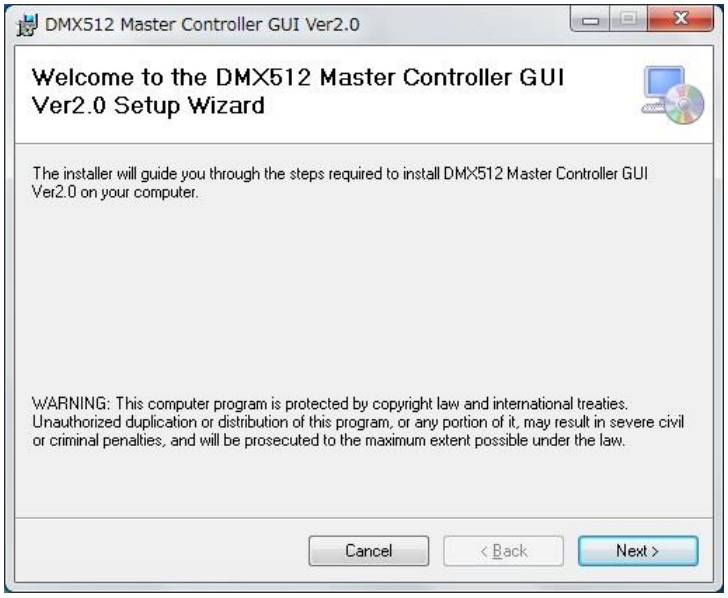
4. 1. 1 Installation procedure

The installation procedure is shown below.

<1> When the installer is double clicked, the dialog box shown in Figure 4-1 is displayed.

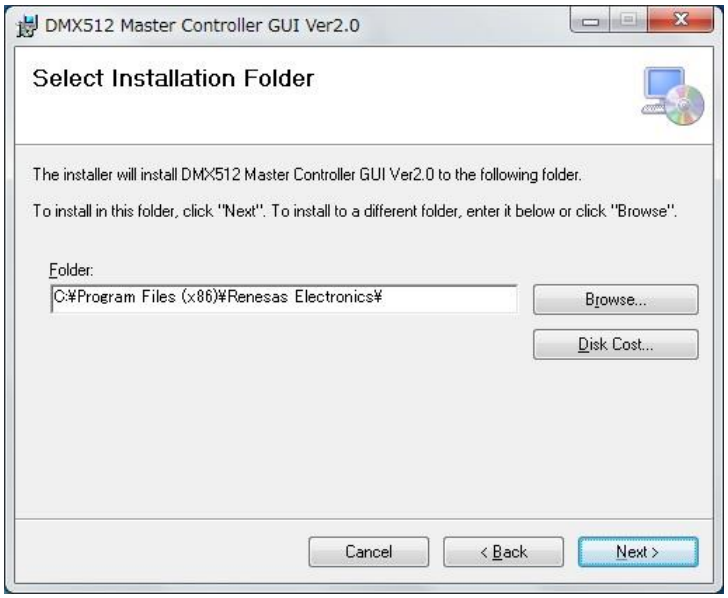
Click [Next].

Figure 4-1 DMX512 Master Controller GUI (installer)



<2> Select the folder in the Select Installation Folder dialog box and then click [Next].

Figure 4-2 DMX512 Master Controller GUI (Select Installation Folder)



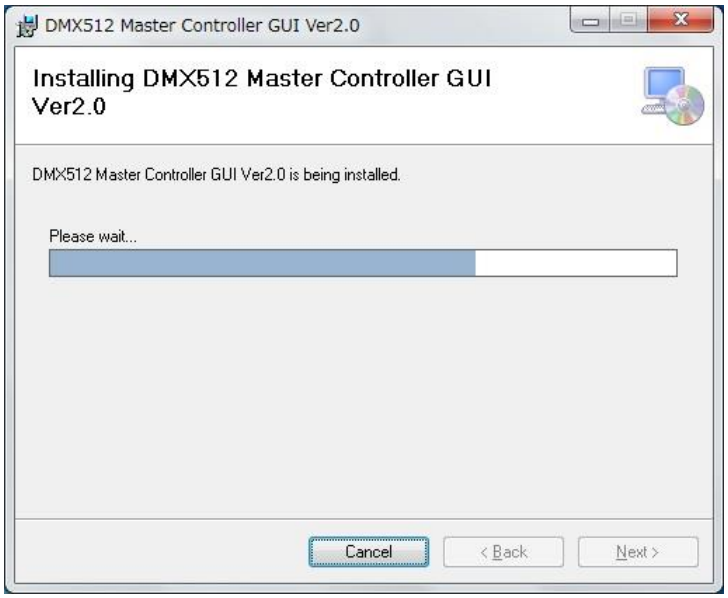
<3> The Confirm Installation dialog box is displayed.

Click [Next] to start the installation.

Figure 4-3 DMX512 Master Controller GUI (Confirm Installation)

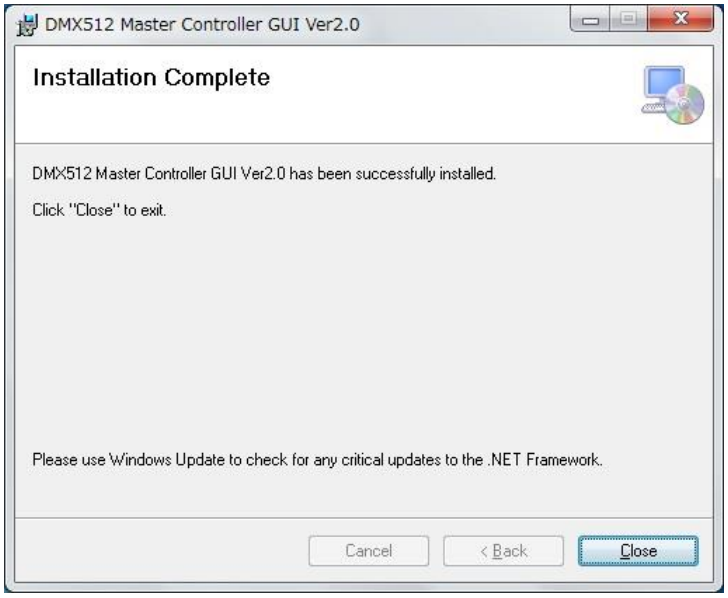
<4> Installation starts.

Figure 4-4 DMX512 Master Controller GUI (Installing)



<5> Installation is complete.

Figure 4-5 DMX512 Master Controller GUI (Installation Complete)



<6> The icon is added to the desktop.

When the icon is double clicked, the “DMX512 Controller” window is displayed.

4. 1. 2 Uninstallation procedure

The uninstallation procedure is shown below.

<1> Select [Start], [Control Panel], and then [Programs and Features].

<2> Select “DMX512 Master Controller GUI” from the displayed programs and then the menu is indicated by a right click..

<3> [Uninstall (U)] menu is clicked.

<4> The DMX512 Master Controller GUI is uninstalled.

Caution It's possible also to uninstall from an installer.

Double-click the installer, and the process proceeds according to the instructions.

4. 2 Driver

Install the driver when connecting RL78/I1A Lighting Communication Master Evaluation Board to the PC by using a USB cable for the first time.

Save the following required files to any folder.

mqb2sall.cat
MQB2SALL.inf
MQB2SALL.sys
MQB2SVCP.sys

The driver exists for the 32bit version and the 64bit version.

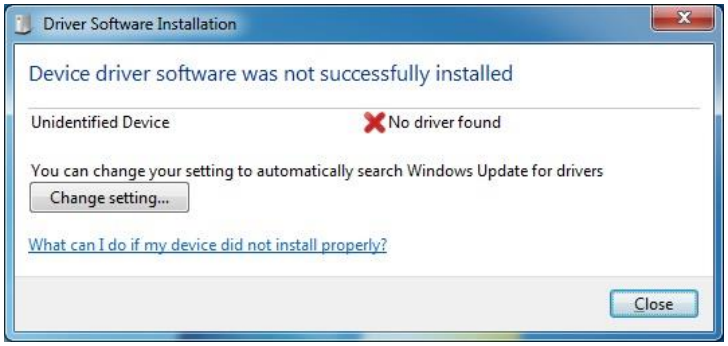
Use a driver in accord with Windows using.

4. 2. 1 Installation procedure

The installation procedure is shown below.

<1> When connecting RL78/I1A Lighting Communication Master Evaluation Board to the PC by using a USB cable, if the driver has not been installed, the following dialog box is displayed.
Click [Close].

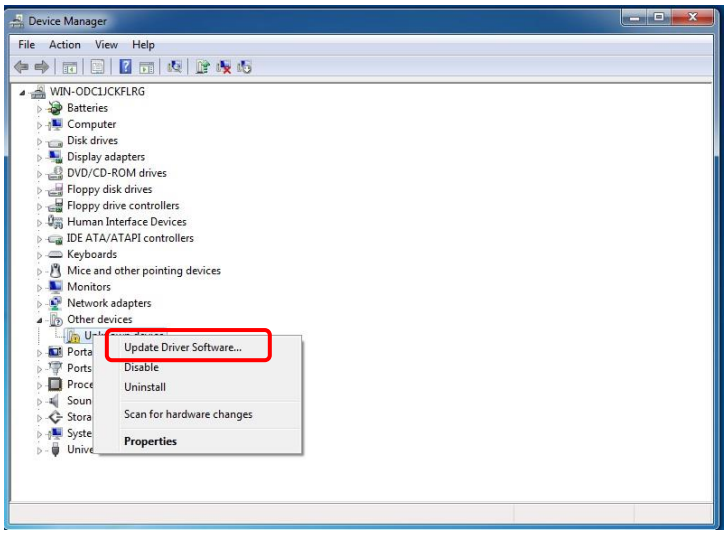
Figure 4-6 Installation error screen of the new hardware



<2> Open the Device Manager, select the unknown device, to display the menu in the right click.

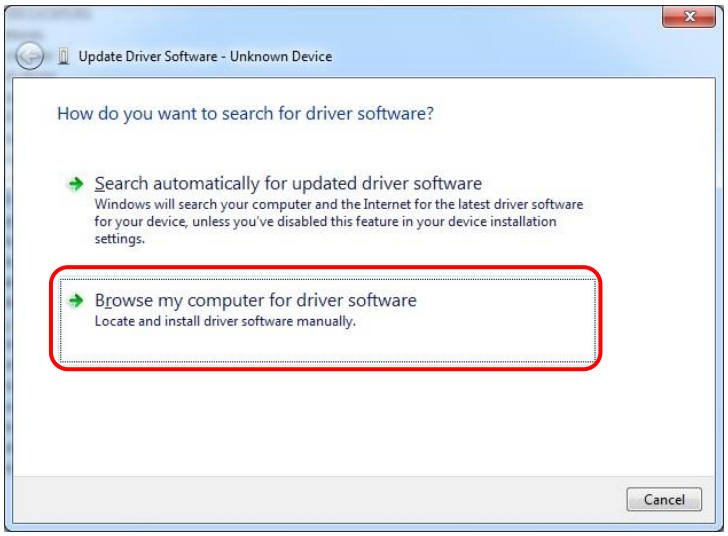
Click [Update Driver Software…].

Figure 4-7 Screen of driver installation (1)



<3> Search manually, and then click “Install”.

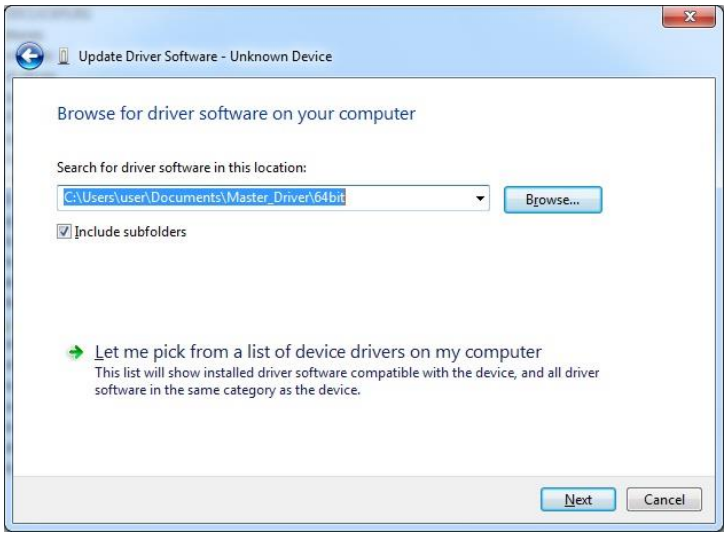
Figure 4-8 Screen of driver installation (2)



<4> Specify the save folder of the driver file.

Click [Next].

Figure 4-9 Screen of driver installation (3)

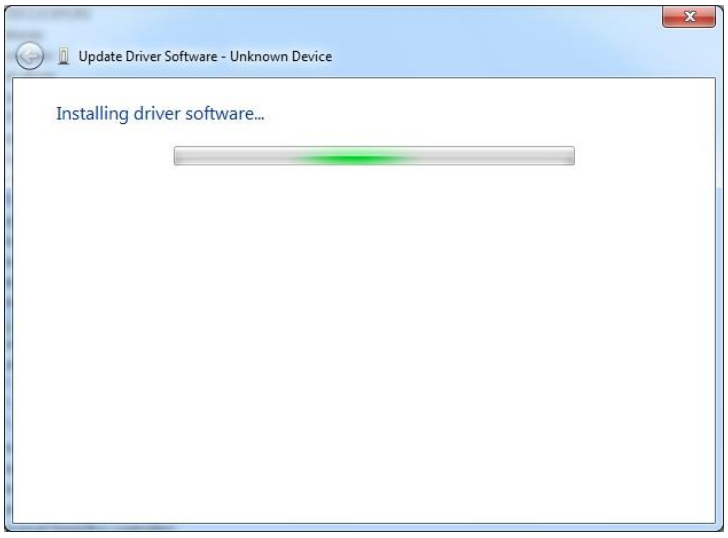


<5> Click [Install], installation starts.

Figure 4-10 Screen of driver installation (4)

<6> Continue the installation.

Figure 4-11 Screen of driver installation (5)



<7> Click [Close]. Installation is complete.

Figure 4-12 Screen of driver installation (6)

CHAPTER 5. STARTING AND CLOSING THE DMX512 MASTER CONTROLLER GUI

After .NET Framework, Visual Studio 2013 Visual C++ Redistributable Package and the DMX512 Master Controller GUI have been installed, the DMX512 Master Controller GUI can be opened.

5. 1 Starting

<1> Connect RL78/I1A Lighting Communication Master Evaluation Board to the host.

<R> <2> Double click the [DMX512 Master Controller GUI] icon, or select [Start], [All Programs], [DMX512 Master Controller], and then [DMX512 Master Controller GUI].

<3> The DMX512 Controller window is displayed.

<4> The COM port is set to “NULL” and “250000 bps” by default.

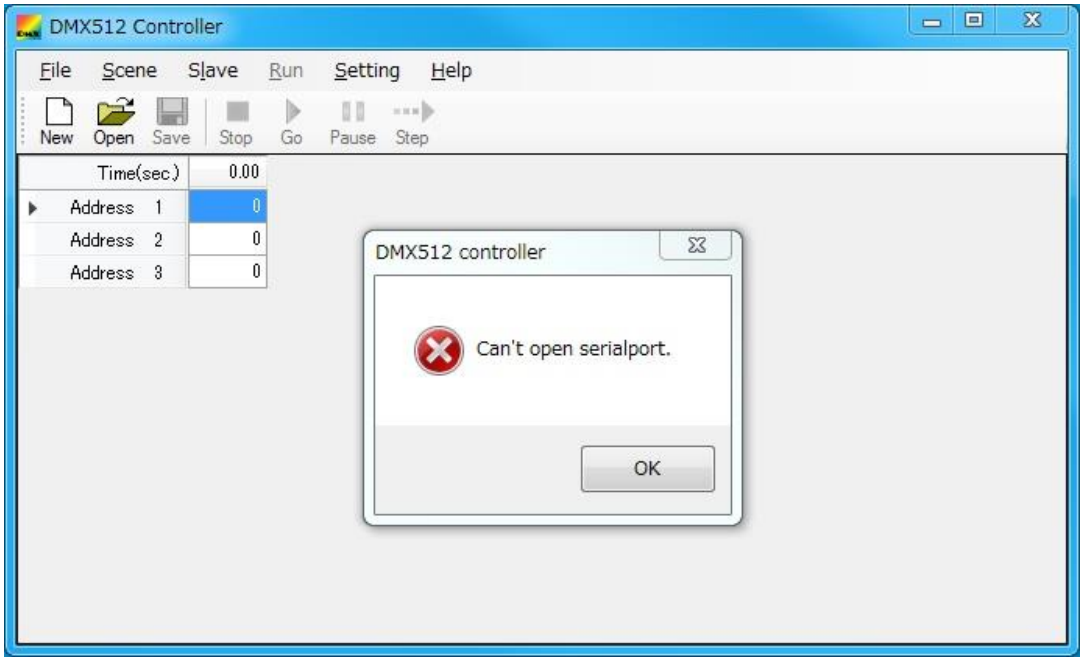
It isn't connected because COM port isn't established at the time of the initial start.

It's connected to established COM port last time from the 2nd time of start.

If the connection fails, the message “Can’t open serialport” is displayed

Initial start, or if the connection is not successful, specify the COM port in the Serial dialog box (COM port setting window).

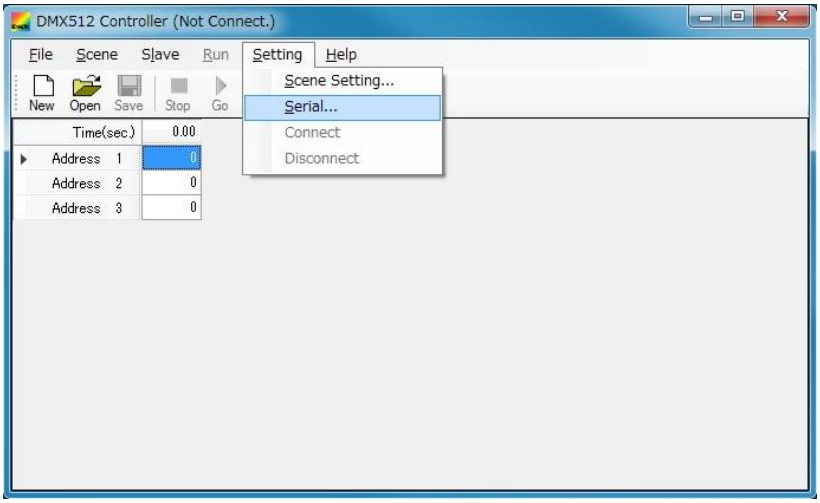
Figure 5-1 Startup screen



<5> Click [OK].

<6> In the menu, select [Setting] and then [Serial] to specify the COM port.

Figure 5-2 "DMX512 Controller" Window

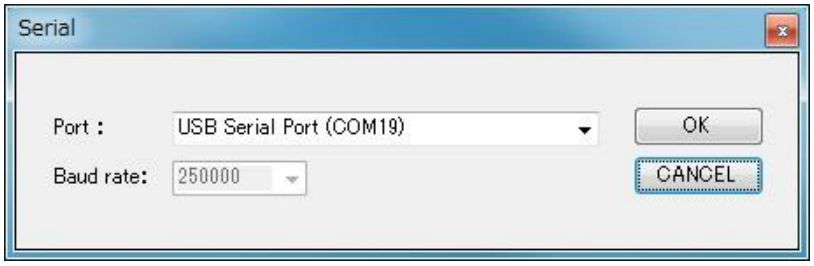


<7> Specify a COM port in the Serial dialog box, and then click [OK].

The port (COM1 to COM255) differs depending on the PC to connect.

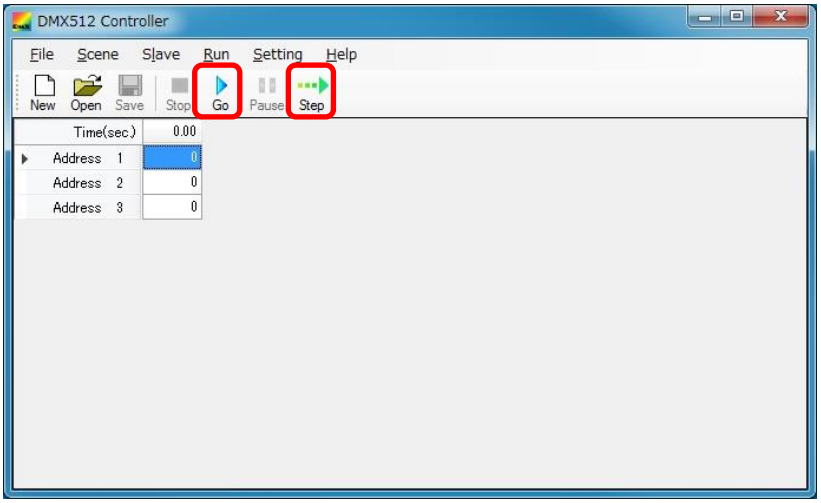
What is displayed in the list is the Port that is currently connected.

Figure 5-3 Serial Dialog Box



<8> If RL78/I1A Lighting Communication Master Evaluation Board is successfully connected to the PC, the [Go] and [Step] are enabled (colored).

Figure 5-4 ”DMX512 Controller” Window

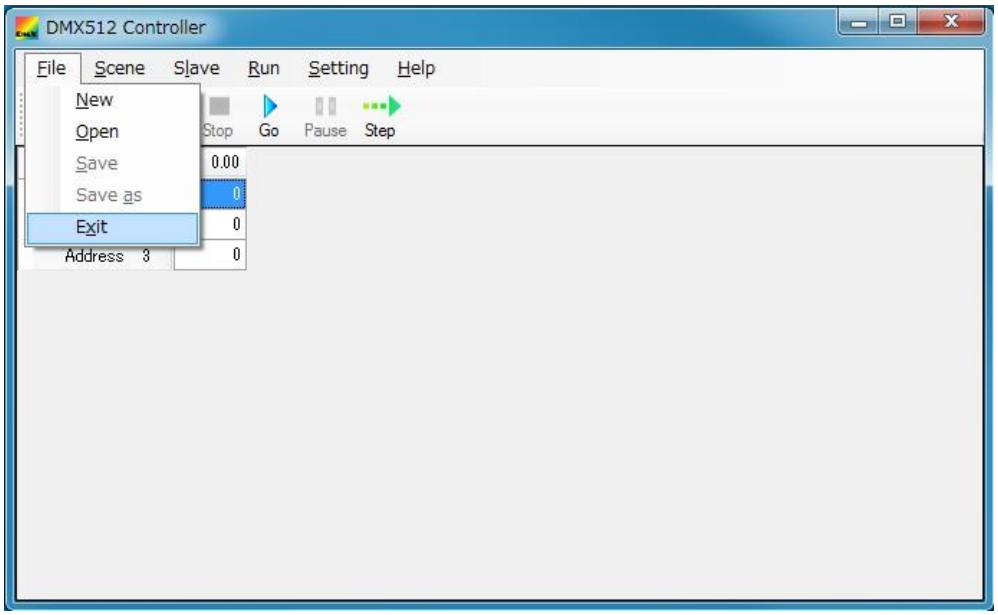


If the COM port to the serial screen is not displayed, RL78/I1A Lighting Communication Master Evaluation Board might not be correctly recognized by the PC, or another application might be using the COM port. In the latter case, close the application, and then check whether the COM port is correctly recognized by using the Windows Device Manager.

5. 2 Closing

<1> Select [File] and then [Exit].

Figure 5-5 Window Displayed When Closing



<2> Close the “DMX512 Controller” Window.

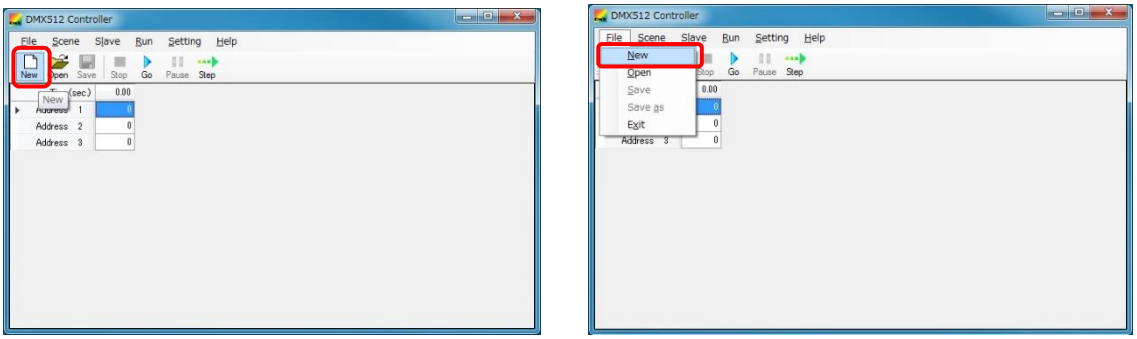
CHAPTER 6. USING THE DMX512 MASTER CONTROLLER GUI

6. 1 Creating a File

6. 1. 1 New (creating a file)

To create a file, click [New], or select [File] in the menu and then [New].

Figure 6-1 New (Creating a File)



6. 1. 2 Slave Address setting

Specify slave addresses. Up to 512 slave addresses can be selected.

For details about the Select slaves dialog box, see 7. 2. 2 Select slaves dialog box.

In the menu, select [Slave] and then [Select] to open the Select slaves dialog box. Select the addresses of the slaves to connect.

Figure 6-2 Select slaves Dialog Box

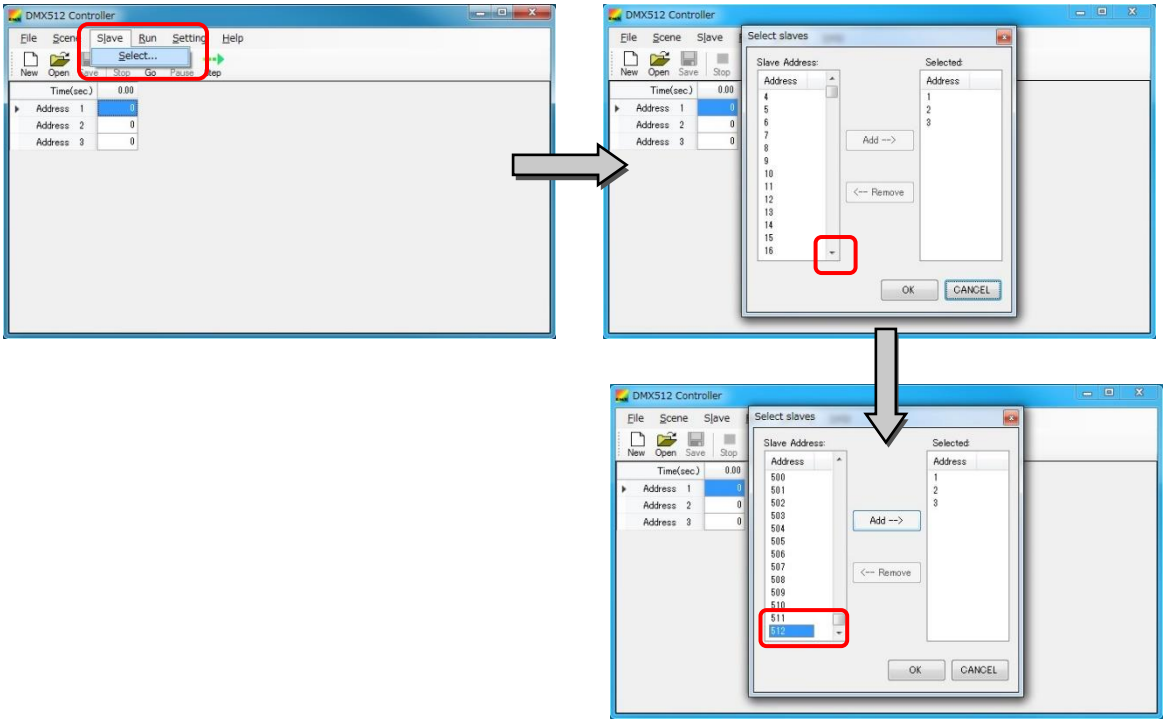
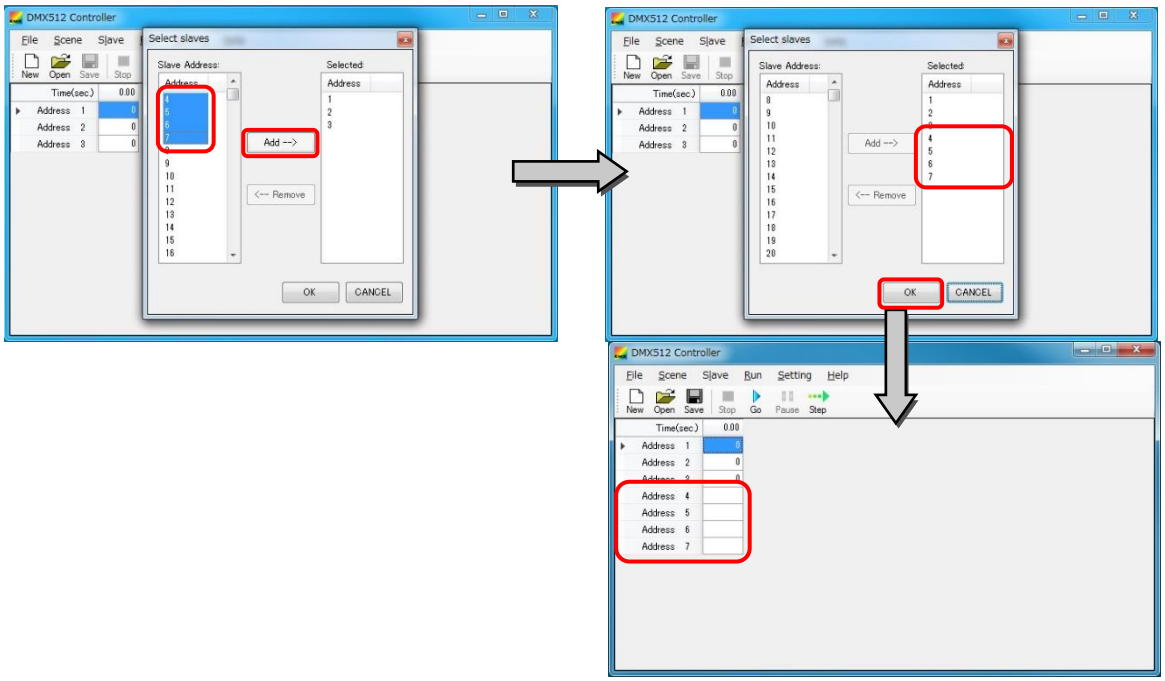


Figure 6-3 Select slaves Dialog Box (Specification Example)



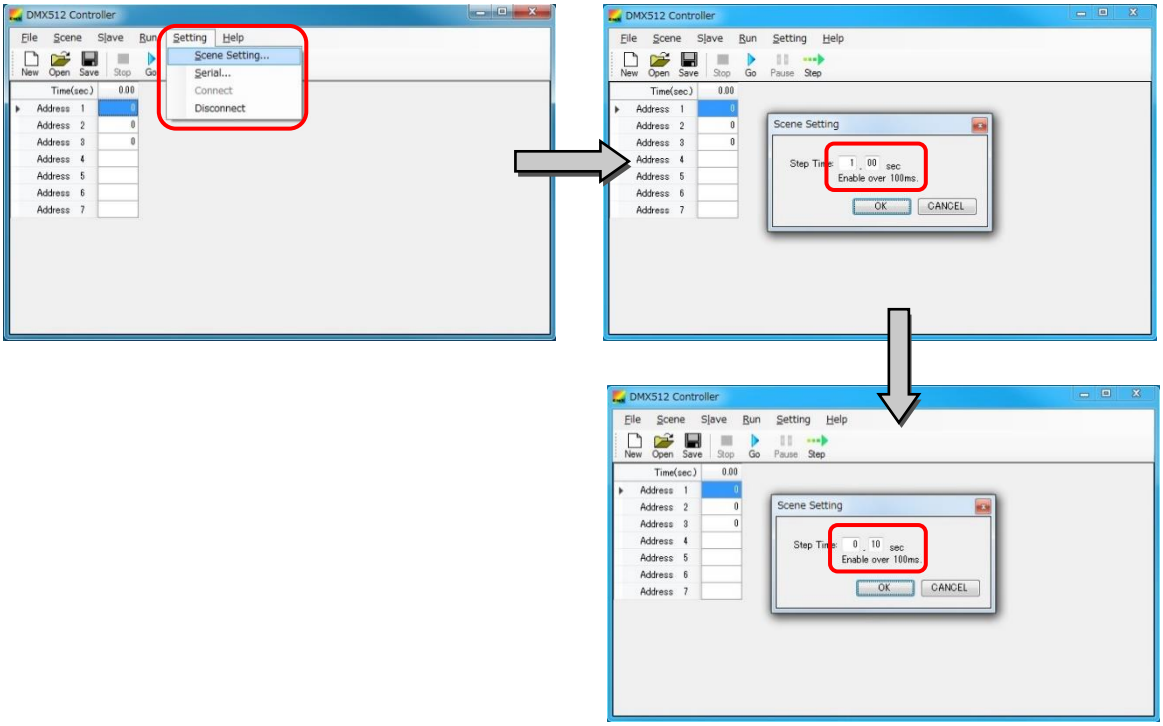
6. 1. 3 Scene Setting

Specify the Scene Setting.

0.1 seconds (minimum value) or more can be specified.

For details about the Scene Setting dialog box, see 7. 2. 3 Scene Setting dialog box.

Figure 6-4 Scene Setting Dialog Box (Specification Example)



(1) Entering values

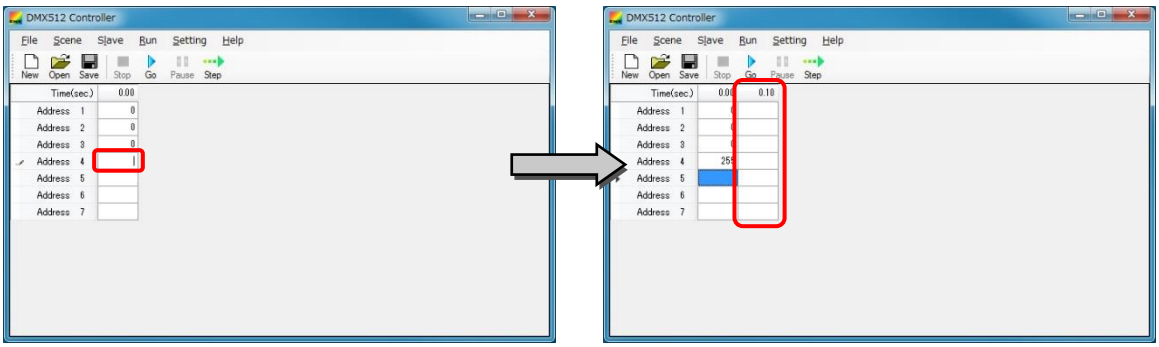
A value from 0 to 255 can be entered into each cell. If a value other than 0 to 255 or a non-numeral is entered, the value is ignored and “0” is displayed.

Scenes can be added. If values are entered for the last (rightmost) Scene, the next Scene is automatically added.

The value in a cell can be cleared (to 0) by selecting the cell and then pressing [Delete].

In Version 1.0, the value in a cell cannot be copied and pasted by selecting the cell.

Figure 6-5 Entering Values



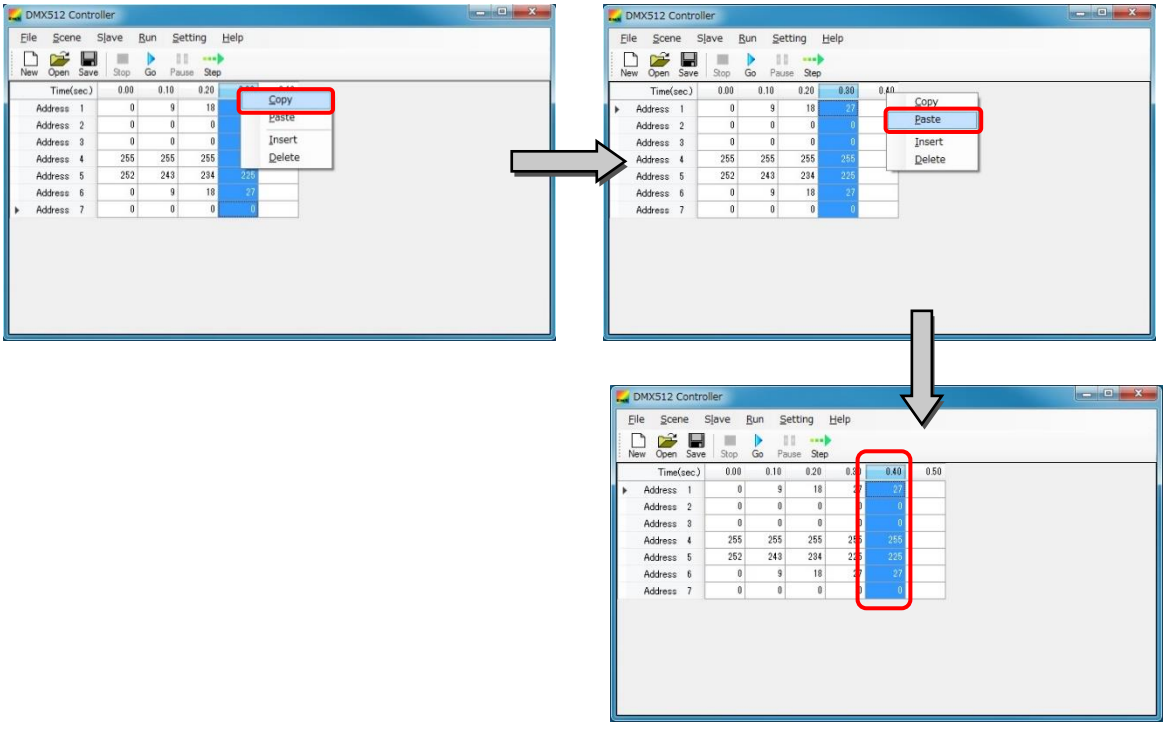
(2) Copy/Paste

A Scene can be copied and pasted.

Place the cursor on the Time(sec) header of the row to copy, right-click, and then select [Copy].

Next, place the cursor on the Time(sec) header of the row to which to copy the selected row, right-click, and then select [Paste].

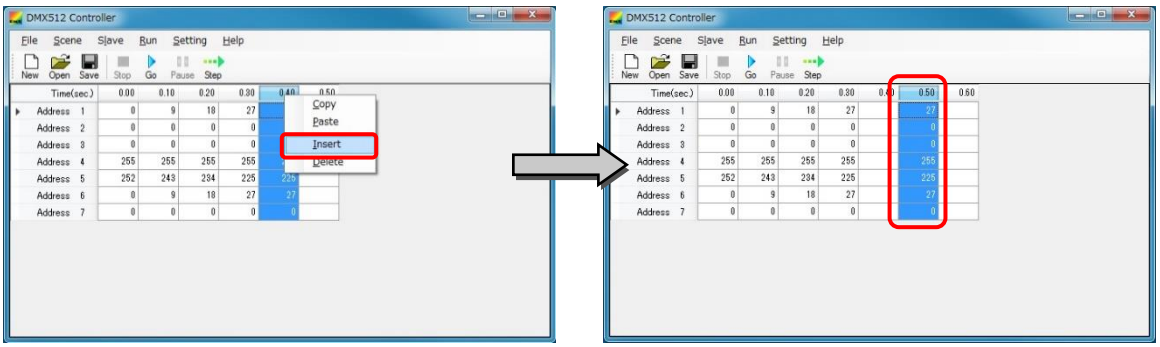
Figure 6-6 Copy/Paste



(3) Insert

To insert an empty row, place the cursor on the Time(sec) header of the row to insert a scene, right-click, and then select [Insert].

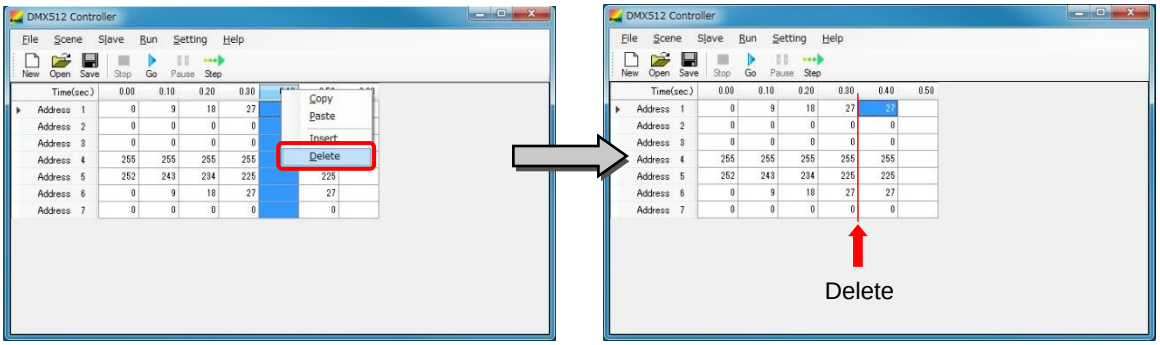
Figure 6-7 Insert



(4) Delete

To delete a row, place the cursor on the Time (sec) header of the row to delete a scene, right-click, and then select [Delete].

Figure 6-8 Delete



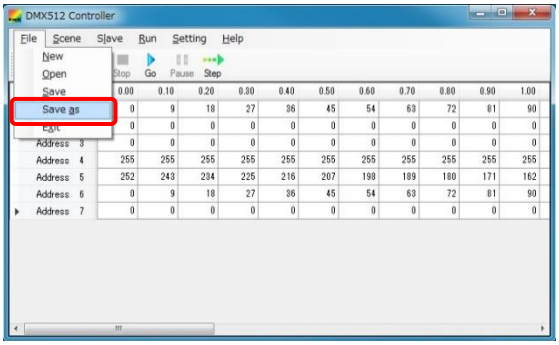
6. 2 Saving Scenes (in CSV Format)

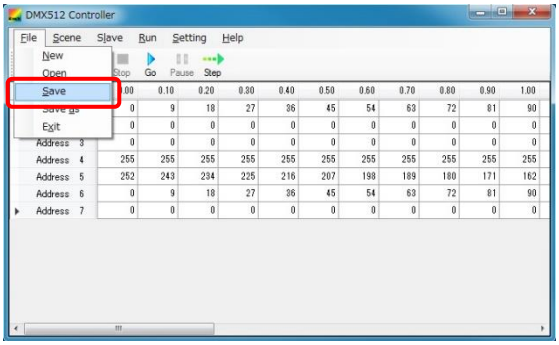
Data can be saved in CSV format.

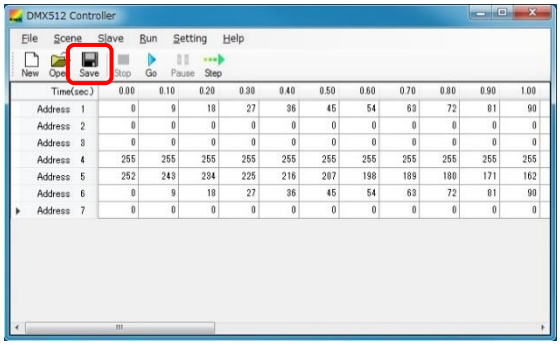
<1> Saving data to a new file: Select [File] in the menu and then [Save as].

Saving data to an existing file: Select [File] in the menu and then [Save], or click [Save].

Figure 6-9 Saving the Data in CSV Format

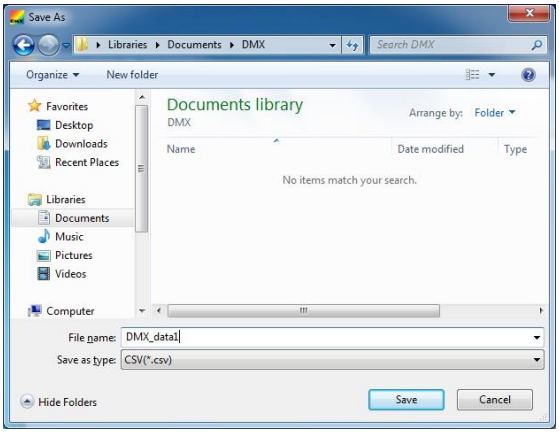






<2> Saving data to a new file: Name the file, and save it by clicking [Save].

Saving data to an existing file: Overwrite saved.

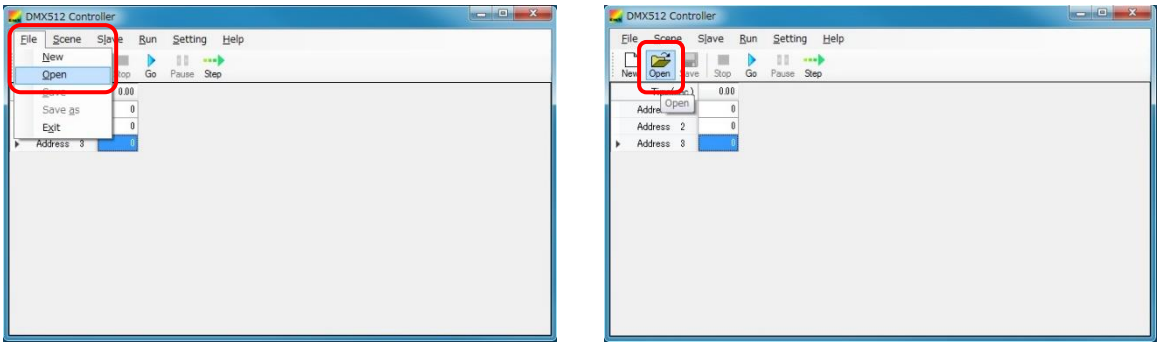


6. 3 Opening a File

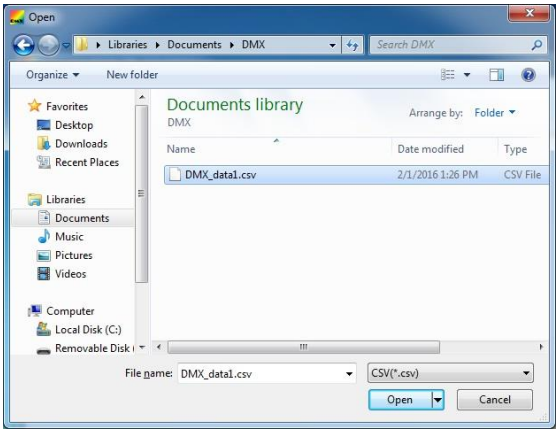
Open the saved CSV file.

<1> Select [File] in the menu and then [Open], or click [Open].

Figure 6-10 Opening a CSV File

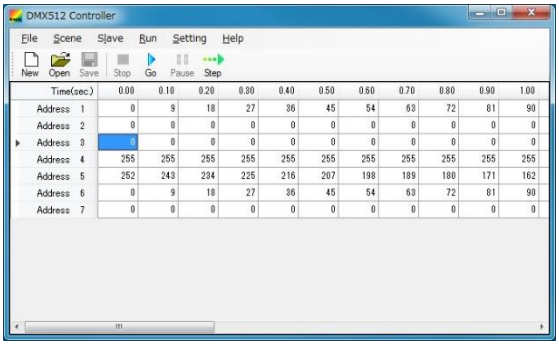


<2> Select a file in the Open File dialog box.



<3> The selected file opens.

Opening the file might take a while, depending on the PC environment.



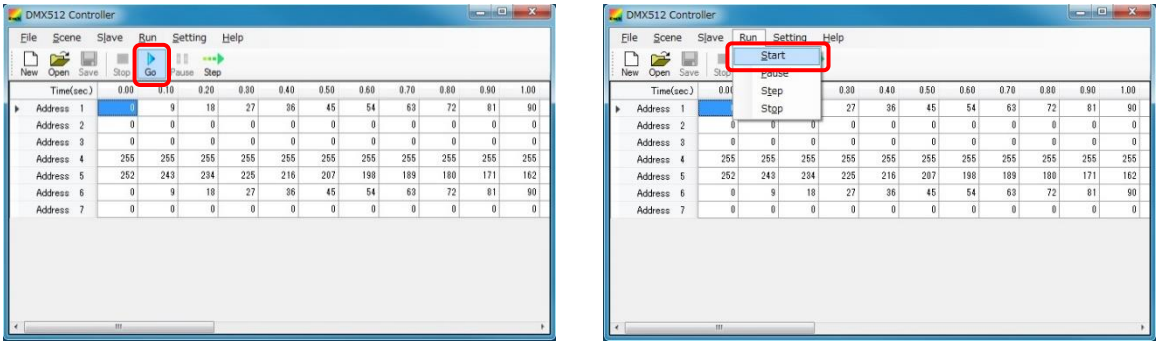
6. 4 Checking Operation

The following subsections describe how to check the operation of RL78/I1A Lighting Communication Master Evaluation Board.

6. 4. 1 Go (Start)

Click [Go], or select [Run] in the menu and then [Start] to start transmitting data to the Lighting Communication Slave Evaluation Board.

Figure 6-11 Go (Start)



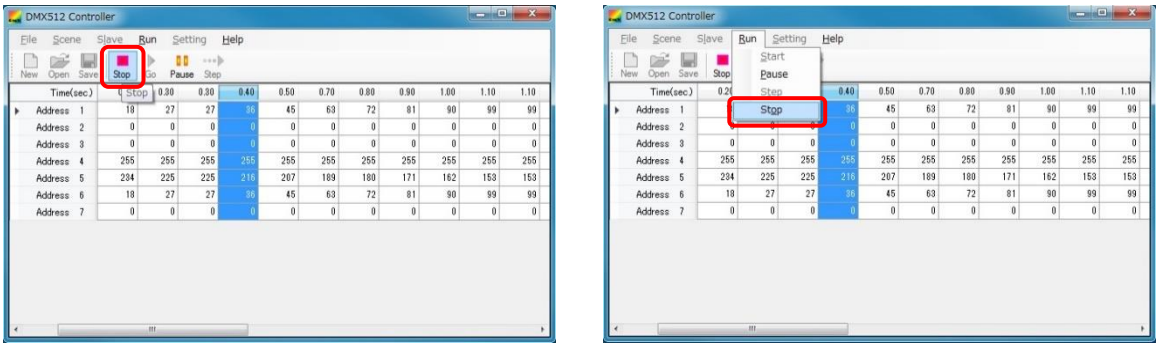
When all data has been transmitted, the operation returns to the first data item and continues transmission.

To stop transmission, click [Stop], or select [Run] in the menu and then [Stop].

6. 4. 2 Stop (Stop)

Click [Stop], or select [Run] in the menu and then [Stop] to stop transmitting data to the Lighting Communication Slave Evaluation Board.

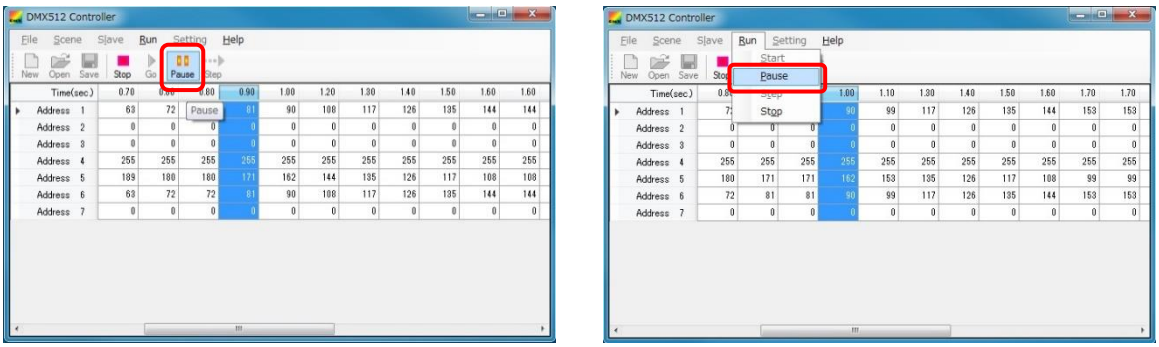
Figure 6-12 Stop (Stop)



6. 4. 3 Pause (Pause)

Click [Pause], or select [Run] in the menu and then [Pause] to pause transmitting data to the Lighting Communication Slave Evaluation Board.

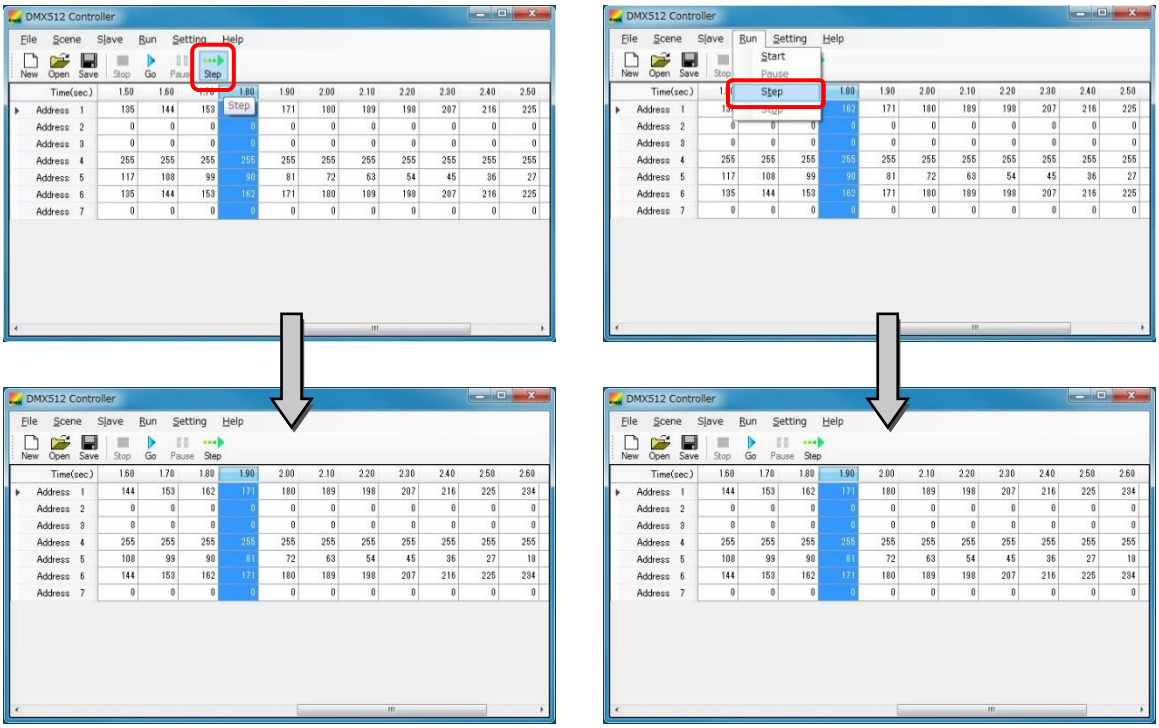
Figure 6-13 Pause (Pause)



6. 4. 4 Step (Step)

Click [Step], or select [Run] in the menu and then [Step] to select the next row.

Figure 6-14 Step (Step)



CHAPTER 7. WINDOW AND DIALOG BOX REFERENCE

7. 1 Overview of the Window and Dialog Boxes

The window and dialog boxes displayed during use are described below.

Table 7-1 Window and Dialog Boxes

Window or Dialog Box	Description	See:
Main window	Displayed when the DMX512 Master Controller GUI opens	7. 2. 1
Select slaves dialog box	Used to edit the slave addresses to display in the main window	7. 2. 2
Scene Setting dialog box	Used to specify the time between scenes to execute	7. 2. 3
Serial dialog box	Used to specify the serial port	7. 2. 4
Version dialog box	Used to check the DMX512 Master Controller GUI version	7. 2. 5

7. 2 Description of the Window and Dialog Boxes

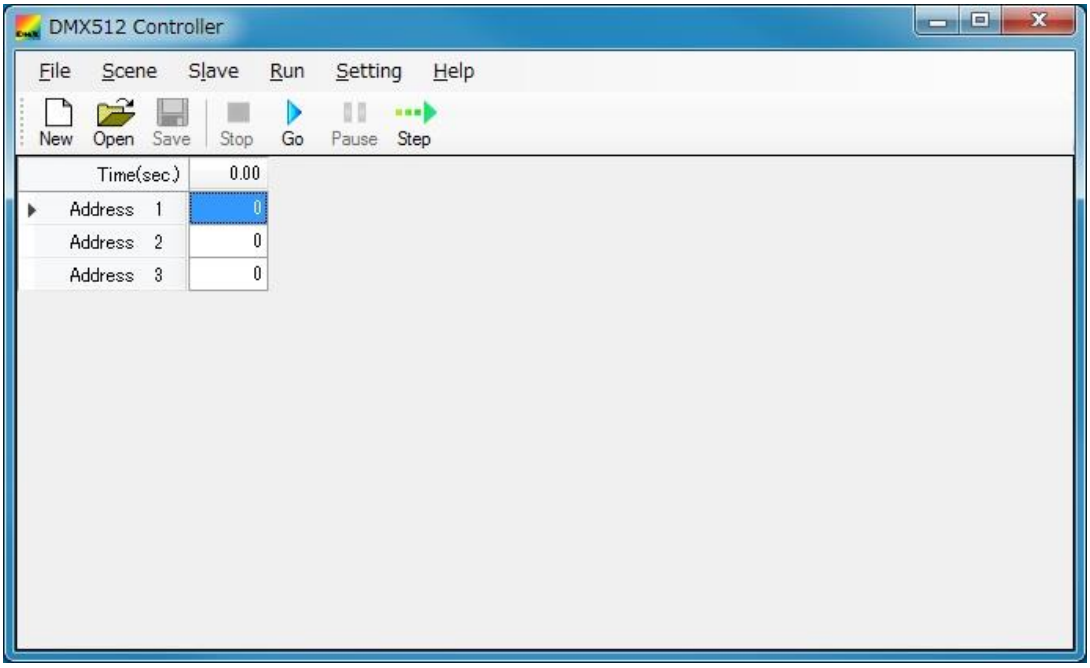
7. 2. 1 Main Window

The main window displays addresses in the vertical direction and time in the horizontal direction.

“Address 1”, “Address 2”, and “Address 3” are displayed by default for addresses.

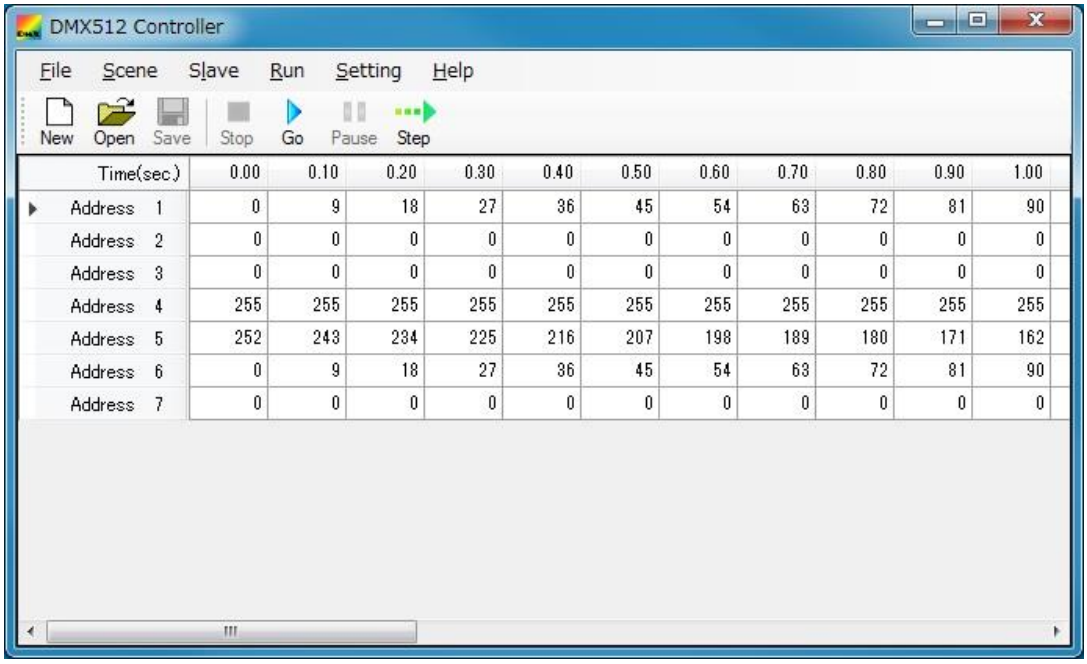
“0” is displayed as the default time.

Figure 7-1 Main Window (Default)



An example of a window in which values have been specified is shown below.

Figure 7-2 Main Window (Values are specified)



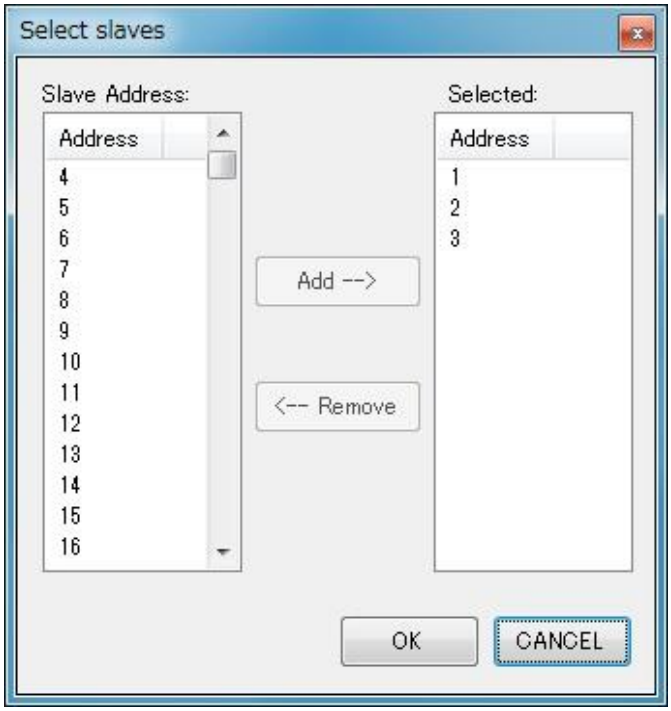
Time(sec.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Address 1	0	9	18	27	36	45	54	63	72	81	90
Address 2	0	0	0	0	0	0	0	0	0	0	0
Address 3	0	0	0	0	0	0	0	0	0	0	0
Address 4	255	255	255	255	255	255	255	255	255	255	255
Address 5	252	243	234	225	216	207	198	189	180	171	162
Address 6	0	9	18	27	36	45	54	63	72	81	90
Address 7	0	0	0	0	0	0	0	0	0	0	0

7. 2. 2 Select slaves dialog box

Edit the Slave Address list to display in the main window in this dialog box.

To open this dialog box, select [Slave] in the main menu and then [Select].

Figure 7-3 Select slaves Dialog Box



- The selectable **Slave Address** (in the left field) and selected **Slave Address** (in the right field) cannot be selected at the same time.
- Select addresses in the **Slave Address** field to add them to the **Selected** field.
- Click [OK] to apply the selection to the main window.

Slave Address (addresses in the left field):

- The addresses in the Slave Address field (which are in the range from 1 to 512 and not displayed in the right field) are sorted in ascending order from the top to the bottom.
- If a selectable Slave Address is selected, [Add-->] is enabled.
- Multiple Slave Addresses can be selected.
- To add the selected addresses to the **Selected** (right field), click [Add-->].
  The selected addresses are deleted from the **Slave Address** (left field).
- The [Add-->] and [<--Remove] are disabled immediately after Slave Addresses are added.

Selected (addresses in the right field):

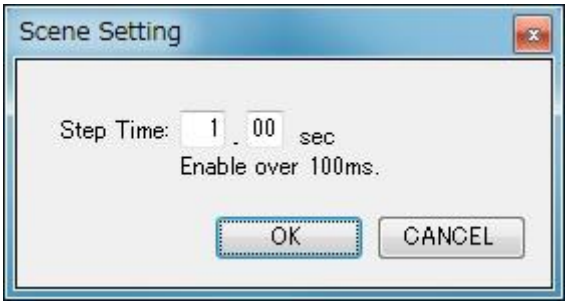
- The currently selected Slave Addresses are displayed in the **Selected** field.
- If currently selected Slave Addresses (in the right field) are selected, [<--Remove] is enabled.
- The [Add-->] and [<--Remove] are disabled immediately after Slave Addresses are deleted.
- The selected addresses are added to the Slave Address (left field) and deleted from the Selected (right field) by clicking [<--Remove].

7. 2. 3 Scene Setting dialog box

Specify the time between scenes to execute in this dialog box.

To open this dialog box, select [Setting] in the main menu and then [Scene Setting].

Figure 7-4 Scene Setting Dialog Box



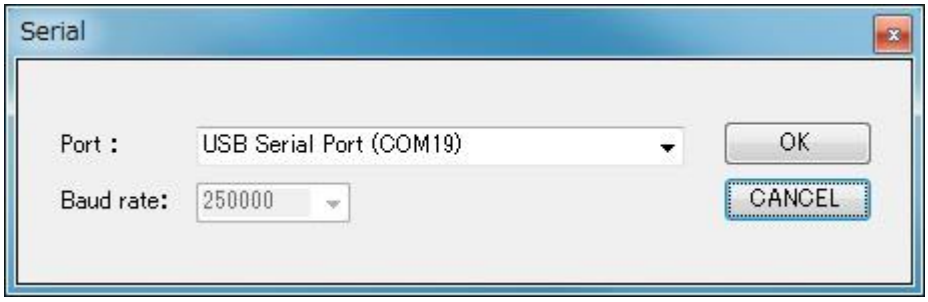
- The Step Time is displayed in 0.1 second increments for a scene.
- The default step time is 1.0 second. (The minimum is 0.1 seconds.)
- If a file is read, the Step Time value changes according to the setting in that file.
- If characters other than numerals are entered in the **Step Time** fields, [OK] is disabled.
- If numerals are entered in the Step Time fields and then [OK] is clicked, the value is applied to the Time(sec) row in the main window.

7. 2. 4 Serial dialog box

Set up the serial port in this dialog box.

To open this dialog box, select [Setting] in the main menu and then [Serial].

Figure 7-5 Serial Dialog Box



- The default values are “COM4” and “250000”.
  The Port (COM1 to COM255) differs depending on the PC to connect.
  The specified values are saved and then retrieved when the DMX512 Master Controller GUI next opens.
- COM port will re-open in a new setting by clicking [OK].
- If [CANCEL] is clicked, the dialog box opens with the originally displayed port set.
  If the dialog box cannot be opened, connection processing stops and “DMX512 Controller (Not Connect.)” is displayed on the title bar of the main window.

7. 2. 5 Version dialog box

Check the DMX512 Master Controller GUI version in this dialog box.

To open this dialog box, select [Help] in the main menu and then [Version].

Figure 7-6 Version Dialog Box

- If [OK] is clicked, the Version dialog box disappears.

7. 2. 6 Menu

(1) File

Figure 7-7 File (Menu)

New: Create a file. The window is refreshed and initialized.

Open: Read and display a saved setting.

Save: Save the setting in CSV format.

This menu item is not enabled until the data is updated.

Save as: Save the setting to a new file.

This menu item is not enabled until the data is updated.

Exit: Close the application.

(2) Scene

This menu item can be selected only if an entire Scene is selected.

Figure 7-8 Scene (Menu)

Copy: Delimit the values of the cells in the selected scene using commas and copies them to the clipboard.

Paste: Paste the values from the clipboard to cells.

Insert: Add a row to the left of the selected scene.

If multiple scenes are selected, a row is added to the left of each scene.

Delete: Delete the selected scene.

If multiple scenes are selected, those rows are deleted.

(3) Slave

Figure 7-9 Slave Dialog Box

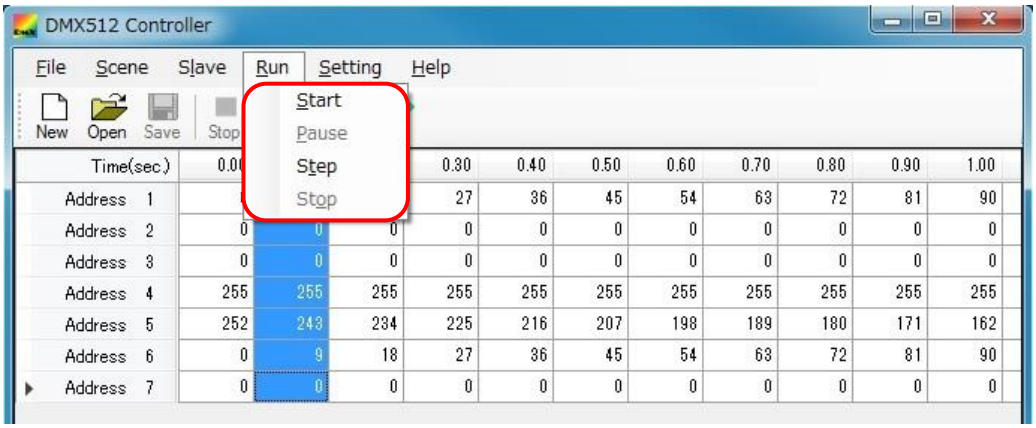
Select: Display the Select slaves dialog box.

Select the Slave Address to use in this dialog box. (For details, see 7. 2. 2 Select slaves dialog box.)

(4) Run

The **Run** menu item cannot be selected if the serial port cannot be opened.

Figure 7-10 Run (Menu)



Start: Transmit scenes in sequence, starting from the selected row.

After the last scene is transmitted, the operation returns to the first scene.

The scene currently being transmitted is highlighted to indicate the location.

<R>

Stop: The automatic transmission is stopped, and a cursor is returned to the first row.

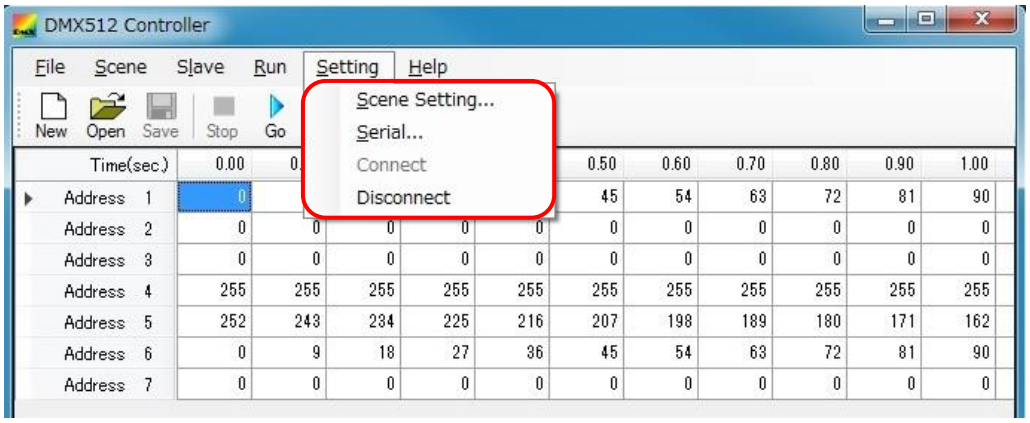
Pause: Pause automatic transmission.

Step: Transmit only one scene, and then moves the cursor to the next row.

If the cursor is on the last scene, the cursor returns to the first scene.

(5) Setting

Figure 7-11 Setting (Menu)



Scene Setting: Specify the scene execution time (the interval between steps).
(For details, see 7. 2. 3 Scene Setting dialog box.)

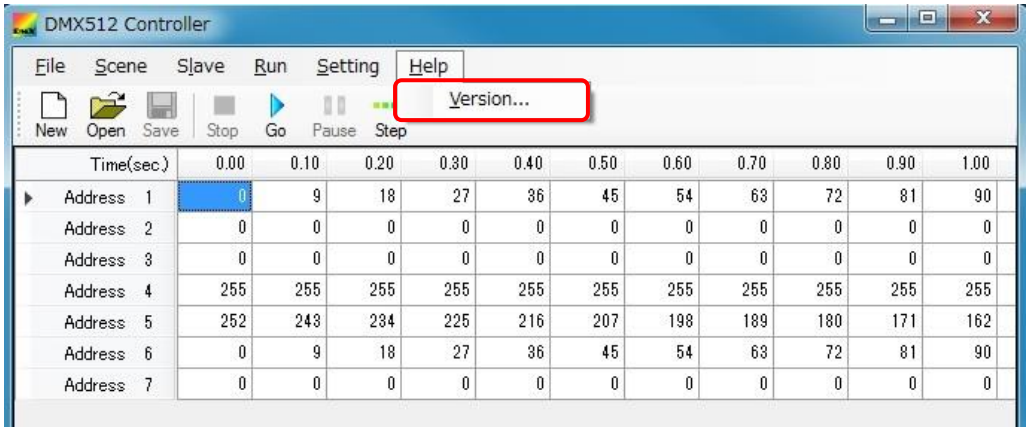
Serial: Specify the COM port and communication speed.
(For details, see 7. 2. 4 Serial dialog box.)

Connect: Connect the COM port.

Disconnect: Disconnect the COM port.

(6) Help

Figure 7-12 Help



Version: Display the DMX512 Master Controller GUI version.
(For details, see 7. 2. 5 Version dialog box.)

7. 2. 7 Right-click menu

Figure 7-13 Right-Click Menu

Copy: Copy the selected row to memory.

Paste: Paste the copied row in memory to the selected row.

Insert: Add a row to the left of the selected row.

If multiple rows are selected, a row is added to the left of each row.

Delete: Delete the selected row.

If multiple rows are selected, the first selected row is deleted.

Revision History	DMX512 Master Controller GUI User's Manual

Rev.	Date	Description	
		Page	Summary
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DMX512 Master Controller GUI

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