CJ Series
General-purpose Serial Communications
Connection Guide (RS-232C)

MARS TOHKEN SOLUTION CO.LTD.
Fixed Mount 1D/2D Image Reader
(TFIR-31LAN Series)

About Intellectual Property Rights and Trademarks

Table of Contents

1. Related Manuals

The table below lists the manuals related to this document.
To ensure system safety, make sure to always read and heed the information provided in all Safety Precautions, Precautions for Safe Use, and Precaution for Correct Use of manuals for each device which is used in the system.

Cat. No.	Model	Manual name
W472	CJ2H-CPU6[]-EIP CJ2H-CPU6[] CJ2M-CPU[][]	CJ-series CJ2 CPU Unit Hardware User's Manual
W473	CJ2H-CPU6[]-EIP CJ2H-CPU6[] CJ2M-CPU[][]	CJ-series CJ2 CPU Unit Software User's Manual
W336	CJ1W-SCU[]1-V1 CJ1W-SCU[]2	CJ Series Serial Communications Units Operation Manual
W446	-	CX-Programmer Operation Manual

2. Terms and Definitions

Term	Explanation and Definition
PLC link	PLC link is a function which enables an image reader to directly read/write data to PLC's data memory by connecting the PLC to the image reader of MARS TOHKEN SOLUTION CO.LTD. through RS232C or LAN interface. This eliminates the need to create a communication program, cutting the time required for programming.

3. Precautions

(1) Understand the specifications of devices which are used in the system. Allow some margin for ratings and performance. Provide safety measures, such as installing safety circuit in order to ensure safety and minimize risks of abnormal occurrence.

(2) To ensure system safety, always read and heed the information provided in all Safety Precautions and Precautions for Safe Use of manuals for each device used in the system.

(3) The user is encouraged to confirm the standards and regulations that the system must conform to.

(4) It is prohibited to copy, to reproduce, and to distribute a part or the whole of this document without the permission of OMRON Corporation.

(5) The information contained in this document is current as of July 2014. It is subject to change without notice for improvement.

The following notation is used in this document.

| ⚠ **Caution** | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage. |

📝 **Precautions for Correct Use**

Precautions on what to do and what not to do to ensure proper operation and performance.

📑 **Additional Information**

Additional information to read as required.

This information is provided to increase understanding or make operation easier.

Symbol

⚠ The triangle symbol indicates precautions (including warnings).
The specific operation is shown in the triangle and explained in text.
This example indicates a general precaution.

4. Overview

This document describes the procedure for connecting Fixed Mount 1D/2D Image Reader (TFIR-31LAN series) (hereinafter referred to as Image Reader) of MARS TOHKEN SOLUTION CO.LTD. (hereinafter referred to as MARS TOHKEN SOLUTION) to CJ-series Programmable Controller + Serial Communications Unit (hereinafter referred to as the PLC) of OMRON Corporation (hereinafter referred to as OMRON), and the procedure to check their connection.

Refer to *Section 6. Serial Communications Settings* and *Section 7. Connection Procedure* to understand the setting method and key points to perform PLC link for the Image Reader via serial communications.

5. Applicable Devices and Device Configuration

5.1. Applicable Devices

The applicable devices are as follows:

Manufacturer	Name	Model
OMRON	CJ2 CPU Unit	CJ2[]-CPU[][]
OMRON	Serial Communications Unit	CJ1W-SCU[]1-V1 CJ1W-SCU[]2
MARS TOHKEN SOLUTION	Image Reader	TFIR-31LAN TFIR-31LAN-H

Precautions for Correct Use

As applicable devices above, the devices with the models and versions listed in *Section 5.2.* are actually used in this document to describe the procedure for connecting devices and checking the connection. You cannot use devices with versions lower than the versions listed in *Section 5.2.* To use the above devices with versions not listed in *Section 5.2.* or versions higher than those listed in *Section 5.2.*, check the differences in the specifications by referring to the manuals before operating the devices.

Additional Information

This document describes the procedure to establish the network connection. It does not provide information on operation, installation or wiring method which is not related to the connection procedure. It also does not describe the functionality or operation of the devices. Contact the device manufacturer.
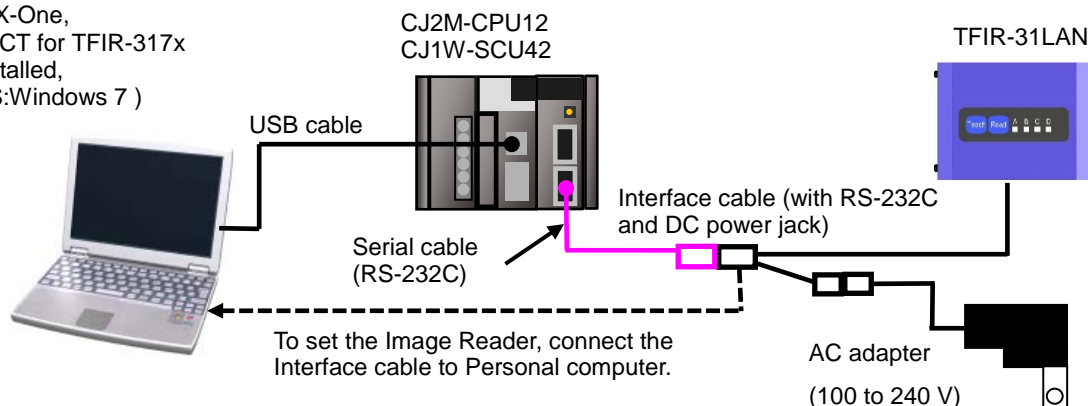
(MARS TOHKEN SOLUTION CO.LTD.　http://www.mars-tohken.co.jp/en/)

This URL is the latest address at the time of this document creation.

Contact each device manufacturer for the latest information.

5.2. Device Configuration

The hardware components to reproduce the connection procedure of this document are as follows:

Personal computer
(CX-One,
TECT for TFIR-317x
installed,
OS:Windows 7)

CJ2M-CPU12
CJ1W-SCU42

TFIR-31LAN

USB cable

Interface cable (with RS-232C and DC power jack)

Serial cable
(RS-232C)

To set the Image Reader, connect the Interface cable to Personal computer.

AC adapter

(100 to 240 V)

Manufacturer	Name	Model	Version
OMRON	Serial Communications Unit	CJ1W-SCU42	Ver.2.0
OMRON	CPU Unit	CJ2M-CPU12	Ver.2.0
OMRON	Power Supply Unit	CJ1W-PA202	
OMRON	CX-One	CXONE-AL[][]C-V4 /AL[][]D-V4	Ver.4.[][]
OMRON	CX-Programmer	(Included in CX-One)	Ver.9.51
-	Personal computer (OS: Windows 7)	-	
-	USB cable (USB 2.0 type B connector)	-	
-	Serial cable (RS-232C)	-	
MARS TOHKEN SOLUTION	Image Reader	TFIR-31LAN	System version: M21C-V2.1a Decode version: M21A-V2.1a
MARS TOHKEN SOLUTION	Interface cable (with RS-232C and DC power jack)	(Included with Image Reader)	
MARS TOHKEN SOLUTION	AC adapter (100 to 240 V)(Optional)	KSAC0500160W1UV-1	
MARS TOHKEN SOLUTION	TECT for TFIR-317x	-	Ver.1.8.0.1

Precautions for Correct Use

Update the CX-Programmer to the versions specified in this section or higher versions using the auto update function.

If a version not specified in this section is used, the procedures described in *Section 7.* and subsequent sections may not be applicable. In that case, use the equivalent procedures described in the *CX-Programmer Operation Manual* (Cat. No. W446).

Additional Information

The system configuration in this document uses USB for the connection between the Personal computer and PLC. For information on how to install the USB driver, refer to *A-5 Installing the USB Driver* of the *CJ-series CJ2 CPU Unit Hardware User's Manual* (Cat. No. W472).

Additional Information

Refer to *CJ Series Serial Communications Units Operation Manual* (Cat. No. W336) for information on the serial cables (RS-232C).

6. Serial Communications Settings

This section describes specifications such as the serial communications settings, link area allocation, and wiring cables that are set in this document.

6.1. Serial Communications Settings

The serial communications settings are shown below.

6.1.1. Communications Settings between the Personal Computer and Image Reader

The setting example below is used to explain the procedure for setting the Image Reader by using the Personal computer.

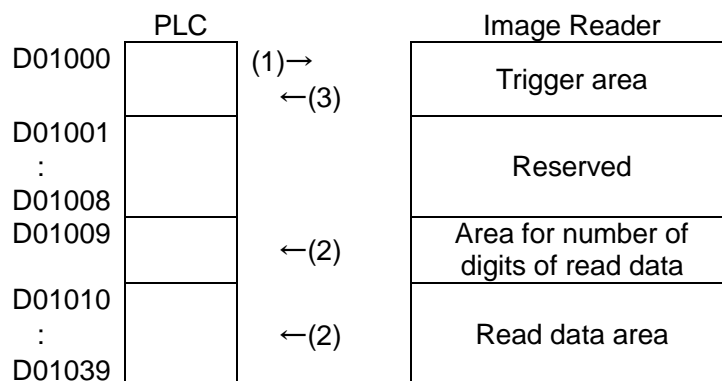| Setting item	Personal computer	Image Reader
Communication port No.	COM1	-
Baud rate	9,600bps	9,600 bps (default)
Data bits	8 bits	8 bits (default)
Parity	None	None (default)
Stop bit	1 bit	1 bit (default)
Flow control	None	RS/CS control is not performed (default)

6.1.2. Communications Settings between the Serial Communications Unit and Image Leader

The setting example below is used to explain the procedure for connecting the Serial Communication Units to the Image Leader.

Setting item	Serial Communications Unit	Image Reader
Unit number	0	-
Communication port	Port 2	-
Serial communications mode	Host Link	-
Data length	8 bits	8 bits (default)
Stop bits	1 bit	1 bit (default)
Parity	None	None (default)
Transmission rate (Baud rate)	9,600 bps (default)	9,600 bps (default)
1:N/1:1 protocol setting	1:1 protocol	-
Interface to output	-	RS-232C
Connection method	-	RS-232C, C mode command(Omron SYSMAC)
Head address of data memory	-	1000(D1000)
Padding code of data length is odd	-	0 (default: NULL:[0x00])
Watch of the trigger area	-	0:Enable (default)
Wait time of watch from power-on	-	10 (default: 10sec)
Interval time of watch	-	10 (default: 10ms)

6.2. Allocating the Data Memory

With PLC link, Data Memory for the Image Reader is allocated as shown below.

```
              PLC                         Image Reader
D01000   ┌─────────┐  (1)→        ┌──────────────────────┐
         │         │    ←(3)      │     Trigger area      │
D01001   ├─────────┤              ├──────────────────────┤
  :      │         │              │       Reserved        │
D01008   │         │              │                       │
D01009   ├─────────┤   ←(2)       ├──────────────────────┤
         │         │              │  Area for number of   │
                                  │  digits of read data  │
D01010   ├─────────┤              ├──────────────────────┤
  :      │         │   ←(2)       │    Read data area     │
D01039   └─────────┘              └──────────────────────┘
```

The PLC and Image Reader perform the following operations to the Data Memory above.
   (1) PLC writes 1 in the "Trigger area".
   (2) After the data such as QR code is read, the Image Reader sets the data to the "Area
       for number of digits of read data" and to the "Read data area".
   (3) After step(2) is completed, the Image Reader clears the "Trigger area" to zero.

Additional Information

For details on allocation of the link area for the Image Reader, contact the device
manufacturer.

6.3. Cable Wiring Diagram

For details on wiring cables, refer to *Section 3. Installation and Wiring* of the *CJ Series Serial Communications Units Operation Manual* (Cat. No. W336).

Check the connector configuration and pin assignment before wiring.

■ Connector configuration and pin assignment
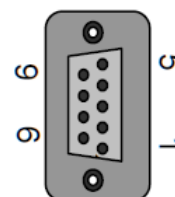
<OMRON: CJ1W-SCU42>

Applicable connector: D-sub 9 pin

Pin	Abbreviation	Signal name	I/O
1	FG	Shield	---
2	SD	Send data	Output
3	RD	Receive data	Input
4	RTS (RS)	Request to send	Output
5	CTS (CS)	Clear to send	Input
6	5V	Power supply	---
7	DSR (DR)	Data set ready	Input
8	DTR (ER)	Data terminal ready	Output
9	SG	Signal ground	---
Hood	FG	Shield	---

<MARS TOHKEN SOLUTION: TFIR-31LAN interface cable >
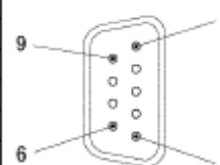
Applicable connector: D-SUB 9 pin

Pin	Abbreviation	Signal name	I/O
1	NC	Not connected	-
2	SD	Send data (RS-232C)	Output
3	RD	Recieve data (RS-232C)	Input
4	NC	Not connected	-
5	GND	Ground	-
6	NC	Not connected	-
7	CS	Clear to send (RS-232C)	Input
8	RS	Request to send (RS-232C)	Output
9	NC	Not connected	-
Shell	FG	Shield	-

■ Cable/ Pin assignment

Serial Communications Unit (CJ1W-SCU42)				Image Reader (TFIR-31LAN)		
RS-232C interface	Signal name	Pin No.		Pin No.	Signal name	RS-232C interface
	FG	1		1	NC	
	SD	2		2	SD	
	RD	3		3	RD	
	RS	4		4	NC	
	CS	5		5	GND	
	5V	6		6	NC	
	DR	7		7	CS	
	ER	8		8	RS	
	SG	9		9	NC	
	FG	Shell		Shell	FG	
D-SUB 9 pin Cable connector type: Male				D-SUB 9 pin Cable connector type: Male		
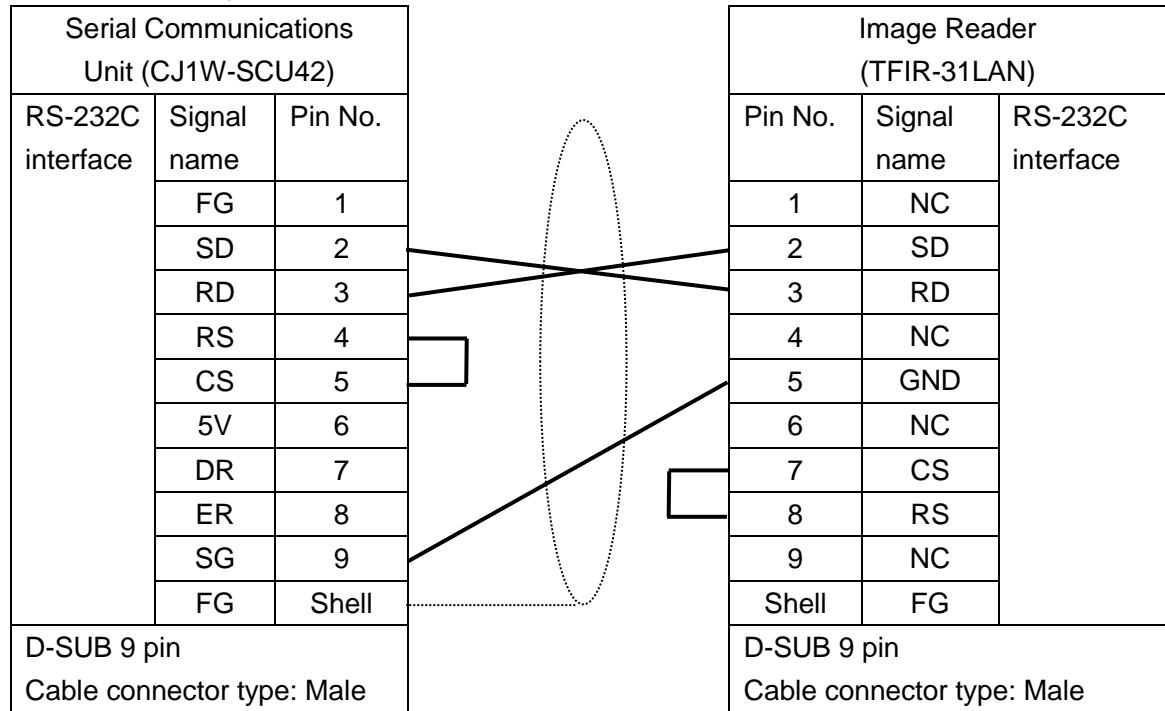
7. Connection Procedure

This section describes the procedure for connecting the Image Reader to the PLC with PLC link via serial communications.

This document explains the procedures for setting up the PLC and the Image Reader from the factory default setting. For the initialization, refer to *Section 8. Initialization Method*.

7.1. Work Flow

Take the following steps to connect the Image Reader to the PLC with PLC link via serial communications.

7.2. Setting Up the MARS TOHKEN SOLUTION Image Reader	Set up the MARS TOHKEN SOLUTION Image Reader.
↓	
7.2.1. Cable Connection	Connect cables to the Image Reader.
↓	
7.2.2. Parameter Settings	Set the parameters for the Image Reader.
↓	
7.3. Setting Up the PLC	Set up the PLC.
↓	
7.3.1. Hardware Settings	Set the hardware switches on the Serial Communications Unit and connect the cables.
↓	
7.3.2. Starting the CX-Programmer and Connecting Online with the PLC	Start the CX-Programmer and connect online with the PLC.
↓	
7.3.3. Creating the I/O Table	Create the I/O table for the PLC.
↓	
7.3.4. Parameter Settings	Set the parameters for the Serial Communications Unit.
↓	
7.4. Checking the Serial Communications	Confirm that PLC link via serial communications is performed normally.
↓	
7.4.1. Checking the Connection Status	Check the connection status.
↓	
7.4.2 Checking the Data that are Sent and Received	Confirm that the correct data are sent and received.

7.2. Setting Up the MARS TOHKEN SOLUTION Image Reader

Set up the MARS TOHKEN SOLUTION Image Reader.

7.2.1. Cable Connection

Connect cables to the Image Reader.

📑 **Precautions for Correct Use**
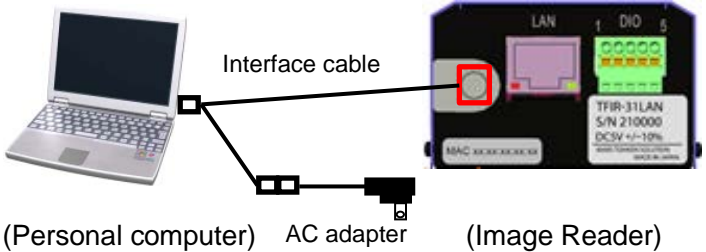
Make sure that the power supply is OFF when you perform the setting up.

1	Make sure that the power supply to the Image Reader is OFF. *If the power supply is turned ON, settings may not be applicable as described in the following procedure.	
2	Check the position of the LAN connector and Interface cable connector on the Image Reader.	LAN connector Interface cable connector (Image Reader)
3	Connect the AC adapter to the Interface cable. Connect the Image Reader to the Personal computer with the interface cable.	Interface cable (Personal computer) AC adapter (Image Reader)
4	Turn ON the Image Reader and Personal computer.	

7.2.2. Parameter Settings

Set the parameters for the Image Reader.
The "TECT for TFIR-317x" software is used to set parameters.

📓 **Additional Information**

For details on how to install TECT for TFIR-317x, contact the device manufacturer.

1	Start the TECT for TFIR-317x from the Personal computer.	
2	The TECT for TFIR-317x starts as shown on the right.	
	After the parameter is complete to read, "[Read settings] is required" disappears from the window enclosed in red as shown on the right. Once it disappears, perform step 12 and subsequent steps.	
	*If a setting other than described in *6.1.1. Communications Settings between the Personal Computer and Image Reader* is made to the Personal computer, the COM1 [9600,n,8,1] Dialog Box is displayed. Confirm that there is no problem and click the **OK** Button. Perform step 3 and subsequent steps.	
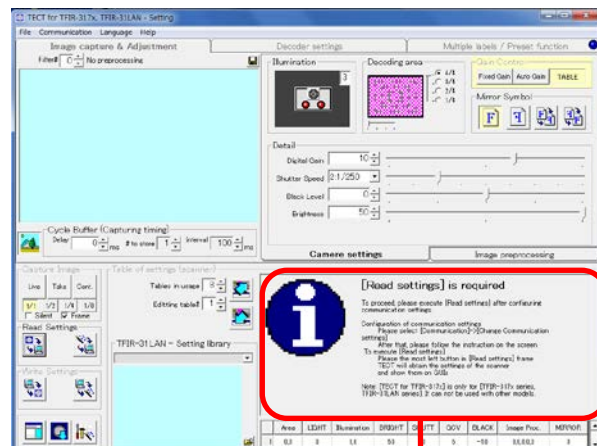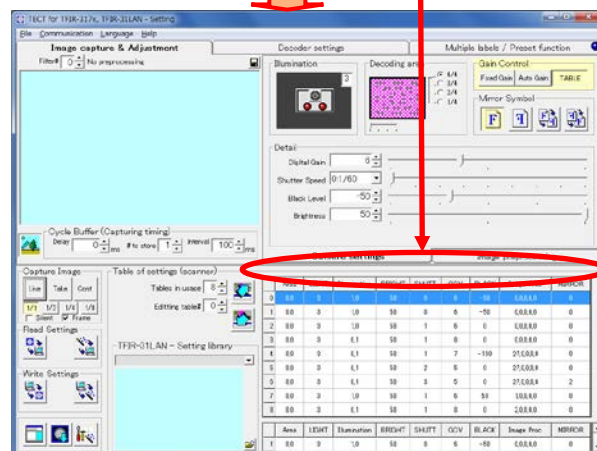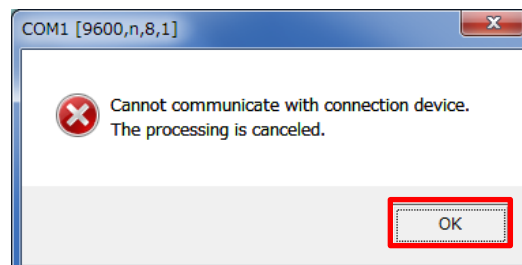
3	Select *Change Communication settings* from the Communication Menu.	TECT for TFIR-317x, TFIR-31LAN - Setting File [Communication] Language Help Terminal Change Communication settings
4	The Change Communication settings Dialog Box is displayed. Select *RS-232C* Option and click the **Next** Button.	&Change Communication settings **Communication Settings** The communication settings of the scanner can be modified from the designated window. It is useful because the communication settings of the scanner can be changed after changing the communication settings of the application software. To start configuration , please select the type of interface and then click [Next] ● RS-232C ○ LAN ○ USB Cancel < Back(B) Next(N) > Finish(F)
5	A message "Settings of the application" appears in the Change Communication settings Dialog Box. Select the communication port No. that the Image Leader is connected (Com2 in this example), and then click the ⦿ Button. Each value in *Baud*, *Frame*, and *Flow Control* Fields for the Image Leader is automatically retrieved. *If there are multiple serial ports on the Personal computer, display the Windows Device Manager. Then select the same port as the communications port No. that the Image Leader is connected under Ports (COM & LPT) (COM2 in this example). *To display the Device Manager, right-click **My Computer** and select *Properties* - *Device Manager*.	&Change Communication settings **Settings of the application** If the interface is RS-232C, please manually select COM number. Clicking the circle will get baud rate and data frame structure automatically. If the interface is LAN, please click [AUTO] then TECT will detect the device automatically. When finish, please click [Next] Port ⦿ Com2 Baud 9600 Frame DataBits 8 ParityBit None StopBits 1 Flow Control ● Non ○ Xon/Xoff ○ RTS ○ Xon/RTS Cancel < Back(B) Next(N) > Finish(F) --- Device Manager File Action View Help ▲ Ports (COM & LPT) 　Communications Port (COM2) 　Intel(R) Active Management Technology - SOL (COM3) ▷ Processors
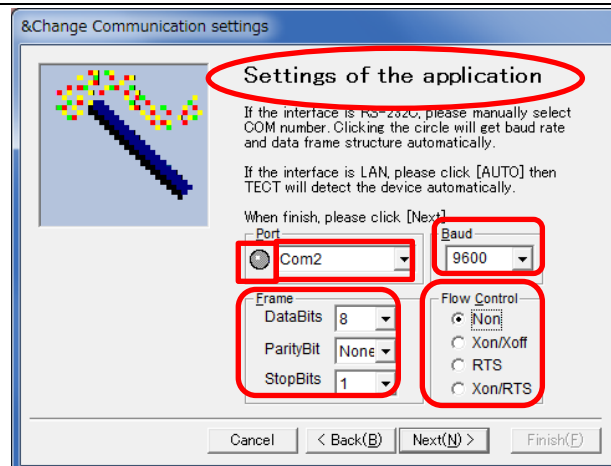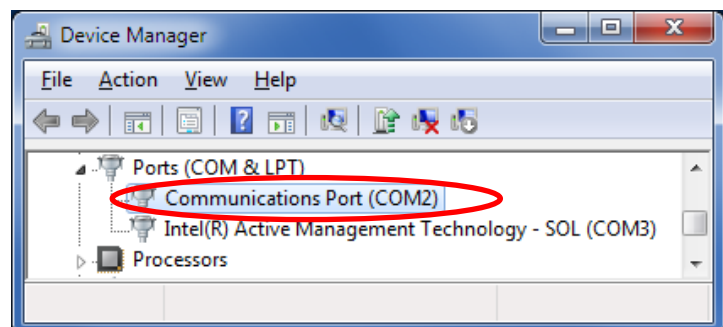
13

6	Confirm that the ⊙ button changes to the blue button ●, and click the **Next** Button. *If the red button ● is displayed, perform step 5 after checking the communication port No. that the Image Leader is connected	&Change Communication settings **Settings of the application** If the interface is RS-232C, please manually select COM number. Clicking the circle will get baud rate and data frame structure automatically. If the interface is LAN, please click [AUTO] then TECT will detect the device automatically. When finish, please click [Next] Port ● Com2 Baud 9600 Frame DataBits 8 ParityBit None StopBits 1 Flow Control ● Non ○ Xon/Xoff ○ RTS ○ Xon/RTS Cancel < Back(B) Next(N) > Finish(F)
7	A message "Baud of the scanner" appears in the Change Communication settings Dialog Box. Confirm that the setting is as follows: ・baud: 9600(bps) Click the **Next** Button.	&Change Communication settings **Baud of the scanner** Configuration of the scanner's baud rate Please select baud rate and then click [Next] baud 1200 2400 4800 9600 19.2K 38.4K 57.6K 115K Cancel < Back(B) Next(N) > Finish(F)
8	A message "Frame of the scanner" appears in the Change Communication settings Dialog Box. Confirm that the setting is as follows: ・frame: 8N1 Click the **Next** Button.	&Change Communication settings **Frame of the scanner** Configuration of the scanner's frame structure Please select frame structure and then click [Next] frame 7O1 7O2 7E1 7E2 8N1 8N2 8O1 8O2 8E1 8E2 Cancel < Back(B) Next(N) > Finish(F)
9	A message "Network setting" appears in the Change Communication settings Dialog Box. Click the **Next** Button. *No need to set Network setting.	&Change Communication settings **Network setting** Please consult network adminstrator before network configuration. The change of network settings will be effective after [WSETS] command to save the settings and then restart the scanner. ○ Network setting is returned to default settings. ● The network setting is changed. TCP Client / TCP Server IP address 192.168.250. 2 Subnet mask 255.255.255. 0 Default gateway 192.168.209.254 Port # of TCP protocol 27110 Cancel < Back(B) Next(N) > Finish(F)
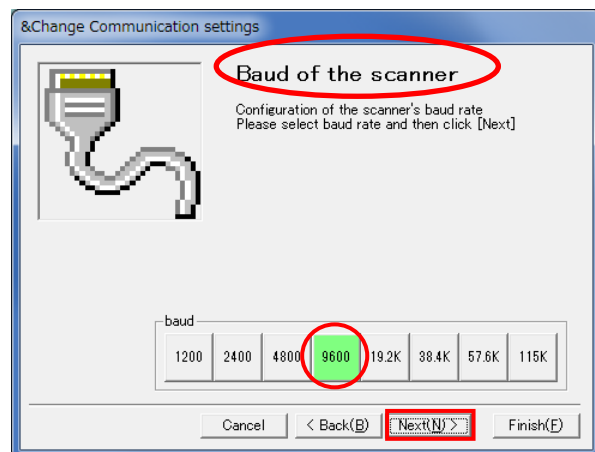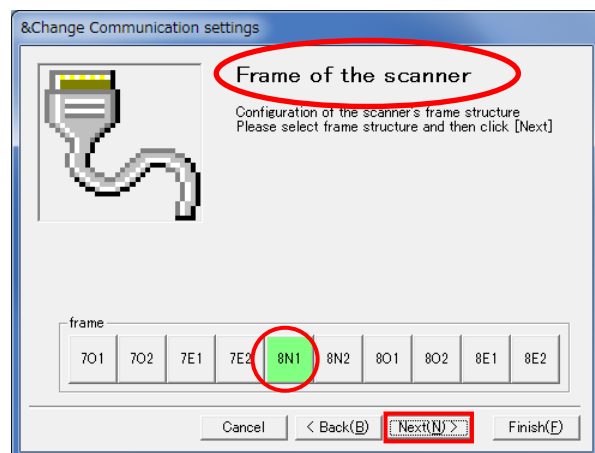
14

10 A message "Settings are modified" appears in the Change Communication settings Dialog Box. Click the **Finish** Button to close the Change Communication settings Dialog Box.
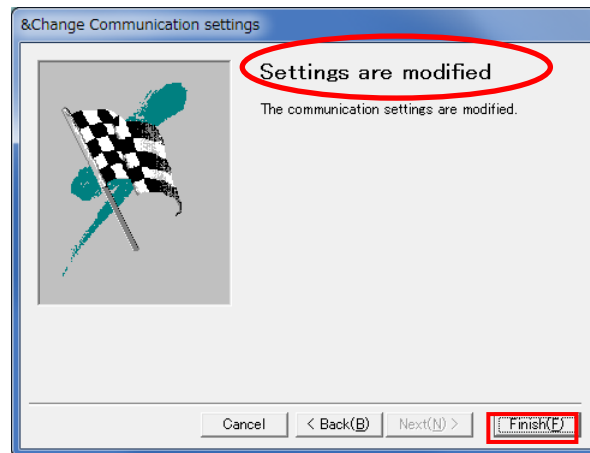
11 "[Read settings] is required" appears as shown on the right.
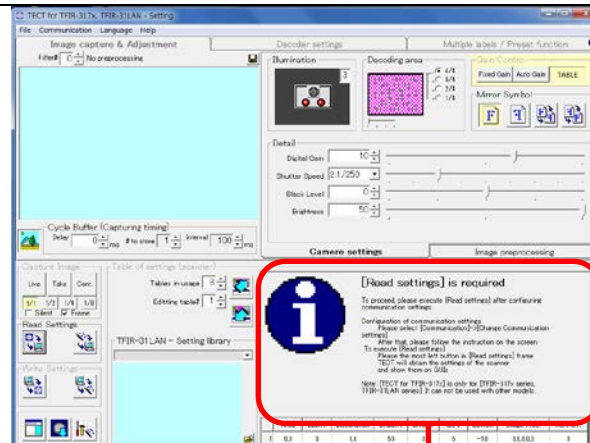
Click the **Read Settings** Button.

"Read Settings" is displayed in a grayout state while the setting is being read.
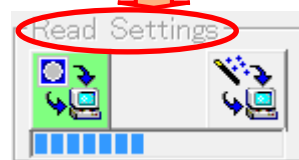
After the parameters are correctly loaded, "[Read settings] is required" disappears from the window enclosed in red as shown on the right.

15
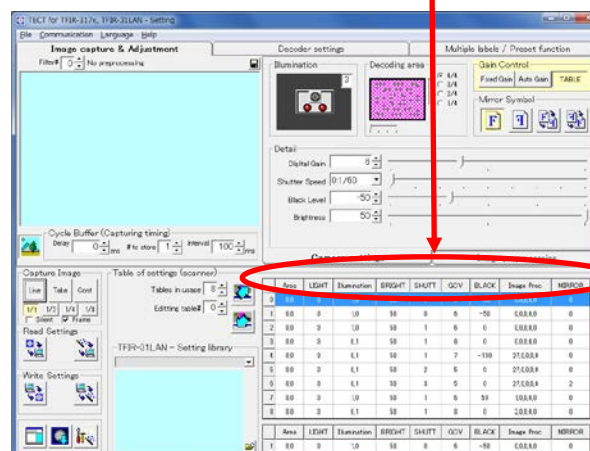
12	Select the **Decoder settings** Tab Page. The *Communication* and *Decoding (Basic options)* Fields are displayed. Confirm that the following settings are made. In the *Communication* Field: ・Flow Control (Handshake) : 232 is not selected. (When Handshake is not performed, RS/CS control is not performed) In the *Decoding (Basic options)* Field: ・Interface to output: 232C Check the settings and click the **Hide** Button of Advanced Options (PLC-LINK).	
13	The button of Advanced Options (PLC-LINK) changes to Show from Hide. "Communication (Advanced options)" appears.	
14	Make the following settings in the *PLC-LINK* Field. ・Connection method: *RS-232C*, *C mode command(Omron SYSMAC)*.	 (Left half of the *PLC-LINK* Field)
	・Set the head address of data memory: *1000* ・Set the padding code of data length is odd: *0:NUL[00]* ・Watch of the trigger area: *0: Enable* ・Set the wait time of watch from power-on: *10 sec* ・Set the interval time of watch: *10 ms*	 (Right half of the *PLC-LINK* Field)
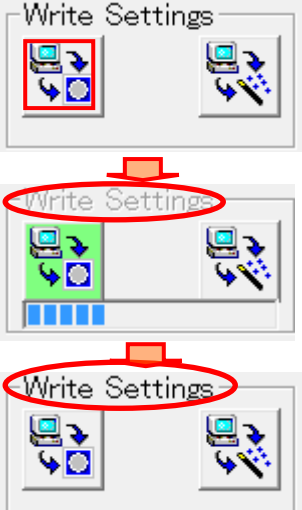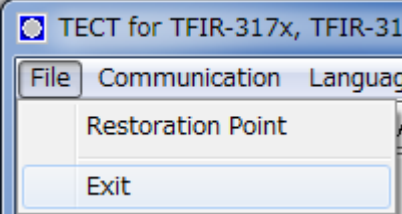
15	Click the **Write Settings** Button.	
	"Write Settings" is displayed in a grayout state while the setting is being written.	
	After the parameter is written, "Write Settings" appears.	
16	Click the **Save to imager** Button to save the settings to non-volatile memory in the Image Reader. *Without clicking the **Save to imager** Button, if the Image Reader is turned ON again, it starts up in the previous settings.	
17	Select *Exit* from the File Menu to exit the TECT for TFIR-317x.	

7.3. Setting Up the PLC

Set up the PLC.

7.3.1. Hardware Settings

Set the hardware switches on the Serial Communications Unit and connect the cables.
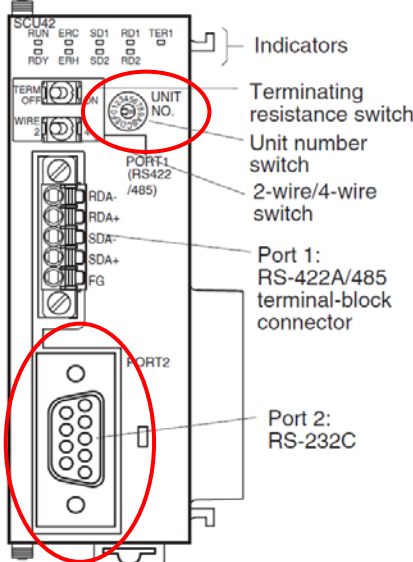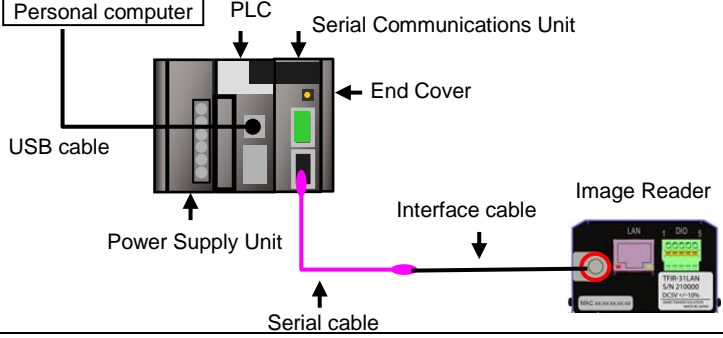
Precautions for Correct Use

Make sure that the power supply is OFF when you perform the setting up.

1	Make sure that the power supply to the PLC is OFF. *If the power supply is turned ON, settings may not be applicable as described in the following procedures.	
2	Check the position of the hardware switches on the front side of the Serial Communications Unit by preferring to the right figure. *This setting is required to use Port 2 of the Serial Communications Unit.	
3	Set the Unit number switch to *0*. *The unit number is set to *0* as the factory default setting.	
4	Connect the Serial Communications Unit to the PLC as shown on the right. Connect the Interface cable for the Image Leader to the Serial Communications Unit with the Serial cable. Connect the Personal computer to PLC with a USB cable.	
5	Turn ON the power supply to the PLC.	
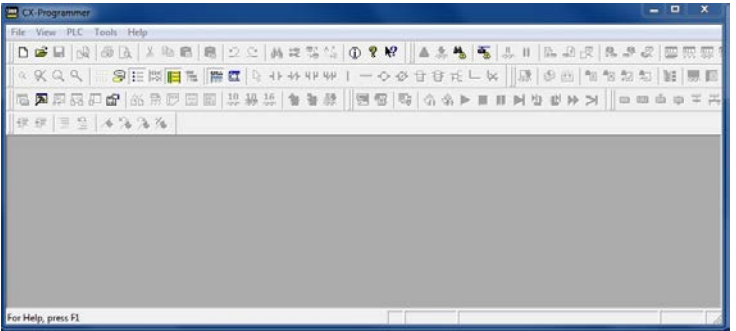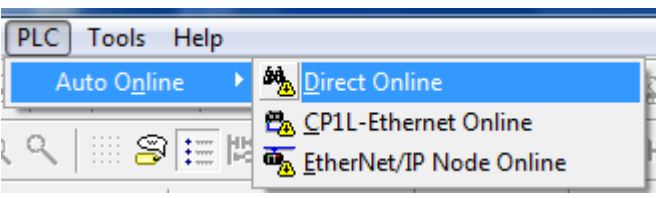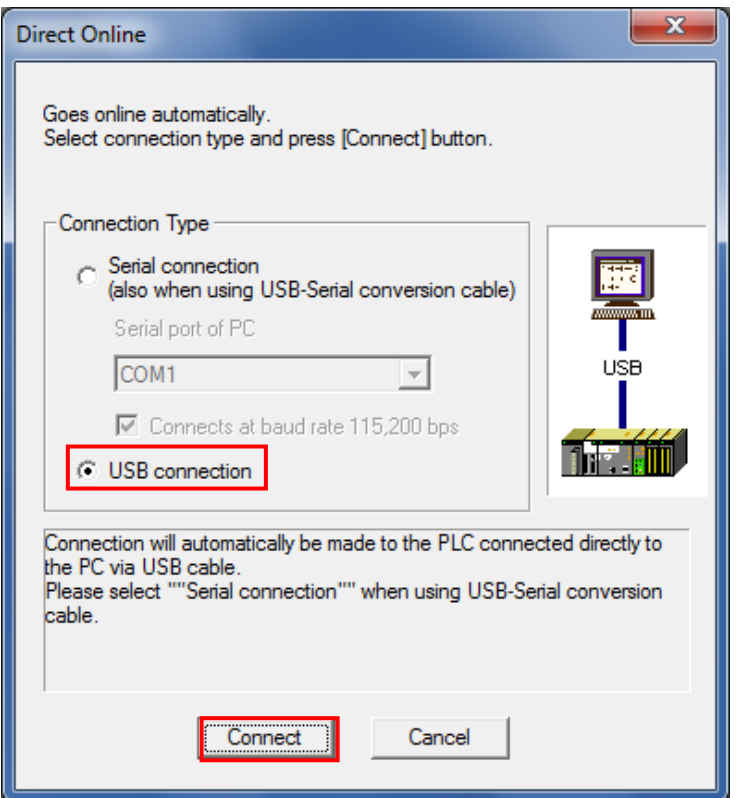
18

7.3.2. Starting the CX-Programmer and Connecting Online with the PLC

Start the CX-Programmer and connect online with the PLC.

Install the CX-One and USB driver in the Personal computer beforehand.

1	Start the CX-Programmer.	
2	The CX-Programmer starts. *If a confirmation dialog for an access right is displayed at start, execute a selection to start.	
3	Select *Auto Online* - *Direct Online* from the PLC Menu.	
4	The Direct Online Dialog Box is displayed. Select the *USB connection* Option for Connection Type. Click the **Connect** Button.	

5	The dialog box on the right is displayed. Check the contents and click the **No** Button.	
6	The dialog box on the right is displayed, and the CX-Programmer and the PLC are automatically connected.	
7	Confirm that the CX-Programmer and the PLC are normally connected online. *The ⚠ icon is pressed down during online connection.	

📓 **Additional Information**

If an online connection cannot be made to the PLC, check the cable connection.

Or, return to step 2, check the settings and repeat each step.

Refer to *Connecting Directly to a CJ2 CPU Unit Using a USB Cable* in *Chapter 3 Communications* in *PART 3:CX-Server Runtime* of *the CX-Programmer Operation Manual* (Cat. No. W446) for details.

📓 **Additional Information**

The dialog boxes explained in the following procedures may not be displayed depending on the environmental setting of CX-Programmer.

For details on the environmental setting, refer to *Options and Preferences* in *Chapter 3 Project Reference* in *PART 1:CX-Programmer* of *the CX-Programmer Operation Manual* (Cat. No. W446). This document explains the setting procedure when the *Confirm all operations affecting the PLC* Check Box is selected.

7.3.3. Creating the I/O Table

Create the I/O table for the PLC.

1	If the operating mode of the PLC is Run Mode or Monitor Mode, change it to Program Mode by following the steps below. (1) Select *Operating Mode* - *Program* from the PLC Menu of the CX-Programmer. (2) The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button. *Refer to *Additional Information* on the previous page for the settings concerning the dialog display. (3) Confirm that Stop/Program Mode is displayed on the right of the PLC model in the Project Tree.	
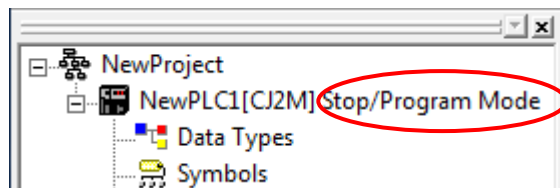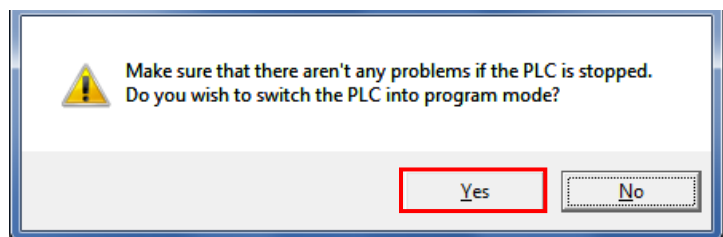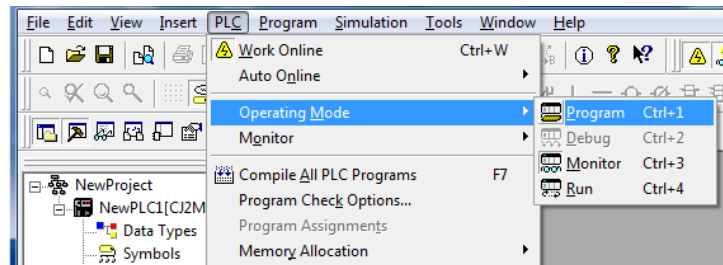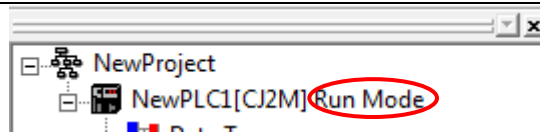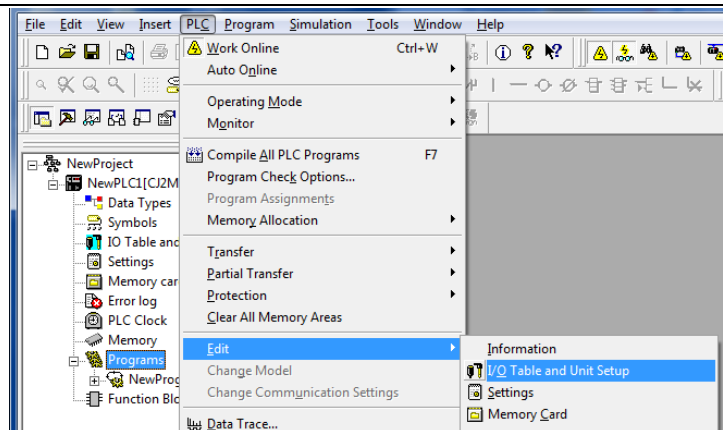
2	Select *Edit* - *I/O Table and Unit Setup* from the PLC Menu of the CX-Programmer. The PLC IO Table Window is displayed.	
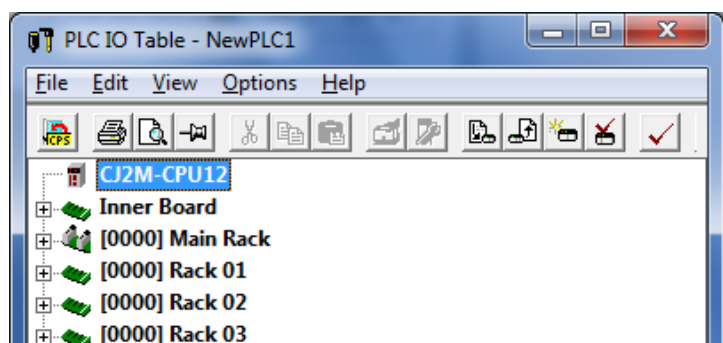
3	Select *Create* from the Options Menu of the PLC IO Table Window.	
	The dialog box on the right is displayed. Confirm that there is no problem and click the **Ye**s Button.	
	The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.	
4	The Transfer from PLC Dialog Box is displayed. Select the *I/O Table* Check Box and the *SIO Unit Parameters* Check Box, and click the **Transfer** Button.	
	When the transfer is completed, the Transfer Results Dialog Box is displayed. Confirm that the transfer was normally executed by referring to the message in the dialog box. When the I/O table is created normally, the dialog box displays as follows: Transfer Success: 1 Unit Transfer Unsuccessful: 0 Unit Click the **OK** Button.	
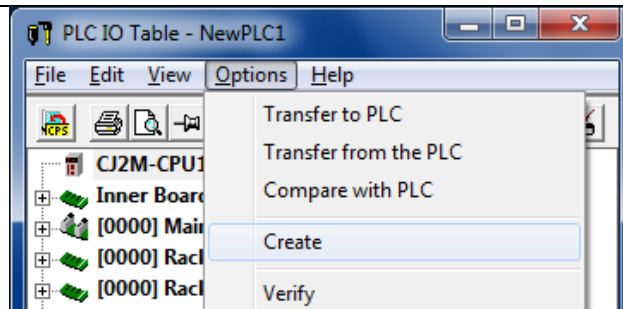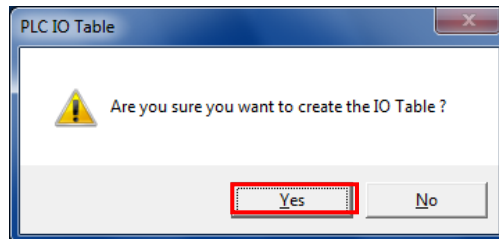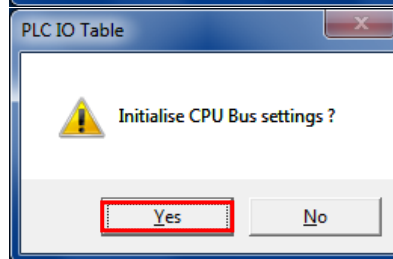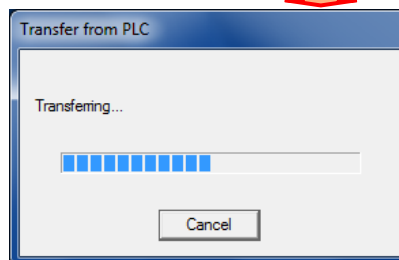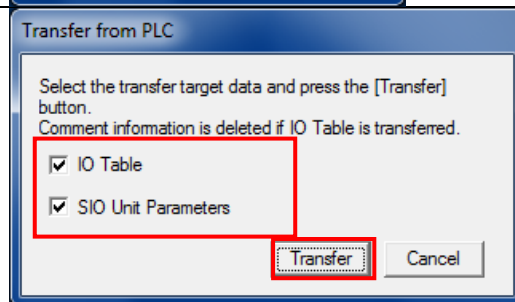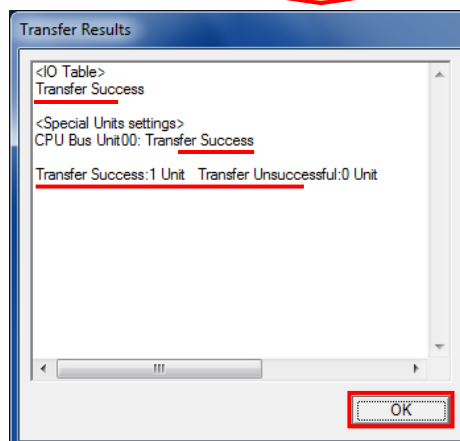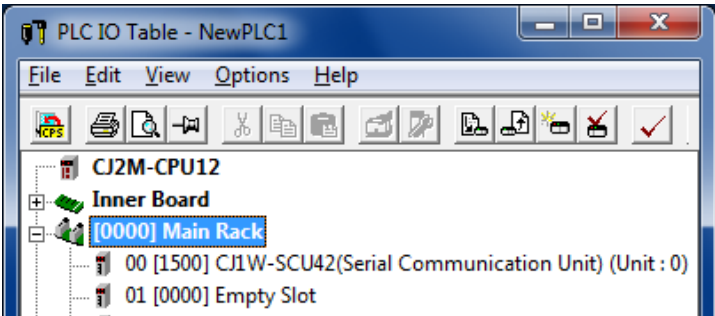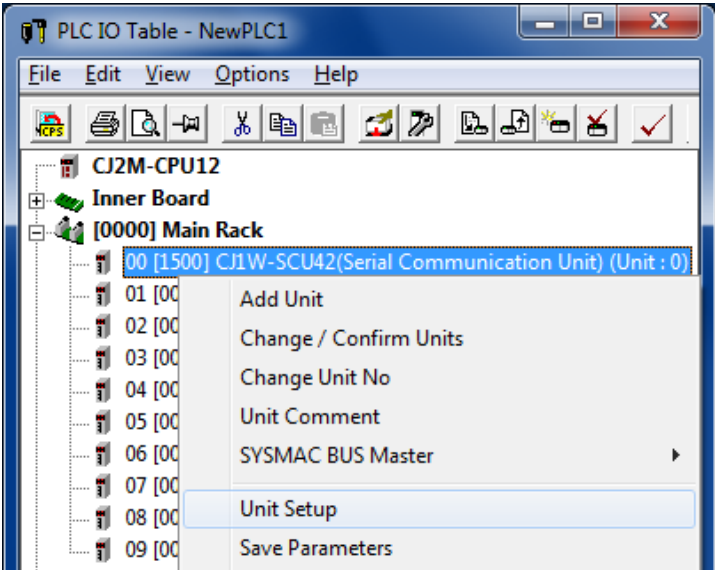
7.3.4. Parameter Settings
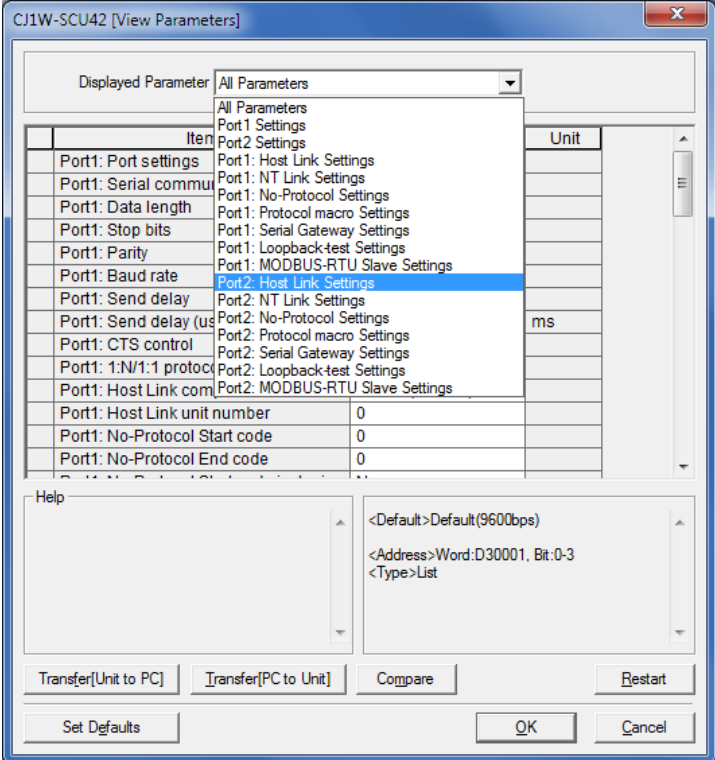
Set the parameters for the Serial Communications Unit.

1	Double-click **[0000] Main Rack** on the PLC IO Table Window to expand the tree.	
2	Right-click **00[1500]CJ1W-SCU42** and select the *Unit Setup*.	
3	The View Parameters Dialog Box is displayed. Select *Port2: Host Link Settings* for Displayed Parameter. *This setting is required to use Port 2 of the Serial Communications Unit.	

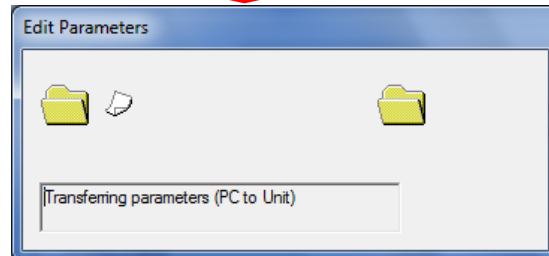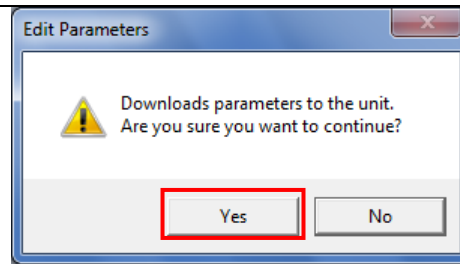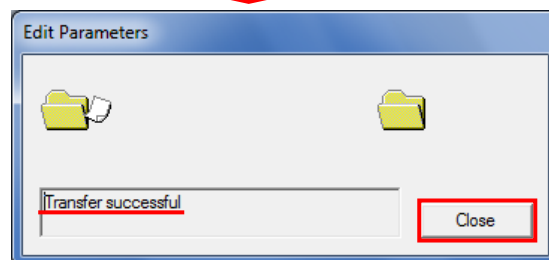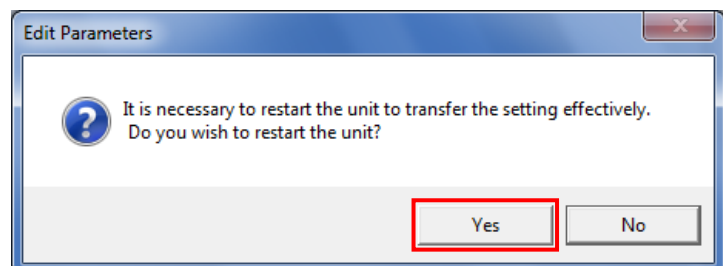|		
4	The setting items of the Port 2: Host Link Settings are listed as shown in the right figure.	CJ1W-SCU42 [View Parameters] Displayed Parameter: Port2: Host Link Settings | Item	Set Value	Unit
Port2: Port settings	Defaults	
Port2: Serial communications mode	Host Link(default)	
Port2: Data length	7 bits	
Port2: Stop bits	2 bits	
Port2: Parity	Even	
Port2: Baud rate	Default(9600bps)	
Port2: Send delay	Default (0 ms)	
Port2: Send delay (user-specified)	0	ms
Port2: CTS control	No	
Port2: 1:N/1:1 protocol setting	1:N protocol	
Port2: Host Link compatible device mo	Default(Mode A)	
Port2: Host Link unit number	0		
5	Select **User settings** for Port settings.	CJ1W-SCU42 [View Parameters] Displayed Parameter: Port2: Host Link Settings | Item	Set Value	Unit
Port2: Port settings	User settings	
Port2: Serial communications mode	Defaults	
Port2: Data length	User settings	
Port2: Stop bits	2 bits	
Port2: Parity	Even	
Port2: Baud rate	Default(9600bps)	
Port2: Send delay	Default (0 ms)	
Port2: Send delay (user-specified)	0	ms
Port2: CTS control	No	
Port2: 1:N/1:1 protocol setting	1:N protocol	
Port2: Host Link compatible device mo	Default(Mode A)	
Port2: Host Link unit number	0		
6	Set the following parameters in the same way as step 5. ・Serial communications mode: *Host Link(default)* ・Data length: *8 bits* ・Stop bits: *1bit* ・Parity: *None* ・Baud rate: *Default (9600 bps)* ・1:N/1:1 protocol setting: *1:1 protocol* *Use the default settings for other parameters. Click the **Transfer [PC to Unit]** Button.	CJ1W-SCU42 [View Parameters] Displayed Parameter: Port2: Host Link Settings | Item	Set Value	Unit
Port2: Port settings	User settings	
Port2: Serial communications mode	Host Link(default)	
Port2: Data length	8 bits	
Port2: Stop bits	1 bit	
Port2: Parity	None	
Port2: Baud rate	Default(9600bps)	
Port2: Send delay	Default (0 ms)	
Port2: Send delay (user-specified)	0	ms
Port2: CTS control	No	
Port2: 1:N/1:1 protocol setting	1:1 protocol	
Port2: Host Link compatible device mo	Default(Mode A)	
Port2: Host Link unit number	0	| Help <Default>Defaults <Address>Word:D30010, Bit:15 <Type>List Transfer[Unit to PC] Transfer[PC to Unit] Compare Restart Set Defaults OK Cancel

24

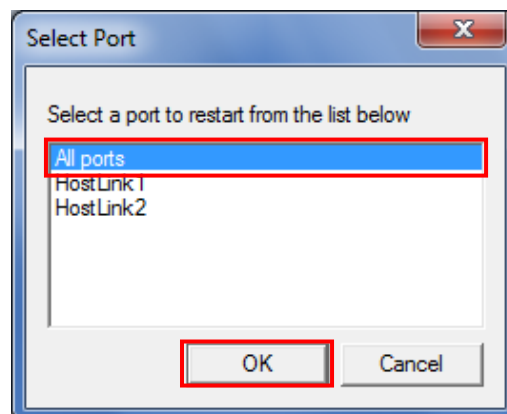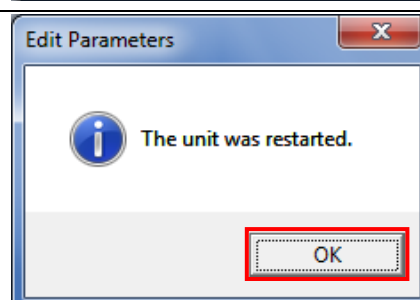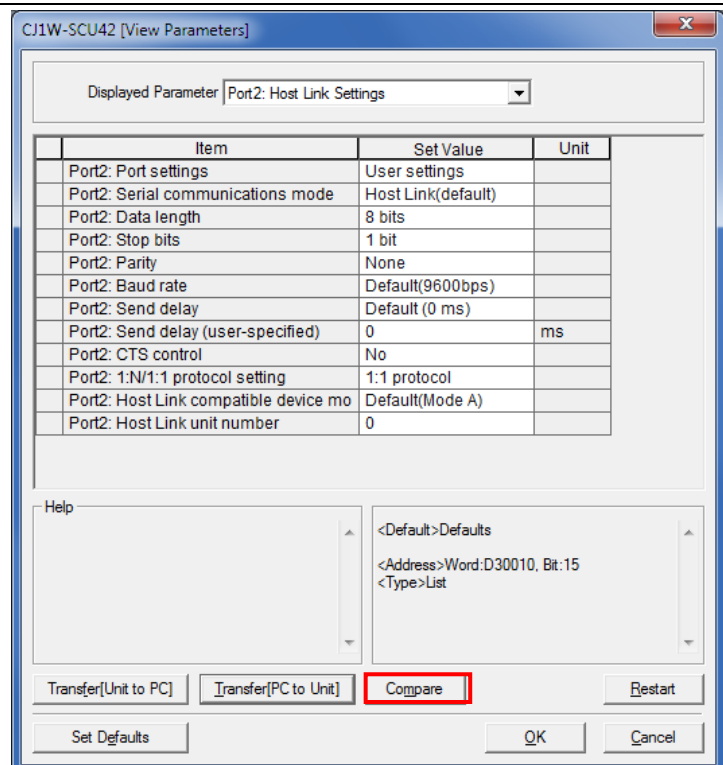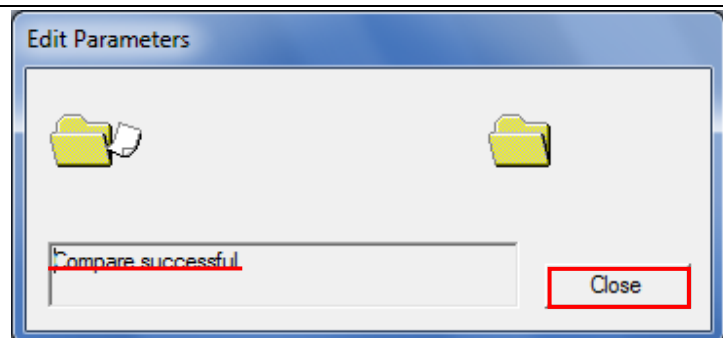| 7	The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.	
	When the transfer is completed, the dialog box on the right is displayed. Click the **Close** Button.	
8	A dialog box on the right is displayed. Check the contents and click the **Yes** Button.	
	The Select Port Dialog Box is displayed. Select *All ports* and click the **OK** Button.	
9	The dialog box on the right is displayed. Check the contents and click the **OK** Button.	

10 Click the **Compare** Button on the View Parameters Dialog Box.

CJ1W-SCU42 [View Parameters]

Displayed Parameter | Port2: Host Link Settings

Item	Set Value	Unit
Port2: Port settings	User settings	
Port2: Serial communications mode	Host Link(default)	
Port2: Data length	8 bits	
Port2: Stop bits	1 bit	
Port2: Parity	None	
Port2: Baud rate	Default(9600bps)	
Port2: Send delay	Default (0 ms)	
Port2: Send delay (user-specified)	0	ms
Port2: CTS control	No	
Port2: 1:N/1:1 protocol setting	1:1 protocol	
Port2: Host Link compatible device mo	Default(Mode A)	
Port2: Host Link unit number	0	

Help

<Default>Defaults

<Address>Word:D30010, Bit:15
<Type>List

Transfer[Unit to PC] Transfer[PC to Unit] Compare Restart

Set Defaults OK Cancel

11 After confirming that a message "Compare successful" is displayed in the dialog box on the right, click the **Close** Button.

Edit Parameters

Compare successful

Close

12 Click the **OK** Button on the View Parameters Dialog Box.

CJ1W-SCU42 [View Parameters]

Displayed Parameter | Port2: Host Link Settings

Item	Set Value	Read Value (Compare
Port2: Port settings	User settings	User settings
Port2: Serial communications mode	Host Link(default)	Host Link(default)
Port2: Data length	8 bits	8 bits
Port2: Stop bits	1 bit	1 bit
Port2: Parity	None	None
Port2: Baud rate	Default(9600bps)	Default(9600bps)
Port2: Send delay	Default (0 ms)	Default (0 ms)
Port2: Send delay (user-specified)	0	0
Port2: CTS control	No	No
Port2: 1:N/1:1 protocol setting	1:1 protocol	1:1 protocol
Port2: Host Link compatible device mo	Default(Mode A)	Default(Mode A)
Port2: Host Link unit number	0	0

Help

<Default>Defaults

<Address>Word:D30010, Bit:15
<Type>List

Transfer[Unit to PC] Transfer[PC to Unit] Compare Restart

Set Defaults OK Cancel

26

7.4. Checking the Serial Communications

Confirm that PLC link via serial communications is performed normally for the Image Reader.

7.4.1. Checking the Connection Status

Check the connection status.

<table>
<tr>
<td>**1**</td>
<td>

Confirm that PLC link is normally in operation by checking the LED indicators on the Serial Communications Unit.

・The LED indicators in normal status on the Serial Communications Unit are as follows:

[RUN]: Lit green
[RDY]: Not lit
[ERC]: Not lit
[ERH]: Not lit
[SD1]: Not lit
[SD2]: Not lit
[TER1]: Not lit
[SD2]: Flashing yellow
[RD2]: Flashing yellow

</td>
<td>

(Serial Communications Unit)

</td>
</tr>
</table>
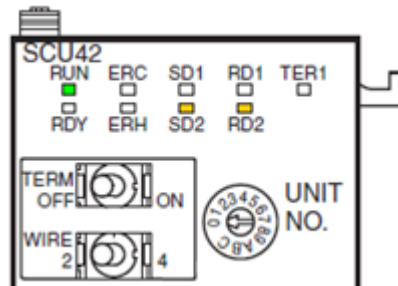
7.4.2. Checking the Data that are Sent and Received

Confirm that the correct data are sent and received.

⚠ Caution
Confirm safety sufficiently before monitoring power flow and present value status in the Ladder Section window or before monitoring present values in the Watch window. If force-set/reset or set/reset operations are incorrectly performed by pressing short-cut keys, the devices connected to Output Units may malfunction, regardless of the operating mode of the CPU Unit.

1	Confirm that the PLC is in Program Mode. *If the PLC is not in the Program mode, change to Program mode by referring to step 1 of *7.3.3. Creating the I/O Table*.
2	Select *Edit* - *Memory* from the PLC Menu.
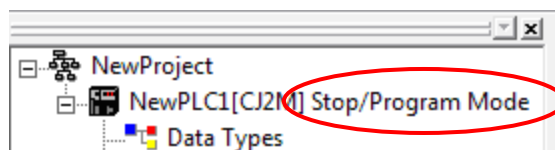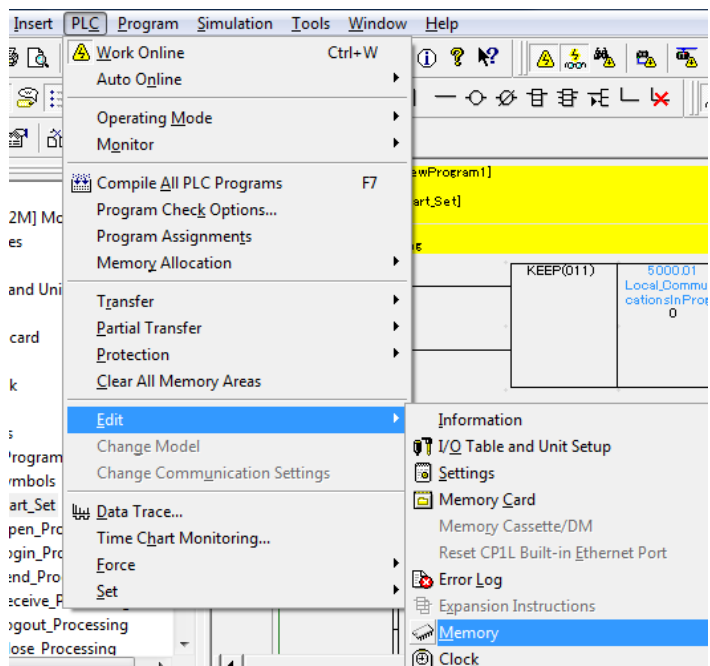
3	Double-click *D* from the list in the PLC Memory Window that is displayed.	
4	Select **Display** - **Hexadecimal** from the View Menu.	
5	Select **Monitor** from the Online Menu.	
6	The Monitor Memory Areas Dialog Box is displayed. Confirm that the *D* Check Box is selected and click the **Monitor** Button.	
7	Enter *1000* in the *Start Address* Field in the D Window.
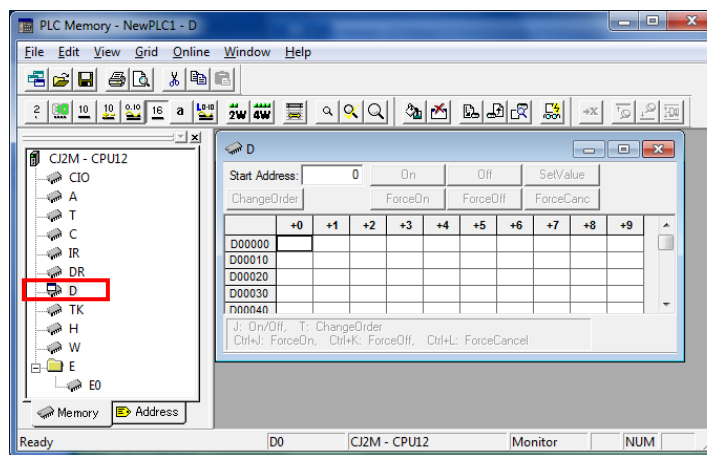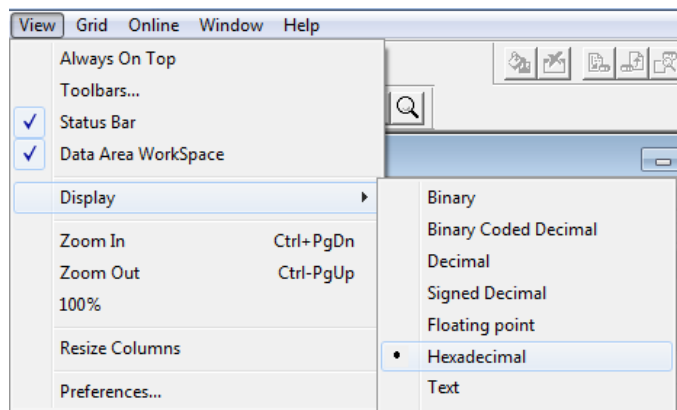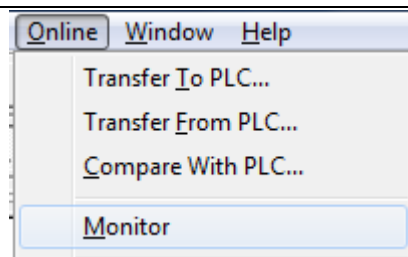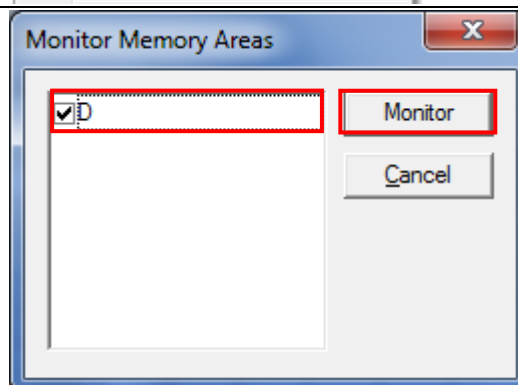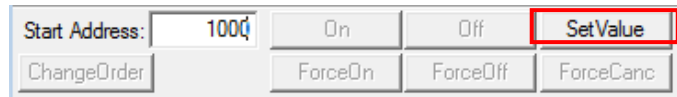
Confirm that the start address changes to D01000. | |
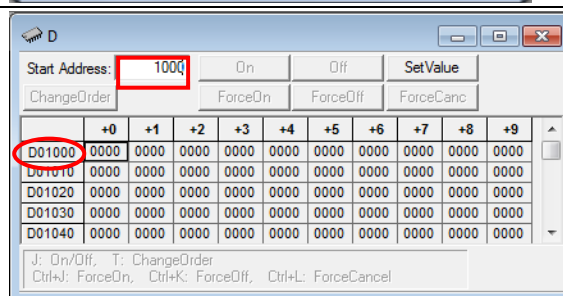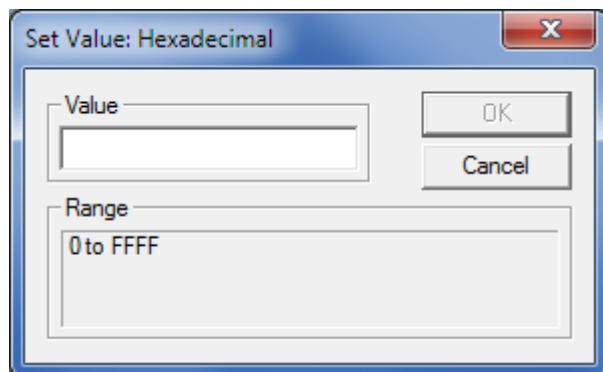
8	Click the **Set Value** Button.	Start Address: 1000 / On / Off / SetValue ChangeOrder / ForceOn / ForceOff / ForceCanc
	The Set Value: Hexadecimal Dialog Box is displayed.	Set Value: Hexadecimal Value [ ] OK / Cancel Range 0 to FFFF
9	Install the Image Reader so that it can read a QR code.	
10	Enter *1* in the *Value* Field. Click the **OK** Button.	Set Value: Hexadecimal Value [1] OK / Cancel Range 0 to FFFF
	The value of D01000 changes to 0001.	
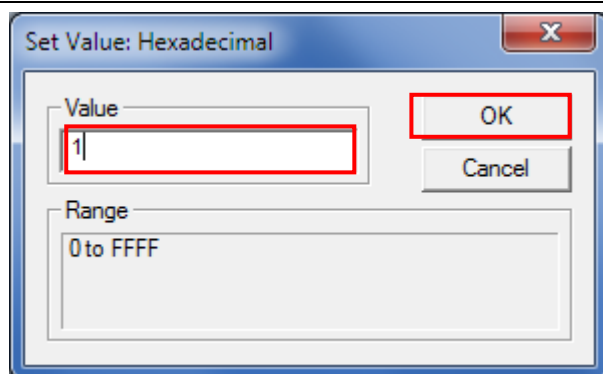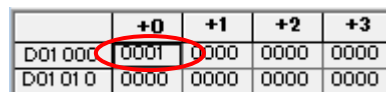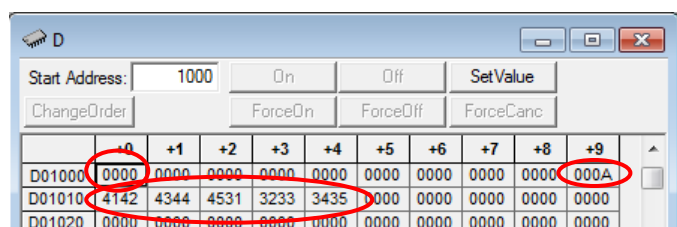
	+0	+1	+2	+3
D01000	0001	0000	0000	0000
D01010	0000	0000	0000	0000

11	The Image Reader reads the QR code.	
12	The value of D01000 changes to 0000. The number of digits of read data is stored in D01009. The read data is stored in D01010 onward. *In the right figure, the following data is read. ・Number of digits of read data: 000A(10: decimal) ・Read data: 4142 4344 4531 3233 3435('AB CD E1 23 45')	

Start Address: 1000 / On / Off / SetValue
ChangeOrder / ForceOn / ForceOff / ForceCanc

	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
D01000	0000	0000	0000	0000	0000	0000	0000	0000	0000	000A
D01010	4142	4344	4531	3233	3435	0000	0000	0000	0000	0000
D01020	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

8. Initialization Method

This document explains the setting procedure from the factory default setting.
Some settings may not be applicable as described in this document unless you use the
devices with the factory default setting.

8.1. Initializing the PLC

To initialize the settings of the PLC, it is necessary to initialize the CPU Unit and Serial
Communications Unit. Change the PLC to PROGRAM mode before the initialization.

8.1.1. Serial Communications Unit

(1) Select *Edit - I/O Table and Unit Setup* from the PLC Menu of the CX-Programmer.
On the PLC IO Table Dialog Box, right-click the Serial Communications Unit and select
Unit Setup from the menu.
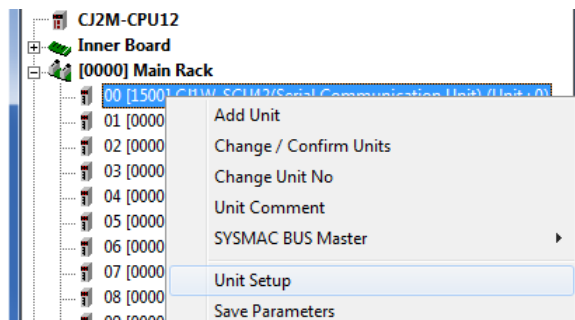
(2) On the View Parameters Dialog Box, click the **Set Defaults** Button, and click the **Transfer
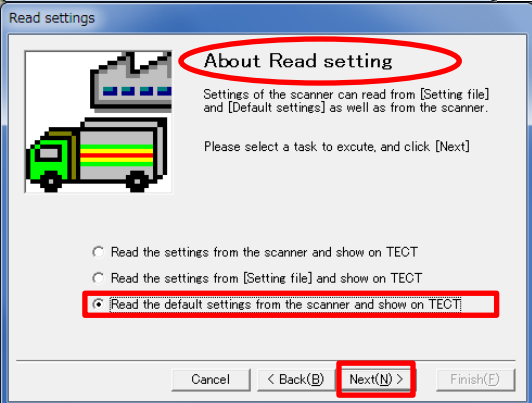(PC to Unit)** Button.
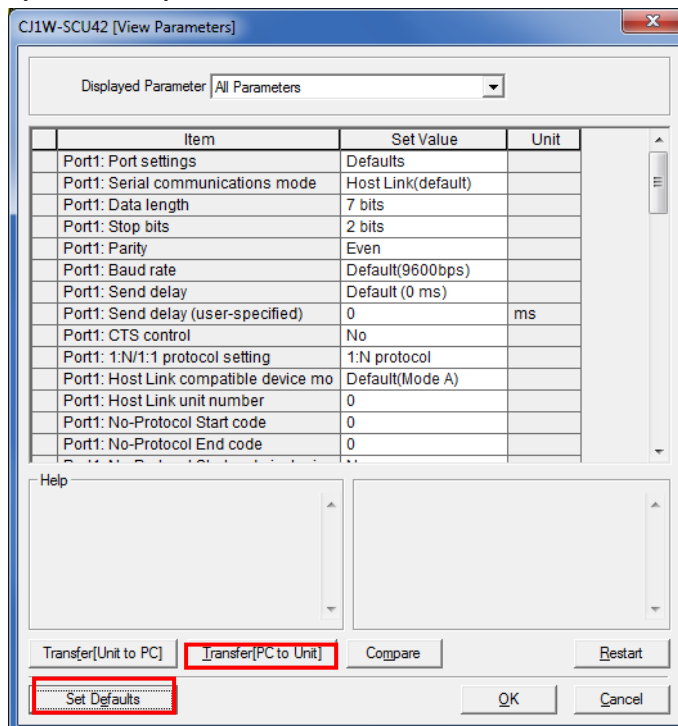
8.1.2. CPU Unit
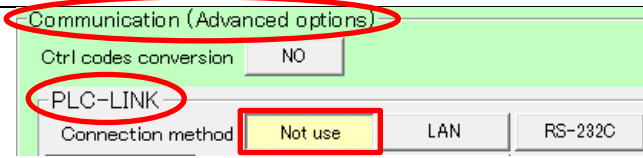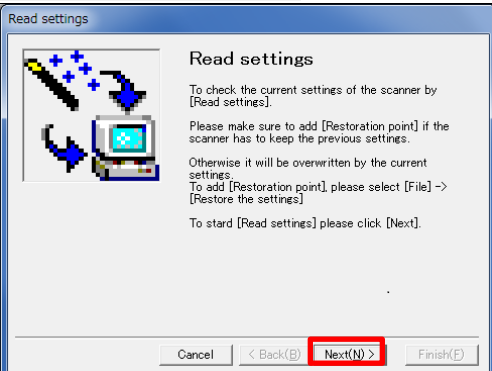
To initialize the settings of the CPU Unit, select **Clear All Memory Areas** from the PLC Menu of the CX-Programmer. On the Confirm All Memory Area Clear Dialog Box, select the *Initialize* Option and click the **OK** Button.
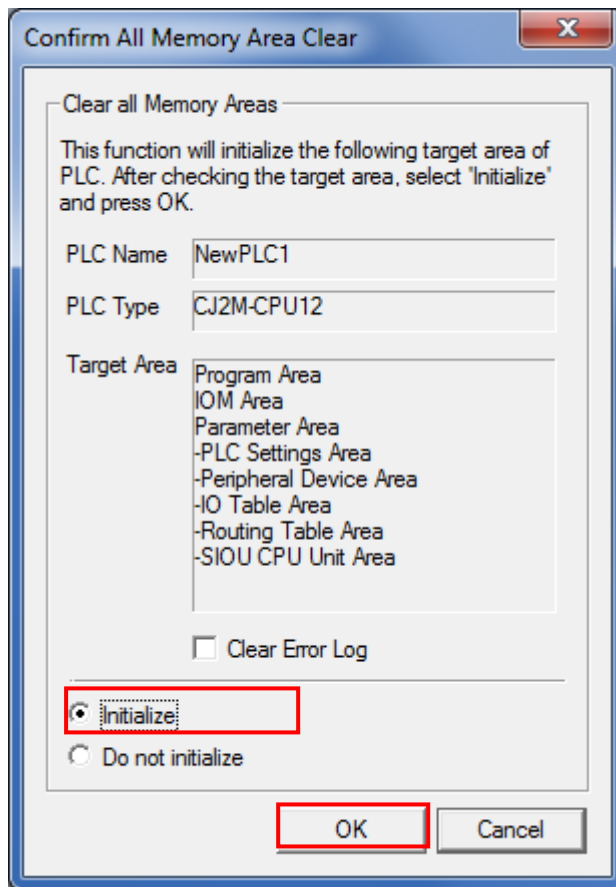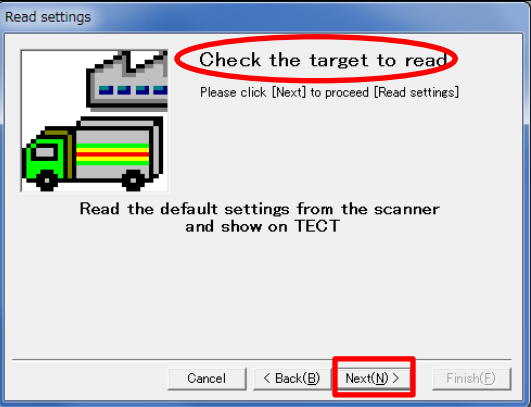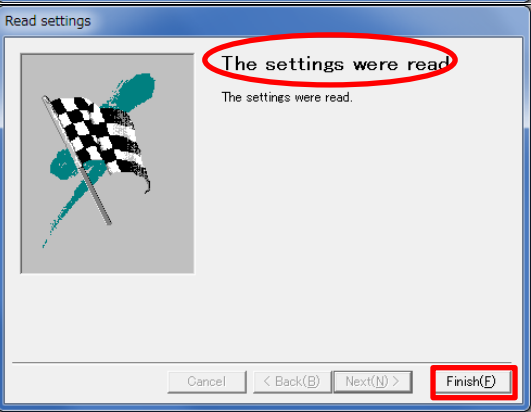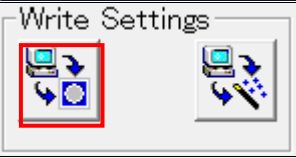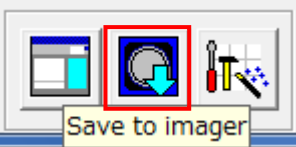
8.2. Initializing the MARS TOHKEN SOLUTION Image Reader

Take the following steps to initialize the MARS TOHKEN SOLUTION Image Reader.

The following steps do not initialize network settings for the Image Reader.

1	Connect the Interface cable for the Image Leader to the Personal computer.
2	Perform steps 1 to 13 of *7.2.2. Parameter Settings*.
3	Set Connection method to *Not use* in the *PLC-LINK* Field in "Communication (Advanced options)".
4	PLC link stops by clicking the **Write Settings** Button. *Stop PLC link before initializing the Image Reader whose Connection method in the PLC-LINK Field is RS-232C.
5	Click the **Read Settings** Button.
6	The Read settings Dialog Box is displayed. Check the contents and click the **Next** Button.
7	A message "About Read setting" appears in the Read settings Dialog Box. Select the *Read the default settings from the scanner and show on TECT* Option. Click the **Next** Button.

(Left half of the PLC-LINK Field)

33

8	A message "Check the target to read" appears in the Read settings Dialog Box. Check the contents and click the **Next** Button.	Read settings Check the target to read Please click [Next] to proceed [Read settings] Read the default settings from the scanner and show on TECT Cancel < Back(B) Next(N) > Finish(F)
9	A message "The settings were read" appears in the Read settings Dialog Box. Check the contents and click the **Finish** Button.	Read settings The settings were read The settings were read. Cancel < Back(B) Next(N) > Finish(F)
10	Click the **Write Settings** Button to write the default setting of the Image Reader.	Write Settings
11	Click the **Save to imager** Button to save the settings to non-volatile memory in the Image Reader.	Save to imager
12	Restart the Image Reader.	

📖 **Additional Information**

Contact the device manufacturer for details on reading/writing settings to the Image Reader as well as writing data to non-volatile memory.

9.   Revision History

Revision code	Date of revision	Revision reason and revision page
01	Jul. 31, 2014	First edition

Authorized Distributor:

 Cat. No. P607-E1-01

                                                    0714(-)