OMRON

Programmable Controller CS1D-CPU□□S

Replacement Guide

From CS1D-CPU□□S to CS1D-CPU□□SA

CS1D-CPU42S

CS1D-CPU44S

CS1D-CPU65S

CS1D-CPU67S

CS1D-CPU44SA

CS1D-CPU67SA

P146-E1-01

About this document

This document provides the reference information for replacing CS1D-CPU**S with CS1D-CPU**SA .
This document does not include precautions and reminders; please read and understand the important precautions and reminders described on the manuals of PLCs (both of PLC used in the existing system and PLC you will use to replace the existing PLC) before attempting to start operation.

Related Manuals

Man.No.	Manual
W405	CS1D Duplex System OPERATION MANUAL
W394	CS/CJ/NSJ PROGRAMMING MANUAL
W474	CS/CJ/NSJ Series INSTRUCTIONS REFERENCE MANUAL
W342	CS/CJ/CP/NSJ Series Communications Commands REFERENCE MANUAL
W463	CX-One FA Integrated Tool Package SETUP MANUAL
W446	CX-Programmer OPERATION MANUAL
W447	CX-Programmer OPERATION MANUAL：Function Blocks/Structured Text
W469	CX-Programmer OPERATION MANUAL SFC Programming
W464	CX-Integrator OPERATION MANUAL

Terms and Conditions Agreement

Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right.

(c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See http://www.omron.com/global/ or contact your Omron representative for published information.

Limitation on Liability; Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

CS1D-CPU□□S Replacement Guide

From CS1D-CPU42/44/65/67S to CS1D-CPU44/67SA

Document Change Summary

REV.	PAGES	REMARKS	DATE
A	---	New Creation	2021/1/17

●

Table of Contents

●

1. Specification

1.1. Difference between CS1D-CPU□□S and CS1D-CPU□□SA

See followings.

Table 1-1. Specification comparison table

Type / Specification	CS1D-CPU□□S	CS1D-CPU□□SA	Remark
The number of Input/Output points (the number of peripheral port)	42S: 960 points (2 racks) 44S: 1,280 points (3 racks) 65/67S: 5,120 points (7 racks)	44SA: 1,280 points (3 racks) 67SA: 5,120 points (7 racks)	
Program Capacity (Step)	42S: 10K 44S: 30K 65S: 60K 67S: 250K	44SA: 30K 67SA: 250K	
Expanded data memory (EM)	42/44S: 32K words×1 bank 65S: 32K words×3 bank 67S: 32K words×13 bank	44SA: 32K words ×1 bank 67SA: 32K words ×13 bank	
Current Consumption	42/44S: DC5V 0.79A 65/67S: DC5V 0.82A	44/67SA: DC5V 0.82A	
Program language	-Ladder diagram -Instruction list(IL)	-Ladder diagram -ST -SFC -Instruction list (IL)	
Function Block (FB)	Unavailable	Available	
Online editing	Only ladder diagram	Ladder diagram, ST, SFC	Online editing of FB is available for CS1D-CPU□□SA .
Array variables	Unavailable	Available	
STRING variables	Unavailable	Available	
Instruction execution time (LD Instruction processing speed)	42/44S: 0.04μs 65/67S: 0.02μs	44/67SA: From 0.02μs	Note: Instruction execution time of CS1D-CPU□□S may differ from one of CS1D-CPU□□SA. After replacement, confirm that the system can be operated as the former system.

2. Work flow

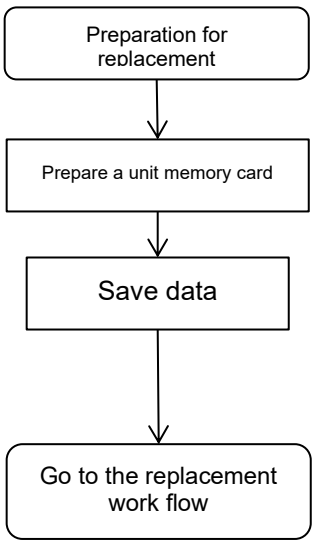
There are two replacement methods.

(1) Using a memory card (HMC-EF□□□) (Easy backup)

(2) Using the CX-Programmer

2.1. Using a memory card: HMC-EF□□□ (Easy backup)

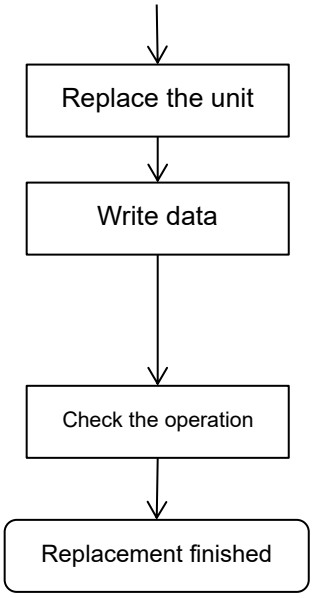
1. Before replacement



Description	Reference pages
Prepare a unit memory card to replace CS1D-CPU□□S to CS1D-CPU□□SA.	3. Prepare a unit. 4.1. Prepare a memory card.
Insert the memory card into the CPU unit and send programs, I/O memory, and each setting data in CS1D-CPU□□S to the memory card.	4.2. Save data in CS1D-CPU□□S to the memory card.

Figure 2-1: Work flow before replacement

2. Replacement flow from CS1D-CPU□□S to CS1D-CPU□□SA

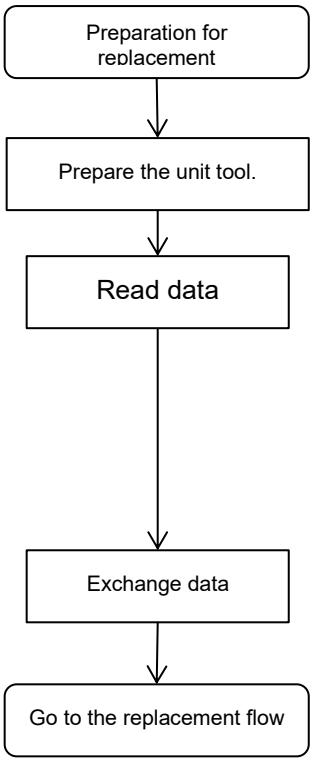


Description	Reference pages
Be sure to turn off the power before replacing the unit.	4.3. Replace the unit of the equipment to S1D-CPU□□SA.
Insert the memory card the CPU unit to write the data in the card to the unit.	4.4. Write the data in the memory card to CS1D-CPU□□SA.
Turn on the power and check whether the equipment can be operated normally.	

Figure 2-2: Replacement flow using a memory card

2.2. Using the CX-Programmer

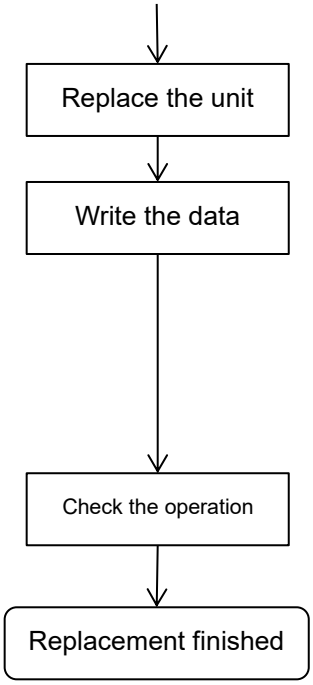
1. Before replacement



Description	Reference pages
Prepare the unit tool to replace CS1D-CPU□□S to CS1D-CPU□□SA.	3. Prepare the unit 5.1. Supported tools
Read programs, I/O memory, and each setting data in CS1D-CPU□□S.	5.2. Read the data in CS1D-CPU□□S 5.3. Read the routing table in CS1D-CPU□□S. 5.4. Read the data link table in CS1D-CPU□□S.
Exchange the data to transmit to CS1D-CPU□□SA.	5.5. Exchange the programs to transmit to CS1D-CPU□□SA.

Figure 2-3: Work flow before replacement

2. Replacement flow from CS1D-CPU□□S to CS1D-CPU□□SA



Description	Reference pages
Be sure to turn off the power before replacing the unit.	5.6. Replace the unit of equipment to CS1D-CPU□□SA.
Write the exchanged data which was used in CS1D-CPU□□S into CS1D-CPU□□SA.	5.7. Write data into CS1D-CPU□□SA. 5.8. Write the routing table into CS1D-CPU□□SA. 5.9. Write the data link table into CS1D-CPU□□SA.
Turn on the power and check whether the equipment can be operated normally.	

Figure 2-4: Replacement flow using the support tool

●

3. About the CPU units

3.1. Prepare the CPU unit

We recommend that conventional lines of CS1D-CPU□□S should be replaced to new lines of CS1D-CPU□□SA as following.

CS1D-CPU□□S (Conventional line)	CS1D-CPU□□SA (New line)	Remarks
CS1D-CPU42S	CS1D-CPU44SA	
CS1D-CPU44S	CS1D-CPU44SA	
CS1D-CPU65S	CS1D-CPU67SA	
CS1D-CPU67S	CS1D-CPU67SA	

3.2. About other units and power supply

The other units and power supply used for CS1D-CPU□□S can be used for CS1D-CPU□□SA.

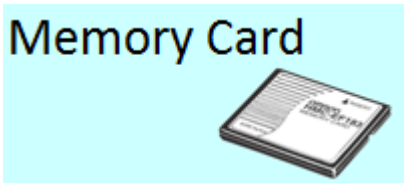
Note : Consider the product life, when using existing units.

●

4. Using a memory card: HMC-EF□□□ (Easy backup)

4.1. Prepare a memory card

Prepare a supported type of memory card, which is described in the brochure (R103-E1) and the manual (W405-E1).

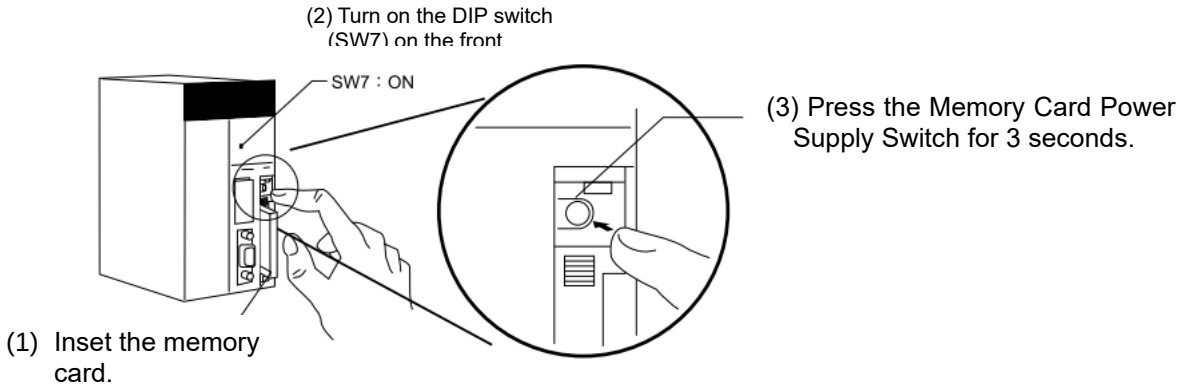


4.2. Move the data stored in CS1D-CPU□□S to the memory card

(1) Insert the memory card into the CS1D-CPU□□S.

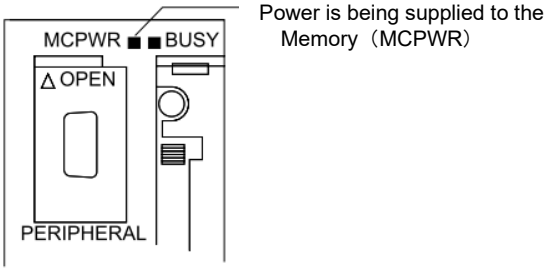
(2) Turn on the DIP switch (SW7) on the front.

(3) Press the Memory Card Power Supply Switch for 3 seconds.



(4) Pressing the Memory Card Power Supply Switch for 3 seconds blinks the LED light (MCPWR) 1 time.

The LED light blinks while the data is being transferred into the memory card. Once the data storage is completed, the LED light turns off.



4.3. Replace the unit to CS1D-CPU□□SA

(1) Turn off the power of the equipment.

(2) Remove the CS1D-CPU□□S from the CPU Backplane (CS1D-BC082S).

Also remove the INNER board and the memory card from the CPU unit.

(3) Attach the CS1D-CPU□□SA to the CPU Backplane (CS1D-BC082S).

Place the INNER board and the memory card inside the replaced CPU unit.

4.4. Write the data stored in the Memory Card into CS1D-CPU□□SA

(1) Insert the Memory Card into the CS1D-CPU□□SA.

(2) Turn on the DIP switch (SW7) on the front.

(3) Turn on the power of the CPU unit.

(4) Turning on the power blinks the LED light (MCPWR) 1 time.

The LED light blinks while the data is being written into the CPU unit. After the writing is completed, the LED light turns off.

(5) Turn off the DIP switch (SW7) on the front.

5. Using the CX-Programmer

5.1. Supported Tools

CX-Programmer Ver.9.7 or later versions can connect to both CPU units. Depending on the selected CPU version, the desired CX-Programmer version may not be available. Carefully select the version of CX-Programmer to meet your functions used with CS1D-CPU□□S.

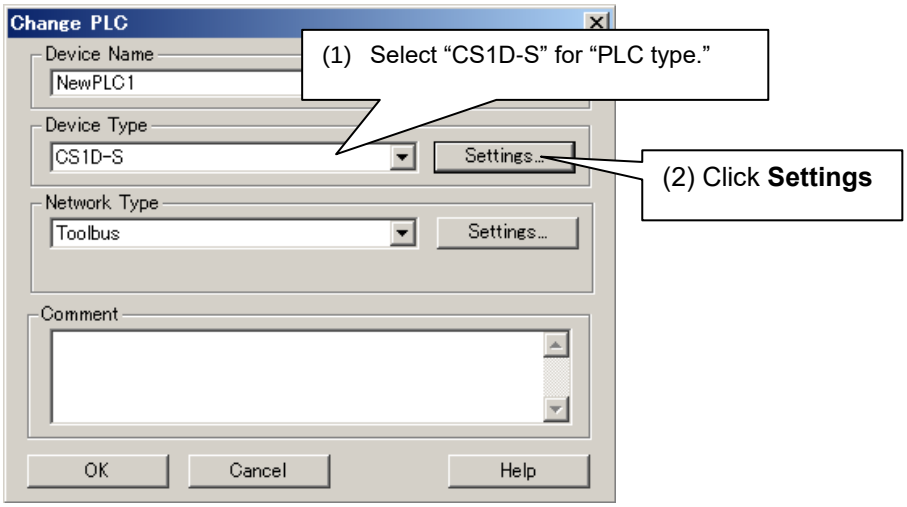
5.2. Read the data stored in CS1D-CPU□□S (using the CX-Programmer)

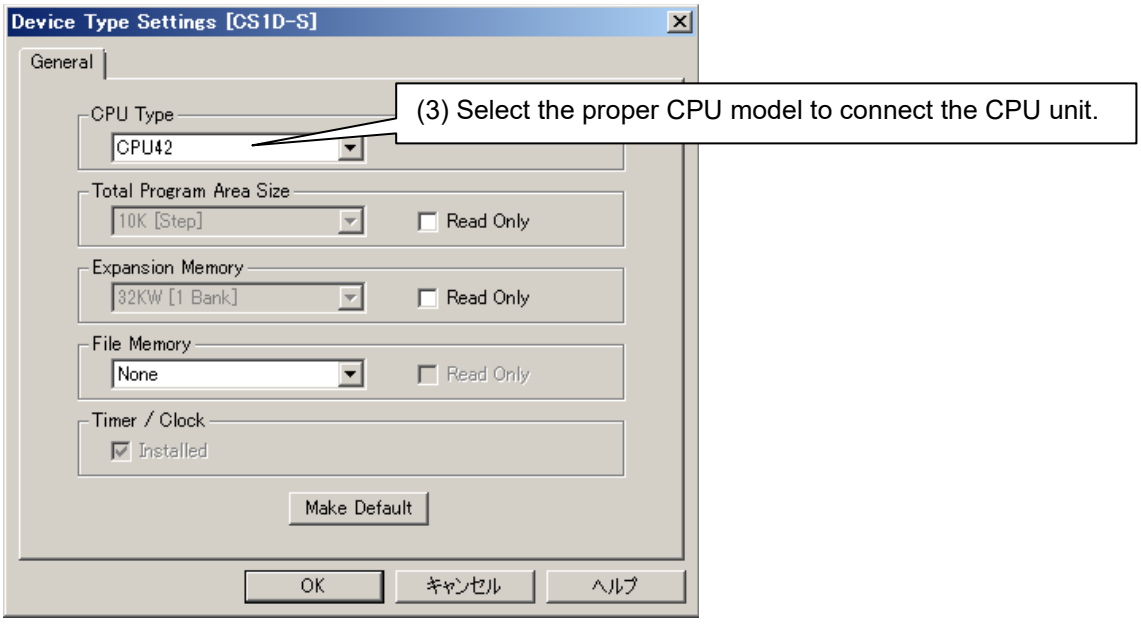
Read the ladder programs, PLC system settings, and the data memory stored in the CS1D-CPU□□S using the CX-Programmer.

(1) Connect the CS1D-CPU□□S to a PC with connection cables for peripheral tools.

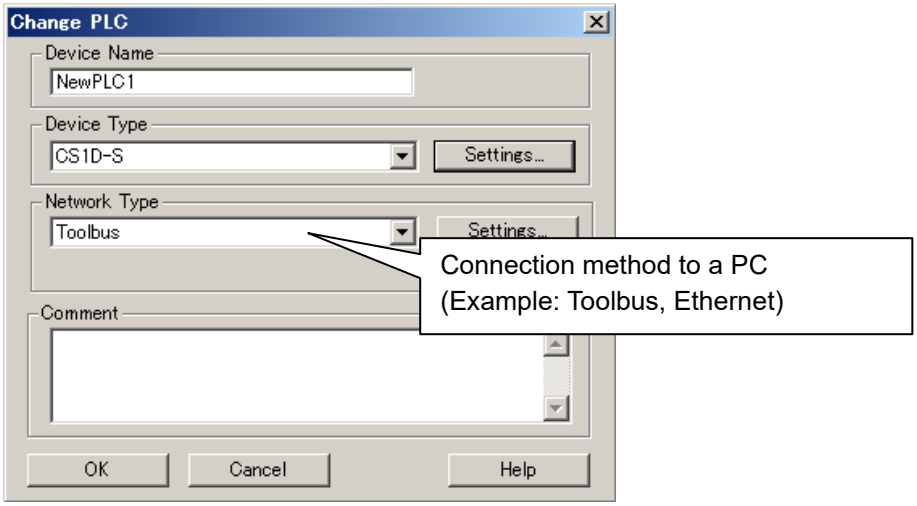
(2) Start the CX-Programmer. (***Start menu - Program - OMRON - CX-One - CX-Programmer - CX-Programmer***)

(3) Select “CS1D-CPU□□S (CS1D-S)” for “PLC type.” (***File – New…***)



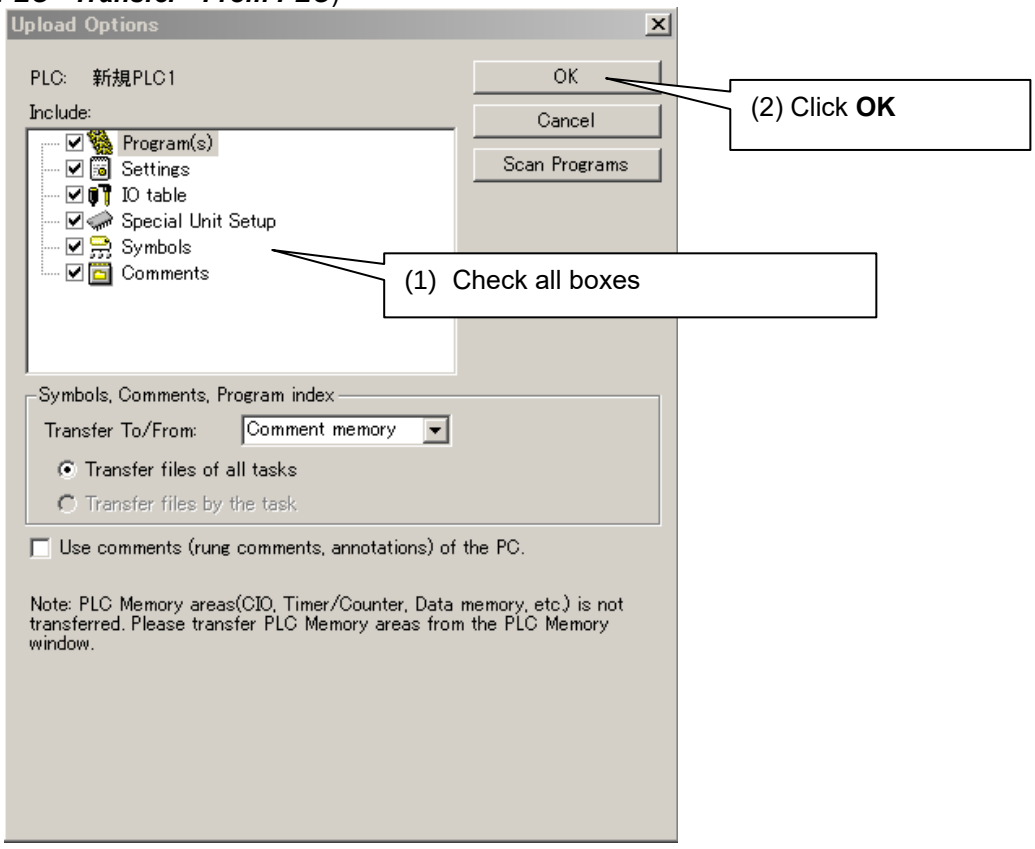


(4) Select the connection method to a PC.

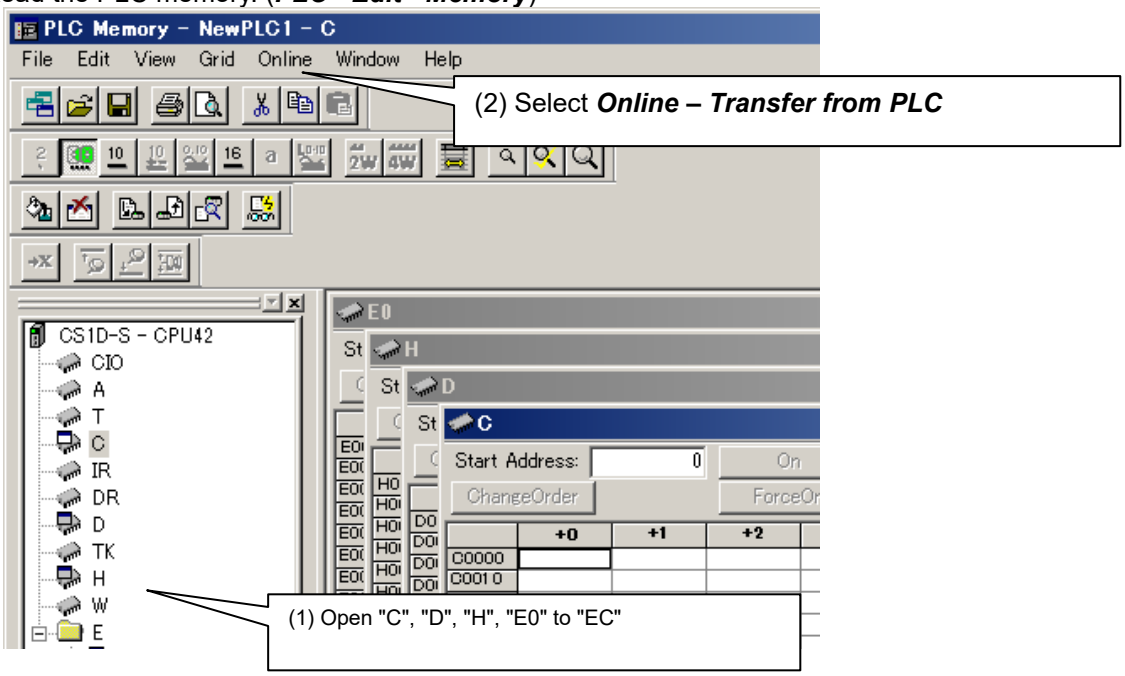


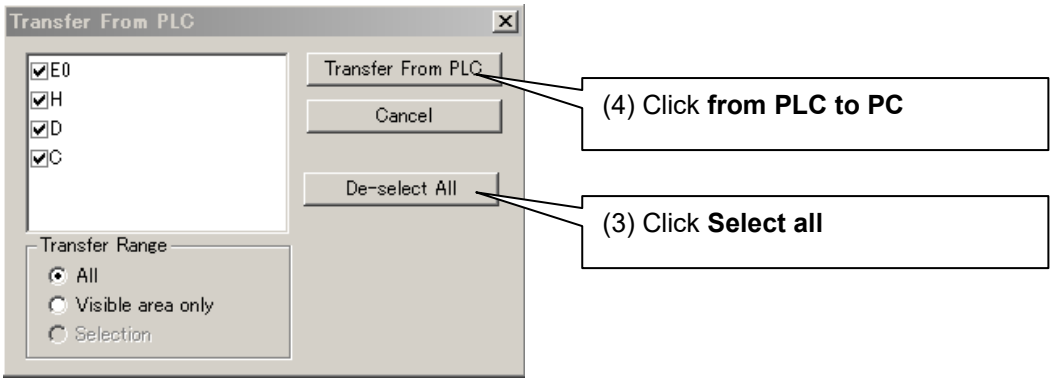
(5) Connect the PLC with online. (***PLC – Work online***)

(6) Read programs, PLC system settings, I/O table, CPU BUS unit settings, variable table, and comments.
(***PLC - Transfer - From PLC***)



(7) Read the PLC memory. (***PLC - Edit - Memory***)





(8) Change the status of the CX-Programmer to offline. (***PLC - Work online***)

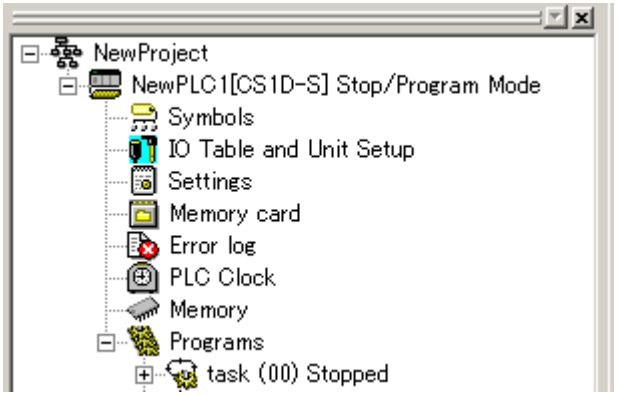
(9) Save the PLC memory as a file and name it. (***File - Save as…***)

(10) Stay open the CX-Programmer. (to use later)

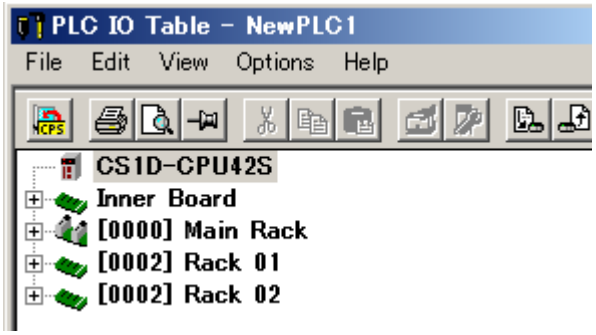
5.3. Read the routing table stored in the CS1D-CPU□□S (using the CX-Integrator)

Read the routing table stored in the CS1D-CPU□□S using the CX-Integrator.

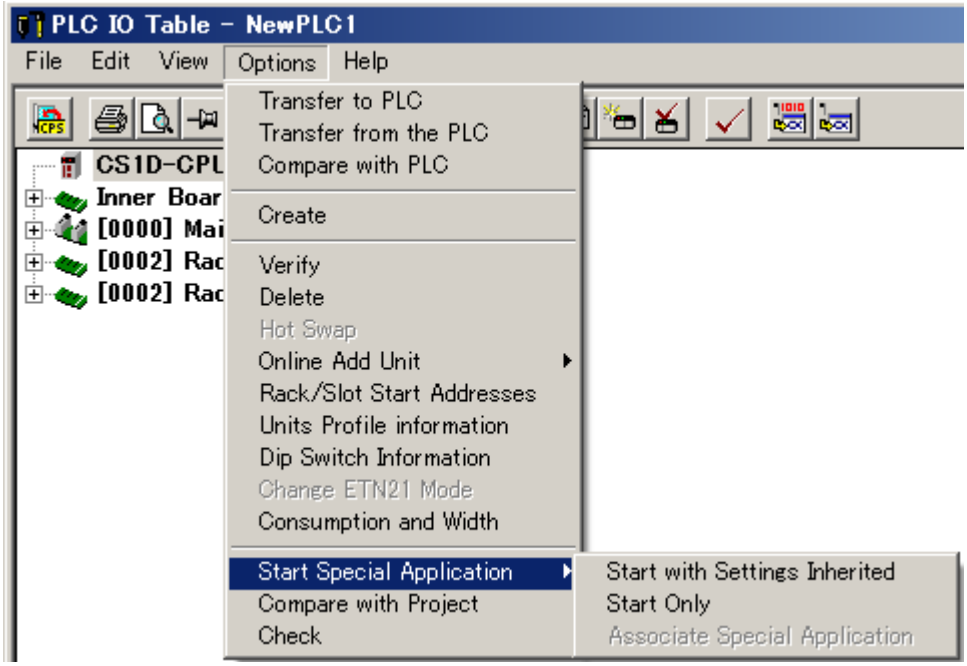
(1) Double-click **I/O Table and Unit setup** from the workspace of the CX-Programmer to open the I/O table.



(2) Select the PLC from the I/O table.

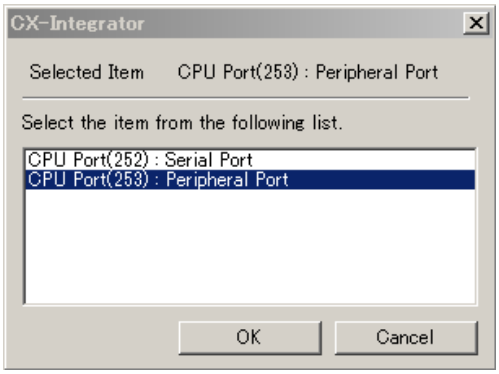


(3) Start the CX-Integrator. (***Options - Start Special Application - Start with Settings Inherited***)

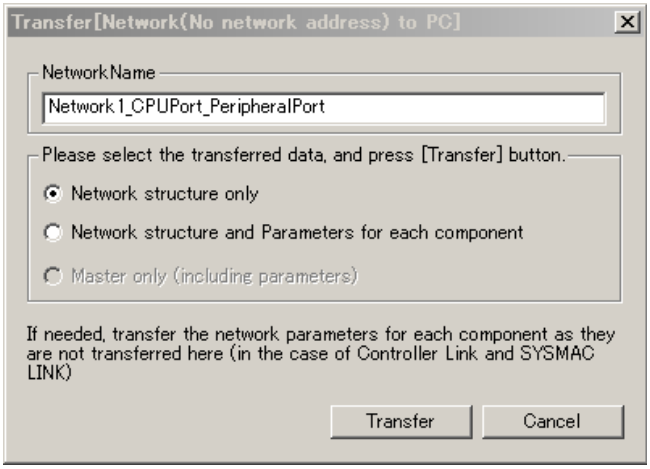


(4) The CX-Integrator starts.

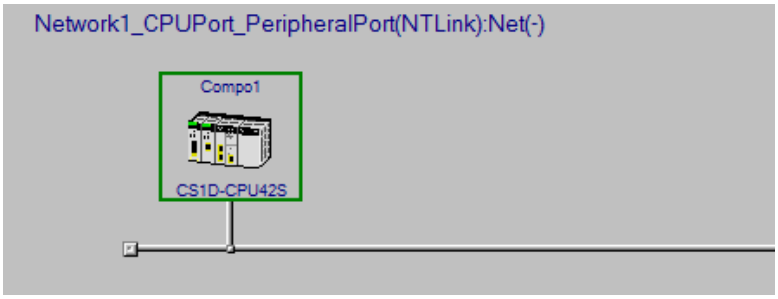
(5) Select the port connecting to the PC.



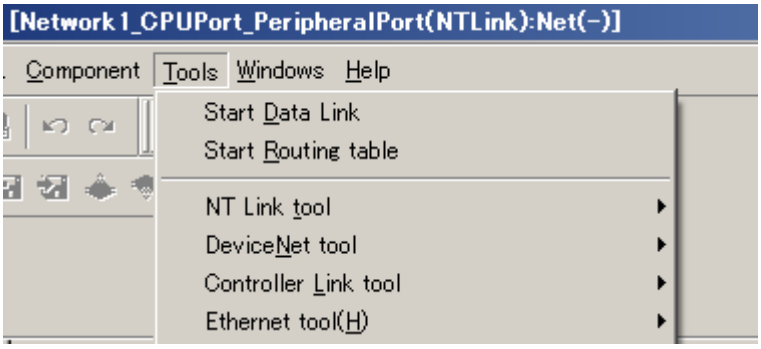
(6) Select the **Network structure only** and click **Transfer.**



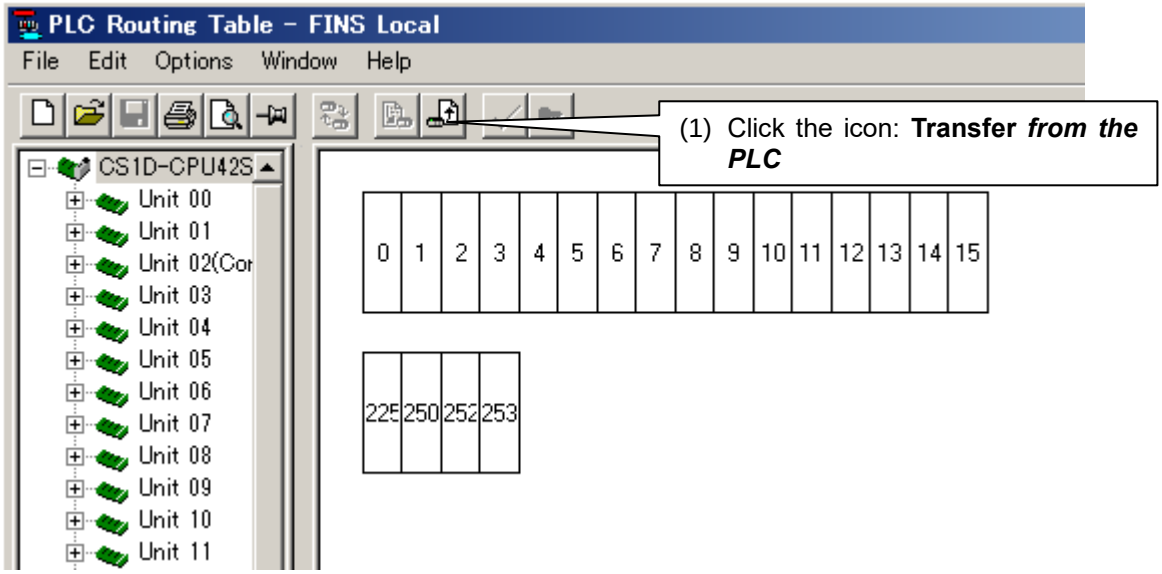
Following image is displayed.

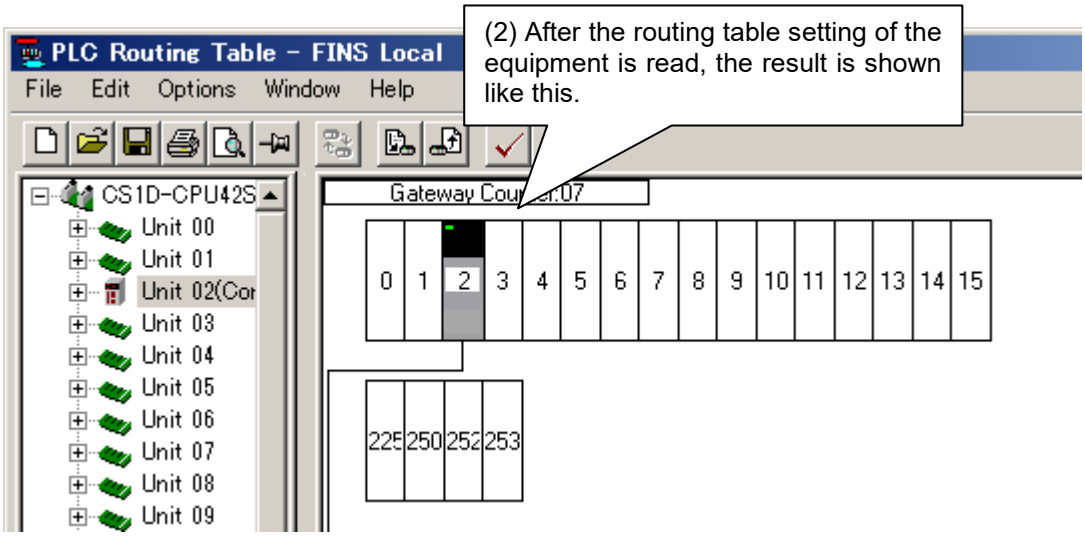


(7) Start the routing table setting tool. (***Tools – Start Routing Table***)



Following window is displayed.

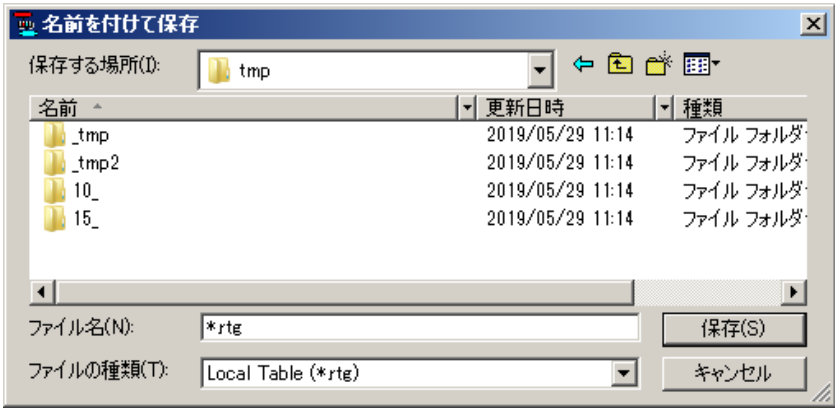




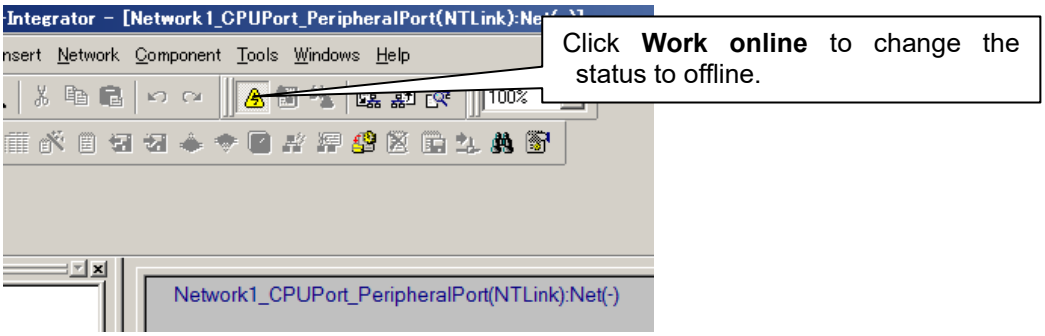
【Notes】If the unit does not have the routing table setting, no changes are shown on the table.

(8) Close the routing table setting page. (***File – Exit***)

Save the routing table as a file and name it as you like.



(9) Change the status of the CX-Integrator to offline.



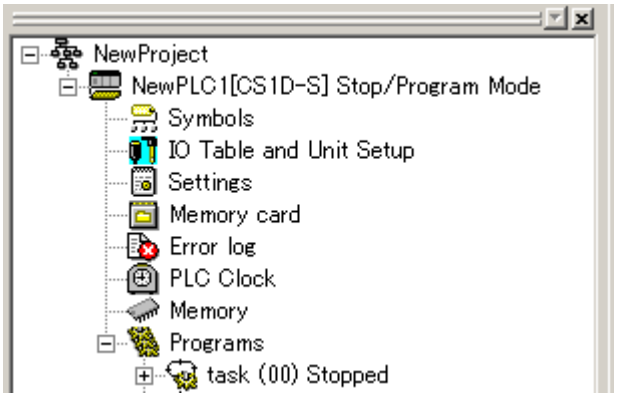
(10) Close the CX-Integrator. (***File – Exit***)

Do you want to save changes to new project? Click **No.**

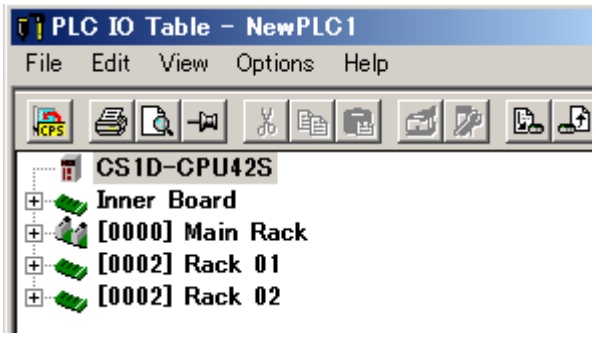
5.4. Read the data link table stored in the CS1D-CPU□□S (using the CX-Integrator)

Read the data link table stored in the CS1D-CPU□□S using the CX-Integrator.

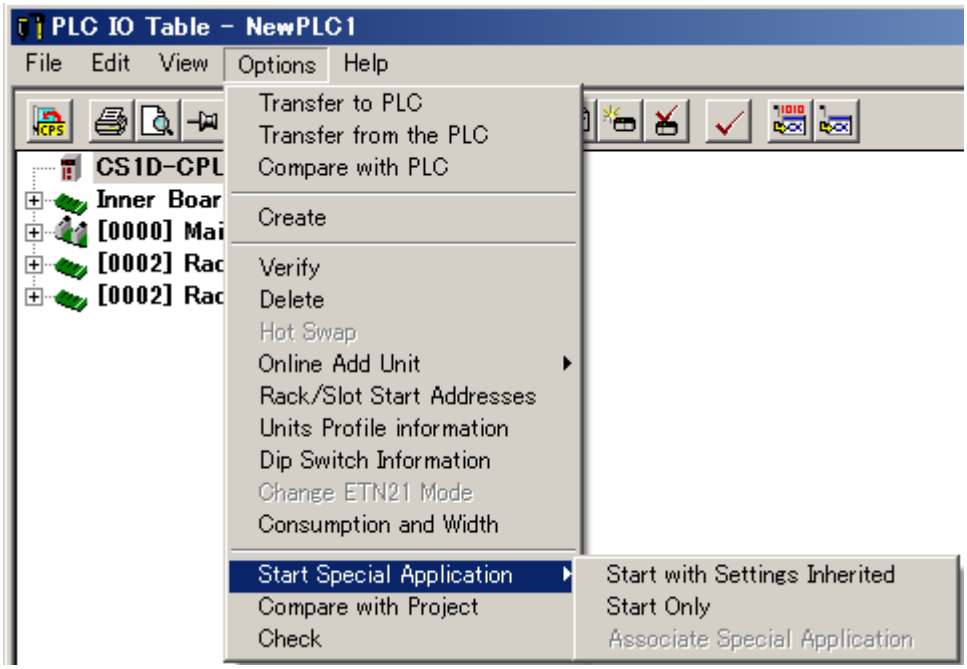
（1）Double-click **I/O Table and Unit setup** from the workspace of the CX-Programmer to open the I/O table.



（2）Select the PLC from the I/O table.

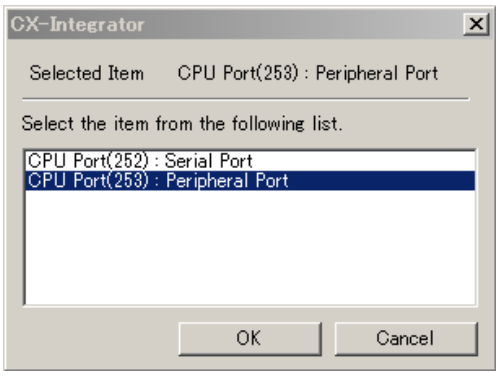


（3）Start the CX-Integrator. (***Options – Start Special Application - Start with Settings Inherited***)

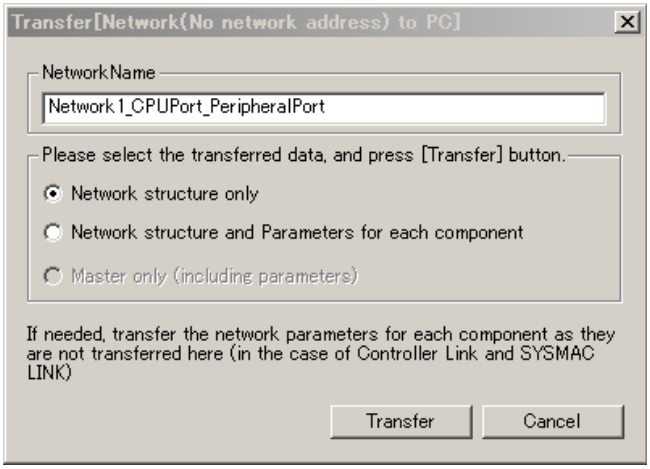


(4) The CX-Integrator starts.

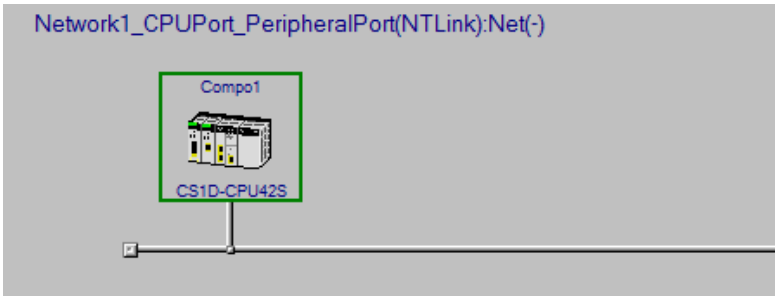
(5) Select the port connecting to the PC.



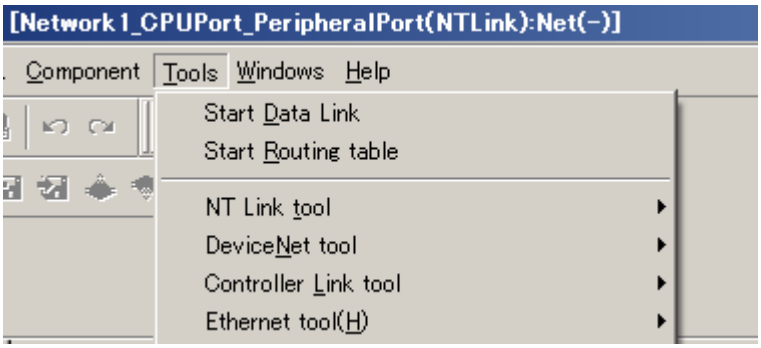
(6) Select **Network structure only** and click **Transfer.**



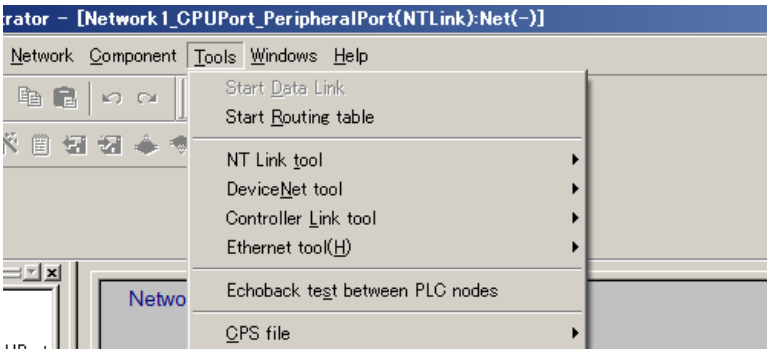
Following image is displayed.



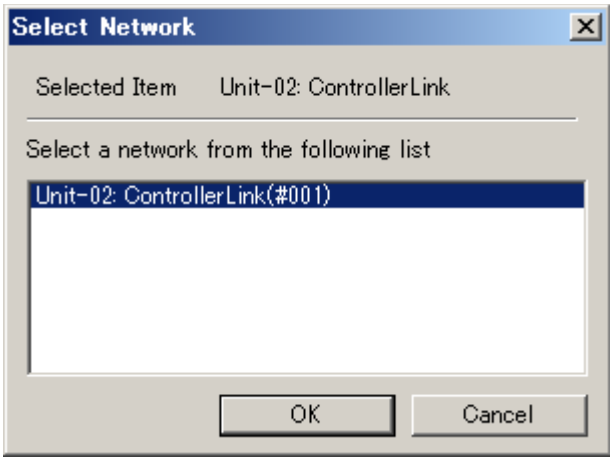
(7) Open the data link table setting tool from the CX-Integrator. (***Tools – Start Data link***)



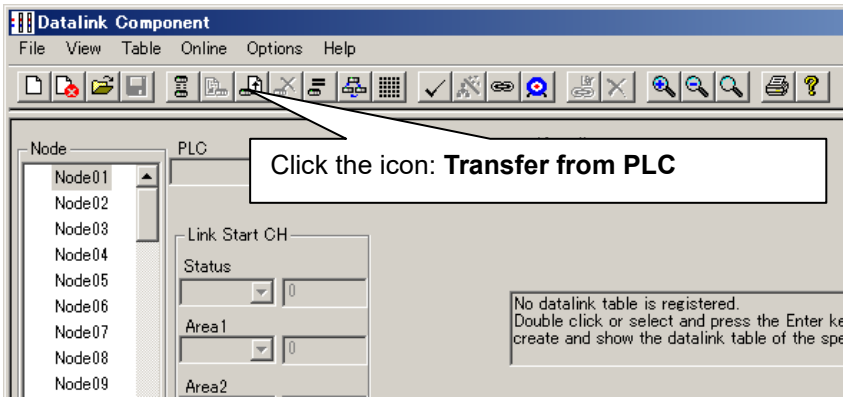
If the data link table setting is not required for the configuration, the data link table setting tool is grayed-out. Skip the following procedures.



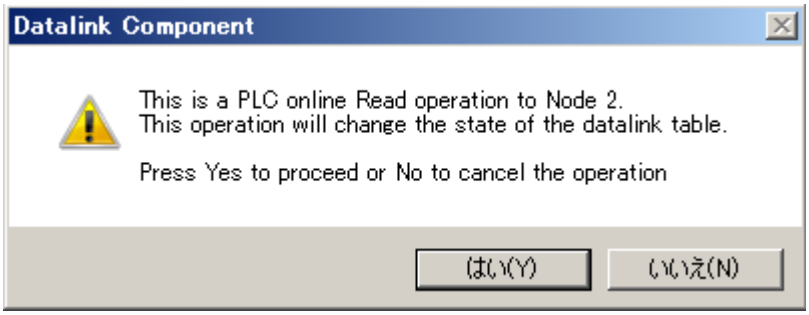
Select the network to read the data link table.



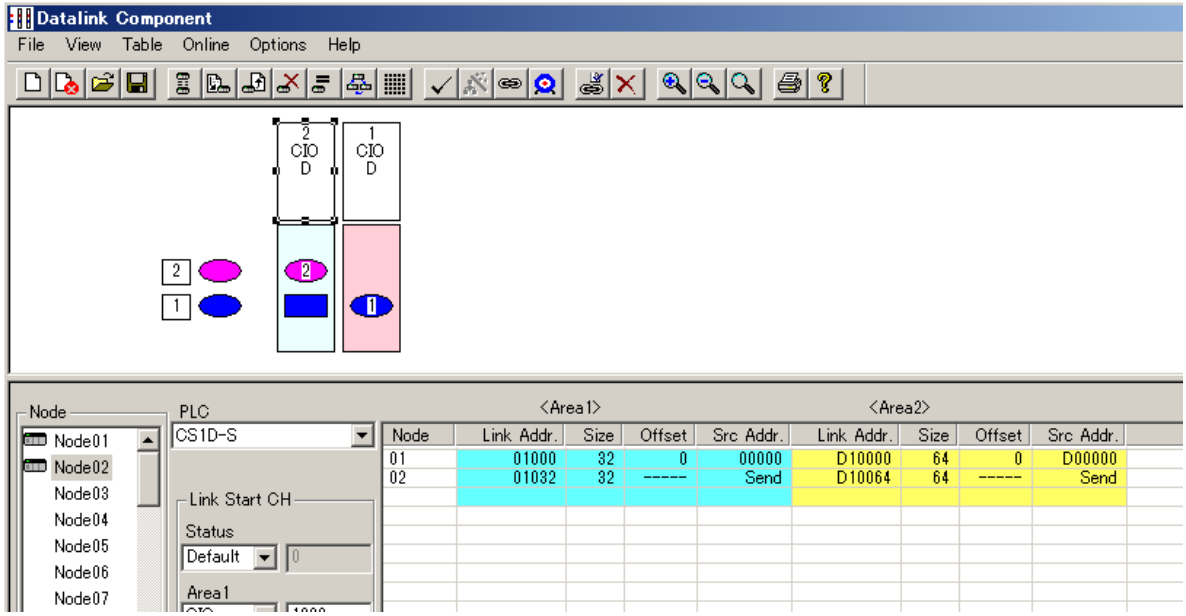
Following window is displayed.



Click **Yes**.

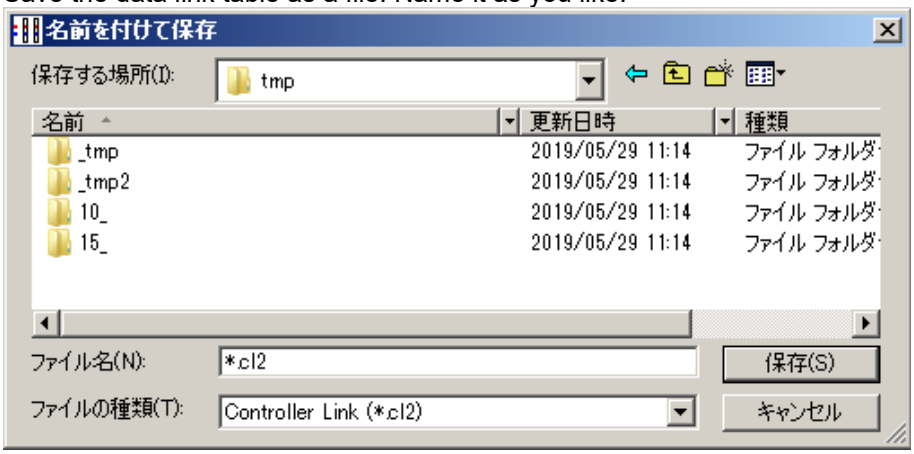


After the data link table setting is read, the following image is displayed.

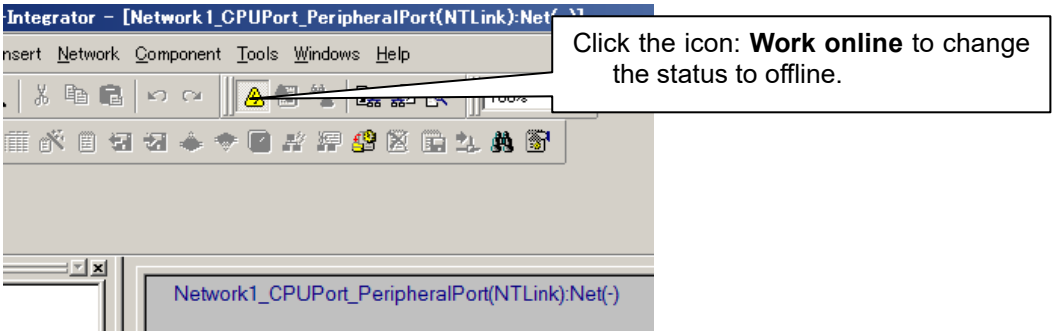


(8) Close the data link table setting. (***File – Exit***)

Save the data link table as a file. Name it as you like.



(9) Change the status of CX-Integrator to offline.



(10) Close the CX-Integrator. (***File – Exit***)

Do you want to save changes to new project? Click **No.**

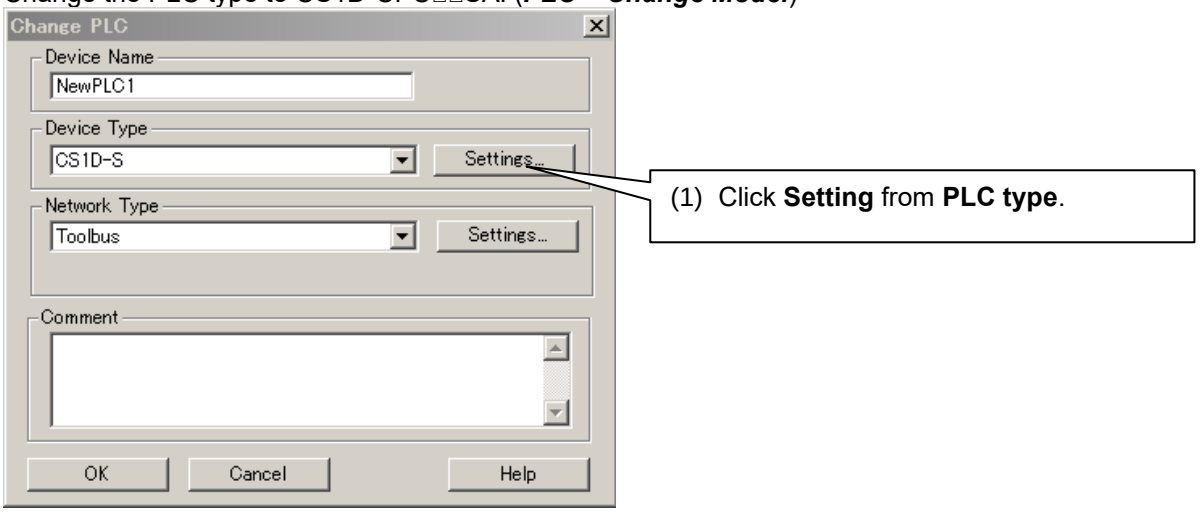
(11) If you use several networks in the CPU unit, read each data link table setting, individually.

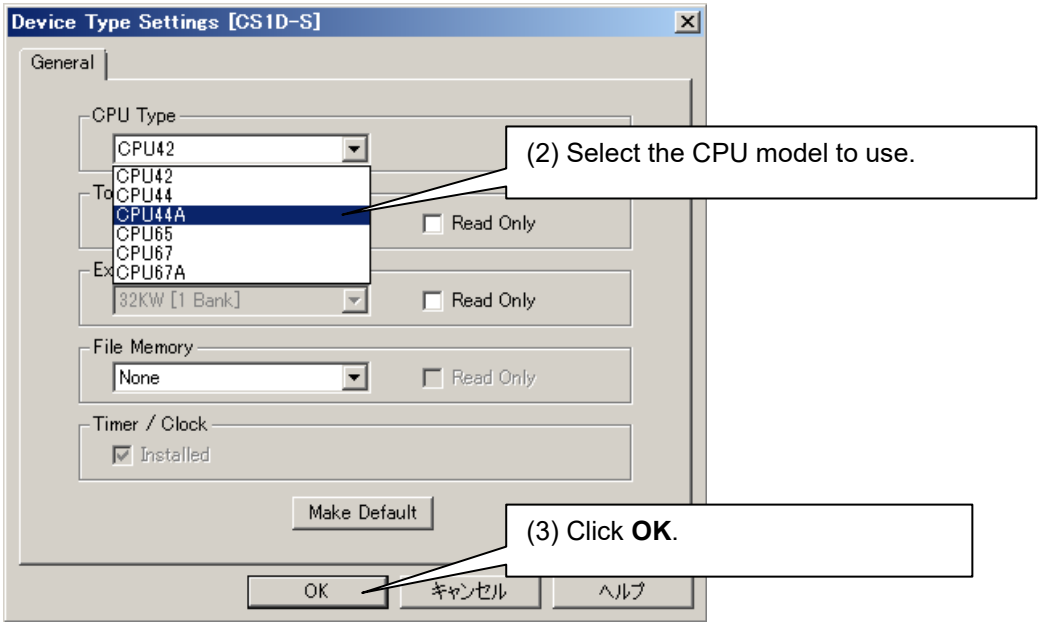
Carry out the step (1) through (10) described in the section 6. It takes several minutes.

5.5. Convert and modify the programs to be used in CS1D-CPU□□SA

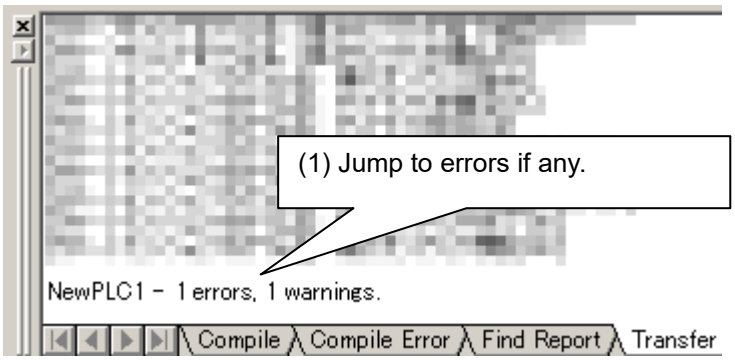
Convert and modify the programs to be used in CS1D-CPU□□SA with CX-Programmer.

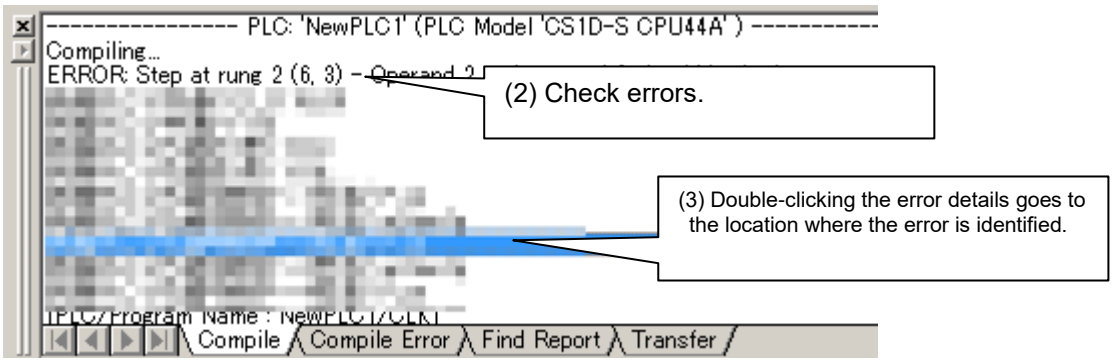
(1) Change the PLC type to CS1D-CPU□□SA. (***PLC – Change Model***)





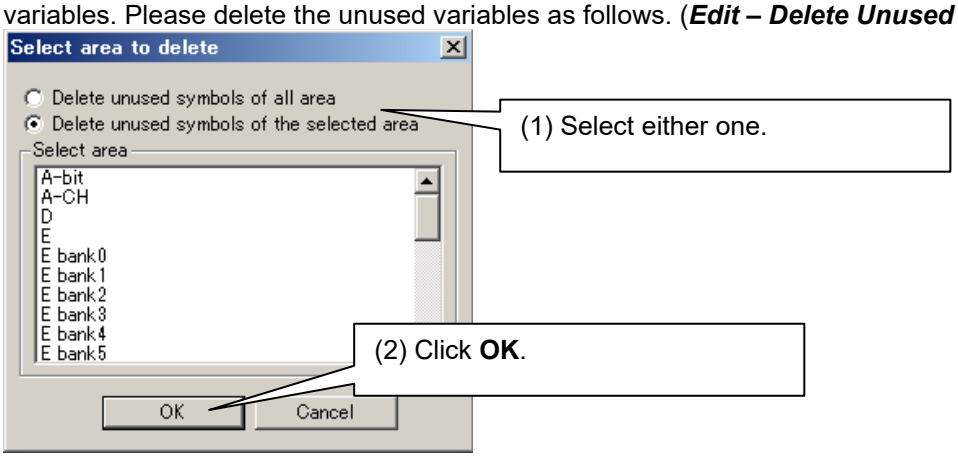
(2) The program check function (Compilation) runs because the PLC type was changed. The result is displayed on the output window. Any errors to be corrected.





【Notes】

If an error (any address is not assigned to the variable) occurs, the original program might include unused variables. Please delete the unused variables as follows. (***Edit – Delete Unused symbols***)



(3) Program check function (Compilation) runs again. Any errors to be corrected.
(***Program – Compile (Program check)***) Repeat this procedure until no errors found.

(4) Save as a file and name it. (***File – Save as…***)

(5) Stay open the CX-Programmer. (to use later)

5.6. Replace the unit to CS1D-CPU□□SA

(1) Turn off the equipment.

(2) Remove the CS1D-CPU□□S from the CPU Backplane (CS1D-BC082S).

(3) Attach the CS1D-CPU□□SA to the CPU Backplane (CS1D-BC082S).

(4) Check the unit is firmly attached to the equipment, and turn on the power.

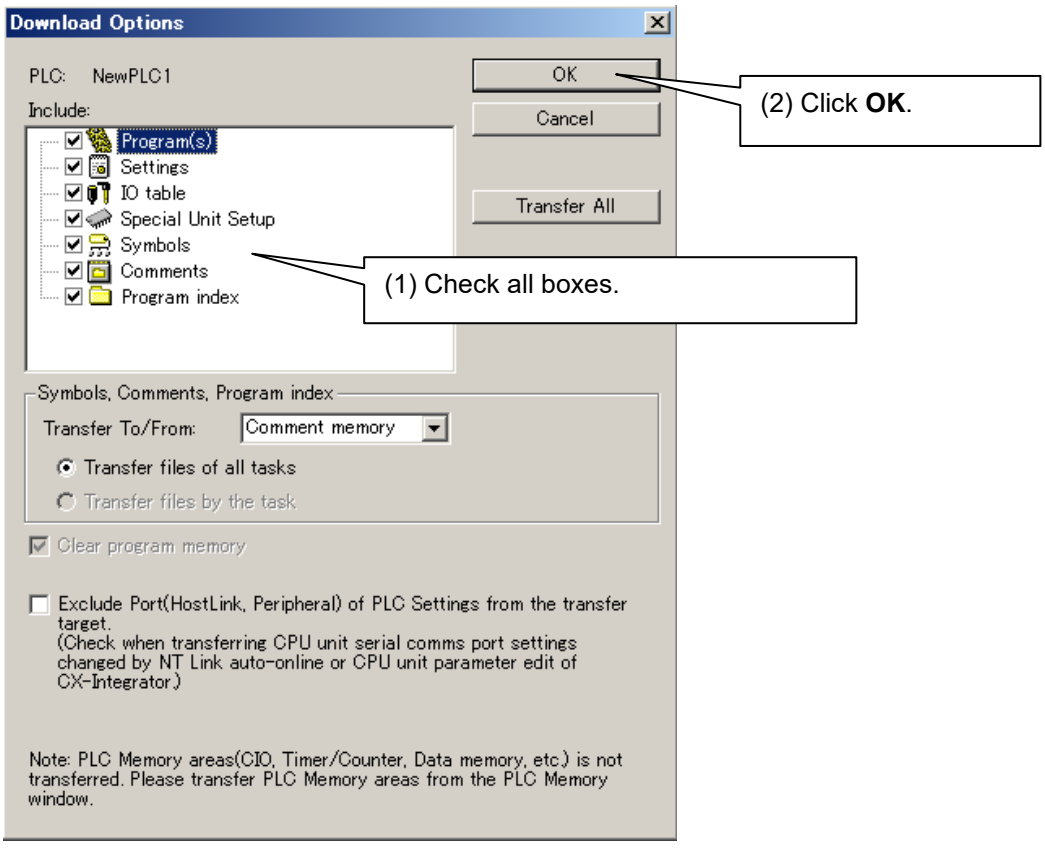
5.7. Write data into CS1D-CPU□□SA. (CX-Programmer)

Write ladder programs, PLC system settings, and the data memory into the CS1D-CPU□□SA using the CX-Programmer.

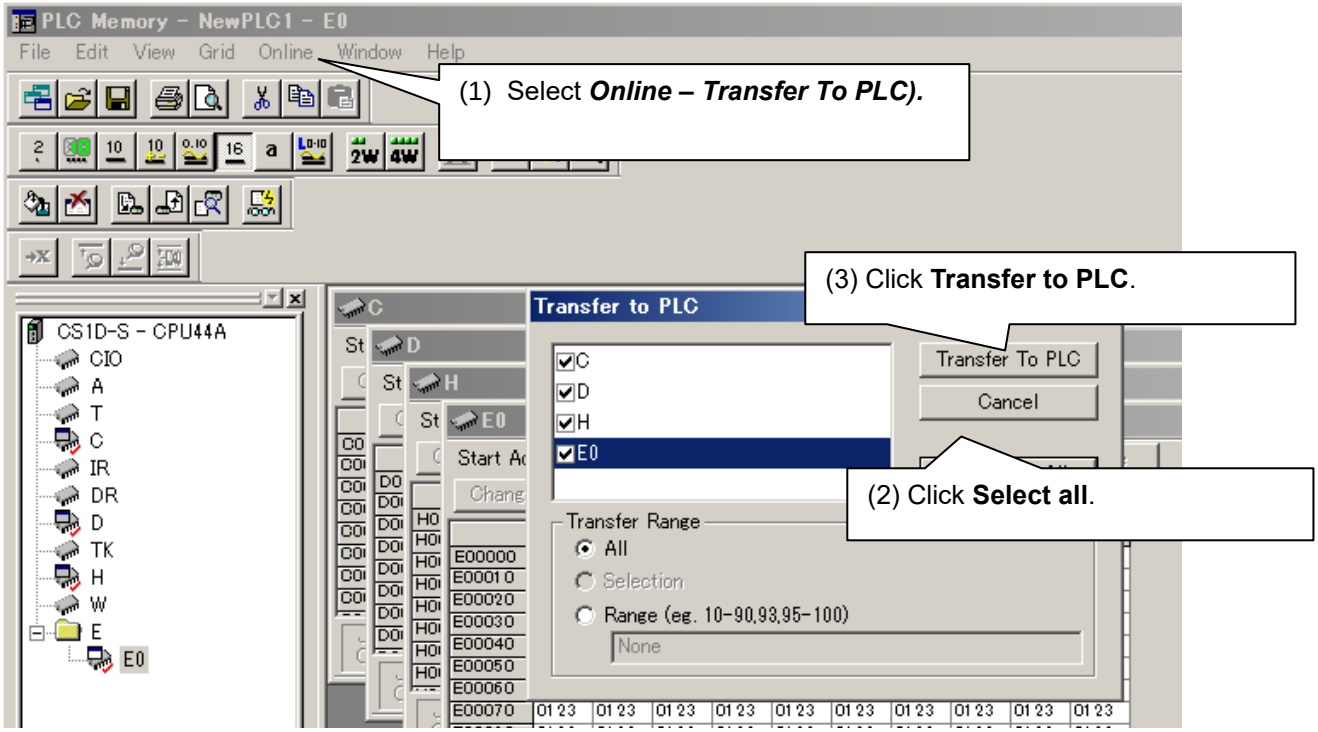
(1) Connect the CS1D-CPU□□SA to a PC with connection cables for peripheral tools.

(2) Connect the PLC to online (***PLC – Work online***)

(3) Transfer programs, PLC system settings, I/O table, CPU BUS unit settings, variable table, comments, and program index. (***PLC – Transfer –To PLC***)



(4) Transfer the PLC memory. (***PLC – Edit –Memory***)

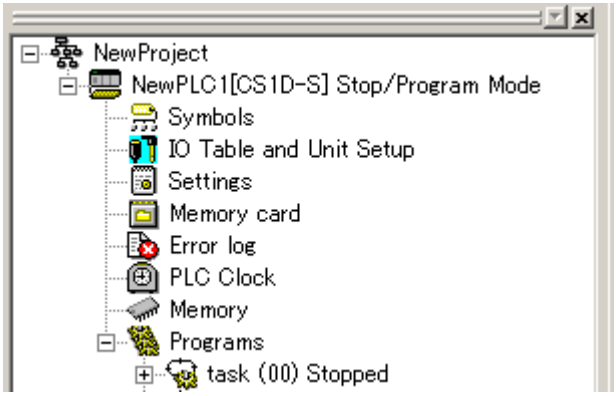


(5) Change the status of CX-Programmer to offline. (***PLC – Work online***)

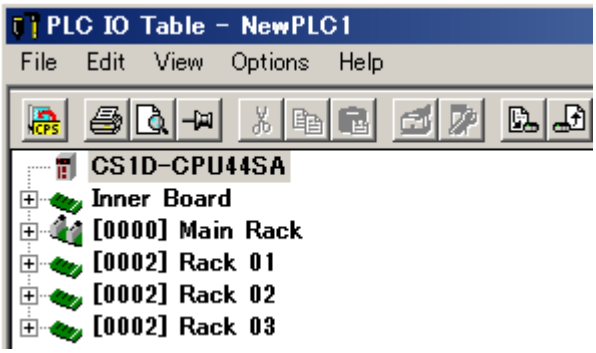
5.8. Write the routing table into CS1D-CPU□□SA (CX- Integrator)

Write the routing table into the CS1D-CPU□□SA using the CX-Integrator.

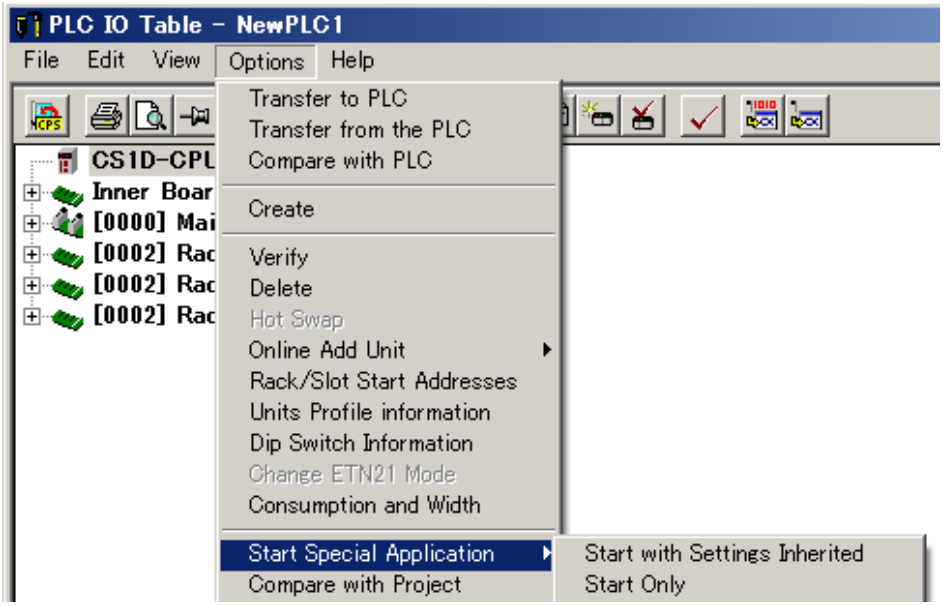
(1) Double click **I/O Table and Unit setup** from the workspace of the CX-Programmer to open the I/O table.



(2) Select the PLC from the I/O table.

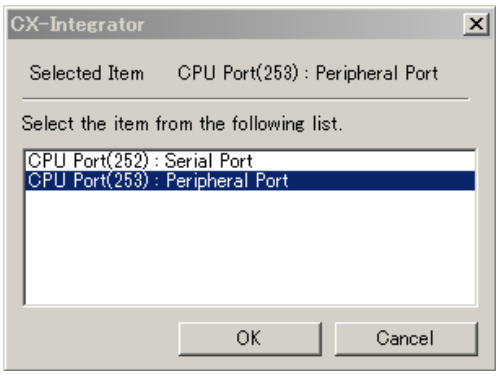


(3) Start the CX-Integrator. (***Options – Start Special Application - Start with Settings Inherited***)

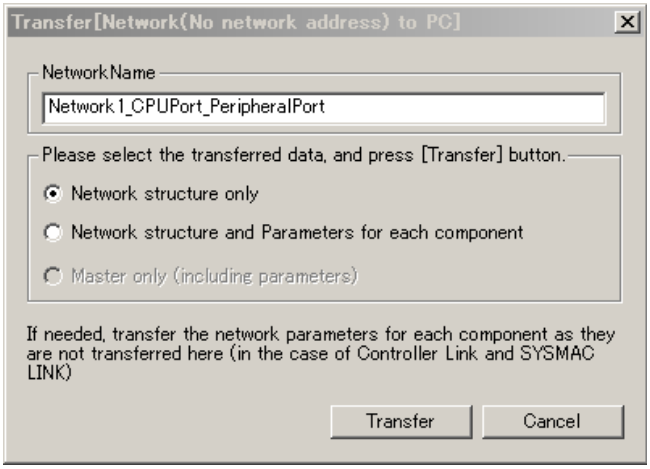


(4) The CX-Integrator starts.

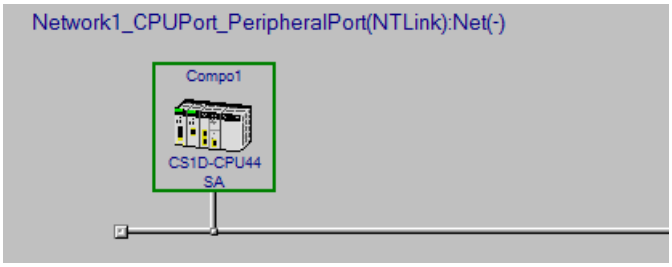
(5) Select the port connecting to the PC.



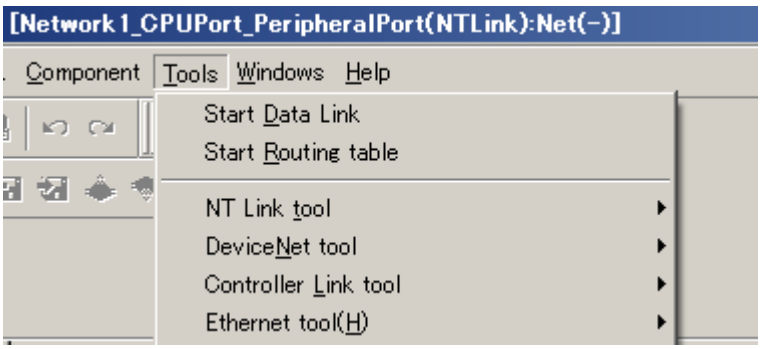
(6) Select **Network structure only** and click **Transfer.**

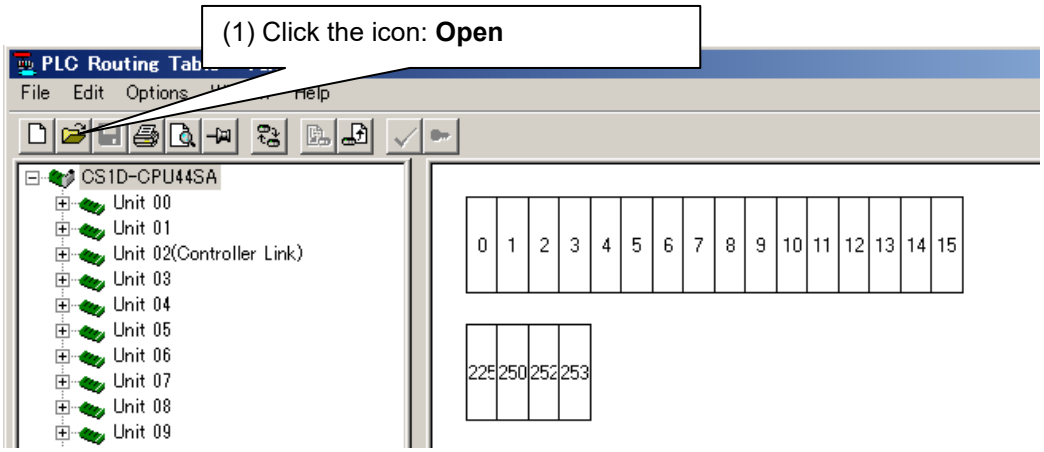


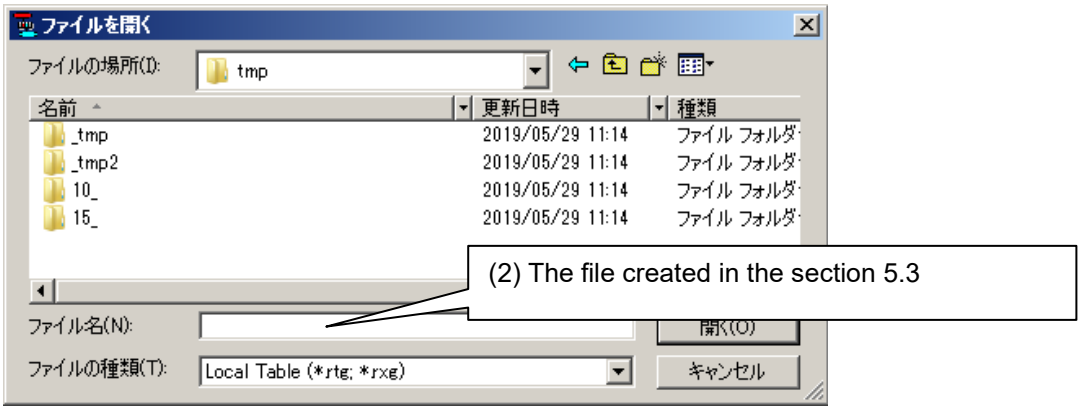
Following image is displayed.

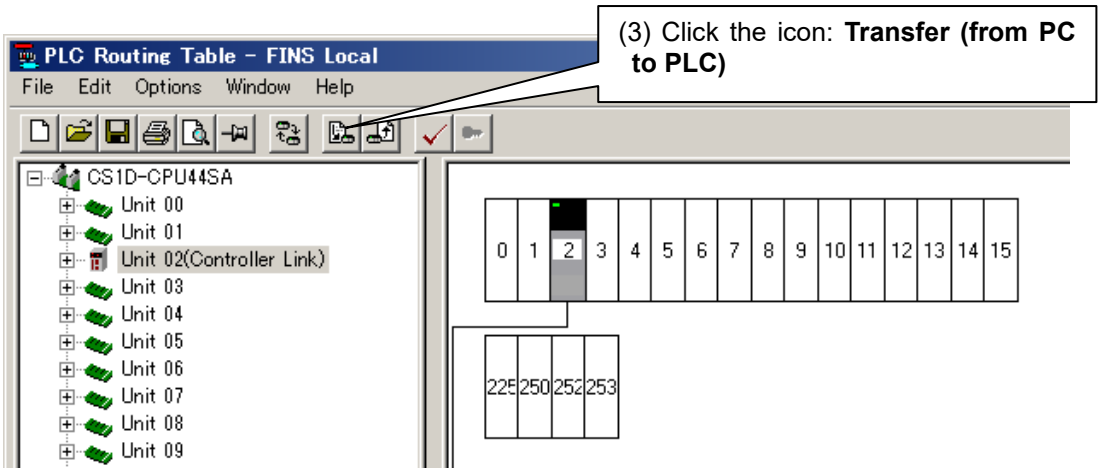


(7) Start the routing table setting tool. (***Tools –Start Routing table***)

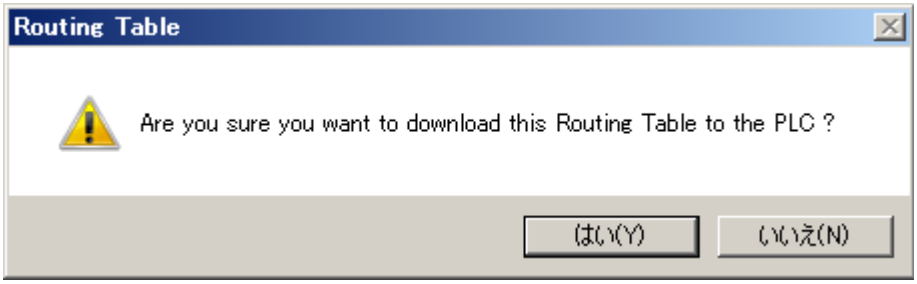




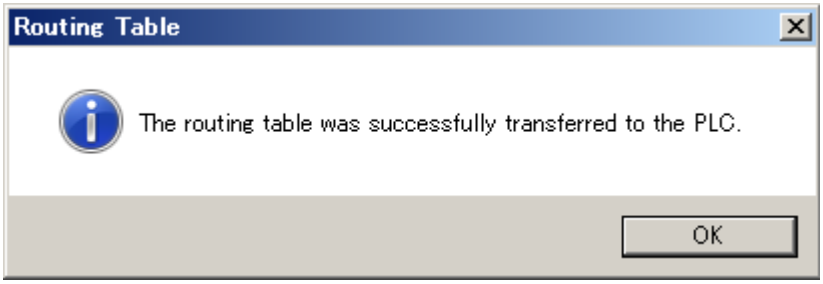




Click **Yes.**

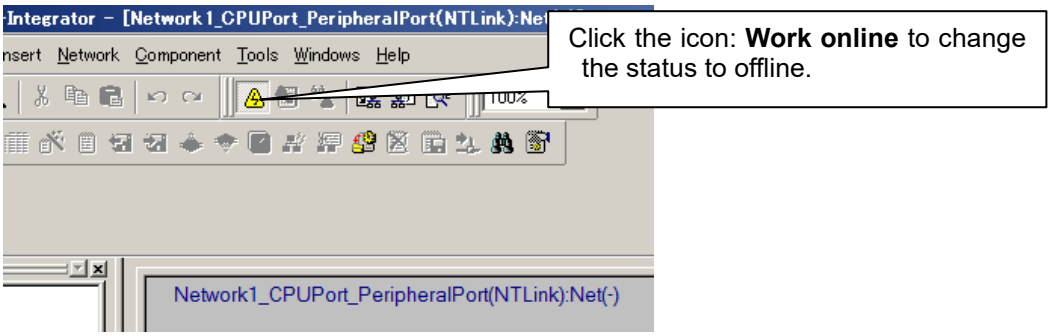


Following window is displayed when the data has been transferred correctly.



(8) Close the routing table settings. (***File – Exit***)

(9) Change the status of CX-Integrator to offline.



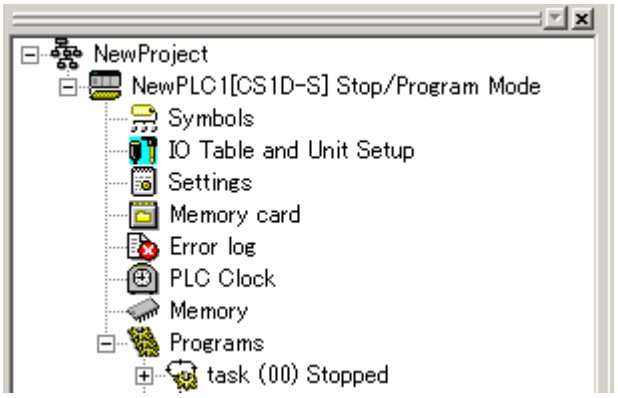
(10) Close the CX-Integrator. (***File – Exit***)

Do you want to save changes to new project? Click **No.**

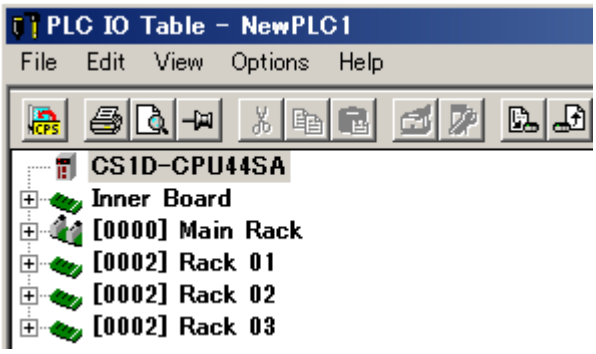
5.9. Write the data link table into CS1D-CPU□□SA (CX- Integrator)

Write the data link table stored in the CS1D-CPU□□S into the CS1D-CPU□□SA using the CX-Integrator.
If it is not required to read the data link table in this section, skip the following procedures.

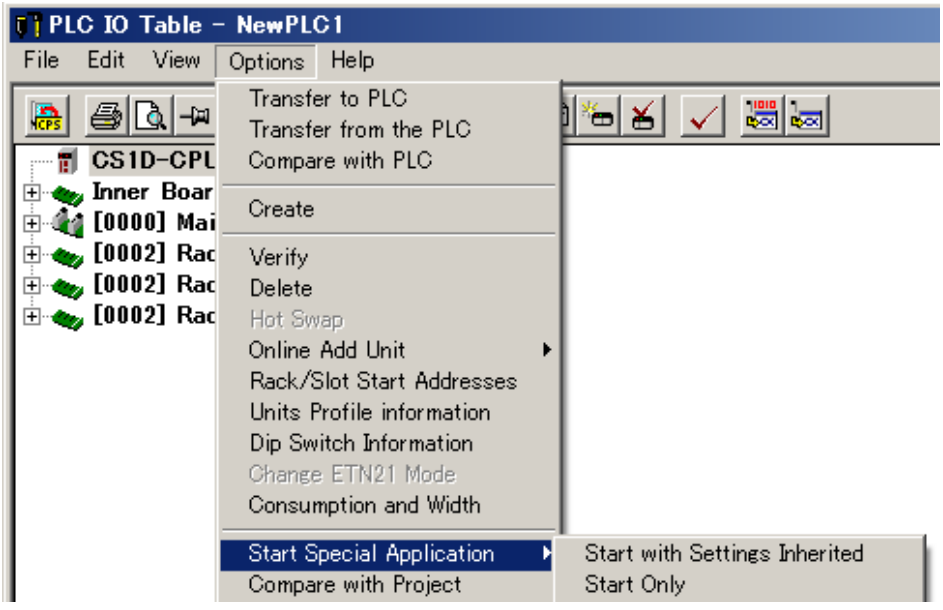
（1）Double-click the I/O Table and the Unit setup from the workspace of the CX-Programmer to open the I/O table.



（2）Select the PLC from the I/O table.

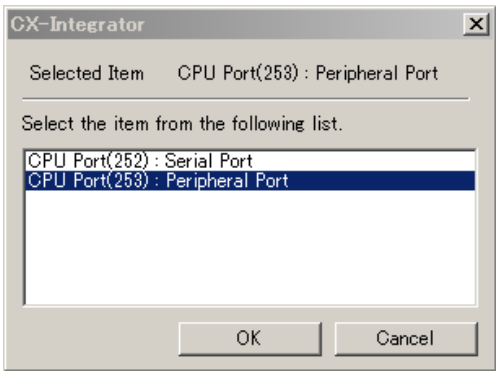


（3）Start the CX-Integrator. (***Options – Start Special Application - Start with Settings Inherited***)

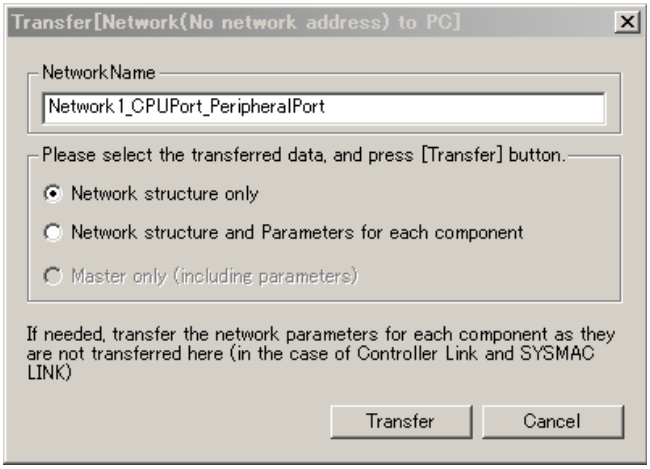


(4) The CX-Integrator starts.

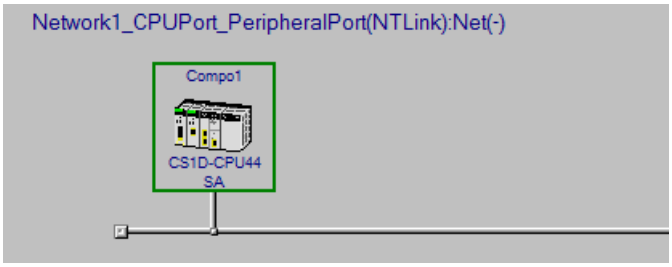
(5) Select the port connecting to the PC.



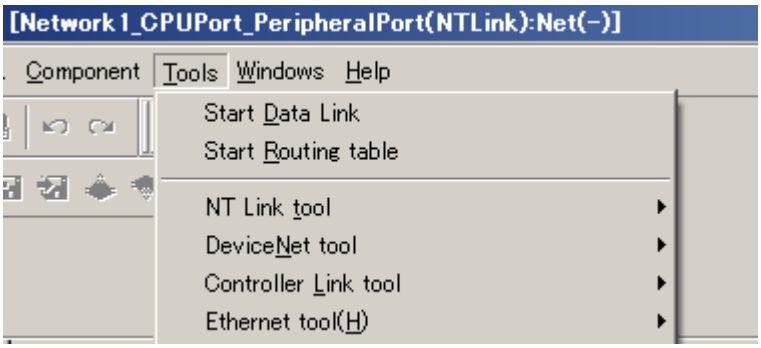
(6) Select **Network structure only** and click **Transfer.**



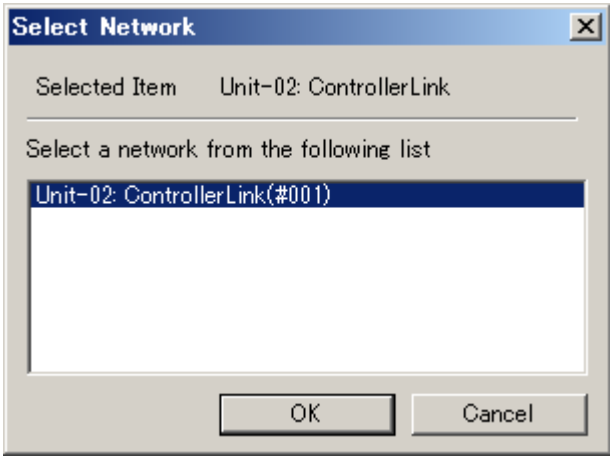
Following image is displayed.



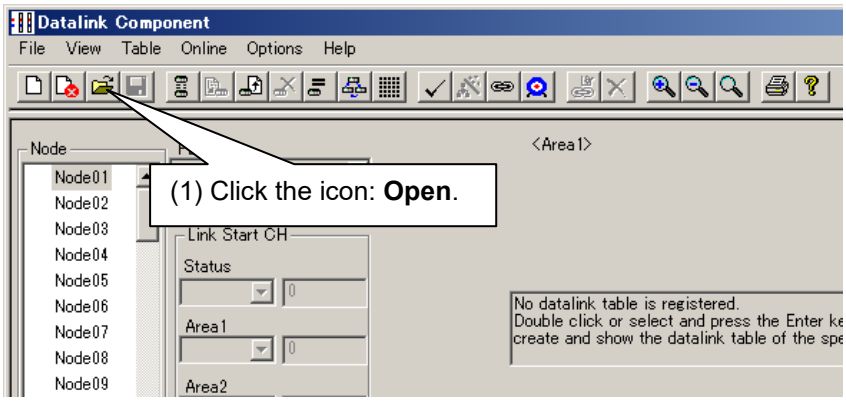
(7) Select **Data link table setting tool** of the CX-Integrator. (***Tools –Start Data Link***)

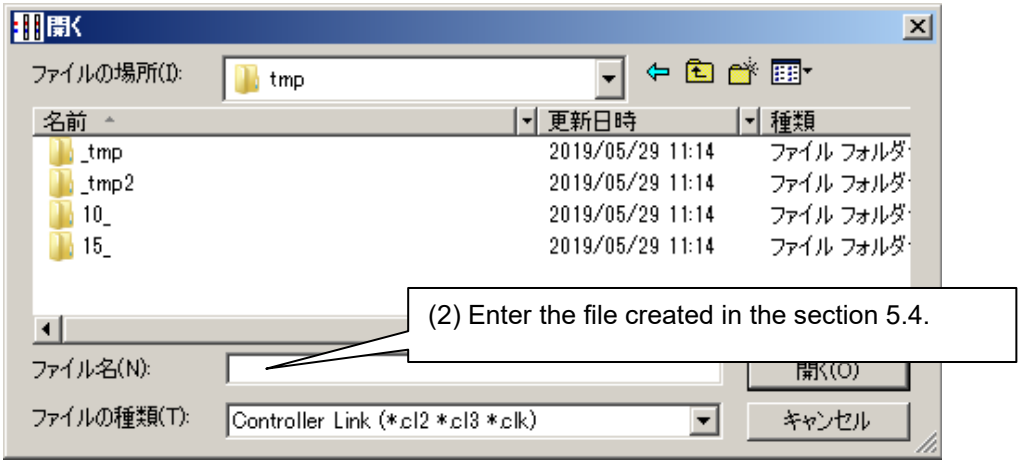


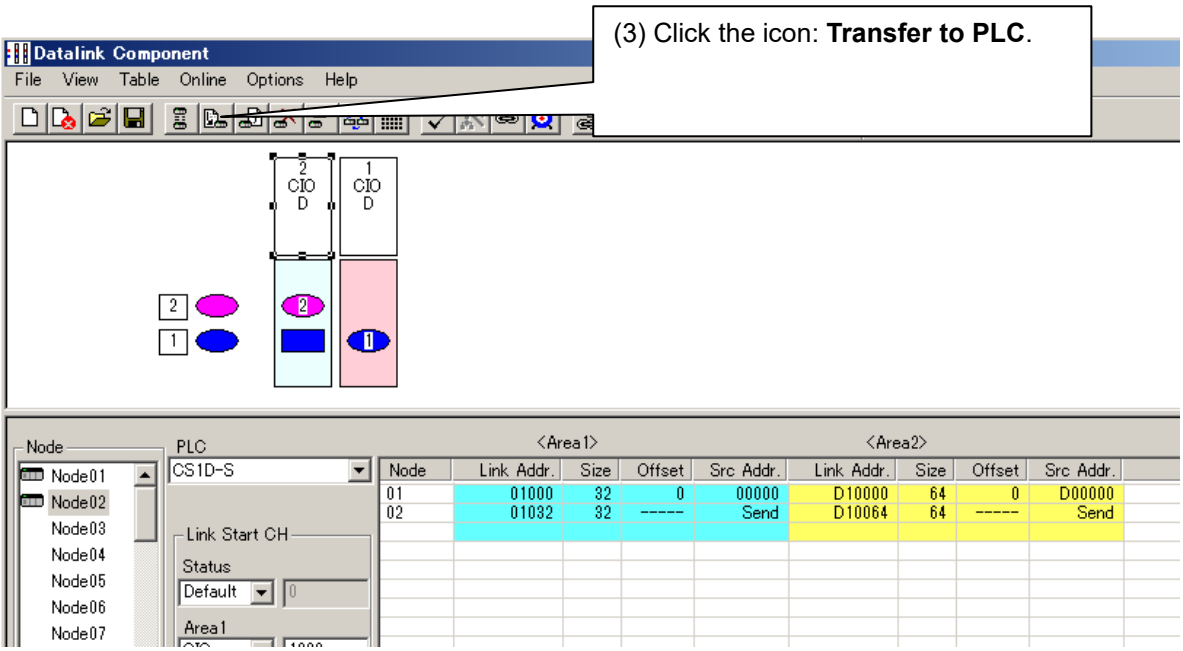
Select the network to read the data link table.



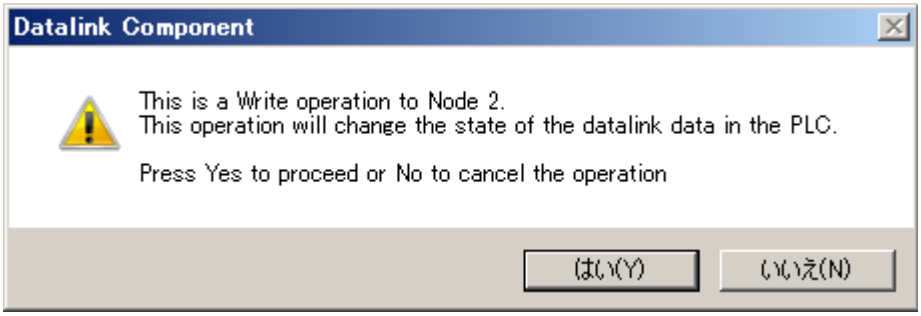
Following image is displayed.



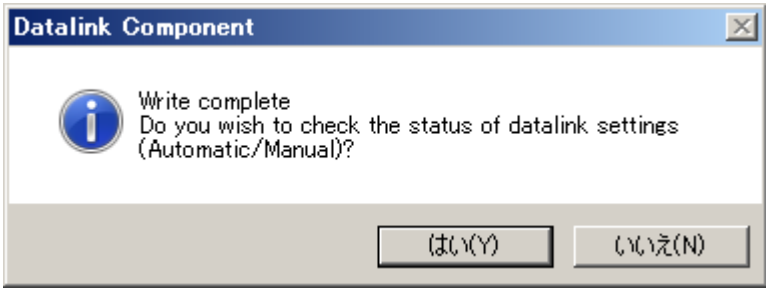

開く
ファイルの場所(I):
tmp
名前
更新日時
種類
_tmp
2019/05/29 11:14
ファイル フォルダ
_tmp2
2019/05/29 11:14
ファイル フォルダ
10_
2019/05/29 11:14
ファイル フォルダ
15_
2019/05/29 11:14
ファイル フォルダ
(2) Enter the file created in the section 5.4.
ファイル名(N):
開く(O)
ファイルの種類(T):
Controller Link (*.cl2 *.cl3 *.clk)
キャンセル


(3) Click the icon: **Transfer to PLC**.
Datalink Component
File View Table Online Options Help
2 CIO D
1 CIO D
Node
PLC
CS1D-S
Node01
Node02
Node03
Node04
Node05
Node06
Node07
Link Start CH
Status
Default
Area1
<Area1>
<Area2>
Node Link Addr. Size Offset Src Addr. Link Addr. Size Offset Src Addr.
01 01000 32 0 00000 D10000 64 0 D00000
02 01032 32 ----- Send D10064 64 ----- Send

Click **Yes.**

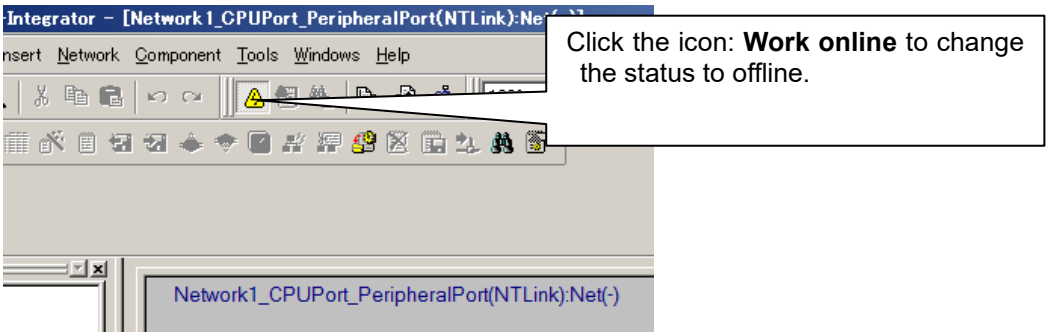

Datalink Component
This is a Write operation to Node 2.
This operation will change the state of the datalink data in the PLC.
Press Yes to proceed or No to cancel the operation
はい(Y)
いいえ(N)

Following window is displayed when the routing table has been transferred correctly.



(8) Close the Data link table setting. (***File – Exit***)

(9) Change the status of CX-Integrator to offline.



(10) Close the CX-Integrator. (**File – Exit**)

Do you want to save changes to new project? Click **No.**

(11) If you use several networks in the CPU unit, read each data link table setting, individually.

Carry out the step 1 through 10 described in the section 5. It takes several minutes

OMRON Corporation **Industrial Automation Company**
Kyoto, JAPAN

Contact: www.ia.omron.com

Regional Headquarters
OMRON EUROPE B.V.
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC
2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
No. 438A Alexandra Road # 05-05/08 (Lobby 2),
Alexandra Technopark,
Singapore 119967
Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

Authorized Distributor:

Cat. No. P146-E1-01 0121 (0121)