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

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CS1D-CPU□□S Replacement Guide

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

Document Change Summary

REV.	PAGES	REMARKS	DATE	AUTH
A	---	New Creation		

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	44/67S: 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

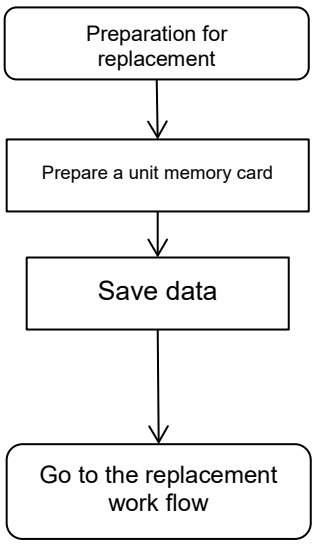
There are two replacement methods.

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

(2) Using the CX-Programmer

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

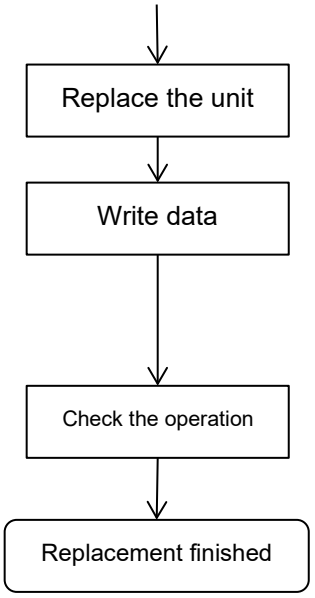
1. Before replacement



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

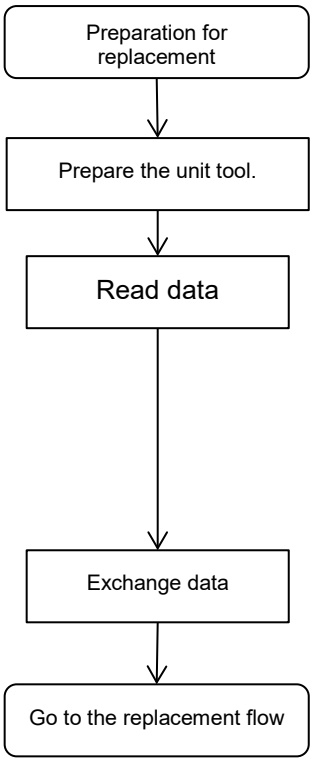


Description	Reference pages
Be sure to turn off the power before replacing the unit.	4.3. Replace the unit of the equipment to S1D-CPU□□SA.
Insert the memory card the CPU unit to write the data in the card to the unit.	4.4. Write the data in the memory card to CS1D-CPU□□SA.
Turn on the power and check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

Figure 2-2: Replacement flow using a memory card

2.2. Using the CX-Programmer

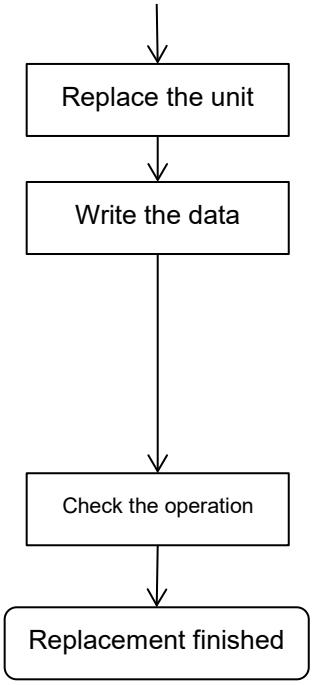
1. Before replacement



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

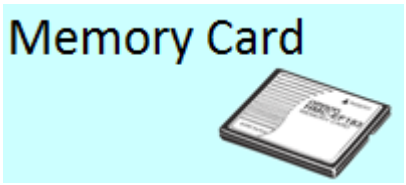
The other units and power supply used for CS1D-CPU□□S can be used for CS1D-CPU□□SA.

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).

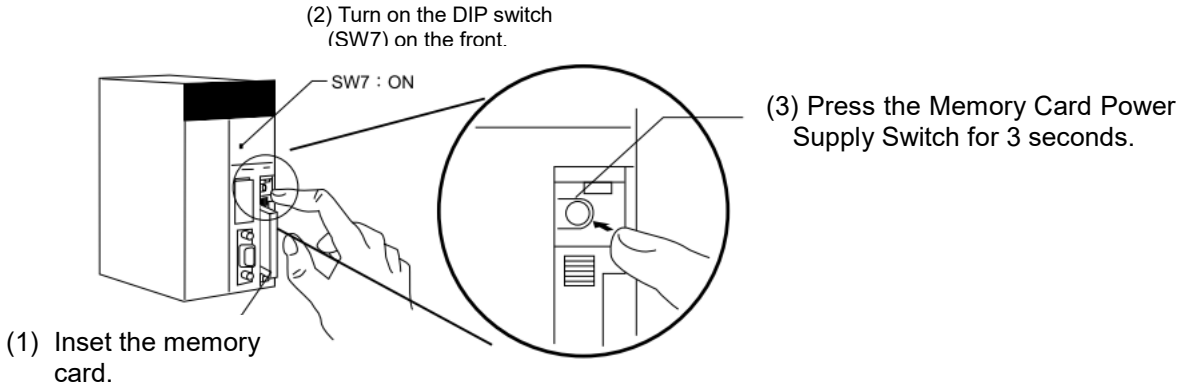


4.2. Move the data stored in CS1D-CPU□□S to the memory card

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

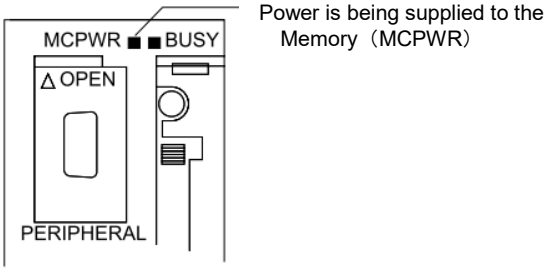
(2) Turn on the DIP switch (SW7) on the front.

(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.

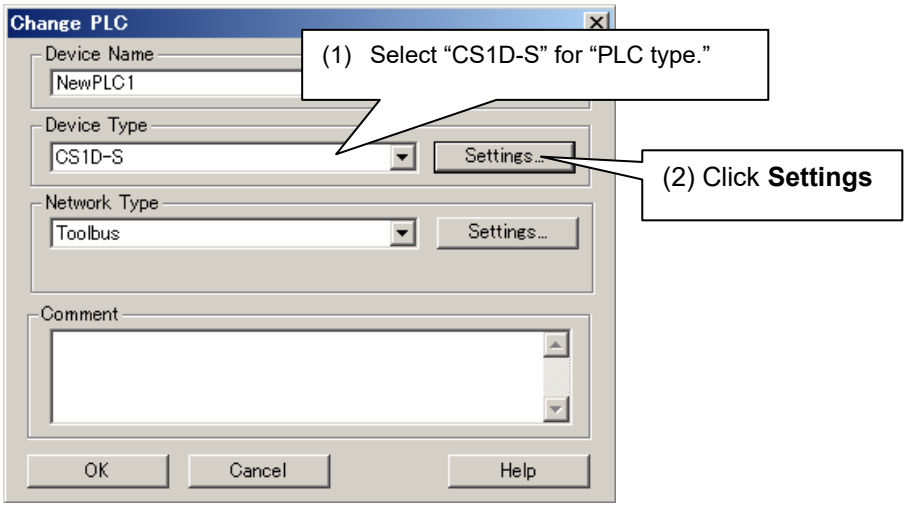
5.2. Read the data stored in CS1D-CPU□□S (using the CX-Programmer)

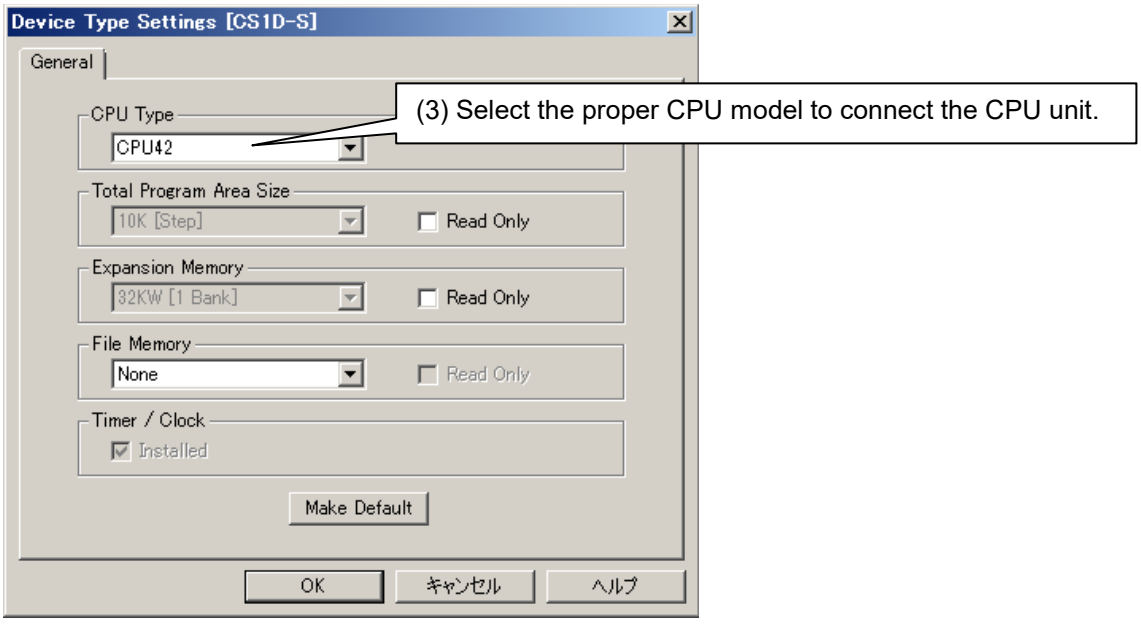
Read the ladder programs, PLC system settings, and the data memory stored in the CS1D-CPU□□S using the CX-Programmer.

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

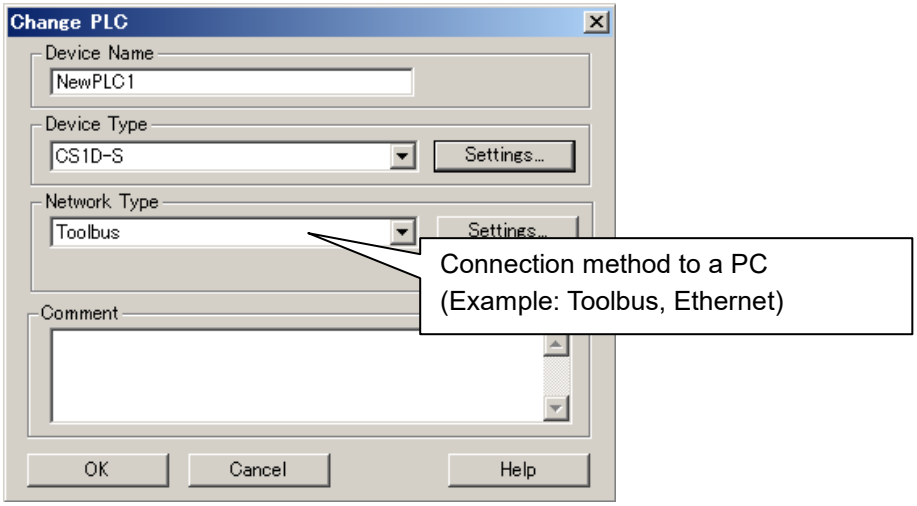
(2) Start the CX-Programmer. (***Start menu - Program - OMRON - CX-One - CX-Programmer - CX-Programmer***)

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





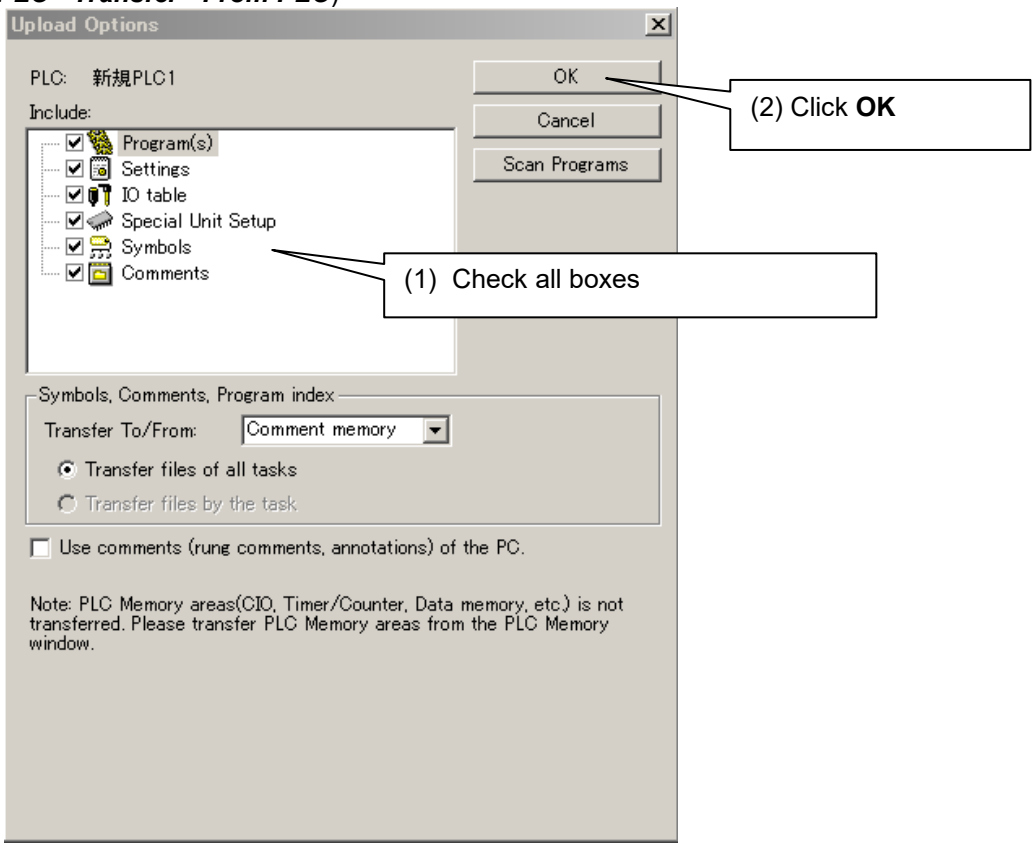
(4) Select the connection method to a PC.



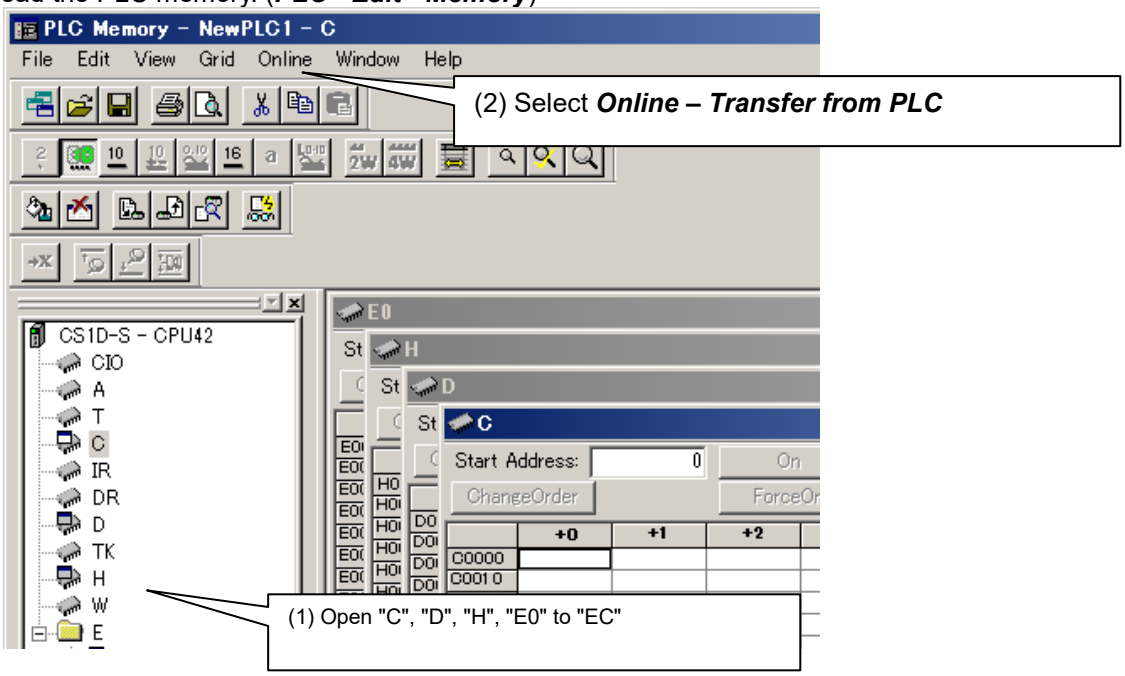
(5) Connect the PLC with online. (***PLC – Work online***)

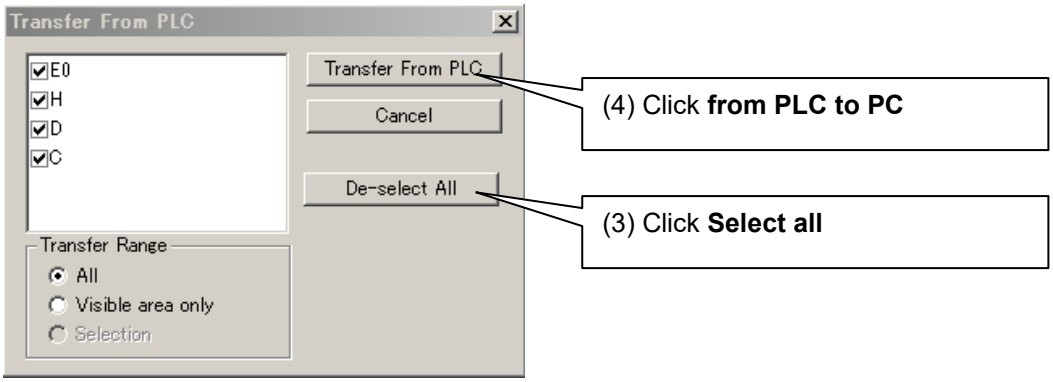
(6) Read programs, PLC system settings, I/O table, CPU BUS unit settings, variable table, and comments.

(***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***)

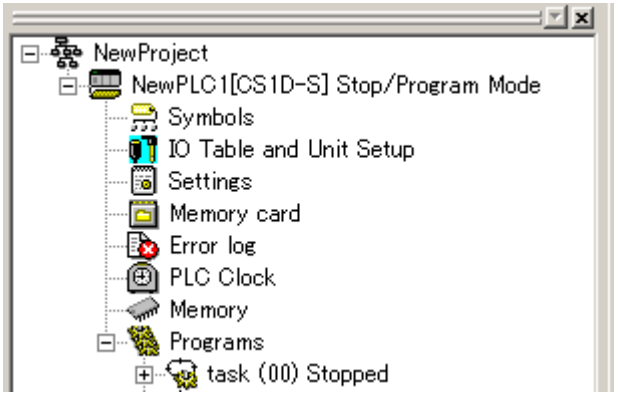
(9) Save the PLC memory as a file and name it. (***File - Save as…***)

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

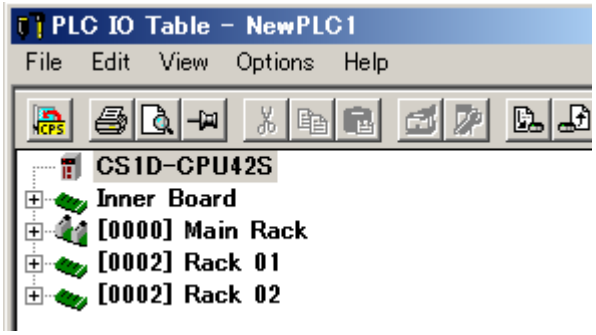
5.3. Read the routing table stored in the CS1D-CPU□□S (using the CX-Integrator)

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

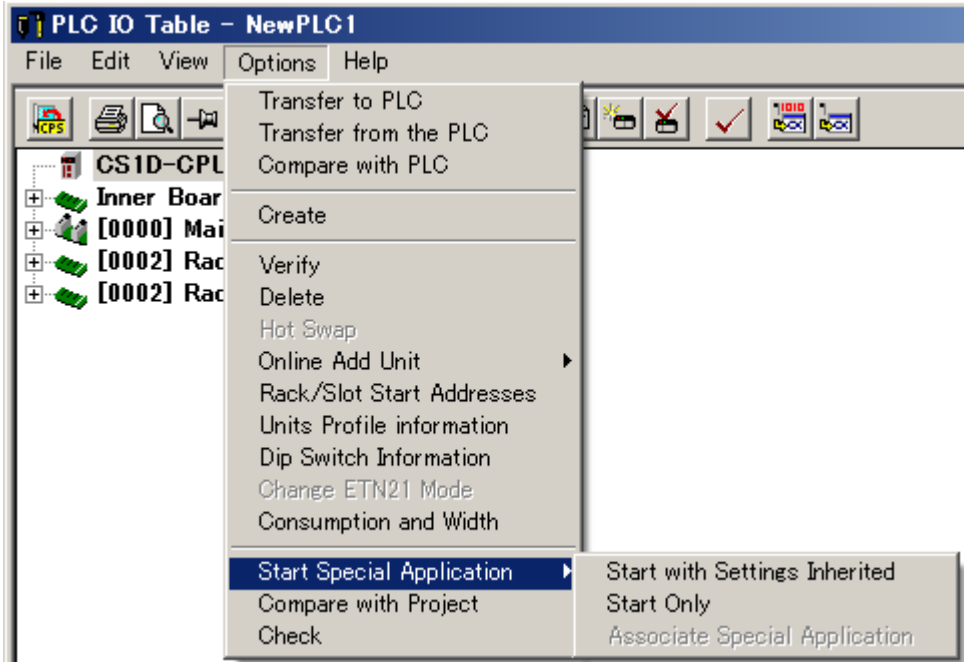
(1) Double-click **I/O Table and Unit setup** from the workspace of the CX-Programmer to open the I/O table.



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

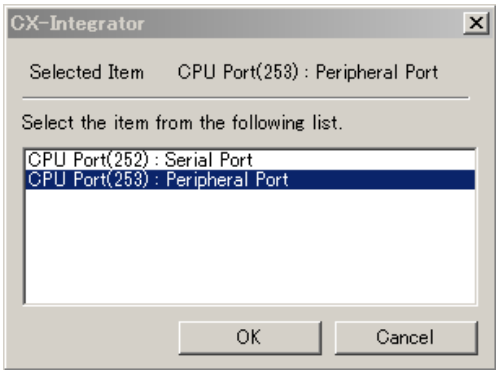


(3) Start the CX-Integrator. (***Options - Start Special Application - Start with Settings Inherited***)

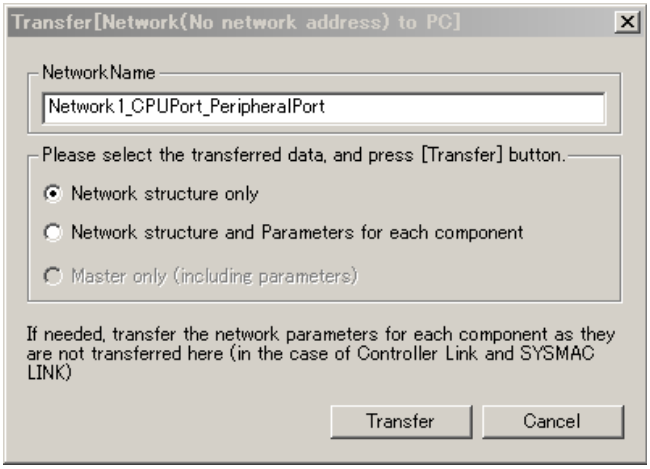


(4) The CX-Integrator starts.

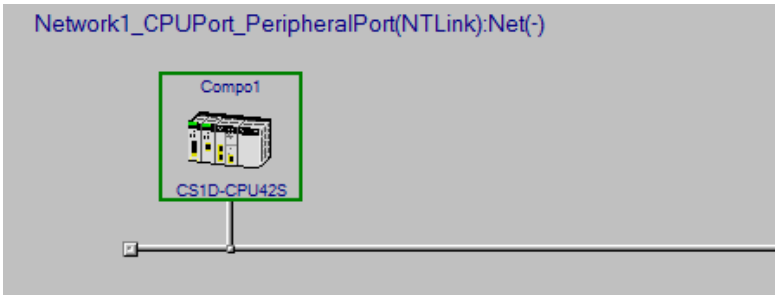
(5) Select the port connecting to the PC.



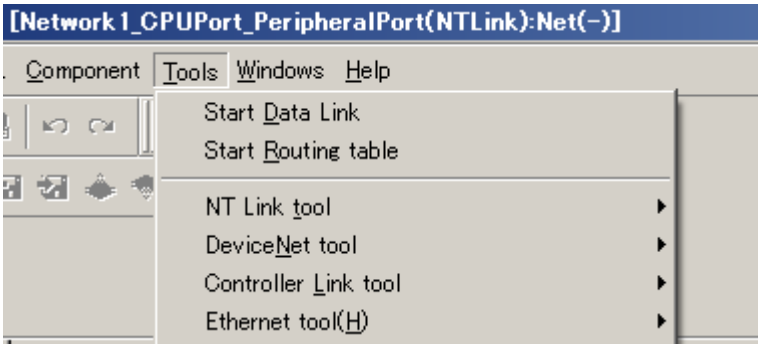
(6) Select the **Network structure only** and click **Transfer.**



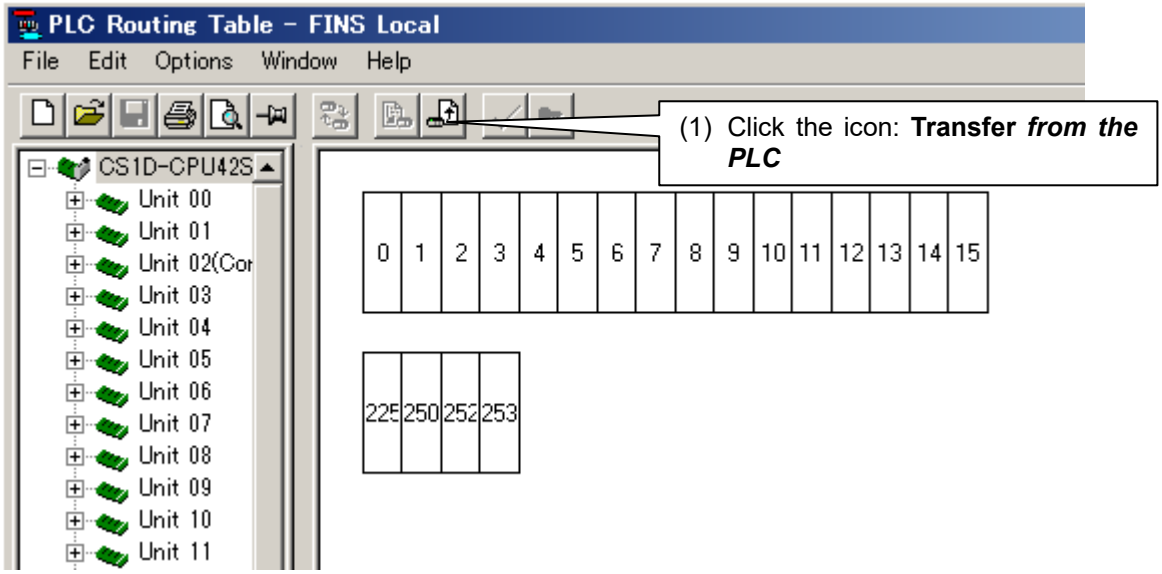
Following image is displayed.

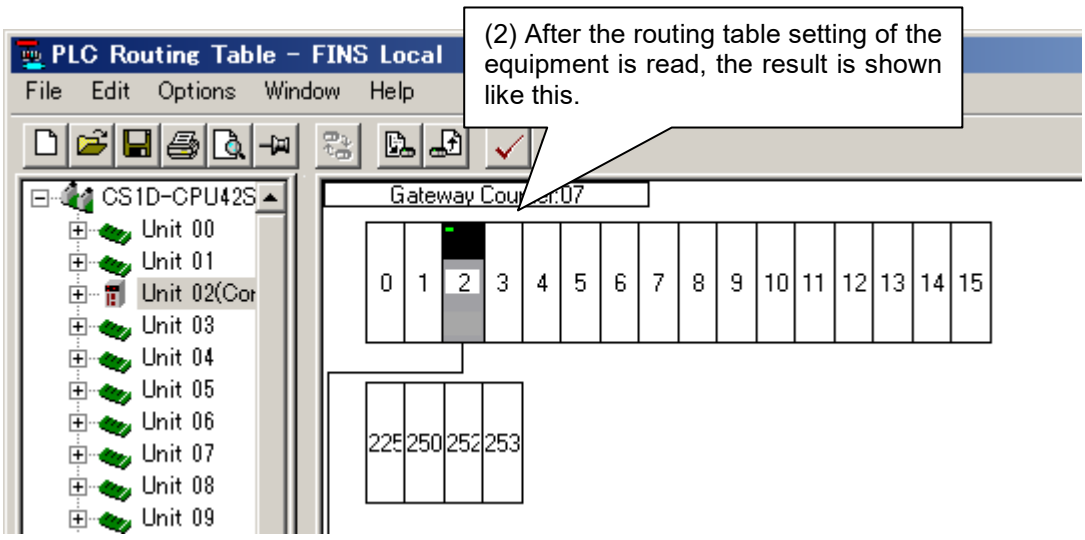


(7) Start the routing table setting tool. (***Tools – Start Routing Table***)



Following window is displayed.

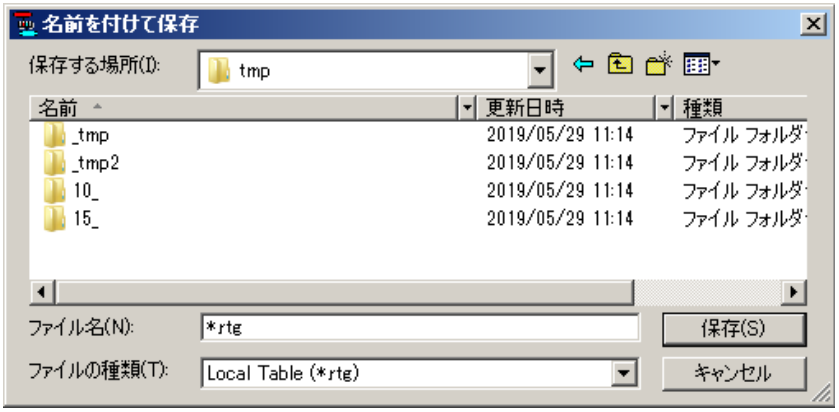




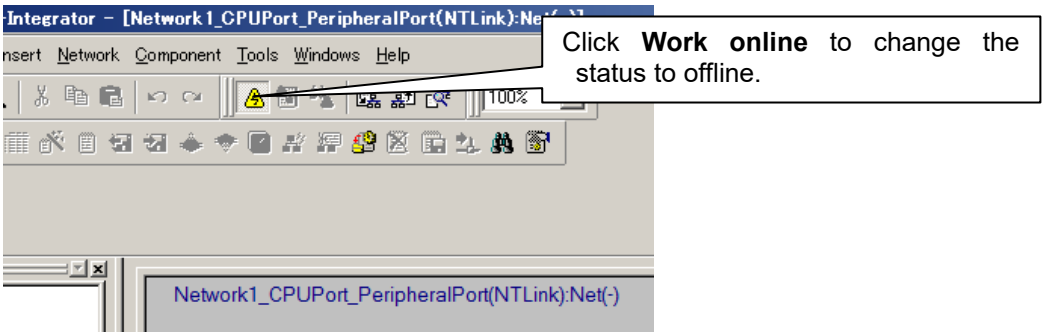
【Notes】If the unit does not have the routing table setting, no changes are shown on the table.

(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.



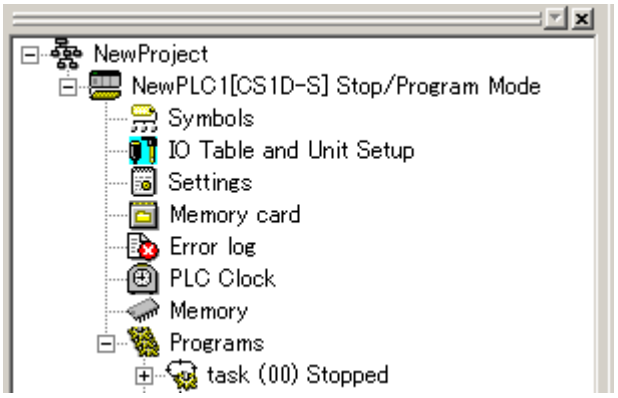
(10) Close the CX-Integrator. (***File – Exit***)

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

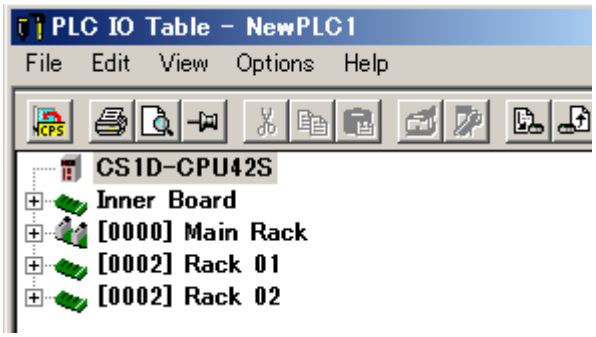
5.4. Read the data link table stored in the CS1D-CPU□□S (using the CX-Integrator)

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

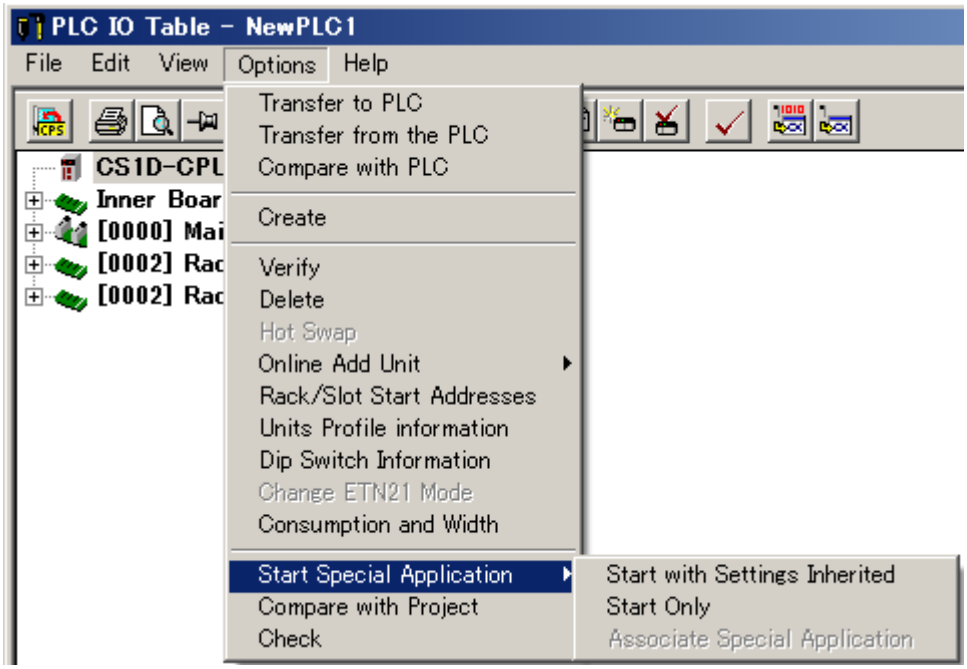
（1）Double-click **I/O Table and Unit setup** from the workspace of the CX-Programmer to open the I/O table.



（2）Select the PLC from the I/O table.

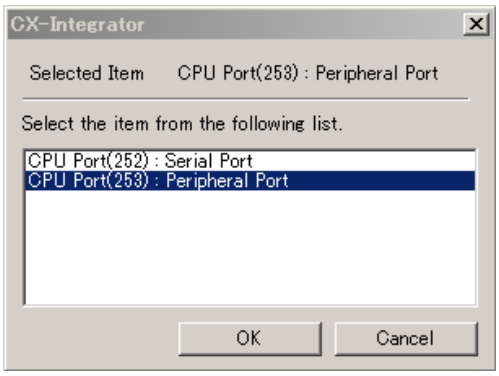


（3）Start the CX-Integrator. (***Options – Start Special Application - Start with Settings Inherited***)

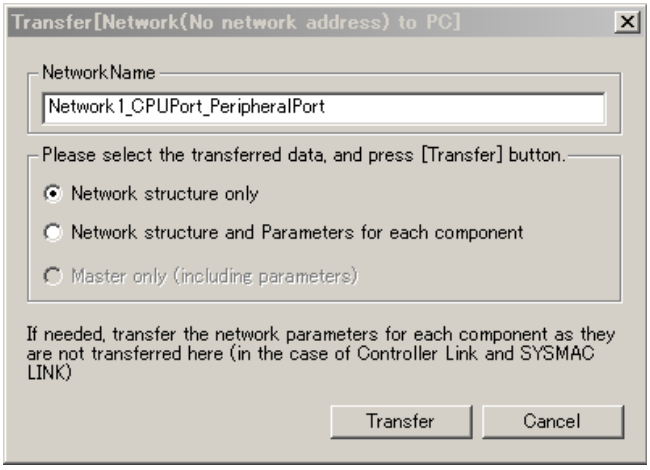


(4) The CX-Integrator starts.

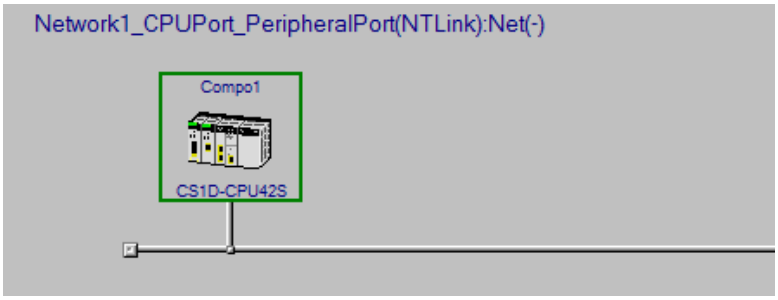
(5) Select the port connecting to the PC.



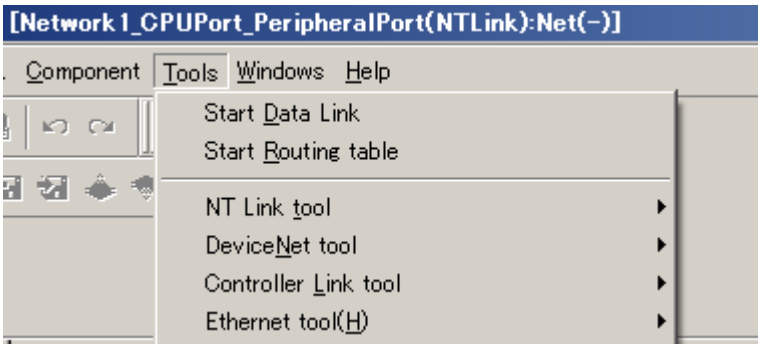
(6) Select **Network structure only** and click **Transfer.**



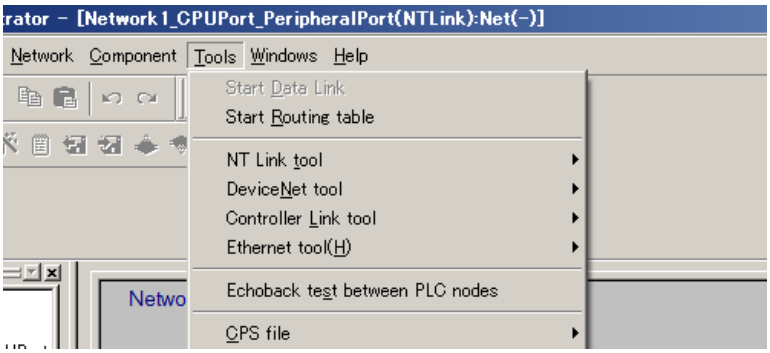
Following image is displayed.



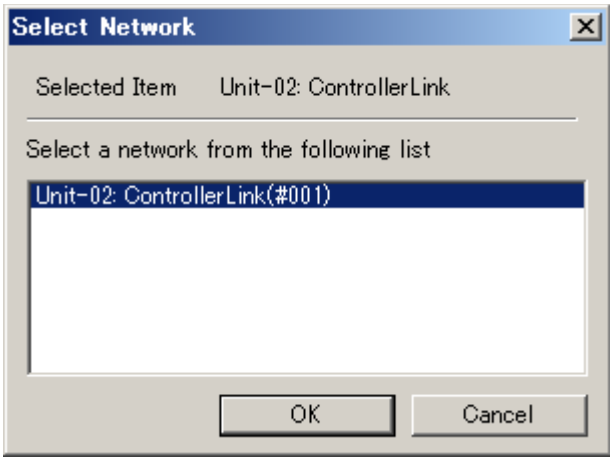
（7）Open the data link table setting tool from the CX-Integrator.（***Tools – Start Data link***）



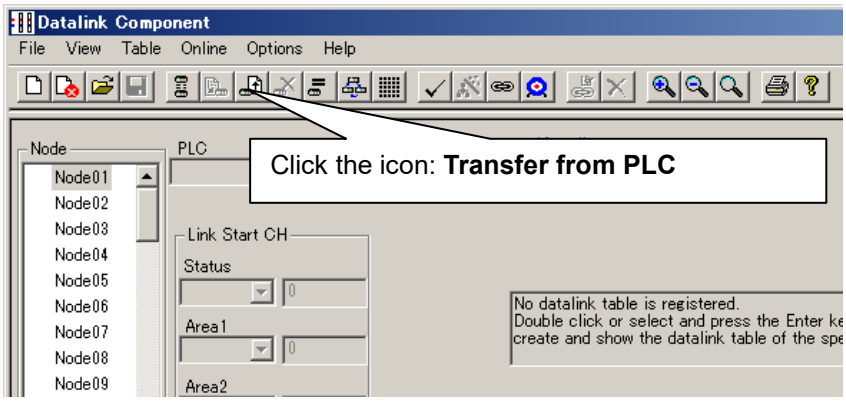
If the data link table setting is not required for the configuration, the data link table setting tool is grayed-out. Skip the following procedures.



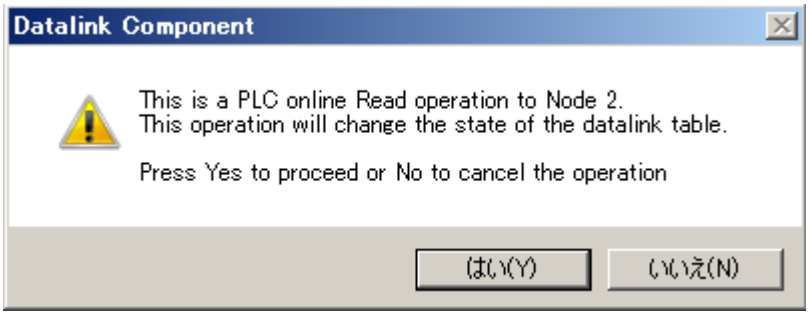
Select the network to read the data link table.



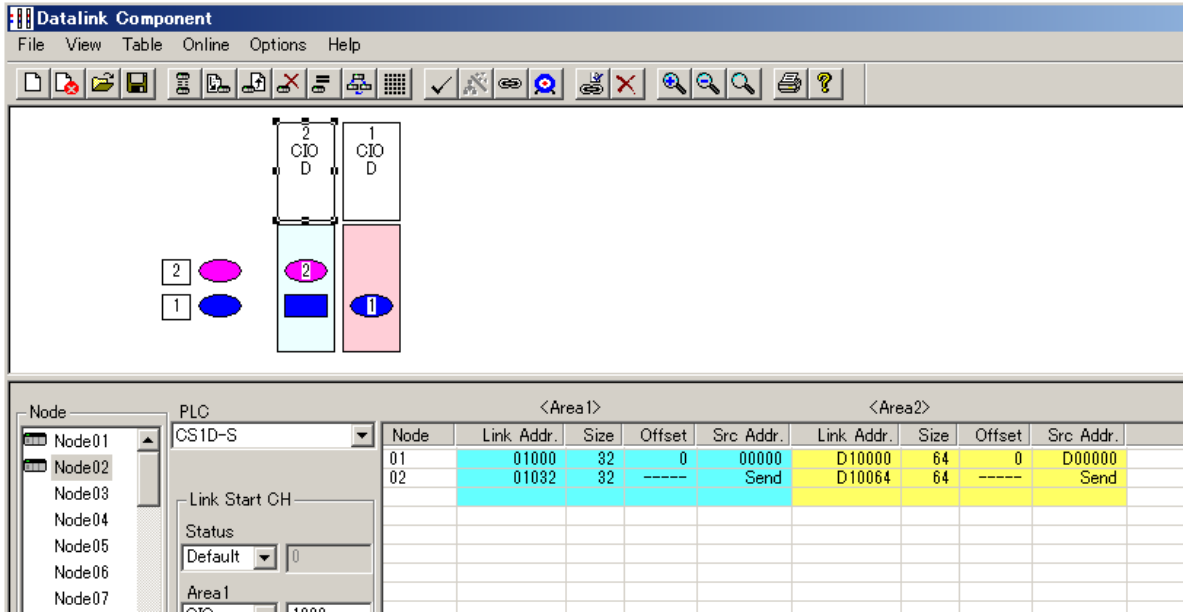
Following window is displayed.



Click **Yes**.

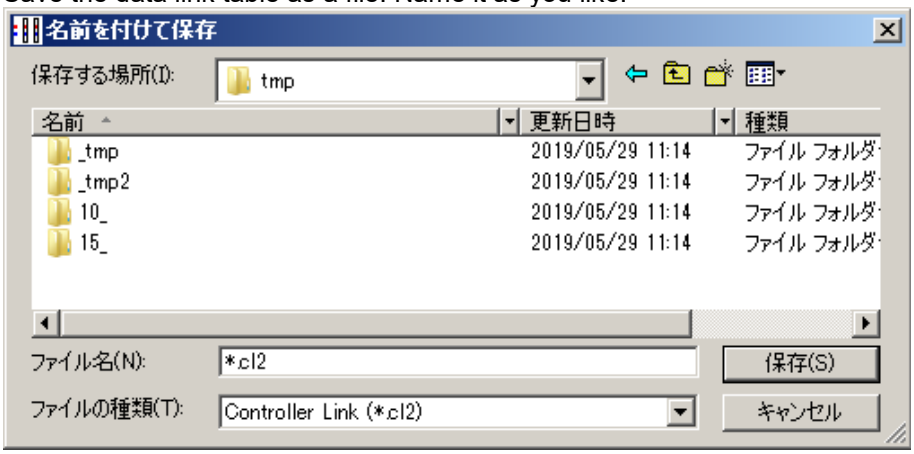


After the data link table setting is read, the following image is displayed.

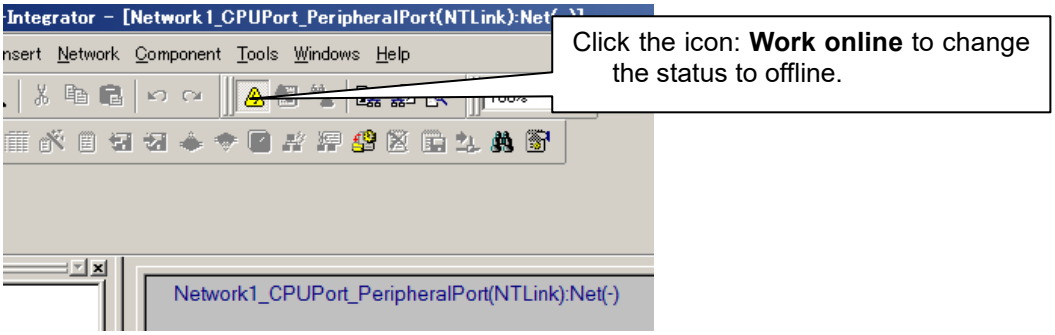


(8) Close the data link table setting. (***File – Exit***)

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.**

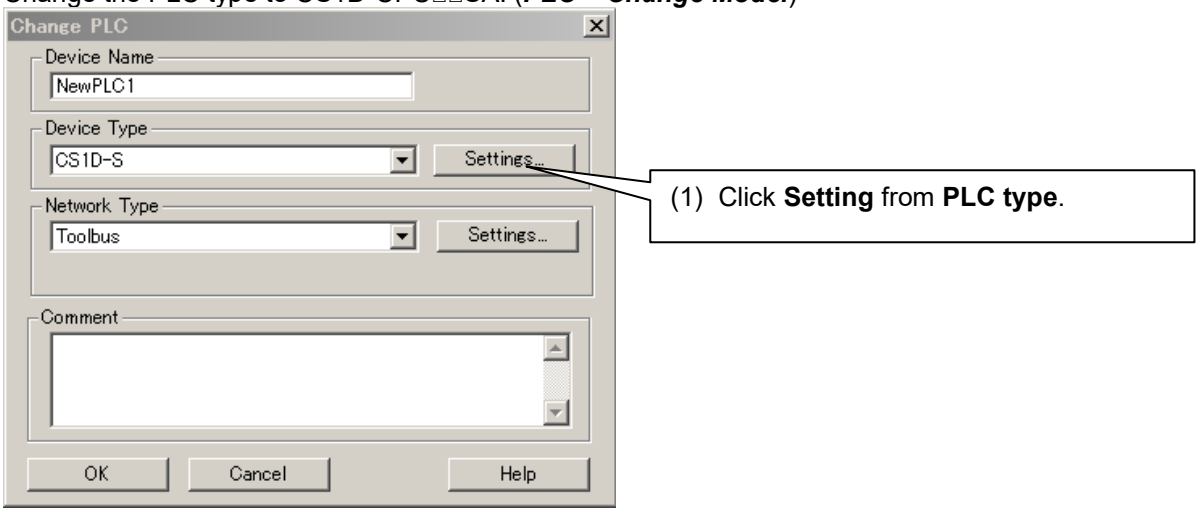
(11) If you use several networks in the CPU unit, read each data link table setting, individually.

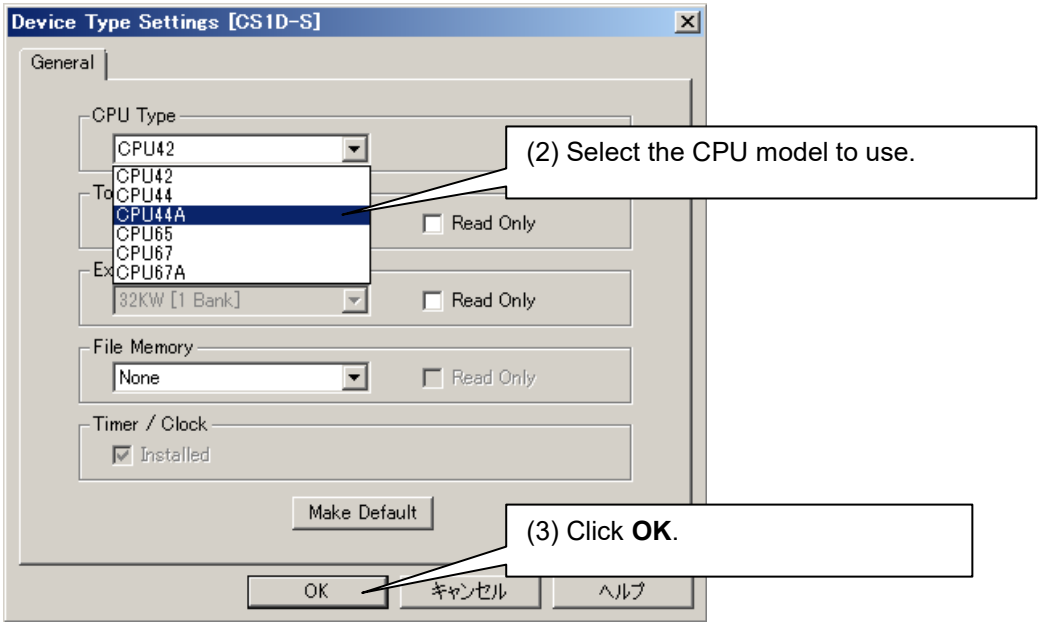
Carry out the step (1) through (10) described in the section 6. It takes several minutes.

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

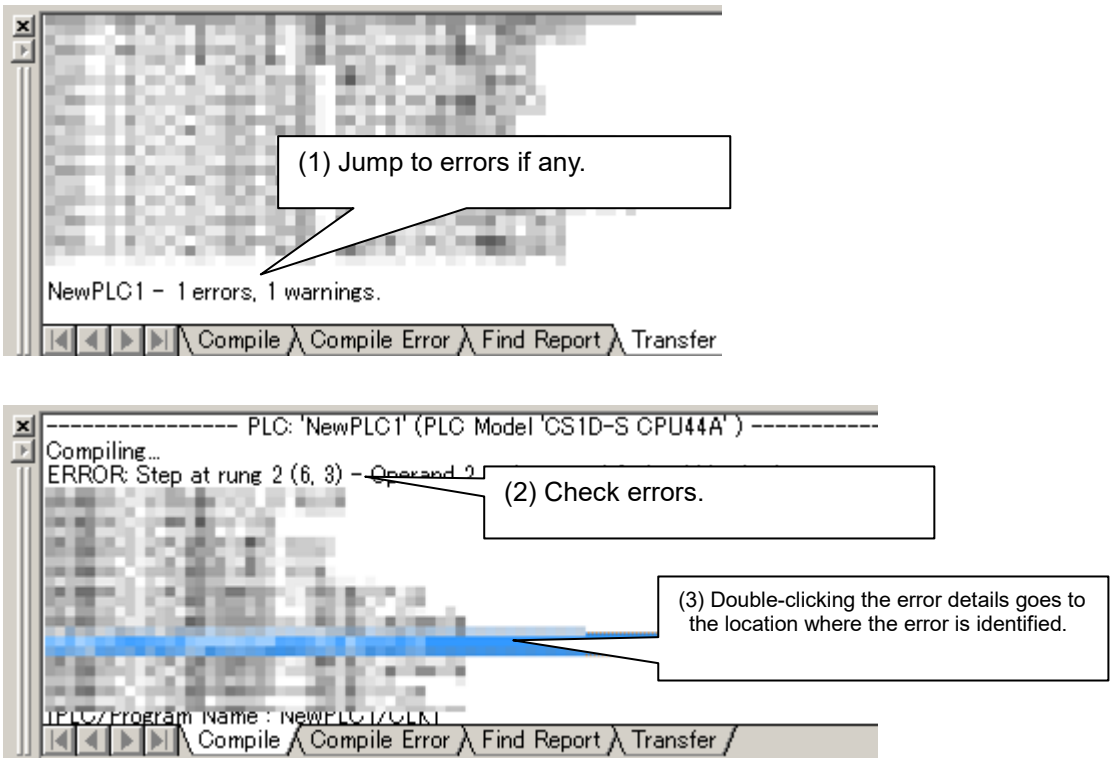
Convert and modify the programs to be used in CS1D-CPU□□SA with CX-Programmer.

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



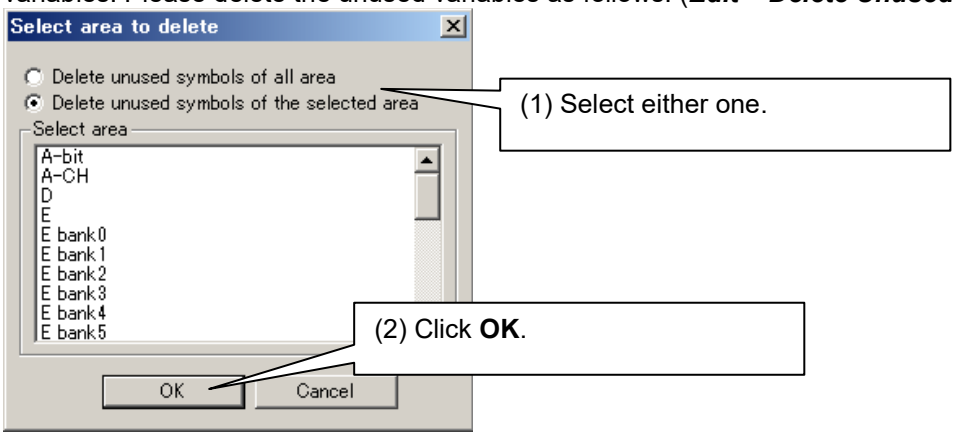


(2) The program check function (Compilation) runs because the PLC type was changed. The result is displayed on the output window. Any errors to be corrected.



【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.

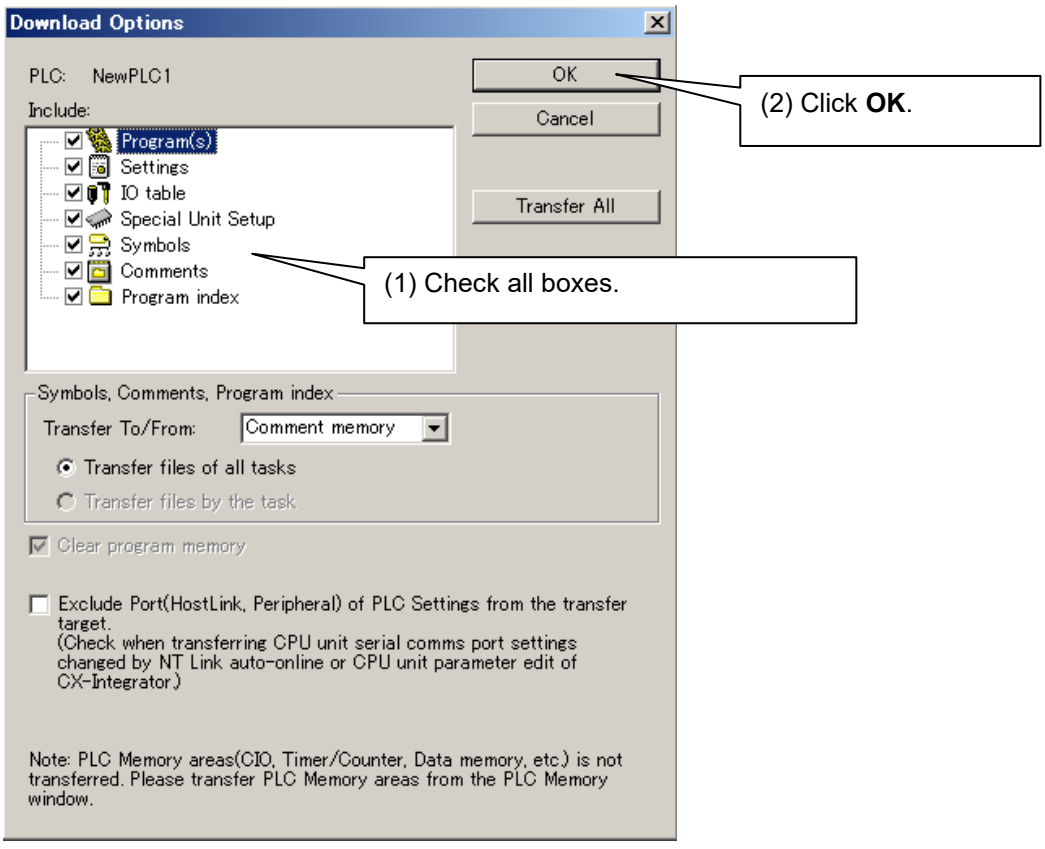
5.7. Write data into CS1D-CPU□□SA. (CX-Programmer)

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

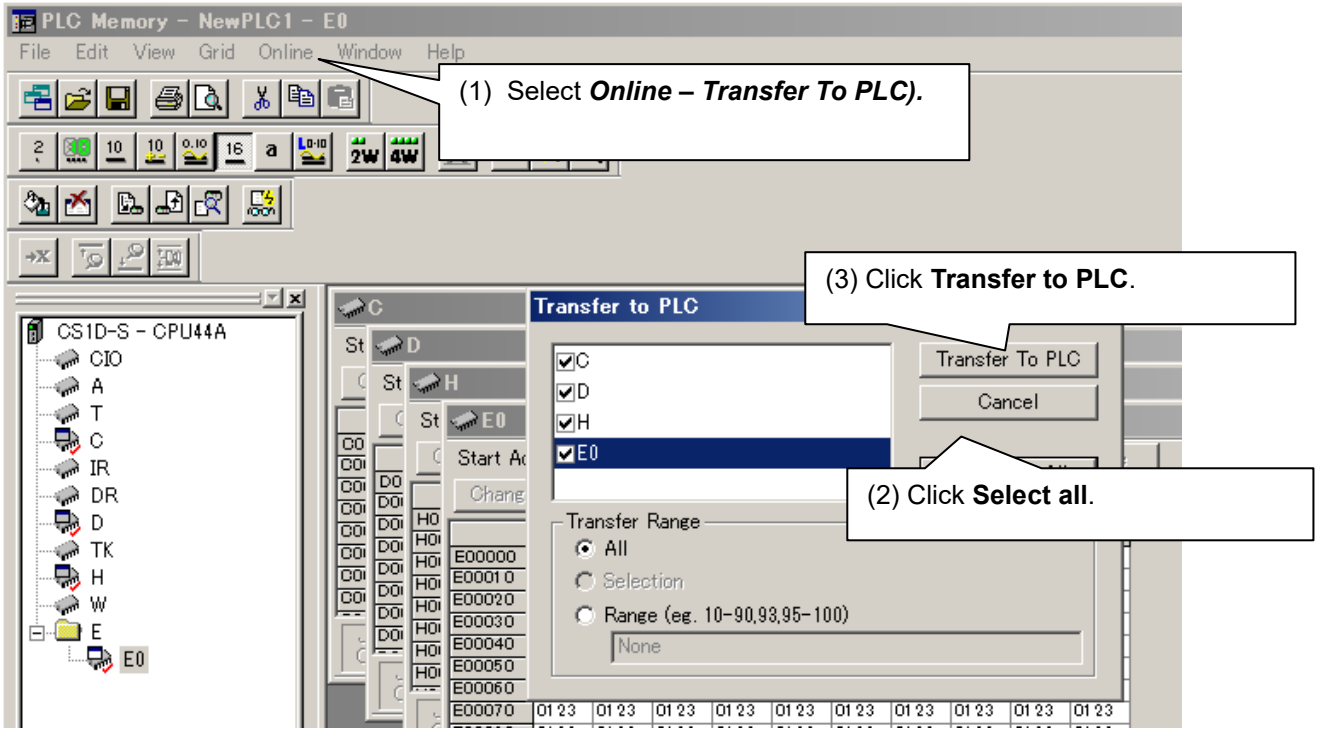
(1) Connect the CS1D-CPU□□SA to a PC with connection cables for peripheral tools.

(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***)

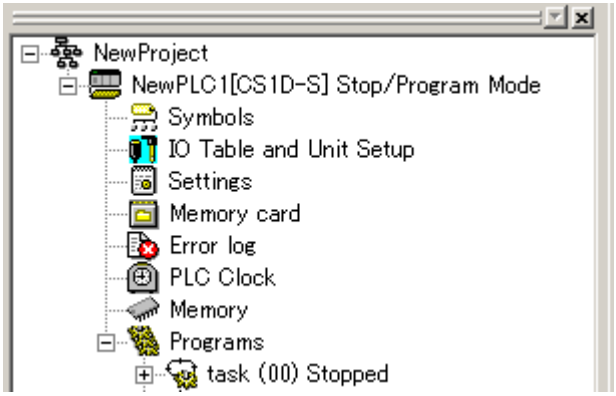


(5) Change the status of CX-Programmer to offline. (***PLC – Work online***)

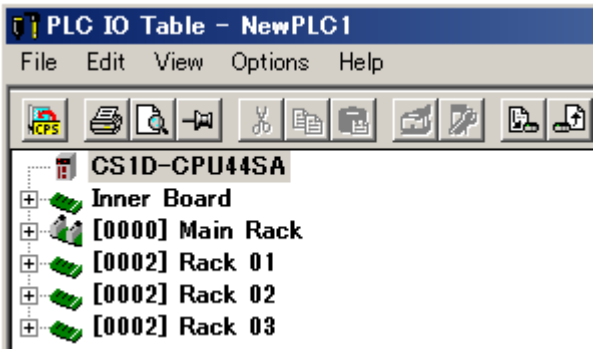
5.8. Write the routing table into CS1D-CPU□□SA (CX- Integrator)

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

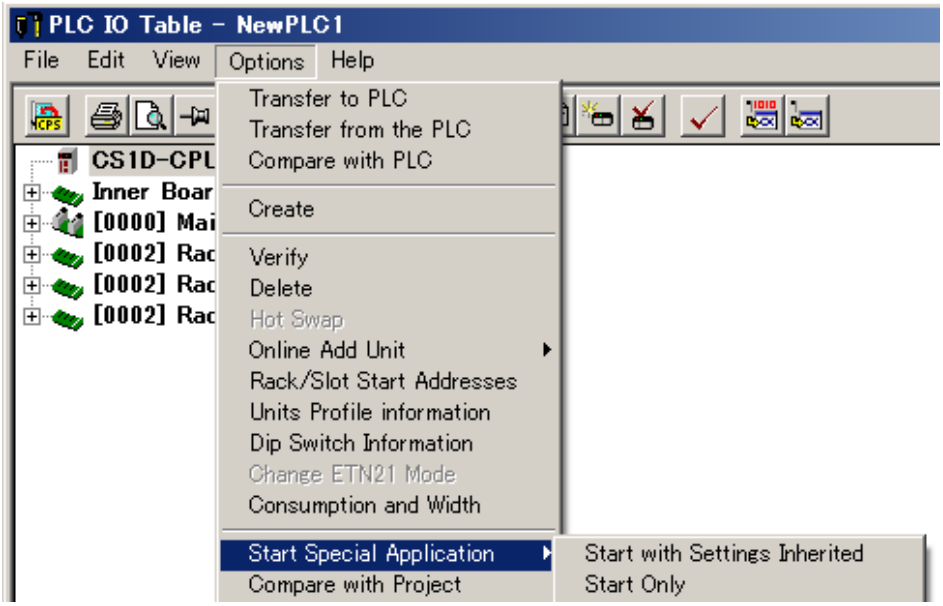
(1) Double click **I/O Table and Unit setup** from the workspace of the CX-Programmer to open the I/O table.



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

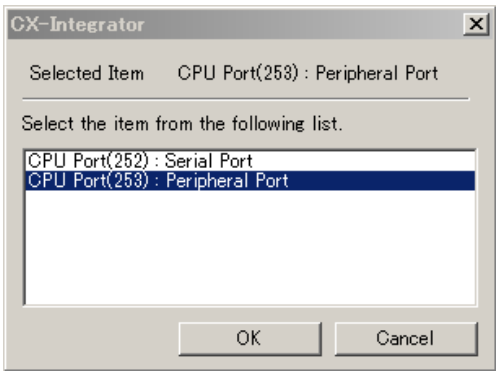


(3) Start the CX-Integrator. (***Options – Start Special Application - Start with Settings Inherited***)

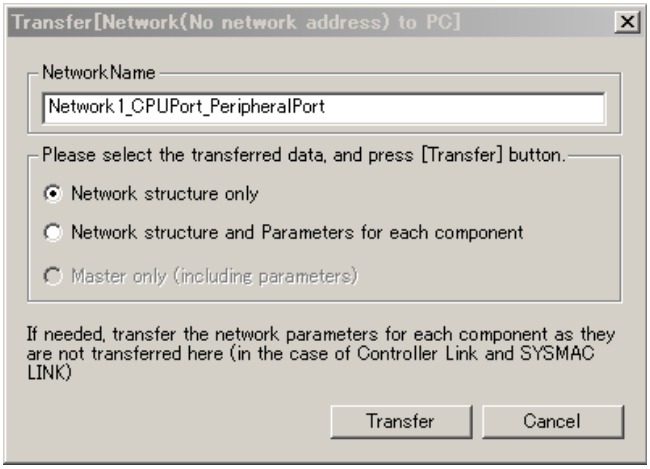


(4) The CX-Integrator starts.

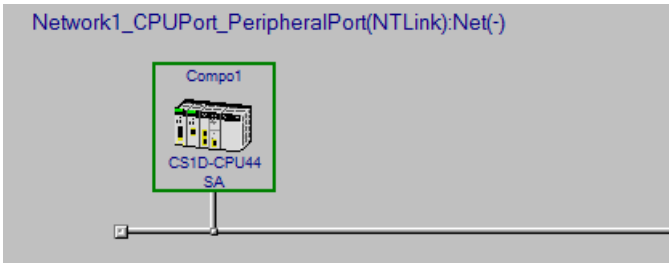
(5) Select the port connecting to the PC.



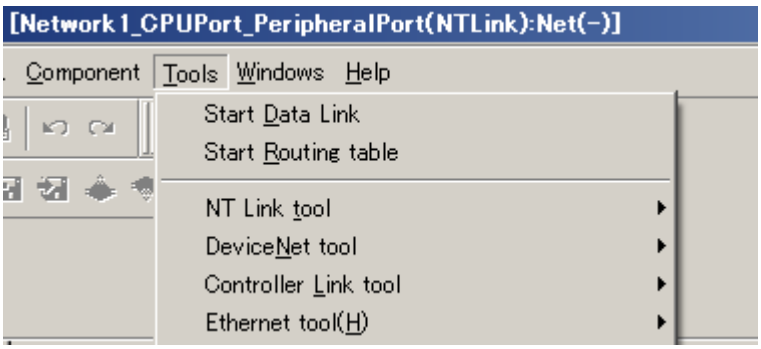
(6) Select **Network structure only** and click **Transfer.**

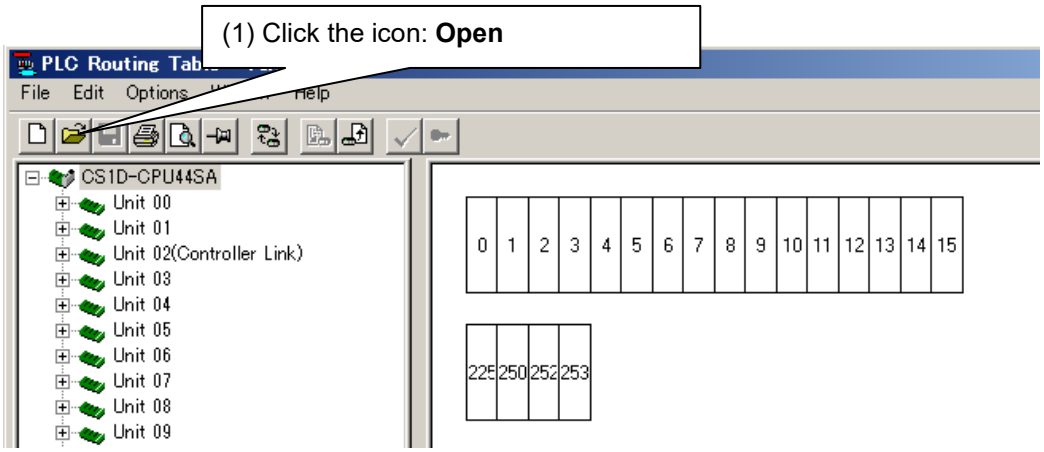


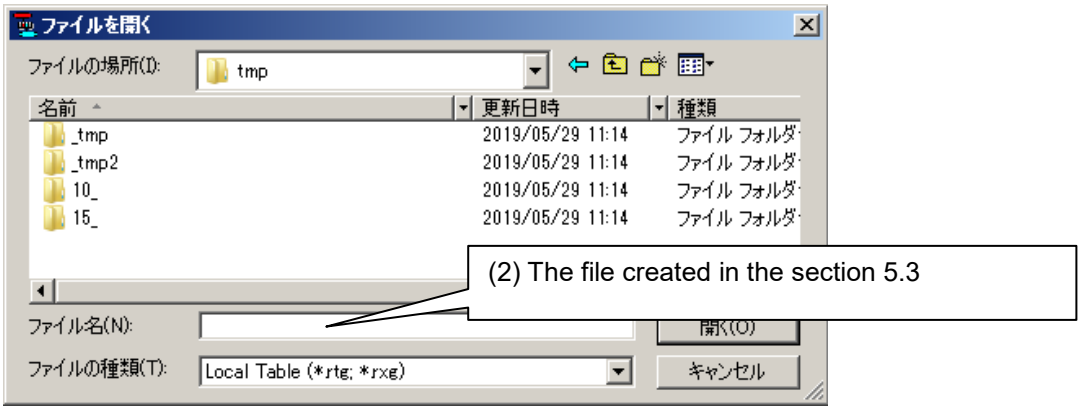
Following image is displayed.

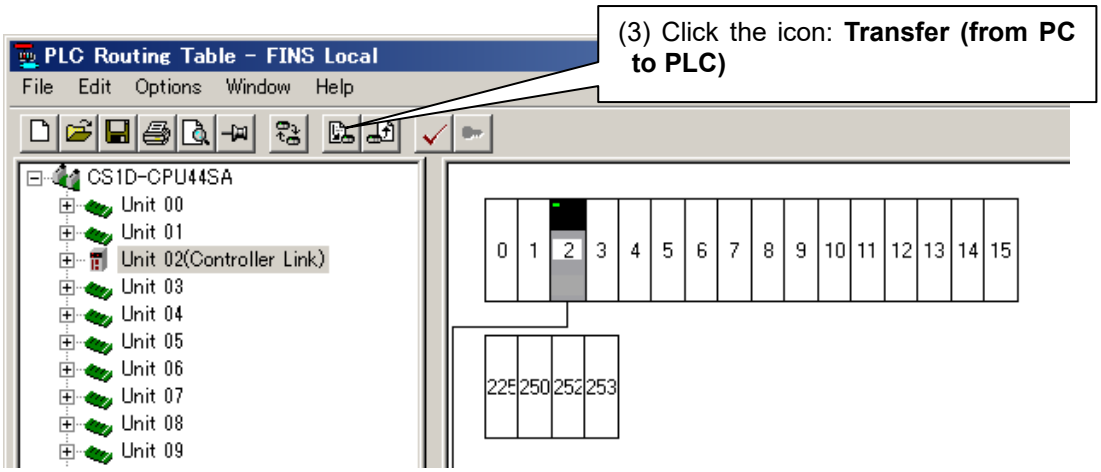


(7) Start the routing table setting tool. (***Tools –Start Routing table***)

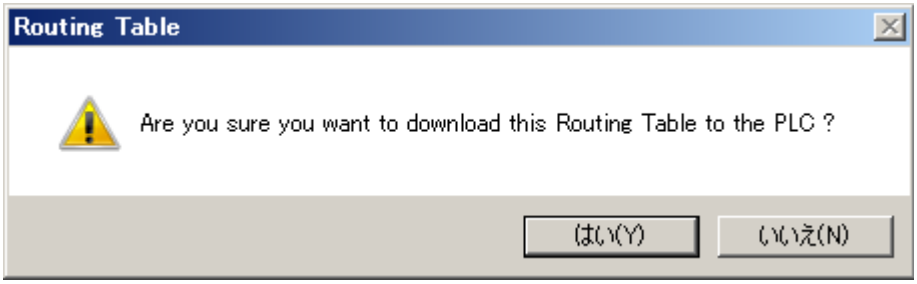




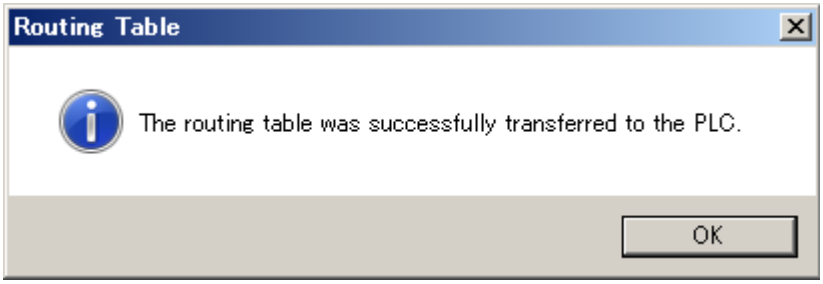




Click **Yes.**

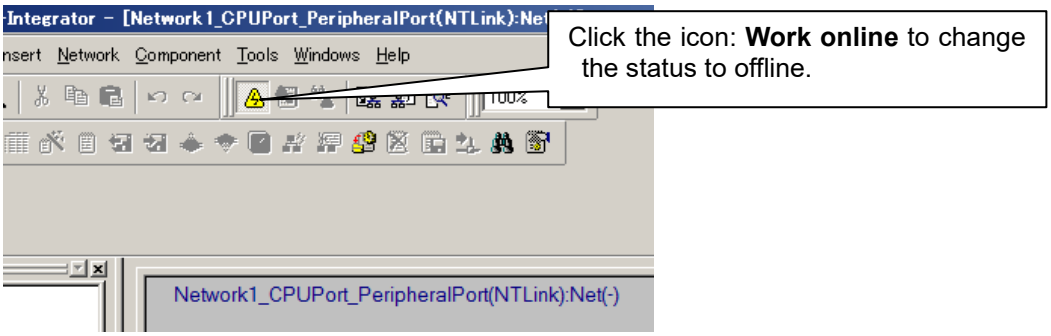


Following window is displayed when the data has been transferred correctly.



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

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



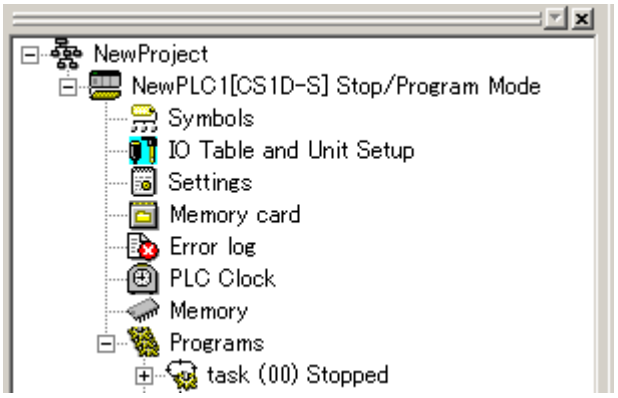
(10) Close the CX-Integrator. (***File – Exit***)

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

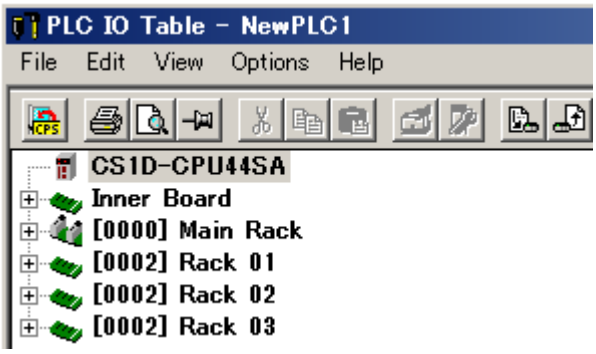
5.9. Write the data link table into CS1D-CPU□□SA (CX- Integrator)

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.

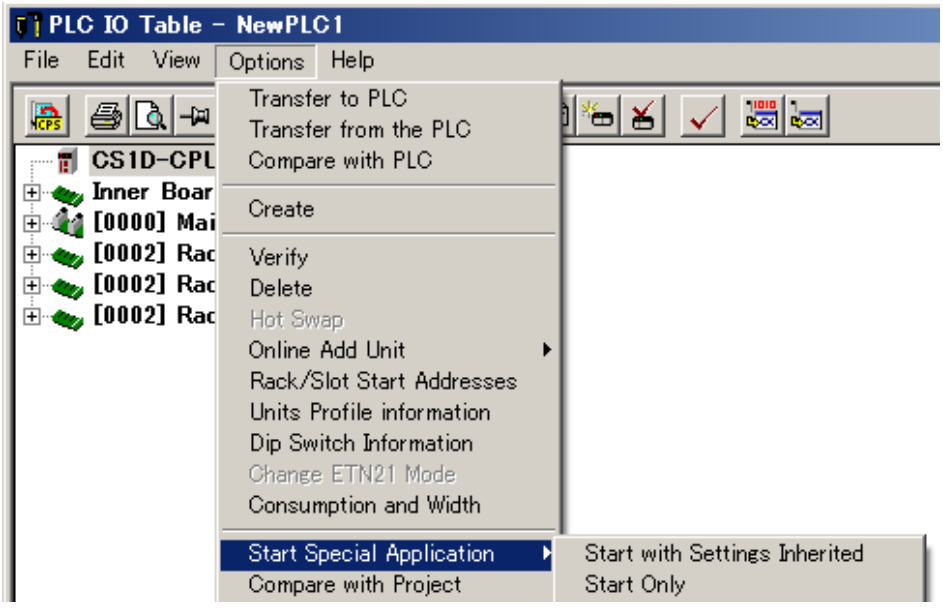
（1）Double-click the I/O Table and the Unit setup from the workspace of the CX-Programmer to open the I/O table.



（2）Select the PLC from the I/O table.

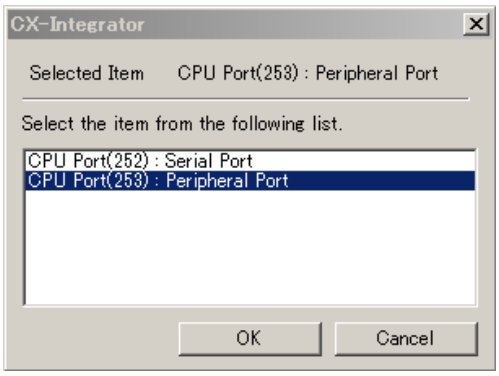


（3）Start the CX-Integrator. (***Options – Start Special Application - Start with Settings Inherited***)

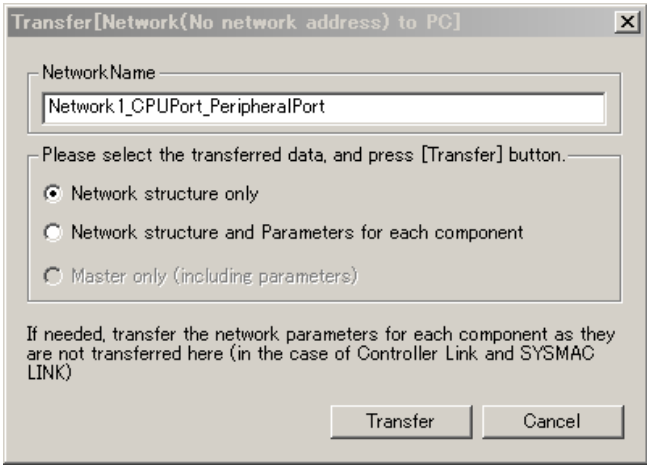


(4) The CX-Integrator starts.

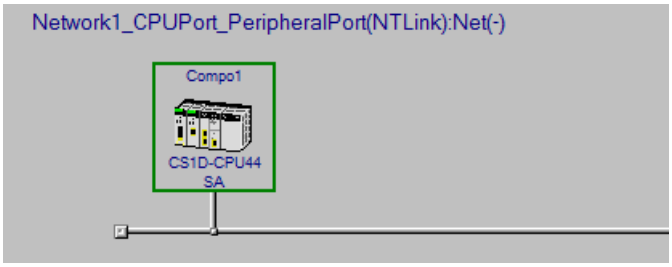
(5) Select the port connecting to the PC.



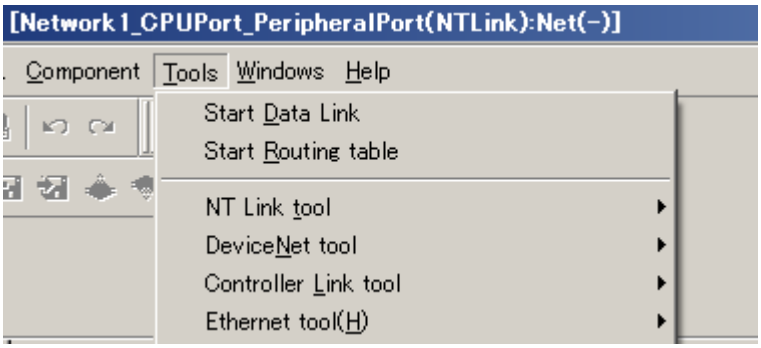
(6) Select **Network structure only** and click **Transfer.**



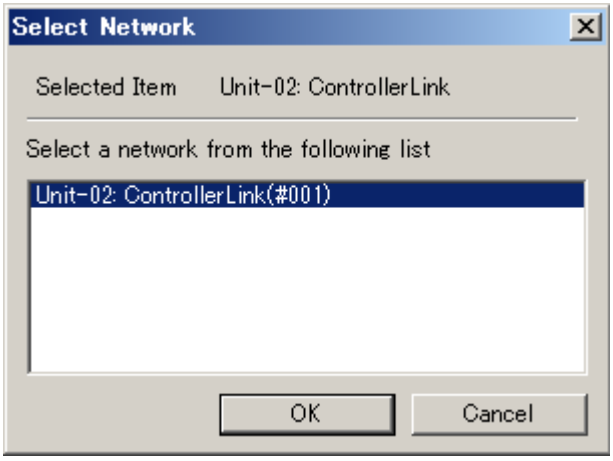
Following image is displayed.



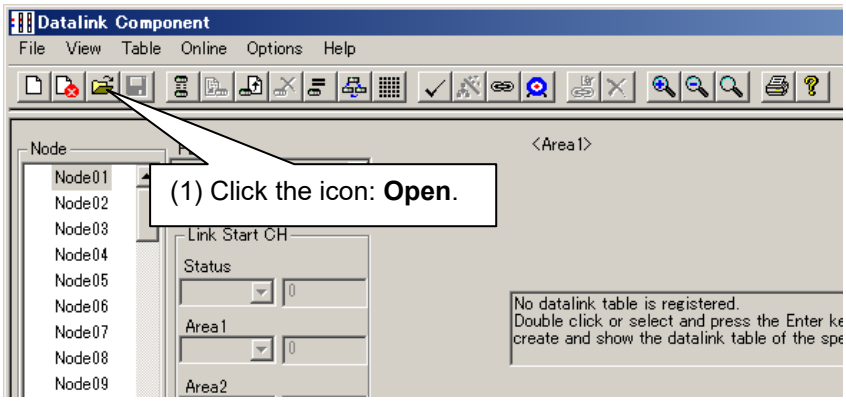
(7) Select **Data link table setting tool** of the CX-Integrator. (***Tools –Start Data Link***)

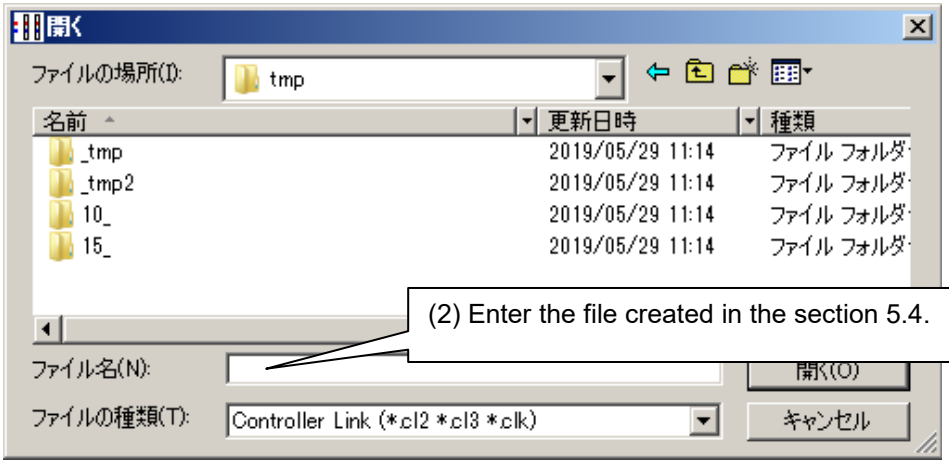


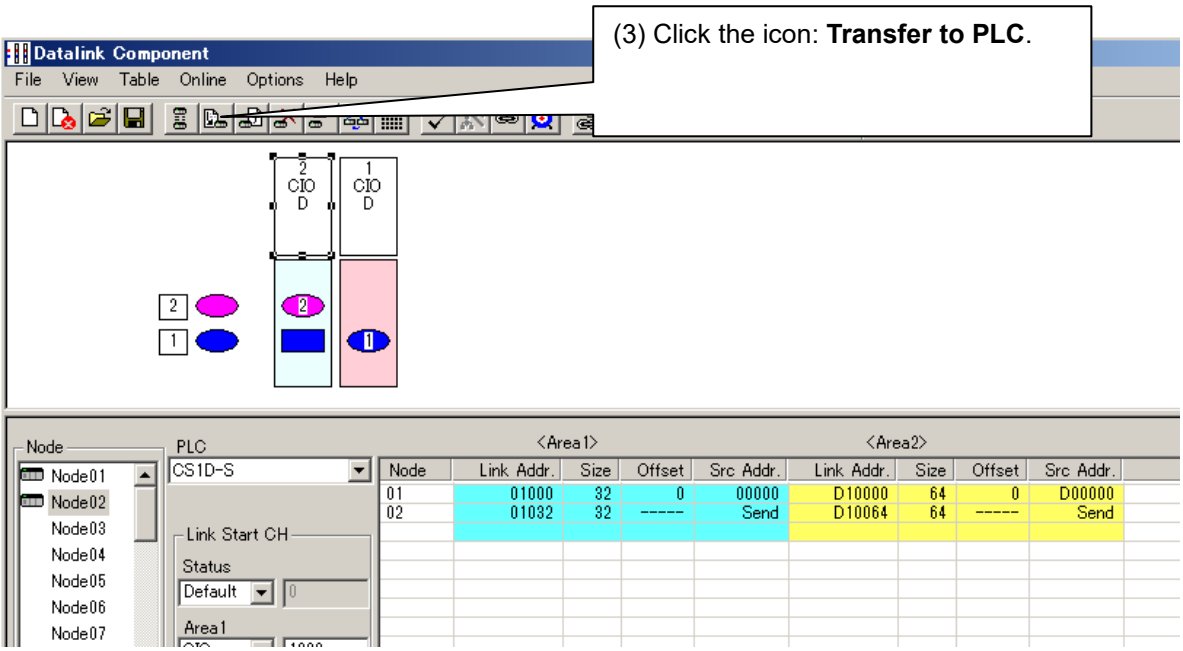
Select the network to read the data link table.



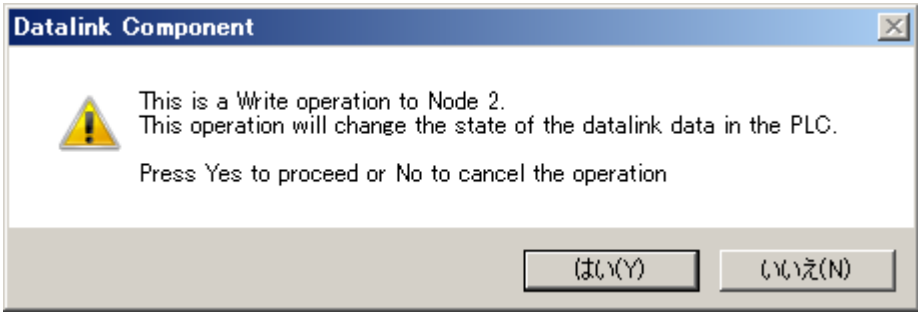
Following image is displayed.



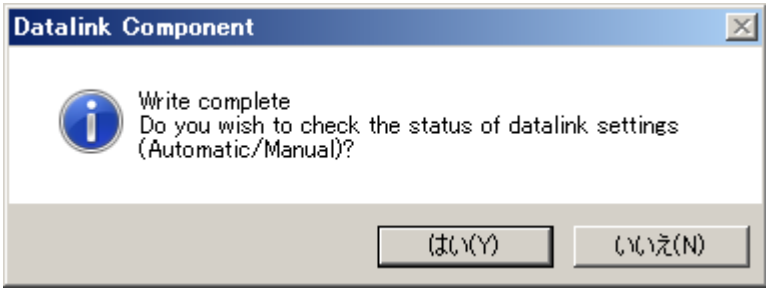

開く
ファイルの場所(I):
tmp
名前
更新日時
種類
_tmp
2019/05/29 11:14
ファイル フォルダ
_tmp2
2019/05/29 11:14
ファイル フォルダ
10_
2019/05/29 11:14
ファイル フォルダ
15_
2019/05/29 11:14
ファイル フォルダ
(2) Enter the file created in the section 5.4.
ファイル名(N):
開く(O)
ファイルの種類(T):
Controller Link (*.cl2 *.cl3 *.clk)
キャンセル


(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.**

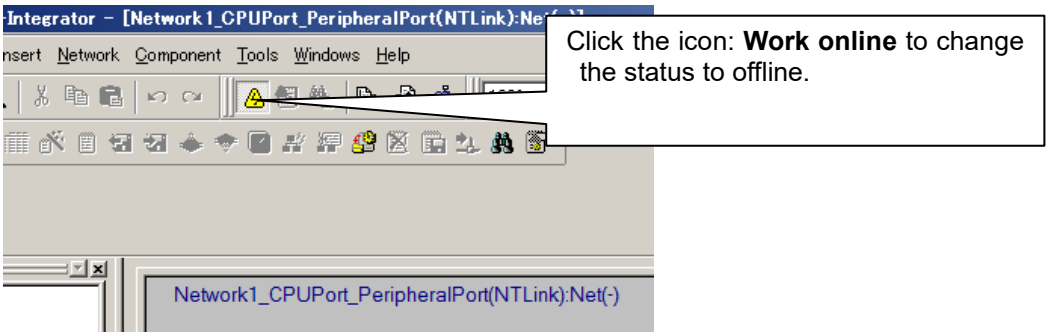

Datalink Component
This is a Write operation to Node 2.
This operation will change the state of the datalink data in the PLC.
Press Yes to proceed or No to cancel the operation
はい(Y)
いいえ(N)

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