CJ Series
DeviceNet™ Connection Guide

ABB Ltd
IRC5 Robot Controller

P569-E1-01

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	CJ2M-CPU[][] CJ2H-CPU6[] CJ2H-CPU6[]-EIP	CJ-series CJ2 CPU Unit Hardware User's Manual
W473	CJ2M-CPU[][] CJ2H-CPU6[] CJ2H-CPU6[]-EIP	CJ-series CJ2 CPU Unit Software User's Manual
W267	-	DeviceNet™ Operation Manual
W380	CJ1W-DRM21	CJ-series DeviceNet™ Unit Operation Manual
W446	-	CX-Programmer Operation Manual
W464	-	CX-Integrator Ver.2. Operation Manual
3HAC021313-001	IRC5	Product Manual Robot Controller IRC5
3HAC020676-001	IRC5	Application Manual DeviceNet

2. Terms and Definitions

Term	Explanation and Definition
Master/Slave	A master is a unit that controls the DeviceNet communications. A master sends output data to multiple slaves and receives input data from the slaves. Slaves receive output data that are sent from the master, and send input data to the master. At least one master is required for a DeviceNet system.
EDS file	An EDS file is a file that contains the I/O points of DeviceNet slave devices and the parameters that can be set via DeviceNet.
Node address (MAC ID)	A node address is an address to identify the unit connected to DeviceNet. With DeviceNet, a MAC (Media Access Control) ID is used as a node address. Thus, a node address is a MAC ID.
Scan list	A scan list is used to register slaves with which a master communicates in DeviceNet remote I/O communications. A master communicates with the slaves based on the scan list settings.

3. Remarks

(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, Precautions for Safe Use, and Precaution for Correct 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 June 2013. 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 in property damage.

Precautions for Safe Use

Precautions on what to do and what not to do to ensure safe usage of the product.

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.

Symbols

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.

The filled circle symbol indicates operations that you must do.
The specific operation is shown in the circle and explained in text.
This example shows a general precaution for something that you must do.

4. Overview

This document describes the procedure for connecting the Robot Controller (IRC5) of ABB Ltd (hereinafter referred to as ABB) to the CJ-series Programmable Controller + DeviceNet Unit of OMRON Corporation (hereinafter referred to as OMRON), and provides the procedure for checking their connection.
Refer to *Section 6 DeviceNet Settings* and *Section 7. DeviceNet Connection Procedure* to understand the setting method and key points to connect the devices via DeviceNet.

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	DeviceNet Unit (master)	CJ1W-DRM21
ABB	Robot Controller	IRC5
ABB	Manipulator	IRB series

Precautions for Correct Use

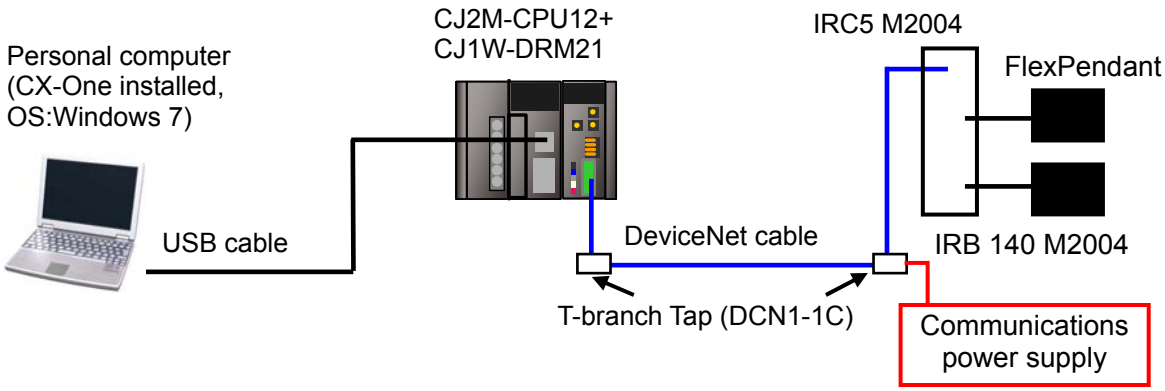
As applicable devices above, the devices with the models and versions listed in Section 5.2. are actually used in this document to describe the procedure for connecting devices and checking the connection.
You cannot use devices with versions lower than the versions listed in Section 5.2.
To use the 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. Except for the connection procedure, it does not provide information on operation, installation or wiring method. It also does not describe the functionality or operation of the devices. Refer to the manuals or contact the device manufacturer.
(ABB Ltd. http://www.abb.com/)
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:



Manufacturer	Name	Model	Version
OMRON	DeviceNet Unit (master)	CJ1W-DRM21	Ver.1.1
OMRON	CJ2 CPU Unit	CJ2M-CPU12	Ver.2.0
OMRON	Power Supply Unit	CJ1W-PA202	
OMRON	DeviceNet cable	DCA1-5C10	
OMRON	T-branch Tap	DCN1-1C	
OMRON	CX-One	CXONE-AL[][]C-V4/AL[][]D-V4	Ver.4.[][]
OMRON	CX-Programmer	(Included in CX-One)	Ver.9.43
OMRON	CX-Integrator	(Included in CX-One)	Ver.2.57
-	Personal computer (OS: Windows7)	-	
-	USB cable (USB 2.0 type B connector)	-	
-	Communications power supply	-	
ABB	Robot Controller	IRC5 M2004	RW5.14-03.01 .3071.
ABB	Manipulator	IRB 140 M2004	
ABB	FlexPendant	-	
ABB	EDS file	IRC5_Slave.eds	Ver.1.1

Precautions for Correct Use

Prepare the corresponding EDS file beforehand.
To obtain, contact ABB Ltd.

Precautions for Correct Use

When there is an icon file specific to the device, the icon file and the EDS file must be stored in the same folder.

Precautions for Correct Use

Update the CX-Programmer and CX-Integrator 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) and CX-Integrator Ver.2. Operation Manual (Cat. No. W464).

Additional Information

For information on the DeviceNet cable and network wiring, refer to *Chapter 2 Network Configuration and Wiring* of the *DeviceNet Operation Manual* (Cat. No. W267).
Connect a terminating resistor to each end of the trunk line of DeviceNet.

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* in the *CJ-series CJ2 CPU Unit Hardware User's Manual* (Cat. No. W472).

6. DeviceNet Settings

This section describes the specifications such as communication parameters and remote I/O communications that are defined in this document.

6.1. DeviceNet Communications Parameters

The communications parameters required to connect the PLC and the Robot Controller via DeviceNet are given below.

	PLC (DeviceNet Unit)	Robot Controller
Unit number	0	-
Bus type	-	DeviceNet1
Unit Name	-	tmp0
Node address (MAC ID)	63	0
Baud rate (bps)	500kbps	500kbps

6.2. Allocation for Remote I/O Communications

The I/O memory areas of the PLC are allocated for the DeviceNet remote I/O communications for the Robot Controller as shown below.

	Output area
3200	(PLC → Robot Controller)
3203	8 bytes

	Input area
3300	(Robot Controller → PLC)
3303	8 bytes

■Details on output area

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
3200	Not allocated												di4	di3	di2	di1
3201 to 3203	Not allocated															

■Details on input area

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
3300	Not allocated												do4	do3	do2	do1
3301 to 3303	Not allocated															

7. DeviceNet Connection Procedure

This section describes the procedure for connecting the PLC to the Robot Controller via DeviceNet.
This document explains the procedures for setting up the PLC and the Robot Controller from the factory default setting. For the initialization, refer to *Section 8 Initialization Method*.

7.1. Work Flow

Take the following steps to perform DeviceNet remote I/O communications.

7.2. Wiring the network	Wire the DeviceNet cable.
↓	
7.2.1 Hardware Settings for the DeviceNet Unit	Set the hardware switches on the DeviceNet Unit and wire the network.
↓	
7.3. Setting Up the ABB Robot Controller	Set up the ABB Robot Controller.
↓	
7.3.1. DeviceNet Parameter Settings	Set the DeviceNet parameters for the Robot Controller.
↓	
7.3.2. DeviceNet I/O Settings	Make DeviceNet I/O settings for the Robot Controller.
↓	
7.4. Setting up the PLC	Set up the PLC.
↓	
7.4.1. Starting the CX-Programmer and Connecting online with the PLC	Start the CX-Programmer and Connect Online with the PLC.
↓	
7.4.2. Creating the I/O Table	Create the I/O table for the PLC.
↓	
7.5. Setting Up the Network.	Set up DeviceNet remote I/O communications.
↓	
7.5.1. Starting the CX-Integrator and Installing the EDS File	Start the CX-Integrator and install the EDS file.
↓	
7.5.2. Creating the Network Configuration	Create the network and device configuration offline.
↓	
7.5.3. Setting the Device	Set the device and register it in the DeviceNet Unit.
↓	
7.5.4. Connecting Online and Transferring the Scan List	Connect online with the PLC and transfer the device setting to the DeviceNet Unit.
↓	
7.6. Checking the DeviceNet Communications	Confirm that the DeviceNet communications are performed normally.
↓	
7.6.1 Checking the Connection Status	Check the connection status of DeviceNet.
↓	
7.6.2 Checking Data that are Sent and Received	Confirm that correct data are sent and received.

7.2. Wiring the network

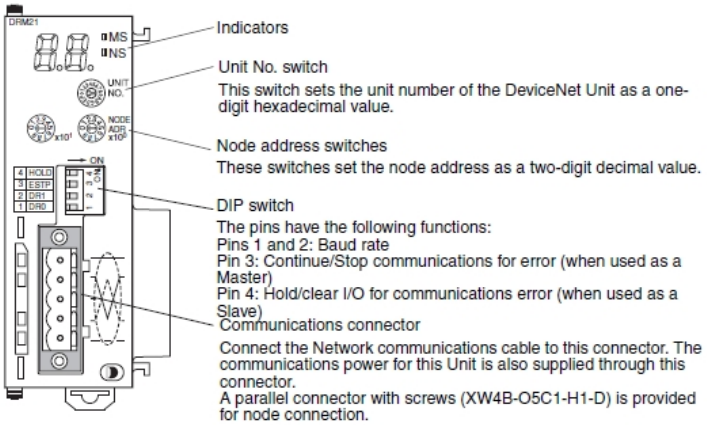
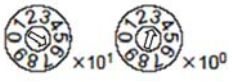
Wire the DeviceNet cable.

7.2.1. Hardware Settings for the DeviceNet Unit

Set the hardware switches on the DeviceNet Unit and wire the network.

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 procedure.	
2	Check the hardware switches located on the front panel of the DeviceNet Unit by referring to the right figure.	
3	Set the Unit No. Switch to 0.	 Setting method: One-digit hexadecimal Setting range:0 to F Note: The unit number is set to 0 at the factory.
4	Set the node address switches to 63.	 Setting method: Two-digit decimal Setting range:0 to 63 Note: The node address is set to 63 at the factory.

5 Set only pin 2 of the DIP switch to ON. (Set pins 1, 3 and 4 of the DIP switch to OFF.)

*Set the baud rate to 500 kbps.

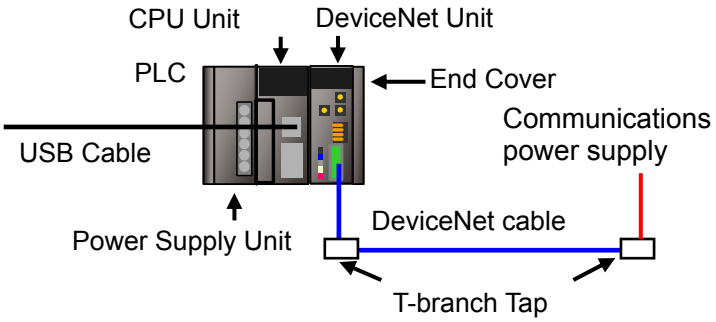
Hold/clear I/O for communications error (when used as a slave)
Continue/stop communications for communications error (when used as a master)
Baud rate

Pin	Function	Setting
1	Baud rate	See the next table.
2		
3	Continue/stop remote I/O communications for communication errors (when used as a master)	OFF: Continue communications ON: Stop communications
4	Hold/clear remote outputs for communications error (when used as a slave)	OFF: Clear remote outputs ON: Hold remote outputs

Pin 1	Pin 2	Baud rate
OFF	OFF	125 kbps
ON	OFF	250 kbps
OFF	ON	500 kbps
ON	ON	Not allowed.

All pins are set to OFF at the factory.

6 Connect the DeviceNet Unit to the CPU Unit.
Connect the PLC with the DeviceNet cable and USB cable as shown in 5.2. Device Configuration.
Connect the communications power supply to DeviceNet.



7.3. Setting Up the ABB Robot Controller

Set up the ABB Robot Controller.

⚠ Caution

Always confirm safety before you reset the Controller or any components.

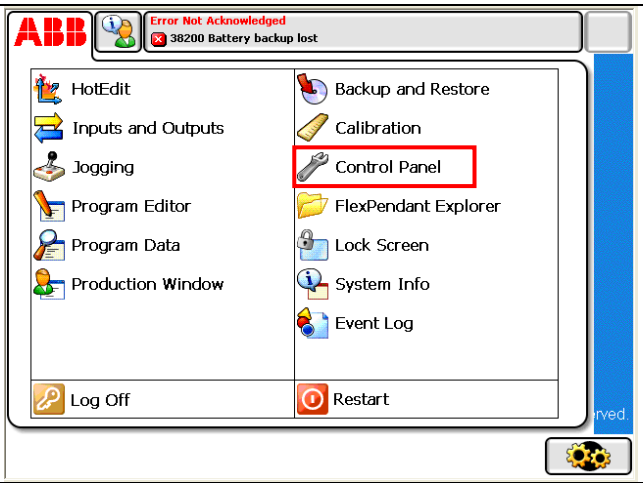
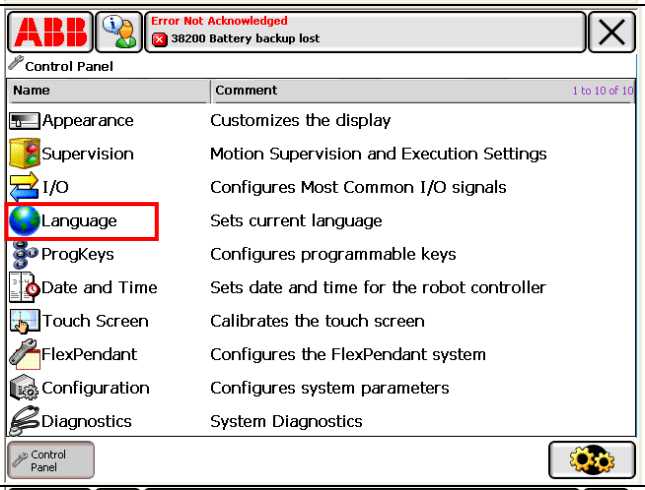
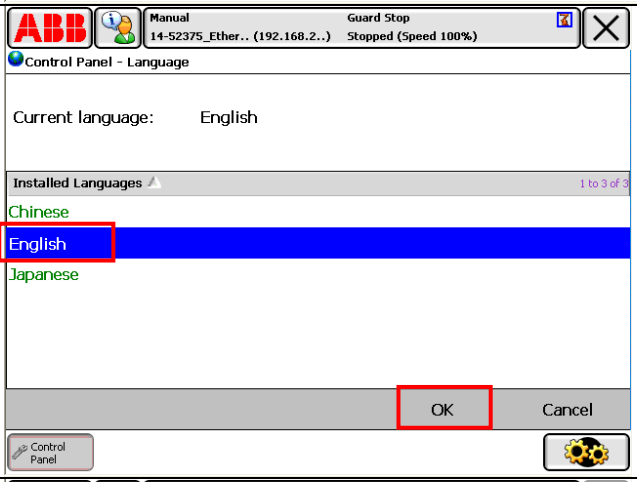
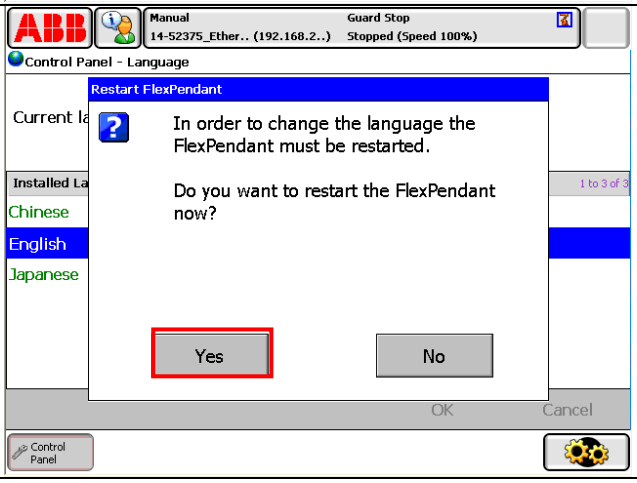
Precautions for Correct Use

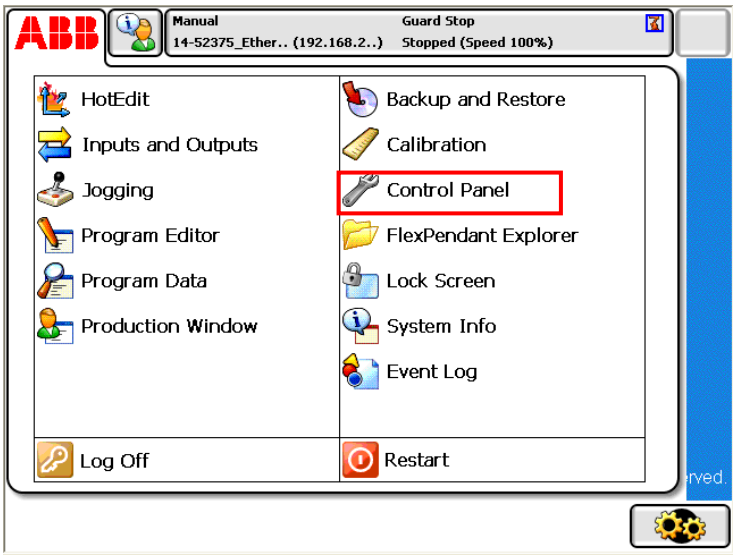
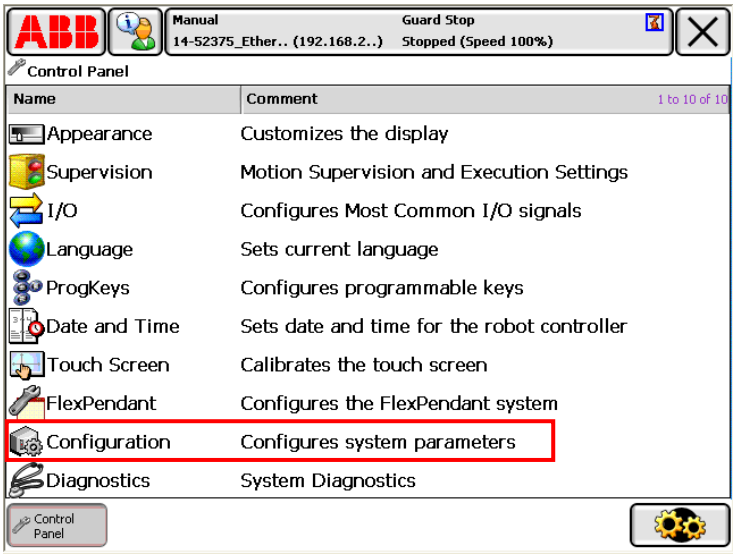
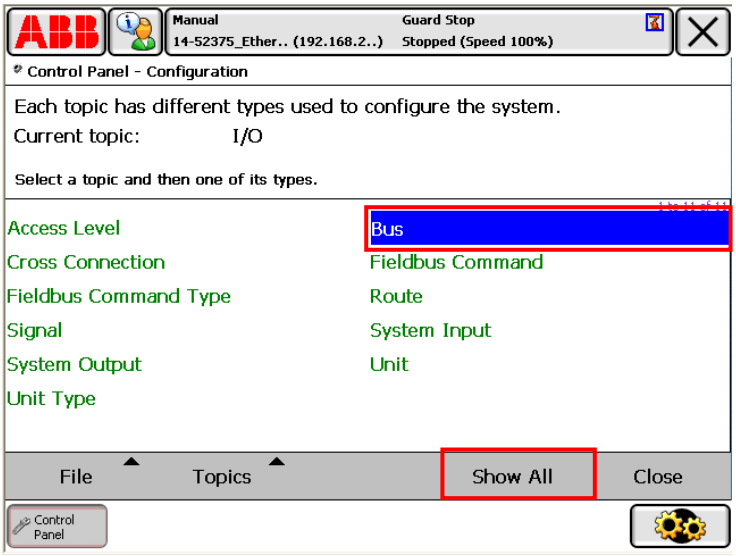
This document explains the setting procedure when The DeviceNet board is installed on the Robot Controller and safety circuits are connected.
For information on installing the Robot Controller, refer to *2 Installation and Commissioning* of the *Product Manual Robot Controller IRC5* (3HAC021313-001).
For information on installing the DeviceNet board, refer to 2. *Hardware description* of the *Application Manual DeviceNet* (3HAC020676-001).

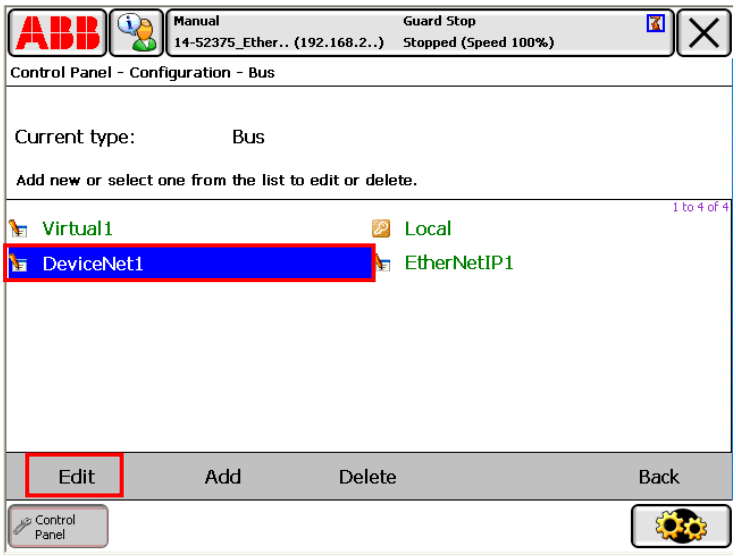
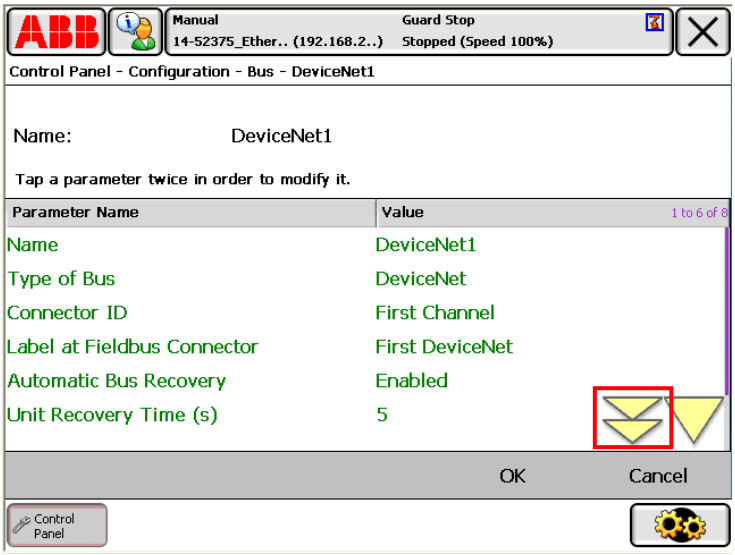
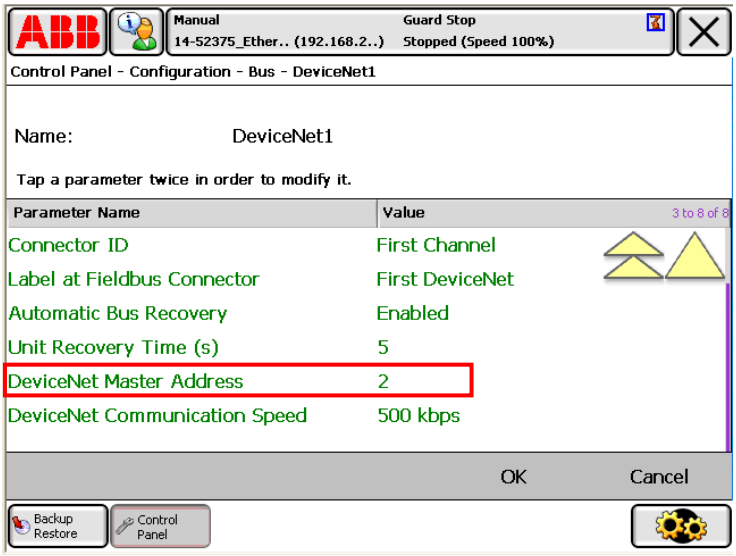
7.3.1. DeviceNet Parameter Settings

Set the DeviceNet parameters for the Robot Controller.

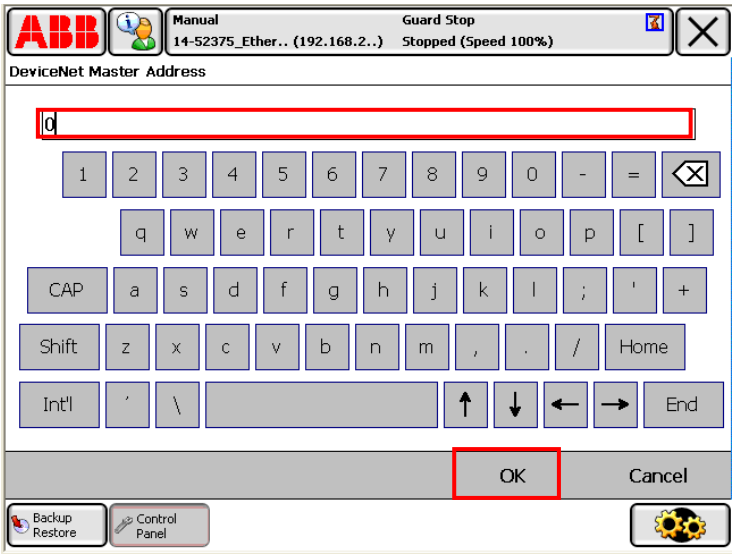
1	Connect the Manipulator and FlexPendant to the Robot Controller. Connect the power supply cable and the DeviceNet cables. Turn ON the communications power supply to DeviceNet and the power supply to the Robot Controller.	*For information on wiring the Robot Controller, refer to *2.5 Connections* of the *Product Manual Robot Controller IRC5* (3HAC021313-001). *For DeviceNet connection, refer to *2.2 Connections* of the *Application Manual DeviceNet* (3HAC020676-001).
2	The initial window is displayed on the FlexPendant. Press **ABB**.	

3	Press **Control Panel**. *If the window on the right is displayed in English, steps 4 to 6 are unnecessary. Proceed to step 7.	
4	Press **Language**.	
5	Select **English** and press **OK**.	
6	A change confirmation window is displayed. Press the **Yes** Button. The Robot Controller restarts. The same initial window as step 2 is displayed. Press **ABB**.	

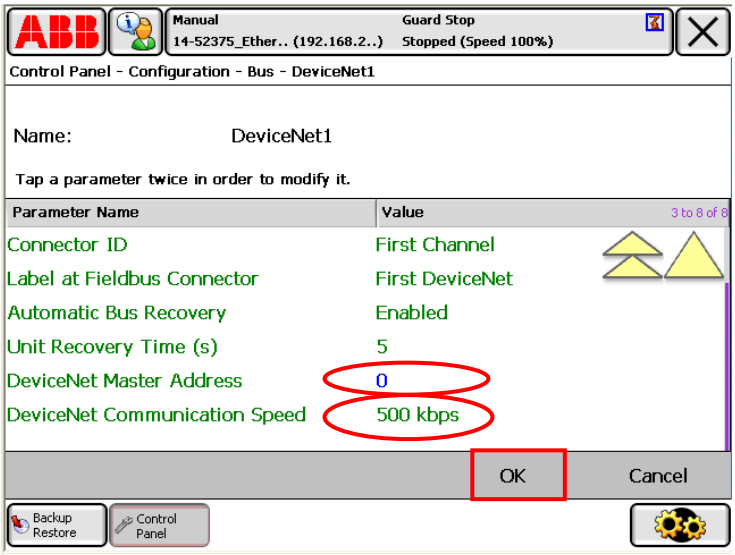
7	The window is displayed in English. Press **Control Panel**.	
8	Press **Configuration**.	
9	Select **Bus** and press **Show All**.	

10	Select **DeviceNet1** and press **Edit**.	
11	Display the next page by pressing  .	
12	Select **DeviceNet Master Address** and press the value.	

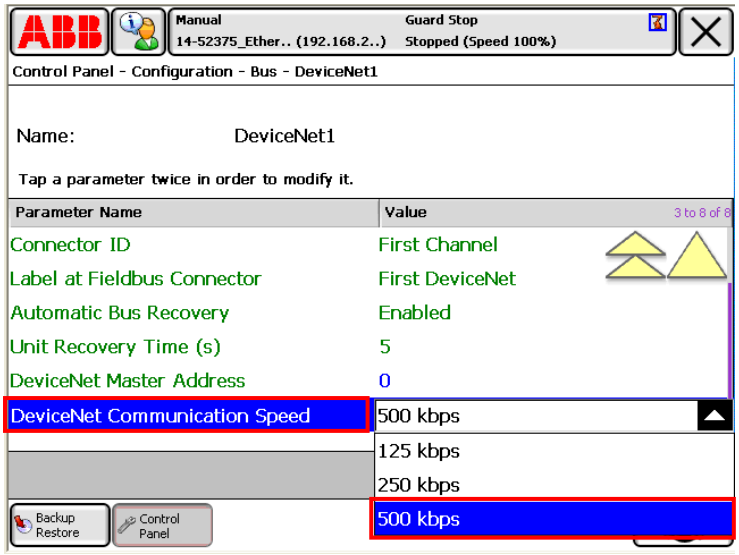
13 Enter 0 and press **OK**.

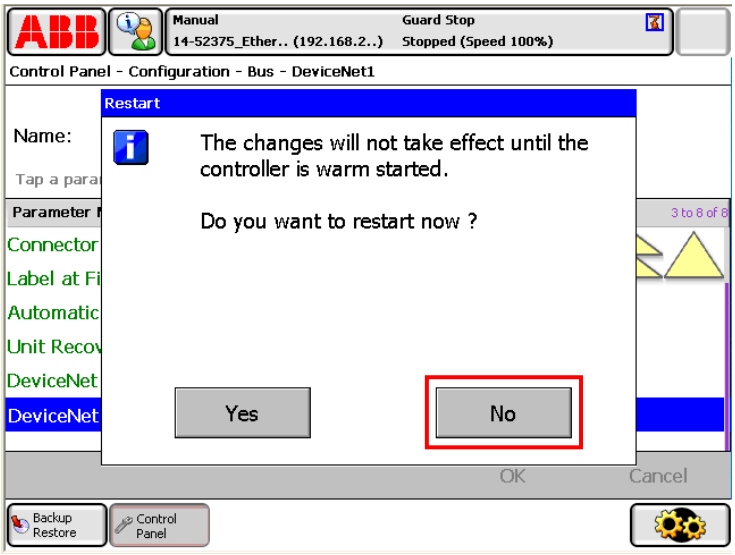
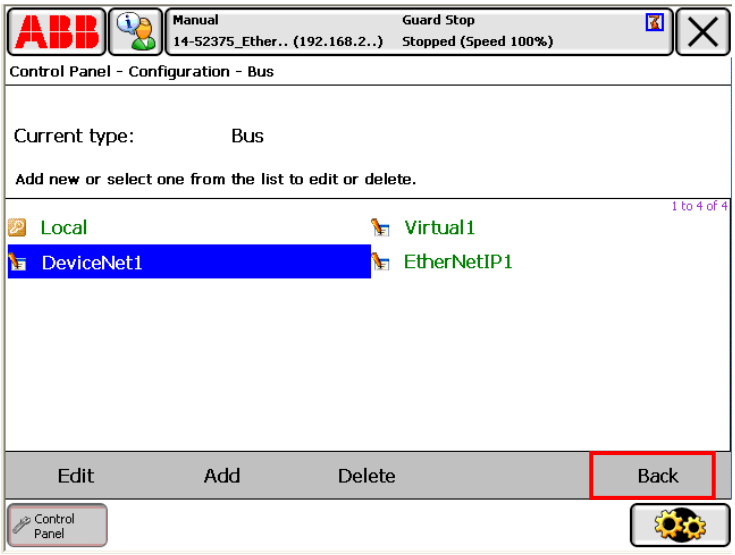
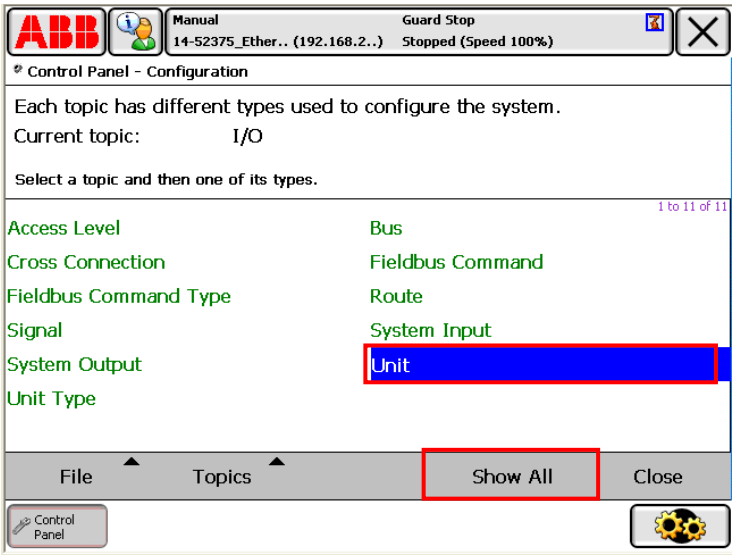


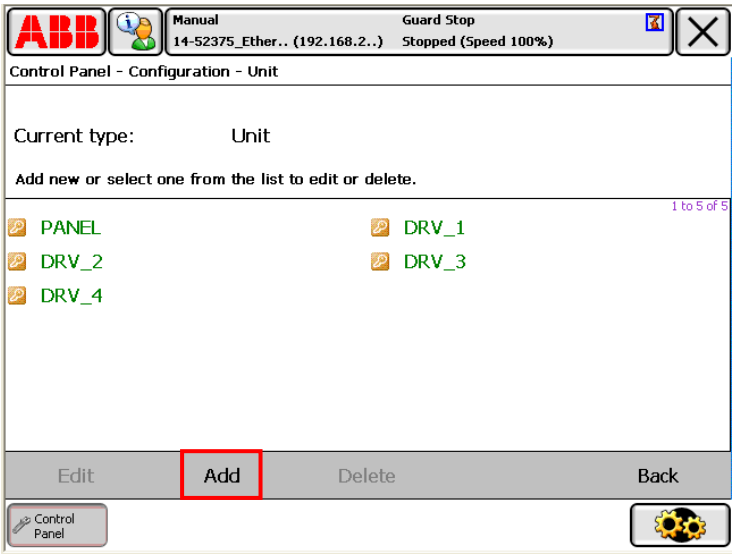
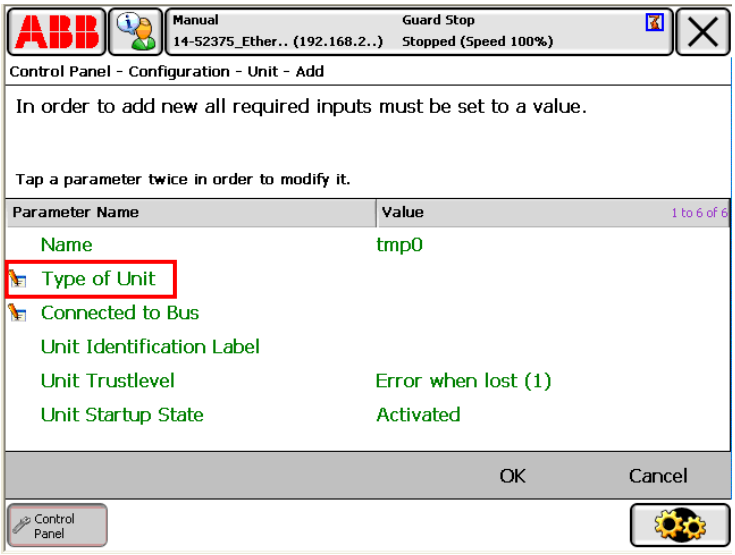
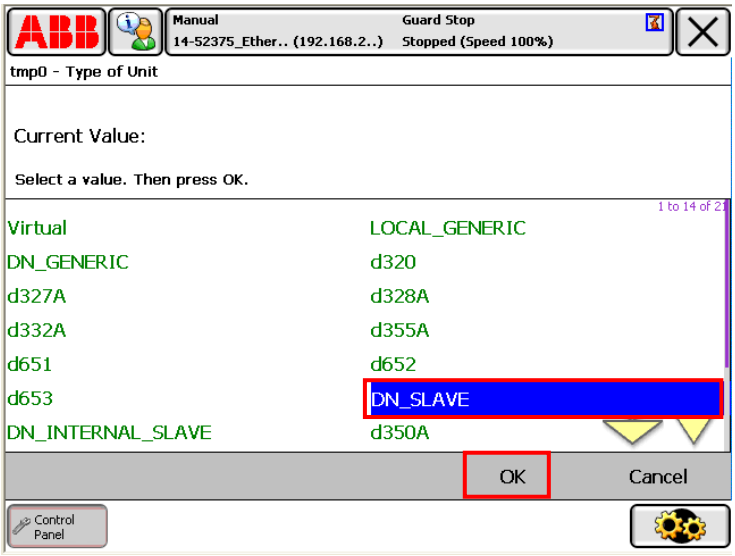
14 Confirm that DeviceNet Master Address was changed to 0. Confirm that DeviceNet Communication Speed is 500 kbps and press **OK**.



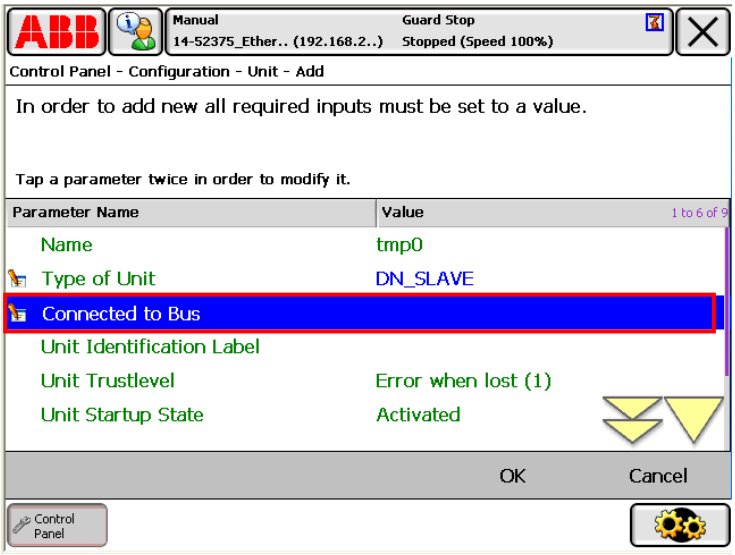
*If a different value is set as the DeviceNet Communication Speed, select **DeviceNet Communication Speed** and press the value as shown on the right. Select *500 kbps* from the pull-down list that is displayed.



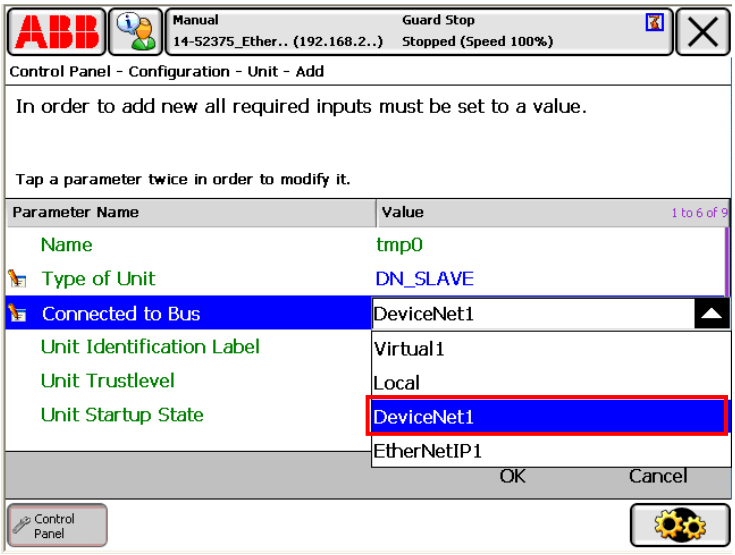
15	If the setting values were changed in steps 12 to 14, the Restart Window is displayed. Press the **No** Button. If no change was made, proceed to step 16.	
16	Press **Back**.	
17	Select **Unit** and **Show All**.	

18	Press **Add**.	
19	Select **Type of Unit** and press the value.	
20	Select **DN_SLAVE** and press **OK**.	

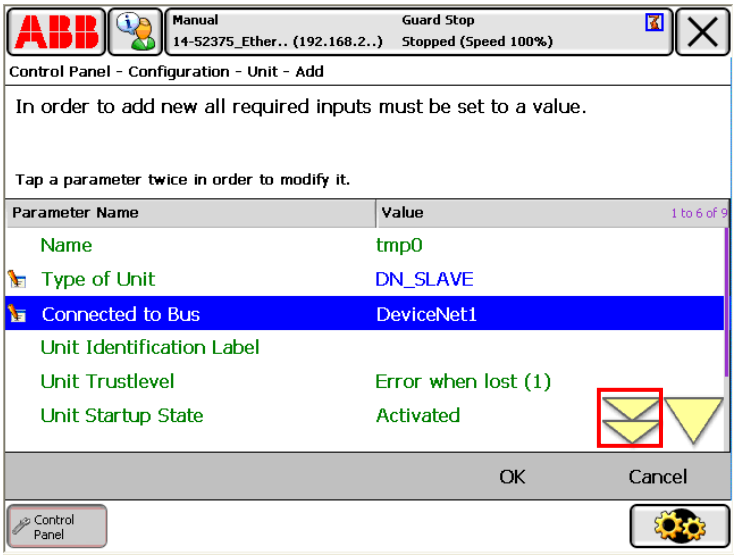
21 Select **Connected to Bus** and press the value.

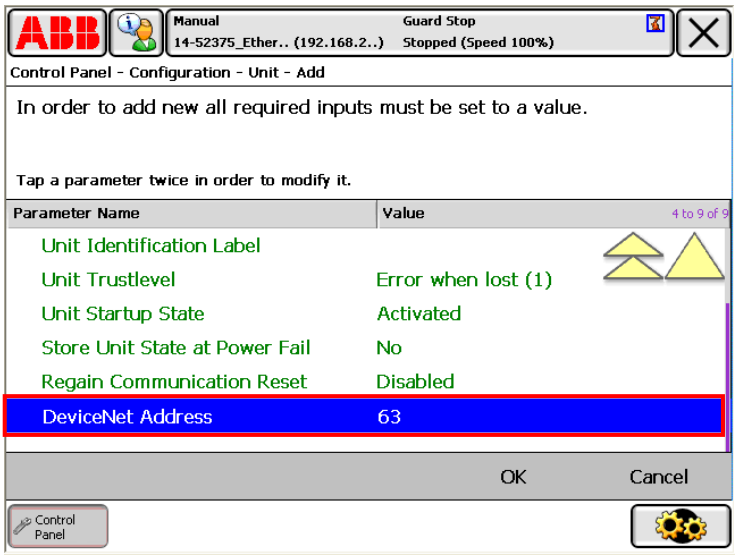
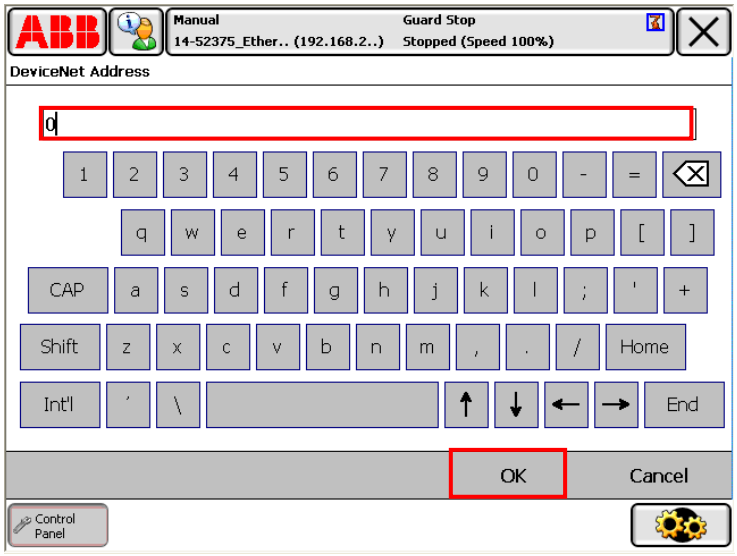
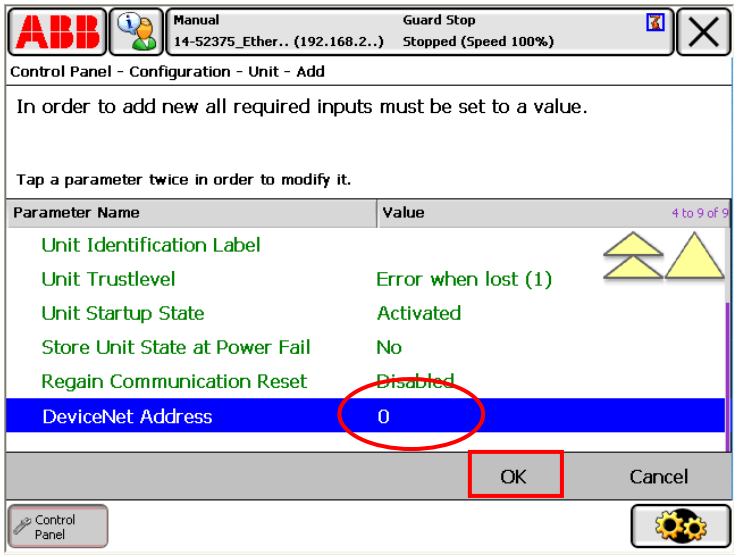


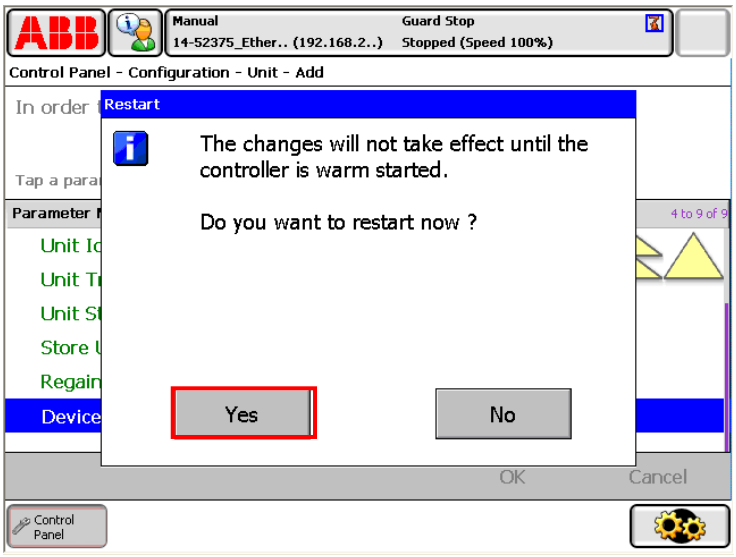
22 Select *DeviceNet1* from the pull-down list.



23 Display the next page by pressing ⏬.

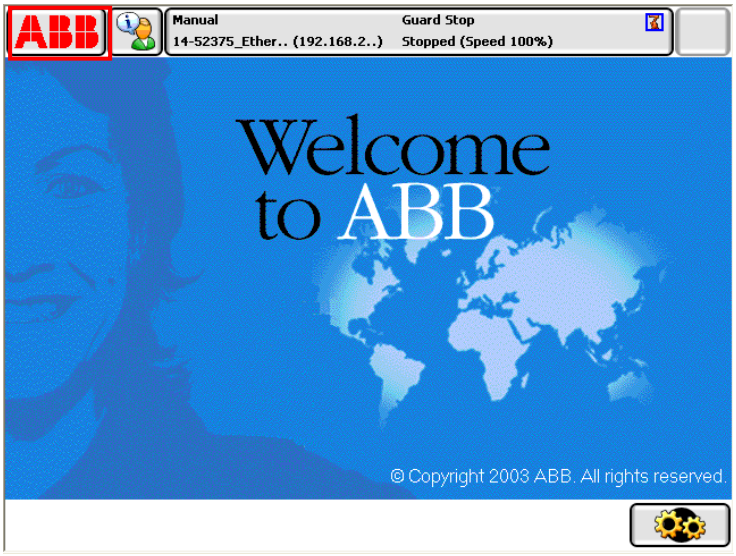
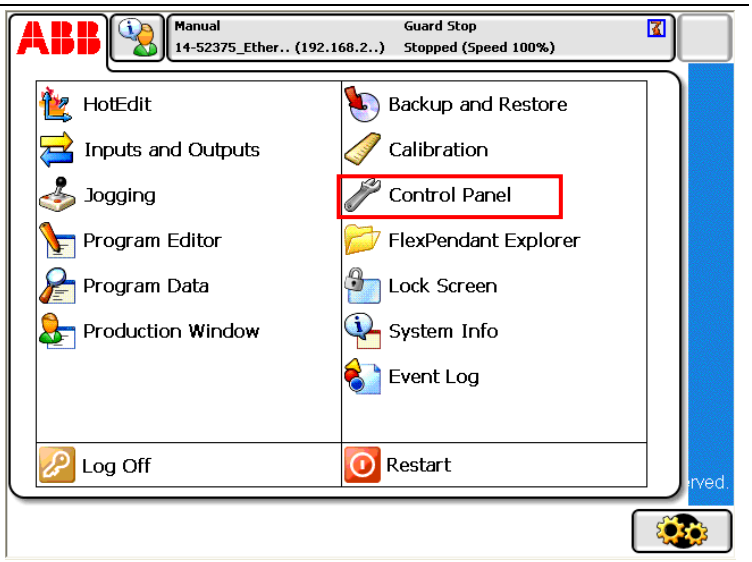
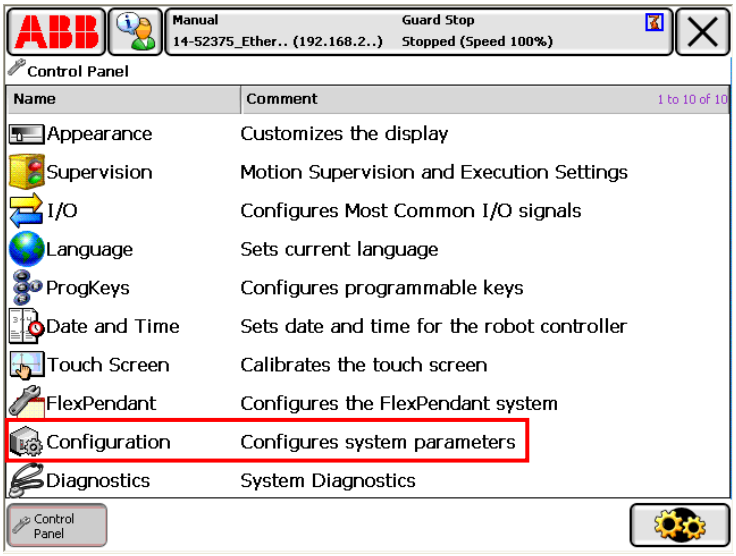


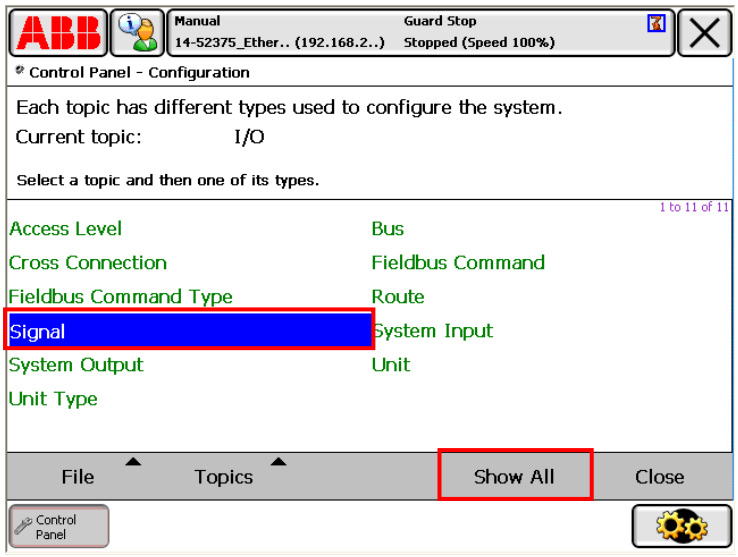
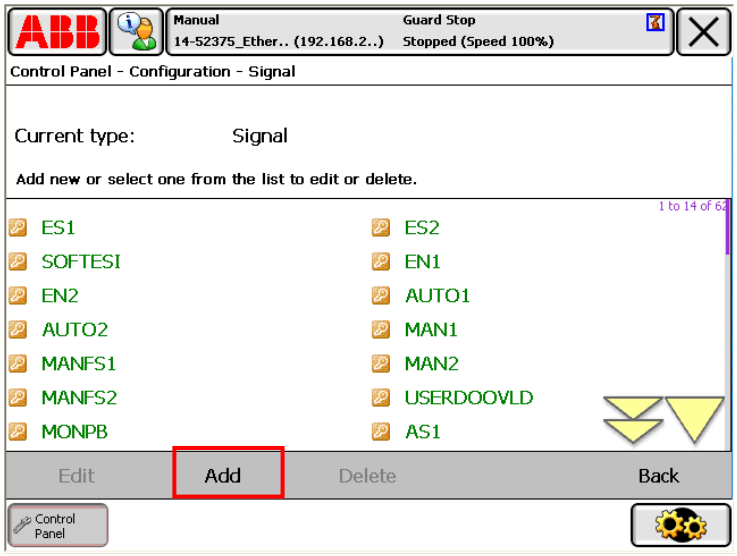
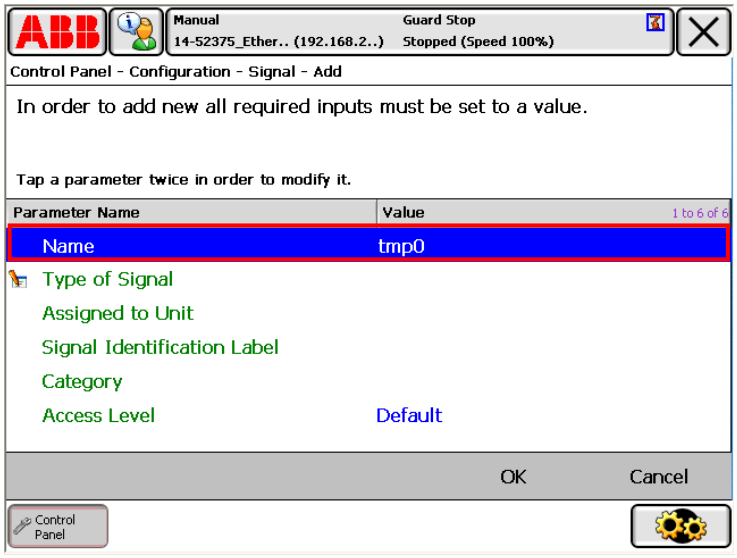
24	Select **DeviceNet Address** and press the value.	
25	Enter 0 and press **OK**.	
26	Confirm that DeviceNet Address is 0. Press **OK**.	

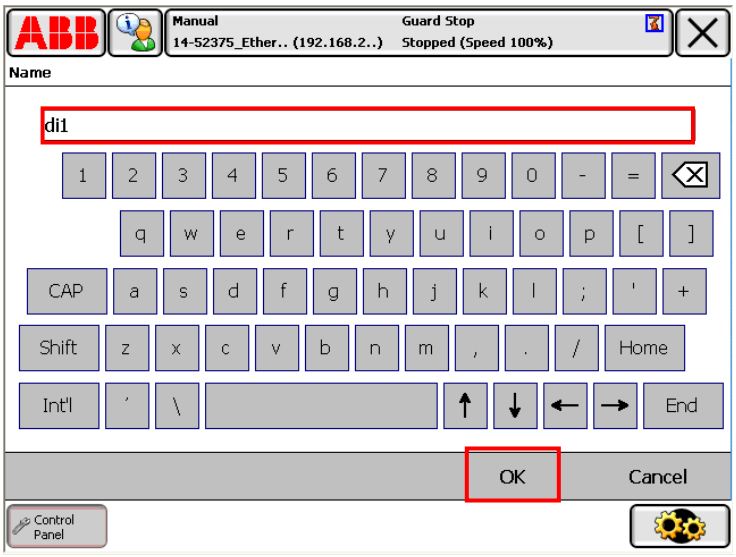
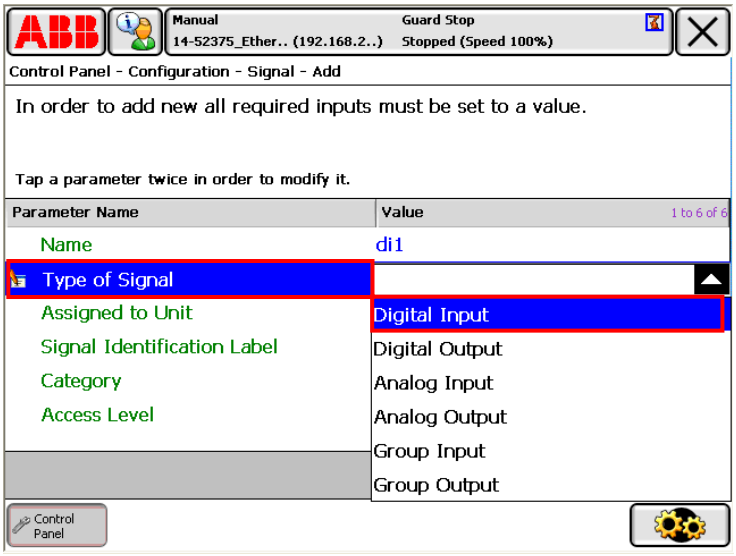
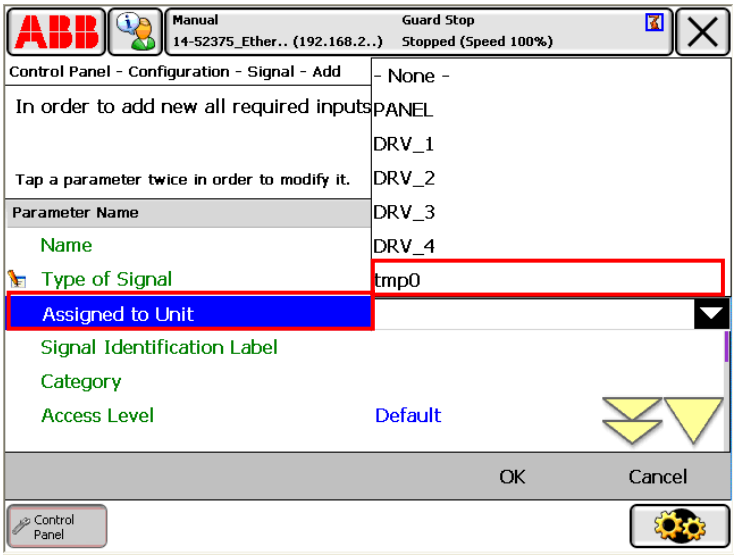
27	A restart confirmation window is displayed. Press the **Yes** Button.	

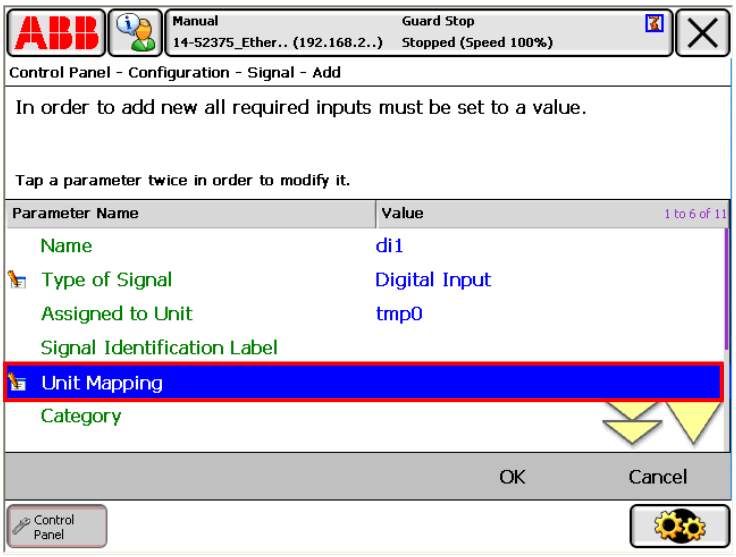
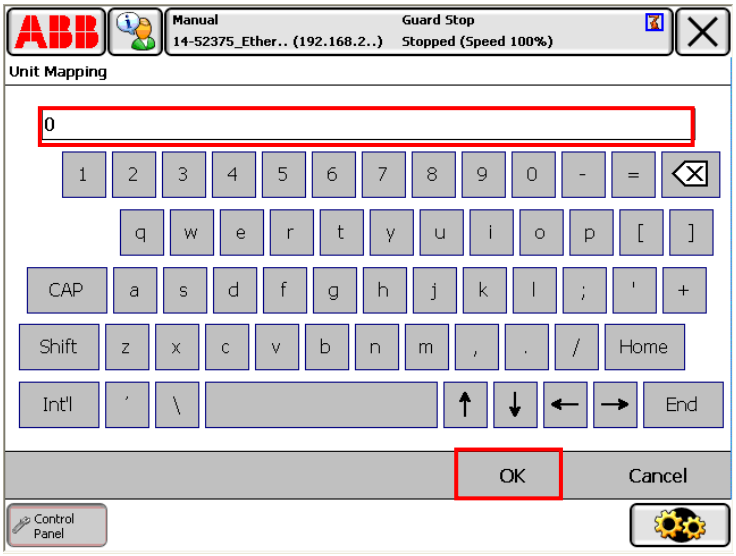
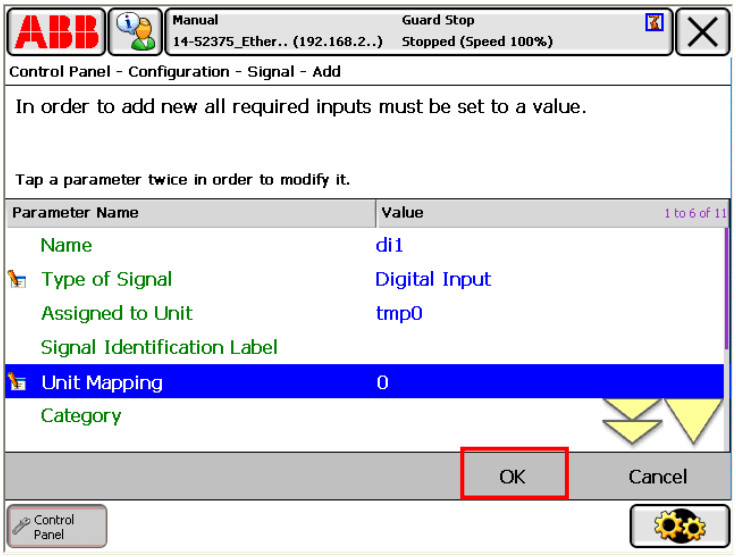
7.3.2. DeviceNet I/O Settings

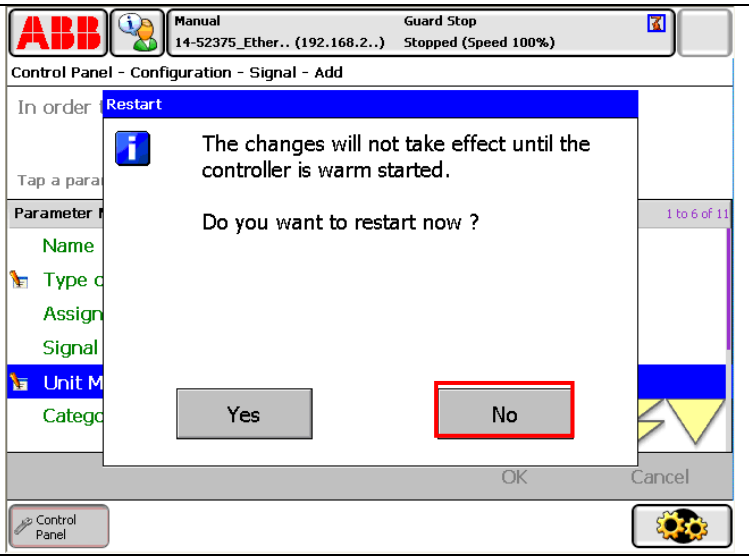
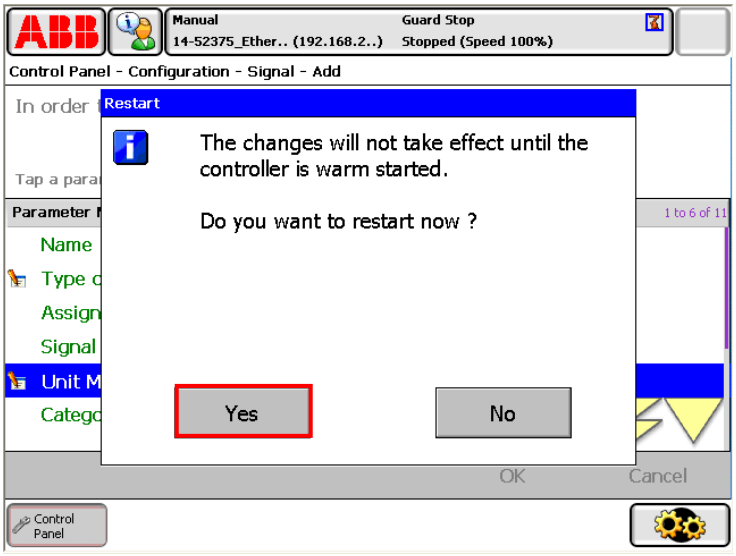
Make DeviceNet I/O settings for the Robot Controller.

1	The Robot Controller restarts and the initial window is displayed on FlexPendant. Press **ABB**.	
2	Press **Control Panel**.	
3	Press **Configuration**.	

4	Select **Signal** and press **Show All**.	
5	Press **Add**.	
6	Select **Name** and press the value.	

7	Enter di1 and press **OK**.	
8	Select **Type of Signal**, press the value, and then select **Digital Input** from the pull-down list that is displayed.	
9	Select *Assigned of Unit,* press the value, and then select *tmp0* from the pull-down list that is displayed.	

10	Select **Unit Mapping** and press the value.	
11	Enter 0 and press **OK**.	
12	Press **OK**.	

13	Press **No**. The same initial window as step 5 is displayed.	
14	Add the following signals in the same way as steps 5 to 13. •Name: di2 Type of signal: Digital Input Assigned to Unit: tmp0 Unit Mapping: 1 •Name: di3 Type of signal: Digital Input Assigned to Unit: tmp0 Unit Mapping: 2 •Name: di4 Type of signal: Digital Input Assigned to Unit: tmp0 Unit Mapping: 3	
15	Add the following signals in the same way as steps 5 to 13. •Name: do1 Type of signal: Digital Output Assigned to Unit: tmp0 Unit Mapping: 0 •Name: do2 Type of signal: Digital Output Assigned to Unit: tmp0 Unit Mapping: 1 •Name: do3 Type of signal: Digital Output Assigned to Unit: tmp0 Unit Mapping: 2 •Name: do4 Type of signal: Digital Output Assigned to Unit: tmp0 Unit Mapping: 3	*Press the **Yes** Button in step 13 only when you make the last setting (setting for do4). 
16	The Robot Controller restarts and the initial window is displayed on FlexPendant. Press **ABB**.	(The same window as step 2 is displayed.)

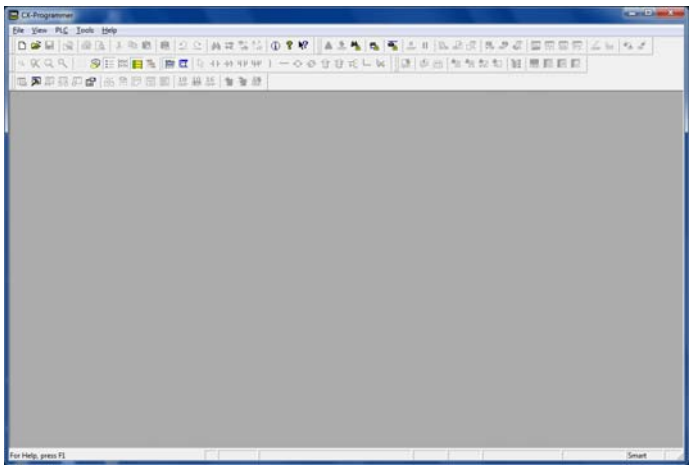
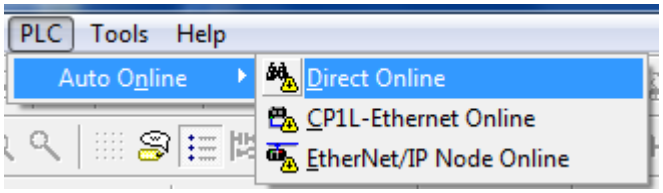
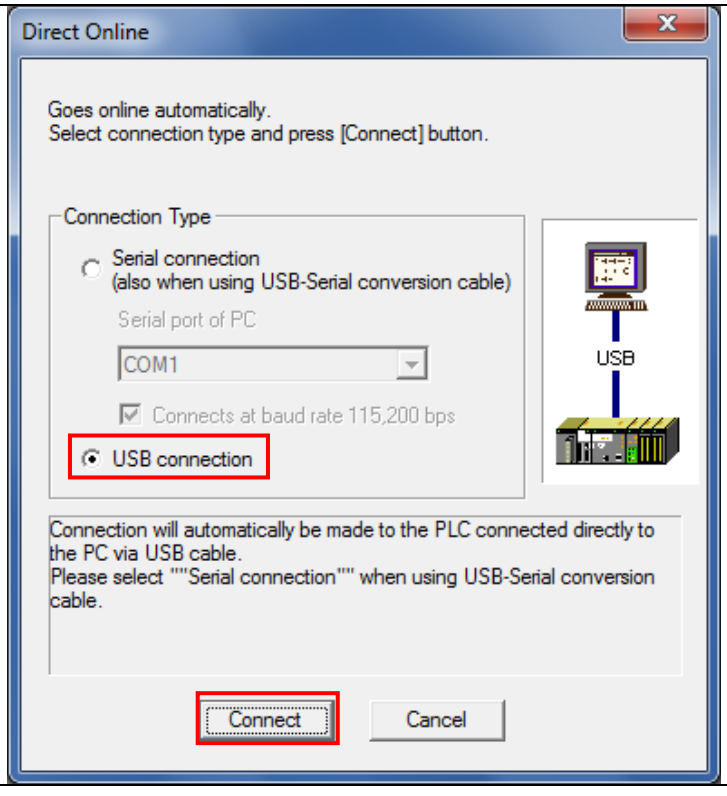
7.4. Setting Up the PLC

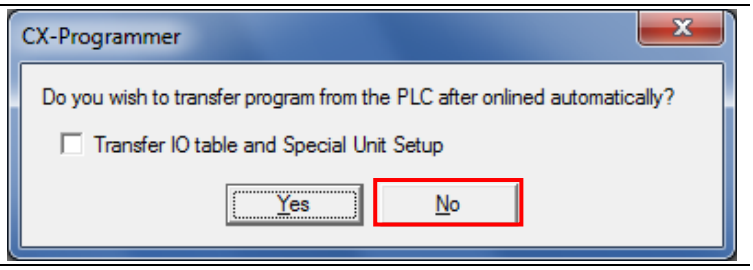
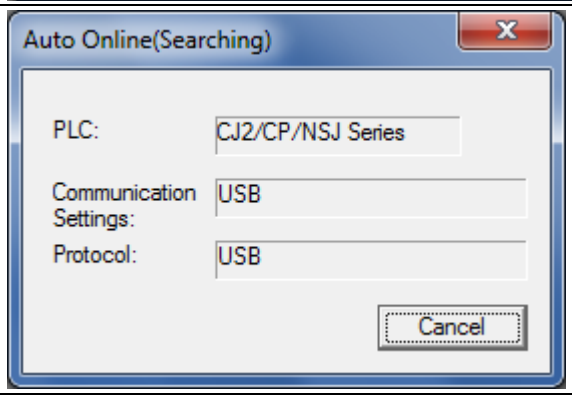
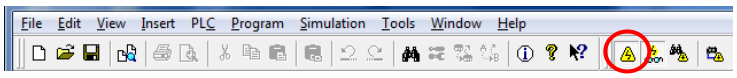
Set up the PLC.

7.4.1. 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	Turn ON the power supply to the PLC.	
2	Start the CX-Programmer. *If a confirmation dialog for an access right is displayed at start, select 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 and 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 is 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 the CX-Programmer and PLC are not connected online, please check the connection of the cable.
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.

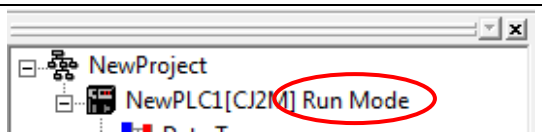
Additional Information

The dialogs 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.

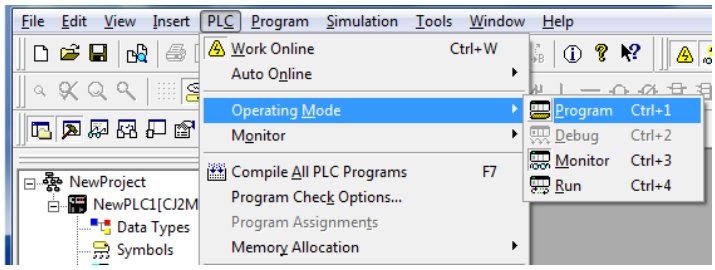
7.4.2. Creating the I/O Table

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.

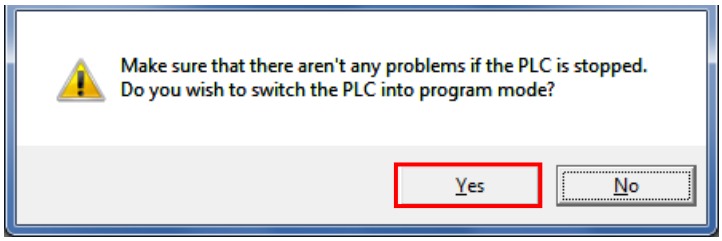


(1)Select ***Operating Mode*** - ***Program*** from the PLC Menu of the CX-Programmer.

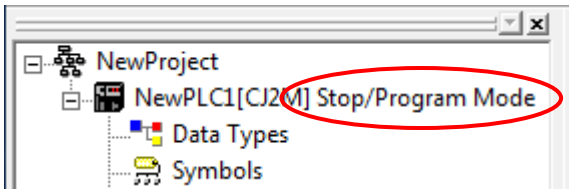


(2)The dialog box on the right is displayed. Click the **Yes** Button.

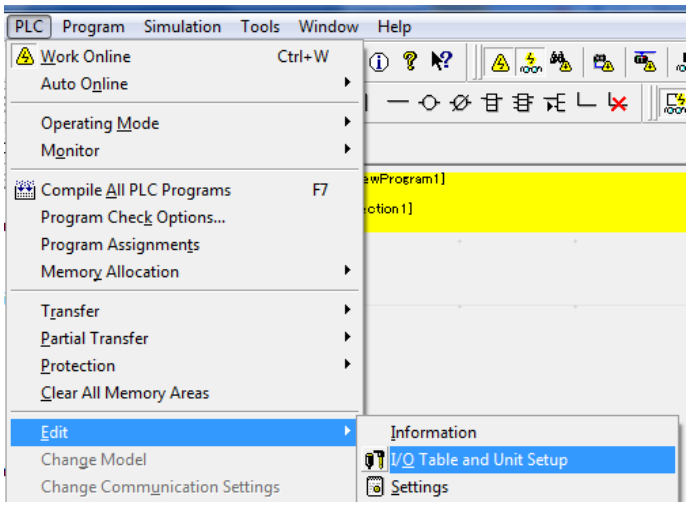
*Refer to *Additional Information* on the previous page for the settings concerning the dialog display.



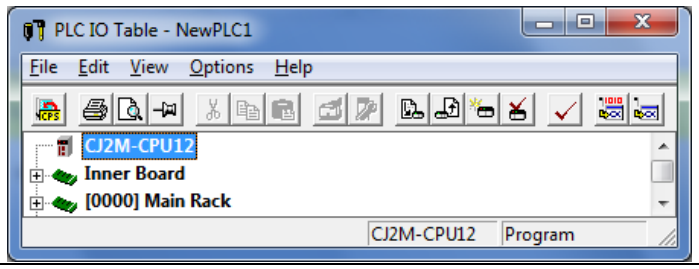
(3)Confirm that Stop/Program Mode is displayed on the right of the PLC model in the project workspace of the CX-Programmer.



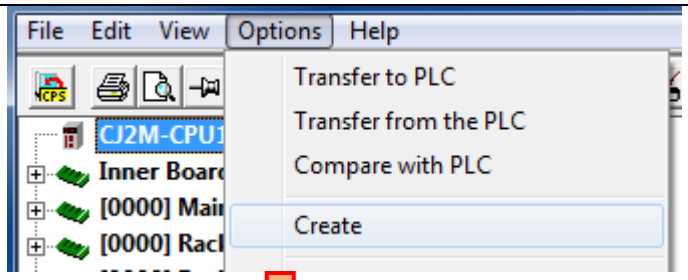
2 Select ***Edit*** - ***I/O Table and Unit Setup*** from the PLC Menu of the CX-Programmer.



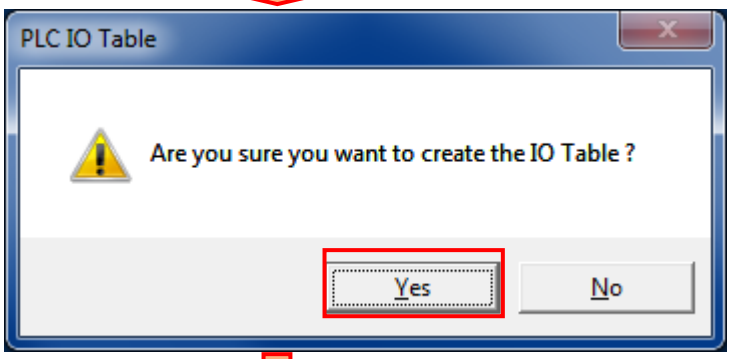
The PLC IO Table Window is displayed.



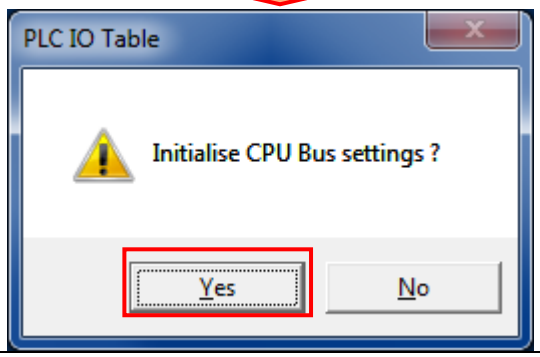
3 Select ***Create*** from the Options Menu of the PLC IO Table Window.



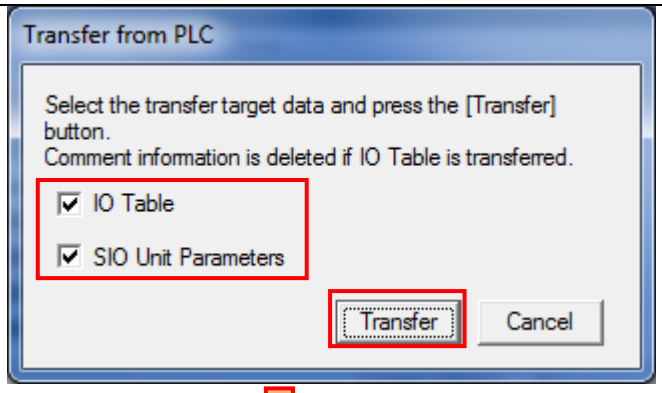
The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.



The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.



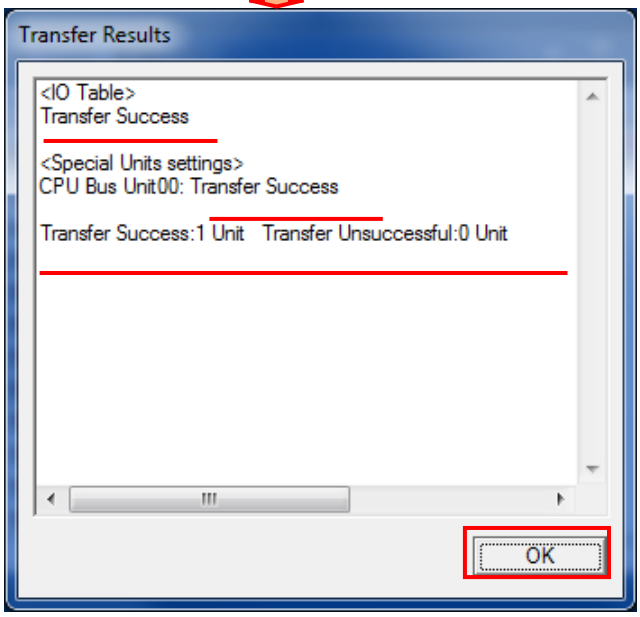
4 The Transfer from PLC Dialog Box is displayed. Select the *I/O Table* Check Box and the *SIO Unit Parameters* Check Box, and click the **Transfer** Button.



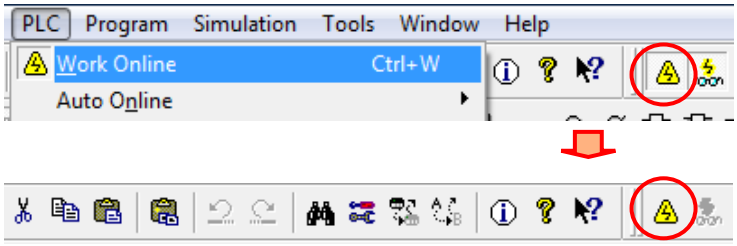
When the transfer is completed, the Transfer Results Dialog Box is displayed.
Confirm that the transfer was normally executed by referring to the message in the dialog box.

When the I/O table is created normally, the dialog box shows the following,
Transfer Success: 1 Unit
Transfer Unsuccessful: 0 Unit

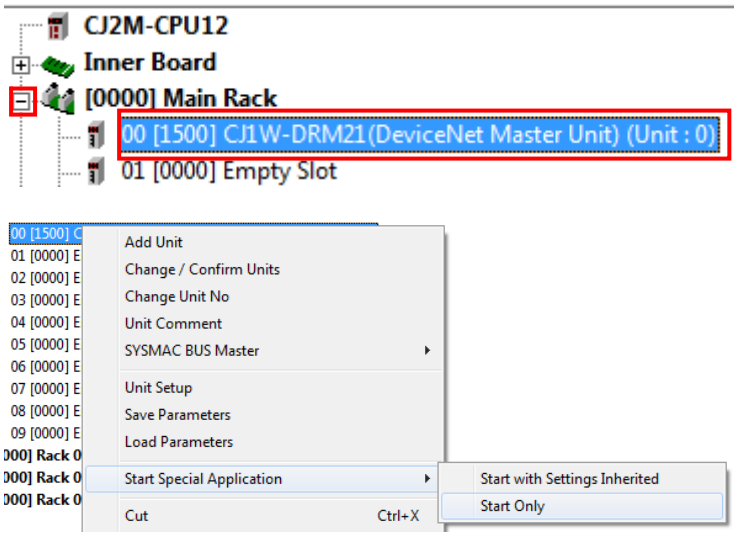
Click the **OK** Button.



5 Connect offline with the CX-Programmer.
Select ***Work Online*** from the PLC Menu.
*The  icon is not pressed down during offline connection.



6 On the PLC IO Table Window, click **+** to the left of [0000] Main Rack to display CJ1W-DRM21.
Right-click CJ1W-DRM21 on the PLC IO Table Window, and select ***Start Special Application*** - ***Start Only***.



7.5. Setting Up the Network

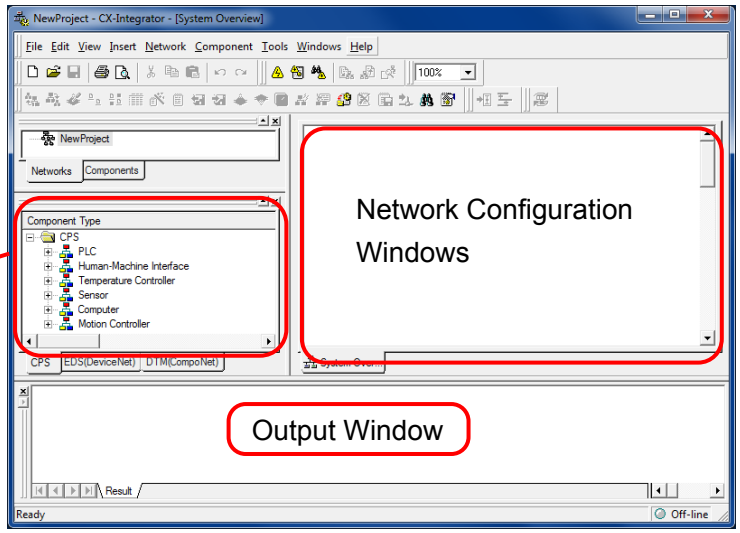
Set up DeviceNet remote I/O communications.

7.5.1. Starting the CX-Integrator and Installing the EDS File

Start the CX-Integrator and install the EDS file.

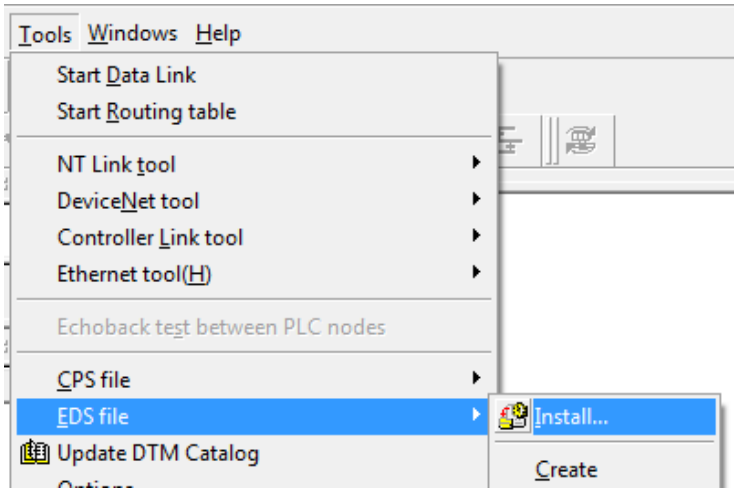
1 The CX-Integrator starts.

*If the Component List Window is not displayed, select ***Windows*** - ***Component List Window*** from the View Menu.



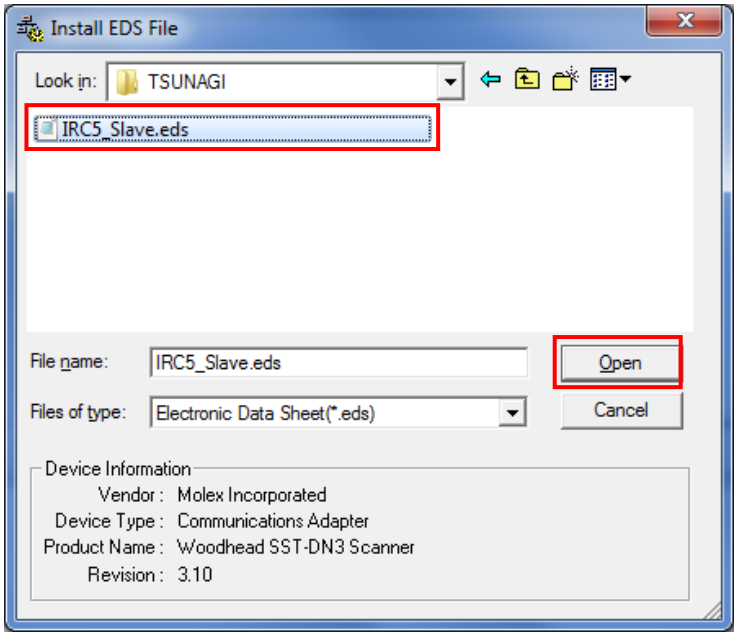
2 Install the EDS file to register the Robot Controller in the network.

Select ***EDS file*** - ***Install*** from the Tools Menu.

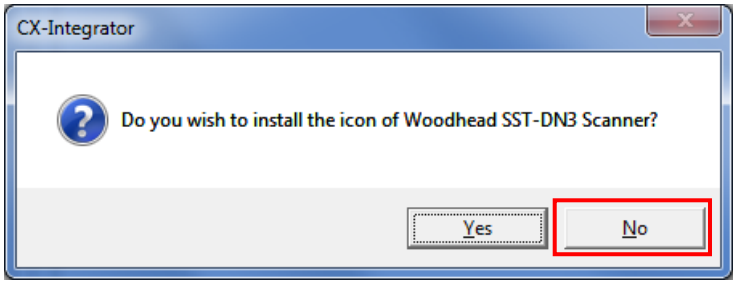


3 Select [IRC5_Slave.eds] as an EDS file to install and click the **Open** Button.

*For how to obtain the EDS file, refer to *Precautions for Correct Use* in *5.2. Device Configuration*.

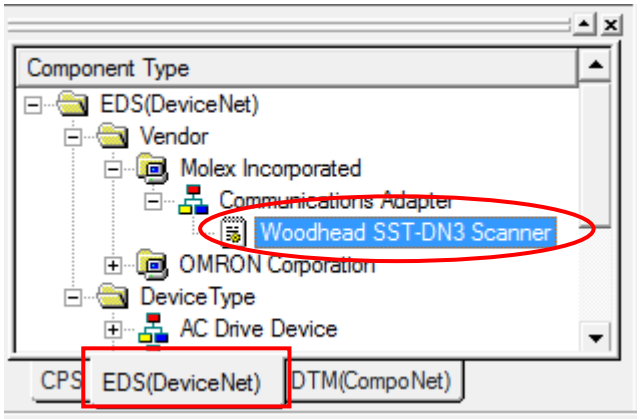


4 The dialog box on the right is displayed. Check the contents and click the **No** Button.



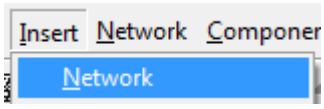
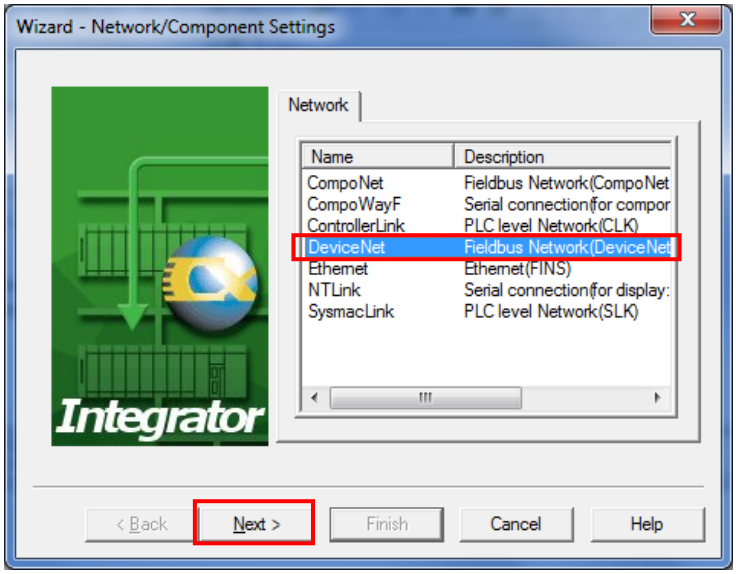
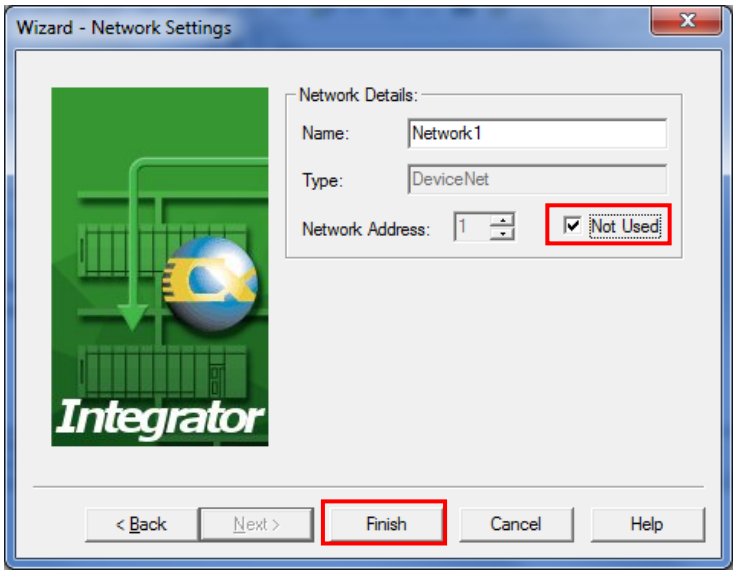
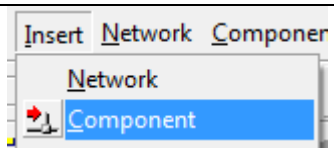
5 Select the EDS(DeviceNet) Tab on the Component List Window and confirm that the installed device was added ([Woodhead SST-DN3 Scanner] was added in the right figure).

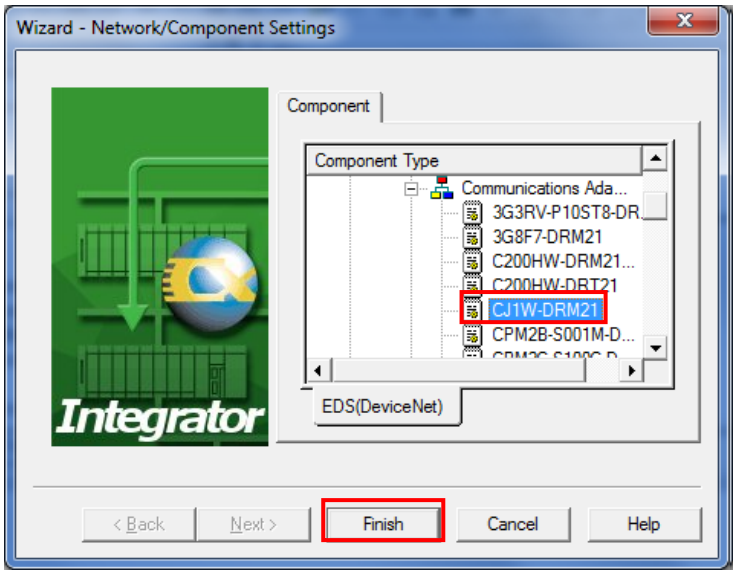
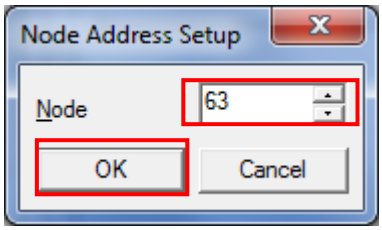
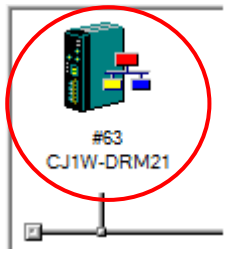
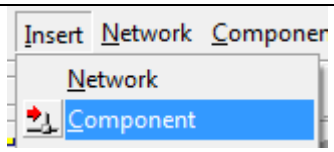
*When you install the [IRC5_Slave.eds], [Woodhead SST-DN3 Scanner] device will register.

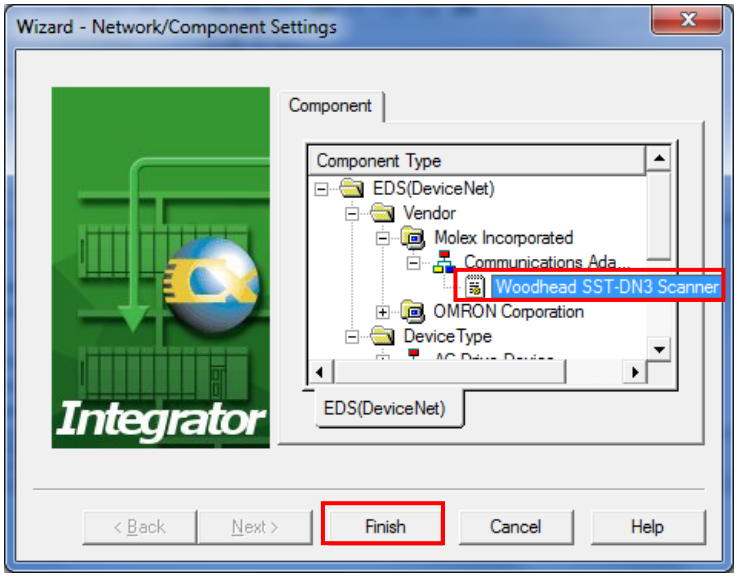
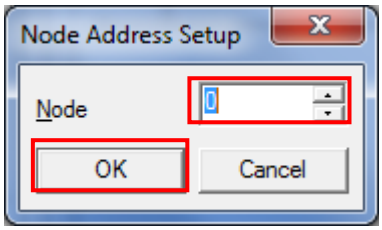
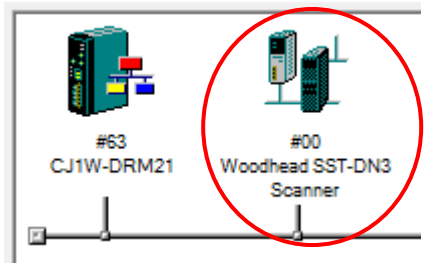


7.5.2. Creating the Network Configuration

Create the network and device configuration offline.

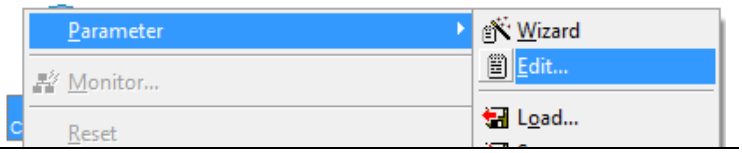
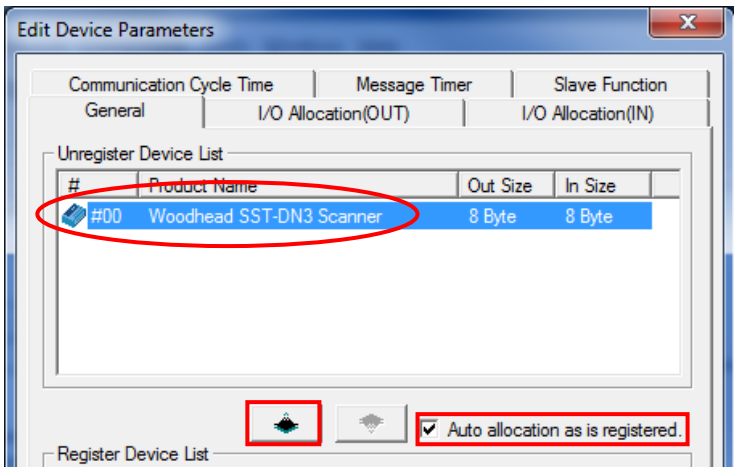
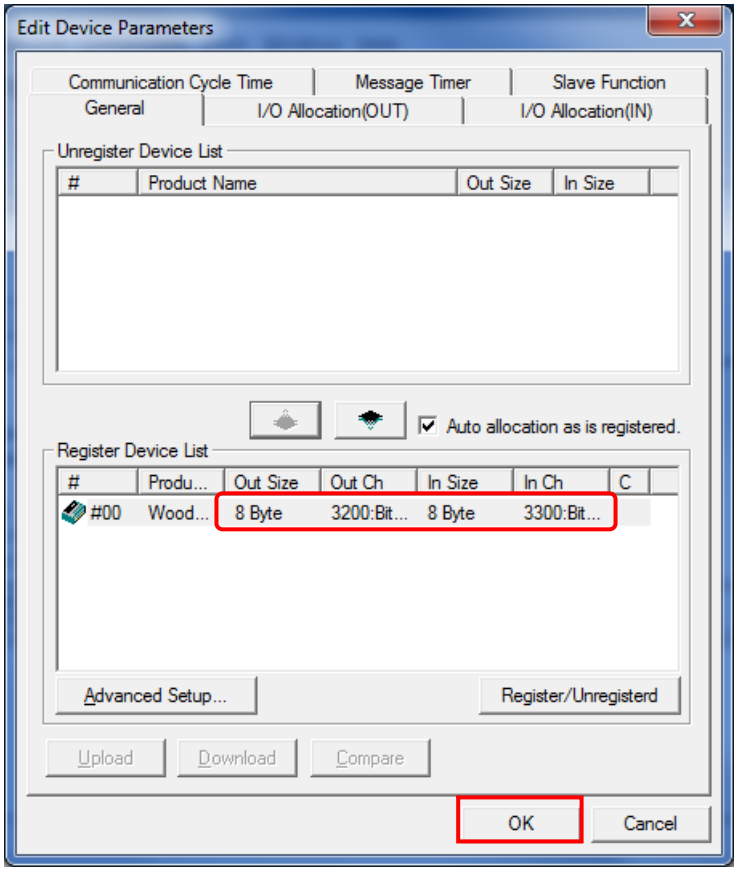
1	Select ***Network*** from the Insert Menu of the CX-Integrator.	
2	Select ***DeviceNet*** and click the **Next** Button.	
3	Select the *Not Used* Check Box for the Network Address and click the **Finish** Button.	
4	Register the DeviceNet Unit in the Network. Select ***Component*** from the Insert Menu.	

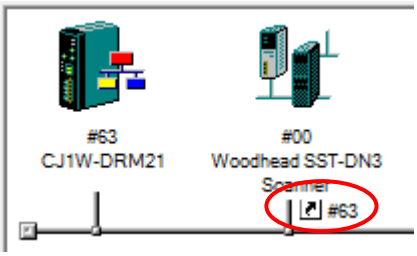
5	Select the DeviceNet Unit from the component list and click the **Finish** Button. **OMRON Corporation** - **Communications Adapter** - **CJ1W-DRM21** is selected here.	
6	Enter the node address (63 is entered here) in the Node Address Setup Dialog Box, and click the **OK** Button.	
7	Confirm that the DeviceNet Unit is registered in the Network Configuration Window.	
8	Register the Robot Controller (hereinafter referred to as the Slave Unit) in the network. Select **Component** from the Insert Menu.	

9	Select the Slave Unit to connect from the component list, and click the **Finish** Button. [Woodhead SST-DN3 Scanner] is selected here. *When you install the [IRC5_Slave.eds], [Woodhead SST-DN3 Scanner] device will register.	
10	Enter the node address (0 is entered here) in the Node Address Setup Dialog Box, and click the **OK** Button.	
11	Confirm that the Slave Unit is registered in the Network Configuration Window. *IRC5 is shown as [Woodhead SST-DN3 Scanner].	

7.5.3. Setting the Device

Set the device and register it in the DeviceNet Unit (create a scan list).

1	Right-click the DeviceNet icon and select ***Parameter*** - ***Edit***.	
2	The Edit Device Parameters Dialog Box is displayed. Slave Unit (#00) is displayed in the Unregister Device List. Select the *Auto allocation as is registered* Check Box. Click the ↓ button. Slave Unit (#00) is registered in the Register Device List. Confirm that the sizes and channels are set as follows, and click the **OK** Button. OUT Size: 8 Byte Out Ch: 3200:Bit00 In Size: 8 Byte In Ch: 3300:Bit00	 

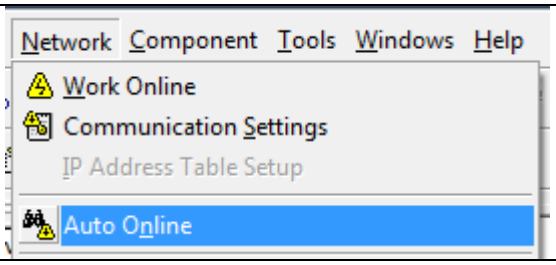
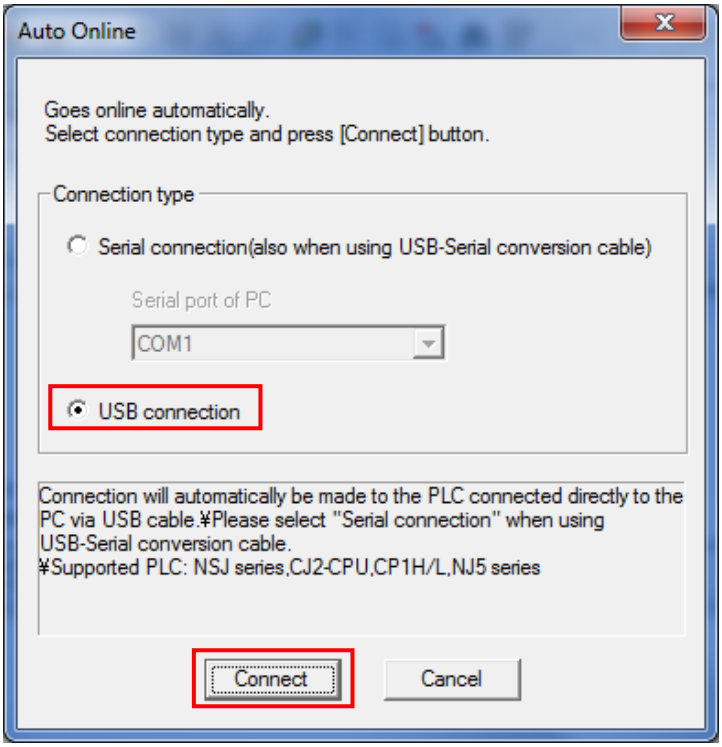
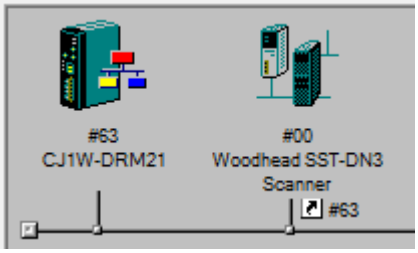
3	Confirm that node address #63 is displayed under the slave unit icon on the Network Configuration Window. *IRC5 is shown as [Woodhead SST-DN3 Scanner].	

Precautions for Correct Use

Confirm that the DeviceNet cable is connected before proceeding to the following procedure. If it is not connected, turn OFF the power supply to each device, and then connect the DeviceNet cable.

7.5.4. Connecting Online and Transferring the Scan List

Connect online with the PLC, and transfer the device setting (scan list) to the DeviceNet Unit. When the transfer is completed, remote I/O communications start automatically.

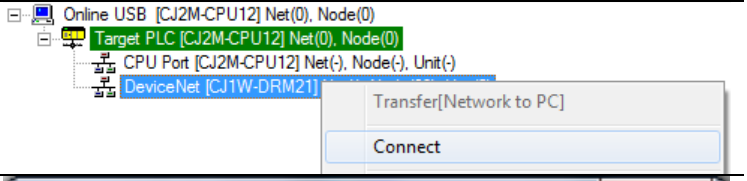
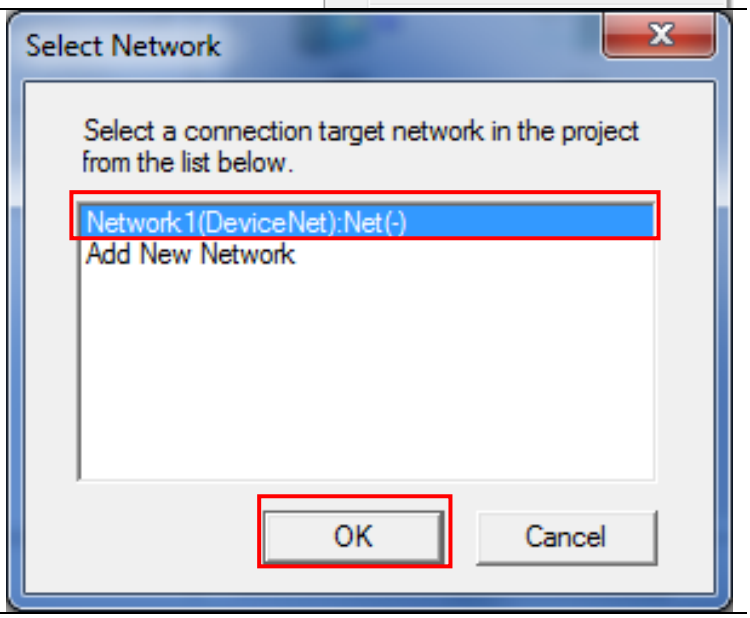
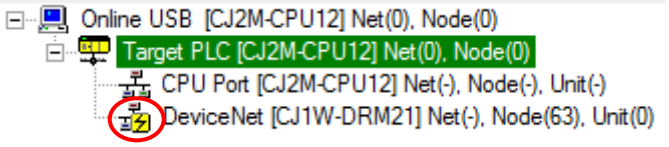
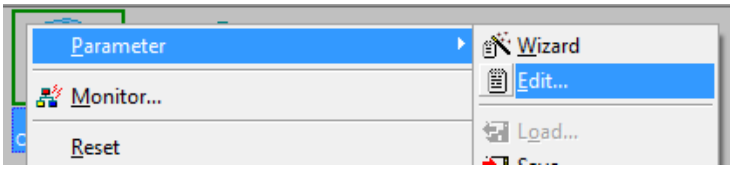
1	Select ***Auto Online*** from the Network Menu.	
2	The Auto Online Dialog Box is displayed. Select the *USB connection* Option for Connection type, and click the **Connect** Button. A confirmation dialog is displayed indicating the connection is being established.	
3	After an online connection is established, the background color of the Network Configuration Window changes as shown in the right figure. *IRC5 is shown as [Woodhead SST-DN3 Scanner].	

Additional Information

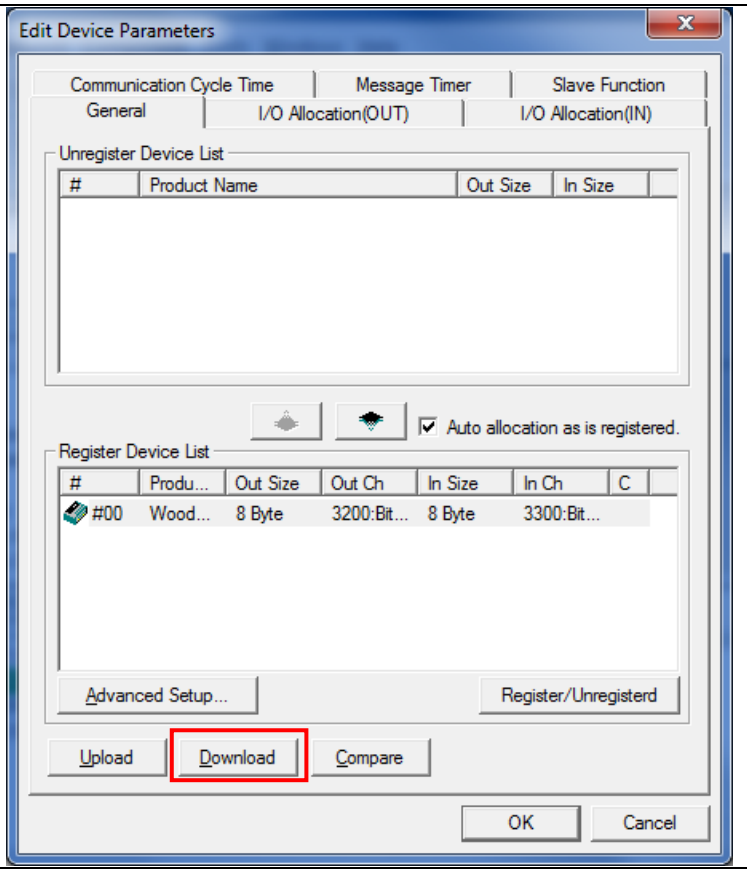
If the CX-Programmer and PLC are not connected online, please check the connection of the cable.

Or, return to step 1, check the settings and repeat each step.

Refer to *Section 2 Basic Operations* of the *CX-Integrator Ver.2. Operation Manual* (Cat. No. W464) for details.

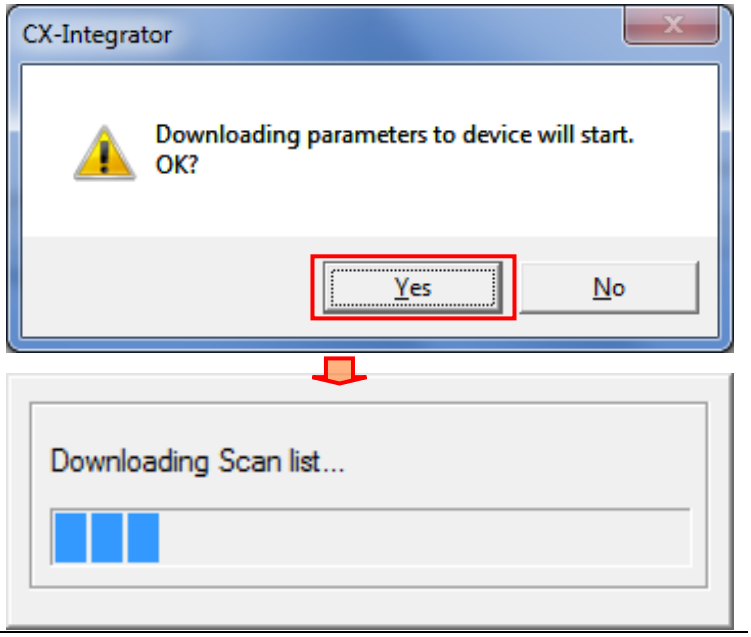
4	Right-click DeviceNet in the Online Connection Information Window, and select ***Connect***.	
5	Select DeviceNet in the Select Network Dialog Box, and click the **OK** Button.	
6	Confirm that DeviceNet is in online status (icon) in the Online Connection Information Window.	
7	Right-click CJ1W-DRM21 on the Network Configuration Window, and select ***Parameter*** - ***Edit***.	

8 The Edit Device Parameters Dialog Box is displayed. Click the **Download** Button.

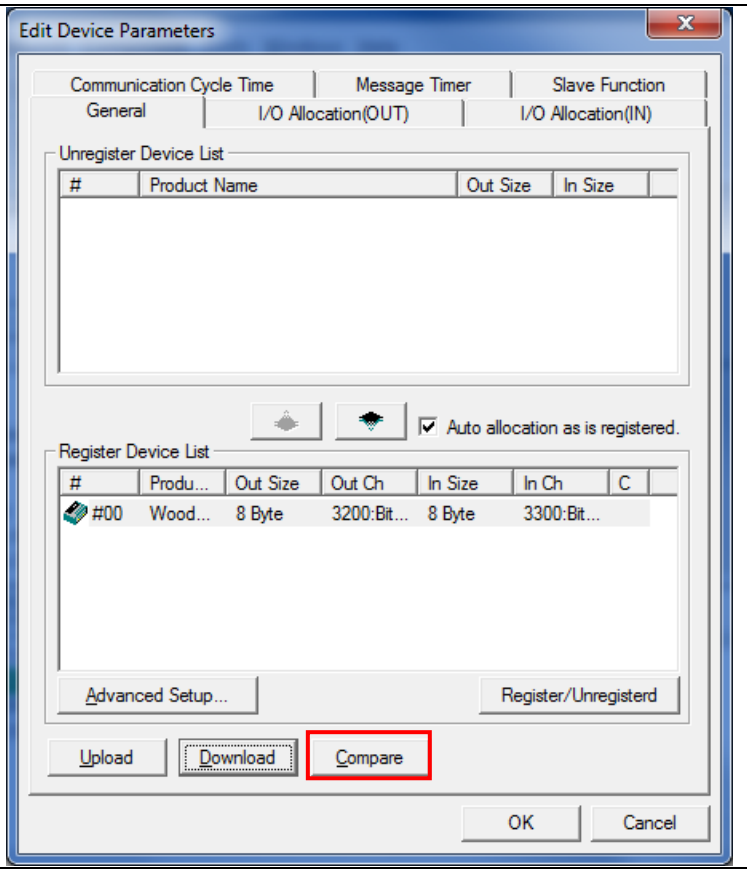


9 A download confirmation dialog box is displayed. Confirm that there is no problem and click the **Yes** Button.

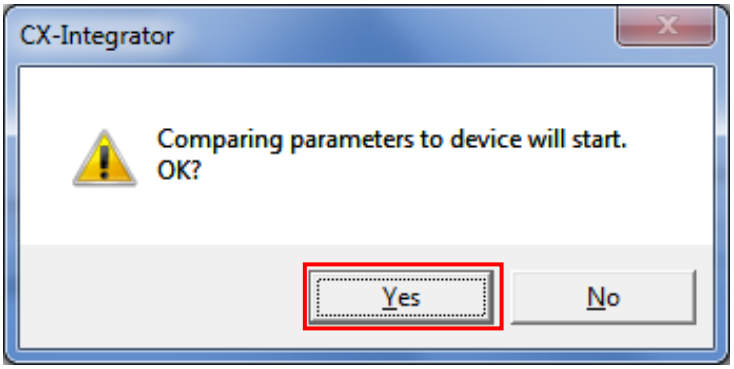
A dialog box indicating the downloading is in progress is displayed.



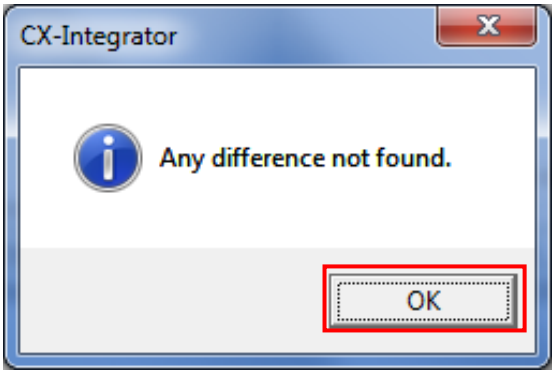
10 The Edit Device Parameters Dialog Box is displayed again. Click the **Compare** Button.



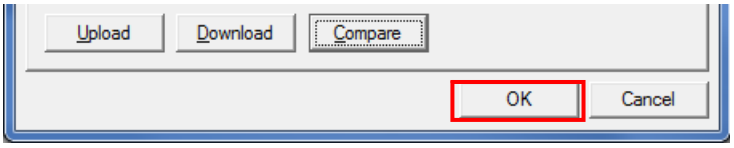
11 A dialog box shown on the right is displayed. Confirm that there is no problem. Click the **Yes** Button to compare the parameters.



When the comparison is completed, a dialog box shown on the right is displayed. Check the contents and click the **OK** Button.



The Edit Device Parameters Dialog Box is displayed again. Click the **OK** Button to close the dialog box.

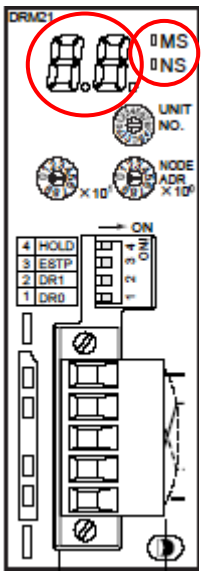
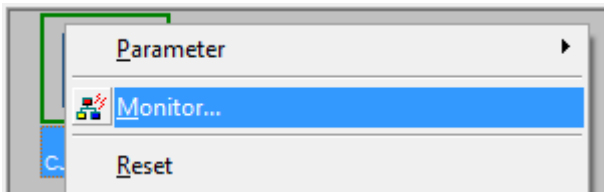


7.6. Checking DeviceNet Communications

Confirm that the DeviceNet communications are performed normally.

7.6.1. Checking the Connection Status

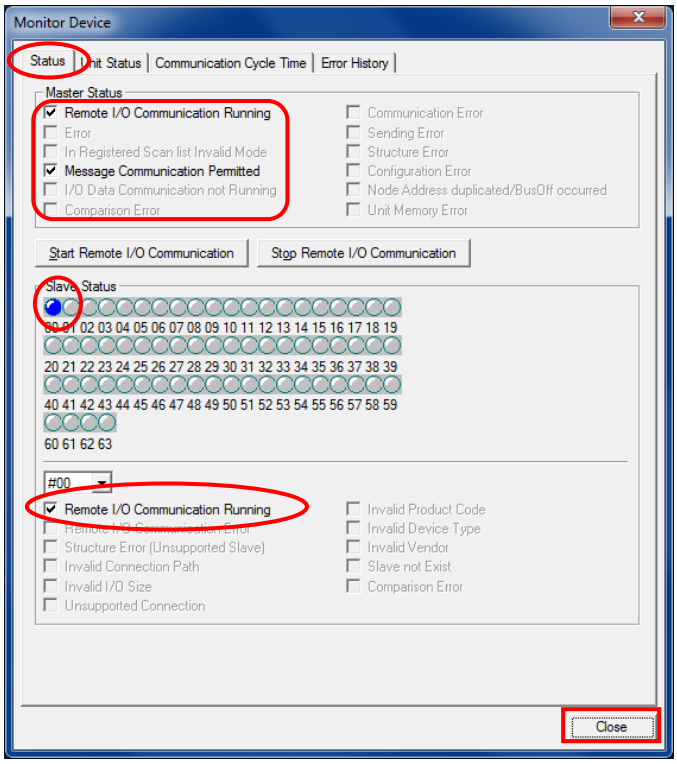
Check the connection status of DeviceNet.

1	Confirm that the DeviceNet communications are performed normally by checking the LED indicators on each unit. •PLC (DeviceNet Unit) LED indicators in normal status: [MS]: Lit green [NS]: Lit green The 7-segment display shows 63 during normal operation. (63: Master node address, remote I/O communications active and normal)	 (DeviceNet Unit)
2	Confirm that the DeviceNet communications are performed normally from the CX-Integrator by referring to the status information on the Monitor Device Dialog Box. Right-click the DeviceNet Unit icon on the Network Configuration Window, and select ***Monitor***.	

3 The figure on the right shows the Status Tab Page of the Monitor Device Dialog Box.

The DeviceNet communications are normally performed if the same items are selected in the Master Status Field, #00 is lit blue in the Slave Status Field, and the Remote I/O Communications Running Check Box is selected.

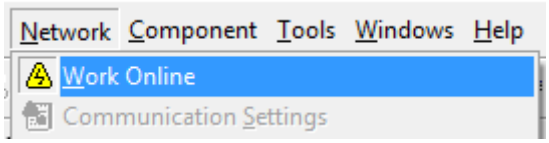
Click the **Close** Button.



(Monitor Device window)

4 Go offline with the CX-Integrator.
Select ***Work Online*** from the Network Menu.

*The  icon is not pressed down during offline connection.

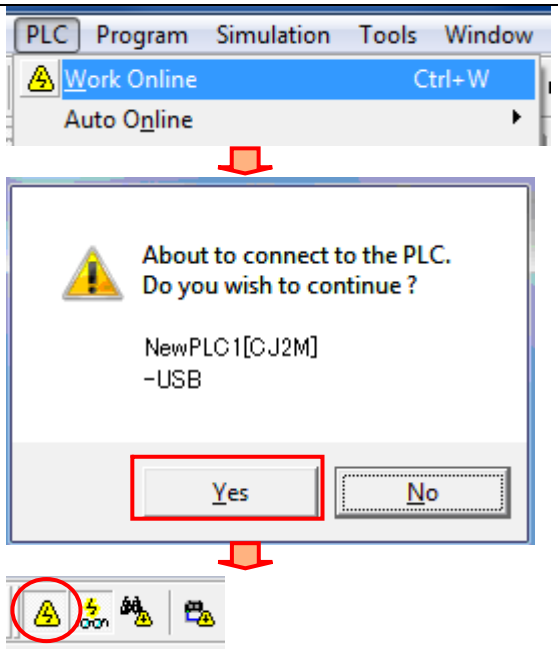


7.6.2. Checking Data that are Sent and Received

Confirm that correct data are sent and received.

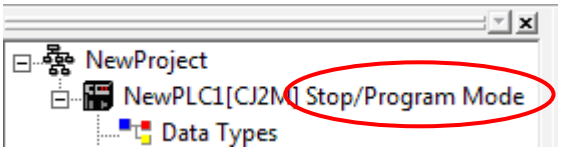
⚠ Caution

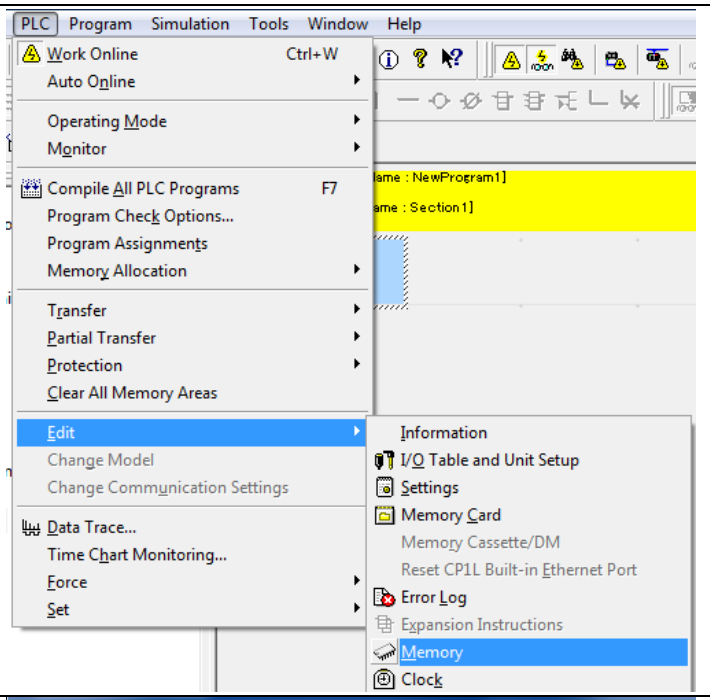
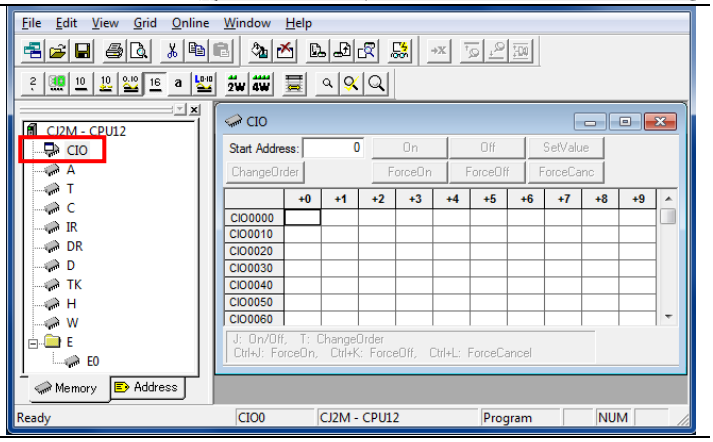
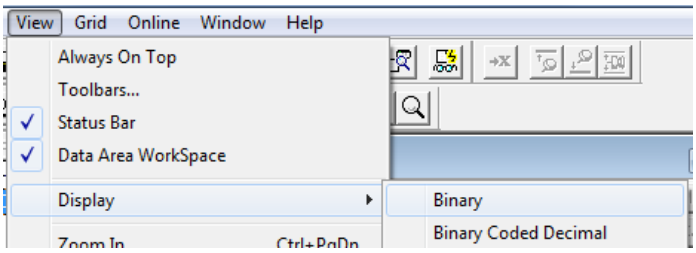
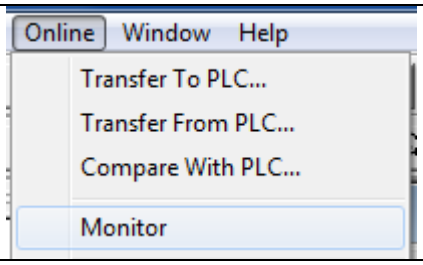
Confirm safety sufficiently before monitoring power flow and present value status in the Ladder Section window or before monitoring present values in the Watch window.
If force-set/reset or set/reset operations are incorrectly performed by pressing short-cut keys, the devices connected to Output Units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

1	Select ***Work Online*** from the PLC Menu of the CX-programmer. A confirmation dialog box is displayed. Confirm that there is no problem and click the **Yes** Button. The icon is pressed down.	

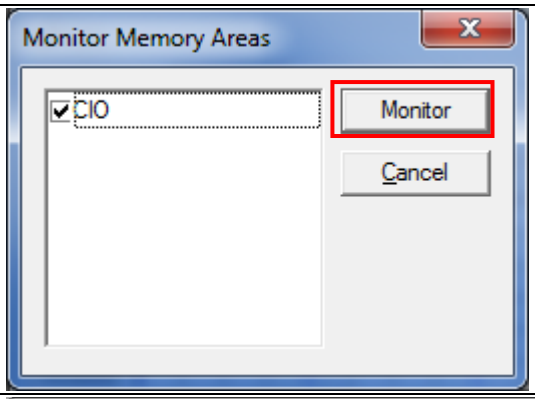
Precautions for Correct Use

If an online connection cannot be established, check the CX-Integrator's connection status. If it is online, disconnect it from the PLC. Then, check the cable connection and connection settings.

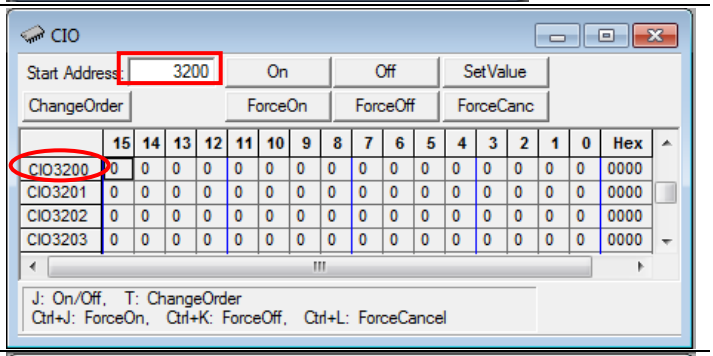
2	Confirm that the operating mode of the PLC is Stop/Program Mode. *If the PLC is not in the PROGRAM mode, change to PROGRAM mode by referring to step 1 of 7.3.3. Creating the I/O Table.	

3	Select ***Edit*** - ***Memory*** from the PLC Menu.	
4	Double-click **CIO** from the list in the PLC Memory Window that is displayed.	
5	Select ***Display*** - ***Binary*** from the View Menu.	
6	Select ***Monitor*** from the Online Menu.	

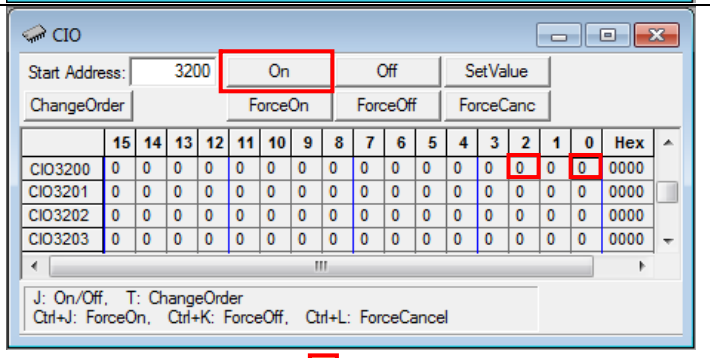
7 The Monitor Memory Areas Dialog Box is displayed.
Select the **CIO** Check Box and click the **Monitor** Button.



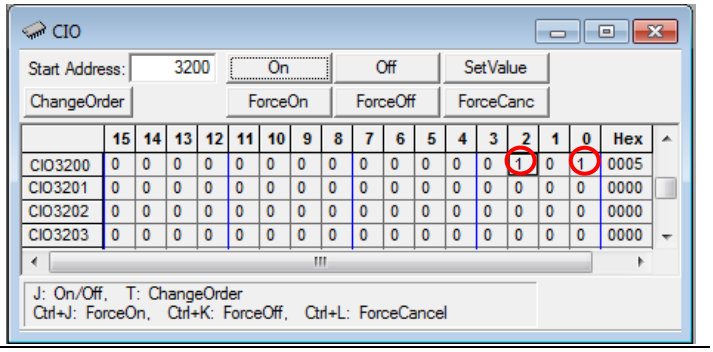
8 Enter 3200 in the Start Address Field on the CIO Window.
Confirm that the start address was changed to CIO 3200.



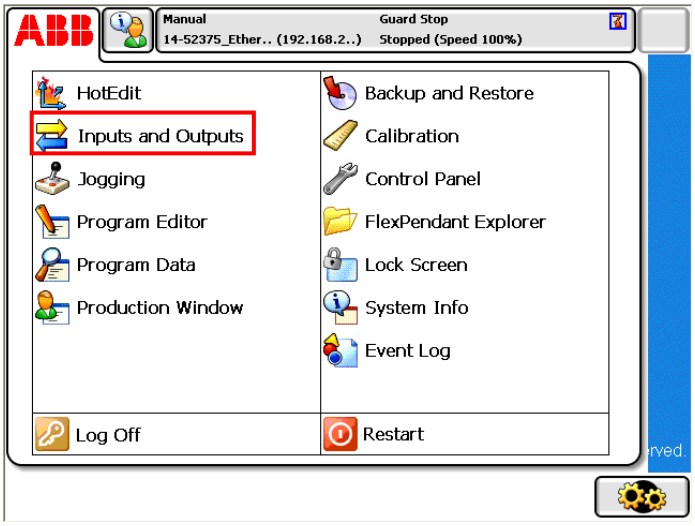
9 Select bits 0 and 2, and click the **On** Button.



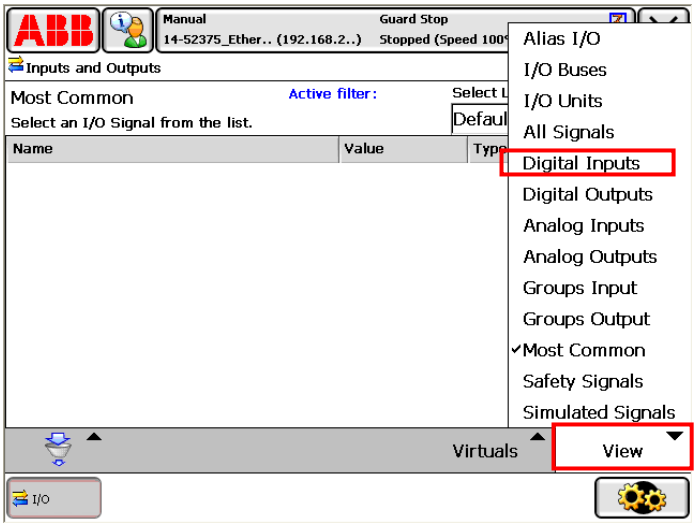
Confirm that the values of bits 0 and 2 were changed to 1.



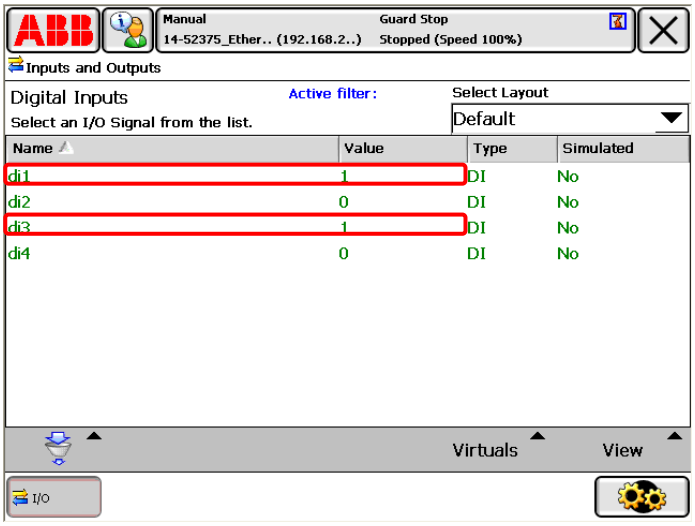
10 Confirm that the window shown on the right is displayed on FlexPendant.
If not displayed, press **ABB**.
Press **Inputs and Outputs**.

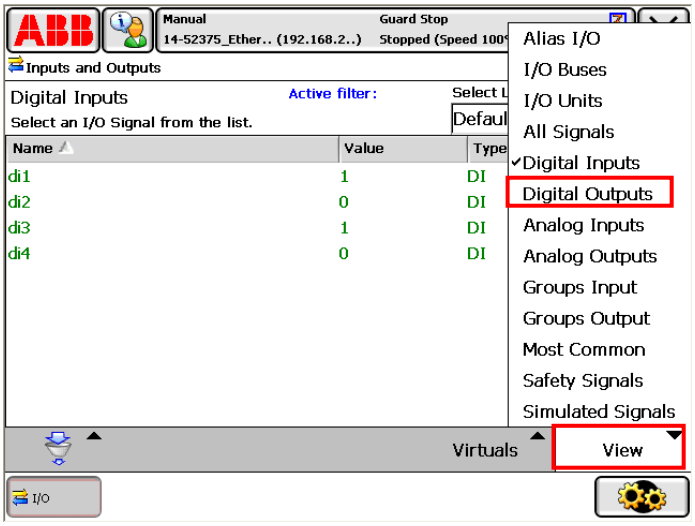
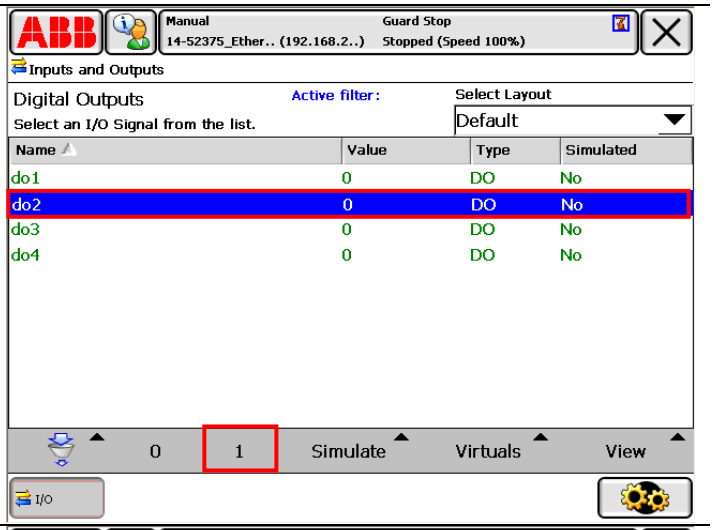
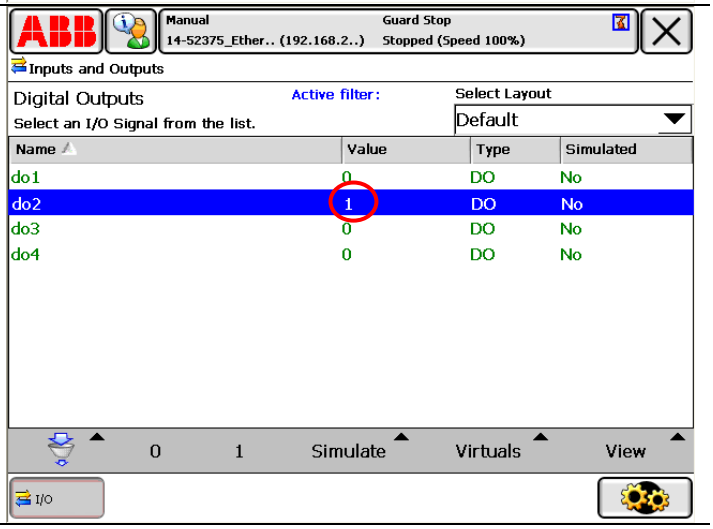


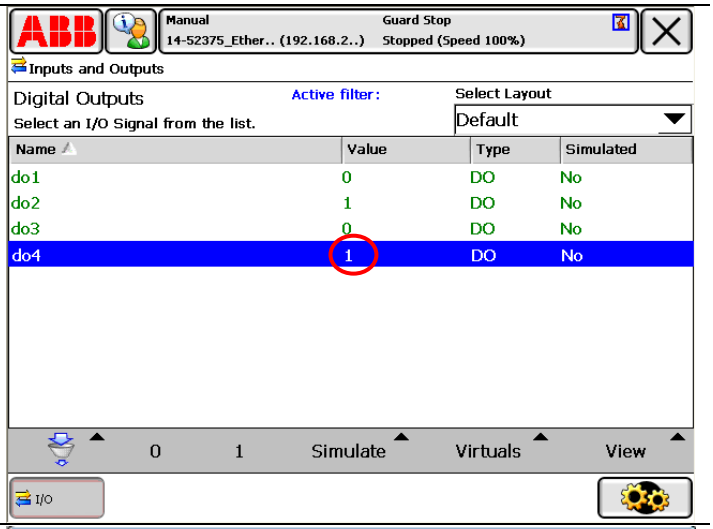
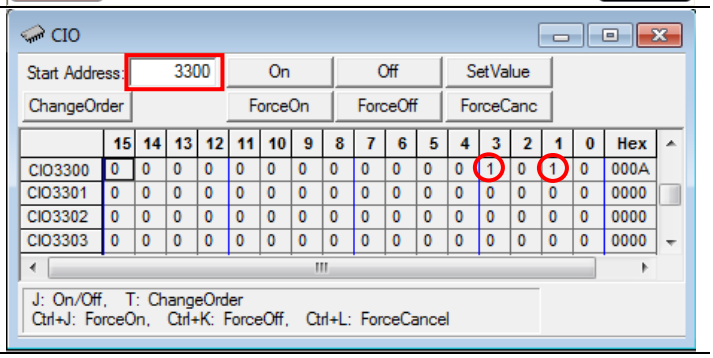
11 The Inputs and Outputs Window is displayed.
Press **View** and select *Digital Inputs*.



12 The Digital Inputs Window is displayed.
Confirm that 1 is set for the bit that was changed to 1 in step 9.



13	Press **View** and select *Digital Outputs*.	
14	The Digital Output Window is displayed. Select **do2** and press **1**.	
15	The value of do2 is changed to 1.	

16	In the same way, set the value of do4 to 1.	
17	Enter 3300 in the Start Address Field on the CIO Window. Confirm that the start address was changed to CIO 3300. Confirm that the values of bits 1 and 3 of CIO 3300 are 1.	

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.

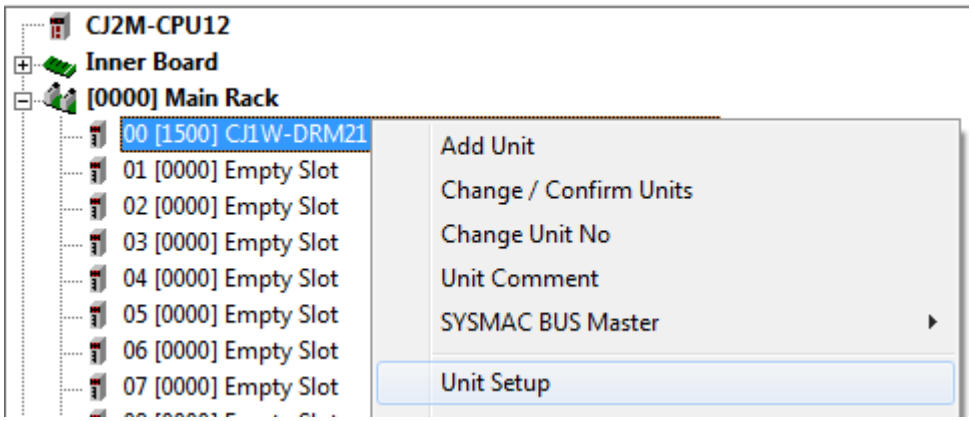
8.1. Initializing the PLC

To initialize the settings of the PLC, it is necessary to initialize the CPU Unit and DeviceNet Unit. Place the PLC to PROGRAM mode before the initialization.

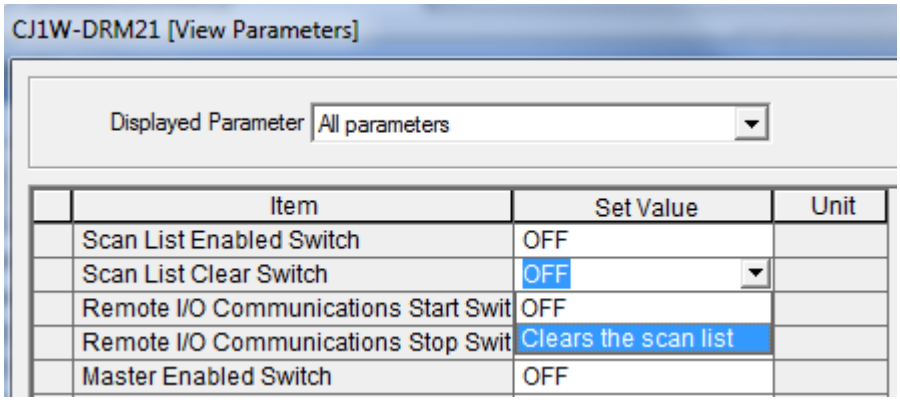
8.1.1. DeviceNet Unit

Use the following procedure to initialize the settings of the DeviceNet Unit.

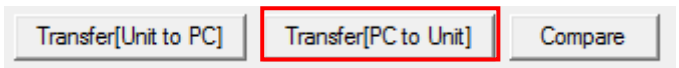
(1)Right-click CJ1W-DRM21 on the PLC IO Table of the CX-Programmer and select ***Unit Setup*** from the menu.



(2)On the CJ1W-DRM21 [View Parameters] Dialog Box, select *Clears the scan list* from Scan List Clear Switch.

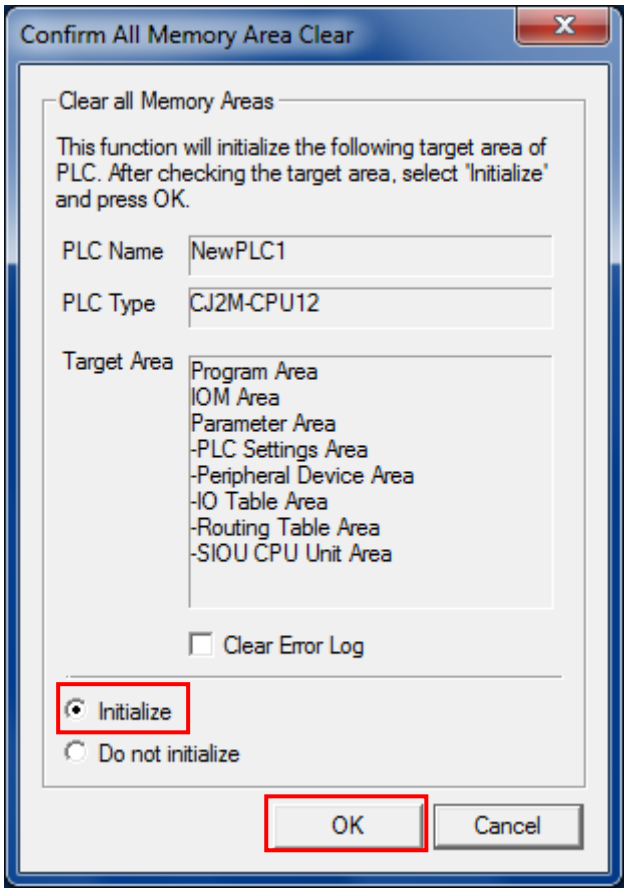


(3)Click the **Transfer [PC to Unit]** Button.



8.1.2. CPU Unit

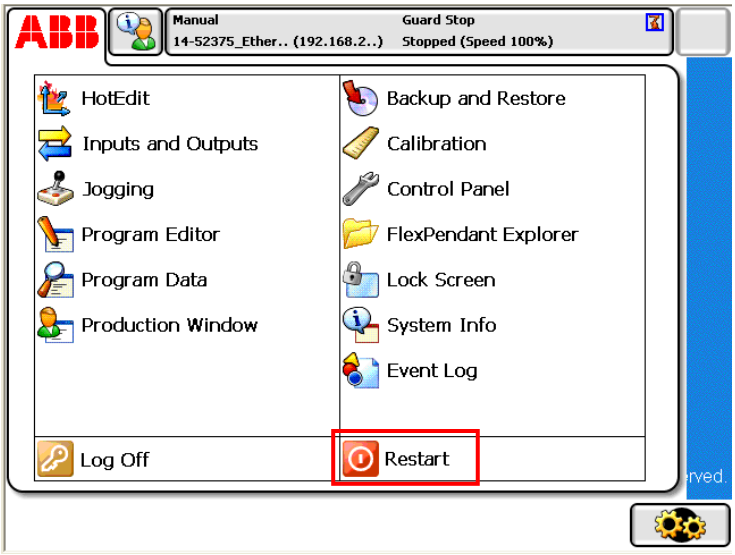
To initialize the settings of the CPU Unit, select **Clear All Memory Areas** from the PLC Menu of the CX-Programmer. On the Confirm All Memory Area Clear Dialog Box, select the *Initialize* Option and click the **OK** Button.



8.2. Initializing the ABB Robot Controller

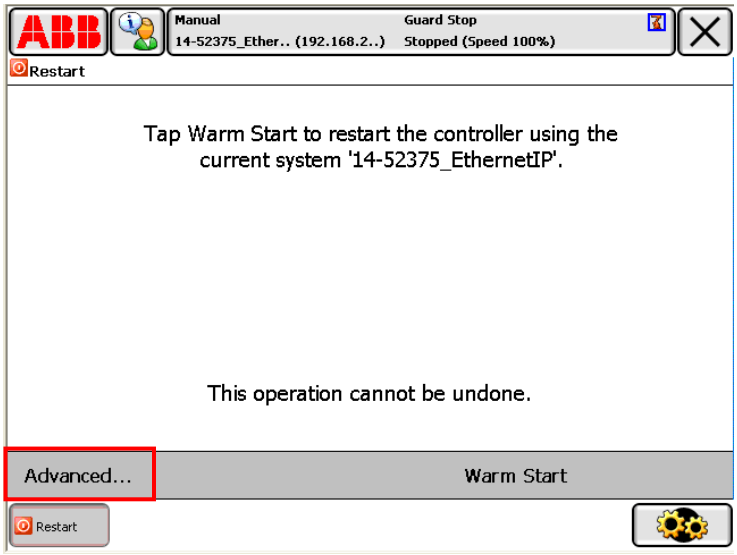
To initialize the ABB Robot Controller, execute Restart - I-Start by using the following procedure.

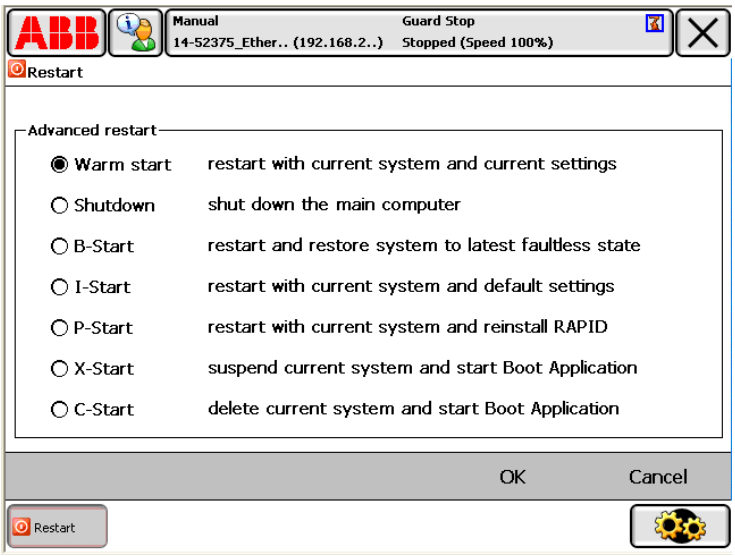
1 Press **Restart**.

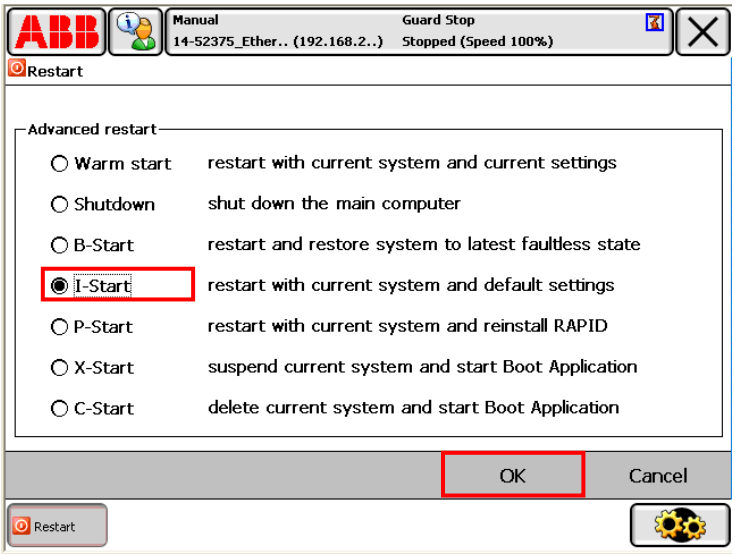
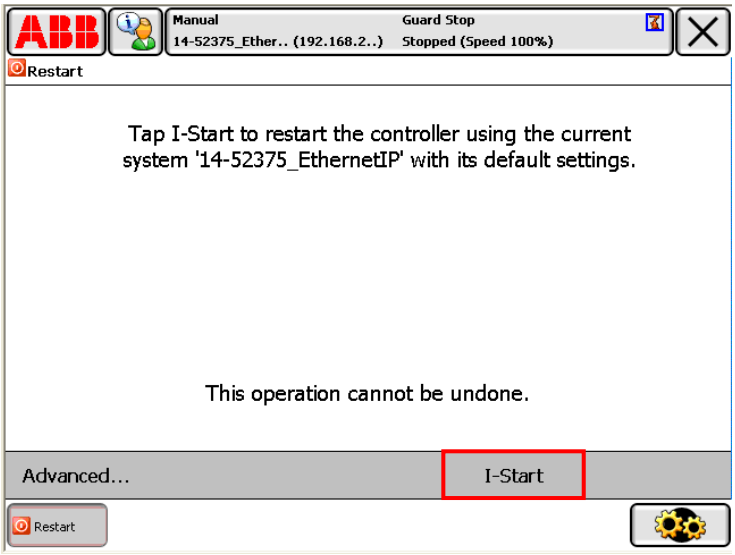


2 Press **Advanced**.

The advanced restart window is displayed.





3	Select *I-Start* and click **OK**.	
4	Press **I-Start**.	
5	The initial window is displayed again.	

9. Revision History

Revision code	Date of revision	Revision reason and revision page
01	Jun. 6, 2013	First edition

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