

HITACHI PROGRAMMABLE CONTROLLER

HIDIC EH-150

**DeviceNet Master configuration
Software (EH-RMDCFG)
APPLICATION MANUAL**

NJI-455 (X)

○ Warranty period and coverage

The warranty period is the shorter period either 18 months from the date of manufacture or 12 months from the date of installation. However within the warranty period, the warranty will be void if the fault is due to;

- (1) Incorrect use as directed in this manual and the application manual.
- (2) Malfunction or failure of external other devices than this unit.
- (3) Attempted repair by unauthorized personnel.
- (4) Natural disasters.

The warranty is for the PLC only, any damage caused to third party equipment by malfunction of the PLC is not covered by the warranty.

○ Repair

Any examination or repair after the warranty period is not covered. And within the warranty period any repair and examination which results in information showing the fault was caused by any of the items mentioned above, the repair and examination cost are not covered. If you have any questions regarding the warranty please contact either your supplier or the local Hitachi Distributor. (Depending on failure part, examination might be impossible.)

○ Ordering parts or asking questions

When contacting us for repair, ordering parts or inquiring about other items, please have the following details ready before contacting the place of purchase.

- (1) Model
- (2) Manufacturing number (MFG no.)
- (3) Details of the malfunction

Warning

- (1) This manual may not be reproduced in its entirety or any portion thereof without prior consent.
- (2) The content of this document may be changed without notice.
- (3) This document has been created with utmost care. However, if errors or questionable areas are found, please contact us.

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Safety Precautions

Read this manual and related documents thoroughly before installing, operating, performing preventive maintenance or performing inspection, and be sure to use the unit correctly. Use this product after acquiring adequate knowledge of the unit, all safety information, and all cautionary information. Also, make sure this manual enters the possession of the chief person in charge of safety maintenance.

Safety caution items are classified as “Danger” and “Caution” in this document.



: Cases where if handled incorrectly a dangerous circumstance may be created, resulting in possible death or severe injury.



: Cases where if handled incorrectly a dangerous circumstance may be created, resulting in possible minor to medium injury to the body, or only mechanical damage.

However, depending on the circumstances, items marked with  CAUTION may result in major accidents.

In any case, they both contain important information, so please follow them closely.

Icons for prohibited items and required items are shown below:



: Indicates prohibited items (items that may not be performed). For example, when open flames  is shown.



: Indicates required items (items that must be performed). For example, when grounding must be performed,  is shown.

1. About installation

CAUTION

- Use this product in an environment as described in the catalog and this document.
If this product is used in an environment subject to high temperature, high humidity, excessive dust, corrosive gases, vibration or shock, it may result in electric shock, fire or malfunction.
- Perform installation according to this manual.
If installation is not performed adequately, it may result in dropping, malfunction or an operational error in the unit.
- Do not allow foreign objects such as wire chips to enter the unit.
They may become the cause of fire, malfunction or failure.

2. About wiring

REQUIRED

- Always perform grounding (FE terminal).
If grounding is not performed, there is a risk of electric shocks and malfunctions.

CAUTION

- Connect power supply that meets rating.
If a power supply that does not meet rating is connected, fire may be caused.
- The wiring operation should be performed by a qualified personnel.
If wiring is performed incorrectly, it may result in fire, damage, or electric shock.

3. Precautions when using the unit

DANGER

- Do not touch the terminals while the power is on.
There is risk of electric shock.
- Structure the emergency stop circuit, interlock circuit, etc. outside the programmable controller (hereinafter referred to as PLC).
Damage to the equipment or accidents may occur due to failure of the PLC.
However, do not interlock the unit to external load via relay drive power supply of the relay output module.

CAUTION

- When performing program change, forced output, RUN, STOP, etc., while the unit is running, be sure to verify safety.
Damage to the equipment or accidents may occur due to operation error.
- Supply power according to the power-up order.
Damage to the equipment or accidents may occur due to malfunctions.

4. About preventive maintenance

DANGER

- Do not connect the \oplus , \ominus of the battery in reverse. Also, do not charge, disassemble, heat, place in fire, or short circuit the battery.
There is a risk of explosion or fire.

PROHIBITED

- Do not disassemble or modify the unit.
These actions may result in fire, malfunction, or malfunction.

CAUTION

- Turn off the power supply before removing or attaching module/unit.
Electric shock, malfunction or failure may result.

Chapter 1 Introduction

1.1 Before Using the Products

This manual provides instructions on how to use the EH-150 series programmable controllers (hereinafter as PLC), DeviceNet master Configuration software (EH-RMDCFG).

Please read this manual thoroughly and refer to it during installation and operation as well as during maintenance and inspection.

In addition, refer to the relevant manual of the PLC main unit when actually using the PLC system.

Table 1.1 List of related manual

Item	Related manual name	Manual number
Main system of EH-150	EH-150 Application Manual	NJI-281*(X)
Programming Software	LADDER EDITOR (for MS-DOS)	NJI-342*(X) NJI-343(X)
	LADDER EDITOR for Windows® (Windows®95/98/NT)	
DeviceNet modules	EH-150 DeviceNet Application manual	NJI-364*(X)

Please refer to the manual with the appropriate manual number, where “*” is A or higher. (“*” indicates the version of the applicable manual; the version number increases in alphabetic sequence, i.e., starting with A, B, C, and so on.)

1.2 Packaged Items

The following files are packaged in the installation CD. Please verify that each files is included by your PC.

Install Disk (CD)	1 pcs	
(1)Install program		
(2)Application manual (Japanese)		D:¥MANUALS¥Japanese
(3)Application manual (English)		D:¥MANUALS¥English

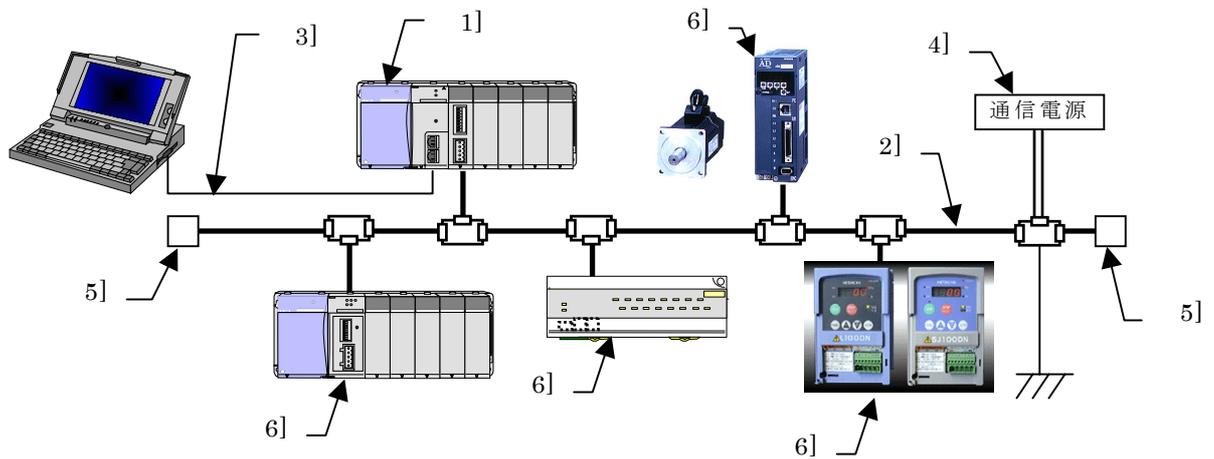
1.3 System requirements

(1) PC

OS: Windows 95/98/2000/ME/NT4.0/XP
 RAM: 128MB or more
 HDD: 10MB of free space on the hard drive (Application program)
 CD-ROM drive
 RS-232C port
 Internet Explorer 5.0 or higher

(2) PLC

1] EH-150 PLC (set)
 2] DeviceNet cable
 3] RS-232C Communication cable
 4] DeviceNet Power
 5] Termination register 121(120) Ω
 6] DeviceNet slave(1 pcs or more)



This configuration software is supported by EH-150 DeviceNet™ master module (EH-RMD) of software ver.03 or more.

Configuration software	EH-RMD Software version	
	SOFTWARE VER.02 or less	SOFTWARE VER.03 or more
EH-RMDCFGE	<i>Not supported</i>	supported
RSNetWorx™ for DeviceNet™	supported	supported

1.4 Installation

(1)

Insert installation CD in the CD-ROM drive.

(2)

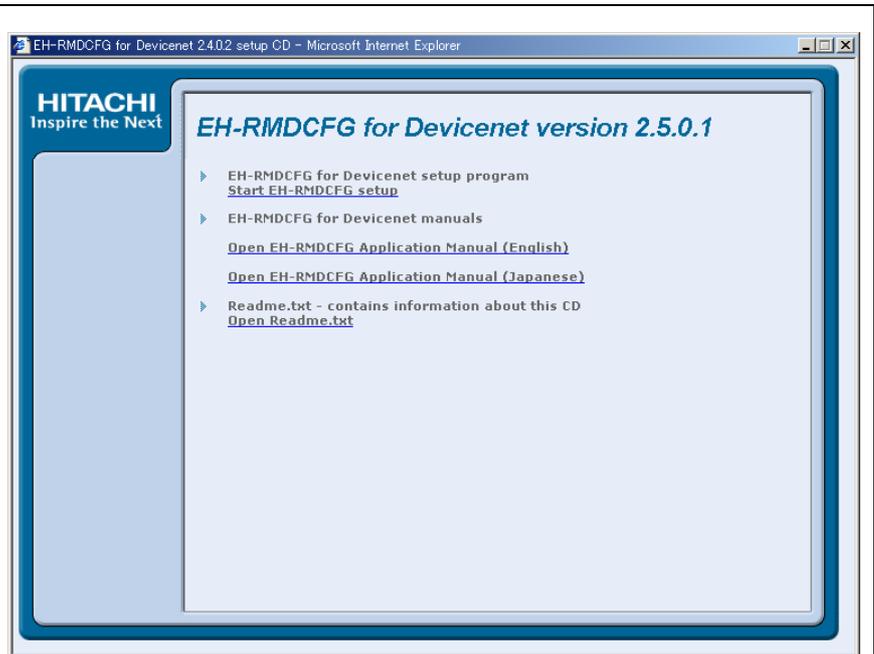
A setup screen is automatically displayed.

Click

“Start EH-RMDCFG Setup”.

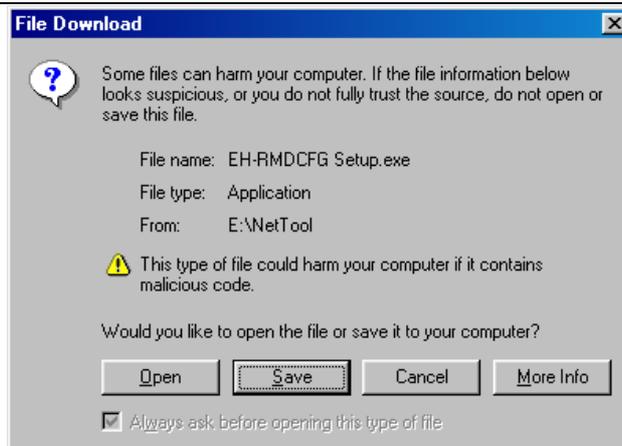
If the right screen isn't displayed,

Execute “D:\¥index.html”.



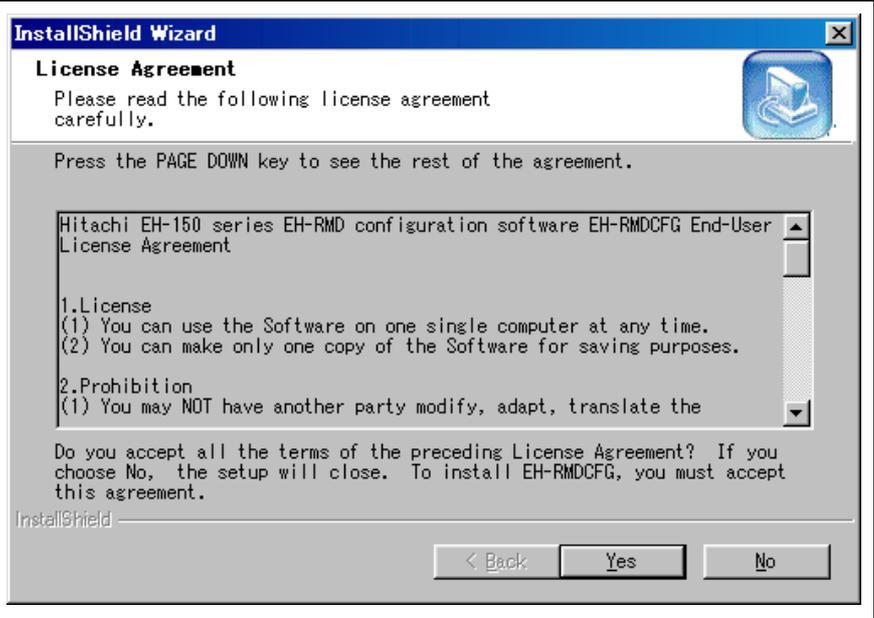
(3)

Please click [Open] for installation.



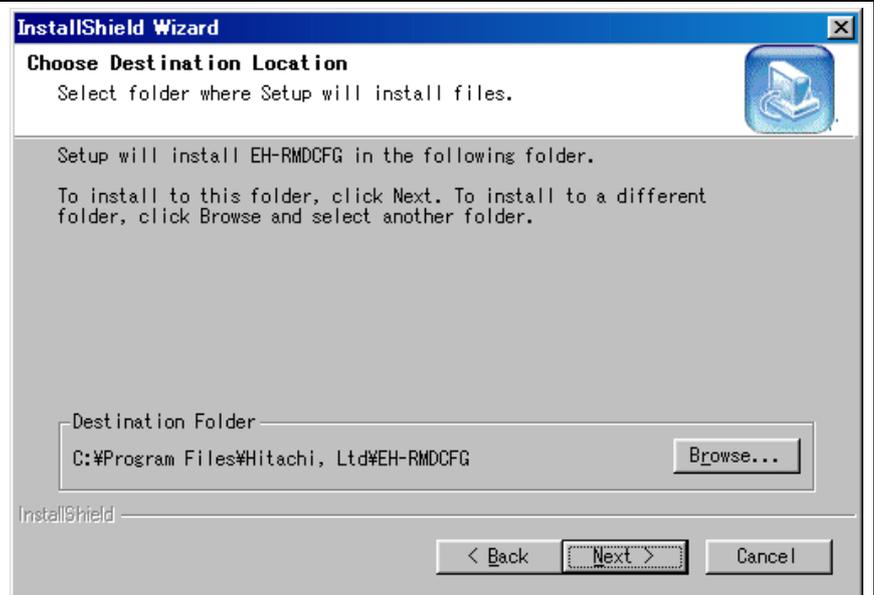
- (4)
InstallShield Wizard will start.

If you accept the License Agreement, please click [Yes].

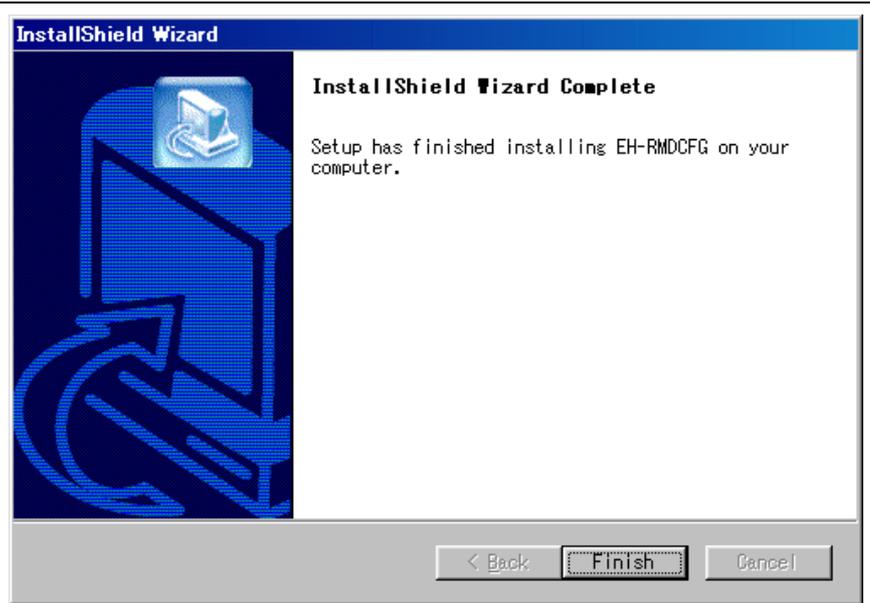


- (3)
Default of destination location is "C:\Program Files\Hitachi\EH-RMDCFG"

To install to this folder, click [Next].
To install to a different folder, click [Browse] and select another folder.

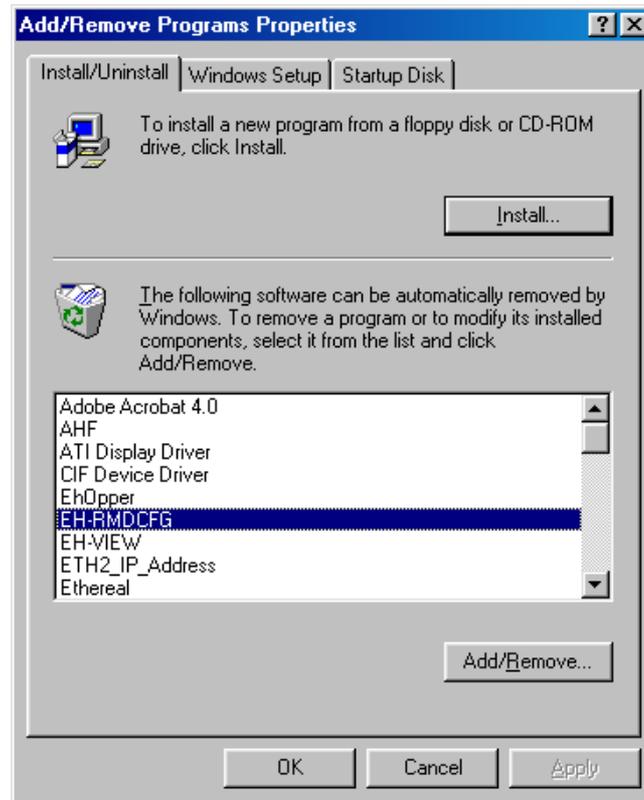


(4)
When installation was finished,
click [Finish].

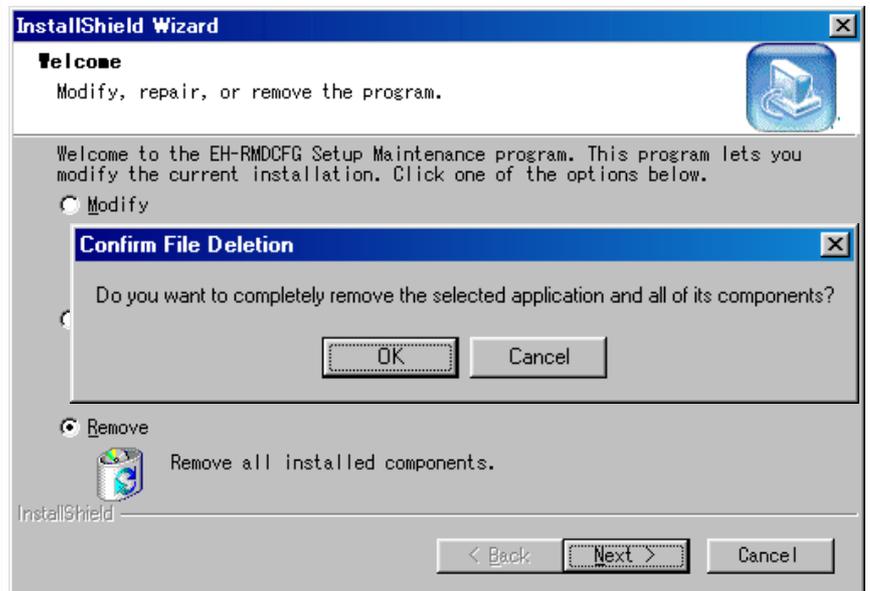


1.5 Uninstallation

- (1) Open [Start]-[Setting]-[Control Panel].
- (2) Execute “Add/Remove Programs”.
- (3) Select EH-RMDCFG and click [Add/Remove].

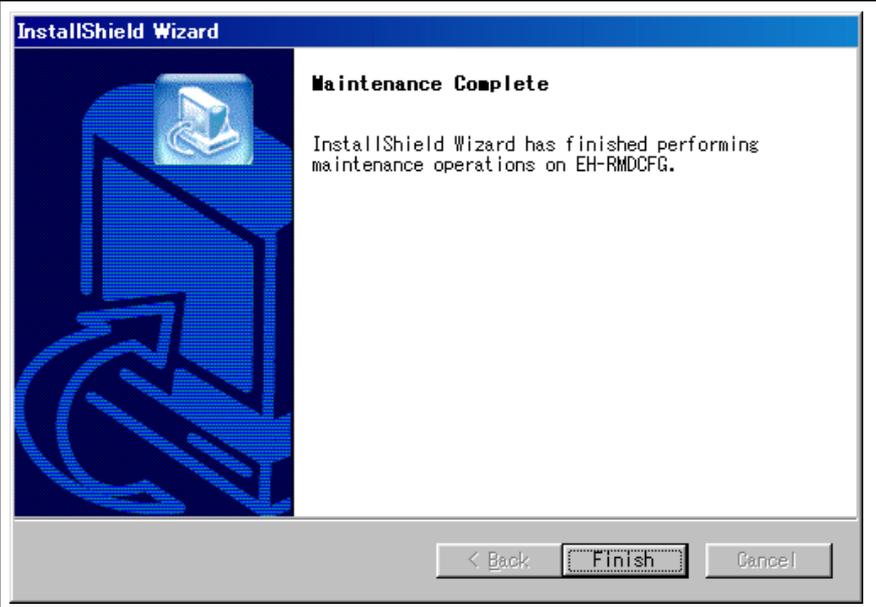


- (4) InstallShield Wizard will start.
Select Remove and click [Next].
- (5) When confirmation window is displayed, lick [OK].



(6)

When uninstallation was finished,
click [Finish].



Chapter 2 Configuration

In order to operate DeviceNet, the information of each slave must be registered in EH-RMD.

- (1) Off-line setting: Registration information is created before building up the network.
- (2) On-line setting: All slaves must be connected to the network.
EH-RMDCFG reads out information from those slaves.

The configuration can be done by either (1) or (2).

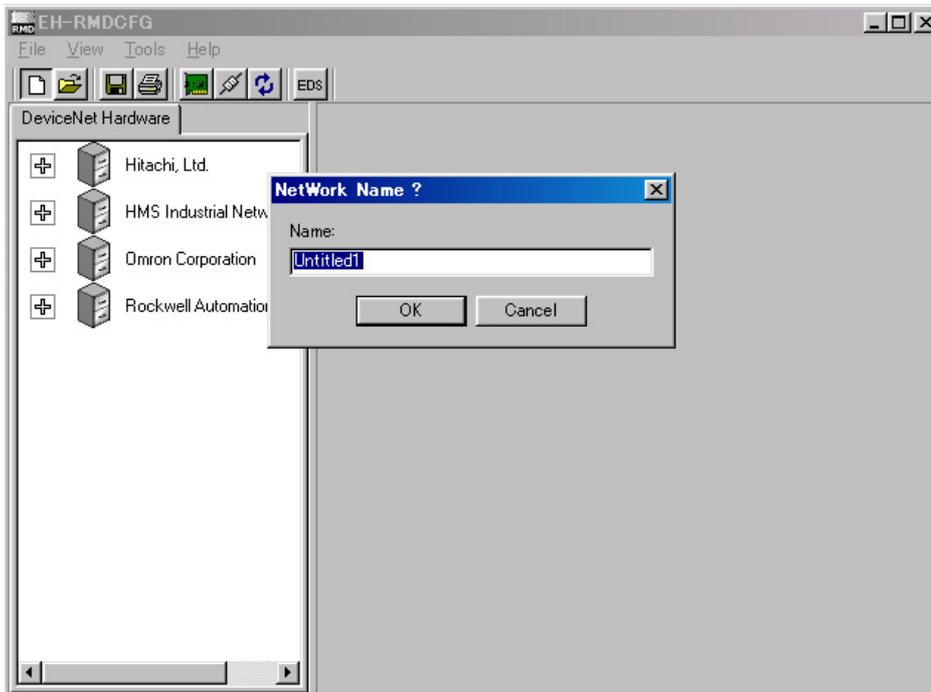
2.1 Off-line setting

STEP1: Start EH-RMDCFG

Click [Start]-[Programs]-[EH-RMDCFG]-[EH-RMDCFG].

STEP2: Open new file

Input the "Network Name", and click [OK].

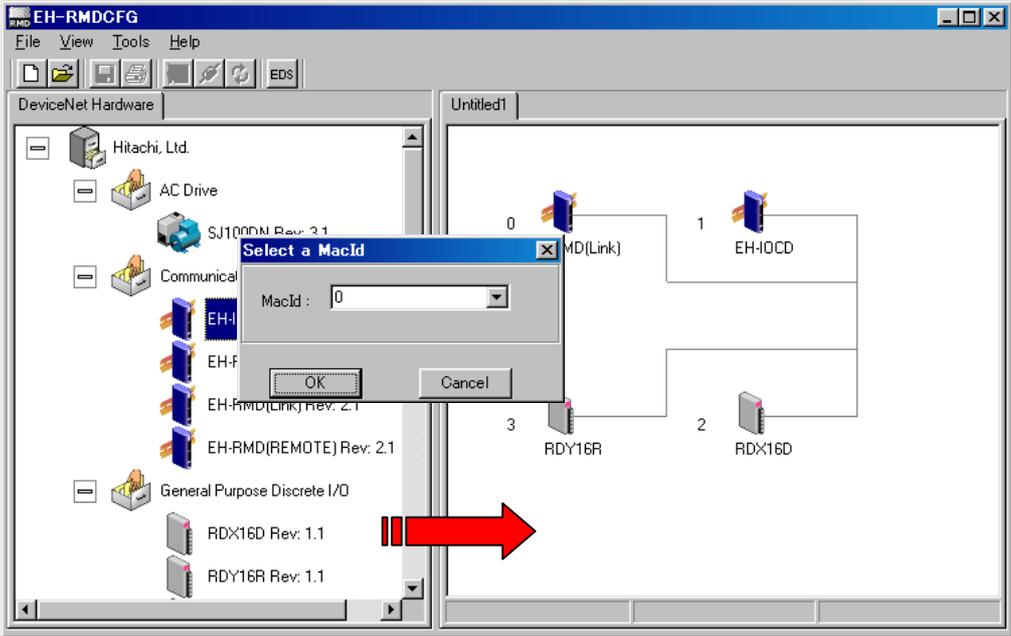


If you have already working data, click [Cancel], and open the file by choosing [File]-[Load NetWork from file]

When the list of "DeviceNet Hardware" is not displayed, click [View]-[Show Hardware].

STEP3: Registration of the device

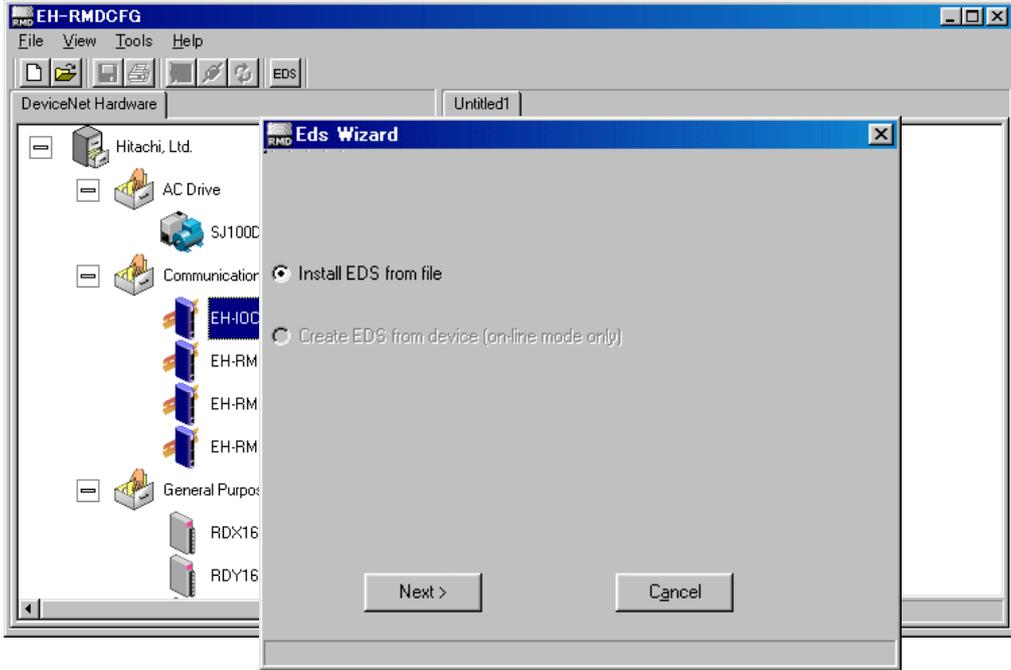
Drag and drop a necessary device from left side to right side with setting node address (Mac ID). Master module is always necessary.



EH-RMD has two different mode, either Link mode or Remote mode.

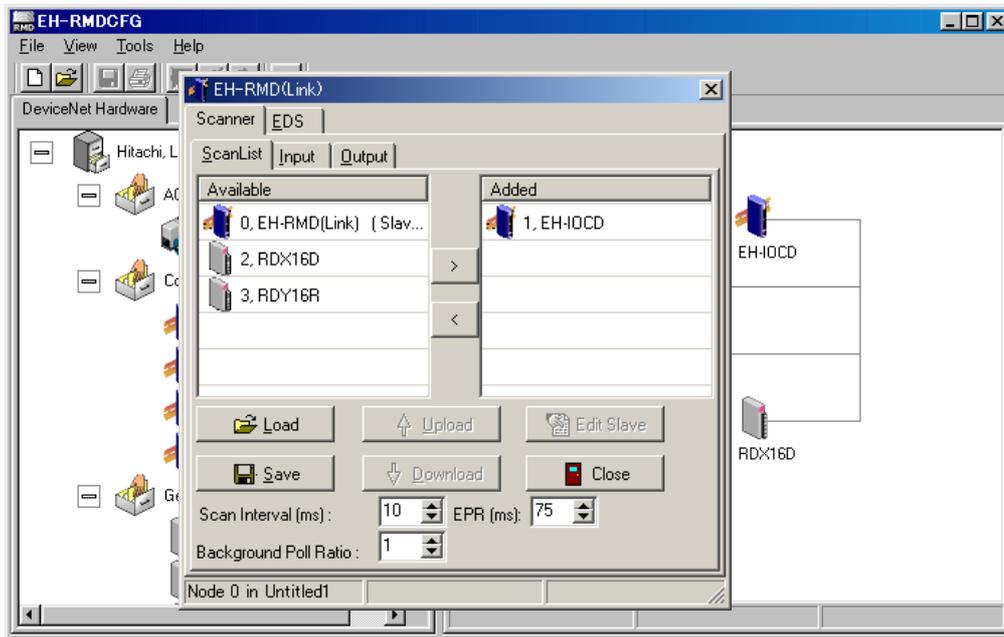
STEP4: Registration of EDS file

If slave module to use is not displayed in "DeviceNet Hardware", EDS file must be registered
EDS Wizard will start by clicking [Tools]-[Install EDS-file].
Click [Next] and proceed to the next step.
When the registration finished, new icon is created to "DeviceNet Hardware".

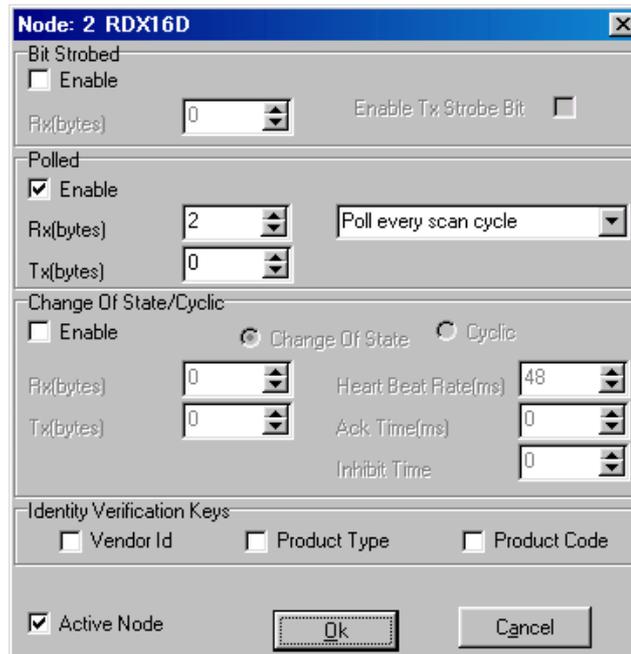


STEP5: Make Scan List

Double click the master icon. Then property window will appear.



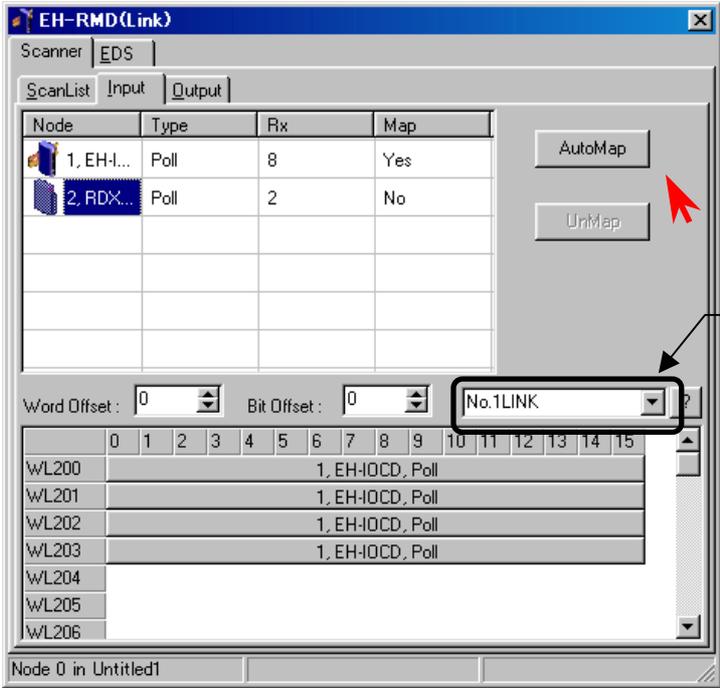
Double-click slave modules displayed in [Available].
Then another window for setting communication type and I/O size is displayed.
Check if it is correct setting, and click [OK].
If no information is set or should be changed, set communication type and I/O size.



EH-RMD (Link or Remote) (Slave Mode) displayed in [Available] is used as a slave module with another master.
When EH-RMD (Link or Remote) is used as a master, do not register in this window.

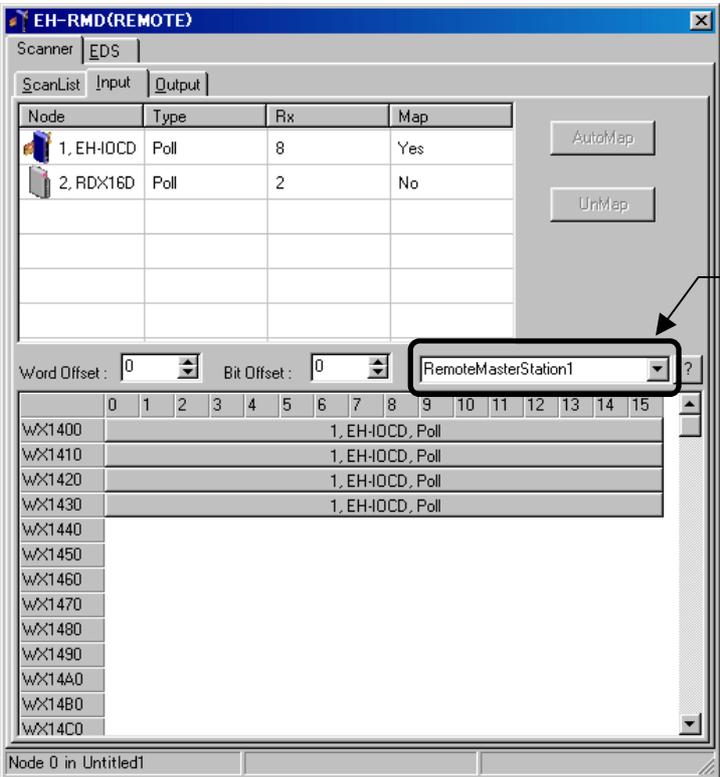
STEP6: Mapping of I/O data

I/O mapping is configured in each slave.
Click the slave displayed in “Node”, and click [AutoMap] for both the “input” tab and the “output” tab.
By setting Word Offset, I/O table is freely mapped. **(ONLY FOR LINK MODE)**
Bit Offset is invalid. Leave it as 0.



Link mode

Displayed I/O address is changed according to link area No. (link No.1 / link No.2).



Remote mode

Displayed I/O address is changed according to Remote master No.

When the mapping of all nodes is completed, close the property window of the master.

STEP7: Save configuration data

Save configuration data by choosing [File]-[Save All]
If system configuration is changed, this saved data should be modified accordingly.

STEP8: Data transfer to the EH-RMD

Transfer the scan list data to EH-RMD.
Refer to the chapter 2.2 “On-line setting” for further information.

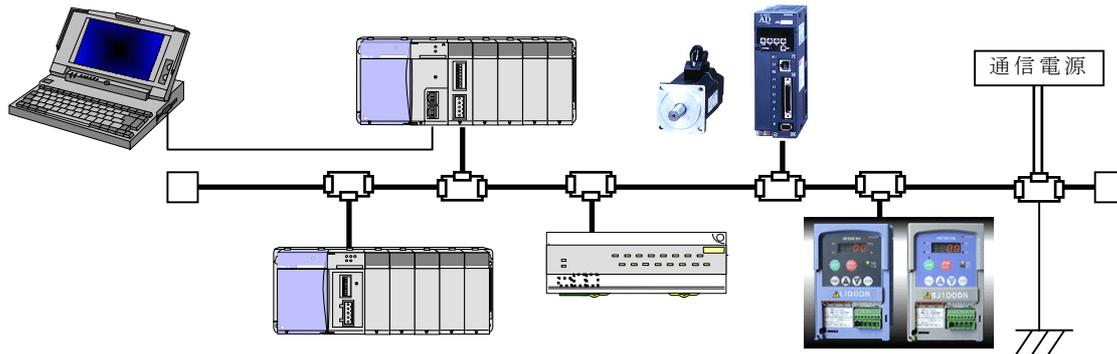
2.2 On-line setting

Set up PLC and network system before configuration.

Necessary environment condition is described in chapter 1.3.

Power must be supplied to PLC and **slave modules too** since EH-RMDCFG communicates with all modules in the network.

Even if all modules are not be prepared, connect one slave at least.



STEP1: PLC Set up

(1) I/O assignment

Start Ladder Editor for Windows®, make I/O assignment for the EH-RMD.

I/O Assignment Table					
Type(S):	Standard				
I/O Assignment Table					
	Unit 0	Unit 1	Unit 2	Unit 3	Unit 4
Slot0	CPU link	Empty 16			
Slot1	Empty 16	Empty 16			
Slot2	Empty 16	Empty 16			
Slot3	Empty 16	Empty 16			
Slot4	Empty 16	Empty 16			
Slot5	Empty 16	Empty 16			
Slot6	Empty 16	Empty 16			
Slot7	Empty 16	Empty 16			
Slot8					

I/O assignment of "CPU link" is for EH-RMD link mode, "Remote 2" is for EH-RMD remote mode.

(2) Operation Parameter (Only LINK mode)

Click the Link No. to use.

Top assign No. should be fixed as WL0/WL1000.^(*)

Last assign No. should be fixed as WL1FF/WL11FF.^(*)

*1: When mounting two modules having I/O assignment of "CPU Link", left module is Link No.1.

After downloading I/O assignment to CPU module, check the indication of "STATUS" LED on the EH-RMD.

Link mode : Solid Green

Remote mode : Solid Green or 4 times flash Green

In case of remote mode, after scan list is configured in RMDCFG, it is necessary to assign Remote stations again.

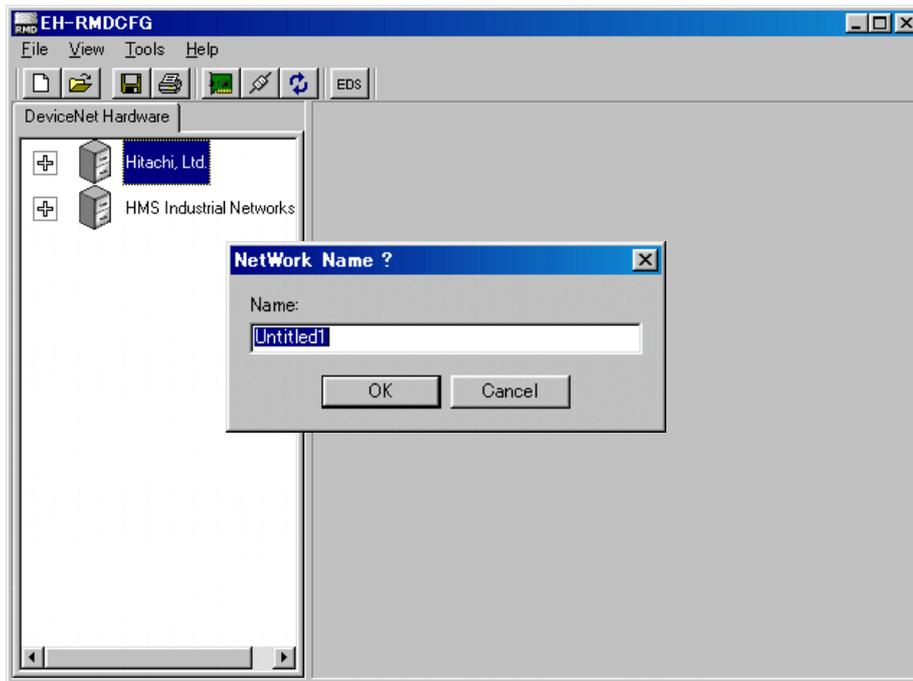
After downloading I/O assignment CPU module, close Ladder Editor or enter off-line mode (GRS).

STEP2: Start EH-RMDCFG

Click [Start]-[Programs]-[EH-RMDCFG]-[EH-RMDCFG].

STEP3: Open new file

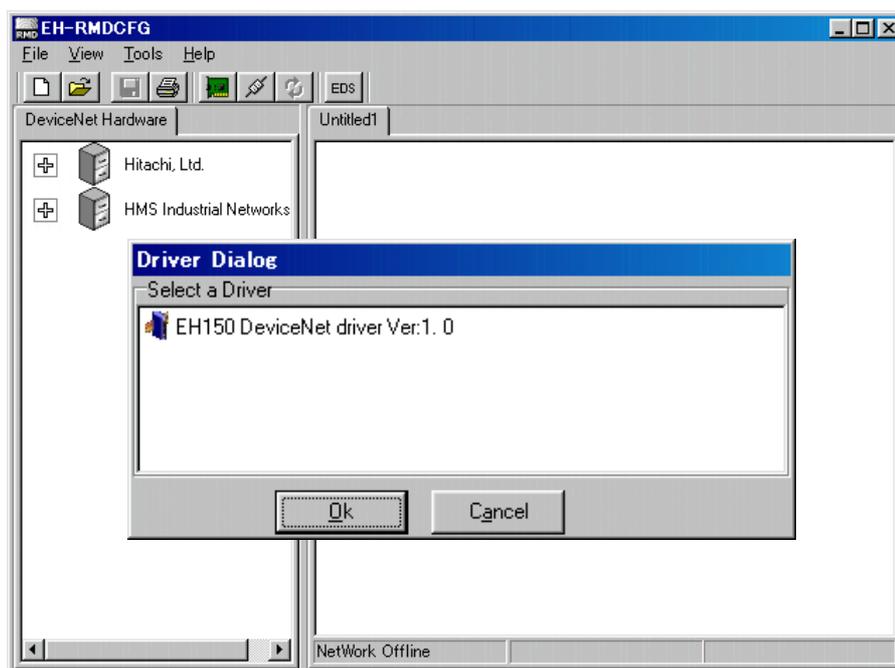
Input the “Network Name”, and click [OK].



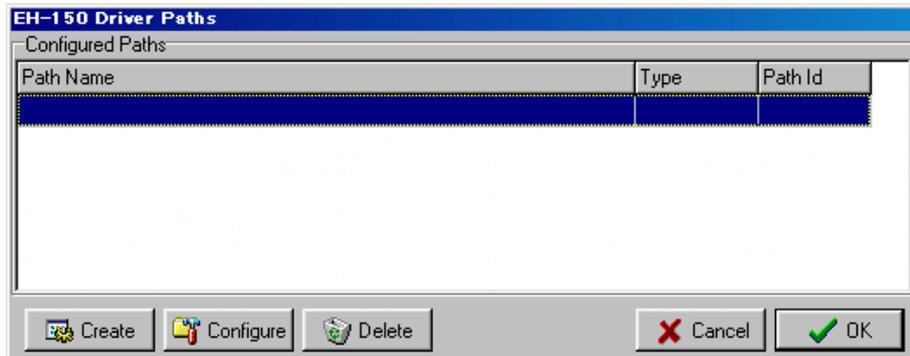
If you have already working data, click [Cancel], and open the file by choosing [File]-[Load Network from file]

STEP4: Serial port setting/connection

Click [Tools]-[Configure Driver], and click [OK] in Dialog window.



When “EH-150 Driver Paths” window is displayed, click [Create].
Previous path names are listed.



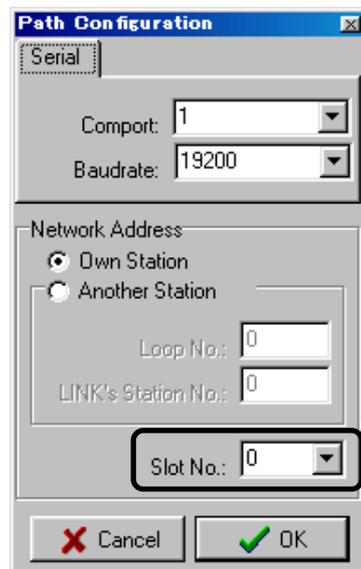
[Create]: New
[Configure]: modifying the setting
[Delete]: delete

Input path name for every communication setting, and click [OK].



For easy understanding
Ex:
“COM1 19200 Own Slot0”

Input “Comport”, “Baud rate”, “Network Address”, and “Slot No.”.
Click [OK].

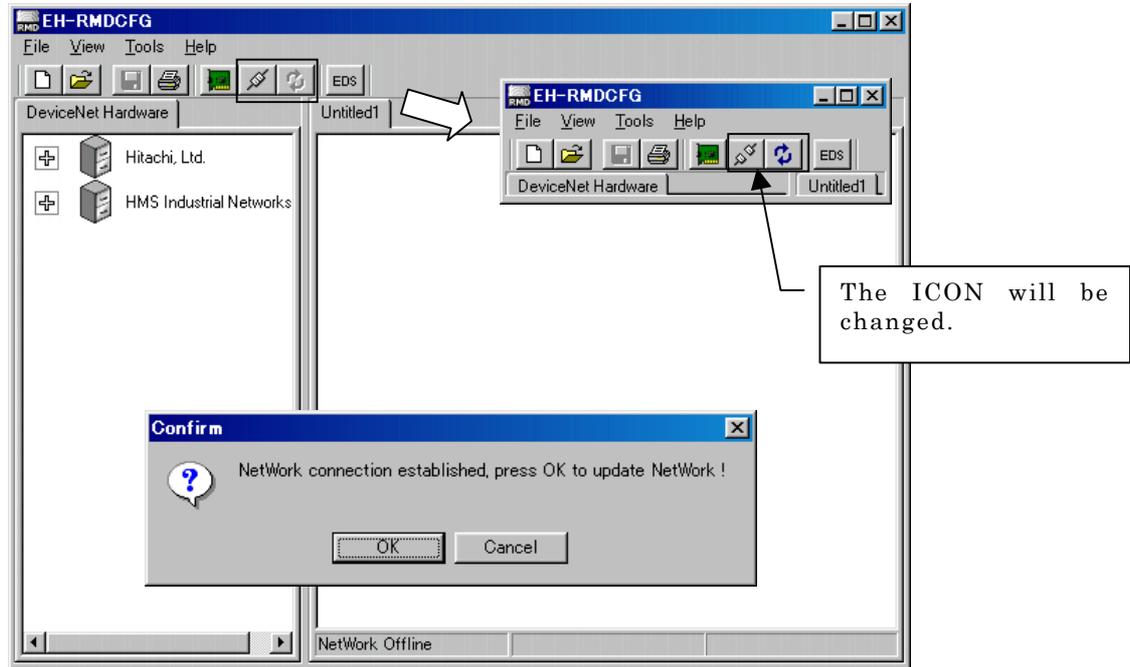


Specify slot position which
EH-RMD is mounted.

When “Path Configuration” window is closed, EH-RMDCFG will go on-line mode.

STEP5: On-line mode

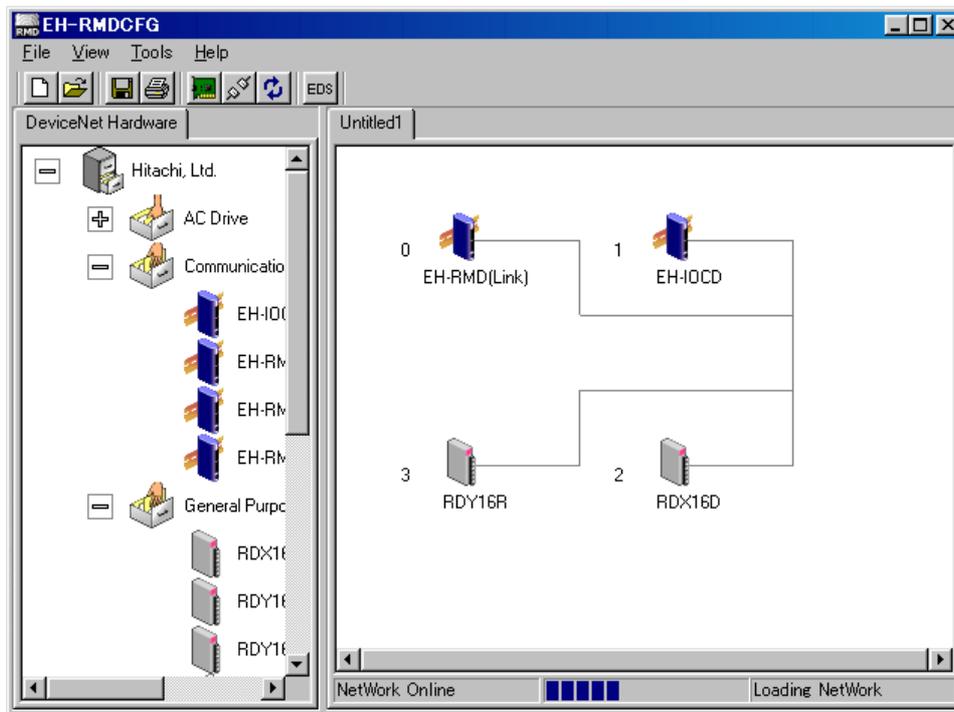
When on-line connection is established, the following window appears.
Click [OK].



When on-line connection is failed, the icon is not changed and “Confirm” window does not appear.
Check “communication port”, “baud rate”, “network address”, and Slot No. again.
When NS LED of EH-RMD is not lighting, on-line connection is not established.

STEP6 : Browsing network

After on-line connection, EH-RMDCFG reads out the information of devices connected to network. During the Browsing, the indicator will be displayed in the lower part of the window. When the indicator will disappear, the Browsing is finished. (Maximum 2 minute) It takes a few seconds before the indicator is displayed.



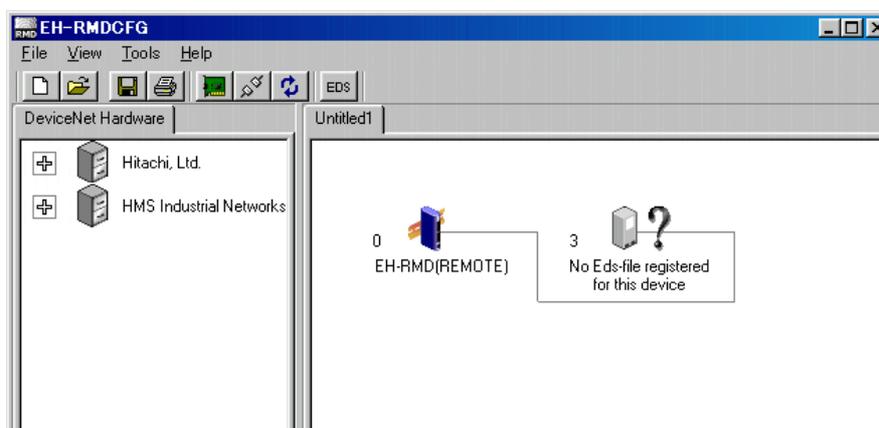
STEP7: Registration of EDS file

If the browsed device's EDS file is not registered in RMDCFG, the device is displayed with the icon as shown below screen shot.

In this case, EDS file must be registered.

Double click the icon, follow the EDS wizard and create EDS file.

In on-line mode, EDS file is created by reading out information from the device.



STEP8: Make Scan List

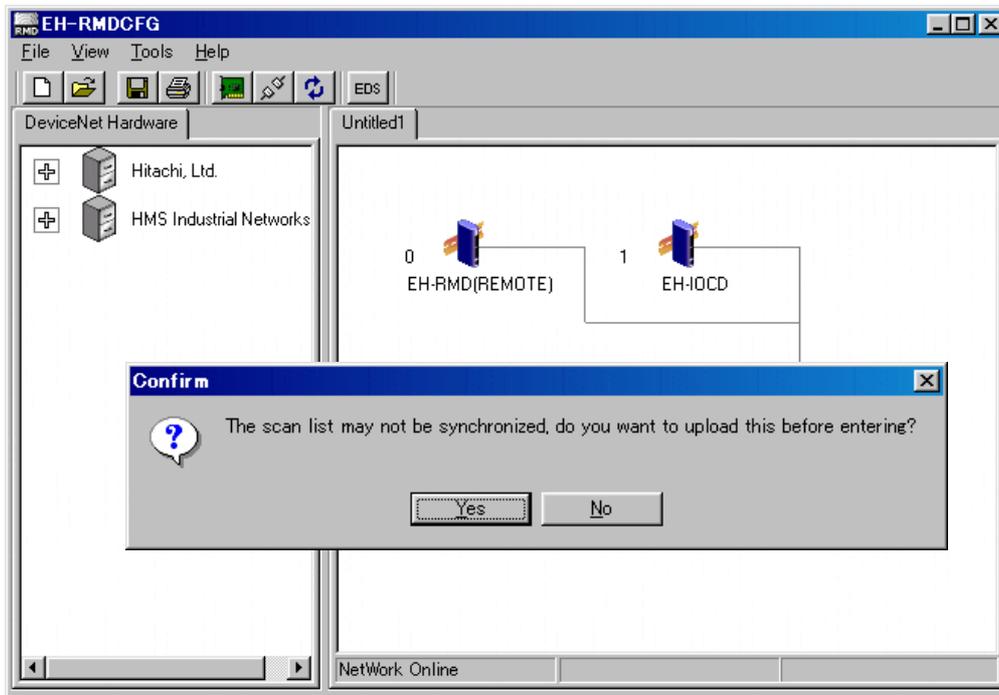
Double click the EH-RMD.

Confirmation window appears (upload or not), click [No].

When clicking [Yes], the configuration data will be uploaded from EH-RMD.

Then current the configuration data will be overwritten and lost.

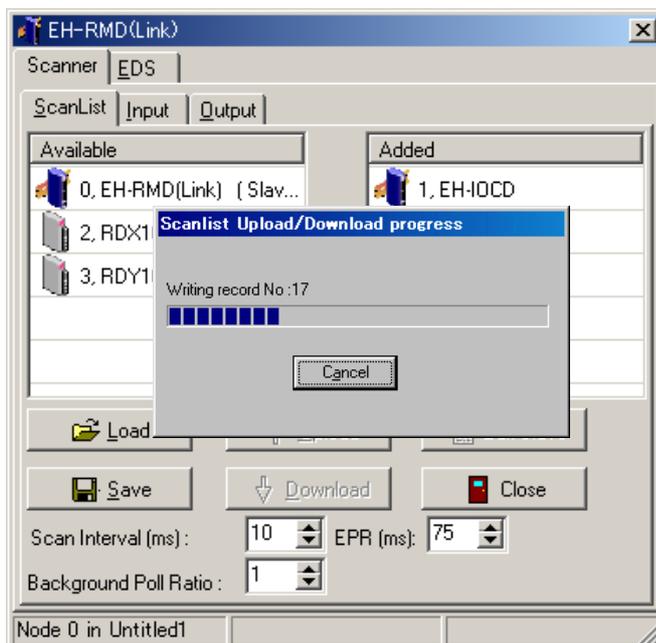
Please click [No] for making new configuration data or already made in OFF-line mode.



When the property window of EH-RMD appears, make scan list according to [STEP5,6](#) in chapter 2.1.

STEP9: Downloading Scan List

In "Scanlist" tab of property window, click [Download].



After downloading, scan list configuration is completed.

When the EH-RMD is Link mode, the necessary setting is finished.

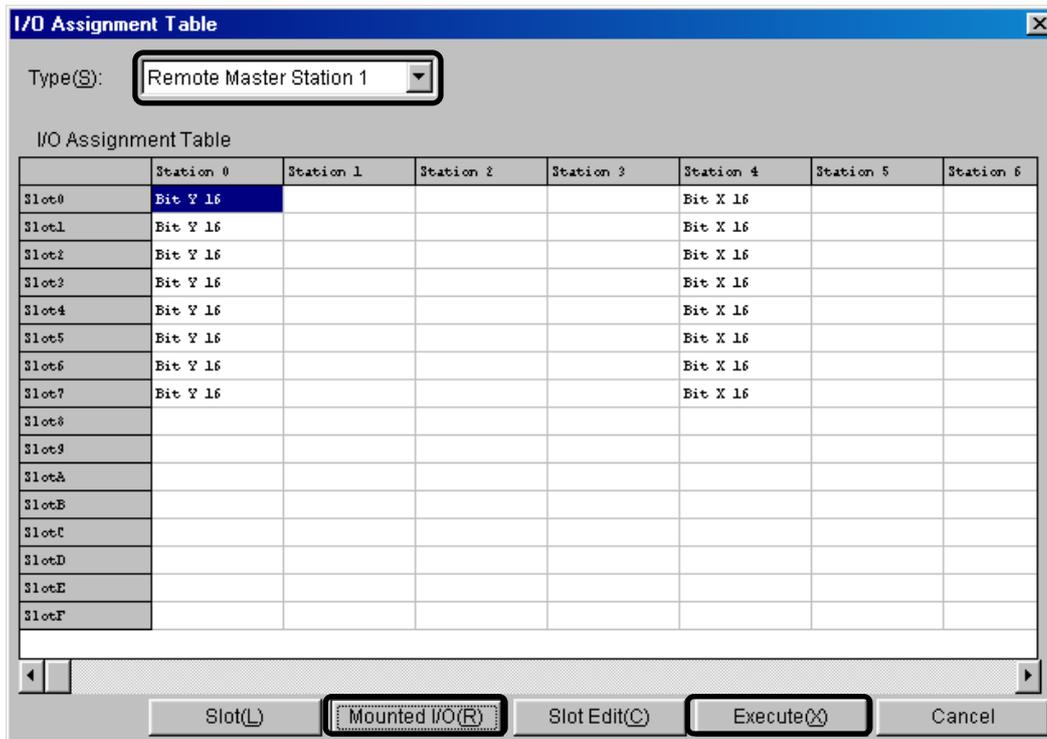
When the EH-RMD is Remote mode, additional setting is necessary. Refer to the chapter 2.3.

2.3 I/O assignment (Remote station)

When EH-RMD is used in Remote mode, it is necessary to configure the I/O assignment of Remote stations in programming software based on scan-list information.

(1) Reading Mounted I/O

Start LADDER EDITOR or programming software and read out I/O assignment from the DeviceNet via CPU module by choosing [Utility]-[I/O assignment]-[Mounted I/O].



Check the I/O size of configured slaves on EH-RMD.
Download to the CPU module by clicking [Execute].

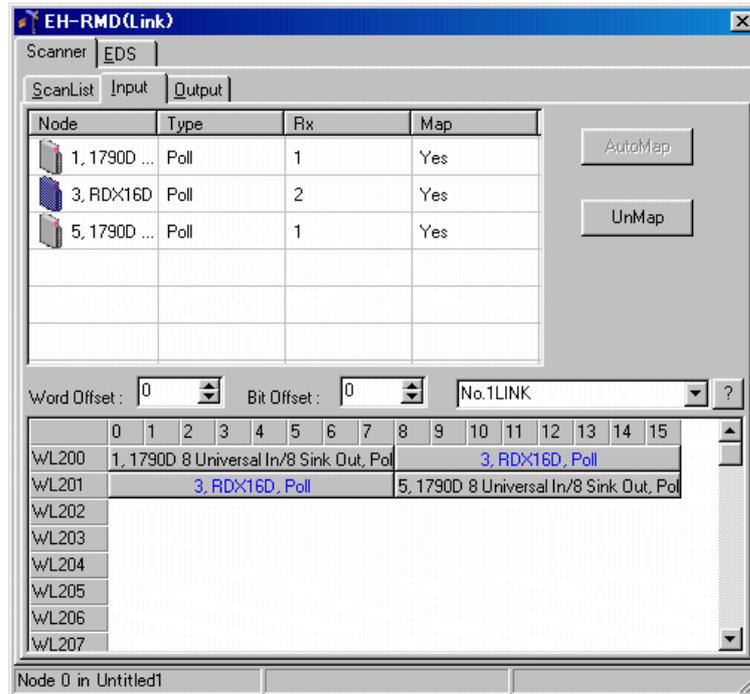
2.4 Word Offset

There are various I/O sizes available for DeviceNet slave modules.
The mapping example of odd byte is described as below.

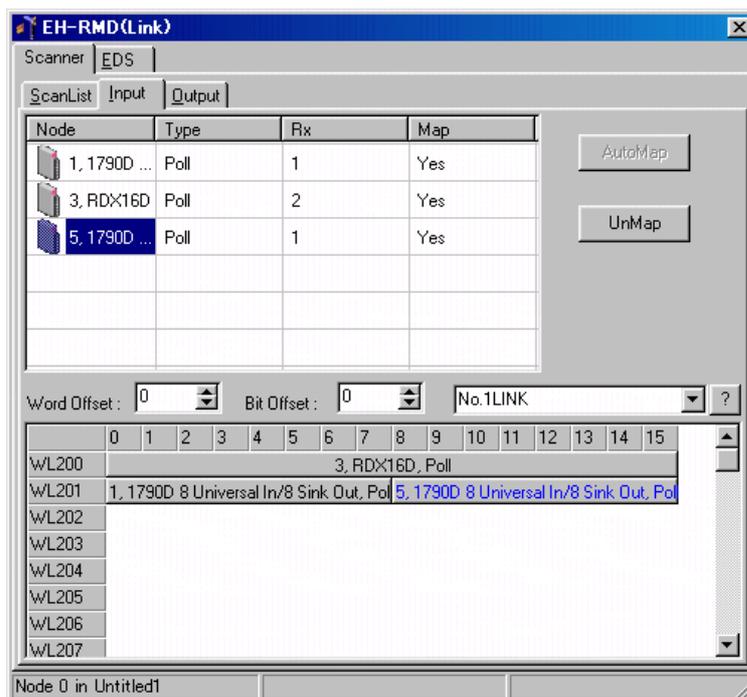
If 1 byte device and 2 byte device are used together, 2 byte data can be mapped in 2 words. (see example 1)

To avoid this, it is easy to map as 2 byte device at first. (see example 2)

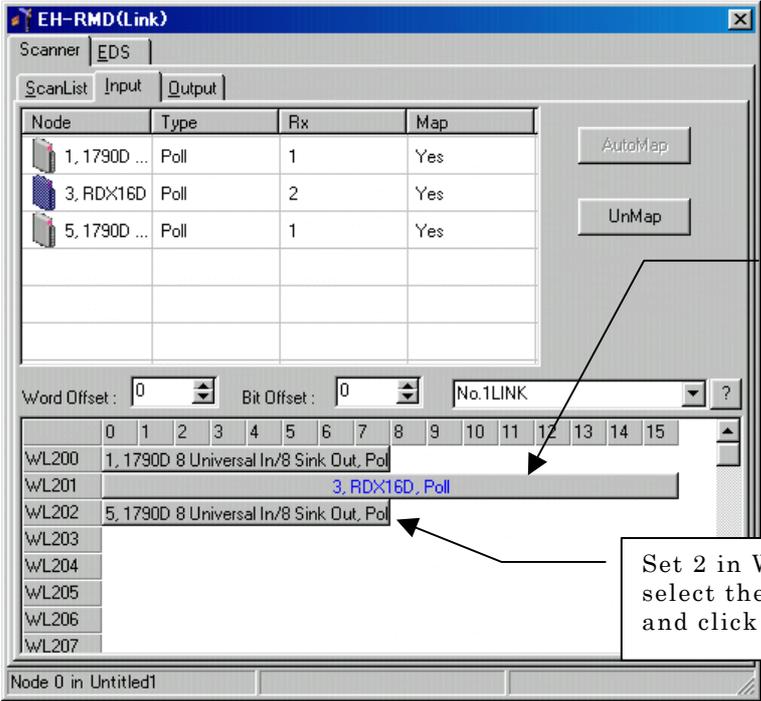
Besides this, each device can be mapped flexibly by using Word Offset. (**ONLY FOR LINK MODE**) (see example 3)



Ex.1 Straddling on Two words



Ex.2 Changed the order



Ex.3 Using Word offset (Only LINK mode)

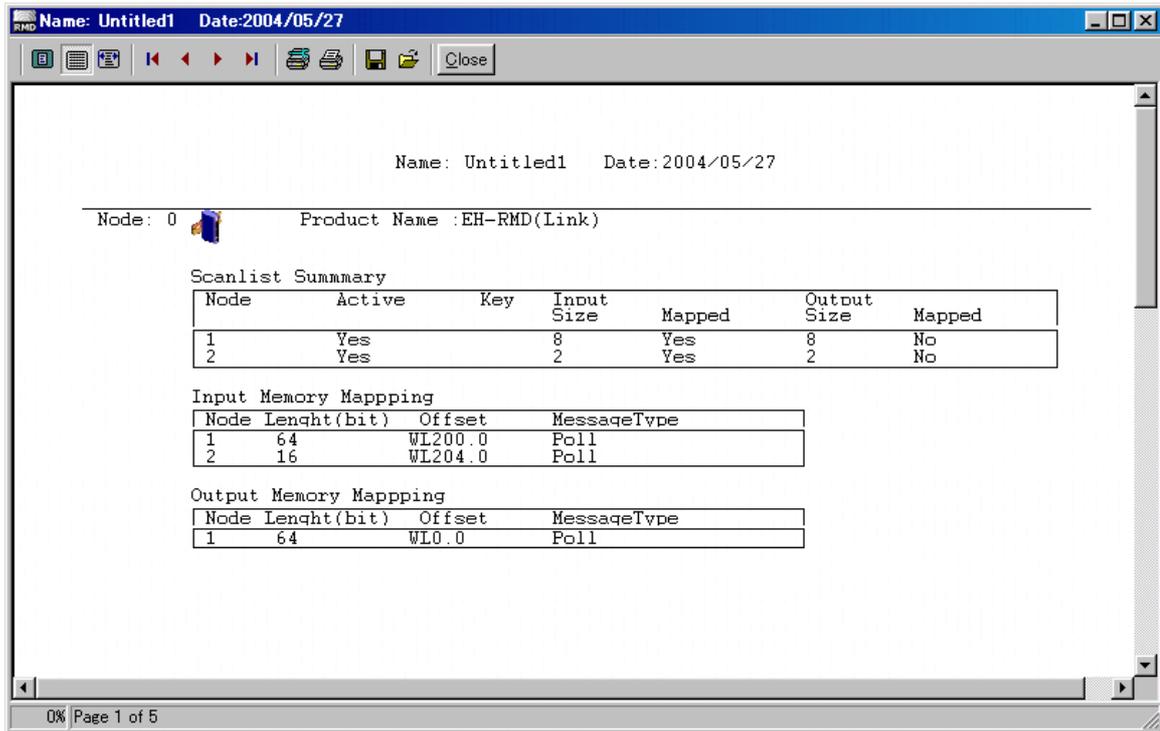
Chapter 3 Additional function

In this chapter, additional function of this tool is described.

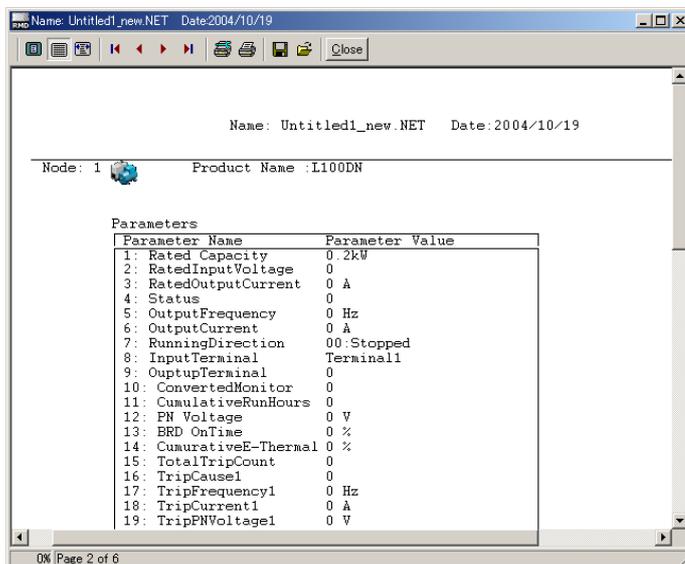
3.1 Printing function

Scan-list can be printed out as following example.

(1)Master property: The information of Scan List is displayed.



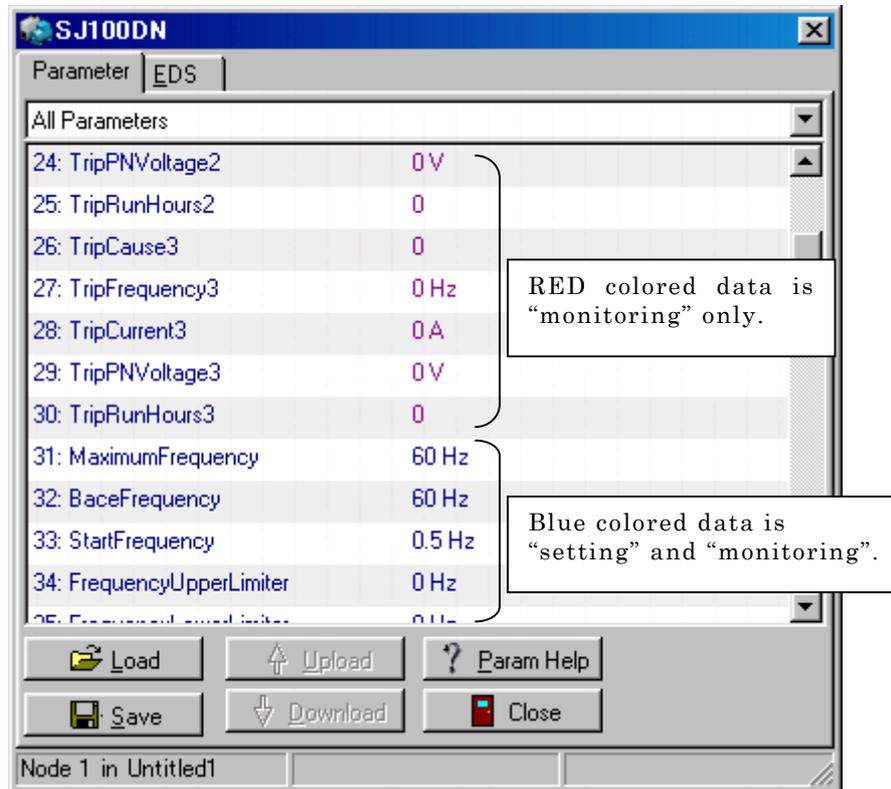
(2)Each slave property: The parameter which each slave has is displayed.



To display the actual parameter in slaves, it is necessary to uploading the parameter from each slaves.

3.2 Slave parameter setting/monitoring

Inverter or servo drives, etc. have a function to read or write parameters by using Explicit message. This tool provides easy interface to read or write the parameters.



The information about these parameters must be specified in EDS file.

When EDS file is created and registered by RMDCFG in on-line mode, those parameter information is not created. Be sure to use and register official EDS file provided by each vendor.

Chapter 4 Troubleshooting

In this chapter, troubleshooting of this tool is described.

[1] Can't ON-line

The ICON of OFF-line state



The ICON of ON-line state



When not changing into ON-line state, the ICON doesn't become like the above figure.

In this case, please check the following item.

- 1) Communication setup is right. Please set up correctly the slot No. in which EH-RMD is mounted.
- 2) SOFTWARE VER. of EH-RMD is 03 or more.
- 3) "NS" LED of EH-RMD is solid GREEN or FLASHING GREEN.

[2] Can't Upload/Download

When Upload/Download processing doesn't progress, please go to OFF-line state once and go to ON-line again.