Honeywell

Honeywell Process Solutions

Dnet I/F Module
2MLL-DMEB
User's Guide

R220
May 2018

Release 220

Honeywell

Notices and Trademarks

Copyright 2011 by Honeywell International Sárl.
Release 220 **May 2018**

While this information is presented in good faith and believed to be accurate, Honeywell disclaims the implied warranties of merchantability and fitness for a particular purpose and makes no express warranties except as may be stated in its written agreement with and for its customers.

In no event is Honeywell liable to anyone for any indirect, special or consequential damages. The information and specifications in this document are subject to change without notice.

Honeywell, PlantScape, Experion PKS, and **TotalPlant** are registered trademarks of Honeywell International Inc.

Other brand or product names are trademarks of their respective owners.

Honeywell Process Solutions

1860 W. Rose Garden Lane

Phoenix, AZ 85027 USA

1-800 822-7673

About This Document

This document describes how to install, configure, and use the DeviceNet I/F module.

Release Information

Document Name	Document ID	Release Number	Publication Date
2MLL-DMEA User's Guide		210	July 2011
2MLL-DMEB User's Guide		220	May 2018

Support and Other Contacts

United States and Canada

Contact:	Honeywell Solution Support Center
Phone:	1-800-822-7673 Calls are answered by dispatcher between 6:00 am and 4:00 pm Mountain Standard Time. Emergency calls outside normal working hours are received by an answering service and returned within one hour.
Fascimile:	1-973-455-5000
Mail:	Honeywell TAC, MS L17 1860 W. Garden Lane Phoenix, AZ, 85027 USA

Europe, Middle East, and Africa (EMEA)

Contact:	Honeywell TAC-EMEA
Phone:	+32-2-728-2345
Fascimile:	+32-2-728-2696
Mail:	TAC-BE02 Hermes Plaza Hermeslaan, 1H B-1831 Diegem, Belgium

Pacific

Contact:	Honeywell Global TAC – Pacific
Phone:	1300-364-822 (toll free within Australia) +61-8-9362-9559 (outside Australia)
Fascimile:	+61-8-9362-9564
Mail:	Honeywell Limited Australia 5 Kitchener Way Burswood 6100, Western Australia
Email:	GTAC@honeywell.com

India

Contact:	Honeywell Global TAC – India
Phone:	+91-20- 6603-9400
Fascimile:	+91-20- 6603-9800
Mail:	Honeywell Automation India Ltd 56 and 57, Hadapsar Industrial Estate Hadapsar, Pune –411 013, India
Email:	Global-TAC-India@honeywell.com

Korea

Contact:	Honeywell Global TAC – Korea
Phone:	+82-80-782-2255 (toll free within Korea)
Fascimile:	+82-2-792-9015
Mail:	Honeywell Co., Ltd 4F, Sangam IT Tower 1590, DMC Sangam-dong, Mapo-gu Seoul, 121-835, Korea
Email:	Global-TAC-Korea@honeywell.com

People's Republic of China

Contact:	Honeywell Global TAC – China
Phone:	+86- 21-2219-6888 800-820-0237 400-820-0386
Mail:	Honeywell (China) Co., Ltd 33/F, Tower A, City Center, 100 Zunyi Rd. Shanghai 200051, People's Republic of China
Email:	Global-TAC-China@honeywell.com

Singapore

Contact:	Honeywell Global TAC – South East Asia
Phone:	+65-6580-3500
Fascimile:	+65-6580-3501 +65-6445-3033
Mail:	Honeywell Private Limited Honeywell Building 17, Changi Business Park Central 1 Singapore 486073
Email:	GTAC-SEA@honeywell.com

Taiwan

Contact:	Honeywell Global TAC – Taiwan
Phone:	+886-7-536-2567
Fascimile:	+886-7-536-2039
Mail:	Honeywell Taiwan Ltd. 17F-1, No. 260, Jhongshan 2nd Road. Cianjhen District Kaohsiung, Taiwan, ROC
Email:	Global-TAC-Taiwan@honeywell.com

Japan

Contact:	Honeywell Global TAC – Japan
Phone:	+81-3-6730-7160
Fascimile:	+81-3-6730-7228
Mail:	Honeywell Japan Inc. New Pier Takeshiba, South Tower Building, 20th Floor, 1-16-1 Kaigan, Minato-ku, Tokyo 105-0022, Japan
Email:	Global-TAC-JapanJA25@honeywell.com

Elsewhere

Call your nearest Honeywell office.

World Wide Web

Honeywell Solution Support Online:

http://www.honeywell.com/ps

Training Classes

Honeywell Automation College:

http://www.automationcollege.com

Symbol Definitions

The following table lists those symbols used in this document to denote certain conditions.

Symbol	Definition
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user, often in terms of performing a task.
	REFERENCE -EXTERNAL: Identifies an additional source of information outside of the bookset.
	REFERENCE - INTERNAL: Identifies an additional source of information within the bookset.
CAUTION	Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.
	CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. **CAUTION** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	WARNING: Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or death. **WARNING** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.

Symbol	Definition
	WARNING, Risk of electrical shock: Potential shock hazard where HAZARDOUS LIVE voltages greater than 30 Vrms, 42.4 Vpeak, or 60 VDC may be accessible.
	ESD HAZARD: Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices.
	Protective Earth (PE) terminal: Provided for connection of the protective earth (green or green/yellow) supply system conductor.
	Functional earth terminal: Used for non-safety purposes such as noise immunity improvement. NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national local electrical code requirements.
	Earth Ground: **Functional earth connection.** NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements.
	Chassis Ground: Identifies a connection to the chassis or frame of the equipment shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements.

◎ Table of Contents ◎

Chapter 1 Introduction ..... 1-1 ~ 1-5

1.1 What is DeviceNet? 1-1
1.2 Characteristics of the module 1-2
1.3 Information for Module Operation 1-3
1.4 Configuration of Smart I/O for Dnet 1-4

Chapter 2 Specifications ..... 2-1 ~ 2-8

2.1 General Specifications 2-1
2.2 Performance Specifications 2-2
2.3 Part names and structure 2-4
2.4 Cable Specifications 2-5
2.5 Terminating Resistor 2-6
2.6 Tap/Divider 2-7

Chapter 3 Installation and Test Operation ..... 3-1 ~ 3-8

3.1 Installation 3-1
3.2 From Setting to Operation 3-7
3.3 Setting Procedure of N Configurator and SoftMaster..... 3-8

Chapter 4 System Configuration ..... 4-1 ~ 4-3

4.1 System with LS Dnet I/F module used 4-1
4.2 Combined system with LS Dnet I/F module and slaves by other manufacturers..... 4-2
4.3 System with Multi-master used 4-3

Chapter 5 N Configurator Setting ..... 5-1 ~ 5-157

5.1 EDS Analyzer 5-1
5.2 Project File Management 5-4
5.3 Binary File Management 5-7
5.4 Excel Report 5-10
5.5 Program Exit 5-18
5.6 N Configurator Overview 5-19
5.7 N Configurator Features 5-20
5.8 System Requirements for Running N Configurator 5-22
5.9 N Configurator Installation 5-23

5.10 Editing Devices 5-24
5.11 Changing Display Method 5-28
5.12 Screen Configuration 5-35
5.13 Fast Start 5-46
5.14 Device List 5-51
5.15 EDS Viewer 5-52
5.16 Project Explorer 5-54
5.17 Master Property Window 5-56
5.18 Bus Parameter Window 5-59
5.19 Slave Property Window 5-60
5.20 Output Window 5-59
5.21 Shrink Topology 5-60
5.22 Toolbar/Status Bar 5-62
5.23 Project property settings 5-63
5.24 Master Properties 5-65
5.25 Bus Parameter 5-68
5.26 Slave Properties 5-69
5.27 Slave I/O modules 5-75
5.28 Slave Parameters 5-83
5.29 Communication Settings 5-90
5.30 Download Binary Images 5-92
5.31 Download Binary Files 5-94
5.32 Upload Binary Files 5-96
5.33 Master Slave Control 5-98
5.34 Slave Device Monitoring 5-100
5.35 Device Diagnostics 5-111
5.36 Network Scan 5-115
5.37 Device Table 5-119
5.38 Device Communication Type Table 5-121
5.39 Slave I/O Address Table 5-123
5.40 Option Window 5-130
5.41 Window Management 5-137
5.42 Project Window Management 5-145
5.43 Project Tab Group Management 5-147

Chapter 6 High-speed Link Setting ..... 6-1 ~ 6-20

6.1 Introduction 6-1
6.2 How to use SoftMaster 6-2
6.3 High-speed Link Editing 6-5
6.4 Read and Write of High-speed Link 6-11
6.5 Enable Link 6-12
6.6 System Diagnosis 6-16
6.7 High-speed Link Information 6-19

Chapter 7 Communication Program ..... 7-1 ~ 7-31

7.1 Example Program..... 7-1
7.2 Example Program(MDL-BSSA setting) 7-17

Chapter 8 Troubleshooting .....8-1 ~ 8-7

8.1 Symptoms and Management by LED Status 8-1
8.2 System Diagnosis in SoftMaster..... 8-1
8.3 Diagnosis of Communication Module through SoftMaster 8-4
8.4 Troubleshooting of Respective Errors 8-5

Appendix ..... A-1 ~ A-21

A.1 List of Flags A-1
A.2 Terminology A-11
A.3 Smart I/O Mode Setting in N-Configurator..... A-18
A.4 External Dimensions A-21

Chapter 1 Introduction

1.1 What is DeviceNet?

This user's manual is to describe DeviceNet Master I/F module among communication modules of ML200 PLC system. It is proposed as ISO 11898 and 11591-1 standards which are composed of Physical Layer and Data Link Layer only.

DeviceNet is an Application Layer developed by Rockwell/Allen-Bradley, widely used in the present industrial automation field.

Since DeviceNet uses CAN communication protocol, low-priced CAN microchip applied will reduce the cost. And direct connection of master and respective devices with the network of device level is available. In addition, flexible counteractions against errors are also available by access to important diagnosis information of device level which was impossible to use via the I/O interface.

1.2 Characteristics of the Module

DeviceNet (hereinafter referred to as Dnet) I/F module have features as follows;

- ▶ 1 master module can control 63 slave modules with the max. 28,000 points of I/O control available.

- ▶ Multi-drop and T-diverged connection is available allowing the system to be extended and changed easily with flexible system operation function provided.

- ▶ Open network available to connect with other company's various slave modules.

- ▶ Master and slave can be set through Configuration Tool (N Configurator), and communication control is available through SoftMaster.

- ▶ Automatic setting, in other words, Auto scan is available for the modules (which exist) in the network.

- ▶ Configuration Tool (N Configurator)
  1) Station number (MAC ID) can be specified (0 ~ 63) through Configuration Tool (N Configurator).
  2) Communication speed can be specified (125/250/500 kbps) through Configuration Tool (N Configurator).
  3) Out of 4 communication types (Poll, Bit strobe, COS, Cyclic), one DeviceNet can be selected through Configuration Tool (N Configurator).

- ▶ Setup time and installation cost of the system will be saved from reduced connections and wiring works by using a single cable for communication power(24V) and communication signal line.

- ▶ Network setting and various diagnoses can be simply arranged through N Configurator and SoftMaster, in other words, diagnosis of the whole network or each slave is available.

- ▶ Real-time control over I/O devices in the lowest level of the network system is available.
  In addition, connection to various slaves I/O is available.
  - General I/O, actuator, proximity switch, optical switch, valve, inverter, A/D module, D/A module, position control, etc.

1.3 Information for Module Operation

1) It describes required components to operate the product.

Classification	Type	Description	Reference
Series	2MLL-DMEB	DeviceNet I/F module.	Master only
Software	N-Configurator	Software for Station number, Speed, Communication methods, configuration of network setting.	Master set up only
	EDS	Including module information (Product code/Type, Maker name/Maker number) - It is used to configure the network in N Configurator.	Provided by each maker
	SoftMaster	Software for PLC programming	Additional software

Remark

SoftMaster program can be downloaded at our company website. If you do not have an access to the internet, contact the nearest agency for CD-ROM about SoftMaster. Regarding EDS file related to our slave module (Smart Link), please contact Honeywell.

2) It describes about the number of module and position that can be installed in a single CPU module.

Classification	Description	
Position	2MLK/2MLI	Standard base and Extension base
	2MLR	Extension base
Number	Common	A maximum of 12. In case of using with other communication modules, It is able to install a maximum of 24 (But High-speed link setting is limited to 12)
High-speed link number	Common	A maximum of 12 (It cannot set for P2P)

3) Please refer to below User Manuals to write communication program with Dnet I/F module.

- 2MLK Instruction Manual
- 2MLR/2MLI Instruction Manual
- SoftMaster User Manual
- 2MLK CPU User Manual
- 2MLR/I CPU User Manual
- Smart I/O User Manual
- Other company's User Manual which is related to Dnet

1.4 Configuration of Smart I/O for Dnet

1) Slave Products List of Stand-alone type

Product		Details
Classification	Designations	
Plug-in type	MDL-D22C	DC input 16 points
	MDL-D22C(Q)	DC input 16 points, Quick mode
	MDL-D24C	DC input 32 points
	MDL-D24C(Q)	DC input 32 points, Quick mode
	MDL-TR2C	TR output 16 points (0.5A, Source)
	MDL-TR2C(Q)	TR output 16 points (0.5A, Source), Quick mode
	MDL-TR2C1	TR output 16 points (0.5A, Sink)
	MDL-TR2C1(Q)	TR output 16 points (0.5A, Sink), Quick mode
	MDL-TR4C	TR output 32 points (0.5A, Source)
	MDL-TR4C(Q)	TR output 32 points (0.5A, Source), Quick mode
	MDL-TR4C1	TR output 32 points (0.5A, Sink)
	MDL-TR4C1(Q)	TR output 32 points (0.5A, Sink), Quick mode
	MDL-DT4C	DC input 16 points/TR output 16 points (0.5A,Source)
	MDL-DT4C(Q)	DC input 16 points/TR output 16 points (0.5A,Source), Quick mode
	MDL-DT4C1	DC input 16 points/TR output 16 points (0.5A, Sink)
	MDL-DT4C1(Q)	DC input 16 points/TR output 16 points (0.5A, Sink), Quick mode
	MDL-RY2C	Relay output 16 points
	MDL-RY2C(Q)	Relay output 16 points, Quick mode

Remark

1) Plug-in type: A product whose I/O terminal block can be installed or removed.
2) Quick mode: A product whose initializing time is 1.5 sec. after the communication power is On.

2) Slave Products List of Extendable type

Products		Details
Classification	Designations	
Communication Adapter	MDL-BSSA	Dnet I/F Adapter
Extendable I/O	MLE-DC32A	24VDC Input 32points
	MLE-DC16A	24VDC Input 16points
	MLE-DC08A	24VDC Input 8points
	MLE-RY16A	Relay Output 16points
	MLE-RY08A	Relay Output 8points
	MLE-TN32A	Transistor Output 32points(NPN Type)
	MLE-TN16A	Transistor Output 16points(NPN Type)
	MLE-TN08A	Transistor Output 8points(NPN Type)
	MLE-DR16A	24VDC Input 9points/Relay Output 16points
Extendable Special module	MLF-AD04A/C	Current/Voltage Input 4Ch, C:high-accuracy
	MLF-AD08A	Current/Voltage Input 8Ch
	MLF-DV04A/C	Voltage Output 4Ch, C:high-accuracy
	MLF-RD04A	RTD input 4Ch
	MLF-TC04S	TC input 4ch(Isolated)
	MLF-DC04A/C	Current Output 4Ch, C:high-accuracy

Chapter 2 Specifications

2.1 General Specifications

General specifications of ML200 series are as specified below in Table 2.1.

<table>
<tr><th>No.</th><th>Item</th><th colspan="6">Specification</th><th>Related specifications</th></tr>
<tr><td>1</td><td>Operating temp.</td><td colspan="6">0℃ ~ +55℃</td><td>-</td></tr>
<tr><td>2</td><td>Storage temp.</td><td colspan="6">-25℃ ~ +70℃</td><td>-</td></tr>
<tr><td>3</td><td>Operating humidity</td><td colspan="6">5 ~ 95%RH, no dew allowed</td><td>-</td></tr>
<tr><td>4</td><td>Storage humidity</td><td colspan="6">5 ~ 95%RH, no dew allowed</td><td>-</td></tr>
<tr><td rowspan="9">5</td><td rowspan="9">Vibration immunity</td><td colspan="6">For discontinuous vibration</td><td>-</td></tr>
<tr><td>Frequency</td><td colspan="2">Acceleration</td><td colspan="2">Amplitude</td><td>Number</td><td rowspan="8">IEC61131-2</td></tr>
<tr><td>5 ≤ f < 8.4 Hz</td><td colspan="2">-</td><td colspan="2">3.5mm</td><td rowspan="7">Each 10 times in X,Y,Z directions</td></tr>
<tr><td>8.4 ≤ f ≤ 150 Hz</td><td colspan="2">9.8 ㎨ (1G)</td><td colspan="2">-</td></tr>
<tr><td colspan="6">For continuous vibration</td></tr>
<tr><td>Frequency</td><td colspan="2">Acceleration</td><td colspan="2">Amplitude</td></tr>
<tr><td>5 ≤ f < 8.4 Hz</td><td colspan="2">-</td><td colspan="2">1.75mm</td></tr>
<tr><td>8.4 ≤ f ≤ 150 Hz</td><td colspan="2">4.9 ㎨ (0.5G)</td><td colspan="2">-</td></tr>
<tr><td>6</td><td>Impact immunity</td><td colspan="6">* Max. impact acceleration: 147 ㎨ (15G)
* Authorized time: 11 ㎳
* Pulse wave : Sign half-wave pulse
(Each 3 times in X,Y,Z directions)</td><td>IEC61131-2</td></tr>
<tr><td rowspan="5">7</td><td rowspan="5">Noise immunity</td><td colspan="3">Square wave impulse noise</td><td colspan="3">AC: ±1,500V
DC: ±900V</td><td></td></tr>
<tr><td colspan="3">Static electric discharging</td><td colspan="3">4.0KV (contact discharging)</td><td>IEC 61131-2,
IEC 61000-4-2</td></tr>
<tr><td colspan="3">Radiation electromagnetic field noise</td><td colspan="3">80 ~ 1,000MHz, 10 V/m</td><td>IEC 61131-2,
IEC 61000-4-3</td></tr>
<tr><td rowspan="2">Fast Transient /burst noise</td><td>Class</td><td>Power module</td><td colspan="3">Digital/Analog I/O communication interface</td><td rowspan="2">IEC 61131-2,
IEC 61000-4-4</td></tr>
<tr><td>Voltage</td><td>2KV</td><td colspan="3">1KV</td></tr>
<tr><td>8</td><td>Ambient conditions</td><td colspan="6">No corrosive gas or dust</td><td></td></tr>
<tr><td>9</td><td>Operating height</td><td colspan="6">2,000m or less</td><td></td></tr>
<tr><td>10</td><td>Pollution level</td><td colspan="6">2 or less</td><td></td></tr>
<tr><td>11</td><td>Cooling type</td><td colspan="6">Natural air cooling</td><td></td></tr>
</table>

[Table 2.1] General Specifications

Notes

[Note 1] IEC (International Electrotechnical Commission):
An international nongovernmental organization which promotes internationally cooperated standardization in electric/electronic field, publishes international standards and manages applicable estimation system related with.

[Note 2] Pollution level:
An index indicating pollution level of the operating environment which decides insulation performance of the devices. For instance, Pollution level 2 indicates the state generally that only non-conductive pollution occurs. However, this state contains temporary conduction due to dew produced.

2.2 Performance Specifications

1) Performance specifications

Performance specifications of DeviceNet (hereinafter referred to as Dnet) I/F module are as described below.

Item			Performance Specifications
Transmission Specification	Transmission Speed (kbps)		125/250/500
	Transmission Type	I/O Connection	G2, UCMM
		I/O Communication	Poll, Bit strobe, COS, Cyclic
	Communication distance(m)	Thick Cable	500 (125kbps)/250 (250kbps)/100 (500kbps)
		Thin Cable	100 (125/250/500kbps)
	Terminal resistance (Ω)		121 (1%, 1/4W)
	Max.drop length(m)	125 kbps	6 (Max. extended length 156)
		250 kbps	6 (Max. extended length 78)
		500 kbps	6 (Max. extended length 39)
	Data Packet		0~8 Bytes
	Message Access Control		CSMA/NBA
	Network Structure		• Trunk/drop line • Power/Signal cable inside the identical network cable
	Bus Type		• Poll type
	Max. number of nods		Up to 64 (including master) MAC IDs (MAC Identifier)
	System Features		Insertion and removal of nod available in voltage On status
	Operation Voltage		DC 24V
	Diagnosis Function		Module: Checks duplicated station/ Checks CRC error N Configurator: Detects defective station/Checks BusOff/Auto-scan function SoftMaster: Monitors High-speed link
	Master/Slave Operation		Available only in master
Parameter setting			1) N Configurator (CONFIG Port of Dnet I/F) 2) Setting to High-speed link of SoftMaster (RS-232C of CPU module or USB port)
SoftMaster (High-speed link)	Data process unit		Byte
	Send/Receive period		Select among 20ms, 50ms, 100ms, 200ms, 500ms, 1s, 5s and 10s - Default : 20ms
	Max. communication point		Send 128,520points, Receive 128,520 points, 16,065 bytes respectively
	Max. block number		63 (Setting range: 0~62)
	Max. point number per block		2040 points (255 bytes)
Basic Specification	Max. modules installed		Up to 12 (available on basic base and added base)
	Internal-consumed current (mA)		350mA
	Weight (g)		81g

Remark

1) Transmission distance of Dnet I/F module is inversely proportional to data transmission rate. If thin cable is used, the transmission distance will be limited to 100m regardless of data transmission rate.
2) CSMA/NBA (Carrier Sense Multiple Access with Non-destructive Bitwise Arbitration)
3) If the station No. of Dnet I/F module (master module) is specified, surely reset the applicable slave module.

2) Communication methods

Communication methods can be set per module when it is supported by slave module.

Setting of Slave insertion/setting in N Configurator is as shown below.

(1) Automatic setting: Online → Automatic Network Scan

(2) Manual setting: Settings → Device Configuration

Communication method's features are as shown below.

Communication method	Feature
Poll	Master and slave module Send/Receive the data by one on one.
Bit-Strobe	It is used only in input module. The way to transmit data simultaneously for master module from its input type slave modules when the master module's data transmission request is received.
COS (Change of State)	If input data status of slave module is changed, slave module transmits changed data to master module. But output type slave module, Settings → Device Configuration Menu selection → Connection Object Instance Attributes Setting window→ Expected Packet Rate Category, transmits every time according to its setting rates.
Cyclic	Slave module attempts to Send/Receive periodically. Communication period setting, Settings → Device Configuration Menu selection→ Connection Object Instance Attributes Setting window→ Expected Packet Rate Category, sent/receives data periodically between master and slave module according to its setting periods.

So, Communication method should be used with cautions along with data process of Input/Output module in the system.

3) EDS (Electronic Data Sheet) file

▶ It is to allow other vendors to use restricted information of product through EDS file format.

Restricted information of product: Maker name and unique number (ODVA Certification)

Module information (Master and slave module)

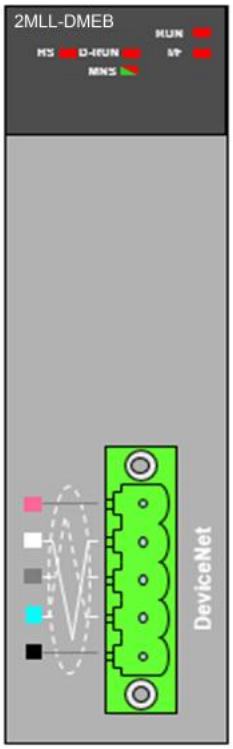
Input/Output module information (Input point, Output point)

Information on communication support method

▶ EDS file addition: It can be executed by File → Copy EDS.

Copied EDS file can be used only when located under EDS folder of N Configurator execution directory

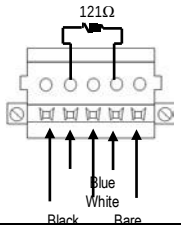
2.3 Part names and Structure



(1) LED display parts

LED		Status	LED display description
RUN	On	Normal	Completion of initializing.
	Off	Error	Error is occurred.
I/F	Flickering	Normal	Normal status of interface in CPU module.
	On/Off	Error	Error status of interface in CPU module.
HS	On	Normal	Normal status when High-speed link is enabled.
	Flickering	Waiting	Communication is disconnected between Dnet I/F and Slave module while downloading at High-speed link enabled status by N Configurator.
	Off	Error	High-speed link service is in Critical error while High-speed link is enabled.
D-RUN	Flickering	Stop	Stop status of communication between Dnet I/F module and slave module.
	On	Communicating	Communication status of Dnet I/F module and slave module.
MNS	Off	Power Off	● Waiting status of Dnet I/F module communication. ● Non-completed status of Checking duplicated MAC ID on network. ● It is not supplied external power supply (DC24V).
	Green Flickering	Waiting	Communication waiting status between Dnet I/F module and slave. - It is recognized the information of network (Station number, ID, Communication speed) in N Configurator.
	Green Flickering	Normal	Normal communication status between Dnet I/F module and slave.
	Red Flickering	Error	Slave module is separated network while communicating.
	Red Flickering	Critical error	● Dnet I/F module could not access the network. ● Non-ability status of Communication (Bus Off). ● Duplicated ID module is existed in network.

(2) 5 pin connector (for exeternal connection)

Color	Signal	Service	5 pin connector
Red	DC 24V(+)	Vcc	
White	CAN_H	Signal wire	
Bare	Drain	Shielded wire	
Blue	CAN_L	Signal wire	
Black	DC 24V(-)	GND	

2.4 Cable Specifications

1) Cable specifications (Belden)

Classification	Thick (class1)	Thick (class2)	Thin (class2)	
Type	7897A	3082A	3084A	Trunk and Drop line is used concurrently
Cable Type	Round			
Impedance (Ω)	120			
Temperature range (℃)	-20 ~ 75			
Max. allowable current(A)	8		2.4	
Min. radius of curvature (in.)	4.4	4.6	2.75	
Core wire number	5 wires			

2) Maximum trasmission distance for repective cable types

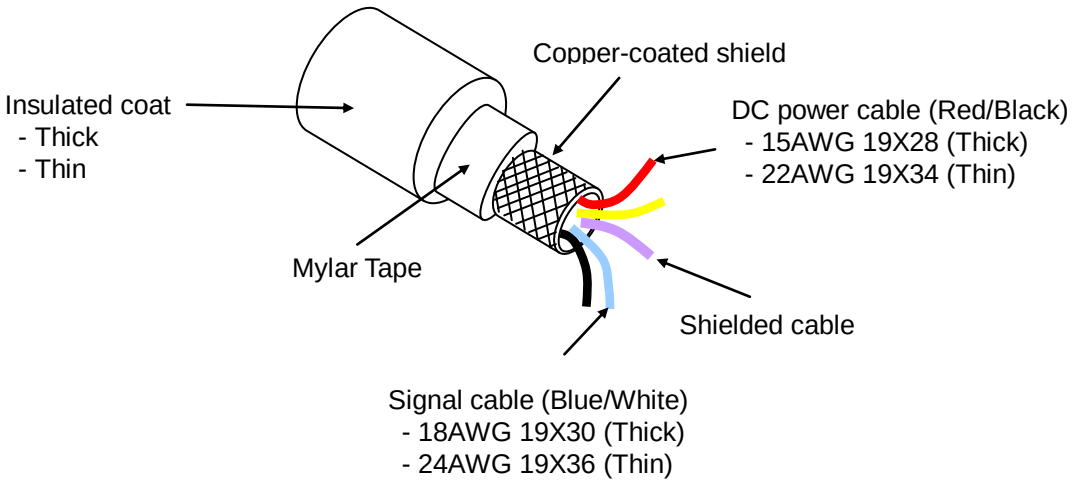
(1) If one type of trunk line is used

Transmission speed	Maximum distance	
	Thick cable	Thin cable
125kbps	500m	100m
250kbps	250m	100m
500kbps	100m	100m

(2) If mixed with trunk line

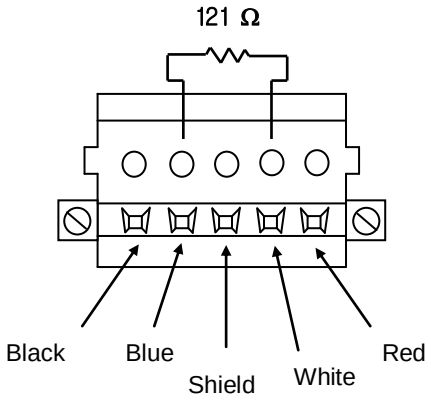
Transmission speed	Max. distance if Thin and Thick cables are used as mixed
125kbps	Thick cable length + 5 x Thin cable length ≤ 500m
250kbps	Thick cable length + 2.5 x Thin cable length ≤ 250m
500kbps	Thick cable length + Thin cable length ≤ 100m

3) Structure



2.5 Terminating Resistances

- Attach 121Ω, 1%, 1/4W of resistance to both ends of the network.
- Connect connector's CAN_H (White) with CAN_L (Blue) signal cable.



- Connection Connector

Classification	Cable connection method	
	single direction connector	dual direction connector
Shape		

Remark

1) Be sure to attach the terminating resistor to both ends of the network trunk line, or to both ends of the tap if composed of device port tap. If the terminating resistor is omitted, communication will not be normal.

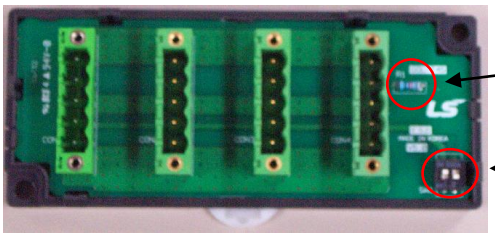
2) If the terminating resistor is installed on the port tap, it is not necessary to install an additional terminating resistor.

2.6 Tap/Divider

1) 4-Port / 8-Port Tap (LSIS)

If you use multi tap, it is convenient to configuration and modification of network system.

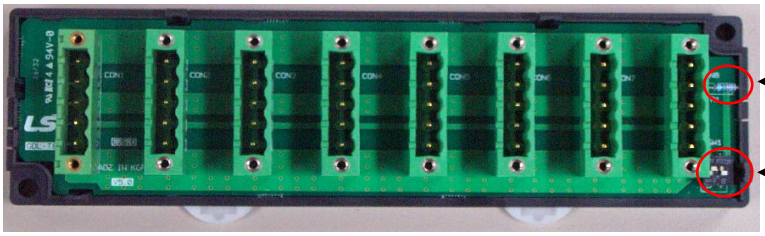
(1) 4-Port tab (GDL-T4S)



Resistor for Termination
(121Ω, 1%, 1/4W)

Switch for termination resistor
(Switch no.1 is used)

(2) 8-Port tab (GDL-T8S)



Resistor for Termination
(121Ω, 1%, 1/4W)

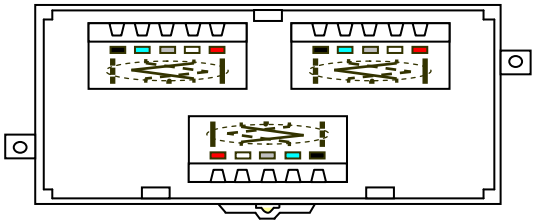
Switch for termination resistor
(Switch no.1 is used)

Remark

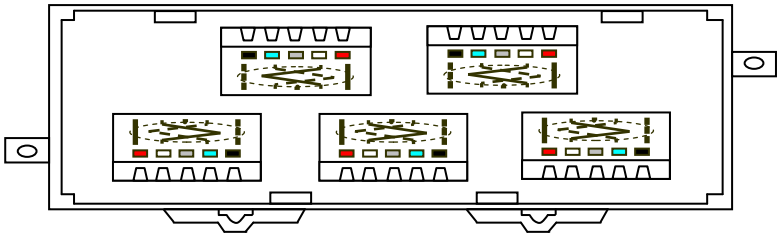
1) In case of configuring the network by using multi tab, turn on the switch for termination resistor of network line end. If termination resistor is missing in the network line, communication will be abnormally. In case of using more than two multi tabs, turn on the switch for termination resistor of each multitab that is network line end. If all the multi tab to turn on the switch for termination resistor, communication will be abnomally.

2) 1-Branch (T-Branch)/3-Branch tap (Ex.: Company OMRON)

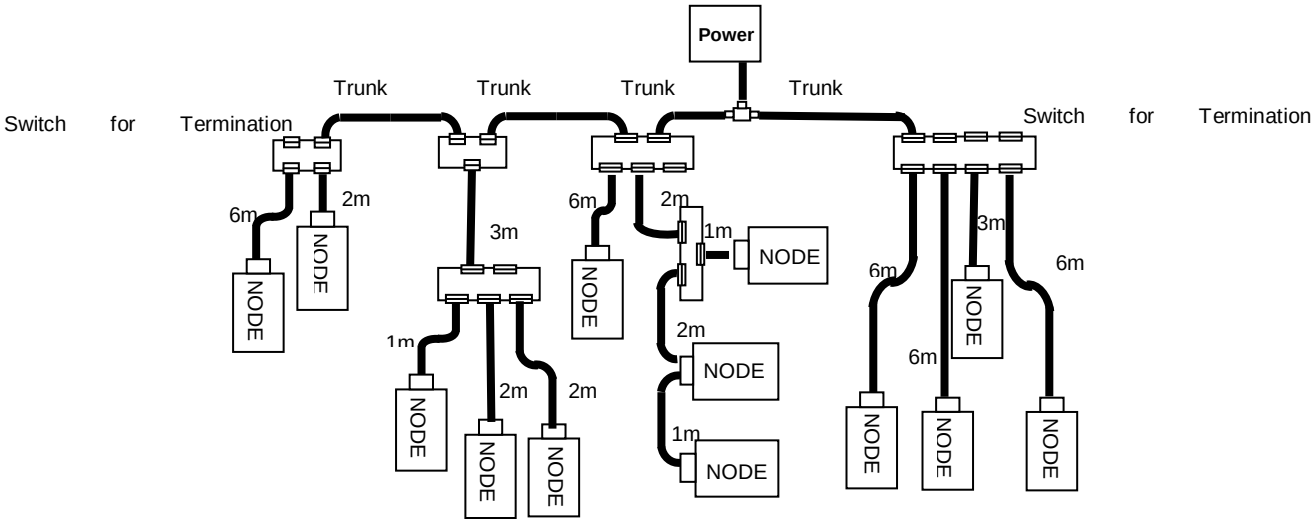
(1) 1-Branch tap (DCN-2C)



(2) 3-Branch tap (DCN-4C)



3) Multi Tab Configuration



Chapter 3 Installation and Test Operation

3.1 Installation

3.1.1 Precautions for installation

For system configuration through Dnet I/F module, carefully make sure of the following items prior to installation.

1) Check the basic factors necessary for system configuration so to select an appropriate communication module.
2) Prepare accessories such as cable, tap and terminating resistor used for communication module.
3) Speed of communication modules shall be identical respectively based on the communication speed applicably used for the communication module in compliance with cable specifications.
4) If the tap is used, surely apply terminating resistor to the tap of both ends.
5) In a single network, it must be set without duplicated station number.
6) Before the communication module is installed, check for any power supply, any foreign material on the base connector the module will be installed on and any damage on the connector pin of the module.
7) The module when installed on the base board or used solely shall be securely connected with the correspondent. If the connection is incomplete, interface with CPU may be abnormal.
8) Communication speed to be applied to this communication module is 125/250/500kbps. In order to change the communication speed of slave module once specified, let it powered off and then change the communication setting switch to apply the changed mode.

3.1.2 Materials necessary for installation

Materials necessary	Dnet I/F module
Communication cable	Thick cable/Thin cable (only for Dnet)
Tap	4,8-port tap
Terminating resistor	Terminating resistor : 121Ω, 1%, 1/4W
24V power supplier	General power supplier
Connector	Open type 5-pin connector

3.1.3 Installation

1) Precautions for installation of the connector

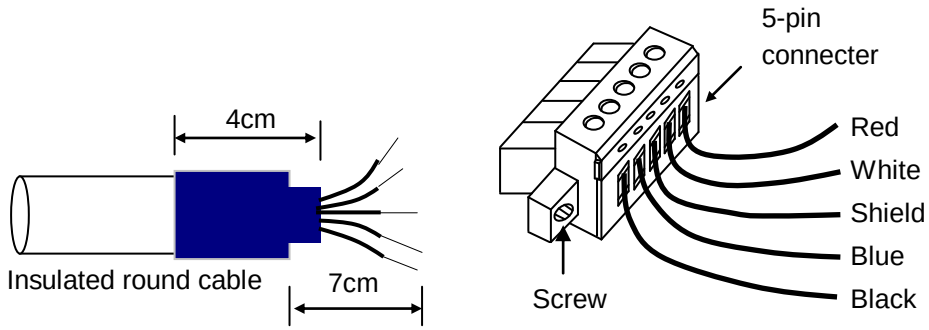
Prior to installation of the connector, please pay attention to the following.

(1) Installation shall be performed when no signal and power supply is carried by cable.

(2) If the module installed on the system operates, stop the operation prior to installation.

After the installation is complete, secure the applicable cable tightly so to keep from being vibrated or escaped.

2) How to install the connector



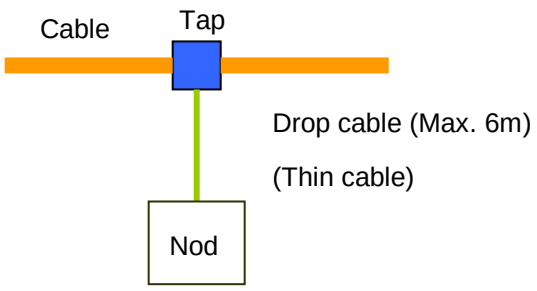
(1) First, slip off the coat of the cable about 7cm to connect.

(2) Cut the packing cover contracted about 4cm to cover on the cable and wrap up the exposed conductor and insulated coat of the cable.

(3) Slip off the coat of the cable about 8mm at the both ends respectively and apply heat to the packing cover contracted to adhere closely to the cable.

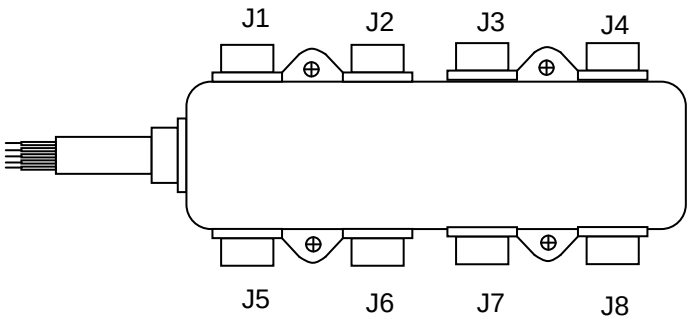
(4) Insert the slipped coat into the connector's clamp screw with a proper distance and tighten the screw (DC power supply and signal line is in identical cable, so ,be sure to make designation of the signal identical between cable and connector).

Tap-applied method and drop-applied method are available for the cable connection. And DC 24V power is recommended to be installed on the position necessary to keep the voltage when lots of Dnet I/F modules are expected or the cable is expected to get long.



3) How to install the tap (8-port tap)

Connect to device port tap's trunk line where up to 8 connections and disconnections are available.



(1) The drop line composed of Thick or Thin cable can be connected with the device through the tap. And if it is a Open-Style tap, 3 types of connectors can be used.

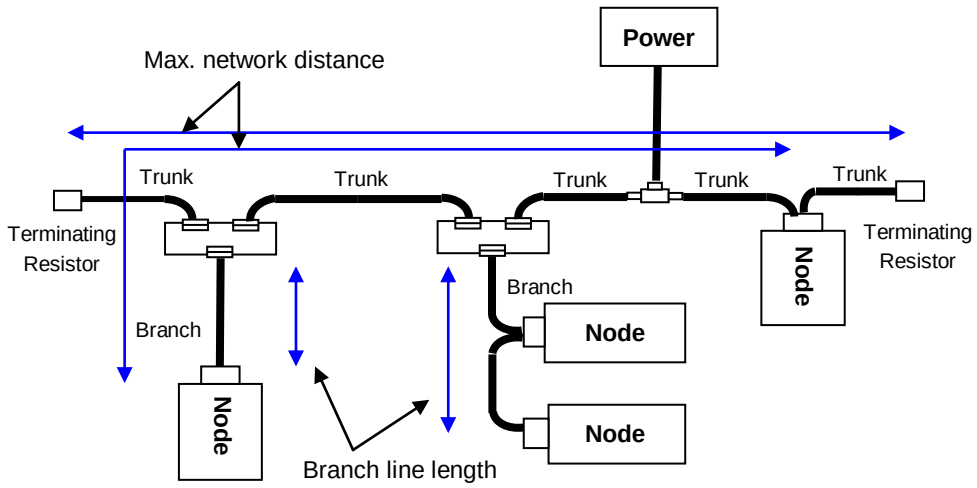
- Pluggable screw type
- Hard-wired screw type
- Soldered type

(2) The cable is most desirable to connect with drop line when the system does not operate. If the cable is to be connected when the system operates, check the connection status with other devices and let it connected with the trunk line so to avoid the influence on communication.

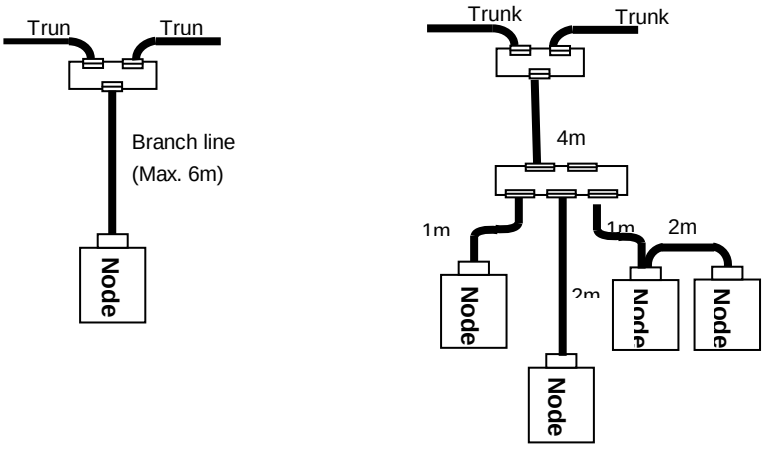
(3) When connected with the trunk line, don't let the max. allowable length exceeded.

4) How to connect with network

(1) Max. network distance: stands for the distance between nodes most far away or between terminating resistors.



(2) Branch line length: stands for the length (max. 6m) from the first branched position of the trunk line to the last of the branch line.

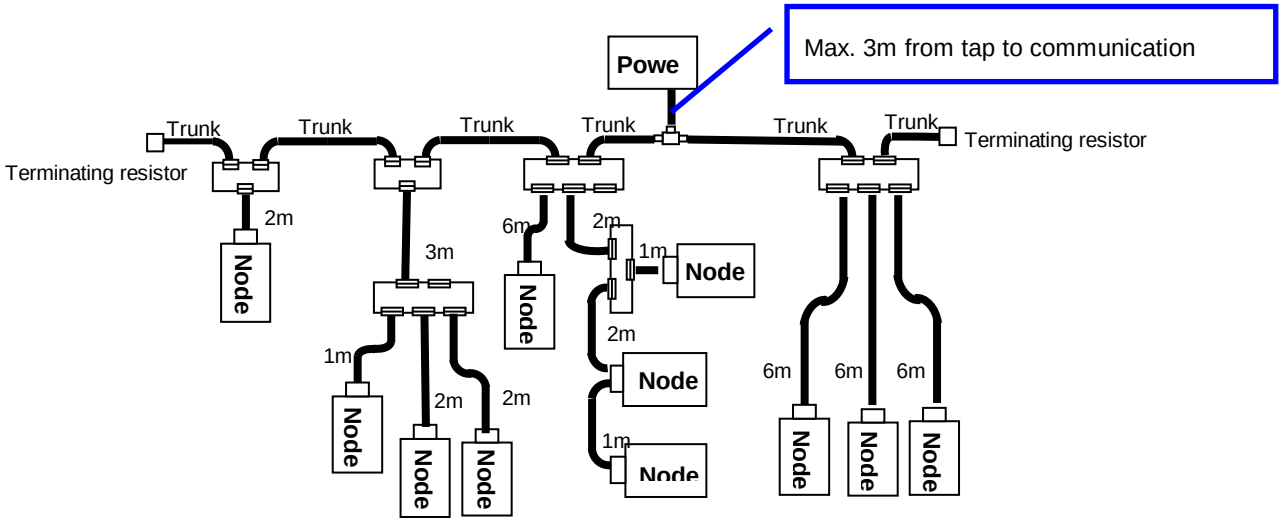


(3) Communication distance compared with communication speed

Communication speed	Max. network length		Branch line length	Branch link leghth in total
	Thick	Thin		
500kbps	100m or less	100m or less	6m or less	39m or less
250kbps	250m or less			78m or less
125kbps	500m or less			156m or less

5) Branch line length in total

- Distance of accumulated branch line length (length of each branch line shall be within the max. 6m)

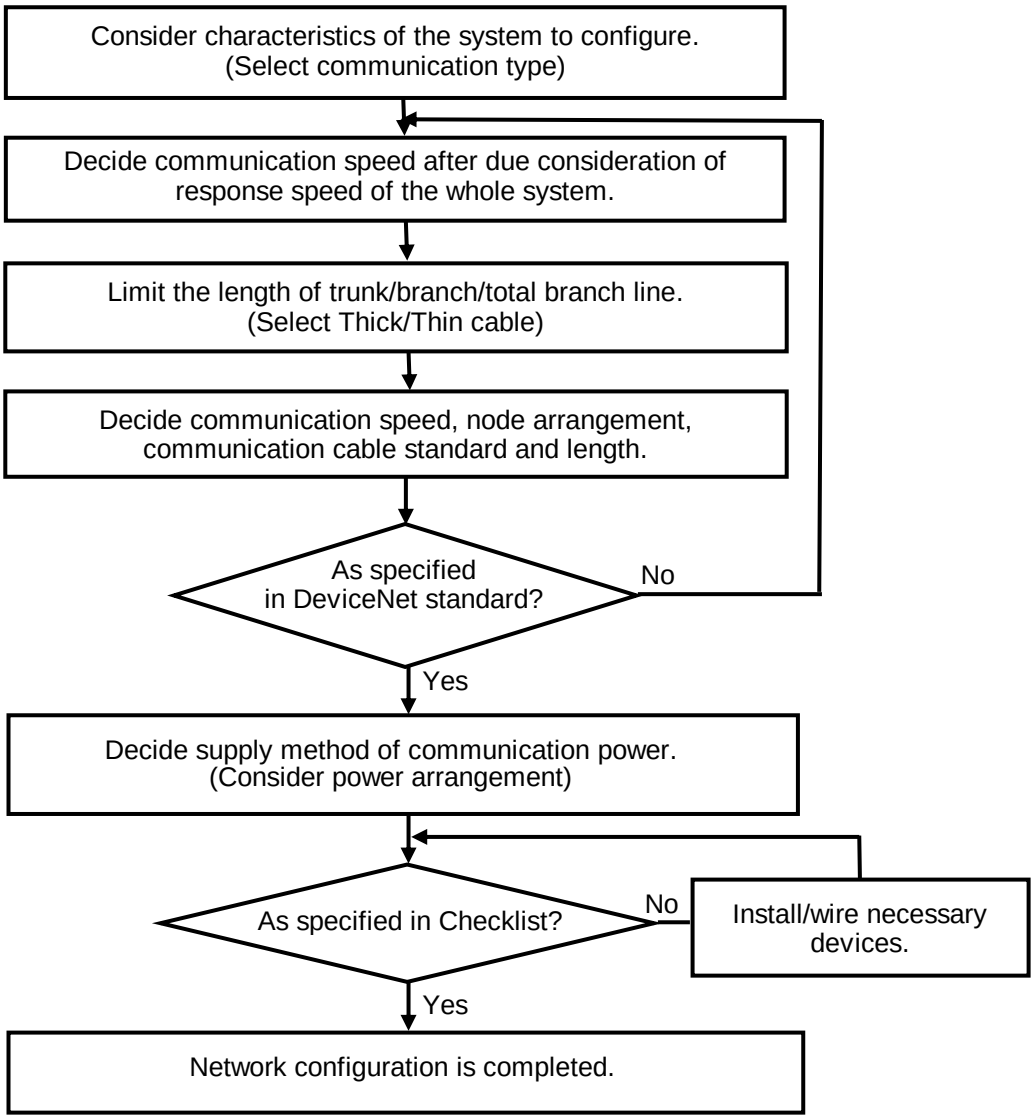


As for the configuration example above, since the branch line length is within 6m, there is no problem in the branch line length. However since the total length of the branch line is 40m which does not comply with the max. branch line length of 39m with communication speed of 500kbps,

250 and 125kpbs are only available for communication.

6) Network configuration and Checklist

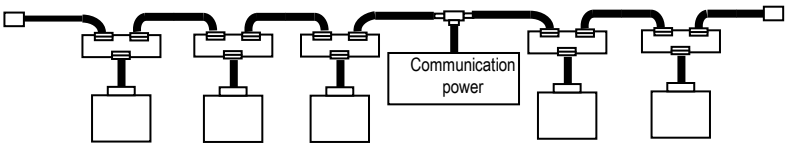
Prior to the first network configuration, please check the system to be installed in the sequence as specified below;



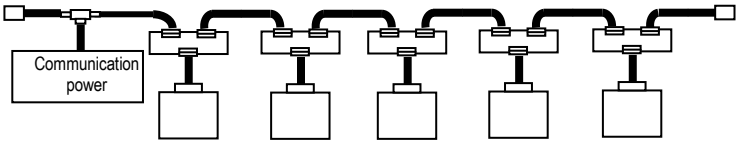
7) Power arrangement

4 types of power arrangement are available as shown below.
At this time, the distance between power and power tap shall be within 3m.

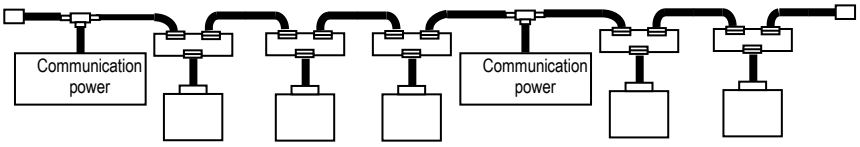
(1) If node is arranged in both directions of power



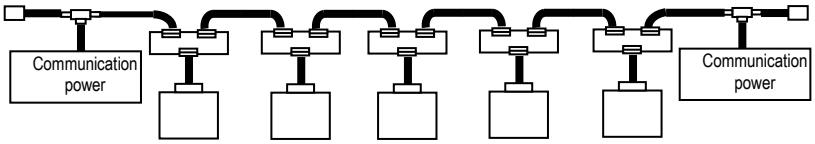
(2) If node is arranged in a direction of power



(3) If the system of power supply is separated, with the plural power installed



(4) If power duplicated



3.2 From Setting to Operation

The sequence of the product from installation to operation will be described below.

Operation Sequence

▼

Install module on the base.
→ Check the applicable base/slot position for exact installation on the basic base.

▼

Configure the system with module.
→ Use DeviceNet cable specified, terminating resistor, tap, communication power to configure the system.
→ Set the station number of slave module.

▼

With power (master and slave module) On, check the LED status of the communication module.
→ Check if the interface of the communication module is normal (I/F: Flickering, Run: On, NMS: Green On) with CPU.

▼

Execute N Configurator
After Master is selected, Station number and Communication speed is specified then Auto Scan function scan the configured information of network.
→ Check up the communication way of slave module whether the setting is correct and the module which is different from system configuration is corrected then Auto Scan function is operated.

▼

Using SoftMaster
1) Execute [Read] →2) "High-speed link" →3) [Online]- [Communication module setting]-[Config.Upload (Dnet,Pnet) → 4) Set the address of Read area/Save area for uploaded slave module → 5) [Online] – [Write] → 6) [Online]–[Communication module setting]-[Enable Link].

▼

SoftMaster
1) [Online]-[Connection] → 2) [Online] – [Communication module setting] – [System Diagnosis] → 3) Select the Master module in System diagnosis window and Check the system's operation status at "High-speed link" and "Auto scan" (It appeared by right button click of selected area).

▼

Start Run

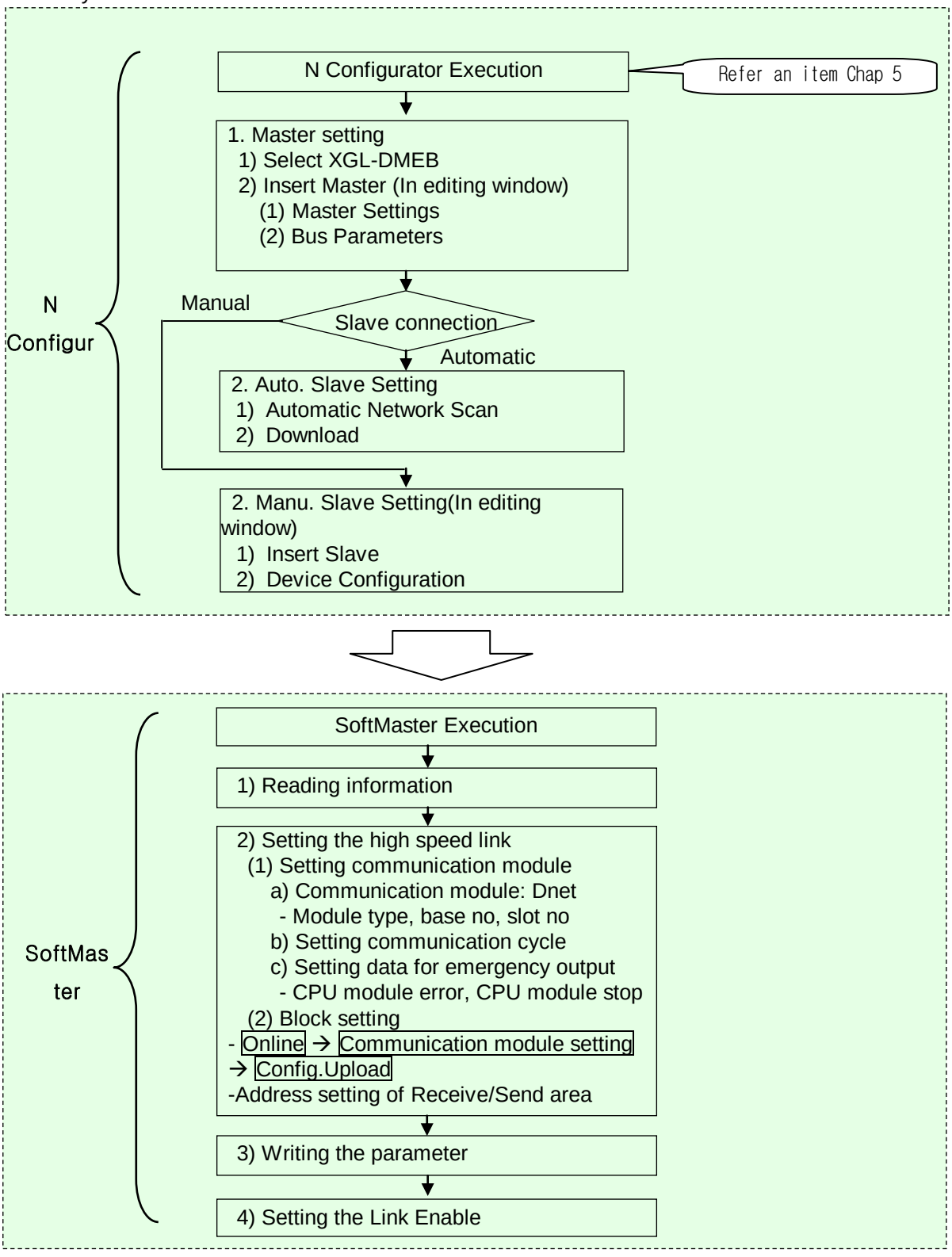
Remark

1) When the first station No. is initialized, the value read from the communication module will be kept continuously. Thus, the details changed (station No., etc.) during communication will not be applied during operation.

3.3 Setting Procedure of N Configurator and SoftMaster

After setting the network configuration in N Configurator software, then set the high speed link parameter and data in SoftMaster software.

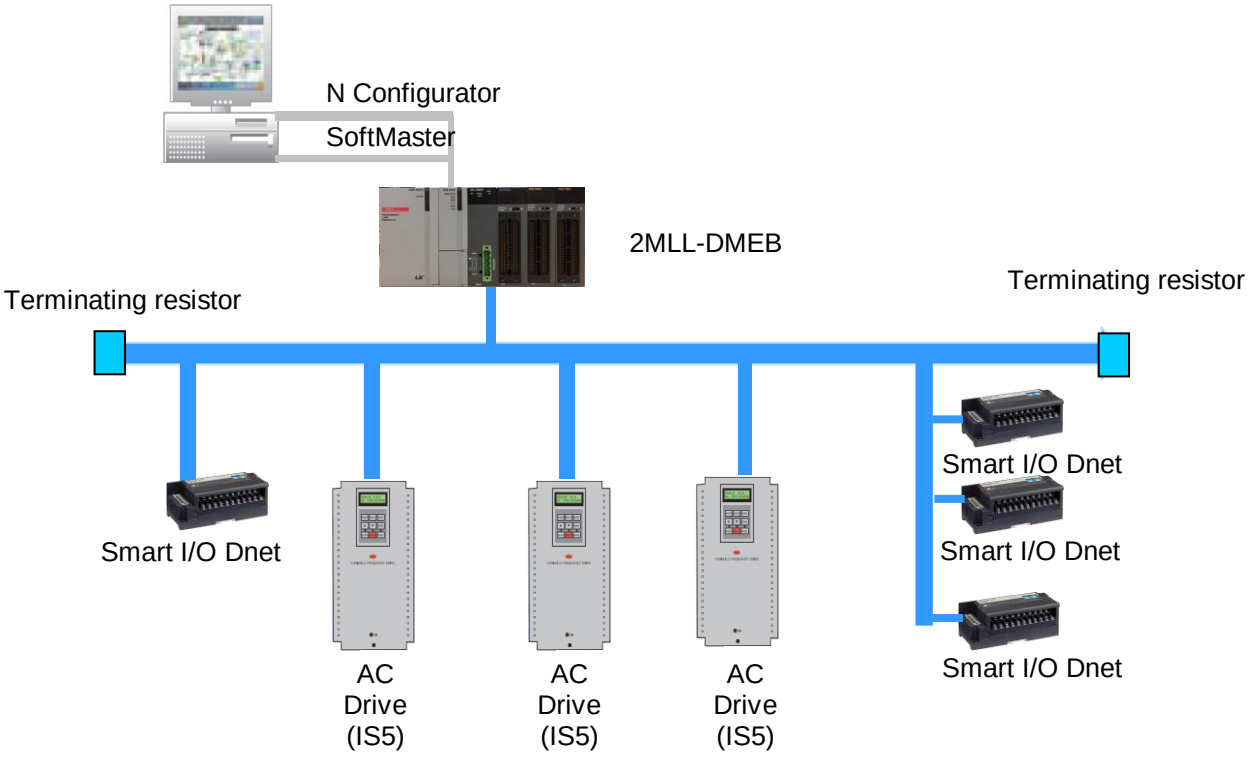
If you don't set configuration of the network in N Configurator software, you can not communicate normally.



Chapter 4 System Configuration

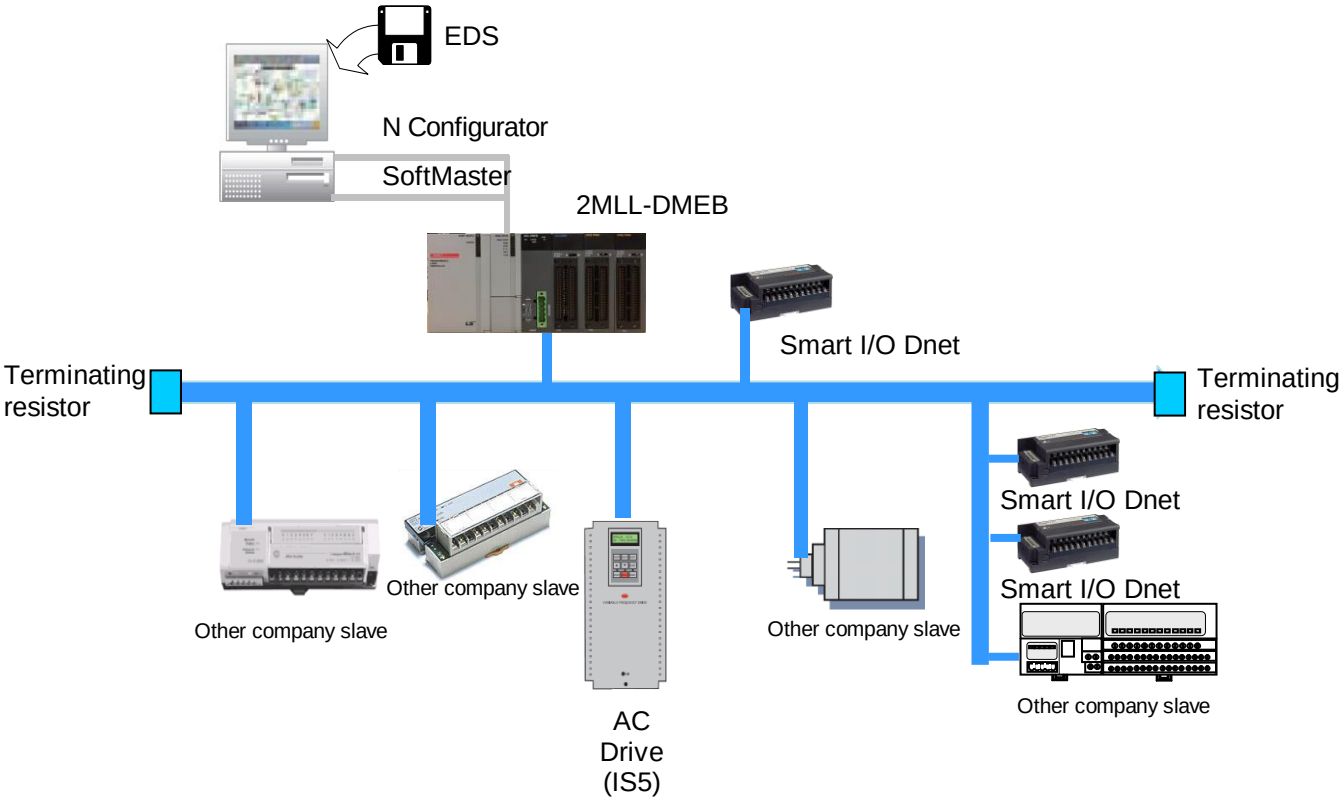
4.1 System with Dnet I/F module used

Communication system between Dnet I/F modules can be configured as shown below. In the system, 2MLL-DMEB communication module shall be set to the master and the rest set to slave modules. In order to connect with LS inverter, Dnet I/F option module shall be installed on the applicable product to make the communication available.



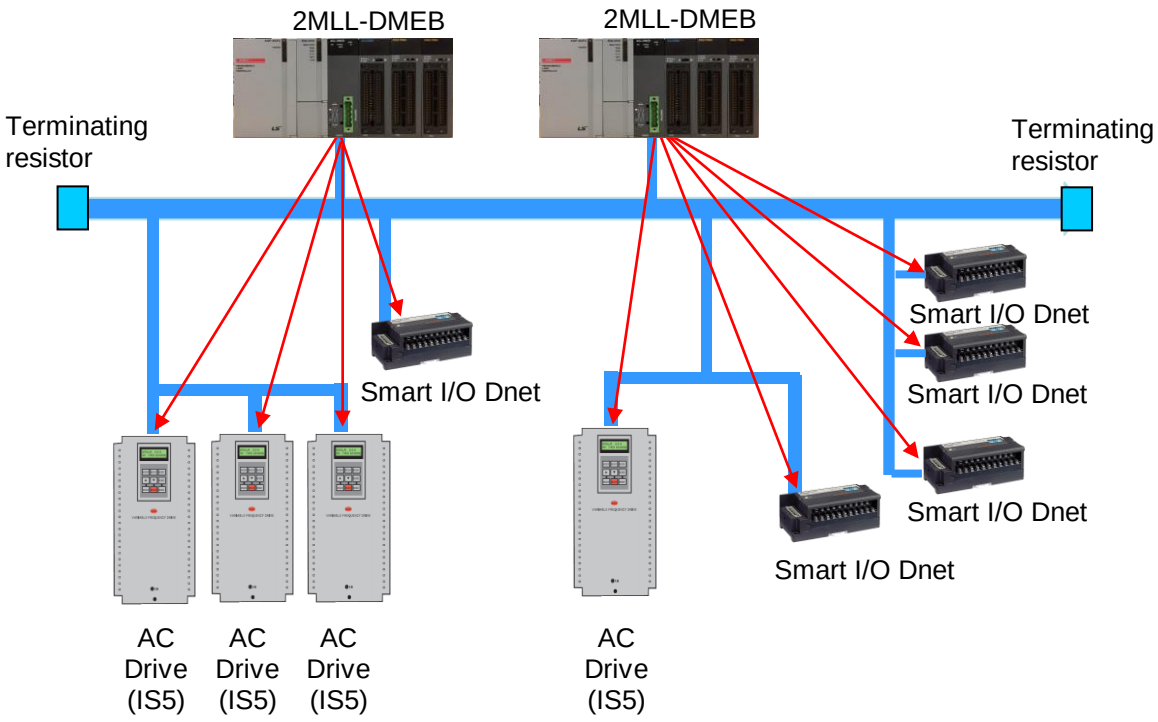
4.2 System with Dnet I/F module and LSIS or other company's slaves mixed

In order to use other company's slave module, EDS (Electronic Data Sheet) file provided by its maker is necessary. Copy EDS file on the EDS folder of N Configurator, the software tool for Dnet configuration and then use N Configurator automatically to set the slave modules existent in the network.



4.3 System with Multi-master used

Communication system between Dnet I/F modules can be configured as shown below. In the system, set all the two 2MLL-DMEB modules to the master and then let the slave modules existent in the network shared with respective masters to make the communication available in the same network.



Chapter 5 N Configurator Settings

5.1 EDS Analyzer

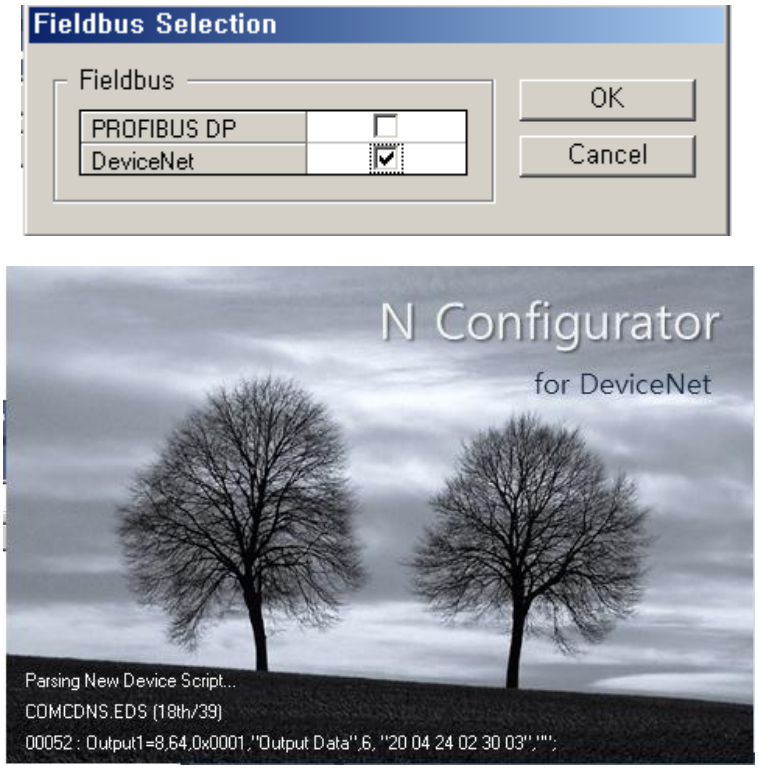
EDS (Electronic Data Sheets) files are text files which describe device specifications in accordance with the provisions of ODVA (Open DeviceNet Vendors Association) and are distributed to users.

N CONFIGURATOR analyzes EDS files by running an analyzer that applies correspondingly to the EDS specification at the start of the program and provides configuration information that the user needs.

5.1.1 Fast Analysis

N Configurator ensures a fast start-up by comparing EDS file to be analyzed with EDS information registered in the main database of the program, checking if it is a new file and selectively analyzing it.

The analysis process of the EDS file is displayed at the bottom of the splash screen at the start of the program as follows.



[Figure 5.1.1] Splash screen showing the EDS analysis process

In a splash screen, the name of EDS file which is being analyzed, the number of files to be newly analyzed, and syntax under analysis and current line number are displayed in real time.

Note

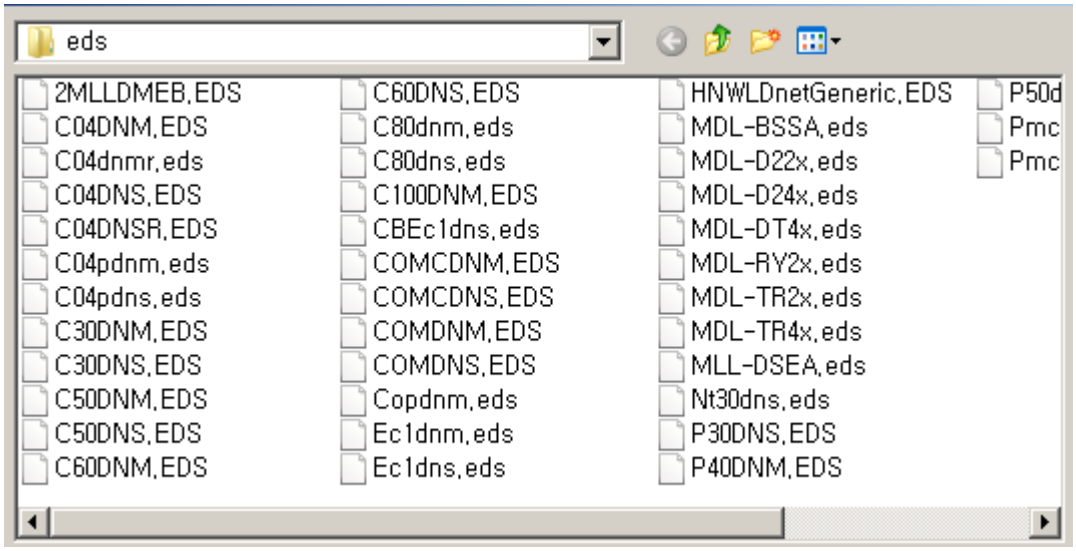
1) In case grammatical errors are extensively detected in the EDS file, all the files in the SYS folder should be deleted, and then N CONFIGURATOR should be run with the modified EDS file to ensure the reliability of the configuration data

5.1.2 Addition of a New EDS File

There are two methods to add a new EDS file to N CONFIGURATOR for the configuration of the device.

5.1.2.1 Reading EDS file automatically in the path designated in running N Configurator

N CONFIGURATOR automatically analyzes files in the EDS folder under the path in which executable files are present in executing the program. Therefore, when you add a new device to the DeviceNet network, you can make configuration using the device possible from the next N CONFIGURATOR running by coping the EDS file distributed by the device manufacturer to this folder.



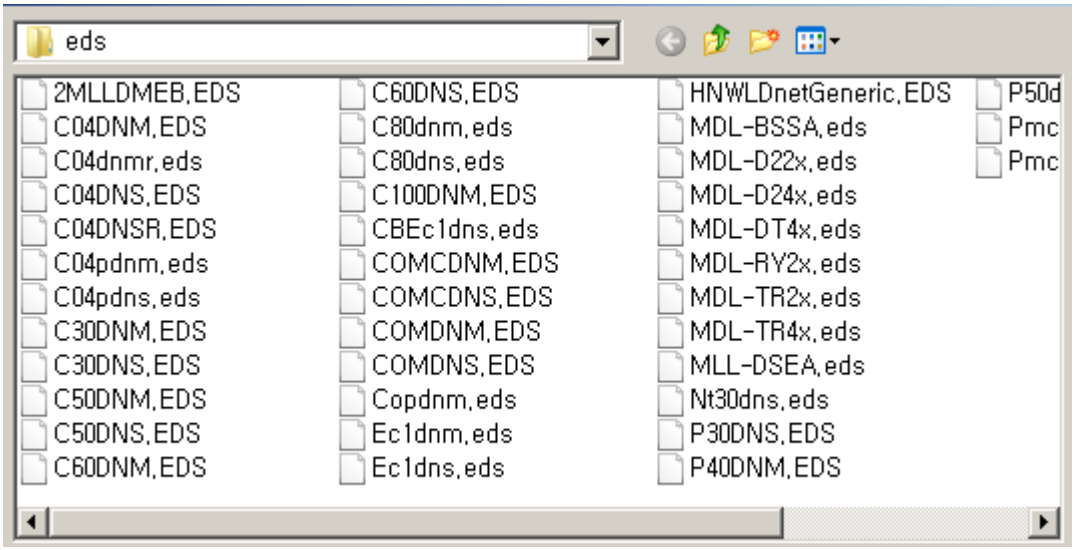
[Figure 5.1.2] EDS file path in which N CONFIGURATOR reads the EDS file

Note

1) The path to save the EDS file can be confirmed or changed in Menu [Tools] - [System Options].

5.1.2.2 Reading EDS file manually in the path specified by the user while running N-CONFIGURATOR

[Step]
(1) Select the Menu [File] - [Add EDS].
(2) The following "Open" dialog box appears.



[Figure 5.1.3] "Open" dialog box

(3) Select the EDS file in the desired position and press the "Open" button.

The selected EDS file is copied to the EDS folder under the path in which N CONFIGURATOR execution files are present, analyzed and then added to the device list on the left side of the N CONFIGURATOR main screen.

Note

1) If there are icon files (*.ICO) of the device in the folder where the EDS file selected by the user is present, N CONFIGURATOR copies these files to the IOC folder under the path where N CONFIGURATOR execution files are present.

In case the device added to the network design sheet does not have icon files, N CONFIGURATOR displays an empty square in the image area between station number and device model name.

[Figure 5.1.4] In case where the device without image files is displayed

Note

1) The path where the image file is stored can be confirmed or changed in Menu [Tools] - [System Options].

5.2 Project File Management

This chapter describes methods to save DeviceNet Master-Slave configuration information created using N CONFIGURATOR to a file, read the saved file and display the Configuration data in a Microsoft Excel.

5.2.1 Create New Project

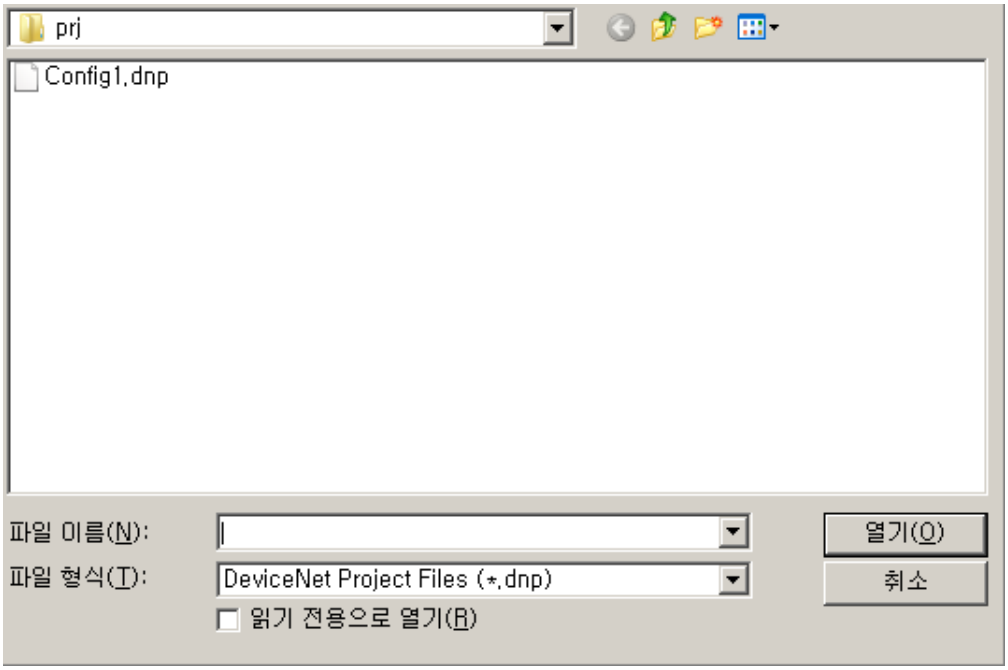
Create a new project window that can configure DeviceNet Master-Slave network.

[Step]
(1) Select the Menu [File] - [New] or press the shortcut key <CTRL+N>.

5.2.2 Open Project

Open the previously saved project file (*.DNP).

[Step]
(1) Select the Menu [File] - [Open] or press the shortcut key <CTRL+O>.
(2) The following “Open” dialog box appears.



[Figure 5.2.1] “Open” dialog box

(3) Select the project file (*.DNP) and press the “Open” button.

Note

1) Default path that reads or stores the project file is a PRJ folder in the folder where executable files are present.

2) The project file storage path can be changed by selecting Menu [Tools] - [System Options].

5.2.3 Close Project

Close the currently activated project window.

[Step]
(1) Select the Menu [File] - [Close].

> **Note**
>
> 1) Close Project is prohibited until the communication function with the master is terminated if it is in progress.

5.2.4 Save Project

Save the changes in the project file (*.DNP)

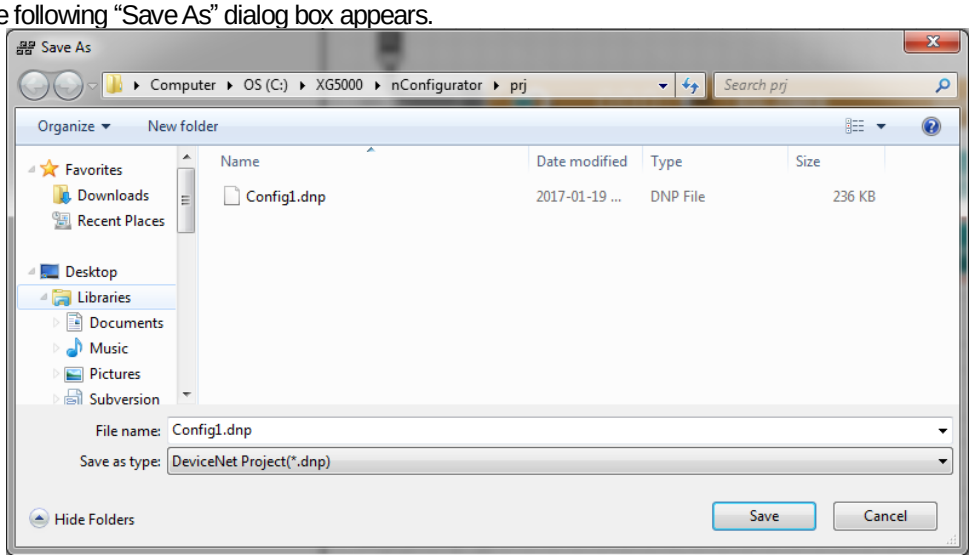
[Step]
(1) Select the Menu [File] - [Save] or Press the shortcut key <CTRL+S>.

> **Note**
>
> 1) In case where the project is saved first, “Save under a different name” dialog box appears as in selecting Menu [File] – [Save As].

5.2.5 Save As

Save the project under a different name.

[Step]
(1) Select the Menu [File] - [Save As].
(2) The following “Save As” dialog box appears.



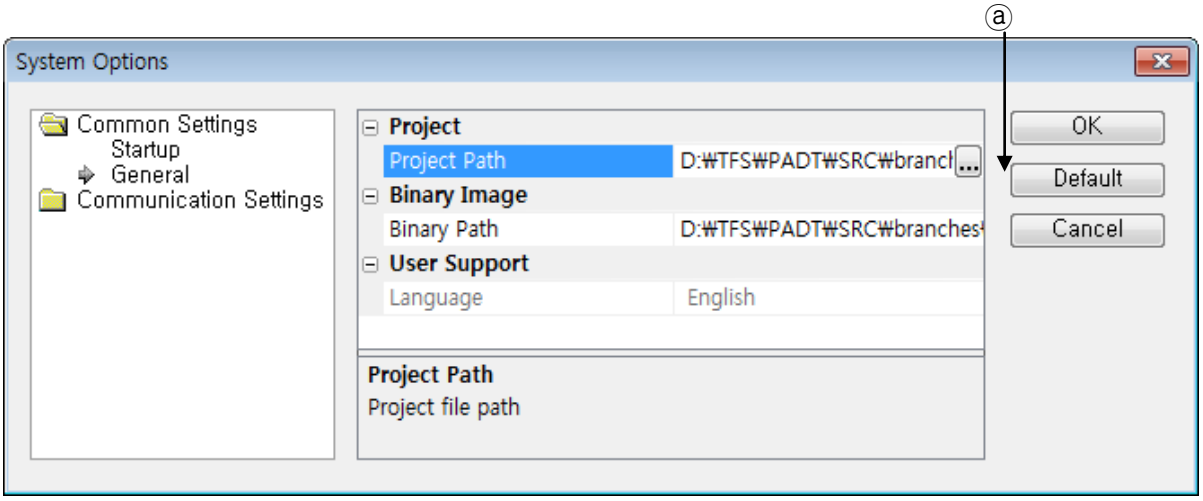
[Figure 5.2.2] “Save As” dialog box

(3) Enter the file name and press the “Save” button.

5.2.6 Project File Save Path Change

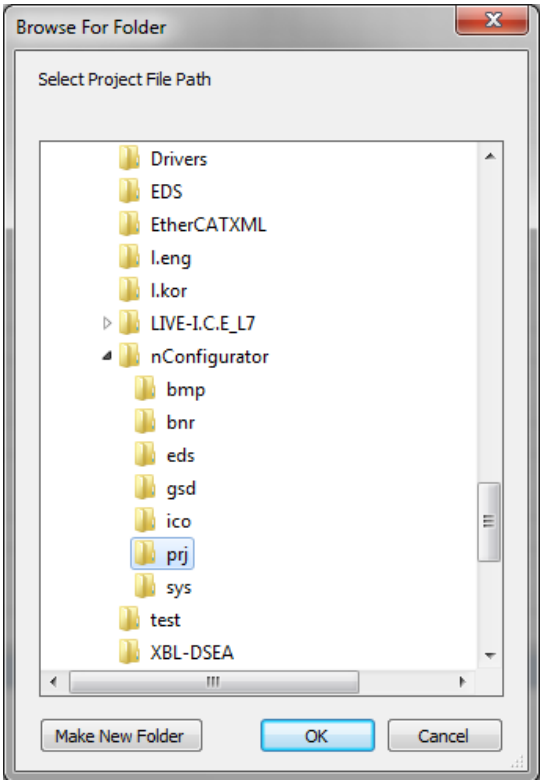
Change the save path of the project file.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



[Figure 5.2.3] “System Options” dialog box

(3) Open the Common Settings folder on the left tree and select the General item.
(4) Press the button(ⓐ) of the [Project] – [Project Path] item of the attributes on the right.
(5) The following “Find Folder” dialog box appears.



[Figure 5.2.4] “Find Folder” dialog box

(6) Select the folder to save the project and press the “OK” button.
(7) Press the “OK” button of the “System Options” dialog box to save the changes.

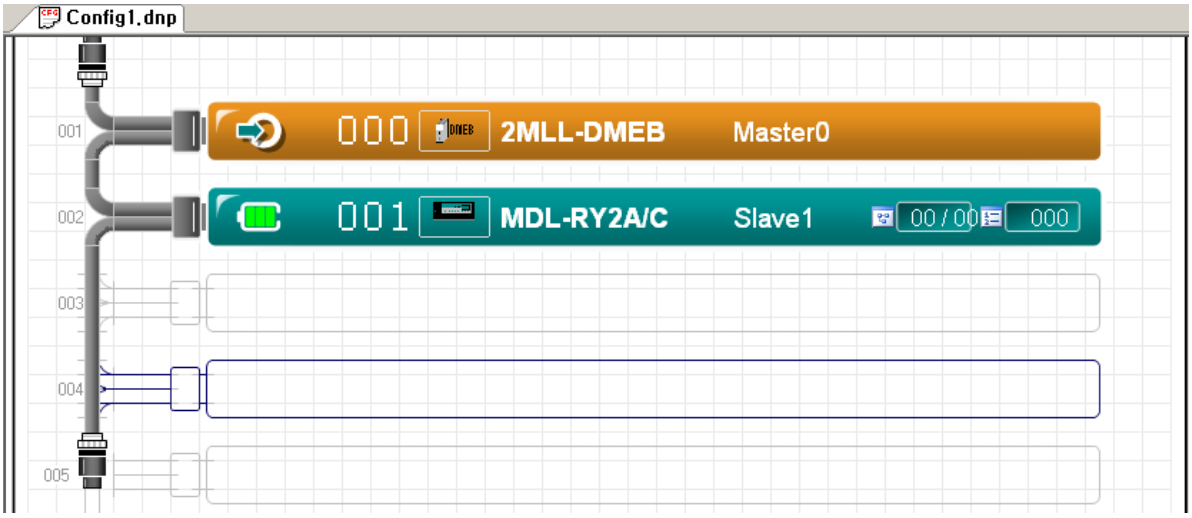
5.3 Binary File Management

This unit describes the functions to save the DeviceNet Master-Slave configuration information created by the user in a binary file and read the saved binary file

5.3.1 Save Binary Image

Create a binary image for the current project and then save it to a file (*.DNB) form.

[Step]
(1) Select the master to make a binary image file on the topology.
(2) Select the Menu [File] - [Export Binary].
(3) The most recently selected master (master to create a binary image) on the topology is displayed at the top of the screen.



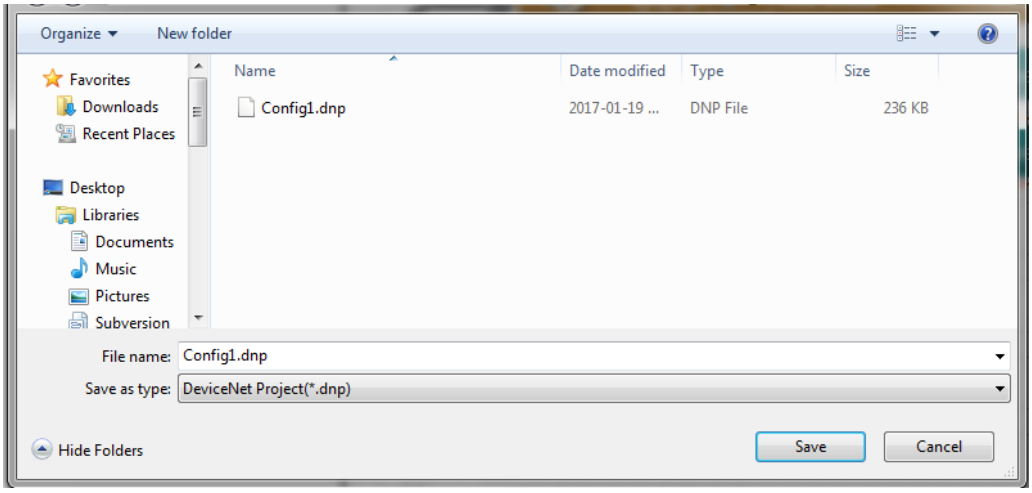
[Figure 5.3.1] Example of the master to create a binary image displayed at the top of the screen

Note

1) Binary image: It refers to the data converted from the DeviceNet Network configuration information created using N CONFIGURATION by a user so that the user can understand it.

2) When the user attempts to save the Configuration information on the project window in the form of a binary file or download it into a master device, N CONFIGURATOR creates the binary image automatically.

(4) The following “Save As” dialog box appears.



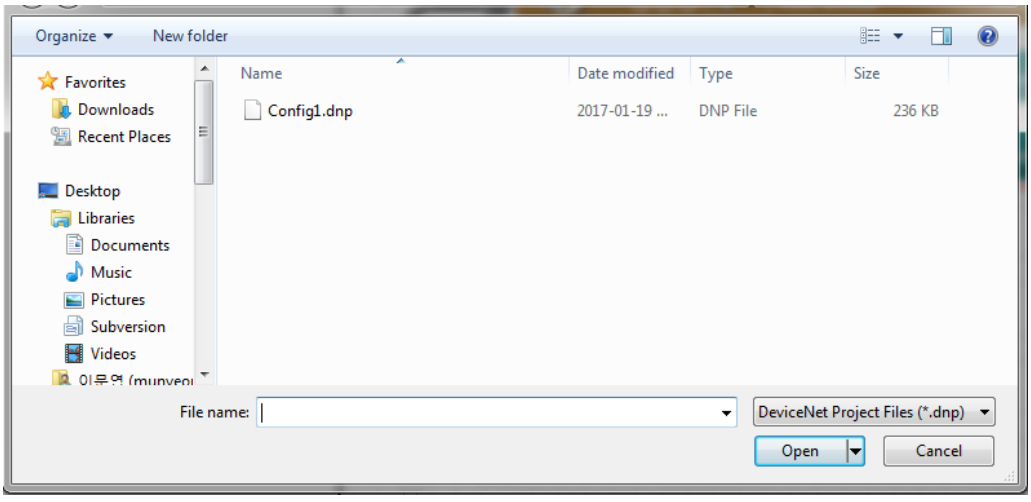
[Figure 5.3.2] “Save As” dialog box

(5) Enter the file name and press the “Save” button.

5.3.2 Open Binary File

Open the previously saved binary file (*.DNB).

[Step]
(1) Select the Menu [File] - [Import Binary].
(2) The following “Open” dialog box appears.



[Figure 5.3.3] “Open” dialog box

(3) Select the binary file (*.DNB) and press the “Open” button.

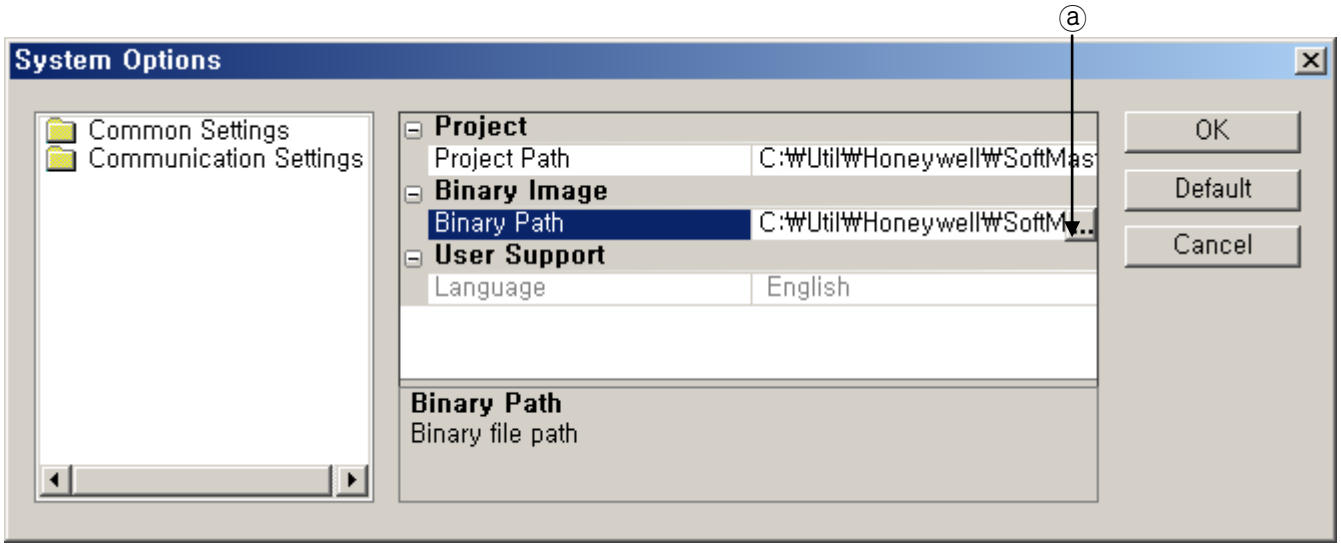
Note

1) Default path to read or save the binary file is BNR folder within a folder where there are executable files.

5.3.3 Binary File Save Path Change

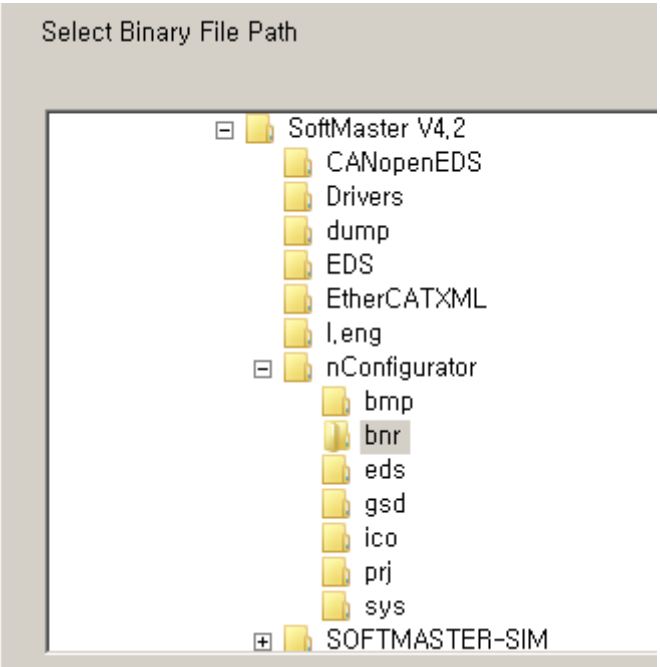
Change the save path of the binary file.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



[Figure 5.3.4] “System Options” dialog box

(3) Open the Common Settings folder on the left tree and select the General item.
(4) Press the button (ⓐ) of the [Binary Image] – [Binary Path] of attributes on the right.
(5) The following “Find Folder” dialog box appears.



[Figure 5.3.5] “Find Folder” dialog box

(6) Select the folder to save the binary file and Press the “OK” button.
(7) Press the “OK” button of the “System Options” dialog box to save the changes.

5.4 Excel Report

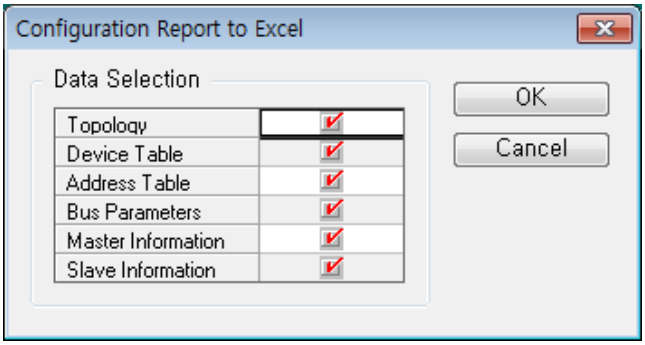
This unit describes the function to display the DeviceNet Mater-Slave configuration information created by the user in a Microsoft Excel sheet.

Note

1) This function cannot be used in a PC in which the Microsoft Excel is not installed.

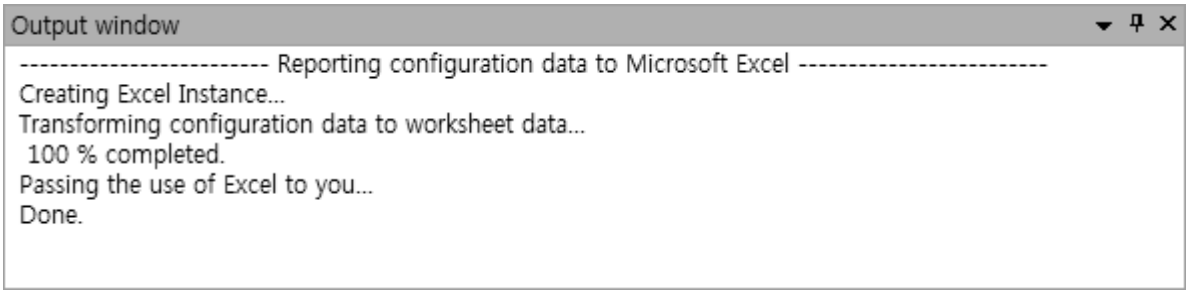
This function helps to eliminate the limitations of the output contents that the printer output function of the existing program has and makes it possible to freely edit the configuration date.

[Step]
(1) Select the Menu [File] - [Report (MS-Excel)].
(2) The following "Configuration Report to Excel" dialog box appears.



[Figure 5.4.1] "Configuration Report to Excel" dialog box

(3) Select the check box of the output item and press the "OK" button
(4) The following Excel sheet data conversion processing rate is displayed in the output window at the bottom of the N CONFIGURATOR.



[Figure 5.4.2] Information displayed in the output window

(5) If the conversion is completed, the Excel loaded with the data of the selected output item by sheet unit is automatically executed.

Note

1) The check box in the dialog box appears only in case where there is the configuration information of the item, and the item that does not have information is displayed as No Data.

5.4.1 Topology Summary Information

If the “Topology” item is selected in the Excel report dialog box, the following content displayed in the Excel worksheet.
The data display order in the sheet corresponds to the order in which the device is shown on the topology.

PROJECT NAME	Config1
REPORTING TIME	2018/05/18 16-20-28

SYSTEM TOPOLOGY

No.	Node Type	MAC ID	Product Name	Assigned Master	EDS File Name	Description
001	Master	0	2MLL-DMEB	-	2MLLDMEB.EDS	Master0
002	Slave	1	MDL-RY2A/C	0	MDL-RY2X.EDS	Slave1
003	Slave	2	MDL-D24A/C	0	MDL-D24X.EDS	Slave2
004	Slave	3	MDL-DT4A/C/C1	0	MDL-DT4X.EDS	Slave3
005	Slave	4	MDL-TR2A/C/C1	0	MDL-TR2X.EDS	Slave4
006	Slave	5	MDL-TR4A/C/C1	0	MDL-TR4X.EDS	Slave5

Honeywell

[Figure 5.4.3] Topology summary information (in part) on the Excel sheet

[Descriptions of the items displayed on the Excel worksheet]
(1) 2nd row in Excel sheet - PROJECT NAME : Indicates the project name.
(2) 3rd row in Excel sheet - REPORTING TIME : Indicates the date and time when the report information is generated
(3) 7th row in Excel sheet - No. : Indicates the display order on the configured network
(Linear type: from top to bottom, Matrix type: from left to right)
(4) 7th row in Excel sheet - Node Type : Indicates whether the device is a master or a slave
(5) 7th row in Excel sheet – MAC ID : Indicates a unique address of the device on the PROFIBUS network.
(6) 7th row in Excel sheet - Product Name : Indicates the model name of the device
(7) 7th row in Excel sheet - Assigned Master : Indicates the address of the master device if the device is a slave
(8) 7th row in Excel sheet - EDS File Name : Indicates the name of the file that contains information about the device
(9) 7th row in Excel sheet - Description : Indicates the description of the device

5.4.2 Device Table Information

If the “Device Table” item is selected in the Excel report dialog box, the following content is displayed in the Excel worksheet.
The data display order on the sheet is the order of the master device and slave device.

PROJECT NAME	Config1
REPORTING TIME	2018/05/18 16-50-55

DEVICE TABLE

No.	Node Type	MAC ID	Product Name	Vendor Code	Product Code	Vendor Name	EDS File Name	Description
001	Master	0	2MLL-DMEB	0x0003	0x0001	Honeywell	2MLLDMEB.EDS	Master0
002	Slave	1	MDL-RY2A/C	0x0003	0x0069	Honeywell	MDL-RY2X.EDS	Slave1
003	Slave	2	MDL-D24A/C	0x0003	0x0067	Honeywell	MDL-D24X.EDS	Slave2
004	Slave	3	MDL-DT4A/C/C1	0x0003	0x0066	Honeywell	MDL-DT4X.EDS	Slave3
005	Slave	4	MDL-TR2A/C/C1	0x0003	0x0064	Honeywell	MDL-TR2X.EDS	Slave4
006	Slave	5	MDL-TR4A/C/C1	0x0003	0x0068	Honeywell	MDL-TR4X.EDS	Slave5

Honeywell

[Figure 5.4.4] Device table information (in part) on the Excel sheet

[Descriptions of the items displayed on the Excel worksheet]
(1) 2nd row in Excel sheet - PROJECT NAME : Indicates the project name
(2) 3rd row in Excel sheet - REPORTING TIME : Indicates the date and time when the report information is generated
(3) 7th row in Excel sheet - No. : Indicate the serial number
(4) 7th row in Excel sheet - Node Type : Indicates whether the device is a master or a slave
(5) 7th row in Excel sheet – MAC ID : Indicates a unique address of the device on the PROFIBUS network
(6) 7th row in Excel sheet – Product Name : Indicates the model name of the device
(7) 7th row in Excel sheet – Vendor Code : Indicates the ID assigned to the Vendor in the ODVA
(8) 7th row in Excel sheet – Product Code : Indicate the product code of the device
(9) 7th row in Excel sheet - Vendor Name : Indicates the manufacturer of the device
(10) 7th row in Excel sheet - EDS File Name : indicates the name of the file that contains the information about the device
(11) 7th row in Excel sheet - Description : Indicates the description of the device

5.4.3 Module I/O address Table Information

If the “Address Table” item is selected in the Excel report dialog box, the following content is displayed in the Excel worksheet.

Data on the sheet is the information of I/O modules defined in slave devices that belong to the master device and the current master device.

PROJECT NAME	Config1
REPORTING TIME	2018/05/18 16-50-55

CURRENT MASTER DEVICE

MAC ID	0
Product Name	2MLL-DMEB

DEVICE ADDRESS TABLE

No.	MAC ID	Product Name	I/O Name	Input Type	Input Add	Input Len	Output Type	Output Add	Output Len	I/O Description
001	1	MDL-RY2A/C	Discrete Output Data				BYTE	0	2	
002	2	MDL-D24A/C	Discrete Input Data	BYTE	0	4				
003	3	MDL-DT4A/C/C1	Discrete Input Data	BYTE	4	2				
004	3	MDL-DT4A/C/C1	Discrete Output Data				BYTE	2	2	
005	4	MDL-TR2A/C/C1	Discrete Output Data				BYTE	4	2	
006	5	MDL-TR4A/C/C1	Discrete Output Data				BYTE	6	4	

Honeywell

[Figure 5.4.5] Module I/O address table information (In part) on the Excel sheet

[Descriptions of the items displayed on the Excel worksheet]

(1) 2nd row in Excel sheet - PROJECT NAME : Indicates the project name

(2) 3rd row in Excel sheet - REPORTING TIME : Indicates the date and time when the report information is generated

(3) 7th row in Excel sheet – MAC ID : Indicates a unique address of the current master device

(4) 8th row in Excel sheet - Product Name : Indicates the model name of the current master device

(5) 12th row in Excel sheet - No. : Indicates the serial number

(6) 12th row in Excel sheet – MAC ID : Indicates a unique address of the slave device

(7) 12th row in Excel sheet – I/O Name : Indicates the name of the set module

(8) 12th row in Excel sheet – Input Type : Indicates the input data type

(9) 12th row in Excel sheet – Input Add : Indicates the input data address

(10) 12th row in Excel sheet – Input Len : Indicates the input data length

(11) 12th row in Excel sheet – Output Type : Indicates the output data type

(12) 12th row in Excel sheet – Output Add : Indicates the output data address

(13) 12th row in Excel sheet – Output Len : Indicates the output data length

(14) 12th row in Excel sheet - Module Description : Indicates the description of the module

5.4.4 Bus Parameter Information

If the “Bus Parameter” item is selected in the Excel report dialog box, the following content is displayed in the Excel worksheet.
Data on the sheet represents the current master device and set parameter information.

PROJECT NAME	Config1
REPORTING TIME	2018/05/18 16-50-55

CURRENT MASTER DEVICE

MAC ID	0
Product Name	2MLL-DMEB

BUS PARAMETER

Baudrate	500 kBits/s
Auto Clear Mode	Off

Honeywell

[Figure 5.4.6] Bus parameter information (in part) on the Excel sheet

[Descriptions of the item displayed on the Excel worksheet]
(1) 2th row in Excel sheet - PROJECT NAME : Indicates the project name
(2) 3th row in Excel sheet - REPORTING TIME : Indicates the date and time when the report information is generated
(3) 7th row in Excel sheet – MAC ID : Indicates a unique address of the current master device
(4) 8th row in Excel sheet - Product Name : Indicates the name of the current master device
(5) 12th row in Excel sheet - Baudrate : Indicates Master-Slave Communication Baudrate
(6) 12th row in Excel sheet – Auto Clear Mode : Indicates the Auto Clear Mode

5.4.5 Master Device Information

If the "Master Information" item is selected in the Excel report dialog box, the following content is displayed in the Excel sheet.
Data on the sheet represents all the master device information on the topology.

PROJECT NAME	Config1
REPORTING TIME	2018/05/18 16-50-55

MASTER DEVICE INFORMATION : Master0

MAC ID	0
Product Name	2MLL-DMEB
Vendor Code	0x0003
Product Code	0x0001
Vendor Name	Honeywell
EDS File Name	2MLLDMEB.EDS
Description	Master0

Honeywell

[Figure 5.4.7] Master device information (in part) on the Excel sheet

[Descriptions of the items displayed on the Excel worksheet]

(1) 2th row in Excel sheet - PROJECT NAME : Indicates the project name
(2) 3th row in Excel sheet - REPORTING TIME : Indicates the date and time when the report information is generated
(3) 7th row in Excel sheet – MAC ID : Indicates a unique address of the master device
(4) 8th row in Excel sheet - Product Name : Indicates the model name of the master device
(5) 9th row in Excel sheet – Vendor Code : Indicates the ID assigned to the Vendor in the ODVA
(6) 10th row in Excel sheet – Product Code : Indicates the product code of the device
(7) 11th row in Excel sheet - Vendor Name : Indicates the manufacture of the device
(8) 12th row in Excel sheet - EDS File Name : Indicates the name of the file that contains the information about the device
(9) 13th row in Excel sheet - Description : Indicates the description of the device

Note

1) Each data is displayed repeatedly by the number of master devices.

5.4.6 Slave Device Information

If the “Slave Information” item is selected in the Excel report dialog box, the following content is displayed in the Excel worksheet.
Data on the sheet represents all the device information on the topology, including I/O modules and parameter information.

PROJECT NAME	Config1
REPORTING TIME	2018/05/18 16-50-55

SLAVE DEVICE INFORMATION : Slave1

MAC ID	1
Product Name	MDL-RY2A/C
Vendor Code	0x0003
Product Code	0x0069
Vendor Name	Honeywell
EDS File Name	MDL-RY2X.EDS
Description	Slave1

ADDRESS TABLE

No.	I/O Name	Input Type	Input Add	Input Len	Output Type	Output Add	Output Len
001	Discrete Output Da				BYTE	0	2

PARAMETER TABLE

No.	Parameter Name	Class ID	Instance ID	Attribute ID	Type	Access	Value

[Figure 5.4.8] Slave device information (in part) on the Excel sheet

[Descriptions of the items displayed on the Excel worksheet]

(1) 2th row in Excel sheet - PROJECT NAME : Indicates the project name
(2) 3rd row in Excel sheet - REPORTING TIME : Indicates the date and time when the report information is displayed
(3) 7th row in Excel sheet – MAC ID : Indicates a unique address of the slave device
(4) 8th row in Excel sheet – Product Name : Indicates the model name of the slave device
(5) 9th row in Excel sheet – Vendor Code : Indicates the ID assigned to the Vendor in the ODVA
(6) 10th row in Excel sheet – Product Code : Indicates the product code of the device
(7) 11th row in Excel sheet - Vendor Name : Indicates the manufacturer of the device
(8) 12th row in Excel sheet - EDS File Name : Indicates the name of the file that contains the data about the device
(9) 13th row in Excel sheet - Description : Indicates the description of the device
(10) 17th row in Excel sheet - No. : Indicates the serial number
(11) 17th row in Excel sheet – I/O Name : Indicates the I/O module name
(12) 17th row in Excel sheet – Input Type : Indicates the I/O data type
(13) 17th row in Excel sheet – Input Add : Indicates the input data address
(14) 17th row in Excel sheet – Input Len : Indicates the input data length
(15) 17th row in Excel sheet – Output Type : Indicates the output data type
(16) 17th row in Excel sheet – Output Add : Indicates the output data address
(17) 17th row in Excel sheet – Output Len : Indicates the output data length
(18) 22th row in Excel sheet - No. : Indicates the serial number
(19) 22th row in Excel sheet – Parameter Name : Indicates the parameter name
(20) 22th row in Excel sheet – Class ID : Indicates the Class ID of the parameter
(21) 22th row in Excel sheet – Instance ID : Indicates the Instance ID of the parameter
(22) 22th row in Excel sheet – Property ID : Indicates the Property ID of the parameter

(23) 22th row in Excel sheet – Type : Indicates the data type of the parameter
(24) 22th row in Excel sheet – Access : Indicates the Read/Write attributes of the parameter.
(25) 22th row in Excel sheet – Value : Indicates the Value of the parameter

Note

1) Each data is displayed repeatedly by the number of slave devices.

5.5 Program Exit

Terminates the execution of N CONFIGURATOR

[Step]
(1) Select the Menu [File] - [Exit].

5.6 N Configurator Overview

This user manual describes N Configurator, which is an operating software for the DeviceNet master module ML200 Dnet(model name:2MLL-DMEB). N Configurator has functions to edit information necessary to operate slave devices on the DeviceNet network, transmit the information to a master module and diagnose the status of the slave devices in operation.

If you configure the system with the DeviceNet master module and N Configurator, please not the following.

- ML200 Dnet (DeviceNet) Firmware Version 5.0 or more

5.7 N Configurator Features

N Configuratoris a software tool that is connected to the DeviceNet master module and manages the DeviceNet network.
N Configurator has the following features.

(1) Fast program start

Since it selectively analyzes EDS files which were not loaded by N Configurator at the start of the program, the program starts immediately even when many EDS files are loaded.

(2) Easy-to-understand operation screen (Real world Metaphor)

N Configurator provides a main work area with the same appearance as the design drawings for easy understanding of the concept where a user designs the DeviceNet network and manages/monitors the operation of devices and supports intuitive and convenient work environment by connecting elements on the screen with a variety of functions.

(3) Multi-master system and up to 60-device configuration support

The configuration of the network composed of up to 64 devices, including multiple master devices is possible in one project window, and multiple project windows can be opened and operated at the same time.

(4) Network search and various diagnostic functions

If the device that configures the network is not known, the status of the configuration can be identified through the automatic scan function. In addition, it provides various functions that can diagnose the status of the devices on the DeviceNet network in operation through configuration along with Live List, I/O Monitor, Disconnection Report and Device Diagnostics.

(5) One click configuration

It makes it possible to perform more efficient operation by setting key configuration tasks such as main device addition, address setting, I/O module addition/delete with a single double-click on the main screen.

(6) One click data access

Most of the data on the N Configurator is displayed systematically and interacts organically, and therefore a user can access the desired information with one click.

(7) Intelligent feedback

The main screen of N Configurator shows the specifications of the selected device by simple device addition operation, indicates the items that can be set by a user, shows the summarized structure where the added device is located at the entire network structure and informs a user whether the user's operation has been properly processed.

In this way, N Configurator responds intelligently to the user's operation so that the work can be done conveniently and accurately.

(8) Various and optimized topology display capability

N Configurator has two display modes, such as Linear View mode, which displays the configured network topology vertically, and Matrix View mode, which shows it horizontally.

Lineare View mode includes information and features needed for quick configuration, and Matrix View mode displays as many devices as possible (about 40 at 1280X1024 resolution) so that the entire network structure can be identified at a glance.

(9) WYSIWYG (What You See Is What You Get) support

N Configurator provides not only methods to obtain all the information that can be seen, but also a function to output the summarized configuration information to the Microsoft Excel. For this, the data on the N Configurator is displayed in a table of worksheet type in Excel, and a user can select and copy the desired area in the same way as Excel work, and freely copy it out of the program.

(10) Convenient user interface

N Configurator provides a progressive and convenient user interface that corresponds to the latest development tools from Microsoft to enable a user to make up various window configurations according to the user's needs.

5.8 System Requirements for Running N Configurator

(1) Personal computer and memory

A computer with more than 500MB of memory and Pentium or higher CPU is needed.

(2) Communication port

RS-232C serial port or USB port is needed.

(3) Hard disk

There must be a usable area of more than 100MB in capacity.

(4) Mouse

A mouse that can be connected to a computer is needed.

(5) Monitor

The resolution must be at least 1024 X 768.

(6) Window

Execution is possible in Windows 7 or later.

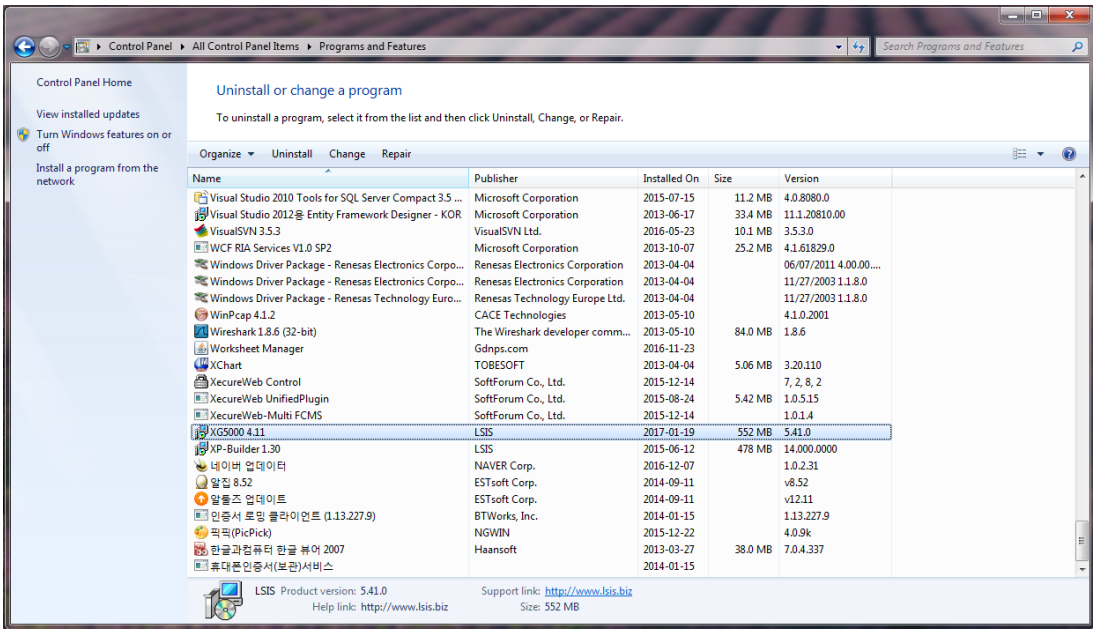
5.9 N Configurator Installation

5.9.1 N Configurator Installation

N Configurator is basically included in the package of SoftMaster and installed along with SoftMaster. Please refer to the manual for SoftMaster for more details.

5.9.2 Remove the Installed N Configurator

Press the start menu at the bottom left of the window background screen, select [Control Panel] > [Add/Remove Programs] > [SoftMaster X.XX] and press the Remove button to remove the installed SoftMaster (including N Configurator).



[Figure 5.9.7] Example of how to remove the N Configurator on a PC

5.10 Editing Devices

This unit describes functions to add devices to the DeviceNet network displayed on the project window and edit the added devices.

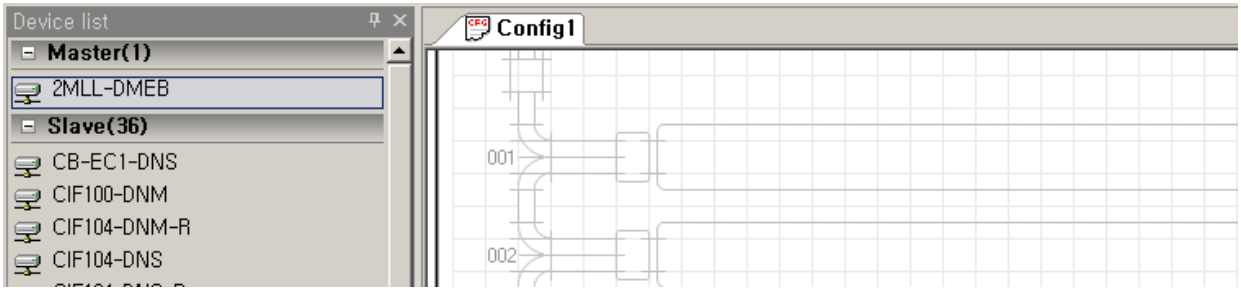
5.10.1 Add Devices

Add a new device in the project window to configure the topology.

You can add devices by using double-click or drag-and-drop features.

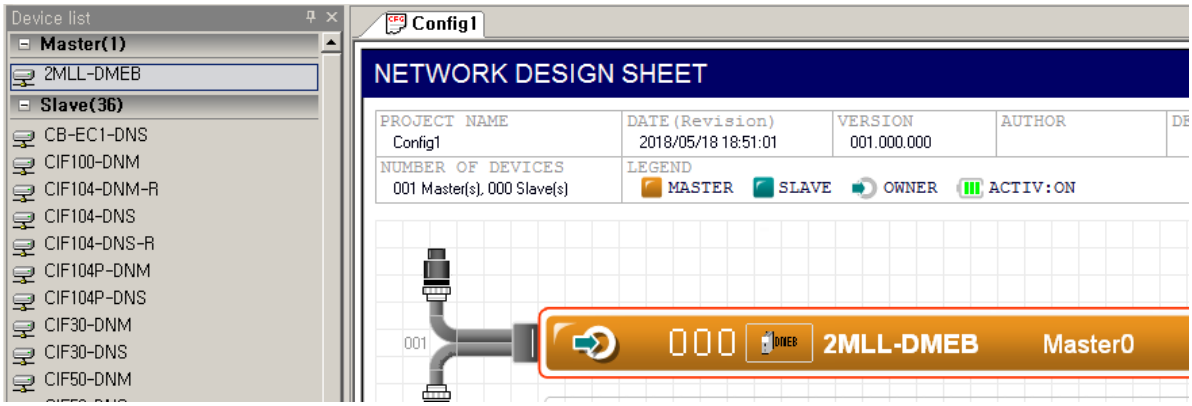
5.10.1.1 Adding devices by double-clicking

[Step]
(1) Double click the device to add in the device list window on the left side of the N CONFIGURATOR.



[Figure 5.10.1] Screen of double-click status for adding devices

(2) Devices are added to an empty area on the topology as follows.



[Figure 5.10.2] Screen showing the status in which the device is added to the topology

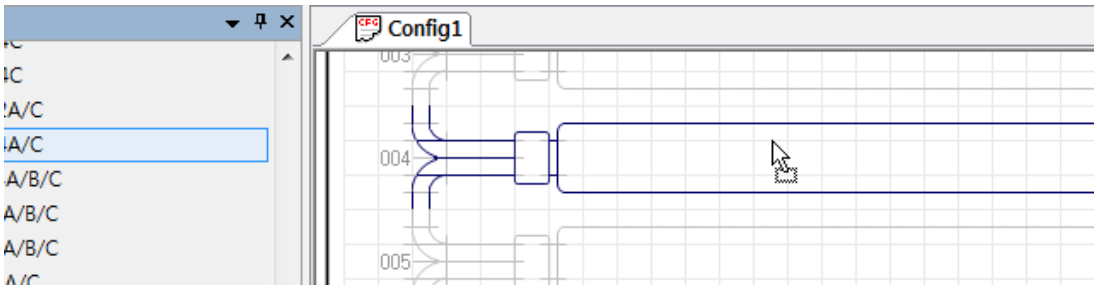
Note

1) The topology refers to the configuration of networks in the project window.

2) The device is filled first from the area close to the upper part of the topology at the time of the double-clicking.

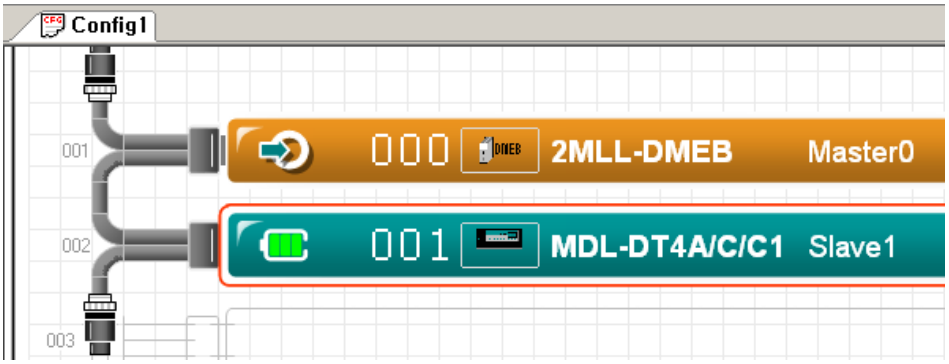
5.10.1.2 Adding devices by using drag & drop feature

[Step]
(1) Select the device to be added in the device list window on the left side of the N CONFIGURATOR, and then drag it to the project window.
(2) If the area is the one that can add the device, the outline of the area is shown in bold as follows.



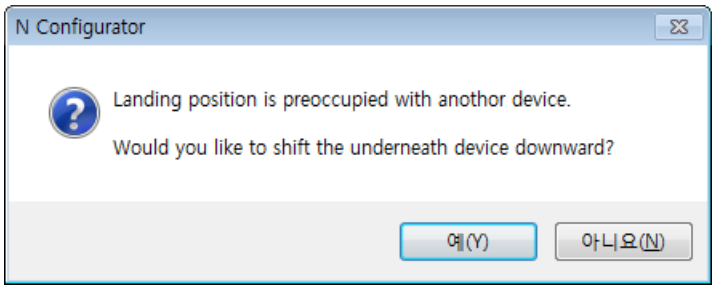
[Figure 5.10.3] Screen of drag status for adding devices

(3) If you drop the device to the desired position, the device will be added as follows.



[Figure 5.10.4] Screen showing the status where the device is added to the topology

(4) If you want to add a new device between the two devices on the topology, drag and drop the device to the desired position even if the position if preoccupied with another device.
(5) Dialog box asking if you want to shift the underneath device downward appears as follows



[Figure 5.10.5] Dialog box asking if you want to shift the underneath device downward

(6) If you press “Yes”button, the underneath device is moved to the next position, and then the new device is added to the drop area.
(7) If you press “No” button, adding a new device to the position where another device is placed is cancelled.

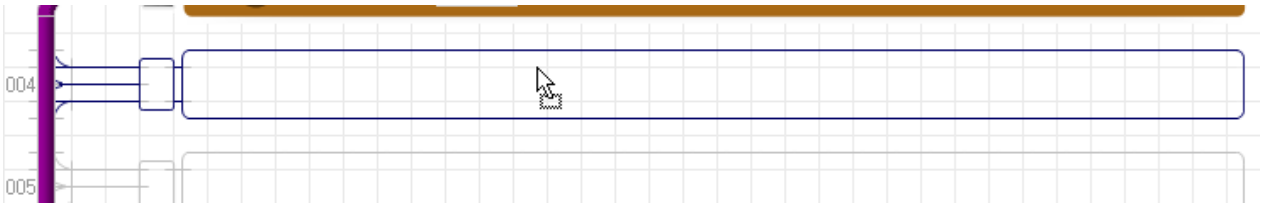
Note

1) If the device list window is not visible on the main screen, Select the Menu [View] - [Device List]

5.10.2 Move Position

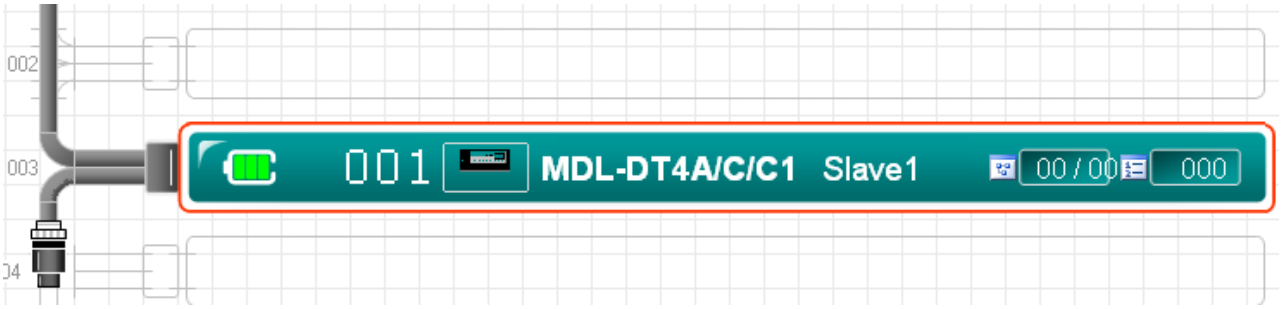
Move the device to another position in the topology.

[Step]
(1) Select a device on the topology, and then drag it to the desired position.
(2) If the area can move the device, the outline of the area is shown in bold as follows.



[Figure 5.10.6] Screen of drag status for moving devices

(3) If you drop the device to the desired position, the deive will be moved as follows.



[Figure 5.10.7] Screen showing the status where the device is moved

Note

1) The device cannot be moved to the position which is preoccupied with other project windows or another device.

5.10.3 Cut

Save the selected device in the clipboard and remove it from the topology.

[Step]
(1) Select the device to be cut from the topology with a mouse.
(2) Select the Menu [Edit] - [Cut] or press the shortcut key <CTRL+X>.

5.10.4 Copy

Save the selected device to the clipboard.

[Step]
(1) Select the device you want to copy on the topology with a mouse.
(2) Select the Menu [Edit] - [Copy] or press the shortcut key <CTRL+C>.

5.10.5 Paste

Copy the device saved in the clipboard to the topology.

[Step]
(1) Select a blank area to add a device on the topology with a mouse.
(2) Select the Menu [Edit] - [Paste] or press the shortcut key <CTRL+V>.

Note

1) The address of the pasted device is automatically set to the address with lower number which is not used by other devices.

5.10.6 Delete

Remove the selected device from the topology.

[Step]
(1) Select the device you want to delete from the topology with a mouse.
(2) Select the Menu [Edit] - [Delete] or press the function key <Delete>.

Note

1) N CONFIGURATOR is a program designed to provide the master device with the information necessary for DeviceNet master-slave communication, and therefore it does not support the configuration of the topology only with the slave device.

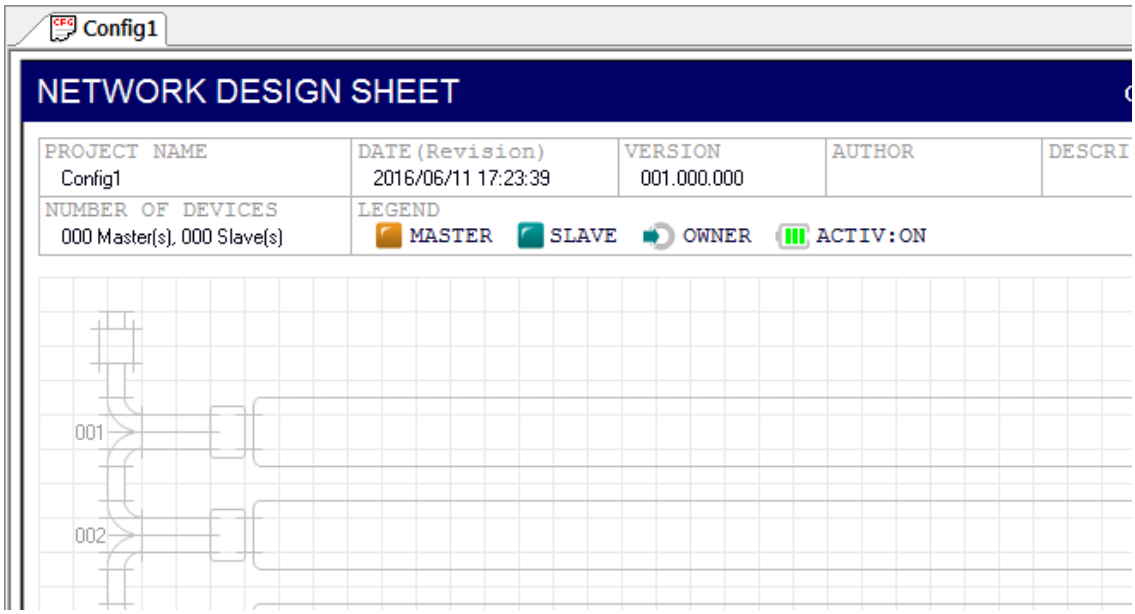
5.11 Changing Display Method

This unit describes how to change the network display format according to the user's needs and what is displayed for each device depending on the changed display format

5.11.1 Vertical Display Bus Topology

It displays the DeviceNet network topology in a vertical direction.
The vertical topology is the default screen format when a new project window is opened.

[Step]
(1) Select "Linear View" from the [View Selector] combo box on the toolbar.
(2) The following screen appears.



[Figure 5.11.1] Initial screen of the vertical topology (in part)

In the vertical display bus topology screen, the following functions can be executed by double-clicking the project information display area.

(a) [PROJECT NAME - LEGEND area except for NO. OF DEVICES] : Project attributes can be chaned.

[Figure 5.11.2] Area where the project property window is run by double-clicking

(b) [NO. OF DEVICES area] : The details of the configured device can be seen.

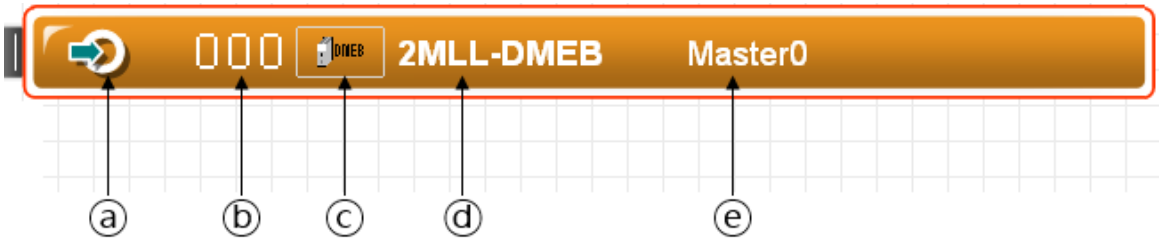
[Figure 5.11.3] Area where the device table is run by double-clicking

Note

1) Vertical topology is a screen mode where major settings can be done only by double-clicking to provide convenient configuration environment.

5.11.2 Master Device in Vertical Topology

The added master device is displayed in orange as follows.



[Figure 5.11.4] Screen of the status where the master device is added to the vertical topology

[Descriptions of the master device display items in vertical topology]

ⓐ Whether it is assigned Master : Indicates which master device the selected slave device belongs to.

ⓑ Master device address : Indicates a unique device address on the topology.

ⓒ Master device image : Indicates the image of the device provided by the device manufacturer. If there is none, the area is blank.

ⓓ Master model name : Indicates the product name of the master device defined in EDS file.

ⓔ Master description : Indicates a description of the device that has user-defined attributes.

The following functions can be executed by double-clicking the master device area.

(1) [Master device address area] : The address can be changed.

Note

1) The most recently added master device is initially set as the Assigned Master of the slave device to be added next.

The master device selected by a mouse click on the topology is displayed with a red outline as follows.

[Figure 5.11.5] Screen showing the status where the master device is selected on the vertical topology

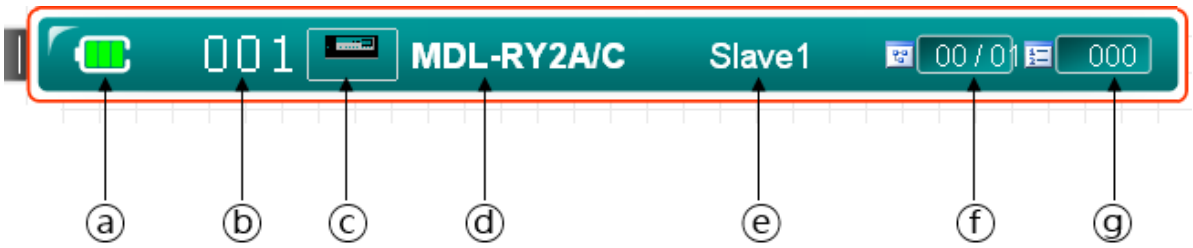
If the master device is selected, the related information is displayed in the master property window, and items in the menu on the upper part of the program are adjusted so that they can be selected for the master device-related matters.

Note

1) All the master device-related matters that appear in the dialog box and the main screen of the N CONFIGURATOR are consistently displayed under the orange background to make it easier to identify the master information.

5.11.3 Slave Device in Vertical Topology

The added slave device is displayed in turquoise blue as follows.



[Figure 5.11.6] Screen of the status where the slave device is added to the vertical topology

[Descriptions of the slave device display items in vertical topology]

ⓐ Whether it is activate Device : Indicates whether to have the slave device participate in the actual master-slave communication.

ⓑ Slave device address : Indicates a unique device address on the topology.

ⓒ Slave device image : Indicates the image of the device provided by the device manufacturer. If there is none, the area is blank.

ⓓ Slave model name : Indicates the product name of the slave device defined in EDS file.

ⓔ Slave description : Indicates a description of the device that has user-defined attributes.

ⓕ Slave module : Indicates the number of I/O modules defined in the slave device.

ⓖ Slave parameter : Indicates the number of parameters defined in the slave device.

The following functions can be executed by double-clicking the slave device area.

(1) [Activate Device area] : Changes whether to have the slave device participate in the actual master-slave communication.
(2) [Slave device address area] : The address can be changed.
(3) [I/O module area] : I/O modules of the slave device can be set.
(4) [Parameter area] :Parameters of the slave device can be set.

The slave device selected by a mouse click on the topology is displayed with a red outline.

[Figure 5.11.7] Screen showing the status where the slave device is selected on the vertical topology

If the slave device is selected, the related information is displayed in the master property window, and items in the menu on the upper part of the program are adjusted so that they can be selected for the slave device-related matters.

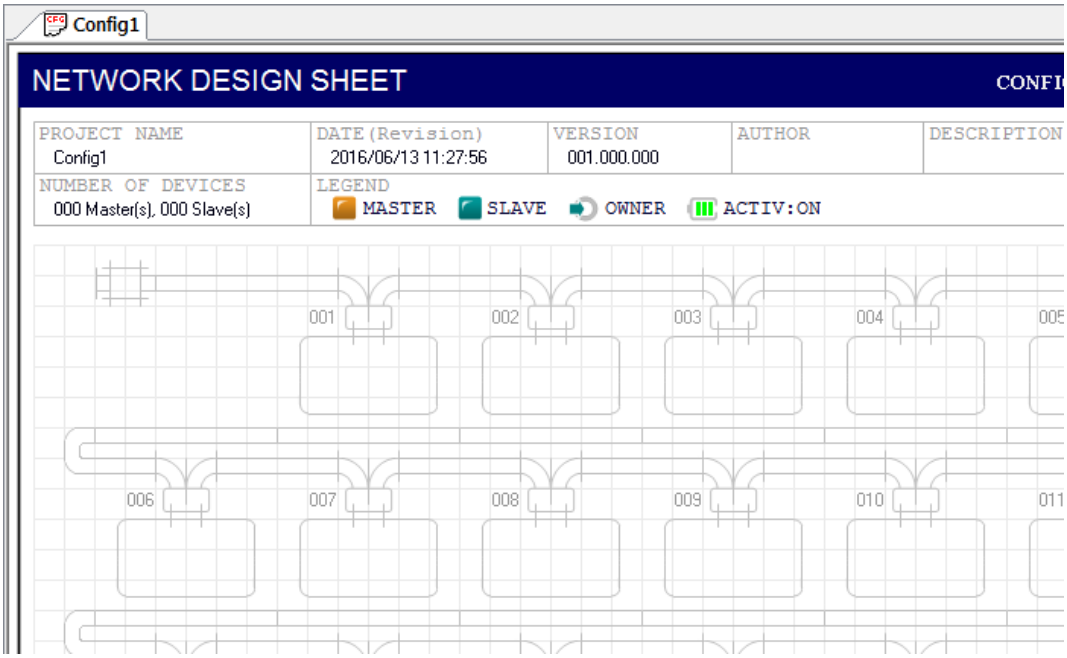
Note

1) All the slave device-related matters that appear in the dialog box and the main screen of the N CONFIGURATOR are consistently displayed under the orange background to make it easier to identify the slave information.

5.11.4 Horizontal Display Bus Topology

It displays PROFIBUS network topology in a horizontal direction.

[Step]
(1) Select "Matrix View" from the [View Selector] combo box on the toolbar.
(2) The following screen appears.



[Figure 5.11.8] Initial screen of the horizontal topology (in part)

In the horizontal topology screen, the following functions can be executed by double-clicking the project information display area.

(1) [PROJECT NAME - LEGEND area except for NO. OF DEVICES] : Project attributes can be changed.

[Figure 5.11.9] Area where the project property screen is run by double-clicking

(2) [NO. OF DEVICES area] : The details of the configured devices can be seen.

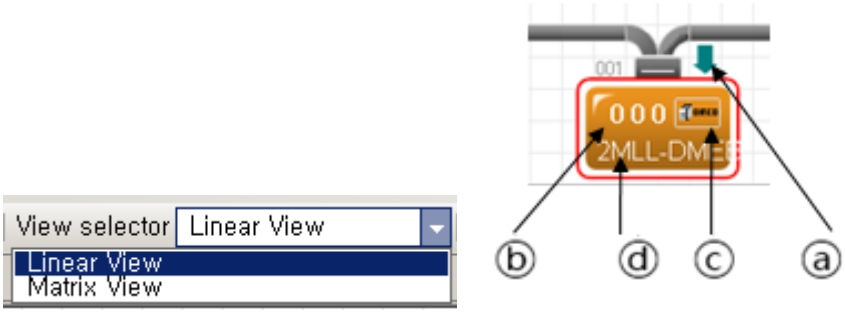
[Figure 5.11.10] Area where the device table is run by double-clicking

Note

1) Horizontal topology is a mode where more devices are displayed in one screen to allow a user to identify the entire network configuration more easily.

5.11.5 Mater Device in Horizontal Topology

The added master device is displayed in orange as follows.



[Figure 5.11.11] Screen of the status where the master device is added to the horizontal topology

[Descriptions of the master device display items in horizontal topology]

ⓐ Whether it is Assigned Master : Indicates the which master slave the selected slave device belongs to

ⓑ Master device address : Indicates a unique address on the topology

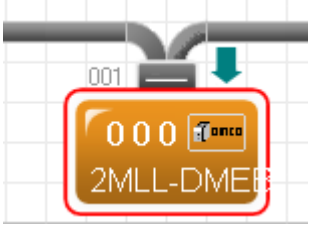
ⓒ Master device image : Indicates the image of the device provided by the device manufacturer. If there is none, the area is blank.

ⓓ Mater model name : Indicates the product name of the master device defined in EDS file

The following functions can be executed by double-clicking the master device area.

(1) [Master device address area] : The address can be changed.

The master device selected by a mouse click on the topology is displayed with a red outline as follows.

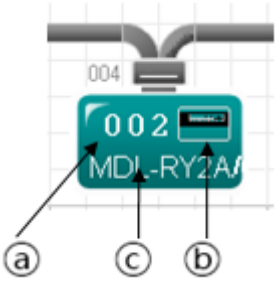


[Figure 5.11.12] Screen showing the status where the master device is selected on the horizontal topology

If the master device is selected, the related information is displayed in the master property window, and items in the menu on the upper part of the program are adjusted so that they can be selected for the master device-related matters.

5.11.6 Slave Device in Horizontal Topology

The added slave device is displayed in turquoise blue as follows.



[Figure 5.11.13] Screen of the status where the slave device is added to the horizontal topology

[Descriptions of the slave device display items in horizontal topology]

ⓐ Slave device address : Indicates a unique address on the topology.

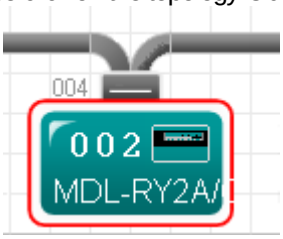
ⓑ Slave device image : Indicates the image of the device provided by the device manufacturer. If there is none, the area is blank.

ⓒ Slave model name : Indicates the product name of the slave device defined in EDS file.

The following functions can be executed by double-clicking the slave device area.

(1) [Slave device address area] : The address can be changed.
(2) [Area except for the slave device address area] : I/O modules of the slave device can be set.

The slave device selected by a mouse click on the topology is displayed with a red outline as follows.

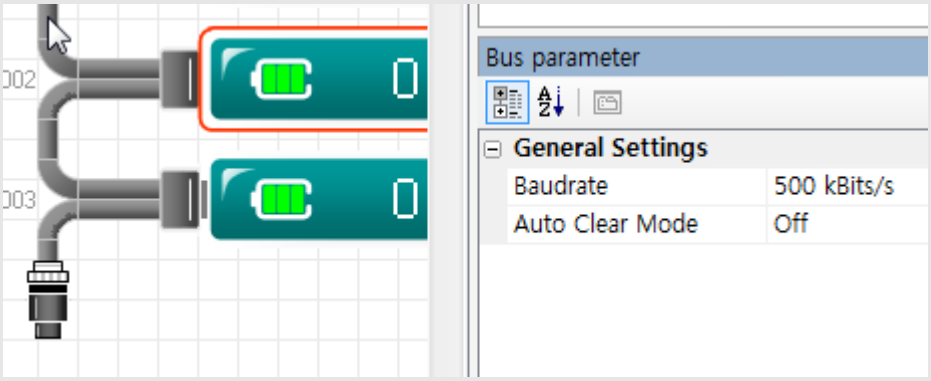


[Figure 5.11.14] Screen showing the status where the slave device is selected on the horizontal topology

If the slave device is selected, the related information is displayed in the slave property window, and items in the menu on the upper part of the program are adjusted so that they can be selected for the slave device-related matters.

Note

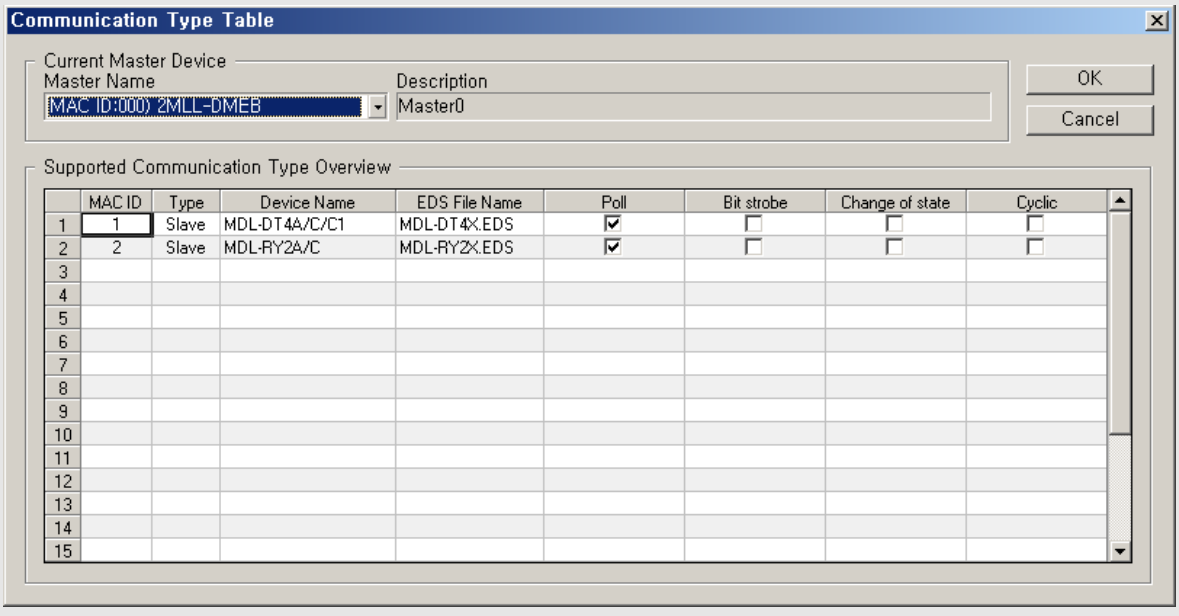
1) If you click the gray DeviceNet cable area that appears after one or more devices are added, bus property window is displayed at the front screen to change the bus-related information.



[Figure 5.11.15] Example of the screen where the bus property window appears by clicking the cable area

Note

1) If you double click the gray DeviceNet cable area that appears after one or more devices are added , s table that can identify the communication type of all devices is displayed

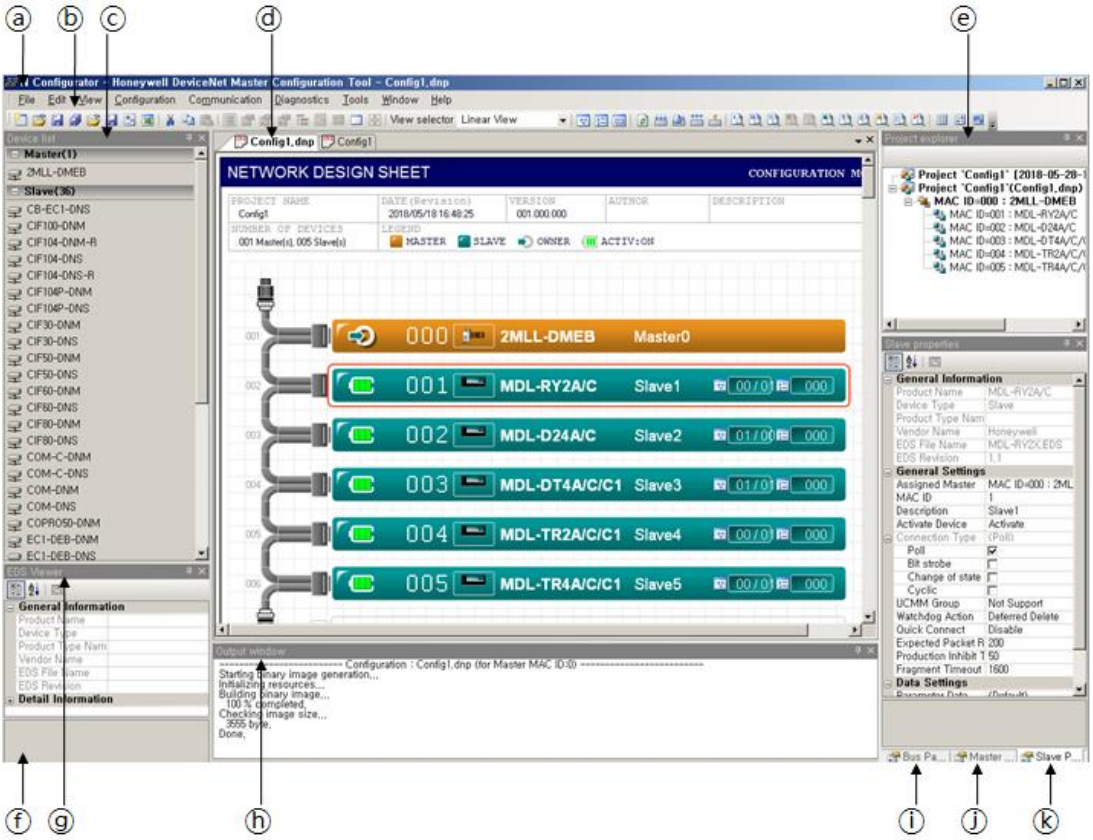


[Figure 5.11.16] Example of the communication type table displayed by double-clicking the cable area

5.12 Screen Configuration

This chapter describes the basic usage and a simple example of using the N Configurator.

The main screen of the N Configurator is configured as follows.



[Figure 5.12.1] Main screen of N Configurator

[Descriptions of the main screen]

ⓐ Menu : Indicates the main menu of the program.

ⓑ Toolbar : Indicates the button to directly execute the major items of the main menu.

ⓒ Device list window : Indicates a window that lists the devices analyzed from the EDS file to add them to the network of the project window

ⓓ Project window : Indicates a window that shows the DeviceNet master-slave configuration information created by a user

ⓔ Project explorer window : Indicates a window that shows the configured topology in hierarchical order of project-master-slave

ⓕ Status bar : Indicates an area that shows the operation status of N Configurator “on-line”

ⓖ EDS viewer window : Indicates a window that shows the EDS details of the device selected from the device list

ⓗ Output window : Indicates a window that shows the operation results of N Configurator

ⓘ Bus parameter window : Indicates a window used to set the communication attributes of the configured PROFIBUS network

ⓙ Master property window : Indicates a window used to set the attributes of the configured master device.

ⓚ Slave property window : Indicates a window used to set the attributes of the configured slave device.

5.12.1 Menu Configuration

The menu shows the functions of the N Configurator in the form of a group in which the items are listed so that they can be selected through a mouse.
Some of the main functions of the menu can also be executed with shortcut keys or buttons on the toolbar.

[Figure 5.12.2] Main menu

(1) File-related menus

Commands	Descriptions
New	Create a new project window that can configure the PROFIBUS network
Open	Open the previously saved project file(*.dnp)
Close	Close the currently activated project window
Save	Save the changes in the project file(*.dnp).
Save As	Save the project under a different name
Import Binary	Open the previously saved binary file(*.dnb)
Export Binary	Create a binary image of the project and then save it as a file(*.dnb)
Add EDS	Add EDS file to device list window
Report(MS-Excel)	Output the PROFIBUS configuration information you created to Microsoft Excel sheet
Recent File List	List the recently opened project files
Exit	Terminate the execution of N Configurator

(2) Edit-related menus

Commands	Descriptions
Cut	Save the selected device to the clipboard and remove it from the network
Copy	Save the selected device to the clipboard
Paste	Copy the device saved in the clipboard to the network
Delete	Remove the selected device from the network

(3) View-related menus

Commands	Descriptions
Device List	Display the hidden or closed device list window on the screen
Master Properties	Display the hidden or closed master property window on the screen
Slave Properties	Display the hidden or closed slave property window on the screen
Bus Parameters	Display the hidden or closed bus parameter window on the screen
Project Explorer	Display the hidden or closed project explore window on the screen
EDS Viewer	Display the hidden or closed EDS viewer window on the screen
Output	Display the hidden or closed output window on the screen
Clear Output	Clear the contents of the output window
Shrink Topology	Eliminate the empty space between each device on the network and make it compact
Toolbar	Show or hide the tool bar
Status Bar	Show or hide the status bar

(4) Configuration-related menus

Commands	Descriptions
Master Properties	Set the properties of the currently selected master slave
Slave Properties	Set the properties of the currently selected slave device
I/O Data Settings	Set the I/O data of the currently selected slave device
Parameter Settings	Set the parameters of the currently selected slave device
Bus Parameters	Set the bus parameters of the currently selected master device
Project Information	Set the current project properties

(5) Communication-related menus

Commands	Descriptions
Settings	Set communication environment with master module
Download Image	Transmit the binary image to the master module
Download Image File	Transmit the saved binary image file to the master module
Upload Image	Read the binary image from the master module
ML200 PLC Reset	Reset ML200 PLC equipped with the master module

(6) Diagnostics-related menus

Commands	Descriptions
Start Communication	Start communication between master and slave
Stop Communication	Stop communication between master and slave
Start Debug Mode	Start the diagnostic mode for the slaves which are currently connected to the master module
Device Diagnostics	Display the diagnostic information of the selected slave device
Stop Debug Mode	Exit the diagnostic mode for the slaves which are currently connected to the master slave
Live List	Identify which slave device is alive on the network
Auto. Network Scan	Examine the current network configuration status
I/O Monitor	Display I/O Processing Data
Global State Field	Display the status of master and slave
Get/Set Attribute	Access the attributes of the selected slave
Device Information	Display the information of the selected device
Extended Device Diagnostic	DNM Common Variables: Display the master's major count Device Running States: Display the operation status of the slave that communicates with the master Communication Error: Display error status with the master Transmit Queue: Display the transmit queue count Receive Queue: Display the receive queue count DeviceNet Command Counter: Display the number of DeviceNet commands Timeout Counter: Display the timeout count with the slave Device Init Counter: Display the number of slave initializations

(7) Tool-related menus

Commands	Descriptions
Configured Device Table	Show the list of the currently configured devices
Communication Type Table	Show the communication type of the currently configured devices
Slave I/O Data Address Table	Show the I/O data memory map of the currently configured slaves
System Options	Set system options

(8) Window-related menus

Commands	Descriptions
Auto Hide All	Make all setting windows auto-hide
New Horiz. Tab Group	Create a new horizontal tab group with the current project window
New Vert. Tab Group	Create a new vertical tab group with the current project window
Move to Next Tab Group	Move the current project window to the next tab group
Move to Prev. Tab Group	Move the current project window to the previous tab group
Close All Documents	Close all open project windows
Opened Project List	List all open project windows
More Windows	Display an administration window where all project windows are listed

Note

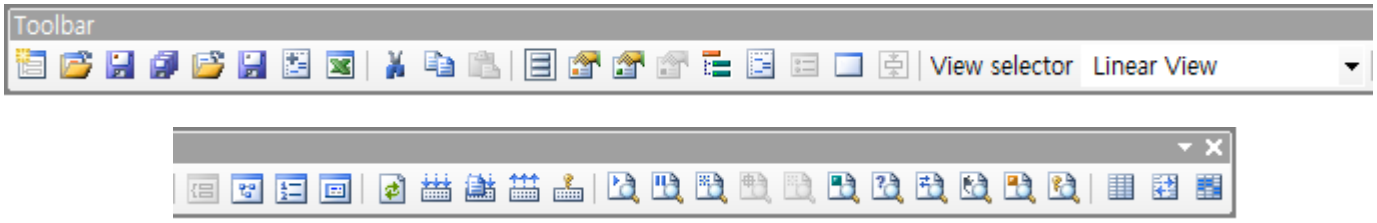
1) Some items of the window-related menus appear only when multiple project windows are present or are divided into groups.

(9) Help-related menus

Commands	Descriptions
N Configurator Help	Display the help of the N Configurator
About N Configurator	Display program information

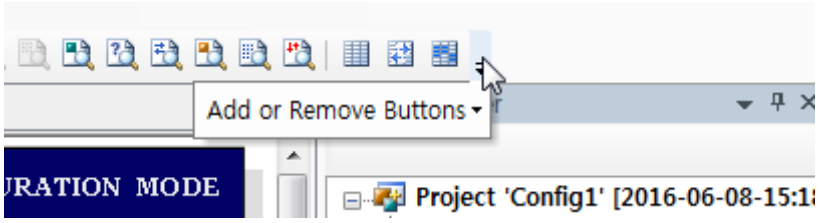
5.12.2 Toolbar

N Configurator has a toolbar at the bottom of the main menu, which is a group of buttons that allow a user to directly execute the major items of the main menu. The toolbar displayed on the N Configurator is as follows.



[Figure 5.12.3] Toolbar

If you press the arrow button on the right side of the toolbar, the [Add or Remove Buttons] menu appears, and you can change the group or button configuration of the toolbar.

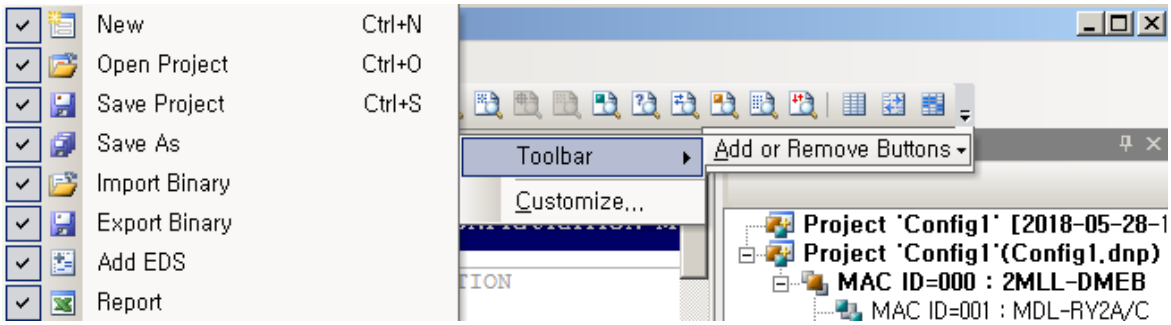


[Figure 5.12.4] Configuration setting menu of the toolbar

5.12.2.1 Display and hide toolbar buttons

Displaying or removing buttons on the toolbar is done as follows.

[Step]
(1) Press the button on the right side of the toolbar and select [Add or Remove Buttons] - [Tool bar] from the toolbar menu.
(2) The following list of toolbar buttons appears.



[Figure 5.12.5] List indicating whether the toolbar buttons are displayed

(3) Select the item to be displayed on the screen so that the check mark on the left can be displayed, and it can disappear for unnecessary items.

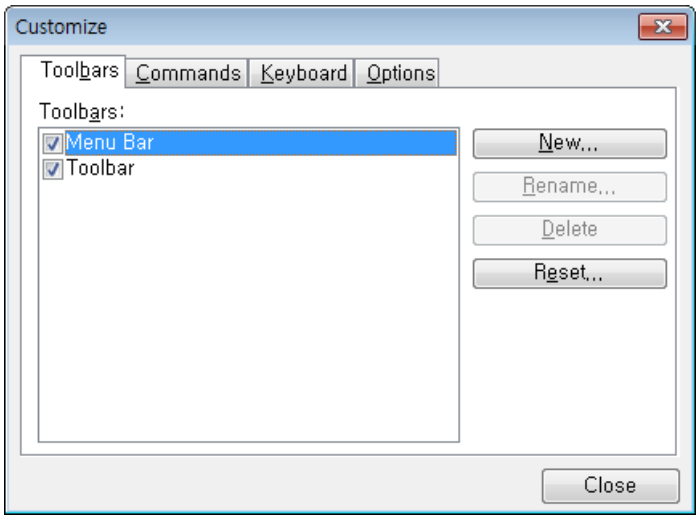
Note

1) Select the Menu [View] - [Tool Bar] to show or hide the entire toolbar.

5.12.2.2 Create a new toolbar

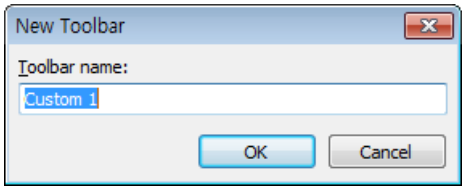
The following needs to be done to create a new toolbar.

[Step]
(1) Press the button on the right side of the toolbar and select [Add or Remove Buttons] - [Customize] from the toolbar menu.
(2) If the dialog box appears, select [Toolbars] from the tab at the top as follows.



[Figure 5.12.6] "Customize" dialog box for creating a new toolbar

(3) Press the "New' button on the [Toolbars] tab.
(4) If the "New Toolbar" dialog box appears as shown below, enter the name of the new toolbar and press the "OK" button.



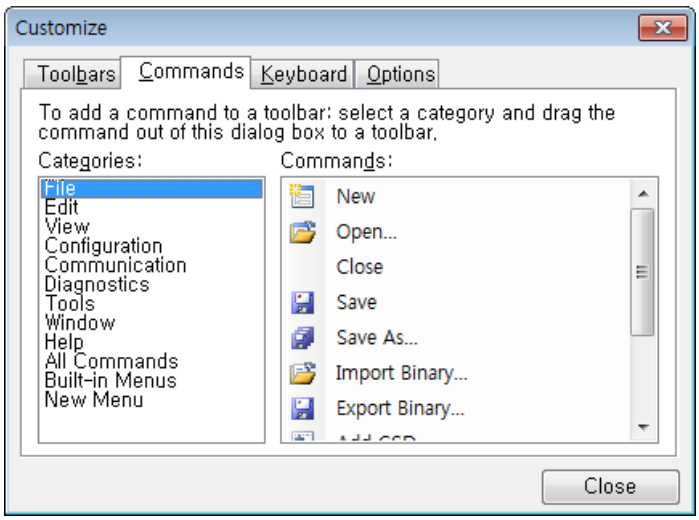
[Figure 5.12.7] "New Toolbar" dialog box

(5) A new toolbar is created on the main screen.
(6) When the work is finished, press the "Close" button in the "Customize" dialog box to close the dialog box.

5.12.2.3 Add buttons to a toolbar

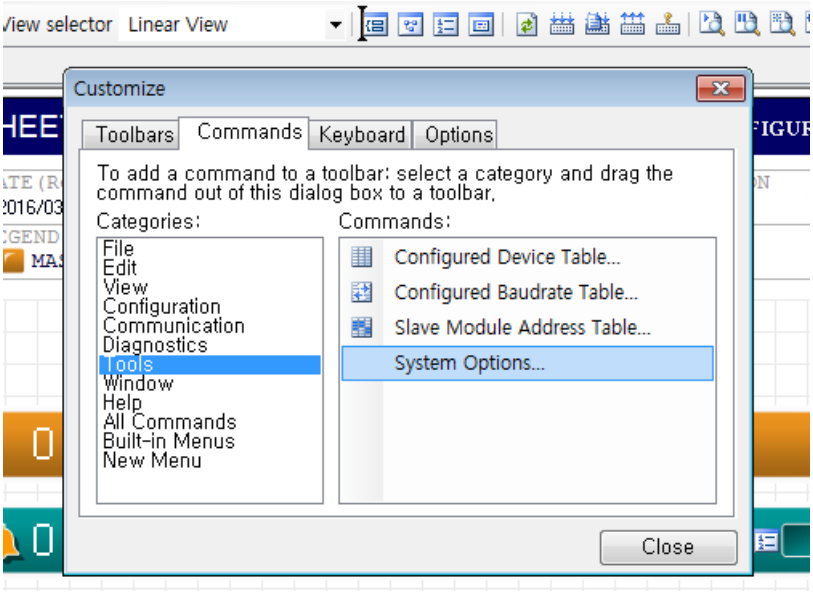
The following needs to be done to add buttons to a toolbar.

[Step]
(1) Press the button on the right side of the toolbar and select [Add or Remove Buttons] - [Customize] from the toolbar menu.
(2) If the dialog box appears, select [Commands] in the tab at the top as follows.



[Figure 5.12.8] "Customize" dialog box for adding buttons to the toolbar

(3) Select the item to be added from the "Commands" list on the right side and drag it onto the toolbar.



[Figure 5.12.9] Example of the screen that adds the "System Options" to the toolbar

(4) A button that can execute the item is added to the toolbar of the main screen.
(5) When the work is finished, press the "Close" button to close the dialog box.

Note

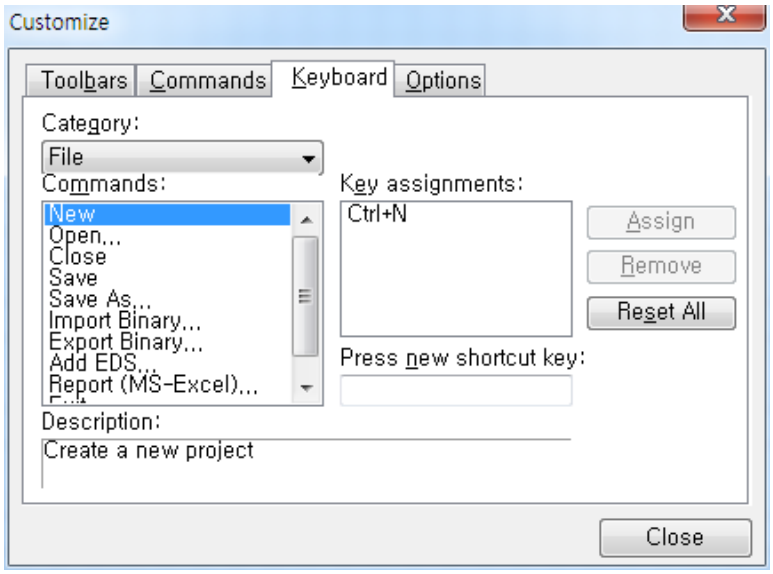
1)If there is no icon defined in the added item, a button with the item name appears as follows.

[Figure 5.12.10] Toolbar button displayed as text

5.12.2.4 Set shortcut keys on toolbar buttons

The following needs to be done to set shortcut keys on toolbar buttons.

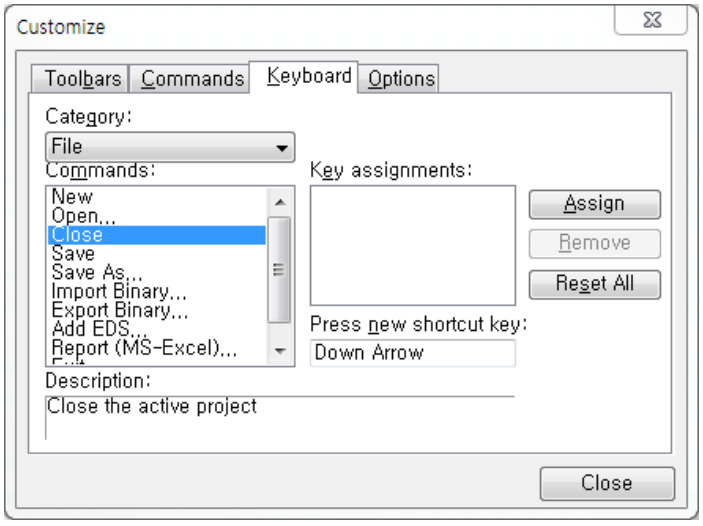
[Step]
(1) Press the button on the right side of the toolbar and select [Add or Remove Buttons] - [Customize] from the toolbar menu.
(2) If the dialog box appears, select [Keyboard] in the tab at the top as follows.



[Figure 5.12.11] "Customize" dialog box for setting shortcut keys on toolbar buttons

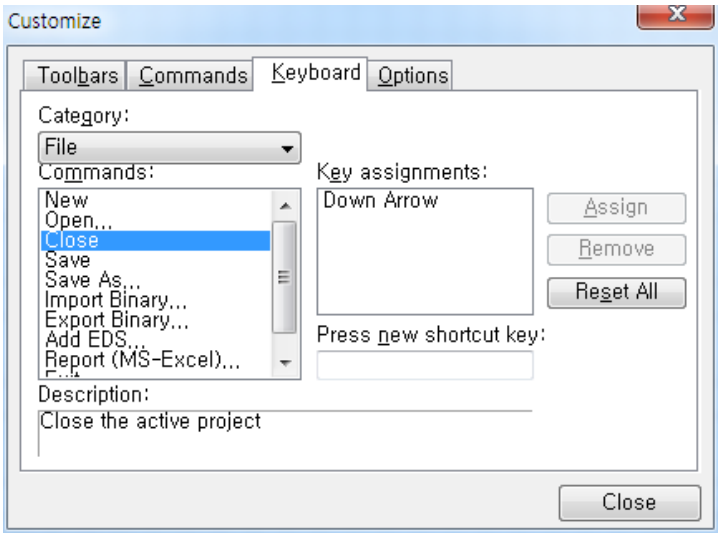
(3) Select the item to set a shortcut key from 'Commands" list and "Categories" combo box on the left side of the screen.
(4) Move the cursor to the "Press new shortcut key" text box at the bottom left of the screen and press the desired shortcut key.

The following is an example of pressing [Downward cursor key] as a shortcut key for [File] - [Close] item.



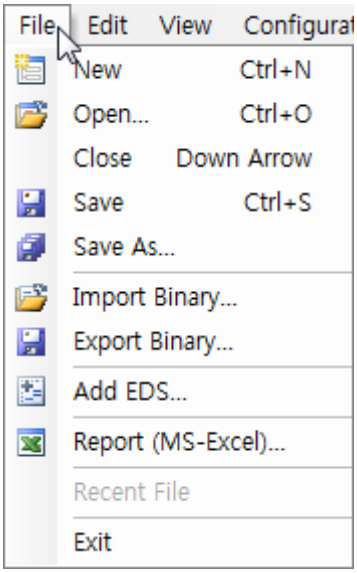
[Figure 5.12.12] Example of the screen to select a shortcut key

(5) Press the "Assign" button to assign the selected shortcut key to the item.



[Figure 5.12.13] Example of screen to set the shortcut key in the item

(6) The shortcut keys set on the toolbar button and the menu of the item are applied as follows.



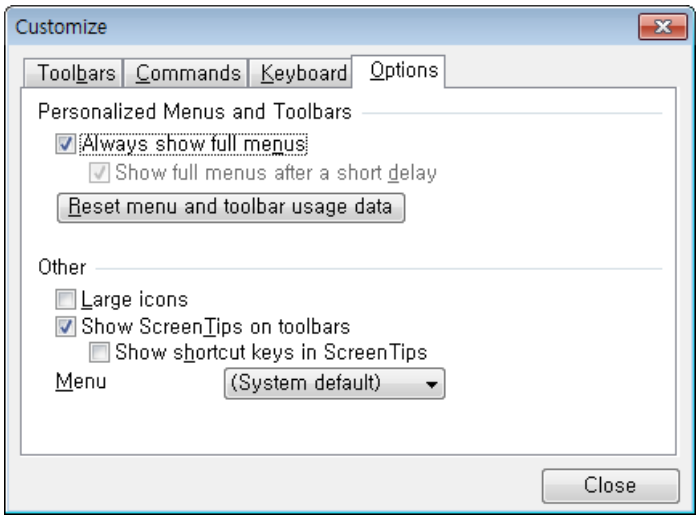
[Figure 5.12.14] Example of the menu item where the shortcut key is set

(7) When the work is finished, press the “Close” button to close the dialog box.

5.12.2.5 Change toolbar options

The following needs to be done to change toolbar options.

[Step]
(1) Press the button on the right side of the toolbar and select [Add or Remove Buttons] - [Customize] from the toolbar menu.
(2) If the dialog box appears, select the [Options] in the tab at the top as follows.

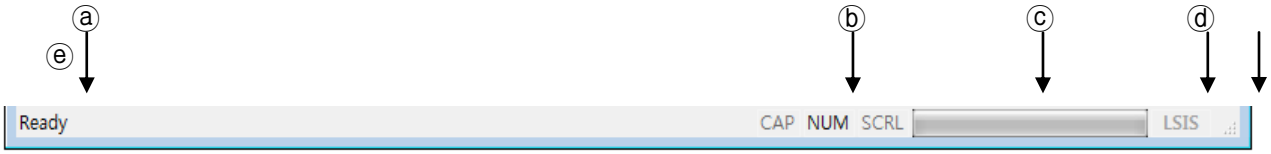


[Figure 5.12.15] "Customize" dialog box for changing toolbar options

(3) Select check box or combo box item to change the appearance of shortcut keys or icons.
(4) When the work is finished, press the "Close" button to close the dialog box.

5.12.3 Status Bar

Status bar is located at the bottom of N Configurator and shows the operation status of the program.



[Figure 5.12.16] Status bar

[Descriptions of the status bar]
ⓐ Displays a description of the current operating function.
ⓑ Displays the keyboard lock status
ⓒ Displays the progress rate of the current operating function
ⓓ Displays the manufacture of N Configurator
ⓔ This is mouse-grip area to adjust the window size of the program .

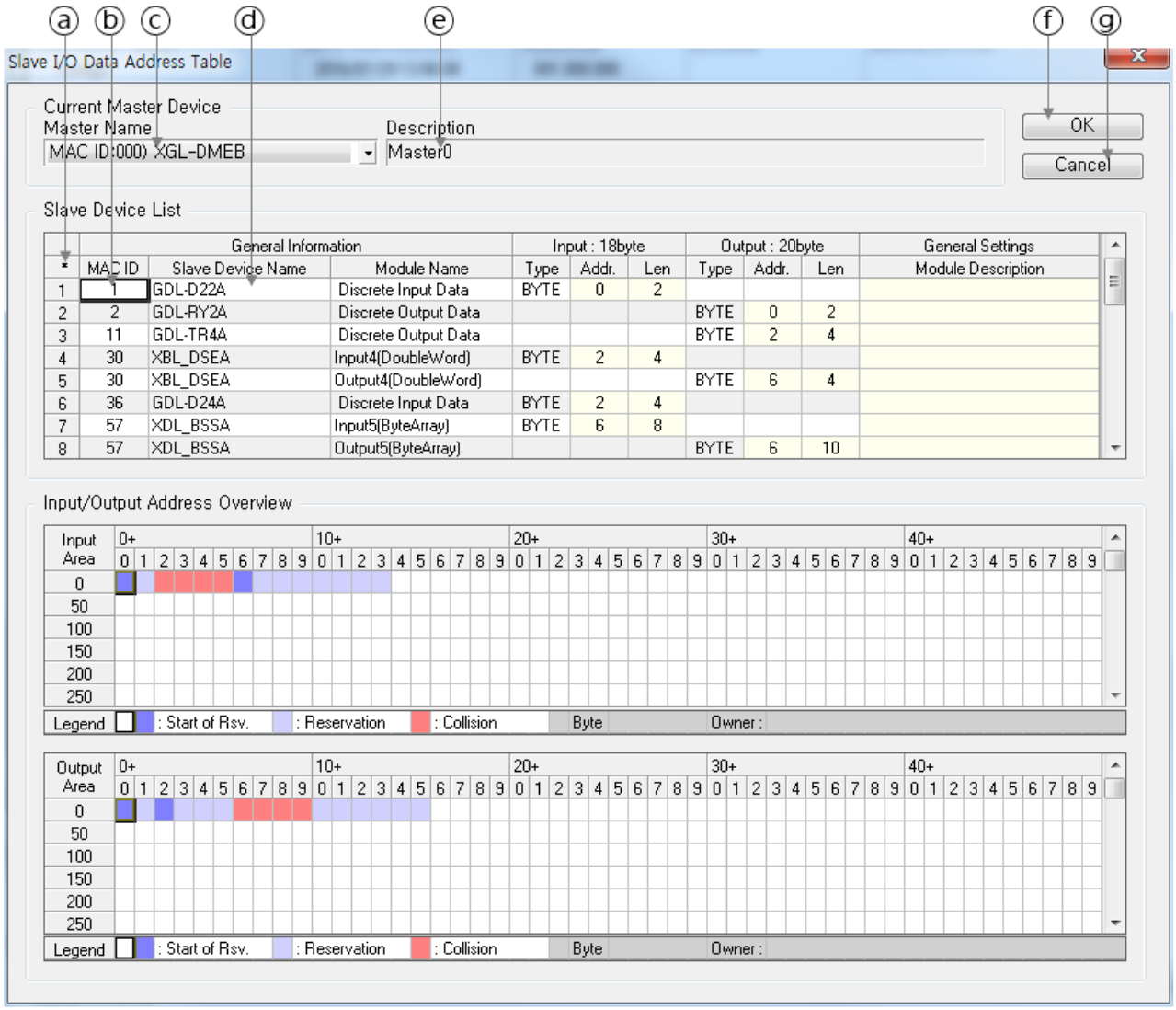
Note

1) Select the Menu [View] - [Status Bar] to show or hide the entire status bar.

5.12.4 Method on How to Use Dialog Box

A dialog box is a window that is displayed independently to display data or receive input from a user
N Configurator displays most of the data that appears in the dialog box in the form of an Excel spreadsheet for systematic and organized information delivery.

The following describes the common usage of the dialog box.



[Figure 5.12.17] Example of dialog box

[Descriptions of the dialog box]

ⓐ Sort function display : Indicates a table to be sorted in ascending/descending order by clicking the column header

ⓑ Data display cell : Indicates the data area which is not entered but displayed.
(Alternating rows of gray and white backgrounds for each distinction of lines)

ⓒ Combo box : Indicates the area used to input data in a format that selects one of several listed values

ⓓ Data input cell : Indicates the data area that can be modified by keyboard input

ⓔ Data display column : Indicates the data area which is not entered but displayed

ⓕ "OK" button : Reflects the input settings and closes the screen

ⓖ "Cancel" button : Cancels the input settings and closes the screen

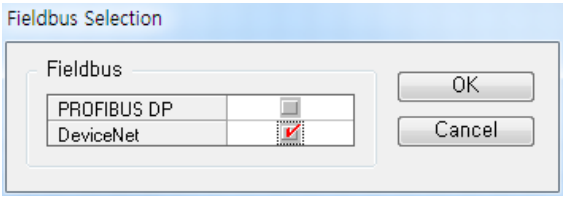
5.13 Fast Start

This unit describes the main features of the program with a simple example so that a user can quickly learn how to use the N Configurator.

The following is an example of the configuration of the DeviceNet network composed of 2MLL-DMEB master module and GDL-TR4A, GDL-D24A Smart I/O slave device of LSIS through N Configurator connectd with USB cable and ML200 PLC equipped with the master module and the storing of the configured contents in a file.

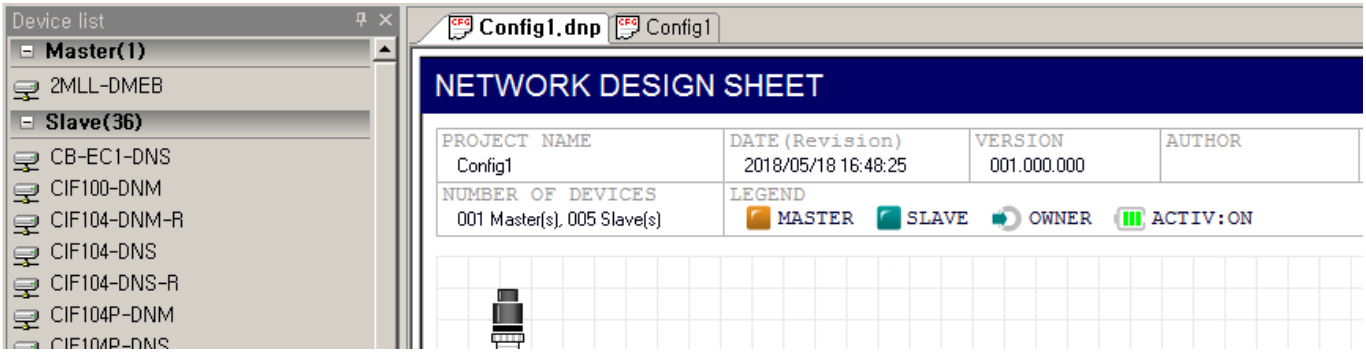
5.13.1 Fieldbus Selection

[Method]
Run N Configurator, select DeviceNet in a fieldbus selection window, and then press “OK” button



[Figure 5.13.3] Fieldbus selection window of N Configurator

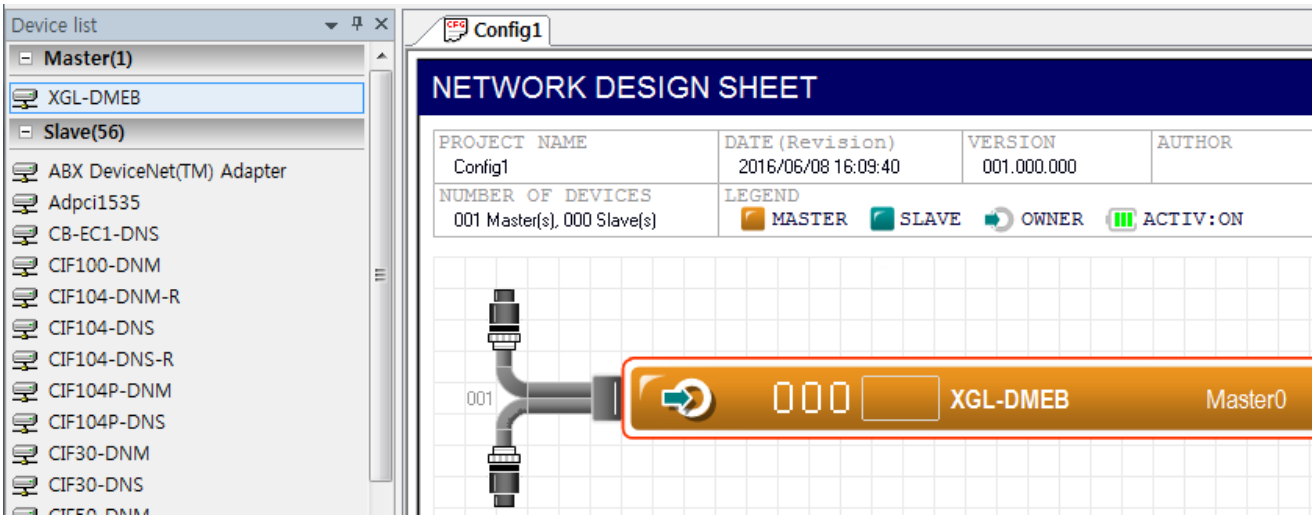
The initial screen appears as follows.



[Figure 5.13.4] Initial screen of N Configurator (in part)

5.13.2 Add Master Device to Network on Screen

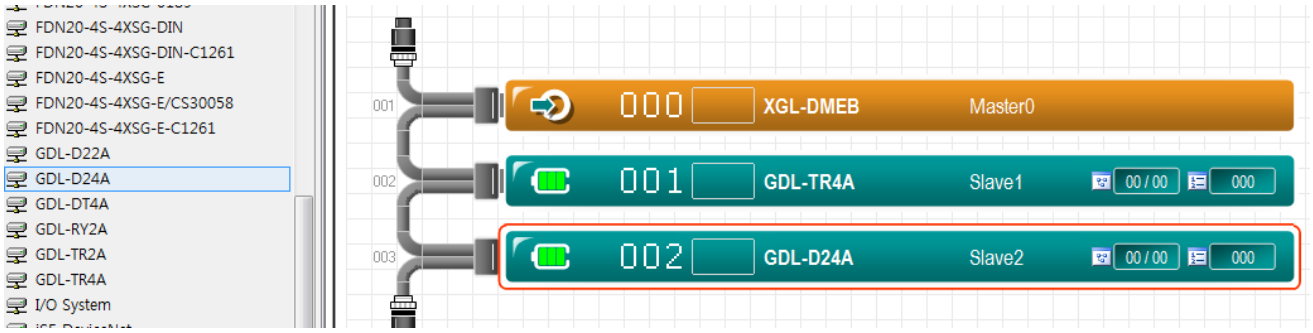
[Method]
Find 2MLL-DMEB master in the device list window and double click it with a mouse.



[Figure 5.13.5] Screen of the status where master device is added with a double-click

5.13.3 Add Slave Device to Network on Screen

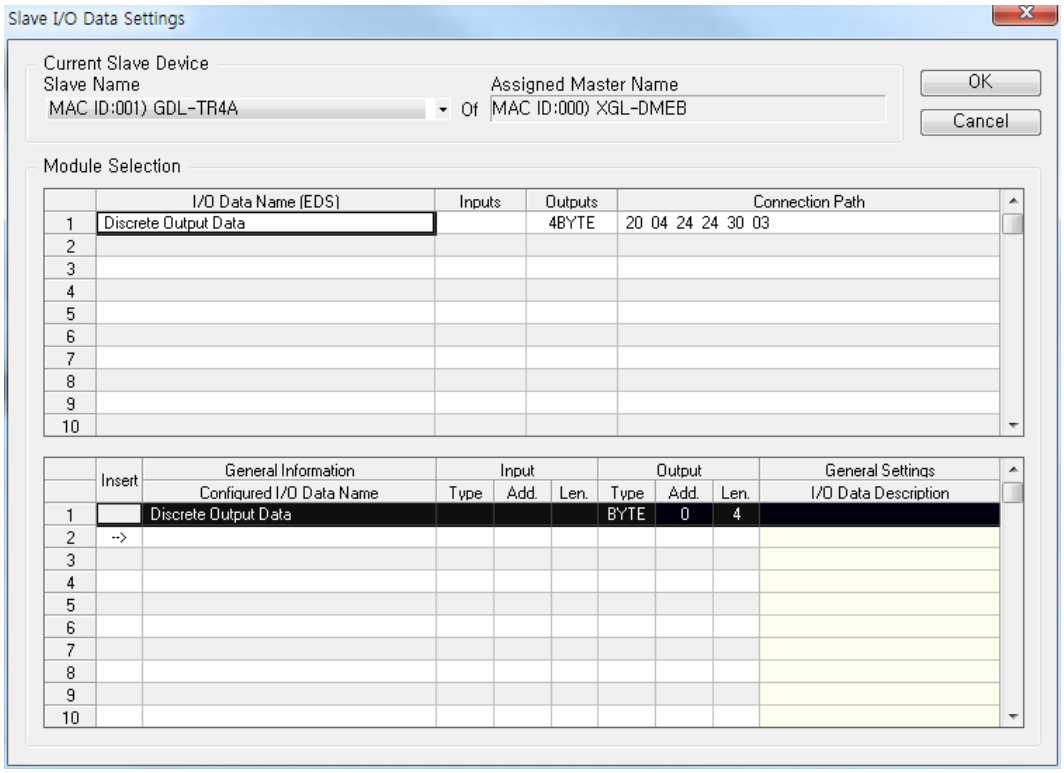
[Method]
Find GDL-TR4A and GDL-D24A slave in the device list window and double click it with a mouse.



[Figure 5.13.6] Screen of the status where slave device is added with a double-click

5.13.4 Configuration Settings by Slave

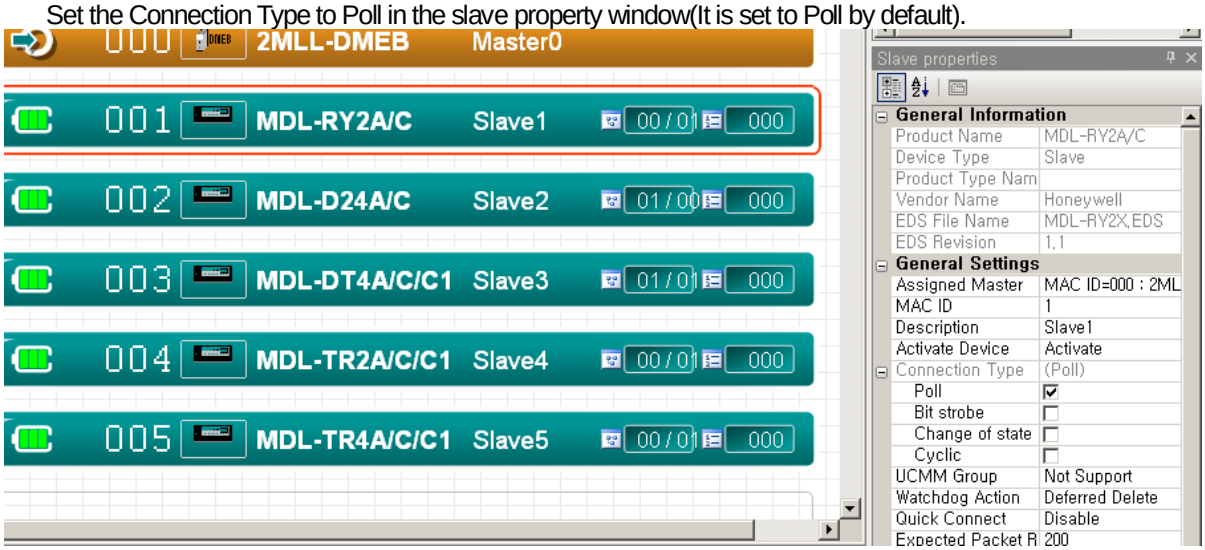
[Method]
Select I/O Data Setting menu from the configuration of the menu and double click the module to be set for each slave to register it. Register in the same way for GDL-TR4A and GDL-D24A.



[Figure 5.13.7] Screen of the status where 10 configurations are done with a double-click

5.13.5 Determine Communication Method

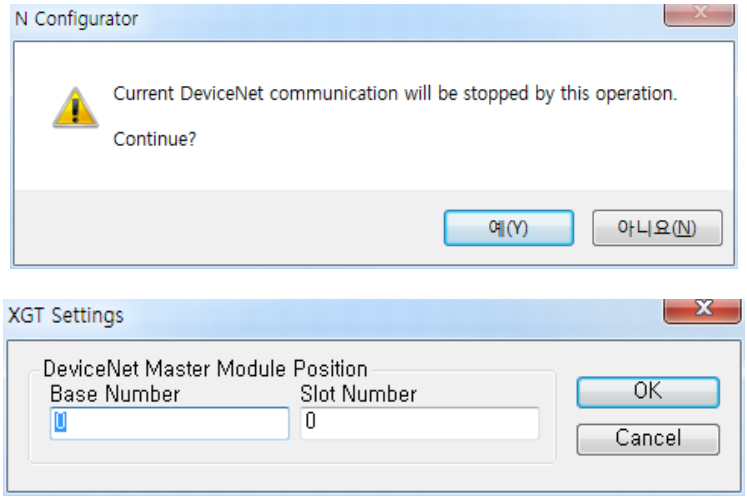
[Method]
Set the Connection Type to Poll in the slave property window(It is set to Poll by default).



[Figure 5.13.8] Set the salve connection method

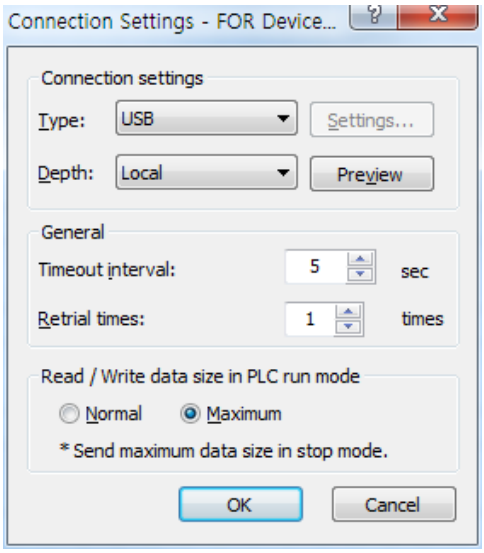
5.13.6 Download Information on Screen to Master Module

[Step]
(1) Select [Communication] - [Download Image] from the menu.
(2) The following “ML200 Settings” dialog box appears.



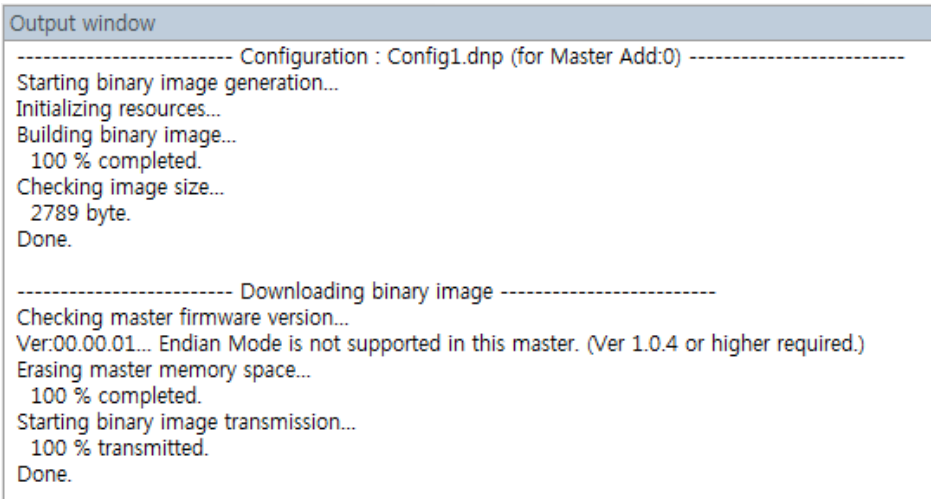
[Figure 5.13.9] “Communication Settings” dialog box

(3) Enter the base number and slot number equipped with the master module and press the “OK” button.
(4) The following “Connection Settings” dialog box appears.



[Figure 5.13.10] “Connection Settings” dialog box

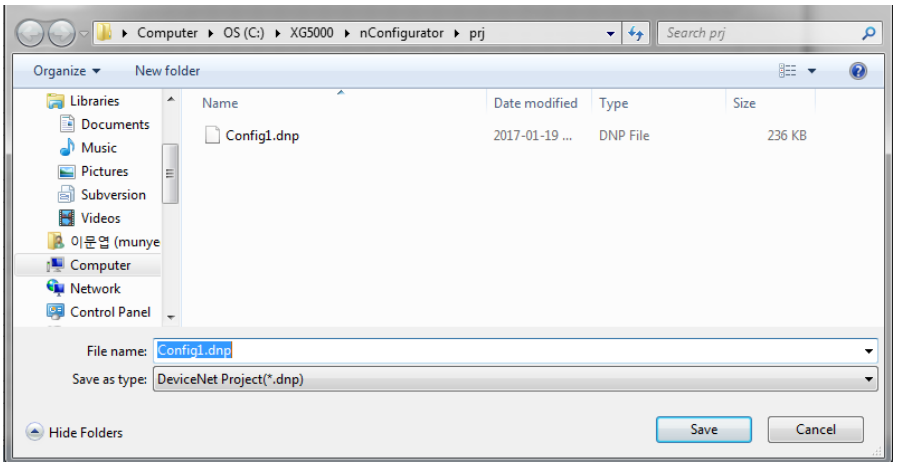
(5) Select USB and press the “OK” button.
(6) A binary image is generated, and the download progress is displayed in the output window as below.



[Figure 5.13.11] Output window display contents in downloading binary images

5.13.7 Save Information on Screen in a File for Future Reuse

[Step]
(1) Select the Menu [File] - [Save] or press the shortcut key <CTRL+S>.
(2) The following “Save As” dialog box appears.



[Figure 5.13.12] “Save As” dialog box

(3) Enter the file name and press the Save button.

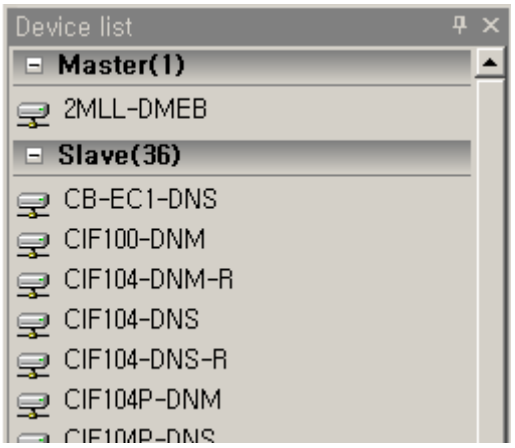
5.14 Device List

This chapter describes how to display the windows that appear on the main screen of N CONFIGURATOR by default.

The device list is a window where devices analyzed from the EDS file are listed to add them to the topology of the project window.

It is placed at the upper left side of the main screen by default. If this window is hidden or closed, it can be displayed on the screen in the following way.

[Step]
(1) Select the Menu [View] - [Device List].
(2) The following device list window appears.



[Figure 5.14.1] Device list window

The number of devices (analyzed through the EDS file) is displayed in the brackets of each category name.

Note

1) The Menu [View] - [Device List] is displayed as the status that cannot be selected if the device list is already displayed on the main screen.

2) If you want to add a new EDS file to the device list, refer to Section 3.1.3.

5.15 EDS Viewer

EDS viewer is a window that shows the EDS details of the device selected in the device list.
It is basically placed at the bottom left of the main screen. If this window is hidden or closed, it can be displayed in the following way.

[Step]
(1) Select the Menu [View] - [EDS Viewer].
(2) The following EDS viewer window appears.

[Figure 5.15.1] EDS viewer window

[Descriptions of the toolbar buttons in EDS viewer window]
ⓐ Sort by group : Shows items by group.
ⓑ Sort by item name : Shows items by sorting them in ascending order.

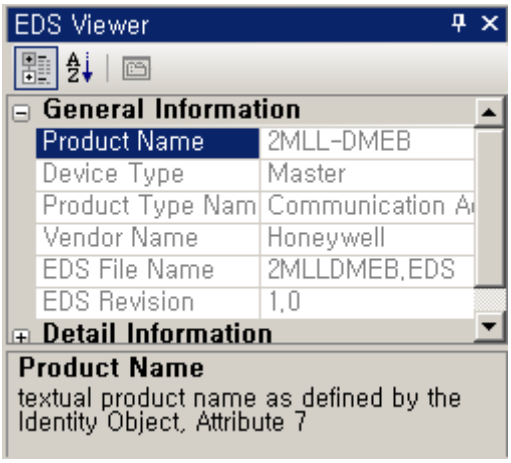
EDS viewer is divided into the following groups.
(a) General Information : Indicates general EDS information.
(b) Detail Information : Indicates detailed EDS information.

Note

1) Menu [View] - [Device List] is displayed in a status that cannot be selected if EDS viewer is already displayed on the main screen.

5.15.1 Display Item Help

If you select an item in the EDS viewer with a mouse, a description of the item is displayed as follows.

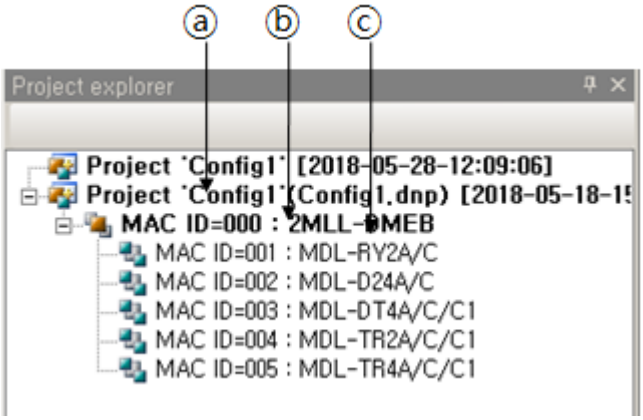


[Figure 5.15.2] Screen showing help at the bottom of the window in selecting item

5.16 Project Explorer

Project explorer is a window that shows the configured topology in the project window in the hierarchical order of project-master-slave.
It is basically placed in the upper right side of the main screen. If this window is hidden or closed, it can be displayed on the screen in the following way.

[Step]
(1) Select the Menu [View] - [Project Explorer].
(2) The following project explore window appears.



[Figure 5.16.1] Project explorer

[Descriptions of the components in project explorer]
ⓐ Project : Corresponds to one project window and consists of generation time (year/month/day/hour/minute/second) and title
ⓑ Master : Refers to the master configured in the parent project and consists of address and model name
ⓒ Slave : Refers to the slave belonging to the upper master and consists of address and model name

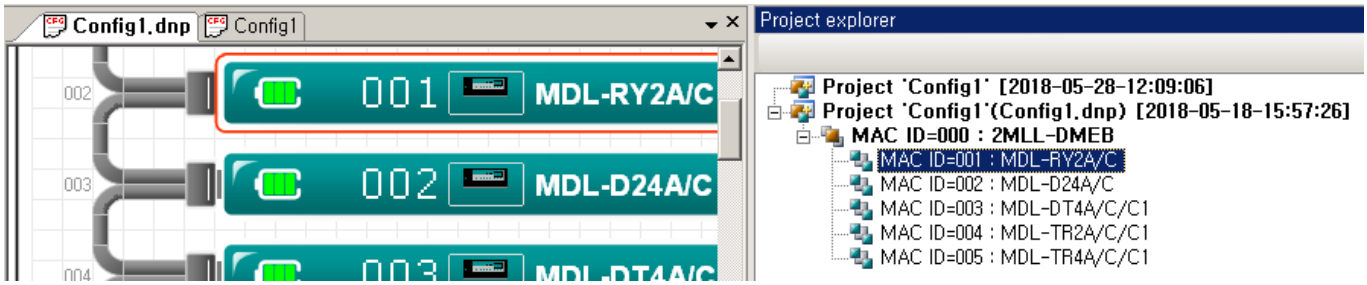
Note

1) Menu [View] - [Project Explorer] is displayed in a status that cannot be selected if the Project Explorer is already displayed on the main screen.

5.16.1 Find Device Location

The use of Project Explorer makes it possible to find device locations on the topology faster.

[Step]
(1) In the Project Explorer, select the desired device with a mouse.
(2) The topology is scrolled so that the selected device is displayed at the top of the project window as follows.

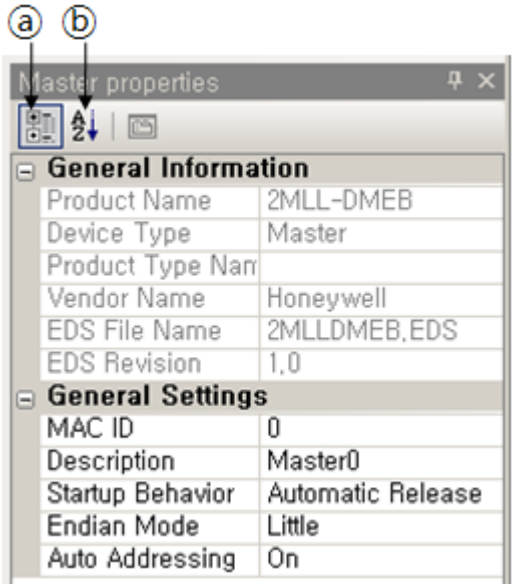


[Figure 5.16.2] Screen of the status where device is found in the project window through Project Explorer

5.17 Master Property Window

Master property window is a window for setting the properties of the configured master device in the project window.
It is basically placed in the bottom right side of the main screen. If this window is hidden or closed, it can be displayed on the screen in the following way.

[Step]
(1) Select the Menu [View] - [Master Properties].
(2) The following project master property window appears.



[Figure 5.17.1] Master property window

[Descriptions of the toolbar buttons in master property window]
ⓐ Sort by group : Shows items by group
ⓑ Sort by item name : Show items by sorting them in ascending order

The master property window is divided into the following groups.

(a) General Information : Indicates general master device information.
(b) General Settings : Indicates required setting details.

Note

1) Menu [View] - [Master Properties] is displayed in a status that cannot be selected if the master property window is already displayed on the main screen.

5.18 Bus Parameter Window

Bus parameter window is used to set the communication attributes of the DeviceNet network configured I the project window.
It is basically placed at the bottom right side of the main screen. If this window is hidden or closed, it can be displayed on the screen in the following way.

[Step]
(1) Select the Menu [View] - [Bus Parameters].
(2) The following bus parameter window appears.

[Figure 5.18.1] Bus parameter window

[Descriptions of the toolbar buttons in bus parameter window]
ⓐ Sort by group : Shows items by group
ⓑ Sort by item name : Shows items by sorting them in ascending order.

The bus parameter window is divided into the following group.

(a) General Settings : Indicates required setting details.

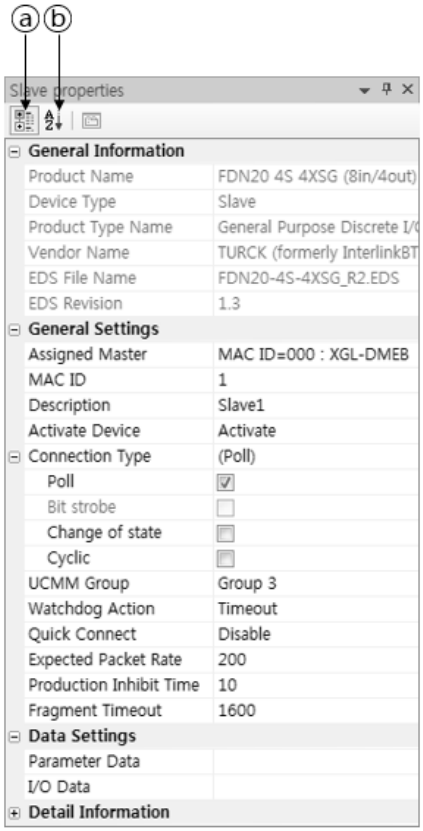
Note

1) Menu [View] - [Bus Parameters] is displayed in a status that cannot be selected if the bus parameter window is already displayed on the main screen.

5.19 Slave Property Window

Slave property window is used to set the properties of the slave device configured in the project window. It is basically placed at the bottom right side of the main screen. It this window is hidden or closed, it can be displayed on the screen in the following way.

[Step]
(1) Select the Menu [View] - [Slave Properties].
(2) The following project slave property window appears.



[Figure 5.19.1] Slave property window

[Descriptions of the toolbar buttons in slave property window]

ⓐ Sort by group : Shows items by group.

ⓑ Sort by item name : Shows items by sorting them in ascending order

The slave property window is divided into the following groups.

(a) General Information : Indicates general slave device information
(b) General Settings : Indicates required setting details
(c) Data Settings : Indicates modules and parameter settings
(d) Detail Information : Indicates detailed slave device information

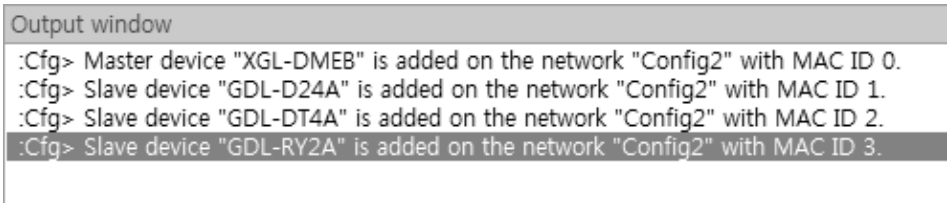
Note

1) Menu [View] - [Slave Properties] is displayed in a status that cannot be selected if the slave property window is already displayed on the main screen.

5.20 Output Window

Output window shows the operation results of N CONFIGURATOR.
It is basically placed at the bottom center of the main screen. If this window is hidden or closed, it can be displayed on the screen in the following way.

[Step]
(1) Select the Menu [View] - [Output].
(2) The following project output window appears.



[Figure 5.20.1] Output window

Note

1) Menu [View] - [Output] is displayed in a status that cannot be selected if the output window is already displayed on the main screen.

5.20.1 Clear Output Window Contents

The following needs to be done to clear the contents of output window.

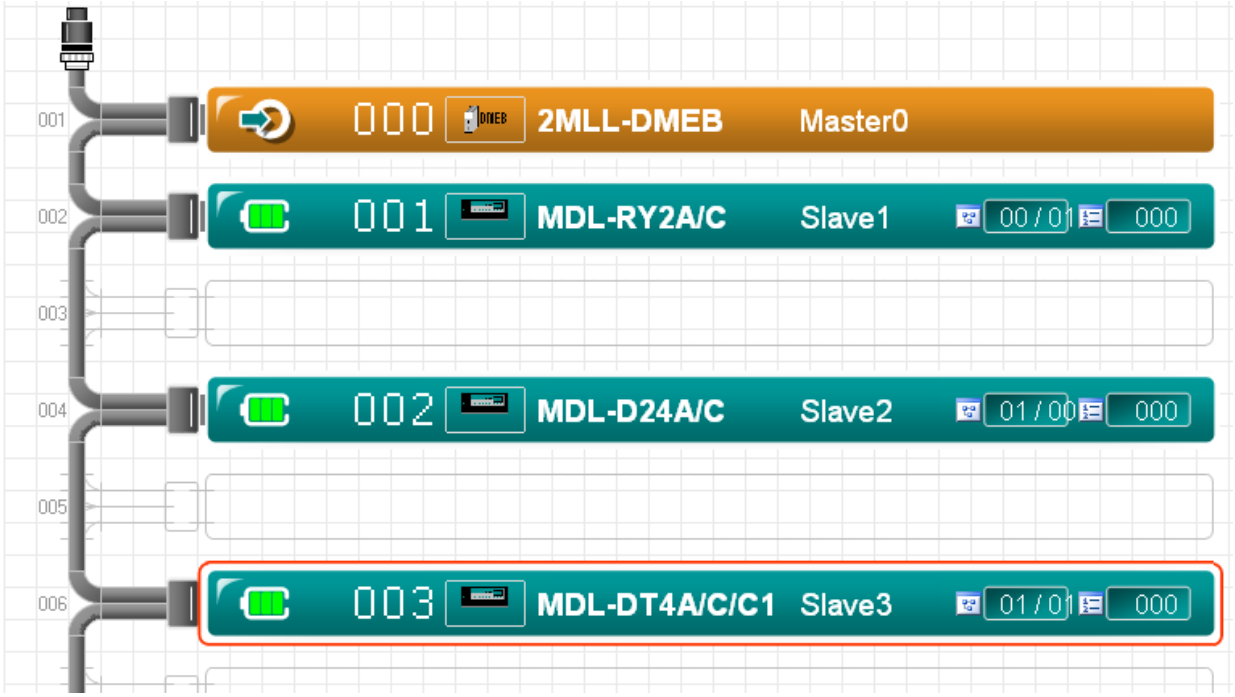
[Step]
(1) Select the Menu [View] - [Clear Output].
(2) The contents of the output window are cleared as follows.

[Figure 5.20.2] Output window with no contents

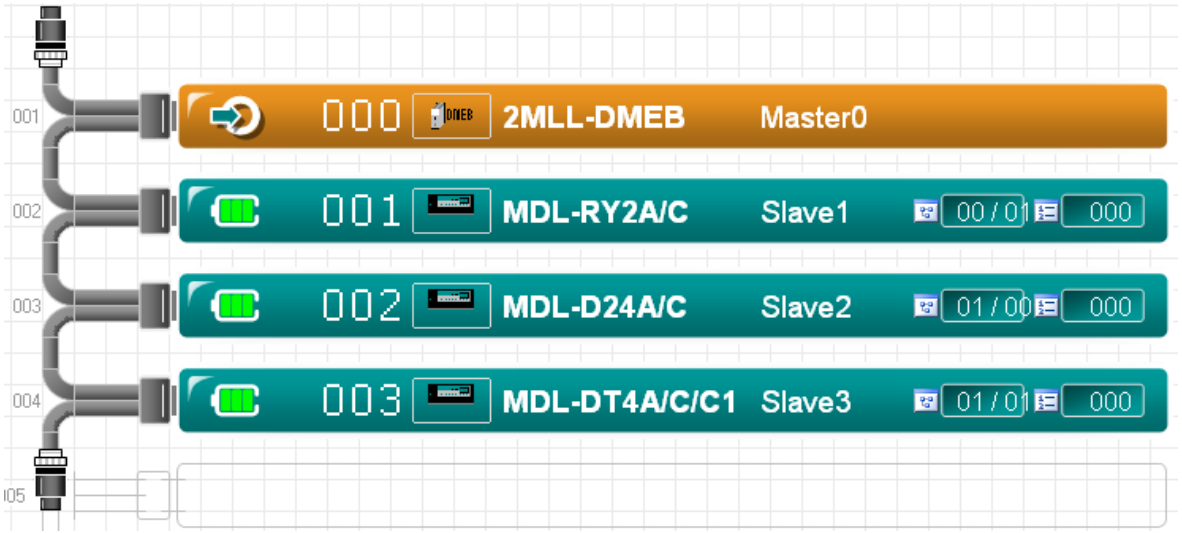
5.21 Shrink Topology

You can eliminate blank areas between each device on the topology and create a dense topology.

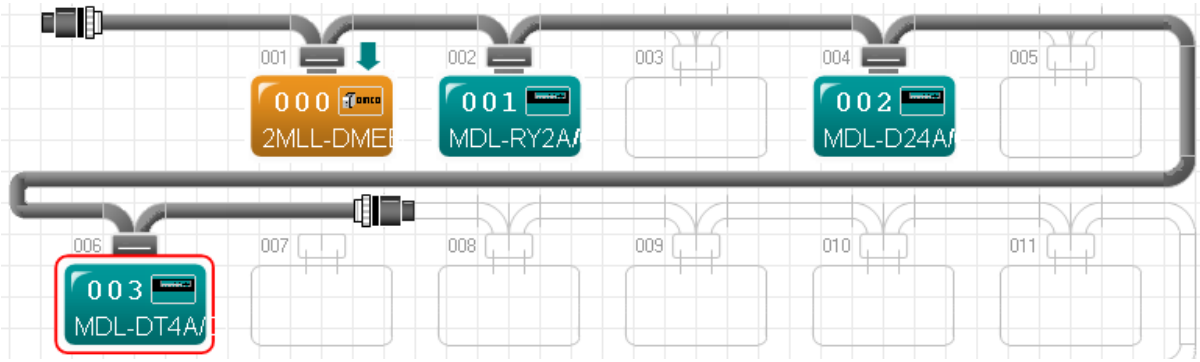
[Step]
(1) Select the Menu [View] - [Shrink Topology].



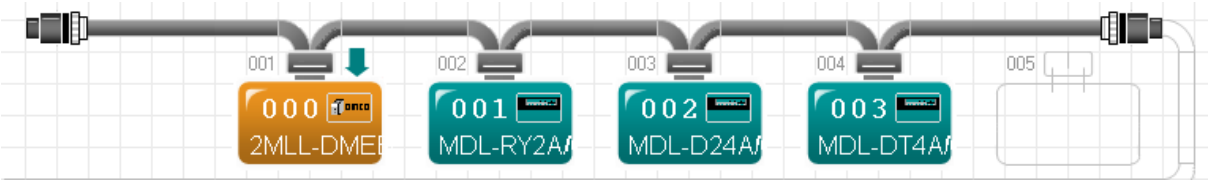
[Figure 5.21.1] Example of screen before executing Shrink Topology of vertical display bus topology



[Figure 5.21.2] Example of screen after executing Shrink Topology of vertical display bus topology



[Figure 5.21.3] Example of screen before executing Shrink Topology of horizontal display bus topology



[Figure 5.21.4] Example of screen after executing Shrink Topology of horizontal display bus topology

Note

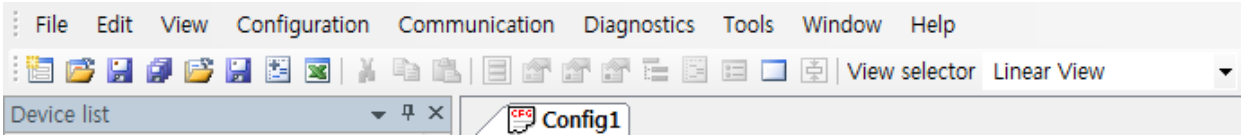
1) Shrink Topology only adjusts the device location on the screen, and therefore it does not affect the configuration data.

5.22 Toolbar / Status Bar

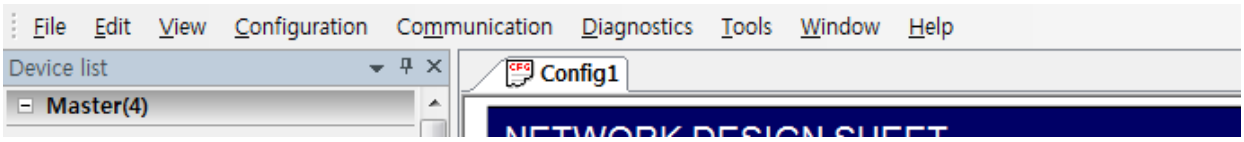
5.22.1 Toolbar

Hide or show toolbars.

[Step]
(1) Select the Menu [View] - [Tool Bar].



[Figure 5.22.1] Example of screen with toolbars

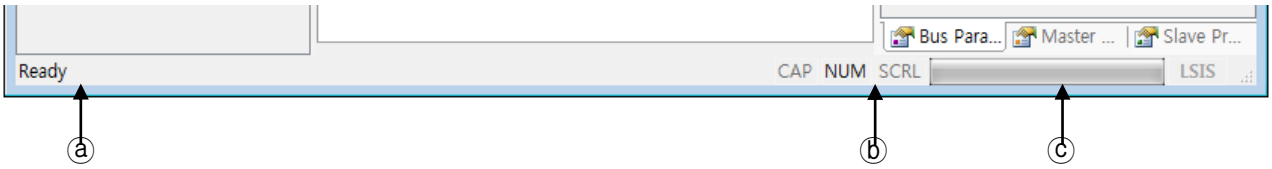


[Figure 5.22.2] Example of screen without toolbars

5.22.2 Status Bar

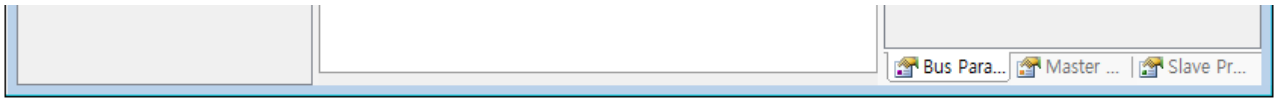
Hide or show status bars.

[Step]
(1) Select the Menu [View] - [Status Bar].



[Figure 5.22.3] Example of screen with status bars

[Descriptions of the status bar items]
ⓐ Indicates help for the functions.
ⓑ Indicates the keyboard lock status
ⓒ Indicates gauge for displaying operation progress rate.



[Figure 5.22.4] Example of screen without status bars

5.23 Project property settings

This chapter describes how to enter the necessary information to manage the configured DeviceNet master-slave configuration information on a project basis.

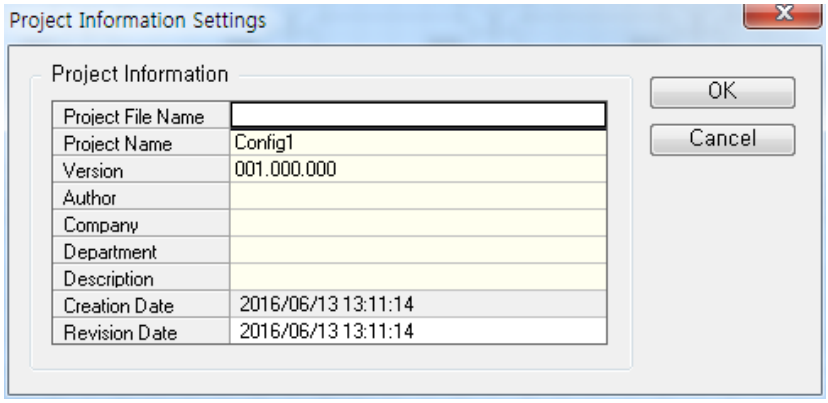
Set the project properties for the current topology

[Step]

(1) Select the Menu [Configuration] - [Project Information] or double click [PROJECT NAME - LEGEND area] except for NO. OF DEVICES on the topology

[Figure 5.23.1] Area where project property window is executed by a double-click

(2) The following "Project Information Settings" dialog box appears.



[Figure 5.23.2] "Project Information Settings" dialog box

[Descriptions of the "Project Information Settings" dialog box items]

(a) Project File Name : Displays the saved file name if the project is saved as a file
(b) Project Name : Indicates the title of this project (User input item)
(c) Version : Indicates the version of this project in the Major.Minor.Revision format (User input item)
(d) Author : Indicates the author of this project (User input item)
(e) Company : Indicates the company name of this project (User input item)
(f) Department : Indicates the department name of this project creator (User input item)
(g) Description : Indicates a description of this project (User input item)
(h) Creation Date : Indicates the creation time of this project
(i) Revision Date : Indicates the revision time of this project

(3) Enter required items and press the "OK" button.

Note

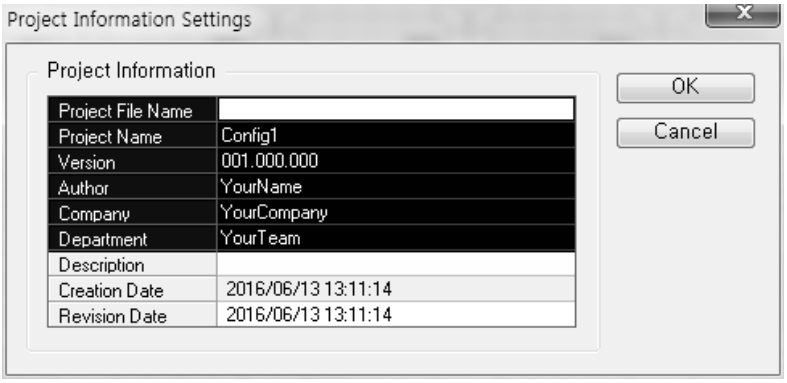
1) For keyboard input items, the background of the input area is displayed in yellow.
2) If the keyboard input is started, the allowable input range for the current items (cells) is displayed in the frame title as follows so that a user can enter exact values.

[Figure 5.23.3] Example of the allowable range for the item displayed in the frame title

5.23.1 Copy Settings

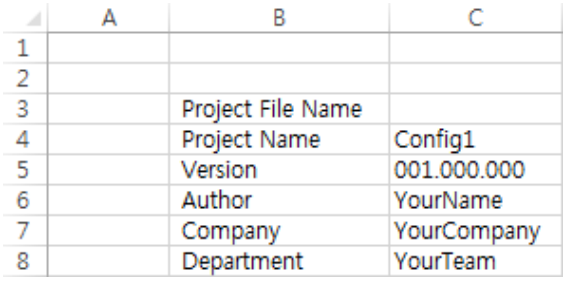
Copy the contents set in the “Project Information Settings” dialog box to the clipboard.

[Step]
(1) Select the desired information from the displayed contents, highlight it and then press the shortcut key <CTRL+C>.



[Figure 5.23.4] Screen with some data selected in the dialog box

(2) Press the shortcut key <CTRL+V> in the required program and paste the copied contents.



	A	B	C
1			
2			
3		Project File Name	
4		Project Name	Config1
5		Version	001.000.000
6		Author	YourName
7		Company	YourCompany
8		Department	YourTeam

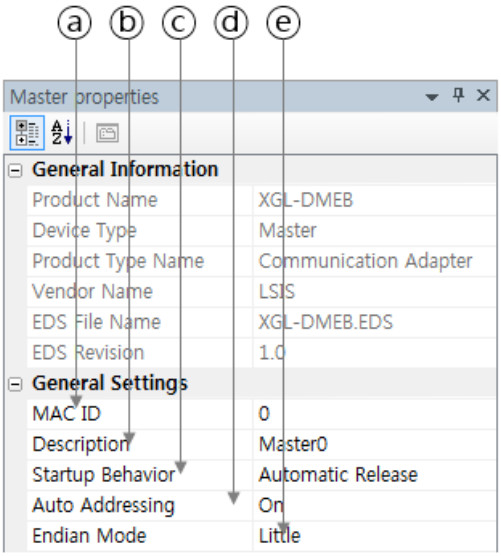
[Figure 5.23.5] Example of pasting the copied data into Excel

5.24 Master Properties

This chapter describes how to set the bus parameters and master properties of the master device added to the topology.

Set the properties of the currently selected master device in the topology

[Step]
(1) Select the master device in the topology
(2) The following master property window is activated.



[Figure 5.24.1] Master property window

[Descriptions of the setting items in master property window]
ⓐ MAC ID : Indicates a unique address of the master device on the DeviceNet network
ⓑ Description : Shows a description of the master device
ⓒ Startup Behavior : Sets whether or not operate network behavior immediately after downloading parameters
ⓓ Auto Addressing : Allocates slave address automatically
ⓔ Endian Mode : Sets Endian mode for word-type module

Station Address is automatically set to the address of lower number which is not used by other devices when the master device is added to the topology.

Description is initialized in the form of “Master”+ Station Address when the master device is added to the topology.

Note

1) If the master property window is not visible on the main screen, Select the Menu [View] - [Master Properties].

5.24.1 Specify Master Address

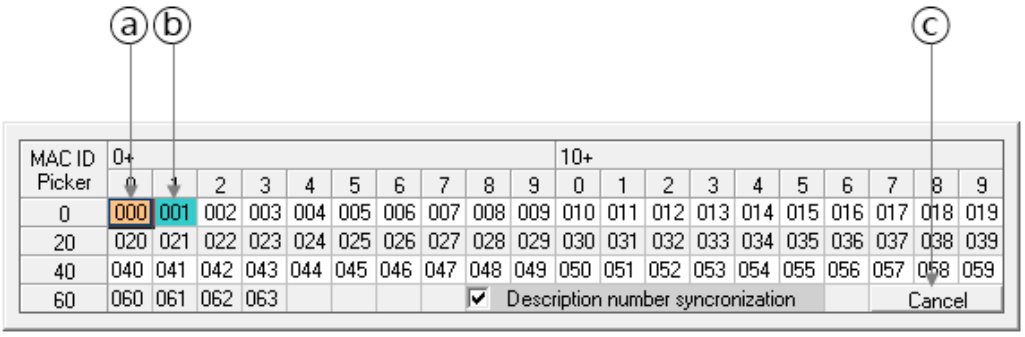
The address of the master device ranges from 0 to 63.

5.24.1.1 Specify master address in the property window

[Step]
(1) Enter number in the MAC ID item of the master property window and then press the [ENTER] key.
(2) The changed address is reflected in the master node on the project explorer and topology.

5.24.1.2 Specify master address on the topology

[Step]
(1) Double click the master device address area in the topology.
(2) The following "MAC ID Picker" dialog box appears.



[Figure 5.24.2] "MAC ID Picker" dialog box

[Descriptions of the "MAC ID Picker" dialog box]
ⓐ Indicates the address assigned to the master device
ⓑ Indicates the address assigned to the slave device
ⓒ Indicates the button that cancels the input on the dialog box

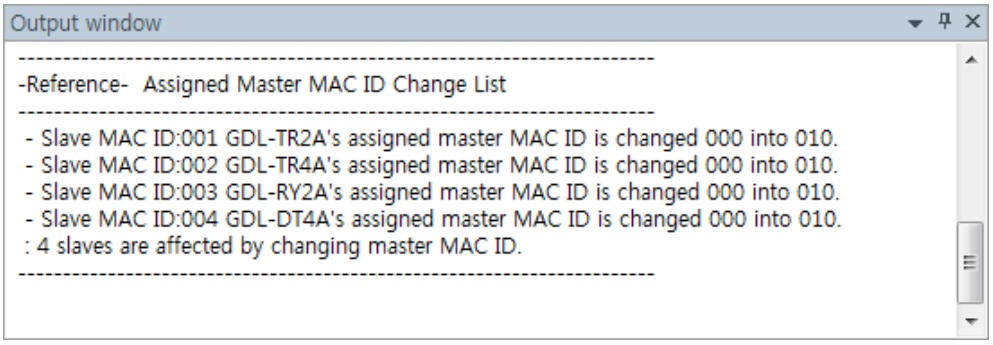
(3) Double click the address to be changed
(4) The changed address is reflected in the master node on the project explorer and topology.

Note

1) If you check the "Description number synchronization" check box at the bottom of the dialog box, the description is also changed automatically to match the changed address in case there is address information in the Description string.

5.24.1.3 Automatic change in master address of slave

If the address of the master device is changed, the master address of the slave belong to this master is also changed.
The slave list affected by the master device address change is displayed in the output window as follows.



[Figure 5.24.3] Changes in master address of slave in case the master address is changed

5.24.2 Enter Master Descriptions

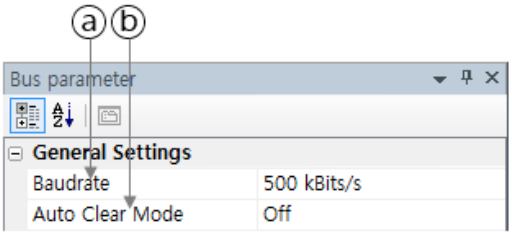
[Step]
(1) Enter a description in the Description item of the master property window and press the [ENTER] key.
(2) The changed description is reflected in the master node on the topology.

5.25 Bus Parameter

Set the bus parameters of the currently selected master device in the topology

5.25.1 Specify Bus Rate

[Step]
(1) Click the cable area on the topology or select the master device on the topology, and then Select the Menu [Configuration] - [Bus Parameters].
(2) The following bus parameter window is activated.



[Figure 5.25.1] Bys parameter window

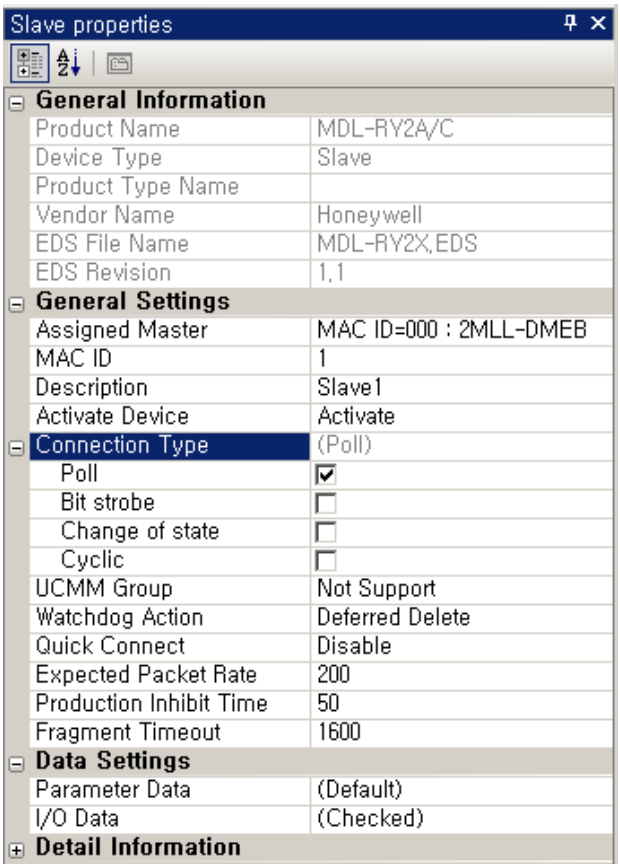
[Descriptions of the setting items in bus parameter window]
ⓐ Baudrate : Indicates master-slave communication baudrate.
ⓑ Auto Clear Mode : Indicates the setting in which the entire network stops if more than one slave is disconnected during the master-slave communication.

5.26 Slave Properties

This chapter describes how to set slave properties, I/O modules and slave parameter information of the slave device added to the topology.

Set the properties of the currently selected slave device in the topology.

[Step]
(1) Select the slave device in the topology.
(2) The following slave property window is activated.



[Figure 5.26.1] Slave property window

[Descriptions of the setting items in slave property window]
- Assigned Master : Indicates the address and model name of the master device
- MAC ID : Indicates a unique address of the slave device on the DeviceNet network
- Description : Indicates a description of the slave device
- Activate Device : Indicates whether the slave device participates in the actual slave-master communication
- Connection Type : Sets the connection type of the master-target slave
- UCMM Group : Selects this when a user intends to use the UCMM messaging format
- Watchdog Action : Sets Watchdog Action of the target slave
- Quick Connect : Sets Quick Connect function
- Expected Packet Rate : Sets Expected Packet Rate(ms)
- Production Inhibit Time : Sets Production Inhibit Time(ms)
- Fragment Timeout : Sets Timeout for the frame to be fragmented
- Parameter Data : Sets parameters to be sent to the slave
- I/O Data : Sets I/O Configuration of the slave

MAC ID is automatically set to the address of lower number which is not used by other devices when the slave device is added to the topology.
Description is initialized in the form of "Slave"+ MAC ID when the slave device is added to the topology.

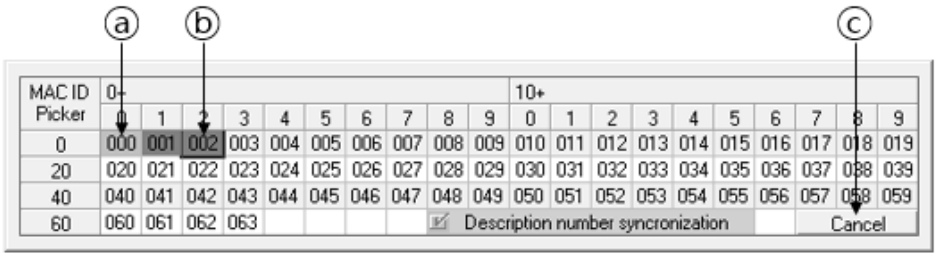
5.26.1 Specify Slave Address

5.26.1.1 Specify the slave address in property window

[Step]
(1) Enter number into MAC ID item of the slave property window and press the [ENTER] key.
(2) The changed address is reflected in the slave node on the project explorer and topology.

5.26.1.2 Specify the slave address on topology

[Step]
(1) Double click the slave device address area on the topology.
(2) The following dialog box appears.



[Figure 5.26.2] "MAC ID Picker" dialog box

[Descriptions of the "Address Picker" dialog box]
ⓐ Indicates the address assigned to the master device
ⓑ Indicates the address assigned to the slave device
ⓒ Indicates the button that cancels the input in the dialog box.

(3) Double click the address to be changed
(4) The changed address is reflected in the slave node on the project explorer and topology.

Note

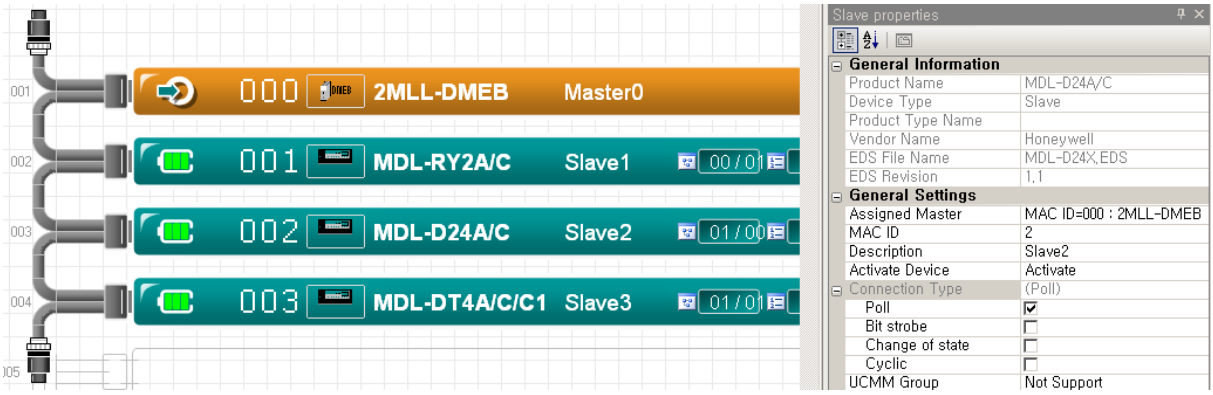
1) If you check the "Description number synchronization" check box at the bottom of the dialog box, the description is also changed automatically to match the changed address in case there is address information in the Description string.

5.26.2 Enter Slave Descriptions

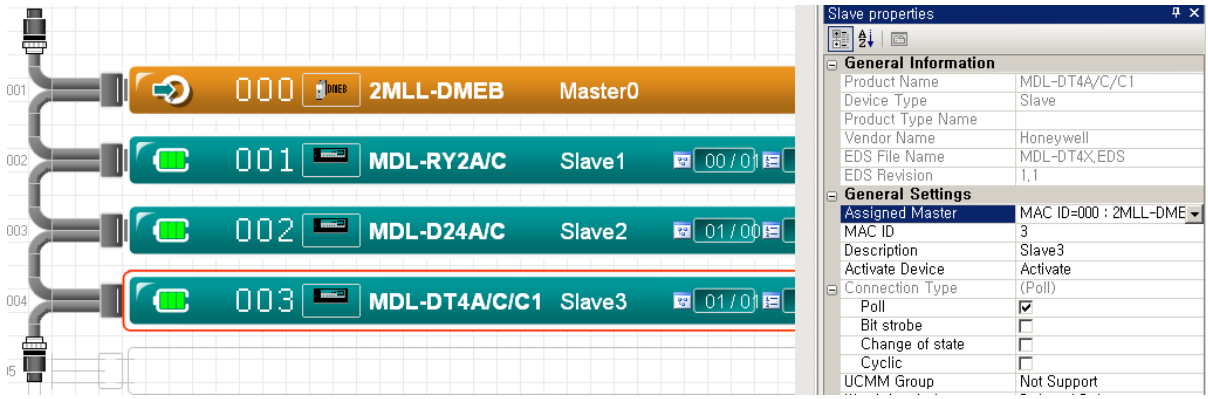
[Step]
(1) Enter a description in the Description item of the slave property window and press the [ENTER] key.
(2) The changed description is reflected in the slave node on the topology.

5.26.3 Specify Master Device

[Step]
(1) Changed the master from the Assigned Master item of the slave property window.
(2) The changed master is reflected in the topology of the project window and node on the project explorer.



[Figure 5.26.3] Screen of the case where the master address of the slave device with address 4 is 3



[Figure 5.26.4] Screen of the case where the master address of the slave device with address 4 is changed to 0

If the Assigned Master item of the slave property window is changed above, the OWNER (=Assigned Master) icon location of the project window changes, and the master-slave hierarchy of the project explorer changes.

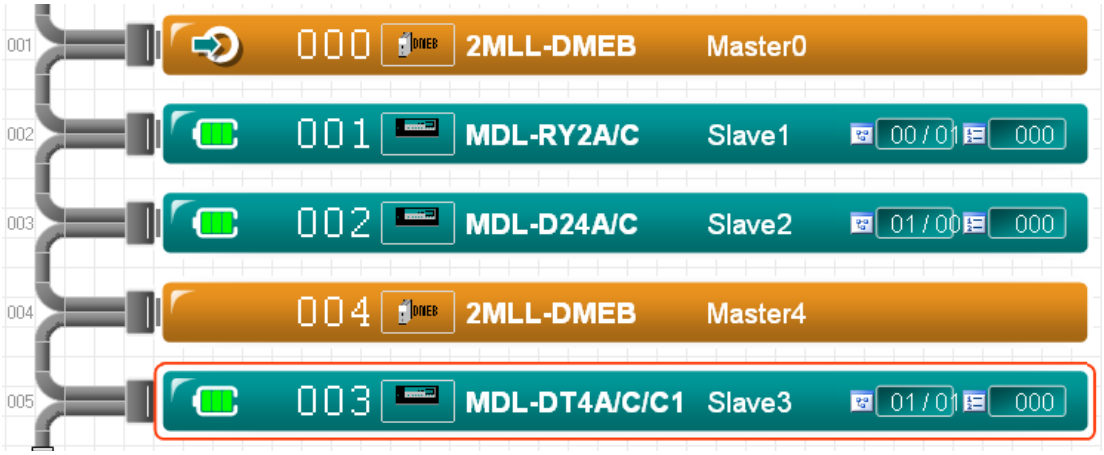
Note

1) Assigned Master refers to the master device to which the slave belongs, and it is abbreviated as "OWNER" in the Legend of the project window.

2) If the slave device is added to the topology, the Assigned Master of this slave is set to the master that has been most recently selected on the topology

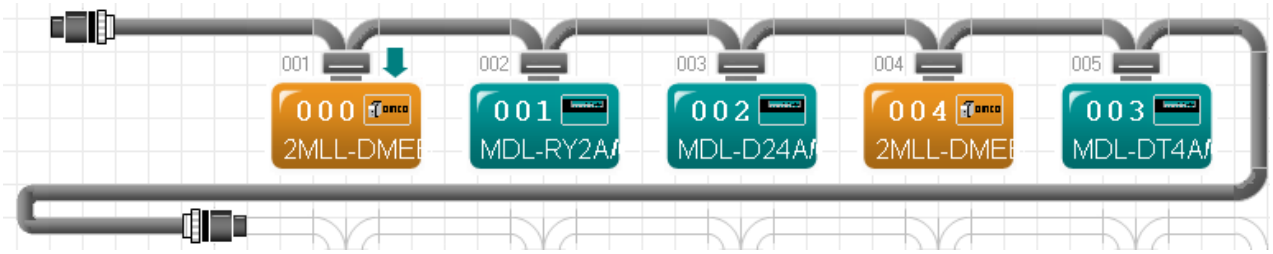
If you select the slave on the linear topology by clicking, you can determine which master has the slave selected through the owner (=Assigned Master) icon display of the master as follows

[Figure 5.26.5] Screen of the case where the slave device with address 2(which belongs to the master device whose address is 0) is selected

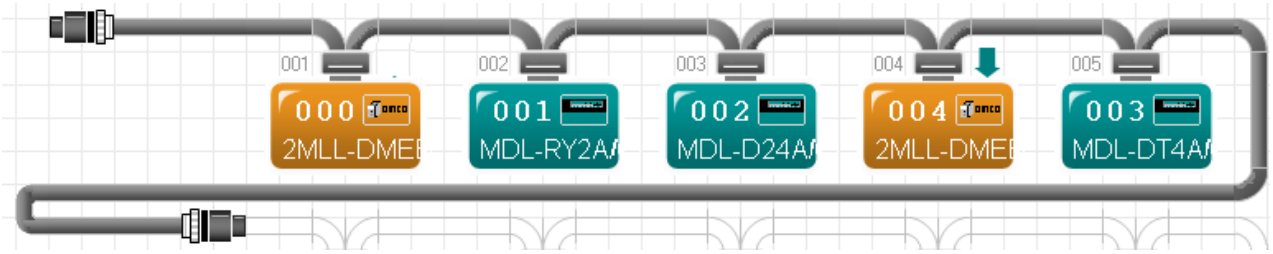


[Figure 5.26.6] Screen of the case where the slave device with address 4(which belongs to the master device whose address is 3) is selected

If you select the slave on the matrix topology, you can determine which master slave has the slave selected through the OWNER (=Assigned Master) Icon display of the master as follows.



[Figure 5.26.7] Screen of the case where the slave device with address 2 (which belongs to the master device whose address is 0) is selected



[Figure 5.26.8] Screen of the case where the slave device with address 4 (which belongs to the master device whose address is 3) is selected

Note

1) If the address of the master device is changed, the master address of the slave which belongs to this master is also changed, and the slave list is displayed in the output window.

5.26.4 Set Whether to Activate Device

5.26.4.1 Set whether to active the device in Property window

[Step]
(1) Change the setting on the Activate Device item of the slave property window
(2) The changed settings are reflected in the slave device on the topology.

5.26.4.2 Set whether to active the device in linear topology

[Step]
(1) Double click the Activate Device icon (battery shape) area in the topology
(2) The changed settings are reflected in the slave property window and slave device on the topology.

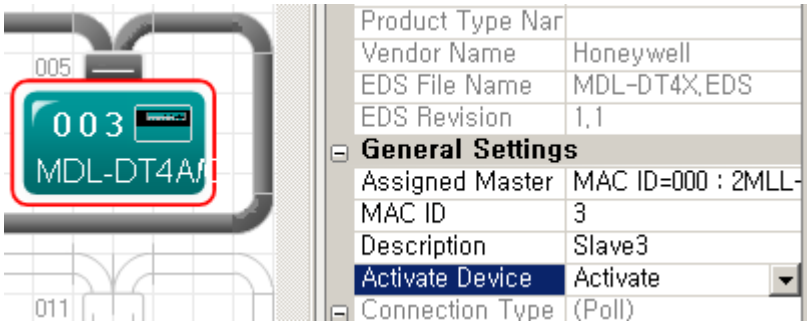
The slave device display format depending on the setting status of the Activate Device item in the linear topology is as follows.

[Figure 5.26.9] Slave device in case Activate Device item is set to “Activate”

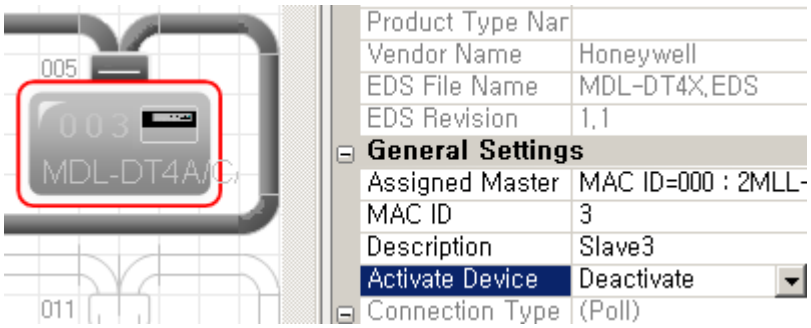
[Figure 5.26.10] Slave device in case Activate Device item is set to “Deactivate”

If the Activate Device item is set to “Activate’ as shown in the above figure, the Activate Device icon(battery shape)is displayed as a charged cyan slave device, and if it is set to “Deactivate”, the Activate Device icon(battery shape) is displayed as a discharged gray slave device.

The slave device display format depending on the setting status of the Activate Device item in the matrix topology is as follows.



[Figure 5.26.11] Slave device in case Activate Device item is set to “Activate”



[Figure 5.26.12] Slave device in case Activate Device item is set to “Deactivate”

As shown in the above figure, if the Activate Device item is set to “Activate”, it is displayed as a cyan slave device, and if it is set to “Deactivate”, it is displayed as a gray slave device.

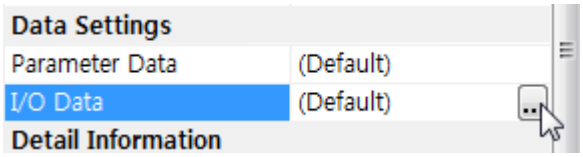
Note

1) Activate Device item settings through a double click in the matrix topology are not supported.

5.27 Slave I/O Modules

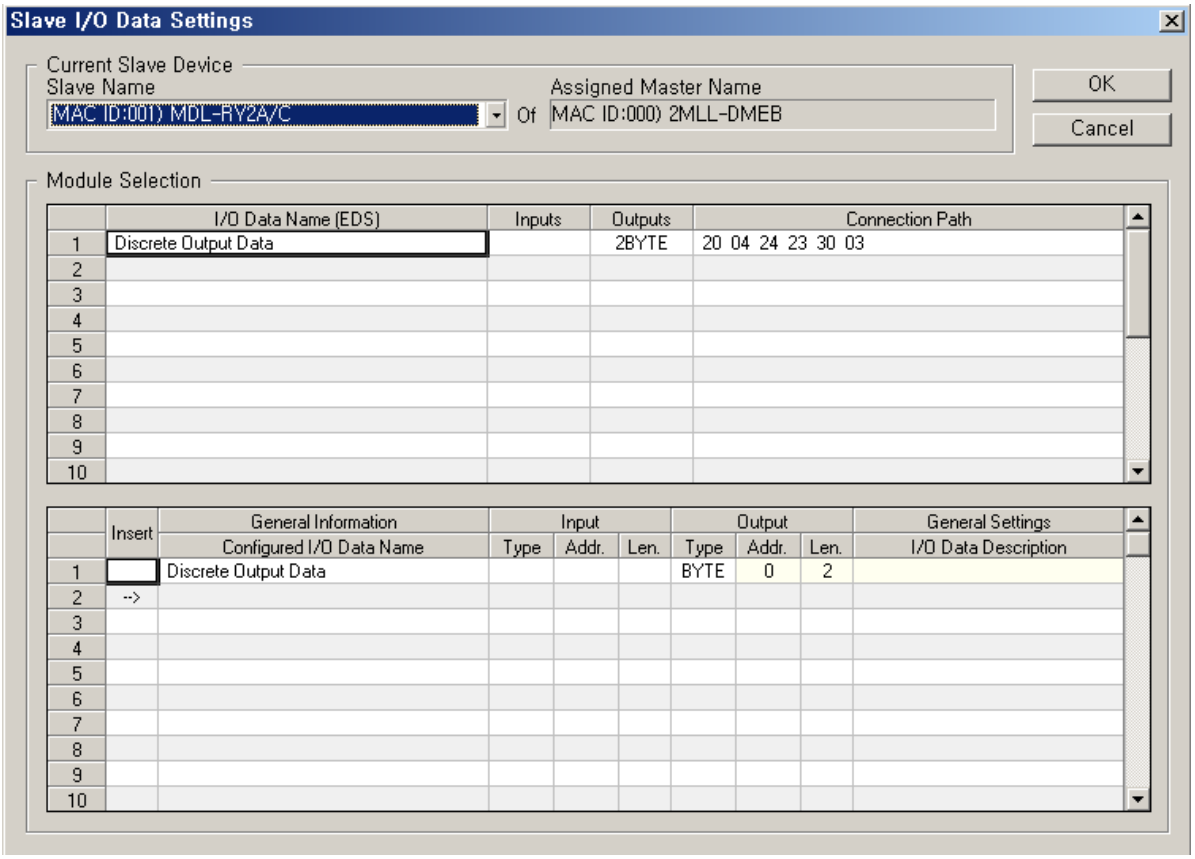
Set the I/O module of the currently selected device in the topology.

[Step]
(1) Select the slave device in the topology.
(2) Display the module setting dialog box with one of the following methods.
  (a) Select the Menu [Configuration] - [I/O Data Settings].
  (b) Double click the I/O Data area in the slave device on the topology.
  (c) Select I/O Data item in slave property window and press the right button as follows.



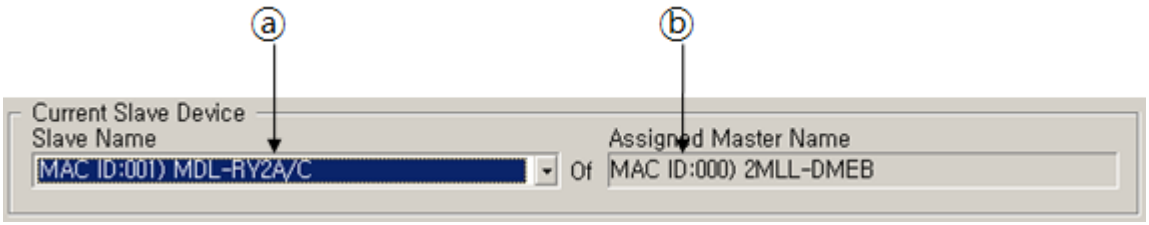
[Figure 5.27.1] I/O Data setting button in the slave property window

(3) The following “Slave I/O Data Settings” dialog box appears.



[Figure 5.27.2] “Slave I/O Data Settings” dialog box

The contents of the slave device information area in the dialog box are as follows.



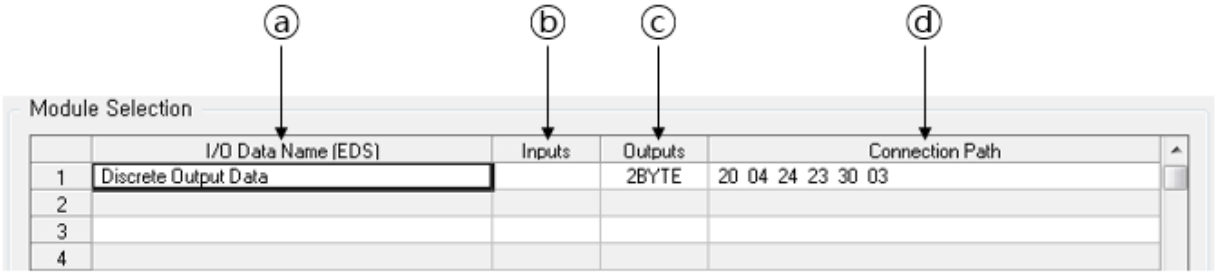
[Figure 5.27.3] Slave device information area

[Descriptions of the slave device information areas]

ⓐ Slave Name : Indicates the current slave device address and model name.

ⓑ Assigned Master Name : Indicates the address and model name of the master device to which the slave device belongs.

The contents of the selectable module area in the dialog box area as follows.



[Figure 5.27.4] Selectable module list area

[Descriptions of the selectable module list information]

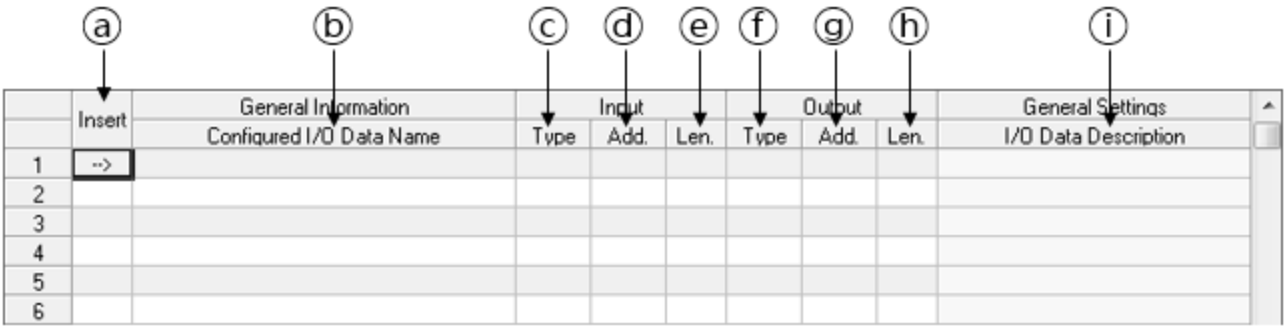
ⓐ I/O Data Name : Indicates model name.

ⓑ Inputs : Indicates input data type and length

ⓒ Outputs : Indicates output data type and length

ⓓ Connection Path : Indicates connection path

The contents of the module list area configured in the dialog box are as follows.



[Figure 5.27.5] Configured module list area

[Descriptions of the configured module list information]

ⓐ Insert : Indicates where to add (insert) the module.

ⓑ Configured I/O Data Name : Indicates the added module name

ⓒ Input Type : Indicates the input data type

ⓓ Input Addr. : Indicates the input data address
ⓔ Input Len. : Indicates the input data length
ⓕ Output Type : Indicates the output data type
ⓖ Output Addr. : Indicates the output data address
ⓗ Output Len : Indicates the output data length
ⓘ I/O Data Description : Indicates a description of the module.

(4) Select or enter the necessary items, and then press the “OK” button.

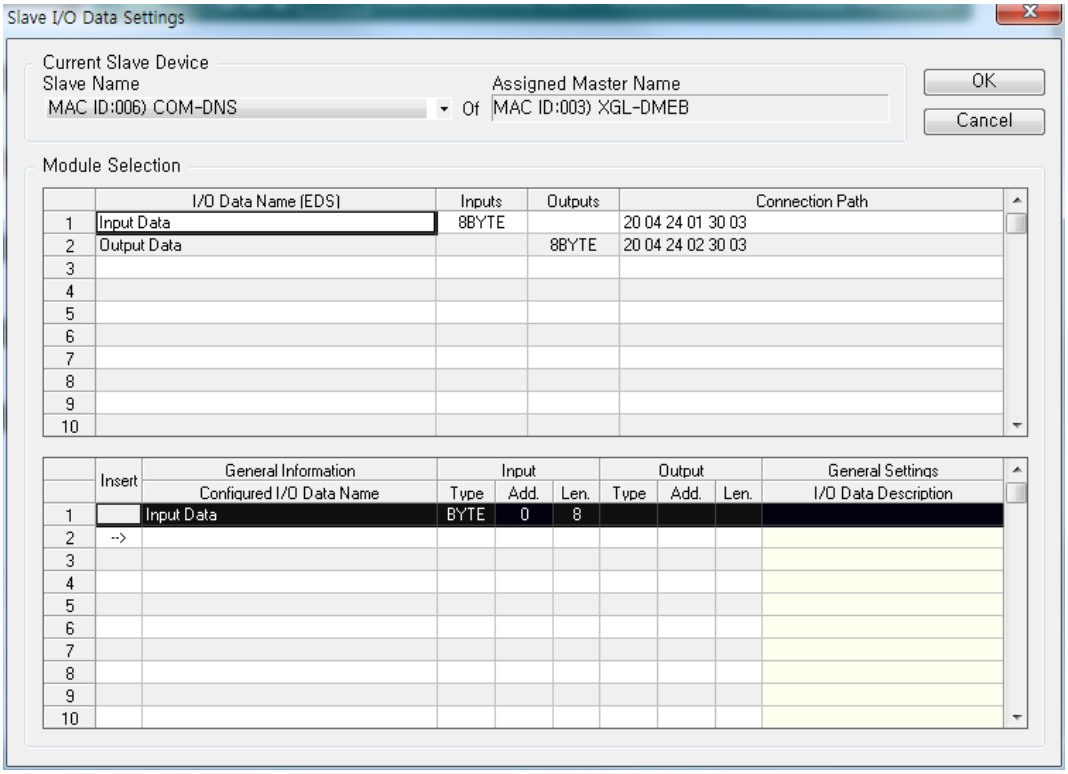
Note

1) Data in a table with vertical arrows at the top left of the sheet can be sorted by clicking on the column header.

5.27.1 Add Modules in Salve Device

Add module configuration information to the current slave device

[Step]
(1) Double click the module you want to add from the list of selectable modules at the top of the dialog box
(2) The module is added to the configured module list as below.



[Figure 5.27.6] Screen where “Input Data” module is configured in slave device

Note

1) The added module list is confirmed as the configuration information of the slave by pressing the “OK” button.

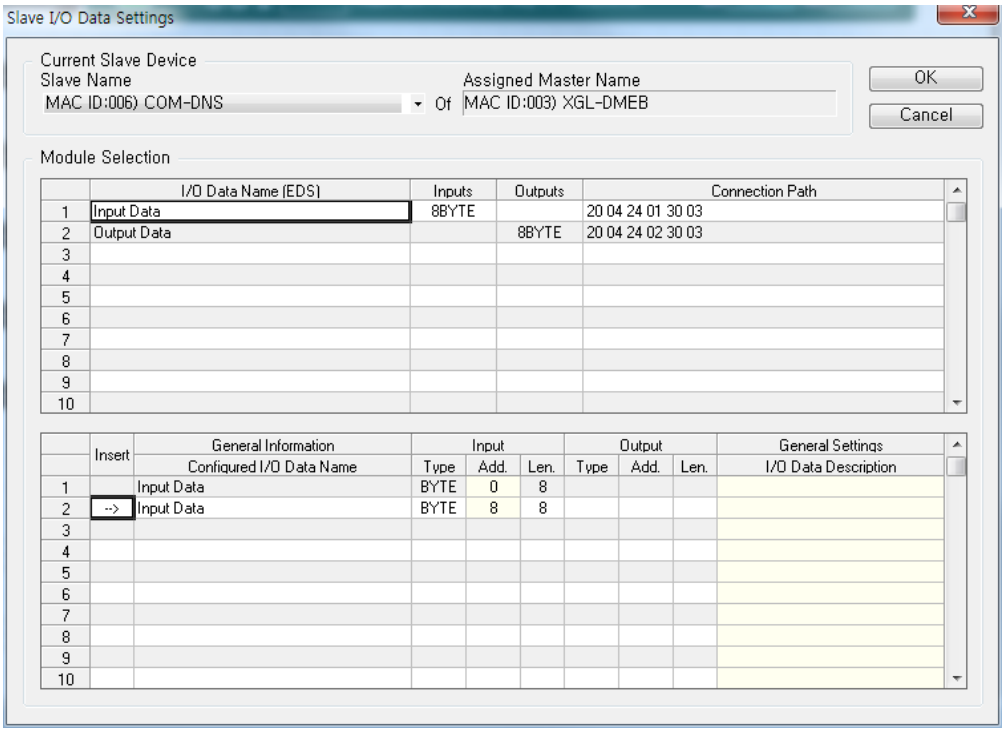
5.27.2 Insert Modules

Insert other module configuration information at a specific position of the module configuration information.

[Step]

(1) Click the cell of the position at which you want to insert a module in the Insert column rows of the configured module list at the bottom of the dialog box.

.



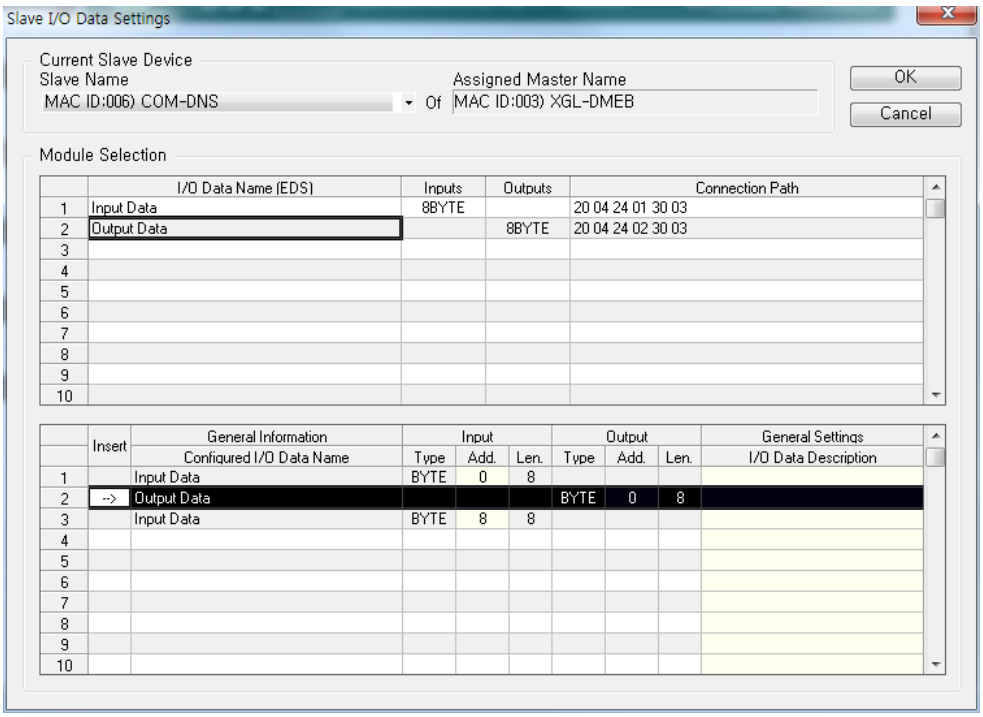
[Figure 5.27.7] Screen showing specified insertion position between two “Input Data” modules

Note

1) If the insertion position is specified as above, the position where the module is added is between the modules with the slot number 1 and the slot number 2.

(2) Double click the module you want to add from the list of selectable modules at the top of the dialog box.

(3) The module is added to the configured model list at the bottom as show below.



[Figure 5.27.8] Screen where “Output Data” module is configured between two “Input Data”modules

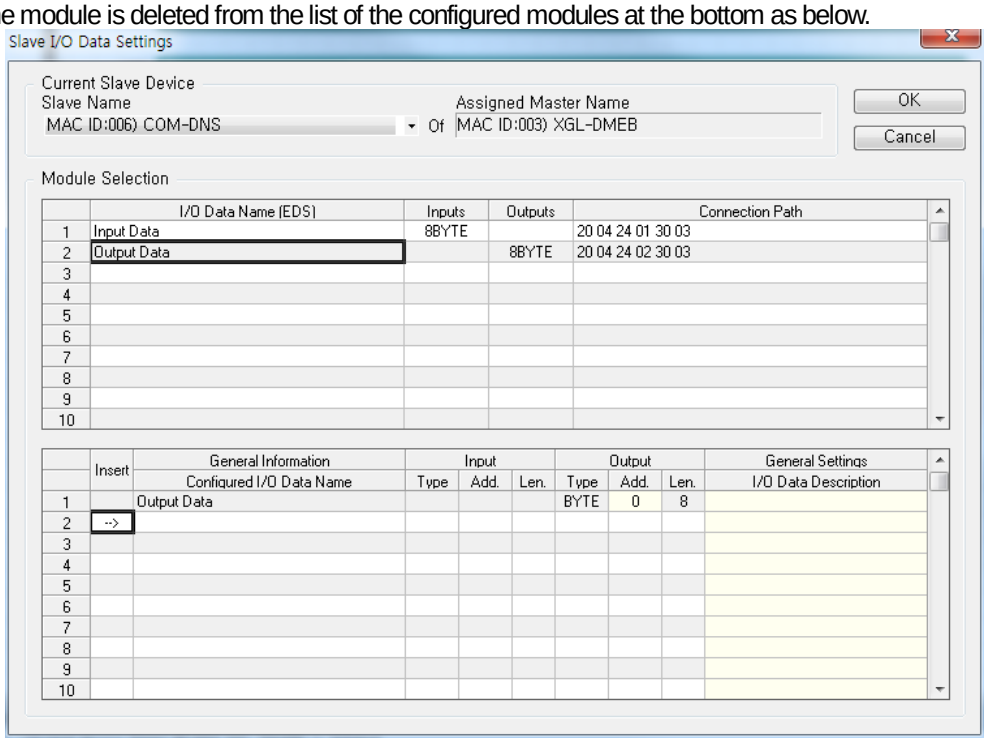
5.27.3 Delete Modules

Remove module configuration information from the current slave device.

[Step]

(1) Double click the module you want to delete from the list of configured models at the bottom of the dialog box.

(2) The module is deleted from the list of the configured modules at the bottom as below.



[Figure 5.27.9] Screen where the two “Input Data” modules configured in the previous screen are deleted

Note

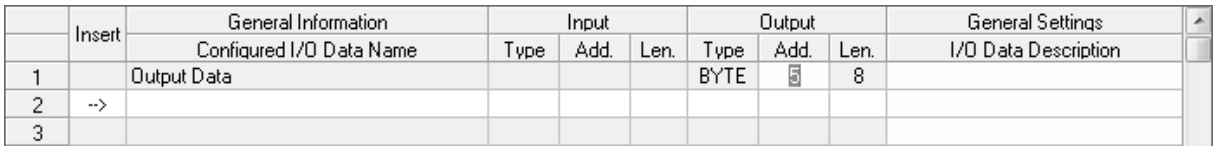
1) The modified module list information is confirmed as slave configuration information by pressing the “OK” button.

5.27.4 Modify Module I/O Addresses

Modify the module I/O address on the configured module list.

[Step]

(1) Double click the module address area on the configured module list and enter a new value.



[Figure 5.27.10] Example of module I/O address modification screen

Note

1) Select the Menu [Tools] - [Slave Module Address Table] to check whether there is duplication between module I/O addresses set between each slave device.

5.27.5 Modify Module I/O Length

Modify the length on the module in the configured module list.

[Step]
(1) Double click the Len. Area on the configured model list and enter a new value.

	Insert	General Information	Input			Output			General Settings
		Configured I/O Data Name	Type	Addr.	Len.	Type	Addr.	Len.	I/O Data Description
1		Discrete Input Data	BYTE	0	2				
2		Discrete Output Data				BYTE	0	2	

[Figure 5.27.11] Example of module I/O length modification screen

5.27.6 Enter Module Description

Enter a description in the module on the configured module list.

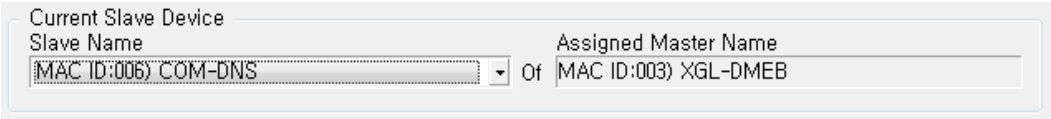
[Step]
(1) Double click the module description area on the configured module list and enter a new value.

	Insert	General Information	Input			Output			General Settings
		Configured I/O Data Name	Type	Add.	Len.	Type	Add.	Len.	I/O Data Description
1		Output Data				BYTE	5	8	My First Module
2	-->								
3									

[Figure 5.27.12] Example of module description input screen

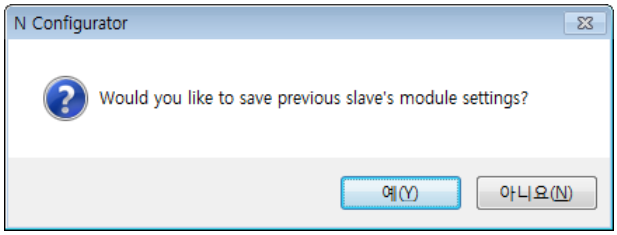
5.27.7 Change Slave Device

If there are multiple slaves in the topology, you can change the “Current Slave Device” at the top of the “Slave Module Settings” dialog box to set the I/O modules of other slave devices.



[Figure 5.27.13] Current slave device selection screen

When changing to another slave, a dialog box asking whether to save the previous settings is displayed as follows.



[Figure 5.27.14] Dialog box asking whether to save previous settings

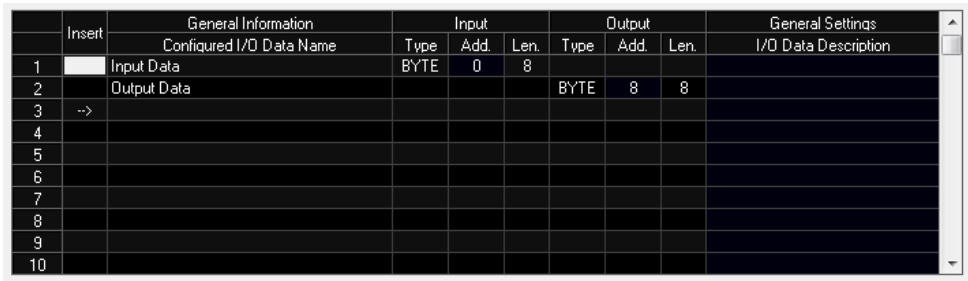
Press the “Yes” button to save the I/O module settings of the current slave and change slave, and press the “No” button to change slave without saving the settings.

5.27.8 Copy Settings

Copy the contents set in “Slave Module Settings” dialog box to the clipboard.

[Step]

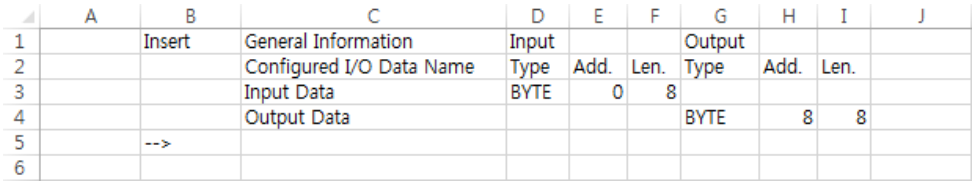
(1) Select the desired information from the displayed contents and highlight it, and then press the shortcut key <CTRL+C>.



	Insert	General Information	Input			Output			General Settings
		Configured I/O Data Name	Type	Add.	Len.	Type	Add.	Len.	I/O Data Description
1		Input Data	BYTE	0	8				
2		Output Data				BYTE	8	8	
3	-->								
4									
5									
6									
7									
8									
9									
10									

[Figure 5.27.15] Screen where the entire data is selected by pressing header at the left edge of sheet

(2) Press the shortcut key <CTRL+V> in the required program to paste the copied contents.



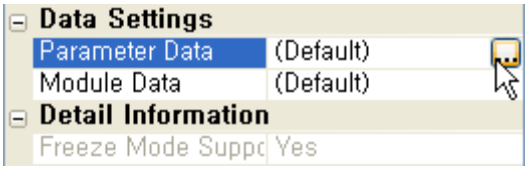
	A	B	C	D	E	F	G	H	I	J
1		Insert	General Information	Input			Output			
2			Configured I/O Data Name	Type	Add.	Len.	Type	Add.	Len.	
3			Input Data	BYTE	0	8				
4			Output Data				BYTE	8	8	
5		-->								
6										

[Figure 5.27.16] Example of pasting copied data into Excel

5.28 Slave Parameters

Set the slave and module level parameters of the currently selected slave device in the topology.

[Step]
(1) Select the salve device in the topology.
(2) Display the parameter setting dialog box with one of the following methods.
(a) Select the Menu [Configuration] - [Parameter Settings].
(b) Select Parameter Data item in slave property window and press the right button as follows.

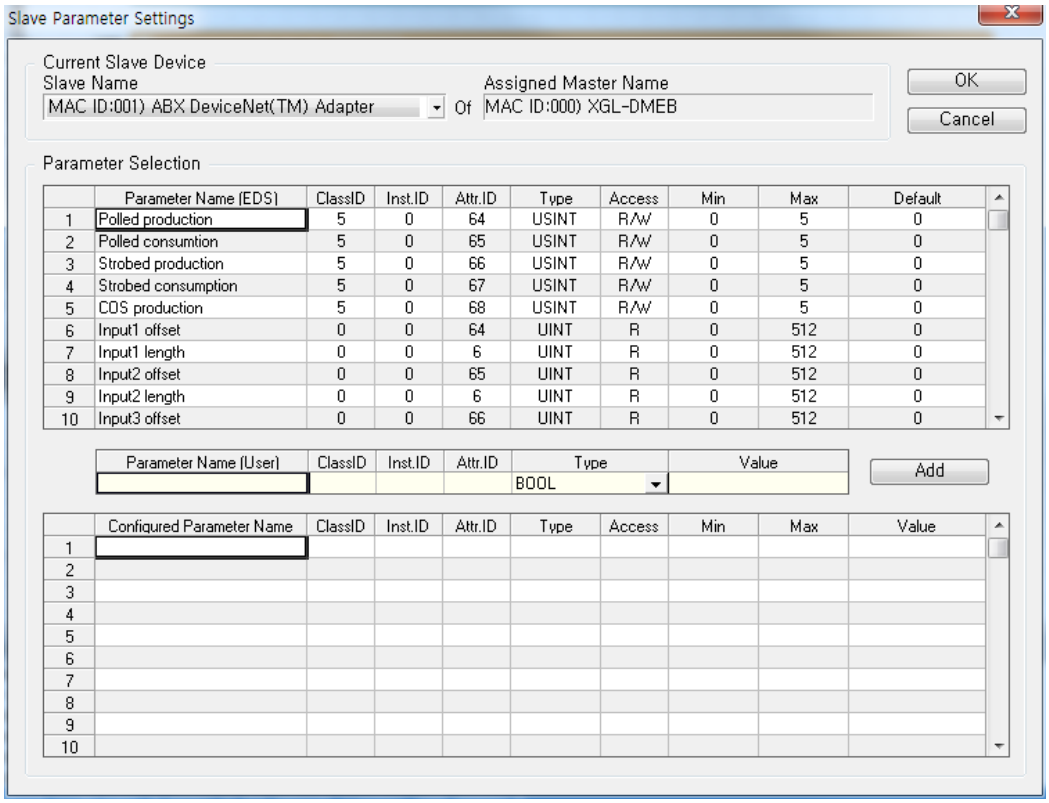


[Figure 5.28.1] Parameter setting button in slave property window

Note

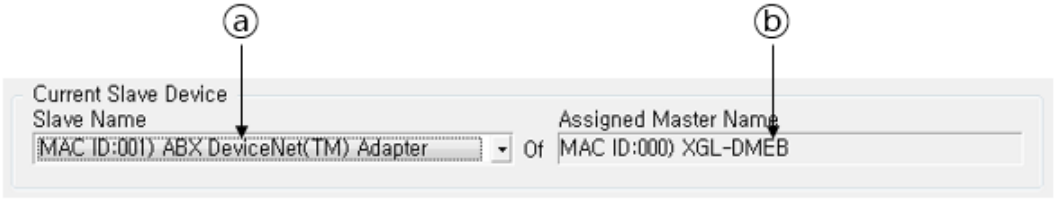
1) The configured slave device has slave and module unit operating parameter data analyzed from the EDS file. N CONFIGURATOR displays a table listing the same parameter data in byte order and a table that structurally shows the details of the parameter at the same time.

(3) The following “Slave Parameter Settings” dialog box appears.



[Figure 5.28.2] “Slave Parameter Settings” dialog box

The contents of the slave device information area in the dialog box are as follows.



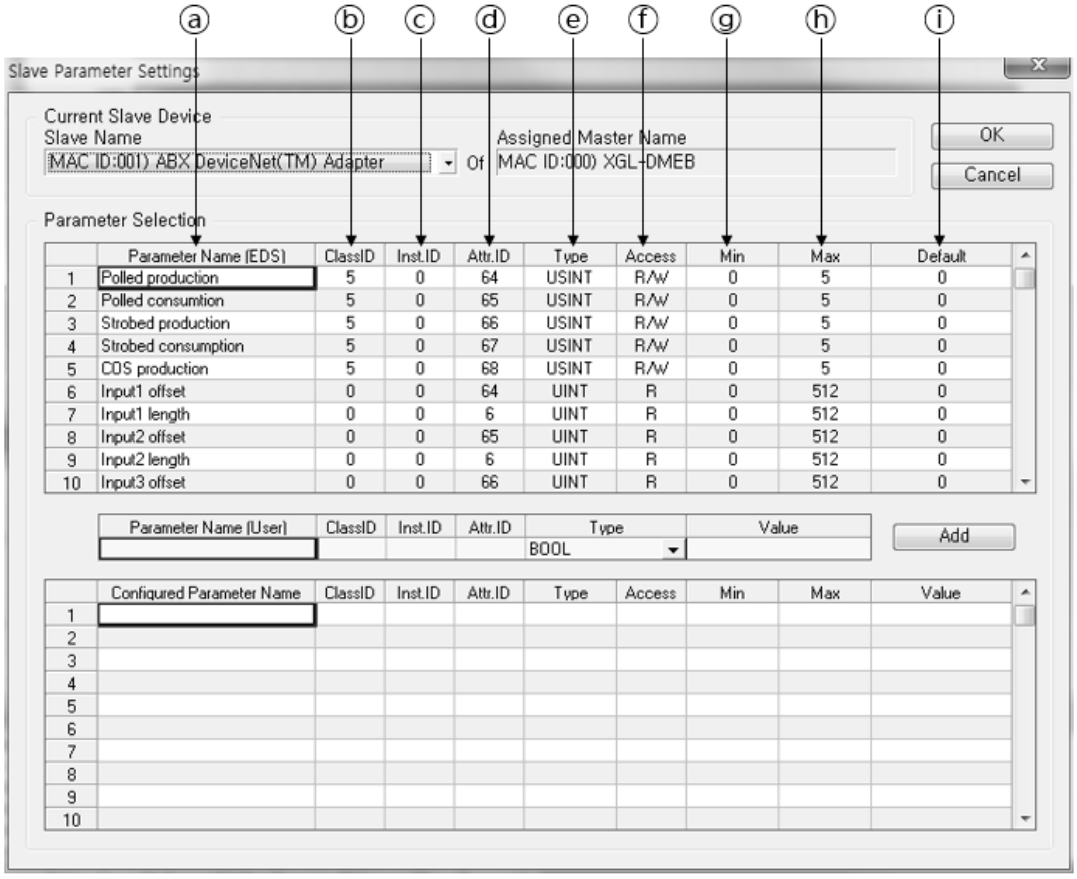
[Figure 5.28.3] Slave device information area

[Descriptions of the slave device information areas]

ⓐ Slave Name : Indicates the address and model name of the current slave device.

ⓑ Assigned Master Name : Indicates the address and model name of the master device to which the slave device belongs.

The contents of the parameter information (Byte Ordered View) area displayed in the byte order in the dialog box are as follows.



[Figure 5.28.4] Parameter Selection area

[Descriptions of the Parameter Selection areas]

ⓐ Parameter Name (EDS) : Indicates the parameter name defined in EDS

ⓑ Class ID : Indicates the Class ID of the parameter

ⓒ Inst.ID : Indicates the Instance ID of the parameter

ⓓ Attr.ID : Indicates the Property ID of the parameter

ⓔ Type : Indicates the Data Type of parameter value

ⓕ Access : Indicates the attributes of the parameter
ⓖ Min : Indicates the minimum value of the parameter
ⓗ Max : Indicates the maximum value of the parameter
ⓘ Default : Indicates the default value of the parameter

(4) Select or enter the required items and then press the “OK”button.

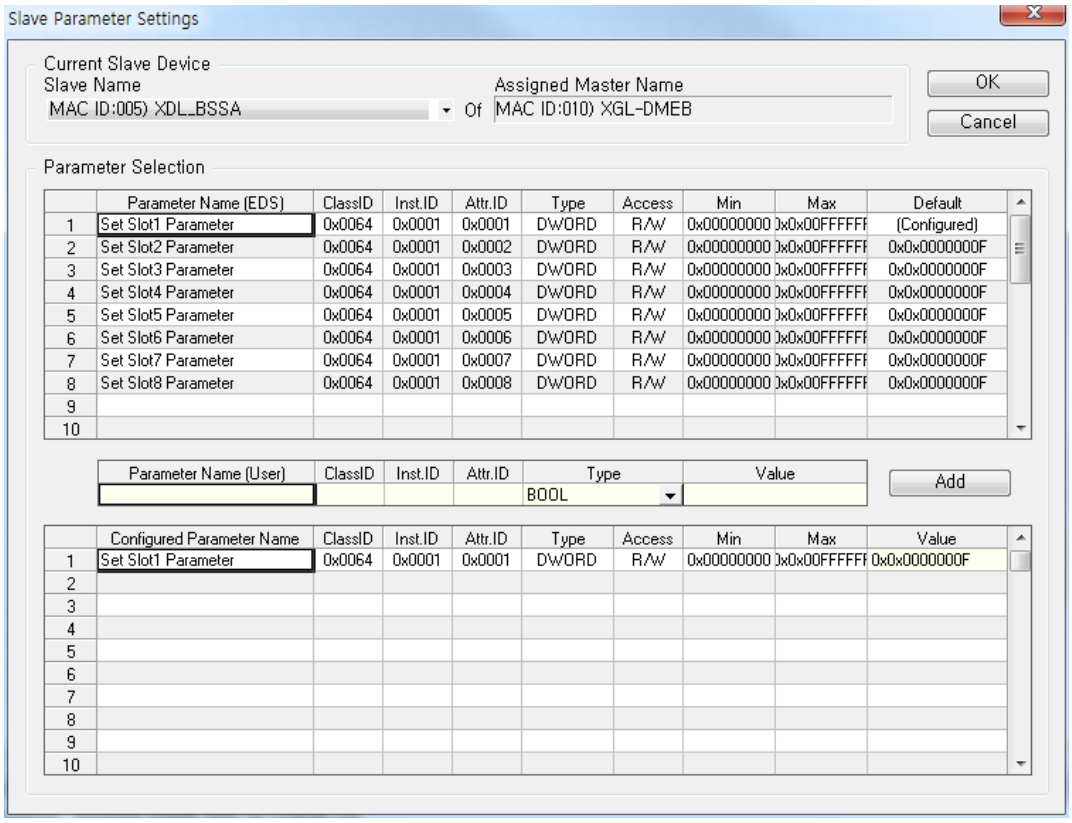
Note

1) For keyboard input items, the background of the input area is displayed in yellow.

5.28.1 Add Parameters in Slave Device

Add module parameter information to the current slave device.

[Step]
(1) Double click the module you want to add from the list of selectable modules at the top of the dialog box.
(2) The module is added to the selected parameter list at the bottom as shown below.



[Figure 5.28.5] Screen where “Set Slot1 Parameter” module is added to slave device

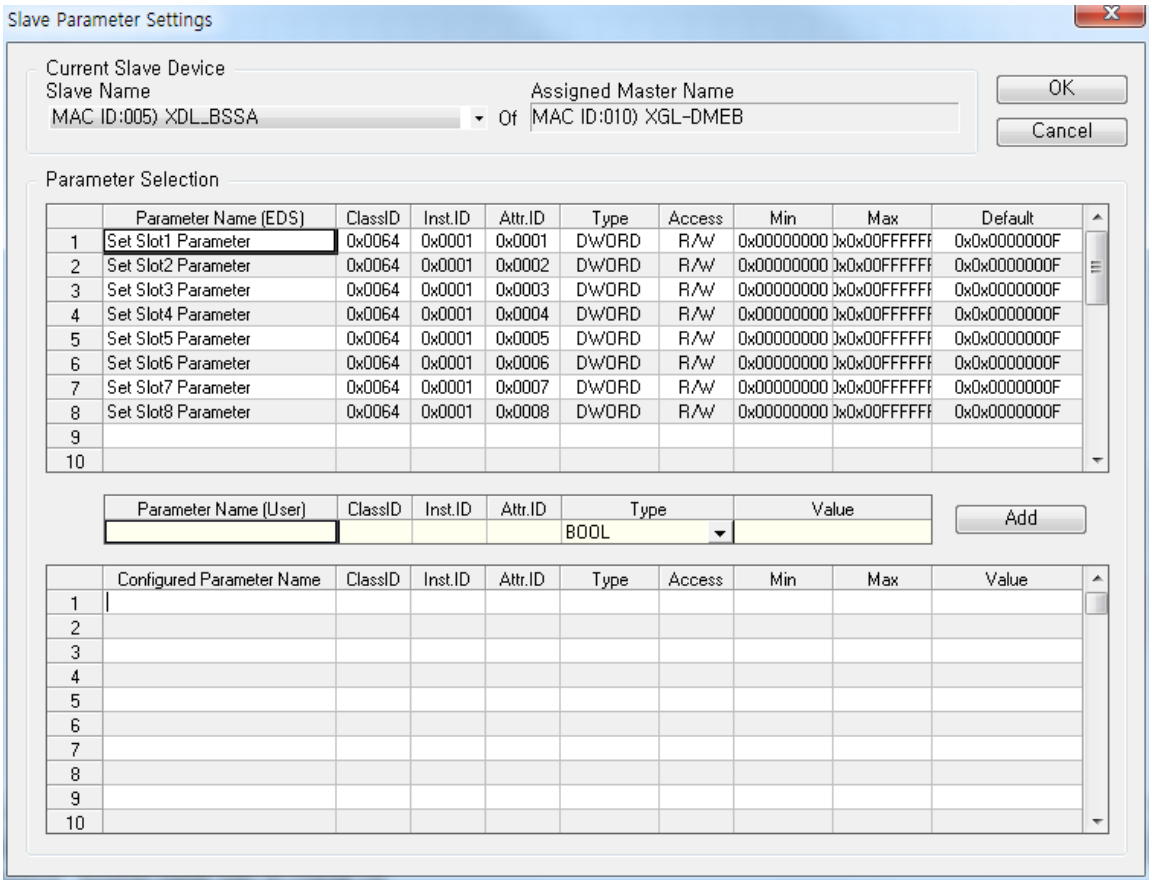
5.28.2 Delete Parameters

Remove module parameter information from the current slave device.

[Step]

(1) Double click the module you want to delete from the list of selected modules at the bottom of the dialog box.

(2) The module is deleted from the list of selected parameters at the bottom as follows.

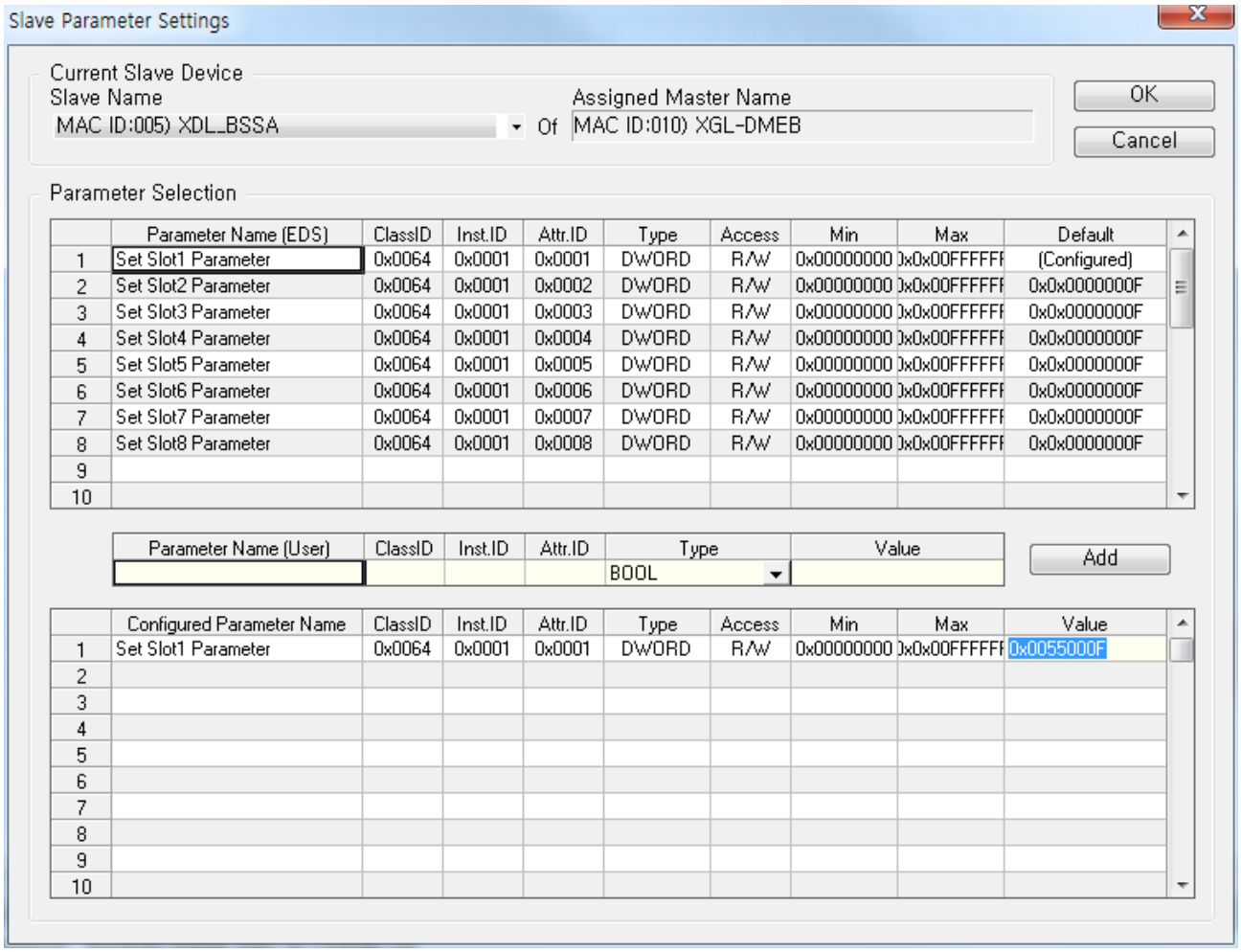


[Figure 5.28.6] Screen where one “Set Slot1 Parameter” module selected from the previous screen

5.28.3 Enter Parameter Values.

Modify the parameter data on the selected parameter list.

[Step]
(1) Double click the value area on the selected parameter list and enter a new value.



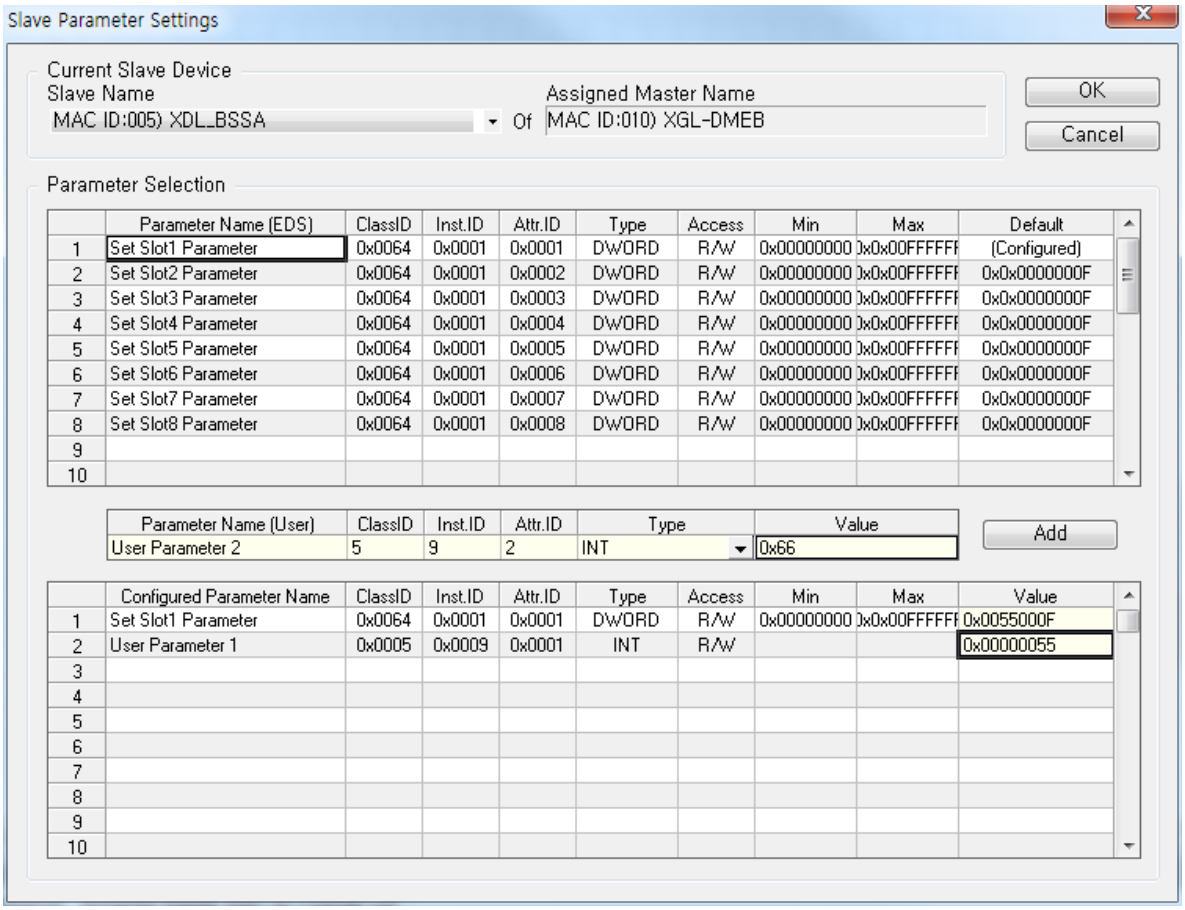
[Figure 5.28.7] Example of module parameter data modification

5.28.4 Add User-Defined Parameters

Set parameters with Class ID, Instance ID and Property ID defined by a user.

[Step]

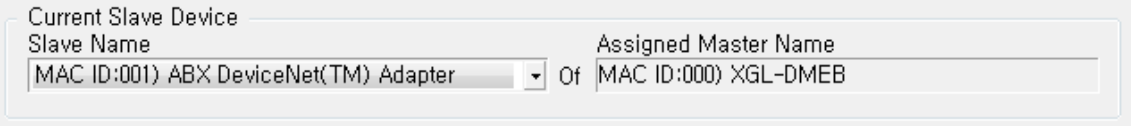
(1) Enter a value in the user-defined area of Slave Parameter Settings and click the Add button to set the parameter list.



[Figure 5.28.8] Example of adding user-defined parameters

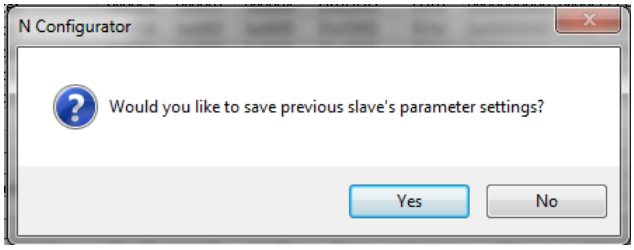
5.28.5 Change Slave Devices

If there are multiple slaves in the topology, you can change the “Current Device” at the top of the “Slave Parameter Settings” dialog box to set the parameters of other slave devices.



[Figure 5.28.9] Current slave device selection screen

When changing to another slave, a dialog box asking whether to save the previous settings is displayed as follows.



[Figure 5.28.10] Dialog box asking whether to save previous settings

Press the “Yes” button to save the parameter settings of the current slave and change the slave. Press the “No” button to change the slave without saving the settings.

5.28.6 Copy Settings

Copy the contents set in “Slave Parameter Settings” dialog box to the clipboard.

[Step]

(1) Select the desired information from the displayed contents and highlight it, and then press the shortcut key <CTRL+C>.

	Configured Parameter Name	ClassID	Inst.ID	Attr.ID	Type	Access	Min	Max	Value
1	Polled production	5	0	64	USINT	R/W	0	5	2
2	Strobed production	5	0	66	USINT	R/W	0	5	1
3	Strobed consumption	5	0	67	USINT	R/W	0	5	1
4									
5									
6									
7									
8									
9									
10									

[Figure 5.28.11] Screen where the entire data is selected by pressing header at the left edge of sheet

(2) Press the shortcut key <CTRL+V> in the required program and past the copied contents.

	A	B	C	D	E	F	G	H	I	J
1		Configured Parameter Name	ClassID	Inst.ID	Attr.ID	Type	Access	Min	Max	Value
2		Polled production	5	0	64	USINT	R/W	0	5	2
3		Strobed production	5	0	66	USINT	R/W	0	5	1
4		Strobed consumption	5	0	67	USINT	R/W	0	5	1

[Figure 5.28.12] Example of pasting copied data into Excel

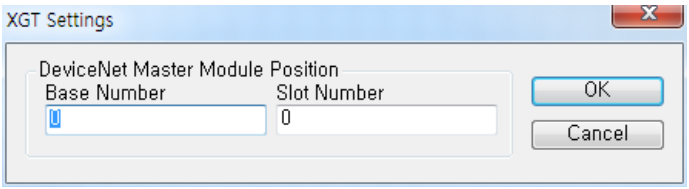
5.29 Communication Settings

This chapter describes how to set the communication environment with the master device, convert the configured contents into binary images, download them to the master device, or upload the binary images in the master device to the N CONFIGURATOR.

5.29.1 Communication with Master Module

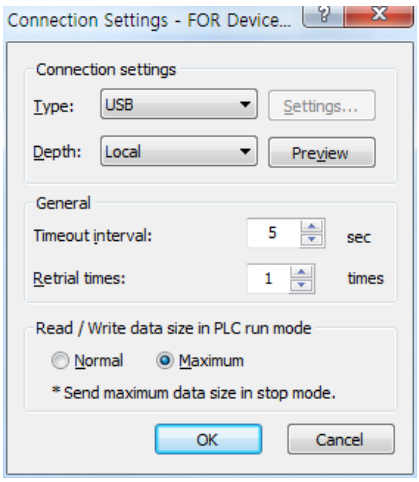
Set the communication environment with the installed master module.

[Step]
(1) Select the Menu [Communication] - [Settings].
(2) The following “Communication Settings” dialog box appears.



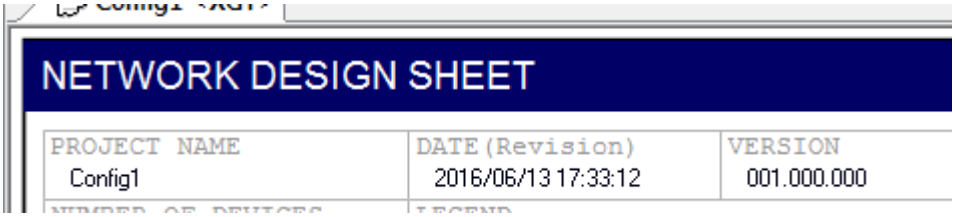
[Figure 5.29.1] “Communication Settings” dialog box

(3) Enter the base number and slot number of the DeviceNet communication module you want to connect and press the “OK” button.
(4) The following “Connection Settings” dialog box appears.

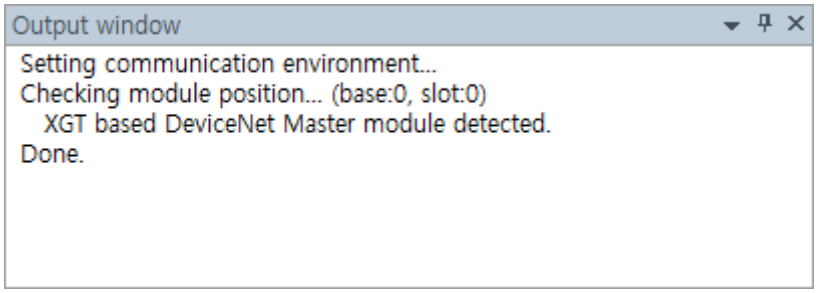


[Figure 5.29.2] “Online Settings” dialog box

(5) An indication that the communication environment is set is displayed in the current project window and output window as follows.



[Figure 5.29.3] Screen showing whether or not to set ML200 communication (arrow) in the project window title



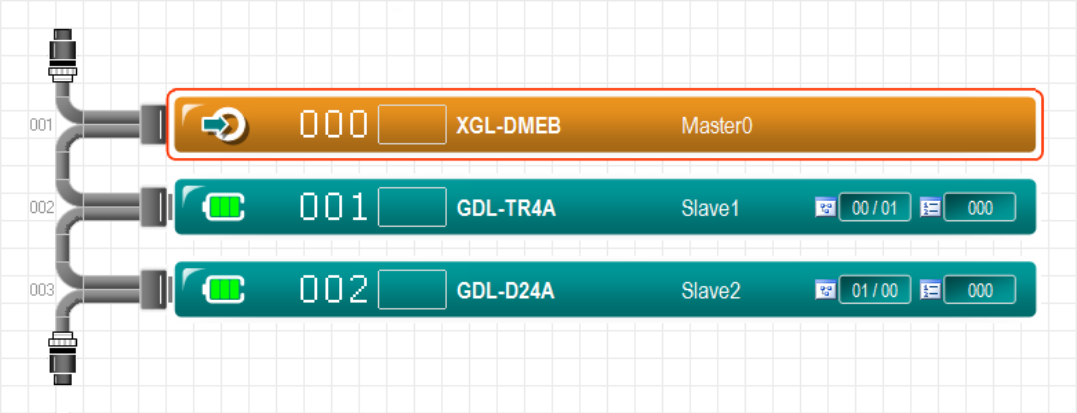
[Figure 5.29.4] Screen showing completion of ML200 communication settings in output window

5.30 Download Binary Images

Convert the configuration contents of the current project window into a binary image and transmit (download) it to the master module.

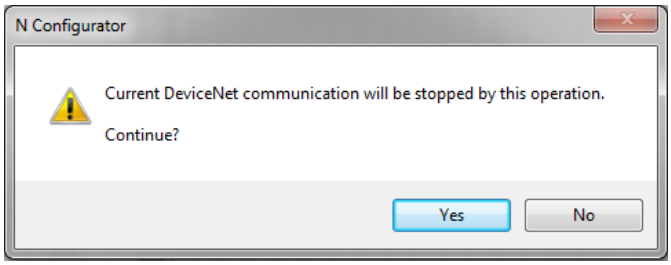
Note

1) To execute the download, a configuration consisting of one master device and one or more slave devices should be created in the topology as follows.



[Figure 5.30.1] Example of downloadable configuration

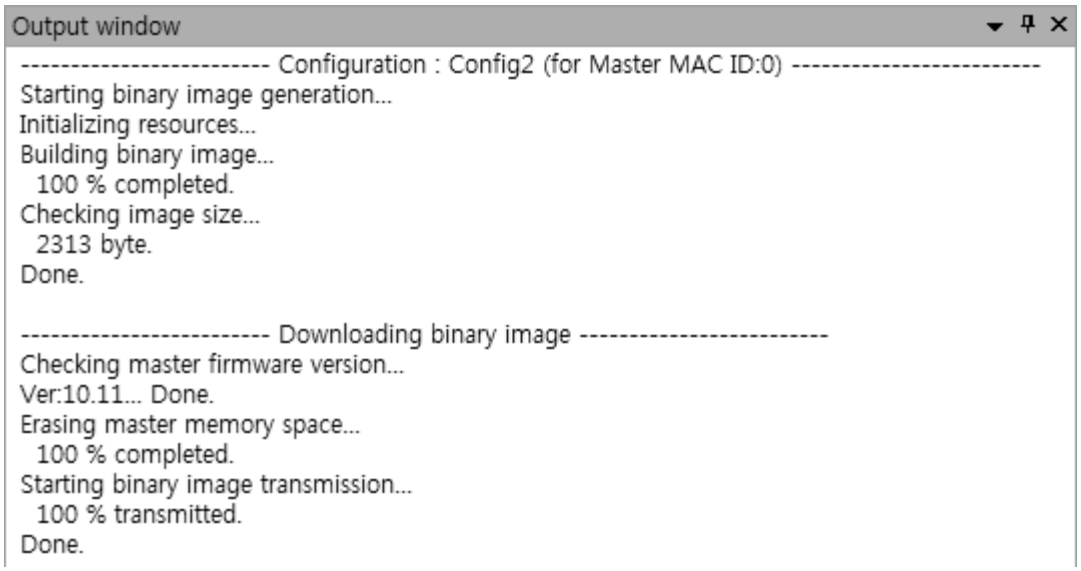
[Step]
(1) Select the master to transmit the binary image on the topology.
(2) Select the Menu [Communication] - [Download Image].
(3) If this function is executed as below, a dialog box to inform you that the communication will be stopped appears if there is the currently active DeviceNet communication.



[Figure 5.30.2] Dialog box to inform you that the communication will be stopped if there is currently active PROFIBUS communication

(4) If you can proceed with the download, press the “Yes” button.

(5) The binary image is created and downloaded, and the status is displayed in the output window as follows.



[Figure 5.30.3] Output window display contents when downloading binary images

Note

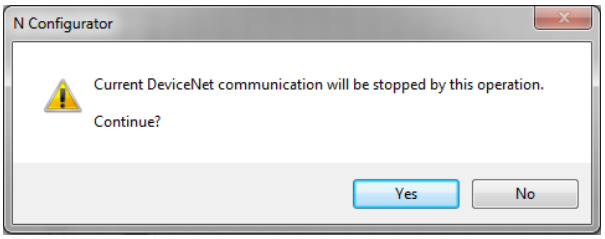
1) If the communication environment is not set in advance, the “Communication Settings” dialog box appears before downloading. Refer to Section 10.1 for methods on how to set the communication environment.

5.31 Download Binary Files

Transmit (download) the binary image saved in the file format to the master module.

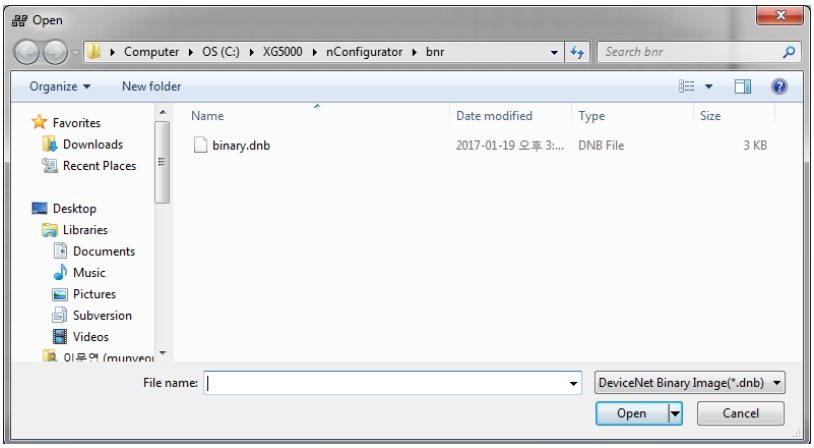
> **Note**
>
> 1) Refer to Section 5.3 for methods on how to save the binary image to a file.

[Menu]
(1) Select the Menu [Communication] - [Download Image From File].
(2) If this function is executed as follows, a dialog box to inform you that the communication will be stopped appears if there is the currently active DeviceNet communication.



[Figure 5.31.1] Dialog box to inform you that the communication will be stopped if there is the currently active DeviceNet communication

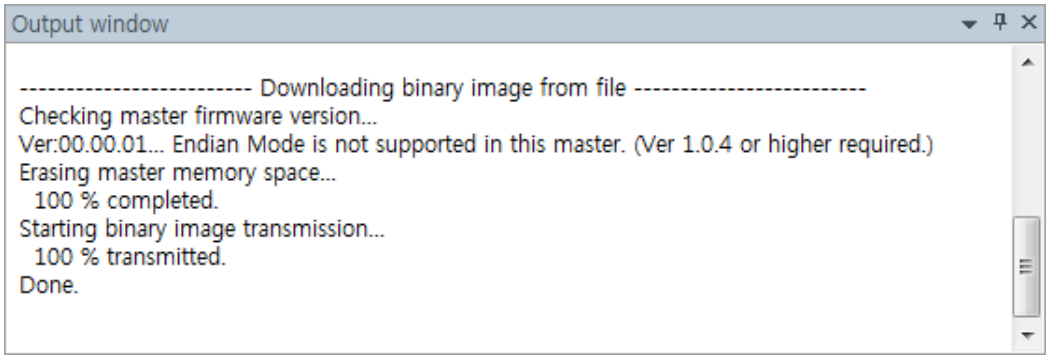
(3) If you can proceed with the download. Press the “Yes” button.
(4) The following “Open” dialog box appears.



[Figure 5.31.2] “Open” dialog box

(5) Select the binary file (*.DNB) and press the “Open” button.

(6) The download progresses, and the status is displayed in the output window as follows.



[Figure 5.31.3] Output window display contents when downloading binary file

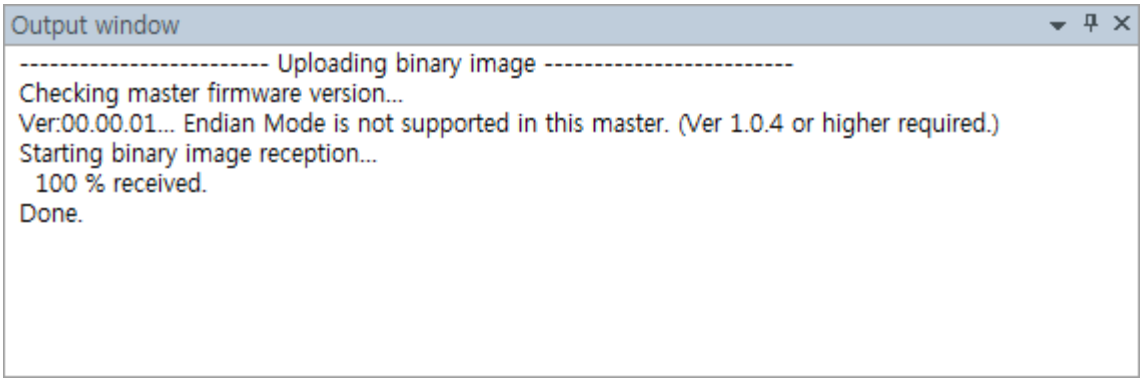
Note

1) If the communication environment is not set in advance, the "Communication Settings" dialog box appears before downloading. Refer to Section 5.29 for methods on how to set the communication environment.

5.32 Upload Binary Images

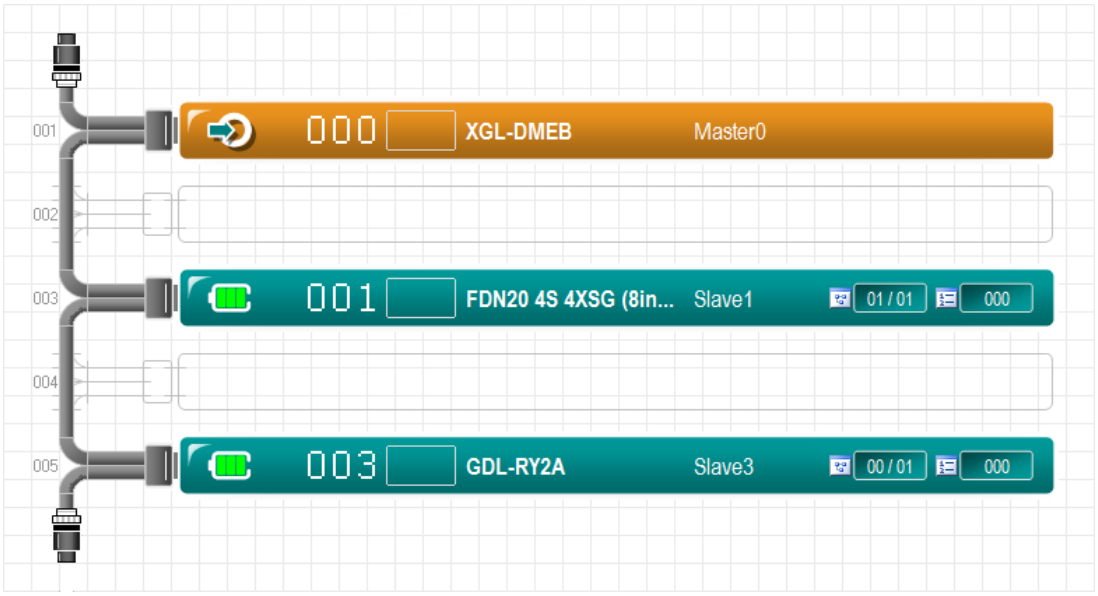
Read binary images from the master module.

[Step]
(1) Select the Menu [Communication] - [Upload Image].
(2) The upload progresses, and the status is displayed in the output window as follows.



[Figure 5.32.1] Contents displayed in output window in uploading binary images

(3) A new project window is opened, and the uploaded binary image is converted into the configurable topology information and displayed as follows.



[Figure 5.32.2] Example of screen where the uploaded binary image is displayed in topology

Note

1) If the communication environment is not set in advance, the "Communication Settings" dialog box appears before uploading. Refer to Section 10.1 for methods on how to set communication environment.

5.32.1 Process Devices without EDS Files

The information displayed on the screen is completed by combining the device information on the binary image and the detailed EDS information about the device which is previously analyzed by the N CONFIGURATOR, and therefore if a device which is not provided with EDS is present on the binary image, it is mapped to Generic.EDS and configured with the name of “I/O System” as below.

[Figure 5.32.3] Screen where a device not provided with EDS is configured

5.33 Master Slave Control

This unit describes how to stop or resume communication between master and slave, and obtain master information.

5.33.1 Start Master Slave Communication

Start communication between master and slave.

[Step]
(1) Select the Menu [Diagnostics] - [Start Communication].
(2) The execution results of the command are displayed in the output window as follows.

[Figure 5.33.1] Output window that shows the execution results of communication start function

5.33.2 Stop Master Slave Communication

Stop communication between master and slave.

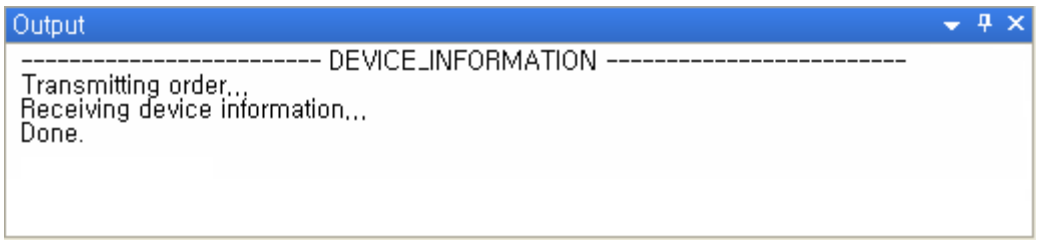
[Step]
(1) Select the Menu [Diagnostics] - [Stop Communication].
(2) The execution results of the command are displayed in the output window as follows.

[Figure 5.33.2] Output window that shows the execution results of communication stop function

5.33.3 View Master Device Information

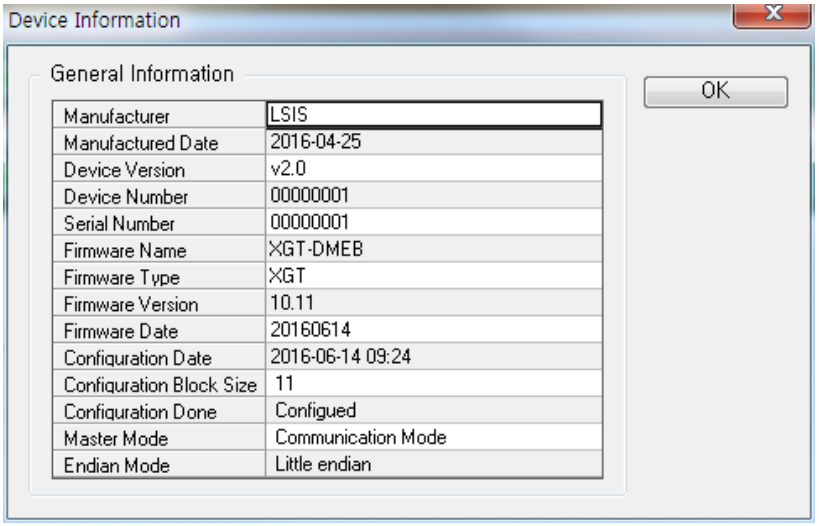
Display information embedded in the master device.

[Step]
(1) Select the Menu [Diagnostics] - [Device Information].
(2) The execution results of the command are displayed in the output window as follows.



[Figure 5.33.3] Output window that shows the execution results of device information view function

(3) The "Device Information" dialog box showing the basic information obtained from the master device appears as follows.



[Figure 5.33.4] "Device Information" dialog box

[Descriptions of the "Device Information" dialog box display items]
(a) 1st row - Manufacturer : Master module manufacturer name
(b) 2nd row - Manufactured Date : Date of manufacture of master hardware module
(c) 3rd row - Device version : Master hardware module version
(d) 4th row - Device Number : Master hardware module number
(e) 5th row - Serial Number : Serial number of Pnet module
(f) 6th row - Firmware Name : Name of operating system mounted on the master module
(g) 7th row - Firmware Type : Type of operating system mounted on the master module (name of support PLC)
(h) 8th row - Firmware Version : Version of operating system mounted on the master module
(i) 9th row - Firmware Date : Date of version release of operating system mounted on the master module
(j) 10th row - Configuration Date : Date on which configuration information is downloaded
(k) 11th row - Configuration Block Size : Size of downloaded configuration information
(l) 12th row - Configuration Done : Whether the configuration information is loaded in the master module
(m) 13th row - Master Mode : Whether the current operation status of the master module is the auto scan mode, which is the data communication mode
(n) 14th row – Endian Mode : I/O data loading format of the master module

(4) Confirm the information and press the "OK" button to close the dialog box.

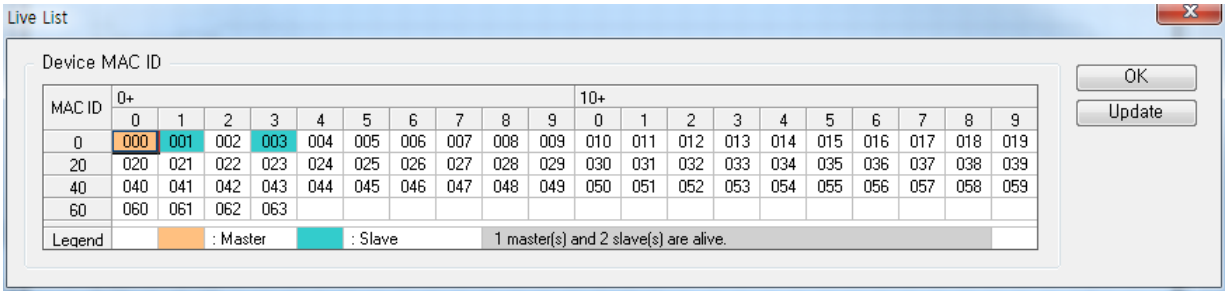
5.34 Slave Device Monitoring

This unit describes how to identify which devices are running on the DevieNet network, display I/O data on the master module and check the number of slave disconnections.

5.34.1 Live List

Identify which slave devices are live on the DeviceNet network.

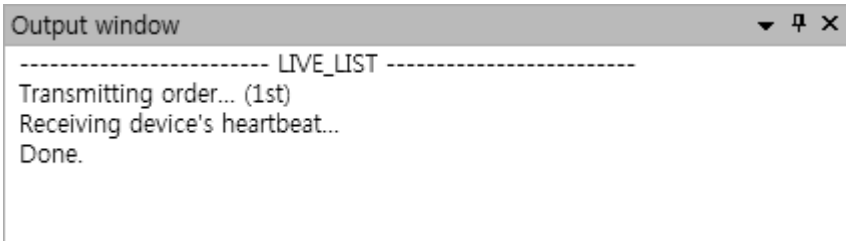
[Step]
(1) Select the Menu [Diagnostics] - [Live List].
(2) The “Live List” dialog box showing the device information on the network appears as follows.



[Figure 5.34.1] “Live List” dialog box

(3) If there is a need to update the information on the screen, press the “Update” button.
(4) Confirm the information and press the “OK” button to close the dialog box.

In the output window, the execution results of the command are displayed along with the number of communications as follows.



[Figure 5.34.2] Output window that shows the execution results of live list function

The information displayed in the Device MAC ID area of the “Live List” dialog box is as follows.

[Figure 5.34.3] Device MAC ID area

[Descriptions of the Device MAC ID areas]

ⓐ Marks the address of live master device in orange cell.

ⓑ Marks the address of live slave device in cyan cell.

ⓒ Indicates a blank address to which the device is not assigned

ⓓ Indicates the number of live master and slave devices

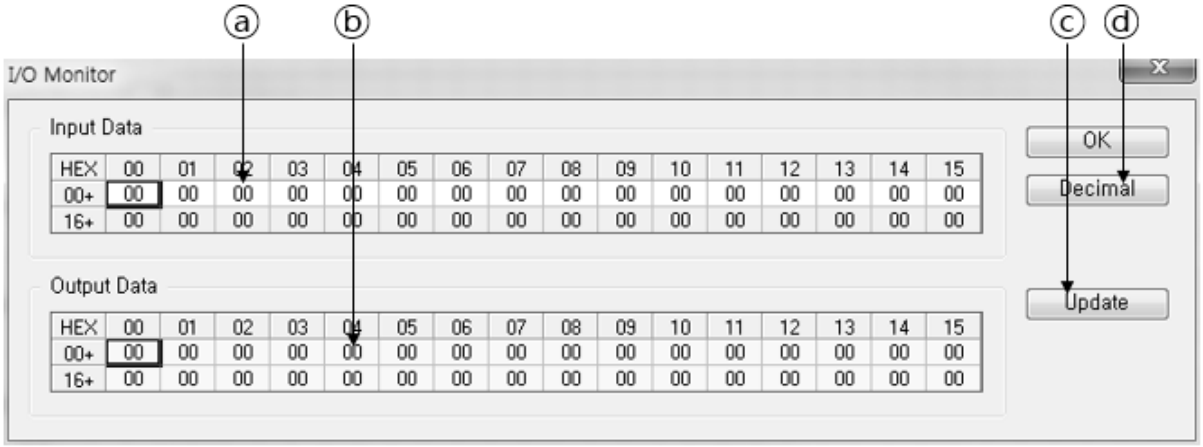
5.34.2 I/O Monitor

Read the input data on the master module periodically to display it on the screen and transmit the output data entered by a user to the master module.

[Step]

(1) Select the Menu [Diagnostics] - [I/O Monitor].

(2) The “I/O Monitor” dialog box appears as follows.



[Figure 5.34.4] “I/O Monitor” dialog box

[Descriptions of the “I/O Monitor” dialog box]

ⓐ Input Data : Indicates the input data read from the master module

ⓑ Output Data : Indicates the output data that can be entered by a user

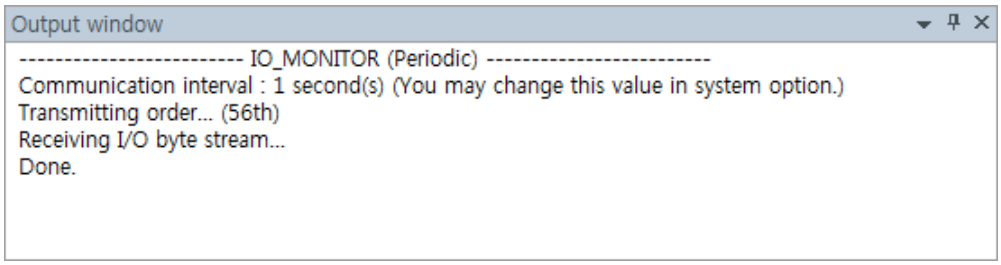
ⓒ Update : Indicates the button to transmit the output data to the master module

ⓓ Decimal(Hexadecimal) : Indicates the decimal or hexadecimal display selection button of data.

(5) Data of the dialog box is automatically updated by communicating with the master module at a fixed

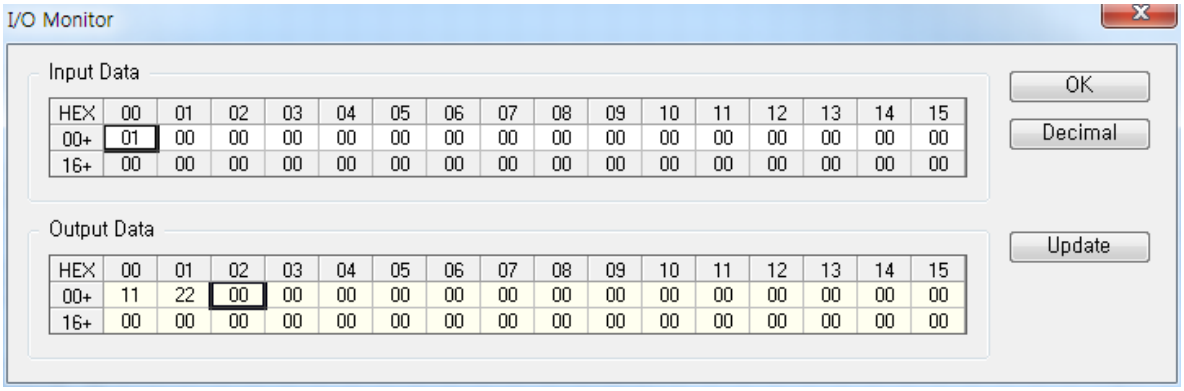
cycle
(6) Enter the corresponding value in the Output Data area and press the “Update” button to update the output data
(7) Confirm the information and press the “OK” button to close the dialog box.

In the output window the execution results of the command are displayed along with the number of communications as follows.



[Figure 5.34.5] Output window that shows the execution results of I/O Monitor function

The following is an example in which the input data area read from the master module through the subsequent periodic communication after the update of the output data entered by a user is updated .

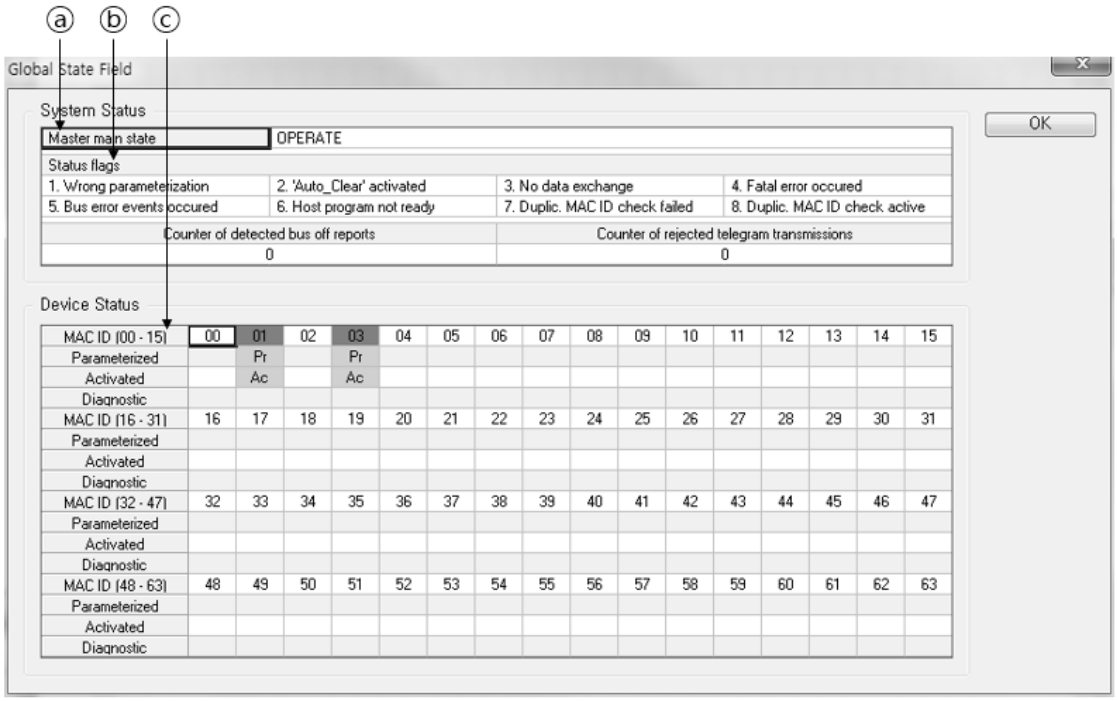


[Figure 5.34.6] Example of I/O monitor operation screen

5.34.3 Global State Field

Indicate the online status information of the master module

[Step]
(1) Select the Menu [Diagnostics] - [Global State Field].
(2) The “Global State Field” dialog box showing the information read from the master module appears as follows.
.



[Figure 5.34.7] "Global State Field" dialog box

[Descriptions of the items in "Global State Field" dialog box]

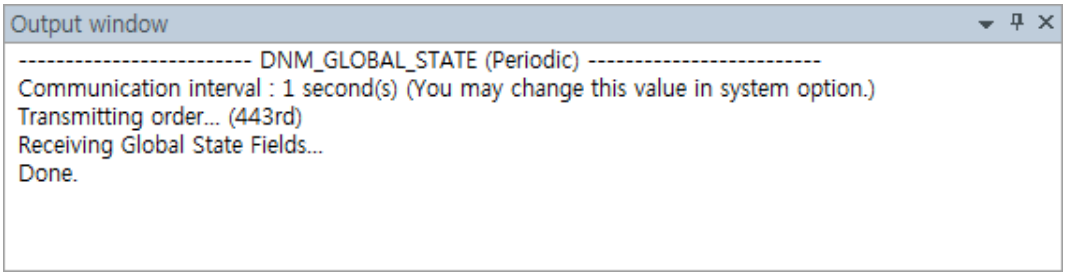
ⓐ Indicates the operation mode of the master module

ⓑ Indicates the status information of the master module. If there is an item, the area is highlighted in red.

ⓒ Indicates Online, Parameterization and Diagnostic information for each device

(3) Confirm the information and press the "OK" button to close the dialog box.

In the output window, the execution results of the command are displayed along with the number of communication as follows.



[Figure 5.34.8] Output window that shows the execution results of Global State Field function

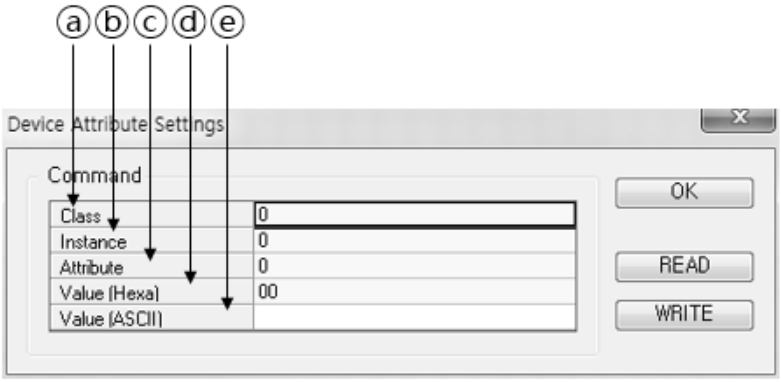
Note

1) The communication cycle can be changed in Menu [Tools] - [System Options]. Refer to Section 12.3 for methods on how to change the communication cycle.

5.34.4 Get/Set Attributes

Transfer or fetch attribute values from the master module to the slave module.

[Step]
(1) Select the Menu [Diagnostics] - [Get/Set Attribute].
(2) A dialog box that allows a user to read or write attributes appears as follows.



[Figure 5.34.9] "Global State Field" dialog box

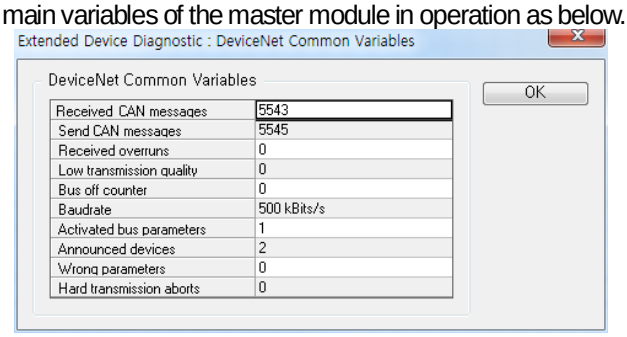
[Descriptions of the items in "Device Property Settings" dialog box]
ⓐ Specifies the class to access
ⓑ Specifies the instance to access
ⓒ Specifies attributes to access
ⓓ When the Write button is pressed, the data of the field is transmitted. The data read when the Read button is pressed is displayed.
ⓔ Shows the value of Hexa area in ASCII.

(3) Confirm the information and press the "OK" button to close the dialog box.

5.34.5 DNM Common Variables

Identify main variables of the master module in operation

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [DNM Common Variables].
(2) You can identify the main variables of the master module in operation as below.



[Figure 5.34.10] "DeviceNet Common Variables" dialog box

[Descriptions of the items in "DeviceNet Common Variables" dialog box]

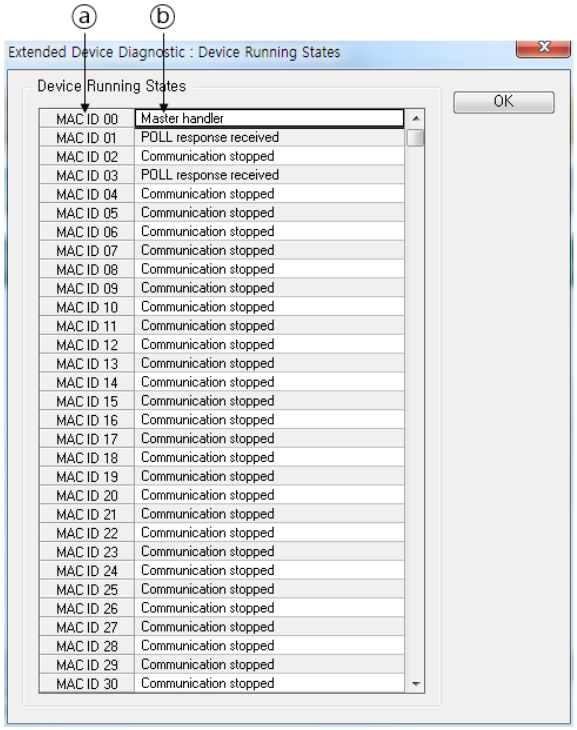
ⓐ Received CAN messages : Number of messages received
ⓑ Send CAN messages : Number of CAN messages sent
ⓒ Received overruns : Number of times overrun occurred
ⓓ Low transmission quality : Count when send/receive errors increases by more than a certain amount
ⓔ Bus off counter : Number of times Bus off occurred
ⓕ Baudrate : Displays the currently set baud rate
ⓖ Activated bus parameters : Indicates whether parameters are received from N Configurator
ⓗ Announced Devices : Number of registered slave devices
ⓘ Wrong parameters : Number of slave devices whose parameter is faulty
ⓙ Hard transmission aborts : Number of times transmission failure occurred

(3) Confirm the information and press the "OK" button to close the dialog box.

5.34.6 Device Running States

Identify the communication status of each device.

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [Device Running States].
(2) You can check the communication status for each device as follows.



[Figure 5.34.11] "Device Running States" dialog box

[Descriptions of the items in "Device Running States" dialog box]

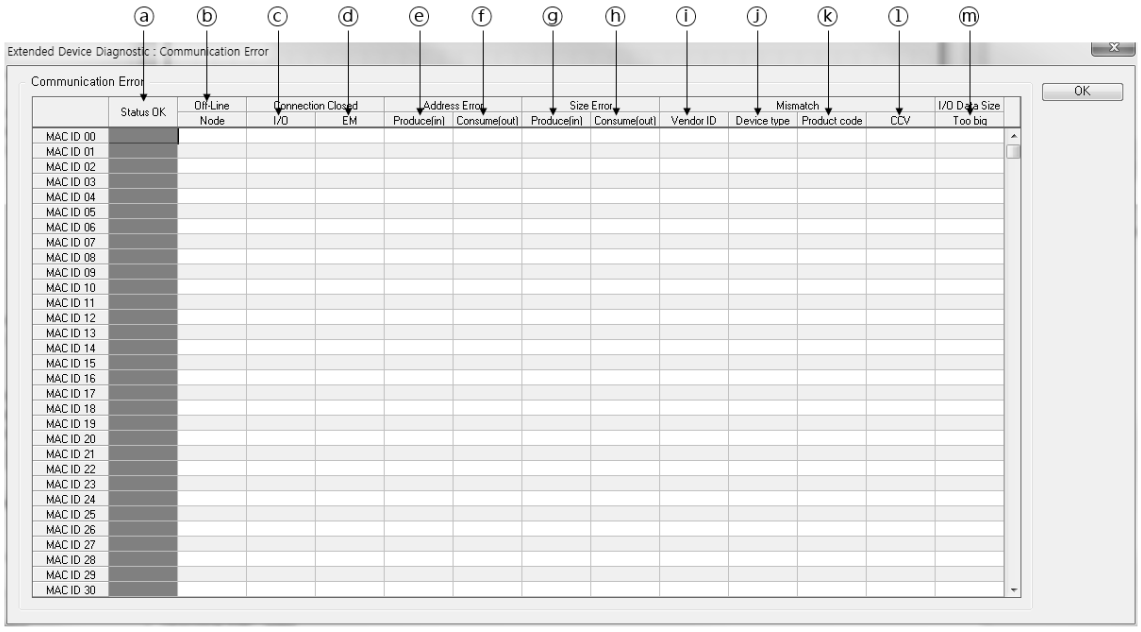
ⓐ Displays the device station number
ⓑ Indicates the current status

(3) Confirm the information and press the "OK" button to close the dialog box.

5.34.7 Communication Error

Check the details of communication errors for each device.

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [Communication Error].
(2) You can check the details of communication errors by device as follows.



[Figure 5.34.12] “Communication Error” dialog box

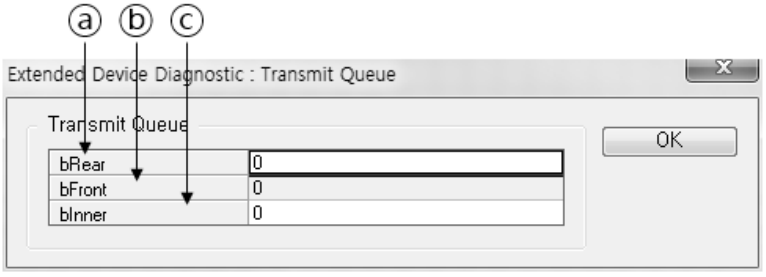
[Descriptions of the items in “Communication Error” dialog box]
ⓐ Status OK : It indicates normal status(green). If there is an error in the remaining items, it is not inverted.
ⓑ Off-line node : It is displayed in red if the device is Off-line.
ⓒ I/O Connection Closed : It is displayed in red if I/O Connection is closed.
ⓓ EM Connection Closed : It is displayed in red if Explicit Message Connection is closed.
ⓔ Produce Address Error : It is displayed in red if there is an error in the input address of the device.
ⓕ Consume Address Error : It is displayed in red if there is an error in the output address of the device.
ⓖ Produce Size Error : It is displayed in red if there is an error in the input size of the device.
ⓗ Consume Size Error : It is displayed in red if there is an error in the output size of the device.
ⓘ Vendor ID Mismatch : It is displayed in red if there is an error in the Vendor ID.
ⓙ Device Type Mismatch : It is displayed in red if there is an error in the device type.
ⓚ Product Code Mismatch : It is displayed in red if there is an error in the product code.
ⓛ CCV Mismatch : It is displayed in red if there is an error in the configured set value.
ⓜ I/O Data size is too big : It is displayed in red if I/O size exceeds 255 bytes.

(3) Confirm the information and press the “OK” button to close the dialog box.

5.34.8 Transmit Queue

This is the preliminary queue information used when messages are transmitted via CAN.

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [Transmit Queue].
(2) The information about the Transmit Queue can be checked as follows.



[Figure 5.34.13] "Transmit Queue" dialog box

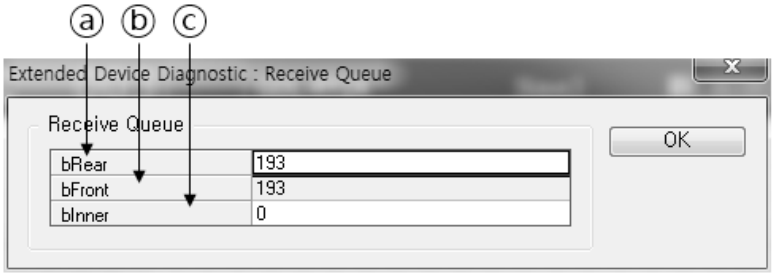
[Descriptions of the items in "Transmit Queue" dialog box]
ⓐ bRear : Indicates the transmitted queue number
ⓑ bFront : Indicates the queue number to be transmitted
ⓒ bInner : Indicates the number of queues to be transmitted

(3) Confirm the information and press the "OK" button to close the dialog box.

5.34.9 Receive Queue

This is the queue information used when messages are received via CAN.

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [Receive Queue].
(2) The information about the Receive Queue can be check as follows.



[Figure 5.34.14] "Receive Queue" dialog box

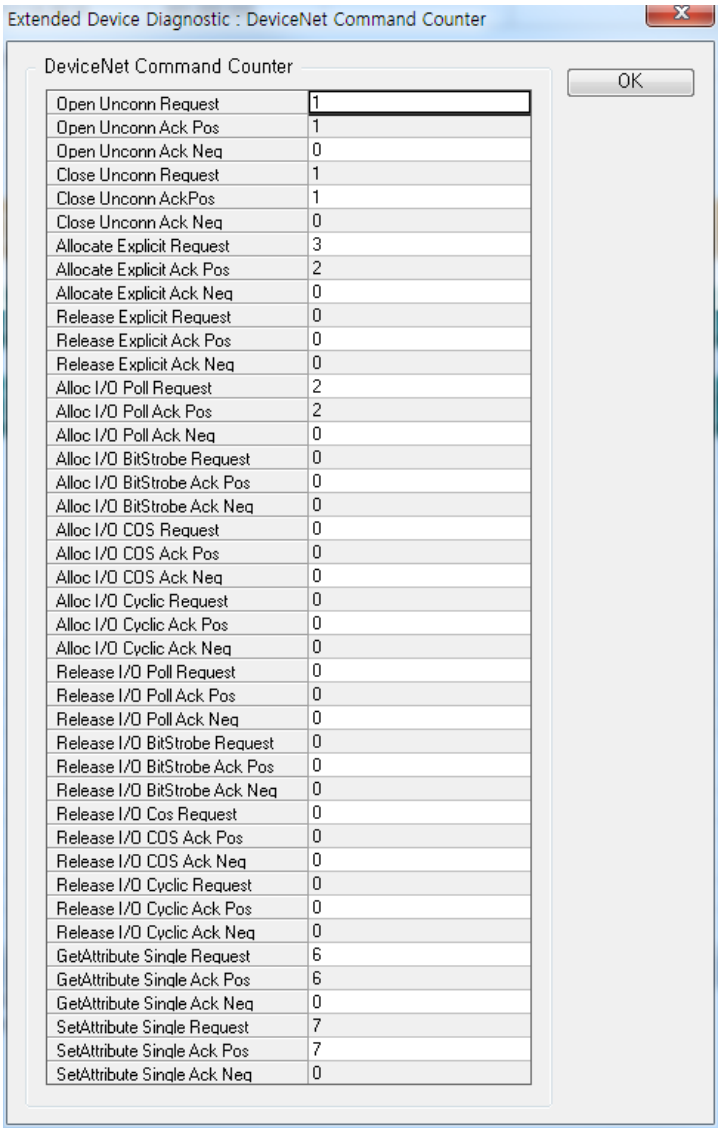
[Descriptions of the items in "Receive Queue" dialog box]
ⓐ bRear : Indicates the last queue number with received message
ⓑ bFront : Indicates the first queue number with received message
ⓒ bInner : Indicates the number of received messages remaining in the queue.

(3) Confirm the information and press the "OK" button to close the dialog box.

5.34.10 DeviceNet Command Counter

Indicate the type and number of Explicit messages transmitted/received by DevicneNet

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [DeviceNet Command Counter]
(2) The count information for several commands can be checked as follows.



[Figure 5.34.15] “DeviceNet Command Counter” dialog box

[Descriptions of the items in “DeviceNet Command Counter” dialog box]
ⓐ Open Unconn Request/Ack(Pos)/Ack(Neg) : Indicates the number of connection requests and responses (Pos/Neg) through UCMM
ⓑ Close Unconn Request/Ack(Pos)/Ack(Neg) : Indicates the number of connection release requests and responses (Pos/Neg) through UCMM
ⓒ Allocate Explicit Request/Ack(Pos)/Ack(Neg) : Indicates the number of connection requests and responses (Pos/Neg) through G2
ⓓ Release Explicit Request/Ack(Pos)/Ack(Neg) : Indicates the number of connection release requests and responses (Pos/Neg) through GS

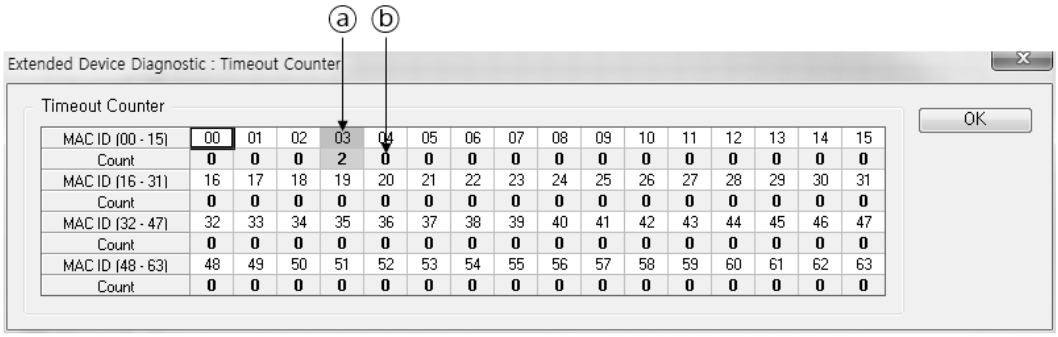
ⓔ Alloc I/O Poll Request/Ack(Pos)/Ack(Neg) : Indicates the number of Poll-type I/O connection requests and responses(Pos/Neg).
ⓕ Alloc I/O BitStrobe Request/Ack(Pos)/Ack(Neg) : Indicates the number of BitStrobe-type I/O connection requirests and responses(Pos/Neg)
ⓖ Alloc I/O COS Request/Ack(Pos)/Ack(Neg) : Indicates the number of COS-type I/O connection requests and responses(Pos/Neg)
ⓗ Alloc I/O Cyclic Request/Ack(Pos)/Ack(Neg) : Indicates the number of Cyclic-type I/O connection requests and responses(Pos/Neg)
ⓘ Release I/O Poll Request/Ack(Pos)/Ack(Neg) : Indicates the number of Poll-type I/O connection release requests and responses(Pos/Neg)
ⓙ Release I/O BitStrobe Request/Ack(Pos)/Ack(Neg) : Indicates the number of BitStrobe-type I/O connection release requests and responses(Pos/Neg)
ⓚ Release I/O COS Request/Ack(Pos)/Ack(Neg) : Indicates the number of COS-type I/O connection release requests and responses(Pos/Neg)
ⓛ Release I/O Cyclic Request/Ack(Pos)/Ack(Neg) : Indicates the number of Cyclic-type I/O connection release requests and responses(Pos/Neg)
ⓜ Get Property Single Request/Ack(Pos)/Ack(Neg) : Indicates the number of property read requests and responses(Pos/Neg)
ⓝ Set Property Single Request/Ack(Pos)/Ack(Neg) : Indicates the number of property write requests and responses(Pos/Neg)

(3) Confirm the information and press the “OK” button to close the dialog box.

5.34.11 Timeout Counter

Indicate the number of times the communication timeout of the slave device connected to the DeviceNet master occurred.

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [Timeout Counter].
(2) The timeout count information for each slave device can be checked as follows.



[Figure 5.34.16] “Timeout Counter” dialog box

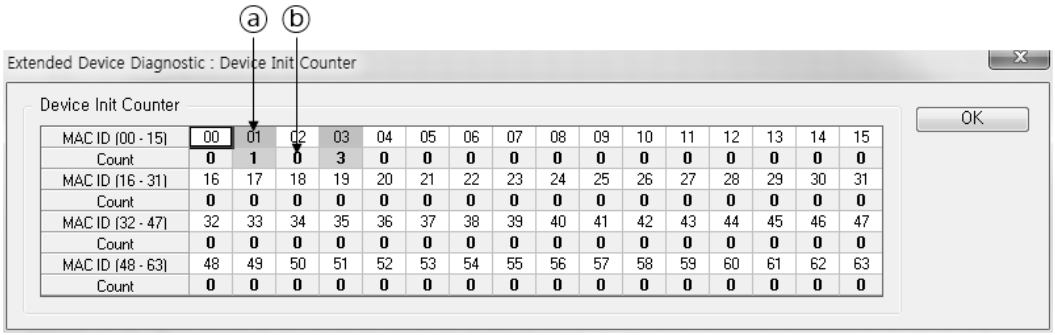
[Descriptions of the items in “Timeout Counter” dialog box]
ⓐ Indicates the device number
ⓑ Indicates the cumulative timeout count

(3) Confirm the information and press the “OK” button to close the dialog box.

5.34.12 Device Init Counter

Indicate the I/O connections of the slave device connected to DeviceNet master.

[Step]
(1) Select the Menu [Diagnostics] - [Extended Device Diagnostic] – [Device Init Counter].
(2) The count information for each slave device can be checked as follows.



[Figure 5.34.17] “Device Init Counter” dialog box

[Descriptions of the items in “Device Init Counter” dialog box]
ⓐ Indicates the device number
ⓑ Indicates the cumulative count

(3) Confirm the information and press “OK” button to close the dialog box.

5.35 Device Diagnostics

This unit describes how to obtain diagnostic information of devices operating on the DeviceNet network.

5.35.1 Start Diagnostic Mode

Start the diagnostic model for slaves that are currently connected to the master module

[Step]

(1) If the configuration information displayed in the current project window does not match the the device configuration on the actual DeviceNet network, if the device configuration on the network is not known, one of the following two methods are used to match the contents of the project window with the device configuration of the actual network for viewing diagnostic information.

(a) In case the previously downloaded binary images are present in the master module
: Select the Menu [Communication] - [Upload Image] to execute the binary image upload.
(Refer to Section 5.32 for details on uploading the binary image.)

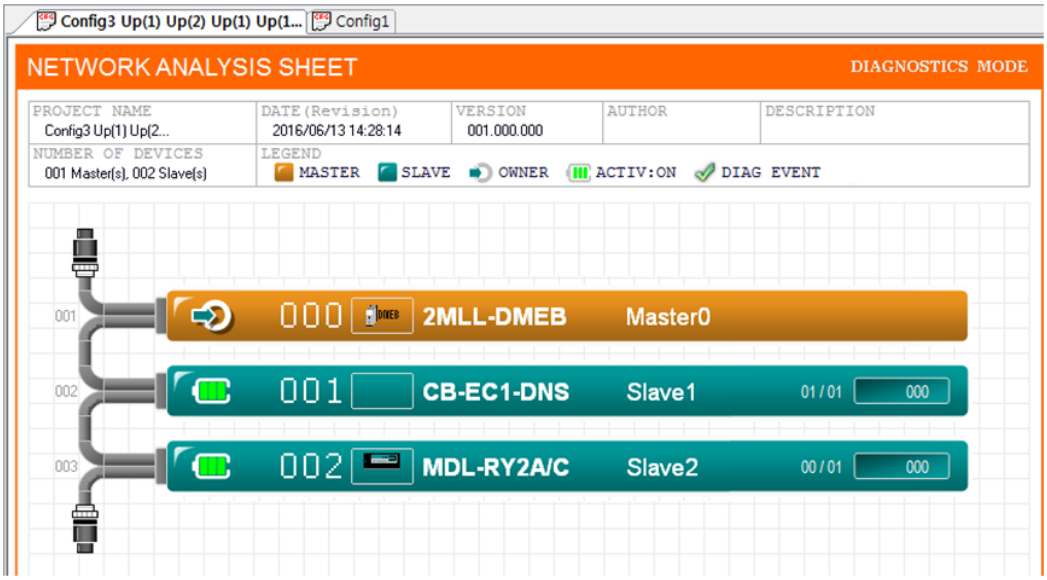
(b) In case the device configuration on the actual DevinceNet network is not known
: Select the Menu [Diagnostics] - [Auto. Network Scan] to execute the network scan
(Refer to Section 5.36 for details on the network scan)

Note

1) The N Configuration won't work if the diagnostic mode is executed while the device configuration on the network does not match with the contents on the project window.

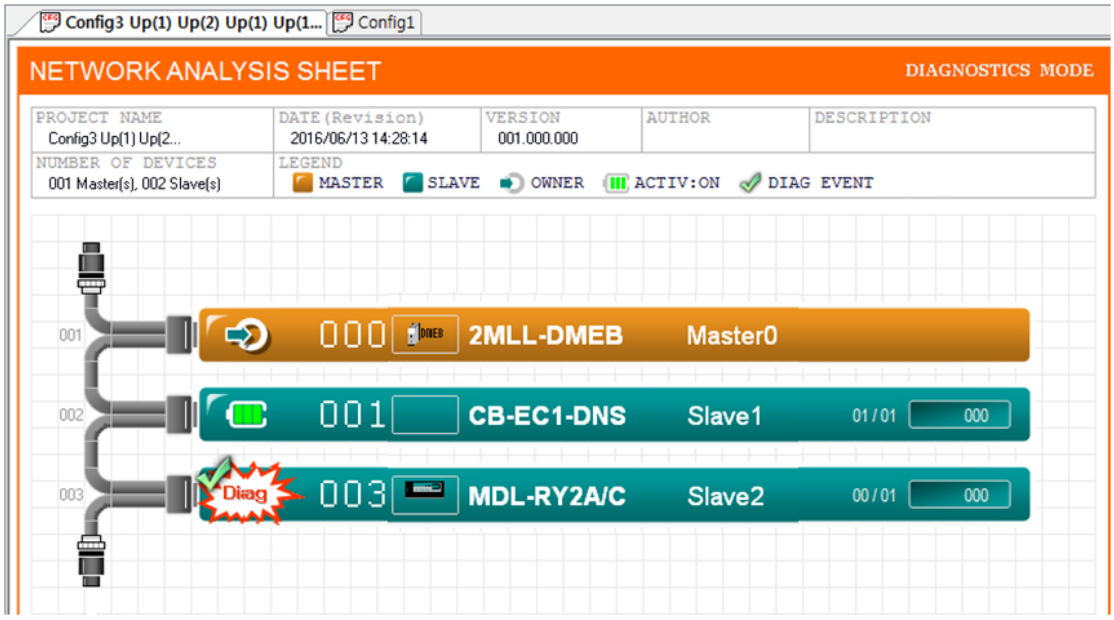
(2) Select the Menu [Diagnostics] - [Start Debug Mode].

(3) The main screen switches to the diagnostic mode with the orange background as shown below.



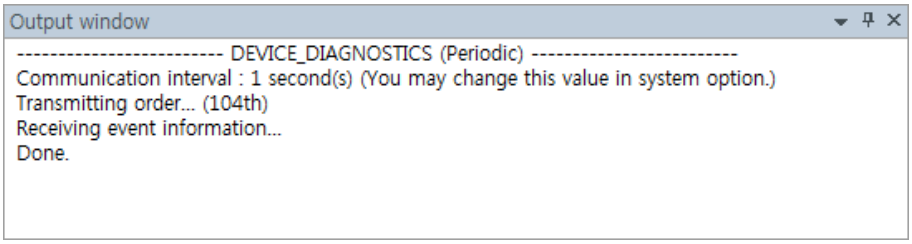
[Figure 5.35.1] Example of diagnostic mode screen

(4) Through communication with the master module at a specified cycle, whether or not there is a device where a diagnostic event occurs is displayed on the main screen as follows.



[Figure 5.35.2] Example of screen where a diagnostic event occurs on the slave device with address 3

In the output window, the execution results of the diagnostic mode start command are displayed along with the number of communications as follows.



[Figure 5.35.3] Output window that shows the execution results of diagnostic mode start function

Note

1) If the communication environment is not set in advance, the “Communication Settings” dialog ox appears before the function starts. Refer to Section 10.1 for methods on how to set the communication environment.

2) The communication cycle can be changed in Menu [Tools] - [System Options]. Refer to Section 12.3 for methods on how to change the communication cycle.

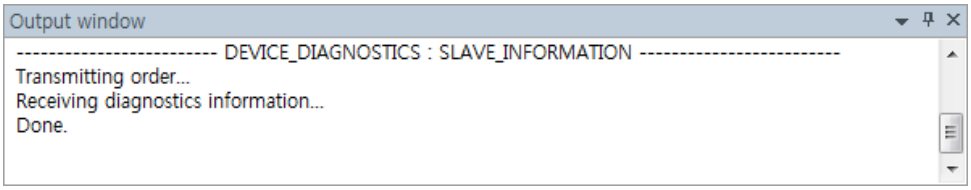
5.35.2 Device Diagnostics

Display the diagnostic information of the selected slave device

[Step]
(1) Execute one of the following methods.

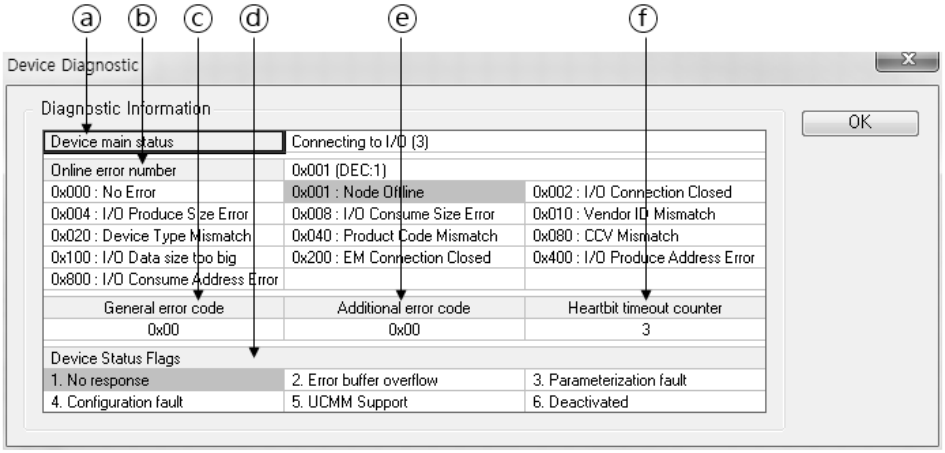
(a) Double click the slave device for which you want to obtain diagnostic information on the topology.
(b) Select the slave on the topology and Select the Menu [Diagnostics] - [Device Diagnostics].

(2) Periodic communication that indicates whether or not the diagnostic event occurs is stopped.
(3) Device diagnostics communication results are displayed on the output window as follows.



[Figure 5.35.4] Output window that shows the execution results of device diagnostics function

(4) The “Device Diagnostic” dialog box showing the diagnostic information of the selected device appears as follows.



[Figure 5.35.5] “Device Diagnostic” dialog box

[Descriptions of the “Device Diagnostic” areas]
ⓐ Device main status : Indicates the status of master with target slave device.
ⓑ Online error number : Indicates the contents of the current error
ⓒ General error code : Indicates error code
ⓓ Device Status Flags : Indicates device status
ⓔ Additional error code : Indicates additional error code
ⓕ Heartbit timeout counter : Indicates the number of times I/O Timeout occurred

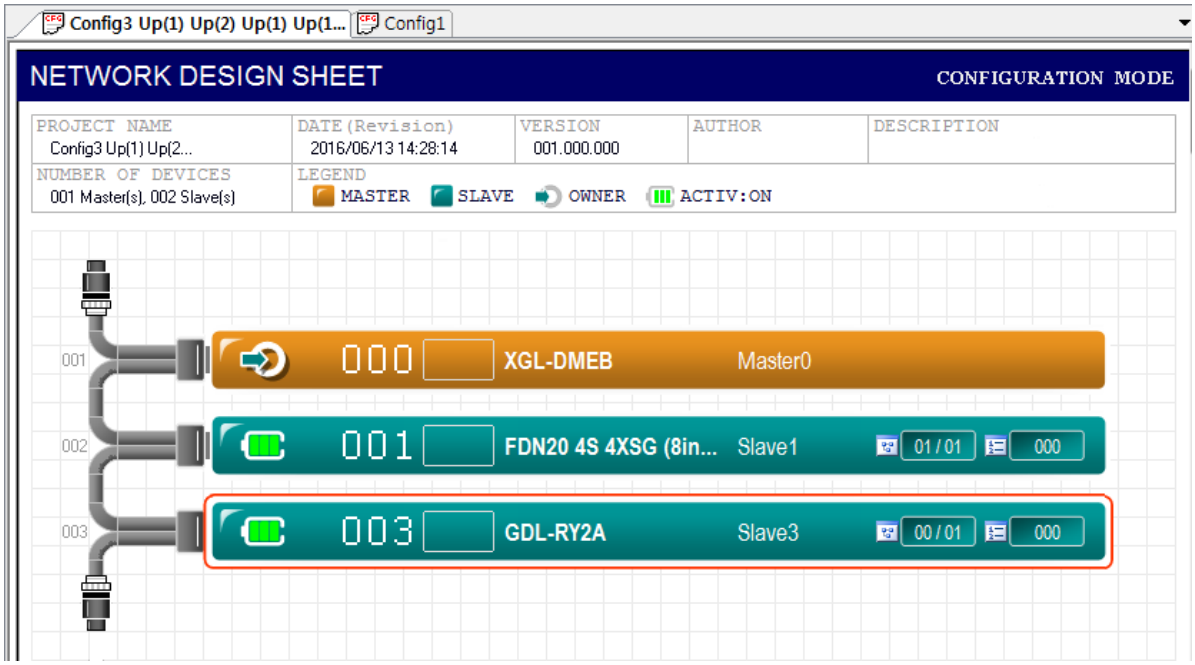
Note

1) If the communication environment is not set in advance, the “Communication Settings” dialog box appears before the function starts. Refer to Section 10.1 for methods on how to set the communication environment.

5.35.3 Stop Diagnostic Mode

Stop the diagnostic mode for slaves which are currently connected to the master module.

[Step]
(1) Select the Menu [Diagnostics] - [Stop Debug Mode].
(2) Diagnostic event communication is stopped, and the main screen is restored to the configuration mode as follows.



[Figure 5.35.6] Example of screen restored to the configuration mode by the completion of diagnostic mode

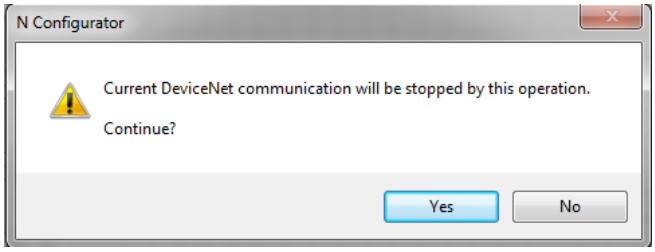
Note

1) If the communication environment is not set in advance, the "Communication Settings" dialog box appears before the function starts. Refer to Section 10.1 for methods on how to set the communication environment.

5.36 Network Scan

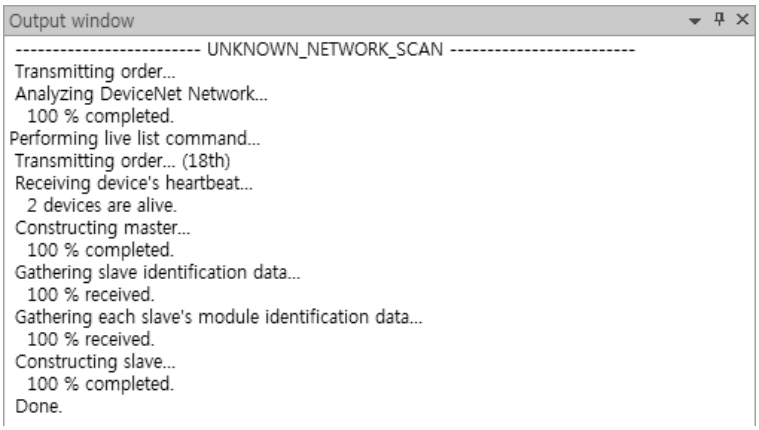
Gather the slave information from the network whose device configuration on the actual DeviceNet network is not known through the master module and identify the network configuration status to create a configurable topology screen.

[Step]
(1) Select the Menu [Diagnostics] - [Auto. Network Scan]
(2) If this function is executed as follows, a dialog box showing the current DeviceNet communication will be stopped appears.



[Figure 5.36.1] Dialog box showing the current DeviceNet communication will be stopped

(3) If you can proceed with the network scan, press the “Yes” button.
(4) The following message that indicates the progress of the network san is displayed in the output window.



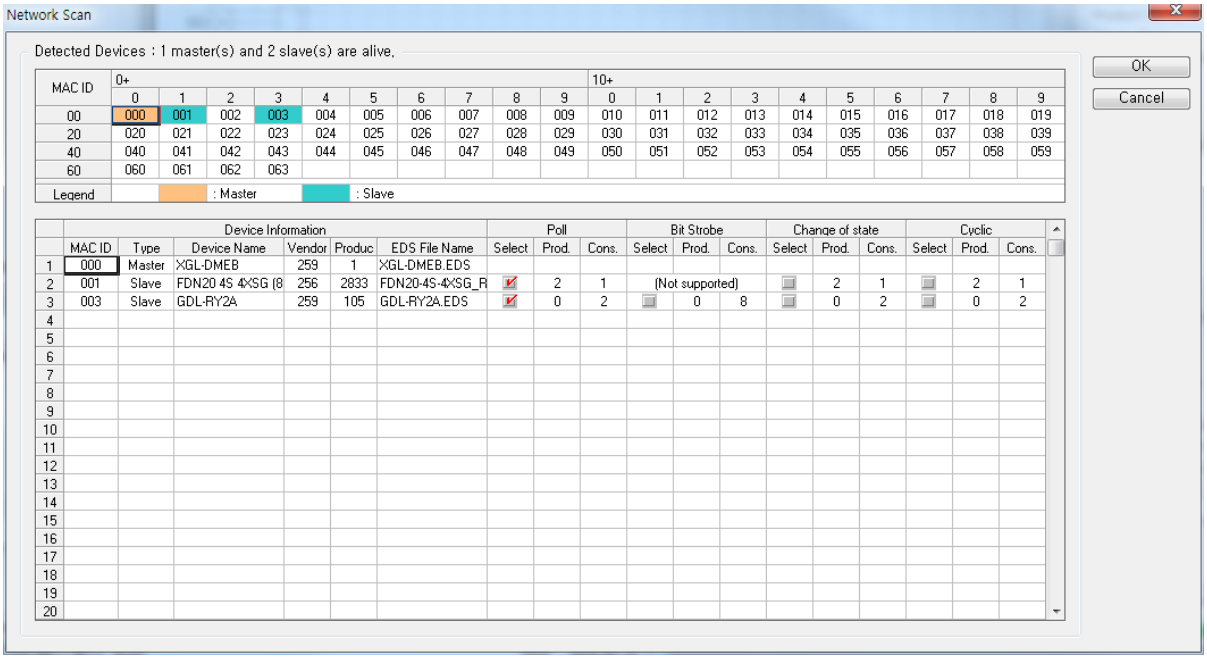
[Figure 5.36.2] Output window that shows the execution results of network scan function

[Output window display contents (network scan process)]
(a) Analyzes DeviceNet network
(b) Indicates the number of detected devices
(c) Configures the master device by combining the collected information and with the EDS information.
(d) Gathers slave-related information
(e) Gathers I/O module-related information
(f) Configures the slave device by combining the collected information with the EDS information
(g) Connects I/O modules by combining the configured slave with the EDS information.

Since the information displayed on the screen is completed by combining the scanned device ID information with the detailed EDS information about this device analyzed previously by the N Configurator, it is mapped to Generic.EDS and configured with the name of “I/O System” if there is an ID which is not provided with EDS.

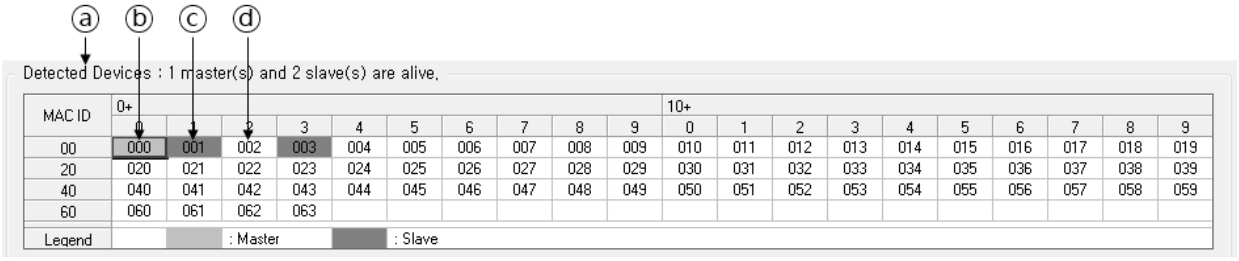
[Figure 5.36.3] Configuration screen where there is an ID which is not provided with EDS

(5) The “Network Scan” dialog box showing a summary of the analyzed network scan information appears as follows.



[Figure 5.36.4] “Network Scan” dialog box

The contents displayed in the detected device areas in the dialog box are as follows.



[Figure 5.36.5] Areas of detected devices

[Descriptions of the detected device areas]

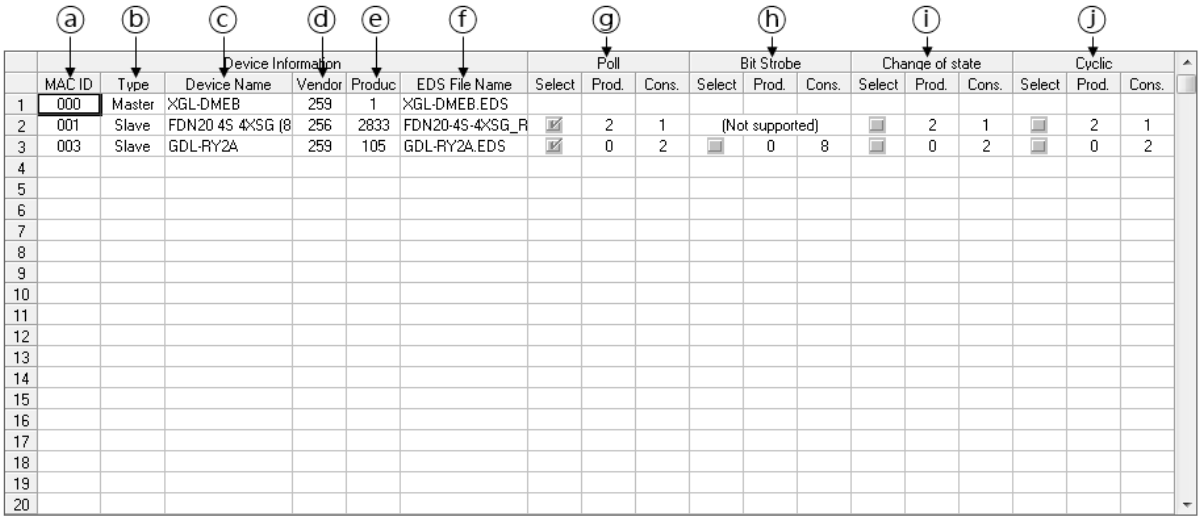
ⓐ Indicates the number of live master and slave devices

ⓑ Displays the address of the live master device in an orange cell

ⓒ Displays the address of the live slave device in a cyan cell

ⓓ Indicates a blank address for which the device is not assigned

The contents displayed in the detected slave module information area in the dialog box are as follows.



	Device Information						Poll			Bit Strobe			Change of state			Cyclic		
	MAC ID	Type	Device Name	Vendor	Produc	EDS File Name	Select	Prod.	Cons.	Select	Prod.	Cons.	Select	Prod.	Cons.	Select	Prod.	Cons.
1	000	Master	XGL-DMEB	259	1	XGL-DMEB.EDS												
2	001	Slave	FDN20 4S 4XSG (8	256	2833	FDN20-4S-4XSG_R	☑	2	1	(Not supported)			☐	2	1	☐	2	1
3	003	Slave	GDL-RY2A	259	105	GDL-RY2A.EDS	☑	0	2	☐	0	8	☐	0	2	☐	0	2
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		

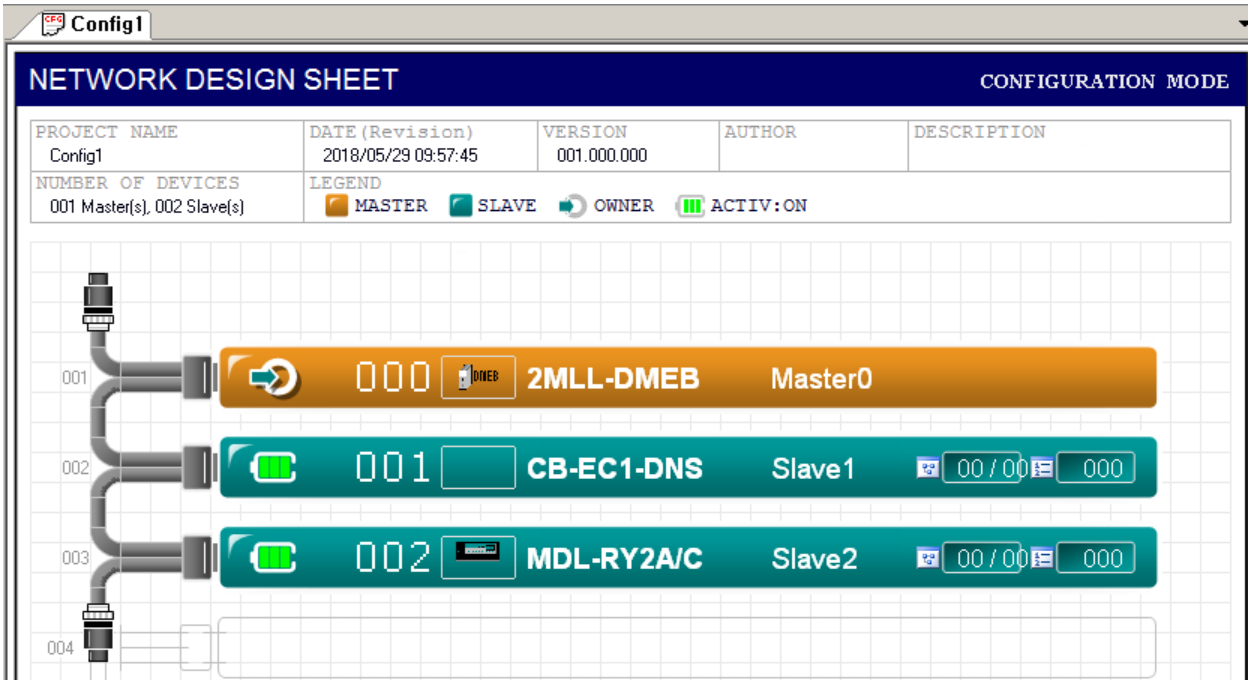
[Figure 5.36.6] Detected slave module information areas

[Descriptions of the detected slave module information areas]

ⓐ MAC ID : Indicates the address of the detected device
ⓑ Type : Indicates the type of the detected device
ⓒ Device Name : Indicates the model name of the detected device
ⓓ Vendor : Indicates the vendor code of the detected device
ⓔ Product : Indicates the product code of the detected device
ⓕ EDS File Name : Indicates the EDS file name of the detected slave device
ⓖ Poll : Shows the size that can be connected by Poll-type and provides I/F that can be selected
ⓗ Bit-Strobe : Shows the size that can be connected by Bit-Strobe-type and provides I/F that can be selected
ⓘ Change of state : Shows the size that can be connected by COS-type and provides I/F that can be selected
ⓙ Cyclic : Shows the size that can be connected by Cyclic-type and provides I/F that can be selected

(6) Confirm the information and settings, and then press the ‘OK” button to close the dialog box

(7) The configuration screen created by the set information appears.



[Figure 5.36.7] Example of configuration screen created through network scan

Note

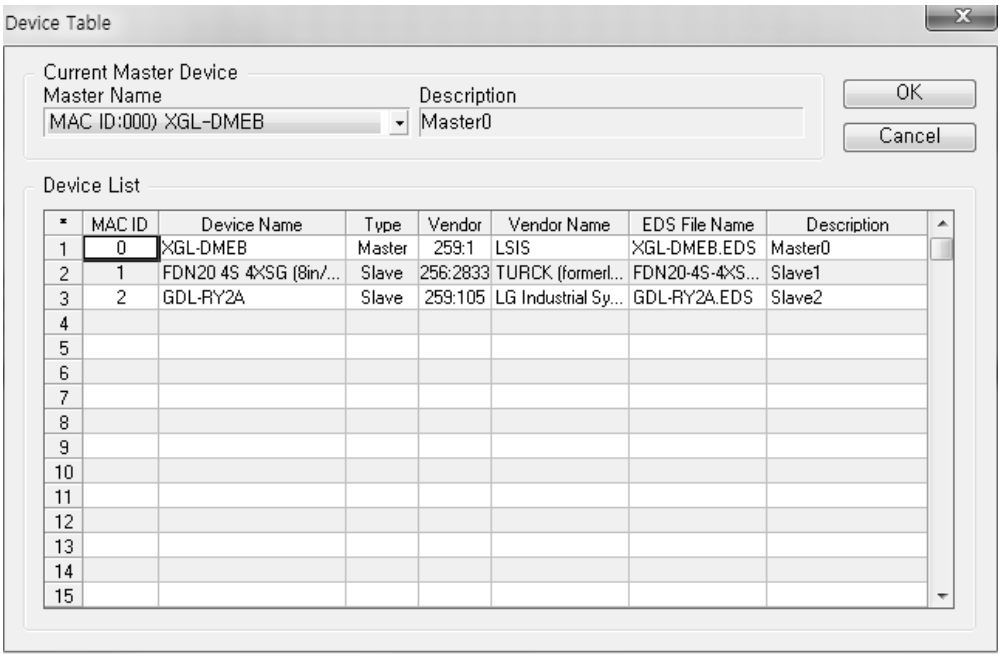
1) If the communication environment is not set in advance, the “Communication Settings” dialog box appears before the function starts. Refer to Section 10.1 for methods on how to set the communication environment.

5.37 Device Table

This chapter describes how to check the summaries of information such as slave module I/O addresses, bus speed table and configured device list and set system options.

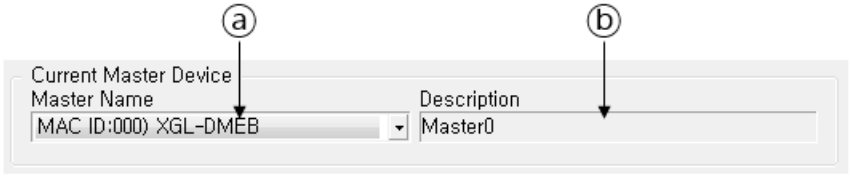
Display the currently configured device list in master and slave units.

[Step]
(1) Select the Menu [Tools] - [Configured Device Table] or double click the [NO. OF DEVICES] on the topology.
(2) The following “Device Table” dialog box appears.



[Figure 5.37.1] “Device Table” dialog box

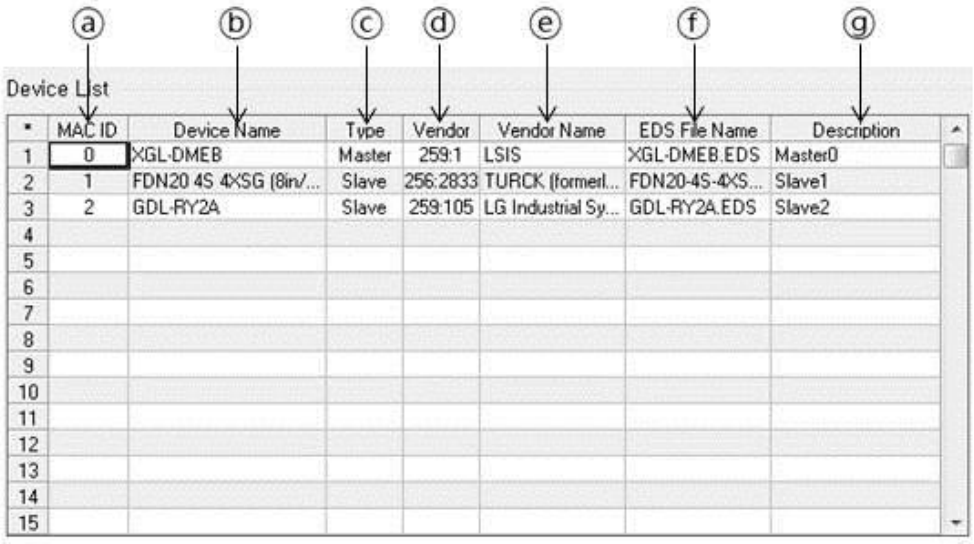
The contents displayed in the current master device information area in the dialog box are as follows.



[Figure 5.37.2] Current master device information area

[Descriptions of the current master device information areas]
ⓐ Master Name : Indicates the address and model name of the current master device.
ⓑ Description : Indicates a description of the current master device.

The contents displayed in the device list information area in the dialog box are as follows.

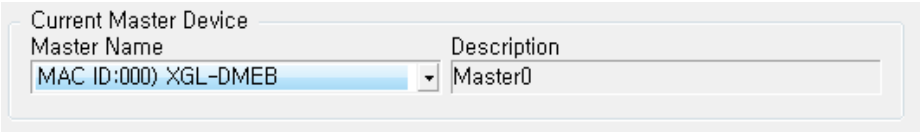


[Figure 5.37.3] Device list information area

[Descriptions of the device list information areas]

ⓐ MAC ID : Indicates the address of the device
ⓑ Device Name : Indicates the model name of the device
ⓒ Type : Indicates whether the device is master or slave
ⓓ Ident. : Indicates the product code of the device
ⓔ Vendor Name : Indicates the manufacturer of the device
ⓕ EDS File Name : Indicates the name of a file that contains information about the device
ⓖ Description : Indicates a description of the device

(1) Change the master name item in the current master device area to see the list of devices related to other masters in the current topology as shown below.



[Figure 5.37.4] Current master device selection screen

(1) Confirm the information and press the “OK” button to close the dialog box.

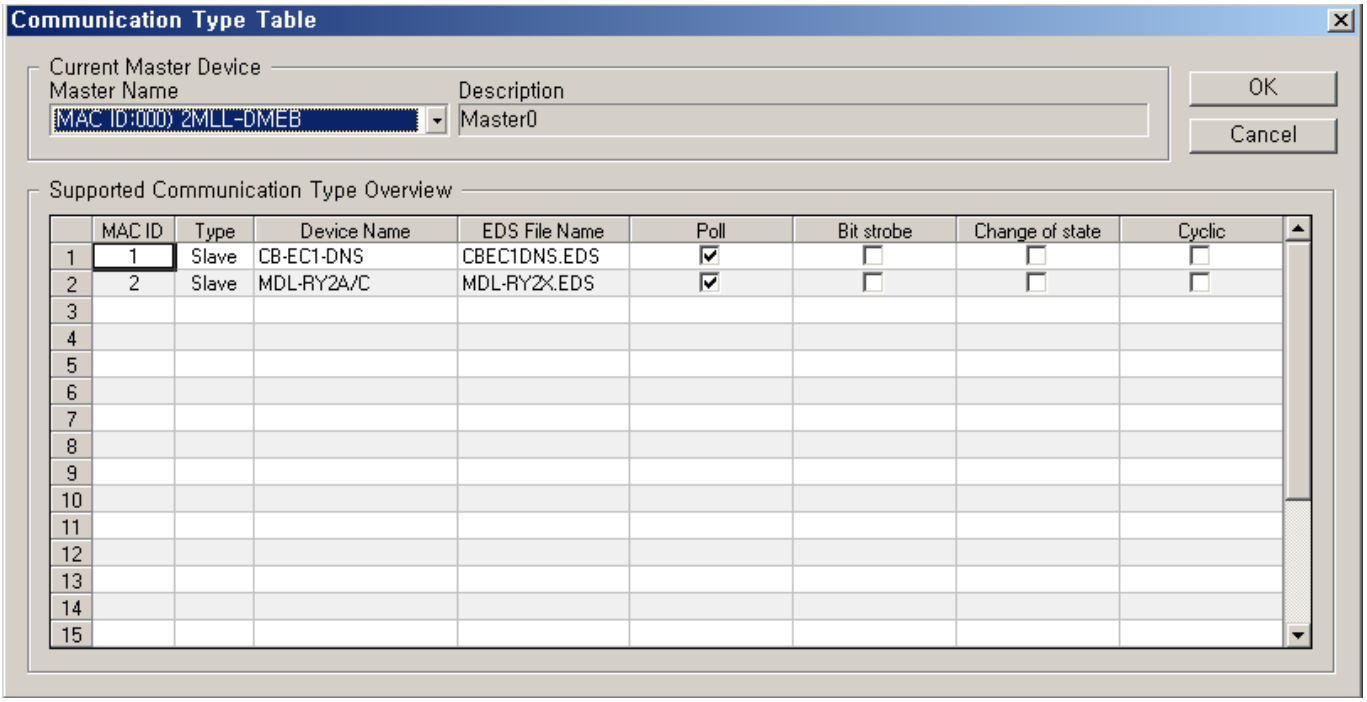
The area where the device table is executed by double-click is as follows.

[Figure 5.37.5] Area where the device table is executed by double-click

5.38 Device Communication Type Table

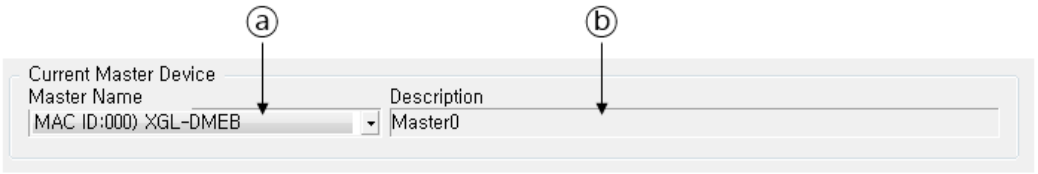
Display the communication type for the currently configured slave module

[Step]
(1) Select the Menu [Tools] - [Communication Type Table].
(2) The following "Communication Type Table" dialog box appears.



[Figure 5.38.1] "Communication Type Table" dialog box

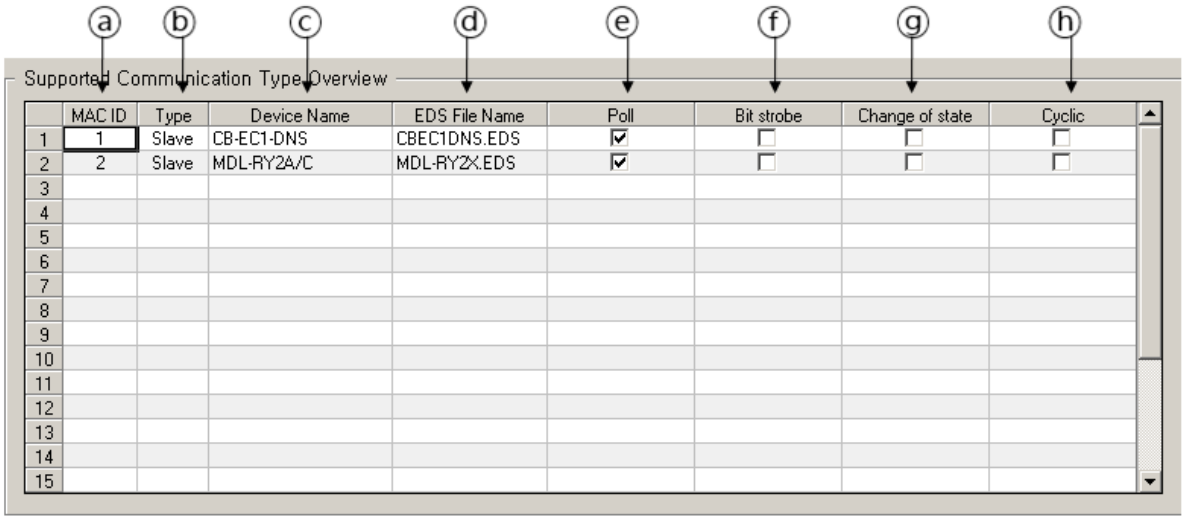
The contents displayed in the current master device information area in the dialog box are as follows.



[Figure 5.38.2] Current master device information area

[Descriptions of the current master device information areas]
ⓐ Master Name : Indicates the address and model name of the current master device
ⓑ Description : Indicates a description of the current master device

The contents displayed in the communication type information area supported in the dialog box are as follows.



[Figure 5.38.3] Communication type information area

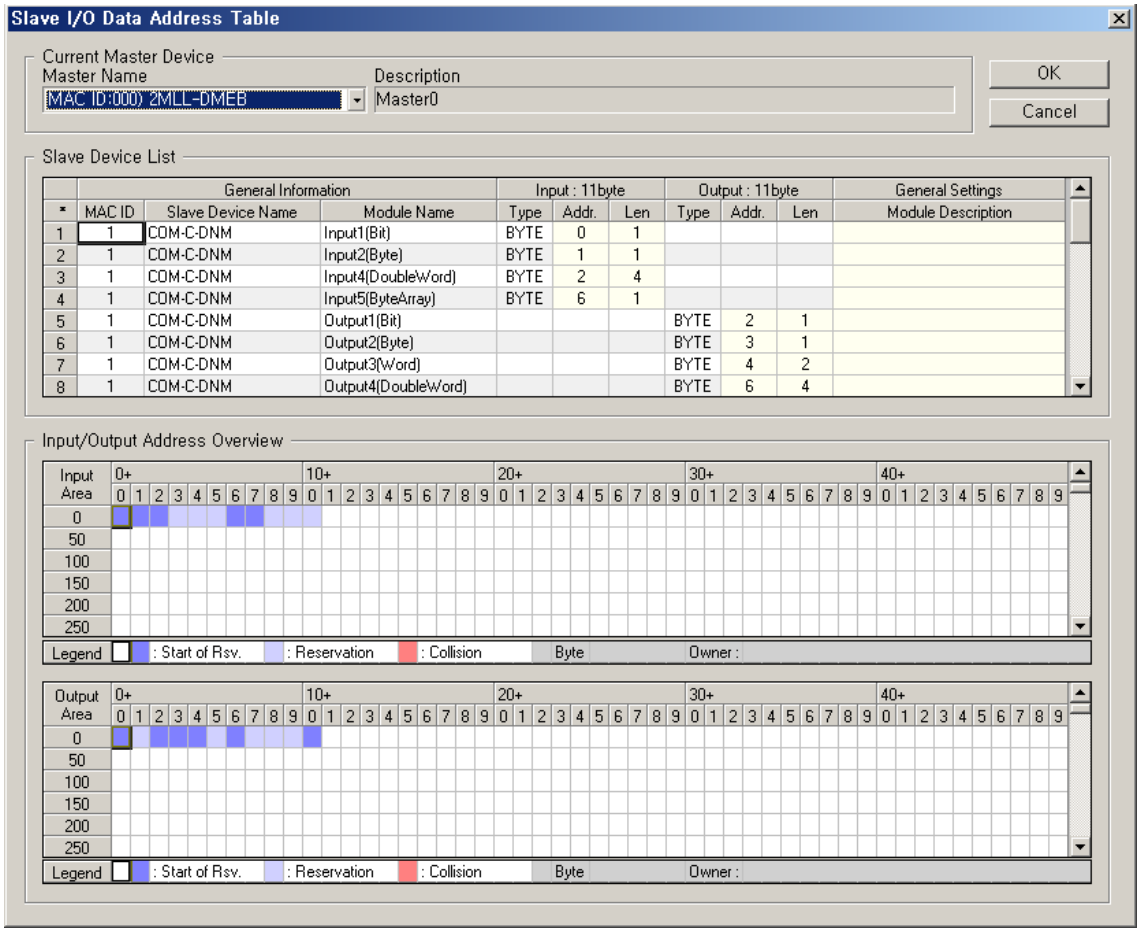
[Descriptions of the communication type information areas]

ⓐ MAC ID : Indicates a unique address of the slave device
ⓑ Type : Indicates whether the device is master or slave
ⓒ Device Name : Indicates the model name of the slave device
ⓓ EDS File Name : Indicates the EDS file name of the device
ⓔ Poll : Indicates the connection status of Poll type
ⓕ Bit-Strobe : Indicates the connection status of Bit-Strobe type
ⓖ Change of state : Indicates the connection status of COS type
ⓗ Cyclic : Indicates the connection status of Cyclic type

5.39 Slave I/O Address Table

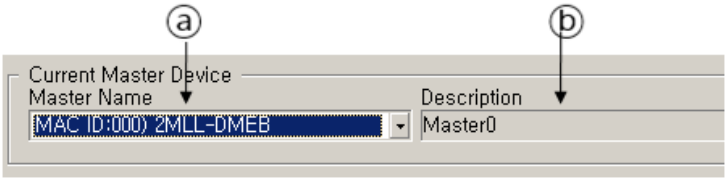
Display the I/O address details of the currently configured slave device in master and slave units.

[Step]
(1) Select the Menu [Tools] - [Slave I/O Data Address Table].
(2) The following “Slave I/O Data Address Table” dialog box appears.



[Figure 5.39.1] “Slave I/O Data Address Table” dialog box

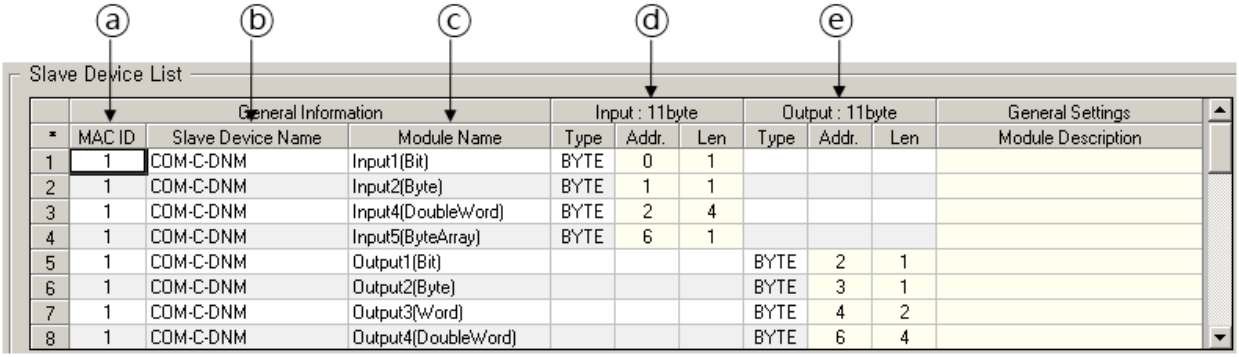
The contents displayed in the current master device information area in the dialog box are as follows.



[Figure 5.39.2] Current master device information area

[Descriptions of the current master device information areas]
ⓐ Master Name : Indicates the address and model name of the current master device
ⓑ Description : Indicates a description of the current master device

The contents displayed in the slave device list information area in the dialog box are as follows.



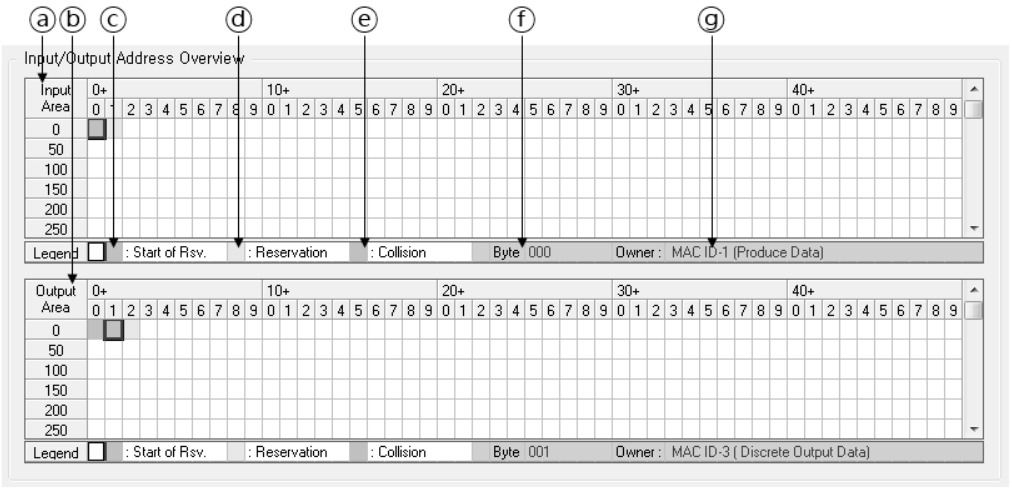
	General Information			Input : 11byte			Output : 11byte			General Settings
*	MAC ID	Slave Device Name	Module Name	Type	Addr.	Len	Type	Addr.	Len	Module Description
1	1	COM-C-DNM	Input1(Bit)	BYTE	0	1				
2	1	COM-C-DNM	Input2(Byte)	BYTE	1	1				
3	1	COM-C-DNM	Input4(DoubleWord)	BYTE	2	4				
4	1	COM-C-DNM	Input5(ByteArray)	BYTE	6	1				
5	1	COM-C-DNM	Output1(Bit)				BYTE	2	1	
6	1	COM-C-DNM	Output2(Byte)				BYTE	3	1	
7	1	COM-C-DNM	Output3(Word)				BYTE	4	2	
8	1	COM-C-DNM	Output4(DoubleWord)				BYTE	6	4	

[Figure 5.39.3] Slave device list information area

[Descriptions of the slave device list information area]

ⓐ MAC ID : Indicates a unique address of the slave device
ⓑ Slave Device Name : Indicates the model name of the slave device
ⓒ Module Name : Indicates I/O module name
ⓓ Input : Indicates the total size and type/address/length of input data
ⓔ Output : Indicates the total size and type/address/length of output data

The contents displayed in the module I/O address information area in the dialog box area as follows.



[Figure 5.39.4] Module I/O address information area

[Descriptions of the module I/O address information areas]

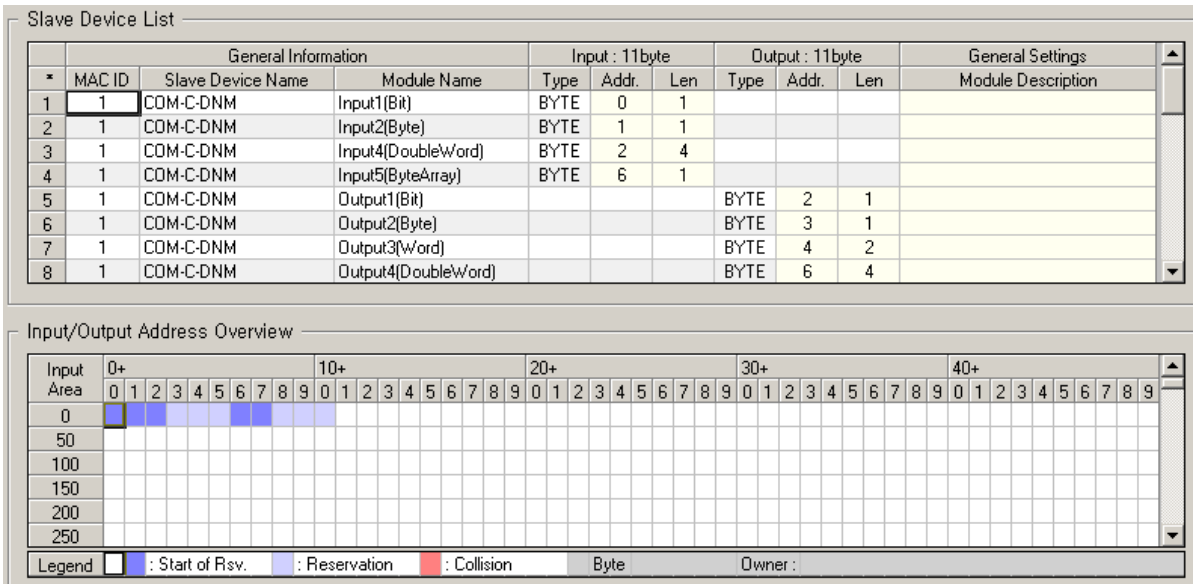
ⓐ Input Area : Indicates a table that displays the details of input address assigned to the module
ⓑ Output Area : Indicates a table that displays the details of output address assigned to the module
ⓒ Start of Rsv. : Indicates that the starting position of the area assigned to one module is marked in blue
ⓓ Reservation : Indicates that the area assigned to one module is marked in pale blue
ⓔ Collision : Indicates that the area with multiple modules assigned to the same address is displayed in red
ⓕ Byte : Indicates the size of the allocated area of the position where a mouse cursor is located
ⓖ Owner : Indicates the information of module assigned to the location of the mouse cursor (slave address and slot number)

(3) Confirm the information, modify the I/O address if necessary, and press the “OK’ button.

5.39.1 Interlock Data Positions between Tables

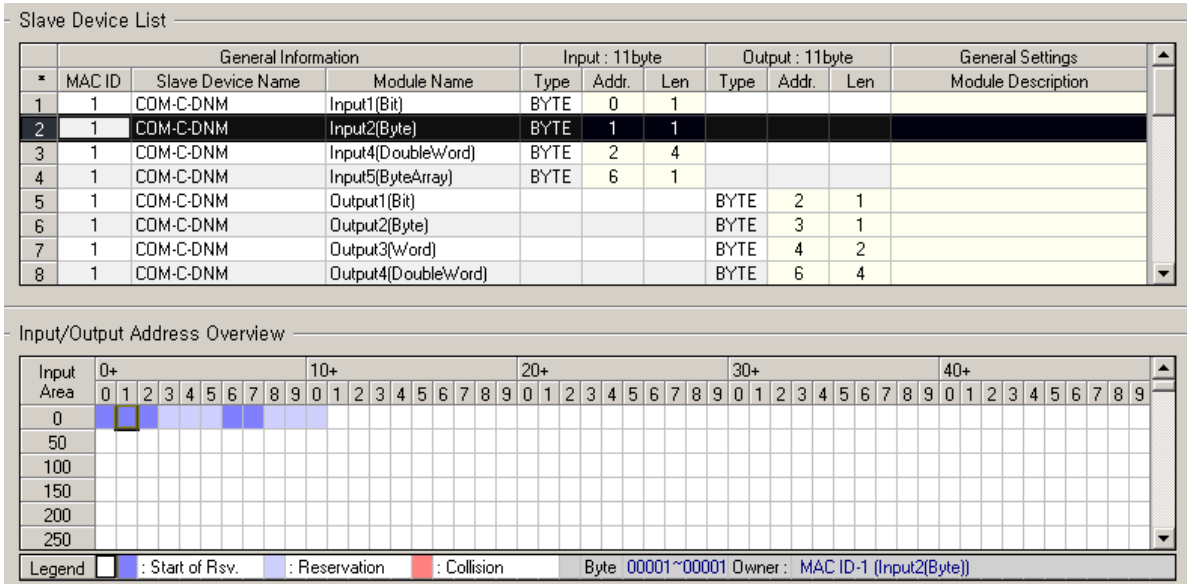
The slave device list table and the two I/O address display tables in the "Slave I/O Data Address Table" dialog box is interlocked with respect to the user-select (in the case of the slave device list table) module or the byte position(in the case of the I/O address display table).

If data from one table is selected as follows, the other table inverts the position of the relevant data.



*	General Information			Input : 11byte			Output : 11byte			General Settings
	MAC ID	Slave Device Name	Module Name	Type	Addr.	Len	Type	Addr.	Len	Module Description
1	1	COM-C-DNM	Input1(Bit)	BYTE	0	1				
2	1	COM-C-DNM	Input2(Byte)	BYTE	1	1				
3	1	COM-C-DNM	Input4(DoubleWord)	BYTE	2	4				
4	1	COM-C-DNM	Input5(ByteArray)	BYTE	6	1				
5	1	COM-C-DNM	Output1(Bit)				BYTE	2	1	
6	1	COM-C-DNM	Output2(Byte)				BYTE	3	1	
7	1	COM-C-DNM	Output3(Word)				BYTE	4	2	
8	1	COM-C-DNM	Output4(DoubleWord)				BYTE	6	4	

[Figure 5.39.5] Example that shows the area is inverted in the bottom table when module address is clicked from the top table



*	General Information			Input : 11byte			Output : 11byte			General Settings
	MAC ID	Slave Device Name	Module Name	Type	Addr.	Len	Type	Addr.	Len	Module Description
1	1	COM-C-DNM	Input1(Bit)	BYTE	0	1				
2	1	COM-C-DNM	Input2(Byte)	BYTE	1	1				
3	1	COM-C-DNM	Input4(DoubleWord)	BYTE	2	4				
4	1	COM-C-DNM	Input5(ByteArray)	BYTE	6	1				
5	1	COM-C-DNM	Output1(Bit)				BYTE	2	1	
6	1	COM-C-DNM	Output2(Byte)				BYTE	3	1	
7	1	COM-C-DNM	Output3(Word)				BYTE	4	2	
8	1	COM-C-DNM	Output4(DoubleWord)				BYTE	6	4	

[Figure 5.39.6] Example that shows when reservation area is clicked in the bottom table, the module that reserves the area in the top table is inverted

Note

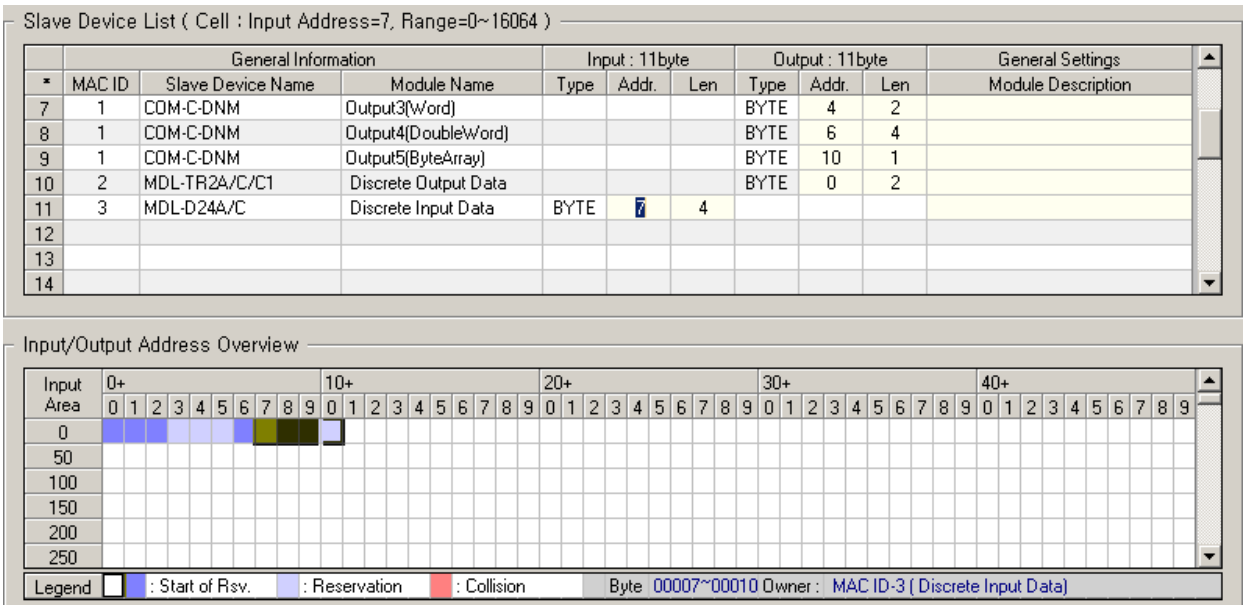
1) Output address display table and slave deice list table are interlocked same as above example.

5.39.2 Modify Module I/O Addresses

The configured module I/O address can be modified.

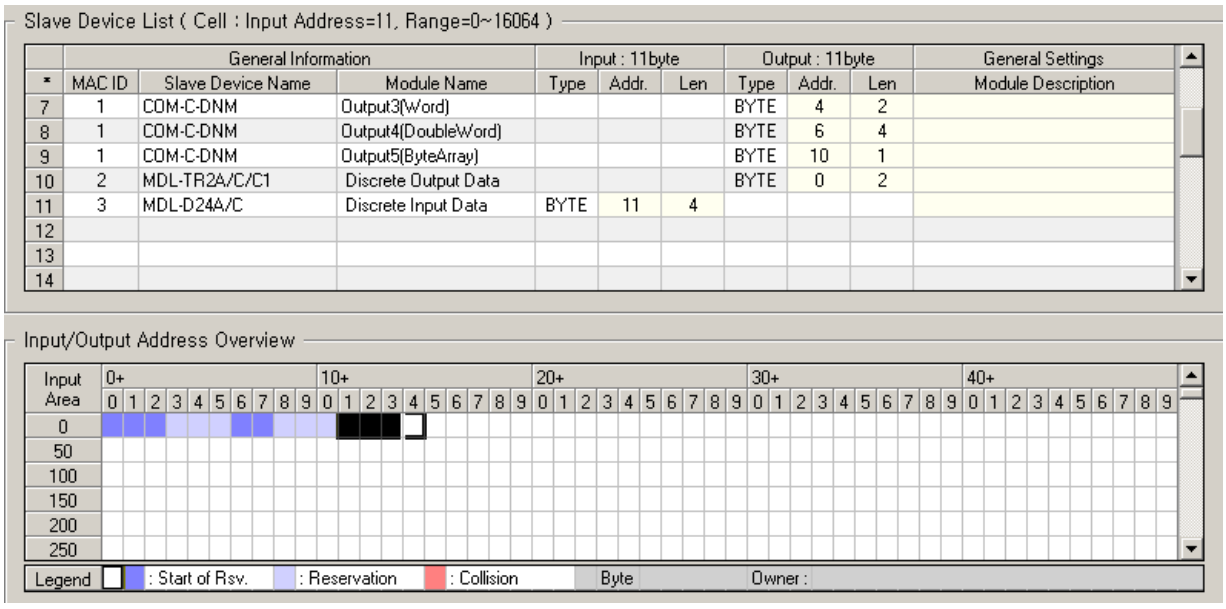
If keyboard input is started, the allowable range for the current item(cell) is displayed in the "Slave Device List" frame title as follows.

In the I/O address display table, the color of the area corresponding to the current input address is inverted as shown below.



[Figure 5.39.7] Example of screen where module I/O address is being modified

If you press the enter key to finish entering the address, the area that has been inverted is displayed as its being reserved.



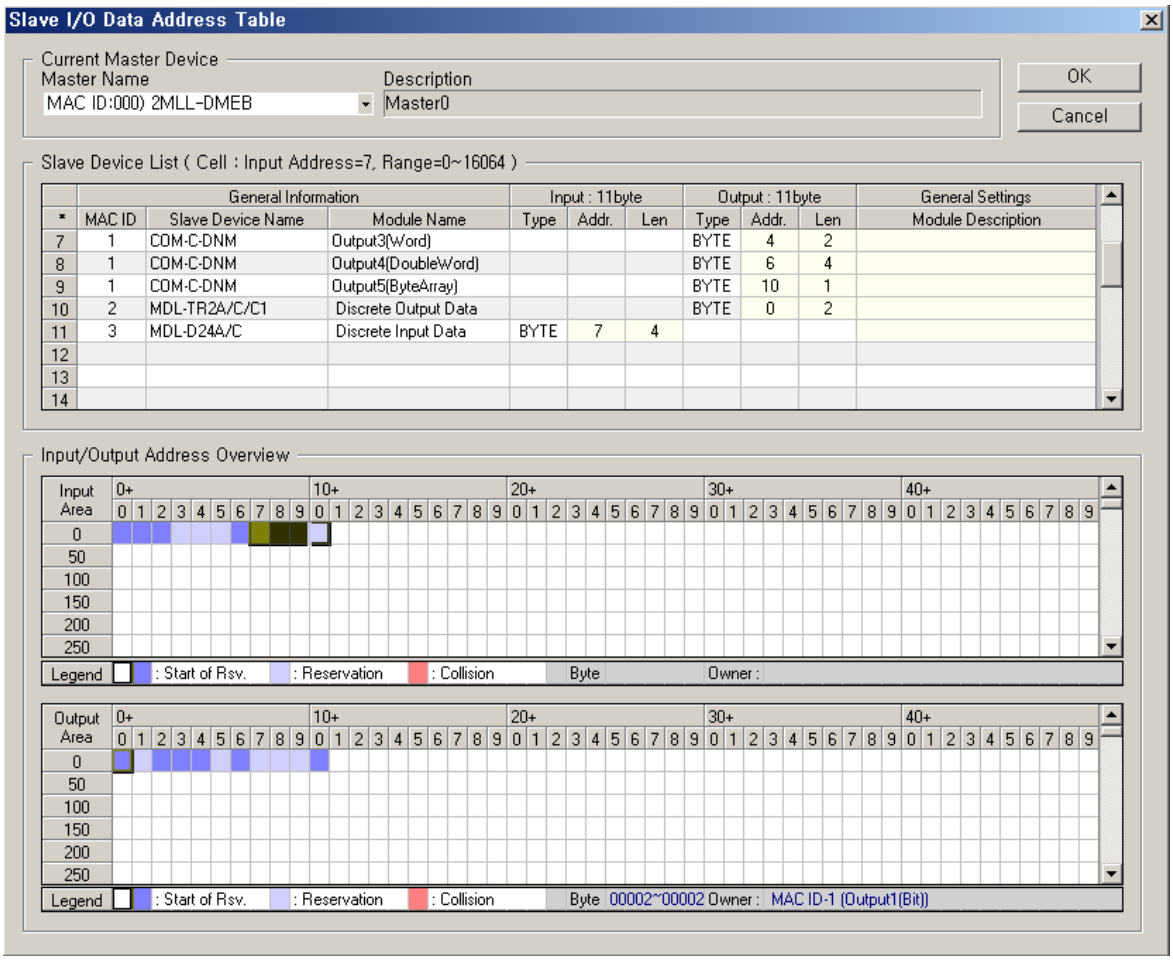
[Figure 5.39.8] Example of screen where module I/O address modification is completed

5.39.3 Modify Module I/O Address Lengths

The configured module I/O length can be modified.

If keyboard input is started, the allowable range for the current item (cell) is displayed in the “Slave Device List” frame title

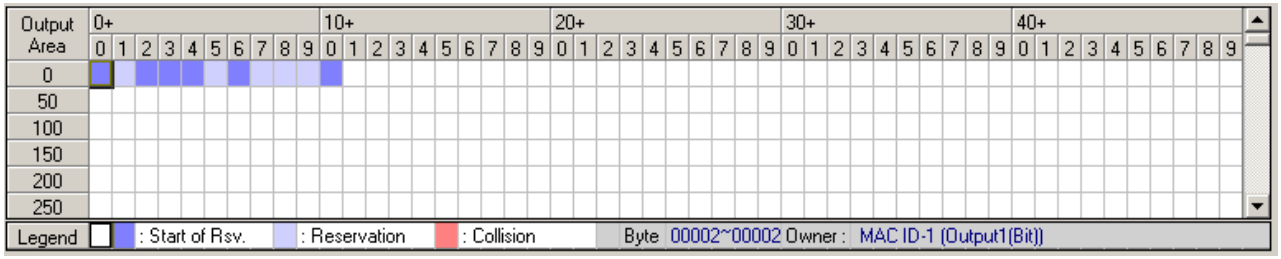
In the I/O address display table, the color of the area corresponding to the current input area is inverted as shown below.



[Figure 5.39.9] Example of screen where module I/O length is being modified

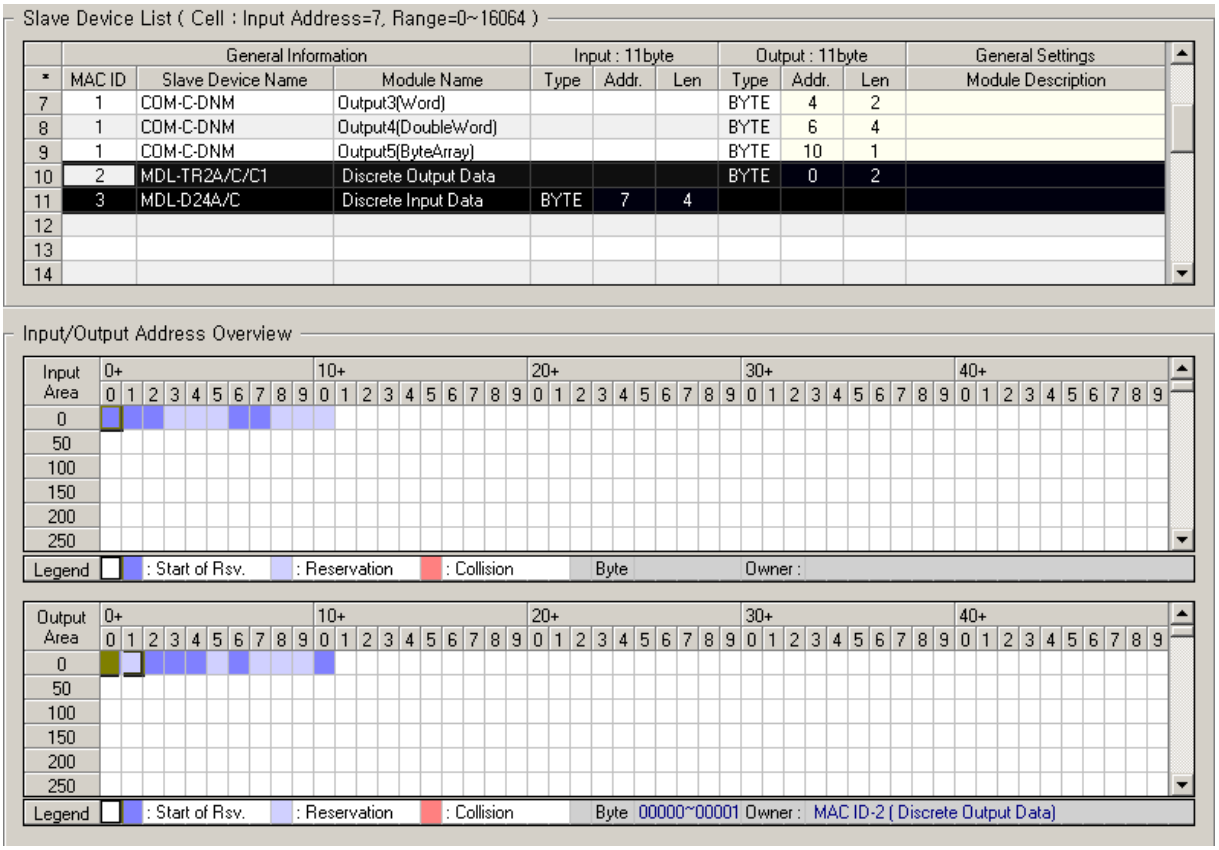
5.39.4 Rearrange Duplicate I/O Addresses

The I/O address display table indicates that the address id duplicated by the collision display when there are multiple modules that have reserved the same address area among the addresses assigned to the module.



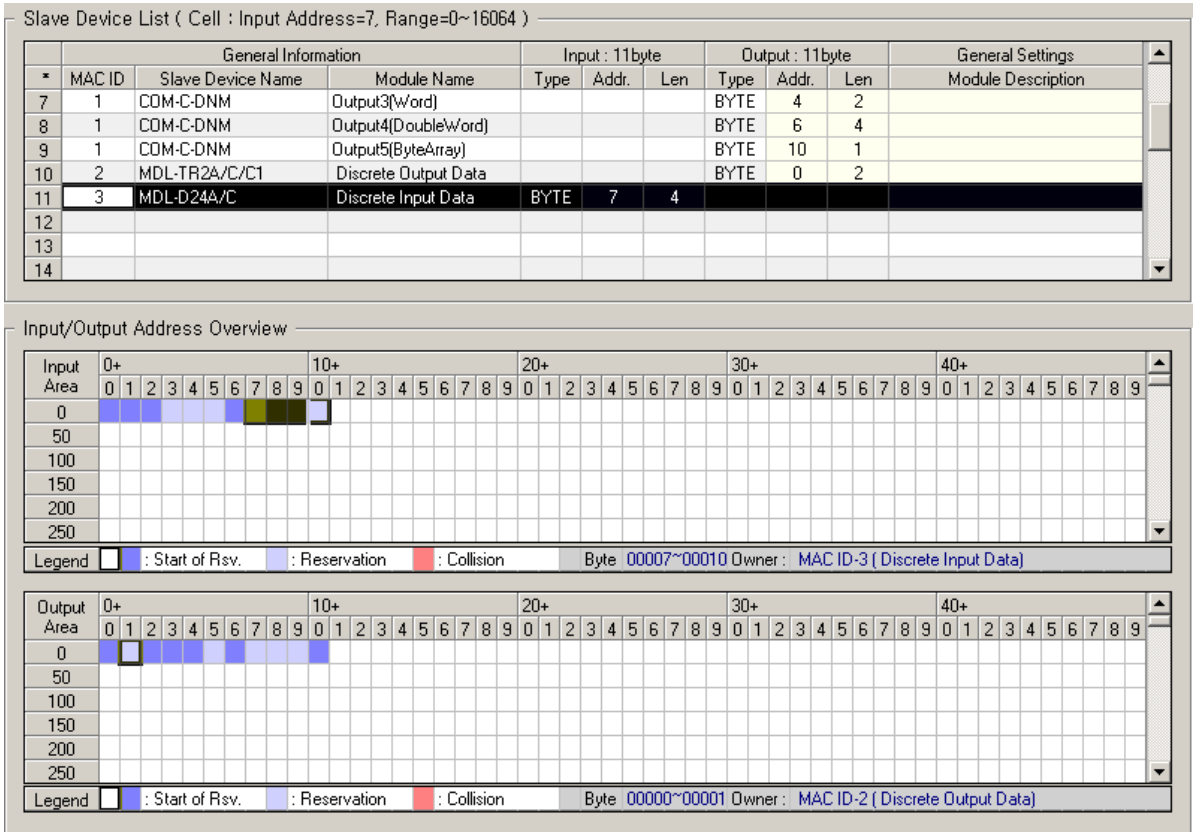
[Figure 5.39.10] Example of screen where output address 0 byte area is duplicated

If the collision display area is selected in the I/O address display table with a mouse, the color of the module that is duplicating the address is inverted as shown in the top table.



[Figure 5.39.11] Example of screen to identify module that is duplicating the address

If the address of one of the duplicated modules is assigned to an empty address space, the collision state is released as follows.



[Figure 5.39.12] Example of screen where the duplicated part is removed by modifying the module address

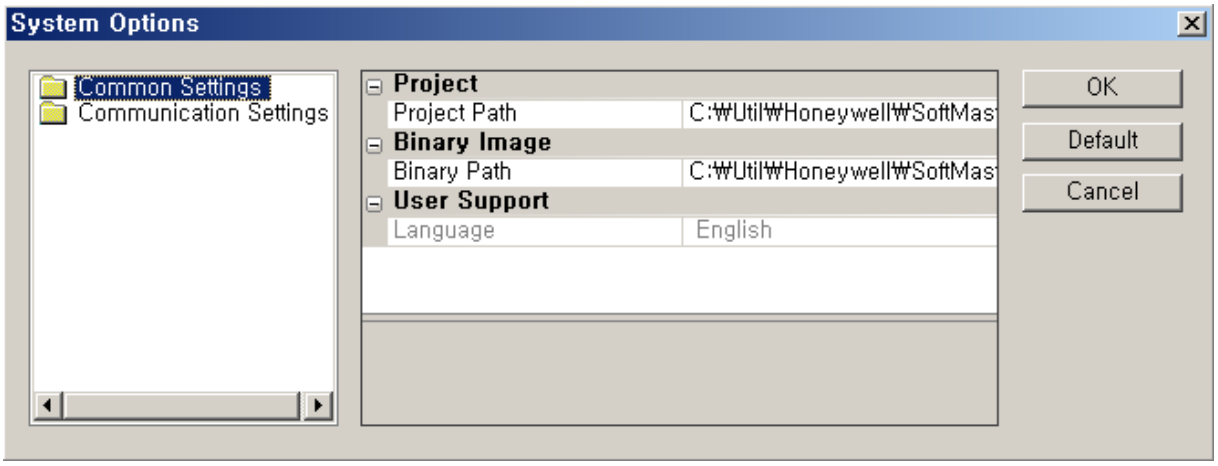
5.40 Option Window

This unit describes how to set various system options.

5.40.1 Change the Path of EDS File to be Interpreted

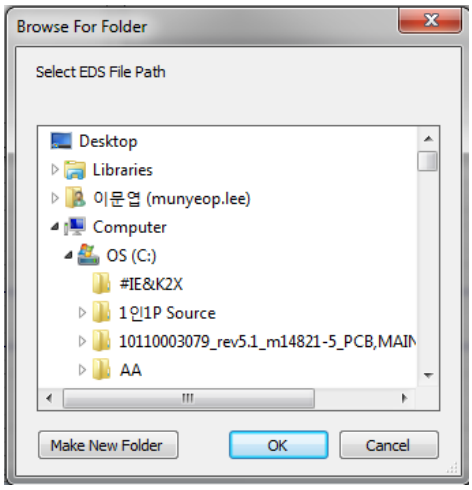
Change the path where EDS file to be interpreted is saved.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



[Figure 5.40.1] “System Options” dialog box

(3) Open the Common Settings folder in the left tree of dialog box and select the Startup item.
(4) Press the “(…)” button of [EDS Interpretation] - [EDS Path] item among attributes of dialog box
(5) The following “Browse for Folder” dialog box appears.



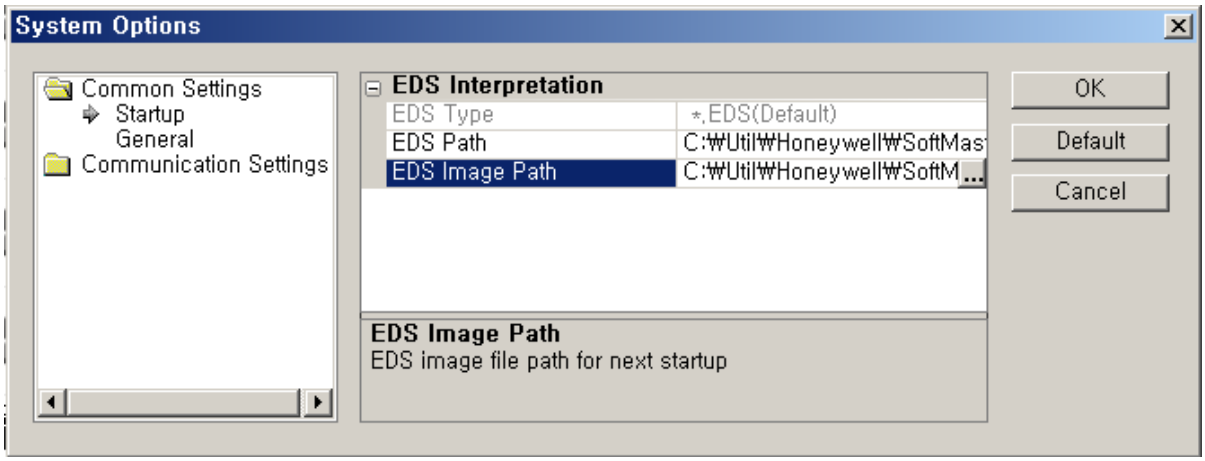
[Figure 5.40.2] “Browse for Folder” dialog box

(6) Select the file to read EDS file and press the “OK” button.
(7) Press the “OK” button of “System Options” dialog box to save the changes.

5.40.2 Change the Path of EDS Image File to be Interpreted

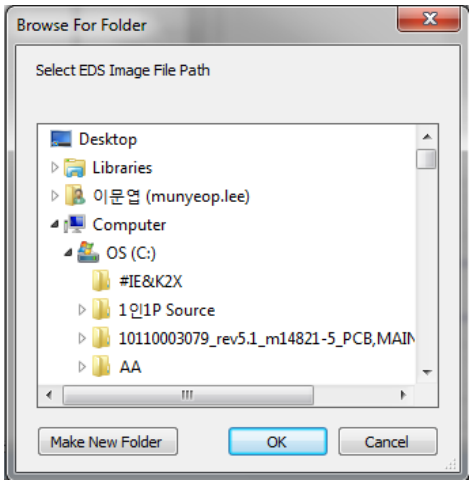
Change the path of EDS image file to be interpreted is saved.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



[Figure 5.40.3] “System Options” dialog box

(3) Open the Common Settings folder in the left tree of dialog box and select the Startup item.
(4) Press the “(…)” button of [EDS Interpretation] – [EDS Image Path] item among attributes of dialog box.
(5) The following “Browse for Folder” dialog box appears.



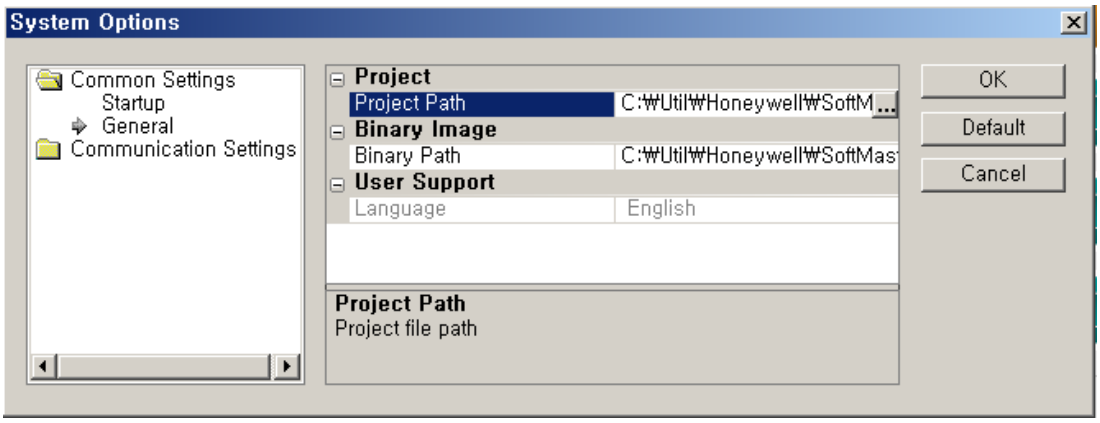
[Figure 5.40.4] “Browse for Folder” dialog box

(6) Select the folder to read EDS file and press the “OK’ button.
(7) Press the “OK’ button of the “System Options” dialog box to save the changes.

5.40.3 Change Project File Path

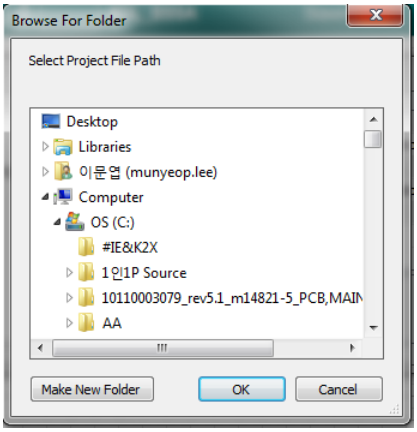
Change the Save path of project file.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



[Figure 5.40.5] “System Options” dialog box

(3) Open the Common Settings folder in the left tree of dialog box and select the General item.
(4) Press the “(…)” button of [Project] – [Project Path] item among attributes of dialog box.
(5) The following “Browse for Folder” dialog box appears.



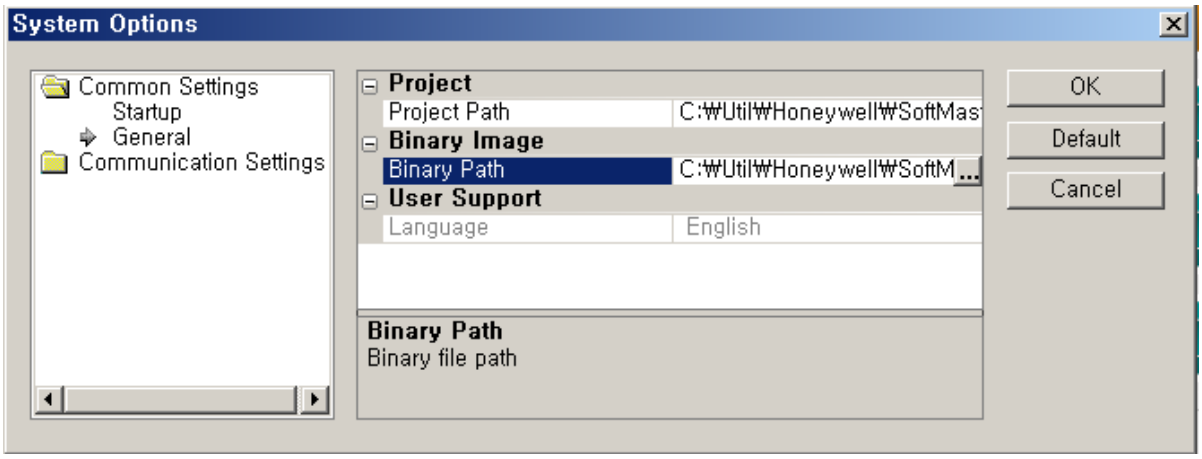
[Figure 5.40.6] “Browse for Folder” dialog box

(6) Select the folder to save the project and press the “OK’ button.
(7) Press the “OK” button of the “System Options” dialog box to save the changes.

5.40.4 Change Binary File Path

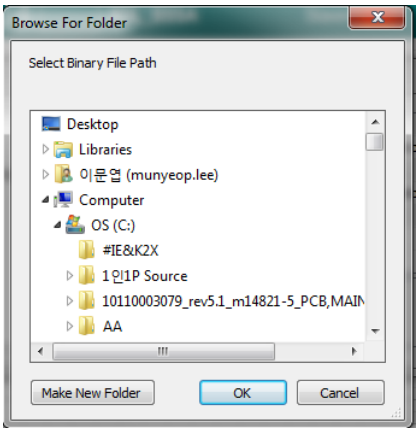
Change the Save path of binary file.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



[Figure 5.40.7] “System Options” dialog box

(3) Open the Common Settings folder in the left tree of dialog box and select the General item.
(4) Press the “(…)”button of [Binary Image] – [Binary Path] item among attributes of dialog box.
(5) The following “Browse for Folder” dialog box appears.



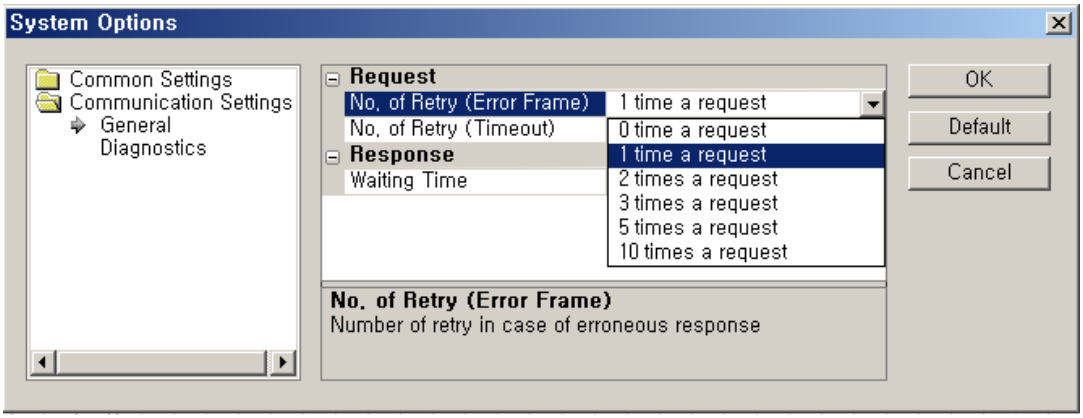
[Figure 5.40.8] “Browse for Folder” dialog box

(6) Select the folder to save the binary file and press the “Ok” button.
(7) Press the “OK” button of the “System Options” dialog box to save the changes.

5.40.5 Change the Number of Communication Retries in Case of Erroneous Response

Set the number of command retransmissions in case of errors of received data in communication with the master device.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



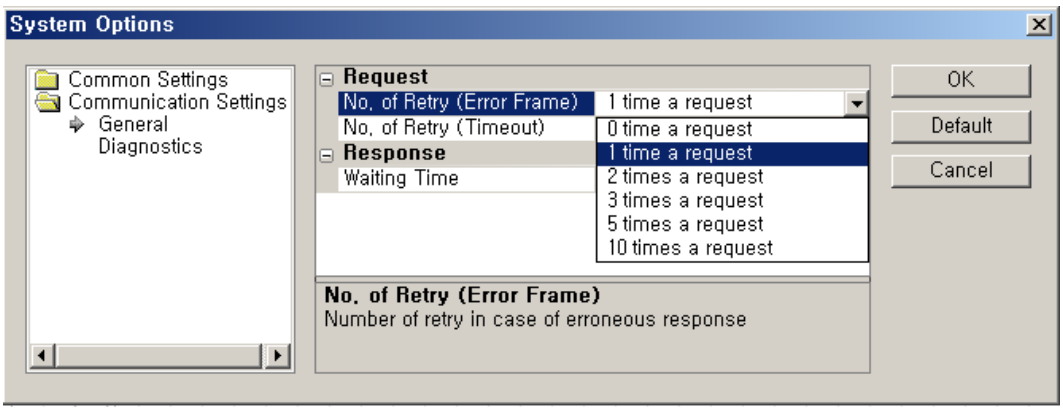
[Figure 5.40.9] “System Options” dialog box

(3) Open the Communication Settings folder in the left tree of dialog box and select the General item.
(4) Select the number of times in the [Request] - [Number of Retry (Error Frame)] item combo box among attributes of dialog box. (The number of command retransmissions that can be selected is 0, 1, 2, 3, 5 and 10times.)
(5) Press the “OK” button of the “System Options” dialog box to save the changes.

5.40.6 Change the Number of Communication Retries in Case of Response Timeout

Set the number of command retransmissions in case of received data timeout in communication with the master device.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



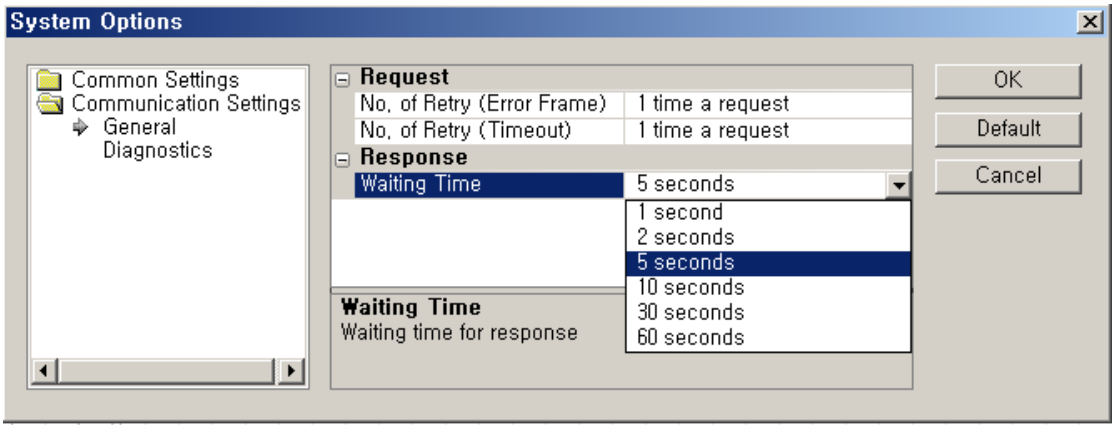
[Figure 5.40.10] “System Options” dialog box

(3) Open the Communication Settings folder in the left tree of dialog box and select the General item.
(4) Select the number of times in the [Request] - [Number of Retry (Timeout)] item combo box among attributes of dialog box. (The number of command retransmissions that can be selected is 0, 1, 2, 3, 5 and 10 times.)
(5) Press the “OK” button of the “System Options” dialog box to save the changes.

5.40.7 Change Waiting Time for Communication Response

Change the waiting time for response in communication with the master device.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



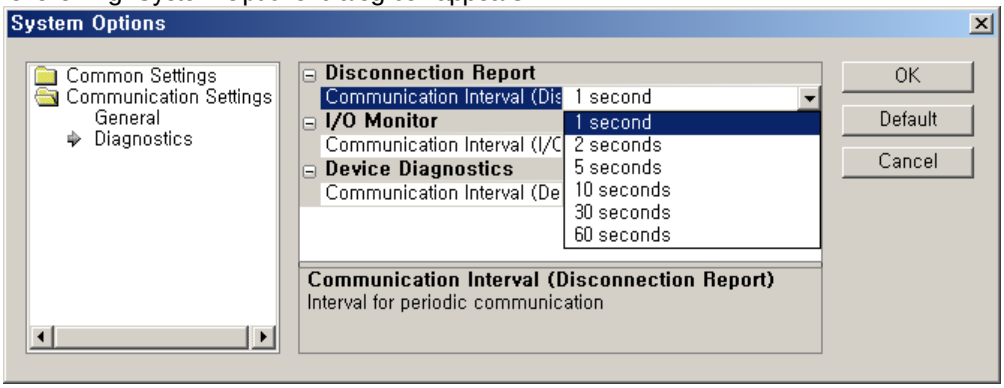
[Figure 5.40.11] “System Options” dialog box

(3) Open the Communication Settings folder in the left tree of dialog box and select the General item.
(4) Select time in the [Response] - [Waiting Time] item among attributes of dialog box.
(The waiting time for response that can be selected is 1, 2, 5, 10, 30, and 60 seconds.)
(5) Press the “OK” button of the “System Options” dialog box to save the changes.

5.40.8 Change Disconnection Report Communication Intervals

Change the communication intervals of disconnection report function.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



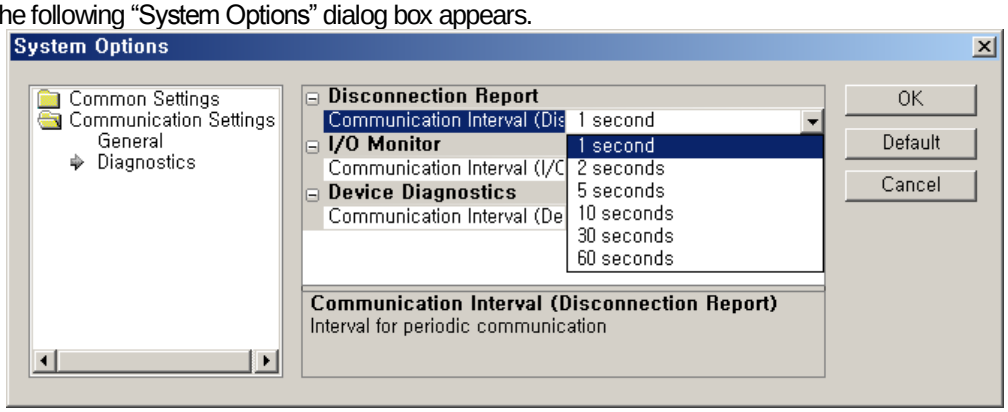
[Figure 5.40.12] “System Options” dialog box

(3) Open the Communication Settings folder in the left tree of dialog box and select the Diagnostics item.
(4) Select time in the [Disconnection Report] - [Communication Interval] item combo box among attributes of dialog box. (The communication interval that can be selected is 1, 2, 5, 10, 30 and 60 seconds.)
(5) Press the “OK” button of the “System Options” dialog box to save the changes.

5.40.9 Change I/O Monitor Communication Intervals

Change the communication intervals of I/O Monitor function.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.



[Figure 5.40.13] “System Options” dialog box

(3) Open the Communication Settings folder in the left tree of dialog box and select the Diagnostics item.
(4) Select time in the [I/O Monitor] - [Communication Interval] item combo box among attributes of dialog box. (The communication interval that can be selected is 1, 2, 5, 10, 30 and 60 seconds.)
(5) Press the “OK” button of the “System Options” dialog box to save the changes.

5.40.10 Change Diagnostic Event (Device Diagnostics) Communication Intervals

Change the communication interval of diagnostic event (Device Diagnostics) function.

[Step]
(1) Select the Menu [Tools] - [System Options].
(2) The following “System Options” dialog box appears.
(3) Open the Communication Settings folder in the left tree of dialog box and select the Diagnostics item.
(4) Select time in the [Device Diagnostics] - [Communication Interval] item combo box among attributes of dialog box. (The communication interval that can be selected is 1, 2, 5, 10, 30 and 60 seconds.)
(5) Press the “OK” button of the “System Options” dialog box to save the changes.

5.41 Window Management

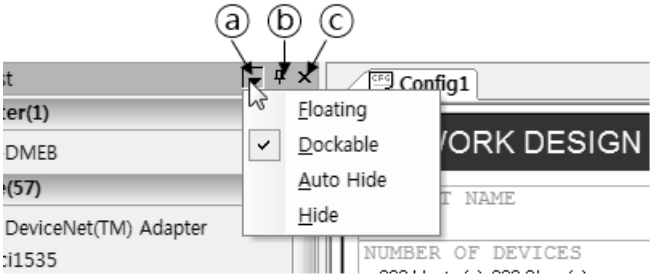
This chapter describes common functions provided by N CONFIGURATOR to manage the types and positions of the project window and various setting windows on the main screen.

This unit describes how to manage the windows through the common functions of the setting windows.

The target windows are as follows.

(1) Device list window
(2) EDS viewer window
(3) Project explorer window
(4) Master property window
(5) Slave property window
(6) Bus parameter window
(7) Output window

The setting windows have the following buttons and menus on the title bar.



[Figure 5.41.1] Buttons and menus displayed on the setting window title bar

[Descriptions of the buttons displayed on the setting window title bar]

ⓐ Display the menu for setting window
ⓑ Set( ) or disable ( )the Auto Hide function in the setting window.
ⓒ Hide the setting window

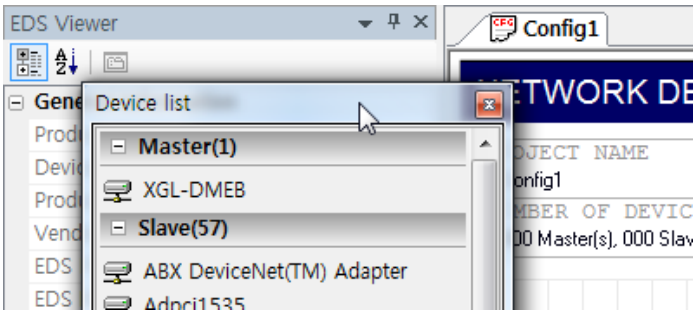
[Descriptions of the menus displayed on the setting window title bar]

1) Floating : Specifies whether to make the window a separate window separated from the mainframe
2) Dockable : Specifies whether to make the window a window that can be coupled to the mainframe
3) Auto Hide : Specifies whether to make the window a window that is automatically hidden when it is not used.
4) Hide : Hide the window. (The same function as the title bar button C in the figure above.)

5.41.1 Separate Windows from Mainframe

Make the setting window into a Floating Window separated from the mainframe of N CONFIGURATOR.

[Step]
(1) Press the Menu ( ) button on the setting window title bar.
(2) Select the Menu [Floating].
(3) The window is separated from the mainframe as follows.



[Figure 5.41.2] Example of device list window separated from the mainframe

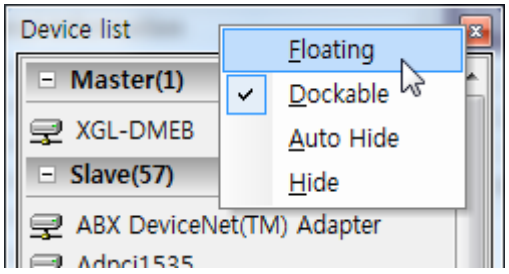
Note

1) The outer boundary line of the N CONFIGURATOR main screen is referred to as the mainframe.

5.41.2 Couple the Separated Window to Mainframe

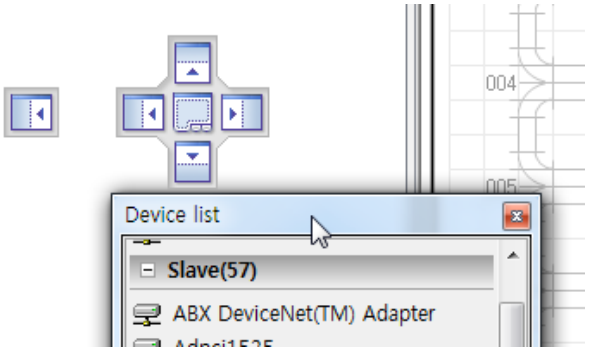
Make a Floating Window into a Docking Window coupled to the mainframe of N CONFIGURATOR.

[Step]
(1) Press the right mouse button on the independent setting window title bar.
(2) The following popup menu appears.



[Figure 5.41.3] Popup menu of Floating Window

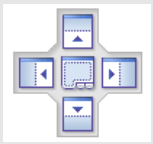
(3) Select the Menu [Dockable].
(4) Click the independent setting window title area and start mouse drag and the docking sticker will be displayed as follows.



[Figure 5.41.4] Example of docking sticker that appears while dragging window

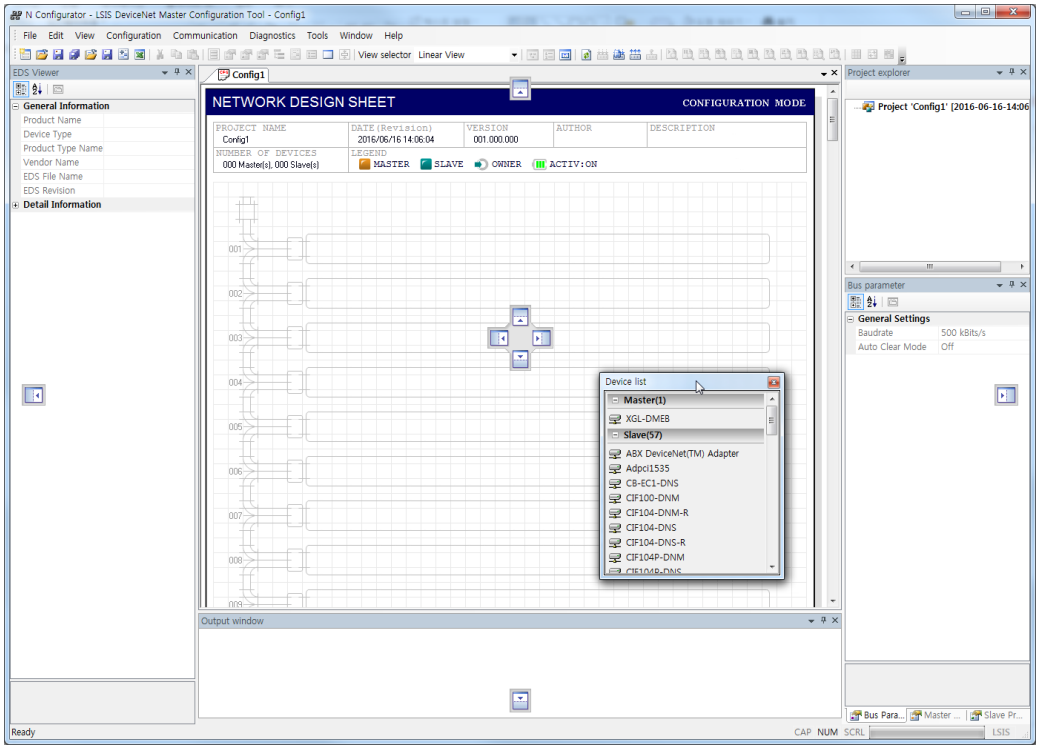
Note

1) The markings that appear to make it easy to find a position that can be coupled if you drag a window set to [Dockable] in the menu are called Docking Stickers.



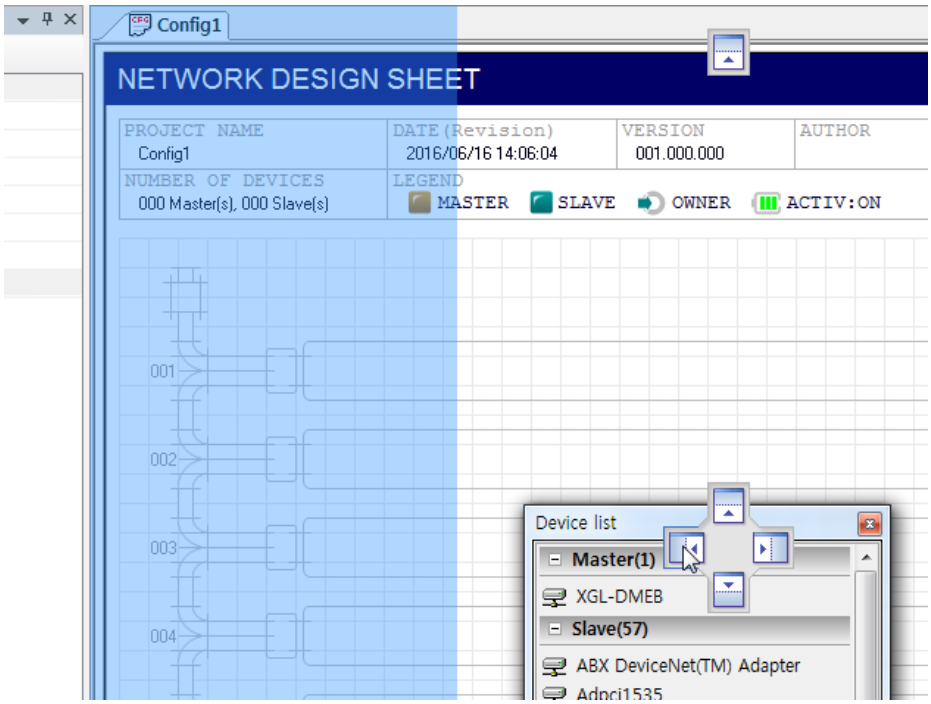
[Figure 5.41.5] Example of docking stickers that appear in the center of the screen

The position of the docking stickers displayed in the full screen when dragging the window is as follows.



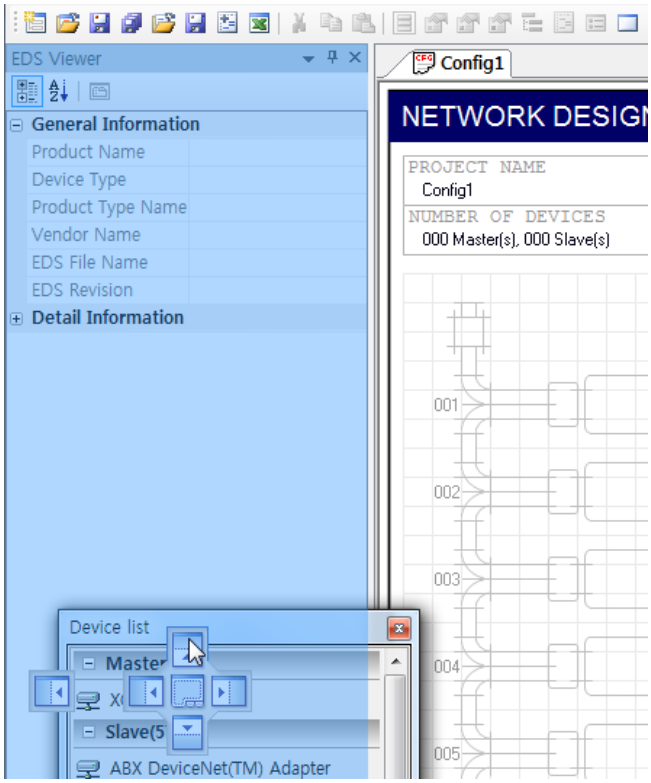
[Figure 5.41.6] Docking stickers that appears in the center and on the top, bottom, left and right side of the screen

(5) Move the mouse to one side of the docking sticker in the drag state and the position to be coupled to the mainframe if you drop in the current state will be displayed as a blue semi-transparent area.



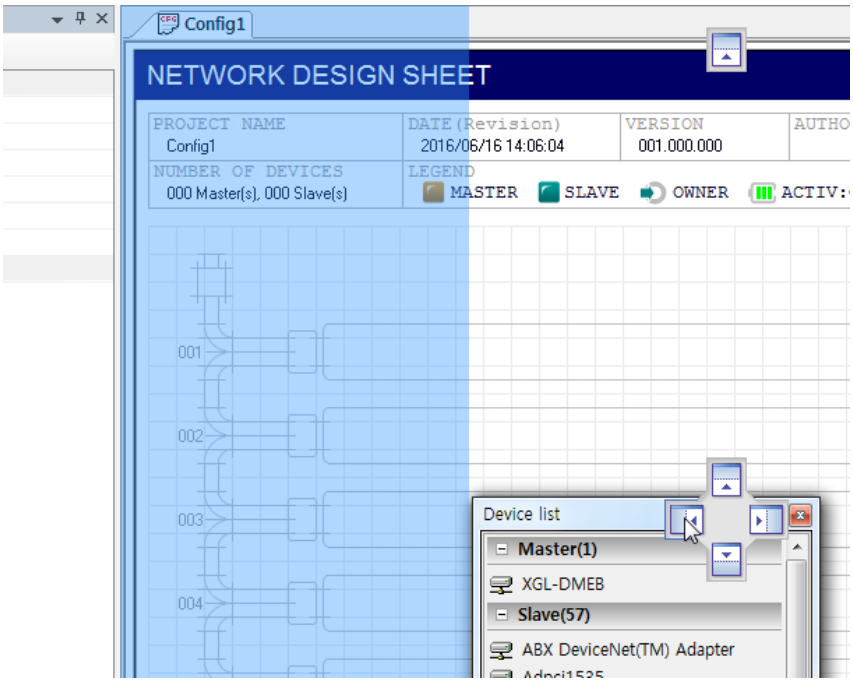
[Figure 5.41.7] Example of screen with a coupled position (blue semi-transparent area) displayed by selecting docking sticker

The docking sticker shows appropriate position that can be coupled in the current drag position as follows.

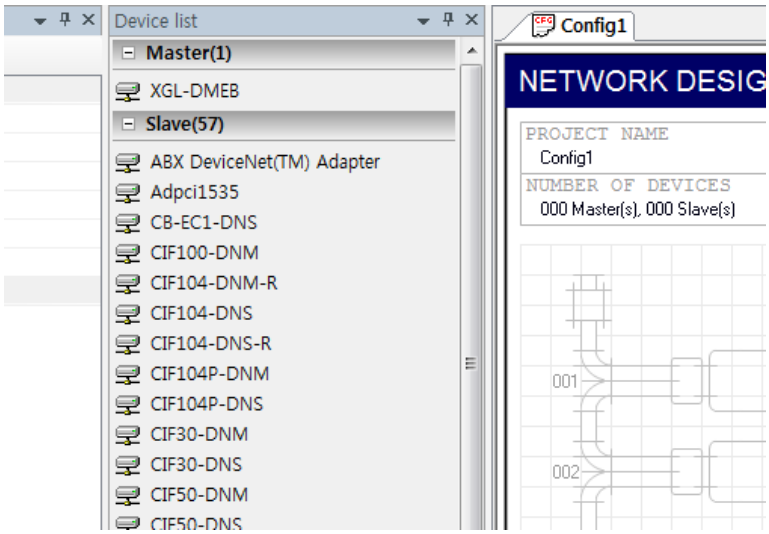


[Figure 5.41.8] Example of docking sticker moved to proper location depending on the mouse position

(6) Release (drop) the mouse while the blue semi-transparent area is displayed and the window will be coupled to the area as follows.



[Figure 13.1.9] Example of screen before a drop



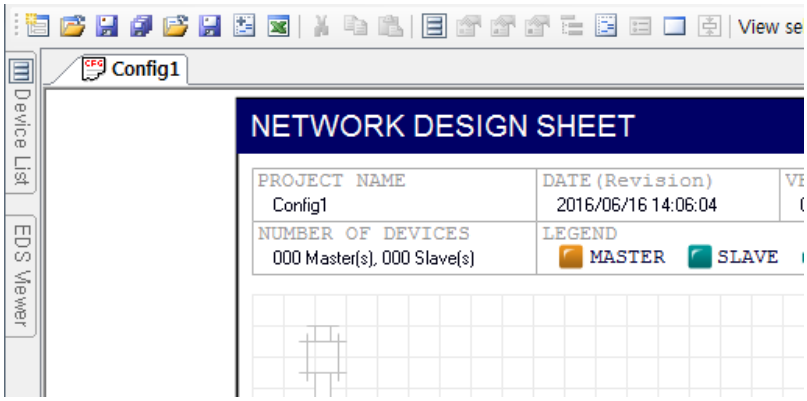
[Figure 13.1.10] Example of screen after a drop]

Unlike the conventional method of determining the shape and position of the window to be coupled through a fine mouse movement, this method enables a docking sticker to determine the shape and position of the window and allows a user to select the desired docking sticker, thereby providing better operational ease.

5.41.3 Set Window Auto-Hide

Make the setting window auto-hide.

[Step]
(1) Press the Auto Hide button on the setting window title bar to set the function ( ) or press the menu ( ) button on the setting window title bar to select the menu [Auto Hide].
(2) The setting window hides to the side of the frame as follows.

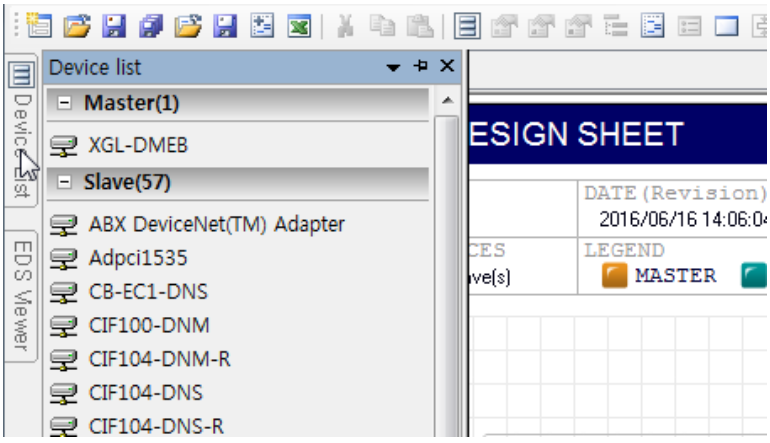


[Figure 5.41.11] Example of screen where device list window with Auto Hide settings is hidden

Note

1) The icon displayed on the Auto Hide button on the setting window title bar indicates whether the current window state cannot be hidden as it is fixed with tweezers(, Auto Hide diabled status) or can be hidden as it is not fixed with tweezers(, Auto Hide set status).

The window where Auto Hide is set is displayed only if the mouse points to the window and is automatically hidden again when the mouse leaves the window.



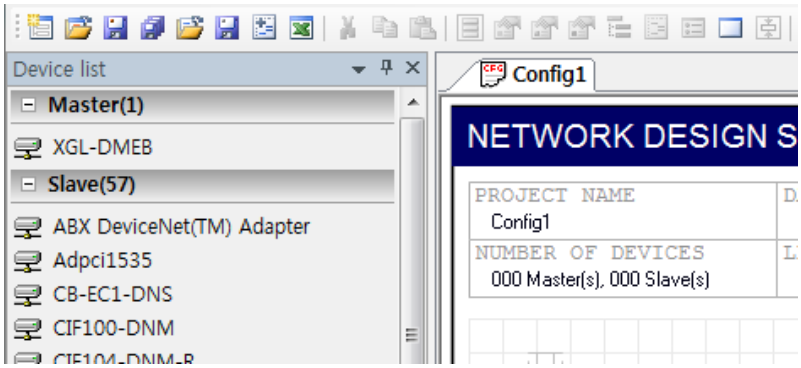
[Figure 5.41.12] Example of screen where device list window where Auto Hide is set is displayed

[Step]
(1) Select the menu [View] - [Device List].
(2) The above device list window appears.

5.41.4 Disable Window Auto-Hide

Disable the auto hide function of the window where the auto hide is set.

[Step]
(1) Press the Auto Hide button on the setting window title bar to disable the function (), or press the menu () on the setting window title bar and select the menu [Auto Hide] to clear the checkmark.
(2) The setting window is fixed to the original position as follows.

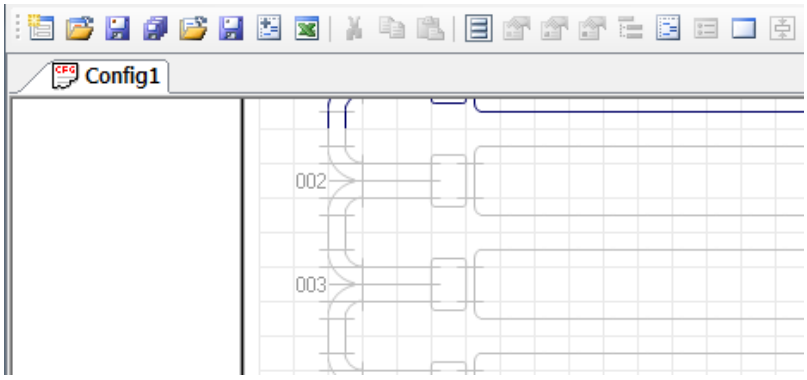


[Figure 5.41.13] Example of screen showing device list window with disabled auto-hide function

5.41.5 Hide Window

Hide the setting window from the main screen.

[Step]
(1) Press the Close () button on the setting window title bar or press the menu () on the setting window title bar to select the menu [Hide].
(2) The setting window is hidden on the screen as follows.



[Figure 5.41.14] Example of screen where device list window is hidden

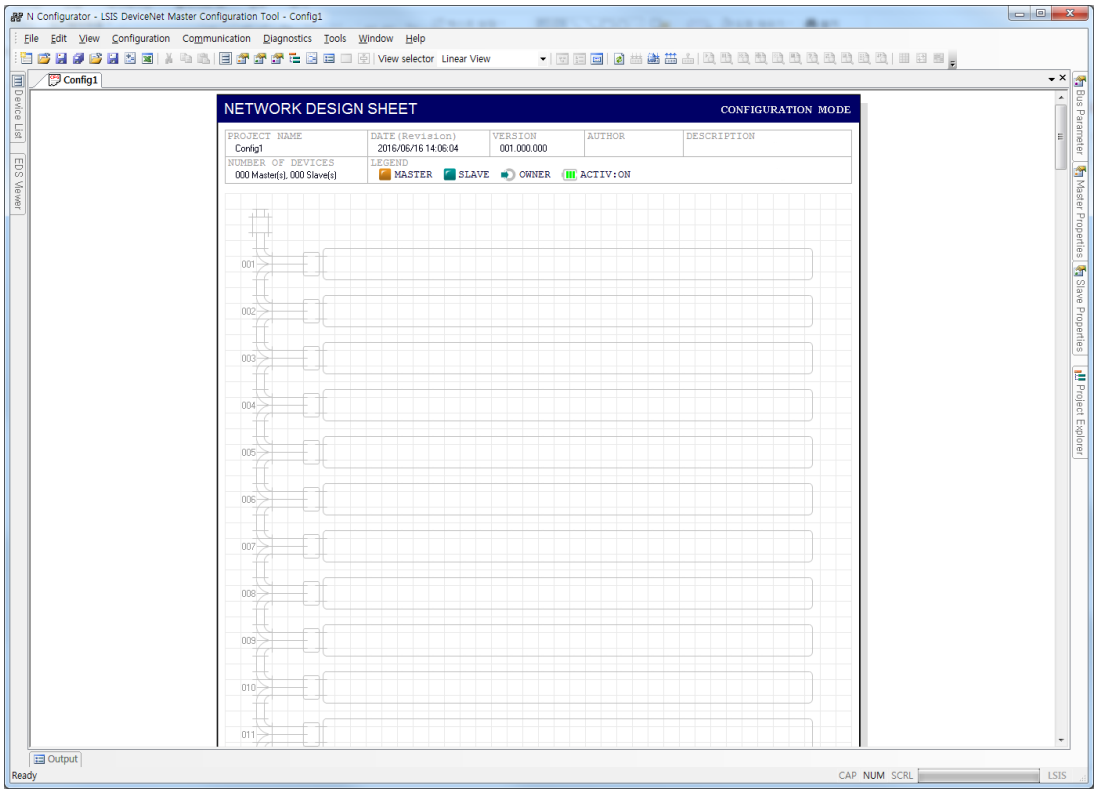
Note

1) Select the main menu [View] - [Window to open] to display the hidden window on the screen again.

5.41.6 Auto Hide All Setting Windows

Make all setting windows auto-hide.

[Step]
(1) Select the menu [Window] - [Auto Hide All].
(2) All windows except for the project window are automatically hidden as follows.



[Figure 5.41.15] Screen where all setting windows are automatically hidden

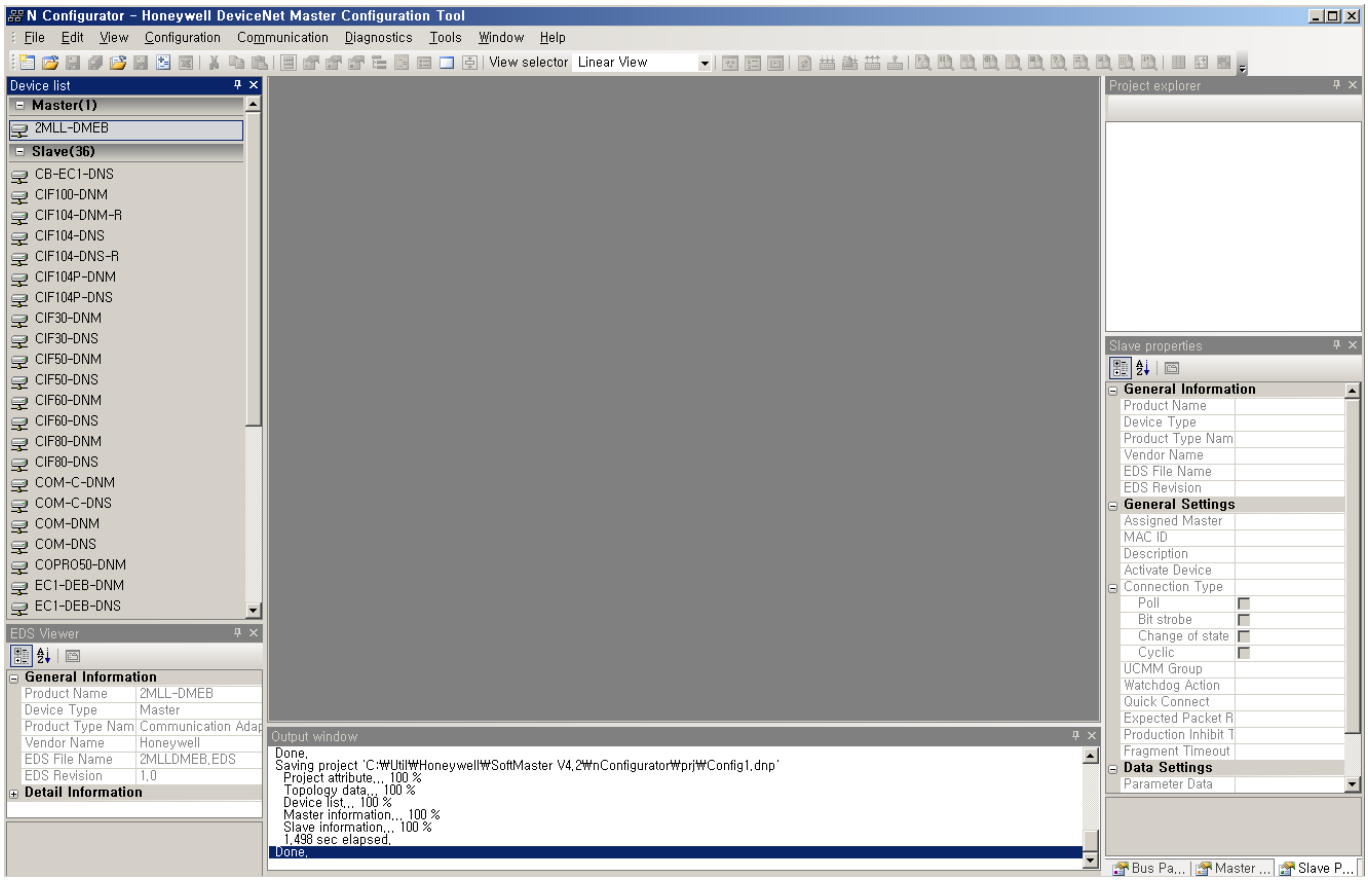
5.42 Project Window Management

This unit describes how to manage the project window.

5.42.1 Close All Project Windows

Close all project windows

[Step]
(1) Select the menu [Window] - [Close All Documents].
(2) Close all project window as follows.



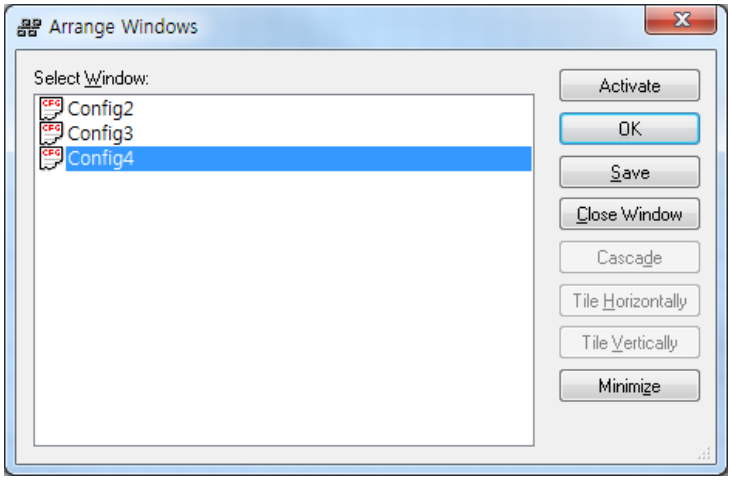
[Figure 5.42.1] Example of screen where all project window are closed

5.42.2 Project Management Window

Display the management window where all project windows on N CONFIGURATOR are listed.

[Step]
(1) Select the menu [Window] - [More Windows].

(2) The following “Arrange Windows” dialog box where all project window are listed appears.



[Figure 5.42.2] “Arrange Windows” dialog box

Each button of the dialog box performs the following functions.

(a) “Activate” button : Activates the project selected from the left list
(b) “OK” button : Closes the dialog box
(c) “Save” button : Saves the project selected from the left list
(d) “Close Window” button : Closes the project window selected from the left list
(e) “Minimize” button : Minimizes the project window selected from the left list

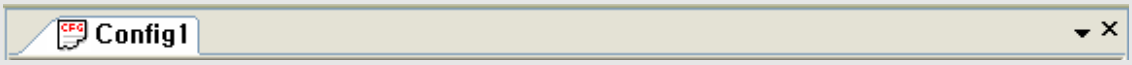
(3) When the necessary work is finished, press the “OK” button to close the dialog box.

5.43 Project Tab Group Management

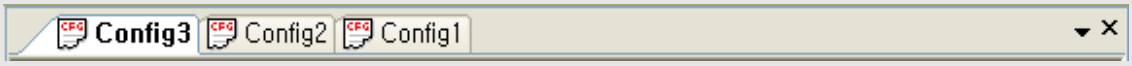
This unit describes how to manage the project window on a tab group basis.

Note

1) The area where the title is displayed at the top of the project window is called a Tab. If multiple projects are opened, they will form a tab group as follows.

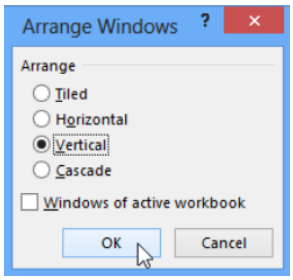


[Figure 5.43.1] Example of tab

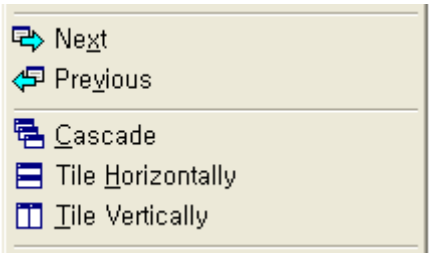


[Figure 5.43.2] Example of tab group

Tab group is a function that replaces window alignment in the existing window system to improve window operation and space utilization when you need to open and work with multiple project windows.

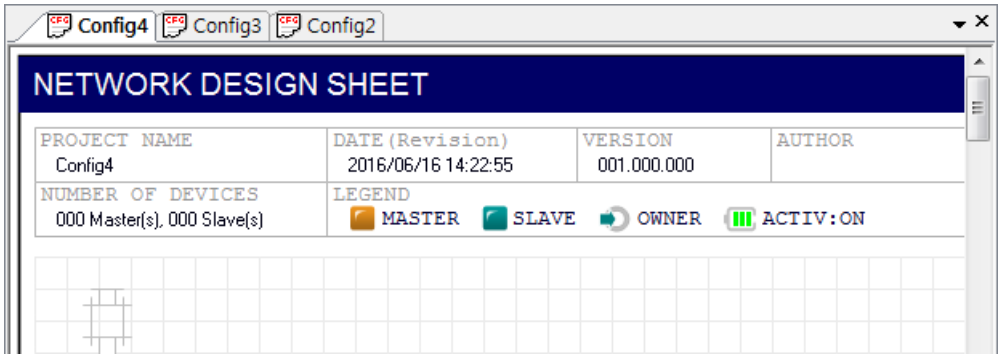


[Figure 5.43.3] Window alignment function in the existing window system (example of Microsoft Excel)



[Figure 5.43.4] Window alignment function in the existing window system (example of Microsoft Visual C++6.0)

The tab group is displayed in a fixed position to ensure quick access to all open project windows.



[Figure 5.43.5] Tab of each project window displayed at the top of the project window

In addition, the following functions are provided for cases where you need to work on multiple project windows at the same time.

5.43.1 Add New Horizontal Tab Group

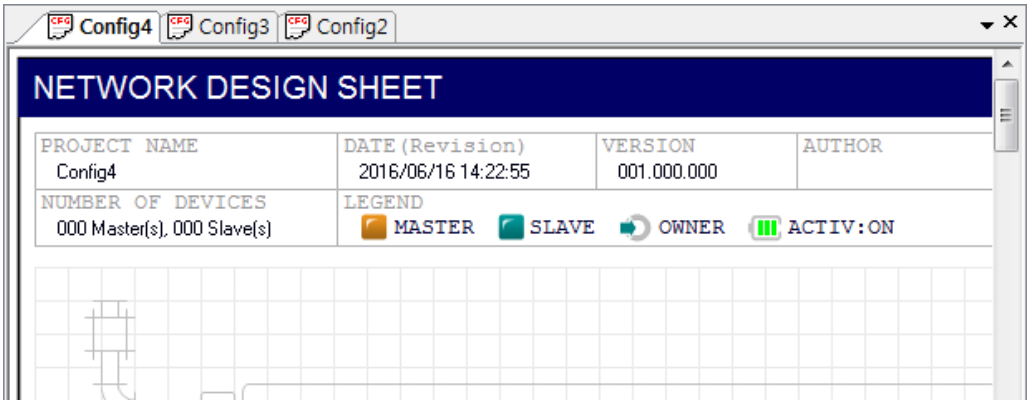
Create a new tab group with the current project window and display it horizontally.

[Step]
(1) Select the project window to be separated into individual tab groups.
(2) Select the menu [Window] - [New Horizontal Tab Group].

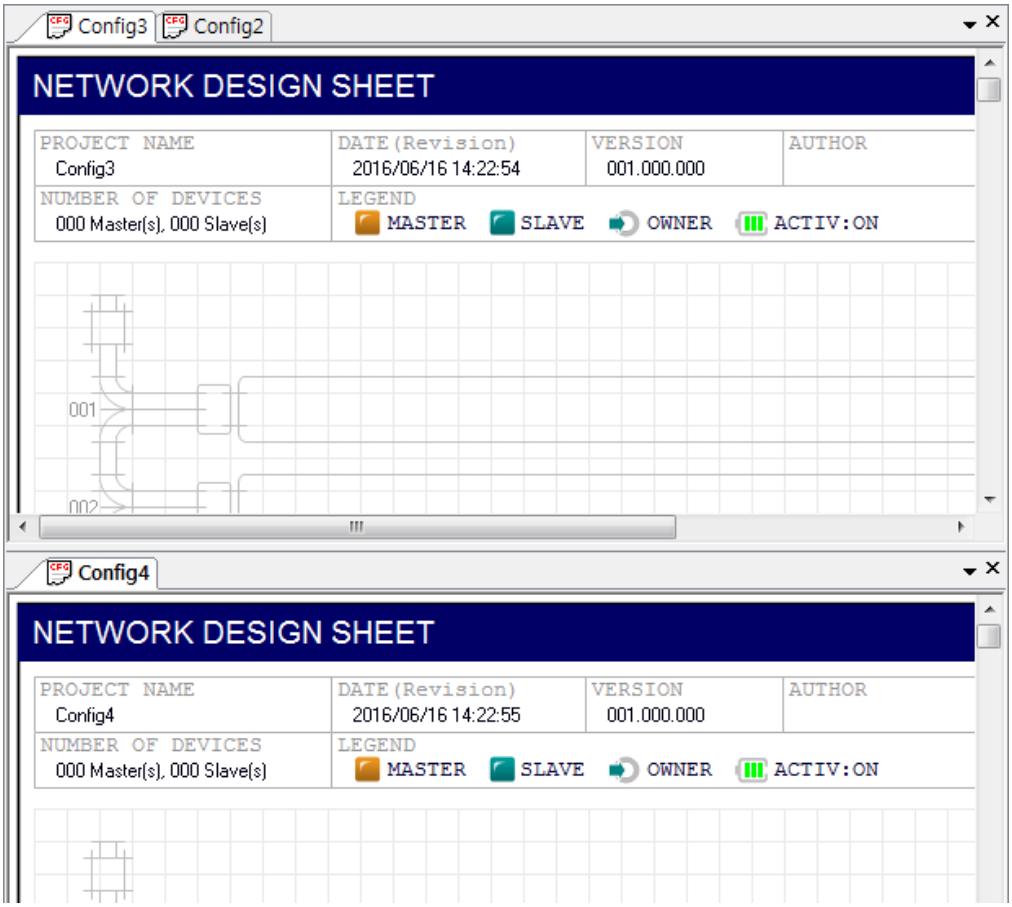
Note

1) This menu item appears on the main menu only when two or more project windows are opened.

(3) A new horizontal tab group with the current project window is created as follows.



[Figure 5.43.6] Example of screen before execution (add“Config4”project to new horizontal tab group)



[Figure 5.43.7] Example of screen after execution (add"Config4"project to new horizontal tab group)

In this way, tab groups with two or more project tabs can be split as many times as necessary.

5.43.2 Add new Vertical Tab Group

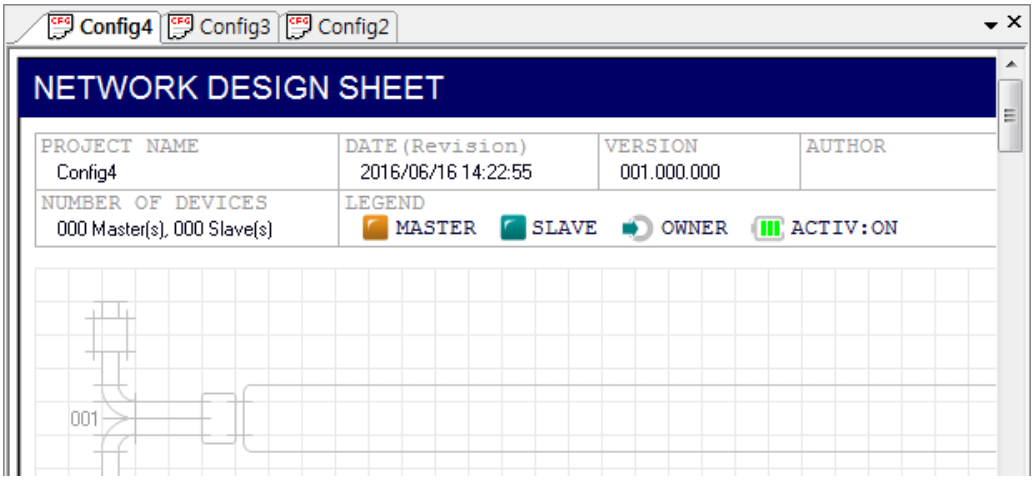
Create a new tab group with the current project window and display it horizontally.

[Step]
(1) Select the project window to be separated into individual groups.
(2) Select the menu [Window] - [New Horizontal Tab Group]

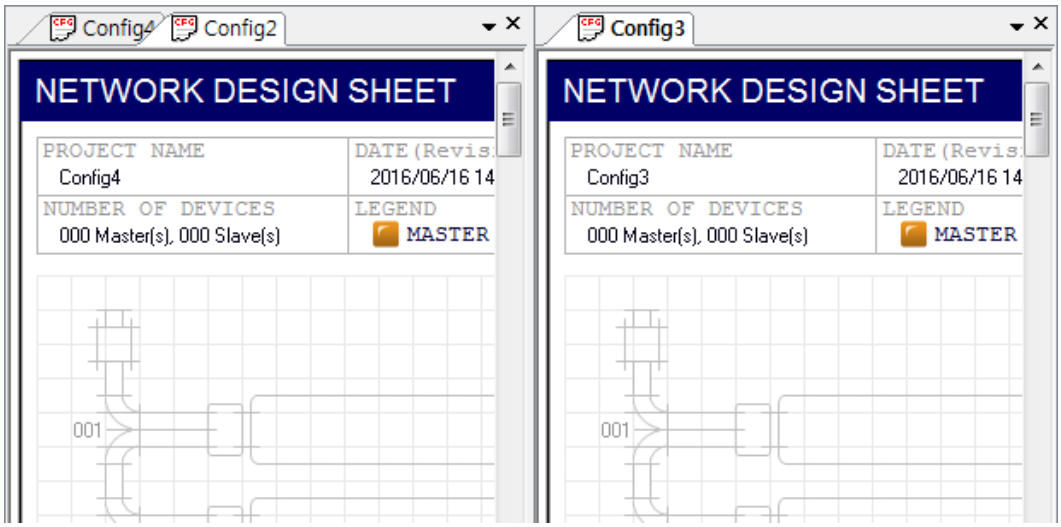
Note

1) This menu item appears on the main menu only when one or two project windows are opened.

(3) A new horizontal tab group with the current project window is created as follows.



[Figure 5.43.8] Example of screen before execution (add"Config3"project to new vertical tab group)



[Figure 5.43.9] Example of screen after execution (add"Config3"project to new vertical tab group)

5.43.3 Move to Next Tab Group

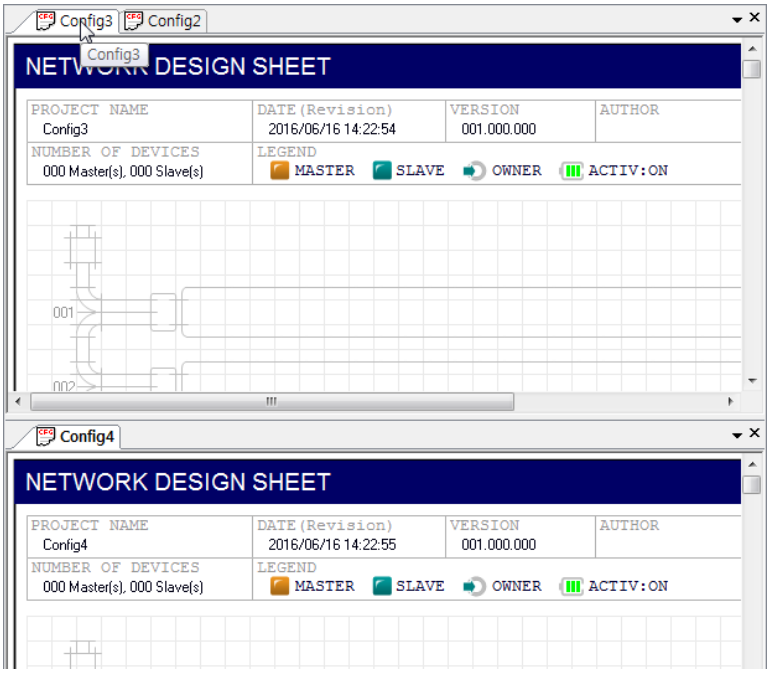
Move the current project window to the next tab group.

[Step]
(1) Select the project window to move.
(2) Select the menu [Window] - [Move to Next Tab Group].

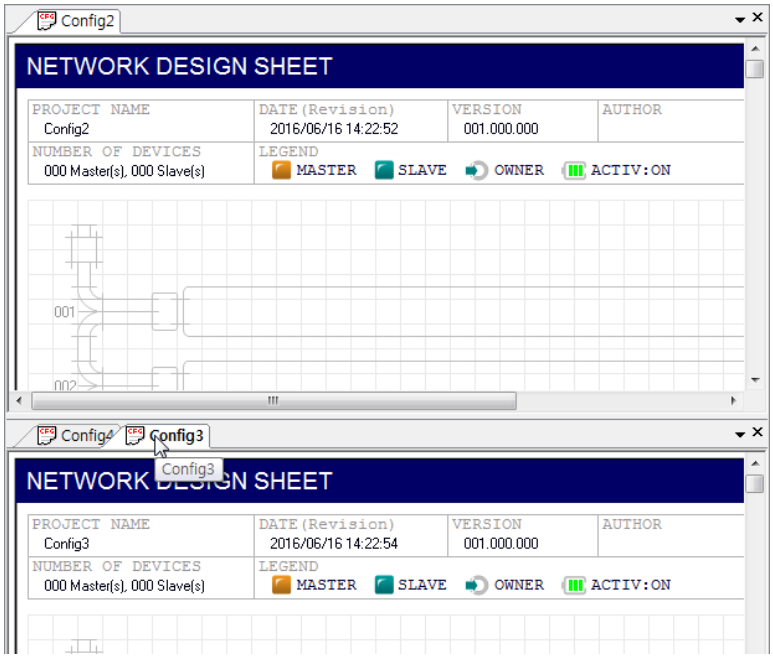
Note
1) This menu item appears on the main menu only when the tab group is split into two or more groups.

.

(3) The current project window is moved to the next tab group as follows.



[Figure 5.43.10] Example of screen before execution (move“Config3”project to the next horizontal tab group)



[Figure 5.43.11] Example of screen after execution (move “Config3”project to the next horizontal tab group)

Note

1) This function works the same way even if the project windows are displayed in the form of a vertical tab group

5.43.4 Move to Previous Tab Group

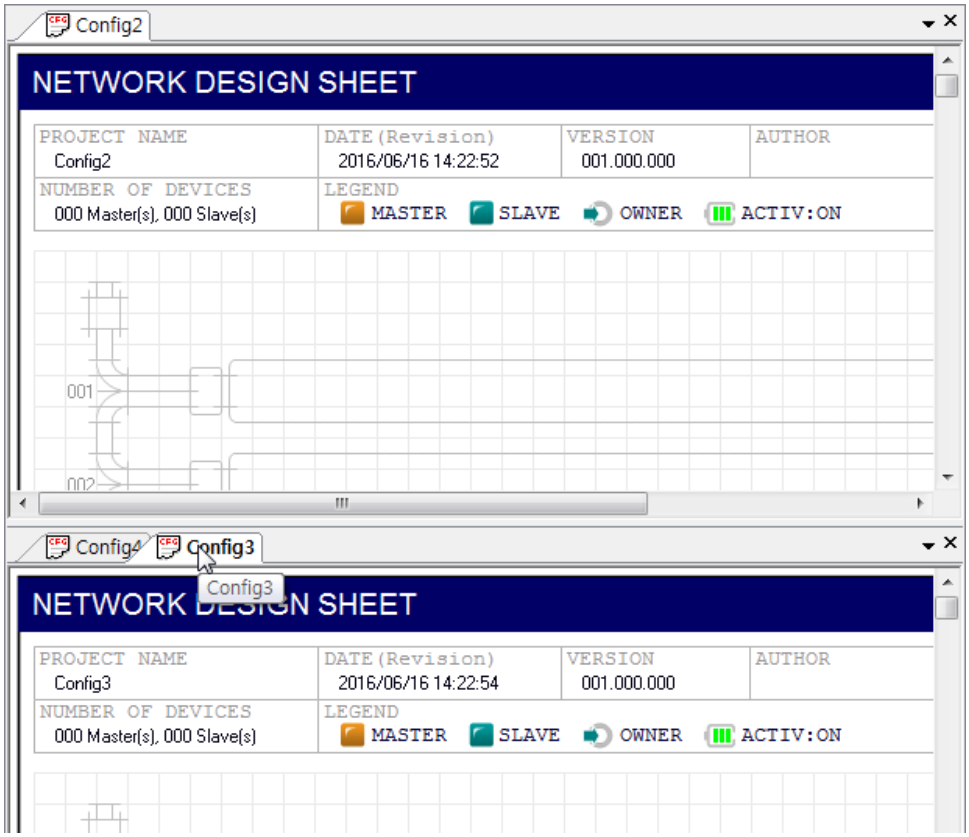
Move the current project window to the previous tab group.

[Step]
(1) Select the project window to move.
(2) Select the menu [Window] - [Move to Previous Tab Group].

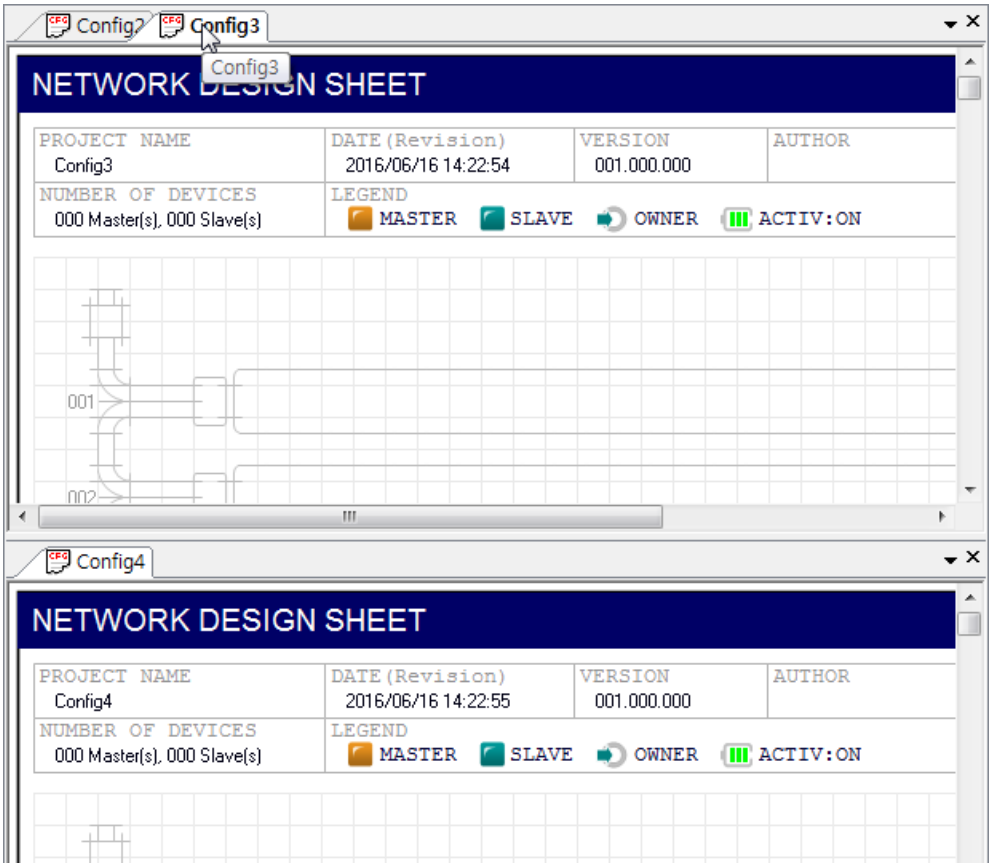
Note

1) This menu item appears on the main menu only when the tab group is split into two or more groups.

(3) The current project window is moved to the previous tab group as follows.



[Figure 5.43.12] Example of screen before execution (move “Config3”project to the previous horizontal tab group)



[Figure 5.43.13] Example of screen after execution (move “Config3”project to the previous horizontal tab group)

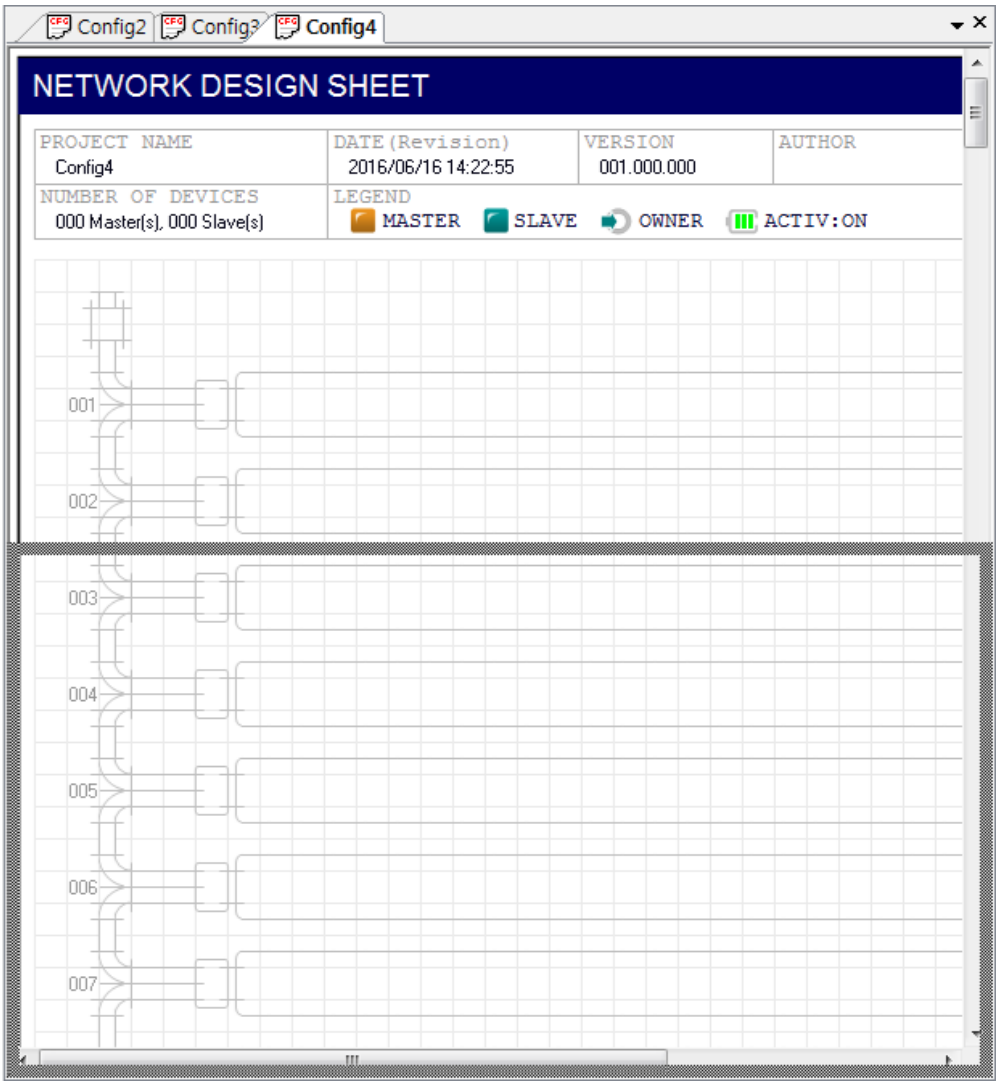
Note

1) This function works the same way even if the project windows are displayed in the form of a vertical tab group

5.43.5 Add Tab Groups and Move between Them by Drag & Drop

The tab group management functions on the main menu can also be executed by dragging the mouse within the project window.

Drag and drop the selected project tabs to the lower border of the window and the “Add New Horizontal Tab Group” function will be executed as follows.



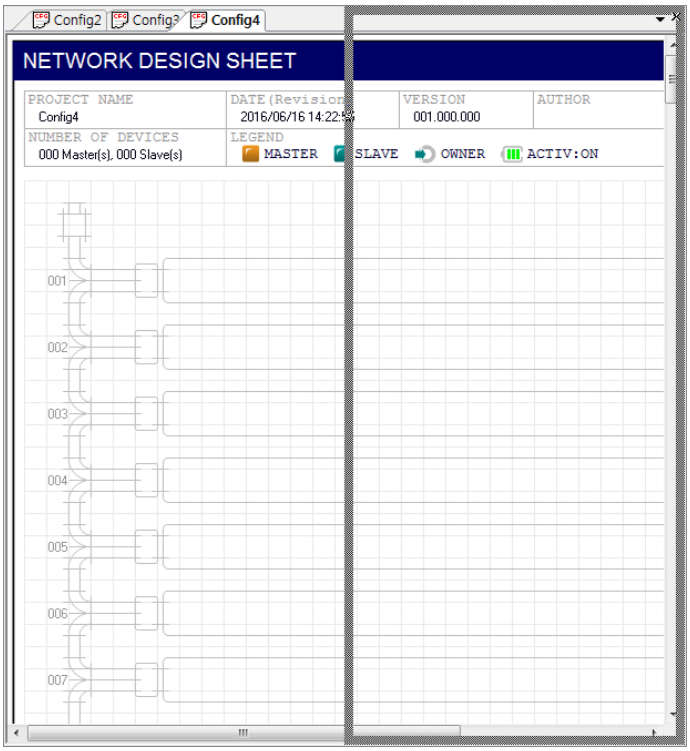
[Figure 5.43.14] Example of adding horizontal tabs using drag & drop (add “Config4”project to new horizontal project tab group)

Note

1) The vertical and horizontal tab groups cannot be added in a single screen.

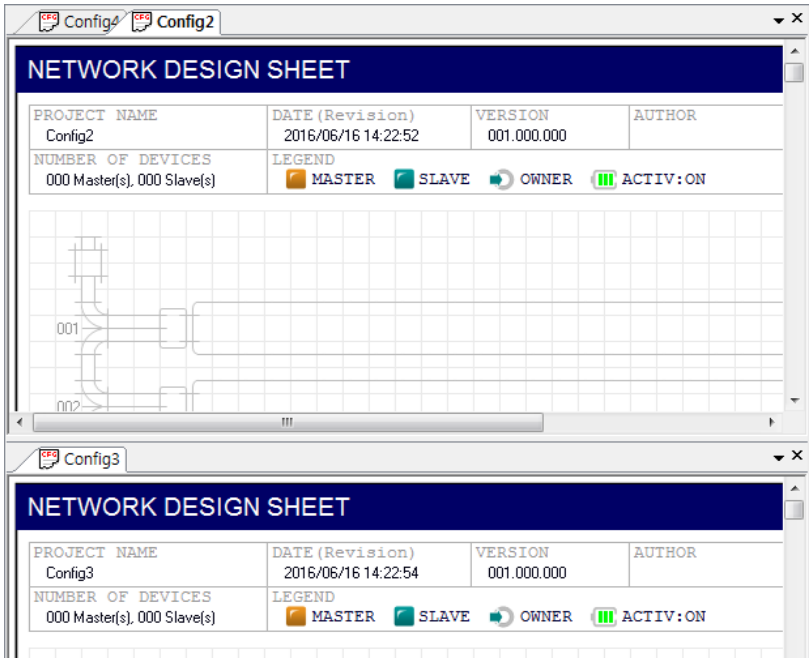
[Figure 5.43.15] Example of prohibiting horizontal group addition in vertical tab group

Drag and drop the selected project tabs to the right border of the window and the “Add new Vertical Tab Group” function will be executed as follows.

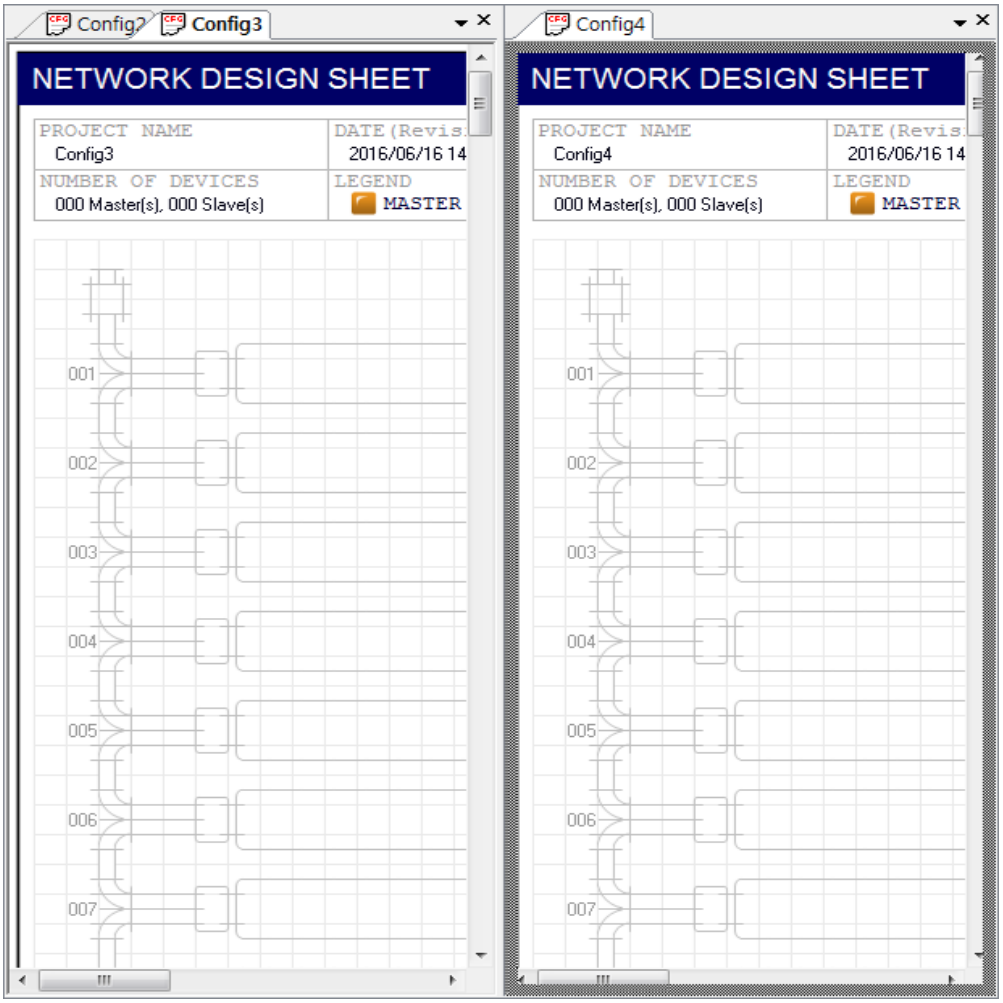


[Figure 5.43.16] Example of adding vertical tabs using drag & drop (add“Config4”project to new vertical tab group)

Drag and drop the selected project tab to the right border of the window and the Move Tab Group will be executed as follows.

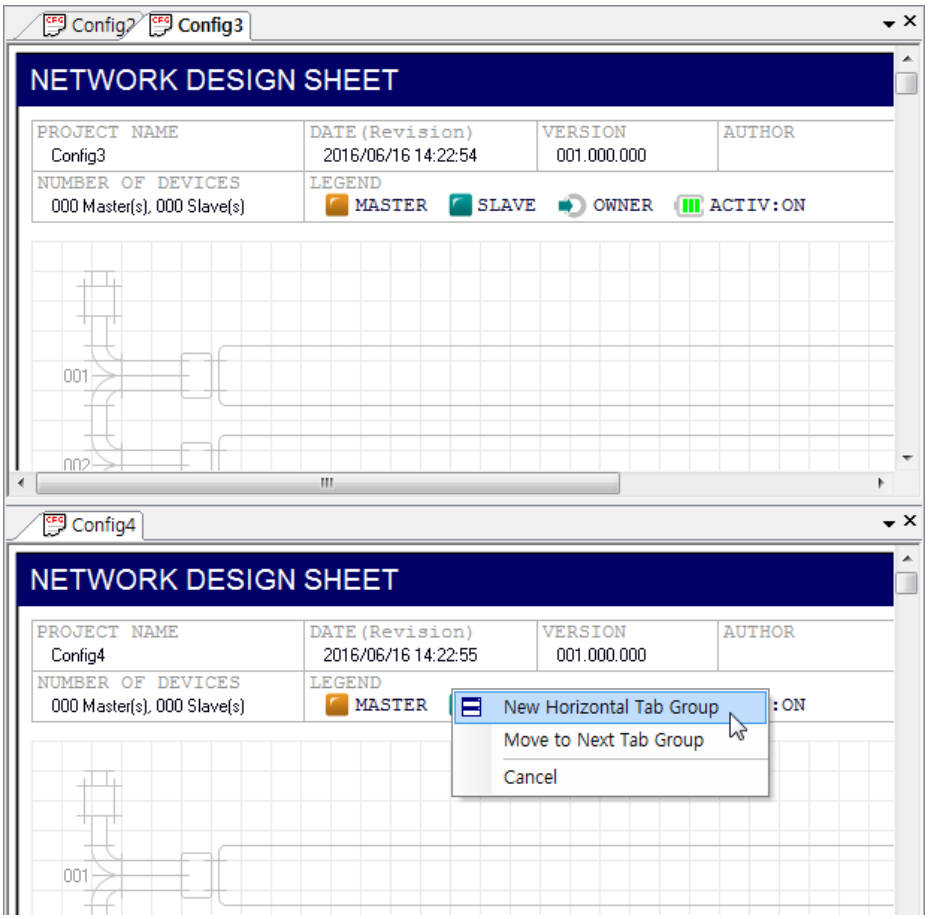


[Figure 5.43.17] Example of moving tab groups using drag & drop (add"Config2"project to bottom horizontal tab group)



[Figure 5.43.18] Example of moving tab groups using drag & drop (move "Config3"project to left vertical tab group)

Drag and drop the selected project tab to the center of the window of another tab group and the following pop-up men will appear. The selection of menu item also allows a user to add a new tab group or move the project to another tab group.



[Figure 5.43.19] Example of dragging and dropping“Config3”project to the center of the bottom horizontal tab group

Chapter 6 High-speed Link Setting

6.1 Introduction

High-speed link specifies the Send/Receive device area and data size between CPU module and the communication module by SoftMaster.

High-speed link can be set the function as shown below.

Description		High-speed Link		
Communication module setting	Communication module setting	Module type	Dnet	
		Base no.	Max.: 0 ~ 7 Setting range is different from CPU module.	
		Slot no.	Max.: 0 ~ 11 Setting range is different from Base type.	
	Communication period setting (Period type)	Select among 10ms, 20ms, 50ms, 100ms, 200ms, 500ms, 1s, 5s, 10s. - Default setting: 20 ms		
	Output data setup in case of emergency	CPU error	Latch	Keep the previous output status.
			Clear	Clear the output.
		CPU stop	Latch	Keep the previous output status.
			Clear	Clear the output.
	Mode *1	Send : the data transfer from master module to slave module Receive : the data transfer from slave module to master module		
	Station No. *1	Slave station number (Range: 0 ~ 63)		
	Communication Method *1	The communication method between master and slave(Poll, Bit-Strobe, COS, Cyclic)		
	Read area (From Master to Slave module)	Address	Head address of the sending device Usable device: P, M, K, F, T, C, U, Z, L, N, D, R, ZR	
		Size *1 (Byte)	Input/Output point of slave module is displayed Byte. - If input /Output module is less than 8 bit, it is processed 1 Byte.	
	Save area (From Slave to Master module)	Address	Head address of the receiving device Usable device: P, M, K, F, T, C, U, Z, L, N, D, R, ZR	
		Size *1 (Byte)	Input/Output point of slave module is displayed in Byte. - If input/Output module is less than 8 bit, it is dealt with 1 Byte.	
PLC connection		RS-232C or USB Port of CPU module		
Control condition		It can control regardless of position of Run mode switch (Run, Stop) of CPU module.		
Max. communication point		Transmission 128,520 points, Reception 128,520 points, Respectively 16,065 Bytes		
Max. block number		63 (Setting Range : 0~62)		
Max. point per block		255 Byte (2,040 point) (Setting range 1 ~ 255)		
Number of High-speed link setting		Up to 12		

Note

*1 : 1) It cannot set in SoftMaster.
2) It displays the uploaded data from N Configurator to SoftMaster.
3) The setting sequence is from 1 phase to 2 phase.
1 phase: Parameter setting in N Configurator→Download
2 phase: SoftMaster →Read → N Configurator upload → High-speed link parameter setting → Download the parameter → High-speed link permission
Setting value can be changed according to the changing phases (2 phase → 1 phase).

- When High-speed link is edited, parameter has to download again.
- High-speed link is used per a communication module.
- CPU module saves the written parameter (Standard, High-speed link, P2P).
  When CPU module is exchanged, parameter in SoftMaster has to back-up and then the parameter has to write in CPU module again.

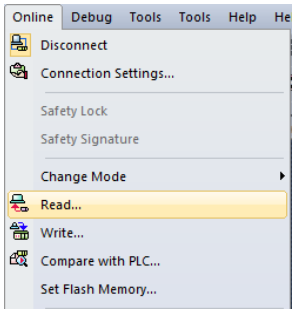
6.2 How to use SoftMaster

SoftMaster usage for Dnet I/F module is as shown below.

SoftMaster execution

1) Read I/O information

Read Dnet I/F module information



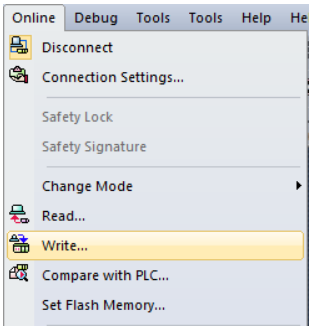
or

2) High-speed link setting
(1) Communication module setting
A) Communication module setting: Dnet
- Module type, Base, Slot
B) Communication period setting
C) Data setup in case of emergency
-CPU module error, CPU module stop
(2) Block setting
- Online → N Configurator Upload
- Read area/Save area address setting

1) Connects High-speed link and Dnet I/F module (The module information get through 'Read IO information').
2) Reads system information in N Configurator.
3) PLC's program synchronizes with slave module's input/output point setting in N Configurator. It is to

3) Write Parameter

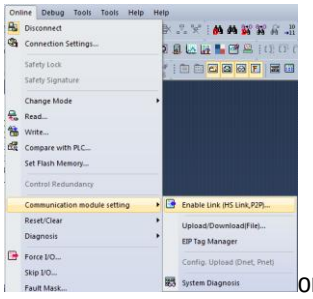
Write of High-speed link parameter value of installed Dnet I/F module.



or

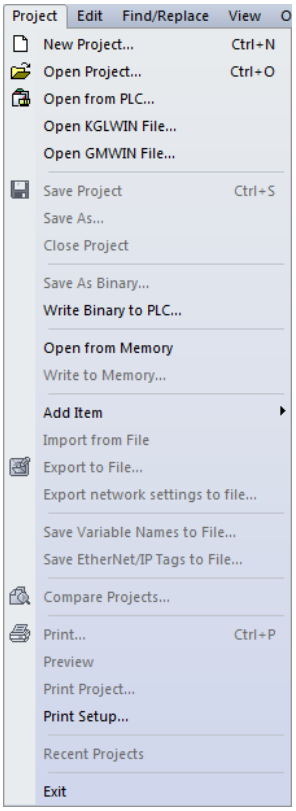
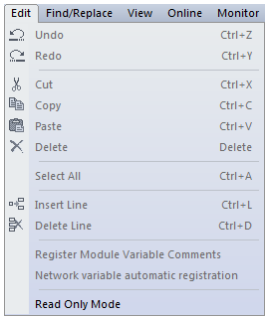
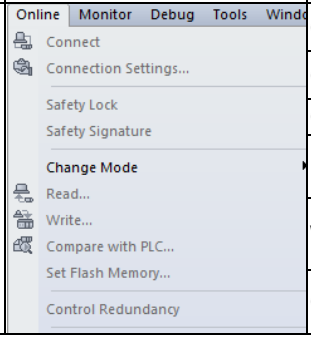
4) Enable Link

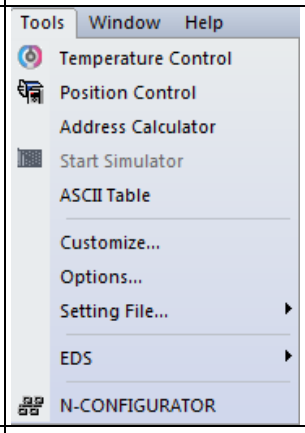
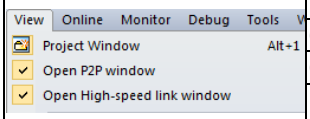
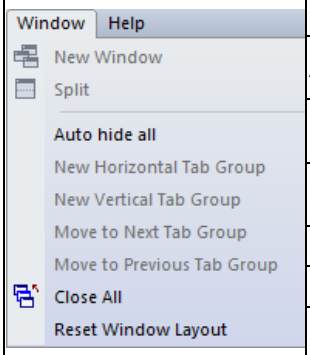
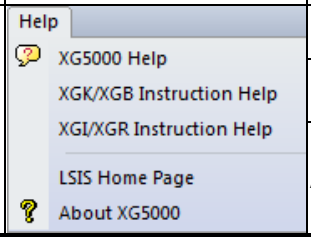
Communication permission of installed Dnet I/F module.



or

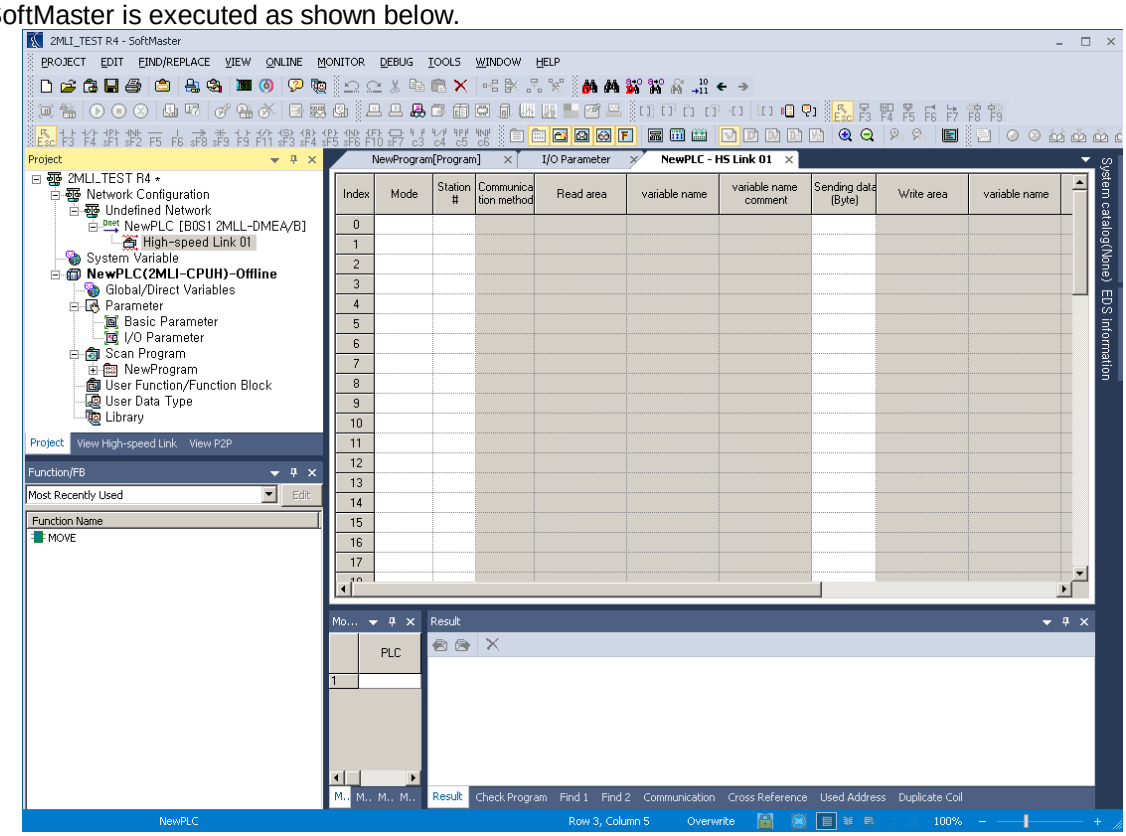
*** The following is menu bar and short cut of SoftMaster.**

Menu bar		Menu	Icon	Description
Project		New Project		Create a new project.
		Open Project		Open the existing project.
		Open from PLC		Upload the project and program stored in PLC.
		Open KGLWIN File		Open the project file for KGLWIN.
		Open GMWIN File		Open the project file for GMWIN.
		Save Project		Save the project.
		Save As	-	Save the project as a different name.
		Close Project		Close the project.
		Save As Binary		Saved as the binary file that cannot show the details of the project.
		Write Binary to PLC		Write the binary file with the PLC. You cannot see the details of the project.
		Add Item		Add Item to Project
		Import from File		Import the item from the file to the project
		Export to File		Save the selected items included opened project as separated file.
		Save Variable Names to File		Save variable names to file for using other programs.
		Save EtherNet/IP Tags to file		Register EtherNet/IP tag and save the established EtherNet/IP tag list to the file.
		Compare Project		Compare two projects stored in PC and displays its result.
		Print		Print the active window's details.
		Preview	-	Previously display the screen to be printed.
		Print Project	-	Select the project item to print
		Print Setup	-	Set the printer options.
Edit		Undo		Cancel the edit on Program Edit Window to recover its previous status.
		Redo		Recover the edit cancelled above.
		Cut		Copy the selected block to clipboard and delete the block.
		Copy		Copy the selected block to the clipboard.
		Paste		Copy from the clipboard onto Edit Window.
		Delete		Delete the selected block or items.
Online		Connect		Connect with PLC
		Connection Setting		Specify the connection method.
		Change Mode		Change the mode of connected PLC
		Read		Read parameter/program/comment from PLC.
		Write		Write parameter/program/comment on PLC.
		Compare with PLC		Compare the project with project saved in PLC

		Set Flash Memory	-	Shows the window for setting up the flash memory.
		Control Redundancy		Control the redundancy PLC.
		Communication module setting		Set about communication module
		Reset/Clear		Reset the PLC or delete the data
Tools		Temperature Control		Execute the XG-TCON tool.
		Position Control		Execute the XG-PM tool.
		Address Calculator		Open Address calcilator
		Start Simulator		Start simulator
		ASCII Table		Open ASCII Table
		Customize		Open customize windows
		Options	-	Open SoftMaster option windows
		EDS		Manage EDS file
		PROFICON		Open N-CONFIGURATOR
View		Project Window		Open project window to SoftMaster
		Open P2P window	-	Open P2P window to SoftMaster
		Open High-speed link window	-	Open HS window to SoftMaster
		…	-	The Following description, please refer to the SoftMaster user's guide.
Window		New Window		Open a new window on the active window.
		Split		Divide the active window.
		Auto hide all		Hide all windows automatically except current windw
		New Horizontal Tab Group		Arrays the several windows belonging to SoftMaster with the horizontal tab
		New Vertical Tab Group		Arrays the several windows belonging to SoftMaster with the vertical tab.
		Move to Next Tab Group		Move to the next tab group.
		Move to Previous Tab Group		Move to the previous tab group.
		Close All		Close all windows belonging to SoftMaster.
		Reset Window Layout	-	Reset the default layout of the project.
Help		Help		Open the help for each item
		LSIS Home Page		Connect to LSIS Home Page via the Internet.
		About SoftMaster		Shows SoftMaster information.

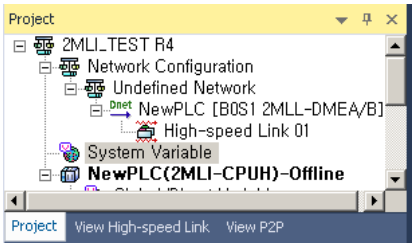
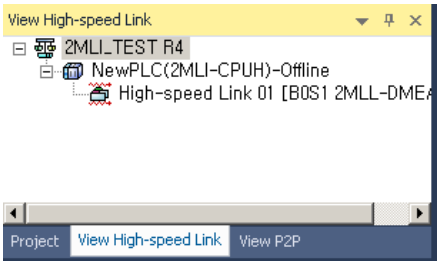
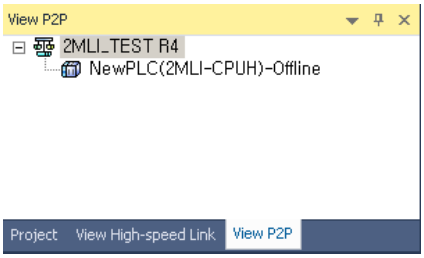
6.3 High-speed Link Editing

SoftMaster is executed as shown below.



[Standard window]

The parameter in SoftMaster is as shown below.

Basic setting	High-speed link	P2P
		

[Parameter window]

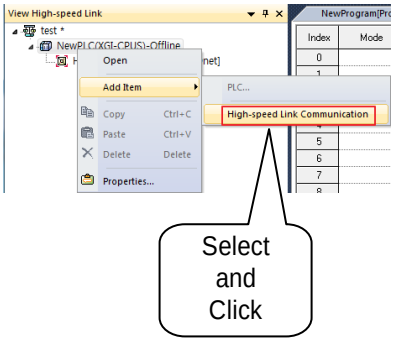
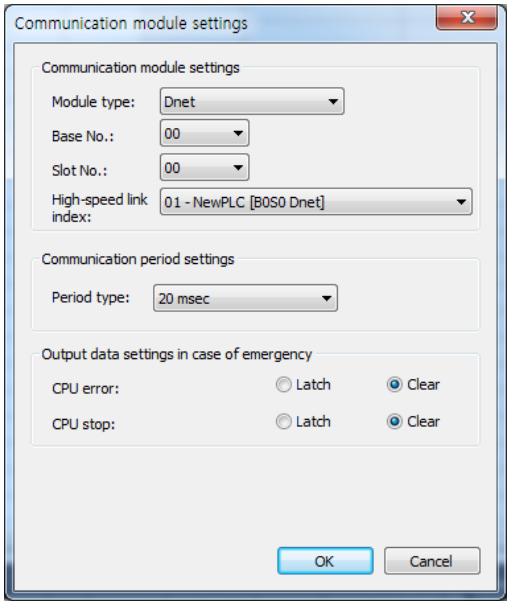
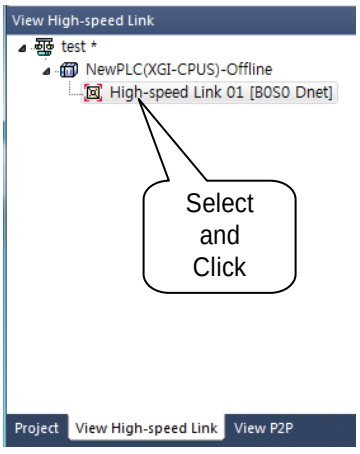
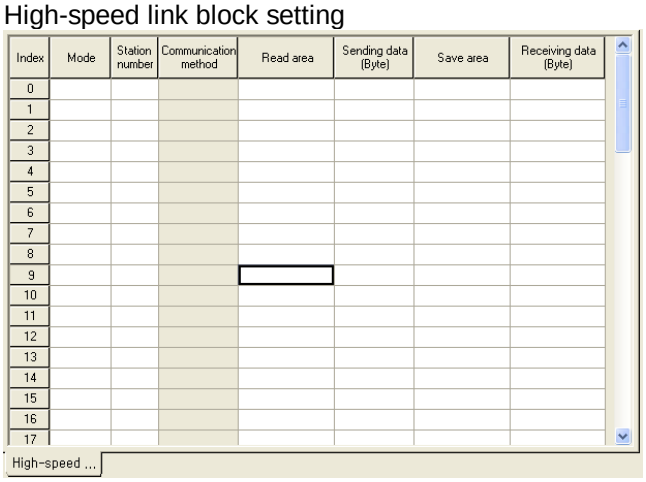
Dnet I/F module is set in High-speed link window.

It can use the High-speed link up to maximum 12.

A High-speed link is available per a Dnet I/F module.

1) How to use High-speed link window

Parameter is specified at High-speed link window as shown below. There are 2 kinds of parameter setting, Communication module setting and High-speed link block setting.

High-speed link	Parameter setting
	Communication module setting 
	High-speed link block setting 

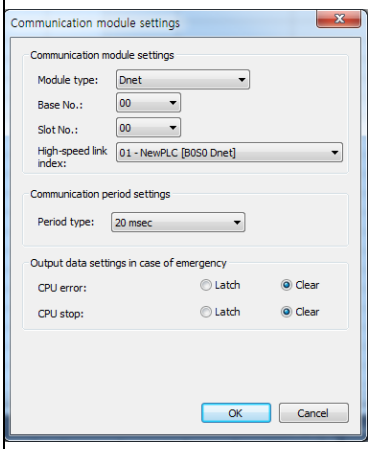
Remark

High-speed link1 [B0S0 Dnet] is as shown below.

1) High-speed link1: It is a serial number of High-speed link.
2) B0: It means Base number. (Example: Expansion base 2 stage - B2, Expansion base 5 stage - B5)
3) S0: It means Slot number. (Example: Slot number 5 - S5, Slot number 11 - S11)

2) Communication module setting parameter

Communication module parameter setting is as shown below.

<table>
<tr><th>Parameter</th><th colspan="3">Setting item</th><th>Description</th></tr>
<tr><td rowspan="6"> 
</td><td rowspan="3">Communi-cation module setting</td><td colspan="2">Module type</td><td>Dnet</td></tr>
<tr><td colspan="2">Base No.</td><td>Setting range: 0 ~ 7
It is different from CPU module.</td></tr>
<tr><td colspan="2">Slot No.</td><td>Setting range: 0 ~ 11
It is different from type of base.</td></tr>
<tr><td colspan="3">Communication period setting
(Period type)</td><td>Select among the 10ms, 20ms, 50ms, 100ms, 200ms, 500ms, 1s, 5s, 10s.
- Default: 20ms
- It is only for transmission data.
- Received data is processed every end of program.</td></tr>
<tr><td rowspan="4">Output data setup in case of emergenc y</td><td rowspan="2">CPU error</td><td>Latch</td><td>Keep the output status.
(But, P device’s data is cleared.)</td></tr>
<tr><td>Clear</td><td>Clear all of the output.</td></tr>
<tr><td rowspan="2">CPU stop</td><td>Latch</td><td>Keep the output status.
(But, P device’s data is cleared.)</td></tr>
<tr><td>Clear</td><td>Clear all of the output.</td></tr>
</table>

After complete the settings, click the ‘OK’.

Remark

Cautions of communication period setting

1) Setting value of communication period is applicable to transmission data (CPU module’s data → Dnet I/F module). If communication period is longer than the time of changing data at scan program, It might be different from the data which is transmitted to slave module.

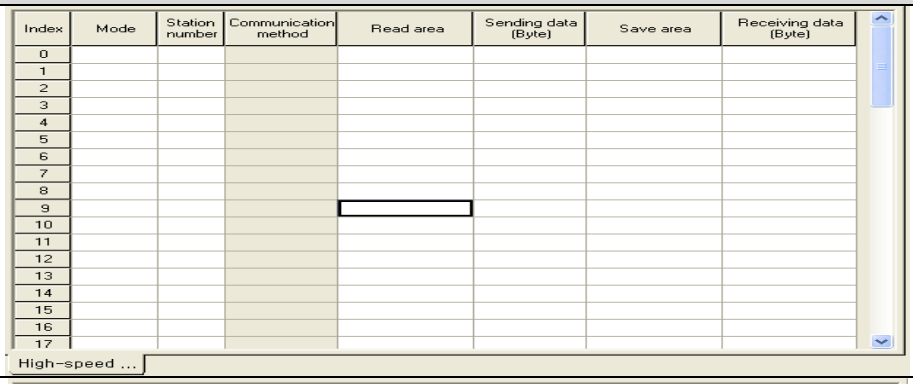
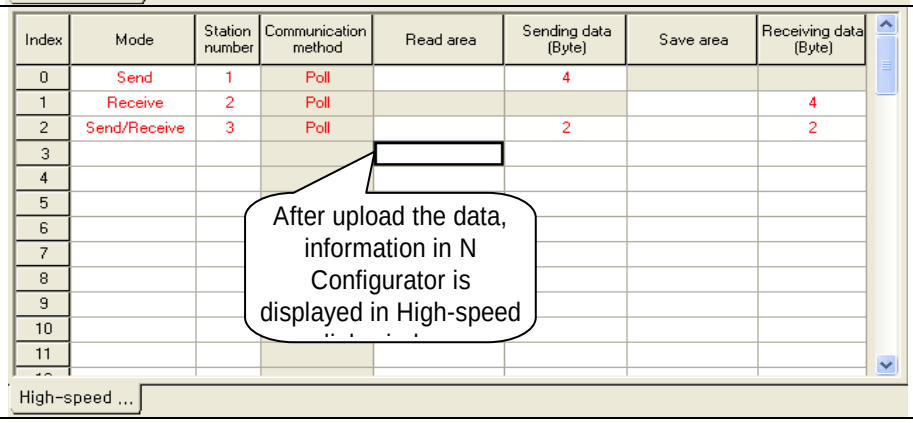
3) Parameter of High-speed link block setting

High-speed link block setting parameter is as shown below.

(1) Config. Upload

N Configurator configuration must be uploaded before High-speed link block setting.

Upload way: Online → Communication module setting → Config. Upload (Dnet, Pnet)

Classification	High-speed link block setting
Before Upload	
After Upload	

The uploaded information is as shown below.

Item	Description
Index	Arrange starting from the lowest station number in N Configurator.
Station No.	Station number of slave module in network.
Communication method	Display the setting that set in N Configurator (Poll, Bit-Strobe, Cyclic, COS).
Read area	Head address of transmitting device from master module to slave module.
Transmission data	Size of slave module (Byte).
Save area	Head address of receiving device from slave module to master module.
Reception data	Size of slave module (Byte).

Remark

Uploaded N Configurator information cannot used to save the edited file in SoftMaster.Therefore, in case of monitoring by using saved SoftMaster file, please upload the N Configurator again.

When Config. Upload after auto scanning in N Configurator, compare with current High-speed block information. If there is the same station number, keep that block. If empty station number has been added, display the read area and save area of that block as blank.

(2) High-speed link block editing

Head address of Send/Receive address can be edited in High-speed block.

Select index to edit and set Read area & Save area.

<table>
<tr><td>Classification</td><td>Description</td></tr>
<tr><td>Screen After uploaded the data</td><td>
<table>
<tr><th>Index</th><th>Mode</th><th>Station number</th><th>Communication method</th><th>Read area</th><th>Variable name</th><th>Variable name comment</th><th>Sending data (Byte)</th><th>Save area</th><th>Variable name</th><th>Variable name comment</th><th>Receiving data (Byte)</th></tr>
<tr><td>0</td><td>Send/Receive</td><td>2</td><td></td><td></td><td></td><td></td><td>22</td><td></td><td></td><td></td><td>128</td></tr>
<tr><td>1</td><td>Send/Receive</td><td>4</td><td></td><td></td><td></td><td></td><td>32</td><td></td><td></td><td></td><td>32</td></tr>
<tr><td>2</td><td>Send/Receive</td><td>5</td><td></td><td></td><td></td><td></td><td>4</td><td></td><td></td><td></td><td>8</td></tr>
<tr><td>3</td><td>Send/Receive</td><td>30</td><td></td><td></td><td></td><td></td><td>5</td><td></td><td></td><td></td><td>16</td></tr>
<tr><td>4</td><td>Send/Receive</td><td>60</td><td></td><td></td><td></td><td></td><td>4</td><td></td><td></td><td></td><td>2</td></tr>
<tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>12</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>13</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>High-speed link block editing window</td><td>
<table>
<tr><td>Classification</td><td colspan="2">Description</td></tr>
<tr><td>Station type *1</td><td colspan="2">Select slave.</td></tr>
<tr><td>Block type *1</td><td colspan="2">Transmission: Data is transmitted from master module to slave module.
Reception: Data is transmitted from slave module to master module.</td></tr>
<tr><td>Station No. *1</td><td colspan="2">Slave station number (range: 0 ~ 63)</td></tr>
<tr><td>Block No. *1</td><td colspan="2">Not used in Dnet I/F module.</td></tr>
<tr><td rowspan="2">Read area (Master module → Slave module)</td><td>Address</td><td>Head address of transmitting device.
Usable device: P, M, K, F, T, C, U, Z, L, N, D, R, ZR</td></tr>
<tr><td>Size *1 (Byte)</td><td>Input/Output point of slave module is displayed in Byte.
- If input module point is less than 8 bit, it is dealt with 1 Byte.</td></tr>
<tr><td rowspan="2">Save area (Slave module → Master module)</td><td>Address</td><td>Head address of receiving device.
Usable device: P, M, K, F, T, C, U, Z, L, N, D, R, ZR</td></tr>
<tr><td>Size *1 (Byte)</td><td>Input/Output point of slave module is displayed in Byte.
- If input module point is less than 8 bit, it is dealt with 1 Byte.</td></tr>
</table>
</td></tr>
</table>

Remark

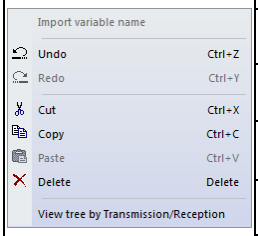
Unit of address setting is Word. But slave module's unit size is Byte. Less than 8 point module is processed by 1 Byte when address is specified.

(3) How to use High-speed link block editing tool

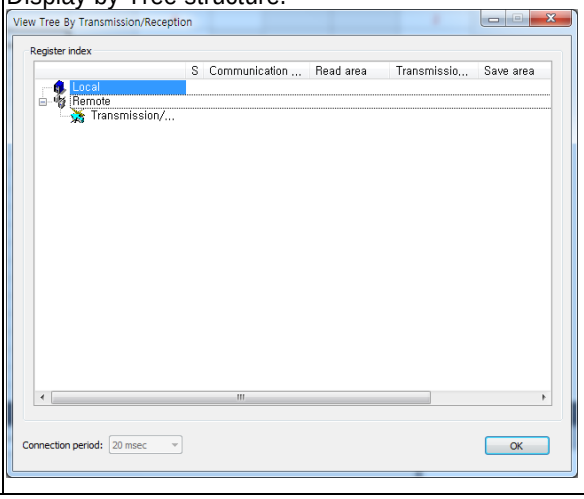
The editing tool and usage of High-speed link block is as shown below.

Index	Mode	Station number	Communication method	Read area	Variable name	Variable name comment	Sending data (Byte)	Save area	Variable name	Variable name comment	Receiving data (Byte)
0	Send/Receive	2					22				128
1	Send/Receive	4					32				32
2	Send/Receive	5					4				8
3	Send/Receive	30					5				16
4	Send/Receive	60					4				2
5											
6											
7											
8											
9											
10											
11											
12											
13											

Screen 1: Right mouse (right click) button of a selected area.

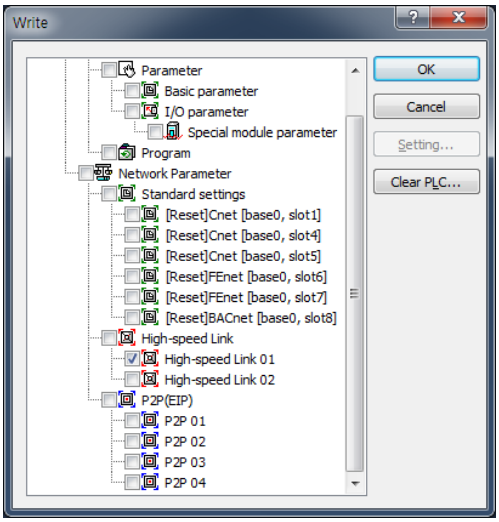


[Screen 1]

Undo	Undo edited index block.
Redo	Redo edited index block.
Cut	Cut the edited index block.
Copy	Copy the edited index block.
Paste	Paste the copied index block.
Delete	Delete the edited index block.
View Tree by Transmission/ Reception	Display by Tree structure. 

6.4 Read and Write of High-speed Link

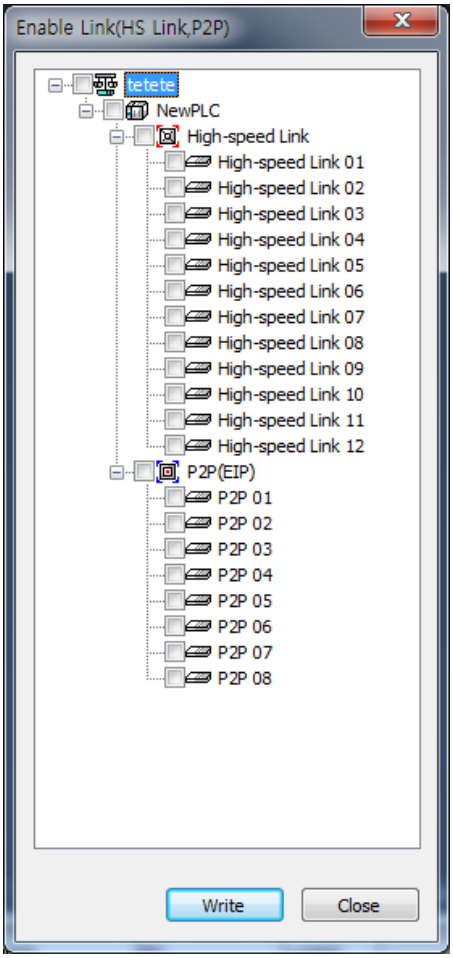
The screen is used for read/write of High-speed link's parameter.

Configuration	Description
	1) High-speed link is available up to 12 for installed Dnet I/F module. - It can be used up to 12 with the other communication module which use High-speed link. 2) It can read/write for each High-speed parameter. - Check the box to set the High-speed link. 3) Read/Write of High-speed link parameter not affect to CPU's Run mode.

If High-speed link parameter is written to CPU module, CPU module saves the data. If CPU module is exchanged, High-speed link parameter has to backup from CPU module. The parameter has to re-write in exchanged CPU module.

6.5 Enable Link

You need to enable the link for actual data communication of the downloaded HS link data.

Configuration	Description
	1) Select “Online” → “Enable Link” on the menu. Then, “Enable Link” screen appears. 2) Check the item you want to enable and click “Write”.

* Enable Link through flag
It describes “Enable Link” method through flag. The following SoftMaster version, CPU OS version is needed.

Item	Version
SoftMaster	V3.61 or above
2MLR CPU	V1.91 or above
2MLI CPU	V3.4 or above
2MLK CPU	V3.7 or above

Flag list related with “Enable Link”
-2MLR

Flag	Data type	Device	Description
_HS_ENABLE_STATE	ARRAY[0..11] OF BOOL	%FX19040	HS link enable/disable current state
_HS_REQ	ARRAY[0..11] OF BOOL	%FX31520	HS link enable/disable request
_HS_REQ_NUM	ARRAY[0..11] OF BOOL	%FX31536	HS link enable/disable setting
_P2P_ENABLE_STATE	ARRAY[0..7] OF BOOL	%FX19072	P2P enable/disable current state
_P2P_REQ	ARRAY[0..7] OF BOOL	%FX31552	P2P enable/disable request
_P2P_REQ_NUM	ARRAY[0..7] OF BOOL	%FX31568	P2P enable/disable setting

-2MLI

Flag	Data type	Device	Description
_HS_ENABLE_STATE	ARRAY[0..11] OF BOOL	%FX15840	HS link enable/disable current state
_HS_REQ	ARRAY[0..11] OF BOOL	%FX16480	HS link enable/disable request
_HS_REQ_NUM	ARRAY[0..11] OF BOOL	%FX16496	HS link enable/disable setting
_P2P_ENABLE_STATE	ARRAY[0..7] OF BOOL	%FX15872	P2P enable/disable current state
_P2P_REQ	ARRAY[0..7] OF BOOL	%FX16512	P2P enable/disable request
_P2P_REQ_NUM	ARRAY[0..7] OF BOOL	%FX16528	P2P enable/disable setting

-2MLK

Flag	Data type	Device	Description
_HS1_ENABLE_STATE	BIT	F09600	HS link 1 enable/disable current state
_HS2_ENABLE_STATE	BIT	F09601	HS link 2 enable/disable current state
_HS3_ENABLE_STATE	BIT	F09602	HS link 3 enable/disable current state
_HS4_ENABLE_STATE	BIT	F09603	HS link 4 enable/disable current state
_HS5_ENABLE_STATE	BIT	F09604	HS link 5 enable/disable current state
_HS6_ENABLE_STATE	BIT	F09605	HS link 6 enable/disable current state
_HS7_ENABLE_STATE	BIT	F09606	HS link 7 enable/disable current state
_HS8_ENABLE_STATE	BIT	F09607	HS link 8 enable/disable current state
_HS9_ENABLE_STATE	BIT	F09608	HS link 9 enable/disable current state

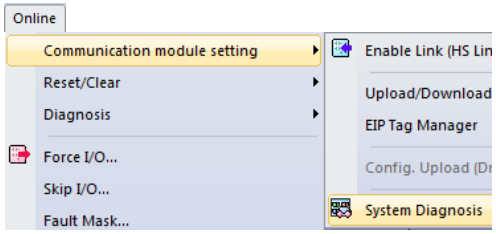
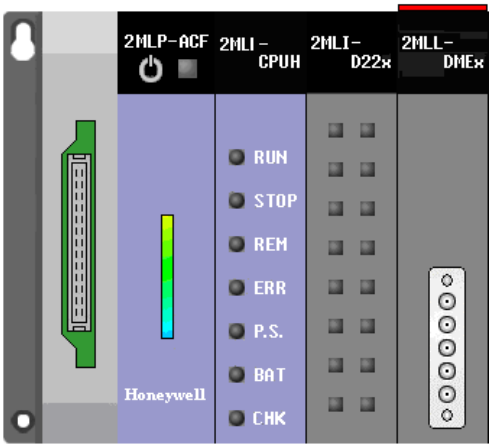
Flag	Data type	Device	Description
_HS10_ENABLE_STATE	BIT	F09609	HS link 10 enable/disable current state
_HS11_ENABLE_STATE	BIT	F0960A	HS link 11 enable/disable current state
_HS12_ENABLE_STATE	BIT	F0960B	HS link 12 enable/disable current state
_HS1_REQ	BIT	F10300	HS link 1 enable/disable request
_HS2_REQ	BIT	F10301	HS link 2 enable/disable request
_HS3_REQ	BIT	F10302	HS link 3 enable/disable request
_HS4_REQ	BIT	F10303	HS link 4 enable/disable request
_HS5_REQ	BIT	F10304	HS link 5 enable/disable request
_HS6_REQ	BIT	F10305	HS link 6 enable/disable request
_HS7_REQ	BIT	F10306	HS link 7 enable/disable request
_HS8_REQ	BIT	F10307	HS link 8 enable/disable request
_HS9_REQ	BIT	F10308	HS link 9 enable/disable request
_HS10_REQ	BIT	F10309	HS link 10 enable/disable request
_HS11_REQ	BIT	F1030A	HS link 11 enable/disable request
_HS12_REQ	BIT	F1030B	HS link 12 enable/disable request
_HS1_REQ_NUM	BIT	F10310	HS link 1 enable/disable setting
_HS2_REQ_NUM	BIT	F10311	HS link 2 enable/disable setting
_HS3_REQ_NUM	BIT	F10312	HS link 3 enable/disable setting
_HS4_REQ_NUM	BIT	F10313	HS link 4 enable/disable setting
_HS5_REQ_NUM	BIT	F10314	HS link 5 enable/disable setting
_HS6_REQ_NUM	BIT	F10315	HS link 6 enable/disable setting
_HS7_REQ_NUM	BIT	F10316	HS link 7 enable/disable setting
_HS8_REQ_NUM	BIT	F10317	HS link 8 enable/disable setting
_HS9_REQ_NUM	BIT	F10318	HS link 9 enable/disable setting
_HS10_REQ_NUM	BIT	F10319	HS link 10 enable/disable setting
_HS11_REQ_NUM	BIT	F1031A	HS link 11 enable/disable setting
_HS12_REQ_NUM	BIT	F1031B	HS link 12 enable/disable setting
_P2P1_ENABLE_STATE	BIT	F09620	P2P1 enable/disable current state
_P2P2_ENABLE_STATE	BIT	F09621	P2P2 enable/disable current state
_P2P3_ENABLE_STATE	BIT	F09622	P2P3 enable/disable current state
_P2P4_ENABLE_STATE	BIT	F09623	P2P4 enable/disable current state
_P2P5_ENABLE_STATE	BIT	F09624	P2P5 enable/disable current state
_P2P6_ENABLE_STATE	BIT	F09625	P2P6 enable/disable current state
_P2P7_ENABLE_STATE	BIT	F09626	P2P7 enable/disable current state
_P2P8_ENABLE_STATE	BIT	F09627	P2P8 enable/disable current state
_P2P1_REQ	BIT	F10320	P2P1 enable/disable request
_P2P2_REQ	BIT	F10321	P2P2 enable/disable request
_P2P3_REQ	BIT	F10322	P2P3 enable/disable request
_P2P4_REQ	BIT	F10323	P2P4 enable/disable request

Flag	Data type	Device	Description
_P2P5_REQ	BIT	F10324	P2P5 enable/disable request
_P2P6_REQ	BIT	F10325	P2P6 enable/disable request
_P2P7_REQ	BIT	F10326	P2P7 enable/disable request
_P2P8_REQ	BIT	F10327	P2P8 enable/disable request
_P2P1_REQ_NUM	BIT	F10330	P2P1 enable/disable setting
_P2P2_REQ_NUM	BIT	F10331	P2P2 enable/disable setting
_P2P3_REQ_NUM	BIT	F10332	P2P3 enable/disable setting
_P2P4_REQ_NUM	BIT	F10333	P2P4 enable/disable setting
_P2P5_REQ_NUM	BIT	F10334	P2P5 enable/disable setting
_P2P6_REQ_NUM	BIT	F10335	P2P6 enable/disable setting
_P2P7_REQ_NUM	BIT	F10336	P2P7 enable/disable setting
_P2P8_REQ_NUM	BIT	F10337	P2P8 enable/disable setting

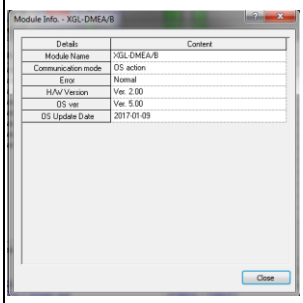
▶ How to enable link
  -HS link/P2P enable/disable setting flag ON → HS link/P2P enable/disable request flag ON
▶ How to disable link
  -HS link/P2P enable/disable setting flag OFF → HS link/P2P enable/disable request flag ON
▶ You can monitor the Enable/Disable state of the each link through “enable/disable current states” flag.

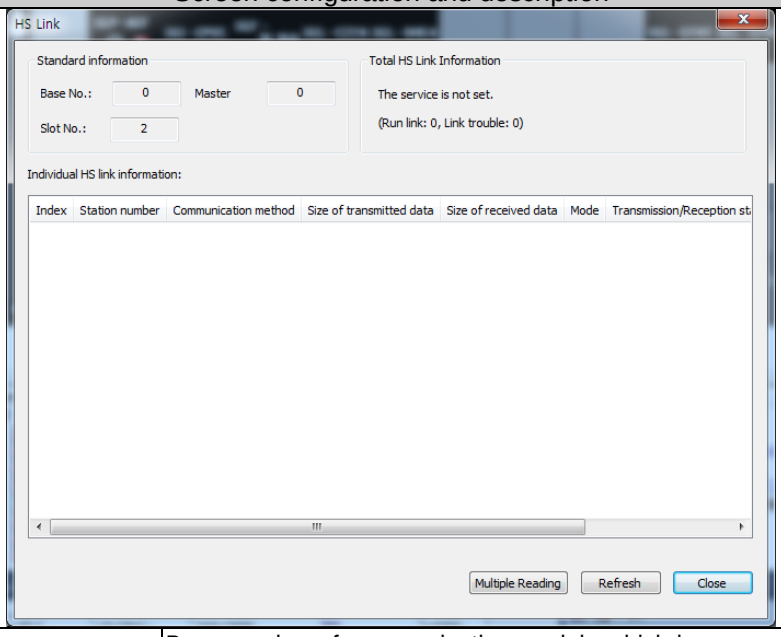
6.6 System Diagnosis

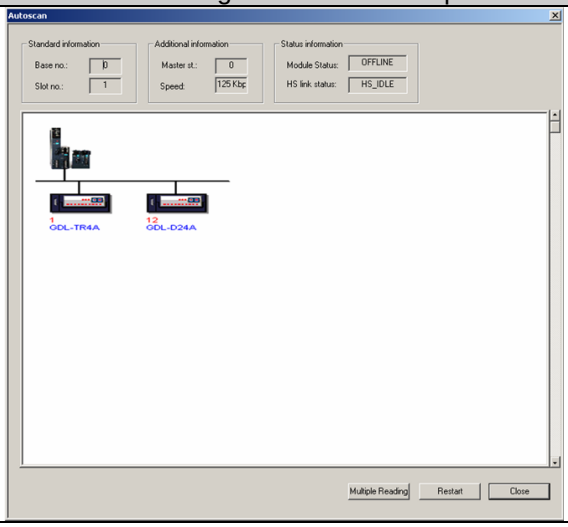
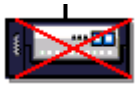
System diagnosis provides the information of Dnet I/F module system. The System diagnosis screen is as shown below.

Menubar	System diagnosis window
	

It describes the menu of system diagnosis.

Menu	Screen configuration and description			
Communic-ation module information		Standard information	Module Kind	Communication module type.
			Base number	Base number of communication module which is connected with High-speed link.
			Slot number	Slot number of communication module which is connected with High-speed link.
		Hardware/ Software information	Hardware Error	Hardware error of communication module.
			Hardware version	Hardware version of communication module.
			OS Version	Software version of communication module.

Menu	Screen configuration and description		
HS (High-speed) link information			
	Standard information	Base no.	Base number of communication module which is connected with High-speed link.
		Slot no.	Slot number of communication module which is connected with High-speed link.
		Master station	Station number of Dnet I/F module.
	Total HS link information	Run link	Normal: All salve modules communicates normally.
		Link trouble	Error: Error is occurred in slave station after Run link becomes normal status.
	Individual HS link information	Index	Arrange starting from the lowest station number in N Configurator.
		Station number	Slave module's station number which is existed in network.
		Communication method	Display communication setting among the communication methods (Poll, Bit-Strobe, Cyclic, COS).
		Size of transmitted data	Data size of transmitting data from master module to slave module.
		Size of recepted data	Data size of receiving data from master module to slave module.
		Mode	RUN: Normal communication status between master and slave module. STOP: Abnormal communication status between master and slave module.
		Transmission/Reception status	Display of communication status between master and slave module.
		High-speed link status	Display of error occurring Transmission/Reception status or Error status.
		Error	Error is displayed while High-speed link data is processed.

Menu	Screen configuration and description
Autoscan	
	Communication status of slave module is displayed as shown below. 1) Connected communication : 2) Disconnected communication: 

6.7 High-speed Link Information

High-speed link swaps the data between master module and all slave modules. It provides the flag of High-speed link operation status classified by individual station or total station. It is useful when checking the reliability of Transmission/Reception data and finding cause of error. Flag kinds and usage is as shown below.

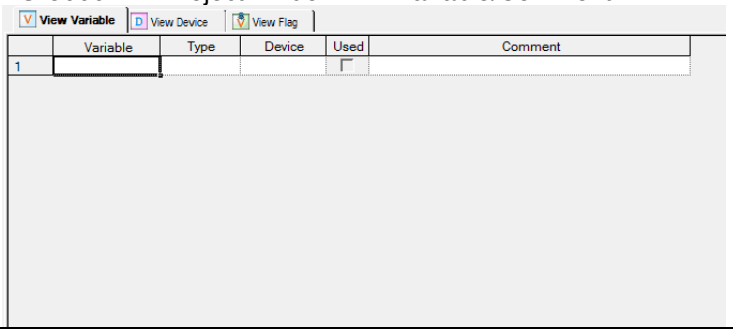
Classification	Run-Link	Link-Trouble	Transmission /Reception status	Operation mode	Error	High-speed link status
Information type	All		Respectively			
Flag name (x=High-speed link number)	_HSxRLINK	_HSxLTRBL	_HSxTRX[n] (n=0..63)	_HSxMOD[n] (n=0..63)	_HSxERR[n] (n=0..63)	_HSxSTATE[n] (n=0..63)
Data type	Bit	Bit	Bit Array	Bit Array	Bit Array	Bit Array
Monitoring	Available	Available	Availability	Availability	Availability	Availability
Program use	Available	Availability	Availability	Availability	Availability	Availability

[Table] Function of High-speed link information

The way of selecting flag is as shown below.

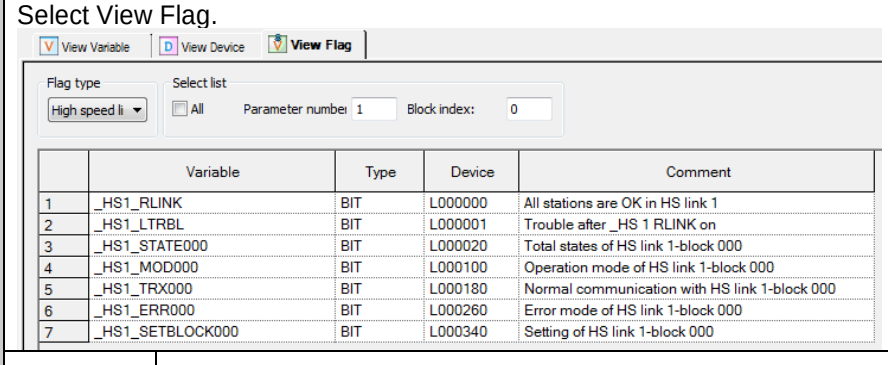
Setting sequence

XG-5000 → Project window → Variable/Comment



How to use

Select View Flag.

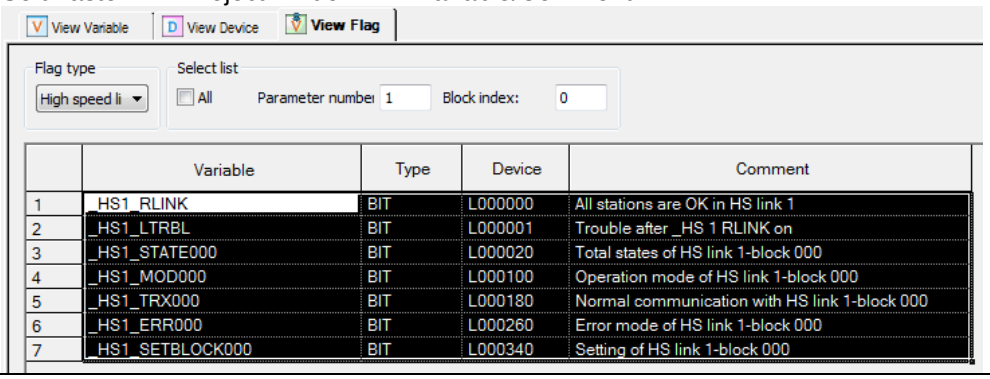


Flag kind	Select among the System/High-speed link/P2P/PID.	
Select list	All	It is showed the list of all High-speed links.
	Parameter number	It means High-speed link number. The selected number is only displayed in List.
	Block index	It is index number of High-speed link block.

Monitoring of flag and device's value is as shown below.

Setting sequence

SoftMaster → Project window → Variable/Comment



	Variable	Type	Device	Comment
1	_HS1_RLINK	BIT	L000000	All stations are OK in HS link 1
2	_HS1_LTRBL	BIT	L000001	Trouble after _HS 1 RLINK on
3	_HS1_STATE000	BIT	L000020	Total states of HS link 1-block 000
4	_HS1_MOD000	BIT	L000100	Operation mode of HS link 1-block 000
5	_HS1_TRX000	BIT	L000180	Normal communication with HS link 1-block 000
6	_HS1_ERR000	BIT	L000260	Error mode of HS link 1-block 000
7	_HS1_SETBLOCK000	BIT	L000340	Setting of HS link 1-block 000

How to use

SoftMaster → View → Variable Monitoring Window

	PLC	Program	Device/Variable	Value	Type	Variable/Device	Comment
1	NewPLC	<GLOBAL>	_HS1_RLINK	0	BIT	L000000	All stations are OK in HS link 1
2	NewPLC	<GLOBAL>	_HS1_LTRBL	0	BIT	L000001	Trouble after _HS 1 RLINK on
3	NewPLC	<GLOBAL>	_HS1_STATE000	0	BIT	L000020	Total states of HS link 1-block 000
4	NewPLC	<GLOBAL>	_HS1_MOD000	0	BIT	L000100	Operation mode of HS link 1-block 000
5	NewPLC	<GLOBAL>	_HS1_TRX000	0	BIT	L000180	Normal communication with HS link 1-block 000
6	NewPLC	<GLOBAL>	_HS1_ERR000	0	BIT	L000260	Error mode of HS link 1-block 000
7	NewPLC	<GLOBAL>	_HS1_SETBLOCK000	0	BIT	L000340	Setting of HS link 1-block 000
8							

- Select variable in Variable/Comment screen and then Copy/Paste the variable to Variable Monitoring Window. The value is appeared in variable Monitoring Window.

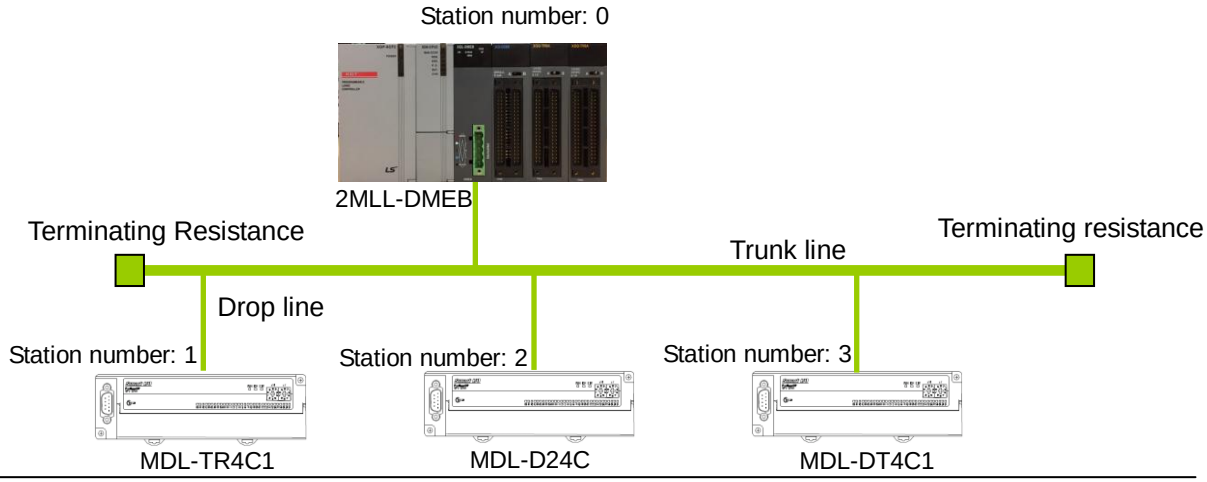
Chapter 7 Communication Program

7.1 Example Program

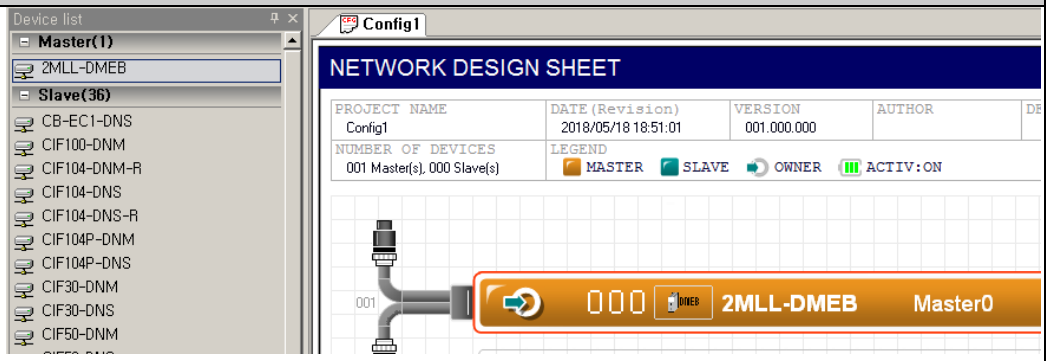
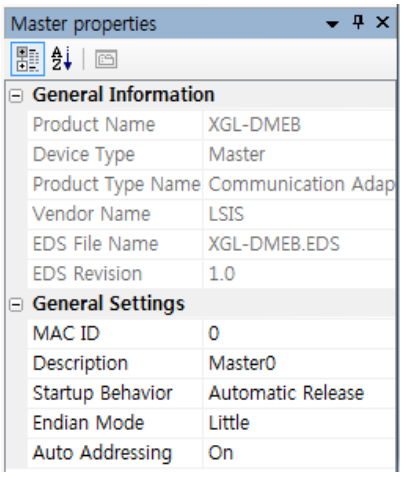
Basic configuration of example and setting value is as shown below.

Classification				Description		Setting program	Setting phase
System configuration	Master module	Master setting		2MLL-DMEB		N Configurator	1-3 ~ 1-4
		Base number		0		SoftMaster	5-1
		Slot number		0		SoftMaster	5-1
		Station number		0		N Configurator	1-5, 3-1
		Communication speed		125kbps		N Configurator	3-1
		High-speed link setting		High-speed link 1 area		SoftMaster	5-1
		Communication period setting		200ms		SoftMaster	5-1
	Slave module	Slave type		MDL-TR4C1,MDL-D24C, MDL-DT4C1		N Configurator	4-1 ~ 4-4
		MDL-TR4C1 (Output 32 points)	Station no.	1		N Configurator	4-3, 5-2
			Communication method	Poll		N Configurator	5-3
			Save area	Device	M100	SoftMaster	6-1
				Size	4		
		MDL-D24C (Input 32 points)	Station no.	2		N Configurator	4-3, 5-2
			Communication method	COS (Change of State) (Transmission period: 200ms)		N Configurator	5-3 (5-4)
			Read area	Device	M110	SoftMaster	6-1
				Size	4		
		MDL-DT4C1 (Output 16 points, Input 16 points)	Station no.	3		N Configurator	4-3, 5-2
			Communication method	COS (Change of State) (Transmission period: 200ms)		N Configurator	5-3 (5-4)
			Read area	Device	M102	SoftMaster	6-1
				Size	2		
			Save area	Device	M112	SoftMaster	6-1
				Size	2		
Etc.	Master Setting			Change of basic setting value		N Configurator	2-1 ~ 2-3
	Device Assignment			Setting of computer's communication port		N Configurator	6-1 ~ 6-2

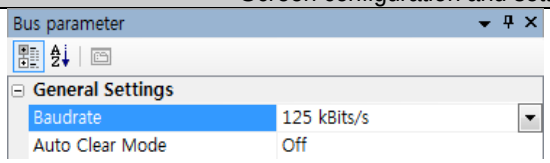
- **Configuration of system**



[N Configurator 1 phase] Master and MAC ID setting

Phase	Item	Screen configuration and setting description
1-1	Select masters	 Double Click 2MLL-DMEB in Device list
1-2	Master setting	 MAC ID, Startup Behavior etc

[N Configurator 2 phase] Communication Speed setting

Phase	Item	Screen configuration and setting description
2-1	Bus Parameter	 Baudrate: 125kBit/s Auto Clear mode: Off

* Auto clear mode

(1) If Auto clear mode is selected

→ If error is occurred in slave module, the communication stops for the whole system.

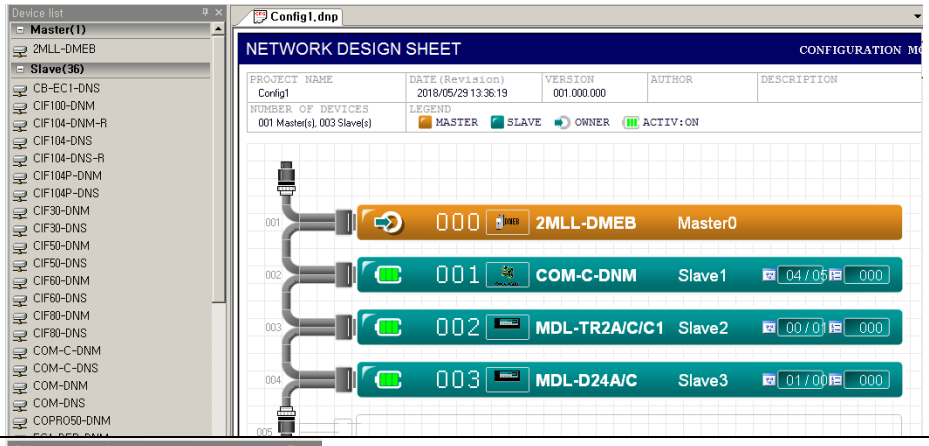
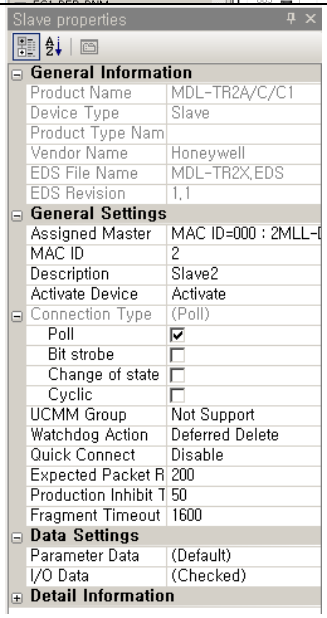
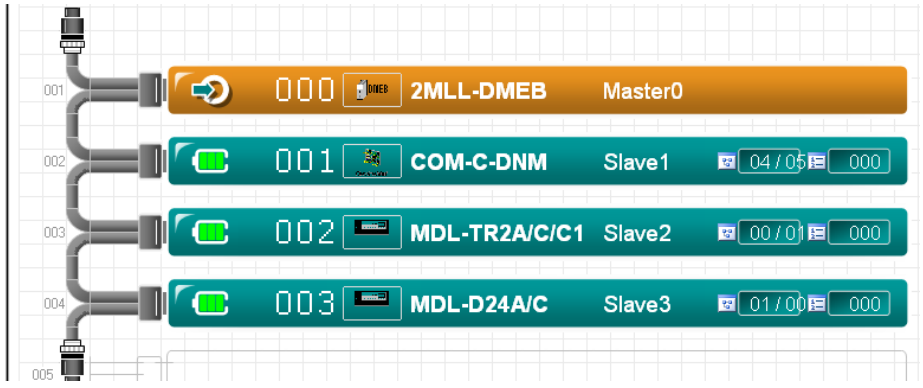
→ Dnet I/F module's HS LED is flickering, MNS LED red light flickering.

(2) If Auto clear mode is not selected

→ If error is occurred in slave module, the communication keeps for normal slave module.

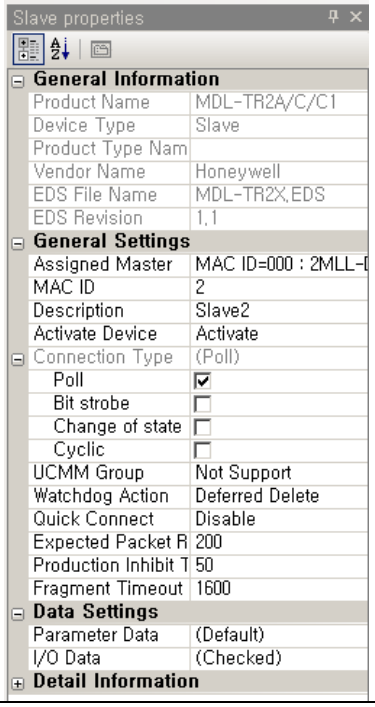
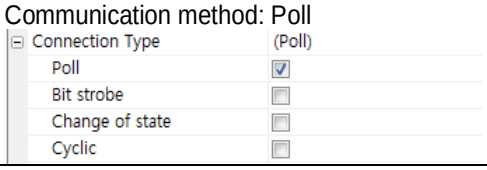
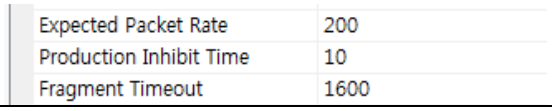
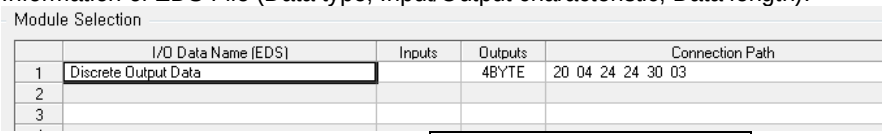
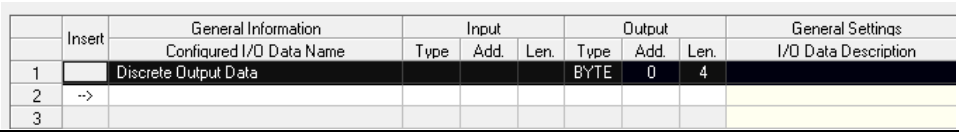
[N Configurator 3 phase] Slave and MAC ID setting

Menu: Insert → Master

Phase	Item	Screen configuration and setting description
3-1	Select slave	Double click slaves in device list 
3-2	MAC ID setting	 MAC ID: Slave station number setting Description: Add description of slave
3-3	Completed Slave setting	

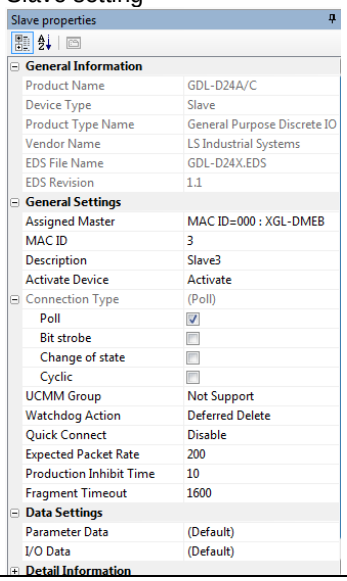
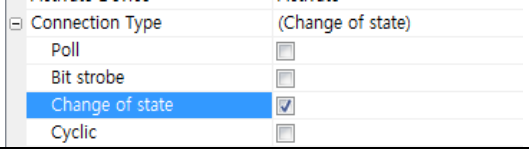
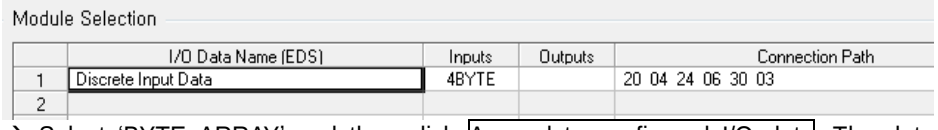
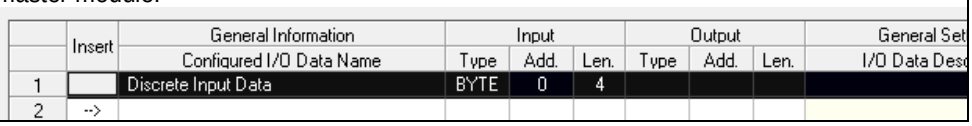
[N Configurator 4-1 phase] Slave module communication methods setting – Slave module: MDL-TR2C1

Menu: Settings → Device Configuration

Phase	Item	Screen configuration and setting description
4-1	Slave communication methods setting	Slave module setting 
4-2	Slave MAC ID	MAC ID setting: 1
4-3	Slave communication method	Communication method: Poll 
4-4	Slave Transmission/ Reception period setting	Transmission/Reception data period and response condition setting →Poll is default communication method. 
4-5	Slave data structure (EDS File)	Information of EDS File (Data type, Input/Output characteristic, Data length).  → Select 'BYTE ARRAY' and then click Append to configured I/O data. The data is displayed as next 5-6 phase.
4-6	Slave data structure	Slave structure (Data type, Input/Output characteristic, Data length) is transmitted to master module. 

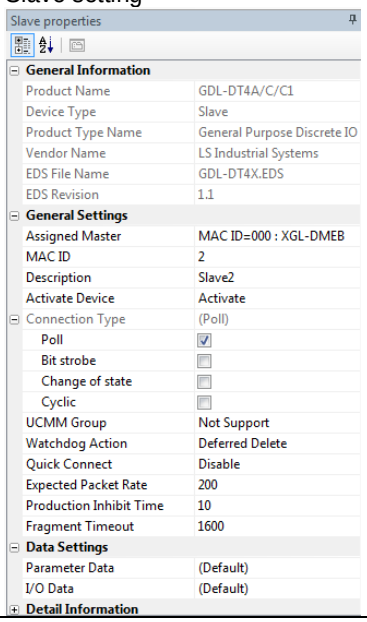
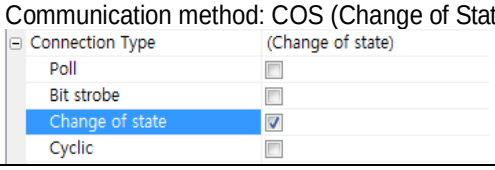
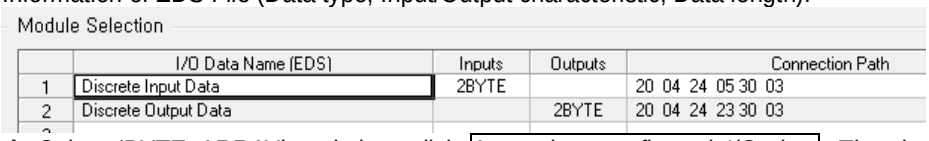
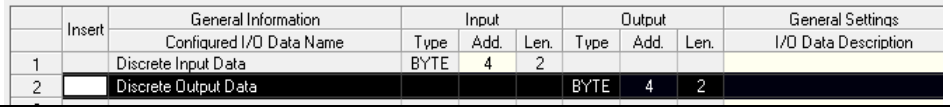
[N Configurator 4-2 phase] Slave communication method setting – slave module: MDL-D24C

Menu: Settings → Device Configuration

Phase	Item	Screen configuration and setting description
4-1	Slave communication method setting	Slave setting 
4-2	Slave MAC ID	MAC ID: 2
4-3	Slave communication method	Communication method : COS (Change of State) 
4-4	Slave Transmission /Reception period setting	Transmission/Reception data period and response condition setting → Expected packet rate must be 200ms in COS (Change of State) communication method. (Expected packet rate must be larger than production inhibit time.)
4-5	Slave data structure (EDS File)	Information of EDS File (Data type, Input/Output characteristic, Data length).  → Select 'BYTE ARRAY' and then click Append to configured I/O data. The data is displayed as next 5-6 phase.
4-6	Slave data structure	Slave structure (Data type, Input/Output characteristic, Data length) is transmitted to master module. 

[N Configurator 4-3 phase] slave communication method setting – slave module: MDL-DT4C1

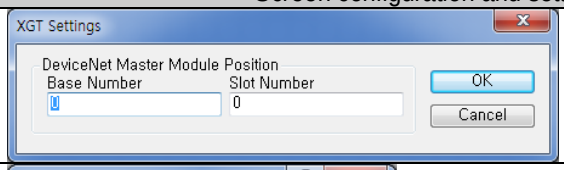
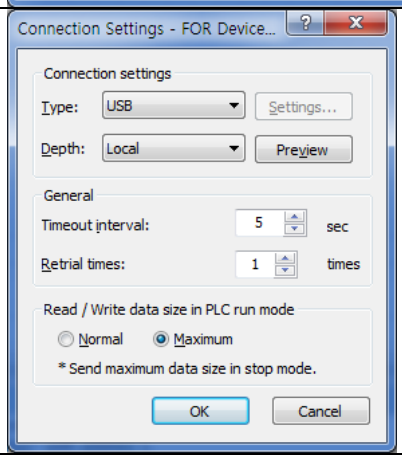
Menu: Settings → Device Configuration

Phase	Item	Screen configuration and setting description
4-1	Slave communication method setting	Slave setting 
4-2	Slave MAC ID	MAC_ID: 3
4-3	Slave communication method	Communication method: COS (Change of State) 
4-4	Slave Transmission /Reception period setting	Transmission/Reception data period and response condition setting → Expected packet rate must be 200ms in COS (Change of State) communication method. (Expected packet rate must be larger than production inhibit time.)
4-5	Slave data structure (EDS File)	Information of EDS File (Data type, Input/Output characteristic, Data length).  → Select 'BYTE ARRAY' and then click Append to configured I/O data. The data is displayed as next 5-6 phase.
4-6	Slave data structure	Slave structure (Data type, Input/Output characteristic, Data length) is transmitted to master module. 

[N Configurator 5 phase] Serial port selection

The cable diagram is same as RS-232C cable diagram using in CPU module. Use same kind cable.

Menu: Settings → Device Assignment

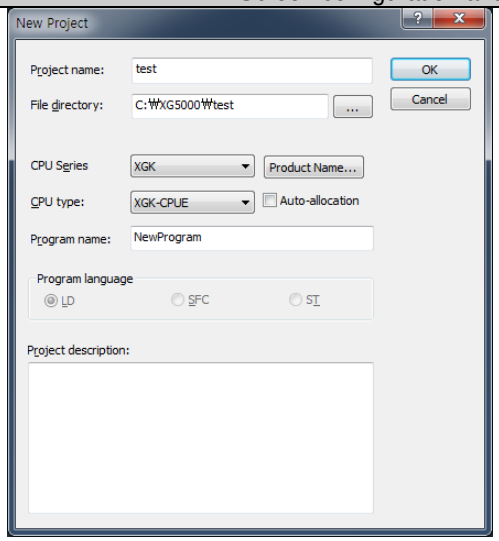
Phase	Item	Screen configuration and setting description
5-1	Master position setting	
5-2	Port select	

[N Configurator 6 phase] Download

Menu: Communication → Download image

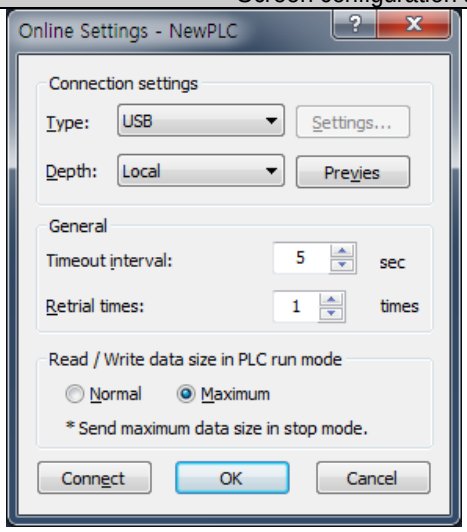
[SoftMaster 1 phase] Select CPU module type

Menu: Option – PLC Type Settings

Phase	Item	Screen configuration and setting description
1-1	Select CPU module	 CPU module type: 2MLK-CPUE

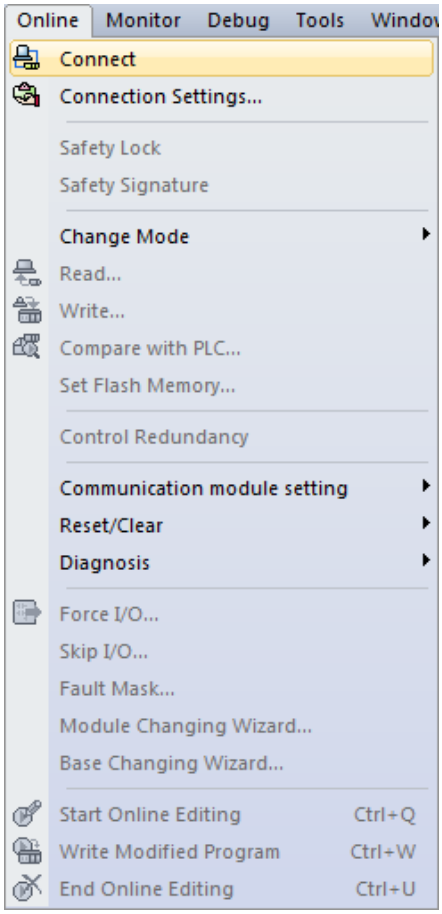
[SoftMaster 2 phase] Connection settings

Menu: Online – Connection settings

Phase	Item	Screen configuration and setting description
2-1	Connection settings	 Type: USB Depth: Local

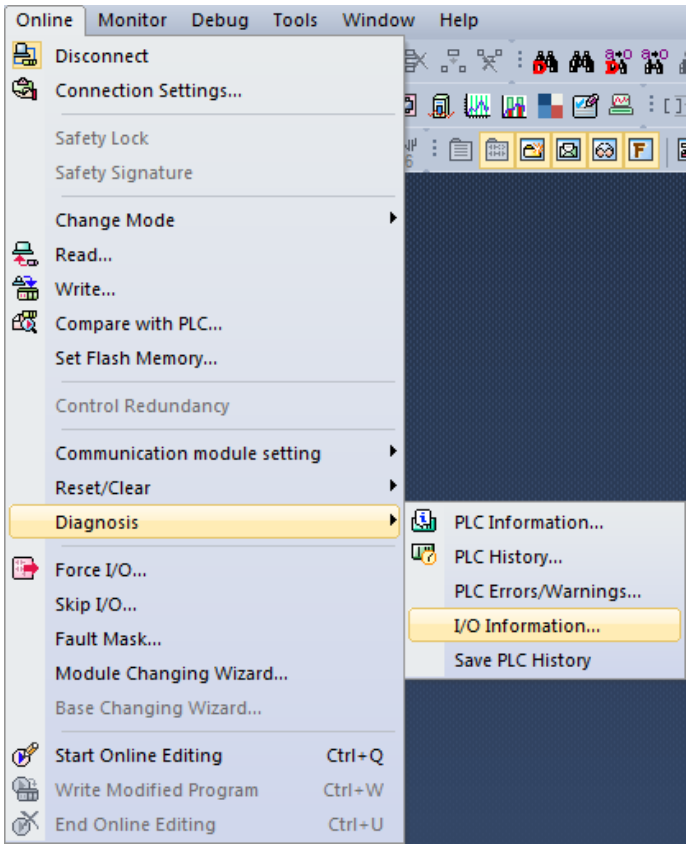
[SoftMaster 3 phase] Connection

Menu: Online – Connection

Phase	Item	Screen configuration and setting description
3-1	Set connection method	

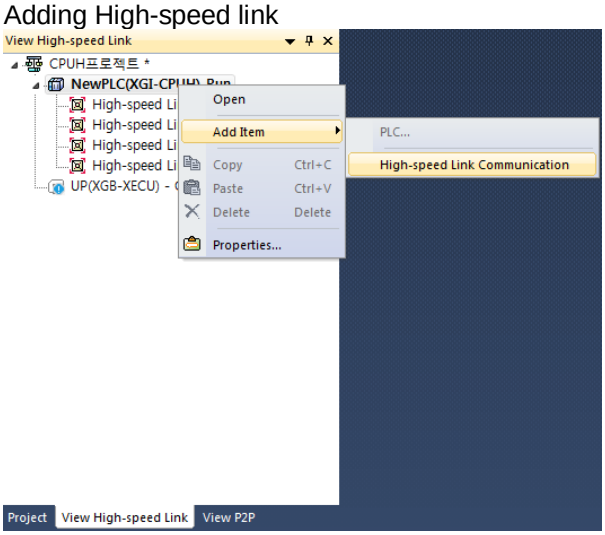
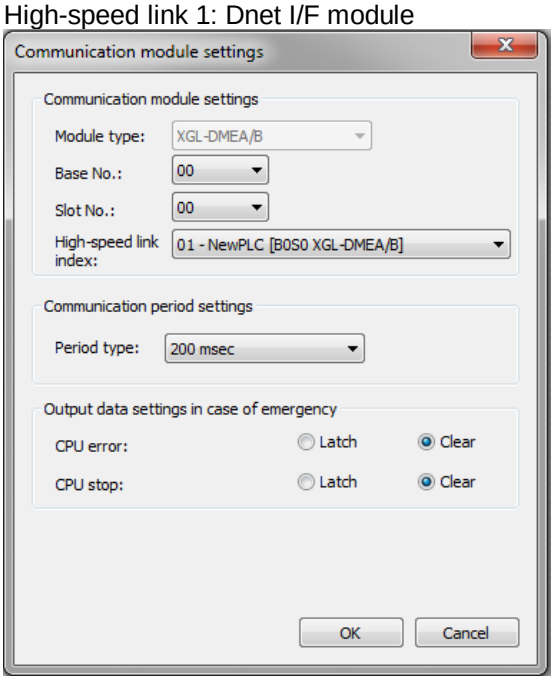
[SoftMaster 4 phase] Read IO information

Menu: Online - Diagnosis – I/O Information

Phase	Item	Screen configuration and description
4-1	I/O Information	

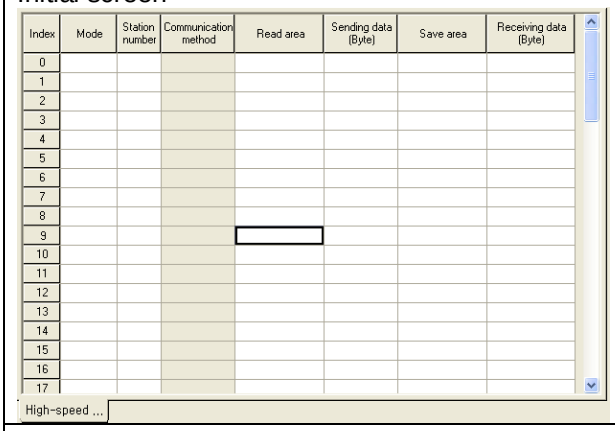
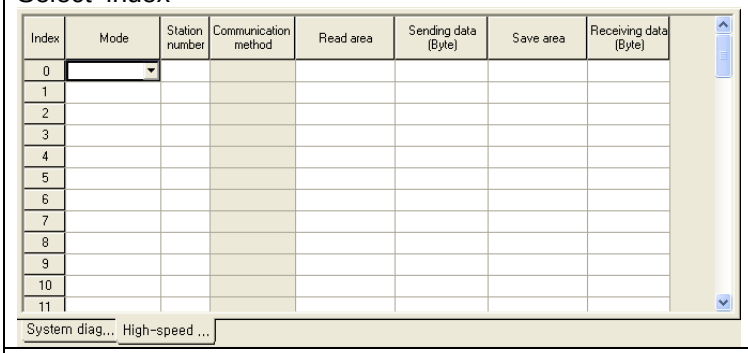
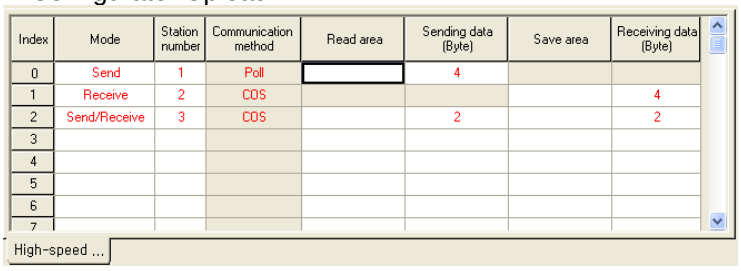
[SoftMaster 5 phase] High-speed link setting

Menu: Network Configuration → Add item → High-speed link Communication

Phase	Item	Screen configuration and setting description
5-1	Communication Module Settings	Adding High-speed link  High-speed link 1: Dnet I/F module  Module type: Dnet Base no.: 00 Slot no.: 00 Communication period settings: 200ms

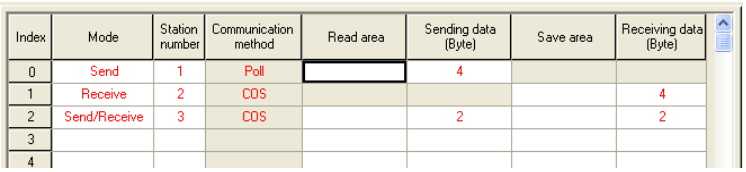
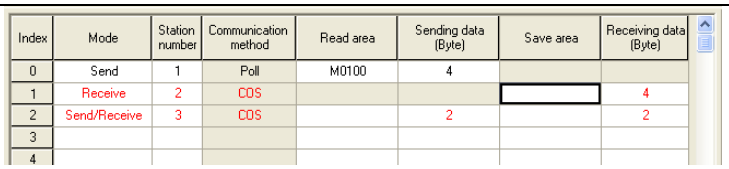
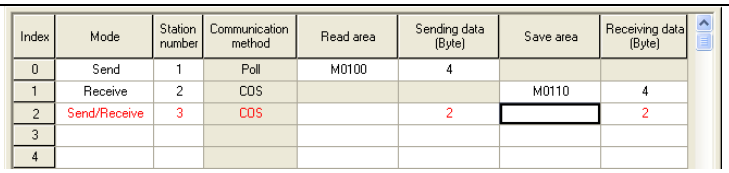
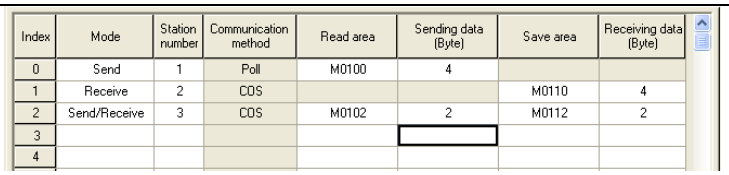
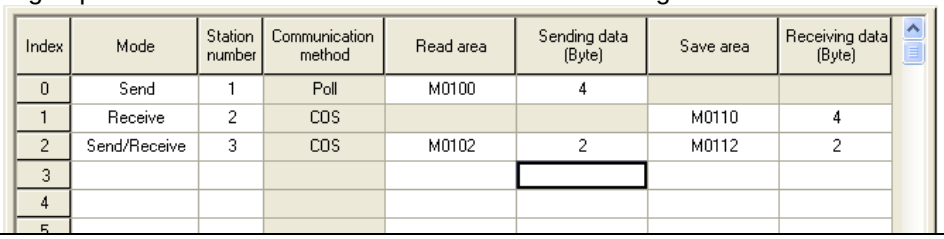
[SoftMaster 6] N Configurator Upload (Dnet, Pnet)

Menu: Online → Communication module setting → Config.upload (Dnet, Pnet)

Phase	Item	Screen configuration and setting description
6-1	Communication module settings	Initial screen 
		Select index 
		N Configurator Upload 

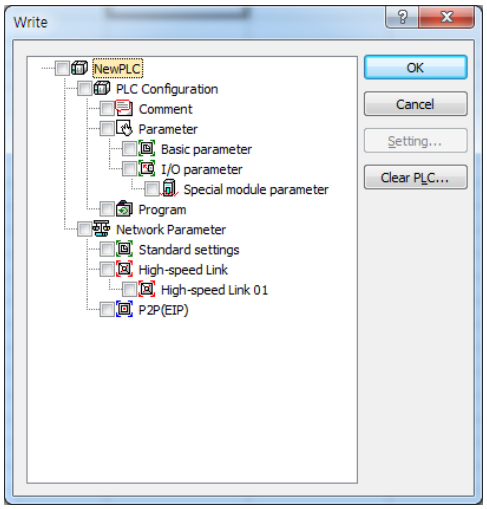
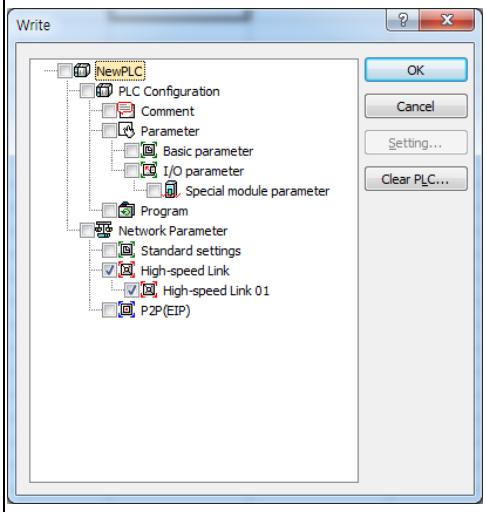
[SoftMaster 6 Phase] Read area/Save area setting

Menu: View High-speed Link → High-speed link1 → block

<table>
<tr><th>Phase</th><th>Item</th><th>Screen configuration and setting description</th></tr>
<tr><td rowspan="5">6-1</td><td rowspan="5">Communication module setting</td><td>Initial screen

<table>
<tr><th>Index</th><th>Mode</th><th>Station number</th><th>Communication method</th><th>Read area</th><th>Sending data (Byte)</th><th>Save area</th><th>Receiving data (Byte)</th></tr>
<tr><td>0</td><td>Send</td><td>1</td><td>Poll</td><td></td><td>4</td><td></td><td></td></tr>
<tr><td>1</td><td>Receive</td><td>2</td><td>COS</td><td></td><td></td><td></td><td>4</td></tr>
<tr><td>2</td><td>Send/Receive</td><td>3</td><td>COS</td><td></td><td>2</td><td></td><td>2</td></tr>
<tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Select index of block window
<table>
<tr><th>Slave module</th><th>Index</th><th>High-speed link block setting</th></tr>
<tr><td>MDL-TR4C1</td><td>0</td><td> 
<table>
<tr><th>Index</th><th>Mode</th><th>Station number</th><th>Communication method</th><th>Read area</th><th>Sending data (Byte)</th><th>Save area</th><th>Receiving data (Byte)</th></tr>
<tr><td>0</td><td>Send</td><td>1</td><td>Poll</td><td>M0100</td><td>4</td><td></td><td></td></tr>
<tr><td>1</td><td>Receive</td><td>2</td><td>COS</td><td></td><td></td><td></td><td>4</td></tr>
<tr><td>2</td><td>Send/Receive</td><td>3</td><td>COS</td><td></td><td>2</td><td></td><td>2</td></tr>
<tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>MDL-D24C</td><td>1</td><td> 
<table>
<tr><th>Index</th><th>Mode</th><th>Station number</th><th>Communication method</th><th>Read area</th><th>Sending data (Byte)</th><th>Save area</th><th>Receiving data (Byte)</th></tr>
<tr><td>0</td><td>Send</td><td>1</td><td>Poll</td><td>M0100</td><td>4</td><td></td><td></td></tr>
<tr><td>1</td><td>Receive</td><td>2</td><td>COS</td><td></td><td></td><td>M0110</td><td>4</td></tr>
<tr><td>2</td><td>Send/Receive</td><td>3</td><td>COS</td><td></td><td>2</td><td></td><td>2</td></tr>
<tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>MDL-DT4C1</td><td>2</td><td> 
<table>
<tr><th>Index</th><th>Mode</th><th>Station number</th><th>Communication method</th><th>Read area</th><th>Sending data (Byte)</th><th>Save area</th><th>Receiving data (Byte)</th></tr>
<tr><td>0</td><td>Send</td><td>1</td><td>Poll</td><td>M0100</td><td>4</td><td></td><td></td></tr>
<tr><td>1</td><td>Receive</td><td>2</td><td>COS</td><td></td><td></td><td>M0110</td><td>4</td></tr>
<tr><td>2</td><td>Send/Receive</td><td>3</td><td>COS</td><td>M0102</td><td>2</td><td>M0112</td><td>2</td></tr>
<tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table></td></tr>
<tr><td>High-speed link block after Read area/Save area setting

<table>
<tr><th>Index</th><th>Mode</th><th>Station number</th><th>Communication method</th><th>Read area</th><th>Sending data (Byte)</th><th>Save area</th><th>Receiving data (Byte)</th></tr>
<tr><td>0</td><td>Send</td><td>1</td><td>Poll</td><td>M0100</td><td>4</td><td></td><td></td></tr>
<tr><td>1</td><td>Receive</td><td>2</td><td>COS</td><td></td><td></td><td>M0110</td><td>4</td></tr>
<tr><td>2</td><td>Send/Receive</td><td>3</td><td>COS</td><td>M0102</td><td>2</td><td>M0112</td><td>2</td></tr>
<tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

[SoftMaster 7 phase] Write High-speed link parameter

Menu: Online → Write

<table>
<tr><th>Phase</th><th>Item</th><th colspan="2">Screen configuration and setting description</th></tr>
<tr><td rowspan="3">7-1</td><td rowspan="3">Write parameter</td><td>Initial screen</td><td>Select High-speed link</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">Parameter is downloaded after click ‘OK’.</td></tr>
</table>

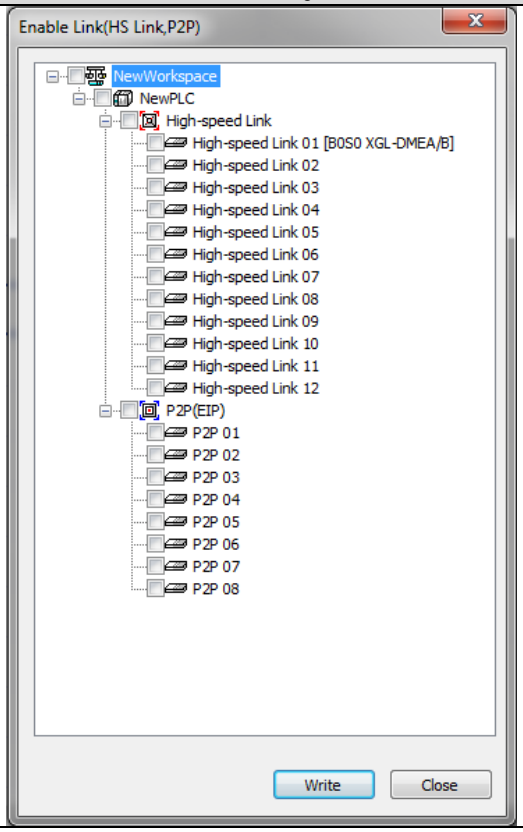
- Written parameter is saved CPU module.

  - If CPU module is exchanged, High-speed link parameter has to backup from used CPU module.

[SoftMaster 8 phase] High-speed link enabling

Menu: Online →Communication module setting → Enable Link (HS Link, P2P)

→ Communication is permitted between master module and slave module.

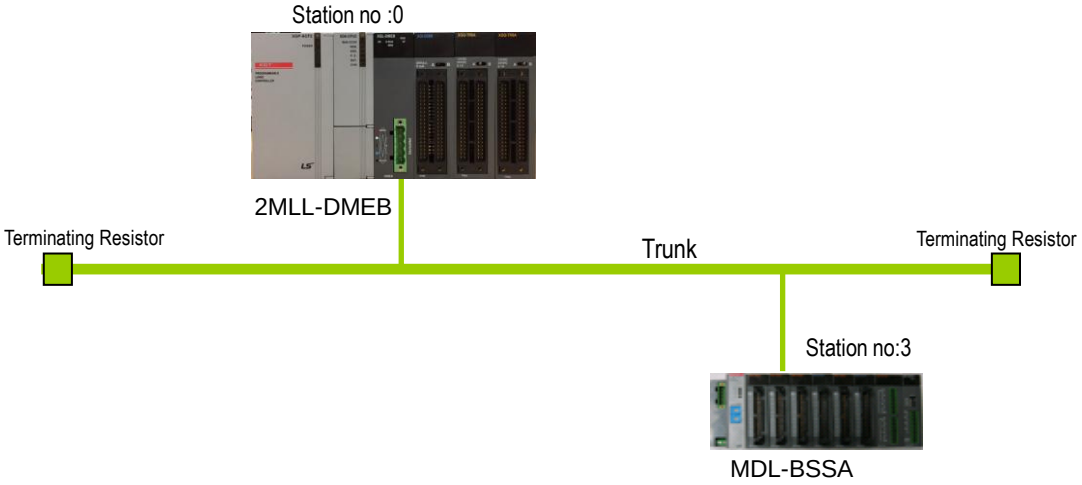
Phase	Item	Screen configuration and setting description
8-1	Communication module permission	

7.2 Example Program (MDL-BSSA setting)

Basic configuration and setting value for example is as below.

Setting item				Setting		Software	Phase
System configuration	Master	Master setting		2MLL-DMEB		N Configurator	1-3 ~ 1-4
		Base no.		0		SoftMaster	5-1
		Slot no.		0		SoftMaster	5-1
		Station no.		0		N Configurator	1-5, 3-1
		Communication speed		125kbps		N Configurator	3-1
		High Speed Link setting		High Speed Link 1		SoftMaster	5-1
		Communication cycle setting		200ms		SoftMaster	5-1
	Slave	Select slave		MDL-BSSA		N Configurator	4-1 ~ 4-4
		MDL-BSSA (MLE-TN32A:Tr. Output MLE-RY16A:Relay Output MLE-DC32A:DC Input MLF-AD04A:A/D Conversion module MLE-DV04A:D/A Conversion module)	Station no.	3		N Configurator	4-3, 5-2
			Communication method	Poll		N Configurator	5-3 (5-4)
			Read area	Device	P1000	SoftMaster	6-1
				Size	14		
			Save area	Device	M200	SoftMaster	6-1
				Size	12		
Etc.	Master Setting			Change of basic setting value		N Configurator	2-1 ~ 2-3
	Device Assignment			Communication port setting of computer		N Configurator	6-1 ~ 6-2

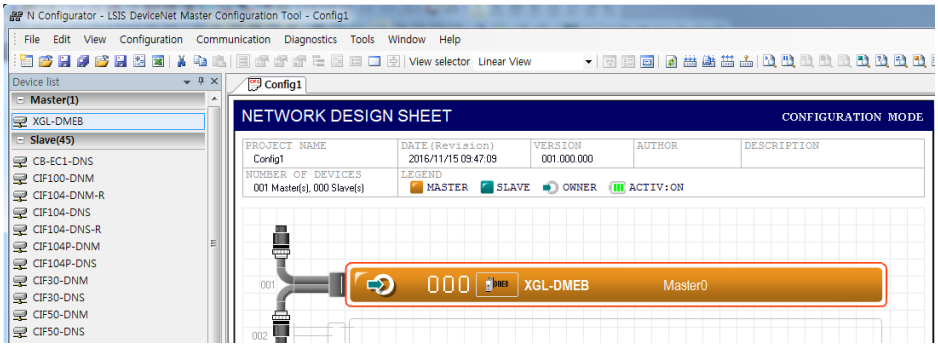
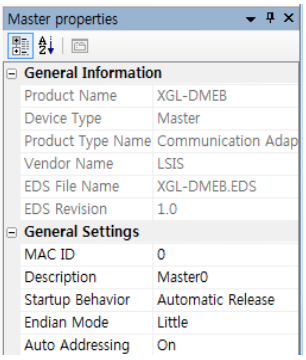
- **System Configuration**



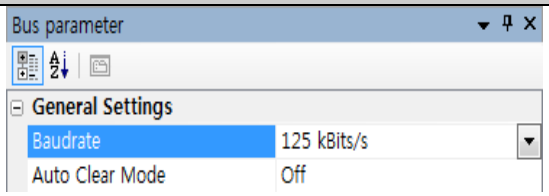
Slot no.	1	2	3	4	5
Model Name	MLE-TN32A	MLE-RY16A	MLE-DC32A	MLF-AD04A	MLE-DV04A
Contents	Tr. Output	Relay Output	DC Input	A/D Conversion module	D/A Conversion module
Occupied I/O points	32points (4Byte)	16Points (2Byte)	32Points (4byte)	64Points (8Byte)	64Points (8Byte)

[N Configurator 1 Phase] Master and station no. setting

Menu selection: File → New

Phase	Item	Screen configuration and setting description
1-1	Master selection	Double click 2MLL-DMEB in device list 
1-2	Master setting	 Set Master Properties of 2MLL-DMEB

[N Configurator 2 Phase] Communication speed

Phase	Item	Screen configuration and setting description
3-1	Bus Parameter	 Communication speed(Baudrate) : 125KBit/s Auto Clear mode: Off

* Auto Clear Mode

(1) When it is selected

→ If it is occurred to error in slave module, communication stop on overall system.

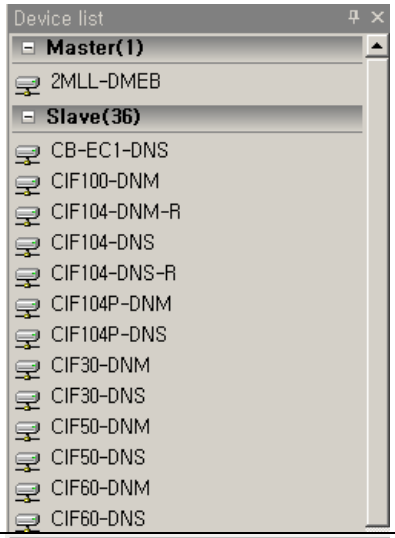
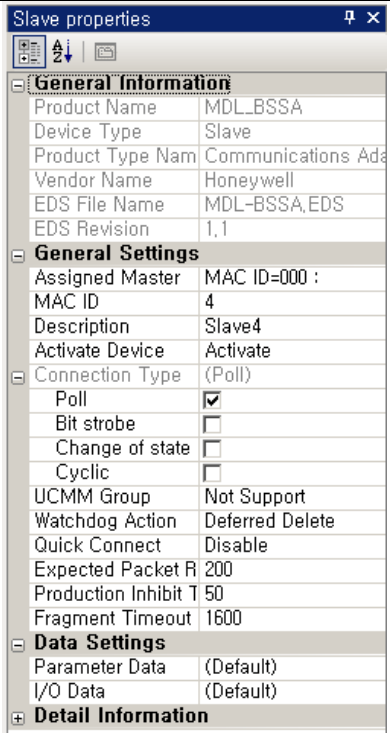
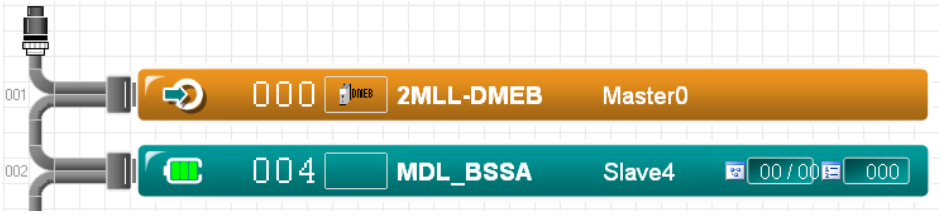
→ HS LED flickering of Dnet I/F module

MNS Red LED On

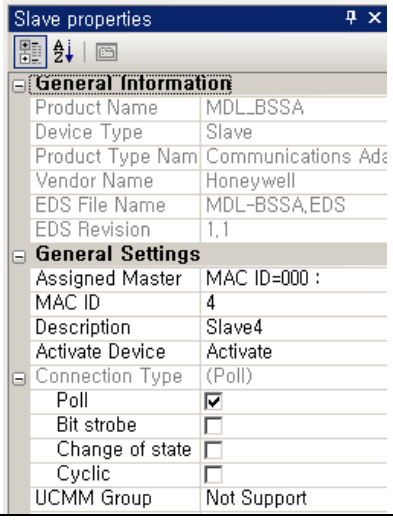
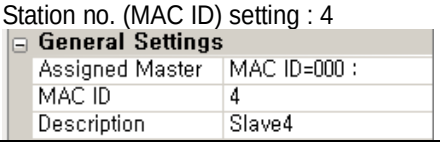
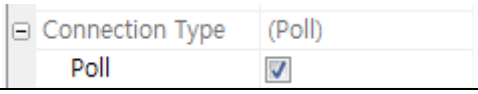
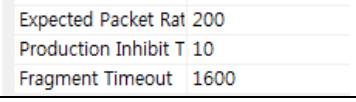
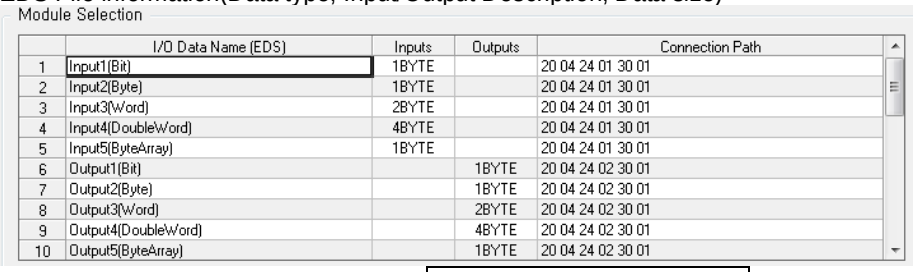
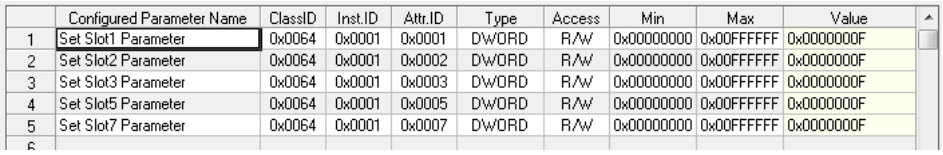
(2) When it is not selected

→ If it is occurred to error in slave module, communication is kept about normal slave Module.

[N Configurator 3 Phase] Slave and station no. setting

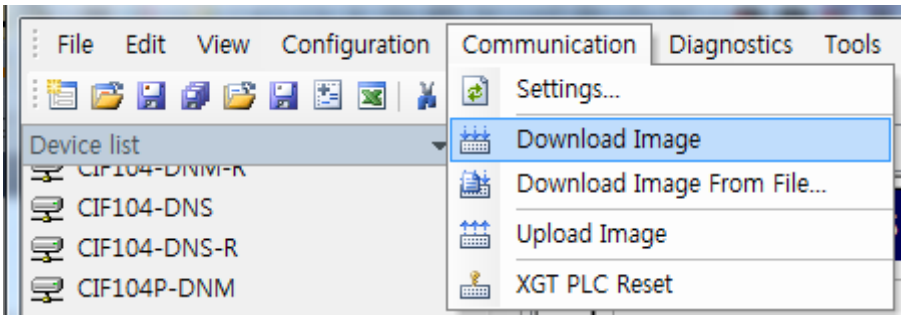
Phase	Item	Screen configuration and setting description
3-1	Slave selection	Double click slaves in device list 
3-2	Set Slave properties	 MAC ID: 4 Added description of slave: Slave 3
3-3	Slave setting completed	

[N Configurator 4 Phase] Slave communication method setting - Slave: MDL-BSSA

Phase	Item	Screen configuration and setting description
4-1	Setting window for slave communication method	Slave setting 
4-2	Slave station no	Station no. (MAC ID) setting : 4 
4-3	Slave communication method	Communication method selection : Poll 
4-4	Slave Send/Receive cycle	Send/Receive cycle of slave module and condition setting of response status →Poll method is set by default value 
4-5	Slave Data Configuration (EDS File)	EDS File information(Data type, Input/Output Description, Data size)  → select “BYTE ARRAY” by mouse and Append to configured I/O data then data is displayed as 5-6
4-6	Slave Data Configuration	Slave configuration(Data type, Input/Output Description, Data size)is transferred to master. 

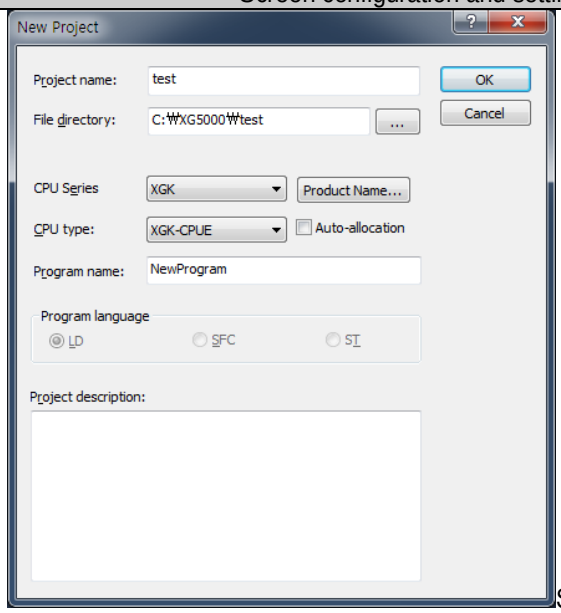
[N Configurator 5 Phase] Download

Menu: Communication → Download Image



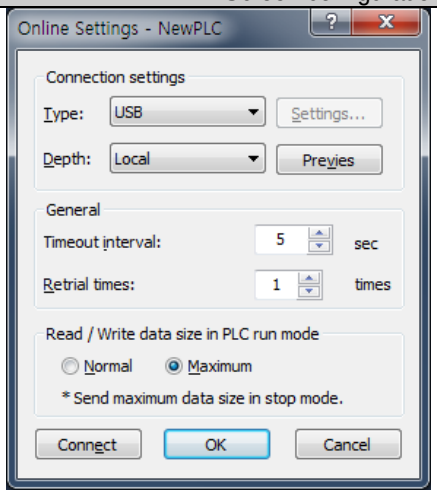
[SoftMaster 1 Phase] CPU module type selection

Menu selection: Option – PLC type setting

Phase	Item	Screen configuration and setting description
1-1	CPU module selection	 Select “2MLK-CPUE”

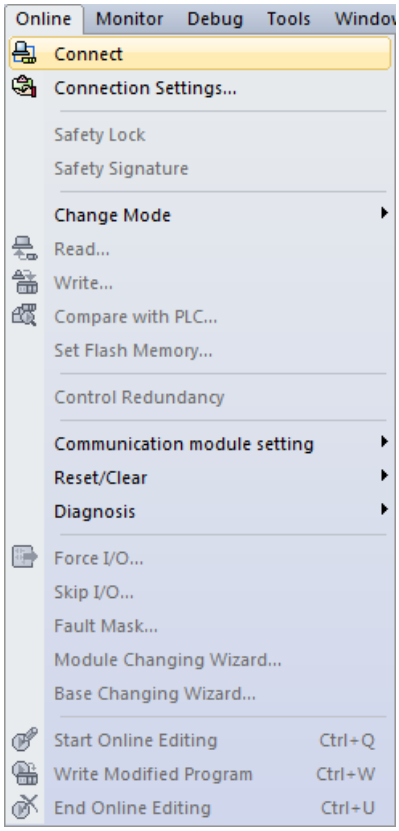
[SoftMaster 2 Phase] Communication method setting

Menu selection: Online – Connection setting

Phase	Item	Screen configuration and setting description
2-1	Communication method setting	 Connection Type : USB Connection depth : Local

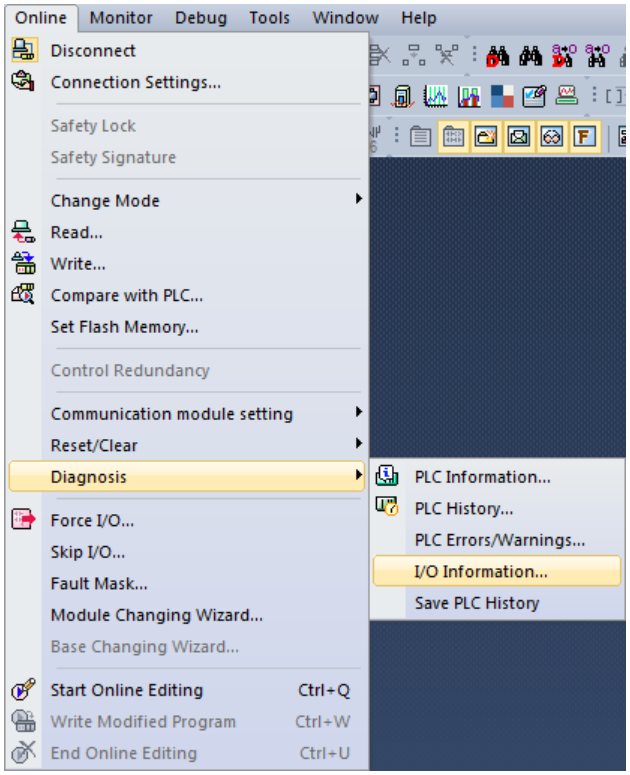
[SoftMaster 3 Phase] Connection

Menu selection: Online – Connection

Phase	Item	Screen configuration and setting description
3-1	Set connection method	

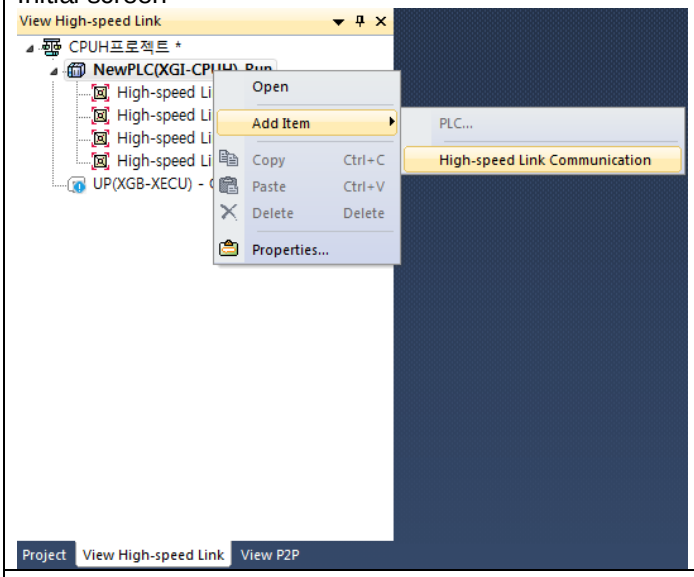
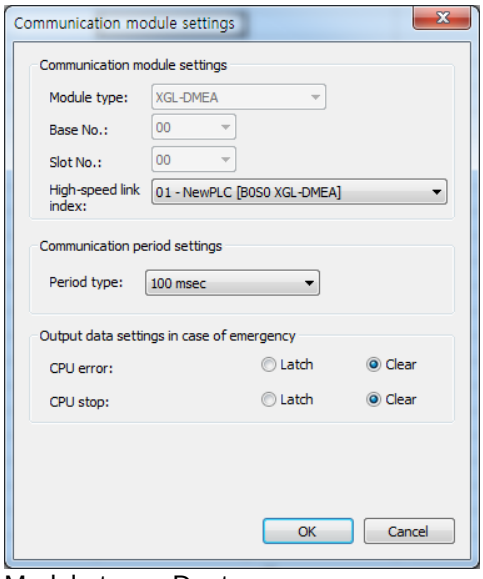
[SoftMaster 4 Phase] I/O information reading

Menu selection: Online – Diagnosis - I/O information

Phase	Item	Screen configuration and setting description
4-1	I/O Information	

[SoftMaster 5 Phase] High Speed Link setting

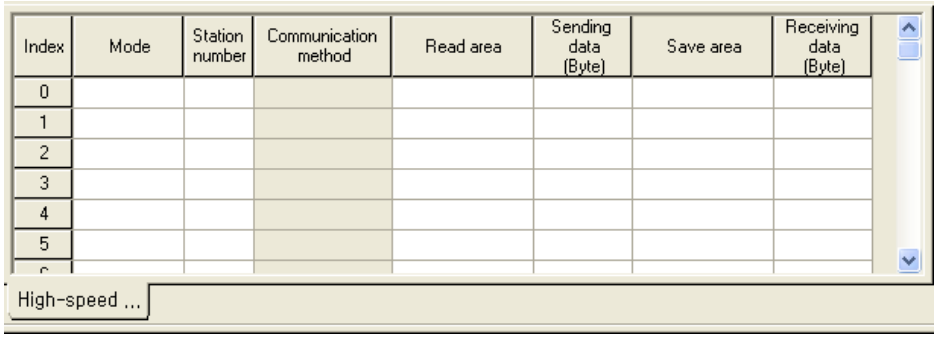
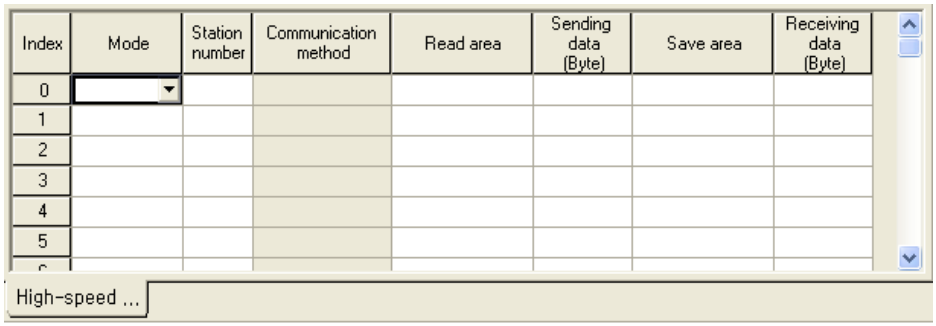
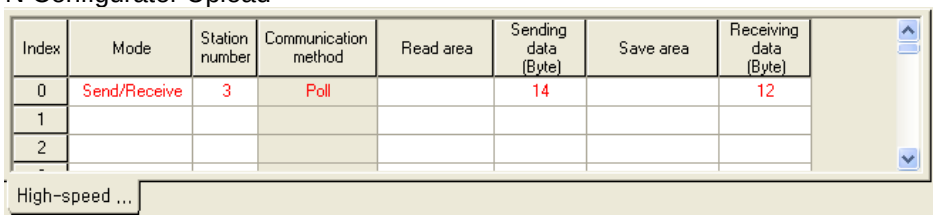
Menu selection: Network Configuration → Add item → High-speed link Communication

<table>
<tr><th>Phase</th><th>Item</th><th>Screen configuration and setting description</th></tr>
<tr><td rowspan="2">5-1</td><td rowspan="2">Communication module setting</td><td>Initial screen
 
</td></tr>
<tr><td> 

Module type : Dnet
Base no. : 00
Slot no. : 00
Communication cycle setting : 100ms</td></tr>
</table>

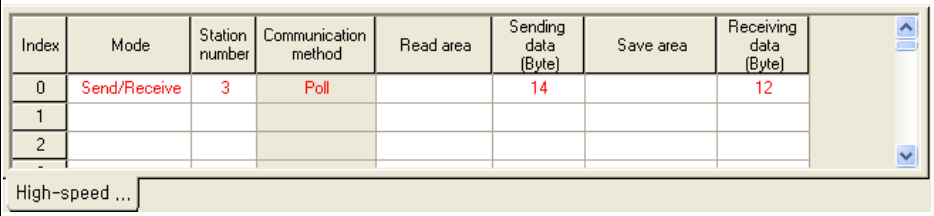
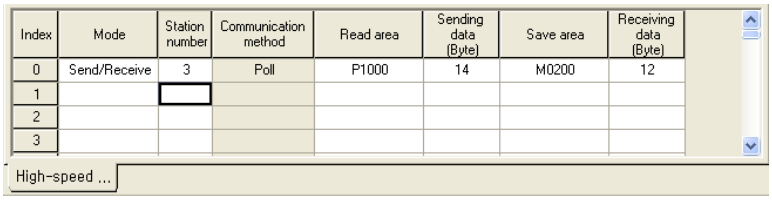
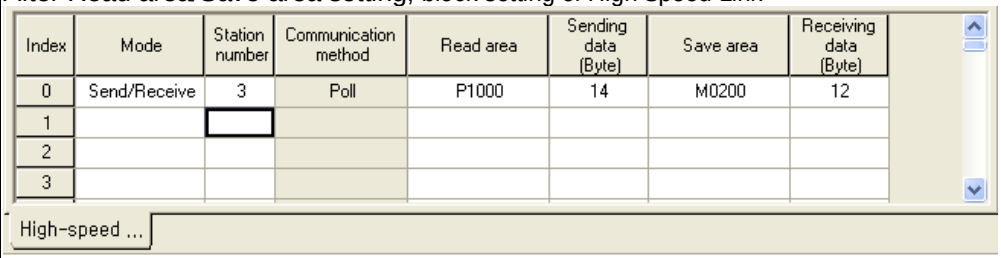
[SoftMaster 6 Phase] N Configurator Upload

Menu selection : Online → Communication module setting → Config.upload (Dnet, Pnet)

<table>
<tr><th>Phase</th><th>Item</th><th>Screen configuration and setting description</th></tr>
<tr><td rowspan="3">6-1</td><td rowspan="3">Communication module setting</td><td>Initial screen
 
</td></tr>
<tr><td>Index selection of block screen
 
</td></tr>
<tr><td>N Configurator Upload
 
</td></tr>
</table>

[SoftMaster 6 Phase] Read area/Save area setting

Menu selection: View High-speed Link → High-speed link1 → block

<table>
<tr><th>Phase</th><th>Item</th><th>Screen configuration and setting description</th></tr>
<tr><td rowspan="3">6-1</td><td rowspan="3">Communica-
tion
module setting</td><td>Initial screen
 
</td></tr>
<tr><td>Index selection of block screen
<table>
<tr><th>Slave module</th><th>Index</th><th>Block setting of High Speed Link</th></tr>
<tr><td>MDL-
BSSA</td><td>0</td><td> 
</td></tr>
</table></td></tr>
<tr><td>After Read area/Save area setting, block setting of High Speed Link
 
</td></tr>
</table>

◈ Read area/Save area configuration of slave module

1. I/O configuration of Dnet module of extendable type

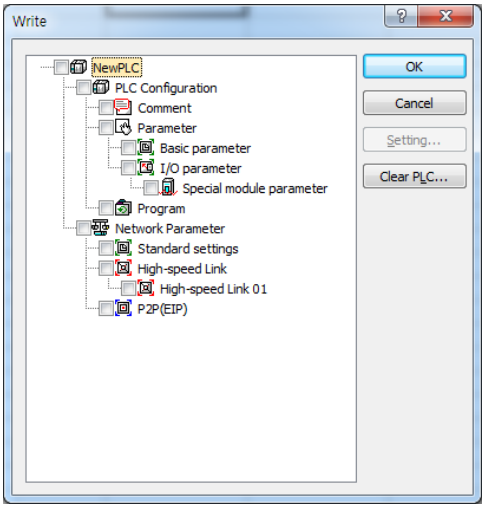
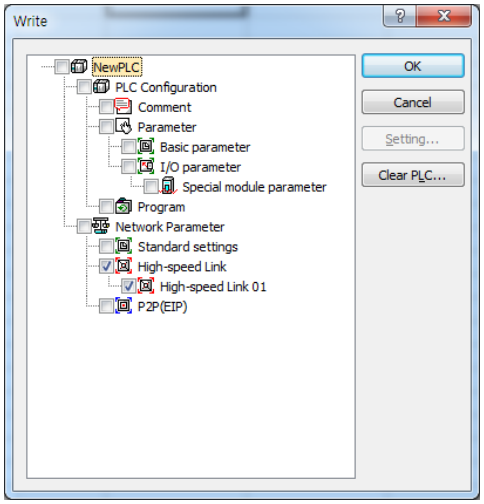
Communication Adapter	Slot 0: P1000 Tr. Output	Slot 1: P1002 Relay Output	Slot 2: M0200 DC Input	Slot 3: P1003 DA Output	Slot 4: M0202 AD Input
Read area Slot0: Slot1: Slot3: Save area Slot2: Slot4:	32points (XBE-TN32A)	16points (XBE-RY16A)	32points (XBE-DC32A)	(XBF-DA04A)	(XBF-AD04A)

2. Read area/Save area of module

Read area(Master→Slave)					Save area(Slave→Master)				
Device	Tx Data		Extendable Output Module		Device	Rx Data		Extendable Input Module	
P1000	14 Byte	4Byte	TR Output 32points		M0200	12 Byte	4Byte	DC Input 32points	
P1002		2Byte	Relay 16points		M0202		2Byte	A/D Conversion 4Ch	Ch0
P1003		2Byte	D/A Conversion 4Ch	Ch0	M0203		2Byte		Ch1
P1004		2Byte		Ch1	M0204		2Byte		Ch2
P1005		2Byte		Ch2	M0205		2Byte		Ch3
P1006		2Byte		Ch3					

[SoftMaster 7 Phase] High Speed Parameter Writing

Menu selection : Online → Write

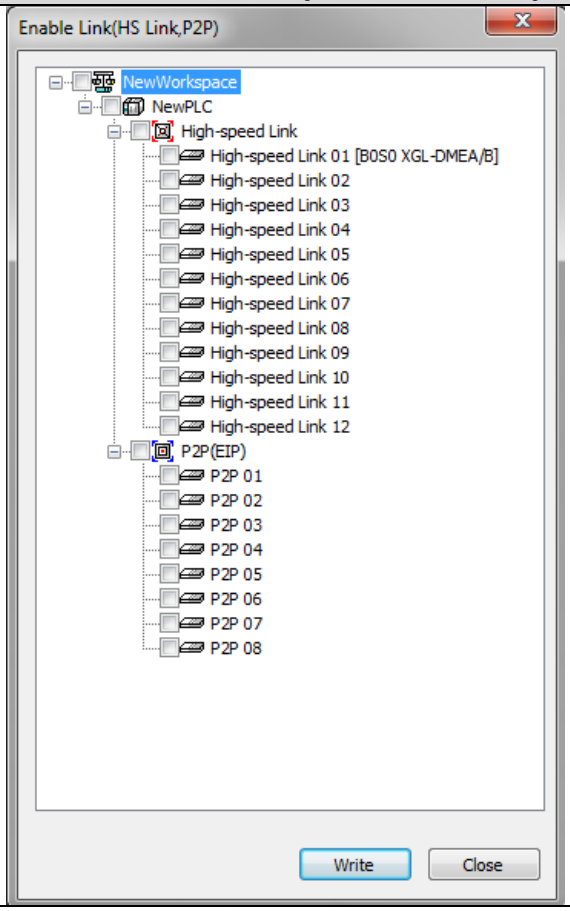
<table>
<tr><th>Phase</th><th>Item</th><th colspan="2">Screen configuration and setting description</th></tr>
<tr><td rowspan="3">7-1</td><td rowspan="3">Parameter writing</td><td>Initial screen</td><td>High Speed Link selection</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">If you click “ok”, then the parameter is downloaded.</td></tr>
</table>

- The parameter wrote is saved to CPU module.
  - Therefore if you exchange CPU module, you have to backup the parameter of High Speed Link.

[SoftMaster 8 Phase] High Speed Link enable

Menu selection : Online → Communication module setting → Enable Link (HS link, P2P)

→ Enable the communication between master module and slave module

Phase	Item	Screen configuration and setting description
8-1	Communication module permission	

Chapter 8 Troubleshooting

This chapter is to describe various errors that may occur in system operation, their causes and actions to take against. If any error occurs on the communications module, related error details will be displayed through LED of the communication module. Follow the procedures below to shoot the troubles after checking for errors displayed, based on the applicable LED status referring to product specification.

8.1 Symptoms and Management by LED Status

It shows the symptoms of communication module by LED status and the management.
(When High-speed link is enabled)

RUN	I/F	HS	D-RUN	MNS	Symptoms	Management
ON	Flickering	OFF	Flickering	Green ON	High-speed link disable	-
ON	Flickering	ON	ON	Red ON	Slave connection abnormal	Slave connection check Check slave setting
ON	Flickering	Flickering	Flickering	Green ON	N Configurator setting changed while High-speed link is executed	-
ON	Flickering	Flickering	Flickering	Red ON	Whole slave connection error	Check slave connection Check slave setting
OFF	OFF	OFF	-	-	Critical defect	Ask customer service center

[Table 8.1] The symptoms of communication module error (High-speed link is enabled)

8.2 System Diagnosis in SoftMaster

It shows the diagnosis item in SoftMaster.

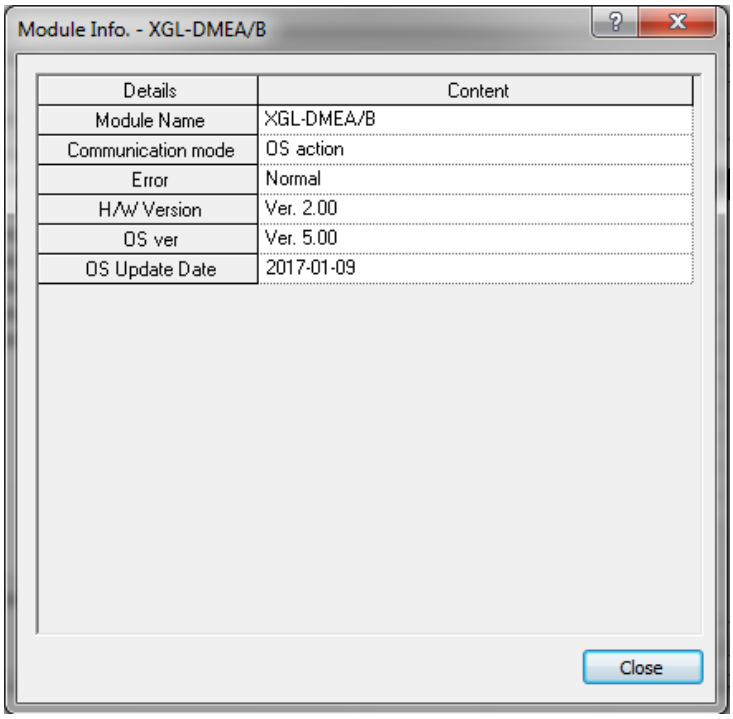
Diagnosis item	Description
Communication module information	It displays the standard information of communication module.
High-speed link	It displays the flag information of High-speed link.
Log	It displays system log and running log.
Auto-scan	It displays the slave module which is connected Dnet I/F module.

[Table 8.2] System diagnosis in SoftMaster

It diagnoses the system by [Online] – [Communication module setting] – [System Diagnosis] in SoftMaster.

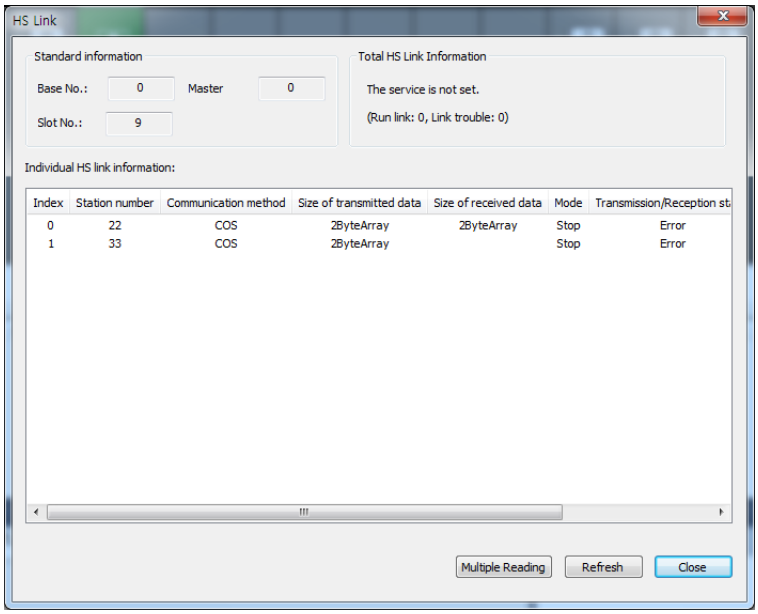
8.2.1 Communication module information

It displays the information of Dnet I/F module.



[Figure 8.1] Communication module information

8.2.2 High-speed link



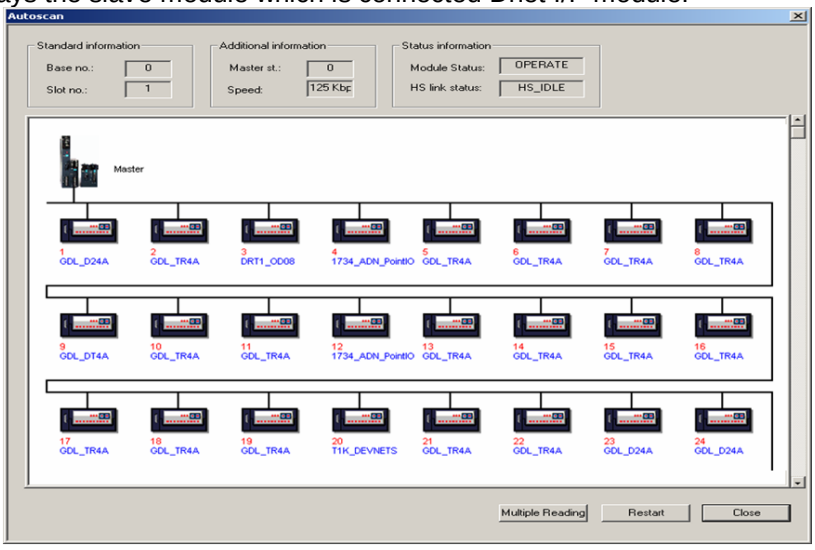
[Figure 8.2] High-speed link

High-speed link diagnosis		
Classification (Main item)	Classification (Sub item)	Description
Standard information	Base no.	Base number: 0~7
	Slot no.	Slot number: 0~11
	Master st.	Master station number
Total High-speed link information	Run link	Normal: All station is a normal communication. Error: If only one station can not to communicate, it is an error.
	Link trouble	Communication line's status
Individual High-speed link information	Index	High-speed link parameter index (High-speed link block number in SoftMaster)
	Station number	Master station number
	Communication method	Slave's communication method
	Size of transmitted data	Transmission data size (Byte)
	Size of recepted data	Received data size (Byte)
	Mode	Present operation status
	Transmission/Reception status	transmission/reception status
	High-speed link status	High-speed link status
	Error	Error status

[Table 8.3] High-speed link diagnosis

8.2.3 Autoscan

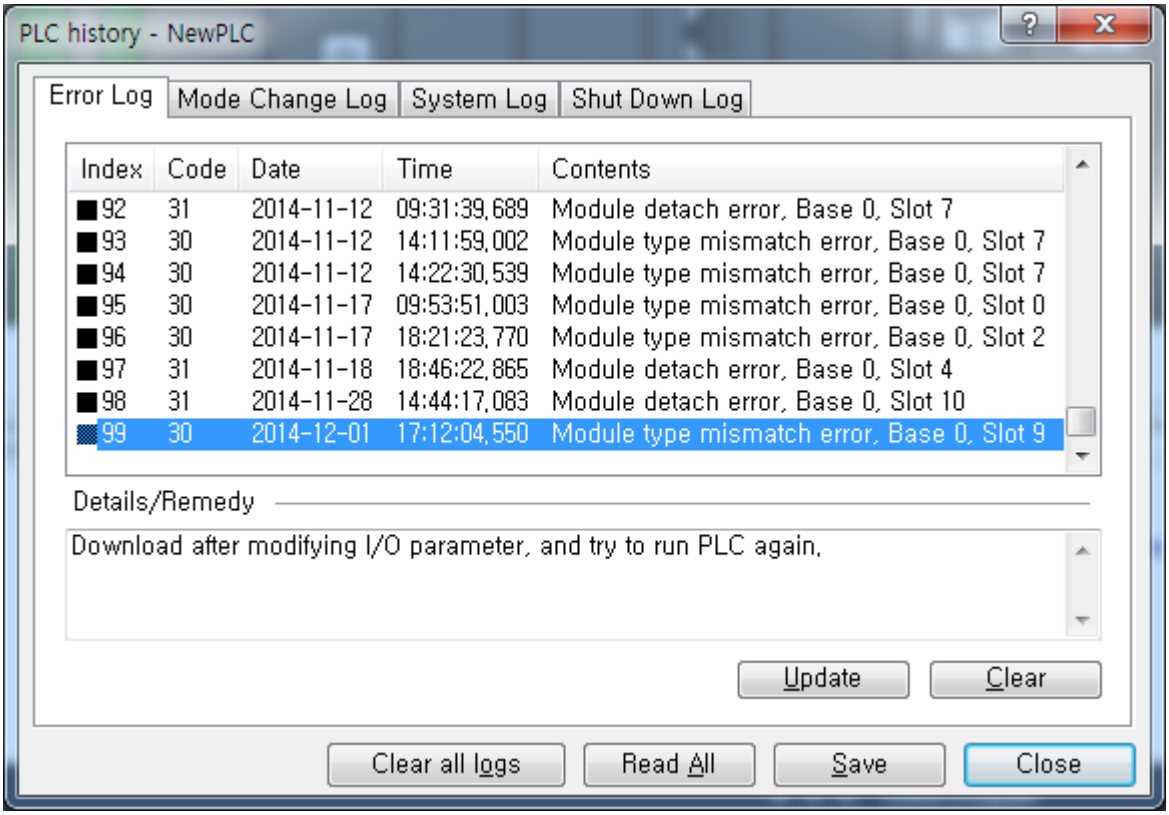
It displays the slave module which is connected Dnet I/F module.



[Figure 8.4 Autoscan]

8.3 Diagnosis of Communication Module through SoftMaster

It can monitor the communication status by SoftMaster. Connect to CPU port and [Online] – [PLC History] – [PLC Errors/Warnings].

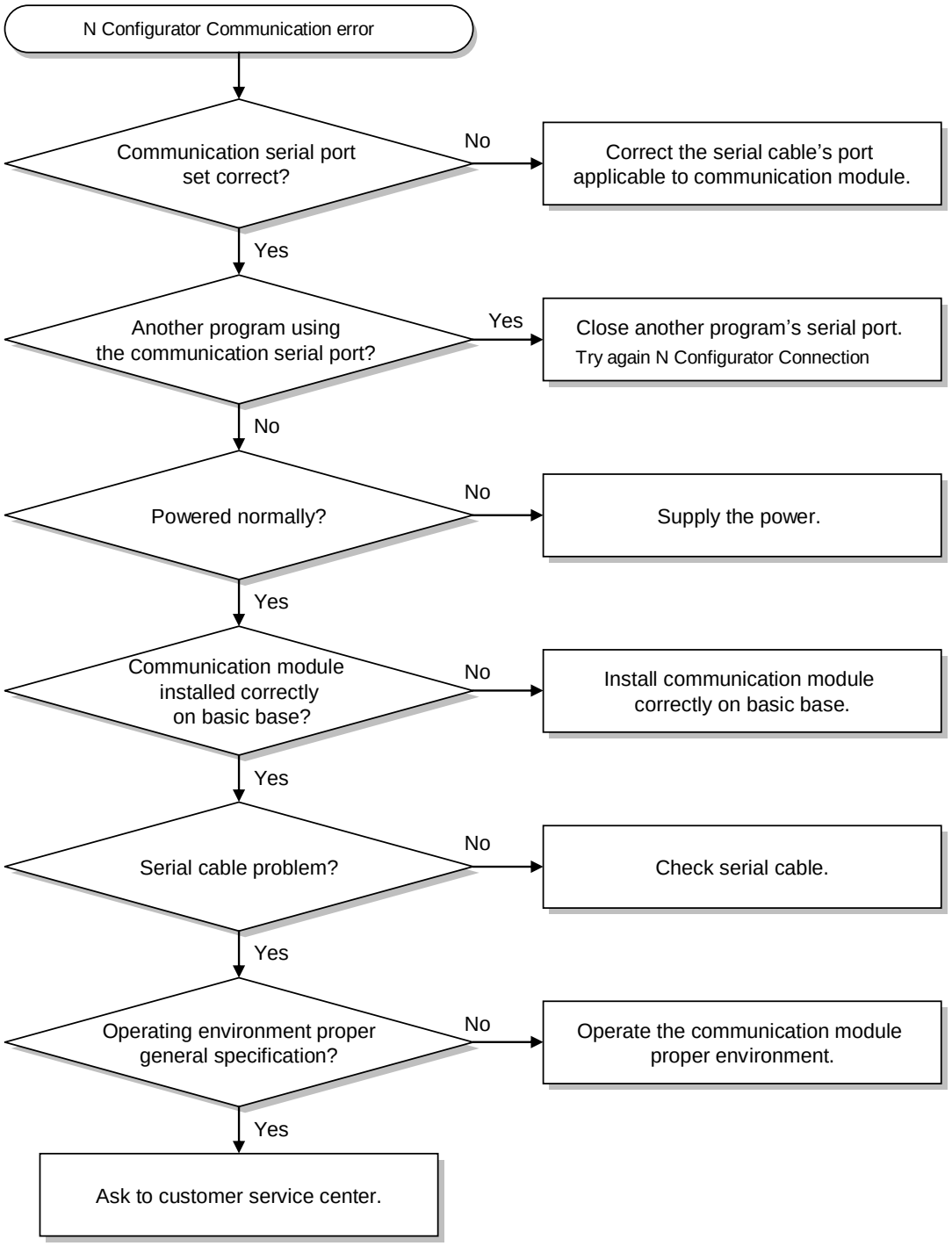


[Figure 8.5] Detailed information of PLC history

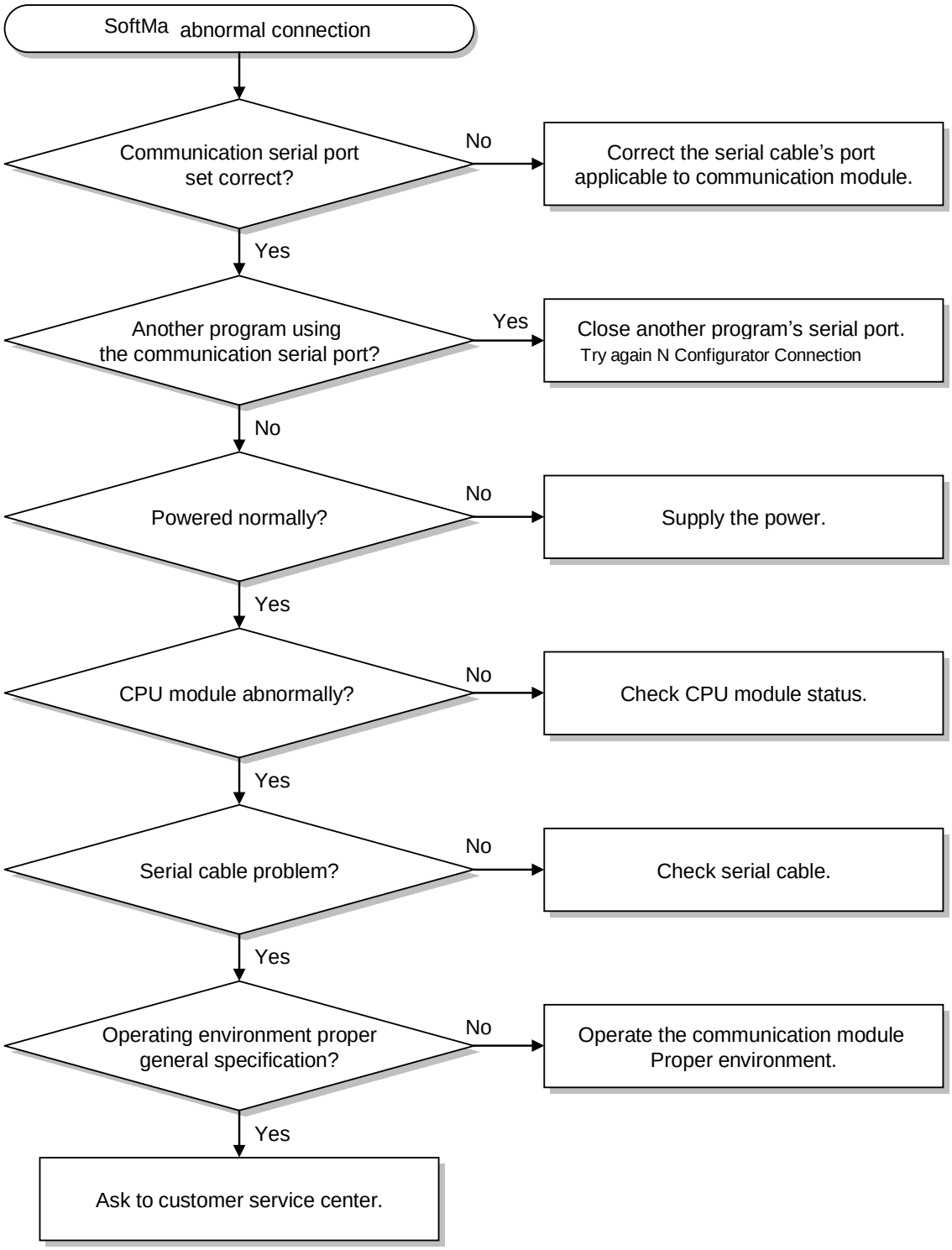
If hardware error or CPU interface error is occurred, communication module's LED operates abnormally. Also, the error information is shown through SoftMaster.
[Figure 8.5] shows Error/Warning information from [Online] - [PLC History] menu in SoftMaster.

8.4 Trouble shooting for Respective Error

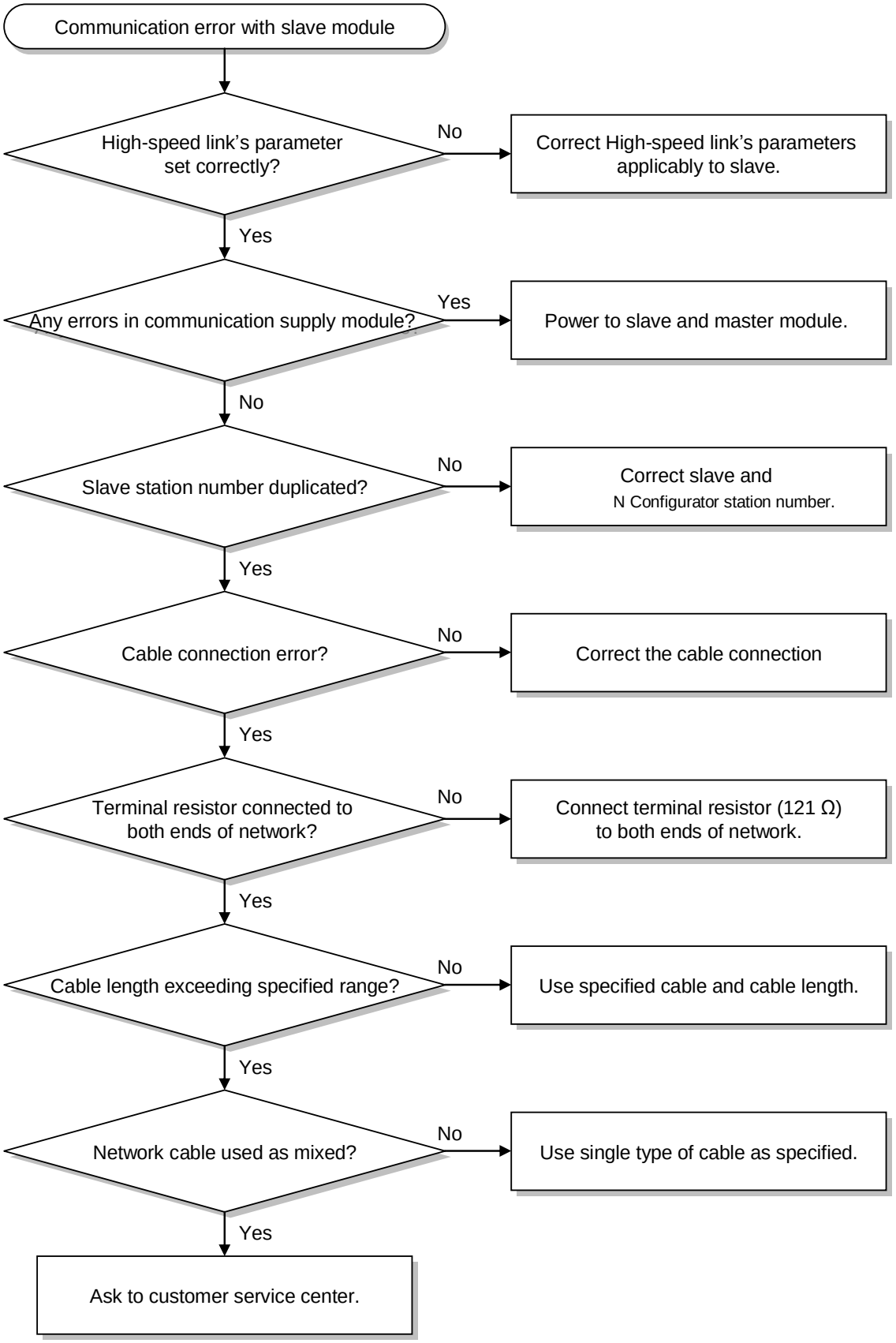
8.4.1 N Configurator communication error



8.4.2 SoftMaster abnormal connection



8.4.3 Communication error with slave module



A.1 List of Flags

A.1.1 Special relays

Device 1	Device 2	Type	Variable	Function	Description
F0000		DWORD	_SYS_STATE	Mode & Status	PLC mode & run status displayed.
	F00000	BIT	_RUN	RUN	RUN status.
	F00001	BIT	_STOP	STOP	STOP status.
	F00002	BIT	_ERROR	ERROR	ERROR status.
	F00003	BIT	_DEBUG	DEBUG	DEBUG status.
	F00004	BIT	_LOCAL_CON	Local control	Local control mode.
	F00005	BIT	_MODBUS_CON	Modbus mode	Modbus control mode.
	F00006	BIT	_REMOTE_CON	Remote mode	Remote control mode.
	F00008	BIT	_RUN_EDIT_ST	Modification during run	Program being downloaded during run.
	F00009	BIT	_RUN_EDIT_CHK	Modification during run	Modification in progress during run.
	F0000A	BIT	_RUN_EDIT_DONE	Modification complete during run	Modification complete during run.
	F0000B	BIT	_RUN_EDIT_END	Modification complete during run	Modification complete during run.
	F0000C	BIT	_CMOD_KEY	Run Mode	Run Mode changed by key.
	F0000D	BIT	_CMOD_LPADT	Run Mode	Run Mode changed by local PADT.
	F0000E	BIT	_CMOD_RPADT	Run Mode	Run Mode changed by remote PADT.
	F0000F	BIT	_CMOD_RLINK	Run Mode	Run Mode changed by remote communication module.
	F00010	BIT	_FORCE_IN	Compulsory input	Compulsory input status.
	F00011	BIT	_FORCE_OUT	Compulsory output	Compulsory output status.
	F00012	BIT	_SKIP_ON	I/O SKIP	I/O SKIP being executed.
	F00013	BIT	_EMASK_ON	Error mask	Error mask being executed.
	F00014	BIT	_MON_ON	Monitor	Monitor being executed.
	F00015	BIT	_USTOP_ON	STOP	Stopped by STOP function
	F00016	BIT	_ESTOP_ON	ESTOP	Stopped by ESTOP function.
	F00017	BIT	_CONPILE_MODE	Compiling	Compile being performed.
	F00018	BIT	_INIT_RUN	Initializing	Initialization task being performed.
	F0001C	BIT	_PB1	Program code 1	Program code 1 selected.
	F0001D	BIT	_PB2	Program code 2	Program code 2 selected.
	F0001E	BIT	_CB1	Compile code 1	Compile code 1 selected.
	F0001F	BIT	_CB2	Compile code 2	Compile code 2 selected.

Device 1	Device 2	Type	Variable	Function	Description
F0002		DWORD	_CNF_ER	System error	Serious error in system reported.
	F00020	BIT	_CPU_ER	CPU error	CPU configuration error found.
	F00021	BIT	_IO_TYER	Module type error	Module type is not identical.
	F00022	BIT	_IO_DEER90	Module installation error	Module is displaced.
	F00023	BIT	_FUSE_ER	Fuse error	Fuse blown.
	F00024	BIT	_IO_RWER	Module I/O error	Module I/O error found.
	F00025	BIT	_IP_IFER	Module interface error	Error found in Special/communication module interface.
	F00026	BIT	_ANNUM_ER	External equipment Error	Serious error detected in external equipment.
	F00028	BIT	_BPRM_ER	Basic parameter	Basic parameter is abnormal.
	F00029	BIT	_IOPRM_ER	IO parameter	IO configuration parameter abnormal.
	F0002A	BIT	_SPPRM_ER	Special module parameter	Special module parameter abnormal.
	F0002B	BIT	_CPPRM_ER	Communication module parameter	Communication module parameter abnormal.
	F0002C	BIT	_PGM_ER	Program error	Program error found.
	F0002D	BIT	_CODE_ER	Code error	Program code error found.
	F0002E	BIT	_SWDT_ER	System watch-dog	System watch-dog active.
	F0002F	BIT	_BASE_POWER_ER	Power error	Base power abnormal.
	F00030	BIT	_WDT_ER	Scan watch-dog	Scan watch-dog active.
F0004		DWORD	_CNF_WAR	System warning	Slight error in system reported.
	F00040	BIT	_RTC_ER	RTC error	RTC data abnormal.
	F00041	BIT	_DBCK_ER	Back-up error	Data back-up error found.
	F00042	BIT	_HBCK_ER	Restart error	Hot restart unavailable.
	F00043	BIT	_ABSD_ER	Run error stop	Stopped due to abnormal run.
	F00044	BIT	_TASK_ER	Task impact	Task being impacted.
	F00045	BIT	_BAT_ER	Battery error	Battery status abnormal.
	F00046	BIT	_ANNUM_WAR	External equipment error	Slight error detected in external equipment.
	F00047	BIT	_LOG_FULL	Memory full	Log memory full
	F00048	BIT	_HS_WAR1	HS link 1	HS link – parameter 1 error
	F00049	BIT	_HS_WAR2	HS link 2	HS link – parameter 2 error
	F0004A	BIT	_HS_WAR3	HS link 3	HS link – parameter 3 error
	F0004B	BIT	_HS_WAR4	HS link 4	HS link – parameter 4 error
	F0004C	BIT	_HS_WAR5	HS link 5	HS link – parameter 5 error
	F0004D	BIT	_HS_WAR6	HS link 6	HS link – parameter 6 error
	F0004E	BIT	_HS_WAR7	HS link 7	HS link – parameter 7 error
	F0004F	BIT	_HS_WAR8	HS link 8	HS link – parameter 8 error
	F00050	BIT	_HS_WAR9	HS link 9	HS link – parameter 9 error

Appendix

Device 1	Device 2	Type	Variable	Function	Description
	F00051	BIT	_HS_WAR10	HS link 10	HS link – parameter 10 error
	F00052	BIT	_HS_WAR11	HS link 11	HS link - parameter11 error
	F00053	BIT	_HS_WAR12	HS link 12	HS link - parameter12 error
	F00054	BIT	_P2P_WAR1	P2P parameter 1	P2P - parameter1 error
	F00055	BIT	_P2P_WAR2	P2P parameter 2	P2P – parameter2 error
	F00056	BIT	_P2P_WAR3	P2P parameter 3	P2P – parameter3 error
	F00057	BIT	_P2P_WAR4	P2P parameter 4	P2P – parameter4 error
	F00058	BIT	_P2P_WAR5	P2P parameter 5	P2P – parameter5 error
	F00059	BIT	_P2P_WAR6	P2P parameter 6	P2P – parameter6 error
	F0005A	BIT	_P2P_WAR7	P2P parameter 7	P2P – parameter7 error
	F0005B	BIT	_P2P_WAR8	P2P parameter 8	P2P – parameter8 error
	F0005C	BIT	_CONSTANT_ER	Fixed cycle error	Fixed cycle error
F0009		WORD	_USER_F	User contact point	Timer available for user.
	F00090	BIT	_T20MS	20ms	CLOCK of 20ms cycle.
	F00091	BIT	_T100MS	100ms	CLOCK of 100ms cycle.
	F00092	BIT	_T200MS	200ms	CLOCK of 200ms cycle.
	F00093	BIT	_T1S	1s	CLOCK of 1s cycle.
	F00094	BIT	_T2S	2s	CLOCK of 2s cycle.
	F00095	BIT	_T10S	10s	CLOCK of 10s cycle.
	F00096	BIT	_T20S	20s	CLOCK of 20s cycle.
	F00097	BIT	_T60S	60s	CLOCK of 60s cycle.
	F00099	BIT	_ON	Always ON	Bit always ON.
	F0009A	BIT	_OFF	Always OFF	Bit always OFF
	F0009B	BIT	_1ON	1 scan ON	Bit only ON for the first scan.
	F0009C	BIT	_1OFF	1 scan OFF	Bit only OFF for the first scan.
	F0009D	BIT	_STOG	Reverse	Every scan reversed.
F0010		WORD	_USER_CLK	User CLOCK	CLOCK available to set by user.
	F00100	BIT	_USR_CLK0	Repeat specific scan	ON/OFF CLOCK 0 for specific scan
	F00101	BIT	_USR_CLK1	Repeat specific scan	ON/OFF CLOCK 1 for specific scan
	F00102	BIT	_USR_CLK2	Repeat specific scan	ON/OFF CLOCK 2 for specific scan
	F00103	BIT	_USR_CLK3	Repeat specific scan	ON/OFF CLOCK 3 for specific scan
	F00104	BIT	_USR_CLK4	Repeat specific scan	ON/OFF CLOCK 4 for specific scan
	F00105	BIT	_USR_CLK5	Repeat specific scan	ON/OFF CLOCK 5 for specific scan
	F00106	BIT	_USR_CLK6	Repeat specific scan	ON/OFF CLOCK 6 for specific scan
	F00107	BIT	_USR_CLK7	Repeat specific scan	ON/OFF CLOCK 7 for specific scan

Appendix

Device 1	Device 2	Type	Variable	Function	Description
F0011		WORD	_LOGIC_RESULT	Logic result	Logic result displayed.
	F00110	BIT	_LER	Calculation error	ON for 1 scan if calculation in error.
	F00111	BIT	_ZERO	Zero flag	ON if calculation result is 0.
	F00112	BIT	_CARRY	Carry flag	ON if Carry found during calculation.
	F00113	BIT	_ALL_OFF	Whole output OFF	ON if all output OFF
	F00115	BIT	_LER_LATCH	Calculation error latch	ON kept if calculation in error.
F0012		WORD	_CMP_RESULT	Compared result	Compared result displayed.
	F00120	BIT	_LT	LT flag	ON if “less than”
	F00121	BIT	_LTE	LTE flag	ON if “less than or equal”
	F00122	BIT	_EQU	EQU flag	ON if “equal”
	F00123	BIT	_GT	GT flag	ON if “greater than”
	F00124	BIT	_GTE	GTE flag	ON if “greater than or equal”
	F00125	BIT	_NEQ	NEQ flag	ON if “not equal”
F0013		WORD	_AC_F_CNT	Inspected power cut	Number of inspected power-cuts displayed.
F0014		WORD	_FALS_NUM	FALS No.	FALS No. displayed.
F0015		WORD	_PUTGET_ERR0	PUT/GET error 0	Main base PUT / GET error
F0016		WORD	_PUTGET_ERR1	PUT/GET error 1	Added base step 1 PUT / GET error
F0017		WORD	_PUTGET_ERR2	PUT/GET error 2	Added base step 2 PUT / GET error
F0018		WORD	_PUTGET_ERR3	PUT/GET error 3	Added base step 3 PUT / GET error
F0019		WORD	_PUTGET_ERR4	PUT/GET error 4	Added base step 4 PUT / GET error
F0020		WORD	_PUTGET_ERR5	PUT/GET error 5	Added base step 5 PUT / GET error
F0021		WORD	_PUTGET_ERR6	PUT/GET error 6	Added base step 6 PUT / GET error
F0022		WORD	_PUTGET_ERR7	PUT/GET error 7	Added base step 7 PUT / GET error
F0023		WORD	_PUTGET_NDR0	PUT/GET complete 0	Main base PUT / GET complete
F0024		WORD	_PUTGET_NDR1	PUT/GET complete 1	Added base step 1 PUT / GET complete
F0025		WORD	_PUTGET_NDR2	PUT/GET complete 2	Added base step 2 PUT / GET complete
F0026		WORD	_PUTGET_NDR3	PUT/GET complete 3	Added base step 3 PUT / GET complete
F0027		WORD	_PUTGET_NDR4	PUT/GET complete 4	Added base step 4 PUT / GET complete
F0028		WORD	_PUTGET_NDR5	PUT/GET complete 5	Added base step 5 PUT / GET complete
F0029		WORD	_PUTGET_NDR6	PUT/GET complete 6	Added base step 6 PUT / GET complete
F0030		WORD	_PUTGET_NDR7	PUT/GET complete 7	Added base step 7 PUT / GET complete
F0044		WORD	_CPU_TYPE	CPU type	Information on CPU type displayed.
F0045		WORD	_CPU_VER	CPU version	CPU version displayed.
F0046		DWORD	_OS_VER	OS version	OS version displayed.
F0048		DWORD	_OS_DATE	OS date	OS released date displayed.

Device 1	Device 2	Type	Variable	Function	Description
F0050		WORD	_SCAN_MAX	Max. scan time	Max. scan time displayed
F0051		WORD	_SCAN_MIN	Min. scan time	Min. scan time displayed
F0052		WORD	_SCAN_CUR	Present scan time	Present scan time displayed.
F0053		WORD	_MON_YEAR	Month / Year	PLC's time information (Month/Year)
F0054		WORD	_TIME_DAY	Hour / Date	PLC's time information (Hour/Date)
F0055		WORD	_SEC_MIN	Second / Minute	PLC's time information (Second/Minute)
F0056		WORD	_HUND_WK	100 years / Day	PLC's time information (100 years/Day)
F0057		WORD	_FPU_INFO	FPU calculation result	Floating decimal calculation result displayed.
	F00570	BIT	_FPU_LFLAG_I	Incorrect error latch	Latched if in incorrect error.
	F00571	BIT	_FPU_LFLAG_U	Underflow latch	Latched if underflow found.
	F00572	BIT	_FPU_LFLAG_O	Overflow latch	Latched if overflow found.
	F00573	BIT	_FPU_LFLAG_Z	Latch divided by 0	Latched if divided by 0.
	F00574	BIT	_FPU_LFLAG_V	Invalid calculation latch	Latched if invalid calculation.
	F0057A	BIT	_FPU_FLAG_I	Incorrect error	Reported if incorrect error found.
	F0057B	BIT	_FPU_FLAG_U	Underflow	Reported if underflow found.
	F0057C	BIT	_FPU_FLAG_O	Overflow	Reported if overflow found.
	F0057D	BIT	_FPU_FLAG_Z	Division by 0	Reported if divided by 0.
	F0057E	BIT	_FPU_FLAG_V	Invalid calculation	Reported if calculation invalid.
	F0057F	BIT	_FPU_FLAG_E	Irregular value input	Reported if irregular value input.
F0058		DWORD	_ERR_STEP	Error step	Error step saved.
F0060		DWORD	_REF_COUNT	Refresh	Increased when module refresh executed.
F0062		DWORD	_REF_OK_CNT	Refresh OK	Increased if module refresh normal
F0064		DWORD	_REF_NG_CNT	Refresh NG	Increased if module refresh abnormal.
F0066		DWORD	_REF_LIM_CNT	Refresh LIMIT	Increased if module refresh abnormal (TIME OUT).
F0068		DWORD	_REF_ERR_CNT	Refresh ERROR	Increased if module refresh abnormal.
F0070		DWORD	_MOD_RD_ERR_CNT	Module READ ERROR	Increased if module reads 1 word abnormally.
F0072		DWORD	_MOD_WR_ERR_CNT	Module WRITE ERROR	Increased if module writes 1 word abnormally.
F0074		DWORD	_CA_CNT	Block service	Increased if module's block data serviced
F0076		DWORD	_CA_LIM_CNT	Block service LIMIT	Increased if module's block data service abnormal.
F0078		DWORD	_CA_ERR_CNT	Block service ERROR	Increased if module's block data service abnormal.
F0080		DWORD	_BUF_FULL_CNT	Buffer FULL	Increased if CPU's internal buffer is FULL.
F0082		DWORD	_PUT_CNT	PUT count	Increased if PUT executed.
F0084		DWORD	_GET_CNT	GET count	Increased if GET executed.
F0086		DWORD	_KEY	Present key	Local key's present status displayed.
F0088		DWORD	_KEY_PREV	Previous key	Local key's previous status displayed.

Device 1	Device 2	Type	Variable	Function	Description
F0090		WORD	_IO_TYER_N	Discordant slot	Slot number with discordant module type displayed.
F0091		WORD	_IO_DEER_N	Displaced slot	Slot number with displaced module displayed.
F0092		WORD	_FUSE_ER_N	Fuse blown slot	Slot number with fuse blown displayed.
F0093		WORD	_IO_RWER_N	RW error slot	Slot number with module Read/Write error displayed.
F0094		WORD	_IP_IFER_N	IF error slot	Slot number with module interface error displayed.
F0096		WORD	_IO_TYER0	Module type 0 error	Main base module type error.
F0097		WORD	_IO_TYER1	Module type 1 error	Added base step 1 module type error.
F0098		WORD	_IO_TYER2	Module type 2 error	Added base step 2 module type error.
F0099		WORD	_IO_TYER3	Module type 3 error	Added base step 3 module type error.
F0100		WORD	_IO_TYER4	Module type 4 error	Added base step 4 module type error.
F0101		WORD	_IO_TYER5	Module type 5 error	Added base step 5 module type error
F0102		WORD	_IO_TYER6	Module type 6 error	Added base step 6 module type error
F0103		WORD	_IO_TYER7	Module type 7 error	Added base step 7 module type error
F0104		WORD	_IO_DEER0	Module installation 0 error	Main base module installation error
F0105		WORD	_IO_DEER1	Module installation 1 error	Added base step 1 module installation error
F0106		WORD	_IO_DEER2	Module installation 2 error	Added base step 2 module installation error
F0107		WORD	_IO_DEER3	Module installation 3 error	Added base step 3 module installation error
F0108		WORD	_IO_DEER4	Module installation 4 error	Added base step 4 module installation error
F0109		WORD	_IO_DEER5	Module installation 5 error	Added base step 5 module installation error
F0110		WORD	_IO_DEER6	Module installation 6 error	Added base step 6 module installation error
F0111		WORD	_IO_DEER7	Module installation 7 error	Added base step 7 module installation error
F0112		WORD	_FUSE_ER0	Fuse blown 0 error	Main base Fuse blown error
F0113		WORD	_FUSE_ER1	Fuse blown 1 error	Added base step 1 Fuse blown error
F0114		WORD	_FUSE_ER2	Fuse blown 2 error	Added base step 2 Fuse blown error
F0115		WORD	_FUSE_ER3	Fuse blown 3 error	Added base step 3 Fuse blown error
F0116		WORD	_FUSE_ER4	Fuse blown 4 error	Added base step 4 Fuse blown error
F0117		WORD	_FUSE_ER5	Fuse blown 5 error	Added base step 5 Fuse blown error
F0118		WORD	_FUSE_ER6	Fuse blown 6 error	Added base step 6 Fuse blown error
F0119		WORD	_FUSE_ER7	Fuse blown 7 error	Added base step 7 Fuse blown error
F0120		WORD	_IO_RWER0	Module RW 0 error	Main base module Read/Write error
F0121		WORD	_IO_RWER1	Module RW 1 error	Added base step 1 module Read/Write error
F0122		WORD	_IO_RWER2	Module RW 2 error	Added base step 2 module Read/Write error
F0123		WORD	_IO_RWER3	Module RW 3 error	Added base step 3 module Read/Write error
F0124		WORD	_IO_RWER4	Module RW 4 error	Added base step 4 module Read/Write error
F0125		WORD	_IO_RWER5	Module RW 5 error	Added base step 5 module Read/Write error
F0126		WORD	_IO_RWER6	Module RW 6 error	Added base step 6 module Read/Write error

Device 1	Device 2	Type	Variable	Function	Description
F0127		WORD	_IO_RWER7	Module RW 7 error	Added base step 7 module Read/Write error
F0128		WORD	_IO_IFER_0	Module IF 0 error	Main base module interface error
F0129		WORD	_IO_IFER_1	Module IF 1 error	Added base step 1 module interface error
F0130		WORD	_IO_IFER_2	Module IF 2 error	Added base step 2 module interface error
F0131		WORD	_IO_IFER_3	Module IF 3 error	Added base step 3 module interface error
F0132		WORD	_IO_IFER_4	Module IF 4 error	Added base step 4 module interface error
F0133		WORD	_IO_IFER_5	Module IF 5 error	Added base step 5 module interface error
F0134		WORD	_IO_IFER_6	Module IF 6 error	Added base step 6 module interface error
F0135		WORD	_IO_IFER_7	Module IF 7 error	Added base step 7 module interface error
F0136		WORD	_RTC_DATE	RTC date	RTC's present date
F0137		WORD	_RTC_WEEK	RTC day	RTC's present day of the week
F0138		DWORD	_RTC_TOD	RTC time	RTC's present time (ms unit)
F0140		DWORD	_AC_FAIL_CNT	Power-cut times	Power-cut times saved.
F0142		DWORD	_ERR_HIS_CNT	Errors found	Number of found errors saved.
F0144		DWORD	_MOD_HIS_CNT	Mode conversion times	Mode conversion times saved.
F0146		DWORD	_SYS_HIS_CNT	History updated times	System's history updated times saved.
F0148		DWORD	_LOG_ROTATE	Log rotate	Log rotate information saved.
F0150		WORD	_BASE_INFO0	Slot information 0	Main base slot information
F0151		WORD	_BASE_INFO1	Slot information 1	Added base step 1 slot information
F0152		WORD	_BASE_INFO2	Slot information 2	Added base step 2 slot information
F0153		WORD	_BASE_INFO3	Slot information 3	Added base step 3 slot information
F0154		WORD	_BASE_INFO4	Slot information 4	Added base step 4 slot information
F0155		WORD	_BASE_INFO5	Slot information 5	Added base step 5 slot information
F0156		WORD	_BASE_INFO6	Slot information 6	Added base step 6 slot information
F0157		WORD	_BASE_INFO7	Slot information 7	Added base step 7 slot information
F0158		WORD	_RBANK_NUM	Used block number	Presently used block number
F0159		WORD	_RBLOCK_STATE	Flash status	Flash block status
F0160		DWORD	_RBLOCK_RD_FLAG	Flash Read	ON when reading Flash N block data.
F0162		DWORD	_RBLOCK_WR_FLAG	Flash Write	ON when writing Flash N block data.
F0164		DWORD	_RBLOCK_ER_FLAG	Flash error	Error found during Flash N block service.
F1024		WORD	_USER_WRITE_F	Available contact	Contact point available in program
	F10240	BIT	_RTC_WR	RTC RW	Data Write & Read in RTC
	F10241	BIT	_SCAN_WR	Scan WR	Scan value initialization
	F10242	BIT	_CHK_ANC_ERR	Detect external serious error	Detection of serious error in external equipment requested.
	F10243	BIT	_CHK_ANC_WAR	Detect external slight error	Detection of slight error in external equipment requested.

Appendix

Device 1	Device 2	Type	Variable	Function	Description
F1025		WORD	_USER_STAUS_F	User contact point	User contact point
	F10250	BIT	_INIT_DONE	Initialization complete	Initialization complete displayed.
F1026		WORD	_ANC_ERR	External serious error information	Serious error information in external equipment displayed.
F1027		WORD	_ANC_WAR	External slight error information	Slight error information in external equipment displayed.
F1034		WORD	_MON_YEAR_DT	Month / Year	Time information data (Month/Year)
F1035		WORD	_TIME_DAY_DT	Hour / Date	Time information data (Hour/Date)
F1036		WORD	_SEC_MIN_DT	Second / Minute	Time information data (Second/Minute)
F1037		WORD	_HUND_WK_DT	100 years / Day	Time information data (100 years/Day)

A.1.2 Special register for data link

[Table 1] List of communication flags based on HS link No. HS link No. 1 ~ 12

No.	Keyword	Type	Detail	Description
L000000	_HS1_RLINK	Bit	HS link parameter No.1's all stations normally operated	Displays all stations normally operated as specified in HS link parameter, which will be On if 1.There is no RUN mode error in all stations specified in parameter 2.All data block is in normal communication as specified in parameter. 3.The parameter specified in each station itself is in normal communication. Run_link will be kept On if once On until stopped by link disenable.
L000001	_HS1_LTRBL	Bit	After _HS1RLINK is ON, abnormal status displayed	This flag will be On if the station specified in parameter and the data block's communication status are as described below with _HSmRLINK flag On,. 1. When the station specified in parameter is not in RUN mode, 2. When the station specified in parameter is in error, 3. When data block's communication status specified in parameter is unstable, The link trouble will be On if one of those conditions 1,2 and 3 Above occurs. And if such a condition is back to normal, it will be Off.
L000020 ~ L00009F	_HS1_STATE[k] (k=000~127)	Bit Array	HS link parameter No.1, Block No.k's general status displayed	Displays the general status of the communication information for the specified parameter's respective data blocks. HS1STATE[k]=HS1MOD[k]&_HS1TRX[k]&(~_HSmERR[k])
L000100 ~ L00017F	_HS1_MOD[k] (k=000~127)	Bit Array	HS link parameter No.1, Block No.k station's Run operation mode	Displays the operation mode of the station specified in parameter's data block k.
L000180 ~ L00025F	_HS1_TRX[k] (k=000~127)	Bit Array	Normal communication displayed with HS link parameter No.1, Block No.k station	Displays the communication status of parameter's data block k to check if normal as specified.
L000260 ~ L00033F	_HS1_ERR[k] (k=000~127)	Bit Array	HS link parameter No.1, Block No.k station's Run error mode	Displays the communication status of parameter's data block k to check for any error.
L000340 ~ L00041F	_HS1_SETBLOCK [k]	Bit Array	HS link parameter No.1, Block No.k setting displayed	Displays the setting status of parameter's data block k.

* In the case of Dnet and Pnet, Block No.k stands for the station No. of the slave (in other words, it is station No.k).

Remark

HS link No.	L area address	Remarks
2	L000500~L00099F	Compared with HS link of 1 in [Table 1], other HS link station number's flag address will be simply calculated as follows; ∗ Calculation formula: L area address = L000000 + 500 x (HS link No. – 1) In order to use HS link flag for program and monitoring, use the flag map registered in SoftMaster for convenient application..
3	L001000~L00149F	
4	L001500~L00199F	
5	L002000~L00249F	
6	L002500~L00299F	
7	L003000~L00349F	
8	L003500~L00399F	
9	L004000~L00449F	
10	L004500~L00499F	
11	L005000~L00549F	

K as a block number is displayed through 8 words by 16 for 1 word for the information of 128 blocks from 000 to 127.
For example, block information of 16~31, 32~47, 48~63, 64~79, 80~95, 96~111, 112~127 will be displayed in L00011, L00012, L00013, L00014, L00015, L00016, L00017 from block 0 to block 15 for mode information (_HS1MOD). Thus, the mode information of the block No. 55 will be displayed in L000137.

A.2 Terminology

General terms of DeviceNet I/F module are as described below for the suitable application of the product. Refer to DeviceNet specification for more details.

1) Fieldbus

Electric system to transmit small quantity of data between automatic devices fast and reliably so to execute a given task thoroughly.

2) Master Module

A module to send/receive and control data.

3) Slave Module

A module to respond to the data sent from the master module.

4) CAN (Controller Area Network) Protocol

Communication protocol designed compatible with dedicated automobile communication. CAN technology has been adopted in the device network. CAN is divided into 11-bit Identifier Field and Data Field which can transmit up to 8 bytes.

Identifier Field	RTR	Data Length	Data

- Identifier Field : Area to set address (composed of 11 bits)
- Data : Field composed of actual data (up to 8 bytes can be transmitted)

5) Bus-Off

It produces an applicable error to abnormal network power.

6) ODVA (Open DeviceNet Vendor Association)

An association established to propagate DeviceNet communication widely.

7) Connection

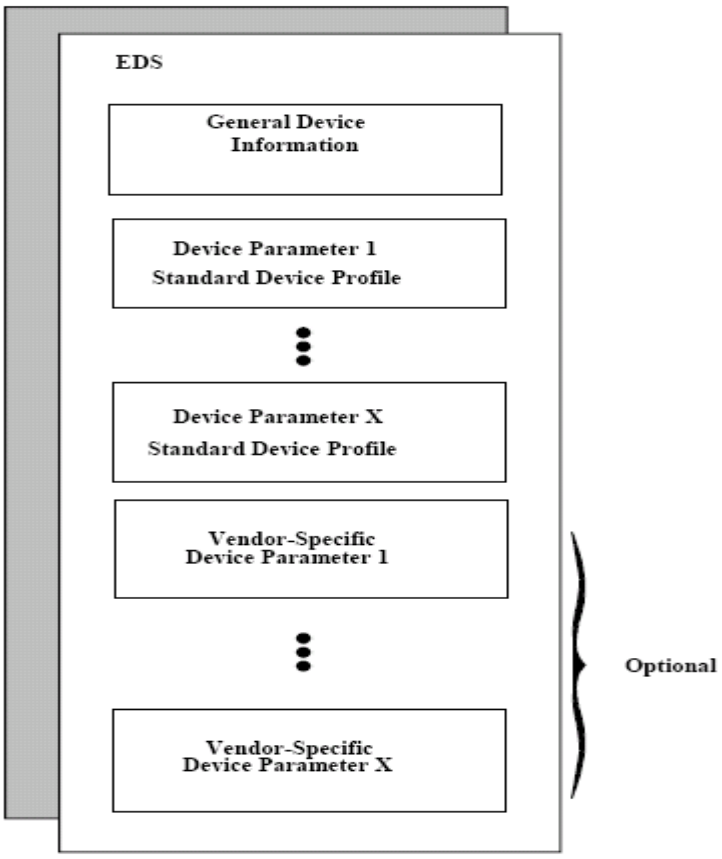
As logic connection between master and slave which are connected through DeviceNet, it is used to keep and control all kinds of communication.

8) DeviceNet station No. (DeviceNet MAC ID)

Station No. of the communication module which has adopted DeviceNet standard. 2MLL-DMEB is specified through N Configurator, and generally the station No. used for DeviceNet module is set by means of the switch installed on the front of the communication module. And this station No. is used as the station No. for all the services including HS link service.

9) Profile

It provides information on the device configuration data. (Printed data sheet, EDS; Electronic Data Sheet, etc.) It is named EDS in DeviceNet. It contains attributes of device and object address information of parameter. EDS's constitution is as shown below.



10) Packet

A data packet which is the basic unit used to transmit data through the network. With the header (Message identifier) attached in front, information on destination of the packet and other information necessary are added thereto.

11) CRC (Cyclic Redundancy Check)

As one of the error detection methods mostly used for synchronous transmission, it is also called as patrol signed type. CRC field of CAN protocol is displayed in 15- bit CRC and 'r' bit, composed of 1-bit CRC delimiter. If Rx node receives data frame, it deletes stuffing bits first and then checks for errors from SOF to data field through CRC. Since 15-bits CRC is suitable for the frame with bit counts less than 127 bits and CAN is of the max. 108-bit frame, it is appropriate to check for errors. If CRC divides transmitted value by multinomial expression created when transmitting and sends the value together attached to the back of message, the Rx side will divide the received data by the identical multinomial expression. And if the remainder is 'zero', it is regarded as No Error identified in this method.

12) Terminating resistance

Resistance used to adjust mutual impedance between Tx and Rx sides on the Physical Layer. Terminating resistance of DeviceNet is 121Ω,1/4 W,1% .

13) High-speed Link

A communication type used only between DeviceNet communication modules for the user to send/receive data at high speed, which execute communication with HS link parameters setting of SoftMaster.

14) SoftMaster (PLC Programming And Debugging Tool)

Software used for programming, downloading, run, stop, debugging applicably to PLC CPU module, where a diagnosis function is included to check the status of respective communication modules.

15) N Configurator (System Configuration Tool)

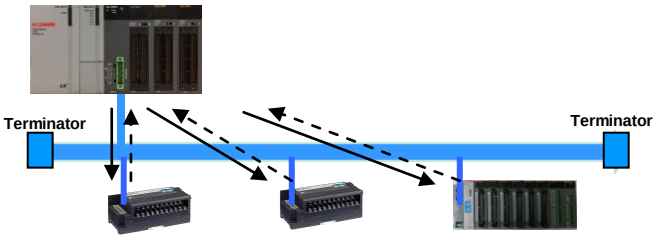
Software used for system configuration through DeviceNet, where basic DeviceNet parameters can be set for master module and slave module, and setting details can be monitored through SoftMaster as well.

16) Communication Type

4 types of DeviceNet communication are available (Poll, Bit-Strobe, COS and Cyclic). The communication types provided by respective slaves (remote I/O) may be different as such. DeviceNet can use the 4 communication types as mixed in a single network.

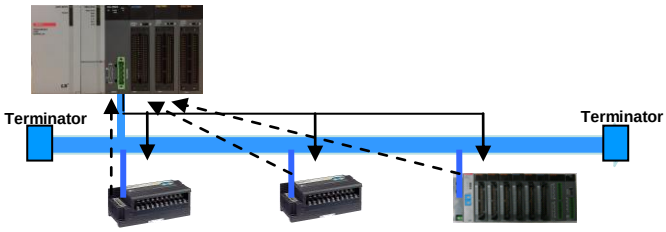
17) Poll

Master executes monitoring and data Tx/Rx for the respective slaves whenever scanned.



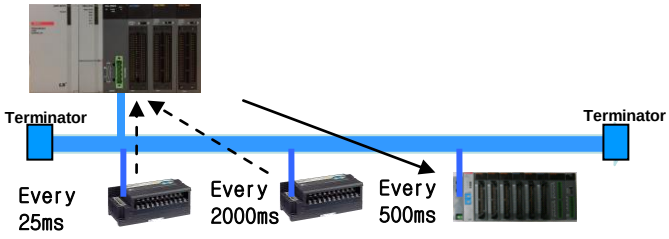
18) Bit Strobe

Master sends 1-bit output signal to respective slaves. Each slave which receives the output sign operates as specified. With data Tx/Rx minimized between master and slaves, the speed of the whole scan can be increased.



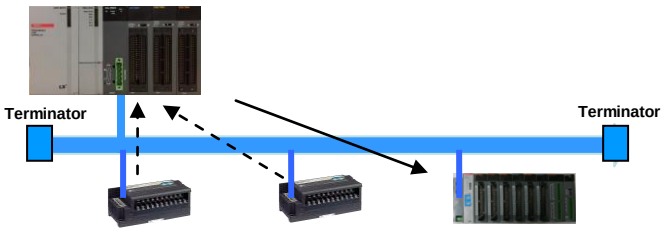
19) Cyclic

The slave set to cyclic sends the data of one time to the master for every cycle (max. 65535mS) specified.



20) COS (Change of State)

If any change occurs in the status of respective slaves, communication will be executed with the master. It is effective only for the slave monitoring the objects whose distance of status change is long. Data will be also sent to the master even if there is no change in the status with the max. COS distance of 65535ms specified in the slave.



21) MAC ID (Media Access Control Identifier)

Node Address on the DeviceNet network is defined as MAC ID, which uses 6 bits among 11 bits of CAN Identifier Field. MAC ID range of DeviceNet is available up to 0 ~ 63.

22) CSMA/CD (Carrier Sense Multiple Access with Collision Detection)

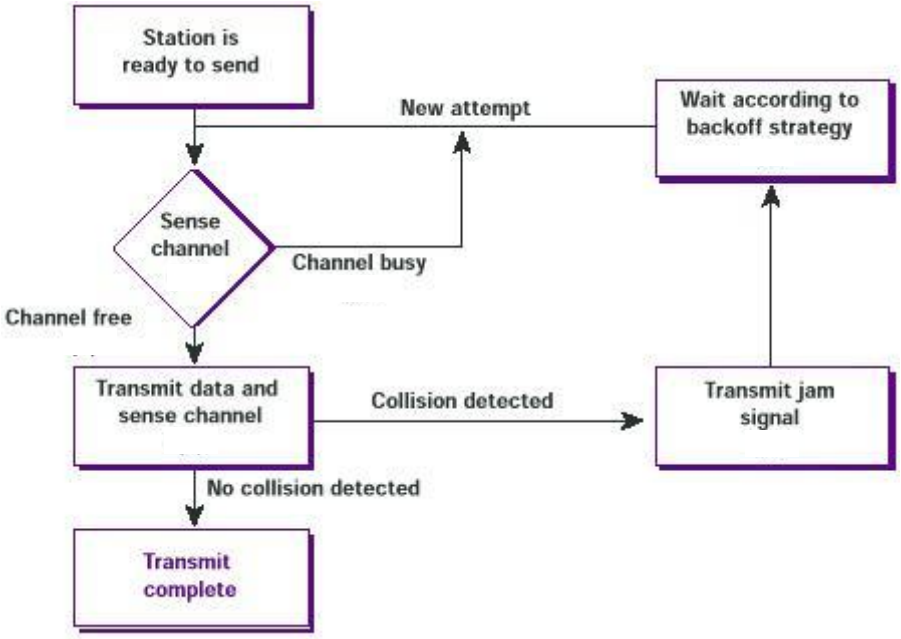
Ethernet is of the structure configured to send the data after a client to send data checks if other computer in the network is being communicated and then no sign is found to be sent. If any collision occurs between data sent from various nodes at a time, CSMA/CD which monitors such a collision will keep the data for a specific time and then resend the sign to control the communication. For example, if a node is to use the network, cable status of the network will be checked first. At this time there will be no problem if any other node is not to use the network and there is no data in the cable, which allows normal execution free of any problem. However, if the network is tried to be used when other node is already using the network, there will be a collision in the cable. Once such a collision occurs, wait for the first node to complete the use and then retry after a while. The time necessary to wait after a collision occurs is mostly decided by the timer installed on the node. The time for respective nodes to wait shall be different from each other so to keep from another collision, which can be resolved with the time adjustment fixed inside the node, or by means of principal of random numbers applied. Use CSMA/CD to reduce the band width which is wasted during transmission of collided packets. CSMA/CD is as follows;

Using CSMA/CD can reduce wasted bandwidth for transmitting packet collision.

Meaning of CSMA/CD words are as follow.

Access method	Description
CS (Carrier Sense)	Checks the network if being used.
MA (Multiple Access)	Available for any user if the network is empty.
CD (Collision Detection)	Checks for any collision while sending messages.

CSMA/CD Flow Chart



23) CSMA/NBA (Carrier Sense Multiple Access with Non-destructive Bitwise Arbitration)

Data Tx mechanism of CAN is similar to IEEE 802.3 CSMA/CD protocol. In other words, respective nodes check the status of the bus previously to sending the data, and then send the ready message if the bus is inactive. In CSMA/CD if two or more nodes send the messages at a time, the message will be collided and all lost. However, in CAN the message to be sent has 11-bit identifier allowing the message of high priority to be sent first. In other words, if two or more nodes send the messages at a time, the message of the highest priority (that is, the message with the lowest identifier value) will be sent while transmission of other messages of lower priority is stopped after identifiers are compared with each other bit by bit. As for the bus, '0' bit is superior to '1' bit. In other words, '0' bit is called as 'dominant' ('d' bit) and '1' as 'recessive' ('r' bit). Tx node monitors the bus whenever sending a bit. If a node sends 'r' bit and the monitoring result of the bus is 'd' bit, it means other node in the bus is sending the message of higher priority, thus the node will promptly stop transmitting the message to convert to Rx mode. The node which stops transmitting will monitor the status of the bus and then restart to transmit the message automatically if the bus is back to inactive status.

24) Reset

Communication module is initialized when error is occurred. It is executed [Online] – [Reset] menu in SoftMaster. PLC is restarted.

25) Expected Packet Rate

Transmission value from slave module for I/O data exchange of master module

a) Cyclic communication : Slave update the data by this setting value.
b) COS communication : Slave can set the time of Watchdog timeout through this setting value.

26) Production inhibit time

Minimum delay time for updating of new data. It is not updated during this production inhibit time.

27) Fragmented Timeout

If I/O data is 8 bytes more than, master module wait until slave module give response within fragmented timeout setting.

A.3 Smart I/O Mode Setting in N Configurator

Our company's slave module Smart I/O has built-in mode as shown below.

1) Standard mode
2) Quick start mode
3) Dummy mode

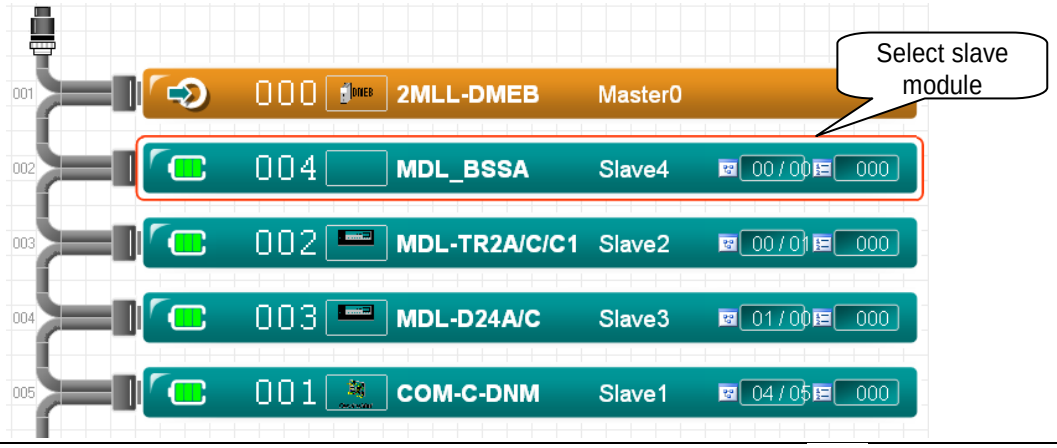
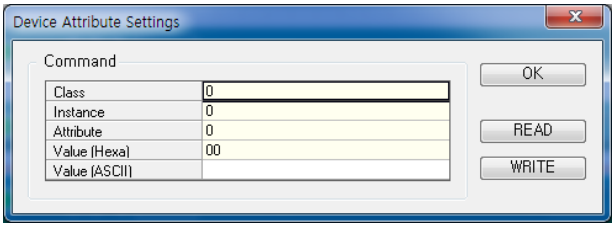
Each mode's characteristic is as shown below.

Mode type	Description
Standard mode	▶ After powered on master and slave model. - It takes 5~6 second to start the communication. - Default setting
Quick start mode	▶ If master and slave module support the Quick start mode function, it takes 1.5 second to start the communication. ▶ If only slave module supports the Quick start mode function, it takes 3~4 second to start the communication. (Setting address: Class-3, Instance-1, Attribute-10)
Dummy mode	▶ It makes a 1 word data size of slave input module additionally. - It can't write the data. (Setting address: Class-3, Instance-1, Attribute-40)

Mode setting is as shown below.

1) Mode setting

Select slave module to edit in editing window. Setting is available at menu bar.

Phase	Description
1	Execute 5) Master setting's 8 phase in 'Chapter 5 N Configurator Setting'.
2	Select slave to edit. 
3	**Mode setting:** 1) Diagnostics → Get/Set Attribute 

Menu	Description
Get Device Attribute	It reads the mode's information from slave module. - It is displayed Hexadecimal. (If click the ASCII button, it is displayed ASCII type.)
Set Device Attribute	It writes the mode's information from slave module. - It is displayed Hexadecimal.

<table>
<tr><th>Phase</th><th>Description</th></tr>
<tr><td>4</td><td>

Mode setting parameter editing

<table>
<tr><th>No.</th><th>Item</th><th>Description</th></tr>
<tr><td>①</td><td>Command</td><td>Mode setting address of slave module
<table>
<tr><th rowspan="2">Classification</th><th colspan="3">Setting address</th></tr>
<tr><th>Class</th><th>Instance</th><th>Attribute</th></tr>
<tr><td>Quick start mode</td><td>3</td><td>1</td><td>10</td></tr>
<tr><td>Dummy mode</td><td>3</td><td>1</td><td>40</td></tr>
</table></td></tr>
<tr><td>②</td><td>Read
(hex)</td><td>Displayed area of Read value (Click Get)
→ “00”: Clear
→ “01”: Set</td></tr>
<tr><td>③</td><td>Write
(hex)</td><td>Input area of Write value (Click Set)
→“00”: Clear
→“01”: Set</td></tr>
</table>

▶ To Read

Input the setting value in command area (Class, Instance and Attribute) and click Get.

▶ To Write

Input the setting value in command area (Class, Instance and Attribute) and input Set

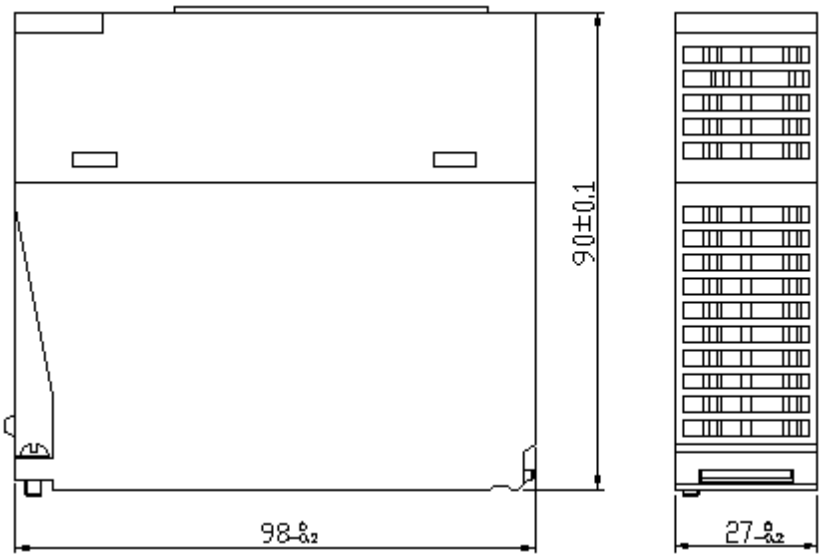
or Clear value in write area. Click Set.

After the all settings, [OK] button closes the setting window. Turn off the slave module’s power, setting value is applied after turn on the salve module.

</td></tr>
</table>

A.4 External Dimensions

Unit: mm



Honeywell

Honeywell Process Solutions
1860 W. Rose Garden Lane
Phoenix, AZ 85027 USA