azbil

No. CP-SP-1324E

Network Instrumentation Module NX-S11/12/21 Supervisor Module

User's Manual

Functions

Thank you for purchasing the Instrument Network Module Supervisor Module NX-S11/12/21. This manual contains information for ensuring the correct use of the NX-S11/12/21.

It should be read by those who design and maintain equipment that uses the NX-S11/12/21. It also provides necessary information for installation, maintenance, and troubleshooting. Be sure to keep it nearby for handy reference.

Yamatake Corporation

NOTICE

Be sure that the user receives this manual before the product is used.

Copying or duplicating this user's manual in part or in whole is forbidden. The information and specifications in this manual are subject to change without notice.

Considerable effort has been made to ensure that this manual is free from inaccuracies and omissions. If you should find an error or omission, please contact the azbil Group.

In no event is Yamatake Corporation liable to anyone for any indirect, special or consequential damages as a result of using this product.

Conventions Used in This Manual

■ To prevent injury to the operator and others, and to prevent property damage, the following types of safety precautions are indicated:

⚠**WARNING**	Warnings are indicated when mishandling this product might result in death or serious injury.
⚠**CAUTION**	Cautions are indicated when mishandling this product might result in minor injury to the user, or physical damage to the product.

■ In describing the product, this manual uses the icons and conventions listed below.


Use caution when handling the product.


The indicated action is prohibited.


Be sure to follow the indicated instructions.

Handling Precautions:

Handling Precautions indicate items that the user should pay attention to when handling the NX-S11/12/21.

Note: Notes indicate information that might benefit the user.


This indicates the item or page that the user is requested to refer to.

■ Abbreviations

At times, the following abbreviations may be used in this manual.

Supervisor module	:	SV
Controller module	:	TC
Communication adapter	:	CA
Communication box	:	CB
Smart Loader Package	:	SLP-NX

Safety Precautions

Safety precautions are intended to ensure the safe and correct use of this product, to prevent injury to the operator and others, and to prevent damage to property. Be sure to observe these safety precautions. Please make sure you understand the safety guidelines before reading the rest of this manual.
The use of this product in a manner not specified by the manufacturer will impair its built-in safety features.

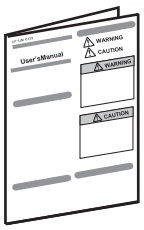
⚠ WARNING	
	Before removing, mounting, or wiring the NX-S11/12/21, be sure to turn off the power to the module and all connected devices. Failure to do so might cause electric shock.
	Be sure to check that the NX-S11/12/21 has been correctly wired before turning on the power. Incorrect wiring of the module can damage it or lead to hazardous conditions.

⚠ CAUTION	
	To lock or unlock the DIN rail locking tab, use a tool such as a screwdriver.
	Do not disassemble the NX-S11/12/21. Doing so might cause device failure.
	Do not block the ventilation holes. Doing so might cause fire or device failure.
	Do not allow wire clippings, metal shavings, water, etc. to enter the case of this device. They can cause fire or device failure.
	Do not touch electrically charged parts such as the power supply terminals. Doing so may result in an electric shock.
	Before wiring the NX-S11/12/21, be sure to disconnect the power. Failure to do so might cause device failure.
	Wire the NX-S11/12/21 in compliance with established standards, using the specified power source and recognized installation methods. Failure to do so could result in fire, electric shock, or malfunction.
	Make sure that there are no loose connections. Failure to do so might cause overheating or device failure.
	Ensure that the total power consumption of all linked modules does not exceed 100 W. Otherwise fire or faulty operation could occur.
	Do not supply power to the linked modules from multiple power sources. Doing so could result in fire or malfunction.
	Do not use unused terminals on the NX-S11/12/21 as relay terminals. Doing so might cause electric shock, fire or device failure.
	Do not short the output. Device failure could result.
	Firmly tighten the terminal screws to the torque listed in the specifications. Insufficient tightening might cause fire.
	If there is a risk of a power surge caused by lightning, use a surge protector to prevent possible fire or failure of the device.

⚠ CAUTION	
❗	Use this device within the operating ranges given in the specifications (for temperature, humidity, vibration, shock, mounting direction, atmosphere, etc.). Otherwise, fire or device failure could result.
❗	This device does not operate for about 10 seconds after the power has been turned ON. Take this into account if the output is used as an interlock signal.
❗	Be sure to use the specified battery (model number : 83170639-001).
❗	When discarding this module, first remove the battery and then dispose of the module appropriately as industrial waste, following local regulations.
❗	When discarding the used battery, dispose of it appropriately in accordance with local laws and regulations.

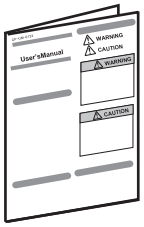
The Role of This Manual

A total of 10 different manuals are available for the Network Instrumentation Module. Read them as necessary for your specific requirements. If a manual you require is not available, contact the azbil Group or its dealer. Alternatively, you can download the necessary manuals from “http://www.azbil.com”.



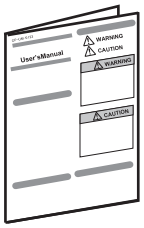
Network Instrumentation Module Controller Module NX-D15/25/35
User's Manual for Installation **Manual No. CP-UM-5561JE**

This manual is supplied with the NX-D15/25/35.
Personnel in charge of design and/or manufacture of a system using the NX-D15/25/35 should thoroughly read this manual. It describes safety precautions, installation, wiring, and primary specifications.



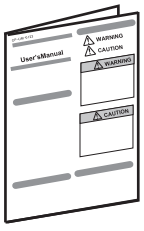
Network Instrumentation Module
NX-CB1 Communication Box User’s Manual for Installation
Manual No. CP-UM-5558JE

This manual is supplied with the NX-CB1.
Personnel in charge of design and/or manufacture of a system using the NX-CB1 should read this manual thoroughly. It describes safety precautions, installation, wiring, and primary specifications.



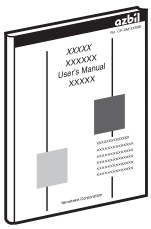
Network Instrumentation Module
Digital Input/Pulse Input Module
NX-DX1/NX-DX2 User's Manual for Installation
Manual No. CP-UM-5560JE

This manual is supplied with the NX-DX1/DX2.
Personnel in charge of design and/or manufacture of a system using the NX-DX1/DX2 should read this manual thoroughly. It describes safety precautions, installation, wiring, and primary specifications.



Network Instrumentation Module
NX-S11/12/21 Supervisor Module
User's Manual for Installation **Manual No. CP-UM-5557JE**

This manual is supplied with the NX-S11/12/21.
Personnel in charge of design and/or manufacture of a system using the NX-D15/12/21 should thoroughly read this manual.It describes safety precautions, installation, wiring, and primary specifications.



Network Instrumentation Module
NX-D15/25 Controller Module User’s Manual
Manual No. CP-SP-1308E

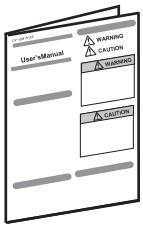
Personnel who are using the NX-D15/25 for the first time or who are in charge of hardware design and/or maintenance of a control panel containing the NX-D15/25 should read this manual thoroughly.
This manual describes the hardware, surveys the NX-D15/25 and other products used with it, explains installation, wiring, and troubleshooting, and gives hardware specifications.

Network Instrumentation Module
Digital Input/Pulse Input Module
NX-DX1/DX2 User's Manual **Manual No. CP-SP-1323E**

Personnel who are using the NX-DX1/DX2 for the first time or who are in charge of hardware design and/or maintenance of a control panel containing the NX-DX1/DX2 should read this manual thoroughly. This manual describes the hardware, surveys the NX-DX1/DX2 and other products used with it, explains installation, wiring, and troubleshooting, and gives hardware specifications.

Network Instrumentation Module Supervisor Module
NX-S11/12/21 User's Manual **Manual No. CP-SP-1324E**

This manual.
Personnel who are using the NX-S11/12/21 for the first time or who are in charge of hardware design and/or maintenance of a control panel containing the NX-S11/12/21 should read this manual thoroughly.
This manual describes the hardware, surveys the NX-S11/12/21 and other products used with it, explains installation, wiring, and troubleshooting, and gives hardware specifications.



Network Instrumentation Module
User's Manual Network Design Version **Manual No. CP-SP-1313E**

Personnel who are in charge of design of a network using the Network Instrumentation Module should read this manual thoroughly.
It describes how to design a network and gives examples.

Network Instrumentation Module
Smart Loader Package SLP-NX Installation Guide
Manual No. CP-UM-5559JE

This manual is supplied with the SLP-NX Smart Loader Package and describes installation of the software on a personal computer.

Network Instrumentation Module
Smart Loader Package SLP-NX User's Manual
Manual No. CP-UM-5636E

This manual is included in the SLP-NX Smart Loader Package as a PDF file.
Personnel in charge of design or configuration of a system using the Network Instrumentation Module should read this manual thoroughly.
The manual describes the software used to configure the Network Instrumentation Module using a personal computer. It also describes installation of the software on a personal computer, operation of the personal computer, various functions, and setup procedures.

Organization of This User's Manual

This manual is organized as follows:

Chapter 1. OVERVIEW

Overview, features, model selection guide, and part names and functions.

Chapter 2. INSTALLATION

Operating environment and installation procedures.

Chapter 3. WIRING

Wiring procedures and precautions, and connection examples.

Chapter 4. MULTI-LOOP COOPERATIVE CONTROL

This chapter provides an overview, configuration methods, settings, etc. for NX-S11/12/21 multi-loop cooperation control functions.

Chapter 5. OPERATION AND GENERAL FUNCTIONS

This chapter describes how to operate the NX-S11/12/21.

Chapter 6. ZONE TEMPERATURE DIFFERENCE CONTROL (NX-S11)

This chapter gives an overview, basic operations, parameters, etc. for NX-S11 zone temperature difference control.

Chapter 7. OPTIMUM START-UP CONTROL

An overview, basic operations, and parameters for NX-S12 optimal startup control.

Chapter 8. PEAK POWER SUPPRESSION CONTROL (NX-S21)

This chapter gives an overview, basic operations, parameters, etc. for NX-S21 peak power suppression control.

Chapter 9. OTHER FUNCTIONS

A description of NX-S11/12/21 functions other than multi-loop cooperation control.

Chapter 10. CPL COMMUNICATIONS FUNCTION

Communication with a host unit, such as a personal computer or PLC, using Yamatake's standard CPL communication and RS-485.

Chapter 11. MODBUS COMMUNICATIONS FUNCTION

Communication with a host unit, such as a personal computer or PLC, using MODBUS and RS-485.

Chapter 12. MODBUS/TCP COMMUNICATIONS FUNCTION

MODBUS/TCP communication with a host unit, such as a personal computer or PLC, using Ethernet.

Chapter 13. LIST OF COMMUNICATION DATA

A list of communication data in the memory of the NX-S11/12/21.

Chapter 14. LIST OF PARAMETER SETTINGS

A list of parameter settings NX-S11/12/21.

Chapter 15. TROUBLESHOOTING

What to do in case of a problem.

Chapter 16. MAINTENANCE, INSPECTION, AND DISPOSAL

Maintenance, inspection, and disposal.

Chapter 17. SPECIFICATIONS

General specifications, performance specifications, external dimensions, and optional parts.

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Appendices

Chapter 1. OVERVIEW

1 - 1 Overview and Features

■ Overview

The Instrumentation Network Module uses Ethernet as standard to achieve distributed instrumentation and high-speed communication, and reduce the required wiring and engineering. This gives customers the value of improved environments, quality and productivity.

The supervisor module, NX-S11/12/21, is a modular controller designed to execute multi-loop cooperative control in combination with multiple other control modules. Each model is equipped with one of three different types of multi-loop cooperative control function.

- Zone temperature difference control
- Optimum start-up control
- Peak power suppression control

■ Features

● Higher communication speed

- Ethernet equipped as standard

  Each module is equipped with an Ethernet communication function.

  When Network Instrumentation Modules are not only linked but also distributed, greatly reduced wiring is possible by using a daisy chain configuration.

  Each module is also equipped with an RS-485 communication function.

  High-speed communication is possible to devices such as host systems, programmable logic controllers (PLCs) and display devices.

  The system can be upgraded to the Yamatake Monitor and Control System.
- Delivers a true distributed layout

  When connected by Ethernet, the system can be used with a distributed layout that has no functional differences from a connected layout.
- Communication redundancy

  Two communication configurations are available for the Ethernet network: non-ring and ring.

● Hardware

- Compact and highly functional

  The body is an ultra-compact 30×100×85 mm.
- Simple assembly

  The three-part structure consists of a base, main body and terminal block. For ease of operation, installation and removal can be performed without using any tools.
- Connected operation and distributed layout

  The input and output signals between modules can be linked. Also, modules used in a distributed layout can be linked in the same way as during connected use.
- Stand-alone operation is possible

  Power, control and communication are integrated into a single unit. This enables efficient use even for applications with low number of channels, and it also saves space.

● Multi-loop cooperative control functions

- Zone temperature difference control
  In the case of multiple control loops, interference is eliminated and the temperature difference is constantly controlled if the temperature rises or if there is a disturbance.
  This is very helpful for energy conservation and for improvement of yield through improved product quality.
- Optimum start-up control
  When fast and slow rising loops coexist in the same equipment or process, synchronized or optimized start-up control reduces energy losses.
- Peak power suppression control
  This function controls peak power by means of time-sharing of outputs from 2 control loops within the time proportional output cycle time.
  Peak power suppression control calculation selects the optimal loop combination from multiple loops. Peak power for heating at start-up is dramatically reduced (up to 50 %).

● Engineering tools

The SLP-NX Smart Loader Package (sold separately) is available.
The Ethernet connection enables simultaneous connection to multiple modules.
This provides centralized management, setting and monitoring, which contributes to reduced engineering requirements.

1 - 2 Model Selection Table

■ Supervisor module

Basic model No.	Type	Ring connection	Option 1	Option 2	Option 3	Addition	Description
NX—							Instrumentation Network Module
	S11						Zone temperature difference control model
	S12						Optimal startup control model
	S21						Peak power suppression control model
		N					Non-ring connection
		R					Ring connection
			0				None
				00			None
					0		None
						0	None
						D	Inspection certificate
						T	Tropicalization treatment
						K	Anti-sulfide treatment
						B	Tropicalization treatment + inspection certificate
						L	Anti-sulfide treatment + inspection certificate

■ Communication box

Basic model No.	Type	Ring connection 1	Ring connection 2	Ports	Option	Addition	Description
NX—							Instrumentation Network Module
	CB1						4-port switching hub
		N					Chain (side connector) non-ring connection communications
		R					Chain (side connector) ring connection communications
			N				Inter-chain (front port) non-ring connection communications
			R				Inter-chain (front port) connection communications
				04			4 ports
					0		RJ-45
						0	None
						D	Inspection certificate
						T	Tropicalization treatment
						K	Anti-sulfide treatment
						B	Tropicalization treatment + inspection certificate
						L	Anti-sulfide treatment + inspection certificate

■ Communication adapter, terminal adapter

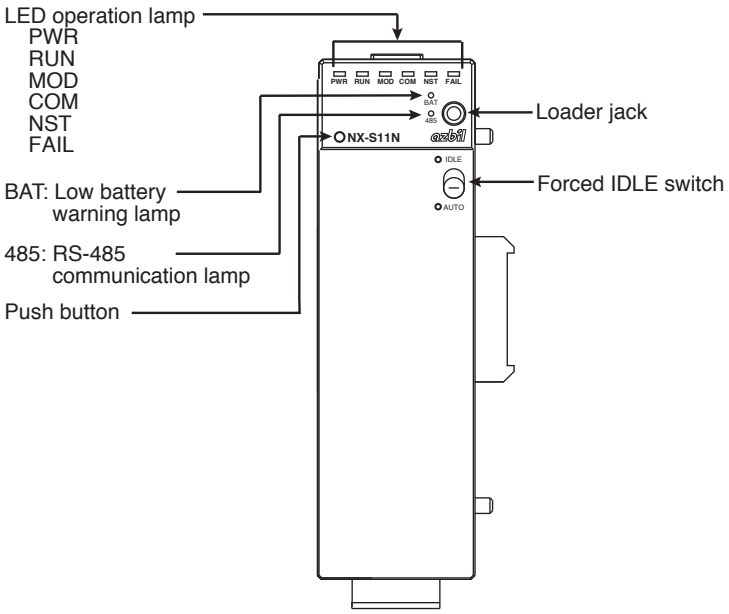
Basic model No.	Type	Option 1	Option 2	Option 3	Option 4	Addition	Instrumentation Network Module
NX—							Instrumentation Network Module
*1	CL1						Communications adaptor for left side
*1	CR1						Communications adaptor for right side
*1	TL1						Terminal adaptor for left side (for ring connection between chains)
*1	TR1						Terminal adaptor for right side (for ring connection between chains)
		0					None
			0				None
				00			None
					0		None
						0	None
						D	Inspection certificate
						T	Tropicalization treatment
						K	Anti-sulfide treatment
						B	Tropicalization treatment + inspection certificate
						L	Anti-sulfide treatment + inspection certificate

*1 A view of the front after attaching to the sides.

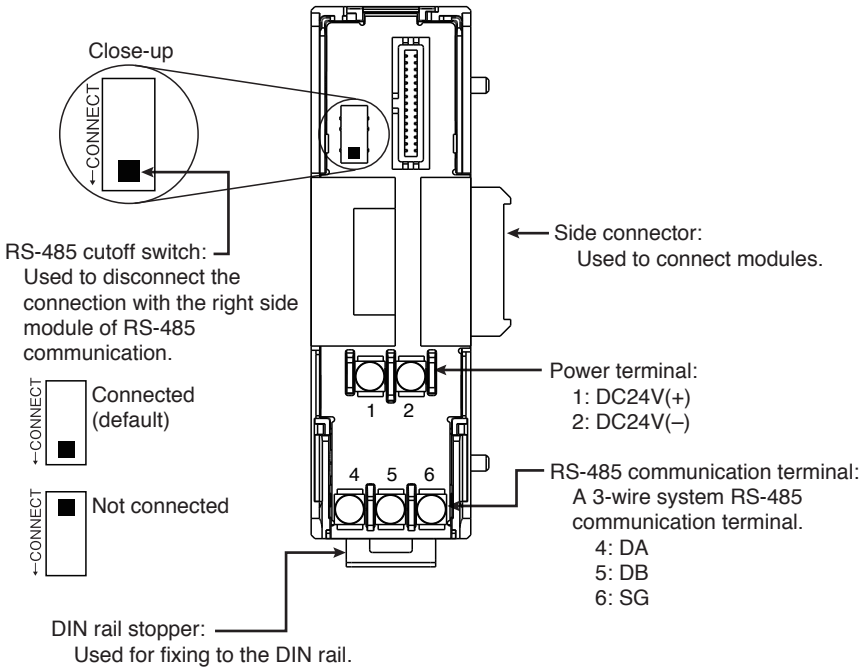
1 - 3 Names and Functions of Parts

■ Supervisor module1-4

● Main body

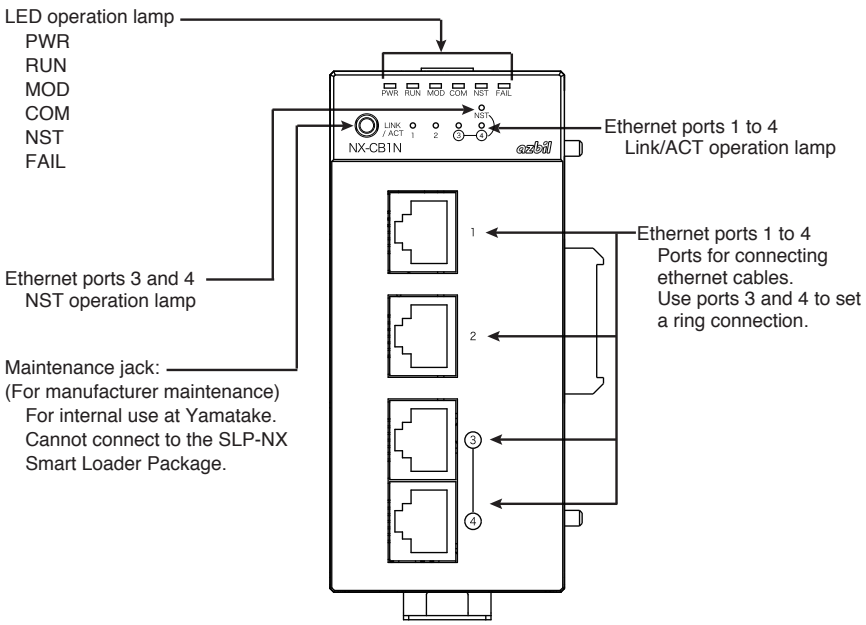


● Base

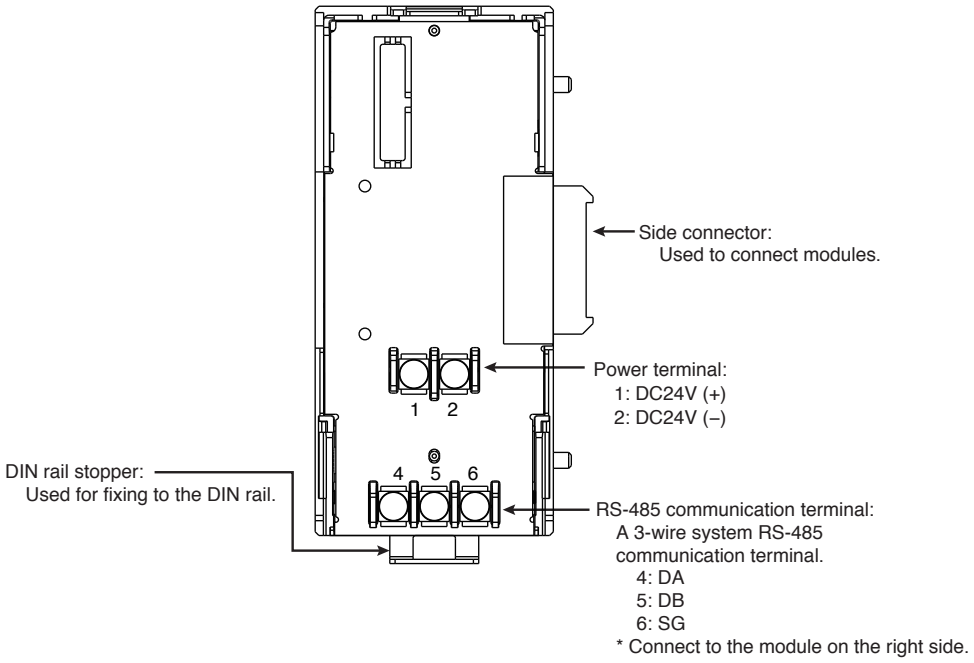


■ Communication box

● Main body

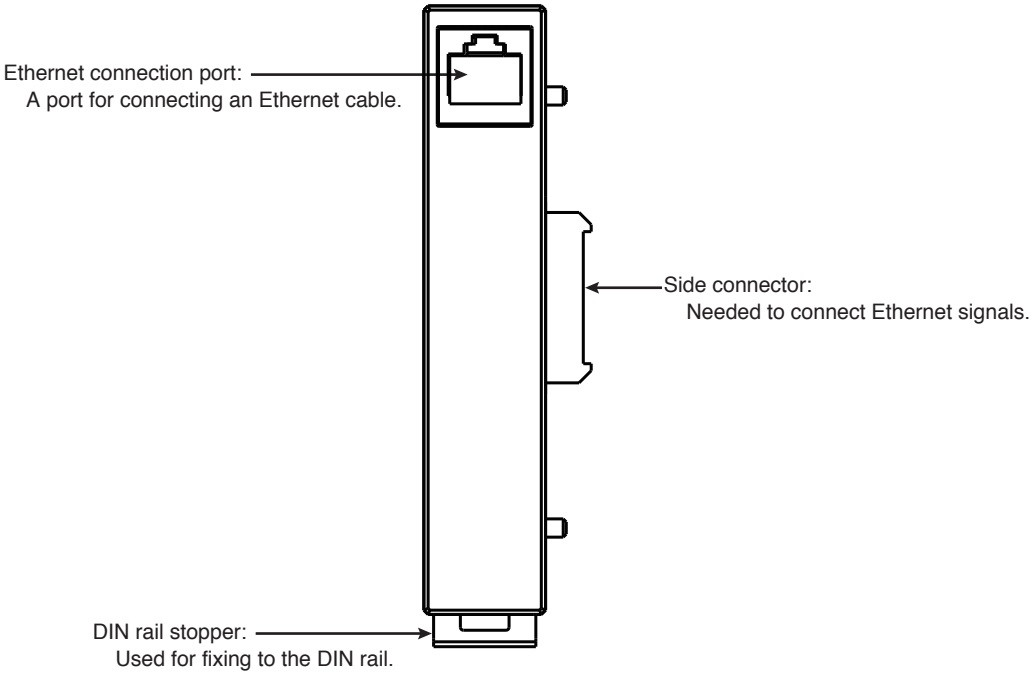


● Base

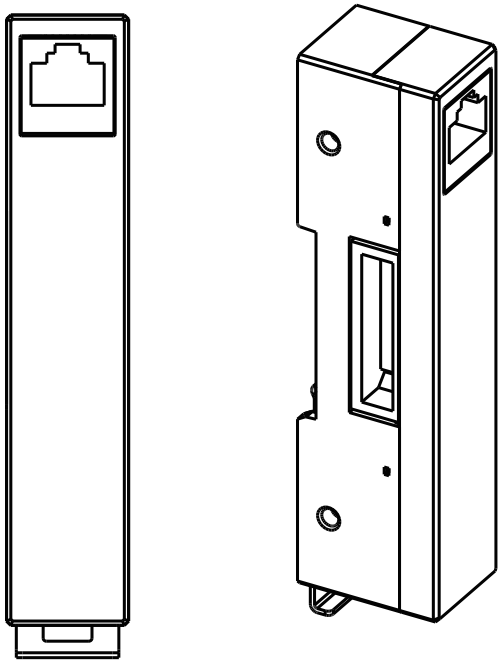


■ Communication adapter

● Adapter for the left side

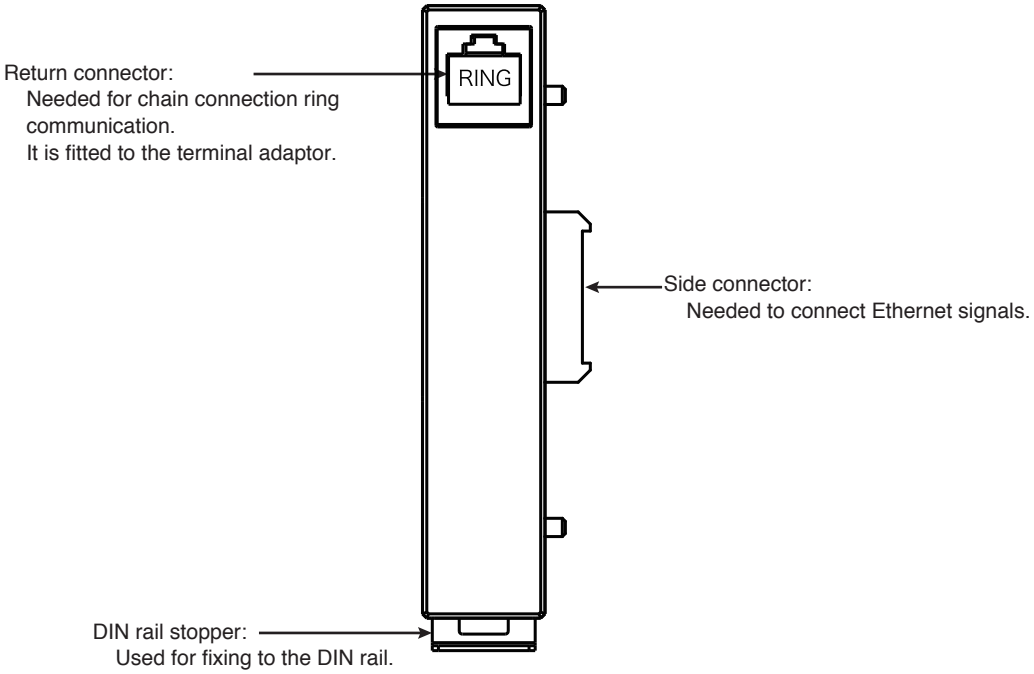


● Adapter for the right side

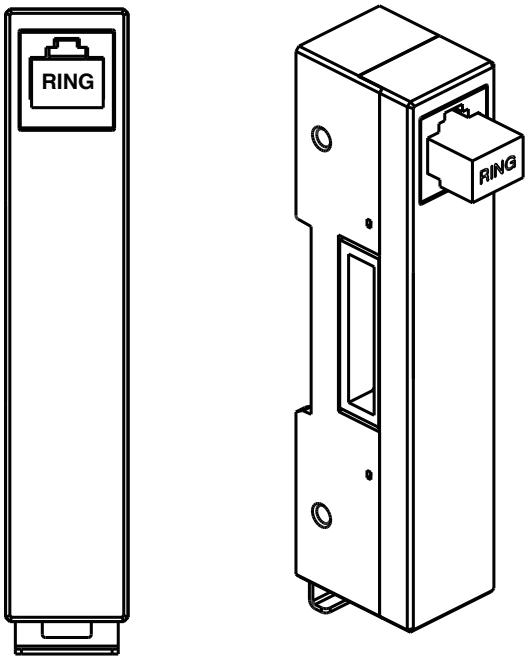


■ Terminal adapter

● Adapter for the left side



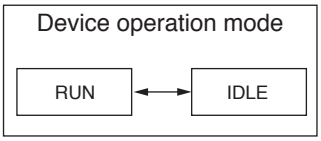
● Adapter for the right side



1 - 4 Operation Modes

■ Device operation modes

The following shows the transition of the supervisor module's operation modes:



RUN : Module operation status (all functions)
IDLE : Module control stops.
* Loader communications and host communications operate.

■ Linkage between supervisor module and controller module

The device operation mode of controller modules that make up the multi-loop cooperative control follows the supervisor module's device operation mode. In this situation, controller modules are under the supervisor module's control.

🕮 Note

- For details on the device operation mode of controller modules,
  ☞ 1-4 Operation Modes, in Network Instrumentation Module NX-D15/25 Controller Modules User's Manual, CP-SP-1308E.

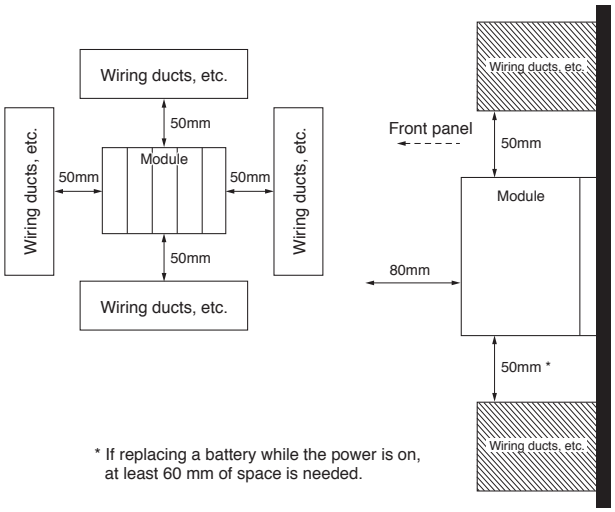
Chapter 2. INSTALLATION

⚠ WARNING
Before removing, mounting, or wiring the NX-S11/12/21, be sure to turn off the power to the module and all connected devices. Failure to do so might cause electric shock.

⚠ CAUTION
Use this device within the operating ranges given in the specifications (for temperature, humidity, voltage, vibration, shock, mounting direction, atmosphere, etc.). Otherwise, fire or device failure could result.
Do not block the ventilation holes. Doing so might cause fire or device failure.
Do not allow wire clippings, metal shavings, water, etc. to enter the case of this device. They can cause fire or device failure.

■ Installation location

During installation, leave clearance of at least 50 mm above and below, 50 mm on the right and left, and 80 mm from the front for air intake, removal, wiring, and maintenance.
When mounted, the module should be at least 100 mm away from another module or other device.
Do not mount the module above heat-generating equipment like a power generator.



Do not install in the following locations:

- Places with a high or low temperature or high or low humidity outside the specification range
- Places with sulfide gas or other corrosive gases
- Places exposed to dust or oily smoke
- Places exposed to direct sunlight, wind or rain
- Places exposed to mechanical vibration or shocks outside the specification range
- Near high voltage lines, welding machines or other sources of electrical noise
- Within 15 meters of a high voltage ignition device, such as a boiler
- Places with strong magnetic fields
- Places with flammable liquid or gas
- Outdoor
- Common mode voltages of I/O: Greater than 30 Vrms, 42.4 V peak, and 60 Vdc

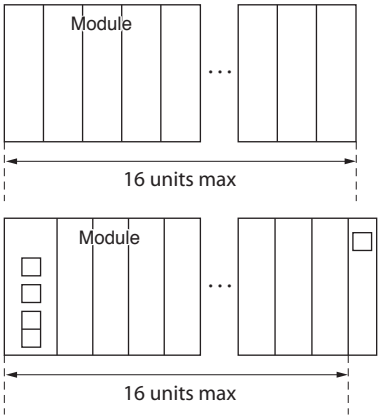
■ Module linkage

This module can be connected to other modules with the left and right connectors on the base.
Connecting the modules connects the power and communication of each module, reducing the amount of wiring that is required. With RS-485 communication, the connection with the right side module can be disconnected with the RS-485 cutoff switch on the base.

Up to 16 modules can be linked.
In a distributed layout, if the horizontal length is too long, or if more than 16 modules are connected, divide the modules into two or more groups.

! Handling Precautions

- The following are not included in the number of linked modules.
  - Communication adapter
  - Terminal adapter

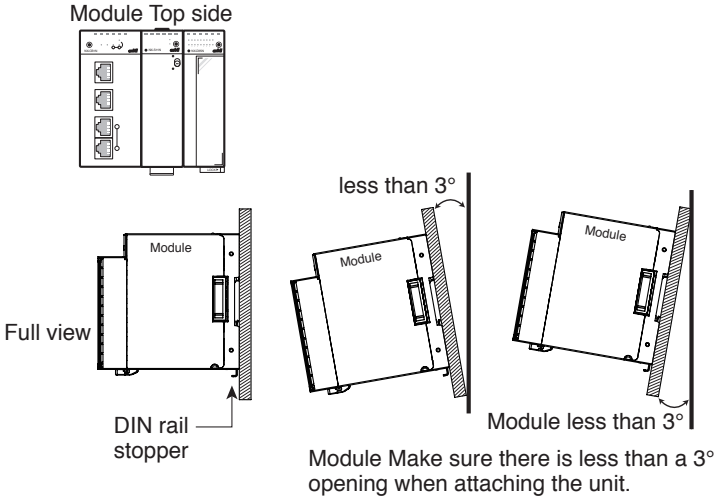


■ Installation method

Use the unit while it is installed on a DIN rail.
After fixing the DIN rail, pull out an ample amount of the DIN rail stopper and then attach the base to the rail. Next, push in the DIN rail stopper in the upper direction until it clicks.

! Handling Precautions

- Connect the unit before attaching the DIN rail.
- Attach the unit with the DIN rail stopper under the vertical surface.



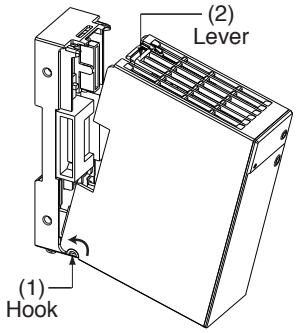
■ Installing the main body to the base

! Handling Precautions

- Use the base and main body from the same package together as a pair.
- First attach the hook on the lower side of the main body to the base. Failure to do so might cause damage.

(1) Attach the hook on the lower side of the main body to the base.

(2) Insert the upper side of the main body until the lever clicks.



To remove, pull the upper side lever towards yourself while pressing it.

Chapter 3. WIRING

3 - 1 Wiring Precautions

⚠ WARNING	
❗	Before removing, mounting, or wiring the NX-S11/12/21, be sure to turn off the power to the module and all connected devices. Failure to do so might cause electric shock.
❗	Be sure to check that the NX-S11/12/21 has been correctly wired before turning on the power. Incorrect wiring of the module can damage it or lead to hazardous conditions.

⚠ CAUTION	
🚫	Do not disassemble the module. Doing so might cause electric shock or device failure.
❗	Do not allow wire clippings, metal shavings, water, etc. to enter the case of this device. They can cause fire or device failure.
🚫	Do not touch electrically charged parts such as the power terminals. Failure to do so might cause electric shock.
❗	Before wiring the NX-S11/12/21, be sure to disconnect the power. Failure to do so might cause device failure.
❗	Wire the NX-S11/12/21 in compliance with established standards, using the specified power source and recognized installation methods. Failure to do so could result in fire, electric shock, or malfunction.
❗	Ensure that all wires and connections are tightly/correctly attached. Loose wires and connections can cause the product to overheat or operate incorrectly.
🚫	Do not use unused terminals on the unit as relay terminals. Doing so might cause electronic shock, fire or faulty operation.
🚫	Do not short-circuit the outputs. Doing so might cause this unit to malfunction.
❗	Firmly tighten the terminal screws to the torque listed in the specifications. Insufficient tightening might cause fire.
❗	If there is a risk of a power surge caused by lightning, use a surge protector to prevent possible fire or failure of the device.

■ Wiring precautions

- Make sure that the wiring follows regulations for indoor wiring and technical standards for electrical equipment.
- Do not apply outdoor wiring. Doing so might cause failure during lightning.
- When connecting wires to the power terminals, use crimp terminals with insulating sleeves.
- Before wiring the unit, verify the device's model number and terminal numbers from the label on the side of the main body.
- Use M3 crimp-type terminal lugs for wiring to a power terminal or RS-485 communication terminal.
- Pay special attention so that no crimp type terminal lugs make contact with adjacent terminals.
- Make sure the signal, power and other wires of the unit are separated by at least 60 cm with other power lead wires. Also, do not pass these lead wires through the same conduit or wiring duct.
- When connecting in parallel to another device, check the requirements of the other device carefully before performing instrumentation.
- To ensure stable operation, this device does not operate for about 10 seconds after the power has been turned on. (NX-S21 control functions may not operate for up to 40 seconds.)
- When the wiring is completed, check that there are no wiring mistakes before turning the power ON.

3 - 2 Cables

● For the RS-485 cable, use a JCS 4364 instrument cable or equivalent.(Generally called twisted shielded cable for instrumentation use.)

See the “Recommended Cables” example for reference.

Function	Cable	Dimensions	Length *1	Remarks
Power supply	CVV, IV	1.25 mm^2	less than 30 m	
Ethernet	UTP cable (4P) More than Cat 5e (straight) (both ends ANSI/TIA/EIA-568-B)	—	*2	
RS-485	IPEV-S 2P *, KPEV-S 2P * CVV-S 3C, MVVS 3C	0.9 mm^2 1.25 mm^2	less than 500m	* DA and DB should be paired. For SG, one or both are recommended from the remaining pair.

*1 Effects from external noise are not considered.

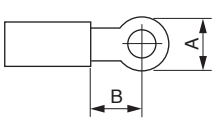
*2 ☞ Chapter 2, “Configuration of Ethernet Communications” in Network Instrumentation Module User’s Manual Network Design Version, CP-SP-1313E.

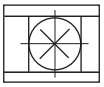
3 - 3 Terminal Connections

⚠CAUTION	
❗	Firmly tighten the terminal screws to the torque listed in the specifications. Insufficient tightening might cause fire.
⊘	Do not use unused terminals on the NX-S11/12/21 as relay terminals. Doing so might cause electric shock, fire or device failure.
⊘	Do not short the output section. Doing so might cause device failure.

The following describes the connections of the unit terminals.

For wiring of the unit, use a crimp type terminal lug that is suitable for the M3 screw.





Applicable screw size	A	B	Recommended crimp-type terminal lugs (note)
M3	5.8 mm max.	5.5 mm min.	JST Mfg. Co., Ltd. ring tongue terminal (vinyl-insulated) V1.25-MS3

! Handling Precautions

- When installing this unit in a place where the vibration or shock is large, always use an appropriate round crimp type terminal lug to avoid loose terminal connections.
- Pay special attention so that no crimp type terminal lugs make contact with adjacent terminals.
- The correct tightening torque of the terminal screw must be 0.5 to 0.7 N•m or less.
- When crimp style terminal lugs are positioned back to back, up to two terminals can be connected per terminal block.

3 - 4 Power Supply Connections

■ Power supply connections

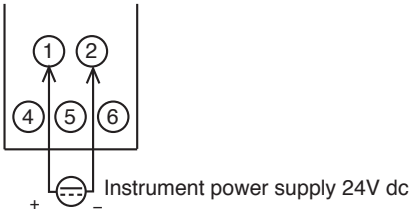
⚠ WARNING

Before installing, removing or wiring the unit, be sure to turn off the power of the unit and any connected devices.
Failure to do so might cause electric shock.

⚠ CAUTION

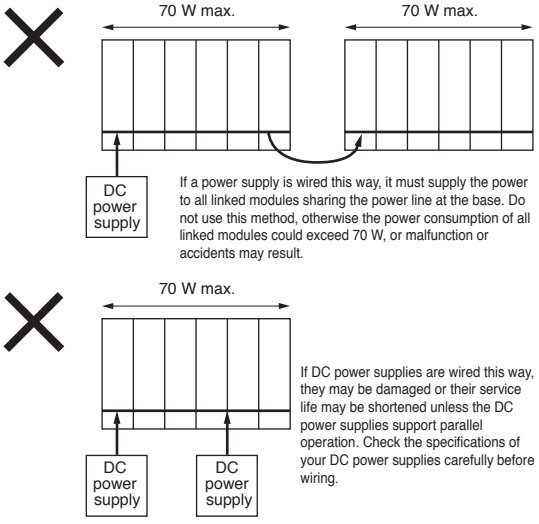
Do not allow the total power consumption of all linked modules to exceed 70 W.
Excessive wattage can result in fire or malfunction.

Connect the power terminal as shown below.



Handling Precautions

- The power supply is connected reciprocally between the connected modules.
- Supply power to one of the connected modules.
- Select a power supply that satisfies in full the total power consumption of the connected modules.
- To comply with UL standards, connect the module to a UL class 2 power supply.



■ Noise countermeasures

Provide a power supply from a single-phase instrument power supply to minimize the effects of noise.
If the power supply generates noise, add an insulation transformer, and use a line filter.
(Yamatake Corporation Line Filter Model No.: 81446364-001)
Use a CR filter for quick-rising noises such as impulse noise.
(Yamatake Corporation CR Filter Model No.: 81446365-001)

[!] Handling Precautions

- After introducing noise-reduction measures, do not bundle the primary and secondary coils of the insulation transformer together, or put them into the same conduit or duct.

■ Power supply design

The required power supply capacity depends on the module configuration that is used.
It is necessary to determine the required power supply capacity.
The procedures for power supply design are described below.
(1) Calculate the total consumption current of the modules to be used
(2) Determine the power supply capacity required, considering inrush current and derating
The design of power supply is described below.

● How to calculate the power consumption

Modules are connected to the instrument power supply (24 Vdc) via side connector.
The power consumption of each module is shown in the table below.
Calculate the total power consumption from the number of modules to be used.

Module	Type (model number)	Power consumption (W)	Inrush current	Remarks
Controller module	D15, D25	4 W max.	20 A max.	Depends on operating conditions
Digital pulse input module	DX1, DX2	4 W max.	20 A max.	Depends on operating conditions
Supervisor module	S11, S12, S21	4 W max.	12 A max.	Depends on operating conditions
Communication box	CB1	4 W max.	10 A max.	Depends on operating conditions
Communication adapter	CL1, CR1	—	—	Power supply not required
Terminal adapter	TL1, TR1	—	—	Power supply not required

● How to select the required power supply capacity

Calculate the required power from the table above, perform derating according to the ambient temperature or the load factor, and then select the power supply.

[!] Handling Precautions

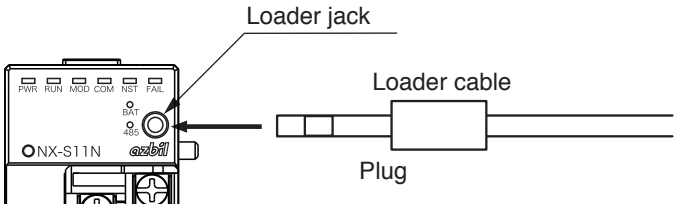
- Select a power supply that is sufficient for the inrush current (under operating conditions).
  If derating at ambient temperature or load reduction is not performed, the life of the power supply may be shortened.
  For details, contact the manufacturer of your power supply device.

3 - 5 Ethernet Connections

Refer to the following for details on ethernet communications:

☞ Chapter 2, “Configuration of Ethernet Communications” in Network Instrumentation Module User’s Manual Network Design Version, CP-SP-1313E.

3 - 6 Loader Cable Connections



Handling Precautions

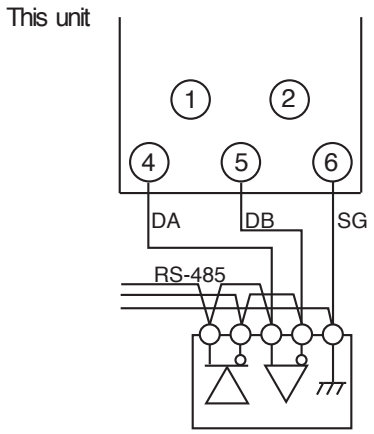
- Only a USB loader cable can be used.
- Firmly insert the plug into the loader jack.
- When removing or inserting the loader cable, hold the plug. Do not pull the cable.
- Do not apply force to the loader cable or plug in any direction while the cable is connected.
  Doing so might damage the loader cable or loader jack, or affect the functionality or performance.

Note

- For details on loader cable connection,
  ☞ 2-5 Configuration With Other Devices, in Network Instrumentation Module User's Manual Network Design Version, CP-SP-1313E.

3 - 7 RS-485 Communication Connections

Connect CPL and MODBUS (RS-485 communication) in the following manner.



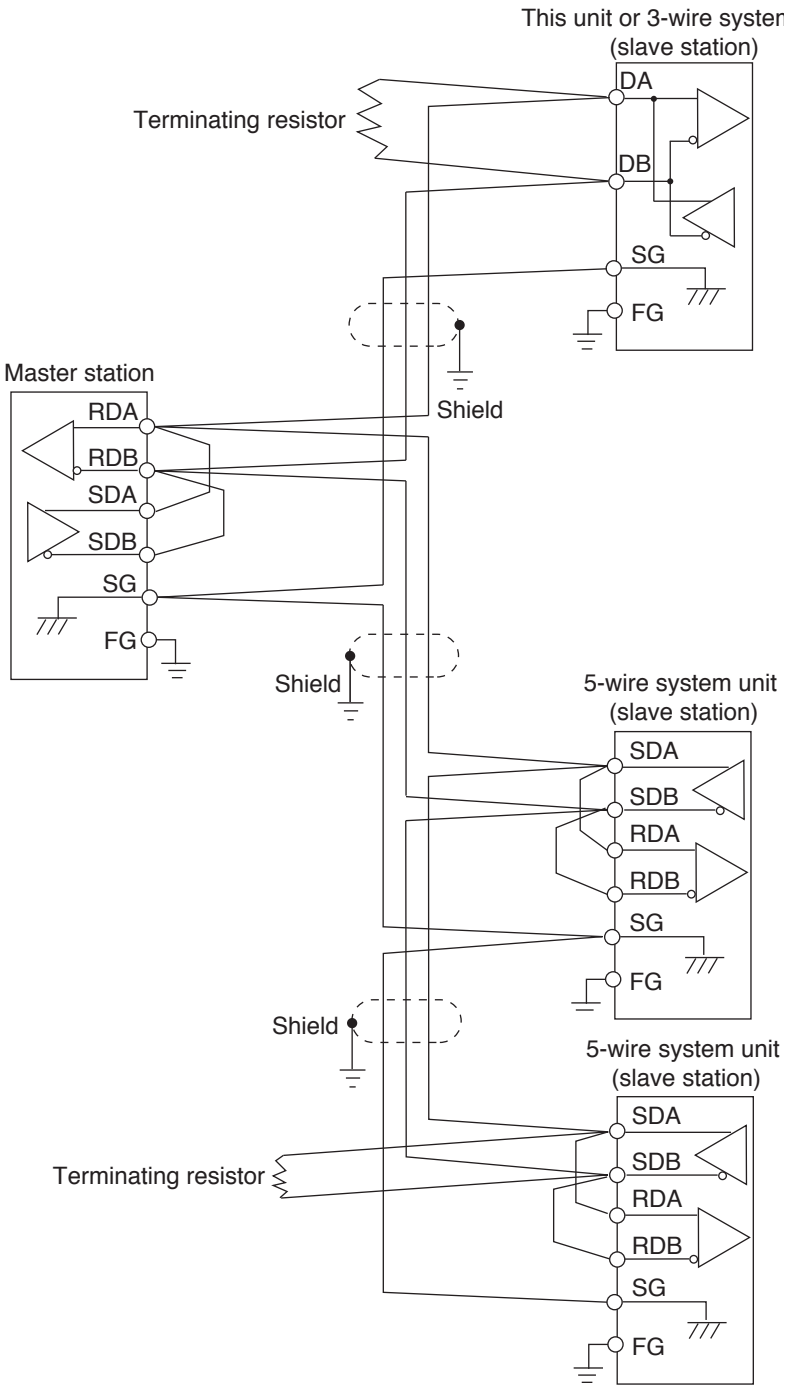
Handling Precautions

- Attach a 0.5 W or greater terminating resistor of 150Ω ±5% at each end of the communications lines.
  If a device does not allow terminating resistor to be placed in the same line, follow the settings of the device.
- Be sure to connect the SG terminals to each other. Failure to do so might cause unstable communications.
- Use a twisted pair cable as the communication wires.

Note

- For more details on RS-485 connections, refer to the following for details:
  ☞ Chapter 3, “Configuration of Serial Communications” in Network Instrumentation Module User’s Manual Network Design Version, CP-SP-1313E.

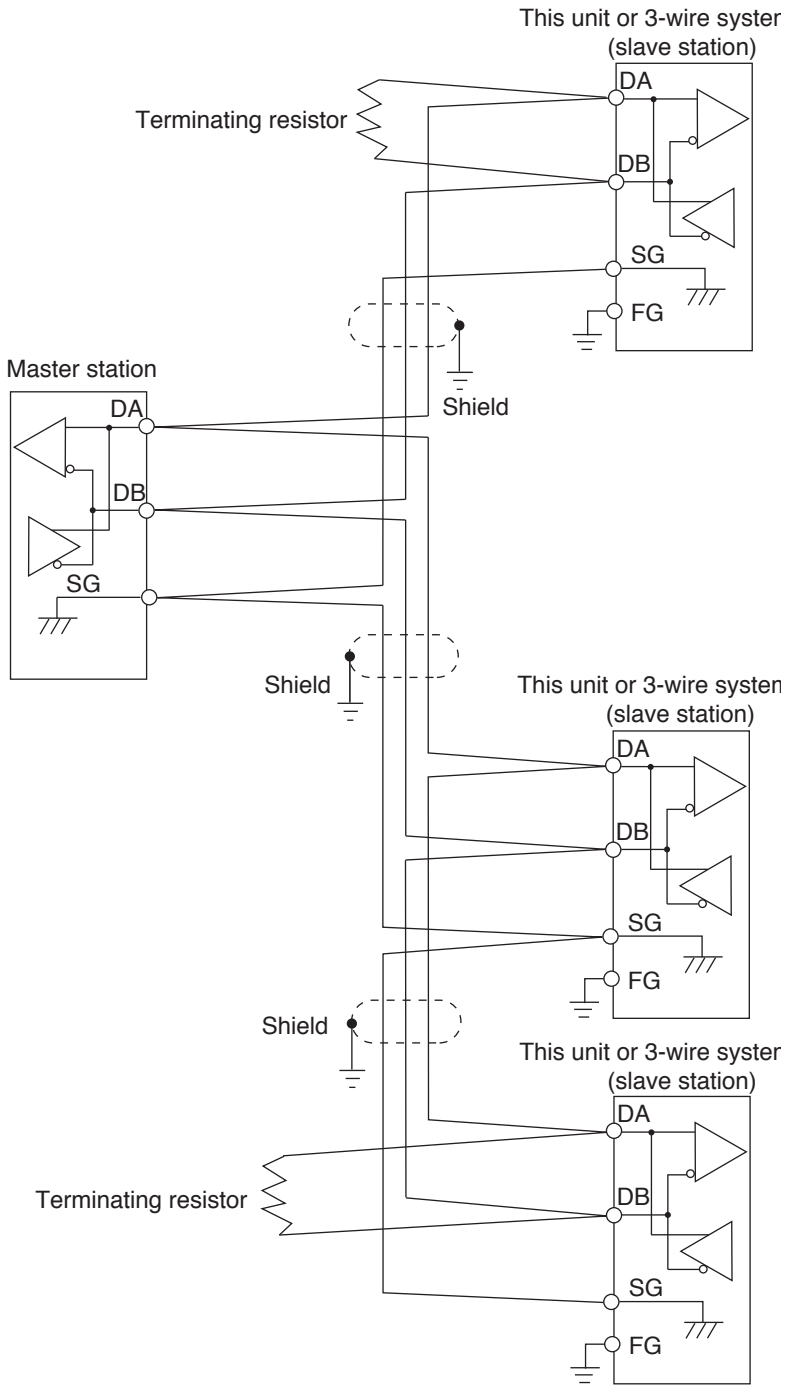
● **Combining with 5-wire system units**



! Handling Precautions

- If units for which the connection of a terminating resistor is prohibited (Yamatake SDC15/25/26/35/36 or DMC10) are on the same transmission line, do not connect a terminating resistor to the external or communication line of this unit.
- FG is not included with this unit.

● **3-wire system**



! Handling Precautions

- If units for which the connection of a terminating resistor is prohibited (Yamatake SDC15/25/26/35/36 or DMC10) are on the same transmission line, do not connect a terminating resistor to the external or communication line of this unit.
- FG is not included with this unit.

3 - 8 Noise Generation Sources and Noise Suppression

The following are typical noise generation sources:

1. Relays and contacts
2. Solenoid coils and solenoid valves
3. Power lines (especially those 90 V ac or higher)
4. Inductive loads
5. Motor commutators
6. Phase angle control SCR
7. Radio communication equipment
8. Welding machinery
9. High-voltage ignition devices

Effective measures for noise suppression are described below.

1. A CR filter is effective for quick-rising noises such as impulse noise.
   Recommended CR filter:
   Yamatake Corporation Model No.: 81446365-001
2. A varistor is effective for noises with high crest values.
   Recommended varistor:
   Yamatake Corporation Model No.: 81446366-001(for 100 V)
   81446367-001(for 200 V)

Handling Precautions

- Take great care when using a varistor because the varistor short-circuits when faulty.

3 - 9 I/O Isolation

The solid line indicates isolation from the rest of the circuit.

Power source (including side connectors) *1	
Logic circuit Loader jack RS-485 communications, side connector Ethernet communications *1 Displayed portions (LED, switch, etc.)	
Side connector ring communication *1	

*1 The power, ring communication, RS-485 communication, and ethernet communication are insulated and connected to the side connector.

Chapter 4. MULTI-LOOP COOPERATIVE CONTROL FUNCTIONS

4 - 1 What is “Multi-loop cooperative control”?

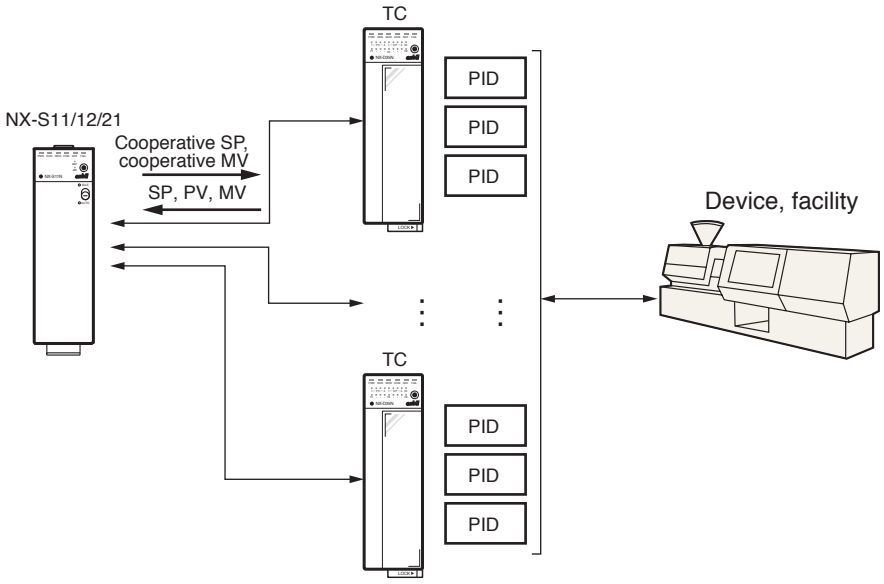
By a combination of the supervisor module and controller modules, multiple control loops, regardless of the control module, work together for advanced control.This is called “multi-loop cooperative control ,” and the following three types are available:

- Zone temperature difference control (NX-S11)
- Optimum start-up control (NX-S12)
- Peak power suppression control (NX-S21)

In order to control the controller modules, multi-loop cooperative control samples control loop setup values, manipulated variables, etc. to calculate the cooperative control between control loops.

Note

- Multi-Loop Cooperative Control Diagram

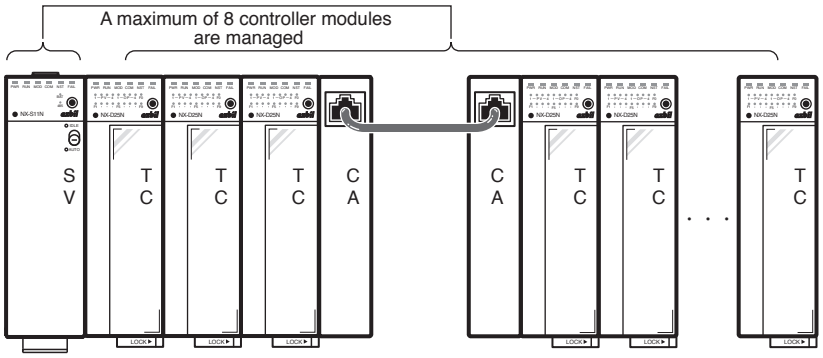


Handling Precautions

- Mmulti-loop cooperatiive control is not compatible with the NX-D15.
- Controller modules performing multi-loop cooperative control cannot use the inter-module forwarding function.

4 - 2 Module Configuration

The following text explains which device configuration is required when using multi-loop cooperative control.
When performing multi-loop cooperative control, connect the supervisor module to controller modules as shown in the following chart.A single supervisor module can manage up to 8 controller modules.



Handling Precautions

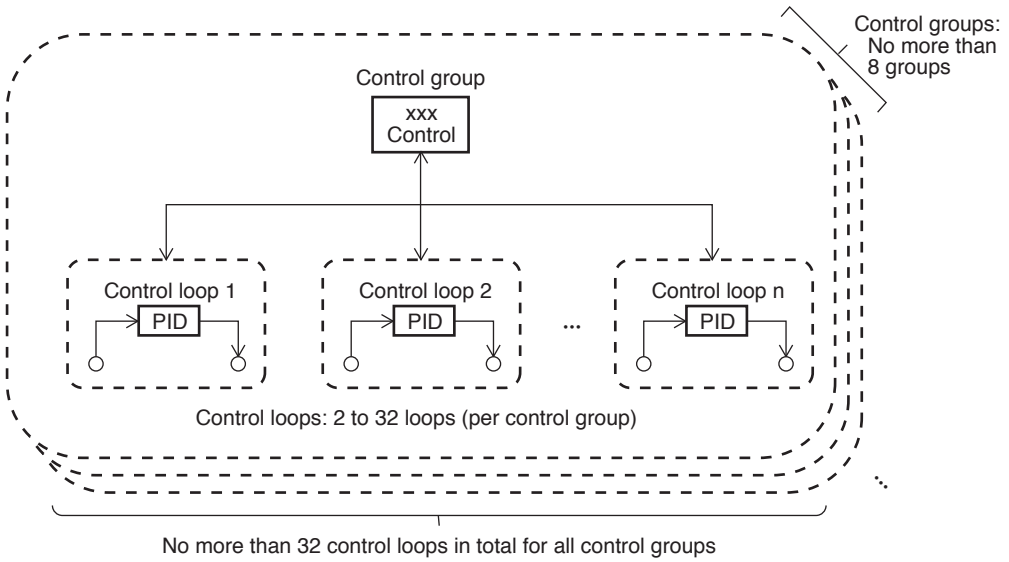
- Place modules to perform multi-loop cooperative control in the same chain.
- Multi-loop cooperative control cannot be performed via communication box.
- Multiple supervisor modules cannot be placed within the same chain.
- If the chain to perform multi-loop cooperative control is to be connected to host communication via Ethernet, make sure to use the communication box to connect to the host device.
  However, the communication box NX-CB1RR cannot be used.

Note

- For details on module configuration,
  ☞ Chapter 6, "Multi-Loop Cooperative Control" in the Network Instrumentation Module User's Manual Network Design Version, CP-SP-1313E.

4 - 3 Control Groups & Control loops

The following is an explanation of the multi-loop cooperative control's logical configuration.
When performing the multi-loop cooperative control, a concept called the "control group" is used for logical units.
A "control group" is a unit used for performing multi-loop cooperative control. Each "control group" unit consists of at least two control loops.
Control loops (also called "loops") perform PID calculations here based on sensor inputs, then indicate a sequence of control systems from controller modules, which output final control elements such as SSR to control targets.
Up to 32 control loops can be included in a single control group.
Up to 8 control groups can be registered to a single supervisor module.

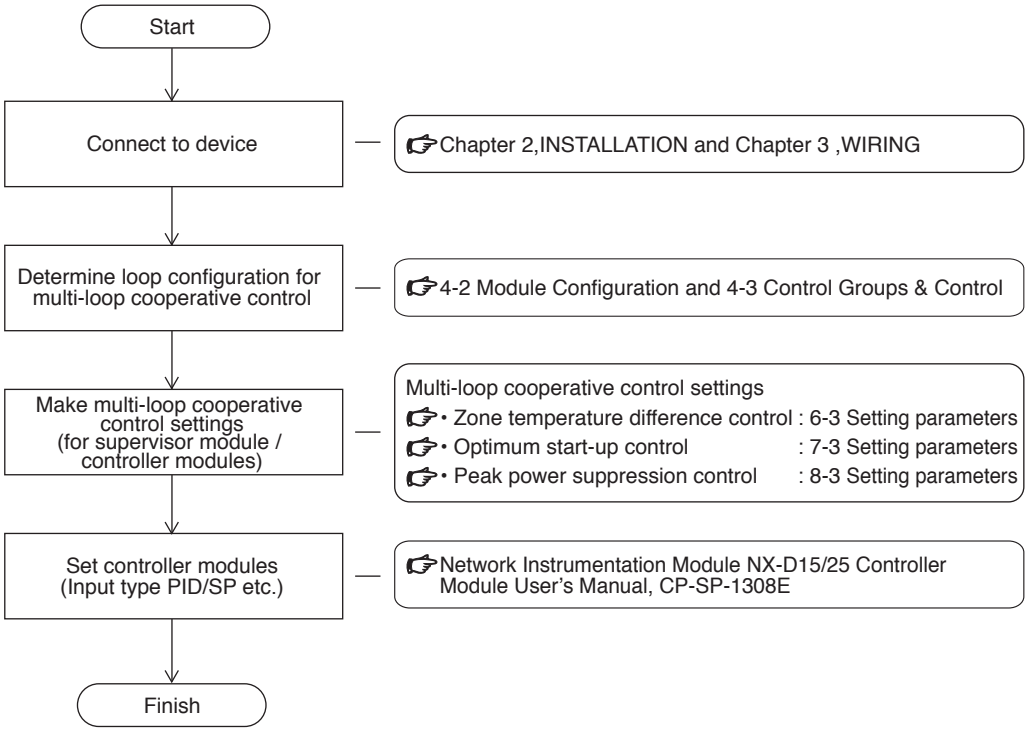


Note

- Up to 8 controller modules, with 32 control loops, can perform multi-loop cooperative control within a single supervisor module.

4 - 4 Multi-loop Cooperative Control Setup

Basic steps to be taken for multi-loop cooperative control setup are explained below.



■ Connect to device

Connect the supervisor module to the controller modules.

For details on the connection process,

☞ Chapter 2, "INSTALLATION", Chapter 3, "WIRING", and Network Instrumentation Module User's Manual Network Design Version, CP-SP-1313E.

For information on the Smart Loader Package,

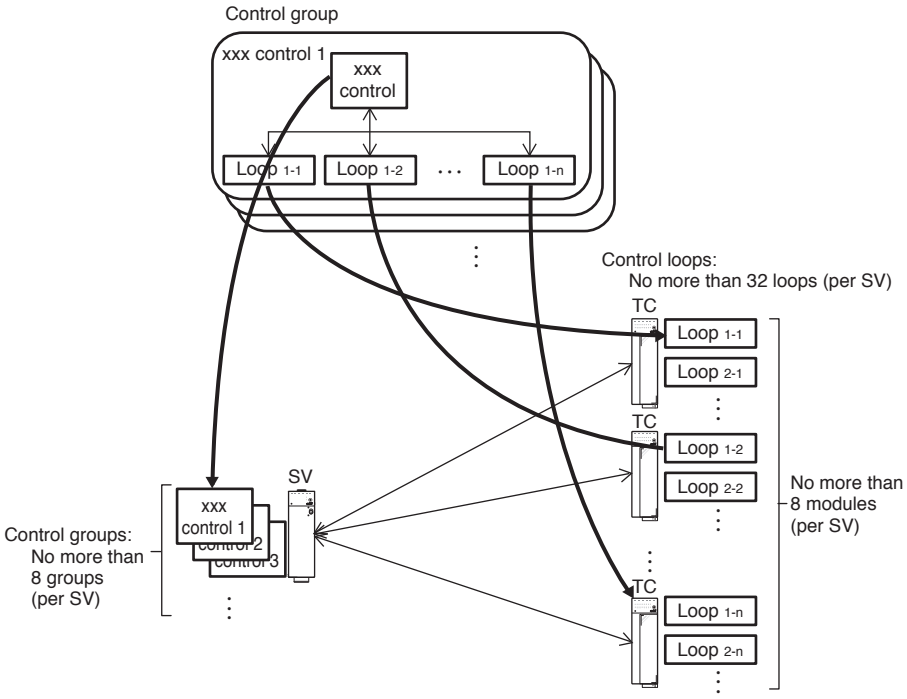
☞ Network Instrumentation Module Smart Loader Package SLP-NX User's Manual, CP-UM-5636E.

■ Determine loop configuration for multi-loop cooperative control

Perform mapping with physical module configuration and the logical configuration of multi-loop cooperative control (4-3 Control Groups & Control loops) .

A single supervisor module can create up to 8 control groups, and can manage up to 8 controller modules.

Each control group can include between 2 and 32 loops.



Constraints for the devices that make up multi-loop cooperative control have been grouped together in the chart below.

Item	High limit value	Low limit value	Remarks
Number of control groups per supervisor module	8	1	Each controller module can hold up to 4 control loops
Number of control groups per supervisor module	8	1	Each control group can hold up to 32 control loops
Number of control loops per control group	32	2	

Handling Precautions

- After a restart, controller modules that are configured for multi-loop cooperative control wait with a 0.0 % control output for the supervisor module's command. Therefore if the supervisor module has not been started or if there are only controller modules, normal operation is impossible. If there are only controller modules, reconfigure using the SLP-NX.

■ Set up multi-loop cooperative control

Use SLP-NX to set up control loops and control groups.

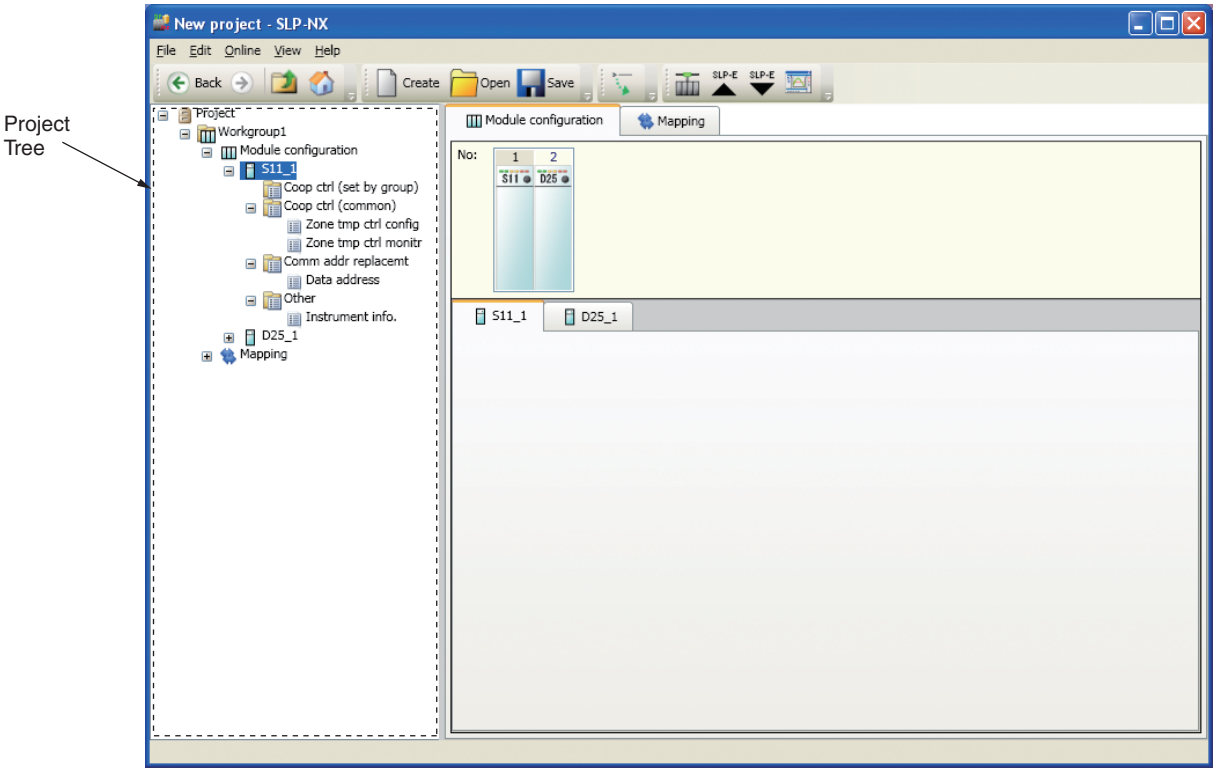
Note

- For details on project creation, module configuration definitions, and controller module parameter settings,
  ☞ Network Instrumentation Module Smart Loader Package SLP-NX User's Manual, CP-UM-5636E. or Network Instrumentation Module NX-D15/25 Controller Module User's Manual, CP-SP-1308E.

● Setting Procedure Examples

Using the SLP-NX [Project] window, follow the procedures below to set up multi-loop cooperative control. The NX-S11 is used as an example, but the procedures are the same for the NX-S12/21.

(1) Access [Project] → [Work Group 1] → [Module Config] from the project tree.

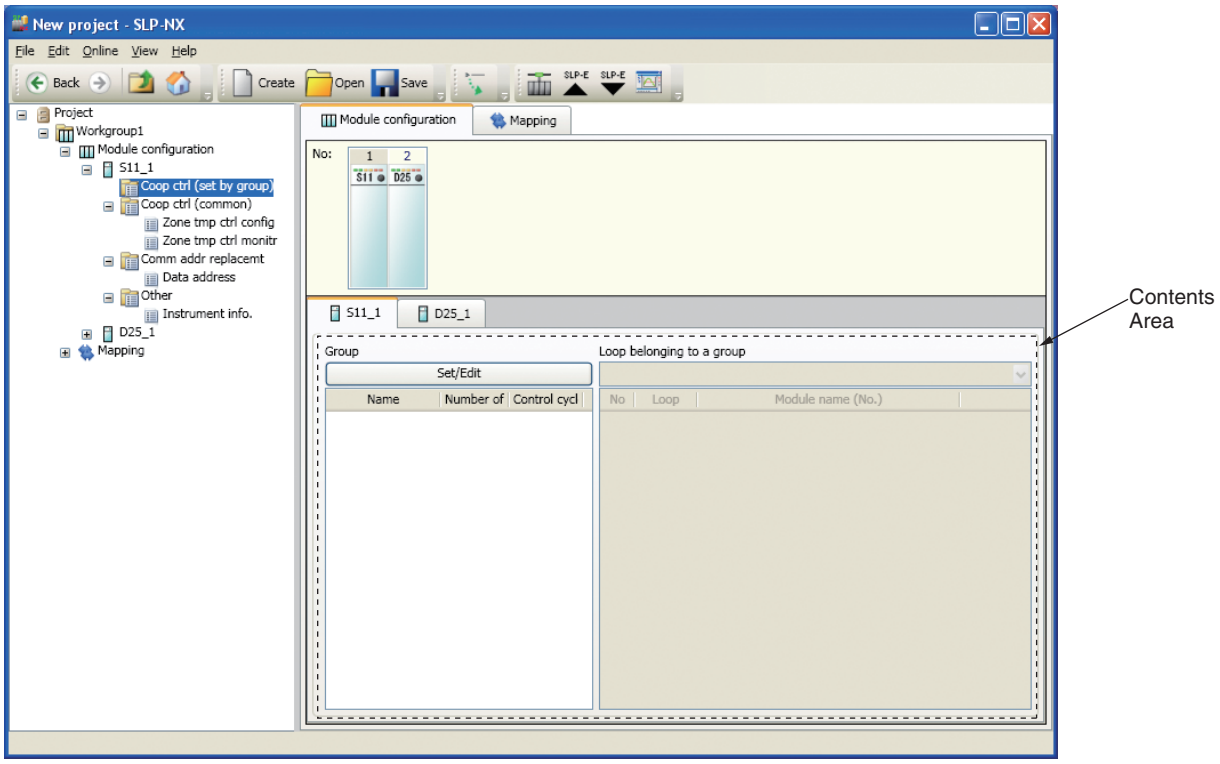


Note

- The name [Work Group 1] above can be changed.

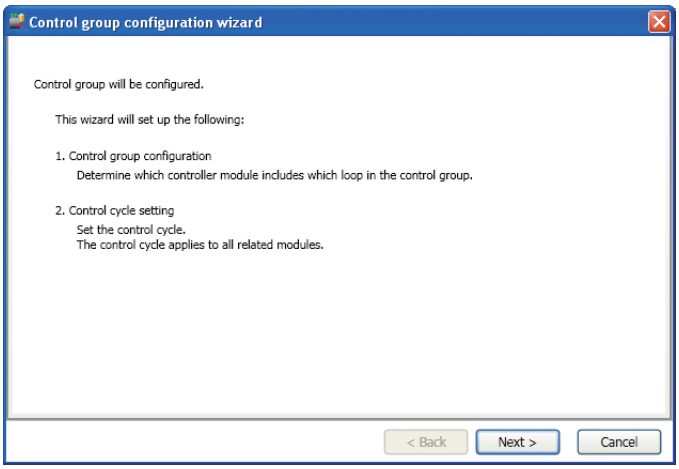
(2) Click [Cooperative Control (other group settings)] on the project tree.

>> The Group Settings screen will be displayed in the contents area.



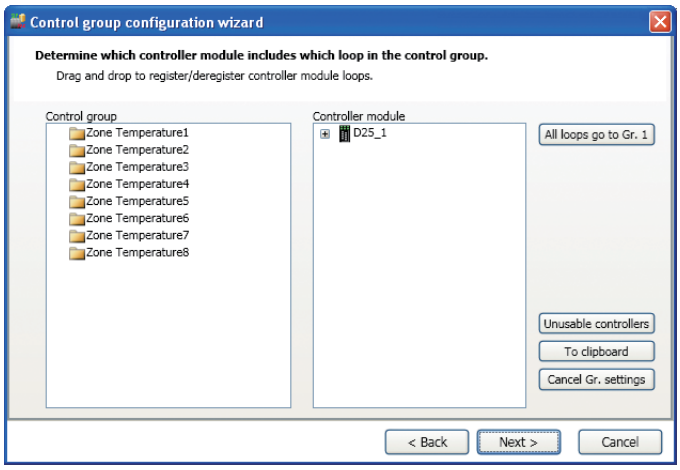
(3) Click the [Settings/Edit] button.

>> [Control Group Config Wizard] is then displayed.

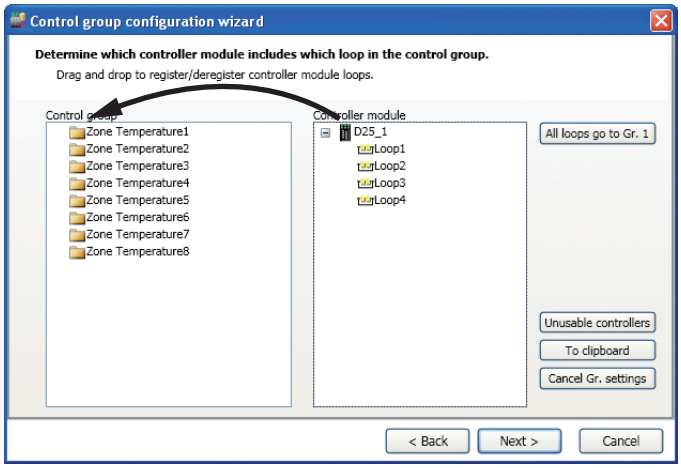


(4) Click the [Next] button.

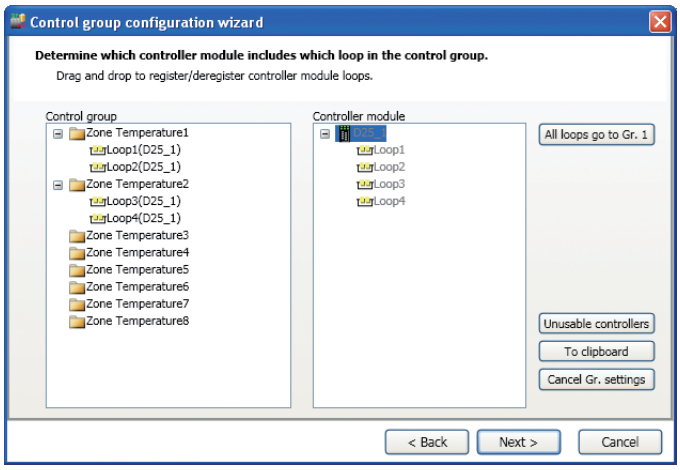
>> The [Control Group Config Settings] screen is then displayed.



(5) Click the + mark to the left of the controller module name to display its control loops, then drag and drop the control loops into the control group folder.



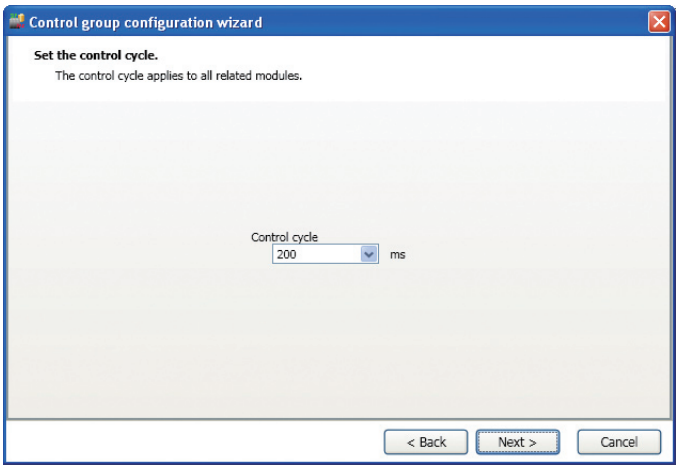
>> Control loops will then be placed into the control group.



Note

- When clicking the [All Loops to Gr1] button, all unregistered control loops from the controller module will be registered to control group 1.
- To delete registered control loops from their control group, drag and drop the loops you want to delete into the controller module column.
- To change the order sequence or control group of registered control loops, drag and drop the loops you want to change to the desired destination.

(6) Click the [Next] button to check the control cycle.

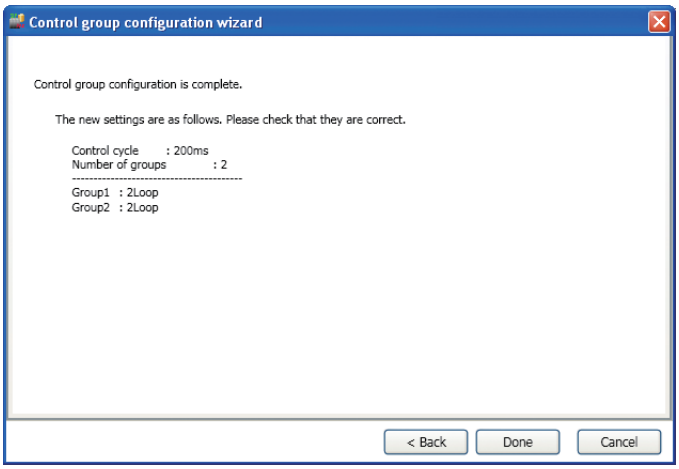


Handling Precautions

- The multi-loop cooperative control's control cycle is 200 ms. This setting cannot be changed.

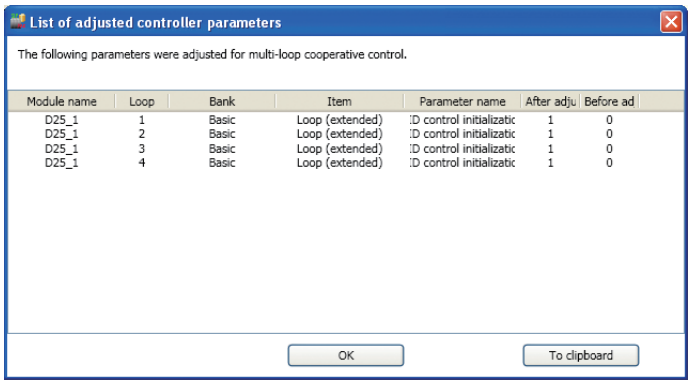
(7) Click the [Next] button.

>> Group setting content is then displayed.



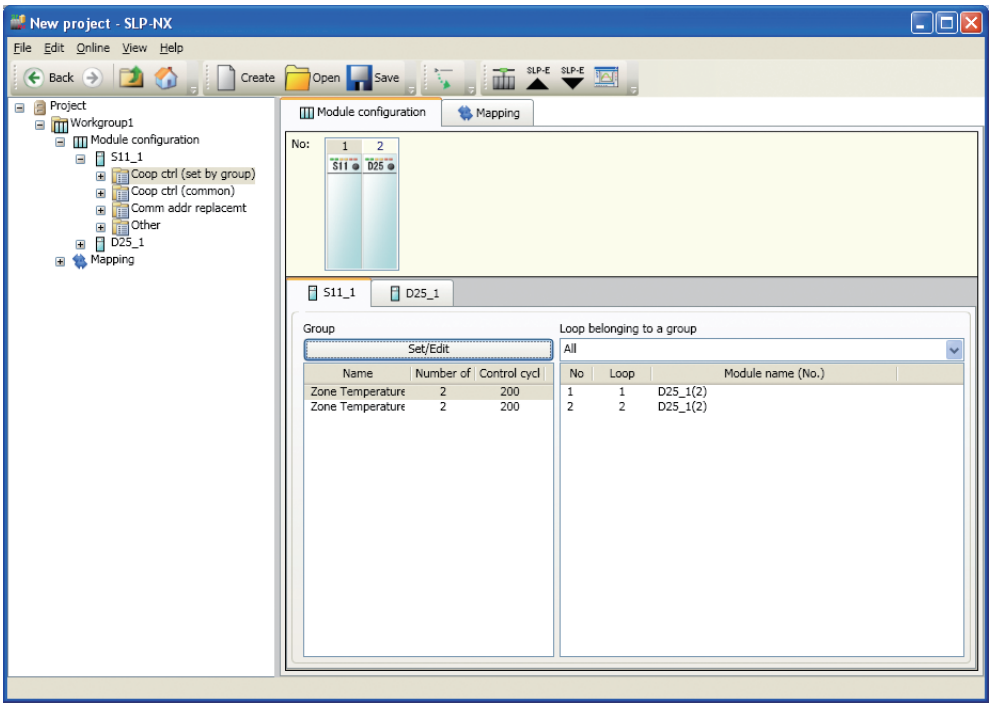
(8) Click [Finish].

>>A list of controller module parameters will then be displayed for controller modules that were changed via multi-loop cooperative control settings.

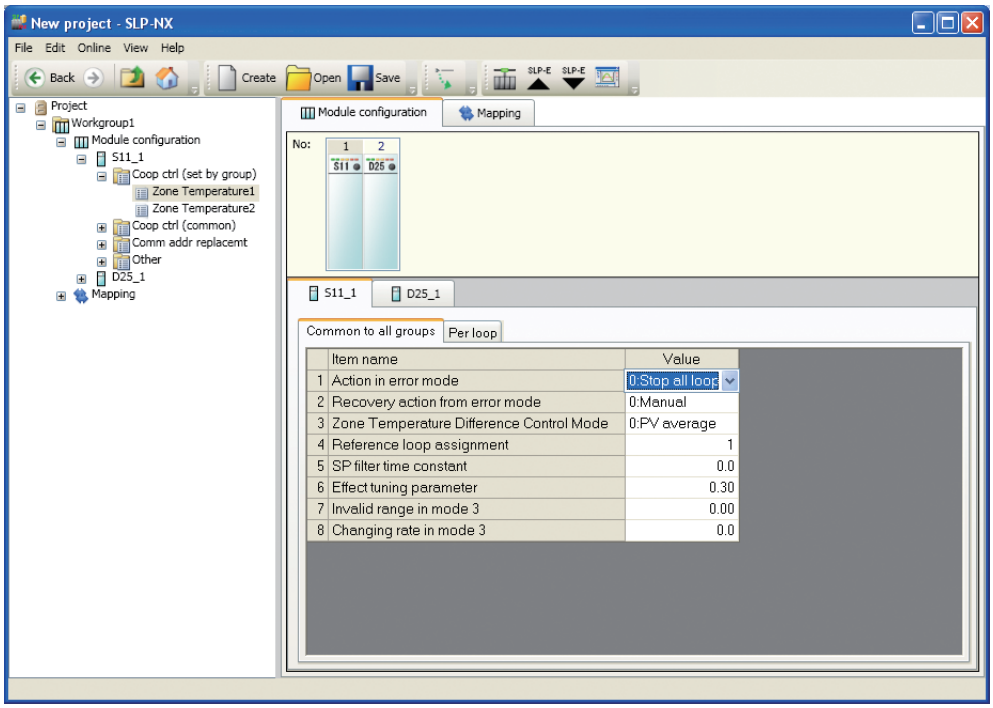


(9) Click the [OK] button.

Multi-loop cooperative control settings are now complete, and control groups set up at the contents area will be displayed. When clicking and selecting a group name, information for loops registered to that control group will be displayed to the right.



(10) Click the + mark to the left of Cooperative Control (other group settings) to display set control groups, then click a control group to perform multi-loop cooperative control setup.



Note

- For details on the settings of each function included with multi-loop cooperative control, please read the following.
  - ☞ Chapter 6, "Zone temperature difference control", 6-3 Setting parameter.
  - ☞ Chapter 7, "Optimum start-up control", 7-3 Setting parameter.
  - ☞ Chapter 8, "Peak power suppression control", 8-3 Setting parameter.

■ Cancel multi-loop cooperative control settings

Use SLP-NX to cancel control group settings.

Note

- For details on project creation, module configuration definitions, and controller module parameter settings,
  ☞ Network Instrumentation Module Smart Loader Package SLP-NX User's Manual, CP-UM-5636E, or Network Instrumentation Module NX-D15/25 Controller Module User's Manual, CP-SP-1308E.

● Setting Procedure Examples

Using the SLP-NX [Project] window, follow the procedures below to cancel the settings for multi-loop cooperative control. The NX-S11 is used as an example, but the procedures are the same for the NX-S12/21.

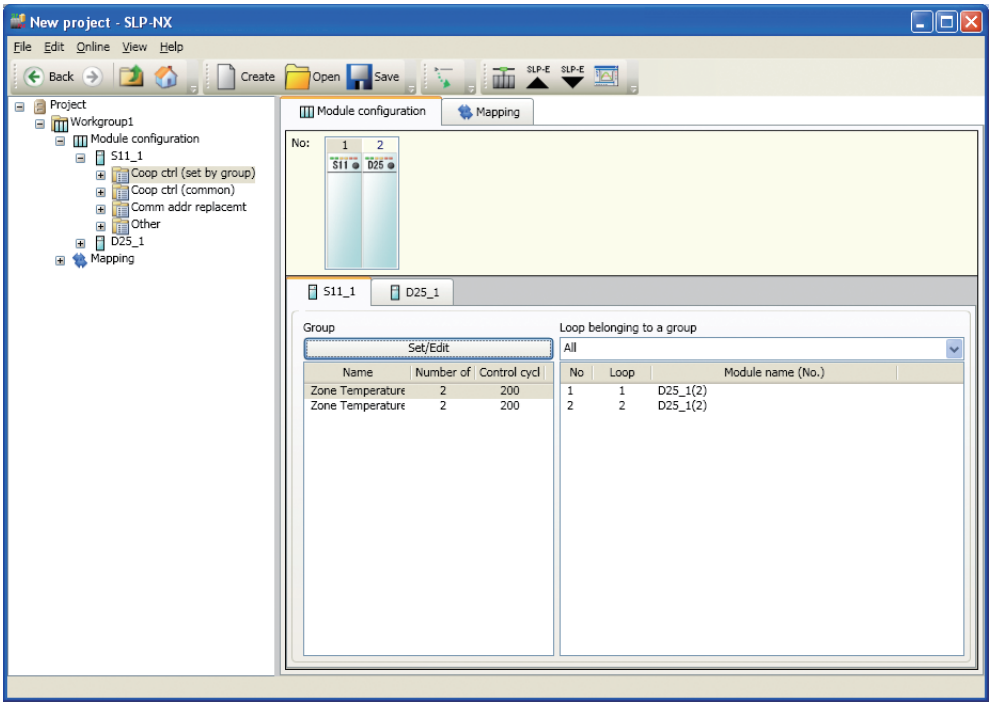
(1) Access [Project] → [Work Group 1] → [Module Config] from the project tree.

Note

- The name [Work Group 1] above can be changed.

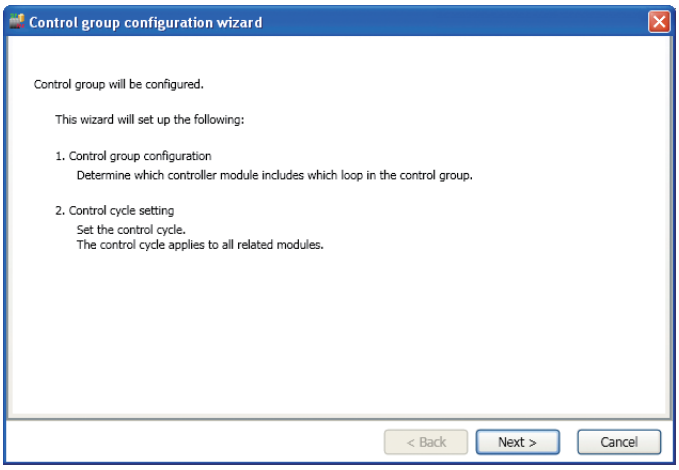
(2) Click [Cooperative Control (other group settings)] on the project tree.

>> The Group Settings screen will be displayed in the contents area.



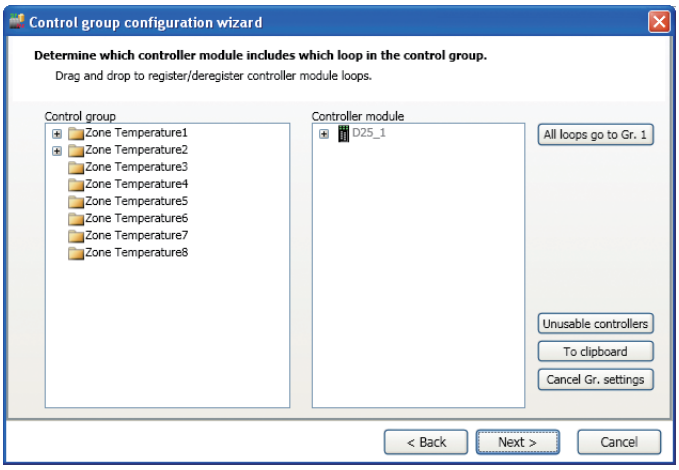
(3) Click the [Settings/Edit] button.

>> [Control Group Config Wizard] is then displayed.

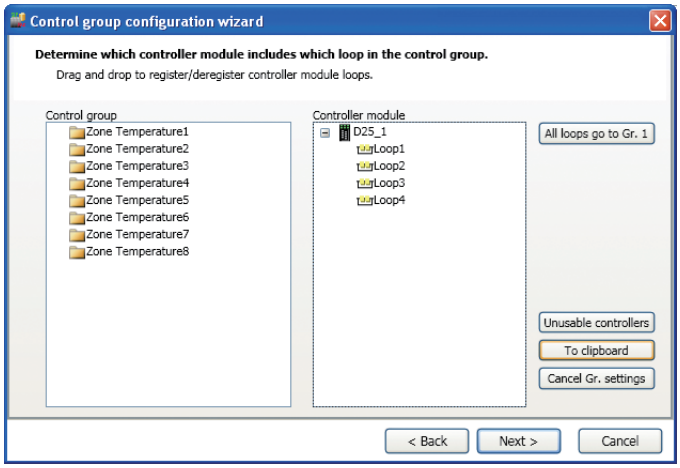


(4) Click the [Next] button.

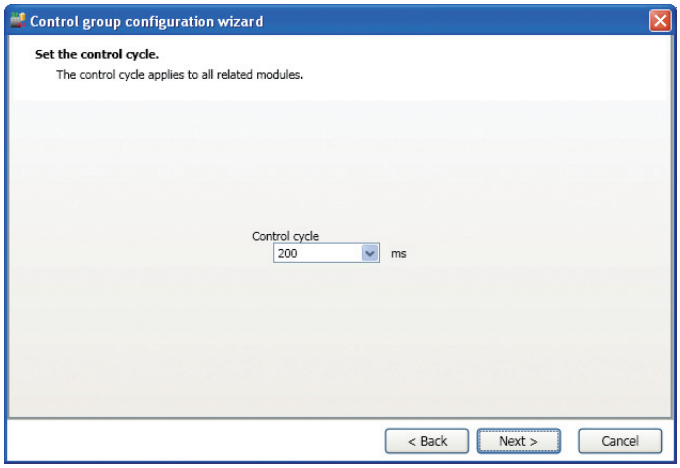
>> The control group config settings screen is then displayed.



(5) Click the [Cancel All Gr Settings] button. All loops will then be deleted from all control groups.



(6) Click the [Next] button.

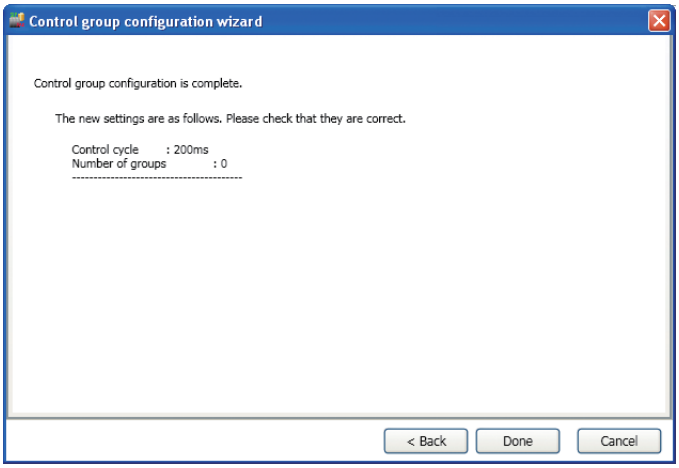


Handling Precautions

- Control cycle settings have no effect on control group cancellation.

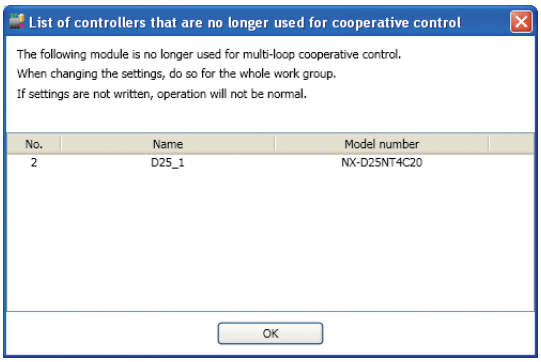
(7) Click the [Next] button.

>> Group setting content is then displayed. Make sure the group configuration column is now blank.



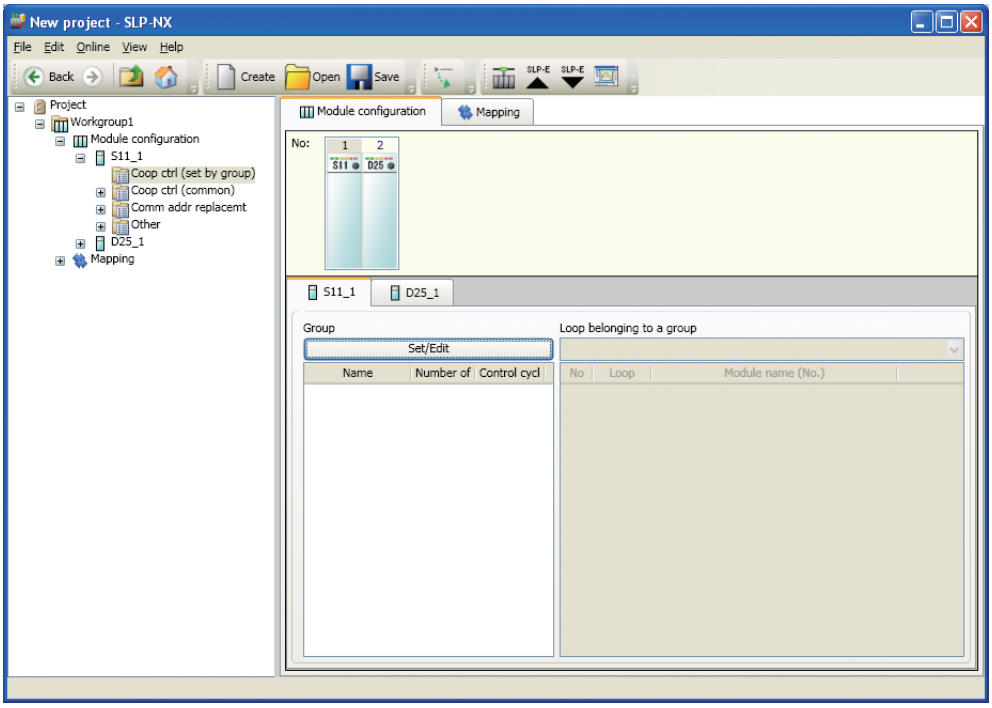
(8) Click [Finish].

>> Since the settings for multi-loop cooperative control have been cancelled, a list of controller modules that are no longer used for that purpose is displayed.



(9) Click the [OK] button.

>> Cancellation of control group settings is now complete, and the contents area's control group column is blank.



Handling Precautions

- If the multi-loop cooperative control settings are canceled, the controller modules may operate in the loop mode that was used before multi-loop cooperative control. For example, if multi-loop cooperative control is set up for controller modules that ran previously in READY/MANUAL mode, they run in cooperative mode, but if the cooperative control is cancelled, they may run in READY/MANUAL mode.

Note

- When setting up multi-loop cooperative control with Control Group Config Wizard, the control loop parameters of the controller modules, which are listed below, will be changed as follows.

Handling Precautions

- When using controller modules with multi-loop cooperative control, make sure to use parameters which indicate the following multi-loop cooperative control setup values.
- When using a controller module as a single unit that was previously being used with multi-loop cooperative control, make sure to check the following parameter values, and perform the required settings.
- Controller modules with multi-loop cooperative control settings canceled will sometimes resume in an operation mode which was used before multi-loop cooperative control settings were applied. For example, when using controller modules originally set to READY/MANUAL mode with multi-loop cooperative control, the modules will operate in cooperative mode. However, when cancelling those settings, the controller modules will sometimes return to READY/MANUAL operation.

● Zone temperature difference control

Bank name	Item name	Multi-loop cooperative control setup value	Controller module initial value	Setting range	Remarks
Loop control (extended)	PID control initialization	1	0	0: Automatic 1: Do not initialize 2: Initialize	

● Optimum start-up control

Bank name	Item name	Multi-loop cooperative control setup value	Controller module initial value	Setting range	Remarks
Loop control (extended)	PID control initialization	1	0	0: Automatic 1: Do not initialize 2: Initialize	

● Peak power suppression control

Bank name	Item name	Multi-loop cooperative control setup value	Controller module initial value	Setting range	Remarks
Loop control (basic)	Control action	0	0	0: Reverse action (heating) 1: Direct action (cooling) 2: Heat/Cool 3: Reverse action (ON/OFF) 4: Direct action (ON/OFF)	Controller module set to initial value
OUT/DO Output	Output type	1/4/7/10	1/4/7/10	1: Loop 1 MV 4: Loop 2 MV 7: Loop 3 MV 10: Loop 4 MV	Controller module set to initial value
OUT/DO Output	Latch	0	0	0: No latch 1: Latch at ON 2: Latch at OF	Controller module set to initial value
OUT/DO Output	Time proportional operation type	1	0	0: Control oriented 1: Priority on device life	
OUT/DO Output	Min. ON/OFF time	10	10	0 ~ 300 ms	Min. ON/OFF time should be set to 10 ms or more
OUT/DO Output	Time proportional cycle	2.,	2.0	0.1 ~ 120.0 s	Time proportional cycle should be set to 2.0 s or more
OUT/DO Output	Linearization table group definition	0	0	1 ~ 8	Controller module set to initial value
OUT/DO Output	Phase shift	0	0	0 ~ 32000 ms	Controller module set to initial value
Energy conservation time proportion	Energy conservation time proportional operation	1	0	0: No latch 1: Use	
Energy conservation time proportion	Master / slave operation	0	0	0: Master 1: Other than master	These parameters are not set during peak power suppression control setup, but are set for master/ slave operation determined by peak power suppression control.
Energy conservation time proportion	Time proportional slave channel	1 ~ 8	1 ~ 8	1: Time proportioning 1 2: Time proportioning 2 3: Time proportioning 3 4: Time proportioning 4 5: Time proportioning 5 6: Time proportioning 6 7: Time proportioning 7 8: Time proportioning 8	Controller module set to initial value

Chapter 5. OPERATION AND GENERAL FUNCTIONS

5 - 1 Operation Displays

The front panel of the main body has LED displays and buttons.
There are two types of LED flashing, fast blink (0.2 s cycles) and slow blink (1.4 s cycles).

■ PWR, RUN, MOD, COM, NST, FAIL

The lighting patterns and descriptions of the top LEDs are shown in the following table.

LED name	Color	Lighting pattern	Description
PWR	Green	Lit.	Power ON (energized)
		Off	Power OFF (not energized)
RUN	Green	Lit.	RUN mode (device operation mode)
		Slow blink	IDLE mode (device operation mode)
		Off	Operation status other than the above
MOD	Orange	Fast blink	Parameters from the loader are being written, or parameters are being backed up.
		Off	Normal action mode
COM	Green	Lit.	Receiving local Ethernet packet
		Off	Local Ethernet packet not received
NST	Orange	Lit.	Chain connection has non-ring communications
		Fast blink	Chain connection is in ring cut status (ring is cut somewhere)
		Slow blink	Chain connection is in ring cut status (own ring or ring with adjacent node is cut)
		Off	Chain connection has normal communications
FAIL	Red	Lit.	Hard failure
		Slow blink	Soft failure
		Fast blink	Partial failure
		Off	No error

■ BAT, 485

LED name	Color	Lighting pattern	Description
BAT	Red	Lit.	Dead battery
		Slow blink	Battery voltage low *1
		Off	Battery voltage normal
485	Green	Flashing	Receiving local message
		Off	Local message not received

*1 When battery voltage has decreased, please change the battery within a week.
For details on battery changes,
☞ 16-2 Changing Batteries (page 16-2).

■ Display when power turned ON

When the power is turned ON, the LEDs light up as shown in the following table.
This is different from the operation displays.
The LEDs then transition to the operation displays.

Order	LED lighting status (○: Lit, –: Off, ◇: Flashing, ∗: Depends on the status)								Status or process
	Top LEDs						Middle LEDs	Bottom LEDs	
	PWR	RUN	MOD	COM	NST	FAIL	BAT	485	
1	–	–	–	–	–	–	–	–	Power OFF
2	○	○	○	○	○	○	–	–	Immediately after power ON
3	○	–	–	–	–	–	○	–	LED lighting test (0.5 s)
4	○	–	–	–	–	–	–	○	LED lighting test (0.5 s)
5	○	–	–	–	–	–	–	–	Waiting for EEPROM read stability
6	○	∗	∗	∗	∗	∗	∗	∗	Operation display

■ LED lighting pattern under special conditions

LED lighting status (○: Lit, –: Off, ◇: Slow blink, ◆: Fast blink, ∗: Depends on the status)								Status or process
Top LEDs						Middle LEDs	Bottom LEDs	
PWR	RUN	MOD	COM	NST	FAIL	BAT	485	
○	◇	◇	◇	◇	◇	∗	∗	Wink function If specified with the SLP-NX.
○	–	◇	∗	∗	○	∗	∗	Base EEPROM read write error Communications failed between the main body and base, or the base has fatal damage, and base failed, or the base has fatal damage. Turn the power OFF and ON. If the error recurs, replace the module.
○	◇	◇	∗	∗	◇	∗	∗	Base EEPROM incompatibility Connected base EEPROM data error Turn the power OFF and then ON again. If the error reoccurs, perform base EEPROM recovery via SLP-NX by writing in communication parameters. If it is still not recovered, replace the module.
○	◆	◆	◆	◆	◆	∗	∗	Wrong module insertion The model No. of the main body and that of the base do not match. Make sure that the inserted module has the correct model No., and then turn the power OFF and ON. If the error recurs, recover the base EEPROM using the button.
								Ethernet congestion occurring Ethernet congestion occurs in the network. If congestion continues, check for wrong connections in the network.
○	◇	◇	∗	∗	–	∗	∗	Base EEPROM error The main body parameters and base parameters Turn the power OFF and ON again. If the error recurs, recover the base EEPROM using the push button.

■ Button functions

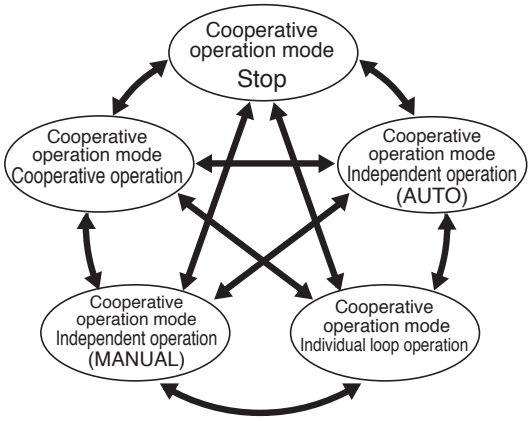
Base EEPROM recovery can be performed with the buttons.

Order	LED lighting status (○: Lit, –: Off, ◇: Slow blink, ◆: Fast blink, ∗: Depends on the status)								Status or process
	Top LEDs						Middle LEDs	Bottom LEDs	
	PWR	RUN	MOD	COM	NST	FAIL	BAT	485	
1	○	∗	∗	∗	∗	∗	∗	∗	Normal operation in progress
									↓ (Press the button)
2	○	–	–	–	–	–	∗	∗	Top LEDs all off
									↓ (2 seconds elapsed)
3	○	○	○	○	○	○	∗	∗	Top LEDs all lit
									↓ (Release the button)
4	○	∗	∗	∗	∗	∗	∗	∗	Normal operation in progress

Base EEPROM recovery aligns the main body with the base when an incorrect module insertion or base EEPROM error occurs.

5 - 2 Cooperative Operation Mode

Cooperative operation mode is used by a single control group while multi-loop cooperative control is running. The following shows the transition to cooperative operation mode:



The following chart indicates the relationship between the cooperative operation mode running for each control group during multi-loop cooperation control, and the loop modes of controller modules belonging to those control groups.

Cooperative operation mode	Operation	Controller loop mode
Stop	Multi-loop cooperative control will stop, and all control loops will be brought to a halt.	READY + AUTO
Independent operation (AUTO)	Multi-loop cooperative control will stop, and all control loops will output according to their set SP values (LSP).	RUN + AUTO
Cooperative operation	Multi-loop cooperative control changes to cooperative operation, and all control loops cooperate with the supervisor module.	RUN + AUTO
Independent operation (MANUAL)	Multi-loop cooperative control stops. Control loops run independently in the loop mode that the user specified.	RUN + MANUAL
Individual loop operation	Multi-loop cooperative control stops. Control loops run independently in the loop mode that the user specified.	User-specified loop mode

Note

- For details on controller loop modes,
  ☞ 1-4 Operation Modes, in Network Instrumentation Module NX-D15/25 Controller Modules User's Manual, CP-SP-1308E.

Handling Precautions

- Individual loop operation can be used with a combination of supervisor module ROM version 1.02 (available in April, 2011) or later and controller module ROM version 2.02 (available in April, 2011) or later.
- If a control group includes a control loop that is not compatible with individual loop operation, an attempt to change the group's operation mode to individual loop operation will fail, and the mode will return to the previous one.
- During multi-loop control, do not change the loop mode (RUN/READY or AUTO/MANUAL) of the controller modules (except in the case of individual loop operation mode). Doing so may result in control error.

5 - 3 How to Change the Control Mode and Parameters

To change the control mode or setting parameters, use SLP-NX(sold separately) or use the host computer.
This section provides an overview of how to change the control mode and setting parameters using the loader.

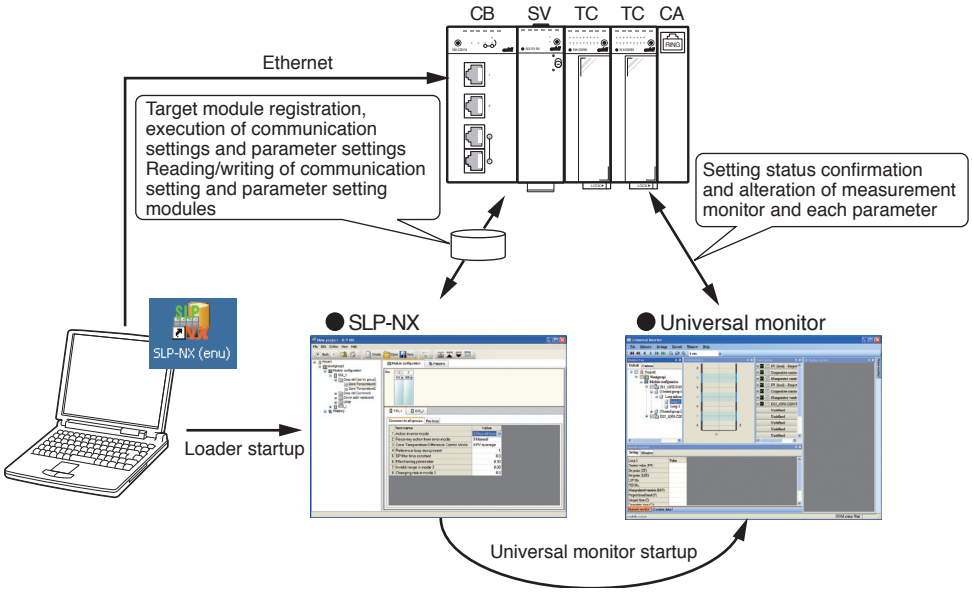
■ Loader Function System

The loader offers the following function system.

Function name	Application
SLP-NX	Module registration, communication settings for each module, and parameter settings. In addition, the loader handles reading and writing of each module's data, communication settings, and parameter settings.
Universal monitor	Communicates with each module in order to monitor various measured values and to allow checking and changing of any parameter.

■ How to change setting parameters

The following describes how to change the settings for the setting parameters using the universal monitor.



! Handling Precautions

- When creating a project that uses the supervisor module, connect with an Ethernet cable. The USB loader cable cannot be used.

● Setting change procedures

In this example, the supervisor module's cooperative operation mode will be changed to independent operation (AUTO).

Note

- The following method is an example. The same change can be performed with other operation methods.

(1) Start SLP-NX.

(2) Open a project that is backed up on the computer.

(3) Connect the computer to modules. (Ethernet)

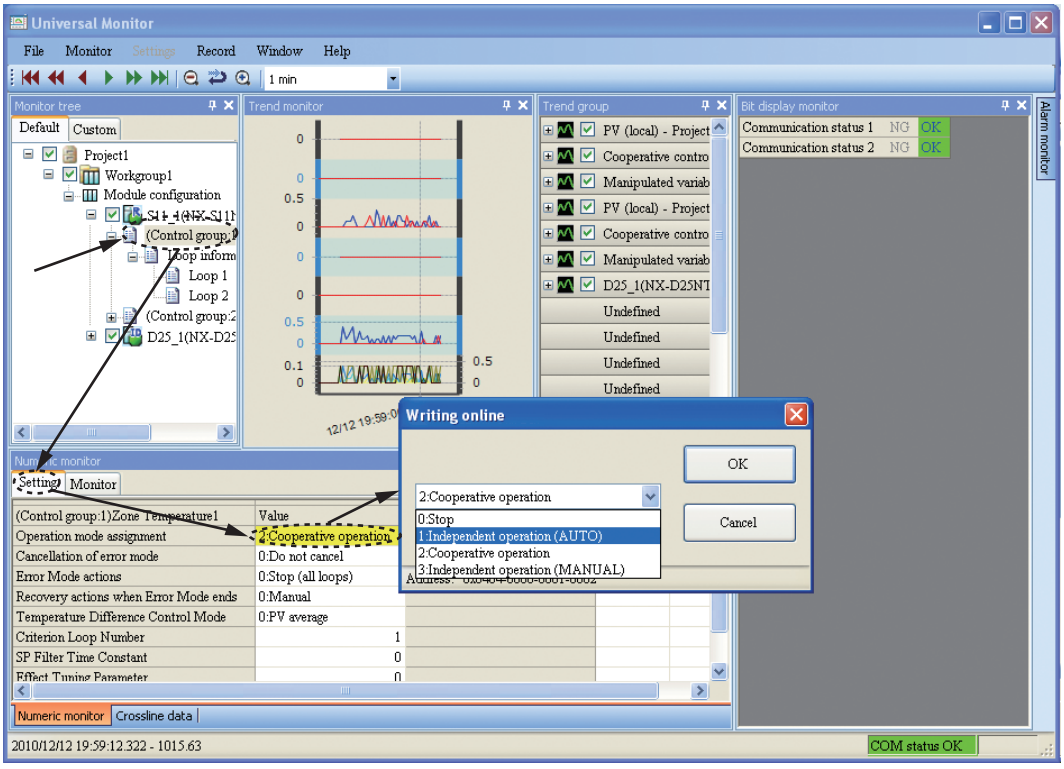
(4) Start the universal monitor with the following operation: [Online] → [Monitor].

(5) Click the target module for the change in "Monitor tree" on the universal monitor.

(6) Set the communications status to communication in progress with the following operation: [Monitor] → [Start].

(7) Double click the supervisor module's [Assign operation mode] value available from the universal monitor's [Numeric monitor [setting]] tab, and the [Writing online] dialogue box will be displayed.

(8) Change from [2: Cooperative operation] → [1: Independent operation (MANUAL)] at the pull down menu, and then click [OK].



5 - 4 How to Manually Output the MV (cooperative operation → independent operation (MANUAL))

For each control loop, the universal monitor can be used to manually output the MV.
Operate by following the procedure below.

(1) Display the multi-loop cooperation control's control groups operated by the supervisor module on the universal monitor.

(2) Change [Assign operation mode] under the [Numeric value monitor [Settings]] tab from [2: Cooperative Operation] to [3: Independent operation (MANUAL)].

(3) Display control loops operated by controller modules on the universal monitor.

(4) Make sure the [Numeric value monitor [Settings]] tab's [AUTO/MANUAL] setting is set to [1: MANUAL].

(5) Change the MV in the [Numeric value monitor [Settings]] tab.

Note

- When changing multi-loop cooperation control's control groups from "cooperative operation mode" to "independent operation (MANUAL)", loop mode for all loops belonging to control groups will be changed to MANUAL. MV can be output manually when operation is performed as it is with a single controller module.

5 - 5 Independent Operation of Control Loops (cooperative operation → independent operation (AUTO))

Use the universal monitor to switch multi-loop cooperation control's "cooperative operation mode" to "independent operation (AUTO)", which makes it possible to control all loops independently.
Operate by following the procedure below.

(1) Display the multi-loop cooperation control's control groups operated by the supervisor module on the universal monitor.

(2) Change [Assign operation mode] under the [Numeric value monitor [Settings]] tab from [2: Cooperative operation] to [1: Independent operation (AUTO)].

(3) Display control loops operated by controller modules on the universal monitor.

(4) Make sure the [Numeric value monitor [Settings]] tab's [AUTO/MANUAL] setting is set to [0: AUTO].

(5) Change control loop operation in the [Numeric value monitor [Settings]] tab.

Note

- When changing multi-loop cooperation control's control groups from "cooperative operation mode" to "independent operation (AUTO)", loop mode for all loops belonging to control groups will be changed to AUTO. Operation can be performed as it is with a single controller module.

5 - 6 Switching Multi-loop Cooperative Control from “stop” to “operate”

You can use the universal monitor to switch multi-loop cooperation control’s “cooperative operation mode” to “stop”, or switch from “stop” to “multi-loop cooperative operation”.
Operate by following the procedure below.

(1) Display the multi-loop cooperative control groups operated by the supervisor module on the universal monitor.

(2) Change [Operation mode settings] under the [Numeric value monitor [Settings]] tab from [2: Cooperative operation] to [0: Stop].
Or change [0: Stop] to [2: Cooperative operation]

(3) Display control loops operated by controller modules on the universal monitor.

(4) Make sure [Operation mode settings] under the [Numeric value monitor [Settings]] tab has been set to [0: Stop] or to [2: Cooperative operation].

Note

- When changing a multi-loop cooperation control’s control group from “cooperative operation” to “stop”, the loop mode for all control loops belonging to the control group will be “READY”, and the control loops will stop being controlled.
- When changing a multi-loop cooperation control’s control group from “stop” to “cooperative operation”, the loop mode for all control loops belonging to the control group will be set to “RUN + AUTO”.

5 - 7 Switching Control Loops to Individual Loop Mode (Cooperative Operation → Individual Loop Operation)

Using the universal monitor, you can switch the multi-loop control mode from cooperative operation to individual loop operation so that control loops can run in the individual loop mode.
The procedure is as follows.

(1) On the universal monitor, display the multi-loop cooperative control group operated by the supervisor module.

(2) Change [Operation mode settings] in the [Numeric value monitor [Settings]] tab from [2: Cooperative operation] to [4: Individual loop operation].

(3) On the universal monitor, display the control loops operated by the controller modules.

(4) Configure the loop mode using the [Numeric value monitor [Settings]] tab.

Note

- If the operation mode is changed from cooperative operation to individual loop operation in a multi-loop cooperative control group, the operation mode of control loops in the group can be set individually. For instance, one loop belonging to the controller module can be set to RUN + AUTO, and the other loops to READY + AUTO.

Handling Precautions

- In the case of individual loop operation, the loop mode of a controller module may vary before and after the power is turned off and on. For instance, if a control loop that had a mode of RUN + AUTO is added to a multi-loop cooperative control group whose mode is [3: Independent operation (MANUAL)], and then the group's mode is changed to [4: Individual loop operation], the controller module will run in RUN + MANUAL mode. However, if the power is then turned off and on, the module will run in RUN + AUTO mode.
  If the cooperative operation mode is [4: Individual loop operation], and the loop mode of the controller module is changed by the universal monitor, the loop mode of the controller module will be maintained even if the power is turned off and on.

Chapter 6. ZONE TEMPERATURE DIFFERENCE CONTROL (NX-S11)

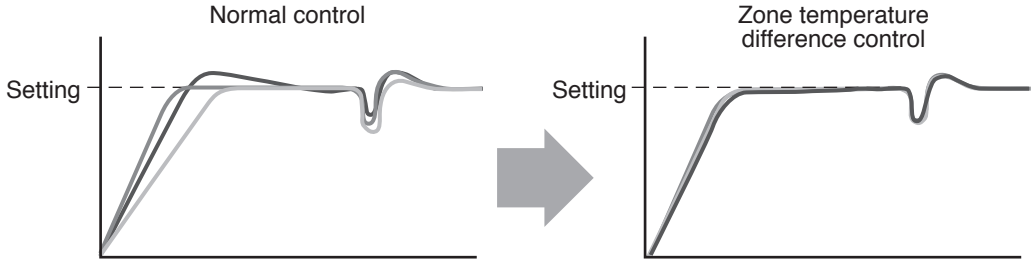
6 - 1 What is “Zone temperature difference control”?

■ Overview

In the case of multiple control loops, interference is eliminated and the temperature difference is constantly controlled if the temperature rises or if there is a disturbance. This is very helpful for energy conservation and for improvement of yield through improved product quality.

Feature 1: Zone temperature difference control algorithms are separated from PID control, so the conventional method can still be used for PID adjustment of each control loop.

Feature 2: There are 2 types of adjustment parameters for zone temperature difference control: performance tuning parameters and effect tuning parameters.



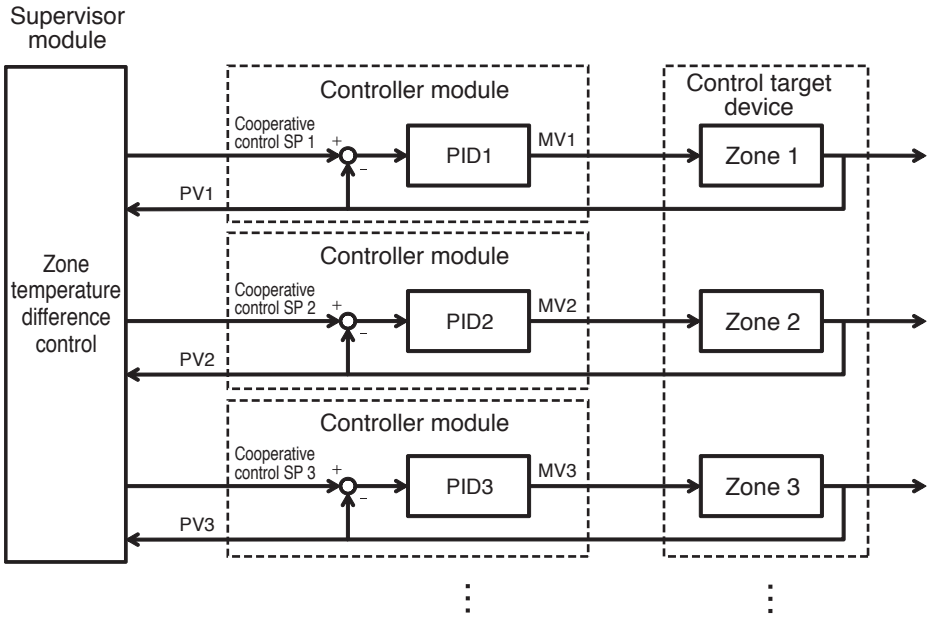
■ Effects

If the unit generates heat with a heater, degradation of quality due to resulting temperature differences, as well as damage, cracking, and other such production losses can be reduced.

6 - 2 Basic Operation

For control systems with two or more loops, control volume differences between each control loop are constantly maintained during control.
For initial value settings, zone temperature difference control calculates a standard control volume by taking the average control volume value of all control loops during each control cycle. The following option settings are also available.

- Max. deviation
  The deviation between the set point and current value uses the largest loop's control volume as a standard control volume. A standard control volume is selected during each control cycle.
- Reference loop assignment
  A standard control loop is assigned by the user, and zone temperature difference control is calculated.



Handling Precautions

- Zone temperature difference control does not work for controller module heat/cool control.

6 - 3 Setting Parameters

The following is a list of setup items for zone temperature difference control.
These are used to make changes during setup or operation of zone temperature difference control. The set point (SP) for each control loop of zone temperature difference control is set to controller modules.

Parameter name	Meaning	Setting	Initial value
Operation mode setting	Zone temperature difference control's cooperative operation Set a mode	0: Stop 1: Independent operation (AUTO) * 2: Cooperative operation 3: Independent operation (MANUAL) 4: Individual loop operation	2: Cooperative operation
Error mode release	Cancel zone temperature difference control's error mode	0: Do not cancel 1: Cancel	0: Do not cancel
Action in error mode	This will set an operation when an error occurs for loops within a control group.	0: Stop all loops 1: Operate all loops independently *	0: Stop all loops
Recovery action from error mode	If loop errors within a control group have been resolved, this operation is set when preparations have been made for normal operation.	0: Manual 1: Automatic	0: Manual
Zone temperature difference control mode	Assign a method for determining zone temperature difference control's standard PV value	0: Average PV value 1: Reference loop assignment 2: Max. deviation PV	0: Average PV value
Reference loop assignment	Assigns a loop as the reference loop, if [Reference loop assignment] is selected for zone temperature difference control.	From 1 to the # of loops in control group	1
SP filter time constant	A first-order lag filter is applied to the SP that is output by zone temperature difference control.	0.0 to 3200.0 s	0.0
Effect tuning parameter	The PV change of all control loops is slowed down, which makes it easier for PV differences between each loop to approach predefined values.	0.01 to 1.00	0.30
Invalid range in mode 3	By setting to "Invalid range in mode 3", standard PV switches to the average value PV, which prevents control disorder.	0.00 to 100.00	0.00
Changing rate in mode 3	A filter time constant which prevents control disorder by switching the [Max. deviation PV].	0.0 to 320.0 s	0.0
Performance tuning parameters 1 ~ 32	Factors for adjusting control response speed in order to maintain a constant temperature difference between each loop.	0.00 to 10.00	3.00

* All control loops will use each control loop unit's PID to control toward the target value.

■ Operation mode setting

This will set the zone temperature difference control's cooperative operation mode.
The following operation modes are available for zone temperature difference control.

Operation mode setting	Operation content
Stop	All loops within a control group are set to READY mode, and zone temperature difference control is not performed. Each controller module's control loops operate in READY + AUTO mode.
Independent operation (AUTO)	All loops within a control group are set to independent operation mode, and zone temperature difference control will not run. Each controller module's control loops perform control independently in RUN + AUTO mode.
Cooperative operation	All loops within a control group are set to cooperative operation mode, and zone temperature difference control will run. The loops of each controller module run in RUN + AUTO mode, and control is performed according to cooperative SP set from zone temperature difference control.
Independent operation (MANUAL)	All loops within a control group are set to MANUAL mode, and zone temperature difference control will not run. Each controller module's control loops perform output independently in RUN + MANUAL mode.
Individual loop operation	All control loops in the control group maintain the current loop mode and do not execute zone temperature difference control. Each controller module's control loop operates individually in the mode specified by the user.

! Handling Precautions

- Individual loop operation can be used with a combination of supervisor module ROM version 1.02 (available in April, 2011) or later and controller module ROM version 2.02 (available in April, 2011) or later.
- If a control group includes a control loop that is not compatible with individual loop operation, an attempt to change the group's operation mode to individual loop operation will fail, and the mode will return to the previous one.
- During multi-loop control, do not change the loop mode (RUN/READY or AUTO/MANUAL) of the controller modules (except in the case of individual loop operation mode). Doing so may result in control error.

■ Error mode release

When [Recovery action from error mode] is set to [0: Manual], errors will occur for loops within the control group, and the mode will continue to operate in error even after errors have been resolved. By selecting [1: Cancel] to cancel error mode, zone temperature difference control can be reopened.
Once the error mode release process has completed, [Error mode release] will return to its initial value of [0: Do not cancel].

! Handling Precautions

- When setting [Error mode release] to [1: Cancel], Control Cycle 1 will return it to [0: Do not cancel]. Due to this action, sometimes it is impossible to check if it has been changed to [1: Cancel] via general monitor/host communication.

■ Action in error mode

This will set an operation when an error occurs for loops within a control group. Actions in error mode are available as follows.

Action in error mode	Operation content
Stop all loops	Zone temperature difference control is stopped, and all loops within a control group are set to READY mode. (Operation is the same as when operation mode setting is set to [Stop].)
Operate all loops independently *	Zone temperature difference control is stopped, and all loops within a control group are set to independent operation mode. (Operation is the same as when operation mode setting is set to [Independent operation (AUTO)].)

* All control loops will use each control loop unit's PID to control toward the target value.

■ Recovery action from error mode

If loop errors within a control group have been resolved, this operation is set when preparations have been made for normal operation.

Recovery action from error mode	Operation content
Manual	Error mode operation continues To reopen zone temperature difference control, error mode is cancelled externally.
Automatic	Zone temperature difference control is reopened automatically.

■ Zone temperature difference control mode

This mode is put into operation when following PV value, which is the zone temperature difference control's standard. There are three ways to determine this standard PV value, described as follows.

Zone temperature difference control mode	Operation content
PV average value	The PV average value is set as a standard for all loops in a control group.
Reference loop assignment	PV from the assigned loops is set as a standard.
Max. deviation PV	Deviation sets the largest loop PV as a standard.

■ Reference loop assignment

When [Reference loop assignment] is selected for zone temperature difference control mode, standard control loops are assigned.

■ SP filter time constant

A first-order lag filter is applied to the cooperative SP that is output by zone temperature difference control. A time constant is set to "SP filter time constant".

■ Effect tuning parameter

The PV change of all control loops is slowed down, which makes it easier for PV differences between each control loop to approach predefined values.

! Handling Precautions

- By lowering the effect tuning parameter, control loop PV differences can more easily approach predetermined values, but set values are tracked down more slowly as a result.
- By raising the effect tuning parameter, set values are tracked down more quickly, but discrepancies arise in control loop PV response.

■ Invalid range in mode 3

When zone temperature difference control mode is set to [Max. deviation PV], the max. deviation PV is selected as the standard PV during each control cycle.
When the deviation becomes relatively low, control is no longer steady at times due to the max. deviation PV switching during each control cycle.
By setting to “Invalid range in mode 3”, standard PV switches to the average value PV, which prevents control disorder.
When deviation is higher than the “Invalid range in mode 3” value, max. deviation PV is operated as standard PV, but when deviation drops lower than the “Invalid range in mode 3” value, the average PV value is used as standard PV.

■ Changing rate in mode 3

When zone temperature difference control mode is set to [Max. deviation PV], control might quickly change when standard PV switches during each control cycle.
[Changing rate in mode 3] is a first-order lag filter time constant for relaxing the sudden changes during control. By making the [Changing rate in mode 3] value higher, change will be relaxed due to switching of the standard PV.

! Handling Precautions

- If the [Changing rate in mode 3] is made too high, discrepancies will increase for each control loop PV.

■ Performance tuning parameter

As the set value gets higher, the control response used to maintain a constant temperature difference between each loop will speed up, and the PV differences between each loop will approach predetermined values.

! Handling Precautions

- If the adjustment factor gets too high, control will become unstable at times.

6 - 4 Operation Status Parameters

■ Group operation status

Indicates the operation status of control groups for zone temperature difference control.

Parameter name	Meaning	Setting
Error code	A number that indicates which error has occurred during zone temperature difference control.	The error code (Chapter 15. TROUBLESHOOTING) is “0” when no error has occurred.
No. of control loops in a group	The number of loops that belong to a control group.	
Standard loop	A standard loop of the zone temperature difference control.	The standard control loop number is “0” when ■ Zone temperature difference control mode (page 6-5) is set to [0: Average PV value].
Operation status	The current operation status for zone temperature difference control.	0: Normal 1: Error

■ Control loop operation status

Indicates the status of each control loop belonging to a control group.
Each control loop belonging to a control group has a single pair of parameters as shown below.

Parameter name	Meaning	Setting
SP (local)	The SP value currently used by control loops.	The SP value currently used for control, which was filter-processed and written in from the zone temperature difference control. Entered from controller module
PV (local)	Control loop PV value	Entered from controller module’s PV
Cooperative control SP	Zone temperature difference control calculation results	Output to controller module’s cooperative SP

6 - 5 Operation During Error/Restoration

■ Error types

When the zone temperature difference control's cooperative operation mode is running, the following errors may occur.

- Connection module error
  When communication with controller modules is disconnected.
- Controller module error
  When the following error within a controller module is accepted by the supervisor module as an entry.
  - Hard failure
  - Soft failure

! Handling Precautions

- The error code when multiple errors have occurred follows the order of precedence described here.
  - Connected module error
  - Controller module error
    - Hard failure
    - Soft failure

■ Operation when an error occurs

Operation is performed as follows when an error occurs.

- Set the applicable error code as described in [Error code] parameters (page 6-7)
- Set [1: Error] for [Operation status] parameters (page 6-7)
- Stop zone temperature difference control
- Follow the settings for ■ Action in error mode(page 6-5), then set controller module operation to [0: Stop all loops] or [1: Operate all loops independently].

Controller modules operate differently depending on whether an error is caused by a connected module or by a controller module. Differences in operation are shown below.

Action in error mode	Stop all loops		Operate all loops independently	
Operation mode when error occurred	Stop, cooperative operation, or independent operation (AUTO)	Independent operation (MANUAL)	Stop, cooperative operation, or independent operation (AUTO)	Independent operation (MANUAL)
Controller module loop mode when error caused by connected module	READY AUTO	READY MANUAL	RUN AUTO	RUN MANUAL
Controller module loop mode when error caused by controller module	READY AUTO	READY AUTO	RUN AUTO	RUN AUTO

! Handling Precautions

- "Action in error mode" is given priority over "Operation mode setting." Therefore, if "Action in error mode" is set for [1: Operate all loops independently], all loops operate independently when an error occurs even if the operation mode setting is [0: Stop all loops]. However, if the operation mode setting is [4: Individual loop operation], the controller modules maintain their current loop mode even when an error occurs.

■ Operation when restoring to normal status

Once an error status has been resolved, follow settings for ■ Recovery action from error mode (page 6-5), for the following operation.

When parameters for [Operate during error mode restoration]

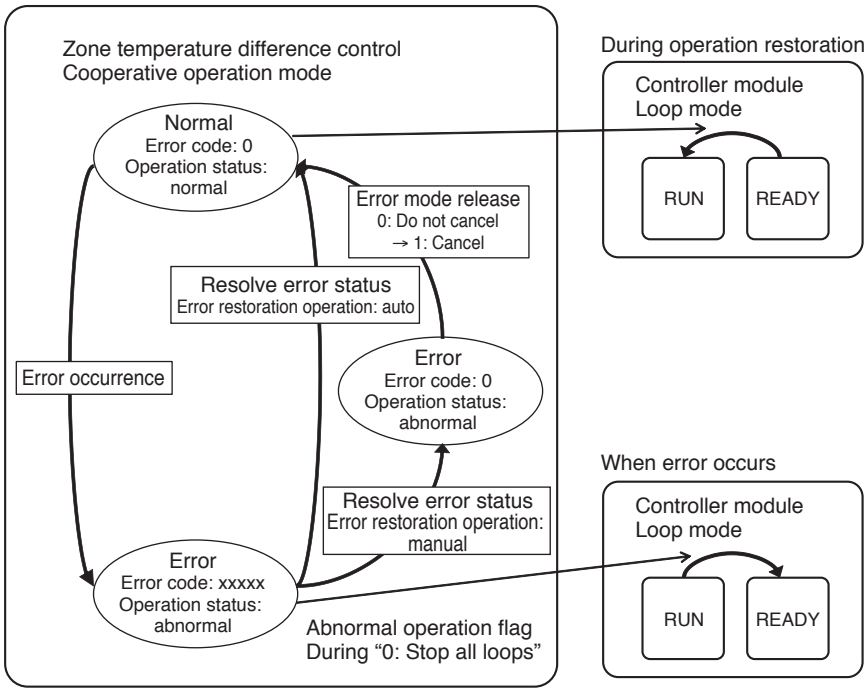
- are set to [0: Manual]
  Erroneous operation will continue even if error status has been resolved. By setting [Error mode release] to [1: Cancel], cooperative operation mode will be restored to the mode it was in before an error occurred.
- are set to [1: Auto]
  Once the error has been resolved, cooperative mode will automatically be restored to the mode it was in before an error occurred.

Handling Precautions

- When returning to normal status after an error occurs, the [Error code] parameter will return to 0. If you want to save the [Error code] parameter, prepare a process in which the applicable address is read and recorded.

■ Status change during error/restoration

Here is an illustration of when an error occurs during operation of the zone temperature difference control's cooperative operation mode.



Chapter 7. OPTIMUM STARTUP CONTROL (NX-S12)

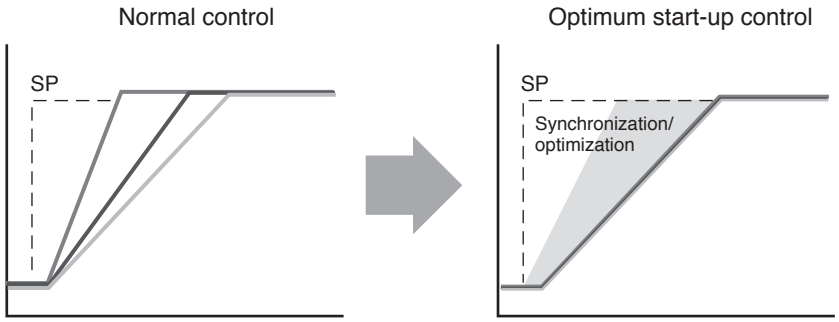
7 - 1 What is “Optimum start-up control”?

■ Overview

When fast and slow rising loops coexist in the same equipment or process, synchronized or optimized start-up control reduces energy losses.

Feature 1: Even if the set value differs for each loop, the timing at which set values are reached can be synchronized.

Feature 2: Even if the temperature at operation startup differs for each loop, the timing at which set values are reached can be synchronized.



■ Effects

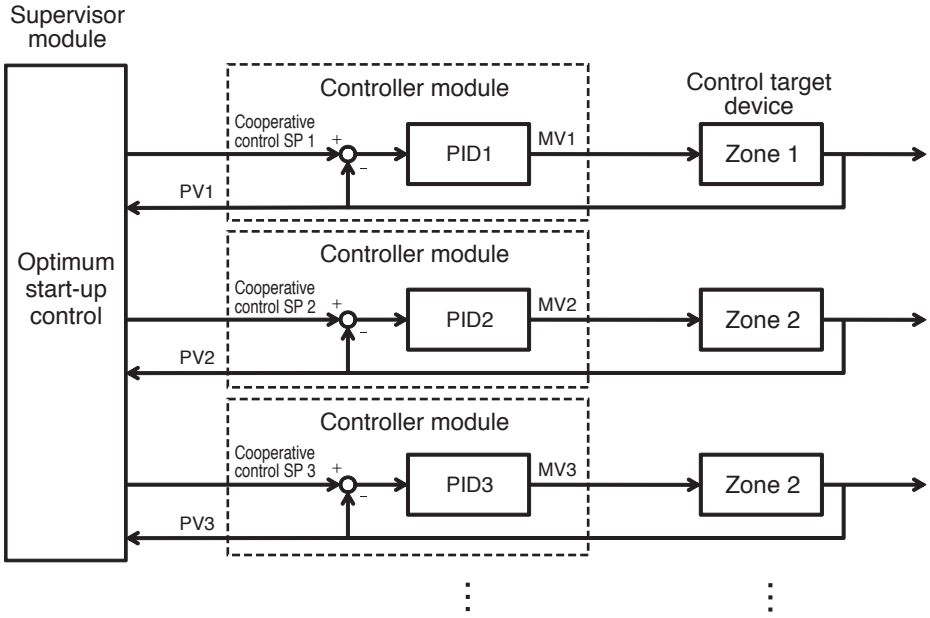
Think of a device that holds multiple control loops, while simultaneously performing step responses such as startup.

When such a device begins simultaneously performing step responses such as startup for multiple control loops, the quick startup control loops have to wait for the slow startup control loops to reach their set values, which is a waste of energy. When optimum start-up control is applied to such a case, each control loop is balanced to the slowest changing control loop, and then made to change. This reduces the amount of time quick changing control loops have to standby after completing their step responses.

For example, if the operation temperature rises due to a heater, a reduction in standby time at a high temperature will also reduce energy consumption, ultimately lowering environmental strain.

7 - 2 Basic Operation

When changing the set value with a control system of 2 or more loops, the rate of progress for each control loop's PV change (step response) is balanced with the slowest changing control loop.
At initial settings, the slowest changing control loop is automatically recognized during step response at every control cycle, and the control volume is made uniform in speed to that control loop. If the slowest changing control loop is already known, that loop can be assigned.



Handling Precautions

- Optimum start-up control does not work for controller module heat/cool control.

7 - 3 Setting Parameters

The following is a list of setup items for optimum start-up control.
These are used to make changes during setup or operation of optimum start-up control. The set point (SP) for each control loop used for optimum start-up control is set to controller modules.

Parameter name	Meaning	Setting	Initial value
Operation mode setting	This will set the optimum start-up control's cooperative operation mode.	0: Stop 1: Independent operation (AUTO) * 2: Cooperative operation 3: Independent operation (MANUAL) 4: Individual loop operation	2: Cooperative operation
Error mode release	This will cancel the optimum start-up control's error mode.	0: Do not cancel 1: Cancel	0: Do not cancel
Action in error mode	This will set an operation when an error occurs for loops within a control group.	0: Stop all loops 1: Operate all loops independently *	0: Stop all loops
Recovery action from error mode	If loop errors within a control group have been resolved, this operation is set when preparations have been made for normal operation.	0: Manual 1: Automatic	0: Manual
Optimum start-up control mode	Determines the standard control loop for optimum start-up control.	0: Automatic 1: Reference loop assignment	0: Automatic
Reference loop assignment	Assigns a loop as the reference loop if [Reference loop assignment] is selected for optimum start-up control.	From 1 to the # of loops in control group	1
SP filter time constant	A first-order lag filter time constant is applied to the cooperative SP that is output by optimum start-up control.	0.0 to 3200.0 s	0.0
Step response progress correction amount	Optimum start-up control factor which determines the max. change volume per cooperative SP control cycle output by loops belonging to controller modules.	0.01 to 1.00	0.10
Set value step input modifiable range	Optimum start-up control sets the step input change range for enabled set values.	0.00 to 100.00	0.00

* All control loops will use each control loop unit's PID to control toward the target value.

■ Operation mode setting

This will set the optimum start-up control's cooperative operation mode. The following operation modes are available for optimum start-up control.

Operation mode setting	Operation content
Stop	All loops within a control group are set to READY mode, and optimum start-up control will not run. Each controller module's control loops operate in READY + AUTO mode.
Independent operation (AUTO)	All loops within a control group are set to independent operation mode, and optimum start-up control will not run. Each controller module's control loops perform control independently in RUN + AUTO mode.
Cooperative operation	All loops within a control group are set to cooperative operation mode, and optimum start-up control will run. The loops of each controller module run in RUN + AUTO mode, and control is performed according to cooperative SP set from optimum start-up control.
Independent operation (MANUAL)	All loops within a control group are set to MANUAL mode, and optimum start-up control will not run. Each controller module's control loops perform output independently in RUN + MANUAL mode.
Individual loop operation	All control loops in the control group maintain the current loop mode and do not execute zone temperature difference control. Each controller module's control loop operates individually in the mode specified by the user.

! Handling Precautions

- Individual loop operation can be used with a combination of supervisor module ROM version 1.02 (available in April, 2011) or later and controller module ROM version 2.02 (available in April, 2011) or later.
- If a control group includes a control loop that is not compatible with individual loop operation, an attempt to change the group's operation mode to individual loop operation will fail, and the mode will return to the previous one.
- During multi-loop control, do not change the loop mode (RUN/READY or AUTO/MANUAL) of the controller modules (except in the case of individual loop operation mode). Doing so may result in control error.

■ Error mode release

When [Recovery action from error mode] is set to [0: Manual], errors will occur for loops within the control group, and the mode will continue to operate in error even after errors have been resolved. By selecting [1: Cancel] to cancel error mode, multi-loop cooperative control can be reopened.
Once the error mode release process has completed, [Error mode release] will return to its initial value of [0: Do not cancel].

! Handling Precautions

- When setting [Error mode release] to [1: Cancel], Control Cycle 1 will return it to [0: Do not cancel].Due to this action, sometimes it is impossible to check if it has been changed to [1: Cancel] via general monitor/host communication.

■ Action in error mode

This will set an operation when an error occurs for loops within a control group. Actions in error mode are available as follows.

Action in error mode	Operation content
Stop all loops	Optimum start-up control is stopped, and all loops within a control group are set to READY mode. (Operation is the same as when operation mode setting is set to [0: Stop].)
Operate all loops independently *	Optimum start-up control is stopped, and all loops within a control group are set to independent operation mode. (Operation is the same as when operation mode setting is set to [1: Independent operation (AUTO)].)

* All control loops will use each control loop unit's PID to control toward the target value.

■ Recovery action from error mode

If loop errors within a control group have been resolved, this operation is set when preparations have been made for normal operation.

Recovery action from error mode	Operation content
Manual	Error mode operation continues To reopen optimum start-up control, error mode is cancelled externally.
Automatic	Optimum start-up control is reopened automatically.

■ Optimum start-up control mode

Optimum start-up control takes the slowest control loop operating within the control group during step response, and makes it the standard loop. There are two ways to select this standard loop: [Automatic] and [Reference loop assignment].

Optimum start-up control mode	Operation content
Automatic	The slowest operating control loop is automatically selected as the standard loop. Standard loop selection is performed during every control cycle.
Reference loop assignment	The assigned control loop is made into the standard loop.

■ Reference loop assignment

When [Reference loop assignment] is selected for optimum start-up control mode, a standard control loop is assigned.

■ SP filter time constant

A first-order lag filter is applied to the cooperative SP that is output by optimum start-up control.
A time constant is set to “SP filter time constant”.

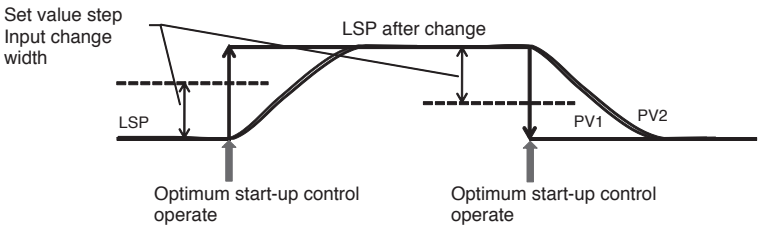
■ Step response progress correction amount

Optimum start-up control is a factor which determines the max. change volume per cooperative SP control cycle, which is output by control loops within controller modules.
Lowering this factor will relax the PV change of all control loops, making it easier to balance startup time.

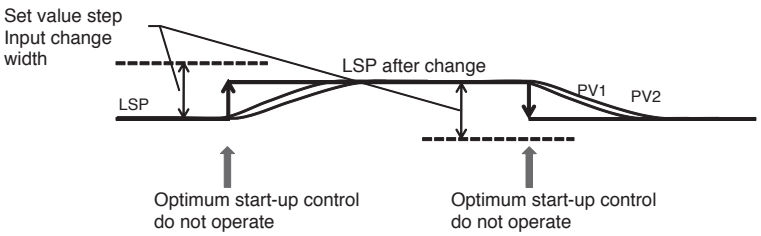
■ Set value step input modifiable range

Optimum start-up control sets the step input change range for enabled set values. If the set value of any loop within a control group increases or decreases from outside of the [Set value step input modifiable range], optimum start-up control will begin to operate. For set value changes lower than the [Set value step input modifiable range], control is performed by controller modules, as each control loop’s normal set value change.

• When the set SP change width is higher than the [Set value step input modifiable range]:



• When the set SP change width is lower than the [Set value step input modifiable range]:



7 - 4 Operation Status Parameters

■ Group operation status

Indicates the operation status of control groups for optimum start-up control.

Parameter name	Meaning	Setting
Error code	The number indicating which error is occurring for optimum start-up control.	The error code (Chapter 15. TROUBLESHOOTING) The number is “0” when no error is occurring.
No. of control loops in a group	The number of loops that belong to a control group.	
Standard loop	The standard loop for optimum start-up control.	The standard loop’s loop number
Operation status	Current optimal startup temperature difference control operational status.	0: Normal 1: Error

■ Control loop operation status

Indicates the status of each control loop belonging to a control group.

Each control loop belonging to a control group has a single pair of parameters as shown below.

Parameter name	Meaning	Setting
SP (local)	The SP value currently used by control loops.	The SP value currently used for control, which was filter-processed and written in from optimum start-up control.
PV (local)	Control loop PV value	Entered from controller module’s PV
Cooperative control SP	Optimum start-up control calculation results	Output to controller module’s cooperative SP

7 - 5 Operation During Error/Restoration

■ Error types

When the optimum start-up control's cooperative operation mode is running, the following errors may occur.

- Connected module error
  When communication with controller modules is disconnected.
- Controller module error
  When the following error within a controller module is accepted by the supervisor module as an entry.
  - Hard failure
  - Soft failure

! Handling Precautions

- The error code when multiple errors have occurred follows the order of precedence described here.
  - Connected module error
  - Controller module error
    - Hard failure
    - Soft failure

■ Operation when an error occurs

Operation is performed as follows when an error occurs.

- Set the applicable error code as described in [Error code] parameters (page 7-7)
- Set [1: Error] for [Operation status] (page 7-7)
- Stopping optimum start-up control
- Follow the "■ Action in error mode" (page 7-5) settings, and set controller module operation to [0: Stop all loops] or [1: Operate all loops independently].

Controller modules operate differently depending on whether an error is caused by a connected module or by a controller module. Differences in operation are shown below.

Action in error mode	Stop all loops		Operate all loops independently	
Operation mode when error occurred	Stop, cooperative operation, or independent operation (AUTO)	Independent operation (MANUAL)	Stop, cooperative operation, or independent operation (AUTO)	Independent operation (MANUAL)
Controller module loop mode when error caused by connected module	READY AUTO	READY MANUAL	RUN AUTO	RUN MANUAL
Controller module loop mode when error caused by controller module	READY AUTO	READY AUTO	RUN AUTO	RUN AUTO

! Handling Precautions

- "Action in error mode" is given priority over "Operation mode setting." Therefore, if "Action in error mode" is set for [1: Operate all loops independently], all loops operate independently when an error occurs even if the operation mode setting is [0: Stop all loops]. However, if the operation mode setting is [4: Individual loop operation], the controller modules maintain their current loop mode even when an error occurs.

■ Operation when restoring to normal status

- Once an error status has been resolved, follow settings for ■ Recovery action from error mode (page 7-5), for the following operation.

When parameters for [Recovery action from error mode]

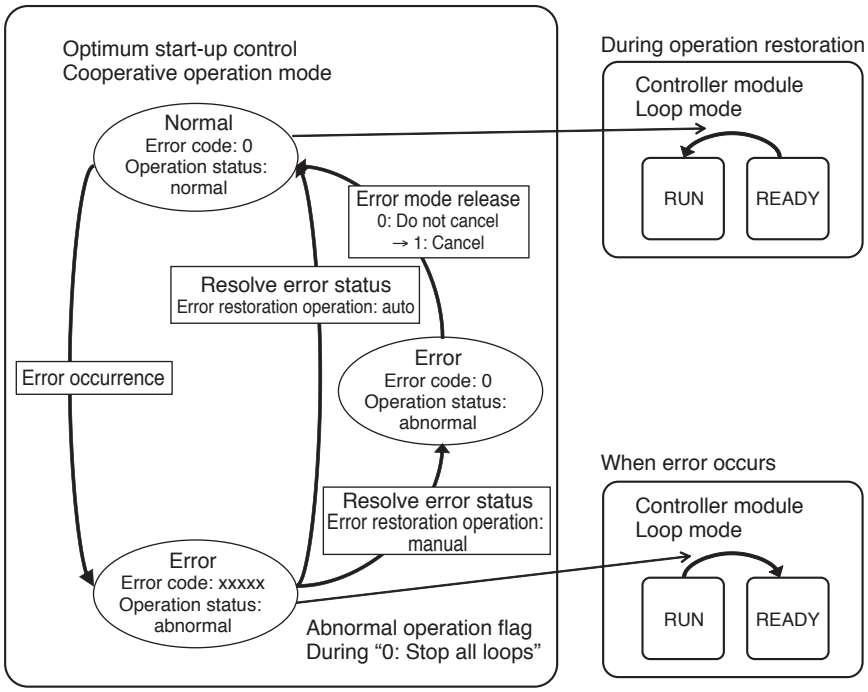
- are set to [0: Manual]
  Erroneous operation will continue even if error status has been resolved. By setting the [Error mode release] parameter to [1: Initialize], cooperative operation mode will be restored to the mode it was in before an error occurred.
- When set to [1: Auto]
  Once the error has been resolved, cooperative mode will automatically be restored to the mode it was in before an error occurred.

Handling Precautions

- When returning to normal status after an error occurs, the [Error code] parameter will return to 0.If you want to save the [Error code] parameter, prepare a process in which the applicable address is read and recorded.

■ Status change during error/restoration

Here is an illustration of when an error occurs during operation of the optimum start-up control's cooperative operation mode.



Chapter 8. PEAK POWER SUPPRESSION CONTROL (NX-S21)

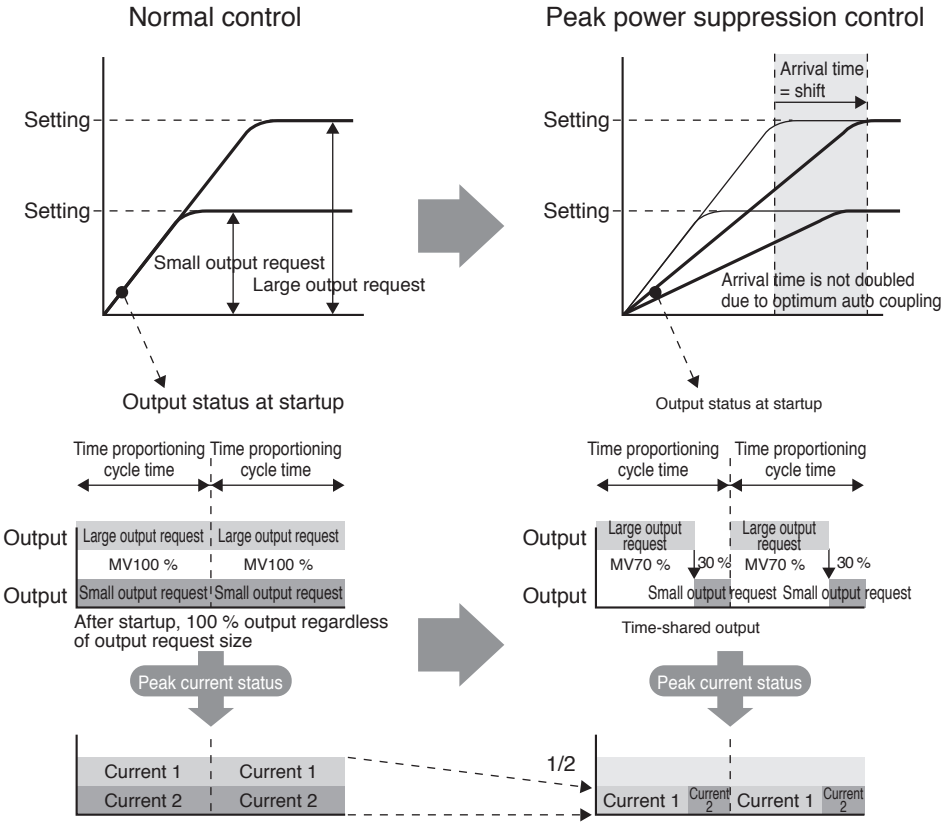
8 - 1 What is “Peak power suppression control”?

■ Overview

This function controls peak power by means of time-sharing of outputs from 2 control loops within the time proportional output cycle time.
Peak power suppression control calculation selects the optimal loop combination from multiple loops. Peak power for heating at start-up is dramatically reduced (up to 50 %).

Feature 1: A time-serialed control loop combination is able to automatically couple optimal combinations via the supervisor module.
By combining a high-output requiring loop with a low-output requiring loop, peak power suppression during device startup can be executed effectively.

Feature 2: As with the energy conservation time proportional operation of controller modules, cooperative operation is performed between control loops within the module, but is also performed via control loop combination throughout the controller modules.
This makes it possible to review module positioning without dealing with hardware limitations.



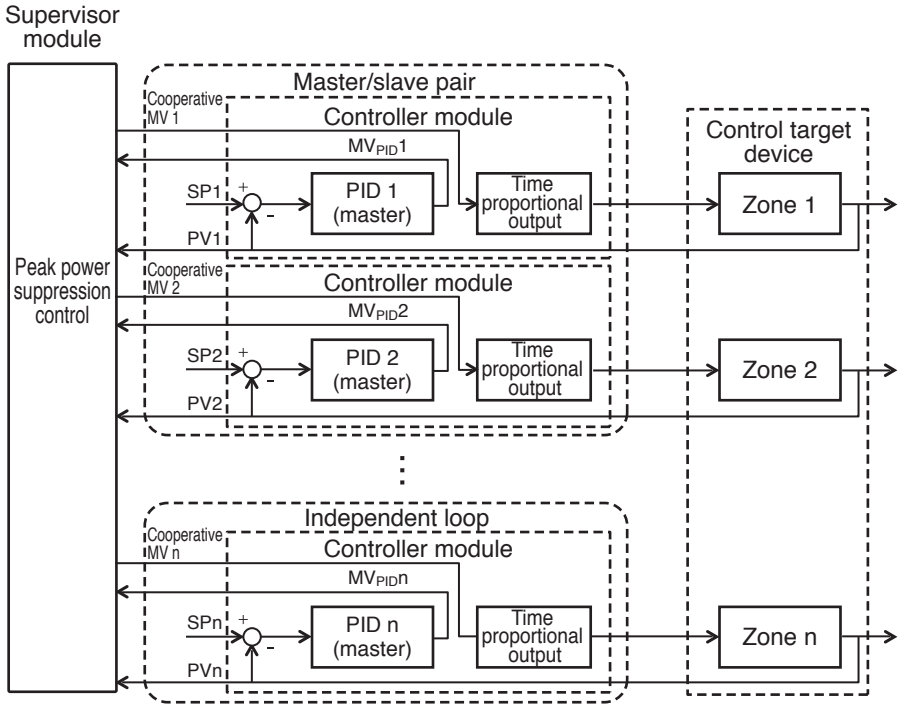
■ Effects

For example, think of a control system that provides time proportioning output to a 400 W electric heater, which has 2 loops within a single device.
And while you do not want to decrease the controllability of one control loop in the device (the master loop), the other loop doesn't need to be focused on a great deal (the slave loop).
By applying peak power suppression control to such a case, control is possible for 2 loops within a total MV output of 100%, and within 400 W.

8 - 2 Basic Operation

Control is performed with the value assigned as total MV output for 2 loops. In addition, a good control status is maintained for high-priority loops. When 3 or more loops are present, total MV output is limited to loops in pairs of 2.

If there is an odd number of loops present, control is performed independently for control loops with max. output requirement, and the remaining control loops are paired into groups of 2.



Handling Precautions

- Control via peak power suppression control is possible once the supervisor module's power is turned ON, and preparation between the supervisor module and controller modules is complete. Please note that cooperative control preparations between the supervisor module and controller modules can take up to 1 minute.
- If an error occurs for loops within the control group, peak power suppression control stops, and all loops within the control group are set to READY mode.
- Peak power suppression control can be used with transistor output-type controller modules.
- Peak power suppression control cannot be used for controller module heat/cool control.
- Set the controller module's time proportional cycle to 2 s or more.
- Set the time proportional output's minimum ON/OFF time to 10 ms or more. If the wrong settings are made, the time proportional output for master control loop and slave control loop will be ON simultaneously at times.
- Make sure not to set the energy conservation delay time at a lower value than the minimum ON/OFF time. If the wrong settings are made, the output for master loop and slave loop will be ON simultaneously at times.

8 - 3 Setting Parameters

The following is a list of setup items for peak power suppression control.
These are used to make changes during setup or operation of peak power suppression control.

Parameter name	Meaning	Setting	Initial value
Operation mode setting	This will set the peak power suppression control's cooperative operation mode.	0: Stop 1: Independent operation (AUTO) * 2: Cooperative operation 3: Independent operation (MANUAL) 4: Individual loop operation	2: Cooperative operation
Error mode release	This will cancel the peak power suppression control's error mode.	0: Do not cancel 1: Cancel	0: Do not cancel
Recovery action from error mode	If loop errors within a control group have been resolved, this operation is set when preparations have been made for normal operation.	0: Manual 1: Automatic	0: Manual
Coupling assignment	Performs coupling. After coupling is complete, returns to [0: Coupling not performed].	0: Coupling not performed 1: Coupling performed	0: Coupling not performed
Total MV limit	The max. total limit value for master/slave loop MV.	0.0 ~ 100.0	100.0
MV dividing rate	The distribution rate for master/slave loop MV.	0.00 ~ 1.00	0.80
MV change pace	A factor which eases the vibration caused during the update process for output limit value.	0.0 ~ 320.0	10.0
Time proportional output Offset	An offset for the time proportioning output start time of each pair	Offset time 0 ~ 60000 ms	0
Heating capability rates 1 ~ 32	Heating capability rates (HC) for coupling evaluation calculation.	0.00 ~ 10.00	1.00
Basic heating capability 1 ~ 32	Heat-up temp capability offsets (HO) for coupling evaluation calculation.	–1999.9 ~ 3200.0	0.0

* All control loops will use each control loop unit's PID to control toward the target value.

■ Operation mode setting

This will set the peak power suppression control's cooperative operation mode.
The following operation modes are available for peak power suppression control.

Operation mode setting	Operation content
Stop	All loops within a control group are set to READY mode, and peak power suppression control will not run. Each controller module's control loops operate in READY + AUTO mode.
Independent operation (AUTO)	All loops within a control group are set to independent operation mode, and peak power suppression control will not run. Each controller module's control loops perform control independently in RUN + AUTO mode.
Cooperative operation	All loops within a control group are set to cooperative operation mode, and peak power suppression control will run. The loops of each controller module run in RUN + AUTO mode, and control is performed according to cooperative SP set from multi-loop cooperation control.
Independent operation (MANUAL)	All loops within a control group are set to MANUAL mode, and peak power suppression control will not run. Each controller module's control loops perform output independently in RUN + MANUAL mode.
Individual loop operation	All control loops in the control group maintain the current loop mode and do not execute peak power suppression control. Each controller module's control loop operates individually in the mode specified by the user.

! Handling Precautions

- Operation mode setting's [Operation status] parameter can only be changed when set to [0: Normal].
- In an operation mode other than cooperative operation, time proportioning outputs are all set to the master. When MV is anything other than 0.0 % in independent operation (AUTO) and independent operation (MANUAL) modes, time proportioning outputs will be ON, which means loop power will occasionally be consumed for several minutes.
- If the operation mode is changed and at the same time "Coupling assignment" is set to operate, coupling execution will be cancelled.
- Individual loop operation can be used with a combination of supervisor module ROM version 1.02 (available in April, 2011) or later and controller module ROM version 2.02 (available in April, 2011) or later.
- If a control group includes a control loop that is not compatible with individual loop operation, an attempt to change the group's operation mode to individual loop operation will fail, and the mode will return to the previous one.
- During multi-loop control, do not change the loop mode (RUN/READY or AUTO/MANUAL) of the controller modules (except in the case of individual loop operation mode). Doing so may result in control error.

■ Error mode release

When [Recovery action from error mode] is set to [0: Manual], errors will occur for control loops within a group, and the mode will continue to operate in error even after errors have been resolved. By selecting [1: Cancel] to cancel error mode, peak power suppression control can be reopened. Once the error mode release process has completed, [Error mode release] will return to its initial value of [0: Do not cancel].

! Handling Precautions

- When setting [Error mode release] to [1: Cancel], Control Cycle 1 will return it to [0: Do not cancel].Due to this action, sometimes it is impossible to check if it has been changed to [1: Cancel] via general monitor/host communication.

■ Recovery action from error mode

If loop errors within a control group have been resolved, this operation is set when preparations have been made for normal operation.

Recovery action from error mode	Operation content
Manual	Error mode operation continues To reopen peak power suppression control, error mode is cancelled externally.
Automatic	Peak power suppression control is reopened automatically.

■ Coupling assignment

Peak power suppression control divides loops within the control group into pairs of 2, and the total MV of each pair is controlled so that it cannot surpass the total output limit. N-loop control groups will be ranked according to those control loops with the highest evaluation values, in the following combinations:

Number 1 and N-rank
Number 2 and N-1 rank

Each loop's evaluation value will be listed in the following style:

$En = HCn \times (SPn - PVn) + HOn$

n : loop No.
E: Evaluation value
HC : Heating capability rate
HO: Heat-up capability offset
SP: Set value
PV: Control volume

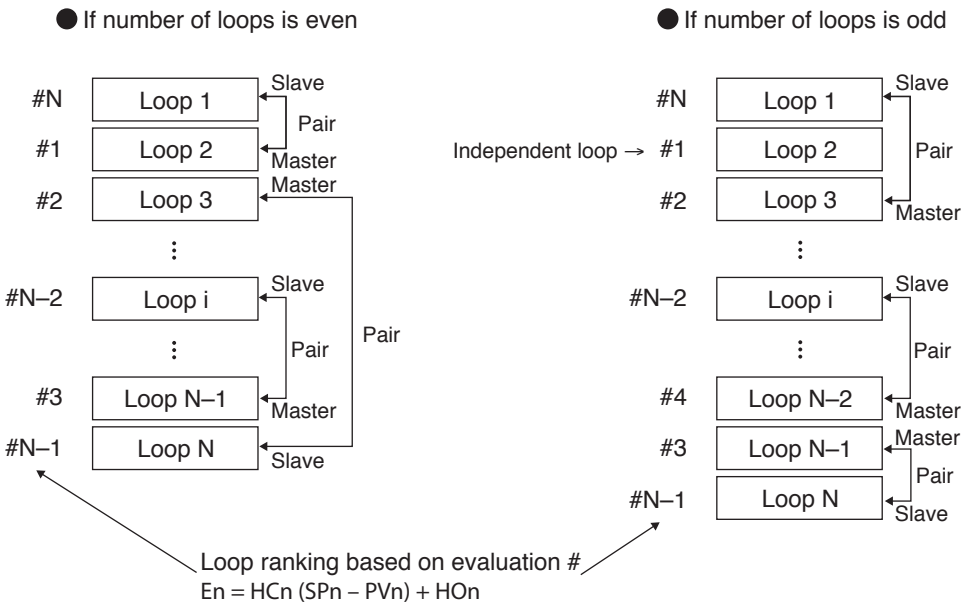
High-ranking control loops within a pair are master loops, and low-ranking control loops are slave loops. Master loop output turns on from the start of the time proportional cycle. Slave loop output turns ON after master loop output is turned OFF. This operation cycle makes it impossible for both master and slave loops in a pair to be ON simultaneously.

If there is an odd number of loops belonging to the control group, the loop ranked number 1 is an independent loop. Also, the independent loop is treated as a master loop, so the max. output limit is determined according to the [total output limit value].

Before coupling is performed for the first time, loops are registered according to rank.

By setting the [Coupling execution switch] parameter of a device with 3 or more control loops to "1" (perform coupling), master/slave loop pairs will each be changed based on their loop evaluation values. When 2 loops are used, master/slave will change at times according to the evaluation value.

In that case, control will resume for the loops of controller modules, and control loops will start to change pairs.



Handling Precautions

- If the operation mode is set to [2: Cooperative operation], the MV output stays at 0.0 % for about 2 seconds after coupling due to updating of master and slave settings (etc.) for the time proportional output of the controller modules.
- If the operation mode becomes abnormal during coupling, coupling is cancelled (including individual loop operation).
- If the operation mode is changed and at the same time "Coupling execution switch" is set to operate, coupling will be cancelled.

Note

- In operation modes other than [2: Cooperative operation], any MV outputs that are set for a master are not limited.
- Loop ranks calculated according to coupling will also be saved when power is OFF.
- If peak power suppression control is executed properly, coupling is possible regardless of the operation mode: stop, independent operation (AUTO), cooperative operation, independent operation (MANUAL), or individual loop operation.

■ Total MV limit

Set the total MV limit value for master/slave loop pairs.

■ MV dividing rate

Sets the rate of output distribution of the master loop to slave loop. The setting range is 0.00 (master loop output max. priority rate) to 1.00 (master loop output min. priority rate).

■ MV change pace

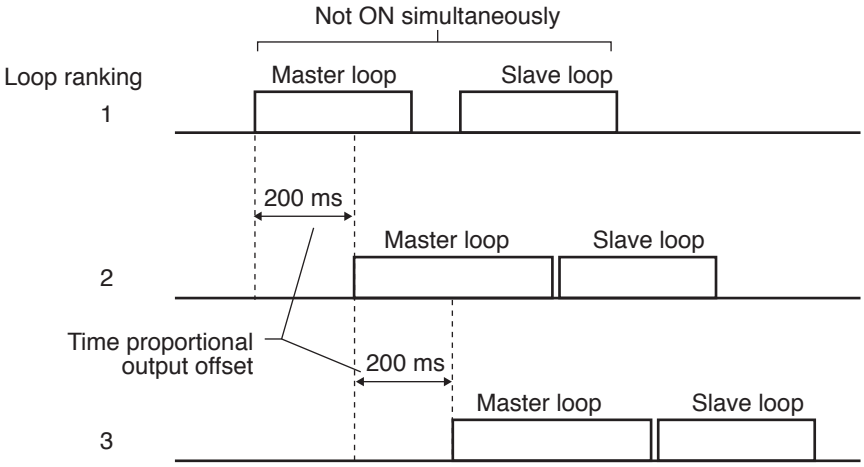
Suppresses the vibration that occurs when the master/slave output limit value is updated during each control calculation cycle for peak power suppression control. Making this factor high will relax the movement generated by the master/slave loop output limit value.

Handling Precautions

- Making this factor too high will slow down slave loop response. Making it too low will render control unstable at times.
- Normally it should be used with the initial setting value. If control becomes unstable at the initial setting value, you should make the MV change pace higher.

■ Time proportional output offset

Sets offset in milliseconds for the starting time of time proportioning output for each control loop pair. For example, when setting the time proportional output offset to 200 ms, 200 ms after master loop No. 1 outputs, master loop No. 2 will begin output, and 200 ms after that, master loop No.3 will begin output, and so on. Since a slave loop is set to the same offset as the master loop it is paired with, master and slave loops will not output ON simultaneously.



Time proportional output offset is enabled after going through the following process.

- Startup after power is turned ON
- Initialization of peak power suppression control
- Coupling
- Transition from cooperative operation to independent operation (AUTO), stop, and independent operation (MANUAL) modes.
- Transition from independent operation (AUTO), stop, and independent operation (MANUAL) modes to cooperative operation.

■ Heating capability rate

Set the heating capability rate (HC) of control loop evaluation calculation performed during master and slave loop coupling (page 8-5).When coupling evaluation calculation is to be performed, this adjustment parameter is for absorbing the difference between each loop's heat-up temp capability.
Each control loop belonging to a peak power suppression control group can be set.

■ Basic heating capability

Set the heat-up temp capability offset (HO) of control loop evaluation calculation performed during master and slave loop coupling (page 8-4).By adding an offset to the coupling evaluation value, this parameter can always be set as the highest or lowest evaluation value of a certain loop.
Each control loop belonging to a peak power suppression control group can be set.

8 - 4 Operation Status Parameters

■ Group operation status

Indicates the operation status of control groups for peak power suppression control.

Parameter name	Meaning	Setting
Error code	A number that indicates which error is occurring for peak power suppression control.	Error code (Chapter 15. TROUBLESHOOTING) The number is “0” when no error is occurring.
No. of control loops in a group	The number of loops that belong to a control group.	
Independent loop	An independent loop during peak power suppression control.	The independent control loop’s loop number
Operation status	Current operation status of peak power suppression control.	0: Normal 1: Error 2: Wait for cooperative control preparation to complete 3: Wait for output initialization to complete

! Handling Precautions

- The status of [Operation status] → [2: Wait for cooperative control preparation to complete], after device operation mode transitions to RUN during supervisor module startup, is a “wait” status for peak power suppression control’s cooperative control preparation with controller modules. Peak power suppression control will not operate during this status. Please note that cooperative control preparations between the supervisor module and controller modules can take up to 1 minute.
- The status of [Operation status] → [3: Wait for output initialization to complete], is a “wait” status during the time proportioning output’s restart process, which is performed by controller modules during coupling (page 8-3) or transition to cooperative operation (page 8-4).
  In order to reliably perform the startup process, a wait time of about 2 seconds has been provided for peak power suppression control. Peak power suppression control calculation and control group PIC control calculation will continue while waiting for time proportioning output to restart, and only the MV which is automatically output to control groups will be set to 0.0 %.

■ Control loop operation status

Indicates the status of each control loop belonging to a control group.
Each control loop belonging to a control group has a single pair of parameters as shown below.

Parameter name	Meaning	Setting
MV low limit	The MV low limit set for controller modules	Entered from controller module’s OL
MV high limit	The MV high limit set for controller modules	Entered from controller module’s OH
SP (local)	The SP value currently used by control loops.	The SP value currently used for control, which was filter-processed and written in from the multi-loop cooperation control. Entered from controller module
PV (local)	Control loop PV value	Entered from controller module’s PV
Loop evaluation value	The evaluation value for coupling calculation (page 8-5)	
MV output limit	Each loop’s MV output limit is calculated via peak power suppression control calculation.	
Cooperative control MV	MV which is output by the controller module’s control group time proportioning output from peak power suppression control.	
Ranking in the group	Ranking within a group based on evaluation values. Initial status is the same as the loop number.	

8 - 5 Operation During Error/Restoration

■ Error types

Errors that can occur in cooperative operation mode are as follows.

- Connected module error
  When communication with controller modules is disconnected.
- Controller module error
  When the following error within a controller module is accepted by the supervisor module as an entry.
  - Hard failure
  - Soft failure
- Multi-loop cooperative control preparation complete error
  Unconformity occurs during preparation between multi-loop cooperative control and control loops.
- Time proportional output initialization error
  Failure occurs for a control loop's time proportioning output initialization, which is performed when coupling or operation mode setting is changed by peak power suppression control.

! Handling Precautions

- The error code when multiple errors have occurred follows the order of precedence described here.
  - Connected module error
  - Controller module error
    - Hard failure
    - Soft failure
- Multi-loop cooperative control preparation complete error
- Time proportional output initialization error

■ Operation when an error occurs

Operation is performed as follows when an error occurs.

- Set the applicable error code as described in [Error code] parameters (page 8-10)
- Set [1: Error] for [Operation status] parameters (page 8-10)
- Stop peak power suppression control
- All loops in a control group are set to READY
  Controller modules operate differently depending on whether an error is caused by a connected module or by a controller module. Differences in operation are shown below.

Operation mode when error occurred	Stop, cooperative operation, or independent operation (AUTO)	Independent operation (MANUAL)
Controller module loop mode when error caused by connected module	READY AUTO	READY MANUAL
Controller module loop mode when error caused by controller module	READY AUTO	READY AUTO

! Handling Precautions

- If the operation mode is set to [4: Individual loop operation], the controller module maintains the current loop mode even though an error occurs.

■ Operation when restoring to normal status

Once an error status has been resolved, follow settings for ■ Operation during error mode restoration (page 8-6), for the following operation.

When parameters for [Recovery action from error mode]

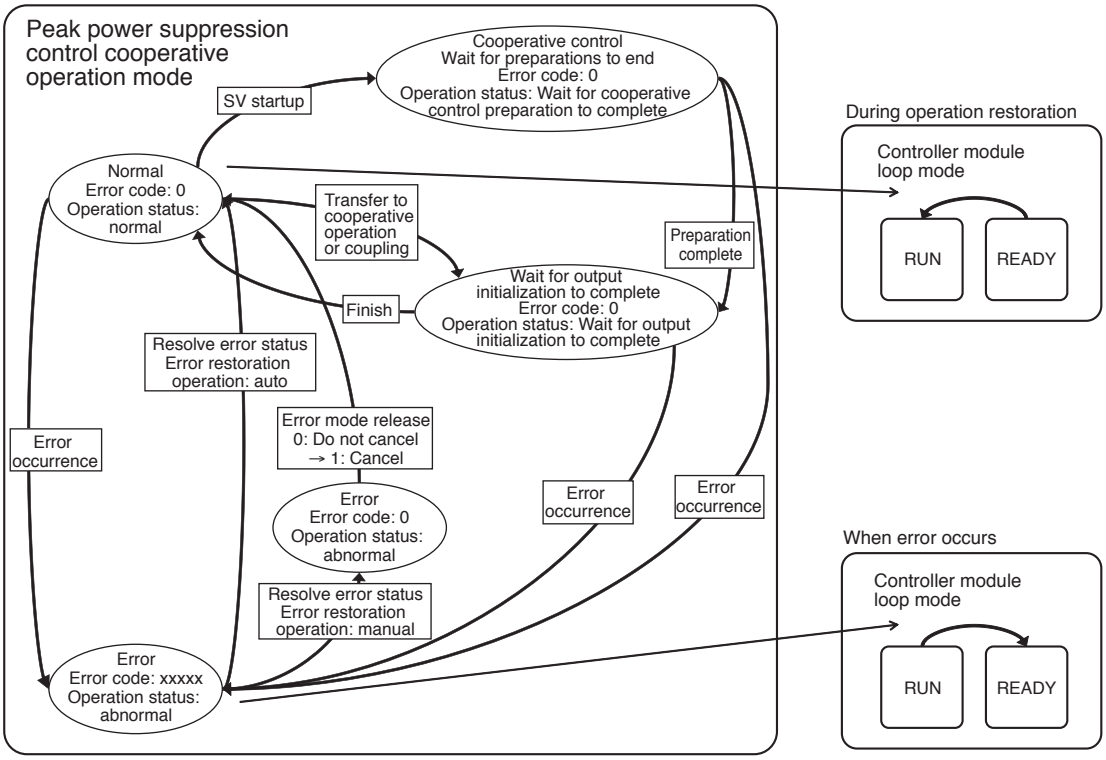
- are set to [0: Manual]
  Erroneous operation will continue even if error status has been resolved. By setting [Error mode release] to [1: Cancel], cooperative operation mode will be restored to the mode it was in before an error occurred.
- are set to [1: Auto]
  Once the error has been resolved, cooperative mode will automatically be restored to the mode it was in before an error occurred.

! Handling Precautions

- When returning to normal status after an error occurs, the [Error code] parameter will return to 0.If you want to save the [Error code] parameter, prepare a process in which the applicable address is read and recorded.

■ Status change during error/restoration

Here is an illustration of when an error occurs during operation of the peak power suppression control's cooperative operation mode.



Chapter 9. OTHER FUNCTIONS

9 - 1 Using the Forced IDLE Switch to Stop Control

Through use of an forced IDLE switch, this device is able to stop control during operation, or reopen it.

■ Execution methods

● Stop monitoring

Switch the automatic IDLE switch to [IDLE].This will change the device operation mode to [IDLE].
The [RUN] LED will be on slow blink when in this mode.

● Reopen control

Switch the automatic IDLE switch to [AUTO]. This will change the device operation mode to [RUN].
The [RUN] LED will be lit when in this mode.

🕮 Note

- For details on the forced IDLE switch:
  ☞ 1-3 Names and Functions of Parts.
- For details on device operation modes,
  ☞ 1-4 Operation Modes.

[!] Handling Precautions

- When starting NX-S21 control via [IDLE] → [RUN], about 2 seconds will pass before starting in order to update controller module time proportioning output master/slave settings, etc.

9 - 2 Parameter backup/restoration

A flash ROM is installed in this device, enabling you to save parameters via SRAM. It is also possible to restore parameters saved to flash ROM to SRAM.
SRAM is backed up even when the power is OFF due to a battery backup feature, but it is recommended to save master parameters to flash ROM as a precaution, in case the battery is dead during a blackout, etc.

■ Execution methods

● Parameter backup process

(1) Backup is performed via SLP-NX.

(2) Wait for the backup process to complete. It usually takes about 50 seconds.

The [MOD] LED will be on fast blink during the backup process.

Handling Precautions

- Do not perform other operations or turn OFF the device power during the parameter backup operation.
- Turning OFF the power during the backup process will cause a minor malfunction.
  If such a malfunction occurs, restarting the backup process will solve the issue.
- For details on minor malfunctions:
  ☞ Chapter 15, "TROUBLESHOOTING" ■ If a malfunction occurs…

● Parameter restoration procedure

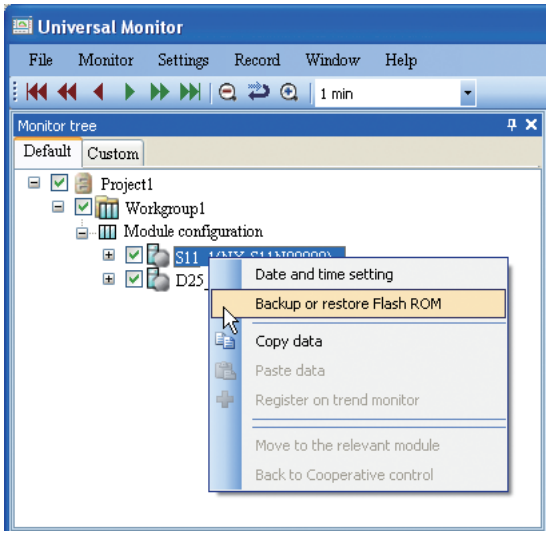
Restoration is performed via SLP-NX.

Handling Precautions

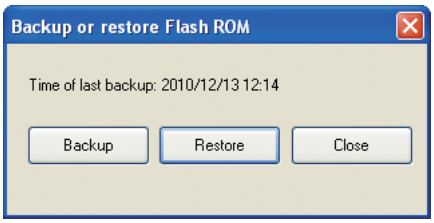
- When performing parameter restoration for the SLP-NX, the supervisor module's device operation mode will be changed to IDLE during the restoration process. For details on IDLE mode:
  ☞ 1-4 Operation Modes.

● How to operate with engineering tools

Start up the SLP-NX, right click the supervisor module target found on the general monitor's monitor tree, and select the [Flash ROM backup/restore (F)] menu.



>> The [Flash ROM backup/restore] dialog box is displayed.



If backup has been performed in the past, the date and time taken from the module will be displayed as the previous backup time.
To back up parameters on the flash ROM, click the [Backup] button. When backup is completed, the previous backup time will be updated.
To restore parameters from the flash ROM, click the [Restore] button.

9 - 3 Clock functions

The time function on this device records “year, month, date, day, hour, minutes, seconds”. A battery backup on this device enables the clock to keep working while the power is turned OFF.

■ Clock data accuracy

Clock IC (embedded RTC) accuracy is at +/- 2.2 seconds per day (under standard conditions).

■ Clock data list

Meaning	Data range	Initial value *	Remarks
Year	00 ~ 99	00	The final 2 digits are indicated starting from the year 2000
Month	1 ~ 12	1	
Date	1 ~ 31	1	
Hour	00 ~ 23	00	
Minutes	00 ~ 59	00	
Seconds	00 ~ 59	00	
Day	0 ~ 6	6	0: Sun, 1: Mon, 2: Tue, 3: Wed, 4: Thu, 5: Fri, 6: Sat

* If clock data is lost due to a dead battery when the power is OFF etc., the clock will automatically be returned to default settings when the power is turned ON again.

■ Setting procedures

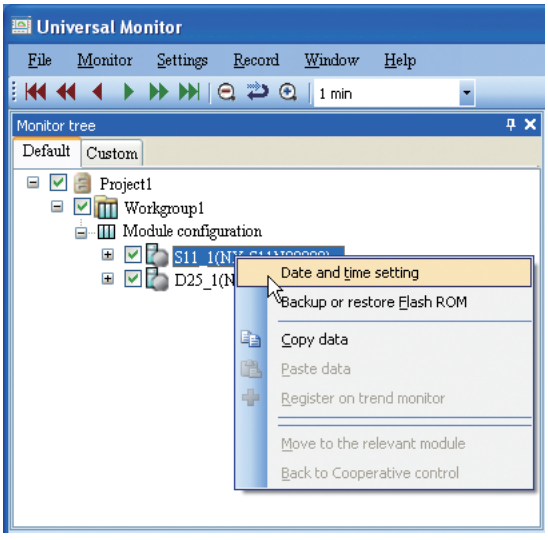
● How to set clock data

(1) Set the clock using the SLP-NX.

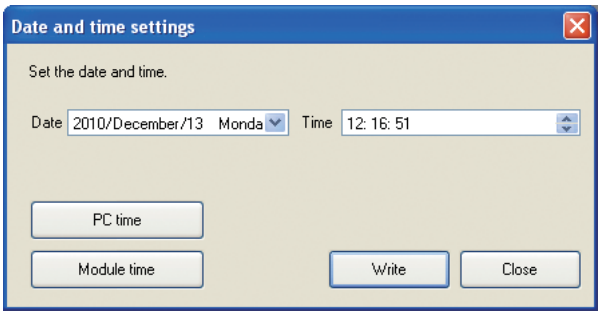
(2) “Year, month, date, hour, minutes, and seconds” will be set simultaneously. Day of the week is automatically determined by the device, so it does not have to be set manually.

● How to operate with engineering tools

Start up the SLP-NX, right click the supervisor module found on the general monitor’s monitor tree, and select the [Set date/time (T)] menu.



>> The [Set date/time] dialog box is displayed.



Here you can directly edit the date and time, or use buttons to set them at the date column and time column.

[PC time] button: Current date/time as shown on the PC will be reflected in the dialog box's date column and time column.

[Module time] button: The target module's date/time will be reflected in the dialog box's date column and time column.

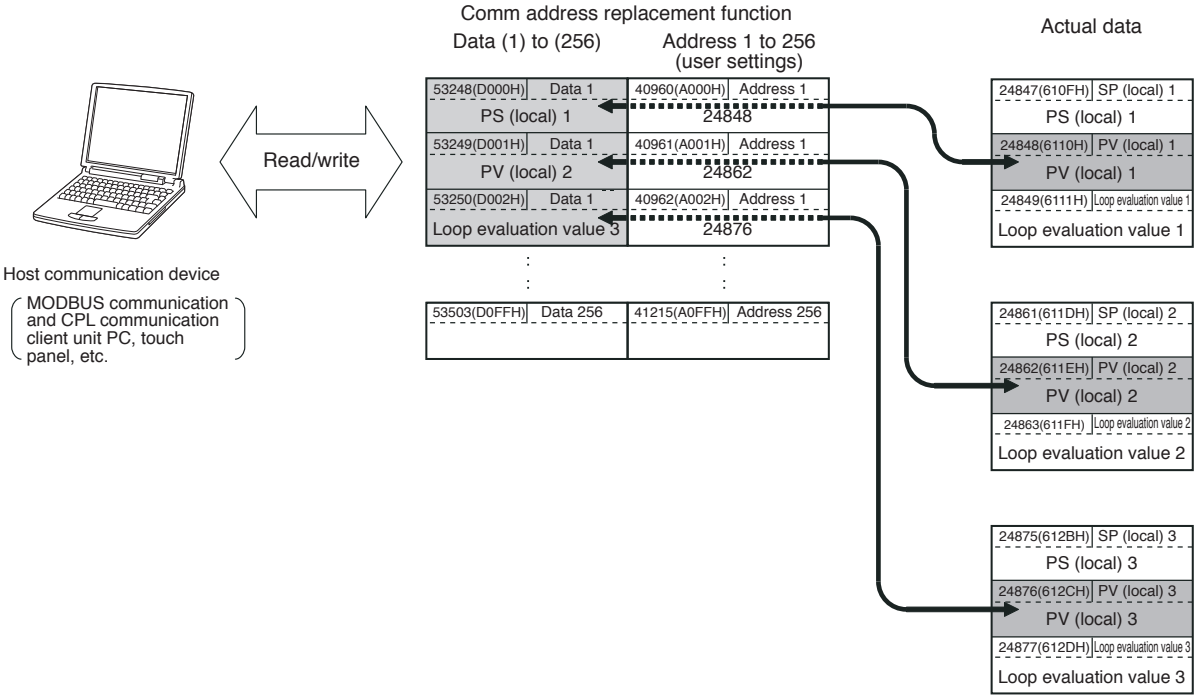
[Write] button: Clicking the [Write] button while the desired date/time are reflected in the date column and time column will set them to the module.

Handling Precautions

- When changing the time via host communication, change all categories in the same command order: year, month, date, hour, minutes, seconds.
- Even if only the year or date need to be changed, make sure to input all categories: year, month, date, hour, minutes, seconds.

9 - 4 Comm addr replacemt function

This function is for repositioning any data address accessed by host communication to an area where continuous reading/writing can be done.
This function is used for scattered data, that can only be continuously read (written) by MODBUS communication, etc. is grouped together for reading/writing.



Use SLP-NX to set the Comm addr replacemt data address.By performing this setting, reading/writing addresses for data areas (1) - (256) becomes the same as reading/writing the actual addresses set to addresses (1) - (256).

■ Setting data

Bank name	Item name	Setting
Data address	Address	0 ~ 53247

Handling Precautions

- For address settings, use the addresses defined in Chapter 13. LIST OF COMMUNICATION DATA.

■ Setting example

This setting example is for when you want to read the PV (local) values of all control loops while peak power suppression control is operating.
The PV (local) value for 32 loops is positioned in 14 data address intervals. In this case, when reading without using the Comm addr replacemt function, only the necessary data must be cut out with the following 7 communications.

(1) 57 continuous reads (PV1-5 are read) from address 24848 (6110H)
(2) 57 continuous reads (PV6-10 are read) from address 24918 (6156H)
(3) 57 continuous reads (PV11-15 are read) from address 24988 (619CH)
(4) 57 continuous reads (PV16-20 are read) from address 25058 (61E2H)
(5) 57 continuous reads (PV21-25 are read) from address 24872 (6128H)
(6) 57 continuous reads (PV26-30 are read) from address 24942 (616EH)
(7) 15 continuous reads (PV31, 32 are read) from address 25012 (61B4H)

When using the Comm addr replacemt function, these can be read in a single time.

(1) 32 continuous reads (PV1-32 are read) from address 53248 (D000H)

Setting destination address		Item name	Setting (Decimals)	Remarks
Decimal	Hexadecimal			
40960	A000	Address 1	24848	Allot PV (local) 1 to 53248 (D000H)
40961	A001	Address 2	24862	Allot PV (local) 2 to 53249 (D001H)
40962	A002	Address 3	24876	Allot PV (local) 3 to 53250 (D002H)
40963	A003	Address 4	24890	Allot PV (local) 4 to 53251 (D003H)
40964	A004	Address 5	24904	Allot PV (local) 5 to 53252 (D004H)
40965	A005	Address 6	24918	Allot PV (local) 6 to 53253 (D005H)
40966	A006	Address 7	24932	Allot PV (local) 7 to 53254 (D006H)
40967	A007	Address 8	24946	Allot PV (local) 8 to 53255 (D007H)
40968	A008	Address 9	24960	Allot PV (local) 9 to 53256 (D008H)
40969	A009	Address 10	24974	Allot PV (local) 10 to 53257 (D009H)
40970	A00A	Address 11	24988	Allot PV (local) 11 to 53258 (D00AH)
40971	A00B	Address 12	25002	Allot PV (local) 12 to 53259 (D00BH)
40972	A00C	Address 13	25016	Allot PV (local) 13 to 53260 (D00CH)
40973	A00D	Address 14	25030	Allot PV (local) 14 to 53261 (D00DH)
40974	A00E	Address 15	25044	Allot PV (local) 15 to 53262 (D00EH)
40975	A00F	Address 16	25058	Allot PV (local) 16 to 53263 (D00FH)
40976	A010	Address 17	25072	Allot PV (local) 17 to 53264 (D010H)
40977	A011	Address 18	25086	Allot PV (local) 18 to 53265 (D011H)
40978	A012	Address 19	25100	Allot PV (local) 19 to 53266 (D012H)
40979	A013	Address 20	25114	Allot PV (local) 20 to 53267 (D013H)
40980	A014	Address 21	25128	Allot PV (local) 21 to 53268 (D014H)
40981	A015	Address 22	25142	Allot PV (local) 22 to 53269 (D015H)
40982	A016	Address 23	25156	Allot PV (local) 23 to 53270 (D016H)
40983	A017	Address 24	25170	Allot PV (local) 24 to 53271 (D017H)
40984	A018	Address 25	25184	Allot PV (local) 25 to 53272 (D018H)
40985	A019	Address 26	25198	Allot PV (local) 26 to 53273 (D019H)
40986	A01A	Address 27	25212	Allot PV (local) 27 to 53274 (D01AH)
40987	A01B	Address 28	25226	Allot PV (local) 28 to 53275 (D01BH)
40988	A01C	Address 29	25240	Allot PV (local) 29 to 53276 (D01CH)
40989	A01D	Address 30	25254	Allot PV (local) 30 to 53277 (D01DH)
40990	A01E	Address 31	25268	Allot PV (local) 31 to 53278 (D01EH)
40991	A01F	Address 32	25282	Allot PV (local) 32 to 53279 (D01FH)

The actual addresses for PV (local) values are as follows.

Target address		Item name
Decimal	Hexadecimal	
24848	6110	PV (local) 1
24862	611E	PV (local) 2
24876	612C	PV (local) 3
24890	613A	PV (local) 4
24904	6148	PV (local) 5
24918	6156	PV (local) 6
24932	6164	PV (local) 7
24946	6172	PV (local) 8
24960	6180	PV (local) 9
24974	618E	PV (local) 10
24988	619C	PV (local) 11
25002	61AA	PV (local) 12
25016	61B8	PV (local) 13
25030	61C6	PV (local) 14
25044	61D4	PV (local) 15
25058	61E2	PV (local) 16
25072	61F0	PV (local) 17
25086	61FE	PV (local) 18
25100	620C	PV (local) 19
25114	621A	PV (local) 20
25128	6228	PV (local) 21
25142	6236	PV (local) 22
25156	6244	PV (local) 23
25170	6252	PV (local) 24
25184	6260	PV (local) 25
25198	626E	PV (local) 26
25212	627C	PV (local) 27
25226	628A	PV (local) 28
25240	6298	PV (local) 29
25254	62A6	PV (local) 30
25268	62B4	PV (local) 31
25282	62C2	PV (local) 32

Note

- These examples are of a MODBUS/TCP capable of 64 continuous data readings. When using MODBUS/RTU or CPL via RS-485, only 32 data can be read at once, so please perform communication as described on the chart on page 9-6.

Chapter 10. CPL COMMUNICATION FUNCTION

10 - 1 Outline of Communication

Communication with a PC, PLC or other host devices is available using a user-configured program that uses RS-485 communication.
CPL communication (Controller Peripheral Link: Yamatake Corporation's host communication protocol) or MODBUS communication can be selected as the communication protocol.
This chapter describes the CPL communications.

■ Features

The features of the unit's communication function are as follows:

- Up to 31 units can be connected to a single master station that functions as a host device.
- When the communication specifications of the host device conform to the RS-232C interface, the communication converter CMC10L (sold separately) is required.
  The CMC10L allows conversion between RS-232C and RS-485.
- Almost all of the unit parameters can be communicated.
  For details on the communication data, refer to:
  ☞ Chapter 13, "LIST OF COMMUNICATION DATA".
- Random access commands are available.
  Two or more parameters at separated addresses can be read or written by a single command.

■ Setup

The following setup is required for performing the CPL communications.

Item name	Contents of setup	Initial value
Communications type	0: CPL 1: MODBUS/ACSII 2: MODBUS/RTU	0
Station address	0: Does not communicate 1 to 127	127
Transmission speed	0: 4800 bps 1: 9600 bps 2: 19200 bps 3: 38400 bps 4: 57600 bps 5: 115200 bps	2
Data format (Data length)	0: 7 bits 1: 8 bits	1
Data format (Parity)	0: Even parity 1: Odd parity 2: No parity	0
Data format (Stop bit)	0: 1 bit 1: 2 bits	0
Minimum response time	1 to 250 ms	3

⚠ Handling Precautions

- If you use the Yamatake CMC10L as an RS-485 converter, set the minimum response time to 3 ms or longer.
  The maximum transmission speed supported by the CMC10L is 38400 bps.
- AL33 occurs if the setting of RS-485 communications conditions (Transmission speed, Data format (data length, parity, stop bit)) fails. In that case, either repeat writing or restart the system.

■ Communication procedure

The communication procedure is as follows:

(1) The instruction message is sent from the host device (master station) to one module (slave station).

(2) The slave station receives the instruction message, and performs read or write processing according to the content of the message.

(3) The slave station sends a message corresponding to the processing content as a response message.

(4) The master station receives the response message.

! Handling Precautions

- Two or more protocols cannot be used together on a single RS-485 transmission line (such as CPL, MODBUS/ASCII, and MODBUS/RTU).

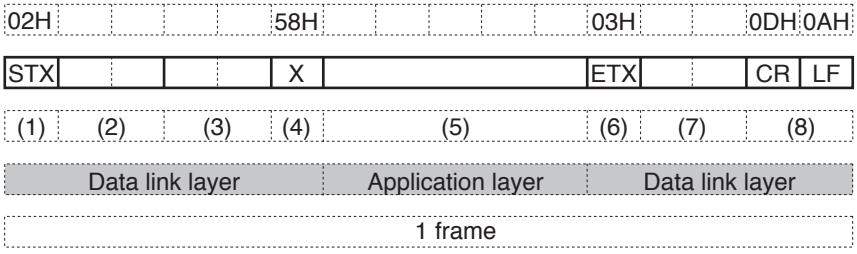
10 - 2 Message Structure

■ Message structure

The following shows the message structure.
Messages are broadly classified into two layers: the data link layer and the application layer.

- Data link layer
  This layer contains the basic information required for communication.
  For example, the destination of the communication message and the check information of the message.
- Application layer
  Data is read and written in this layer. The content of the layer varies according to the purpose of the message.

Messages comprise parts (1) to (8)as shown in the figure below.
The command (details sent from the master station) and the response (details returned from the slave station) are stored in the application layer.



(1) STX (start of message)
(2) Station address
(3) Sub-address
(4) Device code
(5) Instruction message = command, response message = response
(6) ETX (end of command/response)
(7) Checksum
(8) Delimiter (end of message)

■ Data link layer

● Outline of the data link layer

The data link layer is of a fixed length. The position of each data item and the number of its characters are already decided. Note, however, that the data positions of the data link layer from ETX onwards shift according to the number of characters in the application layer.

● Response start conditions

- The device sends the response message only when all the message components in the data link layer of the instruction message are correct. If even one of these is incorrect, no response messages are sent, and the device waits for a new message.

● List of data link layer data definitions

The following list shows the definitions for data in the data link layer:

Data name	Character code	Number of characters	Meaning of data
STX	02H	1	Start of message
Station address	0 to 7FH are expressed as hexadecimal character codes	2	Identification of device to communicate with sub-address
Sub-address	00 (30H, 30H)	2	No function
Device code	X (58H) or x (78H)	1	Device type
ETX	03H	1	Application layer end position
Checksum	00H to FFH are expressed as two-digit hexadecimal character codes	2	Checksum of message
Delimiter	CR (0DH), LF (0AH)	2	End of message

● **Description of data items**

- STX (02H)
  When STX is received, the module judges this to be the start of the send message. It follows that if a delimiter has not been received previously, the unit judges that a message start STX has been received. The purpose of this is to enable recovery of the module's response at the next message from the master station in the event that noise, for example, causes a message error.
- Station address
  Of the messages received, the module creates response messages only when station addresses are the same. Station addresses in the messages are expressed as two hexadecimal characters.
  The module returns the same station address as that of the received message. However, when the station address is set to "00" (30H 30H), the unit does not respond even if the station addresses match.
- Sub-address
  Two hexadecimal characters can be used, from "00" (30H 30H) to "FF" (46H 46H). The module returns the same sub-address as that of the received message.
- Device code
  "X" (58H) or "x" (78H) can be used. This code is determined for each device series, and other codes cannot be selected. The module returns the same device code as that of the received message. These can be used to identify the messages, for example by using "X" (58H) as the initial value and "x" (78H) in resend messages.
- ETX
  ETX indicates the end of the application layer.
- Checksum
  This value is for checking whether or not some abnormality (e.g. noise) causes the message content to change during communications.
- The checksum is expressed as two hexadecimal characters.
- How to calculate a checksum

  (1) Add the character codes in the message from STX through ETX in single byte units.
  (2) Take two's complement of the low-order one byte of the addition result.
  (3) Convert the obtained two's complement to a two-byte ASCII code.

  The following is a sample checksum calculation for a sample message:

  [Message example]

  "STX" : 02H
  "0" : 30H (first byte of the station address)
  "1" : 31H (second byte of the station address)
  "0" : 30H (first byte of the sub-address)
  "0" : 30H (first byte of the sub-address)
  "X" : 58H (device code)
  "R" : 52H (first byte of the command)
  "D" : 44H (second byte of the command)
  (omitted)
  "ETX" : 03H

(1) Add the character codes in the message from STX through ETX in single byte units.The adding calculation in single byte units is as follows:
02H + 30H + 31H + 30H + 30H + 58H + 52H + 44H +... + 03H
The result of this calculation is 376H.

(2) The low-order one byte of the addition result 376H is 76H.The two's complement of 76H is 8AH.

(3) Convert the obtained 8AH to a two-byte ASCII code. The result is:
"8": 38H
"A": 41H
The two bytes "8" (38H) and "A" (41H) are the checksum.

- Delimiter (CR/LF)
  This indicates the end of the message. Immediately after LF is received, the unit enters a state allowed to process the received message.

■ Application layer

The table below shows the configuration of the application layer.

Item	Description
Command	RS (decimal format continuous address data read)
	WS (decimal format continuous address data write)
	RD (hexadecimal format continuous address data read)
	WD (hexadecimal format continuous address data write)
	RU (hexadecimal format random address data read)
	WU (hexadecimal format random address data write)
Data delimiter	RS, WS command: ,(comma) Other commands: None
Word address	RS, WS command: Numeric value in decimal notation and W, such as 501W. Other commands: Numeric value in hexadecimal notation, such as 01F5.
Read count	RS, WS command: Numeric value in decimal notation, such as 1. Other commands: Numeric value in hexadecimal notation, such as 0001.
Numerical value to be written	RS, WS command: Numeric value in decimal notation, such as 100. Other commands: Numeric value in hexadecimal notation, such as 0064.

The number of data records accessible by a single instruction message and response message cycle is as follows:

Command	RAM	EEPROM
RD	28	28
WD	28	28
RU	28	28
WU	16	16
RS	16	16
WS	16	16

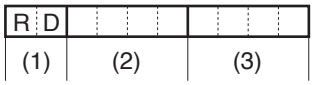
10 - 3 Description of Commands

■ Fixed length continuous data read command (RD command)

Data in continuous data addresses is read in a hexadecimal format.

● Instruction message

Specifies the start data address and the number of data records. The structure of the application layer in the instruction message is as follows:

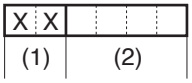


(1) Command
(2) Start data address
(3) Number of data records

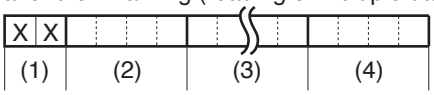
● Response message

The structure of the application layer in the response message is as follows:

• Normal end or Warning (reading of single data item)



• Normal end or Warning (reading of multiple data items)



• Abnormal end

(1) End code
(2) Data (1st item)
(3) Data (2nd and following items)
(4) Data (final item)

Termination code is entered at XX.
For code details,
☞ 10-6 List of End Codes (page 10-15).

🕮 Note

- For details on hexadecimal number notation:
  ☞ ■ 10-5 Numeric Representation in the Application Layer.
- When a warning is given, the relevant data address value will be read as 0000H.

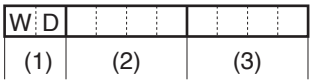
■ Fixed length continuous data write command (WD command)

Writing is performed in a hexadecimal format to data in continuous data addresses.

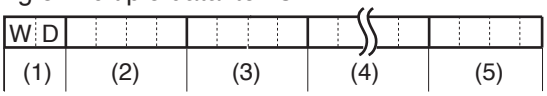
● Instruction message

Specifies the start data address and at least one data record. The structure of the application layer in the instruction message is as follows:

• Writing of single data item



• Writing of multiple data items



(1) Command
(2) Start data address
(3) Data (1st item)
(4) Data (2nd and following items)
(5) Data (final item)

● Response message

The structure of the application layer in the response message is as follows:

• Normal end or Warning

• Abnormal end

(1) End code

Termination code is entered at XX.
For code details,
☞ 10-6 List of End Codes (page 10-15).

🕮 Note

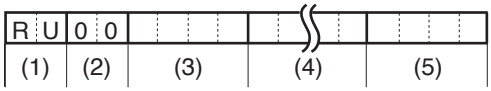
- For details on hexadecimal number notation:
  ☞ ■ 10-5 Numeric Representation in the Application Layer.
- When a warning is given, writing will not be performed to the relevant data address.

■ Fixed length random data read command (RU command)

Data in random (non-continuous) data addresses is read in a hexadecimal format.

● Instruction message

Specifies at least one data record. The structure of the application layer in the instruction message is as follows:

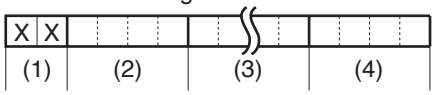


(1)Command
(2)Sub-command, fixed to “00”
(3)Data address (1st item)
(4)Data address (2nd and following items)
(5)Data address (final item)

● Response message

The structure of the application layer in the response message is as follows:

• Normal end or Warning



• Abnormal end

(1) End code
(2) Data (1st item)
(3) Data (2nd and following items)
(4) Data (final item)

Termination code is entered at XX.
For code details,
☞ 10-6 List of End Codes (page 10-15).

🕮 Note

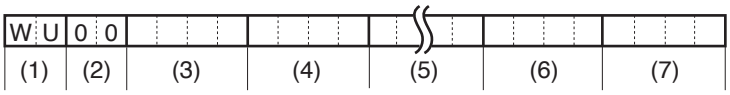
- For details on hexadecimal number notation:
  ☞ ■ 10-5 Numeric Representation in the Application Layer.
- When a warning is given, the relevant data address value will be read as 0000H.

■ Fixed length random data write command (WU command)

Writing is performed in a hexadecimal format to data in random (non-continuous) data addresses.

● Instruction message

Groups data addresses and data, and specifies at least one group. The structure of the application layer in the instruction message is as follows:



(1) Command
(2) Sub-command, fixed to “00”
(3) Data address (1st group)
(4) Write data (1st group)
(5) Data address, write data (2nd and following groups)
(6) Data address (final group)
(7) Write data (final group)

● Response message

The structure of the application layer in the response message is as follows:

• Normal end or Warning

• Abnormal end

(1) End code

Termination code is entered at XX.
For code details,
☞ 10-6 List of End Codes (page 10-15).

🕮 Note

- For details on hexadecimal number notation:
  ☞ ■ 10-5 Numeric Representation in the Application Layer.
- When a warning is given, writing will not be performed to the relevant data address.

■ Continuous data read command (RS command)

Data in continuous data addresses is read in a decimal format.

● Instruction message

Specifies the start data address and the number of data records. The structure of the application layer in the instruction message is as follows:

R	S	,	4	0	9	6	W	,	1
(1)		(2)	(3)					(2)	(4)

(1) Command
(2) Data delimiter
(3) Start data address (“W” is required)
(4) Number of data records

● Response message

The structure of the application layer in the response message is as follows:

• Normal end or Warning (reading of single data item)

X	X	,	
(1)		(2)	(3)

• Normal end or Warning (reading of multiple data items)

X	X	,		,		,	
(1)		(2)	(3)	(2)	(4)	(2)	(5)

• Abnormal end

X	X
(1)	

(1) End code
(2) Data delimiter
(3) Data (1st item)
(4) Data (2nd and following items)
(5) Data (final item)

Termination code is entered at XX.
For code details,
☞ 10-6 List of End Codes (page 10-15).

🕮 Note

- For details on decimal number notation:
  ☞ ■ 10-5 Numeric Representation in the Application Layer.
- When a warning is given, the relevant data address value will be read as 0000H.

■ Continuous data write command (WS command)

Writing is performed in a decimal format to data in continuous data addresses.

● Instruction message

Specifies the start address and at least one data record. The structure of the application layer in the instruction message is as follows:

W	S	,	4	0	9	6	W	,	1	,	6	5
(1)		(2)	(3)					(2)	(4)	(2)	(5)	

(1) Command
(2) Data delimiter
(3) Start data address ("W" is required)
(4) Data (1st item)
(5) Data (2nd item)

● Response message

The structure of the application layer in the response message is as follows:

• Normal end or Warning

X	X
(1)	

• Abnormal end

X	X
(1)	

(1) End code

Termination code is entered at XX.
For code details,
☞ 10-6 List of End Codes (page 10-15).

🕮 Note

- For details on decimal number notation:
  ☞ ■ 10-5 Numeric Representation in the Application Layer.
- When a warning is given, writing will not be performed to the relevant data address.

10 - 4 Definition of Data Addresses

● **RAM and EEPROM areas of data addresses**

Data addresses are categorized as follows:

Data address Hexadecimal	Data address Decimal	Name	Remarks
100 to FFF	256 ~ 4095	EEPROM access data address	Write accesses both the RAM area and EEPROM area, but read accesses only the RAM area. Since writing is also performed to EEPROM, the value does not change even after restarting.
1000 to 4FFF	4096 ~ 20479	RAM access data address	Both read and write access the RAM area data. Since writing is not performed to EEPROM, the value returns to that stored in EEPROM after restarting.
5000 to 8FFF	20480 ~ 36863	EEPROM access data address	Write accesses both the RAM area and EEPROM area, but read accesses only the RAM area. Since writing is also performed to EEPROM, the value does not change even after restarting.

Handling Precautions

- The number of EEPROM erase/write cycles is limited.
  Accordingly, it is recommended that very frequently written parameters be written to RAM, which does not have a limitation on cycles.
  However, note that the data written to the RAM area is overwritten with the EEPROM area data when the power is turned ON.

● **Write data range**

If the write value exceeds the range determined by parameters, writing is not performed and an abnormal termination code is returned.

● **Write conditions**

An abnormal termination code is also returned when the writing is not possible due to the conditions.

● **Undefined address read**

When an undefined address is read, the end code does not result in an abnormality or warning when the data is 0.

10 - 5 Numeric Representation in the Application Layer

The numeric values in the application layer include the data address, number of data records and data values, and use hexadecimal or decimal notation depending on the command. This notation method is shared by both the instruction message and the response message.

■ Hexadecimals

The hexadecimal specifications are shown in the table below.
If the message does not match the specifications, the module does not process the instruction message and instead returns an error response.

Item	Specification	Example of specification mismatch
Supported commands	RD WD RU WU	RS command (hexadecimal is not allowed) WS command (hexadecimal is not allowed)
Available characters	0 (30H) to 9 (39H) A (41H) to F (46H)	1 2 3 a (a is not allowed) – 1 2 3 (– is not allowed) ␣ 1 2 3 (Space is not allowed)
Number of characters	4	1 2 3 (3 characters) 0 1 2 3 4 (5 characters)
Expressible numeric values	8000H to 7FFFH (data with symbols) 0000H to FFFFH (data without symbols)	
Examples of normal character strings	0 0 0 0 1 2 A B 0 1 2 3 F F F F 0 1 1 0	

■ Decimals

The decimal specifications are shown in the table below.
In the data address, a capital letter "W" (57H) is added immediately after the decimal.
If the message does not match the specifications, the module does not process the instruction message and instead returns an error response.

Item	Specification	Example of specification mismatch
Supported commands	RS WS	RD command (decimal is not allowed) WD command (decimal is not allowed)
Available characters	0 (30H) to 9 (39H) – (2DH)	1 2 3 A (A is not allowed) + 1 2 3 (+ is not allowed) ␣ 1 2 3 (Space is not allowed)
Delimiter characters	, (2CH) Delimiter characters are used between two numeric values	
Number of characters	1 to 5 (positive numbers) 2 to 6 (negative numbers) 1 (Numeric value 0)	0 characters (Nothing between delimiter characters) 1 2 3 4 5 6 (6-character positive number)
Expressible numeric values	–32768 to +32767 (data with symbols) 0 to 65535 (data without symbols)	
Positive number notation	Starts with 1 (31H) to 9 (39H)	0 1 (Not allowed to start with 0)
Negative number notation	Starts with – (2DH), the second character is 1 (31H) to 9 (39H)	– 0 1 (0 is not allowed for the second character)
Numeric value 0 notation	0	– 0 (– is not allowed) 0 0 (Anything other than 1 character is not allowed)
Examples of normal character strings	1 3 2 7 6 7 – 1 2 – 3 2 7 6 8	

10 - 6 List of End Codes

The result of the application layer process for the instruction message can be understood from the end code of the response message.
Results other than “normal” are in two levels. An “error” occurs when nothing is processed, and a “warning” occurs when there is a possibility that some kind of processing will be performed.

■ End code of the read command

End code	Meaning	Module processing
00 (Normal)	Normal termination	Returns a read value
99 (Error)	Undefined command	Returns only the end code (does not add data)
10 (Error)	Parameter error *	Returns only the end code (does not add data)
40 (Error)	No. of data records error	Returns only the end code (does not add data)
21 (Warning)	Data address error	Returns the data of the corresponding data address as a 0 value
22 (Warning)	Data range error	Returns the read value of the corresponding data address as 8000 or 7FFF in hexadecimal format, or -32768 or +32767 in decimal format.
23 (Warning)		Not allowed depending on the instrument conditions Returns the data of the corresponding data address as a 0 value

* The parameter errors are the following errors.
- Violation of the numeric representation
- Violation of the instruction message format

■ End code of the write command

End code	Meaning	Module processing
00 (Normal)	Normal termination	Writes all data
99 (Error)	Undefined command	Does not write any data
10 (Error)	Parameter error *	Does not write any data
40 (Error)	No. of data records error	Does not write any data
21 (Warning)	Data address error	Does not write the corresponding data address
22 (Warning)	Data range error	Does not write the corresponding data address
23 (Warning)	Not allowed depending on the instrument conditions	Does not write the corresponding data address

* The parameter errors are the following errors.
- Violation of the numeric representation
- Violation of the instruction message format
- Addition of excess data to the end of the frame

10 - 7 Reception and Transmission Timing

■ Timing specifications for instruction and response messages

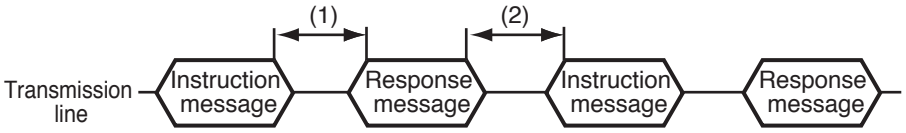
The cautions below are required with regard to the timing to transmit an instruction message from the master station and a response message from the slave station.

● Response monitoring time

The maximum response time from the end of the instruction message transmission by the master station until when the master station receives a response message from the slave station is two seconds ((1) in the figure below).
So, the response monitoring time should be set to two seconds.
Generally, when a response time-out occurs, the instruction message is resent.

● Transmission start time

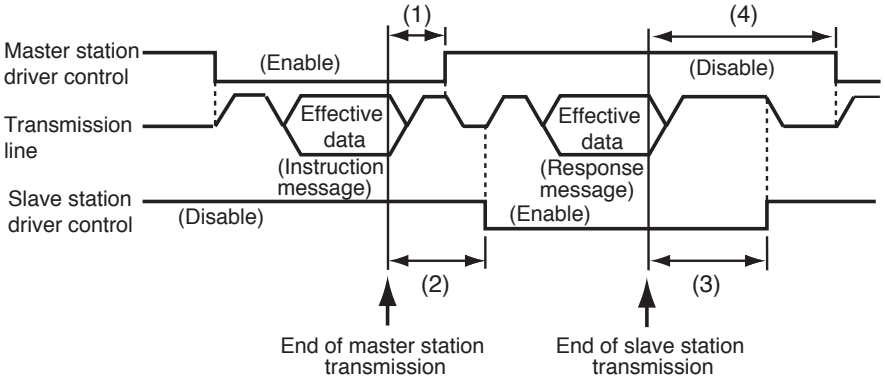
A wait time of 10 ms is required before the master station starts to transmit the next instruction message (to the same slave station or a different slave station) after the end of receiving response message ((2) in the figure below).



(1) End of master station transmission – Transmission start time of slave station = Max. 2000 ms
(2) End of slave station transmission – Transmission start time of master station = Min. 10 ms

■ RS-485 driver control timing specifications

When the transmission/reception on the RS-485 3-wire system is directly controlled by the master station, care should be paid to the following timing:



(1) End of master station transmission - Driver disable time = Max. 500 µs
(2) End of slave station reception – Driver enable time = Minimum response time
(3) End of slave station transmission - Driver disable time = Max. 10 ms
(4) End of master station reception - Driver enable time = Min. 10 ms

Chapter 11. MODBUS COMMUNICATIONS FUNCTION

11 - 1 Outline of Communication

Communication with a PC, PLC or other host devices is available using a user-configured program that uses RS-485 communication.
CPL communication (Controller Peripheral Link: Yamatake Corporation's host communication protocol) or MODBUS communication can be selected as the communication protocol. This chapter describes the MODBUS communications.

■ Features

The features of the unit's communication function are as follows:

- Up to 31 units can be connected to a single master station as a host device.
- When the communication specifications of the host device conform to the RS-232C interface, the communication converter CMC10L (sold separately) is required.
  The CMC10L allows conversion between RS-232C and RS-485.
- Almost all of the unit parameters can be communicated.
  For details on the communication parameters, refer to:
  ☞ Chapter 13, "LIST OF COMMUNICATION DATA".

⚠ Handling Precautions

- In MODBUS communications, the communication address (parameter) for the module that is set in the host device may be reduced by 1 in a communication message during transmission.
  Example: If the communication address (parameter) is set to 1001 in the host device, it will be 1000 in a communication message during transmission.
  The module sends/receives a message to/from the communication address (parameter) that is specified in the communication message. Be sure to understand the specifications of the host device before using the module.

■ Setup

The following setup is required for performing the MODBUS communications.

Item name	Contents of setup	Initial value
Communications type	0: CPL 1: MODBUS/ASCII 2: MODBUS/RTU	0
Station address	0: Does not communicate 1 to 127	127
Transmission speed	0: 4800 bps 1: 9600 bps 2: 19200 bps 3: 38400 bps 4: 57600 bps 5: 115200 bps	2
Data format (Data length)	0: 7 bits 1: 8 bits	1
Data format (Parity)	0: Even parity 1: Odd parity 2: No parity	0
Data format (Stop bit)	0: 1 bit 1: 2 bits	0
Minimum response time	1 to 250 ms	3

- When the communications type is set to MODBUS/RTU, the operation is fixed to 8-bit data regardless of the data format (data length) setting.

Handling Precautions

- The setup cannot be performed via RS-485 communications.
- If you use the Yamatake CMC10L as an RS-232C/RS-485 converter, set the minimum response time to 3 ms or longer.
  The maximum transmission speed supported by the CMC10L is 38400 bps.

■ Communication procedure

The communication procedure is as follows:

(1) The instruction message is sent from the host device (master station) to one unit (slave station).

(2) The slave station receives the instruction message, and performs read or write processing according to the content of the message.

(3) The slave station sends a message corresponding to the processing content as a response message.

(4) The master station receives the response message.

Handling Precautions

- Two or more protocols cannot be used together on a single RS-485 transmission line (such as CPL, MODBUS/ASCII, and MODBUS/RTU).

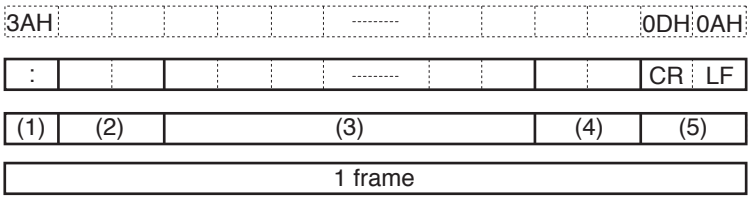
11 - 2 Message Structure

■ Message structure

The following shows the message structure.

● MODBUS/ACSII

Messages other than the start code and end code all use hexadecimal ASCII codes.
MODBUS/ASCII messages comprise parts (1) to (5) as shown below.
The command (details sent from the master station) and the response (details returned from the slave station) are stored in part (3).
One box below represents one character.



(1) Start code (1 byte)
(2) Station address (2 bytes)
(3) Send message, response message
(4) Check code (LRC) (2 bytes)
(5) End code (2 bytes)

- Start code
  The start code is a colon (3AH).
  When the start code is received, the unit judges this to be the start of the send message. It follows that if an end code has not been received previously, the unit judges that a start code for the start of the message has been received. The purpose of this is to enable recovery of the unit's response at the next message from the master station in the event that noise, for example, causes a message error.

- Station address
  Of the messages received, the unit creates response messages only when station addresses are the same. Station addresses in the messages are expressed as two hexadecimal characters.
  However, when the station address is set to "00" (30H 30H), the unit does not respond even if the station addresses match.
  The unit returns the same station address as that of the received message.

- Check code (LRC)
  This value is for checking whether or not some abnormality (e.g. noise) causes the message content to change during communications. The check code is expressed as two hexadecimal characters. The procedure for calculating the check code is as follows.

  (1) Add from the start of the station address to immediately before the check code. Be sure that the added value is not the ASCII character value of the send message, but rather the one-byte binary data that is converted from the two ASCII characters.

(2) Take the two's complement of the addition result.

(3) Convert the low-order one byte of the addition result to the two characters that express the hexadecimal.

- End code (CR/LF)
  This indicates the end of the message. Immediately after LF is received, the unit enters a state allowed to process the received message.

Note

- The following is an example of the check code (LRC) calculation.
  [Message example]
  ":" : 3AH (start of message)
  "0" : 30H (first byte of the station address)
  "A" : 41H (second byte of the station address)
  "0" : 30H (first byte of the read command)
  "3" : 33H (second byte of the read command)
  "0" : 30H (first byte of the start data address)
  "3" : 33H (second byte of the start data address)
  "E" : 45H (third byte of the start data address)
  "9" : 39H (fourth byte of the start data address)
  "0" : 30H (first byte of the read count)
  "0" : 30H (second byte of the read count)
  "0" : 30H (third byte of the read count)
  "2" : 32H (fourth byte of the read count)

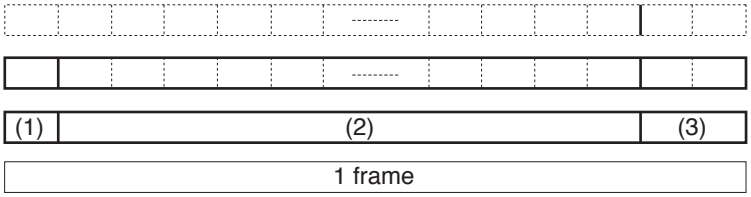
(1) Add from the first byte of the station address to immediately before the check code. The adding calculation is as follows:
0AH + 03H + 03H + E9H + 00H + 02H
The result of this calculation is FBH.

(2) The low-order one byte of the addition result FBH is unchanged at FBH. The two's complement of FBH is 05H.

(3) Convert the obtained 05H to a two-byte ASCII code. The result is:
"0" : 30H
"5" : 35H
The two bytes '0' (30H) and '5' (35H) are the two-byte check code.

● MODBUS/RTU

All messages use binary data.
MODBUS/RTU messages comprise parts (1) to (3) as shown below.
The command (details sent from the master station) and the response (details returned from the slave station) are stored in part (2).
All messages use binary data. (One box below represents one byte.)



(1) Station address (1 byte)
(2) Send message, response message
(3) Check code (2 bytes)

- Station address
  Of the messages received, the unit creates response messages only when station addresses are the same. Station addresses in the messages are one byte. However, when the station address is set to "0", the unit does not respond even if the station addresses match. The unit returns the same station address as that of the received message.
- Check code (CRC)
  This value is for checking whether or not some abnormality (e.g. noise) causes the message content to change during communications. The check code is two bytes.

The procedure for calculating the check code (CRC) is as follows.
The part from the start of the station address in the message to immediately before the check code is the subject of the calculation. The binary data of the message is used unchanged in the calculation. The check code is 16-bit data, and can be calculated with the C language function get_crc16() as shown below. In the message, the low-order one byte is first, and the high-order one byte is last. This order is the reverse of the other 16-bit data.

[Explanation] Calculate the CRC 16 bits
[Argument 1] Character string length (number of bytes)
[Argument 2] Pointer for start of character string
[Function value] Calculation result

```
unsigned short get_crc16(signed int len, const unsigned char
*p)
{
     unsigned short crc16;
     unsigned short next;
     unsigned short carry;
     signed int i;
     crc16 = 0xffff;

     while (len > 0)
     {
     next = (unsigned short)*p;
     crc16 ^= next;
     for (i = 0; i < 8; i++)
     {
     carry = crc16 & 0x0001;
     crc16 >>= 1;
     if (carry != 0)
     {
     crc16 ^= 0xa001;
     }
     }
     p++;
     len--;
     }

     return crc16;
}
```

- One frame end judgment
  The message end (one frame end) is judged when the time in which a character has not been received exceeds the time specified for the transmission speed. One frame end is judged when the next character is not received before the time-outs shown below.
  However, note that there is a variation of ±1 ms in the time-outs shown in the table below.

Set transmission speed (bps)	Time-out transmission speed (bps)
4800	9 ms or longer
9600	5 ms or longer
19200	3 ms or longer
38400	2 ms or longer
57600	2 ms or longer
115200	2 ms or longer

■ Command types

The command (send message) types supported by this unit are as follows:

Command type	Description		Conformance class
	ASCII	RTU	
Multiple data item read	03 (2 bytes)	03H (1 byte)	class 0
Multiple data item write	10 (2 bytes)	10H (1 byte)	class 0
One data item write	06 (2 bytes)	06H (1 byte)	class 1 *

* This unit does not support class 1 commands other than one data item write.

■ Exception codes

When a response message error occurs, the following exception codes are added after the function code.

Error type	Exception code		Description
	ASCII	RTU	
Invalid function	01 (2 bytes)	01H (1 byte)	Function code not supported code by the unit
Invalid data address	02 (2 bytes)	02H (1 byte)	Including data addresses that cannot be read or written
Invalid data	03 (2 bytes)	03H (1 byte)	Errors other than the above

■ No. of data records

The number of data records that can be read or written in a one frame message is as follows:

Command type (Function code)	No. of data records			
	ASCII		RTU	
	RAM	EEPROM	RAM	EEPROM
Multiple data item read (03)	1 to 16 items	1 to 16 items	1 to 32 items	1 to 32 items
Multiple data item write (10)	1 to 16 items	1 to 16 items	1 to 32 items	1 to 32 items
One data item write (06)	1 item	1 item	1 item	1 item

🕮 Note

- For details on the MODBUS communication specifications, refer to:
  ☞ "Modicon Modbus Protocol Reference Guide (PI-MBUS-300 Rev.J)" MODICON, Inc.
  ☞ "OPEN MODBUS/TCP SPECIFICATION (Release 1.0)" Schneider Electric.

11 - 3 Description of Commands

■ Multiple data item read command (03H)

Data in continuous data addresses is read in a hexadecimal format.

● Instruction message

Specifies the start data address and the number of data records. The structure of the instruction message is as follows:

MODBUS/ASCII

3AH	30H	41H	30H	33H	30H	33H	45H	39H	30H	30H	30H	32H	30H	35H	0DH	0AH
:	0	A	0	3	0	3	E	9	0	0	0	2	0	5	CR	LF
(1)	(2)		(3)		(4)				(5)				(6)		(7)	

(1) Start code
(2) Station address
(3) Function code
(4) Start data address
(5) No. of data records
(6) Check code (LRC)
(7) End code

MODBUS/RTU

0AH	03H	03H	E9H	00H	02H	14H	C0H
(1)	(2)	(3)		(4)		(5)	

(1) Start code
(2) Function code
(3) Start data address
(4) No. of data records
(5) Check code (CRC)

● Response message

The structure of the response message is as follows:

MODBUS/ASCII

• Normal example

3AH	30H	41H	30H	33H	30H	34H	30H	33H	30H	31H	30H	30H	30H	33H	45H	38H	0DH	0AH
:	0	A	0	3	0	4	0	3	0	1	0	0	0	3	E	8	CR	LF
(1)	(2)		(3)		(4)		(5)				(6)				(7)		(8)	

(1) Start code
(2) Station address
(3) Function code
(4) No. of data records ×2
(5) Read data 1
(6) Read data 2
(7) Check code (LRC)
(8) End code

• Error example

3AH	30H	41H	38H	34H	30H	31H	37H	31H	0DH	0AH
:	0	A	8	4	0	1	7	1	CR	LF
(1)	(2)		(3)		(4)		(5)		(6)	

(1) Start code
(2) Station address
(3) Function code (When an error occurs, 1 is set for the MSB of the send message's function code. In this example, a response of 84 is given for the undefined 04.)
(4) Exception code (☞ page 11-6)
(5) Check code (LRC)
(6) End code

MODBUS/RTU

• Normal example

0AH	03H	04H	03H	01H	00H	03H	51H	76H
(1)	(2)	(3)	(4)		(5)		(6)	

(1) Station address
(2) Function code
(3) Read count ×2 (number of bytes)
(4) Read data 1
(5) Read data 2
(6) Check code (CRC)

• Error example

0AH	84H	01H	F3H	02H
(1)	(2)	(3)	(4)	

(1) Station address
(2) Function code (When an error occurs, 1 is set for the MSB of the send message's function code. In this example, a response of 84 is given for the undefined 04.)
(3) Exception code (☞ page 11-6)
(4) Check code (CRC)

■ Multiple data item write command (10H)

Writing is performed in a hexadecimal format to data in continuous data addresses.

● Instruction message

Specifies the start address, number of data records, and at least one data record.
The structure of the instruction message is as follows:
Example: The 01A0H and 0E53H values are written in two continuous data addresses from 05DDH.

MODBUS/ASCII

3AH	30H	31H	31H	30H	30H	35H	44H	44H	30H	30H	30H	32H	30H	34H
:	0	1	1	0	0	5	D	D	0	0	0	2	0	4
(1)	(2)		(3)		(4)				(5)				(6)	

30H	31H	41H	30H	30H	45H	35H	33H	30H	35H	0DH	0AH
0	1	A	0	0	E	5	3	0	5	CR	LF
(7)				(8)				(9)		(10)	

(1) Start code
(2) Station address
(3) Function code
(4) Write start data address 1
(5) No. of write data records
(6) No. of write data records ×2
(7) Write data 1
(8) Write data 2
(9) Check code (LRC)
(10) End code

MODBUS/RTU

01H	10H	05H	DDH	00H	02H	04H	01H	A0H	0EH	53H	45H	B9H
(1)	(2)	(3)		(4)		(5)	(6)		(7)		(8)	

(1) Station address
(2) Function code
(3) Write start data address
(4) No. of write data records
(5) No. of write data records ×2
(6) Write data 1
(7) Write data 2
(8) Check code (CRC)

● **Response message**

The structure of the response message is as follows:

MODBUS/ASCII

3AH	30H	31H	31H	30H	30H	35H	44H	44H	30H	30H	30H	32H	30H	42H	0DH	0AH
:	0	1	1	0	0	5	D	D	0	0	0	2	0	B	CR	LF
(1)	(2)		(3)		(4)				(5)				(6)		(7)	

(1) Start code
(2) Station address
(3) Function code
(4) Write start data address 1
(5) No. of write data records
(6) Check code (LRC)
(7) End code

MODBUS/RTU

01H	10H	05H	DDH	00H	02H	D1H	3EH
(1)	(2)	(3)		(4)		(5)	

(1) Station address
(2) Function code
(3) Write start data address
(4) No. of write data records
(5) Check code (CRC)

Note

- The response message when an error occurs is the same as when an error occurs for the multiple data item read command.

■ One data item write command (06H)

Writing is performed in a hexadecimal format to data for which there is only one data address.

● Send message

Specifies the data address and the data. The structure of the instruction message is as follows:
Example: The 01A0H value is written in the 05DDH data address.

MODBUS/ASCII

3AH	30H	31H	30H	36H	30H	35H	44H	44H	30H	31H	41H	30H	37H	36H	0DH	0AH
:	0	1	0	6	0	5	D	D	0	1	A	0	7	6	CR	LF
(1)	(2)		(3)		(4)				(5)				(6)		(7)	

(1) Start code
(2) Station address
(3) Function code
(4) Data address
(5) Write data
(6) Check code (LRC)
(7) End code

MODBUS/RTU

01H	06H	05H	DDH	01H	A0H	18H	D4H
(1)	(2)	(3)		(4)		(5)	

(1) Station address
(2) Function code
(3) Data address
(4) Write data
(5) Check code (CRC)

● Response message

The normal response message is the same as the send message.

🕮 Note

- The response message when an error occurs is the same as when an error occurs for the multiple data item read command.

11 - 4 Numeric Representation

The numeric values include the data address, number of data records and data values, and all use the hexadecimal notation. The numeric representation varies depending on whether the communications type is MODBUS/ASCII or MODBUS/RTU. This notation method is shared by both the instruction message and the response message.

■ ASCII hexadecimals

The ASCII hexadecimal specifications are shown in the table below.
If the message does not match the specifications, the unit does not process the instruction message and instead returns an error response.

Item	Specification	Example of specification mismatch
Available characters	0 (30H) to 9 (39H) A (41H) to F (46H)	1 2 3 a (a is not allowed) – 1 2 3 (– is not allowed) ␣ 1 2 3 (Space is not allowed)
Number of characters	4 or 2	1 2 3 (3 characters) 0 1 2 3 4 (5 characters)
Expressible numeric values (4 characters)	8000H to 7FFFH (data with symbols) 0000H to FFFFH (data without symbols)	
Expressible numeric values (2 characters)	00H to FFH (data without symbols)	
Examples of normal character strings	0 0 0 0 1 2 A B 0 1 2 3 F F F F 0 1 1 0	

■ RTU hexadecimals

The RTU hexadecimal specifications are shown in the table below.
If the message does not match the specifications, the unit does not process the instruction message and instead returns an error response.

Item	Specification	Example of specification mismatch
Available characters	00H to FFH (all)	
Number of characters	2 or 1	00H 01H 02H (3 characters)
Expressible numeric values (2 characters)	8000H to 7FFFH (data with symbols) 0000H to FFFFH (data without symbols)	
Expressible numeric values (1 characters)	00H to FFH (data without symbols)	
Examples of normal character strings	00H 01H 12H ABH 01H 23H FFH FFH 10H 04H	

11 - 5 Specifications Shared with CPL Communications Function

■ Definition of data addresses

☞ 10-4 Definition of Data Addresses (page 10-12).

■ RS-485 driver control timing specifications

☞ 10-7 Reception and Transmission Timing (page 10-16).

Chapter 12. MODBUS/TCP COMMUNICATIONS FUNCTION

12 - 1 Outline of Communication

This unit can communicate with host devices in MODBUS/TCP protocol that conforms to Ethernet TCP/IP.

■ Features

The features of the unit's communication function are as follows:

- When an Ethernet interface communication adapter (1 port) or communication box (4 ports) is mounted on the right or left (communication box is left only) of a connected unit and an Ethernet cable is connected, all modules in the connected block can be accessed.
- The host device can perform communication via Ethernet when the unit's IP address is specified.
- Almost all of the unit parameters can be communicated.
  For details on the communication parameters, refer to:
  ☞ Chapter 13. LIST OF COMMUNICATION DATA.

! Handling Precautions

- In MODBUS communications, the communication address (parameter) for the module that is set in the host device may be reduced by 1 in a communication message during transmission.
  Example: If the communication address (parameter) is set to 1001 in the host device, it will be 1000 in a communication message during transmission.
  The module sends/receives a message to/from the communication address (parameter) that is specified in the communication message. Be sure to understand the specifications of the host device before using the module.

■ Setup

The following setup is required for performing the MODBUS/TCP communications with the unit.

Item	Initial value
IP address	192.168.255.254
Net mask	255.255.255.0
Default gateway	None

- The net mask and default gateway can be set for each chain by selecting "All" in the actual module configuration screen of the SLP-NX (sold separately).
- The port number used by MODBUS/TCP is 502, but this can be changed as required.

■ Communication procedure

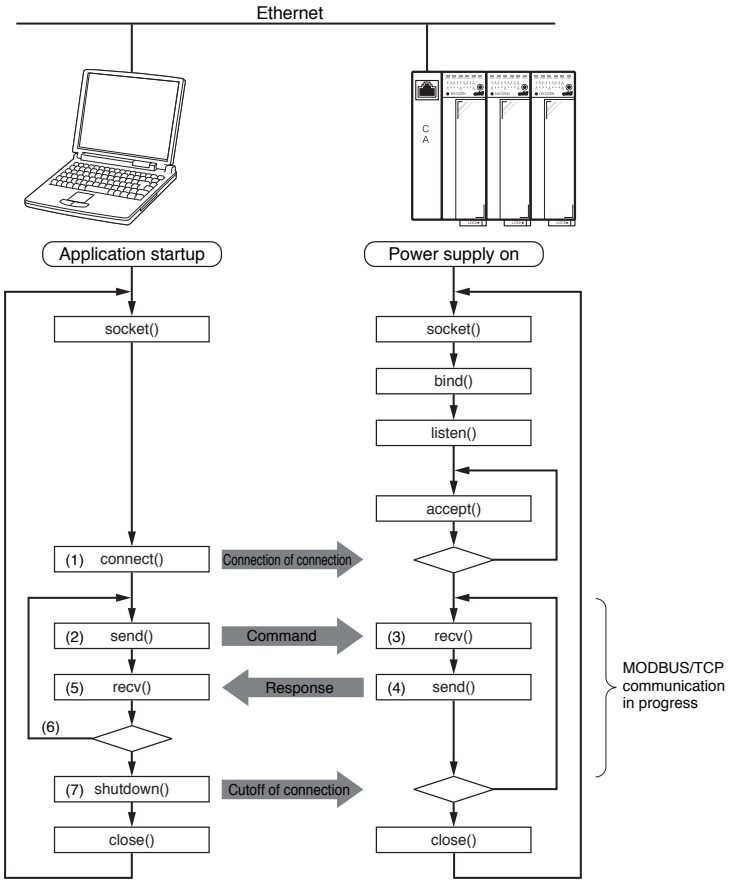
With MODBUS/TCP, the TCP/IP socket interface is used for communications. The TCP/IP socket interface is used in different ways depending on the host device, but this section will explain the usage method for an ordinary computer.

(1) A TCP/IP socket connection is established from the host device (master station) to one unit (slave station).
(2) The master station sends an instruction message to a slave station.
(3) The slave station receives the instruction message, and performs read or write processing according to the content of the message.
(4) The slave station sends a message corresponding to the processing content as a response message.
(5) The master station receives the response message.
(6) To continue MODBUS/TCP communications, go back to (2).
(7) To end MODBUS/TCP communications, the master station performs a TCP/IP socket connection cutoff request process on the slave station.

Handling Precautions

- This device can support up to two (one when using RS-485 communication) TCP connections for MODBUS/TCP.
  For details,
  ☞ Chapter 4, “Network Function Design” in Network Instrumentation Module User’s Manual Network Design Version, CP-SP-1313E.

■ General TCP/IC socket communications procedure

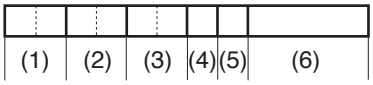


12 - 2 Message Structure

■ Message structure

A TCP/IP frame is used. The MODBUS/TCP message is expressed in the TCP data section.

● MODBUS/TCP



(1) Transaction Identifier (2 bytes)	No particular definition.
(2) Protocol Identifier (2 bytes)	0000H when the protocol is MODBUS.
(3) Length (2 bytes)	Expresses the number of bytes in (4) to (6).
(4) Unit Identifier (1 byte)	Specify FF or 00H.
(5) Function (1 byte)	Specify a function code.
(6) Data (n bytes)	A data string that depends on the function code.

● Data details

- Transaction Identifier
  Contains the same value in a request - response pair.
  The communication master station can use the Transaction Identifier to recognize that a response is the pair of a request.

- Protocol Identifier
  Specify with 0000H when the protocol is MODBUS.

- Length
  Expresses the data length from Unit Identifier to Data as the number of bytes.

- Unit Identifier
  Specify FFH or 00H.

- Function
  Specify a function code.

- Data
  The communication data.

● Frame detection method

A TCP frame is detected as one MODBUS/TCP frame.

● Used port

The TCP port number used by MODBUS/TCP is No. 502. (Can be changed.)

● Function code

Supports Function Codes 3(03H), 16(10H) and (06H).

■ Exception codes

When a response message error occurs, the following exception codes are added after the function code.

Error type	Exception code	Description
Invalid function	01 (2 bytes)	Function code not supported code by the unit
Invalid data address	02 (2 bytes)	Including data addresses that cannot be read or written
Invalid data	03 (2 bytes)	Errors other than the above
Busy	06 (2 bytes)	Status where the unit cannot process. Resend.

■ No. of data records

The number of data records that can be read or written in a one frame message is as follows:

Command type (Function code)	No. of data records	
	RAM	EEPROM
Multiple data item read (03H)	1 to 64 items	1 to 64 items
Multiple data item write (10H)	1 to 32 items	1 to 32 items
One data item write (06H)	1 item	1 item

🕮 Note

- For details on the MODBUS communication specifications, refer to:
  ☞ “Modicon Modbus Protocol Reference Guide (PI-MBUS-300 Rev.J)” MODICON, Inc.
  ☞ “OPEN MODBUS/TCP SPECIFICATION (Release 1.0)” Schneider Electric.

12 - 3 Description of Commands

■ Application section

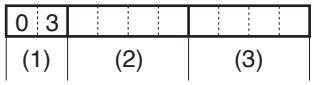
The following data descriptions

are single byte hex descriptions (left side is the upper nibble).

■ Multiple data item read command (03H)

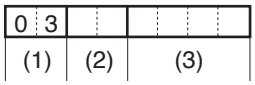
● One data item

• Request



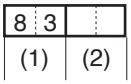
(1) Function code (Read Holding Registers)
(2) Start data address
(3) Number of data records (= 1)

• Normal response



(1) Function code (Read Holding Registers)
(2) Number of bytes (= 2)
(3) Read data

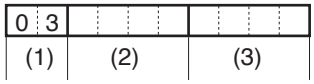
• Abnormal response



(1) Error code (Read Holding Registers)
(2) Exception code (= 01H/02H/03H/06H)

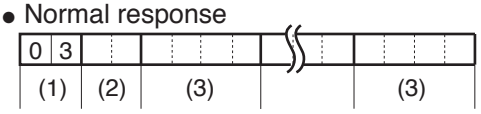
● Multiple data items

• Request



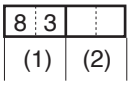
(1) Function code (Read Holding Registers)
(2) Start data address
(3) Number of data records

• Normal response



(1) Function code (Read Holding Registers)
(2) Number of bytes
(3) Read data (data items continue for the number of read data items)

• Abnormal response



(1) Error code (Read Holding Registers)
(2) Exception code (= 01H/02H/03H/06H)

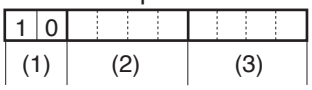
■ Multiple data item write command (10H)

● One data item

• Request

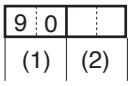
(1) Function code (Write Multiple Registers)
(2) Start data address
(3) Number of data records (= 1)
(4) Number of bytes (= number of data records × 2)
(5) Write data

• Normal response



(1) Function code (Write Multiple Registers)
(2) Start data address
(3) Number of data records (= 1)

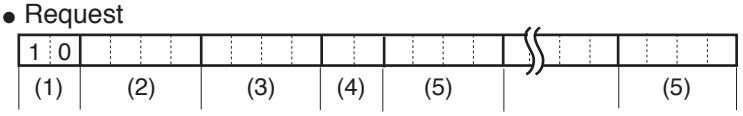
• Abnormal response



(1) Error code (Write Multiple Registers)
(2) Exception code (= 01H/02H/03H/06H)

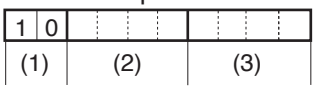
● Multiple data items

• Request



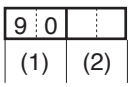
(1) Function code (Write Multiple Registers)
(2) Start data address
(3) Number of data records
(4) Number of bytes (= number of data records × 2)
(5) Write data

• Normal response



(1) Function code (Write Multiple Registers)
(2) Start data address
(3) Number of data records

• Abnormal response



(1) Error code (Write Multiple Registers)
(2) Exception code (= 01H/02H/03H/06H)

■ One data item write command (06H)

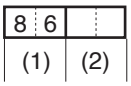
- Request

(1) Function code (Write Single Register)
(2) Write address
(3) Write data

- Normal response

(1) Function code (Write Single Register)
(2) Write address
(3) Write data (echo back)

- Abnormal response



(1) Error code (Write Single Register)
(2) Exception code (= 01H/02H/03H/06H)

Chapter 13. LIST OF COMMUNICATION DATA

List explanation

Read / write

No symbol: Possible
×: Impossible

Decimal point information

–: No decimal point
1 to 3: Decimal point position (original value of data is multiplied by 10, 100, or 1000)

MODBUS communications

Handling Precautions

- In MODBUS communications, the communication address (parameter) for the module that is set in the host device may be reduced by 1 in a communication message during transmission.
  Example: The communication address (parameter) is “1000” in a communication message sent when “1001” is set on the host device.
- This unit bases sending and receiving on the communication address (parameter) that is specified in the communication message.
  Be sure to understand the specifications of the host device before using the unit module.

Bit map assignment

Some data are prepared to be grouped together by type within 16-bit data (bit: ON/OFF). grouped together by type within 16-bit data (bit: ON/OFF).

System settings/operation information System information/operation information

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
System settings	Operation information		Device operation mode settings	3840	0F00			–	
System information	Operation information		Display status	4096	1000		×	–	
System information	Operation information		Module status	4097	1001		×	–	
System information	Operation information		Management IO module module Status (1)	4112	1010		×	–	
System information	Operation information		Management IO module module Status (2)	4114	1012		×	–	
System information	Operation information		Management IO module module Status (3)	4116	1014		×	–	
System information	Operation information		Management IO module module Status (4)	4118	1016		×	–	
System information	Operation information		Management IO module module Status (5)	4120	1018		×	–	
System information	Operation information		Management IO module module Status (6)	4122	101A		×	–	
System information	Operation information		Management IO module module Status (7)	4124	101C		×	–	
System information	Operation information		Management IO module module Status (8)	4126	101E		×	–	
System information	Operation information		Management IO module module Status (9)	4128	1020		×	–	
System information	Operation information		Management IO module module Status (10)	4130	1022		×	–	
System information	Operation information		Management IO module module Status (11)	4132	1024		×	–	
System information	Operation information		Management IO module module Status (12)	4134	1026		×	–	
System information	Operation information		Management IO module module Status (13)	4136	1028		×	–	
System information	Operation information		Management IO module module Status (14)	4138	102A		×	–	
System information	Operation information		Management IO module module Status (15)	4140	102C		×	–	
System information	Operation information		Management IO module module Status (16)	4142	102E		×	–	

NX-S11/12/21 (general)

System information/bit information operation System information/bit information (system) System information/bit information (module)

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
System information	Bit information operation		Bit information latch information clear	4464	1170			–	
System information	Bit information (system)		Minor malfunction flag	4488	1188		×	–	Refer to bit map assignment alarm information 2
System information	Bit information (system)		Partial failure flag	4496	1190		×	–	Refer to bit map assignment alarm information 3
System information	Bit information (module)		Module used/unused	4544	11C0			–	Bit map
System information	Bit information (module)		Module online/offline	4552	11C8			–	Assignment
System information	Bit information (module)		Module normal/error	4560	11D0		×	–	Module information
System information	Bit information (module)		Module normal/error	4564	11D4		×	–	should be referred to Latch information
System information	Bit information (module)		Module serious malfunction occurrence	4568	11D8		×	–	
System information	Bit information (module)		Module serious malfunction occurrence	4572	11DC		×	–	Latch information
System information	Bit information (module)		Module minor malfunction occurrence	4576	11E0		×	–	
System information	Bit information (module)		Module minor malfunction occurrence	4580	11E4		×	–	Latch information
System information	Bit information (module)		Module partial failure occurrence	4584	11E8		×	–	
System information	Bit information (module)		Module partial failure occurrence	4588	11EC		×	–	Latch information
System information	Bit information (module)		Module communication error occurrence	4592	11F0		×	–	
System information	Bit information (module)		Module communication error occurrence	4596	11F4		×	–	Latch information

Module information/clock information

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Module information	Clock information		Year	4704	1260			–	
Module information	Clock information		Month	4705	1261			–	
Module information	Clock information		Date	4706	1262			–	
Module information	Clock information		Hour	4707	1263			–	
Module information	Clock information		Minutes	4708	1264			–	
Module information	Clock information		Seconds	4709	1265			–	
Module information	Clock information		Day	4710	1266		×	–	

NX-S11/12/21 (general)

Error status/system error Error status/SV module error
Error status/IO management module representative error Error status/communication representative error

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Error status	System error		Minor malfunction flag	4865	1301		×	–	
Error status	System error		Partial failure flag	4866	1302		×	–	
Error status	SV module error		Minor malfunction flag	4897	1321		×	–	
Error status	SV module error		Partial failure flag	4898	1322		×	–	
Error status	IO management module representative error		Management module representative serious malfunction flag	5248	1480		×	–	
Error status	IO management module representative error		Management module representative minor malfunction flag	5249	1481		×	–	
Error status	IO management module representative error		Management module representative partial failure flag)	5250	1482		×	–	
Error status	Communication representative error		Communication representative error flag	5504	1580		×	–	

Application status related to module configuration

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Application status	Module structure related		Module (1) product ID	6145	1801		×	–	Product ID List (page 13-67)
Application status	Module structure related		Module (2) product ID	6147	1803		×	–	
Application status	Module structure related		Module (3) product ID	6149	1805		×	–	
Application status	Module structure related		Module (4) product ID	6151	1807		×	–	
Application status	Module structure related		Module (5) product ID	6153	1809		×	–	
Application status	Module structure related		Module (6) product ID	6155	180B		×	–	
Application status	Module structure related		Module (7) product ID	6157	180D		×	–	
Application status	Module structure related		Module (8) product ID	6159	180F		×	–	
Application status	Module structure related		Module (9) product ID	6161	1811		×	–	
Application status	Module structure related		Module (10) product ID	6163	1813		×	–	
Application status	Module structure related		Module (11) product ID	6165	1815		×	–	
Application status	Module structure related		Module (12) product ID	6167	1817		×	–	
Application status	Module structure related		Module (13) product ID	6169	1819		×	–	
Application status	Module structure related		Module (14) product ID	6171	181B		×	–	
Application status	Module structure related		Module (15) product ID	6173	181D		×	–	
Application status	Module structure related		Module (16) product ID	6175	181F		×	–	

Comm addr replacemt/data address

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt	Data address		Address (1)	40960	A000			–	
Comm addr replacemt	Data address		Address (2)	40961	A001			–	
Comm addr replacemt	Data address		Address (3)	40962	A002			–	
Comm addr replacemt	Data address		Address (4)	40963	A003			–	
Comm addr replacemt	Data address		Address (5)	40964	A004			–	
Comm addr replacemt	Data address		Address (6)	40965	A005			–	
Comm addr replacemt	Data address		Address (7)	40966	A006			–	
Comm addr replacemt	Data address		Address (8)	40967	A007			–	
Comm addr replacemt	Data address		Address (9)	40968	A008			–	
Comm addr replacemt	Data address		Address (10)	40969	A009			–	
Comm addr replacemt	Data address		Address (11)	40970	A00A			–	
Comm addr replacemt	Data address		Address (12)	40971	A00B			–	
Comm addr replacemt	Data address		Address (13)	40972	A00C			–	
Comm addr replacemt	Data address		Address (14)	40973	A00D			–	
Comm addr replacemt	Data address		Address (15)	40974	A00E			–	
Comm addr replacemt	Data address		Address (16)	40975	A00F			–	
Comm addr replacemt	Data address		Address (17)	40976	A010			–	
Comm addr replacemt	Data address		Address (18)	40977	A011			–	
Comm addr replacemt	Data address		Address (19)	40978	A012			–	
Comm addr replacemt	Data address		Address (20)	40979	A013			–	
Comm addr replacemt	Data address		Address (21)	40980	A014			–	
Comm addr replacemt	Data address		Address (22)	40981	A015			–	
Comm addr replacemt	Data address		Address (23)	40982	A016			–	
Comm addr replacemt	Data address		Address (24)	40983	A017			–	
Comm addr replacemt	Data address		Address (25)	40984	A018			–	
Comm addr replacemt	Data address		Address (26)	40985	A019			–	
Comm addr replacemt	Data address		Address (27)	40986	A01A			–	
Comm addr replacemt	Data address		Address (28)	40987	A01B			–	
Comm addr replacemt	Data address		Address (29)	40988	A01C			–	
Comm addr replacemt	Data address		Address (30)	40989	A01D			–	
Comm addr replacemt	Data address		Address (31)	40990	A01E			–	
Comm addr replacemt	Data address		Address (32)	40991	A01F			–	
Comm addr replacemt	Data address		Address (33)	40992	A020			–	
Comm addr replacemt	Data address		Address (34)	40993	A021			–	
Comm addr replacemt	Data address		Address (35)	40994	A022			–	
Comm addr replacemt	Data address		Address (36)	40995	A023			–	
Comm addr replacemt	Data address		Address (37)	40996	A024			–	
Comm addr replacemt	Data address		Address (38)	40997	A025			–	
Comm addr replacemt	Data address		Address (39)	40998	A026			–	
Comm addr replacemt	Data address		Address (40)	40999	A027			–	
Comm addr replacemt	Data address		Address (41)	41000	A028			–	
Comm addr replacemt	Data address		Address (42)	41001	A029			–	
Comm addr replacemt	Data address		Address (43)	41002	A02A			–	
Comm addr replacemt	Data address		Address (44)	41003	A02B			–	
Comm addr replacemt	Data address		Address (45)	41004	A02C			–	
Comm addr replacemt	Data address		Address (46)	41005	A02D			–	
Comm addr replacemt	Data address		Address (47)	41006	A02E			–	
Comm addr replacemt	Data address		Address (48)	41007	A02F			–	
Comm addr replacemt	Data address		Address (49)	41008	A030			–	
Comm addr replacemt	Data address		Address (50)	41009	A031			–	
Comm addr replacemt	Data address		Address (51)	41010	A032			–	
Comm addr replacemt	Data address		Address (52)	41011	A033			–	
Comm addr replacemt	Data address		Address (53)	41012	A034			–	
Comm addr replacemt	Data address		Address (54)	41013	A035			–	
Comm addr replacemt	Data address		Address (55)	41014	A036			–	

Comm addr replacemt/data address

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt	Data address		Address (56)	41015	A037			–	
Comm addr replacemt	Data address		Address (57)	41016	A038			–	
Comm addr replacemt	Data address		Address (58)	41017	A039			–	
Comm addr replacemt	Data address		Address (59)	41018	A03A			–	
Comm addr replacemt	Data address		Address (60)	41019	A03B			–	
Comm addr replacemt	Data address		Address (61)	41020	A03C			–	
Comm addr replacemt	Data address		Address (62)	41021	A03D			–	
Comm addr replacemt	Data address		Address (63)	41022	A03E			–	
Comm addr replacemt	Data address		Address (64)	41023	A03F			–	
Comm addr replacemt	Data address		Address (65)	41024	A040			–	
Comm addr replacemt	Data address		Address (66)	41025	A041			–	
Comm addr replacemt	Data address		Address (67)	41026	A042			–	
Comm addr replacemt	Data address		Address (68)	41027	A043			–	
Comm addr replacemt	Data address		Address (69)	41028	A044			–	
Comm addr replacemt	Data address		Address (70)	41029	A045			–	
Comm addr replacemt	Data address		Address (71)	41030	A046			–	
Comm addr replacemt	Data address		Address (72)	41031	A047			–	
Comm addr replacemt	Data address		Address (73)	41032	A048			–	
Comm addr replacemt	Data address		Address (74)	41033	A049			–	
Comm addr replacemt	Data address		Address (75)	41034	A04A			–	
Comm addr replacemt	Data address		Address (76)	41035	A04B			–	
Comm addr replacemt	Data address		Address (77)	41036	A04C			–	
Comm addr replacemt	Data address		Address (78)	41037	A04D			–	
Comm addr replacemt	Data address		Address (79)	41038	A04E			–	
Comm addr replacemt	Data address		Address (80)	41039	A04F			–	
Comm addr replacemt	Data address		Address (81)	41040	A050			–	
Comm addr replacemt	Data address		Address (82)	41041	A051			–	
Comm addr replacemt	Data address		Address (83)	41042	A052			–	
Comm addr replacemt	Data address		Address (84)	41043	A053			–	
Comm addr replacemt	Data address		Address (85)	41044	A054			–	
Comm addr replacemt	Data address		Address (86)	41045	A055			–	
Comm addr replacemt	Data address		Address (87)	41046	A056			–	
Comm addr replacemt	Data address		Address (88)	41047	A057			–	
Comm addr replacemt	Data address		Address (89)	41048	A058			–	
Comm addr replacemt	Data address		Address (90)	41049	A059			–	
Comm addr replacemt	Data address		Address (91)	41050	A05A			–	
Comm addr replacemt	Data address		Address (92)	41051	A05B			–	
Comm addr replacemt	Data address		Address (93)	41052	A05C			–	
Comm addr replacemt	Data address		Address (94)	41053	A05D			–	
Comm addr replacemt	Data address		Address (95)	41054	A05E			–	
Comm addr replacemt	Data address		Address (96)	41055	A05F			–	
Comm addr replacemt	Data address		Address (97)	41056	A060			–	
Comm addr replacemt	Data address		Address (98)	41057	A061			–	
Comm addr replacemt	Data address		Address (99)	41058	A062			–	
Comm addr replacemt	Data address		Address (100)	41059	A063			–	
Comm addr replacemt	Data address		Address (101)	41060	A064			–	
Comm addr replacemt	Data address		Address (102)	41061	A065			–	
Comm addr replacemt	Data address		Address (103)	41062	A066			–	
Comm addr replacemt	Data address		Address (104)	41063	A067			–	
Comm addr replacemt	Data address		Address (105)	41064	A068			–	
Comm addr replacemt	Data address		Address (106)	41065	A069			–	
Comm addr replacemt	Data address		Address (107)	41066	A06A			–	
Comm addr replacemt	Data address		Address (108)	41067	A06B			–	
Comm addr replacemt	Data address		Address (109)	41068	A06C			–	
Comm addr replacemt	Data address		Address (110)	41069	A06D			–	

Comm addr replacemt/data address

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt	Data address		Address (111)	41070	A06E			–	
Comm addr replacemt	Data address		Address (112)	41071	A06F			–	
Comm addr replacemt	Data address		Address (113)	41072	A070			–	
Comm addr replacemt	Data address		Address (114)	41073	A071			–	
Comm addr replacemt	Data address		Address (115)	41074	A072			–	
Comm addr replacemt	Data address		Address (116)	41075	A073			–	
Comm addr replacemt	Data address		Address (117)	41076	A074			–	
Comm addr replacemt	Data address		Address (118)	41077	A075			–	
Comm addr replacemt	Data address		Address (119)	41078	A076			–	
Comm addr replacemt	Data address		Address (120)	41079	A077			–	
Comm addr replacemt	Data address		Address (121)	41080	A078			–	
Comm addr replacemt	Data address		Address (122)	41081	A079			–	
Comm addr replacemt	Data address		Address (123)	41082	A07A			–	
Comm addr replacemt	Data address		Address (124)	41083	A07B			–	
Comm addr replacemt	Data address		Address (125)	41084	A07C			–	
Comm addr replacemt	Data address		Address (126)	41085	A07D			–	
Comm addr replacemt	Data address		Address (127)	41086	A07E			–	
Comm addr replacemt	Data address		Address (128)	41087	A07F			–	
Comm addr replacemt	Data address		Address (129)	41088	A080			–	
Comm addr replacemt	Data address		Address (130)	41089	A081			–	
Comm addr replacemt	Data address		Address (131)	41090	A082			–	
Comm addr replacemt	Data address		Address (132)	41091	A083			–	
Comm addr replacemt	Data address		Address (133)	41092	A084			–	
Comm addr replacemt	Data address		Address (134)	41093	A085			–	
Comm addr replacemt	Data address		Address (135)	41094	A086			–	
Comm addr replacemt	Data address		Address (136)	41095	A087			–	
Comm addr replacemt	Data address		Address (137)	41096	A088			–	
Comm addr replacemt	Data address		Address (138)	41097	A089			–	
Comm addr replacemt	Data address		Address (139)	41098	A08A			–	
Comm addr replacemt	Data address		Address (140)	41099	A08B			–	
Comm addr replacemt	Data address		Address (141)	41100	A08C			–	
Comm addr replacemt	Data address		Address (142)	41101	A08D			–	
Comm addr replacemt	Data address		Address (143)	41102	A08E			–	
Comm addr replacemt	Data address		Address (144)	41103	A08F			–	
Comm addr replacemt	Data address		Address (145)	41104	A090			–	
Comm addr replacemt	Data address		Address (146)	41105	A091			–	
Comm addr replacemt	Data address		Address (147)	41106	A092			–	
Comm addr replacemt	Data address		Address (148)	41107	A093			–	
Comm addr replacemt	Data address		Address (149)	41108	A094			–	
Comm addr replacemt	Data address		Address (150)	41109	A095			–	
Comm addr replacemt	Data address		Address (151)	41110	A096			–	
Comm addr replacemt	Data address		Address (152)	41111	A097			–	
Comm addr replacemt	Data address		Address (153)	41112	A098			–	
Comm addr replacemt	Data address		Address (154)	41113	A099			–	
Comm addr replacemt	Data address		Address (155)	41114	A09A			–	
Comm addr replacemt	Data address		Address (156)	41115	A09B			–	
Comm addr replacemt	Data address		Address (157)	41116	A09C			–	
Comm addr replacemt	Data address		Address (158)	41117	A09D			–	
Comm addr replacemt	Data address		Address (159)	41118	A09E			–	
Comm addr replacemt	Data address		Address (160)	41119	A09F			–	
Comm addr replacemt	Data address		Address (161)	41120	A0A0			–	
Comm addr replacemt	Data address		Address (162)	41121	A0A1			–	
Comm addr replacemt	Data address		Address (163)	41122	A0A2			–	
Comm addr replacemt	Data address		Address (164)	41123	A0A3			–	
Comm addr replacemt	Data address		Address (165)	41124	A0A4			–	

Comm addr replacemt/data address

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt	Data address		Address (166)	41125	A0A5			–	
Comm addr replacemt	Data address		Address (167)	41126	A0A6			–	
Comm addr replacemt	Data address		Address (168)	41127	A0A7			–	
Comm addr replacemt	Data address		Address (169)	41128	A0A8			–	
Comm addr replacemt	Data address		Address (170)	41129	A0A9			–	
Comm addr replacemt	Data address		Address (171)	41130	A0AA			–	
Comm addr replacemt	Data address		Address (172)	41131	A0AB			–	
Comm addr replacemt	Data address		Address (173)	41132	A0AC			–	
Comm addr replacemt	Data address		Address (174)	41133	A0AD			–	
Comm addr replacemt	Data address		Address (175)	41134	A0AE			–	
Comm addr replacemt	Data address		Address (176)	41135	A0AF			–	
Comm addr replacemt	Data address		Address (177)	41136	A0B0			–	
Comm addr replacemt	Data address		Address (178)	41137	A0B1			–	
Comm addr replacemt	Data address		Address (179)	41138	A0B2			–	
Comm addr replacemt	Data address		Address (180)	41139	A0B3			–	
Comm addr replacemt	Data address		Address (181)	41140	A0B4			–	
Comm addr replacemt	Data address		Address (182)	41141	A0B5			–	
Comm addr replacemt	Data address		Address (183)	41142	A0B6			–	
Comm addr replacemt	Data address		Address (184)	41143	A0B7			–	
Comm addr replacemt	Data address		Address (185)	41144	A0B8			–	
Comm addr replacemt	Data address		Address (186)	41145	A0B9			–	
Comm addr replacemt	Data address		Address (187)	41146	A0BA			–	
Comm addr replacemt	Data address		Address (188)	41147	A0BB			–	
Comm addr replacemt	Data address		Address (189)	41148	A0BC			–	
Comm addr replacemt	Data address		Address (190)	41149	A0BD			–	
Comm addr replacemt	Data address		Address (191)	41150	A0BE			–	
Comm addr replacemt	Data address		Address (192)	41151	A0BF			–	
Comm addr replacemt	Data address		Address (193)	41152	A0C0			–	
Comm addr replacemt	Data address		Address (194)	41153	A0C1			–	
Comm addr replacemt	Data address		Address (195)	41154	A0C2			–	
Comm addr replacemt	Data address		Address (196)	41155	A0C3			–	
Comm addr replacemt	Data address		Address (197)	41156	A0C4			–	
Comm addr replacemt	Data address		Address (198)	41157	A0C5			–	
Comm addr replacemt	Data address		Address (199)	41158	A0C6			–	
Comm addr replacemt	Data address		Address (200)	41159	A0C7			–	
Comm addr replacemt	Data address		Address (201)	41160	A0C8			–	
Comm addr replacemt	Data address		Address (202)	41161	A0C9			–	
Comm addr replacemt	Data address		Address (203)	41162	A0CA			–	
Comm addr replacemt	Data address		Address (204)	41163	A0CB			–	
Comm addr replacemt	Data address		Address (205)	41164	A0CC			–	
Comm addr replacemt	Data address		Address (206)	41165	A0CD			–	
Comm addr replacemt	Data address		Address (207)	41166	A0CE			–	
Comm addr replacemt	Data address		Address (208)	41167	A0CF			–	
Comm addr replacemt	Data address		Address (209)	41168	A0D0			–	
Comm addr replacemt	Data address		Address (210)	41169	A0D1			–	
Comm addr replacemt	Data address		Address (211)	41170	A0D2			–	
Comm addr replacemt	Data address		Address (212)	41171	A0D3			–	
Comm addr replacemt	Data address		Address (213)	41172	A0D4			–	
Comm addr replacemt	Data address		Address (214)	41173	A0D5			–	
Comm addr replacemt	Data address		Address (215)	41174	A0D6			–	
Comm addr replacemt	Data address		Address (216)	41175	A0D7			–	
Comm addr replacemt	Data address		Address (217)	41176	A0D8			–	
Comm addr replacemt	Data address		Address (218)	41177	A0D9			–	
Comm addr replacemt	Data address		Address (219)	41178	A0DA			–	
Comm addr replacemt	Data address		Address (220)	41179	A0DB			–	

NX-S11/12/21 (general)

Comm addr replacemt/data address

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt	Data address		Address (221)	41180	A0DC			–	
Comm addr replacemt	Data address		Address (222)	41181	A0DD			–	
Comm addr replacemt	Data address		Address (223)	41182	A0DE			–	
Comm addr replacemt	Data address		Address (224)	41183	A0DF			–	
Comm addr replacemt	Data address		Address (225)	41184	A0E0			–	
Comm addr replacemt	Data address		Address (226)	41185	A0E1			–	
Comm addr replacemt	Data address		Address (227)	41186	A0E2			–	
Comm addr replacemt	Data address		Address (228)	41187	A0E3			–	
Comm addr replacemt	Data address		Address (229)	41188	A0E4			–	
Comm addr replacemt	Data address		Address (230)	41189	A0E5			–	
Comm addr replacemt	Data address		Address (231)	41190	A0E6			–	
Comm addr replacemt	Data address		Address (232)	41191	A0E7			–	
Comm addr replacemt	Data address		Address (233)	41192	A0E8			–	
Comm addr replacemt	Data address		Address (234)	41193	A0E9			–	
Comm addr replacemt	Data address		Address (235)	41194	A0EA			–	
Comm addr replacemt	Data address		Address (236)	41195	A0EB			–	
Comm addr replacemt	Data address		Address (237)	41196	A0EC			–	
Comm addr replacemt	Data address		Address (238)	41197	A0ED			–	
Comm addr replacemt	Data address		Address (239)	41198	A0EE			–	
Comm addr replacemt	Data address		Address (240)	41199	A0EF			–	
Comm addr replacemt	Data address		Address (241)	41200	A0F0			–	
Comm addr replacemt	Data address		Address (242)	41201	A0F1			–	
Comm addr replacemt	Data address		Address (243)	41202	A0F2			–	
Comm addr replacemt	Data address		Address (244)	41203	A0F3			–	
Comm addr replacemt	Data address		Address (245)	41204	A0F4			–	
Comm addr replacemt	Data address		Address (246)	41205	A0F5			–	
Comm addr replacemt	Data address		Address (247)	41206	A0F6			–	
Comm addr replacemt	Data address		Address (248)	41207	A0F7			–	
Comm addr replacemt	Data address		Address (249)	41208	A0F8			–	
Comm addr replacemt	Data address		Address (250)	41209	A0F9			–	
Comm addr replacemt	Data address		Address (251)	41210	A0FA			–	
Comm addr replacemt	Data address		Address (252)	41211	A0FB			–	
Comm addr replacemt	Data address		Address (253)	41212	A0FC			–	
Comm addr replacemt	Data address		Address (254)	41213	A0FD			–	
Comm addr replacemt	Data address		Address (255)	41214	A0FE			–	
Comm addr replacemt	Data address		Address (256)	41215	A0FF			–	

Comm addr replacemt data/data

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt data	Data		Data (1)	53248	D000			Save to replacement destination	
Comm addr replacemt data	Data		Data (2)	53249	D001			Save to replacement destination	
Comm addr replacemt data	Data		Data (3)	53250	D002			Save to replacement destination	
Comm addr replacemt data	Data		Data (4)	53251	D003			Save to replacement destination	
Comm addr replacemt data	Data		Data (5)	53252	D004			Save to replacement destination	
Comm addr replacemt data	Data		Data (6)	53253	D005			Save to replacement destination	
Comm addr replacemt data	Data		Data (7)	53254	D006			Save to replacement destination	
Comm addr replacemt data	Data		Data (8)	53255	D007			Save to replacement destination	
Comm addr replacemt data	Data		Data (9)	53256	D008			Save to replacement destination	
Comm addr replacemt data	Data		Data (10)	53257	D009			Save to replacement destination	
Comm addr replacemt data	Data		Data (11)	53258	D00A			Save to replacement destination	
Comm addr replacemt data	Data		Data (12)	53259	D00B			Save to replacement destination	
Comm addr replacemt data	Data		Data (13)	53260	D00C			Save to replacement destination	
Comm addr replacemt data	Data		Data (14)	53261	D00D			Save to replacement destination	
Comm addr replacemt data	Data		Data (15)	53262	D00E			Save to replacement destination	
Comm addr replacemt data	Data		Data (16)	53263	D00F			Save to replacement destination	
Comm addr replacemt data	Data		Data (17)	53264	D010			Save to replacement destination	
Comm addr replacemt data	Data		Data (18)	53265	D011			Save to replacement destination	
Comm addr replacemt data	Data		Data (19)	53266	D012			Save to replacement destination	
Comm addr replacemt data	Data		Data (20)	53267	D013			Save to replacement destination	
Comm addr replacemt data	Data		Data (21)	53268	D014			Save to replacement destination	
Comm addr replacemt data	Data		Data (22)	53269	D015			Save to replacement destination	
Comm addr replacemt data	Data		Data (23)	53270	D016			Save to replacement destination	
Comm addr replacemt data	Data		Data (24)	53271	D017			Save to replacement destination	
Comm addr replacemt data	Data		Data (25)	53272	D018			Save to replacement destination	
Comm addr replacemt data	Data		Data (26)	53273	D019			Save to replacement destination	
Comm addr replacemt data	Data		Data (27)	53274	D01A			Save to replacement destination	
Comm addr replacemt data	Data		Data (28)	53275	D01B			Save to replacement destination	
Comm addr replacemt data	Data		Data (29)	53276	D01C			Save to replacement destination	
Comm addr replacemt data	Data		Data (30)	53277	D01D			Save to replacement destination	
Comm addr replacemt data	Data		Data (31)	53278	D01E			Save to replacement destination	
Comm addr replacemt data	Data		Data (32)	53279	D01F			Save to replacement destination	
Comm addr replacemt data	Data		Data (33)	53280	D020			Save to replacement destination	
Comm addr replacemt data	Data		Data (34)	53281	D021			Save to replacement destination	
Comm addr replacemt data	Data		Data (35)	53282	D022			Save to replacement destination	
Comm addr replacemt data	Data		Data (36)	53283	D023			Save to replacement destination	
Comm addr replacemt data	Data		Data (37)	53284	D024			Save to replacement destination	

Comm addr replacemt data/data

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt data	Data		Data (38)	53285	D025			Save to replacement destination	
Comm addr replacemt data	Data		Data (39)	53286	D026			Save to replacement destination	
Comm addr replacemt data	Data		Data (40)	53287	D027			Save to replacement destination	
Comm addr replacemt data	Data		Data (41)	53288	D028			Save to replacement destination	
Comm addr replacemt data	Data		Data (42)	53289	D029			Save to replacement destination	
Comm addr replacemt data	Data		Data (43)	53290	D02A			Save to replacement destination	
Comm addr replacemt data	Data		Data (44)	53291	D02B			Save to replacement destination	
Comm addr replacemt data	Data		Data (45)	53292	D02C			Save to replacement destination	
Comm addr replacemt data	Data		Data (46)	53293	D02D			Save to replacement destination	
Comm addr replacemt data	Data		Data (47)	53294	D02E			Save to replacement destination	
Comm addr replacemt data	Data		Data (48)	53295	D02F			Save to replacement destination	
Comm addr replacemt data	Data		Data (49)	53296	D030			Save to replacement destination	
Comm addr replacemt data	Data		Data (50)	53297	D031			Save to replacement destination	
Comm addr replacemt data	Data		Data (51)	53298	D032			Save to replacement destination	
Comm addr replacemt data	Data		Data (52)	53299	D033			Save to replacement destination	
Comm addr replacemt data	Data		Data (53)	53300	D034			Save to replacement destination	
Comm addr replacemt data	Data		Data (54)	53301	D035			Save to replacement destination	
Comm addr replacemt data	Data		Data (55)	53302	D036			Save to replacement destination	
Comm addr replacemt data	Data		Data (56)	53303	D037			Save to replacement destination	
Comm addr replacemt data	Data		Data (57)	53304	D038			Save to replacement destination	
Comm addr replacemt data	Data		Data (58)	53305	D039			Save to replacement destination	
Comm addr replacemt data	Data		Data (59)	53306	D03A			Save to replacement destination	
Comm addr replacemt data	Data		Data (60)	53307	D03B			Save to replacement destination	
Comm addr replacemt data	Data		Data (61)	53308	D03C			Save to replacement destination	
Comm addr replacemt data	Data		Data (62)	53309	D03D			Save to replacement destination	
Comm addr replacemt data	Data		Data (63)	53310	D03E			Save to replacement destination	
Comm addr replacemt data	Data		Data (64)	53311	D03F			Save to replacement destination	
Comm addr replacemt data	Data		Data (65)	53312	D040			Save to replacement destination	
Comm addr replacemt data	Data		Data (66)	53313	D041			Save to replacement destination	
Comm addr replacemt data	Data		Data (67)	53314	D042			Save to replacement destination	
Comm addr replacemt data	Data		Data (68)	53315	D043			Save to replacement destination	
Comm addr replacemt data	Data		Data (69)	53316	D044			Save to replacement destination	
Comm addr replacemt data	Data		Data (70)	53317	D045			Save to replacement destination	
Comm addr replacemt data	Data		Data (71)	53318	D046			Save to replacement destination	
Comm addr replacemt data	Data		Data (72)	53319	D047			Save to replacement destination	
Comm addr replacemt data	Data		Data (73)	53320	D048			Save to replacement destination	
Comm addr replacemt data	Data		Data (74)	53321	D049			Save to replacement destination	

Comm addr replacemt data/data

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt data	Data		Data (75)	53322	D04A			Save to replacement destination	
Comm addr replacemt data	Data		Data (76)	53323	D04B			Save to replacement destination	
Comm addr replacemt data	Data		Data (77)	53324	D04C			Save to replacement destination	
Comm addr replacemt data	Data		Data (78)	53325	D04D			Save to replacement destination	
Comm addr replacemt data	Data		Data (79)	53326	D04E			Save to replacement destination	
Comm addr replacemt data	Data		Data (80)	53327	D04F			Save to replacement destination	
Comm addr replacemt data	Data		Data (81)	53328	D050			Save to replacement destination	
Comm addr replacemt data	Data		Data (82)	53329	D051			Save to replacement destination	
Comm addr replacemt data	Data		Data (83)	53330	D052			Save to replacement destination	
Comm addr replacemt data	Data		Data (84)	53331	D053			Save to replacement destination	
Comm addr replacemt data	Data		Data (85)	53332	D054			Save to replacement destination	
Comm addr replacemt data	Data		Data (86)	53333	D055			Save to replacement destination	
Comm addr replacemt data	Data		Data (87)	53334	D056			Save to replacement destination	
Comm addr replacemt data	Data		Data (88)	53335	D057			Save to replacement destination	
Comm addr replacemt data	Data		Data (89)	53336	D058			Save to replacement destination	
Comm addr replacemt data	Data		Data (90)	53337	D059			Save to replacement destination	
Comm addr replacemt data	Data		Data (91)	53338	D05A			Save to replacement destination	
Comm addr replacemt data	Data		Data (92)	53339	D05B			Save to replacement destination	
Comm addr replacemt data	Data		Data (93)	53340	D05C			Save to replacement destination	
Comm addr replacemt data	Data		Data (94)	53341	D05D			Save to replacement destination	
Comm addr replacemt data	Data		Data (95)	53342	D05E			Save to replacement destination	
Comm addr replacemt data	Data		Data (96)	53343	D05F			Save to replacement destination	
Comm addr replacemt data	Data		Data (97)	53344	D060			Save to replacement destination	
Comm addr replacemt data	Data		Data (98)	53345	D061			Save to replacement destination	
Comm addr replacemt data	Data		Data (99)	53346	D062			Save to replacement destination	
Comm addr replacemt data	Data		Data (100)	53347	D063			Save to replacement destination	
Comm addr replacemt data	Data		Data (101)	53348	D064			Save to replacement destination	
Comm addr replacemt data	Data		Data (102)	53349	D065			Save to replacement destination	
Comm addr replacemt data	Data		Data (103)	53350	D066			Save to replacement destination	
Comm addr replacemt data	Data		Data (104)	53351	D067			Save to replacement destination	
Comm addr replacemt data	Data		Data (105)	53352	D068			Save to replacement destination	
Comm addr replacemt data	Data		Data (106)	53353	D069			Save to replacement destination	
Comm addr replacemt data	Data		Data (107)	53354	D06A			Save to replacement destination	
Comm addr replacemt data	Data		Data (108)	53355	D06B			Save to replacement destination	
Comm addr replacemt data	Data		Data (109)	53356	D06C			Save to replacement destination	
Comm addr replacemt data	Data		Data (110)	53357	D06D			Save to replacement destination	
Comm addr replacemt data	Data		Data (111)	53358	D06E			Save to replacement destination	

Comm addr replacemt data/data

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt data	Data		Data (112)	53359	D06F			Save to replacement destination	
Comm addr replacemt data	Data		Data (113)	53360	D070			Save to replacement destination	
Comm addr replacemt data	Data		Data (114)	53361	D071			Save to replacement destination	
Comm addr replacemt data	Data		Data (115)	53362	D072			Save to replacement destination	
Comm addr replacemt data	Data		Data (116)	53363	D073			Save to replacement destination	
Comm addr replacemt data	Data		Data (117)	53364	D074			Save to replacement destination	
Comm addr replacemt data	Data		Data (118)	53365	D075			Save to replacement destination	
Comm addr replacemt data	Data		Data (119)	53366	D076			Save to replacement destination	
Comm addr replacemt data	Data		Data (120)	53367	D077			Save to replacement destination	
Comm addr replacemt data	Data		Data (121)	53368	D078			Save to replacement destination	
Comm addr replacemt data	Data		Data (122)	53369	D079			Save to replacement destination	
Comm addr replacemt data	Data		Data (123)	53370	D07A			Save to replacement destination	
Comm addr replacemt data	Data		Data (124)	53371	D07B			Save to replacement destination	
Comm addr replacemt data	Data		Data (125)	53372	D07C			Save to replacement destination	
Comm addr replacemt data	Data		Data (126)	53373	D07D			Save to replacement destination	
Comm addr replacemt data	Data		Data (127)	53374	D07E			Save to replacement destination	
Comm addr replacemt data	Data		Data (128)	53375	D07F			Save to replacement destination	
Comm addr replacemt data	Data		Data (129)	53376	D080			Save to replacement destination	
Comm addr replacemt data	Data		Data (130)	53377	D081			Save to replacement destination	
Comm addr replacemt data	Data		Data (131)	53378	D082			Save to replacement destination	
Comm addr replacemt data	Data		Data (132)	53379	D083			Save to replacement destination	
Comm addr replacemt data	Data		Data (133)	53380	D084			Save to replacement destination	
Comm addr replacemt data	Data		Data (134)	53381	D085			Save to replacement destination	
Comm addr replacemt data	Data		Data (135)	53382	D086			Save to replacement destination	
Comm addr replacemt data	Data		Data (136)	53383	D087			Save to replacement destination	
Comm addr replacemt data	Data		Data (137)	53384	D088			Save to replacement destination	
Comm addr replacemt data	Data		Data (138)	53385	D089			Save to replacement destination	
Comm addr replacemt data	Data		Data (139)	53386	D08A			Save to replacement destination	
Comm addr replacemt data	Data		Data (140)	53387	D08B			Save to replacement destination	
Comm addr replacemt data	Data		Data (141)	53388	D08C			Save to replacement destination	
Comm addr replacemt data	Data		Data (142)	53389	D08D			Save to replacement destination	
Comm addr replacemt data	Data		Data (143)	53390	D08E			Save to replacement destination	
Comm addr replacemt data	Data		Data (144)	53391	D08F			Save to replacement destination	
Comm addr replacemt data	Data		Data (145)	53392	D090			Save to replacement destination	
Comm addr replacemt data	Data		Data (146)	53393	D091			Save to replacement destination	
Comm addr replacemt data	Data		Data (147)	53394	D092			Save to replacement destination	
Comm addr replacemt data	Data		Data (148)	53395	D093			Save to replacement destination	

Comm addr replacemt data/data

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt data	Data		Data (149)	53396	D094			Save to replacement destination	
Comm addr replacemt data	Data		Data (150)	53397	D095			Save to replacement destination	
Comm addr replacemt data	Data		Data (151)	53398	D096			Save to replacement destination	
Comm addr replacemt data	Data		Data (152)	53399	D097			Save to replacement destination	
Comm addr replacemt data	Data		Data (153)	53400	D098			Save to replacement destination	
Comm addr replacemt data	Data		Data (154)	53401	D099			Save to replacement destination	
Comm addr replacemt data	Data		Data (155)	53402	D09A			Save to replacement destination	
Comm addr replacemt data	Data		Data (156)	53403	D09B			Save to replacement destination	
Comm addr replacemt data	Data		Data (157)	53404	D09C			Save to replacement destination	
Comm addr replacemt data	Data		Data (158)	53405	D09D			Save to replacement destination	
Comm addr replacemt data	Data		Data (159)	53406	D09E			Save to replacement destination	
Comm addr replacemt data	Data		Data (160)	53407	D09F			Save to replacement destination	
Comm addr replacemt data	Data		Data (161)	53408	D0A0			Save to replacement destination	
Comm addr replacemt data	Data		Data (162)	53409	D0A1			Save to replacement destination	
Comm addr replacemt data	Data		Data (163)	53410	D0A2			Save to replacement destination	
Comm addr replacemt data	Data		Data (164)	53411	D0A3			Save to replacement destination	
Comm addr replacemt data	Data		Data (165)	53412	D0A4			Save to replacement destination	
Comm addr replacemt data	Data		Data (166)	53413	D0A5			Save to replacement destination	
Comm addr replacemt data	Data		Data (167)	53414	D0A6			Save to replacement destination	
Comm addr replacemt data	Data		Data (168)	53415	D0A7			Save to replacement destination	
Comm addr replacemt data	Data		Data (169)	53416	D0A8			Save to replacement destination	
Comm addr replacemt data	Data		Data (170)	53417	D0A9			Save to replacement destination	
Comm addr replacemt data	Data		Data (171)	53418	D0AA			Save to replacement destination	
Comm addr replacemt data	Data		Data (172)	53419	D0AB			Save to replacement destination	
Comm addr replacemt data	Data		Data (173)	53420	D0AC			Save to replacement destination	
Comm addr replacemt data	Data		Data (174)	53421	D0AD			Save to replacement destination	
Comm addr replacemt data	Data		Data (175)	53422	D0AE			Save to replacement destination	
Comm addr replacemt data	Data		Data (176)	53423	D0AF			Save to replacement destination	
Comm addr replacemt data	Data		Data (177)	53424	D0B0			Save to replacement destination	
Comm addr replacemt data	Data		Data (178)	53425	D0B1			Save to replacement destination	
Comm addr replacemt data	Data		Data (179)	53426	D0B2			Save to replacement destination	
Comm addr replacemt data	Data		Data (180)	53427	D0B3			Save to replacement destination	
Comm addr replacemt data	Data		Data (181)	53428	D0B4			Save to replacement destination	
Comm addr replacemt data	Data		Data (182)	53429	D0B5			Save to replacement destination	
Comm addr replacemt data	Data		Data (183)	53430	D0B6			Save to replacement destination	
Comm addr replacemt data	Data		Data (184)	53431	D0B7			Save to replacement destination	
Comm addr replacemt data	Data		Data (185)	53432	D0B8			Save to replacement destination	

Comm addr replacemt data/data

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt data	Data		Data (186)	53433	D0B9			Save to replacement destination	
Comm addr replacemt data	Data		Data (187)	53434	D0BA			Save to replacement destination	
Comm addr replacemt data	Data		Data (188)	53435	D0BB			Save to replacement destination	
Comm addr replacemt data	Data		Data (189)	53436	D0BC			Save to replacement destination	
Comm addr replacemt data	Data		Data (190)	53437	D0BD			Save to replacement destination	
Comm addr replacemt data	Data		Data (191)	53438	D0BE			Save to replacement destination	
Comm addr replacemt data	Data		Data (192)	53439	D0BF			Save to replacement destination	
Comm addr replacemt data	Data		Data (193)	53440	D0C0			Save to replacement destination	
Comm addr replacemt data	Data		Data (194)	53441	D0C1			Save to replacement destination	
Comm addr replacemt data	Data		Data (195)	53442	D0C2			Save to replacement destination	
Comm addr replacemt data	Data		Data (196)	53443	D0C3			Save to replacement destination	
Comm addr replacemt data	Data		Data (197)	53444	D0C4			Save to replacement destination	
Comm addr replacemt data	Data		Data (198)	53445	D0C5			Save to replacement destination	
Comm addr replacemt data	Data		Data (199)	53446	D0C6			Save to replacement destination	
Comm addr replacemt data	Data		Data (200)	53447	D0C7			Save to replacement destination	
Comm addr replacemt data	Data		Data (201)	53448	D0C8			Save to replacement destination	
Comm addr replacemt data	Data		Data (202)	53449	D0C9			Save to replacement destination	
Comm addr replacemt data	Data		Data (203)	53450	D0CA			Save to replacement destination	
Comm addr replacemt data	Data		Data (204)	53451	D0CB			Save to replacement destination	
Comm addr replacemt data	Data		Data (205)	53452	D0CC			Save to replacement destination	
Comm addr replacemt data	Data		Data (206)	53453	D0CD			Save to replacement destination	
Comm addr replacemt data	Data		Data (207)	53454	D0CE			Save to replacement destination	
Comm addr replacemt data	Data		Data (208)	53455	D0CF			Save to replacement destination	
Comm addr replacemt data	Data		Data (209)	53456	D0D0			Save to replacement destination	
Comm addr replacemt data	Data		Data (210)	53457	D0D1			Save to replacement destination	
Comm addr replacemt data	Data		Data (211)	53458	D0D2			Save to replacement destination	
Comm addr replacemt data	Data		Data (212)	53459	D0D3			Save to replacement destination	
Comm addr replacemt data	Data		Data (213)	53460	D0D4			Save to replacement destination	
Comm addr replacemt data	Data		Data (214)	53461	D0D5			Save to replacement destination	
Comm addr replacemt data	Data		Data (215)	53462	D0D6			Save to replacement destination	
Comm addr replacemt data	Data		Data (216)	53463	D0D7			Save to replacement destination	
Comm addr replacemt data	Data		Data (217)	53464	D0D8			Save to replacement destination	
Comm addr replacemt data	Data		Data (218)	53465	D0D9			Save to replacement destination	
Comm addr replacemt data	Data		Data (219)	53466	D0DA			Save to replacement destination	
Comm addr replacemt data	Data		Data (220)	53467	D0DB			Save to replacement destination	
Comm addr replacemt data	Data		Data (221)	53468	D0DC			Save to replacement destination	
Comm addr replacemt data	Data		Data (222)	53469	D0DD			Save to replacement destination	

Comm addr replacemt data/data

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Comm addr replacemt data	Data		Data (223)	53470	D0DE			Save to replacement destination	
Comm addr replacemt data	Data		Data (224)	53471	D0DF			Save to replacement destination	
Comm addr replacemt data	Data		Data (225)	53472	D0E0			Save to replacement destination	
Comm addr replacemt data	Data		Data (226)	53473	D0E1			Save to replacement destination	
Comm addr replacemt data	Data		Data (227)	53474	D0E2			Save to replacement destination	
Comm addr replacemt data	Data		Data (228)	53475	D0E3			Save to replacement destination	
Comm addr replacemt data	Data		Data (229)	53476	D0E4			Save to replacement destination	
Comm addr replacemt data	Data		Data (230)	53477	D0E5			Save to replacement destination	
Comm addr replacemt data	Data		Data (231)	53478	D0E6			Save to replacement destination	
Comm addr replacemt data	Data		Data (232)	53479	D0E7			Save to replacement destination	
Comm addr replacemt data	Data		Data (233)	53480	D0E8			Save to replacement destination	
Comm addr replacemt data	Data		Data (234)	53481	D0E9			Save to replacement destination	
Comm addr replacemt data	Data		Data (235)	53482	D0EA			Save to replacement destination	
Comm addr replacemt data	Data		Data (236)	53483	D0EB			Save to replacement destination	
Comm addr replacemt data	Data		Data (237)	53484	D0EC			Save to replacement destination	
Comm addr replacemt data	Data		Data (238)	53485	D0ED			Save to replacement destination	
Comm addr replacemt data	Data		Data (239)	53486	D0EE			Save to replacement destination	
Comm addr replacemt data	Data		Data (240)	53487	D0EF			Save to replacement destination	
Comm addr replacemt data	Data		Data (241)	53488	D0F0			Save to replacement destination	
Comm addr replacemt data	Data		Data (242)	53489	D0F1			Save to replacement destination	
Comm addr replacemt data	Data		Data (243)	53490	D0F2			Save to replacement destination	
Comm addr replacemt data	Data		Data (244)	53491	D0F3			Save to replacement destination	
Comm addr replacemt data	Data		Data (245)	53492	D0F4			Save to replacement destination	
Comm addr replacemt data	Data		Data (246)	53493	D0F5			Save to replacement destination	
Comm addr replacemt data	Data		Data (247)	53494	D0F6			Save to replacement destination	
Comm addr replacemt data	Data		Data (248)	53495	D0F7			Save to replacement destination	
Comm addr replacemt data	Data		Data (249)	53496	D0F8			Save to replacement destination	
Comm addr replacemt data	Data		Data (250)	53497	D0F9			Save to replacement destination	
Comm addr replacemt data	Data		Data (251)	53498	D0FA			Save to replacement destination	
Comm addr replacemt data	Data		Data (252)	53499	D0FB			Save to replacement destination	
Comm addr replacemt data	Data		Data (253)	53500	D0FC			Save to replacement destination	
Comm addr replacemt data	Data		Data (254)	53501	D0FD			Save to replacement destination	
Comm addr replacemt data	Data		Data (255)	53502	D0FE			Save to replacement destination	
Comm addr replacemt data	Data		Data (256)	53503	D0FF			Save to replacement destination	

NX-S11/12/21 (general)

Communications/RS-485 communications Communications/Ethernet communications

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Communications	RS-485 communication		Communications type	512	0200		×	–	Use the SLP-NX for configuration.
Communications	RS-485 communication		Station address	513	0201		×	–	0: Communications are disabled. Use the SLP-NX for configuration.
Communications	RS-485 communication		Transmission speed	514	0202		×	–	Use the SLP-NX for configuration.
Communications	RS-485 communication		Data format (bit length)	515	0203		×	–	
Communications	RS-485 communication		Data format (parity)	516	0204		×	–	
Communications	RS-485 communication		Data format (stop bit)	517	0205		×	–	
Communications	RS-485 communication		Minimum response time	518	0206		×	–	
Communications	Ethernet communications		MAC address 1	800	0320		×	–	
Communications	Ethernet communications		MAC address 2	801	0321		×	–	
Communications	Ethernet communications		MAC address 3	802	0322		×	–	
Communications	Ethernet communications		MAC address 4	803	0323		×	–	
Communications	Ethernet communications		MAC address 5	804	0324		×	–	
Communications	Ethernet communications		MAC address 6	805	0325		×	–	
Communications	Ethernet communications		IPv4 address 1	817	0331		×	–	
Communications	Ethernet communications		IPv4 address 2	818	0332		×	–	
Communications	Ethernet communications		IPv4 address 3	819	0333		×	–	
Communications	Ethernet communications		IPv4 address 4	820	0334		×	–	
Communications	Ethernet communications		IPv4 address net mask 1	821	0335		×	–	
Communications	Ethernet communications		IPv4 address net mask 2	822	0336		×	–	
Communications	Ethernet communications		IPv4 address net mask 3	823	0337		×	–	
Communications	Ethernet communications		IPv4 address net mask 4	824	0338		×	–	
Communications	Ethernet communications		IPv4 default gateway 1	825	0339		×	–	
Communications	Ethernet communications		IPv4 default gateway 2	826	033A		×	–	
Communications	Ethernet communications		IPv4 default gateway 3	827	033B		×	–	
Communications	Ethernet communications		IPv4 default gateway 4	828	033C		×	–	
Communications	Ethernet communications		MODBUS/TCP port number	830	033E		×	–	0 to 501, 503 to 1023 are used generally at times. Refrain from use as much as possible. 1252 is reserved for system use. Do not use. Use the SLP-NX for configuration.

Other/device information 1 Other/device information 2

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Other	Device information 1		F/W ROM ID	278	0116		×	–	Not displayed for SLP-NX
Other	Device information 1		F/W ROM version 1	279	0117		×	–	
Other	Device information 1		F/W ROM version 2	280	0118		×	–	
Other	Device information 1		Compatible module version	281	0119		×	–	
Other	Device information 2		F/W (1) program number	–	–	×	×	–	
Other	Device information 2		F/W (1) program item	–	–	×	×	–	
Other	Device information 2		F/W (1) major version	–	–	×	×	–	
Other	Device information 2		F/W (1) minor version	–	–	×	×	–	
Other	Device information 2		F/W (1) build version	–	–	×	×	–	
Other	Device information 2		F/W (2) program number	–	–	×	×	–	
Other	Device information 2		F/W (2) program item	–	–	×	×	–	
Other	Device information 2		F/W (2) major version	–	–	×	×	–	
Other	Device information 2		F/W (2) minor version	–	–	×	×	–	
Other	Device information 2		F/W (2) build version	–	–	×	×	–	
Other	Device information 2		F/W (3) program number	–	–	×	×	–	
Other	Device information 2		F/W (3) program item	–	–	×	×	–	
Other	Device information 2		F/W (3) major version	–	–	×	×	–	
Other	Device information 2		F/W (3) minor version	–	–	×	×	–	
Other	Device information 2		F/W (3) build version	–	–	×	×	–	
Other	Device information 2		Module version (Major, minor)	–	–	×	×	–	
Other	Device information 2		Compatible module version	–	–	×	×	–	

Multi-loop cooperative control (common settings)/zone temperature difference control settings

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	zone temperature difference control settings		SP filter time constant decimal point position	16648	4108			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Effect tuning parameter decimal point position	16649	4109			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Invalid range in mode 3 decimal point position	16650	410A			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Changing rate in mode 3 decimal point position	16651	410B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 1 decimal point position	16660	4114			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 2 decimal point position	16661	4115			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 3 decimal point position	16662	4116			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 4 decimal point position	16663	4117			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 5 decimal point position	16664	4118			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 6 decimal point position	16665	4119			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 7 decimal point position	16666	411A			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 8 decimal point position	16667	411B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 9 decimal point position	16668	411C			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 10 decimal point position	16669	411D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 11 decimal point position	16670	411E			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 12 decimal point position	16671	411F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 13 decimal point position	16672	4120			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 14 decimal point position	16673	4121			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 15 decimal point position	16674	4122			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 16 decimal point position	16675	4123			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 17 decimal point position	16676	4124			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 18 decimal point position	16677	4125			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 19 decimal point position	16678	4126			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 20 decimal point position	16679	4127			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 21 decimal point position	16680	4128			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 22 decimal point position	16681	4129			–	

Multi-loop cooperative control (common settings)/zone temperature difference control settings

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 23 decimal point position	16682	412A			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 24 decimal point position	16683	412B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 25 decimal point position	16684	412C			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 26 decimal point position	16685	412D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 27 decimal point position	16686	412E			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 28 decimal point position	16687	412F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 29 decimal point position	16688	4130			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 30 decimal point position	16689	4131			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 31 decimal point position	16690	4132			–	
Multi-loop cooperative control (common settings)	zone temperature difference control settings		Performance tuning parameter 32 decimal point position	16691	4133			–	

Multi-loop cooperative control (common settings)/zone temperature difference control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 1 decimal point position	16908	420C			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 1 decimal point position	16909	420D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 1 decimal point position	16911	420F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 2 decimal point position	16914	4212			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 2 decimal point position	16915	4213			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 2 decimal point position	16917	4215			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 3 decimal point position	16920	4218			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 3 decimal point position	16921	4219			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 3 decimal point position	16923	421B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 4 decimal point position	16926	421E			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 4 decimal point position	16927	421F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 4 decimal point position	16929	4221			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 5 decimal point position	16932	4224			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 5 decimal point position	16933	4225			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 5 decimal point position	16935	4227			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 6 decimal point position	16938	422A			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 6 decimal point position	16939	422B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 6 decimal point position	16941	422D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 7 decimal point position	16944	4230			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 7 decimal point position	16945	4231			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 7 decimal point position	16947	4233			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 8 decimal point position	16950	4236			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 8 decimal point position	16951	4237			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 8 decimal point position	16953	4239			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 9 decimal point position	16956	423C			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 9 decimal point position	16957	423D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 9 decimal point position	16959	423F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 10 decimal point position	16962	4242			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 10 decimal point position	16963	4243			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 10 decimal point position	16965	4245			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 11 decimal point position	16968	4248			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 11 decimal point position	16969	4249			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 11 decimal point position	16971	424B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 12 decimal point position	16974	424E			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 12 decimal point position	16975	424F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 12 decimal point position	16977	4251			–	

Multi-loop cooperative control (common settings)/zone temperature difference control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 13 decimal point position	16980	4254			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 13 decimal point position	16981	4255			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 13 decimal point position	16983	4257			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 14 decimal point position	16986	425A			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 14 decimal point position	16987	425B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 14 decimal point position	16989	425D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 15 decimal point position	16992	4260			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 15 decimal point position	16993	4261			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 15 decimal point position	16995	4263			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 16 decimal point position	16998	4266			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 16 decimal point position	16999	4267			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 16 decimal point position	17001	4269			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 17 decimal point position	17004	426C			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 17 decimal point position	17005	426D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 17 decimal point position	17007	426F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 18 decimal point position	17010	4272			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 18 decimal point position	17011	4273			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 18 decimal point position	17013	4275			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 19 decimal point position	17016	4278			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 19 decimal point position	17017	4279			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 19 decimal point position	17019	427B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 20 decimal point position	17022	427E			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 20 decimal point position	17023	427F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 20 decimal point position	17025	4281			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 21 decimal point position	17028	4284			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 21 decimal point position	17029	4285			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 21 decimal point position	17031	4287			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 22 decimal point position	17034	428A			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 22 decimal point position	17035	428B			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 22 decimal point position	17037	428D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 23 decimal point position	17040	4290			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 23 decimal point position	17041	4291			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 23 decimal point position	17043	4293			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 24 decimal point position	17046	4296			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 24 decimal point position	17047	4297			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 24 decimal point position	17049	4299			–	

Multi-loop cooperative control (common settings)/zone temperature difference control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 25 decimal point position	17052	429C			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 25 decimal point position	17053	429D			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 25 decimal point position	17055	429F			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 26 decimal point position	17058	42A2			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 26 decimal point position	17059	42A3			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 26 decimal point position	17061	42A5			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 27 decimal point position	17064	42A8			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 27 decimal point position	17065	42A9			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 27 decimal point position	17067	42AB			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 28 decimal point position	17070	42AE			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 28 decimal point position	17071	42AF			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 28 decimal point position	17073	42B1			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 29 decimal point position	17076	42B4			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 29 decimal point position	17077	42B5			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 29 decimal point position	17079	42B7			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 30 decimal point position	17082	42BA			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 30 decimal point position	17083	42BB			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 30 decimal point position	17085	42BD			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 31 decimal point position	17088	42C0			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 31 decimal point position	17089	42C1			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 31 decimal point position	17091	42C3			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		SP (local) 32 decimal point position	17094	42C6			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		PV (local) 32 decimal point position	17095	42C7			–	
Multi-loop cooperative control (common settings)	zone temperature difference control monitor		Cooperative control SP 32 decimal point position	17097	42C9			–	

—MEMO —

Multi-loop cooperative control data/setting data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
1	Multi-loop cooperative control data	Setting banks		Operation mode setting	24577	6001	25857	6501
2	Multi-loop cooperative control data	Setting banks		Error mode release	24578	6002	25858	6502
3	Multi-loop cooperative control data	Setting banks		Operation during error mode	24579	6003	25859	6503
4	Multi-loop cooperative control data	Setting banks		Recovery action from error mode	24580	6004	25860	6504
5	Multi-loop cooperative control data	Setting banks		Zone temperature difference control mode	24582	6006	25862	6506
6	Multi-loop cooperative control data	Setting banks		Reference loop assignment	24583	6007	25863	6507
7	Multi-loop cooperative control data	Setting banks		SP filter time constant	24584	6008	25864	6508
8	Multi-loop cooperative control data	Setting banks		Effect tuning parameter	24585	6009	25865	6509
9	Multi-loop cooperative control data	Setting banks		Invalid range in mode 3	24586	600A	25866	650A
10	Multi-loop cooperative control data	Setting banks		Changing rate in mode 3	24587	600B	25867	650B
11	Multi-loop cooperative control data	Setting banks	1	Performance tuning parameter 1	24596	6014	25876	6514
12	Multi-loop cooperative control data	Setting banks	2	Performance tuning parameter 2	24597	6015	25877	6515
13	Multi-loop cooperative control data	Setting banks	3	Performance tuning parameter 3	24598	6016	25878	6516
14	Multi-loop cooperative control data	Setting banks	4	Performance tuning parameter 4	24599	6017	25879	6517
15	Multi-loop cooperative control data	Setting banks	5	Performance tuning parameter 5	24600	6018	25880	6518
16	Multi-loop cooperative control data	Setting banks	6	Performance tuning parameter 6	24601	6019	25881	6519
17	Multi-loop cooperative control data	Setting banks	7	Performance tuning parameter 7	24602	601A	25882	651A
18	Multi-loop cooperative control data	Setting banks	8	Performance tuning parameter 8	24603	601B	25883	651B
19	Multi-loop cooperative control data	Setting banks	9	Performance tuning parameter 9	24604	601C	25884	651C
20	Multi-loop cooperative control data	Setting banks	10	Performance tuning parameter 10	24605	601D	25885	651D
21	Multi-loop cooperative control data	Setting banks	11	Performance tuning parameter 11	24606	601E	25886	651E
22	Multi-loop cooperative control data	Setting banks	12	Performance tuning parameter 12	24607	601F	25887	651F
23	Multi-loop cooperative control data	Setting banks	13	Performance tuning parameter 13	24608	6020	25888	6520
24	Multi-loop cooperative control data	Setting banks	14	Performance tuning parameter 14	24609	6021	25889	6521
25	Multi-loop cooperative control data	Setting banks	15	Performance tuning parameter 15	24610	6022	25890	6522
26	Multi-loop cooperative control data	Setting banks	16	Performance tuning parameter 16	24611	6023	25891	6523
27	Multi-loop cooperative control data	Setting banks	17	Performance tuning parameter 17	24612	6024	25892	6524
28	Multi-loop cooperative control data	Setting banks	18	Performance tuning parameter 18	24613	6025	25893	6525
29	Multi-loop cooperative control data	Setting banks	19	Performance tuning parameter 19	24614	6026	25894	6526
30	Multi-loop cooperative control data	Setting banks	20	Performance tuning parameter 20	24615	6027	25895	6527
31	Multi-loop cooperative control data	Setting banks	21	Performance tuning parameter 21	24616	6028	25896	6528
32	Multi-loop cooperative control data	Setting banks	22	Performance tuning parameter 22	24617	6029	25897	6529
33	Multi-loop cooperative control data	Setting banks	23	Performance tuning parameter 23	24618	602A	25898	652A
34	Multi-loop cooperative control data	Setting banks	24	Performance tuning parameter 24	24619	602B	25899	652B
35	Multi-loop cooperative control data	Setting banks	25	Performance tuning parameter 25	24620	602C	25900	652C
36	Multi-loop cooperative control data	Setting banks	26	Performance tuning parameter 26	24621	602D	25901	652D
37	Multi-loop cooperative control data	Setting banks	27	Performance tuning parameter 27	24622	602E	25902	652E
38	Multi-loop cooperative control data	Setting banks	28	Performance tuning parameter 28	24623	602F	25903	652F
39	Multi-loop cooperative control data	Setting banks	29	Performance tuning parameter 29	24624	6030	25904	6530
40	Multi-loop cooperative control data	Setting banks	30	Performance tuning parameter 30	24625	6031	25905	6531
41	Multi-loop cooperative control data	Setting banks	31	Performance tuning parameter 31	24626	6032	25906	6532
42	Multi-loop cooperative control data	Setting banks	32	Performance tuning parameter 32	24627	6033	25907	6533

Multi-loop cooperative control data/setting data

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
1	27137	6A01	28417	6F01	29697	7401	30977	7901	32257	7E01	33537	8301		×	0	
2	27138	6A02	28418	6F02	29698	7402	30978	7902	32258	7E02	33538	8302		×	0	
3	27139	6A03	28419	6F03	29699	7403	30979	7903	32259	7E03	33539	8303		×	0	
4	27140	6A04	28420	6F04	29700	7404	30980	7904	32260	7E04	33540	8304		×	0	
5	27142	6A06	28422	6F06	29702	7406	30982	7906	32262	7E06	33542	8306		×	0	
6	27143	6A07	28423	6F07	29703	7407	30983	7907	32263	7E07	33543	8307		×	0	
7	27144	6A08	28424	6F08	29704	7408	30984	7908	32264	7E08	33544	8308		×	1	
8	27145	6A09	28425	6F09	29705	7409	30985	7909	32265	7E09	33545	8309		×	2	
9	27146	6A0A	28426	6F0A	29706	740A	30986	790A	32266	7E0A	33546	830A		×	2	
10	27147	6A0B	28427	6F0B	29707	740B	30987	790B	32267	7E0B	33547	830B		×	1	
11	27156	6A14	28436	6F14	29716	7414	30996	7914	32276	7E14	33556	8314		×	2	
12	27157	6A15	28437	6F15	29717	7415	30997	7915	32277	7E15	33557	8315		×	2	
13	27158	6A16	28438	6F16	29718	7416	30998	7916	32278	7E16	33558	8316		×	2	
14	27159	6A17	28439	6F17	29719	7417	30999	7917	32279	7E17	33559	8317		×	2	
15	27160	6A18	28440	6F18	29720	7418	31000	7918	32280	7E18	33560	8318		×	2	
16	27161	6A19	28441	6F19	29721	7419	31001	7919	32281	7E19	33561	8319		×	2	
17	27162	6A1A	28442	6F1A	29722	741A	31002	791A	32282	7E1A	33562	831A		×	2	
18	27163	6A1B	28443	6F1B	29723	741B	31003	791B	32283	7E1B	33563	831B		×	2	
19	27164	6A1C	28444	6F1C	29724	741C	31004	791C	32284	7E1C	33564	831C		×	2	
20	27165	6A1D	28445	6F1D	29725	741D	31005	791D	32285	7E1D	33565	831D		×	2	
21	27166	6A1E	28446	6F1E	29726	741E	31006	791E	32286	7E1E	33566	831E		×	2	
22	27167	6A1F	28447	6F1F	29727	741F	31007	791F	32287	7E1F	33567	831F		×	2	
23	27168	6A20	28448	6F20	29728	7420	31008	7920	32288	7E20	33568	8320		×	2	
24	27169	6A21	28449	6F21	29729	7421	31009	7921	32289	7E21	33569	8321		×	2	
25	27170	6A22	28450	6F22	29730	7422	31010	7922	32290	7E22	33570	8322		×	2	
26	27171	6A23	28451	6F23	29731	7423	31011	7923	32291	7E23	33571	8323		×	2	
27	27172	6A24	28452	6F24	29732	7424	31012	7924	32292	7E24	33572	8324		×	2	
28	27173	6A25	28453	6F25	29733	7425	31013	7925	32293	7E25	33573	8325		×	2	
29	27174	6A26	28454	6F26	29734	7426	31014	7926	32294	7E26	33574	8326		×	2	
30	27175	6A27	28455	6F27	29735	7427	31015	7927	32295	7E27	33575	8327		×	2	
31	27176	6A28	28456	6F28	29736	7428	31016	7928	32296	7E28	33576	8328		×	2	
32	27177	6A29	28457	6F29	29737	7429	31017	7929	32297	7E29	33577	8329		×	2	
33	27178	6A2A	28458	6F2A	29738	742A	31018	792A	32298	7E2A	33578	832A		×	2	
34	27179	6A2B	28459	6F2B	29739	742B	31019	792B	32299	7E2B	33579	832B		×	2	
35	27180	6A2C	28460	6F2C	29740	742C	31020	792C	32300	7E2C	33580	832C		×	2	
36	27181	6A2D	28461	6F2D	29741	742D	31021	792D	32301	7E2D	33581	832D		×	2	
37	27182	6A2E	28462	6F2E	29742	742E	31022	792E	32302	7E2E	33582	832E		×	2	
38	27183	6A2F	28463	6F2F	29743	742F	31023	792F	32303	7E2F	33583	832F		×	2	
39	27184	6A30	28464	6F30	29744	7430	31024	7930	32304	7E30	33584	8330		×	2	
40	27185	6A31	28465	6F31	29745	7431	31025	7931	32305	7E31	33585	8331		×	2	
41	27186	6A32	28466	6F32	29746	7432	31026	7932	32306	7E32	33586	8332		×	2	
42	27187	6A33	28467	6F33	29747	7433	31027	7933	32307	7E33	33587	8333		×	2	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
1	Multi-loop cooperative control data	Monitor data		Error code	24832	6100	26112	6600
2	Multi-loop cooperative control data	Monitor data		No. of control loops in a group	24833	6101	26113	6601
3	Multi-loop cooperative control data	Monitor data		Standard loop	24834	6102	26114	6602
4	Multi-loop cooperative control data	Monitor data		Operation status	24835	6103	26115	6603
5	Multi-loop cooperative control data	Monitor data	1	SP (local) 1	24844	610C	26124	660C
6	Multi-loop cooperative control data	Monitor data	1	PV (local) 1	24845	610D	26125	660D
7	Multi-loop cooperative control data	Monitor data	1	Cooperative control SP 1	24847	610F	26127	660F
8	Multi-loop cooperative control data	Monitor data	2	SP (local) 2	24850	6112	26130	6612
9	Multi-loop cooperative control data	Monitor data	2	PV (local) 2	24851	6113	26131	6613
10	Multi-loop cooperative control data	Monitor data	2	Cooperative control SP 2	24853	6115	26133	6615
11	Multi-loop cooperative control data	Monitor data	3	SP (local) 3	24856	6118	26136	6618
12	Multi-loop cooperative control data	Monitor data	3	PV (local) 3	24857	6119	26137	6619
13	Multi-loop cooperative control data	Monitor data	3	Cooperative control SP 3	24859	611B	26139	661B
14	Multi-loop cooperative control data	Monitor data	4	SP (local) 4	24862	611E	26142	661E
15	Multi-loop cooperative control data	Monitor data	4	PV (local) 4	24863	611F	26143	661F
16	Multi-loop cooperative control data	Monitor data	4	Cooperative control SP 4	24865	6121	26145	6621
17	Multi-loop cooperative control data	Monitor data	5	SP (local) 5	24868	6124	26148	6624
18	Multi-loop cooperative control data	Monitor data	5	PV (local) 5	24869	6125	26149	6625
19	Multi-loop cooperative control data	Monitor data	5	Cooperative control SP 5	24871	6127	26151	6627
20	Multi-loop cooperative control data	Monitor data	6	SP (local) 6	24874	612A	26154	662A
21	Multi-loop cooperative control data	Monitor data	6	PV (local) 6	24875	612B	26155	662B
22	Multi-loop cooperative control data	Monitor data	6	Cooperative control SP 6	24877	612D	26157	662D
23	Multi-loop cooperative control data	Monitor data	7	SP (local) 7	24880	6130	26160	6630
24	Multi-loop cooperative control data	Monitor data	7	PV (local) 7	24881	6131	26161	6631
25	Multi-loop cooperative control data	Monitor data	7	Cooperative control SP 7	24883	6133	26163	6633
26	Multi-loop cooperative control data	Monitor data	8	SP (local) 8	24886	6136	26166	6636
27	Multi-loop cooperative control data	Monitor data	8	PV (local) 8	24887	6137	26167	6637
28	Multi-loop cooperative control data	Monitor data	8	Cooperative control SP 8	24889	6139	26169	6639
29	Multi-loop cooperative control data	Monitor data	9	SP (local) 9	24892	613C	26172	663C
30	Multi-loop cooperative control data	Monitor data	9	PV (local) 9	24893	613D	26173	663D
31	Multi-loop cooperative control data	Monitor data	9	Cooperative control SP 9	24895	613F	26175	663F
32	Multi-loop cooperative control data	Monitor data	10	SP (local) 10	24898	6142	26178	6642
33	Multi-loop cooperative control data	Monitor data	10	PV (local) 10	24899	6143	26179	6643
34	Multi-loop cooperative control data	Monitor data	10	Cooperative control SP 10	24901	6145	26181	6645
35	Multi-loop cooperative control data	Monitor data	11	SP (local) 11	24904	6148	26184	6648
36	Multi-loop cooperative control data	Monitor data	11	PV (local) 11	24905	6149	26185	6649
37	Multi-loop cooperative control data	Monitor data	11	Cooperative control SP 11	24907	614B	26187	664B
38	Multi-loop cooperative control data	Monitor data	12	SP (local) 12	24910	614E	26190	664E
39	Multi-loop cooperative control data	Monitor data	12	PV (local) 12	24911	614F	26191	664F
40	Multi-loop cooperative control data	Monitor data	12	Cooperative control SP 12	24913	6151	26193	6651
41	Multi-loop cooperative control data	Monitor data	13	SP (local) 13	24916	6154	26196	6654
42	Multi-loop cooperative control data	Monitor data	13	PV (local) 13	24917	6155	26197	6655
43	Multi-loop cooperative control data	Monitor data	13	Cooperative control SP 13	24919	6157	26199	6657
44	Multi-loop cooperative control data	Monitor data	14	SP (local) 14	24922	615A	26202	665A
45	Multi-loop cooperative control data	Monitor data	14	PV (local) 14	24923	615B	26203	665B
46	Multi-loop cooperative control data	Monitor data	14	Cooperative control SP 14	24925	615D	26205	665D
47	Multi-loop cooperative control data	Monitor data	15	SP (local) 15	24928	6160	26208	6660
48	Multi-loop cooperative control data	Monitor data	15	PV (local) 15	24929	6161	26209	6661
49	Multi-loop cooperative control data	Monitor data	15	Cooperative control SP 15	24931	6163	26211	6663
50	Multi-loop cooperative control data	Monitor data	16	SP (local) 16	24934	6166	26214	6666
51	Multi-loop cooperative control data	Monitor data	16	PV (local) 16	24935	6167	26215	6667
52	Multi-loop cooperative control data	Monitor data	16	Cooperative control SP 16	24937	6169	26217	6669
53	Multi-loop cooperative control data	Monitor data	17	SP (local) 17	24940	616C	26220	666C
54	Multi-loop cooperative control data	Monitor data	17	PV (local) 17	24941	616D	26221	666D
55	Multi-loop cooperative control data	Monitor data	17	Cooperative control SP 17	24943	616F	26223	666F
56	Multi-loop cooperative control data	Monitor data	18	SP (local) 18	24946	6172	26226	6672
57	Multi-loop cooperative control data	Monitor data	18	PV (local) 18	24947	6173	26227	6673
58	Multi-loop cooperative control data	Monitor data	18	Cooperative control SP 18	24949	6175	26229	6675
59	Multi-loop cooperative control data	Monitor data	19	SP (local) 19	24952	6178	26232	6678

Multi-loop cooperative control data/monitor data

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
1	27392	6B00	28672	7000	29952	7500	31232	7A00	32512	7F00	33792	8400		×	0	
2	27393	6B01	28673	7001	29953	7501	31233	7A01	32513	7F01	33793	8401		×	0	
3	27394	6B02	28674	7002	29954	7502	31234	7A02	32514	7F02	33794	8402		×	0	
4	27395	6B03	28675	7003	29955	7503	31235	7A03	32515	7F03	33795	8403		×	0	
5	27404	6B0C	28684	700C	29964	750C	31244	7A0C	32524	7F0C	33804	840C		×	1	
6	27405	6B0D	28685	700D	29965	750D	31245	7A0D	32525	7F0D	33805	840D		×	1	
7	27407	6B0F	28687	700F	29967	750F	31247	7A0F	32527	7F0F	33807	840F		×	1	
8	27410	6B12	28690	7012	29970	7512	31250	7A12	32530	7F12	33810	8412		×	1	
9	27411	6B13	28691	7013	29971	7513	31251	7A13	32531	7F13	33811	8413		×	1	
10	27413	6B15	28693	7015	29973	7515	31253	7A15	32533	7F15	33813	8415		×	1	
11	27416	6B18	28696	7018	29976	7518	31256	7A18	32536	7F18	33816	8418		×	1	
12	27417	6B19	28697	7019	29977	7519	31257	7A19	32537	7F19	33817	8419		×	1	
13	27419	6B1B	28699	701B	29979	751B	31259	7A1B	32539	7F1B	33819	841B		×	1	
14	27422	6B1E	28702	701E	29982	751E	31262	7A1E	32542	7F1E	33822	841E		×	1	
15	27423	6B1F	28703	701F	29983	751F	31263	7A1F	32543	7F1F	33823	841F		×	1	
16	27425	6B21	28705	7021	29985	7521	31265	7A21	32545	7F21	33825	8421		×	1	
17	27428	6B24	28708	7024	29988	7524	31268	7A24	32548	7F24	33828	8424		×	1	
18	27429	6B25	28709	7025	29989	7525	31269	7A25	32549	7F25	33829	8425		×	1	
19	27431	6B27	28711	7027	29991	7527	31271	7A27	32551	7F27	33831	8427		×	1	
20	27434	6B2A	28714	702A	29994	752A	31274	7A2A	32554	7F2A	33834	842A		×	1	
21	27435	6B2B	28715	702B	29995	752B	31275	7A2B	32555	7F2B	33835	842B		×	1	
22	27437	6B2D	28717	702D	29997	752D	31277	7A2D	32557	7F2D	33837	842D		×	1	
23	27440	6B30	28720	7030	30000	7530	31280	7A30	32560	7F30	33840	8430		×	1	
24	27441	6B31	28721	7031	30001	7531	31281	7A31	32561	7F31	33841	8431		×	1	
25	27443	6B33	28723	7033	30003	7533	31283	7A33	32563	7F33	33843	8433		×	1	
26	27446	6B36	28726	7036	30006	7536	31286	7A36	32566	7F36	33846	8436		×	1	
27	27447	6B37	28727	7037	30007	7537	31287	7A37	32567	7F37	33847	8437		×	1	
28	27449	6B39	28729	7039	30009	7539	31289	7A39	32569	7F39	33849	8439		×	1	
29	27452	6B3C	28732	703C	30012	753C	31292	7A3C	32572	7F3C	33852	843C		×	1	
30	27453	6B3D	28733	703D	30013	753D	31293	7A3D	32573	7F3D	33853	843D		×	1	
31	27455	6B3F	28735	703F	30015	753F	31295	7A3F	32575	7F3F	33855	843F		×	1	
32	27458	6B42	28738	7042	30018	7542	31298	7A42	32578	7F42	33858	8442		×	1	
33	27459	6B43	28739	7043	30019	7543	31299	7A43	32579	7F43	33859	8443		×	1	
34	27461	6B45	28741	7045	30021	7545	31301	7A45	32581	7F45	33861	8445		×	1	
35	27464	6B48	28744	7048	30024	7548	31304	7A48	32584	7F48	33864	8448		×	1	
36	27465	6B49	28745	7049	30025	7549	31305	7A49	32585	7F49	33865	8449		×	1	
37	27467	6B4B	28747	704B	30027	754B	31307	7A4B	32587	7F4B	33867	844B		×	1	
38	27470	6B4E	28750	704E	30030	754E	31310	7A4E	32590	7F4E	33870	844E		×	1	
39	27471	6B4F	28751	704F	30031	754F	31311	7A4F	32591	7F4F	33871	844F		×	1	
40	27473	6B51	28753	7051	30033	7551	31313	7A51	32593	7F51	33873	8451		×	1	
41	27476	6B54	28756	7054	30036	7554	31316	7A54	32596	7F54	33876	8454		×	1	
42	27477	6B55	28757	7055	30037	7555	31317	7A55	32597	7F55	33877	8455		×	1	
43	27479	6B57	28759	7057	30039	7557	31319	7A57	32599	7F57	33879	8457		×	1	
44	27482	6B5A	28762	705A	30042	755A	31322	7A5A	32602	7F5A	33882	845A		×	1	
45	27483	6B5B	28763	705B	30043	755B	31323	7A5B	32603	7F5B	33883	845B		×	1	
46	27485	6B5D	28765	705D	30045	755D	31325	7A5D	32605	7F5D	33885	845D		×	1	
47	27488	6B60	28768	7060	30048	7560	31328	7A60	32608	7F60	33888	8460		×	1	
48	27489	6B61	28769	7061	30049	7561	31329	7A61	32609	7F61	33889	8461		×	1	
49	27491	6B63	28771	7063	30051	7563	31331	7A63	32611	7F63	33891	8463		×	1	
50	27494	6B66	28774	7066	30054	7566	31334	7A66	32614	7F66	33894	8466		×	1	
51	27495	6B67	28775	7067	30055	7567	31335	7A67	32615	7F67	33895	8467		×	1	
52	27497	6B69	28777	7069	30057	7569	31337	7A69	32617	7F69	33897	8469		×	1	
53	27500	6B6C	28780	706C	30060	756C	31340	7A6C	32620	7F6C	33900	846C		×	1	
54	27501	6B6D	28781	706D	30061	756D	31341	7A6D	32621	7F6D	33901	846D		×	1	
55	27503	6B6F	28783	706F	30063	756F	31343	7A6F	32623	7F6F	33903	846F		×	1	
56	27506	6B72	28786	7072	30066	7572	31346	7A72	32626	7F72	33906	8472		×	1	
57	27507	6B73	28787	7073	30067	7573	31347	7A73	32627	7F73	33907	8473		×	1	
58	27509	6B75	28789	7075	30069	7575	31349	7A75	32629	7F75	33909	8475		×	1	
59	27512	6B78	28792	7078	30072	7578	31352	7A78	32632	7F78	33912	8478		×	1	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
60	Multi-loop cooperative control data	Monitor data	19	PV (local) 19	24953	6179	26233	6679
61	Multi-loop cooperative control data	Monitor data	19	Cooperative control SP 19	24955	617B	26235	667B
62	Multi-loop cooperative control data	Monitor data	20	SP (local) 20	24958	617E	26238	667E
63	Multi-loop cooperative control data	Monitor data	20	PV (local) 20	24959	617F	26239	667F
64	Multi-loop cooperative control data	Monitor data	20	Cooperative control SP 20	24961	6181	26241	6681
65	Multi-loop cooperative control data	Monitor data	21	SP (local) 21	24964	6184	26244	6684
66	Multi-loop cooperative control data	Monitor data	21	PV (local) 21	24965	6185	26245	6685
67	Multi-loop cooperative control data	Monitor data	21	Cooperative control SP 21	24967	6187	26247	6687
68	Multi-loop cooperative control data	Monitor data	22	SP (local) 22	24970	618A	26250	668A
69	Multi-loop cooperative control data	Monitor data	22	PV (local) 22	24971	618B	26251	668B
70	Multi-loop cooperative control data	Monitor data	22	Cooperative control SP 22	24973	618D	26253	668D
71	Multi-loop cooperative control data	Monitor data	23	SP (local) 23	24976	6190	26256	6690
72	Multi-loop cooperative control data	Monitor data	23	PV (local) 23	24977	6191	26257	6691
73	Multi-loop cooperative control data	Monitor data	23	Cooperative control SP 23	24979	6193	26259	6693
74	Multi-loop cooperative control data	Monitor data	24	SP (local) 24	24982	6196	26262	6696
75	Multi-loop cooperative control data	Monitor data	24	PV (local) 24	24983	6197	26263	6697
76	Multi-loop cooperative control data	Monitor data	24	Cooperative control SP 24	24985	6199	26265	6699
77	Multi-loop cooperative control data	Monitor data	25	SP (local) 25	24988	619C	26268	669C
78	Multi-loop cooperative control data	Monitor data	25	PV (local) 25	24989	619D	26269	669D
79	Multi-loop cooperative control data	Monitor data	25	Cooperative control SP 25	24991	619F	26271	669F
80	Multi-loop cooperative control data	Monitor data	26	SP (local) 26	24994	61A2	26274	66A2
81	Multi-loop cooperative control data	Monitor data	26	PV (local) 26	24995	61A3	26275	66A3
82	Multi-loop cooperative control data	Monitor data	26	Cooperative control SP 26	24997	61A5	26277	66A5
83	Multi-loop cooperative control data	Monitor data	27	SP (local) 27	25000	61A8	26280	66A8
84	Multi-loop cooperative control data	Monitor data	27	PV (local) 27	25001	61A9	26281	66A9
85	Multi-loop cooperative control data	Monitor data	27	Cooperative control SP 27	25003	61AB	26283	66AB
86	Multi-loop cooperative control data	Monitor data	28	SP (local) 28	25006	61AE	26286	66AE
87	Multi-loop cooperative control data	Monitor data	28	PV (local) 28	25007	61AF	26287	66AF
88	Multi-loop cooperative control data	Monitor data	28	Cooperative control SP 28	25009	61B1	26289	66B1
89	Multi-loop cooperative control data	Monitor data	29	SP (local) 29	25012	61B4	26292	66B4
90	Multi-loop cooperative control data	Monitor data	29	PV (local) 29	25013	61B5	26293	66B5
91	Multi-loop cooperative control data	Monitor data	29	Cooperative control SP 29	25015	61B7	26295	66B7
92	Multi-loop cooperative control data	Monitor data	30	SP (local) 30	25018	61BA	26298	66BA
93	Multi-loop cooperative control data	Monitor data	30	PV (local) 30	25019	61BB	26299	66BB
94	Multi-loop cooperative control data	Monitor data	30	Cooperative control SP 30	25021	61BD	26301	66BD
95	Multi-loop cooperative control data	Monitor data	31	SP (local) 31	25024	61C0	26304	66C0
96	Multi-loop cooperative control data	Monitor data	31	PV (local) 31	25025	61C1	26305	66C1
97	Multi-loop cooperative control data	Monitor data	31	Cooperative control SP 31	25027	61C3	26307	66C3
98	Multi-loop cooperative control data	Monitor data	32	SP (local) 32	25030	61C6	26310	66C6
99	Multi-loop cooperative control data	Monitor data	32	PV (local) 32	25031	61C7	26311	66C7
100	Multi-loop cooperative control data	Monitor data	32	Cooperative control SP 32	25033	61C9	26313	66C9

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
60	27513	6B79	28793	7079	30073	7579	31353	7A79	32633	7F79	33913	8479		×	1	
61	27515	6B7B	28795	707B	30075	757B	31355	7A7B	32635	7F7B	33915	847B		×	1	
62	27518	6B7E	28798	707E	30078	757E	31358	7A7E	32638	7F7E	33918	847E		×	1	
63	27519	6B7F	28799	707F	30079	757F	31359	7A7F	32639	7F7F	33919	847F		×	1	
64	27521	6B81	28801	7081	30081	7581	31361	7A81	32641	7F81	33921	8481		×	1	
65	27524	6B84	28804	7084	30084	7584	31364	7A84	32644	7F84	33924	8484		×	1	
66	27525	6B85	28805	7085	30085	7585	31365	7A85	32645	7F85	33925	8485		×	1	
67	27527	6B87	28807	7087	30087	7587	31367	7A87	32647	7F87	33927	8487		×	1	
68	27530	6B8A	28810	708A	30090	758A	31370	7A8A	32650	7F8A	33930	848A		×	1	
69	27531	6B8B	28811	708B	30091	758B	31371	7A8B	32651	7F8B	33931	848B		×	1	
70	27533	6B8D	28813	708D	30093	758D	31373	7A8D	32653	7F8D	33933	848D		×	1	
71	27536	6B90	28816	7090	30096	7590	31376	7A90	32656	7F90	33936	8490		×	1	
72	27537	6B91	28817	7091	30097	7591	31377	7A91	32657	7F91	33937	8491		×	1	
73	27539	6B93	28819	7093	30099	7593	31379	7A93	32659	7F93	33939	8493		×	1	
74	27542	6B96	28822	7096	30102	7596	31382	7A96	32662	7F96	33942	8496		×	1	
75	27543	6B97	28823	7097	30103	7597	31383	7A97	32663	7F97	33943	8497		×	1	
76	27545	6B99	28825	7099	30105	7599	31385	7A99	32665	7F99	33945	8499		×	1	
77	27548	6B9C	28828	709C	30108	759C	31388	7A9C	32668	7F9C	33948	849C		×	1	
78	27549	6B9D	28829	709D	30109	759D	31389	7A9D	32669	7F9D	33949	849D		×	1	
79	27551	6B9F	28831	709F	30111	759F	31391	7A9F	32671	7F9F	33951	849F		×	1	
80	27554	6BA2	28834	70A2	30114	75A2	31394	7AA2	32674	7FA2	33954	84A2		×	1	
81	27555	6BA3	28835	70A3	30115	75A3	31395	7AA3	32675	7FA3	33955	84A3		×	1	
82	27557	6BA5	28837	70A5	30117	75A5	31397	7AA5	32677	7FA5	33957	84A5		×	1	
83	27560	6BA8	28840	70A8	30120	75A8	31400	7AA8	32680	7FA8	33960	84A8		×	1	
84	27561	6BA9	28841	70A9	30121	75A9	31401	7AA9	32681	7FA9	33961	84A9		×	1	
85	27563	6BAB	28843	70AB	30123	75AB	31403	7AAB	32683	7FAB	33963	84AB		×	1	
86	27566	6BAE	28846	70AE	30126	75AE	31406	7AAE	32686	7FAE	33966	84AE		×	1	
87	27567	6BAF	28847	70AF	30127	75AF	31407	7AAF	32687	7FAF	33967	84AF		×	1	
88	27569	6BB1	28849	70B1	30129	75B1	31409	7AB1	32689	7FB1	33969	84B1		×	1	
89	27572	6BB4	28852	70B4	30132	75B4	31412	7AB4	32692	7FB4	33972	84B4		×	1	
90	27573	6BB5	28853	70B5	30133	75B5	31413	7AB5	32693	7FB5	33973	84B5		×	1	
91	27575	6BB7	28855	70B7	30135	75B7	31415	7AB7	32695	7FB7	33975	84B7		×	1	
92	27578	6BBA	28858	70BA	30138	75BA	31418	7ABA	32698	7FBA	33978	84BA		×	1	
93	27579	6BBB	28859	70BB	30139	75BB	31419	7ABB	32699	7FBB	33979	84BB		×	1	
94	27581	6BBD	28861	70BD	30141	75BD	31421	7ABD	32701	7FBD	33981	84BD		×	1	
95	27584	6BC0	28864	70C0	30144	75C0	31424	7AC0	32704	7FC0	33984	84C0		×	1	
96	27585	6BC1	28865	70C1	30145	75C1	31425	7AC1	32705	7FC1	33985	84C1		×	1	
97	27587	6BC3	28867	70C3	30147	75C3	31427	7AC3	32707	7FC3	33987	84C3		×	1	
98	27590	6BC6	28870	70C6	30150	75C6	31430	7AC6	32710	7FC6	33990	84C6		×	1	
99	27591	6BC7	28871	70C7	30151	75C7	31431	7AC7	32711	7FC7	33991	84C7		×	1	
100	27593	6BC9	28873	70C9	30153	75C9	31433	7AC9	32713	7FC9	33993	84C9		×	1	

Multi-loop cooperative control (common settings)/optimum start-up control settings

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	optimum start-up control settings		SP filter time constant decimal point position	17928	4608				–
Multi-loop cooperative control (common settings)	optimum start-up control settings		Step response progress correction amount decimal point position	17929	4609			–	
Multi-loop cooperative control (common settings)	optimum start-up control settings		Set value step input modifiable range decimal point position	17930	460A			–	

Multi-loop cooperative control (common settings)/optimum start-up control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 1 decimal point position	18188	470C			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 1 decimal point position	18189	470D			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 1 decimal point position	18191	470F			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 2 decimal point position	18194	4712			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 2 decimal point position	18195	4713			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 2 decimal point position	18197	4715			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 3 decimal point position	18200	4718			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 3 decimal point position	18201	4719			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 3 decimal point position	18203	471B			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 4 decimal point position	18206	471E			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 4 decimal point position	18207	471F			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 4 decimal point position	18209	4721			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 5 decimal point position	18212	4724			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 5 decimal point position	18213	4725			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 5 decimal point position	18215	4727			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 6 decimal point position	18218	472A			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 6 decimal point position	18219	472B			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 6 decimal point position	18221	472D			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 7 decimal point position	18224	4730			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 7 decimal point position	18225	4731			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 7 decimal point position	18227	4733			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 8 decimal point position	18230	4736			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 8 decimal point position	18231	4737			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 8 decimal point position	18233	4739			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 9 decimal point position	18236	473C			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 9 decimal point position	18237	473D			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 9 decimal point position	18239	473F			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 10 decimal point position	18242	4742			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 10 decimal point position	18243	4743			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 10 decimal point position	18245	4745			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 11 decimal point position	18248	4748			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 11 decimal point position	18249	4749			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 11 decimal point position	18251	474B			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 12 decimal point position	18254	474E			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 12 decimal point position	18255	474F			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 12 decimal point position	18257	4751			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 13 decimal point position	18260	4754			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 13 decimal point position	18261	4755			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 13 decimal point position	18263	4757			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 14 decimal point position	18266	475A			–	

Multi-loop cooperative control (common settings)/optimum start-up control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 14 decimal point position	18267	475B			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 14 decimal + BF7 point position	18269	475D			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 15 decimal point position	18272	4760			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 15 decimal point position	18273	4761			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 15 decimal point position	18275	4763			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 16 decimal point position	18278	4766			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 16 decimal point position	18279	4767			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 16 decimal point position	18281	4769			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 17 decimal point position	18284	476C			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 17 decimal point position	18285	476D			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 17 decimal point position	18287	476F			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 18 decimal point position	18290	4772			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 18 decimal point position	18291	4773			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 18 decimal point position	18293	4775			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 19 decimal point position	18296	4778			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 19 decimal point position	18297	4779			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 19 decimal point position	18299	477B			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 20 decimal point position	18302	477E			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 20 decimal point position	18303	477F			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 20 decimal point position	18305	4781			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 21 decimal point position	18308	4784			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 21 decimal point position	18309	4785			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 21 decimal point position	18311	4787			–	
Multi-loop cooperative control (common settings)	optimum start-up control monitor		SP (local) 22 decimal point position	18314	478A			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 22 decimal point position	18315	478B			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 22 decimal point position	18317	478D			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 23 decimal point position	18320	4790			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 23 decimal point position	18321	4791			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 23 decimal point position	18323	4793			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 24 decimal point position	18326	4796			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 24 decimal point position	18327	4797			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 24 decimal point position	18329	4799			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 25 decimal point position	18332	479C			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 25 decimal point position	18333	479D			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 25 decimal point position	18335	479F			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 26 decimal point position	18338	47A2			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 26 decimal point position	18339	47A3			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 26 decimal point position	18341	47A5			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 27 decimal point position	18344	47A8			–	

Multi-loop cooperative control (common settings)/optimum start-up control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 27 decimal point position	18345	47A9			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 27 decimal point position	18347	47AB			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 28 decimal point position	18350	47AE			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 28 decimal point position	18351	47AF			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 28 decimal point position	18353	47B1			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 29 decimal point position	18356	47B4			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 29 decimal point position	18357	47B5			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 29 decimal point position	18359	47B7			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 30 decimal point position	18362	47BA			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 30 decimal point position	18363	47BB			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 30 decimal point position	18365	47BD			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 31 decimal point position	18368	47C0			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 31 decimal point position	18369	47C1			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 31 decimal point position	18371	47C3			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		SP (local) 32 decimal point position	18374	47C6			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		PV (local) 32 decimal point position	18375	47C7			–	
Multi-loop cooperation control (common settings)	optimal startup control monitor		Cooperative control SP 32 decimal point position	18377	47C9			–	

Multi-loop cooperative control data/setting data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
1	Multi-loop cooperative control data	Setting banks		Operation mode setting	24577	6001	25857	6501
2	Multi-loop cooperative control data	Setting banks		Error mode release	24578	6002	25858	6502
3	Multi-loop cooperative control data	Setting banks		Operation during error mode	24579	6003	25859	6503
4	Multi-loop cooperative control data	Setting banks		Recovery action from error mode	24580	6004	25860	6504
5	Multi-loop cooperative control data	Setting banks		Optimum start-up control mode	24582	6006	25862	6506
6	Multi-loop cooperative control data	Setting banks		Reference loop assignment	24583	6007	25863	6507
7	Multi-loop cooperative control data	Setting banks		SP filter time constant	24584	6008	25864	6508
8	Multi-loop cooperative control data	Setting banks		Step response progress correction amount	24585	6009	25865	6509
9	Multi-loop cooperative control data	Setting banks		Set value step input modifiable range	24586	600A	25866	650A

Multi-loop cooperative control data/monitor data

➡ “Address Groups 3 to 8”

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
1	27137	6A01	28417	6F01	29697	7401	30977	7901	32257	7E01	33537	8301			0	
2	27138	6A02	28418	6F02	29698	7402	30978	7902	32258	7E02	33538	8302			0	
3	27139	6A03	28419	6F03	29699	7403	30979	7903	32259	7E03	33539	8303			0	
4	27140	6A04	28420	6F04	29700	7404	30980	7904	32260	7E04	33540	8304			0	
5	27142	6A06	28422	6F06	29702	7406	30982	7906	32262	7E06	33542	8306			0	
6	27143	6A07	28423	6F07	29703	7407	30983	7907	32263	7E07	33543	8307			0	
7	27144	6A08	28424	6F08	29704	7408	30984	7908	32264	7E08	33544	8308			1	
8	27145	6A09	28425	6F09	29705	7409	30985	7909	32265	7E09	33545	8309			2	
9	27146	6A0A	28426	6F0A	29706	740A	30986	790A	32266	7E0A	33546	830A			2	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
1	Multi-loop cooperative control data	Monitor data		Error code	24832	6100	26112	6600
2	Multi-loop cooperative control data	Monitor data		No. of control loops in a group	24833	6101	26113	6601
3	Multi-loop cooperative control data	Monitor data		Standard loop	24834	6102	26114	6602
4	Multi-loop cooperative control data	Monitor data		Operation status	24835	6103	26115	6603
5	Multi-loop cooperative control data	Monitor data	1	SP (local) 1	24844	610C	26124	660C
6	Multi-loop cooperative control data	Monitor data	1	PV (local) 1	24845	610D	26125	660D
7	Multi-loop cooperative control data	Monitor data	1	Cooperative control SP 1	24847	610F	26127	660F
8	Multi-loop cooperative control data	Monitor data	2	SP (local) 2	24850	6112	26130	6612
9	Multi-loop cooperative control data	Monitor data	2	PV (local) 2	24851	6113	26131	6613
10	Multi-loop cooperative control data	Monitor data	2	Cooperative control SP 2	24853	6115	26133	6615
11	Multi-loop cooperative control data	Monitor data	3	SP (local) 3	24856	6118	26136	6618
12	Multi-loop cooperative control data	Monitor data	3	PV (local) 3	24857	6119	26137	6619
13	Multi-loop cooperative control data	Monitor data	3	Cooperative control SP 3	24859	611B	26139	661B
14	Multi-loop cooperative control data	Monitor data	4	SP (local) 4	24862	611E	26142	661E
15	Multi-loop cooperative control data	Monitor data	4	PV (local) 4	24863	611F	26143	661F
16	Multi-loop cooperative control data	Monitor data	4	Cooperative control SP 4	24865	6121	26145	6621
17	Multi-loop cooperative control data	Monitor data	5	SP (local) 5	24868	6124	26148	6624
18	Multi-loop cooperative control data	Monitor data	5	PV (local) 5	24869	6125	26149	6625
19	Multi-loop cooperative control data	Monitor data	5	Cooperative control SP 5	24871	6127	26151	6627
20	Multi-loop cooperative control data	Monitor data	6	SP (local) 6	24874	612A	26154	662A
21	Multi-loop cooperative control data	Monitor data	6	PV (local) 6	24875	612B	26155	662B
22	Multi-loop cooperative control data	Monitor data	6	Cooperative control SP 6	24877	612D	26157	662D
23	Multi-loop cooperative control data	Monitor data	7	SP (local) 7	24880	6130	26160	6630
24	Multi-loop cooperative control data	Monitor data	7	PV (local) 7	24881	6131	26161	6631
25	Multi-loop cooperative control data	Monitor data	7	Cooperative control SP 7	24883	6133	26163	6633
26	Multi-loop cooperative control data	Monitor data	8	SP (local) 8	24886	6136	26166	6636
27	Multi-loop cooperative control data	Monitor data	8	PV (local) 8	24887	6137	26167	6637
28	Multi-loop cooperative control data	Monitor data	8	Cooperative control SP 8	24889	6139	26169	6639
29	Multi-loop cooperative control data	Monitor data	9	SP (local) 9	24892	613C	26172	663C
30	Multi-loop cooperative control data	Monitor data	9	PV (local) 9	24893	613D	26173	663D
31	Multi-loop cooperative control data	Monitor data	9	Cooperative control SP 9	24895	613F	26175	663F
32	Multi-loop cooperative control data	Monitor data	10	SP (local) 10	24898	6142	26178	6642
33	Multi-loop cooperative control data	Monitor data	10	PV (local) 10	24899	6143	26179	6643
34	Multi-loop cooperative control data	Monitor data	10	Cooperative control SP 10	24901	6145	26181	6645
35	Multi-loop cooperative control data	Monitor data	11	SP (local) 11	24904	6148	26184	6648
36	Multi-loop cooperative control data	Monitor data	11	PV (local) 11	24905	6149	26185	6649
37	Multi-loop cooperative control data	Monitor data	11	Cooperative control SP 11	24907	614B	26187	664B
38	Multi-loop cooperative control data	Monitor data	12	SP (local) 12	24910	614E	26190	664E
39	Multi-loop cooperative control data	Monitor data	12	PV (local) 12	24911	614F	26191	664F
40	Multi-loop cooperative control data	Monitor data	12	Cooperative control SP 12	24913	6151	26193	6651
41	Multi-loop cooperative control data	Monitor data	13	SP (local) 13	24916	6154	26196	6654
42	Multi-loop cooperative control data	Monitor data	13	PV (local) 13	24917	6155	26197	6655
43	Multi-loop cooperative control data	Monitor data	13	Cooperative control SP 13	24919	6157	26199	6657
44	Multi-loop cooperative control data	Monitor data	14	SP (local) 14	24922	615A	26202	665A
45	Multi-loop cooperative control data	Monitor data	14	PV (local) 14	24923	615B	26203	665B
46	Multi-loop cooperative control data	Monitor data	14	Cooperative control SP 14	24925	615D	26205	665D
47	Multi-loop cooperative control data	Monitor data	15	SP (local) 15	24928	6160	26208	6660
48	Multi-loop cooperative control data	Monitor data	15	PV (local) 15	24929	6161	26209	6661
49	Multi-loop cooperative control data	Monitor data	15	Cooperative control SP 15	24931	6163	26211	6663
50	Multi-loop cooperative control data	Monitor data	16	SP (local) 16	24934	6166	26214	6666
51	Multi-loop cooperative control data	Monitor data	16	PV (local) 16	24935	6167	26215	6667
52	Multi-loop cooperative control data	Monitor data	16	Cooperative control SP 16	24937	6169	26217	6669
53	Multi-loop cooperative control data	Monitor data	17	SP (local) 17	24940	616C	26220	666C
54	Multi-loop cooperative control data	Monitor data	17	PV (local) 17	24941	616D	26221	666D
55	Multi-loop cooperative control data	Monitor data	17	Cooperative control SP 17	24943	616F	26223	666F
56	Multi-loop cooperative control data	Monitor data	18	SP (local) 18	24946	6172	26226	6672
57	Multi-loop cooperative control data	Monitor data	18	PV (local) 18	24947	6173	26227	6673
58	Multi-loop cooperative control data	Monitor data	18	Cooperative control SP 18	24949	6175	26229	6675
59	Multi-loop cooperative control data	Monitor data	19	SP (local) 19	24952	6178	26232	6678

Multi-loop cooperative control data/monitor data

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
1	27392	6B00	28672	7000	29952	7500	31232	7A00	32512	7F00	33792	8400		×	0	
2	27393	6B01	28673	7001	29953	7501	31233	7A01	32513	7F01	33793	8401		×	0	
3	27394	6B02	28674	7002	29954	7502	31234	7A02	32514	7F02	33794	8402		×	0	
4	27395	6B03	28675	7003	29955	7503	31235	7A03	32515	7F03	33795	8403		×	0	
5	27404	6B0C	28684	700C	29964	750C	31244	7A0C	32524	7F0C	33804	840C		×	1	
6	27405	6B0D	28685	700D	29965	750D	31245	7A0D	32525	7F0D	33805	840D		×	1	
7	27407	6B0F	28687	700F	29967	750F	31247	7A0F	32527	7F0F	33807	840F		×	1	
8	27410	6B12	28690	7012	29970	7512	31250	7A12	32530	7F12	33810	8412		×	1	
9	27411	6B13	28691	7013	29971	7513	31251	7A13	32531	7F13	33811	8413		×	1	
10	27413	6B15	28693	7015	29973	7515	31253	7A15	32533	7F15	33813	8415		×	1	
11	27416	6B18	28696	7018	29976	7518	31256	7A18	32536	7F18	33816	8418		×	1	
12	27417	6B19	28697	7019	29977	7519	31257	7A19	32537	7F19	33817	8419		×	1	
13	27419	6B1B	28699	701B	29979	751B	31259	7A1B	32539	7F1B	33819	841B		×	1	
14	27422	6B1E	28702	701E	29982	751E	31262	7A1E	32542	7F1E	33822	841E		×	1	
15	27423	6B1F	28703	701F	29983	751F	31263	7A1F	32543	7F1F	33823	841F		×	1	
16	27425	6B21	28705	7021	29985	7521	31265	7A21	32545	7F21	33825	8421		×	1	
17	27428	6B24	28708	7024	29988	7524	31268	7A24	32548	7F24	33828	8424		×	1	
18	27429	6B25	28709	7025	29989	7525	31269	7A25	32549	7F25	33829	8425		×	1	
19	27431	6B27	28711	7027	29991	7527	31271	7A27	32551	7F27	33831	8427		×	1	
20	27434	6B2A	28714	702A	29994	752A	31274	7A2A	32554	7F2A	33834	842A		×	1	
21	27435	6B2B	28715	702B	29995	752B	31275	7A2B	32555	7F2B	33835	842B		×	1	
22	27437	6B2D	28717	702D	29997	752D	31277	7A2D	32557	7F2D	33837	842D		×	1	
23	27440	6B30	28720	7030	30000	7530	31280	7A30	32560	7F30	33840	8430		×	1	
24	27441	6B31	28721	7031	30001	7531	31281	7A31	32561	7F31	33841	8431		×	1	
25	27443	6B33	28723	7033	30003	7533	31283	7A33	32563	7F33	33843	8433		×	1	
26	27446	6B36	28726	7036	30006	7536	31286	7A36	32566	7F36	33846	8436		×	1	
27	27447	6B37	28727	7037	30007	7537	31287	7A37	32567	7F37	33847	8437		×	1	
28	27449	6B39	28729	7039	30009	7539	31289	7A39	32569	7F39	33849	8439		×	1	
29	27452	6B3C	28732	703C	30012	753C	31292	7A3C	32572	7F3C	33852	843C		×	1	
30	27453	6B3D	28733	703D	30013	753D	31293	7A3D	32573	7F3D	33853	843D		×	1	
31	27455	6B3F	28735	703F	30015	753F	31295	7A3F	32575	7F3F	33855	843F		×	1	
32	27458	6B42	28738	7042	30018	7542	31298	7A42	32578	7F42	33858	8442		×	1	
33	27459	6B43	28739	7043	30019	7543	31299	7A43	32579	7F43	33859	8443		×	1	
34	27461	6B45	28741	7045	30021	7545	31301	7A45	32581	7F45	33861	8445		×	1	
35	27464	6B48	28744	7048	30024	7548	31304	7A48	32584	7F48	33864	8448		×	1	
36	27465	6B49	28745	7049	30025	7549	31305	7A49	32585	7F49	33865	8449		×	1	
37	27467	6B4B	28747	704B	30027	754B	31307	7A4B	32587	7F4B	33867	844B		×	1	
38	27470	6B4E	28750	704E	30030	754E	31310	7A4E	32590	7F4E	33870	844E		×	1	
39	27471	6B4F	28751	704F	30031	754F	31311	7A4F	32591	7F4F	33871	844F		×	1	
40	27473	6B51	28753	7051	30033	7551	31313	7A51	32593	7F51	33873	8451		×	1	
41	27476	6B54	28756	7054	30036	7554	31316	7A54	32596	7F54	33876	8454		×	1	
42	27477	6B55	28757	7055	30037	7555	31317	7A55	32597	7F55	33877	8455		×	1	
43	27479	6B57	28759	7057	30039	7557	31319	7A57	32599	7F57	33879	8457		×	1	
44	27482	6B5A	28762	705A	30042	755A	31322	7A5A	32602	7F5A	33882	845A		×	1	
45	27483	6B5B	28763	705B	30043	755B	31323	7A5B	32603	7F5B	33883	845B		×	1	
46	27485	6B5D	28765	705D	30045	755D	31325	7A5D	32605	7F5D	33885	845D		×	1	
47	27488	6B60	28768	7060	30048	7560	31328	7A60	32608	7F60	33888	8460		×	1	
48	27489	6B61	28769	7061	30049	7561	31329	7A61	32609	7F61	33889	8461		×	1	
49	27491	6B63	28771	7063	30051	7563	31331	7A63	32611	7F63	33891	8463		×	1	
50	27494	6B66	28774	7066	30054	7566	31334	7A66	32614	7F66	33894	8466		×	1	
51	27495	6B67	28775	7067	30055	7567	31335	7A67	32615	7F67	33895	8467		×	1	
52	27497	6B69	28777	7069	30057	7569	31337	7A69	32617	7F69	33897	8469		×	1	
53	27500	6B6C	28780	706C	30060	756C	31340	7A6C	32620	7F6C	33900	846C		×	1	
54	27501	6B6D	28781	706D	30061	756D	31341	7A6D	32621	7F6D	33901	846D		×	1	
55	27503	6B6F	28783	706F	30063	756F	31343	7A6F	32623	7F6F	33903	846F		×	1	
56	27506	6B72	28786	7072	30066	7572	31346	7A72	32626	7F72	33906	8472		×	1	
57	27507	6B73	28787	7073	30067	7573	31347	7A73	32627	7F73	33907	8473		×	1	
58	27509	6B75	28789	7075	30069	7575	31349	7A75	32629	7F75	33909	8475		×	1	
59	27512	6B78	28792	7078	30072	7578	31352	7A78	32632	7F78	33912	8478		×	1	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
60	Multi-loop cooperative control data	Monitor data	19	PV (local) 19	24953	6179	26233	6679
61	Multi-loop cooperative control data	Monitor data	19	Cooperative control SP 19	24955	617B	26235	667B
62	Multi-loop cooperative control data	Monitor data	20	SP (local) 20	24958	617E	26238	667E
63	Multi-loop cooperative control data	Monitor data	20	PV (local) 20	24959	617F	26239	667F
64	Multi-loop cooperative control data	Monitor data	20	Cooperative control SP 20	24961	6181	26241	6681
65	Multi-loop cooperative control data	Monitor data	21	SP (local) 21	24964	6184	26244	6684
66	Multi-loop cooperative control data	Monitor data	21	PV (local) 21	24965	6185	26245	6685
67	Multi-loop cooperative control data	Monitor data	21	Cooperative control SP 21	24967	6187	26247	6687
68	Multi-loop cooperative control data	Monitor data	22	SP (local) 22	24970	618A	26250	668A
69	Multi-loop cooperative control data	Monitor data	22	PV (local) 22	24971	618B	26251	668B
70	Multi-loop cooperative control data	Monitor data	22	Cooperative control SP 22	24973	618D	26253	668D
71	Multi-loop cooperative control data	Monitor data	23	SP (local) 23	24976	6190	26256	6690
72	Multi-loop cooperative control data	Monitor data	23	PV (local) 23	24977	6191	26257	6691
73	Multi-loop cooperative control data	Monitor data	23	Cooperative control SP 23	24979	6193	26259	6693
74	Multi-loop cooperative control data	Monitor data	24	SP (local) 24	24982	6196	26262	6696
75	Multi-loop cooperative control data	Monitor data	24	PV (local) 24	24983	6197	26263	6697
76	Multi-loop cooperative control data	Monitor data	24	Cooperative control SP 24	24985	6199	26265	6699
77	Multi-loop cooperative control data	Monitor data	25	SP (local) 25	24988	619C	26268	669C
78	Multi-loop cooperative control data	Monitor data	25	PV (local) 25	24989	619D	26269	669D
79	Multi-loop cooperative control data	Monitor data	25	Cooperative control SP 25	24991	619F	26271	669F
80	Multi-loop cooperative control data	Monitor data	26	SP (local) 26	24994	61A2	26274	66A2
81	Multi-loop cooperative control data	Monitor data	26	PV (local) 26	24995	61A3	26275	66A3
82	Multi-loop cooperative control data	Monitor data	26	Cooperative control SP 26	24997	61A5	26277	66A5
83	Multi-loop cooperative control data	Monitor data	27	SP (local) 27	25000	61A8	26280	66A8
84	Multi-loop cooperative control data	Monitor data	27	PV (local) 27	25001	61A9	26281	66A9
85	Multi-loop cooperative control data	Monitor data	27	Cooperative control SP 27	25003	61AB	26283	66AB
86	Multi-loop cooperative control data	Monitor data	28	SP (local) 28	25006	61AE	26286	66AE
87	Multi-loop cooperative control data	Monitor data	28	PV (local) 28	25007	61AF	26287	66AF
88	Multi-loop cooperative control data	Monitor data	28	Cooperative control SP 28	25009	61B1	26289	66B1
89	Multi-loop cooperative control data	Monitor data	29	SP (local) 29	25012	61B4	26292	66B4
90	Multi-loop cooperative control data	Monitor data	29	PV (local) 29	25013	61B5	26293	66B5
91	Multi-loop cooperative control data	Monitor data	29	Cooperative control SP 29	25015	61B7	26295	66B7
92	Multi-loop cooperative control data	Monitor data	30	SP (local) 30	25018	61BA	26298	66BA
93	Multi-loop cooperative control data	Monitor data	30	PV (local) 30	25019	61BB	26299	66BB
94	Multi-loop cooperative control data	Monitor data	30	Cooperative control SP 30	25021	61BD	26301	66BD
95	Multi-loop cooperative control data	Monitor data	31	SP (local) 31	25024	61C0	26304	66C0
96	Multi-loop cooperative control data	Monitor data	31	PV (local) 31	25025	61C1	26305	66C1
97	Multi-loop cooperative control data	Monitor data	31	Cooperative control SP 31	25027	61C3	26307	66C3
98	Multi-loop cooperative control data	Monitor data	32	SP (local) 32	25030	61C6	26310	66C6
99	Multi-loop cooperative control data	Monitor data	32	PV (local) 32	25031	61C7	26311	66C7
100	Multi-loop cooperative control data	Monitor data	32	Cooperative control SP 32	25033	61C9	26313	66C9

Multi-loop cooperative control data/monitor data

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
60	27513	6B79	28793	7079	30073	7579	31353	7A79	32633	7F79	33913	8479		×	1	
61	27515	6B7B	28795	707B	30075	757B	31355	7A7B	32635	7F7B	33915	847B		×	1	
62	27518	6B7E	28798	707E	30078	757E	31358	7A7E	32638	7F7E	33918	847E		×	1	
63	27519	6B7F	28799	707F	30079	757F	31359	7A7F	32639	7F7F	33919	847F		×	1	
64	27521	6B81	28801	7081	30081	7581	31361	7A81	32641	7F81	33921	8481		×	1	
65	27524	6B84	28804	7084	30084	7584	31364	7A84	32644	7F84	33924	8484		×	1	
66	27525	6B85	28805	7085	30085	7585	31365	7A85	32645	7F85	33925	8485		×	1	
67	27527	6B87	28807	7087	30087	7587	31367	7A87	32647	7F87	33927	8487		×	1	
68	27530	6B8A	28810	708A	30090	758A	31370	7A8A	32650	7F8A	33930	848A		×	1	
69	27531	6B8B	28811	708B	30091	758B	31371	7A8B	32651	7F8B	33931	848B		×	1	
70	27533	6B8D	28813	708D	30093	758D	31373	7A8D	32653	7F8D	33933	848D		×	1	
71	27536	6B90	28816	7090	30096	7590	31376	7A90	32656	7F90	33936	8490		×	1	
72	27537	6B91	28817	7091	30097	7591	31377	7A91	32657	7F91	33937	8491		×	1	
73	27539	6B93	28819	7093	30099	7593	31379	7A93	32659	7F93	33939	8493		×	1	
74	27542	6B96	28822	7096	30102	7596	31382	7A96	32662	7F96	33942	8496		×	1	
75	27543	6B97	28823	7097	30103	7597	31383	7A97	32663	7F97	33943	8497		×	1	
76	27545	6B99	28825	7099	30105	7599	31385	7A99	32665	7F99	33945	8499		×	1	
77	27548	6B9C	28828	709C	30108	759C	31388	7A9C	32668	7F9C	33948	849C		×	1	
78	27549	6B9D	28829	709D	30109	759D	31389	7A9D	32669	7F9D	33949	849D		×	1	
79	27551	6B9F	28831	709F	30111	759F	31391	7A9F	32671	7F9F	33951	849F		×	1	
80	27554	6BA2	28834	70A2	30114	75A2	31394	7AA2	32674	7FA2	33954	84A2		×	1	
81	27555	6BA3	28835	70A3	30115	75A3	31395	7AA3	32675	7FA3	33955	84A3		×	1	
82	27557	6BA5	28837	70A5	30117	75A5	31397	7AA5	32677	7FA5	33957	84A5		×	1	
83	27560	6BA8	28840	70A8	30120	75A8	31400	7AA8	32680	7FA8	33960	84A8		×	1	
84	27561	6BA9	28841	70A9	30121	75A9	31401	7AA9	32681	7FA9	33961	84A9		×	1	
85	27563	6BAB	28843	70AB	30123	75AB	31403	7AAB	32683	7FAB	33963	84AB		×	1	
86	27566	6BAE	28846	70AE	30126	75AE	31406	7AAE	32686	7FAE	33966	84AE		×	1	
87	27567	6BAF	28847	70AF	30127	75AF	31407	7AAF	32687	7FAF	33967	84AF		×	1	
88	27569	6BB1	28849	70B1	30129	75B1	31409	7AB1	32689	7FB1	33969	84B1		×	1	
89	27572	6BB4	28852	70B4	30132	75B4	31412	7AB4	32692	7FB4	33972	84B4		×	1	
90	27573	6BB5	28853	70B5	30133	75B5	31413	7AB5	32693	7FB5	33973	84B5		×	1	
91	27575	6BB7	28855	70B7	30135	75B7	31415	7AB7	32695	7FB7	33975	84B7		×	1	
92	27578	6BBA	28858	70BA	30138	75BA	31418	7ABA	32698	7FBA	33978	84BA		×	1	
93	27579	6BBB	28859	70BB	30139	75BB	31419	7ABB	32699	7FBB	33979	84BB		×	1	
94	27581	6BBD	28861	70BD	30141	75BD	31421	7ABD	32701	7FBD	33981	84BD		×	1	
95	27584	6BC0	28864	70C0	30144	75C0	31424	7AC0	32704	7FC0	33984	84C0		×	1	
96	27585	6BC1	28865	70C1	30145	75C1	31425	7AC1	32705	7FC1	33985	84C1		×	1	
97	27587	6BC3	28867	70C3	30147	75C3	31427	7AC3	32707	7FC3	33987	84C3		×	1	
98	27590	6BC6	28870	70C6	30150	75C6	31430	7AC6	32710	7FC6	33990	84C6		×	1	
99	27591	6BC7	28871	70C7	30151	75C7	31431	7AC7	32711	7FC7	33991	84C7		×	1	
100	27593	6BC9	28873	70C9	30153	75C9	31433	7AC9	32713	7FC9	33993	84C9		×	1	

Multi-loop cooperative control (common settings)/peak power suppression control settings

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperation control (common settings)	peak power suppression control settings		Total MV limit decimal point position	19208	4B08			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		MV dividing rate decimal point position	19209	4B09			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		MV change pace decimal point position	19210	4B0A			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 1 decimal point position	19220	4B14			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 2 decimal point position	19221	4B15			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 3 decimal point position	19222	4B16			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 4 decimal point position	19223	4B17			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 5 decimal point position	19224	4B18			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 6 decimal point position	19225	4B19			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 7 decimal point position	19226	4B1A			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 8 decimal point position	19227	4B1B			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 9 decimal point position	19228	4B1C			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 10 decimal point position	19229	4B1D			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 11 decimal point position	19230	4B1E			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 12 decimal point position	19231	4B1F			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 13 decimal point position	19232	4B20			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 14 decimal point position	19233	4B21			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 15 decimal point position	19234	4B22			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 16 decimal point position	19235	4B23			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 17 decimal point position	19236	4B24			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 18 decimal point position	19237	4B25			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 19 decimal point position	19238	4B26			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 20 decimal point position	19239	4B27			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 21 decimal point position	19240	4B28			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 22 decimal point position	19241	4B29			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 23 decimal point position	19242	4B2A			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 24 decimal point position	19243	4B2B			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 25 decimal point position	19244	4B2C			–	

Multi-loop cooperative control (common settings)/peak power suppression control settings

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 26 decimal point position	19245	4B2D			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 27 decimal point position	19246	4B2E			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 28 decimal point position	19247	4B2F			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 29 decimal point position	19248	4B30			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 30 decimal point position	19249	4B31			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 31 decimal point position	19250	4B32			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability factor 32 decimal point position	19251	4B33			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 1 decimal point position	19284	4B54			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 2 decimal point position	19285	4B55			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 3 decimal point position	19286	4B56			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 4 decimal point position	19287	4B57			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 5 decimal point position	19288	4B58			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 6 decimal point position	19289	4B59			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 7 decimal point position	19290	4B5A			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 8 decimal point position	19291	4B5B			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 9 decimal point position	19292	4B5C			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 10 decimal point position	19293	4B5D			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 11 decimal point position	19294	4B5E			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 12 decimal point position	19295	4B5F			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 13 decimal point position	19296	4B60			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 14 decimal point position	19297	4B61			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 15 decimal point position	19298	4B62			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 16 decimal point position	19299	4B63			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 17 decimal point position	19300	4B64			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 18 decimal point position	19301	4B65			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 19 decimal point position	19302	4B66			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 20 decimal point position	19303	4B67			–	

Multi-loop cooperative control (common settings)/peak power suppression control settings

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 21 decimal point position	19304	4B68			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 22 decimal point position	19305	4B69			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 23 decimal point position	19306	4B6A			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 24 decimal point position	19307	4B6B			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 25 decimal point position	19308	4B6C			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 26 decimal point position	19309	4B6D			–	
Multi-loop cooperative control (common settings)	peak power suppression control settings		Heat-up temp capability offset 27 decimal point position	19310	4B6E			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 28 decimal point position	19311	4B6F			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 29 decimal point position	19312	4B70			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 30 decimal point position	19313	4B71			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 31 decimal point position	19314	4B72			–	
Multi-loop cooperation control (common settings)	peak power suppression control settings		Heat-up temp capability offset 32 decimal point position	19315	4B73			–	

Multi-loop cooperative control (common settings)/peak power suppression control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 1 decimal point position	19469	4C0D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 1 decimal point position	19470	4C0E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 1 decimal point position	19471	4C0F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 1 decimal point position	19472	4C10			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 1 decimal point position	19475	4C13			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 1 decimal point position	19476	4C14			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 2 decimal point position	19483	4C1B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 2 decimal point position	19484	4C1C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 2 decimal point position	19485	4C1D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 2 decimal point position	19486	4C1E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 2 decimal point position	19489	4C21			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 2 decimal point position	19490	4C22			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 3 decimal point position	19497	4C29			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 3 decimal point position	19498	4C2A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 3 decimal point position	19499	4C2B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 3 decimal point position	19500	4C2C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 3 decimal point position	19503	4C2F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 3 decimal point position	19504	4C30			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 4 decimal point position	19511	4C37			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 4 decimal point position	19512	4C38			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 4 decimal point position	19513	4C39			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 4 decimal point position	19514	4C3A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 4 decimal point position	19517	4C3D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 4 decimal point position	19518	4C3E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 5 decimal point position	19525	4C45			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 5 decimal point position	19526	4C46			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 5 decimal point position	19527	4C47			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 5 decimal point position	19528	4C48			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 5 decimal point position	19531	4C4B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 5 decimal point position	19532	4C4C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 6 decimal point position	19539	4C53			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 6 decimal point position	19540	4C54			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 6 decimal point position	19541	4C55			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 6 decimal point position	19542	4C56			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 6 decimal point position	19545	4C59			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 6 decimal point position	19546	4C5A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 7 decimal point position	19553	4C61			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 7 decimal point position	19554	4C62			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 7 decimal point position	19555	4C63			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 7 decimal point position	19556	4C64			–	

Multi-loop cooperative control (common settings)/peak power suppression control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 7 decimal point position	19559	4C67			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 7 decimal point position	19560	4C68			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 8 decimal point position	19567	4C6F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 8 decimal point position	19568	4C70			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 8 decimal point position	19569	4C71			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 8 decimal point position	19570	4C72			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 8 decimal point position	19573	4C75			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 8 decimal point position	19574	4C76			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 9 decimal point position	19581	4C7D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 9 decimal point position	19582	4C7E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 9 decimal point position	19583	4C7F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 9 decimal point position	19584	4C80			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 9 decimal point position	19587	4C83			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 9 decimal point position	19588	4C84			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 10 decimal point position	19595	4C8B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 10 decimal point position	19596	4C8C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 10 decimal point position	19597	4C8D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 10 decimal point position	19598	4C8E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 10 decimal point position	19601	4C91			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 10 decimal point position	19602	4C92			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 11 decimal point position	19609	4C99			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 11 decimal point position	19610	4C9A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 11 decimal point position	19611	4C9B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 11 decimal point position	19612	4C9C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 11 decimal point position	19615	4C9F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 11 decimal point position	19616	4CA0			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 12 decimal point position	19623	4CA7			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 12 decimal point position	19624	4CA8			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 12 decimal point position	19625	4CA9			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 12 decimal point position	19626	4CAA			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 12 decimal point position	19629	4CAD			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 12 decimal point position	19630	4CAE			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 13 decimal point position	19637	4CB5			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 13 decimal point position	19638	4CB6			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 13 decimal point position	19639	4CB7			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 13 decimal point position	19640	4CB8			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 13 decimal point position	19643	4CBB			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 13 decimal point position	19644	4CBC			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 14 decimal point position	19651	4CC3			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 14 decimal point position	19652	4CC4			–	

Multi-loop cooperative control (common settings)/peak power suppression control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 14 decimal point position	19653	4CC5			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 14 decimal point position	19654	4CC6			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 14 decimal point position	19657	4CC9			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 14 decimal point position	19658	4CCA			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 15 decimal point position	19665	4CD1			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 15 decimal point position	19666	4CD2			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 15 decimal point position	19667	4CD3			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 15 decimal point position	19668	4CD4			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 15 decimal point position	19671	4CD7			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 15 decimal point position	19672	4CD8			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 16 decimal point position	19679	4CDF			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 16 decimal point position	19680	4CE0			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 16 decimal point position	19681	4CE1			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 16 decimal point position	19682	4CE2			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 16 decimal point position	19685	4CE5			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 16 decimal point position	19686	4CE6			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 17 decimal point position	19693	4CED			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 17 decimal point position	19694	4CEE			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 17 decimal point position	19695	4CEF			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 17 decimal point position	19696	4CF0			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 17 decimal point position	19699	4CF3			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 17 decimal point position	19700	4CF4			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 18 decimal point position	19707	4CFB			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 18 decimal point position	19708	4CFC			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 18 decimal point position	19709	4CFD			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 18 decimal point position	19710	4CFE			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 18 decimal point position	19713	4D01			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 18 decimal point position	19714	4D02			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 19 decimal point position	19721	4D09			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 19 decimal point position	19722	4D0A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 19 decimal point position	19723	4D0B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 19 decimal point position	19724	4D0C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 19 decimal point position	19727	4D0F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 19 decimal point position	19728	4D10			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 20 decimal point position	19735	4D17			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 20 decimal point position	19736	4D18			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 20 decimal point position	19737	4D19			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 20 decimal point position	19738	4D1A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 20 decimal point position	19741	4D1D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 20 decimal point position	19742	4D1E			–	

Multi-loop cooperative control (common settings)/peak power suppression control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 21 decimal point position	19749	4D25			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 21 decimal point position	19750	4D26			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 21 decimal point position	19751	4D27			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 21 decimal point position	19752	4D28			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 21 decimal point position	19755	4D2B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 21 decimal point position	19756	4D2C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 22 decimal point position	19763	4D33			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 22 decimal point position	19764	4D34			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 22 decimal point position	19765	4D35			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 22 decimal point position	19766	4D36			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 22 decimal point position	19769	4D39			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 22 decimal point position	19770	4D3A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 23 decimal point position	19777	4D41			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 23 decimal point position	19778	4D42			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 23 decimal point position	19779	4D43			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 23 decimal point position	19780	4D44			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 23 decimal point position	19783	4D47			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 23 decimal point position	19784	4D48			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 24 decimal point position	19791	4D4F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 24 decimal point position	19792	4D50			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 24 decimal point position	19793	4D51			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 24 decimal point position	19794	4D52			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 24 decimal point position	19797	4D55			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 24 decimal point position	19798	4D56			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 25 decimal point position	19805	4D5D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 25 decimal point position	19806	4D5E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 25 decimal point position	19807	4D5F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 25 decimal point position	19808	4D60			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 25 decimal point position	19811	4D63			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 25 decimal point position	19812	4D64			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 26 decimal point position	19819	4D6B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 26 decimal point position	19820	4D6C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 26 decimal point position	19821	4D6D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 26 decimal point position	19822	4D6E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 26 decimal point position	19825	4D71			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 26 decimal point position	19826	4D72			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 27 decimal point position	19833	4D79			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 27 decimal point position	19834	4D7A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 27 decimal point position	19835	4D7B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 27 decimal point position	19836	4D7C			–	

Multi-loop cooperative control (common settings)/peak power suppression control monitor

Folder name	Bank name	Code	Item name	Address		Read	Write	Decimal point Information	Remarks
				Decimal	Hexa-decimal				
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 27 decimal point position	19839	4D7F			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 27 decimal point position	19840	4D80			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 28 decimal point position	19847	4D87			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 28 decimal point position	19848	4D88			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 28 decimal point position	19849	4D89			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 28 decimal point position	19850	4D8A			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 28 decimal point position	19853	4D8D			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 28 decimal point position	19854	4D8E			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 29 decimal point position	19861	4D95			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 29 decimal point position	19862	4D96			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 29 decimal point position	19863	4D97			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 29 decimal point position	19864	4D98			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 29 decimal point position	19867	4D9B			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 29 decimal point position	19868	4D9C			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 30 decimal point position	19875	4DA3			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 30 decimal point position	19876	4DA4			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 30 decimal point position	19877	4DA5			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 30 decimal point position	19878	4DA6			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 30 decimal point position	19881	4DA9			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 30 decimal point position	19882	4DAA			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 31 decimal point position	19889	4DB1			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 31 decimal point position	19890	4DB2			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 31 decimal point position	19891	4DB3			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 31 decimal point position	19892	4DB4			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 31 decimal point position	19895	4DB7			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 31 decimal point position	19896	4DB8			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV low limit 32 decimal point position	19903	4DBF			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV high limit 32 decimal point position	19904	4DC0			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		SP (local) 32 decimal point position	19905	4DC1			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		PV (local) 32 decimal point position	19906	4DC2			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		MV output limit 32 decimal point position	19909	4DC5			–	
Multi-loop cooperative control (common settings)	peak power suppression control monitor		Cooperative MV 32 decimal point position	19910	4DC6			–	

Multi-loop cooperative control data/setting data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
1	Multi-loop cooperative control data	Setting banks		Operation mode setting	24577	6001	25857	6501
2	Multi-loop cooperative control data	Setting banks		Error mode release	24578	6002	25858	6502
3	Multi-loop cooperative control data	Setting banks		Recovery action from error mode	24580	6004	25860	6504
4	Multi-loop cooperative control data	Setting banks		Coupling execution switch	24582	6006	25862	6506
5	Multi-loop cooperative control data	Setting banks		Total MV limit	24584	6008	25864	6508
6	Multi-loop cooperative control data	Setting banks		MV dividing rate	24585	6009	25865	6509
7	Multi-loop cooperative control data	Setting banks		MV change pace	24586	600A	25866	650A
8	Multi-loop cooperative control data	Setting banks		Time proportional output offset	24590	600E	25870	650E
9	Multi-loop cooperative control data	Setting banks	1	Heat-up temp capability factor 1	24596	6014	25876	6514
10	Multi-loop cooperative control data	Setting banks	2	Heat-up temp capability factor 2	24597	6015	25877	6515
11	Multi-loop cooperative control data	Setting banks	3	Heat-up temp capability factor 3	24598	6016	25878	6516
12	Multi-loop cooperative control data	Setting banks	4	Heat-up temp capability factor 4	24599	6017	25879	6517
13	Multi-loop cooperative control data	Setting banks	5	Heat-up temp capability factor 5	24600	6018	25880	6518
14	Multi-loop cooperative control data	Setting banks	6	Heat-up temp capability factor 6	24601	6019	25881	6519
15	Multi-loop cooperative control data	Setting banks	7	Heat-up temp capability factor 7	24602	601A	25882	651A
16	Multi-loop cooperative control data	Setting banks	8	Heat-up temp capability factor 8	24603	601B	25883	651B
17	Multi-loop cooperative control data	Setting banks	9	Heat-up temp capability factor 9	24604	601C	25884	651C
18	Multi-loop cooperative control data	Setting banks	10	Heat-up temp capability factor 10	24605	601D	25885	651D
19	Multi-loop cooperative control data	Setting banks	11	Heat-up temp capability factor 11	24606	601E	25886	651E
20	Multi-loop cooperative control data	Setting banks	12	Heat-up temp capability factor 12	24607	601F	25887	651F
21	Multi-loop cooperative control data	Setting banks	13	Heat-up temp capability factor 13	24608	6020	25888	6520
22	Multi-loop cooperative control data	Setting banks	14	Heat-up temp capability factor 14	24609	6021	25889	6521
23	Multi-loop cooperative control data	Setting banks	15	Heat-up temp capability factor 15	24610	6022	25890	6522
24	Multi-loop cooperative control data	Setting banks	16	Heat-up temp capability factor 16	24611	6023	25891	6523
25	Multi-loop cooperative control data	Setting banks	17	Heat-up temp capability factor 17	24612	6024	25892	6524
26	Multi-loop cooperative control data	Setting banks	18	Heat-up temp capability factor 18	24613	6025	25893	6525
27	Multi-loop cooperative control data	Setting banks	19	Heat-up temp capability factor 19	24614	6026	25894	6526
28	Multi-loop cooperative control data	Setting banks	20	Heat-up temp capability factor 20	24615	6027	25895	6527
29	Multi-loop cooperative control data	Setting banks	21	Heat-up temp capability factor 21	24616	6028	25896	6528
30	Multi-loop cooperative control data	Setting banks	22	Heat-up temp capability factor 22	24617	6029	25897	6529
31	Multi-loop cooperative control data	Setting banks	23	Heat-up temp capability factor 23	24618	602A	25898	652A
32	Multi-loop cooperative control data	Setting banks	24	Heat-up temp capability factor 24	24619	602B	25899	652B
33	Multi-loop cooperative control data	Setting banks	25	Heat-up temp capability factor 25	24620	602C	25900	652C
34	Multi-loop cooperative control data	Setting banks	26	Heat-up temp capability factor 26	24621	602D	25901	652D
35	Multi-loop cooperative control data	Setting banks	27	Heat-up temp capability factor 27	24622	602E	25902	652E
36	Multi-loop cooperative control data	Setting banks	28	Heat-up temp capability factor 28	24623	602F	25903	652F
37	Multi-loop cooperative control data	Setting banks	29	Heat-up temp capability factor 29	24624	6030	25904	6530
38	Multi-loop cooperative control data	Setting banks	30	Heat-up temp capability factor 30	24625	6031	25905	6531
39	Multi-loop cooperative control data	Setting banks	31	Heat-up temp capability factor 31	24626	6032	25906	6532
40	Multi-loop cooperative control data	Setting banks	32	Heat-up temp capability factor 32	24627	6033	25907	6533
41	Multi-loop cooperative control data	Setting banks	1	Heat-up capability offset 1	24660	6054	25940	6554
42	Multi-loop cooperative control data	Setting banks	2	Heat-up capability offset 2	24661	6055	25941	6555
43	Multi-loop cooperative control data	Setting banks	3	Heat-up capability offset 3	24662	6056	25942	6556
44	Multi-loop cooperative control data	Setting banks	4	Heat-up capability offset 4	24663	6057	25943	6557
45	Multi-loop cooperative control data	Setting banks	5	Heat-up capability offset 5	24664	6058	25944	6558
46	Multi-loop cooperative control data	Setting banks	6	Heat-up capability offset 6	24665	6059	25945	6559
47	Multi-loop cooperative control data	Setting banks	7	Heat-up capability offset 7	24666	605A	25946	655A
48	Multi-loop cooperative control data	Setting banks	8	Heat-up capability offset 8	24667	605B	25947	655B
49	Multi-loop cooperative control data	Setting banks	9	Heat-up capability offset 9	24668	605C	25948	655C
50	Multi-loop cooperative control data	Setting banks	10	Heat-up capability offset 10	24669	605D	25949	655D
51	Multi-loop cooperative control data	Setting banks	11	Heat-up capability offset 11	24670	605E	25950	655E
52	Multi-loop cooperative control data	Setting banks	12	Heat-up capability offset 12	24671	605F	25951	655F
53	Multi-loop cooperative control data	Setting banks	13	Heat-up capability offset 13	24672	6060	25952	6560
54	Multi-loop cooperative control data	Setting banks	14	Heat-up capability offset 14	24673	6061	25953	6561
55	Multi-loop cooperative control data	Setting banks	15	Heat-up capability offset 15	24674	6062	25954	6562
56	Multi-loop cooperative control data	Setting banks	16	Heat-up capability offset 16	24675	6063	25955	6563
57	Multi-loop cooperative control data	Setting banks	17	Heat-up capability offset 17	24676	6064	25956	6564
58	Multi-loop cooperative control data	Setting banks	18	Heat-up capability offset 18	24677	6065	25957	6565
59	Multi-loop cooperative control data	Setting banks	19	Heat-up capability offset 19	24678	6066	25958	6566

Multi-loop cooperative control data/setting data

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
1	27137	6A01	28417	6F01	29697	7401	30977	7901	32257	7E01	33537	8301			0	
2	27138	6A02	28418	6F02	29698	7402	30978	7902	32258	7E02	33538	8302			0	
3	27140	6A04	28420	6F04	29700	7404	30980	7904	32260	7E04	33540	8304			0	
4	27142	6A06	28422	6F06	29702	7406	30982	7906	32262	7E06	33542	8306			0	
5	27144	6A08	28424	6F08	29704	7408	30984	7908	32264	7E08	33544	8308			1	
6	27145	6A09	28425	6F09	29705	7409	30985	7909	32265	7E09	33545	8309			2	
7	27146	6A0A	28426	6F0A	29706	740A	30986	790A	32266	7E0A	33546	830A			1	
8	27150	6A0E	28430	6F0E	29710	740E	30990	790E	32270	7E0E	33550	830E			0	
9	27156	6A14	28436	6F14	29716	7414	30996	7914	32276	7E14	33556	8314			2	
10	27157	6A15	28437	6F15	29717	7415	30997	7915	32277	7E15	33557	8315			2	
11	27158	6A16	28438	6F16	29718	7416	30998	7916	32278	7E16	33558	8316			2	
12	27159	6A17	28439	6F17	29719	7417	30999	7917	32279	7E17	33559	8317			2	
13	27160	6A18	28440	6F18	29720	7418	31000	7918	32280	7E18	33560	8318			2	
14	27161	6A19	28441	6F19	29721	7419	31001	7919	32281	7E19	33561	8319			2	
15	27162	6A1A	28442	6F1A	29722	741A	31002	791A	32282	7E1A	33562	831A			2	
16	27163	6A1B	28443	6F1B	29723	741B	31003	791B	32283	7E1B	33563	831B			2	
17	27164	6A1C	28444	6F1C	29724	741C	31004	791C	32284	7E1C	33564	831C			2	
18	27165	6A1D	28445	6F1D	29725	741D	31005	791D	32285	7E1D	33565	831D			2	
19	27166	6A1E	28446	6F1E	29726	741E	31006	791E	32286	7E1E	33566	831E			2	
20	27167	6A1F	28447	6F1F	29727	741F	31007	791F	32287	7E1F	33567	831F			2	
21	27168	6A20	28448	6F20	29728	7420	31008	7920	32288	7E20	33568	8320			2	
22	27169	6A21	28449	6F21	29729	7421	31009	7921	32289	7E21	33569	8321			2	
23	27170	6A22	28450	6F22	29730	7422	31010	7922	32290	7E22	33570	8322			2	
24	27171	6A23	28451	6F23	29731	7423	31011	7923	32291	7E23	33571	8323			2	
25	27172	6A24	28452	6F24	29732	7424	31012	7924	32292	7E24	33572	8324			2	
26	27173	6A25	28453	6F25	29733	7425	31013	7925	32293	7E25	33573	8325			2	
27	27174	6A26	28454	6F26	29734	7426	31014	7926	32294	7E26	33574	8326			2	
28	27175	6A27	28455	6F27	29735	7427	31015	7927	32295	7E27	33575	8327			2	
29	27176	6A28	28456	6F28	29736	7428	31016	7928	32296	7E28	33576	8328			2	
30	27177	6A29	28457	6F29	29737	7429	31017	7929	32297	7E29	33577	8329			2	
31	27178	6A2A	28458	6F2A	29738	742A	31018	792A	32298	7E2A	33578	832A			2	
32	27179	6A2B	28459	6F2B	29739	742B	31019	792B	32299	7E2B	33579	832B			2	
33	27180	6A2C	28460	6F2C	29740	742C	31020	792C	32300	7E2C	33580	832C			2	
34	27181	6A2D	28461	6F2D	29741	742D	31021	792D	32301	7E2D	33581	832D			2	
35	27182	6A2E	28462	6F2E	29742	742E	31022	792E	32302	7E2E	33582	832E			2	
36	27183	6A2F	28463	6F2F	29743	742F	31023	792F	32303	7E2F	33583	832F			2	
37	27184	6A30	28464	6F30	29744	7430	31024	7930	32304	7E30	33584	8330			2	
38	27185	6A31	28465	6F31	29745	7431	31025	7931	32305	7E31	33585	8331			2	
39	27186	6A32	28466	6F32	29746	7432	31026	7932	32306	7E32	33586	8332			2	
40	27187	6A33	28467	6F33	29747	7433	31027	7933	32307	7E33	33587	8333			2	
41	27220	6A54	28500	6F54	29780	7454	31060	7954	32340	7E54	33620	8354			1	
42	27221	6A55	28501	6F55	29781	7455	31061	7955	32341	7E55	33621	8355			1	
43	27222	6A56	28502	6F56	29782	7456	31062	7956	32342	7E56	33622	8356			1	
44	27223	6A57	28503	6F57	29783	7457	31063	7957	32343	7E57	33623	8357			1	
45	27224	6A58	28504	6F58	29784	7458	31064	7958	32344	7E58	33624	8358			1	
46	27225	6A59	28505	6F59	29785	7459	31065	7959	32345	7E59	33625	8359			1	
47	27226	6A5A	28506	6F5A	29786	745A	31066	795A	32346	7E5A	33626	835A			1	
48	27227	6A5B	28507	6F5B	29787	745B	31067	795B	32347	7E5B	33627	835B			1	
49	27228	6A5C	28508	6F5C	29788	745C	31068	795C	32348	7E5C	33628	835C			1	
50	27229	6A5D	28509	6F5D	29789	745D	31069	795D	32349	7E5D	33629	835D			1	
51	27230	6A5E	28510	6F5E	29790	745E	31070	795E	32350	7E5E	33630	835E			1	
52	27231	6A5F	28511	6F5F	29791	745F	31071	795F	32351	7E5F	33631	835F			1	
53	27232	6A60	28512	6F60	29792	7460	31072	7960	32352	7E60	33632	8360			1	
54	27233	6A61	28513	6F61	29793	7461	31073	7961	32353	7E61	33633	8361			1	
55	27234	6A62	28514	6F62	29794	7462	31074	7962	32354	7E62	33634	8362			1	
56	27235	6A63	28515	6F63	29795	7463	31075	7963	32355	7E63	33635	8363			1	
57	27236	6A64	28516	6F64	29796	7464	31076	7964	32356	7E64	33636	8364			1	
58	27237	6A65	28517	6F65	29797	7465	31077	7965	32357	7E65	33637	8365			1	
59	27238	6A66	28518	6F66	29798	7466	31078	7966	32358	7E66	33638	8366			1	

Multi-loop cooperative control data/setting data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
60	Multi-loop cooperative control data	Setting banks	20	Heat-up capability offset 20	24679	6067	25959	6567
61	Multi-loop cooperative control data	Setting banks	21	Heat-up capability offset 21	24680	6068	25960	6568
62	Multi-loop cooperative control data	Setting banks	22	Heat-up capability offset 22	24681	6069	25961	6569
63	Multi-loop cooperative control data	Setting banks	23	Heat-up capability offset 23	24682	606A	25962	656A
64	Multi-loop cooperative control data	Setting banks	24	Heat-up capability offset 24	24683	606B	25963	656B
65	Multi-loop cooperative control data	Setting banks	25	Heat-up capability offset 25	24684	606C	25964	656C
66	Multi-loop cooperative control data	Setting banks	26	Heat-up capability offset 26	24685	606D	25965	656D
67	Multi-loop cooperative control data	Setting banks	27	Heat-up capability offset 27	24686	606E	25966	656E
68	Multi-loop cooperative control data	Setting banks	28	Heat-up capability offset 28	24687	606F	25967	656F
69	Multi-loop cooperative control data	Setting banks	29	Heat-up capability offset 29	24688	6070	25968	6570
70	Multi-loop cooperative control data	Setting banks	30	Heat-up capability offset 30	24689	6071	25969	6571
71	Multi-loop cooperative control data	Setting banks	31	Heat-up capability offset 31	24690	6072	25970	6572
72	Multi-loop cooperative control data	Setting banks	32	Heat-up capability offset 32	24691	6073	25971	6573

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
60	27239	6A67	28519	6F67	29799	7467	31079	7967	32359	7E67	33639	8367			1	
61	27240	6A68	28520	6F68	29800	7468	31080	7968	32360	7E68	33640	8368			1	
62	27241	6A69	28521	6F69	29801	7469	31081	7969	32361	7E69	33641	8369			1	
63	27242	6A6A	28522	6F6A	29802	746A	31082	796A	32362	7E6A	33642	836A			1	
64	27243	6A6B	28523	6F6B	29803	746B	31083	796B	32363	7E6B	33643	836B			1	
65	27244	6A6C	28524	6F6C	29804	746C	31084	796C	32364	7E6C	33644	836C			1	
66	27245	6A6D	28525	6F6D	29805	746D	31085	796D	32365	7E6D	33645	836D			1	
67	27246	6A6E	28526	6F6E	29806	746E	31086	796E	32366	7E6E	33646	836E			1	
68	27247	6A6F	28527	6F6F	29807	746F	31087	796F	32367	7E6F	33647	836F			1	
69	27248	6A70	28528	6F70	29808	7470	31088	7970	32368	7E70	33648	8370			1	
70	27249	6A71	28529	6F71	29809	7471	31089	7971	32369	7E71	33649	8371			1	
71	27250	6A72	28530	6F72	29810	7472	31090	7972	32370	7E72	33650	8372			1	
72	27251	6A73	28531	6F73	29811	7473	31091	7973	32371	7E73	33651	8373			1	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
1	Multi-loop cooperative control data	Monitor data		Error code	24832	6100	26112	6600
2	Multi-loop cooperative control data	Monitor data		No. of control loops in a group	24833	6101	26113	6601
3	Multi-loop cooperative control data	Monitor data		Independent loop	24834	6102	26114	6602
4	Multi-loop cooperative control data	Monitor data		Operation status	24835	6103	26115	6603
5	Multi-loop cooperative control data	Monitor data	1	MV low limit 1	24845	610D	26125	660D
6	Multi-loop cooperative control data	Monitor data	1	MV high limit 1	24846	610E	26126	660E
7	Multi-loop cooperative control data	Monitor data	1	SP (local) 1	24847	610F	26127	660F
8	Multi-loop cooperative control data	Monitor data	1	PV (local) 1	24848	6110	26128	6610
9	Multi-loop cooperative control data	Monitor data	1	Loop evaluation value	24849	6111	26129	6611
10	Multi-loop cooperative control data	Monitor data	1	MV output limit 1	24851	6113	26131	6613
11	Multi-loop cooperative control data	Monitor data	1	Cooperative MV 1	24852	6114	26132	6614
12	Multi-loop cooperative control data	Monitor data	1	Rank 1 within group	24855	6117	26135	6617
13	Multi-loop cooperative control data	Monitor data	2	MV low limit 2	24859	611B	26139	661B
14	Multi-loop cooperative control data	Monitor data	2	MV high limit 2	24860	611C	26140	661C
15	Multi-loop cooperative control data	Monitor data	2	SP (local) 2	24861	611D	26141	661D
16	Multi-loop cooperative control data	Monitor data	2	PV (local) 2	24862	611E	26142	661E
17	Multi-loop cooperative control data	Monitor data	2	Loop evaluation value	24863	611F	26143	661F
18	Multi-loop cooperative control data	Monitor data	2	MV output limit 2	24865	6121	26145	6621
19	Multi-loop cooperative control data	Monitor data	2	Cooperative MV 2	24866	6122	26146	6622
20	Multi-loop cooperative control data	Monitor data	2	Rank 2 within group	24869	6125	26149	6625
21	Multi-loop cooperative control data	Monitor data	3	MV low limit 3	24873	6129	26153	6629
22	Multi-loop cooperative control data	Monitor data	3	MV high limit 3	24874	612A	26154	662A
23	Multi-loop cooperative control data	Monitor data	3	SP (local) 3	24875	612B	26155	662B
24	Multi-loop cooperative control data	Monitor data	3	PV (local) 3	24876	612C	26156	662C
25	Multi-loop cooperative control data	Monitor data	3	Loop evaluation value	24877	612D	26157	662D
26	Multi-loop cooperative control data	Monitor data	3	MV output limit 3	24879	612F	26159	662F
27	Multi-loop cooperative control data	Monitor data	3	Cooperative MV 3	24880	6130	26160	6630
28	Multi-loop cooperative control data	Monitor data	3	Rank 3 within group	24883	6133	26163	6633
29	Multi-loop cooperative control data	Monitor data	4	MV low limit 4	24887	6137	26167	6637
30	Multi-loop cooperative control data	Monitor data	4	MV high limit 4	24888	6138	26168	6638
31	Multi-loop cooperative control data	Monitor data	4	SP (local) 4	24889	6139	26169	6639
32	Multi-loop cooperative control data	Monitor data	4	PV (local) 4	24890	613A	26170	663A
33	Multi-loop cooperative control data	Monitor data	4	Loop evaluation value	24891	613B	26171	663B
34	Multi-loop cooperative control data	Monitor data	4	MV output limit 4	24893	613D	26173	663D
35	Multi-loop cooperative control data	Monitor data	4	Cooperative MV 4	24894	613E	26174	663E
36	Multi-loop cooperative control data	Monitor data	4	Rank 4 within group	24897	6141	26177	6641
37	Multi-loop cooperative control data	Monitor data	5	MV low limit 5	24901	6145	26181	6645
38	Multi-loop cooperative control data	Monitor data	5	MV high limit 5	24902	6146	26182	6646
39	Multi-loop cooperative control data	Monitor data	5	SP (local) 5	24903	6147	26183	6647
40	Multi-loop cooperative control data	Monitor data	5	PV (local) 5	24904	6148	26184	6648
41	Multi-loop cooperative control data	Monitor data	5	Loop evaluation value	24905	6149	26185	6649
42	Multi-loop cooperative control data	Monitor data	5	MV output limit 5	24907	614B	26187	664B
43	Multi-loop cooperative control data	Monitor data	5	Cooperative MV 5	24908	614C	26188	664C
44	Multi-loop cooperative control data	Monitor data	5	Rank 5 within group	24911	614F	26191	664F
45	Multi-loop cooperative control data	Monitor data	6	MV low limit 6	24915	6153	26195	6653
46	Multi-loop cooperative control data	Monitor data	6	MV high limit 6	24916	6154	26196	6654
47	Multi-loop cooperative control data	Monitor data	6	SP (local) 6	24917	6155	26197	6655
48	Multi-loop cooperative control data	Monitor data	6	PV (local) 6	24918	6156	26198	6656
49	Multi-loop cooperative control data	Monitor data	6	Loop evaluation value	24919	6157	26199	6657
50	Multi-loop cooperative control data	Monitor data	6	MV output limit 6	24921	6159	26201	6659
51	Multi-loop cooperative control data	Monitor data	6	Cooperative MV 6	24922	615A	26202	665A
52	Multi-loop cooperative control data	Monitor data	6	Rank 6 within group	24925	615D	26205	665D
53	Multi-loop cooperative control data	Monitor data	7	MV low limit 7	24929	6161	26209	6661
54	Multi-loop cooperative control data	Monitor data	7	MV high limit 7	24930	6162	26210	6662
55	Multi-loop cooperative control data	Monitor data	7	SP (local) 7	24931	6163	26211	6663
56	Multi-loop cooperative control data	Monitor data	7	PV (local) 7	24932	6164	26212	6664
57	Multi-loop cooperative control data	Monitor data	7	Loop evaluation value	24933	6165	26213	6665
58	Multi-loop cooperative control data	Monitor data	7	MV output limit 7	24935	6167	26215	6667
59	Multi-loop cooperative control data	Monitor data	7	Cooperative MV 7	24936	6168	26216	6668

Multi-loop cooperative control data/monitor data

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
1	27392	6B00	28672	7000	29952	7500	31232	7A00	32512	7F00	33792	8400		×	0	
2	27393	6B01	28673	7001	29953	7501	31233	7A01	32513	7F01	33793	8401		×	0	
3	27394	6B02	28674	7002	29954	7502	31234	7A02	32514	7F02	33794	8402		×	0	
4	27395	6B03	28675	7003	29955	7503	31235	7A03	32515	7F03	33795	8403		×	0	
5	27405	6B0D	28685	700D	29965	750D	31245	7A0D	32525	7F0D	33805	840D		×	1	
6	27406	6B0E	28686	700E	29966	750E	31246	7A0E	32526	7F0E	33806	840E		×	1	
7	27407	6B0F	28687	700F	29967	750F	31247	7A0F	32527	7F0F	33807	840F		×	1	
8	27408	6B10	28688	7010	29968	7510	31248	7A10	32528	7F10	33808	8410		×	1	
9	27409	6B11	28689	7011	29969	7511	31249	7A11	32529	7F11	33809	8411		×	1	
10	27411	6B13	28691	7013	29971	7513	31251	7A13	32531	7F13	33811	8413		×	1	
11	27412	6B14	28692	7014	29972	7514	31252	7A14	32532	7F14	33812	8414		×	1	
12	27415	6B17	28695	7017	29975	7517	31255	7A17	32535	7F17	33815	8417		×	0	
13	27419	6B1B	28699	701B	29979	751B	31259	7A1B	32539	7F1B	33819	841B		×	1	
14	27420	6B1C	28700	701C	29980	751C	31260	7A1C	32540	7F1C	33820	841C		×	1	
15	27421	6B1D	28701	701D	29981	751D	31261	7A1D	32541	7F1D	33821	841D		×	1	
16	27422	6B1E	28702	701E	29982	751E	31262	7A1E	32542	7F1E	33822	841E		×	1	
17	27423	6B1F	28703	701F	29983	751F	31263	7A1F	32543	7F1F	33823	841F		×	1	
18	27425	6B21	28705	7021	29985	7521	31265	7A21	32545	7F21	33825	8421		×	1	
19	27426	6B22	28706	7022	29986	7522	31266	7A22	32546	7F22	33826	8422		×	1	
20	27429	6B25	28709	7025	29989	7525	31269	7A25	32549	7F25	33829	8425		×	0	
21	27433	6B29	28713	7029	29993	7529	31273	7A29	32553	7F29	33833	8429		×	1	
22	27434	6B2A	28714	702A	29994	752A	31274	7A2A	32554	7F2A	33834	842A		×	1	
23	27435	6B2B	28715	702B	29995	752B	31275	7A2B	32555	7F2B	33835	842B		×	1	
24	27436	6B2C	28716	702C	29996	752C	31276	7A2C	32556	7F2C	33836	842C		×	1	
25	27437	6B2D	28717	702D	29997	752D	31277	7A2D	32557	7F2D	33837	842D		×	1	
26	27439	6B2F	28719	702F	29999	752F	31279	7A2F	32559	7F2F	33839	842F		×	1	
27	27440	6B30	28720	7030	30000	7530	31280	7A30	32560	7F30	33840	8430		×	1	
28	27443	6B33	28723	7033	30003	7533	31283	7A33	32563	7F33	33843	8433		×	0	
29	27447	6B37	28727	7037	30007	7537	31287	7A37	32567	7F37	33847	8437		×	1	
30	27448	6B38	28728	7038	30008	7538	31288	7A38	32568	7F38	33848	8438		×	1	
31	27449	6B39	28729	7039	30009	7539	31289	7A39	32569	7F39	33849	8439		×	1	
32	27450	6B3A	28730	703A	30010	753A	31290	7A3A	32570	7F3A	33850	843A		×	1	
33	27451	6B3B	28731	703B	30011	753B	31291	7A3B	32571	7F3B	33851	843B		×	1	
34	27453	6B3D	28733	703D	30013	753D	31293	7A3D	32573	7F3D	33853	843D		×	1	
35	27454	6B3E	28734	703E	30014	753E	31294	7A3E	32574	7F3E	33854	843E		×	1	
36	27457	6B41	28737	7041	30017	7541	31297	7A41	32577	7F41	33857	8441		×	0	
37	27461	6B45	28741	7045	30021	7545	31301	7A45	32581	7F45	33861	8445		×	1	
38	27462	6B46	28742	7046	30022	7546	31302	7A46	32582	7F46	33862	8446		×	1	
39	27463	6B47	28743	7047	30023	7547	31303	7A47	32583	7F47	33863	8447		×	1	
40	27464	6B48	28744	7048	30024	7548	31304	7A48	32584	7F48	33864	8448		×	1	
41	27465	6B49	28745	7049	30025	7549	31305	7A49	32585	7F49	33865	8449		×	1	
42	27467	6B4B	28747	704B	30027	754B	31307	7A4B	32587	7F4B	33867	844B		×	1	
43	27468	6B4C	28748	704C	30028	754C	31308	7A4C	32588	7F4C	33868	844C		×	1	
44	27471	6B4F	28751	704F	30031	754F	31311	7A4F	32591	7F4F	33871	844F		×	0	
45	27475	6B53	28755	7053	30035	7553	31315	7A53	32595	7F53	33875	8453		×	1	
46	27476	6B54	28756	7054	30036	7554	31316	7A54	32596	7F54	33876	8454		×	1	
47	27477	6B55	28757	7055	30037	7555	31317	7A55	32597	7F55	33877	8455		×	1	
48	27478	6B56	28758	7056	30038	7556	31318	7A56	32598	7F56	33878	8456		×	1	
49	27479	6B57	28759	7057	30039	7557	31319	7A57	32599	7F57	33879	8457		×	1	
50	27481	6B59	28761	7059	30041	7559	31321	7A59	32601	7F59	33881	8459		×	1	
51	27482	6B5A	28762	705A	30042	755A	31322	7A5A	32602	7F5A	33882	845A		×	1	
52	27485	6B5D	28765	705D	30045	755D	31325	7A5D	32605	7F5D	33885	845D		×	0	
53	27489	6B61	28769	7061	30049	7561	31329	7A61	32609	7F61	33889	8461		×	1	
54	27490	6B62	28770	7062	30050	7562	31330	7A62	32610	7F62	33890	8462		×	1	
55	27491	6B63	28771	7063	30051	7563	31331	7A63	32611	7F63	33891	8463		×	1	
56	27492	6B64	28772	7064	30052	7564	31332	7A64	32612	7F64	33892	8464		×	1	
57	27493	6B65	28773	7065	30053	7565	31333	7A65	32613	7F65	33893	8465		×	1	
58	27495	6B67	28775	7067	30055	7567	31335	7A67	32615	7F67	33895	8467		×	1	
59	27496	6B68	28776	7068	30056	7568	31336	7A68	32616	7F68	33896	8468		×	1	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
60	Multi-loop cooperative control data	Monitor data	7	Rank 7 within group	24939	616B	26219	666B
61	Multi-loop cooperative control data	Monitor data	8	MV low limit 8	24943	616F	26223	666F
62	Multi-loop cooperative control data	Monitor data	8	MV high limit 8	24944	6170	26224	6670
63	Multi-loop cooperative control data	Monitor data	8	SP (local) 8	24945	6171	26225	6671
64	Multi-loop cooperative control data	Monitor data	8	PV (local) 8	24946	6172	26226	6672
65	Multi-loop cooperative control data	Monitor data	8	Loop evaluation value	24947	6173	26227	6673
66	Multi-loop cooperative control data	Monitor data	8	MV output limit 8	24949	6175	26229	6675
67	Multi-loop cooperative control data	Monitor data	8	Cooperative MV 8	24950	6176	26230	6676
68	Multi-loop cooperative control data	Monitor data	8	Rank 8 within group	24953	6179	26233	6679
69	Multi-loop cooperative control data	Monitor data	9	MV low limit 9	24957	617D	26237	667D
70	Multi-loop cooperative control data	Monitor data	9	MV high limit 9	24958	617E	26238	667E
71	Multi-loop cooperative control data	Monitor data	9	SP (local) 9	24959	617F	26239	667F
72	Multi-loop cooperative control data	Monitor data	9	PV (local) 9	24960	6180	26240	6680
73	Multi-loop cooperative control data	Monitor data	9	Loop evaluation value	24961	6181	26241	6681
74	Multi-loop cooperative control data	Monitor data	9	MV output limit 9	24963	6183	26243	6683
75	Multi-loop cooperative control data	Monitor data	9	Cooperative MV 9	24964	6184	26244	6684
76	Multi-loop cooperative control data	Monitor data	9	Rank 9 within group	24967	6187	26247	6687
77	Multi-loop cooperative control data	Monitor data	10	MV low limit 10	24971	618B	26251	668B
78	Multi-loop cooperative control data	Monitor data	10	MV high limit 10	24972	618C	26252	668C
79	Multi-loop cooperative control data	Monitor data	10	SP (local) 10	24973	618D	26253	668D
80	Multi-loop cooperative control data	Monitor data	10	PV (local) 10	24974	618E	26254	668E
81	Multi-loop cooperative control data	Monitor data	10	Loop evaluation value	24975	618F	26255	668F
82	Multi-loop cooperative control data	Monitor data	10	MV output limit 10	24977	6191	26257	6691
83	Multi-loop cooperative control data	Monitor data	10	Cooperative MV 10	24978	6192	26258	6692
84	Multi-loop cooperative control data	Monitor data	10	Rank 10 within group	24981	6195	26261	6695
85	Multi-loop cooperative control data	Monitor data	11	MV low limit 11	24985	6199	26265	6699
86	Multi-loop cooperative control data	Monitor data	11	MV high limit 11	24986	619A	26266	669A
87	Multi-loop cooperative control data	Monitor data	11	SP (local) 11	24987	619B	26267	669B
88	Multi-loop cooperative control data	Monitor data	11	PV (local) 11	24988	619C	26268	669C
89	Multi-loop cooperative control data	Monitor data	11	Loop evaluation value	24989	619D	26269	669D
90	Multi-loop cooperative control data	Monitor data	11	MV output limit 11	24991	619F	26271	669F
91	Multi-loop cooperative control data	Monitor data	11	Cooperative MV 11	24992	61A0	26272	66A0
92	Multi-loop cooperative control data	Monitor data	11	Rank 11 within group	24995	61A3	26275	66A3
93	Multi-loop cooperative control data	Monitor data	12	MV low limit 12	24999	61A7	26279	66A7
94	Multi-loop cooperative control data	Monitor data	12	MV high limit 12	25000	61A8	26280	66A8
95	Multi-loop cooperative control data	Monitor data	12	SP (local) 12	25001	61A9	26281	66A9
96	Multi-loop cooperative control data	Monitor data	12	PV (local) 12	25002	61AA	26282	66AA
97	Multi-loop cooperative control data	Monitor data	12	Loop evaluation value	25003	61AB	26283	66AB
98	Multi-loop cooperative control data	Monitor data	12	MV output limit 12	25005	61AD	26285	66AD
99	Multi-loop cooperative control data	Monitor data	12	Cooperative MV 12	25006	61AE	26286	66AE
100	Multi-loop cooperative control data	Monitor data	12	Rank 12 within group	25009	61B1	26289	66B1
101	Multi-loop cooperative control data	Monitor data	13	MV low limit 13	25013	61B5	26293	66B5
102	Multi-loop cooperative control data	Monitor data	13	MV high limit 13	25014	61B6	26294	66B6
103	Multi-loop cooperative control data	Monitor data	13	SP (local) 13	25015	61B7	26295	66B7
104	Multi-loop cooperative control data	Monitor data	13	PV (local) 13	25016	61B8	26296	66B8
105	Multi-loop cooperative control data	Monitor data	13	Loop evaluation value	25017	61B9	26297	66B9
106	Multi-loop cooperative control data	Monitor data	13	MV output limit 13	25019	61BB	26299	66BB
107	Multi-loop cooperative control data	Monitor data	13	Cooperative MV 13	25020	61BC	26300	66BC
108	Multi-loop cooperative control data	Monitor data	13	Rank 13 within group	25023	61BF	26303	66BF
109	Multi-loop cooperative control data	Monitor data	14	MV low limit 14	25027	61C3	26307	66C3
110	Multi-loop cooperative control data	Monitor data	14	MV high limit 14	25028	61C4	26308	66C4
111	Multi-loop cooperative control data	Monitor data	14	SP (local) 14	25029	61C5	26309	66C5
112	Multi-loop cooperative control data	Monitor data	14	PV (local) 14	25030	61C6	26310	66C6
113	Multi-loop cooperative control data	Monitor data	14	Loop evaluation value	25031	61C7	26311	66C7
114	Multi-loop cooperative control data	Monitor data	14	MV output limit 14	25033	61C9	26313	66C9
115	Multi-loop cooperative control data	Monitor data	14	Cooperative MV 14	25034	61CA	26314	66CA
116	Multi-loop cooperative control data	Monitor data	14	Rank 14 within group	25037	61CD	26317	66CD
117	Multi-loop cooperative control data	Monitor data	15	MV low limit 15	25041	61D1	26321	66D1
118	Multi-loop cooperative control data	Monitor data	15	MV high limit 15	25042	61D2	26322	66D2

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
60	27499	6B6B	28779	706B	30059	756B	31339	7A6B	32619	7F6B	33899	846B		×	0	
61	27503	6B6F	28783	706F	30063	756F	31343	7A6F	32623	7F6F	33903	846F		×	1	
62	27504	6B70	28784	7070	30064	7570	31344	7A70	32624	7F70	33904	8470		×	1	
63	27505	6B71	28785	7071	30065	7571	31345	7A71	32625	7F71	33905	8471		×	1	
64	27506	6B72	28786	7072	30066	7572	31346	7A72	32626	7F72	33906	8472		×	1	
65	27507	6B73	28787	7073	30067	7573	31347	7A73	32627	7F73	33907	8473		×	1	
66	27509	6B75	28789	7075	30069	7575	31349	7A75	32629	7F75	33909	8475		×	1	
67	27510	6B76	28790	7076	30070	7576	31350	7A76	32630	7F76	33910	8476		×	1	
68	27513	6B79	28793	7079	30073	7579	31353	7A79	32633	7F79	33913	8479		×	0	
69	27517	6B7D	28797	707D	30077	757D	31357	7A7D	32637	7F7D	33917	847D		×	1	
70	27518	6B7E	28798	707E	30078	757E	31358	7A7E	32638	7F7E	33918	847E		×	1	
71	27519	6B7F	28799	707F	30079	757F	31359	7A7F	32639	7F7F	33919	847F		×	1	
72	27520	6B80	28800	7080	30080	7580	31360	7A80	32640	7F80	33920	8480		×	1	
73	27521	6B81	28801	7081	30081	7581	31361	7A81	32641	7F81	33921	8481		×	1	
74	27523	6B83	28803	7083	30083	7583	31363	7A83	32643	7F83	33923	8483		×	1	
75	27524	6B84	28804	7084	30084	7584	31364	7A84	32644	7F84	33924	8484		×	1	
76	27527	6B87	28807	7087	30087	7587	31367	7A87	32647	7F87	33927	8487		×	0	
77	27531	6B8B	28811	708B	30091	758B	31371	7A8B	32651	7F8B	33931	848B		×	1	
78	27532	6B8C	28812	708C	30092	758C	31372	7A8C	32652	7F8C	33932	848C		×	1	
79	27533	6B8D	28813	708D	30093	758D	31373	7A8D	32653	7F8D	33933	848D		×	1	
80	27534	6B8E	28814	708E	30094	758E	31374	7A8E	32654	7F8E	33934	848E		×	1	
81	27535	6B8F	28815	708F	30095	758F	31375	7A8F	32655	7F8F	33935	848F		×	1	
82	27537	6B91	28817	7091	30097	7591	31377	7A91	32657	7F91	33937	8491		×	1	
83	27538	6B92	28818	7092	30098	7592	31378	7A92	32658	7F92	33938	8492		×	1	
84	27541	6B95	28821	7095	30101	7595	31381	7A95	32661	7F95	33941	8495		×	0	
85	27545	6B99	28825	7099	30105	7599	31385	7A99	32665	7F99	33945	8499		×	1	
86	27546	6B9A	28826	709A	30106	759A	31386	7A9A	32666	7F9A	33946	849A		×	1	
87	27547	6B9B	28827	709B	30107	759B	31387	7A9B	32667	7F9B	33947	849B		×	1	
88	27548	6B9C	28828	709C	30108	759C	31388	7A9C	32668	7F9C	33948	849C		×	1	
89	27549	6B9D	28829	709D	30109	759D	31389	7A9D	32669	7F9D	33949	849D		×	1	
90	27551	6B9F	28831	709F	30111	759F	31391	7A9F	32671	7F9F	33951	849F		×	1	
91	27552	6BA0	28832	70A0	30112	75A0	31392	7AA0	32672	7FA0	33952	84A0		×	1	
92	27555	6BA3	28835	70A3	30115	75A3	31395	7AA3	32675	7FA3	33955	84A3		×	0	
93	27559	6BA7	28839	70A7	30119	75A7	31399	7AA7	32679	7FA7	33959	84A7		×	1	
94	27560	6BA8	28840	70A8	30120	75A8	31400	7AA8	32680	7FA8	33960	84A8		×	1	
95	27561	6BA9	28841	70A9	30121	75A9	31401	7AA9	32681	7FA9	33961	84A9		×	1	
96	27562	6BAA	28842	70AA	30122	75AA	31402	7AAA	32682	7FAA	33962	84AA		×	1	
97	27563	6BAB	28843	70AB	30123	75AB	31403	7AAB	32683	7FAB	33963	84AB		×	1	
98	27565	6BAD	28845	70AD	30125	75AD	31405	7AAD	32685	7FAD	33965	84AD		×	1	
99	27566	6BAE	28846	70AE	30126	75AE	31406	7AAE	32686	7FAE	33966	84AE		×	1	
100	27569	6BB1	28849	70B1	30129	75B1	31409	7AB1	32689	7FB1	33969	84B1		×	0	
101	27573	6BB5	28853	70B5	30133	75B5	31413	7AB5	32693	7FB5	33973	84B5		×	1	
102	27574	6BB6	28854	70B6	30134	75B6	31414	7AB6	32694	7FB6	33974	84B6		×	1	
103	27575	6BB7	28855	70B7	30135	75B7	31415	7AB7	32695	7FB7	33975	84B7		×	1	
104	27576	6BB8	28856	70B8	30136	75B8	31416	7AB8	32696	7FB8	33976	84B8		×	1	
105	27577	6BB9	28857	70B9	30137	75B9	31417	7AB9	32697	7FB9	33977	84B9		×	1	
106	27579	6BBB	28859	70BB	30139	75BB	31419	7ABB	32699	7FBB	33979	84BB		×	1	
107	27580	6BBC	28860	70BC	30140	75BC	31420	7ABC	32700	7FBC	33980	84BC		×	1	
108	27583	6BBF	28863	70BF	30143	75BF	31423	7ABF	32703	7FBF	33983	84BF		×	0	
109	27587	6BC3	28867	70C3	30147	75C3	31427	7AC3	32707	7FC3	33987	84C3		×	1	
110	27588	6BC4	28868	70C4	30148	75C4	31428	7AC4	32708	7FC4	33988	84C4		×	1	
111	27589	6BC5	28869	70C5	30149	75C5	31429	7AC5	32709	7FC5	33989	84C5		×	1	
112	27590	6BC6	28870	70C6	30150	75C6	31430	7AC6	32710	7FC6	33990	84C6		×	1	
113	27591	6BC7	28871	70C7	30151	75C7	31431	7AC7	32711	7FC7	33991	84C7		×	1	
114	27593	6BC9	28873	70C9	30153	75C9	31433	7AC9	32713	7FC9	33993	84C9		×	1	
115	27594	6BCA	28874	70CA	30154	75CA	31434	7ACA	32714	7FCA	33994	84CA		×	1	
116	27597	6BCD	28877	70CD	30157	75CD	31437	7ACD	32717	7FCD	33997	84CD		×	0	
117	27601	6BD1	28881	70D1	30161	75D1	31441	7AD1	32721	7FD1	34001	84D1		×	1	
118	27602	6BD2	28882	70D2	30162	75D2	31442	7AD2	32722	7FD2	34002	84D2		×	1	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
119	Multi-loop cooperative control data	Monitor data	15	SP (local) 15	25043	61D3	26323	66D3
120	Multi-loop cooperative control data	Monitor data	15	PV (local) 15	25044	61D4	26324	66D4
121	Multi-loop cooperative control data	Monitor data	15	Loop evaluation value	25045	61D5	26325	66D5
122	Multi-loop cooperative control data	Monitor data	15	MV output limit 15	25047	61D7	26327	66D7
123	Multi-loop cooperative control data	Monitor data	15	Cooperative MV 15	25048	61D8	26328	66D8
124	Multi-loop cooperative control data	Monitor data	15	Rank 15 within group	25051	61DB	26331	66DB
125	Multi-loop cooperative control data	Monitor data	16	MV low limit 16	25055	61DF	26335	66DF
126	Multi-loop cooperative control data	Monitor data	16	MV high limit 16	25056	61E0	26336	66E0
127	Multi-loop cooperative control data	Monitor data	16	SP (local) 16	25057	61E1	26337	66E1
128	Multi-loop cooperative control data	Monitor data	16	PV (local) 16	25058	61E2	26338	66E2
129	Multi-loop cooperative control data	Monitor data	16	Loop evaluation value	25059	61E3	26339	66E3
130	Multi-loop cooperative control data	Monitor data	16	MV output limit 16	25061	61E5	26341	66E5
131	Multi-loop cooperative control data	Monitor data	16	Cooperative MV 16	25062	61E6	26342	66E6
132	Multi-loop cooperative control data	Monitor data	16	Rank 16 within group	25065	61E9	26345	66E9
133	Multi-loop cooperative control data	Monitor data	17	MV low limit 17	25069	61ED	26349	66ED
134	Multi-loop cooperative control data	Monitor data	17	MV high limit 17	25070	61EE	26350	66EE
135	Multi-loop cooperative control data	Monitor data	17	SP (local) 17	25071	61EF	26351	66EF
136	Multi-loop cooperative control data	Monitor data	17	PV (local) 17	25072	61F0	26352	66F0
137	Multi-loop cooperative control data	Monitor data	17	Loop evaluation value	25073	61F1	26353	66F1
138	Multi-loop cooperative control data	Monitor data	17	MV output limit 17	25075	61F3	26355	66F3
139	Multi-loop cooperative control data	Monitor data	17	Cooperative MV 17	25076	61F4	26356	66F4
140	Multi-loop cooperative control data	Monitor data	17	Rank 17 within group	25079	61F7	26359	66F7
141	Multi-loop cooperative control data	Monitor data	18	MV low limit 18	25083	61FB	26363	66FB
142	Multi-loop cooperative control data	Monitor data	18	MV high limit 18	25084	61FC	26364	66FC
143	Multi-loop cooperative control data	Monitor data	18	SP (local) 18	25085	61FD	26365	66FD
144	Multi-loop cooperative control data	Monitor data	18	PV (local) 18	25086	61FE	26366	66FE
145	Multi-loop cooperative control data	Monitor data	18	Loop evaluation value	25087	61FF	26367	66FF
146	Multi-loop cooperative control data	Monitor data	18	MV output limit 18	25089	6201	26369	6701
147	Multi-loop cooperative control data	Monitor data	18	Cooperative MV 18	25090	6202	26370	6702
148	Multi-loop cooperative control data	Monitor data	18	Rank 18 within group	25093	6205	26373	6705
149	Multi-loop cooperative control data	Monitor data	19	MV low limit 19	25097	6209	26377	6709
150	Multi-loop cooperative control data	Monitor data	19	MV high limit 19	25098	620A	26378	670A
151	Multi-loop cooperative control data	Monitor data	19	SP (local) 19	25099	620B	26379	670B
152	Multi-loop cooperative control data	Monitor data	19	PV (local) 19	25100	620C	26380	670C
153	Multi-loop cooperative control data	Monitor data	19	Loop evaluation value	25101	620D	26381	670D
154	Multi-loop cooperative control data	Monitor data	19	MV output limit 19	25103	620F	26383	670F
155	Multi-loop cooperative control data	Monitor data	19	Cooperative MV 19	25104	6210	26384	6710
156	Multi-loop cooperative control data	Monitor data	19	Rank 19 within group	25107	6213	26387	6713
157	Multi-loop cooperative control data	Monitor data	20	MV low limit 20	25111	6217	26391	6717
158	Multi-loop cooperative control data	Monitor data	20	MV high limit 20	25112	6218	26392	6718
159	Multi-loop cooperative control data	Monitor data	20	SP (local) 20	25113	6219	26393	6719
160	Multi-loop cooperative control data	Monitor data	20	PV (local) 20	25114	621A	26394	671A
161	Multi-loop cooperative control data	Monitor data	20	Loop evaluation value	25115	621B	26395	671B
162	Multi-loop cooperative control data	Monitor data	20	MV output limit 20	25117	621D	26397	671D
163	Multi-loop cooperative control data	Monitor data	20	Cooperative MV 20	25118	621E	26398	671E
164	Multi-loop cooperative control data	Monitor data	20	Rank 20 within group	25121	6221	26401	6721
165	Multi-loop cooperative control data	Monitor data	21	MV low limit 21	25125	6225	26405	6725
166	Multi-loop cooperative control data	Monitor data	21	MV high limit 21	25126	6226	26406	6726
167	Multi-loop cooperative control data	Monitor data	21	SP (local) 21	25127	6227	26407	6727
168	Multi-loop cooperative control data	Monitor data	21	PV (local) 21	25128	6228	26408	6728
169	Multi-loop cooperative control data	Monitor data	21	Loop evaluation value	25129	6229	26409	6729
170	Multi-loop cooperative control data	Monitor data	21	MV output limit 21	25131	622B	26411	672B
171	Multi-loop cooperative control data	Monitor data	21	Cooperative MV 21	25132	622C	26412	672C
172	Multi-loop cooperative control data	Monitor data	21	Rank 21 within group	25135	622F	26415	672F
173	Multi-loop cooperative control data	Monitor data	22	MV low limit 22	25139	6233	26419	6733
174	Multi-loop cooperative control data	Monitor data	22	MV high limit 22	25140	6234	26420	6734
175	Multi-loop cooperative control data	Monitor data	22	SP (local) 22	25141	6235	26421	6735
176	Multi-loop cooperative control data	Monitor data	22	PV (local) 22	25142	6236	26422	6736
177	Multi-loop cooperative control data	Monitor data	22	Loop evaluation value	25143	6237	26423	6737

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
119	27603	6BD3	28883	70D3	30163	75D3	31443	7AD3	32723	7FD3	34003	84D3		×	1	
120	27604	6BD4	28884	70D4	30164	75D4	31444	7AD4	32724	7FD4	34004	84D4		×	1	
121	27605	6BD5	28885	70D5	30165	75D5	31445	7AD5	32725	7FD5	34005	84D5		×	1	
122	27607	6BD7	28887	70D7	30167	75D7	31447	7AD7	32727	7FD7	34007	84D7		×	1	
123	27608	6BD8	28888	70D8	30168	75D8	31448	7AD8	32728	7FD8	34008	84D8		×	1	
124	27611	6BDB	28891	70DB	30171	75DB	31451	7ADB	32731	7FDB	34011	84DB		×	0	
125	27615	6BDF	28895	70DF	30175	75DF	31455	7ADF	32735	7FDF	34015	84DF		×	1	
126	27616	6BE0	28896	70E0	30176	75E0	31456	7AE0	32736	7FE0	34016	84E0		×	1	
127	27617	6BE1	28897	70E1	30177	75E1	31457	7AE1	32737	7FE1	34017	84E1		×	1	
128	27618	6BE2	28898	70E2	30178	75E2	31458	7AE2	32738	7FE2	34018	84E2		×	1	
129	27619	6BE3	28899	70E3	30179	75E3	31459	7AE3	32739	7FE3	34019	84E3		×	1	
130	27621	6BE5	28901	70E5	30181	75E5	31461	7AE5	32741	7FE5	34021	84E5		×	1	
131	27622	6BE6	28902	70E6	30182	75E6	31462	7AE6	32742	7FE6	34022	84E6		×	1	
132	27625	6BE9	28905	70E9	30185	75E9	31465	7AE9	32745	7FE9	34025	84E9		×	0	
133	27629	6BED	28909	70ED	30189	75ED	31469	7AED	32749	7FED	34029	84ED		×	1	
134	27630	6BEE	28910	70EE	30190	75EE	31470	7AEE	32750	7FEE	34030	84EE		×	1	
135	27631	6BEF	28911	70EF	30191	75EF	31471	7AEF	32751	7FEF	34031	84EF		×	1	
136	27632	6BF0	28912	70F0	30192	75F0	31472	7AF0	32752	7FF0	34032	84F0		×	1	
137	27633	6BF1	28913	70F1	30193	75F1	31473	7AF1	32753	7FF1	34033	84F1		×	1	
138	27635	6BF3	28915	70F3	30195	75F3	31475	7AF3	32755	7FF3	34035	84F3		×	1	
139	27636	6BF4	28916	70F4	30196	75F4	31476	7AF4	32756	7FF4	34036	84F4		×	1	
140	27639	6BF7	28919	70F7	30199	75F7	31479	7AF7	32759	7FF7	34039	84F7		×	0	
141	27643	6BFB	28923	70FB	30203	75FB	31483	7AFB	32763	7FFB	34043	84FB		×	1	
142	27644	6BFC	28924	70FC	30204	75FC	31484	7AFC	32764	7FFC	34044	84FC		×	1	
143	27645	6BFD	28925	70FD	30205	75FD	31485	7AFD	32765	7FFD	34045	84FD		×	1	
144	27646	6BFE	28926	70FE	30206	75FE	31486	7AFE	32766	7FFE	34046	84FE		×	1	
145	27647	6BFF	28927	70FF	30207	75FF	31487	7AFF	32767	7FFF	34047	84FF		×	1	
146	27649	6C01	28929	7101	30209	7601	31489	7B01	32769	8001	34049	8501		×	1	
147	27650	6C02	28930	7102	30210	7602	31490	7B02	32770	8002	34050	8502		×	1	
148	27653	6C05	28933	7105	30213	7605	31493	7B05	32773	8005	34053	8505		×	0	
149	27657	6C09	28937	7109	30217	7609	31497	7B09	32777	8009	34057	8509		×	1	
150	27658	6C0A	28938	710A	30218	760A	31498	7B0A	32778	800A	34058	850A		×	1	
151	27659	6C0B	28939	710B	30219	760B	31499	7B0B	32779	800B	34059	850B		×	1	
152	27660	6C0C	28940	710C	30220	760C	31500	7B0C	32780	800C	34060	850C		×	1	
153	27661	6C0D	28941	710D	30221	760D	31501	7B0D	32781	800D	34061	850D		×	1	
154	27663	6C0F	28943	710F	30223	760F	31503	7B0F	32783	800F	34063	850F		×	1	
155	27664	6C10	28944	7110	30224	7610	31504	7B10	32784	8010	34064	8510		×	1	
156	27667	6C13	28947	7113	30227	7613	31507	7B13	32787	8013	34067	8513		×	0	
157	27671	6C17	28951	7117	30231	7617	31511	7B17	32791	8017	34071	8517		×	1	
158	27672	6C18	28952	7118	30232	7618	31512	7B18	32792	8018	34072	8518		×	1	
159	27673	6C19	28953	7119	30233	7619	31513	7B19	32793	8019	34073	8519		×	1	
160	27674	6C1A	28954	711A	30234	761A	31514	7B1A	32794	801A	34074	851A		×	1	
161	27675	6C1B	28955	711B	30235	761B	31515	7B1B	32795	801B	34075	851B		×	1	
162	27677	6C1D	28957	711D	30237	761D	31517	7B1D	32797	801D	34077	851D		×	1	
163	27678	6C1E	28958	711E	30238	761E	31518	7B1E	32798	801E	34078	851E		×	1	
164	27681	6C21	28961	7121	30241	7621	31521	7B21	32801	8021	34081	8521		×	0	
165	27685	6C25	28965	7125	30245	7625	31525	7B25	32805	8025	34085	8525		×	1	
166	27686	6C26	28966	7126	30246	7626	31526	7B26	32806	8026	34086	8526		×	1	
167	27687	6C27	28967	7127	30247	7627	31527	7B27	32807	8027	34087	8527		×	1	
168	27688	6C28	28968	7128	30248	7628	31528	7B28	32808	8028	34088	8528		×	1	
169	27689	6C29	28969	7129	30249	7629	31529	7B29	32809	8029	34089	8529		×	1	
170	27691	6C2B	28971	712B	30251	762B	31531	7B2B	32811	802B	34091	852B		×	1	
171	27692	6C2C	28972	712C	30252	762C	31532	7B2C	32812	802C	34092	852C		×	1	
172	27695	6C2F	28975	712F	30255	762F	31535	7B2F	32815	802F	34095	852F		×	0	
173	27699	6C33	28979	7133	30259	7633	31539	7B33	32819	8033	34099	8533		×	1	
174	27700	6C34	28980	7134	30260	7634	31540	7B34	32820	8034	34100	8534		×	1	
175	27701	6C35	28981	7135	30261	7635	31541	7B35	32821	8035	34101	8535		×	1	
176	27702	6C36	28982	7136	30262	7636	31542	7B36	32822	8036	34102	8536		×	1	
177	27703	6C37	28983	7137	30263	7637	31543	7B37	32823	8037	34103	8537		×	1	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
178	Multi-loop cooperative control data	Monitor data	22	MV output limit 22	25145	6239	26425	6739
179	Multi-loop cooperative control data	Monitor data	22	Cooperative MV 22	25146	623A	26426	673A
180	Multi-loop cooperative control data	Monitor data	22	Rank 22 within group	25149	623D	26429	673D
181	Multi-loop cooperative control data	Monitor data	23	MV low limit 23	25153	6241	26433	6741
182	Multi-loop cooperative control data	Monitor data	23	MV high limit 23	25154	6242	26434	6742
183	Multi-loop cooperative control data	Monitor data	23	SP (local) 23	25155	6243	26435	6743
184	Multi-loop cooperative control data	Monitor data	23	PV (local) 23	25156	6244	26436	6744
185	Multi-loop cooperative control data	Monitor data	23	Loop evaluation value	25157	6245	26437	6745
186	Multi-loop cooperative control data	Monitor data	23	MV output limit 23	25159	6247	26439	6747
187	Multi-loop cooperative control data	Monitor data	23	Cooperative MV 2	25160	6248	26440	6748
188	Multi-loop cooperative control data	Monitor data	23	Rank 23 within group	25163	624B	26443	674B
189	Multi-loop cooperative control data	Monitor data	24	MV low limit 24	25167	624F	26447	674F
190	Multi-loop cooperative control data	Monitor data	24	MV high limit 24	25168	6250	26448	6750
191	Multi-loop cooperative control data	Monitor data	24	SP (local) 24	25169	6251	26449	6751
192	Multi-loop cooperative control data	Monitor data	24	PV (local) 24	25170	6252	26450	6752
193	Multi-loop cooperative control data	Monitor data	24	Loop evaluation value	25171	6253	26451	6753
194	Multi-loop cooperative control data	Monitor data	24	MV output limit 24	25173	6255	26453	6755
195	Multi-loop cooperative control data	Monitor data	24	Cooperative MV 24	25174	6256	26454	6756
196	Multi-loop cooperative control data	Monitor data	24	Rank 24 within group	25177	6259	26457	6759
197	Multi-loop cooperative control data	Monitor data	25	MV low limit 25	25181	625D	26461	675D
198	Multi-loop cooperative control data	Monitor data	25	MV high limit 25	25182	625E	26462	675E
199	Multi-loop cooperative control data	Monitor data	25	SP (local) 25	25183	625F	26463	675F
200	Multi-loop cooperative control data	Monitor data	25	PV (local) 25	25184	6260	26464	6760
201	Multi-loop cooperative control data	Monitor data	25	Loop evaluation value	25185	6261	26465	6761
202	Multi-loop cooperative control data	Monitor data	25	MV output limit 25	25187	6263	26467	6763
203	Multi-loop cooperative control data	Monitor data	25	Cooperative MV 25	25188	6264	26468	6764
204	Multi-loop cooperative control data	Monitor data	25	Rank 25 within group	25191	6267	26471	6767
205	Multi-loop cooperative control data	Monitor data	26	MV low limit 26	25195	626B	26475	676B
206	Multi-loop cooperative control data	Monitor data	26	MV high limit 26	25196	626C	26476	676C
207	Multi-loop cooperative control data	Monitor data	26	SP (local) 26	25197	626D	26477	676D
208	Multi-loop cooperative control data	Monitor data	26	PV (local) 26	25198	626E	26478	676E
209	Multi-loop cooperative control data	Monitor data	26	Loop evaluation value	25199	626F	26479	676F
210	Multi-loop cooperative control data	Monitor data	26	MV output limit 26	25201	6271	26481	6771
211	Multi-loop cooperative control data	Monitor data	26	Cooperative MV 26	25202	6272	26482	6772
212	Multi-loop cooperative control data	Monitor data	26	Rank 26 within group	25205	6275	26485	6775
213	Multi-loop cooperative control data	Monitor data	27	MV low limit 27	25209	6279	26489	6779
214	Multi-loop cooperative control data	Monitor data	27	MV high limit 27	25210	627A	26490	677A
215	Multi-loop cooperative control data	Monitor data	27	SP (local) 27	25211	627B	26491	677B
216	Multi-loop cooperative control data	Monitor data	27	PV (local) 27	25212	627C	26492	677C
217	Multi-loop cooperative control data	Monitor data	27	Loop evaluation value	25213	627D	26493	677D
218	Multi-loop cooperative control data	Monitor data	27	MV output limit 27	25215	627F	26495	677F
219	Multi-loop cooperative control data	Monitor data	27	Cooperative MV 27	25216	6280	26496	6780
220	Multi-loop cooperative control data	Monitor data	27	Rank 27 within group	25219	6283	26499	6783
221	Multi-loop cooperative control data	Monitor data	28	MV low limit 28	25223	6287	26503	6787
222	Multi-loop cooperative control data	Monitor data	28	MV high limit 28	25224	6288	26504	6788
223	Multi-loop cooperative control data	Monitor data	28	SP (local) 28	25225	6289	26505	6789
224	Multi-loop cooperative control data	Monitor data	28	PV (local) 28	25226	628A	26506	678A
225	Multi-loop cooperative control data	Monitor data	28	Loop evaluation value	25227	628B	26507	678B
226	Multi-loop cooperative control data	Monitor data	28	MV output limit 28	25229	628D	26509	678D
227	Multi-loop cooperative control data	Monitor data	28	Cooperative MV 28	25230	628E	26510	678E
228	Multi-loop cooperative control data	Monitor data	28	Rank 28 within group	25233	6291	26513	6791
229	Multi-loop cooperative control data	Monitor data	29	MV low limit 29	25237	6295	26517	6795
230	Multi-loop cooperative control data	Monitor data	29	MV high limit 29	25238	6296	26518	6796
231	Multi-loop cooperative control data	Monitor data	29	SP (local) 29	25239	6297	26519	6797
232	Multi-loop cooperative control data	Monitor data	29	PV (local) 29	25240	6298	26520	6798
233	Multi-loop cooperative control data	Monitor data	29	Loop evaluation value	25241	6299	26521	6799
234	Multi-loop cooperative control data	Monitor data	29	MV output limit 29	25243	629B	26523	679B
235	Multi-loop cooperative control data	Monitor data	29	Cooperative MV 29	25244	629C	26524	679C
236	Multi-loop cooperative control data	Monitor data	29	Rank 29 within group	25247	629F	26527	679F

➡ "Address Groups 3 to 8"

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
178	27705	6C39	28985	7139	30265	7639	31545	7B39	32825	8039	34105	8539		×	1	
179	27706	6C3A	28986	713A	30266	763A	31546	7B3A	32826	803A	34106	853A		×	1	
180	27709	6C3D	28989	713D	30269	763D	31549	7B3D	32829	803D	34109	853D		×	0	
181	27713	6C41	28993	7141	30273	7641	31553	7B41	32833	8041	34113	8541		×	1	
182	27714	6C42	28994	7142	30274	7642	31554	7B42	32834	8042	34114	8542		×	1	
183	27715	6C43	28995	7143	30275	7643	31555	7B43	32835	8043	34115	8543		×	1	
184	27716	6C44	28996	7144	30276	7644	31556	7B44	32836	8044	34116	8544		×	1	
185	27717	6C45	28997	7145	30277	7645	31557	7B45	32837	8045	34117	8545		×	1	
186	27719	6C47	28999	7147	30279	7647	31559	7B47	32839	8047	34119	8547		×	1	
187	27720	6C48	29000	7148	30280	7648	31560	7B48	32840	8048	34120	8548		×	1	
188	27723	6C4B	29003	714B	30283	764B	31563	7B4B	32843	804B	34123	854B		×	0	
189	27727	6C4F	29007	714F	30287	764F	31567	7B4F	32847	804F	34127	854F		×	1	
190	27728	6C50	29008	7150	30288	7650	31568	7B50	32848	8050	34128	8550		×	1	
191	27729	6C51	29009	7151	30289	7651	31569	7B51	32849	8051	34129	8551		×	1	
192	27730	6C52	29010	7152	30290	7652	31570	7B52	32850	8052	34130	8552		×	1	
193	27731	6C53	29011	7153	30291	7653	31571	7B53	32851	8053	34131	8553		×	1	
194	27733	6C55	29013	7155	30293	7655	31573	7B55	32853	8055	34133	8555		×	1	
195	27734	6C56	29014	7156	30294	7656	31574	7B56	32854	8056	34134	8556		×	1	
196	27737	6C59	29017	7159	30297	7659	31577	7B59	32857	8059	34137	8559		×	0	
197	27741	6C5D	29021	715D	30301	765D	31581	7B5D	32861	805D	34141	855D		×	1	
198	27742	6C5E	29022	715E	30302	765E	31582	7B5E	32862	805E	34142	855E		×	1	
199	27743	6C5F	29023	715F	30303	765F	31583	7B5F	32863	805F	34143	855F		×	1	
200	27744	6C60	29024	7160	30304	7660	31584	7B60	32864	8060	34144	8560		×	1	
201	27745	6C61	29025	7161	30305	7661	31585	7B61	32865	8061	34145	8561		×	1	
202	27747	6C63	29027	7163	30307	7663	31587	7B63	32867	8063	34147	8563		×	1	
203	27748	6C64	29028	7164	30308	7664	31588	7B64	32868	8064	34148	8564		×	1	
204	27751	6C67	29031	7167	30311	7667	31591	7B67	32871	8067	34151	8567		×	0	
205	27755	6C6B	29035	716B	30315	766B	31595	7B6B	32875	806B	34155	856B		×	1	
206	27756	6C6C	29036	716C	30316	766C	31596	7B6C	32876	806C	34156	856C		×	1	
207	27757	6C6D	29037	716D	30317	766D	31597	7B6D	32877	806D	34157	856D		×	1	
208	27758	6C6E	29038	716E	30318	766E	31598	7B6E	32878	806E	34158	856E		×	1	
209	27759	6C6F	29039	716F	30319	766F	31599	7B6F	32879	806F	34159	856F		×	1	
210	27761	6C71	29041	7171	30321	7671	31601	7B71	32881	8071	34161	8571		×	1	
211	27762	6C72	29042	7172	30322	7672	31602	7B72	32882	8072	34162	8572		×	1	
212	27765	6C75	29045	7175	30325	7675	31605	7B75	32885	8075	34165	8575		×	0	
213	27769	6C79	29049	7179	30329	7679	31609	7B79	32889	8079	34169	8579		×	1	
214	27770	6C7A	29050	717A	30330	767A	31610	7B7A	32890	807A	34170	857A		×	1	
215	27771	6C7B	29051	717B	30331	767B	31611	7B7B	32891	807B	34171	857B		×	1	
216	27772	6C7C	29052	717C	30332	767C	31612	7B7C	32892	807C	34172	857C		×	1	
217	27773	6C7D	29053	717D	30333	767D	31613	7B7D	32893	807D	34173	857D		×	1	
218	27775	6C7F	29055	717F	30335	767F	31615	7B7F	32895	807F	34175	857F		×	1	
219	27776	6C80	29056	7180	30336	7680	31616	7B80	32896	8080	34176	8580		×	1	
220	27779	6C83	29059	7183	30339	7683	31619	7B83	32899	8083	34179	8583		×	0	
221	27783	6C87	29063	7187	30343	7687	31623	7B87	32903	8087	34183	8587		×	1	
222	27784	6C88	29064	7188	30344	7688	31624	7B88	32904	8088	34184	8588		×	1	
223	27785	6C89	29065	7189	30345	7689	31625	7B89	32905	8089	34185	8589		×	1	
224	27786	6C8A	29066	718A	30346	768A	31626	7B8A	32906	808A	34186	858A		×	1	
225	27787	6C8B	29067	718B	30347	768B	31627	7B8B	32907	808B	34187	858B		×	1	
226	27789	6C8D	29069	718D	30349	768D	31629	7B8D	32909	808D	34189	858D		×	1	
227	27790	6C8E	29070	718E	30350	768E	31630	7B8E	32910	808E	34190	858E		×	1	
228	27793	6C91	29073	7191	30353	7691	31633	7B91	32913	8091	34193	8591		×	0	
229	27797	6C95	29077	7195	30357	7695	31637	7B95	32917	8095	34197	8595		×	1	
230	27798	6C96	29078	7196	30358	7696	31638	7B96	32918	8096	34198	8596		×	1	
231	27799	6C97	29079	7197	30359	7697	31639	7B97	32919	8097	34199	8597		×	1	
232	27800	6C98	29080	7198	30360	7698	31640	7B98	32920	8098	34200	8598		×	1	
233	27801	6C99	29081	7199	30361	7699	31641	7B99	32921	8099	34201	8599		×	1	
234	27803	6C9B	29083	719B	30363	769B	31643	7B9B	32923	809B	34203	859B		×	1	
235	27804	6C9C	29084	719C	30364	769C	31644	7B9C	32924	809C	34204	859C		×	1	
236	27807	6C9F	29087	719F	30367	769F	31647	7B9F	32927	809F	34207	859F		×	0	

Multi-loop cooperative control data/monitor data

"Address Groups 1 to 2" ➡

	Folder name	Bank name	Code	Item name	Address (Group 1)		Address (Group 2)	
					Decimal	Hexa-decimal	Decimal	Hexa-decimal
237	Multi-loop cooperative control data	Monitor data	30	MV low limit 30	25251	62A3	26531	67A3
238	Multi-loop cooperative control data	Monitor data	30	MV high limit 30	25252	62A4	26532	67A4
239	Multi-loop cooperative control data	Monitor data	30	SP (local) 30	25253	62A5	26533	67A5
240	Multi-loop cooperative control data	Monitor data	30	PV (local) 30	25254	62A6	26534	67A6
241	Multi-loop cooperative control data	Monitor data	30	Loop evaluation value	25255	62A7	26535	67A7
242	Multi-loop cooperative control data	Monitor data	30	MV output limit 30	25257	62A9	26537	67A9
243	Multi-loop cooperative control data	Monitor data	30	Cooperative MV 30	25258	62AA	26538	67AA
244	Multi-loop cooperative control data	Monitor data	30	Rank 30 within group	25261	62AD	26541	67AD
245	Multi-loop cooperative control data	Monitor data	31	MV low limit 31	25265	62B1	26545	67B1
246	Multi-loop cooperative control data	Monitor data	31	MV high limit 31	25266	62B2	26546	67B2
247	Multi-loop cooperative control data	Monitor data	31	SP (local) 31	25267	62B3	26547	67B3
248	Multi-loop cooperative control data	Monitor data	31	PV (local) 31	25268	62B4	26548	67B4
249	Multi-loop cooperative control data	Monitor data	31	Loop evaluation value	25269	62B5	26549	67B5
250	Multi-loop cooperative control data	Monitor data	31	MV output limit 31	25271	62B7	26551	67B7
251	Multi-loop cooperative control data	Monitor data	31	Cooperative MV 31	25272	62B8	26552	67B8
252	Multi-loop cooperative control data	Monitor data	31	Rank 31 within group	25275	62BB	26555	67BB
253	Multi-loop cooperative control data	Monitor data	32	MV low limit 32	25279	62BF	26559	67BF
254	Multi-loop cooperative control data	Monitor data	32	MV high limit 32	25280	62C0	26560	67C0
255	Multi-loop cooperative control data	Monitor data	32	SP (local) 32	25281	62C1	26561	67C1
256	Multi-loop cooperative control data	Monitor data	32	PV (local) 32	25282	62C2	26562	67C2
257	Multi-loop cooperative control data	Monitor data	32	Loop evaluation value	25283	62C3	26563	67C3
258	Multi-loop cooperative control data	Monitor data	32	MV output limit 32	25285	62C5	26565	67C5
259	Multi-loop cooperative control data	Monitor data	32	Cooperative MV 32	25286	62C6	26566	67C6
260	Multi-loop cooperative control data	Monitor data	32	Rank 32 within group	25289	62C9	26569	67C9

➡ “Address Groups 3 to 8”

	Address (Group 3)		Address (Group 4)		Address (Group 5)		Address (Group 6)		Address (Group 7)		Address (Group 8)		Read	Write	Decimal point	Remarks
	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal	Decimal	Hexa-decimal				
237	27811	6CA3	29091	71A3	30371	76A3	31651	7BA3	32931	80A3	34211	85A3		×	1	
238	27812	6CA4	29092	71A4	30372	76A4	31652	7BA4	32932	80A4	34212	85A4		×	1	
239	27813	6CA5	29093	71A5	30373	76A5	31653	7BA5	32933	80A5	34213	85A5		×	1	
240	27814	6CA6	29094	71A6	30374	76A6	31654	7BA6	32934	80A6	34214	85A6		×	1	
241	27815	6CA7	29095	71A7	30375	76A7	31655	7BA7	32935	80A7	34215	85A7		×	1	
242	27817	6CA9	29097	71A9	30377	76A9	31657	7BA9	32937	80A9	34217	85A9		×	1	
243	27818	6CAA	29098	71AA	30378	76AA	31658	7BAA	32938	80AA	34218	85AA		×	1	
244	27821	6CAD	29101	71AD	30381	76AD	31661	7BAD	32941	80AD	34221	85AD		×	0	
245	27825	6CB1	29105	71B1	30385	76B1	31665	7BB1	32945	80B1	34225	85B1		×	1	
246	27826	6CB2	29106	71B2	30386	76B2	31666	7BB2	32946	80B2	34226	85B2		×	1	
247	27827	6CB3	29107	71B3	30387	76B3	31667	7BB3	32947	80B3	34227	85B3		×	1	
248	27828	6CB4	29108	71B4	30388	76B4	31668	7BB4	32948	80B4	34228	85B4		×	1	
249	27829	6CB5	29109	71B5	30389	76B5	31669	7BB5	32949	80B5	34229	85B5		×	1	
250	27831	6CB7	29111	71B7	30391	76B7	31671	7BB7	32951	80B7	34231	85B7		×	1	
251	27832	6CB8	29112	71B8	30392	76B8	31672	7BB8	32952	80B8	34232	85B8		×	1	
252	27835	6CBB	29115	71BB	30395	76BB	31675	7BBB	32955	80BB	34235	85BB		×	0	
253	27839	6CBF	29119	71BF	30399	76BF	31679	7BBF	32959	80BF	34239	85BF		×	1	
254	27840	6CC0	29120	71C0	30400	76C0	31680	7BC0	32960	80C0	34240	85C0		×	1	
255	27841	6CC1	29121	71C1	30401	76C1	31681	7BC1	32961	80C1	34241	85C1		×	1	
256	27842	6CC2	29122	71C2	30402	76C2	31682	7BC2	32962	80C2	34242	85C2		×	1	
257	27843	6CC3	29123	71C3	30403	76C3	31683	7BC3	32963	80C3	34243	85C3		×	1	
258	27845	6CC5	29125	71C5	30405	76C5	31685	7BC5	32965	80C5	34245	85C5		×	1	
259	27846	6CC6	29126	71C6	30406	76C6	31686	7BC6	32966	80C6	34246	85C6		×	1	
260	27849	6CC9	29129	71C9	30409	76C9	31689	7BC9	32969	80C9	34249	85C9		×	0	

Bit map assignment

■ Alarm information

● Alarm information 2 (minor malfunctions)

RAM address : 4488 (1188H)

MSB LSB

b^{15}	b^{14}	b^{13}	b^{12}	b^{11}	b^{10}	b^{9}	b^{8}	b^{7}	b^{6}	b^{5}	b^{4}	b^{3}	b^{2}	b^{1}	b^{0}
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1 to 5: Undefined
6 : Wrong module insertion
7 : Base EEPROM record format incompatibility
8 : Flash ROM checksum error (network settings area)
9 : Base EEPROM checksum error (network settings area)
10 : Base EEPROM checksum error (product information area)
11 : Base EEPROM check code error
12 : Flash ROM settings data area error
13 : RAM data error
14 : Internal temperature sensor error
15 : Battery voltage low
16 : Dead battery

● Alarm information 3 (partial failures)

RAM address : 4496 (1190H)

MSB LSB

b^{15}	b^{14}	b^{13}	b^{12}	b^{11}	b^{10}	b^{9}	b^{8}	b^{7}	b^{6}	b^{5}	b^{4}	b^{3}	b^{2}	b^{1}	b^{0}
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1 to 15: Undefined
16 : Connected module error

● **Module information (used/unused, online/offline, normal/error, serious malfunction, minor malfunction, communication error)**

RAM address : 4544 (11C0H) Used/unused
: 4552 (11C8H) Online/offline
: 4560 (11D0H) Normal/error
: 4568 (11D8H) Serious malfunction occurrence
: 4576 (11E0H) Minor malfunction occurrence
: 4592 (11F0H) Communication error occurrence

MSB LSB

b^{15}	b^{14}	b^{13}	b^{12}	b^{11}	b^{10}	b^{9}	b^{8}	b^{7}	b^{6}	b^{5}	b^{4}	b^{3}	b^{2}	b^{1}	b^{0}
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1 : Module (1) is applicable
2 : Module (2) is applicable
3 : Module (3) is applicable
4 : Module (4) is applicable
5 : Module (5) is applicable
6 : Module (6) is applicable
7 : Module (7) is applicable
8 : Module (8) is applicable
9 to 16: Undefined

Handling Precautions

- The numbers of Modules 1 to 8 are ordered from the top of the control group structure wizard set for SLP-NX.

■ Product ID List

Product ID (Hexadecimals)	Product No.	Remarks
0000	—	Unconnected
0001	NX-S _ _ _ 0 _ _ _ _	Supervisor Module
0005	NX-D_ 5_ _ _ _ 0_	Controller module (no options)
0006	NX-D_ 5_ _ _ _ 1_	Controller module (current transformer input option included)
0007	NX-D_ 5_ _ _ _ 2_	Controller module (digital output option included)
0008	NX-D_ 5_ _ _ _ 3_	Controller module (digital input option included)
0009	NX-DX1_ _ _ _ _ _	Digital input module (digital input)
000A	NX-DX2_ _ _ _ _ _	Digital input module (pulse input)

Chapter 14. PARAMETER SETTINGS LIST

List explanation

Meaning of initial value

– : differs according to device status

Meaning of user User Levels

0 : Displayed in simple, standard or multiple functions

1 : Displayed in standard or multiple functions

2 : Displayed in multiple functions

System settings/operation information System information/operation information

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
System settings	Operation information		Device operation mode settings	0: IDLE 1: RUN	0		0	
System information	Operation information		Display status	0: IDLE 1: RUN 2: IDLE (during partial failure) 3: RUN (during partial failure)	–		0	
System information	Operation information		Module status	0: IDLE 1: RUN 2: IDLE (during minor malfunction) 3: RUN (during minor malfunction)	–		0	
System information	Operation information		Management IO module module Status (1) to Management IO module module Status (16)		–		0	

NX-S11/12/21 (general)

System information/bit information operation System information/bit information (system) System information/bit information (module)

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
System information	Bit information operation		Bit information latch information clear	0: Normal/latch clear complete 1: Latch clear 0designated	–		0	
System information	Bit information (system)		Minor malfunction flag		–		0	
System information	Bit information (system)		Partial failure flag		–		0	
System information	Bit information (module)		Module used/unused		–		0	
System information	Bit information (module)		Module online/offline		–		0	
System information	Bit information (module)		Module normal/error		–		0	
System information	Bit information (module)		Module normal/error Latch information		–		0	
System information	Bit information (module)		Module serious malfunction occurrence		–		0	
System information	Bit information (module)		Module serious malfunction occurrence Latch information		–		0	
System information	Bit information (module)		Module minor malfunction occurrence		–		0	
System information	Bit information (module)		Module minor malfunction occurrence Latch information		–		0	
System information	Bit information (module)		Module partial failure occurrence		–		0	
System information	Bit information (module)		Module partial failure occurrence Latch information		–		0	
System information	Bit information (module)		Module communication error occurrence		–		0	
System information	Bit information (module)		Module communication error occurrence Latch information		–		0	

Module information/clock information

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Module information	Clock information		Year	0 to 99	0		0	For clock information, set year, month, day, time, minutes, and seconds at once. Clock information will be recorded as soon as the seconds are entered.
Module information	Clock information		Month	1 to 12	1		0	
Module information	Clock information		Date	1 to 31	1		0	
Module information	Clock information		Hour	0 to 23	0		0	
Module information	Clock information		Minutes	0 to 59	0		0	
Module information	Clock information		Seconds	0 to 59	0		0	
Module information	Clock information		Day	0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday	6		0	

NX-S11/12/21 (general)

Error status/system error Error status/SV module error Error status/IO management module representative error Error status/communication representative error

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Error status	System error		Minor malfunction flag	0: No malfunction 1: Malfunction	–		0	
Error status	System error		Partial failure flag	0: No malfunction 1: Malfunction	–		0	
Error status	SV module error		Minor malfunction flag	0: No malfunction 1: Malfunction	–		0	
Error status	SV module error		Partial failure flag	0: No malfunction 1: Malfunction	–		0	
Error status	Management IO module representative Error		Management module representative serious malfunction flag	0: No malfunction 1: Malfunction	–		0	
Error status	Management IO module representative Error		Management module representative minor malfunction flag	0: No malfunction 1: Malfunction	–		0	
Error status	Management IO module representative Error		Management module representative partial failure flag	0: No malfunction 1: Malfunction	–		0	
Error status	Communication representative error		Communication representative error flag	0: No malfunction 1: Malfunction	–		0	

Application status related to module configuration
Comm addr replacemt/data address Comm addr replacemt/data

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Application status	Module structure related		Module (1) product ID to Module (16) product ID		–		0	Product ID List (page 13-63)
Comm addr replacemt	Data address		Address (1) to Address (256)	0 ~ 53247	0		0	
Comm addr replacemt data	Data		Data (1) to Data (256)				0	Setting range, initial value, units apply to the address set as address (1)

NX-S11/12/21 (general)

Communications/RS-485 communications Communications/Ethernet communications

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Communications	RS-485 communication		Communications type	0: CPL 1:MODBUS/ASCII 2: MODBUS RTU	0		0	Use the SLP-NX for configuration
Communications	RS-485 communication		Station address	0 to 127	127		0	0: Communications are disabled. Use the SLP-NX for configuration.
Communications	RS-485 communication		Transmission speed	0: 4800 bps 1: 9600 bps 2: 19200 bps 3: 38400 bps 4: 57600 bps 5: 115200 bps	2		0	Use the SLP-NX for configuration
Communications	RS-485 communication		Data format (bit length)	0: 7 bits 1: 8 bits	1		0	
Communications	RS-485 communication		Data format (parity)	0: Even parity 1: Odd parity 2: No parity	0		0	
Communications	RS-485 communication		Data format (stop bit)	0: 1 stop bit 1: 2-stop bit	0		0	
Communications	RS-485 communication		Minimum response time		3	ms	0	
Communications	RS-485 communication		Communications type					
Communications	RS-485 communication		Station address					
Communications	RS-485 communication		Transmission speed					
Communications	RS-485 communication		Data format (Bit length)					
Communications	RS-485 communication		Data format (Parity)					
Communications	RS-485 communication		Data format (Stop bit)					
Communications	RS-485 communication		Minimum response time					
Communications	Ethernet communications		MAC address 1		–		0	
Communications	Ethernet communications		MAC address 2		–		0	
Communications	Ethernet communications		MAC address 3		–		0	
Communications	Ethernet communications		MAC address 4		–		0	
Communications	Ethernet communications		MAC address 5		–		0	
Communications	Ethernet communications		MAC address 6		–		0	
Communications	Ethernet communications		IPv4 address 1	1 to 250	192		0	
Communications	Ethernet communications		IPv4 address 2	1 to 250	168		0	
Communications	Ethernet communications		IPv4 address 3	1 to 250	255		0	
Communications	Ethernet communications		IPv4 address 4	1 to 250	254		0	
Communications	Ethernet communications		IPv4 address net mask 1	1 to 250	255		0	
Communications	Ethernet communications		IPv4 address net mask 2	1 to 250	255		0	
Communications	Ethernet communications		IPv4 address net mask 3	1 to 250	255		0	
Communications	Ethernet communications		IPv4 address net mask 4	1 to 250	0		0	
Communications	Ethernet communications		IPv4 default gateway 1	1 to 250	0		0	
Communications	Ethernet communications		IPv4 default gateway 2	1 to 250	0		0	
Communications	Ethernet communications		IPv4 default gateway 3	1 to 250	0		0	
Communications	Ethernet communications		IPv4 default gateway 4	1 to 250	0		0	
Communications	Ethernet communications		MODBUS/TCP port number	0 to 65535	502		0	0 to 501, 503 to 1023 are used generally at times. Refrain from use as much as possible. 1252 is reserved for system use. Do not use. Use the SLP-NX for configuration.

Other/device information 1 Other/device information 2

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Other	Device information 1		F/W ROM ID		–		–	Not displayed for SLP-NX.
Other	Device information 1		F/W ROM version 1		–		–	
Other	Device information 1		F/W ROM version 2		–		–	
Other	Device information 1		Compatible module version		–		–	
Other	Device information 2		F/W (1) program number		–		0	
Other	Device information 2		F/W (1) program item		–		0	
Other	Device information 2		F/W (1) major version		–		0	
Other	Device information 2		F/W (1) minor version		–		0	
Other	Device information 2		F/W (1) build version		–		0	
Other	Device information 2		F/W (2) program number		–		0	
Other	Device information 2		F/W (2) program item		–		0	
Other	Device information 2		F/W (2) major version		–		0	
Other	Device information 2		F/W (2) minor version		–		0	
Other	Device information 2		F/W (2) build version		–		0	
Other	Device information 2		F/W (3) program number		–		0	
Other	Device information 2		F/W (3) program item		–		0	
Other	Device information 2		F/W (3) major version		–		0	
Other	Device information 2		F/W (3) minor version		–		0	
Other	Device information 2		F/W (3) build version		–		0	
Other	Device information 2		Module version (Major, minor)		–		0	
Other	Device information 2		Compatible module version		–		0	

NX-S11

Multi-loop cooperative control (common settings)/ zone temperature difference control settings

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control (common settings)	Zone temperature difference control settings		SP filter factor decimal point position	0 to 4	1	0		
Multi-loop cooperation control (common settings)	Zone temperature difference control settings		Effect tuning parameter decimal point position	0 to 4	2		0	
Multi-loop cooperation control (common settings)	Zone temperature difference control settings		Invalid range in mode 3 Decimal point position	0 to 4	2		0	
Multi-loop cooperation control (common settings)	Zone temperature difference control settings		Changing rate in mode 3	0 to 4	1		0	
Multi-loop cooperation control (common settings)	Zone temperature difference control settings	1 to 32	Performance tuning parameter 1 decimal point position Decimal point position to Performance tuning parameter 32 decimal point position	0 to 4	2		0	

Multi-loop cooperative control (common settings)/ zone temperature difference control monitor

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperative control (common settings)	Zone temperature difference control monitor	1	SP (local) 1 decimal point position to SP (local) 32 decimal point position	0 to 4	1		0	
Multi-loop cooperative control (common settings)	Zone temperature difference control monitor	1	PV (local) 1 decimal point position to PV (local) 32 decimal point position	0 to 4	1		0	
Multi-loop cooperative control (common settings)			Cooperative control SP 1 decimal point position to Cooperative control SP (local) 32 decimal point position	0 to 4	1		0	

Multi-loop cooperative control data (1) to (8)/settings data

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control Data (1) to (8)	Setting banks		Operation mode setting	0: Stop 1: Independent operation (AUTO) 2: Cooperative operation 3: Independent operation (MANUAL) 4: Individual loop operation	2		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Error mode release	0: Do not cancel 1: Cancel	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Operation during error mode	0: Stop all loops 1: Operate all loops independently	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Recovery action from error mode	0: Manual 1: Automatic	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Zone temperature difference control mode	0: Average PV value 1: Reference loop assignment 2: Max. deviation PV	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Reference loop assignment	1 to 32	1		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		SP filter time constant	0 to 3200	0	s	0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Effect tuning parameter	0 to 1	0.3		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Invalid range in mode 3	0 to 100	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Changing rate in mode 3	0 to 320	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks	1 to 32	Performance tuning parameter 1 to Performance tuning parameter 32	0 to 10	3		0	

Multi-loop cooperative control data (1) to (8)/monitor data

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control Data (1) to (8)	Monitor data		Error code	0: No error 10001 to 15000	–		0	Error code list (page 15-6)
Multi-loop cooperation control Data (1) to (8)	Monitor data		No. of control loops in a group	2 to 32	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data		Standard loop	1 to 32	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data		Operation status	0: Normal 1: Error	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	SP (local) 1 to SP (local) 32	–19999 to +32000	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	PV (local) 1 to PV (local) 32	–19999 to +32000	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	Cooperative control SP 1 to Cooperative control SP 32	–19999 to +32000	–		0	

Multi-loop cooperative control (common settings)/optimum start-up control settings

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control (common settings)	optimum start-up control settings		SP filter factor decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	Optimum start-up control settings		Step response progress correction amount decimal point position	0 to 4	2		0	
Multi-loop cooperation control (common settings)	Optimum start-up control settings		Set value step input modifiable range decimal point position	0 to 4	2		0	

Multi-loop cooperative control (common settings)/optimum start-up control monitor

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control (common settings)	Optimum start-up control monitor	1 to 32	SP (local) decimal point position to SP (local) 32 decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	Optimum start-up control monitor	1 to 32	PV (local) decimal point position to PV (local) 32 decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	Optimum start-up control monitor	1 to 32	Cooperative control SP 1 decimal point position to Cooperative control SP 32 decimal point position	0 to 4	1		0	

Multi-loop cooperative control data (1) to (8)/settings data

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control Data (1) to (8)	Setting banks		Operation mode setting	0: Stop 1: Independent operation (AUTO) 2: Cooperative operation 3: Independent operation (MANUAL) 4: Individual loop operation	2		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Error mode release	0: Do not cancel 1: Cancel	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Operation during error mode	0: Stop all loops 1: Operate all loops independently	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Recovery action from error mode	0: Manual 1: Automatic	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Optimum start-up control mode	0: Automatic 1: Reference loop assignment	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Reference loop assignment	1 to 32	1		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		SP filter time constant	0 to 3200	0	s	0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Step response progress correction amount	0 to 1	0.3		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Set value step input modifiable range	0 to 100	0		0	

Multi-loop cooperative control data (1) to (8)/monitor data

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control Data (1) to (8)	Monitor data		Error code	0: No error 10001 to 15000	–		0	Error code list
Multi-loop cooperation control Data (1) to (8)	Monitor data		No. of control loops in a group	2 to 32	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data		Standard loop	1 to 32	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data		Operation status	0: Normal 1: Error	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	SP (local) 1 to SP (local) 32	–19999 to 32000	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	PV (local) 1 to PV (local) 32	–19999 to 32000	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	Cooperative control SP 1 to Cooperative control SP 32	–19999 to 32000	–		0	

Multi-loop cooperative control (common settings)/peak power suppression control settings

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperative control (common settings)	Peak power suppression control settings		Total MV limit decimal point position	0to4	1		0	
Multi-loop cooperation control (common settings)	Peak power suppression control setup		MV dividing rate decimal point position	0 to 4	2		0	
Multi-loop cooperation control (common settings)	Peak power suppression control setup		MV change pace decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	Peak power suppression control setup	1 to 32	Heat-up temp capability factor 1 decimal point position to Heat-up temp capability factor 32 decimal point position	0 to 4	2		0	
Multi-loop cooperation control (common settings)	Peak power suppression control setup	1 to 32	Heat-up capability offset 1 decimal point position Heat-up capability offset 32 decimal point position	0 to 4	1		0	

Multi-loop cooperative control (common settings)/peak power suppression control monitor

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control (common settings)	peak power suppression control monitor	1 to 32	MV low limit 1 decimal point position to MV low limit 32 decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	peak power suppression control monitor	1 to 32	MV high limit 1 decimal point position to MV high limit 32 decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	peak power suppression control monitor	1 to 32	SP(local)1 decimal point position to SP(local) 32decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	peak power suppression control monitor	1 to 32	PV (local)1 decimal point position to PV(local) 32decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	peak power suppression control monitor	1 to 32	MV output limit 1 decimal point position to MV output limit 32 decimal point position	0 to 4	1		0	
Multi-loop cooperation control (common settings)	peak power suppression control monitor	1 to 32	Cooperative MV 1 decimal point position to Cooperative MV 32 decimal point position	0 to 4	1		0	

Multi-loop cooperative control data (1) to (8)/settings data

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control Data (1) to (8)	Setting banks		Operation mode setting	0: Stop 1: Independent operation (AUTO) 2: Cooperative operation 3: Independent operation (MANUAL) 4: Individual loop operation	2		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Error mode release	0: Do not cancel 1: Cancel	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Recovery action from error mode	0: Manual 1: Automatic	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Coupling execution switch	0: Coupling not performed 1: Coupling performed	0		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Total MV limit	0 to 100	100		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		MV dividing rate	0 to 1	0.8		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		MV change pace	0 to 320	10		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks		Time proportional output offset	0 to 60000	0	ms	0	
Multi-loop cooperation control Data (1) to (8)	Setting banks	1 to 32	Heat-up temp capability factor 1 to Heating capability rate 32	0 to 10	1		0	
Multi-loop cooperation control Data (1) to (8)	Setting banks	1 to 32	Heat-up capability offset 1 to Heat-up temp capability offset 32	–1999.9 to 3200.0	0		0	

Multi-loop cooperative control data (1) to (8)/monitor data

Folder name	Bank name	code	Item name	Setting range	Initial value	Unit	User Level	Remarks
Multi-loop cooperation control Data (1) to (8)	Monitor data		Error code	0: No error 10001 to 15000	–		0	Error code list (page 15-6)
Multi-loop cooperation control Data (1) to (8)	Monitor data		No. of control loops in a group	2 to 32	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data		Independent loop	0: No independent loop 1 to 32	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data		Operation status	0: Normal 1: Error 2: Wait for synchronization 3: Wait for DO initialization to complete	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	MV low limit 1 to MV low limit 32	–10 to 110	–	%	0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	MV high limit 1 to MV high limit 32	–10 to 110	–	%	0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	SP (local) 1 to SP (local) 32	–19999 to 32000	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	PV (local) 1 to PV (local) 32	–19999 to 32000	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	Loop evaluation value 1 to Loop evaluation value 32	–1999.9 to 3200.0	–		0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	MV output limit 1 to MV output limit 32	–10 to 110	–	%	0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	Cooperative MV 1 to Cooperative MV 32	–10 to 110	–	%	0	
Multi-loop cooperation control Data (1) to (8)	Monitor data	1 to 32	Rank 1 within group to Rank 32 within group	1 to 32	–		0	

Chapter 15. TROUBLESHOOTING

■ If a malfunction occurs...

Malfunction information for this device will be displayed on the [FAIL] LED.
If the [FAIL] LED is lit, there is a serious malfunction, if it is blinking slowly, there is a minor malfunction, and if it is blinking quickly, there is a partial failure.
Malfunction details can be confirmed by connecting the SLP-NX.A host communication can be used to read.

Note

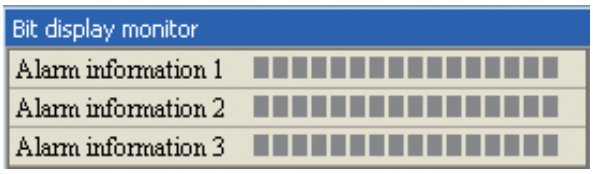
- When confirming via host communication, read the communications data list system information/bit information (system)/minor malfunction flag, and partial failure flag.

Handling Precautions

- Host communication cannot be used for serious malfunctions. For detailed confirmation of serious malfunctions, use SLP-NX.

Serious malfunction: When an error occurs making it impossible to start or continue control.
Minor malfunction: When an error occurs that only enables certain aspects of control to start or continue.
Partial failure: A system error is indicated, and there has either been a minor malfunction with the device, or a controller module under SV management has malfunctioned.

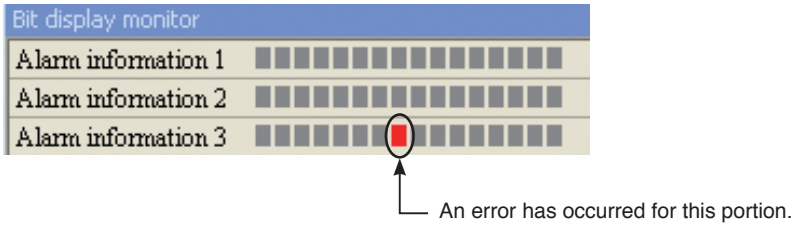
If any of the above error types has occurred, confirmation can be performed at the SLP-NX general monitor's bit display monitor.



When an error is indicated by a red ■, pointing the mouse at the ■ will display a tool chip, and the error content can be confirmed.

Note

- When the following display is shown for the SLP-NX, an alarm information 3 (partial failure) connected module error has occurred.



● Alarm information 1 (serious malfunctions)

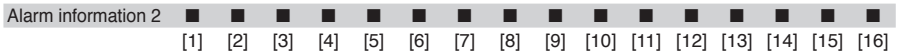
Alarm information 1 indicates a serious malfunction status.
Items starting from the left of the SLP-NX bit display monitor have the following meanings.

Alarm information 1 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16]

Number	Failure name	Cause	Corrective action
[1]	Battery backup RAM error	An error occurred during SRAM writing.	If the error is not solved after turning the power ON again, replace the device.
[2]	Unused	—	—
[3]	Clock IC malfunction	The clock IC has malfunctioned.	If the error is not solved after turning the power ON again, replace the device.
[4]	Clock IC access error	Communication with the clock IC can no longer be performed.	
[5]	Unused		
[6]	Base EEPROM read write error	An error occurred when writing to the base EEPROM.	If the error is not solved after turning the power ON again, replace the device.
[7]	Base EEPROM error	Communication cannot be established with base EEPROM.	
[8]	Flash ROM device error	An error occurred when writing to the flash ROM.	
[9]	Unused	—	—
[10]	Unused	—	—
[11]	Unused	—	—
[12]	Unused	—	—
[13]	Unused	—	—
[14]	Unused	—	—
[15]	MAC address error	An error occurred for a registered MAC address.	Replace the device.
[16]	Model No. information error	An error occurred related to the device's model number.	

● Alarm information 2 (minor malfunctions)

Alarm information 2 indicates a minor malfunction status.
Items starting from the left of the SLP-NX bit display monitor have the following meanings.



Number	Failure name	Cause	Corrective action
[1]	Base EEPROM checksum error (network settings area)	A base EEPROM self diagnosis number error has occurred.	Connected base EEPROM error has occurred. If the error persists after turning the power ON again, restore the base EEPROM by writing communication parameters to SLP-NX. If it is still not recovered, replace the module.
[2]	Base EEPROM checksum error (product information area)	A base EEPROM self diagnosis number error has occurred.	
[3]	Base EEPROM check code error	Base EEPROM is not initialized.	
[4]	Flash ROM configuration data error	A parameter backup information error has occurred.	Run a parameter backup from the SLP-NX.
[5]	RAM data error	An error has occurred with the parameter information.	Perform a group parameter writing from the SLP-NX, or restore the parameters.
[6]	Internal temperature sensor error	The internal temperature sensor has malfunctioned.	If the error persists after turning the power ON again, replace the device.
[7]	Battery voltage low	The battery voltage has decreased significantly.	Replace the battery with a new one.
[8]	Dead battery	The battery is dead or is not present.	
[9]	Unused	—	—
[10]	Unused	—	—
[11]	Unused	—	—
[12]	Unused	—	—
[13]	Unused	—	—
[14]	Wrong module insertion	Model number information stored in the device and base EEPROM is inconsistent.	Model No. information shared by the device and base is inconsistent. Confirm that a module with the correct model No. is installed, and if the error persists after turning the power ON again, use the button to restore EEPROM.
[15]	Base EEPROM recording format incompatible	The base EEPROM recording format is not compatible.	Connected base EEPROM data is in error. Turn the power ON again, and if the error persists, perform base EEPROM recovery via SLP-NX by writing in communication parameters. If it is still not recovered, replace the module.
[16]	Flash ROM checksum error (network settings area)	Flash ROM network If the error is not solved after turning the power ON again, error has occurred.	Write communication related parameters from the SLP-NX.

● Alarm information 3 (partial failures)

Alarm information 3 indicates a partial failure status.
Items starting from the left of the SLP-NX bit display monitor have the following meanings.

Alarm information 3 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16]

Number	Failure name	Cause	Corrective action
[1]	Unused	—	—
[2]	Unused	—	—
[3]	Unused	—	—
[4]	Unused	—	—
[5]	Unused	—	—
[6]	Unused	—	—
[7]	Unused	—	—
[8]	Connected module error	A connected module has malfunctioned, and communication cannot be performed.	Check the power of controller modules under SV management, then check the Ethernet cable and Ethernet related parameters. If the error persists, check communications to make sure other network devices or high-volume network packets are not involved.
[9]	Unused	—	—
[10]	Unused	—	—
[11]	Unused	—	—
[12]	Unused	—	—
[13]	Unused	—	—
[14]	Unused	—	—
[15]	Unused	—	—
[16]	Unused	—	—

■ If a touch panel (etc.) does not respond after module replacement.

If a module communicating with devices like touch panels using the MODBUS/TCP protocol is replaced with another, the replacement module may be unable to communicate with the devices.
In this case, either temporarily turn off the power to devices like touch panels, or wait for automatic recovery.

● Major host devices and estimated time required for the automatic recovery

- ARF100 series devices: about 5 min
- Yamatake system products: about 10 min
  (Harmonas-DEO, PREXION, EneSCOPE, etc.)
- GP series graphic operator interface made by Digital Electronics Corporation: about 20 min
- GOT series graphic operator terminal made by Mitsubishi Electric: about 20 min

● Reason for loss of communications

Host devices using MODBUS/TCP automatically read MAC addresses from modules and regularly update them in order to identify each module.
After module replacement, the MAC address of the replaced module may remain in the host devices. In such a case, they attempt to communicate using the old address.
For this reason, when receiving command messages from host devices, the new module judges that the MAC address in the messages is not its MAC address, even though the IP address is the same, and discards the received messages. Thus communications cannot be established.
For normal communications to resume, time is required to rewrite the MAC address in the host devices. The amount of time varies depending on the host device.

■ If the module can no longer communicate with a device using the MODBUS/TCP protocol

The module can communicate with devices using the MODBUS/TCP protocol. However, in the following cases, MODBUS/TCP communications may not be possible.
In such cases, turn off the power to the devices and module, or wait for 3 minutes for automatic recovery.

● Cases where communication fails

- When the host device is subject to repeated short interruptions
- When network devices (hub, etc.) between the host device and the module experience repeated short power outages or disconnections.

● Reason for loss of communications

Since the module retains data from its communication partners for a certain time, if the host devices experience repeated short interruptions, the module sometimes perceives different devices before and after the interruption.
As a result, the module may mistakenly conclude that the number of host communications exceeds the limit (2) and refuse to accept further communications.

■ When unable to communicate with a controller module

Information will be sent and received through communication between the supervisor module and controller module via multi-loop cooperation control. If this communication can no longer be performed, the supervisor module is found to be in connected module error, and the device will move into partial failure status. When in partial failure status, the [FAIL] LED will blink quickly to notify the user.

If the supervisor module's [FAIL] LED starts to blink quickly (indicating a partial failure), please confirm the cause as described below.

(1) Check the partial failure flag
When the partial failure flag reads "1", a partial failure is occurring.

Address		Item name	Description	Remarks
Decimal	Hexa-decimal			
4866	1302	Partial failure flag	0 = No partial failure 1 = Partial failure occurrence	

(2) Check the communication representative error flag
When the communication representative error flag reads "1", a communication error is occurring.
When it reads "0", the partial failure is occurring for a reason unrelated to communication. Check the management module representative error flag (serious malfunction, minor malfunction).

Address		Item name	Description	Remarks
Decimal	Hexa-decimal			
5504	1580	Communication error representative flag	0= No communication error 1= Communication error occurrence	
5248	1480	Management module representative Serious malfunction flag	0= No serious malfunction 1 = Serious malfunction occurrence	
5249	1481	Management module representative Minor malfunction flag	0 = No minor malfunction 1 = Minor malfunction occurrence	

Note

- When a partial failure is occurring due to a reason unrelated to communication, check each module's status via the SLP-NX etc.

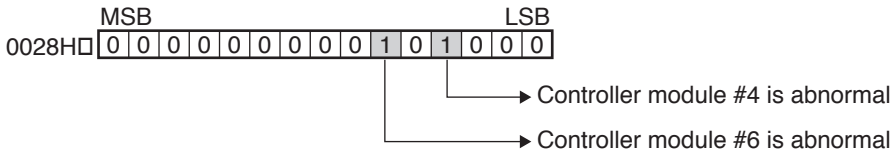
When confirming that a communication error has occurred, check the target controller module.

(3) Confirm that a module communication error has occurred
Read the module communication error occurrence. The bit corresponding to the module experiencing a communication error is ON.

Address		Item name	Description	Remarks
Decimal	Hexa-decimal			
4592	11F0	Module communication error occurrence	0 = No communication error Other than 0 = Communication error	Indicates the target module via bit unit.

Note

- If the module communication error reading is 0028H, communication cannot be performed with the two controller modules shown below.



(4) Restore the communication error.
The cause of the comunication error is thought to be as follows.

- Power of the applicable controller modules is turned OFF.
  Turn the controller module's power ON.
- The controller module's, or supervisor module's, Ethernet cable is disconnected.
  Make sure the Ethernet cable is properly wired.If using the device without a CA or Ethernet cable, the controller module might be disconnected from the base.
  Make sure the base and device are securely connected.
- Controller module settings are not under SV management (multi-loop cooperative control status).
  Please write parameters as a group project for the supervisor module and controller module from the SLP-NX.

Handling Precautions

- When writing settings to a controller module under SV management, write parameters from the SLP-NX, and group together the supervisor module and controller module.
  When writing settings with a controller module unit, at times the supervisor module is unable to recognize the controller module, and communication cannot be performed.

■ When not starting up in RUN mode

When turning the power ON and starting up, device operation mode will stay on [IDLE] instead of advancing to [RUN] at times.
The following text describes some possible causes of this problem, so please confirm.

(1) The automatic [IDLE] switch remains on [IDLE].
When switching to [AUTO], and improvements are still not made, check (2) and (3).

(2) Multi-loop cooperative control settings have not been written in.
Write in multi-loop cooperative control settings, and then change device operation mode to [RUN].

(3) There is a mismatch of information between the device and base plate.In this situation, all LEDs will blink quickly (except for [PWR]), or the [MOD] LED will blink slowly.
Restore base EEPROM by pressing the button.

Handling Precautions

- After base EEPROM has been restored, turn the power OFF.

Note

- For details on how to restore base EEPROM with the button,
☞ 5-1 Operation Display ■ Button functions.

■ Operation during a multi-loop cooperative control error

If an error occurs during multi-loop cooperation control, [Stop all loops] or [All loops operate independently] will occur via [Error mode operation] settings.

Note

- For details on error occurrence during operation of multi-loop cooperation control:
  ☞ 6-3 Setting Parameters ■ Error mode operaiton.
  7-3 Setting Parameters ■ Error mode operation.
- For peak power suppression control, only [Stop all loops] applies.

When an error occurs, the [operation status] value turns to [1: Error], and [Error code] becomes something other than 0, which indicates error content.
■ Refer to "Multi-loop cooperative control error content and countermeasures" (next page), and take the appropriate measures. Depending on the controller module error, multi-loop cooperative control will go into error mode at times. Follow the [Error code] information, check the applicable controller module's alarm, and take the appropriate measures.

Note

- Refer to the following text for controller module troubleshooting methods.
  ☞ Network Instrumentation Module NX-D15/25 Controller Module User's Manual, CP-SP-1308E.

When [Recovery action from error mode] is set to [1: Auto], and multi-loop cooperative control resolves the error, multi-loop cooperative control will automatically be reopened.
When [Recovery action from error mode] is set to [0: Manual], error mode will continue to operate with the [Operation status] value as [1: Error], even if the error is resolved.To reopen multi-loop cooperation control, set [Error mode release] to [1: Cancel].

Note

- For details on multi-loop cooperative control error occurrence and restoration:
  ☞ Chapter 6, "ZONE TEMPERATURE DIFFERENCE CONTROL", 6-5 Operation During Error/Restoration.
  ☞ Chapter 7, "OPTIMUM STARTUP CONTROL", 7-5 Operation During Error/Restoration.
  ☞ Chapter 8, "PEAK POWER SUPPRESSION CONTROL", 8-5 Operation During error/Restoration.

■ Multi-loop cooperative control error content and countermeasures

Describes the multi-loop cooperative control error content and countermeasures.

Error code	Failure name	Cause	Corrective action
10065	Loop 1 Hard failure	A hard failure occurred for the controller module • EEPROM read/write error • RAM read/write error • Base EEPROM read/write error • ROM (memory) malfunction	For the controller module in which there is an error loop, ☞ take corrective action according to Chapter 13, "TROUBLESHOOTING," in Network Instrumentation Module NX-D15/25 Controller Modules User's Manual of Functions, CP-SP-1308E.
10066	Loop 2 Hard failure		
10067	Loop 3 Hard failure		
10068	Loop 4 Hard failure		
10069	Loop 5 Hard failure		
10070	Loop 6 Hard failure		
10071	Loop 7 Hard failure		
10072	Loop 8 Hard failure		
10073	Loop 9 Hard failure		
10074	Loop 10 Hard failure		
10075	Loop 11 Hard failure		
10076	Loop 12 Hard failure		
10077	Loop 13 Hard failure		
10078	Loop 14 Hard failure		
10079	Loop 15 Hard failure		
10080	Loop 16 Hard failure		
10081	Loop 17 Hard failure		
10082	Loop 18 Hard failure		
10083	Loop 19 Hard failure		
10084	Loop 20 Hard failure		
10085	Loop 21 Hard failure		
10086	Loop 22 Hard failure		
10087	Loop 23 Hard failure		
10088	Loop 24 Hard failure		
10089	Loop 25 Hard failure		
10090	Loop 26 Hard failure		
10091	Loop 27 Hard failure		
10092	Loop 28 Hard failure		
10093	Loop 29 Hard failure		
10094	Loop 30 Hard failure		
10095	Loop 31 Hard failure		
10096	Loop 32 Hard failure		

Error code	Failure name	Cause	Corrective action
10129	Loop 1 Soft failure	A soft failure occurred in a controller module.	For the controller module in which there is an error loop, ☞ take corrective action according to Chapter 13, "TROUBLESHOOTING," in Network Instrumentation Module NX-D15/25 Controller Modules User's Manual of Functions, CP-SP-1308E.
10130	Loop 2 Soft failure		
10131	Loop 3 Soft failure		
10132	Loop 4 Soft failure		
10133	Loop 5 Soft failure		
10134	Loop 6 Soft failure		
10135	Loop 7 Soft failure		
10136	Loop 8 Soft failure		
10137	Loop 9 Soft failure		
10138	Loop 10 Soft failure		
10139	Loop 11 Soft failure		
10140	Loop 12 Soft failure		
10141	Loop 13 Soft failure		
10142	Loop 14 Soft failure		
10143	Loop 15 Soft failure		
10144	Loop 16 Soft failure		
10145	Loop 17 Soft failure		
10146	Loop 18 Soft failure		
10147	Loop 19 Soft failure		
10148	Loop 20 Soft failure		
10149	Loop 21 Soft failure		
10150	Loop 22 Soft failure		
10151	Loop 23 Soft failure		
10152	Loop 24 Soft failure		
10153	Loop 25 Soft failure		
10154	Loop 26 Soft failure		
10155	Loop 27 Soft failure		
10156	Loop 28 Soft failure		
10157	Loop 29 Soft failure		
10158	Loop 30 Soft failure		
10159	Loop 31 Soft failure		
10160	Loop 32 Soft failure		

Error code	Failure name	Cause	Corrective action
10385	Loop 1 Time proportional output initialization error	An error occurred during the controller module's time proportioning output initialization, while running the peak power suppression control's coupling function (8-3 Setting parameters ■ Coupling assignment) or transitioning to cooperative operation (8-3 Setting parameters ■ Operation mode setting).	For the controller module in which there is an error loop, ☞ take corrective action according to Chapter 13, "TROUBLESHOOTING," in Network Instrumentation Module NX-D15/25 Controller Modules User's Manual of Functions, CP-SP-1308E.
10386	Loop 2 Time proportional output initialization error		
10387	Loop 3 Time proportional output initialization error		
10388	Loop 4 Time proportional output initialization error		
10389	Loop 5 Time proportional output initialization error		
10390	Loop 6 Time proportional output initialization error		
10391	Loop 7 Time proportional output initialization error		
10392	Loop 8 Time proportional output initialization error		
10393	Loop 9 Time proportional output initialization error		
10394	Loop 10 Time proportional output initialization error		
10395	Loop 11 Time proportional output initialization error		
10396	Loop 12 Time proportional output initialization error		
10397	Loop 13 Time proportional output initialization error		
10398	Loop 14 Time proportional output initialization error		
10399	Loop 15 Time proportional output initialization error		
10400	Loop 16 Time proportional output initialization error		
10401	Loop 17 Time proportional output initialization error		
10402	Loop 18 Time proportional output initialization error		
10403	Loop 19 Time proportional output initialization error		
10404	Loop 20 Time proportional output initialization error		
10405	Loop 21 Time proportional output initialization error		
10406	Loop 22 Time proportional output initialization error		
10407	Loop 23 Time proportional output initialization error		
10408	Loop 24 Time proportional output initialization error		
10409	Loop 25 Time proportional output initialization error		
10410	Loop 26 Time proportional output initialization error		
10411	Loop 27 Time proportional output initialization error		
10412	Loop 28 Time proportional output initialization error		
10413	Loop 29 Time proportional output initialization error		
10414	Loop 30 Time proportional output initialization error		
10415	Loop 31 Time proportional output initialization error		
10416	Loop 32 Time proportional output initialization error		
10449	Preparation complete error	Uncomformity occurred during preparation between SV and controller module via peak power suppression control.	Check all module connections or turn the power ON again for all modules or Rewrite the project

Error code	Failure name	Cause	Corrective action
10450	Loop 1 connected module error	A communication error occurred between the supervisor module and a controller module.	Check all controller module connections Make sure the power is ON for all controller modules.
10451	Loop 2 connected module error		
10452	Loop 3 connected module error		
10453	Loop 4 connected module error		
10454	Loop 5 connected module error		
10455	Loop 6 connected module error		
10456	Loop 7 connected module error		
10457	Loop 8 connected module error		
10458	Loop 9 connected module error		
10459	Loop 10 connected module error		
10460	Loop 11 connected module error		
10461	Loop 12 connected module error		
10462	Loop 13 connected module error		
10463	Loop 14 connected module error		
10464	Loop 15 connected module error		
10465	Loop 16 connected module error		
10466	Loop 17 connected module error		
10467	Loop 18 connected module error		
10468	Loop 19 connected module error		
10469	Loop 20 connected module error		
10470	Loop 21 connected module error		
10471	Loop 22 connected module error		
10472	Loop 23 connected module error		
10473	Loop 24 connected module error		
10474	Loop 25 connected module error		
10475	Loop 26 connected module error		
10476	Loop 27 connected module error		
10477	Loop 28 connected module error		
10478	Loop 29 connected module error		
10479	Loop 30 connected module error		
10480	Loop 31 connected module error		
10481	Loop 32 connected module error		

Handling Precautions

- If the PV input wiring connected to a controller module is disconnected, an error occurs in the controller module, except when some linear input ranges are set.
  If the PV input wiring of a control loop that does not belong to any multi-loop cooperative control group is disconnected, causing an error in the controller module, the error affects all the loops that belong to the same controller module.
  For example, if loops 1 and 2 belong to a multi-loop control group, and loops 3 and 4, which receive thermocouple inputs, are independently operated by the same controller module, if the thermocouple wiring is disconnected, generating an error, the error condition is applied to loops 1 and 2 as well, resulting in an error status for the multi-loop cooperative control.

Chapter 16. MAINTENANCE, INSPECTION, AND DISPOSAL

16 - 1 Maintenance and Inspection

Cleaning :	When removing dirt from the instrument, wipe it off with a soft cloth rag.
Part replacement :	Do not replace any parts of this unit.
Fuse replacement :	When replacing the fuse connected to the electric wiring, always use the fuse that is recommended for your power unit.
Battery replacement :	☞ 16-2 Changing Batteries (page 16-2).

16 - 2 Changing Batteries

⚠CAUTION

Make sure to use the correct battery type (model No. 83170639-001).
Otherwise fire or device failure may occur.

IMPORTANT

If this module is used as a UL-certified product, the battery should be replaced by a person who not only uses but also maintains equipment that incorporates a UL-certified product.

The battery can be replaced whether the power is turned on or off.

■ When battery is low

When the low battery “BAT” LED is blinking slowly, the internal battery must be replaced immediately.Once the low battery lamp starts blinking slowly, data can be preserved for at least one more week (at normal temperature).

■ When the battery dies

If the battery dies, the low battery “BAT” LED will light up.When in this situation, do not turn the power OFF. You must immedietely replace the interior battery while in an energized state.
If you turn the device power OFF in this situation, the data will be erased and backup data cannot be saved via SRAM memory.

Handling Precautions

- If SRAM memory data is erased due to a dead battery, flash ROM backup data created in advance can be recovered at startup.
  If no backup data was created, the device will return to its original state at shipment.
  For details on how to create backup data via flash ROM,
  and how to confirm the date and time the final backup was created, refer to
  ☞ 9-2 Parameter backup/restoration.

■ How to replace a battery

Handling Precautions

- To replace the battery while the power is OFF, make sure the device was energized for at least 60 minutes before power is turned OFF, and perform the replacement within 10 minutes.Backup data may be lost on occasion.
- In the case of battery replacement while the power is on, it takes up to 3 minutes until the battery indicator turns off.
- When returning the battery folder to the device, firmly press down the removal lever until it clicks into place.

● **How to replace when turning the power OFF**

(1) Use the SLP-NX to backup device data on a computer.

(2) Make sure the device was energized for at least 60 minutes, then turn the power OFF.

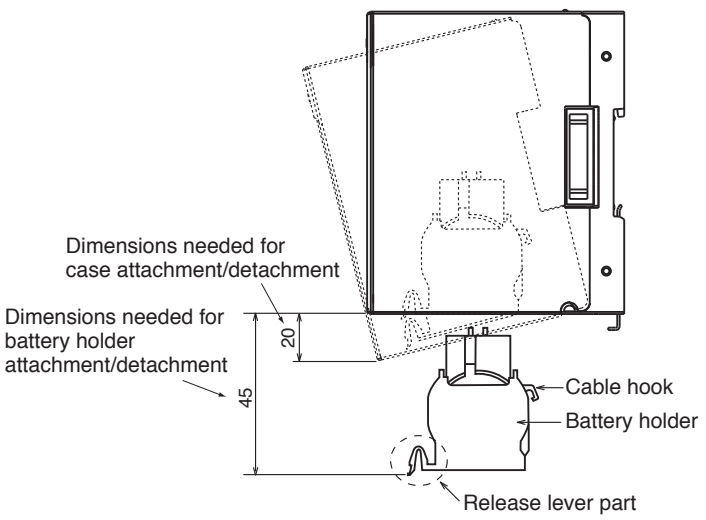
(3) Remove the device from the base, remove the battery cover from the bottom of the device, and take out the battery.

(4) Fit the replacement battery inside of the battery holder, attach it to the connecter, and hang it on the cable hanger.

(5) Return each battery folder to the device, and reconnect the device to the base.

(6) Using the SLP-NX, check if the module's date and time are correct. If they are not correct, correct them and then write the backup data that was stored in the PC in step (1) to the NX-S11/12/21.

Unit: mm



● **How to replace while in an energized state**

(1) Remove the battery holder from the bottom of the device, and remove it from the connecter.

(2) Take the battery out of the battery holder.

(3) Fit the replacement battery inside of the battery holder, attach it to the connecter, and hang it on the cable hanger.

(4) Return each battery folder to the device.

■ Battery disposal

When disposing of this battery, do it appropriately in accordance with local laws and regulations.

16 - 3 Disposal

When disposing of this module, remove the internal battery, and dispose of it appropriately as industrial waste in accordance with local laws and regulations.
For details on battery disposal:
☞ ■ Battery disposal (previous page).

Chapter 17. SPECIFICATIONS

17 - 1 SPECIFICATIONS

■ Standard conditions

Ambient temperature :	23±2 ºC
Ambient humidity :	60±5 % RH (without condensation)
Rated voltage :	24 V dc
Vibration :	0 m/s^2
Shock :	0 m/s^2
Installation angle :	Reference plane ±3°

■ Operating conditions

Ambient temperature :	0 to 50 ºC (at module underside when installed)
Ambient humidity :	10 to 90 % RH (without condensation)
Allowable operating voltage :	21.6 to 26.4 Vdc
Vibration :	0 to 3.2 m/s^2 (10 to 150 Hz for 2 h each in X, Y, and Z directions)
Shock :	0 to 9.8 m/s^2
Installation angle :	Reference plane ±3°
Dust :	0.3 mg/m^3 max.
Corrosive gas :	None
Altitude :	2000 m max.
Pollution degree :	2 (Same as normal office environment)

■ Transportation conditions

Ambient temperature :	–20 to +70 ºC
Ambient humidity :	5 to 95 % RH (without condensation)
Vibration :	0 to 9.8 m/s^2 (10 to 150 Hz for 2 h each in X, Y, and Z directions)
Shock :	0 to 300 m/s^2 (when installed to the DIN rail, 3 times in the up-down direction)
Package drop test :	60 cm drop height (using the free drop method for 1 corner, 3 ridges and 6 faces)

■ Other

Memory backup :	Nonvolatile memory (flash ROM) and SRAM with battery
Number of flash ROM writing cycles :	Over 100,000 cycles
Battery life :	3 years (when not energized, under standard conditions)
Clock IC :	Embedded RTC, ± 2.2 seconds per day, calendar included (under standard conditions)
Insulation resistance :	500 Vdc, 20 MΩ or more (power terminal (1) (2) and between the power terminal and insulated I/O terminals)
Voltage resistance :	500 Vac, 1 min (Power terminal (1) (2), and between the power terminal and insulated I/O terminals)
Power consumption :	4 W max. (under operating conditions)
Operation when power is turned ON :	Reset time approx. 10 seconds (time to normal operation, under standard conditions)
Power ON inrush current :	Max. 12 A (under operating conditions)
External dimensions :	30 × 100 × 85 mm
Case material :	Modified PPO resin
Case color :	Black
Standards compliance :	CE (EN 61326-1) and cUL (UL61010-1)
Mass :	200 g max.
Installation method :	DIN rail installation
Terminal screw tightening torque :	0.6±0.1 N·m
Service parts (sold separately) :	Replacement battery model No. 83170639-001

■ Communication specifications

- Ethernet communication

Protocol :	MODBUS/TCP (To connect to a host device, be sure to use a communication box. However, the NX-CB1RR communication box cannot be used.)

- RS-485 communication

Protocol :	Selectable from CPL, MODBUS/ASCII, MODBUS/RTU
Signal level :	Conforms to RS-485
Network :	Multi-drop method (Max. 31 slave stations to 1 host stations)
Communication/synchronization method :	Half-duplex, start/stop synchronization
Max. line length :	500 m
Communication wires :	3-wire system
Terminating resistor :	External (150 Ω 1/2 W min.)
Transmission speed :	Selectable from 4800, 9600, 19200, 38400, 57600, 115200 bps
Data length :	7 bits/8 bits
Stop bit length :	1 bits/2 bits
Parity bit :	Even parity, odd parity, or non-parity

- Loader communications

Dedicated loader :	SLP-NX-J70 or SLP-NX-J71

■ Communication box (sold separately, model no.: NX-CB1_ _ _ _ ,)

Ports :	4
Transmission path type :	• Ethernet port 1, 2 IEEE802.3/IEEE802.3u 10BASE-T/100BASE-TX (With auto-negotiation, Auto MDI/MDI-X functions) • Ethernet port 3, 4 IEEE802.3u 100BASE-TX (With Full Duplex, Auto MDI/MDI-X functions.Unless there is a connection between communication boxes, the auto-negotiation should be enabled for the connected devices.
Connector :	RJ-45
Cable :	UTP cable (4P), category 5e or higher (straight) (both ends ANSI/TIA/EIA-568-B)

■ Communication adapter (sold separately, model nos.: NX-CL1_ _ _ _ , NX-CR1_ _ _ _)

Ports :	1
Transmission path type :	IEEE802.3u 100BASE-TX (With Full Duplex, Auto MDI/MDI-X functions.The auto-negotiation function is enabled for the connected device.)
Connector :	RJ-45
Cable :	UTP cable (4P), category 5e or higher (straight) (both ends ANSI/TIA/EIA-568-B)

■ Terminal adapter (sold separately, model nos.: NX-TL1_ _ _ _ , NX-TR1_ _ _ _)

This adapter is for using as a chain connection ring communication terminal (with Ethernet communications within base).

■ Replacement battery (sold separately, model No.: 83170639-001)

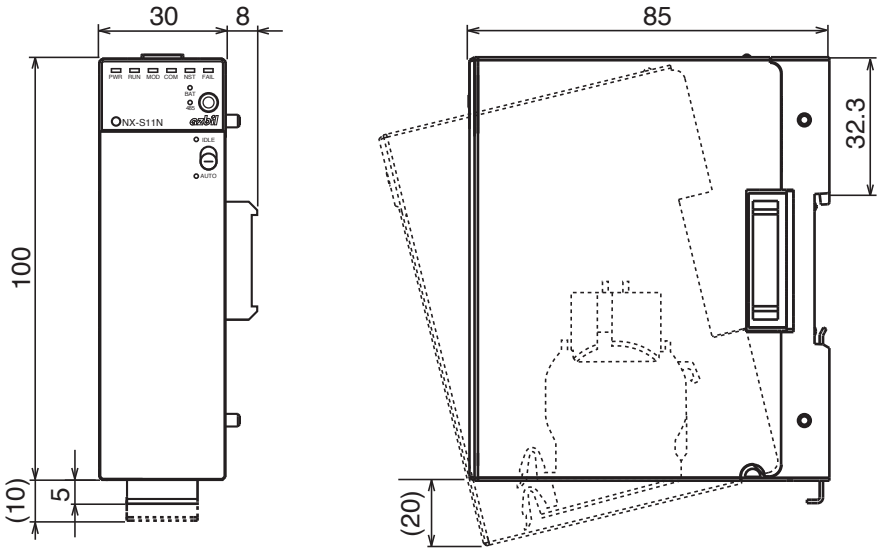
Configuration :	Button battery with connection cable
Quantity :	1 item

17 - 2 External Dimensions

■ Supervisor module

Although the NX-S11 is used in the following diagrams, the dimensions for the NX-S12 and NX-S21 are all the same.

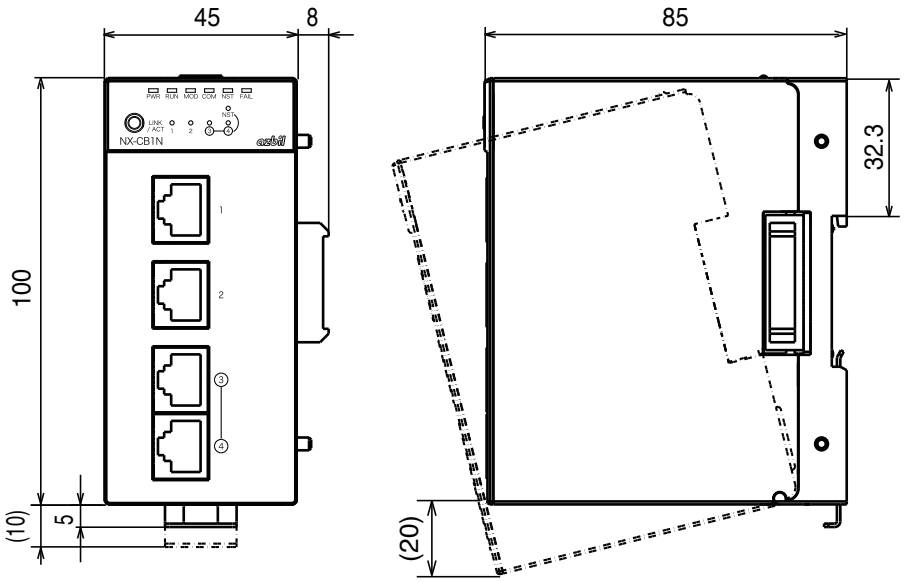
Unit: mm



■ Communication box

Although the NX-CB1N is used in the following diagrams, the dimensions for the NX-CB1R are all the same.

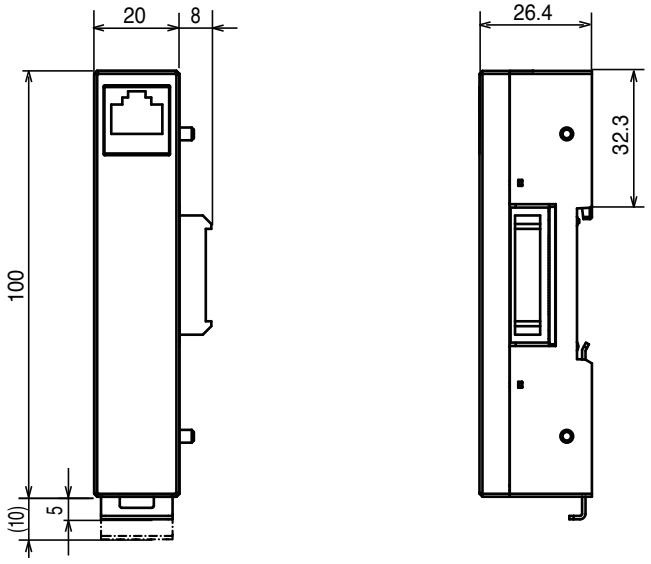
Unit: mm



■ Communication adapter

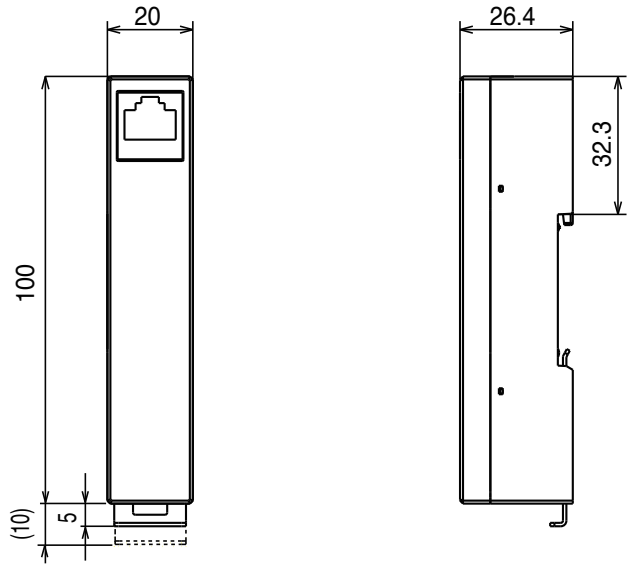
● For left connection

Unit :mm



● For right connection

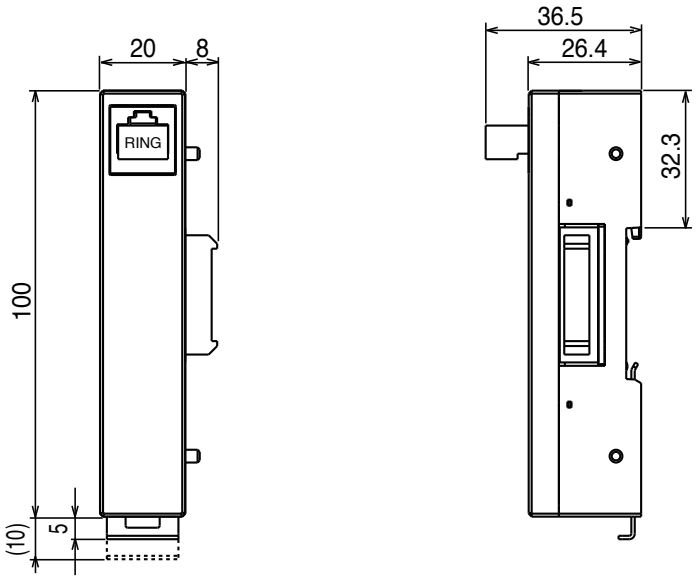
Unit :mm



■ Terminal adapter

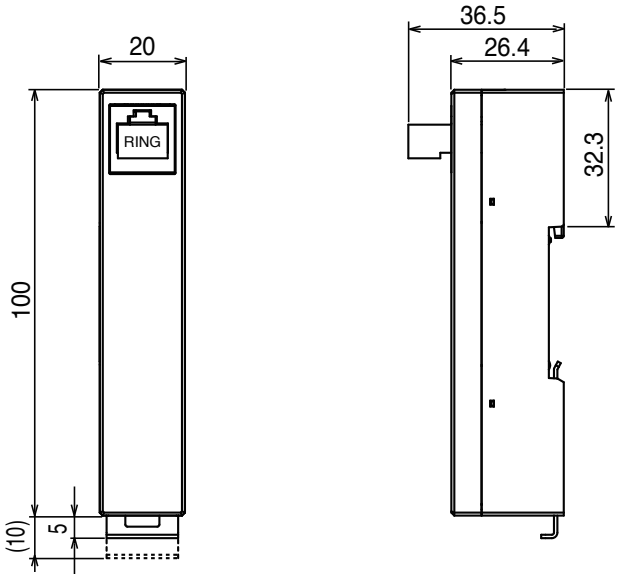
● For left connection

Unit :mm



● For right connection

Unit :mm



Appendix

Appendix - 1 ROM version history

This section explains functions added by ROM versions and the content of specification changes.

■ Version 1.02 (available in April, 2011)

● Added functions

Description
Individual loop operation mode was added to cooperative operation modes.

-MEMO-

Revision History

Printed date	Manual Number	Edition	Revised pages	Description
Feb. 2011	**CP-SP-1324E**	**1st Edition**		
July 2011		**2nd Edition**		Terms standardized.
			ii	Description and caution were added.
			iii	Cautions were added.
			1-3	Model selection table was changed.
			3-5	A description was added to Handling Precautions.
			4-5	Handling Precautions section was added.
			5-4	The diagram and table were changed, and the Handling
			5-10	Precautions section was added.
				Section 5-7 was added.
			6-3, 7-3	Settings in table were changed.
			6-4, 7-4, 8-4	Individual loop operation description was added to the table.
			6-8, 7-8, 8-11	"Error types" and "Operation when an error occurs" explanations were changed.
			7-7	Handling Precautions section was added.
			8-7	Handling Precautions were changed. Note was added.
			13-8, 14-8	Remarks were changed.
			14-3	Settings were changed in the table.
			14-12, 14-16, 14-20	Settings were changed in the table.
			15-5	New sections were added.
			15-6 ~ 15-10	Pages 15-5 to 15-9 in the previous edition were moved here.
			15-1	Failure name was changed.
			15-12	Pages 15-11 and 15-12 in the previous edition were deleted, and page 15-13 was moved here.
			15-13	Page 15-14 in the previous edition was moved here.
			16-2	"IMPORTANT" section was added. Explanation changed. Handling Precautions changed.
			17-1	"Other" section of Specifications was changed.
			17-2	Explanation added to communication specifications.
			Appendix-1	ROM version history was added.

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1.2 Warranty scope

In the event that azbil product has any failure attributable to azbil during the aforementioned warranty period, azbil shall, without charge, deliver a replacement for the said product to the place where you purchased, or repair the said product and deliver it to the aforementioned place.
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(1) For use under such conditions or in such environments as not stated in technical documents, including catalogs, specification, and instruction manuals
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[For use outside nuclear energy controlled areas] [For use of azbil Limit Switch For Nuclear Energy]
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[Railway, aircraft, vessels, vehicle equipment, etc.]
* Antidisaster/crime-prevention equipment
* Burning appliances
* Electrothermal equipment
* Amusement facilities
(3) Supply systems such as electricity/gas/water supply systems, large-scale communication systems, and traffic/air traffic control systems requiring high reliability
(4) Facilities that are to comply with regulations of governmental/public agencies or specific industries
(5) Machinery or equipment that may affect human lives, human bodies or properties
(6) Other machinery or equipment equivalent to those set forth in items (1) to (5) above which require high reliability and safety

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