Panasonic

Programmable Controller

FP7 Multi-wire Link Unit

User's Manual

Supported models

- AFP7MW

WUME-FP7MW-06

2024.4 | industry.panasonic.com/

(MEMO)

Introduction

Thank you for buying a Panasonic product. Before you use the product, please carefully read the installation instructions and the user's manual, and understand their contents in detail to use the product properly.

Types of Manual

- There are different types of user's manual for the FP7 series, as listed below. Please refer to a relevant manual for the unit and purpose of your use.
- The manuals can be downloaded on our website: https://industry.panasonic.com/global/en/downloads/?tab=manual

Unit name or purpose of use	Manual name	Manual code
FP7 Power Supply Unit	FP7 CPU Unit User's Manual (Hardware)	WUME-FP7CPUH
FP7 CPU Unit	FP7 CPU Unit Command Reference Manual	WUME-FP7CPUPGR
	FP7 CPU Unit User's Manual (Logging Trace Function)	WUME-FP7CPULOG
	FP7 CPU Unit User's Manual (Security Function)	WUME-FP7CPUSEC
Instructions for Built-in LAN Port	FP7 CPU Unit User's Manual (LAN Port Communication)	WUME-FP7LAN
	FP7 CPU Unit User's Manual (Ethernet Expansion Function)	WUME-FP7CPUETEX
	FP7 CPU Unit User's Manual (EtherNet/IP Communication)	WUME-FP7CPUEIP
	Web Server Function Manual	WUME-FP7WEB
Instructions for Built-in COM Port	FP7 Series User's Manual (SCU Communication)	WUME-FP7COM
FP7 Extension Cassette (Communication) (RS-232C / RS485 type)		
FP7 Extension Cassette (Communication) (Ethernet Type)	FP7 Series User's Manual (Communication Cassette Ethernet Type)	WUME-FP7CCET
FP7 Extension (Function) Cassette Analog Cassette	FP7 Analog Cassette User's Manual	WUME-FP7FCA
FP7 Digital Input / Output Unit	FP7 Digital Input / Output Unit User's Manual	WUME-FP7DIO
FP7 Analog Input Unit	FP7 Analog Input Unit User's Manual	WUME-FP7AIH
FP7 Analog Output Unit	FP7 Analog Output Unit User's Manual	WUME-FP7AOH
FP7 Thermocouple Multi-analog Input Unit	FP7 Thermocouple Multi-analog Input Unit FP7 RTD Input Unit User's Manual	WUME-FP7TCRTD
FP7 RTD Input Unit		
FP7 Multi Input / Output Unit	FP7 Multi Input / Output Unit User's Manual	WUME-FP7MXY
FP7 High-speed counter unit	FP7 High-speed Counter Unit User's Manual	WUME-FP7HSC

Unit name or purpose of use	Manual name	Manual code
FP7 Pulse Output Unit	FP7 Pulse Output Unit User's Manual	WUME-FP7PG
FP7 Positioning Unit	FP7 Positioning Unit User's Manual	WUME-FP7POSP
FP7 Serial Communication Unit	FP7 Series User's Manual (SCU Communication)	WUME-FP7COM
FP7 Multi-wire Link Unit	FP7 Multi-wire Link Unit User's Manual	WUME-FP7MW
FP7 Motion Control Unit	FP7 Motion Control Unit User's Manual	WUME-FP7MCEC
PHLS System	PHLS System User's Manual	WUME-PHLS
Programming Software FPWIN GR7	FPWIN GR7 Introduction Guidance	WUME-FPWINGR7

Safety Precautions

- Observe the following precautions to ensure personal safety or to prevent accidents.
- Before performing installation, operation, maintenance, or inspection, read this manual carefully to understand how to use the product correctly.
- Make sure that you fully understand the product, information on safety, and other precautions.
- This manual uses two safety symbols, different levels of safety precautions “Warning” and “Caution”, to indicate .

⚠ **WARNING**	Indicates a potentially hazardous situation which, if not handled correctly, could result in death or serious injury of the user.

- Take safety measures outside the product to ensure the safety of the entire system even if this product fails or an error occurs due to external factors.
- Do not use this product in atmospheres that contain flammable gases.
  Doing so may result in explosion.
- Do not throw this product into the fire.
  Doing so may cause the batteries or other electronic parts to explode.

⚠ **CAUTION**	Indicates a potentially hazardous situation which, if not handled correctly, could result in injury to the user or property damage.

- To prevent abnormal heat generation or smoke generation, use this product with some leeway from the guaranteed characteristics and performance values of the product.
- Do not disassemble or modify this product.
  Doing so may result in abnormal heat generation or smoke generation.
- Do not touch any terminals while the power is on.
  Doing so may result in electrical shock.
- Configure emergency stop and interlock circuits outside this product.
- Connect wires and connectors properly.
  Failure to do so may result in abnormal heat generation or smoke generation.
- Do not perform work (such as connection or removal) with the power turned on.
  Doing so may result in electrical shock.
- If this product is used in any way that is not specified by Panasonic, its protection function may be impaired.
- This product has been developed and manufactured for industrial use only.

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Handling Precautions

■ In this manual, the following symbols are used to indicate safety information that must be observed.

Stop	Indicates an action that is prohibited or a matter that requires caution.
!	Indicates an action that must be taken.
i Info.	Indicates supplemental information.
Note	Indicates details about the subject in question or information useful to remember.

1 2 Procedure	Indicates operation procedures.

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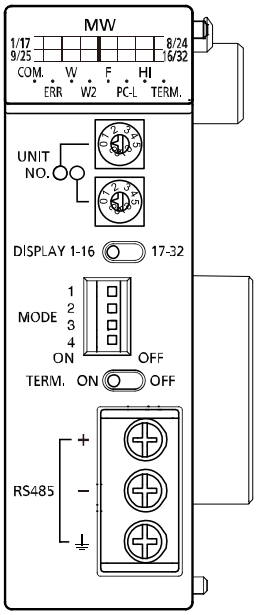
1 System Configuration

1.1 Unit Functions and Types

1.1.1 Functions of Unit



■ Overview

FP7 Multi-wire Link Unit can be used as an interface unit connected to any of the following networks by switching with the mode setting switches of the unit.

Network	Transmission line	Trans-mission distance	Baud rate	Number of units	Main functions
MEWNET-W	Twisted pair	Max. 800 m	500k bit/s	Max. 16 units	PLC Link
				Max. 32 units	Data transmission and remote programming
MEWNET-W2	Twisted pair	Max. 800 m	500k bit/s	Max. 32 units	PLC link, data transmission and remote programming
		Max. 1200 m	250k bit/s		
MEWNET-F	Twisted pair	Max. 700 m	500k bit/s	Max. 32 units	Remote I/O control
	VCTF	Max. 400 m			

■ Term: Product name

To simplify the expression in the manual, the product name is abbreviated to "FP7 MW Unit".

1.1.2 Unit Type

■ Unit Type

Name	Specifications	Product number
FP7 Multi-wire Link Unit	Unit for connecting the FP7 series to MEWNET-W, MEWNET-W2 or MEWNET-F.	AFP7MW

■ Product related to MEWNET-W / MEWNET-W2

Item name	Specifications	Product number
FP2 Multi-wire Link Unit	Unit for connecting the conventional model FP2 series to MEWNET-W, MEWNET-W2 or MEWNET-F.	AFP2720

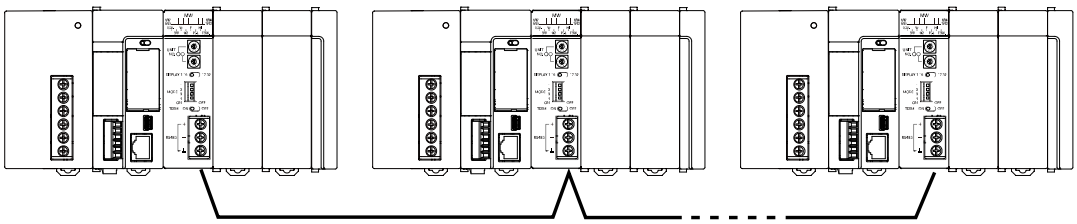
■ Product related to MEWNET-F

The following are connectable products when using FP7 MW Unit in F mode.

Item name	Specifications	Product number
FP I/O terminal unit (Primary unit)	DC input: 8 points	AFP87421
	DC input: 16 points	AFP87422
	Transistor output: 8 points	AFP87423
	Transistor output: 16 points	AFP87424
FP I/O terminal unit (Expansion unit)	DC input: 8 points	AFP87425
	DC input: 16 points	AFP87426
	Transistor output: 8 points	AFP87427
	Transistor output: 16 points	AFP87428
FP I/O terminal board (Terminal block type)	DC Input: 16 points, Relay output: 8 points	AFP87432
	DC input: 16 points, Transistor output: 16 points	AFP87444
FP I/O terminal board (MIL connector type)	DC input: 16 points, Transistor output: 16 points, Power supply: 12 VDC	AFP87445
	DC input: 16 points, Transistor output: 16 points, Power supply: 24 VDC	AFP87446

1.2 Network Type

1.2.1 MEWNET-W / MEWNET-W2



■ Overview

- They are used to link data between PLCs connected to each network.
- The PLC link function is used to share and transmit exclusive internal relays "link relays (L)" and data registers "link registers (LD)" between PLCs cyclically. For MEWNET-W2, "internal relays (WR)" and "data registers (DT)" can be specified as well as "link relays (L)" and "link registers (LD)".
- With the data transfer function, data can be transferred from a specified arbitrary source to arbitrary destination by executing the SEND/RECV instructions with user programs.
- Also, monitoring or programming destination PLCs can also be possible via network.
- Either MEWNET-W or MEWNET-W2 can be used in the same network. It is selected by the switch on the FP7 MW Unit.

■ Specifications

Item	Specifications		
	MEWNET-W	MEWNET-W2	
Communication method	Token bus		
Transmission system	Baseband		
Transmission line	Twisted pair cable		
Transmission distance (Total length)	Max. 800 m	Max. 800 m	Max. 1200 m
Baud rate	500 kbit/s	500 kbit/s	250 kbit/s
Function / Number of units	PLC link: Max. 16 units	PLC link: Max. 32 units	
	data transfer: Max. 32 units	data transfer: Max. 32 units	
PLC link capacity Per unit	Link relay: 1,024 points	Link relay: 4,096 points	
	Link register: 128 words	Link register: 4,096 words	
Other functions	Remote programming (USB port, COM port), Computer link, Hierarchy link		
Interface	Conforming to RS-485		
RAS function	Hardware self-diagnosis function		

(Note 1) For MEWNET-W2, the transmission distance depends on the setting of baud rate. The baud rate is set by the mode setting switches of the unit.

■ Example of application

They are used when using the following Panasonic PLCs and link function.

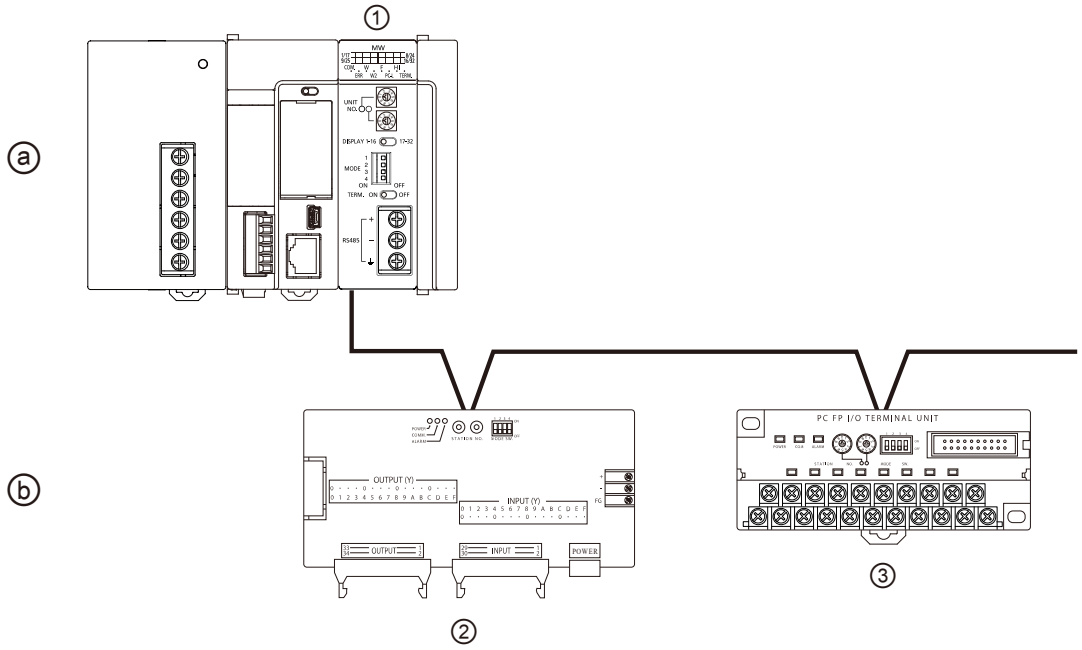
- FP7 (Using FP7 MW Unit)
- FP2/FP2SH (Using FP2 MW Unit)

Note

- MEWNET-W can also be connected to the conventional models FP3/FP10SH (discontinued products) with the MEWNET-W link function.

1.2.2 MEWNET-F

■ Configuration diagram



(a)	Master station	(1)	FP7 MW Unit		
(b)	Slave station	(2)	FP I/O terminal board	(3)	FP I/O terminal unit

■ Overview

- A remote I/O system in which the FP7 is applied as a master unit can be established. I/O in a remote place can be controlled via a two-wire cable so that saving wiring, reducing man-hours and saving space is achievable.
- Up to 32 slave units, or 4096 I/O points can be controlled per FP7 MW Unit.
- The I/O of slave units can be treated as external input (X) and external output (Y) as well as general I/O devices.

■ Specifications

Item	Specifications
Communication method	Polling
Transmission system	Baseband
Transmission line	Twisted pair cable / VCTF cable
Transmission distance (Note 1)	Max. 700 m (when using twisted pair cable) Max. 400 m (when using VCTF cable)
Baud rate	500 kbps
No. of slave units	Max. 32 units (Per master unit)
Controllable I/O points (Note 2)	Max. 4,096 units (Per master unit)
Interface	Conforming to RS-485
Transmission error check	CRC method

(Note 1) The transmission distance varies according to the used cable and unit.

(Note 2) The number of I/O points that can be actually controlled varies according to the configuration.

■ Example of application

The remote I/O control can be performed by connecting slave units compliant with Panasonic MEWNET-F.

- FP I/O terminal board
- FP I/O terminal unit

Note

- It cannot be connected to FP2 Slave Unit or FP3 Slave Unit (discontinued products).

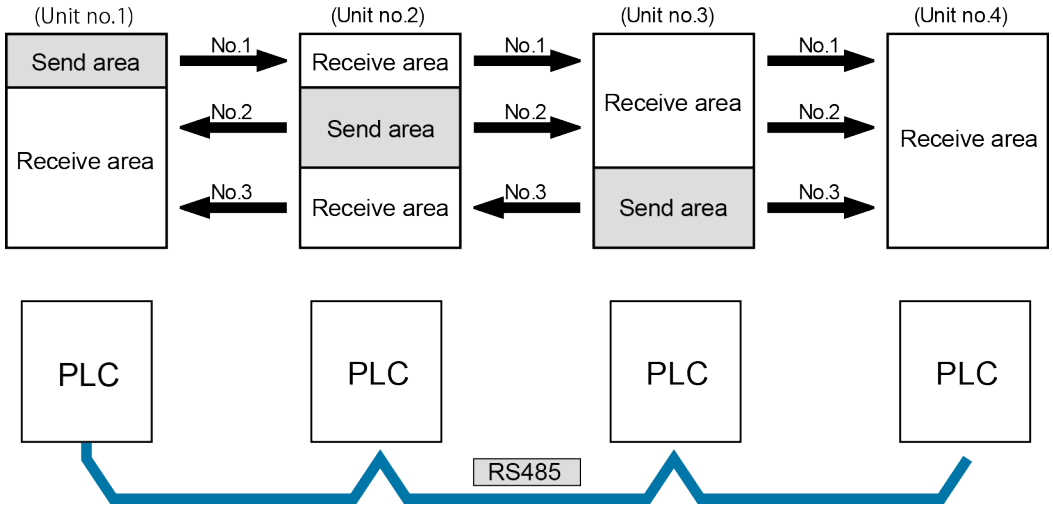
1.3 Function Overview

1.3.1 PLC Link (MEWNET-W / MEWNET-W2)

■ Overview of Function

- The PLC link function is a communication function which enables data sharing between PLCs easily using link relays (L) and link registers (LD) transmitted cyclically.
- For MEWNET-F, data of link relays (1008 points) and link registers (128 words) can be converted between max. 16 PLC units.
- For MEWNET-W2, data of link relays (4,096 points) and link registers (4,096 words) can be converted between max. 32 PLC units. Also, internal relays (WR) and data registers (DT) can be specified as well as link relays (L) and link registers (LD).
- Send area and receive area can be allocated for each PLC connected to the network. They are set from the configuration menu of tool software.

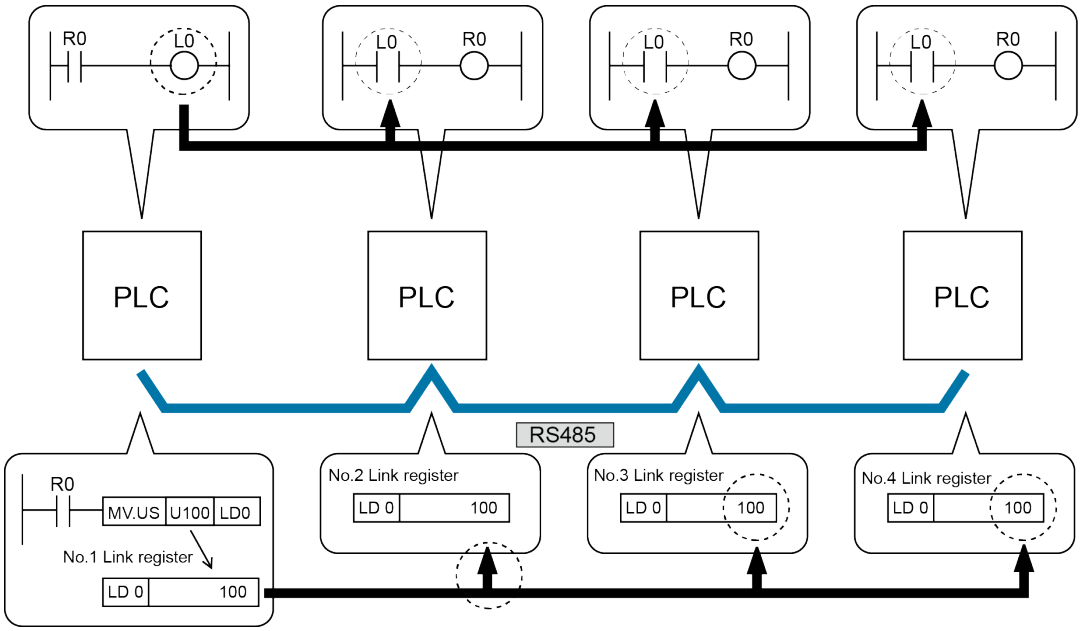
Example of PLC link allocation



- Either one of MEWNET-W and MEWNET-W2 can be used in the same network. It is selected by the switch on the FP7 MW Unit.

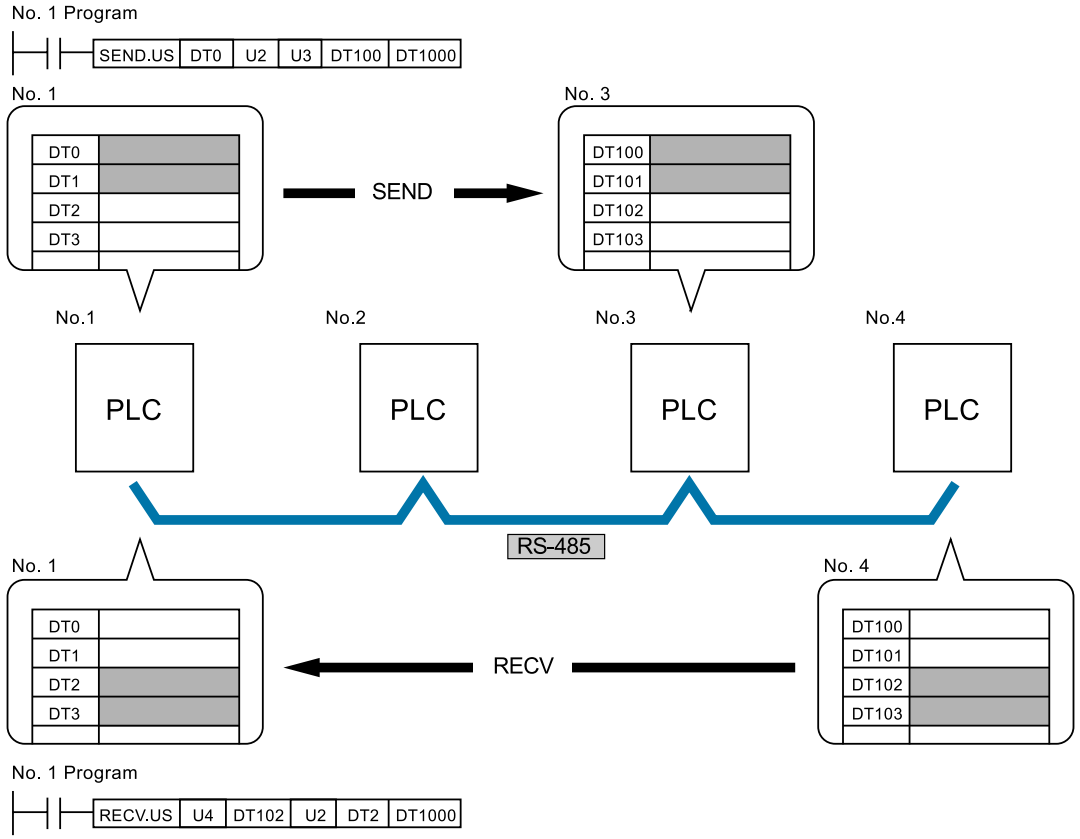
■ Role of link relays and link registers

- If the link relay contact for one PLC goes on, the same link relay also goes on in each of the other PLCs connected to the network.
- Likewise, if the value of a link register in one PLC is changed, the values of the same link register are changed in all PLCs on the same network.



1.3.2 Data Transfer (MEWNT-W / MEWNET-W2)

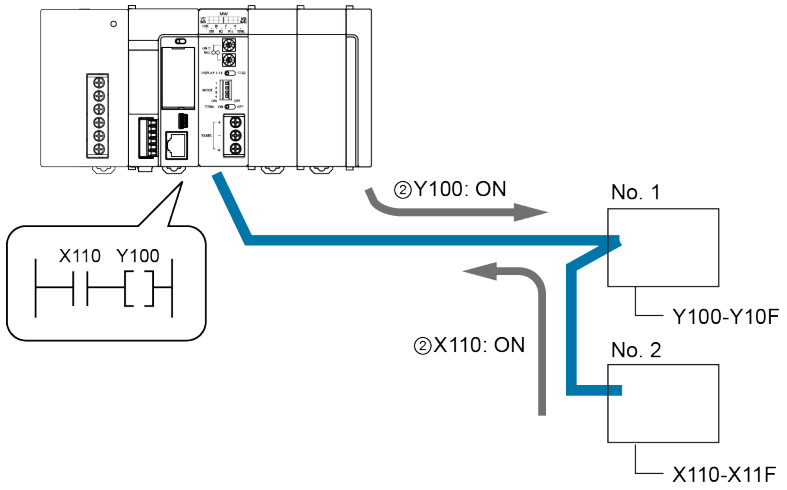
- With the data transfer function, data can be transferred from a specified arbitrary source to arbitrary destination by executing the SEND/RECV instructions with user programs.
- Destination PLCs need no program for sending/receiving data.



(Note 1) For the FP7 MW Unit, either one of SEND and RECV instructions can be executed.

1.3.3 Remote I/O Control (MEWNET-F)

The I/O of a slave unit can be controlled on the CPU of the system (master unit) which FP7 MW (F mode) Unit has been connected. The remote I/O control is made possible by transferring I/O information to a slave unit according to a sequence in the CPU on the master unit.



1.3.4 Other Functions (MEWNET-W / MEWNE-W2)

The functions are available besides the PLC link and data transfer functions.

Functions	Overview
Remote programming	Enables PLCs in the same system connected to the network to be operated by tool software remotely. Monitoring contacts and registers, switching the mode and rewriting programs can be performed.
Computer Link	Enables PLCs connected to the network to be operated by MEWTOCOL commands from a high-order PC or high-order PLC.
Hierarchy Link	Enables PLCs in different hierarchies to be operated by MEWTCOL commands through multiple FP7 MW Units.

1.4 Restrictions on Combinations of Units

1.4.1 Restrictions on Power Consumption

The unit has the following internal current consumption. Make sure that the total current consumption is within the capacity of the power supply with consideration of all other units used in combination with this unit.

Name	Product no.	Consumption current
FP7 MW Unit	AFP7MW	100mA or less

1.4.2 Applicable Versions of Unit and Software

The following version of CPU unit and software are required.

Name	Product no.	Applicable versions		
		CPU unit		FPWINGR7
		CPS4* CPS3*	CPS2*	
FP7 MW Unit	AFP7MW	Ver.4.40 or later	Ver.1.40 or later	Ver.2.17 or later

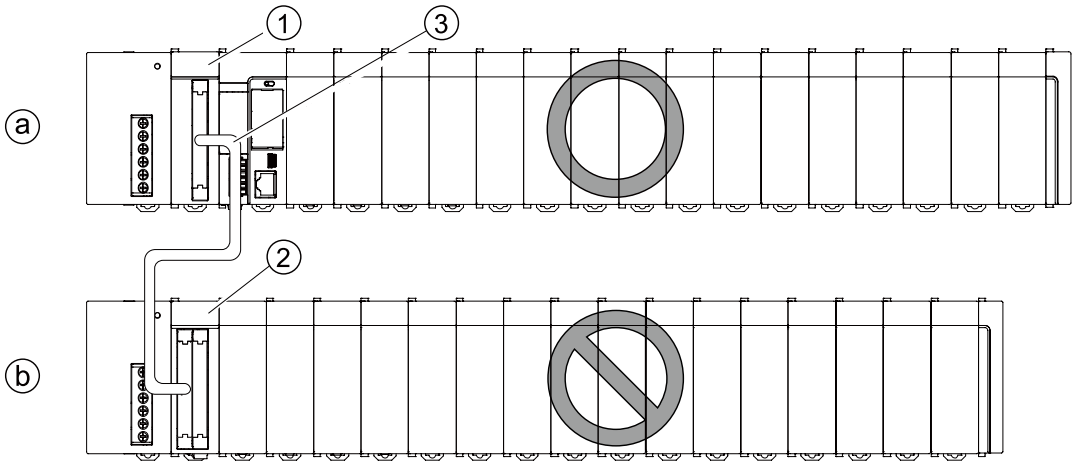
1.4.3 Restrictions on Number of Installed Units and Used Functions

There are following restrictions depending on functions to be used.

		Number of usable units	
Total number of units		Max. 6 units	
	MEWNET-W	Max. 4 units	Of which, PLC link is max. 2 units.
	MEWNET-W2	Max. 4 units	Of which, PLC link is max. 2 units.
	MEWNET-F	Max. 4 units	

1.4.4 Restrictions on Installation Position

The FP7 MW Unit can be installed in the base block only. It cannot be installed in the expansion block.



(a)	Base block	(1)	Expansion master unit	(3)	Expansion cable
(b)	Expansion block	(2)	Expansion Slave Unit		

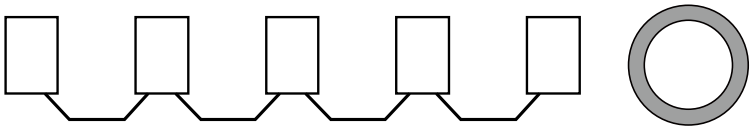
1.5 Restrictions on Communication

1.5.1 Restrictions on Network Configuration

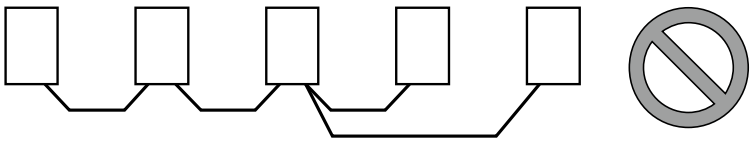
■ Connection method of transmission line

Arrange the transmission line by connecting like drawing with one stroke. Never run two wires from a single unit to two other units.

Example of correction connection

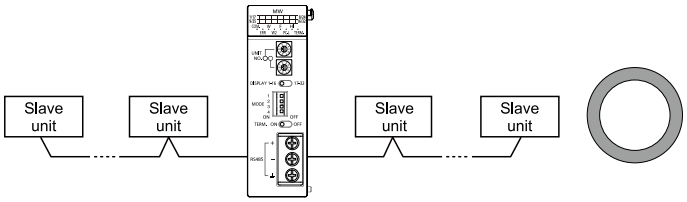


Example of wrong connection



■ Setting terminal unit

To be a terminal unit, set the switch of the unit. Also, for MEWNET-F, the FP7 MW Unit can be placed in the middle.



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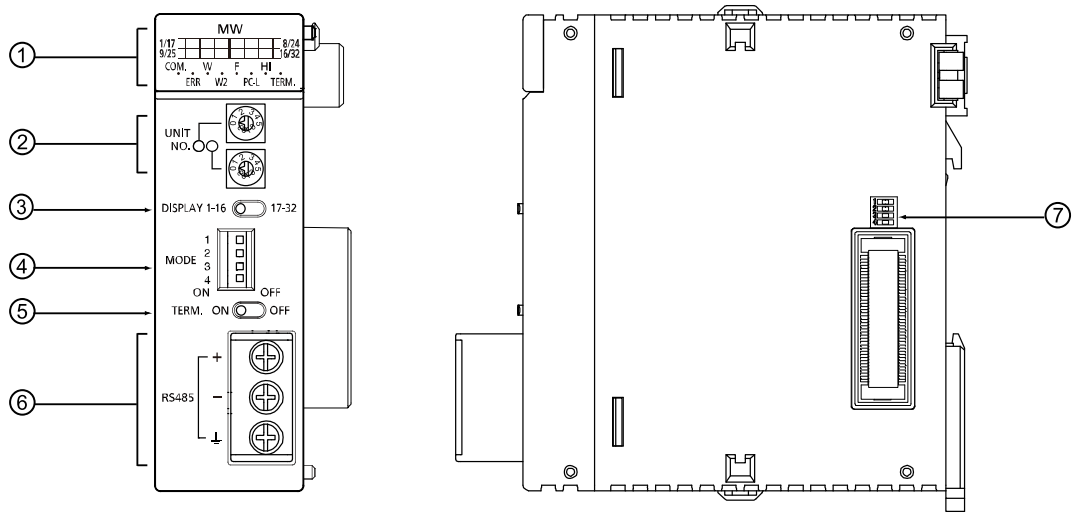
2 Names and Functions of Parts

2.1 Names and Functions of Parts

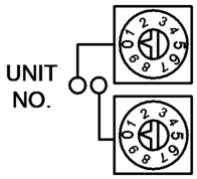


■ Names and Functions of Parts

Number	Name	Functions
(1)	Operation Monitor LEDs	Indicates the operation state of the unit such as the communication state, error state and selected communication mode.
(2)	Unit number selector	Sets the unit number of the own unit in the network. It is used in the Wor W2 mode only.
(3)	Slave unit number display selector	Switches the slave unit number display of the operation monitor LEDs. It is used in the F mode only.
(4)	Mode setting switch	Sets the operation mode (network type, PLC link mode, non-PLC link mode and baud rate).
(5)	Terminator setting switch	Sets the terminating unit.
(6)	Connection terminal for transmission line	For connecting the communication cables.
(7)	Side switch	This switch is used for the system. Use this at the factory default (all off) as it is.

2.2 Switch Settings

■ Unit number selector (For W mode / W2 mode)



	W mode	W2 mode
PLC link (Corresponding unit numbers)	01 to 16	01 to 32
Data transfer (Corresponding unit numbers)	01 to 32	01 to 64 (Note 2)

(Note 1) The factory default setting is "00". When using tool software or user program to set unit numbers, set "00".

(Note 2) It shows the range of settable unit numbers. The maximum number of units that can be actually used is 32.

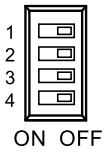
■ Slave unit number display selector (For F mode)

Switches the slave unit number display of the operation monitor LEDs.

DISPLAY 1-16  17-32

Item	Settings
1-16	Displays the connected units nos. 1 to 16.
17-32	Displays the connected units nos. 1 to 32.

■ Mode setting switch



Item		Operation		
		W mode	W2 mode	F mode
Operation mode	1	OFF: PLC link mode ON: Non-PLC link mode		OFF: Stops communication in case of communication error. ON: Continues communication in case of communication error.
Mode setting	2	OFF	ON	ON
	3	OFF	OFF	ON
Baud rate	4	500 kbps fixed	OFF: 500 kbps ON: 250 kbps	500 kbps fixed

(Note 1) Be sure the power is off when changing the switches.

(Note 2) All the switches are set to OFF at the factory.

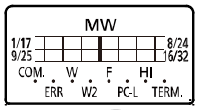
■ Terminator setting switch

Item	Settings
ON	Set this unit as a terminal unit.
OFF	Not set this unit as a terminal unit.

■ Side switch

Do not operate the dip switch on the side of the unit. All the switches are set to OFF at the factory.

2.3 Operation Monitor LEDs



○: Lights ◕: Flashing (T=0.2s) ◐: Flashing slowly (T=1.0s) ●: Goes out

LED	Description	Operation		
		W mode	**W2 mode**	**F mode**
COM.	Communication status	○ : Communicating (Normal) ● : Communication error (Transmission is not available)	○ : Communicating (Normal) ◐ : Communication buffer overloaded ● : Communication error (Transmission is not available)	○ : Waiting for communication ◕ : Communicating (Normal) ◐ : Stop mode transmitting ● : Communication error
ERR	Hardware/ Software error	○ : Out of control/ Self-diagnostic error ◐ : Various errors ● : Normal operation	○ : Out of control/Self-diagnostic error ◐ : Various errors ● : Normal operation	○ : Out of control/ Self-diagnostic error ◕ Setup error ● : Normal operation
W	W mode	○ : Lights	● : Goes out	● : Goes out
W2	W2 mode	● : Goes out	○ : Lights	● : Goes out
F	F mode	● : Goes out	● : Goes out	○ : Lights
PC-L	PLC link state	○ : PLC link operation state ● : PLC link stop/ Non-PLC link operation state	○ : PLC link operation state ◕ : PLC link operation impossible ● : Non-PLC link operation state	● : Not used
HI	Baud rate	○ : 500 kbps fixed	○ : 500 kbps ● : 250 kbps	○ : 500 kbps fixed
TERM.	Terminal unit	○ : Terminal unit ● : Not terminal unit		
1/17-8/24 9/25-16/32	Slave unit display	● : Not used		○ : Connected ● : Not connected

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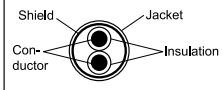
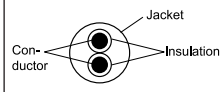
3 Wiring

3.1 Applicable Cables and Solderless Terminals

3.1.1 Applicable cables

■ Applicable cables

Classification	Cross-sectional view	Conductor		Insulator		Cable diam.	Sample appropriate cable
		Size	Resistance (at 20°C)	Material	Thickness		
Shielded twisted pair		1.25 mm^2 (AWG16) or more	Max.16.8 Ω/km	Polyethylene	Max. 0.5 mm	Approx. 8.5 mm	Sumiden Hitachi Cable Ltd. KPEV-S 1.25 mm^2 × 1P
		0.5 mm^2 (AWG20)	Max. 33.4 Ω/km	Polyethylene	Max. 0.5 mm	Approx. 7.0 mm	Sumiden Hitachi Cable Ltd. KPEV-S 0.5 mm^2 × 1P
VCTF		0.75 mm^2 (AWG18) or more	Max. 25.1 Ω/km	Polychlorinated biphenyl	Max. 0.6 mm	Approx. 6.6 mm	VCTF 0.75 mm^2 × 2C (JIS) or equivalent

■ Applicable cables and transmission distance

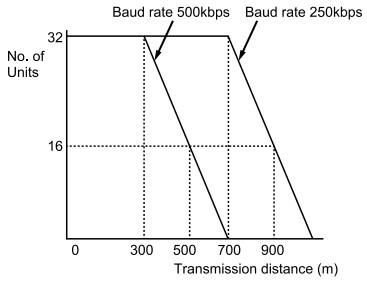
Type	Transmission distance (Total length)			
	W mode	W2 mode		F mode
		500k bit/s	250k bit/s	
Shielded twisted-pair cable Sumiden Hitachi Cable Ltd. KPEV-S 1P × 1.25 mm2 or equivalent	Max. 800 m	Max. 800 m	Max. 1200 m	Max. 700 m
Shielded twisted-pair cable Sumiden HST Cable, Ltd. KPEV-S 1P × 0.5 mm2 or equivalent	Max. 700 m	Max. 700 m	Max. 1100 m	Max. 600 m
VCTF VCTF2C×0.75mm2(JIS) or equivalent	Not available			Max. 400 m

Note

- Configure all the wiring systems using the same type of cables. Do not mix different types of cables.
- Polyvinyl chloride has worse electrical charactersitics than polyethylene, the total transmission distance is shorter.
- Use shielded twisted pair cables in noisy environments.

■ Example of characteristic (when using KPEV-S1Px0.5mm2 or equivalent)

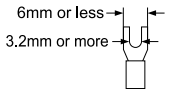
When using KPEV-S1Px0.5mm2 or equivalent, reduce the transmission distance or the number of units.



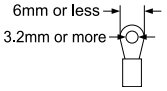
3.1.2 Terminals

M3 terminal screws are used for the terminal. The following solderless terminals are recommended for the wiring to the terminals

<Fork type terminal>



<Round type terminal>



Suitable solderless terminals

Manufacturer	Shape	Part No.	Suitable wires
J.S.T. Mfg Co.,Ltd	Fork type	1.25-B3A	0.25 to 1.65 mm^2
	Round type	1.25-MS3	

Suitable wires (strand wire)

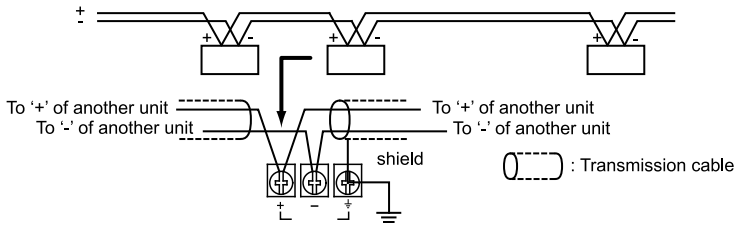
Size: AWG20-12, Rated temperature: 60/75°C

Tightening torque: 0.5–0.6 N·m (5.3 lb-in)

3.2 Wiring

3.2.1 Wiring of Transmission Line

- As for transmission cables, connect RS-485 terminals, positive (+) to positive (+) and negative (-) to negative (-).
- Connect transmission cables from one unit to the next. Never run two wires from a single unit to two other units.
- When using a shielded transmission cable, ground the one end of the shield. Never ground at the both ends of the cable.



4 MEWNET-W

4.1 Overview

The following are main steps to use the FP7 MW Unit in W mode.

	Item	Used tool	Outline of operation
(1)	Set the switches of the unit.	-	Select "W mode" by the mode selector switches. Set whether to use PLC link or not.
			Specify unit number. When setting it in the configuration of tool software or user program, set it to "00".
(2)	Registration in I/O map of the unit	FPWIN GR7	Register the unit configuration of the FP7 system in the "I/O map" dialog box.
			Confirm slot numbers specified for each instruction.
			When using the data transfer function, confirm the number of the flag to be checked when executing SEND/RECV instructions.
(3)	Unit Configuration	FPWIN GR7	Specify unit number. (When selecting "00" by the unit number selector of the unit.) (Note 1)
			Allocate link relays and link registers used for the PLC link. (Note 2)
			Set a device in which the communication state (transmission assurance relay, operation mode relay) is copied.
(4)	Download the settings to the unit and confirm the operation state.	FPWIN GR7	Download "I/O map" and "unit configuration" information to the FP7 CPU Unit.
			Switch the mode to RUN mode.
			Confirm the state if the process is normally performed. The communication state and error information can be confirmed by the communication state information copy destination device, system relays or system data registers. Also, detailed information can be read by PMGET instruction.

(Note 1) The unit number can be set by a user program.

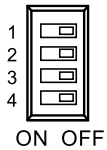
(Note 2) For MEWNET-W, link relays and link registers can be allocated by user programs.

4.2 Setting the Switches of the Unit

For using the FP7 MW Unit as W link unit, the switches on the front of the unit need to be set.

■ Mode setting switch

Each mode is set with the four dip switches on the front of the unit.



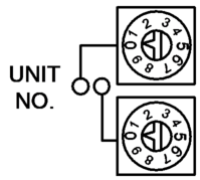
No.	Item	Range
1	Operation mode	OFF: PLC link mode, ON: Non-PLC link mode
2	Mode	Turn off the both 2 and 3 to activate the unit as the unit for "MEWNET-W".
3		
4	Baud rate	For "MEWNET-W", it is fixed at 500 kbps.

(Note 1) All the switches are set to OFF at the factory.

(Note 2) Be sure the power is off when changing the switches.

■ Unit number selector

Specify the own unit number by the two rotary switches on the front of the unit.



Range	Description
01 to 16	For target unit of PLC link
01 to 32	For target unit of data transfer
00	When setting it in the configuration of the tool software or user program (PMSET/pPMSET instruction).

(Note 1) Be sure the power is off when changing the switches.

4.3 Configuration

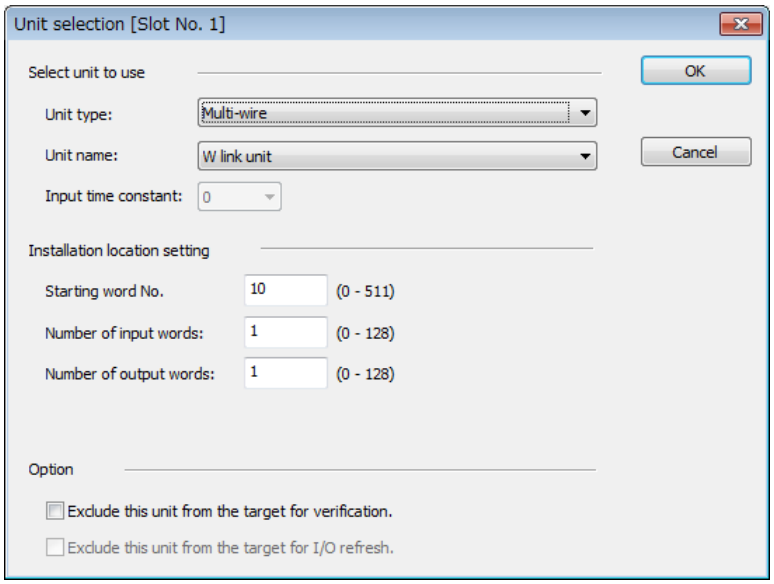
4.3.1 Registration in I/O Map

The unit is allocated to the I/O map in the tool software FPWIN GR7.

■ **Allocation method**

Procedure

1. Select **Options**>**FP7 Configuration**>**I/O map** in the menu bar.
2. Double-click the target slot where the operating unit is to be inserted.
   The "Unit Selection" dialog box is displayed.
3. Select "Multi-wire" and "W2 link unit" in the "Select unit to use" field.



4. Press the [[OK]] button.

4.3.2 No. of Occupied I/O Points of MEWNET-W

In W mode, the FP7 MW Unit occupies only one word. It is allocated as a flag for executing the data transfer function (SEND/RECV instruction).

Mode	No. of points
W mode	1 word / Output: 1 word (Fixed)

■ I/O Allocation

I/O number	Name	Description
X100	Master communication clear to send flag	Turns ON when the unit number of MEWNET-W has been set and the unit is in RUN mode.
Y100	Master communication send active flag	Turns ON during sending data based on the SEND/RECV instruction. Turns OFF when the ED instruction is executed after the completion of the response receive processing.

(Note 1) Each contact in the table above is used for reading the operation status. Do not write them using user programs.

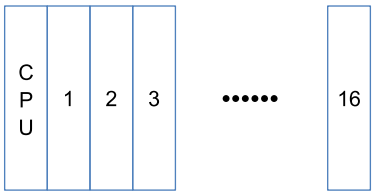
(Note 2) The above I/O numbers are those for the base word number 10.

4.3.3 Confirmation of Slot Numbers

Slot numbers are decided by registering units in the I/O map. Slot numbers are used when reading or writing the values of unit memories by user programs. They are also used when performing the data monitoring on FPWIN GR7.

■ Slot No.

Slot numbers are decided by each installation position of units. They are counted from the unit closest to the CPU unit.



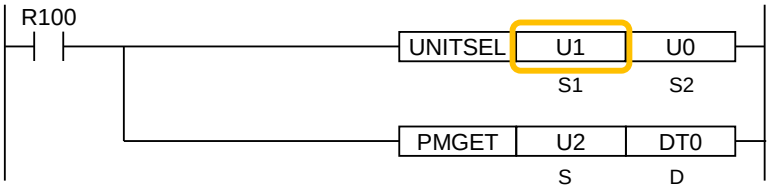
■ Display on the I/O map of FPWIN GR7

Slot numbers can be confirmed in the "I/O map" dialog box of FPWIN GR7.

Slot N...	Product No.	Unit used	He...	Input	Out...	Ver...	Refre...	Time...	Consu...	Cassette	Programmable...
☐ 0	AFP7CPS4RES/41ES	FP7 CPU unit	0	10	10	Valid	Valid		200mA	Not registered	Not registered
☑ 1	AFP7MW	W link unit	10	0	0	Valid	Valid		100mA		

■ Using by user programs

The user program below is that for specifying the slot number.

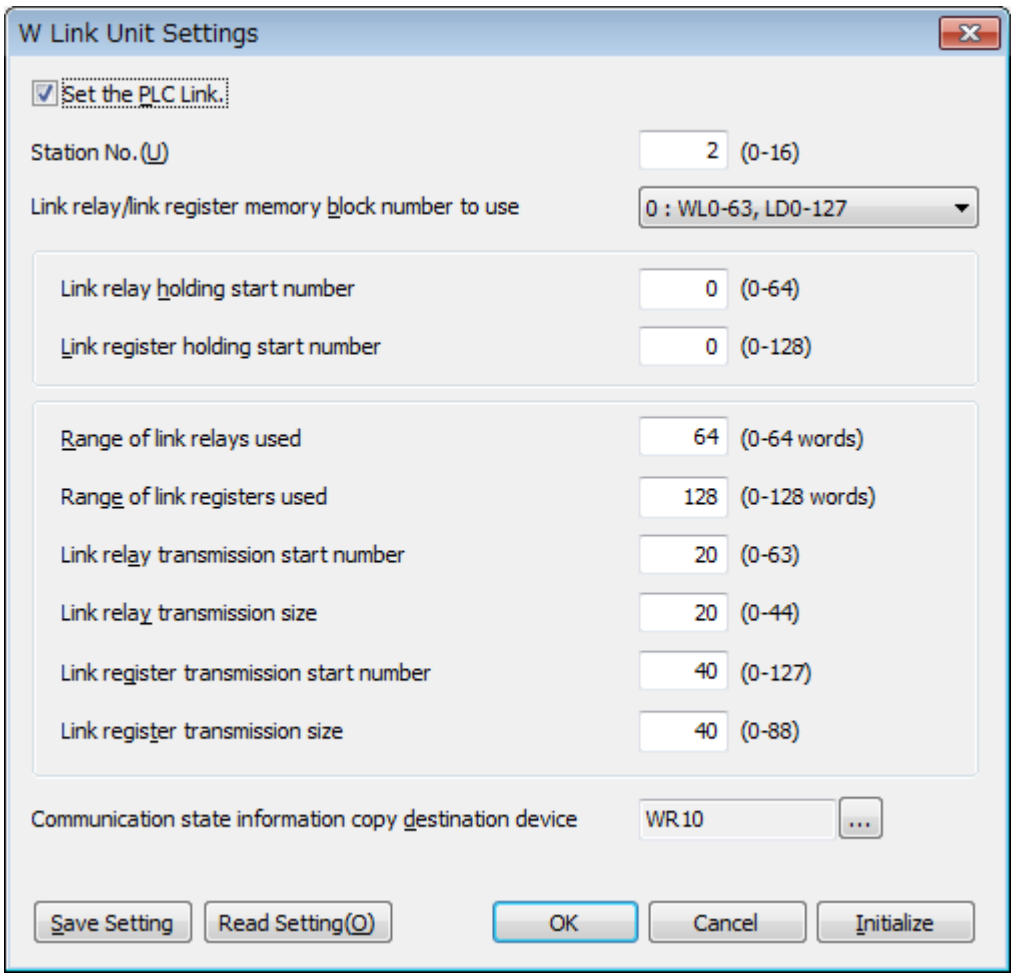


4.3.4 W Link Unit Setting Procedure

Link relays and link registers are set in the "W Link Unit Settings" dialog box of FPWIN GR7. The following procedure describes the case that "W link unit" has been already registered in the "I/O map" dialog box.

Procedure

1. Select **Options**>**FP7 Configuration**>**I/O map** in the menu bar.
   The "I/O map" dialog box is displayed.
2. Select the slot where the W link unit has been selected, and press the [Advanced] button.
   The "W Link Unit Settings" dialog box is displayed.



3. Check "Set the PLC Link" and set the unit number.
   For setting the PLC link in the configuration (the above dialog box), check the checkbox.
   For setting the PLC link in the configuration (the above dialog box), uncheck the checkbox.

4. For making the configuration of PLC link, set each item relating to link relays and link registers.

5. Press the [[OK]] button.
   The window returns to the "I/O map" dialog box.

6. Press the [[OK]] button.
   It returns to the edit window of FPWIN GR7. These settings will be downloaded to the CPU unit together with programs and other configuration information, and will be effective in RUN mode.

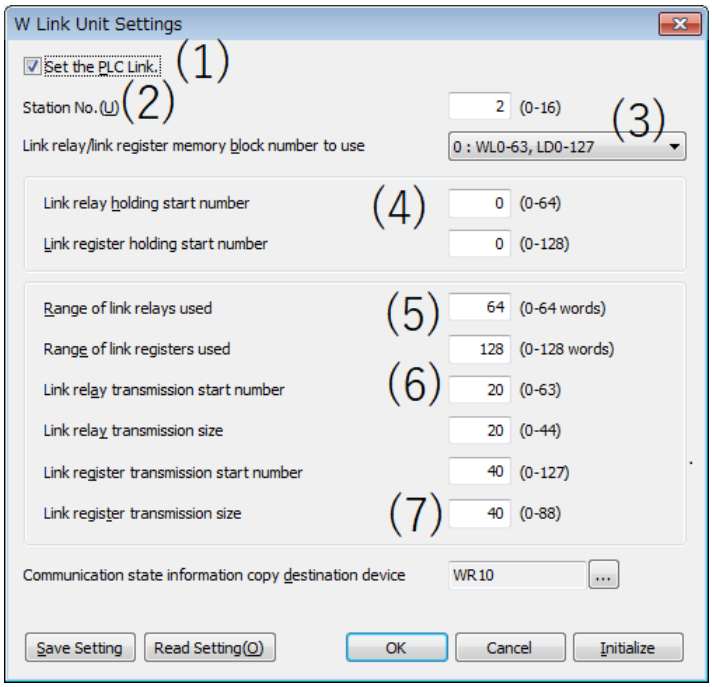
Info.

- Assign the own unit number within the following ranges.
  PLC link target unit numbers: 1 to 16
  Data transfer target unit numbers: 1 to 32
- Press the [Save Setting] button in the "W Link Unit" Settings dialog box to save configuration data (extension: .fp7mww) for the W link unit. The configuration data can also be used for other projects.

Info.

- For the details of the setting items of "W Link Unit" Settings dialog box, refer to the next page.

4.3.5 W Link Unit Setting Dialog Box



■ Setting item

No.	Item	Range	Remarks
(1)	Set the PLC Link.	For setting the PLC link in the configuration (the above dialog box), check the checkbox. For setting the PLC link in the configuration (the above dialog box), uncheck the checkbox.	
(2)	Unit no.	Specify a unit number for the own unit. PLC link target unit numbers: 1 to 16 Data transfer target unit numbers: 1 to 32 When setting it using a user program (PMSET/pPMSET instruction), specify "0".	
(3)	Link relay/link register memory block number to use	Select the range of device numbers. 0: WL0-WL63, LD0-LD127 1: WL64-WL127, LD128-LD255 2: WL128-WL191, LD256-LD383 3: WL192-WL255, LD384-LD511 4: WL256-WL319, LD512-LD639 5: WL320-WL383, LD640-LD767 6: WL384-WL447, LD768-LD895 7: WL448-WL511, LD896-LD1023	
(4)	Link relay holding start no. Link register holding start no.	Set the starting word number of a device used as hold type. The holding start number is specified as a relative value from the beginning of the memory block. For link relays: 0-64 For link registers: 0 to 128 Example 1) When specifying 0, the area in the selected range is hold type. Example 2) When specifying the maximum value, the area in the selected range is non-hold type.	
(5)	Range of link relays used Range of link registers used	Set the number of words of a device used as link relay and link register. Link relays and link registers that are not used can be used as functions similar to internal relays and data registers.	
(6)	Starting number for link relay transmission Link relay transmission size Starting number for link register transmission Link register transmission size	Specify the send area of link relays and link registers in word units. The transmission start number is specified as a relative value from the beginning of the memory block. Example) When selecting the memory block number "1: WL64-WL127, LD128-LD255", WL84- will be the send area by setting the link relay transmission start number to "20".	
(7)	Communication State Information Copy Destination Device	Specify the starting device of the 2-word area in which the transmission assurance relay (1 word: for 16 units) and operation mode relay (1 word: for 16 units) of MEWNET-W are copied.	

Info.

- Assign the own unit number within the following ranges.
  PLC link target unit numbers: 1 to 16
  Data transfer target unit numbers: 1 to 32
- For FP7, the ranges of link relays and link registers that can be specified are different from those for conventional models. Link relays and link registers can be allocated to different blocks in such a case as using memory blocks (0: WL0-WL63, LD0-LD127, 1: WL64-WL127, LD128-LD255) by the system using MEWNET-W0. It is recommended to allocate the same numbers (0: WL0-WL63, LD0-LD127, 1: WL64-WL127, LD128-LD255) when performing the PLC link with conventional models such as FP2SH series.

Info.

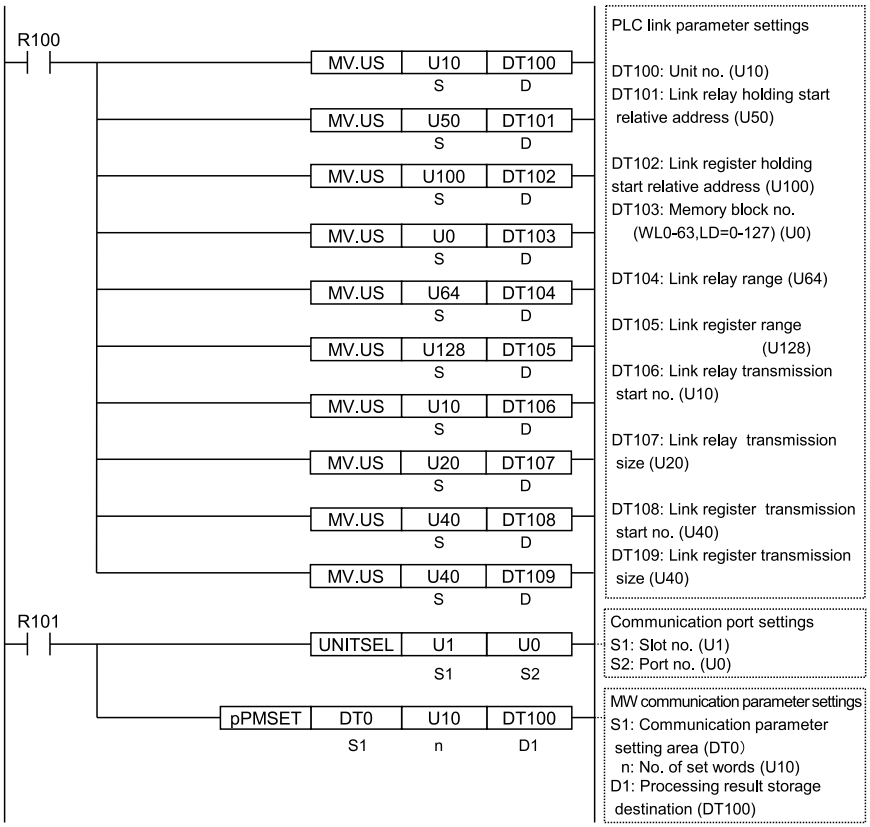
- For information on configuration examples of link relays and link registers, refer to "4.4 PLC Link".

4.3.6 Configuration Using User Programs

In MEWNET-W, unit numbers, link relays and link registers can be allocated by the user programs (PMSET/pPMSET instruction). The unit number selector on the front panel of the unit needs to be set to "00".

■ Sample program

This sample program shows the allocation of unit number, link relay and link register for the FP7 MW Unit (W Link Unit) installed in the slot number 1.



Item	Setting example	Remarks
Unit no.	U10	
Link relay holding start relative address	50	(Note 1)
Link register holding start relative address	U100	(Note 2)
Memory block number	0 (WL0-63, LD=0-127)	
Range of link relays used	64	
Range of link registers used	128	
Starting number for link relay transmission	U10	(Note 1)
Link relay transmission size	20	
Starting number for link register transmission	40	(Note 2)
Link register transmission size	40	

(Note 1) The link relay transmission start number is specified as a relative value from the beginning of the device specified by "Memory block number".

(Note 2) The link register transmission start number is specified as a relative value from the beginning of the device specified by "Memory block number".

Info.

- For the FP7 MW Unit (W mode), link areas as well as unit numbers can be allocated by user programs.

4.4 PLC Link

4.4.1 Example of Link Area Allocation

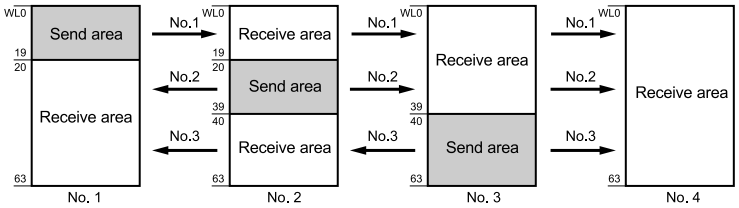
Link relays and link registers used for the PLC link are allocated to the configuration of the FP7 MW Unit.

■ Link Area Allocation: Example 1

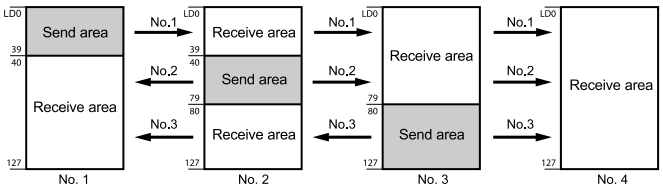
- The PLC link area is divided into the send area and receive area for each unit and used.
- The link relays and link registers are sent from the send area to the receive area of a different PLC.

Item	Each unit setting			
Range of link relays used	64	64	64	64
Range of link registers used	128	128	128	128
Starting number for link relay transmission	0	20	40	0
Link relay transmission size	20	20	24	0
Starting number for link register transmission	0	40	80	0
Link register transmission size	40	40	48	0

- Link relay allocation



- Link register allocation



- When link areas are allocated as shown above, the send area no. 1 is sent to the receive areas nos.2, 3 and 4. Also, the receive area no. 1 receives data from the send areas nos. 2 and 3.
- No.4 is allocated as a receive area only, and receives data from nos. 1, 2 and 3.

■ Link area allocation: Example 2 (WL64-127, LD128-255)

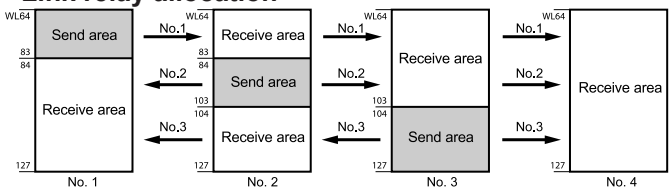
- Select the memory block numbers (1: WL64-127, LD128-255) of used link relay and link register.
- The PLC link area is divided into the send area and receive area for each unit and used.
- The link relays and link registers are sent from the send area to the receive area of a different PLC.

Item	Each unit setting				
Range of link relays used	64	64	64	64	(Note 1)
Range of link registers used	128	128	128	128	(Note 2)
Starting number for link relay transmission	0	20	40	0	(Note 1)
Link relay transmission size	20	20	24	0	(Note 2)
Starting number for link register transmission	0	40	80	0	
Link register transmission size	40	40	48	0	

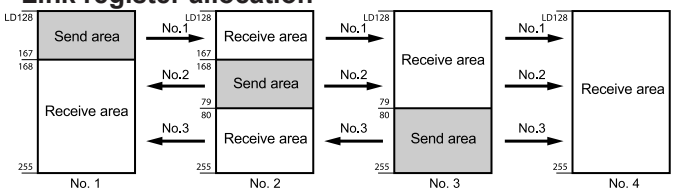
(Note 1) The link relay transmission start number is specified as a relative value from the beginning of the device specified by "Memory block number".

(Note 2) The link register transmission start number is specified as a relative value from the beginning of the device specified by "Memory block number".

- Link relay allocation



- Link register allocation



■ Link area allocation: Example 3 (Partial use of link area)

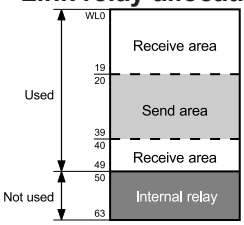
- In the link area, link relays (1024 points) and link registers (128 words) can be used. This does not mean, however, that it is necessary to reserve the entire area.
- Parts of the area which have not been reserved can be used as internal relays or internal registers.

Item	Set value	
Range of link relays used	50	(Note 1)
Range of link registers used	U100	(Note 2)
Starting number for link relay transmission	20	(Note 1)
Link relay transmission size	20	(Note 2)
Starting number for link register transmission	40	
Link register transmission size	40	

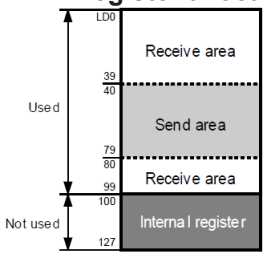
(Note 1) The link relay transmission start number is specified as a relative value from the beginning of the device specified by "Memory block number".

(Note 2) The link register transmission start number is specified as a relative value from the beginning of the device specified by "Memory block number".

- Link relay allocation

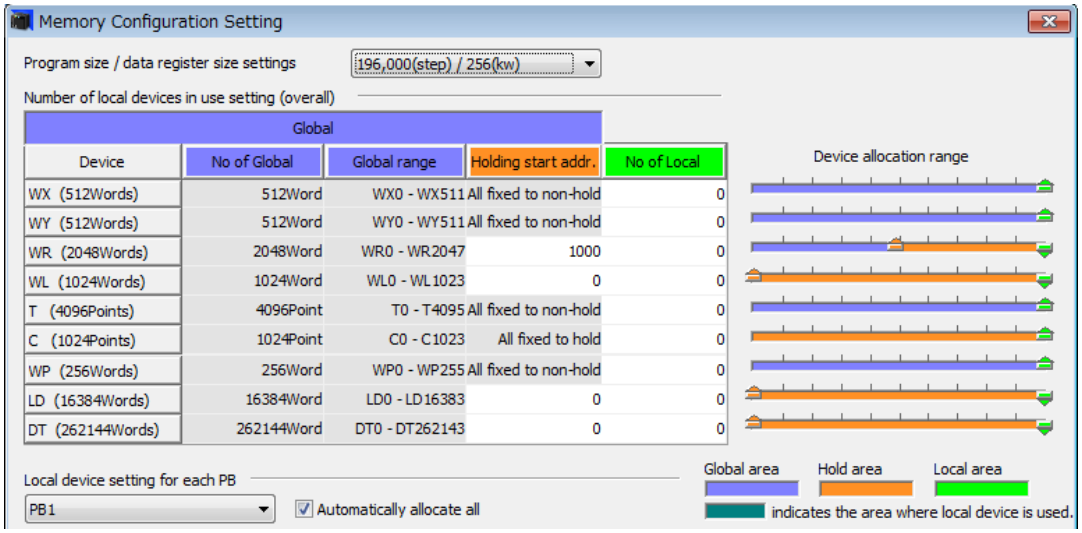


- Link register allocation



4.4.2 Holding Start Number Setting

- To enable the setting of the "holding start number" specified in the "W Link Unit Settings" dialog box, the device "L" or "LD" should be set to the hold area in the "Memory Configuration Setting" dialog box for the CPU unit.
- Select **Options**>**FP7 Configuration**>**Memory Configuration** in the menu bar of FPWIN GR7.



4.4.3 Communication State Information Copy Destination Device

The information indicating the communication state of the unit can be monitored as the transmission assurance relay and operation mode relay. The information storage destination is specified in the "W Link Unit Settings" dialog box.

■ Communication state information

Storage location	Item	Description
[D]	PLC link transmission assurance relays	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Normal ON: Unit which performs PLC link
[D+1]	PLC link operation mode relay	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: PROG mode ON: RUN mode

(Note 1) The storage destination [D] to [D+1] is determined by the device specified for "Communication state information copy destination device" in the "W Link Unit Settings" dialog box. When selecting WR10, they are allocated as follows.

PLC link transmission assurance relay: R100 to R10F, PLC link operation mode relay: R110 to R11F

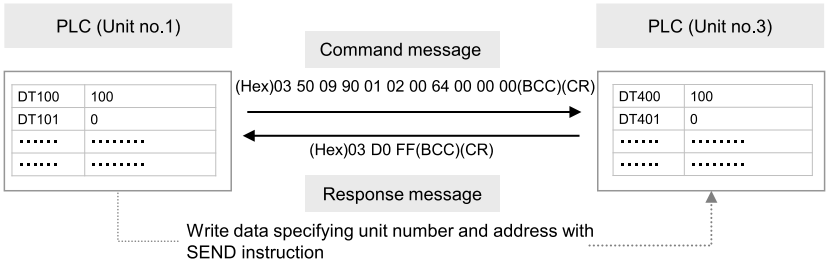
Info.

- The communication state information can also be read by a user program (PMGET instruction).Refer to "9.1.3 PMGET Instruction (For MEWNET-W)".

4.5 Data Transfer

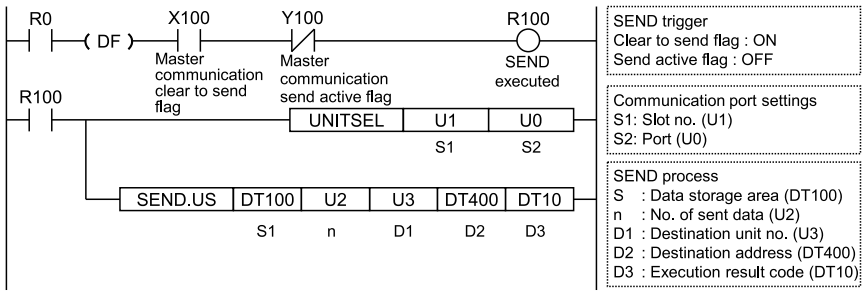
4.5.1 Data Transfer from Own Unit to Destination Unit (SEND)

In MEWNET-W, data can be transferred by specifying an arbitrary unit number or device in a user program. The PLC generates a message according to the protocol automatically. Destination PLCs need no program for sending/receiving data.

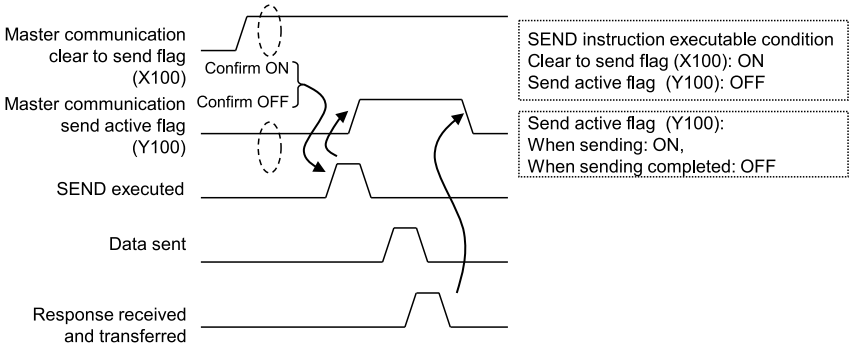


■ Sample Program (Word transmission)

- Transfers the content of the device for operation (DT100 to DT101) of the own unit to the device for operation (DT400 to DT401) of a destination unit via the MW Unit installed in the slot 1.
- The SEND instruction is executed by specifying the starting address (DT100) and number of DATA (U2) of the source unit and the unit number (U3) and starting address (DT400) of the destination unit.
- The execution result code is set in DT10 of the own unit.



■ Time chart



■ I/O Allocation

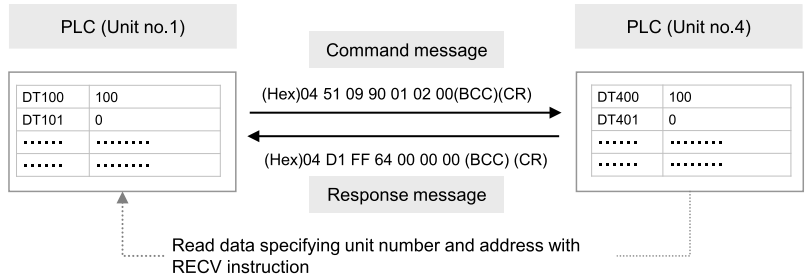
I/O number	Name	Description
X100	Master communication clear to send flag	Turns ON when the unit number of MEWNET-W has been set and the unit is in RUN mode.
Y100	Master communication send active flag	Turns ON during sending data based on the SEND/RECV instruction. Turns OFF when the ED instruction is executed after the completion of the response receive processing.

(Note 1) Each contact in the table above is used for reading the operation status. Do not write them using user programs.

(Note 2) The above I/O numbers are those for the base word number 10.

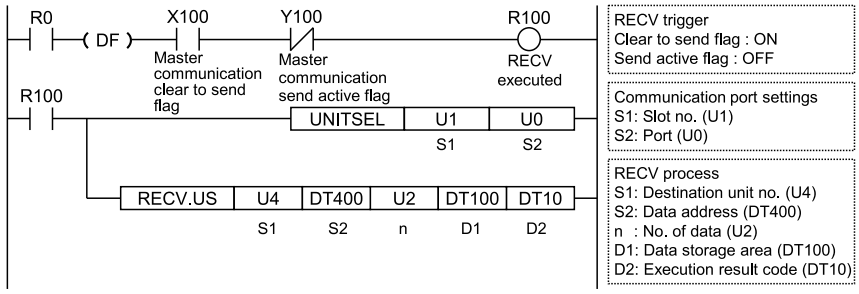
4.5.2 Data Transfer from Destination Unit to Own Unit

In MEWNET-W, data can be transferred by specifying an arbitrary unit number or device in a user program. The PLC generates a message according to the protocol automatically. Destination PLCs need no program for sending/receiving data.

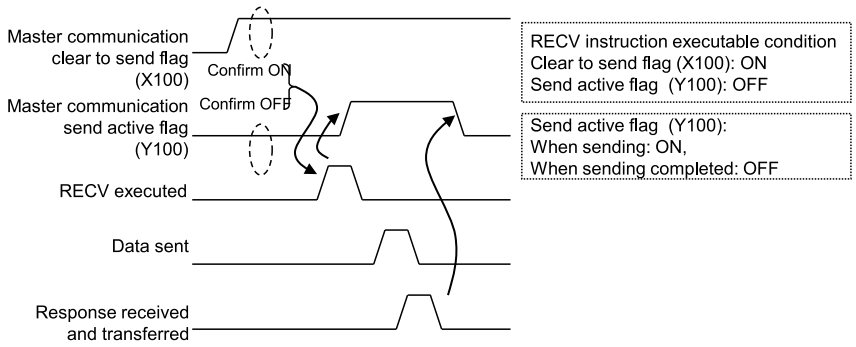


■ Sample Program (Word reception)

- Reads and transfers the content of the device for operation (DT400 to DT401) of a destination unit to the device for operation (DT100 to DT101) of the own unit via the MW Unit installed in the slot 1.
- The RECV instruction is executed by specifying the unit number (U4), starting address (DT400) and number of data (U2) of the destination unit and the starting address (DT100) of the own unit.
- The execution result code is set in DT10 of the own unit.



■ Time chart



■ I/O Allocation

I/O number	Name	Description
X100	Master communication clear to send flag	Turns ON when the unit number of MEWNET-W has been set and the unit is in RUN mode.
Y100	Master communication send active flag	Turns ON during sending data by SEND/RECV instruction. Turns OFF when the ED instruction is executed after the completion of the response receive processing.

(Note 1) Each contact in the table above is used for reading the operation status. Do not write them using user programs.

(Note 2) The above I/O numbers are those for the base word number 10.

4.5.3 Precautions When Using Data Transfer Function

■ Specifications of data transfer function:

- Using the data transfer function, communication can be performed between any units in either PLC link mode or non-PLC link mode.
- For the FP7 MW Unit, one instruction can be executed for each one unit simultaneously.
- The maximum number of transmission data that can be specified is 55 words (SEND instruction) and 56 words (RECV instruction) in W mode.

■ Execution condition of SEND/RECV instructions:

- Start the SEND/RECV instruction (message communication) in the W mode of FP7 MW Unit after any of the following steps.

(1)	Confirm that the PLC link transmission assurance relays of the destination unit to send a message or all units are ON.
(2)	Confirm that the information bit of the units being added to the link of the destination unit is ON. The information on the units added to the link can be monitored by PMGET instruction.
(3)	After a certain period of time after power-on (After a few seconds)

- Use the UNITSEL instruction following the SEND/RECV instruction to specify a target slot number for communication. Specify U0 for [S2] port number.

- Confirm that the "master communication clear to send flag" is ON, and execute the SEND/RECV instruction.
- Confirm that the "master communication send active flag" is OFF, and execute the SEND/RECV instruction. For the FP7 MW Unit, one instruction can be executed for each one unit simultaneously.
- SEND and RECV instructions cannot be executed for the FP7 MW Units during the slave communication.

Info.

- The information on PLC link transmission assurance relays and units added to the link can also be read by a user program (PMGET instruction).Refer to "9.1.4 PMGET Instruction (For MEWNET-W2)".

(MEMO)

5 MEWNET-W2

5.1 Overview

The following are main steps to use the FP7 MW Unit in W2 mode.

	Item	Used tool	Outline of operation
(1)	Set the switches of the unit.	-	Select "W2 mode" by the mode selector switches. Set whether to use the PLC link or not, and buad rate.
			Specify unit number. When setting it in the configuration of tool software or user program, set it to "00".
(2)	Registration in I/O map of the unit	FPWIN GR7	Register the unit configuration of the FP7 system in the "I/O map" dialog box.
			Confirm slot numbers specified for each instruction.
			When using the data transfer function, confirm the number of the flag to be checked when executing SEND/RECV instructions.
(3)	Unit Configuration	FPWIN GR7	Specify unit number. (When selecting "00" by the unit number selector of the unit.) (Note 1)
			Allocate link relays and link registers used for the PLC link.
			Set the device to which the PLC link operation state flag is copied.
			Set the device to which the link error information output destination is copied.
(4)	Download the settings to the unit and confirm the operation state.	FPWIN GR7	Download "I/O map" and "unit configuration" information to the FP7 CPU Unit.
			Switch the mode to RUN mode.
			Confirm the state if the process is normally performed. The communication state and error information can be confirmed by the communication state information copy destination device, system relays or system data registers. Also, detailed information can be read by PMGET instruction.

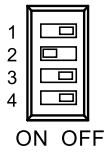
(Note 1) The unit number can be set by a user program.

5.2 Setting the Switches of the Unit

For using the FP7 MW Unit as W2 link unit, the switches on the front of the unit need to be set.

■ Mode setting switch

Each mode is set with the four dip switches on the front of the unit.



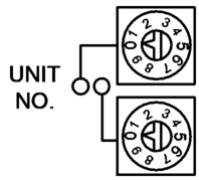
No.	Item	Range
1	Operation mode	OFF: PLC link mode, ON: Non-PLC link mode
2	Mode	Set 2 to ON and 3 to OFF. The unit operates as the unit for "MEWNET-W2".
3		
4	Baud rate	For "MEWNET-W2", set it to OFF: 500 kbps and ON: 250 kbps.

(Note 1) All the switches are set to OFF at the factory.

(Note 2) Be sure the power is off when changing the switches.

■ Unit number selector

Specify the own unit number by the two rotary switches on the front of the unit.



Range	Description
01 to 32	For target unit of PLC link
01 to 64	For target unit of data transfer (Note 1)
00	When setting it in the configuration of the tool software or user program (PMSET/pPMSET instruction).

(Note 1) It indicates the range that can be specified. The range of units that can be actually connected is up to 32 units.

(Note 2) Be sure the power is off when changing the switches.

5.3 Configuration

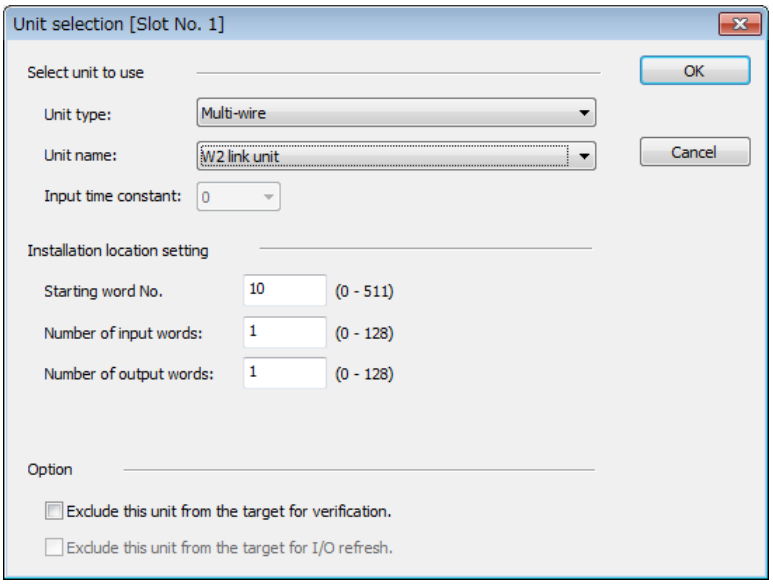
5.3.1 Registration in I/O Map

The unit is allocated to the I/O map in the tool software FPWIN GR7.

■ **Allocation method**

Procedure

1. Select **Options**>**FP7 Configuration**>**I/O map** in the menu bar.
2. Double-click the target slot where the operating unit is to be inserted.
   The "Unit Selection" dialog box is displayed.
3. Select "Multi-wire" and "W2 link unit" in the "Select unit to use" field.



4. Press the [[OK]] button.

5.3.2 No. of Occupied I/O Points of MEWNET-W2

In W2 mode, the FP7 MW Unit occupies only one word. It is allocated as a flag for executing the data transfer function (SEND/RECV instruction).

Mode	No. of points
W2 mode	1 word / Output: 1 word (Fixed)

■ I/O Allocation

I/O number	Name	Description
X100	Master communication clear to send flag	Turns ON when the unit number of MEWNET-W2 has been set and the unit is in RUN mode.
Y100	Master communication send active flag	Turns ON during sending data by SEND/RECV instruction. Turns OFF when the ED instruction is executed after the completion of the response receive processing.

(Note 1) Each contact in the table above is used for reading the operation status. Do not write them using user programs.

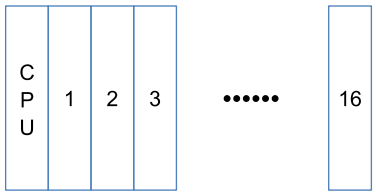
(Note 2) The above I/O numbers are those for the base word number 10.

5.3.3 Confirmation of Slot Numbers

Slot numbers are decided by registering units in the I/O map. Slot numbers are used when reading or writing the values of unit memories by user programs. They are also used when performing the data monitoring on FPWIN GR7.

■ Slot No.

Slot numbers are decided by each installation position of units. They are counted from the unit closest to the CPU unit.



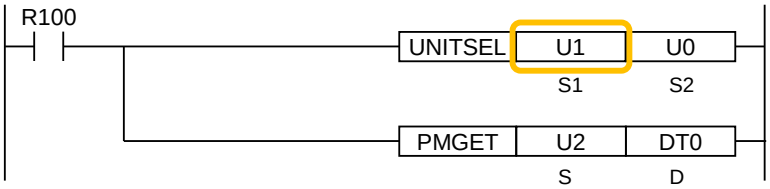
■ Display on the I/O map of FPWIN GR7

Slot numbers can be confirmed in the "I/O map" dialog box of FPWIN GR7.

Slot N...	Product No.	Unit used	He...	Input	Out...	Ver...	Refre...	Time...	Consu...	Cassette	Programmable...
☐ 0	AFP7CPS4RES/41ES	FP7 CPU unit	0	10	10	Valid	Valid		200mA	Not registered	Not registered
☑ 1	AFP7MW	W link unit	10	0	0	Valid	Valid		100mA		

■ Using by user programs

The user program below is that for specifying the slot number.



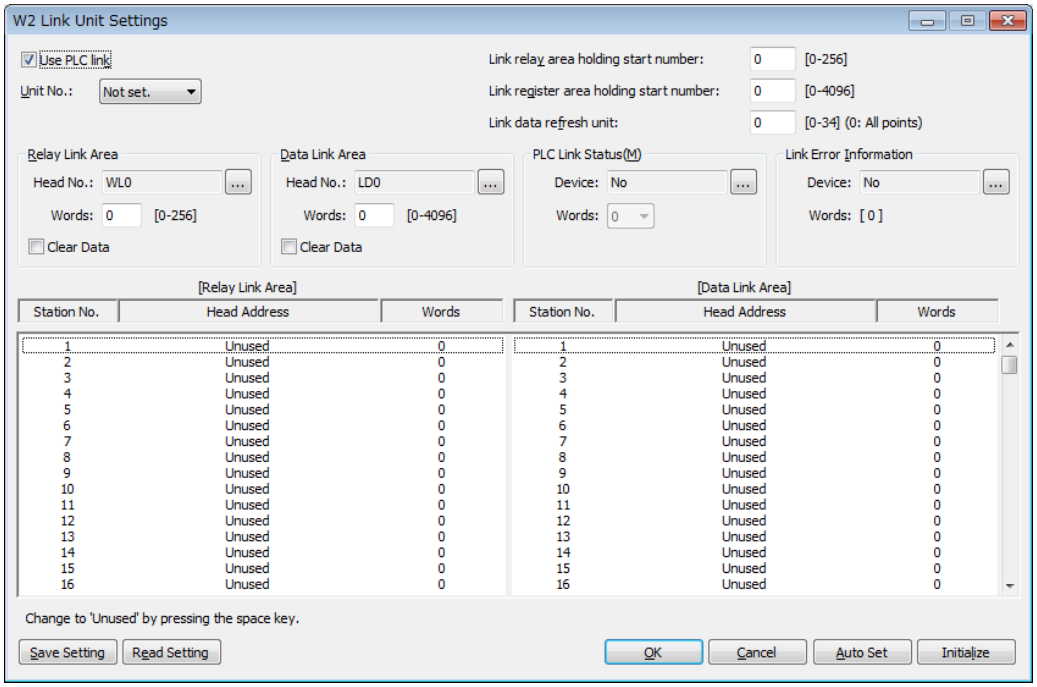
5.3.4 W2 Link Unit Setting Procedure

Link relays and link registers are set in the "W2 Link Unit Settings" dialog box of FPWIN GR7. The following procedure describes the case that "W2 link unit" has been already registered in the "I/O map" dialog box.

Procedure

1. Select **Options**>**FP7 Configuration**>**I/O map** in the menu bar.
   The "I/O map" dialog box is displayed.

2. Select the slot where the W2 link unit has been selected, and press the [Advanced] button.
   The "W2 Link Unit Settings" dialog box is displayed.



3. Check "Use PLC link" and set the unit number.
   When the PLC link is not used, uncheck the checkbox.

4. For the PLC link, set each item relating to link relays and link registers.

5. Press the [[OK]] button.
   The window returns to the "I/O map" dialog box.

6. Press the [[OK]] button.
   It returns to the edit window of FPWIN GR7. These settings will be downloaded to the CPU unit together with programs and other configuration information, and will be effective in RUN mode.

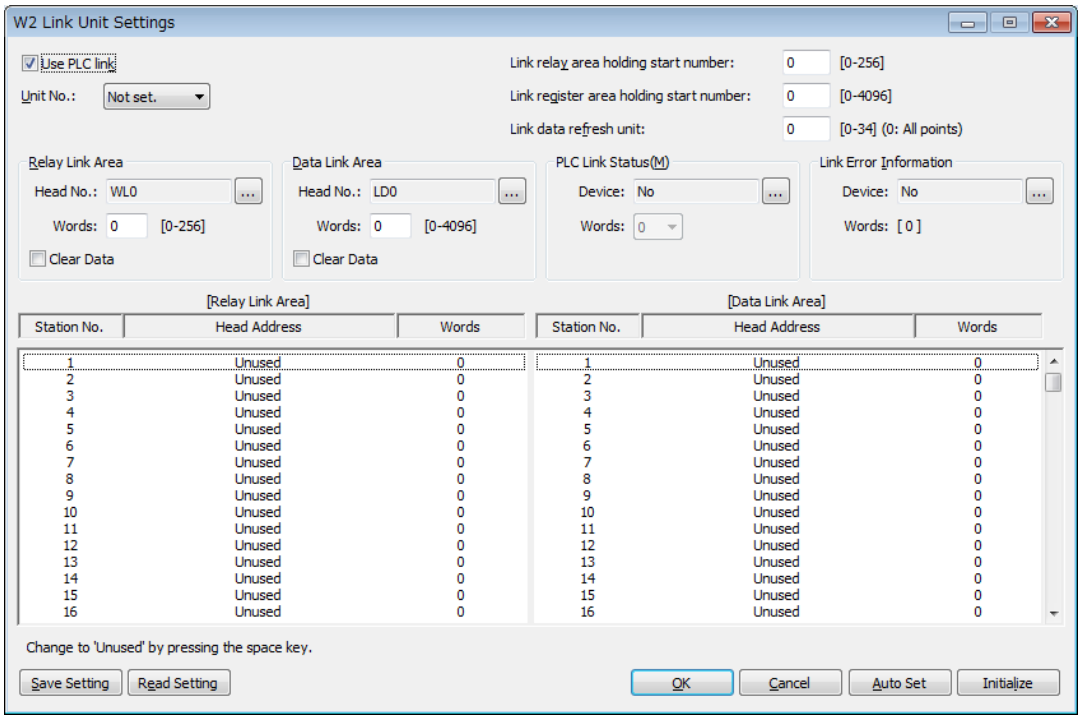
Info.

- Press the [Save Setting] button in the "W2 Link Unit" Settings dialog box to save configuration data (extension: .fp7mww2) for the W link unit. The configuration data can also be used for other projects.

Info.

- For the details of the setting items of "W2 Link Unit" Settings dialog box, refer to the next page.

5.3.5 W2 Link Unit Setting dialog box



■ Setting item

No.	Item	Range	Remarks
(1)	Use PLC link	For using the PLC link, check the checkbox.	
(2)	Unit No.:	Specify a unit number for the own unit. When setting it using a user program (PMSET/pPMSET instruction), specify "Not set". The unit number selector on the front panel of the unit needs to be set to "00".	
(3)	Link relay area holding start number	Set the starting word number of a device used as hold type. The holding start number is specified as a relative value from the beginning of "Relay Link Area" and "Data Link Area". For link relays: 0-256 For link registers: 0 to 4096	
	Link register area holding start number		

No.	Item	Range	Remarks
		Example 1) When specifying 0, the area in the selected range is hold type. Example 2) When specifying the maximum value, the area in the selected range is non-hold type.	
(4)	Link data refresh unit	Specify the unit to refresh the I/O by the PLC link in the format of (set value x 256 bytes/scan). By default, all points are refreshed collectively when specifying 0. Although the responsiveness is improved, the scan time of a single unit becomes longer. When a set value is changed, data of the set number of bytes is refreshed for each scan. Although the responsiveness is deteriorated, the scan time of a single unit becomes shorter.	
(5)	Relay Link Area (Own unit)	Select a device type and number used as link relay. WL, WR, LD, DT, global device or local device can be used. Specify a device number. Specify the usage area of relay link (no. of words). [0-256] For clearing the area when the PLC link stops, check this checkbox.	
(6)	Data Link Area (Own unit)	Select a device type. WL, WR, LD, DT, global device or local device can be used. Specify a device number. Specify the usage area of data link (no. of words). [0-4096] For clearing the area when the PLC link stops, check this checkbox.	
(7)	PLC Link Operation State Flag	Specify a device storing the PLC link operation state. Device type: WL, WR, LD, DT (Global device/Local device) Device no.: From 0 No. of words: 0, 3, 6	
(8)	Link Error Information Output Destination	Specify a destination device to output link error information. Device type: WL, WR, LD, DT (Global device/Local device) Device no.: From 0	
(9)	Relay Link Area (Each unit number)	Specify the transmission starting device number and the number of sent words for each unit. No. of sent words: [0-256]	
(10)	Data Link Area (Each unit number)	Specify the transmission starting device number and the number of sent words for each unit. No. of sent words: [0-4096]	

Info.

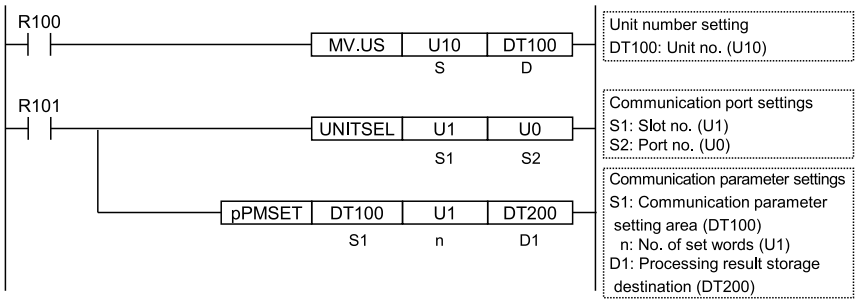
- For information on configuration examples of link relays and link registers, refer to "5.4.1 Example of Link Area Allocation".

5.3.6 Configuration Using User Programs

In MEWNET-W2, unit numbers can be set by the user programs (PMSET/pPMSET instruction). The unit number selector on the front panel of the unit needs to be set to "00".

■ Sample program

This sample program shows the case that the unit number for the FP7 MW Unit (W2 link unit) in the slot number 1 is set to 10.



Info.

- For the MEWNET-W2, the link area cannot be allocated by the user programs. Allocate the area in the "W2 Link Settings" dialog box of the tool software.

5.4 PLC Link

5.4.1 Example of Link Area Allocation

For MEWNET-W2, a device allocated for the PLC link can be selected from WL, WR, LD and DT.

■ Link area allocation:

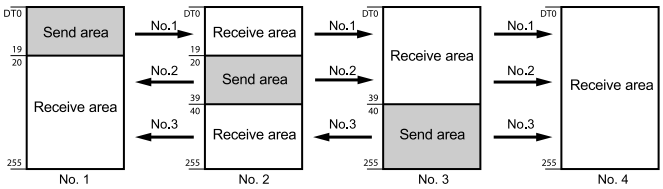
The PLC link area is divided into the send area and receive area for each unit and used. The link relays and link registers are sent from the send area to the receive area of a different PLC.

Item	Each unit setting				Remarks
	Unit no. 1	Unit no. 2	Unit no. 3	Unit no. 4	
Range of link relays used	DT0				
No. of all words for link relays	256				
Range of link registers used	DT300				
No. of all words for link registers	4096				
Starting number for link relay transmission	0	20	40	0	(Note 1)
No. of sent words for link relays	20	20	20	0	
Starting number for link register transmission	0	40	80	0	(Note 2)
No. of sent words for link registers	40	40	40	0	

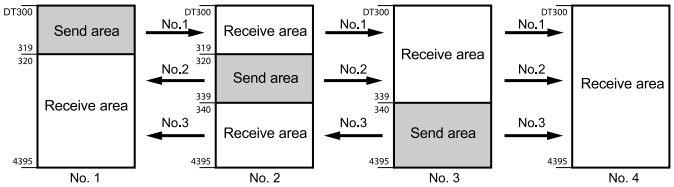
(Note 1) The link relay transmission start number is specified as a relative value from the beginning of "Range of link relays used".

(Note 2) The link register transmission start number is specified as a relative value from the beginning of "Range of link registers used".

- Link relay allocation



- Link register allocation



5.4.2 PLC Link Operation State Flag

Information showing the PLC link communication state of the unit can be monitored by the following flags. The information storage destination is specified in the "W2 Link Unit Settings" dialog box.

■ Format of PLC link operation state

Format when setting the number of words to 6 in the W2 configuration.

Storage location	Name	Description
[D]	PLC link state monitor flag Unit nos. 1 to 16	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Stop, ON: PLC link communicating normally
[D+1]	PLC link state monitor flag Unit nos. 17 to 32	bit0 to bit15: Unit no. 17 to unit no. 32 OFF: Stop, ON: PLC link communicating normally
[D+2]	PLC link operation mode flag Unit nos. 1 to 16	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: PROG. mode, ON: RUN mode
[D+3]	PLC link operation mode flag Unit nos. 17 to 32	bit0 to bit15: Unit no. 17 to unit no. 32 OFF: PROG. mode, ON: RUN mode
[D+4]	PLC link operation state flag Unit nos. 1 to 16	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Error occurs in PLC transmission is ensured, ON: No error.
[D+5]	PLC link operation state flag Unit nos. 17 to 32	bit0 to bit15: Unit no. 17 to unit no. 32 OFF: Error occurs in PLC transmission is ensured, ON: No error.

Format when setting the number of words to 3 in the W2 configuration.

Storage location	Name	Description
[D]	PLC link state monitor flag Unit nos. 1 to 16	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Stop, ON: PLC link communicating normally
[D+1]	PLC link operation mode flag Unit nos. 1 to 16	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: PROG. mode, ON: RUN mode
[D+2]	PLC link operation state flag Unit nos. 1 to 16	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Error occurs in PLC transmission is ensured, ON: No error.

(Note 1) The storage destination is determined by the device specified for "Communication state information copy destination device" in the "W2 Link Unit Settings" dialog box. When selecting WR10, they are allocated as follows.

PLC link transmission assurance relay: WR100 to WR10F, PLC link operation mode relay: WR110 to WR11F, PLC link operation state flag: WR120 to WR12F

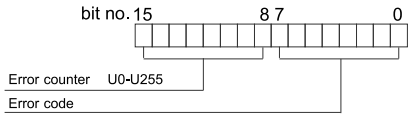
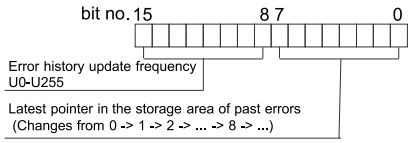
Info.

- The PLC link operation state flag can also be read by a user program PMGET instruction).Refer to "9.1.4 PMGET Instruction (For MEWNET-W2)".

5.4.3 Link Error Information

The link error information of the units can be monitored by the following flags. The information storage destination is specified in the "W2 Link Unit Settings" dialog box.

■ Format of link error information

	Item	Description
[D]	State of error currently occurs	 When the same error occurs, the error counter of high byte will be updated. When the error content changes and the error is cleared, the information will be stored in the error occurrence state history area ([D+2] to [D+9]).
[D+1]	Error occurrence state history management	 When the latest pointer in the storage area of past errors is 0, it indicates that there is no error. When the number of error updates is 0, it indicates that there is no update.
[D+2]	Error occurrence state history area 1	History of error occurrence state (parameter of [D]) 1
[D+3]	Error occurrence state history area 2	History of error occurrence state (parameter of [D]) 2
[D+4]	Error occurrence state history area 3	History of error occurrence state (parameter of [D]) 3
[D+5]	Error occurrence state history area 4	History of error occurrence state (parameter of [D]) 4
[D+6]	Error occurrence state history area 5	History of error occurrence state (parameter of [D]) 5
[D+7]	Error occurrence state history area 6	History of error occurrence state (parameter of [D]) 6
[D+8]	Error occurrence state history area 7	History of error occurrence state (parameter of [D]) 7
[D+9]	Error occurrence state history area 8	History of error occurrence state (parameter of [D]) 8

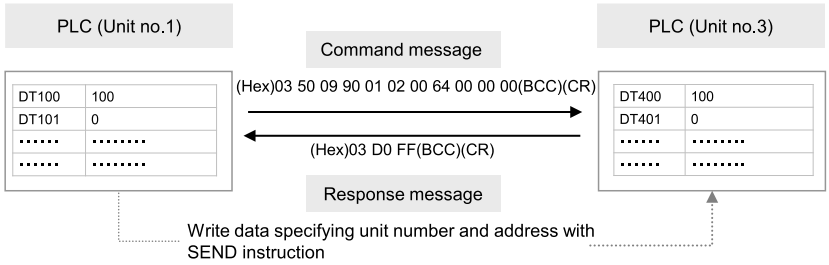
Info.

- The PLC link operation state flag can also be read by a user program PMGET instruction).Refer to "9.1.4 PMGET Instruction (For MEWNET-W2)".

5.5 Data Transfer

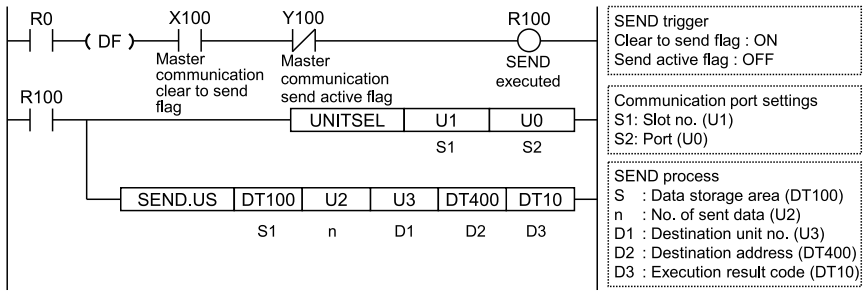
5.5.1 Data Transfer from Own Unit to Destination Unit (SEND)

In MEWNET-W2, data can be transferred by specifying an arbitrary unit number or device in a user program. The PLC generates a message according to the protocol automatically. Destination PLCs need no program for sending/receiving data.

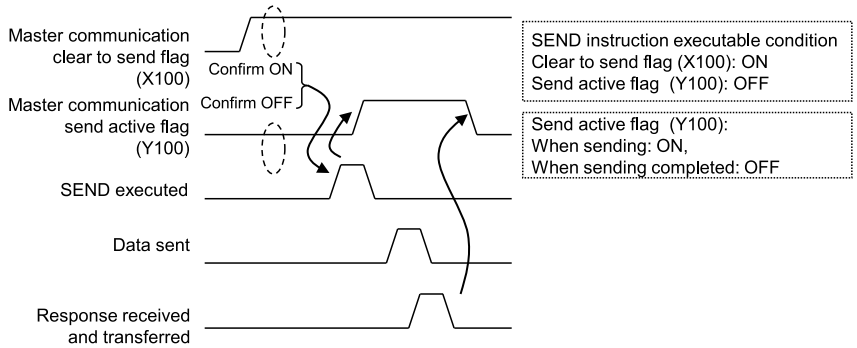


■ Sample Program (Word transmission)

- Transfers the content of the device for operation (DT100 to DT101) of the own unit to the device for operation (DT400 to DT401) of a destination unit via the MW Unit installed in the slot 1.
- The SEND instruction is executed by specifying the starting address (DT100) and number of DATA (U2) of the source unit and the unit number (U3) and starting address (DT400) of the destination unit.
- The execution result code is set in DT10 of the own unit.



■ Time chart



■ I/O Allocation

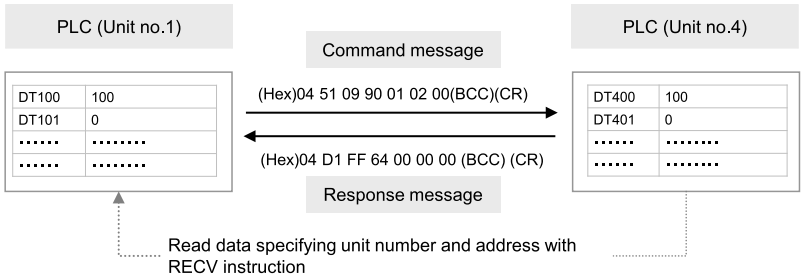
I/O number	Name	Description
X100	Master communication clear to send flag	Turns ON when the unit number of MEWNET-W2 has been set and the unit is in RUN mode.
Y100	Master communication send active flag	Turns ON during sending data by SEND/RECV instruction. Turns OFF when the ED instruction is executed after the completion of the response receive processing.

(Note 1) Each contact in the table above is used for reading the operation status. Do not write them using user programs.

(Note 2) The above I/O numbers are those for the base word number "10".

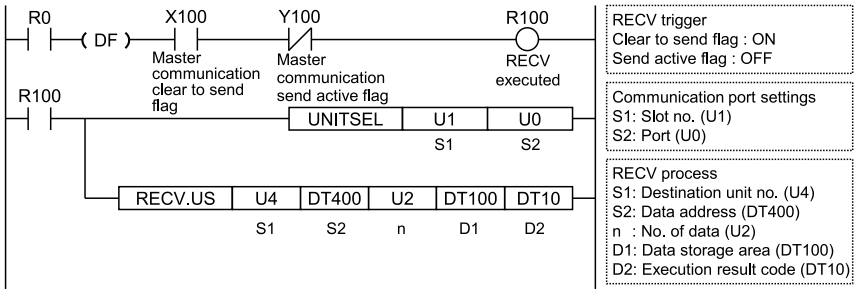
5.5.2 Data Transfer from Destination Unit to Own Unit

In MEWNET-W2, data can be transferred by specifying an arbitrary unit number or device in a user program. The PLC generates a message according to the protocol automatically. Destination PLCs need no program for sending/receiving data.

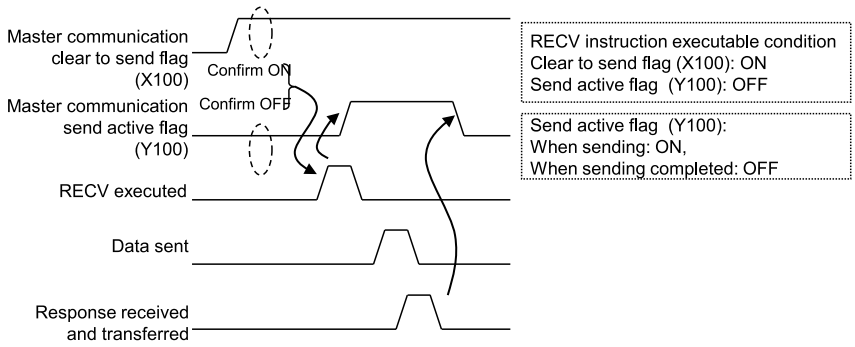


■ Sample Program (Word reception)

- Reads and transfers the content of the device for operation (DT400 to DT401) of a destination unit to the device for operation (DT100 to DT101) of the own unit via the MW Unit installed in the slot 1.
- The RECV instruction is executed by specifying the unit number (U4), starting address (DT400) and number of data (U2) of the destination unit and the starting address (DT100) of the own unit.
- The execution result code is set in DT10 of the own unit.



■ Time chart



■ I/O Allocation

I/O number	Name	Description
X100	Master communication clear to send flag	Turns ON when the unit number of MEWNET-W2 has been set and the unit is in RUN mode.
Y100	Master communication send active flag	Turns ON during sending data by SEND/RECV instruction. Turns OFF when the ED instruction is executed after the completion of the response receive processing.

(Note 1) Each contact in the table above is used for reading the operation status. Do not write them using user programs.

(Note 2) The above I/O numbers are those for the base word number "10".

5.5.3 Precautions When Using Data Transfer Function

■ Specifications of data transfer function:

- Using the data transfer function, communication can be performed between any units in either PLC link mode or non-PLC link mode.
- For the FP7 MW Unit, one instruction can be executed for each one unit simultaneously.
- The maximum number of transmission data that can be specified is 1020 words.

■ Execution condition of SEND/RECV instructions:

- Start the SEND/RECV instruction (message communication) in the W2 mode of FP7 MW Unit after any of the following steps.

(1)	Confirm that the PLC link transmission assurance relays of the destination unit to send a message or all units are ON.
(2)	Confirm that the information bit of the units being added to the link of the destination unit is ON. The information on the units added to the link can be monitored by PMGET instruction.
(3)	After a certain period of time after power-on (After a few seconds)

- Use the UNITSEL instruction following the SEND/RECV instruction to specify a target slot number for communication. Specify (U0) for [S2] port number.
- Confirm that the "master communication clear to send flag" is ON, and execute the SEND/RECV instruction.

- Confirm that the "master communication send active flag" is OFF, and execute the SEND/RECV instruction. For the FP7 MW Unit, one instruction can be executed for each one unit simultaneously.
- SEND and RECV instructions cannot be executed for the FP7 MW Units during the slave communication.

Info.

- The information on PLC link transmission assurance relays and units added to the link can also be read by a user program (PMGET instruction).Refer to "9.1.4 PMGET Instruction (For MEWNET-W2)".

6 MEWNET-F

6.1 Overview

The following are main steps to use the FP7 MW Unit in F mode.

	Item	Used tool	Outline of operation
(1)	Set the switches of the unit.	-	Select "F mode" by the mode selector switches. Sets the operation mode in an abnormal state.
(2)	Set the switches of slave units.	-	Set the unit numbers of connected slave units by the dip switches of each slave unit.
(3)	Registration in I/O map of the unit	FPWIN GR7	Register the unit configuration of the FP7 system in the "I/O map" dialog box. (Note 1)
			For the F mode, set the number of I/O words allocated to slave units and base numbers of I/O numbers.
			Confirm slot numbers specified for each instruction.
(4)	Unit Configuration	FPWIN GR7	Set the slave unit connection wait time and I/O refresh method.
	Allocation of Remote I/O Map		Allocate I/O for slave units. (Note 1)
(5)	Download the settings to the unit and confirm the operation state.	FPWIN GR7	Download "I/O map" and "unit configuration" information to the FP7 CPU Unit.
			Switch the mode to RUN mode.
			Confirm the state if the process is normally performed. The communication state and error information can be confirmed by system relays or system data registers. Also, detailed information can be read by PMGET instruction.

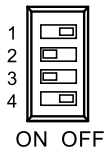
(Note 1) I/O can be allocated by mount allocation.

6.2 Settings of the Unit

For using the FP7 MW Unit as F link unit, the switches on the front panel of the unit need to be set.

■ Mode setting switch

Each mode is set with the four dip switches on the front of the unit.



No.	Item	Range
1	Operation mode	Select the operation mode of the FP7 MW Unit when an error occurs. OFF: Stops operation in case of communication error, ON: Continues operation in case of communication error
2	Mode	Set 2 and 3 to ON. The unit operates as the unit for "MEWNET-F".
3		
4	Baud rate	For "MEWNET-F", it is fixed at 500 kbps.

(Note 1) Be sure the power is off when changing the switches.

(Note 2) All the switches are set to OFF at the factory.

■ Unit number selector

It is not used in F mode.

6.3 Configuration

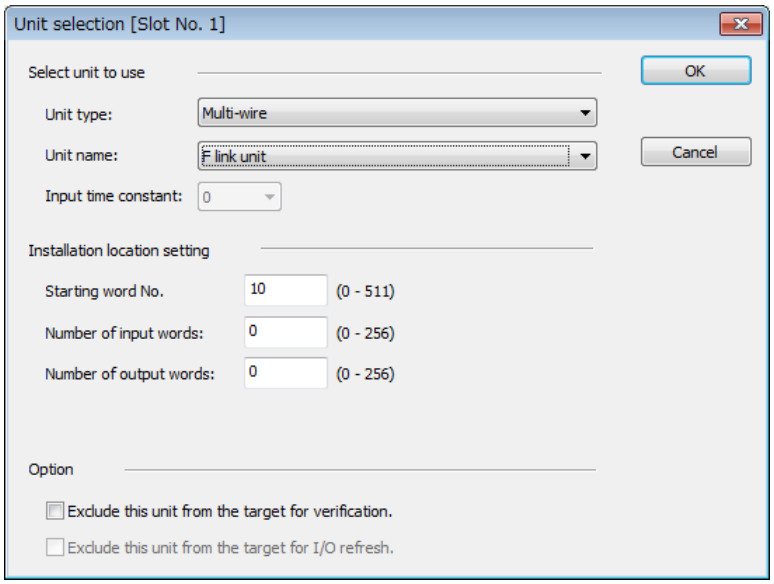
6.3.1 Registration in I/O Map

The unit is allocated to the I/O map in the tool software FPWIN GR7.

■ **Allocation method**

Procedure

1. Select **Options**>**FP7 Configuration**>**I/O map** in the menu bar.
2. Double-click the target slot where the operating unit is to be inserted.
   The "Unit Selection" dialog box is displayed.
3. Select "Multi-wire" and "F link unit" in the "Select unit to use" field.



4. Input the number of input words and the number of output words according to the connected configuration.
5. Press the [[OK]] button.

6.3.2 Number of Occupied I/O Points for the Unit

For the F mode, the number of I/O points allocated to the remote I/O part is occupied.

Mode	No. of points
F mode	Input: 0 to 256 words / Output: 0 to 256 words

Info.

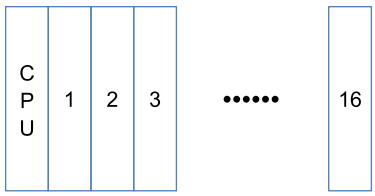
- Set the numbers of input words and output words according to the configuration of connected remote I/O. When the allocation of occupied I/O points is not enough, it is necessary to change the allocation of I/O map along with other units.

6.3.3 Confirmation of Slot Numbers

Slot numbers are decided by registering units in the I/O map. Slot numbers are used when reading or writing the values of unit memories by user programs. They are also used when performing the data monitoring on FPWIN GR7.

■ Slot No.

Slot numbers are decided by each installation position of units. They are counted from the unit closest to the CPU unit.



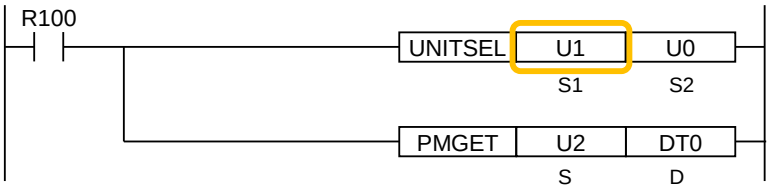
■ Display on the I/O map of FPWIN GR7

Slot numbers can be confirmed in the "I/O map" dialog box of FPWIN GR7.

Slot No.	Product No.	Unit used	Head	Input	Outp...	Veri...	Refresh	Time ...	Consum...	Cassette	Programmabl...
0	AFP7CPS41E	FP7 CPU unit	0	10	10	Valid	Valid		200mA	Not registered	Not registered
1	AFP7MW	F link unit	10	0	0	Valid	Valid		100mA		

■ Using by user programs

The user program below is that for specifying the slot number.

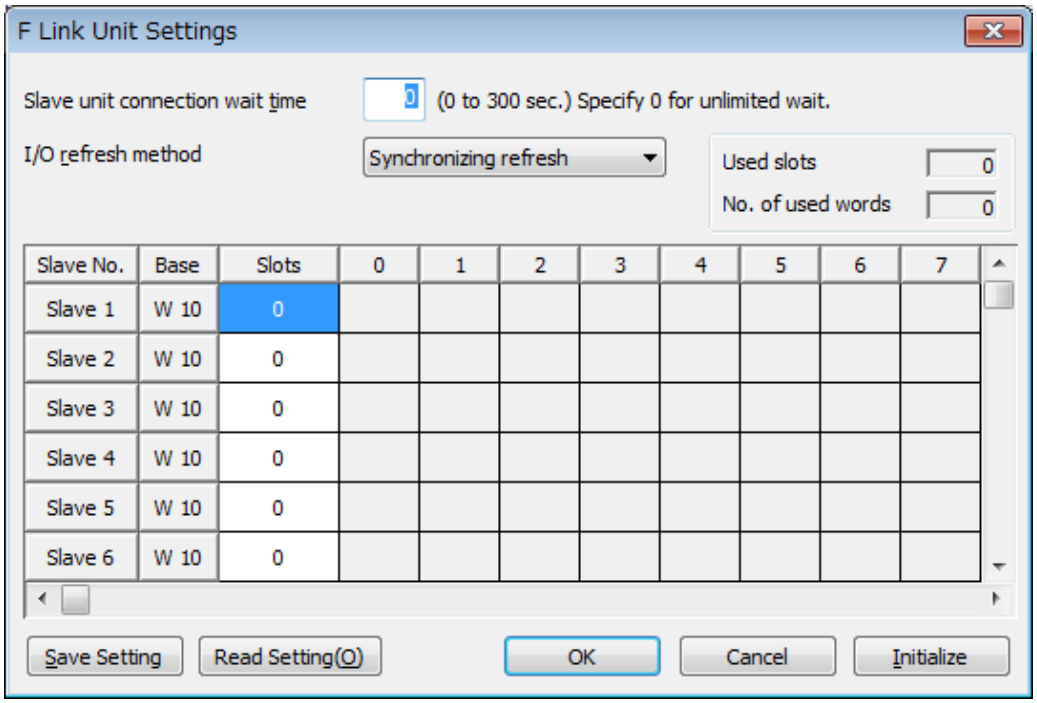


6.3.4 F Link Unit Setting Procedure

The allocations of the slave unit connection wait time, I/O refresh method and MEWNET-F slave unit I/O are set in the "F Link Unit Settings" dialog box of FPWIN GR7. The following procedure describes the case that "F link unit" has been already registered in the "I/O map dialog" box.

Procedure

1. Select **Options**>**FP7 Configuration**>**I/O map** in the menu bar.
   The "I/O map" dialog box is displayed.
2. Select the slot where the F link unit has been selected, and press the [Advanced] button.
   The "F Link Unit Settings" dialog box is displayed.



3. Confirm "Slave unit connection wait time" and change the setting as necessary.
4. Confirm "I/O refresh method" and change the setting as necessary.
5. Set the I/O allocation for slave units.
6. Press the [[OK]] button.
   The window returns to the "I/O map" dialog box.
7. Press the [[OK]] button.
   It returns to the edit window of FPWIN GR7. These settings will be downloaded to the CPU unit together with programs and other configuration information, and will be effective in RUN mode.

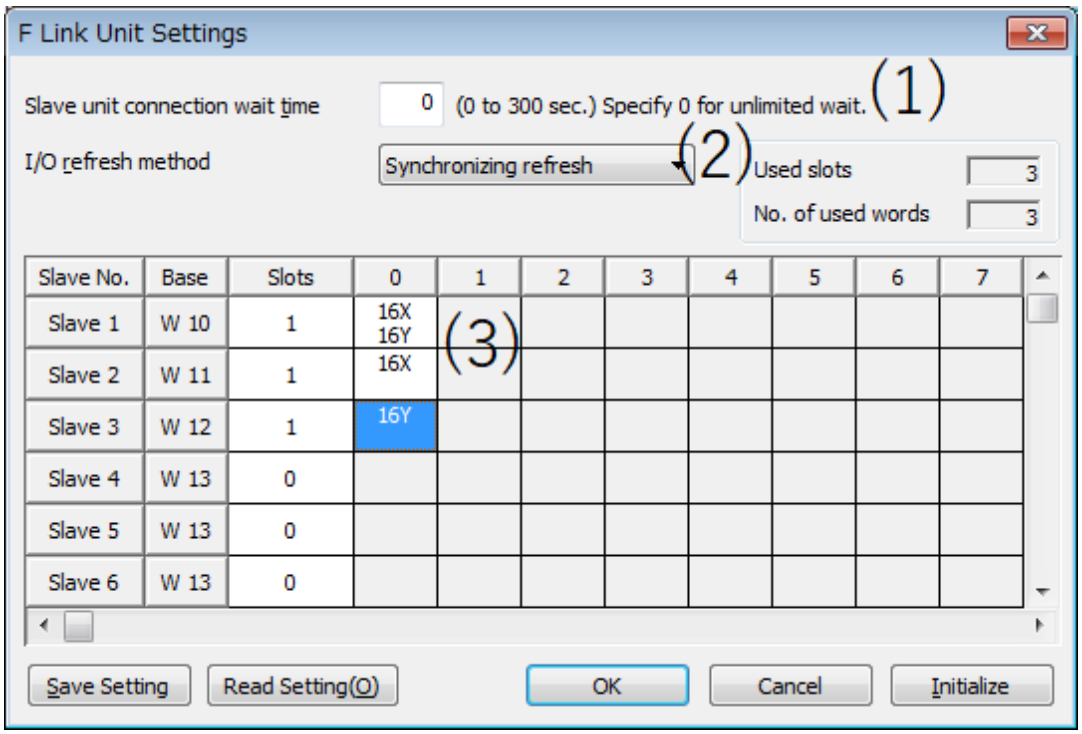
Info.

- Press the [Save Setting] button in the "F Link Unit Settings" dialog box to save configuration data (extension: .fp7mwf) for the W link unit. The configuration data can also be used for other projects.

Info.

- For the details of the setting items of "F link unit" dialog box, refer to the next page.
- For information on the allocation of slave units, refer to "6.4 Allocation of Remote I/O Map".

6.3.5 F Link Unit Setting Dialog Box



■ Setting item

No.	Item	Range	Remarks
(1)	Slave unit connection wait time	Set a time to determine the state that a slave unit is not connected as an error when the power is turned on. When it is set to 0, a standby state continues until the slave unit communicates normally. Range: 0 to 300 seconds	"P.6-15"
(2)	I/O refresh method	Select the /O refresh method of remote I/O. Synchronizing refresh: The normal I/O refresh is executed synchronously with a scan of remote I/O. Asynchronizing refresh: The normal I/O refresh is executed asynchronously with a scan of remote I/O.	"P.6-18"
(3)	Slave unit I/O allocation field	Set the numbers of input points and output points according to the types of used slave units.	

Info.

- The I/O allocation for slave units can also be made by turning on the power supply when the slave units are connected and pressing the [Mount] button in the online "I/O map setting" dialog box.Refer to "6.4.3 Online Mount Allocation".

Info.

- For information on the difference between operations according to the slave unit connection wait time, refer to "6.5.3 Setting and Operation of Slave Connection Wait Time".
- For information on the difference between operations according to the I/O refresh methods, refer to "6.7.1 Remote I/O Refresh".

6.4 Allocation of Remote I/O Map

6.4.1 I/O Numbers Allocated to Slaves

I/O numbers allocated to each slave unit of the MEWNET-F system by FP7 are determined by the starting word numbers and slave numbers of a connected master unit.

■ Slave types and allocated I/O numbers

The following I/O numbers are those when the starting word number is "10" and slave number is "1".

Item name	Product number	No. of inputs/ outputs	I/O no.	
			Input	Output
FP I/O terminal unit (Primary unit)	AFP87421	Input: 8 points	X100 to X107	—
	AFP87422	Input: 16 points	X100 to X10F	—
	AFP87423	Output: 8 points	—	Y100 to Y107
	AFP87424	Output: 16 points	—	Y100 to Y10F
FP I/O terminal unit (Expansion unit)	AFP87425	Input: 8 points	X110 to X117	—
	AFP87426	Input: 16 points	X110 to X11F	—
	AFP87427	Output: 8 points	—	Y110 to Y117
	AFP87428	Output: 16 points	—	Y110 to Y11F
FP I/O terminal board [Terminal block type]	AFP87432	Input: 16 points Output: 8 points	X100 to X10F	Y100 to Y107
	AFP87444	Input: 16 points Output: 16 points	X100 to X10F	Y100 to Y10F
FP I/O terminal board [MIL connector type]	AFP87445 AFP87446	Input: 16 points Output: 16 points	X100 to X10F	Y100 to Y10F

(Note 1) 16 points are used by the 8-point unit.

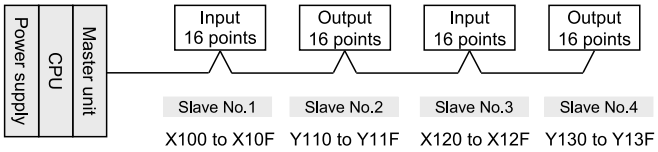
(Note 2) The allocated settings vary according to the combination of primary unit and expansion units.

Combination	No. of occupied I/O points in software
Primary unit (Input) + Expansion unit (Input)	32-point input (32X)
Primary unit (Input) + Expansion unit (Output)	16-point input (16X) / 16-point output (16Y)

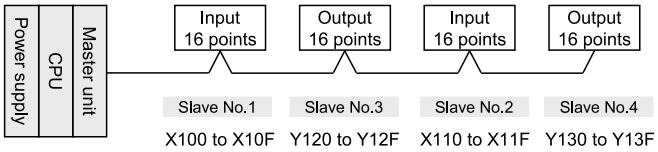
Combination	No. of occupied I/O points in software
Primary unit (Output) + Expansion unit (Input)	
Primary unit (Output) + Expansion unit (Output)	32-point output (32Y)

■ Order of allocated I/O numbers

I/O numbers for slave units are allocated in the order of slave numbers set with the switch of each slave unit.



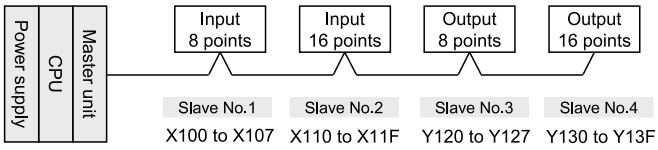
I/O numbers for slave units are allocated in the order of slave numbers regardless of the connecting order of slave units.



■ I/O numbers allocated when 8-type units are mixed

As 16-point I/Os are allocated even for an 8-point type, dead numbers occur between the unit and a subsequent unit with the next slave number.

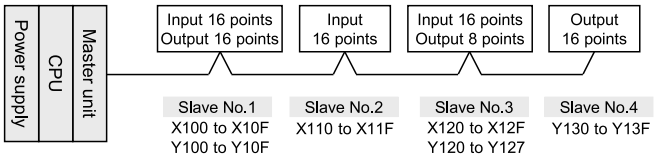
Example) When the I/O numbers for the 8-type slave no. 1 are X100 to X107, X108 to X10F are dead numbers. The I/O numbers for the slave no. 2 start from X110 or Y110.



■ How to count I/O numbers for units that have both inputs and outputs

In the case of a unit that has both inputs and outputs, input numbers and output numbers start with the same value.

Example) If input numbers for an I/O terminal board (input 16 points / output 16 points) are X100 to X10F, the unit's output numbers are set at Y100 to Y10F.

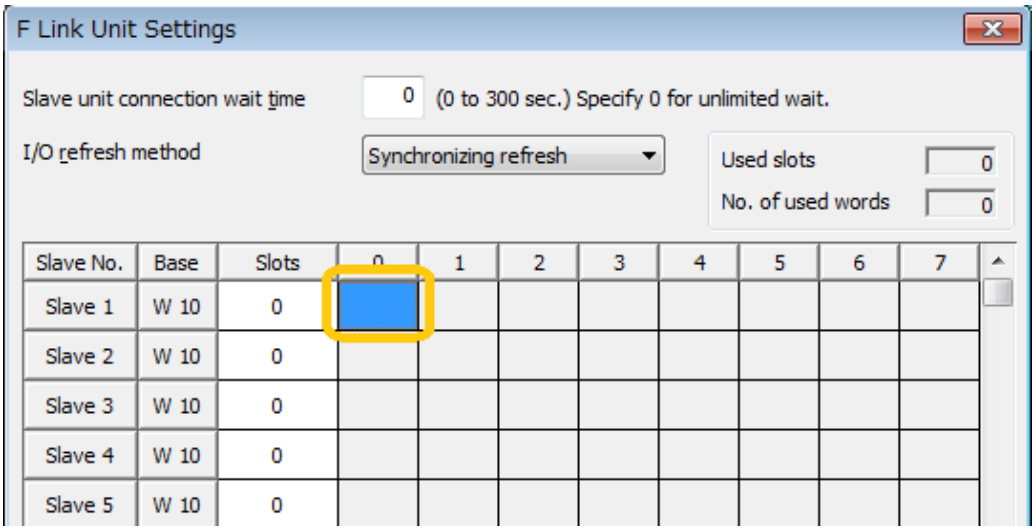


6.4.2 Registration by Configuration

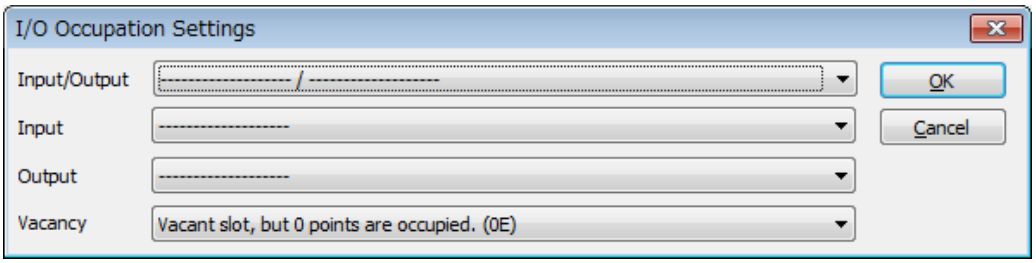
This section describes the procedure for setting the I/O allocation of MEWNET-F slave units in the "F Link Unit Settings" dialog box of FPWIN GR7. The following are operations in the "F Link Unit Settings" dialog box.

Procedure

1. Double-click the slot in which "F link unit" has been registered in the "I/O Map Settings" dialog box.
   The "F Link Unit Settings" dialog box is displayed.



2. Double-click the position of a slave unit to be registered.
   The "I/O Occupation Settings" dialog box is displayed.



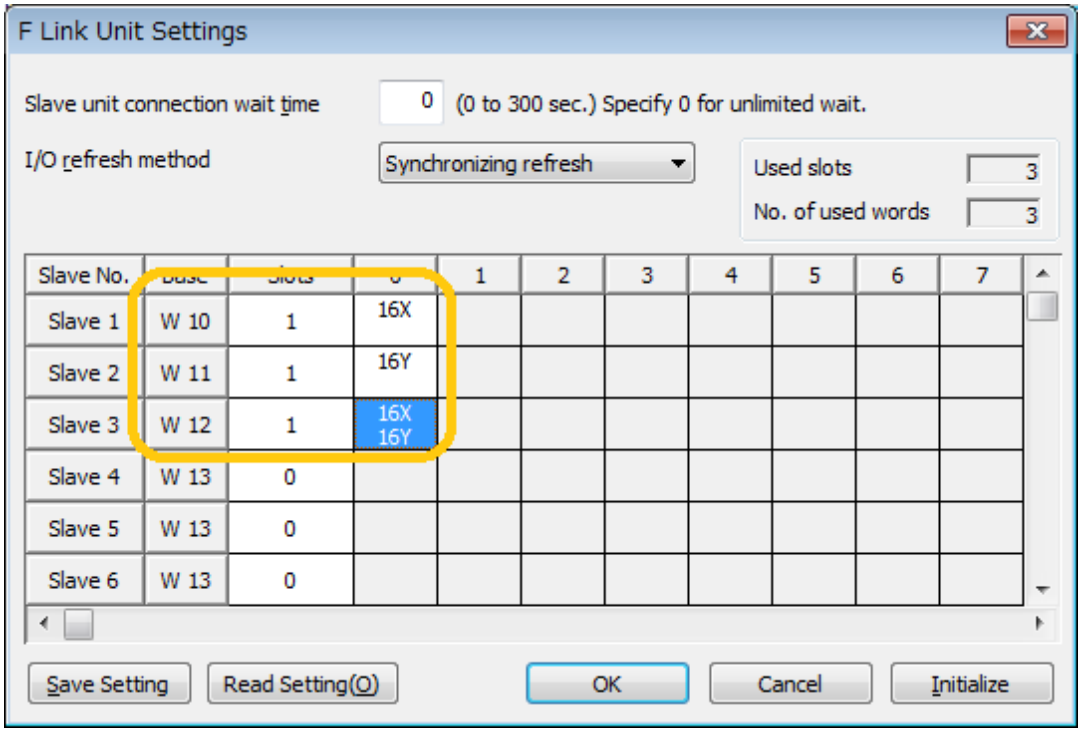
3. Select "I/O Occupation Settings" according to the used slave unit, and press the [OK] button.
   The symbols indicating the number of I/O points are registered and the number of slots is updated. In the base column, the word number is displayed.

4. Repeat the above steps according to your system configuration.

5. Press the [[OK]] button.
   The window returns to the "I/O map" dialog box.

Setting example

The following figure shows the case when three slave units are registered in the remote I/O map. The base word number and slot number of each slave unit is automatically input.



Unit type and I/O occupation settings

Item name	Product number	No. of inputs/ outputs	No. of occupied I/O points in software
FP I/O terminal unit (Primary unit)	AFP87421	Input: 8 points	16-point input (16X)
	AFP87422	Input: 16 points	16-point input (16X)
	AFP87423	Output: 8 points	16-point output (16Y)
	AFP87424	Output: 16 points	16-point output (16Y)
FP I/O terminal unit (Expansion unit)	AFP87425	Input: 8 points	(Note 2)
	AFP87426	Input: 16 points	
	AFP87427	Output: 8 points	
	AFP87428	Output: 16 points	
FP I/O terminal board [Terminal block type]	AFP87432	Input: 16 points	16-point input (16X) / 16-point output (16Y)

Item name	Product number	No. of inputs/ outputs	No. of occupied I/O points in software
		Output: 8 points	
	AFP87444	Input: 16 points Output: 16 points	16-point input (16X) / 16-point output (16Y)
FP I/O terminal board [MIL connector type]	AFP87445 AFP87446	Input: 16 points Output: 16 points	16-point input (16X) / 16-point output (16Y)

(Note 1) 16 points are used by the 8-point unit.

(Note 2) The allocated settings vary according to the combination of primary unit and expansion units.

Combination	No. of occupied I/O points in software
Primary unit (Input) + Expansion unit (Input)	32-point input (32X)
Primary unit (Input) + Expansion unit (Output) Primary unit (Output) + Expansion unit (Input)	16-point input (16X) / 16-point output (16Y)
Primary unit (Output) + Expansion unit (Output)	32-point output (32Y)

6.4.3 Online Mount Allocation

This section describes the procedure for configuring units by changing to the online mode and reading the mounting state connected to MEWNET-F.

Procedure

1. Confirm that the FP7 MW Unit and slave units are connected.
2. Turn on slave units first, and then FP7 MW Unit.
3. Select **Online**>**Switch to Online Mode** from the menu bar. Or select "Upload from PLC".
4. Select**"Options**>**FP7 Configuration"**>**I/O map**in the menu bar
   The "I/O map" dialog box is displayed.
5. Confirm that "F link unit" has been registered in the I/O map.
6. Press the [Mount] button.
   The mounting state of FP7 including remote I/O slave units is read. Also, it is written as the configuration information in the FP7 CPU Unit.

Info.

- For performing the mount allocation of "Remote I/O allocation" with the FP7 MW Unit, "F link unit" must be registered in the I/O map in advance.
- By executing the "mount allocation", the mounting state of the CPU unit, I/O unit and advanced unit is read besides "Remote I/O allocation" connected to the FP7 MW Unit, and the I/O map is updated. Check if the design content matches the mounting state in the I/O map.

6.5 Starting MEWNET-F System

6.5.1 Check Before Turning On the Power

Check the following items before starting the system to prevent malfunction and accidents.

■ Items to check

1. Check to make sure the various devices have been connected as indicated by the design.
2. Check to make sure settings have been entered so that power supplies will be turned on according to the following order.
3. Check to make sure the CPU unit starts in PROG. mode in the initial state.

6.5.2 Power-on and Power-off Sequences

Start the PHLS system by the following procedure to prevent the malfunction when the system starts or stops.

■ Procedure for Turning On the Power

1. Turn on I/O devices connected to MEWNET-F slave units.
2. Turn on the MEWNET-F slave units.
3. Turn on the FP7 to which the FP7 MW Unit is installed.

■ Procedure for Turning Off the Power

1. Turn off the FP7 to which the FP7 MW Unit is installed.
2. Turn off the MEWNET-F slave units.
3. Turn off I/O devices connected to MEWNET-F slave units.

6.5.3 Setting and Operation of Slave Connection Wait Time

The operation of switching the mode from PROG. to RUN when the power turns on, after making the FP7 configuration or downloading a project varies according to the setting of the slave connection wait time.

■ Operation when the connection wait time is set to "0"

- Waits until the registered slave units start. Until then, the PROG.LED of the CPU unit flashes. During this processing, the mode cannot be switched to RUN mode.
- If slave units start when turning on the power in RUN mode or switching the mode from PROG. to RUN, the mode changes to RUN mode.changes to RUN mode.

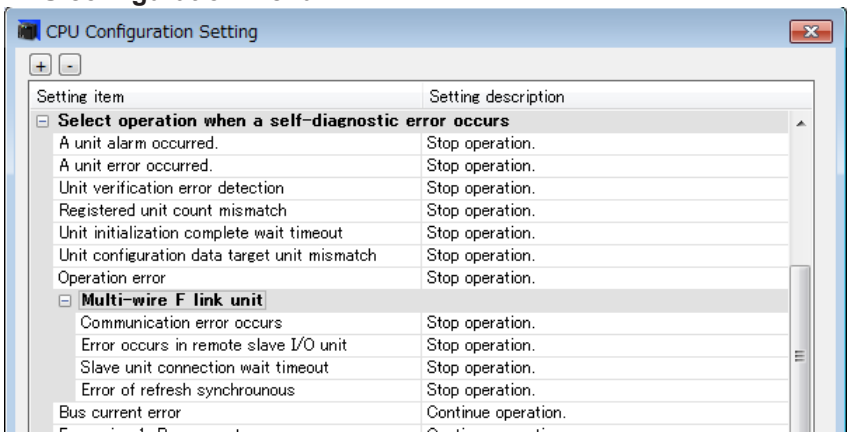
■ Operation when the connection wait time is set to "1 to 300 seconds"

- During the specified wait time, waits until the registered slave units start. Until then, the PROG.LED of the CPU unit flashes. During this processing, the mode cannot be switched to RUN mode.

- If the registered slave unit starts during the wait time, the mode changes to RUN mode. The mode can be switched. When turning on the power in RUN mode or switching the mode from PROG. to RUN, the mode automatically changes to RUN mode.
- When the time until the registered slave unit starts exceeds the specified connection wait time, an error occurs. At this time, the ERROR LED of the FP7 MW Unit turns on.
- The operation mode of the CPU unit when an error occurs depends on the setting of CPU configuration (Select operation when a self-diagnostic error occurs: A unit error occurred).

Select operation when a self-diagnostic error occurs: A unit error occurred.	**Operation when the startup time of the slave registered in "select slave connection" exceeds the setting of connection wait time**
Operation stops.	A unit error occurs. The CPU unit stays in PROG. mode.
Operation continues.	A unit error occurs. The CPU unit is changed to RUN mode.

CPU configuration menu



6.6 Checking Before Operation (Before Switching to RUN Mode)

6.6.1 Checking Communication State

- When slave units and the master unit communicate normally, the both COM.LEDs turn on. The connected slave numbers can be confirmed by the operation monitor LEDs of the master unit.
- Confirm that the COM.LEDs of the master unit and all slave units are on. Then, confirm if the connected slave numbers are correct by the operation monitor LEDs of the master unit.

Info.

- For details of the operation monitor LEDs of the master unit, refer to "2.3 Operation Monitor LEDs".

6.7 Behavior During Operation

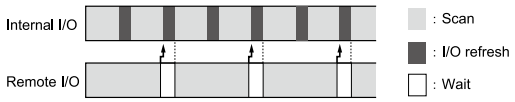
6.7.1 Remote I/O Refresh

There are two remote I/O refresh methods.

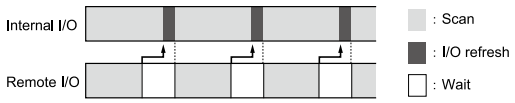
- For "Synchronous refresh", remote I/Os are simultaneously updated with the normal I/Os of the master unit system. When selecting "Synchronous refresh", the time taken for one scan becomes longer as the number of remote I/Os increases.
- When selecting "Asynchronous refresh", remote I/Os are not simultaneously updated with the normal I/Os, however, it can decrease the scan time for the normal I/Os.

■ Asynchronous refresh

- The normal I/O update (refresh) is performed after completing the processing of normal I/Os even if remote I/O processing has not been completed yet.
- The remote I/O update (refresh) is performed after completing the processing of remote I/Os.



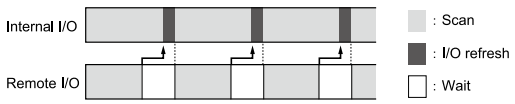
(Note 1) The above figure shows the operation when "Normal I/O scan time" is shorter than "Remote I/O scan time".



(Note 1) The above figure shows the operation when "Normal I/O scan time" is longer than "Remote I/O scan time". Even when selecting "Asynchronous refresh", the update is performed at the same timing as that for "Synchronous refresh".

■ Synchronous refresh

- The normal I/O update (refresh) and remote I/O update (refresh) are performed after completing the processing of normal I/Os and remote I/Os.
- When the time for scanning remote I/Os is long, the scan time relatively increases.



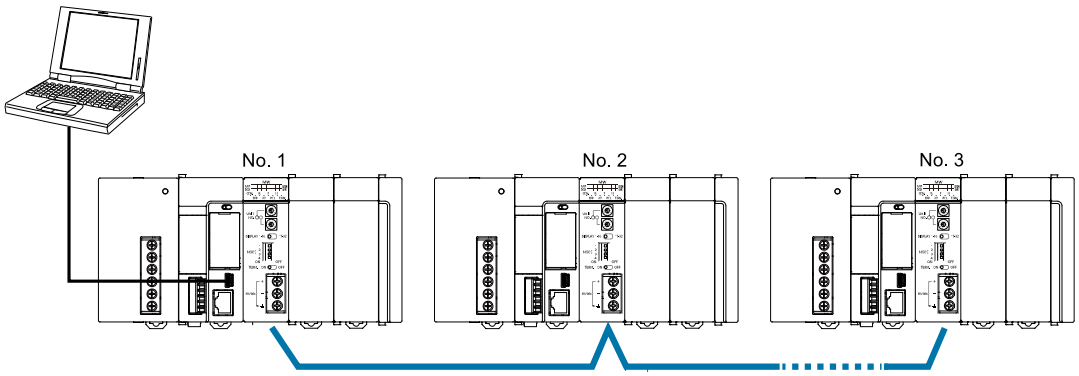
(Note 1) The above figure shows the operation when "Normal I/O scan time" is longer than "Remote I/O scan time".

7 Other Functions

7.1 Remote programming

7.1.1 Overview

This function enables PLCs in the same system connected to the network to be programmed by tool software remotely. For the system which uses FP7 MW Unit, it can be executed under the following conditions.



■ Remote programming function

- By connecting a PC to the USB port or COM0 port of FP7 CPU Unit, operation is performed by the tool software via the network.
- To operate the remote FP7, it must be connected by the MEWNET-W2.
- To operate remote FP series PLCs (such as FP2SH), either MEWNET-W2 or MEWNET-W must be connected.
- The remote FP7 cannot be operated from a PC connected to conventional models FP2/FP2SH.

■ Combination (A: Available, Blank: Not available)

PC connection port	Programmed PLC	W mode	W2 mode	Remarks
FP7 (USB port/COM0 port)	FP7		A	(Note 1)
FP7 (USB port/COM0 port)	FP2/FP2SH	A	A	
FP2/FP2SH (Tool port/COM port)	FP2/FP2SH	A	A	
FP2/FP2SH (Tool port/COM port)	FP7			(Note 2)

(Note 1) As the W mode is not available for MEWTOCOL7, remote programming cannot be performed.

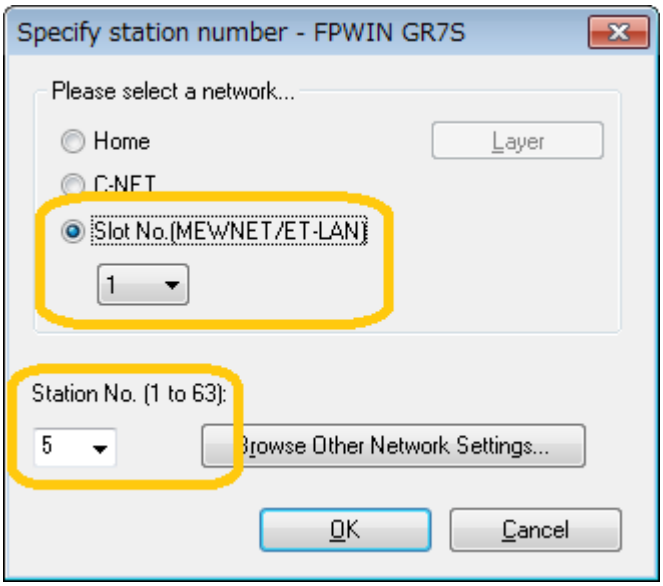
(Note 2) As the models other than FP7 does not support MEWTOCOL7, remote programming cannot be performed.

7.1.2 Operation of Tool Software

This section describes the procedure for performing remote programming from FPWIN GR7.

Procedure

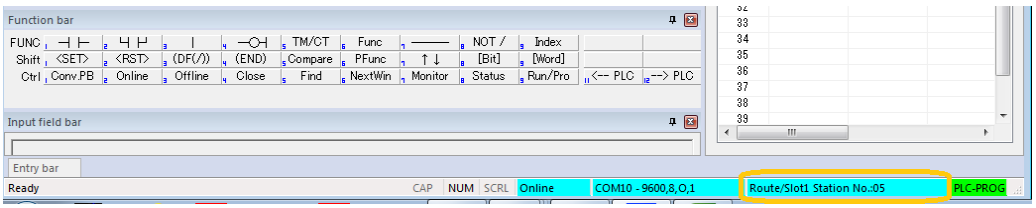
1. Select **Online>Communication Settings** from the menu bar.
   The "Communication Settings" dialog box is displayed.



2. Select "Slot Number (MEWNET/ET-LAN)" and the slot number of the home unit in which the FP7 MW Unit is installed.

3. Select the unit number of a PLC to be remotely programmed.

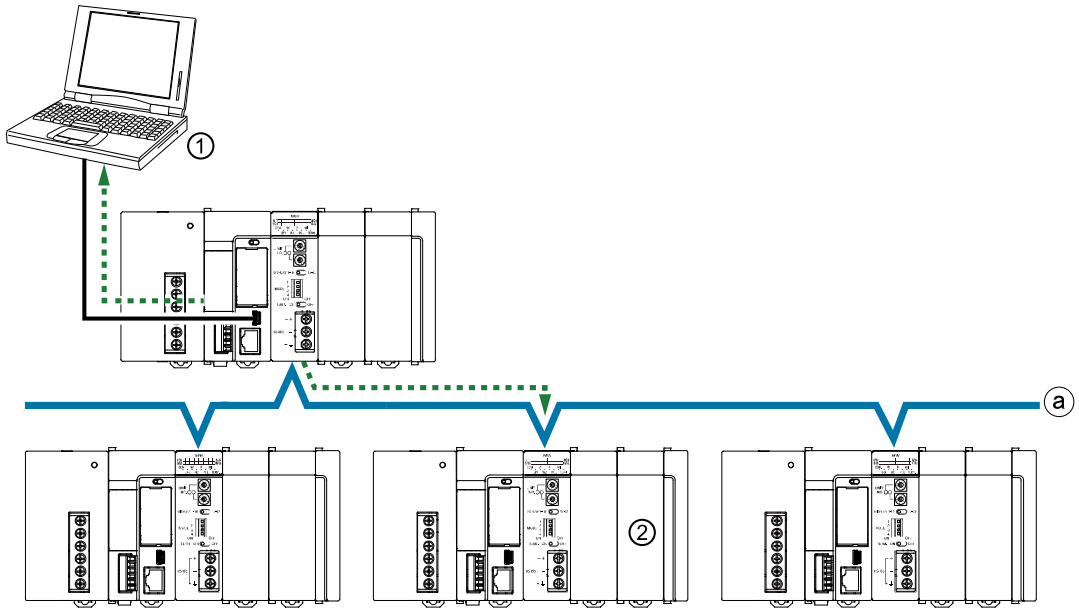
4. Press the [[OK]] button.
   The slot number and unit number of the connected communicating unit is displayed on the right side of the status field. After that, remote programming operation can be performed for the communicating unit, such as uploading/downloading projects, monitoring devices, and monitoring statuses.



7.2 Computer Link

7.2.1 Overview

This figure shows an example when a command is sent/received to/from a higher-order PC.



(1)	Source	(2)	Destination	(3)	Depth 0

■ Computer Link Function

- Communication is performed by sending commands and receiving responses from a higher-order PC or higher-order PLC. Various operations such as reading and writing operation devices can be performed.
- The communication is performed according to the format of MEWTOCOL-COM or MEWTOCOL7.
- Destination PLCs need no user programs for communication.

7.2.2 Specifications and Restrictions

Usable protocols and capacity vary according to the mode.

Item	Specifications	
	W mode	W2 mode
Number of units	Max. 32 units	
Supported protocol	MEWTOCOL-COM	MEWTOCOL-COM MEWTOCOL7 (Note 1)

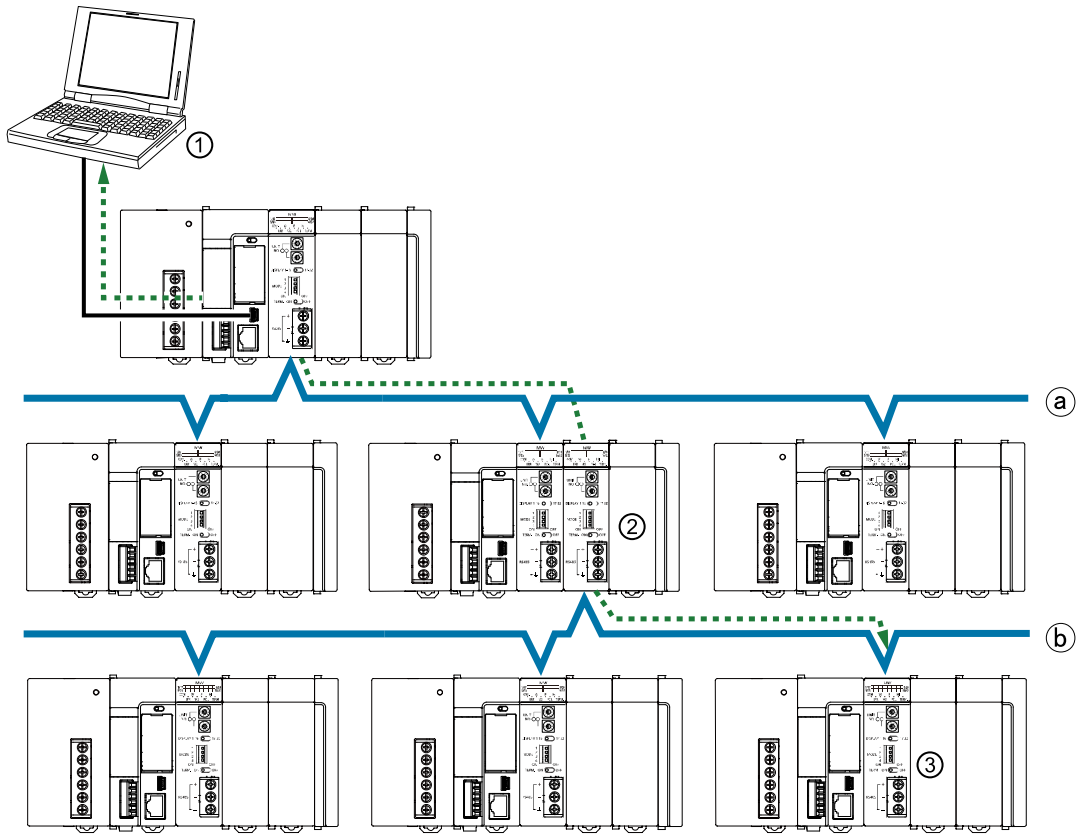
Item	Specifications	
	W mode	W2 mode
Computer link capacity	Max. 118 bytes per frame	Max. 2048 bytes per frame

(Note 1) For sending commands using MEWTOCOL7, PLCs must consists of FP7 only.

7.3 Hierarchy Link

7.3.1 Overview

This figure shows an example when a command is sent/received to/from a higher-order PC via a relay station.



(1)	Source			(a)	Depth 0
(2)	Relay station	(3)	Destination	(b)	Depth 1

■ Hierarchy link function

- Commands can be sent or received to link with PLCs in different hierarchies using a PLC with multiple link units as a relay station.
- The system using the FP7 MW Unit can consist of PLCs in a maximum of two hierarchies (depth 0 or depth 1).
- For the hierarchy link, linked PLCs are specified by the hierarchy control command "LC" of communication procedure "MEWTOCOL-COM". After sending the hierarchy control command "LC", PLCs are controlled by sending/receiving MEWTOCOL commands according to used applications.
- In the system using the FP7 MW Unit, the transmission path information is held in case of power outage. Even after the occurrence of an instantaneous power failure, operation can be

continued. Send the hierarchy control command "LC" again for communicating with PLCs in different hierarchies.

7.3.2 Specifications and Restrictions

■ Specifications

Item			Specifications
Supported function			Computer Link
Hierarchy			Max. 2 hierarchies (Depth 0, depth 1)
Corresponding port of CPU unit			USB port / COM0 port
Transmission path setting function			Set it to the PLC communication port by MEWTOCOL-COM command (0C, LC). The transmission path information is held in case of power outage.(Note 2)(Note 3)
Protocol and size capable of relaying	W mode	MEWTOCOL7	Not available
		MEWTOCOL-COM	118 bytes per frame
		MEWTOCOL-DAT	118 bytes per frame
	W2 mode	MEWTOCOL7	4 k bytes per frame
		MEWTOCOL-COM	2 k bytes per frame
		MEWTOCOL-DAT	2 k bytes per frame
Available transmission path			Source -> (Relay station) -> Destination
	MEWTOCOL7 (Note 4)		FP7(FP7)FP7FP7→(FP7)→FP7
	MEWTOCOL-COM MEWTOCOL-DAT (Note 1)(Note 5)		FP7(FP7)FP7FP7→(FP7)→FP7 FP7→(FP2)→FP7 FP7→(FP2)→FP2 FP2→(FP2)→FP7 FP2→(FP7)→FP7

(Note 1) The remote programming function and data transfer function (transfer by SEND/RECV instructions) are available for PLCs in the same hierarchy (depth 0). They cannot be executed for PLCs in the different hierarchy (depth 1).

(Note 2) Slot numbers are set in the range of 01h to 10h (1 to 16).

(Note 3) The relay position for the FP7 CPU is specified with a slot number. The depth is selected from 0 or 1.

(Note 4) For communicating with MEWTOCOL7, the system must consist of MEWNET-W2 and FP7 only.

(Note 5) Data must be sent by the minimum size limited in the transmission path.

■ Other restrictions

Item		Specifications
Unit configuration	Relay from W mode to W mode	Available only when the units in W mode are two. When there are more than three units, it cannot be used as the relay station.
	Relay from W mode to W2 mode	Not available
	Relay from W2 mode to W mode	Not available

Item		Specifications
	Relay from W2 mode to W2 mode	There is no restrictions when the installed units are up to 4 units (i.e. max. connectable number of units).
	Relay to the built-in ET-LAN in the CPU	Not available
Simultaneous transmission of commands		Communication cannot be performed when another command for the same function (computer link, data transfer, remote programming) is sent to the same relay station

7.4 Relevant Information

7.4.1 Format of [LC] Command Response

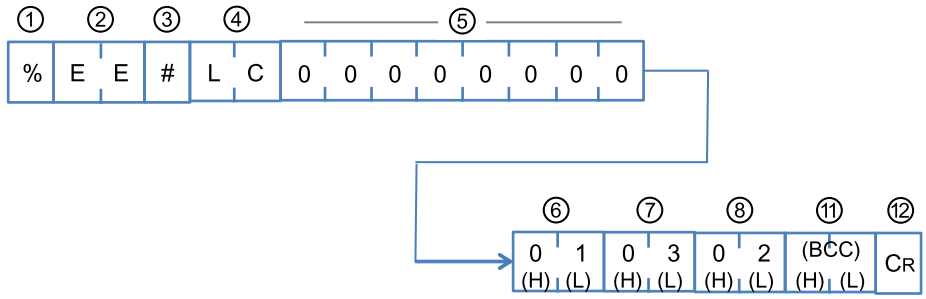
This section describes the formats of "LC: Hierarchy control" used for the hierarchy link function.

■ Overview

- Specify hierarchies and register the units to be linked in the PLC.
- In the system using the FP7 MW Unit, the transmission path information is held in case of power outage. Even after the occurrence of an instantaneous power failure, operation can be continued.
- Send the hierarchy control command "LC" again for communicating with PLCs in different hierarchies.

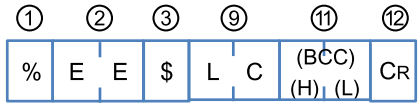
■ Command format

Format when using the FP7 MW Unit



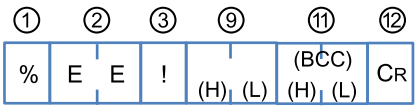
■ Response format (in normal state)

"LC" that is the same as the command code is returned on successful completion.



■ Response format (in abnormal state)

An error code is returned when the operation abnormally ends.



■ **Elements which compose command responses**

Number	Name	Description
(1)	Header	% or <
(2)	Address	"EE" (Fixed): Specify the own unit.
(3)	Identification code	"#": Indicates a command. "$": Indicates a normal response. "!": Indicates an error response.
(4)	Command code	"LC": Indicates the hierarchy control command.
(5)	0 (Fixed)	"0" x 8 characters of LC command are given.
(6)	Depth	"00" to "01": Specify the depth to a connected unit. For the FP7 MW Unit, up to the depth 1 can be specified.
(7)	Relay source unit no.	"01" to "32": Specify a relay source unit number.
(8)	Relay destination slot no.	"0x01" to "0x10": For the FP7 MW Unit, specify slot numbers. Specify slot numbers (01 to 16) converted to hexadecimal.
(9)	Response code	"LC": It is returned for a normal response.
(10)	Error code	An error code is returned when an error occurs.
(11)	Check code	BCC code is stored.
(12)	Terminator	”CR” (0D:Hex):

7.4.2 Format of [0C] Command Response

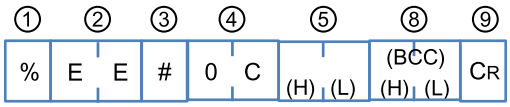
This section describes the formats of "0C: Access link unit" used for the hierarchy link function.

■ **Overview**

- Register units to be linked in the PLC.
- When this command is received, the transmission path information set by "LC: Hierarchy control" command will be invalid.
- In the system using the FP7 MW Unit, the transmission path information is held in case of power outage. Even after the occurrence of an instantaneous power failure, operation can be continued.
- The transmission path information is initialized (cleared to 0) by specifying "00" for a slot number.

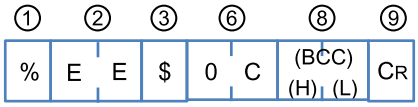
■ **Command format**

Format when using the FP7 MW Unit



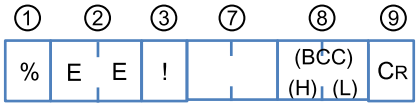
■ Response format (in normal state)

"0C" that is the same as the command code is returned on successful completion.



■ Response format (in abnormal state)

An error code is returned when the operation abnormally ends.



■ Elements which compose command responses

Number	Name	Description
(1)	Header	% or <
(2)	Destination	"EE" (Fixed): Specify the own unit.
(3)	Identification code	"#": Indicates a command. "$": Indicates a normal response. "!": Indicates an error response.
(4)	Command code	"0C": Indicates the access link unit command.
(5)	Slot no.	"0x01" to "0x10": For the FP7 MW Unit, specify slot numbers. Specify slot numbers (01 to 16) converted to hexadecimal.
(6)	Response code	"0C": It is returned for a normal response.
(7)	Error code	An error code is returned when an error occurs.
(8)	Check code	BCC code is stored.
(9)	Terminator	”CR” (0D:Hex)

(MEMO)

8 Troubleshooting

8.1 Self-diagnostic Function

8.1.1 Operation Monitor LEDs of CPU Unit

The CPU unit has a self-diagnostic function which identifies errors and stops operation if necessary. Indications concerning self-diagnosis are as follows.

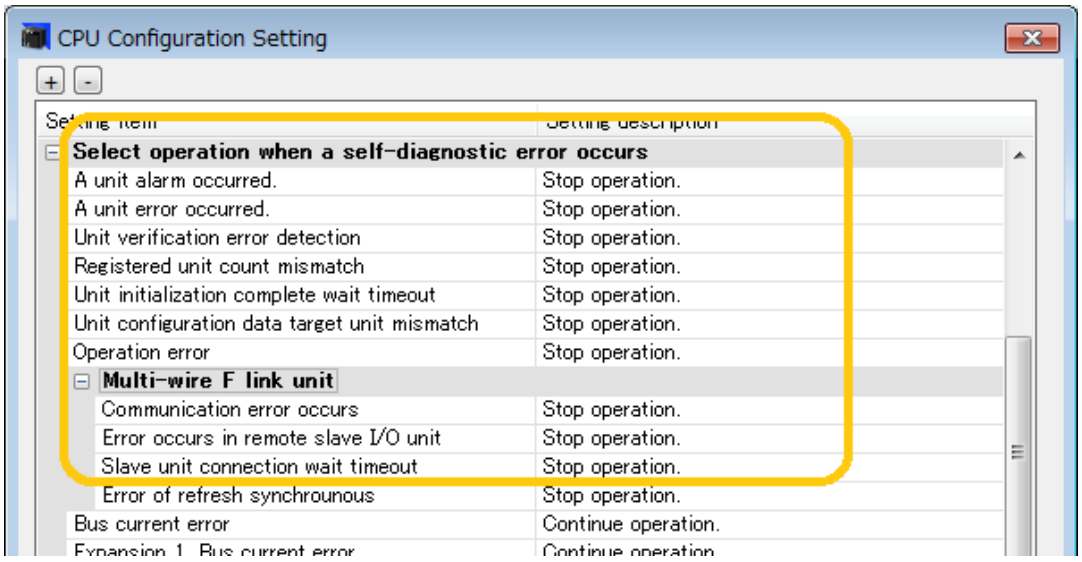
■ LEDs related to self-diagnostic errors

	LEDs of CPU Unit				Description	Operation status
	RUN Green	PROG Green	ERROR Red	ALARM Red		
Normal operation	ON	OFF	OFF	OFF	Normal operation	Operating
	OFF	ON	OFF	OFF	Program mode	Stop
	Flashes	OFF	OFF	OFF	Forcing input/output in RUN mode	Operating
Error	ON	OFF	Flashes	OFF	Self-diagnostic error (During operation)	Operating
	OFF	ON	Flashes	OFF	Self-diagnostic error (During stop)	Stop
	OFF	ON	(Not fixed)	ON	System watchdog timer has been activated	Stop
	OFF	Flashes	(Not fixed)	OFF	Waiting for connection of slaves	Stop

8.1.2 Operation State of CPU Unit When an Error Occurs

Operation mode of the CPU unit at the time of error can be set (Continue or Stop) in the "FP7 Configuration" dialog box of the programming tool FPWIN GR7.

■ Configuration menu of FPWIN GR7



Info.

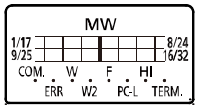
- For information on the troubleshooting for the CPU unit, also refer to *FP7 CPU Unit User's Manual (Hardware)*.

Info.

- In W mode or W2 mode, the CPU unit continues the operation even if an error occurs in the FP7 MW Unit (except for the hardware error of the FP7 MW Unit).
- In F mode, the operation mode is determined by "CPU Configuration Setting".

8.1.3 Operation Monitor LEDs of FP7 MW Unit

The FP7 MW Unit has a self-diagnostic function which identifies errors.



Info.

- For details of the operation monitor LEDs of the FP7 MW Unit, refer to "2.3 Operation Monitor LEDs".

8.2 Confirmation by System Relays / System Data Registers

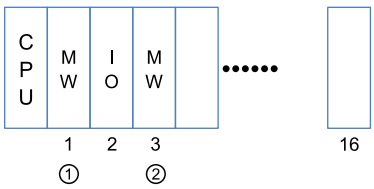
8.2.1 Confirmation by System Registers

The system relay of the relative number of an abnormal unit among installed FP7 MW Units turns on.

SR50-SR5F

Relay no.	Name	Description
SR50	FP7 MW Unit error annunciation relay (1st unit)	Turns on when an error occurs in the FP7 MW Unit. The error code and unit number is stored in the system registers SD90-SD95.
SR51	(2nd unit)	
SR52	(3rd unit)	
SR53	(4th unit)	
SR54	(5th unit)	
SR55	(6th unit)	
SR56-SR5F	Reserved for system	

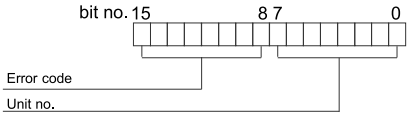
(Note 1) The unit numbers in the above table are those for the installed FP7 MW Units (W mode/W2 mode/F mode) counted from the unit closest to the CPU unit. They are different from the slot numbers.



8.2.2 Confirmation by System Data Registers

The following is a list of system data registers (SD) related to the FP7 MW Unit.

SD90-SD99 (A: Available, Blank: Not available)

Register No.	Name	Description	R	W
SD90	FP7 MW Unit error annunciation register (1st unit)	When an error occurs in the FP7 MW Unit, the error code is stored in the high byte and the unit number is stored in the low byte.  	A	
SD91	(2nd unit)			
SD92	(3rd unit)			
SD93	(4th unit)			
SD94	(5th unit)			
SD95	(6th unit)			
SD96-SD99	Reserved for system			

(Note 1) The following values are stored in the error code and unit number.

Network	Error code		Unit No.
MEWNET-W	bit 8	Transmission system error	H01 to H20 (U1 to U32)
	bit 9	Unit number duplicate	
	bit10	PLC link address duplicate	
	bit11	Unit number error	
	bit12	Undefined	
	bit13	Undefined	
	bit14	Undefined	
	bit15	Undefined	
MEWNET-W2	bit 8	Link unit stopped	H01 to H40 (U1 to U64)
	bit 9	Link disabled	
	bit10	Undefined	
	bit11	Packet transmission disabled	
	bit12	PLC link address duplicate	
	bit13	Undefined	
	bit14	Undefined	
	bit15	Undefined	
MEWNET-F	bit 8	Line error	H00 (Fixed)
	bit 9	Transmission error	
	bit10	Prohibited unit	
	bit11	Terminal unit error	
	bit12	Excessive number of slots	
	bit13	Excessive number of I/O points	
	bit14	Instantaneous power failure	
	bit15	Verification error	

8.3 Monitor and Operation by User Programs

8.3.1 Monitoring Status by PMGET Instruction

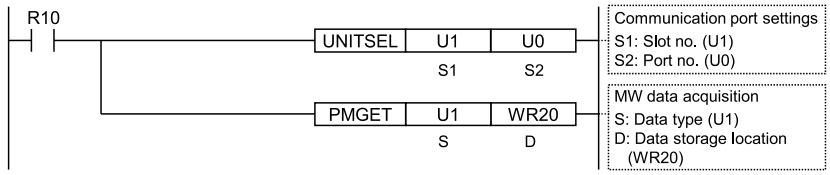
The communication state or error information on the unit can be monitored by using PMGET instruction. Readable type of information and the number of wards vary according to the network mode.

■ Monitorable items

Mode	Item	Description	No. of words
MEWNET-W	PLC link communication state	The transmission state and operation mode of PLC link are stored.	3
	Network participation state	The network participation state is stored.	3
	Detail of W link communication error	The number of occurred communication errors is stored.	15
	PLC link refresh operation monitoring information	The transmission/reception state of PLC link is stored.	8
MEWNET-W2	PLC link transmission state	The transmission state and operation mode of PLC link are stored.	6
	Network participation state	The network participation state is stored.	5
	W2 link error system counter type error area	The number of occurred communication errors is stored.	18
	W2 link error system error register area	The error history is stored.	U10
MEWNET-F	No. of F link services	The number of services of master unit is stored.	1
	F link operation state monitor	The information on connected unit and abnormal units is stored.	U10

■ Example of program

This program is for acquiring the state of the unit connected to the network of the FP7 MW Unit in the slot number 1.



Info.

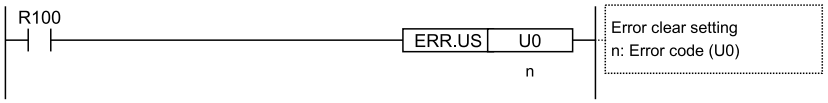
- For checking communication parameters with PMGET instruction, the CPU should be set in the RUN mode. For MEWNET-F, the operation stops according to errors and changes to PROG. mode. As necessary, set "Mode selection when self-diagnostic error occurs - A unit error occurred." to "Continue operation" in the "CPU configuration".

8.3.2 Clearing Errors by ERR Instruction

The self-diagnostic errors in the FP7 MW Unit can be cleared by user programs. After correcting error factors, execute the clear operation.

■ Sample program

When clearing the self-diagnostic error code, the errors in the FP7 MW Unit are also cleared.



Info.

- For details of "PMGET" instructions, refer to "9.1.3 PMGET Instruction (For MEWNET-W)", "9.1.4 PMGET Instruction (For MEWNET-W2)", and "9.1.5 PMGET Instruction (For MEWNET-F)".
- For details of "ERR" instructions, refer to "9.2.1 ERR Instruction".

8.4 What to Do If an Error Occurs

8.4.1 When Transmission Error Occurs (COM.LED of FP7 MW Unit Turns Off)

■ Situation

A transmission error may have occurred.

■ Procedure (1)

Check to make sure the transmission cables have been connected between the two (+) terminals, and between the two (-) terminals of the units.

■ Procedure (2)

Check if the transmission cables are within the specifications range. Configure all the wiring systems using the same type of cables. Do not mix different types of cables.

■ Procedure (3)

Check the operation monitor LEDS and terminator setting switch on the unit to make sure the units at the both ends of the network are set as terminal units.

8.4.2 When ERR LED on FP7 MW Unit Turns ON

■ Situation

An error may have occurred in the hardware of FP7 MW Unit.

■ Procedure

Turn off and on the power, and check again.

8.4.3 When ERR LED on FP7 MW Unit is Flashing

■ Situation

Any setting or configuration of the unit may be wrong.

■ Procedure

Confirm the position of the unit and error content by using any of the followings.

- System relays (SR), System data registers (SD)
- Status information (such as transmission assurance relay, operation mode relay)
- PMGET instruction

■ Procedure

Correct the settings and configuration of the unit.

■ Check items

Item	Contents to check	Remarks
Switch settings	Is the selection of the mode switch (W mode/W2 mode/F mode) correct?	
	For the PLC link, is the mode switch number 1 off?	
	Are the unit numbers set correctly? Isn't there any overlapping unit number?	
Configuration	Is the allocation of PLC link correct? Isn't there any overlapping transmission area for connected units. Is the transmission/reception area of PLC link correct?	
	When unit numbers are set in Configuration, are unit numbers set correctly? Isn't there any overlapping unit number?	
User program	When unit numbers are set by user programs, are unit numbers set correctly?	
	(W mode) When performing the PLC link allocation by user programs, is the PLC link allocation correct?	

(Note 1) For checking communication parameters with PMGET instruction, the CPU should be set in the RUN mode.

(MEMO)

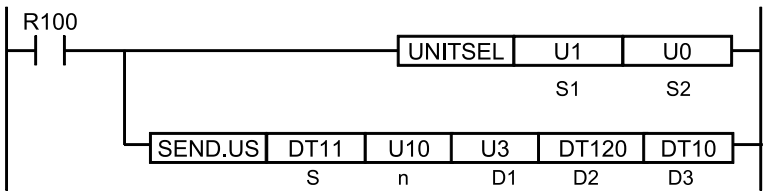
9 Instruction References

9.1 Communication Instructions

9.1.1 SEND Instruction (When Using FP7 MW Unit)

Data can be transferred from the own unit to destination units between PLCs connected by MEWNET-W or MEWNET-W2 by specifying the both operation devices.

■ Instruction format



(Note 1) The above figure shows the case that the FP7 MW Unit of S1=U1 (slot no.1) is specified by UNITSEL instruction.

■ Operand

Item	Settings	Settable device	Setting range
S	Specify the starting address of the source data area. (Note 1)	WX, WY, WR, WL, DT, LD, X, Y, R, L, DT.n, LD.n	-
n	Specify the number of sent data. (Note 2)	WX, WY, WR, WL, DT, LD, U, H	(For register transmission) W mode: 1 to 55 W2 mode: 1 to 1020 (For bit transmission) 1 (Fixed)
D1	Specify the destination unit number.	WX, WY, WR, WL, DT, LD, U, H	W mode: 1 to 32 W2 mode: 1 to 64
D2	Specify the starting address of the device in the destination data area of destination unit. (Note 3)	WX, WY, WR, WL, DT, LD, X, Y, R, L	(For register transmission) 0 to 65535 (For bit transmission) 0 to 65535F
D3	Specify the device area of the local unit storing the execution result code (1 word).	WX,WY,WR,WL,DT,LD	-

(Note 1) The transfer method varies according to the device type specified for operands [S] and [D2].

Devices specified for [S] and [D2]	Transfer method
16-bit device: WX, WY, WR, WL, DT, LD	Register transmission
1-bit device: X, Y, R, L, DT.n, LD.n	Bit transmission

(Note 2) The number of sent data is in word unit for the register transmission and it is in bit unit for the bit transmission.

(Note 3) When the destination unit is FP7, only global devices can be specified. Local devices cannot be specified.

(Note 4) When the destination data is FL, specify the integer (U, H). (For FL100, specify U100.)

■ Execution result code [D3]

Code	Description	Code	Description
H0	Normal end	H24	Transmission format error
H 1	The communication port is being used in the master communication.	H25	MW hardware error
H 2	The communication port is being used in the slave communication.	H26	The unit number setting error occurs.
H 3	The number of master communication instructions simultaneously used is exceeded.	H27	NOT support
H 4	Transmission timeout	H28	No response
H 5	Response reception timeout	H29	MW hardware error
H 6	Reception error(Note 1)	H30	Transmission timeout error
H7	I/O allocation shortage error(Note 2)	H30-H39	MW hardware error
H8	The send buffer is being used.		
H9	Own unit unset error	H41	Format error
H21	NACK	H60	Parameter error
H22	WACK	H61	Data error
H23	The unit number duplicate error occurs.	H91	Missing expansion slave unit error

(Note 1) It occurs when an abnormal telegram is received. When the format of the header for each protocol is abnormal, the reception data will be discarded and the response reception will time out.

(Note 2) It occurs when the communication control I/O relays corresponding to the communication port (master communication clear to send flag, master communication send active flag, master communication send done result relay) are not allocated as I/O words of the CPU unit in the I/O map. It occurs only when the number of user connections of ET-LAN is expanded and this instruction is executed specifying that expanded connections.

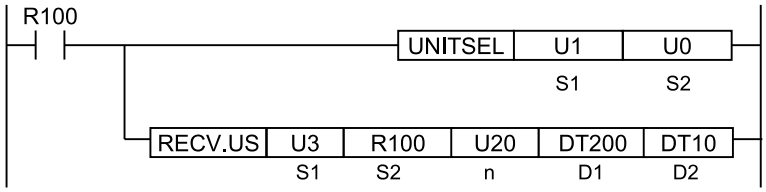
■ Precautions during programming

- Describe UNITSEL instruction immediately before SEND instruction and specify the slot number of FP7 MW Unit in [S1] and 0 in [S2].
- For FP7 MW Unit, SEND instruction executes the transmission and reception by MEWTOCOL-DAT (fixed).
- Up to 16 send instructions can be performed to different COM ports and connections simultaneously. (The total of simultaneous usage of SEND, RECV, pGPSEND, GPTRNS, and pPMSET instructions.)
- For the FP7 MW Unit, only one of those can be executed for one unit.

9.1.2 RECV instruction (When using FP7 MW Unit)

Data can be transferred from the destination unit to own unit between PLCs connected by MEWNET-W or MEWNET-W2 by specifying the both operation devices.

■ Instruction format



(Note 1) The above figure shows the case that the FP7 MW Unit of S1=U1 (slot no.1) is specified by UNITSEL instruction.

■ Operand

Item	Settings	Settable device	Setting range
S1	Specify the destination unit number.	WX, WY, WR, WL, DT, LD, U, H	W mode: 1 to 32 W2 mode: 1 to 64
Example 1	Specify the starting address of the device in the source data area of destination unit. (Note 1)(Note 2)(Note 3)(Note 4)	WX, WY, WR, WL, DT, LD, U, H X, Y, R, L, DT.n, LD.n	(For register transmission) 0 to 65535 (For bit transmission) 0 to 65535F
n	Specify the number of received data. (Note 5)	WX, WY, WR, WL, DT, LD, U, H	(For register transmission) W mode: 1 to 56 W2 mode: 1 to 1020 (For bit transmission) 1 (Fixed)
D1	Specify the device starting address in the home unit storing received data. (Note 1)	WX, WY, WR, WL, DT, LD, X, Y, R, L, DT.n, LD.n	(Note 1)
D2	Specify the device area of the local unit storing the execution result code (1 word).	WX,WY,WR,WL,DT,LD	-

(Note 1) The transfer method varies according to the device type specified for operands [S2] and [D1].

Device specified in [S2] and [D1]	Transfer method
16-bit device: WX, WY, WR, WL, DT, LD	Register transmission
1-bit device: X, Y, R, L, DT.n, LD.n	Bit transmission

(Note 2) The bit devices DT, n, LD and n cannot be specified for the starting address of the source data of destination unit.

(Note 3) When the source unit is FP7, only global devices can be specified. Local devices cannot be specified.

(Note 4) When the source data is FL, specify the integer (U, H). (For FL100, specify U100.)

(Note 5) The number of sent data is in word unit for the register transmission and it is in bit unit for the bit transmission.

■ Execution result code [D2]

Code	Description	Code	Description
H0	Normal end	H24	Transmission format error

Code	Description	Code	Description
H 1	The communication port is being used in the master communication.	H25	MW hardware error
H 2	The communication port is being used in the slave communication.	H26	The unit number setting error occurs.
H 3	The number of master communication instructions simultaneously used is exceeded.	H27	NOT support
H 4	Transmission timeout	H28	No response
H 5	Response reception timeout	H29	MW hardware error
H 6	Reception error(Note 1)	H30	Transmission timeout error
H7	I/O allocation shortage error(Note 2)	H30-H39	MW hardware error
H8	The send buffer is being used.		
H9	Own unit unset error	H41	Format error
H21	NACK	H60	Parameter error
H22	WACK	H61	Data error
H23	The unit number duplicate error occurs.	H91	Missing expansion slave unit error

(Note 1) It occurs when an abnormal telegram is received. When the format of the header for each protocol is abnormal, the reception data will be discarded and the response reception will time out.

(Note 2) It occurs when the communication control I/O relays corresponding to the communication port (master communication clear to send flag, master communication send active flag, master communication send done result relay) are not allocated as I/O words of the CPU unit in the I/O map. It occurs only when the number of user connections of ET-LAN is expanded and this instruction is executed specifying that expanded connections.

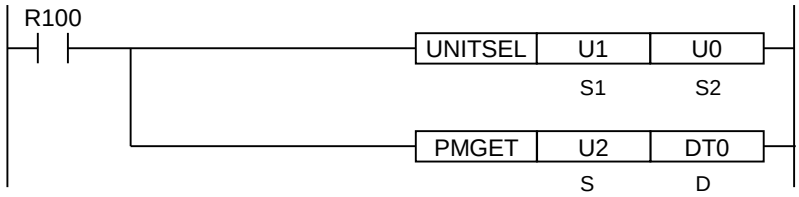
■ Precautions during programming

- Describe UNITSEL instruction immediately before RECV instruction and specify the slot number of FP7 MW Unit in [S1] and 0 in [S2].
- For FP7 MW Unit, RECV instruction executes the transmission and reception by MEWTOCOL-DAT (fixed).
- Up to 16 send instructions can be performed to different COM ports and connections simultaneously. (The total of simultaneous usage of SEND, RECV, pGPSEND, GPTRNS, and pPMSET instructions.)
- For the FP7 MW Unit, only one of those can be executed for one unit.

9.1.3 PMGET Instruction (For MEWNET-W)

Monitor information showing the communication state and PLC link operation can be acquired.

■ Instruction format



(Note 1) The above figure shows the case that the FP7 MW Unit of S1=U1 (slot no.1) is specified by UNITSEL instruction.

■ Operand

Item	Settings	Settable device	Setting range
S	Specify the type of acquired data.	WX,WY,WR,WL,DT,LD,U	0: PLC link communication state 1: Network participation state 2: Detail of W link communication error 3: PLC link refresh operation monitor
D	Specify the starting address of the area storing the acquired communication parameter (monitor information).	WX,WY,WR,WL,DT,LD	(Note 1)

(Note 1) The size of the area storing data varies in the range of 3 to 15 words according to the data type specified in [S].

Value of [S]	Type	No. of words	Storage location
0	PLC link communication state	3	[D] to [D+2]
1	Network participation state	3	[D] to [D+2]
2	Detail of W link communication error	15	[D] to [D+14]
3	PLC link refresh operation monitoring information	8	[D] to [D+7]

■ PLC link communication state (When [S] = 0)

	Item	Range	Description
[D]	PLC Link address duplicate destination	H0 to HF	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Normal, ON: Area duplication occurs (The position of destination unit is set to ON.)
[D+1]	PLC Link transmission assurance relay	H0 to HF	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: When stopped or in abnormal state, ON: PLC link communicating normally
[D+2]	PLC Link operation mode relay	H0 to HF	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: PROG. mode, ON: RUN mode

■ Network participation state (When [S] = 1)

	Item	Range	Description
[D]	No. of units added to the link	U0 to U32	The number of units added to the link is stored. The value is 0 when the existing unit in the network is only one or a unit number is being changed.
[D+1]	Link participation unit flag Unit nos. 1 to 16	H0 to HF	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Not exist, ON: Participating
[D+2]	Link participation unit flag Unit nos. 17 to 32	H0 to HF	bit0 to bit15: Unit no. 17 to unit no. 32 OFF: Not exist, ON: Participating

■ [D] Detail of W link communication error (When [S] = 2)

	Item	Range
[D]	No. of occurrences of non-token state	U0 to U255
[D+1]	No. of occurrences of duplicate tokens	U0 to U255
[D+2]	No. of occurrences of non-signal state	U0 to U255
[D+3]	No. of occurrences of synchronous error	U0 to U255
[D+4]	No. of occurrences of transmission answer NACK	U0 to U255
[D+5]	No. of occurrences of three consecutive transmission answers NACK	U0 to U255
[D+6]	No. of occurrences of transmission answer WACK	U0 to U255
[D+7]	No. of occurrences of three consecutive transmission answers WACK	U0 to U255
[D+8]	No. of occurrences of non-response	U0 to U255
[D+9]	No. of occurrences of three consecutive non-response	U0 to U255
[D+10]	No. of occurrences of receive command code error	U0 to U255
[D+11]	No. of occurrences of receive data CRC error	U0 to U255
[D+12]	No. of absences of receive data end code	U0 to U255
[D+13]	No. of occurrences of receive data format error	U0 to U255
[D+14]	No. of occurrences of receive data NOT support error	U0 to U255

■ PLC link refresh operation monitoring information (When [S] = 3)

	Item	Range
[D]	No. of receptions RING counter	U0 to U65535
[D+1]	Reception interval Current value (x1ms)	
[D+2]	Reception interval Minimum value (x1ms)	
[D+3]	Reception interval Maximum value (x1ms)	
[D+4]	No. of transmissions RING counter	U0 to U65535
[D+5]	Transmission interval Current value (x1ms)	
[D+6]	Transmission interval Minimum value (x1ms)	
[D+7]	Transmission interval Maximum value (x1ms)	

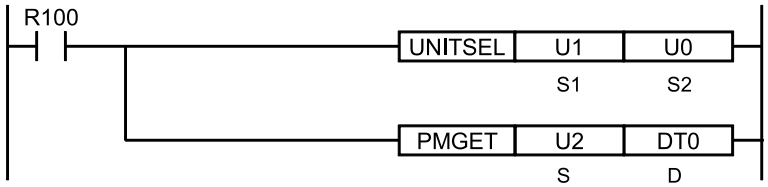
■ Precautions during programming

- Describe UNITSEL instruction immediately before PMGET instruction and specify the slot number of the unit which acquires parameters in [S1] and 0 in [S2].

9.1.4 PMGET Instruction (For MEWNET-W2)

Monitor information showing the communication state and PLC link operation can be acquired.

■ Instruction format



(Note 1) The above figure shows the case that the FP7 MW Unit of S1=U1 (slot no.1) is specified by UNITSEL instruction.

■ Operand

Item	Settings	Settable device	Setting range
S	Specify the type of acquired data.	WX,WY,WR,WL,DT,LD,U	0: PLC link transmission state 1: Network participation state 2: W2 link error system counter type error area 3: W2 link error system error register area
D	Specify the starting address of the area storing the acquired communication parameter (monitor information).	WX,WY,WR,WL,DT,LD	(Note 1)

(Note 1) The size of the area storing data varies in the range of 5 to 18 words according to the data type specified in [S].

Value of [S]	Type	No. of words	Storage location
0	PLC link transmission state	6	[D] to [D+5]
1	Network participation state	5	[D] to [D+4]
2	W2 link error system counter type error area	18	[D] to [D+17]
3	W2 link error system error register area	U10	[D] to [D+9]

■ PLC link transmission state (When [S] = 0)

	Item	Range	Description
[D] to [D +1]	PLC link state monitor flag Unit no. 1 to 32	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: Stop, ON: PLC link communicating normally

	Item	Range	Description
[D+2] to [D+3]	PLC link operation mode flag Unit no. 1 to 32	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: PROG. mode, ON: RUN mode
[D+4] to [D+5]	PLC link operation state flag Unit no. 1 to 32	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: No error, ON: Error occurs in PLC transmission is ensured.

(Note 1) Even when the above (3) has been set by the **PLC link operation state flag>"W2 link unit setting"** of the tool software, the data of 6 words is read by PMGET instruction.

■ Network participation state (When [S] = 1)

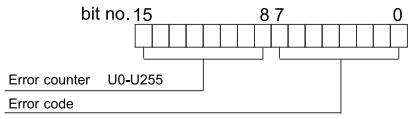
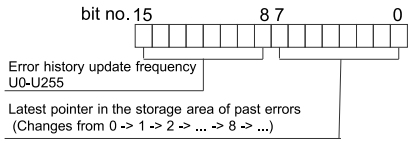
	Item	Range	Description
[D]	No. of units added to the link	U0 to U64	The number of units added to the link is stored. The value is 0 when the existing unit in the network is only one or a unit number is being changed.
[D+1]	Link participation unit flag Unit nos. 1 to 16	H0 to HF	bit0 to bit15: Unit no. 1 to unit no. 16 OFF: Not exist, ON: Participating
[D+2]	Link participation unit flag Unit nos. 17 to 32	H0 to HF	bit0 to bit15: Unit no. 17 to unit no. 32 OFF: Not exist, ON: Participating
[D+3]	Link participation unit flag Unit nos. 33 to 48	H0 to HF	bit0 to bit15: Unit no. 33 to unit no. 48 OFF: Not exist, ON: Participating
[D+4]	Link participation unit flag Unit nos. 49 to 64	H0 to HF	bit0 to bit15: Unit no. 49 to unit no. 64 OFF: Not exist, ON: Participating

■ W2 link error system counter type error area (When [S] = 2)

	Item	Range
[D]	No. of missing tokens	U0 to U255
[D+1]	No. of duplicate tokens	U0 to U255
[D+2]	No. of occurrences of non-signal state	U0 to U255
[D+3]	No. of occurrences of synchronous error	U0 to U255
[D+4]	No. of occurrences of transmission NACK error (When an error occurs)	U0 to U255
[D+5]	No. of occurrences of transmission NACK error (At the time of third retry)	U0 to U255
[D+6]	No. of occurrences of transmission WACK error (When an error occurs)	U0 to U255
[D+7]	NNo. of occurrences of transmission WACK error (When occurred 16 times continuously)	U0 to U255
[D+8]	No. of occurrences of non-response (When an error occurs)	U0 to U255
[D+9]	No. of occurrences of non-response (At the time of third retry)	U0 to U255
[D+10]	No. of receptions of undefined commands	U0 to U255
[D+11]	No. of occurrences of receive parity check error	U0 to U255
[D+12]	No. of occurrences of END CODE reception error	U0 to U255

	Item	Range
[D+13]	No. of occurrences of receive data format error	U0 to U255
[D+14]	No. of occurrences of receive data NOT support error	U0 to U255
[D+15]	No. of token retransmissions	U0 to U255
[D+16]	No. of detection of unit OFF	U0 to U255
[D+17]	No. of occurrences of link disabled state	U0 to U255

■ W2 link error system error register area (When [S] = 3)

	Item	Description
[D]	State of error currently occurs	 When the same error occurs, the error counter of high byte will be updated. When the error content changes and the error is cleared, the information will be stored in the error occurrence state history area ([D+2] to [D+9]).
[D+1]	Error occurrence state history management	 (Changes from 0 -> 1 -> 2 -> ... -> 8 -> ...) When the latest pointer in the storage area of past errors is 0, it indicates that there is no error. When the number of error updates is 0, it indicates that there is no update.
[D+2]	Error occurrence state history area 1	History of error occurrence state (parameter of [D]) 1
[D+3]	Error occurrence state history area 2	History of error occurrence state (parameter of [D]) 2
[D+4]	Error occurrence state history area 3	History of error occurrence state (parameter of [D]) 3
[D+5]	Error occurrence state history area 4	History of error occurrence state (parameter of [D]) 4
[D+6]	Error occurrence state history area 5	History of error occurrence state (parameter of [D]) 5
[D+7]	Error occurrence state history area 6	History of error occurrence state (parameter of [D]) 6
[D+8]	Error occurrence state history area 7	History of error occurrence state (parameter of [D]) 7
[D+9]	Error occurrence state history area 8	History of error occurrence state (parameter of [D]) 8

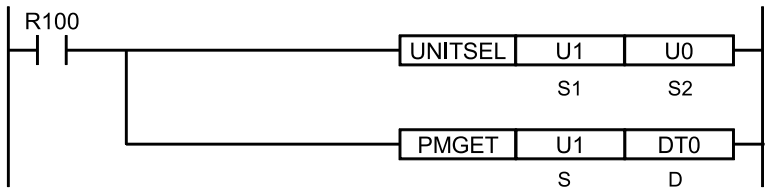
■ Precautions during programming

- Describe the UNITSEL instruction immediately before the PMGET instruction. Specify the slot number of the unit from which the parameters are acquired for [S1] and specify 0 for [S2].

9.1.5 PMGET Instruction (For MEWNET-F)

Monitor information showing the communication state can be acquired.

■ Instruction format



(Note 1) The above figure shows the case that the FP7 MW Unit of S1=U1 (slot no.1) is specified by UNITSEL instruction.

■ Operand

Item	Settings	Settable device	Setting range
S	Specify the type of acquired data.	WX,WY,WR,WL,DT,LD,U	0 : No. of F link services 1 : F link operation state monitor
D	Specify the starting address of the area storing the acquired communication parameter (monitor information).	WX,WY,WR,WL,DT,LD	(Note 1)

(Note 1) The size of the area storing data varies in the range of 5 to 18 words according to the data type specified in [S].

	Type	No. of words	Storage location
0	No. of F link services	1	[D]
1	F link operation state monitor	U10	[D] to [D+9]

■ No. of F link services (When [S] = 0)

	Item	Range	Description
[D]	F link service counter	U0 to U65535	Service ring counter of master unit

■ F link operation state monitor {When [S] = 1)

	Item	Range	Description
[D] to [D +1]	Connected unit	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: Disconnected unit, ON: Connected unit

	Item	Range	Description
[D+2] to [D+3]	Abnormal unit current value	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: Normal unit, ON: Abnormal unit
[D+4] to [D+5]	Abnormal unit cumulative value	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: Normal unit, ON: Abnormal unit
[D+6] to [D+7]	Setting of slave unit where I/O verification error occurred	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: Normal unit, ON: Abnormal unit
[D+8] to [D+9]	Slave unit where instantaneous power failure occurred	H00 to HFF	bit0 to bit31: Unit no. 1 to unit no. 32 OFF: Normal unit, ON: Abnormal unit

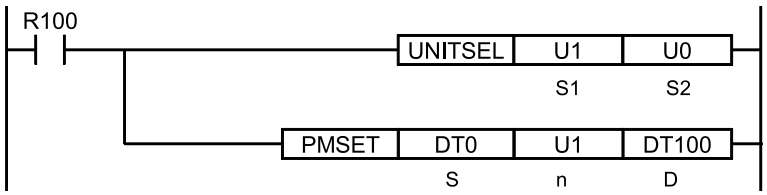
■ Precautions during programming

- Describe the UNITSEL instruction immediately before the PMGET instruction. Specify the slot number of the unit from which the parameters are acquired for [S1] and specify 0 for [S2].

9.1.6 PMSET/pPMSET Instruction (For MEWNET-W)

Unit numbers and PLC link allocation can be set.

■ Instruction format



(Note 1) The above figure shows the case that the FP7 MW Unit of S1=U1 (slot no.1) is specified by UNITSEL instruction.

■ Operand

Item	Settings	Settable device	Setting range
S	Specify the starting address of the device storing set communication parameters.	WX,WY,WR,WL,DT,LD	
n	Specify the number of set words.	WX,WY,WR,WL,DT,LD,U	10 or 1 (Note 1)
D	Specify the device area of the local unit storing the processing result (1 word).	WX,WY,WR,WL,DT,LD	

(Note 1) When the unit number is 17 or more, specify 1.

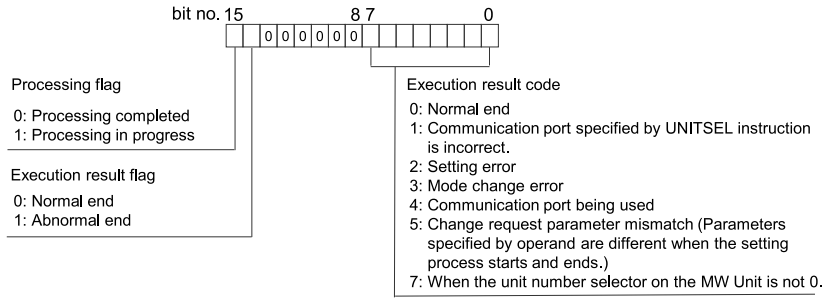
■ [S] to [S+9]: Communication parameter settings in W mode

	Parameter	Range	Description
[S]	Unit no.	U1 to U32	It can be changed only when the rotary switch on the front panel of the unit is set to 0. When using the PLC link, set it in the range of 1 to 16.

	Parameter	Range	Description
[S+1]	Link relay holding start no.	U0 to U128	Specify the hold area of link relays by word numbers.
[S+2]	Link register holding start no.	U0 to U128	Specify the hold area of link relays by word numbers.
[S+3]	Memory block number	U0 to U7	Memory block no. of PLC link area
[S+4]	Range of link relays	U0 to U64	Link relay usable range in the above memory block
[S+5]	Range of link registers	U0 to U128	Link register usable range in the above memory block
[S+6]	Starting number for link relay transmission	U0 to U63	Link relay transmission start no.
[S+7]	Link relay transmission size	U0 to U64	Link relay transmission size
[S+8]	Starting number for link register transmission	U0 - U12	Link register transmission start no.
[S+9]	Link register transmission size	U1 - U12	As for the link register transmission size, up to 127 words can be sent.

■ [D]: Processing result

- The execution result is stored in the area of one word.
- The execution result code in the lower byte is valid when the processing flag of bit 15 is zero.



■ Precautions during programming

- The unit number of the FP7 MW Unit can be set by PMSET/pPMSET instruction only when the unit number selector on the unit is set to 0.
- Describe UNITSEL instruction immediately before PMSET/pPMSET instruction and specify the slot number of the unit which acquires parameters in [S1] and 0 in [S2].
- Confirm the execution result when the bit 15 (processing flag) in the area specified in [D] changes from 1 to 0.
- The content set by the PMSET/pPMSET instruction is not held in the case of power outage. Turn on the power supply again and switch to RUN mode to return to the configuration information set in the tool software.
- When setting it for the FP7 MW Unit, it cannot be used in an interrupt program.

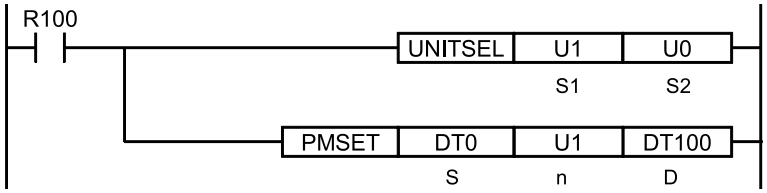
Info.

- For details of sample programs of "PMGET" and "pPMSET" instructions, refer to "9.1.7 PMSET/pPMSET Instruction (For MEWNET-W2)".

9.1.7 PMSET/pPMSET Instruction (For MEWNET-W2)

Unit numbers can be set.

■ Instruction format



(Note 1) The above figure shows the case that the FP7 MW Unit of S1=U1 (slot no.1) is specified by UNITSEL instruction.

■ Operand

Item	Settings	Settable device	Setting range
S	Specify the starting address of the device storing set communication parameters.	WX,WY,WR,WL,DT,LD	
n	Specify the number of set words.	WX,WY,WR,WL,DT,LD,U	U1 (Note 1)
D	Specify the device area of the local unit storing the processing result (1 word).	WX,WY,WR,WL,DT,LD	

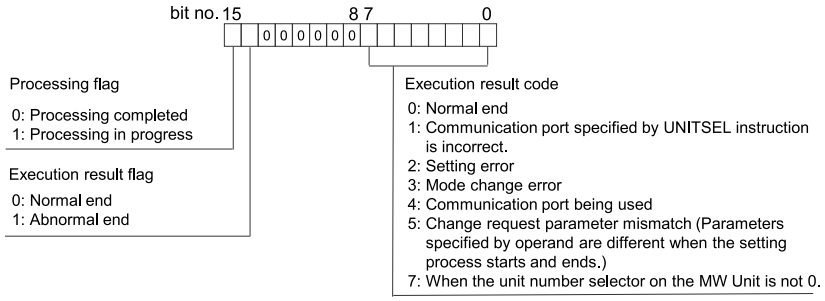
(Note 1) For MEWNET-W2, specify 1.

■ [S]: Communication parameter settings in W2 mode

	Parameter	Range	Description
[S]	Unit no.	U1 to U64	It can be changed only when the rotary switch on the front panel of the unit is set to 0.

■ [D]: Processing result

- The execution result is stored in the area of one word.
- The execution result code in the lower byte is valid when the processing flag of bit 15 is zero.



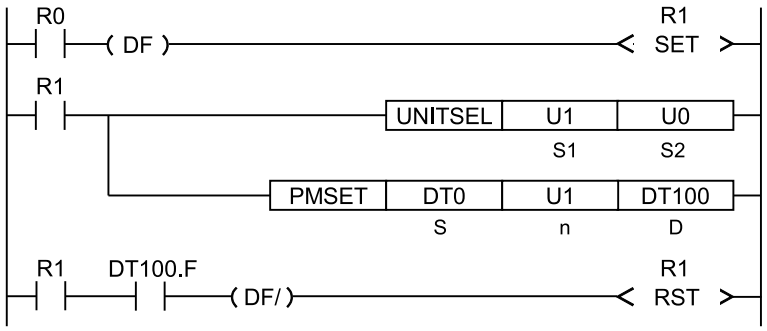
■ Precautions during programming

- The unit number of the FP7 MW Unit can be set by PMSET/pPMSET instruction only when the rotary switch on the unit is set to 0.

- Describe UNITSEL instruction immediately before PMSET/pPMSET instruction and specify the slot number of the unit which acquires parameters in [S1] and 0 in [S2].
- Confirm the execution result when the bit 15 (processing flag) in the area specified in [D] changes from 1 to 0.
- The content set by the PMSET/pPMSET instruction is not held in the case of power outage. Turn on the power supply again and switch to RUN mode to return to the configuration information set in the tool software.
- When setting it for the FP7 MW Unit, it cannot be used in an interrupt program.

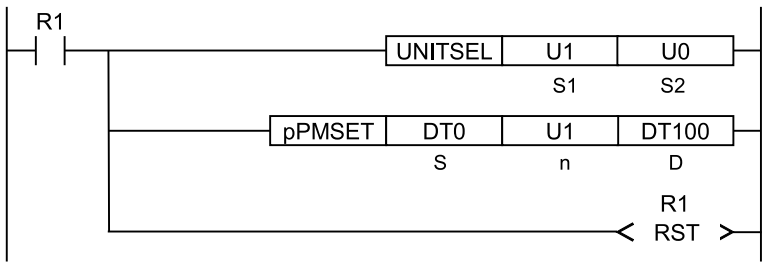
■ Program example (PMSET)

For the PMSET instruction, it is necessary to turn ON the execution condition of the PMSET instruction until the end of processing, and turn OFF the execution condition at a scan in which the end of data transmission is confirmed.



■ Program example (pPMSET)

For pPMSET instruction, when the execution condition arises, the parameter change processing is performed only once.



9.2 Special Instructions

9.2.1 ERR Instruction

Errors related to the FP7 MW Unit can be cleared.

■ Instruction format

■ Operand

Item	Settings	Setting range
n	Specify the self-diagnostic error code.	0: Clear the self-diagnostic error.

■ Area cleared by ERR instruction

Resets values of system relays and system data registers as well as clearing errors in the FP7 MW Unit.

Item	No.	Description
System relay	SR50	FP7 MW Unit 1 error
	SR51	FP7 MW Unit 2 error
	SR52	FP7 MW Unit 3 error
	SR53	FP7 MW Unit 4 error
	SR54	FP7 MW Unit 5 error
	SR55	FP7 MW Unit 6 error
System data register	SD90	FP7 MW Unit 1 error (High-order 8 bits = Error code, Low-order 8 bits = Unit number)
	SD91	FP7 MW Unit 2 error (High-order 8 bits = Error code, Low-order 8 bits = Unit number)
	SD92	FP7 MW Unit 3 error (High-order 8 bits = Error code, Low-order 8 bits = Unit number)
	SD93	FP7 MW Unit 4 error (High-order 8 bits = Error code, Low-order 8 bits = Unit number)
	SD94	FP7 MW Unit 5 error (High-order 8 bits = Error code, Low-order 8 bits = Unit number)
	SD95	FP7 MW Unit 6 error (High-order 8 bits = Error code, Low-order 8 bits = Unit number)

(Note 1) Error information can be read by PMGET instruction.

10 Specifications

10.1 Specifications

10.1.1 General Specifications

Item	Specifications
Operating ambient temperature	0°C to 55°C
Storage ambient temperature	-40°C to +70°C
Operating ambient humidity	10 to 95% RH (at 25°C with no condensing)
Storage ambient humidity	10 to 95% RH (at 25°C with no condensing)
Vibration resistance	10 to 55 Hz, 1 cycle/min (Double amplitude of 0.75 mm, 10 min. on 3 axes)
Shock resistance	98 m/s^2, 4 times on X, Y and Z directions
Noise resistance	1000 V DC [P-P] with pulse widths of 50 ns or 1 μs (based on in-house measurements)
Environment	Free from corrosive gases and excessive dust. EU Directive applicable standard
Overvoltage category	Category II
Pollution degree	Pollution degree 2
Weight (main unit)	Approx. 100g
Consumption current	100mA or less

10.1.2 Performance Specifications

■ Transmission specifications

Item	Specifications		
	W mode	W2 mode	F mode
Communication method	Token bus		Polling
Transmission system	Baseband		
Baud rate	500k bit/s	500k bit/s、250k bit/s	500k bit/s
Transmission distance (Total length)	Max. 800 m	Max. 800m (500k bit/s) Max. 1200m (250k bit/s)	Max. 700 m
No. of connected units	Max. 32 units		Master unit: 1 unit + Slave units: Max. 32 units
Transmission error check	CRC (Cyclic Redundancy Check) method		
Synchronous method	Start stop synchronous system		
Interface	Conforming to RS-485		

Item	Specifications		
	W mode	W2 mode	F mode
Transmission line	Twisted pair cable		Twisted pair, VCTF
RAS function	Hardware self-diagnosis function		

(Note 1) For details of the specifications of applicable cables, refer to "3.1.1 Applicable cables".

■ W / W2 mode specifications

Item			Specifications	
			W mode	W2 mode
Communication Functions			PLC link, Data transfer Remote programming, Computer link, Hierarchy link	
Function / Number of units	PLC Link		Max. 16 units	Max. 32 units
	Others		Max. 32 units	
PLC Link	Used area	Link relay	Memory block specification of WL	WL, WR, LD, DT can be used. (by setting)
		Link register	Memory block specification of LD	
	Setting method		W link configuration	W2 link configuration
	Capacity	Link relay	Max. 1024 points	Max. 4096 points
		Link register	Max. 128 words	Max. 4096 words
Operation state/Error annunciation	Used area		● System relay ● System data register ● Detailed information can be output to WR, LD, DT by setting.	● System relay ● System data register ● Detailed information can be output to WL, WR, LD, DT by setting.
	Setting method		W link configuration	W2 link configuration
Data transfer capacity			Max. 55 words (SEND instruction) Max. 56 words (RECV instruction)	Max. 1020 words
Computer link capacity			Max. 118 bytes	Max. 2048 bytes

■ F mode specifications

Item	Specifications
No. of control points per CPU	Total I/O points: 16064 (excluding 320 points of 10 words occupied by the SCU and ET-LAN built in the CPU)
No. of control points per unit	Total I/O points: 4096
No. of master units per CPU	Max. 4 units (Note 1)

(Note 1) Up to 4 master units (F mode) can be used in the range of the number of control points of CPU Unit.

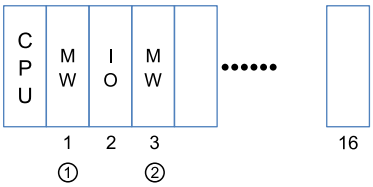
10.2 List of System Relays (SR)

The following is a list of system relays (SR) related to the FP7 MW Unit.

SR50-SR5F

Relay no.	Name	Description
SR50	FP7 MW Unit error annunciation relay (1st unit)	Turns on when an error occurs in the FP7 MW Unit. The error code and unit number is stored in the system registers SD90-SD95.
SR51	(2nd unit)	
SR52	(3rd unit)	
SR53	(4th unit)	
SR54	(5th unit)	
SR55	(6th unit)	
SR56-SR5F	Reserved for system	

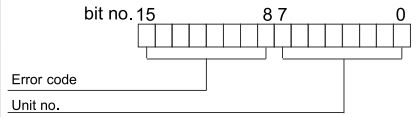
(Note 1) The unit numbers in the above table are those for the installed FP7 MW Units (W mode/W2 mode/F mode) counted from the unit closest to the CPU unit. They are different from the slot numbers.



10.3 List of System Data Registers (SD)

The following is a list of system data registers (SD) related to the FP7 MW Unit.

SD90-SD99 (A: Available, Blank: Not available)

Register No.	Name	Description	R	W
SD90	FP7 MW Unit error annunciation register (1st unit)	When an error occurs in the FP7 MW Unit, the error code is stored in the high byte and the unit number is stored in the low byte. 	A	
SD91	(2nd unit)			
SD92	(3rd unit)			
SD93	(4th unit)			
SD94	(5th unit)			
SD95	(6th unit)			
SD96-SD99	Reserved for system			

(Note 1) The following values are stored in the error code and unit number.

Network	Error code		Unit No.
MEWNET-W	bit 8	Transmission system error	H01 to H20 (U1 to U32)
	bit 9	Unit number duplicate	
	bit10	PLC link address duplicate	
	bit11	Unit number error	
	bit12	Undefined	
	bit13	Undefined	
	bit14	Undefined	
	bit15	Undefined	
MEWNET-W2	bit 8	Link unit stopped	H01 to H40 (U1 to U64)
	bit 9	Link disabled	
	bit10	Undefined	
	bit11	Packet transmission disabled	
	bit12	PLC link address duplicate	
	bit13	Undefined	
	bit14	Undefined	
	bit15	Undefined	
MEWNET-F	bit 8	Line error	H00 (Fixed)
	bit 9	Transmission error	
	bit10	Prohibited unit	
	bit11	Terminal unit error	

Network	Error code		Unit No.
	bit12	Excessive number of slots	
	bit13	Excessive number of I/O points	
	bit14	Instantaneous power failure	
	bit15	Verification error	

11 Appendix

11.1 Compatibility with Conventional Model FP2SH

11.1.1 Restrictions on the Number of Units Installed

Item		FP7	FP2SH
Total number of installed units		Max. 6 units	Max. 17 units (Note 1)
	W mode	Max. 4 units (Of which, PLC link is max. 2 units.)	Max. 5 units (Of which, PLC link is max. 2 units.)
	W2 mode	Max. 4 units (Of which, PLC link is max. 2 units.)	Max. 8 units (Of which, PLC link is max. 2 units.)
	F mode	Max. 4 units	Max. 4 units
Installation position		In base block (Cannot be installed in expansion block)	Master backplane is recommended. (Can be installed on expansion backplane.)

(Note 1) The total number of installed units of FP2SH shows the total number of the following units; (W mode, CCU) × 5 units, (W2 mode) × 8 units, and (F mode) × 4 units.

11.1.2 PLC Link Function (W Mode, W2 Mode)

■ Link area

Item		FP7	FP2SH
W mode	Capacity	Link relay: 1024 points, Link register: 128 words per unit	Link relay: 1024 points, Link register: 128 words per unit
	Allocation	Selectable from the following areas in the configuraiton. 0: WL0-WL63, LD0-LD127 1: WL64-WL127, LD128-LD255 2: WL128-WL191, LD256-LD383 3: WL192-WL255, LD384-LD511 4: WL256-WL319, LD512-LD639 5: WL320-WL383, LD640-LD767 6: WL384-WL447, LD768-LD895 7: WL448-WL511, LD896-LD1023	Allocated to the fixed areas of WL and LD. 0: WL0-WL63, LD0-LD127 1: WL64-WL127, LD128-LD255
W2 mode	Capacity	Link relay: 4096 points, Data link: 4096 words per unit	Link relay: 4096 points, Data link: 4096 words per unit
	Allocation	Selectable from the following areas in the configuraiton. Device: WL/WR/LD/DT Can also be allocated to local devices. Can be linked between the DT of FP7 and FL of FP2SH.	Select from the MEWNET-W2 setting menu, or set by a user program. Device: WL/WR/LD/DT/FL

(Note 1) When it is used in conjunction with the system using MEWNET-W0, the PLC link area (0: WL0-WL63, LD0-LD127) and (1: WL64-WL127, LD128-LD255) cannot be allocated redundantly.

(Note 2) When the areas of MEWNET-W, MEWNET-W2 and MEWNET-W0 are duplicated in FP7, the self-diagnostic error (128) which continues the operation occurs.

■ Transmission information monitoring method

Item		FP7	FP2SH
Transmission information monitoring method	W mode	● System relays, system data registers ● Copy to registers by the unit configuration ● Read by PMGET instruction	● Special internal relays, special registers
	W2 mode	● System relays, system data registers ● Copy to registers by the unit configuration ● Read by PMGET instruction	● Copy to registers by the unit configuration ● Special internal relays, special registers

■ MEWNET-W2 Operation of flags related to PLC link

Item	FP7	FP2SH
Operation	All-point reception unit also sends the PLC link status to other units. All-point transmission unit also perform the reception processing of other units.	All-point reception unit does not send the PLC link status. All-point transmission unit does not perform the reception processing of other units.
Flag monitored on all-point transmission unit	Transmission assurance relays of other FP2W2 (all-point reception unit) turn off.	Transmission assurance relays of other FP2W2 (all-point reception unit) turn off.
	Transmission assurance relays of other FP7W2 (all-point reception unit) turn on.	Transmission assurance relays of other FP7W2 (all-point reception unit) turn off.
Flag monitored on all-point reception unit	Transmission assurance relays of other FP2W2 (all-point transmission unit) turn on.	Transmission assurance relays of other FP2W2 (all-point transmission unit) turn on.
	Transmission assurance relays of other FP7W2 (all-point transmission unit) turn on.	Transmission assurance relays of other FP7W2 (all-point transmission unit) turn on.
	Transmission assurance relays of other FP2W2 (all-point reception unit) turn off.	Transmission assurance relays of other FP2W2 (all-point reception unit) turn off.
	Transmission assurance relays of other FP7W2 (all-point reception unit) turn on.	Transmission assurance relays of other FP7W2 (all-point reception unit) turn off.

(Note 1) When the network is composed of FP7 units only, the status can be confirmed on all the units.

(Note 2) In the case of MEWNET-W, the status can be confirmed on all the units.

11.1.3 Data Transfer Function (W Mode, W2 Mode)

Item		FP7	FP2SH
SEND/ RECV instructio n	No. of sent data	Max. 55 words (SEND, Max. 56 words (RECV)	
	Simultaneous execution	One instruction per unit can be executed simultaneously.	Only one instruction can be executed simultaneously for all mounted units.
	Control flag	Allocate for each unit.	Special Internal Relay

Item		FP7	FP2SH
		X0: Master communication clear to send, Y0: Master communication send active	
	Execution result	Specify an arbitrary area by instruction.	Special data registers
	Hierarchy transfer	Only the transfer to the same hierarchy is possible. (1st hierarchy, depth 0 only)	Hierarchy transfer is possible. (Up to 2nd hierarchy, depth 1)

11.1.4 Command Relay Function (W Mode, W2 Mode)

Item			FP7	FP2SH
Command input port for remote programming			USB port / COM0 port	Too.l port / COM port
Restriction on relayed units			Impossible to relay to the built-in ET-LAN.	Possible to relay to the ET-LAN unit.
Transmission path setting function	0C command (Access link unit)		Specify a slot number. Settable values: 0x01 to 0x10	Specify a route number. Settable values: 1 to 15
	Relay position information of LC command Depth specification		Specify a slot number for the relay position. Depth specification: 0 or 1	Specify a route number for the relay position. Depth specification: 0 or 1
	Transmission path information in case of power outage		Transmission path information: Held in case of power outage. (Can be continued after the occurrence of instantaneous power failure.)	Transmission path information: Not held in case of power outage. (Cannot be continued after the occurrence of instantaneous power failure.)
Protocol and size capable of relaying	W mode	MEWTOCOL7	Not available	
		MEWTOCOL-COM	118B per frame	
		MEWTOCOL-DAT	118B per frame	
	W2 mode	MEWTOCOL7	4kB per frame	Not available
		MEWTOCOL-COM	2kB per frame	
		MEWTOCOL-DAT	2kB per frame	
Available transmission path	MEWTOCOL7 (W2 mode)		FP7(FP7)FP7FP7→(FP7)→FP7	Relay is not available.
	MEWTOCOL-COM MEWTOCOL-DAT (Note 1)(Note 2)		FP7(FP7)FP7FP7→(FP7)→FP7 FP7→(FP2)→FP7 FP7→(FP2)→FP2 FP2→(FP2)→FP7 FP2→(FP7)→FP7	FP2→(FP2)→FP2 FP2→(FP2)→FP7 FP2→(FP7)→FP7
Restriction on relay 1	Relay from W mode to W mode		Available only when the units in W mode are two.	Available only when the postion of reception unit is 1 or 2.
	Relay from W mode to W2 mode		Not available	The allowable total number of W and W2 link units is 2 only.

Item		FP7	FP2SH
	Relay from W2 mode to W mode	Not available	The allowable total number of W and W2 link units is 2 only.
	Relay from W2 mode to W2 mode	No restriction	No restriction
Restriction on communication and relay 2	(Source) USB port COM port SEND/RECV instruction	Communication is not available when the transmission paths of commands whose transmission source is the same type cross over the MW Unit.	Same as on the left.

(Note 1) Data must be sent by the minimum size limited in the transmission path.

(Note 2) For FP7, the hierarchy transmission for MEWTOCOL-DAT is not available due to the restriction on SEND/RECV instructions.

11.1.5 Remote I/O Function (F Mode)

Item	FP7	FP2SH
I/O allocation method	Master unit base number + No. of I/O points (Note 1)	Master unit base number (Note 2)
Slave unit I/O number allocation method	The starting numbers for the Input X and output Y of the same unit number are the same. (FP7 I/O allocation method)	Allocate in the order of the input X and output Y. (FP2 I/O allocation method)
Slave unit registration method	Unit configuration	System register I/O map registration
Connectable slave unit	FP I/O terminal unit FP I/O terminal board	FP I/O terminal unit FP I/O terminal board FP2 Slave Unit
Transmission information monitoring method	Read by PMGET instruction System relays, system data registers	Special internal relays, special data registers
I/O map mount allocation	For executing the mount registration, it is necessary to register "F link unit" in the I/O map in advance.	-

(Note 1) For FP7, the base word number of FP7 WM Unit is a reference.

(Note 2) For FP2SH, the base word number set by the system register (remote I/O allocation) is a reference.

11.1.6 Serial Communication Unit

Item	FP7	FP2SH
Remote programming	Remote programming is not available from Serial Communication Unit (product no. AFP7NSC).	Remote programming is available (via MEWNET-W/MEWNET-W2) from CCU (Computer Communication Unit (product no. AFP2462)).

Item	FP7	FP2SH
		Remote programming is not available from MCU (Multi Communication Unit (product no. AFP2465)).
MEWTOCOL-DAT ASCII transmission by SEND instruction	Not available Sending MEWTCOL-COM commands by SEND/RECV instruction is available.	MEWTOCOL-DAT ASCII transmission by SEND instruction is available from CCU (Computer Communication Unit).

11.1.7 No. of Occupied I/O Points

Item	FP7	FP2SH
W mode	Input: 1 word / Output: 1 word (Fixed)	16SE（0SE）
W2 mode	Input: 1 word / Output: 1 word (Fixed)	
F mode	Input: 256 word / Output: 256 word (Max.)	

(Note 1) For FP7 (W mode/W2 mode), they are occupied as flags for controlling SEND/RECV instruction.

(Note 2) For FP7 (F mode), the number of occupied points varies according to the number of I/O points allocated to the remote I/O part.

(Note 3) In the system of FP2SH, they are occupied for one word (16 points). (It can be set to 0 point by the system register.

Record of changes

Manual numbers can be found at the bottom of the manual cover.

Date	Manual No.	Record of changes
Jun. 2017	WUME-FP7MW-01	1st Edition
May. 2018	WUME-FP7MW-02	2nd Edition ● Errors corrected
Jan. 2019	WUME-FP7MW-03	3rd Edition ● Errors corrected
Sep. 2020	WUME-FP7MW-04	4th Edition ● Errors corrected
Jun. 2022	WUME-FP7MW-05	5th Edition ● Changed manual format
Apr. 2024	WUME-FP7MW-06	6th Edition ● Change in Corporate name

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