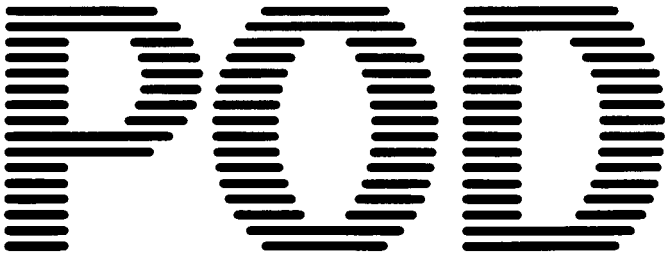
FUJI ELECTRIC

FUJI UG □ 20-SERIES PROGRAMMABLE OPERATION DISPLAY



USER'S MANUAL

<UG□20 SERIES JEMA-NET Communications>

TYPES: UG03I-J
UG02I-J

FEH358

Preface

Thank you very much for purchasing the FUJI UG Series POD (Programmable Operation Display). This manual describes how to use the UG520/420/320/220 Series POD (hereinafter called UG □ 20 or POD) of JEMA-NET (JPCN-1)* conforming interface type.

We suggest, however, the reader who has not experienced this software yet go through all the chapters in order.

This manual is an English version based on the Japanese user's manual (No. FH358)

[Reference]
In addition to this manual, the following manuals on the UG □ 20 Series are available. Please ask your nearest dealer for the appropriate manuals and read them as required.

Name	Manual No.	Contents
UG □ 20 Series Manual <Tutorial>	FEH350	Describes how to operate screen editor (UG00S-3WE) for the UG Series.
UG □ 20 Series Manual <Reference>	FEH351	Describes the functions of the UG □ 20 Series.
UG520/420/320/220 Series Manual <Hardware>	FEH352	Describes the UG520/420/320/220 Series hardware.

* JPCN-1 is the field network for programmable controller which is defined in JEM-F3008 standard of the Japan Electrical Manufacturers' Association.

Notes

(2) The contents of this manual, including the specifications, are subject to change for improvement without notice.
(3) This manual was prepared with utmost care. However, if you find any ambiguity, errors, etc., please contact any of our sales offices that are listed at the end of this manual. In so ding, please tell the manual number shown on the cover of this manual.

Notes for Your Safety

1. About Printing from UG00S-3WE

① A user-defined external character cannot be printed.

② The portion outside the area of 160 × 120 dots cannot be printed during parts printing (monochrome).

2. About UG00S-3WE Screen Display

① If the Windows 95 screen is set to 256-color display, the XOR display of the switches, lamps, and graphic relays is not normally performed.
Specify High Color (16 bits) to obtain the normal display.

② If the Windows 95 screen is set to display 800 × 600 dots, characters in the dialog window may sometimes be displayed incorrectly when a large font has been set.

③ All types of lines are displayed as a solid line in zoom mode (200% or 400%).

Safety Precautions

Before mounting, wiring, operation, maintenance and inspection of the device, be sure to read the operating instructions carefully to ensure operation. The operating instructions should be furnished to the maintenance supervisors of final users.

- Here, the safety precaution items are classified into "**Warning**" and "**Caution**"

⚠**Warning** :Incorrect handling of the device may result in death or injury.

⚠**Caution** :Incorrect handling of the device may result in minor injury or physical damage.

Even some items indicated by "**Caution**" may also result in a serious accident.
The general safety precautions are described below. Individual precautions are given where necessary, with the above symbols.

Safety Precautions

⚠ Warning

- Turn OFF the power before mounting, dismounting, wiring, maintaining or checking, otherwise, electric shock, erratic operation or troubles might occur.
- Place the emergency stop circuit, interlock circuit or the like for safety outside the PLC. A failure of PLC might break or cause problems to the machine.
- Never touch any part of charged circuits as terminals and exposed metal portion while the power is turned ON. It may result in an electric shock to the operator.

⚠ Caution

- Do not use one found damaged or deformed when unpacked, otherwise, failure or erratic operation might be caused.
- Do not shock the product by dropping or tipping it over, otherwise, it might be damaged or troubled.
- Operate (keep) in the environment specified in the operating instructions and manual. High temperature, high humidity condensation, dust, corrosive gases, oil, organic solvents, excessive vibration or shook might cause electric shock, fire, erratic operation or failure.
- Do not place magnetized items near to such things as floppy disks. There is a risk of failure.
- Insert items such as floppy disks and connectors in the proper direction. There is a risk of failure.
- Carry out the transfer of screen data during system operation only after checking that everything is safe, as there is a risk of damage to the set or of an accident owing to operational error.
- Do not cut off the power during program loading (during access to the hard disk or floppy disk, or during communication with the POD). There is a risk of erasure of data, product failure, malfunction, mechanical damage or failure.
- Use in the software operation environment stipulated in the manual. There is a risk of failure or malfunction.
- Follow the instructions in the manual regarding the software version. There is a risk of failure or malfunction.
- Mount and lock the connectors for communication cables securely. There is a risk of failure or malfunction.
- Do not touch the surface of the floppy disk. There is a risk of failure or malfunction.
- Carry out regular disk checks. When the hard disk or a floppy disk is used in a damaged state, there is a risk of failure or malfunction of the data generation system.
- Follow the regulations of industrial wastes when the device is to be discarded.

Matters Calling for Special Attention

• For "safety precautions", refer to the manuals supplied with the product.

• This POD can communicate with the following PLCs (communication units).

Fuji Electric Co., Ltd.	:	FLEX-PC NJ Series communication unit (NJ-JPCN-1)
		MICREX-SX Series communication unit (NP1L-JP1)
Mitsubishi Electric Corporation:		MELSEC AnA/AnU Series communication unit (AJ71J92-S3)
		MELSEC AnS Series communication unit (A1SJ71J92-S3)
Hitachi, Ltd.	:	HIDIC S10/2α Series communication unit (LWE580)
		HIDIC S10mini Series communication unit (LQE040)
OMRON Corporation	:	SYSMAC C200H Series communication unit (C200HW-JRM21)

• To create screen data for UG □ 20 series, be sure to use Ver 2.00 or newer UG00S-3WE (for Windows). Ver 1.xx UG00S-3WE, UG00S-3NE (for 98DOS), or UG00S-3DE (for DOS/V) cannot define data for UG □ 20 Series.

PC selected for UG00S-3W			PLC type setting for UG simulator		
Fuji Electric	:	FLEX-PC (JPCN-1)	Fuji Electric	:	FLEX-PC (JPCN-1)
Fuji Electric	:	MICREX-SX (JPCN-1)	Unavailable		
Mitsubishi Electric	:	AnA/N/U (JPCN-1)	Mitsubishi Electric	:	AnA/N (JPCN-1)
Hitachi	:	HIDIC-S10 (JPCN-1)	Hitachi	:	HIDIC-S10 (JPCN-1)
OMRON	:	SYSMAC C (JPCN-1)	OMRON	:	SYSMAC C (JPCN-1)

• To use the UG simulator, set as follows:

• Screen data for MICREX-SX cannot be uploaded (reading screen data from POD into editor).

Contents

1 General

- JEMA-NET PODs are programmable operation displays that transfer data to and from a master station, such as a PLC, conforming to the specifications of the JEM-F8008 Programmable Controller Field Network Standard (Level 1) as formulated by the Japan Electrical Manufacturers Association (hereafter called “JPCN-1”).
- As with link unit communications, JEMA-NET PODs do not require any program to connect to a PLC.
- The compatible class as defined by JPCN-1 is as follows:

TYPE-S511

- Isolation type
- Wiring type: Two-wire
- Baud rate: All rates selected
- Unit type: Slave station

2 Specifications

2.1 Compatible Types of PLCs and Communications Modules

Manufacturer	Compatible PLC	Compatible communications module
Fuji Electric	FLEX-PC NJ Series	NJ-JPCN-1
	MICREX-SX Series	NP1L-JP1
Mitsubishi	MELSEC AnA/AnN/AnU Series	AJ71J92-S3
	MELSEC AnS Series	A1SJ71J92-S3
Hitachi	HIDIC S10/2α Series	LWE580
	HIDIC S10mini Series	LQE040
Omron	SYSMAC C200H Series	C200HW-JRM21

2.2 JPCN-1 Communications Specifications

Item	Specification
Maximum number of units connected	Master station: 1 Slave stations: 31 (PODs are slave stations.)
Station number setting range	01 to 7F
Transmission line	Bus transmission line: Shielded twisted pair cable (The total extension depends on the baud rate.)
Baud rate/ Transmission distance	125kbps (1000m), 250kbps (800m) 500kbps (480m), 1Mbps (240m) The transmission distances stated assume the use of 1.25 mm^2 KPEV-SB manufactured by Furukawa Electric Co., Ltd. and may vary depending on the characteristics of the cable used.
Communications functions	• Initialization service • Reset service • I/O service • GET service • PUT service • Data read service • Data write service (See note 1)
Number of I/O points occupied	Dependent on the POD editor setting.
Number of message points	Maximum transmission length: 250 bytes

Note 1: The PODs do not support any communications functions that are not mentioned here.

For information about general specifications, please consult the relevant hardware documentation.

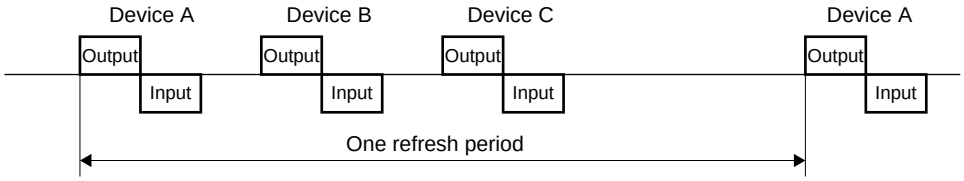
2.3 I/O Services and Massaging Services

The PODs use the services mentioned in “2.2 JPCN-1 Communications Specifications,” as they implement the JPCN-1 communications functions. These services can be classified into two categories: I/O services and all other services (messaging services).

<Concept of I/O services>

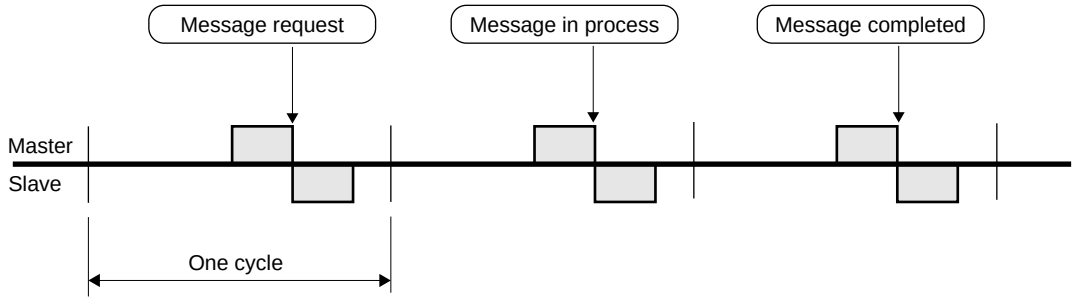
An I/O service is a method of communication signals from slaves distributed at remote locations to a JEMA-NET master module at high speed. Data is updated periodically. (The timing of data updates varies with the number of connected slave stations, the number of words occupied by the slave stations, and the baud rate.) **To maximize the rate of transmission between a PLC and PODs, assign their addresses in the I/O service area.** Up to 128 words (2,048 points) can be used per POD (127 words for a MICREX-SX). With a UG □ 20 Series POD, an I/O service is enabled by having I/O memory: JI/J0 is specified with the editor.

<Concept of messaging services>



A messaging service is a method of communicating large amounts of data to a JEMA-NET master module. It allows transmitting data to and from areas other than the I/O service area. Since data on JEMA-NET is updated once after I/O service has been refreshed a certain number of times, **messaging services take more time to communicate than I/O services.** As a PLC implements messaging service for one slave at a time, the more devices (such as PODs) that are connected to the PLC for receiving the message service or the more loaders are connected to the PLC, the longer the communications time required becomes.

With a UG □ 20 Series POD, messaging service is enabled by having non-I/O memory specified as PLC memory with the editor.



3 Setting and Wiring a POD

3.1 Setting a POD

3.1.1 Interface units

The optional JPCN-1 interface unit is needed for communication with a UG □ 20 Series POD under JPCN-1.

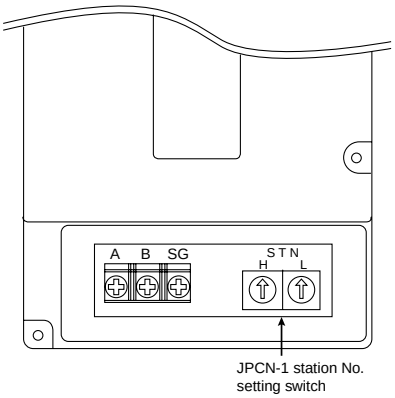
Prepare one of the following interface units according to the type of the POD used:

POD type	Interface unit
UG520H-□	
UG420H-□	UG03I-J
UG320H-□	
UG220H-□	UG02I-J

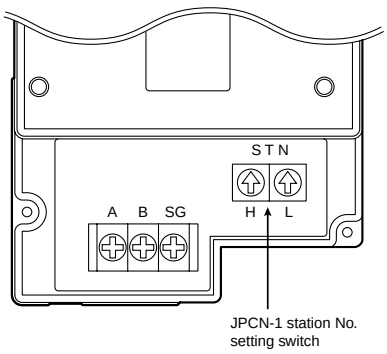
3.1.2 Setting a station number

Use the rotary switch on the JPCN-1 interface unit to program a POD station number.

● UG03I-J

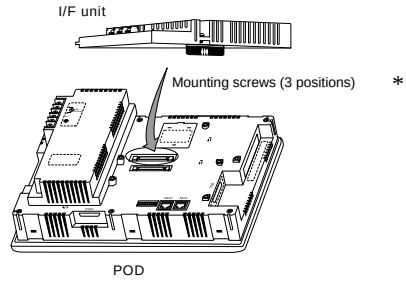


● UG02I-J



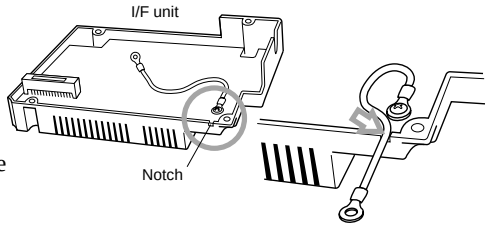
3.1.3 Mounting a JPCN-1 interface unit(UG03I-T)

- Remove the dust-proof seal from the back of the POD before mounting a JPCN-1 interface unit in position with three mounting screws (M3 × 8) included with the unit.
- Wire the communications cable. If a POD is the end-terminal on the cable line, insert a terminator between signal lines A and B.
- For the UG320, insert the spacer included with the JPCN-1 interface unit into the upper-left mounting hole and then mount the unit with the included M3 × 15 mounting screw.

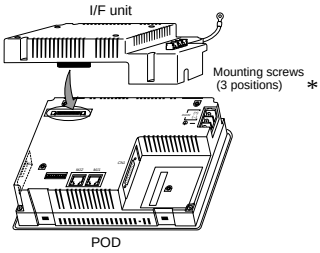


3.1.4 Mounting a JPCN-1 interface unit(UG02I-T)

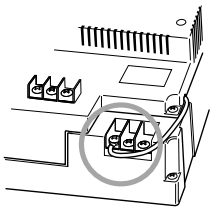
- Route the insulated cable through the notch.



- Remove the dust-proof seal from the back of the POD before mounting a JPCN-1 interface unit in position with three mounting screws (M3 × 8) included with the unit.



- Connect the insulated cable with the ground terminal on the POD.
- Wire the communications cable. If a POD is the end-terminal on the cable line, insert a terminator between signal lines A and B.



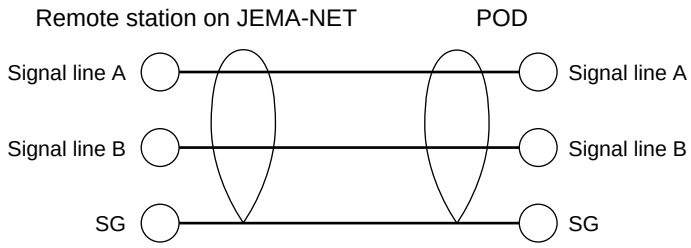
*** Tightening the unit mounting screws**

Tighten according to the table below:

Type of screw	Screw size	Tightening torque (kg.cm)
Unit mounting screw	M3	3 to 5
Communication terminals	M3.5	8 ± 1.5

3.2 Wiring

On JEMA-NET, connect signal lines of the same kind together, such as signal line A, signal line B, or SG. Make sure that all connections are completed at the same time. If a POD is the end-terminal on the cable line on JEMA-NET, insert the included terminator between signal lines A and B.



- Complete connections on a two-wire basis as shown above.
- Twist signal lines A and B.

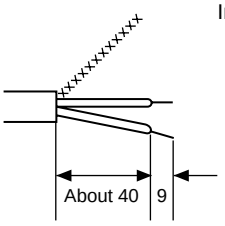
- Cable

  On JEMA-NET, use the specified cable type. Data transmission will be unpredictable with a nonstandard-type cable.

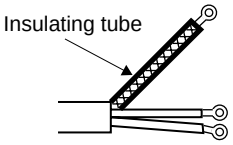
- Cable termination

  Terminate cables as shown below.

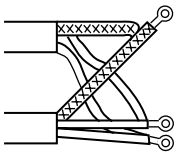
① **Peeling**



② **Solder-less lug connection**



If a cable is directly connected to a terminal block without using a solder-less lug, it can develop a defective contact, resulting in a communications error or other fault.

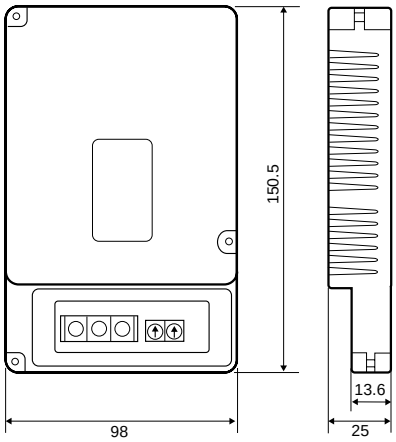


Crossover wiring can be made easier by pairing cables and having each pair connected to one solder-less lug.

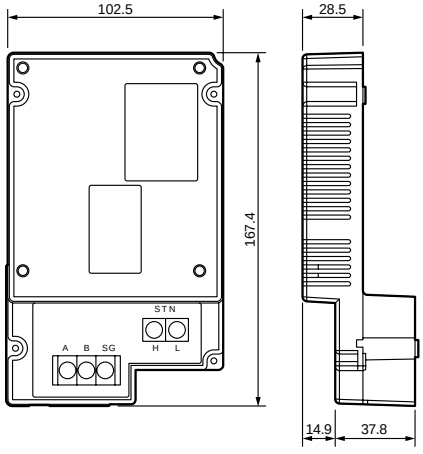
3.3 External Dimensions

3.3.1 JPCN-1 interface unit external dimensions

● **UG03I-J**

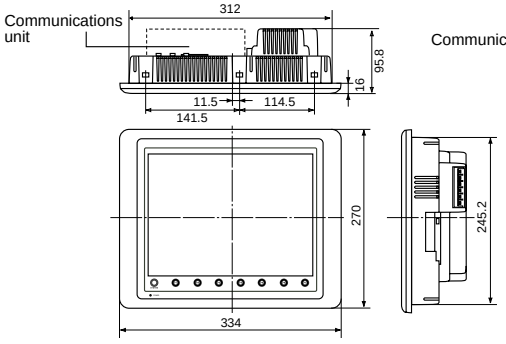


● **UG02I-J**

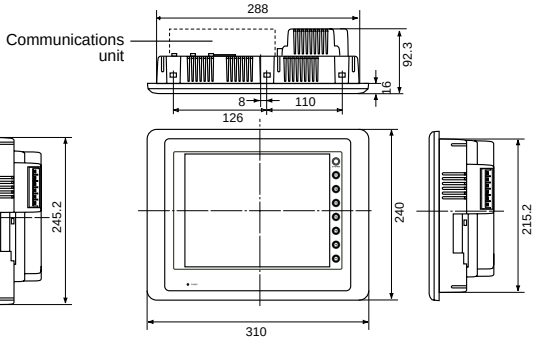


3.3.2 External dimensions of PODs equipped with a JPCN-1 interface unit

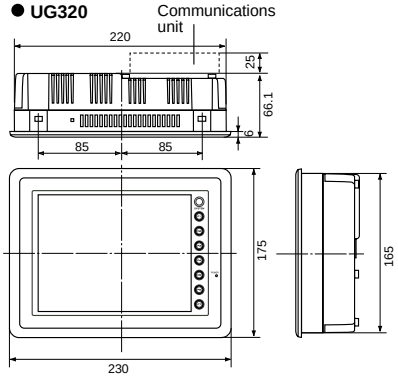
● **UG520**



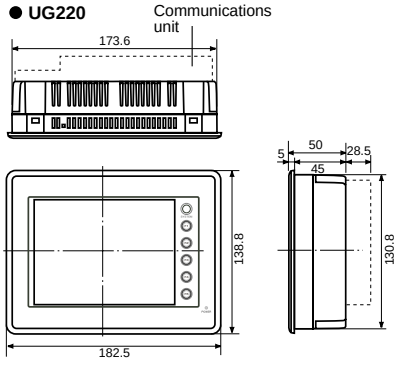
● **UG420**



● **UG320**



● **UG220**



* UG320 has a 25 mm greater depth.
UG520/420 has the same depth as shown in this figure.

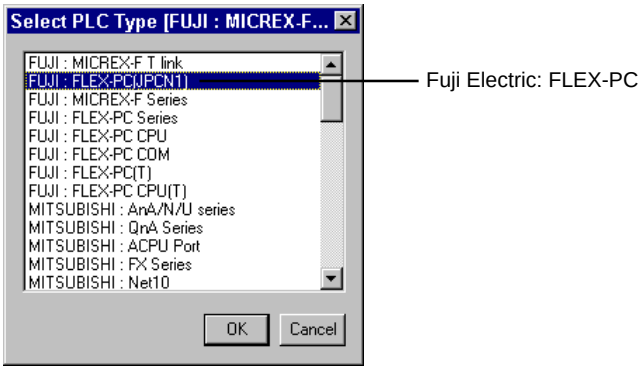
4 Setting for Creating Display Images

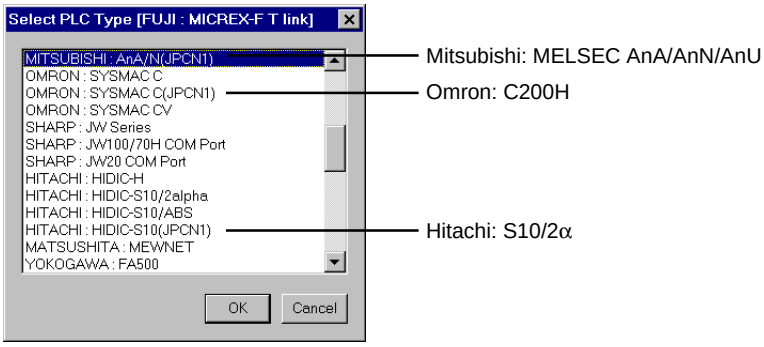
This chapter focuses on the display editor (PC) setting items that are needed to implement JPCN-1 interface communication.
For additional setting and detailed usage information, see User's Manual Tutorial <FEH350> and Reference <FEH351>.

Create display data for UG □ 20 Series PODs on UG00S-3WE (for Windows) Ver. 2.00 or higher. Display data for UG □ 20 Series PODs is not programmable on UG00S-3WE Ver. xx, UG00S-3NE (for 98 DOS) and UG00S-3DE (for DOS/V).

4.1 Setting the PLC Type

Choose [Item], [System Setting], and then "Manufacturer and PLC name (JPCN-1)" from [PLC Type...].

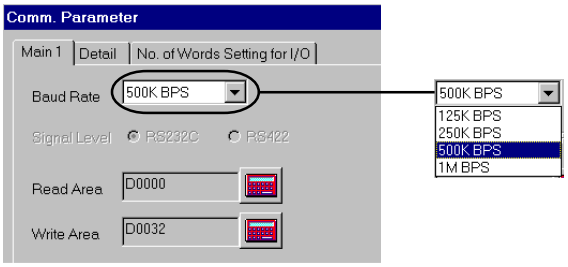




4.2 Communications Parameters

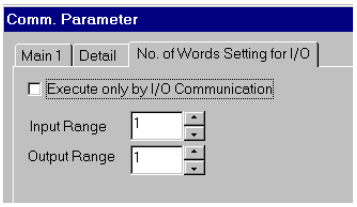
Choose [Item], [System Setting], and then [Comm. Parameter...]. Differences from other methods of communication are mentioned below.

<Main> tab



① **Baud rate**
The baud rate setting must match the PLC setting.

<I/O word length setting> tab

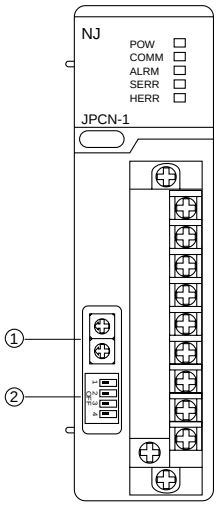


② **Carry out only I/O communication**
If this check box is selected, only the [I/O memory: JI/JO] is selectable as a memory specification.

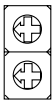
③ **Input and output ranges**
Set the amounts of data that are communicated by the I/O services. The input range and the output range can each be set between 1 to 64.

5 Communicating to Fuji Electric's FLEX-PC

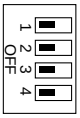
5.1 NJ-JPCN-1 Settings



① Station number setting switch



② Baud rate/transmission distance selector switch



① Station number setting switch

If the JPCN-1communications unit is connected to a POD, it is used as a master module. In this case, set the station number setting switch to 00.

Use the station number setting switch on the JPCN-1 unit to set the station number for the POD.

② Baud rate/transmission distance selector switch

The baud rate/transmission distance selector switch has four positions, numbered 1 to 4 from top to bottom. The baud rate/transmission distance is set in a combination of the ON/OFF states of switch positions 1and 2. Make sure that the baud rate setting matches the POD loader setting.

Switch positions 3 and 4 are not used; leave them OFF (left side).

1	2	Baud rate/transmission distance
OFF	OFF	125kbps/1000m
OFF	ON	250kbps/800m
ON	OFF	500kbps/480m
ON	ON	1Mbps/240m

5.2 Available Memory Locations

The table below lists the memory locations available to items such as switches, lamps and data displays.

Memory	Bit write	Type (See note 3)	Remarks
D (data register)	○	0	
W (link register)	○	1	
M (internal relay)	○	2	If word is specified: WM
L (latch relay)	○	3	If word is specified: WL
X (input relay)	○	4	If word is specified: WX (See note 4)
Y (output relay)	○	5	If word is specified: WY (See note 4)
R (file register)	×	6	Writing from the POD is disabled
TN (timer current value)	○	7	(See note 1)
CN (counter current value)	○	8	(See note 1)
T (timer contact)	○	9	
C (counter contact)	○	10	
S (step relay)	×	11	
JI (input relay)	×	56	(See note 4)
JO (output relay)	×	57	(See note 4)

Note 1: The timer and counter current values are designated as TN/CN, respectively, for convenience. (They are actually T/C.)

Note 2: The programmable range of each memory location depends on the type of the PLC used and the system architecture. Program the range of each memory location within a valid range.

Note 3: Use types to address indirect memory locations in a macro.

Note 4: Message if specified with X/Y, and I/O communication if specified with JI/JO. The memory locations of JI/JO are relative addresses and their actual addresses in the PLC are determined by the NJ-JPCN-1 module location and the station number setting on the POD. For more details, see the next section.

5.3 Setting the I/O Communications Area

■ **Hint on connecting to the FLEX-PC**

The NJ-JPCN-1 module V2.05 and later models support reduced mode and standard mode. (With V2.04 and earlier models, only reduced mode is available.)
The programmable range of JPCN-1 slave station numbers depends on the reduced/ standard mode selection.

	Reduced mode	Standard mode
Slave station number setting range	01 to 1F	01 to 7F

To set the station number of a POD between 20 to 7F, run the NJ-JPCN-1 module in standard mode.

5.3.1 Link register area allocated to the POD

The I/O area (W: link register area) in the PLC that is allocated to the POD is determined by the NJ-JPCN-1 module location, the JPCN-1 unit station number setting on the POD, and the communications parameter settings programmed with the POD editor.

① **NJ-JPCN-1 module location**

First, the first two digits (Wxxxx: the lower digit varies with ②) of the starting word address of the allocated link register area are determined by the installation location of the NJ-JPCN-1 module.

Word address = Mounting slot number × 800 [H]

Power supply	CPU module	Slot 0	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7

Slot number	0	1	2	3	4	5	6	7
Allocated address range	W0000 to 07FF	W0800 to 0FFF	W1000 to 17FF	W1800 to 1FFF	W2000 to 27FF	W2800 to 2FFF	W3000 to 37FF	W3800 to 3FFF
Starting address: Wn	W0000	W0800	W1000	W1800	W2000	W2800	W3000	W3800

② **JPCN-1 station number setting on the POD**

Next, the last two digits (Wxxxx) of the starting word address of the allocated link register area are determined by the JPCN-1 unit station number setting (two digits) on the POD, which depends on the reduced/standard mode selection of the NJ-JPCN-1 module.

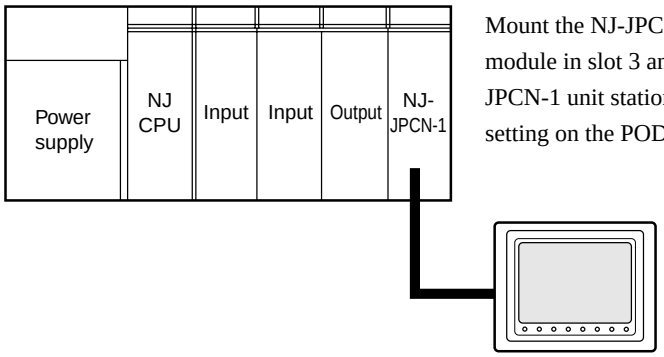
②**-1 Reduced mode**

In reduced mode, 20 [H] words are allocated per slave station. Therefore, the station number × 20 [H] designates the starting word address of the allocated link register area.

②**-2 Standard mode**

In standard mode, eight [H] words are allocated per slave station. Therefore, the station number × 8 [H] designates the starting word address of the allocated link register area.

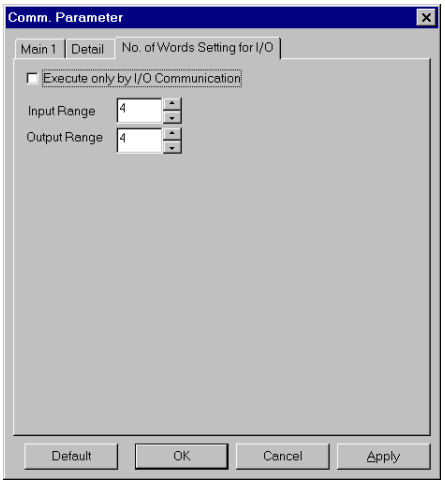
[Typical setting]



Mount the NJ-JPCN-1 module in slot 3 and set the JPCN-1 unit station number setting on the POD to 05.

POD: Station number 05

POD editor settings:



Choose [Item], [System Setting], and then [Comm. Parameter...]. On the [I/O word length setting] tab, set both the input and output ranges to 4.

① **NJ-JPCN-1 module location**

Since the NJ-JPCN-1 module is mounted in slot 3:

3 (slots) × 800 [H] = 1800 [H]

Therefore, the starting word address of the allocated link register area is W1800.

② Station number setting on the POD

②-1 If the NJ-JPCN-1 module is in reduced mode

Since the station number is 05:

5×20 [H] = A0 [H]

Add the result of ① to this value to derive:

1800 [H] + A0 [H] = 10A0 [H]

The starting address of the area allocated to the POD is **W18A0**. The link register area allocated to the POD therefore spans from W18A0 to W18A7.

②-2 If the NJ-JPCN-1 module is in standard mode

Since the station number is 05:

5×8 [H] = 28 [H]

Add the result of ① to this value to derive:

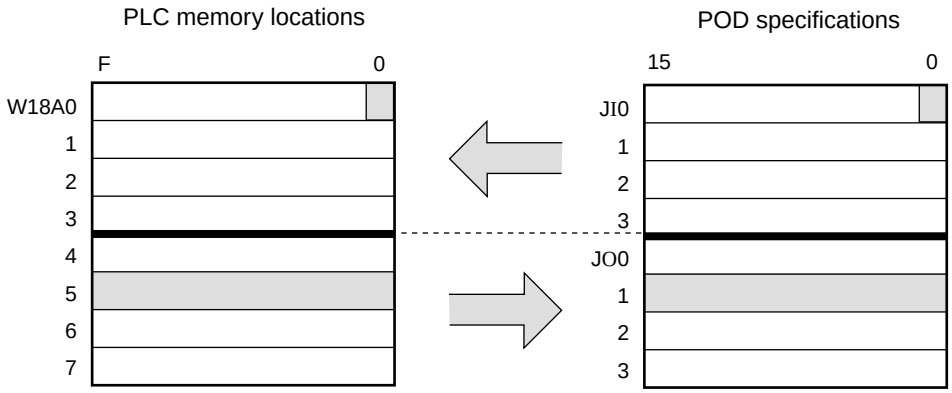
1800 [H] + 28 [H] = 1828 [H]

The starting address of the area allocated to the POD is **W1828**. The link register area allocated to the POD therefore spans from W1828 to W182F.

5.3.2 Relationship with memory locations programmed with the POD editor

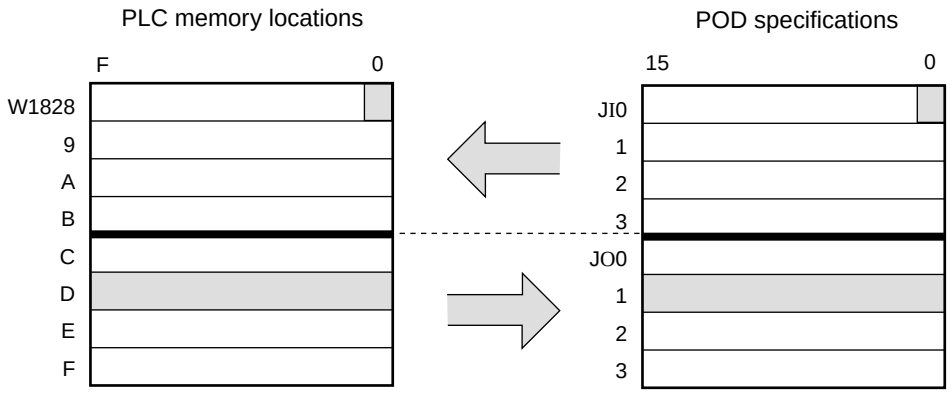
The link register area allocated to the POD, when viewed from the PLC standpoint, has input and output programmed in this order. In [Typical setting] in 5.3.1, the following relationship exists with the memory locations programmed with the POD editor:

■ If the NJ-JPCN-1 module is in reduced mode



If JI0-0 is programmed with the POD editor, W18A0 bit 0 (W18A0∗0) is associated with it. If JO1 is programmed with the POD editor, then W18A5 is associated with it.

■ **If the NJ-JPCN-1 module is in standard mode**



If JI0-0 is programmed with the POD editor, W1828 bit 0 (W1828*0) is associated with it. If JO1 is programmed with the POD editor, then W182D is associated with it.

5.3.3 Assigned station numbers

The station number that is assigned to the POD is determined by the I/O word length setting programmed with the POD editor.

Total I/O word length	Assigned station number	
	Standard mode	Reduced mode
2 to 8	1	1
9 to 16	2	
17 to 24	3	
25 to 32	4	
33 to 40	5	2
41 to 48	6	
49 to 56	7	
57 to 64	8	
65 to 72	9	3
73 to 80	10	
81 to 88	11	
89 to 96	12	
97 to 104	13	4
105 to 112	14	
113 to 120	15	
121 to 128	16	

Though the JEMA-NET module can control up to 31 slave stations by itself, it may control fewer slave stations depending on the POD setting, as indicated in the table above.

5.4 POD STYPE

There is no need to specify STYPE for the POD when setting parameters on the NJ-JPCN-1 module. (The POD will run from the defaults.)

When specifying STYPE, program "yes" for all of the following:

DW (write data)

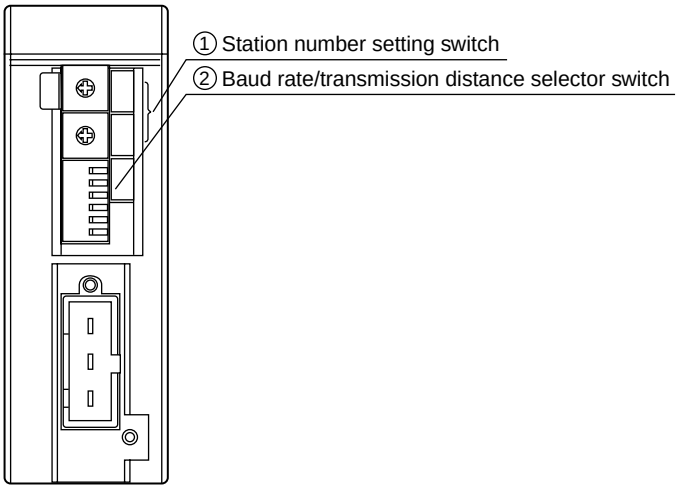
DR (read data)

DO (output data viewed from the master)

DI (input data viewed from the master)

6 Communicating to Fuji Electric's MICREX-SX

6.1 NP1L-JP1 Settings



① JP1 station number setting switch

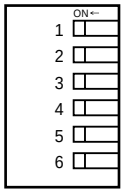
If the JP1 communications unit is connected to a POD, it is used as a master module. In this case, set the station number setting switch to 00.

Use the station number setting switch on the JP1 unit to set the station number for the POD.

② Baud rate/transmission distance selector switch

The baud rate/transmission distance selector switch has six switch positions, numbered 1 to 6 from top to bottom. Set the baud rate to match the POD loader setting.

Switch positions 1 to 4 are not used; leave them OFF (right side).



Baud rate/transmission distance						Baud rate
1	2	3	4	5	6	
Reserved				OFF	OFF	125kbps/1000m
				OFF	ON	250kbps/800m
				ON	OFF	500kbps/480m
				ON	ON	1Mbps/240m

6.2 Available Memory Locations

The table below lists the memory locations available for items such as switches, lamps, and data displays.

Memory	Bit write	Type (See note 3)	Remarks
Input memory (I)	○	0	(See note 5)
Output memory (Q)	○	1	(See note 5)
Standard memory (M)	○	2	
Retained memory (RM)	○	4	
System memory (SM)	○	8	
Global memory (GM)	○	14	
Input memory (JI)	×	56	(See note 5)
Output memory (JO)	×	57	(See note 5)

Note 1: The programmable range of each memory location depends on the type of the PLC used and the system architecture. Program each memory location within a valid range.

Note 2: Use types to address indirect memory locations in a macro.

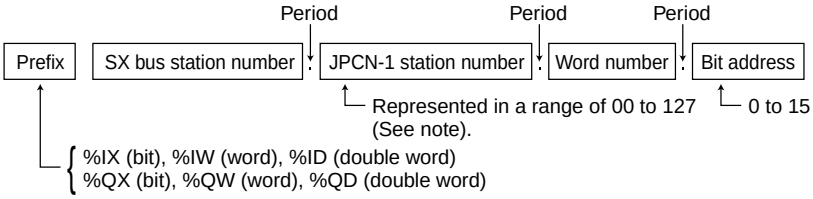
Note 3: Specify the CPU number as an extension code when addressing indirect memory locations in a macro.

Note 4: Message if specified with I/Q; I/O communication if specified with JI/JO. The memory locations of JI/JO are relative addresses, and the SX station number of the JPCN-1 module and the station number setting on the POD determine their actual addresses in the PLC. For more details, see the next section.

The NP1L-JP1 can transmit up to 127 words of data per slave station through the execution of I/O service.
While up to 128 words (input: 64 words, output: 64 words) can be programmed as a combined I/O word length with the POD editor, the I/O word length setting should be held to 127 words or below due to the limitation above.

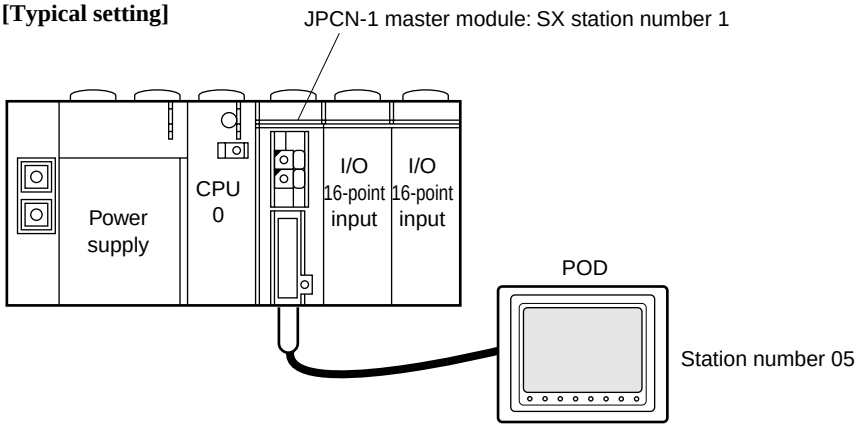
6.3 Setting the I/O Communications Area

The POD is handled as a JPCN-1 capsule. The PLC addresses are assigned in the order of input and output according to the JPCN-1 station number setting on the POD by the rules shown below.

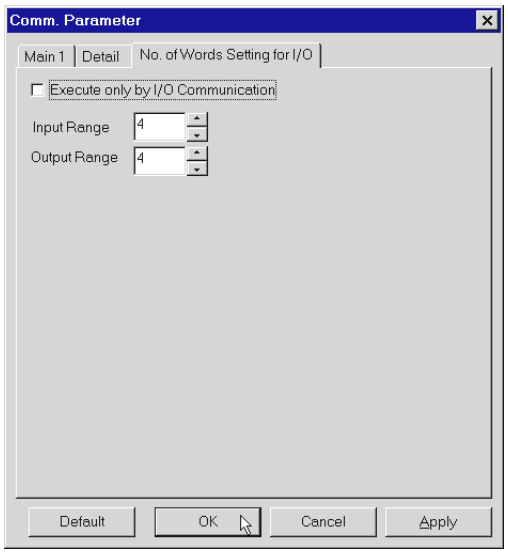


Note: While the JPCN-1 station number setting on the POD is hexadecimal, this specification is decimal. The address programmed in hexadecimal should be handled in decimal.

[Typical setting]

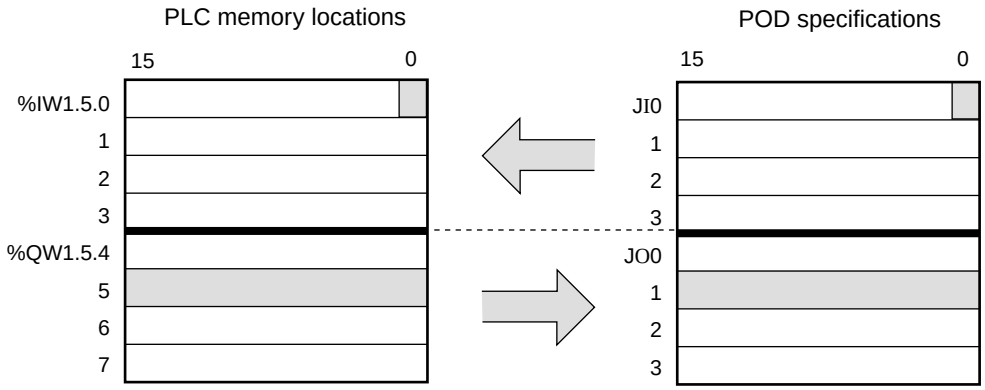


POD editor settings:



Choose [Item], [System Setting], and then [Comm. Parameter...]. On the [I/O word length setting] tab, set both the input and output ranges to 4.

Since the SX station number of the JPCN-1 master module is 1, the station number of the POD is 05, and both input and output word lengths are 4, I/O memory specifications are programmed with the POD editor as shown below.



If JI0-0 is programmed with the POD editor, %IX1.5.0.0 is associated with it. If JO1 is programmed with the POD editor, then %QW1.5.5 is associated with it.

6.4 POD STYPE

There is no need to specify STYPE for the POD when setting parameters on the NJ-JPCN-1 module.

When specifying STYPE, program "yes" for all of the following:

DW (write data)
DR (read data)
DO (output data viewed from the master)
DI (input data viewed from the master)

7 Connecting to Mitsubishi's MELSEC AnA/AnU

7.1 AJ71J92-S3 Settings

For detailed instructions on AJ71J92-S3 unit settings, see the AJ71J92-S3 User's Manual.

The following items require setting in order to connect the POD to Mitsubishi's MELSEC AnA/AnU:

(1) Mode setting switch

Set the switch to 0 (online with automatic recovery).

(2) Baud rate selector switch

The switch setting must match the value set with the POD editor.

(3) GET/PUT service setup switch (SW1)

Set the GET/PUT service setting switch to "enabled" to allow POD to use the GET/PUT services during operation. The switch is disabled by default.

7.2 Available Memory Locations

The table below lists the memory locations available to items such as switches, lamps and data displays.

Memory	Bit write	Type (See note 2)	Remarks
D (data register)	×	0	
W (link register)	×	1	
R (file register)	×	2	
TN (timer current value)	×	3	
CN (counter current value)	×	4	
M (internal relay)	×	6	
L (latch relay)	×	7	
B (link relay)	×	8	
X (input relay)	×	9	(See note 3)
Y (output relay)	×	10	(See note 3)
TS (timer contact)	×	11	
TC (timer coil)	×	12	
CS (counter contact)	×	13	
CC (counter coil)	×	14	
JI (input relay)	×	56	(See note 3)
JO (output relay)	×	57	(See note 3)

Note 1: The programmable range of each memory location depends on the type of the PLC used and the system architecture. Program each memory location within a valid range.

Note 2: Use types to address indirect memory locations in a macro.

Note 3: Message if specified with X/Y, I/O communication if specified with JI/JO.

7.3 POD STYPE

When specifying STYPE on the AJ71J92-S3 unit, program "yes" for all of the following:

DW (write data)
DR (read data)
DO (output data viewed from the master)
DI (input data viewed from the master)

Enter the specification by running a PC program. See the sections that follow.

7.4 Setting the PLC

To connect the POD to an AnA/AnU Series PLC, the PLC would require:

① A program that is buffered in the AJ71J92-S3 to provide an initialization service

② A program that launches cyclic communication to provide GET/PUT services

Program ① involves programming the following POD-specific items:

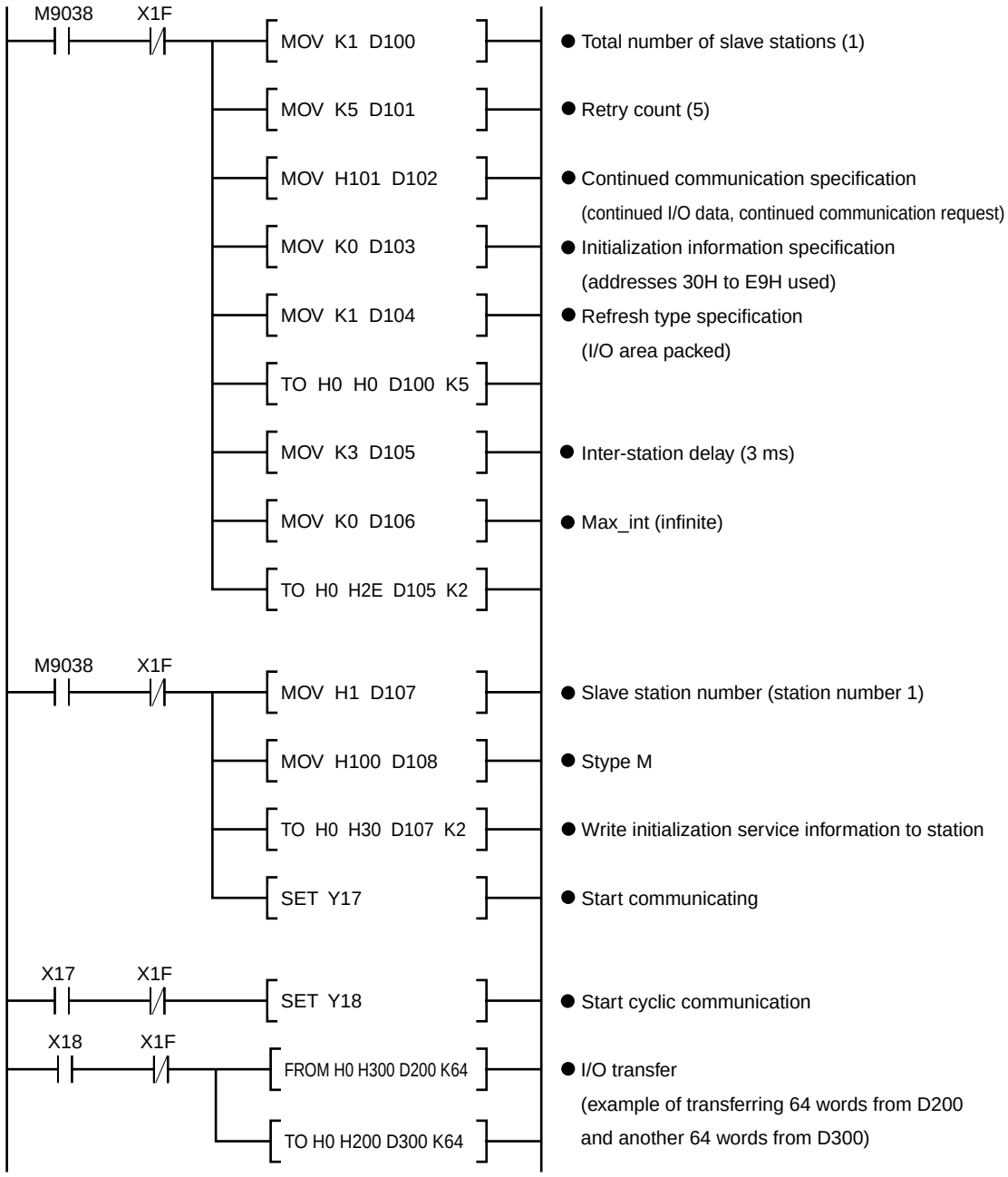
- Total number of slave stations
- Retry count
- Continued communication specification
- Refresh type
- Reset destination station number
- Inter-station delay
- Max_int
- Initialization service information

* The initialization service information is broken down into:

- Initialization service informationA slave station number
- Initialization service informationStype M
- Initialization service informationGET/PUT service specification

[Sample program]

A sample program that runs with the AJ71J92-S3 unit inserted in slot 0 in the basic base and with a POD connected to the first station (station number 1).



8 Connecting to Hitachi's HIDIC S10/2α

8.1 LWE580 Settings

For detailed instructions on LWE580 settings, see the LWE580 User's Manual.
The following items require setting in order to connect the POD to Hitachi's HIDIC S10/2α:

(1) Module number setting switch

Set this switch to 00 to let the unit work as a master.

(2) Baud rate selector switch

The switch setting must match the value set with the POD editor.

8.2 Available Memory Locations

The table below lists the memory locations available to switches, lamps, data displays and so forth.

Memory	Bit write	Type (See note 2)	Remarks
FW (work register)	×	0	
X (input relay)	×	1	If word is specified: XW (See note 3, 4)
Y (output relay)	×	2	If word is specified: YW (See note 3, 4)
R (internal relay)	×	3	If word is specified: RW (See note 4)
G (global link)	×	4	If word is specified: GW (See note 4)
K (keep relay)	×	5	If word is specified: KW (See note 4)
T (on-delay timer [contact])	×	6	If word is specified: TW
U (one-shot timer [contact])	×	7	If word is specified: UW
C (up-down counter [contact])	×	8	If word is specified: CW
TS (on-delay timer [setting]	×	9	
TC (on-delay timer [count])	×	10	
US (one-shot timer [setting])	×	11	
UC (one-shot timer [count])	×	12	
CS (up-down counter [setting])	×	13	
CC (up-down counter [count])	×	14	
DW (data register)	×	15	
JI (input relay)	×	56	(See note 3)
JO (output relay)	×	57	(See note 3)

Note 1: The programmable range of each memory location depends on the type of the PLC used and the system architecture. Program each memory location within a valid range.

Note 2: Use types to address indirect memory locations in a macro.

Note 3: Message if specified with X/Y; I/O communication if specified with JI/JO.

Note 4: When specifying bits of any of these locations with the POD editor, specify the bit numbers following the word address.

Example) Specify XW10 bit 15 : X10F
Specify YW80 bit 8 : Y808
Specify GW180 bit 2 : G1802
Specify KW1F0 bit 0 : K1F00

8.3 POD STYPEs

Setting AUTO for STYPE in the LWE580 settings will allow the POD to run successfully.
When specifying STYPEs program "yes" for all of the following:

DW (write data)
DR (read data)
DO (output data viewed from the master)
DI (input data viewed from the master)

8.4 Setting the PLC

To connect the POD to an S10/2α Series PLC, the PLC requires a JPCN-1 usage definition. For more details, see the LWE580 User's Manual.
The items that require setting in order to connect the POD to the Hitachi's HIDIC S10/2α are described below, along with sample settings (underlined).

(1) Station number

Set the station number shown on the back of the POD.

(2) Station type

Set "I/O + DR/DW."

(3) Slot box number

Set the amount of memory that is read into the PLC, or the amount of I/O communication data, on the [I/O word length setting] tab. To do this, choose [Item], [System Setting], and then [Comm. Parameter...].

9 Connecting to Omron's C200H

9.1 C200HW-JRM21 Settings

For detailed instruction on C200HW-JRM21 settings, see the C200HW-JRM21 User's Manual.

The following items require setting in order to connect the POD to Hitachi's HIDIC S10/2α:

(1) Baud rate/error output setting switch

The baud rate switch setting must match the value set with the POD editor.

(2) Station number setting switch

Set this switch to 00 to let the unit work as a master.

9.2 Available Memory Locations

The table below lists the memory locations available to items such as switches, lamps and data displays.

Memory	Bit write	Type (See note 2)	Remarks
DM (data memory)	×	0	
CH (I/O relay)	○	1	(See note 4)
HR (latch relay)	○	2	
LR (link relay)	○	3	(See note 3)
AR (alarm relay)	×	4	
T (timer [current value])	×	5	
C (counter [current value])	×	6	
JI (input relay)	×	56	(See note 4)
JO (output relay)	×	57	(See note 4)

Note 1: The programmable range of each memory location depends on the type of the PLC used and the system architecture. Program each memory location within a valid range.

Note 2: Use types to address indirect memory locations in a macro.

Note 3: LR0 may or may not be available depending on the version of the C200HW-JRM21 unit.

Note 4: Message if specified with CH; I/O communication if specified with JI/JO.

9.3 POD STYPE

When specifying STYPE on the C200HW-JRM21 unit, program "yes" for all of the following:

DW (write data)
DR (read data)
DO (output data viewed from the master)
DI (input data viewed from the master)

9.4 Setting the PLC

To connect the POD to a C200H Series PLC, the PLC requires a definition of JPCN-1 usage. For more details, see the C200HW-JRM21 User's Manual.
The setting items that are prerequisite to connecting the POD to Omron's C200HW-JRM21 are described below, along with sample settings (underscored).

(1) Master slave/slave identification code
Set **master (11H)** to connect to a POD.

(2) Initial recognition switch
Set **0**.

(3) Number of slave stations registered

(4) Communications monitoring timer

(5) Slave station number

(6) Slave service type (ptype)
Set **"0F (H)"** (I/O service, READ/WRITE, and PUT/GET service support slave setting).

(7) IN area starting channel size
Set by the user.

(8) IN data size
Must match the POD editor setting.

(9) OUT area starting channel size
Set by the user.

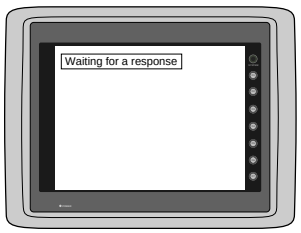
(10) OUT data size
Must match the POD editor setting.

10 Error Messages

This section defines the error messages that may appear during JPCN-1 communication sessions. For definitions of error messages that may appear during drawing, see User's Manual Reference <FEH351>.

■ **Error message: Waiting for a response**

This message appears in the upper left corner of the screen during a communication session with the PLC as shown below.



Error generation conditions

① Shorter than the PLC interval setting of max_int for JPCN-1 communication (slave station communications monitoring time).

② POD editor timeout has expired
(The timeout interval can be programmed on the [Detailed settings] tab, which is displayed by choosing [Item], [System Setting], and then [Comm. Parameter...].

If a max_int value that is too large (such as infinite) is programmed on the PLC, it will become impossible to determine the presence or absence of a response from the PLC, and whether communication is successful or not. Therefore, the error message will be displayed if these two conditions are established. The error message will be cleared, however, if a response is received from the PLC within the max_int time interval.

■ **Error message: Network I/O access error**

Error occurrence condition: Attempted access outside the I/O ranges preprogrammed with the POD editor. (The I/O ranges can be programmed on the [I/O word length setting] tab, which is displayed by choosing [Item], [System Setting], and then [Comm. Parameter...].

You have likely accessed an area out of bounds with a POD macro instructions. Correct the display data with the POD editor.

Fuji Electric Co., Ltd.

ED & C · EDrive Systems Company

Gate City Ohsaki, East Tower

11-2, Osaki 1-chome, Shinagawa-ku, Tokyo, 141-0032, Japan

Phone: +81-3-5435-7135~8

Fax: +81-3-5435-7456~9

URL http://www.fujielectric.co.jp/kiki/