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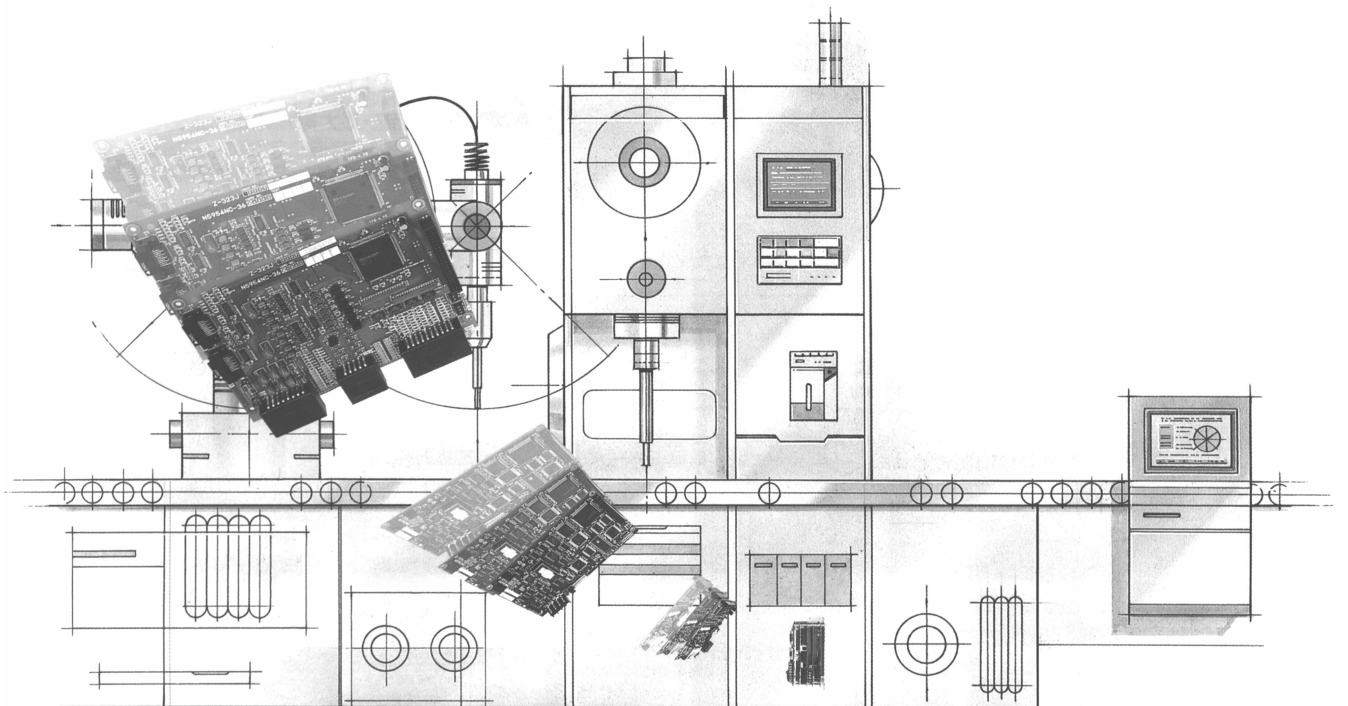
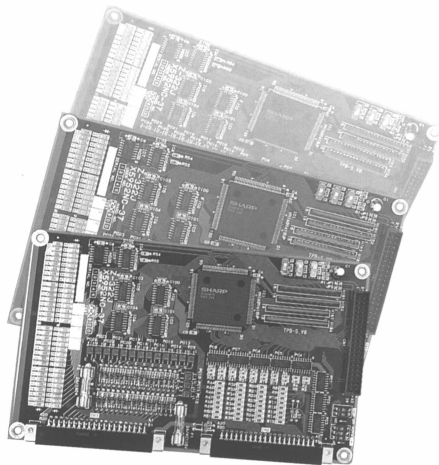
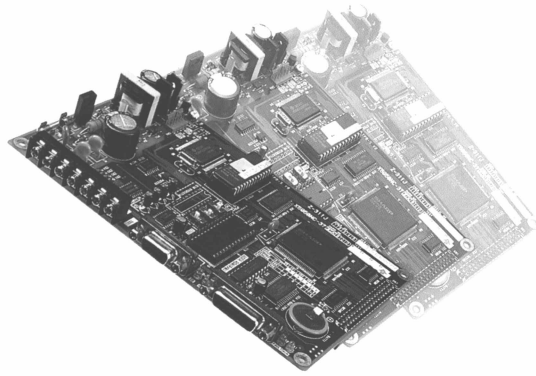
Version 2.0
Produced in August, 2006

Sharp Programmable Controller

Board PC J-board

Model name
DeviceNet Master Board Z-337J/338J

User's Manual



Make sure to read this insert before using this module

The Z-337J/338J communicates with slave stations that are registered on a scan list it creates. If a slave station is physically disconnected from the communication line, the Z-337J/338J will not receive a response from the slave station and a communication error will occur. In order not to cause a system error, if a slave station is temporarily disconnected and reconnected, a new connection table will be constructed in the module versions described below.

Note: Please note that the master board will not try to communicate with a slave station whose corresponding entry is turned ON (disconnected) in the connection table.

Diagnostic table

Register D7 D6 D5 D4 D3 D2 D1 D0

39000	Communication monitor table (8 bytes)							
39001								
39002								
39003								
39004								
39005								
39006								
39007								
39010	Error node table (8 bytes)							
39011								
39012								
39013								
39014								
39015								
39016								
39017								
39020	Scan list table (8 bytes)							
39021								
39022								
39023								
39024								
39025								
39026								
39027								
39030	7	6	5	4	3	2	1	0
39031	15	14	13	12	11	10	9	8
39032	23	22	21	20	19	18	17	16
39033	31	30	29	28	27	26	25	24
39034	39	38	37	36	35	34	33	32
39035	47	46	45	44	43	42	41	40
39036	55	54	53	52	51	50	49	48
39037	63	62	61	60	59	58	57	56
39040	Operating status monitor table (8 bytes)							
39041								
39042								
39043								
39044								
39045								
39046								
39047								
39050								

If the top address of the diagnostic table is 39000, the connection table area will be from 39030 to 39037.

Connection table area

[ON: Disconnected (does not communicate)
OFF: Connected (communicates)

[1] The applicable program version number for the connection table and the compatible module models are as follows.

v4.1 or later	JW20DN2
v2.7 or later	JW32CV3, JW32CUM1, JW32CUM2, Z337J/Z338J

[2] The LEDs and communication status will be as follows when a module is shown as disconnected in the connection table.

Ex.: A system with a master board (station number 0) and two slave stations (station numbers 1 and 2).

(1) When the D1 bit in 39030 is ON (Slave station 1 is disconnected)

LED	Z-337J/338J (station No. 0)	Slave station (station No. 1)	Slave station (station No. 2)	Communication status
MS	Lit green	Lit green	Lit green	Only one slave station (station No. 1) is disconnected and the NS LED will blink green. The master board will continue communication with the other slave station (station No. 2)
NS	Lit green	Blinks green	Lit green	
S0 to S7	OFF	-	-	

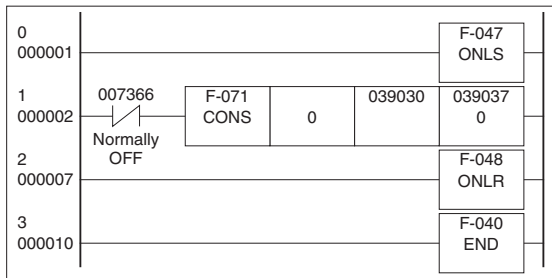
(2) When the D1 and D2 bits in 39030 are ON (Slave stations 1 and 2 are disconnected)

LED	Z-337J/338J (station No. 0)	Slave station (station No. 1)	Slave station (station No. 2)	Communication status
MS	Lit green	Lit green	Lit green	Only one slave station (station No. 1) is disconnected and the NS LED will blink green. The master board will continue communication with the other slave station (station No. 2).
NS	Blinks green	Blinks green	Blinks green	
S0 to S7	OFF	-	-	

[3] Recommending program

If you will not be using the connection function, we recommend that you insert the following program at the end of user program, in order not to disconnect any slave module mistakenly from the user program.

* When the top address of the diagnostic table is 39000.



■ Lighting conditions and meanings of the MS and NS LEDs on the JW-20DN2, version 4.1 or later, and the JW32CV3, JW32CUM1, JW32CUM2, Z337J/Z338J, version 2.7 or later.

Lamp name	Color	Status	Description
NS (Network status)	Green	ON	<p>In master mode</p> <ul style="list-style-type: none"> - The network is normal. <p>Note: Even if some slave stations are disconnected, as long as one slave station can communicate, this lamp will be lit.</p> <p>In slave mode</p> <ul style="list-style-type: none"> - The network is normal. (Normal communication established with a master board.)
		Blinking	<p>On-line / no communication</p> <p>In master mode</p> <ul style="list-style-type: none"> - Although the network is normal, communication has not been established. - Slave stations are disconnected. (By turning ON (disconnect) the connection table, there are no slave stations that the master can communicate with.) <p>In slave mode</p> <ul style="list-style-type: none"> - Although the network is normal, communication has not been established. - The Z-337J/338J is disconnected from the master board.
	Red	ON	<p>Communication error 1</p> <p>Same for master and slave mode</p> <ul style="list-style-type: none"> - Communication error (the Z-337J/338J detected an error or there is unstable communication on the network.) - A node address is used twice. - A busoff error was detected.
		Blinking	<p>Communication error 2</p> <p>In master mode</p> <ul style="list-style-type: none"> - One or more slave stations have a communication error. <p>In slave mode</p> <ul style="list-style-type: none"> - The Z-337J/338J has a communication error.
	-	OFF	<p>Off-line / Power OFF</p> <p>Same for master and slave mode</p> <ul style="list-style-type: none"> - There is no node other than the Z-337J/338J.

Safety Precautions

Read this user's manual and attached documents carefully before installation, operation, maintenance and checking in order to use this board correctly. Understand all of this board's knowledge, safety information, and cautions before starting to use. In this user's manual, safety precautions are ranked into "Danger" and "Caution" as follows.



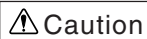
Danger

: Wrong handling may possibly lead to death or heavy injury.



Caution

: Wrong handling may possibly lead to medium or light injury or loss on properties.

Even in the case of , a serious result may be experienced depending on the circumstances. Anyway, important points are mentioned. Be sure to observe them strictly.

The picture signs of prohibit and compel are explained below.



: It means a don't. For example, prohibition of disassembly is indicated as ()



: It means a must. For example, obligation of grounding is indicated as ()

1) Installation

Caution

- Use in the environments specified in the catalog and user's manual.
Electric shock, fire or malfunction may be caused when used in the environments of high temperature, high humidity, dusty or corrosive atmosphere, vibration or impact.
- Install according to the instruction manual and user's manual.
Wrong installation may cause a drop, trouble or malfunction.
- Never admit wire chips or foreign matters.
Or fire, trouble or malfunction may be caused.

2) Wiring

Compel

- Be sure to ground.
Unless grounded, electric shock or malfunction may be caused.

Caution

- Wiring should be done by a qualified electrician.
Wrong wiring may lead to fire, trouble or electric shock.

3) Use

Danger

- Never touch the terminals while electric power is charged.
Otherwise, you may have an electric shock.
- Assemble an emergency stop circuit and interlock circuit outside of the J-board and integrate the J-board's halt output. Otherwise a machine breakdown or accident may be caused by the trouble of the programmable controller.

 **Caution**

- Manipulation for program change, forced output, RUN or STOP during operation should be done with particular care by confirming safety. Mis-operation may lead to a machine trouble or accident.
- Follow the power input order specified. Otherwise, the J-board malfunctions and damages machines or cause an accident.

4) Maintenance

 **Prohibit**

- Don't disassemble or modify.
Or fire, trouble or malfunction may be caused.

 **Caution**

- Make sure to turn OFF the power before removing / installing the board, installing the connectors, or changing the switch settings.

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Chapter 1: Outline

The DeviceNet master board, Z-337J/338J is a master board for the J/board Z300/500 series programmable controllers, and it is used in a DeviceNet (an open network). Installing this board on a J-board, and connecting various DeviceNet slave devices allows you to construct an optimum system with decentralized control. In addition, the Z-338J is equipped with 32 points I/O (16 points input and 16 points output).

■ De facto standard network

By employing the DeviceNet standards, which have a major share of the market in North America, your product will have an advantage in that it can be used in overseas markets, and can share facilities both in Japan and overseas.

■ Wire savings by using proprietary cables

One single exclusive cable can be used to connect between nodes (master and slaves). It can also be branched using a "T" branch tap.

■ Up to 63 slave stations can be connected

A maximum of 63 slave stations can be connected to one Z-337J/338J master board. (Maximum number of I/O points: 4096)

■ Simple operation using a scan list editing function

In addition, the Z-337J/338J is equipped with a Polling I/O function and Explicit message function as a part of the DeviceNet specifications.

■ 32 I/O points installed (Z-338J only)

The Z-338J has 16 VDC input and 16 NPN transistor output points, saving a lot of space.

DeviceNet is a trademark of the ODVA (Open DeviceNet Vendor Association).

Chapter 2: Handling Precautions

Follow the precautions below when using the Z-337J/338J.

(1) Precautions for installation

Never install the board in the following locations.

- Where proximate to any heat generating object.
- Where temperature rapidly changes and gives dew condensation.
- Where there is corrosive or flammable gas.
- Where it directly receives vibration or shocks.
- Where exposed to dust, iron powder, or salty atmosphere.

(In conditions where the printed circuit boards may be directly affected by these causes, make sure to provide an appropriate external case to cover the J-board.)

- Where it is proximate to high voltage equipment, driving power tools, large open/close surge generating devices, and their wirings.

(2) Precautions at use

- In order to prevent personal injury or damage to equipment, construct an external emergency stop circuit and connect it to the halt output on the J-board.

- As J-board is board structure and it's electronic parts are exposed, be careful when handling.

1) Before you touch the board directly, be sure to eliminate static electricity in your body.

2) Do not touch directly with dirty hands such as stacked oil etc.

3) Do not put the board alone directly on conductive objects such as metallic boards.

(Once the J-board is installed on a motherboard, if it contacts a conductive object the battery on the motherboard may be short circuited and the back up memory may be damaged.)

4) Be careful not to apply excessive force to each switch, connector, terminal block of the J-board.

- Make sure to turn OFF the power before connecting the board, installing connector, changing a switch setting.

(3) Grounding

- The FG terminal (CPU board terminal block) on the J-board must not share a ground point with high voltage applications. Set up an independent, class 3 ground for the FG terminal.
- The hexagonal stand-offs on each board, that are used to install the J-board, are also used to connect the board to ground (FG). Tighten them securely.

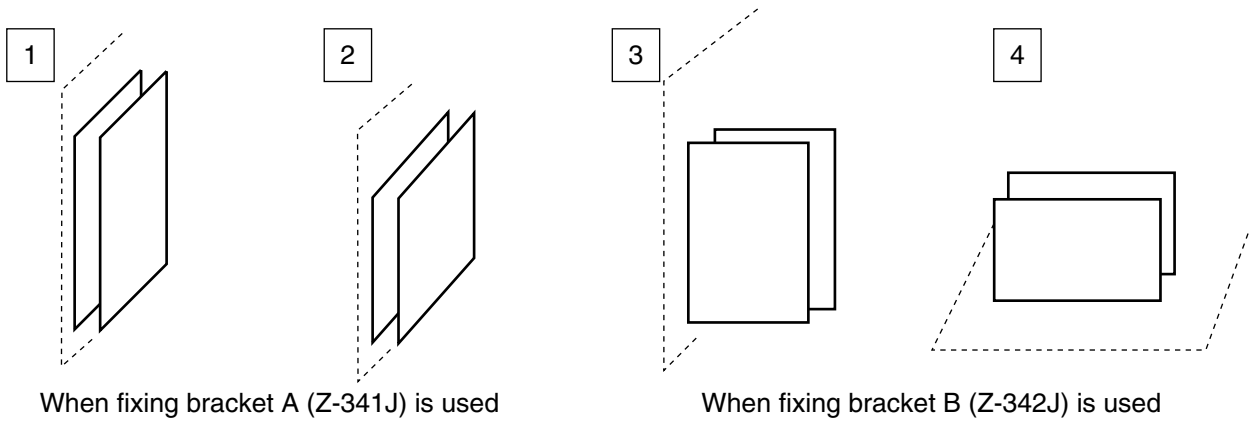
(4) Precautions for wiring

Do not run the communication lines parallel to or near to power lines or high voltage lines. Do not arrange wiring so that sources of electrical noise (driver lines, high voltage lines, or I/O lines) come close to the PC board on the J-board.

(5) Installation

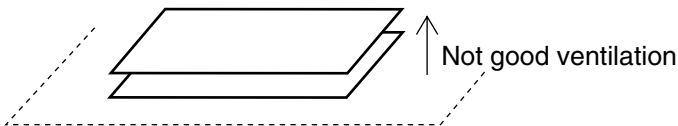
Use bracket A or B (sold separately) to install the J-board in any of the following 4 positions.

● **Recommending installation positions**



If you do not use bracket A or B to install the J-board, make sure it is very secure. Also, install the J-board with as much ventilation as possible.

If the J-board is installed horizontally, as shown in the figure below, it will not be well ventilated. Make sure the installation allows enough space above the board so that the surrounding temperature does not rise above 55°C.

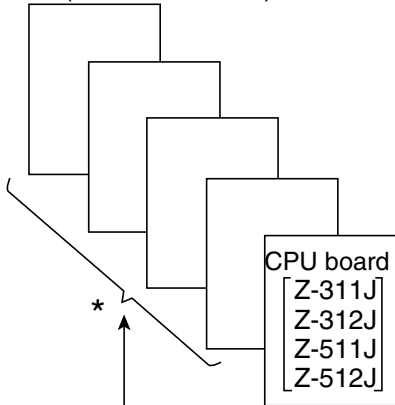


(6) Output protection fuse: Z-338J only

When the output protection fuse on the Z-338J is blown, after resolving the problem such as a short circuit in a load, replace the fuse. The output protection fuse on the Z-338J is there to protect the internal circuits from damage due to overcurrent or shorted loads. It is not there to protect the output elements.

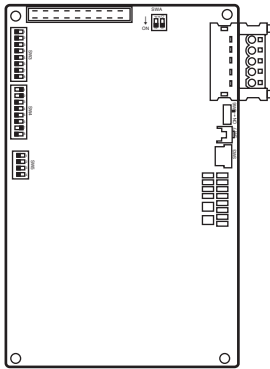
Chapter 3: System Configuration

J-board (Z300/500 series)



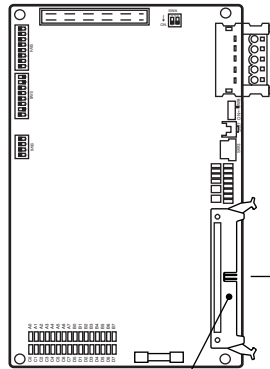
* Number of boards to install into a J-board
=> See page 3-2 and 3-3.

Z-337J



DeviceNet network
=> See page 3-4 to 3-9

Z-338J



DeviceNet network
=> See page 3-4 to 3-9

Input/output equipment
=> See section 6-2.

332 points I/O
[24 VDC input: 16 points
NPN transistor output: 16 points]

3-1 Number of board install into a J-board

The Z-337J/338J is a communication board of the J-board. The maximum number of boards to install into a J-board are total number of boards including the communication boards.

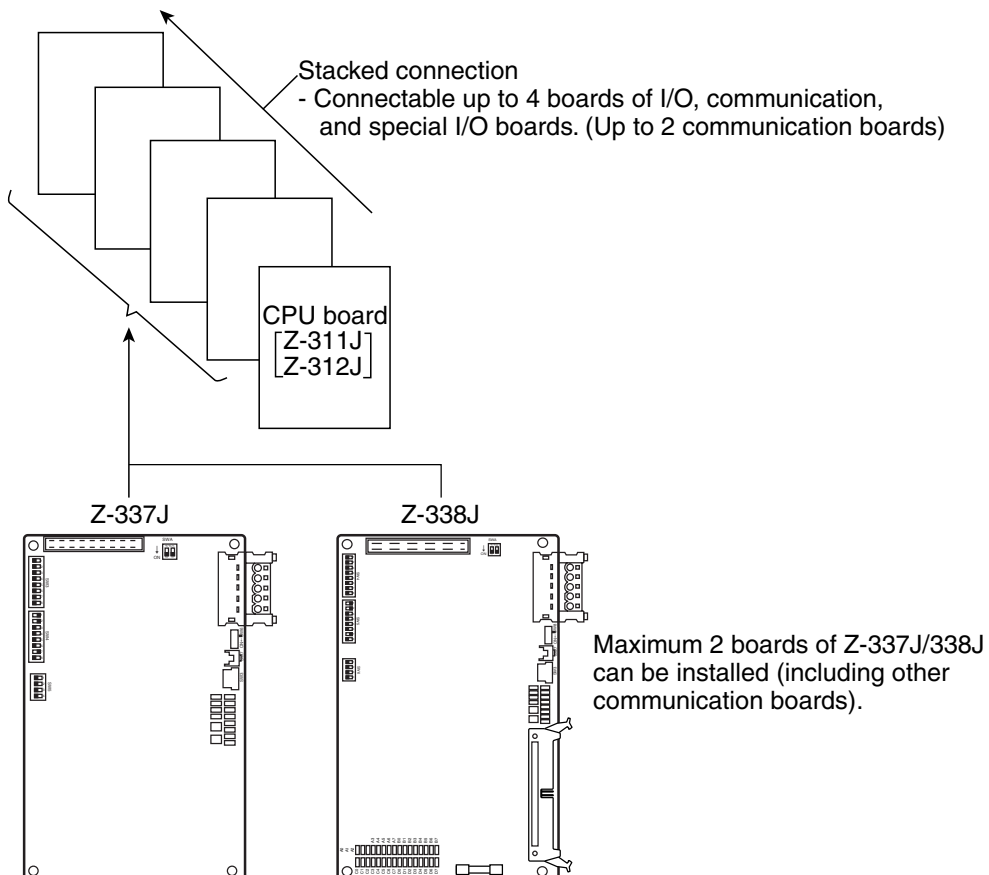
J-board	CUP board	Number of Z-337J/338J boards to install (including other communication boards)
Z300 series	Z-311J	Maximum 2 boards - When the total of 5 V power consumption current of boards installed exceed 800 mA, the number of boards is restricted.
	Z-312J	
Z500 series	Z-511J	Maximum 2 boards - 5 V power supply (outside connection) is needed a capacity of total 5 V power consumption current of each board installed (max. 2.7 A).
	Z-512J	Maximum 2 boards - When the total of 5 V power consumption current of boards installed exceed 1.8 A, the number of boards is restricted.

● Types of communication boards

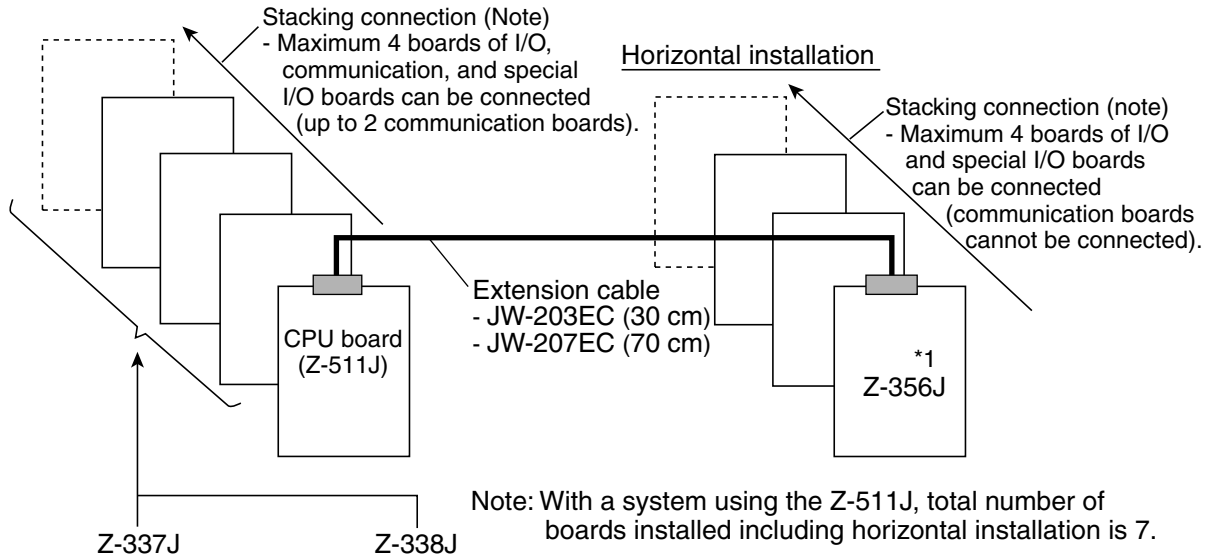
Model name	Specifications
Z-331J *	Data link or computer link, satellite I/O link master station
Z-332J	Data link or computer link
Z-333J	Satellite I/O link master station
Z-334J	ME-NET board (with branch line extension function)
Z-335J	Satellite net board
Z-336J	FL-net board
Z-337J	Devicenet master board
Z-338J	DeviceNet master board (with 32 points I/O)

*Manufacture after ordered

(1) When CPU board is Z-311J/312J



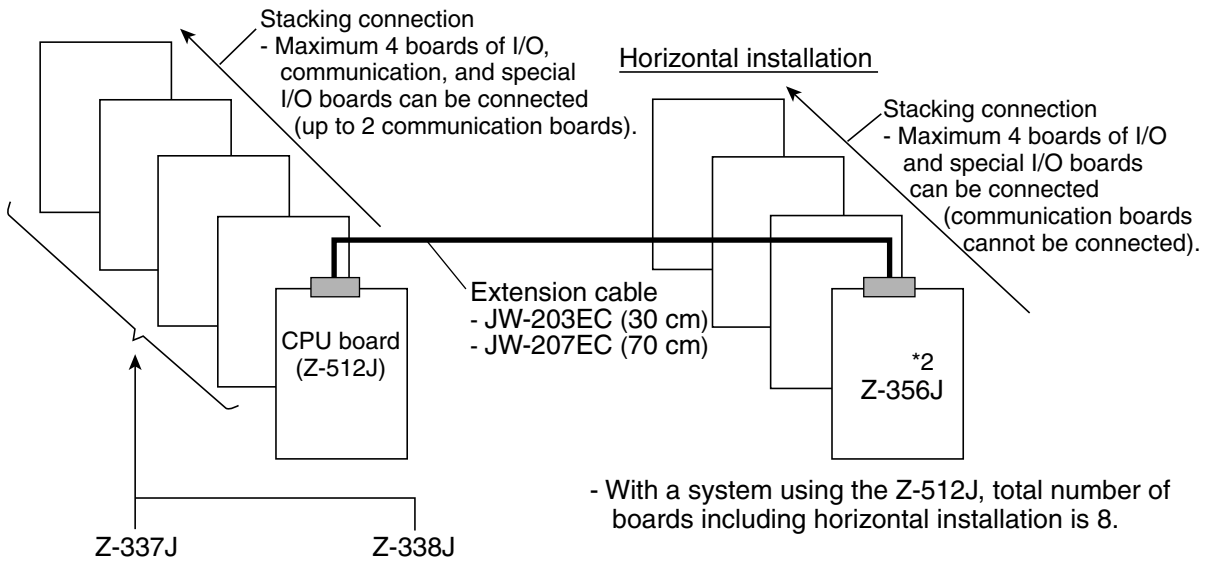
(2) When CPU board is Z-511J



The Z-337J/338J can be installed with maximum 2 boards (including other communication boards).

*1. When to install horizontally, the Z-511J (CUP board) and Z-356J (high-speed counter board) shall be connected using an expansion cable.

(3) When CPU board is Z-512J



The Z-337J/338J can be installed maximum 2 boards (including other communication boards).

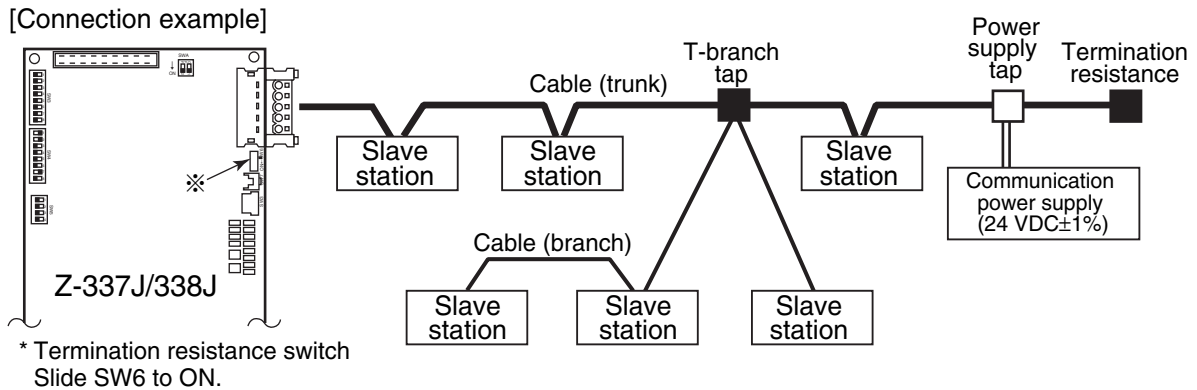
*2. When to install horizontally, the Z-512J (CUP board) and the Z-356J (high-speed counter board) shall be connected using an expansion cable.

As for the details of number of boards and modules connectable to the CPU board, see the following manuals for CPU boards.

- Z-331J/312J User's Manual - Hardware Version
- Z-511J User's Manual - Hardware Version
- Z-512J User's Manual - Hardware Version

3-2 Network configuration of DeviceNet

This section describes equipment related connection and communication specifications concerning the Z-337J/338J DeviceNet.



■ Connection related equipment of the DeviceNet

For slave stations, cables, T-branch taps, power supply taps, and termination resistances used for the DeviceNet system of the Z-337J/338J master station, prepare items conform to the DeviceNet. For slave stations, the following conditions are required.

Required conditions of slave station	Have the Polling I/O function as communication service. Note: In addition to the function above, slave stations having other communication functions can be connected. However, this system cannot use these functions.
--------------------------------------	--

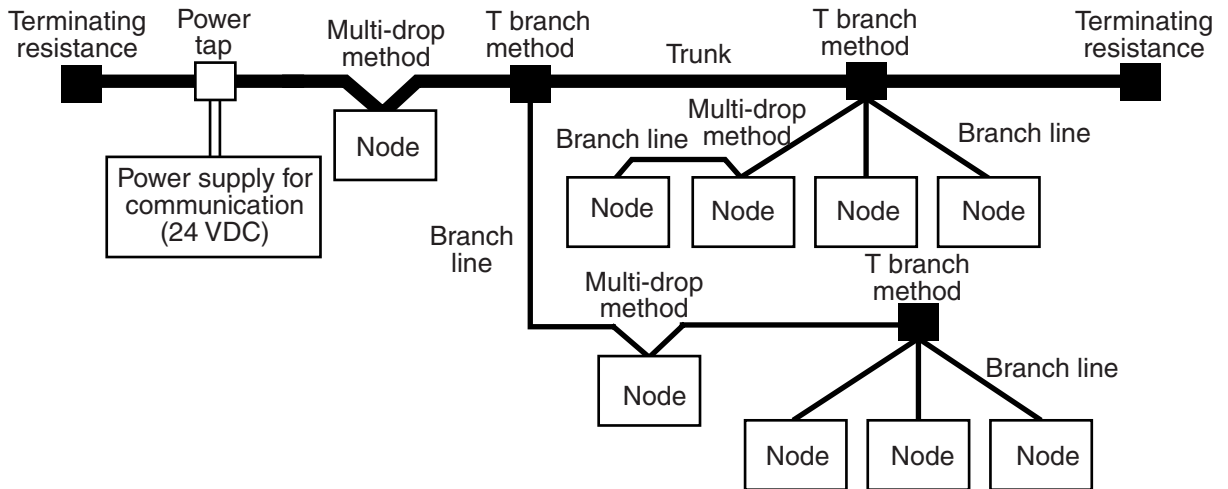
■ Communication specifications of the DeviceNet section

Item	Specifications				Pages to refer
Communication protocol	Conform to the DeviceNet				—
Node	Maximum 63 nodes slave stations against a master station (1 node)				—
Number of I/O points	4096 (512 bytes) as input/output data table				4-3, 8-1
Communication speed	Selectable 125 kbps, 250 kbps, or 500 kbps.				4-6
Communication distance (maximum)	Communication speed	125 kbps	250 kbps	500 kbps	3-7, 3-9
	Trunk length using the thick cable	500 m	250 m	100 m	
	Trunk length using the thin cable	100 m	100 m	100 m	
	Branch length	6 m	6 m	6 m	
	Total branch length	156 m	78 m	39 m	
Communication service	Poling I/O function, Explicit message function				Chapter 8, Chapter 9
Communication media	Proprietary cable: 5 lines (2 signal lines, 2 power lines, and 1 shield) - Thick cable: For trunks - Thin cable: For trunks and branches				3-9
Allocation of data table	Selectable I/O data mapping from "order allocation," "even allocation," "allocate in order of securing empty node area" in the scan list edit mode.				4-5

[1] Network names and functions

This section lists the device names and functions used in DeviceNet networks.

● Network example



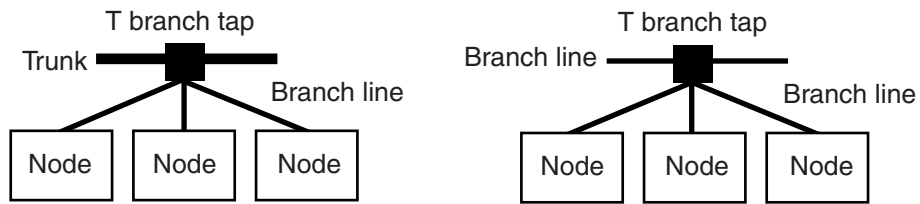
Names	Functions
Node	<p>Master and slave nodes are available on the DeviceNet.</p> <p>Master: Integrates external I/Os from each slave. Slave: provides connections for external I/Os.</p> <ul style="list-style-type: none"> - In a system using the Z-337J/338J, the Z-337J/338J (J-board) will be master station. - Since there are no restrictions in allocating a master and slaves, you can arrange nodes at any location shown above.
Trunk	<p>Cable with a terminating resistance at both ends.</p> <ul style="list-style-type: none"> - Normally, the cable connecting the terminals the furthest distance apart will be a trunk cable. - Use a five conductor cable (2 signal wires, 2 power wires, 1 shield). - The trunk length is not always equal to the maximum length of the network.
Branch line	<p>A cable branching off the trunk.</p> <ul style="list-style-type: none"> - You can newly branch from a branch line. - Use a five conductor cable (2 signal wires, 2 power wires, 1 shield).
Connection method	<p>There are two methods for connecting nodes: T branch and Multi-drop.</p> <p>T branch method: Uses T branch taps for up to three separate branch lines. Multi-drop method: Connects a node directly to a trunk or to a branch line.</p> <ul style="list-style-type: none"> - Both the T branch method and the Multi-drop method can be used in the same network.
Terminating resistance	<p>Install a terminating resistance (121 ohm) on both ends of the trunk, in order to reduce signal reflection and stabilize the communication.</p> <ul style="list-style-type: none"> - The module is equipped with terminating resistances (selectable enable/disable).
Power supply for communication	<p>Communication power should be supplied to the communication connector on each node through the five conductor cable.</p> <ul style="list-style-type: none"> - Use only a power supply dedicated exclusively to communications. Do not share this power supply with other devices.

[2] Connection method

There are two methods for connecting nodes: T branch and Multi-drop.

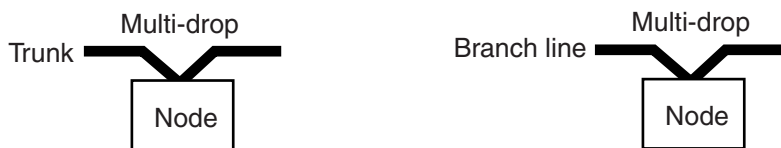
(1) T branch method

You can make up to three branch lines away from a trunk or a branch line. Use a T branch tap to branch off.



(2) Multi-drop method

Connect a node directly to a trunk or a branch line.

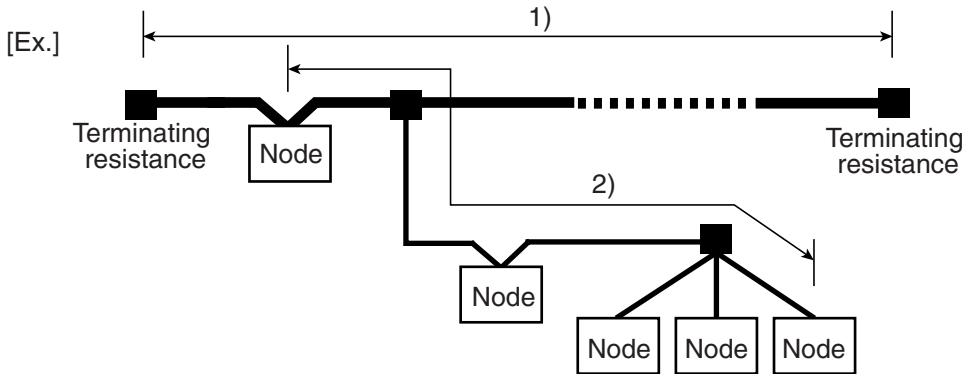


[3] Cable length

(1) Maximum network length

The maximum network length will be the longest of the following:

- 1) The distance between the two terminating resistances
- 2) The distance between the two nodes in the network that are the farthest apart



The maximum network length possible will vary, depending on the type of cable used.

	Cable type	Maximum network length
1)	Thick cable: 5 conductors	500 m
	Thin cable: 5 conductors	100 m
2)	Thin cable: 5 conductors	100 m

- The maximum network length is also limited by the communication speed. => See section (3) below.
- When thick and thin cables are mixed in the same network, the following conditions must be met.

Communication speed	Maximum network length
500 k bits/s	(A + B) is less than 100 m
250 k bits/s	(A + 2.5 x B) is less than 250 m
125 k bits/s	(A + 5 x B) is less than 500 m

A: Thick cable length
B: Thin cable length

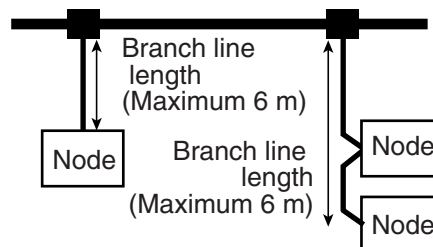
(2) Maximum branch line length

The maximum branch line length is 6 m.

- You can make a new branch line from a branch line.

However, the maximum distance between the branch point on the trunk and the end of the most distant branch line should not be more than 6 m.

[Ex.]



(3) Communication speed and distance

The communication distance will vary, depending on the communication speed.

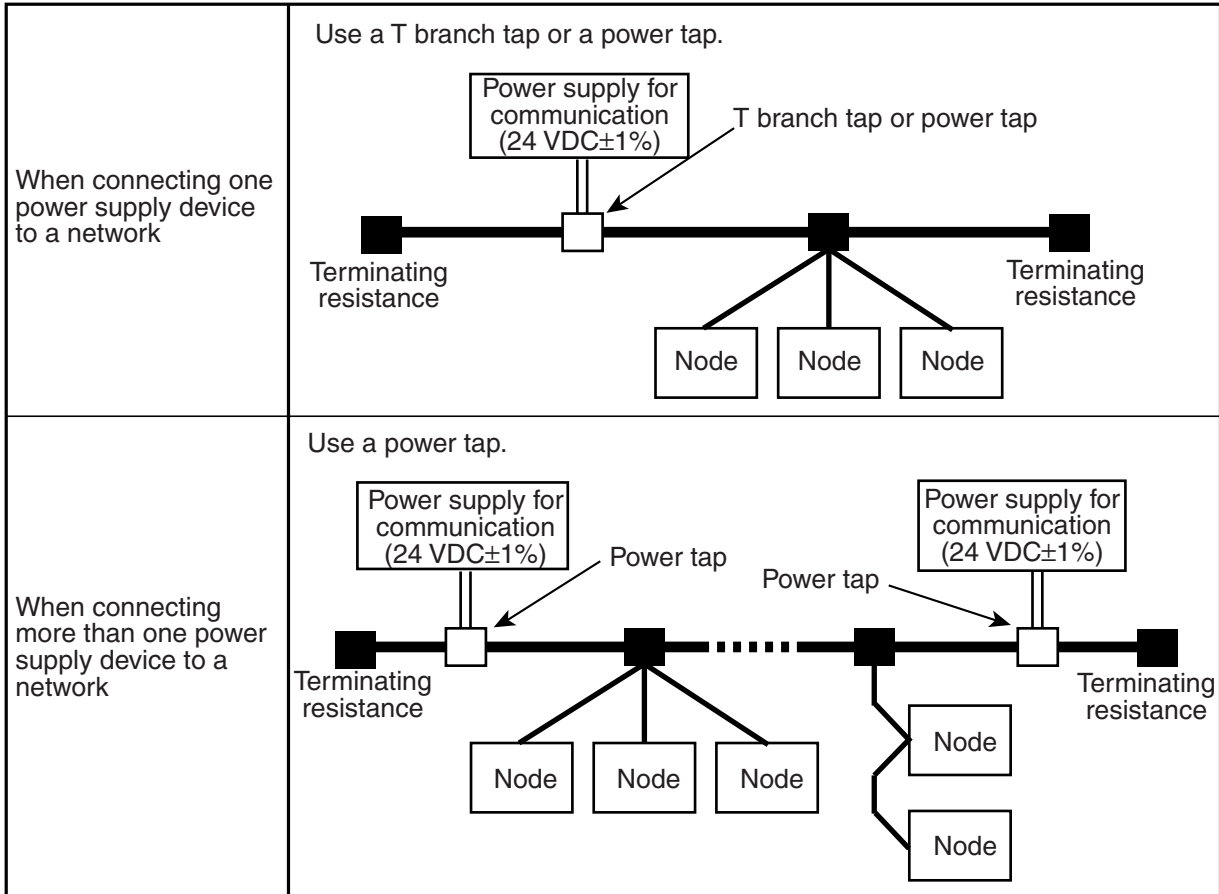
Communication speed	Maximum network length		Branch line length	Total length of branch lines
	Thick cable	Thin cable		
500 k bits/s	100 m or less	100 m or less	6 m or less	39 m or less
250 k bits/s	250 m or less			78 m or less
125 k bits/s	500 m or less			156 m or less

[4] Power supply

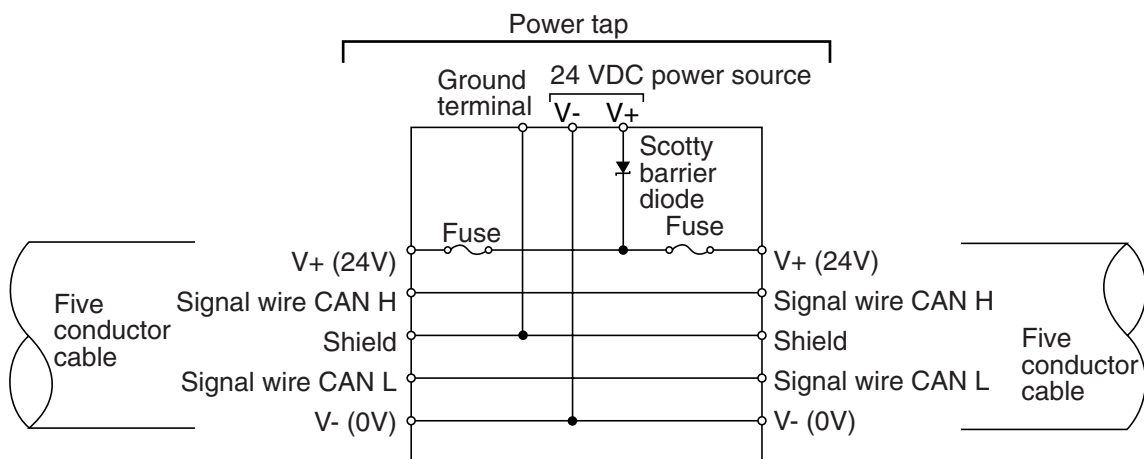
Connect the communication power supply to the trunk.

Two of the five conductors in the cable used for trunk and branch lines are assigned to carry power for communication (24 VDC).

The following methods can be used to connect a communication power source to the trunk.



• Configuration of a power tap



Remarks

- Do not share the communication power source with other devices.
- Do not turn OFF the communication power supply while communicating using the Polling I/O function. Otherwise, the communication may be stopped.

[5] Communication related devices

In addition to master and slave nodes, the following devices can be used in this system: cables, T branch taps, power taps, communication connectors, terminating resistances, and communication power supplies. Listed below are the models of devices currently available (by manufacturer).

(1) Cable

Thick or thin five conductor cable is available.

Number of lines	Mfg.	Cable type	Model name	Length (m)	Outside dimension (mm)	Major applications
5 conductors: 2 signal lines, 2 power lines, and 1 shield	Allen-Bradley	Thick cable	1485C-P1-A50	50	11.6 to 12.1	Trunk
		Thin cable	1485C-P1-C150	150	6.9	Branch or trunk*
	Omron	Thick cable	DCA2-5C10	100	11.6 to 12.1	Trunk
		Thin cable	DCA1-5C10	100	6.9	Branch or trunk*

* When using a thin cable as a trunk, the trunk length must be less than 100 m.

(2) T branch tap

You can connect up to three new branch lines off a single existing branch line.

Model	Number of connectors	Remarks	Mfg.
DCN1-1C	Three (this tap is used to connect one new branch line)	- Has three connectors for connecting up to three new lines - Connects to a terminating resistance	Omron
DCN1-3C	Five (this tap is used to connect three new branch lines)	- Has five connectors for connecting up to five new lines - Connects to a terminating resistance	

(3) Power tap

This tap is used to supply power to the five conductor cable when connecting more than one communication power supply to a single network.

Model	Specifications	Mfg.
1485T-P2T5-T5	Power tap With a reverse current prevention function and ground terminal	Allen-Bradley

- This tap can be used to connect a single communication power supply to a network.

In this case, you can also use a T branch tap (above), in addition to the power tap.

- When connecting a power supply to a single line network, use of a power tap may prevent reverse current flow to the power supply.

(4) Communication connector

The Z-337J/338J contains one BLZ5.08/5F AU-DN (with a screw for securing the connector, made by Nihon Widmüller Co., Ltd.). => See page 6-2 to 6-3.

(5) Terminating resistance

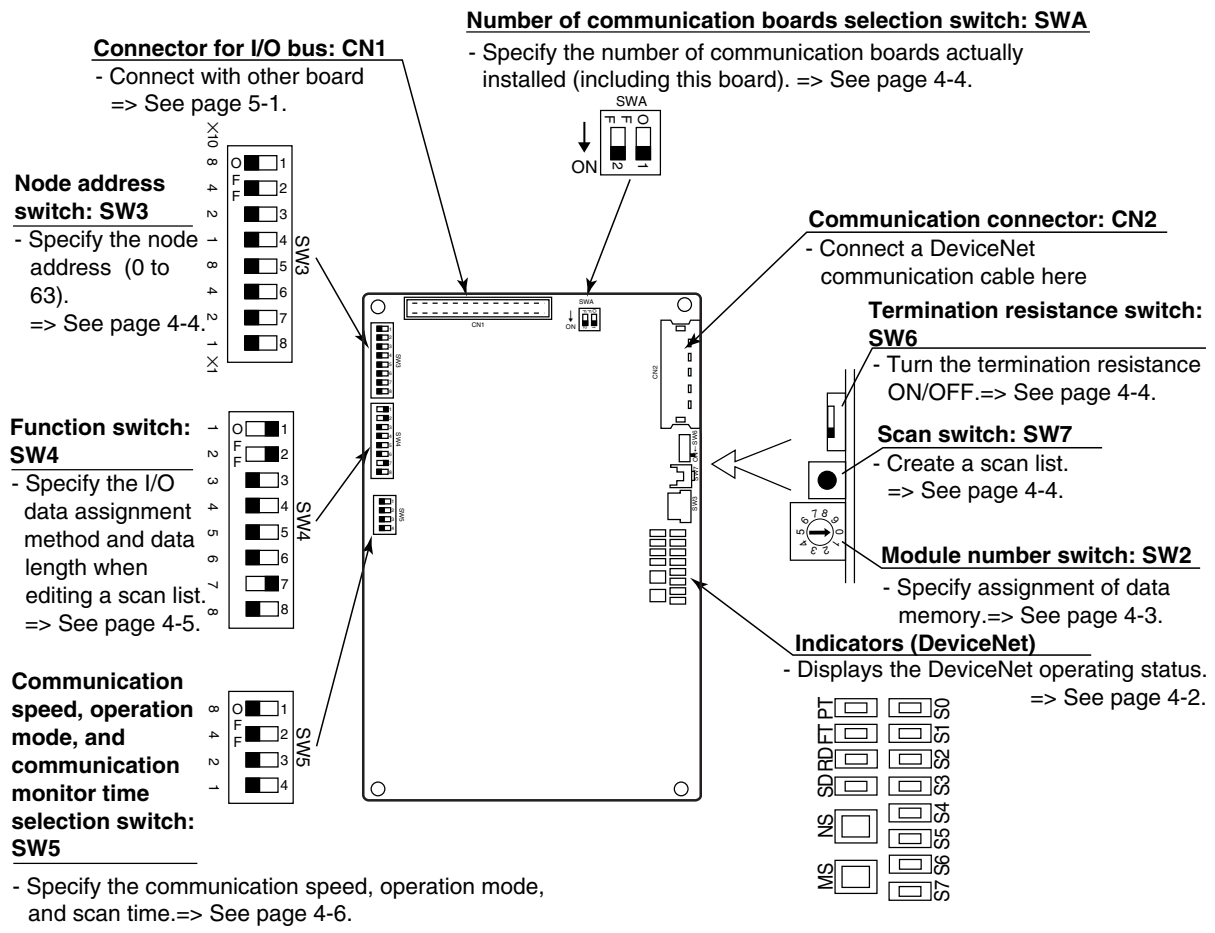
Model	Remarks	Mfg.
DRS1-T	Terminal block type terminating resistance (121 ohm)	Omron
---	Terminating resistance comes with T-branch tap (121 ohm)	

(6) Communication power supply

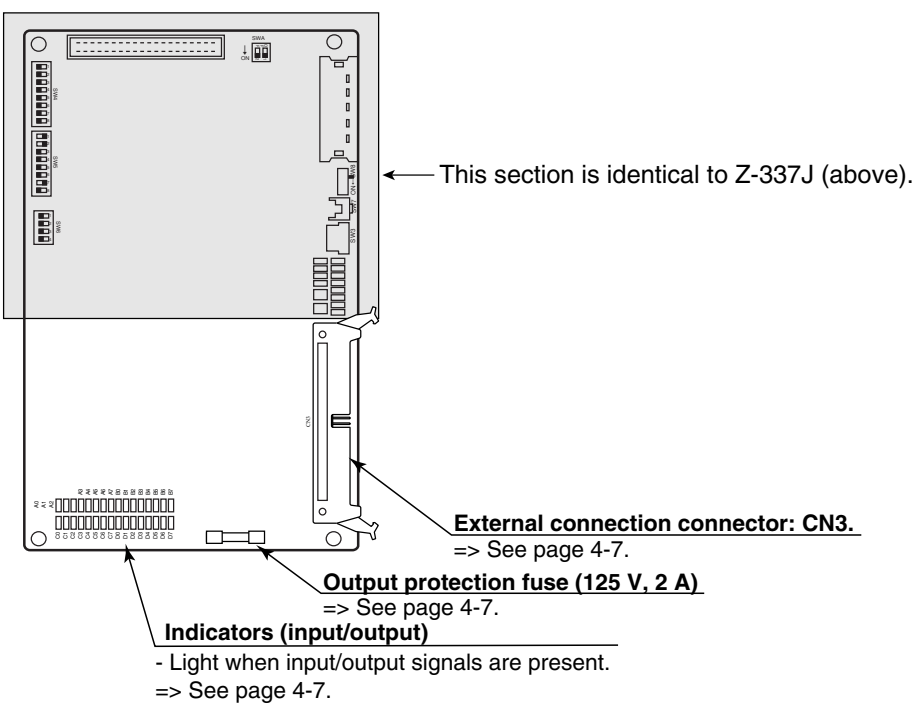
Make sure to use a communication power supply with a rated output voltage of 24VDC $\pm 1\%$. Also, the AC input must be isolated from the DC output. Select a power supply with enough spare capacity to carry the load easily.

Chapter 4: Name and Function of Each Part

■ Z-337J

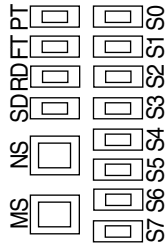


■ Z-338J



(1) Indicators (DeviceNet): Z-337J/338J

The DeviceNet function operating details on the Z-337J/338J (this board) are displayed by ON, blinking, and OFF lights.



Lamp name	Operation
MS	Indicates the module's status.
NS	Indicates the network status.
SD	Lights when sending data.
RD	Lights when receiving data.
FT	Lights when this board is hardware error.
PT	Lights when this board is in the protection mode.
S7 to S0	Displays error codes and the error occurred node address when an error occurs.

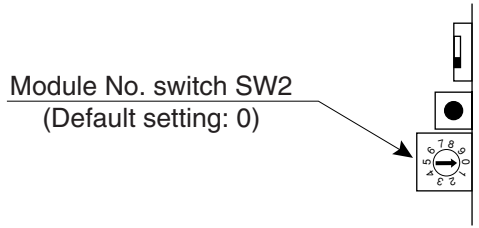
=> See the table below.

● **Details of the MS/NS**

Lamp name	Color	Status	Details
MS (Module Status)	Green	ON	Normal This board is functioning normally.
		Blinks	Not yet set Currently reading the switch settings.
	Red	ON	Hardware error This board has a hardware error.
		Blinks	Abnormal setting Incorrectly set switches.
---	OFF	No power supplied - Hardware error in this board. - No power is supplied to this module (for Device Net.) - Currently resetting - Waiting for initialization.	
NS (Network Status)	Green	ON	On-line/connected The network is functioning normally (communication has been established)
		Blinks	On-line/not yet connected Although the network is functioning normally, communication has not yet been established.
	Red	ON	Communication error 1 - Communication error (the module detected an error indicating that communication on the network is not possible). - A node address has been used twice. - Detected Bus Off.
		Blinks	Communication error 2 A slave station or some other stations are causing a communication error.
	---	OFF	Off-line/power OFF status There are no nodes other than the master.

(2) Module No. switch SW2: Z-337J/338J.

Assign the data memory addresses for the Z-337J/338J in the CPU board (Z-311J/312J, Z-511J/512J) in which the Z-337J/338J is installed.



- Set SW2 to 0 to 4. Setting this switch from 5 to 9 may cause an error.
- When setting SW2, be careful not to duplicate the data memory areas used on other communication boards (including the Z-337J/338J).

Ex.: When installing a Z-331J/333J on the same CPU board as this board.

Set SW2 on this board to 1 to 3. Setting this switch to 0 or 4 may overlap the Z-331J/333J I/O link area.

● **When the board is installed into Z-311J/312J CPU board**

Table	Number of bytes	Module number switch SW2 settings				
		0	1	2	3	4
I/O data	512	␣0100 to ␣0727 (408 bytes)	␣1000 to ␣1477 (320 bytes)	69000 to 69777	79000 to 79777	␣0100 to ␣0777
Diagnosis data	256	␣1500 to ␣1507 (8 bytes)*	␣1510 to ␣1517 (8 bytes)*	89000 to 89337	99000 to 99377	␣1500 to ␣1507 (8 bytes)*
Host Explicit message data (request)	118			89400 to 89565	99400 to 99565	
Host Explicit message data (response)	118			89600 to 89765	99600 to 99765	
Scan list data	512	29000 to 29777	39000 to 39777	49000 to 49777	59000 to 59777	29000 to 29777

* Only communication monitor table exists.

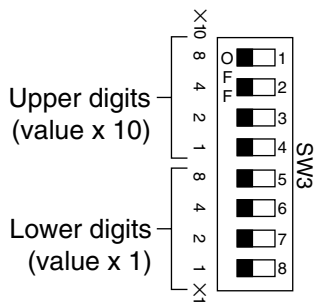
● **When the board is installed into Z-511J/512J CPU board**

Table	Number of bytes	Module number switch SW2 settings				
		0	1	2	3	4
I/O data	512	␣2000 to ␣2777	␣5000 to ␣5777	␣6000 to ␣6777	79000 to 79777	␣0100 to ␣0777
Diagnosis data	256	39000 to 39377	49000 to 49377	59000 to 59377	69000 to 69377	39000 to 39377
Host Explicit message data (request)	118	39400 to 39565	49400 to 49565	59400 to 59565	69400 to 69565	39400 to 39565
Host Explicit message data (response)	118	39600 to 39765	49600 to 49765	59600 to 59765	69600 to 69765	39600 to 39765
Scan list data	512	E0000 to E0777	E1000 to E1777	E2000 to E2777	E3000 to E3777	E0000 to E0777

(3) Node address switch SW3: Z-337J/338J

Specify a node address in the range of 0 to 63 (decimal)

- The node address of the Z-337J/338J can be set freely (within the range 0 to 63) as long as it does not duplicate the address of another node (slave stations) in the same network. If duplicate node addresses are assigned, a node address error occurs and they cannot communicate.



Default setting: All OFF

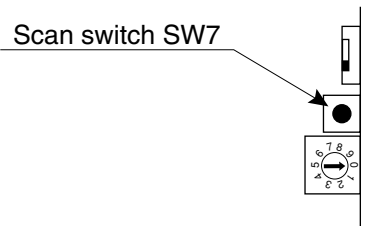
Switch SW3								Node address
x10 (upper digits)				x1 (Lower digits)				
8	4	2	1	8	4	2	1	
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	1	0	2
0	0	1	1	1	0	0	1	39
0	1	0	0	0	0	0	1	40
0	1	1	0	0	0	1	0	62
0	1	1	0	0	0	1	1	63

0 : OFF, 1 : ON

(4) Scan switch SW7: Z-337J/338J

Hold this switch down for at least 3 seconds while the CPU board is in program mode to create a scan list. However, this will not work in the following cases.

- 1) When the CPU board is in the operation mode.
- 2) When switch SW5-4(2) on the Z-337J/338J is set to protected mode.

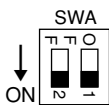


For details about editing the scan list, see page 8-8.

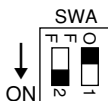
(5) Number of communication boards switch SWA: Z-337J/338J

Use this switch when more than one communication board (including Z-337J/338J) is installed.

- When one communication board is installed, keep this switch setting in the default setting (all ON).

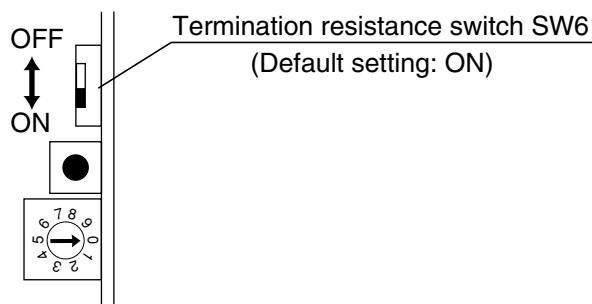


- When 2 communication boards are installed, turn OFF SWA-1 on the 2nd communication board.



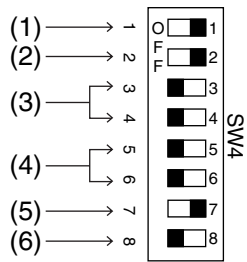
(6) Terminating resistance switch SW6: Z-337J/338J

When the Z-337J/338J is used at the end of a DeviceNet communication trunk, turn this switch ON.



(7) Function switch SW4: Z-337J/338J

Select an I/O data allocation method and data length to use when editing a scan list.

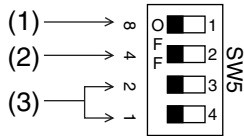


(Default setting)

Switch No.		Set details															
(1)	SW4-1	<p>Operation when a slave communication error occurs. Select whether or not to continue CPU board operation when a communication error occurs while communicating with a slave station.</p> <table border="1"> <tr> <td>OFF</td> <td>The CPU board will continue operation.</td> </tr> <tr> <td>ON</td> <td>The CPU board stops operation and enters the program mode. (Default setting)</td> </tr> </table>	OFF	The CPU board will continue operation.	ON	The CPU board stops operation and enters the program mode. (Default setting)											
OFF	The CPU board will continue operation.																
ON	The CPU board stops operation and enters the program mode. (Default setting)																
(2)	SW4-2	<p>Synchronous/asynchronous operation - Select whether or not to synchronize the communication one cycle.</p> <table border="1"> <tr> <td>OFF</td> <td>Not synchronized.</td> </tr> <tr> <td>ON</td> <td>Synchronized with the operation (default setting)</td> </tr> </table>	OFF	Not synchronized.	ON	Synchronized with the operation (default setting)											
OFF	Not synchronized.																
ON	Synchronized with the operation (default setting)																
(3)	SW4-3, 4	<p>I/O data allocation method Select the I/O data table allocation method to use while editing the scan list.</p> <table border="1"> <thead> <tr> <th>SW1-4</th> <th>SW1-3</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>Address order assignment (default setting)</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>Even number assignment</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>Assignment in the order in which vacant nodes are occupied</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>Free location assignment (a separate program tool is needed)</td> </tr> </tbody> </table> <p>- Details of the allocation methods.=> See page 8-1</p>	SW1-4	SW1-3	Details	OFF	OFF	Address order assignment (default setting)	OFF	ON	Even number assignment	ON	OFF	Assignment in the order in which vacant nodes are occupied	ON	ON	Free location assignment (a separate program tool is needed)
SW1-4	SW1-3	Details															
OFF	OFF	Address order assignment (default setting)															
OFF	ON	Even number assignment															
ON	OFF	Assignment in the order in which vacant nodes are occupied															
ON	ON	Free location assignment (a separate program tool is needed)															
(4)	SW4-5, 6	<p>Data length (each node) while editing the scan list. Set the data length for each node when "even allocation" is selected, and set the data length for vacant node, data length.</p> <table border="1"> <thead> <tr> <th>SW1-6</th> <th>SW1-5</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>1 byte (default setting)</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>2 bytes</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>4 bytes</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>8 bytes</td> </tr> </tbody> </table>	SW1-6	SW1-5	Details	OFF	OFF	1 byte (default setting)	OFF	ON	2 bytes	ON	OFF	4 bytes	ON	ON	8 bytes
SW1-6	SW1-5	Details															
OFF	OFF	1 byte (default setting)															
OFF	ON	2 bytes															
ON	OFF	4 bytes															
ON	ON	8 bytes															
(5)	SW4-7	<p>Host message data exchange function - Select whether or not to use the Explicit message function.</p> <table border="1"> <tr> <td>OFF</td> <td>Not use the Explicit message function.</td> </tr> <tr> <td>ON</td> <td>Uses the Explicit message function</td> </tr> </table> <p>(Explicit message function => Chapter 9.)</p>	OFF	Not use the Explicit message function.	ON	Uses the Explicit message function											
OFF	Not use the Explicit message function.																
ON	Uses the Explicit message function																
(6)	SW4-8	Do not use (leave it OFF -- default setting)															

(8) Communication speed, operation mode, communication monitor time switch SW5: Z-337J/338J

Set the communication speed (125, 250, 500 kbps), operation mode (normal, protected), and communication monitor time (standard, or for a slow responding slave station).



(Default setting: All OFF)

Switch number	Settings (details)																					
(1) SW5-8(1)	<p>Communication monitor time Select "normal mode" or "long mode" for the communication monitor time.</p> <table border="1"> <tr> <td>OFF</td> <td>When using a slave module with the long mode (default setting)</td> </tr> <tr> <td>ON</td> <td>Standard</td> </tr> </table> <p>The communication monitor time will be as follows, according to the number of slave stations.</p> <table border="1"> <thead> <tr> <th rowspan="2">Number of slave stations</th> <th colspan="2">Communication monitor time (ms)</th> </tr> <tr> <th>Standard (ON)</th> <th>When using a slave station with the long mode.</th> </tr> </thead> <tbody> <tr> <td>1 to 15</td> <td>40</td> <td>80</td> </tr> <tr> <td>16 to 31</td> <td>60</td> <td>120</td> </tr> <tr> <td>32 to 47</td> <td>80</td> <td>160</td> </tr> <tr> <td>48 to 63</td> <td>100</td> <td>200</td> </tr> </tbody> </table> <ul style="list-style-type: none"> - If there is no response from the slave station after the specified time elapses, the J-board will display an error when starting the next cycle. - Normally, there will not be a problem by setting the switch ON (standard). However, if there is a slave station with a slower response time and communication errors occur frequently, select OFF (Long mode). 	OFF	When using a slave module with the long mode (default setting)	ON	Standard	Number of slave stations	Communication monitor time (ms)		Standard (ON)	When using a slave station with the long mode.	1 to 15	40	80	16 to 31	60	120	32 to 47	80	160	48 to 63	100	200
OFF	When using a slave module with the long mode (default setting)																					
ON	Standard																					
Number of slave stations	Communication monitor time (ms)																					
	Standard (ON)	When using a slave station with the long mode.																				
1 to 15	40	80																				
16 to 31	60	120																				
32 to 47	80	160																				
48 to 63	100	200																				
(2) SW5-(2)	<p>Operation mode Select normal mode or protected mode.</p> <table border="1"> <tr> <td>OFF</td> <td> <p>Normal mode (default setting) Hold down the scan switch SW7 for 3 seconds while the CPU board is stopped and it will enter the scan list editing mode.</p> <ul style="list-style-type: none"> - The scan list is created by collecting slave information from the slave stations. - Change the CPU board to the operating mode and it will start a Polling I/O operation. </td> </tr> <tr> <td>ON</td> <td> <p>Protected mode Scan switch SW7 is disabled.</p> <ul style="list-style-type: none"> - This is to prevent the Polling I/O operation from being stopped by accidentally pressing scan switch SW7. </td> </tr> </table>	OFF	<p>Normal mode (default setting) Hold down the scan switch SW7 for 3 seconds while the CPU board is stopped and it will enter the scan list editing mode.</p> <ul style="list-style-type: none"> - The scan list is created by collecting slave information from the slave stations. - Change the CPU board to the operating mode and it will start a Polling I/O operation. 	ON	<p>Protected mode Scan switch SW7 is disabled.</p> <ul style="list-style-type: none"> - This is to prevent the Polling I/O operation from being stopped by accidentally pressing scan switch SW7. 																	
OFF	<p>Normal mode (default setting) Hold down the scan switch SW7 for 3 seconds while the CPU board is stopped and it will enter the scan list editing mode.</p> <ul style="list-style-type: none"> - The scan list is created by collecting slave information from the slave stations. - Change the CPU board to the operating mode and it will start a Polling I/O operation. 																					
ON	<p>Protected mode Scan switch SW7 is disabled.</p> <ul style="list-style-type: none"> - This is to prevent the Polling I/O operation from being stopped by accidentally pressing scan switch SW7. 																					
(3) SW5-(3) SW5-(4)	<p>Communication speed Select 125 kbps, 250 kbps, or 500 kbps.</p> <table border="1"> <tr> <td>2(3) : OFF</td> <td>1(4) : OFF</td> <td>125 kbps (default setting)</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>250 kbps</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>500 kbps</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>Prohibited to set</td> </tr> </table>	2(3) : OFF	1(4) : OFF	125 kbps (default setting)	OFF	ON	250 kbps	ON	OFF	500 kbps	ON	ON	Prohibited to set									
2(3) : OFF	1(4) : OFF	125 kbps (default setting)																				
OFF	ON	250 kbps																				
ON	OFF	500 kbps																				
ON	ON	Prohibited to set																				

(9) External connector CN3: Z-338J only

Send and receive input/output signals to other equipment.

The connections and cable used to connect the input/output equipment to the Z-338J must be fabricated by the user.

=> See page 6-5.

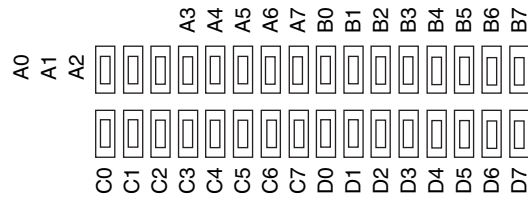
(10) Output protection fuse: Z-338J only

This fuse prevents overcurrent damage to the internal circuits from a short circuit in a load. (This is not designed to protect the output elements.)

When this fuse is blown out, repair the problem and then replace the fuse in the Z-338J.

(11) Indicators (input/output): Z-338J only

The signal status (ON/OFF) of the input/output equipment (connected to CN3 external connector) is shown by the input/output indicators.

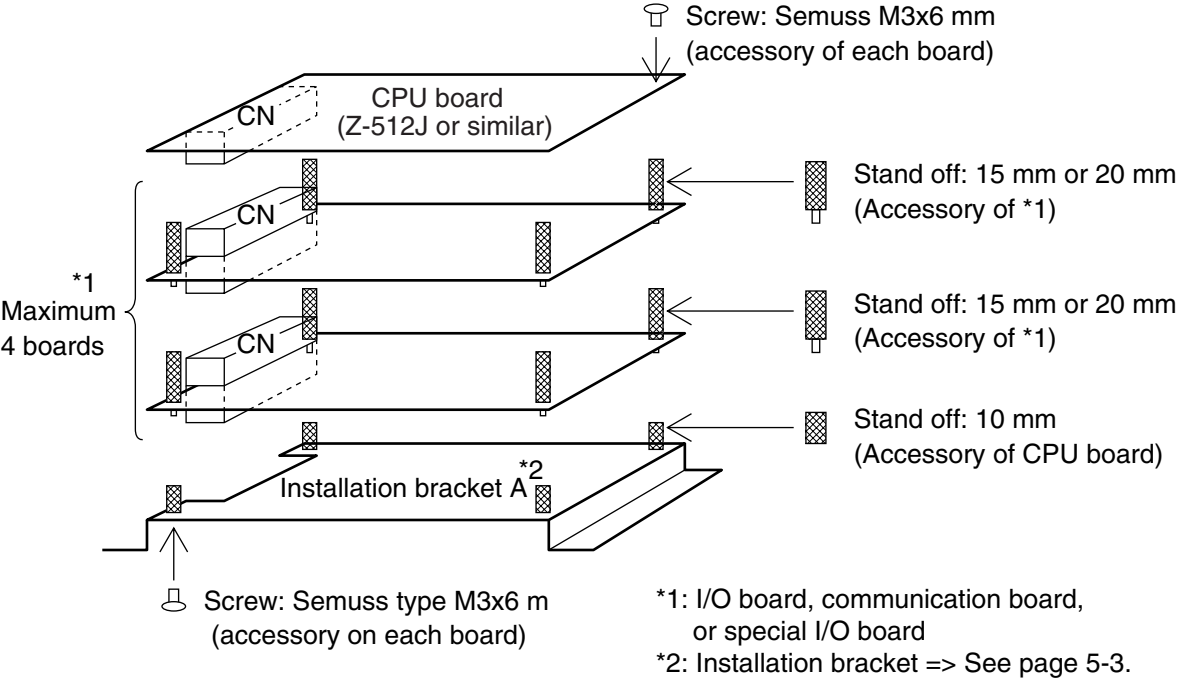


- A0 to D7 correspond to the CN3 signal names.
=> See page 6-4.

Chapter 5: Assembly and Installation Methods

5-1 Assembly

Assemble the Z-337J/338J as shown below, as a communication board in the J-board using the stand offs and screws that came with the board.



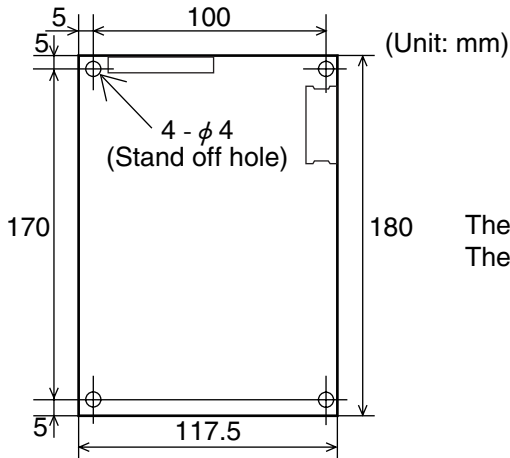
Note: When connecting between boards, make a secure installation by matching the positions of the CN bus connectors. When removing the cable, pull straight out. Do not apply force at an angle.

● Tools needed for assembly

<ul style="list-style-type: none"> - Philips screwdriver - Hex. Socket-head screwdriver: For 5.5 mm 	Stand off shape
---	---------------------

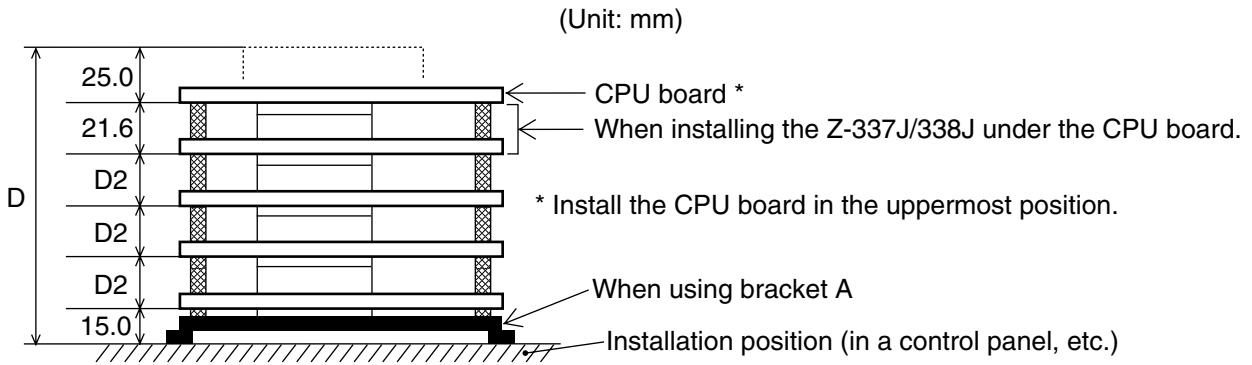
The board sizes and assembly dimensions of the Z-337J/338J are shown below.

■ Board sizes



The outside dimensions are the same for the Z-337J and Z-338J.
The dimensions on the left do not include the fittings.

■ Assembly drawings



- For details about the assembled dimensions, see the manuals below for the individual CPU boards.

- Z-311J/312J Users Manual – Hardware version
- Z-511J Users Manual – Hardware version
- Z-512J Users Manual – Hardware version

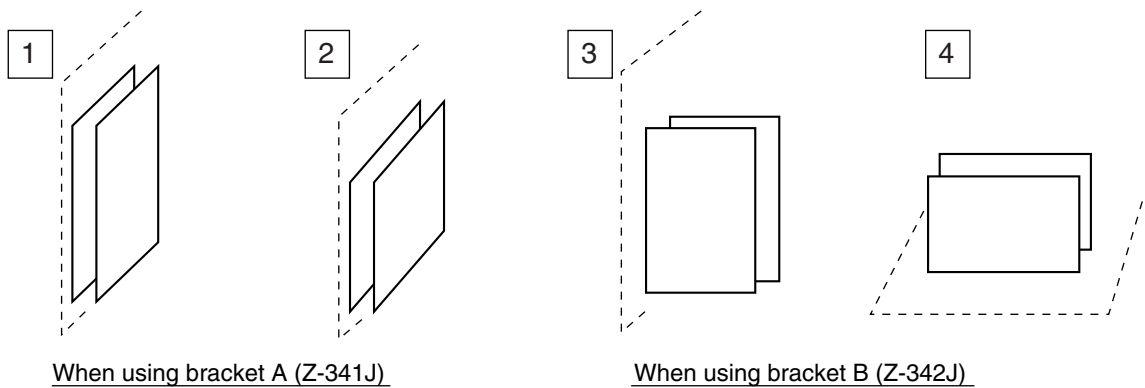
Dimensions D and D2 correspond to D and D2 as described in the section about board size in the manuals above.

- Make sure there is good conductivity between the brackets and the fixing metals.

5-2 Installation

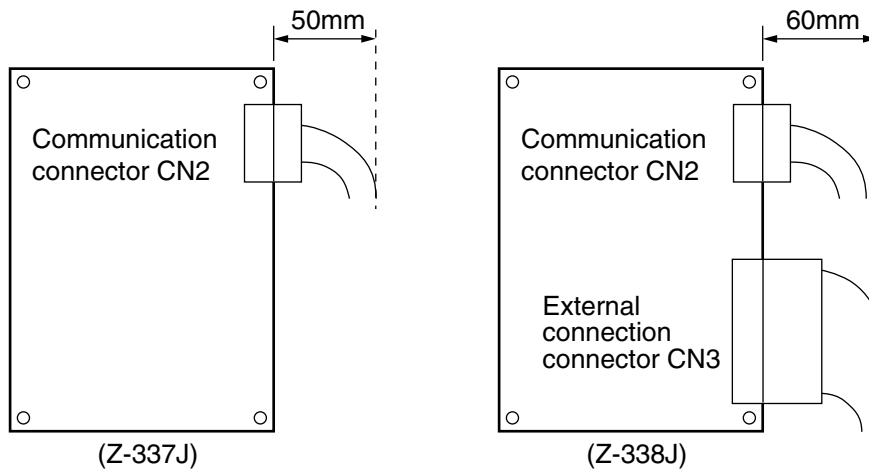
Basically, use bracket A (Z-341J: Horizontal installation) or bracket B (Z-342J: Vertical installation) made exclusively for the J-board. Install them in any of the four positions shown below. For the specific dimensions of the brackets A and B, see the instruction manual for your CPU board (e.g. the Z-512). If you need to make an installation that does not use the exclusive brackets, make sure the installation is strong. Install the boards in a well ventilated place.

■ Recommended installation conditions



■ Installation clearance

To see the amount of clearance needed for the Z-337J/338J connector wiring, see the drawing below.



The clearances above do not include space to install or removal the boards. In addition, the actual clearances required will depend on the wiring method and wire size. Please the required clearance with your actual cable.

Chapter 6: Connection (Wiring) Method

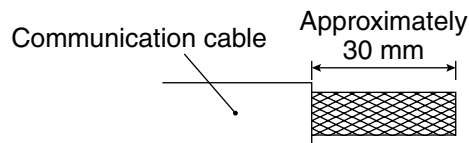
6-1 Connection to the DeviceNet: Z-337J/338J

[1] Processing of communication cable

This section describes how to install a connector on a communication cable for this network.
Prepare the communication cable by following the steps below to attach the connector.

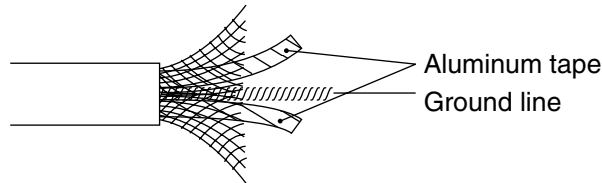
① Remove approximately 30 mm of insulation from the communication cable

- Remove the insulation without damaging the coaxial shield around the cable.
Do not remove more insulation than necessary, as it may cause a short-circuit.



② Unwrap the wires in the coaxial shield carefully

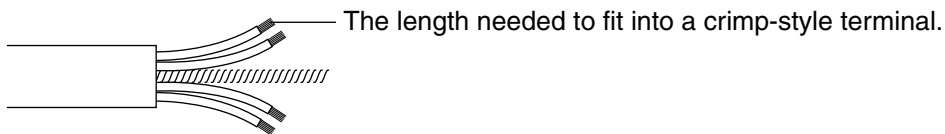
- Under the coaxial shield there is one signal line, one power line, and one ground line.



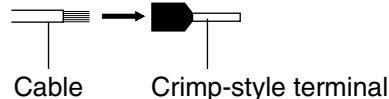
③ Cut off the excess coaxial shield and peel back the aluminum tape on the signal line and power line.

④ Remove the insulation from the signal and power lines until enough bare wire is exposed to fit into a crimp-style terminal.

- Twist the strands of wire in the signal and power lines tightly, in order to slide them into a terminal.



⑤ Crimp a terminal on each of the individual lines and then insulate it using vinyl tape or shrink tubing.



- Shown below are the recommended crimp-style terminals

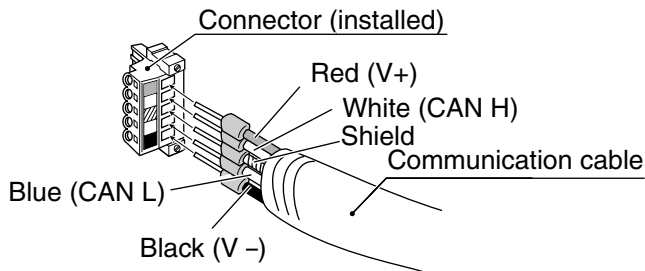
Recommended crimp-style terminals	Special tool
Al series made by Phoenix Contact	ZA3 made by Phoenix Contact
Nichifu TC series - For thin wire : TME TC-0.5 - For thick wire : TME TC-2-11 (power line) TME-TC-1.25-11 (communication line)	NH-32

To the next page

From the previous page

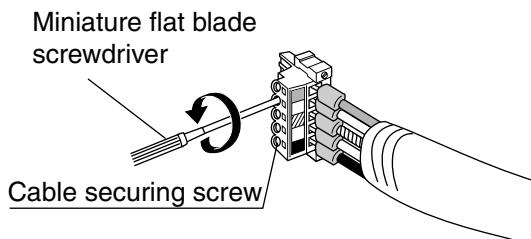
⑥ Insert the signal line, power line, and the ground line into the appropriate connector holes.

- Insert the wires from the top down, in the following order: red, white, ground, blue, and black. Pay strict attention to the connector orientation.
- Before inserting the wires, loosen the screws on the connector enough to insert the wires easily.
- The Z-337J/338J is equipped with a BLZ5.08/5F AU-DN connector (Nihon Weidmüller Co., Ltd., with screws to secure the connector).



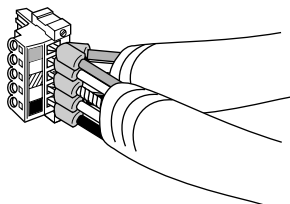
⑦ Secure each wire tightly using the wire retention screws of the connector.

- Use a miniature flat blade screwdriver which has the same diameter from the neck all the way to the end. Tighten the screws using 0.5 N-m of force.



■ **When connecting two thin cables in a multi-drop system**

Insert the wires from each cable with the same color insulation into the same hole.



Crimp a terminal to each tip of the two wires.

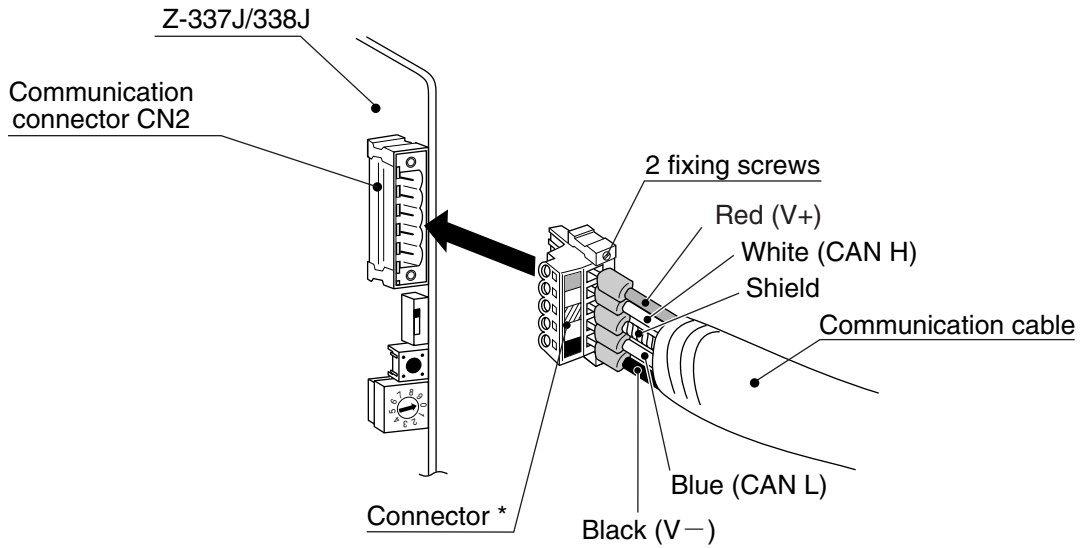
Remarks

- Before connecting the communication cable, make sure to turn OFF the power to the J-board, all slave stations, and the communication power supply.
- Do not pull hard on the communication cable since the connector can be pulled off or disconnected easily.

[2] Connection of communication connector

This section describes how to plug a connector that has been installed on the communication cable into the Z-337J/338J.

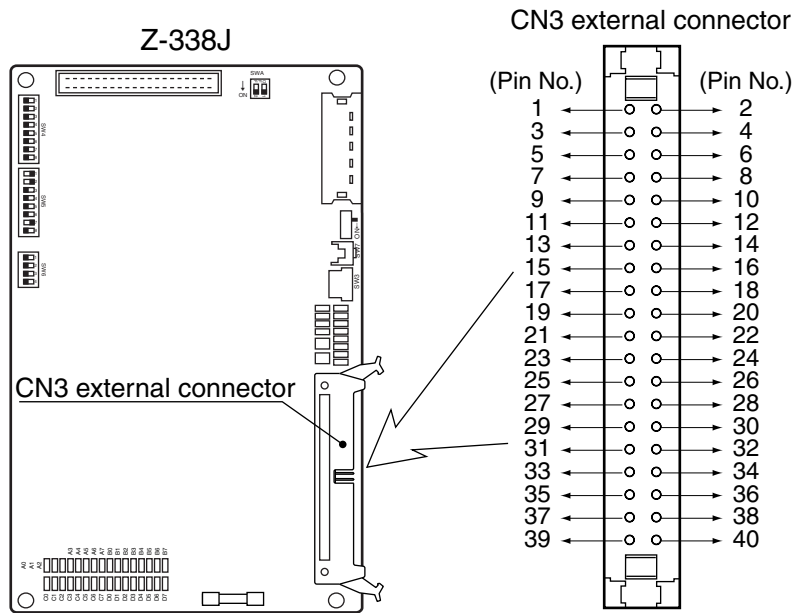
Match the orientation of the connector on the cable with the female connector CN2 on the Z-337J/338J and insert the male cable connector as far as it will go. After inserting it all the way, tighten the screws on the male connector. The appropriate tightening torque is 0.3 N-m of force.



* One communication cable connector is supplied with the Z-337J/338J.
Model name: BLZ5.08/5F AU-DN (made by Nihon Weidmüller Co., Ltd.)

6-2 Connection to input/output equipment: Z-338J only

Connect the Z-338J to input/output equipment using CN3 external connector.

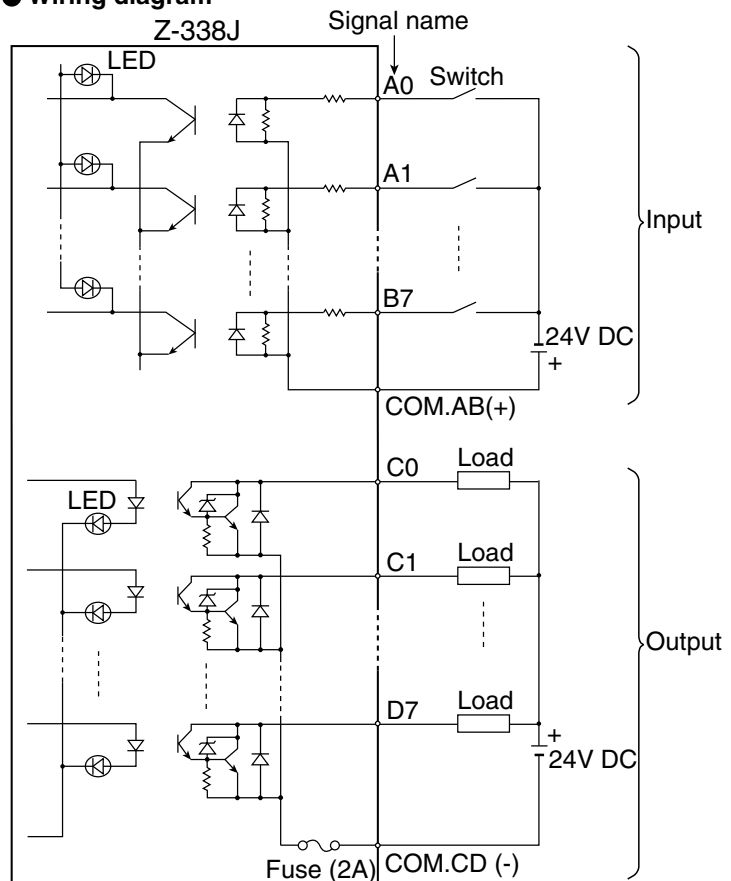


● CN3 pin numbers and signal name

Pin No.	Signal name	Pin No.	Signal name
1	COM.AB(+)	2	COM.AB(+)
3	Not used	4	Not used
5	A0(IN)	6	A1(IN)
7	A2(IN)	8	A3(IN)
9	A4(IN)	10	A5(IN)
11	A6(IN)	12	A7(IN)
13	B0(IN)	14	B1(IN)
15	B2(IN)	16	B3(IN)
17	B4(IN)	18	B5(IN)
19	B6(IN)	20	B7(IN)
21	C0(OUT)	22	C1(OUT)
23	C2(OUT)	24	C3(OUT)
25	C4(OUT)	26	C5(OUT)
27	C6(OUT)	28	C7(OUT)
29	D0(OUT)	30	D1(OUT)
31	D2(OUT)	32	D3(OUT)
33	D4(OUT)	34	D5(OUT)
35	D6(OUT)	36	D7(OUT)
37	Not used	38	Not used
39	COM.CD(-)	40	COM.CD(-)

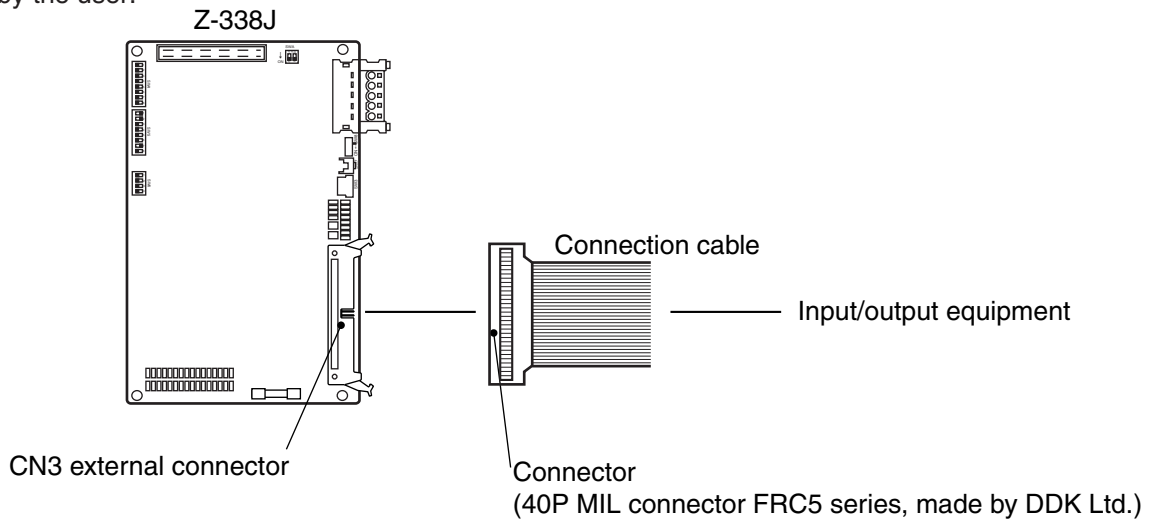
(IN: Input, OUT: Output)

● Wiring diagram



● **Connector (cable side)**

The cable and connectors needed to connect input/output equipment to a Z-338J must be fabricated by the user.



● **Assignment of I/O relay addresses**

The I/O relay addresses (signal names) that are assigned to pin numbers on an external connector (CN3) are as follows. (I/O relay assignment => Chapter 7)

	Pin number (signal name)	I/O relay address	
		*1	*2
Input	5 to 12 (A0 to A7)	∅0002 (00020 to 00027)	∅0012 (00120 to 00127)
	13 to 20 (B0 to B7)	∅0003 (00030 to 00037)	∅0013 (00130 to 00137)
Output	21 to 28 (C0 to C7)	∅0004 (00040 to 00047)	∅0014 (00140 to 00147)
	29 to 36 (D0 to D7)	∅0005 (00050 to 00057)	∅0015 (00150 to 00157)

- *1 {
 - When a Z-311J/312J or Z-512J CPU board is used with one Z-338J communication board.
 - When a Z-311J/312J or Z-511J/512J CPU board is used and 2 communication boards are used, with the Z-338J being the 1st communication board.
- *2 {
 - When a Z-511J CPU board is used with one Z-338J communication board.
 - When a Z-311J/312J or Z-511J/512J CPU board is used with 2 communication boards, and the Z-338J is used as the 2nd communication board.

Chapter 7: I/O Relay Assignment

This chapter describes the way I/O relay addresses on a Z-337J/338J are assigned.

[1] When installed on Z-311J/312J, Z-512J

A maximum of 2 Z-337J/338J boards can be installed on these CPU boards (including other communication boards). Shown below are the switch settings for the SWA switch (number of communication boards) on the Z-337J/338J and the proper I/O relay assignment.

(1) When one communication board (Z-337J or Z-338J) is used.

SWA switch settings on the Z-337J/338J			1	2	
			ON	ON	
I/O relay assignment	Z-337J	Z-338J	I/O relay address	Installation address	
	Dummy (option)*	Dummy (option)*	∩0000 ∩0001	R=0, S=0	
	Dummy (empty)	Input	A0 to A7 B0 to B7	∩0002 ∩0003	R=0, S=1
	Dummy (empty)	Output	C0 to C7 D0 to D7	∩0004 ∩0005	R=0, S=2
	Dummy (empty)	Dummy (empty)		∩0006 ∩0007	R=0, S=3

* Although assignment of these switches is optional, they are in a dummy area and have no function.

Input (A0 to A7, B0 to B7) and output (C0 to C7, D0 to C7) are the signal names for the CN3 external connector.

=> See page 6-4.

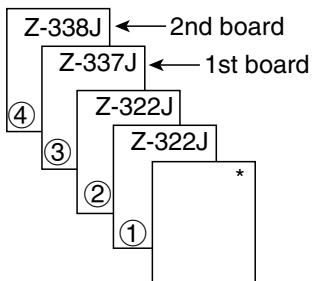
(2) When two communication boards (Z-337J or Z-338J) are used.

The I/O relays assignment depends on the position in which the Z-337J/338J is located.

			Use Z-337J/338J as the 1st board		Use Z-337J/338J as the 2nd board	
SWA switch settings on the Z-337J/338J			1	2	1	2
			ON	ON	OFF	ON
I/O relay assignment	Z-337J	Z-338J	I/O relay address	Installation address	I/O relay address	Installation address
	Dummy (option)*	Dummy (option)*	∩0000 ∩0001	R=0, S=0	∩010 ∩011	R=0, S=4
	Dummy (empty)	Input	A0 to A7 B0 to B7	∩0002 ∩0003	∩012 ∩013	R=0, S=5
	Dummy (empty)	Output	C0 to C7 D0 to D7	∩0004 ∩0005	∩014 ∩015	R=0, S=6
	Dummy (empty)	Dummy (empty)		∩0006 ∩0007	∩016 ∩017	R=0, S=7

Assignment example

- Shown below is an example of switch settings and I/O assignments when one Z-337J and one Z-338J are used.



* Z-311J, Z-312J, or Z-512J

■ ON
□ OFF

Installed	SW1 (rack No.)	SWA (SW2)	I/O relay address	Installation address										
①	<table border="1"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>■</td><td>□</td><td>□</td></tr> </table>	1	2	3	■	□	□	<table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	∩0020, ∩0021	R=1, S=0
		1	2	3										
		■	□	□										
		1	2											
■	■													
∩0022, ∩0023	R=1, S=1													
∩0024, ∩0025	R=1, S=2													
∩0026, ∩0027	R=1, S=3													
②	<table border="1"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>□</td><td>■</td><td>□</td></tr> </table>	1	2	3	□	■	□	<table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	∩0030, ∩0031	R=2, S=0
		1	2	3										
		□	■	□										
		1	2											
■	■													
∩0032, ∩0033	R=2, S=1													
∩0034, ∩0035	R=2, S=2													
∩0036, ∩0037	R=2, S=3													
③	Not provided	<table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	∩0000, ∩0001	R=0, S=0						
			1	2										
			■	■										
			∩0002, ∩0003	R=0, S=1										
∩0004, ∩0005	R=0, S=2													
∩0006, ∩0007	R=0, S=3													
④	Not provided	<table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>□</td><td>■</td></tr> </table>	1	2	□	■	∩0010, ∩0011	R=0, S=4						
			1	2										
			□	■										
			∩0012, ∩0013	R=0, S=5										
∩0014, ∩0015	R=0, S=6													
∩0016, ∩0017	R=0, S=7													

[2] When installed on Z-511J

A maximum of two Z-337J/338J boards can be installed on this CPU board (including other communication boards). Shown below are the switch settings for the Z-511J, Z-337J/338J and the I/O relay assignment for the Z-337J/338J.

(1) When one communication board (Z-337J or Z-338J) is used.

■ Switch settings

Set switch SW1 and SWA on the Z-511J and the SWA switch (number of communication boards) on the Z-337J/338J as follows.

• Z-511J

SW1 switch			SWA switch	
1	2	3	1	2
OFF	OFF	OFF	ON	ON

• Z-337J/338J

SWA switch	
1	2
OFF	ON

■ I/O relay assignment

I/O relay addresses on the Z-337J/338J will be assigned as follows.

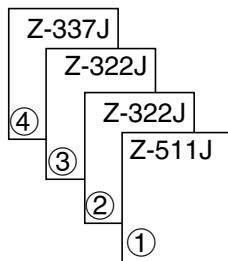
Assignment details		I/O relay address	Installation address
Z-337J	Z-338J		
Dummy (option)*	Dummy (option)*	⌘0010 ⌘0011	R=0, S=4
Dummy (empty)	Input	A0 to A7	R=0, S=5
		B0 to B7	
Dummy (empty)	Output	C0 to C7	R=0, S=6
		D0 to D7	
Dummy (empty)	Dummy (empty)	⌘0016	R=0, S=7
		⌘0017	

* Although assignment of these switches is optional, they are in a dummy area and have no function.

Input (A0 to A7, B0 to B7) and output (C0 to C7, D0 to C7) are the signal names for the CN3 external connector. => See page 6-4.

■ Assignment example

Shown below is an example of switch settings and I/O assignments when one Z-337J is used.



■ ON
□ OFF

Installed	SW1 (rack No.)	SWA (SW2)	I/O relay address	Installation address										
①	<table border="1"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>□</td><td>□</td><td>□</td></tr> </table>	1	2	3	□	□	□	SWA <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	⌘0000, ⌘0001	R=0, S=0
		1	2	3										
		□	□	□										
		1	2											
■	■													
⌘0002, ⌘0003	R=0, S=1													
⌘0004, ⌘0005	R=0, S=2													
⌘0006, ⌘0007	R=0, S=3													
②	<table border="1"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>■</td><td>□</td><td>□</td></tr> </table>	1	2	3	■	□	□	SW2 <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	⌘0020, ⌘0021	R=1, S=0
		1	2	3										
		■	□	□										
		1	2											
■	■													
⌘0022, ⌘0023	R=1, S=1													
⌘0024, ⌘0025	R=1, S=2													
⌘0026, ⌘0027	R=1, S=3													
③	<table border="1"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>□</td><td>■</td><td>□</td></tr> </table>	1	2	3	□	■	□	SW2 <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	⌘0030, ⌘0031	R=2, S=0
		1	2	3										
		□	■	□										
		1	2											
■	■													
⌘0032, ⌘0033	R=2, S=1													
⌘0034, ⌘0035	R=2, S=2													
⌘0036, ⌘0037	R=2, S=3													
④	Not provided	SWA <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>□</td><td>■</td></tr> </table>	1	2	□	■	⌘0010, ⌘0011	R=0, S=4						
			1	2										
			□	■										
			⌘0012, ⌘0013	R=0, S=5										
			⌘0014, ⌘0015	R=0, S=6										
⌘0016, ⌘0017	R=0, S=7													

(2) When two communication boards (Z-337J or Z-338J) are used.

■ Switch settings

Set switch SW1 and SWA of the Z-511J, and number of communication boards SWA switch of the Z-337J/338J as follows.

• Z-511J

SW1 switch			SWA switch	
1	2	3	1	2
ON	OFF	OFF	ON	ON

• Z-337J/338J

When used as 1st board		When used as 2nd board	
Switch SWA		Switch SWA	
1	2	1	2
ON	ON	OFF	ON

■ I/O relay assignments

I/O relay addresses of the Z-337J/338J shall be assigned as follows.

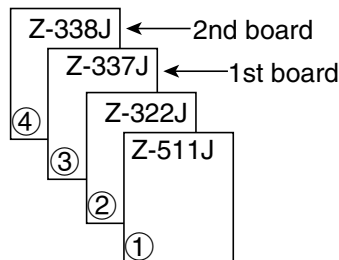
Assignment details		When using Z-337J/338J as 1st board		When using Z-337J/338J as 2nd board	
Z-337J	Z-338J	I/O relay address	Installation address	I/O relay address	Installation address
Dummy (option)*	Dummy (option)*	⌘0000 ⌘0001	R=0, S=0	⌘0010 ⌘0011	R=0, S=4
Dummy (empty)	Input A0 to A7 B0 to B7	⌘0002	R=0, S=1	⌘0012	R=0, S=5
		⌘0003		⌘0013	
Dummy (empty)	Output C0 to C7 D0 to D7	⌘0004	R=0, S=2	⌘0014	R=0, S=6
		⌘0005		⌘0015	
Dummy (empty)	Dummy (empty)	⌘0006	R=0, S=3	⌘0016	R=0, S=7
		⌘0007		⌘0017	

* Although assignment of these switches is optional, they are in a dummy area and have no function.

Input (A0 to A7, B0 to B7) and output (C0 to C7, D0 to C7) are the signal names for the CN3 external connector. => See page 6-4.

■ Assignment example

Shown below is an example of switch settings and I/O assignments when one Z-337J and one Z-338J are used.



■ ON
□ OFF

Installed	SW1 (rack No.)	SWA (SW2)	I/O relay address	Installation address										
①	<table border="1"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>■</td><td>□</td><td>□</td></tr> </table>	1	2	3	■	□	□	SWA <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	⌘0020, ⌘0021	R=1, S=0
		1	2	3										
		■	□	□										
		1	2											
■	■													
⌘0022, ⌘0023	R=1, S=1													
⌘0024, ⌘0025	R=1, S=2													
⌘0026, ⌘0027	R=1, S=3													
②	<table border="1"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>□</td><td>■</td><td>□</td></tr> </table>	1	2	3	□	■	□	SW2 <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	⌘0030, ⌘0031	R=2, S=0
		1	2	3										
		□	■	□										
		1	2											
■	■													
⌘0032, ⌘0033	R=2, S=1													
⌘0034, ⌘0035	R=2, S=2													
⌘0036, ⌘0037	R=2, S=3													
③	Not provided	SWA <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>■</td><td>■</td></tr> </table>	1	2	■	■	⌘0000, ⌘0001	R=0, S=0						
			1	2										
			■	■										
			⌘0002, ⌘0003	R=0, S=1										
⌘0004, ⌘0005	R=0, S=2													
⌘0006, ⌘0007	R=0, S=3													
④	Not provided	SWA <table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>□</td><td>■</td></tr> </table>	1	2	□	■	⌘0010, ⌘0011	R=0, S=4						
			1	2										
			□	■										
			⌘0012, ⌘0013	R=0, S=5										
⌘0014, ⌘0015	R=0, S=6													
⌘0016, ⌘0017	R=0, S=7													

Chapter 8: Polling I/O Function

I/O Polling is a function for the automatic exchange of input/output data between the CPU board, on which the Z-337J/338J master station is installed, and the slave stations.

The input/output data table addresses used by the I/O Polling function are assigned by board No., using switch SW2 on the Z-337J/338J. => See page 4-3.

■ Input/output table addresses

Installed CPU board	Number of bytes	Module No. switch SW2 settings				
		0	1	2	3	4
Z-311J Z-312J	512	⊃0100 to ⊃0727 (408bytes)	⊃1000 to ⊃1477 (320bytes)	69000 to 69777	79000 to 79777	⊃0100 to ⊃0777 (448bytes)
Z-511J Z-512J	512	⊃2000 to ⊃2777	⊃5000 to ⊃5777	⊃6000 to ⊃6777	79000 to 79777	⊃0100 to ⊃0777 (448bytes)

8-1 Input/output data table allocation

This board can select from several allocation methods for the slave station input/output data table. The choices are "address order allocation," "even number allocation," and "allocation in the order in which vacant nodes are occupied." Use switch 4-3 and 4-4 of the module for selecting any of these allocation methods => See page 4-5.

Allocation method	Input/output data table allocation details	Details
Address order allocation	<ol style="list-style-type: none"> 1. Assign the number of bytes in node address order for slave stations. 2. Enter the number of bytes required by each slave station. 3. A slave station that does not have a Polling I/O function is not assigned a data length. 4. Any slave station number (node address) that does not have hardware connected is not assigned a number of bytes. 	Page 8-2
Even number allocation	<ol style="list-style-type: none"> 1. Assign data length in node address order for slave stations. 2. Enter the data length required by each slave station evenly. For any slave station that needs more data than the default data length, increase the size in multiples of the default data length. 3. A slave station that does not have the Polling I/O function is assigned the default data length. 4. Any slave station number (node address) that does not have hardware connected is assigned the default data length. 	Page 8-4
Allocation in the order in which vacant nodes are occupied	<ol style="list-style-type: none"> 1. Assign a data length in node address order for slave stations. 2. Enter the data length required by each slave station with the Polling I/O function. 3. A slave station that does not have Polling I/O function is not assigned the data length. 4. Any slave station number (node address), that does not have hardware connected, is assigned the default data length. 	Page 8-6

- No matter which allocation method is selected, you have to start the board in the scan list edit mode, collect the data from slave stations, and create a scan list. The scan list classifies slave station inputs and outputs, data length, and addresses. Therefore, a separate configuration program is not needed for the input/output data table allocation. => See page 8-8 to 8-9.

- Set the data length to be used for "Even number order assignment" and "Assignment in order": 1, 2, 4, or 8 bytes. Use SW4-5, and SW4-6 on the function switch on this board to set the length. => See page 4-5.

The allocation examples [1] to [3] show the cases below.

- Node address 0 : This board (master)			
- Node address 1 : Slave station	<table border="1"> <tr> <td>Polling I/O input data = 1 byte</td> </tr> <tr> <td>Polling I/O output data = 1 byte</td> </tr> </table>	Polling I/O input data = 1 byte	Polling I/O output data = 1 byte
Polling I/O input data = 1 byte			
Polling I/O output data = 1 byte			
- Node address 2 : Not connected			
- Node address 3 : Slave station	<table border="1"> <tr> <td>Polling I/O input data = 3 bytes</td> </tr> <tr> <td>Polling I/O output data = 3 bytes</td> </tr> </table>	Polling I/O input data = 3 bytes	Polling I/O output data = 3 bytes
Polling I/O input data = 3 bytes			
Polling I/O output data = 3 bytes			
- Node address 4 : Slave station	(No I/O message function)		
- Node address 5 : Slave station	<table border="1"> <tr> <td>Bit Strobe input data = 3 bytes</td> </tr> <tr> <td>Bit Strobe output data = 0 byte</td> </tr> </table>	Bit Strobe input data = 3 bytes	Bit Strobe output data = 0 byte
Bit Strobe input data = 3 bytes			
Bit Strobe output data = 0 byte			

[1] Address order allocation

Assign the data length in the input/output data table (data length) in the same order as the node addresses are assigned to the slave stations.

1. Assign the data length required by each slave station
2. A slave station that does not have the Polling I/O function is not assigned the data length.
3. Any slave station number (node address), that does not have hardware connected, is not assigned the data length.

■ Allocation example

The allocation results with case above are as follows:

Address *	Input/output data table	
1st byte (≡2000)	Node address 1 (slave station)	
2nd byte (≡2001)		Input
3rd byte (≡2002)	Node address 3 (slave station)	
4th byte (≡2003)		Output
5th byte (≡2004)		Input
6th byte (≡2005)		Output
7th byte (≡2006)	Node address 5 (slave station)	
8th byte (≡2007)		Input
9th byte (≡2010)	Not used	
10th byte (≡2011)		
11th byte (≡2012)		
12th byte (≡2013)		
to		
512nd byte (≡2777)		

* The addresses shown in parentheses are correct when a Z-511J/512J is used as CPU board and the Z-337J-338J is set to 0 using its module No. switch SW2.

Node address	Required number of bytes	Polling I/O function	Assigned data length
1	2 (1 input, 1 output)	Yes	2 (1 input, 1 output)
2	Not connected	-	0
3	6 (3 input, 3 output)	Yes	6 (3 input, 3 output)
4	0	No	0
5	3 (3 input, 0 output)	Yes	3 (3 input)

- The required data length are assigned to the slaves at nodes 1, 3, and 5.
- Slave 2 (nothing connected) and slave 4 (doesn't have the Polling I/O function) are not assigned any data length.

The scan list data table (page 8-9) will be as follows:

Address *	Value (hexadecimal): Details	
1st byte (E0000)	FF: This board (master)	Node address 0
2nd byte (E0001)	All zeroes	
3rd byte (E0002)		
4th byte (E0003)		
5th byte (E0004)		
6th byte (E0005)		
7th byte (E0006)		
8th byte (E0007)		
9th byte (E0010)		02: A slave station with a Polling I/O function
10th byte (E0011)	00: Not used	
11th byte (E0012)	01: 1 byte (input data length)	
12th byte (E0013)	01: 1 byte (output data length)	
13th byte (E0014)	00: 1st byte	
14th byte (E0015)	00: (Offset input data)	
15th byte (E0016)	01: 2nd byte	
16th byte (E0017)	00: (Offset output data)	
17th byte (E0020)	00: Not connected	Node address 2
18th byte (E0021)	All zeroes	
19th byte (E0022)		
20th byte (E0023)		
21st byte (E0024)		
22nd byte (E0025)		
23rd byte (E0026)		
24th byte (E0027)		
25th byte (E0030)		02: A slave station with a Polling I/O function
26th byte (E0031)	00: Not used	
27th byte (E0032)	03: 3 bytes (input data length)	
28th byte (E0033)	03: 3 bytes (output data length)	
29th byte (E0034)	02: 3rd byte	
30th byte (E0035)	00: (Offset input data)	
31st byte (E0036)	05: 6th byte	
32nd byte (E0037)	00: (Offset output data)	
33rd byte (E0040)	01: A slave station without an I/O message function	Node address 4
34th byte (E0041)	All zeroes	
35th byte (E0042)		
36th byte (E0043)		
37th byte (E0044)		
38th byte (E0045)		
39th byte (E0046)		
40th byte (E0047)		
41st byte (E0050)		02: Slave modules having the Polling I/O function
42nd byte (E0051)	00: Not used	
43rd byte (E0052)	03: 3 bytes (input data length)	
44th byte (E0053)	00: 0 byte (output 7)	
45th byte (E0054)	08: 9th byte	
46th byte (E0055)	00: (Offset input data)	
47th byte (E0056)	0B: 12th byte	
48th byte (E0057)	00: (offset output data)	

Address *	Value(HEX): Details	
49th byte (E0060)	All zeroes	Node address 6
50th byte (E0061)		
51st byte (E0062)		
52nd byte (E0063)		
53rd byte (E0064)		
54th byte (E0065)		
55th byte (E0066)		
56th byte (E0067)		
57th byte (E0068)	All zeroes	Node address 63
58th byte (E0069)		
59th byte (E0070)		
60th byte (E0071)		
61st byte (E0072)		
62nd byte (E0073)		
63rd byte (E0074)		
64th byte (E0075)		
65th byte (E0076)	All zeroes	Node address 63
66th byte (E0077)		
67th byte (E0078)		
68th byte (E0079)		
69th byte (E0080)		
70th byte (E0081)		
71st byte (E0082)		
72nd byte (E0083)		

* The addresses shown in parentheses are correct when a Z-511J/512J is used as CPU board and the Z-337J/338J is set to 0 using its module No. switch SW2.

[2] Even number allocation

Assign the data length (number of bytes) in the order that the node addresses were assigned to each slave station.

1. Set the predetermined data length to each slave station.
If an individual slave station needs more than the default data length, the Z-337J/338J can be used to assign a data length in terms of multiples of the default data length.
2. The Z-337J/338J assigns the default data length to slave stations that do not have the Polling I/O function.
3. The Z-337J/338J also assigns the default data length to slave station numbers (node addresses) that do not have any hardware connected to them.

Set the data length (1, 2, 4, or 8 bytes), using switch SW4-5, SW4-6 on this board. => See page 4-5.

Allocation example

The allocation results from assigning number of bytes of the case on page 8-2 (top) are as shown below.

The default number of bytes is 2 bytes.

Address *	Input/output data table		
1st byte (□2000)	Node address 1 (slave station)	Input	
2nd byte (□2001)		Output	
3rd byte (□2002)	Node address 2 (not connected)	Not used	
4th byte (□2003)			
5th byte (□2004)	Node address 3 (slave station)	Input	
6th byte (□2005)			
7th byte (□2006)		Output	
8th byte (□2007)			
9th byte (□2010)	Node address 4 (slave station)	Not used	
10th byte (□2011)			
11th byte (□2012)	Node address 5 (slave station)	Input	
12th byte (□2013)		Not used	
13th byte (□2014)	Node address 6 (not connected)	Not used	
14th byte (□2015)			
15th byte (□2016)			
16th byte (□2017)			
			Node address 63 (not connected)
			Not used

* The addresses shown in parentheses are correct when a Z-511J/512J is used as CPU board and the Z-337J/338J is set to 0 using its module No. switch SW2.

(When the default data length is set to 2 bytes)

Node address	Required data length (bytes)	Polling I/O function	Assigned data length (bytes)
1	2 (1 input, 1 output)	Yes	2 (1 input, 1 output)
2	Not connected	-	2
3	6 (3 input, 3 output)	Yes	6 (3 input, 3 output)
4	0	No	2
5	3 (3 input, 0 output)	Yes	4 (3 input, 1 not used)

- The needed data length (2 bytes) is assigned to slave station 1.
- Slave station 2 (not connected) and slave station 4 (does not have the Polling I/O function) are assigned the default data length (2 bytes).
- Slave stations 3 and 5 need a larger data length than the default data length (2 bytes). Therefore, in these cases, a data lengths is assigned which is a multiple of the default data length (2 bytes).
=> Slave station 3 needs 6 bytes and is assigned 6 bytes (2 x 3).
=> Slave station 5 needs 3 bytes and is assigned 4 bytes (2 x 2).

The scan list data table (page 8-9) for this example will be as follows:

Address * 1	Value (hexadecimal): Details	
1st byte (E0000)	FF: This JW-20DN2 station (master)	Node address 0
2nd byte (E0001)	All zeroes	
3rd byte (E0002)		
4th byte (E0003)		
5th byte (E0004)		
6th byte (E0005)		
7th byte (E0006)		
8th byte (E0007)		
9th byte (E0010)		02: A slave station with a Polling I/O function
10th byte (E0011)	00: Not used	
11th byte (E0012)	01: 1 byte (input)	
12th byte (E0013)	01: 1 byte (output)	
13th byte (E0014)	00: 1st byte	
14th byte (E0015)	00: (Offset input data)	
15th byte (E0016)	01: 2nd byte	
16th byte (E0017)	00: (Offset output data)	
17th byte (E0020)	00: Not connected	Node address 2
18th byte (E0021)	00: Not used	
19th byte (E0022)	00: 0 byte (input data length)	
20th byte (E0023)	00: 0 byte (output data length)	
21st byte (E0024)	02: 3rd byte	
22nd byte (E0025)	00: (Offset input data)	
23rd byte (E0026)	02: 3rd byte	
24th byte (E0027)	00: (Offset output data)	
25th byte (E0030)	02: A slave station with a Polling I/O function	Node address 3
26th byte (E0031)	00: Not used	
27th byte (E0032)	03: 3 bytes (input data length)	
28th byte (E0033)	03: 3 bytes (output data length)	
29th byte (E0034)	04: 5th byte	
30th byte (E0035)	00: (Offset input data)	
31st byte (E0036)	07: 8th byte	
32nd byte (E0037)	00: (Offset output data)	
33rd byte (E0040)	01: A slave station without the Polling I/O function	Node address 4
34th byte (E0041)	00: Not used	
35th byte (E0042)	00: 0 byte (input data length)	
36th byte (E0043)	00: 0 byte (output data length)	
37th byte (E0044)	0A: 11th byte	
38th byte (E0045)	00: (Offset input data)	
39th byte (E0046)	0A: 11th byte	
40th byte (E0047)	00: (Offset output data)	
41st byte (E0050)	04: A slave station having the Polling I/O function	Node address 5
42nd byte (E0051)	00: Not used	
43rd byte (E0052)	03: 3 bytes (input data length)	
44th byte (E0053)	00: 0 byte (output data length)	
45th byte (E0054)	0C: 13th byte	
46th byte (E0055)	00: (Offset input data)	
47th byte (E0056)	0F: 16th byte	
48th byte (E0057)	00: (Offset output data)	

Address *	Value _H : Details	
49th byte (E0060)	00	Node address 6
50th byte (E0061)	00	
51st byte (E0062)	00	
52nd byte (E0063)	00	
53rd byte (E0064)	11 * 2	
54th byte (E0065)	00	
55th byte (E0066)	11 * 2	
56th byte (E0067)	00	
	}	}
505th byte (E0770)	00	Node address 63
506th byte (E0771)	00	
507th byte (E0772)	00	
508th byte (E0773)	00	
509th byte (E0774)	83 * 2	
510th byte (E0775)	00	
511th byte (E0776)	83 * 2	
512th byte (E0777)	00	

* 1 : The addresses shown in parentheses are correct when a Z-511J/512J is used as CPU board and the Z-337J/338J is set to 0 using its module No. switch SW2.

* 2 : The offset values are calculated by adding 2 bytes (default number of bytes) to each address.

[3] Allocation in the order in which vacant nodes are occupied

Assign the data length (number of bytes) in the input/output data table in the order that the node addresses were assigned to each slave station.

1. Assign the required data length to slave stations with the Polling I/O function.
2. The Z-337J/338J does not allocate any data length for slave stations that do not have the Polling I/O function.
3. The Z-337J/338J will allocate the default data length to any slave station number (node address) that does not actually have hardware connected.
Set the data length (1, 2, 4, or 8 bytes), using switch SW4-5, SW4-6 on this board. => See page 4-5.

Allocation example

The allocation result for the example shown on page 8-2 (top) are as follows.
The default number of bytes was set to 2 bytes.

Address *	Input/output data table			
1st byte (≡2000)	Node address 1 (slave)	Input	* The addresses shown in parentheses are correct when a Z-511J/512J is used as CPU board and the Z-337J/338J is set to 0 using its module No. switch SW2.	
2nd byte (≡2001)		Output		
3rd byte (≡2002)	Node address 2 (not connected)	Not used		
4th byte (≡2003)				
5th byte (≡2004)	Node address 3 (slave)	Input	14th byte (≡2015)	
6th byte (≡2005)			Node address 6 (not connected)	15th byte (≡2016)
7th byte (≡2006)				Not used
8th byte (≡2007)		Output		
9th byte (≡2010)			Node address 63 (not connected)	128th byte (≡2177)
10th byte (≡2011)				129th byte (≡2200)
11th byte (≡2012)	130th byte (≡2201)			
12th byte (≡2013)	Node address 5 (slave)	Input	Not used	
13th byte (≡2014)				
			512th byte (≡2777)	

(When the data length is set to 2 bytes)

Node address	Required data length (bytes)	Polling I/O function	Assigned data length (bytes)
1	2 (1 input, 1 output)	Yes	2 (1 input, 1 output)
2	Not connected	-	2
3	6 (3 input, 3 output)	Yes	6 (3 input, 3 output)
4	0	No	0
5	3 (3 input, 0 output)	Yes	3 (3 input)

- The required data length is assigned to slave stations 1, 3, and 5.
- Slave station 2 (no hardware connected) is assigned the default data length (2 bytes).
- Slave station 4 (doesn't have the Polling I/O function) is not allocated any data length.

The scan list table for this example (page 8-9) will be as follows:

Address * 1	Value (hexadecimal): Details	
1st byte (E0000)	FF: This JW-20DN2 station (master)	Node address 0
2nd byte (E0001)	All zeroes	
3rd byte (E0002)		
4th byte (E0003)		
5th byte (E0004)		
6th byte (E0005)		
7th byte (E0006)		
8th byte (E0007)		
9th byte (E0010)		02: A slave station with a Polling I/O function
10th byte (E0011)	00: Not used	
11th byte (E0012)	00: 1 byte (input data length)	
12th byte (E0013)	01: 1 byte (output data length)	
13th byte (E0014)	00: 1st byte	
14th byte (E0015)	00: (Offset input data)	
15th byte (E0016)	01: 2nd byte	
16th byte (E0017)	00: (Offset output data)	
17th byte (E0020)	00: Not connected	Node address 2
18th byte (E0021)	00: Not used	
19th byte (E0022)	00: 0 byte (input data length)	
20th byte (E0023)	00: 0 byte (output data length)	
21st byte (E0024)	02: 3rd byte	
22nd byte (E0025)	00: (Offset input data)	
23rd byte (E0026)	02: 3rd byte	
24th byte (E0027)	00: (Offset output data)	
25th byte (E0030)	02: A slave station with a Polling I/O function	Node address 3
26th byte (E0031)	00: Not used	
27th byte (E0032)	03: 3 bytes (input data length)	
28th byte (E0033)	03: 3 bytes (output data length)	
29th byte (E0034)	04: 5th byte	
30th byte (E0035)	00: (Offset input data)	
31st byte (E0036)	07: 8th byte	
32nd byte (E0037)	00: (Offset output data)	
33rd byte (E0040)	01: A slave station without the Polling I/O function	Node address 4
34th byte (E0041)	All zeroes	
35th byte (E0042)		
36th byte (E0043)		
37th byte (E0044)		
38th byte (E0045)		
39th byte (E0046)		
40th byte (E0047)		
41st byte (E0050)		02: A slave station with a Polling I/O function
42nd byte (E0051)	00: Not used	
43rd byte (E0052)	03: 3 bytes (input data length)	
44th byte (E0053)	00: 0 byte (output data length)	
45th byte (E0054)	0A: 11th byte	
46th byte (E0055)	00: (Offset input data)	
47th byte (E0056)	0D: 14th byte	
48th byte (E0057)	00: (Offset output data)	

Address *	Value _H : Details	
49th byte (E0060)	00	Node address 6
50th byte (E0061)	00	
51st byte (E0062)	00	
52nd byte (E0063)	00	
53rd byte (E0064)	OF * 2	
54th byte (E0065)	00	
55th byte (E0066)	OF * 2	
56th byte (E0067)	00	
505th byte (E0770)	00	Node address 63
506th byte (E0771)	00	
507th byte (E0772)	00	
508th byte (E0773)	00	
509th byte (E0774)	81 * 2	
510th byte (E0775)	00	
511th byte (E0776)	81 * 2	
512th byte (E0777)	00	

* 1 : The addresses shown in parentheses are correct when a Z-511J/512J is used as CPU board and the Z-337J/338J is set to 0 using its module No. switch SW2.

* 2 : The offset values are calculated by adding 2 bytes (default data length) to each node address.

8-2 Editing the scan list

When using this board for the first time, you will have to edit the scan list (to assign I/O data).

[1] Editing procedure

Shown below are the procedures used to edit the scan list.

■ Procedures

① Switch the J-board CPU board (Z-331J/332J, Z-511J/512J) to the program mode.

You cannot do this when the J-board is in operation mode.

② Turn OFF the J-board power.

③ Change switch SW5 on this board to "normal mode." => See page 4-6.

When switch SW5 is in the protected mode, the operations below cannot be performed.

④ Install this board on the J-board. => See Chapter 5.

⑤ Connect any slave stations.

In principle, all the slave stations will be started. => See * 1 below.

⑥ Turn ON the power to the J-board.

⑦ Press and hold the SCAN switch on this board for at least 3 seconds.

The JW-20DN2 will edit the scan list. => See * 2 below.

⑧ After the editing process is complete, turn OFF the power to the J-board.

⑨ Remove this board from the J-board.

⑩ Set switch SW5 on this board to the "protected mode."

⑪ Install this board on the J-board.

⑫ Turn ON the power to the J-board.

⑬ Put the J-board CPU board in the operation mode.

* 1: Connecting the slave stations mentioned in step ⑤ above

When "even number allocation" or "allocation in the order in which vacant nodes are occupied" is selected for the I/O data allocation method, and some node addresses are not occupied by slave stations, those node address will be assigned the default number of bytes. This will make operation possible with only the connected slave stations.

When a slave station is connected at a vacant address, and if this station needs more than the default number of bytes for I/O, the I/O addresses thereafter can be incremented by editing the next time a scan list is created.

* 2: Scan list editing procedure mentioned in step ⑦

When the Z-337J/338J is in the "without protection" mode and you change the CPU board to the operation mode, the Z-337J/338J will start I/O communication. However, when you mistakenly press the SCAN switch after communication is started, the Z-337J/338J will start editing the scan list. This may cause a malfunction. Therefore, change from the operation mode to the protected mode, as described starting in step ⑧ above.

[2] Scan list table

Addresses in the scan list table (512 bytes) are assigned using the module No. switch SW2 on this board. => See page 4-3.

■ Addresses in the scan list table

Installed CPU board	Number of bytes	Module No. switch SW2 settings				
		0	1	2	3	4
Z-311J Z-312J	512	29000 to 29777	39000 to 39777	49000 to 49777	59000 to 59777	29000 to 29777
Z-511J Z-512J	512	E0000 to E0777	E1000 to E1777	E2000 to E2777	E3000 to E3777	E0000 to E0777

■ Details of the scan list data table

Address * 1	Details		Node address 0 information
1st byte (E0000)	Slave information flag * 2		
2nd byte (E0001)	Not used		
3rd byte (E0002)	Input data length	- A number of bytes for the data which slave stations will send and receive the Polling I/O message.	
4th byte (E0003)	Output data length		
5th byte (E0004)	Offset input data	- These indicate the byte mappings in the I/O data table (page 7-1) that data will be sent from or received into using the Polling I/O message. * 3.	
6th byte (E0005)			
7th byte (E0006)	Offset output data		
8th byte (E0007)			
9th byte (E0010) to to 16th byte (E0017)	Node address 1 details (same as node address 0)		
17th byte (E0020) to to 24th byte (E0027)	Node address 2 details (same as node address 0)		
⋮ ⋮	⋮		
505th byte (E0770) to to 512th byte (E0777)	Node address 63 details (same as node address 0)		

* 1: The addresses shown in parentheses are correct when a Z-511J/512J is used as CPU board and the Z-337J/338J is set to 0 using its module No. switch SW2.

* 2: Slave information flag

Value(HEX)	Details
00	Node not connected
01	Node connected that does not have the Polling I/O function
02	Node connected with the Polling I/O function
FF	Own station node address

* 3: The data received after the input data length is changed will become effective when the slave information flag (1st byte) is 02.

* 4: The position of an address from the top byte is expressed by a byte + 1.

(Ex.: When the value is 0, it is the 1st byte. When the value is 2, it is the 3rd byte.)

Chapter 9: Explicit Message Function

Normally, this function is not needed when you use the I/O Polling function. If you need to use the Explicit message function with a specific slave station, refer to the descriptions below.

The Z-337J/338J can send a request for service to any device made by another manufacturer using the Explicit message function defined in the DeviceNet specifications. This function uses the Explicit message table (118 bytes each for request and response) in the CPU board (Z-311J/312J, Z-511J/512J).

- An Explicit message table request issues an Explicit message defined by DeviceNet, and asks any corresponding device to provide service.
- The Explicit message table response stores the service data details from the slave station.

The address of the Explicit message data table is assigned using the module No. switch on the Z-337J/338J. (=> See page 4-3.)

■ Addresses of the Explicit message table areas (requests and responses)

Installed CPU board	Table	Number of bytes	Module No. switch SW2 setting				
			0	1	2	3	4
Z-311J	Request	118			89400 to 89565	99400 to 99565	
Z-312J	Response	118			89600 to 89765	99600 to 99765	
Z-511J	Request	118	39400 to 39565	49400 to 49565	59400 to 59565	69400 to 69565	39400 to 39565
Z-512J	Response	118	39600 to 39765	49600 to 49765	59600 to 59765	69600 to 69765	39600 to 39765

(1) Details of the Explicit message data table (requests)

A board side reading flag, host side writing flag, and other parameters are described.

Address *	Parameter name	Details
1st byte (39400)	Board side reading flag	When this board has finished reading the contents being sent, the data in memory is automatically inverted. (Inverting data changes 00 _(H) to 01 _(H) , and vice-versa.)
2nd byte (39401)	Host side writing flag	After inverting the address data in the Z-337J/338J, it will read the request contents from the CPU board and send request messages to slave modules.
3rd byte (39402)	Status	The device status and response information are stored.
4th byte (39403)	TXID (transaction ID)	Assign an ID when creating a request. If you are using two channels, make sure to enter a different value in the TXID parameter for each channel.
5th byte (39404)	Size	Set the request data length.
6th byte (39405)	Reserved area	Use prohibited.
7th byte (39406)	MAC ID	Set a node address for the transaction object.
8th byte (39407)	Service code	Service code for the DeviceNet request.
9th byte (39410) 10th byte (39411)	Class ID	Assign a class ID to the Explicit message sending target.
11th byte (39412) 12th byte (39413)	Instance ID	Assign an instance ID to the Explicit message sending target.
13th byte (39414) ⋮ 118th byte (39565)	Service data (106 bytes)	Assign data that is defined by a service code. (In most of the cases, enter attributes in the first byte.)

* The addresses in parentheses are correct when a Z-511J/512J is used as CPU board and the module No. switch SW2 on the Z-337J/338J is set to 0. (For the addresses of the other settings => See page 9-3.)

- For details about the Explicit message parameters, see the "DeviceNet specifications." To obtain a copy of "DeviceNet specifications," contact an ODVA branch office in your country.

(2) Details of the Explicit message data table (responses)

A host side reading flag, board side writing flag, and other parameters are described.

Address *	Parameter name	Details
1st byte (39600)	Host side reading flag	When reading the received data, the same data is written to the Z-337J/338J.
2nd byte (39601)	Boarde side writing flag	When the Z-337J/338J receives a response from a slave station, the Z-337J/338J inverts the data. (Inverting data changes 00 _(H) to 01 _(H) , and vice-versa.)
3rd byte (39602)	Status	The device status and response information are stored.
4th byte (39603)	TXID (transaction ID)	Transaction ID of the response data.
5th byte (39604)	Size	Response data length.
6th byte (39605)	Reserved area	Use prohibited.
7th byte (39606)	MAC ID	Node address that will be the target for the transaction.
8th byte (39607)	Service code	Service code for the Device Net request.
9th byte (39610) . . . 118th byte (39765)	Response data (110 bytes)	A received data message, as defined by the service code, is returned.

* The addresses in parentheses are correct when a Z-511J/512J is used as CPU board and the module No. switch SW2 on the Z-337J/338J is set to 0. (For the addresses of the other settings => See page 9-3.)

- For details about the Explicit message parameters, see the "DeviceNet specifications."
To obtain a copy of "DeviceNet specifications," contact an ODVA branch office in your country.

(3) Parameter addresses for the Explicit message table (requests, responses)

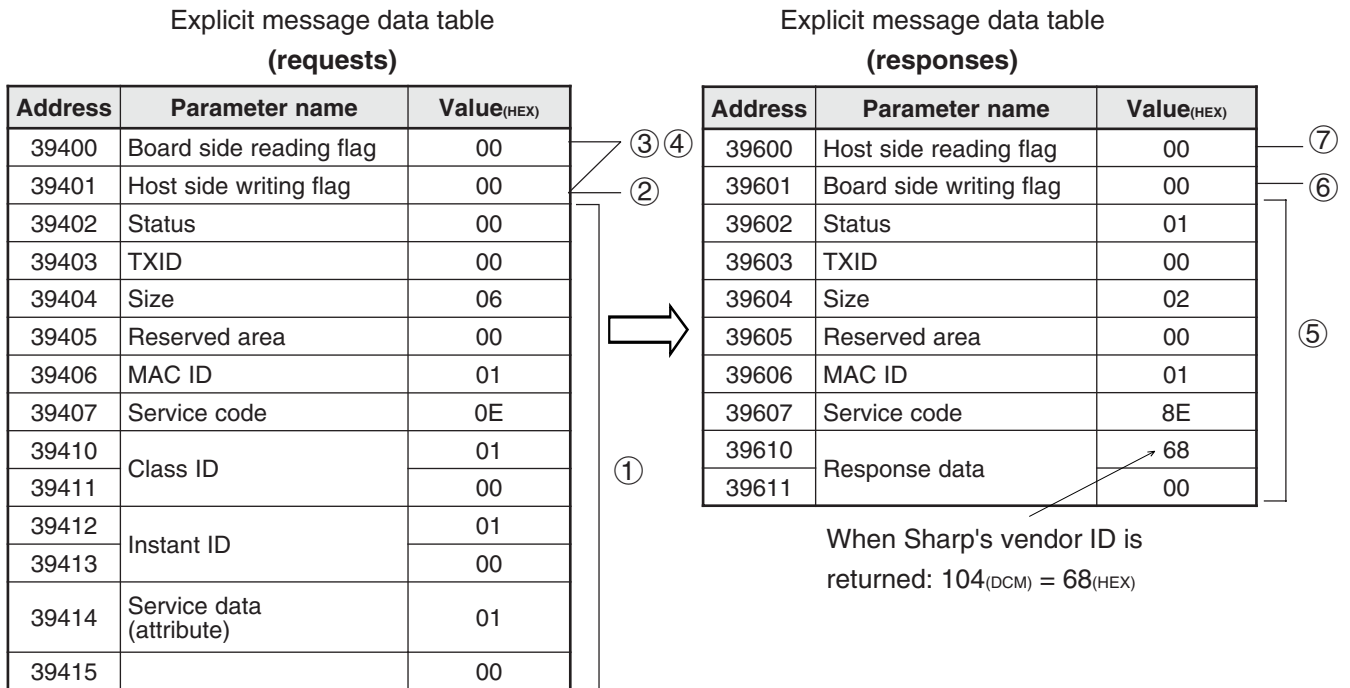
Shown below are the parameter addresses for each installation CPU board and the module No. switch SW2 setting.

CPU board	Z-311J/312J					Z-511J/512J					Parameter name		
	Switch SW2 setting	0	1	2	3	4	0	1	2	3			4
Address		89400	99400				39400	49400	59400	69400	39400	Board side reading flag	Request
		89401	99401				39401	49401	59401	69401	39401	Host side writing flag	
		89402	99402				39402	49402	59402	69402	39402	Status	
		89403	99403				39403	49403	59403	69403	39403	TXID (transaction ID)	
		89404	99404				39404	49404	59404	69404	39404	Size	
		89405	99405				39405	49405	59405	69405	39405	Reserved area	
		89406	99406				39406	49406	59406	69406	39406	MAC ID	
		89407	99407				39407	49407	59407	69407	39407	Service code	
		89410	99410				39410	49410	59410	69410	39410	Class ID	
		89411	99411				39411	49411	59411	69411	39411	Instance ID	
		89412	99412				39412	49412	59412	69412	39412		
		89413	99413				39413	49413	59413	69413	39413		
		89414	99414				39414	49414	59414	69414	39414		
			∫	∫			∫	∫	∫	∫	∫	Service data (106 bytes)	
		89565	99565				39565	49565	59565	69565	39565		
		89600	99600				39600	49600	59600	69600	39600	Host side reading flag	Response
		89601	99601				39601	49601	59601	69601	39601	Board side writing flag	
		89602	99602				39602	49602	59602	69602	39602	Status	
		89603	99603				39603	49603	59603	69603	39603	TXID (transaction ID)	
		89604	99604				39604	49604	59604	69604	39604	Size	
	89605	99605				39605	49605	59605	69605	39605	Reserved area		
	89606	99606				39606	49606	59606	69606	39606	MAC ID		
	89607	99607				39607	49607	59607	69607	39607	Service code		
	89610	99610				39610	49610	59610	69610	39610			
		∫	∫			∫	∫	∫	∫	∫	Response data (110 bytes)		
	89765	99765				39765	49765	59765	69765	39765			

(4) Example

Shown below is an example of reading the vendor ID of the identified object in a slave station (node address 1.)

(Installed CPU board: Z-511J/512J. Set the module number on switch SW2 on this board to 0)



● Request table

- ① Enter the values above in the request table (39402 to 39415).
- ② Reverse the write flag (39401). (00 -> 01:*)
- ③ When the write flag (39401) and read flag (39400) are not the same, the JW-20DN2 starts reading the details of the transaction.
- ④ When the read process is complete, the Z-337J/338J automatically reverses the read flag (39400) (00 -> 01:*), so that the read flag will be same value as the write flag (39401).
=> The Z-337J/338J sends a request message to a slave module.

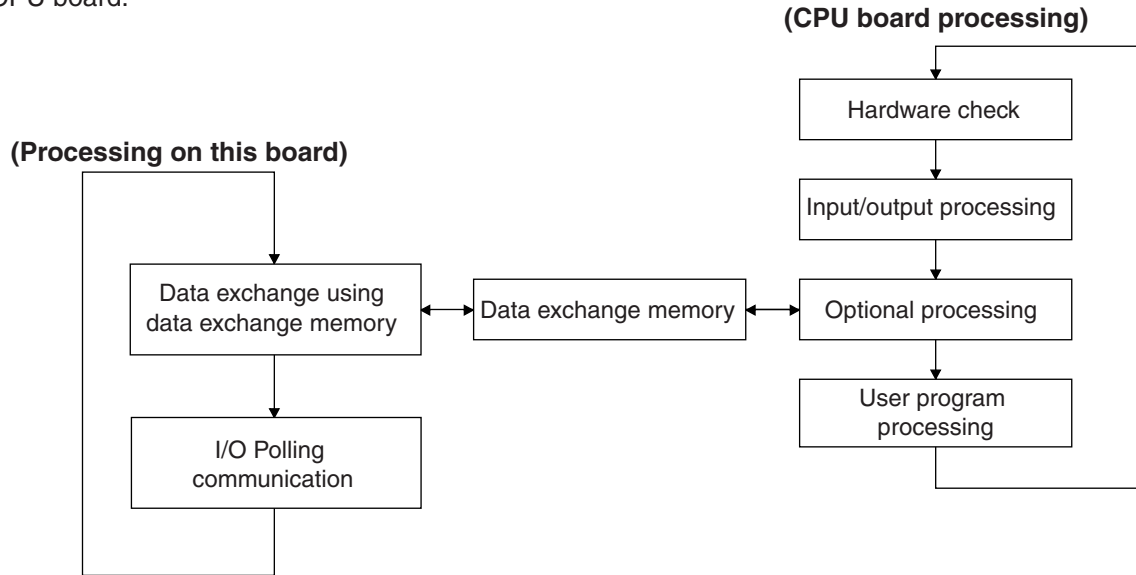
● Response table

- ⑤ When the Z-337J/338J receives a response corresponding to the request above from a slave module, or if a time out occurs, the Z-337J/338J writes data to the transaction block in the response table.
- The Z-337J/338J stores the response data from a slave module in the transaction block, starting at address 39602. In practice, the slave module vendor ID 104_(DCM) for MAC ID 01 is stored with the service data.
- ⑥ The values of the write flag (39601) in the response is reversed.
- ⑦ Until the write flag (39600) (00 -> 01:*) is reversed, the details of the transaction block are not allowed to change. To issue messages consecutively, the read flag should be reversed.

Chapter 10: Communication Timing

This chapter describes the communication between the CPU board (Z-311J/312J, Z-511J/512J), the Z-337J/338J (master), and the slave stations.

This board uses optional processing by the J-board to exchange data between the Z-337J/338J and the CPU board.



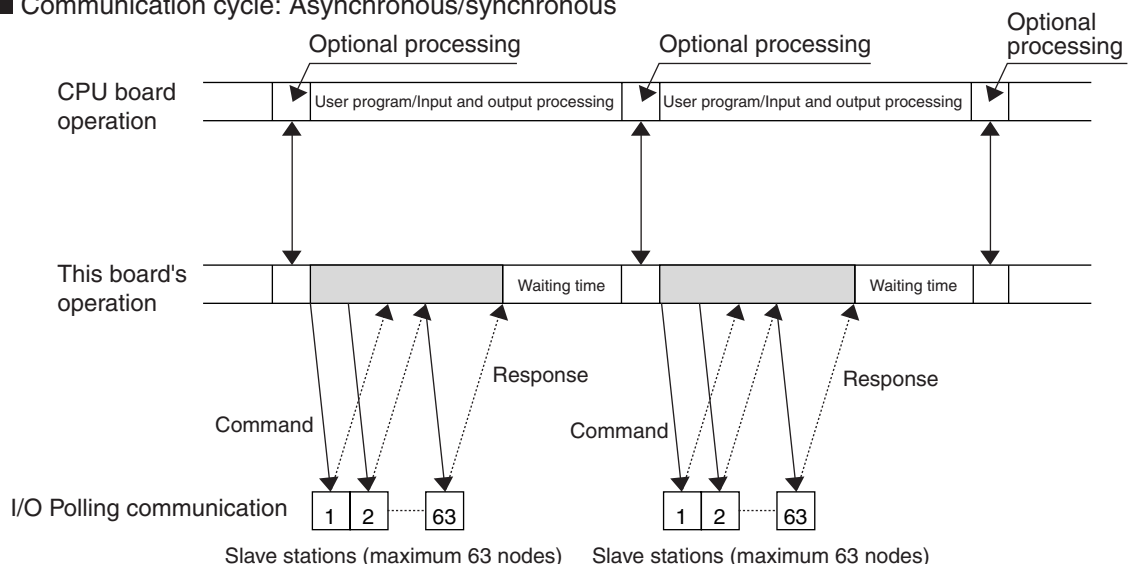
When the Z-337J/338J receives responses from all slave stations, or a communication time out occurs, it will complete one Polling I/O communication cycle, and exchange data with the CPU board.

- The time-out time is the normal time required after the Z-337J/338J completes sending commands to all of the slave stations, until it receives responses from all of the slave stations. The actual communication time-out period is determined by the setting of switch SW2 (selection of the communication monitor time) on the Z-337J/338J and the number of slave stations connected. => See page 4-6.

The communication timing between the I/O Polling communication time and the operation time of the J-board is as follows.

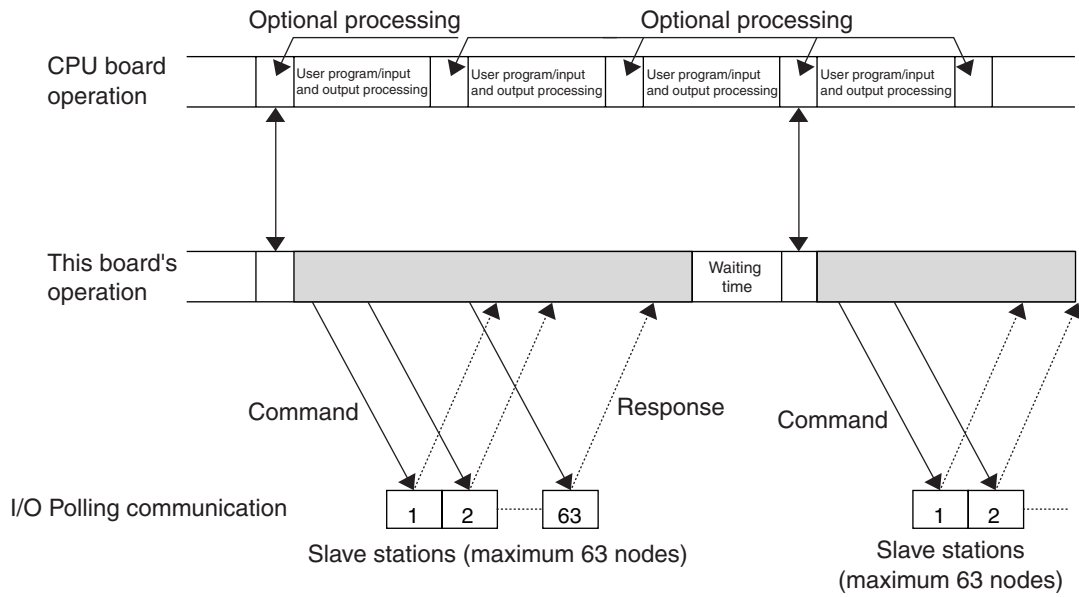
[1] When the Polling I/O communication time is shorter than the CPU board cycle operation time

■ Communication cycle: Asynchronous/synchronous

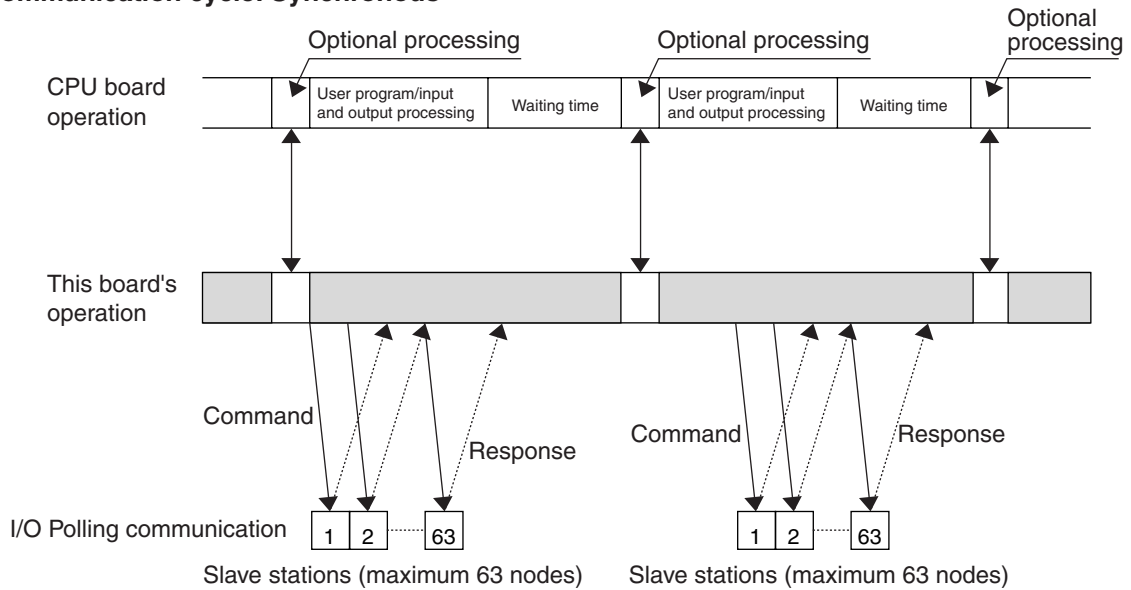


[2] When the Polling I/O communication time is longer than the CPU board cycle operation time

(1) Communication cycle: Asynchronous



(2) Communication cycle: Synchronous

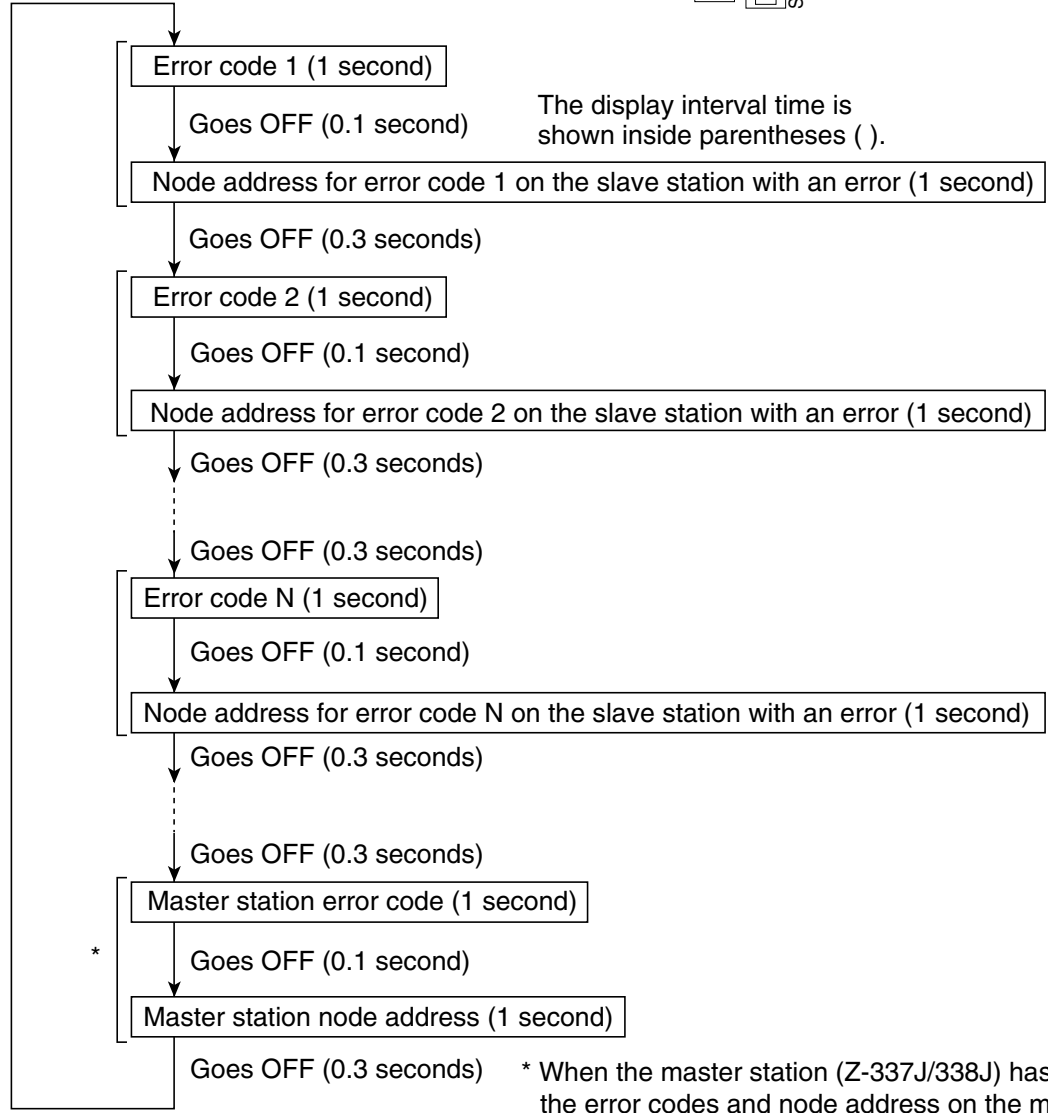
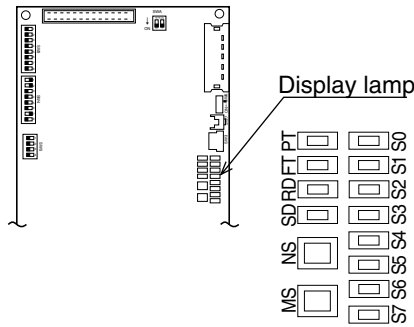


Chapter 11: Error Handling

When an error occurs during communication with the Z-337J/338J, check the error details by referring to the display lamps and the diagnostic table. Then take the appropriate action.

11-1 Display lamp

When an error occurs on a node (master and slave station), the error code and the node address will be displayed on the Z-337J/338J display panel (S0 to S7).



* When the master station (Z-337J/338J) has a problem, the error codes and node address on the master station will be displayed.

- There is no display priority order for error displays. The board displays all of the errors that have occurred repeatedly, one at a time.
- For details about the displays and error codes, as well as node addresses, see the following pages.

[1] Error code

(1) Error code display

The Z-337J/338J displays error codes using lights S0 to S7 on the display panel.

S0 to S7 lamp status (● : Lit, ○ : Off)								Error code (hexadecimal)
S7	S6	S5	S4	S3	S2	S1	S0	
●	●	○	●	○	○	●	○	D2
●	●	○	●	○	●	○	●	D5
●	●	○	●	○	●	●	○	D6
●	●	○	●	●	○	○	●	D9
●	●	●	○	○	○	○	○	E0
●	●	●	●	○	○	○	○	F0
●	●	●	●	○	○	○	●	F1
●	●	●	●	○	○	●	○	F2
●	●	●	●	○	○	●	●	F3
●	●	●	●	○	●	○	○	F4
●	●	●	●	○	●	●	●	F7
●	●	●	●	●	○	○	○	F8
●	●	●	●	●	○	○	●	F9
●	●	●	●	●	○	●	○	FA
●	●	●	●	●	○	●	●	FB

(2) Error details

The error code details and actions are as follows.

MS/NS lamp	S0 to S7 (error node)	Error details		Operation of Z-337J/338J	Master status *1	Treatment
MS: Keeps the current status NS: Red lamp blinks	D2	Configuration error	The I/O area of one slave station exceeds 64 bytes (input), or 64 bytes (output)	- Do not open communication with the error slave station.	D4 turns ON * 2	Reset the slave node addresses.
	D5	Verification error	- There is no slave data table at all. - The slave does not exist.	- Try to connect with the error slave station - Communicate with normal slave stations.	D16 and D3 turn ON * 2	- Check whether the slaves are properly connected. - Recreate the scan list after checking the slave connections.
	D6		The slave's I/O data size does not match the scan list register details.			After checking the number of I/O bytes used by the slaves, recreate the scan list.
	D9	Communication error	- The response from a slave station times out 6 times in a row (no response is received). - The error occurs 3 time sequentially on fragmentation protocol.		D16 and D2 turn ON * 2	Check the following: - Make sure the communication of the master station and slave stations are the same. - Make sure there are no disconnected or loose cables. - Make sure there is not too much electrical noise. - Make sure the cable lengths (trunk and branches) are appropriate. - Make sure the terminating resistances are connected to both ends and only to the ends.
MS: Green lamp lights NS: Goes OFF	E0	Network power error (transfer error)	Communication power is not being supplied correctly from the network.		Waiting for the network to supply power.	D16 and D5 turn ON.

* 1 : Master status => See page 11-9.

* 2 : D17 will turn ON when the Z-337J/338J is connected to more than 1 slave station.
(If the master station detects a problem or is unable to establish connection with all slave stations, D17 will turn OFF.)

To the next page

MS/NS lamp	S0 to S7 (error node)	Error details		Operation of Z-337J/338J	Master status *1	Treatment	
MS: Red lamp blinks NS: Goes OFF	F0 (master)	A node address has been used twice	The master station node address has been assigned to another node.	Operation stopped Operation stopped	D16 and D1 turn ON.	Check the other node addresses. Eliminate the duplicated node address and restart the master module (Z-337J/338J).	
	F1 (master)	Detected a Bus OFF	Bus OFF status is active (communication was stopped due to frequent data errors).			Check the following: - Make sure the communication speed of the master station and slave stations are the same. - Make sure there are no disconnected or loose cables. - Make sure there is not too much electrical noise. - Make sure the cable lengths (trunk and branches) are appropriate. - Make sure the terminating resistances are connected both ends and only to the ends.	
	F2 (master)	Node address error	Some of the switches on the Z-337J/338J are set incorrectly.			Check the node address switch.	
	F3 (master)	Communication speed error				Check the SW2 switch settings.	
	F4 (master)	Module No. error				Check the Module No. switch settings.	
MS: Red lamp lights NS: Goes OFF	F7 (master)	Scan list data error	Memory error in the EEPROM - Since there is no data table in the master board, the board cannot read/write scan list master parameters.		D16 and D0 turn ON	Recreate the scan list and recreate the data table in the master board (Z-337J/338J). Or, replace the Z-337J/338J. Check the network power and cable wiring.	
	F8 (master)	Serial No. error					
	F9 (master)	RAM error	An error occurred during a RAM check of the master board.				—
	FA (master)	ROM-SUM error	An error occurred during a ROM check of the master board.				
	FB (master)	DPRAM error	An error occurred during a common RAM check of the master board.				
MS: Keeps the current status NS: Keeps the current status	Off	Watchdog timer error	A watchdog timer error occurred on the master board.	Operation stopped	—	Replace the Z-337J/338J.	
		CPU watchdog timer error	A watchdog timer error has occurred on the J-board (CPU board).			See the manual for the J-board (CPU board).	

* Master status => See page 11-9.

[2] Display of node addresses

The Z-337J/338J displays node addresses using the S0 to S7 lamps on the display panel.

S0 to S7 lamp status (● : Lit, ○ : Off)								Node address (decimal)
S7	S6	S5	S4	S3	S2	S1	S0	
○	○	○	○	○	○	○	○	0
○	○	○	○	○	○	○	●	1
○	○	○	○	○	○	●	○	2
○	○	○	○	○	○	●	●	3
○	○	○	○	○	●	○	○	4
○	○	○	○	○	●	○	●	5
○	○	○	○	○	●	●	○	6
○	○	○	○	○	●	●	●	7
○	○	○	○	●	○	○	○	8
○	○	○	○	●	○	○	●	9
○	○	○	●	○	○	○	○	10
○	○	○	●	○	○	○	●	11
○	○	○	●	○	○	●	○	12
○	○	○	●	○	○	●	●	13
○	○	○	●	○	●	○	○	14
○	○	○	●	○	●	○	●	15
○	○	○	●	○	●	●	○	16
○	○	○	●	○	●	●	●	17
○	○	○	●	●	○	○	○	18
○	○	○	●	●	○	○	●	19
○	○	●	○	○	○	○	○	20
○	○	●	○	○	○	○	●	21
○	○	●	○	○	○	●	○	22
○	○	●	○	○	○	●	●	23
○	○	●	○	○	●	○	○	24
○	○	●	○	○	●	○	●	25
○	○	●	○	○	●	●	○	26
○	○	●	○	○	●	●	●	27
○	○	●	○	●	○	○	○	28
○	○	●	○	●	○	○	●	29
○	○	●	●	○	○	○	○	30
○	○	●	●	○	○	○	●	31
○	○	●	●	○	○	●	○	32
○	○	●	●	○	○	●	●	33
○	○	●	●	○	●	○	○	34
○	○	●	●	○	●	○	●	35
○	○	●	●	○	●	●	○	36
○	○	●	●	○	●	●	●	37
○	○	●	●	●	○	○	○	38
○	○	●	●	●	○	○	●	39
○	●	○	○	○	○	○	○	40
○	●	○	○	○	○	○	●	41
○	●	○	○	○	○	●	○	42
○	●	○	○	○	○	●	●	43
○	●	○	○	○	●	○	○	44
○	●	○	○	○	●	○	●	45

S0 to S7 lamp status (● : Lit, ○ : Off)								Node address (decimal)
S7	S6	S5	S4	S3	S2	S1	S0	
○	●	○	○	○	○	●	○	46
○	●	○	○	○	○	●	●	47
○	●	○	○	○	●	○	○	48
○	●	○	○	○	●	○	○	49
○	●	○	○	○	○	○	○	50
○	●	○	○	○	○	○	○	51
○	●	○	○	○	○	○	○	52
○	●	○	○	○	○	○	○	53
○	●	○	○	○	○	○	○	54
○	●	○	○	○	○	○	○	55
○	●	○	○	○	○	○	○	56
○	●	○	○	○	○	○	○	57
○	●	○	○	○	○	○	○	58
○	●	○	○	○	○	○	○	59
○	●	○	○	○	○	○	○	60
○	●	○	○	○	○	○	○	61
○	●	○	○	○	○	○	○	62
○	●	○	○	○	○	○	○	63

11-2 Diagnostic table

Using the diagnostic table created on the installation CPU board, you can check the communication status of the nodes (master and slave stations). Assign the address of the diagnostic table (master mode: 256 bytes, slave mode: 128 bytes) using the module No. switch SW2 on the Z-337J/338J.
=> See page 4-3.

■ Diagnostic data table (256 bytes) addresses

CPU board	Module No. switch settings				
	0	1	2	3	4
Z-331J/312J	11500 to 11507 (8 bytes) * 1	11510 to 11517 (8 bytes) * 1	89000 to 89337	99000 to 99337	11510 to 11507 (8 bytes) * 1
Z-511J/512J	39000 to 39377	49000 to 49377	59000 to 59377	69000 to 69377	39000 to 39377

* Only the communication monitor table exists.

- The Z-331J/333J communication board can be installed on the same J-board as this board. However, this board module number switch SW2 must be set to a number other than 0 or 4. If SW2 is set to 0 or 4, the link area in the Z-331J/333J will duplicate the area in this board and they cannot function.

[1] Details of the diagnostic data table

The diagnostic table contains a communication monitor table, error node table, scan list table, connection table, operating status monitor table, device status table, master status table, and vender table.

■ Diagnosis table (256 bytes)

Address * 1		D7	D6	D5	D4	D3	D2	D1	D0	← Bit number	
1st byte	39000	7	6	5	4	3	2	1	0	Communication monitor table (8 bytes) - The node addresses are numbered 0 to 63. The communication status of each node is indicated by turning the bits in these 8 bytes ON and OFF. ON: Normal OFF: Stopped or not exit => See the next page. - A bit representing the Z-337J/338J (master module) status will turn OFF whenever any of one the slavetations is abnormal.	
	2nd byte	39001	15	14	13	12	11	10	9		8
	3rd byte	39002	23	22	21	20	19	18	17		16
	4th byte	39003	31	30	29	28	27	26	25		24
	5th byte	39004	39	38	37	36	35	34	33		32
	6th byte	39005	47	46	45	44	43	42	41		40
	7th byte	39006	55	54	53	52	51	50	49		48
	8th byte	39007	63	62	61	60	59	58	57		56
9th byte	39010	Reserved area *2									
32nd byte	39037	D7	D6	D5	D4	D3	D2	D1	D0	Operating status monitor table (8 bytes) - The node addresses are numbered 0 to 63. The operating status of each node is indicated by turning the bits in these 8 bytes ON and OFF. ON: The slave station is operating OFF: The slave station is idle. => See the next page. As for operation details of each slave station, see specifications of the respective slave station.	
	33rd byte	39040	7	6	5	4	3	2	1		0
	34th byte	39041	15	14	13	12	11	10	9		8
	35th byte	39042	23	22	21	20	19	18	17		16
	36th byte	39043	31	30	29	28	27	26	25		24
	37th byte	39044	39	38	37	36	35	34	33		32
	38th byte	39045	47	46	45	44	43	42	41		40
	39th byte	39046	55	54	53	52	51	50	49		48
40th byte	39047	63	62	61	60	59	58	57	56		
41st byte	39050	Reserved area *2									
64th byte	39077	Node 0								Device status table (64 bytes) - The status of the slave station devices can be monitored by keeping track of the device status codes assigned to each node address. 00(HEX) is normal. => See page 11-7.	
	65th byte	39100	Node 1								
66th byte	39101	Node 1								Master status (2 bytes) - The error information and operating status of the master station is indicated by turning bits ON and OFF. => See page 11-9.	
	127th byte	39176	Node 62								
128th byte	39177	Node 63									
129th byte	39200	D7	D6	D5	D4	D3	D2	D1	D0		
130th byte	39201	D17	D16	D15	D14	D13	D12	D11	D10		
131st byte	39202	Reserved area *2									
256th byte	39377	Reserved area *2									

*1: Addresses in the parenthesis () are true when the module number switch of the Z-337J/338J (mounted on Z-511J/512J) is 0 and the fixed allocation is selected.

*2: Never change the values in the reserved areas. Otherwise, the module may malfunction.

[2] Addresses in the diagnostic data table

Shown below are the addresses of the diagnostic data table (communication monitor table, etc.) for each CPU board and each Module No. switch setting.

(1) Address of the communication monitor table (master mode)

CPU board	Z-311J/312J					Z-511J/512J					Node address (bit)							
	0	1	2	3	4	0	1	2	3	4								
Switch SW2 setting											D7	D6	D5	D4	D3	D2	D1	D0
Address	⊠1500	⊠1510	89000	99000	⊠1500	39000	49000	59000	69000	39000	7	6	5	4	3	2	1	0
	⊠1501	⊠1511	89001	99001	⊠1501	39001	49001	59001	69001	39001	15	14	13	12	11	10	9	8
	⊠1502	⊠1512	89002	99002	⊠1502	39002	49002	59002	69002	39002	23	22	21	20	19	18	17	16
	⊠1503	⊠1513	89003	99003	⊠1503	39003	49003	59003	69003	39003	31	30	29	28	27	26	25	24
	⊠1504	⊠1514	89004	99004	⊠1504	39004	49004	59004	69004	39004	39	38	37	36	35	34	33	32
	⊠1505	⊠1515	89005	99005	⊠1505	39005	49005	59005	69005	39005	47	46	45	44	43	42	41	40
	⊠1506	⊠1516	89006	99006	⊠1506	39006	49006	59006	69006	39006	55	54	53	52	51	50	49	48
	⊠1507	⊠1517	89007	99007	⊠1507	39007	49007	59007	69007	39007	63	62	61	60	59	58	57	56

This board shows the communication status of each node based on the bit status (ON/OFF) of node addresses 0 to 63. (ON : Normal, OFF : Error)

(2) Address of the operation status monitor table

CPU board	Z-311J/312J					Z-511J/512J					Node address (bit)								
	0	1	2	3	4	0	1	2	3	4									
Switch SW2 setting											D7	D6	D5	D4	D3	D2	D1	D0	
Address	/		89040	99040	/		39040	49040	59040	69040	39040	7	6	5	4	3	2	1	0
			89041	99041			39041	49041	59041	69041	39041	15	14	13	12	11	10	9	8
			89042	99042			39042	49042	59042	69042	39042	23	22	21	20	19	18	17	16
			89043	99043			39043	49043	59043	69043	39043	31	30	29	28	27	26	25	24
			89044	99044			39044	49044	59044	69044	39044	39	38	37	36	35	34	33	32
			89045	99045			39045	49045	59045	69045	39045	47	46	45	44	43	42	41	40
			89046	99046			39046	49046	59046	69046	39046	55	54	53	52	51	50	49	48
			89047	99047			39047	49047	59047	69047	39047	63	62	61	60	59	58	57	56

This board shows the operation status of each slave module based on the bit status (ON/OFF) of node addresses 0 to 63.

(ON: Slave station is operating. OFF: Slave station is idle.)

(3) Device status table addresses (master mode)

When an error occurs on a slave station device, a device status code (next page) will be stored at the following addresses. (When the communication is normal, 00_(HEX) will be stored.)

CPU board Switch SW2 setting	Z-311J/312J					Z-511J/512J					Node address
	0	1	2	3	4	0	1	2	3	4	
Address			89100	99100		39100	49100	59100	69100	39100	0
			89101	99101		39101	49101	59101	69101	39101	1
			89102	99102		39102	49102	59102	69102	39102	2
			89103	99103		39103	49103	59103	69103	39103	3
			89104	99104		39104	49104	59104	69104	39104	4
			89105	99105		39105	49105	59105	69105	39105	5
			89106	99106		39106	49106	59106	69106	39106	6
			89107	99107		39107	49107	59107	69107	39107	7
			89110	99110		39110	49110	59110	69110	39110	8
			89111	99111		39111	49111	59111	69111	39111	9
			89112	99112		39112	49112	59112	69112	39112	10
			89113	99113		39113	49113	59113	69113	39113	11
			89114	99114		39114	49114	59114	69114	39114	12
			89115	99115		39115	49115	59115	69115	39115	13
			89116	99116		39116	49116	59116	69116	39116	14
			89117	99117		39117	49117	59117	69117	39117	15
			89120	99120		39120	49120	59120	69120	39120	16
			89121	99121		39121	49121	59121	69121	39121	17
			89122	99122		39122	49122	59122	69122	39122	18
			89123	99123		39123	49123	59123	69123	39123	19
			89124	99124		39124	49124	59124	69124	39124	20
			89125	99125		39125	49125	59125	69125	39125	21
			89126	99126		39126	49126	59126	69126	39126	22
			89127	99127		39127	49127	59127	69127	39127	23
			89130	99130		39130	49130	59130	69130	39130	24
			89131	99131		39131	49131	59131	69131	39131	25
			89132	99132		39132	49132	59132	69132	39132	26
			89133	99133		39133	49133	59133	69133	39133	27
			89134	99134		39134	49134	59134	69134	39134	28
			89135	99135		39135	49135	59135	69135	39135	29
			89136	99136		39136	49136	59136	69136	39136	30
			89137	99137		39137	49137	59137	69137	39137	31
			89140	99140		39140	49140	59140	69140	39140	32
			89141	99141		39141	49141	59141	69141	39141	33
			89142	99142		39142	49142	59142	69142	39142	34
			89143	99143		39143	49143	59143	69143	39143	35
			89144	99144		39144	49144	59144	69144	39144	36
			89145	99145		39145	49145	59145	69145	39145	37
			89146	99146		39146	49146	59146	69146	39146	38
			89147	99147		39147	49147	59147	69147	39147	39
			89150	99150		39150	49150	59150	69150	39150	40
			89151	99151		39151	49151	59151	69151	39151	41
			89152	99152		39152	49152	59152	69152	39152	42
			89153	99153		39153	49153	59153	69153	39153	43
			89154	99154		39154	49154	59154	69154	39154	44
			89155	99155		39155	49155	59155	69155	39155	45
			89156	99156		39156	49156	59156	69156	39156	46
			89157	99157		39157	49157	59157	69157	39157	47
			89160	99160		39160	49160	59160	69160	39160	48
			89161	99161		39161	49161	59161	69161	39161	49
			89162	99162		39162	49162	59162	69162	39162	50
			89163	99163		39163	49163	59163	69163	39163	51
		89164	99164		39164	49164	59164	69164	39164	52	

↓ To the next page

CPU board Switch SW2 setting	Z-311J/312J					Z-511J/512J					Node address
	0	1	2	3	4	0	1	2	3	4	
Address	/	89165	99165	89165	99165	39165	49165	59165	69165	39165	0
		89166	99166	89166	99166	39166	49166	59166	69166	39166	1
		89167	99167	89167	99167	39167	49167	59167	69167	39167	2
		89170	99170	89170	99170	39170	49170	59170	69170	39170	3
		89171	99171	89171	99171	39171	49171	59171	69171	39171	4
		89172	99172	89172	99172	39172	49172	59172	69172	39172	5
		89173	99173	89173	99173	39173	49173	59173	69173	39173	6
		89174	99174	89174	99174	39174	49174	59174	69174	39174	7
		89175	99175	89175	99175	39175	49175	59175	69175	39175	8
		89176	99176	89176	99176	39176	49176	59176	69176	39176	9
		89177	99177	89177	99177	39177	49177	59177	69177	39177	10

• Device status code

Device status code		Details
Decimal	Hexadecimal	
0 _(DCM)	0 _(HEX)	The slave station is normal or does not exist in the scan list
72	48	The slave station device stopped communicating
73	4B	Identification data from the slave station device does not match the value in the scan list.
77	4D	The data size is different from the setting.
78	4E	The slave station device is not returning a response.
86	53	The slave station device is idle.

(4) Master status address

By turning each bit ON/OFF, the board keeps track of the error information and operation status of the devices.

CPU board	Z-311J/312J					Z-511J/512J					Diagnosis detail
	0	1	2	3	4	0	1	2	3	4	
Address			89200	99200		39200	49200	59200	69200	39200	Error information (D0 to D7)
			89201	99201		39201	49201	59201	69201	39201	Operation status (D10 to D17)

*

* Details of D0 to D7, D10 to D17.

Error information	D0	Incorrect switch settings, EEPROM error
	D1	Duplicated assignment of a node address. Bus OFF is detected.
	D2	Communication error
	D3	Verification error
	D4	Configuration error
	D5	Sending error
	D6	Reserved area
	D7	
Operation status	D10	Currently creating scan list
	D11	Currently writing serial numbers
	D12	Reserved area
	D13	Reserved area
	D14	Disabled scan list (protected mode)
	D15	Message communication enable flag
	D16	Error is currently occurring
	D17	Using I/O Polling communication

11-3 Slave status when the J-board has stopped

When the J-board is in the program mode (stopped operation), the Z-337J/338J sends all slave stations information that it is idle. For details about the operations of slave stations, see the user's manual for each slave station.

Chapter 12: Specifications

(1) General specifications: Z-337J/338J

Item	Z-337J	Z-338J
Storage temperature	-20 to +70° C	
Ambient operating temperature	0 to +55° C	
Ambient humidity	35 to 90%RH (non condensing)	
Vibration resistance	Equivalent to JIS C 0911. Oscillation distance: 0.15 mm (10 to 58 Hz), 9.8 m/s ² (58 to 150 Hz) (2 hours each for X, Y, and Z directions.)	
Shock resistance	Equivalent to JIS C 0912. 147 m/s ² (3 times each in the X, Y, and Z directions)	
Communication power voltage	11 to 25 VDC	
Internal power consumption	200 mA max. (5 VDC)	240 mA max. (5 VDC)
Communication power consumption	50 mA max.	
Number of internally installed module	Install up to 4 modules on the JW20H/30H/300 basic rack panel.	
Weight	Approximately 180 g	Approximately 160 g
Accessories	4 stand offs for mounting the board (20 mm + 6 mm protrusion) 4 screws (Semuss M3 x 6 mm)	

(2) Communication specifications: Z-337J/338J

Item	Specification			
Communication protocol	Conforms to the DeviceNet protocol			
Number of connectable nodes	Maximum of 63 nodes for one master station (1 node).			
Number of I/O points	4096 points in the input/output data table (512 bytes)			
Communication speed	Selectable: 125 Kbps, 250 Kbps, or 500 Kbps.			
Communication distance (max.)	Communication speeds	125 k bit/s	250 k bit/s	500 k bit/s
	Trunk length using a thick cable	500 m	250 m	100 m
	Trunk length using a thin cable	100 m	100 m	100 m
	Maximum branch length	6 m	6 m	6 m
	Total branch length	156 m	78 m	39 m
Communication services	Polling I/O function, Explicit message function			
Communication carrier	Specialized cable (5 lines: 2 signal lines, 2 power lines, 1 shield line) - Thick cable: For trunk lines - Thin cable: For trunk or branch lines			
Data table allocation method when used in master mode	Select the method used for I/O data mapping in the scan list edit mode from "address order allocation," "even number allocation," or "allocation in the order in which vacant nodes are occupied."			

(3) Input/output specifications: Z-338J only

Item		Specification
Input	Number of input points	16: 24VDC (+ common) input (16 points / common)
	Input power supply voltage range	20 VDC to 26.4 VDC
	Input current	Approximately 7mA (24 VDC)
	ON/OFF levels	ON above 20 V, OFF below 5 V
	Response time	OFF to ON: 0.5 ms or less, ON to OFF: 1.0 ms or less
	Input signal operation display	LED
	Insulation type	Using photo-couplers (500 VAC for 1 minute)
Output	Number of output points	16: Transistor (sink) outputs (16 points / common)
	Load voltage range	4.75 VDC to 26.4 VDC
	Load current	0.2 A/point, 1.6 A total
	Voltage drop when ON	1.5 V or less
	Leakage current when OFF	0.2 mA or less
	ON/OFF response time	OFF to ON: 1 ms or less, ON to OFF: 1.0 ms or less
	Signal display of status	LEDs
	Insulation type	Using photo-couplers (500 VAC for 1 minute)
External wiring	Connector (Compatible connector: 40P MIL connector FRC5 series by DDK Ltd.)	

* This is true when the rated load is "24 VDC, 0.1A." In other load conditions, the response time may be more than 1 ms.

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