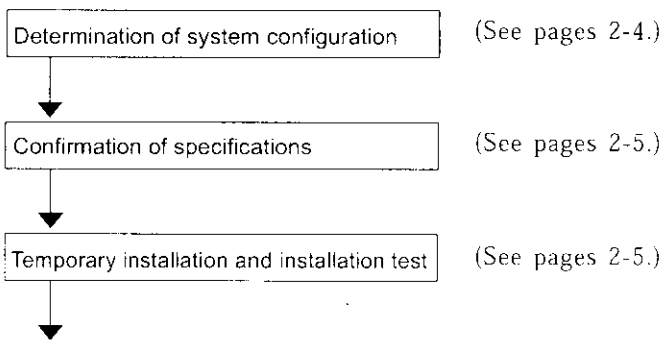
2-1 Basic Operation Procedure

Specific examples illustrating the basic operation procedure of the DeviceNet wireless unit are given in this chapter.

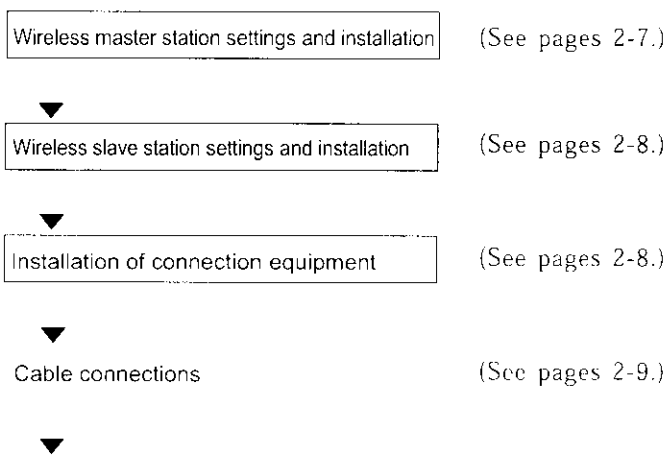
■ Basic operation procedures flowchart

The basic operation procedure is shown below. Refer to the "DeviceNet User's Manual" (SCCC-308□) and the "DeviceNet Slave Manual" (SBCD-305□) for details concerning settings and connections.

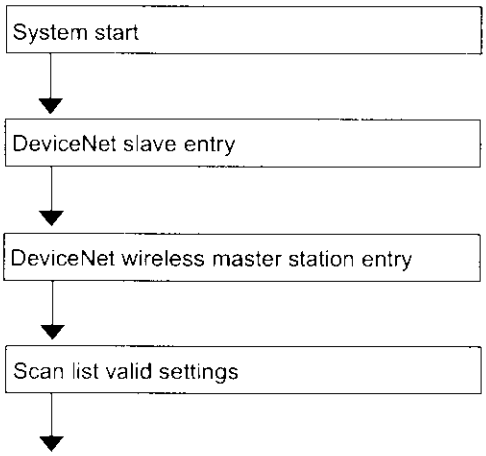
● Pre-work confirmation



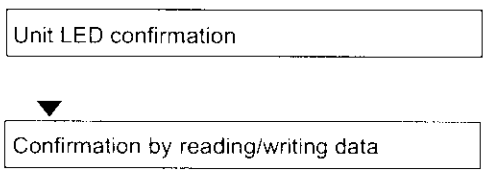
● Hardware settings and wiring



● System initialization and starting communication



● Operation confirmation



2-2 Pre-work Preparations

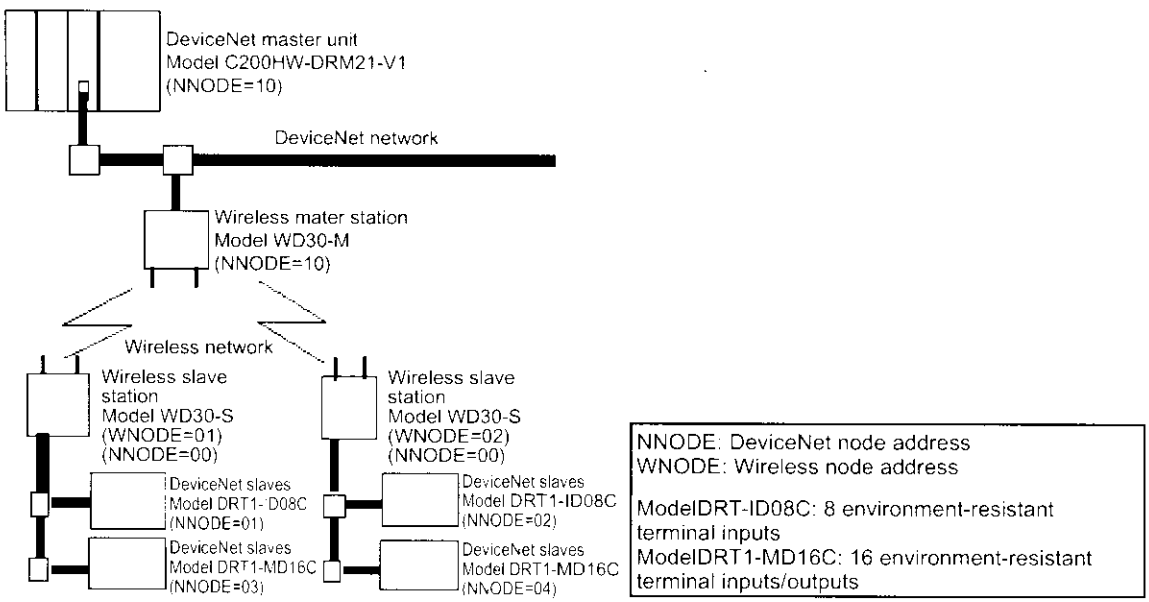
Items to be checked before performing installation work are explained here.

■ Determination of system configuration

A single wireless master station is limited to a maximum of 1,024 points, 512 points (32ch) each for both IN and OUT.
In addition, the maximum configuration in a wireless network of master stations to slave stations is 1 to 32, and the maximum number of IN/OUT points for the entire system is limited by the DeviceNet master unit. This should be considered carefully when determining system configuration.

● System configuration example

In this section, the operation procedure is explained using the following system configuration as an example.
A communications power supply (Model S82K) has been purposely left out



of the diagram above. It should be connected and supply power to the DeviceNet network (both upper and lower) and should be connected with terminal register. In addition, an external power supply should be connected to the environment resistant terminal of the DeviceNet slave.

Master unit I/O limitations

A single wireless master station can control up to 512 points for both input and output, but the number of I/O points per node is limited by the master unit. For example, the Omron CVM1/CV series master unit (Model CVM1-DRM21-V1) and the SYSMAC α/C200HS master unit (Model C200HW-DRM21-V1) are limited to 512 points for both IN and OUT per node. Be careful to not exceed the limit for I/O points per master unit node when constructing your system.

■ Confirmation of specifications

● Confirmation of number of IN/OUT points

Confirm that the number of IN/OUT points for each wireless master station is no more than 512 (32ch).
In the example, the number of IN points is 8 × 4 = 32, and the number of OUT points is 8 × 2 = 16.

● Confirmation of wiring

A special communications cable is required to connect to the DeviceNet micro connector on the wireless unit.
In addition, if multiple DeviceNet slaves are connected, branch taps should be used as necessary. Terminators for the wireless slave station DeviceNet network should also be prepared. Refer to the "DeviceNet User's Manual" (SCCC 308□) for details.

● Confirmation of communications power supply

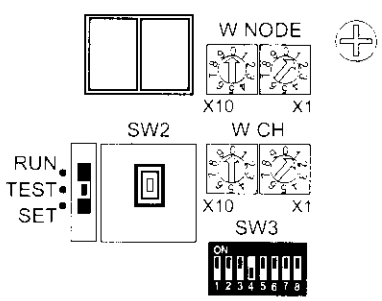
Since power is supplied to the wireless unit from an external communications power supply, a communications power connection must be made.
Refer to the "DeviceNet User's Manual" (SCCC 308□) for details concerning power supply restrictions.
When calculating the amount of current required, both wireless master stations and slave stations should be at 220mA.

■ Temporary installation and installation test

● Temporary installation of wireless master station

Set the switches as shown below, and temporarily fix the master station in the determined location.

Master station



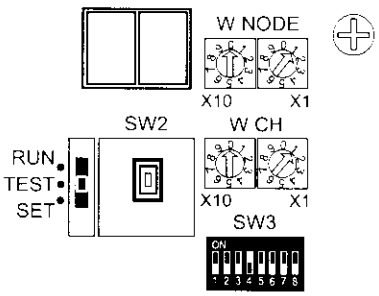
- SW3=bit4 ON (positioning test)
- Mode select switch = TEST
- WNODE = test subject's wireless slave station WNODE (This example starts at WNODE = 01.)
- WCH = 01

Connect a DeviceNet cable prepared for a micro-connector, and connect the DC24V communications power supply.

● Temporary installation of wireless slave station

Set the switches as shown below, and temporarily fix the master station in the determined location.

Slave station



- SW3 = bit4 ON (installation test)
- Mode select switch = TEST
- WNODE = WNODE for each wireless slave station (WNODE = 01 to 02 for this example.)

Connect a DeviceNet cable prepared for a micro-connector, and connect the DC24V communications power supply.

● Performing the installation test

Perform the positioning test. (Refer to "5-2 Positioning Test" for details concerning the procedure.) Once you have confirmed that wireless communications are stable, ensure that they remain stable by securing the wireless unit in position. In this example, an installation test is performed between the wireless master station and slave station 1, and the wireless master station and slave station 2.

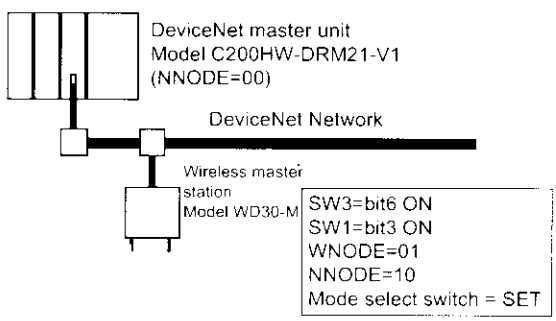
2-3 Hardware Settings and Wiring

Settings and wiring to be performed before turning on the power supply to the system are explained in this section.

■ DeviceNet wireless master station settings and installation

● Settings

An example setting for a wireless master station is shown below. Refer to "4-1 DeviceNet Wireless Master station Specifications" for details concerning setting procedures. All DeviceNet settings apart from the node address must match the master unit, and therefore the default settings should be used.



● Installation

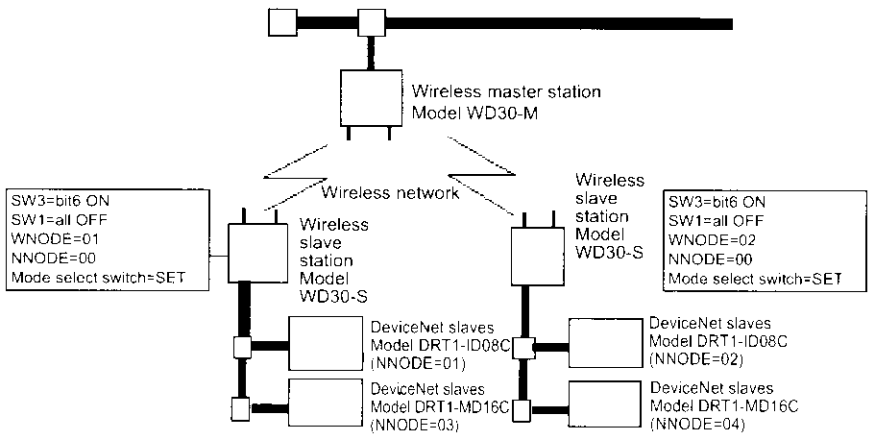
Use screws to firmly fix the wireless master station that has already been temporarily installed. Refer to "4-1 DeviceNet Wireless Master station Specifications" for details.

■ DeviceNet wireless slave station settings and installation

● Settings

Settings example for each wireless slave station are shown below. Refer to "4-2 DeviceNet Wireless Slave Station Specifications" for details concerning the setting procedure.

In this example, the default settings should be used for all DeviceNet settings apart from the node address. Refer to the "DeviceNet Slave Manual" (SBCD 305□) for details concerning the settings for each DeviceNet slave.



● Installation

Use screws to firmly fix the wireless slave stations that have already been temporarily installed. Refer to "4-2 DeviceNet Wireless Slave Station Specifications" for details.

■ Installation of connection equipment

Connection equipment that requires installation is listed below.

- Shielded T-type branch connector
- Shielded terminal registor
- Communications power supply (DC24V)

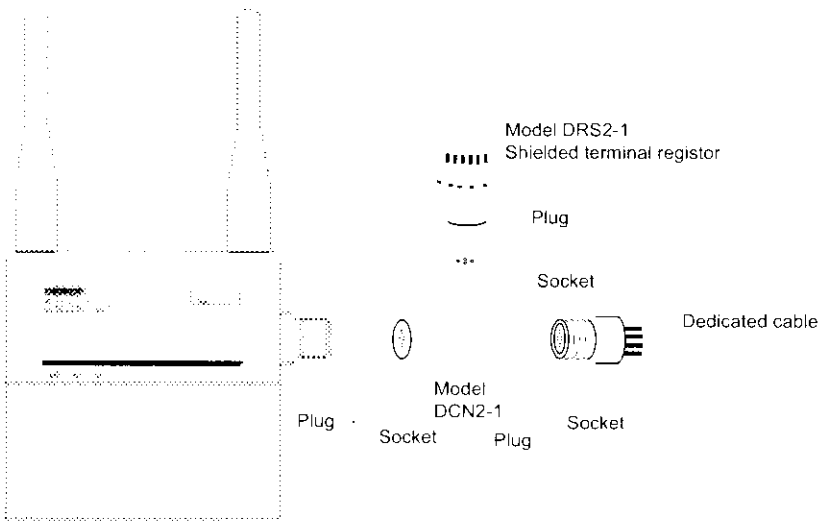
Terminal registor installation

Terminal registors are required not only for the wireless master station, but also on both ends of the wireless slave stations' DeviceNet network.

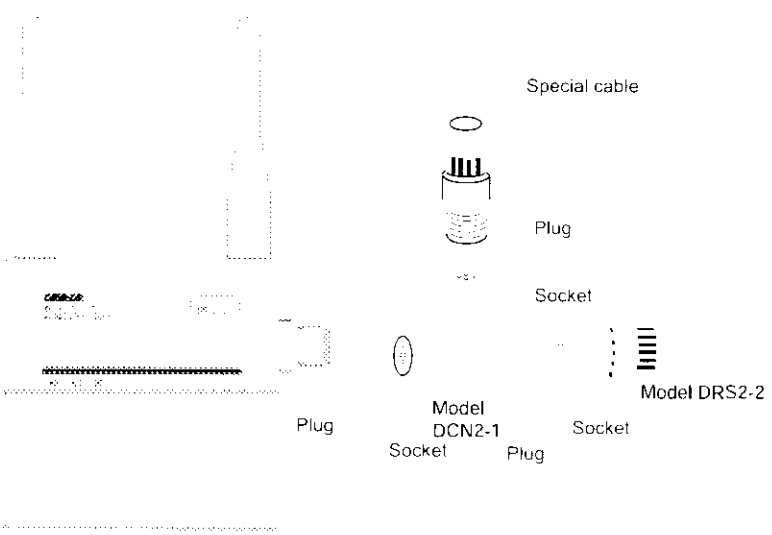
■ Cable connections

Connect a DeviceNet cable prepared for micro connectors to the wireless master and slave stations.
Connect the cables to the DeviceNet master (C200HW-DRM21-V1) and the DeviceNet slave (environment-resistant terminal) to create the complete physical system network.

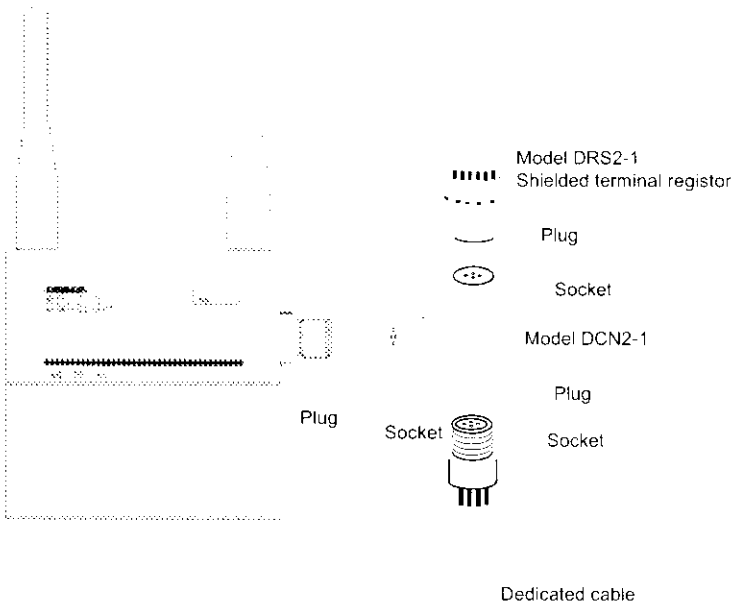
Example 1:
Connecting the cable on the side and installing a terminal registor



Example 2:
Connecting the cable to the top. and installing a terminal registor



Example 3:
Connecting the cable to the bottom, and installing a terminal registor



2-4 System Initial Setting and Starting Communications

The required entries, and deletion and initialization procedures following system start are explained in this section.

■ System start

Turn on the communications power source and the node power supply in the following order.

(1) DeviceNet slave (environment resistant terminal) external power supply

(2) DeviceNet master (C200HW-DRM21-V1) power supply

It is also OK to turn all power supplies on simultaneously.

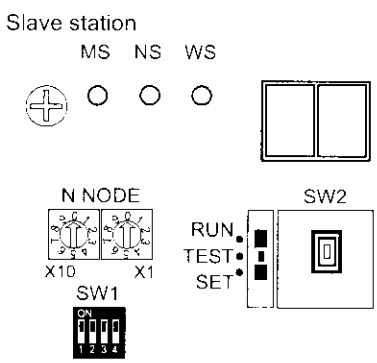
■ DeviceNet slave registration

Register the number of DeviceNet slave I/O points in the wireless slave station.

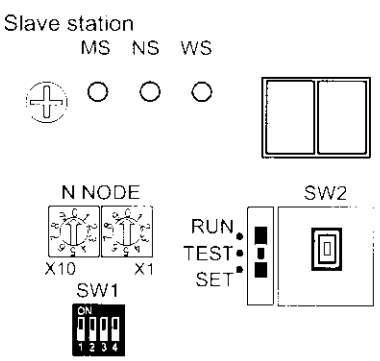
If the same system configuration as for the network default settings (Refer to "1-2 Basic Functions of the DeviceNet Wireless Unit".) is used, there is no need to do this registration.

The specifics of this example are explained below.

First, begin with the WNODE = 1 wireless slave station.

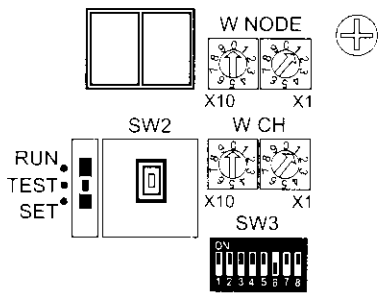


(1) Confirm that the slave station node address (NNODE) is not doubled with the DeviceNet slave. In this example, NNODE = 00 is OK.



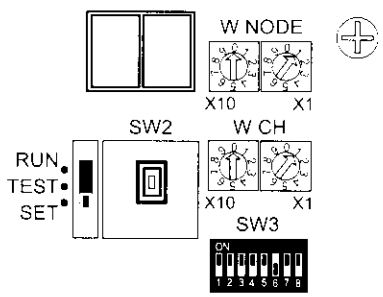
(2) Check if the communications rate for the slave station and the DeviceNet slave is the same. In this example, since default settings (125kbps) are used, all of the bits for SW1 should be OFF.

Slave station



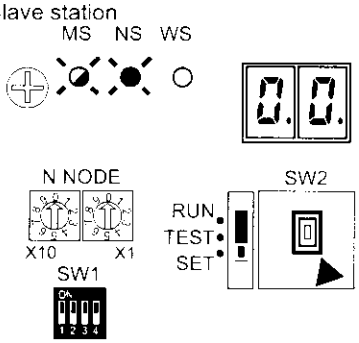
(3) Since the DeviceNet slave is registered, set SW3 to "bit 6 = ON".

Slave station



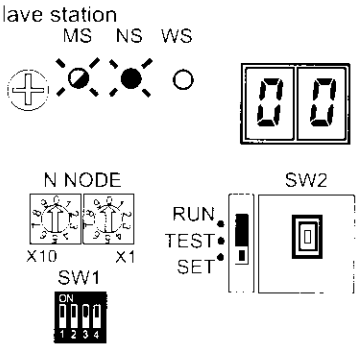
(4) Set the mode select switch to "SET".

Slave station



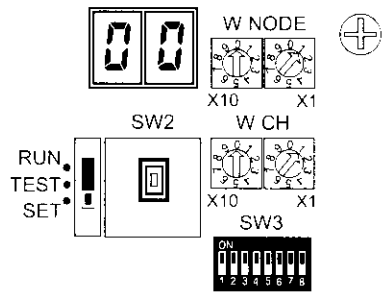
(5) Turn ON the wireless slave station communications power supply.
After confirming that the LED display shows a decimal point display (scan list invalid mode) and the NS LED lights green, push SW2.

Slave station



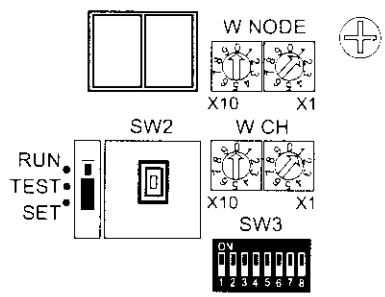
(6) Once the decimal point display has disappeared from the LED display, DeviceNet slave entry is complete. (scan list valid mode)

Slave station



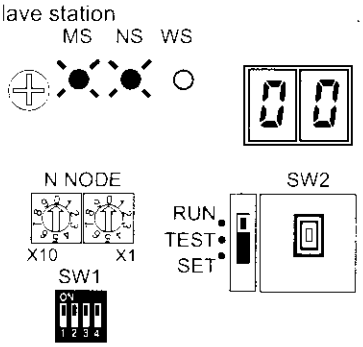
(7) Set SW3 to "bit 6 = OFF".

Slave station



(8) Set the mode select switch to "RUN".

Slave station



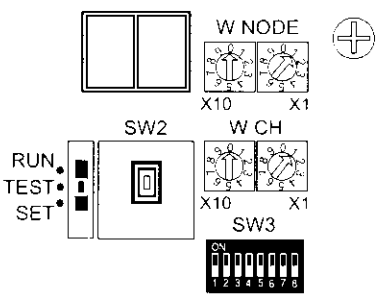
(9) If the NS LED lights green and the LED display shows the node address, the system is in RUN operation status.

The operation for the WNODE = 2 wireless slave station is the same as steps (1) through (9) above.

■ DeviceNet wireless slave station registration

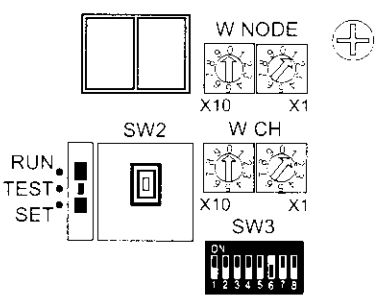
Entry the wireless slave station in the wireless master station.
If the same system configuration as for the network default settings (Refer to "1-2 DeviceNet Wireless Unit Basic Functions".) is used, there is no need to do this registration. In addition, when not using the WNODE = 1 wireless slave station (entry is complete with default settings when sent from the factory), it must be deleted before proceeding with entry.
The specifics of this example are explained below.
First, begin with the WNODE = 1 wireless slave station.

Master station



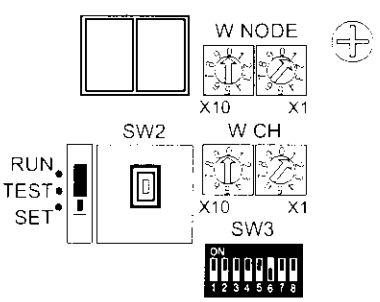
(1) Use the wireless master station WNODE = 1.

Master station

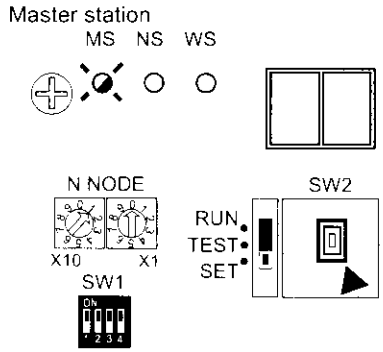


(2) To entry the wireless slave station, set SW3 to "bit 6 = ON".

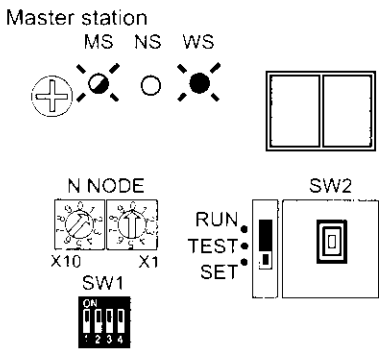
Master station



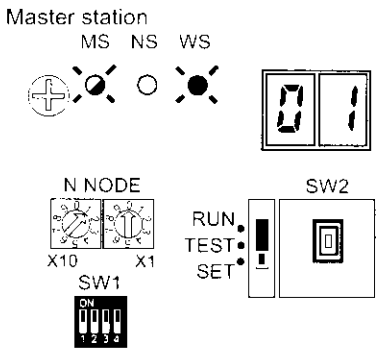
(3) Set the wireless master station mode select switch to "SET".



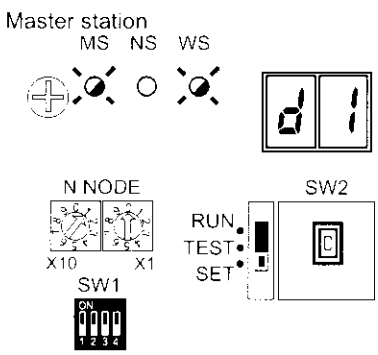
(4) Turn ON the wireless master station communications power supply. Once the MS LED flashes green and SW2 is pressed, the addition of the wireless slave station begins.



(5) Once communication has begun with the wireless slave station, the WS LED lights green, the number of IN/OUT points are acquired, and a check is performed on the total number of points. If the check is OK, entry is performed automatically.



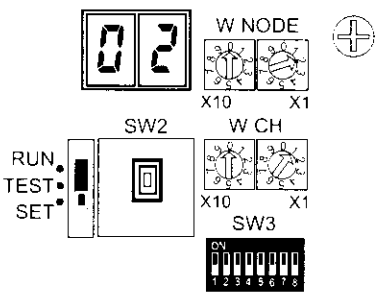
(6) If entry is completed correctly, the registered WNODE (01 for this example) is shown in the LED display.



(7) If entry fails, the WS LED flashes red, and the error condition is shown in the LED display.

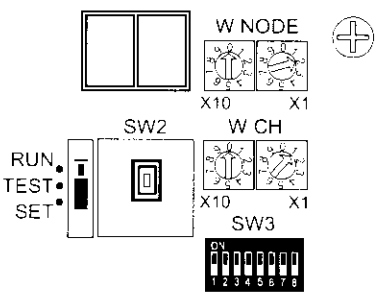
(8) The registration for the WNODE = 2 wireless slave station is the same as steps (1) through (7) above. This procedure completes the registration of all wireless slave stations.

Master station



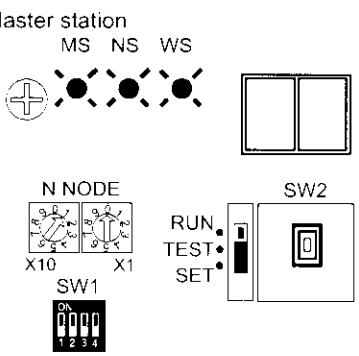
(9) Set SW3 to "bit 6 = OFF".

Master station



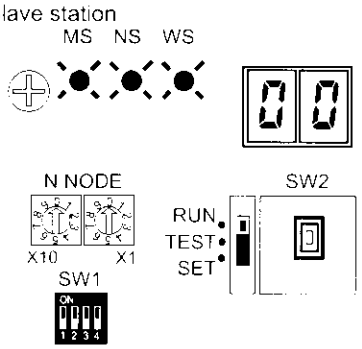
(10) Set the mode select switch to "RUN".

Master station



(11) If the MS, NS, and WS LEDs all light green and nothing is shown in the LED display, the system is in RUN operation status.

Slave station



(12) At this point, the MS, NS, and WS LEDs on each wireless slave station light green, too, and the node addresses (NNODE = 0) are shown in the LED displays.

■ Scan list valid settings

Scan list creation and entry and the scan list valid mode are performed from the DeviceNet master (C200HW-DRM21-V1). Refer to the "DeviceNet User's Manual" (SCCC-308□) for details.

2-5 Operation Confirmation

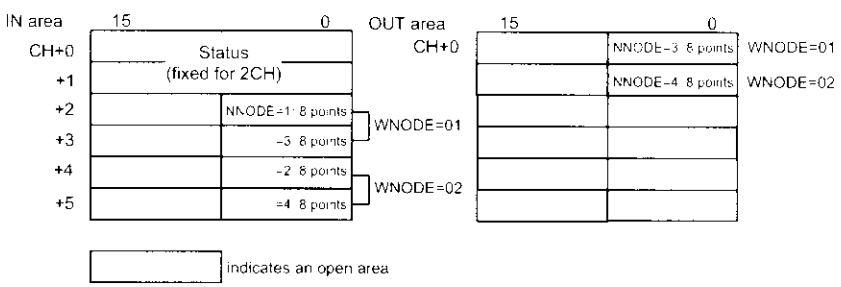
The confirmation procedure for whether or not remote I/O communications are performed correctly is explained in this section.

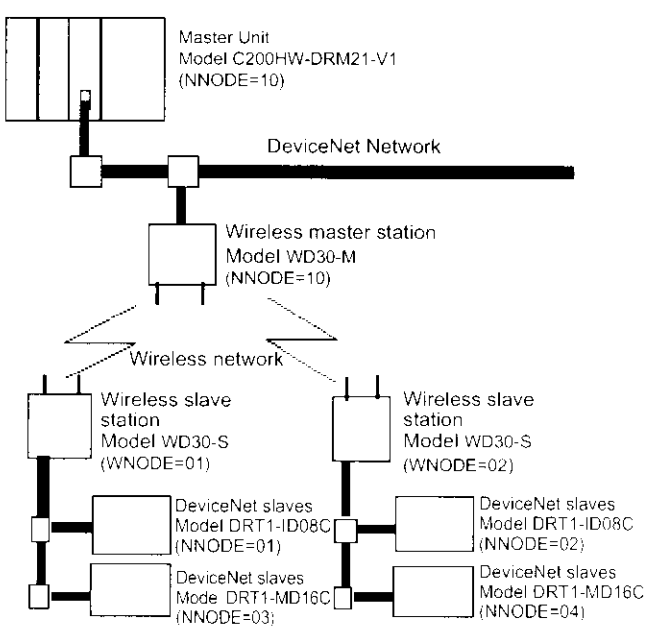
■ Unit LED confirmation

If the MS and NS LEDs on all DeviceNet slaves (environment-resistant terminals) light green, the node address is shown on the DeviceNet master (C200HW-DRM21-V1) LED display (the decimal display disappears), and the MS and NS LEDs light green, wireless remote I/O communications are operating correctly in scan list enable mode.

■ Status confirmation

If the STATUS setting is made, status information is automatically assigned to the 2CH at the top of the IN area. (The position is fixed.)
The IN/OUT data for the DeviceNet slave (environment-resistant terminal) is assigned to the IN areas and OUT areas of both the wireless slave stations as the WNODE order rises and the wireless master stations as the NNODE (1 to 4 in this example) order rises.





■ Confirmation by reading/writing data

Connect the computer's peripheral tools to the master, read and write from and to the OUT and IN areas of the DeviceNet master unit (C200HW-DRM21-V1), and confirm that this is reflected correctly on the DeviceNet slave (environment-resistant terminal).

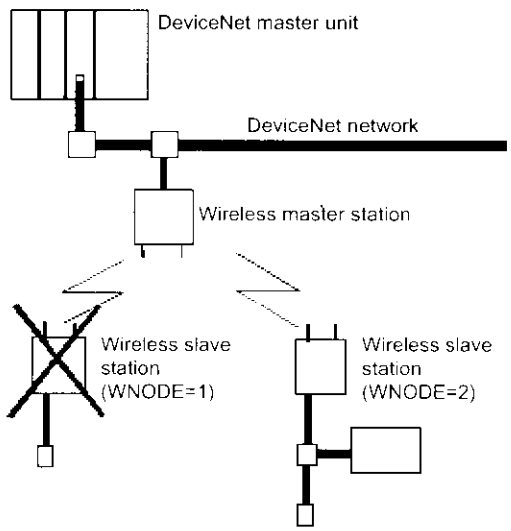
2-6 Other Operations

■ DeviceNet wireless slave station deletion

Wireless slave stations you want to remove from the system can be deleted. When creating a system that does not use a WNODE = 1 wireless slave station, the WNODE = 1 slave station (registered as the default before being shipped from the factory) should be deleted before performing the entry procedure.

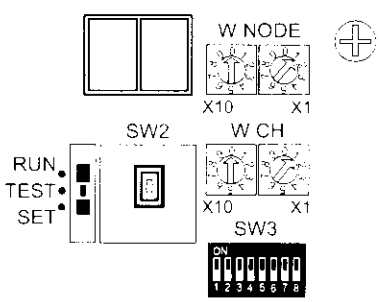
● Deletion example

Delete the WNODE = 1 wireless slave station from the system shown below.



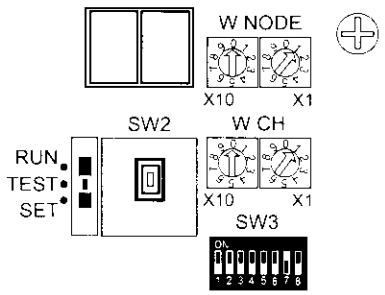
● Procedure

Master station



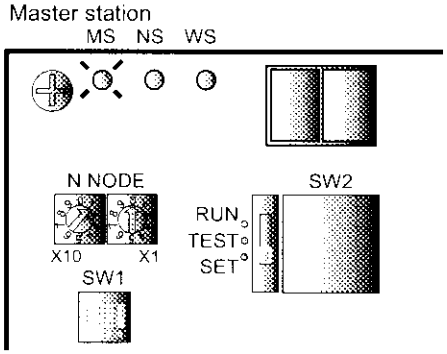
(1) Align with the wireless slave station WNODE = 1 that will delete the wireless master station WNODE.

Master station



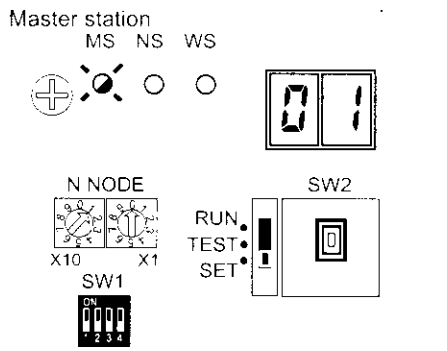
(2) To delete the wireless slave station, set SW3 to "bit 7 = ON".

Master station



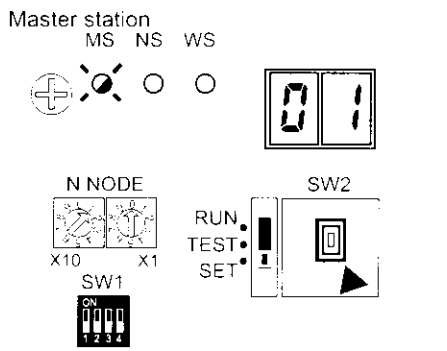
(3) Set the wireless master station mode select switch to "SET". The NS LED goes off, and the MS LED flashes green.

Master station

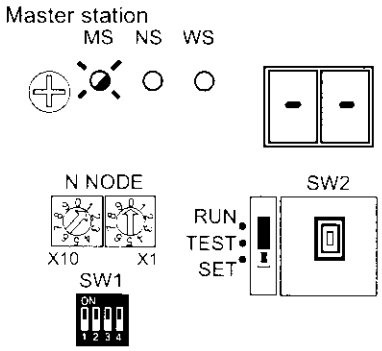


(4) "01", the item to be deleted, will be shown in the LED display.

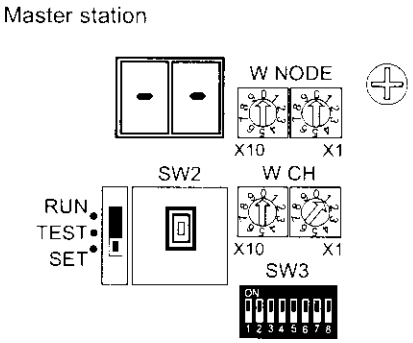
Master station



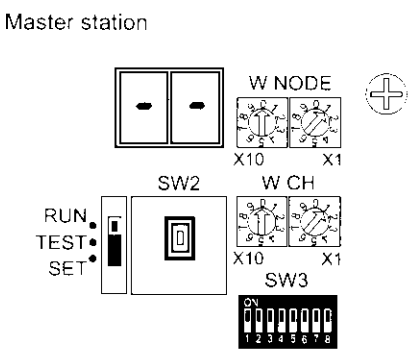
(5) Push SW2 to delete the item.



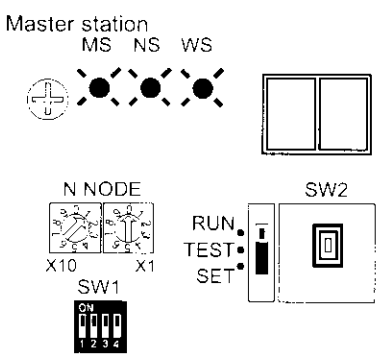
(6) Once deletion is complete, "--" is shown in the LED display.



(7) Set SW3 to "bit 7 = OFF".



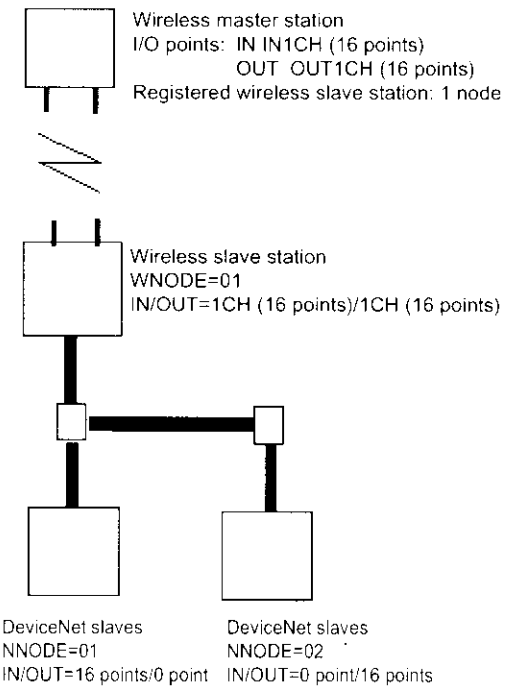
(8) Set the mode select switch to "RUN".



(9) If all MS, NS, and WS LEDs light green and the LED display goes off, the system is in RUN operation status.

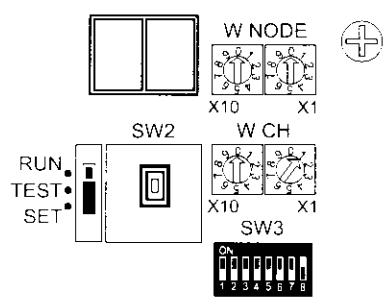
■ DeviceNet wireless master station initialization

Initialize all registered IN/OUT points to their default settings.



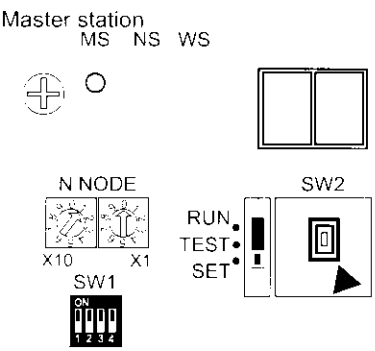
● Procedure

Master station

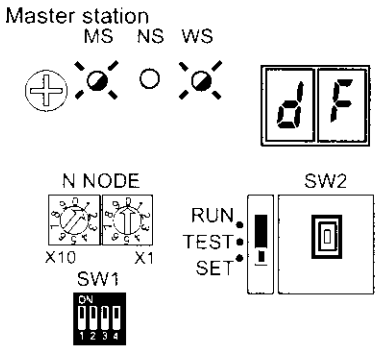


(1) Set SW3 to "bit 8 = ON".

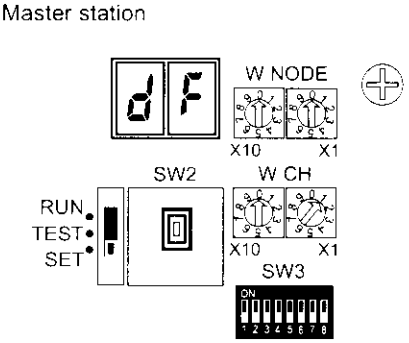
Master station



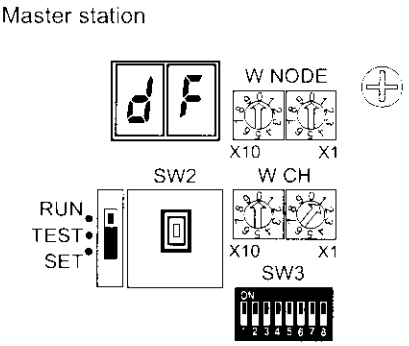
(2) While holding down SW2, set the mode select switch to "SET".



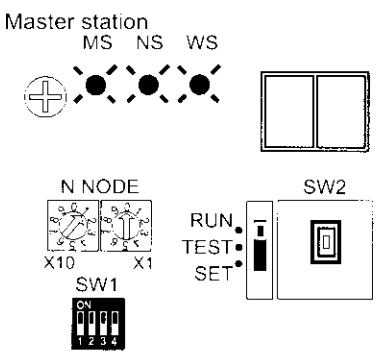
(3) Once initialization is complete, "dF" is shown in the LED display, the MS and WS LEDs flash green, and the NS LED goes off.



(4) Set SW3 to "bit 8 = OFF".



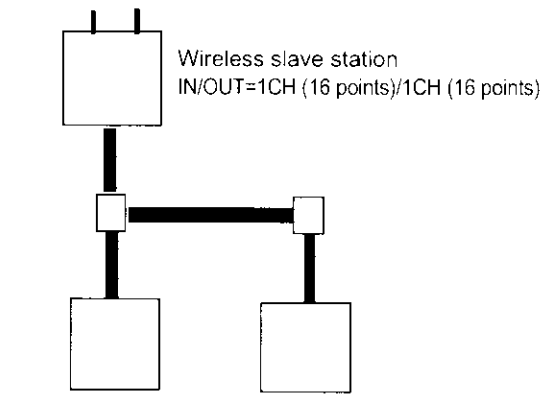
(5) Set the mode select switch to "RUN".



(6) If all MS and NS LEDs light green and the LED display goes off, the system is in RUN operation status. However, while the WS LED lights green, "E2" is shown in the LED display.

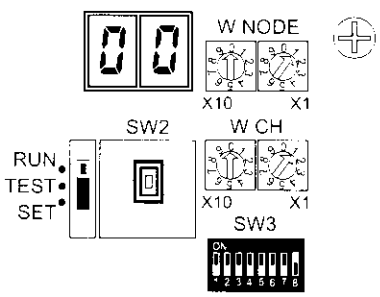
■ DeviceNet wireless slave stations initialization

Initialize all entried IN/OUT points to their default settings.



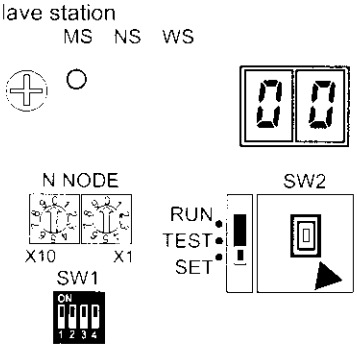
● Procedure

Slave station

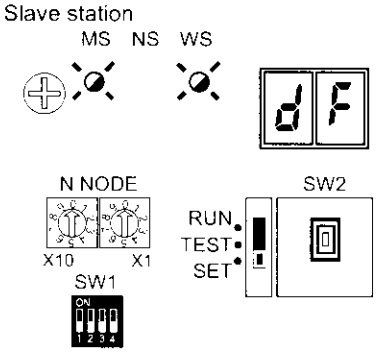


(1) Set SW3 to "bit 8 = ON".

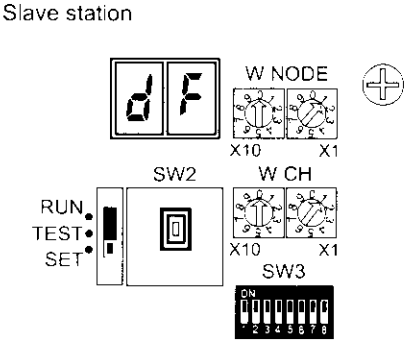
Slave station



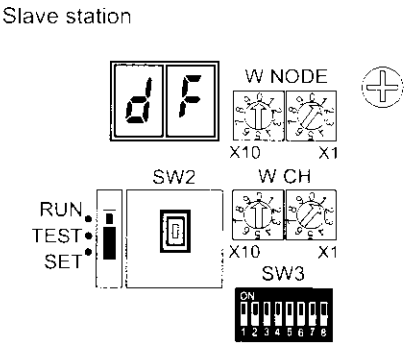
(2) While holding down SW2, set the mode select switch to "SET".



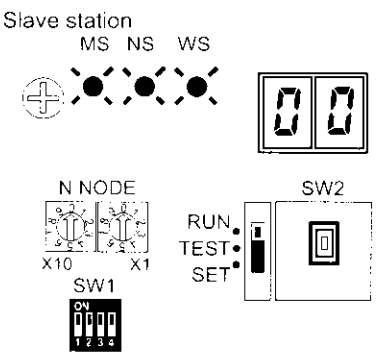
(3) Once initialization is complete, "dF" is shown in the LED display, the MS and WS LEDs flash green, and the NS LED goes off.



(4) Set SW3 to "bit 8 = OFF".



(5) Set the mode select switch to "RUN".



(6) If all MS and NS LEDs ligit green and the node address is shown in the LED display, the system is in RUN operation status.