Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.

MOTOMAN INSTRUCTIONS
MOTOMAN-□□□ INSTRUCTIONS
DX200 INSTRUCTIONS
DX200 OPERATOR'S MANUAL (for each purpose)
DX200 MAINTENANCE MANUAL

Please have the following information available when contacting Yaskawa Customer Support:
- System
- Primary Application
- Software Version (Located on Programming Pendant by selecting: [Main Menu] - [System Info] - [Version])
- Robot Serial Number (Located on robot data plate)
- Robot Sales Order Number (Located on controller data plate)

Part Number: 187430-1CD
Revision: 0
MANDATORY

• This manual explains the EtherNet/IP communication function (for AB3607 made by HMS) of the DX200. Read this manual carefully and be sure to understand its contents before handling the DX200.

• General items related to safety are listed in Chapter 1: Safety of the DX200 Instructions. To ensure correct and safe operation, carefully read the DX200 Instruction before reading this manual.

CAUTION

• Some drawings in this manual are shown with the protective covers or shields removed for clarity. Be sure all covers and shields are replaced before operating this product.

• The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.

• YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications. If such modification is made, the manual number will also be revised.

• If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.

• YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids your product’s warranty.
Notes for Safe Operation

Read this manual carefully before installation, operation, maintenance, or inspection of the DX200.

In this manual, the Notes for Safe Operation are classified as “DANGER”, “WARNING”, “CAUTION”, “MANDATORY”, or “PROHIBITED”.

**DANGER**
Indicates a imminent hazardous situation which, if not avoided, could result in death or serious injury to personnel.

**WARNING**
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to personnel.

**CAUTION**
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury to personnel and damage to equipment. It may also be used to alert against unsafe practices.

**MANDATORY**
Always be sure to follow explicitly the items listed under this heading.

**PROHIBITED**
Must never be performed.

Even items described as “CAUTION” may result in a serious accident in some situations.

At any rate, be sure to follow these important items

---

**NOTE**
To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as “DANGER”, “WARNING” and “CAUTION”.

---

**PROHIBITED**

- Do not use or keep the board in the following environmental conditions.
  - Where exposed to direct sunshine
  - Where vibration or impact occurs
  - Where high humidity exists
  - Where a strong magnetic field exists
  - Where much dust exists
  - Where a sudden change in the temperature occurs
  - Where corrosive gases occur
  - Where condensation occurs

Improper usage of the board may damage the board.
WARNING

• Before operating the manipulator, check that servo power is turned OFF when the emergency stop buttons on the front door of the DX200 and programming pendant are pressed. When the servo power is turned OFF, the SERVO ON LED on the programming pendant is turned OFF.

Injury or damage to machinery may result if the emergency stop circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the emergency stop buttons do not function.

Fig. : Emergency Stop Button

• Once the emergency stop button is released, clear the cell of all items which could interfere with the operation of the manipulator. Then turn the servo power ON.

Injury may result from unintentional or unexpected manipulator motion.

Fig. : Release of Emergency Stop

• Observe the following precautions when performing teaching operations within the P-point maximum envelope of the manipulator
  – Be sure to use a lockout device to the safeguarding when going inside. Also, display the sign that the operation is being performed inside the safeguarding and make sure no one closes the safeguarding.
  – View the manipulator from the front whenever possible.
  – Always follow the predetermined operating procedure.
  – Keep in mind the emergency response measures against the manipulator’s unexpected motion toward you.
  – Ensure that you have a safe place to retreat in case of emergency.

Improper or unintended manipulator operation may result in injury.

• Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe location before:
  – Turning ON the DX200 power
  – Moving the manipulator with the programming pendant
  – Running the system in the check mode
  – Performing automatic operations

Injury may result if anyone enters the P-point maximum envelope of the manipulator during operation. Always press an emergency stop button immediately if there are problems. The emergency stop buttons are located on the right of the front door of the DX200 and the programming pendant.

• Before wiring, be sure to turn OFF the power supply and put up a warning sign, such as “DO NOT TURN ON THE POWER.”

Failure to observe this warning may result in an electric shock or an injury.
**WARNING**

- Do not touch the inside of the panel for 5 minutes after the power is turned OFF.
  The remaining charged voltage in the capacitor may cause an electric shock or an injury.
- Be sure to close the door and install the protection cover while the power is turned ON.

Failure to observe this warning may result in a fire or an electric shock.

**CAUTION**

- Perform the following inspection procedures prior to conducting manipulator teaching. If problems are found, repair them immediately, and be sure that all other necessary processing has been performed.
  - Check for problems in manipulator movement.
  - Check for damage to insulation and sheathing of external wires.
- Always return the programming pendant to the hook on the cabinet of the DX200 after use.

The programming pendant can be damaged if it is left in the manipulator's work area, on the floor, or near fixtures.

Read and understand the Explanation of Warning Labels in the DX200 Instructions before operating the manipulator:
- The wiring and mounting must be performed by authorized and qualified personnel.

Failure to observe this caution may result in a fire or an electric shock.

- Make sure that there is no foreign matter such as metal chips on the board.
- In case of malfunction, etc. it may result in an injury or damage the board.
- Make sure that there is no damage or deflection of parts on the board.
- Correctly connect each cable and connector.
- Set the switches, etc. correctly.
- Malfunction, caused by an incorrect setting, may result in an injury or damage the board.
- Never touch the mounting surfaces of the board parts directly with fingers.
- The generated static electricity may damage the IC.
- Never touch the soldered surfaces of the board directly with fingers. Protrusions on the soldered surface may result in an injury.
- No shock to the board.

The shock may damage the board.
Definition of Terms Used Often in This Manual

The MOTOMAN is the YASKAWA industrial robot product.

The MOTOMAN usually consists of the manipulator, the controller, the programming pendant, and supply cables.

In this manual, the equipment is designated as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX200 controller</td>
<td>DX200</td>
</tr>
<tr>
<td>DX200 programming pendant</td>
<td>Programming pendant</td>
</tr>
<tr>
<td>Cable between the manipulator and the controller</td>
<td>Manipulator cable</td>
</tr>
</tbody>
</table>
Descriptions of the programming pendant keys, buttons, and displays are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Pendant</td>
<td><strong>Character Keys /Symbol Keys</strong> The keys which have characters or symbols printed on them are denoted with [ ]. e.g. [ENTER]</td>
</tr>
<tr>
<td>Axis Keys /Numeric Keys</td>
<td>[Axis Key] and [Numeric Key] are generic names for the keys for axis operation and number input.</td>
</tr>
<tr>
<td>Keys pressed simultaneously</td>
<td>When two keys are to be pressed simultaneously, the keys are shown with a “+” sign between them, e.g. [SHIFT]+[COORD].</td>
</tr>
<tr>
<td>Mode Switch</td>
<td>Mode Switch can select three kinds of modes that are denoted as follows: REMOTE, PLAY or TEACH.</td>
</tr>
<tr>
<td>Button</td>
<td>The three buttons on the upper side of the programming pendant are denoted as follows: START, HOLD, or EMERGENCY STOP.</td>
</tr>
<tr>
<td>Displays</td>
<td>The menu displayed in the programming pendant is denoted with { }. e.g. {JOB}</td>
</tr>
</tbody>
</table>

![Diagram showing the layout of the programming pendant keys, buttons, and displays](attachment:image.png)
Description of the Operation Procedure

In the explanation of the operation procedure, the expression "Select • • • " means that the cursor is moved to the object item and [SELECT] is pressed, or that the item is directly selected by touching the screen.

Registered Trademark

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or brand names for each company or corporation. The indications of (R) and TM are omitted.
# Contents

1 Outline .................................................................................................................... 1-1
  1.1 System Configuration ......................................................................................... 1-1

2 Hardware Specification ............................................................................................. 2-1
  2.1 Board Diagram ..................................................................................................... 2-1
  2.2 Board Specification .............................................................................................. 2-2
  2.3 Communication Specification ............................................................................... 2-2
  2.4 Connector Specification ....................................................................................... 2-2

3 Settings and Installation of the Board .......................................................................... 3-1
  3.1 Mounting the Board ............................................................................................... 3-2
    3.1.1 Opening the DX200 Front Door ........................................................................ 3-2
    3.1.2 Mounting the AB3607 Board to the DX200 ....................................................... 3-3
    3.1.3 Connecting Cable ............................................................................................... 3-3
    3.1.4 Closing the DX200 Front Door ......................................................................... 3-4

4 Allocating I/O Signals ................................................................................................. 4-1
  4.1 Optional Board and I/O Module Settings .............................................................. 4-1
  4.2 When Setting with Only the Maintenance Mode .................................................. 4-3
    4.2.1 AB3607 Setting Window .................................................................................... 4-3
    4.2.2 Device Information List Setting ......................................................................... 4-5
    4.2.3 AB3607 Setting .................................................................................................. 4-8
    4.2.4 Ethernet Setting ............................................................................................... 4-10
    4.2.5 Scanner Setting ............................................................................................... 4-12
    4.2.6 Terminal Output Function ............................................................................... 4-20
    4.2.7 Terminal Output Setting ................................................................................. 4-21
  4.3 When Setting with the PC Tool and the Maintenance Mode .................................... 4-22
    4.3.1 Setting with the Maintenance Mode .................................................................. 4-22
    4.3.2 Communication Setting of the AB3607 ............................................................ 4-29
  4.4 Transmitting Data ................................................................................................. 4-30
  4.5 Communication Status ......................................................................................... 4-31
    4.5.1 The Alarm when Communications Error of the AB3607 Board Occurs Using the Board Status........................................................................................................ 4-31
  4.6 I/O Allocation ....................................................................................................... 4-36
    4.6.1 I/O Allocation Examples of the AB3607 for DX200 (For Handling) .................... 4-36
    4.6.2 I/O Allocation Examples of the AB3607 for DX200 (Except for Handling) ........ 4-38
Contents

4.7 Convenient Function ...................................................................................................... 4-40
  4.7.1 ListIdentity Function ............................................................................................ 4-40

5 Error Indication ........................................................................................................... 5-1
  5.1 LED Indication.......................................................................................................... 5-1
This instruction explains the necessary setting methods for using EtherNet/IP boards (AB3607 made by HMS) in the DX200 and the relevant information.

These boards enable the DX200 to communicate general I/O data with other EtherNet/IP devices.

1.1 System Configuration

- System Configuration Example: AB3607

The AB3607 is used as a master. Settings of the communication between the DX200 and this board are executed in the maintenance mode.

The network as EtherNet/IP is set with either the maintenance mode or the setting tool made by HMS.
2 Hardware Specification

2.1 Board Diagram

- AB3607

![Board Diagram]

- LAN (EtherNet/IP)
- Status LEDs
2.2 Board Specification

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface to the external devices</td>
<td>EtherNet/IP Scanner</td>
</tr>
<tr>
<td>Board location</td>
<td>PCI slot in the DX200 controller</td>
</tr>
<tr>
<td>Maximum number of I/O points</td>
<td>Input: 506 Byte</td>
</tr>
<tr>
<td></td>
<td>Output: 506 Byte</td>
</tr>
</tbody>
</table>

**NOTE**

The maximum number of I/O points (Input: 506 Byte / Output: 506 Byte) is used when the attached optional I/O module is only this board. On the other hand, the points cannot be used if other optional I/O modules than this board are attached.

2.3 Communication Specification

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Star (Connection by HUB)</td>
</tr>
<tr>
<td>Communication speed</td>
<td>10 Mbps/100 Mbps (Detected automatically during startup)</td>
</tr>
<tr>
<td>Communication media</td>
<td>Use category 5 or higher shielded Ethernet cables.</td>
</tr>
</tbody>
</table>

2.4 Connector Specification

- **LAN Connector**

<table>
<thead>
<tr>
<th>Pin RJ45(Female)</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TD+</td>
</tr>
<tr>
<td>2</td>
<td>TD-</td>
</tr>
<tr>
<td>3</td>
<td>RD+</td>
</tr>
<tr>
<td>4</td>
<td>Termination</td>
</tr>
<tr>
<td>5</td>
<td>Termination</td>
</tr>
<tr>
<td>6</td>
<td>RD-</td>
</tr>
<tr>
<td>7</td>
<td>Termination</td>
</tr>
<tr>
<td>8</td>
<td>Termination</td>
</tr>
</tbody>
</table>
3 Settings and Installation of the Board

**WARNING**

- Before wiring, be sure to turn OFF the power supply and put up a warning sign, such as “DO NOT TURN ON THE POWER”.
- Failure to observe this warning may result in an electric shock or an injury.
- Do not touch the inside of the panel for 5 minutes after the power is turned OFF.
- The remaining charged voltage in the capacitor may cause an electric shock or an injury.
- Be sure to close the door and install the protection cover while the power is turned ON.
- Failure to observe this warning may result in a fire or an electric shock.

**CAUTION**

- The wiring and mounting must be performed by authorized and qualified personnel.
- Failure to observe this caution may result in a fire or an electric shock.
- Make sure that there is no foreign matter such as metal chips on the board.
- In case of malfunction, etc. it may result in an injury or damage the board.
- Make sure that there is no damage or deflection of parts on the board.
- In case of malfunction, etc. it may result in an injury or damage the board.
- Correctly connect each cable and connector.
- Failure to observe this caution may result in a fire or damage the board.
- Set the switches, etc. correctly.
- Malfunction, caused by an incorrect setting, may result in an injury or damage the board.
- Never touch the mounting surfaces of the board parts directly with fingers.
- The generated static electricity may damage the IC.
- Never touch the soldered surfaces of the board directly with fingers.
- Protrusions on the soldered surface may result in an injury.
- No shock to the board.
- The shock may damage the board.
3.1 Mounting the Board

Mount the AB3607 board in the following manner.

3.1.1 Opening the DX200 Front Door

1. Open the front door of the DX200.
   
   (1) Turn the door lock on the front face of the DX200 clockwise for 90° with a flat-head screwdriver.

   ![Unlock the Door](image)

   *Fig. 3-1: Unlock the Door*

   (2) With the door lock turned clockwise for 90°, turn the main switch handle to the “OFF” position, and slowly open the door.

   ![Open the Door "OFF" Position (Horizontal)](image)

   *Fig. 3-2: Open the Door "OFF" Position (Horizontal)*
3.1 Mounting the Board

3.1.2 Mounting the AB3607 Board to the DX200

1. Uninstall the riser card (JANCD-YBB02-E) from the CPU rack.
2. Insert the AB3607 board to the PCI slot on the riser card, then fix it with the supporting clamp.
3. Reinstall the riser card to the CPU rack.

3.1.3 Connecting Cable

1. Connect the Ethernet cable to the LAN connector on the AB3607.
3.1.4 Closing the DX200 Front Door

1. Close the front door of the DX200.
   (1) Close the door slowly.
   (2) Turn the door lock on the front face of the DX200 counterclockwise for 90 °.

*Fig. 3-3: Lock the Door*

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Please always keep the DX200 front door closed except maintenance time.</td>
</tr>
<tr>
<td>• Never fail to shut all the door tightly.</td>
</tr>
<tr>
<td>• If dust, dirt or water goes inside the DX200, it may result in a failure, a fire or an electric shock.</td>
</tr>
</tbody>
</table>
4 Allocating I/O Signals

4.1 Optional Board and I/O Module Settings

When using the AB3607 board in the DX200, it is necessary to set the optional board and the I/O module. There are two following methods to set the optional board.

A) Set with only the maintenance mode.
B) Set with the PC tool and the maintenance mode.

If the following all conditions apply, follow the procedures in chapter 4.2 “When Setting with Only the Maintenance Mode” to set.

- The firmware version of the AB3607 board is 1.19 or later.
- The system software version of the DX200 is DN2.80.00A-00 or later.
- The parameter is set to S2C1432=1.

For any other cases above conditions, follow the procedures in chapter 4.3 “When Setting with the PC Tool and the Maintenance Mode” to set.

The firmware version of the board can be confirmed in the item of "BOARD:" of the AB3607 setting window.

To show the confirmation window:

Turn ON the power supply while pressing [MAIN MENU].
{SYSTEM} - {SETUP} - {OPTION BOARD} - {AB3607}

If “AB3607: DETAIL” is shown in the window after this operation, select {DETAIL}.

**NOTE**
Before executing additional settings in the management mode, install the AB3607 board.
The setting operation cannot be executed without the board or in the operation mode/editing mode.
4 Allocating I/O Signals
4.1 Optional Board and I/O Module Settings

A) When setting with only the maintenance mode

B) When setting with the PC tool and the maintenance mode
4.2 When Setting with Only the Maintenance Mode

4.2.1 AB3607 Setting Window

Display the setting window in the following procedures.

1. Turn ON the power supply while pressing [MAIN MENU] simultaneously.
   - The maintenance mode starts up.

2. Change the security mode to the management mode.

3. Select {SYSTEM} under the main menu.
   - The sub menu appears.

4. Select {SETUP}.
   - The SETUP window appears.
4. Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

5. Select {OPTION BOARD}.
   - The OPTION BOARD window appears.

6. Select {AB3607}.
   - The AB3607 setting window appears.
4 Allocating I/O Signals

4.2 When Setting with Only the Maintenance Mode

4.2.2 Device Information List Setting

When using the AB3607, it is necessary to set the network information of the lower tool, etc. in advance. The chapter describes the procedure to register such information into the device information list.

1. Select [DETAIL] of the DEVICE INFORMATION LIST.
   - The DEVICE INFORMATION LIST window appears. Only the cursor is shown in the window example because the device information is not registered.

2. Press [SELECT].
   - The setting window of the device information appears.

   - (Details of each setting item)

   ① **REGISTRATION NAME**
   Input the name to register as the device. Without the name, the device information will not be registered on the device information list.

   When deleting the registered device information, the name is made blank.

   ② **COMMENT**
   Input the comment if necessary.

   ③ **CONNECTION RPI (O → T)**
   Set the data updating period (RPI) to be sent from the originator to the target.

   Set the RPI to 2 msec or more.
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

4 CONNECTION RPI (T → O)
Set the data updating period (RPI) to be sent from the target to the originator.
Set the RPI to 2 msec or more.

5 CONNECTION TIMEOUT
Set the connection timeout.

6 CONNECTION TYPE
Set the connection type. It is only available for Exclusive Owner.

7 INPUT SIZE
Set the IN signal size to be input to the DX200. (Unit: Byte)

8 OUTPUT SIZE
Set the OUT signal size to be output from the DX200. (Unit: Byte)

9 CONFIGURATION SIZE
Set the data size for the configuration. (Unit: Word)

10 INPUT INSTANCE
Set the instance number of the IN signal to be input to the DX200.

11 OUTPUT INSTANCE
Set the instance number of the OUT signal to be output from the DX200.

12 CONFIGURATION INSTANCE
Set the instance number of the data for the configuration.

3. Input the desired value to each item.

– The following shows examples of input. (Set the value to correspond to the actual communication opposite station.)
4. Allocating I/O Signals

4.2 When Setting with Only the Maintenance Mode

4. Press [ENTER].

   – The confirmation dialog box appears.

   ![Confirmation Dialog Box]

5. Select “YES”.

   – Return to the DEVICE INFORMATION LIST window.

   ![Device Information List]

   – On the example window, the device information named “TEST” registered. At most 64 devices can be set in the device information list. Move the cursor to the position which the strings are not displayed, and then press [SELECT]. The new device information can be registered.

6. Press [ENTER].

   – Return to the AB3607 setting window.

   ![AB3607 Setting Window]
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

4.2.3 AB3607 Setting

Execute the AB3607 setting. For the detail, set on the window displayed when selecting the DETAIL of each item on this window.

1. Select (DETAIL) of the AB3607.
   - The setup window of the AB3607 appears.

   - (Details of each setting item)

   ① **AB3607**  
     For the AB3607 board, set USED or NOT USED. Select “USED” to use this board.

   ② **IO SIZE(IN/OUT)**  
     Total I/O size set with the scanner is displayed. The I/O size cannot be set on this window.

   ③ **ETHERNET**  
     The Ethernet setting window is displayed.

   ④ **SCANNER**  
     The scanner setting window is displayed.

   ⑤ **SECURITY**  
     Reserved for manufacturer. It cannot be used.

   ⑥ **TERMINAL OUTPUT FUNCTION**  
     Numbers for non-communicating adapters can be output to the M register. Set ENABLE / DISABLE of this function.

     For details of this function, refer to chapter 4.2.6 “Terminal Output Function”.

   ⑦ **M REGISTER**  
     This item is displayed when enabling the above mentioned “⑥ TERMINAL OUTPUT FUNCTION”.

     Set the M register’s leading number as the destination of the terminal output function.

     Before setting the number, confirm that M register is not used for the different purposes.
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

8 TERMINAL OUTPUT SETTING

This item is displayed when enabling the above mentioned “8 TERMINAL OUTPUT FUNCTION”. Set ENABLE / DISABLE of this function.

For details of this function, refer to chapter 4.2.7 “Terminal Output Setting”.

9 M REGISTER

This item is displayed when enabling the above mentioned “8 TERMINAL OUTPUT SETTING”.

Set the M register’s leading number as the destination of the terminal output setting.

Before setting the number, confirm that M register is not used for the different purposes.
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

4.2.4 Ethernet Setting

The IP address setting, etc. for Ethernet communications is required for EtherNet/IP communications.

Execute settings in this chapter.

1. Select {DETAIL} of the AB3607 setting window.
   – NETWORK(AB3607) window appears.

   ![NETWORK(AB3607) Window](image)

   – (Details of each setting item)

1. **HOST NAME**

   ![NOTE]
   The host name is not used in communications.

   Set the host name to allocate to the AB3607. This name is self-declared, therefore it cannot be used for access from other communicating station.

   Input with a half-width alphanumeric character, a hyphen (-), and an underscore (_).

   Make sure to include one or more alphabetic characters.

2. **DOMAIN NAME**

   ![NOTE]
   The domain name is not used in communications.

   Set the domain name to which the AB3607 belongs.

   Input with a half-width alphanumeric character, a hyphen (-), an underscore (_), and a period (.)

3. **IP ADDRESS**

   Input the IP address formed as “xx.xx.xx.xx” (xx: decimal) for the AB3607 with a half-width numeric number and period (.)

4. **SUBNET MASK**

   Input the subnet mask formed as “xx.xx.xx.xx” (xx: decimal) for the AB3607 with a half-width numeric number and period (.)
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

5 DEFAULT GATEWAY

When executing TCP/IP communications with the terminal on the different network or the different subnet, it is necessary to set the default gateway.

Input the default gateway formed as “xx.xx.xx.xx” (xx: decimal) for the AB3607 with a half-width numeric number and period (.). If the default gateway is not used, set to “0.0.0.0”.

6 DNS SERVER

DNS server is not supported. Set to “0.0.0.0” for this item.

2. Press [ENTER].
   – Return to the AB3607 setting window.
To send and receive I/O with the adapter (which is a communication slave like tools) in I/O communications for the EtherNet/IP, scanner setting must be executed.

Execute settings in this chapter.

1. Select {DETAIL} of the SCANNER of the AB3607 setting window.
   - The scanner setting window appears.

2. Press [SELECT].
   - Select the blank of the REGISTRATION NAME, and "MODIFY" is displayed.
   - Select a registered name, and the followings are displayed.
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

- (Details of each setting item)

① INSERT
A new setting is added to the current No. When the current No. has already registered, the registered setting is changed to the next No.

② MODIFY
The targeted registration name is modified. (When no name is registered, the new name is registered.)

③ DELETE
The targeted registration name is deleted.

④ DETAIL
Details of the device information list are displayed.

- **"** is shown as follows when the setting value changes after displaying the details.

3. Select “MODIFY”.

- The registered device information list appears.

- For the setting methods of the device information list, refer to chapter 4.2.2 “Device Information List Setting”.
4. Allocating I/O Signals
   4.2 When Setting with Only the Maintenance Mode

4. Select the device to be used.
   – Selected device information is set on the scanner setting window.

5. Input an IP address.
   – The IP address is input.

6. Press [ENTER].
   – Return to the AB3607 setting window.

7. Press [ENTER].
   – The confirmation dialog box appears.
8. Select {YES}.
   - After transferring the setting data to the AB3607 board, the I/O module window appears.

While transferring the setting data, the message “Transferring data to Option Board. Don’t turn the power off.” appears. Data transferring time differs depending on setting details.

9. Press [ENTER].
   - The next window to the above mentioned I/O module window as the result of AB3607 board’s I/O allocation appears.

10. Press [ENTER].
    - The confirmation dialog box appears.
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

11. Select {YES}.
   - Select {YES} if the mounting status of the I/O modules is right.
   The I/O module setting is updated and the display changes to the
   external I/O setup window.

12. The EXTERNAL IO SETUP window is displayed.

13. Select "AUTO" or "MANUAL" for the allocation mode.
   - After "AUTO"/"MANUAL" is selected, the selection menu is
     displayed.

\[NOTE\]
If the allocation mode is changed from "MANUAL" to
"AUTO", the allocation data that has been set will be lost,
and re-allocating will be executed in the auto mode. If the
set allocation data need to be kept, save the data in the
external memory menu in advance.
14. Select the allocation mode to be set.
   - When allocating the I/O signal automatically, select "AUTO". When allocating the I/O signal manually, select "MANUAL".
   - The selected allocation mode will be set.

15. Select "DETAIL" of {EXTERNAL IO ALLOCATION}.
   - When selecting "AUTO" for the allocation mode, the following steps 16-18 are not necessary. Perform the operation from step 19.
   - When selecting "MANUAL" for the allocation mode, perform the following steps 16-18 for the items necessary for manual settings.

16. Select the external I/O signal number to be changed from the original. ("#20060" is selected in the setting example.)
   - The select menu is displayed.
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

17. Select "MODIFY" and enter the desired external input signal number to replace the original. ('20300' is entered in the setting example.)
   - The external input signal number will be changed.

18. Select and change the external input signal number with the same steps.
   - Repeat the selecting and changing operation for the desired allocation.

19. Press [ENTER].
   - The EXTERNAL IO ALLOCATION (OUTPUT) window is displayed.

20. Select and change the external output signal number with the same procedure as the external input signal number.
   - Repeat the selecting and changing operation for the desired allocation.
21. Press [ENTER].
   - The confirmation dialog box is displayed.

22. Select "Yes".
   - Return to the setting window after the setting contents are confirmed.
4 Allocating I/O Signals
4.2 When Setting with Only the Maintenance Mode

4.2.6 Terminal Output Function

This function allows numbers for non-communicating adapters to be output to the M register when the AB3607 is used.

To utilize this function, set “ENABLE” to the “TERMINAL OUTPUT FUNCTION” on the AB3607 general setting window. Then, set the leading number of the M register as the destination of the terminal output function to the “M REGISTER”.

The communication status is output to 4 registers (64 bits) from the designated M register. The bit equivalent to the terminal number (No.) of the non-communicating adapter is “1”. The number for the master, communicating, or non-allocated terminals is “0”.

The following is a setting example.

Leading number of the register (No. 1 to 16 error information:
Register 850 for screen setting)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Leading number of the register +1 (No. 17 to 32 error information:
Register 851 for screen setting)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>31</td>
<td>30</td>
<td>29</td>
<td>28</td>
<td>27</td>
<td>26</td>
<td>25</td>
<td>24</td>
<td>23</td>
<td>22</td>
<td>21</td>
<td>20</td>
<td>19</td>
<td>18</td>
</tr>
</tbody>
</table>

Leading number of the register +2 (No. 33 to 48 error information:
Register 852 for screen setting)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>47</td>
<td>46</td>
<td>45</td>
<td>44</td>
<td>43</td>
<td>42</td>
<td>41</td>
<td>40</td>
<td>39</td>
<td>38</td>
<td>37</td>
<td>36</td>
<td>35</td>
<td>34</td>
</tr>
</tbody>
</table>

Leading number of the register +3 (No. 49 to 64 error information:
Register 853 for screen setting)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
<td>63</td>
<td>62</td>
<td>61</td>
<td>60</td>
<td>59</td>
<td>58</td>
<td>57</td>
<td>56</td>
<td>55</td>
<td>54</td>
<td>53</td>
<td>52</td>
<td>51</td>
<td>50</td>
</tr>
</tbody>
</table>
4.2.7 Terminal Output Setting

This function allows numbers for non-communicating adapters to be specified to the M register when the TERMINAL OUTPUT FUNCTION is used.

To utilize this function, set “ENABLE” to the “TERMINAL OUTPUT FUNCTION” on the AB3607 general setting window. Then, set the leading number of the M register as the destination of the terminal output function to the “M REGISTER” which is directly under the “TERMINAL OUTPUT FUNCTION” column. Then, set “ENABLE” to the “TERMINAL OUTPUT SETTING”, and set the M register’s leading number as the destination of the terminal output setting to “M REGISTER” which is directly under “TERMINAL OUTPUT SETTING” column.

The communication status is designated to output to 4 registers (64 bits) from the designated M register. A communication error will be output when the bit equivalent to the terminal number (No.) of the non-communicating adapter is set to “1”. The error will not be output when the bit is set to “0”.

The following is a setting example.

Leading number of the register (Designation of output terminal for No. 1 to 16: Register 854 for screen setting)

| No. | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9  | 8  | 7  | 6  | 5  | 4  | 3  | 2  | 1  |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

Leading number of the register +1 (Designation of output terminal for No. 17 to 32: Register 855 for screen setting)

<table>
<thead>
<tr>
<th>No.</th>
<th>32</th>
<th>31</th>
<th>30</th>
<th>29</th>
<th>28</th>
<th>27</th>
<th>26</th>
<th>25</th>
<th>24</th>
<th>23</th>
<th>22</th>
<th>21</th>
<th>20</th>
<th>19</th>
<th>18</th>
<th>17</th>
</tr>
</thead>
</table>

Leading number of the register +2 (Designation of output terminal for No. 33 to 48: Register 856 for screen setting)

<table>
<thead>
<tr>
<th>No.</th>
<th>48</th>
<th>47</th>
<th>46</th>
<th>45</th>
<th>44</th>
<th>43</th>
<th>42</th>
<th>41</th>
<th>40</th>
<th>39</th>
<th>38</th>
<th>37</th>
<th>36</th>
<th>35</th>
<th>34</th>
<th>33</th>
</tr>
</thead>
</table>

Leading number of the register +3 (Designation of output terminal for No. 49 to 64: Register 857 for screen setting)

| No. | 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 |
4 Allocating I/O Signals
4.3 When Setting with the PC Tool and the Maintenance Mode

4.3 When Setting with the PC Tool and the Maintenance Mode

4.3.1 Setting with the Maintenance Mode

Set the DX200 in the following procedures.

1. Turn ON the power supply while pressing [MAIN MENU] simultaneously.
   - The maintenance mode starts up.

2. Change the security mode to the management mode.

3. Select {SYSTEM} under the main menu.
   - The sub menu appears.

4. Select {SETUP}.
   - The SETUP window appears.
4 Allocating I/O Signals
4.3 When Setting with the PC Tool and the Maintenance Mode

5. Select {OPTION BOARD}
   - The OPTION BOARD window appears.

6. Select {AB3607}.
   - The AB3607 setting window appears.
   - (Details of each setting item)

1. **AB3607**
   Determine the usage of this board.
   “USED” or “NOT USED” toggles each time it is selected.
   Select “USED” to use this board.

2. **IO SIZE**
   Set the transmitting I/O size within the range from 1 to 506.

3. **SECURITY**
   Reserved for manufacturer.
   It cannot be used.
4. Allocating I/O Signals
4.3 When Setting with the PC Tool and the Maintenance Mode

7. Input the desired value to each item.

8. Press [ENTER].
   - The confirmation dialog box appears.

9. Select [YES].
   - The I/O module window appears.

10. Press [ENTER].
    - The next window to the above mentioned I/O module window as the result of AB3607 board’s I/O allocation appears.
11. Press [ENTER].
   – The confirmation dialog box appears.

12. Select [YES].
   – Select [YES] if the mounting status of the I/O modules is right.
     The I/O module setting is updated and the display changes to the
     external I/O setup window.

13. The EXTERNAL IO SETUP window is displayed.
4 Allocating I/O Signals
4.3 When Setting with the PC Tool and the Maintenance Mode

14. Select "AUTO" or "MANUAL" for the allocation mode.
   - After "AUTO"/"MANUAL" is selected, the selection menu is displayed.

15. Select the allocation mode to be set.
   - When allocating the I/O signal automatically, select "AUTO". When allocating the I/O signal manually, select "MANUAL".
   - The selected allocation mode will be set.

**NOTE**
If the allocation mode is changed from "MANUAL" to "AUTO", the allocation data that has been set will be lost, and re-allocating will be executed in the auto mode. If the set allocation data need to be kept, save the data in the external memory menu in advance.
4 Allocating I/O Signals
4.3 When Setting with the PC Tool and the Maintenance Mode

16. Select “DETAIL” of [EXTERNAL IO ALLOCATION].
   - When selecting “AUTO” for the allocation mode, the following steps 17 to 19 are not necessary. Perform the operation from step 20.
   - When selecting “MANUAL” for the allocation mode, perform the following steps 17 to 19 for the items necessary for manual settings.

17. Select the external I/O signal number to be changed from the original. (“#20060” is selected in the setting example.)
   - The select menu is displayed.

18. Select “MODIFY” and enter the desired external input signal number to replace the original. (‘20300’ is entered in the setting example.)
   - The external input signal number will be changed.
4 Allocating I/O Signals

4.3 When Setting with the PC Tool and the Maintenance Mode

19. Select and change the external input signal number with the same steps.
   - Repeat the selecting and changing operation for the desired allocation.

20. Press [ENTER].
   - The EXTERNAL IO ALLOCATION (OUTPUT) window is displayed.

21. Select and change the external output signal number with the same procedure as the external input signal number.
   - Repeat the selecting and changing operation for the desired allocation.

22. Press [ENTER].
   - The confirmation dialog box is displayed.
4 Allocating I/O Signals
4.3 When Setting with the PC Tool and the Maintenance Mode

23. Select “Yes”.
   - Return to the setting window after the setting contents are confirmed.

4.3.2 Communication Setting of the AB3607

The communication setting for the EtherNet/IP master is performed for the AB3607.

RS-Networks made by Rockwell Automation Inc. or the web server inside the AB3607 board is used for the EtherNet/IP communication setting.

When using RS-Networks, refer to the related instruction manuals made by Rockwell Automation Inc.

When using the web server inside the AB3607 board, set the IP address with the tool “Anybus IPconfig” made by HMS.

The tool “Anybus IPconfig” can be downloaded from the support web page of HMS.

In either case, connect the AB3607 and the PC for the communication setting with the Ethernet cable, and then start up the DX200 as usual.

For details of the tool “Anybus IPconfig” made by HMS and the web server inside the AB3607 board, refer to the section “Anybus-M for EtherNet/IP” on the web support page of HMS.
4.4 Transmitting Data

The data to be transmitted from the AB3607 to the DX200 is not only the I/O data from the external EtherNet/IP adapter devices, but the status of the AB3607 board is also included.

Therefore, in the DX200, 8 points (1 byte) each for input and output are reserved for the AB3607 board status area beside the area for the I/O data.

The transmitting data from the AB3607 board are allocated to the external I/O signals of the concurrent I/O.

When only the AB3607 board (input/output: 16 Byte) is mounted as an optional I/O board, the concurrent I/O allocation is as follows.

(20010 to 20057 are used for standard I/O unit of the DX200)

<table>
<thead>
<tr>
<th>Table 4-1: Example of Concurrent I/O Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data</strong></td>
</tr>
<tr>
<td>I/O data</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
4 Allocating I/O Signals
4.5 Communication Status

4.5 Communication Status

The first 1 Byte of the input data for the AB3607 allocated to external input signal, (which is 20060 to 20067 in the above allocation example), indicates the board status of the AB3607.

<table>
<thead>
<tr>
<th>Signal</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2xxx0 to 2xxx4</td>
<td>Reserved area for the manufacture</td>
</tr>
<tr>
<td>2xxx5</td>
<td>Indicates the existence of uncommunicative station</td>
</tr>
<tr>
<td></td>
<td>0: Communicating with all the defined station. (normal)</td>
</tr>
<tr>
<td></td>
<td>1: More than one uncommunicative stations are existing</td>
</tr>
<tr>
<td>2xxx6</td>
<td>Indicates the EtherNet/IP communication status</td>
</tr>
<tr>
<td></td>
<td>0: Communicating normally. (normal)</td>
</tr>
<tr>
<td></td>
<td>1: Not operating normally.</td>
</tr>
<tr>
<td>2xxx7</td>
<td>Reserved area for the manufacture</td>
</tr>
</tbody>
</table>

4.5.1 The Alarm when Communications Error of the AB3607 Board Occurs Using the Board Status

When the optional board detects the communication error, it is possible to make the alarm occur by using CIO ladder or the user alarm.

The examples of the method are described in below.

In this example, the following two alarms occur.

<table>
<thead>
<tr>
<th>Alarm No.</th>
<th>Alarm Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>9065</td>
<td>AB3607 COMMUNICATION ERROR</td>
</tr>
<tr>
<td>9066</td>
<td>UNCOMMUNICATIVE STATION (AB3607)</td>
</tr>
</tbody>
</table>

As for the user alarm registration, refer to “Chap.13.7 I/O Messages and I/O Alarms” in “DX200 OPTIONS INSTRUCTIONS FOR CONCURRENT I/O (RE-CKI-A465)” for more details.

Register the User Alarm
1. Change the security mode to the “Management Mode”.
2. Select the {I/O ALARM} from the {IN/OUT} in the main menu.
3. The I/O ALARM (USER) window appears.
4. Allocating I/O Signals
4.5 Communication Status

4. Move the cursor over the desired No. to register, and press [SELECT].
   – The window changes to the character string entry window.

5. Enter the I/O alarm name.

6. Press [ENTER].
   – The entered alarm is registered.
7. Register the other alarms.
   
   - Repeat the same procedures to register the alarm to use.
## IO Allocation and the Ladder Program

Create the ladder program to occur the alarm by using the following signals when the optional board detects an error.

### External input

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20065</td>
<td>Existence of un-communicating station</td>
</tr>
<tr>
<td>20066</td>
<td>AB3607 communication status</td>
</tr>
</tbody>
</table>

### System input signal

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>40012</td>
<td>User alarm request</td>
</tr>
<tr>
<td>40220</td>
<td>User alarm code d0</td>
</tr>
<tr>
<td>40221</td>
<td>User alarm code d1</td>
</tr>
<tr>
<td>40222</td>
<td>User alarm code d2</td>
</tr>
<tr>
<td>40223</td>
<td>User alarm code d3</td>
</tr>
<tr>
<td>40224</td>
<td>User alarm code d4</td>
</tr>
<tr>
<td>40225</td>
<td>User alarm code d5</td>
</tr>
</tbody>
</table>

### Assistant relay

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>70017</td>
<td>Control Power ON Completed (Normality ON)</td>
</tr>
</tbody>
</table>
The ladder program (the figure of the ladder)

Creating the following ladder allows to occur the alarm according to the status error signals of the optional board.
4.6 I/O Allocation

Followings are the examples of allocations to external I/O signals.

4.6.1 I/O Allocation Examples of the AB3607 for DX200 (For Handling)

Note 1) The following allocation examples are in case of the standard setting. If the external input/output signal allocation or concurrent ladder program is changed, the allocation will be changed according to the content changed.

Note 2) Regarding the detail of input data/output data on JANCD-YIO21-E (Standard I/O Board), refer to DX200 Instructions.

Note 3) Regarding JANCD-YIO21-E (standard I/O board), YSF21 (YIO21 base board) is displayed on IO Module Setup display.

<table>
<thead>
<tr>
<th>JANCD-YIO21-E (Standard I/O)</th>
<th>I/O Input</th>
<th>External Input Signal</th>
<th>General Input Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20010 - 20017</td>
<td>None (Already allocated with the system)</td>
<td>Input Data (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20020 - 20027</td>
<td>None (Already allocated with the system)</td>
<td>Input Data (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20030 - 20037</td>
<td>00010 - 00017 (IN0001 - IN0008)</td>
<td>Input Data (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20040 - 20047</td>
<td>00020 - 00027 (IN0009 - IN0016)</td>
<td>Input Data (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20050 - 20057</td>
<td>None (Already allocated with the system)</td>
<td>Input Data (5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I/O Output</th>
<th>External Output Signal</th>
<th>General Output Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30010 - 30017</td>
<td>None (Already allocated with the system)</td>
<td>Output Data (1)</td>
</tr>
<tr>
<td></td>
<td>30020 - 30027</td>
<td>None (Already allocated with the system)</td>
<td>Output Data (2)</td>
</tr>
<tr>
<td></td>
<td>30030 - 30037</td>
<td>10010 - 10017 (OT0001 - OT0008)</td>
<td>Output Data (3)</td>
</tr>
<tr>
<td></td>
<td>30040 - 30047</td>
<td>10020 - 10027 (OT0009 - OT0016)</td>
<td>Output Data (4)</td>
</tr>
<tr>
<td></td>
<td>30050 - 30057</td>
<td>None (Already allocated with the system)</td>
<td>Output Data (5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AB3607 (EtherNet/IP)</th>
<th>I/O Input</th>
<th>External Input Signal</th>
<th>General Input Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20000 - 20067</td>
<td>00030 - 00037 (IN0017 - IN0024)</td>
<td>Board Status I/O allocation is invalid.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20007 - 20077</td>
<td>00040 - 00047 (IN0025 - IN0032)</td>
<td>Input Data (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20080 - 20087</td>
<td>00050 - 00057 (IN0033 - IN0040)</td>
<td>Input Data (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20090 - 20097</td>
<td>00060 - 00067 (IN0041 - IN0048)</td>
<td>Input Data (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20100 - 20107</td>
<td>00070 - 00077 (IN0049 - IN0056)</td>
<td>Input Data (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20110 - 20117</td>
<td>00080 - 00087 (IN0057 - IN0064)</td>
<td>Input Data (5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20120 - 20127</td>
<td>00090 - 00097 (IN0065 - IN0072)</td>
<td>Input Data (6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20130 - 20137</td>
<td>00100 - 00107 (IN0073 - IN0080)</td>
<td>Input Data (7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20140 - 20147</td>
<td>00110 - 00117 (IN0081 - IN0088)</td>
<td>Input Data (8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20150 - 20157</td>
<td>00120 - 00127 (IN0089 - IN0096)</td>
<td>Input Data (9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20160 - 20167</td>
<td>00130 - 00137 (IN0097 - IN0104)</td>
<td>Input Data (10)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20170 - 20177</td>
<td>00140 - 00147 (IN0105 - IN0112)</td>
<td>Input Data (11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20180 - 20187</td>
<td>00150 - 00157 (IN0113 - IN0120)</td>
<td>Input Data (12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20190 - 20197</td>
<td>00160 - 00167 (IN0121 - IN0128)</td>
<td>Input Data (13)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20200 - 20207</td>
<td>00170 - 00177 (IN0129 - IN0136)</td>
<td>Input Data (14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20210 - 20217</td>
<td>00180 - 00187 (IN0137 - IN0144)</td>
<td>Input Data (15)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20220 - 20227</td>
<td>00190 - 00197 (IN0145 - IN0152)</td>
<td>Input Data (16)</td>
</tr>
</tbody>
</table>
### Allocating I/O Signals

#### I/O Allocation

<table>
<thead>
<tr>
<th>I/O Output</th>
<th>External Output Signal</th>
<th>General Output Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB3607 (EtherNet/IP)</td>
<td>30060 - 30067</td>
<td>10030 - 10037 (OT0017 - OT0024)</td>
<td>System Reservation IO allocation is invalid.¹</td>
</tr>
<tr>
<td></td>
<td>30070 - 30077</td>
<td>10040 - 10047 (OT0025 - OT0032)</td>
<td>Output Data (1)</td>
</tr>
<tr>
<td></td>
<td>30080 - 30087</td>
<td>10050 - 10057 (OT0033 - OT0040)</td>
<td>Output Data (2)</td>
</tr>
<tr>
<td></td>
<td>30090 - 30097</td>
<td>10060 - 10067 (OT0041 - OT0048)</td>
<td>Output Data (3)</td>
</tr>
<tr>
<td></td>
<td>30100 - 30107</td>
<td>10070 - 10077 (OT0049 - OT0056)</td>
<td>Output Data (4)</td>
</tr>
<tr>
<td></td>
<td>30110 - 30117</td>
<td>10080 - 10087 (OT0057 - OT0064)</td>
<td>Output Data (5)</td>
</tr>
<tr>
<td></td>
<td>30120 - 30127</td>
<td>10090 - 10097 (OT0065 - OT0072)</td>
<td>Output Data (6)</td>
</tr>
<tr>
<td></td>
<td>30130 - 30137</td>
<td>10100 - 10107 (OT0073 - OT0080)</td>
<td>Output Data (7)</td>
</tr>
<tr>
<td></td>
<td>30140 - 30147</td>
<td>10110 - 10117 (OT0081 - OT0088)</td>
<td>Output Data (8)</td>
</tr>
<tr>
<td></td>
<td>30150 - 30157</td>
<td>10120 - 10127 (OT0089 - OT0096)</td>
<td>Output Data (9)</td>
</tr>
<tr>
<td></td>
<td>30160 - 30167</td>
<td>10130 - 10137 (OT0097 - OT0104)</td>
<td>Output Data (10)</td>
</tr>
<tr>
<td></td>
<td>30170 - 30177</td>
<td>10140 - 10147 (OT0105 - OT0112)</td>
<td>Output Data (11)</td>
</tr>
<tr>
<td></td>
<td>30180 - 30187</td>
<td>10150 - 10157 (OT0113 - OT0120)</td>
<td>Output Data (12)</td>
</tr>
<tr>
<td></td>
<td>30190 - 30197</td>
<td>10160 - 10167 (OT0121 - OT0128)</td>
<td>Output Data (13)</td>
</tr>
<tr>
<td></td>
<td>30200 - 30207</td>
<td>10170 - 10177 (OT0129 - OT0136)</td>
<td>Output Data (14)</td>
</tr>
<tr>
<td></td>
<td>30210 - 30217</td>
<td>10180 - 10187 (OT0137 - OT0144)</td>
<td>Output Data (15)</td>
</tr>
<tr>
<td></td>
<td>30220 - 30227</td>
<td>10190 - 10197 (OT0145 - OT0152)</td>
<td>Output Data (16)</td>
</tr>
</tbody>
</table>

¹ The board status and system reservation cannot be allocated as the I/O signal. The data are not transmitted by EtherNet/IP communications (cannot communicate with PLC).
### 4.6.2 I/O Allocation Examples of the AB3607 for DX200 (Except for Handling)

Note 1) The following allocation examples are in case of the standard setting. If the external input/output signal allocation or concurrent ladder program is changed, the allocation will be changed according to the content changed.

Note 2) Regarding the detail of input data/output data on JANCD-YIO21-E (Standard I/O Board), refer to DX200 Instructions.

Note 3) Regarding JANCD-YIO21-E (standard I/O board), YSF21 (YIO21 base board) is displayed on IO Module Setup display.

<table>
<thead>
<tr>
<th>JANCD-YIO21-E (Standard I/O)</th>
<th>I/O Input</th>
<th>External Input Signal</th>
<th>General Input Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20010 - 20017</td>
<td>None (Already allocated with the system)</td>
<td>Input Data (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20020 - 20027</td>
<td>None (Already allocated with the system)</td>
<td>Input Data (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20030 - 20035</td>
<td>00010 - 00017 (IN0001 - IN0008)</td>
<td>Input Data (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20040 - 20047</td>
<td>00020 - 00027 (IN0009 - IN0016)</td>
<td>Input Data (4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20050 - 20057</td>
<td>00030 - 00037 (IN0017 - IN0024)</td>
<td>Input Data (5)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JANCD-YIO21-E (Standard I/O)</th>
<th>I/O Output</th>
<th>External Output Signal</th>
<th>General Output Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30010 - 30017</td>
<td>None (Already allocated with the system)</td>
<td>Output Data (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30020 - 30027</td>
<td>None (Already allocated with the system)</td>
<td>Output Data (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30030 - 30037</td>
<td>10010 - 10017 (OT0001 - OT0008)</td>
<td>Output Data (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30040 - 30047</td>
<td>10020 - 10027 (OT0009 - OT0016)</td>
<td>Output Data (4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30050 - 30057</td>
<td>10030 - 10037 (OT0017 - OT0024)</td>
<td>Output Data (5)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AB3607 (EtherNet/IP)</th>
<th>I/O Input</th>
<th>External Input Signal</th>
<th>General Input Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20060 - 20067</td>
<td>00040 - 00047 (IN0025 - IN0032)</td>
<td>Board Status</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IO allocation is invalid. 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20070 - 20077</td>
<td>00050 - 00057 (IN0033 - IN0040)</td>
<td>Input Data (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20080 - 20087</td>
<td>00060 - 00067 (IN0041 - IN0048)</td>
<td>Input Data (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20090 - 20097</td>
<td>00070 - 00077 (IN0049 - IN0056)</td>
<td>Input Data (3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20100 - 20107</td>
<td>00080 - 00087 (IN0057 - IN0064)</td>
<td>Input Data (4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20110 - 20117</td>
<td>00090 - 00097 (IN0065 - IN0072)</td>
<td>Input Data (5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20120 - 20127</td>
<td>00100 - 00107 (IN0073 - IN0080)</td>
<td>Input Data (6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20130 - 20137</td>
<td>00110 - 00117 (IN0081 - IN0088)</td>
<td>Input Data (7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20140 - 20147</td>
<td>00120 - 00127 (IN0089 - IN0096)</td>
<td>Input Data (8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20150 - 20157</td>
<td>00130 - 00137 (IN0097 - IN0104)</td>
<td>Input Data (9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20160 - 20167</td>
<td>00140 - 00147 (IN0105 - IN0112)</td>
<td>Input Data (10)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20170 - 20177</td>
<td>00150 - 00157 (IN0113 - IN0120)</td>
<td>Input Data (11)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20180 - 20187</td>
<td>00160 - 00167 (IN0121 - IN0128)</td>
<td>Input Data (12)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20190 - 20197</td>
<td>00170 - 00177 (IN0129 - IN0136)</td>
<td>Input Data (13)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20200 - 20207</td>
<td>00180 - 00187 (IN0137 - IN0144)</td>
<td>Input Data (14)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20210 - 20217</td>
<td>00190 - 00197 (IN0145 - IN0152)</td>
<td>Input Data (15)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20220 - 20227</td>
<td>00200 - 00207 (IN0153 - IN0160)</td>
<td>Input Data (16)</td>
<td></td>
</tr>
</tbody>
</table>
### Allocating I/O Signals

#### 4.6 I/O Allocation

<table>
<thead>
<tr>
<th>AB3607 (EtherNet/IP)</th>
<th>I/O Output</th>
<th>External Output Signal</th>
<th>General Output Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>30060 - 30067</td>
<td>10040 - 10047 (OT0025 - OT0032)</td>
<td>System Reservation IO allocation is invalid. 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30070 - 30077</td>
<td>10050 - 10057 (OT0033 - OT0040)</td>
<td>Output Data (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30080 - 30087</td>
<td>10060 - 10067 (OT0041 - OT0048)</td>
<td>Output Data (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30090 - 30097</td>
<td>10070 - 10077 (OT0049 - OT0056)</td>
<td>Output Data (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30100 - 30107</td>
<td>10080 - 10087 (OT0057 - OT0064)</td>
<td>Output Data (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30110 - 30117</td>
<td>10090 - 10097 (OT0065 - OT0072)</td>
<td>Output Data (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30120 - 30127</td>
<td>10100 - 10107 (OT0073 - OT0080)</td>
<td>Output Data (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30130 - 30137</td>
<td>10110 - 10117 (OT0081 - OT0088)</td>
<td>Output Data (7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30140 - 30147</td>
<td>10120 - 10127 (OT0089 - OT0096)</td>
<td>Output Data (8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30150 - 30157</td>
<td>10130 - 10137 (OT0097 - OT0104)</td>
<td>Output Data (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30160 - 30167</td>
<td>10140 - 10147 (OT0105 - OT0112)</td>
<td>Output Data (10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30170 - 30177</td>
<td>10150 - 10157 (OT0113 - OT0120)</td>
<td>Output Data (11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30180 - 30187</td>
<td>10160 - 10167 (OT0121 - OT0128)</td>
<td>Output Data (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30190 - 30197</td>
<td>10170 - 10177 (OT0129 - OT0136)</td>
<td>Output Data (13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30200 - 30207</td>
<td>10180 - 10187 (OT0137 - OT0144)</td>
<td>Output Data (14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30210 - 30217</td>
<td>10190 - 10197 (OT0145 - OT0152)</td>
<td>Output Data (15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30220 - 30227</td>
<td>10200 - 10207 (OT0153 - OT0160)</td>
<td>Output Data (16)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1 The board status and system reservation cannot be allocated as the I/O signal.
The data are not transmitted by EtherNet/IP communications (cannot communicate with PLC).
4.7 Convenient Function

4.7.1 ListIdentity Function

This function allows the user to check if the EtherNet/IP station for the IP address exists on the network connected with the AB3607.

1. Select {IN/OUT} under the main menu.
2. Select {FIELDBUS UTILITY}.
   - The I/O module selection window appears.

3. Select the station number (ST#) of the AB3607 to confirm its existence.
   - The function selection window appears.

**NOTE**

This function can be used when the board firmware version of the AB3607 is 1.19 or later and the system software version of the DX200 is DN2.80.00-00 or later.
4 Allocating I/O Signals

4.7 Convenient Function

4. Select {ListIdentity}.

- The execution window of ListIdentity appears.

![ListIdentity window]

5. Input the IP address to confirm its existence, and then select [EXECUTE].

When receiving the normal response, “OK” is displayed on {Result}, and also the received “Vendor ID”, “Device Type”, and “Product Name” are displayed.

If not receiving the response, “Timeout” is displayed on {Result}.

If receiving the abnormal response, “NG” is displayed on {Result}.
5 Error Indication

5.1 LED Indication

The AB3607 is provided with 6 LEDs for board status indication.

<table>
<thead>
<tr>
<th>No.</th>
<th>Indication</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appl.connected</td>
<td>Green</td>
<td>Controlled by application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red</td>
<td>Standalone</td>
</tr>
<tr>
<td>2</td>
<td>I/O ACCESS</td>
<td>Green, flashing</td>
<td>I/O access OK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red, flashing</td>
<td>I/O access failure (recoverable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF</td>
<td>No activity</td>
</tr>
<tr>
<td>3</td>
<td>Not used</td>
<td>-</td>
<td>Not used</td>
</tr>
<tr>
<td>4</td>
<td>Link/Activity</td>
<td>Green</td>
<td>Link established</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green, flashing</td>
<td>Activity; receiving/transmitting data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF</td>
<td>No link or power OFF</td>
</tr>
</tbody>
</table>
5 Error Indication
5.1 LED Indication

<table>
<thead>
<tr>
<th>No.</th>
<th>Indication</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Network status</td>
<td>Green</td>
<td>Connected</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The module has at least one established EtherNet/IP connection. (target or originated)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green, flashing</td>
<td>No connections</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>There are no EtherNet/IP connections established to the module. (class 1 or class 3, target or originated)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red</td>
<td>Duplicate IP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Configured IP address already in use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red, flashing</td>
<td>Connection timeout</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>One or several EtherNet/IP target connections have timed-out. The module can only leave this state if all timed-out target connections are re-established, or if the module is reset.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF</td>
<td>No power or no IP address</td>
</tr>
</tbody>
</table>

| 6   | Module status | Green          | Device operational                                                      |
|     |              |                | Module is operating correctly in Run-state.                            |
|     |              | Green, flashing| Standby                                                                 |
|     |              |                | Module has not been configured. Scanner in Idle-state                   |
|     |              | Red            | Major fault                                                             |
|     |              |                | Major unrecoverable fault                                               |
|     |              | Red, flashing  | Minor fault                                                             |
|     |              |                | Minor recoverable fault (originated on timeout) An originated connection could not be opened. |
|     |              | Alternating Red/Green | Self test                                |
|     |              |                | Module is performing power up test procedures.                         |
|     |              | OFF            | No power                                                                |
DX200 OPTIONS
INSTRUCTIONS
EtherNet/IP COMMUNICATION FUNCTION
(FOR AB3607 MADE BY HMS)

HEAD OFFICE
2-1 Kurosakishiroishi, Yahatanishi-ku, Kitakyushu 806-0004, Japan
Phone  +81-93-645-7703  Fax  +81-93-645-7802

YASKAWA America Inc. (Motoman Robotics Division)
100 Automation Way, Miamisburg, OH 45342, U.S.A.
Phone  +1-937-847-6200  Fax  +1-937-847-6277

YASKAWA Europe GmbH (Robotics Division)
Yaskawastrasse 1, 85391 Allershausen, Germany
Phone  +49-8166-90-100  Fax  +49-8166-90-103

YASKAWA Nordic AB
Verkstadsgatan 2, Box 504 ,SE-385 25 Torsas, Sweden
Phone  +46-480-417-800  Fax  +46-486-414-10

YASKAWA Electric (China) Co., Ltd.
22F, One Corporate Avenue, No.222, Hubin Road, Huangpu District, Shanghai 200021, China
Phone  +86-21-5385-2200  Fax  +86-21-5385-3299

YASKAWA SHOUGANG ROBOT Co. Ltd.
No7 Yongchang North Road, Beijing E&T Development Area, China 100176
Phone  +86-10-6788-2858  Fax  +86-10-6788-2878

YASKAWA India Private Ltd. (Robotics Division)
#426, Udyog Vihar, Phase-IV, Gurgaon, Haryana, India
Phone  +91-124-475-8500  Fax  +91-124-475-8542

YASKAWA Electric Korea Corporation
35F, Three IFC, 10 Gujejeumyung-ro, Yeongdeungpo-gu, Seoul, Korea 07326
Phone  +82-2-784-7844  Fax  +82-2-784-8495

YASKAWA Electric Taiwan Corporation
12F, No.207, Sec. 3, Beishin Rd., Shindian District, New Taipei City 23143, Taiwan
Phone  +886-2-8913-1333  Fax  +886-2-8913-1513

YASKAWA Electric (Singapore) PTE Ltd.
151 Lorong Chuan, #04-02A, New Tech Park, Singapore 556741
Phone  +65-6282-3003  Fax  +65-6289-3003

YASKAWA Electric (Thailand) Co., Ltd.
59,1st-5th Floor, Flourish Building, Soi Ratchadapisek 18,Ratchadapisek Road,
Huaykwang, Bangkok 10310, THAILAND
Phone  +66-2-017-0099  Fax  +66-2-017-0199

PT. YASKAWA Electric Indonesia
Secure Building-Gedung B Lantai Dasar & Lantai 1 Jl. Raya Protokol Halim Perdanakusuma,
Jakarta 13610, Indonesia
Phone  +62-21-2982-6470  Fax  +62-21-2982-6741

©2019 YASKAWA ELECTRIC CORPORATION
Published by YASKAWA

YASKAWA
YASKAWA ELECTRIC CORPORATION
February 2019 19-02

MANUAL NO.
HW1486011