DX100 OPTIONS
INSTRUCTIONS

FOR PROFINET COMMUNICATIONS FUNCTION
(FOR AB3609 (PROFINET IO Device) MADE BY HMS)

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

MOTOMAN INSTRUCTIONS

MOTOMAN--□□□ INSTRUCTIONS
DX100 INSTRUCTIONS
DX100 OPERATOR'S MANUAL
DX100 MAINTENANCE MANUAL

The DX100 operator's manuals above correspond to specific usage.
Be sure to use the appropriate manual.

Part Number: 169277-1CD
Revision: 0

YASKAWA
MOTOMAN ROBOTICS

MANUAL NO.
HW1482643◇0

MANDATORY

- This manual explains the PROFINET communications function (AB3609 made by HMS) of the DX100 system and general operations. Read this manual carefully and be sure to understand its contents before handling the DX100.
- General items related to safety are listed in Chapter 1: Safety of the DX100 Instructions. To ensure correct and safe operation, carefully read the DX100 Instructions 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 DX100.

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

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

To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as "CAUTION" and "WARNING".

PROHIBITED

- Do not use or keep the circuit 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 circuit board may damage the circuit board.

WARNING

- Before operating the manipulator, check that servo power is turned OFF pressing the emergency stop buttons on the front door of the DX100 and the programming pendant.
  When the servo power is turned OFF, the SERVO ON LED on the programming pendant is turned OFF.

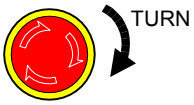
Injury or damage to machinery may result if the emergency stop circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the emergency stop buttons do not function.

Figure 1: 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.

Figure 2: Release of Emergency Stop



- Observe the following precautions when performing teaching operations within the P-point maximum envelope of the manipulator:
  - 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 person is present in the P-point maximum envelope of the manipulator and that you are in a safe location before:
  - Turning ON the power for the DX100.
  - 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 is a problem.

The emergency stop buttons are located on the right of front door of the DX100 and the programming pendant.

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.

- 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.

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 DX100 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 DX100 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 circuit board.

In case of malfunction, etc. it may result in an injury or damage the circuit board.

- Make sure that there is no damage or deflection of parts on the circuit board.

In case of malfunction, etc. it may result in an injury or damage the circuit board.

- Correctly connect each cable and connector.

Failure to observe this caution may result in a fire or damage the circuit board.

- Set the switches, etc. correctly.

Malfunction, caused by an incorrect setting, may result in an injury or damage the circuit board.

- Never touch the mounting surfaces of the circuit board parts directly with fingers.

The generated static electricity may damage the IC.

- Never touch the soldered surfaces of the circuit board directly with fingers.

Protrusions on the soldered surface may result in an injury.

- No shock to the circuit board.

The shock may damage the circuit 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:

Equipment	**Manual Designation**
DX100 controller	DX100
DX100 programming pendant	Programming pendant
Cable between the manipulator and the controller	Manipulator cable

Descriptions of the programming pendant, buttons, and displays are shown as follows:

Equipment		Manual Designation
Programming Pendant	Character Keys	The keys which have characters printed on them are denoted with [ ]. ex. [ENTER]
	Symbol Keys	The keys which have a symbol printed on them are not denoted with [ ] but depicted with a small picture. ex. page key  The cursor key is an exception, and a picture is not shown.
	Axis Keys Numeric Keys	“Axis Keys” and “Numeric Keys” are generic names for the keys for axis operation and number input.
	Keys pressed simultaneously	When two keys are to be pressed simultaneously, the keys are shown with a “+” sign between them. ex. [SHIFT]+[COORD]
	Displays	The menus displayed in the programming pendant is denoted with { }. ex. {JOB}

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 the SELECT key 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.

Table of Contents

1 Outline

This instruction explains the necessary setting methods for using PROFINET circuit board (AB3609 made by HMS) in the DX100 and the relevant information.

This circuit board enables the DX100 to communicate general I/O data with other PROFINET devices.

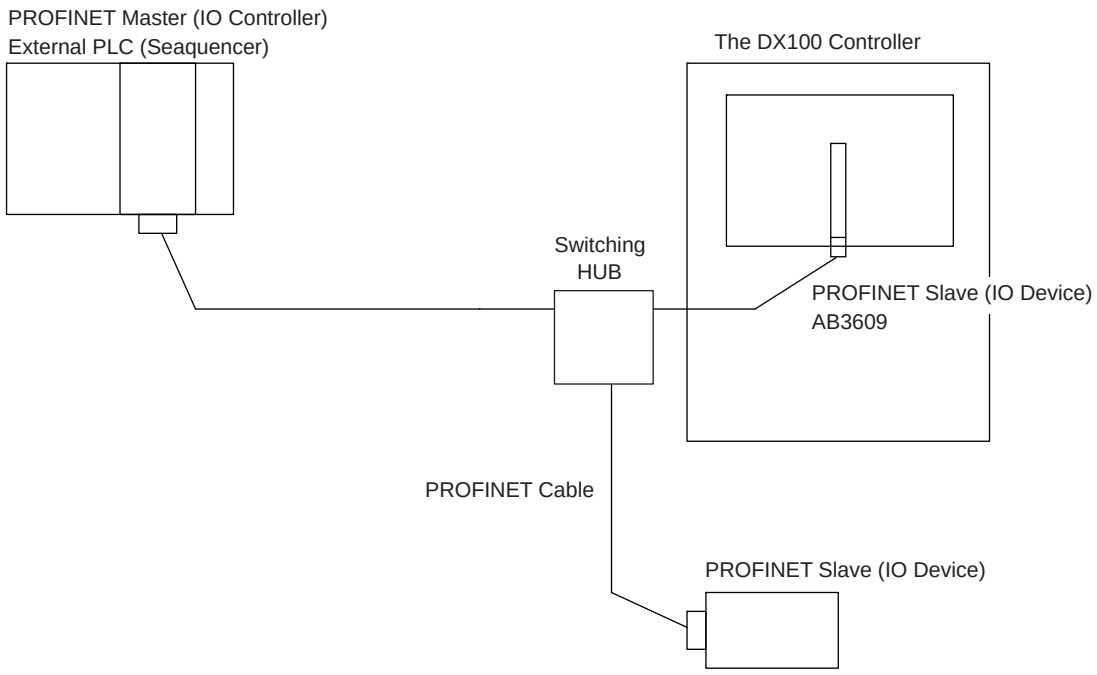
NOTE

AB3609 is used as a slave (PROFINET IO Device). Communication settings between the DX100 and this circuit board are executed in the maintenance mode.

The network as PROFINET is set with Siemens PLC and PLC setting tool (Step7).

1.1 System Configuration

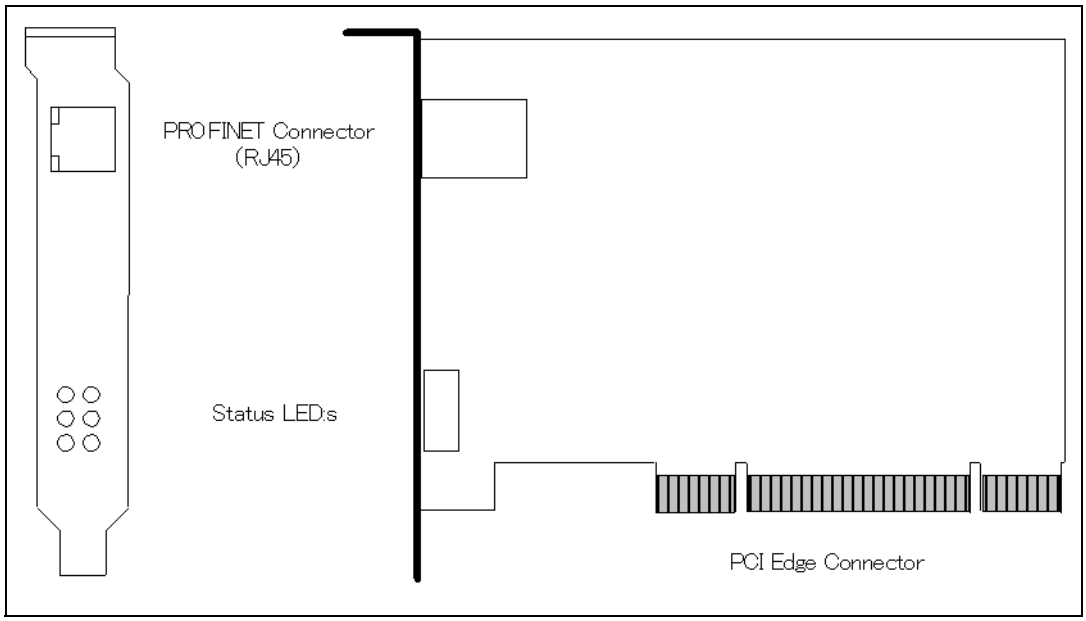
■ System Configuration: AB3609



2 Hardware Specification

2.1 Circuit Board Diagram

■ **AB3609**



2.2 Circuit Board Specification

Item	Specification
Interface between the external device	PROFINET IO Device
Circuit board location	PCI slot in the DX100 controller
Error display method	LED display
Maximum number of I/O points	AB3609: Input: 250 Byte Output: 250 Byte However, the input and output bytes cannot be set respectively

The above mentioned maximum number of I/O points for AB3609 (Input: 250 Byte / Output: 250 Byte) are used when the attached optional I/O module is only this circuit board.

The points are not be used if other optional I/O modules than this circuit board are attached.

2.3 Communication Specification

	Explanation
Physical layer	Ethernet
Baud rate	100 Mbps

2.4 Connector Specification

■ **PROFINET Connector**
RJ45 (socket)

	Explanation
1	TD+
2	TD-
3	RD+
4	Termination
5	Termination
6	RD-
7	Termination
8	Termination

3 Settings and Installation of the Circuit 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 circuit board.

In case of malfunction, etc. it may result in an injury or damage the circuit board.

- Make sure that there is no damage or deflection of parts on the circuit board.

In case of malfunction, etc. it may result in an injury or damage the circuit board.

- Correctly connect each cable and connector.

Failure to observe this caution may result in a fire or damage the circuit board.

- Set the switches, etc. correctly.

Malfunction, caused by an incorrect setting, may result in an injury or damage the circuit board.

- Never touch the mounting surfaces of the circuit board parts directly with fingers.

The generated static electricity may damage the IC.

- Never touch the soldered surfaces of the circuit board directly with fingers.

Protrusions on the soldered surface may result in an injury.

- No shock to the circuit board.

The shock may damage the circuit board.

3.1 Mounting the Circuit Board

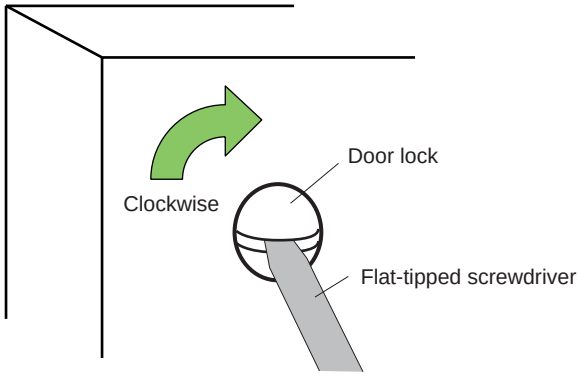
Mount AB3609 circuit board in the following manner.

3.1.1 Opening the DX100 Front Door

1. Open the front door of the DX100.

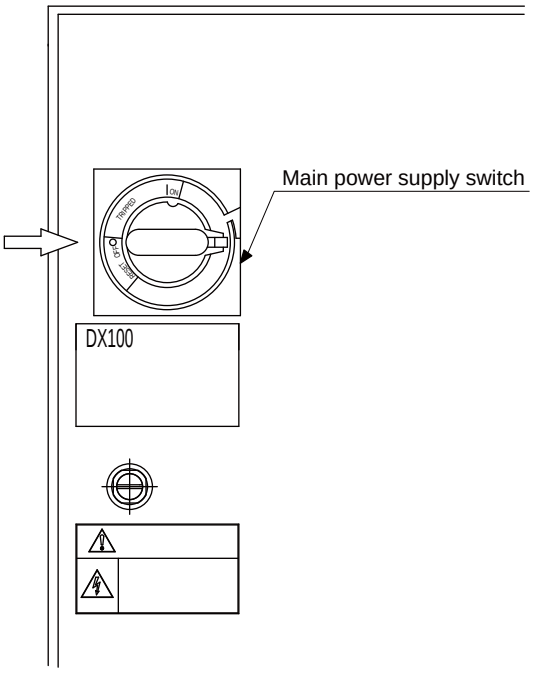
   (1) Turn the door lock (2 locks) on the front face of the DX100 clockwise for 90° with a flat -tipped screw drive.

Fig. 3-1: Rotate Clockwise to Release Door Lock



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

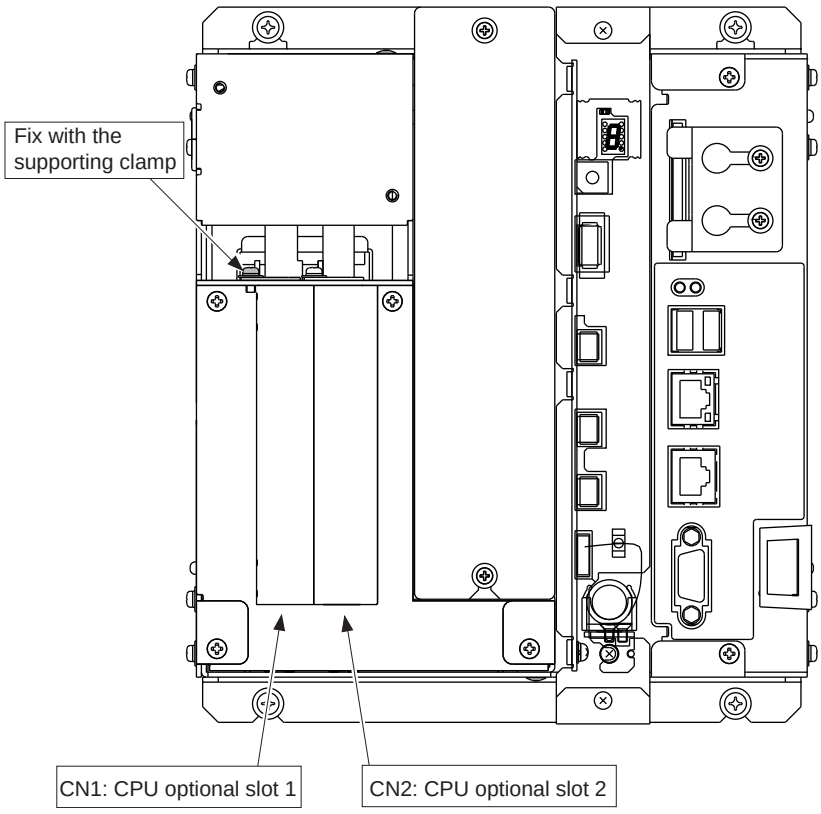
Fig. 3-2: Rotate the Main Power Supply Switch to OFF Position



3.1.2 Mount AB3609 Circuit Board to the DX100

1. Uninstall the riser card (JANCD-YBB02-E) from the CPU rack.
2. Insert AB3609 to the PCI slot on the riser card, then fix it with the supporting clamp.
3. Reinstall the riser card to the CPU rack.

NOTE When inserting AB3609 to the riser card, be sure to insert it in the order of slot 1, then slot 2. If the DX100 is used with the slot 1 empty, the circuit board is not recognized and it would not work appropriately.



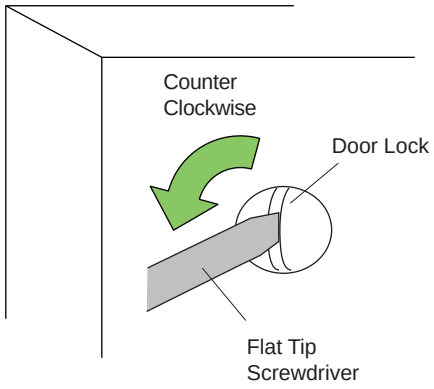
3.1.3 Connecting Cables

1. Connect the PROFINET cable to the PROFINET connector on AB3609.

3.1.4 Closing the Front Door of the DX100

1. Close the DX100 front door.
   (1) Close the door gently.
   (2) Turn the door lock (2 locks) on the front face of the DX100 counterclockwise for 90 °.

Fig. 3-3: Rotate Counterclockwise to Lock the Door



CAUTION

- Please always keep the DX100 front door closed except maintenance time.
- Never fail to shut all the door tightly.
- If dust, dirt or water goes inside the DX100, it may result in a failure, a fire or an electric shock.

4 Allocating I/O Signals

4.1 Optional Circuit Board and I/O Module Settings

NOTE

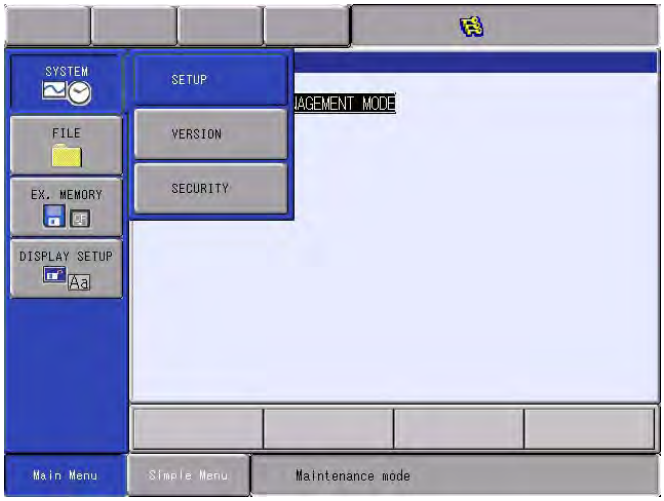
Before executing additional settings in the management mode, install AB3609 circuit board.
The setting operation cannot be executed without the circuit board or in the operation mode/editing mode.

■ When Setting to AB3609 Circuit Board

When using AB3609 circuit board in the DX100, it is necessary to set the optional circuit board and the I/O module in the following manners.

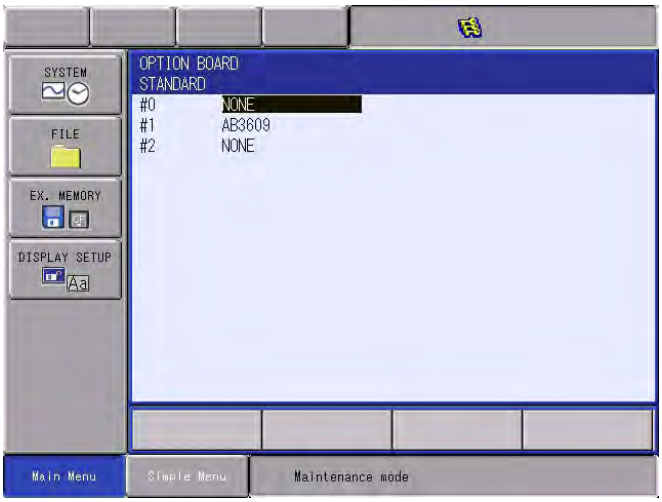
1. Turn ON the power supply while pressing [MAIN MENU].
   – The maintenance mode starts up.

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.

5. Select {OPTION BOAD}
   – The OPTION BOAD window appears.



6. Select {AB3609}.
   – The AB3609 setting window appears.

   – (Details of each setting item)

① AB3609

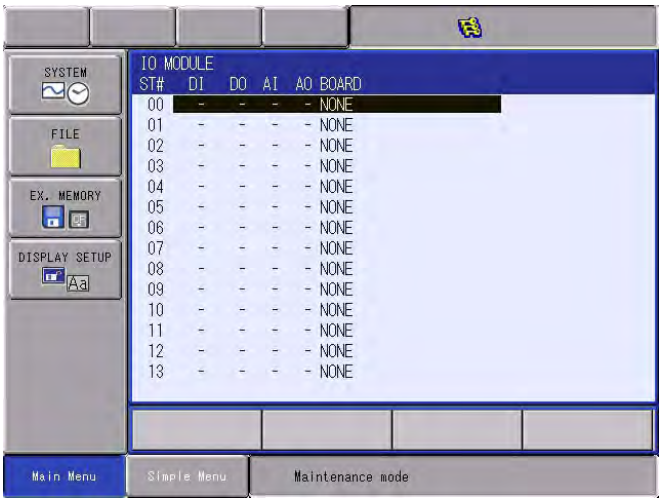
Determine the usage of this circuit board.
“USED” or ”NOT USED” toggles each time it is selected.
Select “USED” to use this circuit board.

② IO SIZE

Set the transmitting I/O size within the range from 1 to 250.

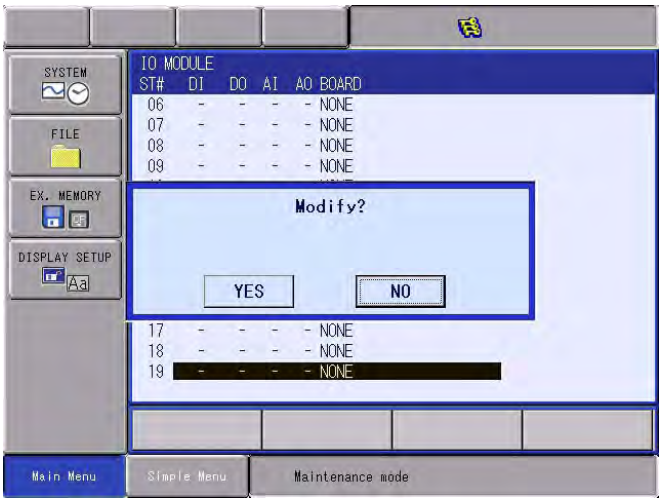
7. Input the desired value to each item.
8. Press [ENTER].
   – The confirmation dialog box appears.

9. Select {YES}.
   – The I/O module window appears.

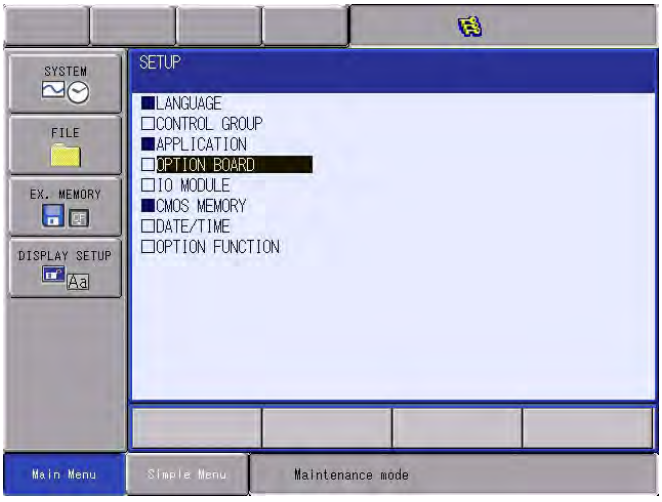


10. Press [ENTER].
    – The next window to the above mentioned I/O module window as the result of AB3609 circuit board's I/O allocation appears.

11. Press [ENTER].
    – The confirmation dialog box appears.



12. Select "Yes".
    – Return to the setting window after the setting contents are confirmed.

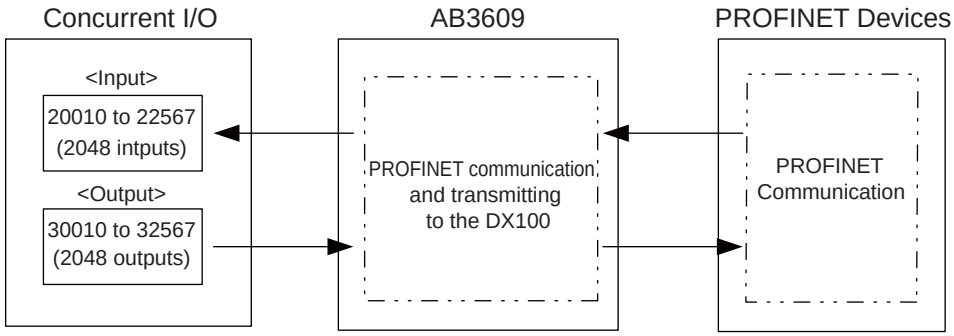


4.2 Transmitting Data

The data to be transmitted from AB3609 to the DX100 is not only the I/O data from the external PROFINET devices, but the status of the AB3609 circuit board is also included.

Therefore, in the DX100, 8 points (1 byte) each for input and output are reserved for the AB3609 circuit board status area beside the area for the I/O data.

The transmitting data from the AB3609 circuit board is allocated to the external I/O signals of the concurrent I/O.



When only AB3609 circuit board (input/output: 16 Byte) is mounted as an optional I/O circuit board, the concurrent I/O allocation is as follows.

(20010 to 20057 are used for standard I/O unit of the DX100.)

Table 4-1: Example of Concurrent I/O Allocation

Data	Input	Output
I/O data	20060 to 20067 circuit board status (1)	30060 to 30067 unusable (1)
	20070 to 20077 input data (1)	30070 to 30077 output data (1)
	20080 to 20087 input data (2)	30080 to 30087 output data (2)
	20090 to 20097 input data (3)	30090 to 30097 output data (3)
	• • •	• • •
	20220 to 20227 input data (16)	30220 to 30227 output data (16)

[AB3609 Circuit Board Status]

The first 1 Byte of AB3609's input data allocated to external input signal (which is 20060 to 20067 in the above allocation example) indicates the circuit board status of AB3609.

Signal	Contents
2xxx0 to 2xxx5	Reserved area for the manufacture
2xxx6	Indicates the PROFINET communication status 0: Communicating normally (normal) 1: Not communicable
2xxx7	Indicates the operation status of the circuit board 1: Operating normally (normal) 0: Not operating normally

4.2.1 The Alarm when Communication Error Occurs Using the Circuit Board Status

When the optional circuit board detects the communication error, the CIO ladder or the user alarm allows to occur the alarm.

The examples of the method are described below.

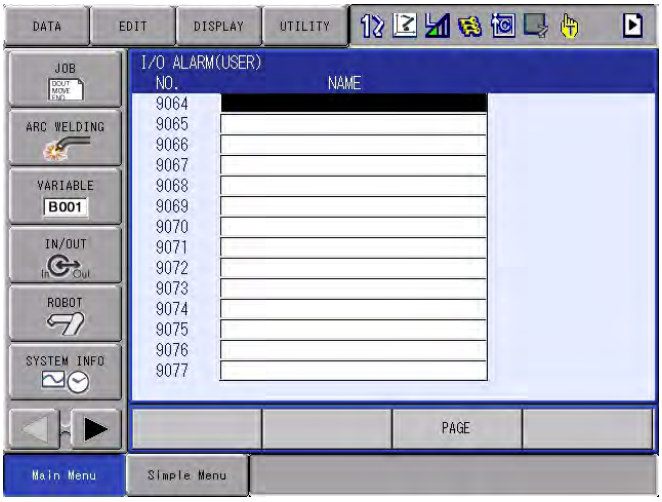
There are two occurrence alarms.

Alarm No.	Alarm Name
9065	PROFINET BOARD OPERATION ERROR
9066	PROFINET COMMUNICATION ERROR

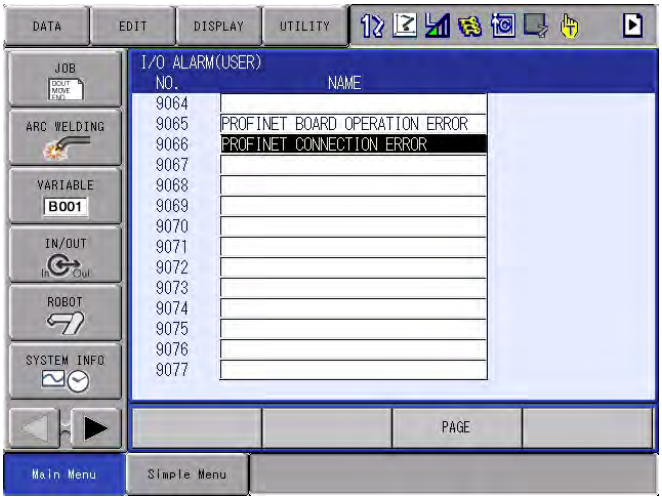
As for the user alarm registration, refer to "Section 13.7 I/O Messages and I/O Alarms" in the "DX100 OPTIONS INSTRUCTIONS FOR CONCURRENT I/O" (155491-1CD) for more details.

■ **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 (system) window appears.
4. Press the [PAGE].
   – I/O alarm (user) window appears.



5. Move the cursor over the desired No. to register, and press [SELECT].
6. Enter the I/O alarm name.
7. Press [ENTER].
8. 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 alert the alarm by using the following signals when the optional circuit board detects an error.

External input

Signal	Description
20066	PROFINET communication status
20067	PROFINET circuit board operation status

System input signal

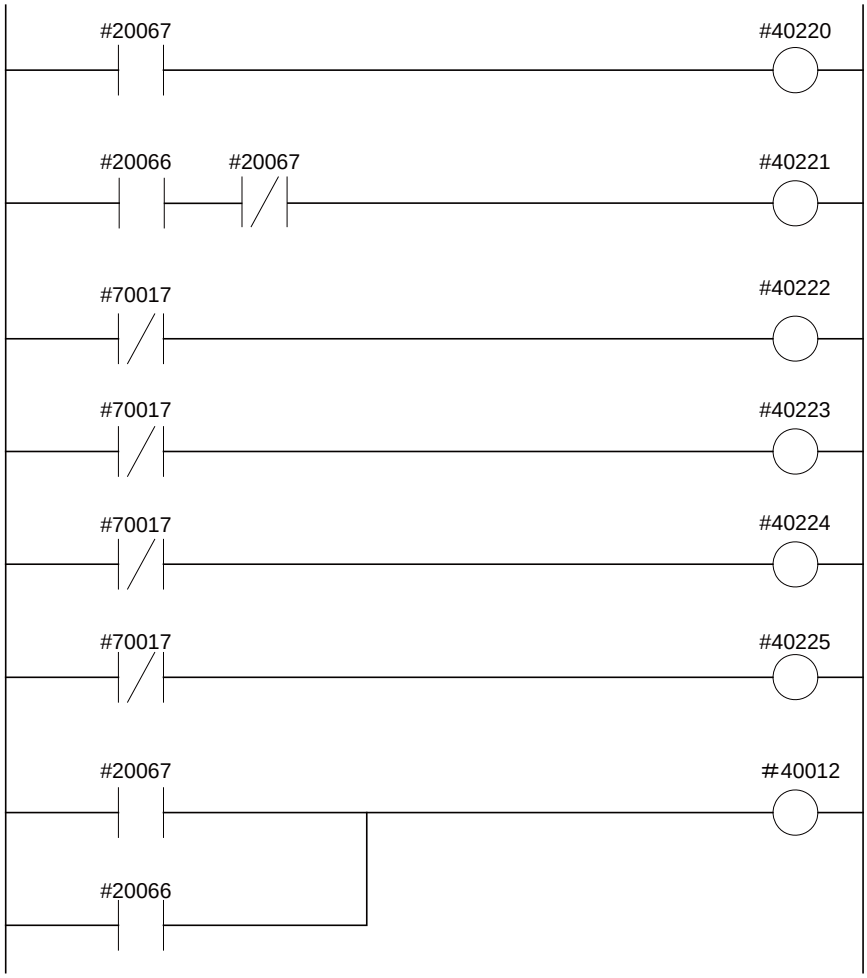
Signal	Description
40012	User alarm request
40220	User alarm code d0
40221	User alarm code d1
40222	User alarm code d2
40223	User alarm code d3
40224	User alarm code d4
40225	User alarm code d5

Auxiliary Relay

Signal	Description
70017	Control Power ON completed (Normality ON)

The ladder program (the figure of the ladder)

Creating the following ladder allows to alert the alarm according to the status error signals of the optional circuit board.



4.3 I/O Allocation

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

4.3.1 I/O Allocation Examples of AB3609 for DX100 (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 JZNC-YIU01 (Standard I/O unit), refer to DX100 Instructions.

JZNC-YIU01 (Standard I/O)	I/O Input	External Input Signal	General Input Signal	Description
		20010 - 20017	None (Already allocated with the system)	Input Data (1)
		20020 - 20027	None (Already allocated with the system)	Input Data (2)
		20030 - 20037	00010 - 00017 (IN0001 - IN0008)	Input Data (3)
		20040 - 20047	00020 - 00027 (IN0009 - IN0016)	Input Data (4)
		20050 - 20057	None (Already allocated with the system)	Input Data (5)
	I/O Output	External Output Signal	General Output Signal	Description
		30010 - 30017	None (Already allocated with the system)	Output Data (1)
		30020 - 30027	None (Already allocated with the system)	Output Data (2)
		30030 - 30037	10010 - 10017 (OT0001 - OT0008)	Output Data (3)
		30040 - 30047	10020 - 10027 (OT0009 - OT0016)	Output Data (4)
		30050 - 30057	None (Already allocated with the system)	Output Data (5)
AB3609 (PROFINET)	I/O Input	External Input Signal	General Input Signal	Description
		20060 - 20067	00030 - 00037 (IN0017 - IN0024)	Circuit Board Status IO allocation is invalid.[1)]
		20070 - 20077	00040 - 00047 (IN0025 - IN0032)	Input Data (1)
		20080 - 20087	00050 - 00057 (IN0033 - IN0040)	Input Data (2)
		20090 - 20097	00060 - 00067 (IN0041 - IN0048)	Input Data (3)
		20100 - 20107	00070 - 00077 (IN0049 - IN0056)	Input Data (4)
		20110 - 20117	00080 - 00087 (IN0057 - IN0064)	Input Data (5)
		20120 - 20127	00090 - 00097 (IN0065 - IN0072)	Input Data (6)
		20130 - 20137	00100 - 00107 (IN0073 - IN0080)	Input Data (7)
		20140 - 20147	00110 - 00117 (IN0081 - IN0088)	Input Data (8)
		20150 - 20157	00120 - 00127 (IN0089 - IN0096)	Input Data (9)
		20160 - 20167	00130 - 00137 (IN0097 - IN0104)	Input Data (10)
		20170 - 20177	00140 - 00147 (IN0105 - IN0112)	Input Data (11)
		20180 - 20187	00150 - 00157 (IN0113 - IN0120)	Input Data (12)
		20190 - 20197	00160 - 00167 (IN0121 - IN0128)	Input Data (13)
		20200 - 20207	00170 - 00177 (IN0129 - IN0136)	Input Data (14)
		20210 - 20217	00180 - 00187 (IN0137 - IN0144)	Input Data (15)
		20220 - 20227	00190 - 00197 (IN0145 - IN0152)	Input Data (16)

AB3609 (PROFINET)	I/O Output	External Output Signal	General Output Signal	Description
		30060 - 30067	10030 - 10037 (OT0017 - OT0024)	System Reservation IO allocation is invalid.[1)]
		30070 - 30077	10040 - 10047 (OT0025 - OT0032)	Output Data (1)
		30080 - 30087	10050 - 10057 (OT0033 - OT0040)	Output Data (2)
		30090 - 30097	10060 - 10067 (OT0041 - OT0048)	Output Data (3)
		30100 - 30107	10070 - 10077 (OT0049 - OT0056)	Output Data (4)
		30110 - 30117	10080 - 10087 (OT0057 - OT0064)	Output Data (5)
		30120 - 30127	10090 - 10097 (OT0065 - OT0072)	Output Data (6)
		30130 - 30137	10100 - 10107 (OT0073 - OT0080)	Output Data (7)
		30140 - 30147	10110 - 10117 (OT0081 - OT0088)	Output Data (8)
		30150 - 30157	10120 - 10127 (OT0089 - OT0096)	Output Data (9)
		30160 - 30167	10130 - 10137 (OT0097 - OT0104)	Output Data (10)
		30170 - 30177	10140 - 10147 (OT0105 - OT0112)	Output Data (11)
		30180 - 30187	10150 - 10157 (OT0113 - OT0120)	Output Data (12)
		30190 - 30197	10160 - 10167 (OT0121 - OT0128)	Output Data (13)
		30200 - 30207	10170 - 10177 (OT0129 - OT0136)	Output Data (14)
		30210 - 30217	10180 - 10187 (OT0137 - OT0144)	Output Data (15)
		30220 - 30227	10190 - 10197 (OT0145 - OT0152)	Output Data (16)

1 The circuit board status and system reservation cannot be allocated as the IO signal.
The data are not transmitted from PROFINET (cannot communicate with external PLC).

4.3.2 I/O Allocation Examples of AB3609 for DX100 (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 JZNC-YIU01 (Standard I/O unit), refer to DX100 Instructions.

JZNC-YIU01 (Standard I/O)	I/O Input	External Input Signal	General Input Signal	Description
		20010 - 20017	None (Already allocated with the system)	Input Data (1)
		20020 - 20027	None (Already allocated with the system)	Input Data (2)
		20030 - 20037	00010 - 00017 (IN0001 - IN0008)	Input Data (3)
		20040 - 20047	00020 - 00027 (IN0009 - IN0016)	Input Data (4)
		20050 - 20057	00030 - 00037 (IN0017 - IN0024)	Input Data (5)
	I/O Output	External Output Signal	General Output Signal	Description
		30010 - 30017	None (Already allocated with the system)	Output Data (1)
		30020 - 30027	None (Already allocated with the system)	Output Data (2)
		30030 - 30037	10010 - 10017 (OT0001 - OT0008)	Output Data (3)
		30040 - 30047	10020 - 10027 (OT0009 - OT0016)	Output Data (4)
		30050 - 30057	10030 - 10037 (OT0017 - OT0024)	Output Data (5)
AB3609 (PROFINET)	I/O Input	External Input Signal	General Input Signal	Description
		20060 - 20067	00040 - 00047 (IN0025 - IN0032)	Circuit Board Status IO allocation is invalid.[1)]
		20070 - 20077	00050 - 00057 (IN0033 - IN0040)	Input Data (1)
		20080 - 20087	00060 - 00067 (IN0041 - IN0048)	Input Data (2)
		20090 - 20097	00070 - 00077 (IN0049 - IN0056)	Input Data (3)
		20100 - 20107	00080 - 00087 (IN0057 - IN0064)	Input Data (4)
		20110 - 20117	00090 - 00097 (IN0065 - IN0072)	Input Data (5)
		20120 - 20127	00100 - 00107 (IN0073 - IN0080)	Input Data (6)
		20130 - 20137	00110 - 00117 (IN0081 - IN0088)	Input Data (7)
		20140 - 20147	00120 - 00127 (IN0089 - IN0096)	Input Data (8)
		20150 - 20157	00130 - 00137 (IN0097 - IN0104)	Input Data (9)
		20160 - 20167	00140 - 00147 (IN0105 - IN0112)	Input Data (10)
		20170 - 20177	00150 - 00157 (IN0113 - IN0120)	Input Data (11)
		20180 - 20187	00160 - 00167 (IN0121 - IN0128)	Input Data (12)
		20190 - 20197	00170 - 00177 (IN0129 - IN0136)	Input Data (13)
		20200 - 20207	00180 - 00187 (IN0137 - IN0144)	Input Data (14)
		20210 - 20217	00190 - 00197 (IN0145 - IN0152)	Input Data (15)
		20220 - 20227	00200 - 00207 (IN0153 - IN0160)	Input Data (16)

AB3609 (PROFINET)	I/O Output	External Output Signal	General Output Signal	Description
		30060 - 30067	10040 - 10047 (OT0025 - OT0032)	System Reservation IO allocation is invalid.[1)]
		30070 - 30077	10050 - 10057 (OT0033 - OT0040)	Output Data (1)
		30080 - 30087	10060 - 10067 (OT0041 - OT0048)	Output Data (2)
		30090 - 30097	10070 - 10077 (OT0049 - OT0056)	Output Data (3)
		30100 - 30107	10080 - 10087 (OT0057 - OT0064)	Output Data (4)
		30110 - 30117	10090 - 10097 (OT0065 - OT0072)	Output Data (5)
		30120 - 30127	10100 - 10107 (OT0073 - OT0080)	Output Data (6)
		30130 - 30137	10110 - 10117 (OT0081 - OT0088)	Output Data (7)
		30140 - 30147	10120 - 10127 (OT0089 - OT0096)	Output Data (8)
		30150 - 30157	10130 - 10137 (OT0097 - OT0104)	Output Data (9)
		30160 - 30167	10140 - 10147 (OT0105 - OT0112)	Output Data (10)
		30170 - 30177	10150 - 10157 (OT0113 - OT0120)	Output Data (11)
		30180 - 30187	10160 - 10167 (OT0121 - OT0128)	Output Data (12)
		30190 - 30197	10170 - 10177 (OT0129 - OT0136)	Output Data (13)
		30200 - 30207	10180 - 10187 (OT0137 - OT0144)	Output Data (14)
		30210 - 30217	10190 - 10197 (OT0145 - OT0152)	Output Data (15)
		30220 - 30227	10200 - 10207 (OT0153 - OT0160)	Output Data (16)

1 The circuit board status and system reservation cannot be allocated as the IO signal.
The data are not transmitted from PROFINET (cannot communicate with external PLC).

4.4 AB3609 GSDML File

When using AB3609 circuit board, the GSDML file of the circuit board is necessary to set the network with the PROFINET communication master (Siemens Step 7).

Please download the GSDML file for Anybus-S from the following website.

http://www.hms.se/

4.5 Communication Condition Setting with Step 7

When using AB3609 circuit board, Device Name and IP Address are necessary to be configured with a PLC and a PLC setting tool (Step 7) manufactured by Siemens.

As for setting, HMS shows manuals of how to configure an Anybus PROFINET IO Slave module with a Siemens Step 7. Follow the manual and perform the setting, regarding the AB3609 as an Anybus-Slave.

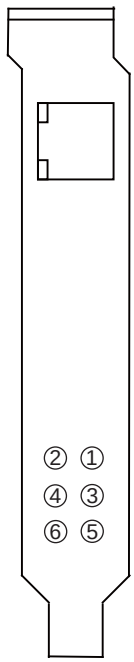
The manual shows not only how to configure the Device Name/IP Address, but also how to configure the PLC and the IO communication.

Please download the manual from the following website.

http://www.hms.se/

5 Error Indication

AB3609 is provided with 6 LEDs for circuit board status indication. These LEDs indicate the following conditions.



Status: LEDs

No.	Meaning	State	Meaning	Remedy
1	Circuit board Status	Green	Normal	-
		Red	Not controlled by DX100	Cycle the DX100 power. If this error occurs again, change circuit boards.
		OFF	Error	Cycle the DX100 power. If this error occurs again, change circuit boards.
2	PROFINET Communication Status	Green Flashing	Normal (Communication connection has been established.)	-
		Red Flashing	Cannot establish communication connection	Check the cable connection and PLC operation.
		OFF	Error	Cycle the DX100 power. If this error occurs again, change circuit boards.
3	Unused	OFF	-	-

No.	Meaning	State	Meaning	Remedy
4	PROFINET Communication Status	Green Flashing 1Hz	Normal (Communication connection has been established.)	-
		Green Flashing 2Hz	Cannot establish communication connection	Check the cable connection and PLC operation.
		OFF	Cannot establish communication connection	Check the cable connection and PLC operation.
5	PROFINET: IO Communication	Green	Normal (IO communication going on)	-
		Red Flashing	IO communication not going on	Check communication setting such as communication byte.
		OFF	Error	Cycle the DX100 power. If this error occurs again, change circuit boards.
6	PROFINET: Offline	Green	Normal (PROFINET online)	-
		OFF	PROFINET offline	Check the cable connection and PLC operation.

DX100 OPTIONS
INSTRUCTIONS

FOR PROFINET COMMUNICATIONS FUNCTION
(FOR AB3609 (PROFINET IO Device) MADE BY HMS)

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