

# DX100 OPTIONS INSTRUCTIONS

**FOR CMOS SAVE FUNCTION WITH FTP**

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

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## MOTOMAN INSTRUCTIONS

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

The DX100 Operator's manual above corresponds to specific usage.  
Be sure to use the appropriate manual.

Part Number: 158600-1CD  
Revision: 0



## MANDATORY

- This manual explains the CMOS save function with FTP of the DX100 system. 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.

DX100

## 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”.



## 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.

*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:
  - 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.



## 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:

## 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

## DX100

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 Number Keys	“Axis Keys” and “Number 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 menu 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.

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	1	CMOS Save Function with FTP
DX100	1.1	Comparison with the Auto Backup Function

## 1 CMOS Save Function with FTP

In the DX100, you can save batch data in the compact flash inserted to the programming pendant using the auto backup function. Now you can save the batch data from the internal memory without the compact flash using the FTP function from a PC via Ethernet by applying this function.

### 1.1 Comparison with the Auto Backup Function

Differences between this function and the auto backup function are shown below.

No	Function	CMOS save function with FTP	Auto backup function
1	Data to be backed-up	Equivalent to "CMOS.BIN" of the maintenance mode (YIF01 data + Data in YCP01 Compact Flash)	
2	Setting backup timing	Auto backup function settings window	
3	Loading backup data	"SYSTEM RESTORE" of the maintenance mode	
4	Number of backup files	1 (Several files can be managed on PC)	Max. 100 (less than free space of the compact flash inserted in the programming pendant)
5	Notification of backup completed	Sent via Ethernet (TCP)	N/A
6	Sending backup data	Via FTP command from PC (Ethernet and FTP functions are required)	N/A

### 1.2 Supported Versions

This function is supported by the standard version DS1.53-00 or later.



	2	Settings
DX100	2.1	Ethernet Function Settings

## 2 Settings

Configure the following settings to use the CMOS save function with FTP.

### 2.1 Ethernet Function Settings

You need to set the DX100 Ethernet function (paid option) to use this function.

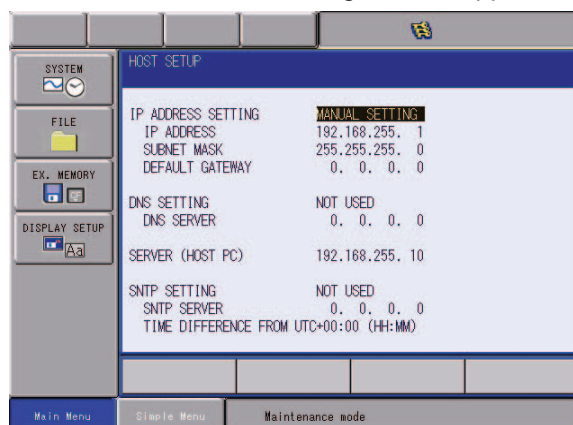
#### 2.1.1 Ethernet Function Setting

The DX100 Ethernet is set. (This setting is configured with the parameters exclusive for us. You cannot change the parameters. For more details, contact our sales representative.)

#### 2.1.2 Ethernet Communication Setting

Set Ethernet communications.

1. Turn ON the DX100 pressing [MAIN MENU]
  - The maintenance mode starts.
2. Set the security mode to the management mode
3. Select {SYSTEM} of the main menu
  - The sub menu appears.
4. Select {SETUP}
  - The setup window appears.
5. Select {OPTION FUNCTION}
  - The function selection window appears.
6. Select {DETAIL} for network
  - The network function setting window appears.
7. Select {DETAIL} for host setup.
  - The Ethernet communication setting window appears.



- Enter a value appropriate for the network.  
Press [ENTER] after entering the value and select {YES} on the confirmation dialog box.

For more details, see "3.3 Ethernet communication settings" in the "DX100 OPTIONS INSTRUCTIONS FOR ETHERNET FUNCTION". Be sure to set the following items.

	2	Settings
DX100	2.2	FTP Function Settings

### 2.1.2.1 IP Address Setting

We recommend you should select "Manual Setting" to set "IP Address" and "Subnet Mask" as fixed values. If a PC to be communicated with FTP has been set to a subnet different from the DX100, also set "Default Gateway".

### 2.1.2.2 Server (Host PC)

Set the IP address of a PC to be notified of batch data that have been saved into the internal memory.

## 2.2 FTP Function Settings

You need to set the DX100 FTP function (paid option) to use this function.

### 2.2.1 FTP Function Setting

The DX100 FTP is set. (This setting is configured with the parameters exclusive for us. You cannot change the parameters. For more details, contact our sales representative.)

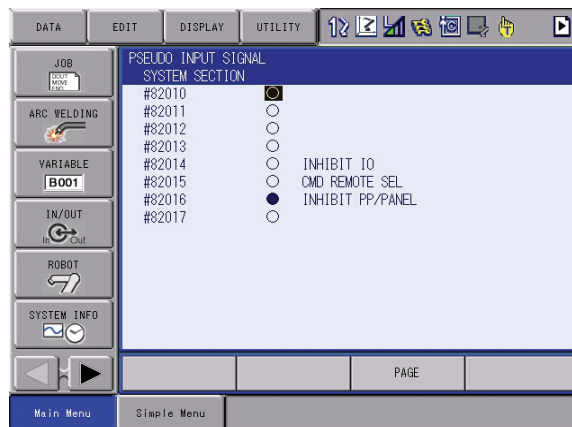
### 2.2.2 Command Remote Activation Setting

You need to enable the command remote for data transmission via FTP.

#### 2.2.2.1 Pseudo Input Signal Settings

Set "CMD REMOTE SEL" for pseudo input signal.

1. Turn ON the DX100
2. Set the security mode to the management mode
3. Select {IN/OUT} of the main menu
  - The sub menu appears.
4. Select {PSEUDO INPUT SIGNAL}
  - The pseudo input signal window appears.



5. [INTERLOCK] + [SELECT] for items with O in the CMD REMOTE SEL
  - ○ (unfilled circle) changes into ● (filled circle).

	2	Settings
DX100	2.3	Setting of CMOS Save Function with FTP

### 2.2.2.2 Programming Pendant Mode Key Settings

Change the mode key of the programming pendant to "REMOTE" for FTP communication.



When changing the mode key of the pendant to "REMOTE", operations (edit etc.) on the programming pendant are unavailable. Select "TEACH" or "PLAY" to enable the operations.

## 2.3 Setting of CMOS Save Function with FTP

Configure the following settings to use the CMOS save function with FTP.

### 2.3.1 Setting of CMOS Save Function with FTP

Configure the following settings.

#### 2.3.1.1 Setting of CMOS Save Function with FTP

This function is set. (This setting is configured with the parameters exclusive for us. You cannot change the parameters. For more details, contact our sales representative.)

### 2.3.2 Related Parameter Settings

Configure the following parameter settings.

Parameter No.	Description	Default	Parameter
RS004	Specifying a device	0	20 (Internal memory for FTP)
RS128	Specifying notification TCP port of completed creation of batch data (High) Notification port = High x 256 + Low	0	Adjust it to the application software in your PC
RS129	Specifying notification TCP port of completed creation of batch data (Low) Notification port = High x 256 + Low	0	

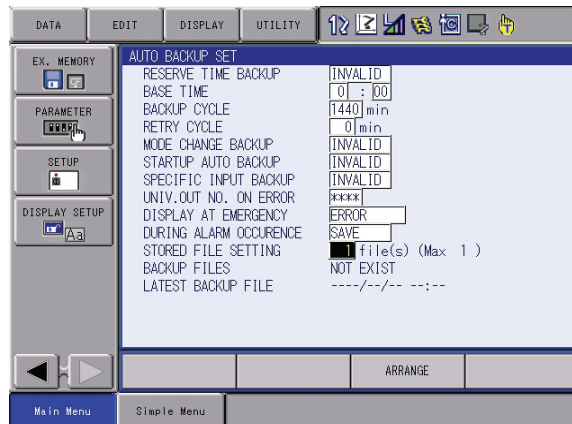
## 2.4 Auto Backup Function Settings

Settings such as timing of generating batch data into the internal memory are configured on the setting window for the auto backup function.

1. Turn ON the DX100
2. Set the security mode to the management mode
3. Select {SETUP} of the main menu
  - The sub menu appears.

4. Select {AUTO BACKUP SET}

– The auto backup set window appears.



5. Entering a value to be changed



The STORED FILE SETTING is 1 when this function is used. The name of a file saved is always "CMOSBK.BIN".

For more details, see "9.3 Auto Backup Function" in the "DX100 INSTRUCTIONS".

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DX100	3	CMOS Saving
	3.1	Checking Batch Data Generated

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## 3 CMOS Saving

Perform CMOS save as shown below.

### 3.1 Checking Batch Data Generated

Batch data are generated in the internal memory in the timing set on the auto backup setting window. When the batch data are generated, a TCP port specified with a value obtained by multiplying the parameter "preset value of RS128" by 256 added to the "preset value of RS129" is opened and an ASCII string "Ready to CMOS save" is sent.



If this string is not correctly sent by the DX100, a general output signal set in "UNIV. OUT NO. ON ERROR" is turned ON. Actions after this signal is turned ON can be taken normally.

In addition, if you do not confirm data generation by this string, take any measures for access by FTP when batch data exist (example: adjusting time of batch data generation and time for FTP access from a PC).

Perform CMOS save as shown below.

### 3.2 CMOS Save with FTP

Login to the DX100 from a PC with the FTP function and save (GET) the CMOS data "/SPDRV/CMOSBK.BIN". Set to the binary mode when transmitting CMOS with FTP. For more details on the FTP function, see the "DX100 OPTIONS INSTRUCTIONS FOR FTP FUNCTION".

The following example shows saving CMOS data into a PC using the FTP client function of Windows XP. The underlined items are entered. Press [ENTER] at the end of each entered item.

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DX100	3	CMOS Saving
	3.2	CMOS Save with FTP

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```
C:\>ftp 192.168.255.11)
Connected to 192.168.255.1.
220 DX FTP server ( 1.16) ready.
User (192.168.255.1:(none)): ftp2)
331 Password required for ftp.
Password:???3)
230 User ftp logged in.
ftp> bin4)
200 Type set to I.
ftp> get /spdrv/cmosbk.bin5)
200 PORT command successful.
150 Opening BINARY mode data connection. (192,168,255,10,1094)
226 Transfer complete.
ftp: 23527520 bytes received in 28.88Seconds 814.81Kbytes/sec.
ftp> bye6)
221 Goodbye.
```

C:\>

- 
- 1 Login to the DX100 via FTP.
  - 2 Enter your login name.
  - 3 Enter your password (hidden on the window).
  - 4 Set the transmission mode to Binary.
  - 5 Request saving CMOSBK.BIN.
  - 6 Quit FTP.

DX100	4	Loading Save Data
	4.1	Loading Procedure

## 4 Loading Save Data

Prepare the compact flash. For more details on recommended compact flashes, see 9.1.2 "Device" in the "DX100 INSTRUCTIONS".



### CAUTION

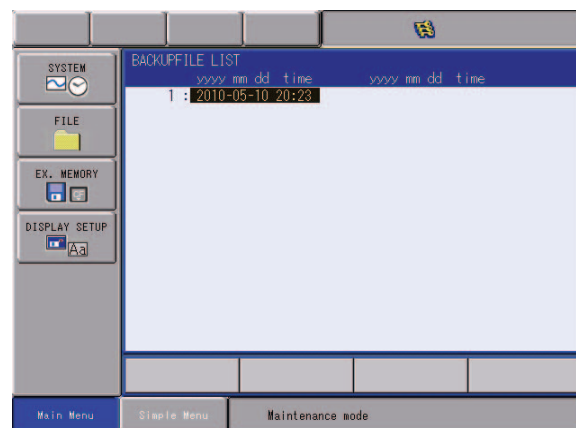
When performing [SYSTEM RESTORE], data in the DX100 are replaced with the content of "CMOSBK.BIN", CMOS data in the compact flash. Understand this instruction before performing the function.

Check whether data written in the DX100 is the same as before after restoring the system. In addition, call the master job and check the current position of the robot is safe before starting the robot.

### 4.1 Loading Procedure

Copy CMOSBK.BIN already saved using this function to the root folder of the compact flash and insert it into the compact flash card slot of the programming pendant.

1. Turn ON the DX100 pressing [MAIN MENU]
  - The maintenance mode starts.
2. Set the security mode to the management mode
3. Select {EX. MEMORY}of the main menu
  - The sub menu appears.
4. Select {SYSTEM RESTORE}
  - The backup file list window appears.

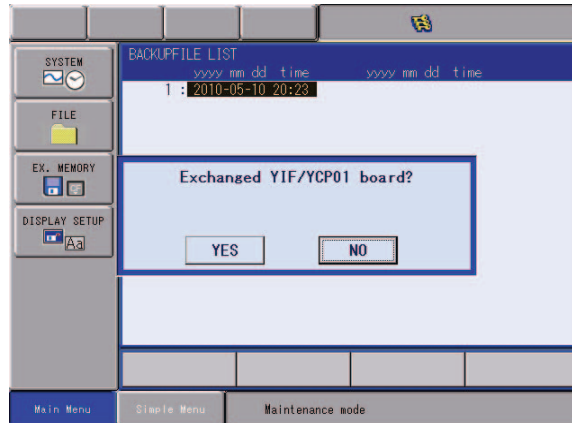


## 4 Loading Save Data

### 4.1 Loading Procedure

#### 5. Select a date of a file to be loaded

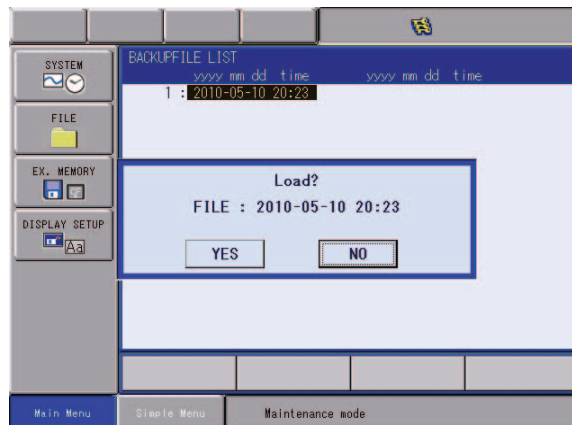
- The confirmation dialog box to confirm whether the board has been replaced or not appears.



- Select {YES} initializes system managed time.
- Select {NO} does not initialize system managed time.

#### 6. Select {YES} or {NO}

- The execution confirmation dialog box appears.



#### 7. Select {YES}

- The DX100 is updated by the CMOSBK. BIN file in the compact flash.
- When "Loading system data. Don't turn the power OFF." of the human interface display area disappears, loading is completed.



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DX100	5	Restrictions
	5.1	Standard Auto Backup Function Unavailable

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## 5 Restrictions

The CMOS save function with FTP has the following restrictions.

### 5.1 Standard Auto Backup Function Unavailable

When this function is enabled, the normal auto backup function (Function to save up to 100 backup data can be saved using the compact flash inserted to the programming pendant) is unavailable. Take appropriate measures such as saving different backup data into different folders on a PC on which FTP is used.

### 5.2 Available Serial Numbers Restricted

When this function is enabled, necessary memory is reserved for processing sub tasks in order to keep batch data in the internal memory. This restricts the maximum number of available subtasks to 7. For more details on sub tasks, see the "DX100 OPTIONS INSTRUCTIONS FOR INDEPENDENT / COORDINATED CONTROL FUNCTION".

### 5.3 Turning OFF the System Erasing Batch Data

Batch data are kept in the internal memory according to settings in the auto backup function window. However, the data in the memory are erased when the DX100 is turned OFF. Because of this, batch data are not kept just after turning ON the DX100. Confirm batch data have been kept in the internal memory when saving the data with FTP.

# DX100 OPTIONS INSTRUCTIONS

## FOR CMOS SAVE FUNCTION WITH FTP

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