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

MOTOMAN INSTRUCTIONS

MOTOMAN-

DX200 INSTRUCTIONS
DX200 OPERATOR’S MANUAL (for each purpose)
DX200 MAINTENANCE MANUAL

The DX200 operator’s manual above corresponds to specific usage. Be sure to use the appropriate manual.

Part Number: 179393-1CD
Revision: 1
MANDATORY

- This manual explains the software pendant of the DX200 system. 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 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.
We suggest that you obtain and review a copy of the ANSI/RIA National Safety Standard for Industrial Robots and Robot Systems (ANSI/RIA R15.06-2012). You can obtain this document from the Robotic Industries Association (RIA) at the following address:

Robotic Industries Association
900 Victors Way
P.O. Box 3724
Ann Arbor, Michigan 48106
TEL: (734) 994-6088
FAX: (734) 994-3338
www.roboticsonline.com

Ultimately, well-trained personnel are the best safeguard against accidents and damage that can result from improper operation of the equipment. The customer is responsible for providing adequately trained personnel to operate, program, and maintain the equipment. NEVER ALLOW UNTRAINED PERSONNEL TO OPERATE, PROGRAM, OR REPAIR THE EQUIPMENT!

We recommend approved YASKAWA training courses for all personnel involved with the operation, programming, or repair of the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
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 an 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.

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

• Before using the software pendant, the user must supply the emergency stop button.

• Before operating the manipulator, check that servo power is turned OFF pressing the emergency stop buttons on the front door of the DX200 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:
  – 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 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 DX200.
  – 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 DX200 and the programming pendant.
Definition of Terms Used Often in This Manual

The MOTOMAN is the YASKAWA industrial robot product.

The MOTOMAN usually consists of the manipulator, the DX200 controller, manipulator cables, and the DX200 programming pendant (optional).

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>DX200 Software Pendant</td>
<td>Software Pendant</td>
</tr>
</tbody>
</table>
Descriptions of the keys, buttons, and screen of the software pendant and the keyboard keys and screen of the PC (personal computer) are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Pendant</td>
<td><strong>Key Sheet</strong> <strong>Character Key and Symbol Key</strong> The keys which have characters printed on them are denoted with [ ]. e.g. [ENTER], [SHIFT]</td>
</tr>
<tr>
<td></td>
<td><strong>Axis Key and Numeric Key</strong> “Axis Keys” and “Numeric Keys” are generic names for the keys for axis operation and number input.</td>
</tr>
<tr>
<td></td>
<td><strong>Cursor Key</strong> Denoted as “cursor key”, or by an arrow [↑], [↓], [←], or [→].</td>
</tr>
<tr>
<td></td>
<td><strong>Keys Pressed Simultaneously</strong> To press two keys simultaneously on the software pendant, click or double-click [SHIFT], and then click the desired key, e.g. [COORD]. The keys are denoted with a “+” sign between them, e.g. [SHIFT]+[COORD].</td>
</tr>
<tr>
<td>Pendant Screen</td>
<td><strong>Button</strong> The button shown on the screen is denoted with { }. e.g. {REMOTE}</td>
</tr>
<tr>
<td></td>
<td><strong>Screen</strong> The menu shown on the screen is denoted with { }. e.g. {JOB}</td>
</tr>
<tr>
<td>PC Keyboard and Screen</td>
<td><strong>Keyboard</strong> Denoted by the key name.</td>
</tr>
<tr>
<td></td>
<td><strong>Screen</strong> Denoted with { }. e.g. { } screen</td>
</tr>
</tbody>
</table>

**Description of the Operation Procedure**

In the explanation of operation procedure, the expression “Click • • •” means moving the cursor to the item and clicking [SELECT], or clicking the item on the screen by using the mouse.
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.

Safeguarding Tips

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. General safeguarding tips are as follows:

• Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation of this equipment, the operator's manuals, the system equipment, and options and accessories should be permitted to operate this equipment.

• Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.

• The system must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

• In accordance with ANSI/RIA R15.06-2012, section 4.2.5, Sources of Energy, use lockout/tagout procedures during equipment maintenance. Refer also to Section 1910.147 (29CFR, Part 1910), Occupational Safety and Health Standards for General Industry (OSHA).

Mechanical Safety Devices

The safe operation of this equipment is ultimately the users responsibility. The conditions under which the equipment will be operated safely should be reviewed by the user. The user must be aware of the various national codes, ANSI/RIA R15.06-2012 safety standards, and other local codes that may pertain to the installation and use of this equipment.

Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. The following safety equipment is provided as standard:

• Safety barriers

• Door interlocks

• Emergency stop palm buttons located on operator station

Check all safety equipment frequently for proper operation. Repair or replace any non-functioning safety equipment immediately.
Programming, Operation, and Maintenance Safety

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system must become familiar with the operation of this equipment. Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this equipment should be permitted to program, or maintain the system. All personnel involved with the operation of the equipment must understand potential dangers of operation.

• Inspect the equipment to be sure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.

• Be sure that all safeguards are in place. Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.

• Check the E-Stop button on the operator station for proper operation before programming. The equipment must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

• Back up all programs and jobs onto suitable media before program changes are made. To avoid loss of information, programs, or jobs, a backup must always be made before any service procedures are done and before any changes are made to options, accessories, or equipment.

• Any modifications to the controller unit can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to the controller unit. Making any changes without the written permission from YASKAWA will void the warranty.

• Some operations require a standard passwords and some require special passwords.

• The equipment allows modifications of the software for maximum performance. Care must be taken when making these modifications. All modifications made to the software will change the way the equipment operates and can cause severe personal injury or death, as well as damage parts of the system. Double check all modifications under every mode of operation to ensure that the changes have not created hazards or dangerous situations.

• This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.

• Do not perform any maintenance procedures before reading and understanding the proper procedures in the appropriate manual.

• Use proper replacement parts.

• Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.
Maintenance Safety

Turn the power OFF and disconnect and lockout/tagout all electrical circuits before making any modifications or connections.

Perform only the maintenance described in this manual. Maintenance other than specified in this manual should be performed only by YASKAWA-trained, qualified personnel.

Summary of Warning Information

This manual is provided to help users establish safe conditions for operating the equipment. Specific considerations and precautions are also described in the manual, but appear in the form of Dangers, Warnings, Cautions, and Notes.

It is important that users operate the equipment in accordance with this instruction manual and any additional information which may be provided by YASKAWA. Address any questions regarding the safe and proper operation of the equipment to YASKAWA Customer Support.
Customer Support Information

If you need assistance with any aspect of your Software Pendant system, please contact YASKAWA Customer Support at the following 24-hour telephone number:

(937) 847-3200

For routine technical inquiries, you can also contact YASKAWA Customer Support at the following e-mail address:

technical_support@motoman.com

When using e-mail to contact YASKAWA Customer Support, please provide a detailed description of your issue, along with complete contact information. Please allow approximately 24 to 36 hours for a response to your inquiry.

Please use e-mail for routine inquiries only. If you have an urgent or emergency need for service, replacement parts, or information, you must contact YASKAWA Customer Support at the telephone number shown above.

Please have the following information ready before you call Customer Support:

- **System**: Software Pendant
- **Primary Application**: 
- **Controller**: DX200
- **Software Version**: Access this information on the Programming Pendant’s LCD display screen by selecting {MAIN MENU} - {SYSTEM INFO} - {VERSION}
- **Robot Serial Number**: Located on the robot data plate
- **Robot Sales Order Number**: Located on the DX200 controller data plate
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   1.2 Terms and Conditions of Use ............................................................................................ 1-2
   1.3 Limitations.......................................................................................................................... 1-3

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1 Introduction

1.1 Overview of Software Pendant

The software pendant on the PC provides functions equivalent to those of the programming pendant for the DX200 (excluding some functions).

The software pendant enables the following operations:

- Monitoring the playback state of the manipulator in the same way as the programming pendant
- Connecting to the DX200 on the same network as the PC

To connect the software pendant, the DX200 must meet the following conditions:

- The communication between the programming pendant and the DX200 is disconnected.
  (For the method of disconnecting communication, refer to "Chap.11.1 Disconnection Function" in "DX200 INSTRUCTIONS (165292-1CD)."
- Other software pendant is not connected.
- The Ethernet function (optional) is valid.
- The parameter is set to S2C1205=1.
1.2 Terms and Conditions of Use

The following shows the Terms and Conditions of Use for the software pendant. To use the software pendant, the user must agree to these Terms and Conditions of Use.

1. Before using the software pendant, confirm that no person is present in the manipulator’s operating range and that you are in a safe location. Injury may result if anyone enters the working envelope of the manipulator during operation.

2. Before using the software pendant, the user must supply the emergency stop button that can turn OFF the servo power supply. Connect the emergency button to the external emergency stop signal for the DX200. Then, before operating the manipulator, check that pressing the emergency stop button turns OFF the servo power supply. When the servo power is turned OFF, the SERVO ON LED on the key sheet of the software pendant turns OFF. If the manipulator cannot be stopped during an emergency, personal injury or equipment damage may result.

3. Once the emergency stop button is released, clear an obstacle or a failure that caused an emergency stop. Then turn ON the servo power.

4. View the manipulator from the front whenever possible. Improper operation or unexpected manipulator motion during teaching or operation may result in personal injury or equipment damage.

5. Before using the software pendant, exit other applications and the screen-saver. Improper operation of the software pendant may result due to another application running.
1.3 Limitations

The following shows the limitations in using the software pendant.

1. The following functions cannot be used by the software pendant. To use one of these functions, use the programming pendant, the concurrent IO, and the MotoPlus for the DX200.
   - Turning ON the servo power supply
   - Executing the JOBs
   - Operating [JOG]
   - Operating [TEST START], [FWD] and [BWD]
   - Overrun release
   - Manual brake release
   - External memory (save destination: CF of programming pendant, USB of programming pendant)
   - Automatic backup (save destination: CF of programming pendant)
   - Zeroing (optional)
   - Programming pendant customization (optional)

2. The software pendant function supports DN2.16-00 or later.
2 Installation Procedure

2.1 Environments for Installation

The environments to install the software pendant are shown below.

<table>
<thead>
<tr>
<th>OS</th>
<th>Windows 7 Professional Edition (32-bit version)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel Core2 Duo 2 GHz or more</td>
</tr>
<tr>
<td>Memory</td>
<td>2 GB or more</td>
</tr>
<tr>
<td>Hard disk</td>
<td>Free space of 500 MB or more</td>
</tr>
<tr>
<td>Display</td>
<td>Display (256 colors or more) supported by MS-Windows</td>
</tr>
<tr>
<td>Mouse</td>
<td>Mouse supported by MS Windows</td>
</tr>
</tbody>
</table>
2.2 Installation of Software Pendant

1. Double-click “setup.exe”.

   – The setup wizard starts.

**NOTE**

Installation must be performed as the administrator of the PC.

---

WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
2. Installation Procedure
2.2 Installation of Software Pendant

2. Click {Next}.
   – "License Agreement" appears.

   ![License Agreement](image)

   To use the software pendant, the user must agree to this Software License Agreement.

3. Carefully read the Software License Agreement. If you agree, select "I Agree" and click {Next}.
   – "Select Installation Folder" appears.
2 Installation Procedure

2.2 Installation of Software Pendant

4. Select the install destination, select the user, and then click {Next}.

   - “Confirm Installation” appears.

   ![Confirm Installation]

5. Click {Next}.

   - The installation starts.

   ![Installing Software Pendant DN]

   - “Installation Complete” appears.

   ![Installation Complete]
2.3 Installation of Hardware Key Driver

To operate the software pendant properly, be sure to connect the hardware key (USB-stick type) supplied with the package to the PC in advance.

Before connecting the key to the PC, be sure to perform the following procedures “Note on PC” and “Installation of driver”, and then connect the key to the USB port.

- **Note on PC**

  Due to the hardware configuration, multiple USB-stick type keys cannot be connected to one USB port by connecting the keys each other. Thus, connect one key to one USB port.

  To install multiple pieces of offline software and connect multiple USB-stick type keys to one PC, use the PC which has the same number of USB ports as that of pieces of offline software.

- **Installation of driver**

  The key must be removed from the PC before installing the driver.

To install the driver, execute the "\SentinelDriver-7.6.3\Sentinel Protection Installer 7.6.3.exe" in the install CD-ROM.

For the installation procedure, refer to "\SentinelDriver-7.6.3\Manual\SafeNet_Sentinel_EndUser_Guide.pdf."
3 Network Configuration

3.1 Changing Network Configuration

The software pendant communicates with the DX200. Thus, the network configuration of the PC on which the software pendant runs must be changed so that the software pendant is connected to the same network as the DX200.

3.1 Changing Network Configuration

1. Click “Control Panel” from the Start menu.

   – The “All Control Panel Items” window appears.
3. Network Configuration

3.1 Changing Network Configuration

2. Click “Network and Sharing Center”.
   – The “Network and Sharing Center” window appears.

3. Click “Change adapter settings”.
   – The “Network Connections” window appears.

4. Select the desired network device, and then click “Properties”.
   – The “Local Area Connection Properties” window appears.
3 Network Configuration

3.1 Changing Network Configuration

5. Select “Internet Protocol Version 4 (TCP/IPv4)”, and then click “Properties”.

6. Select “Use the following IP address”, and then enter the IP address appropriate to the user’s network configuration.

   ![Internet Protocol Version 4 (TCP/IPv4) Properties](image)

   If the PC network configuration is the same as the DX200, the IP address may conflict and cause a failure in the network operation.
4 Resolution Settings

Adjust the resolution of the PC to start the software pendant.

4.1 Changing the Resolution Settings

1. Click [Control Panel] from the Start menu.

   Network settings must be performed by the administrator of the PC.

   – All Control Panel Items window appears.

   ![Control Panel Items Window](image)

   2. Click [Display].

   – Display window appears.

   3. Select "Small", click [Apply].

   – Resolution of the PC is changed.
5 Operations

5.1 Wiring

1. To connect with the PC, insert the LAN cable into the Ethernet terminal (CN104(LAN)) which is for the external device communication of the DX200.

5.2 Disconnecting the Communication Between the Programming Pendant and the DX200

1. For the method of disconnecting communication, refer to section 11.1 "Disconnection Function” in "DX200 INSTRUCTIONS (165292-1CD)".
5.3 Startup of Software Pendant

1. Click the shortcut on the desktop, or click "Software Pendant for DX200" from the Start menu.

   - The "Safety Precautions" window appears.

   **NOTE** The software pendant cannot be started unless the hardware key is connected to the USB port of the PC.

   - The “Programming Pendant Startup” window appears.

2. Carefully read the precautions, and click (agree) if you agree.

   **NOTE** To use the software pendant, the user must agree to these safety precautions.

   - The software pendant communicates with the DX200. If the block warning appears due to the firewall, release the block, and then use the software pendant.
5.4 Connection to DX200

1. Click “Connect to DX200”.

- The “Select DX200” window appears. In this window, the user can select the DX200 to be connected on the network.

To sort items, click the tab “RC Name”, “IP Address”, etc.

To search for the DX200 on the network again, click “Search”.

Supplement
2. Select the DX200 to be connected, and then click {Connect}.

- The DX200 is connected, and the pendant screen and the key sheet are displayed.
5.5 Description of Buttons

The software pendant can be controlled similarly to the programming pendant, but mouse-clicking is used instead of button-pressing, switch-turning, or screen-touching.

For usage of buttons not described in this chapter, refer to “DX200 OPERATOR’S MANUAL (166346-1CD, 165297-1CD, 165298-1CD, 175154-1CD, 165300-1CD, 173911-1CD)” and “DX200 INSTRUCTIONS (165292-1CD)".
Pendant Switch

When a button is selected, it is displayed in blue. When the buttons cannot be used, they are shown shaded.

Table 5-1: Pendant Switch

<table>
<thead>
<tr>
<th>Button</th>
<th>Function and application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode switch Remote mode state</td>
<td>Can be used only when the programming pendant is under the remote mode. By clicking this button, the mode is changed to the remote mode.</td>
</tr>
<tr>
<td>Mode switch Play mode state</td>
<td>Can be used only when the programming pendant is under the remote mode. By clicking this button, the mode is changed to the play mode.</td>
</tr>
<tr>
<td>Mode switch Teach mode state</td>
<td>Can be used only when the programming pendant is under the remote mode. By clicking this button, the mode is changed to the teach mode.</td>
</tr>
<tr>
<td>{START}</td>
<td>This button cannot be used by the DX200 software pendant.</td>
</tr>
<tr>
<td>{HOLD}</td>
<td>By clicking this button, the manipulator’s operation is stopped temporarily.</td>
</tr>
<tr>
<td>{SERVO ON/OFF}</td>
<td>This button cannot be used by the DX200 software pendant.</td>
</tr>
<tr>
<td>{R.STOP}</td>
<td>By clicking this button, the servo power is turned OFF.</td>
</tr>
</tbody>
</table>

The pendant switches cannot be used when inputting the characters, changing the font style, changing the size of buttons, and also when the window pattern change display and the warning dialog box is shown. Before using the pendant switches, be sure to close every windows and dialog boxes.
### Pendant Switch

When a key is selected, it is displayed in blue. When the keys cannot be used, they are shown shaded.

**Table 5-2: Software Pendant Keys and Keyboard Keys (Sheet 1 of 3)**

<table>
<thead>
<tr>
<th>Key</th>
<th>Corresponding key on keyboard</th>
<th>Function and application</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELECT</td>
<td>Space key</td>
<td>Works as described below.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Selects menu items in the main menu area and the pull-down menu area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Makes the selected item ready to be set in the general-purpose display area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Displays multiple messages in the message area.</td>
</tr>
<tr>
<td>Cursor</td>
<td>Arrow keys (↑, ←, →, ↓)</td>
<td>Moves the cursor in the direction of the arrow.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The size of the cursor and the range or place where the cursor can move will vary depending on the window.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If [↑] is pressed when the cursor is on the [NOP] line, the cursor will move to the [END] line.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[SHIFT] + [↑] Scrolls the screen upward.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[SHIFT] + [↓] Scrolls the screen downward.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[SHIFT] + [→] Scrolls the screen to the right.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[SHIFT] + [←] Scrolls the screen to the left.</td>
</tr>
<tr>
<td>CANCEL</td>
<td>Esc</td>
<td>Cancels the current status.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Deletes the sub menu in the main menu area and the pull-down menu area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cancels the input data or the input status in the general-purpose display area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cancels the multiple-message display in the message area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cancels the occurred error.</td>
</tr>
<tr>
<td>AREA</td>
<td>Tab</td>
<td>Moves the cursor in the following order:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Menu Area”→”General-Purpose Display Area”→”Message Area”→”Main Menu Area”. If no item is displayed, the cursor does not move.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[SHIFT] + [AREA] The language can be switched when the bilingual function is valid.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Bilingual function is optional.)</td>
</tr>
</tbody>
</table>
5 Operations
5.5 Description of Buttons

### SHIFT
When a key is pressed with [SHIFT], the function of the key is alternated.

The keys whose functions are alternated by pressing with [SHIFT] are following: [MAIN MENU], [ASSIST], [COORD], [AREA], [MOTION TYPE], cursor key and numeric key.

By single-clicking, [SHIFT] becomes “pressed state”. By clicking another key, the “pressed state” is released.

By double-clicking, [SHIFT] remains “pressed state”. Clicking another key cannot release the pressed state. Thus, the simultaneous pressing of keys can be performed continuously. To release the pressed state, click [SHIFT] again.

### INTERLOCK
When a key is pressed with [INTERLOCK], the function of the key is alternated.

The keys whose functions are alternated by pressing with [INTERLOCK] are following: [ASSIST], [MULTI], [TEST START], [FWD], and numeric key (numeric key customize function).

By single-clicking, [INTERLOCK] becomes “pressed state”. By clicking another key, the “pressed state” is released.

By double-clicking, [INTERLOCK] remains “pressed state”. Clicking another key cannot release the pressed state. Thus, the simultaneous pressing of keys can be performed continuously. To release the pressed state, click [INTERLOCK] again.

### ENTER
Registers instructions, data, current position of the manipulator, etc.

Clicking [ENTER] moves the instruction or data displayed in the input buffer line to the cursor position to complete a registration, insertion, or modification.

### Numeric Keys
Enters the number or symbol when the “>” prompt appears on the input line.

- “.” is the decimal point. “-” is a minus sign or hyphen.
Table 5-2: Software Pendant Keys and Keyboard Keys (Sheet 3 of 3)

<table>
<thead>
<tr>
<th>Key</th>
<th>Corresponding key on keyboard</th>
<th>Function and application</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVO ON READY</td>
<td><img src="image" alt="SERVO ON READY" /></td>
<td>This key cannot be used by the DX200 software pendant.</td>
</tr>
<tr>
<td>Axis Keys</td>
<td><img src="image" alt="Axis Keys" /></td>
<td>This keys cannot be used by the DX200 software pendant.</td>
</tr>
<tr>
<td>TEST START</td>
<td><img src="image" alt="TEST START" /></td>
<td>This key cannot be used by the DX200 software pendant.</td>
</tr>
<tr>
<td>BWD</td>
<td><img src="image" alt="BWD" /></td>
<td>This key cannot be used by the DX200 software pendant.</td>
</tr>
<tr>
<td>FWD</td>
<td><img src="image" alt="FWD" /></td>
<td>This key cannot be used by the DX200 software pendant.</td>
</tr>
</tbody>
</table>

For detailed instructions on teaching, Operators Manual (166346-1CD, 165297-1CD, 165298-1CD, 175154-1CD, 165300-1CD, 173911-1CD)" and “DX200 INSTRUCTIONS (165292-1CD)"

For the device of the external memory function, select "USB1: Controller" "USB2: Controller".
5.6 Exit of Software Pendant

1. Click {×} at the right end of the title bar.

   - A confirmation dialog box appears.

2. Click {OK} to exit out of the software pendant.

   **CAUTION**

   - Followings are the conditions of the DX200 after the completion of communication with the software pendant.
     - Mode: REMOTE
     - Emergency stop signal of the programming pendant: Released
     - HOLD signal of the programming pendant: Released

   During the external memory operation, the software pendant cannot be exited. After the external memory operation is completed, perform the exit operation again.

   - The “Programming Pendant Startup” window appears.

3. Click {×} at the right end of the title bar.

   - The software pendant exits.
6 Frequently Asked Questions

6.1 Connection to DX200 Cannot Be Established

To connect the software pendant to the DX200, the DX200 and the software pendant must meet the following conditions:

- The programming pendant is not connected with the DX200.
- Other software pendant is not connected.
- The Ethernet function (optional) is valid.
- The parameter is set to S2C1205=1.

If the above conditions are met and the connection is still not established, the PC and the DX200 may not be connected by network. To check the network connection, use the Command Prompt.

1. Click “Command Prompt” from the Start menu.
   - The Command Prompt starts.

2. Enter the command as follows:
   > ping 10.0.0.2 (IP address of the DX200 to be connected)
   - If the network is established, a response is returned.

If the response is not returned, a network failure has occurred. Contact your network administrator to correct the failure.
6.2 Software Pendant Does Not Start

To use the software pendant, the dedicated hardware key is necessary. To purchase the hardware key, contact your YASKAWA representative. If the hardware key is not connected properly, the following dialog box appears.

6.3 Software Pendant Behavior is Unstable

Before using the software pendant, other applications and screen-saver must be exited. Another application with high execution priority may cause the improper operation of the software pendant.

Also, the power-saving setting of the PC may cause the unstable behavior of the software pendant. When using the software pendant, disable the power-saving setting.

6.4 If Hardware Key Driver Is Installed with USB-type Key Plugged into PC

1. With the USB-type key plugged into the PC, delete the drive registered as “unknown device” by using “Device Manager”.
2. Uninstall the driver (Sentinel System Driver) from “Programs and Features”.
3. Install the driver with the USB-type key removed from the PC. This allows the software pendant to operate properly.

6.5 If Hardware Key Driver of Version Older than Currently Installed One Is Installed

Installing the hardware key driver of a version older than the currently installed one may cause a problem. Uninstall the driver from “Programs and Features”, and then reinstall it.

For details of installation, refer to section 2.3 “Installation of Hardware Key Driver”.

NOTE: To display the “Programs and Features” menu, go to the Start menu, click “Control Panel”, and then click “Programs and Features”.
6 Frequently Asked Questions

6.6 To Start DX200 in Maintenance Mode

Use the programming pendant to start in the maintenance mode.

6.7 To Check Firewall Settings

To connect the software pendant to the DX200, communication through Windows Firewall of the PC must be allowed.

1. Click “Windows Firewall” from “Control Panel”.
   – The “Windows Firewall” window appears.

2. Click “Allow a program or feature through Windows Firewall”.
   – The “Allowed Programs” window appears.
3. Make sure that the check boxes for “Ypp SWP”, “YppMain Application”, and corresponding networks are selected.

**NOTE**

The firewall must be set or checked as the administrator of the PC.

**NOTE**

The software pendant cannot be connected to the DX200 unless the communication via the firewall of “Ypp SWP” and “YppMain Application” are allowed. Be sure to allow the communication before using the software pendant.