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

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: 172033-1CD
Revision: 0
MANDATORY

- This manual explains the external I/O signal allocation function 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.
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.

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

TURN

• 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:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX100 controller</td>
<td>DX100</td>
</tr>
<tr>
<td>DX100 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, buttons, and displays are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming</td>
<td></td>
</tr>
<tr>
<td>Pendant</td>
<td></td>
</tr>
<tr>
<td>Character Keys</td>
<td>The keys which have characters printed on them are denoted with [ ].</td>
</tr>
<tr>
<td></td>
<td>ex. [ENTER]</td>
</tr>
<tr>
<td>Symbol Keys</td>
<td>The keys which have a symbol printed on them are not denoted with [ ] but depicted</td>
</tr>
<tr>
<td></td>
<td>with a small picture.</td>
</tr>
<tr>
<td></td>
<td>ex. page key</td>
</tr>
<tr>
<td></td>
<td>The cursor key is an exception, and a picture is not shown.</td>
</tr>
<tr>
<td>Axis Keys</td>
<td>&quot;Axis Keys&quot; and &quot;Number Keys&quot; are generic names for the keys for axis operation and</td>
</tr>
<tr>
<td>Number Keys</td>
<td>number input.</td>
</tr>
<tr>
<td>Keys pressed</td>
<td>When two keys are to be pressed simultaneously, the keys are shown with a &quot;+&quot;</td>
</tr>
<tr>
<td>simultaneously</td>
<td>sign between them, ex. [SHIFT]+[COORD]</td>
</tr>
<tr>
<td>Displays</td>
<td>The menu displayed in the programming pendant is denoted with { }.</td>
</tr>
<tr>
<td></td>
<td>ex. {JOB}</td>
</tr>
</tbody>
</table>

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 External I/O Signal Allocation Function
   1.1 Features of External I/O Signal Allocation Function
   1.2 Applicable Version

2 External I/O Signal Allocation Settings
   2.1 External I/O Signal Allocation Function Settings
   2.2 Allocating External I/O Signal
      2.2.1 System Example Intended to Describe the Allocation Procedure
      2.2.2 Procedure for the External I/O Signal Allocation Settings
      2.2.3 Explanation about the External I/O Signal Allocation Window

3 Procedure for Setting the Allocation of the External I/O Signals after Setting the I/O Module
   3.1 Procedure for Performing Allocation after Setting the I/O Module

4 Related Information
   4.1 Management of External I/O Signal Allocation
      4.1.1 Saving to External Memory Device
      4.1.2 Loading from External Memory Device
1 External I/O Signal Allocation Function

The DX100 can process control related to input and output, independently of the motion of the manipulator (in parallel with the motion of the manipulator). This I/O control function is called a concurrent I/O. When a concurrent I/O inputs signals from or outputs signals to an external device, “external input signal (2xxxx)” and “external output signal (3xxxx)” are used. Previously, these signals were automatically allocated when the IO module was set in the maintenance mode, and it was not possible to make an arbitrary allocation. Accordingly, an external I/O signal allocation function that enables signals to be allocated arbitrarily was developed.

1.1 Features of External I/O Signal Allocation Function

The external output signal allocation function has the functions and features shown in the table below.

<table>
<thead>
<tr>
<th>No</th>
<th>Functions and Features</th>
<th>Purposes and Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Allocation in an arbitrary sequence that does not rely on a DX100 station number</td>
<td>· When the IO board is to be installed later, it can be used without changing the ladder</td>
</tr>
<tr>
<td></td>
<td>Previously, the output signals were automatically allocated in the sequence of</td>
<td>program by allocating the IO section of the board to be installed later to an unused area.</td>
</tr>
<tr>
<td></td>
<td>serial communication station No. (1 to 14), followed by OPTION slot 1 (16), and</td>
<td>· The DeviceNet board and the CC-Link board enable a standard ladder program to be used</td>
</tr>
<tr>
<td></td>
<td>OPTION slot 2 (17), and this sequence could not be changed. It is now possible to set</td>
<td>without any need to use the general I/O board (JZNC-YIU01).</td>
</tr>
<tr>
<td></td>
<td>these signals in an arbitrary sequence.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Setting of empty numbers</td>
<td>· When the I/O board is removed, it can be used without changing the ladder program by</td>
</tr>
<tr>
<td></td>
<td>Previously, output signals were automatically allocated in ascending order from #20010/#30010, and the sequence could not be changed. It is now possible to set these signals in an arbitrary sequence using empty numbers.</td>
<td>making the I/O section of the removed board an empty setting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· In a system in which many DX100 units exist, the same ladder program can be used, even if the existence/non-existence of the I/O board used differs for each DX100 unit.</td>
</tr>
<tr>
<td>3</td>
<td>Arbitrary allocation on the board</td>
<td>· The I/O on the board can be divided into multiple areas and controlled.</td>
</tr>
<tr>
<td></td>
<td>Previously, it was not possible to change the allocation on the board, however it is</td>
<td>· Particularly, on a network master board such as DeviceNet, it is possible to divide the area explicitly or change over the sequence, for each substation.</td>
</tr>
<tr>
<td></td>
<td>now possible.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Consolidation of board statuses</td>
<td>· The board status can be consolidated, enabling only the I/O signal to be allocated to a contiguous area.</td>
</tr>
<tr>
<td></td>
<td>Some optional I/O boards have a board status. Previously, the output signal was</td>
<td></td>
</tr>
<tr>
<td></td>
<td>allocated to the front edge of each board, and could not be changed, however it can</td>
<td></td>
</tr>
<tr>
<td></td>
<td>now be changed.</td>
<td></td>
</tr>
</tbody>
</table>
1 External I/O Signal Allocation Function

1.2 Applicable Version

The external I/O signal allocation function is applicable from version No. : DS1.40.00A(**)-00.

CAUTION

If the allocation of an external I/O signal is carelessly changed, an unexpected signal output may be input or output, resulting in abnormal motion. Before allocating an external I/O signal, acquire a thorough understanding of the concurrent I/O and this function. For details of the concurrent I/O, refer to “DX100 Concurrent I/O Manual”.

NOTE

This function cannot be used when the arc welding function is used in the Enhanced mode.
2 External I/O Signal Allocation Settings

CAUTION

If the allocation of an external I/O signal is carelessly changed, an unexpected signal output may be input or output, resulting in abnormal motion. Before allocating an external I/O signal, acquire a thorough understanding of the concurrent I/O and this function. For details of the concurrent I/O, refer to “DX100 Concurrent I/O Manual”.

To utilize the external I/O signal allocation function, please follow the setting methods shown in this section.

2.1 External I/O Signal Allocation Function Settings

Set the parameters to enable the external I/O signal allocation function. (This parameter is reserved for the manufacturer. The customer is not allowed to change this parameter. As for its settings, contact your Yaskawa representative.)

CAUTION

If the setting of this parameter was changed from disabled to enabled, be sure to allocate the next item. A signal will be output in the allocation data unregistered status, resulting in the possibility of an unexpected signal being turned ON/OFF.
2.2 Allocating External I/O Signal

The allocation window is displayed even when the allocation mode is left set to “AUTO”, however it is not possible to change the allocation. To change the allocation, set the allocation mode to “MANUAL”.

2.2.1 System Example Intended to Describe the Allocation Procedure

The procedure for external I/O signal allocation settings is described, using the system with the following configuration as an example.

- **System Configuration**
  - General I/O Unit (JZNC-YIU01)
  - DeviceNet board (SST-DN3-PCU-1: Used as DeviceNet master.)
  - CC-Link board (SST-CCS-PCU: Used to occupy two stations.)

- **Policy of Allocation**
  - I/O area of the DeviceNet board/CC-Link board is allocated first.
  - The communication status of the DeviceNet board/CC-Link board is allocated last.
  - The same settings are performed for IN and OUT.

**Fig. 2-1: Example of allocation (Input)**

Status immediately after execution of automatic allocation Status after execution of manual allocation

---

HW0485745
2.2.2 Procedure for the External I/O Signal Allocation Settings

Allocate the external I/O signal in the following manner.

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

2. Set the security mode to the “MANAGEMENT MODE”.
   – Security mode is set to “MANAGEMENT MODE”.

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

4. Select {SETUP}.
   – The SETUP window appears.
2. External I/O Signal Allocation Settings

2.2 Allocating External I/O Signal

5. Select "OPTION FUNCTION".
   - The OPTION FUNCTION window appears.

6. Select "DETAIL" under the "EXTERNAL IO SETUP".
   - The EXTERNAL IO SETUP window appears.

7. Select "AUTO" or "MANUAL" under the ALLOCATION MODE.
   - The select menu appears.
2.2 Allocating External I/O Signal

8. Select “MANUAL”.

   – Allocation mode is set to “MANUAL”.

9. Select “DETAIL” under the “EXTERNAL IO ALLOCATION”.

   – The External Input Signals Allocation window appears.

   **NOTE**
   When the allocation mode is changed from “MANUAL” to “AUTO”, the set allocation data is discarded, and re-allocation in the Auto mode takes place. If it is necessary to save the set allocation data, save it using the external memory menu in advance.

   Select “MANUAL”.

   – Allocation mode is set to “MANUAL”.

   9. Select “DETAIL” under the “EXTERNAL IO ALLOCATION”.

   – The External Input Signals Allocation window appears.
10. Select the external input signal number (at the change source) to be changed. (In the setting example, select “#20010”.)

- The select menu appears.

11. Select “MODIFY”, and input the external input signal number (at the change destination) to be changed. (In the setting example, enter ‘20190’.)

- YIU01 displayed in the top row moves to the row following #20160.

12. Likewise, select/modify the number of the external input signal.

- Repeat select/modify until the following window appears.
13. Press [ENTER].
   
   – The External Output Signals Allocation window appears.

14. Like the case of the external input signal, select/modify the external output signal.

   – Repeat select/modify until the following window appears.

15. Press [ENTER].

   – The confirmation dialog box appears.
2. External I/O Signal Allocation Settings

2.2 Allocating External I/O Signal

16. Select “YES”.

– The settings are confirmed, and the OPTION FUNCTION window reappears.
2.2.3 Explanation about the External I/O Signal Allocation Window

The details of the window are explained using the window example. The range over which the cursor can move is the hatched area of the figure.

<table>
<thead>
<tr>
<th>EXTERNAL I/O ALLOCATION(INPUT)</th>
<th>ST#</th>
<th>CH</th>
<th>MAC id addr byte</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>#20010</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>YIU01</td>
</tr>
<tr>
<td>#20060</td>
<td>16</td>
<td>0</td>
<td>254</td>
<td>DN3-PCU-1</td>
</tr>
<tr>
<td>#20070</td>
<td>16</td>
<td>0</td>
<td>1</td>
<td>DN3-PCU-1</td>
</tr>
<tr>
<td>#20120</td>
<td>16</td>
<td>0</td>
<td>2</td>
<td>DN3-PCU-1</td>
</tr>
<tr>
<td>#20160</td>
<td>16</td>
<td>0</td>
<td>3</td>
<td>DN3-PCU-1</td>
</tr>
<tr>
<td>#20190</td>
<td>17</td>
<td>0</td>
<td>254</td>
<td>CCS-PCU</td>
</tr>
<tr>
<td>#20200</td>
<td>17</td>
<td>0</td>
<td>1</td>
<td>CCS-PCU</td>
</tr>
</tbody>
</table>

- **External I/O signal numbers**
  Indicates the beginning number of the external I/O signals allocated to each I/O area. On the allocation window, the set values of these items are used and displayed in ascending order. The following contents are displayed.
  - #20010 to #22560: The number of the signal allocated to the beginning of each I/O area, in the input signals
  - #30010 to #32560: The number of the signal allocated to the beginning of each I/O area, in the output signals
  - #----- : Unallocated I/O area

- **ST#**
  Indicates the DX100 station number allocated to each I/O board. The displayed contents include the following:
  - 1 to 13: Optional I/O board which is connected to the JZNC-YIU01 using a serial communication cable (The serial communication station number is determined by the rotary switch setting on each board.)
  - 14 : General I/O board (JZNC-YIU01)
  - 16 : Optional board inserted into CN1 of the riser card in the CPU rack
  - 17 : Optional board inserted into CN2 of the riser card in the CPU rack

- **CH**
  Indicates the channel number (network communication system) on the board. Two channels exist on the SST-DN3-PCU-2 alone. All boards other than this have one channel. The following contents are displayed.
  - 0: I/O area for channel 1
  - 1: I/O area for channel 2
### 2 External I/O Signal Allocation Settings

#### 2.2 Allocating External I/O Signal

#### MAC ID

Indicates the network communication station number set in the channel concerned on the board concerned. Regarding station numbers that cannot be displayed, or station numbers that do not need to be displayed, ‘0’ is displayed. The following contents are displayed.

- 0 : No station number, or network communication station number ‘0’
- 1 to 251 : Network communication station number ‘1’ to ‘251’
- Scanner station of EtherNet/IP board (PCU-ETHIO)
- 252 : Unallocated I/O area of channel 1
- 253 : Unallocated I/O area of channel 2
- 254 : Communication status area of channel 1
- 255 : Communication status area of channel 2

#### ADDR

Indicates the offset address from the beginning of each I/O area when the inside of each I/O area is further divided into multiple parts.

#### BYTE

Indicates the size (number of bytes) inside each I/O area.

#### NAME

Indicates the name of each I/O board.
3 Procedure for Setting the Allocation of the External I/O Signals after Setting the I/O Module

In the case where the external I/O signal allocation function is enabled, and the I/O module is set, the window automatically changes over to the external I/O signal allocation window. If an I/O module setting was changed, be sure to also allocate an external I/O signal. Before reading this section, carefully read chapter 2 "External I/O Signal Allocation Settings" in order to become familiar with the setting procedure.

CAUTION

If the allocation of an external I/O signal is carelessly changed, an unexpected signal output may be input or output, resulting in abnormal motion. Before allocating an external I/O signal, acquire a thorough understanding of the concurrent I/O and this function. For details of the concurrent I/O, refer to “DX100 Concurrent I/O Manual”.

3.1 Procedure for Performing Allocation after Setting the I/O Module

Make the I/O module setting for the case when the external I/O signal allocation function is enabled, using the following procedure. The system configuration assumed for this procedure is the same as that described in section 2.2.1 “System Example Intended to Describe the Allocation Procedure” on page 2-2.

1. Turn ON the power supply while pressing [MAIN MENU].
   – The maintenance mode starts.
2. Set the security mode to the “MANAGEMENT MODE”.
   – Security mode is set to “MANAGEMENT MODE”.
3. Select {SYSTEM} under the main menu.
   – The sub menu appears.
3. Procedure for Setting the Allocation of the External I/O Signals after Setting the I/O Module

3.1 Procedure for Performing Allocation after Setting the I/O Module

4. Select {SETUP}.
   - The SETUP window appears.
   - Make sure that the settings are correct.
   - If the settings are not correct, interrupt this procedure, check the settings/connection status of each board, and then restart operation from step 1 of this procedure.

5. Select {IO MODULE}.
   - The IO MODULE setup window appears.
   - Make sure that the settings are correct.
   - If the settings are not correct, interrupt this procedure, check the settings/connection status of each board, and then restart operation from step 1 of this procedure.
3. Procedure for Setting the Allocation of the External I/O Signals after Setting the I/O Module

3.1 Procedure for Performing Allocation after Setting the I/O Module

6. Press [ENTER].

- The rest of the I/O modules appears.

   ![Image of I/O Modules]

- Make sure that the settings are correct.
  If the settings are not correct, interrupt this procedure, check the settings/connection status of each board, and then restart operation from step 1 of this procedure.

7. Press [ENTER].

- The confirmation dialog box appears.
3. Procedure for Setting the Allocation of the External I/O Signals after Setting the I/O Module

3.1 Procedure for Performing Allocation after Setting the I/O Module

8. Select “YES”.
   - The External I/O Setup window appears.

9. To set the mode to “MANUAL”, select “AUTO”, and then select “MANUAL”.
   - Allocation mode is set to “MANUAL”.

10. Select “DETAIL”.
    - The External I/O allocation window appears.
11. Select/enter the number of the external input signal of the parts to be changed.
   – Repeat select/modify until the following window appears. (Refer to section 2.2.1 “System Example Intended to Describe the Allocation Procedure” on page 2-2.)

12. Press [ENTER].
   – The External I/O allocation window appears.
3. Procedure for Setting the Allocation of the External I/O Signals after Setting the I/O Module

3.1 Procedure for Performing Allocation after Setting the I/O Module

13. Select/enter the number of the external output signal of the parts to be changed.

- Repeat select/modify until the following window appears. (Refer to section 2.2.1 “System Example Intended to Describe the Allocation Procedure” on page 2-2.)

14. Press [ENTER].

- The confirmation dialog box appears.

15. Select “YES”.

- The settings are confirmed, and the IO MODULE setup window reappears.
4  Related Information

4.1  Management of External I/O Signal Allocation

The settings on the external I/O allocation window can be saved or loaded using an external memory device. An outline of this procedure is shown below. For details of the external memory device, refer to Chapter 7. “External Memory Devices” of the "DX100 OPERATOR’S MANUAL".

4.1.1 Saving to External Memory Device

1. Turn ON the DX100 power.
2. Select {EX. MEMORY} under the main menu.
3. Select “SAVE”.
   – The save window appears.
4. Select "SYSTEM DATA".
   – The system data selection display appears.
5. Select “EXTERNAL IO ALLOC DATA”.
   – The selected system data are marked with "★".
6. Press [ENTER].
   – The confirmation dialog box appears.
7. Select “YES”.
   – The file starts to be saved, and the transmission window appears. To interrupt the saving, press [STOP]. When the saving is completed or interrupted, the system data selection window appears.

NOTE

“External I/O allocation data” can be saved or loaded when the parameter “External I/O Signal Allocation Function Settings” is enabled and the allocation mode is set to "MANUAL".
4.1.2 Loading from External Memory Device

1. Turn ON the DX100 power.
2. Set the security mode to the “MANAGEMENT MODE”.
3. Select (EX. MEMORY) under the main menu.
4. Select “LOAD”.
   – The load window appears.
5. Select “SYSTEM DATA”.
   – The system data selection window appears.

6. Select “EXTERNAL IO ALLOC DATA”.
   – The selected system data are marked with "★".
7. Press [ENTER].
   – The confirmation dialog box appears.
8. Select “YES”.
   – The file starts to be loaded, and the transmission window appears.
   When the loading is completed, the system data selection window appears.

If there is an inconsistency between the board that is actually connected and the contents of the external I/O allocation data, it will be impossible to load the file normally. Before loading the file, confirm that the data does not disagree with the configuration of the board that is actually connected.

9. After the file has been successfully loaded, power cycle the DX100.
DX100

INSTRUCTIONS

FOR EXTERNAL I/O SIGNAL ALLOCATION FUNCTION

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
Bredbandet 1 vån. 3 varvsholmen 392 30 Kalmar, Sweden
Phone +46-480-417-800 Fax +46-480-417-999

YASKAWA Electric (China) Co., Ltd.
22/F 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 Co., Ltd
9F, Kyobo Securities Bldg., 26-4, Yeouido-dong, Yeongdeungpo-gu, Seoul 150-737, Korea
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.
252/125-126 27th Floor, Tower B Muang Thai-Phatra Complex Building, Rachadaphisek Road, Huaykwang, Bangkok 10320, Thailand
Phone +66-2693-2200 Fax +66-2693-4200

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

Specifications are subject to change without notice for ongoing product modifications and improvements.