

- 24-hour Telephone Number: (937) 847-3200
Use for urgent or emergency needs for technical support, service and/or replacement parts
- Routine Technical Inquiries: techsupport@motoman.com
Allow up to 36 hours for response

YRC1000 OPTIONS JZNC-YIU01-E BOARD INSTRUCTIONS

FOR I/O EXPANSION

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

MOTOMAN INSTRUCTIONS

MOTOMAN-□□□ INSTRUCTIONS

YRC1000 INSTRUCTIONS

YRC1000 OPERATOR'S MANUAL (GENERAL) (SUBJECT SPECIFIC)

YRC1000 MAINTENANCE MANUAL

YRC1000 ALARM CODES (MAJOR ALARMS) (MINOR ALARMS)

The YRC1000 operator's manual above corresponds to specific usage. Be sure to use the appropriate manual.

The YRC1000 operator's manual above consists of "GENERAL" and "SUBJECT SPECIFIC".

The YRC1000 alarm codes above consists of "MAJOR ALARMS" and "MINOR ALARMS".

Please have the following information available when contacting Yaskawa Customer Support:

- System
- Primary Application
- Software Version (*Located on Programming Pendant by selecting: {Main Menu} - {System Info} - {Version}*)
Robot Serial Number (*Located on robot data plate*)
Robot Sales Order Number (*Located on controller data plate*)

Part Number: 178955-1CD
Revision: 0



DANGER

- This manual explains the JZNC-YIU01-E board of the YRC1000 system. Read this manual carefully and be sure to understand its contents before handling the YRC1000. Any matter, including operation, usage, measures, and an item to use, not described in this manual must be regarded as "prohibited" or "improper".
- General information related to safety are described in "Chapter 1. Safety" of the YRC1000 INSTRUCTIONS. To ensure correct and safe operation, carefully read "Chapter 1. Safety" of the YRC1000 INSTRUCTIONS.



CAUTION

- In some drawings in this manual, protective covers or shields are removed to show details. Make sure that all the covers or shields are installed in place before operating this product.
- YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids the product warranty.

NOTICE

- 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.

NOTES FOR SAFE OPERATION

Read this manual carefully before installation, operation, maintenance, or inspection of the YRC1000.

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



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Safety Signs identified by the signal word DANGER should be used sparingly and only for those situations presenting the most serious hazards.



WARNING

Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Hazards identified by the signal word WARNING present a lesser degree of risk of injury or death than those identified by the signal word DANGER.



CAUTION

Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury. It may also be used without the safety alert symbol as an alternative to “NOTICE”.

NOTICE

NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol should not be used with this signal word. As an alternative to “NOTICE”, the word “CAUTION” without the safety alert symbol may be used to indicate a message not related to personal injury.

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”.

NOTICE

- Do not use or maintain this board under the following 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

Failure to observe this instruction may result in the failure of the board.



DANGER

- Before operating the manipulator, make sure the servo power is turned OFF by performing the following operations. When the servo power is turned OFF, the SERVO ON LED on the programming pendant is turned OFF.
 - Press the emergency stop buttons on the front door of the YRC1000, on the programming pendant, on the external control device, etc.
 - Disconnect the safety plug of the safety fence. (when in the play mode or in the remote mode)

If operation of the manipulator cannot be stopped in an emergency, personal injury and/or equipment damage may result.

Fig. : Emergency Stop Button



- Before releasing the emergency stop, make sure to remove the obstacle or error caused the emergency stop, if any, and then turn the servo power ON.

Failure to observe this instruction may cause unintended movement of the manipulator, which may result in personal injury.

Fig. : Release of Emergency Stop



- Observe the following precautions when performing a teaching operation within the manipulator's operating range:
 - Be sure to perform lockout by putting a lockout device on the safety fence when going into the area enclosed by the safety fence. In addition, the operator of the teaching operation must display the sign that the operation is being performed so that no other person closes the safety fence.
 - View the manipulator from the front whenever possible.
 - Always follow the predetermined operating procedure.
 - Always keep in mind emergency response measures against the manipulator's unexpected movement toward a person.
 - Ensure a safe place to retreat in case of emergency.

Failure to observe this instruction may cause improper or unintended movement of the manipulator, which may result in personal injury.

- Confirm that no person is present in the manipulator's operating range and that the operator is in a safe location before:
 - Turning ON the YRC1000 power
 - Moving the manipulator by using the programming pendant
 - Running the system in the check mode
 - Performing automatic operations

Personal injury may result if a person enters the manipulator's operating range during operation. Immediately press an emergency stop button whenever there is a problem. The emergency stop buttons are located on the front panel of the YRC1000 and on the right of the programming pendant.

- Read and understand the Explanation of the Warning Labels before operating the manipulator.



WARNING

- Do not touch the inside of the controller cabinet for at least 5 minutes after turning the power off.

Failure to observe this warning may result in electric shock or personal injury because of the residual voltage of the condenser.

- During power on, make sure to close the door and mount the protective cover, and do not touch the board.

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

- Perform the following inspection procedures prior to conducting manipulator teaching. If there is any problem, immediately take necessary steps to solve it, such as maintenance and repair.
 - Check for a problem in manipulator movement.
 - Check for damage to insulation and sheathing of external wires.
- Always return the programming pendant to the hook on the YRC1000 cabinet after use.

If the programming pendant is left unattended on the manipulator, on a fixture, or on the floor, the Enable Switch may be activated due to surface irregularities of where it is left, and the servo power may be turned ON. In addition, in case the operation of the manipulator starts, the manipulator or the tool may hit the programming pendant left unattended, which may result in personal injury and/or equipment damage.

- Wiring and installation must be performed by authorized or certified personnel.

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



CAUTION

- Check to be sure that there is no foreign matter (metal piece, etc.) on the board.

Failure to observe this caution may result in personal injury or equipment damage because of malfunction.

- Check to be sure that there is no problem (damage, bend, etc.) with the components of the board.

Failure to observe this caution may result in personal injury or equipment damage because of malfunction.

- Connect the cables and connectors properly.

Failure to observe this caution may result in fire or equipment failure.

- Make sure to properly perform the setting of the switches, etc.

Failure to observe this caution may result in personal injury or equipment damage because of malfunction.

- Do not touch the solder surface of the board directly with a finger.

Failure to observe this caution may result in personal injury because of solder projection, etc.

NOTICE

- Do not touch the component-mounting surface of the board directly with a finger.

Failure to observe this caution may result in the failure of IC, etc. because of static electricity.

- Avoid shock on the board.

Failure to observe this caution may result in the failure of the board.

Definition of Terms Used Often in This Manual

The MOTOMAN is the YASKAWA industrial robot product.

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

In this manual, the equipment is designated as follows.

Equipment	Manual Designation
YRC1000 controller	YRC1000
YRC1000 programming pendant	Programming pendant
Cable between the manipulator and the controller	Manipulator cable

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

Equipment		Manual Designation
Programming Pendant	Character Keys /Symbol Keys	The keys which have characters or its symbol printed on them are denoted with []. ex. [ENTER]
	Axis Keys /Numeric Keys	[Axis Key] and [Numeric Key] 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 [SELECT] is pressed, or that the item is directly selected by touching the screen.

Registered Trademark

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

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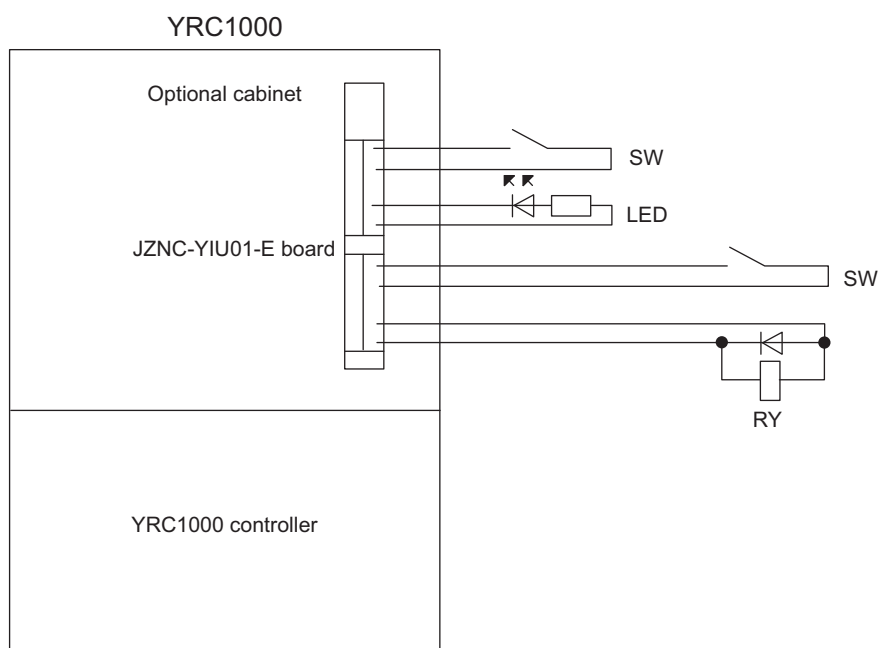
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1	Outline
1.1	System Configuration Example

1 Outline

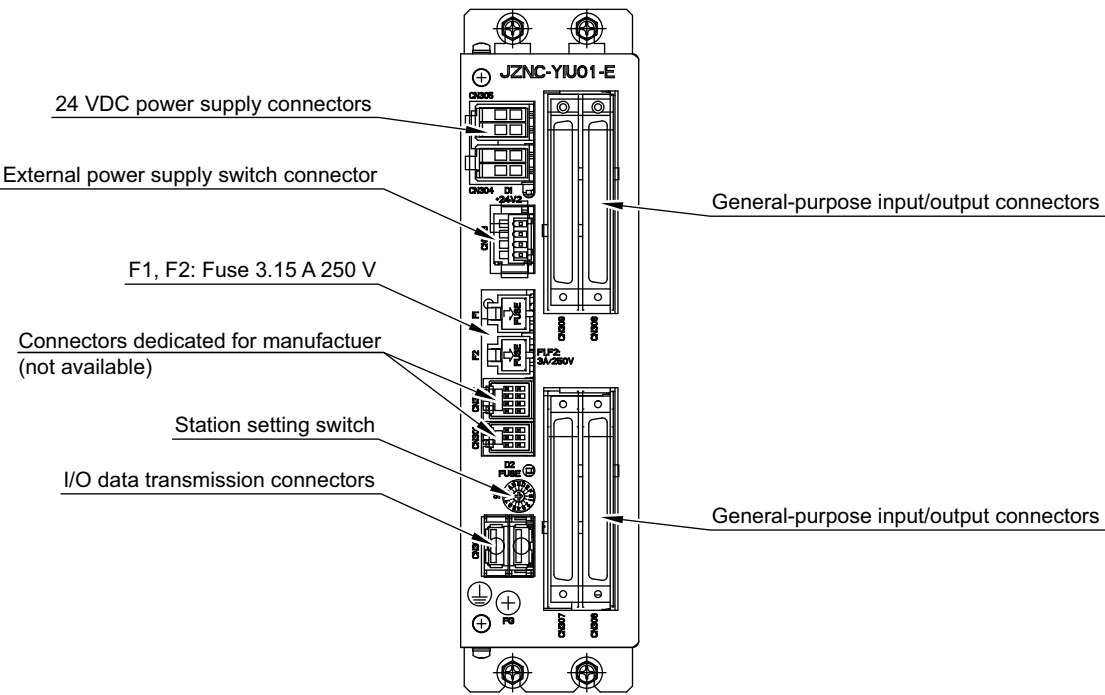
This instruction manual describes the I/O expansion board, the JZNC-YIU01-E. The JZNC-YIU01-E board can be used to expand the number of I/O points when more YRC1000 I/O points are needed.

1.1 System Configuration Example



2 Hardware Specifications

2.1 Board External View



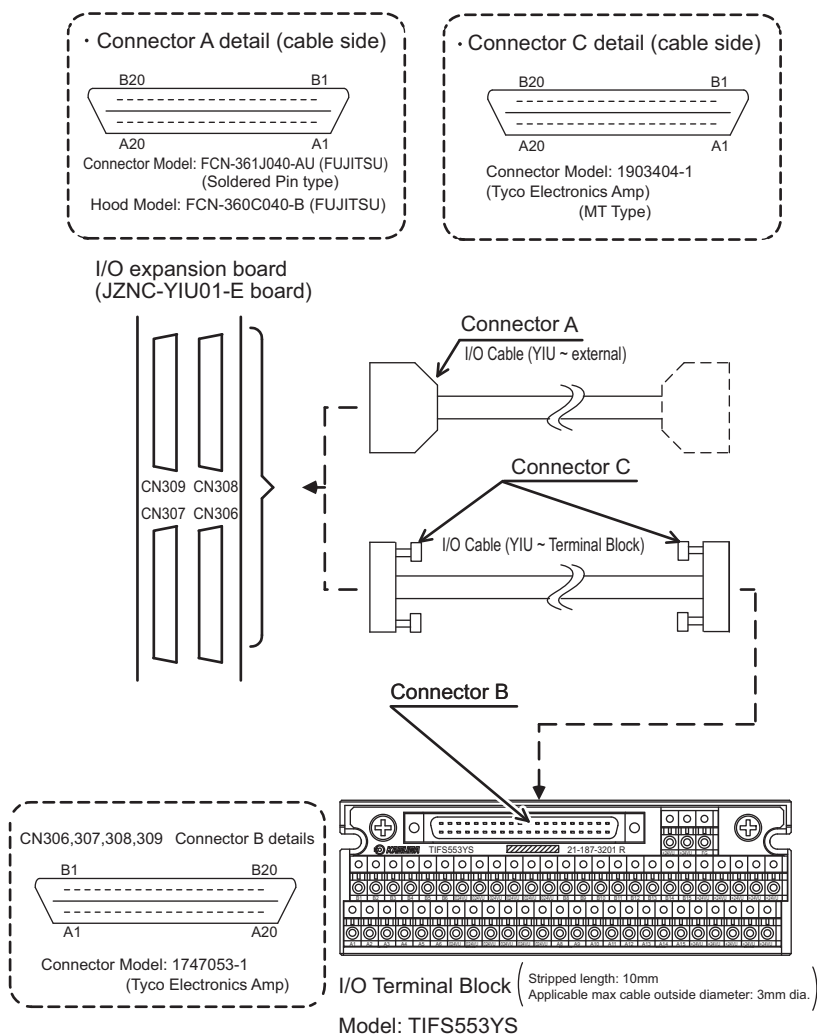
2.2 Board Specifications

Items	Specifications
Board mounting position	Optional board mounting space in the optional cabinet of the YRC1000
Number of I/O points	Input: 40 points Output: 40 points (transistor output 32 points, relay output 8 points)

2 Hardware Specifications

2.3 General-purpose Input/output Connectors

2.3 General-purpose Input/output Connectors




3 Setting the Functions


3.1 Function Setting Switches

The section explains the switches that set the functions of the JZNC-YIU01-E board. Make the proper settings following the instructions. For details of the settings, refer to *chapter 3.2 “Setting Method”*.

S1: Sets the stations for the JZNC-YIU01-E board on the YRC1000.
 The setting range for a station is 1 (ST#01) to E (ST#14).
 Do not set the station to 0 (ST#00) or F (ST#15).

3.2 Setting Method

Switches	Setting Method																
S1 Station setting	<div></div> <div>Sets the stations. The relation between the switch setting and the station is shown below. Turn the arrow to the number corresponding to the desired station. (Use a flat tip screwdriver.)</div> <div><table><tr><td>0: Cannot be set</td><td>8: ST#08</td></tr><tr><td>1: ST#01</td><td>9: ST#09</td></tr><tr><td>2: ST#02</td><td>A: ST#10</td></tr><tr><td>3: ST#03</td><td>B: ST#11</td></tr><tr><td>4: ST#04</td><td>C: ST#12</td></tr><tr><td>5: ST#05</td><td>D: ST#13</td></tr><tr><td>6: ST#06</td><td>E: ST#14 (Default setting)</td></tr><tr><td>7: ST#07</td><td>F: Can not be set</td></tr></table></div> <div>The number after ST# is the station number displayed on the programming pendent of the YRC1000 when setting I/O modules. The default setting is ST#14.</div>	0: Cannot be set	8: ST#08	1: ST#01	9: ST#09	2: ST#02	A: ST#10	3: ST#03	B: ST#11	4: ST#04	C: ST#12	5: ST#05	D: ST#13	6: ST#06	E: ST#14 (Default setting)	7: ST#07	F: Can not be set
0: Cannot be set	8: ST#08																
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4: ST#04	C: ST#12																
5: ST#05	D: ST#13																
6: ST#06	E: ST#14 (Default setting)																
7: ST#07	F: Can not be set																



Do not set S1 to 0 or F.

Do not set more than one board to one ST#.

Improper settings may prevent the I/O module from being recognized correctly.

4 Mounting the JZNC-YIU01-E 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.

- 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.



CAUTION

- Check to be sure that there is no foreign matter (metal piece, etc.) on the board.

Failure to observe this caution may result in personal injury or equipment damage because of malfunction.

- Check to be sure that there is no problem (damage, bend, etc.) with the components of the board.

Failure to observe this caution may result in personal injury or equipment damage because of malfunction.

- Connect the cables and connectors properly.

Failure to observe this caution may result in fire or equipment failure.

- Make sure to properly perform the setting of the switches, etc.

Failure to observe this caution may result in personal injury or equipment damage because of malfunction.

- Do not touch the solder surface of the board directly with a finger.

Failure to observe this caution may result in personal injury because of solder projection, etc.

NOTICE

- Do not touch the component-mounting surface of the board directly with a finger.

Failure to observe this caution may result in the failure of IC, etc. because of static electricity.

- Avoid shock on the board.

Failure to observe this caution may result in the failure of the board.

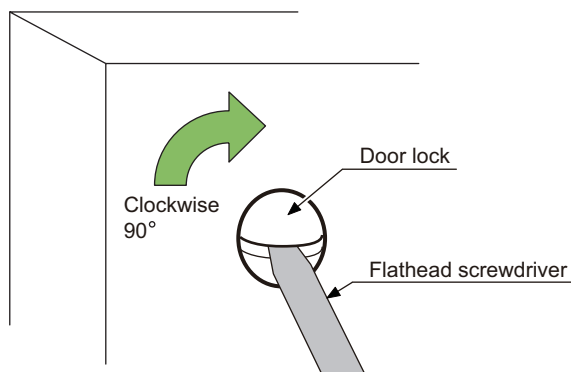
4 Mounting the JZNC-YIU01-E Board

4.1 Opening Front Door of the YRC1000

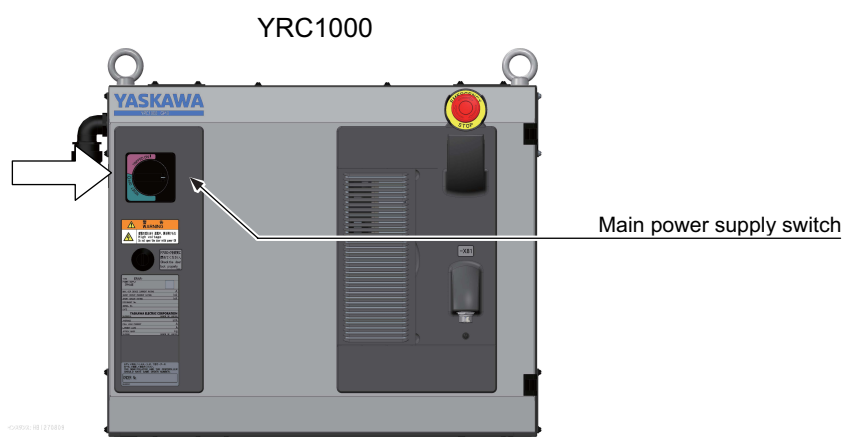
4.1 Opening Front Door of the YRC1000

Mount the JZNC-YIU01-E board in the following manner.

1. By using a flathead screwdriver, rotate the door lock on the front of the YRC1000 90 degrees clockwise.



2. Rotate the main power supply switch to the "OFF" position and gently open the doors of the YRC1000 controller and of the YRC1000 optional cabinet.



4.2 Confirming the Switch Settings on the JZNC-YIU01-E Board

1. Be sure that the settings of switches on the board are correct.
2. For the switch settings, refer to *chapter 3 "Setting the Functions"*.

4.3 Mounting the JZNC-YIU01-E Board on the YRC1000

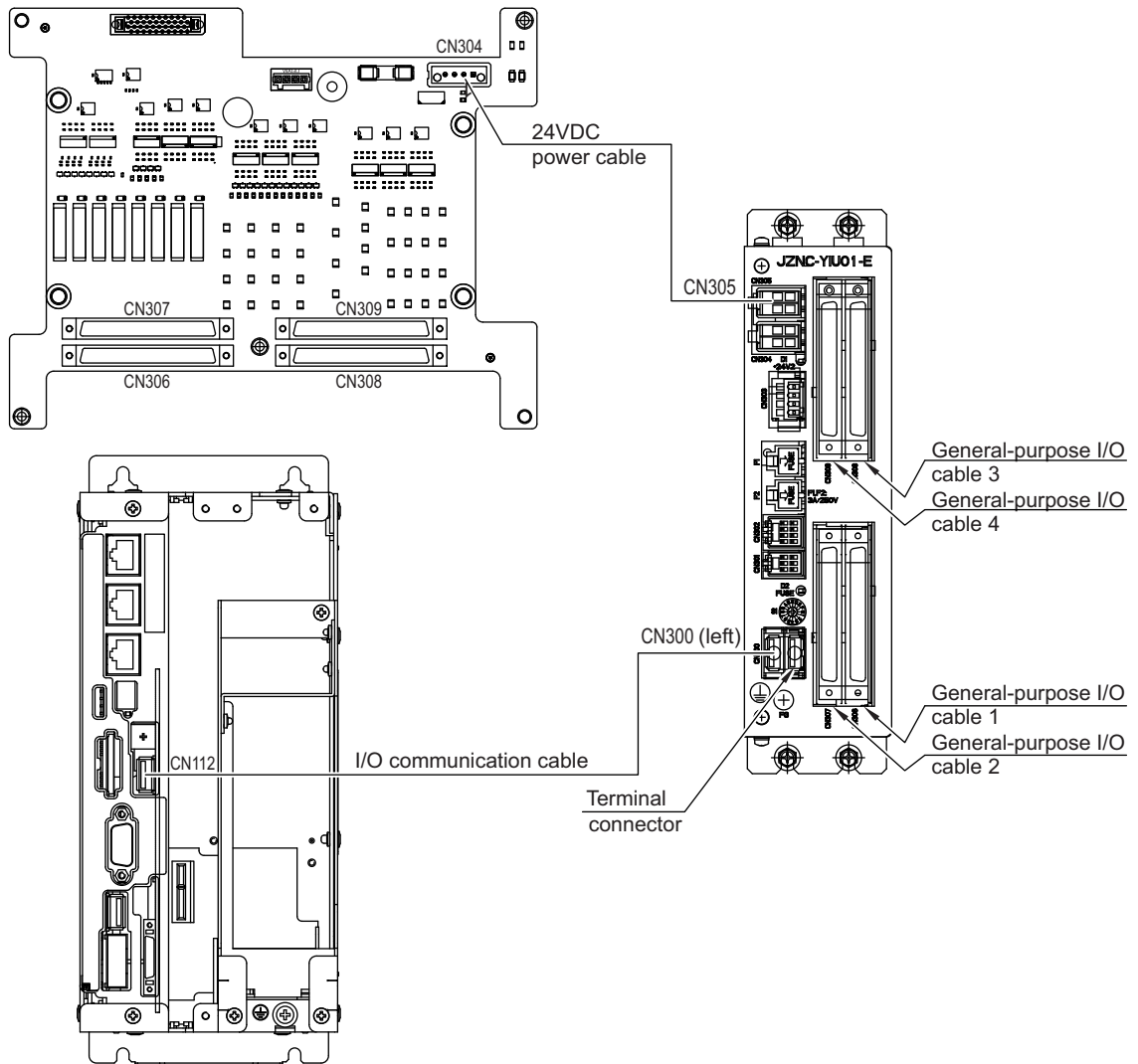
1. Be sure that the main power supply is OFF.
2. Fix the JZNC-YIU01-E board on the YRC1000 with the board fixing screws securely tightened.

4 Mounting the JZNC-YIU01-E Board

4.4 Connecting Each Cable

4.4 Connecting Each Cable

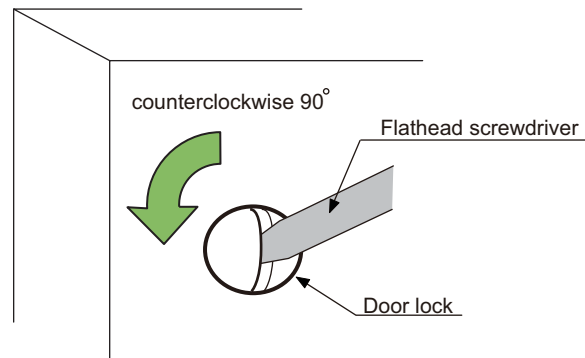
1. Connect the 24 VDC power supply cable to the CN305 on the JZNC-YIU01-E board.
2. Connect the I/O communication cable to the CN300 on the JZNC-YIU01-E board. Connect the terminal connector to the non-occupied CN300 on the JZNC-YIU01-E board.
3. Connect the I/O cables to CN306 to CN309 on the JZNC-YIU01-E board.



- 4 Mounting the JZNC-YIU01-E Board
- 4.5 Closing the Front Door of the YRC1000

4.5 Closing the Front Door of the YRC1000

1. Close the door gently.
2. By using a flathead screwdriver, rotate the door locks on the front of the YRC1000 90 degrees counterclockwise.



5 I/O Signal Allocation

5.1 I/O Module Setting

In order to use a JZNC-YIU01-E board on the YRC1000, perform the I/O module setting in the following manner.

Make sure that the power supply to the YRC1000 is OFF. Then, mount the JZNC-YIU01-E board, for which all of its switches have been set, inside the YRC1000. For the board mounting method, refer to *chapter 4 "Mounting the JZNC-YIU01-E Board"*.



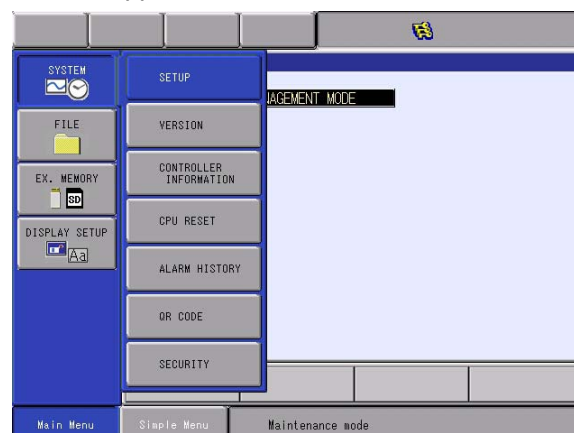
Add an I/O module in the management mode.

In the operation mode and the editing mode, the settings are for reference only.

1. Turn the power supply ON again while pressing [MAIN MENU] simultaneously.
 - The main menu appears.



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



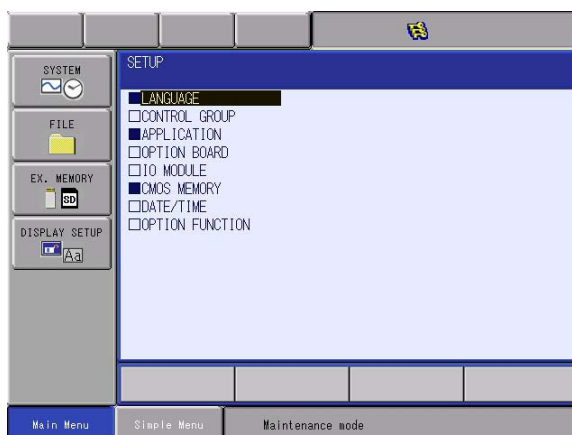
3. Change the security mode to management mode.

5 I/O Signal Allocation

5.1 I/O Module Setting

4. Select {SETUP}.

- The SETUP window appears.



5. Select {I/O MODULE}.

- The current mounted status of the I/O modules is shown as in the following example.

ST#	DI	DO	AI	AO	BOARD
00	0040	0040	-	-	ASF01(AI001 NPN)
01	-	-	-	-	NONE
02	-	-	-	-	NONE
03	-	-	-	-	NONE
04	-	-	-	-	NONE
05	-	-	-	-	NONE
06	-	-	-	-	NONE
07	-	-	-	-	NONE
08	-	-	-	-	NONE
09	-	-	-	-	NONE
10	-	-	-	-	NONE
11	-	-	-	-	NONE
12	-	-	-	-	NONE
13	-	-	-	-	NONE

The bottom of the screen shows the menu navigation: Main Menu, Simple Menu, and Maintenance mode.

- To view the current mounted status of the I/O modules for stations that are not displayed, press [ENTER].

ST#	DI	DO	AI	AO	BOARD
06	-	-	-	-	NONE
07	-	-	-	-	NONE
08	-	-	-	-	NONE
09	-	-	-	-	NONE
10	-	-	-	-	NONE
11	-	-	-	-	NONE
12	-	-	-	-	NONE
13	-	-	-	-	NONE
14	0040	0040	-	-	YIU01
15	-	-	-	-	NONE
16	-	-	-	-	NONE
17	-	-	-	-	NONE
18	-	-	-	-	NONE
19	-	-	-	-	NONE

The bottom of the screen shows the menu navigation: Main Menu, Simple Menu, and Maintenance mode.

5 I/O Signal Allocation

5.1 I/O Module Setting

6. Confirm the status of the mounted I/O module.

- Only the I/O modules mounted on YRC1000 are displayed. Confirm that each station (ST#) indicates the actual mounted status of the I/O module.
- The following table lists the meanings of each line.

ST#	Station address of I/O module
DI	Number of digital input points ¹⁾
DO	Number of digital output points ¹⁾
AI	Number of analog input points ¹⁾
AO	Number of analog output points ¹⁾
BOARD	Circuit board type ²⁾

1 A hyphen "-" indicates the corresponding I/O module is not mounted.

2 If the system cannot recognize the circuit board type, "*****" is shown. No problem will occur as long as the values displayed in DI, DO, AI, and AO are correct.

- In the example shown on the display, the configuration of boards are as follows.

ST#00: JANCD-AIO0□-E board

This board is shown as ASF01 on the IO module display.
(digital input 40 points, digital output 40 points)

This board is fixed to ST#00.

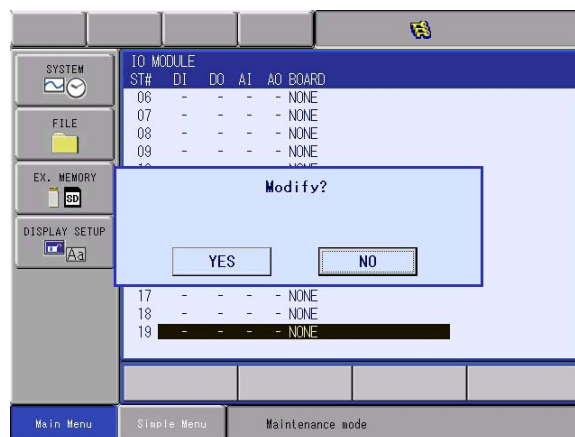
ST#14: JANCD-YIU01-E board

(digital input 40 points, digital output 40 points).

Switch S1: set to E (This value becomes the ST#).

7. Press [ENTER].

- The confirmation dialog box appears.



8. Select "YES."

- When the mounted status of an I/O module is correct, select "YES." The I/O module setting is updated, and the IO MODULE window changes to the EXTERNAL IO SETUP window.

5 I/O Signal Allocation

5.1 I/O Module Setting

If the window does not indicate the actual mounted status, recheck the cable connection and the switch setting.

If the mounted status is correct (but the window does not correspond), the following causes are suspected.

- Improper or overlapped station settings
S1 may be erroneously set to 0 or F. Each station can be set to only one board. If S1 has been set to two boards, change the setting of S1 so only one board is assigned.



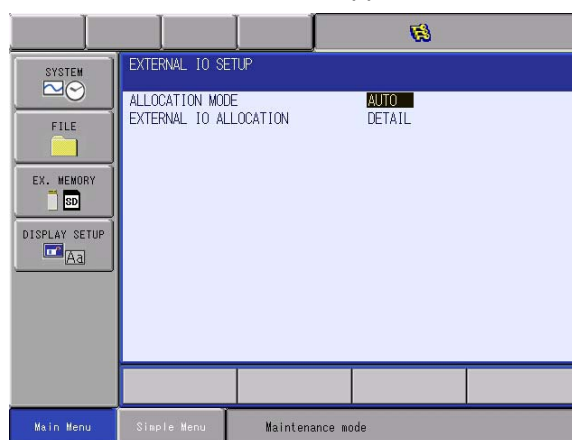
- Improper connection of the 24 VDC power cable and the I/O communication cable

The 24 VDC cable and the I/O communication cable may not be connected properly. Recheck the cable connection referring to *chapter 4.4 "Connecting Each Cable"*. Improper connection of the 24 VDC power cable to the CN305 may prevent the board from starting up.

- I/O module failure

When the above causes do not apply, and the display still does not correspond to the actual mounted status, failure of an I/O module is suspected. Contact your YASKAWA representative.

9. The EXTERNAL IO SETUP window appears.



5 I/O Signal Allocation

5.1 I/O Module Setting

10. Select {AUTO} or {MANUAL} in the ALLOCATION MODE.

- The selection menu appears after selecting {AUTO} or {MANUAL}.



If the allocation mode is changed from {MANUAL} to {AUTO}, the set allocation data is discarded. The data will be allocated by AUTO MODE again. Save the set allocation data to the external devices in advance, if needed.

11. Select the allocation mode to set up.

- Select {AUTO} to allocate I/O signal allocation automatically.
Select {MANUAL} to allocate I/O signal allocation manually.
- The selected allocation mode is set up.

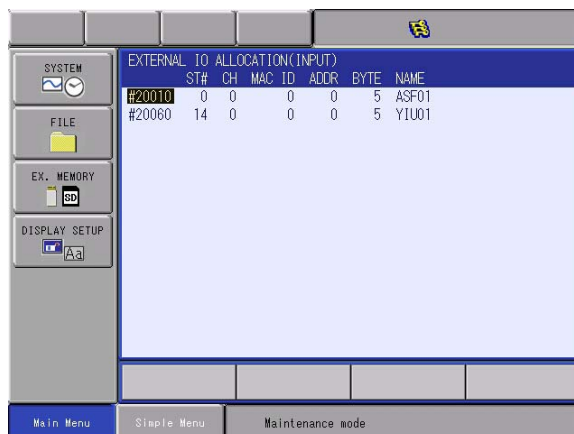


5 I/O Signal Allocation

5.1 I/O Module Setting

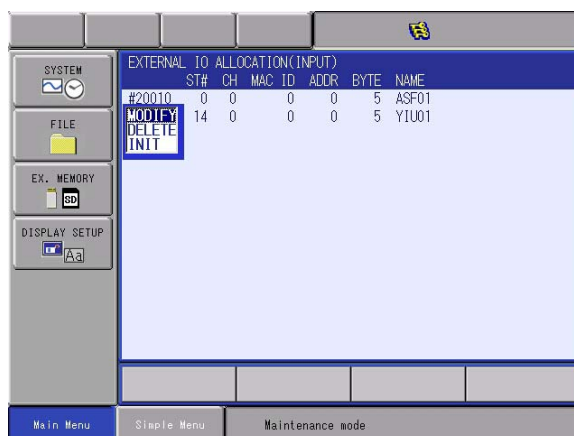
12. Select {DETAIL} of {EXTERNAL IO ALLOCATION}.

- When select {AUTO}, the following procedures No.13 to 15 are not necessary. Operate the procedure from No.16.
- When select {MANUAL}, operate the following procedures No.13 to 15 accordant with the setting manually.



13. Select the external I/O signal number (at the change source) to be changed. (In the setting example, select “#20060”.)

- The select menu appears.

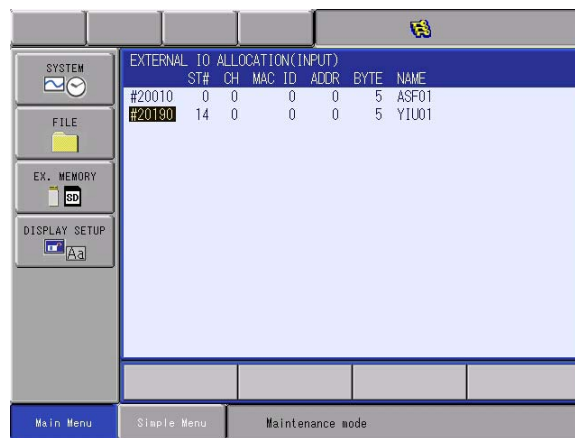


5 I/O Signal Allocation

5.1 I/O Module Setting

14. Select {MODIFY}, and input the external input signal number (at the change destination) to be changed. (In the setting example, enter “#20190”.)

– The external input signal number is changed.



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

– Repeat select/modify until it becomes the desired allocation to set up.

16. Press {ENTER}.

– The allocation window of the external output signal appears.



17. Select/modify the number of the external output signal same as the external input signal.

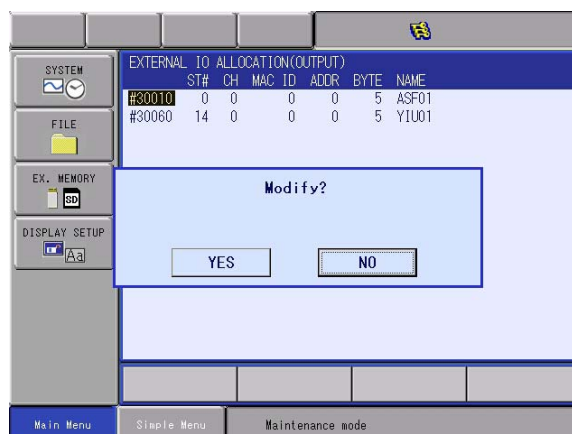
– Repeat select/modify until it becomes the desired allocation to set up.

5 I/O Signal Allocation

5.1 I/O Module Setting

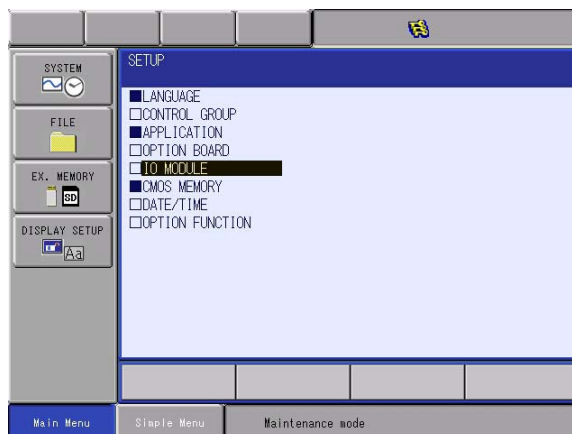
18. Press {ENTER}.

- Confirmation dialog appears.



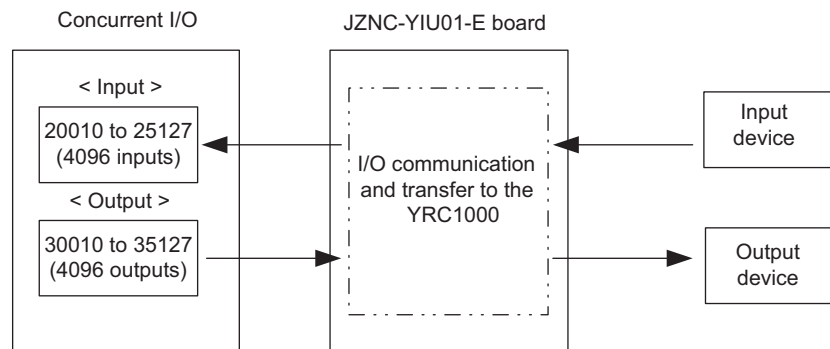
19. Select {YES}.

- The settings are confirmed, and returns to the SETUP window.



5.2 I/O Data

The data to be transferred from the JZNC-YIU01-E board to the inside of the YRC1000 is of 40 input points (5 bytes) and 40 output points (5 bytes). The I/O data of the JZNC-YIU01-E board is allocated to external I/O signals of concurrent I/O.



When only a JZNC-YIU01-E board is mounted as an optional I/O board, the concurrent I/O allocation of each board is as follows.

(20010 to 20057 and 30010 to 30057 are used for standard I/O of the YRC1000.)

5 I/O Signal Allocation
5.2 I/O Data

5.2.1 YRC1000 I/O Allocation example (For Handling)

Note1) The following example is for the standard setting. When change the allocation of the external output signal or the concurrent ladder program, the allocation changes in accordance with the changes.

Note2) As for the input data/output data of JANCD-AIO0□-E (standard I/O board), refer to YRC1000 INSTRUCTIONS MANUAL for more details.

Note3) JANCD-AIO0□-E (standard I/O board) is displayed as ASF01 (base board of AIO0□) in the IO module setup display.

JANCD-AIO0□-E (Standard I/O)	I/O Input	External input signal	User input signal	Details
		20010 to 20017	None (allocated on the system)	Input data (1)
		20020 to 20027	None (allocated on the system)	Input data (2)
		20030 to 20037	00010 to 00017 (IN0001 to IN0008)	Input data (3)
		20040 to 20047	00020 to 00027 (IN0009 to IN0016)	Input data (4)
		20050 to 20057	None (allocated on the system)	Input data (5)
	I/O Output	External output signal	User output signal	Details
		30010 to 30017	None (allocated on the system)	Output data (1)
		30020 to 30027	None (allocated on the system)	Output data (2)
		30030 to 30037	00010 to 00017 (OT0001 to OT0008)	Output data (3)
		30040 to 30047	00020 to 00027 (OT0009 to OT0016)	Output data (4)
		30050 to 30057	None (allocated on the system)	Output data (5)
JZNC-YIU01-E (I/O expansion)	I/O Input	External input signal	User input signal	Details
		20060 to 20067	00030 to 00037 (IN0017 to IN0024)	Input data (1)
		20070 to 20077	00040 to 00047 (IN0025 to IN0032)	Input data (2)
		20080 to 20087	00050 to 00057 (IN0033 to IN0040)	Input data (3)
		20090 to 20097	00060 to 00067 (IN0041 to IN0048)	Input data (4)
		20100 to 20107	00070 to 00077 (IN0049 to IN0056)	Input data (5)
	I/O Output	External output signal	User output signal	Details
		30060 to 30067	10030 to 10037 (OT0017 to OT0024)	Output data (1)
		30070 to 30077	10040 to 10047 (OT0025 to OT0032)	Output data (2)
		30080 to 30087	10050 to 10057 (OT0033 to OT0040)	Output data (3)
		30090 to 30097	10060 to 10067 (OT0041 to OT0048)	Output data (4)
		30100 to 30107	10070 to 10077 (OT0049 to OT0056)	Output data (5)

5 I/O Signal Allocation

5.2 I/O Data

5.2.2 YRC1000 I/O Allocation example (For Except Handling)

Note1) The following example is for the standard setting. When change the allocation of the external output signal or the concurrent ladder program, the allocation changes in accordance with the changes.

Note2) As for the input data/output data of JANCD-AIO0□-E (standard I/O board), refer to YRC1000 INSTRUCTIONS MANUAL for more details.

Note3) JANCD-AIO0□-E (standard I/O board) is displayed as ASF01 (base board of AIO0□) in the IO module setup display.

JANCD-AIO0□-E (Standard I/O)	I/O Input	External input signal	User input signal	Details
		20010 to 20017	None (allocated on the system)	Input data (1)
		20020 to 20027	None (allocated on the system)	Input data (2)
		20030 to 20037	00010 to 00017 (IN0001 to IN0008)	Input data (3)
		20040 to 20047	00020 to 00027 (IN0009 to IN0016)	Input data (4)
		20050 to 20057	00030 to 00037 (IN0017 to IN0024)	Input data (5)
	I/O Output	EXternal output signal	User output signal	Details
		30010 to 30017	None (allocated on the system)	Output data (1)
		30020 to 30027	None (allocated on the system)	Output data (2)
		30030 to 30037	00010 to 00017 (OT0001 to OT0008)	Output data (3)
		30040 to 30047	00020 to 00027 (OT0009 to OT0016)	Output data (4)
		30050 to 30057	10030 to 10037 (OT0017 to OT0024)	Output data (5)
JZNC-YIU01-E (I/O expansion)	I/O Input	External input signal	User input signal	Details
		20060 to 20067	00040 to 00047 (IN0025 to IN0032)	Input data (1)
		20070 to 20077	00050 to 00057 (IN0033 to IN0040)	Input data (2)
		20080 to 20087	00060 to 00067 (IN0041 to IN0048)	Input data (3)
		20090 to 20097	00070 to 00077 (IN0049 to IN0056)	Input data (4)
		20100 to 20107	00080 to 00087 (IN0057 to IN0064)	Input data (5)
	I/O Output	EXternal output signal	User output signal	Details
		30060 to 30067	10040 to 10047 (OT0025 to OT0032)	Output data (1)
		30070 to 30077	10050 to 10057 (OT0033 to OT0040)	Output data (2)
		30080 to 30087	10060 to 10067 (OT0041 to OT0048)	Output data (3)
		30090 to 30097	10070 to 10077 (OT0049 to OT0056)	Output data (4)
		30100 to 30107	10080 to 10087 (OT0057 to OT0064)	Output data (5)

6 I/O Circuits

NOTE

- When an internal power supply is used for the I/O power supply, the allocation to the 24 VDC internal power supply of the YRC1000 is approximately 1.5 A. If the total current consumption of the I/O circuits including that of other I/O boards (such as the JZNC-YIU01-E board) exceeds 1.5 A, use an external power supply.
For connecting external power supply, refer to *chapter 6.3 "Connection Example"*.
- When an external power supply is used for the I/O power supply and the total current consumption of the I/O circuits exceeds 2 A, use a 24 VDC external power supply. However, do not use the 24 VDC power supply from CN307 for the 24 VDC power supply used at the relay output contact.
- The I/O circuits of the JZNC-YIU01-E board are exclusive-use for 24 VDC. Connecting a power supply other than 24 VDC causes damages to the circuits and malfunction.

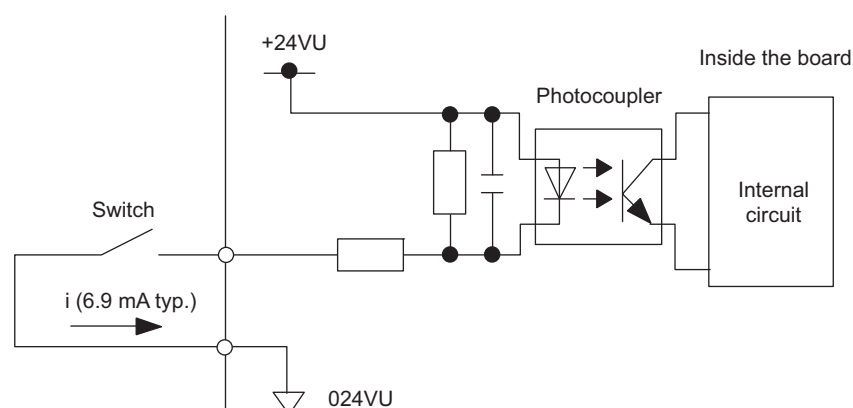
6.1 Input Circuit

The input circuit has 40-points, and all for input circuit 1.

6.1.1 Input Circuit 1 (CN306 to CN309)

Circuit structure	Input circuit with photocoupler insulation
Current (typ.)	6.9 mA per one point
Common	0 V common

Connection example



6.2 Output Circuits

The output circuit has 40 points from CN306 through CN309. Two types of circuits are provided: transistor output (32 points) and relay output (8 points). When the contact life of a relay should be considered because of frequent ON/OFF switchings, the transistor output can be used to control a relay mounted on an easily accessible position or a non-contact relay SSR (solid state relay).



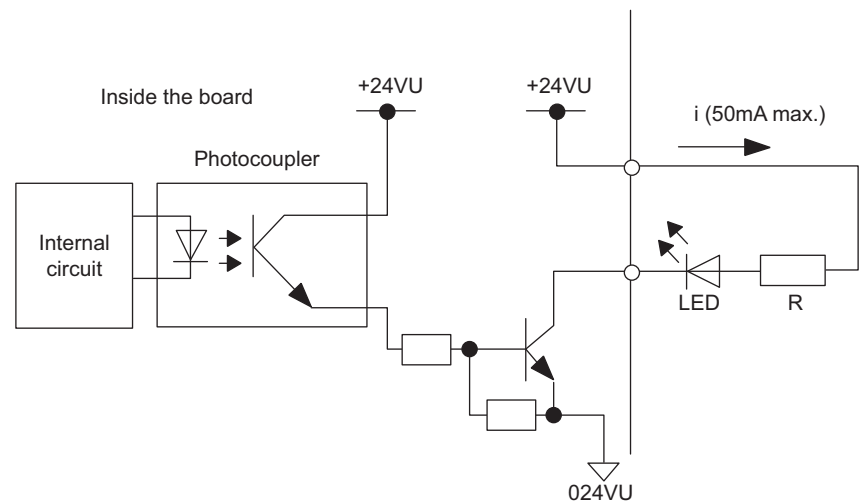
When connecting an induction load to the output circuit, connect a fly-wheel diode in parallel to the induction load, to suppress the surge voltage. Not using a fly-wheel diode may damage the output circuit.

When connecting a load with a large inrush current such as a lamp, connect a current limiting resistance in series to the load, so that the output current does not exceed its maximum value. Exceeding the maximum output current value may damage the output circuit.

6.2.1 Output Circuit 1 CN306, CN308, and CN309 (Transistor Output)

Circuit structure	Transistor open-collector output
Output current (max.)	50 mA per one point
Common	+24 V common

Connection example

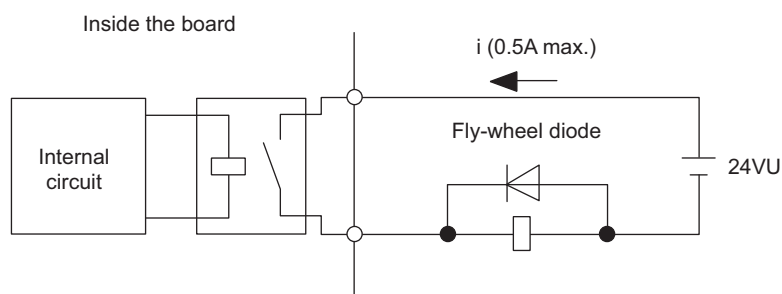


6 I/O Circuits
6.2 Output Circuits

6.2.2 Output Circuit 2 CN307 (Relay Output)

Circuit structure	Relay contact output (only DC load can be connected)
Output current (max.)	0.5 A per point
Common	None (determined according to the external connection)
Contact resistance	100 mΩ or less
Relay life	Electrical life: 500,000 times (with inductive load 24 VDC, 0.5 A) Mechanical life: 20,000,000 times

Connection example

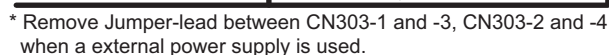


6.3 Connection Example

The following are allocation examples when the JZNC-YIU01-E board is added to the YRC1000: handling application; and arc welding, spot welding, and general-purpose applications. The "general-purpose applications" in this manual includes; assembling and cutting applications.

These examples are applied when only one JZNC-YIU01-E board is used as an optional I/O board. When any other optional I/O boards are added, the JZNC-YIU01-E board allocation will be changed depending on the I/O board allocation.

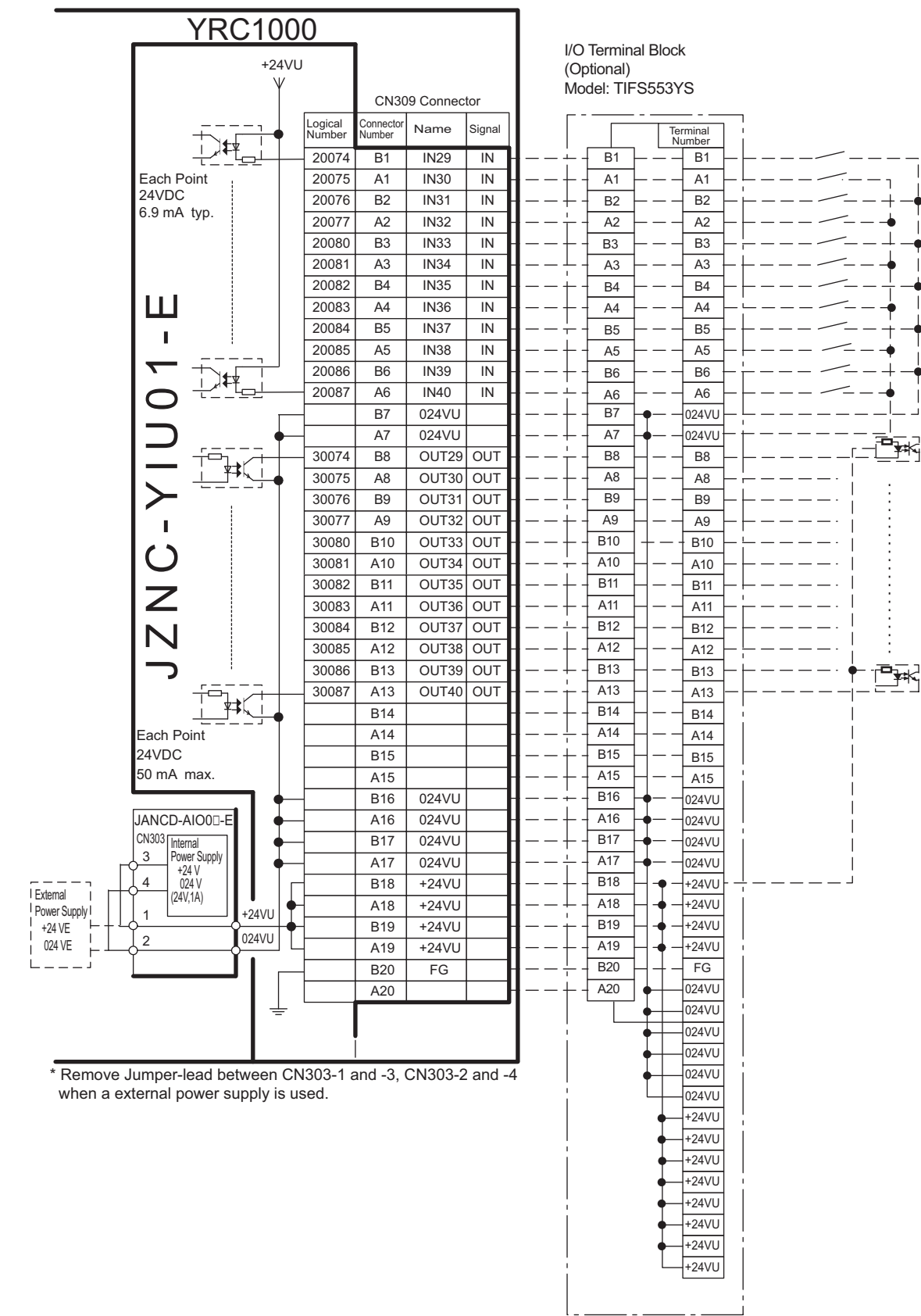
CN308 General-purpose input/output (for handling application)



6 I/O Circuits

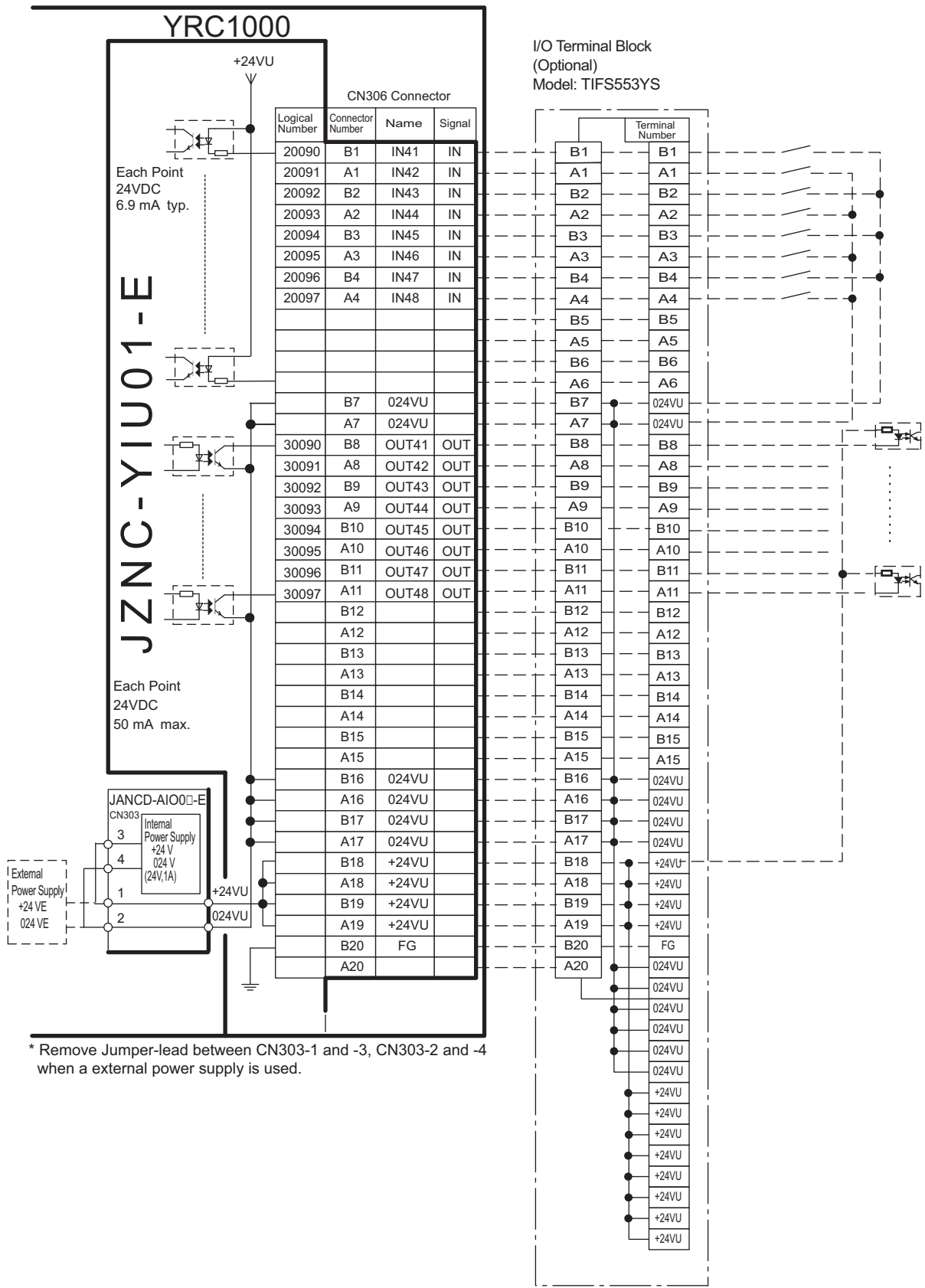
6.3 Connection Example

CN309 General-purpose input/output (for handling application)



6 I/O Circuits
6.3 Connection Example

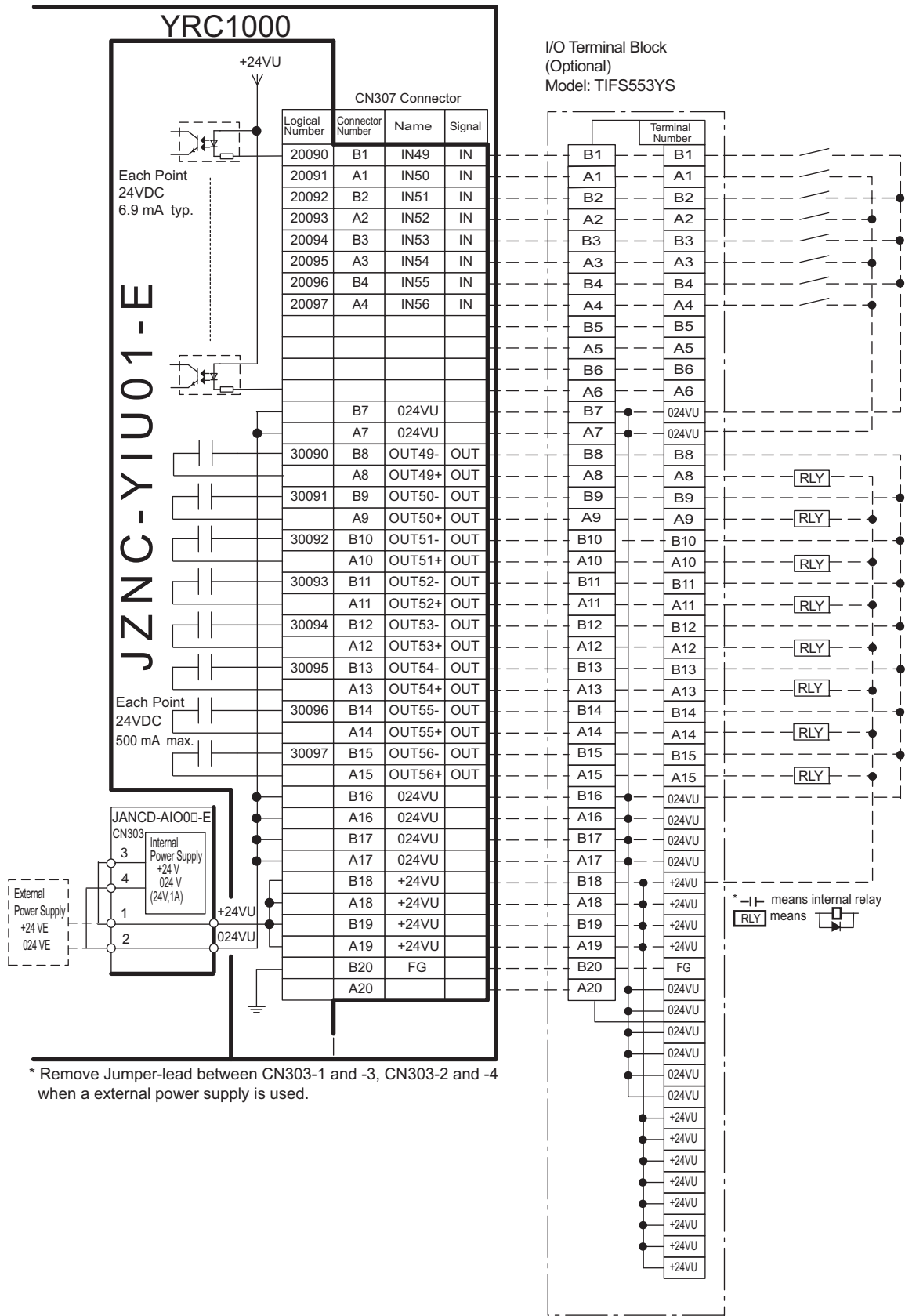
CN306 General-purpose input/output (for handling application)



6 I/O Circuits

6.3 Connection Example

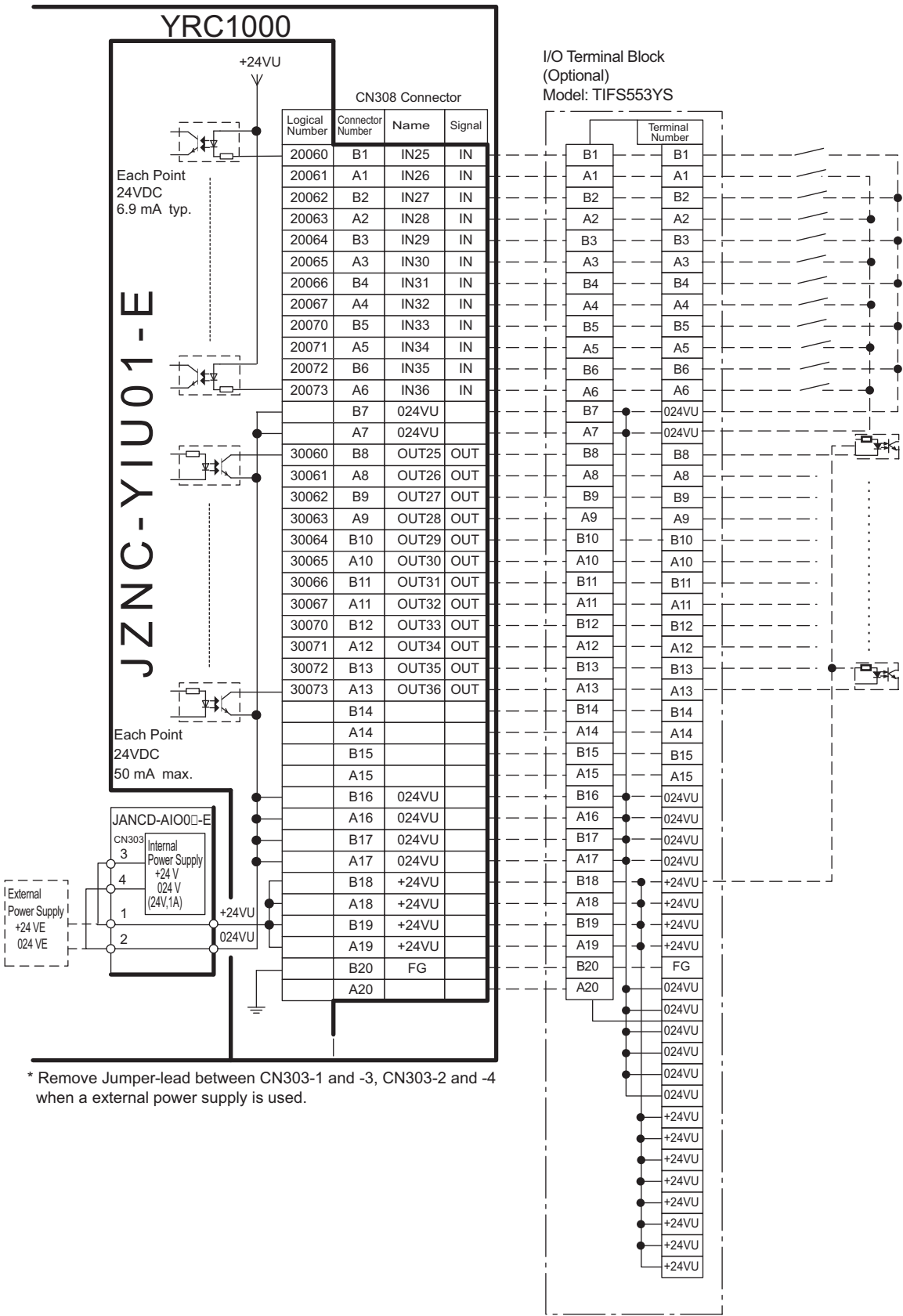
CN307 General-purpose input/output (for handling application)



6 I/O Circuits
6.3 Connection Example

6.3.2 Arc Welding, Spot Welding, and General-purpose Applications

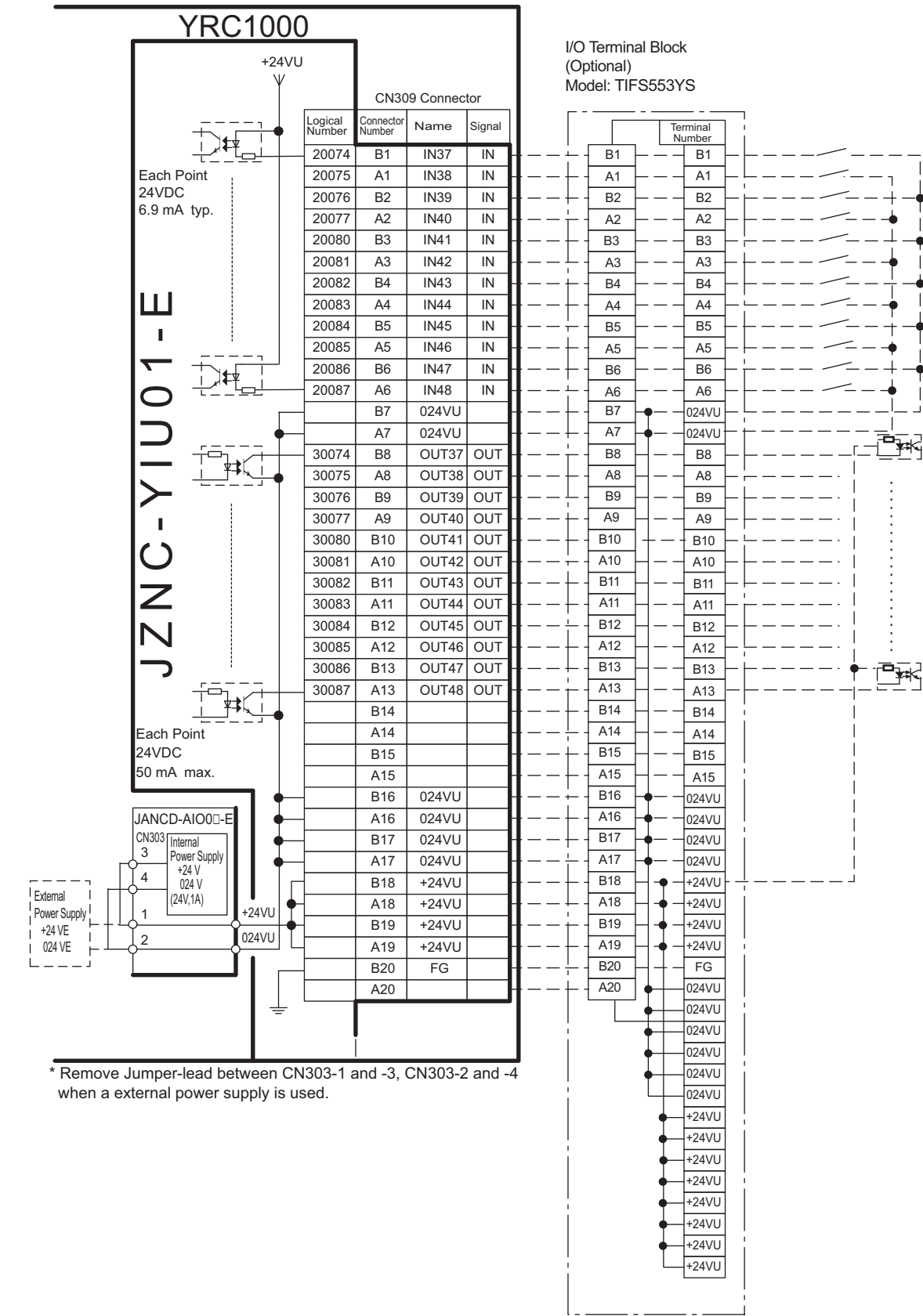
CN308 General-purpose input/output
(for arc welding, spot welding, and general-purpose applications)



6 I/O Circuits

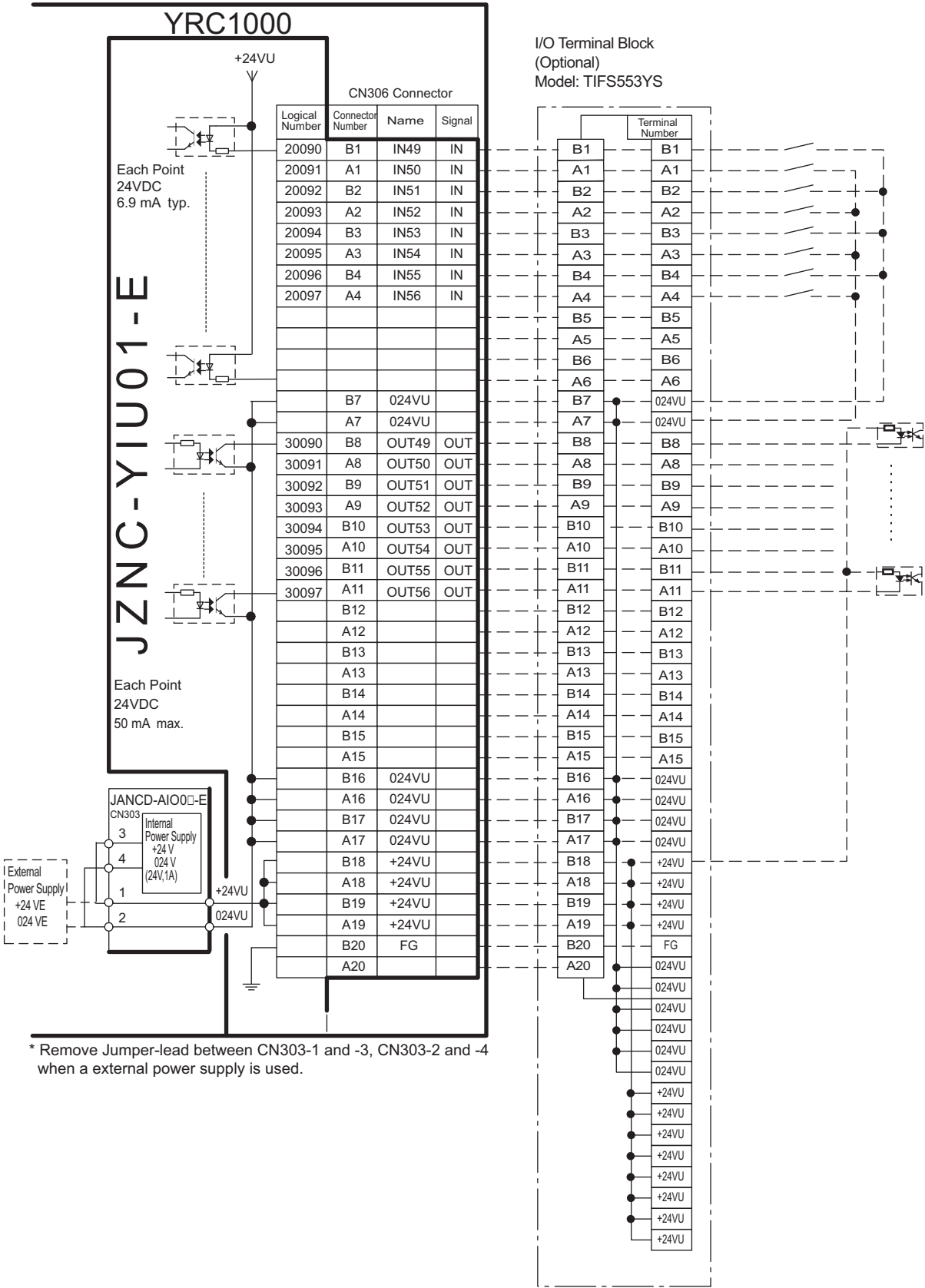
6.3 Connection Example

CN309 General-purpose input/output
(for arc welding, spot welding, and general-purpose applications)



6 I/O Circuits
6.3 Connection Example

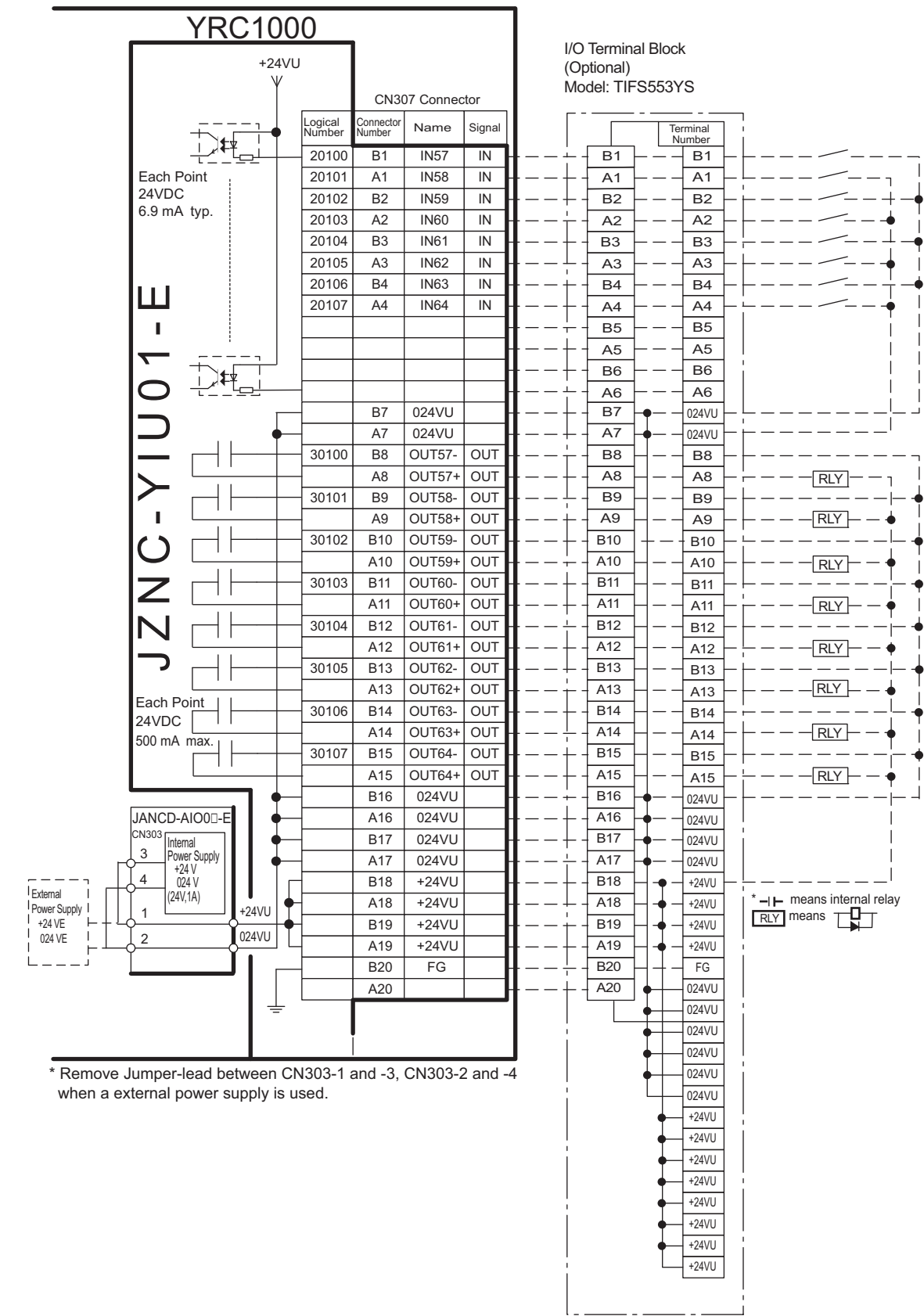
CN306 General-purpose input/output
(for arc welding, spot welding, and general-purpose applications)



6 I/O Circuits

6.3 Connection Example

CN307 General-purpose input/output
(for arc welding, spot welding, and general-purpose applications)



YRC1000 OPTIONS JZNC-YIU01-E BOARD INSTRUCTIONS

FOR I/O EXPANSION

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