

YASKAWA

YRC1000micro MAINTENANCE MANUAL

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

MOTOMAN INSTRUCTIONS

- MOTOMAN-□□□ INSTRUCTIONS**
- YRC1000micro INSTRUCTIONS**
- YRC1000micro OPERATOR'S MANUAL**
- YRC1000micro MAINTENANCE MANUAL**
- YRC1000micro ALARM CODES (MAJOR ALARMS) (MINOR ALARMS)**

The YRC1000micro alarm codes above consists of "MAJOR ALARMS" and "MINOR ALARMS".



DANGER

- This manual explains maintenance procedures of the YRC1000micro system. Read this manual carefully and be sure to understand its contents before handling the YRC1000micro. Any matter 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 "YRC1000micro INSTRUCTIONS". To ensure correct and safe operation, carefully read "Chapter 1. Safety" of the YRC1000micro 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 YRC1000micro.

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



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.



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.



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 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”.



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 button on the programming pendant or 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 YRC1000micro 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 YRC1000micro and on the right of the programming pendant.

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



DANGER

- In the case of not using the programming pendant, be sure to supply the emergency stop button on the equipment. Then before operating the manipulator, check to be sure that the servo power is turned OFF by pressing the emergency stop button.
Connect the external emergency stop button to the 4-14 pin and 5-15 pin of the Safety connector (Safety).
- Upon shipment of the YRC1000micro, this signal is connected by a jumper cable in the dummy connector. To use the signal, make sure to supply a new connector, and then input it.
If the signal is input with the jumper cable connected, it does not function, which may result in personal injury or equipment damage.



WARNING

- 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.
- Return the programming pendant to a safe place after use.

If the programming pendant is left unattended on the manipulator, on a fixture, or on the floor, etc., 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.

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 manipulator cables.

In this manual, the equipment is designated as follows.

Equipment	Manual Designation
YRC1000micro controller	YRC1000micro
YRC1000micro programming pendant	Programming pendant (optional)
Cable between the manipulator and the controller	Manipulator cable
YRC1000micro programming pendant dummy connector	Programming pendant dummy connector (optional)

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 symbols printed on them are denoted with []. ex. [ENTER]
	Axis Keys /Number 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]
	Mode Key Three kinds of modes that can be selected by the mode key are denoted as follows: REMOTE, PLAY, or TEACH
	Button Three buttons on the upper side of the programming pendant are denoted as follows: HOLD button START button EMERGENCY STOP button
	Displays The menu displayed in the programming pendant is denoted with { }. e.g. {JOB}
PC Keyboard	The name of the key is denoted. e.g. Ctrl key on the keyboard

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] 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.

Explanation of Warning Labels

The following warning labels are attached to the manipulator and YRC1000micro.

Fully comply with the precautions on the warning labels.



DANGER

- The label described below is attached to the manipulator.

Observe the precautions on the warning labels.

Failure to observe this caution may result in injury or damage to equipment.

Refer to the manipulator manual for the warning label location.



WARNING

Moving parts
may cause
injury



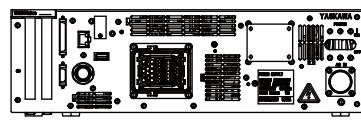
WARNING

Do not enter
robot
work area.

- The following warning labels are attached to YRC1000micro.

Observe the precautions on the warning labels.

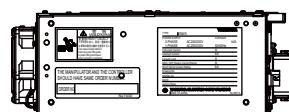
Failure to observe this warning may result in injury or damage to equipment.



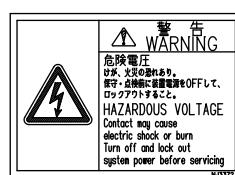
(Front View)



Warning NP for heavy objects



(Left Side View)



Warning NP for electric shock



Warning NP for electric shock

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1 Equipment Configuration

This section explains the configuration of the YRC1000micro equipment.

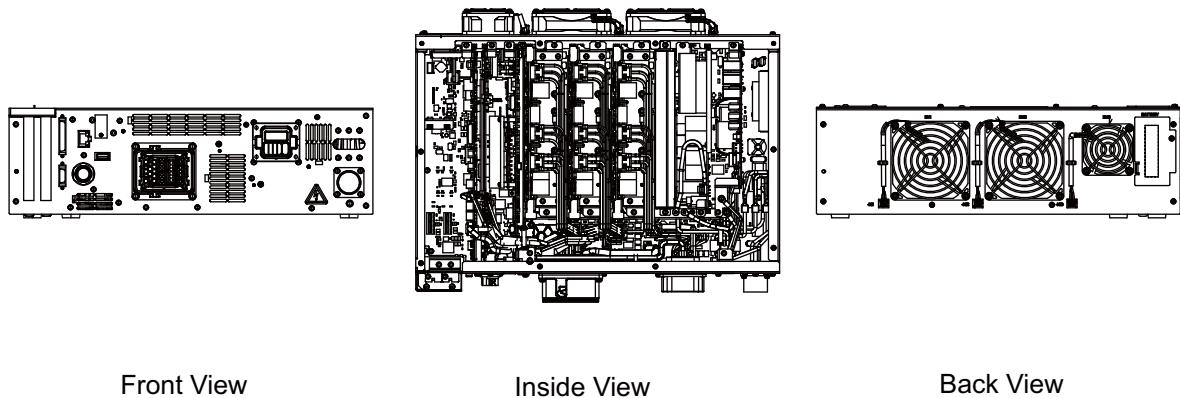


For the models not described in this manual, refer to the YRC1000micro instructions supplement.

1.1 Arrangement of Units and Circuit Boards

1.1.1 Arrangement

Fig. 1-1: Equipment Configuration



Front View

Inside View

Back View

Model	YRC1000micro
	For Japan, North America, Asia
MotoMINI	ERBR-100-06VX05-A00
GP7	ERBR-100-06VX8-A00
GP8	
GP12	ERBR-100-06VX12-A00

2 Security System

2.1 Protection Through Security Mode Settings

The YRC1000micro modes setting are protected by a security system. The system allows the operation and the modification of settings depending on the level of the operator. Fully understand the operator's level to perform the proper operation and management.

2.1.1 Security Mode

There are five security modes "operation mode, editing mode, management mode, safety mode and one time manage mode". For the editing mode, management mode and safety mode, a user ID is required. For the editing mode and the management mode, the user ID must be 4 or more and 16 or less characters with number(s) and symbol(s). As for the safety mode, it must be 9 or more and 16 or less characters with number(s) and symbol(s).

(Significant numbers and symbols: "0 to 9", "-", ".")

Operating the one time manage mode requires to enter the security code, which is issued by YASKAWA sales representative.

Table 2-1: Security Mode Descriptions

Security Mode	Explanation
Operation Mode	This mode allows basic operation of the robot (stopping, starting, etc.) for people operating the robot work on the line.
Editing Mode	This mode allows the operator to teach and edit jobs and robot settings.
Management Mode	This mode allows those authorized to set up and maintain robot system: parameters, system time and modifying user IDs.
Safety Mode	This mode allows the operator to setup the safety function, and able to edit the files related to the safety function. When the optional function "functional safety" is valid, the security is changed to the safety mode to edit the some files, such as the tool file. Refer to "YRC1000micro OPTIONS INSTRUCTIONS FOR FUNCTIONAL SAFETY FUNCTION (HW1484544)" for more details.
One Time Manage Mode	This mode allows to operator to maintain the mode which is higher than the management mode. The loading limitation of the batch data (CMOS.BIN), the parameter batch data (ALL.PRM) and the functional definition parameter (FD.PRM) are removed.

Table 2-2: Menu & Security Mode (Sheet 1 of 4)

Main Menu	Sub Menu	Allowed Security Mode	
		DISPLAY	EDIT
JOB	JOB	Operation	Edit
	SELECT JOB	Operation	Operation
	CREATE NEW JOB ¹⁾	Edit	Edit
	MASTER JOB	Operation	Edit
	JOB CAPACITY	Operation	-
	RES. START (JOB) ¹⁾	Edit	Edit
	RES. STATUS ²⁾	Operation	-
	CYCLE	Operation	Operation
	TRASH JOB LIST ³⁾	Edit	Edit
	JOB EDIT (PLAY)	Edit	Edit
VARIABLE	BYTE	Operation	Edit
	INTEGER	Operation	Edit
	DOUBLE	Operation	Edit
	REAL	Operation	Edit
	STRING	Operation	Edit
	POSITION (ROBOT)	Operation	Edit
	POSITION (BASE)	Operation	Edit
	POSITION (ST)	Operation	Edit
	LOCAL VARIABLE	Operation	-
	FLAG	Operation	Edit
IN/OUT	EXTERNAL INPUT	Operation	Edit
	EXTERNAL OUTPUT	Operation	Edit
	GENERAL PURPOSE INPUT	Operation	Operation
	GENERAL PURPOSE OUTPUT	Operation	Operation
	SYSTEM INPUT	Operation	-
	SYSTEM OUTPUT	Operation	-
	RIN	Operation	-
	CPRIN	Operation	-
	REGISTER	Operation	Management
	AUXILIARY RELAY	Operation	-
	CONTROL INPUT	Operation	-
	PSEUDO INPUT SIG	Operation	Management
	NETWORK INPUT	Operation	-
	NETWORK OUTPUT	Operation	-
	ANALOG OUTPUT	Operation	-
	SV POWER STATUS	Operation	-
	LADDER PROGRAM	Management	Management
	I/O ALARM	Management	Management
	I/O MESSAGE	Management	Management
	TERMINAL	Operation	Edit
	I/O SIMULATION LIST	Management	Management
	SERVO ON FACTOR	Management	-
	SERVO OFF MONITOR	Operation	-

2 Security System
2.1 Protection Through Security Mode Settings

Table 2-2: Menu & Security Mode (Sheet 2 of 4)

Main Menu	Sub Menu	Allowed Security Mode	
		DISPLAY	EDIT
ROBOT	CURRENT POSITION	Operation	-
	COMMAND POSITION	Operation	-
	SERVO MONITOR	Management	-
	WORK HOME POS	Operation	Edit
	SECOND HOME POS	Operation	Edit
	DROP AMOUNT	Management	Management
	POWER ON/OFF POS	Operation	-
	TOOL	Edit	Edit
	INTERFERENCE	Management	Management
	SHOCK SENS LEVEL	Operation	Edit
	USER COORDINATE	Edit	Edit
	HOME POSITION	Management	Management
	MANIPULATOR TYPE	Management	-
	ANALOG MONITOR	Management	Management
	OVERRUN&S-SENSOR ¹⁾	Operation	Operation
	LIMIT RELEASE ¹⁾	Edit	Edit
	ARM CONTROL ¹⁾	Management	Management
SYSTEM INFO	SHIFT VALUE	Operation	-
	SOFTLIMIT SETTING	Management	Management
	SHOCK SEN LV.(CURRENT)	Operation	-
	VERSION	Operation	-
	MONITORING TIME	Operation	Management
	ALARM HISTORY	Operation	Management
	I/O MSG HISTORY	Operation	Management
	USER DEFINITION MENU	Operation	Edit
EX.MEMORY	SECURITY	Operation	Operation
	CPU RESET	Operation	Edit
	LOAD	Edit	-
	SAVE	Operation	-
	VERIFY	Operation	-
	DELETE	Operation	-
	DEVICE	Operation	Operation
FOLDER	OPERATION	Operation	Management
	INITIALIZE ¹⁾	Operation	-

2 Security System
2.1 Protection Through Security Mode Settings

Table 2-2: Menu & Security Mode (Sheet 3 of 4)

Main Menu	Sub Menu	Allowed Security Mode	
		DISPLAY	EDIT
PARAMETER	S1CxG	Management	Management
	S2C	Management	Management
	S3C	Management	Management
	S4C	Management	Management
	A1P	Management	Management
	A2P	Management	Management
	A3P	Management	Management
	A4P	Management	Management
	A5P	Management	Management
	A6P	Management	Management
	A7P	Management	Management
	A8P	Management	Management
	RS	Management	Management
	S1E	Management	Management
	S2E	Management	Management
	S3E	Management	Management
	S4E	Management	Management
SETUP	TEACHING COND.	Edit	Edit
	OPERATE COND.	Management	Management
	OPERATE ENABLE	Management	Management
	FUNCTION ENABLE	Management	Management
	JOG COND.	Management	Management
	PLAYBACK COND.	Management	Management
	FUNCTION COND.	Management	Management
	DISPLAY COLOR COND.	Edit	Edit
	DATE/TIME	Management	Management
	GRP COMBINATION ²⁾	Management	Management
	SET WORD	Edit	Edit
	RESERVE JOB NAME	Edit	Edit
	USER ID	Edit	Edit
	SET SPEED	Management	Management
	KEY ALLOCATION	Management	Management
	JOG KEY ALLOC.	Edit	Management
	RES. START (CNCT)	Management	Management
	AUTO BACK SET	Management	Management
SAFETY FUNC.	WRONG DATA LOG	Edit	Management
	ENERGY SAVING FUNCTION	Edit	Management
	ENCODER MAINTENANCE	Edit	Management
PM	M-SAFETY SIGNAL ALLOC	Operation	Management
	TIMER DELAY SET	Operation	Management
	SAFETY LOGIC CIRCUIT	Operation	Management
	PM (REDUCER)	Operation	Management
	INSPECTION RECORD	Operation	Management
	OPERATING STATUS	Operation	Edit
	JOB MONITOR	Operation	Edit
	STEP DIAGNOSIS	Operation	Edit
	ROBOT MONITOR	Operation	Edit

2 Security System
2.1 Protection Through Security Mode Settings

Table 2-2: Menu & Security Mode (Sheet 4 of 4)

Main Menu	Sub Menu	Allowed Security Mode	
		DISPLAY	EDIT
DISPLAY SETUP	CHANGE FONT	Operation	Operation
	CHANGE BUTTON	Operation	Operation
	INITIALIZE LAYOUT	Operation	Operation
	CHANGE WINDOW PATTERN	Operation	Operation
	TOUCH OPE. SETTING	Operation	Operation
GENERAL	WEAVING	Operation	Edit
	GENERAL DIAG.	Operation	Edit
COMMON TO ALL APPLICATIONS	I/O VARIABLE CUSTOMIZE	Operation	Operation

1 Displayed in the teach mode only.

2 Displayed in the play mode only.

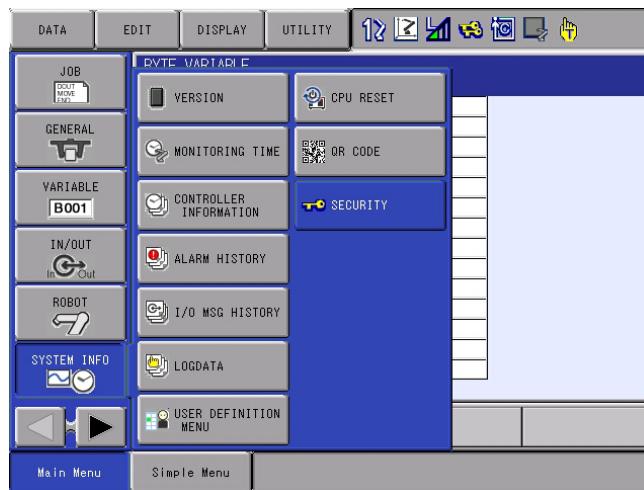
3 Displayed when the job reconstruction function is valid.

*As for the menu and the security mode when the functional safety is valid, refer to "YRC1000micro OPTIONS INSTRUCTIONS FOR FUNCTIONAL SAFETY FUNCTION (HW1484544)" for more details.

2 Security System
2.1 Protection Through Security Mode Settings

2.1.1.1 Changing the Security Mode

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



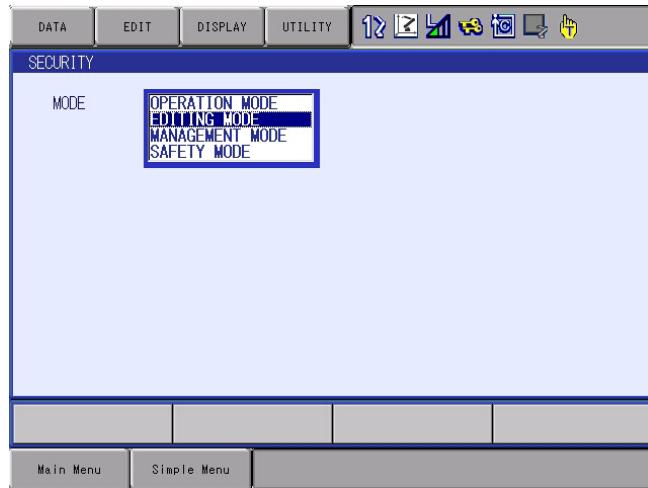
2. Select {SECURITY}.
 - The selection window of security mode appears.



2 Security System

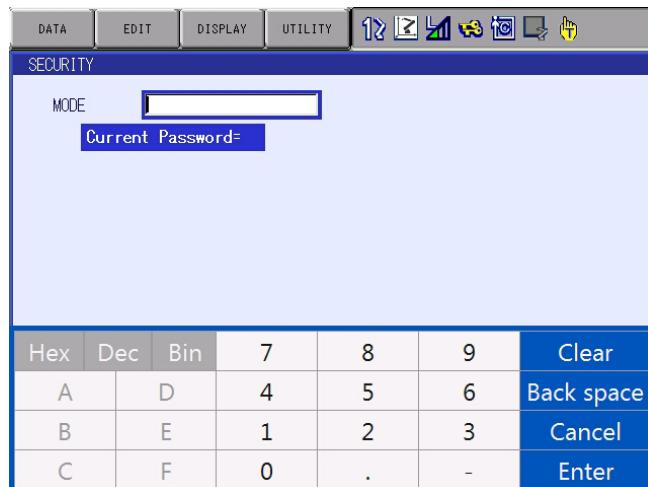
2.1 Protection Through Security Mode Settings

- Security mode can be selected from “OPERATION MODE”, “EDITING MODE”, “MANAGEMENT MODE” or “SAFETY MODE”.



3. Select the security mode to change.

- If the selected security mode is lower than the current security level, the password will be required.



4. Enter the password.

- The following user ID numbers are set as default.
Editing Mode: [0000000000000000]
Management Mode: [9999999999999999]
Safety Mode: [5555555555555555]

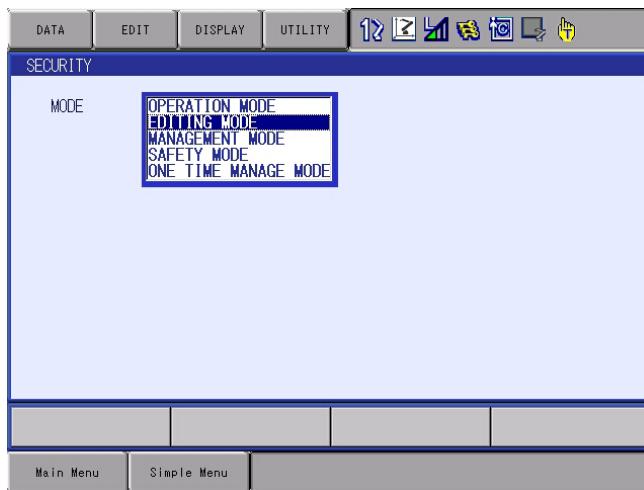
5. Press [ENTER].

- If the password is correct, the security mode will be changed.

■ Procedures to Change the Mode to the One Time Management Mode

1. Change to the management mode.

- When changing to the management mode, security mode can be selected from “OPERATION MODE”, “EDITING MODE”, “MANAGEMENT MODE”, “SAFETY MODE” or “ONE TIME MANAGE MODE”.



2. Select “ONE TIME MANAGE MODE”.

- A character string input keypad is displayed. Input the one time security code, which is issued by YASKAWA sales representative.
- If the password is correct, the security mode will be changed.



2 Security System

2.1 Protection Through Security Mode Settings

2.1.2 User ID

User ID is required for the operation of the editing mode, the management mode or the safety mode.

For the editing mode and the management mode, the user ID consists of 4 or more and 16 or less characters which are number(s) and symbol(s).

For the safety mode, the user ID consists of 9 or more and 16 or less characters which are number(s) and symbol(s).

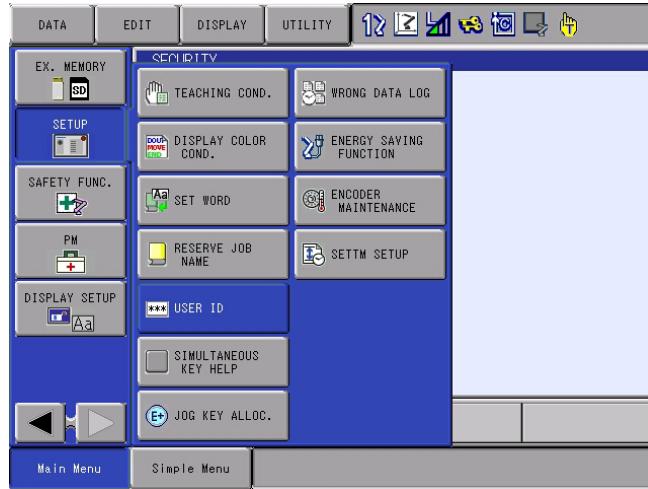
(Significant numbers and symbols: “0 to 9”, “-”, “.”.)

2.1.2.1 Changing a User ID

The user ID can be modified only in the editing mode, management mode or safety mode. Higher security modes can modify the user ID of lower security modes.

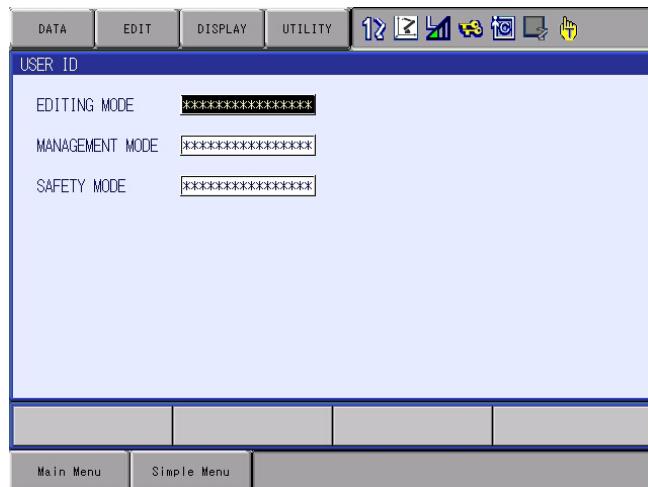
1. Select {SETUP} under the main menu.

– The sub menu appears.



2. Select {USER ID}.

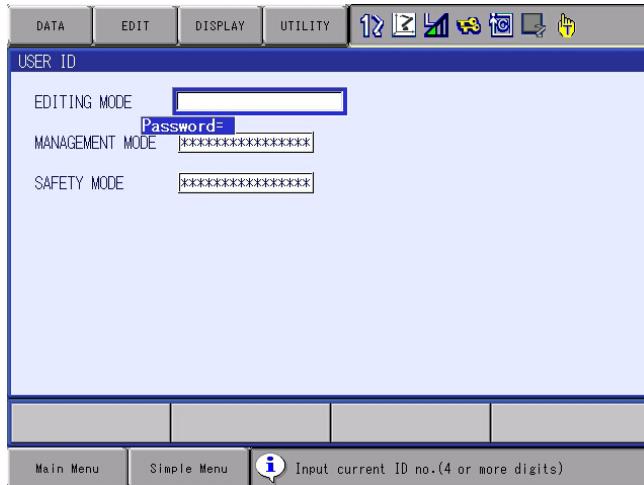
– The USER ID window appears.



2 Security System
2.1 Protection Through Security Mode Settings

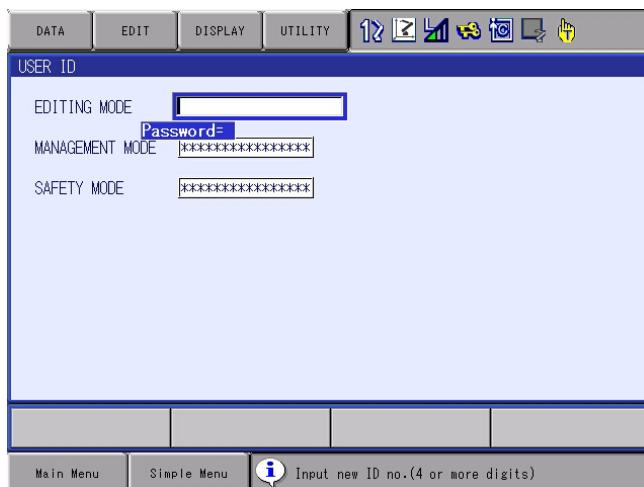
3. Select the desired ID.

- The character input line appears, and a message “Input current ID no. (4 or more digits)” appears.
(As for the safety mode, 9 or more digits) Select the desired ID.



4. Input the current ID and press [ENTER].

- When the correct user ID is entered, a new ID is requested to be input. “Input new ID no.(4 or more digits)” appears.
(As for the safety mode, 9 or more digits)



5. Input new ID and press [ENTER].

- User ID is changed.

2.1.3 Main CPU SD Card ID

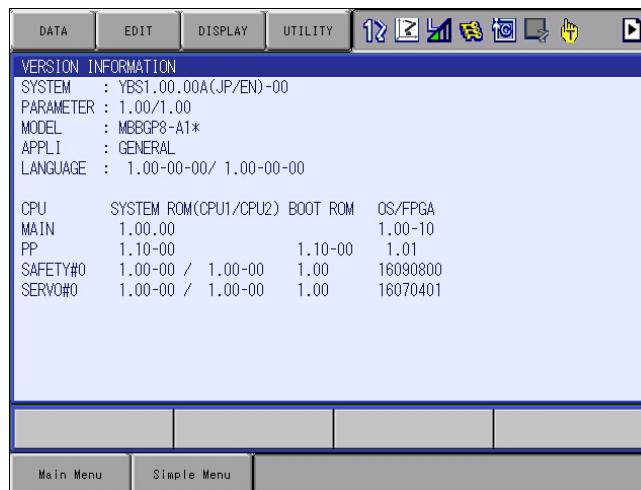
This section explains about the display of the Main CPU SD Card ID.

The main CPU SD Card ID is necessary to issue the one time security code.

1. Change the security mode to the management mode.



2. Select {SYSTEM INFO} in the main menu.
 - The sub menu appears.
3. Select {VERSION}.
 - VERSION window appears.



2 Security System
2.1 Protection Through Security Mode Settings

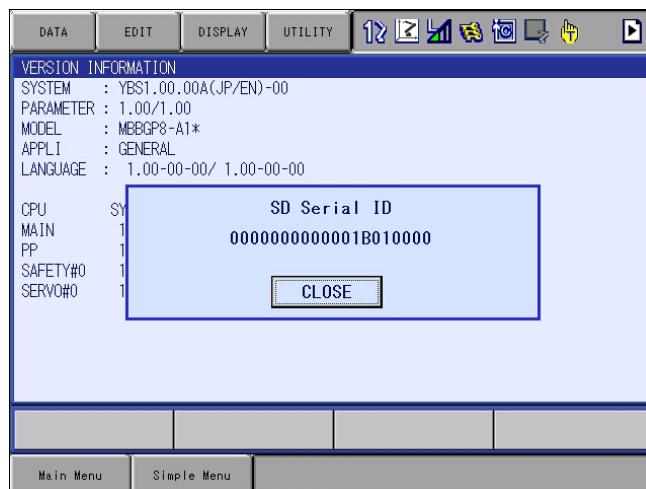
4. Select {UTILITY} under the pull-down menu.

– “SD Card ID” appears.



5. Select “SD Card ID”.

– SD Card ID dialog of the main CPU appears.



3 Inspections

3.1 Regular Inspections



CAUTION

- Do not touch the cooling fan or any other part while the power is ON.

Failure to observe this instruction may result in electric shock and/or personal injury.

Carry out the following inspections.

Failure to perform the following inspections may adversely affect the performance of YRC1000micro, shorten the life of YRC1000micro, or cause the unexpected accidents.

Inspection Equipment	Inspection Item	Inspection Frequency	Comments
YRC1000micro controller	Check for damage, loss, or loose of screws of the case. Check for damage or gap in the body.	Monthly	
Power supply	Confirm that power supply voltage is normal.	Before use	
Power supply cable	Check for damage. Confirm the connection.	Before use	
YRC1000micro cables	Confirm that the cables are not twisted or falling out.	Daily	
Cooling fan	Check the operation	Monthly	While power ON
Emergency stop button ①(programming pendant)	Check the operation	Daily	While servo ON
Enable switch (programming pendant)	Check operation	When using	In teach mode
Battery	Check the message for replacement, etc. is displayed or not.	When an alarm occurs	

1 Be sure to confirm that the SERVO can be turned OFF by pressing the external emergency button when the programming pendant is not used. The external emergency button is prepared by the user.

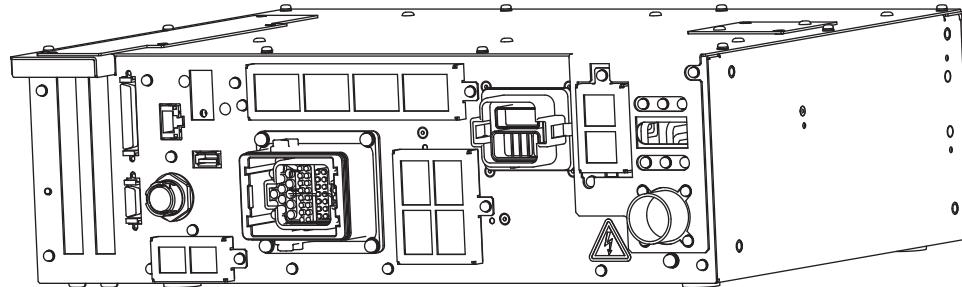
3	Inspections
3.2	Inspection of the YRC1000micro

3.2 Inspection of the YRC1000micro

3.2.1 Inspection of the Case and the Body

Visually check for loss of screws of the cover. Check for loose screws by tightening each screws by using the screwdriver. Check for gap and/or damage in the body.

Fig. 3-1: External View of YRC1000micro



3.3 Power-Supply Voltage Check

By using the electric tester, measure the voltage in the terminal parts of the breaker which is located at the primary power source.

The specifications of power supply voltage are different depending on the specifications of the YRC1000micro. Confirm the label on the side of the YRC1000micro.

Table 3-1: Power-Supply Voltage Check (Three-phase AC200-220V)

Measured Item	Terminal	Normal value
Line Voltage	Between 1 and 3, 3 and 5, 1 and 5	200 to 220V(+10%, -15%)
Voltage between earth (S-phase grounding)	Between 1 and E, 5 and E	200 to 220V(+10%, -15%)
	Between 3 and E	Approx. 0V

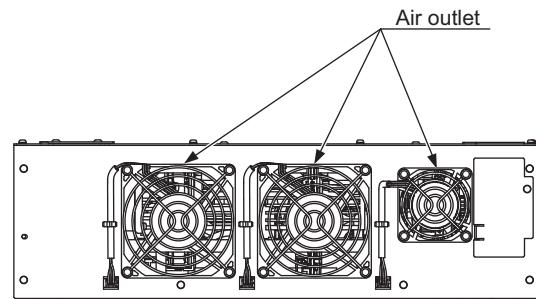
Table 3-2: Power-Supply Voltage Check (Single-phase AC200-230V)

Measured Item	Terminal	Normal value
Line Voltage	Between 1 and 3	200 to 230V(+10%, -15%)
Voltage between earth (S-phase grounding)	Between 1 and E	200 to 230V(+10%, -15%)
	Between 3 and E	Approx. 0V

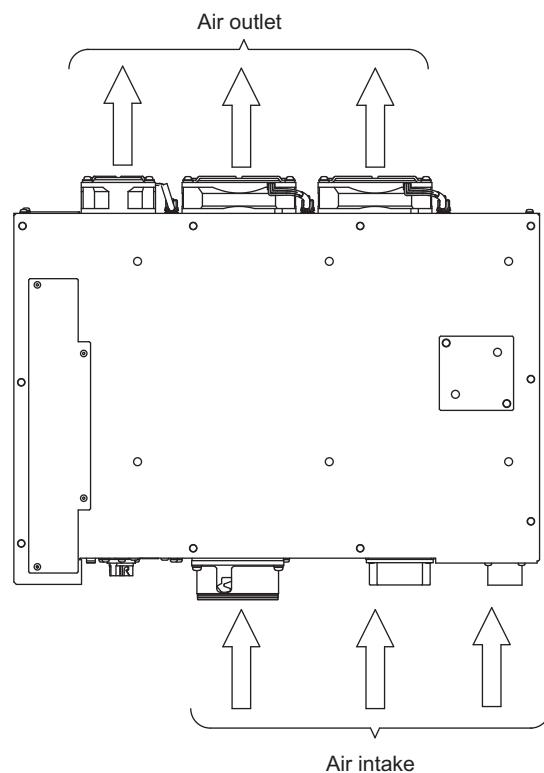
3.4 Inspection of Cooling Fan

The cooling fan located at the backside prevents the rise of temperature inside the YRC1000micro since the high temperature may affects the internal devices. Thus, the cooling fan must be inspected once in a month to keep its normal performance.

Fig. 3-2: Wind Direction of Cooling Fan



Backside View
Installing direction of cooling fan



Top View
Direction of cool wind

3.5 Inspection of Emergency Stop Button

For the YRC1000micro, the programming pendant equipped with the emergency stop button is available as optional. When using the programming pendant, before operating the manipulator, be sure to confirm that the servo power can be turned OFF by pressing the emergency stop button after the servo power is ON.

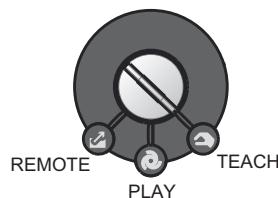
When the programming pendant is not used, be sure to confirm that the servo power can be turned OFF by the external emergency stop button which is prepared by user.

3.6 Inspection of Enable Switch

For the YRC1000micro, the programming pendant equipped with three-position enable switch is available as optional. By performing the following operations, confirm that the enable switch is surely operated.

1. Set the Mode key on the programming pendant to “TEACH”.

Mode key with a switch



2. Press [SERVO ON READY] on the programming pendant. Then [SERVO ON] lamp blinks.



3. When the enable switch is grasped lightly, the servo power is turned ON. When the enable switch is grasped firmly or released, the servo power is turned OFF.

If the [SERVO ON] lamp does not blink in previous operation (2), check the following:



- The emergency stop button on the programming pendant is pressed.
- The emergency stop signal is externally input.
- The alarm is occurring.

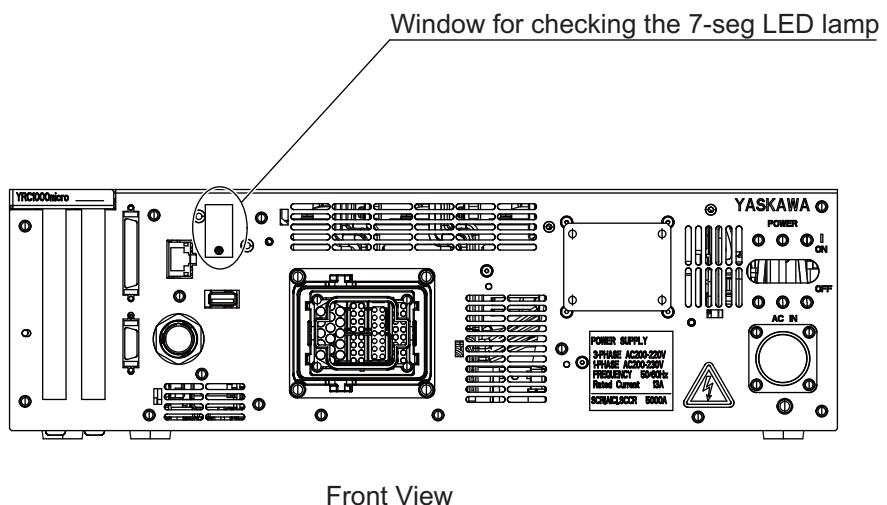
3.7 Inspection of Battery

The YRC1000micro has a battery for the system. The battery is used to backup the file data (CMOS memory) of the user program. When using the optional programming pendant, the message "Memory battery weak" is shown in the display at the time to replace the weak battery. Confirm that this message is not shown.

When the programming pendant is not used, confirm that the window for the 7-seg LED lamp on the YRC1000micro front panel is not lit up by the battery alarm LED(D4) as yellow.

For battery replacement, refer to *chapter 5.2 "Battery Replacement"*

Fig. 3-3: External View of YRC1000micro Front Panel



4 Preparation before Replacing Parts



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 button on the programming pendant or 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.

- 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 YRC1000micro 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 YRC1000micro and on the right of the programming pendant.

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



DANGER

- In the case of not using the programming pendant, be sure to supply the emergency stop button on the equipment. Then before operating the manipulator, check to be sure that the servo power is turned OFF by pressing the emergency stop button.
Connect the external emergency stop button to the 4-14 pin and 5-15 pin of the Safety connector (Safety).
- Upon shipment of the YRC1000micro, this signal is connected by a jumper cable in the dummy connector. To use the signal, make sure to supply a new connector, and then input it.
If the signal is input with the jumper cable connected, it does not function, which may result in personal injury or equipment damage.

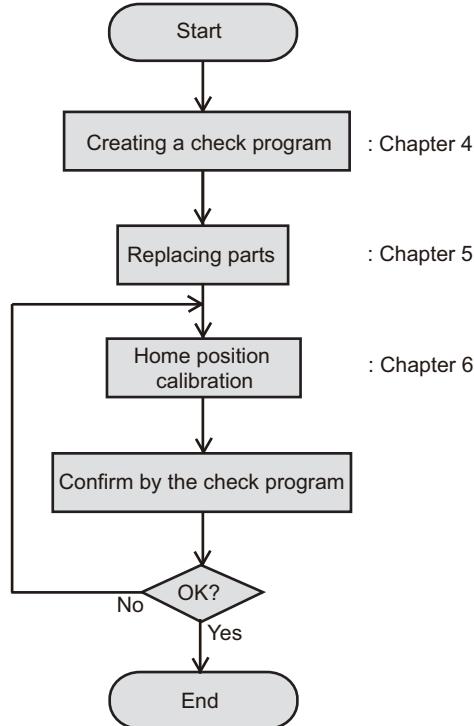


WARNING

- 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.
- Return the programming pendant to a safe place after use.

If the programming pendant is left unattended on the manipulator, on a fixture, or on the floor, etc., 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.

The following flowchart shows the operations for replacing parts.



This chapter describes how to create a check program as a preparation for replacing parts. The check program is a program to check the position deviation. If positions are deviated, home position calibration is required. For the calibration, this program data is used to correct the home position data. In the following cases particularly, the home position calibration using the check program is necessary. Be sure to create a check program referring to *chapter 4.1 “Creating a Check Program”*.

- Change in the combination of the manipulator and YRC1000micro
- Replacement of the motor or absolute encoder
- Stored memory is cleared. (due to weak battery, etc.)
- Home position deviation is caused by hitting the manipulator against a workpiece, etc.

4.1 Creating a Check Program

To check position deviation whenever necessary, create a program in which a check point is taught (the job for the check point). In the job for the check point, teach two points; one as a check point and the other as the point to approach the check point. This program checks for any deviation between the tool tip position and the check point.

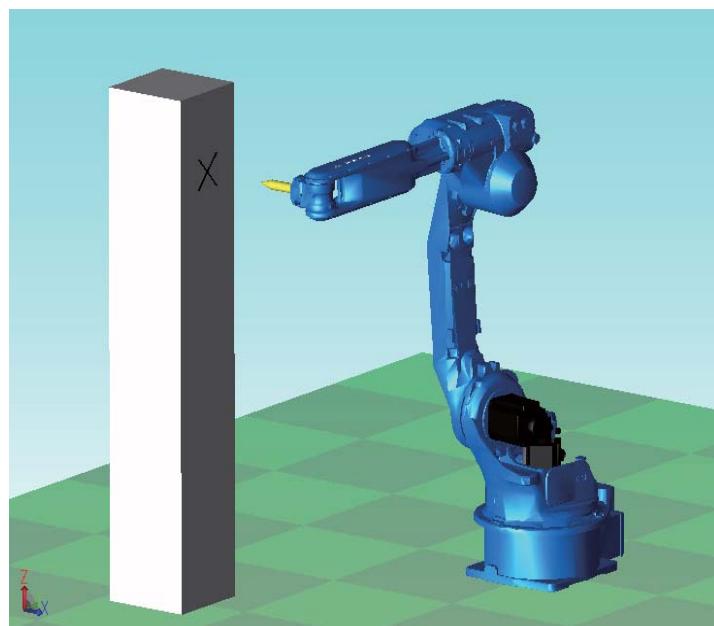
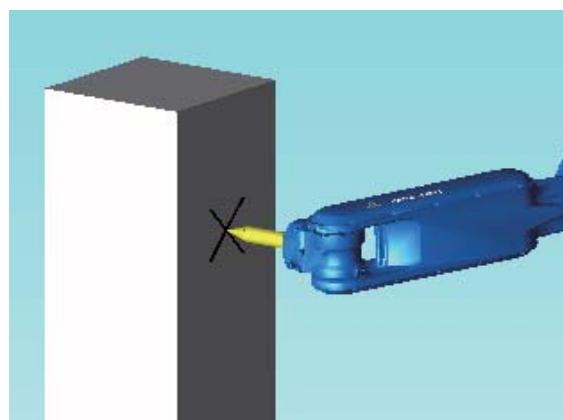


Fig. 4-1: <Enlarged View>



5 Replacing Parts

Prepare the recommended tools for maintenance:

- Phillips screwdriver: medium size
- Flathead screwdriver: medium size



WARNING

- To prevent anyone from inadvertently turning ON the power supply during maintenance and inspection, display a warning sign such as "DO NOT TURN ON THE POWER" at the primary power supply (at the knife switch, or at the circuit breaker, etc.) and at the YRC1000micro and related controllers, and use proper lockout/tagout.

Failure to observe this instruction may result in electric shock and/or personal injury.

- After completing the replacement of parts, confirm that no problem is found in the manipulator and peripheral devices and no person is present in the manipulator's operating range. After that, start operating the manipulator.
- After installing the manipulator, replacing parts, modifying the taught job, or modifying the robot system by changing the tool or a peripheral device, etc., make sure to perform the first operation of the manipulator at low speed, and confirm that there is no abnormal noise, abnormal vibration, or abnormal operation. If an error occurs, immediately turn OFF the YRC1000micro power supply and inform the safety manager of the error.
- When entering the area enclosed by the safety fences, confirm that there is no source of danger around. If it is necessary to enter the area enclosed by the safety fences while any source of danger exists, pay careful attention to the surroundings and enter the area with due care.
- If it is necessary to perform a maintenance operation or to enter the manipulator's operating range while the power is ON, make sure that another operator stays near the YRC1000micro and is able to immediately press the emergency stop button in case of emergency.
- Maintenance and inspection must be performed by specified personnel.

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



CAUTION

- Make sure to use recommended spare parts only. If parts not recommended by YASKAWA are used, product performance cannot be guaranteed and mechanical failure and/or fire may result.
- If the light in the operator's working space is not bright enough, provide the space with appropriate lighting.

5.1 Replacement of Cooling Fan

NOTE

Turn OFF the power before replacing the fan.

■ Replacement Procedures

1. Disconnect plug codes from the fan to be replaced.
(Refer to *fig. 5-1 "Positions of Cooling-Fan Plug Code"*)
2. Remove the screws (4 places) fixing the fan and the fan guard to remove the fan from the YRC1000micro.(Refer to)
Keep those screws for future use.
3. Mount a new fan on the YRC1000micro. When mounting, pay attention to the wind direction. Fix the fan and the fan guard by tightening the screws (4 places).
4. Connect all the disconnected plug codes to the connector.

Fig. 5-1: Positions of Cooling-Fan Plug Code

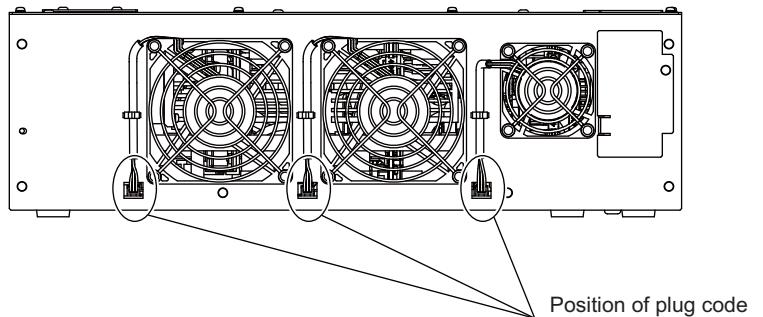
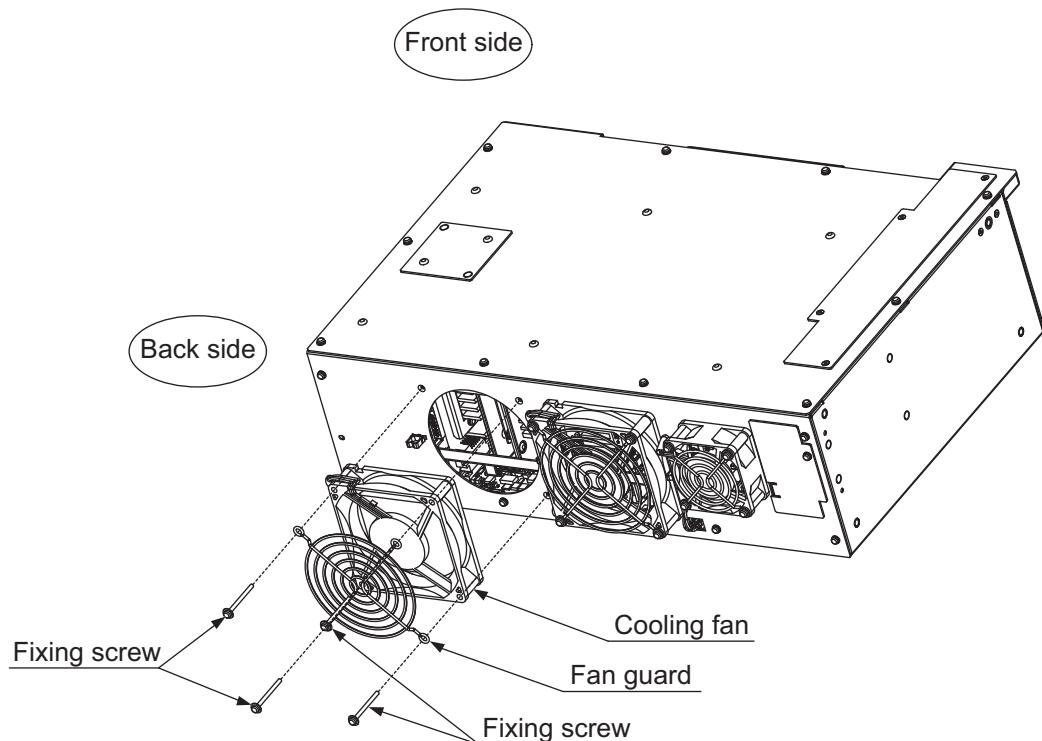


Fig. 5-2: Removing the Cooling Fan



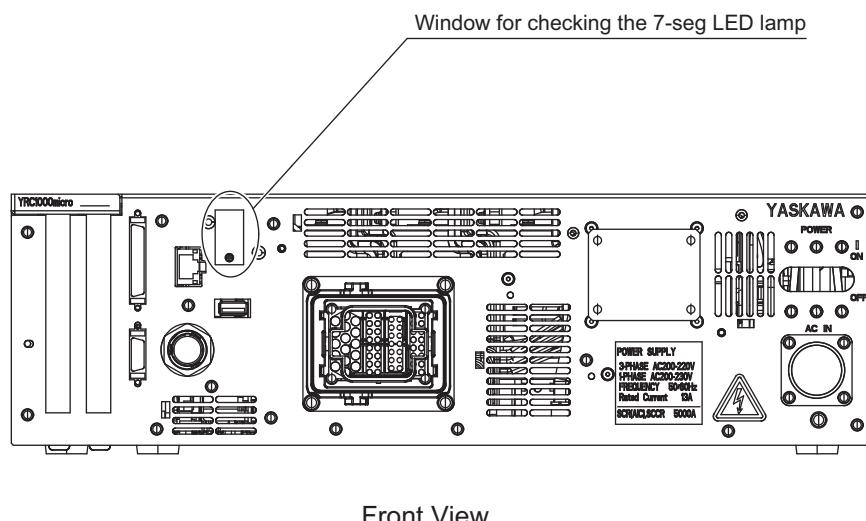
5.2 Battery Replacement

When battery alarm occurs, the battery must be replaced immediately (within 30 days). Be sure to keep the main switch ON while the battery is being replaced to prevent the loss of data.

Battery alarm is shown as below.

- When the optional programming pendant is used:
The message “Memory battery weak” is shown.
- When the programming pendant is not used:
The window for 7-seg LED lamp is lit up by LED(D4) as yellow.

Fig. 5-3: Position of the Battery Alarm LED



Front View



WARNING

- Before the replacement operation, be sure to turn OFF the power supply.

NOTE

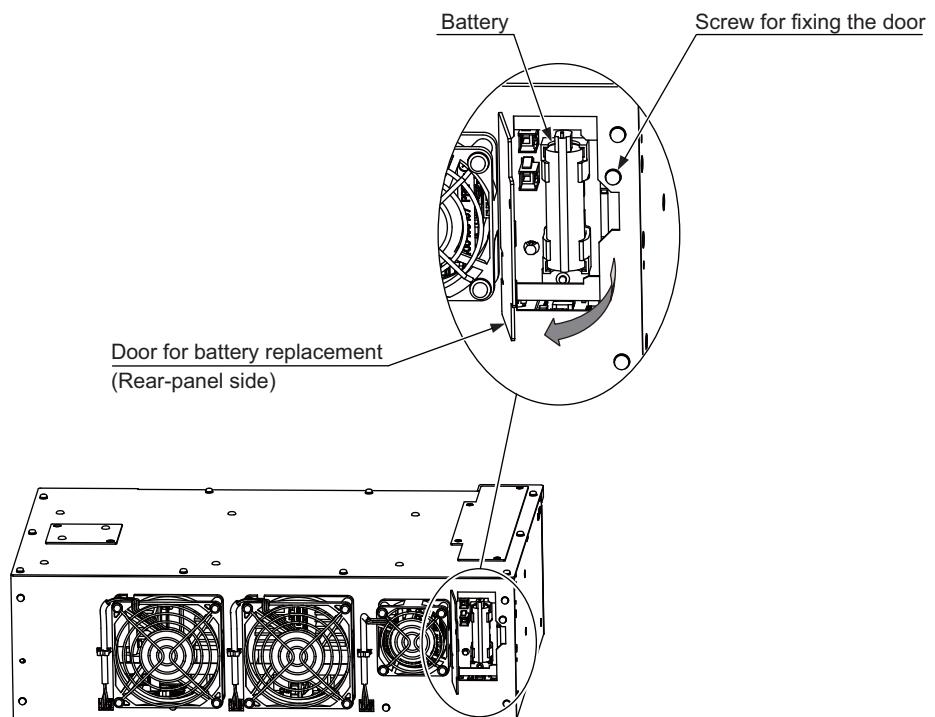
Although the file data of user program (CMOS memory) is backed up by super capacitor, the battery must be replaced as soon as the message “Memory battery weak” is shown. (within 30 days after the message is shown)

Be sure to keep the main switch ON while the battery is being replaced.

■ **Replacement Procedure**

1. To replace the battery, unscrew the fixing screws of the door which is located at the right side of the rear panel. Then, open the door.
(Refer to *fig. 5-4 "Position for Mounting Battery"*)
2. Confirm the position of the connector which is connected to the battery.
3. Connect the connector of a new battery to the disconnected connector while the old battery is being connected.
4. Remove the connector of the old battery and then remove the old battery from the battery holder.
5. Mount a new battery on the battery holder.
6. Close the door without getting caught the lead wires of the battery.
Tighten the fixing screws by using a flat head screwdriver.

Fig. 5-4: Position for Mounting Battery



5.3 Supplied Parts List

The supplied parts of YRC1000micro are as follows.

Table 5-1: Supplied Parts List

No.	Parts Name	Type	Manufacturer	Qty.	Qty. per Unit	Remarks
1	Connector of the primary power supply	CE05-8A18-10SD-D-BAS (with a back shell)	DDK Productions	1	1	
2	Dummy connector for short-circuiting a safety signal	CBL-AR001	YASKAWA Electric Corporation	1	1	

5.4 Recommended Spare Parts

It is recommended that the following parts and components be kept in stock as spare parts for the YRC1000micro. The spare parts list for the YRC1000micro is shown below.

To buy the spare parts which are ranked B or C, inform the manufacturing number (or order number) of YRC1000micro to YASKAWA representative.

Please make sure to use our recommended spare parts. In case use spare parts from any other than YASKAWA, it may cause that product performance can not be guaranteed, damage to equipment or fire.

The spare parts are ranked as follows:

- Rank A: Expendable and frequently replaced parts
- Rank B: Parts for which replacement may be necessary as a result of frequent operation
- Rank C: Drive unit



For replacing parts in Rank B or Rank C, contact your YASKAWA representative.

Table 5-2: Recommended Spare Parts List

Rank	Parts No.	Name	Type	Manufacturer	Qty.	Qty. per Unit	Remarks
A	1	Battery	ER6BD_WK77P 3.6V	Hitachi Maxell, Ltd.	1	1	Replace when the battery alarm occurs.
C	2	Cooling Fan (Large)	09225VE-24P-BL	MINEBEA	2	2	
C	3	Cooling Fan (Small)	06025VE-24P-BL	MINEBEA	1	1	

6 Operations after Replacing Parts



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 button on the programming pendant or 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.

- 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 YRC1000micro 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 YRC1000micro and on the right of the programming pendant.

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



DANGER

- In the case of not using the programming pendant, be sure to supply the emergency stop button on the equipment. Then before operating the manipulator, check to be sure that the servo power is turned OFF by pressing the emergency stop button.
Connect the external emergency stop button to the 4-14 pin and 5-15 pin of the Safety connector (Safety)
- Upon shipment of the YRC1000micro, this signal is connected by a jumper cable in the dummy connector. To use the signal, make sure to supply a new connector, and then input it.

If the signal is input with the jumper cable connected, it does not function, which may result in personal injury or equipment damage.



WARNING

- 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.
- Return the programming pendant to a safe place after use.

If the programming pendant is left unattended on the manipulator, on a fixture, or on the floor, etc., 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.

6.1 Home Position Calibration

6.1.1 Home Position Calibration

Teaching and playback are not possible before home position calibration is complete.



In a system using two or more manipulators, the home position of all the manipulators must be calibrated before starting teaching or playback.

Set the security mode to the management mode to perform home position calibration.

Home position calibration is an operation in which the home position and absolute encoder position coincide. Although this operation is performed prior to shipment at the factory, it must be performed again when the following cases occur.

- Change in the combination of the manipulator and YRC1000micro
- Replacement of the motor or absolute encoder
- Stored memory is cleared. (due to weak battery, etc.)
- Home position deviation is caused by hitting the manipulator against a workpiece, etc.

To calibrate the home position, use the axis keys to calibrate the mark for the home position on each axis so that the manipulator can take its posture for the home position. There are two operations for home position calibration:

- All the axes can be moved at the same time
- Axes can be moved individually

If the absolute data of the home position is already known, set the absolute data again after completing home position registration.

Home Position

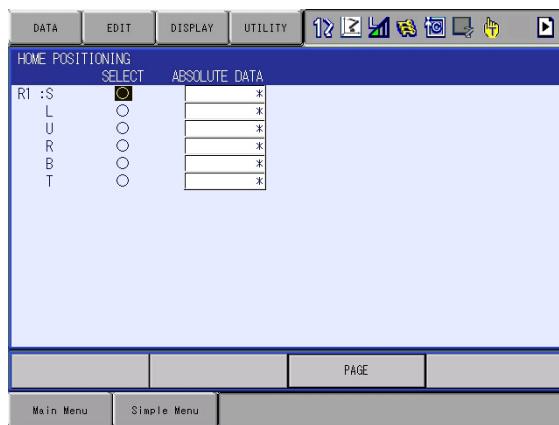


The home position is the position with the pulse value "0" for each axis. See chapter 6.1.3 "Home Position Posture of Manipulator".

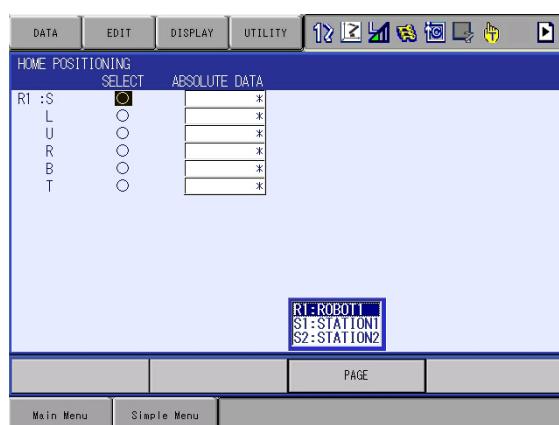
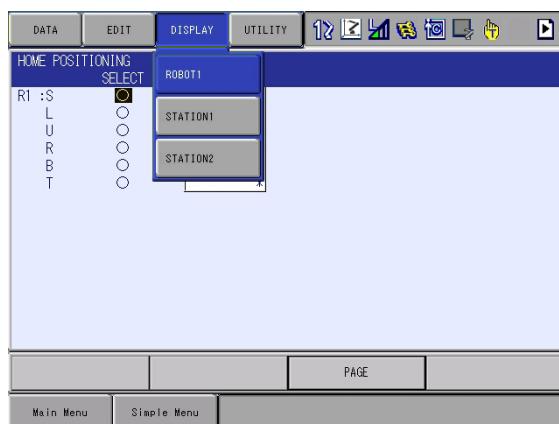
6.1.2 Calibrating Operation

6.1.2.1 Registering All Axes at One Time

1. Select {ROBOT} under the main menu.
 2. Select {HOME POSITION}.
- The HOME POSITIONING window appears.



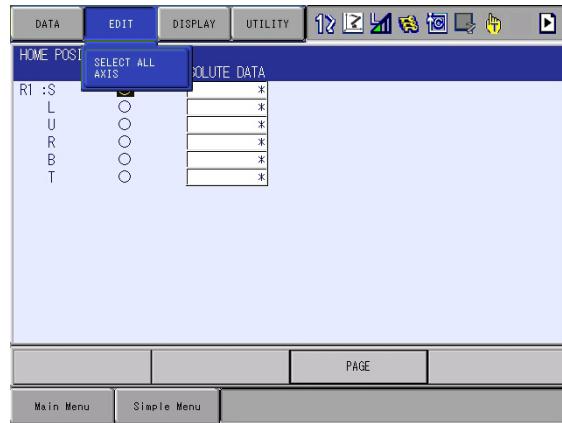
3. Select {DISPLAY} under the menu,
or select “PAGE” to display the selection window for the control group,
or press [PAGE].
- The pull-down menu appears.



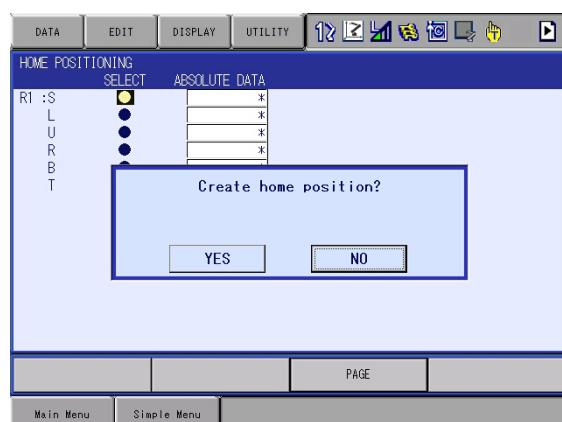
6 Operations after Replacing Parts

6.1 Home Position Calibration

4. Select the desired control group.
5. Select {EDIT} under the menu.
 - The pull-down menu appears.



6. Select {SELECT ALL AXES}.
- The confirmation dialog box appears.



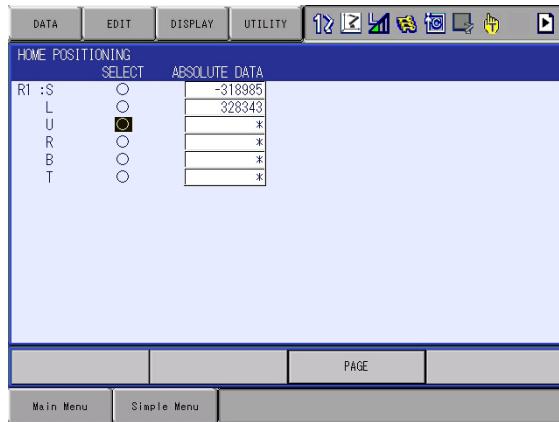
7. Select {YES}.
- Displayed position data of all axes are registered as home position.
When {NO} is selected, the registration will be canceled.

6 Operations after Replacing Parts

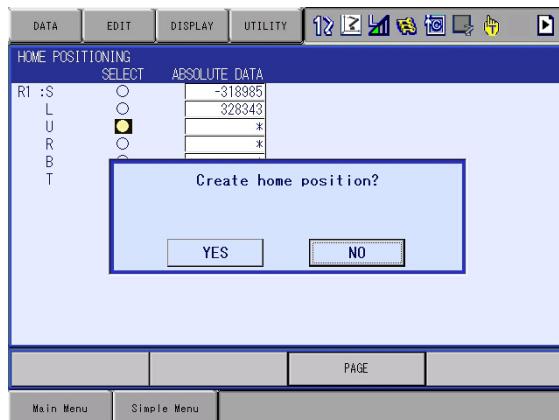
6.1 Home Position Calibration

6.1.2.2 Registering Individual Axes

1. Select {ROBOT} under the main menu.
2. Select {HOME POSITION}.
3. Select the desired control group.
 - Perform steps 3 and 4 which have been described in “Registering All Axes at One Time” to select the desired control group.
4. Select the axis to be registered.



– The confirmation dialog box appears.

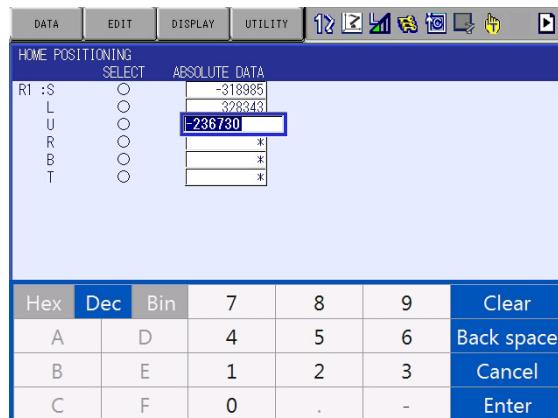


5. Select {YES}.
 - Displayed position data of the axis are registered as home position. When {NO} is selected, the registration will be canceled.

6.1.2.3 Changing the Absolute Data

To change the absolute data of the axis when home position calibration is completed, perform the following operations:

1. Select {ROBOT} under the main menu.
2. Select {HOME POSITION}.
3. Select the desired control group.
 - Perform steps 3 and 4 which have been described in “Registering All Axes at One Time” to select the desired control group
4. Select the absolute data to be registered.
 - The number can now be entered.



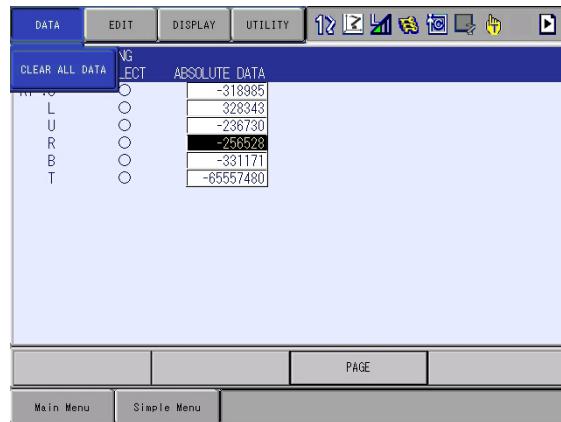
5. Enter the absolute data using the numeric keys.
6. Press [ENTER].
 - Absolute data are modified.

6 Operations after Replacing Parts

6.1 Home Position Calibration

6.1.2.4 Clearing Absolute Data

1. Select {ROBOT} under the main menu.
2. Select {HOME POSITION}.
- Perform steps 2, 3, and 4 which have been described in “Registering All Axes at One Time” to display the HOME POSITIONING window and select the desired control group.
3. Select {DATA} under the menu.
- The pull-down menu appears.



4. Select {CLEAR ALL DATA}.
- The confirmation dialog box appears.

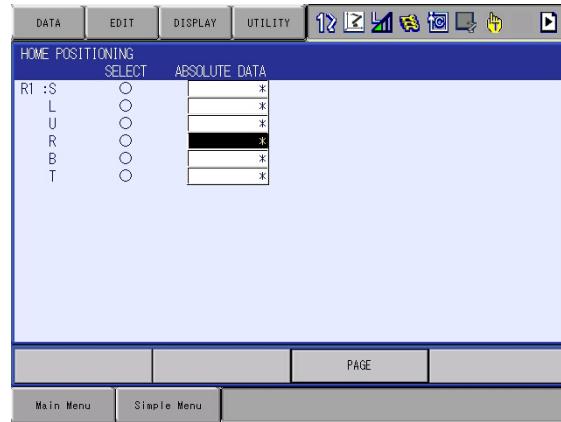


6 Operations after Replacing Parts

6.1 Home Position Calibration

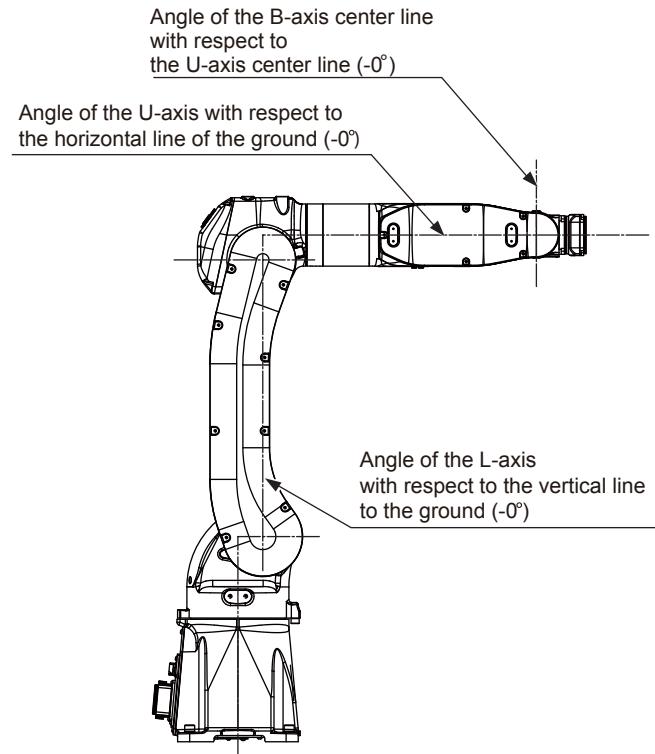
5. Select {YES}.

- The all absolute data are cleared. When {NO} is selected, the operation will be canceled.



6.1.3 Home Position Posture of Manipulator

The home position posture of a commonly used 6-axis vertically-articulated manipulator is shown below.

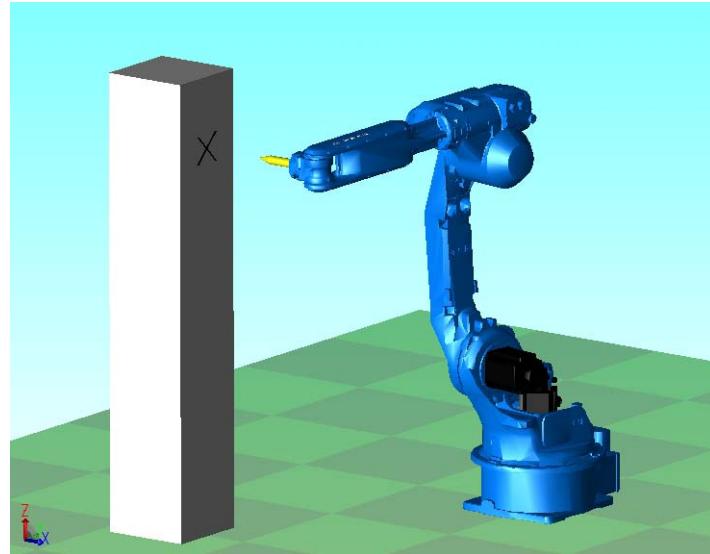


The home position posture of each manipulator differs depending on its model. Refer to the manipulator's instruction manual corresponding to the model.

6.2 Position Deviation Check Using the Check Program

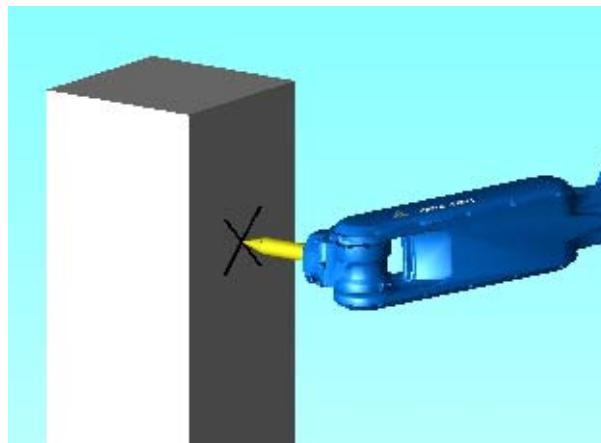
Use the check program to check if positions are deviated in accordance with the following procedures.

1. Call up the check program in which the check point is taught (the job for) and operate the manipulator at low speed.



2. Check the tool tip position.

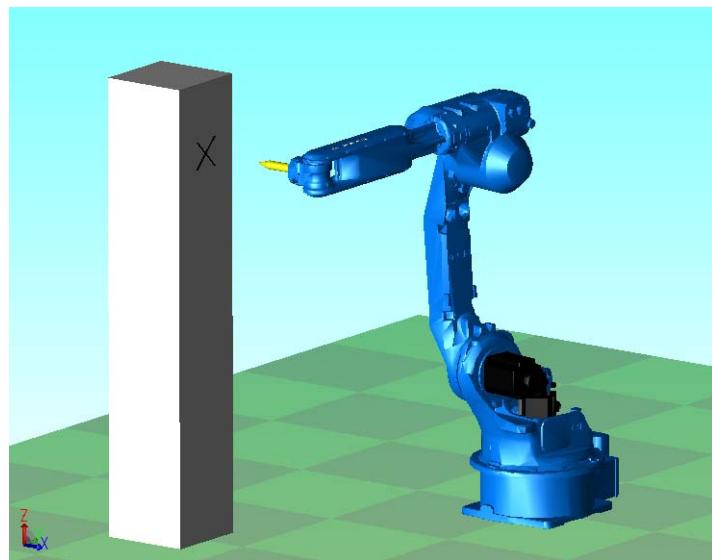
- If the tool tip comes to the check point exactly as shown in the following figure, there is no deviation from the positions. Proceed to *chapter 6.4 “Setting the Second Home Position (Check Point)”*.
- If not, there is a deviation. When the motor or encoder, etc. was replaced, move the replaced axis only, when the stored memory was cleared or the manipulator was hit against a workpiece, move all axes, to the check point by joint motion. Then, proceed to *chapter 6.3.3 “Home Position Data Correction”*.



6.3 Checking of the Check Program

6.3.1 Motion of the Check Program

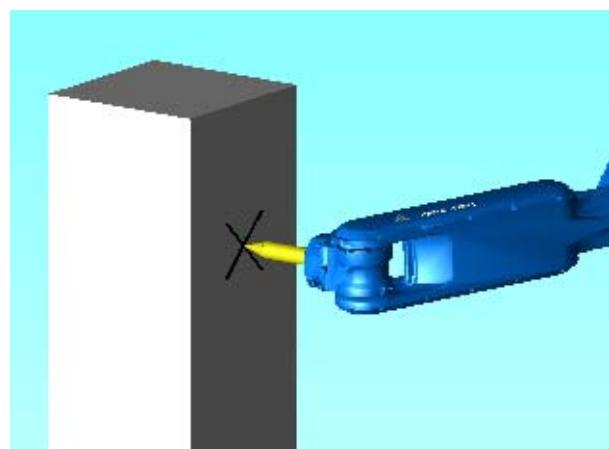
Call up the check program in which the check point is taught (the job for avoiding the position deviation) and operate the manipulator at low speed.



6.3.2 Checking of the Check Program

Check the deviation in to the check point. If the tool tip position is deviated, there is a deviation.

When the motor or encoder, etc. was replaced, move the replaced axis only, when the stored memory was cleared or the manipulator was hit against a workpiece, move all axes, to the check point by joint motion.



6.3.3 Home Position Data Correction

When there is a deviation from the positions, correct the home position data in accordance with the following procedures.

1. Investigate the values of the following pulses.
 - If there is no deviation, the following two values coincide. Then, proceed to *chapter 6.4 “Setting the Second Home Position (Check Point)”*.
 - If there is a deviation, execute the following procedures to correct it.

(1) Command position pulse of the check point which was taught in advance

Displaying the Command Position Pulse

- I) Select {ROBOT} under the main menu.
- II) Select {COMMAND POSITION}.

(2) Current position pulse where the manipulator (tool tip) was moved to the check point after performing the check program

Displaying the Current Position Pulse

- I) Select {ROBOT} under the main menu.
- II) Select {CURRENT POSITION}.

2. Calculate the difference between the command position pulse and the current position pulse.

The difference pulse = Command position pulse – Current position pulse

3. On the HOME POSITIONING window, add the difference pulse value to the absolute data of the axis whose motor or encoder, etc. was replaced.
4. Modify the home position data in accordance with the procedures described in *chapter 6.1.2.3 “Changing the Absolute Data”* in *chapter 6.1.2 “Calibrating Operation”*.
5. Confirm that the command position pulse coincides with the current position pulse.
 - The home position data have been corrected.
 - Perform the procedures in *chapter 6.4 “Setting the Second Home Position (Check Point)”*.

6.4 Setting the Second Home Position (Check Point)



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 button on the programming pendant or 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.

- 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 YRC1000micro 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 YRC1000micro and on the right of the programming pendant.

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



DANGER

- In the case of not using the programming pendant, be sure to supply the emergency stop button on the equipment. Then before operating the manipulator, check to be sure that the servo power is turned OFF by pressing the emergency stop button.
Connect the external emergency stop button to the 4-14 pin and 5-15 pin of the Safety connector (Safety)
- Upon shipment of the YRC1000micro, this signal is connected by a jumper cable in the dummy connector. To use the signal, make sure to supply a new connector, and then input it.

If the signal is input with the jumper cable connected, it does not function, which may result in personal injury or equipment damage.



WARNING

- When performing the position check operation for the second home position (check point), pay careful attention to ensure the safety of the surrounding operation environment.

If the “OUT OF RANGE (ABSO DATA)” alarm occurs, an error in the encoder communication related components may be the cause of the alarm. In this case, the manipulator may move in an unexpected direction, which may result in personal injury and/or equipment damage.

- 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.
- Return the programming pendant to a safe place after use.

If the programming pendant is left unattended on the manipulator, on a fixture, or on the floor, etc., 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.

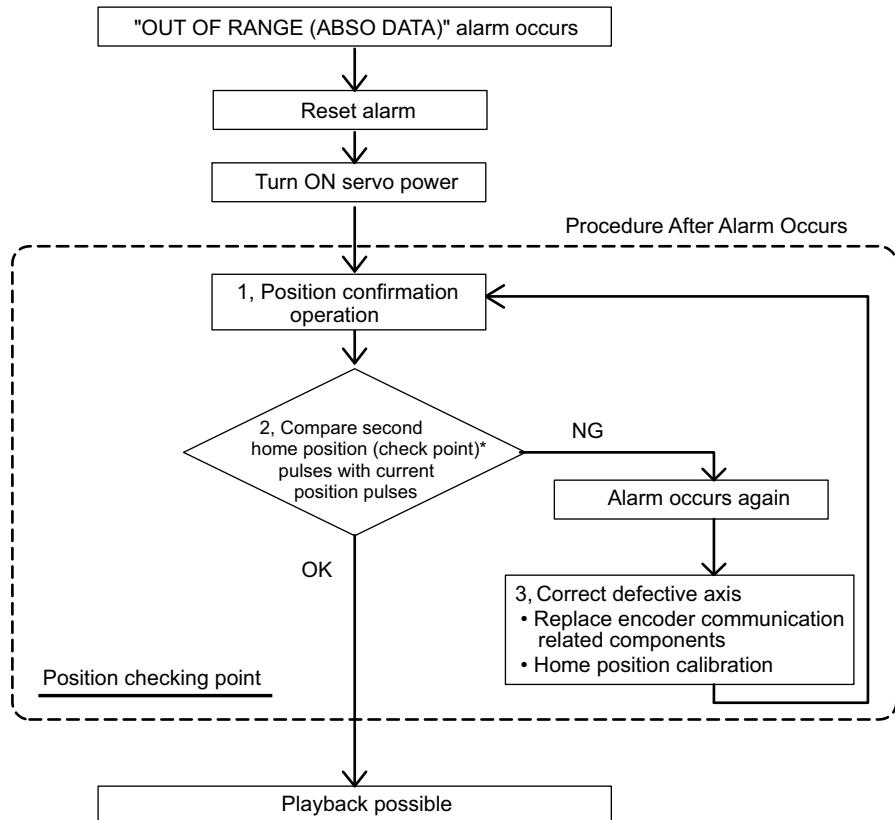
6.4.1 Purpose of Position Check Operation

If the absolute number of rotation detected at power supply ON does not match the data stored in the absolute encoder the last time the power supply was turned off, alarm 4107 "OUT OF RANGE (ABSO DATA)" is issued when the controller power is turned ON.

There are two possible causes of this alarm:

- An error was found in the encoder communication related components.
- No error was found in the encoder communication related components, but the manipulator was moved after the power supply was turned OFF.

If there is an error in the encoder communication related components, the manipulator may stall when playback is started. If the absolute data allowable range error alarm has occurred, playback and test runs will not function and the position must be checked.



1. Position Check

After the "OUT OF RANGE (ABSO DATA)" alarm occurs, move to the second home position using the axis keys and perform the position confirmation. For performing the position confirmation, refer to chapter 6.4.3 "Procedure after the Alarm". Playback and test runs will not function unless "CONFIRM POSITION" is performed.

2, Pulse Difference Check

The pulse number at the second home position is compared with that at the current position. If the difference is within the allowable range, playback is enabled. If not, the alarm occurs again.

- The allowable range pulse is the number of pulses per rotation of the motor (PPR data).
- The initial value of the second home position is the home position (where all axes are at pulse 0). The second home position can be changed. For details, refer to *chapter 6.4.2 “Procedure for the Second Home Position Setting (Check Point)”*.

3, Alarm Occurrence

If the alarm occurs again, there may be an error in the encoder communication related components. Check the components. After adjusting the erroneous axis, calibrate the home position of the axis, and then check the position again.

- When the home position calibration for all the axes is performed at the same time, playback operations are possible without the position confirmation.
- For a system with a manipulator that has no brake, after the alarm occurs, there is a case that the playback operations are possible without the position confirmation. (However, as a rule, “CONFIRM POSITION” must be performed.)

Under the above special conditions, the manipulator moves as follows:



After starting, the manipulator moves at low speed (1/10 of the maximum speed) to the step indicated by the cursor.

If it is stopped and restarted during this motion, the low speed setting is kept until the step at cursor is reached. Regardless of cycle setting, the manipulator stops after the cursor step is reached.

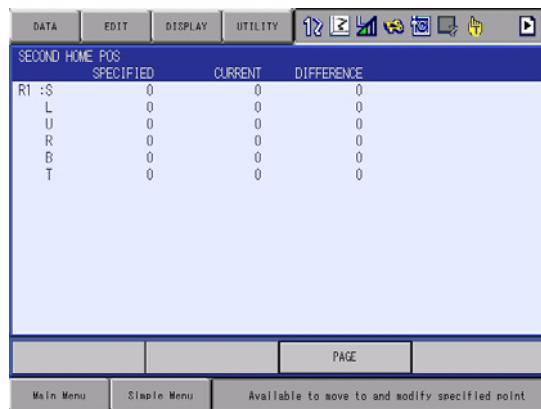
When starting the manipulator again after it is stopped, the manipulator operates at the programmed speed and cycle of the job.

6.4.2 Procedure for the Second Home Position Setting (Check Point)

Apart from the “home position” of the manipulator, the second home position can be set up as a check point for absolute data. Perform the following steps to set the specified point.

If two or more manipulators or stations are controlled by one controller, the second home position must be set for each manipulator or station.

1. Select {ROBOT} under the main menu.
2. Select {SECOND HOME POS}.
 - The SECOND HOME POS window appears.
The message “Available to move to and modify specified point” is shown.

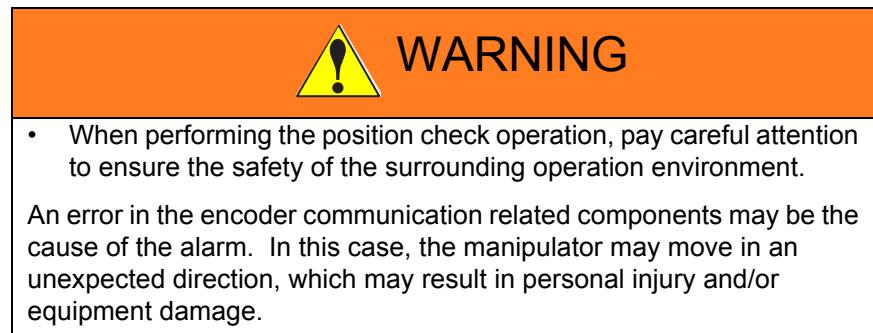


3. Press the page key [PAGE], or select “PAGE” to display the selection window for the control group.
 - The group axes by which the second home position is set is selected when there are two or more group axes.



4. Press the axis keys.
 - Move the manipulator to the new second home position.
5. Press [MODIFY] and [ENTER].
 - The second home position is changed.

6.4.3 Procedure after the Alarm



If the “OUT OF RANGE (ABSO DATA)” alarm occurs, perform the followings:

- Reset the alarm
- Turn Servo power ON

And then confirm the second home position. After the confirmation, if the encoder communication related components are found to be the cause of the alarm, perform the necessary operations, such as replacing the encoder communication related components, etc.

The robot current position data when turning main power supply OFF and ON can be confirmed in “POWER ON/OFF POS” window.

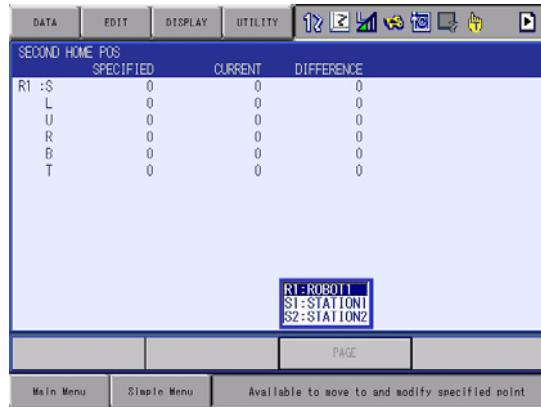


Refer to chapter 7.7 “Position Data When Power Is Turned ON/OFF” for details on the “POWER ON/OFF POS” window.

1. Select {ROBOT} under the main menu.
2. Select {SECOND HOME POS}.
 - The SECOND HOME POS window appears.



3. Press the page key [PAGE], or select "PAGE" to display the selection window for the control group.
 - The group axes by which the second home position is set is selected when there are two or more group axes.



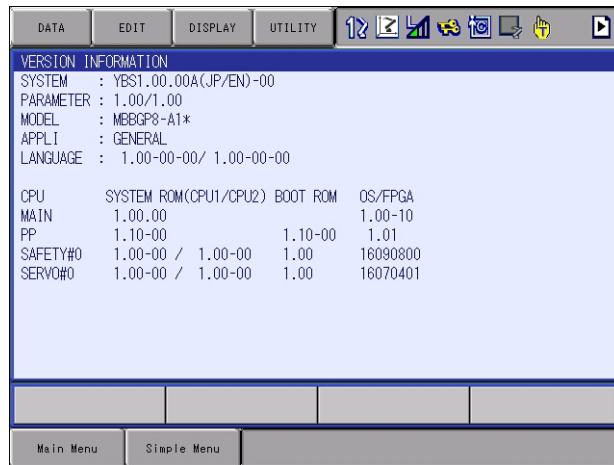
4. Press [FWD].
 - TCP moves to the second home position. The robot moving speed is set as selected manual speed.
5. Select {DATA} under the menu.
6. Select {CONFIRM POSITION}.
 - The message “Home position checked” is shown.
Pulse data of the second home position and current pulse data are compared. If the compared error is in allowed range, playback operation can be done.
If the error is beyond the allowed range, the alarm occurs again.

7 System Diagnosis

7.1 System Version

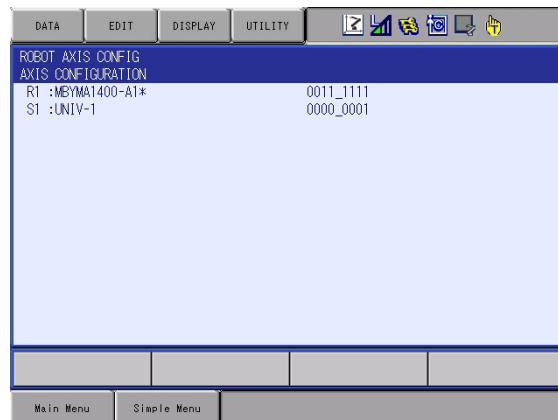
It is possible to check the system CPU version information as follows.

1. Select {SYSTEM INFO} under the main menu.
 2. Select {VERSION}.
- The VERSION window appears.



7.2 Manipulator Model

1. Select {ROBOT} under the main menu.
 2. Select {MANIPULATOR TYPE}.
- The ROBOT AXIS CONFIG window appears.



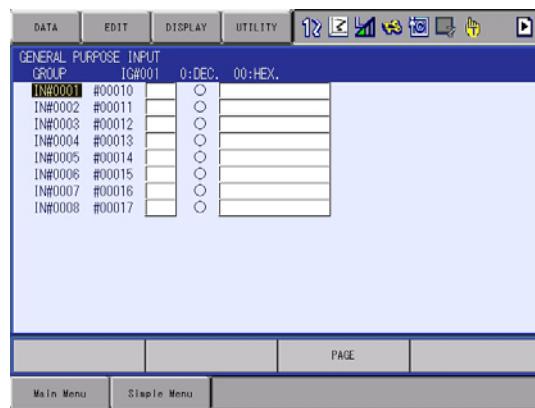
7.3 Input/Output Status

7.3.1 General-Purpose Input

The status of input signal which is referred to by input instruction of a job can be confirmed.

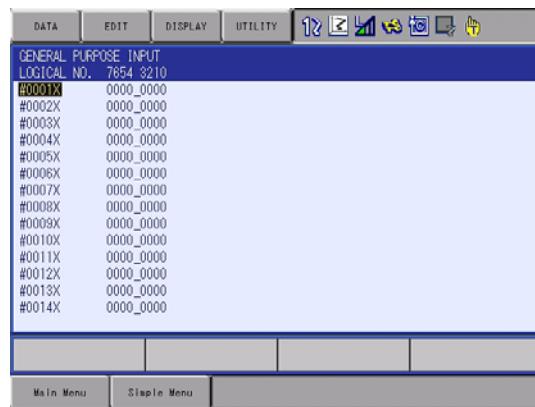
7.3.1.1 GENERAL PURPOSE Input Window

1. Select {IN/OUT} under the main menu.
2. Select {GENERAL PURPOSE INPUT}.
 - The GENERAL PURPOSE INPUT window appears.



7.3.1.2 General-Purpose Simple Window

1. Select {IN/OUT} under the main menu.
2. Select {GENERAL PURPOSE INPUT}.
 - The GENERAL PURPOSE INPUT window appears.
3. Select {SIMPLE} from the pull-down menu of {DISPLAY}.
 - The GENERAL PURPOSE INPUT simple window appears.

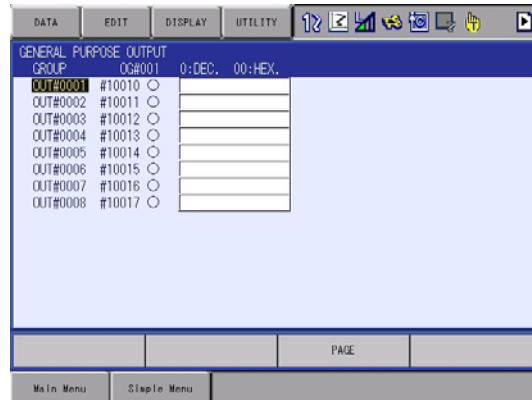


7.3.2 General-Purpose Output

The status of the output signal set by the output instruction can be confirmed and modified.

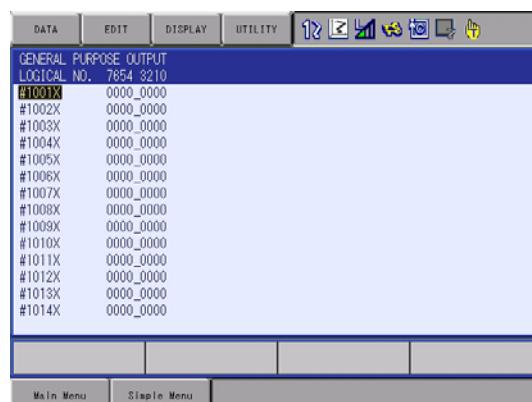
7.3.2.1 General-Purpose Output Window

1. Select {IN/OUT} under the main menu.
2. Select {GENERAL PURPOSE OUTPUT}.
 - The GENERAL PURPOSE OUTPUT window appears.



7.3.2.2 General-Purpose Output Simple Window

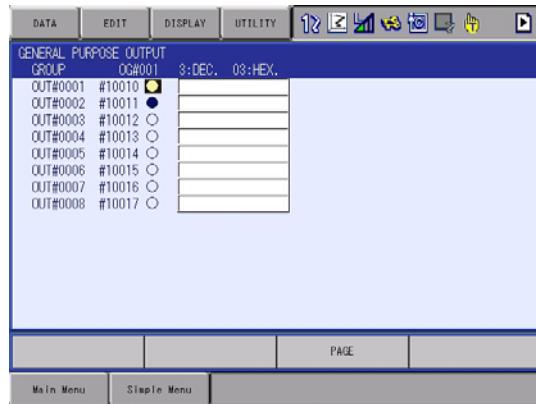
1. Select {IN/OUT} under the main menu.
2. Select {GENERAL PURPOSE OUTPUT}.
 - The GENERAL PURPOSE OUTPUT window appears.
3. Select {SIMPLE} from the pull-down menu of {DISPLAY}.
 - The GENERAL PURPOSE OUTPUT simple window appears.



7.3.2.3 Modifying the Output Status

The status of general-purpose output signal can be changed by the operation below.

1. Select the desired output signal number.
 - Select the status of the desired output signal, “O” or “●” in the GENERAL PURPOSE OUTPUT window.
2. Press [INTER LOCK] + [SELECT].
 - The status is changed. (●: ON status, O: OFF status)

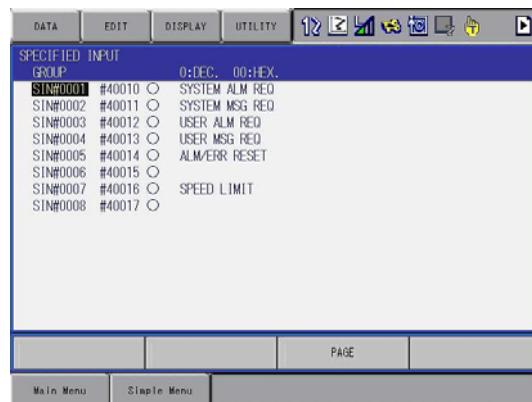


The status of general-purpose output signal can be changed only when the mode is set to the teach mode.

7.3.3 Specific Input

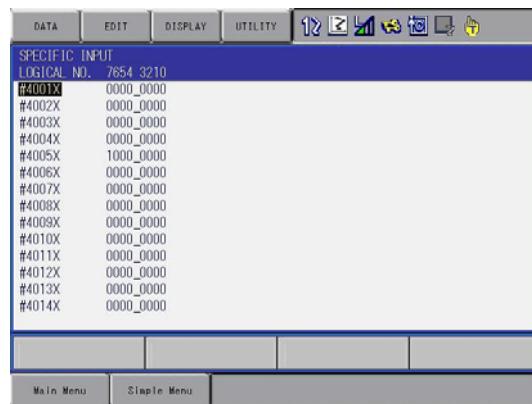
7.3.3.1 Specific Input Window

1. Select {IN/OUT} under the main menu.
2. Select {SPECIFIC INPUT}.
 - The SPECIFIED INPUT window appears.



7.3.3.2 Specific Input Simple Window

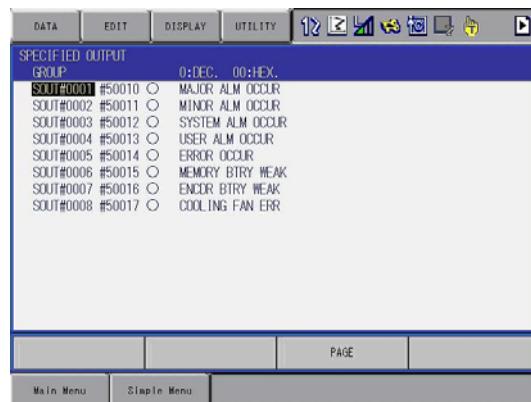
1. Select {IN/OUT} under the main menu.
2. Select {SPECIFIC INPUT}.
 - The SPECIFIED INPUT window appears.
3. Select {SIMPLE} from the pull-down menu of {DISPLAY}.
 - The SPECIFIED INPUT simple window appears.



7.3.4 Specific Output

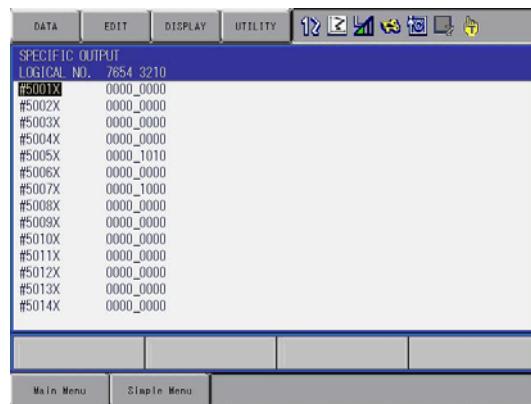
7.3.4.1 Specific Output Window

1. Select {IN/OUT} under the main menu.
2. Select {SPECIFIC OUTPUT}.
 - The SPECIFIED OUTPUT window appears.



7.3.4.2 Specific Output Simple Window

1. Select {IN/OUT} under the main menu.
2. Select {SPECIFIC OUTPUT}.
 - The SPECIFIED OUTPUT window appears.
3. Select {SIMPLE} from the pull-down menu of {DISPLAY}.
 - The SPECIFIED OUTPUT simple window appears.

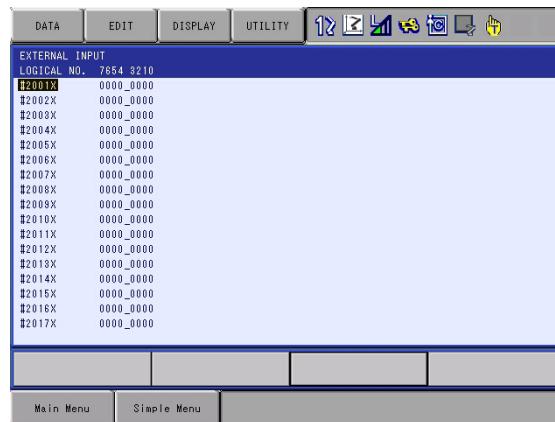


7.3.5 External Input

The status of signal which is input by an external device.

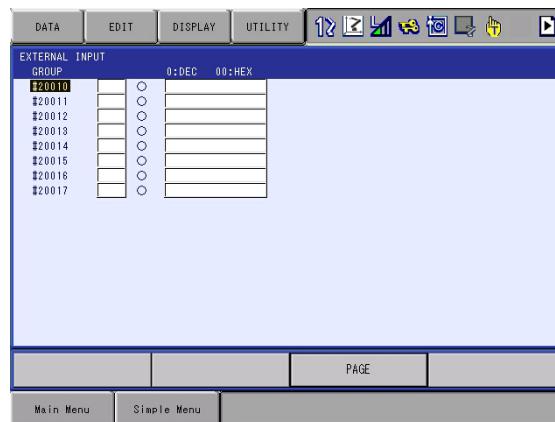
7.3.5.1 External Input Window

1. Select {IN/OUT} under the main menu.
2. Select {EXTERNAL INPUT}.
 - The EXTERNAL INPUT window appears.



7.3.5.2 External Input Detail Window

1. Select {IN/OUT} under the main menu.
2. Select {EXTERNAL INPUT}.
 - The EXTERNAL INPUT window appears.
3. Select {DETAIL} from the pull-down menu of {DISPLAY}.
 - The EXTERNAL INPUT detail window appears.

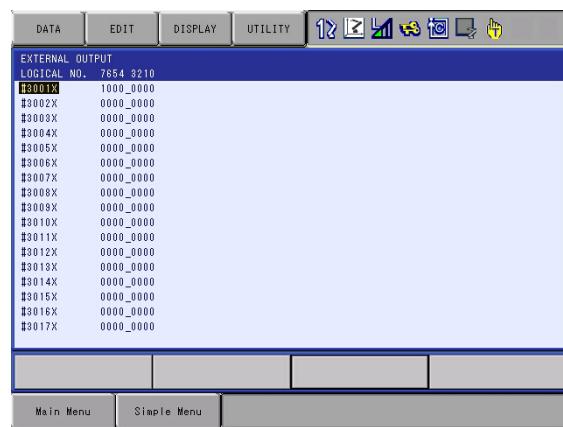


7.3.6 External Output

The status of signal which is output to an external device.

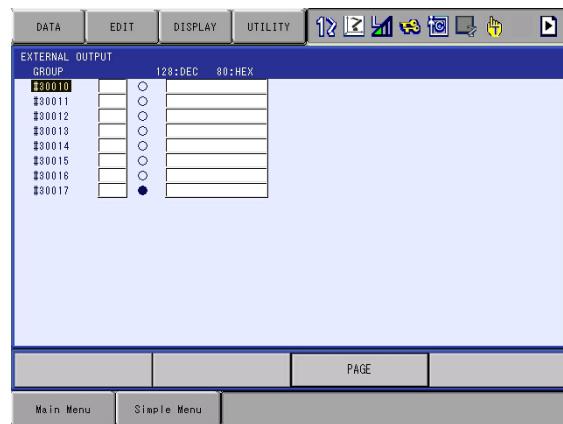
7.3.6.1 External Output Window

1. Select {IN/OUT} under the main menu.
2. Select {EXTERNAL OUTPUT}.
 - The EXTERNAL OUTPUT window appears.



7.3.6.2 External Output Detail Window

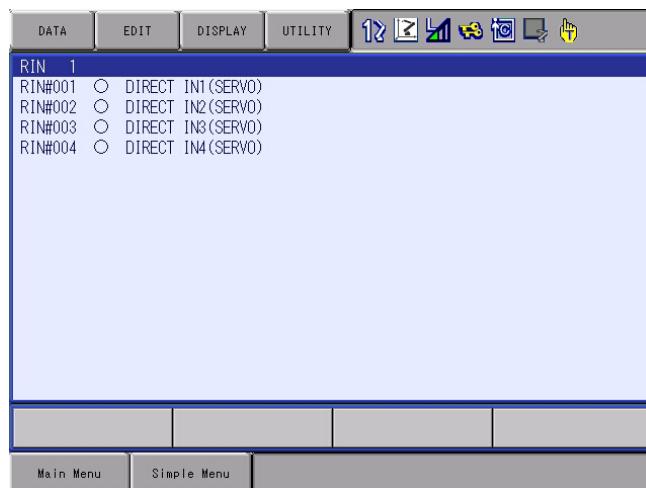
1. Select {IN/OUT} under the main menu.
2. Select {EXTERNAL OUTPUT}.
 - The EXTERNAL OUTPUT window appears.
3. Select {DETAIL} from the pull-down menu of {DISPLAY}.
 - The EXTERNAL OUTPUT detail window appears.



7.3.7 RIN Input

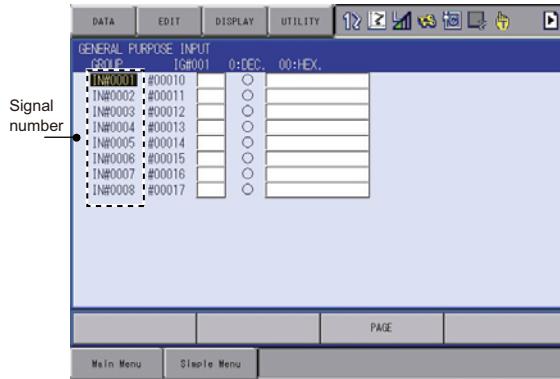
7.3.7.1 RIN Input Window

1. Select {IN/OUT} under the main menu.
2. Select {RIN}.
 - The RIN window appears.



7.3.8 Signal Number Search

A search can be made for a signal number of a general-purpose input, general-purpose output, specific input, specific output.

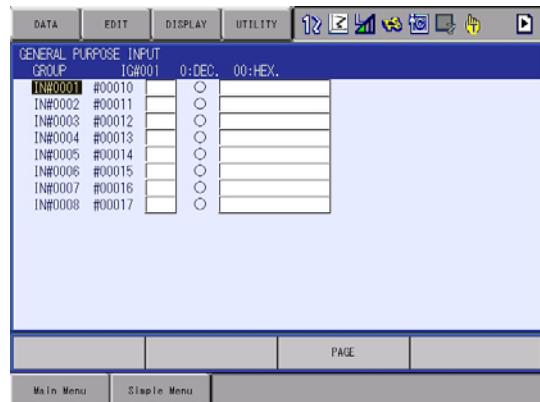


A search for the signal number can be made in the following two ways.

- Direct search on the GENERAL PURPOSE/SPECIFIED INPUT/OUTPUT window
- Search from the menu

7.3.8.1 Direct Search on the General Purpose/Specified Input/Output Window

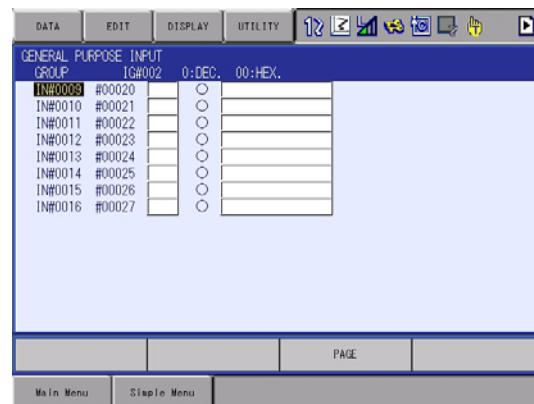
1. Move the cursor to a signal number in the GENERAL PURPOSE/SPECIFIED INPUT/OUTPUT window, and press [SELECT].
 - Numeric values can now be entered.



2. Input the signal number to be searched.
 - Type the signal number in the number input line.

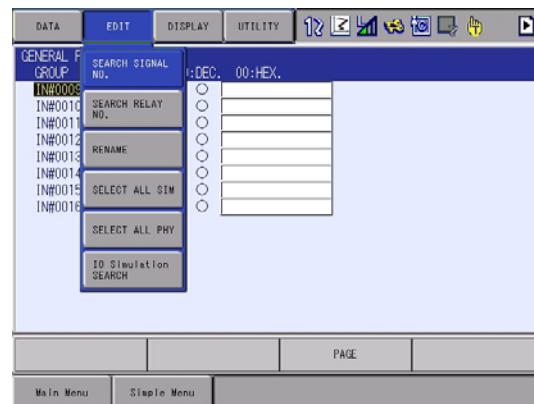
7 System Diagnosis
7.3 Input/Output Status

3. Press [ENTER] to start the search.
 - The page where the signal number exists appears.



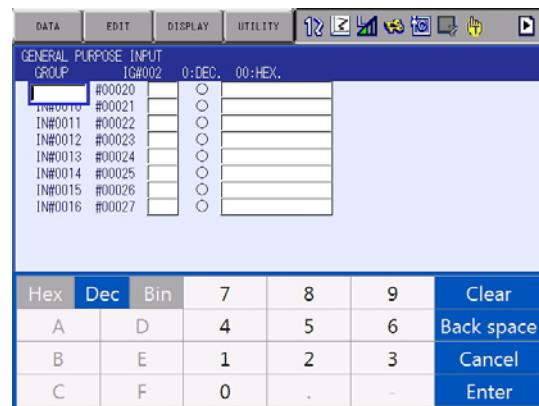
7.3.8.2 Search from the Menu

1. Select {EDIT} under the menu in the GENERAL PURPOSE/SPECIFIED INPUT/OUTPUT window.
 - The pull-down menu appears.



7 System Diagnosis
7.3 Input/Output Status

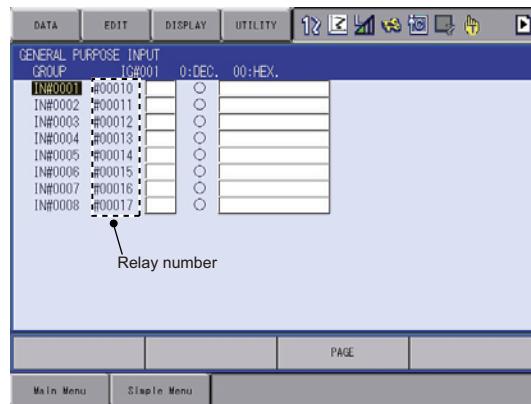
2. Select {SEARCH SIGNAL NO.}.
- Numeric values can now be entered.



3. Input the signal number to be searched.
- Type the signal number in the number input line.
4. Press [ENTER] to start the search.
- The page where the signal number exists appears.

7.3.9 Relay Number Search

A search can be made for a relay number of a general-purpose input, general-purpose output, specific input, specific output, external input and external output.

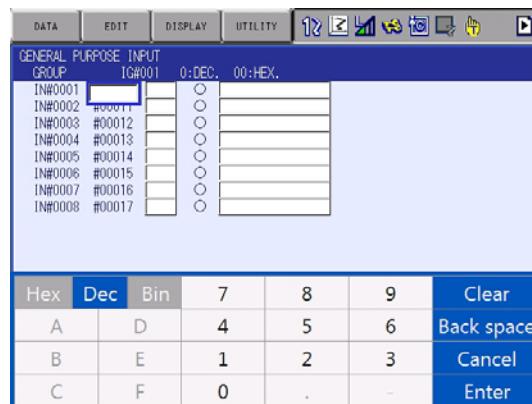


A search for the relay number can be made in the following two ways.

- Direct search on the GENERAL PURPOSE/SPECIFIED/EXTERNAL INPUT/OUTPUT window
- Search from the menu

7.3.9.1 Direct Search on the General Purpose/Specified Input/Output Window

1. Move the cursor to a relay number in the GENERAL PURPOSE/SPECIFIED/EXTERNAL INPUT/OUTPUT window, and press [SELECT].
– Numeric values can now be entered.

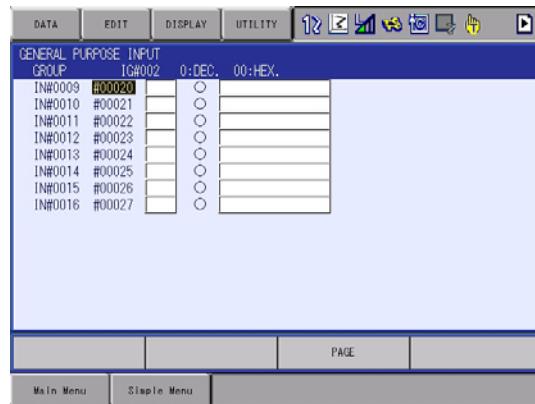


2. Enter the relay number to be searched.
– Type the relay number in the number input line.

7 System Diagnosis

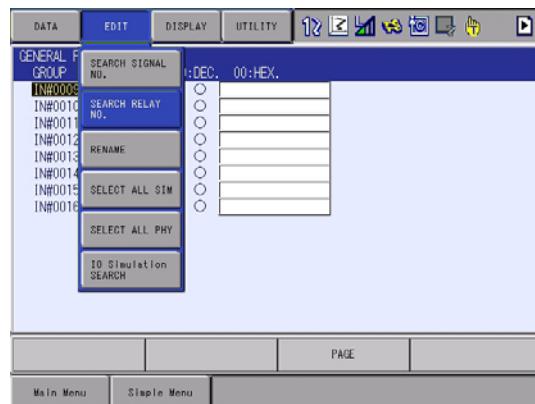
7.3 Input/Output Status

3. Press [ENTER] to start the search.
 - The page where the relay number exists appears.



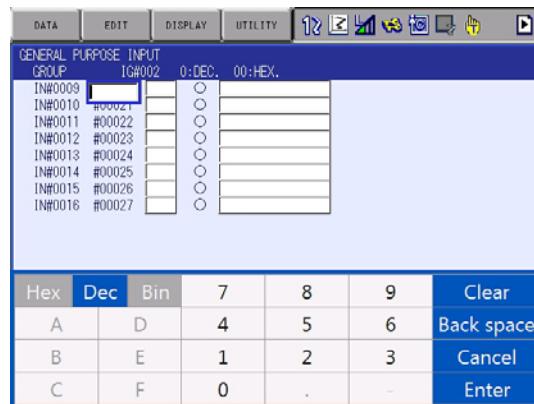
7.3.9.2 Search from the Menu

1. Select {EDIT} under the menu in the GENERAL PURPOSE/SPECIFIED/EXTERNAL INPUT/OUTPUT window.
 - The pull-down menu appears.



2. Select {SEARCH RELAY SIGNAL NO.}.

- Numeric values can now be entered.



3. Enter the relay number to be searched.

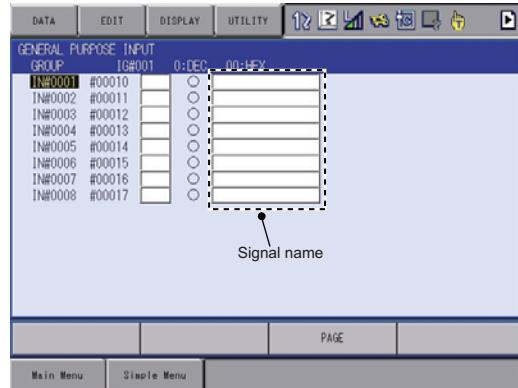
- Type the relay number in the number input line.

4. Press [ENTER] to start the search.

- The page where the relay number exists appears.

7.3.10 Modification of the Signal Name

The name of the general-purpose/external input or output signal can be modified.

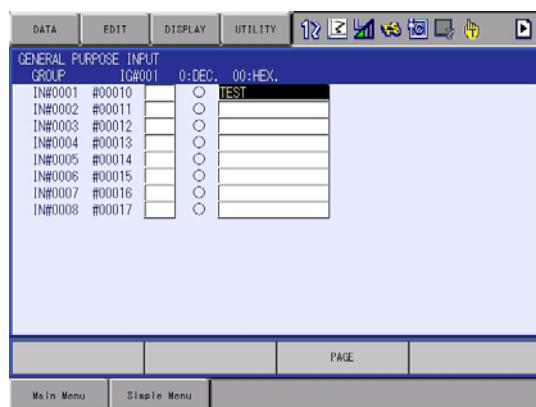


The name can be modified in the following two ways.

- Direct modification on the GENERAL PURPOSE/EXTERNAL INPUT/OUTPUT window.
- Modification from the menu

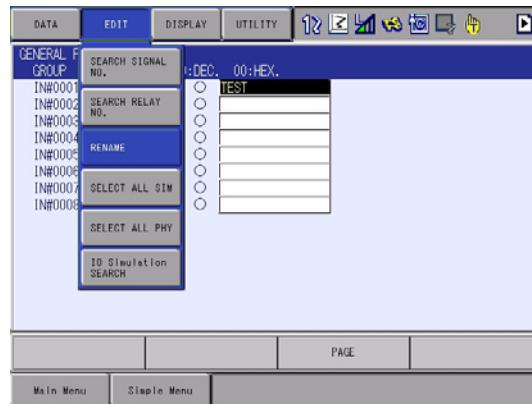
7.3.10.1 Direct Modification on the General Purpose/Specified Input/Output Window

1. Move the cursor to the signal name to be modified in the GENERAL PURPOSE/EXTERNAL INPUT/OUTPUT window, and press [SELECT].
 - The window for character input appears.
2. Enter the signal name.
3. Press [ENTER].
 - New signal name is registered.

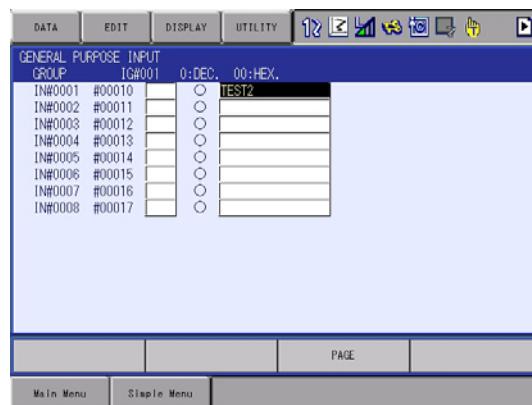


7.3.10.2 Modification from the Menu

1. Move the cursor to the signal name to be modified in the GENERAL PURPOSE/EXTERNAL INPUT/OUTPUT window.
2. Select {EDIT} under the menu.
 - The pull-down menu appears.



3. Select {RENAME}.
- The window for character input appears.
4. Enter the signal name.
5. Press [ENTER].
- New signal name is registered.

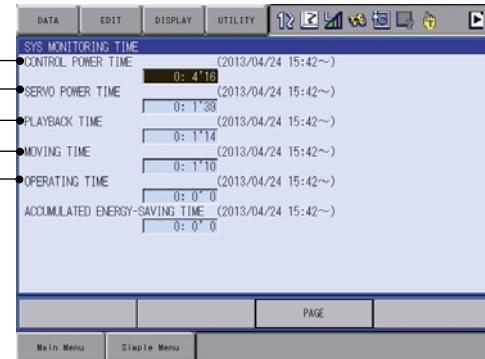


7.4 System Monitoring Time Display

7.4.1 System Monitoring Time Display Window

The status of system operation, e.g. power ON time, can be checked.

1. Select {SYSTEM INFO}.
2. Select {MONITORING TIME}.
 - The SYS MONITORING TIME window appears.



1, CONTROL POWER TIME

Display the cumulative time for which the main power supply has been turned ON and the time when the cumulative time is initialized.

2, SERVO POWER TIME

Display the cumulative time for which the servo power supply has been turned ON and the time when the cumulative time is initialized.

3, PLAYBACK TIME

Display the cumulative time for which the manipulator has been in the playback status and the time when the cumulative time is initialized.

4, MOVING TIME

Display the cumulative time for which the manipulator has been in motion and the time when the cumulative time is initialized.

5, OPERATING TIME

Display the cumulative time for operating and the time when the cumulative time is initialized.

6, ACCUMULATED ENERGY-SAVING TIME

Display the cumulative time for which the manipulator has been in the energy-saving status and the time when the cumulative time is initialized.

The values of the cumulative time and the time when the cumulative time is initialized are equal to the values of the same items in {ENERGY SAVING FUNCTION} of {SETUP} under the main menu.

7.4.2 Individual Window of the System Monitoring Time Display

If the [PAGE] key is pressed, or "PAGE" is selected to display the selection window for the system monitoring time display, the servo power time, playback time, moving time, and each-application operating time by each control group are individually displayed.



The total time of each control group here is not always the same as the time in the SYS MONITORING TIME window because these windows show time as seen from the individual control group.

7.4.3 Initializing the System Monitoring Time Display

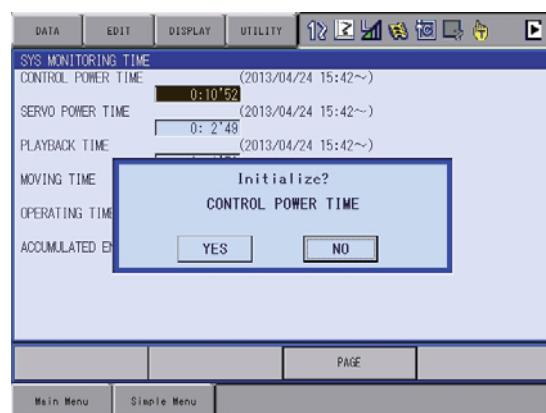
The control power time, the servo power time, the playback time, the moving time, the operating time and the accumulated energy-saving time can be initialized by following procedure when the security mode is the management mode or higher.

The control power time, the servo power time, the playback time, the moving time and the operating time can be initialized in either the system monitoring time display or the individual display.

The accumulated energy-saving time can be initialized only in the system monitoring time display.

1. Select the time to be initialized.

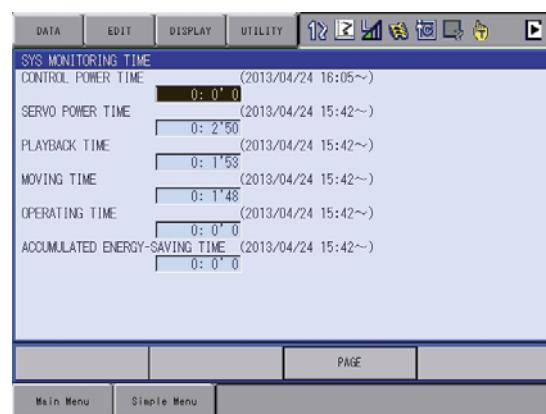
- The confirmation dialog box appears.



2. Select {YES}.

- The cumulative time value at the cursor line is reset to 0, and a new time measurement begins.

And, the current time when the cumulative time is initialized is shown on the window.



CONTROL POWER TIME, SERVO POWER TIME, PLAYBACK TIME, MOVING TIME AND OPERATING TIME can be initialized when the parameter corresponding with each time is 1.



S2C415...CONTROL POWER TIME
S2C416...SERVO POWER TIME
S2C417...PLAYBACK TIME
S2C418...MOVING TIME
S2C419...OPERATING TIME

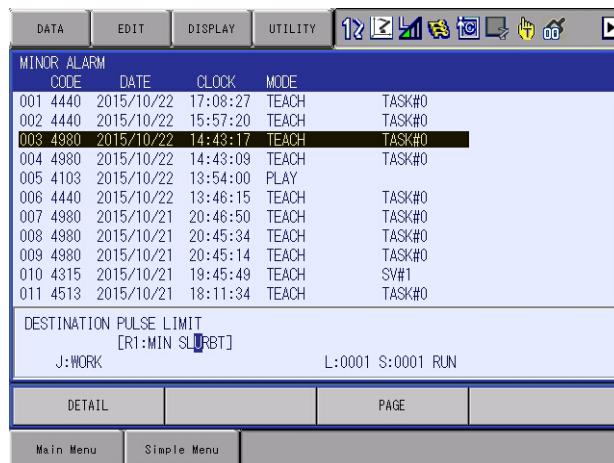
7.5 Alarm History

7.5.1 Alarm History Window

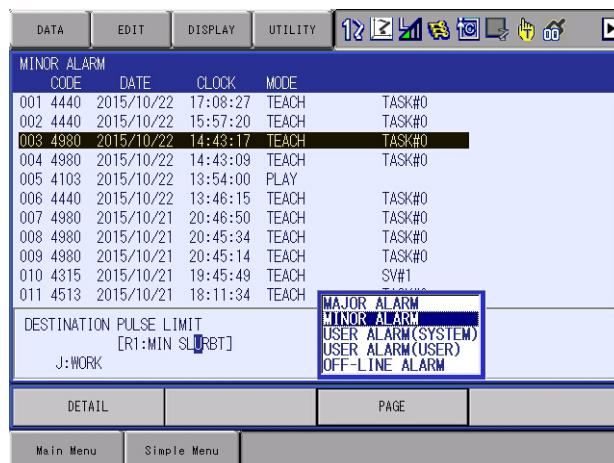
The history of alarm occurrence can be checked on the alarm history window.

The alarm history window includes five types: MAJOR ALARM, MINOR ALARM, USER ALARM (SYSTEM), USER ALARM (USER), and OFF-LINE ALARM. On each of the alarm history windows, the alarm code, date, time, mode, and alarm detail are listed.

1. Select {SYSTEM INFO} under the main menu.
 2. Select {ALARM HISTORY}.
- The alarm history window appears.



3. Press [PAGE] to switch the window.
Or select {PAGE} in the lower part of the window.
- The window is switched every time [PAGE] is pressed in the following order.
{MAJOR ALARM}, {MINOR ALARM}, {USER ALARM (SYSTEM)}, {USER ALARM (USER)}, {OFF-LINE ALARM}.



7.5.2 Change the Listing Order of Alarm History

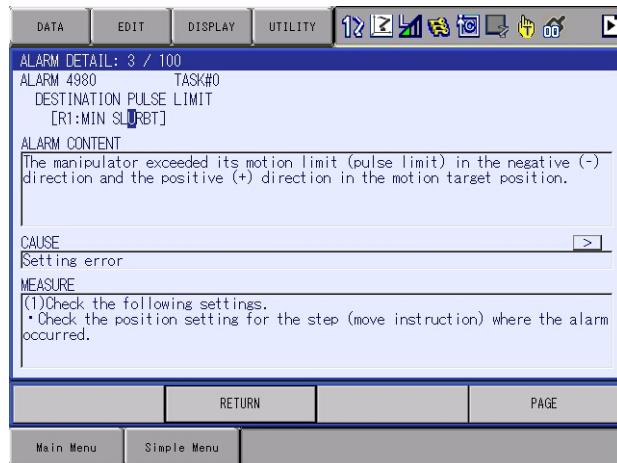
The listing order of the alarm history can be changed as follows:

1. Select either {REGISTRATION ORDER} or {NUMERICAL ORDER} under the pull-down menu {EDIT}.
 - REGISTRATION ORDER: The alarm history is shown in chronological order (descending order) of the alarm occurrence.
 - NUMERICAL ORDER: The alarm history is shown in the ascending order of the alarm code numbers.
- If the power supply of the controller is turned OFF and then ON, the listing order returns to REGISTRATION ORDER.

MINOR ALA CODE	*REGISTRATION ORDER	CLOCK	MODE
001 4440		08:27	TEACH TASK#0
002 4440		57:20	TEACH TASK#0
003 4980	NUMERICAL ORDER	43:17	TEACH TASK#0
004 4980		2015/10/22 14:43:09	TEACH TASK#0
005 4103		2015/10/22 13:54:00	PLAY
006 4440		2015/10/22 13:46:15	TEACH TASK#0
007 4980		2015/10/21 20:46:50	TEACH TASK#0
008 4980		2015/10/21 20:45:34	TEACH TASK#0
009 4980		2015/10/21 20:45:14	TEACH TASK#0
010 4315		2015/10/21 19:45:49	TEACH SV#1
011 4513		2015/10/21 18:11:34	TEACH TASK#0

7.5.3 Alarm History Detailed Information Window

Press [SELECT] under the alarm history window to show the ALARM DETAIL window and check the description and cause of, and the countermeasure against the alarm where the cursor is located.



When the Independent Control Function (optional) is activated, the {DETAIL} button is shown in the lower part of the alarm history window. For the detailed information of the alarm where the cursor is located, press {DETAIL} to show the status of the job in each task (job name, line number, step number and status) when the alarm occurs.

The task numbers are shown in the left part of the window. If the alarm occurred in a specific task, an asterisk is added next to the task number. Press [Back] to return to the alarm history window.

0: master task

1 to 5: subtask 1 to 5

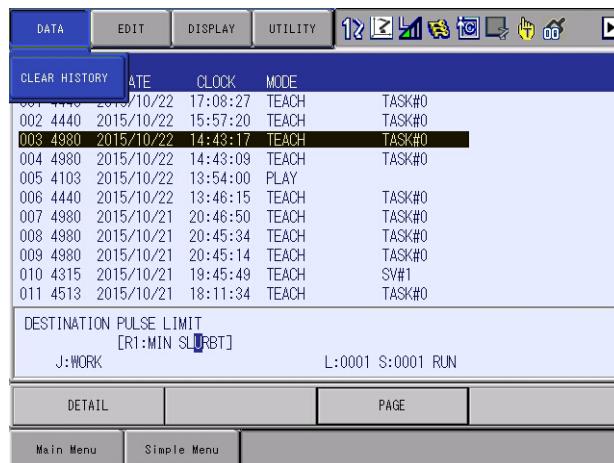
- Only the task numbers usable in the system are displayed.



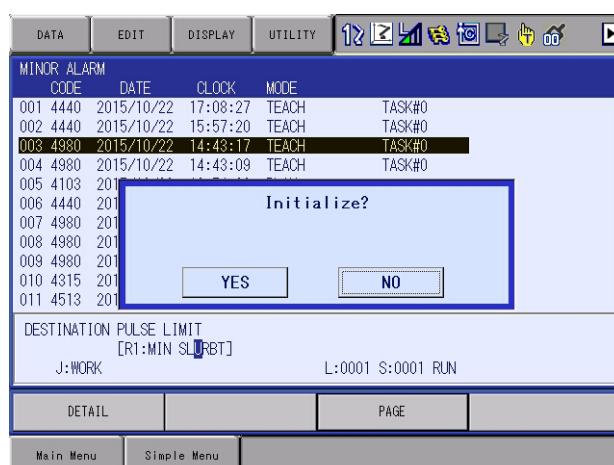
7.5.4 Clearing the Alarm History

The history of the minor alarms and the user alarms (system and user) can be cleared.

1. Display the alarm history window to be cleared.
2. Select {DATA} under the menu.
 - The pull-down menu "CLEAR HISTORY" appears.



3. Select {CLEAR HISTORY}.
 - The confirmation dialog box appears.



4. Select {YES}.
 - The alarm history displayed is reset.

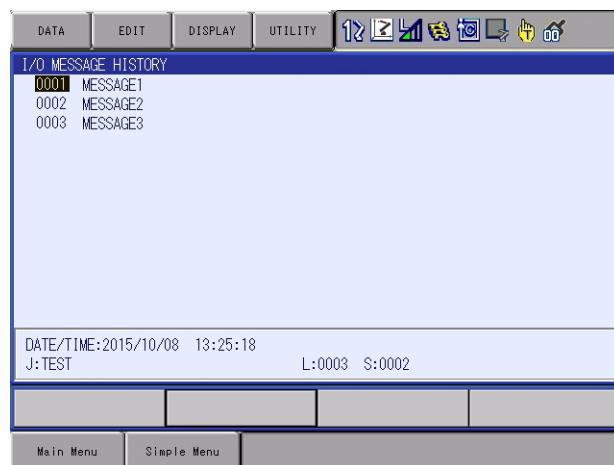
7.6 I/O Message History

7.6.1 I/O Message History Window

The I/O message history can be confirmed in the I/O MESSAGE HISTORY window.

The I/O MESSAGE HISTORY window shows the date and time, the job name, the line number, the step number and the mode of the I/O message which appeared on the window.

1. Select {SYSTEM INFO} under the main menu.
2. Select {I/O MSG HISTORY}
 - The I/O MESSAGE HISTORY window appears.



Press [SELECT], and numeric values can now be entered. Input the history number, and press [ENTER]. The search for the input history number begins, and the I/O message that appeared on the window is displayed.

7.6.1.1 Search

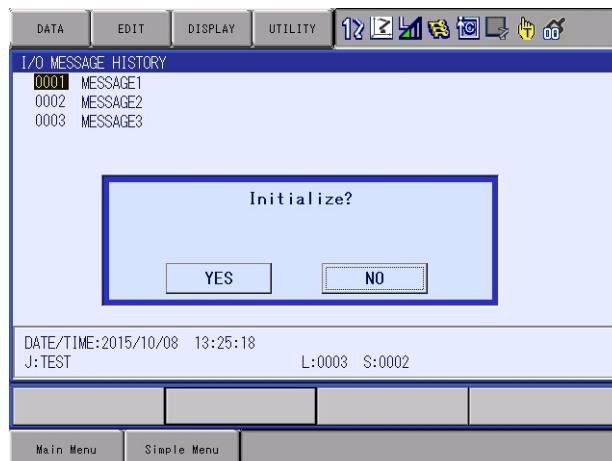
Use the following operation to search for the I/O message history.

1. Select {EDIT} under the menu.
2. Select {SEARCH}.
 - The character input line appears.
3. Enter the history No.
4. Press [ENTER].
 - The search for the input history number begins, and the I/O message is displayed.

7.6.2 Clearing the I/O Message History

Use the following operation to clear the I/O message history.

1. Select {DATA} under the menu.
2. Select {CLEAR HISTORY}.
 - The confirmation dialog box appears.



3. Select {YES}.
 - The displayed I/O message history is cleared.



Initializing the history becomes valid when the security mode is higher than the management mode.

7.7 Position Data When Power Is Turned ON/OFF

7.7.1 Power ON/OFF Position Window

The Power ON/OFF position window shows the position of the manipulator when power was turned OFF the last time, the current position of the manipulator when power was later turned ON, and the amount of difference between the two positions. When alarm 4107, "OUT OF RANGE (ABSO DATA)" occurs, the error value of the faulty axes can be verified in this window.

1. Select {ROBOT} under the main menu.
2. Select {POWER ON/OFF POS}.
 - The POWER ON/OFF POSITION window appears.

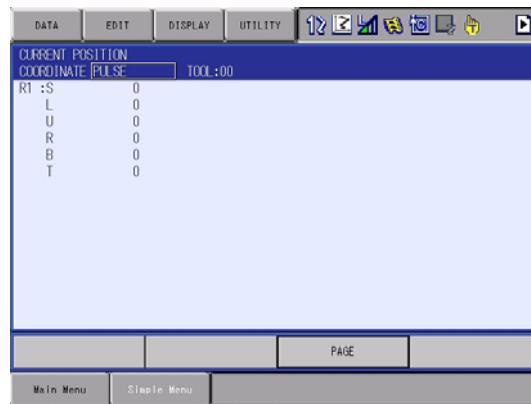


POWER ON/OFF POS	OFF POS	ON POS	DIFFERENCE
R1:S	0	0	0
L	0	0	0
U	0	0	0
R	0	0	0
B	0	0	0
T	0	0	0

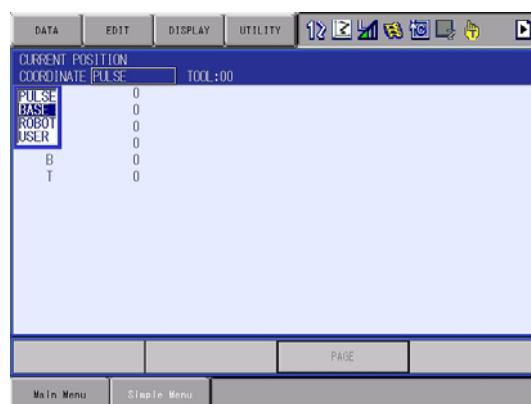
7.8 Current Position

7.8.1 Current Position Window

1. Select {ROBOT} under the main menu.
2. Select {CURRENT POSITION} under the sub menu.
 - The CURRENT POSITION window appears.



3. Select the types of coordinates to be displayed.
 - The pull-down menu appears.



4. Select the desired coordinate system.
 - The type of coordinates being displayed is changed.



7.9 Servo Monitoring

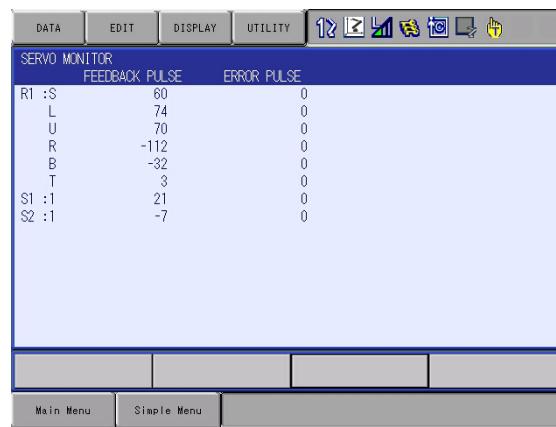
7.9.1 Servo Monitor Window

The servo monitor window shows the servo-related data of each axis.

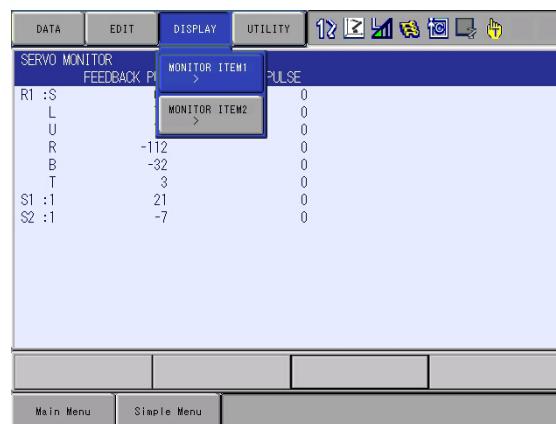
Monitor Items	Description
FEEDBACK PULSE	Feedback position (actual position) of each axis “0” at the home position
ERROR PULSE	Difference between the command position and the feedback position of each axis
SPEED DEVIATION	Difference between the command speed and the feedback speed of each axis
SPEED INST	Speed reference of each axis
FEEDBACK SPEED	Feedback speed (actual speed) of each axis
TORQUE SPEC	Torque reference of each axis
MAX TORQUE	Keeps the maximum value of the torque reference of each axis. “0” when the maximum torque is cleared or the control power supply is turned ON or OFF
ENCODER ROTATE SUM	Accumulated number of encoder rotation when the control power supply of each axis is turned ON
IN 1 TURN POSITION	Position after one rotation of the encoder when the control power supply of each axis is turned ON
MOTOR ABSOLUTE	Absolute value of the motor is calculated by adding the position in one rotation to the sum of the accumulated rotations when the control power supply of each axis is turned ON.
ENCODER TEMP.	The temperature of the each axis (°C)

7.9.1.1 Changing the Monitor Items

1. Set the security mode to the management mode.
2. Select {ROBOT} under the main menu.
3. Select {SERVO MONITOR}.
 - The SERVO MONITOR window appears.



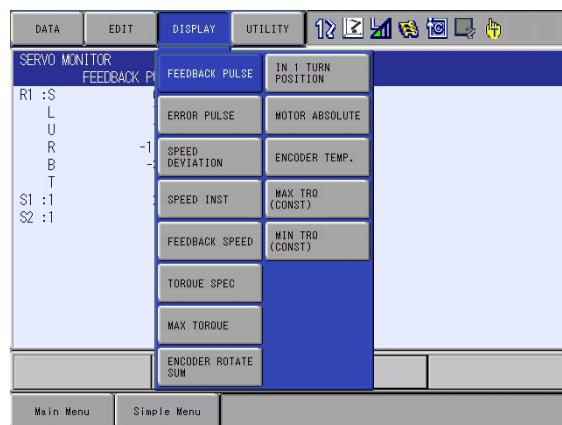
4. Select {DISPLAY} under the menu.
 - The pull-down menu appears.
MONITOR ITEM 1 is the data on the left, and MONITOR ITEM 2 is the data on the right



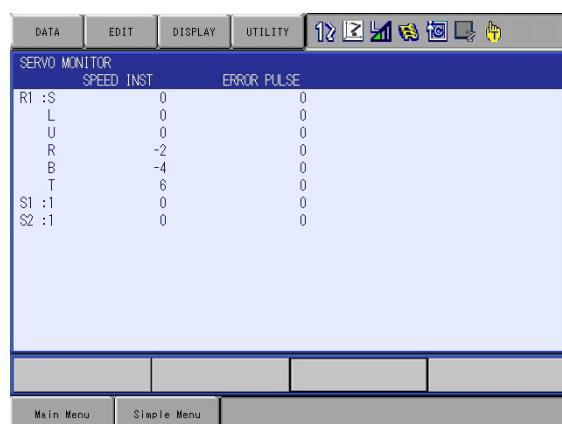
7 System Diagnosis

7.9 Servo Monitoring

5. Select MONITOR ITEM 1 or 2, and view the sub-menu choices by the cursor key.
 - The sub-menu choices appear.



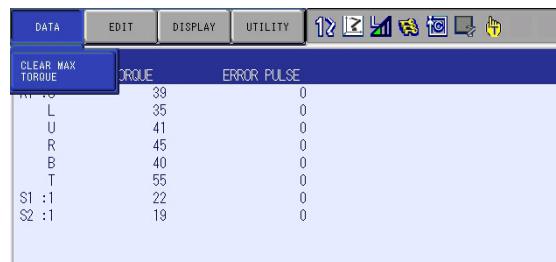
6. Select a menu.
 - The type of monitor-related information is changed.



7.9.1.2 Clearing Maximum Torque Data

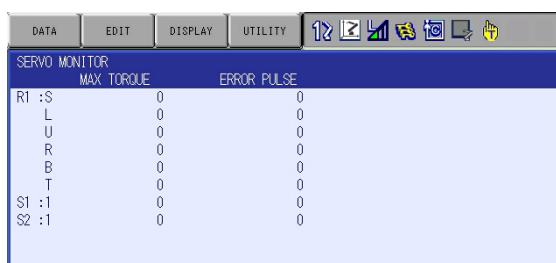
The data for the maximum torque can be cleared when the maximum torque-related information is being displayed.

1. Select {DATA} under the menu.
 - The clear max torque window appears



SERVO	MAX TORQUE	ERROR PULSE
R1 :S	39	0
L	35	0
U	41	0
R	45	0
B	40	0
T	55	0
S1 :1	22	0
S2 :1	19	0

2. Select {CLEAR MAX TORQUE}.
 - The maximum torque data is cleared.



SERVO	MAX TORQUE	ERROR PULSE
R1 :S	0	0
L	0	0
U	0	0
R	0	0
B	0	0
T	0	0
S1 :1	0	0
S2 :1	0	0

7.10 State of the Robot Drop Tolerance Error

7.10.1 Check the Robot Drop Tolerance

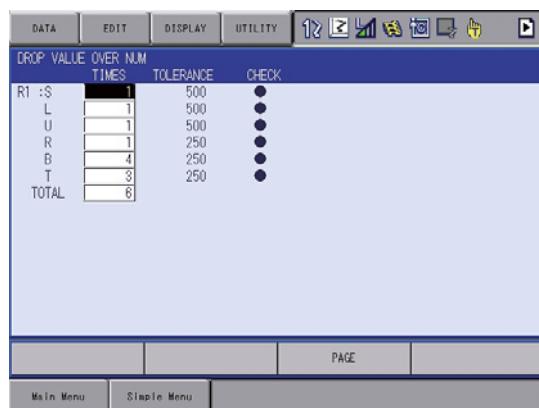
When a servo to the robot is turned off, the robot holds its position by the holding brake. However, in case of not holding its position, the YRC1000micro checks if the drop value of the pulse is within the range when the servo is turned off from the turned on status.

Checking the drop value of the pulse is not performed when the robot is operating. The YRC1000micro checks the value when turn on the servo again from the stopped state (it is a stopped state while waiting for the input during the timer in the playback).

7.10.2 Display of the Drop Value Number Window

Confirm the state of the times of the drop, tolerance and check on this window.

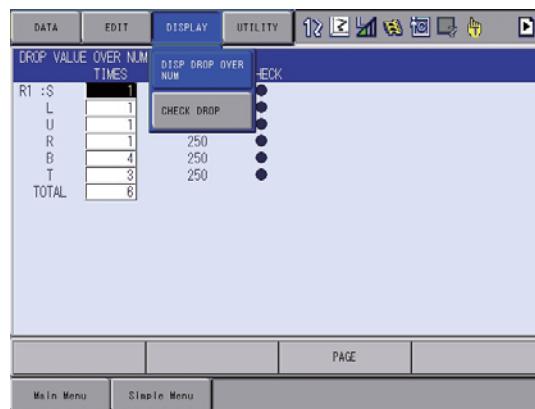
1. Select {ROBOT} in the main menu.
2. Select {DROP VALUE}.
 - The DROP VALUE OVER NUM window appears.



7.10.3 Display of the Drop Value Check Window

The position value of the manipulator where the servo was turned off (shown as SERVO ON on the screen), the position value of the manipulator where the servo is turned on (shown as SERVO OFF on the screen), and the difference value from these positions above are displayed in this window.

1. Select {DISPLAY} in the menu.
 - The pull-down menu appears.
 - Select {CHECK DROP} to display the DROP VALUE CHECK window.



2. Select {DROP VALUE CHECK}.
 - The DROP VALUE CHECK window appears.

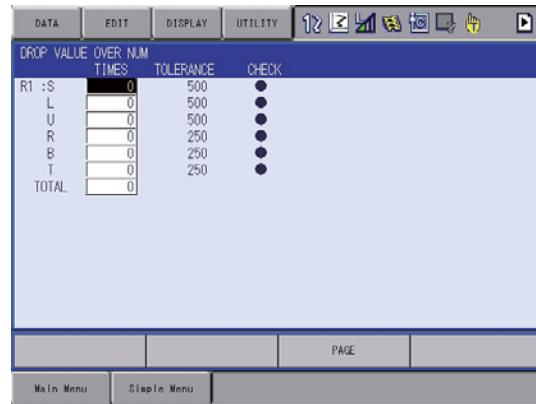
This screenshot shows the 'DROP VALUE CHECK' window. The menu bar at the top is identical to the previous one. The main area displays a table with columns for 'SERVO ON' and 'SERVO OFF' position values, and a 'DIFFERENCE' column. The table includes a header row and several data rows for joints R1:S, L, U, R, B, and T. The 'SERVO ON' column shows values like -23580, 83698, 18511, -41, -56241, and 2828 respectively. The 'SERVO OFF' column shows mostly 0 values. The 'DIFFERENCE' column shows values like -23580, 83698, 18511, -41, -56241, and 2828 respectively.

	SERVO ON	SERVO OFF	DIFFERENCE
R1:S	-23580	0	-23580
L	83698	0	83698
U	18511	0	18511
R	-41	0	-41
B	-56241	0	-56241
T	2828	0	2828

7.10.4 Clear the Times of the Drop Value Number

Clear the number by following operation.

1. Occurring times of the each axis
 - Move the cursor over the axis to be deleted, and press {SELECT}.
The number of occurrence times is deleted.
2. Occurring times of the all axes
 - Move the cursor over the TOTAL, and press {SELECT}.
The number of occurrence times are deleted.



	TIMES	TOLERANCE	CHECK
R1 :S	0	500	●
L	0	500	●
U	0	500	●
R	0	250	●
B	0	250	●
T	0	250	●
TOTAL	0		

8 Alarm

8.1 Outline of Alarm

When an alarm of level 0 to 3 (major alarm) occurs, the servo power supply is turned OFF.

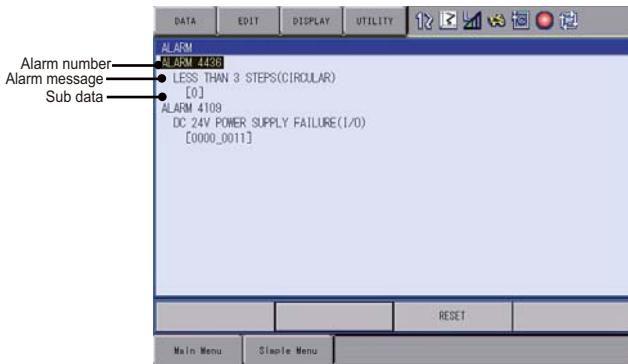
Table 8-1: Alarm Code Classification

Alarm Code	Alarm Level	Alarm Reset Method
0□□□	Level 0 (Major alarm) (Off line alarm: Initial diagnosis/ Hardware diagnosis alarm)	It is not possible to reset by “RESET” under the ALARM window or the system input signal (Alarm reset). Turn OFF the main power supply and correct the cause of the alarm. Then turn ON the main power supply again.
1□□□ to 3□□□	Level 1 to 3 (Major alarm)	It is not possible to reset by “RESET” under the ALARM window or the system input signal (Alarm reset). Turn OFF the main power supply and correct the cause of the alarm. Then turn ON the main power supply again.
4□□□ to 8□□□	Level 4 to 8 (Minor alarm)	After correcting the cause, it is possible to reset by “RESET” under the ALARM window or the system input signal (Alarm reset).
9□□□	Level 9 (Minor alarm) (I/O alarm)	After correcting the cause for which the system input signal for the system or user alarm request turns ON, it is possible to reset by “RESET” under the ALARM window or the system input signal (Alarm reset).

8.2 Alarm Display

8.2.1 Displaying and Releasing Alarm

If an alarm occurs during operation, the manipulator stops immediately and the ALARM window appears on the programming pendant indicating that the machine was stopped by an alarm.



If more than one alarm occurs simultaneously, all the alarms are displayed.

Scroll the viewing area with the cursor key to view the alarm that is not currently displayed on the viewing area.

The following operations are available in the alarm status: window change, mode change, alarm reset, and emergency stop. If the window is changed to another window during alarm occurrence, the ALARM window can be shown again by selecting {SYSTEM INFO} under the main menu and then selecting {ALARM}.

8.2.1.1 Releasing Alarms

Alarms are classified by minor and major alarms.

- Minor Alarms

Select "RESET" on the ALARM window to release alarms.
Or, turn ON the specific signal "ALARM RESET" when using an external input signal (specific input).

- Major Alarms

If a severe alarm such as hardware failure occurs, servo power is automatically shut OFF and the manipulator stops. Turn OFF the main power supply, remove the cause of the alarm, and then turn ON the power supply again.

8.2.2 Special Alarm Display

(1) Sub Data

Sub data such as data for the axis where the alarm occurred, may also be displayed for some alarms.

- Decimal data

Without signs: 0 to 65535

With signs: -32768 to 32767

- Binary data

The alarm occurrence data becomes "1."

With 8 bits: 0000_0001

With 16 bits: 00000001_00000001

- Axis data

The axis where the alarm occurred is highlighted.

With robot axis: Robots 1 to 2 [S **L** U R B T]

With base axis: Base 1 to 2 [**1** 2 3]

With station axis: Stations 1 to 3 [1 **2** 3]

- XYZ coordinate data

The coordinates where the alarm occurred are highlighted.

[**X** Y Z]

[X Y Z **Tx** Ty Tz]

- 123 data

The data for which the alarm occurred is highlighted.

[**1** 2 3]

- Control group data

The control group where the alarm occurred is highlighted.

[**R1** R2 S1 S2 S3]

(2) Independent Control Function (Optional)

In the independent control function (multi-task job), the tasks that were being done when the alarm occurred are also displayed.

TASK#0: Master-task job

TASK#1: Sub-task1 job (SUB1)

TASK#2: Sub-task2 job (SUB2)

TASK#3: Sub-task3 job (SUB3)

TASK#4: Sub-task4 job (SUB4)

TASK#5: Sub-task5 job (SUB5)

8.3 Display of Alarm Details

Alarm details displaying function indicates the alarm contents breakdown on the alarm window.

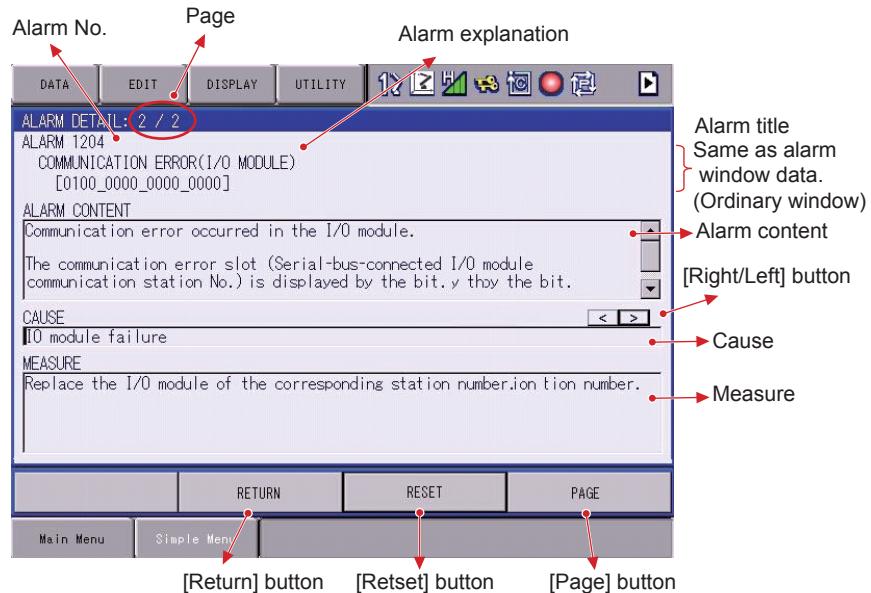
Press [Select] key after moving the cursor to the subject alarm on the alarm window to display its "content", "cause" and "measure".

Skip displaying the alarm window to directly display this breakdown window is possible by specifying the parameter when an alarm occurs.

8.3.1 Parameter

S2C406 Alarm Details Direct Display 0: Invalid / 1: Valid

8.3.2 Display of Alarm Detail Window



- **Page**
Displays the page number of the alarm whose detail window is currently displayed / the total alarm number occurred coincidentally.
- **Alarm No.**
Displays the alarm number with decimal 4 digit.
- **Sub data**
Displays the sub code number defined to each alarm.
- **Alarm content**
Displays the content of the alarm.

■ **[Right/Left] button**

This button appears when there can be several “cause”s and “measure”s to one alarm. Press this to right/left ward to alternate the “cause” and the “measure”.

■ **Cause**

Displays the cause of an alarm.

■ **Measure**

Displays the recovery method from the alarming state.

■ **[Reset] button**

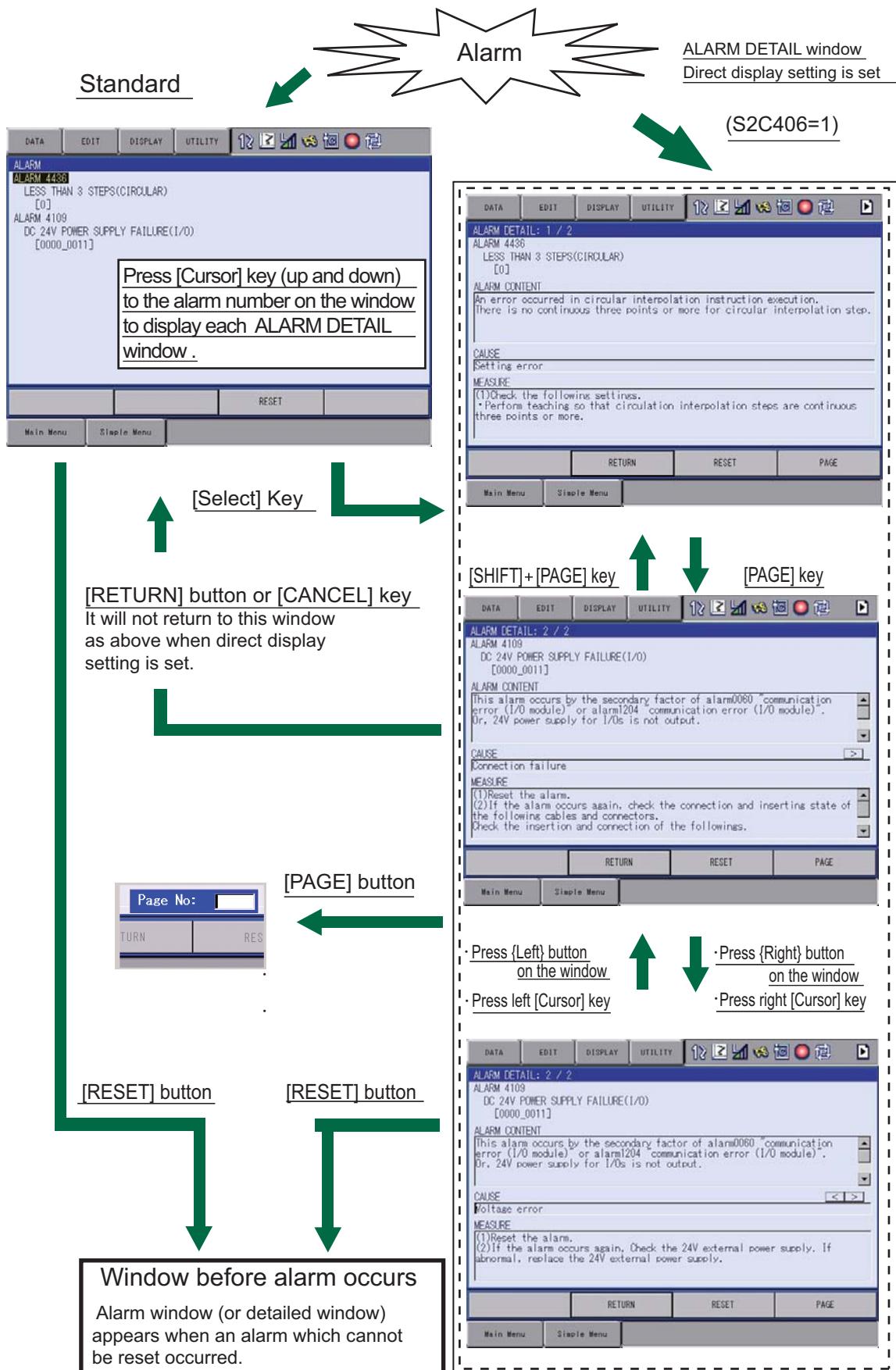
Press this button to reset the alarm.

■ **[Page] button**

Press this button to display the page number inputting area.

This area appears when several alarms occur at a time.

8.3.3 Transition of Alarm Detail Window



8.4 Alarm Message List

NOTICE

- To handle the system control circuit board “JANCD-ACP**-*”, personnel must be appropriately skilled in maintenance mode operation.
- The JANCD-ACP**-* backs up very important file data for the user program with a battery. Careless operation may delete registered data.
Before handling the JANCD-ACP**-* for any remedies, consult YASKAWA representative.

- For the Alarm No.0000 to 0999, refer to “Alarm Number(0000 to 0999)” in “YRC1000micro ALARM CODES (MAJOR ALARMS)”.
- For the Alarm No.1000 to 3999, refer to “Alarm Number(1000 to 3999)” in “YRC1000micro ALARM CODES (MAJOR ALARMS)”.
- For the Alarm No.4000 to 4999, refer to “Alarm Number(4000 to 4999)” in “YRC1000micro ALARM CODES (MINOR ALARMS)”.

9 Error

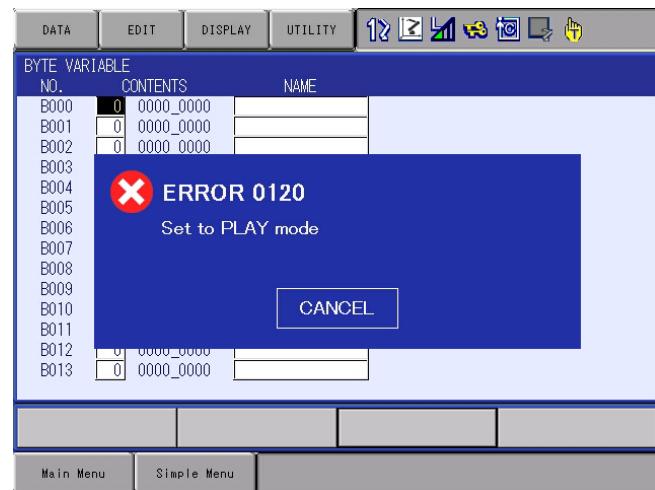
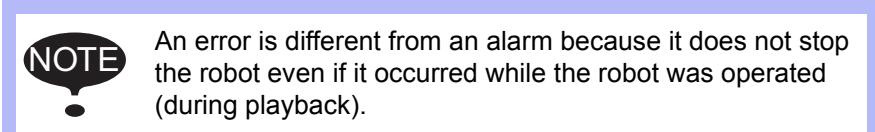
9.1 Error Message

Error warns the operator not to advance to the next operation caused by a wrong operation or the access method when using the programming pendant or an external equipment (computer, PLC, etc.).

When an error occurs, confirm the content of the error then release the error.

To release the error, perform either of the following operations:

- Press [CANCEL] on programming pendant.
- Input alarm/error reset signal (system input).
- Select {CANCEL} of error dialog box.



9.1.1 System and General Operation

Error No.	Data	Error Message	Contents
10	-	Turn off servo power and perform corrective action	It cannot be operated while servo power supply is ON.
20	-	Depress TEACH	Out of specified operation mode
30	-	Illegal setting for number of variables	Parameter setting error
31	-	Illegal setting for number of variable-names	
32	-	Illegal setting for number of SUB task.	
40	-	Undefined robot position variables	Position variable cannot be used.
50	-	Depress MODIFY	
60	-	Undefined points (ORG, XX, XY)	Not registered user coordinates basic 3 points (ORG, XX, XY)
70	-	Program and current tool different	The tool number registered with teaching position data does not match the tool number selected at the programming pendant.
80	-	Same position in the 3 points	
90	-	Set robot exactly to taught position	
100	-	On overrun recovery status	
110	-	Turn ON servo power	
120	-	Set to PLAY mode	
130	-	No start using external signal	
140	-	No start using P.P.	
180	-	TEACH mode select signal ON	
190	-	Set variable number	
200	-	Defined group axis	
210	-	Undefined coordinated robots	
212	-	Cannot register at this combination	
230	-	While releasing soft limit	
240	-	Undefined robot	
280	-	Lack of number of I/O points	
290	-	Cannot set same No.	
300	-	Undefined user frame	
310	-	Cannot register Master JOB	

9 Error
9.1 Error Message

Error No.	Data	Error Message	Contents
320	-	Cannot operate CHECK-RUN	
330	-	Cannot operate MACHINE LOCK	
340	-	Cannot operate Master JOB	
341	-	Cannot be called up Master JOB	Master JOB cannot be called up while the brake is released manually.
350	-	Cannot initialize	
380	-	Position not checked	Second home position was not checked.
383	-	Select joint coordinate system and perform forward operation	
384	*	Coasting value setting of Ex-axis is not completed.	
	xxx		The coasting value unsetting group of the external axes.
410	-	Time could not be measured	Time could not be measured for TRT function.
420	-	Incorrect number of taught points	The number of the taught points for tool calibration is incorrect.
430	-	Register start reserved JOB	
460	-	Excess time for measuring	
500	-	Undefined robot calibration data	
510	-	Undefined axis	
520	-	Cannot select two coordinated combination	
530	-	Start reservation mode	
550	-	Start reserved JOB change prohibit is set	
560	-	Cannot teach position while soft limit released	
590	-	Register group axis combination	[SYNCHRO] was pressed for coordinated job which was not registered as group.
600	-	Out of setting data range	
610	-	Cannot use the user coordinate	
620	-	Select JOB (robot)	
650	-	Incorrect measured data	
660	-	Wrong data type of position variable	
680	-	Defined data	
	XXX		File no.
700	-	Wrong CMOS memory board type	
720	-	Defined name	

Error No.	Data	Error Message	Contents
721	-	It is already registered for IN/OUT signal name.	
722	-	It is already registered for Variable name.	
723	-	It is already registered for Local variable name.	
724	-	The existing names cannot be overwritten	
740	-	This name cannot be defined	
741	-	This name cannot delete	The name cannot be deleted while alias function is valid.
742	-	The string cannot start with a '/'.	
770	-	During robot or station operation	
801	-	The group axis of designation is not connection	
810	-	Servo power supply is limited	
820	-	Modification range over	
930	-	Undefined conveyor calibration data	
960	-	I/O axis mode requesting	
970	-	ERRSVCPU signal error	
971	-	ERRCPU signal error	

9.1.2 Editing

Error No.	Data	Error Message	Contents
1010	-	EDIT LOCK mode	
1011	-	EDIT LOCK is set for this line.	
1012	-	This line is defined as a comment.	
1020	-	Enter correct value	
1030	-	Unauthorized ID No.	
1050	-	Enter correct date	
1060	-	Enter correct clock	
1061	-	Enter correct time	The input time value is not correct.
1062	-	Values over 0 are not acceptable. Move to OPERATING TIME screen to set the values over 0.	The value other than "0" cannot be input.
1063	-	Enter 500000 or less value for 'HHHHHH'.	The value for the time is too big.
1070	-	Enter an ID number in 4 or more figures	
1071	-	Enter an ID number in 9 or more figures	
1080	-	Negative value can't be set	
1090	-	Enter correct value (START-END signal no)	
1130	-	Cannot register variable name in this job any more.	
1140	-	No input signals are set.	
1141	-	Overlapped input signals exist.	
1142	-	Overlapped output signals exist.	
1143	-	The signal which cannot be used is set up.	
1150	*	There are abnormal values in the file.	
	1		FILE NO.
	2		FILE SET STATUS
	3		FILE VALID CONDITION
	4		ALARM SET
	5		STOP METHOD
	6		Control GROUP
	7		Robot range limit: MONITOR TARGET
	8		Robot range limit: COORDINATE
	9		Robot range limit: SHAPE TYPE
	10		Range combination: INPUT FILE1, INPUT FILE2 and OUTPUT FILE
	11		Range combination: LOGIC

Error No.	Data	Error Message	Contents
1151	*	Check the numeric value settings.	
	1		Axis range limit: the valid axis can be set by maximum < minimum.
	2		Robot range limit: set the "Z UPPER < Z LOWER" when the creating method is the prism.
	4		Robot range limit: set the same coordinate at the two vertices of the plane monitoring.
1152	*	The set values are out of range.	
	1		Axis range limit: maximum value and minimum value
	2		Axis speed monitor: speed
	3		Axis speed monitor: acceptable range
	4		Speed limit: limit speed (Robot)
	5		Speed limit: limit speed (Station)
	6		Speed limit: detection delay time
	7		Speed limit: acceptable range
	8		Robot range limit: used point number
	9		Robot range limit: X and Y coordinates
	10		Robot range limit: Z coordinate
	11		Approach warning buzzer: buzzer occurring distance
	12		Approach warning buzzer: universal output number
	13		Tool angle monitor: reference angle
	14		Tool angle monitor: limit angle
	16		Tool change monitor: tool number
	17		Tool change monitor: detection delay time
1160	*	The selected control group cannot be applied to functional safety.	
	2		The target group of the group change
	4		The group with the endless axis
	5		The group with the speed control axis
	6		The group with unset setting of the current position set up parameter
	7		The group with unset setting of the approximation model
	8		The group is not the monitoring target of the functional safety.
	9		The group with the functional safety monitoring invalid axis

Error No.	Data	Error Message	Contents
1161	*	The axis that cannot be applied to functional safety exist.	
	10 to 17		The axis motion range limit and the axis speed monitor are valid, and the axes are endless axes (10+axis number).
	20 to 27		The axis motion range limit and the axis speed monitor are valid, and the axes are speed control axes (20+axis number).
	30 to 37		The axis motion range limit and the axis speed monitor are valid, and the axes are functional safety monitoring invalid axes (30+axis number).
1162	*	The axis to which coasting distance is not set cannot be set to VALID.	
	0 to 7		The coasting values are not set when the axis is valid (axis number).
1163	*	The group to which coasting distance is not set cannot be set to VALID.	
1170	*	Range cannot be configured with this setting.	
	1		Invalid robot range limit file number
	2		Inequality of the neighboring lines in the initial and terminal node
	3		There is the same point at the specified vertex.
	4		Lack of the setting vertex number
	5		The setting range lines are interfering each other.
	8		Inappropriate height setting
	9		Detected the non-convex range
	12		The exceeded number of the vertices
	13		Failure to create the data for the monitoring the outside of the range.
	14		Failure to create the plane surface range.
1180	-	Same file cannot be set.	
1181	-	The specified output file is under monitoring.	
1182	-	Monitor type differs between INPUT1 and INPUT2.	
1183	-	Coord type differs between INPUT1 and INPUT2.	
1184	-	The height in Z-direction differs between INPUT1 and INPUT2.	

Error No.	Data	Error Message	Contents
1185	*	Range combination cannot be performed.	
	1		Inappropriate specified combination
	2		The exceeded number of the point of the intersection
	3		Failure to combine the range "AND"
	4		Failure to combine the range "OR"
1186	-	The combination use of the files where plane monitoring is set is not permitted.	
1190	-	Cannot modify this parameter.	
1191	-	Axis range limit function is temporally disabled.	
1192	-	Robot range limit function is temporally disabled.	
1193	-	Tool angle monitor function is temporally disable.	
1194	-	Tool change monitor function is temporally disable.	
1195	*	The tool No. must be the same as the registered tool No.	
	XXX		The control group for the operation target.
1196	-	Select "Functional safety Board FLASH Reset".	
1223	-	The specified output value already exists.	
1600	-	A confirmation position is not set.	

9.1.3 Job Defined Data

Error No.	Data	Error Message	Contents
2010	-	Incorrect character	
2020	-	Name not entered	
2030	-	Undefined JOB name	
2040	-	Defined JOB name	
2050	-	Address not found	
2070	-	Set robot exactly to taught position	
2080	-	Press INSERT or MODIFY	
2090	-	Only modifying move instruction possible	
2100	-	JOB cannot be edited.	
2110	-	Over soft limit	
2111	-	Over soft limit. Adjust center position or pulse width.	
2120	-	Cannot insert/alter/delete with servo off	
2150	-	Inserting is not possible from this point	
2160	-	Cannot modify or delete this position	
2170	-	Press INSERT to record same step as previous step	
2180	-	Cannot insert data	
2210	-	Illegal data setting	
2220	-	Display edit instruction	
2240	-	Excessive instruction equation	
2250	-	Unmatched number of parentheses in equation	
2251	-	Unmatched number of parentheses in conditional expression.	
2260	-	Wrong group axis selection	
2270	-	Cannot insert any more instruction in JOB	
2272	-	Cut/ copy failed. Specify the effective range of instruction.	

Error No.	Data	Error Message	Contents
2280	*	JOB memory is full	
	1		Lack of position file memories
	2		Lack of JOB registering memories
	3		Lack of instruction file memories
	4		Lack of memory pool
	5		Lack of pass condition file for multi layer
	128		The instruction exceeded the maximum size
2290	-	Undefined master JOB	
2291	*	Undefined SUB Master JOB	
	1		Sub-master 1
	2		Sub-master 2
	3		Sub-master 3
	4		Sub-master 4
	5		Sub-master 5
2292	-	Undefined MASTER START JOB	
2293	*	Undefined SUB START JOB	
	1		Sub-master 1
	2		Sub-master 2
	3		Sub-master 3
	4		Sub-master 4
	5		Sub-master 5
2300	-	Cannot teach JOB without group-axis specification	
2310	*	Same label exists	
	XXX		Line no.
2340	-	Editing data not found	
2360	-	Cannot create editing area	
2370	-	Cannot cut/copy NOP and END instructions	
2371	-	EDIT LOCK/COMMENT functions cannot be applied to NOP and END.	
2372	-	This line cannot be defined as a comment.	
2390	-	Wrong group axis selection	
2400	-	Cannot move in cut & paste editing	
2430	-	Reverse data not found	
2450	-	Relative JOB not permitted	

Error No.	Data	Error Message	Contents
2470	-	Wrong JOB type	
2480	-	Wrong JOB coordinates setting	
2500	-	Cannot convert the JOB	
2501	-	Cannot convert positions as macro arguments	
2510	-	Cannot correct position in the JOB	
2520	-	Enter JOB name	
2530	-	Illegal step number	
2540	-	Enter step number	
2550	-	Duplicated step number	
2551	-	Duplicated line number	
2560	-	Cannot correct steps of position variables and REFP	
2570	-	The step does not contain speed	
2580	-	The step dose not contain PL/CONT	
2590	-	Soft limit range over	
2600	-	Cannot teach position in concurrent JOB	
2610	-	Wrong JOB kind	
2620	-	Cannot correct play speed in the JOB	
2630	-	Conveyor position not reset	
2640	-	Incorrect JOB name	
2650	-	Defined JOB name	
2670	-	Undefined target JOB	
2710	-	Relative job can't be shifted with pulse type	
2730	-	Cannot use robot macro JOB	
2740	-	Cannot use concurrent macro JOB	
2750	-	Cannot use JOB with group-axis specification	
2762	-	This operation is not allowed, for axes detachment has been set.	
2763	-	Cannot modify, for axes detachment has been set.	
2764	-	Cannot insert/modify/delete, for axes detachment has been set.	
2780	-	Arithmetic error	

Error No.	Data	Error Message	Contents
2790	-	Step exceeding operation range.	
2822	-	Cannot copy job during jog operation.	
2823	-	Cannot copy, cut and paste during jog operation.	
2880	-	This group name cannot be changed.	
2881	-	Same group name exists.	
2882	-	It's not appropriate group name.	

9.1.4 External Memory Equipment

Error No.	Data	Error Message	Contents
3021	-	SD card not inserted into SD card slot (PP)	
3022	-	USB media not inserted	
3040	-	File not saved on the media	
3050	-	File saved on the media	
3060	-	Out of memory on the media	
3070	-	Number of files on the media	
3080	-	I/O error on the media	
3090	*	Transmission error with the media	
	1		Framing error
	2		Overrun error
	3		Parity error
	4		Data code error
	5		Data read error
	6		Data write error
	7		Data time out
	8		Serial I/O error
	9		Error other than described above
3100	-	Total checksum error	When the security is in management mode or safety mode, the CMOS.BIN file saved with other controllers can not be loaded.
			The memory size incorporated in the JANCD-ACP31-2E board is different from the memory size of the JANCD-ACP31-2E board used when saved the CMOS.BIN file.
			The CMOS.BIN file is broken or not be saved properly.
3110	-	Syntax error	
3120	*	HEX code error	
	1		Specification error of data decode
	2		Specification error of EOF record
	3		Record type error
	4		Total check error of record
3130	-	Verify error	
3140	-	Wrong pseudo instruction	

Error No.	Data	Error Message	Contents
3150	*	Concurrent I/O record error	
	1		Format error
	2		Ladder program is too long
	3		Exceed the range of the data
	4		Specification error of channel No.
	5		Specification error of relay No.
	6		Timer value error
3160	7		Specification error of timer No
	-	Cannot load illegal system data	
3170	*	Condition file data error	
	1		Format error
	2		Specified file No. is omitted
	3		Specified tool No. is omitted
	4		User file is not registered.
3190	*	Error in JOB data record	
	1		Record on the number of position data (NPOS) is wrong for the format.
	2		Record on the user coordinate No. (USER) is wrong for the format.
	3		Record on the tool No. (TOOL) is wrong for the format.
	4		Record on the position data section is wrong for the format.
	5		Record on the robot type of XYZ data (RCONF) is wrong for the format.
	6		Date (DATE) record is wrong for the format.
	7		Comment (COMM) record is wrong for the format.
	8		Record on the JOB attribute data (ATTR) is wrong for the format.
	9		Control group (GROUP) record is wrong for the format.
	10		Local variable (LVARS) record is wrong for the format.
	11		JOB argument (JARGS) record is wrong for the format.
	12		Record on the teaching coordinates for relative job (FRAME) is wrong for the format.
	13		Position data coordinates do not match relative job coordinates.
3200	-	NOP or END instruction not found	
3210	-	Position No. storage area not found	

Error No.	Data	Error Message	Contents
3220	*	Syntax error in instruction data	
	2		Interior control error
	3		Undefined instruction/tag
	4		Instruction/tag shortage
	5		Disuse instruction/tag
	6		Sub instruction
	7		No instruction
	8		Invalid instruction
	9		Invalid tag
	10		Invalid character
	11		Undefined intermediate code
	12		Intermediate code shortage
	13		Syntax stack overflow
	14		Syntax stack underflow
	15		Array type tag uncompleted Tag [ARRAY]
	16		Element type tag uncompleted Tag [ELEMENT]
	17		Macro JOB unregistered
	18		Input format error
	19		Data size over
	20		MIN value over
	21		MAX value over
	22		Operation expression error
	23		Job call argument setting error
	24		Macro job call argument setting error
	25		Position vector setting error
	26		System error
	27		Soft key designate error
	28		Numerical input buffer overflow
	29		Real type data precision error
	30		Element format error
	35		BOOL TYPE data error
	36		CHAR data error
	37		BYTETYPE, BINARY / HEXADECIMAL BYTE TYPE data error
	38		INTEGER TYPE, DECIMAL WORD TYPE data error
	39		BINARY/HEXADECIMAL WORD TYPE data error
	40		DOUBLE PRECISION INTEGER TYPE, DECIMAL DWORD TYPE data error
	41		BINARY/HEXADECIMAL WORD TYPE data error
	42		REAL TYPE data error
	43		LADDER SPECIAL TYPE data error

Error No.	Data	Error Message	Contents
3220	44		JCL text
	45		Invalid text
	46		LABEL NAME data error
	47		JOB NAME data error
	48		STRING data error
	49		COMMENT data error
	51		The job contains the instructions which exceeded the maximum size
	58		Invalid instruction/tag detection
3230	-	Syntax not matched	
3231	-	Controller type is not matched.	
3240	-	Undefined application	
3250	-	Cannot load this file	
3251	-	Cannot SAVE/LOAD the job which has more than 512 aliases.	
3260	-	Excess input data	
3270	-	Cannot verify this file	
3290	-	Serial port not defined	
3300	-	Serial port being used	
3310	-	Protocol being used	
3350	-	Not enough memory	
3360	-	Invalid folder	
3370	-	Incorrect folder name	
3450	-	Cannot load macro JOB at current security mode	Load in management mode.
3460	*	Cannot backup the media	
	1		Insufficient Compact Flash memory.
	2		Not accessible to Compact Flash.
3461	-	Failed to delete the system backup file.	
3462	-	Data accessed with other functions.	
3501	-	Check the media insertion	
3510	-	Cannot delete folder. Check attribute and inside file	
3520	-	Same folder exists	
3550	-	Under automatic backup operation. Operate after the backup is completed.	
3551	-	Under automatic backup operation. Operate "SORT FILE" after the backup is completed.	
3560	-	Failed in sorting backup file	

9 Error
9.1 Error Message

Error No.	Data	Error Message	Contents
3570	-	Actuator data transmission error	
3580	-	Under backup file access. Operate after the access is completed.	
3581	-	Under backup file access. Operate "SORT FILE" after the access is completed.	
3600	-	system configuration data not matched	
3610	-	Excessive path	
3620	-	Excess folders	
3680	-	Cannot load the file while running time chart.	

9.1.5 Concurrent I/O

Error No.	Data	Error Message	Contents
4010	*	Illegal relay No.	
	XXX		Line no.
4030	*	Illegal instruction	
	XXX		Line no.
4040	*	Relay/register No. duplicated in OUT/GOUT or arithmetic instruction	Multiple outputs are instructed to the relay or register.
	XXX		Line no.
4050	*	The relay is not used	
	XXX		Line no.
4060	*	Excess STR[-NOT] instructions	
	XXX		Line no.
4070	*	Excess AND [OR] STR instructions	
	XXX		Line no.
4080	*	Syntax error in CRT instructions	
	XXX		Line no.
4090	*	Enter STR [-NOT] at head of block	Need STR [-NOT]
	XXX		Line no.
4120	-	Concurrent I/O memory is full	Exceeds memory capacity (10000 steps)
4130	-	END instruction not found	END instruction not found
4140	-	Wrong ladder program	Position and number of PART instruction are wrong.
4150	*	Wrong use of GSTR, GOUT commands	GSTR and GOUT is not used together.
	XXX		Line no.
4190	-	Ladder program not found	
4220	-	Excess TMR/CNT or arithmetic instructions	More than 100 TMR, CNT or arithmetic instruction used
4230	-	Syntax error in TMR/CNT instructions	
5212	-	EXDSW signal is OFF. (Safety Logical Circuit)	

9.1.6 Maintenance Mode

Error No.	Data	Error Message	Contents
8011	-	Choose the input of overrun	
8012	-	Equipment data file reading error	
8021	-	ASF30 board not found	
8030	-	Too many boards (DEVICENET(MASTER))	
8033	-	Too many boards	
8034	-	Too many channels	
8035	-	Invalid configuration	
8040	-	Memory error (ControlNet output condition)	
8041	-	Memory error (UNIWIRE CONNECT DAT)	
8042	-	Memory error (IP Network Configuration data)	
8050	-	Robot model is not registered	
8051	-	Select model	
8060	-	Cannot get UNIWIRE connection data	
8070	-	DHCP is already set to use for another item	
8071	-	DNS is already set to use for another item	
8072	-	DHCP is not set to use	
8073	-	DNS is not set to use	
8074	-	Device Information not found	
8080	-	Non support function	
8205	-	ENABLE Unit over	
8206	-	FLASH access error	
8210	-	IO module configuration is not modified	
8211	-	OPTION BOARD or MODULE SETUP is not completed.	The setting information of OPTION BOARD and the related parameter value do not match. Start the system in maintenance mode and set up as follows: {OPTION BOARD} ->{IO MODULE} ->{EXTERNAL IO} .
8212	-	Cannot change setting (Function conflict)	

Error No.	Data	Error Message	Contents
8213	-	Check EXTERNAL IO setup	
8250	-	Setting group is duplicated that has been set in the axes detachment function.	
8251	-	Setting group is duplicated that has been set in the robot detachment function.	

9.2 Particular Error Message

Apart from ordinary alarms or errors, some may display an error box message on the programming pendant. This message is displayed, when the system of the programming pendant becomes unauthorized.

9.2.1 Message

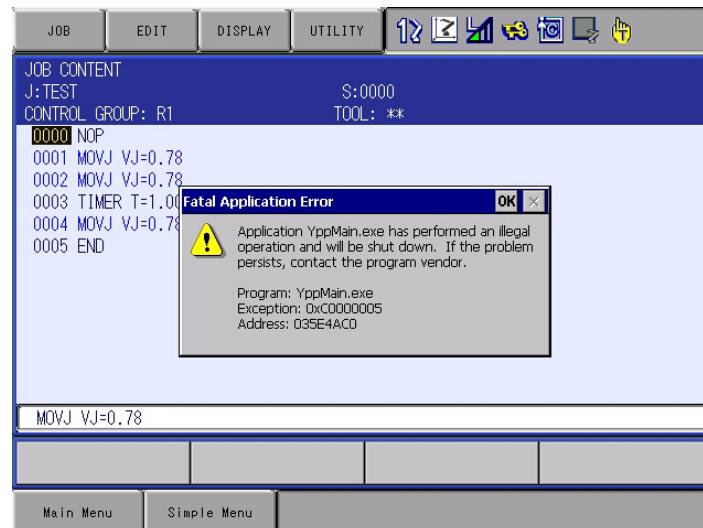
9.2.1.1 Fatal Error

This message is displayed when the fatal error occurs.

The message is “Fatal application Error” although the content of the message box varies depending on the occurrence status.

The programming pendant becomes either of following states

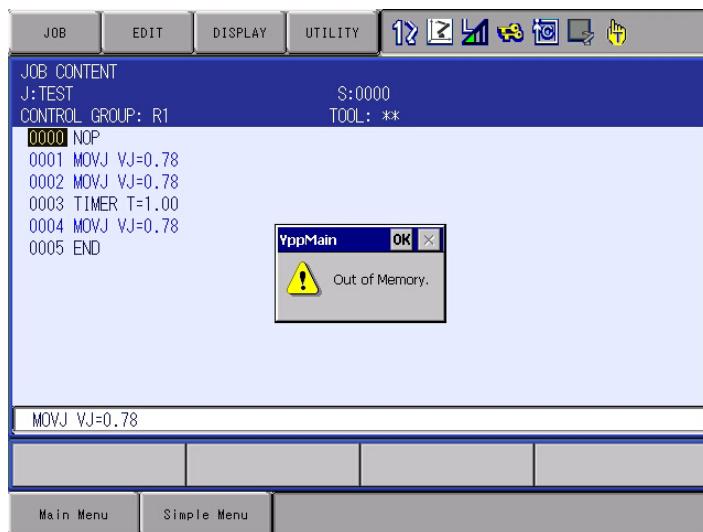
1. The window becomes inoperable.
2. The window disappears and blue background appears.



9.2.1.2 Application Transaction Error

This message is displayed when the system or the software of the programming pendant becomes unauthorized due to unexpected transaction or failure in software transaction, etc.

The message in the message box varies depending on the occurrence status.



Followings are the messages possible to occur.

Message	Meaning
syntax error	There is an unauthorized part in internal processing description.
expression too complex (stack overflow)	Internal stack has overflowed.
function nesting depth exceeded	Nesting of internal processing is unauthorized.
bad radix	The cardinal number used is unauthorized.
divide by 0	Memory is running out.
out of memory	Memory is insufficient.
argument list does not match a function	The internal processing of the pendant program is unauthorized.
register is not available	Specified an unavailable system data.

The programming pendant becomes either of following states

1. The window becomes inoperable.
2. Press [OK] button to disappear the message box and it becomes operable.

9.2.1.3 Other Errors

The message box may appear due to the errors other than mentioned above.

9.2.2 When the Error Is Indicated

9.2.2.1 Fatal Error

Programming pendant becomes inoperable when this message appears.
Please restart the system.

9.2.2.2 Application Transaction Error

It is possible to keep the operation after pressing [OK] button to disappear the message box. However, in this case, the system might be unstable.
Please restart the system if the window becomes inoperable.

9.2.2.3 Other Errors

Most of the cases when an error occurs, it is possible to keep the operation after pressing [OK] button to disappear the message box.
Please restart the system if the window becomes inoperable.

Sometimes the message appears due to a specific operation although unstable state of the programming pendant is the main cause of the error in most cases.

If the pendant becomes inoperable after the message due to a specific operation invariably, please report the displayed message to your YASKAWA representative.

10 Job Data Simplified Restoration Function

10.1 Outline

There are some cases where the data in file system becomes inconsistent status if the controller power is turned off during edit operation.

If this data inconsistent status is neglected, the following data errors (inconsistent status) might occur in rare cases.

This Job data simplified restoration function checks the inconsistent status of the file and restore the data error status of the file system.

[Inconsistent status]

inconsistent chain status between position data and instruction file

- (1) Overlapped chain with same position data
- (2) Unregistered position data is chained with instruction file
- (3) Registered position data is not chained

10.2 Job Data Restoration

10.2.1 How to Check Job Data Inconsistent Status

* “FILE” in WRONG DATA LOG screen corresponds to the following data.

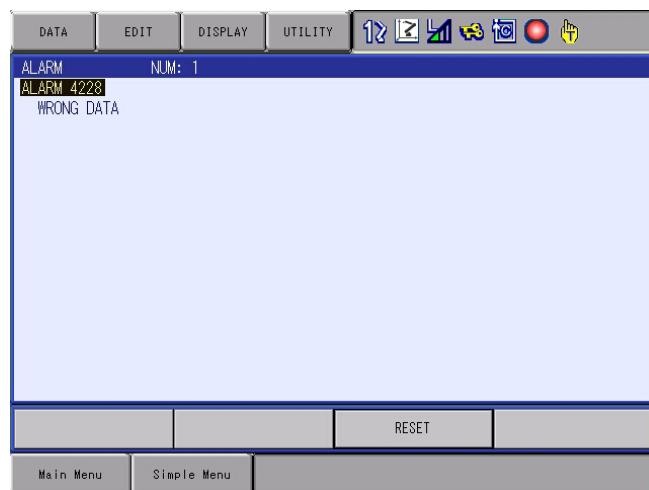
- (1) Job data
- (2) User coordinate data (UFRAME)
- (3) Robot calibration file (RBCAL)
- (4) Edit buffer (-CUTBUF)



- Execute Job data restoration in management mode or higher.
- Operation mode and editing mode permit monitoring only.

1. Detect data error

– ALARM screen appears.



2. Press {SYSTEM INFO} under main menu and select {SECURITY}

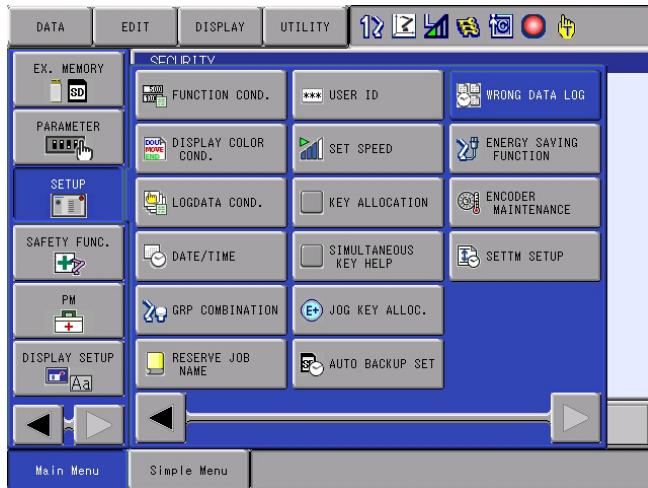


3. Select “MANAGEMENT MODE”

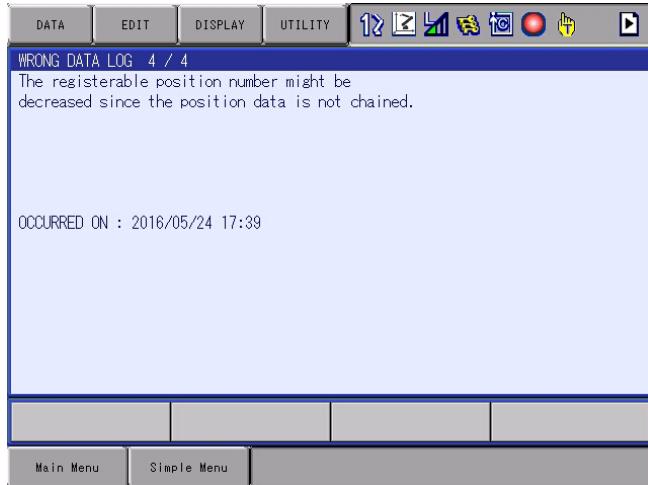


– Input password to switch the mode to Management mode.

4. Press {SETUP} under main menu and select {WRONG DATA LOG}



– WRONG DATA LOG screen appears.

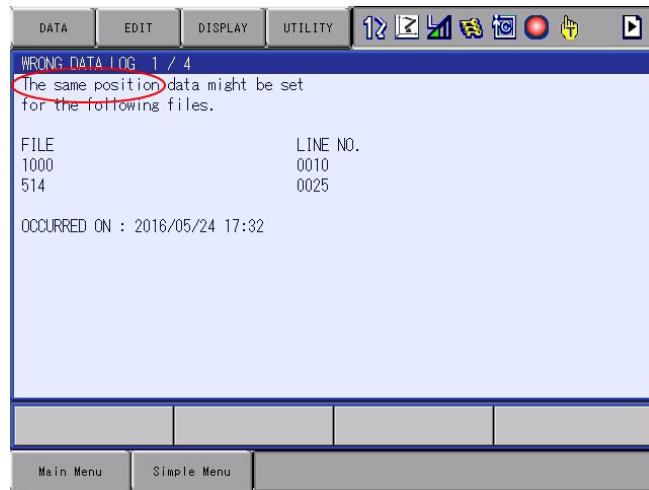


5. Check the details of data inconsistency

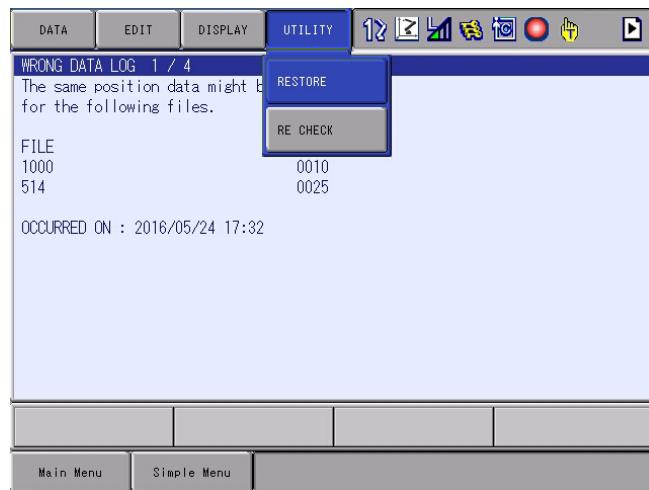
– Check the error contents, then execute restoration following chapter 10.2.2 “Job Data Restoration Method”.

10.2.2 Job Data Restoration Method

10.2.2.1 In Case Same Position Data Is Chained



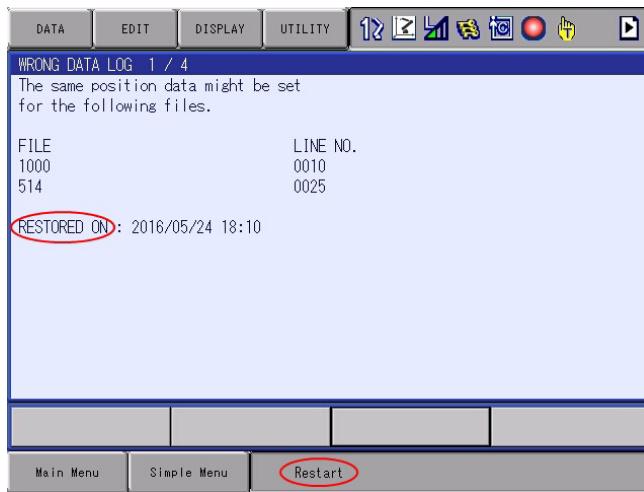
1. Press {UTILITY} to select {RESTORE}
 - Press {RESTORE} to reset the overlapped position data chain.



10 Job Data Simplified Restoration Function

10.2 Job Data Restoration

- The indication changes from “OCCURRED ON” to “RESTORED ON”.



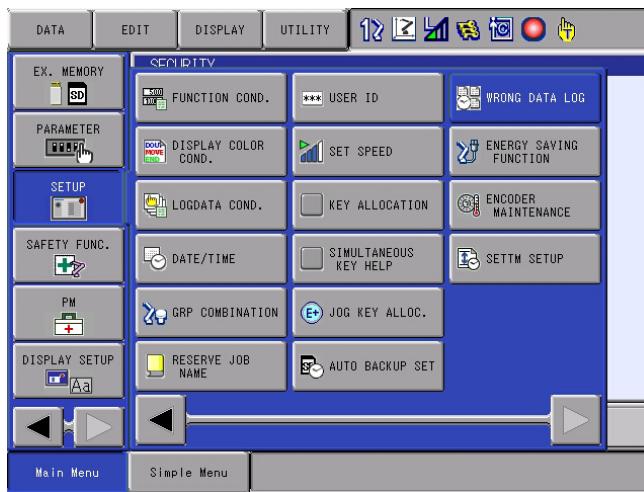
* If fail in the restoration

- If the indication doesn't change from “OCCURRED ON” to “RESTORED ON”, refer to chapter 10.3 “If Fail in Simplified Restoration”.

2. Start up the system again

- After the restoration, the system must be started up again. Turn the control power OFF/ON and then execute the following checking operation.

3. Press {SETUP} under main menu and select {WRONG DATA LOG}



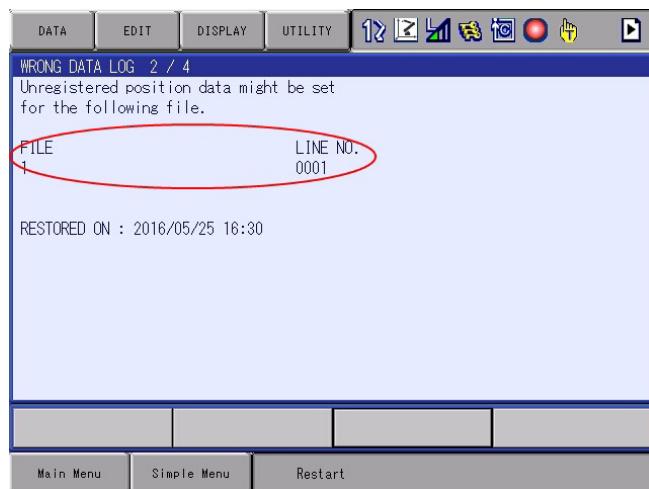
10 Job Data Simplified Restoration Function
10.2 Job Data Restoration

– WRONG DATA LOG screen appears.

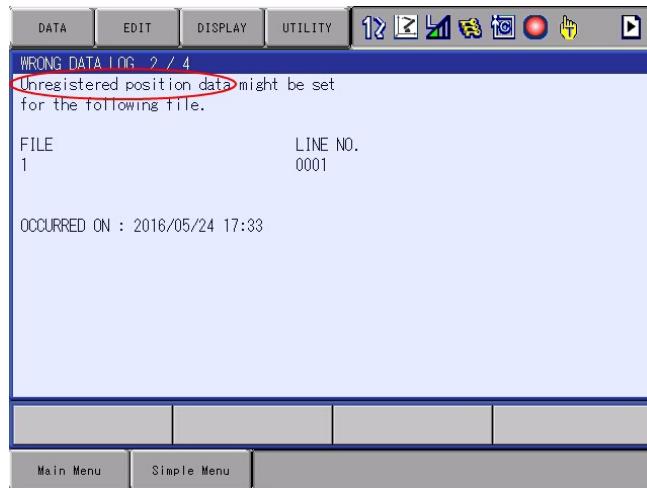


4. Check the position

– Check the position of two lines indicated in the screen.

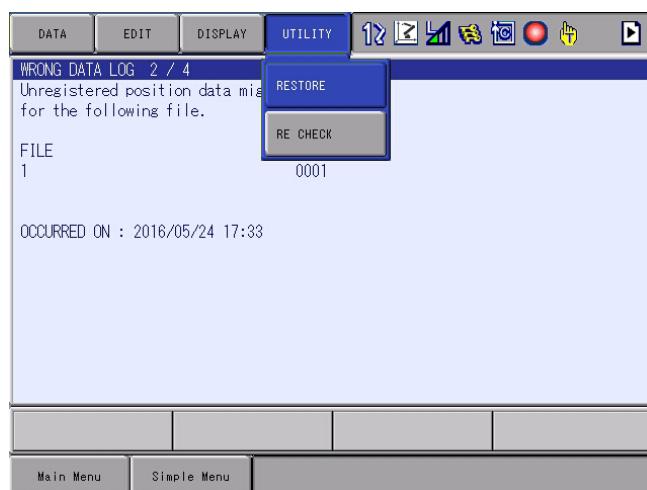


10.2.2.2 In Case Not-Registered Position Data Is Chained



1. Press {UTILITY} and select {RESTORE}

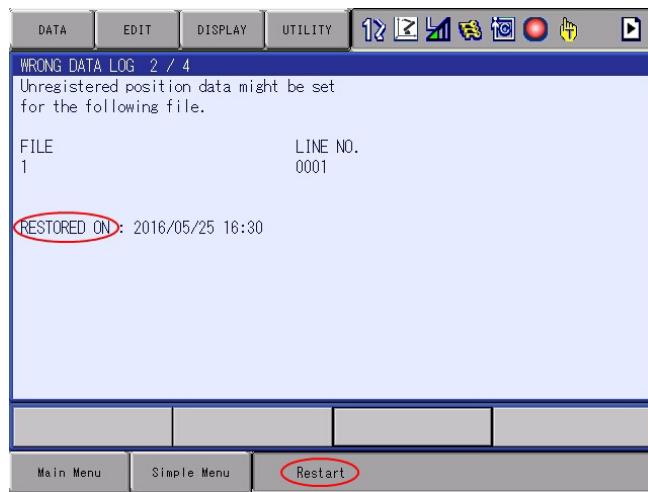
- Press {RESTORE} button to register the position of the file indicated in WRONG DATA LOG screen tentatively, which enables to register position again.



10 Job Data Simplified Restoration Function

10.2 Job Data Restoration

- The indication changes from “OCCURRED ON” to “REGISTERED ON”.



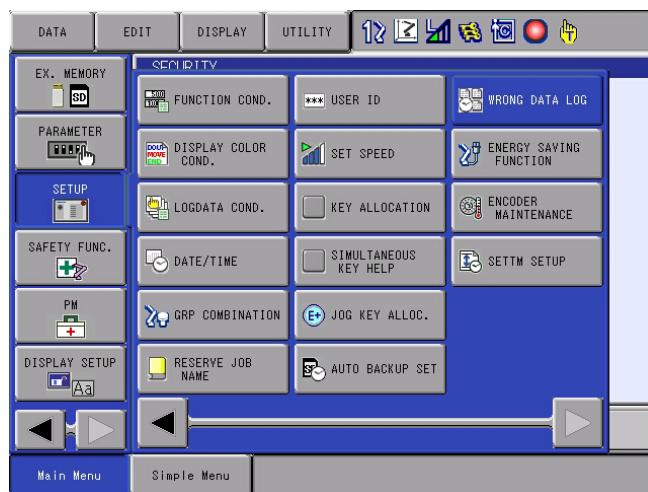
* If fail in the restoration

- If the indication doesn't change from “OCCURRED ON” to “RESTORED ON”, refer to *chapter 10.3 “If Fail in Simplified Restoration”*.

2. Start up the system again

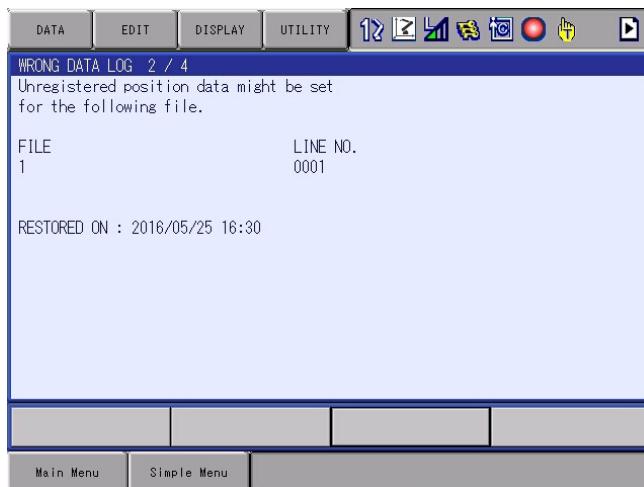
- After the restoration, the system must be started up again. Turn the control power OFF/ON and then execute the following checking operation.

3. Press {SETUP} under main menu and select {WRONG DATA LOG}



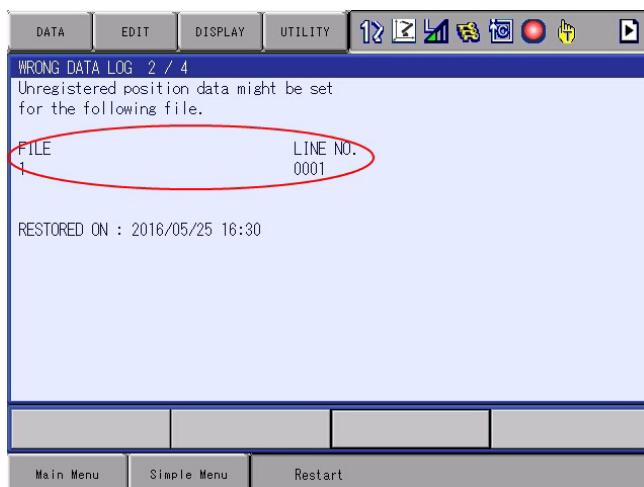
10 Job Data Simplified Restoration Function
10.2 Job Data Restoration

– WRONG DATA LOG appears.

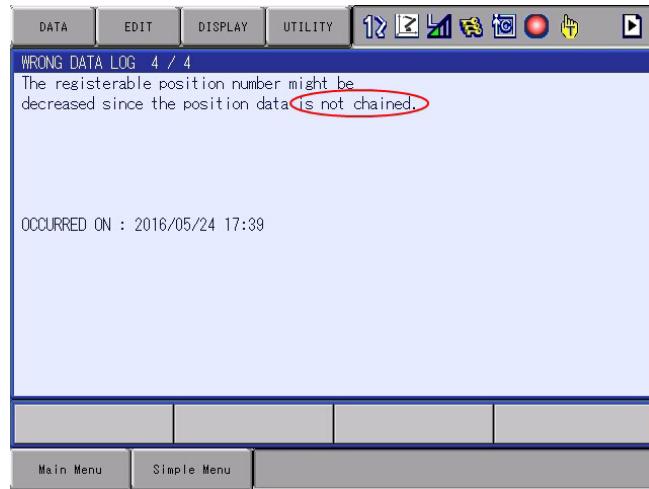


4. Register teaching position again

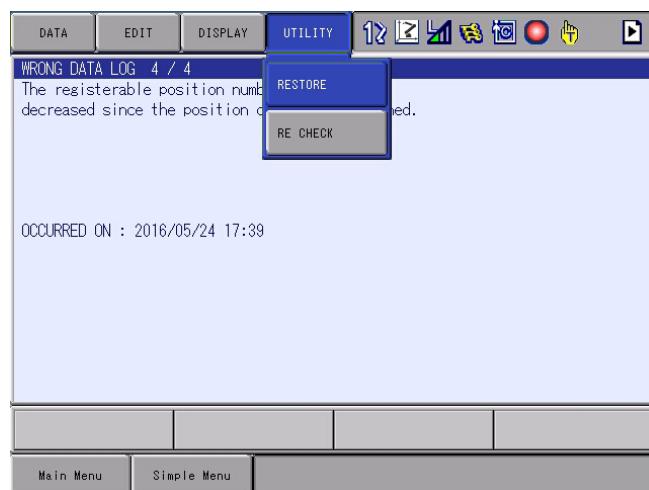
– Register the position data of the file in the screen again.



10.2.2.3 In Case Not-Chained Position Data Exists



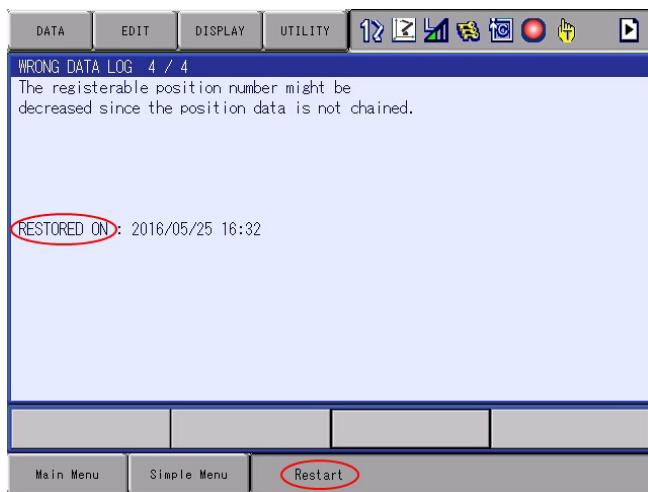
1. Press {UTILITY} and select {RESTORE}
 - Press {RESTORE} to correct the chain.



10 Job Data Simplified Restoration Function

10.2 Job Data Restoration

- The indication changes from “OCCURRED ON” to “REGISTERED ON”.



* If fail in the restoration

- If the indication doesn't change from “OCCURRED ON” to “RESTORED ON”, refer to chapter 10.3 “If Fail in Simplified Restoration”.

2. Start up the system again

- After the restoration, the system must be started up again. Turn the control power OFF/ON.

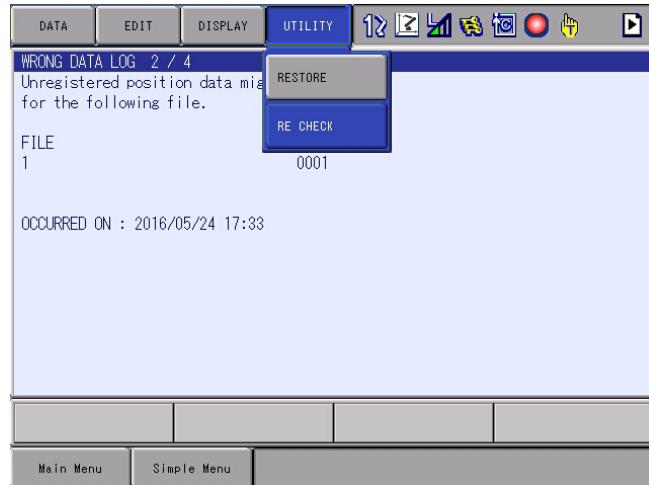
10.3 If Fail in Simplified Restoration

Execute the following procedure if failing in the restoration by Job data simplified restoration method.

10.3.1 Rechecking Job Data

1. Select {RE CHECK} under {UTILITY}

- Press {RE CHECK}



2. Restoration is completed.

- * Proceed to the next operation [chapter 10.3.2 “If Data Inconsistency Alarm Occurs Again”](#) if the alarm occurs again after this operation.

10.3.2 If Data Inconsistency Alarm Occurs Again

Execute the following procedure if the data inconsistency alarm occurs again even after rechecking Job data following *chapter 10.3 “If Fail in Simplified Restoration”*.

1. Re-register the position data after deleting the data of the file indicated in WRONG DATA LOG screen.
Refer to *chapter 10.2.2 “Job Data Restoration Method”* for checking operation after registration. (See the operations after procedure 2 “Start up the system again”.)
2. Execute the following procedures if the position data cannot be deleted or re-registered with the operation indicated above.
 - (1) Save Job data and User Coordinate file and Robot Calibration.
*Delete the position data of the file indicated in WRONG DATA LOG screen in case the following error occurs while saving.

ERROR: 0040 Undefined robot position variable

* Refer to “7.3.0.2 Saving Data” in “YRC1000micro OPERATOR’S MANUAL” for details.
 - (2) Initialize Job area in maintenance mode.
*Refer to “8.18.1 Initializing Job File” in “YRC1000micro INSTRUCTIONS” for details.
 - (3) Load the data saved in the procedure 1.
* Refer to “7.3.0.3. Loading Data” in “YRC1000micro OPERATOR’S MANUAL” for details.
 - (4) Check the motion of the manipulator after loading.
* Refer to the procedures after “2. Start up the system again.” in *chapter 10.2.2 “Job Data Restoration Method”*.

10.4 Related Parameters

Parameter	Meaning	Setting value	Initial value
S2C303	Data inconsistency check specification	0:Valid 1:Invalid	0
S2C304	Inconsistency detection method in play mode	0:Warning 1:Stop with alarm	0

10.5 Specific Output Signal

The following signal outputs the status of data inconsistency occurrence.

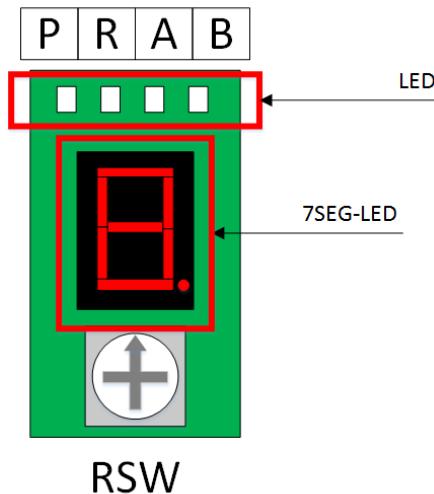
Output signal	Meaning
50696	Indicate the data inconsistency occurrence

11 LED Indicator on Circuit Board

11.1 LED Indicator on ACP 31 Board

The JANCD-ACP31-1E board has the 7-segment LED indicator and four LED indicators. The LED indicator "B" lights up when the voltage which is input in the ACP31 board is lowered. For the replacement of the battery, refer to *chapter 5.2 “Battery Replacement”*. For the contents of the 7-segment LED indicator, refer to *chapter 11.2 “The 7 SEG-LED Indicator”*.

Indication	Color	Status
P	White	Power is ON
R	Green	Operating
A	Red	Alarm Occurrence
B	Yellow	Battery Alarm Occurrence



RSW

11.2 The 7 SEG-LED Indicator

With the 7-segment LED indicator, the start-up status and the operating status are shown in the JANCD-ACP31-1E board.

Table 11-1: [Indication for Normal Status]

Status	YRC1000micro
	ACP31
Right after the power is ON	All 7-SEG indicators light up. (‘8’ + ‘.’ light up.)
During the start-up process	Counts up from ‘O’ toward ‘d’.
After starting up normally	‘d’ + ‘.’ blink every one second.

Table 11-2: [Indication for Error Status]

Status	YRC1000micro
	ACP31
Normal alarm occurrence	‘d + ‘.’ blink every one second.
Fatal error occurrence	The cause of error and the address where the error has occurred are indicated by 7 SEG-LED indicator. (See the indication order 1.)

Indication order 1	E.g.: [-] → [0] → [2] → [0] → [0] → [.] → [-] → [0] → [0] → [0] → [0] → [F] → [F] → [0] → [4] is repeated	: Cause of error : Occurrence address
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11.2.0.1 The 7 SEG-LED Indicator Status (1-Digit Indication) of Each Unit at Error Occurrence

ACP31

All Lit	The power has been turned ON.
0	The booting program has started.
1	The system program has started. (Starts up initialization of various kinds.)
2	Starts verifying the existence of other circuit boards. (Verifies the start-up of the booting program.)
3	Starts the system program transmission.
4	Sends the request of the system program start-up.
5	Starts verifying the existence of other circuit boards. (Verifies the start-up of the system program.)
6	Acquires hardware information, etc. of other circuit boards. (Verifies the IO board status, servo IF, and so on.)
7	Starts the CMOS data transmission.
8	Sends the pre-online request.
9	Waits for CERF communication synchronization.
A	
B	Sends the start-up request of on-line system.
C	The on-line system has started. (Starts up the initialization task.)
D	Processes the YRC1000micro setup completion. (Servo ON enabled)
E	Alarm occurs at the YRC1000micro setup.
F	The maintenance system is starting up.
P	Communications interrupted between ACP01 and the programming pendant.
U	Updating system software through network.

11.2.0.2 The 7 SEG-LED Indicator Status (4-Digit Indication) of Each Unit at Error Occurrence

ACP31	
0000	Arithmetic error
0001	Debug
0002	NMI
0003	Breakpoint
0004	Overflow
0005	Out of BOUND
0006	Invalid operation code
0007	Device disabled
0008	Double fault
0009	Co-processor segment overrun
000A	Invalid TSS
000B	Segment absence
000C	Stack segment fault
000D	General protection exception
000E	Page fault
000F	
0010	Floating point error
0011	Alignment check
0012	Machine check
0013	SIMD floating point exception
0014	
0015	
0016	
0017	
0018	
0019	
001A	
001B	
001C	
001D	
001E	
001F	
0900	WDT error

12 Program Upload Function

12.1 About Program Upload Function

The system program of the YRC1000micro can be saved into the SD card inserted to the programming pendant using this program upload function.

This enables restoring the system easily and quickly, even in the case of a failure in the SD card of the main CA board (ACP31), by writing the system program and the batch data of the YRC1000micro saved previously.

12.1.1 When the System Program Is Required

The system program has been stored in the SD card removable from ACP31 in the YRC1000micro. This enables using the SD card without interruption even if ACP31 is replaced for its failure.

However, in the case of a SD card failure, the existing system program needs to be written into the new one. This function enables saving the existing system program to write it into the new one from the YRC1000micro for the case like this.

12.1.2 Applicable Version

NOTICE

Prepare two SD cards for the restoration of the YRC1000micro.

- For saving the system program
(It is used for writing the program when restoration)
This is for saving the system program from the YRC1000micro by the program uploading operation. This SD card can also be used for writing the batch data. Please prepare our recommended SD card. For more details on recommended SD cards, refer to “9.1.2 Device” in “YRC1000micro INSTRUCTIONS”.
- For ACP31
This SD card is to be inserted to ACP31. Prepare the one inserted to the ACP31, which was shipped as a spare-part, or the one shipped exclusively for ACP31 (it needs a special treatment for start-up, and thus our standard recommended SD cards are unavailable).

12.2 Program Upload Procedure

Upload the program as shown below.

12.2.1 Preparation of SD Card

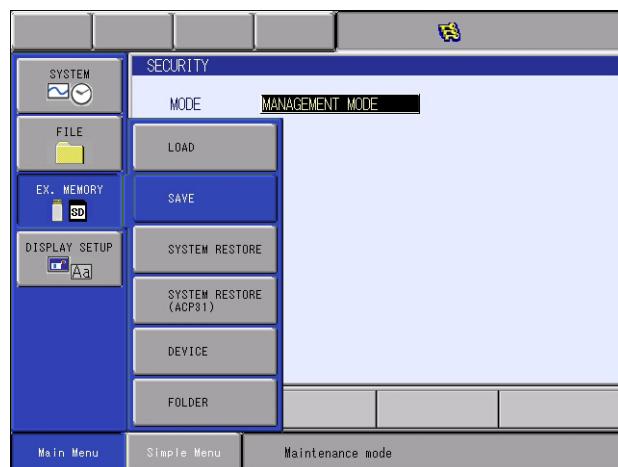
Prepare the SD card with sufficient capacity (200MByte or more) for saving the system program and perform the following procedures.

1. Connect the SD card to a PC.
2. Use Explorer, etc. to delete all the data in the SD card.
3. Remove the SD card from the PC and insert it to the SD card slot on the programming pendant.

12.2.1.1 Uploading

Upload the program as shown below.

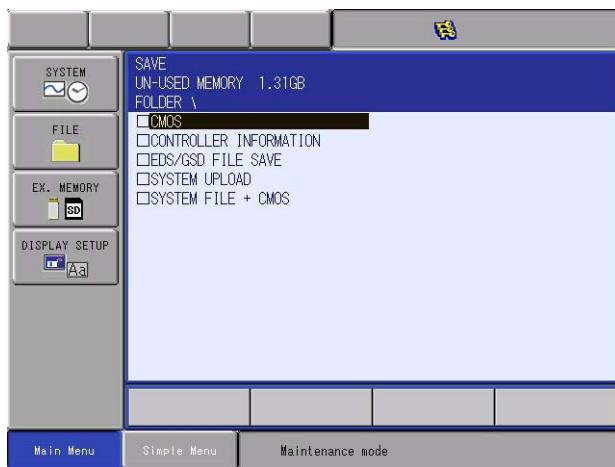
1. Turn ON the YRC1000micro while pressing down the [MAIN MENU].
 - The maintenance mode starts.
2. Set the security mode to the management mode
3. Select {EX. MEMORY} under the main menu.
 - The sub menu appears.



12 Program Upload Function

12.2 Program Upload Procedure

4. Select {SAVE}.
- The save window appears.



5. Select {SYSTEM UPLOAD}.
- The confirmation dialog box appears.



6. Select {YES}.
- Program upload starts.
- When the message "Program uploading. Don't turn the power off." on the human interface display area disappears, uploading is completed.

For the case of restoration, be sure to retain the SD card with the uploaded program after above mentioned procedures.

12.3

Restoration Procedure 1 (Writing the Program)

First, check whether the SD card of the main CA board (ACP31) needs replacing. If needed, replace the SD card and perform the procedures mentioned in *chapter 12 “Program Upload Function”* and *chapter 12.4 “Restoration Procedure 2 (Loading the Batch Data)”*.

NOTICE

After the SD card of ACP31 is replaced, the YRC1000micro and the manipulator cannot be operated correctly unless the correct system program is written-in and the batch data is loaded or initialized in the maintenance mode. To ensure correct and safe operation, please take notice of this matter before operation.

12.3.1 Determining Failure of SD Card

If all of the following conditions are met, the SD card is diagnosed as out of order.

- Power is correctly supplied to each board in the YRC1000micro.
- The programming pendant and ACP31 are correctly connected.
- The programming pendant remains displaying the initial window (an image of a robot on the screen) even one minute after the YRC1000micro is turned ON and the 7SEG LEDs of the CA board (ACP31) remain lit.

For the conditions above, perform the following.

12.3.2 Preparation of SD Card for ACP31

Prepare the SD card for ACP31.

Prepare the one inserted to the ACP31, which was shipped exclusively for ACP31 (it needs a special treatment for start-up, and thus our standard recommended SD cards are unavailable).

Insert this SD card to ACP31.

12.3.3 Preparation of SD Card for Wiring the Program

Insert the SD card uploaded in *chapter 12.2 “Program Upload Procedure”* to the SD card slot on the programming pendant.

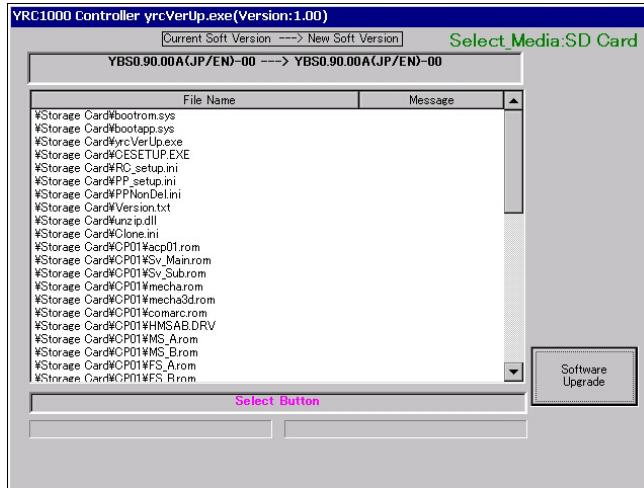
12 Program Upload Function

12.3 Restoration Procedure 1 (Writing the Program)

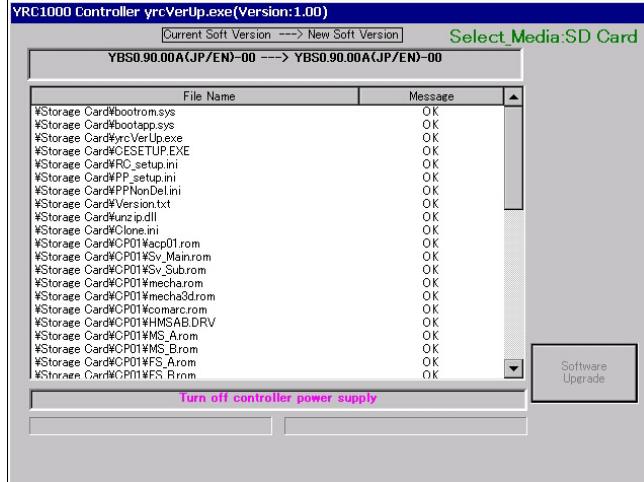
12.3.4 Writing the System Program

Write the system program as shown below.

1. Turn ON the YRC1000micro while pressing down the [INTERLOCK] + [8] + [SELECT].
 - The upgrade tool starts.



2. Select {Software Upgrade}.
 - Start upgrade.
 - When the message “Turn off controller power supply” appears at the bottom of the window, upgrade is completed.



12.4 Restoration Procedure 2 (Loading the Batch Data)

After finish writing of the system program, load the batch data previously saved (saved when the SD card was correctly operating). The batch data include “CMOS.BIN” and “CMOSBK.BIN” (or “CMOSBK???.BIN: ?? represents a number”). Write any of these data into the SD card, insert it to the SD card slot on the programming pendant, and then perform the following.

Use our recommended SD card (the SD card for saving the system program is also available).

NOTICE

Before operation, please understand well that the data in the YRC1000micro is replaced with the batch data in the SD card when loading the batch data.

Check that the data wrote into the YRC1000micro is the same as before after restoring the system. In addition, call the master job and check that the current position of the robot is safe before starting the robot.

The YRC1000micro has the loading limitation of the batch data. When load the batch data, if the SD card of the main CA board(ACP31) is different from the one when saved the batch data, the batch data can not be loaded in the management mode or safety mode. (If the SD card of the main CA board(ACP31) is the identical, the batch data can be loaded in management mode or safety mode.)

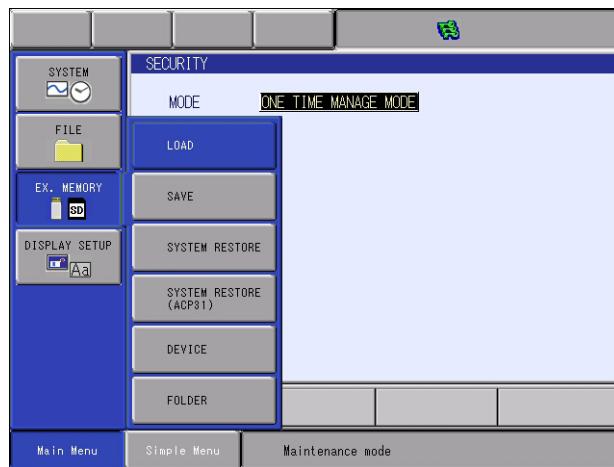
When restore the SD card of the main CA board(ACP31), load the batch data in the one time manage mode.

For the one time manage mode, refer to “*chapter7.1 Protection Through Security Mode Settings*” in “YRC1000micro INSTRUCTIONS” and contact your YASKAWA representative.

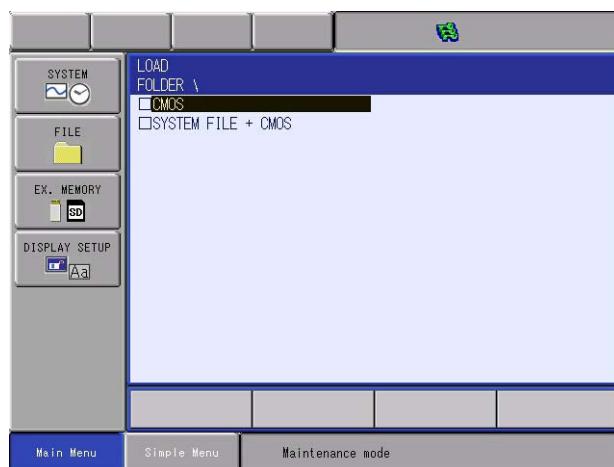
12.4.1 When the Batch Data Is “CMOS.BIN”

When the batch data is “CMOS.BIN”, write the data as shown below.

1. Turn ON the YRC1000micro while pressing down the [MAIN MENU].
 - The maintenance mode starts.
2. Set the security mode to the one time manage mode.
3. Select {EX. MEMORY} under the main menu.
 - The sub menu appears.



4. Select {LOAD}.
- The load window appears.

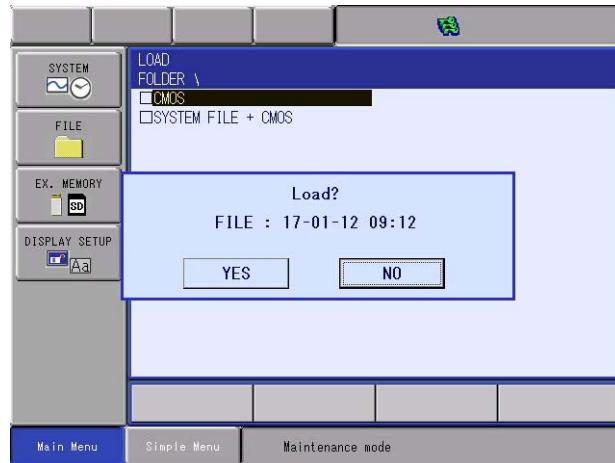


12 Program Upload Function

12.4 Restoration Procedure 2 (Loading the Batch Data)

5. Select {CMOS}.

- The confirmation dialog box appears.



6. Select {YES}.

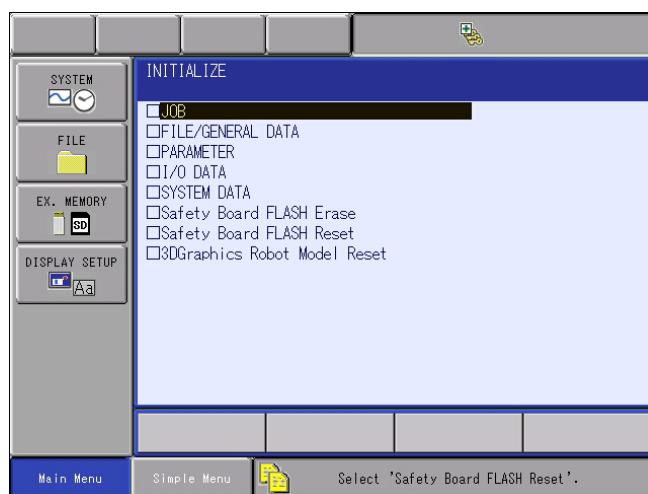
- Loading starts and internal data of the YRC1000micro is updated by CMOS.BIN file in the SD card.
- When the message “Loading system data. Don't turn the power off.” on the human interface display area disappears, loading is completed.

After the loading of CMOS.BIN is completed, the message “Select 'Safety Board FLASH Reset'” is shown in the human interface display area. Perform “Safety Board FLASH Reset” in accordance with the following procedures.

7. Set the security mode to the safety mode.

8. Select {FILE} under the main menu, and then select {INITIALIZE}.

- The INITIALIZE window is shown.



12 Program Upload Function
12.4 Restoration Procedure 2 (Loading the Batch Data)

9. Select “Safety Board FLASH Reset”.

- The confirmation dialog is shown.



10. Select {YES}.

- When the message “Select 'Safety Board FLASH Reset” in the human interface display area is disappeared, the reset is completed.

12.4.2 When the Batch Data Is “CMOSBK.BIN”

When the batch data is “CMOSBK.BIN (or “CMOSBK???.BIN: ?? represents a number”), write the data as shown below.

1. Turn ON the YRC1000micro while pressing down the [MAIN MENU].
 - The maintenance mode starts.
2. Set the security mode to the one time manage mode.
3. Select {EX. MEMORY} under the main menu.
 - The sub menu appears.
4. Select {SYSTEM RESTORATION}.
 - The backup file list window appears.



5. Select a date of a backup file to be loaded.
 - The confirmation dialogue box is shown.



12 Program Upload Function

12.4 Restoration Procedure 2 (Loading the Batch Data)

6. Select {YES}.

- The confirmation dialog box for initializing the system monitoring time is shown.



- Select {YES} to initialize “SYS MONITORING TIME”.

- Select {NO} to keep “SYS MONITORING TIME” unchanged.

7. Select {YES} or {NO}.

- The confirmation dialog box for overwriting the preventive maintenance data is shown.



- Select {YES} to overwrite the preventive maintenance data.

- Select {NO} to keep the preventive maintenance data unchanged.

8. Select {YES}.

- Internal data of the YRC1000micro is updated by CMOSBK.BIN file in the SD card.
- When the message “Loading system data. Don't turn the power off.” on the human interface display area disappears, loading is completed.

After the loading of CMOSBK.BIN is completed, the message “Select ‘Safety Board FLASH Reset’” is shown in the human interface display area. Perform “Safety Board FLASH Reset” in accordance with the following procedures.

12 Program Upload Function

12.4 Restoration Procedure 2 (Loading the Batch Data)

9. Set the security mode to the safety mode.
10. Select {FILE} under the main menu, and then select {INITIALIZE}.
 - The INITIALIZE window is shown.



11. Select "Safety Board FLASH Reset".
 - The confirmation dialog is shown.



12. Select {YES}.
 - When the message "Select 'Safety Board FLASH Reset'" in the human interface display area is disappeared, the reset is completed

12.5 In Case of the SD Card Failure

Prepare as follows for the SD card failure.

NOTICE

Please prepare for the SD card failure for the quick and easy restoration of the YRC1000micro.

12.5.1 Preparation of SD Card for ACP31

Prepare the SD card for ACP31.

Prepare the one inserted to the ACP31, which was shipped exclusively for ACP31 (it needs a special treatment for start-up, and thus our standard recommended SD cards are unavailable).

12.5.2 Program Upload

Save the system program of the YRC1000micro into the SD card following the procedures mentioned in *chapter 12.2 “Program Upload Procedure”*. Be sure to retain the SD card for system restoration.

12.5.3 Backup the Batch Data

Backup the batch data in accordance with the procedures mentioned in “9.2 Backup by CMOS.BIN” and “9.6 Automatic Backup Function” in “YRC1000micro INSTRUCTIONS”. The backed-up data must be stored.

13 Trouble Shooting When Alarm Is Not Displayed

When YRC1000micro does not start and any alarm is not displayed, turn ON and OFF the power of YRC1000micro controller.

When the condition doesn't change even after turning ON and OFF the YRC1000micro, follow the steps below.

13 Trouble Shooting When Alarm Is Not Displayed

The data of robot controller is stored in the SD card and the memory of the ACP31 board.

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
The screen does not become bright and nothing is displayed.	Lights OFF	The control power is not provided from the control power supply unit.	Power supply failure	<ul style="list-style-type: none"> -For the primary power supply voltage, make sure that the voltage is not dropped and there is no open phase. -After confirming the above-mentioned, if there is no error, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>
			Cable failure	<ul style="list-style-type: none"> -Check whether the control power supply is not turned OFF by the external REMOTE signal. -After confirming the above-mentioned, if there is no error, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>
		The control power supply unit is out of order.	control power supply unit failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>
		ACP31 board is out of order.	ACP31 board failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>
The screen does not become bright and nothing is displayed.	'P'	The programming pendant is out of order or malfunctions.	Programming pendant failure	<ul style="list-style-type: none"> -Turn the power ON. -If the error occurs again, replace the programming pendant.
		The power supply is not provided from the control power supply unit to the programming pendant.	Cable failure	<ul style="list-style-type: none"> -Make sure that the cable(x81) between the programming pendant and the YRC1000micro is connected. Confirm that there is no wiring error (e.f. disconnection, ground fault or short-circuit due to damage).
		ASF 30 board is out of order.	ASF30 board failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
 The screen remains unchanged from the above, or changes to the following screen in about 6 minutes. 	Lights OFF	The power supply is not provided from the control power supply unit to the CPU unit.	Cable failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
		ACP31 board is out of order or malfunctions.	ACP31 board failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
 The message "Controller <-> Pendant Connection Failed" is displayed.	All the LEDs ON ('8'+'.' ON)	ACP31 board is out of order or malfunctions.	ACP31 board failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
		The optional circuit board inserted into the PCIe slot of the YRC1000micro is out of order or malfunctions.	Optional circuit board failure	-Turn the power OFF then back ON. -If the error occurs again, remove the optional circuit board in the YRC1000micro and reinstall them. -If the error continues to occur, replace the optional circuit board.
		The system program cannot be read properly from the SD card in the ACP31 board.	SD card (inserted into ACP31 board) failure	-Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board and reinstall it. -If the error continues to occur, replace the SD card of ACP31 board. (Refer to *1)

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
 The screen remains the above, or changes to the following screen in about 6 minutes.  The message "Controller <-> Pendant Connection Failed" is displayed.	'0' or '1'	The ACP31 board is out of order or malfunctions. The system program cannot be read properly from the SD card in the ACP31 board. The specified data cannot be read properly from the SD card in the ACP31 board or an invalid value is specified.	ACP31 board failure SD card (inserted into ACP31 board) failure SD card (inserted into ACP31 board) failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p> <ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board and reinstall it. -If the error occurs again, replace the SD card of ACP31 board. After that, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or the CMOSBK.BIN file saved in the automatic backup function. (Refer to *2) <ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board and reinstall it. -If the error occurs again, replace the SD card of ACP31 board. After that, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or the CMOSBK.BIN file saved in the automatic backup function. (Refer to *2)
	'P'	A communication error has occurred between the APW30 board and the programming pendant. The programming pendant is out of order or malfunctions. The communication IC of APW30 board or its peripheral circuit is out of order.	Cable failure Programming pendant failure APW30 board failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -Check if the cable and the connectors are connected properly. Make sure that there is no wiring error (disconnection) and loose in the connector of the programming pendant. <ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the programming pendant. <ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>
		ACP31 board is out of order or malfunctions.	ACP31 board failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
WindowsCE screen	'P'	The programming pendant is out of order or malfunctions.	IP address or subnet mask specification failure	<p>The IP address or subnet mask of programming pendant may be wrong. Confirm and specify the IP address or subnet mask. The followings are the confirmation procedure.</p> <p>(1) Turn ON the power while pressing [INTERLOCK]+[9]+[SELECT]. (2) After bleeping, release the pressed buttons. (3) After the message "Start was canceled" is displayed, press the OK button at the upper right. (4) Touch the lower left of screen with the pen to display the task bar and select START. (5) After the start menu is displayed, select [Settings] → [Control Panel] → [Network and Dial-up Connections] → [SMSC911X17]. (6) IP address specification screen is displayed and then confirm the followings are set. IP Address 10. 0. 0. 4. Subnet Mask 255.255.255. 0 Default Gateway . . . Also, confirm that Specify an IP address is ticked.</p>
			Data failure	The file stored in the programming pendant is not in the specified area. Perform "chapter3 Programming Pendant Setup" of the YRC1000micro SETUP PROCEDURE MANUAL.
Controller<-> Pendant Connection Failed.		A communication error has occurred between the APW30 board and the programming pendant.	Cable failure	<ul style="list-style-type: none"> - Turn the power OFF then back ON. - Check if the cable and the connectors are connected properly. Make sure that there is no wiring error (disconnection) and loose in the connector of the programming pendant.
		The programming pendant is out of order or malfunctions.	Programming pendant failure	<ul style="list-style-type: none"> - Turn the power OFF then back ON. - If the error occurs again, replace the programming pendant.

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
Controller<->Pendant Connection Failed.	'P'	The communication IC of APW30 board or its peripheral circuit is out of order.	APW30 board failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
		The specified data cannot be read properly from the SD card in the ACP31 board or an invalid value is specified.	SD card (inserted into ACP31 board) failure	-Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board, and then reinstall it. -If the error occurs again after reinstalling it, replace the SD card of the ACP31 board. After that, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or the CMOSBK.BIN file saved in the automatic backup function. (Refer to *2)
		ACP31 board is out of order or malfunctions.	ACP31 board failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
Pendant main application start failed.		The programming pendant is out of order or malfunctions.	OS (written in the programming pendant) failure	(1) Turn the power OFF then back ON. (2) If the error occurs again, write the YRC1000micro OS (WindowsCE) to the programming pendant. For the writing procedure, refer to "chapter3 Programming Pendant Setup" of the YRC1000micro SETUP PROCEDURE MANUAL.
Software upgrade failed. Turn the YRC1000micro power OFF and then ON.	'1'	Creating the media for upgrade is failed.	SD card (created for upgrade) failure	(1) Turn the power OFF then back ON. (2) If the error occurs again, perform the following procedure. A) Delete files in the SD card. B) Perform "chapter 2.2 Preparing SD card/USB for Upgrade" of the YRC1000micro UPGRADE PROCEDURE MANUAL. C) Perform the upgrade operation. If the error occurs again though, replace the SD card.
			USB memory (created for upgrade) failure	(1) Turn the power OFF then back ON. (2) If the error occurs again, perform the following procedure. A) Delete files in the SD card. B) Perform "chapter2.2 Preparing SD card/USB for Upgrade" of the YRC1000micro UPGRADE PROCEDURE MANUAL C) Perform the upgrade operation. If the error occurs again though, replace the SD card.

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
Auto upgrade failed.	'P'	There is no file necessary for the programming pendant or it is out of order.	Programming pendant failure	(1) Turn the power OFF then back ON. (2) If the error occurs again, perform "chapter3 Programming Pendant Setup" of the YRC1000micro SETUP PROCEDURE MANUAL.
Controller <-> pendant communication has been cut off.		A communication error has occurred between the APW30 board and the programming pendant.	Cable failure	-Turn the power OFF then back ON. -Check if the cable and the connectors are connected properly. Make sure that there is no wiring error (disconnection) and loose in the connector of the programming pendant.
Controller <-> Pendant disconnect. Start reconnect.		A communication error has occurred between the APW30 board and the programming pendant.	Cable failure	-If the programming pendant does not start up properly after reconnection, turn the power OFF then back ON. -If the error occurs again, check if the cable and the connectors are connected properly. Make sure that there is no wiring error (disconnection) and loose in the connector of the programming pendant.
YE_AppInstall.exe or unzip.dll file isn't found.	'1'		SD card or USB memory (created to install PP customized application) failure	Perform "chapter 8.3 Installation" of OPTIONS INSTRUCTIONS FOR PROGRAMMING PENDANT CUSTOMIZATION FUNCTION.

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
Character strings are displayed on the white screen and remain unchanged for 5 minutes or longer.	Either of '2' - '9', 'b' and 'C'	The ACP31 board is out of order or malfunctions.	ACP31 board failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>
		The system program of SD card which is inserted into ACP31 board can not be read properly.	SD card (inserted into ACP31 board) failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board and reinstall it. -If the error occurs again, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or the CMOSBK.BIN file saved in the automatic backup function. (Refer to *2)
		The specified data cannot be read properly from the SD card in the ACP31 board or an invalid value is specified.	SD card (inserted into ACP31 board) failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board and reinstall it. -If the error occurs again, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or the CMOSBK.BIN file saved in the automatic backup function. (Refer to *2)
		The programming pendant is out of order or malfunctions.	Programming pendant failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the programming pendant.
		The board inserted into the PCI slot of the YRC1000micro is out of order or malfunctions.	Optional circuitboard failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, remove the optional circuit board installed in the YRC1000micro and reinstall it. -If the error occurs again though reinstall it, replace the optional circuit board.
		The specified data cannot be read properly from the SD card in the ACP31 board or an invalid value is specified.	SD card (inserted into the ACP31 board) failure	<ul style="list-style-type: none"> Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board and reinstall it. -If the error occurs again, replace the SD card of ACP31 board. After that, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or the CMOSBK.BIN file saved in the automatic backup function. (Refer to *2)
		ACP31 board is out of order or malfunctions.	ACP31 board failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. <p>Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.</p>
		The programming pendant is out of order or malfunctions.	Programming pendant failure	<ul style="list-style-type: none"> -Turn the power OFF then back ON. -If the error occurs again, replace the programming pendant.

Screen status of programming pendant	7SEG LED for ACP31 board	Assumed status	Cause	Remedy
Character strings are displayed on the white screen and remain unchanged for 5 minutes or longer.	'P'	A communication error has occurred between the APW30 board and the programming pendant.	Cable failure	-Check if the cable and the connectors are connected properly. Make sure that there is no wiring error (disconnection) and loose in the connector of the programming pendant.
		The programming pendant is out of order or malfunctions.	Programming pendant failure	-Turn the power OFF then back ON. -If the error occurs again, replace the programming pendant.
		The communication IC of APW30 board or its peripheral circuit is out of order.	APW30 board failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
When the power is turned ON, the maintenance mode starts though the mode is not selected and the alarm "Memory battery weak" is displayed."	'F'	The data in the ACP31 board is invalid value.	Battery failure	-Turn the power OFF then back ON. -Check the connection and insertion status of the ACP31 board (CN3) connector. -When the LED(B) of the ACP31 board (Refer to *3) is ON, replace the battery. After replacing the battery, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or the CMOSBK.BIN file saved in the automatic backup function. (Refer to *4)
		The IC storing the data is out of order.	ACP31 board failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
When the power is turned ON, the maintenance mode starts though the mode is not selected.		The ACP31 board is out of order or malfunctions.	ACP31 board failure	-Turn the power OFF then back ON. -If the error occurs again, replace the YRC1000micro. Before the replacement of the YRC1000micro, save the CMOS.BIN just in case.
		The SD card data in the ACP31 board is invalid value.	SD card (inserted into the ACP31 board) failure	-Turn the power OFF then back ON. -If the error occurs again, remove the SD card from the ACP31 board and reinstall it. -If the error occurs again, replace the SD card of ACP31 board. After replacing it, in the maintenance mode, load the CMOS.BIN file saved before the error occurs or CMOSBK.BIN file saved in the automatic backup function. (Refer to *2)

*1: Replacing the SD card of the ACP31 board

Perform the replacement in accordance with the following procedures.

1. Prepare the SD card of the same software version.
Prepare the SD card in which the system software of the same version as the currently used SD card is written.
2. Remove the screws fixed to the cover of the YRC1000micro, and then remove the cover.
3. Remove the current SD card from the ACP31 board.
4. Insert a new SD card into the ACP31 board.
5. Reinstall the cover.
6. Load the backup data.

When load the CMOS.BIN file to restore, refer to “chapter 9.2.2 CMOS.BIN Load” of the YRC1000micro INSTRUCTIONS.

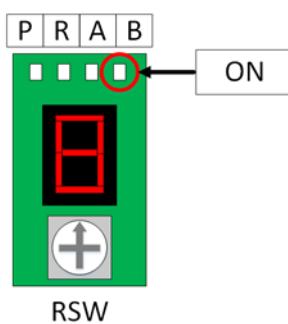
When load the CMOSBK.BIN file saved in the automatic backup function to restore, refer to “chapter 9.7 Loading the Backup Data from the SD card” of the YRC1000micro INSTRUCTIONS.

*2: CMOS.BIN load or CMOSBK.BIN load

When load the CMOS.BIN file to restore, refer to “chapter 9.2.2 CMOS.BIN Load” of the YRC1000micro INSTRUCTIONS.

When load the CMOSBK.BIN file saved in the automatic backup function to restore, refer to “chapter 9.7 Loading the Backup Data from the SD card” of the YRC1000micro INSTRUCTIONS.

*3: LED(B) of ACP31 board



*4: Replacing the battery

For the replacement procedure, refer to *chapter “”* of the YRC1000micro MAINTENANCE MANUAL.



Be sure to back up the data after the change of the setting or teaching operation in case the board is out of order.
For the backup procedure, refer to “chapter 9 System Backup” of the YRC1000micro INSTRUCTIONS.

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YRC1000micro MAINTENANCE MANUAL

HEAD OFFICE

2-1 Kuroskashiroishi, 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
Verkstadsgatan 2, Box 504 ,SE-385 25 Torsas, Sweden
Phone +46-480-417-800 Fax +46-486-414-10

YASKAWA Electric (China) Co., Ltd.
22F, 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 Corporation
35F, Three IFC, 10 Gukjegeumyung-ro, Yeongdeungpo-gu, Seoul, Korea 07326
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.
59,1st-5th Floor, Flourish Building, Soi Ratchadapisek 18,Ratchadapisek Road,
Huaykwang, Bangkok 10310, THAILAND
Phone +66-2-017-0099 Fax +66-2-017-0199

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

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