YASKAWA

# YRC1000 OPTIONS INSTRUCTIONS

**FOR SEARCH FUNCTION**

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

MOTOMAN INSTRUCTIONS

MOTOMAN-□□□ INSTRUCTIONS
YRC1000 INSTRUCTIONS
YRC1000 OPERATOR'S MANUAL (GENERAL) (SUBJECT SPECIFIC)
YRC1000 MAINTENANCE MANUAL
YRC1000 ALARM CODES (MAJOR ALARMS) (MINOR ALARMS)

Have the following information available when contacting the YASKAWA Representative:

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

Part Number: 178657-1CD
Revision: 1

MANUAL NO.
HW1483392 ①

## DANGER

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

## CAUTION

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

## NOTICE

- The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.
- YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications. If such modification is made, the manual number will also be revised.
- If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. Be sure to tell the representative the manual number listed on the front cover.

# NOTES FOR SAFE OPERATION

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

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


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 buttons on the front door of the YRC1000, on the programming pendant, on the external control device, etc.
  - Disconnect the safety plug of the safety fence. (when in the play mode or in the remote mode)

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

*Fig. : Emergency Stop Button*

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

Failure to observe this instruction may result in personal injury caused by unintended manipulator movement.

*Fig. : Release of Emergency Stop*


- Observe the following precautions when performing a teaching operation within the P-point maximum envelope of the manipulator:
  - 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 result in personal injury caused by improper or unintended manipulator movement.

- Confirm that no person is present in the P-point maximum envelope of the manipulator and that the operator is in a safe location before:
  - Turning ON the YRC1000 power
  - Moving the manipulator by using the programming pendant
  - Running the system in the check mode
  - Performing automatic operations

Injury may result if any person should enter the P-point maximum envelope of the manipulator during operation. Immediately press an emergency stop button whenever there is a problem. The emergency stop buttons are located on the front panel of the YRC1000 and on the upper right of the programming pendant.

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

**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.
- Always return the programming pendant to the hook on the YRC1000 cabinet after use.

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

## Definition of Terms Used Often in This Manual

The MOTOMAN is the YASKAWA industrial robot product.

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

In this manual, the equipment is designated as follows.

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

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

| Equipment | | Manual Designation |
|---|---|---|
| Programming Pendant | Character Keys /Symbol Keys | The keys which have characters or symbols printed on them are denoted with [ ]. e.g. [ENTER] |
| | Axis Keys /Numeric Keys | [Axis Key] and [Numeric Key] are generic names for the keys for axis operation and number input. |
| | Keys pressed simultaneously | When two keys are to be pressed simultaneously, the keys are shown with a “+” sign between them, e.g. [SHIFT]+[COORD]. |
| | Mode Switch | Mode Switch can select three kinds of modes that are denoted as follows: REMOTE, PLAY or TEACH. (The switch names are denoted as symbols) |
| | Button | The three buttons on the upper side of the programming pendant are denoted as follows: START, HOLD, or EMERGENCY STOP. (The button names are denoted as symbols) |
| | Displays | The menu displayed in the programming pendant is denoted with { }. e.g. {JOB} |

## Description of the Operation Procedure

In the explanation of the operation procedure, the expression "Select • • • " means that the cursor is moved to the object item and [SELECT] is pressed, or that the item is directly selected by touching the screen.

## Registered Trademark

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

Contents

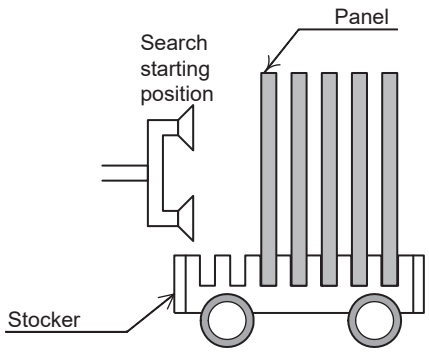
# 1 Search Function

The search function moves the manipulator to a specified position and stops it when a specified direct input signal comes ON.

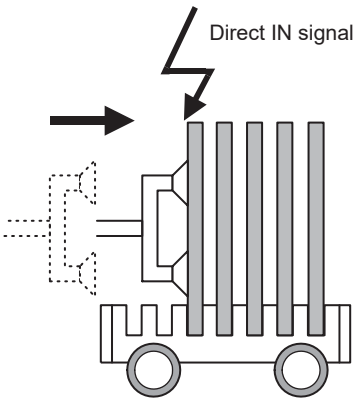
Position data at the point the manipulator stops can be taken-in. This information can be used with other instructions, for instance, to obtain the distance from a goal position and modify operation accordingly.

<Example> A manipulator performs a handling operation of panels

1. The manipulator moves to the search starting position.




2. The manipulator moves to the goal position in the search operation at low-speed. When the manipulator comes to the position to take the panel, a input signal (Direct-IN signal) from the sensor comes ON, then the manipulator stops. At this moment, the difference between the search starting position and the detected position is calculated.



3. On the base of the calculated difference, the program is modified to proceed the operation.

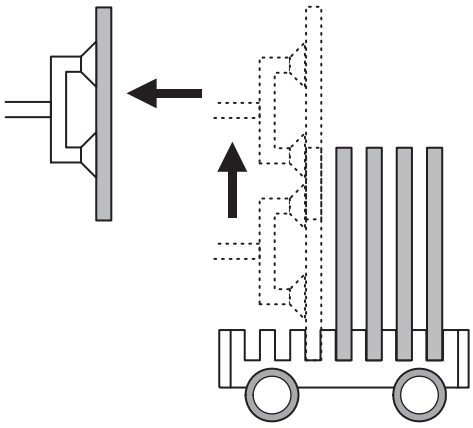


*Table 1-1: JOB:WORK*

| Line NO. | Instruction | Content |
|---|---|---|
| 000 | NOP | |
| 001 | MOVJ VJ=20.00 | |
| 002 | MOVL V=300.0 PL=0 | |
| 003 | REFP 1 | Set the target point of the search operation |
| 004 | CALL JOB:SRCH | Search operation |
| 005 | SFTON P002 | parallel shift start |
| 006 | DOUT OT#(1)=ON | Execution of operation |
| 007 | MOVL V=100.0 | |
| 008 | SFTOF | parallel shift end |
| 009 | MOVJ VJ=20.00 | |
| 010 | END | |

*Table 1-2: JOB:SRCH*

| Line NO. | Instruction | Content |
|---|---|---|
| 000 | NOP | |
| 001 | GETS LPX000 $PX011 | Load the target point of the search operation |
| 002 | MOVL LP000 V=100.0 SRCH RIN#(1)=ON DIS=0.1 | Search operation |
| 003 | GETS LB000 $B002 | Load the detection result |
| 004 | JUMP *NG IF LB000=0 | Determination of the detection result |
| 005 | GETS LPX001 $PX002 | Load the detected position |
| 006 | MSHIFT PX002 RF LPX000 LPX001 | |
| 007 | SETE P002 (4) 0 | Shift amount calculation |
| 008 | SETE P002 (5) 0 | |
| 009 | SETE P002 (6) 0 | |
| 010 | GETE LD000 P002 (1) | |
| 011 | GETE LD001 P002 (2) | |
| 012 | GETE LD002 P002 (3) | Shift length calculation |
| 013 | SET LR000 EXPRESS LD000 * LD000 + LD001 * LD001 + LD002 * LD002 | |
| 014 | SQRT LR000 LR000 | |
| 015 | JUMP *NG IF LR000>400000 | Shift length check |
| 016 | JUMP *NG IF LR000<300000 | |
| 017 | RET | Normal termination |
| 018 | *NG | |
| 019 | PAUSE | Abnormal termination |
| 020 | JUMP *NG | |
| 021 | END | |

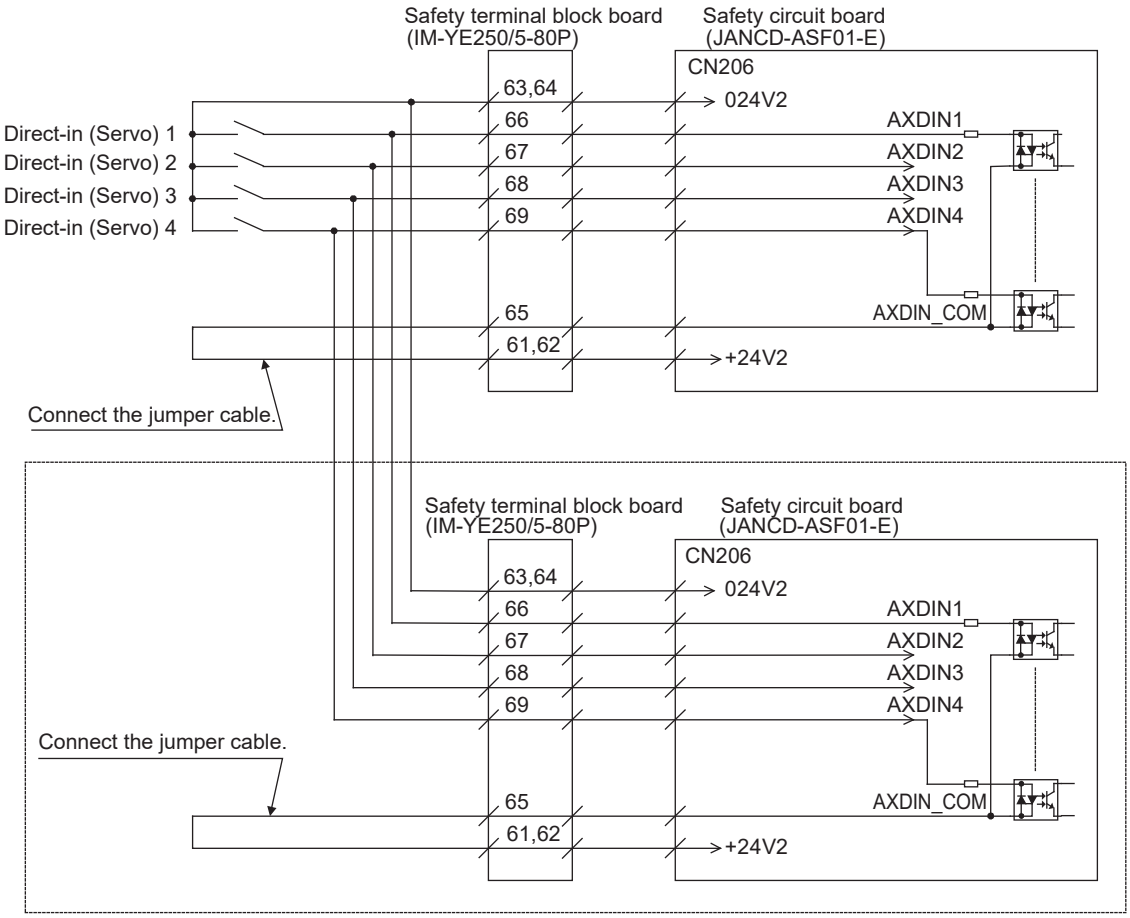
# 2 Wiring

Output signals of the sensor used in the system are connected to the YRC1000 input port for direct-input signals. The signals that are input from this port are called direct-in signals.

The output signals of the sensor used in the system can be connected via a sequencer to the direct-in signal input port, however, processing variations may result due to scanning timing of the sequencer.

It is therefore recommended to connect the output signal of the sensor directly to the YRC1000 input port.

## 2.1 Direct IN Connection



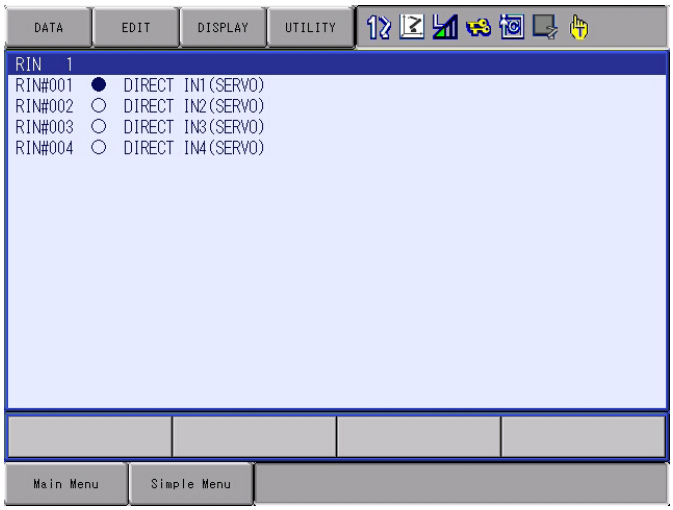

The ⬚ part of wiring is that if there is a slave for the coordinated control side servo control board (CSRA-SDCA01AA).

## 2.2 Confirmation of Direct IN Signal Status

Check the status of direct-input signal on the RIN INPUT window.

### 2.2.1 RIN INPUT Window

1. Select {IN/OUT} under the main menu
2. Select {RIN}
   - The RIN INPUT window appears.
   - "●" indicates the ON status of direct IN signal.
   - "○" indicates the OFF status of direct IN signal



# 3 Instructions

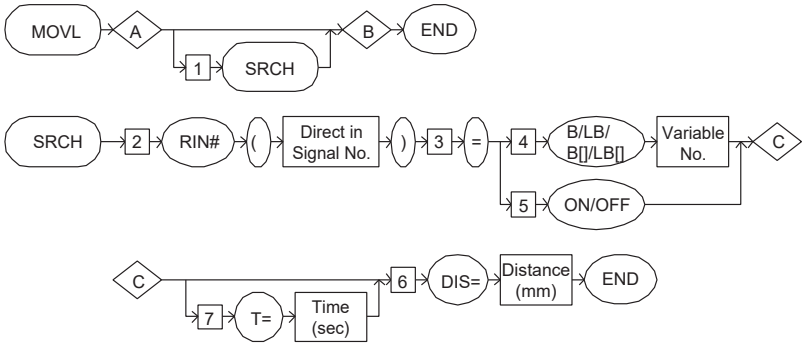
## 3.1 SRCH (Search Instruction)

### 3.1.1 Function

The SRCH is an instruction to execute the search function. It is set as an additional item to the move instruction.

- MOVL
- IMOV
- SMOVL

### 3.1.2 Construction




* Two or more tags can be set in portions A and B, though the description is omitted here.

### 3.1.3 Explanation

| № | Tag | Explanation | Note |
|---|---|---|---|
| 1 | SRCH | Specifies the SRCH instruction.<br>SRCH instruction is an instruction to execute search operation. | |
| 2 | RIN# (Input number) | Specify direct in signal number. | No.:1 - 4<br>B/I/D/B[ ]/I[ ]/D[ ]/LB/LI/LD/LB[ ]/LI[ ]/LD[ ] can be used. |
| 3 | = | It is equal. | |
| 4 | B Variable number/<br>LB Variable number/<br>B [Array number]/<br>LB [Array number]/ | Specify byte type variables which are used as detection conditions. | Last significant bit:<br>0: OFF<br>1: ON |
| 5 | ON/OFF | Specify detection conditions by ON/OFF. | |
| 6 | Distance | Specify the distance to extend the target point. | Distance: 0.1 - 6553.5mm<br>Variable B/I/D/B[ ]/I[ ]/D[ ]/LB/LI/LD/LB[<br>Distance can be specified with variables B/I/D/B[]/D[]/LB/LI/LD/LB[]/LI[]/LD[] (unit: 0.1 mm). |
| 7 | Time | When using direct in signal search start delay time (in 0.01 s) and start point search unit, set 0.1 s or more.<br>This is because there may be cases where the relay (200 V) is switched when starting search operation and direct in signal is constantly received. | unit: 0.01 - 655.35 s<br>Time can be specified with variables I/LI/I[]/LI[] (unit: 0.01 s). |


The operation speed of the move instruction with the SRCH instruction added is limited to the speed set in S1CxG057.

S1CxG057: Maximum search operation speed

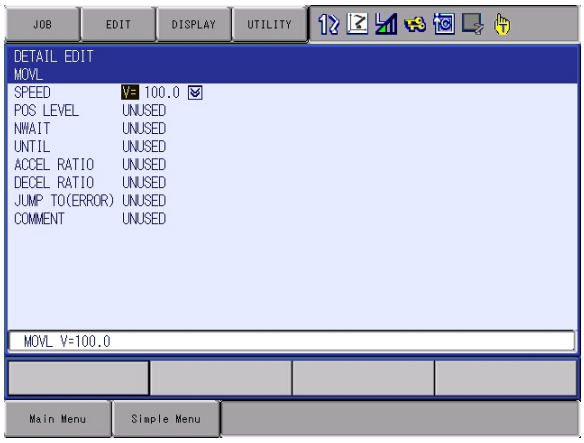
Specifies the maximum speed during the search operation. The unit is 0.1 mm/s.

The maximum speed can be changed by altering the parameters.

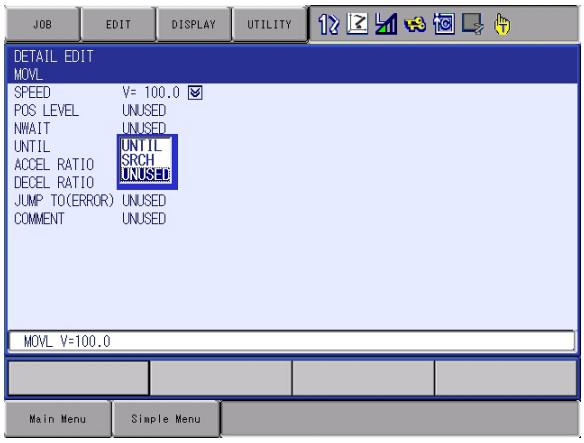
However, the accuracy may decrease when increasing the motion speed.

### 3.1.4 Register SRCH Instruction

1. Move the cursor to the instruction area.
2. Move the cursor to the move instruction where SRCH instruction is to be registered.
3. Press [SELECT] twice.
   (1) Press [SELECT] once to display the contents registered in the job in the input buffer line.
   (2) Press [SELECT] once more, and the DETAIL EDIT window of the move instruction appears.

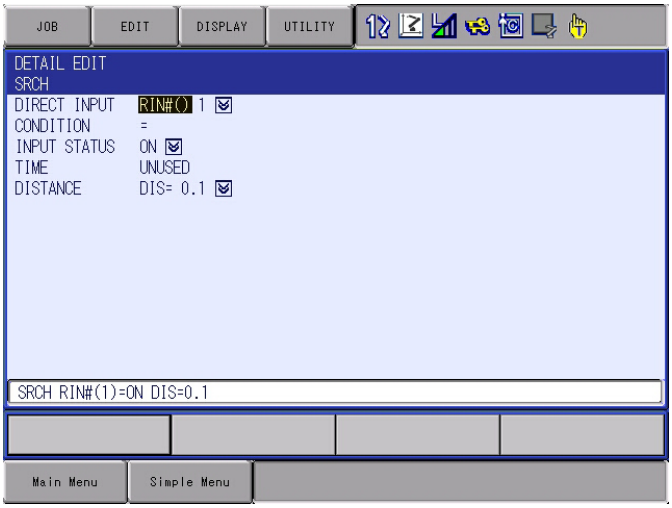



4. Select {UNTIL}.




5. Select {SRCH}.

6. Set each item on the DETAIL EDIT window of SRCH instruction.
   – The DETAIL EDIT window of SRCH instruction appears.



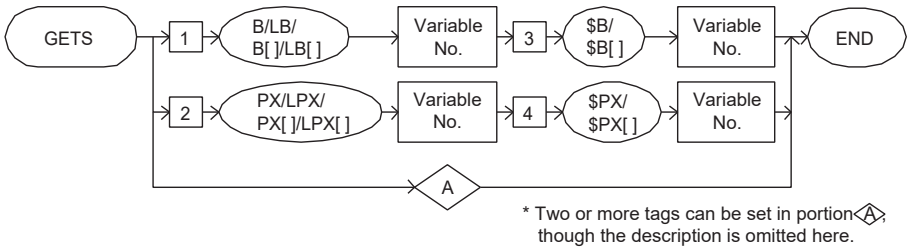

7. Press [ENTER].
   – Returns to the DETAIL EDIT window of the move instruction.
8. Press [ENTER] twice.
   (1) Press [ENTER] once to display the set contents in the input buffer line.
   (2) Press [ENTER] once more, and the set contents are registered in the job.

## 3.2 GETS Instruction

### 3.2.1 Function

Saves the system variable ($ variable) as a user variable.

### 3.2.2 Construction




* Two or more tags can be set in portion <A>, though the description is omitted here.

### 3.2.3 Explanation

| № | Tag | Explanation | Note |
|---|---|---|---|
| 1 | B Variable number/<br>LB Variable number/<br>B [Array number]/<br>LB [Array number] | Specify byte type variable number to save system variable. | |
| 2 | PX Variable number/<br>LPX Variable number/<br>PX [Array number]/<br>LPX [Array number] | Specify expanded position type variable number to save system variable. | |
| 3 | $B Variable number/<br>$B [Array number] | Specify byte type system variable number to set. | |
| 4 | $PX Variable number/<br>$PX [Array number] | Specify expanded position type variable number to set. | |

SUPPLE -MENT

System variable

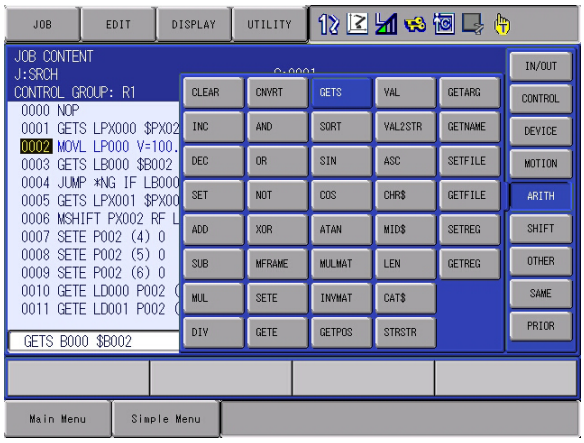
The GETS is the only instruction that refers to system variables written by the controller system.

The following system variables are available.

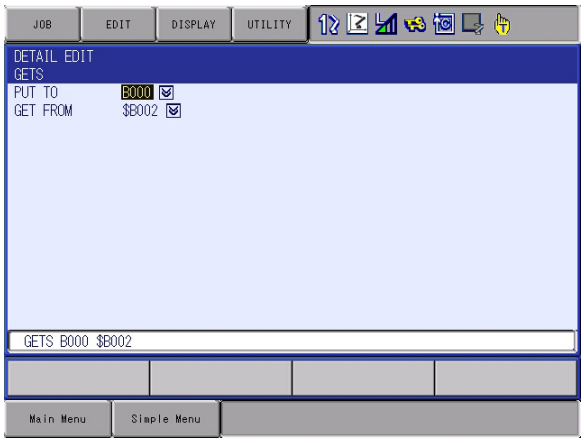
| System Variable | Type | No. | Explanation |
|---|---|---|---|
| $B type variable | Byte type | $B002 | Specifies detected/not detected of the SRCH instruction<br>0: Not detected, 1: Detected |
| $PX type variable | Expanded position type | $PX002 | Position detected by the optional SRCH instruction (pulse type) |
| | | $PX003 | Position detected by the optional SRCH instruction (XYZ type) |
| | | $PX011 - 018 | Teaching position by REFP 1 - 8 instruction (pulse type) |
| | | $PX021 - 028 | Teaching position by SREFP 1 - 8 instruction (pulse type) |

### 3.2.4 Register GETS Instruction

1. Move the cursor to the address area.
2. Move the cursor to the line where GETS instruction is to be registered.
3. Press [INFORM LIST].
   (1) The instruction list dialog box appears.
   (2) The cursor moves to the instruction list dialog box while the cursor in the address area changes to an under bar.
4. Select {GETS}.
   – At this stage, the instruction on the cursor position is displayed with the previously registered additional items in the input buffer line.




5. Press [SELECT] twice.



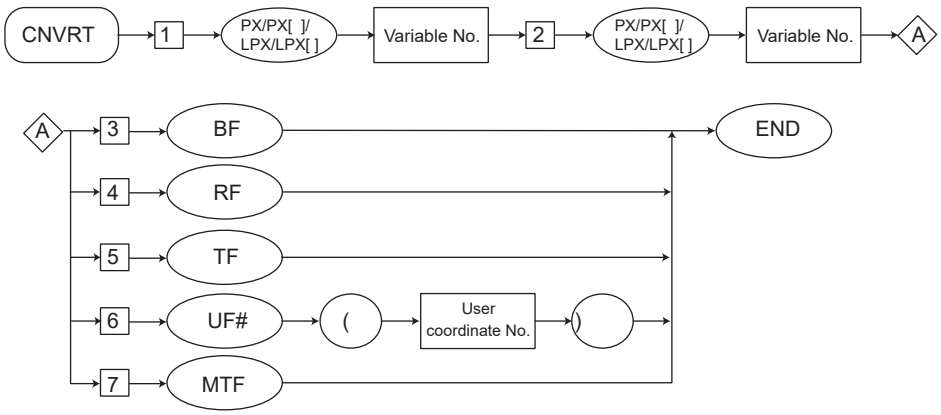

6. The DETAIL EDIT window of GETS instruction appears.
7. Press [ENTER] twice.
   (1) Press [ENTER] once to display the set contents in the input buffer line.
   (2) Press [ENTER] once more, and the set contents are registered in the job.

## 3.3 CNVRT (Position Type Variable Conversion Instruction)

### 3.3.1 Function

The CNVRT is an instruction to convert a pulse data position type variable into XYZ type position type variable of the specified coordinate system.

### 3.3.2 Construction




### 3.3.3 Explanation

| № | Tag | Explanation | Note |
|---|---|---|---|
| 1 | PX Variable number/<br>LPX Variable number/<br>PX [Array number]/<br>LPX [Array number] | Specifies the number of the expanded position type variable where the converted data is stored. | |
| 2 | PX Variable number/<br>LPX Variable number/<br>PX [Array number]/<br>LPX [Array number] | Specifies the number of the expanded position type variable to be converted. | |
| 3 | BF | Specifies the conversion in the base coordinate system. | |
| 4 | RF | Specifies the conversion in the robot coordinate system. | |
| 5 | TF | Specifies the conversion in the tool coordinate system. | |
| 6 | UF#<br>(User coordinate number) | Specifies the conversion in the user coordinate system. | No.: 1 - 63<br>Variable B/I/D/LB/LI/LD can be used. |
| 7 | MTF | Specifies the conversion on the master tool coordinate system.<br>On the master tool coordinate system, the data is converted to a position relative to the master manipulator. | Available only with the optional independent coordinate function. |


Expanded position type variables

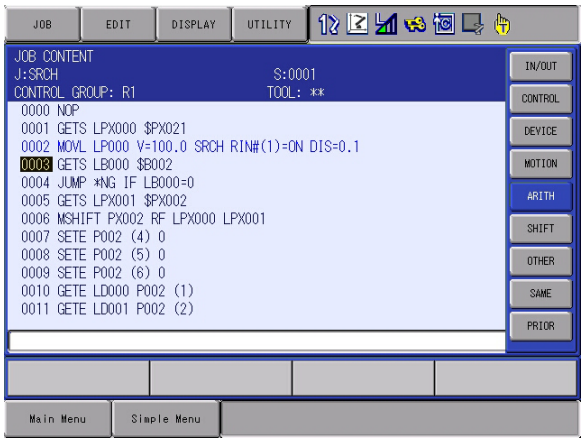
The expanded position type variable is a position type variable that depends on the control group in the job.

<Example>

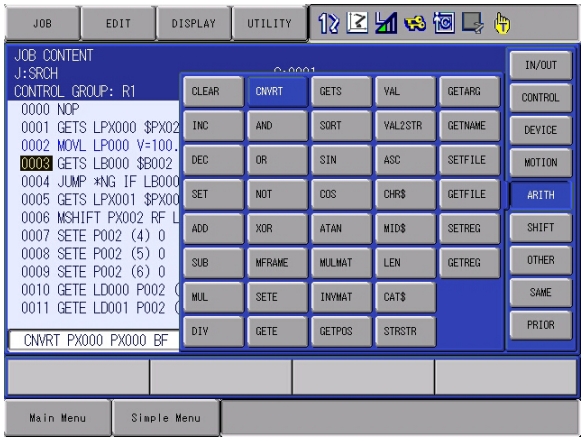
- When the control group is R1:
  PX000 indicates P000.
- When the control group is R1 + B1:
  PX000 indicates P000 and BP000.
- When the control group is R1 + B1 + ST1:
  PX000 indicates P000 + BP000 + EX000.
- When the control group is R1 + R2 + B1 + B2 + ST1 in the coordinated job (master R1 + B1):
  PX000 indicates the following:
  P000: R2 (slave)
  P001: R1 (master)
  BP000: B2 (slave)
  BP001: B1 (master)
  EX000: ST1

### 3.3.4 CNVRT Instruction

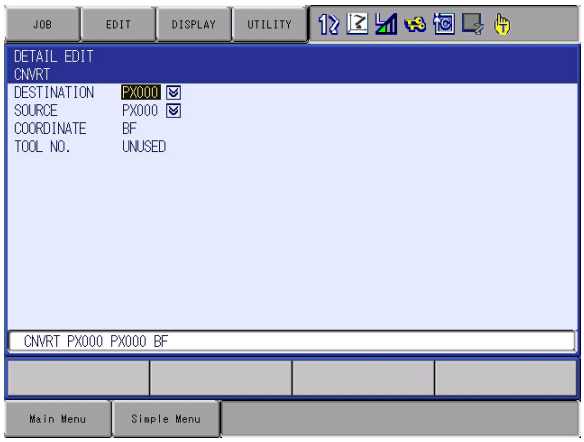
1. Move the cursor to the address area.
2. Move the cursor to the line where CNVRT instruction is to be registered.
3. Press [INFORM LIST].
   (1) The instruction list dialog box appears.
   (2) The cursor moves to the instruction list dialog box while the cursor in the address area changes to an under bar.




4. Select {CNVRT}.
   – At this stage, the instruction on the cursor position is displayed with the previously registered additional items in the input buffer line.



5. Press [SELECT] twice.
   – The DETAIL EDIT window of CNVRT instruction appears.



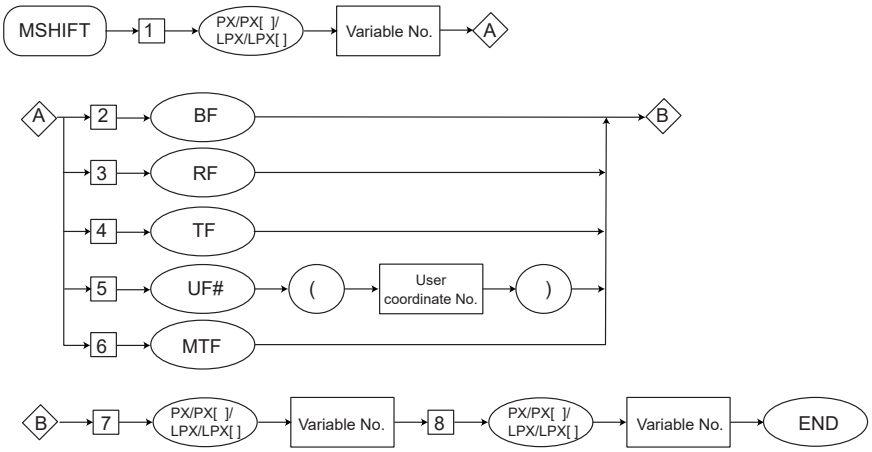

6. Set variables on the DETAIL EDIT window of CNVRT instruction
7. Press [ENTER] twice.
   (1) Press [ENTER] once to display the set contents in the input buffer line.
   (2) Press [ENTER] once more, and the set contents are registered in the job.

## 3.4 MSHIFT Instruction

### 3.4.1 Function

Calculate shift amount in the specified coordinate system from the reference position and the target position.

### 3.4.2 Construction



### 3.4.3 Explanation

1. PX Variable number/LPX Variable number/PX [array number]/LPX [array number]

   – Add the following tag.

| № | Tag | Explanation | Note |
|---|---|---|---|
| 1 | PX Variable number/ LPX Variable number/ PX [Array number]/ LPX [Array number] | Specifies the number of the expanded position variable to store the calculated shift. | <Data 1> |

2. BF/RF/TF/UF# (User coordinate number)/MTF

| № | Tag | Explanation | Note |
|---|---|---|---|
| 2 | BF | Specifies the conversion in the base coordinate system. | |
| 3 | RF | Specifies the conversion in the robot coordinate system. | |
| 4 | TF | Specifies the conversion in the tool coordinate system. | |
| 5 | UF# (User coordinate number) | Specifies the conversion in the user coordinate system. | No.: 1 - 63<br>Variable B/I/D/LB/LI/LD can be used. |
| 6 | MTF | Specifies the conversion on the master tool coordinate system.<br>On the master tool coordinate system, the data is converted to a position relative to the master manipulator. | Available only with the optional independent/coordinated function. |

3. PX Variable/LPX Variable/PX [array number]/LPX [array number]

| № | Tag | Explanation | Note |
|---|---|---|---|
| 7 | PX Variable number/ LPX Variable number/ PX [Array number]/ LPX [Array number] | Specifies the number of the expanded position variable to store the calculated shift. | <Data 2> |

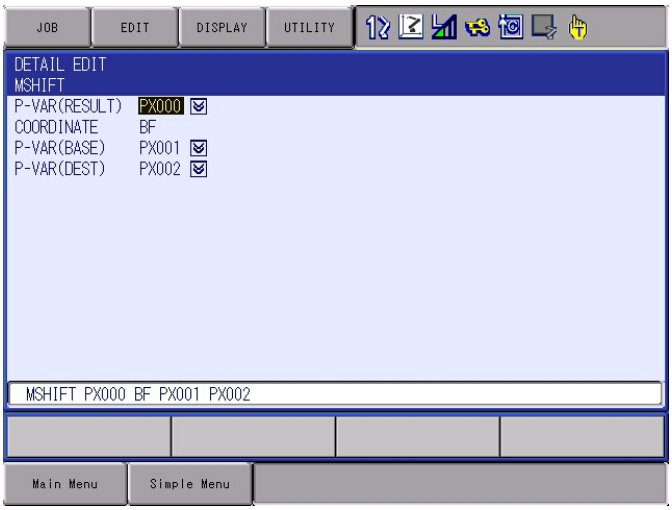
4. PX Variable number/LPX Variable number/PX [array number]/LPX [array number]

| № | Tag | Explanation | Note |
|---|---|---|---|
| 8 | PX Variable number/ LPX Variable number/ PX [Array number]/ LPX [Array number] | Specifies the expanded position type variable number of the target position to calculate the amount of the shift. | <Data 3> |

### 3.4.4 Register MSHIFT Instruction

1. Move the cursor to the address area.
2. Move the cursor to the line where MSHIFT instruction is to be registered.
3. Press [INFORM LIST].
   (1) The instruction list dialog box appears.
   (2) The cursor moves to the instruction list dialog box while the cursor in the address area changes to an under bar.
4. Select {MSHIFT}.
   – At this stage, the instruction on the cursor position is displayed with the previously registered additional items in the input buffer line.


5. Press [ENTER] twice.
   – The DETAIL EDIT window of MSHIFT instruction windows appears.



6. Set variables on the DETAIL EDIT window of MSHIFT instruction.
7. Press [ENTER] twice.
   (1) Press [ENTER] once to display the set contents in the input buffer line.
   (2) Press [ENTER] once more, and the set contents are registered in the job.

# 4 Alarm List

| Alarm No. | Message | Cause | Remedy |
|---|---|---|---|
| 4474 | WRONG CONTROL GROUP AXIS | The CALL/JUMP/PSTART destination job could not be executed.<br>An attempt was made to call or jump to a job whose control group cannot be controlled. (Subcode: The related control-group) | (1) Confirm the settings below.<br>• Make the setting in advance so that the control group of the CALL/JUMP destination job is included in that of the CALL/JUMP source job.<br>• Don't start a job containing a running control group with a "PSTART" instruction. |
| 4499 | UNDEFINED POSITION VARIABLE | The position type variable is not registered.<br>An attempt was made to use the position type variable that was not set. (Subcode: The variable number) | (1) Confirm the settings below.<br>Set the position type variable. |
| 4507 | REFP POS ERROR (SEARCH MOTION) | Incorrect teaching point for search detection<br>The search start point and the motion target point are the same, or the distance between the two points is too short. | (1) Confirm the settings below.<br>• Perform the teaching again so that the search start point and the motion target point are not the same.<br>• Increase the distance between the search start point and the motion target point. |

# 5 Instruction List

- < > indicates numerical or alphabetical data.
- If multiple items are shown in one section, select one of the items.

| | | | |
|---|---|---|---|
| SRCH | Function | Executes a search function. | |
| | Additional Item | RIN#(<direct IN No.>) = <status> | Direct IN No. : 1 - 4<br>Status : ON, OFF, B <variable No.> |
| | | T = <time·s> | Direct IN signal input check start delay time |
| | | DIS = <distance·mm> | A length of passing over the target point specified by the position type variable |
| | Example | MOVL P000 V=138 SRCH RIN#(1)=ON T=1.00 DIS=10.0 | |
| GETS | Function | Saves the system variable as a user variable. | |
| | Additional Item | B <variable No.>, I <variable No.>,<br>D <variable No.>, R <variable No.>,<br>PX <variable No.> | User variable |
| | | $B <variable No.>, $I <variable No.>,<br>$D <variable No.>, $R <variable No.>,<br>$PX <variable No.> | System variable |
| | Example | GETS B000 $B000<br>GETS I001 $I[1]<br>GETS PX003 $PX001 | |
| CNVRT | Function | Converts a pulse data position type data of Data 2 into a Cartesian data position type variable using a specified coordinate system, then saves in Data 1.<br>Format : CNVRT <Data 1><Data 2> coordinate system | |
| | Additional Item | Data 1 | PX <variable No.> |
| | | Data 2 | PX <variable No.> |
| | | BF, RF, TF, UF# (<user coordinate system No.>), MTF | BF:Base coordinate system<br>RF : Robot coordinate system<br>TF : Tool coordinate system<br>UF : User coordinate system<br>MTF : Master tool coordinate system |
| | Example | CNVRT PX000 PX001 BF<br>CNVRT LPX000 LPX001 TF | |

| | | | | |
|---|---|---|---|---|
| SEFTOF | Function | Stop shift operation. | | |
| | Additional Item | No | | |
| | Example | SFTOF | | |
| MSHIFT | Function | Calculate shift amount in the specified coordinate system from data 2 and data 3 and store the calculated value in data 1.<br>Format : MSHIFT <Data 1><Coordinates><Data 2><Data 3> | | |
| | Additional Item | Data 1 | PX <variable No.> | |
| | | Coordinate | BF, RF, TF,<br>UF# (<user coordinate system No.>),<br>MTF | BF:Base coordinate system<br>RF : Robot coordinate system<br>TF : Tool coordinate system<br>UF : User coordinate system<br>MTF : Master tool coordinate system |
| | | Data 2 | PX <variable No.> | |
| | | Data 3 | PX <variable No.> | |
| | Example | MSHIFT PX100 RF PX001 PX002 | | |

# YRC1000 OPTIONS
# INSTRUCTIONS
## FOR SEARCH FUNCTION



YASKAWA

YASKAWA ELECTRIC CORPORATION

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