

Robostar Robot Controller

Controller Series-RcT Instruction Manual



- ☐ Controller Manual
- ☒ Operation Manual
- ☐ Programming Manual
- ☐ Unihost Manual



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Configuration of Instruction Manual

The instruction manual of this product consists of the following. The first user of this product must be well aware of all contents of this manual before use.

- **Controller Manual**

Describes general details of the controller such as controller overview, installation and how to interface with an external device.

- **Operation Manual**

Describes overall methods of controller use as well as parameter setup, JOB program editing and robot operation.

- **Programming Manual**

Describes a Robostar robot program, RRL (Robostar Robot Language), and how to write robot program by RRL.

- **Unihost manual**

Describes 'Unihost' that is a Robostar online PC program.

Manual Configuration

The manual consists of the followings.

- **Chapter 1. Configuration of Teach Pendant (T/P) and basic operation method**

Describes configuration of Teach Pendant (T/P) and basic operation method used for robot operation.

- **Chapter 2. Edit Mode**

Describes method to input programs, points, variables and parameters needed for robot operation.

- **Chapter 3. RUN Mode**

Describes method to run written robot program.

- **Chapter 4. INFO mode**

Describes controller history (state diagnosis) management.

- **Chapter 5. I/O mode**

Describes method to check controller external signal input/output.

- **Chapter 6. ORIGIN Mode**

Describes method to ORIGIN Mode built in the controller.

- **Chapter 7. SHUTDOWN**

Describes normal ends of the controller.

- **Chapter 9. Revision**

Revision details

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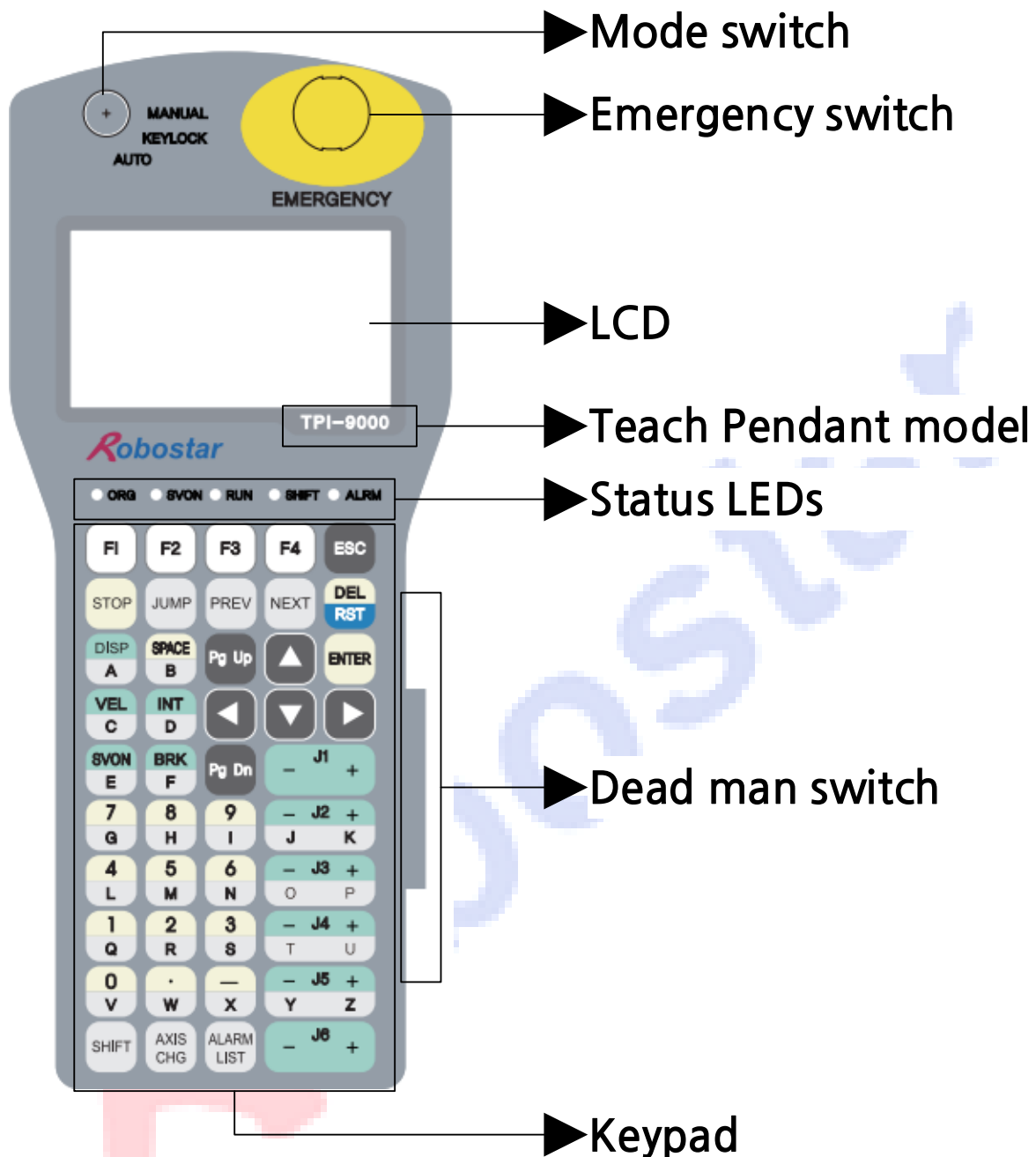
Robostar

Chapter 1. Configuration and use method of Teach Pendant (T/P)

- Teach Pendant (T/P) is a user interface device exclusive only for the controller. It provides start and stop, teaching of the robot, functions to create and edit user program.
- In this chapter, we describe the configuration and use method of Teach Pendant (T/P).

1.1 T/P configuration

- ✓ The figure below shows basic configuration of the Teach Pendant.



1) Mode Switch

- Teach Pendant has 2 modes of Auto Mode and Manual mode 2. Mode can be converted using change Mode switch.
 - ① Manual mode: Controls the robot using the T/P.
 - ② Auto Mode: Externally controls I/O or communication.
- In addition, KEYLOCK function is provided to prevent unnecessary input.

2) Emergency Switch

- When an error occurs during Robot operation or system error occurs, the switch immediately stops robot operation.
- Emergency switch is the red switch on the top right of the Teach Pendant. Press this switch to stop the robot operation. The switch will be kept in pressed state. To release emergency stop, turn Emergency switch clockwise.

3) LCD

- LCD displays current state and provides a lot of information to users.

4) State LED

- It displays control state of the robot. The table below shows meaning of each LED.

LED	Detail
ORG	Origin signal ON
SVON	ON when Servo power is ON
RUN	ON when robot operate after running the program
SHIFT	ON when SHIFT key is used
ALARM	ON when an alarm occurs during program run

5) Dead Man Switch

- Dead Man switch is a switch mounted on the side of the Teach Pendant for operator's safety. If an operator thinks that situation is dangerous in CURR Mode of the robot or an accident occurs, release this switch to turn OFF Servo power and to immediately stop robot operation.

6) Keypad

- The keypad provides keys to operate the controller such as menu selection, DATA Input, and robot operation.

1.2 LCD Screen Configuration and Main Menu

- ✓ Connect the Teach Pendant to the controller and supply power to check the screen below, and input Enter Key to move to Menu Screen.

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(TE 150922___)
Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #

ENTER

- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

- ✓ Excluding special cases such as alarm message, LCD screen is largely divided into 2 parts.

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #

<GEAR>
GEAR RATIO
T : 80 Z : 1
R1: 50 R2: 50
X : 1 6 : 1
R3: 0 R4: 0

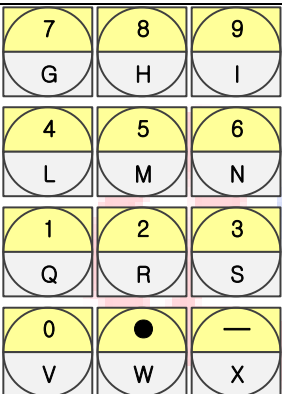
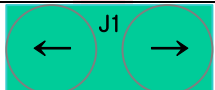
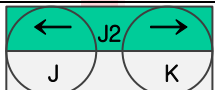
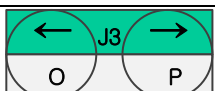
Update? (ENT/ESC)

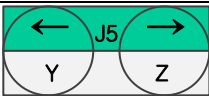
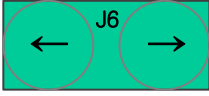
- 1) Data Window: Displays title, menu, input data, and state information.
- 2) Command Window: Displays information of menu Selection, function key input, Update Selection

1.3 Description of operating key

- ✓ Describes function of each key.

Key	Description
 ~ 	- Supports menu function for robot control with F1~F6 keys. - As shown in the figure below, used by matching with some of information displayed in Command Window. <EDIT POINT> ROBOT TYPE *R1 Q4AFL1 R2 NO-EXIT R3 NO-EXIT CURRMDIEDITHOME     <OFFS> ZERO CALIBRATION T : 0 Z : 0 R1 : 0 R2 : 0 X : 0 6 : 0 TZR1R2    
	Conducts stop function during robot.
	Conducts JUMP function during STEP and No move.
	Conducts cancel function and return function to the previous screen.
	Converts value of key which has plural input values.
	Deletes or Resets input data value.
 	Converts screen Page.
	Completes or selects input.
   	Moves cursor or current position.
	- Monitoring short key - Inputs alphabet A character.

	- SPACE: leaves one space - Inputs alphabet B character.
	- Conducts velocity change. - Inputs alphabet C character.
	- GLOBAL INTEGER and FLOAT variable short key - Inputs alphabet D character.
	- Servo power ON/OFF - Inputs alphabet E character.
	- Releases motor brake - Inputs alphabet F character.
	Moves to the previous Page
	Moves to the next Page
	Axis change monitor
	Alarm list monitor
	- Inputs alphabet, number. - Supports input of decimal point and negative number.
	1axis robot operating key
	2axis robot operating key - Inputs alphabet J, K character.
	3axis robot operating key - Inputs alphabet O, P character.
	4axis robot operating key - Inputs alphabet T, R character.

	• 5axis robot operating key • Inputs alphabet X, Y character.
	• 6axis robot operating key

1.4 Alarm Reset

- ✓ This is to release controller alarm.
- ✓ Alarm release is available only in the alarm LIST.

Step 1. Robot Command Selection

<TEACH MENU>
 1. EDIT 2. RUN
 3. JOG 4. I/O
 5. ORIGIN 6. INFO

 0. SHUTDOWN
 input : #



- As shown in the figure below, if alarm LED is turned ON, select “ALARM LIST” key.



Step 2. Checking Alarm Detail

ECODE: 2011 [1/1]
 T/P emergency
 ROBOT: ALL

 [Description]
 1. When press TP
 EMG button, this



- To check alarm detail, press “UP/DOWN” key to check detail.

Step 3. Alarm Release

ECODE: 2011 [1/1]
 T/P emergency
 ROBOT: ALL

 [Description]
 1. When press TP
 EMG button, this

<TEACH MENU>
 1. EDIT 2. RUN
 3. JOG 4. I/O
 5. ORIGIN 6. INFO

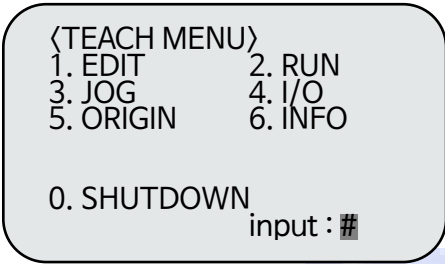
 0. SHUTDOWN
 input : #



- To release alarm after checking alarm detail, press “RST” button to release alarm.

Chapter 2. Edit Mode

- Edit Mode consists of total 3 modes. Program, variable, parameter needed for robot operation can be edited.
- The figure below shows configuration of Edit Mode. Edit Mode provides edit, save and modify function.
 - 1) JOB Edit: Mode to input and Edit program
 - 2) VAR (Variable) Edit: mode to edit, check GLOBAL (INTEGER, FLOAT) of Robot Controller
 - 3) PARA (Parameter) Edit: mode to set robot type and usage environment.



<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
 input : #

2.1 JOB

- JOB EDIT will be displayed in the screen when Teach Pendant screen [1. JOB EDIT] is selected. writes robot file using robot language (RRL) in this menu and does file copy, name change, delete.

2.1.1 Overview

- Saves, displays file written in robot language (RRL).
- Edit function to write file on the Teach Pendant.
- Max 2, 000 lines can be input for one file.
- Max 5 characters including upper case, number can be input for file name.
- File information will be displayed in the order of writing date. [JOB EDIT] provides functions to create, copy, edit, detail vies.

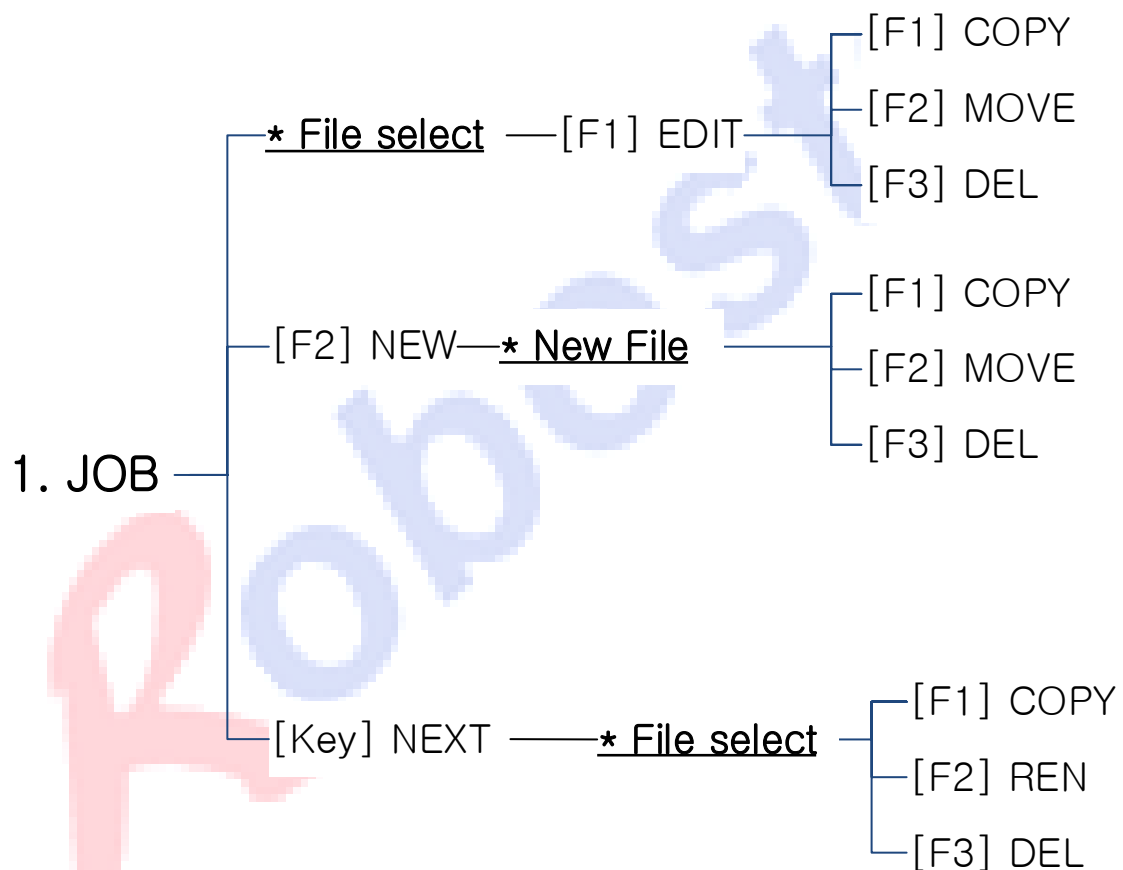
■ 1. JOB EDIT type

GROUP		Detail	Remark
1. JOB	[F1] EDIT	Edits, copies or deletes the existing JOB detail.	
	[F2] NEW	Creates and writes a new JOB file.	
	[F1] COPY	Copies the existing JOB file to a new JOB file name.	
	[F2] REN	Changes name of the existing JOB file.	
	[F3] DEL	Deletes selected JOB file.	

2.1.2 JOB mode flow chart

- Point largely consists of 5 Groups.
 - EDIT: Edits copies or deletes the existing JOBfile detail.
 - NEW: Creates new JOB file and writes JOB detail.
 - COPY: Copies the existing JOB file to another name.
 - REN: Changes the existing JOB file name to another name.
 - DEL: Deletes selected JOB file.

■ Job Menu Tree



2.1.3 JOB Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version:1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

EDIT Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- “1. EDIT” Selection

POINT Selection

<EDIT MENU>
1. JOB 2. VAR
3. PARA

input : #



- “1. JOB” Selection

<JOB MENU> (a)
* 0. AA 8 STEP
1. DD 5 STEP
2. RF 7 STEP
3. WW 12 STEP
4. ARE 100 STEP
5. OF 8 STEP

EDIT NEW

- @: Title bar
- b: File name
- c: Number of JOB line
- d: Function

Step 3.

JOBfile Edit Screen

```

<JOB MANU>
* 0.AA      8   STEP
  1.DD      5   STEP
  2.RF      7   STEP
  3.WW     12   STEP
  4.ARE    100  STEP
  5.QE      8   STEP
EDIT NEW

```



- To edit, copy, delete the existing JOB detail, press “F1” key to select “EDIT”.

Creating new JOBfile

```

<JOB MANU>
* 0.AA      8   STEP
  1.DD      5   STEP
  2.RF      7   STEP
  3.WW     12   STEP
  4.ARE    100  STEP
  5.QE      8   STEP
EDIT NEW

```



- To create a new JOBfile, press “F2” key to select “NEW”.

Moving to next menu

```

<JOB MANU>
* 0.AA      8   STEP
  1.DD      5   STEP
  2.RF      7   STEP
  3.WW     12   STEP
  4.ARE    100  STEP
  5.QE      8   STEP
EDIT NEW

```



- To move to the next menu, press “NEXT” key.
- If next menu exists, “<” will be displayed in front of Menu Function Window.

Coping JOB file

```

<JOB MANU>
* 0.AA      8   STEP
  1.DD      5   STEP
  2.RF      7   STEP
  3.WW     12   STEP
  4.ARE    100  STEP
  5.QE      8   STEP
< COPY REN DEL

```



- To copy the existing JOBfile to another name, press “F1” key to select “COPY”.

Changing JOB file name

```

<JOB MANU>
* 0.AA      8   STEP
  1.DD      5   STEP
  2.RF      7   STEP
  3.WW     12   STEP
  4.ARE    100  STEP
  5.QE      8   STEP
< COPY REN DEL

```



- To change the existing JOBfile to another name, press “F2” key to select “REN”.

Deleting JOB file

<JOB MANU>		
* 0.AA	8	STEP
1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
< COPY	REN	DEL



- To delete the existing JOB detail, press “F3” key to select “DEL”.

Previous Page

<JOB MANU>		
* 0.AA	8	STEP
1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
< COPY	REN	DEL



- To move to the previous menu, press “PREV” key.
- If previous menu exists, “<” will be displayed in Menu Function Window.

2.1.4 How to edit

- Edits JOBfile.

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F1] EDIT

Step 1.

Page Move

<JOB MANU>		
* 0.AA	8	STEP
1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
EDIT NEW		

<JOB MANU>		
* 6.TT	8	STEP
7.MM	5	STEP
8.FF	7	STEP
EDIT NEW		



- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Cursor Move

<JOB MANU>		
* 0.AA	8	STEP
1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
EDIT NEW		

<JOB MANU>		
0.AA	8	STEP
* 1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
EDIT NEW		



- Select a file to be edited
- Select JOBfile to be edited by pressing “UP/DOWN” key.
- The selected JOBfile can be checked by “*” mark in the front of the line.

Step 3

Editing JOBfile

<JOB MANU>		
0.AA	8	STEP
* 1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
EDIT	NEW	



- To edit, copy or delete the existing JOB detail, press “F1” key to select “EDIT”.

Step 4

Edit Screen

<EDIT JOB> @	
STEP	INS (b)
0000	func void main
0001	take 1
0002	while 1 (d)
0003	jmov ip[0]
0004	jmov ip[1]
COPY MOVE DEL	

- @: Title bar
- (b): i → Insert Mode, e → Edit Mode
- (c): Program line No (STEP)
- (d): Program detail
- (e): Function

2.1.4.1 Moving JOB line

■ . OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F1] EDIT

Step 1

Edit Screen

```

<JOB MANU>
* 0.AA      8    STEP
  1.DD      5    STEP
  2.RF      7    STEP
  3.WW     12    STEP
  4.ARE    100    STEP
  5.QE      8    STEP
EDIT NEW

```



- To edit it, press “F1” key to select “EDIT”.

Step 2

Editing JOB Detail

```

<EDIT JOB>
STEP INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY MOVE DEL

```



- To newly create JOB detail in the selected line, press “ENTER” key.

```

<EDIT JOB>
STEP INS      i
0000 func void main
* 0001 ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD FUNC OPER

```

- The newly created JOBline will be displayed with “cursor”.
- The existing JOB detail will be pushed down.
- Write JOB detail!

■ Description of Move

Step 1.

Page Move

```

<EDIT JOB>
STEP  INS      i
0000 func void main
0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL
  
```

```

<EDIT JOB>
STEP  INS      i
* 0005 jmov ip[2]
0006 jmov ip[3]
0007 jmov ip[4]
0008 jmov ip[5]
0009 end
COPY  MOVE  DEL
  
```



- If there is no detail to be copied in Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Cursor Move

```

<EDIT JOB>
STEP  INS      i
* 0000 func void main
0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL
  
```

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL
  
```



- To select block line for “Start”, move using “Cursor Move” key.
- Select JOBfile to be edited by pressing “UP/DOWN” key
- The selected JOBfile can be checked by “*” mark in the front of the line

Step 3.

Jump

```

<EDIT JOB>
STEP  INS      i
* 0000 func void set_para()
0002 /*****
0003 /*****
0004 $ctype_num[1]
0005 $ctype_num[2]
COPY  MOVE  DEL
  
```



- To move to inputting STEP No, press “JUMP” key.

```
<EDIT JOB>
STEP  INS          i
* 0000 func void set_para()
0002 /*****
0003 /*****
0004 $ctype_num[1]
0005 $ctype_num[2]
STEP # =147
```

```
<EDIT JOB>
STEP  INS          i
* 0147 $e_fork_width[1]
0148 $e_fork_width[2]
0149 $e_fork_width[3]
0150 $e_fork_width[4]
0151 $e_fork_width[5]
COPY  MOVE  DEL
```

ENTER

- Input STEP No and press 'ENTER' key.

2.1.4.2 Preprocessor Command Input

- Preprocessor command has 3 types of “Robot Command, FUNC command, and special symbol”.
- Preprocessor command is provided to easily write JOB.

■ . OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F1] EDIT

Step 1

Edit Screen

```

<JOB MANU>
* 0.AA      8    STEP
  1.DD      5    STEP
  2.RF      7    STEP
  3.WW     12    STEP
  4.ARE     100  STEP
  5.QE      8    STEP
EDIT NEW    >
  
```

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
< COPY MOVE DEL
  
```

F1

- To edit it, press “F1” key to select “EDIT”.

Step 2

Editing JOB Detail

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
< COPY MOVE DEL
  
```

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 
0002 take 1
0003 while 1
0004 jmov ip[1]
< CMD FUNC OPER
  
```

ENTER

- To newly create JOB detail in the selected line, press “ENTER” key.
- The newly created JOBlane will be displayed with “cursor”.
- The existing JOB detail will be pushed down.
- Write JOB detail!

Step 3

CMD Selection

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 ■
0002 take 1
0003 while 1
0004 imov ip[1]
CMD  FUNC  OPER

```



- To use Robot Command, Press “F1” key to select “CMD”.

```

<EDIT JOB>          DD
CMD INSTRUCT [1/10]
1: acc              2: amov
3: area:            4: bin
5: bmow             6: bout
7: cbin             8: cbout

```

Input #■

Step 4

FUNC Selection

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 ■
0002 take 1
0003 while 1
0004 imov ip[1]
CMD  FUNC  OPER

```



- To use function command, press “F2” key to select “FUNC”.

```

<EDIT JOB>          DD
FUNC INSTRUCT [1/5]
1: abs              2: acos
3: asc              4: asin
5: atan             6: atan2
7: bins             8: chr

```

Input #■

Step 5

Selecting special symbol

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 ■
0002 take 1
0003 while 1
0004 imov ip[1]
CMD  FUNC  OPER

```



- In case of using special symbol command, press “F3” key to select “OPER”.

<EDIT JOB> DD
OPER INSTRUCT [1/3]

1: + 2: -
3: * 4: /
5: ! 6: %
7: & 8: |

input #■

preprocessor command item

- Provides Robot Command.

■ CMD (Command) item

- Yellow background means button key No.

command	KEY	Detail	Remark
acc	1	Sets percentage (%) of acceleration time.	Page 1
bin	2	Reads value of the designated bite in bite unit.	
bout	3	Displays designated value in designated bite in bite unit.	
cbin	4	Reads Fildbus, cc-link input in bite unit.	
cbout	5	Displays Fildbus, cc-link bite unit.	
cdin	1	Reads Fildbus, cc-link input in double word unit.	Page 2
cdout	2	Displays Fildbus, cc-link double word unit.	
cfin	3	Reads Fildbus, cc-link input in float unit.	
cfout	4	Displays Fildbus, cc-link in float unit.	
cin	5	Reads Fildbus, cc-link input in bit unit.	
cnt	1	UP COUNTS and saves pulse input comes through input port.	Page 3
continue	2	Returns to beginning of repetitive statement	
cout	3	Displays cclink in bit unit.	
cthread	4	Creates thread	
cwin	5	Reads cclink input in word unit.	
cwout	1	Displays cclink in word unit.	Page 4
dec	2	Sets percentage (%) of deceleration time	
din	3	Receives value from input of the designated double word unit	
dlay	4	Sets delay time	
double	5	Declares real type variable.	
dout	1	Displays value designated by designated double word in double word unit.	Page 5
elif	2	Conducts judgment of condition	
else	3	Conducts judgment of condition	
end	4	Ends	
for	5	Repeats Step Run	
fos	1	Trajectory is changed to the next target point before front of axis	Page 6

		arrives at target point.	
func	2	Function declaration	
goto	3	Execution statement branch	
here	4	Loads current axis angle value variable	
if	5	Conducts judgment of condition	
in	1	Reads ON (=1), OFF (=0) value of designated bit No in 1bit unit.	Page 7
inpos	2	Designates target point arrival	
int	3	Integer variable declaration	
jmov	4	PTP Move from current position to target point	
jntsync	5	Sets PTP Sync mode	
labl	1	Designates branch position	Page 8
latch_clear	2	Initialize latch environment	
latch_init	3	Sets latch environment	
latch_pos	4	Latch position	
latch_start	5	Latch start	
latch_state	1	Latch state	Page 9
latch_stop	2	Latch stop	
lmov	3	Linear interpolation move from current position to target point	
main	4	Starts main program	
map_init	5	Initializes Mapping related internal variable	
map_read	1	Reads Mapping data	Page 10
map_start	2	Starts Mapping	
map_stop	3	Stops Mapping	
mvr	4	Percentage value of moving distance comparing to Whole distance	
out	5	Displays designated bit No in 1bit unit	
pin	1	Reads value of designated input port in port unit	Page 11
plup	2	Sets Z-axis position value for PULL UP operation	
pos	3	Declares position type variable	
pout	4	Displays value designated by designated word in port unit.	
error	5	Returns the last error code	
rerrcnt	1	Returns current occurred number of alarm	Page 12
rerrcode	2	Returns error code relevant to INDEX	
rerrtext	3	Returns error detail relevant to INDEX	

reset	4	Clears alarm	
return	5	Ends function	
seterr	1	Occurs System emergency alarm	Page 13
step	2	Repetitively executes block (incremental amount)	
stop	3	Stops robot operation	
string	4	Inputs character string to separator	
svof	5	Turns Servo OFF	
svon	1	Turns Servo ON	Page 14
tmr	2	System definition variable (timer variable)	
to	3	Repetitively runs Step	
vel	4	Percentage (%) of axis moving velocity	
void	5	No return value during function declaration	
while	1	Repetitively runs Condition	Page 15
win	2	Reads value of designated word in word unit.	
with	3	Executes the next execution statement string at the same time during robot operation	
wout	4	Displays value designated by designated word in word unit.	

■ FUNC (Function) item

- Yellow background means button key No.

GROUP	KEY	Detail	Remark
abs	1	Selects absolute value	Page 1
acos	2	Arc cosine function	
asc	3	Returns the first character of character string to character code	
asin	4	Arc sine function	
atan	5	Arctangent function	
atan2	6	The 2 nd arctangent function	
bins	7	Converts integer into binary character string	
chr	8	Converts integer into character	
cos	1	Cosine function	Page 2
deg	2	Converts radian value into angle value	
dist	3	Gets difference value between two position variables	
exp	4	Index e^x	
ftos	5	Converts Integer or real number into character string	
htos	6	Converts integer into hexadecimal character string	
ln	7	Natural log $\log_e X$	
log	8	Commercial exponential function	
pow	1	Exponential function	Page 3
rad	2	Converts angle into radian value	
max	3	Max value function	
min	4	Min value function	
reset	5	Controller alarm release	
rnd	6	Rounds off to the nearest whole number to convert real number value into integer value	
sin	7	Sine function	
sleft	8	Extracts left part character string	
slen	1	Returns character string length	Page 4
smid	2	Extracts character string from character string designation position as many as positional number.	
spos	3	Returns position where character string2 included in character string1.	

sqrt	4	Square root $\sqrt{}$	
sright	5	Extracts right part of input character string.	
strin	6	Inputs character string to separator.	
strout	7	Displays character string.	
sval	8	Converts character string into number.	
tan	1	Tangent function	Page 5

■ OPER (Operator) item

- Yellow background means button key No.

GROUP	KEY	Detail	Remark
+	1	Dyadic operator: addition, character connection	Page 1
-	2	Dyadic operator: negative number	
*	3	Dyadic operator: multiplication	
/	4	Dyadic operator: Division	
!	5	Logical operator: Negation	
%	6	Dyadic operator: the others	
&	7	bit operator: AND	
	8	bit operator: OR	
^	1	bit operator: XOR, index	Page 2
→	2	bit operation: NOT	
>	3	Comparing operator: Excess	
<	4	Comparing operator: less than	
=	5	Assignment operator	
,	6	Single quotation marks	
(	7	Bracket Open, raise operation priority	
)	8	Bracket Close, raise operation priority	
[	1	Square bracket Open	Page 3
]	2	Square bracket Close	
“	3	Double quotation marks	
.	4	Approaches each element of pointer variable	

CMD (Command)

- Provides Robot Command.
- Robot Command type: Declaration, position control, system control, branch, loop statement, program run, motion control, event, input/output, communication, task
- Study how to input “while” sentence through an example.

■ . Example

Step 1.

Robot Command Selection

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER
  
```



- To use Robot Command, press “F1” key to select “CMD”.

Step 2.

로봇 명령어 화면

```

<EDIT JOB>          DD
CMD INSTRUCT [1/8]
1: acc              2: bin
3: bout             4: cbjn
5: cbout            6: cdin
7: cdout            8: cfin
Input # ■
  
```

Input # ■

~

```

<EDIT JOB>          DD
CMD INSTRUCT [8/8]
1: wout
Input # ■
  
```

Input # ■



- If there is no command to be input in Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.
- Refer to ‘CMD’ in ‘2.1.4.2 Preprocessor’.

Step 3.

While Sentence Selection

```

<EDIT JOB>          DD
CMD INSTRUCT [7/8]
1: svon             2: tmr
3: to               4: vel
5: void             6: while
7: win             8: with

```

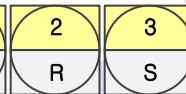
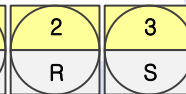
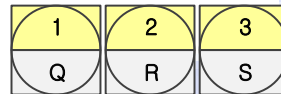
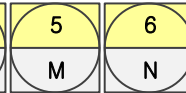
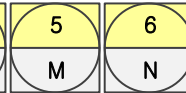
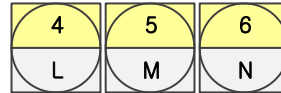
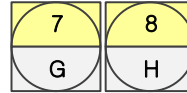
Input #■

```

<EDIT JOB>
STEP INS
0000 func void main
* 0001 while ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD FUNC OPER

```

- To select While sentence, press “6 While” key.
- To select command, press “number key”



Step 5.

Edit Screen Return and Cancel

```

<EDIT JOB>
STEP INS
0000 func void main
* 0001 while ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD FUNC OPER

```

ENTER

ESC

- Save “ENTER” input, screen return
- Cancel by “ESC” input

FUNC (Function)

- Provides function command.
- Function command type: mathematical function, modification function, character string function
- Study how to input “sval” sentence through an example.

■ . Example

Step 1.

Robot Command Selection

```
<EDIT JOB>
STEP  INS
0000 func void main
* 0001 ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER
```



- To use Robot Command, press “F2” key to select “FUNC”.

Step 2.

Robot Command Screen

```
<EDIT JOB>      DD
FUNC INSTRUCT [1/5]
1: abs          2: acos
3: asc          4: asin
5: atan         6: atan2
7: bins         8: chr
```

Input #■



- If there is no command to be input in Teach Pendant screen, press “Page Move”.



- Use “PAGE UP/DOWN” key for screen conversion.

```
<EDIT JOB>      DD
CMD INSTRUCT [5/5]
1: tan
```

Input #■

- Refer to ‘FUNC item’ in ‘2.1.4.2 Preprocessor item’.

Step 3.

“sval” Selection

```

<EDIT JOB>      DD
CMD INSTRUCT [4/5]
1: slem          2: smid
3: spos          4: sqrt
5: sright        6: strin
7: strout        8: sval

```

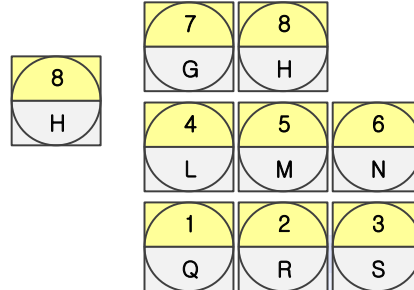
Input #■

```

<EDIT JOB>
STEP INS
0000 func void main
* 0001 sval
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD FUNC OPER

```

- To select “sval”, select “8. sval”.
- To select command, press “number key”



Step 5.

Returning to Edit Screen

```

<EDIT JOB>
STEP INS
0000 func void main
* 0001 sval
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD FUNC OPER

```

```

<EDIT JOB>
STEP INS
0000 func void main
* 0001 sval
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD FUNC OPER

```

ENTER

ESC

- Save “ENTER” input, screen return.
- Cancel by “ESC” input.

OPER (Operation)

- Provides special symbol.
- Special symbol type: operator
- Study how to input “= (equal mark)” through an example.

■ . Example

Step 1.

Robot Command Selection

```

<EDIT JOB>
STEP  INS
0000 func void main
*0001 ■
0002 take 1
0003 while 1
0004 imov ip[1]
CMD  FUNC  OPER
  
```



- To use Robot Command, press “F3” key to select “OPER”.

Step 2.

Robot Command Screen

```

<EDIT JOB>      DD
OPER INSTRUCT  [1/3]
1: +           2: -
3: *           4: /
5: !           6: %
7: &           8: |
  
```

input #■

```

<EDIT JOB>      DD
OPER INSTRUCT  [2/3]
1: ^           2: →
3: >           4: <
5: =           6: }
7: (           7: }
  
```

Input #■

```

<<EDIT JOB>      DD
OPER INSTRUCT  [3/3]
1: [           2: ]
3: "           4: .
  
```

Input #■



- If there is no command to be input in Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.
- Refer to ‘OPERATION’ in ‘2.1.4.2 Preprocessor’

Step 3.

“= (equal mark)” Selection

```

<EDIT JOB>      DD
OPER INSTRUCT  [2/3]
1: ^            2: →
3: >            4: <
5: =            6: ;
7: (            7: )

```

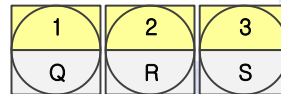
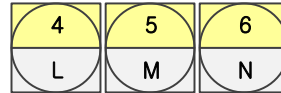
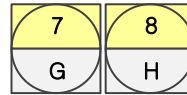
Input #■

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 = ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```

- To select “= (equal mark) “, press “5.”
- To select command, press “number key”



Step 5.

Returning to Edit Screen

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 = ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 =
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```



- Save by “ENTER” input
- Cancel by “ESC” input

2.1.4.3 Inputting JOB detail

■ . OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F1] EDIT

Step 1

Edit Screen

```

<JOB MANU>
* 0.AA      8    STEP
  1.DD      5    STEP
  2.RF      7    STEP
  3.WW     12    STEP
  4.ARE    100    STEP
  5.QE      8    STEP
EDIT NEW    >

```

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL

```


 • To input JOB detail, press “F1” key to select “EDIT”.

Step 2

Editing JOB Detail

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL

```

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 █
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```


 • To newly create JOB detail in the selected line, press “ENTER” key

- The newly created JOBline will be displayed with “cursor”.
- The existing JOB detail will be pushed down.
- Write JOB detail!

■ . Editing order

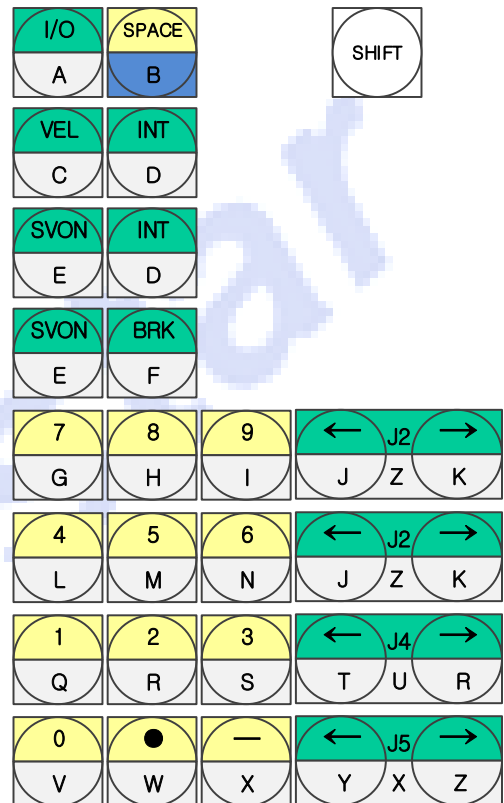
Step 1.

Inputting JOB Detail

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER
  
```

- Press number, character key to input detail to be input in the selected line.



Step 2.

Inputting detail

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER
  
```



- Directly input **aa=1!**



- First, press "SHIFT" button to input character key. press "A", A" twice in the following order.



Step 3.

Inputting special symbol

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```



- To input “equal mark (=)”, press “F3” key.

```

<EDIT JOB>
OPER INSTRUCT DD [1/3]
1: +          2: -
3: *          4: /
5: !          6: %
7: &          8: |

```

input #■



- If “equal mark” symbol is not displayed in Teach Pendant screen, press “Page Move”.

```

<EDIT JOB>
OPER INSTRUCT DD [2/3]
1: ^          2: →
3: >          4: <
5: =          6: ,
7: (          8: )

```

Input #■



- Use “PAGE UP/DOWN” key for screen conversion.

Selecting equal mark No 5

```

<EDIT JOB>
OPER INSTRUCT DD [2/3]
1: ^          2: →
3: >          4: <
5: =          6: ,
7: (          8: )

```

Input #5■



- If equal mark is displayed in the Teach Pendant, select it.
- To select equal mark, select “5. =”.

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```

Step 4.

"1" input

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=1 ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```



- First, release "SHIFT" function. Next, press No "1".



Press "ENTER" key to return to Edit Screen.



```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=1
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```

Step 5.

"1" input

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=1 ■
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```



- First, release selected "SHIFT" function. Next, press No "1".



Press "ENTER" key to return to Edit Screen.



```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=1
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```

Step 6.

Saving and Cancelling JOBfile

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=1
0002 take 1
0003 while 1
0004 jmov ip[1]
COPY MOVE DEL JUMP

```



- If value is changed, Press "ESC" key to display update message in the screen.

```
<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=1
0002 take 1
0003 while 1
0004 jmov ip[1]
Update ? (ENT/ESC)
```



- To save it, press “ENTER” key
- To cancel it, press “ESC” key.

```
<EDIT JOB>
STEP  INS
0000 func void main
* 0001 aa=1
0002 take 1
0003 while 1
0004 jmov ip[1]
save complete
```



- To return to Edit Screen, press “ENTER” key.

```
<JOB MANU>
* 0.AA      8    STEP
1.DD       5    STEP
2.RF       7    STEP
3.WW      12    STEP
4.ARE     100   STEP
5.QE       8    STEP
EDIT NEW      NEXT
```

- Return to JOB file SELECT Screen

2.1.4.4 Inserting JOB line

- Newly creates line in JOB file and writes detail.
- JOBlne newly created will start from the selected line.
- Press “ENTER” key to continuously create new lines.

■ . OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F1] EDIT

Edit Screen

Step 1

```

(JOB MANU)
* 0.AA      8      STEP
  1.DD      5      STEP
  2.RF      7      STEP
  3.WW     12      STEP
  4.ARE    100     STEP
  5.QE      8      STEP
EDIT NEW    NEXT

```

F1

- To insert JOBline, press “F1” key to select “EDIT”.

```

<EDIT JOB>
STEP  INS      i
0000  func void main
* 0001  take 1
0002  while 1
0003  jmov ip[0]
0004  jmov ip[1]
COPY  MOVE  DEL

```

Step 2

Editing JOB Detail

```

<EDIT JOB>
STEP  INS
0000  func void main
* 0001  take 1
0002  while 1
0003  jmov ip[0]
0004  jmov ip[1]
COPY  MOVE  DEL

```

ENTER

- To newly create JOB detail in the selected line, press “ENTER” key

```

<EDIT JOB>
STEP  INS
0000 func void main
* 0001       
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER

```

- The newly created JOBLines will be displayed with “cursor”.
- The existing JOB detail will be pushed Down.
- **Write JOB detail!**

■ Description of insertion

Step 1

Inserting JOB detail

```

<EDIT JOB>
STEP  INS          i
0000 func void main
*0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL
  
```



- To newly create JOB detail in the selected line, press “ENTER” key

```

<EDIT JOB>
STEP  INS
0000 func void main
*0001 
0002 take 1
0003 while 1
0004 jmov ip[1]
CMD  FUNC  OPER
  
```

- The newly created JOBline will be displayed with “cursor”.
- the existing JOB will be pushed down.
- Write JOB detail.

■ Cursor Position Move

- ① Refer to [2.1.4.1 Moving JOBline](#).

■ How to input detail

- ① Refer to [2.1.4.2 Preprocessor Command Input](#).
- ② Refer to [2.1.4.3 JOB detail input](#).

■ How to save and cancel

- ① Refer to “How to save and cancel JOBfile” in [2.1.4.3 JOB detail input](#).

2.1.4.5 Editing JOB detail

- Edits the existing JOB file detail.

■ . OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F1] EDIT

Step 1

Edit Screen

```

<JOB MANU>
* 0.AA      8    STEP
  1.DD      5    STEP
  2.RF      7    STEP
  3.WW     12    STEP
  4.ARE     100  STEP
  5.QE      8    STEP
EDIT NEW      >

```

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL

```

F1

- To edit JOB detail, press “F1” key to select “EDIT”.

Step 2

Editing JOB Detail

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL

```

```

<EDIT JOB>
STEP  INS      i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[1]
0004 jmov ip[1]
CMD   FUNC  OPER

```

ENTER

- To newly create JOB detail in the selected line, press “ENTER” key
- The newly created JOBline will be displayed with “cursor”.
- The existing JOB detail will be pushed Down.
- Write JOB detail!

■ Description of Edit

Step 1

Editing JOB detail

```

<EDIT JOB>
STEP  INS          i
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL  JUMP

```



- To edit JOB detail, press “W” key.

```

<EDIT JOB>
STEP  INS          e
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL  JUMP

```

- “e” will be displayed on the top right of the Teach Pendant.

Step 2

Editing JOBfile

```

<EDIT JOB>
STEP  INS          e
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[0]
0004 jmov ip[1]
COPY  MOVE  DEL  JUMP

```



- To newly create JOB detail, press “ENTER” key

```

<EDIT JOB>
STEP  INS          e
0000 func void main
* 0001 take 1
0002 while 1
0003 jmov ip[1]
CMD  FUNC  OPER

```

- Position to be edited will be marked with “cursor”.

■ Cursor Position Move

- ① Refer to [2.1.4.1 Moving JOBline](#).

■ How to input detail

- ① Refer to [2.1.4.2 Preprocessor Command Input](#)
- ② Refer to [2.1.4.3 JOB detail input](#).

■ How to save and cancel

- ① Refer to “How to save and cancel JOBfile” in [2.1.4.3 JOB detail input](#).

2.1.5 EDIT

- This is to check edit, copy, move or delete selected JOBfile detail. The table below shows Detailed items.

■ Detailed items

GROUP	Detail	Remark
[F1] COPY	Copies and pastes line that designates block.	
[F2] MOVE	Cuts and pastes line that designates block.	
[F3] DEL	Deletes line that designates block.	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F1] EDIT

Step 1.

Page Move

<JOB MANU>		
* 0.AA	8	STEP
1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
EDIT NEW		>



- Use “PAGE UP/DOWN” key for screen conversion.



<JOB MANU>		
* 0.TT	8	STEP
1.MM	5	STEP
2.FF	7	STEP
EDIT NEW		>

Step 2.

Cursor Move

<JOB MANU>		
* 0.AA	8	STEP
1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
5.QE	8	STEP
EDIT NEW		>



- Select a file to be edited
- Select JOBfile to be edited by pressing “UP/DOWN” key
- The selected JOBfile can be checked by “*” mark in the front of the line



```

<JOB MANU>
0.AA      8    STEP
* 1.DD     5    STEP
- 2.RF     7    STEP
3.WW     12    STEP
4.ARE    100    STEP
5.QE      8    STEP
EDIT  NEW    >

```

Step 3

Editing JOB file

```

<JOB MANU>
0.AA      8    STEP
* 1.DD     5    STEP
- 2.RF     7    STEP
3.WW     12    STEP
4.ARE    100    STEP
5.QE      8    STEP
EDIT  NEW    >

```



- To edit, copy, delete the existing JOB detail, press “F1” key to select “EDIT”.

Step 4

Edit Screen

```

<EDIT JOB>
STEP  INS
* 0000 func void main
- 0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
< COPY  MOVE  DEL

```

- Display Edit Screen.

2.1.5.1 COPY

- Designates block to be copied and selects and pastes line to be copied.
- Block can be designated without limitation.

Step 1.

Page Move

```

<EDIT JOB>          DD
STEP  INS           i
* 0000 func void main
  0001 release
  0002 take 1
  0003 while 1
  0004 jmov ip[0]
COPY MOVE DEL
  
```

```

<EDIT JOB>          DD
STEP  INS           i
* 0005 end
  0006 func void robot
  0007 take 1
  0008 while 1
  0009 jmov ip[1]
COPY MOVE DEL
  
```



- If there is no detail to be copied in Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Cursor Move

```

<EDIT JOB>          DD
STEP  INS           i
* 0000 func void main
  0001 release
  0002 take 1
  0003 while 1
  0004 jmov ip[0]
COPY MOVE DEL
  
```

```

<EDIT JOB>          DD
STEP  INS           i
  0000 func void main
* 0001 release
  0002 take 1
  0003 while 1
  0004 jmov ip[0]
< COPY MOVE DEL
  
```



- To select block line for “Start”, move using “Cursor Move” key.
- Select JOBfile to be edited by pressing “UP/DOWN” key
- The selected JOBfile can be checked by “*” mark in the front of the line

Step 3.

Designating Block

```

<EDIT JOB>          DD
STEP  INS           i
  0000 func void main
* 0001 release
  0002 take 1
  0003 while 1
  0004 jmov ip[0]
COPY MOVE DEL
  
```



- To designate block to be copied, press “SHIFT” key first and press “SPACE” key.

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
* 0001< release
0002  take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```

- “Block” will be displayed in the selected line.

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
* 0001< release
0002  take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```



- Press “UP/DOWN” key to designate detail to be copied as a block.



```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
0001< release
* 0002< take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```

Step 4.

Fixing block

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
0001< release
* 0002< take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```



- After designating block, press “SPACE” key again to fix block line.

Step 5.

How to select copy position 1

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
0001< release
* 0002< take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```



- Press “PAGE UP/DOWN” to select position to be copied using Page Move.



- To move page, “*” check.

```

<EDIT JOB>          DD
STEP  INS            i
* 0005 end
0006 func void robot
0007 take 1
0008 while 1
0009 jmov ip[1]
COPY MOVE DEL

```

How to select copy position 2

```

<EDIT JOB>          DD
STEP  INS            i
0000 func void main
0001 { release
* 0002 { take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL

```

```

<EDIT JOB>          DD
STEP  INS            i
0000 func void main
0001 { release
0002 { take 1
* 0003 while 1
0004 jmov ip[0]
COPY MOVE DEL

```

How to select copy position 3

```

<EDIT JOB>          DD
STEP  INS            i
0000 func void main
0001 { release
* 0002 { take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL

```

```

<EDIT JOB>          DD
STEP  INS            i
0000 func void main
0001 { release
* 0002 { take 1
0003 while 1
0004 jmov ip[0]
STEP #=9

```

```

<EDIT JOB>          DD
STEP  INS            i
0005 end
0006 func void robot
0007 take 1
0008 while 1
* 0009 jmov ip[1]
COPY MOVE DEL

```



- Press “UP/DOWN” key to select position to be copied using Cursor Move.



- To move cursor, “*” check.



- Directly move to inputting line to select position to be copied.
- To move to input line, press “JUMP” key.

- Input line No 9.

7	8	9
G	H	I
4	5	6
L	M	N
1	2	3
Q	R	S
0	●	—
V	W	X

Step 6.

Coping

```
<EDIT JOB>      DD  
STEP  INS        i  
0005  end  
0006  func void robot  
0007  take 1  
0008  while 1  
* 0009 jmov ip[1]  
COPY MOVE DEL
```



- To copy it, press “F1” key to select “COPY”.

```
<EDIT JOB>      DD  
STEP  INS        i  
0005  end  
0006  func void robot  
0007  take 1  
0008  while 1  
* 0009 jmov ip[1]  
Copy complete
```



- To return to screen after checking message, press “ENTER” key

```
<EDIT JOB>      DD  
STEP  INS        i  
0005  end  
0006  func void robot  
0007  take 1  
0008  while 1  
* 0009 release  
COPY MOVE DEL
```

- Copied detail ‘Start Position’ will be displayed.

2.1.5.2 MOVE

- Designates block to be cut and paste the cut block detail.
- Block can be designated without limitation.

Step 1.

Page Move

```

<EDIT JOB>          DD
STEP  INS           i
* 0000 func void m-ain
0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL
  
```

```

<EDIT JOB>          DD
STEP  INS           i
* 0005 end
0006 func void robot
0007 take 1
0008 while 1
0009 jmov ip[1]
COPY MOVE DEL
  
```



- If there is no detail to be cut in the Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Cursor Move

```

<EDIT JOB>          DD
STEP  INS           i
* 0000 func void main
0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL
  
```

```

<EDIT JOB>          DD
STEP  INS           i
0000 func void main
* 0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL
  
```



- To select block line for “Start”, move to “cursor UP / DOWN” key.
- Select JOBfile to be edited by pressing “UP/DOWN” key.
- The selected JOBfile can be checked by “*” mark in the front of the line.

Step 3.

Designating Block

```

<EDIT JOB>          DD
STEP  INS           i
0000 func void main
* 0001 release
- 0002 take 1
0003 while 1
0004 jmov ip[0]
COPY  MOVE  DEL

```



- To designate cutting block, press “SHIFT” key first and press “SPACE” key.

```

<EDIT JOB>          DD
STEP  INS           i
0000 func void main
* 0001 < release
- 0002 take 1
0003 while 1
0004 jmov ip[0]
COPY  MOVE  DEL

```

- Block (“<”) will be displayed in the selected line.

```

<EDIT JOB>          DD
STEP  INS           i
0000 func void main
* 0001 < release
- 0002 take 1
0003 while 1
0004 jmov ip[0]
COPY  MOVE  DEL

```



- Press “UP/DOWN” key to designate detail to be copied as block.

```

<EDIT JOB>          DD
STEP  INS           i
0000 func void main
0001 < release
* 0002 < take 1
- 0003 while 1
0004 jmov ip[0]
COPY  MOVE  DEL

```

Step 4.

Fixing block

```

<EDIT JOB>          DD
STEP  INS           i
0000 func void main
0001 < release
* 0002 < take 1
- 0003 while 1
0004 jmov ip[0]
COPY  MOVE  DEL

```



- After designating block, press “SPACE” key again to fix block line.

Step 5.

How to select paste position 1

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
0001< release
* 0002< take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```



- Press “PAGE UP/DOWN” to select position to be copied using Page Move.



- To move page, “*” check.

```

<EDIT JOB>          DD
STEP  INS            i
* 0005 end
0006  func void robot
0007  take 1
0008  while 1
0009  jmov ip[1]
COPY  MOVE  DEL

```

How to select paste position 2

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
0001< release
* 0002< take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```



- Press “UP/DOWN” key to select position to be copied using Cursor Move.



- To move cursor, “*” check.

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
0001< release
0002< take 1
* 0003< while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```

How to select paste position 3

```

<EDIT JOB>          DD
STEP  INS            i
0000  func void main
0001< release
* 0002< take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL

```



- Directly move to inputting line to select position to be copied.
- To move to input line, press “JUMP” key.

```

<EDIT JOB>          DD
STEP  INS           i
0000  func void main
0001 { release
*0002 { take 1
0003  while 1
0004  jmov ip[0]
STEP #=9

```

```

<EDIT JOB>          DD
STEP  INS           i
0005  end
0006  func void robot
0007  take 1
0008  while 1
*0009 jmov ip[1]
COPY  MOVE  DEL

```

- Input line No 9.

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

Step 6.

Pasting after cutting

```

<EDIT JOB>          DD
STEP  INS           i
0005  end
0006  func void robot
0007  take 1
0008  while 1
*0009 jmov ip[1]
COPY  MOVE  DEL

```



- To paste after cutting, press “F2” key to select “MOVE”.

```

<EDIT JOB>          DD
STEP  INS           i
0005  end
0006  func void robot
0007  take 1
0008  while 1
*0009 jmov ip[1]
Copy complete

```



- To return screen after checking message, press “ENTER” key.

```

<EDIT JOB>          DD
STEP  INS           i
0007  take 1
0008  while 1
0009  release
0010 take 1
*0011 end
COPY  MOVE  DEL  JUMP

```

- “*” will be displayed in the last line of the pasted detail.

2.1.5.3 DEL

- Designates and deletes block to be deleted.
- Block can be designated without limitation.

Step 1.

Page Move

```

<EDIT JOB>          DD
STEP  INS           i
* 0000 func void main
0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP
  
```

```

<EDIT JOB>          DD
STEP  INS           i
* 0005 end
0006 func void robot
0007 take 1
0008 while 1
0009 jmov ip[1]
COPY MOVE DEL JUMP
  
```



- If there is no detail to be deleted in the Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Cursor Move

```

<EDIT JOB>          DD
STEP  INS           i
* 0000 func void main
0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP
  
```

```

<EDIT JOB>          DD
STEP  INS           i
0000 func void main
* 0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP
  
```



- To select block line for “Start”, move using “cursor UP/DOWN Move” key.
- Select JOBfile to be edited by pressing “UP/DOWN” key.
- The selected JOBfile can be checked by “*” mark in the front of the line.

Step 3.

Designating Block

```

EDIT JOB>          DD
STEP  INS          i
0000 func void main
* 0001 release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP

```



- To select block to be deleted, press “SHIFT” key first and press “SPACE” key.

```

EDIT JOB>          DD
STEP  INS          i
0000 func void main
* 0001 < release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP

```



- Start position will be displayed with “*” mark.

```

EDIT JOB>          DD
STEP  INS          i
0000 func void main
* 0001 < release
0002 take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP

```



- Press “UP/DOWN” key to designate detail to be deleted as block.

```

EDIT JOB>          DD
STEP  INS          i
0000 func void main
0001 < release
* 0002 < take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP

```



Step 4.

Fixing block

```

EDIT JOB>          DD
STEP  INS          i
0000 func void main
0001 < release
* 0002 < take 1
0003 while 1
0004 jmov ip[0]
COPY MOVE DEL JUMP

```



- After designating block, press “SPACE” key again to fix block line.

Step 5.

Deleting.

```

EDIT JOB>          DD
STEP  INS          i
0000  func void main
0001 { release
* 0002 { take 1
0003  while 1
0004  jmov ip[0]
COPY  MOVE  DEL  JUMP

```



- For cutting, press “F3” key to select “DEL”.

```

EDIT JOB>          DD
STEP  INS          i
0000  func void main
0001 { release
* 0002 { take 1
0003  while 1
0004  jmov ip[0]
Delte ok? (ENT/ESC)

```



- For cutting, press “ENTER”



- To cancel cut, press “ESC”

```

EDIT JOB>          DD
STEP  INS          i
0000  func void main
* 0001  while 1
0002  jmov ip[0]
0005  end
0006  func void robot
COPY  MOVE  DEL  JUMP

```

- “*” will be displayed at cutting start position.

2.1.6 NEW

- A new JOB file can be created and JOB detail can be written.
- A file name must start with alphabet and must be a character string in 5 characters with alphabet or numbers.

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [F2] NEW

Step 1.

Creating new file

<JOB MANU>		
* 0.AA	8	STEP
1.DD	5	STEP
2.RF	7	STEP
3.WW	12	STEP
4.ARE	100	STEP
50.QE	8	STEP
EDIT	NEW	>



- To create a new file, press “F2” key to select “NEW”.

Step 1.

Creating new file

<NEW JOB>		
FILE NAME = <u>NEW1</u>		
EDIT JOB> <u>NEW1</u>		
STEP	INS	I
* 0000	■	
0001		
0002		
0005		
0006		
COPY	MOVE	DEL



- First, press “SHIFT” button to input character key. And press “N”, “E”, “W” key.
- release the selected “SHIFT” function and press “1” key.

■ How to input detail

- ① Refer to [2.2.4.2 How to input preprocessor command.](#)
- ② Refer to Inputting JOB detail in [2.2.4.1 “How to move JOBline”.](#)

■ How to save and cancel

- ① Refer to “How to save and cancel JOBfile” in [2.2.4.1 “How to move JOBline”.](#)

2.1.7 COPY

- Copies the existing JOB file to another name.
- A file name must start with alphabet and must be a character string in 5 characters with alphabet or numbers.

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [JUMP] button → [F1] COPY

Step 1.

Page Move Method

<JOB MANU>			
*0.AA	8	STEP	
1. DD	5	STEP	
2. RF	7	STEP	
3. WW	12	STEP	
4. ARE	100	STEP	
5. QQ	8	STEP	
< COPY REN DEL			

<JOB MANU>			
*6. TT	8	STEP	
7. MM	5	STEP	
8. FF	7	STEP	
< COPY REN DEL			



- If there is no detail to be copied in Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

How to move Cursor

<JOB MANU>			
*0.AA	8	STEP	
1. DD	5	STEP	
2. RF	7	STEP	
< COPY REN DEL			

<JOB MANU>			
0.AA	8	STEP	
*1. DD	5	STEP	
2. RF	7	STEP	
< COPY REN DEL			



- Select file to be edited.
- Select JOBfile to be edited by pressing “UP/DOWN” key.
- The selected JOBfile can be checked by “*” mark in the front of the line.

Step 3.

Creating a new file

<JOB MANU>
 * 0.AA 8 STEP
 1.DD 5 STEP
 2.RF 7 STEP

< COPY REN DEL



- To copy the existing file as another file, press “F1” key to select “COPY”.
- Input Window to input file name to be copied will be displayed.

<COPY JOB>
 JOB NAME = DD

New job name =

Step 3.

Inputting file name to be copied

<COPY JOB>
 JOB NAME = DD

New job name = COPY



- First, press “SHIFT” button to input character key. And press “C”, “O”, “P”, “Y” key.

<COPY JOB>
 JOB NAME = DD

Copy Complete



- After inputting file name, press “ENTER” key to finish.

Step 3.

Inputting file name to be copied

<COPY JOB>
 JOB NAME = DD

Copy Complete



- To return to JOB MENU, press “ENTER” key.

<JOB MANU>

0.AA

8

STEP

1.DD

5

STEP

2.RF

7

STEP

* 3.COPY

5

STEP

2.1.8 REN (Rename)

- Changes the existing JOB file to another name.
- A file name must start with alphabet and must be a character string in 5 characters with alphabet or numbers.

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [JUNP] button → [F2] REN

Step 1.

How to move Page

(JOB MANU)
 *0.AA 8 STEP
 1.DD 5 STEP
 2.RF 7 STEP
 3.WW 12 STEP
 4.RE 100 STEP
 5QE 8 STEP
 (COPY REN DEL

(JOB MANU)
 *6.TT 8 STEP
 7.MM 5 STEP
 8.FF 7 STEP
 (COPY REN DEL



- If there is no detail for name change in the Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

How to move Cursor

(JOB MANU)
 *0.AA 8 STEP
 1.DD 5 STEP
 2.RF 7 STEP
 (COPY REN DEL

(JOB MANU)
 0.AA 8 STEP
 *1.DD 5 STEP
 2.RF 7 STEP
 (COPY REN DEL



- Select file to be edited.
- Select JOBfile to be edited by pressing “UP/DOWN” key.
- The selected JOBfile can be checked by “*” mark in the front of the line.

Step 3.

Changing file name

<JOB MANU>
 0.AA 8 STEP
 * 1.DD 5 STEP
 2.RF 7 STEP

< COPY REN DEL

<REN JOB>
 JOB NAME = DD

New job name =

F2

- To change the existing file to another name, press "F2" key to select "REN".
- Input Window to input file name to be changed will be displayed.

Step 3.

Inputting file name to be changed

<REN JOB>
 JOB NAME = DD

New job name = COPY

<REN JOB>
 JOB NAME = DD

Rename Complete

SHIFT

2

R

SVON

E

6

N

ENTER

- First, press "SHIFT" button to input character key. And press "R", "E", "N" key.
- After inputting file name, press "ENTER" key to finish.

Step 3.

Inputting file name to be copied

<REN JOB>
 JOB NAME = DD

Rename Complete

ENTER

- To return to JOB MENU, press "ENTER" key

<JOB MANU>

0.AA

8

STEP

* 1.REN

5

STEP

2.RF

7

STEP

< COPY REN DEL

2.1.9 DEL

- Deletes selected JOB file.

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 1. JOB → [JUMP] button → [F3] DEL

Step 1.

Page Move Method

<JOB MANU>
 *0.AA 8 STEP
 1.DD 5 STEP
 2.RF 7 STEP
 3.WW 12 STEP
 4.RE 100 STEP
 5QE 8 STEP
 < COPY REN DEL

<JOB MANU>
~~*6.TT 8 STEP~~
~~7.MM 5 STEP~~
~~8.FF 7 STEP~~
 < COPY REN DEL



- If there is no file to be deleted on the Teach Pendant screen, press “Page Move”.
- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Cursor Move Method

<JOB MANU>
~~*0.AA 8 STEP~~
~~1.DD 5 STEP~~
 2.RF 7 STEP
 < COPY REN DEL

<JOB MANU>
 0.AA 8 STEP
~~*1.DD 5 STEP~~
~~2.RF 7 STEP~~
 < COPY REN DEL



- Select file to be deleted.
- Press “UP/DOWN” key to select JOBfile desired to be deleted.
- The selected JOBfile can be checked by “*” mark in the front of the line.

Step 3.

Deleting file

⟨JOB MANU⟩
0.AA 8 STEP
* 1.DD 5 STEP
2.RF 7 STEP

⟨ COPY REN **DEL**

⟨DEL JOB⟩
JOB NAME = DD

Delete ok? (ENT/ESC)

- To delete the existing file, press “F3” key.

F3

- Input Window to input file to be deleted will be displayed.

Step 4.

Inputting file name to be copied

⟨ DEL JOB⟩
JOB NAME = DD

Delete ok? (ENT/ESC)

⟨JOB MANU⟩
0.AA 8 STEP
*** 1.RF 7 STEP**

⟨ COPY REN DEL

ENTER

- To delete it, press “ENTER” key
- To cancel it, press “ESC” key.

ESC

2.2 VAR (Variable)

- ✓ GLOBAL variable has characteristic which maintains current value even when program run stopped or controller power is turned OFF. In addition, select one of integer type, real number type according to use. Change data in the screen or check current data. Data can be referred to in all files. It differs from global variable within the program in the fact that details are maintained even when the program is ended.

2.2.1 Overview

- INTEGER Sets integer type data and FLOAT sets real number DATA.
- VARIABLE has integer type and real number type, and 1, 000 VARIABLES allocated for each.
- Input change value and press [ENTER] key to automatically save value in the memory.
- Final saving of edited variable data will be automatically saved when VARIABLE mode is converted out.

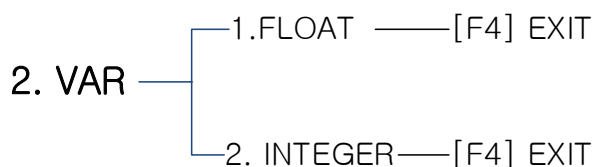
■ 2. VARIABLE type

	GROUP	Detail	Remark
2. VAR	1. FLOAT	Real type variable	
	2. INTEGER	Integer variable	

2.2.2 VARIABLE mode flow chart

- VARIABLE largely consists of 2 Groups.
 - FLOAT: Checks or edits real type variable value.
 - INTEGER: Checks or edits integer variable value.
 - FLOAT input value range: -999999~999999
 - INTEGER input value range: ~32766~32767

■ Variable Menu Tree



2.2.3 VARIABLE Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version:1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. INFO 4. I/O
5. ORIGIN

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

EDIT Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- “1. EDIT” Selection

POINT Selection

<EDIT MENU>
1. JOB 2. VAR
3. PARA

input : #



- “2. VAR” Selection

INTEGER Selection

<EDIT VAR>
1. INT 2. FLOAT

input : #



- To edit, check INTEGER, press “1. INT”.

FLOAT Selection

<EDIT VAR>
1. INT

2. FLOAT

input : #



- To edit, check FLOAT, select “2. FLOAT”.

2.2.4 VARIABLE setting

- Input method is same with that of '1. INTEGER', '2. FLOAT'.
- Describes how to input variable value through an example.
 - Ex) F10=50 ← real type variable input

Step 1.

Moving to PARAMETER item to be changed

(EDIT VAR)
 1. INT **2. FLOAT**

 input :



- "2. FLOAT" Selection

(FLOAT EDIT)
 F0 0
 F1 0
 F2 0
 F3 0
 F4 0
 F5 0

 EXIT

- Check real type variable Screen

Step 2.

Cursor Position Move

(FLOAT EDIT)
F0 0
 F1 0
 F2 0
 F3 0
 F4 0
 F5 0

 EXIT



- Press direction key to move to the value to be edited
- Move result can be checked with cursor position.

(FLOAT EDIT)
 F0 0
F1 0
 F2 0
 F3 0
 F4 0
 F5 0

 EXIT

Page Change

<FLOAT EDIT>

F6 0
 F7 0
 F8 0
 F9 0
 F10 0
 F11 0

EXIT

Pg Up

Pg Dn

- Use "PAGE UP/DOWN" key for screen conversion.

Step 3.

variable Value Change

<FLOAT EDIT>

F6 0
 F7 0
 F8 0
 F9 0
 F10 5
 F11 0

EXIT

- Press number key of the value to be changed.

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	• W	— X

<FLOAT EDIT>

F6 0
 F7 0
 F8 0
 F9 0
 F10 50
 F11 0

EXIT

ENTER

- Press "ENTER" key to apply it into the screen.

Step 4.

Deleting variable value

<FLOAT EDIT>

F6 0
 F7 0
 F8 0
 F9 0
 F10 5.123
 F11 0

EXIT

 DEL
 RST

- If variable value is incorrectly input, press "DEL" key to delete input value in order.

<FLOAT EDIT>

F6 0
 F7 0
 F8 0
 F9 0
 F10 5.12
 F11 0

EXIT

When input value range is exceeded

<FLOAT EDIT>

F6 0

F7 0

F8 0

F9 0

F10 1000000 ■

F11 0

JUMP

EXIT

<FLOAT EDIT>

F6 0

F7 0

F8 0

F9 0

F10 *

F11 0

JUMP

EXIT

- Real number type input range: -999999~999999

- In case of input exceeding range, "*" will be displayed as shown in the screen.

2.2.5 JUMP (Direct No move)

- Directly moves random variable No.
- Direct Move Method is same with that for '1. INTEGER', '2. FLOAT'.

■ How to move

Step 1.

Float Screen

<INTEGER EDIT>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

EXIT



- To move to random variable No, press "JUMP" key.

<INTEGER EDIT>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

integer Num =

<INTEGER EDIT>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

integer Num =50



- Input to be moved No: 50

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

- After completing input, press "ENTER" key.

<INTEGER EDIT>

I50	0
I51	0
I52	0
I53	0
I54	0
I55	0

EXIT

- Check JUMP move Screen.

2.2.6 INTEGER

- Monitors, edits GLOBAL integer variable. The table below shows Detailed items.
- Input range: ~32766~32767

■ Detailed items

GROUP	Detail	Remark
[F4] EXIT	Exits after saving	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 2. VAR → 1. INT

Step 1.

INTEGER Selection

<EDIT VAR>
1. INT 2. FLOAT

input #



- “1. INT” Selection

variable Screen Check

<INTEGER EDIT>

I0 0
 I1 0
 I2 0
 I3 0
 I4 0
 I5 0

EXIT

- Check integer variable Screen

■ How to set

- Refer to [2.2.4 VARIABLE setting](#).

■ Direct No move

- Refer to [2.2.5 JUMP \(Direct No move\)](#).

2.2.6.1 EXIT

- Exits variable display screen.
- Saves variable value in a file when user exits variable display screen.
- There are two ways to exit.
 - To press “[F4] EXIT” key.
 - To press “ESC” key.

■ How to exit

Step 1.

FLOAT Screen

<INTEGER EDIT>	
I0	0
I1	0
I2	0
I3	0
I4	0
I5	0
EXIT	

<EDIT VAR>	
1. INT	2. FLOAT
input #	



- To exit FLOAT variable display screen, press “F4” key to select “EXIT”.

- Check the previous Screen which displays INT variable.

2.2.7 FLOAT

- Monitors and edits GLOBAL real type variable. The table below shows Detailed items.
- Input range: -999999~999999

■ Detailed items

GROUP	Detail	Remark
[F4] EXIT	Exits after saving.	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 2. POINT → 3. VAR → 1. FLOAT

Step 1.

FLOAT Selection

EDIT VAR)

1. INT **2. FLOAT**

input #



- 2. FLOAT Selection

variable Screen Check

⟨FLOAT EDIT⟩

F0 0
F1 0
F2 0
F3 0
F4 0
F5 0

EXIT

- Check real type variable Screen

■ How to set

- Refer to [2.2.4 VARIABLE setting](#).

■ Direct No move

- Refer to [2.2.5 JUMP \(Direct No move\)](#).

2.2.7.1 EXIT

- Exits variable display screen.
- Saves variable value in a file when user exits variable display screen.
- There are two ways to exit.
To press “[F4] EXIT” key.
To press “ESC” key.

■ How to exit

Step 1.

FLOAT Screen

<FLOAT EDIT>
F0 0
F1 0
F2 0
F3 0
F4 0
F5 0
EXIT

<EDIT VAR>
1. INT 2. FLOAT

input #



- To exits FLOAT variable display screen, press “F4” key to select “EXIT”.

- Check the previous Screen which Displays FLOAT variable

2.3 PARAMETER

- ✓ Parameter Setting is very important part. Cause of more than half of the errors occur during robot operation is wrong setting of parameter value.
- ✓ For default parameter setting value, refer to the label attached on the robot.
- ✓ Default parameter is set at the factory before shipment. However, sometimes parameter values have to be inevitably edited according surrounding situation during actual installation and operation of the robot at sites. In this case, contact Customer Support Team in our company for information.

2.3.1 Overview

- Parameter Edit Mode is to set robot type and usage environment.
- Before robot (mechanical part + controller) operation, be sure to check setting value. If necessary, it must be set again.
 - Data related to mechanical, electrical standard of the robot
 - Basic robot operation methods such as origin return method, special function.
 - Data communication protocol with computer
- Default parameters are set at the factory.
- After setting, record or backup data preparing for change due to use error.

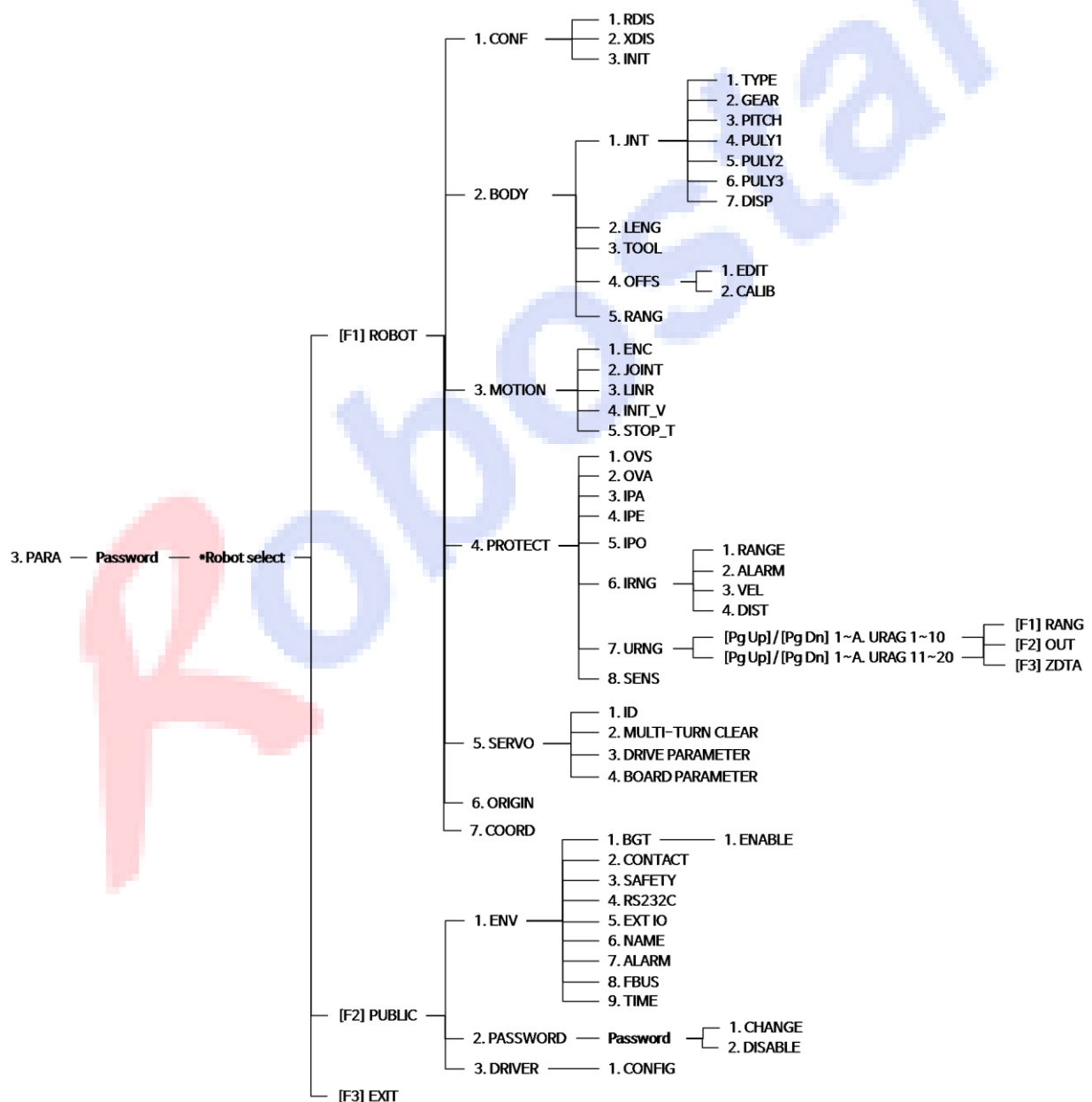
■ Type of Parameter Group

GROUP		Detail	Remark
ROBOT	CONF	Sets robot usage environment.	
	BODY	Sets type of mechanical part of the robot.	
	MOTION	Sets robot operation related parameter.	
	PROTECT	Sets protection system parameter.	
	SERVO	Sets Servo motor and driver related parameter.	
	ORIGIN	Sets Origin related parameter.	
	COORD	Converts coordinate systems.	
PUBLIC	ENV	Sets operating environment such as external communication, expansion I/O, Safety, additional function.	
	PASSWORD	Sets password.	
	DRIVER	Sets driver file suitable for the controller.	

2.3.1.1 Flow chart of parameter mode

- Parameter largely consists of 2 Groups.
 - ROBOT PARAMETER: Sets parameter value such as type of the mechanical part, operation, protection, Servo motor, motor driver, coordinate system which must be set for each individual robot.
 - PUBLIC PARAMETER: Sets parameter value such as communication, external I/O port, password which can be used in common.

■ Parameter Menu Tree



2.3.1.2 Parameter Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RCM6-Series
Version :3.01.33
(TR 141009)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN input : #



- Input power to display screen in LCD (If an error occurs, take measures against error code.)

- Press **ENTER** Key to move to Main Menu Screen.

Step 2.

EDIT Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN input : #



- 1. EDIT Selection

Parameter Selection

<EDIT MENU>
1. JOB 2. VAR
3. PARA

input : #



- 3. PRAR Selection

Step 3.

Inputting PASSWORD

<EDIT MENU>
1. JOB 2. VAR
3. PARA

Password = ####



- Input Password (Default value: "1111").
- Press "ESC" key to cancel Password input.

<EDIT MENU>
1. JOB 2. VAR
3. PARA

Invalid!!

- “Invalid” will be displayed invalid Password is input

Step 4.

Robot Selection

<EDIT PARA>
ROBOT TYPE
*R1 AWDT1S026
-R2 NO-EXIT
R3 NO-EXIT

ROBOT PUB EXIT



- Press “UP/DOWN” key to select robot of which parameter will be edited.



- The selected robot can be checked by “*” mark in the front of the line.

ROBOT Parameter Selection

<EDIT PARA>
ROBOT TYPE
*R1 AWDT1S026
-R2 NO-EXIT
R3 NO-EXIT

ROBOT PUB EXIT



- To edit ROBOT parameter, press “F1” key.

PUBLIC Parameter Selection

<EDIT PARA>
ROBOT TYPE
*R1 AWDT1S026
-R2 NO-EXIT
R3 NO-EXIT

ROBOT **PUB** EXIT



- To edit PUBLIC parameter, press “F2” key.

Canceling PARAMETER edit

<EDIT PARA>
ROBOT TYPE
*R1 AWDT1S026
-R2 NO-EXIT
R3 NO-EXIT

ROBOT PUB **EXIT**



- To cancel edit and to return to the previous screen, press “F4” or “ESC” key.



■ Reference

- ① Password can be changed. For the method to change, refer to [2.5.3.2.1 How to change password change](#).

2.3.1.3 Parameter Setting

- Describes how to set changed parameter through an example.
 - Ex) 'ENC' Edit: [F1] ROBOT ⇒ 3. MOTION ⇒ 1. ENC

Step 1.

Moving to PARAMETER to be changed

⟨ROBOT PARAMETER⟩
 1: CONF 2: BODY
3: MOTION 4: PROTECT
 5: SERVO 6: ORIGIN
 7: COORD

input : #



- 3: MOTION Selection

⟨MOTION⟩
1: ENC 2: JONT
~~3: LINR~~ 4: INIT_V
 5: STOP_T

item #



- 1: ENC Selection

Step 2.

Cursor Position Move

⟨ENC⟩
 ENCODER (pulse/rev)
 T : 131072 Z : 131072
 R1: 131072 R2: 131072
 X : 131072 6 : 131072
 R3: 131072 R4: 131072

⟨ENC⟩
 ENCODER (pulse/rev)
 T : 131072 Z : 131072
 R1: 131072 R2: 131072
 X : 131072 6 : 131072
 R3: 131072 R4: 131072



- Press direction key to move to the value to be edited
- Move result can be checked with cursor position.

Page Change

⟨ENC⟩
 ENCODER (pulse/rev)
 Q1: 131072 V1: 131072
 Q2: 131072 V2: 131072
 Q3: 131072 V3: 131072
 Q4: 131072



- If robot axis exceeds 8, use "PAGE UP/DOWN" key for screen conversion.

Step 3.

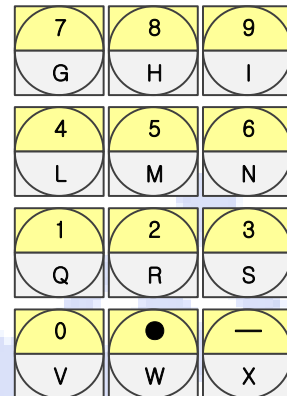
PARAMETER Value Change

```

<ENC>
ENCODER (pulse/rev)
T : 131072   Z : 131072
R1: 131072   R2: 100000
X : 131072   6 : 131072
R3: 131072   R4: 131072

```

- Press number key of the value to be changed to input it.



- In case of ON/OFF or TYPE change, press “ENTER” key to change value.

```

<ENC>
ENCODER (pulse/rev)
T : 131072   Z : 131072
R1: 131072   R2: 100000
X : 131072   6 : 131072
R3: 131072   R4: 131072

```

ENTER

- Press “ENTER” key to apply it into the screen.

Step 4.

Saving and cancelling PARAMETER value

```

<ENC>
ENCODER (pulse/rev)
T : 131072   Z : 131072
R1: 131072   R2: 100000
X : 131072   6 : 131072
R3: 131072   R4: 131072

```

update? (enter/esc)

When Range Error occurs

```

<ENC>
ENCODER (pulse/rev)
T : 131072   Z : 131072
R1: 131072   R2: 0
X : 131072   6 : 131072
ind = 3, val = 0.00000
M=999999.00, m = 10000
range error!!!

```

ESC

- If value is changed, Press “ESC” key to display update message in the screen.
- If the setting value exceeds max range or below min range error message will be displayed.

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
 5: STOP_T

item #

ENTER

ESC

- Press “ENTER” or “ESC” key to return to the previous screen without temporarily saving value.

When Range Error not occurred

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
 5: STOP_T

item #

ENTER

ESC

- Press “ENTER” key to temporarily save parameter value and to return to Main Screen.
- Press “ESC” key to return to Main Screen without saving parameter value.

<ROBOT PARAMETER>
 1: CONF 2: BODY
 3: MOTION 4: PROTECT
 5: SERVO 6: ORIGIN
 7: COORD

input : #

ESC

- Move to top menu.

<EDIT PARA>
 ROBOT TYPE
 *R1 AWDT1S026
 R2 NO-EXIT
 R3 NO-EXIT

ROBOT PUB EXIT

ESC

- Move to top menu.

<EDIT MENU>
 1. JOB 2. VAR
 3. PARA

input : #

ESC

- Move to EDIT menu to apply changed parameter value to data file for final saving.

■ Reference

- ① PARAMETER will be permanently saved not when ENTER is pressed, but when move to

EDIT menu.

Robostar

2.3.2 ROBOT PARAMETER

2.3.2.1 CONF (Configuration)

- Sets usage environment of the robot. The table below shows Detailed items.

■ Detailed items

GROUP	Detail	Setting value
1: RDIS	Selects whether to use the selected robot.	See description
2: XDIS	Selects whether to use each axis of the selected robot.	See description
3: INIT	Sets standard of mechanical part of the robot to the controller.	Set at the factory

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 1: CONF

Step 1.

ROBOT CONF move

<ROBOT PARAMETER>
 1: **CONF** 2: BODY
 3: MOTION 4: PROTECT
 5: SERVO 6: ORIGIN
 7: COORD

input : #



- 1: CONF Selection

ROBOT CONF Setting Screen Check

<ROBOT CONF>
 1: RDIS 2: XDIS
 3: INIT

item #

- Check ROBOT CONF Screen

RIDS (Robot Disable)

- Selects whether to use the selected robot.

Step 1.

RDIS Screen Move

(ROBOT CONF)
 1: **RDIS**
 3: INIT
 2: XDIS
 item #

(RDIS)
 ROBOT DISABLE
 MASK : ☐ OFF



- 1: RDIS Selection

- Check RDIS Setting Screen

■ How to set

- ① Description of setting value
 - ON: Not operates the current robot.
 - OFF: operates the current robot.

Step 1.

How to set RDIS

(RDIS)
 ROBOT DISABLE
 MASK : OFF

(RDIS)
 ROBOT DISABLE
 MASK : ON



- Press “ENTER” key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

XDIS (Axis Disable)

- Set whether to use selected each robot axis.

Step 1.

XDIS Screen Move

⟨ROBOT CONF⟩
1: RDIS **2: XDIS**
3: INIT

item #



- 2: XDIS Selection

⟨XDIS⟩
AXIS DISABLE
T : ☒ OFF Z : OFF
R1: OFF R2: OFF
X : OFF 6 : ON
R3: OFF R4: OFF

- Check RDIS Setting Screen.

Step 2.

When setting is unavailable

⟨ROBOT CONF⟩
1: RDIS 2: XDIS
3: INIT

cancel robot disable

- “Cancel robot disable” message will be displayed in Command Window.

⟨ROBOT CONF⟩
1: RDIS 2: XDIS
3: INIT

item #



- Press “ENTER” or “ESC” key to return to the previous screen, set RDIS value to OFF and conduct Step 1 again.

■ Cursor Position Move

- Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- Description of setting value
 - ON: Not operates the selected AXIS.
 - OFF: Operates the selected AXIS.

Step1.

How to set XDIS

```

<XDIS>
  AXIS DISABLE
T : OFF      Z : OFF
R1: OFF      R2: OFF
X : OFF      6 : ON
R3: OFF      R4: OFF
  
```

```

<XDIS>
  AXIS DISABLE
T : OFF      Z : OFF
R1: OFF      R2: OFF
X : OFF      6 : OFF
R3: OFF      R4: OFF
  
```

- Press “ENTER” key to set ON/OFF value.

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

■ Reference

- ① Coordinate value of the relevant axis of Disabled (ON) axis won't be displayed in Teach Pendant.
- ② Ex) When 6 axes are set to ON,

〈XDIS screen〉

```

<XDIS>
  AXIS DISABLE
T : OFF      Z : OFF
R1: OFF      R2: OFF
X : OFF      6 : ON
R3: OFF      R4: OFF
  
```

〈EDIT JNT screen〉

```

<EDIT PNT>   V: 5 BL
R2AWS1       CURR
T : 0         Z : 0
R1: 0         R2: 0
X : 0         6 : 0
R3: 0         R4: 0
  
```



INIT (Initialize)

- Sets standard of the mechanical part of the robot to the controller.

Step 1.

INIT Screen Move

<ROBOT CONF>
 1: RDIS 2: XDIS
3: INIT

item #



- 3: INIT Selection

Step 2.

PASSWORD input

<ROBOT CONF>
 1: RDIS 2: XDIS
 3: INIT

Password = ####



- Input Password.
- Press "ESC" key to cancel Password input.



CHANGE ROBOT MODEL

Do you want to change? (ENT/ESC)



- Press "ENTER" key to move to INIT screen.
- To cancel edit, press "ESC" key to move to top scree.

Step 3.

INIT Screen Check

<INIT-ROBOT TYPE>
1: TRANSFER
 2: SCARA

item #

- Check INIT Setting Screen.

※ Caution ※

- INIT is set to optimum value according to mechanical part of the robot at the factory before shipment.
- The value is set by final inspector of the factory. Hence, do not change it at user's discretion.
- If change of the setting value is desired, contact Customer Support Team of Robostar.

■ How to set

① Selecting ROBOT TYPE

Step 1.

ROBOT TYPE Selection

<INIT-ROBOT TYPE>
1: TRANSFER
 2: SCARA

item #

- Select the relevant robot type.

Step 2.

선택 cancel 시

<INIT-ROBOT TYPE>
1: TRANSFER
 2: SCARA

item #

ESC

- Press “ESC” key to return to Main Screen.

② Selecting ROBOT APPLICATION

- OLD SEL: Displays previously selected application type.
- 1. AF: Atmospheric FPD
- 2. AW: Atmospheric WAFER
- 3. VF: Vacuum FPD
- 4. VW: Vacuum WAFER
- 5. DEFAULT: Default value input

Step 1.

ROBOT APPLICATION Selection

<ROBOT APPLICATION >
 OLD SEL:NONE
1: AF **2: AW**
3: VF **4: VW**
5: DEFAULT

item #



~



- Check application type of selectable robot and input selected No to move to **ARM TYPE SELECT** Screen.

<ROBOT ARM TYPE>
 SEL:NONE
 1: AFS 2: AFD
 3: AF4 4: AF6

item #

- Check ARM TYPE SELECT Screen

Step 2.

Canceling selection

<ROBOT APPLICATION >
 SEL:NONE
 1: AF 2: AW
 3: VF 4: VW
 5: NO-EXIT

item #



- Press "ESC" key to return to Main Screen return

③ Selecting ROBOT ARM TYPE (In case of SCARA type, skip ARM TYPE Selection procedure)

- OLD SEL: Displays previously selected Arm type.
- 1. __S: One robot arm (Single). Two digits in the front displays Application Type selected previously.
- 2.__D: Two robot arms (Double)
- 3.__4: Four robot arms
- 4.__6: Xix robot arms

Step 1.

ROBOT ARM TYPE Selection

<ROBOT ARM TYPE>
 OLD SEL:NONE
 1: AFS 2: AFD
 3: AF4 4: AF6

item #



~



- Check selectable arm type of the robot and input selected No to move to FILE SELECT Screen.

<FILE SELECT>
 APP: AF A_TYPE:D
 * 0. AFDT1S049-020
 1. AFDT1S043-020-28

item #

- Check FILE SELECT Screen

Step 2.

When selection is cancelled

```

<ROBOT ARM TYPE>
SEL:NONE
1: AFS          2: AFD
3: AF4          4: AF6

```

item #

ESC

- Press “ESC” key to return to the previous screen (ROBOT APPLICATION SELECT Screen) return

④ file Selection

- Files relevant to application and arm type of the selected robot will be sorted and displayed in the screen.

Step 1.

Selecting and moving file

```

<FILE SELECT>
APP: AF      A_TYPE:D
* 0. AFDT1S049-020
- 1. AFDT1S043-020-28

```

item #



- Change * position using “Up/down direction key” to select file to be Initialized.
- In case there are many number of files, press “PAGE UP/DOWN” key to move page

Checking all file names

```

<FILE SELECT>
APP: AF      A_TYPE:D
* 0. AFDT1S049-020
1. AFDT1S043-020-28

```

item #



- press “Left/right direction key” to check all file names.

```

<FILE SELECT>
APP: AF      A_TYPE:D
* 0. DT1S049-020
1. DT1S043-020-281

```

item #

Final selection

<FILE SELECT>
 APP: AF A_TYPE:D
 0. AFDT1S049-020
 * 1. AFDT1S043-020-28

item #



- Move to desired file and press “ENTER” key to move to the next screen.

Step 2.

If there is setting change

APPLICATION: AF
 ARM_TYPE: D
 FILE: AFDT1S043-020-281

update? (ENT/ESC)



- All detail selected by a user and update message will be displayed
- Press “ENTER” key to move to **Setting update** screen.
- Press “ESC” key to cancel update and to return to Main Screen.

If there is no setting change

<ROBOT CONF>
 1: RDIS 2: XDIS
 3: INIT

item #

- In case of no change, move to Main Screen.

Step 3.

Cancelling selection

APPLICATION: AF
 ARM_TYPE: D
 FILE: AFDT1S043-020-281

update? (ENT/ESC)



- Press “ESC” key to return to the previous screen (ROBOT TYPE SELECT Screen).

<ROBOT ARM TYPE>
 SEL:D
 1: AFS 2: AFD
 3: AF4 4: AF6

item #

- Check ROBOT ARM TYPE SELECT Screen.
- Check robot arm type selected previously in SEL box.

⑤ Setting update

Step 1.

Setting update

INITIALIZE PARAMETER

Do you want to init
Para? [ENTER/ESC]

ENTER

- Press “ENTER” key to display message which asks whether to Initialize parameter value.

INITIALIZED!!
Reset Please!

ENTER

- Press “ENTER” key to complete update.

Press Any Key

Step 2.

Canceling update

INITIALIZE PARAMETER

Do you want to init
Para? [ENTER/ESC]

ESC

- Press “ESC” key to return to Main Screen without saving parameter value

 (ROBOT CONF)
 1: RDIS 2: XDIS
 3: INIT

item #

■ Reference

- ① Check nameplate on mechanical part and controller to set robot type/Series/specification.
- ② For location of robot nameplate, refer to [7.1 Location of robot nameplate](#) in Chapter 7 Attachment.

2.3.2.2 BODY

- Sets type of mechanical part of the robot. The table below shows Detailed items.

■ Detailed items

GROUP	Detail	Range	Setting value
1: JNT	Sets joint TYPE, reduction gear ratio, PITCH, direction of each mechanical part.	See description	
2: LENG	Sets Arm length of the robot.	See description	
3: TOOL	Sets Offset value of Work Tool mounted on Z-axis end of the mechanical part.	-1, 000~1, 000	
4: OFFS	Sets difference value between coordinate origin of the mechanical part and coordinate origin of the controller.	See description	
5: RANG	Sets S/W limit range.	-999, 999 ~ 999, 999	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 2: BODY

Step 1.

BODY Move

<ROBOT PARAMETER>
 1: CONF **2: BODY**
 3: MOTION ~~4: PROTECT~~
 5: SERVO 6: ORIGIN
 7: COORD

input : #



- 2: BODY Selection

Checking BODY Setting Screen

<BODY>
 1: JNT 2: LENG
 3: TOOL 4: OFFS
 5: RANG

item #

- Check BODY Screen

JNT (Joint)

- Sets details related to joint such as joint TYPE, reduction gear ratio, PITCH, direction setting of mechanical part. The table below shows Detailed items.

■ Detailed items

GROUP	Detail	Range	Setting value
1: TYPE	Sets joint type.	See description	
2: GEAR	Sets reduction gear ratio.	0.001 ~ 1, 000	
3: PTCH	Sets moving distance per 1 rotation of linear moving axis.	0.1 ~ 1, 000	
4: PULY1	Sets ratio of Pulley.	0.001 ~ 1, 000	
5: PULY2	Sets ratio of Pulley 2.	0.001 ~ 1, 000	
6: PULY3	Sets ratio of Pulley 3.	0.001 ~ 1, 000	
7: DISP	Sets direction.	See description	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 2: BODY → 1: JNT

Step 1.

JNT Screen Move

<BODY>
 1: JNT
 3: TOOL
 5: RANG
 2: LENG
 4: OFFS

item #



- 1: JNT Selection

<JNT>
 GROUP : JOINT
 1: TYPE
 3: PTCH
 5: PULY2
 7: DISP
 2: GEAR
 4: PULY1
 6: PULY3

item #

- Check JNT screen.

1) TYPE

- Sets joint type.

Step 1.

TYPE Screen Move

<JNT>
 GROUP : JOINT
 1: TYPE
 3: PTCH
 5: PULY2
 7: DISP

2: GEAR
 4: PULY1
 6: PULY3

item #



- 1: TYPE Selection

<JNT>
 GROUP : JOINT
 T : REV
 R1: LINK
 X : TRAN
 R3: LINK

Z : TRAN
 R2: LINK
 6 : LINK
 R4: LINK

- Check JNT Setting Screen.

Cursor Position Move

- Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

How to set

- Description of setting value
 - REV (Revolution Joint): used if joint type is rotating axis.
 - TRANS (Translation Joint): used if joint type is linear movement axis.
 - LINK: used if joint type is Link type.

Step 1.

How to set RDIS

<JNT>
 GROUP : JOINT
 T : REV
 R1: LINK
 X : TRAN
 R3: LINK

Z : TRAN
 R2: LINK
 6 : LINK
 R4: LINK



- Press “ENTER” key to select desired type. (change in the order of REV -> LINK -> TRAN -> REV)

<JNT>
 GROUP : JOINT
 T : REV
 R1: LINK
 X : TRAN
 R3: LINK

Z : TRAN
 R2: LINK
 6 : REV
 R4: LINK

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

Robostar

2) GEAR

- Sets reduction gear ratio.

Step 1.

GEAR Screen Move

<JNT>
 GROUP : JOINT
 1: TYPE 2: GEAR
 3: PTCH 4: PULY1
 5: PULY2 6: PULY3
 7: DISP

item #



- 2: GEAR Selection

<GEAR>
 GEAR RATIO
 T : 80 Z : 1
 R1: 50 R2: 50
 X : 1 6 : 1
 R3: 0 R4: 0

- Check GEAR Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Reduction gear ratio of motor and device (Excluding Pulley)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Input value marked on the robot nameplate for reduction gear ratio.
- ② For location of robot nameplate, refer to [7.1 Location of robot nameplate](#) detail in Chapter 7 Attachment.

3) PTCH (Pitch)

- Sets moving distance per 1 rotation of linear moving axis.

Step 1.

PTCH Screen Move

<JNT>
 GROUP : JOINT
 1: TYPE 2: GEAR
 3: PTCH 4: PULY1
 5: PULY2 6: PULY3
 7: DISP

item #



- 3: PTCH Selection

<PITCH>
 PITCH RATIO
 T : 1 Z : 10
 R1: 1 R2: 1
 X : 1 6 : 1
 R3: 1 R4: 1

- Check PTCH Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Moving distance per axis 1 rotation of device (mm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

4) PULY1 ~ 3 (Pulley 1~3)

- Sets ratio of Pulley 1 ~3.

Step 1.

PULY Screen Move

<JNT>
 GROUP : JOINT
 1: TYPE 2: GEAR
 3: PTCH 4: PULY1
 5: PULY2 6: PULY3
 7: DISP

item #



~



- 4: PULY1 Selection
- 5: PULY2 Selection
- 6: PULY3 Selection

<PULLEY1>
 PULLEY1 RATIO
 T : 1 Z : 1
 R1: 1 R2: 1
 X : 1 6 : 1
 R3: 1 R4: 1

- Check PULY Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Pulley1~3 ratio

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

5) DISP (Display Direction)

- Sets direction of the joint.

Step 1.

DISP Screen Move

<JNT>
 GROUP : JOINT
 1: TYPE 2: GEAR
 3: PTCH 4: PULY1
 5: PULY2 6: PULY3
7: DISP

item #



- 7: DISP Selection

<DISP>
 Display direction
 T : - Z : +
 R1: - R2: +
 X : + 6 : -
 R3: - R4: -

- Check DISP Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Description of setting value
 - -: Used to move from coordinate system to negative direction.
 - +: Used to move from coordinate system to positive direction.

Step1.

How to set DISP

<DISP>
 Display direction
 T : - Z : +
 R1: - R2: +
 X : + 6 : -
 R3: - R4: -



- Press “ENTER” key to set -/+ value.

<DISP>
 Display direction
 T : - Z : +
 R1: - R2: +
 X : + 6 : +
 R3: - R4: -

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

■ Reference

- ① Standard value is set at the factory.
- ② If any value besides standard value is set, Interpolation action, interpolation of W-axis won't be made in palletizing action.

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LENG (Length)

- Sets Arm length of the robot.

Step 1.

LENG Screen Move

<BODY>
 1: JNT
 3: TOOL
 5: RANG
 2: LENG
 4: OFFS

item #



- 2: LENG Selection

<LENG>
 ARM LENGTH (mm)
 A-ARM: 135
 B-ARM: 135

- Check LENG screen.

Step 2.

If setting is unavailable

<BODY>
 1: JNT
 3: TOOL
 5: RANG
 2: LENG
 4: OFFS

only use for SCARA!

- In case of Cartesian Robot, “only use for SCARA!” message will be displayed in Command Window.

<BODY>
 1: JNT
 3: TOOL
 5: RANG
 2: LENG
 4: OFFS

item #



- Press “ENTER” or “ESC” key to return to the previous screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Arm length of the robot (mm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Applied only for SCARA /TRANSFER robot.
- ② Arm length is calculated at final factory inspection using Jig. It is marked on the nameplate on the rear of the robot body. Hence, check it before inputting.
- ③ For location of robot nameplate, refer to [7.1 Location of robot nameplate](#) in Chapter 7 Attachment.

※ Caution ※

- Interpolation action (LMOV, AMOV, CMOV), palletizing action (PMOV) are not correctly performed while setting invalid Arm length. In other words, robot will move differently from actual teaching position coordinate.
- Be sure to check nameplate on the mechanical part and setting value of the controller during initial robot installation.

TOOL

- Sets Offset value of Work Tool installed on Z-axis end of the mechanical part.

Step 1.

TOOL Screen Move

<BODY>
 1: JNT 2: LENG
 3: **TOOL** 4: OFFS
 5: RANG

item #



- 3: TOOL Selection

< TOOL>
 TOOL OFFSET 0
 dX: 0
 dY: 0
 dZ: 0

T0 T1 T2 T3

- Check TOOL screen.

< TOOL>
 TOOL OFFSET 0
 dX: 0
 dY: 0
 dZ: 0

T0 T1 T2 T3



- select key that matches with Tool to be edited ([F1] ~ [F4])



< TOOL>
 TOOL OFFSET **0**
 dX: 0
 dY: 0
 dZ: 0

T0 T1 T2 T3

- Check the selected Tool value to check normal display of Selection Window.

Step 2.

In case of robot of which setting is unavailable

<BODY>
 1: JNT 2: LENG
 3: TOOL 4: OFFS
 5: RANG

no support !!!

- In case of robot which does not use TOOL, “no support!” message will be displayed in the screen.

<BODY>
 1: JNT 2: LENG
 3: TOOL 4: OFFS
 5: RANG

item #

ENTER

ESC

- Press “ENTER” or “ESC” key to return to the previous screen

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Work Tool position deviation (mm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① In Cartesian system of SCARA robot, calculate move deviation (Tool Offset) to each direction (X, Y, Z).
- ② In case of the followings, Tool Offset value must be edited.

※ Caution ※

- If Work Tool is mounted on End point of Z axis with deviation from Z-axis center line.
- If W-axis (4th axis, rotary motion axis) conducts Interpolation action (LMOV, AMOV), palletizing action (PMOV) with Tool end.

OFFS (Offset)

- Sets difference value between coordinate origin of the mechanical part and directly input coordinate origin of the controller or sets current position value as coordinate origin and saves current position (pulse) as difference value for calibration. The table below shows Detailed items.

■ Detailed items

GROUP	Detail	Range	Setting value
1: EDIT	Inputs and sets difference value between coordinate origin of the mechanical part and coordinate origin of the controller.	-1,000~1,000	
2: CALIB	Sets current position value as coordinate origin and saves current position (pulse) as difference value for calibration.	See description	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 2: BODY → 4: OFFS

Step 1.

OFFS Screen Move

<BODY>
 1: JNT
 3: TOOL
 5: RANG
 2: LENG
 4: **OFFS**

item #



- 4: OFFS Selection

<OFFS>
 OFFSET SETTING

EDIT CALIB

- Check OFFS screen.

1) EDIT (Offset Edit)

- Sets difference value between coordinate origin of the mechanical part and directly input coordinate origin of the controller.

Step 1.

Edit Screen Move

Diagram illustrating the Edit Screen Move interface. The screen displays the title bar with "<OFFS>" and "OFFSET SETTING". Below the title bar, there are two buttons: "EDIT" (highlighted in red) and "CALIB". The screen also displays the coordinate values: T : 0, Z : 0, R1: 0, R2: 0, X : 0, and 6 : 0.



- Press "F1" key to select EDIT

- Check OFFSET EDIT Setting Screen.

■ Cursor Position Move

- Refer to "Cursor Position Move and Page Change" in [2.5.1.3 Parameter Setting](#).

■ How to set

- Refer to "PARAMETER Value Change" in [2.5.1.3 Parameter Setting](#).
- Description of setting value
 - Difference value between coordinate origin of the mechanical part and coordinate origin of the controller

■ How to save and cancel

- Refer to "How to save and cancel parameter value" in [2.5.1.3 Parameter Setting](#).
- If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- Offset value is marked in the robot nameplate.
- For location of the robot nameplate, refer to [7.1 Location of robot nameplate](#) in Chapter 7 Attachment.
- In case of the followings, correction of Offset value is necessary.

※ Caution ※

- Point is not right because of change of mechanical position (distortion) due to collision.
- Position change occurred after replacing the motor.
- Interpolation action (AMOV, LMOV), palletizing action (PMOV) are not correct.

Robostar

2) CALIB (Offset Calibration)

- Sets current position value as coordinate origin and saves current position (pulse) as difference value for calibration.

Step 1.

CALIB Screen Move

<OFFS>
 OFFSET SETTING

EDIT **CALIB**

<OFFS>
 ZERO CALIBRATION 1/4
 T : 0 Z : 0
 R1 : 0 R2 : 0

T Z R1 R2



- Press "F2" key to select CALIB.

- Check OFFSET CALIB Setting Screen

■ Page Move

- Refer to "Cursor Position Move and Page Change" in [2.5.1.3 Parameter Setting](#).

■ How to set

- Description of setting value
 - Saves current position (pulse) value.

Step 1.

How to set CALIB

<OFFS>
 ZERO CALIBRATION 1/4
 T : 2.61 Z : -5.25
 R1 : 0 R2 : 10.47

T Z R1 R2
 X 6

<OFFS>
 ZERO CALIBRATION 1/4
 T : 2.61 Z : -5.25
 R1 : 0 R2 : 10.47

T Z R1 R2



~



- Move the robot to match arrow (▲▼) on the robot.

- Select key that matches with axis for calibration. ([F1] ~ [F4])

② Example to select T-axis

Step 1.

T-axis Selection

⟨OFFS⟩
 ZERO CALIBRATION 1/4
 T : 2.61 Z : -5.25
 R1: 0 R2: 10.47

T Z R1 R2



- Press “F1” key to select T axis.

Step 2.

Selecting whether to save

⟨OFFS⟩
 ZERO CALIBRATION 1/4
 T : 2.61 Z : -5.25
 R1: 0 R2: 10.47

save T? (ENT/ESC)



- Check Encoder type and whether to save.
- Press “ENTER” key to save
- Press “ESC” key to cancel saving.

If save is selected

⟨OFFS⟩
 ZERO CALIBRATION 1/4
 T : **0** Z : -5.25
 R1: 0 R2: 10.47

T Z R1 R2

- When setting is complete, value of the relevant axis changes to ‘0’ and returns to the previous screen.

If cancel is selected

⟨OFFS⟩
 ZERO CALIBRATION 1/4
 T : **2.61** Z : -5.25
 R1: 0 R2: 10.47

T Z R1 R2

- Returns to the previous screen without change

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

■ Reference

- ① If there is no arrow (▼▲) mark, straighten A, B Arm of Scara robot. In case of transfer robot, fold two Arms relevant to L, R axis in a line.

Robostar

3) How to judge if Offset value is correct

- Check if edited Offset value is correct in point teaching screen.

Step 1.

JOG Screen Move

<TEACH MENU>
 1. EDIT 2. RUN
 3. JOG 4. I/O
 5. ORIGIN 6. INFO

 0. SHUTDOWN input : #



- 3. JOG Selection

Step 2.

Robot Selection

<JOG>
 ROBOT TYPE
 *R1 AWDT1S026
 R2 NO-EXIT
 R3 NO-EXIT

 JOINT HOME



- Press “UP/DOWN” key to select robot of which parameter is to be edited.



- The selected robot can be checked by “*” mark in the front of the line.

<JOG>
 ROBOT TYPE
 *R1 AWDT1S026
 R2 NO-EXIT
 R3 NO-EXIT

 JOINT HOME



- Press “F1” key to select JOINT.

<EDIT JNT> V: 5 BL
 AWDT1S026 CURR
 T : 0 Z : 0
 R1 : 0 R2 : 0
 X : 0 6 : 0

 PGET MDI CORD EXIT

- Check if coordinate value of all axes is “0” in CURR screen.

RANG (Range)

- Sets S/W limit range.

Step 1.

RANG Screen Move

<BODY>
 1: JNT 2: LENG
 3: TOOL 4: OFFS
5: RANG

item #



- 5: RANG Selection

<RANGE>
 Software Limit Range
 T : 5 335
 Z : -5 405
 R1 : -260 260
 R2 : -260 260
 X : -5 1505
 6 : 0 0

- Check RANG screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Limit range value (rotating axis: degree, linear moving axis: mm)
 - Left: limit min value, right: limit max value

<RANGE>		
	Software	Limit Range
T	5	335
Z	-5	405
R1	-260	260
R2	-260	260
X	-5	1505
6	0	0

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

2.3.2.3 MOTION

- Sets robot operation related parameter. The table below shows Detailed items.

■ Detailed items

GROUP	Detail	Range	Setting value
1: ENC	Sets number of pulse per 1 rotation of the encoder.	10, 000~999, 999	131, 072
2: JONT	Sets Joint Motion related variable.	See description	
3: LINR	Sets Linear Motion related variable.	See description	
4: INIT_V	Sets Default Override velocity value.	5 ~ 100	
5: STOP_T	Sets Stop deceleration time.	10 ~ 1, 000	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 3: MOTION

Step 1.

MOTION Move

<ROBOT PARAMETER>
 1: CONF 2: BODY
 3: **MOTION** 4: PROTECT
 5: SERVO 6: ORIGIN
 7: COORD

input : #



- 3: MOTION Selection

Checking MOTION Setting Screen

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
 5: STOP_T

item #

- Check MOTION Screen

ENC (Encoder)

- Sets number of pulse per 1 rotation of the encoder.

Step 1.

ENC Screen Move

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
 5: STOP_T

item #



- 1: ENC Selection

<ENC>
 ENCODER (pulse/rev)
 T : 131072 Z : 131072
 R1: 131072 R2: 131072
 X : 131072 6 : 131072
 R3: 131072 R4: 131072

- Check ENC screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Number of pulse per 1 rotation of the encoder (pulse/rev)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Value marked on the robot nameplate must be input.
- ② For location of robot nameplate, refer to [7.1 Location of robot nameplate](#) in Chapter 7 Attachment.

※ Caution ※

- Setting value differs from motor type. Hence, be sure to check motor standard.

JONT (Joint)

- Sets Joint Motion related variable.

Step 1.

JONT Screen Move

⟨MOTION⟩
 1: ENC
 3: LINR
 5: STOP_T
 2: JONT
 4: INIT_V

item #



- 2: JONT Selection

⟨JONT⟩
 JOINT MOTION: T
 Mv : 225 At : 1
 Jv : 39.81 Ia : 0.1
 [RPM]-----
 Mv : 3000 Jv : 530.8
 T Z R1 R2

- Check JONT screen.

⟨JONT⟩
 JOINT MOTION: T
 Mv : 225 At : 1
 Jv : 39.81 Ia : 0.1
 [RPM]-----
 Mv : 3000 Jv : 530.8
 T Z R1 R2



- Select key that matches with axis to be edited. ([F1] ~ [F4])



⟨JONT⟩
 JOINT MOTION: T
 Mv : 225 At : 1
 Jv : 39.81 Ia : 0.1
 [RPM]-----
 Mv : 3000 Jv : 530.8
 T Z R1 R2

- Check axis name and value to check if Selection Window is correctly displayed.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

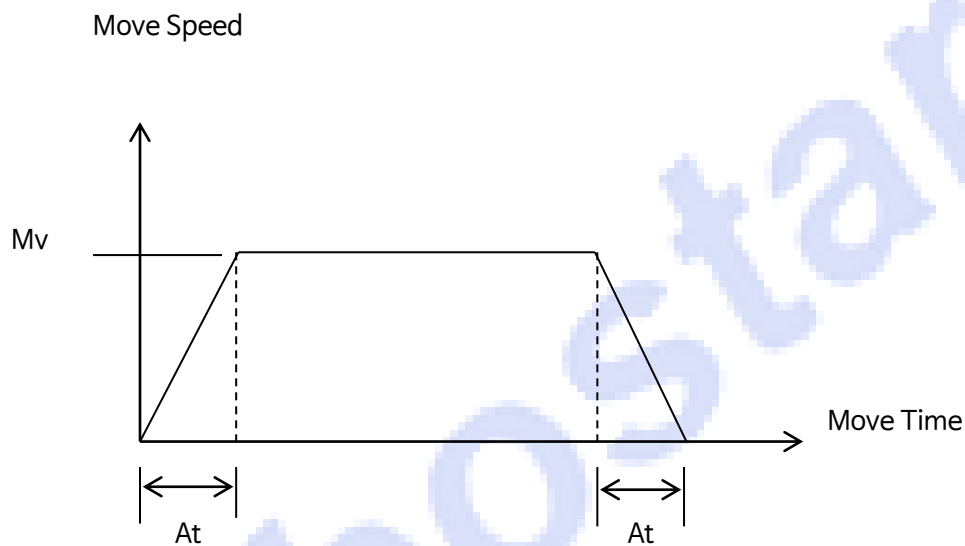
- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Mv: max velocity (rotating axis: degree/sec, linear moving axis: mm/s)
 - At: accel/deceleration time (sec)
 - Jv: max velocity (rotating axis: degree/sec, linear moving axis: mm/s) during Jog move
 - Ia: Inching Jog unit moving distance (rotating axis: degree, linear moving axis: mm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Detailed description



- 1) **Mv**: Max velocity of each axis when the robot moves in RUN MODE (rotating axis: degree/sec, linear moving axis: mm/s)
 - Sometimes the robot moves below setting value according to load factor, moving distance even when moving velocity is set to max velocity (VEL 100%) in work program.
 - In addition, if two axes of the robot move to one POINT at the same time, they must be synchronized each other. Hence, velocity of each axis can differ according to moving distance of each axis.
- 2) **At**: Accel/deceleration time of each axis (sec)
 - Applies to be same to acceleration time, deceleration time.
 - Accel/deceleration time can be longer than the setting time according to load factor and machine state.
 - Excessive accel/deceleration setting causes vibration and shaking of mechanical part and it can have influence over machine lifetime.
 - If possible, adjust accel/deceleration time in the range that does not give influence over payload and Cycle Time.
- 3) **Jv**: Robot moving velocity when the robot axis moves from Point teaching to Jog key on the

Teach Pendant. (rotating axis: degree/sec, linear moving axis: mm/s)

- Jog velocity is divided into 3 velocitys of low velocity (Teach Pendant display: L), middle velocity (M), high velocity (H).

4) **It:** Unit moving distance in Inching move (rotating axis: degree, linear moving axis: mm)

- Inching move is divided into 3 moves of min (Teach Pendant display: l), medium (m), max (h).

Robostar

LINR (Linear)

- Sets Linear Motion related variable.

Step 1.

LINR Screen Move

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
 5: STOP_T

item #



- 3: LINR Selection

<LINR>
 LINEAR MOTION
 Mv : 1000 At : 0.50
 Jv : 100 Ia : 10

- Check LINR Setting Screen.

Step 2.

If setting is unavailable

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
 5: STOP_T

no support!!!

- In case not a Scara robot, “no support!” message will be displayed in Command Window

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
 5: STOP_T

item #



- Press “ENTER” or “ESC” key to return to the previous screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Mv: Max interpolation move velocity (mm/s)
 - At: Interpolation move accel/deceleration time (sec)

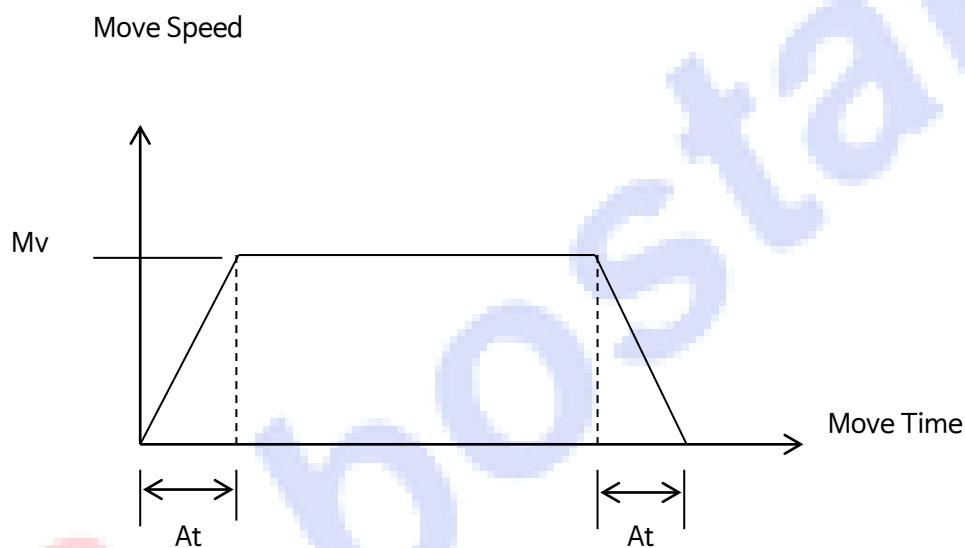
- Jv: Max interpolation move velocity in Jog move (mm/s)
- Ia: Inching Jog unit moving distance (mm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Detailed description



- 1) **Mv**: Max velocity when the robot interpolation moves in RUN MODE (mm/s)
 - Sometimes, the robot moves at below setting value according to load factor, moving distance even when moving velocity is set to max velocity (VEL 100%) in work program.
 - In addition, the robot sometimes fails to follow velocity set according to sudden trajectory change, load factor, motor GAIN in case of command FOS, FIX use, continuous interpolation move.
 - Operates the robot after adjusting moving velocity, load GAIN.
- 2) **At**: Composite axis accel/deceleration time (sec)
 - Applied to be same with acceleration time, deceleration time.
 - Accel/deceleration time can be longer than the setting time according to load factor and machine state.
 - Excessive accel/deceleration setting causes vibration and shaking of mechanical part and it can have influence over machine lifetime.
 - If possible, adjust accel/deceleration time in the range that does not give influence over

payload and Cycle Time.	
3)	Jv: Robot moving velocity (mm/s) for interpolation move using Jog key on the Teach Pendant at Point teaching. • Jog velocity is divided into three of low velocity (Teach Pendant display: L), middle velocity (M), high velocity (H). • In case of Scara robot, if JOG key is used after converting from POINT teaching into XY coordinate system and velocity is set to high velocity (H), the robot can move at above the expected velocity according to position. Hence, be cautious of it
4)	It: Unit moving distance (linear moving axis: mm) at the time of Inching move (interpolation move) • Inching move is divided into three of min (Teach Pendant display: l), medium (m), max (h).

INIT_V (Initial Velocity)

- Sets Default Override velocity value.

Step 1.**INIT_V Screen Move**

<MOTION>

1: ENC

2: JONT

3: LINR

4: INIT_V

5: STOP_T

item #



- 4: INIT_V Selection

<INIT VEL>

INIT VEL (%)

VEL : 100

- Check INIT_V screen.

■ **How to set**

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Default Override velocity value (%)

■ **How to save and cancel**

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ **Reference**

- ① Default Override velocity value will be applied to default value for velocity control function in RUN Screen at operation of “UP/DOWN” direction key.

STOP_T (Stop Time)

- Sets Stop deceleration time.

Step 1.**STOP_V Screen Move**

<MOTION>
 1: ENC 2: JONT
 3: LINR 4: INIT_V
5: STOP_T

item #



- 5: STOP_T Selection

<STOP TIME>
 STOP TIME (%)
 EMG Rate : 100
 MOV Rate : 100
 JOG Rate : 100

- Check STOP_T screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Default Override velocity value (%)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① 4. PARA → 3: MOTION → 2.JONT → Stop motion relevant to STOP key input will be performed base on setting value. However, to reduce stop time, change this setting value.
- ② Setting range is 10~100 (%). (100: use setting value as it is, 10: 10% of setting value)

2.3.2.4 PROTECT

- Sets protection system related parameter.

■ Detailed items

GROUP	Detail	Range	Setting value
1: OVS	Sets max allowable motor velocity of the mechanical part.	500~6,000	
2: OVA	Sets max allowable acceleration of mechanical part.	3,000~100,000	
3: IPA	Sets allowable target position error range.	1.0 ~ 10,000	
4: IPE	Sets max allowable error time until arrives at target position.	1.0 ~ 1,000	
5: IPO	Sets min maintenance time until arrives at target position.	1.0 ~ 1,000	
6: IRNG	Sets In Range or decides whether to use 'In Range alarm'.	See description	
7: URNG	Sets whether to use 'User In Range', range, output contact, Z-axis allowable range.	See description	
8: SENS	Sets whether to use each axis limit sensor (H/W Limit Sensor) and contact.	-1 ~ 64	

■ OPENING SEQUENCE

- Main Screen -> 1. Edit -> 3. PARA -> [F1] ROBOT -> 4: PROTECT

Step 1.

PROTECT move

(ROBOT PARAMETER)
 1: CONF 2: BODY
 3: MOTION 4: PROTECT
 5: SERVO 6: ORIGIN
 7: COORD

input : #



- 4: PROTECT Selection

Checking PROTECT Setting Screen

<PROTECT>

1: OVS

3: IPA

5: IPO

7: URNG

2: OVA

4: IPE

6: IRNG

8: SENS

item #

- Check PROTECT Screen

OVS (Over Velocity Error)

- Set max allowable motor velocity of the mechanical part.

Step 1.

OVS Screen Move

<PROTECT>

1: OVS	2: OVA
3: IPA	4: IPE
5: IPO	6: IRNG
7: URNG	8: SENS

item #

<OVS>

OVER	SPEED (rpm)
T : 4500	Z : 4500
R1: 4500	R2: 4500
X : 4500	6 : 4500
R3: 4500	R4: 4500



- 1: OVS Selection

- Check OVS screen

■ Cursor Position Move

- Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

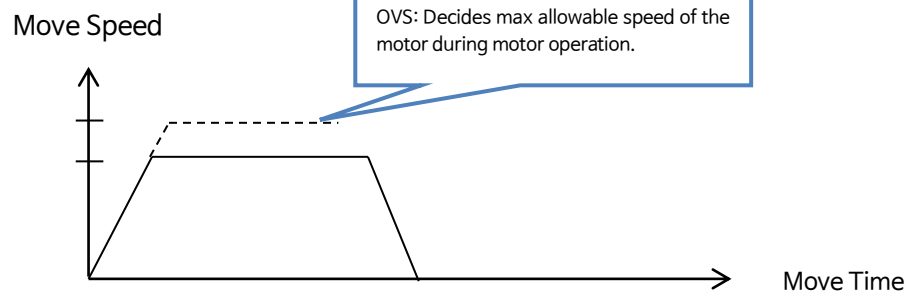
- Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- Description of setting value
 - max allowable velocity (rpm)

■ How to save and cancel

- Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- Example

**※ Caution ※**

- In case the followings are checked, control max allowable velocity to make smooth moving angle.
 - ① Error of the motor encoder
 - ② State of connecting cable of the mechanical part
 - ③ Rapid direction move will occur when the robot moves to the next position in continuous Interpolation action.

OVA (Over Acceleration Error)

- Sets max allowable acceleration of mechanical part.

Step 1.

OVA Screen Move

<PROTECT>

1: OVS

3: IPA

5: IPO

7: URNG

2: OVA

4: IPE

6: IRNG

8: SENS

item #



- 2: OVA Selection

<OVA>

OVER ACCEL (rev/s²)

T : 75000

R1: 75000

X : 75000

R3: 75000

Z : 75000

R2: 75000

6 : 75000

R4: 75000

- check OVA screen.

■ Cursor Position Move

- Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

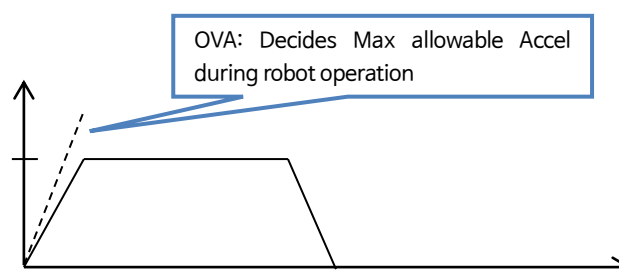
- Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- Description of setting value
 - Max allowable acceleration (rev/s²)

■ How to save and cancel

- Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- Example



※ Caution ※

- In case the followings are checked, control max allowable velocity to make smooth moving angle.
 - ① Error of the motor encoder.
 - ② State of connecting cable of the mechanical part.
 - ③ Rapid direction move will occur when the robot moves to the next position in continuous Interpolation action.

IPA (In Position Amount)

- Sets allowable target position error range.

Step 1.

IPA Screen Move

<PROTECT>
 1: OVS 2: OVA
 3: **IPA** 4: IPE
 5: IPO 6: IRNG
 7: URNG 8: SENS

item #



- 3: IPA Selection

<IPA>
 INPOS (1pulse)
 T : 333 Z : 1310
 R1: 386 R2: 386
 X : 655 6 : 200
 R3: 100 R4: 100

- Check IPA screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

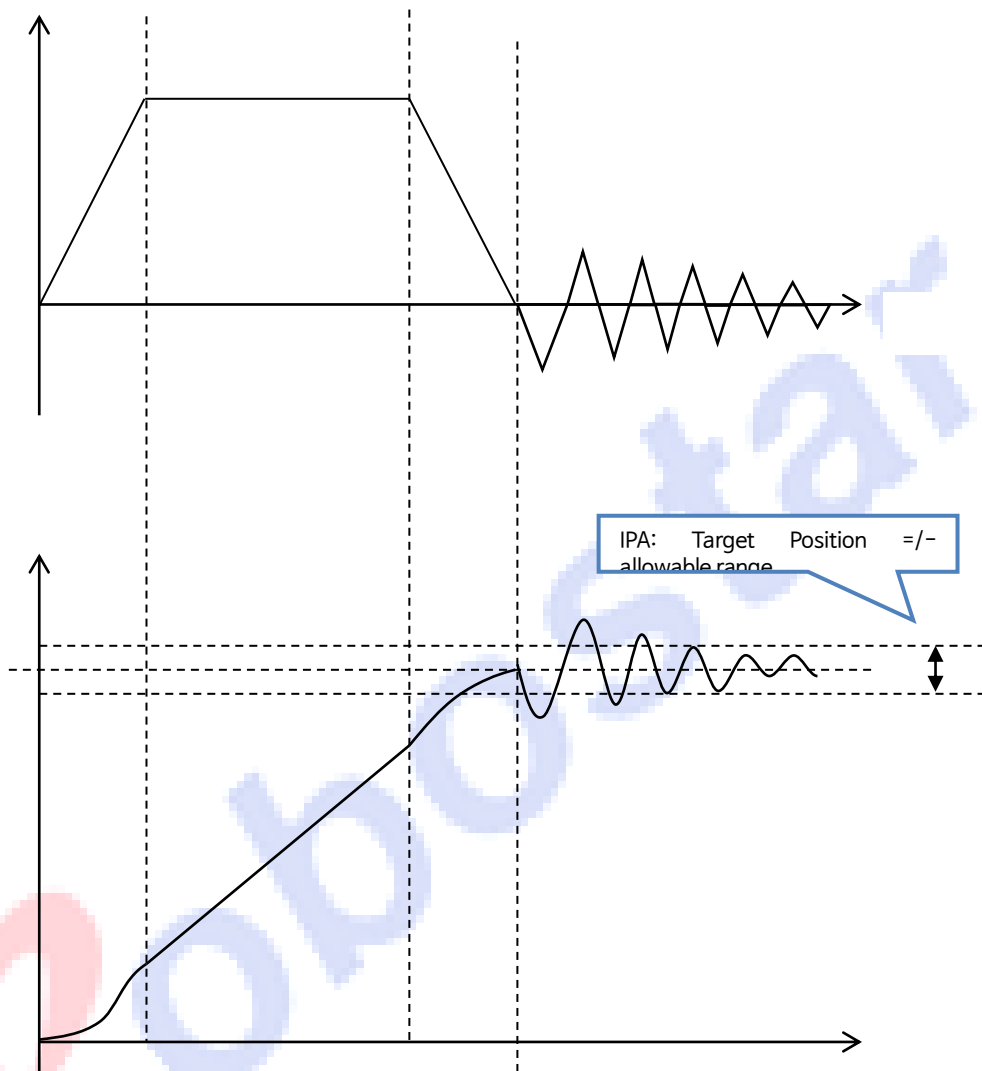
- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Allowable target position error range (pulse)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Example
 - 1) Set $\pm$ error allowable range to IPA value at target position.
 - 2) The figure below shows IPA Example in velocity-time, position-time graph.

**※ Caution ※**

- In Position Error occurs when the mechanical part shakes above IPE, IPA, and IPO allowable value. Check the following points.
 - ① Check if assembly state of the mechanical part is correct.
 - ② Check if load factor comes into within proper payload.

IPE (In Position Error), IPO (In Position On-time)

- Sets max allowable error time (IPE) until arrival to target position and sets min maintenance time (IPO) for judgment of arrival to target position.

Step 1.

IPE Screen Move

<PROTECT>
 1: OVS 2: OVA
 3: IPA **4: IPE**
 5: IPO 6: IRNG
 7: URNG 8: SENS

item #



- 4: IPE Selection

<IPE>
 INPOS ERROR (1ms)
 T : 200 Z : 200
 R1: 200 R2: 200
 X : 200 6 : 200
 R3: 200 R4: 200

- Check IPE screen.

Step 1.

IPO Screen Move

<PROTECT>
 1: OVS 2: OVA
 3: IPA 4: IPE
5: IPO 6: IRNG
 7: URNG 8: SENS

item #



- 5: IPO Selection

<IPE>
 INPOS ON Time (1ms)
 T : 2 Z : 2
 R1: 2 R2: 2
 X : 2 6 : 2
 R3: 2 R4: 2

- Check IPO screen.

■ Cursor Position Move

- Refer to "Cursor Position Move and Page Change" in [2.5.1.3 Parameter Setting](#).

■ How to set

- Refer to "PARAMETER Value Change" in [2.5.1.3 Parameter Setting](#).
- Description of setting value
 - IPE: Max allowable error time for arrival at target position (ms)

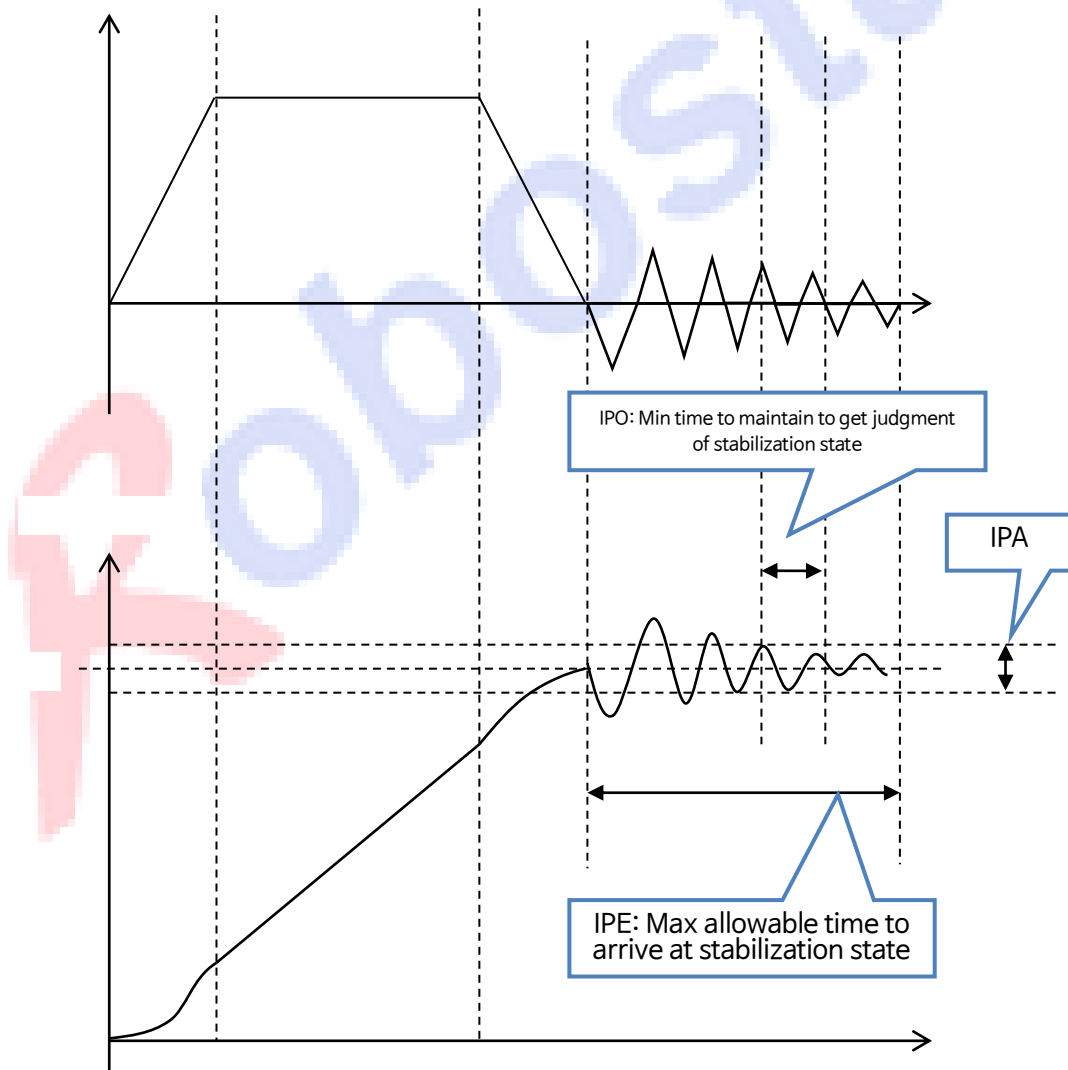
- IPO: Min maintenance time (ms) for judgment of arrival to target position

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Example
 - 1) IPE value sets max allowable time until arrives at stabilization state.
 - 2) IPO value sets min time for judgment of stabilization state.
 - 3) The figure below shows IPE, IPO Example in velocity-time, position-time graph.



※ Caution ※

- In Position Error occurs when the mechanical part shakes above IPE, IPA, and IPO allowable value. Check the following points.
 - ① Check if assembly state of the mechanical part is correct.
 - ② Check if load factor comes into within proper payload.

Robostar

IRNG (In Range)

- Sets In Range or decides whether to use In Range alarm.

■ Detailed items

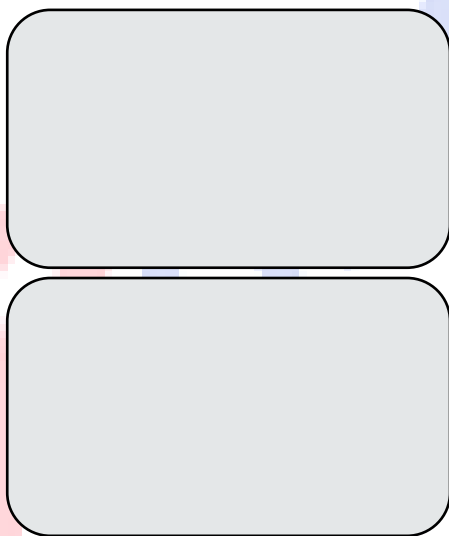
GROUP	Detail	Range	Setting value
1: IN RANGE	Sets In Range of each axis.	-999, 999 ~ 999, 999	
2: ALARM	Decides whether to use In Range alarm of each axis and velocity of axis, target axis.	See description	
3: JOG_SF	Sets whether to use function and velocity of axis, target axis.	See description	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 4: PROTECT → 6: IRNG

Step 1.

IRNG Screen Move



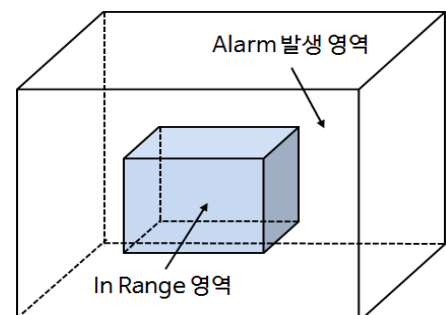
- 6: IRNG Selection

- Check IRNG screen.

■ What is “In Range area”?

- It means area which allows moving of mechanical part of the robot and it is edited in parameter Window. If mechanical part of the robot moves to area besides set in IN RANGE parameter, IN RANGE alarm will occur.

이미지 부분 번역; Alarm 발생 영역 => Alarm occurrence area, 영역 => area



Robostar

1) RANGE

- Sets In Range.

Step 1.

IN RANGE Screen Move

<IRNG>
 1. RANGE 2. ALARM
 3. JOG_SF

item #



- 1. RANGE Selection

<IRNG>
 IN RANGE

T : 0	0
Z : 0	0
R1 : 0	0
R2 : 0	0
X : 0	0
6 : 0	0

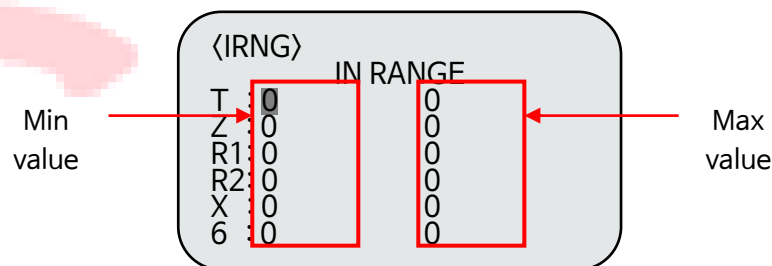
- Check IN RANGE Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Allowable range value (rotating axis: degree, linear moving axis: mm (In case of robot which can convert XY coordinate: mm))
 - Left: min value, right: max value



■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① In case of robot of which XY Coordinate can be converted, set Range to X, Y, Z value.
- ② I/O output is available only when all axes of the robot are within 'In Range' setting value range.

Robostar

2) ALARM

- Decides whether to use In Range alarm of each axis and sets velocity of axis, target axis.

■ Detailed items

GROUP		Detail	Remark
JOG_SF	AXIS	Decides whether to use In Range alarm of each axis.	
	VEL	Decides limit velocity of each axis within 'In Range'.	
	DIST	Decides limit moving distance of each axis within 'In Range'.	

■ function setting

- Main Screen -> 1. Edit -> 3. PARA -> [F1] ROBOT -> 4: PROTECT -> 6:IRNG -> 2: ALARM

Step 1.

ALARM Screen Move

<IRNG>
1. RANGE
3. JOG_SF

2. ALARM

item #



- 2. ALARM Selection

<INRAG-ALARM>
1. AXIS 2. VEL
3. DIST

item #

- Check ALARM Setting Screen.

■ Cursor Position Move

- ① Refer to "Cursor Position Move and Page Change" in [2.5.1.3 Parameter Setting](#).

- (1) AXIS
- Description of setting value
 - ON: Operates current In Range alarm.
 - OFF: Not operates current In Range alarm.

Step 1.**How to set ALARM**

<ALM>	
IN	RANGE ALARM
T :	ON
R1:	OFF
X :	OFF
R3:	OFF

<ALM>	
IN	RANGE ALARM
T :	OFF
R1:	OFF
X :	OFF
R3:	OFF

ENTER

- Press “ENTER” key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

- (2) VEL (Velocity)
- Decides limit velocity of each axis within In Range.

Step 1.

ALARM Screen Move

<IRNG>
1. RANGE 2. ALARM
3. VEL 4. DIST

item #



- 3. VEL Selection

<IN RANGE VEL>
VELOCITY (rpm)
T : 1 T : 1
R1: 1 R2: 1
X : 1 6 : 1
R3: 1 R4: 1

- Check VELOCITY Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Limit velocity value (rpm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

- (3) DIST (Distance)
- Decides limit moving distance of each axis within In Range.

Step 1.

ALARM Screen Move

<IRNG>
 1. RANGE 2. ALARM
 3. VEL 4. DIST

item #



- 4. DIST Selection

<IN RANGE DIST>
 DISTANCE(mm)
 T : 0.10 T : 1
 R1: 1 R2: 1
 X : 1 6 : 1
 R3: 1 R4: 1

- Check DISTANCE Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
- Limit moving distance value (mm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

3) JOG_SF setting

- Sets whether to use function and velocity of axis, target axis.
- The function is applied only when JOG function is used. Check Hand position information. If Hand moves more than certain distance, change it to automatically set target axis at very slow velocity to prevent Hand damage due to move of T/X axis.
- For information of Hand distance, refer to IN RANGE (PROTECT-IRNG) value.

■ Detailed items

GROUP		Detail	Remark
JOG_SF	ENABLE	Sets whether to use Jog Special Function.	
	AXIS	Sets target or Hand axis to which applies Jog Special Function.	
	VEL	Limits velocity of target axis.	

■ Function setting

- Main Screen -> 1. Edit -> 3. PARA -> [F1] ROBOT -> 4: PROTECT -> 6:IRNG -> 3: JOG_SF

Step 1.

JOG_SF Screen Move

<IRNG>
1. RANGE 2. ALARM
3. JOG_SF

item #



- 3. JOG_SF Selection

<JOG SPECIAL FUNC>
1.ENABLE 2.AXIS
3. VEL

item #

- Check JOG_SF Setting Screen.

(1) ENABLE

Step 1.

ENABLE Screen Move

⟨JOG SPECIAL FUNC⟩
1.ENABLE 2.AXIS
 3. VEL

item #



- 1: ENABLE Selection

ENABLE 설정

⟨ENABLE⟩
 VELOCITY LIMIT
 ENABLE: ON



- Press “ENTER” key to convert ON/OFF.
- (ON -> OFF, OFF -> ON)

(2) AXIS

- HAND axis: Sets HAND axis to check position information (Example: R1, R2 axis)
- TARGET axis: Sets axis to limit velocity when HAND axis exceeds limit distance (Example: T, X axis)

Step 1.

AXIS Screen Move

⟨JOG SPECIAL FUNC⟩
 1.ENABLE 2.AXIS
 3. VEL

item #



- 2: AXIS Selection

AXIS Setting

<AXIS>
 SET AXIS
 T1: ~~TARGET~~ Z : NONE
 R1: ~~HAND~~ R2: ~~HAND~~
 X1: ~~TARGET~~ 6 : NONE
 R3: NONE R4: NONE



- Press “ENTER” key to change axis in the order of NONE, TARGET, HAND.
- (NONE-)TARGET-)HAND-)NONE)

(3) VEL

- If HAND axis exceeds limit range, velocity of TARGET axis will be limited at the value set in the following screen.
- (% value of JOG velocity)

Step 1.

VEL Screen Move

<JOG SPECIAL FUNC>
 1.ENABLE 2.AXIS
3. VEL

item #

- 3: VEL Selection

VEL setting

<TARGET MOVING VEL>
 VELOCITY (%)
 T1: 1 Z : 0
 R1: 0 R2: 0
 X1: 1 6 : 0
 R3: 0 R4: 0



~



- Input velocity of TARGET axis
(Default value: 1%)

URNG (Use In Range)

- Sets whether to use 'user In Range', range, output contact, Z-axis allowable range.
- Use Range 1~20 can be saved and used.

■ Detailed items

GROUP	Detail	Range	Setting value
1: DISABLE	Sets whether to use 'Use In Range'.	See description	
2: RANG	Sets Use In Range.	-999, 999 ~ 999, 999	
4: OUT	Selects I/O Output Contact.	0 ~ 320	
4: ZDTA	Sets user Z-axis move unit value.	-1.0 ~ 1, 000	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 4: PROTECT → 7: URNG

Step 1.

URNG Screen Move

<PROTECT>
 1: OVS 2: OVA
 3: IPA 4: IPE
 5: IPO 6: IRNG
7: URNG 8: SENS

item #



- 7: URNG Selection

<URNG (1/2)>
 1: URNG1 2: URNG2
 3: URNG1 4: URNG1
 5: URNG1 6: URNG1
 7: URNG1 8: URNG1
 9: URNG1 A: URNG1

item #

- Check URNG screen.

Step 2.

Selecting edit area

<URNG (1/2)>
 1: URNG1 2: URNG2
 3: URNG1 4: URNG1
 5: URNG1 6: URNG1
 7: URNG1 8: URNG1
 9: URNG1 A: URNG1

item #



- Use "PAGE UP/DOWN" key for screen conversion.

<URNG (1/2)>

1: URNG1 2: URNG2
3: URNG1 4: URNG1
5: URNG1 6: URNG1
7: URNG1 8: URNG1
9: URNG1 A: URNG1

item #



~



- Select desired edit area.



Step 3.

Screen Check (URNG1 Example)

<URNG1>
USER RANGE1
ENABLE : ☐ OFF

- Check DISABLE state screen.

<URNG1>
USER RANGE1
ENABLE : ☒ ON

- Check ENABLE state screen.

RANG OUT ZDTA

1) ENABLE

- Set whether to use 'Use In Range'.

Step 1.

ENABLE Screen Check (URNG1

Example)

<URNG1>
USER RANGE1
ENABLE : OFF

- Check DISABLE state screen.

<URNG1>
USER RANGE1
ENABLE : ON

- Check ENABLE state screen.

RANG OUT ZDTA

■ How to set

- ① Description of setting value
 - ON: Uses 'Use In Range (#)'.
 - OFF: not uses 'Use In Range (#)'.

Step 1.

How to set ENABLE (URNG1

Example)

<URNG1>
USER RANGE1
ENABLE : OFF

ENTER

- Press "ENTER" key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

<URNG1>
USER RANGE1
ENABLE : ON

RANG OUT ZDTA

■ How to save and cancel

- ① Refer to "How to save and cancel parameter value" in [2.5.1.3 Parameter Setting](#).

2) RANG (Range)

- Sets Use In Range.

Step 1.

RANG Screen Move (URNG1

Example)

<URNG1>
USER RANGE1
ENABLE: ☒

RANG OUT ZDTA



- Press "F1" key to move to RANG screen.

<URNG1>
USER RANGE 1
T : 0 0
Z : 0 0
R1: 0 0
R2: 0 0
X : 0 0
6 : 0 0

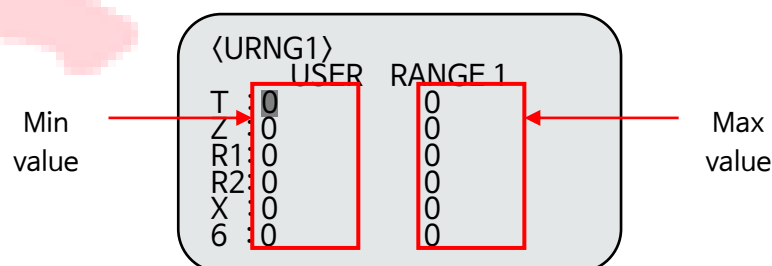
- Check RANG screen.

Cursor Position Move

- Refer to "Cursor Position Move and Page Change" in [2.5.1.3 Parameter Setting](#).

How to set

- Refer to "PARAMETER Value Change" in [2.5.1.3 Parameter Setting](#).
- Description of setting value
 - Allowable range value (rotating axis: degree, linear moving axis: mm (In case of robot of which XY coordinate can be converted, it is mm))
 - Left: min value, right: max value



How to save and cancel

- Refer to "How to save and cancel parameter value" in [2.5.1.3 Parameter Setting](#).
- If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① In case of robot of which XY coordinate can be converted, set Range with X, Y, Z value.
- ② I/O output is available only when all axes of the robot are within 'Use In Range' setting value range. (?)
- ③ If robot exists in 'In Range' even when the robot exceeds 'Use In Range', [**Error Code: 1439 "IN RANGE Error"**] alarm won't occur.

3) OUT

- Selects I/O Output Contact.

Step 1.

OUT Screen Move (URNG1 Example)

〈URNG1〉
USER RANGE1
ENABLE: ☒ ON

RANG **OUT** ZDTA

〈URNG1〉
INDEX: 0 OUTPUT



- Press “F2” key to move to OUT screen.

- check OUT screen.

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - DIO No defined by a user (-1~127)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Input ‘Use IO Output No’ to display Use In Range IN/OUT status.

4) ZDTA (Z Delta Range)

- Sets user Z-axis movement unit value.

Step 1.

ZDTA Screen Move (URNG1

Example)

⟨URNG1⟩
USER RANGE1
ENABLE : ☒ ON

RANG OUT **ZDTA**

⟨URNG1⟩
Z DELTA (mm)
DELTA:



- Press “F3” key to move to ZDTA screen.

- Check ZDTA screen.

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Z-axis move unit value (mm)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

■ Reference

- ① Input distance value can be moved for 1 time of move of Z-axis.
- ② Set distance can be move for 1 time of move to limit move amount during continuous move in JOG & AUTO OPERATION.
- ③ If Z-axis moving distance is longer than the setting value even when the robot exists in ‘Use In Range’, [Error Code: 1439 “IN RANGE Error”] alarm will occur.

SENS (H/W Limit Sensor)

- Sets whether to use each axis limit sensor (H/W Limit Sensor) and contact.

Step 1.**SENS Screen Move**

<PROTECT>
 1: OVS 2: OVA
 3: IPA 4: IPE
 5: IPO 6: IRNG
 7: URNG **8: SENS**

item #



- 8: SENS Selection

<SENS>
 HW Limit Sensor num
 T +: 1 -: 0
 Z +: 0 -: 0
 R1 +: 0 -: 0
 R2 +: 0 -: 0
 X +: 0 -: 0
 6 +: 0 -: 0

- Check SENS screen.

■ **Cursor Position Move**

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ **How to set**

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - If the limit sensor is not used: -1
 - If limit sensor is used: limit sensor DIO No of each axis (0~64)

■ **How to save and cancel**

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

2.3.2.5 SERVO

- Sets Servo motor and driver related parameter.

■ Detailed items

GROUP	Detail	Range	Setting value
1: ID	Sets driver ID.	See description	
2: M-TURN	Initializes MULTI-TURN DATA of motor encoder.	See description	
3: DRIVER	Sets driver related parameter. (Only for EtherCAT communication type)	See description	
4: BOARD	Sets controller board related parameter. (Only for RS422 communication type)	See description	
5: DELAY	Sets Quick stop Servo OFF delay. (Only for EtherCAT communication type)	10~9999	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 5: SERVO

Step 1.

SERVO move

<ROBOT PARAMETER>
 1: CONF 2: BODY
 3: MOTION 4: PROTECT
 5: SERVO 6: ORIGIN
 7: COORD

input : #



- 5: SERVO Selection

Checking SERVO Setting Screen

<SERVO>
 1. ID 2. M-TURN
 3. DRIVER 4. BOARD
 5. DELAY

item #

- Check SERVO Screen

ID (Driver ID)

- Sets driver ID.

Step 1.

ID Screen Move

<SERVO>
 1. ID 2. M-TURN
 3. DRIVER 4. BOARD
 5. DELAY

item #



- 1: ID Selection

<DRIVER ID>
 Driver ID Setting
 T : 0 Z : 1
 R1 : 2 R2 : 3
 X : 4 6 : 5
 R3 : 6 R4 : 7

- Check ID screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - If used: 0
 - If not used: Driver ID value (1~16)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.
- ③ If same ID is delicately input while setting ID, “**Already Used!**” message will be displayed in Command Window. Reset it avoiding overlapping.

Step 1.

In case of overlap input of same ID

<DRIVER ID>
 Driver ID Setting
 T : 0 Z : 1
 R1 : 2 R2 : 0
 X : 4 6 : 5
 R3 : 6 R4 : 7

Already Used!

- If same ID is input and saved while setting ID, “**Already Used!**” message will be displayed in Command Window

<SERVO>
1. ID 2. M-TURN
3. DRIVER 4. BOARD
5. DELAY

item #

ENTER

ESC

- Press “ENTER” key or “ESC” key to return, reset to the previous screen.

■ Reference

- ① Restarts the driver after resetting driver ID.

M-TURN (Multi-turn Clear)

- Initializes MULTI-TURN DATA of the motor encoder.

Step 1. MULTI-TURN CLEAR Screen Move

(SERVO)
 1. ID
 3. DRIVER
 5. DELAY
 2. **M-TURN**
 4. BOARD

item #

MULTI TURN CLEAR 1/4

T Z R1 R2



- 2: MULTI-TURN CLEAR Selection

- Check MULTI-TURN CLEAR screen

■ How to set

- Select function key (F1 ~F4) matches with a desired axis to Initialize Multi-turn data.

Step 1. MULTI-TURN CLEAR setting

MULTI TURN CLEAR 1/4

T Z R1 R2

MULTI TURN CLEAR **2/4**

X 6 R3 R4



- Press "PAGE UP/DOWN" key to move to the screen where axis to Initialize Multi-turn Data exists.



- Press and select function key (F1~F4) which corresponding to screen where a desired axis exists.

- Example of selecting Q1 axis

Step 1. Selecting Q1 axis

MULTI TURN CLEAR 3/4

Q1 V1 Q2 V2

Selecting Initialize or not

MULTI TURN CLEAR

Q1 Clear? (ENT/ESC)

MULTI TURN CLEAR 3/4

Q1 V1 Q2 V2

F1

- Press “F1” key to select Q1 axis

ENTER

ESC

- Press “ESC” key to return to the previous screen after cancelling Multi-turn Clear.
- Press “ENTER” key to Initialize Multi-turn data value of the relevant axis encoder.

- Check Return Screen

DRIVER (Driver Parameter) (EtherCAT communication type Only)

- Sets driver related parameter. ()

Step 1.

DRIVER PARAMETER Screen Move

<SERVO>
1. ID 2. M-TURN
3. DRIVER 4. BOARD
5. DELAY

item #



- 3: DRIVER Selection

<AXIS>
Select axis
1: T 2: Z
3: R1 4: R2
5: X 6: 6

input: #

- Check DRIVER PARAMETER screen.

Step 2.

edit axis Selection

<AXIS>
Select axis
1: T 2: Z
3: R1 4: R2
5: X 6: 6

input: #



- Press "PAGE UP/DOWN" key to move to the screen where axis desired to be edited exists.

<AXIS>
Select axis
1: T 2: Z
3: R1 4: R2
5: X 6: 6

input: #



~



- input number corresponding to axis.

Checking initial Screen of selection axis (T-axis Example)

<T-ax [3000:00]> 000
For manufacturer's use

Range: 0-0
Value: 0

JUMP EXIT

- Check main screen of T-axis.

Step 3.

If setting is unavailable

<AXIS>
Select axis
1: T 2: Z
3: R1 4: R2
5: X 6: 6

axis is disable

<AXIS>
Select axis
1: T 2: Z
3: R1 4: R2
5: X 6: 6

input: #



- 1) If axis is unusable (disable state) or
- 2) If ID of the Driver is not set, “axis is disable” message will be displayed in Command Window

- Press “ESC” key or “ENTER” key to return to the previous screen
- Check the situation and take measures.

■ Page Move

- ① Press “PAGE UP/DOWN” key to move or select JUMP (“F3” key) to move to desired Page.
- ② How to use JUMP

Step 1.

How to use JUMP

<T-ax [3000:00]> 000
For manufacturer's use
Range: 0-0
Value: 0

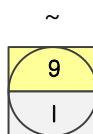
EXIT

<T-ax [3000:00]> 000
For manufacturer's use
Range: 0-0
Value: 0

para # = ■

<T-ax [3000:00]> 000
For manufacturer's use
Range: 0-0
Value: 0

para # = ■



- Press JUMP key on the T/P to activate the screen.

- Check if Command Window is updated and activated to input value.

- Input page number desired to be moved and check update screen.

Step 2.

In case of input error

<T-ax [3000:00]> 000
For manufacturer's use

Range: 0-0
Value: 0

out of bound

- “out of bound” message will be displayed in Command Window

<T-ax [3000:00]> 000
For manufacturer's use

Range: 0-0
Value: 0

para # = ■

ENTER

- Press “ESC” key or “ENTER” key to return to the previous screen

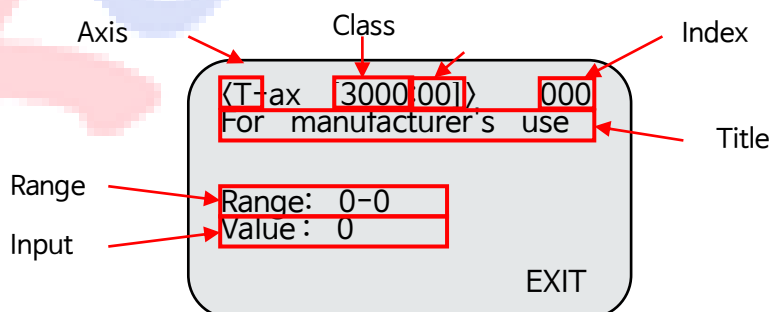
ESC

- Re-input

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Refer to Chapter 9 ‘List of parameters (157 ~ 171pp.)’ in Technical Manual for MINAS-A5B Series of Panasonic.
(No. SX-DSV02472, EtherCAT Communication Specifications)
- ③ Inputting setting value
 - Input value relevant to Range in Teach Pendant screen. However, in case of item with 0-0 of Range, it means that there is no input range and it can't be saved.
 - Matching of screen on the Teach Pendant with the List in Chapter 9 in Technical Manual for MINAS-A5B Series of Panasonic.

<Teach Pendant screen - T-axis Example>



<List Table>

Class	No.	Title	Unit	Range	Size [byte]	Function / Contents
0	00	For manufacturer's use	—	—	2	Permanently set at 1.
						Select the control mode of the servo driver. 0: semi-closed control (position/velocity/torque control, selectable) 1-5: To be used by the manufacturer but not

④ Exemptions or errors

- If exemptions or errors occur and if the message below is displayed in Command Window, press “ENTER” key or “ESC” key to return to the previous screen and retry.

Case 1.

If failed Parameter Read

```

<T-ax [3000:00]> 000
Number of output
pulses per motor
revolution
Range:
Value: Comm Error!
JUMP EXIT

```

- Range and Value won't be displayed. Instead, “Comm Error!” message will be displayed in the screen.

Case2.

Data Load Wait during screen move

```

<T-ax [3000:00]> 000
Number of output
pulses per motor
revolution
Range: 1-262144
Value: 2500
plz wait for a while

```

- If it takes time to load driver data for Page Move or JUMP 시, check “plz wait for a while” message in Command Window.

Case 3.

If value exceeding range is input

```

<T-ax [3000:00]> 000
Number of output
pulses per motor
revolution
Range: 1-262144
Value: 999999
wrong data!!

```

- If value exceeding range (Range value) is input, “invalid data!!” message will be displayed in Command Window.

■ How to save and end

① How to save (SAVE)

Step 1.

SAVE SELECT

<T-ax [3000:00]> 000
 Number of output
 pulses per motor
 revolution
 Range: 1-262144
 Value: 2500

SAVE JUMP EXIT



- Press “F1” key to proceed with SAVE.

Checking save wait message

<T-ax [3000:00]> 000
 Number of output
 pulses per motor
 revolution
 Range: 1-262144
 Value: 2500

plz wait for a while

Completing save (reboot request)

<T-ax [3000:00]> 000
 Number of output
 pulses per motor
 revolution
 Range: 1-262144
 Value: 2500

Save OK. plz reboot!



- If saving is complete without error, “plz wait for a while” message will be displayed.
- If progress is fast, sometimes eye check is unavailable

Completing save (reboot  request)

<T-ax [3000:00]> 000
 Number of output
 pulses per motor
 revolution
 Range: 1-262144
 Value: 2500

Save OK!!



- After completing save, press “ESC” or “ENTER key to return to the previous screen.

Step 2.

If save fails

<T-ax [3000:00]> 000
 Number of output
 pulses per motor
 revolution
 Range: 1-262144
 Value: 2500

Save Error!!

- If saving failed due to system error, “Save Error!!” message will be displayed in Command Window.

② How to end (EXIT)

- Press “ESC” key or select EXIT to move to move Main Screen.

Step 1.

Ending (ESC)

<T-ax [3000:00]> 000
 Number of output
 pulses per motor
 revolution
 Range: 1-262144
 Value: 2500

SAVE JUMP EXIT



- Press "ESC" key to end it.

Ending (EXIT Selection)

<T-ax [3000:00]> 000
 Number of output
 pulses per motor
 revolution
 Range: 1-262144
 Value: 2500

SAVE JUMP EXIT



- Press "F4" key to proceed with EXIT.

Main Screen return

<AXIS>
 Select axis
 1: T 2: Z
 3: R1 4: R2
 5: X 6: 6

input: #

- Check Main Screen.

■ Reference

- ① If re-booting request message is checked, be sure to restart the driver.

BOARD (Board Parameter) (RS422 communication type Only)

- Sets controller board related parameter.

■ Detailed items

GROUP	Detail	Range	Setting value
1: WATT	Sets motor capacity.		
2: OND	Sets Brake ON delay.		
3: OFD	Sets Brake OFF delay.		
4: SENS	Sets each axis limit sensor direction.		
5: GAIN	Sets each axis Gain value.		
6: TQR	Sets Torque Limit.		
7: HWL	Sets whether to use Limit sensor.		

■ OPENING SEQUENCE

- Main Screen -> 1. Edit -> 3. PARA -> [F1] ROBOT -> 5: SERVO-> 4: BOARD

Step 1.

BOARD PARAMETER Screen Move

<SERVO>
 1. ID 2. M-TURN
 3. DRIVER **4. BOARD**
 5. DELAY



- 4: BOARD Selection

<MOTOR>
 1: WATT 2: OND
 3: OFD 4: SESN
 5: GAIN 6: TQR
 7. HWL

input: #

- Check MOTOR PARAMETER screen.

1) WATT

- Sets motor capacity.

Step 1.

Motor watt Screen Move

<MOTOR>

1: WATT

3: OFD

5: GAIN

7: HWL

2: OND

4: SESN

6: TQR

item #



- 1. WATT Selection

<MOTOR>

Motor [Watt]

1 : 103

3 : 103

5 : 103

2 : 103

4 : 103

6 : 103

- check Motor Watt Setting Screen.

Cursor Position Move

- Refer to "Cursor Position Move and Page Change" in [2.5.1.3 Parameter Setting](#).

How to set

- Refer to "PARAMETER Value Change" in [2.5.1.3 Parameter Setting](#).

- Description of setting value

- Refer to 'ENC TYPE in nameplate detail.

ABS: Absolute Type Encoder

INC: Incremental Type Encoder

- PANASONIC MINAS MOTOR A4 SERIES

Model	Watt	Setting value	ENCODER PULSE	BRAKE	ENC TYPE
MSMD5AZS1S	50W	53	131072	without	ABSOLUTE 17BIT
MSMD5AZS1T	50W	53	131072	with	
MSMD012S1S	100W	103	131072	without	
MSMD012S1T	100W	103	131072	with	
MSMD022S1S	200W	203	131072	without	
MSMD022S1T	200W	203	131072	with	
MSMD042S1S	400W	403	131072	without	
MSMD042S1T	400W	403	131072	with	

MSMD082S1S	750W	803	131072	without	
MSMD082S1T	750W	803	131072	with	
MSMA102S1G	1000W	1003	131072	without	
MSMA102S1H	1000W	1003	131072	with	
MSMD012P1S	100W	101	10000	without	INCREMENTAL 2500 PULSE
MSMD012P1T	100W	101	10000	with	
MSMD022P1S	200W	201	10000	without	
MSMD022P1T	200W	201	10000	with	
MSMD042P1S	400W	401	10000	without	
MSMD042P1T	400W	401	10000	with	
MSMD082P1T	750W	801	10000	without	
MSMD082P1T	750W	801	10000	with	

• SEWOO INDUSTRIAL SYSTEM

Model	Watt	Setting value	ENCODER PULSE	DIGITAL ENCODER	ENC TYPE
PS20C	400W	402	96000	HEIDENHAIN 1um	LINEAR
PM40C	750W	702	240000	HEIDENHAIN 1um	
TM20C	750W	802	120000	HEIDENHAIN 1um	

• Additional detail of SWL-PL30C motor ID

Model	Motor ID	
	1um	20um
	setting value	setting value
SWL-PM10C	402	422
SWL-PM20C	502	522
SWL-PM30C	602	622
SWL-PM40C	702	722
SWL-PL10C	902	922
SWL-PL20C	1002	1022

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

Robostar

2) OND (ON delay)

- Sets Brake ON delay.

Step 1.

ON Delay Screen Move

<MOTOR>
 1: WATT
 3: OFD
 5: GAIN
 7: HWL
 2: **OND**
 4: SESN
 6: TQR

item #



- 2. OND Selection

<OND>
 BK ON DELAY(msec)
 1 : 15
 3 : 15
 5 : 15
 2 : 200
 4 : 15
 6 : 15

- Check Brake ON delay Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Sets time difference of Brake ON signal output time and Servo OFF output time
 - Brake ON/OFF time delay unit: msec
 - In case of occurrence of Servo ON signal, Brake OFF signal/ Servo OFF signal, Brake ON signal will be displayed at the controller at the same time.
 - Brake ON/OFF signal has longer time delay than Servo ON/OFF signal due to mechanical element.
 - Time delay (OND, OFD) can be set to Brake ON/OFF signal to supplement time delay of Brake ON/OFF signal.

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

3) OFD (OFF delay)

- Sets Brake OFF delay.

Step 1.

OFF Delay Screen Move

<MOTOR>
 1: WATT 2: OND
 3: OFD 4: SESN
 5: GAIN 6: TQR
 7: HWL

item #



- 3. OFD Selection

<OND>
 BK OFF DELAY(msec)
 1 : 5 2 : 200
 3 : 5 4 : 5
 5 : 5 6 : 5

- Check Brake OFF delay Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Sets time difference between Brake ON signal output time and Servo OFF output time.
 - Brake ON/OFF time delay unit: msec
 - In case of occurrence of Servo ON signal, Brake OFF signal/ Servo OFF signal, Brake ON signal will be displayed at the controller at the same time.
 - Brake ON/OFF signal has longer time delay than Servo ON/OFF signal due to mechanical element.
 - Time delay (OND, OFD) can be set to Brake ON/OFF signal to supplement time delay of Brake ON/OFF signal.

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

4) SENS (Sensor Limit)

- Sets limit sensor direction of each axis.

Step 1.

SENSOR Limit Screen Move

<MOTOR>
 1: WATT 2: OND
 3: OFD **4: SESN**
 5: GAIN 6: TQR
 7: HWL

item #



- 4. SENS Selection

<SENS>
 HW limit sensor dir
 1 :- 2 :-
 3 :- 4 :-
 5 :- 6 :-

- Check HW Limit sensor direction Setting Screen

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Press [ENTER] key for circulation change of (+ → - → +).

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

5) GAIN

- Sets motor GAIN value of each axis.

Step 1.

GAIN Screen Move

<MOTOR>
 1: WATT 2: OND
 3: OFD 4: SESN
 5: **GAIN** 6: TQR
 7: HWL

item #



- 5. GAIN Selection

<GAIN>
 1 :PVG



- 1. PVC Selection

<PVG>
 POS/VEL GAIN:1
 Kpp : 35 Kpf : 0
 Kv : 150 Kvi : 150
 Kv : 150 IR : 3

1 2 3 4

- Check Position Velocity Gain Setting Screen.

Step 2.

Axis Move

<PVG>
 POS/VEL GAIN:1
 Kpp : 35 Kpf : 0
 Kv : 150 Kvi : 150
 Kv : 150 IR : 3

1 2 3 4



- 1axis: F1, 2axis: F2, 3axis: F3, 4axis: F4



- 5axis: F1, 6 axes: F2

Cursor Position Move

- Refer to "Cursor Position Move and Page Change" in [2.5.1.3 Parameter Setting](#).

How to set

- Refer to "PARAMETER Value Change" in [2.5.1.3 Parameter Setting](#).
- Description of setting value
 - Kpp: Position Proportional Gain
 - This is control variable which decides characteristics considering dynamic

characteristics of control system (unique number of vibration). It differs from shape of mechanical part, load carrying weight, robot type as the whole system gain of mechanical part.

- setting range: 1.0 ~ 100 [Hz] (Recommended to adjust to 2 unit)
 - Adjustment range: 30 ~ 40 (Default value: 35)
- Kpf: Feed Forward gain of the velocity controller
 - ① Decides following characteristics of accel/deceleration position command.
 - ② If Kpf value is small, whole operation time gets slow. Therefore, adjustment is needed to reduce cycle time.
 - ③ If the setting value is increased, vibration or noise of the mechanical part can occur.
 - ➔ Setting range: 0.0 ~ 100 [%] (Recommended to adjust to 5 unit)
 - ➔ Adjustment range: 30 ~ 60 (Default value: 0)
- Kvf: Feed Forward gain of the current controller
 - ① No need to change it excepting when severe vibration occurs.
 - Setting range: 1.0 ~ 200 [Hz] (Recommended to adjust to 10 unit)
 - Adjustment range: 100 ~ 150 (Default value: 150)
- Kvi: Velocity Integral Gain

The value is to compensate normal state error of velocity controller. It is decided by capacity and characteristics of the motor

 - Setting range: 1.0 ~ 200 [Hz] (Recommended to adjust to 10 unit)
 - Adjustment range: 100 ~ 150 (Default value: 150)
- Kvp: Velocity Proportional Gain
 - ① The value is decided by value characteristics which decides following characteristics of the velocity controller.
 - ② When Kvp value is increased, driving torque and dynamic characteristics of the motor improves, but vibration occurs.
 - ③ When Kvp value is decreased, driving torque of the motor becomes lower dynamic characteristics gets slows.
 - ➔ Setting range: 1.0 ~ 200 [Hz] (Recommended to adjust to 10 unit)
 - ➔ Adjustment range: 100 ~ 150 (Default value: 150)
- IR: Inertia Ratio
 - ① Means load Inertia Ratio comparing to motor Inertia (Motor Inertia). Inertia Ratio is applied to Kvp, Kvi, and Kvf as proportional factor.
 - ② Inertia Ratio = (load Inertia + motor Inertia) / motor Inertia

- ➔ Setting range: 1.0 ~ 50 (Recommended to adjust to 2.0 unit)
- ➔ Adjustment range: 1.0 ~ 30 (Default value: 2.5)

- Gain Tuning Order

Kpp	35	Kpf	60
Kvf	150	Kvi	150
Kvp	150	IR	2.5

1. If a user installed tool on the robot so that the values become different from the default value above which is factory setting of the robot or if vibration occurs by changing of robot installation environment into vacuum state in wait state, increase IR to 2unit and operate it to high velocity at low velocity.
2. Set the values to be lower about 1.0~2.0 than IR value at which noise starts to occur even after removing vibration or noise by increase of Inertia Ratio (IR) at No 1 procedure.
3. Set the values to be lower about 1.0~2.0 than Kpp value at which noise starts to occur by operating to high velocity at Increase Kpp from 35 to 2unit and low velocity.
4. Set Kpf to 60% improve the whole responsibility.

- **How to save and cancel**

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

6) TRQ (Torque)

- Sets Torque Limit.

Step 1.

Torque Screen Move

<MOTOR>
 1: WATT 2: OND
 3: OFD 4: SESN
 5: GAIN **6: TQR**

item #



- 6. TRQ Selection

<TRQ>
 TRQ LIMIT [%]
 1 : 300 2 : 300
 3 : 300 4 : 300
 5 : 300 6 : 300

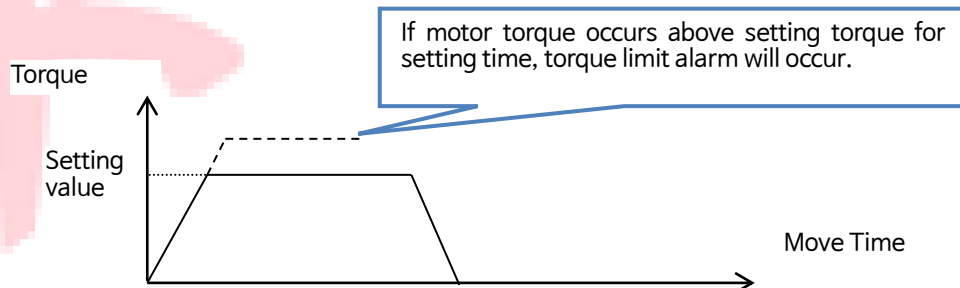
- Check Torque Limit Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Setting value at the factory is ‘300’
 - Setting value: 1…300
 - To sensitively react to external impact, lower Torque value.



■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

7) HWL (Limit sensor)

- Sets whether to use HW Limit sensor.

Step 1.

HW Limit sensor Screen Move

<MOTOR>
 1: WATT 2: OND
 3: OFD 4: SESN
 5: GAIN 6: TQR
7. HWL

item #



- Select 7. HWL.

<HWLIMIT>
 HW limit disable
 1 : ON 2 : ON
 3 : ON 4 : ON
 5 : ON 6 : ON

- Check HW Limit sensor Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - When [ENTER] is pressed (ON → OFF → ON)
 - ON: unuse
 - OFF: use

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

DELAY (EtherCAT communication type Only)

- Sets delay time until Servo Off used to execute quick stop command by the driver.

Step 1.

ID Screen Move

<SERVO>
 1. ID 2. M-TURN
 3. DRIVER 4. BOARD
5. DELAY

item #



- 5: DELAY Selection

<SERVO OFF DELAY>
 q-stop sv off delay
 T : 300 Z : 300
 R1: 300 R2: 300
 X : 300 6 : 300
 R3: 300 R4: 300

- Check Delay Screen.

■ **Cursor Position Move**

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ **How to set**

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - Delay time range: 10~9999 (ms)

■ **How to save and cancel**

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

2.3.2.6 ORIGIN

- Sets Origin related parameter.
- Sets coordinate origin through Scanning initial position using the method set by a user.

■ Detailed items

GROUP	Detail	Range	Setting value
1:ENABLE	Sets whether to use it.		
2: VEL	Sets ORIGIN RETURN velocity.		
3: SEQ	Sets operational priority for ORIGIN RETURN.		
4: RULE	Sets ORIGIN RETURN RULE.		

■ OPENING SEQUENCE

- Main Screen -> 1. Edit -> 3. PARA -> [F1] ROBOT -> 6: ORIGIN

Step 1.

ORIGIN move

<ROBOT PARAMETER>
 1: CONF 2: BODY
 3: MOTION 4: PROTECT
 5: SERVO **6: ORIGIN**
 7: COORD

input : #



- 6: ORIGIN Selection

ORIGIN Setting Screen Check

<ORG>
 1. ENABLE 2. VEL
 3. SEQ 4. RULE

item #

- Check ORIGIN Screen

ENABLE

- Set whether to use ORIGIN.

Step 1.

ORIGIN Screen Move

<ORG>
1. ENABLE 2. VEL
3. SEQ 4. RULE

item #



- 1: ID Selection

<ORG ENABLE>
ORIGIN ENABLE
ENABLE : **OFF**

- Check OIGIN ENABLE screen.

■ **How to set**

- ① Description of setting value
- ON: Uses ORIGIN function.
 - OFF: Not uses ORIGIN function.

Step 1.

ENABLE Setting Method (Example)

<ORG ENABLE>
ORIGIN ENABLE
ENABLE : **OFF**

<ORG ENABLE>
ORIGIN ENABLE
ENABLE : **ON**



- Press “ENTER” key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

■ **How to save and cancel**

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

VEL

- Sets ORIGIN RETURN velocity.

■ Detailed items

GROUP	Detail	Range	Setting value
1: SEARCH VEL	Sets velocity to find Origin sensor from the current position.	1 ...50	10
2: ORIGIN VEL	Sets velocity to find Z PHASE after detecting sensor.	1 ...50	5
3: HOME VEL	Sets velocity to find HOME position after completing ORIGIN.	1 ...50	20

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F1] ROBOT → 6: ORIGIN → 2: VEL

Step 1.

VEL Screen Move

<ORG>
1. ENABLE 2. VEL
3. SEQ 4. RULE

item #



- 2: VEL Selection

<VEL>
1. SEARCH VEL
2. ORIGIN VEL
3. HOME VEL

item #

- Check VEL screen.

1) SEARCH VEL

- Sets velocity to find ORIGIN sensor from the current position.

Step 1.

VEL Screen Move

<VEL>
 1. SEARCH VEL
 2. ORIGIN VEL
 3. HOME VEL

item #



- 1. SEARCH VEL Selection

<SEARCH VLE>
 VEL (%)

1	:10	2	:10
3	:10	4	:10
5	:10	6	:10

- check SEARCH VEL Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

2) ORIGIN VEL

- Sets velocity to find Z PHASE after detecting ORIGIN sensor.

Step 1.

VEL Screen Move

<VEL>
1. SEARCH VEL
2. ORIGIN VEL
3. HOME VEL

item #



- 2. ORIGIN VEL Selection

< ORIGIN VEL>
VEL (%)

1	:5	2	:5
3	:5	4	:5
5	:5	6	:5

- Check ORIGIN VEL Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

3) HOME VEL

- Sets moving velocity to HOME position after completing ORIGIN.

Step 1.

VEL Screen Move

<VEL>
1. SEARCH VEL
2. ORIGIN VEL
3. HOME VEL

item #



- 3. HOME VEL Selection

< HOME VEL>
HOME VEL (%)
VLE: 20

- Check HOME VEL Setting Screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

SEQ (Sequence)

- Sets operational priority for ORIGIN RETURN.
- Sets ORIGIN operational priority to the most dangerous order.
- Priority of each axis can be set with same priority.

Step 1.

ORIGIN Screen Move

<ORG>
1. ENABLE 2. VEL
3. SEQ 4. RULE

item #



- 3: SEQ Selection

<SEQ>
origin sequence
1 :2 2 :2
3 :1 4 :1
5 :2 6 :2

- Check OIGIN SEQUENCE screen.

■ How to set

- ① Description of setting value
 - Operational priority : 1 → 2 → 3 → 4
 - Setting value range: 1 ∼ 4

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

RULE

- Sets ORIGIN RETURN RULE.

Step 1.

ORIGIN Screen Move

⟨ORG⟩
 1. ENABLE 2. VEL
 3. SEQ 4. RULE

item #



- 4: ORIGIN RULE Selection

⟨RULE⟩
 ORIGIN RULE
 1 :4 2 :4
 3 :4 4 :4
 5 :4 6 :4

- Check OIGIN RULE screen.

Step 2

ORIGIN RULE Screen Move

⟨RULE⟩
 ORIGIN RULE
 1 :4 2 :4
 3 :4 4 :4
 5 :4 6 :4



- 1: 1 ~ 6 axes

⟨ORG RULE⟩
 1 axis rule
 RULE :4
 DIR :CW
 SENSOR :NEL
 Z_PHASE :OFF
 ORG DEC :OFF
 EXIT

- Check OIGIN RULE Setting Screen.

■ How to set

- ① Refer to "PARAMETER Value Change" in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value (EtherCAT Communication Type)
 - Setting value at the factory is '1'
 - One of '0', '1' must be set as setting value.

Rule No.	Definition	Description
0	Current position = Home position	Get current position
1	Z PHASE compensation using (-) direction move, Limit sensor	Z PHASE compensation after checking (-) direction move, Limit sensor

Setting Point →

⟨ORG RULE⟩
 1 axis rule
 RULE :4
 DIR :CW
 SENSOR :NEL
 Z_PHASE :OFF
 ORG DEC :OFF

- ③ Description of setting value (RS422 Communication Type)
 - Setting value at the factory is '4'
 - Values besides '4, 14' are prohibited from using as setting value.
 - ■■■ orange box means RULE which is frequently used

No.	Direction		Sensor		Org sensor		Z - phase	Damper (trq)	Description
	+ (CW)	- (CCW)	CW	CCW	ORG	ORG DEC			
0	X	X	X	X	X	X	X	X	현재 모터의 위치 값을 가져옴
1	○	X	○	X	X	X	X	X	+방향 이동, CW Limit 센서 확인
2	○	X	○	X	X	X	○	X	+방향 이동, CW Limit 센서 확인 후 Z상 보상
3	X	○	X	○	X	X	X	X	-방향 이동, CCW Limit 센서 확인
4	X	○	X	○	X	X	○	X	-방향 이동, CCW Limit 센서 확인 후 Z상 보상
5	○	X	○	X	○	X	X	X	현재 미 구현
6	○	X	○	X	○	X	○	X	
7	X	○	X	○	○	X	X	X	
8	X	○	X	○	○	X	○	X	
9	○	X	○	X	○	○	X	X	
10	○	X	○	X	○	○	○	X	
11	X	○	X	○	○	○	X	X	
12	X	○	X	○	○	○	○	X	
13	○	X	X	X	X	X	○	○	+방향 이동, Damper에 부딪힌 이후 Z상 보상
14	X	○	X	X	X	X	○	○	-방향 이동, Damper에 부딪힌 이후 Z상 보상

이미지 부분 번역: 현재 모터 위치 값을 가져옴 => Get the current motor position value, 방향 이동 => direction move, 센서 확인 => sensor check, Z상 보상 => Z phase compensation, 현재 미 구현 => Not currently realized, Damper에 부딪힌 이후 Z상 보상 => Z phase compensation after colliding with Damper

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

2.3.2.7 COORD (Coordinate)

- Converts coordinate system.
- This is not currently supported.

Robostar

2.3.3 PUBLIC PARAMETER

2.3.3.1 ENV

- Sets operating environment like external communication, expansion I/O, Safety, additional function.

■ Detailed items

GROUP	Detail	Range	Setting value
1: BGT	Sets whether to automatically execute Background task.	See description	
2: CONTACT	Sets contact Index of Auto Mode, Battery, Fan, and Light.	See description	
3: SAFETY	Sets Safety unit type.	See description	
4: RS232C	Sets RS232C communication standard for connecting with PC.	See description	
5: EXT IO	Sets whether to use External I/O.	See description	
6: NAME	Sets controller name.	See description	
7: ALARM	Sets whether to use FAN, SMPS alarm.	See description	
8: FBUS	Sets Fieldbus counter.	0 ~ 999	
9: TIME	Sets system time.	See description	

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F2] PUB → 1: ENV

Step 1.

ENV Move

⟨PUBLIC PARAMETER⟩
1: ENV 2: PASSWORD
 3: DRIVER

item #



- 1: ENV Selection

Checking ENV Setting Screen

<PUBLIC-ENV>

1: BGT

3: SAFETY

5: EXT IO

7: ALARM

9: TIME

2: CONTACT

4: RS232C

6: NAME

8: FBUS

item #

- Check ENV Screen

BGT (Background Task)

- Sets whether to automatically execute Background task.

Step 1.

BGT Screen Move

<PUBLIC-ENV>
 1: **BGT** 2: CONTACT
 3: SAFETY 4: RS232C
 5: EXT IO 6: NAME
 7: ALARM 8: FBUS
 9: TIME

item #



- 1: BGT Selection

<ENV-BGT>
 1: ENABLE

item #

- Check BGT screen.

Step 2.

Moving to ENABLE Setting Screen

<ENV-BGT>
 1: **ENABLE**

item #



- 1: ENABLE Selection

<BGT>
 AUTO RUN : NO
 1: YES 2: NO

input: #

- Check ENABLE screen.

■ How to set

- ① Description of setting value
 - 1 (YES): Uses AUTO RUN.
 - 2 (NO): Not uses AUTO RUN.

Step 1.

ENABLE Setting Method

<BGT>
 AUTO RUN : NO
1: YES 2: NO

input: #



- Input number “1” or “2” key to decide whether to use AUTO RUN.

When YES is selected

<BGT>
 AUTO RUN : NO
 1: YES 2: NO

YES selected !

- If YES is selected, “YES selected!” message will be displayed in Command Window.

When NO is selected

<BGT>
 AUTO RUN : NO
 1: YES 2: NO

NO selected !

- If NO is selected, Command Window 에 “NO selected!” message will be displayed.

<BGT>
 AUTO RUN : NO
 1: YES 2: NO

update? (enter/esc)



- Press “ESC” key to move to Update Screen.

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

CONTACT

- Sets contact Index of Auto Mode, Battery, Fan, and Light.

Step 1.

CONTACT Screen Move

<PUBLIC-ENV>
 1: BGT
 3: SAFETY
 5: EXT IO
 7: ALARM
 9: TIME
 2: **CONTACT**
 4: RS232C
 6: NAME
 8: FBUS

item #



- 2: CONTACT Selection

<ENV-CONTACT>

AUTO MODE : ■ 1
 BATTERY : -1
 FAN : -1
 LIGHT : -1

- Check CONTACT screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - When not used: -1
 - When used: output contact No (0~64)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.
- ③ If same Index is duplicate input while setting contact Index setting, “SAME INDEX” message will be displayed in Command Window. Reset it not to be duplicated.

Step 1.

When same Index is duplicate input

<ENV-CONTACT>

AUTO MODE: 1
BATTERY : 1
FAN : -1
LIGHT : -1

SAME INDEX

<PUBLIC-ENV>

1: BGT	2: CONTACT
3: SAFETY	4: RS232C
5: EXT IO	6: NAME
7: ALARM	8: FBUS
9: TIME	

item #

ENTER

ESC

- To input and save same Index while setting contact Index setting, “**SAME INDEX!**” message will be displayed in Command Window

- Press “ENTER” key or “ESC” key to return, reset to the previous screen.

SAFETY

- Sets Safety unit type.

Step 1.**Safety Screen Move**

```

<PUBLIC-ENV>
1: BGT          2: CONTACT
3: SAFETY       4: RS232C
5: EXT IO       6: NAME
7: ALARM        8: FBUS
9: TIME
  
```

item #



- 3: SAFETY Selection

```

<HW CONF-SAFETY>
SAFETY_SELECT
TYPE : C4UT

GROUP : CT
CATE  : C4
UTYPE : UNIT
  
```

- Check Safety Screen.

How to set

- ① Description of setting value
 - TYPE: type of Safety Unit.

Step 1.**How to set SAFETY**

```

<HW CONF-SAFETY>
SAFETY_SELECT
TYPE : C4UT

GROUP : CT
CATE  : C4
UTYPE : UNIT
  
```



Press “ENTER” key to change type and to display detailed GROUP, CATEGORY, and UNIT TYPE of the relevant type.

```

<HW CONF-SAFETY>
SAFETY_SELECT
TYPE : CX7S

GROUP : CX
CATE  : C4
UTYPE : SERIAL
  
```

- ② Item description
 - The following table shows classification of GROUP, CATEGORY, and TYPE. Sets to proper type for each controller.

SAFETY TYPE	GROUP	CATEGORY	TYPE	Remark
S4PO	SD	C4	PLC (OMRON)	
S4PZ	SD	C4	PLC (PILZ)	
L4PO	GP	C4	PLC (OMRON)	
B2	AB	C2	NONE	
C4PZ	CT	C4	PLC (PILZ)	
C4UT	CT	C4	UNIT	
CX7S	Not Defined	Not Defined	CX7 RS422	

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

RS232C

- Sets RS232C communication standard for connection with PC.

Step 1.

RS232C Screen Move

<PUBLIC-ENV>
 1: BGT 2: CONTACT
 3: SAFETY 4: RS232C
 5: EXT IO 6: NAME
 7: ALARM 8: FBUS
 9: TIME

item #



- 4: RS232C Selection

<ENV-RS232C>
 BAUD: 115200
 USED: OFF

- check RS232C screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Description of setting value
 - BAUD: Sets Baud Rate. (9600~115200)
 - USED: Decides whether to use. (ON/OFF)

Step 1.

BAUD Setting Method

<ENV-RS232C>
 BAUD: 115200
 USED: OFF



- Press “ENTER” key to change Baud Rate.

(115200 -> 57600 -> 38400 -> 19200 -> 9600 -> 115200)

<ENV-RS232C>
 BAUD: 57600
 USED: OFF

Step 2.

USED Setting Method

<ENV-RS232C>
BAUD: 115200
USED: OFF

<ENV-RS232C>
BAUD: 57600
USED: ON

ENTER

- Press “ENTER” key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

EXT IO (External I/O)

- Sets whether to use External I/O.

Step 1.

EXT IO Screen Move

<PUBLIC-ENV>
 1: BGT 2: CONTACT
 3: SAFETY 4: RS232C
 5: EXT IO 6: NAME
 7: ALARM 8: FBUS
 9: TIME

item #



- 5: EXT IO Selection

<ENV-EXT IO>
 EXT IO ENABLE
 MASK: ☐ OFF

- Check EXT IO screen.

■ How to set

- ① Description of setting value
 - ON: Uses External I/O.
 - OFF: Not uses External I/O.

Step 1.

How to set EXT IO

<ENV-EXT IO>
 EXT IO ENABLE
 MASK: ☐ OFF

<ENV-EXT IO>
 EXT IO ENABLE
 MASK: ☒ ON



- Press “ENTER” key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

NAME

- Sets name of the controller.

Step 1.

NAME Screen Move

<PUBLIC-ENV>
 1: BGT 2: CONTACT
 3: SAFETY 4: RS232C
 5: EXT IO **6: NAME**
 7: ALARM 8: FBUS
 9: TIME

item #



- 6:NAME Selection

<ENV-NAME>
 Controller name set

CUR:
 NEW: █

SAVE

- check NAME screen.

■ How to set

- ① Description of setting value
- Controller name (Can input 15 characters, A~Z, 0~9)

Step 1.

NAME Setting Method

<ENV-NAME>
 Controller name set

CUR:
 NEW: █

SAVE

- Press “SHIFT” + alphabet, number, SPACE key to input controller name.

<ENV-NAME>
 Controller name set

CUR:
 NEW: CON_NAME1 █

SAVE

■ How to save and end

- ① How to save (SAVE)

Step 1.

SAVE SELECT

〈ENV-NAME〉
Controller name set

CUR:
NEW: CON_NAME1■

SAVE

- Press “F4” key to proceed with SAVE.

- ② For more detail excluding saving, refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

ALARM

- Sets whether to use FAN, SMPS alarm.

Step 1.

ALARM Screen Move

<PUBLIC-ENV>
 1: BGT 2: CONTACT
 3: SAFETY 4: RS232C
 5: EXT IO 6: NAME
 7: **ALARM** 8: FBUS
 9: TIME

item #



- 7: ALARM Selection

<HIDDEN-ALARM>
 Alarm Disable
 FAN: ☐ OFF SMPS: OFF

- Check ALARM screen.

■ Cursor Position Move

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Description of setting value
 - ON: Not uses Alarm.
 - OFF: Uses Alarm.

Step1.

How to set ALARM

<HIDDEN-ALARM>
 Alarm Disable
 FAN: OFF SMPS: OFF



- Press “ENTER” key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

<HIDDEN-ALARM>
 Alarm Disable
 FAN: OFF SMPS: ON

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

Robostar

FBUS (Fieldbus)

- Sets Fieldbus counter.

Step 1.

FBUS Screen Move

⟨PUBLIC-ENV⟩
 1: BGT 2: CONTACT
 3: SAFETY 4: RS232C
 5: EXT IO 6: NAME
 7: ALARM **8: FBUS**
 9: TIME

item #



- 8: FBUS Selection

⟨HIDDEN-FBUS FILTER⟩
 FDBUS filter count

count : 0

- Check FBUS screen.

■ **Cursor Position Move**

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ **How to set**

- ① Description of setting value
- Counter value input (0 ~999)

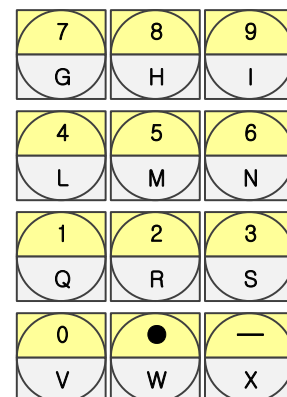
Step 1.

How to set PARAMETER value

⟨HIDDEN-FBUS FILTER⟩
 FDBUS filter count

count : 0

- Press number key of the value to be changed to input it.



〈HIDDEN-FBUS FILTER〉
FDBUS filter count

count: 100



- Press “ENTER” key to apply it into the screen.

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

TIME (System Time)

- Sets system time.

Step 1.

TIME Screen Move

<PUBLIC-ENV> 1: BGT 2: CONTACT 3: SAFETY 4: RS232C 5: EXT IO 6: NAME 7: ALARM 8: FBUS 9: TIME	
item #	

SYSTEM TIME SET	
C: 15/09/08	10:44:22
N: 15/09/08	10:44:22
ESC	



- 9: TIME Selection

- Check TIME screen.

■ Cursor Position Move

- ① Move cursor position using Left/right direction key.
- ② Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

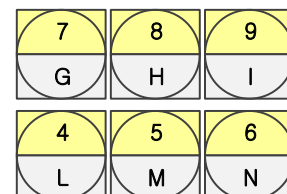
- ① Description of screen detail
 - C: Current system time
 - N: new system time
- ② Description of setting value
 - System time input

Step 1.

How to set TIME value

SYSTEM TIME SET	
C: 15/09/08	10:44:22
N: 15/09/08	10:44:22
ESC	

- Move cursor to desired position and input year/month/date, time information desired to be modified using number key.



1	2	3	0
Q	R	S	V

SYSTEM TIME SET

C: 15/09/08 10:44:22
N: 15/09/08 11:07:22

ESC



- Press “ENTER” key to apply it into the screen.

Checking edit complete message

SYSTEM TIME SET

C: 15/09/08 10:44:22
N: 15/09/08 11:07:22

Time set complete!!!

- After saving time information, “**Time set complete!!!**” message will be displayed in Command Window

■ How to save and cancel

- ① Press “F4” key to use ESC function.
- ② Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

EXT ETH (External Ethernet)

- Sets IP and Port to check data through external Ethernet communication.
- It is not currently supported.

Robostar

AC_RELAY

- Sets whether to connect Power switch signal with AC_Relay contact type.

Step 1.**AC_RELAY Screen Move**

```

<PUBLIC-ENV>
1: BGT          2: CONTACT
3: SAFETY       4: RS232C
5: EXT IO       6: NAME
7: ALARM        8: FBUS
9: TIME
  
```

item #



- Use “PAGE UP/DOWN” key to move to the next page.

```

<PUBLIC-ENV>
1: EXT ETH      2: AC_RELAY
  
```

item #



- 2: AC_RELAY Selection

```

<ENV-AC_RELAY>
RELAY/PW CONTACT
AC_RELAY : NC TYPE
PW_SWITCH: DISCONNECT
  
```

- Check AC_RELAY screen.

■ Cursor Position Move

- ① Move cursor position using Up/down direction key.
- ② Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ How to set

- ① Description of screen detail
 - AC_RELAY: Sets AC RELAY contact type. (NC (Normal Close)/ NO (Normal Open))
 - PW_SWITCH: Selects whether to connect Power switch signal (CONNECT/DISCONNECT)
- ② Description of setting value
 - AC_RELAY contact setting

Step 1.

AC RELAY contact type setting

```

<ENV-AC_RELAY>
RELAY/PW CONTACT
AC_RELAY : NC TYPE
PW_SWITCH: DISCONNECT

```

ENTER

- Press “ENTER” key when cursor blinks at AC_RELAY position for conversion (NC TYPE → NO TYPE, NO TYPE → NC TYPE)

```

<ENV-AC_RELAY>
RELAY/PW CONTACT
AC_RELAY : NO TYPE
PW_SWITCH: DISCONNECT

```

- Sets whether to connect Power switch signal

Step 1.

setting SMPS type

```

<ENV-AC_RELAY>
RELAY/PW CONTACT
AC_RELAY : NO TYPE
PW_SWITCH: DISCONNECT

```

ENTER

- After moving direction key, input “ENTER” key when cursor blinks at PW_SWITCH position for conversion. (CONNECT → DISCONNECT, DISCONNECT → CONNECT)

```

<ENV-AC_RELAY>
RELAY/PW CONTACT
AC_RELAY : NO TYPE
PW_SWITCH: CONNECT

```

■ How to save and cancel

- Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).

2.3.3.2 PASSWORD

- Sets password.

■ Detailed items

GROUP	Detail	Range	Setting value
1: CHANGE	Changes PASSWORD.		
2: DISABLE	Decides whether to use PASSWORD		

■ OPENING SEQUENCE

- Main Screen → 1. Edit → 3. PARA → [F2] PUB → 2: PASSWORD → PASSWORD input

Step 1.

PASSWORD Move

⟨PUBLIC PARAMETER⟩
1: ENV 2: PASSWORD

item #



- 2: PASSWORD Selection

Step 2.

PASSWORD Input

⟨PUBLIC PARAMETER⟩
1: ENV 2: PASSWORD

Password = ####



- Input Password (Default value: "1111").

~



- Press "ESC" key to cancel Password input.

⟨EDIT MENU⟩
1. JOB 2. POINT
3. VAR 4. PARA

Invalid!!

- If invalid Password is input, "Invalid" will be displayed.

Step 2.

Checking PASSWORD Screen

<ETC-PASS>
1: CHANGE 2: DISABLE

item #

- Check PASSWORD Screen

Robostar

CHANGE

- Changes PASSWORD.

Step 1.

CHANGE Screen Move

〈ETC-PASS〉
1: CHANGE 2: DISABLE

item #



- 1: CHANGE Selection

〈PASS-CHANGE〉
Change password
VALUE = 1111

- Check CHANGE screen.

■ How to set

- ① Refer to “PARAMETER Value Change” in [2.5.1.3 Parameter Setting](#).
- ② Description of setting value
 - 4-digits number input

■ How to save and cancel

- ① Refer to “How to save and cancel parameter value” in [2.5.1.3 Parameter Setting](#).
- ② If the setting value exceeds max range or below min range, an error message will be displayed.

DISABLE

- Decides whether to use PASSWORD.

Step 1.

DISABLE Screen Move

〈ETC-PASS〉
1: CHANGE **2: DISABLE**

item #



- 2: DISABLE Selection

〈PASS-DISABLE〉
Password Disable
PARA: ☐ OFF BRK: OFF
ORG : OFF

- Check DISABLE screen.

■ **Cursor Position Move**

- ① Refer to “Cursor Position Move and Page Change” in [2.5.1.3 Parameter Setting](#).

■ **How to set**

- ② Selects whether to use Password Input Window.
- PARA: To edit Parameter related detail
 - BRK: To edit break related detail
 - ORG: To edit Origin related detail
- ③ Description of setting value
- ON: Not requests for Password.
 - OFF: Requests for Password.

Step1.

How to set DISABLE

〈PASS-DISABLE〉
Password Disable
PARA: ☐ OFF BRK: OFF
ORG : OFF



- Press “ENTER” key to convert ON/OFF.
(ON -> OFF, OFF -> ON)

〈PASS-DISABLE〉
Password Disable
PARA: ☒ ON BRK: OFF
ORG : OFF

2.3.3.3 DRIVER

- Sets driver file which is proper to the controller.

■ Detailed items

GROUP	Detail	Range	Setting value
1: CONFIG	Sets driver file.	See description	

■ OPENING SEQUENCE

- Main Screen -> 1. Edit -> 3. PARA -> [F2] PUB -> 3: DRIVER -> CONFIG input

Step 1.

DRIVER Move

⟨PUBLIC PARAMETER⟩
1: ENV 2: PASSWORD
3: DRIVER

item #



- 3: DRIVER Selection

Checking DRIVER Setting Screen

⟨PUBLIC-DRIVER⟩
1: CONFIG

item #

- Check DRIVER Screen

CONFIG

- Sets driver file.

Step 1.

CONFIG Screen Move

<PUBLIC-DRIVER>
1: CONFIG

item #



- 1: CONFIG Selection

<NUMBER OF DRIVERS>
 Num(0~)16) = █

- Check CONFIG screen.

■ How to set

- Input number of Driver of the Input value range: 0~16

Step 1.

Inputting Number of Driver

<NUMBER OF DRIVERS>
Num(0~)16) = █



- Input number of Driver of the controller.

~



selecting or canceling

<NUMBER OF DRIVERS>
Num(0~)16) =16 █

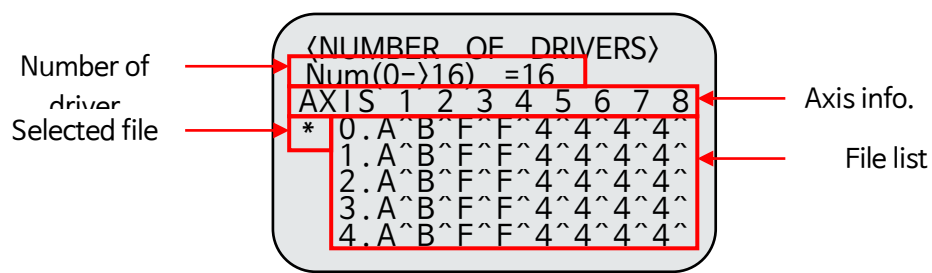


- Press “ENTER” key to move to File Select Window.



- Press “ESC” key to return to the previous screen

① Description of File Select Window



② File Selection

Step 1.

Selecting and moving file

```

<NUMBER OF DRIVERS>
Num(0-16) =16
AXIS 1 2 3 4 5 6 7 8
* 0.A^B^F^F^4^4^4^4^
  1.A^B^F^F^4^4^4^4^
  2.A^B^F^F^4^4^4^4^
  3.A^B^F^F^4^4^4^4^
  4.A^B^F^F^4^4^4^4^
  
```



- Change * position using “Up/down direction key” and select file to be Initialized.
- If there are many files, press “PAGE UP/DOWN” key to move page

Checking all file names

```

<NUMBER OF DRIVERS>
Num(0-16) =16
AXIS 1 2 3 4 5 6 7 8
* 0.A^B^F^F^4^4^4^4^
  1.A^B^F^F^4^4^4^4^
  2.A^B^F^F^4^4^4^4^
  3.A^B^F^F^4^4^4^4^
  4.A^B^F^F^4^4^4^4^
  
```



- Press “Left/right direction key” to check all of file names.
- Check the axis order of value with the value displayed in AXIS line.

```

<NUMBER OF DRIVERS>
Num(0-16) =16
AXIS 9 A B C D E F G
* 0.1^1^1^1^1^1^1^1^
  1.1^1^1^1^1^1^1^2^
  2.1^1^1^1^1^1^1^3^
  3.1^1^1^1^1^1^1^4^
  4.1^1^1^1^1^1^1^5^
  
```

Final Selection

```

<NUMBER OF DRIVERS>
Num(0-16) =16
AXIS 1 2 3 4 5 6 7 8
* 0.A^B^F^F^4^4^4^4^
  1.A^B^F^F^4^4^4^4^
  2.A^B^F^F^4^4^4^4^
  3.A^B^F^F^4^4^4^4^
  4.A^B^F^F^4^4^4^4^
  
```



- Move to the desired file and press “ENTER” key to move to the next screen.

Step 2.

Updating or canceling

CUR:1^2^7%1^1^

NEW:A^B^F^F^4^4^4^4^1^1^
1^1^1^1^1^1^

update? (ENT/ESC)

ENTER

ESC

<PUBLIC-DRIVER>
1: CONFIG

item #

- Current set driver file and detail selected by a user will be displayed with update message.
- Press “ENTER” key to save file name and number of driver and to return to Main Screen.
- Press “ESC” key to cancel update and return to Main Screen

- Move to Main Screen

■ Reference

- ① Description of meaning of file name

file name: (3) (1)A (2)^ B^F^F^4^4^4^4^1^1^1^1^1^1^1^

(1) Nominal Motor capacity according to motor capacity	Driver		Marking
	Frame	Model	
50	A	1505	1
100			
200		1507	2
400	B	2510	4
750	C	3520	7
1K	D	5510	A
1.5K			
2K		7364	B
3K	F	A390	C
4K		B3A2	F
5K			
7.5K	G		G

- (2) Method to marking according to driver type

Driver type	BA	BD	BL	B2
Marking	^	#	%	-

(3) Number of Driver = Total file length / 2 (ex, 32 / 2 = 16)

Chapter 3. RUN Mode

- This mode is to execute JOB file (RRL) written in robot language in JOB menu in Edit Mode.
- Origin must be set before executing JOB file in RUN Mode.
- In this chapter, we describe the method to execute RUN Mode and to monitor it in detail.

3.1 Overview

- ✓ Select JOB file to be executed in the list and run it.
- ✓ There are the following 2 methods to execute RUN Mode on the Teach Pendant.
 - 1) MANUAL RUN (Internal auto operation mode) – AUTO/STEP RUN
 - 2) AUTO RUN (external auto operation mode)

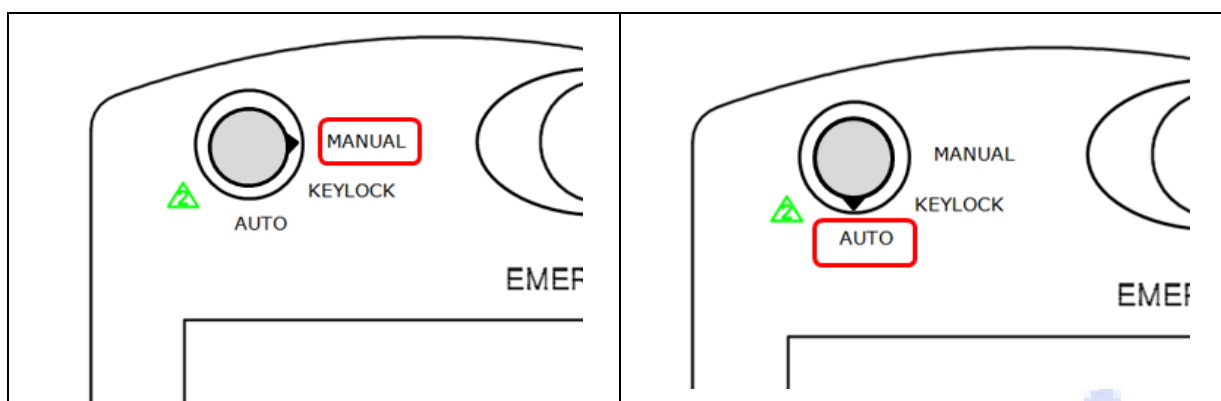
■ RUN Mode type

GROUP		Detail	Remark
MANUAL RUN (Internal auto operation mode)	AUTO/STEP RUN	STEP: Runs and stops the program by 1 Step (1 column) unit. AUTO: Runs the whole program.	
AUTO RUN (external auto operation mode)		Mode to run robot program from external machine like sequence.	In general, auto operation mode of the system

■ How to select RUN Mode

- ① As shown in the figure below, turn the switch on the top of the Teach Pendant to select auto operation mode.
- ② Conversion into operation mode is available only in uppermost menu.

Internal auto operation mode	External auto operation mode
------------------------------	------------------------------

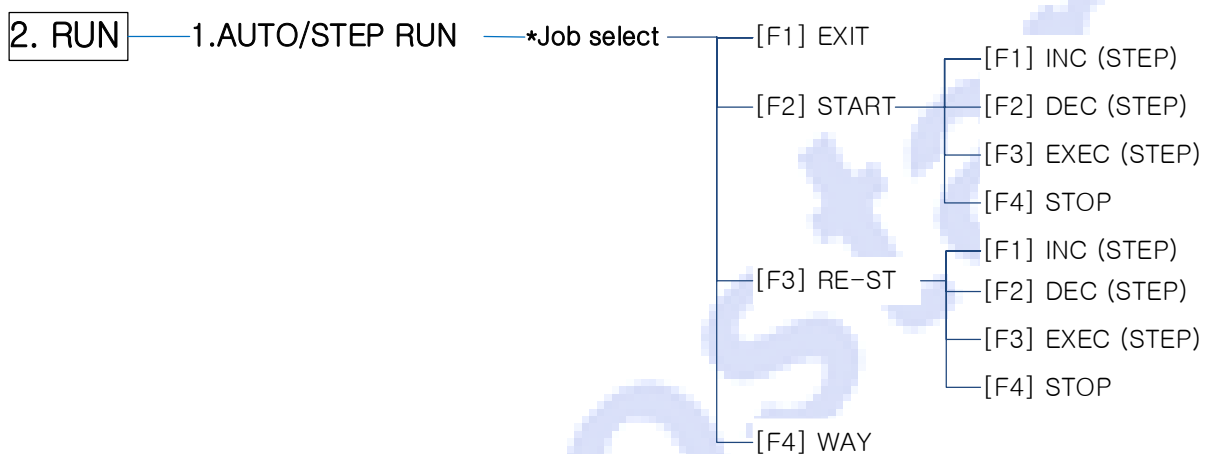


3.2 RUN Mode flow chart

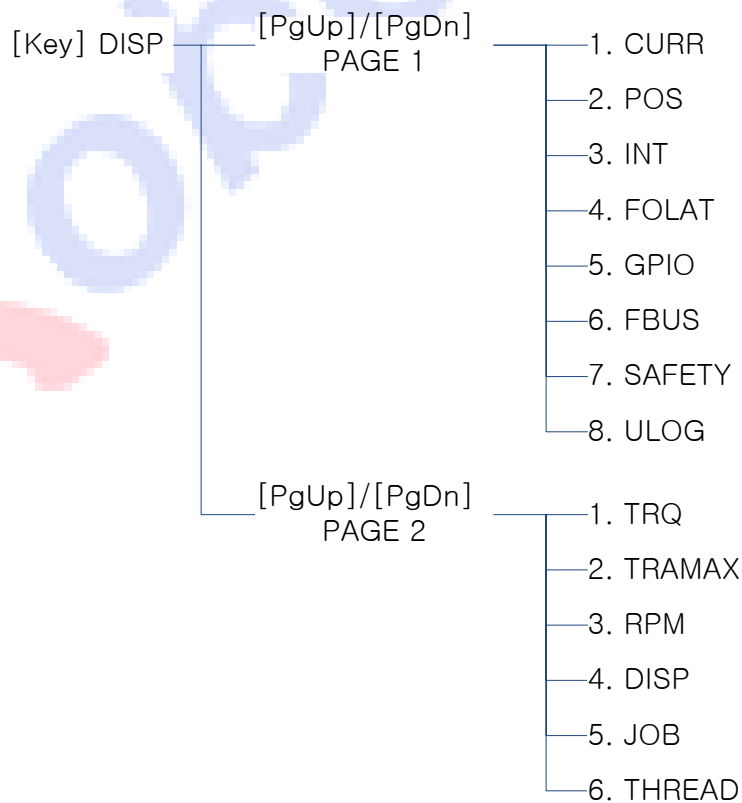
■ External auto operation mode Menu Tree

*Thread Select — [F1] SEL

■ Menu Tree of Internal auto operation mode



■ Monitoring Menu Tree



3.3 AUTO RUN (External auto operation mode)

- ✓ In general, external auto operation mode repetitively conducts robot program set to auto operation mode.
- ✓ Turn the switch on the top of the Teach Pendant to select external auto operation mode to check Thread information and state.
- ✓ Total 4 Threads can be used at the same time. When the robot is in operation, STATE is displayed in RUN. In addition, when the robot is not in operation, IDLE is displayed.
- ✓ Press “F1” key to select work and to display Monitoring Screen to check real time work detail and state value.

■ Main Screen of AUTO RUN

〈AUTO : TH INFO〉	
THREAD	STATE
*T H1	RUN
TH2	IDLE
TH3	IDLE
TH4	IDLE
SEL	EXIT

3.4 MANUAL RUN (Internal auto operation mode)

- ✓ First, it is recommended that execute STEP RUN to check program error before executing AUTO RUN.

3.4.1 Group Screen OPENING SEQUENCE

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #

ENTER

- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

RUN Selection

<TEACH MENU>
1. EDIT 2. **RUN**
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #

2
R

- 2. RUN Selection

<RUN>
SELECT RUN MODE
1. AUTO/STEP RUN

input : #

1
Q

- AUTO/STEP RUN Selection

<RUN MODE>
F: 40
* 0. test_bitop5
1. test_rest
2. bb4
3. out_test5
4. out_test3
5. test_rest2

- Check file list Screen.

```
<MAN : INS>
F: test4      S:2    S
T: 1         V: 5    Q4AFL1
  a = 0

  if a == 0
    b = 1
EXIT  START  RE-ST  WAY
```

- Check AUTO/STEP RUN Screen.

3.4.2 AUTO/STEP RUN

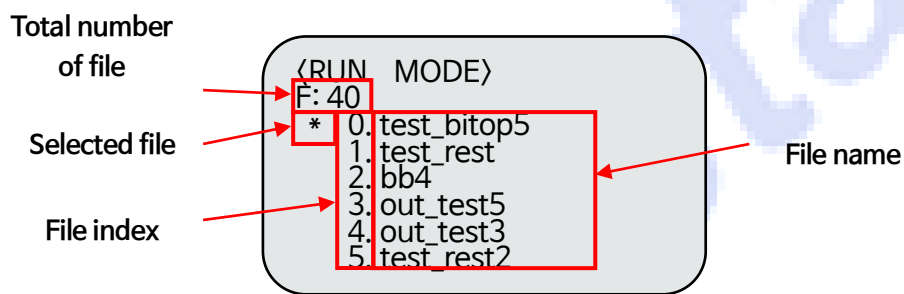
※ Caution ※

- It is recommended that execute STEP RUN to check program error before executing AUTO RUN.

3.4.2.1 Screen description

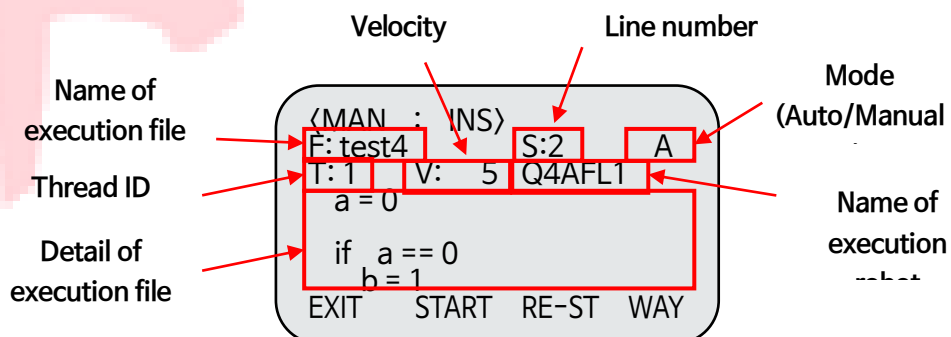
■ Screen description

① File SELECT Screen



② AUTO/STEP RUN Screen

- EXIT:** Exits the screen
- START:** Starts executable file from the beginning
- RE-ST (Restart):** Restarts from the stopping point
- WAY:** Converts execution mode (STEP→)AUTO, AUTO→)STEP)



- Screen to conduct START and RE-ST in **STEP Mode**
- INC: Moves to the previous STEP

- 3) DEC: Moves to the next SETP.
- 4) EXEC: Executes SETP
- 5) STOP: Stops execution and returns to the previous screen

```
<MAN : INS>
F: test4      S:2      S
T: 1      V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
INC      DEC      EXEC      STOP
```

③ Screen to conduct START and RE-ST in **Auto Mode**

- 1) STOP: Stops execution and returns to the previous screen

```
<MAN : INS>
F: test4      S:2      A
T: 1      V: 5 Q4AFL1
a = 0

if a == 0
  b = 1

STOP
```

3.4.2.2 Selecting executable file

- Selects executable file in AUTO/STEP RUN Mode.

■ Selecting executable file

Step 1.

Selecting AUTO/STEP RUN

```
<RUN>
SELECT RUN MODE
1. AUTO/STEP RUN
```

input : #



- 1.AUTO/STEP RUN Selection

```
<RUN MODE>
F: 40
* 0. test_bitop5
  1. test_rest
  2. bb4
  3. out_test5
  4. out_test3
  5. test_rest2
```

- Check file list Screen

Step 2.

JOB file Selection

```
<RUN MODE>
F: 40
* 0. test_bitop5
- 1. test_rest
  2. bb4
  3. out_test5
  4. out_test3
  5. test_rest2
```



- Press “PAGE UP/DOWN” key for Page Move



```
<RUN MODE>
F: 40
* 6. test1
- 7. test2
  8. test3
  9. test4
 10. test5
 11. test6
```



- Press “Up/down direction key” to move to desired file.



```
<RUN MODE>
F: 40
  6. test1
  7. test2
  8. test3
* 9. test4
- 10. test5
 11. test6
```



- Press “ENTER” key to finally select file.

```
<MANUAL : INS>
F: test4      S:2    S
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY
```

- Check AUTO/STEP RUN Screen



■ Precautions before running program

Please be prepare for safety accidents after inputting work program.

- 1, Operators must move out of the operating range of the robot.
- 2, Operators must be ready to press EMERGENCY STOP SWITCH.
- 3, Operators must check work point and move path of the robot.
- 4, Operators must check progress at low speed and increase speed step by step.

3.4.2.3 Changing execution velocity

- Changes execution velocity in AUTO/STEP RUN Mode.

■ Execution velocity change

- In case there is no velocity setting in work program, execution velocity V will be 20% of max velocity (parameter Mv setting value).
- Execution velocity can be adjusted by 5% unit, and the range is 5~100%.

■ Execution velocity change

Step 1.

Changing execution velocity

```

<MANUAL : INS>
F: test4      S:2      S
T: 1  V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY
  
```

```

<MANUAL : INS>
F: test4      S:2      S
T: 1  V: 20 Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY
  
```

Changing execution velocity during operation

```

<MANUAL : INS>
F: test4      S:2      S
T: 1  V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
INC   DEC   EXEC  STOP
  
```



- Press “Up/down direction” key to control execution velocity of executable file.

- Press “Up/down direction” key in STEP/AUTO RUN Screen to control execution velocity of executable file.

※ Caution ※

- Sometimes, velocity resetting occurs when it is started after increasing velocity in Run start screen.
- In case of RE-ST, velocity will continuously continue.

3.4.2.4 Conducting STEP RUN

- Runs STEP Mode in AUTO/STEP RUN Mode.
- In STEP Mode, AUTO/STEP RUN is conducted by 1 STEP unit.

■ STEP Mode setting

Step 1.

Setting STEP Mode

```

<MANUAL : INS>
F: test4      S:2      A
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY
  
```

```

<MANUAL : INS>
F: test4      S:2      S
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY
  
```

F4

- In case of A (AUTO), press “F4” key to convert into S (STEP).

■ Executing STEP Mode

Step 1.

Executing STEP Mode

```

<MANUAL : INS>
F: test4      S:2      S
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY
  
```

```

<MANUAL : INS>
F: test4      S:2      S
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
INC   DEC   EXEC  STOP
  
```

LED Check

○ORG ○SVON ●RUN ○SHIFT ○ALRM

F2

- Press “F2” key to run in STEP Mode from the first line of the executable file.

- Check execution screen.

- Check ON of RUN LED lamp.

Rerunning STEP Mode

```

<MANUAL : INS>
F: test4      S:2      S
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY

```



- Press “F3” key to run from STEP line when STOP key is pressed.

Step 2.

Running 1 STEP

```

<MANUAL : INS>
F: test4      S:2      S
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
INC  DEC  EXEC  STOP

```



- Press “F3” key to run 1 STEP
- Repetitively press key as many times as desired STEP.

```

<MANUAL : INS>
F: test4      S:3      S
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
INC  DEC  EXEC  STOP

```

- Check that number of S: in the 2nd line is changed.

Running INC

```

<MANUAL : INS>
F: test4      S:2      S
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
INC  DEC  EXEC  STOP

```

- Move to the next STEP.

Running DEC

```

<MANUAL : INS>
F: test4      S:2      S
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
INC  DEC  EXEC  STOP

```

- Move to the previous STEP.

Step 3.

Ending STEP Mode

```

<MANUAL : INS>
F: test4      S:2      S
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
INC      DEC      EXEC  STOP

```

F4

- Press “F4” key to stop STEP Mode and to return to the previous screen

```

<MANUAL : INS>
F: test4      S:2      S
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
EXIT      START  RE-ST  WAY

```

- Check the previous screen.

■ Ending STEP Mode

Step 1.

Ending STEP Mode

```

<MANUAL : INS>
F: test4      S:2      S
T: 1      V: 5  Q4AFL1
a = 0

if a == 0
  b = 1
EXIT      START  RE-ST  WAY

```

- Press “F1” key to return to Main Screen.

```

<TEACH MENU>
1. EDIT      2. RUN
3. INFO      4. I/O
5. ORIGIN

0. SHUTDOWN  input : #

```

- Check Main Screen.

3.4.2.5 Executing AUTO RUN

- Runs Auto Mode in AUTO/STEP RUN Mode.
- In Auto Mode, all STEPS will be executed in order.

■ Setting Auto Mode

Step 1.

Setting Auto Mode

```

<MANUAL : INS>
F: test4      S:2
T: 1 V: 5 Q4AFL1 S
a = 0
if a == 0
  b = 1
EXIT START RE-ST WAY
  
```

```

<MANUAL : INS>
F: test4      S:2
T: 1 V: 5 Q4AFL1 A
a = 0
if a == 0
  b = 1
EXIT START RE-ST WAY
  
```

F4

- Press “F4” key to convert into A (AUTO) from S (STEP).

■ Running Auto Mode

Step 1.

Running Auto Mode

```

<MANUAL : INS>
F: test4      S:2 A
T: 1 V: 5 Q4AFL1
a = 0
if a == 0
  b = 1
EXIT START RE-ST WAY
  
```

```

<MANUAL : INS>
F: test4      S:2 A
T: 1 V: 5 Q4AFL1
a = 0
if a == 0
  b = 1
STOP
  
```

LED Check

○ORG ○SVON **○RUN** ○SHIFT ○ALRM

F2

- Press “F2” key to run from the first line of the executable file in Auto Mode.

- Execution screen will be displayed for auto execution.

- Check ON of RUN LED lamp.

Re-running Auto Mode

```

<MANUAL : INS>
F: test4      S:2      A
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY

```



- Press “F3” key to run from STEP line when STOP key is pressed.

Step 2.

Ending Auto Mode

```

<MANUAL : INS>
F: test4      S:2      A
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1

```

STOP



- Press “F4” key to stop Auto Mode and to return to the previous screen.

```

<MANUAL : INS>
F: test4      S:2      A
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY

```

- Check the previous screen.

■ Ending Auto Mode

Step 1.

Ending Auto Mode

```

<MANUAL : INS>
F: test4      S:2      A
T: 1 V: 5 Q4AFL1
a = 0

if a == 0
  b = 1
EXIT  START  RE-ST  WAY

```

- Press “F1” key to return to Main Screen.

```

<TEACH MENU>
1. EDIT      2. RUN
3. INFO      4. I/O
5. ORIGIN

```

```

0. SHUTDOWN
input : #

```

- Check Main Screen.

3.5 Monitoring

- ✓ Diagnose various states of the system.

3.5.1 Overview

- Checks work details and state values in real time in RUN Mode.
- Monitors both of AUTO RUN and MANUAL RUN.
- For information of provided functions, refer to the following detailed items.

■ Detailed items

GROUP		Detail	Display unit
Page1	1 :CURR	Checks current position of each robot axis.	-Moving axis: mm/s rotating axis: degree/s
	2: POS	Checks teaching position of each robot axis.	
	3: INT	Checks Integer value edited in Edit.	-
	4: FLOAT	Checks Float value edited in Edit.	-
	5: GPIO	Checks I/O value of GPIO.	-
	6: FBUS	Checks I/O value of Fieldbus.	-
	7: SAFETY	Checks SAFETY situation.	-
	8: ULOG	Checks user JOB log.	-
Page2	1: TRQ	Checks Torque of each robot axis.	%
	2: TRQMAX	Checks max torque of each robot axis.	%
	3: LOAD	Checks average load factor of each axis.	%
	4: RPM	Checks RPM velocity of each robot axis.	RPM
	5: DIST	Total driving distance of the motor.	-
	6: JOB	Checks currently running JOB detail.	-
	7: MVR	In case of moving 2 POINTS, check percentage value of current position comparing to whole distance.	%
	6: THREAD	Sets Thread ID of executable file. Activated only in MANUAL RUN.	-

3.5.2 How to display Monitoring Screen

3.5.2.1 In case of AUTO RUN Mode

- INC Window will be displayed as the first screen after selecting Thread.

Step 1.

THREAD Selection

```

<AUTO : TH INFO>
THREAD      STATE
*TH1        RUN
TH2         IDLE
TH3         IDLE
TH4         IDLE
SEL
  
```

- Input power to display Thread information in the screen.

```

<AUTO : TH INFO>
THREAD      STATE
*TH1        RUN
TH2         IDLE
TH3         IDLE
TH4         IDLE
SEL
  
```



- Press “UP/DOWN” key to select Thread to check information.
- Selected Thread will be checked with “*” mark in the front of the line.

SEL Selection

```

<AUTO : TH INFO>
THREAD      STATE
*TH1        RUN
TH2         IDLE
TH3         IDLE
TH4         IDLE
SEL
  
```



- Press “F1” key to select “SEL”..

Checking INS Window

```

<AUTO : INS>
F: test4      S:2      A
T: 1      V: 5 Q4AFL1
a = 0
if a == 0
  b = 1
  
```

- Check INS Window.
- Detail in the red box will be continuously changed according to program run STEP.

Step 2.

Checking DISPLAY Selection Window

```

<AUTO : INS>
F: test4      S:2      A
T: 1      V: 5      Q4AFL1
a = 0

if a == 0
b = 1

```



- Press “DISP” key to check DISPLAY Selection Window.

```

<AUTO : DISP>      (1/2)
1.CURR      2. POS
3. INT      4. FLOAT
5. GPIO     6. FBUS
7. SAFETY   8. ULOG

```

input : #

- Check DISPLAY output Window.

Step 3.

Page Selection

```

<AUTO : DISP>      (1/2)
1.CURR      2. POS
3. INT      4. FLOAT
5. GPIO     6. FBUS
7. SAFETY   8. ULOG

```

input : #



- Use “PAGE UP/DOWN” key for screen conversion.

```

<AUTO : DISP>      (2/2)
1. TRQ      2. TRQMAX
3. RPM      4. DIST
5. JOB

```



Step 4.

Cancelling selection of monitoring Menu Screen

```

<AUTO : DISP>      (1/2)
1.CURR      2. POS
3. INT      4. FLOAT
5. GPIO     6. FBUS
7. SAFETY   8. ULOG

```

input : #



- Press “ESC” key to return to the previous screen

<AUTO : DISP> (1/2)
1.CURR 2.POS
3.INT 4.FLOAT
5.GPIO 6.FBUS
7.SAFETY 8.ULOG

input : #

<AUTO : DISP> (1/2)
1.CURR 2.POS
3.INT 4.FLOAT
5.GPIO 6.FBUS
7.SAFETY 8.ULOG

input : #

<AUTO : INS>
F: test4 S:2 A
T: 1 V: 5 Q4AFL1
a = 0
if a == 0
b = 1

3.5.2.2 In case of MANUAL RUN Mode

Step 1.

Monitoring Menu Screen Display

```

<MAN : INS>
F: test4      S:2    S
T: 1      V: 5  Q4AFL1
a = 0

```

```

if a == 0
  b = 1
EXIT  START  RE-ST  WAY

```



- Press “DISP” key to check DISPLAY Selection Window.

```

<MAN : INS>
F: test4      S:2    S
T: 1      V: 5  Q4AFL1
a = 0

```

```

if a == 0
  b = 1
INC   DEC   EXEC  STOP

```

```

<MAN: DISP>      (1/2)
1.CURR           2.POS
3.INT            4.FLOAT
5.GPIO          6.FBUS
7.SAFETY        8.ULOG

```

input : #

- Check Monitoring Screen.

Step 2.

Page Selection

```

<MAN : DISP>      (1/2)
1. INS           2. POS
3. RPM           4. TRQ
5. TRQMAX        6. GPIO
7. SAFETY        8. FBUS

```

input : #



- Use “PAGE UP/DOWN” key for screen conversion.

```

<MAN: DISP>      (2/2)
1. TRQ           2. TRQMAX
3. RPM           4. DIST
5. JOB           6. THREAD

```



Step 3.

Cancelling selection of monitoring

Menu Screen

```
< MAN: DISP>      (1/2)
1.CURR            2. POS
3. INT            4. FLOAT
5. GPIO           6. FBUS
7. SAFETY         8. ULOG
```

input : #

```
<MAN : INS>
F: test4          S:2      S
T: 1      V: 5    Q4AFL1
a = 0
if a == 0
  b = 1
EXIT   START  RE-ST  WAY
```

ESC

- Press “ESC” key to return to the previous screen

※ Caution ※

- In MANUAL RUN Mode, information of monitoring function key is not displayed in the screen.

3.5.3 Description of monitoring function and screen

3.5.3.1 CURR (Current Position)

- Checks current position of each robot axis.

Step 1.

CURR Screen Move

```

< AUTO: DISP> (1/2)
1. CURR      2. POS
3. INT        4. FLOAT
5. GPIO       6. FBUS
7. SAFETY     8. ULOG
  
```

input : #



- 1: CURR Selection

Step 2.

ROBOT SELECTION

```

<SELECT ROBOT>
ROBOT TYPE
*R1          Q4AFL1
R2            NO-EXIT
R3            NO-EXIT
  
```

SEL EXIT



- Press "UP/DOWN" key to select a robot to check Position to the robot.
- The selected robot can be checked by "*" mark in the front of the line.

```

<SELECT ROBOT>
ROBOT TYPE
*R1          Q4AFL1
R2            NO-EXIT
R3            NO-EXIT
  
```

SEL **EXIT**



- Press "F1" key to move to POS screen.
- Press "F4" key to return to the previous screen.

Step 3.

Checking CURR Screen

```

<AUTO : CURR>
F: test4      S:2      A
T: 1          V: 5     Q4AFL1
a = 0
T : 0          Z : 0
R1: 0          R2: 0
X : 0          6 : 0
  
```

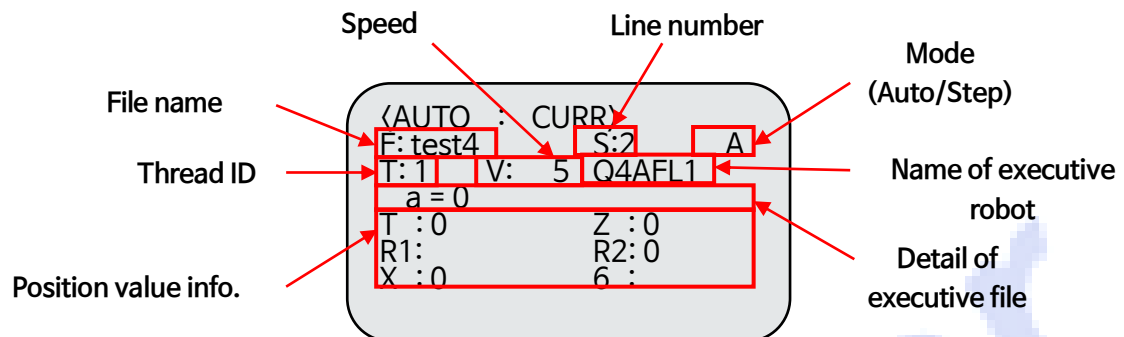
- Check Current screen.

■ Description of function and screen

① Screen description

- 1) Current position value information can be checked in position value information box.
- 2) If value is not displayed in position value information box, it is because axis is

'Disabled'.



- ② Function description
- [ESC]: Moves to Main Screen

3.5.3.2 POS (Current Position)

- Checks teaching position (Local position) of each robot axis.

Step 1.

POS Screen Move

```

< AUTO: DISP> (1/2)
1. CURR      2. POS
3. INT       4. FLOAT
5. GPIO      6. FBUS
7. SAFETY    8. ULOG
  
```

input : #



- 2: POS Selection

Step 2.

ROBOT SELECTION

```

<SELECT ROBOT>
ROBOT TYPE
*R1          Q4AFL1
R2          NO-EXIT
R3          NO-EXIT
  
```

SEL EXIT



- Press "UP/DOWN" key to select a robot to check Position to the robot.
- The selected robot can be checked by "*" mark in the front of the line.

```

<SELECT ROBOT>
ROBOT TYPE
*R1          Q4AFL1
R2          NO-EXIT
R3          NO-EXIT
  
```

SEL

EXIT



- Press "F1" key to move to POS screen.
- Press "F4" key to return to the previous screen.

Step 3.

POS Screen Check

```

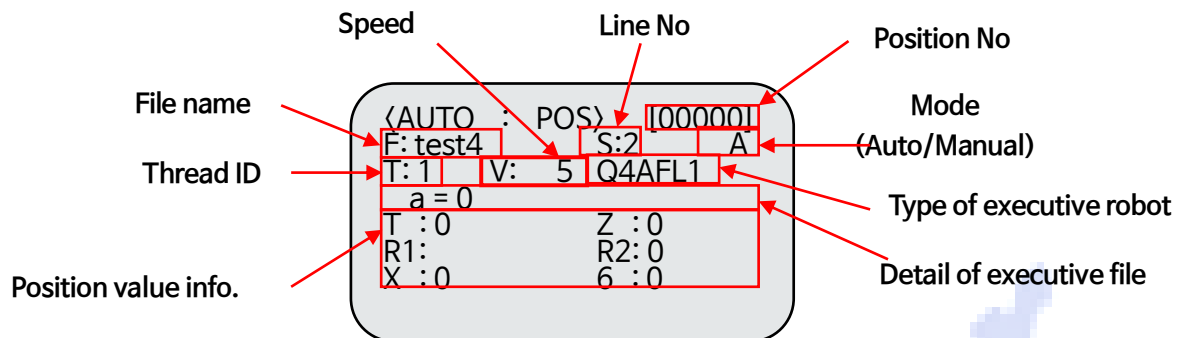
<AUTO : POS> [00000]
F: test4      S:2    A
T: 1          V: 5   Q4AFL1
a = 0
T : 0          Z : 0
R1:            R2: 0
X : 0          6 : 0
  
```

- Check Local position screen.

■ Description of function and screen

① Screen description

- Teaching position value information can be checked in position value information box.
- If value is not displayed in position value information box, it is because axis is 'Disabled'.



② Function description

- [PAGE UP/DOWN]: Moves to desired Index in order
- [JUMP]: Directly moves to desired Index

Step 1

Direct Index Move

```
<AUTO : POS> [00000]
F: test4      S:2      A
T: 1      V: 5  Q4AFL1
a = 0
T : 0      Z : 0
R1:        R2: 0
X : 0      6 : 0
```

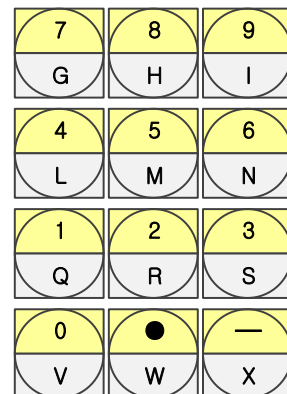


- To directly move to inputting Point No, press "JUMP" key

```
<AUTO : POS> [00000]
F: test4      S:2      A
T: 1      V: 5  Q4AFL1
a = 0
T : 0      Z : 0
R1:        R2: 0
X : 0      6 : 0
Point # = 10
```



- Input Point No "10" to be moved to.



- After inputting, press "ENTER" key.

- [ESC]: Moves to Main Screen

3.5.3.3 INT (Integer)

- Checks Integer value edited in Edit.

Step 1.

GLBINT Screen Move

< AUTO: DISP> (1/2)
 1. CURR 2. POS
 3. **INT** 4. FLOAT
 5. GPIO 6. FBUS
 7. SAFETY 8. ULOG

input : #



- Select 3: INT

Step 2.

< AUTO: **INTEGER**>
 I0 ■
 I1 0
 I2 0
 I3 0
 I4 0
 I5 0

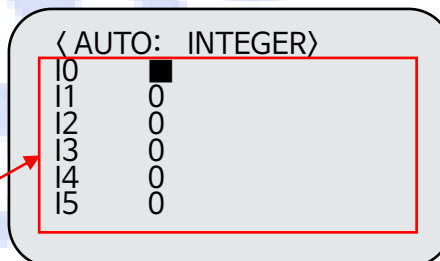
- Check INTEGER screen.

■ Description of function and screen

① Screen description

- 1) Integer Index and the relevant value can be checked in Integer information box.

Integer Info.



② Function description

- [UP/DOWN]: Serial No Move

Step 1.

Cursor Position Move

< AUTO: INTEGER>
 I0 ■
 I1 0
 I2 0
 I3 0
 I4 0
 I5 0



- Press direction key to move to the value to be edited
- Move result can be checked with cursor position.

< AUTO: INTEGER>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

- [PAGE UP/DOWN]: Index No Page Move

Step 1.

< AUTO: INTEGER>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

Pg Up

- Use "PAGE UP/DOWN" key for screen conversion.

< AUTO: INTEGER>

I6	0
I7	0
I8	0
I9	0
I10	0
I11	0

Pg Dn

- [JUMP]: Index No direct move

Step 1

Index direct move

< AUTO: INTEGER>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

JUMP

- To directly move to inputting Point No, press "JUMP" key

< AUTO: INTEGER>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

Integer Num # =10

ENTER

- Input Point No "10" to be moved to.

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	• W	— X

- After inputting, press "ENTER" key.

< AUTO: INTEGER>

11 10
12 0
13 0
14 0
15 0

- Integer Value Edit

Step 1.

Changing variable value

< AUTO: INTEGER>

11 10
12 0
13 0
14 0
15 0

- Press number key of the value to be changed to input change value "10"

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	• W	— X

< AUTO: INTEGER>

11 10 10
12 0
13 0
14 0
15 0



- Press "ENTER" key to apply it into the screen.

- Deleting Integer value
variable value

Step 1.

< AUTO: INTEGER>

11 10 10
12 0
13 0
14 0
15 0



- If variable value is incorrectly input, press "DEL" key to delete input value in order.

< AUTO: INTEGER>

I0	1
I1	0
I2	0
I3	0
I4	0
I5	0

- [ESC]: Moves to Main Screen

< AUTO: INTEGER>

I0	0
I1	0
I2	0
I3	0
I4	0
I5	0

ESC

- Check the result

< AUTO : INS>

F: test4 S:2 A
T: 1 V: 5 Q4AFL1
a = 0
if a == 0
b = 1

3.5.3.4 FLOAT (Float)

- Checks Float value edited in Edit.

Step 1.

GLBINT Screen Move

< AUTO: DISP> (1/2)
 1. CURR 2. POS
 3. INT **4. FLOAT**
 5. GPIO 6. FBUS
 7. SAFETY 8. ULOG

input : #



- Select 4. FLOAT

Step 2.

< AUTO: **FLOAT**>

F0 ■
 F1 0
 F2 0
 F3 0
 F4 0
 F5 0

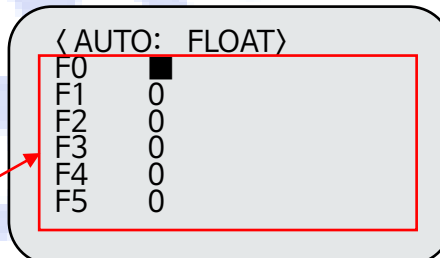
- Check FLOAT Screen.

■ Description of function and screen

① Screen description

- 1) Float Index and the relevant value can be checked in Float information box.

Float Info.



② Function description

- [UP/DOWN]: Serial No Move

Step 1.

Cursor Position Move

< AUTO: FLOAT >

F0 ■
 F1 0
 F2 0
 F3 0
 F4 0
 F5 0



- Press direction key to move to the value to be edited
- Move result can be checked with cursor position.

< AUTO: FLOAT >

F0	0
F1	0
F2	0
F3	0
F4	0
F5	0

- [PAGE UP/DOWN]: Index No Page Move

Step 1.

< AUTO: FLOAT >

F0	0
F1	0
F2	0
F3	0
F4	0
F5	0

Pg Up

- Use "PAGE UP/DOWN" key for screen conversion.

< AUTO: FLOAT >

F6	0
F7	0
F8	0
F9	0
F10	0
F11	0

Pg Dn

- [JUMP]: Index No direct move
Index direct move

Step 1

< AUTO: FLOAT >

F0	0
F1	0
F2	0
F3	0
F4	0
F5	0

JUMP

- To directly move to inputting Point No, press "JUMP" key

< AUTO: FLOAT >

F0	0
F1	0
F2	0
F3	0
F4	0
F5	0
Float Num # =10	

ENTER

- Input Point No "10" to be moved to.

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	• W	— X

- After inputting, press "ENTER" key.

< AUTO: FLOAT >

F10 ■
F11 0
F12 0
F13 0
F14 0
F15 0

- Float Value Edit

Step 1.

Changing variable value

< AUTO: FLOAT >

F0 ■
F1 0
F2 0
F3 0
F4 0
F5 0

- Press number key of the value to be changed to input change value "10.0"

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

< AUTO: FLOAT >

F0 10.0 ■
F1 0
F2 0
F3 0
F4 0
F5 0



- Press "ENTER" key to apply it into the screen.

- Deleting Float value

Step 1.

Deleting variable value

< AUTO: FLOAT >

F0 10.0 ■
F1 0
F2 0
F3 0
F4 0
F5 0



- If variable value is incorrectly input, press "DEL" key to delete input value in order.

< AUTO: FLOAT >

F0 10. ■

F1 0

F2 0

F3 0

F4 0

F5 0

- [ESC]: Moves to Main Screen

< AUTO: FLOAT >

F0 ■

F1 0

F2 0

F3 0

F4 0

F5 0

ESC

- Check the result

< AUTO : INS >

F: test4 S:2 A

T: 1 V: 5 Q4AFL1

a = 0

if a == 0

b = 1

3.5.3.5 GPIO

- Checks I/O value of GPIO.

Step 1.

GPIO Screen Move

< AUTO: DISP > (1/2)
 1. CURR 2. POS
 3. INT 4. FLOAT
 5. **GPIO** 6. FBUS
 7. SAFETY 8. ULOG

input : #



- 5:GPIO Selection

Step 2.

< I/O - GPIO >
 1. IN 2. OUT

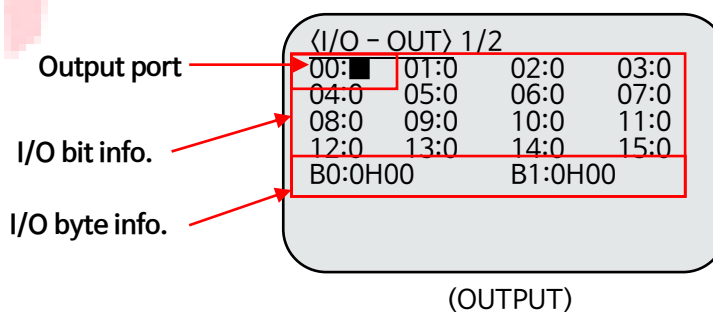
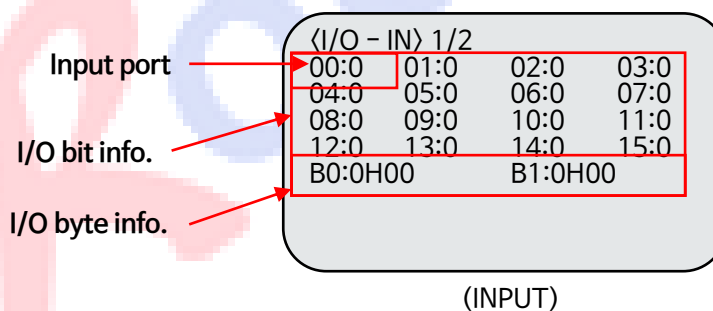
input #

- Check GPIO screen.

■ Description of function and screen

① Screen description

- 1) Check GPIO pin output or input value relevant to Output port and each Index of current Display Window in GPIO information box.



② Function description

- [PAGE UP/DOWN]: How to check input/output signal

Step 1.

IN/OUT Index Page Change

<I/O - OUT> 1/2
 00:0 01:0 02:0 03:0
 04:0 05:0 06:0 07:0
 08:0 09:0 10:0 11:0
 12:0 13:0 14:0 15:0
 B0:0H00 B1:0H00



- Use "PAGE UP/DOWN" key for screen conversion.

<I/O - OUT> 2/2
 16:0 17:0 18:0 19:0
 20:0 21:0 22:0 23:0
 24:0 25:0 26:0 27:0
 28:0 29:0 30:0 31:0
 B2:0H00 B3:0H00



- [UP/DOWN]: Select port to be output

Step 2.

Signal Position Move

<I/O - OUT> 2/2
 16:0 17:0 18:0 19:0
 20:0 21:0 22:0 23:0
 24:0 25:0 26:0 27:0
 28:0 29:0 30:0 31:0
 B2:0H00 B3:0H00



- Press direction key to move to No to be output.

<I/O - OUT> 2/2
 16:0 17:0 18:0 19:0
 20:0 21:0 22:0 23:0
 24:0 25:0 26:0 27:0
 28:0 29:0 30:0 31:0
 B2:0H00 B3:0H00



- Move result can be checked with cursor position.

- Output signal ON/OFF

Step 3.

Signal ON

```

<I/O - OUT> 2/2
16:0  17:0  18:0  19:0
20:0  21:0  22:0  23:0
24:0  25:0  26:0  27:0
28:0  29:0  30:0  31:0
B2:0H00    B3:0H00

```

EXIT

ENTER

- To turn ON signal, press “ENTER” key

```

<I/O - OUT> 2/2
16:0  17:0  18:0  19:0
20:1  21:0  22:0  23:0
24:0  25:0  26:0  27:0
28:0  29:0  30:0  31:0
B2:0H00    B3:0H00

```

EXIT

Signal OFF

```

<I/O - OUT> 2/2
16:0  17:0  18:0  19:0
20:1  21:0  22:0  23:0
24:0  25:0  26:0  27:0
28:0  29:0  30:0  31:0
B2:0H00    B3:0H00

```

EXIT

ENTER

- To turn OFF signal, press “ENTER” key

```

<I/O - OUT> 2/2
16:0  17:0  18:0  19:0
20:0  21:0  22:0  23:0
24:0  25:0  26:0  27:0
28:0  29:0  30:0  31:0
B2:0H00    B3:0H00

```

EXIT

- [ESC]: Moves to Main Screen

Step 4.

```

<I/O - GPIO>
1. IN      2. OUT

```

input #

ESC

- Check the result

```

<AUTO : INS>
F: test4      S:2      A
T: 1          V: 5      Q4AFL1
a = 0
if a == 0
b = 1

```

3.5.3.6 FBUS (Fieldbus)

- Checks BIT, WORD value of Fieldbus.

Step 1.

FBUS Screen Move

<AUTO: DISP> (1/2)
 1. CURR 2. POS
 3. INT 4. FLOAT
 5. GPIO 6. **FBUS**
 7. SAFETY 8. ULOG

input : #



- 6: FBUS Selection

<FIELD BUS>
 1. B-IN 2. B-OUT
 3. W-IN 4. W-OUT
 5. F-IN 6. F-OUT

input : #

- Check FBUS screen.

Step 2.

When FBUS is not connected

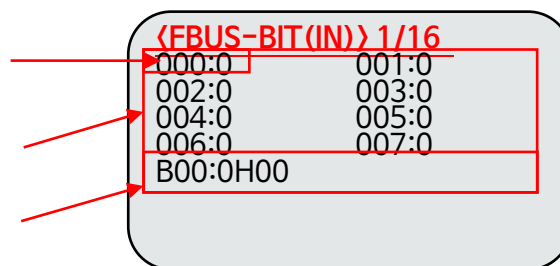
<AUTO : FBUS> (1/2)
 1. INS 2. POS
 3. RPM 4. TRQ
 5. TRQMAX 6. GPIO
 7. SAFETY 8. FBUS

- If Fieldbus is not connected, no screen is changed.

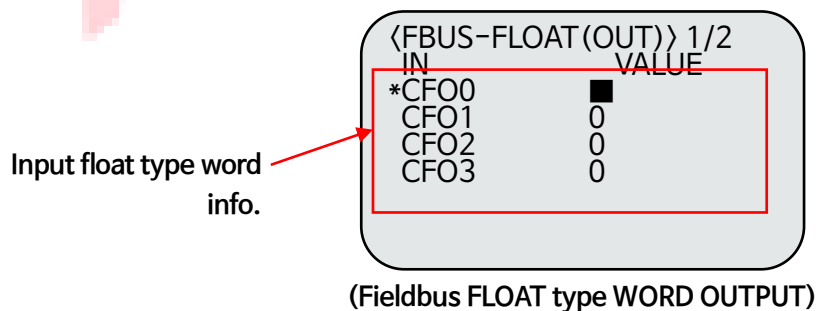
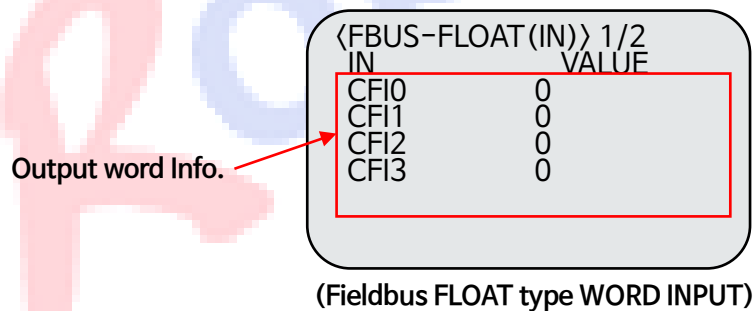
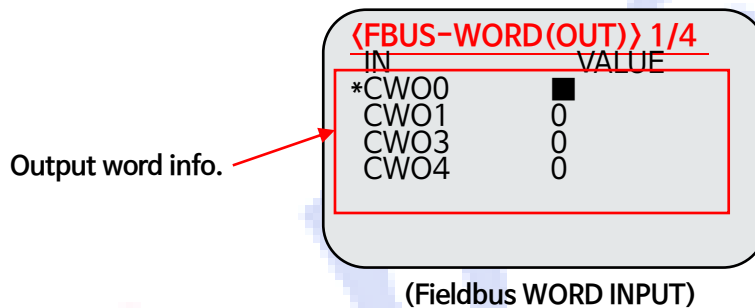
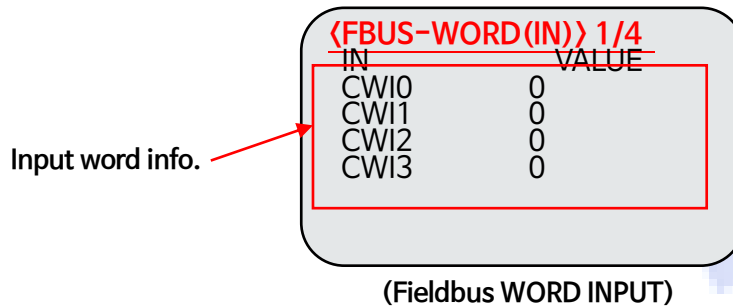
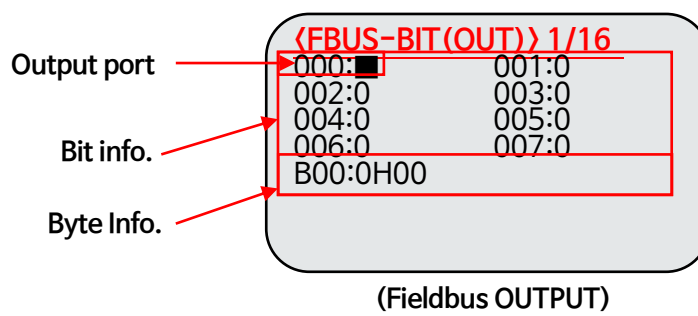
■ Description of function and screen

① Screen description

- 1) Check Fieldbus Index information and output or input information in Fieldbus information box.



(Fieldbus INPUT)



② Function description

- [PAGE UP/DOWN]: How to check input/output signal

Step 1.

BIT (IN/OUT) Index Page Change

⟨FBUS-BIT (IN)⟩ 1/16

000:0	001:0
002:0	003:0
004:0	005:0
006:0	007:0
B00:0H00	



- Use "PAGE UP/DOWN" key for screen conversion.

⟨FBUS-BIT (IN)⟩ 2/16

008:0	009:0
010:0	011:0
012:0	013:0
014:0	015:0
B01:0H00	



WORD DATA Index Page Change

⟨FBUS-WORD (IN)⟩ 1/4

IN	VALUE
CW10	0
CW11	0
CW12	0
CW13	0

EXIT



- 0~15 of WORD DATA area will be displayed.

~

⟨FBUS-WORD (IN)⟩ 4/4

IN	VALUE
CW112	0
CW113	0
CW114	0
CW115	0

EXIT



- [UP/DOWN]: Selects port to be output

Step 2.

BIT Position Move

⟨FBUS-BIT (OUT)⟩ 3/16

<u>016:0</u>	017:0
018:0	019:0
020:0	021:0
022:0	023:0
B02:0H00	



- Press direction key to move to No to be output.
- Move result can be checked with cursor position.

```

<FBUS-BIT(OUT)> 3/16
017:0      018:0
019:0      020:0
021:0      022:0
023:0      024:0
B02:0H00

```



WORD Position Move

```

<FBUS-WORD(OUT)> 2/4
IN      VALUE
*CWO4      0
CWO5      0
CWO6      0
CWO7      0
SET                      EXIT

```



- Press direction key to move to No to be output.

```

<FBUS-WORD(OUT)> 2/4
IN      VALUE
CWO4      0
*CWO5      0
CWO6      0
CWO7      0
SET                      EXIT

```



- Move result can be checked with cursor position.

- **Output BIT ON/OFF**

Step 4.

signal ON

```

FBUS-BIT(OUT)> 3/16
017:0      018:0
019:0      020:0
021:0      022:0
023:0      024:0
B02:0H00

```

```

FBUS-BIT(OUT)> 3/16
017:0      018:0
019:0      020:1
021:0      022:0
023:0      024:0
B02:0H00

```



- To turn ON signal, press "ENTER" key

Signal OFF

```
FBUS-BIT(OUT)> 3/16
017:0      018:0
019:0      020:1
021:0      022:0
023:0      024:0
B02:0H00
```

ENTER

- To turn OFF signal, press “ENTER” key

```
FBUS-BIT(OUT)> 3/16
017:0      018:0
019:0      020:0
021:0      022:0
023:0      024:0
B02:0H00
```

OUTPUT WORD Value Edit

```
<FBUS-WORD(OUT)> 1/4
OUT      VALUE
CWO1     0
CWO2     0
CWO3     0
CWO4     0
CWO5     0
```

```
<FBUS-WORD(OUT)> 1/4
OUT      VALUE
CWO1     0
CWO2     0
CWO3     10
CWO4     0
CWO5     0
```

- Value Edit

7	8	9
G	H	I
4	5	6
L	M	N
1	2	3
Q	R	S
0	●	—
V	W	X

3.5.3.7 SAFETY

- Checks SAFETY situation.

Step 1.

Safety Screen Move

<<AUTO: DISP>> (1/2)
 1. CURR 2. POS
 3. INT 4. FLOAT
 5. GPIO 6. FBUS
7. SAFETY 8. ULOG

input : #



- 7: SAFETY Selection

Step 2.

<I/O - SAFETY>
 1. IN 2. OUT

input : #

- Check Safety Screen.

■ Description of function and screen

① Screen description

- 1) Safety output or input information can be checked in Safety information box.

Safety info.

<I/O - SAFETY IN> 1/2
 MC1_RD:1 MC2_RD:1
 A_EMG:0 TP_EMG:0
 F_EMG:0 ENABLE:0
 LIGHT:0 E_RST:0
 IM_NO:0 IM_NC:0

(INPUT)

<I/O - SAFETY OUT>
 M_EMG:1 RESET:1
 DUMMY1:0 DUMMY1:0
 DUMMY3:0 DUMMY4:0

(OUTPUT)

② Function description

- [PAGE UP/DOWN]: How to check input signal

Step 1.

Page Change

<I/O - Safety IN> **1/2**
 MC1_RD: 1 MC2_RD:1
 A_EMG:0 TP_EMG:0
 F_EMG:0 ENABLE:0
 LIGHT:0 E_RST:0
 IM_NO:0 IM_NC:0
 EXIT

<I/O - Safety IN> **2/2**
 SMPS_F: 1 FAN_F:1
 DUMMY2:0 DUMMY6:0
 DUMMY7:0 DUMMY8:0
 EXIT



- Use "PAGE UP/DOWN" key for screen conversion.

- [ESC]: Moves to Main Screen

<I/O - SAFETY>
 1. IN 2. OUT

input #

<AUTO : INS>
 F: test4 S:2 A
 T: 1 V: 5 Q4AFL1
 a = 0
 if a == 0
 b = 1



- Check the result.

③ Description of SAFETY information

Port		Description
IN	MC1_RD	MC1 State Check
	MC2_RD	MC2 State Check
	A_EMG	Alarm in Auto Mode
	M_EMG	T/P alarm
	S_EMG	Front switch alarm
	TP_EMG	System Enable or Hold

	F_EMG	Ankle detection
	ENABLE	External Reset
	LIGHT	Alarm when T/P mode mismatches with system mode (Manual)
	E_RST	Alarm when T/P mode mismatches with system mode (Auto)
	IM_NO	Alarm when UPS AC power is not supplied
	IM_NC	Fan alarm
	SMPS_F	DUMMY
	FAN_F0	DUMMY
	DUMMY2	DUMMY
	DUMMY6	DUMMY
	DUMMY7	MC1 State Check
	DUMMY8	MC2 State Check
OUT	M_EMG	Main alarm
	RESET	Reset
	DUMMY1	DUMMY
	DUMMY3	DUMMY
	DUMMY4	DUMMY
	DUMMY5	DUMMY

3.5.3.8 ULOG (Use Log)

- Checks user JOB log.

Step 1.

Safety Screen Move

⟨AUTO: DISP⟩ (1/2)
 1. CURR 2. POS
 3. INT 4. FLOAT
 5. GPIO 6. FBUS
 7. SAFETY **8. ULOG**

input : #



- 8: ULOG Selection

Step 2.

⟨MAN : ULOG⟩
 000: ■
 001: —
 002:
 003:
 004:
 005:
 EXIT START RE-ST WAY

- Check ULOG screen.

■ Description of function and screen

① Screen description

- 1) Checks log saved in the memory using PRINT command in JOB.

Float info.

⟨MAN : ULOG⟩
 000: ■
 001: —
 002:
 003:
 004:
 005:
 EXIT START RE-ST WAY

② Function description

- [UP/DOWN]: Serial No Move

Step 1.

Cursor Position Move

⟨MAN : ULOG⟩
000: ■
 001:
 002:
 003:
 004:
 005:
 EXIT START RE-ST WAY



- Press direction key to move to value to be checked.
- Move result can be checked with cursor position.

```

<MAN : ULOG>
000:
001: ■
002:
003:
004:
005:
EXIT START RE-ST WAY

```

- [PAGE UP/DOWN]: Index No Page Move

Step 1.

```

<MAN : ULOG>
000:
001: ■
002:
003:
004:
005:
EXIT START RE-ST WAY

```



- Use “PAGE UP/DOWN” key for screen conversion.

```

<MAN : ULOG>
006:
007: ■
008:
009:
010:
011:
EXIT START RE-ST WAY

```



- [JUMP]: Index No direct move
Index direct move

Step 1

```

<MAN : ULOG>
000:
001: ■
002:
003:
004:
005:
EXIT START RE-ST WAY

```



- To directly move to inputting Point No, press “JUMP” key

```

<MAN : ULOG>
000:
001:
002:
003:
004:
005:
Float Num # =10

```



- Input Point No “10” to move to.

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

- After inputting, press “ENTER” key.

<MAN : ULOG>

010: ■

011:

012:

013:

014:

015:

EXIT START RE-ST WAY

- [ESC]: Moves to Main Screen

<MAN : ULOG>

010: ■

011:

012:

013:

014:

015:

EXIT START RE-ST WAY

ESC

- Check the result

<MAN : INS>

F: test4 S:2 A

T: 1 V: 5 Q4AFL1

a = 0

if a == 0

b = 1

3.5.3.9 TRQ (Torque)

- Checks Torque of each robot axis.

Step 1.

TRQ Screen Move

(AUTO : DISP) (2/2)
 1. **TRQ** 2. TRQMAX
 3. LOAD 4. RPM
 5. DIST 6. JOB
 7. MVR 8. THREAD

input : #



- 1: TRQ Selection

Step 2.

ROBOT SELECTION

(SELECT ROBOT)
 ROBOT TYPE
 *R1 Q4AFL1
 R2 NO-EXIT
 R3 NO-EXIT

SEL

EXIT



- Press "UP/DOWN" key to select a robot to check Position to the robot.
- The selected robot can be checked by "*" mark in the front of the line.

(SELECT ROBOT)
 ROBOT TYPE
 *R1 Q4AFL1
 R2 NO-EXIT
 R3 NO-EXIT

SEL

EXIT



- Press "F1" key to move to TRQ screen.
- Press "F4" key to return to the previous screen.

Step 3.

TRQ Screen Check

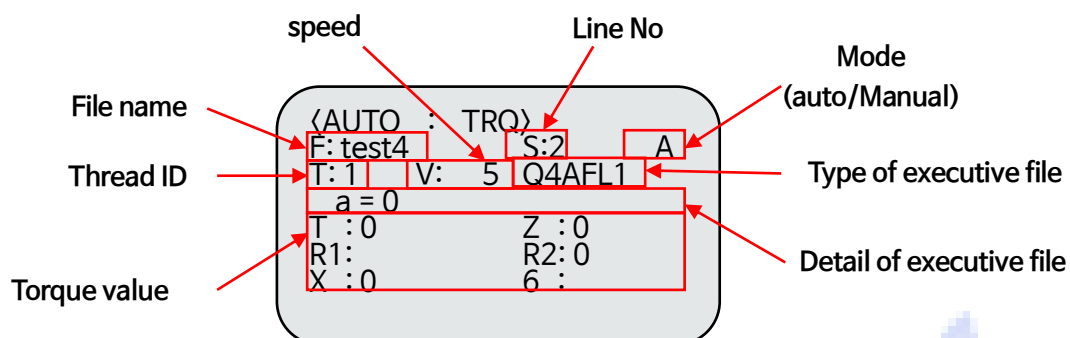
(AUTO : **TRQ**)
 F: test4 S:2 A
 T: 1 V: 5 Q4AFL1
 a = 0
 T1:0 Z1:0
 R1: R2:0
 X1:0 61:

- Check TRQ screen.

■ Description of function and screen

① Screen description

- Current Torque value can be checked in Torque value information box.
- If value is not displayed in Torque value information box, it is because axis is 'Disabled'.



② Function description

- [ESC]: Moves to Main Screen

3.5.3.10 TRQMAX (Max Torque)

- Checks max torque of each robot axis.

Step 1.

TRQMAX Screen Move

<AUTO : DISP> (2/2)
 1. TRQ **2. TRQMAX**
 3. LOAD 4: RPM
 5. DIST 6: JOB
 7. MVR 8. THREAD

input : #



- 2: TRQMAX Selection

Step 2.

ROBOT SELECTION

<SELECT ROBOT>
 ROBOT TYPE
 *R1 Q4AFL1
 R2 NO-EXIT
 R3 NO-EXIT

SEL

EXIT



- Press "UP/DOWN" key to select a robot to check Position to the robot.
- The selected robot can be checked by "*" mark in the front of the line.

<SELECT ROBOT>
 ROBOT TYPE
 *R1 Q4AFL1
 R2 NO-EXIT
 R3 NO-EXIT

SEL

EXIT



- Press "F1" key to move to TRQMAX screen.
- Press "F4" key to return to the previous screen.

Step 3.

TRQMAX Screen Check

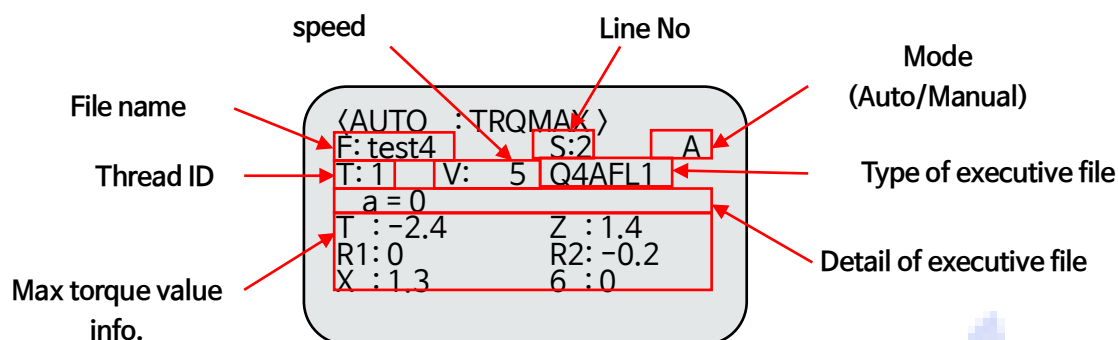
<AUTO : **TRQMAX**>
 F: test4 S:2 A
 T: 1 V: 5 Q4AFL1
 a = 0
T1: -2.4 Z1: 1.4
RT: 0 R2: -0.2
X1: 1.3 61: 0
DISP

- Check TRQMAX screen.

■ Description of function and screen

① Screen description

- 1) Max Torque value can be checked in Max Torque value information box.
- 2) Max If value is not displayed in Torque value information box, it is because axis is 'Disabled'.



② Function description

3.5.3.11 LOAD (Over Load)

- Checks average load factor of each axis.

Step 1.

LOAD Screen Move

```

<AUTO : DISP>      (2/2)
1. TRQ              2. TRQMAX
3. LOAD             4. RPM
5. DIST             6. JOB
7. MVR              8. THREAD
  
```

input : #



- 3: LOAD Selection

Step 2.

ROBOT SELECTION

```

<SELECT ROBOT>
ROBOT TYPE
*R1           Q4AFL1
R2          NO-EXIT
R3            NO-EXIT
  
```

SEL EXIT



- Press “UP/DOWN” key to select robot to check average load factor.
- The selected robot can be checked by “*” mark in the front of the line.

```

<SELECT ROBOT>
ROBOT TYPE
*R1           Q4AFL1
R2          NO-EXIT
R3            NO-EXIT
  
```

SEL **EXIT**



- Press “F1” key to move to LOAD screen.



- Press “F4” key to return to the previous screen.

Step 3.

LOAD Screen Check

```

<AUTO : OVER LOAD>
F: test4           S:2      A
T: 1      V: 5    Q4AFL1
a = 0
T : 0            Z : 0
R1:0            R2:0
X : 0            6 : 0
  
```

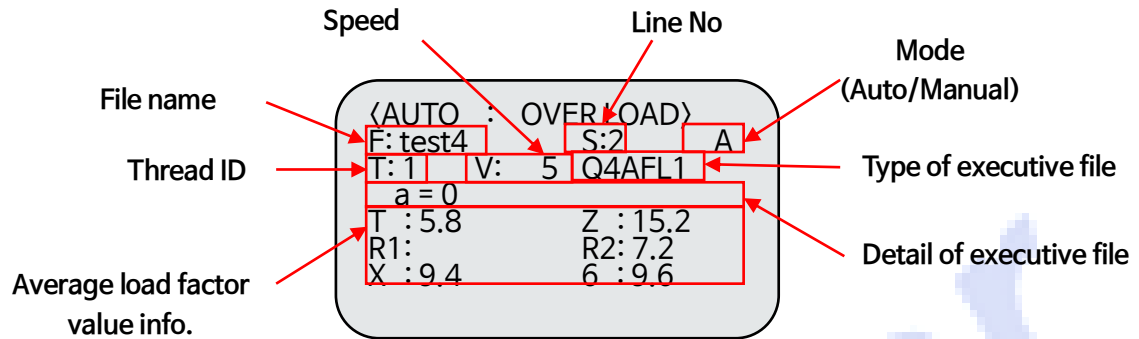
- Check Over load screen.

■ Description of function and screen

① Screen description

- 1) Load factor value can be checked in average load factor value information box.
- 2) If value is not displayed in average load factor value information box, it is because axis is ‘Disabled’.

- 3) If '0' is displayed for average load factor value, it is because Driver F/W is not updated.



- ② Function description
- [ESC]: Moves to Main Screen

3.5.3.12 RPM

- Checks RPM velocity of each robot axis.

Step 1.

RPM Screen Move

```

<AUTO : DISP>      (2/2)
1. TRQ             2. TRQMAX
3. LOAD             4: RPM
5. DIST             6: JOB
7. MVR             8. THREAD
  
```

input : #



- 4: RPM Selection

Step 2.

ROBOT SELECTION

```

<SELECT ROBOT>
ROBOT TYPE
*R1             Q4AFL1
R2             NO-EXIT
R3             NO-EXIT
  
```

SEL

EXIT



- Press “UP/DOWN” key to select a robot to check Position to the robot.
- The selected robot can be checked by “*” mark in the front of the line.

```

<SELECT ROBOT>
ROBOT TYPE
*R1             Q4AFL1
R2             NO-EXIT
R3             NO-EXIT
  
```

SEL

EXIT



- Press “F1” key to move to RPM screen.
- Press “F4” key to return to the previous screen.

Step 3.

RPM Screen Check

```

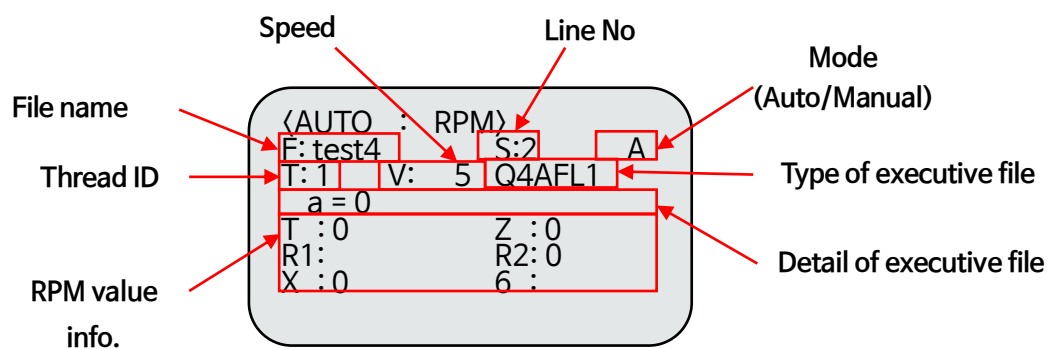
<AUTO : RPM>
F: test4          S:2      A
T: 1             V: 5      Q4AFL1
a = 0
T1: 0            Z1: 0
R1: 0            R2: 0
X1: 0            G1: 0
  
```

- Check RPM screen.

■ Description of function and screen

① Screen description

- Current RPM value information can be checked in RPM value information box.
- If value is not displayed in RPM value information box, it is because axis is ‘Disabled’.



② Function description

- [ESC]: Moves to Main Screen

3.5.3.13 DIST (Distance)

- Checks accumulated distance of each robot axis.

Step 1.

DIST Screen Move

```

<AUTO : DISP>      (2/2)
1. TRQ              2. TRQMAX
3. LOAD             4: RPM
5. DIST            6: JOB
7. MVR              8. THREAD
  
```

input : #



- 5: DIST Selection

Step 2.

ROBOT SELECTION

```

<SELECT ROBOT>
ROBOT TYPE
*R1           Q4AFL1
R2             NO-EXIT
R3             NO-EXIT
  
```

SEL EXIT



- Press “UP/DOWN” key to select a robot to check Position to the robot.
- The selected robot can be checked by “*” mark in the front of the line.

```

<SELECT ROBOT>
ROBOT TYPE
*R1           Q4AFL1
R2             NO-EXIT
R3             NO-EXIT
  
```

SEL EXIT



- Press “F1” key to move to DIST screen.
- Press “F4” key to return to the previous screen.

Step 3.

DIST Screen Check

```

<AUTO : DIST>
F: test4      S:2      A
T: 1          V: 5    Q4AFL1
a = 0
T1:0        Z1:0
RT:0        R2:0
X1:0        GT:0
  
```

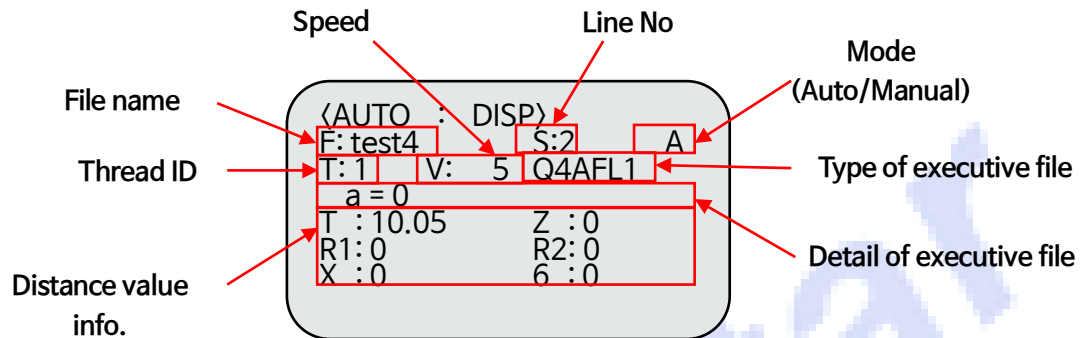
- Check DIST screen.

■ Description of function and screen

① Screen description

- Accumulated distance value can be checked in Distance value information box.
- If value is not displayed in Distance value information box, it is because axis is ‘Disabled’.
- In case of linear axis, unit: Km

- 4) In case of rotating axis, unit: 1, 000, 000 times of rotation unit based on reducer
- Because of limit of digit on the Teach pendant, it is expressed as below.
 - Ex) If T axis rotated 10,050,000 times, the following will be displayed in the screen: 10.05 (omit less than two decimal places)



- ② Function description
- **[ESC]**: Moves to Main Screen

3.5.3.14 JOB

- Checks currently running JOB information.

Step 1.

JOB Screen Move

(AUTO : DISP) (2/2)
 1. TRQ 2. TRQMAX
 3. LOAD 4. RPM
 5. DIST **6: JOB**
 7. MVR 8. THREAD

input : #



- 6: JOB Selection

(AUTO : JOB)
 T1 test4 main

DISP

- Check JOB screen.

■ Description of function and screen

① Screen description

- Checks ID in Thread ID box.
- Checks name of currently running file in executable file name box.
- Checks name of currently running function in executive function name box.

Thread ID

Name of
executive

(AUTO : JOB)
 T1 test4 main

Name of
function

② Function description

- [ESC]: Moves to Main Screen

3.5.3.15 MVR (Move Rate)

- To move between two POINTS, checks percentage value of the current position comparing to whole distance.

Step 1.

MVR Screen Move

```

<AUTO : DISP> (2/2)
1. TRQ          2. TRQMAX
3. LOAD         4. RPM
5. DIST         6. JOB
7. MVR        8. THREAD
  
```

input : #



- 7: MVR Selection

Step 2.

ROBOT SELECTION

```

<SELECT ROBOT>
ROBOT TYPE
*R1          Q4AFL1
R2            NO-EXIT
R3            NO-EXIT
  
```

SEL EXIT



- Press "UP/DOWN" key to select a robot to check Position to the robot.
- The selected robot can be checked by "*" mark in the front of the line.

```

<SELECT ROBOT>
ROBOT TYPE
*R1          Q4AFL1
R2            NO-EXIT
R3            NO-EXIT
  
```

SEL EXIT



- Press "F1" key to move to MVR screen.
- Press "F4" key to return to the previous screen.

Step 3.

MVR Screen Check

```

<AUTO : MVR>
F: test4      S:2      A
T: 1          V: 5     Q4AFL1
a = 0
  
```

MVR : 0

DISP

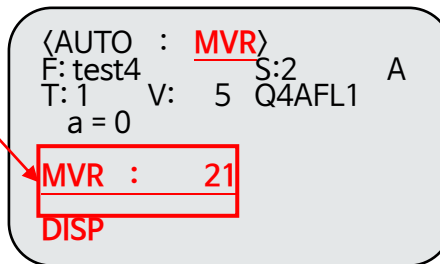
- Check MVR screen.

■ Description of function and screen

① Screen description

- 1) If currently running operation moves between two points, checks percentage value of the current position comparing to whole moving distance in real time.

Move rate



<AUTO : **MVR**>
F: test4 S:2 A
T: 1 V: 5 Q4AFL1
a = 0
MVR : 21
DISP

② Function description

- **[ESC]**: Moves to Main Screen

3.5.3.16 THREAD

- Sets Thread ID of executable file. This is activated only in MANUAL RUN.

Step 1.

THREAD Screen Move

(AUTO : DISP) (2/2)
 1. TRQ 2. TRQMAX
 3. LOAD 4: RPM
 5. DIST 6: JOB
 7. MVR **8. THREAD**
 input : #



- 8: THREAD Selection

(MANUAL: TH INFO)
 THREAD STATE
 *T H1 RUN
 TH2 RUN
 TH3 IDLE
 TH4 IDLE
 SEL EXIT

- Check THREAD screen.

■ Description of function and screen

① Screen description

- Check progress of currently running Thread and select Thread to be monitored.

Thread ID
* selection

(MANUAL: TH INFO)
 THREAD STATE
 *T H1 RUN
 TH2 RUN
 TH3 IDLE
 TH4 IDLE
 SEL EXIT

Thread state

② Function description

- [ESC]: Moves to Main Screen

Chapter 4. TEACH

- Operates the robot in JOG OPERATION.
- JOG LOCAL POINT has data of position to which the robot move. Robot position data includes JOINT coordinate value and has built in robot position data.
- LOCAL POINT per each robot is allocated to position data, and can be used only in the allocated robot.
- Max number of saving is 40, 000 per each robot.
- In most cases, a user moves the robot in position teaching mode to save position value. In this case, it is easy to save it using Teach Pendant [PGET] key.
- Edited final saving of position information will be automatically and permanently saved when the user exists JOG mode.
(However, position information must be saved in the memory.)

4.1 Overview

- ✓ In robot position teaching mode, 1 ~ 2 coordinate systems can be selected according to robot type.
- ✓ SCARA type robot uses [JOINT, Cartesian] coordinate system. The other types of robot use only [JOINT] coordinate system.
- ✓ HMOV: HOME position can be used by designating it by a user. HOME position is used by designating HMOV 0~3. To run ORIGIN Mode, input position information to HMOV No 0.
- ✓ ORIGIN Mode is run when motor type uses [INCREMENTAL, LINEAR].

<TEACH> ROBOT *R1 R2 R3	TYPE R2AWS1 NO-EXIT NO-EXIT
JOINT HOME	

■ 2. POINT type

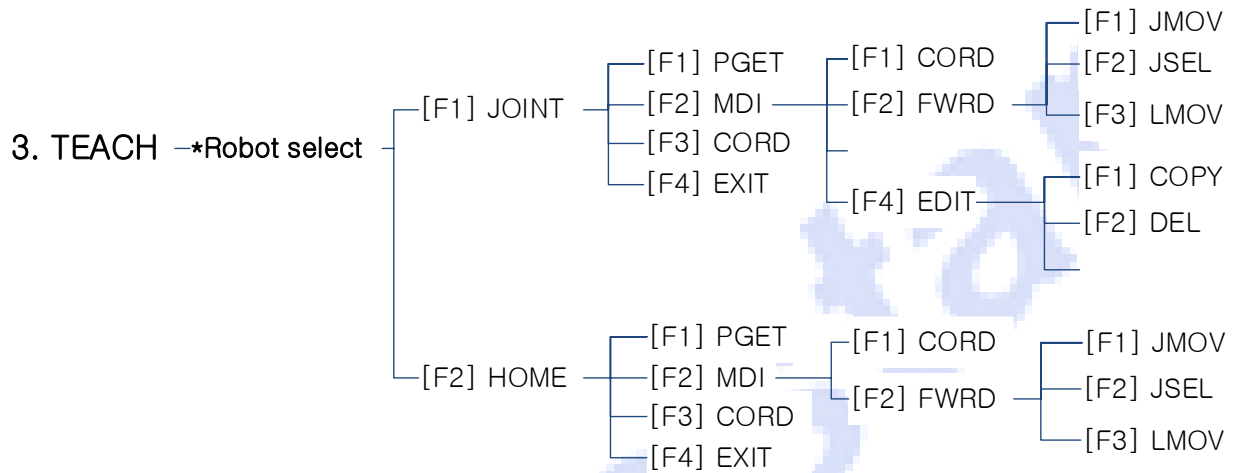
	GROUP	Detail	Remark
3. TEACH	[F1] JOINT	Position teaching of JOINT data	
	[F2] HOME	Position teaching of HMOV data	

Robostar

4.2 TEACH mode flow chart

- ✓ JOG largely consists of 2 Groups.
 - JOINT: Edits JOINT data position variable or loads current position to JOINT data.
 - HOME: Edits HMOV data position variable or loads current position to HMOV data.
 - Acquires or edits position data.

■ TEACH Menu Tree



4.3 OPEN Order of TEACH Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(E 150922)
Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. TEACH 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

JOG Selection

<TEACH MENU>
1. EDIT 2. RUN
3. TEACH 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- “3. TEACH” Selection

Step 3.

Robot Selection

<TEACH>
ROBOT TYPE
***R1** R2AWS1
-R2 NO-EXIT
R3 NO-EXIT

JOINT HOME



- Press “UP/DOWN” cursor key to select robot of which parameter is to be edited.
- The selected robot can be checked by “*” mark in the front of the line.

JOINT Data Select

<TEACH>
ROBOT TYPE
***R1** R2AWS1
-R2 NO-EXIT
R3 NO-EXIT

JOINT HOME



- To edit, acquire JOINT data, press “F1” key to select “JOINT”.

HMOV Data Select

< TEACH >	
ROBOT	TYPE
*R1	R2AWS1
R2	NO-EXIT
R3	NO-EXIT

JOINT **HOME**

- To edit, acquire HMOV data, press "F2" key to select "HOME".

4.4 Setting position variable edit

- ✓ This is to learn how to input position variable value by checking examples.
- ✓ Editing HMOV data is also same.
 - Ex) Edit position variable of each “P10” axis.

Step 1.

Position variable Edit Screen Move

```

<TEACH>
ROBOT      TYPE
*R1        R2AWS1
R2         NO-EXIT
R3         NO-EXIT
  
```

JOINT HOME



- To edit, acquire JOINT data, press “F1” key to select “JOINT”.

Position variable Setting Screen

```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        3:0
6:0        6:0
  
```

PGET **MDI** CORD EXIT



- To acquire, edit, save Current position of the robot and to conduct robot operation to the saved position, press “F2” key to select “MDI”.

Position variable Setting Screen

```

<EDIT JNT> V: 5 BL
Q4AFL      PO  US
1:0        2:0
3:0        42:0
5:0        6:0
  
```

CORD FWRD EDIT

- Position data edit Setting Screen

Step 2.

Point No Page Change Move

```

<EDIT JNT> V: 5 BL
Q4AFL      PO  US
1:0        2:0
3:0        3:0
6:0        6:0
  
```

CORD FWRD EDIT



- Use “PAGE UP/DOWN” key to move point.

```

<EDIT JNT> V: 5 BL
Q4AFL P1 US
1:0 2:0
3:0 3:0
6:0 6:0

```

CORD FWRD EDIT

Direct move to Point No

```

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 3:0
6:0 6:0

```

CORD FWRD EDIT



- Check moved Point No

- To directly move to inputting Point No, press “JUMP” key

```

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 3:0
6:0 6:0

```

Point # =10



- Input Point No “10” to be moved to.

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	• W	— X

- After inputting, press “ENTER” key.

```

<EDIT JNT> V: 5 BL
Q4AFL P10 US
1:0 2:0
3:0 3:0
6:0 6:0

```

CORD FWRD EDIT

Step 3.

Axis Cursor Position Move

```

<EDIT JNT> V: 5 BL
Q4AFL P0
1:0 2:0
3:0 4:0
5:0 6:0

```

CORD FWRD EDIT



- Press direction key to move to axis to be edited.
- Move result can be checked with cursor position.

```

<EDIT JNT> V: 5 BL
Q4AFL P0
1:0 2:
3:0 4:0
5:0 6:0
    
```

CORD FWRD EDIT

- Check moved cursor.

Step 4.

Cursor Move between axes

```

<EDIT JNT> V: 5 BL
Q4AFL P0
1: 2:0
3:0 4:0
5:0 6:0
    
```

CORD FWRD EDIT

ENTER

- In case of Cursor Move between axes, press “ENTER” key
- Cursor moves in order.

```

<EDIT JNT> V: 5 BL
Q4AFL P0
1:0 2:
3:0 42:0
5:0 6:0
    
```

CORD FWRD EDIT

- Check cursor which completed moving.

Step 5.

Changing position variable value

```

<EDIT JNT> V: 5 BL
Q4AFL P10
1:0 2:-10.5
3:0 42:0
5:0 6:0
    
```

CORD FWRD EDIT

ENTER

- Press number key of the value to be changed to input value.
- Press “ENTER” key to apply it in the screen.

7	8	9
G	H	I
4	5	6
L	M	N
1	2	3
Q	R	S
0	•	—
V	W	X

Step 7.

Deleting variable value

```

<EDIT JNT> V:      5  BL
Q4AFL             P10
1:0               2:-10.5■
2:0               4:0
5:0               6:0

```

CORD FWRD EDIT



- If variable value is incorrectly input, press “DEL” key to delete input value in order.

```

<EDIT JNT> V:      5  BL
Q4AFL             P10
1:0               2:-10.■
3:0               4:0
5:0               6:0

```

CORD FWRD EDIT

Step 8.

Saving and canceling

```

<EDIT JNT> V:      5  BL
Q4AFL             P10
1:0               2:-10.5■
3:0               3:0
5:0               6:0

```

CORD FWRD EDIT



- If value is changed, press “ESC” key to display update message in the screen.

```

<EDIT JNT> V:      5  BL
Q4AFL             P10
1:0               2:-10.5■
3:0               4:0
5:0               6:0

```

Update ? (ENT/ESC)



- To save it, “ENTER”
- To cancel it, “ESC”



```

<EDIT JNT> V:      5  BL
Q4AFL             P10
1:0               2:-10.5■
3:0               4:0
5:0               6:0

```

save complete



- For screen return after saving, press “ENTER” key

```

<EDIT JNT> V:      5  BL
Q4AFL             P10
1:0               2:-10.5■
3:0               4:0
5:0               6:0

```

CORD FWRD EDIT

- Return screen

4.5 How to operate ROBOT

- ✓ Uses velocity change, motor brake release, Inch mode.

4.5.1 velocity change

- Changes ROBOT OPERATION velocity.
- Toggle function

■ . H/M/L velocity change

Step 1.

High (BH) → Middle (BM) → Low
(BL) Change

⟨EDIT JNT⟩ **V: 5 BL**
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT



- To change velocity, press “VEL” key.
- Velocity value “L” → BL

⟨EDIT JNT⟩ **V: 50 BM**
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT



- To change velocity, press “VEL” key
- Velocity value “M” → BM

⟨EDIT JNT⟩ **V: 100 BH**
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT



- To change velocity, press “VEL” key.
- Velocity value “H” → BH

■ . Velocity change by “10 %”

Step 1.

Velocity change by “10 %”

⟨EDIT JNT⟩ **V: 50 BH**
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT



- To change velocity by 10%, press “▲, ▼” key in “BH” state.
- To increase velocity by 10%, press “▲”
- To decrease velocity by 10%, press “▼”

(EDIT JNT) V: 50 BH
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- Increased velocity will be displayed.

(EDIT JNT) V: 40 BH
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- Decreased velocity will be displayed.

■ . Velocity change by "5 %"

Step 1.

Velocity change by "5 %"

(EDIT JNT) V: 50 BM
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- To change velocity by 5%, press "▲, ▼" key in "BM" state.
- To increase velocity by 5%, press "▲"
- To decrease velocity by 5%, press "▼"

(EDIT JNT) V: 55 BM
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- Increased velocity will be displayed.

(EDIT JNT) V: 45 BM
 Q4AFL CURR
 1:0 2:0
 2:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- Decreased velocity will be displayed.

■ . Velocity change by “1 %”

Step 1.

Velocity change by “1 %”

⟨EDIT JNT⟩ V: 50 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT



- To change velocity by 1%, press “▲”, “▼” key in “BL” state.
- To increase velocity by 1%, press “▲”
- To decrease velocity by 1%, press “▼”

⟨EDIT JNT⟩ V: 51 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
50 6:0

PGET MDI CORD EXIT



- Increased velocity will be displayed.

⟨EDIT JNT⟩ V: 49 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT



- Decreased velocity will be displayed.

4.5.2 Using INCH mode

- Press JOG key once to move the robot at long as moving distance set by a user.
- For more information of the setting value, refer to 'MOTION' parameter.
- How to calculate moving distance when 'la' setting value is 1mm.
 Bl → moves by (1mmx.0.1) of moving distance.
 Bm → moves by (1mmx.0.5) of moving distance.
 Bh → moves by (1mmx.1) of moving distance.

Step 1.

Use setting

```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0

```

PGET MDI CORD EXIT



- To use moving distance, press "SPACE" key.
- The method to cancel it is same.

```

<EDIT JNT> V: 5 Bl
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0

```

PGET MDI CORD EXIT

- INCH mode will be displayed.

Step 2.

High (Bh) → Middle (Bm) → Low (Bl)

Change

```

<EDIT JNT> V: 5 Bl
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0

```

PGET MDI CORD EXIT



- To change moving distance, press "VEL" key.
- Moving distance "L" → Bl

```

<EDIT JNT> V: 50 Bm
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0

```

PGET MDI CORD EXIT



- To change moving distance, press "VEL" key.
- Moving distance "M" → Bm

<EDIT JNT> V: 100 Bh

Q4AFL CURR

1:0 2:0

3:0 4:0

5:0 6:0

PGET MDI CORD EXIT



- To change moving distance, press “VEL” key.
- Moving distance “H” → Bm

4.5.3 BRAKE release

- Releases brake of the brake motor.
- Releases brake after moving mechanical part to Safety Position.
- Brake release is available only in “CURR” screen.
- Study how to release brake using to the method to release Z-axis brake.

Step 1.

brake release

```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0
  
```

PGET MDI CORD EXIT



- To release brake, press “BRK” key in “CURR” screen.

```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0
  
```

Brake manually?



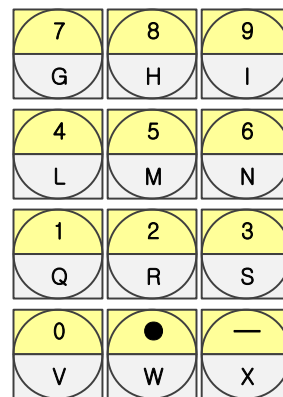
- To release brake, press “ENTER” key

```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0
  
```

Password =

- Input Password “1111”



```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0
  
```

Password =1111

```

<BRAKE STATE> 0/0
Q4AFL      CURR
1:ON      2: ON
3: ON      4: ON
5: ON      6: ON
  
```

Step 2.

Cursor Position Move

<BRAKE STATE> 0/0	
Q4AFL	CURR
1: ON ■	2: ON
3: ON	4: ON
5: ON	6: ON

<BRAKE STATE> 0/0	
Q4AFL	CURR
1: ON	2: ON ■
3: ON	4: ON
5: ON	6: ON



- Press direction key to move to move to the axis to be released.
- Move result can be checked with cursor position.

Step 3.

Brake Axis Selection

<BRAKE STATE> 0/0	
Q4AFL	CURR
1: ON	2: ON ■
3: ON	4: ON
5: ON	6: ON

<BRAKE STATE> 0/0	
Q4AFL	CURR
1: ON	2: ON ■
3: ON	4: ON
5: ON	6: ON

Z OFF? (ENT/ESC)

ENTER

- To release Z-axis motor brake, press "ENTER" key.

Brake Release /Cancel

<BRAKE STATE> 0/0	
Q4AFL	CURR
1: ON	2: ON ■
3: ON	4: ON
5: ON	6: ON

Z OFF? (ENT/ESC)

ENTER

ESC

- Press brake release "ENTER" key
- Cancel : Press "ESC" key.

<BRAKE STATE> 0/0	
Q4AFL	CURR
1: ON	2: OFF ■
3: ON	4: ON
5: ON	6: ON

4.5.4 motor power ON/OFF

- Turns ON/OFF Servo motor power.
- Servo power input is available only in “2. POINT” → “CURR” screen.
- Toggle function: ON → OFF → ON

Step 1.

Motor power ON

〈EDIT JNT〉 V: 5 BL	
Q4AFL	CURR
1:0	2:0
3:0	4:0
5:0	6:0
PGET MDI CORD EXIT	



- To turn “ON” motor power, press “SVON”
- Servo power LED on the Teach Pendant will be ON.



Step 2.

Turning motor power OFF

〈EDIT JNT〉 V: 5 BL	
Q4AFL	CURR
1:0	2:0
3:0	4:0
5:0	6:0
PGET MDI CORD EXIT	



- To turn “OFF” motor power, press “SVON”.
- Servo power LED on the Teach Pendant will be OFF.



4.5.5 Changing axis monitor

- If axes more than 6 axes are used, all axes can't be displayed on the Teach Pendant.
Displays axes more than 6 axes by changing axis.
- Toggle type: [1~6] axis, → [7~12] axis → [13~15] axis

Step 1.

1~6 Axes Display

```

<EDIT JNT> V:    5  BL
Q4AFL          CURR
1:0            2:0
3:0            4:0
5:0            6:0
  
```

PGET MDI CORD EXIT



- To change axis, press "AXIS CHG" key.

7~12 Axes display

```

<EDIT JNT> V:    5  BL
Q4AFL          CURR
7:0            8:0
9:0            10:0
11:0           12:0
  
```

PGET MDI CORD EXIT



To change axis, press "AXIS CHG" key.

13~16 Axes Display

```

<EDIT JNT> V:    5  BL
Q4AFL          CURR
13:0           14:0
15:0           16:0
  
```

PGET MDI CORD EXIT



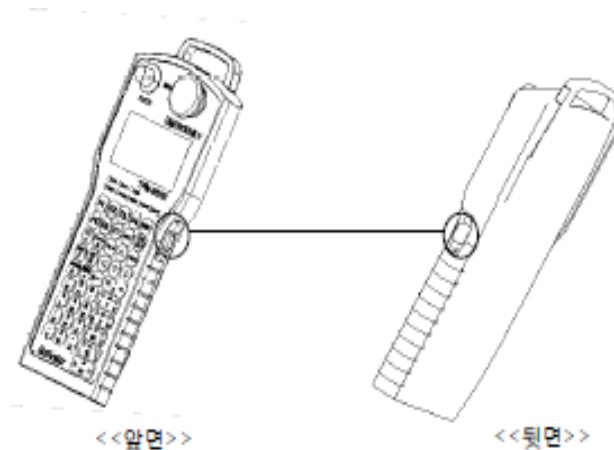
To change axis, press "AXIS CHG" key.

4.5.6 Position teaching in manual mode

- Operates the robot in manual mode.

4.5.6.1 Basic operation of Pendant and Dead Man switch

- Grab the Teach Pendant with both hands and grab Dead Man switch with reasonable force.



- Functions of Dead Man switch are necessary to prevent unexpected accident during manual robot operation. If an unexpected accident occurs during robot operation, force to press Dead Man switch will become too strong or too weak.
- Dead Man switch consists of 3 positions.
 - When the switch is not pressed or pressed with slight force → robot stop
 - When the switch is pressed with normal force → robot operation
 - When the switch is pressed with strong force → robot stop
- In case of operation without pressing Dead Man switch, the following message will be displayed.

```

<EDIT JNT> V:    5  BL
Q4AFL          CURR
1:0            2:0
3:0            4:0
5:0            6:0
  
```

Please push Deadman!

4.5.6.2 Manually moving the robot

Step 1.

Check for safety.

- Check if robot installation state is normal.
- Check if there is anybody within robot operation range.

Step 2.

Turn ON Robot Controller power.

- Turn controller power switch clockwise to turn ON power.
- When controller is booted, segment LED will be ON and power lamp will be ON.
- controller booting will take about **30 seconds**.

Step 3.

manually convert the mode switch on Teach Pendant

- covert Mode Switch into “Manual” mode.
- For the method to operate it, refer to [1.1 T/P CONFIGURATION](#).

Step 4.

Move to CURR screen

- Robot operation is available only in CURR mode.
- For the method to move to CURR screen, refer to the following detail.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(E 150922)
Press ENTER Key

- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

ENTER

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN input : #

- Press ENTER Key to move to Main Menu Screen.

EDIT Selection

<TEACH MENU>
1. EDIT 2. RUN
3. TEACH 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN input : #



- “3. TEACH” Selection

Robot Selection

<TEACH> ROBOT	TYPE
*R1	R2AWS1
R2	NO-EXIT
R3	NO-EXIT

JOINT HOME



- Press “UP/DOWN” cursor key to select robot.



- The selected robot can be checked by “*” mark in the front of the line.

JOINT Data Select

<TEACH> ROBOT	TYPE
*R1	R2AWS1
R2	NO-EXIT
R3	NO-EXIT

JOINT HOME



- To edit, acquire JOINT data, press “F1” key.

CURR screen

<EDIT JNT> V: 5 BL	
Q4AFL	CURR
1:0	2:0
3:0	4:0
5:0	6:0

PGET MDI CORD EXIT

- Check ROBOT current position value Screen
- Screen to operate robot.

Step 5.

Turn ON motor power.

- Turn ON Servo motor power.
- Press “SVON” key on the Teach Pendant.



- Servo power LED on the Teach Pendant will be ON.



Step 6

Velocity change.

- If robot moving velocity is fast, it can be dangerous. Hence, reduce velocity.

High (BH) → Middle (BM) → Low
(BL) Change

(EDIT JNT) V: 5 BL
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- To change velocity, press "VEL" key
- Velocity value "L" → BL

(EDIT JNT) V: 50 BM
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- To change velocity, press "VEL" key
- Velocity value "M" → BM

(EDIT JNT) V: 100 BH
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- To change velocity, press "VEL" key
- Velocity value "H" → BH

Velocity change by "10 %"

(EDIT JNT) V: 50 BH
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- To change velocity by 10%, press "▲, ▼" key in "BH" state.
- To increase velocity by 10%, press "▲"
- To decrease velocity by 10%, press "▼"

Velocity change by "5 %"

(EDIT JNT) V: 50 BM
 Q4AFL CURR
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT



- To change velocity by 5%, press "▲, ▼" key in "BM" state.
- To increase velocity by 5%, press "▲"
- To decrease velocity by 5%, press "▼"

Velocity change by "1 %"

```

<EDIT JNT> V: 50 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0

```

PGET MDI CORD EXIT



- To change velocity by 1%, press “▲, ▼” key in “BL” state.
- To increase velocity by 1%, press “▲”
- To decrease velocity by 1%, press “▼”

Step 7.

Actually operate each axis of the robot.

- Do not allow entrance of person within robot operation range.
- Robot can be operated only in CURR screen.
- Press “move direction” key on the Keypad.
- To change axis, press “AXIS CHG” key.



1~6 axes CURR screen

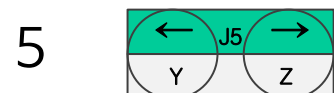
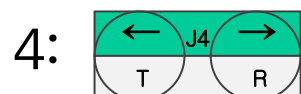
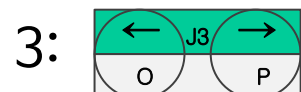
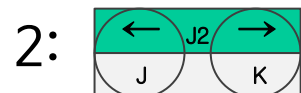
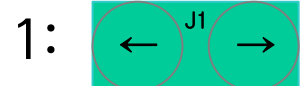
```

<EDIT JNT> V: 50 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0

```

PGET MDI CORD EXIT

- To move axis, press “move direction” key.



7~12axis CURR screen

(EDIT JNT) V: 5 BL
 Q4AFL CURR
 7:0 8:0
 9:0 10:0
 11:0 12:0

PGET MDI CORD EXIT

13~16 axes CURR Screen

(EDIT JNT) V: 5 BL
 Q4AFL CURR
 13:0 14:0
 15:0 16:0

PGET MDI CORD EXIT

- To move axis, press “Move direction” key.

7:

8:

9:

10:

11:

12:

To move axis,
press “Move
direction” key

14:

15:

16:

4.6 ROBOT JOINT

- ✓ The table below shows Detailed items to edit JOINT data position variable and to acquire current position.

■ Detailed items

GROUP	Detail	Remark
[F1] PGET	Loads current position of the robot to JOINT data.	(Acquisition of current position)
[F2] MDI	Edits position variable of JOINT data.	
[F3] CORD	Changes current position data coordinate system (JOINT → Cartesian)	
[F4] EXIT	Exits JOINT data.	

■ OPENING SEQUENCE

- Main Screen → 3. JOG → ROBOT SELECT → [F1] JOINT

Step 1.

JOINT Data Select

<TEACH>
 ROBOT TYPE
 *R1 R2AWS1
 R2 NO-EXIT
 R3 NO-EXIT

JOINT HOME



- To select JOINT Data, press “F1” key to select “JOINT”.

JOINT Data Screen

<EDIT JNT> V: 5 BL
 Q4AFL **CURR**
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT

Position Get Selection

- Check JOINT data Current Screen

```

<EDIT JNT> V:      5  BL
Q4AFL             CURR
1:0               2:0
3:0               4:0
5:0               6:0

```

PGET MDI CORD EXIT

Position Get Selection



- To load current position to JOINT data, press “F1” key to select “PGET”.

```

<EDIT JNT> V:      5  BL
Q4AFL             CURR
1:0               2:0
3:0               4:0
5:0               6:0

```

PGET **MDI** CORD EXIT

Position Get Selection



- To edit JOINT data, press “F2” key to select “MDI”.

```

<EDIT JNT> V:      5  BL
Q4AFL             CURR
1:0               2:0
3:0               4:0
5:0               6:0

```

PGET MDI **CORD** EXIT

Position Get Selection



- To change coordinate system of the selected robot, press “F3” key to select “CORD”.

```

<EDIT JNT> V:      5  BL
Q4AFL             CURR
1:0               2:0
3:0               4:0
5:0               6:0

```

PGET MDI CORD **EXIT**



- Exits JOINT data.

4.6.1 CURR (Current)

- Checks current position of the robot.

Step 1.

CURR Screen Move

```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0
  
```

PGET MDI CORD EXIT

- Check ROBOT current position value Screen

4.6.2 PGET (Position Get)

- Gets current position of the robot to JOINT data.
- Study "Position Get" through experiment to load current position to Point No "5".

Step 1.

PGET Screen Move

```

<EDIT JNT> V: 5 BL
Q4AFL      CURR
1:0        2:0
3:0        4:0
5:0        6:0
  
```

PGET MDI CORD EXIT



- To acquire current position, press "F1" key.

```

<EDIT JNT>
Select point number
Range (0 ~ 39999)
Point num: ■
  
```

- Input Point No to insert into the current position.
- Press "ESC" to return to the previous screen.
- For No input, press "number key".

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

<EDIT JNT>
Select point number
Range (0 ~ 39999)
Point num: 5

Update? (ENT/ESC)

ENTER

- Memory save “ENTER”
- To cancel, return to the previous screen, press “ESC”

<EDIT JNT>
Select point number
Range (0 ~ 39999)
Point num: 5

Update complete

Step 2.

Screen Return

<EDIT JNT>
Select point number
Range (0 ~ 39999)
Point num: ■

Update complete

ENTER

- Current screen return

<EDIT JNT> V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT

4.6.3 MDI (Manual DATA Input)

- Edits, copies, moves or deletes ROBOT Position and conducts robot operation to the saved position. The table below shows Detailed items.
- In case there are data, “US” will be displayed.
- In case there are no data, “NW” will be displayed.

(EDIT JNT) V: 5 BL
 Q4AFL P0 **NW**
 1:- 2:-
 3:- 4:-
 5:- 6:-
 PGET MDI CORD EXIT

(EDIT JNT) V: 5 BL
 Q4AFL P0 **US**
 1:0 2:0
 3:0 4:0
 5:0 6:0
 PGET MDI CORD EXIT

■ Detailed items

GROUP	Detail	Remark
[F1] CORD	Changes current position data coordinate system (JOINT → Cartesian).	
[F2] FWRD	Conducts robot operation to the saved position.	
[F4] EDIT	Copies or deletes position data	

■ OPENING SEQUENCE

- Main Screen → 3. JOG → ROBOT SELECT → [F1] JOINT → [F2] MDI

Step 1. ROBOT Position variable Setting Screen

(EDIT JNT) V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0
 PGET **MDI** CORD EXIT



- To edit, save position data and to conduct robot operation to saved position, press “F2” key to select “MDI”.

ROBOT Position data Edit Screen

(EDIT JNT) V: 5 BL
 Q4AFL **P0** US
 1:0 2:0
 3:0 4:0
 5:0 6:0
 CORD FWRD EDIT

- Position data edit Setting Screen

Selecting coordinate system change screen

〈EDIT JNT〉 V:			5	BL
Q4AFL	P0			US
1:0	2:0			
3:0	4:0			
5:0	6:0			
CORD		FWRD	EDIT	



- To change current position data coordinate system, press “F1” key to select “CORD”.

Conducting robot operation to saved position

〈EDIT JNT〉 V:			5	BL
Q4AFL	P0			US
1:0	2:0			
3:0	4:0			
5:0	6:0			
CORD		FWRD	EDIT	



- To conduct robot operation to the saved position, press “F2” key to select “FWRD”.

Copy or Delete

〈EDIT JNT〉 V:			5	BL
Q4AFL	P0			US
1:0	2:0			
3:0	4:0			
5:0	6:0			
CORD		FWRD	EDIT	



- To copy the existing position data to other position data or delete them, press “F4” key to select “EDIT”.

Directly moving to position data No

〈EDIT JNT〉 V:			5	BL
Q4AFL	P0			US
1:0	2:0			
3:0	4:0			
5:0	6:0			
CORD		FWRD	EDIT	



- To directly move to Point No to be edited, press “JUMP” key.

4.6.3.1 Position variable edit

- Edits position variable.

Step 1.

MDI Screen Move

<EDIT JNT> V:			5	BL
Q4AFL	PO			US
1:0	2:0			
3:0	4:0			
5:0	6:0			
CORD FWRD		EDIT		

- Edits ROBOT position variable.

■ Point No Move

- ① Refer to “Moving Point No and Changing Page” in [3.4 Setting position variable edit](#).

■ Cursor Position Move

- ① Refer to “Moving Cursor Position and Moving Between Axes” in [3.4 Setting position variable edit](#).

■ How to set

- ① Refer to “Changing position variable value” in [3.4 Setting position variable edit](#).

■ How to save and cancel

- ① Refer to “Saving and canceling position variable” in [3.4 Setting position variable edit](#).

4.6.3.2 CORD (Coordinate)

- Changes position variable value of coordinate system
- Coordinate system will be displayed in the order of [JOINT → Cartesian].
- Toggle function.

Step 1.

COORD Screen Move

〈EDIT JNT〉 V: 5 BL		
Q4AFL	P0	US
1:0	2:0	
3:0	4:0	
5:0	6:0	
CORD FWRD EDIT		



- To change coordinate, press “F1” key to select “CORD”.

〈EDIT JNT〉 V: 5 BL		
Q4AFL	P0	US
1:0	2:0	
3:0	4:0	
5:0	6:0	
not work!!!		

- If key is operated in unusable robot type, “Not work!” will be displayed

■ Reference

- ① This is only for “SCARA” robot type and can’t be used for other robots.
- ② “Not work!!!” message will be displayed.

4.6.3.3 FWRD (Forward)

- Conducts robot operation to the saved position.

■ Detailed items

GROUP	Detail	Remark
[F1] JMOV	Conducts JOINT OPERATION for all axes to the saved position variable value.	
[F2] JSE	Operates only the designated axis to the saved position variable value.	
[F3] LMO	Conducts Cartesian operation for all axes to the saved position variable value.	

■ ROBOT axis No

ROBOT AXIS	value	detail
T	0	motor 1axis
Z	1	motor 2axes
R1	2	motor 3axes
R1	3	motor 4axes
X	4	motor 5axes
Y	5	motor 6axes
R3	6	motor 7axes
R4	7	motor 8axes
Q1	8	motor 9axes
V1	9	motor 10axes
Q2	10	motor 11axes
V2	11	motor 12axes
Q3	12	motor 13axes
V3	13	motor 14axes
Q4	14	motor 15axes
V4	15	motor 16axes

■ OPENING SEQUENCE

- Main Screen → 3. JOG → 2. ROBOT SELECT → [F1] JOINT → [F2] MDI → [F2] FWRD

Step 1.

ROBOT Position variable Setting

Screen

⟨EDIT JNT⟩ V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

PGET **MDI** CORD EXIT

F2

- To acquire, edit, save Current position of the robot and to conduct robot operation to the saved position, press “F2” key to select “MDI”.

ROBOT Position data Edit Screen

⟨EDIT JNT⟩ V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

CORD **FWRD** JUMP EDIT

F2

- Position data edit Setting Screen
- For robot operation to the saved position, press “F2” key to select “FWRD”.

Moving to position variable value

⟨EDIT JNT⟩ V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

JSEL JMOV LMOV

- Conduct robot operation with position variable value

Step 1.

Operating only the designated axis

⟨EDIT JNT⟩ V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

JMOV JSEL LMOV

F1

- To conduct JOINT OPERATION for all axes, press “F1” key to select “JMOV”.

JOINT OPERATION of all axes

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

JMOV **JSEL** LMOV

Cartesian operation of all axes

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

JMOV JSEL **LMOV**

F2

- For JOINT OPERATION of only the designated axis, press “F2” key to select “JSEL”.

F3

- For Cartesian operation of all axes, press “F3” key to select “LMOV”.

JMOV

- Conducts JOINT OPERATION of all axes.

■ How to operate

Step 1.

Servo power input

```

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

JMOV JSEL LMOV



- Supply power to the motor before operation.

Step 2.

Deadman Switch

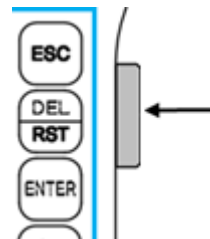
```

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

JMOV JSEL LMOV

- Grab the Deadman Switch with reasonable force before operation.



Step 3.

JOINT OPERATION SELECT Screen

```

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

JMOV JSEL LMOV



- To conduct JOINT OPERATION for all axes, press “F1” key to select “JMOV”.

```

<EDIT JNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

Ready ? (ENT/ESC)



- To start it, press “ENTER”
- To cancel it, press “ESC”

- To stop during robot operation, press “ESC” key.

(EDIT JNT) V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0

Press ESC to stop

(EDIT JNT) V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0

forward complete

(EDIT JNT) V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0

JMOV JSEL LMOV



- For screen return after operation complete, press "ENTER" key.

- Return screen

JSEL

- Operates only the designated one axis with the saved position variable value.

How to operate

Step 1.

Inputting Servo power

```

<EDIT JNT> V:    5  BL
Q4AFL          P0  US
1:0            2:0
3:0            4:0
5:0            6:0
  
```

JMOV JSEL LMOV



- Supply power to the motor before operation.

Step 2.

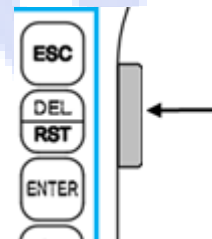
Deadman Switch

```

<EDIT JNT> V:    5  BL
Q4AFL          P0  US
1:0            2:0
3:0            4:0
5:0            6:0
  
```

JMOV JSEL LMOV

- Grab the Deadman Switch with reasonable force before operation.



Step 3.

SELECT Screen for operation of only the designated axis

```

<EDIT JNT> V:    5  BL
Q4AFL          P0  US
1:0            2:0
3:0            4:0
5:0            6:0
  
```

JMOV JSEL LMOV



- To conduct JOINT OPERATION for only the designated axis, press "F2" key to select "JSEL"

```

<EDIT JNT> V:    5  BL
Q4AFL          P0  US
1:0            2:0
3:0            4:0
5:0            6:0
  
```

Forward axis #=1



- Select axis to be operated.
- Input motor 2axis No "1"
- After inputting, press "ENTER" key.

```

<EDIT JNT> V:      5  BL
Q4AFL             P0  US
1:0               2:0
3:0               4:0
5:0               6:0

```

Ready ? (ENT/ESC)

ENTER

- To start it, press “ENTER”
- To cancel it, press “ESC”

```

<EDIT JNT> V:      5  BL
Q4AFL             P0  US
1:0               2:0
3:0               4:0
5:0               6:0

```

Press ESC to stop

- To stop during robot operation, press “ESC” key.

```

<EDIT JNT> V:      5  BL
Q4AFL             P0  US
1:0               2:0
3:0               4:0
5:0               6:0

```

forward complete

ENTER

- For screen return after operation complete, press “ENTER” key.

```

<EDIT JNT> V:      5  BL
Q4AFL             P0  US
1:0               2:0
3:0               4:0
5:0               6:0

```

JSEL JMOV LMOV

- return screen

■ Axis No check

- ① Refer to “Robot Axis No” in 3.6.3. MDI.

LMOV

- Conducts Cartesian operation of all axes.

How to operate

Step 1.

Inputting Servo power

<EDIT MDI> V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0

 JSEL JMOV LMOV



- Supply power to the motor before operation.

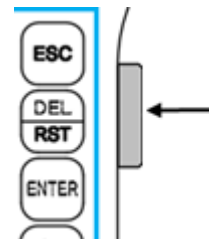
Step 2.

Deadman Switch

<EDIT MDI> V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0

 JSEL JMOV LMOV

- Grab the Deadman Switch with reasonable force before operation.



Step 3.

Cartesian operation SELECT Screen

<EDIT MDI> V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0

 JSEL JMOV **LMOV**



- For Cartesian operation of all axes, press "F3" key to select "LMOV".

<EDIT MDI> V: 5 BL
 Q4AFL P0 US
 1:0 2:0
 3:0 4:0
 5:0 6:0

Ready ? (ENT/ESC)



- To start it, press "ENTER"
- To cancel it, press "ESC"
- To stop during robot operation, press "ESC" key.

```

<EDIT MDI> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

Press ESC to stop

```

<EDIT MDI> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

forward complete

```

<EDIT MDI> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

JSEL JMOV LMOV

ENTER

- For screen return after operation complete, press “ENTER” key.

ENTER

- Return screen

Step 4.

When unusable robot is selected

```

<EDIT MDI> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

JSEL JMOV **LMOV**

```

<EDIT PNT> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

only use for SCARA!

```

<EDIT MDI> V: 5 BL
Q4AFL P0 US
1:0 2:0
3:0 4:0
5:0 6:0

```

JSEL JMOV LMOV

F3

- If key is operated in unusable robot type, “only use for SCARA!” will be displayed.
- For screen return, press “ENTER” key.

- Return screen

■ Reference

- ① This is only for “SCARA” robot type and can’t be used for other robots.
- ② “Only use for SCARA!” message will be displayed.

Robostar

4.6.3.4 EDIT

- Copies or deletes the existing position data to other position data.
- In case there are data, "US" will be displayed.
- In case there are no data, "--" will be displayed

■ Detailed items

GROUP	Detail	Remark
[F1] COPY	Copies the existing position data to other position data	
[F2] DEL	Deletes position data.	
[F3] JUMP	Moves to inputting Point No	

■ OPENING SEQUENCE

- Main Screen → 3. JOG → ROBOT SELECT → [F1] JOINT → [F2] MDI → [F4] EDIT

Step 1.

ROBOT Position variable Setting
Screen

〈EDIT JNT〉 V:		5	BL
Q4AFL		CURR	
1:0		2:0	
3:0		4:0	
5:0		6:0	

PGET **MDI** CORD EXIT



- To edit, save ROBOT Position and to conduct robot operation to the saved position, press "F2" key.

Step 2.

Editing position data

〈EDIT MDI〉 V:		5	BL
Q4AFL		PO	US
1:0		2:0	
3:0		4:0	
5:0		6:0	

CORD FWRD **EDIT**



- Screen to edit position data

Copy and Delete Screen

<EDIT EDIT>
Q4AFL1
P0 US P1 US
P2 -- P3 --
P4 -- P5 --
P6 -- P7 --
P8 -- P9 --
COPY DEL

- Screen to copy or delete data

<EDIT EDIT>
Q4AFL1
P0 US P1 US
P2 -- P3 --
P4 -- P5 --
P6 -- P7 --
P8 -- P9 --
COPY DEL



- To copy the existing position data to other position data, press "F1" key.

<EDIT EDIT>
Q4AFL1
P0 US P1 US
P2 -- P3 --
P4 -- P5 --
P6 -- P7 --
P8 -- P9 --
COPY **DEL**



- To delete position data, press "F2" key.

COPY

- Copies the existing position data to other position data.

■ How to copy

Step 1.

Point No Page Move

```

<EDIT EDIT>
Q4AFL1
■P0 US      P1  US
P2  --      P3  --
P4  --      P5  --
P6  --      P7  --
P8  --      P9  --
COPY DEL

```

```

<EDIT EDIT>
Q4AFL1
■P10 US     P11  US
P12  US     P13  --
P14  --     P15  --
P16  --     P17  --
P18  --     P19  --
COPY DEL

```



- Use “PAGE UP/DOWN” key for point move
- Moved Point No can be checked with check

Step 2.

Cursor Position Move

```

<EDIT EDIT>
Q4AFL1
■P10 US     P11  US
P12  US     P13  --
P14  --     P15  --
P16  --     P17  --
P18  --     P19  --
COPY DEL

```

```

<EDIT EDIT>
Q4AFL1
P10  US     P11  US
■P12 US     P13  --
P14  --     P15  --
P16  --     P17  --
P18  --     P19  --
COPY DEL

```



- Press direction key to move to move to Point No to be selected.
- Move result can be checked with cursor position.

Step 3.

Selecting Point No to be copied


```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
P12 US      P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY DEL
    
```



- To select Point No to be copied, press “ENTER” key

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
*P12 US      P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY DEL
    
```

- When select, “*” will be marked

```

<EDIT EDIT>
Q4AFL1
P10US      P11 US
*P12 US      P13 --
*P14 US      P15 --
*P16 US      P17 --
P18 --      P19--
COPY DEL
    
```

- 다중 시 selected position will be displayed with “*” mark.

Step 4.

Point Copy

```

<EDIT EDIT>
Q4AFL1
P10 US      P11US
*P12 US      P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY DEL
    
```



- To copy point, press “F1” key.

Inputting No to be copied

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
*P12 US      P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
point #=14
    
```

- Input Point No “14” to be copied

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

<<EDIT EDIT>

Q4AFL1

P10 US P11 US

* P12 US P13 --

P14 -- P15 --

P16 -- P17 --

P18 -- P19 --

copy complete■

<EDIT EDIT>

Q4AFL1

P10 US P11 US

P12 US P13 --

■ P14 US P15 --

P16 -- P17 --

P18 -- P19 --

COPY DEL

- Copy Complete Message will be displayed.

- For copied Point No, "US" will be displayed.

DEL

- Deletes the existing position data.
- Once deleted, activated with "--" with no data.

■ How to delete

Step 1.

Moving to Point No Page

```

<EDIT EDIT>
Q4AFL1
■P0  US      P1  US
P2  --      P3  --
P4  --      P5  --
P6  --      P7  --
P8  --      P9  --
COPY  DEL
  
```



- Use "PAGE UP/DOWN" key for point move.

```

<EDIT EDIT>
Q4AFL1
■P10 US      P11 US
P12 US      P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY  DEL
  
```



- Moved Point No can be checked with check.

Step 2.

Cursor Position Move

```

<EDIT EDIT>
Q4AFL1
■P10 US      P11 US
P12 US      P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY  DEL
  
```



- Press direction key to move to move to Point No to be selected.
- Move result can be checked with cursor position.

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
■P12 US      P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY  DEL
  
```

Step 3.

Point No Selection

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
P12 US    P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY DEL

```



- To select after checking Point No, press “ENTER” key.

Position Data Move

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
*P12 US    P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY DEL

```

- When select, “*” will be marked

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
*P12 US    P13 --
*P14 US    P15 --
*P16 US    P17 --
P18 --      P19 --
COPY DEL

```

- In case of multiple selection, selected position will be displayed with “*” mark.

Step 4.

Delete Selection

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
*P12 US    P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
COPY DEL

```



- To delete it, press “F2” key.

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
* P12 US    P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
delete? (ENT/ESC)

```

- To delete it, press “ENTER”
- To cancel it, press “ESC”

```

<EDIT EDIT>
Q4AFL1
P10 US      P11 US
* P12 US    P13 --
P14 --      P15 --
P16 --      P17 --
P18 --      P19 --
delete complete

```

- Copy Complete Message will be displayed.
- For screen return, press “ENTER” key

<EDIT EDIT>

Q4AFL1

P10 US

~~* P12 --~~

P14 --

P16 --

P18 --

COPY DEL

P11 US

P13 --

P15 --

P17 --

P19 --

- “--” will be displayed for the deleted Point No.

JUMP

- Directly moves to inputting Point No.

Step 1

Moving to inputting Point No

<EDIT EDIT>

Q4AFL1

■P0U SPUS

P2 --

P3 --

P4 --

P5 --

P6 --

P7 --

P8 --

P9 --

COPY DEL



- To move to inputting Point No, press “JUMP” key

<EDIT EDIT>

Q4AFL1

■P0 US

P1 US

P2 --

P3 --

P4 --

P5 --

P6 --

P7 --

P8 --

P9 --

Point # =10

- Input Point No “10” to be moved to.

<EDIT EDIT>

Q4AFL1

■P10 US

P11 US

P12 --

P13 --

P14 --

P15 --

P16 --

P17 --

P18 --

P19 --

COPY DEL

- Check Point No which completed moving.

4.6.4 CORD (Coordinate)

- Changes or monitors position variable value of coordinate system
- Coordinate system will be displayed in the order of [JOINT → Cartesian].
- Toggle function.

Step 1.

COORD Screen Move

<EDIT PNT>	V: 5 BL
Q4AFL	CURR
1:0	2:0
3:0	4:0
5:0	6:0

not work!!!



- If key is operated in unusable robot type, “Not work!” will be displayed

■ Reference

- ① This is only for “SCARA” robot type and can’t be used for other robots.
- ② “Not work!!!” message will be displayed.

4.6.5 EXIT

- Exits position variable display screen.
- There are two ways to exit.

To press “[F4] EXIT” key.

To press “ESC” key.

■ How to exit

Step 1.

FLOAT Screen

⟨EDIT JNT⟩ V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD **EXIT**

⟨JOG⟩
ROBOT TYPE
*R1 R2AWS1
R2 NO-EXIT
R3 NO-EXIT

JOINT HOME



- To move out of position variable display screen, press “F4” key.

- Check the previous Screen which displays POINT position variable

4.7 ROBOT HOME

- ✓ Edits HMOV data position variable and acquires current position. The table below shows Detailed items.

■ Detailed items

GROUP	detail	Remark
[F1] PGET	Loads Current position of the robot to HOME data.	(Acquisition of current position)
[F2] MDI	Edits position variable of HOME data	
[F3] CORD	Changes current position data coordinate system (JOINT → Cartesian)	
[F4] EXIT	Exits HOME data.	

■ OPENING SEQUENCE

- Main Screen → 3. JOG → ROBOT SELECT → [F2] HOME

Step 1.

JOINT Data Select

< TEACH >
 ROBOT TYPE
 *R1 R2AWS1
 R2 NO-EXIT
 R3 NO-EXIT

JOINT **HOME**



- To select JOINT Data, press “F2” key to select “HOME”.

HOME Data Screen

<EDIT HOME> V: 5 BL
 Q4AFL **CURR**
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET MDI CORD EXIT

Position Get Selection

- Check HOME data Current Screen

<EDIT HOME> V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT

Position Get Selection



- To load current position to JOINT data, press “F1” key.

<EDIT HOME> V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT

Position Get Selection



- To edit HOME data, press “F2” key.

<EDIT HOME> V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT

Position Get Selection



- To change coordinate system of the selected robot, press “F3” key.

<EDIT HOME> V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT



- Exits JOINT data.

4.7.1 CURR (Current)

- Checks current position of the robot

Step 1.

CURR Screen Move

```

<EDIT HOME> V:  5  BL
Q4AFL          CURR
1:0            2:0
3:0            4:0
5:0            6:0
  
```

PGET MDI CORD EXIT

- Check ROBOT current position value Screen

4.7.2 PGET (Position Get)

- Loads current position of the robot to HOME data.
- Study "Position Get" through experiment to loads the current position to Point No "5".

Step 1.

PGET Screen Move

```

<EDIT HOME> V:  5  BL
Q4AFL          CURR
1:0            2:0
3:0            4:0
5:0            6:0
  
```

PGET MDI CORD EXIT

```

<EDIT HOME>
Select home number
Range (0 ~3)
Home num: ■
  
```



- To acquire current position, press "F1" key.

- Input Point No to insert the current position.
- To return to the previous screen, press "ESC".
- To input No, press "number key".

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

<EDIT HOME>
Select home number
Range (0 ~ 3)
Home num: 5

Update? (ENT/ESC)

ENTER

- Memory save “ENTER”
- To cancel, return to the previous screen, press “ESC”

<EDIT HOME>
Select home number
Range (0 ~ 3)
Home num: 5

Update complete

Step 2.

screen return

<EDIT HOME>
Select point number
Range (0 ~ 39999)
Point num: ■

Update complete

ENTER

- Current screen return

<EDIT HOME> V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD EXIT

4.7.3 MDI (Manual DATA Input)

- Edits, copies, moves or deletes ROBOT Position and conducts robot operation to the saved position. The table below shows Detailed items.

■ Detailed items

GROUP	Detail	Remark
[F1] CORD	Changes current position data coordinate system (JOINT → Cartesian).	
[F2] FWRD	conducts robot operation to the saved position.	

■ OPENING SEQUENCE

- Main Screen → 3. JOG → ROBOT SELECT → [F2] HOME → [F2] MDI

Step 1.

ROBOT Position variable Setting Screen

<EDIT HOME> V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

PGET **MDI** CORD EXIT

F2

- To edit, save position data and to conduct robot operation to the saved position, press “F2” key to select “MDI”.

ROBOT Position data Edit Screen

<EDIT HOME> V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

CORD FWRD

- Position data edit Setting Screen

Selecting coordinate system change screen

<<EDIT HOME> V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

CORD FWRD EDIT

F1

- To change current position data coordinate system, press “F1” key to select “CORD”.

Conducting robot operation to saved

position

(EDIT HOME) V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

CORD **FWRD** EDIT



- To conduct robot operation to the saved position, press "F2" key to select "FWRD".

Copy or Delete

(EDIT HOME) V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

CORD FWRD **EDIT**



- To copy or delete the existing position data to other position data, press "F4" key to select "EDIT".

Directly moving to position data No

(EDIT HOME) V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

CORD FWRD



- To directly move to Point No to be edited, press "JUMP" key.

4.7.3.1 Position variable edit

- Edits position variable

Step 1.

MDI Screen Move

(EDIT HOME)	V: 5	BL
Q4AFL	H0	
1:0	2:0	
3:0	4:0	
5:0	6:0	

CORD	FWRD	EDIT
------	------	------

- Edit ROBOT position variable.

■ Moving Point No

- ① “Moving Point No and Changing Page”. Refer to [4.4 Setting position variable edit](#).

■ Moving Cursor Position

- ① Refer to “Moving Cursor Position and Moving Between Axes” in [4.4 Setting position variable edit](#).

■ How to set

- ① Refer to “Changing position variable value” in [4.4 Setting position variable edit](#).

■ How to save and cancel

- ① Refer to “Saving and canceling position variable” in [4.4 Setting position variable edit](#).

4.7.3.2 CORD (Coordinate)

- Changes position variable value of coordinate system
- Coordinate system will be displayed in the order of [JOINT → Cartesian].
- Toggle function.

Step 1.

COORD Screen Move

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0
  
```

CORD FWRD EDIT



- To change coordinate, press “F1” key to select “CORD”.

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0
  
```

not work!!!

- If key is operated in unusable robot type, “Not work!” will be displayed

■ Reference

- ① This is only for “SCARA” robot type and can’t be used for other robots.
- ② “Not work!!!” message will be displayed.

4.7.3.3 FWRD (Forward)

- Conducts robot operation to the saved position.

■ Detailed items

GROUP	Detail	Remark
[F1] JMOV	Conducts JOINT OPERATION for all axes to the saved position variable value	
[F2] JSE	Operates only the designated axis to the saved position variable value.	
[F3] LMO	Conducts Cartesian operation for all axes to the saved position variable value.	

■ ROBOT Axis No

ROBOT AXIS	value	detail
T	0	motor 1axis
Z	1	motor 2axis
R1	2	motor 3axis
R1	3	motor 4axis
X	4	motor 5axis
Y	5	motor 6 axes
R3	6	motor 7axis
R4	7	motor 8axis
Q1	8	motor 9axis
V1	9	motor 10axis
Q2	10	motor 11axis
V2	11	motor 12axis
Q3	12	motor 13axis
V3	13	motor 14axis
Q4	14	motor 15axis
V4	15	motor 16 axes

■ OPENING SEQUENCE

- Main Screen → 3. JOG → 2. ROBOT SELECT → [F2] HOME → [F2] MDI → [F2] FWRD

Step 1.

ROBOT Position variable Setting Screen

⟨EDIT HOME⟩ V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

PGET **MDI** CORD EXIT



- To acquire, edit, save Current position of the robot and to conduct robot operation to the saved position, press “F2” key to select “MDI”.

ROBOT Position data Edit Screen

⟨EDIT HOME⟩ V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

CORD **FWRD** JUMP EDIT



- position data edit Setting Screen
- To conduct robot operation to the saved position, press “F2” key to select “FWRD”.

position variable value로 move

⟨EDIT HOME⟩ V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

JSEL JMOV LMOV

- Conduct robot operation with position variable value

Step 1.

Operating only the designated axis

⟨EDIT HOME⟩ V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

JMOV JSEL LMOV



- To conduct JOINT OPERATION for all axes, press “F1” key to select “JMOV”.

JOINT OPERATION of all axes

<EDIT HOME> V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

JMOV **JSEL** LMOV

Cartesian operation of all axes

<EDIT HOME> V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

JMOV JSEL **LMOV**

F2

- To conduct JOINT OPERATION for only the designated axis, press “F2” key to select “JSEL”.

F3

- For Cartesian operation of all axes, press “F3” key to select “LMOV”.

JMOV

- Conducts JOINT OPERATION for all axes.

How to operate

Step 1.

Servo power input

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0
  
```

JMOV JSEL LMOV



- Supply power to the motor before operation.

Step 2.

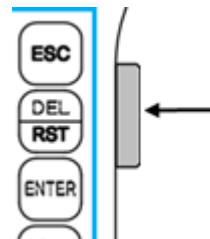
Deadman Switch

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0
  
```

JMOV JSEL LMOV

- Grab the Deadman Switch with reasonable force before operation.



Step 3.

JOINT OPERATION SELECT Screen

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0
  
```

JMOV JSEL LMOV



- To conduct JOINT OPERATION for all axes, press “F1” key to select “JMOV”.

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0
  
```

Ready ? (ENT/ESC)



- To start it, press “ENTER”
- To cancel it, press “ESC”

- To stop during robot operation, press “ESC” key.

⟨EDIT HOME⟩ V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

Press ESC to stop

⟨EDIT HOME⟩ V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

forward complete

⟨EDIT HOME⟩ V: 5 BL
Q4AFL H0
1:0 2:0
3:0 4:0
5:0 6:0

JMOV JSEL LMOV



- For screen return after operation complete, press “ENTER” key.

- Return screen

JSEL

- Operates only one designated axis with the saved position variable value.

How to operate

Step 1.

Servo power input

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

JMOV JSEL LMOV
  
```



- Supply power to the motor before operation.

Step 2.

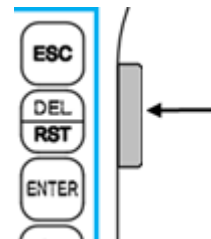
Deadman Switch

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

JMOV JSEL LMOV
  
```

- Grab the Deadman Switch with reasonable force before operation.



Step 3.

SELECT Screen for operation of only the designated axis

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

JMOV JSEL LMOV
  
```



- To conduct JOINT OPERATION for only the designated axis, press "F2" key to select "JSEL"

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0
  
```

Forward axis #=1



- select axis to be operated.
- Input motor 2axis No "1"
- After inputting, press "ENTER" key.

```

<EDIT HOME> V: 5  BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

Ready ? (ENT/ESC)

ENTER

- To start it, press “ENTER”
- To cancel it, press “ESC”

```

<EDIT HOME> V: 5  BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

Press ESC to stop

- To stop during robot operation, press “ESC” key.

```

<EDIT HOME> V: 5  BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

forward complete

ENTER

- For screen return after operation complete, press “ENTER” key.

```

<EDIT HOME> V: 5  BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

JSEL JMOV LMOV

- Return screen

■ Axis No check

- ① Refer to 3.6.3. MDI “Robot Axis No.”.

LMOV

- Conducts Cartesian operation for all axes.

■ How to operate

Step 1.

Servo power input

<EDIT HOME> V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

JSEL JMOV LMOV



- Supply power to the motor before operation.

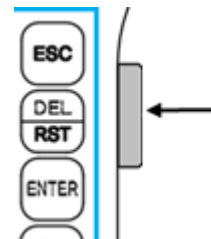
Step 2.

Deadman Switch

<EDIT HOME> V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

JSEL JMOV LMOV

- Grab the Deadman Switch with reasonable force before operation.



Step 3.

Cartesian operation SELECT Screen

<EDIT HOME> V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

JSEL JMOV **LMOV**



- For Cartesian operation of all axes, press "F3" key to select "LMOV".

<EDIT HOME> V: 5 BL
 Q4AFL H0
 1:0 2:0
 3:0 4:0
 5:0 6:0

Ready ? (ENT/ESC)



- To start it, press "ENTER"
- To cancel it, press "ESC"

- To stop during robot operation, press "ESC" key.


```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

Press ESC to stop

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

forward complete

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

JSEL JMOV LMOV

ENTER

- For screen return after operation complete, press “ENTER” key.

ENTER

- Return screen

Step 4.

When unusable robot is selected

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

JSEL JMOV **LMOV**

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

only use for SCARA!

```

<EDIT HOME> V: 5 BL
Q4AFL      H0
1:0        2:0
3:0        4:0
5:0        6:0

```

JSEL JMOV LMOV

F3

- If key is operated in unusable robot type, “only use for SCARA!” will be displayed.
- For screen return, press “ENTER” key.

- Return screen

■ Reference

- ① This is only for “SCARA” robot type and can’t be used for other robots.
- ② “Only use for SCARA!” message will be displayed.

Robostar

4.7.4 CORD (Coordinate)

- Changes or monitors position variable value of coordinate system
- Coordinate system will be displayed in the order of [JOINT → Cartesian].
- Toggle function.

Step 1.

COORD Screen Move

⟨EDIT HOME⟩ V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

not work!!!



- If key is operated in unusable robot type, “Not work!” will be displayed

■ Reference

- ① This is only for “SCARA” robot type and can’t be used for other robots.
- ② “Not work!!!” message will be displayed.

4.7.5 EXIT

- Exits position variable display screen.
- There are two ways to exit.

To press “[F4] EXIT” key.

To press “ESC” key.

■ How to exit

Step 1.

FLOAT Screen

⟨EDIT JNT⟩ V: 5 BL
Q4AFL CURR
1:0 2:0
3:0 4:0
5:0 6:0

PGET MDI CORD **EXIT**

⟨JOG⟩
ROBOT TYPE
*R1 R2AWS1
R2 NO-EXIT
R3 NO-EXIT

JOINT HOME

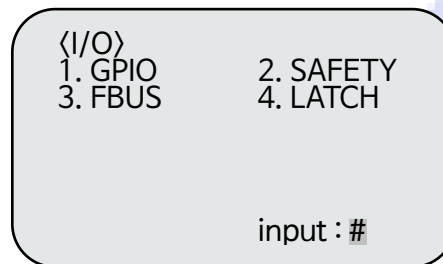


- To move out of position variable display screen, press “F4” key.

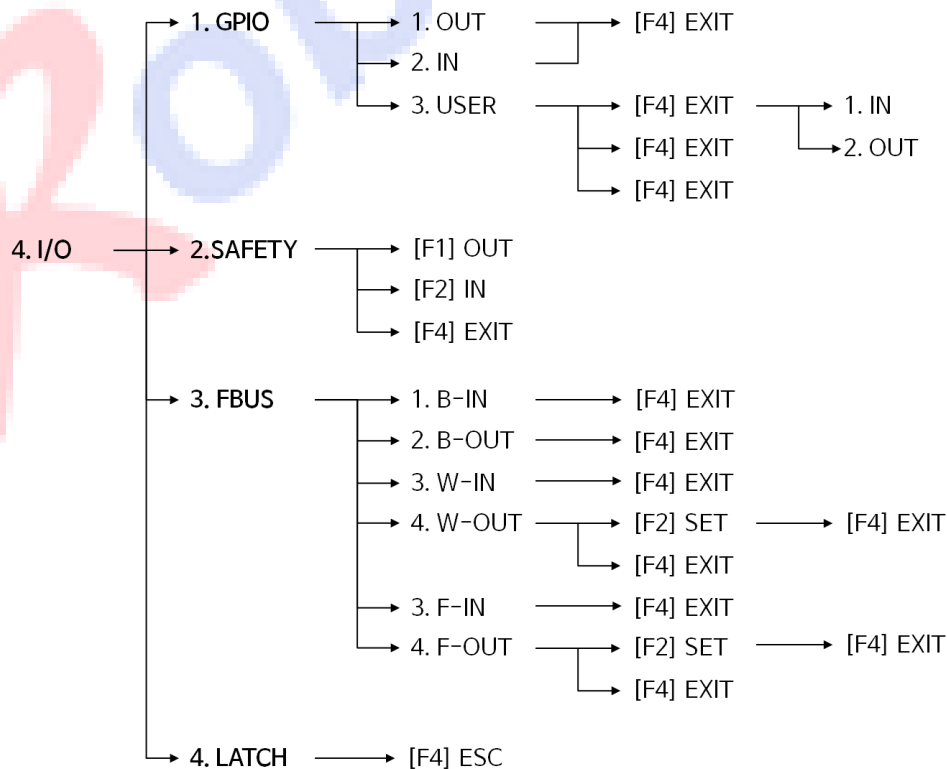
- Check the previous Screen which displays POINT position variable

Chapter 5. I/O mode

- I/O mode consists of basic 3 modes. Checks operation of peripheral device when it is connected with peripheral device (PLC, sensor, solenoid, etc.).
- Check state of User I/O, SAFETY I/O, LIMIT sensor I/O, HIGHT VELOCITY I/O.
- I/O mode consists of the figure below. The mode provides output of each INPUT/OUTPUT contact, State Check function.
 - 1) GPIO: Checks and sets User I/O input/output
 - 2) SAFETY: Checks robot INTERLOCK contact
 - 3) FBUS: Checks CC-LINK BIT input/output
- Selectable menu (usable only for RS422 communication type controller)
 - 4) LATCH: Checks Signal value of the Latch sensor connected to the Servo board



■ I/O Menu Tree



5.1 GPIO (General Purpose Input Output)

- ✓ Displays User I/O Input Contact or controls output contact.

5.1.1 Overview

- Check I/O Input/output signal state connected to the system (robot, external device).
- There are basic 32 points of Input/output contact.
- If extended I/O board is connected, 32 points can be added so that total 64 contacts can be used.

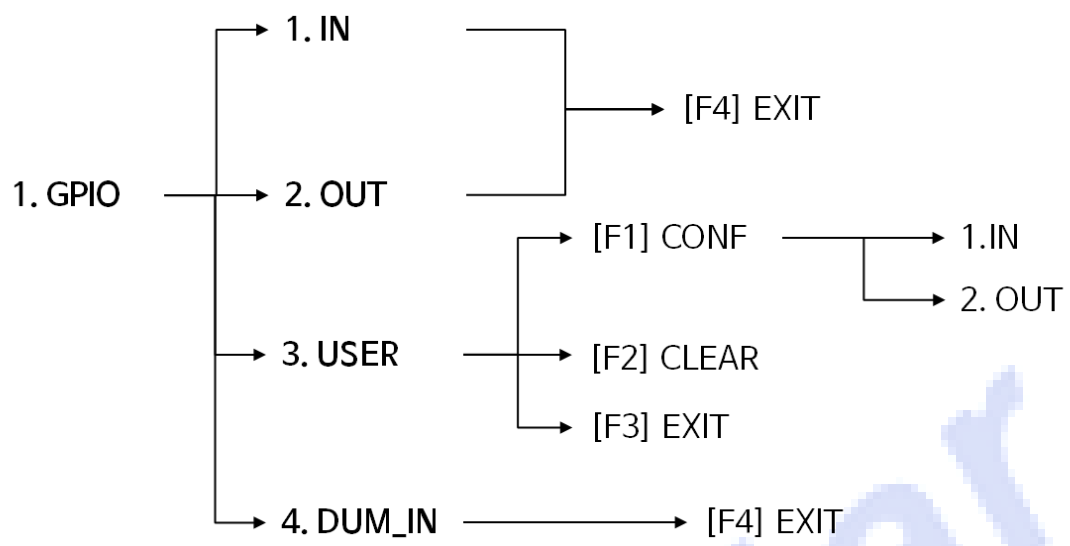
■ 2. GPIO type

	GROUP	Detail	Remark
1 GPIO	1. IN	INPUT	
	2. OUT	OUTPUT	
	3. USE	Displays signal of I/O Input/output contact set by a user.	
	4.DUM_IN	Displays signal of Dummy input contact.	

5.1.2 GPIO mode flow chart

- GPIO largely consists of 4 Groups.
 - IN: Displays signal of random I/O Input Contact.
 - OUT: Displays signal of random I/O Output Contact.
 - USE: Displays signal of I/O Input/output contact designated by a user.
 - DUM_IN: Displays signal of I/O Input Contact used for special use beside contact displayed in 'IN'.

■ GPIO Menu Tree



5.1.3 GPIO Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

I/O Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- “4. I/O” Selection

GPIO Selection

<I/O>
1. GPIO 2. SAFETY
3. FBUS

input : #



- “1. GPIO” Selection

<I/O - GPIO>
1. IN 2. OUT
3. USER 4. DUM_IN

input #

- Check GPIO Screen

Step 3.

INPUT

<I/O - GPIO>	
1. <u>IN</u>	2. OUT
3. USER	4. DUM_IN
input #	



- To check Signal of INPUT contact, press "1. IN" key.

Step 4.

OUTPUT

<I/O - GPIO>	
1. IN	2. <u>OUT</u>
3. USER	4. DUM_IN



- To output Signal of OUTPUT contact, press "2. OUT" key.

Step 5.

Checking I/O set by a user

<I/O - GPIO>	
1. IN	2. IN
3. <u>USER</u>	4. DUM_IN



- To check or display I/O contact set by a user, press "3. USE" key.

Step 6.

DUMMY INPUT check

<I/O - GPIO>	
1. OUT	2. IN
3. USER	4. <u>DUM_IN</u>



- To check or display I/O contact set by a user, press "4. DUM_IN" key.

5.1.4 IN (Input)

- Checks signal state of random I/O Input Contact.

■ OPENING SEQUENCE

- 1. GPIO → 1. IN

Step 1.

OUT Selection

<I/O - GPIO>

1. IN

3. USER

2. OUT

4. DUM_IN

input #

input contact 1/2 display check

<I/O - IN> 1/2

00:0	01:0	02:0	03:0
04:0	05:0	06:0	07:0
08:0	09:0	10:0	11:0
12:0	13:0	14:0	15:0
B0:0H00	B1:0H00		

EXIT



- To check signal of INPUT contact, press “1. IN” key.

- Input contact will be displayed

■ How to check input contact signal

- Describes the method to check INPUT contact signal state through an example.
 - Ex) Checks signal state of INPUT port No 20.

Step 1.

Page Change

<I/O - IN> **1/2**

00:0	01:0	02:0	03:0
04:0	05:0	06:0	07:0
08:0	09:0	10:0	11:0
12:0	13:0	14:0	15:0
B0:0H00	B1:0H00		

EXIT

<I/O - IN> **2/2**

16:0	17:0	18:0	19:0
20:1	21:0	22:0	23:0
24:0	25:0	26:0	27:0
28:0	29:0	30:0	31:0
B2:0H00	B3:0H00		

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.

5.1.5 OUT (Output)

- Displays random I/O Output Contact.

■ OPENING SEQUENCE

- 1. GPIO → 2. OUT

Step 1.

OUT Selection

<I/O - GPIO>
1. IN **2. OUT**
3. USER 4. DUM_IN



- To turn ON/OFF output contact, press “2 OUT” key.

Checking output contact 1/2 display

<I/O - OUT> 1/2
00: 01: 02: 03:
04: 05: 06: 07:
08: 09: 10: 11:
12: 13: 14: 15:
B0:0H00 B1:0H00

EXIT

- Output contact will be displayed

■ How to control output contact signal

- Describe the method to turn ON/OFF OUTPUT signal through an example.
- Press “ENTER” to circle in the order of ON → OFF → ON.
 - Ex) Turns ON/OFF OUTPUT port No 20.

Step 1.

Page Change

<I/O - OUT> **1/2**
00: 01: 02: 03:
04: 05: 06: 07:
08: 09: 10: 11:
12: 13: 14: 15:
B0:0H00 B1:0H00

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.

<I/O - OUT> **2/2**
16: 17: 18: 19:
20: 21: 22: 23:
24: 25: 26: 27:
28: 29: 30: 31:
B2:0H00 B3:0H00

EXIT



Step 2.

Cursor Position Move

<I/O - OUT> 2/2

16:0	17:0	18:0	19:0
20:0	21:0	22:0	23:0
24:0	25:0	26:0	27:0
28:0	29:0	30:0	31:0
B2:0H00		B3:0H00	

EXIT

<I/O - OUT> 2/2

16:0	17:0	18:0	19:0
20:0	21:0	22:0	23:0
24:0	25:0	26:0	27:0
28:0	29:0	30:0	31:0
B2:0H00		B3:0H00	

EXIT



- Press direction key to move to No to be output.
- Move result can be checked with cursor position.

Step 3.

Signal ON/OFF

Turning ON signal

<I/O - OUT> 2/2

16:0	17:0	18:0	19:0
20:1	21:0	22:0	23:0
24:0	25:0	26:0	27:0
28:0	29:0	30:0	31:0
B2:0H00		B3:0H00	

EXIT



- To turn ON signal, press "ENTER" key

Turning OFF signal

<I/O - OUT> 2/2

16:0	17:0	18:0	19:0
20:0	21:0	22:0	23:0
24:0	25:0	26:0	27:0
28:0	29:0	30:0	31:0
B2:0H00		B3:0H00	

EXIT



- To turn OFF signal, press "ENTER" key

5.1.6 USE (User I/O setting)

- Checks I/O state set by a user.

■ USE type

	GROUP	Detail	Remark
[F3] POINT	[F1]. CONF	I/O setting	
	[F2]. CLEAR	Deletes user setting	
	[F4.] EXIT	Exists the screen	

■ OPENING SEQUENCE

- 1. GPIO → 3. USE

Step 1.

OUT Selection

<I/O - GPIO>
1. OUT
3. USER

2. IN
4. DUM_IN

input #



- To check I/O list set by a user, press “3. USE” key.

User I/O Screen

<I/O - USER>
NONE: --
NONE: --
NONE: --
NONE: --
NONE: --
NONE: --
CONF CLEAR EXIT

NONE: --
NONE: --
NONE: --
NONE: --
NONE: --
NONE: --

- Check User I/O display Screen

■ How to set User I/O

- A user can directly set needed I/O.
- Max 12 contacts can be set.
- To set User I/O, divide left to “INPUT”, and divide right to “OUTPUT”.
- Both of INPUT/OUTPUT can be set.

Step 1.

Cursor Position Move

<I/O USER>
IN01: ■ OUT01: 1
NONE: NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
CONF CLEAR EXIT

<I/O USER>
IN01: 0 OUT01: 1
NONE ■ NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
CONF CLEAR EXIT



- Press direction key to move to No to be output.
- Move result can be checked with cursor position.

Step 2.

User I/O Setting Screen

<I/O USER>
IN01: 0 OUT01: 1
NONE ■ NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
NONE: -- NONE: --
CONF CLEAR EXIT

<I/O USER SET>
1. IN 2. OUT

input : #



- To set User I/O, press “F1” key.

- Select “INPUT/OUTPUT” to be set by a user.

Step 3.

INPUT Setting

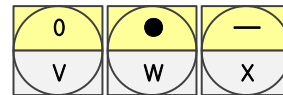
<USER SET - IN>

Index # =2



- Input ‘INPUT port No’.
- After inputting, press “ENTER”

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S



```

<I/O USER>
IN01: 0      OUT01: 1
IN02: ■ NONE: --
NONE: --     NONE: --
NONE: --     NONE: --
NONE: --     NONE: --
NONE: --     NONE: --
CONF CLEAR  EXIT
  
```

- “Port No 2” will be displayed

Step 4.

OUTPUT Setting

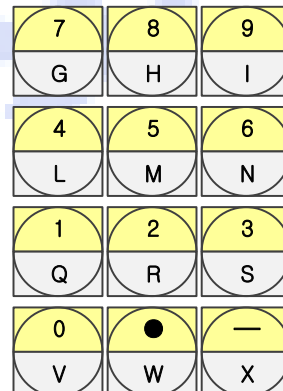
```

<USER SET - OUT>
  
```

Index # =2

ENTER

- Input ‘OUTPUT port No’.
- After inputting, press “ENTER”.



```

<I/O USER>
IN01: 0      OUT01: 1
IN02: 1      OUT02: ■
NONE: --     NONE: --
NONE: --     NONE: --
NONE: --     NONE: --
NONE: --     NONE: --
CONF CLEAR  EXIT
  
```

- “Port No 2” will be displayed.

Step 5.

Saving and canceling

```

<I/O USER>
IN01: 0      OUT01: 1
IN02: 1      OUT02: ■
NONE: --     NONE: --
NONE: --     NONE: --
NONE: --     NONE: --
NONE: --     NONE: --
CONF CLEAR  EXIT
  
```

F4

- Input “F4” port No.

```
<I/O USER SET>
IN01:0          OUT01:1
IN02:1          OUT02:■
NONE:--         NONE:--
NONE:--         NONE:--
NONE:--         NONE:--
NONE:--         NONE:--
```

update ? (ENT/ESC)



- To save it, press “ENTER”
- To cancel it, press “ESC”

```
<I/O USER>
IN01:0          OUT01:1
IN02:1          OUT02:■
NONE:--         NONE:--
NONE:--         NONE:--
NONE:--         NONE:--
NONE:--         NONE:--
CONF CLEAR     EXIT
```

- Display User I/O screen

5.1.7 DUM_IN (DUMMY INPUT)

- Displays signal of I/O Input Contact used as a special use.

■ OPENING SEQUENCE

- 1. GPIO → 4. DUM_IN

Step 1.

OUT Selection

<I/O - GPIO>
1. IN 2. OUT
3. USER 4. DUM_IN

input #



- To check DUMMY INPUT signal, press “4. DUM_IN” key.

Checking input contact 1/2 display

<DUMMY - IN>
DUMMY_IN 00 = 1
DUMMY_IN 01 = 0
DUMMY_IN 02 = 0

- Input contact will be displayed

■ Description of function and screen

① Screen description

- 1) Outputs Input signal connected to contact. Currently only DUMMY_IN No 00 is used, and outputs Power switch signal.
(In case of 1, supplying power. In case of 0, power is shut OFF)

② Function description

- **[ESC]**: Return to the previous screen

5.2 SAFETY

- ✓ Safety Part consists of hardware of emergency of external interface (ankle detection, Door Open, etc.). This part shut OFF driving power of the robot (motor) in the manner of hardware of controller against emergency situation to take measure against dangerous situations regardless of authority of main part. Safety Controller (Unit, PLC) plays pivotal role of the Safety Part.

5.2.1 Overview

- Safety Part consists of Emergency Circuit on the Front Board and Safety Unit (PLC) inside the controller. Checks signal of each Safety Part.
- OUT mode will be firstly displayed in Safety Screen.

■ 2. SAFETY type

	GROUP	Detail	Remark
2 SAFETY	1. IN	INPUT	
	2. OUT	OUTPUT	

5.2.2 Flow chart of SAFETY Mode

- SAFETY largely consists of 2 Groups.
 - IN: Displays signal of random SAFETY I/O Input Contact.
 - OUT: Displays signal of random SAFETY I/O Output Contact.

■ SAFETY Manu Tree



5.2.3 SAFETY Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version:1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER key to move to Main Menu Screen.

Step 2.

I/O Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- “4. I/O” Selection

SAFETY Selection

<I/O>
1. GPIO 2. SAFETY
3. FBUS

input : #



- “2. SAFETY” Selection

Step 3

INPUT

<I/O - SAFETY>
1. IN 2. OUT

input : #

- To select Safety INPUT, press “1. IN” key.

Step 4

OUTPUT

<I/O - SAFETY>
1. IN 2. OUT

input : #



- To select Safety INPUT, press “2. OUT” key.

5.2.4 IN (Input)

- Checks signal state of Safety I/O Input Contact. The table below shows items.

2. type of SAFETY I/O INPUT

Type	Detail	Remark
MC1_RD	MC1 State Check	
MC2_RD	MC2 State Check	
A_EMG	Alarm in Auto Mode	
TP_EMG	T/P alarm	
F_EMG	Front switch alarm	
ENABLE	System Enable or Hold	
LIGHT	Ankle detection	
E_RST	External Reset	
IM_NO	Alarm when T/P mode and system mode mismatches (Manual)	
IM_NC	Alarm when T/P mode and system mode mismatches alarm when (Auto)	
SMPS_F	Alarm when UPS AC power won't turn ON	
FAN_F	Fan alarm	
DUMMY2	DUMMY	
DUMMY6	DUMMY	
DUMMY7	DUMMY	
DUMMY8	DUMMY	

OPENING SEQUENCE

- 2. SAFETY → 1. IN

Step 1.

INPUT Selection

<I/O - SAFETY>
2. OUT

1. IN

input : #



- To check Signal of Safety I/O Input Contact, press "1. IN" key.

<I/O - Safety IN> 1/2
 MC1_RD: 1 MC2_RD:1
 A_EMG:0 TP_EMG:0
 F_EMG:0 ENABLE:0
 LIGHT:0 E_RST:0
 IM_NO:0 IM_NC:0
 EXIT

- Safety I/O Input Contact will be displayed

Step 2.

Page Change

<I/O - Safety IN> **1/2**
 MC1_RD: 1 MC2_RD:1
 A_EMG:0 TP_EMG:0
 F_EMG:0 ENABLE:0
 LIGHT:0 E_RST:0
 IM_NO:0 IM_NC:0
 EXIT

Pg Up

- Use "PAGE UP/DOWN" key for screen conversion.

<I/O - Safety IN> **2/2**
 SMPS_F: 1 FAN_F:1
 DUMMY2:0 DUMMY6:0
 DUMMY7:0 DUMMY8:0
 EXIT

Pg Dn

5.2.5 OUT (Output)

- Checks signal of Safety I/O Output Contact. The table below shows Detailed items

2. types of SAFETY I/O OUTPUT

Type	Detail	Remark
M_EMG	Main alarm	
RESET	Reset	
DUMMY1	DUMMY	
DUMMY2	DUMMY	
DUMMY3	DUMMY	
DUMMY4	DUMMY	

OPENING SEQUENCE

- 2. SAFETY → 2. OUT

Step 1.

OUT Selection

<I/O - SAFETY>
1. IN **2. OUT**

input : #



- To check signal of Safety I/O Output Contact, press “2. OUT” key.

Safety output contact

<I/O - Safety OUT>
M_EMG:1 RESET:1
DUMMY1:0 DUMMY1:0
DUMMY3:0 DUMMY4:0

EXIT

- Safety I/O Output Contact will be displayed

5.3 FBUS (Fieldbus)

- ✓ CC-LINK input · output function

5.3.1 Overview

- Checks state of CC-LINK Input/output signal connected to the system (robot, external device).
- Each of Input/output contact has 128 points.
- Each of WORD DATA Input/output consists of 0~15 areas.
- Each of FLOAT DATA Input/output consists of 0~7 areas and shares WORD area.
2WORDS are allocated for each FLOAT No.

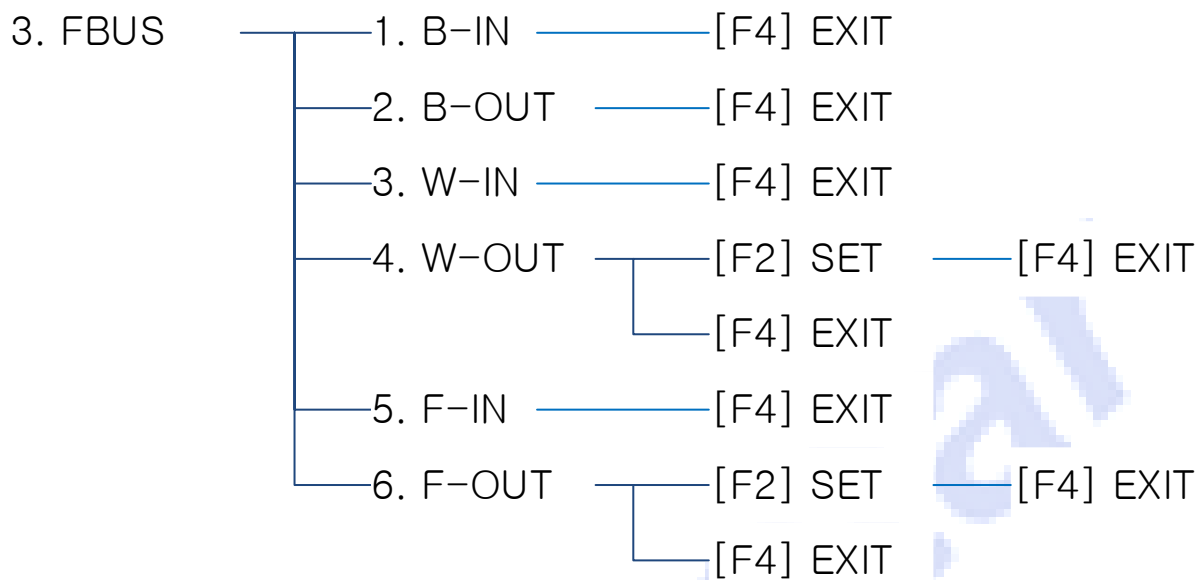
■ 3. FBUS type

	GROUP	Detail	Remark
3. FBUS	1. B-IN	Displays signal of FILEDBUS- BIT input contact	1 WORD
	2. B-OUT	Displays FILEDBUS- BIT output contact	
	3. W-IN	Displays FILEDBUS- WORD DATA Input	
	4. W-OUT	Displays FILEDBUS- WORD DATA	
	5. F-IN	Displays FILEDBUS- FLOAT DATA Input	2 WORD
	6. F-OUT	Displays FILEDBUS- FLOAT DATA	

5.3.2 FBUS mode flow chart

- FBUS largely consists of 6 Groups.
 - B-IN: Displays input signal of random I/O contact.
 - B-OUT: Displays output of random I/O contact.
 - W-IN: Displays random WORD DATA Input.
 - W-OUT: Displays random WORD DATA Output.
 - F-IN: Displays random FLOAT DATA Input.
 - F-OUT: Displays random FLOAT DATA Output.

■ FBUS Manu Tree



5.3.3 FBUS Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version:1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER key to move to Main Menu Screen.

Step 2.

I/O Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- “4. I/O” Selection

FBUS Selection

<I/O>
1. GPIO 2. SAFETY
3. FBUS

input : #



- “3. FBUS” Selection

FIELD BUS screen

<FIELD BUS>
1. B-IN 2. B-OUT
3. W-IN 4. W-OUT
5. F-IN 6. F-OUT

input : #

- Check Screen

Step 3.

BIT input signal

⟨FIELDBUS⟩

<u>1. B-IN</u>	2. B-OUT
3. W-IN	4. W-OUT
5. F-IN	6. F-OUT

input : #



- To check BIT input signal, press “1. BIT-IN” key.

Step 4.

BIT Output signal

⟨FIELDBUS⟩

1. B-IN	<u>2. B-OUT</u>
3. W-IN	4. W-OUT
5. F-IN	6. F-OUT

input : #



- To check BIT Output signal, press “2. B-OUT” key.

Step 5.

WORD DATA Input

⟨FIELDBUS⟩

1. B-IN	2. B-OUT
<u>3. W-IN</u>	4. W-OUT
5. F-IN	6. F-OUT

input : #



- To check WORD DTA input value, press “3. W-IN” key.

Step 6.

WORD DATA Output

⟨FIELDBUS⟩

1. B-IN	2. B-OUT
3. W-IN	<u>4. W-OUT</u>
5. F-IN	6. F-OUT

input : #



- To output WORD DATA, press “4. W-OUT” key.

Step 7.

FLOAT-TYPE WORD DATA Input

⟨FIELDBUS⟩

1. B-IN	2. B-OUT
3. W-IN	4. W-OUT
<u>5. F-IN</u>	6. F-OUT

input : #



- To output FLOAT-TYPE WORD DATA, press “5. F-IN” key.

Step 8.

FLOAT-TYPE WORD DATA Output

<FIELDBUS>

1. B-IN

2. B-OUT

3. W-IN

4. W-OUT

5. F-IN

6. F-OUT

input : #



- To output FLOAT-TYPE WORD DATA, press “6. F-OUT” key.

5.3.4 B -IN (BIT Input)

- Checks signal state of random CC-LINK BIT input contact. The table below shows items.

■ OPENING SEQUENCE

- 3. FBUS → 1. B-IN

Step 1.

BIT INPUT Selection

<FIELDBUS>
 1. B-IN 2. B-OUT
 3. W-IN 4. W-OUT
 5. F-IN 6. F-OUT

input : #



- To check BIT INPUT signal, press “1. BIT-IN” key.

Checking input contact display

<FBUS-BIT (IN)> 1/16
 000:0 001:0
 002:0 003:0
 004:0 005:0
 006:0 007:0
 B00:0H00

EXIT



- 0~127 BIT input contacts are displayed.



<FBUS-BIT (IN)> 16/16
 120:0 121:0
 122:0 123:0
 124:0 125:0
 126:0 127:0
 B15:0H00

EXIT

■ How to check input contact signal

- Describes how to check CCLINK BIT input contact signal state through an example.
 - Ex) Check signal state of input port No 20.

Step 1.

Page Change (Page 1)

<FBUS-BIT (IN)> 1/16
 000:0 001:0
 002:0 003:0
 004:0 005:0
 006:0 007:0
 B00:0H00

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.



Step 2.

Page 2

<FBUS-BIT (IN)> 2/16

008:0	009:0
010:0	011:0
012:0	013:0
014:0	015:0
B01:0H00	

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.

Step 3.

Page 3

<FBUS-BIT (IN)> 3/16

016:0	017:0
018:0	019:0
020:0	021:0
022:0	023:0
B02:0H00	

EXIT

- BIT contact No check

5.3.5 B-OUT (BIT Output)

- Displays random CC-LINK BIT output contact. The table below shows items.

■ OPENING SEQUENCE

- 3. FBUS → 2. B-OUT

Step 1.

BIT OUTPUT Selection

〈FIELDBUS〉
 1. B-IN **2. B-OUT**
 3. W-IN 4. W-OUT
 5. F-IN 6. F-OUT

input : #



- To check BIT OUTPUT signal, press “2. BIT-OUT” key.

Checking output contact display

〈FBUS-BIT(OUT)〉 1/16
 000:■ 001:0
 002:0 003:0
 004:0 005:0
 006:0 007:0
 B00:0H00

EXIT



- 0~127 BIT output contacts are displayed.



~
 〈FBUS-BIT(OUT)〉 16/16
 120:■ 121:0
 122:0 123:0
 124:0 125:0
 126:0 127:0
 B15:0H00

EXIT

■ How to control output contact signal

- Describes how to turn ON/OFF OUTPUT signal through an example.
- Press “ENTER” to output in the order to ON → OFF → ON.
 - Ex) Turn ON/OFF OUTPUT port No 20.

Step 1.

Page Change (Page 1)

〈FBUS-BIT(OUT)〉 1/16
 000:■ 001:0
 002:0 003:0
 004:0 005:0
 006:0 007:0
 B00:0H00

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Page 2

<FBUS-BIT(OUT)> 2/16

008:■	009:0
010:0	011:0
012:0	013:0
014:0	015:0
B01:0H00	

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.

Step 3.

Page 3

<FBUS-BIT(OUT)> 3/16

016:■	017:0
018:0	019:0
020:0	021:0
022:0	023:0
B02:0H00	

EXIT

- Check BIT contact No

Step 2.

Cursor Position Move

<FBUS-BIT(OUT)> 3/16

016:■	017:0
018:0	019:0
020:0	021:0
022:0	023:0
B02:0H00	

EXIT



- Press direction key to move to No to be output.
- Move result can be checked with cursor position.

<FBUS-BIT(OUT)> 3/16

017:0	018:0
019:0	020:■
021:0	022:0
023:0	024:0
B02:0H00	

EXIT

Step 3.

Turn signal ON

FBUS-BIT(OUT)> 3/16

017:0	018:0
019:0	020:0
021:0	022:0
023:0	024:0
B02:0H00	

EXIT



- To turn ON signal, press “ENTER” key

Turn OFF signal

FBUS-BIT(OUT)> 3/16

017:0 018:0

019:0 020:1

021:0 022:0

023:0 024:0

B02:0H00

EXIT



- To turn OFF signal, press “ENTER” key

5.3.6 W-IN (WORD Input)

- Checks random CC-LINK WORD DATA Input value. The table below shows items.

■ OPENING SEQUENCE

- 3. FBUS → 3. W-IN

Step 1.

WORD DATA INPUT Selection

〈FIELDBUS〉
1. B-IN 2. B-OUT
3. W-IN 4. W-OUT
5. F-IN 6. F-OUT

input : #



- To check WORD DATA Input value, press “3.W-IN” key.

Checking WORD DATA Input display

〈FBUS-WORD(IN)〉 1/4
IN VALUE
CW10 0
CW11 0
CW12 0
CW13 0

EXIT

~

〈FBUS-WORD(IN)〉 4/4
IN VALUE
CW112 0
CW113 0
CW114 0
CW115 0

EXIT



- 0~15 WORD DATA areas are displayed.

■ How to check WORD DATA Input value

- Describes how to check CCLINK WORD area input value through an example.
 - Ex) Check input value of WORD area No 4.

Step 1.

Page Change (Page 1)

〈FBUS-WORD(IN)〉 1/4
IN VALUE
CW10 0
CW11 0
CW12 0
CW13 0

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.

Step 2.

Page 2

<u><FBUS-WORD(IN)> 2/4</u>	
<u>IN</u>	<u>VALUE</u>
CW14	0
CW15	0
CW16	0
CW17	0
EXIT	

- WORD area No 4 input value check

5.3.7 W-OUT (WORD Output)

- Displays random WORD DATA Output value. The table below shows items.

■ 4. W-OUT type

	GROUP	Detail	Remark
4. W-OUT	[F1] SET	Displays WORD DATA Output value.	
	[F4] EXIT	Exits	

■ OPENING SEQUENCE

- 3. FBUS → 4. W-OUT

Step 1.

WORD DATA OUTPUT Selection

<FIELDBUS>
 1. B-IN 2. B-OUT
 3. W-IN **4. W-OUT**
 5. F-IN 6. F-OUT

input : #



- To display WORD DATA Output value, press “4. W-OUT” key.

WORD DATA Output display check

<FBUS-WORD(OUT)> 1/4

IN	VALUE
*CWO0	0
CWO1	0
CWO3	0
CWO4	0

SET

EXIT

~

<FBUS-WORD(OUT)> 4/4

IN	VALUE
CWO12	0
CWO13	0
CWO14	0
CWO15	0

EXIT



- 0~15 WORD DATA areas are displayed.

5.3.7.1 SET

- Displays WORD DATA Output value.
- Up to 2bytes (-32768~32767) of output value can be output.
- Describes how to display CCLINK WORD area output value through an example.
 - Ex) Displays output value of WORD area No 5.

■ Page Change

Step 1.

Page Change (Page 1)

<u><FBUS-WORD(OUT)> 1/4</u>	
IN	VALUE
*CWO0	0
CWO1	0
CWO2	0
CWO3	0
SET	EXIT



- Use "PAGE UP/DOWN" key for screen conversion.



Page 2

<u><FBUS-WORD(OUT)> 2/4</u>	
IN	VALUE
*CWO4	0
CWO5	0
CWO6	0
CWO7	0
SET	EXIT

- WORD DATA check

■ Cursor Move

Step 1.

Cursor Position Move

<u><FBUS-WORD(OUT)> 2/4</u>	
IN	VALUE
*CWO4	0
-CWO5	0
CWO6	0
CWO7	0
SET	EXIT



- Press direction key to move to No to be output.



- Move result can be checked with cursor position.

<u><FBUS-WORD(OUT)> 2/4</u>	
IN	VALUE
CWO4	0
*CWO5	0
-CWO6	0
CWO7	0
SET	EXIT

■ Outputting WORD DATA Output value

Step 1.

WORD Data Screen No 5

〈FBUS-WORD(OUT)〉 2/4	
IN	VALUE
CWO4	0
*CWO5	0
CWO6	0
CWO7	0
SET	EXIT



- To display output value after moving cursor to WORD DATA to be output, press "F1" key.

〈FBUS-WORD(OUT)〉	
CWO0 : O	
NEW : ■	
SET	EXIT

- Check WORD DATA Output screen.

Step 2.

Input of output value

〈FBUS-WORD(OUT)〉	
CWO0 : O	
NEW : ■	
SET	EXIT

- Input of output value: 50



7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

〈FBUS-WORD(OUT)〉	
CWO0 : O	
<u>NEW : 50</u>	
SET	EXIT

Step 3.

Deleting

<FBUS-WORD(OUT)>

CWO0 : 0

NEW : 501 ■

SET

EXIT

<FBUS-WORD(OUT)>

CWO0 : 0

NEW : 50 ■

SET

EXIT



- If invalid value is input, press “DEL” key to delete input value in order.

Step 4.

Displaying value output

<FBUS-WORD(OUT)>

CWO0 : 0

NEW : 50 ■

SET

EXIT

 <FBUS-WORD(OUT)> 2/4
 IN VALUE

CWO4 0

*CWO5 50

CWO6 0

CWO7 0

SET

EXIT



- To save it, press “ENTER” key
- To cancel it, press “ESC” key.

5.3.8 F-IN (FLOAT Input)

- Checks random CC-LINK FLAOT DATA Input value. the table below shows items.
- Shares WORD area and allocates 2 WORD for each FLOAT No.
- Receives real number DATA.

■ OPENING SEQUENCE

- 3. FBUS → 5. F-IN

Step 1.

FLAOT DATA INPUT Selection

<FIELDBUS>
 1. B-IN 2. B-OUT
 3. W-IN 4. W-OUT
5. F-IN 6. F-OUT

input : #



- To check FLOAT DATA Input value, press “5 F-IN” key.

Checking FLOAT-TYPE WORD DATA

Input display

<FBUS-FLOAT (IN)> 1/2
 IN VALUE
 CF10 0
 CF11 0
 CF12 0
 CF13 0

EXIT



- 0~7 of FLAOT DATA area will be displayed.

~
 <FBUS- FLOAT (IN)> 2/2
 IN VALUE
 CF14 0
 CF15 0
 CF16 0
 CF17 0

EXIT



■ How to check FLOAT DATA Input value

- Describes the method to check FLOAT area input value through an example.
 - Ex) Check input value of FLOAT area No 4.

Step 1.

Page Change (Page 1)

Step 2.

<FBUS-FLOAT (IN)> 1/2

IN	VALUE
CFI0	0
CFI1	0
CFI2	0
CFI3	0

EXIT



- Use “PAGE UP/DOWN” key for screen conversion.

Page 2

<FBUS- FLOAT (IN)> 2/2

IN	VALUE
CFI4	0
CFI5	0
CFI6	0
CFI7	0

EXIT

- Check FLOAT DATA area No 4 input value

5.3.9 F-OUT (FLOAT Output)

- Displays random FLOAT DATA Output value. The table below shows items.

■ 6. F-OUT type

	GROUP	Detail	Remark
6. F-OUT	[F1] SET	Displays FLOAT DATA Output value.	
	[F4] EXIT	Exits the screen.	

■ OPENING SEQUENCE

- 3. FBUS → 6. F-OUT

Step 1.

Selecting FLAT DATA OUTPUT

<FIELDBUS>
 1. B-IN 2. B-OUT
 3. W-IN 4. W-OUT
 5. F-IN **6. F-OUT**

input : #



- To display FLOAT DATA Output value, press “6 F-OUT” key.

Checking WORD DATA Output 1/4 display

<FBUS-FLOAT (OUT)> 1/4
 IN VALUE
 *CF00 0
 CF01 0
 CF02 0
 CF03 0
 SET EXIT



- 0~7 of FLOAT DATA area will be displayed.

<FBUS-FLOAT (OUT)> 2/2
 IN VALUE
 CF04 0
 CF05 0
 CF06 0
 CF07 0
 EXIT



5.3.9.1 SET

- Displays FLOAT-TYPE WORD DATA Output value.
- Output value can be output up to 4byte which sum up 2WORD.
- Describes the method to display FLOAT area output value through an example.
 - Ex) Displays output value of FLOAT area No 5.

■ Page Change

Step 1.

Page Change (Page 1)

〈FBUS- FLOAT (OUT)〉 1/2
IN VALUE

*CF00 0
CF01 0
CF02 0
CF03 0

SET

EXIT



- Use "PAGE UP/DOWN" key for screen conversion.



Page 2

〈FBUS-FLOAT (OUT)〉 2/2
IN VALUE

*CF04 0
CF05 0
CF06 0
CF07 0

SET

EXIT

- Check FLOAT DATA

■ Cursor Move

Step 1.

Cursor Position Move

〈FBUS- FLAOT (OUT)〉 2/2
IN VALUE

*CF00 0
CF01 0
CF02 0
CF03 0

SET

EXIT



- Press direction key to move to No to be output.



- Move result can be checked with cursor position.

〈FBUS- FLAOT (OUT)〉 2/2
IN VALUE

CF04 0
*CF05 0
CF06 0
CF07 0

SET

EXIT

■ Outputting FLOAT DATA Output value

Step 1.

FLAOT Data Screen No 5

〈FBUS-FLAOT (OUT)〉 2/2
IN VALUE

CWO4	0
*CWO5	0
CWO6	0
CWO7	0

SET EXIT



- To display output value after moving cursor to FLOAT DATA desired to be output, press "F1" key.

〈FBUS- FLAOT (OUT)〉

CWO0 : 0
NEW : ■

SET EXIT

- Check FLOAT DATA Output screen.

Step 2.

Input of output value

〈FBUS- FLOAT (OUT)〉

CWO0 : 0
NEW : ■

SET EXIT



- Input of output value: 50

7 G	8 H	9 I
4 L	5 M	6 N
1 Q	2 R	3 S
0 V	● W	— X

〈FBUS- FLOAT (OUT)〉

CWO0 : 0
NEW : 50 ■

SET EXIT

Step 2.

Deleting

<FBUS- FLOAT (OUT)>

CWO0 : 0

NEW : 501 ■

SET

EXIT

<FBUS- FLOAT (OUT)>

CWO0 : 0

NEW : 50 ■

SET

EXIT



- If invalid value is input, press “DEL” key to delete input value in order.

Step 3.

Outputting output value

<FBUS-WORD(OUT)>

CWO0 : 0

NEW : 50 ■

SET

EXIT

 <FBUS-WORD(OUT)> 2/4
 IN VALUE

CWO4 0

*CWO5 50

CWO6 0

CWO7 0

SET

EXIT



- To save it, press “ENTER” key
- To cancel it, press “ESC” key.

5.4 LATCH (RS422 communication type only)

- ✓ Checks signal value of the Latch sensor connected to the Servo board.
- ✓ Max 6 axes, max 4 sensors for each axis can be installed.

■ OPENING SEQUENCE

- Main Screen → 4. I/O → 4. LATCH

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #

ENTER

- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER key to move to Main Menu Screen.

Step 2.

I/O Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG **4. I/O**
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- “4. I/O” Selection

LATCH Selection

<I/O>
1. GPIO 2. SAFETY
3. FBUS **4. LATCH**

input : #



- “4. LATCH” Selection

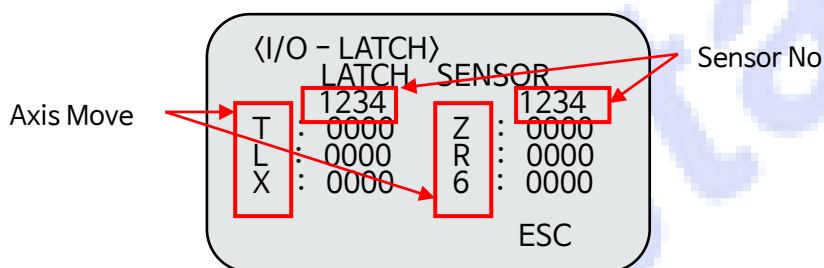
```
<I/O - LATCH>
LATCH  SENSOR
1234    1234
T : 0000 Z : 0000
L : 0000 R : 0000
X : 0000 6 : 0000
ESC
```

- Check LATCH Screen

■ Description of function and screen

① Screen description

- 1) Checks state of Latch sensor of each axis.



② Function description

- **[ESC]:** Moves to Main Screen

Chapter 6. ORIGIN Mode

- Origin Mode means a series of procedure to check origin position of the robot.
- In general, in case of the robot which uses relative position detection-type encoder (Incremental encoder), current robot position can't be memorized after power shut OFF. Therefore, move to reference position of the robot after power supply and designate the position as origin and then the robot must be operated based on this. Hence, Origin function is needed.
 - ORIGIN: Scans origin sensor mounted on the system to check coordinate origin position.

<ORIGIN>			
	DIS	SEQ	ORG
1:	OFF	2	ON
2:	OFF	2	ON
3:	OFF	2	ON
4:	OFF	2	ON
5:	OFF	2	OFF
ORG			

■ ORIGIN Menu Tree



6.1 ORIGIN

6.1.1 Overview

- Scans initial position using the method set by a selected user to set coordinate origin.
- To use motor (Incremental Motor, Linear Motor) which forgets current position when power is reset, no condition Origin must be conducted after booting the controller.

■ 1. ROBOT type

	GROUP	Detail	Remark
5. ORIGIN	[F1] ORG	Conducts Origin operation of the selected robot.	
	[F4] EXIT	Exits to Main Screen.	

6.1.2 Flow chart of ORIGIN Mode

- ORIGIN largely consists of 2 Groups.
 - ORG: Conducts Origin operation
 - EXIT: Exits to INFO screen.

6.1.3 ORIGIN Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version:1.01.01
(E 150922)

Press ENTER Key

{TEACH MENU}

1. EDIT	2. RUN
3. JOG	4. I/O
5. ORIGIN	6. INFO

```
0. SHUTDOWN      input : #
```

ENTER

- Input power to display screen in LCD
(if an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

ORIGIN Selection

<MAUAL MODE>
 1. EDIT 2. RUN
 3. JOG 4. I/O
5. ORIGIN 6. INFO

```
0. SHUTDOWN          input : #
```

5

M

- 5.ORIGIN Selection

Step 3.

Robot Selection

<ORIGIN>		
RBT	TYPE	ORG
*R1	R2AWS1	ON
R2	NO-EXIT	---
R3	NO-EXIT	---

SEL EXIT

Checking Robot Name

<ORIGIN>		
RBT	TYPE	ORG
*R1	R2AWS1	ON
R2	NO-EXIT	---
R3	NO-EXIT	---

SEL EXIT

F1

- Press “UP/DOWN” key to select robot.
- The selected robot can be checked by “*” mark in the front of the line.

- To check inputting robot name, select robot and press “F1” key to select “SEL”.

Step 4

ORIGIN Screen

<ORIGIN>	DIS	SEQ	ORG
1 :	OFF	2	ON
2 :	OFF	2	ON
3 :	OFF	2	ON
4 :	OFF	2	ON
5 :	OFF	2	OFF
ORG			EXIT

- Screen to conduct “ORIGIN”

6.1.3.1 ORG (Origin)

- Conducts Origin operation of the selected robot.

Step 1

ORIGIN RETURN

<ORIGIN>	DIS	SEQ	ORG
1:	OFF	2	ON
2:	OFF	2	ON
3:	OFF	2	ON
4:	OFF	2	ON
5:	OFF	2	OFF
ORG			EXIT

<ORIGIN>
Forwarding

Axis Info :
3 4

Press ESC to stop

- Press “F1” key to conduct “ORIGIN” operation

- Origin Scanning

6.1.3.2 EXIT

- This is to move out of [ORIGIN] screen.
- There are two ways to exit.

To press "[F4] EXIT" key.

To press "ESC" key.

■ How to exit

Step 1

ORIGIN Screen

<ORIGIN>			
	DIS	SEQ	ORG
1:	OFF	2	ON
2:	OFF	2	ON
3:	OFF	1	ON
4:	OFF	1	ON
5:	OFF	2	OFF
ORG			EXIT

F4

- To exit [ORIGIN] screen, press "F4" key.

<ORIGIN>		
RBT	TYPE	ORG
*R1	R2AWS1	ON
R2	NO-EXIT	---
R3	NO-EXIT	---

F4

- To exit into Main Screen, press "F4" key.

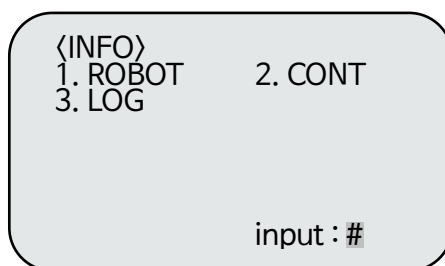
<MANUAL MODE>	
1. EDIT	2. RUN
3. JOG	4. I/O
5. ORIGIN	6. INFO

0. SHUTDOWN
input : #

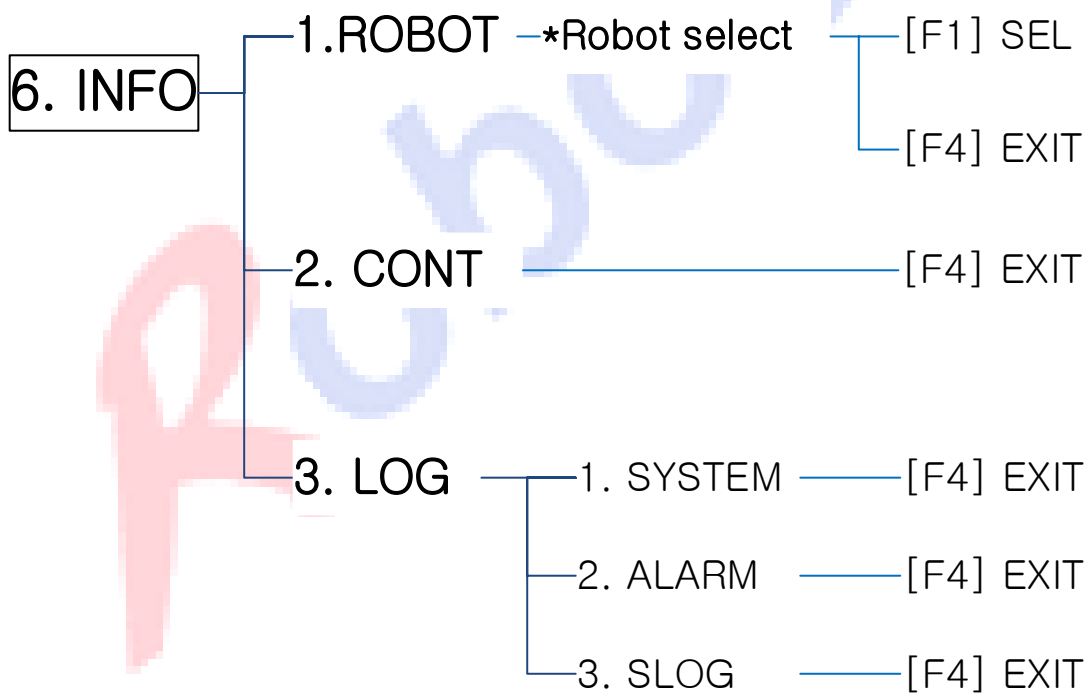
- Main Screen Check

Chapter 7. INFO mode

- Diagnose various states of the system.
- INFO mode consists of total 3 parts (ROBOT, CONT, and LOG).
 - ROBOT: Checks information of setting robot type/Series/specification.
 - CONT: Checks controller F/W information.
 - LOG: Checks system booting log, system alarm log, user log.



■ INFO Menu Tree



7.1 ROBOT (ROBOT type/specification/Series)

7.1.1 Overview

- Checks information of setting robot type/Series/specification.

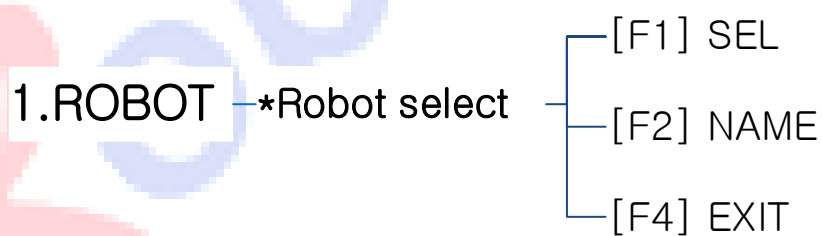
■ 1. ROBOT type

	GROUP	Detail	Remark
1 ROBOT	[F1] SEL	Robot Selection	
	[F2] NAME	ROBOT name input	
	[F4] EXIT	INPUT	

7.1.2 Flow chart of ROBOT Mode

- GPIO id largely divided into 2 Groups.
 - SEL: Selects random robot.
 - NAME: Inputs robot name.
 - EXIT: Exits into INFO screen.

■ ROBOT Menu Tree



7.1.3 ROBOT Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(E 150922)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

INFO Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN **6. INFO**

0. SHUTDOWN
input : #



- 6. INFO Selection

ROBOT SELECTION

<INFO>
1. ROBOT 2. CONT
3. LOG

input : #



- 1. ROBOT SELECTION

Step 3.

Robot Selection

<EDIT PARA>
ROBOT TYPE
*R1 R2AWS1
R2 NO-EXIT
R3 NO-EXIT

SEL NAME EXIT



- Press “UP/DOWN” key to select robot.
- The selected robot can be checked by “*” mark in the front of the line.

Checking Robot Name

<INFO ROBOT>	
ROBOT	TYPE
*R1	R2AWS1
-R2	NO-EXIT
R3	NO-EXIT

SEL	NAME	EXIT
------------	------	------



- To check inputting robot name, select robot and press “F1” key to select “SEL”.

Changing e Robot Name

<INFO ROBOT>	
ROBOT	TYPE
*R1	R2AWS1
R2	NO-EXIT
R3	NO-EXIT

SEL	NAME	EXIT
-----	-------------	------

- To change inputting robot name, select robot and press “F2” key to select “NAME”.

Step 3.

Checking Robot Name

<ROBOT 1 INFO>	
<u>NAME: Q4AFL</u>	

EXIT

- A user checks inputting robot name.

7.1.3.1 SEL (Select)

- A user Checks inputting robot name of each robot.

Step 1.

Robot Selection

<EDIT PARA>		
ROBOT	TYPE	
*R1	R2AWS1	
-R2	NO-EXIT	
R3	NO-EXIT	
SEL	NAME	EXIT



- Press “UP/DOWN” key to select robot.
- The selected robot can be checked by “*” mark in the front of the line.

Checking Robot Name

<INFO ROBOT>		
ROBOT	TYPE	
*R1	R2AWS1	
-R2	NO-EXIT	
R3	NO-EXIT	
SEL	NAME	EXIT



- To check inputting robot name, select robot and press “F1” key to select “SEL”.

Step 2.

Checking Robot Name

<ROBOT 1 INFO>		
<u>NAME: Q4AFL</u>		
EXIT		

- A user checks inputting robot name.

7.1.3.2 NAME

- A user changes inputting robot name of each robot.

Step 1.

Robot Selection

〈EDIT PARA〉	
ROBOT	TYPE
*R1	R2AWS1
-R2	NO-EXIT
R3	NO-EXIT

SEL NAME EXIT



- Press “UP/DOWN” key to select robot.
- The selected robot can be checked by “*” mark in the front of the line.

Checking Robot Name

〈INFO ROBOT〉	
ROBOT	TYPE
*R1	R2AWS1
R2	NO-EXIT
R3	NO-EXIT

SEL **NAME** EXIT



- To change robot name, select robot and press “F2” key to select “NAME”.

Step 2.

Checking Robot Name

〈ROBOT 1 INFO〉	
NAME: Q4AFL	
NEW : ■	

EXIT

- A user changes inputting robot name.

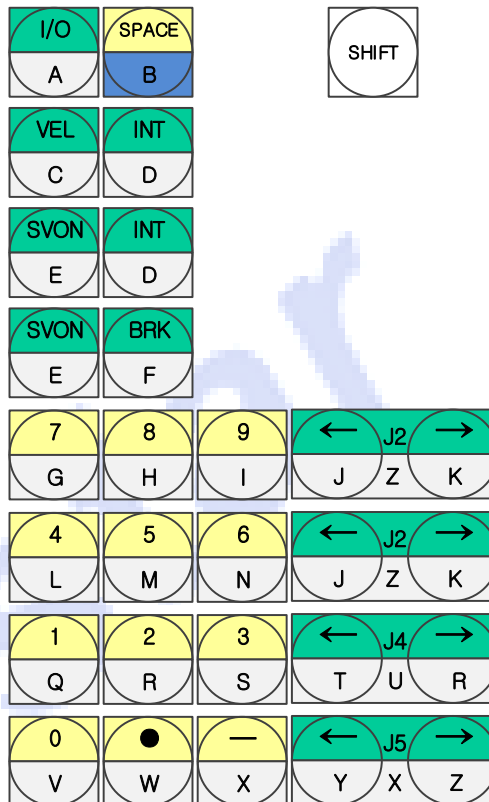
Step 3.

Inputting new name

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : ■

- Input new name by pressing number, character key.



Step 4.

“Q” input

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : ■

EXIT



- Try to directly input **Q4AFL1**!

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q■

EXIT



- First, press “SHIFT” button to input character key. Press character “Q” button in the order below.

Step 5

“4” input

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q■

EXIT



- First, release “SHIFT” function. Next, press number “4” button.

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q4■

EXIT



Step 6.

“AFL” input

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q4■

EXIT



- First, press “SHIFT” button to input character key. Next, press character “A”, “F”, “L” button in order.

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q4AFL■

EXIT



Step 7

“1” input

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q4AFL■

EXIT



- First, release “SHIFT” function. Next, press number “1” button.

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q4AFL1■

EXIT



Step 8.

Saving and Cancelling

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q4AFL1 ■

EXIT



- After completing name input, press “ENTER” key to display update message in the screen.

<ROBOT 1 INFO>
NAME: Q4AFL

NEW : Q4AFL1 ■

update ? (ENT/ESC)



- To save it, press “ENTER” key.
- To cancel it, press “ESC” key.

<INFO ROBOT>
ROBOT TYPE
*R1 R2AWS1
-R2 NO-EXIT
R3 NO-EXIT

SEL NAME EXIT

7.1.4 EXIT

- Exits [INFO ROBOT] screen.
- There are two ways to exit.
 - To press “[F4] EXIT” key.
 - To press “ESC” key.

■ How to exit

Step 1.

FLOAT Screen

<INFO ROBOT>	
ROBOT	TYPE
*R1	R2AWS1
-R2	NO-EXIT
R3	NO-EXIT
SEL	NAME
	EXIT

<INFO>	
1. ROBOT	2. CONT
3. LOG	
input : #	



- To exit [INFO ROBOT] screen, press “F4” key.

- Check INFO Screen

7.2 CONT (Control)

7.2.1 Overview

- Checks F/W information of the controller.

■ ROBOT Menu Tree

2. CONT ————— [F4] EXIT

7.2.2 ROBOT Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RcX-Series
Version :1.01.01
(E 150922)

Press ENTER Key

ENTER

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN 6. INFO

0. SHUTDOWN
input : #

- Input power to display screen in LCD
(If an error occurs, take measures
against error code.)

- Press ENTER Key to move to Main
Menu Screen.

Step 2.

INFO Selection

<TEACH MENU>
1. EDIT 2. RUN
3. JOG 4. I/O
5. ORIGIN **6. INFO**

0. SHUTDOWN
input : #

Controller Selection



- “6. INFO” Selection

<INFO>
1. ROBOT 2. CONT
3.LOG

input : #



- To check F/W version information of the controller, press “2. CONT” key.

Step 3.

Checking F/W version

<INFO - CONT>
Ver: RcX
1.01.01
(E 150922)

EXIT

- Check controller F/W information.

Step 4.

Existing

<INFO - CONT>
Ver: RcX
1.01.01
(E 150922)

EXIT

<INFO>
1. ROBOT 2. CONT
3.LOG

input : #

- To exit into INFO screen after checking F/W information of the controller, press “EXIT” key.

7.3 LOG

7.3.1 Overview

- Checks system booting log, system alarm log, user log.

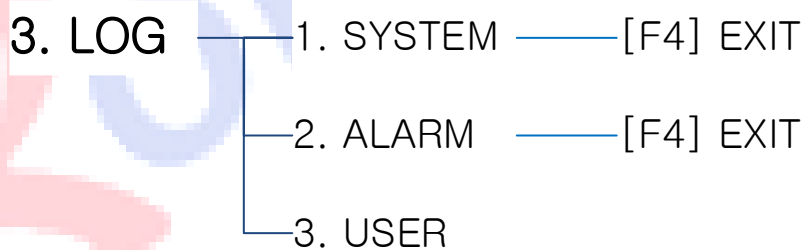
■ 3. LOG type

	GROUP	Detail	Remark
3. LOG	1. SYSTEM	Controller power ON/OFF history	
	2. ALARM	Controller alarm history	
	3. USE	User setting history	

7.3.2 ROBOT Mode flow chart

- LOG largely consists of 3 Group.
 - SYSTEM: Records controller power ON/OFF detail of each time/date.
 - ALARM: Records controller alarm detail of each time/date.
 - USE: Records JOB program detail written by a user of each time/date.

■ 3. LOG Menu Tree



7.3.3 LOG Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RCM6-Series
Version :3.01.33
(TR 141009)

Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. INFO 4. I/O
5. ORIGIN

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER Key to move to Main Menu Screen.

Step 2.

INFO Selection

<TEACH MENU>
1. EDIT 2. RUN
3. INFO 4. I/O
5. ORIGIN

0. SHUTDOWN
input : #



- “3. INFO” Selection

ROBOT SELECTION

<INFO>
1. ROBOT 2. CONT
3.LOG

input : #



- “3. LOG” Selection

Checking controller power history

<INFO - LOG>
1. SYSTEM 2. ALARM
3.USER

input : #



- To check controller power ON/OFF history, press “1. SYSTEM” key.

Checking controller alarm history

<INFO - LOG>
1. SYSTEM 2. ALARM
3. USER

input : #

Checking user setting history

<INFO - LOG>
1. SYSTEM 2. ALARM
3. USER

input : #



- To check controller alarm history, press “2.ALARM” key.



- To check user setting history, press “3. USE” key.

7.3.3.1 SYSTEM

- Records System power ON/OFF history.

Step 1.

Checking controller power history

<INFO - LOG>
1. SYSTEM 2. ALARM
3. USER

input : #

SYSTEM LOG
92: Open the system msg
93: [15-09-22 13:55:04]
94: Open the system msg
95: [15-09-24 13:58:02]
96: Open the system msg
97: [15-09-25 13:58:02]
EXIT



- To check controller power ON/OFF history, press “1. SYSTEM” key.

7.3.3.2 ALARM

- Records System alarm history.

Step 1.

Checking controller alarm history

<INFO - LOG>
1. SYSTEM **2. ALARM**
3. USER

input : #

SYSTEM LOG
93: [15-09-22 13:55:04]
94: Open the alarm file ms
95: [15-09-24 14:58:02]
94: Open the alarm file ms
97: [15-09-25 15:58:02]
98: Open the alarm file ms
EXIT



- To check controller alarm history, press “2. ALARM” key.

7.3.3.3 USE

- Records user Log history input using print command.

Step 1.

Checking user setting history

<INFO - LOG>
1. SYSTEM 2. ALARM
3.USER

input : #

SYSTEM LOG
00: [15-09-22 13:55:04]
01: [0:0] save test
02: [15-09-24 14:58:02]
03: [0:0] save test
04: [15-09-25 15:58:02]
05: [0:0] save test
EXIT



- To check user setting history, press “3. USE” key.

Chapter 8. SHUTDOWN mode

- CF can be damaged if the controller is abnormally shut OFF. Hence, be sure to turn OFF controller power switch after ending the controller.
- To release Driver alarm for which alarm won't be released, alarm can be released without shutting OFF controller power.

8.1 Overview

- ✓ SHUTDOWN mode provides controller normal end, Driver alarm Reset function.

SHUTDOWN MODE
1. SYSTEM SHUTDOWN

■ 0. SHUTDOWN type

	GROUP	Detail	Remark
0. SHUTDOWN	1. SYSTEM SHUTDOWN	Normal end of the controller	

8.2 SHUTDOWN mode flow chart

- ✓ SHUTDOWN largely consists of 2 Groups.
 - SYSTEM SHUTDOWN: normally shut down the controller.

■ SHUT DOWN Manu Tree

0. SHUTDOWN → 1. SYSTEM SHUTDOWN

8.3 SHUTDOWN Group Screen

Step 1.

Main Menu Screen

Robostar
NewRo RCM6-Series
Version :3.01.33
(TR 141009)
Press ENTER Key

<TEACH MENU>
1. EDIT 2. RUN
3. INFO 4. I/O
5. ORIGIN

0. SHUTDOWN
input : #



- Input power to display screen in LCD
(If an error occurs, take measures against error code.)

- Press ENTER key to move to Main Menu Screen.

Step 2.

PASSWORD Input

<TEACH MENU>
1. EDIT 2. RUN
3. INFO 4. I/O
5. ORIGIN

0. SHUTDOWN
Password=



- Input Password (Default value: "1111").

- Press "ESC" key to cancel Password input.

<TEACH MENU>
1. EDIT 2. RUN
3. INFO 4. I/O
5. ORIGIN

0. SHUTDOWN
Invalid!!

- If invalid Password is input, "Invalid" will be displayed.

Normally ending controller

SHUTDOWN MODE
1. SYSTEM SHUTDOWN

input : #



- Normally end the controller

8.4 SYSTEM SHUTDOWN

- ✓ normally ends the controller.
- ✓ In case of abnormal ending of the controller, prevent CF damage.

■ OPENING SEQUENCE

- Main Screen → 0. SHUTDOWN → Password → 1. SYSTEM SHUTDOWN

Step 1.

controller SHUTDOWN

SHUTDOWN MODE
1. SYSTEM SHUTDOWN

input : #



- To normally end the controller, press “1” key.

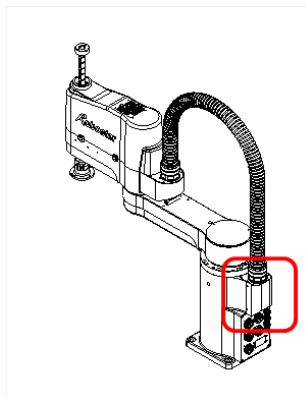
- End screen

Chapter 9. Attachment

9.1 Location of robot nameplate

- ✓ Robot nameplates are located on total 2 places.
 - 1) Mechanical part nameplate: label is attached on the connector on the rear of the robot.
 - 2) Controller nameplate: label is attached on the top of the controller.
- ✓ Ex) In case of Scara robot,

- Nameplate on mechanical part (label)



Nameplate		Description
New Ro AC ROBOT SCARA ROBOT MODEL: RBS60-4A LENGTH: A = 300, B = 300 STROKE: Z = 200 CONTROLLER: RCQ-4211 Ser. NO: 2103 - 007		• MODEL: Refer to mechanical part type, type description in the instruction manual. • LENGTH, STROKE: - Aaxis: 300mm, Baxis 300mm, Z axis: 200mm • CONTROLLER: Controller type, - A (X): 400W, B (Y): 200W, Z: 100W, W: 100W • Productin No: 7th product in March, 2001
Axis	Motor Encoder	• Axis: Displays each axis • Motor: each axis motor capacity, - MS/400W -> Minas Motor 400W • Encoder: each axis motor encoder type, pulse value - Abs.131072: Absolute Encoder, 131072 (pulse)
A	MS/400W Abs.131072	
B	MS/200W Abs.131072	
Z	MS/100W Abs.131072	
W	MS/100 Abs.131072	
Axis	R Length offset	• Axis: Displays each axis • R: each axis reduction gear ratio • Length: length of each axis (mm) • offset: A, B axis offset value
A	1/50 299.92 3.29	
B	1/50 299.95 3.82	
Z	1/15 200	
W	1/20 360	

- Controller nameplate (label) - Attached on the top of the controller.

경기도 안산시 상록구 사사동 119-38 (426-220) ㈜로보스타 119-38, Sasa-dong, Sangnok-gu, Ansan-City, Gyeonggi-do, Republic of South Korea (426-220) Robostar.Co.,Ltd		
제어기 사양 CONTROLLER SPECIFICATION	IPM 용량 IPM CAPACITY	주의사항 CAUTION
로봇 타입 ROBOT TYPE 모델 명 MODEL NO. 시리얼 넘버 SERIAL NO. 제조 일자 DATE 용량 / 출력 CAPACITY / OUTPUT 입력 전압 INPUT POWER 크기 SIZE 중량 WEIGHT 사용 환경 CONDITION		경고 DANGER 고압에 주의하십시오. 제어가 정지 전 반드시 전원을 꺼주십시오. CAUTION! HIGH VOLTAGE! DISCONNECT POWER BEFORE SERVICING. 위험 WARNING 감전의 위험이 있으니, 제어가 정지 전에는 반드시 전원 스위치를 끄고, 전원 케이블을 분리한 후, 3분 이상 대기 후 점검을 하십시오. DON'T TOUCH INSIDE OF CONTROLLER BEFORE TURNING OFF POWER SWITCH AND DISCONNECTING POWER CABLE. WAITING 3 MINUTES OR MORE OR YOU CAN GET ELECTRIC SHOCK. 주의 CAUTION 부상의 위험이 있으니, 제어가 내부로 손이나 이물질을 넣지 마십시오. DON'T PUT FINGERS OR FOREIGN OBJECTS INTO OPENING, OR PERSONAL INJURY MAY OCCUR. 감전 및 화재의 원인이 될 수 있으니, 제어가 외부 접지 단자에 접지를 연결하십시오. GROUND THE EARTH TERMINAL OF THE CONTROLLER WITHOUT FAIL, OR YOU CAN GET ELECTRIC SHOCK.
소프트웨어 버전 SOFTWARE Ver	옵션 카드 OPTION CARD	
MAIN SERVO FRONT I/O T/P	DIGITAL I/O CC-LINK PROFIBUS ETHERNET DEVICENET	

9.2 TPI-9000 membrane

F1	F2	F3	F4	ESC
STOP	JUMP	PREV	NEXT	DEL RST
DISP A	SPACE B	Pg Up	▲	ENTER
VEL C	INT D	◀	▼	▶
SVON E	BRK F	Pg Dn	← J1 →	
7 G	8 H	9 I	← J2 →	→
4 L	5 M	6 N	← J3 →	→
1 Q	2 R	3 S	← J4 →	→
0 V	● W	— X	← J5 →	→
SHIFT	AXIS CHG	ALARM LIST	← J6 →	

9.3 Controller list for each communication type

Communication type	Controller
EtherCAT	RcT1 Series
RS422	TX1 Series

Chapter 10. Revision

Date	Revision detail
Oct., 2015	First distribution
Dec., 2015	3. JOG → 3. TEACH change
July, 2016	• Chapter 2 EDIT Modified 2.1.4.2.1 preprocessor command changes Modified 2.3.2.5 SERVO, 2.3.2.6 ORIGIN, 2.3.3.1 ENV changes in 2.3 parameter • Chapter 5 I/O Added 5.1.7 DUM_IN, 5.4 LATCH • Added Chapter 6 Origin detail

RCQ ROBOT CONTROLLER (Revised)

CONTROLLER MANUAL

FIRST EDITION SEPTEMBER 2015

ROBOSTAR CO, LTD
ROBOT R&D CENTER

Robostar