

R6000-Robot

Operator's Manual

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Leading Numerical Controller



LNC Technology Co., Ltd.

Table of content

Table of content	I
1 Operation Interface	1
2 Home	2
2.1 How to return home	2
3 MANUAL.....	3
3.1 MANUAL	3
3.1.1 Output.....	3
3.1.2 Manual continuous axis move mode	4
3.1.3 JOG	5
3.1.4 Return to standby	5
3.2 IO status.....	6
3.3 Standby tuning	7
4 Auto.....	8
4.1 Monitor	8
4.1.1 Button Description	9
4.1.2 Modify program under auto running.	9
4.2 IO status.....	10
4.3 Stack setting.....	10
4.4 Sample/reject.....	10
4.5 Cycle monitor	11
4.5.1 Conveyor setting	12
4.5.2 Process machine setting	12
5 Teach.....	13
5.1 Edit.....	13
5.1.1 Function key	13
5.1.2 Program command detail	14
5.1.3 Axis.....	14
5.1.4 Speed	16
5.1.5 Delay	17
5.1.6 Robot I/O	18
5.1.7 Injection molding machine I/O	19
5.1.8 Vacuum/gripper I/O.....	21

5.1.9	Peripheral device I/O	22
5.1.10	Call stack	24
5.1.11	Call MACRO	25
5.1.12	Stop	26
5.1.13	Calculating	27
5.1.14	Jump	28
5.1.15	Loop	31
5.2	IO Status	31
5.3	Stack setting	32
5.4	Sample/reject	34
5.4.1	Sample check	34
5.4.2	Reject give up	35
5.5	File manage	36
5.5.1	Open a new mold file	37
5.5.2	Read old mold file	38
5.5.3	Copy current mold file	39
5.5.4	Delete mold file	40
5.5.5	Upload/download mold file via USB	40
5.6	Safe area	41
5.6.1	No go area setting for 3 axes	41
5.6.2	No go area setting for 5 axes	44
5.7	@Variables	46
5.8	MACRO	47
6	Parameter	48
6.1	General parameter	48
6.2	Language	49
6.3	Common parameter	50
6.4	Machine parameter	51
6.5	Maintain	52
6.5.1	Maintain setting	52
6.5.2	Maintain status	52
6.5.3	Maintain history	53
6.6	Network	54
7	System	55
7.1	About	55
7.2	System info	56

7.3	Ladder.....	57
7.4	R bit.....	58
7.5	System parameter.....	58
7.6	I/O Map	59
7.6.1	DI Map	59
7.6.2	DO Map	60
7.6.3	DI Map 、 DO Map setting	60
7.7	Backup	62
7.7.1	Parameter backup	62
7.7.2	Parameter restore	64
7.8	Upgrade	68
7.9	Operator authority	71
7.10	I/O	72
7.11	Change password	73
7.12	Monitor tuning	75
8	Alarm record.....	77
8.1	Alarm.....	77
8.2	Warning.....	78
8.3	Alarm/warning history	79
8.4	Operation history	80
9	Switch users	81
10	Parameter.....	82
10.1	General parameter.....	82
10.2	Common parameter→Mutual parameter.....	83
10.3	Common parameter→Axis parameter.....	86
11	Troubleshooting	88
11.1	Alarm troubleshooting.....	88
11.2	Warning troubleshooting.....	94
12	Q&A.....	95
12.1	How to write note of movement command of mold document	95
12.1.1	Add one line note for movement command	95
12.1.2	Modify note.....	96
12.1.3	Delete note	97
12.1.4	Add note that you want to note	98

Introduction of LNC-R6000 injection molding machine robot

LNC-R6000 is the controller for cartesian coordinate robot which is used on injection molding machine pick and put movement. This controller is based on real-time Linux kernel platform to create, it can control 3~5 axis servo systems, other features are

- ❑ Linux real time kernel.
- ❑ All-graphic simulation HMI.
- ❑ Group type selection, easy to control and use.
- ❑ Via USB to upload/download program.
- ❑ Offer special robot command.
- ❑ Embedded in PLC, for users to do self development.

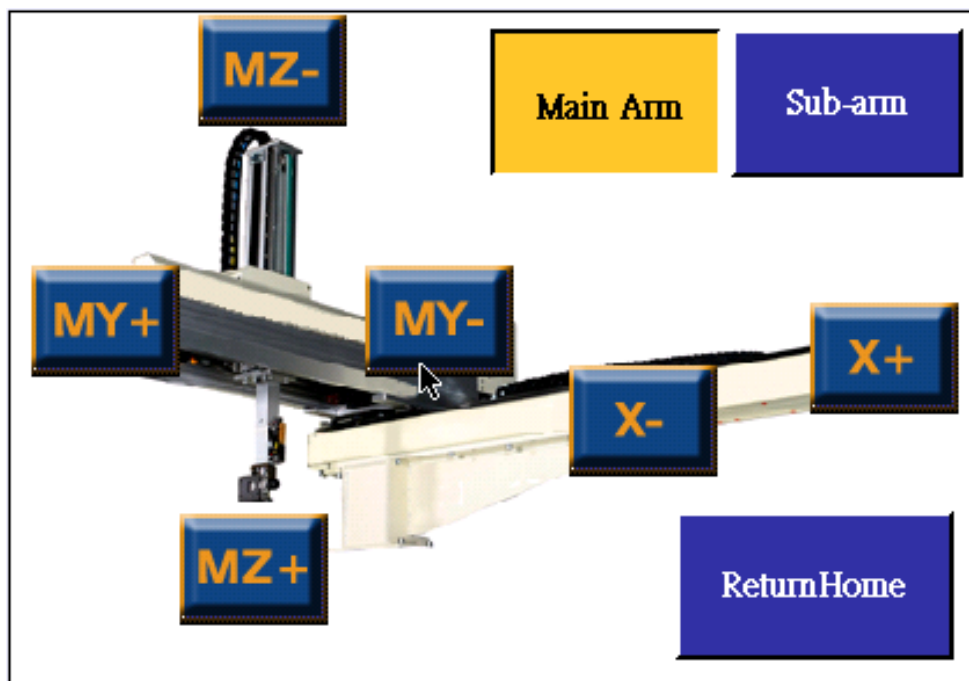
3 axis servo system axis name and definition

Horizontal axis : X °

Pull axis : MY °

Vertical axis : MZ °

Direction as below °



5 axis servo system axis name and definition

Horizontal axis : X ◦

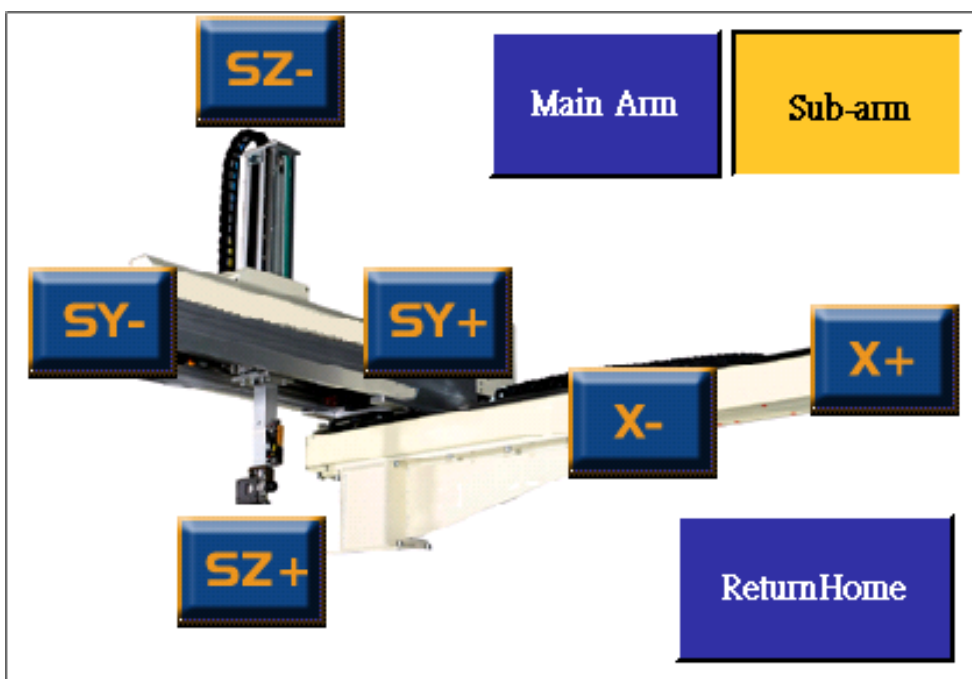
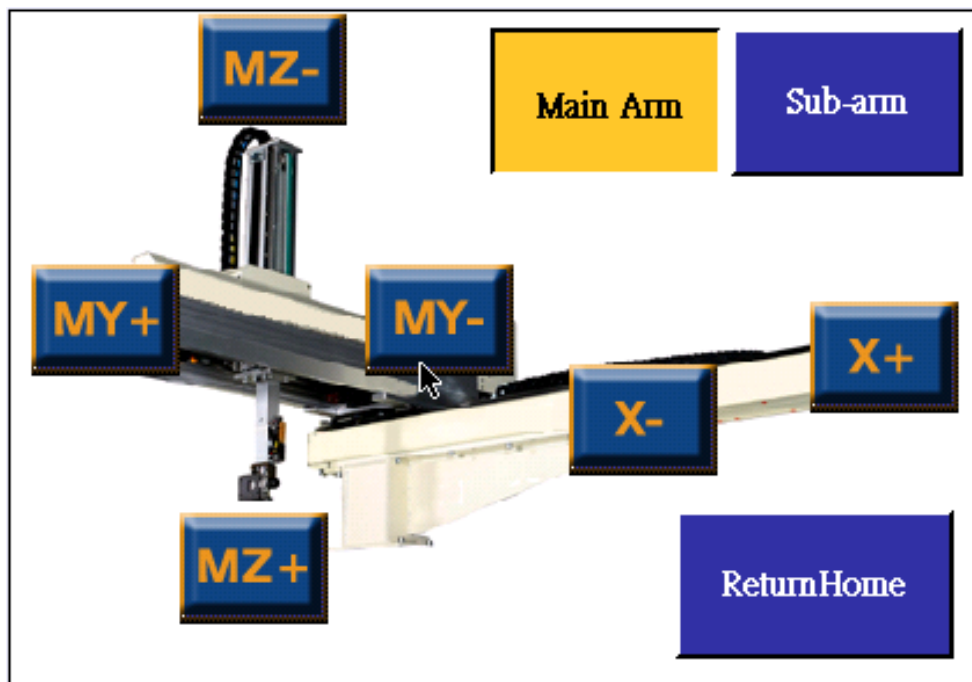
Main arm pull axis : MY ◦

Main arm vertical axis : MZ ◦

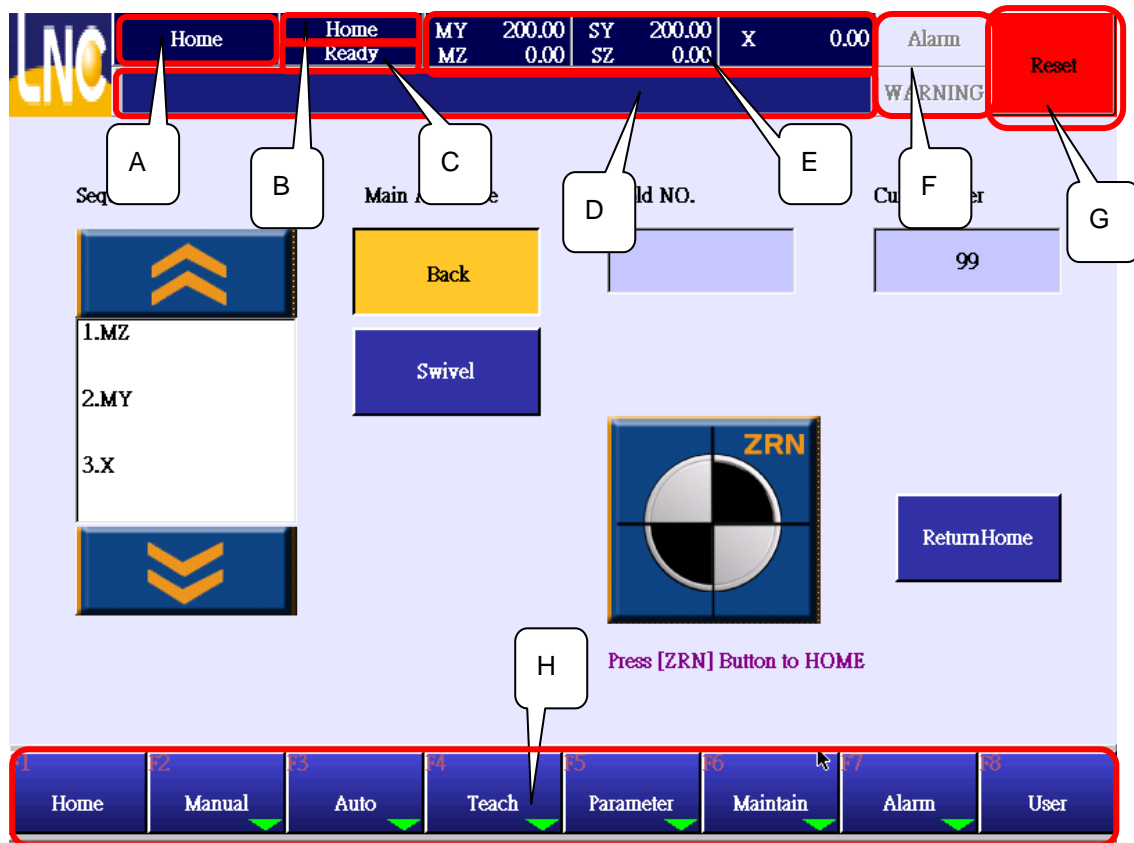
Sub arm pull axis : SY ◦

Sub arm vertical axis : SZ ◦

Direction as below ◦



1 Operation Interface



A : Page Name : Show current page name.

B : Mode : Current mode, there are HOME, MDI, AUTO, TEACH.

C : Situation : Current situation, there are READY, RUNNING, PAUSE.

D : Message hint : System will show hint message at this line.

E : Coordinate of axis.

F : Alarm/warning hint message, where there is a alarm/warning, the area will be twinkling.

G : Reset : Press this button to make robot to be ready and clear alarm.




H : Function key : Switch mode, page. Those with green arrow have further function keys.

2 Home

2.1 How to return home

When entering system, you will see Home page.

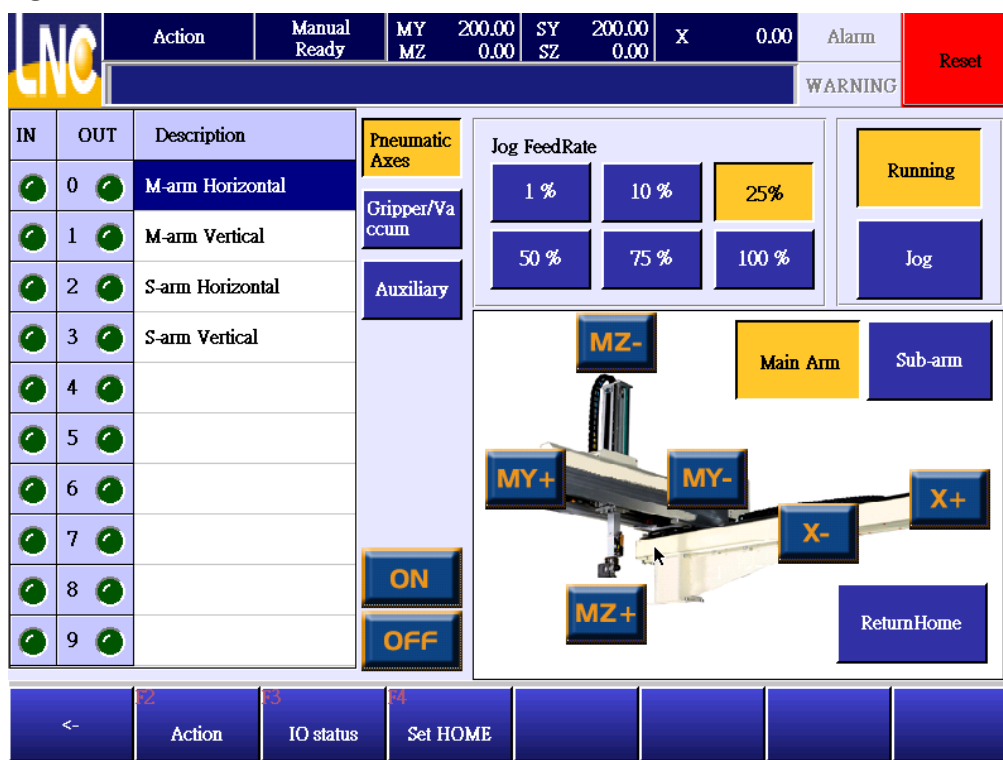


1. Return posture can be selected before going back, with **【vertical】** or **【horizontal】** .
2. Select axis and press  or  to adjust order to return home.
3. Press  to return home.
4. If there is error, press **【RESET】** or EMG to stop return HOME.
5. When returning home, buttons on this page will be lock. After returning, buttons will be recovered to prevent wrong operation.





3 MANUAL

Press 【MANAUL】 to go to manual mode.

3.1 MANUAL

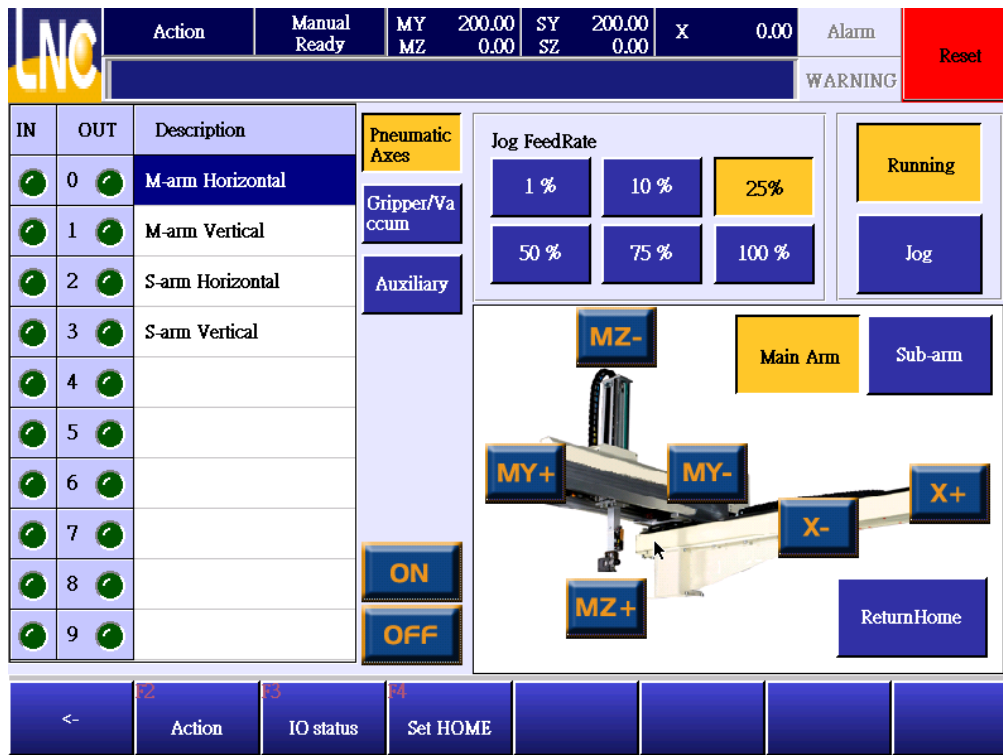


3.1.1 Output

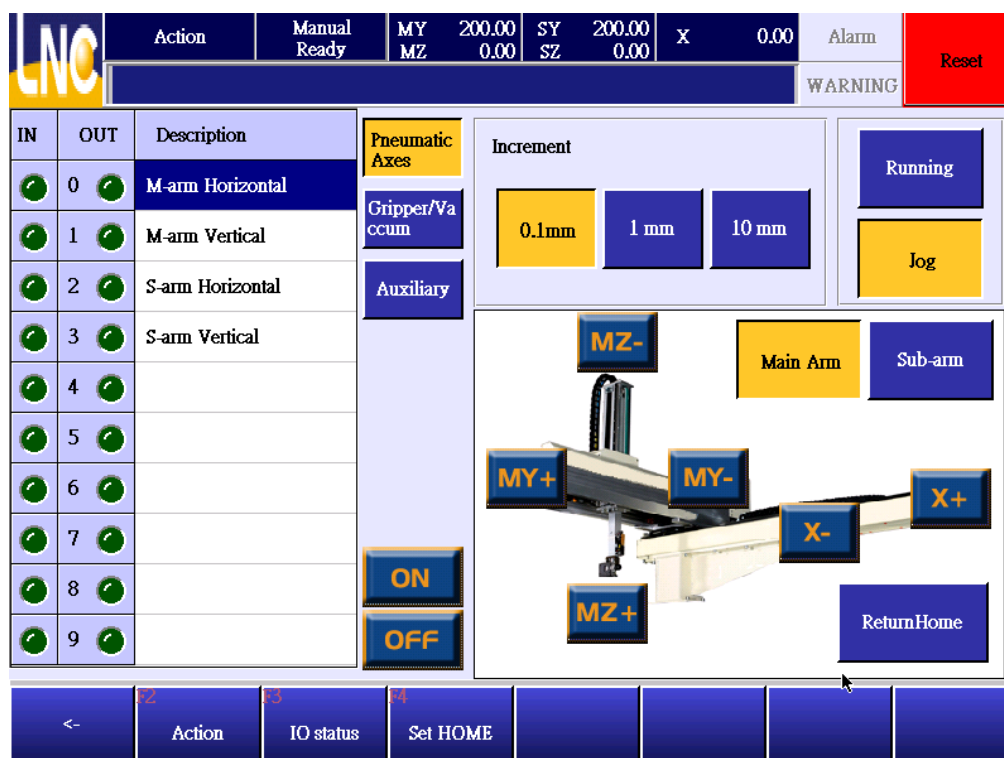
1. There are 3 groups of OUTPUT, air axis, gripper/vacuum, and peripheral devices. You need to choose group and select OUTPUT you want to open or close.
2. When OUTPUT amount is bigger than 1 page, you can press  and  to change.
3. After selecting, press  to make this OUTPUT, or  to close.

3.1.2 Manual continuous axis move mode

Press axis move button to move continuously, release button to stop.



1. Press 【Continue】 button.
2. Select speed that you want this robot to move.
3. Press corresponding axis to move continuously, release to stop.



3.1.3 JOG

Press axis move button to move by 0.1mm、1mm or 10mm. If you release the button, the axis will stop immediately.

1. Press 【JOG】 button.
2. Press 0.1mm、1mm、10mm to change movement distance.
3. Axis movement speed is the same to the one continuously.
4. Press the button of the axis you want to move, release button to stop.

3.1.4 Return to standby

1. Robot can only return standby point when under 【READY】.
2. Press 【Return standby】 button.
 - a. X axis is inside mold : the order is Y→Z→vertical/horizontal→X.
 - b. X axis is not inside mold : the order is Z→vertical/horizontal→Y→X.
3. Standby point can be adjusted at 【Adjust standby point】 page.

3.2 IO status

1. INPUT and OUTPUT are divided into group type, press corresponding group button to select I/O list.
2. You can check INPUT and OUTPUT at the same time.

LNC		IO status	Manual Ready	MY 200.00 MZ 0.00	SY 200.00 SZ 0.00	X 0.00	Alarm	Reset
WARNING								
IN STA.	Description		OUT STA. Description					
000	<input checked="" type="checkbox"/>		Robot	000	<input checked="" type="checkbox"/>	M-arm Horizontal	Robot	
001	<input checked="" type="checkbox"/>			001	<input checked="" type="checkbox"/>	M-arm Vertical		
002	<input checked="" type="checkbox"/>		IMM	002	<input checked="" type="checkbox"/>	S-arm Horizontal	IMM	
003	<input checked="" type="checkbox"/>			003	<input checked="" type="checkbox"/>	S-arm Vertical		
004	<input checked="" type="checkbox"/>		PeriPh.	004	<input checked="" type="checkbox"/>		PeriPh.	
005	<input checked="" type="checkbox"/>			005	<input checked="" type="checkbox"/>			
006	<input checked="" type="checkbox"/>	MY - Hardware Limit	Other	006	<input checked="" type="checkbox"/>		Other	
007	<input checked="" type="checkbox"/>	MY+ Hardware Limit		007	<input checked="" type="checkbox"/>			
008	<input checked="" type="checkbox"/>	MZ - Hardware Limit		008	<input checked="" type="checkbox"/>			
009	<input checked="" type="checkbox"/>	MZ+ Hardware Limit		009	<input checked="" type="checkbox"/>			
010	<input checked="" type="checkbox"/>	SY - Hardware Limit		010	<input checked="" type="checkbox"/>	Gripper 1		
011	<input checked="" type="checkbox"/>	SY+ Hardware Limit		011	<input checked="" type="checkbox"/>	Gripper 2		
012	<input checked="" type="checkbox"/>	SZ - Hardware Limit	PgDn	012	<input checked="" type="checkbox"/>	Gripper 3	PgDn	
013	<input checked="" type="checkbox"/>	SZ+ Hardware Limit		013	<input checked="" type="checkbox"/>	Gripper 4		
014	<input checked="" type="checkbox"/>	X - Hardware Limit		014	<input checked="" type="checkbox"/>	Vaccum 1		
<-		F2 Action	F3 IO status	F4 Set HOME				

3.3 Standby tuning

How to adjust program ZERO location.

When the program zero point is not the one you want, you can adjust standby point to the program starting point.

When pressing 【return standby】 , every axis will move to pre-set position.

LNC	HomeSetting	Manual Ready	MY 200.00 MZ 0.00	SY 200.00 SZ 0.00	X 0.00	Alarm	Reset		
	WARNING								
Machine Pos.			Current Position		Jog	0.1mm	1 mm	10 mm	ReturnHome
MY	0.00	MY	-200.00	MY-	MY+				
MZ	0.00	MZ	0.00	MZ-	MZ+				
SY	0.00	SY	-200.00	SY-	SY+				
SZ	0.00	SZ	0.00	SZ-	SZ+				
X	0.00	X	0.00	X-	X+				
<-	F2 Action	F3 IO status	F4 Set HOME						

Home tuning value will be saved at mold file, when opening a new mold file, previous setting will be loaded in, so the previous offset will be loaded in too.

4 Auto

Press **【Auto】** to go auto mode.

4.1 Monitor

Show auto running situation under auto mode.

LNC	Monitor	Auto Running	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
						WARNING	
Mold NO.	45	Modify					
1	Speed 100%						
2	Move to MZ=0.00						
3	Move to MY=0.00						
4	Move to X=0.00						
5	M-arm Vertical DELAY 1.0 Sec						
=>6	Mould Open						
7	Move to MZ=800.00						
8	Move to MY=-100.00						
30 %		Return Home	Stop Auto	Auto			
<-	Monitor	IO status	Stack	Sample/Reject	Information	General	

4.1.1 Button Description



: Run auto cycle.



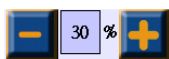
: When the step is at 【complete open mold】 , press this button to stop. But if you press this button when the step is at middle travel, system will complete the whole travel and stop.



: Let robot return to standby point.



: Under auto running, page and cursor will be moved by current program. If you want to modify program, you can press modify key to stop auto mode.



: Running speed adjustment under auto mode.

4.1.2 Modify program under auto running.

Under auto mode, you can only modify movement speed, delay time and small tuning of axis location.



1. Move cursor to the place you want to change.

2. Press **【modify】** to see right side selections and key in dealy time to see below small tablet.



3. Key in value and press **【OK】**
4. Press **【REPLACE】** at right down side to take over old program.

4.2 IO status

Refer to chapter 3.2.

4.3 Stack setting


Refer to chapter 5.3.

4.4 Sample/reject

Refer to chapter 5.4.

4.5 Cycle monitor

You can see time and parts setting under auto mode.

	Information	Auto Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
	WARNING						
Mold NO.	45		Total Count	991 pcs			
Total Time	2 H 48 M 21 Sec		Produce	0 pcs			
Take Time	0.0	Sec	Finish Count	24	pcs	Clear	
Mold Time	0.0	Sec	Bad Count	0	pcs	Clear	
Cycle Time	0.0	Sec	Good Count	24	pcs	Clear	
Conveyor Option			Process Machine Option				
Moving Time	0.0	Sec	Moving Time	0.0	Sec	Zero	
Setting Count	0	pcs	Setting Count	0	pcs		
Current Count	0	pcs	Current Count	0	pcs		
<-	F2 Monitor	F3 IO status	F4 Stack	F5 Sample/Reject	F6 Information	F7 General	

Mold number : Mold file name.

Total time : Accumulated operation time.

Take time : The take out time is from completing open mold, robot pick goods to returning to original location.

Mold time : The time for injection molding machine to complete a part.

Cycle time : The time that robot to complete to pick a part.

Total count : The total auto loop times for robot to running.

Finish count : If the setting is 100, when the auto loop meets 100 times, system will send warning to notice. If the setting is 0, this function will be fail.

Good count : Acceptable parts total numbers.

Bad count : Total times of rejecting parts signals.

Produce : The total amount of injection parts, including good and bad parts.

4.5.1 Conveyor setting

Conveyor Option		
Moving Time	0.0	Sec
Setting Count	0	pcs
Current Count	0	pcs

Zero

Moving time : This is to set up conveyor stop time. When this is 0 and parts also arrived, conveyor will not stop.

Setting count : After how many molds, conveyor will start to move. When this is 0, conveyor will not move.

Current count : Show current put times. You can press **【return zero】** to reset this value and force conveyor to move.

The way to use conveyor is to write command for conveyor in the program and set up moving time and interval mode at this page. When running times arrive, conveyor will move for some time and stop.

4.5.2 Process machine setting

Process Machine Option		
Moving Time	0.0	Sec
Setting Count	0	pcs
Current Count	0	pcs

Zero

Moving time : This is to set up working machine stop time. When this is 0 and parts also arrived, conveyor will not stop.

Setting count : After how many molds, working machine will start to move. When this is 0, working machine will not move.

Current count : Show current put times. You can press **【return zero】** to reset this value and force working machine to move.

The way to use working machine is to write command for conveyor in the program and set up moving time and interval mode at this page. When running times arrive, conveyor will move for some time and stop.

5 Teach

Press **【Teach】** to go to teach mode.

This mode is to do mold file editing and running test.

5.1 Edit

User default level is 99, this level can only open file and do cycle start. If you want to edit or modify program, you will need to change to level 29 and above.



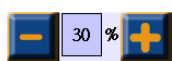
5.1.1 Function key

Delete : Delete cursor current program.

Cut : Cut cursor current program.

Copy : Copy cursor current program.

Paste : Insert the program that you copy or cut.



running speed tuning : running speed tuning under teach mode. Default is 30%.

Single : Run total program one time and stop. At the next step, press this function to do single cycle.

Stop Auto : Stop robot running and go to stop status.



Show index page.



Show previous page.



Show previous line.



Show next line.



Show next page.



Show last page.

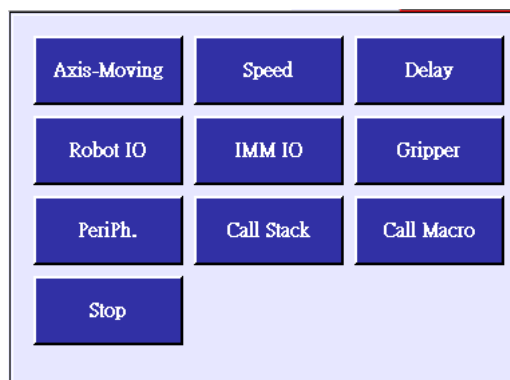
Command : Return to command list page.

Add : Add right side setting info to the left side's next line.

Replace : Make left side blue line to replace to current setting info.

5.1.2 Program command detail

Go to TEACH and press **【command】** , you will see teach command as below. Press below button to go to this command's page.



5.1.3 Axis

Press axis to see below.



This command is to move to certain location.



There are two ways to input location.

Press **【location】** to see small keypad and key in directly.

Press **【axis direction】** to move axis to target location and press **【location】**, **【axis name】** will get current location into location column.

5.1.4 Speed

The screenshot shows the LNC-R6000 Teach interface for setting speed. The top status bar displays 'Edit', 'Semi Ready', 'MY 0.00', 'MZ 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below this is a 'Move to X=0.00' command bar with a 'WARNING' indicator. The main area is divided into a left list of 8 steps and a right command input area. Step 1 is 'Speed 100%', step 2 is 'Move to MZ=0.00', step 3 is 'Move to MY=0.00', step 4 is 'Move to X=0.00' (highlighted), step 5 is 'M-arm Vertical DELAY 1.0 Sec', step 6 is 'Mould Open', step 7 is 'Move to MZ=800.00', and step 8 is 'Move to MY=-100.00'. To the right of the list are directional arrow buttons. Below the list are buttons for 'Del Line', 'Cut', 'Copy', 'Paste', and a 'Single' checkbox. At the bottom left are buttons for '30 %', 'Return Home', 'Stop Auto', and 'Single'. At the bottom right are buttons for 'Command', 'Add', and 'Replace'. The very bottom bar contains buttons for '<-', 'Edit', 'IO status', 'Stack', 'Sample/Reject', 'FileManage', and '@ Var'.

1. You can set up moving speed for every axis, if you didn't renew the speed, this speed will be the previous setting.
2. Range is 1~100.

5.1.5 Delay

The screenshot displays the LNC-R6000 Teach interface for setting a delay command. The top status bar shows 'Edit', 'Semi Ready', 'MY 0.00', 'MZ 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below the status bar is a command bar showing 'Move to X=0.00' and a 'WARNING' indicator. The main area is divided into two sections. On the left, a list of commands for Mold NO. 45 is shown, with 'Move to X=0.00' selected as command 4. On the right, the 'Command: Delay' screen shows 'DelayTime' set to '1 Sec'. At the bottom, there are buttons for 'Del Line', 'Cut', 'Copy', 'Paste', 'Single', 'Return Home', 'Stop Auto', 'Single', 'Command', 'Add', and 'Replace'. The very bottom bar contains function keys F2 through F7 labeled 'Edit', 'IO status', 'Stack', 'Sample/Reject', 'FileManage', and '@ Var'.

1. You can set up the delay time to run the next command.
2. Setting range 0~9.9.

5.1.6 Robot I/O

OUTPUT action.

1. Robot I/O command are output main arm vertical/horizontal, sub-arm move forward/backward, sub-arm vertical/horizontal, sub-arm move down/move up output points.
2. **【Check/Not check】** item is for you to set up a check system. If **【Check】**, then after an output, system need to receive an input signal and go next step. If **【Not check】**, then after an output, system will run next step immediately.
3. After completing output signal setting, press **【add】** to add this command to the next line or press **【replace】** to replace cursor line info.
4. Press **【add】** or **【replace】** to return to command list.

LNC	Edit	Semi Ready	MY 0.00 MZ 0.00	X 0.00	Alarm	Reset
M-arm Vertical DELAY 1.0 Sec					WARNING	
Mold NO.	45	Save				
1	Speed 100%					
2	Move to MZ=0.00					
3	Move to MY=0.00					
4	Move to X=0.00					
5	M-arm Vertical DELAY 1.0 Sec					
6	Mould Open					
7	Move to MZ=800.00					
8	Move to MY=-100.00					
Del Line		Cut	Copy	Paste	<input type="checkbox"/> Single	
30 %		Return Home	Stop Auto	Single		
Command		Add	Replace			

Command: Pneumatic axes

No.	Description
0	M-arm Horizontal
1	M-arm Vertical

☒ Chk ☐ UnChk

Step timer: 1.0 Sec

<-	F2 Edit	F3 IO status	F4 Stack	F5 Sample/Reject	F6 FileManage	F7 @ Var
----	---------	--------------	----------	------------------	---------------	----------

5.1.7 Injection molding machine I/O

【Check INPUT】

1. When running to check injection molding machine input signal, system will stop at this step. Until corresponding input signal has been trigger and system will go next step.
2. Click 【check I】 to see below command
3. Select the signal you want to check and press【add】to add command to the next line or press【replace】to replace cursor info.
4. Press 【add】 or 【replace】 to return to command list.

The screenshot shows the LNC-R6000 Teach interface. At the top, there's a status bar with 'Edit', 'Semi Ready', 'MY 0.00', 'MZ 0.00', 'X 0.00', 'Alarm', and a 'Reset' button. Below this, a 'WARNING' message is displayed. The main area is divided into two panels. The left panel shows a list of commands for Mold NO. 45. The commands are: 1 Speed 100%, 2 Move to MZ=0.00, 3 Move to MY=0.00, 4 Move to X=0.00, 5 M-arm Vertical DELAY 1.0 Sec (selected), 6 Mould Open, 7 Move to MZ=800.00, and 8 Move to MY=-100.00. The right panel shows a list of input signals with descriptions: 66 Mould Open, 67 Mold Mid-place, 69 Ejector Backward, and 70 Ejector Forward. The 'Check I' radio button is selected. At the bottom, there are buttons for 'Command', 'Add', and 'Replace'. The bottom status bar shows various function keys like F2, F3, F4, F5, F6, F7, and a '@ Var' button.

【Check OUTPUT】

1. When running to injection molding machine output signal steps, certain output signal will run next step immediately. Until output delay time arrives, system will output exact signal.
2. Click 【check O】 to see below command
3. Select the signal you want to check and press【add】to add command to the next line or press【replace】to replace cursor info.
4. Press 【add】 or 【replace】 to return to command list.

The screenshot shows the LNC-R6000 Teach interface. At the top, there's a status bar with 'Edit', 'Semi Ready', 'MY 0.00', 'MZ 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below this, a 'WARNING' message is displayed. The main area is divided into two panels. The left panel shows a list of commands for Mold NO. 45, with 'M-arm Vertical DELAY 1.0 Sec' highlighted. The right panel shows a list of output signals (No. 63-68) with descriptions like 'Enable Mould Close', 'Enable Ejector Backward', 'Enable Ejector Forward', and 'Enable Core Mot(Core1, Pos1)'. The 'Output O' radio button is selected. Below the signal list, there's a 'Counting Timer' set to 0.0 Sec. At the bottom, there are buttons for 'Command', 'Add', and 'Replace'. The bottom status bar shows 'Edit', 'IO status', 'Stack', 'Sample/Reject', 'FileManage', and '@ Var'.

5.1.8 Vacuum/gripper I/O

Output certain action.

1. Select the vacuum or gripper valve.
2. When choosing vacuum or gripper valve, if you do not want to check corresponding I point, cancel **【vacuum/gripper valve check】** .
3. ON is output signal, OFF is close the signal.
4. Set up delay time, and then run output signal.
5. Under auto mode, click **【vacuum/gripper check】** , while robot arm moved up to safety position, the corresponding Input signal did not trigger, system will send warning and stop robot. After clearing this trouble, you can press auto cycle to run, but under signal cycle, this situation will not trigger warning.
6. Press **【add】** to add command to the next line or press **【replace】** to replace cursor info.
7. Press **【add】** or **【replace】** to return to command list.

The screenshot shows the LNC-R6000 Teach interface. At the top, there's a status bar with 'Edit', 'Semi Ready', 'MY 0.00', 'MZ 0.00', 'X 0.00', 'Alarm', and a 'Reset' button. Below this is a 'WARNING' indicator. The main area is divided into two panels. The left panel shows a 'Mold NO.' of 45 and a list of 8 commands: 1. Speed 100%, 2. Move to MZ=0.00, 3. Move to MY=0.00, 4. Move to X=0.00, 5. M-arm Vertical DELAY 1.0 Sec, 6. Mould Open, 7. Move to MZ=800.00, 8. Move to MY=-100.00. The right panel is titled 'Command: Vacuum/Grip,Spare I/O' and contains a table for 'Vacuum/Grip' and 'Check Limit'. The table has columns for 'Vacuum/Grip' and 'Check Limit'. The 'Vacuum/Grip' column has checkboxes for Gripper 1, Gripper 2, Gripper 3, and Gripper 4. The 'Check Limit' column has checkboxes for Gripper 1 Signal, Gripper 2 Signal, Gripper 3 Signal, and Gripper 4 Signal. Below the table are buttons for 'ON', 'OFF', 'Step timer' (set to 0.5 Sec), 'Command', 'Add', and 'Replace'. At the bottom, there's a toolbar with buttons for 'Del Line', 'Cut', 'Copy', 'Paste', 'Single', 'Return Home', 'Stop Auto', 'Single', and a row of function keys F2 through F7.

5.1.9 Peripheral device I/O

【Check I】

1. When running to steps of check peripheral device I/O, system will wait corresponding Input signal to be triggered and then go next step. But if the waiting time is bigger than the setting maximum time, system will send warning. Under check mode, if you press running function key again, system will still send warning, but if under not check mode, program will run next step.
2. Select 【check I】 to see below command.
3. Press 【add】 to add command to the next line or press 【replace】 to replace cursor info.
4. Press 【add】 or 【replace】 to return to command list.

The screenshot shows the LNC-R6000 Teach interface in the 'Check I' mode. The top status bar includes 'Edit', 'Semi Ready', 'MY 0.00', 'MZ 0.00', 'X 0.00', 'Alarm', and a 'Reset' button. Below this, a 'WARNING' message is displayed. The main interface is divided into two main sections: a command list on the left and a command table on the right.

Command List (Left):

No.	Description
1	Speed 100%
2	Move to MZ=0.00
3	Move to MY=0.00
4	Move to X=0.00
5	M-arm Vertical DELAY 1.0 Sec
6	Mould Open
7	Move to MZ=800.00
8	Move to MY=-100.00

Command Table (Right):

No.	Description
80	Conveyor Photocell
81	Safety Placing Photocell
82	AUX Signal 1
83	AUX Signal 2

Controls and Settings:

- Command:** Periph. ☒ Check I ☐ Output O
- Status:** ON (yellow) OFF (blue) ☒ Chk ☐ UnChk
- Standby timer:** 0.5 Sec
- Buttons:** Del Line, Cut, Copy, Paste, Single, Command, Add, Replace.
- Bottom Bar:** F2 Edit, F3 IO status, F4 Stack, F5 Sample/Reject, F6 FileManage, F7 @ Var.

【Output O】

These are the peripheral device output.

1. Choose output signal and choose signal status is ON/OFF.
2. Set up how long you want to delay and run this output.
3. Press **【add】** to add command to the next line or press **【replace】** to replace cursor info.
4. Press **【add】** or **【replace】** to return to command list.

The screenshot displays the LNC-R6000 Teach interface. At the top, there's a status bar with 'Edit', 'Semi Ready', 'MY 0.00', 'MZ 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below this is a 'WARNING' indicator. The main interface is divided into several sections:

- Mold NO.:** 45, with a 'Save' button and a right arrow icon.
- Command List (Left):** A list of 8 commands:

No.	Description
1	Speed 100%
2	Move to MZ=0.00
3	Move to MY=0.00
4	Move to X=0.00
5	M-arm Vertical DELAY 1.0 Sec
6	Mould Open
7	Move to MZ=800.00
8	Move to MY=-100.00
- Command: Periph.** with radio buttons for 'Check I' and 'Output O' (selected).
- Output List (Right):** A list of 4 outputs:

No.	Description
80	Conveyor
81	Downstream Equipment
82	AUX Output 1
83	AUX Output 2
- Status:** Two buttons, 'ON' (yellow) and 'OFF' (blue).
- Step timer:** A text box showing '0.5' and 'Sec'.
- Buttons:** 'Del Line', 'Cut', 'Copy', 'Paste', 'Single' (checkbox), 'Return Home', 'Stop Auto' (red), and 'Single' (green).
- Bottom Bar:** A row of function buttons: '<', 'F2 Edit', 'F3 IO status', 'F4 Stack', 'F5 Sample/Reject', 'F6 FileManage', 'F7 @ Var', and a final empty button.

5.1.10 Call stack

Array number is 0~9, array setting content is based on 【stack setting】 page.

LNC		Edit	Semi Ready	MY 0.00 MZ 0.00	X 0.00	Alarm	Reset							
						WARNING								
Mold NO.	45	Save												
1	Speed 100%													
2	Move to MZ=0.00													
3	Move to MY=0.00													
4	Move to X=0.00													
5	M-arm Vertical DELAY 1.0 Sec													
6	Mould Open													
7	Move to MZ=800.00													
8	Move to MY=-100.00													
Del Line	Cut	Copy	Paste	<input type="checkbox"/> Single										
	30 %		Return Home	Stop Auto	Single	Command	Add							
<table border="1"> <tr> <td><-</td> <td>Edit</td> <td>IO status</td> <td>Stack</td> <td>Sample/Reject</td> <td>FileManage</td> <td>@ Var</td> </tr> </table>								<-	Edit	IO status	Stack	Sample/Reject	FileManage	@ Var
<-	Edit	IO status	Stack	Sample/Reject	FileManage	@ Var								

Command: Call Stack

StackNo

5.1.11 Call MACRO

This macro will be edited by machine makers, is for main program to call. System offers total 100 groups of MACRO for you to write. Refer to 【MACRO】 chapter.



Self-defined MACRO file name list

1. Run 【backup】 to backup file to USB drive, backup info should include MACRO. Refer to 【backup】 chapter to know more.
2. Use word editing program (EX:Word) to open file under this link, backup\ncfiles\macro0000.str in the USB drive. (Simplified Chinese=modify this file, macro0001.str, English=modify this file, macro0002.str) .
3. File content is as below
[HMIstring]
2300=sampling check program
2301=rejecting item give up program
2302=sub program 2
2303=sub program 3
2304=sub program 4
2305=sub program 5
2306=sub program 6
...
2398=sub program 98
2399=sub program 99

- [HMIstring]<==first line is system setting keyword; this line should be exist no matter any language.
 - File format content must be 【number=sub program name】.
 - Number range 2300~2399 to correspond to sub program 0~sub program 99, total 100 groups of sub program.
4. After modification, via 【backup】 function to upload this new file into USB drive. Upload to file to controller, reboot to see the new modification.

5.1.12 Stop

How to set up program ending.



1. Teach program's last step must be (also call main program) program end. When runs to this step, there will have below situation.
 - a. Teach mode : program ends and stops.
 - b. Auto mode : Running from the first line of program.
2. Sub program's last line could be
 - a. Sub program return : after sub program completing, it will continue to call later program.
 - b. Program ends : after sub program ending, it will start from the first line of main program.
3. When running to program ends or sub program return, later command will not be run.

5.1.13 Calculating

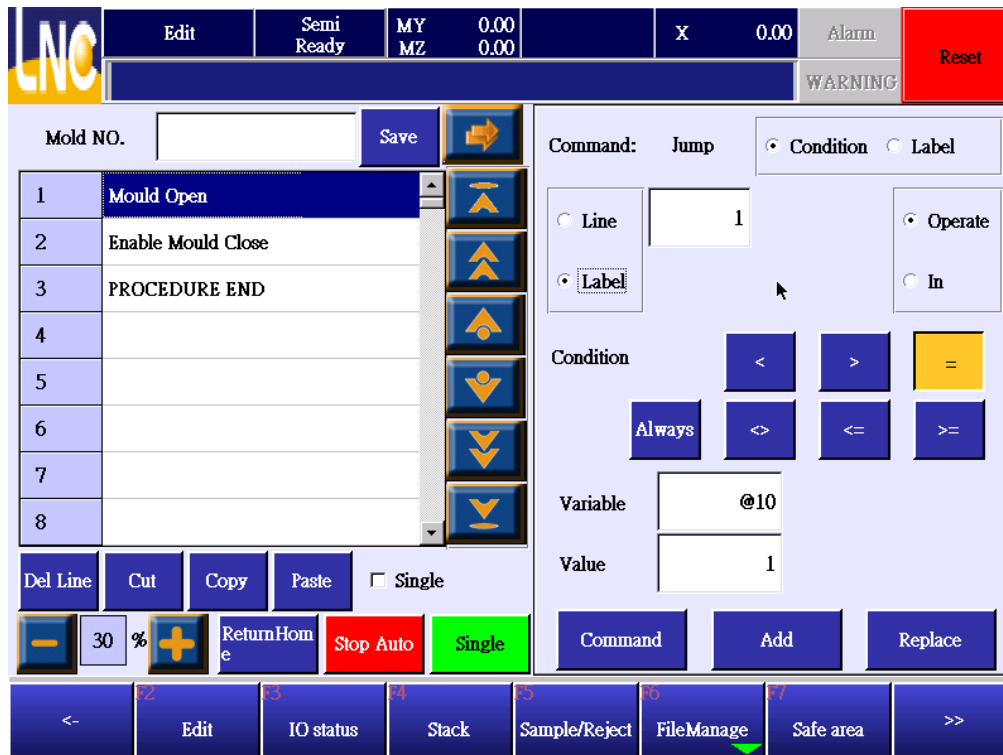
There are 1100 mutual variables in the system. Mutual variable can be read and set up in main program and sub program. You can use mutual variable to meet special function in the program. There are calculating type, logic type and setting type.

- Calculating type : add, subtract, multiply, and divide.
- Logic type : system offers 32 bit variables, there are AND 、OR 、NOT 、XOR for bit processing.
- Setting type : MOV will make variable to be certain value ; SET will make variable to be 1 ; CLR will make variable to be 0.



5.1.14 Jump

Press **【Jump】** to go to below. Jump function can be certain line number or certain tag.



Jump to line number

1. Click line number.
2. Key in line number.
3. Choose jump by variable calculating or I status.
 - a. calculating : determine@variable value status.

Conditional are as below

- unconditional
- less than (<)
- bigger than (>)
- equal to (=)
- is not equal to (<>)
- bigger than or equal to (<=)
- less than or equal to (>=)

- b. I : determine current I signal is ON or OFF.

The screenshot shows the LNC-R6000 Teach interface. At the top, there's a status bar with 'LNC' logo, 'Edit', 'Semi Ready', 'MY MZ 0.00 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below this is a 'WARNING' indicator. The main interface is divided into several sections:

- Mold NO.:** A text input field with a 'Save' button and a right arrow icon.
- Command List:** A table with 8 rows. The first row is '1 Mould Open', the second is '2 Enable Mould Close', and the third is '3 PROCEDURE END'. Rows 4-8 are empty. To the right of the table are up and down arrow icons.
- Command Settings:** A section with 'Command: Jump', radio buttons for 'Condition' and 'Label', a 'Line' input field with '1', and 'Operate' radio buttons. There are also 'ON' and 'OFF' status buttons.
- Tag List:** A table with 4 rows. The first row is '26 Product Check', the second is '64 Rej-parts Signal', the third is '80 Conveyor Photocell', and the fourth is '81 Safety Placing Photocell'. To the right of the table are up and down arrow icons.
- Buttons:** A row of buttons including 'Del Line', 'Cut', 'Copy', 'Paste', 'Single', 'Return Home', 'Stop Auto', and 'Single'.
- Bottom Bar:** A row of buttons including '<-', 'Edit', 'IO status', 'Stack', 'Sample/Reject', 'FileManage', 'Safe area', and '>>'.

4. Presses [add] to add to the next line or press replace to rewrite this line.
5. After pressing, return to command list.

Jump to tag

1. Choose tag item.
2. Key in tag number you want to jump to.
3. Choose jump by variable calculating or I status
 - a. calculating : determine@variable value status.

Conditional are as below

- unconditional
- less than (<)
- bigger than (>)
- equal to (=)
- is not equal to (<>)
- bigger than or equal to (<=)
- less than or equal to (>=)

- b. I : determine current I signal is ON or OFF

4. Press [add] to add to the next line or press replace to rewrite this line
5. After pressing, return to command list
6. Move to the target location and press jump button.

7. Choose label selection.

The screenshot shows the LNC-R6000 Teach interface. At the top, there's a status bar with 'Edit', 'Semi Ready', 'MY MZ', '0.00 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below this is a 'Mold NO.' field with a 'Save' button and a list of 8 lines. Line 1 is 'Mould Open', Line 2 is 'Enable Mould Close', and Line 3 is 'PROCEDURE END'. To the right of the list are navigation buttons (up, down, home, etc.). Below the list are 'Del Line', 'Cut', 'Copy', 'Paste', and a 'Single' checkbox. At the bottom are function keys: '30 %', 'Return Home', 'Stop Auto', 'Single', 'Command', 'Add', and 'Replace'. The bottom-most bar contains navigation buttons: '<-', 'Edit', 'IO status', 'Stack', 'Sample/Reject', 'FileManage', 'Safe area', and '>>'. The main area on the right shows 'Command: Jump' and 'Label: 1' with radio buttons for 'Condition' and 'Label'.

8. Key in label number, label number definition cannot be repeated.

9. Press [add] to add to the next line or press [replace] to rewrite this line.

5.1.15 Loop

From certain line number or label location to repeat running certain times. EX : line number=10, repeat times=3, then the cursor will move from current location to line 10 and run down for 3 times. It means the same area's command was run for 4 times.

The screenshot displays the LNC-R6000 Teach interface. At the top, there is a status bar with 'LNC' logo, 'Edit', 'Semi Ready', 'MY MZ 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below this is a 'WARNING' indicator. The main interface is divided into several sections:

- Mold NO.:** A text input field with a 'Save' button and a right arrow icon.
- Command List:** A table with 8 rows. The first row is '1 Mould Open', the second is '2 Enable Mould Close', and the third is '3 PROCEDURE END'. Rows 4 through 8 are empty. To the right of the table are navigation buttons: up, down, and a central button with a right arrow.
- Command Configuration:** A section titled 'Command: Loop'. It contains two radio buttons: 'Line' (selected) and 'Label'. Next to 'Line' is a text input field containing '1'. Below this is a 'Count' label and a text input field containing '2'.
- Editing Tools:** A row of buttons: 'Del Line', 'Cut', 'Copy', 'Paste', and a checkbox labeled 'Single'.
- Control Buttons:** A row of buttons: a blue button with a minus sign, a blue button with '30 %', a blue button with a plus sign, a red button labeled 'Return Home', a red button labeled 'Stop Auto', and a green button labeled 'Single'.
- Navigation Bar:** A row of buttons: '<-', 'Edit', 'IO status', 'Stack', 'Sample/Reject', 'FileManage' (with a green arrow pointing down), 'Safe area', and '>>'.

5.2 IO Status

Refer to chapter 3.2.

5.3 Stack setting

Press **【stack setting】** to go current mold document stack setting.

Function Description :

When program runs to **【call x number stack】** , horizontal axis and pull axis will move to target location and move down to Z axis location. When complete Z axis, system will continue the next command. As for vacuum release and

move-up to safe location, you will need to edit this by yourself.

Notice :

1. Before setting stack, confirm current mold name again.
2. Mold document name can not be blank.
3. Before stacking, you will need to move Z axis to certain safe height ; after completing, you will also need to do the same step to prevent collision.

No.	First Point	Place order
0	MY 0.00	Y->X->Z X->Y->Z Z->Y->X
1	MZ 0.00	
2	X 0.00	
3		
4	1 1. Feedrate of XY	
5	1 2. 1st downlink speeds	
6	0.00 3. 2nd downlink Distance	
7	0.0 4. Delay before 2nd downlink	
8		
9	1 5. 2nd downlink speeds	

	Offset	Count
X	0.00	0 / 1
Y	0.00	0 / 1
Z	0.00	0 / 1
Conveyor count		0 / 0

Operation



Pick number list to switch stack numbers, system offers 10 sets of stack for setting. The number here and teach mode is corresponding.

First part position :

Set up the first part location, click the column and input coordinate or press left down side button to make current location to the setting.

Putting axis order :

Set up axis order of part, press the order directly.

Arm choose :

Main arm or sub arm.

1.The speed to put location(%)

When running stacking, the speed of horizontal axis and pull axis.

2. Z axis goes down 1 section speed(%)

Horizontal axis and pull axis will need to position to the product to be placed above and Z axis will use 1 section speed to go down to R, EX : part putting location is 500, R distance is 30, Z axis goes down in 1 section speed with 100%, machine will use 100% to move to 470.

3. Moving distance to go down in 2 section speed(mm)

4.Before going down delay time in 2 section speed(second)

5. Z axis goes down in 2 section speed(%)

When putting parts, if you want to use slow speed to move to target place, ex, moving distance=50, delay time 0.5 second, Z down in 2 section speed=30, if this Z axis target=300, then Z axis will go down in 1 section speed to 250 ($250=300-50$), then delay 0.5 second and use 30% speed to move to Z=300.

Interval

Setting interval of products.

Parts

Left line is to show the complete parts, 0 is the first layer, 1 is the second layer and so on. When running, system will add up the value. If you want to reset the location, EX, from 3 layer to put, set up value to be 2, from 4 layer to

put, set up value to be 3, and so on, right side is the parts that every axis needs to put.

5.4 Sample/reject

5.4.1 Sample check

Sample check cycle :

If you set up this value to be 100 under auto running, every 100 mold, system will put one product to sampling desk, if you set this to be 0, there is no check.

Manual sample :

Press“+”button to add 1 on manual sampling. When the value is bigger than 0, system will put current product to sampling check desk and minus value with 1.

@variable number

410	Use main arm or sub arm when sampling	0 : Main arm ; 1 : sub arm
411	Traverse axle coordinate when sampling	Unit : mm
412	Crosswise axle coordinate when sampling	Unit : mm
413	Vertical axle coordinate when sampling	Unit : mm

Sampling function running content should be based on machine maker MACRO 0, moving target location should be based on above @ variable numbers.

5.4.2 Reject give up

Give up mold when running :

You can set up this value as 10 under auto mode, previous 10 molds will trigger rejecting good signal, value 0 is invalid for this function.

Give up mold when good shape :

When bad shape signal was triggered, you can set up give up goods numbers.

@Variable number

400	Use main arm or sub arm when putting rejecting	0 : Main arm ; 1 : sub arm
401	Traverse axle coordinate when putting rejecting	Unit : mm
402	Crosswise axle coordinate when putting rejecting	Unit : mm
403	Vertical axle coordinate when putting rejecting	Unit : mm

This give up function will need to base on machine maker MACRO 1. Moving target in MACRO will need to use@to use.

5.5 File manage

Press file to see below.

The screenshot displays the LNC-R6000 File Management interface. At the top, a status bar shows 'FileManage', 'Semi Ready', 'MY MZ', '0.00 0.00', 'X 0.00', 'Alarm', and a red 'Reset' button. Below this, a message box states 'There is not this function' with a 'WARNING' label. The main area contains a table of files:

No.	Filename	Date	Remark
1	45	2012-02-29 13:53:44	
2	46	2012-03-10 16:37:26	
3	1212	2012-03-10 09:38:02	
4	test	2012-03-10 10:10:23	

Below the table, a 'Filename' field shows '1212'. The bottom navigation bar includes buttons for '<-', 'New', 'Load', 'Copy', 'Delete', 'Transfer', 'Remark', and a 'Reset' button. A green arrow points to the 'Transfer' button.

5.5.1 Open a new mold file

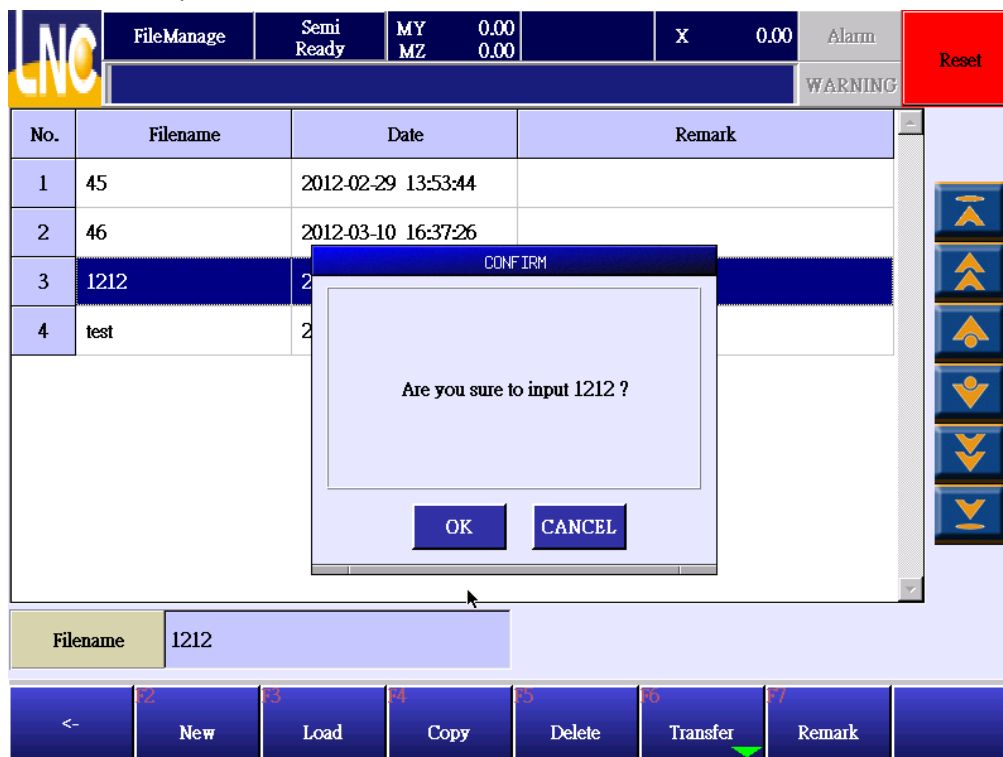
1. Press **【New】** to open a new mold document, as below.



2. Before editing program, you will need to key in mold number.
3. After opening new file, program will have default steps, complete open mold, allow close mold, program end. These command must be exist.

5.5.2 Read old mold file

1. Select the file you want to open, press **【load】** .
2. EX, if you choose 45 mold document and press **【load】** , you will see below confirm window, you can press **【OK】** to open this old file.



5.5.3 Copy current mold file

1. Choose the file you want to copy, press **【copy】** , as below.

The screenshot shows the LNC-R6000 Teach interface. At the top, there's a status bar with 'FileManage', 'Semi Ready', 'MY MZ', '0.00 0.00', 'X', '0.00', 'Alarm', and a red 'Reset' button. Below this is a message: 'Pls click target filename text box & enter filename?'. A table lists files:

No.	Filename	Date	Remark
1	45	2012-02-29 13:53:44	
2	46	2012-03-10 16:37:26	
3	1212	2012-03-10 09:38:02	
4	test	2012-03-10 10:10:23	

Below the table, there's a 'Filename' field containing '1212' and a 'Target File' field. At the bottom, there's a row of buttons: '<', 'F2 New', 'F3 Load', 'F4 Copy' (highlighted), 'F5 Delete', 'F6 Transfer', 'F7 Remark', and a green arrow button.

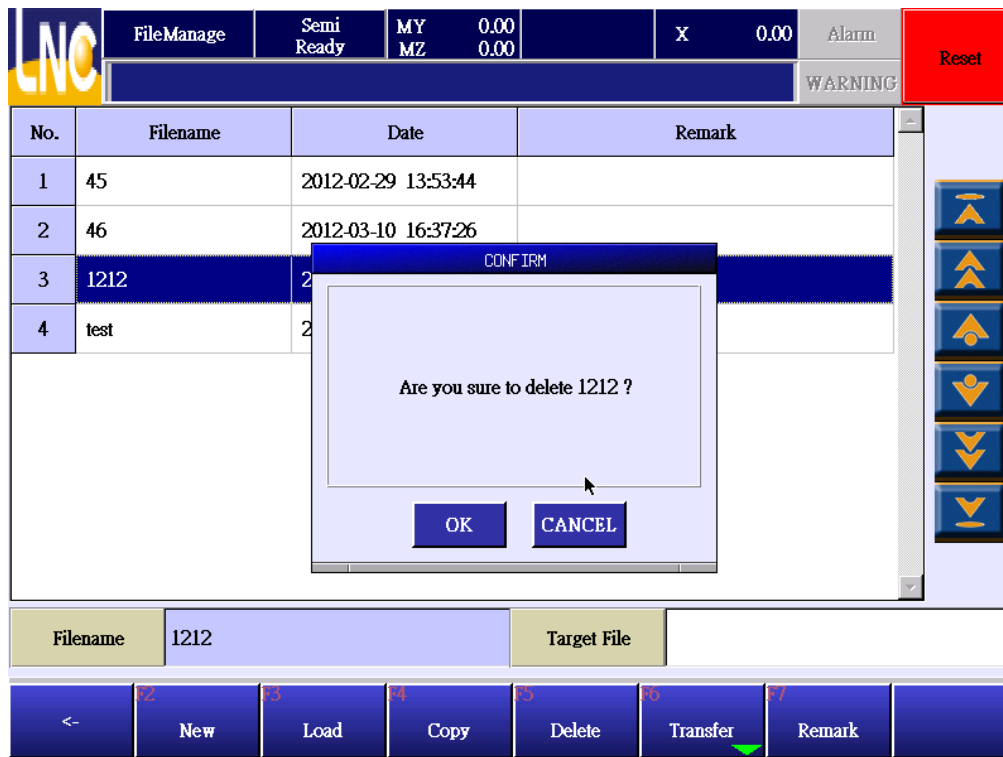
2. Key in target file name, you will see the new copy file with new name.

The screenshot shows the LNC-R6000 Teach interface with a keyboard overlay. The 'Filename' field now contains '1212'. The keyboard has buttons for HOME, END, CANCEL, and a numeric keypad. The 'Copy' button is still highlighted in the bottom row of buttons.

3. After inputing, press OK to complete.

5.5.4 Delete mold file

1. Choose the file you want to delete, press **【delete】**, there will be a confirm window to confirm with you.

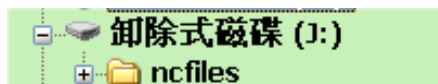


2. Press **【OK】** to delete this file, if no, press **【cancel】**.

5.5.5 Upload/download mold file via USB

Notice

1. Current, only support 4GB and below USB drive.
2. Import/export file should be under root directoty ncfiles.
3. Directory is as below.



5.6 Safe area

Function :

In order to prevent collision risk of arm, every mold document has its own safety area setting. When setting up a new mold document, you will need to confirm the safety area again to meet current mold status.

Notice :

If you set up a new mold file, 【No go area】 and 【safe area】 will use previous mold setting for users to setup quickly.

5.6.1 No go area setting for 3 axes

LNC	Safe area	Semi Ready	MY 0.00 MZ 0.00	X 0.00	Alarm	Reset
WARNING						

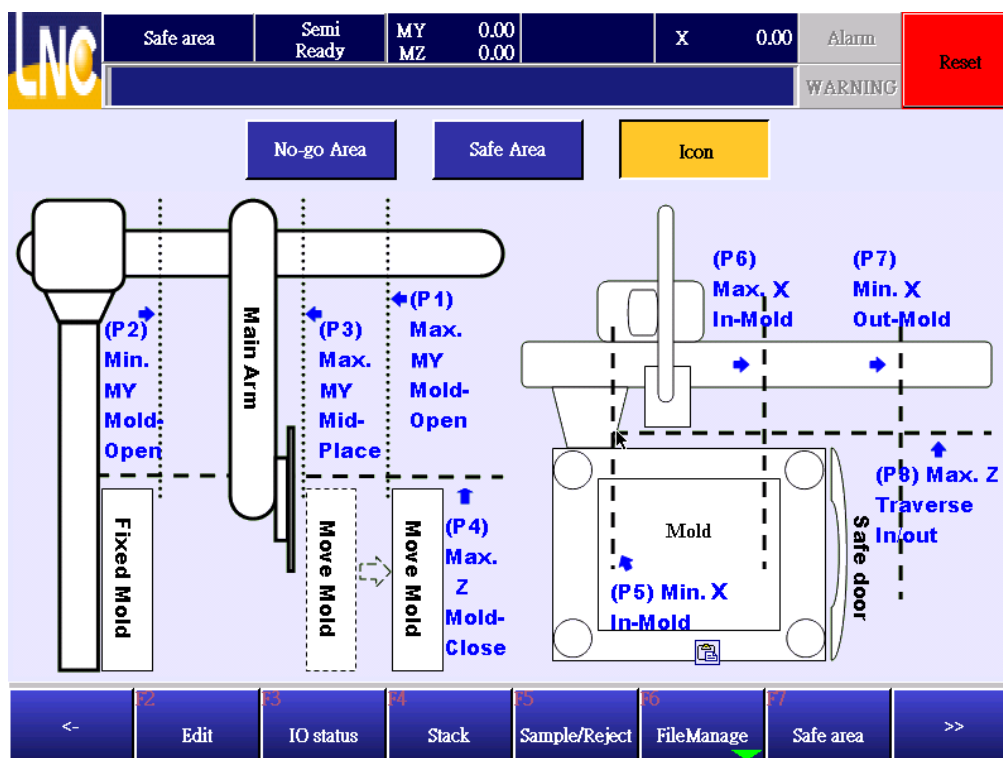
No-go Area

Safe Area

Icon

SET	215.00	(P1): Mold-open, the max. MY in-mold
SET	-200.00	(P2): Mold-open, the min. MY in-mold
SET	210.00	(P3): Mold mid-place, the max. MY in-mold
SET	50.00	(P4): The max. MZ safe mold-close

<-
F2 Edit
F3 IO status
F4 Stack
F5 Sample/Reject
F6 FileManage
F7 Safe area
>>



- **(P1): When completing open mold, max. location of MY axis inside the mold** : When completing open mold, main arm goes down into mold, MY axis goes to the max. coordinate(+), this is P1's MY coordinate.
- **(P2): When completing open mold, min. location of MY axis inside the mold** : When completing open

mold › MZ goes down into mold, MY axis goes to the min. coordinate(-), this is P2's MY coordinate.

- **(P3): Open mold middle position, max. location of MY axis inside the mold** : this function only valid for open mold middle signal. If there is no this function, you will need to set up the same to MY(P1), When middle position signal was triggered, MZ axis can go down to mold, when MZ goes to mold, MY axis can move to the max. location(+), this is P3's MY coordinate.
- **(P4): The height for MZ axis to close mold safely** : when MZ axis moves up to setting position, the max. down position for mold to close mold.

※This function will only be valid when 【go down in mold standby function】 , otherwise X axis can only move to P8 when there is no open mold complete signal.

- **(P5): X axis in the mold's min pick safety location** : When completing open mold, vertical axis to go down to mold, the max. location for X axis to move(-)direction.
- **(P6): X axis in the mold's max pick safety location** : When completing open mold, vertical axis to go into mold, the max. location for X axis to move(+)direction.
- **(P7): X axis in (+) direction at safety location outside of mold** : the area when vertical axis outside of mold, when vertical axis to go down, the max. location for X axis to move(-)direction.
- **(P8): MZ axis to go out safety height** : when X axis goes out or in, the max. location that MZ axis will not hit safety door, this value can not be smaller or equal to 0, recommend value to be 10mm~50mm.

5.6.2 No go area setting for 5 axes

LNC	Safe area	Semi Ready	MY MZ	0.00 0.00	SY SZ	0.00 0.00	X	0.00	Alarm	Reset
WARNING										

No-go Area

Safe Area

Icon

SET	215.00	(P1): Mold-open, the max. MY in-mold
SET	-10.00	(P2): Mold-open, the max. SY in-mold
SET	210.00	(P3): Mold mid-place, the max. MY in-mold
SET	50.00	(P4): The max. MZ safe mold-close
SET	88.00	(P4): The max. SZ safe mold-close

<-

F2 Edit

F3 IO status

F4 Stack

F5 Sample/Reject

F6 FileManage

F7 Safe area

>>

LNC	Safe area	Semi Ready	MY MZ	0.00 0.00	SY SZ	0.00 0.00	X	0.00	Alarm	Reset
WARNING										

No-go Area

Safe Area

Icon

SET	-10.00	(P5): X in-mold min. safe area
SET	100.00	(P6): X in-mold max. safe area
SET	800.00	(P7): X+ out-mold min. safe area
SET	10.00	(P8): Max. MZ can traverse in/out
SET	10.00	(P8): Max. SZ can traverse in/out

<-

F2 Edit

F3 IO status

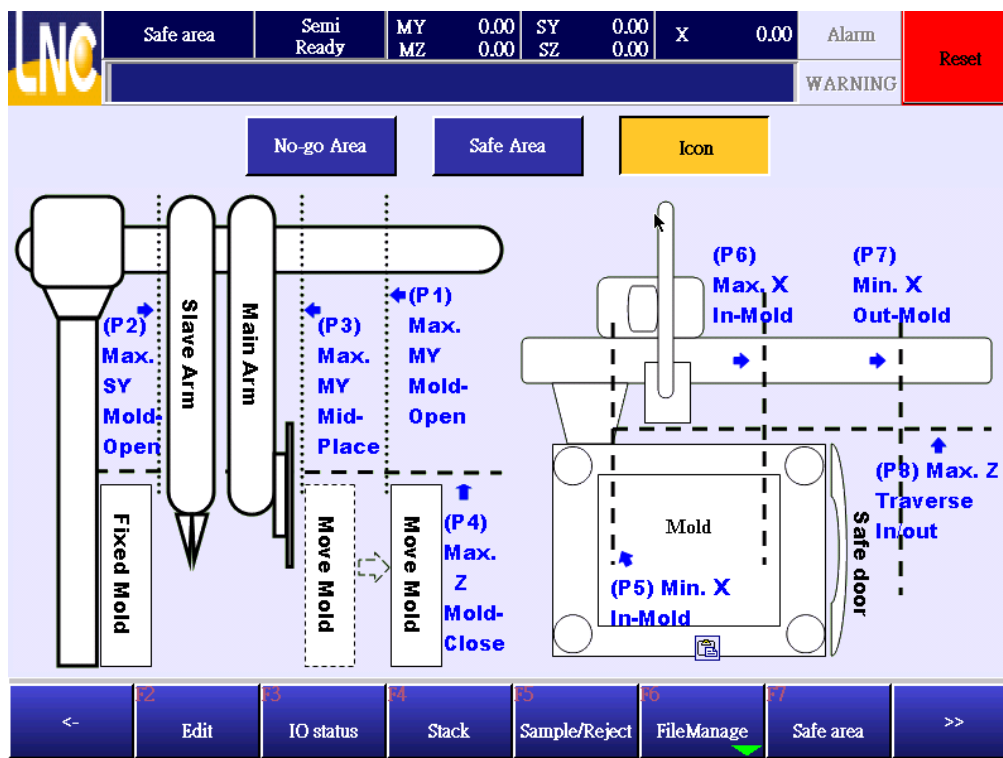
F4 Stack

F5 Sample/Reject

F6 FileManage

F7 Safe area

>>



- **(P1): When completing open mold, max. location of MY axis inside the mold** : when completing open mold, main arm goes down into mold, MY axis goes to the max. coordinate(+), this is P1's MY coordinate.
- **(P2): When completing open mold, max. location of SY axis inside the mold** : when completing open mold, SZ goes down into mold, SY axis goes to the max. coordinate(-), this is P2's SY coordinate.
- **(P3): Open mold middle position, max. location of MY axis inside the mold** : this function only valid for open mold middle signal. If there is no this function, you will need to set up the same to MY(P1), When middle position signal was triggered, MZ axis can go down to mold, when MZ goes to mold, MY axis can move to the max. location(+), this is P3's MY coordinate.
- **(P4): The height for MZ axis to close mold safely** : when MZ axis moves up to setting position, the max. down position for mold to close mold.
 - ※ This function will only be valid when 【go down in mold standby function】 , otherwise X axis can only move to P8 when there is no open mold complete signal.
- **(P4): The height for SZ axis to close mold safely** : when SZ axis moves up to setting position, the max. down position for mold to close mold.
 - ※ This function will only be valid when 【go down in mold standby function】 , otherwise X axis can only move to P8 when there is no open mold complete signal.

- **(P5): X axis in the mold's min pick safety location** : When completing open mold, vertical axis to go down to mold, the max. location for X axis to move(-)direction.
- **(P6): X axis in the mold's max pick safety location** : When completing open mold, vertical axis to go into mold, the max. location for X axis to move(+)direction.
- **(P7): X axis in (+) direction at safety location outside of mold** : the area when vertical axis outside of mold, when vertical axis to go down, the max. location for X axis to move(-)direction.
- **(P8): MZ axis to go out safety height** : when X axis goes out or in, the max. location that MZ axis will not hit safety door, this value can not be smaller or equal to 0, recommend value to be 10mm~50mm.
- **(P8): SZ axis to go out safety height** : when X axis goes out or in, the max. location that SZ axis will not hit safety door, this value can not be smaller or equal to 0, recommend value to be 10mm~50mm.

5.7 @Variables

Show mutual variable for main program and sub program.

LNC		@ Var	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
							WARNING	
@								
	0	1	2	3	4	5	6	7
0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0
Goto		0						
<-	F2 @ Var	F3 Macro	F4 Sys Macro				>>	

5.8 MACRO

Show MACRO as below.

Macro	1
1	IF Rej-parts Signal OFF GOTO Label 1
2	Move to MZ= @523
3	Move to MZ=0.00
4	Label 1
5	PROCEDURE RETURN
6	
7	
8	

Command: MST

M1: 10004

M2:

M3:

S: 2

T:

Buttons: Del Line, Cut, Copy, Paste, Single, Return Home, Stop Auto, Single

Function Keys: F2, F3, F4, <-, @ Var, Macro, Sys Macro, >>

Notice

1. If you want to edit MACRO, you will need to switch to machine maker level (10~19).
2. System offers 100 groups of MACRO to edit.
3. MACRO file name can accept 0~99, the MACRO here is for teach mode to call.

MACRO command editing description

MACRO editing is the same to teach program command, refer to chapter 5. Teach.

6 Parameter

6.1 General parameter

This is the paramter list for general end-user, you can click setting value column to see keypad to do setting.
Detail general parameters, refer to chapter 10.

LNC		General	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
Robot mode [0: Production; 1: Testing]							WARNING	
No.	Set Value	Description						
7999	0	Robot mode [0: Production; 1: Testing]						
8000.2	0	Main-Arm Wrist Gesture to Enter Mold[0:Vertical;1:Horizontal]						
8000.10	0	Main-Arm Wrist Gesture at Waiting Positon[0:Vertical;1:Horizontal]						
8004	0	Check drop[0:Check All;1:Check Inside Mold;2:Uncheck]						
8005	0	Prestage (robot waiting above mold) [0: Not allowed; 1: Allowed]						
8010.1	0	Checking Main-Arm Wrist Gesture when it's Acrossing Out[0:No;1:Yes]						
8010.2	0	Main-Arm Wrist Gesture to Across Out[0:Vertical;1:Horizontal]						
8050.2	0	Open & close safety gate to skip failed grip/vacuum verification signals [0: Not allowe						
Goto		0	Mold NO.					
<-	F2	General	F3	Language	F4	Advance	F5	Machine
					F6	Maintain	F7	Network
							F8	Reboot

6.2 Language

Choose the language you want to use and press OK.

LNC	Language	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
						WARNING	

Used Language

English(Built-in)

Langaue Selected

Traditional Chinese(Built-in)

Simplified Chinese(Built-in)

English(Built-in)

<-

F2 OK

6.3 Common parameter

This is the common parameter for machine makers, if you want to change this value, you will need to change to 10-19 level. You can click setting value column to see keypad to do setting. Detail general parameters, refer to chapter 10.

LNC		Common	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
		Permit homing to origin when arm is down inside IMM [0: Not allowed; 1: Allowed]						WARNING
No.	Set Value	Description						
8050.0	1	Permit homing to origin when arm is down inside IMM [0: Not allowed; 1: Allowed]						▲
8050.3	0	Cycle start check IMM's auto single[0:check;1:Uncheck]						▲
8050.4	0	Permit robot to perform 'HOME' function outside IMM without confirming arm up sensor						▲
8070	10000.00	Return wait position speed(mm/Min)						▼
8071	0	Safety gate opens in auto mode [0:Close safety gate & click start key to continue auto]						▼
8072	20	Buzzer beeping timer [0 ~ 9999; unit in seconds]						▼
8073	5	Warning light on/off timer [0 ~ 99; unit in 0.1 second]						▼
8074	5	Buzzer beeping on/off timer [0 ~ 99; unit in 0.1 second]						
Goto		0	Mold NO.					
<-	F2 Common	F3 MY Axis	F4 MZ Axis	F5 SY Axis	F6 SZ Axis	F7 X Axis		

6.4 Machine parameter

This is to set up reducer gear ratio and motor parameters.

1. **Gear ratio (numerator)** : Set up gear ratio-numerator, if there is no reducer design, numerator and denominator will be 1, EX : reducer=1 : 5, parameter=1.
2. **Gear ratio (Denominator)** : Set up gear ratio- denominator, if there is no reducer design, numerator and denominator will be 1, EX : reducer=1 : 5, parameter=1.
3. **Pitch(mm)** : Most of the mechanical structure of the robot is through the motor and reducer to drive gear. And gear through the belt to move machine mechanical structure. Distance of gear per 1 revolution = gear diameter X circumference ratio. In order to make this calculation easier, system will time this circumference ratio automatically. Users only need to input gear diameter value.
 ※.If you use screw to move mechanical structure, not via gear and belt, you will need to input pitch divide circumference ratio.
4. **Motor 1 revolution pulse numbers** : Motor corresponding rotation per revolution. The setting should be relevant, then moving distance will be correct.
5. **Motor 1 vollabele to rotation speed** : motor's max. rpm is corresponding to 10V, so make this value to divide into 10, this is the value that we are going to set up.

6.5 Maintain

6.5.1 Maintain setting

LNC		Setting	Semi Ready	MY 0.00	0.00	SY 0.00	0.00	X	0.00	Alarm	Reset
WARNING											
No.	Maintain items	Style	Cycle								
001	draining water from the air filter/regulator assembly?	Time	0 D								
002	check to make sure functions of the gripper and vacuum suction headwork	Time	0 D								
003	tighten connecting screws on the vacuum suction headwork(EOAT)?	Time	0 D								
004	check if there is any part on the ROBOT for loosen?	Time	0 D								
005	check if connections between ROBOT and I.M.M., and between hand-ho	Time	0 D								
006	draining water from the air compressor?	Time	0 D								
007	clean and resort appearance of the ROBOT?	Time	0 D								
008	clean the surface of arch	Time	0 D								
009	re-lubricate bearings on the crosswise axis?	Time	0 D								

<-

F2 Setting

F3 Status

F4 History

↑

↑





↓

↓

6.5.2 Maintain status

LNC	Status	Semi Ready	MY MZ	0.00 0.00	SY SZ	0.00 0.00	X	0.00	Alarm	Reset
									WARNING	


No.	Maintain items	Remaining	Next time
001	draining water from the ari filter/reguator assembly?	3D	2012/03/16
002	check to make sure functions of the gripper and vacuum suction headwork	5D	2012/03/18

Date
2012/03/13
Count
991
Complete

<	F2 Setting	F3 Status	F4 History				
---	---------------	--------------	---------------	--	--	--	--

6.5.3 Maintain history

LNC		History	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
							WARNING	
Date	Time							
2012-03-13 20:25:21	No.002 check to make sure functions of the gripper and vacuum suction headwork(EOAT) are normal?							
2012-03-13 20:25:21	No.002 check to make sure functions of the gripper and vacuum suction headwork(EOAT) are normal?							
2012-03-13 20:25:20	No.002 check to make sure functions of the gripper and vacuum suction headwork(EOAT) are normal?							
2012-03-13 20:25:16	No.001 draining water from the ari filter/reguator assembly?							
2012-03-13 20:25:16	No.001 draining water from the ari filter/reguator assembly?							
2012-03-13 20:25:15	No.001 draining water from the ari filter/reguator assembly?							
2012-03-13 20:25:15	No.001 draining water from the ari filter/reguator assembly?							
<-		F2 Setting	F3 Status	F4 History				

6.6 Network

How to set robot net address.

LNC	Network	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
	IP Address_1[0~255]						

Local IP Address

IP Address	192	.	168	.	7	.	20
Sub-mask	255	.	255	.	255	.	0
Gateway	192	.	168	.	7	.	254

<-	F2 General	F3 Language	F4 Advance	F5 Machine	F6 Maintain	F7 Network	F8 Reboot
--------------	----------------------	-----------------------	----------------------	----------------------	-----------------------	----------------------	---------------------

7 System

7.1 About

Show robot relating information.

LNC		About	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset									
							WARNING										
Mfr. Date	2011	EX-2008/01/01					<table border="1"> <thead> <tr> <th colspan="3">Date</th> </tr> <tr> <th>Year</th> <th>Month</th> <th>Day</th> </tr> </thead> <tbody> <tr> <td>2012</td> <td>03</td> <td>13</td> </tr> </tbody> </table>		Date			Year	Month	Day	2012	03	13
Date																	
Year	Month	Day															
2012	03	13															
Model																	
Mfr. No.																	
Version	03.01.45						<table border="1"> <thead> <tr> <th colspan="3">Time</th> </tr> <tr> <th>H</th> <th>M</th> <th>Sec</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>25</td> <td>51</td> </tr> </tbody> </table>		Time			H	M	Sec	20	25	51
Time																	
H	M	Sec															
20	25	51															
CPU Clock	2527.484 MHz																
RAM	249.137 MB																
CD Card	Virtual IDE Hard Drive																
<-		F2 About	F3 Info.	F4 Ladder	F5 R Value	F6 Parameter	F7 I/O Map	>>									

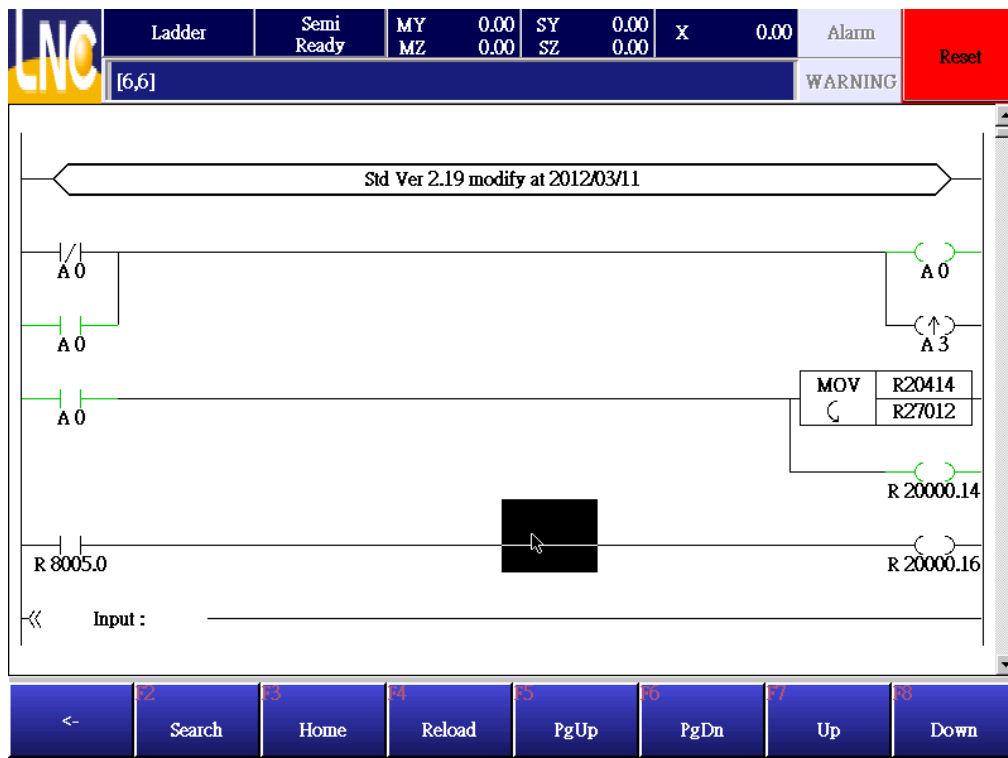
7.2 System info

Show system relaing info page.

LNC	Info.	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
						WARNING	
Machine Pos.							
MY	-200000	MZ	0	SY	0	SZ	0
Servo lag(Pulse)							
MY	0	MZ	0	SY	0	SZ	0
Vcmd lag(Pulse)							
MY	0	MZ	0	SY	0	SZ	0
Encoder(Pulse)							
MY	-63662	MZ	0	SY	0	SZ	0
Zero Point Grid Data(%)							
MY	0	MZ	0	SY	0	SZ	0
Interrupt							
32021							
<	F2 About	F3 Info.	F4 Ladder	F5 R Value	F6 Parameter	F7 I/O Map	>>

1. Machine coordinate : Show current location machine coordinate, unit=um.
2. Servo lag(Pluse) : Sending out movement command and exact feedback difference.
3. Vcmd servo lag(Pluse) : Sending out movement command and exact feedback difference. When motor use vollabele command, servo lag should refer to this column.
4. Encoder value : Current position's corresponding encoder value.This value is encoder's feedback value.
Machine zero's encoder value should be 0.(only has small difference) When robot moves, encoder's value will change together. If you want to verify the accuracy of the machine, you can move back and forth to check if the encoder value are the same.
5. Return home grid position(%) : The percnlabele between the distance of Home dog signal trigger location to motor Z axis signal and the distance of 1 motor revolution.

7.3 Ladder



7.4 R bit

Show system register value.

R Register		Semi Ready	MY MZ	0.00 0.00	SY SZ	0.00 0.00	X	0.00	Alarm	Reset
										WARNING
R Register										
	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	1	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
30	2	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0

Goto 0

<- About Info. Ladder R Value Parameter I/O Map >>

7.5 System parameter

Hardware		Semi Ready	MY MZ	0.00 0.00	SY SZ	0.00 0.00	X	0.00	Alarm	Reset
										WARNING
No.	Set Value	Description								
40054.5	0	5th EPCIO Motion Card Local I/O Type(21~24)(0:I,1:O)								
40054.6	0	5th EPCIO Motion Card Local I/O Type(25~28)(0:I,1:O)								
40055.0	0	6th EPCIO Motion Card Local I/O Type(1~4)(0:I,1:O)								
40055.1	0	6th EPCIO Motion Card Local I/O Type(5~8)(0:I,1:O)								
40055.2	0	6th EPCIO Motion Card Local I/O Type(9~12)(0:I,1:O)								
40055.3	0	6th EPCIO Motion Card Local I/O Type(13~16)(0:I,1:O)								
40055.4	0	6th EPCIO Motion Card Local I/O Type(17~20)(0:I,1:O)								
40055.5	0	6th EPCIO Motion Card Local I/O Type(21~24)(0:I,1:O)								
40055.6	0	6th EPCIO Motion Card Local I/O Type(25~28)(0:I,1:O)								

Goto 48080

<- Hardware Path Axis HMI Default All Def. >>

7.6 I/O Map

7.6.1 DI Map

Set up exact input and software input corresponding relationship.

LNC		DI Map	Semi Ready	MY MZ	0.00 0.00	SY SZ	0.00 0.00	X	0.00	Alarm	Reset
										WARNING	
DI No.	CardType	CardNo.	CardSet	Offset	Reverse	Description					
0	0	0	0	16	False						
1	-1	0	0	0	False						
2	-1	0	0	0	False						
3	-1	0	0	18	False						
4	-1	0	0	0	True						
5	-1	0	0	24	True						
6	0	0	0	5	True	MY- Hardware Limit					
7	0	0	0	6	True	MY+ Hardware Limit					
8	0	0	0	106	True	MZ- Hardware Limit					
9	0	0	0	9	True	MZ+ Hardware Limit					
10	0	0	0	110	True	SY- Hardware Limit					

<-
F2 DI Map
F3 DO Map
F4 Apply

7.6.2 DO Map

Set up exact output and software output corresponding relationship

DO Map		Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset	
WARNING								
DO No.	CardType	CardNo.	CardSet	Offset	Reverse	Force	State	Description
0	0	0	0	0	False	False	False	M-arm Horizontal
1	0	0	0	5	False	False	False	M-arm Vertical
2	-1	0	0	1	False	False	False	S-arm Horizontal
3	-1	0	0	4	False	False	False	S-arm Vertical
4	-1	0	0	4	False	False	False	
5	-1	0	0	5	False	False	False	
6	-1	0	0	6	False	False	False	
7	-1	0	0	7	False	False	False	
8	-1	0	0	2	False	False	False	
9	-1	0	0	3	False	False	False	
10	0	0	0	1	False	False	False	Gripper 1

<
F2 DI Map
F3 DO Map
F4 Apply

7.6.3 DI Map 、DO Map setting

If you want to modify DI Map and DO Map, you need to have machine maker level or even bigger than this.
(10~19)

DI 、DO mutual columns :

CardType : Show motion card type, current setting is 0, if -1=not in use.

CardNo : Show EPCIO card number, current setting is 0.

CardSet : 1=Local IO ; 0=Remote IO, current robot did not use Local IO, therefore setting=0.

Offset : I/O to hardware location, connect EIO2000 to RIO1-**15Pin HD-SUB female**(robot project).Offset=0~191.

Reverse : True=make reverse of the signal or output. 0 : False ; 1 : True ◦

DO description :

Force : Whether to enforce the O point output, 0 : False ; 1 : True ◦

State : O point output status, 0 : False (OFF) ; 1 : True (ON) ◦

Offset description :

EIO2000 to RIO1 HD 15Pin D-SUB female, Offset is **from 0**. One set of EIO2000 can connect with 3 I/O card, 1 I/O has 20IN/16OUT, maximum is 3 cards, 60IN/48OUT. But here one EIO2000 need to be 64IN/64OUT, so the second EIO2000 IO card offset is **from 64**, third EIO2000 Offset is **from 128**.

One set of EIO2000 can connect with 3 I/O card, 1 I/O has 20IN/16OUT, maximum is 3 cards, 60IN/48OUT. But

here one EIO2000 need to be 64IN/64OUT, so the second EIO2000 IO offset is **from 256**, the third EIO2000 Offset is **from 320**.

Motion card position	EIO2000 Switch setting	REL to EIO2000	Offset	
			I	O
RIO1	S1 ON	I/O P1	0~19	0~15
		I/O P2	20~39	16~31
		I/O P3	40~59	32~47
	S2 ON	I/O P1	64~83	64~79
		I/O P2	84~103	80~95
		I/O P3	104~123	96~111
	S3 ON	I/O P1	128~147	128~143
		I/O P2	148~167	144~159
		I/O P3	168~187	160~175
RIO2	S1 ON	I/O P1	192~211	192~207
		I/O P2	212~231	208~223
		I/O P3	232~251	224~239
	S2 ON	I/O P1	256~275	256~271
		I/O P2	276~295	272~287
		I/O P3	296~315	288~303
	S3 ON	I/O P1	320~339	320~335
		I/O P2	340~359	336~351
		I/O P3	360~379	352~367

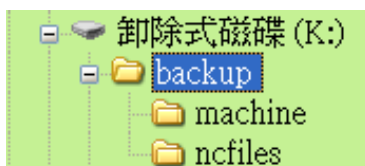
7.7 Backup

Run this function to do backup or restore machine parameter.

7.7.1 Parameter backup

Notice :

1. We recommend you to backup parameter files before using the controller, in case you want to restore to the default status.
2. Currently only support 4GB and below USB drive.
3. After backup, backup file will be saved at the backup directory.
4. There will have machine and ncfiles under this directory of backup, but sub program will be save outside of ncfiles, other files will all be saved under machine directory.
5. Backup directory tree as shown below.



Operation :

1. Go to **【SYSTEM】** , press **【BACKUP】** to see below.

LNC	Backup	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
WARNING							

1. Select : Input or Output

☐ Input from USB
☐ Output to USB

Select	Item
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

0 %

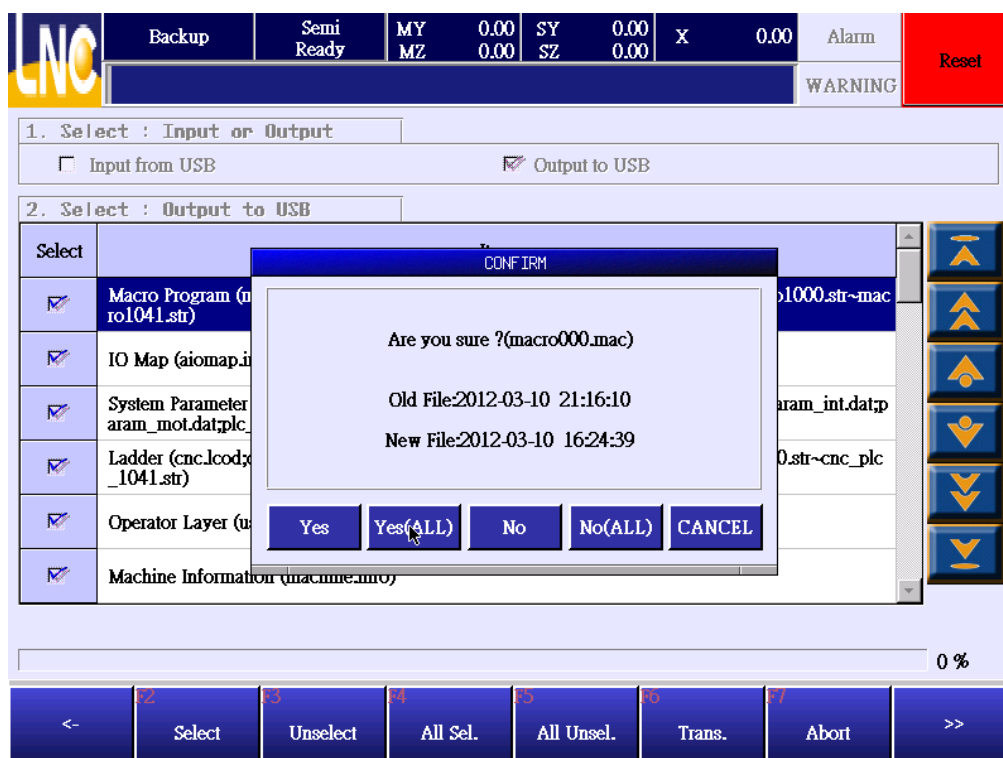
<-
F2 Select
F3 Unselect
F4 All Sel.
F5 All Unsel.
F6 Trans.
F7 Abort
>>

2. Insert USB to controller.

3. Click **【output to USB】** , if controller can not read this USB, there will be a message to show the USB insert fail. That means controller did not accept this model's USB : If the loading is success, you will see details as below.

The screenshot shows the LNC-R6000 System backup interface. At the top, there's a status bar with 'Backup' and 'Semi Ready' indicators, along with coordinate values (MY, MZ, SY, SZ, X). A 'WARNING' message is present. The main menu has two options: 'Input from USB' and 'Output to USB'. 'Output to USB' is selected and highlighted with a red box. Below this, a list of files to be backed up is shown, including Macro Program, IO Map, System Parameter, Ladder, Operator Layer, and Machine Information. A progress bar at the bottom shows 0% completion. Navigation buttons (F2-F7) are at the bottom.

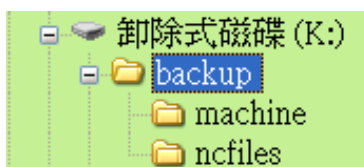
4. Select the file you want to backup, use F2~F5 or choose directly on the page, the file that you chose will be download. You can click again to cancel selection.
5. After selection, press **【F6 to start downloading】** . If you want to cancel the downloading, you can press **【F7 cancel downloading】** . We recommend you not to do this while downloading in order to ensure the integrity of the backup data.
6. If there is previous backup file in this USB, system will ask if you want to rewrite current file, we recommend you to press **【yes to all】** to make the integrity of the backup data.



7.7.2 Parameter restore

Notice :

1. After the modification results in the machine parameter error, you can restore previous parameter backup to return to default setting.
2. Currently only support 4GB and below USB drive.
3. Before running parameter restore, you should put backup file to backup directory of USB.
4. There will have machine and ncfiles under this directory of backup, but sub program will be save outside of ncfiles, other files will all be saved under machine directory
5. Backup directory tree as shown below.



Operation :

1. Go to **【SYSTEM】** , press **【BACKUP】** to see below

LNC	Backup	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
						WARNING	

1. Select : Input or Output

☐ Input from USB
☐ Output to USB

Select	Item
<input type="checkbox"/>	Macro Program (macro000.mac~macro099.mac;macro0000.str~macro0002.str;macro1000.str~macro1041.str)
<input type="checkbox"/>	IO Map (aiomap.ini;iomap.ini)
<input type="checkbox"/>	System Parameter (param_define.txt;param_op.dat;param_hwif.dat;param_hmi.dat;param_int.dat;param_mot.dat;plc_save.dat;recon.dat;coord.dat)
<input type="checkbox"/>	Ladder (cnc.lcod;cnc.lmlc;cnc.lpar;cnc_plc_0000.str~cnc_plc_0002.str;cnc_plc_1000.str~cnc_plc_1041.str)
<input type="checkbox"/>	Operator Layer (user.bin)
<input type="checkbox"/>	Machine Information (machine.info)

0 %

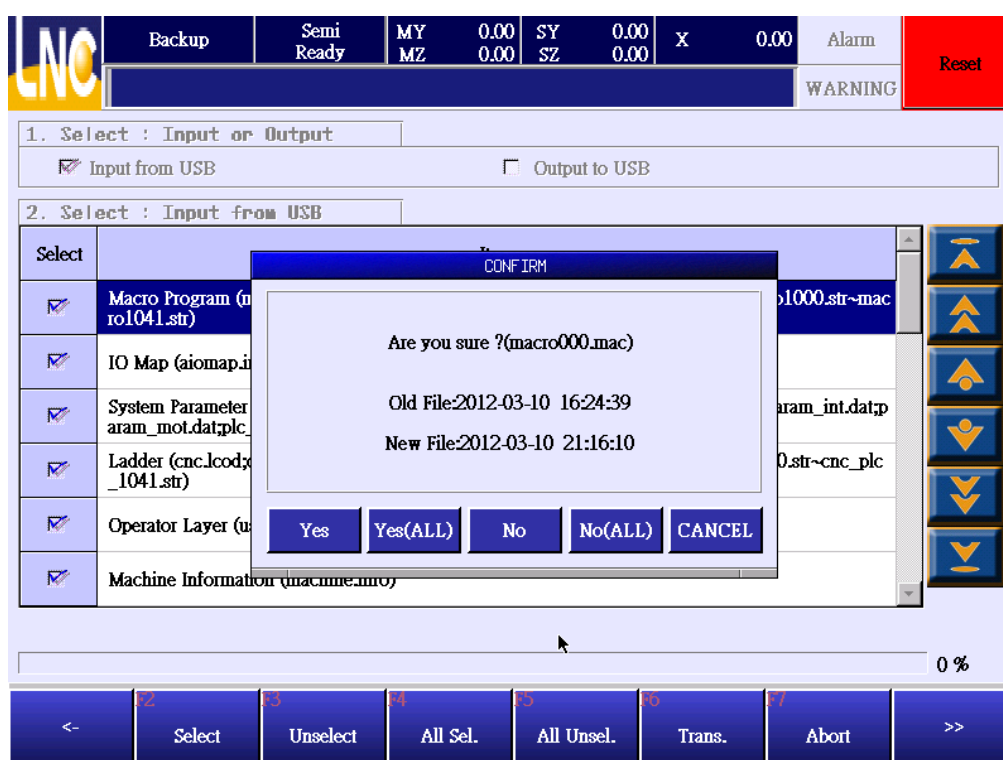
<	F2 Select	F3 Unselect	F4 All Sel.	F5 All Unsel.	F6 Trans.	F7 Abort	>>
---	-----------	-------------	-------------	---------------	-----------	----------	----

2. Insert USB to controller.
3. Click **【input from USB】** , if controller can not read this USB, there will be a message to show the USB insert fail. That means controller did not accept this model's USB ; If the loading is success, you will see details as below.

The screenshot displays the LNC-R6000 control interface. At the top, a status bar shows 'Backup', 'Semi Ready', and coordinate values: MY 0.00, MZ 0.00, SY 0.00, SZ 0.00, X 0.00. An 'Alarm' indicator is present, and a 'Reset' button is on the right. A 'WARNING' message is shown in a red box. Below this, a tabbed interface has 'Input from USB' selected, indicated by a red box. The main area is titled '2. Select : Input from USB' and contains a list of items to be loaded from the USB. The items are: Macro Program (macro000.mac~macro099.mac;macro0000.str~macro0002.str;macro1000.str~macro1041.str), IO Map (aiomap.ini;iomap.ini), System Parameter (param_define.txt;param_op.dat;param_hwif.dat;param_hmi.dat;param_int.dat;param_mot.dat;plc_save.dat;recon.dat;coord.dat), Ladder (cnc.lcod;cnc.lmlc;cnc.lpar;cnc_plc_0000.str~cnc_plc_0002.str;cnc_plc_1000.str~cnc_plc_1041.str), Operator Layer (user.bin), and Machine Information (machine.info). A progress bar at the bottom shows 0%. The bottom of the screen features a row of function buttons labeled F2 through F7: Select, Unselect, All Sel., All Unsel., Trans., Abort, and a right arrow button.

Select	Item
<input type="checkbox"/>	Macro Program (macro000.mac~macro099.mac;macro0000.str~macro0002.str;macro1000.str~macro1041.str)
<input type="checkbox"/>	IO Map (aiomap.ini;iomap.ini)
<input type="checkbox"/>	System Parameter (param_define.txt;param_op.dat;param_hwif.dat;param_hmi.dat;param_int.dat;param_mot.dat;plc_save.dat;recon.dat;coord.dat)
<input type="checkbox"/>	Ladder (cnc.lcod;cnc.lmlc;cnc.lpar;cnc_plc_0000.str~cnc_plc_0002.str;cnc_plc_1000.str~cnc_plc_1041.str)
<input type="checkbox"/>	Operator Layer (user.bin)
<input type="checkbox"/>	Machine Information (machine.info)

4. Select the file you want to upload, use F2~F5 or choose directly on the page, the file that you chose will be upload. You can click again to cancel selection. °
5. After selection, press 【F6 to start uploading】. If you want to cancel the uploading, you can press 【F7 cancel uploading】. We recommend you not to do this while uploading in order to ensure the integrity of the backup data.
6. If there is previous backup file in this controller, system will ask if you want to rewrite old file, we recommend you to press 【yes to all】 to make the integrity of the backup data.

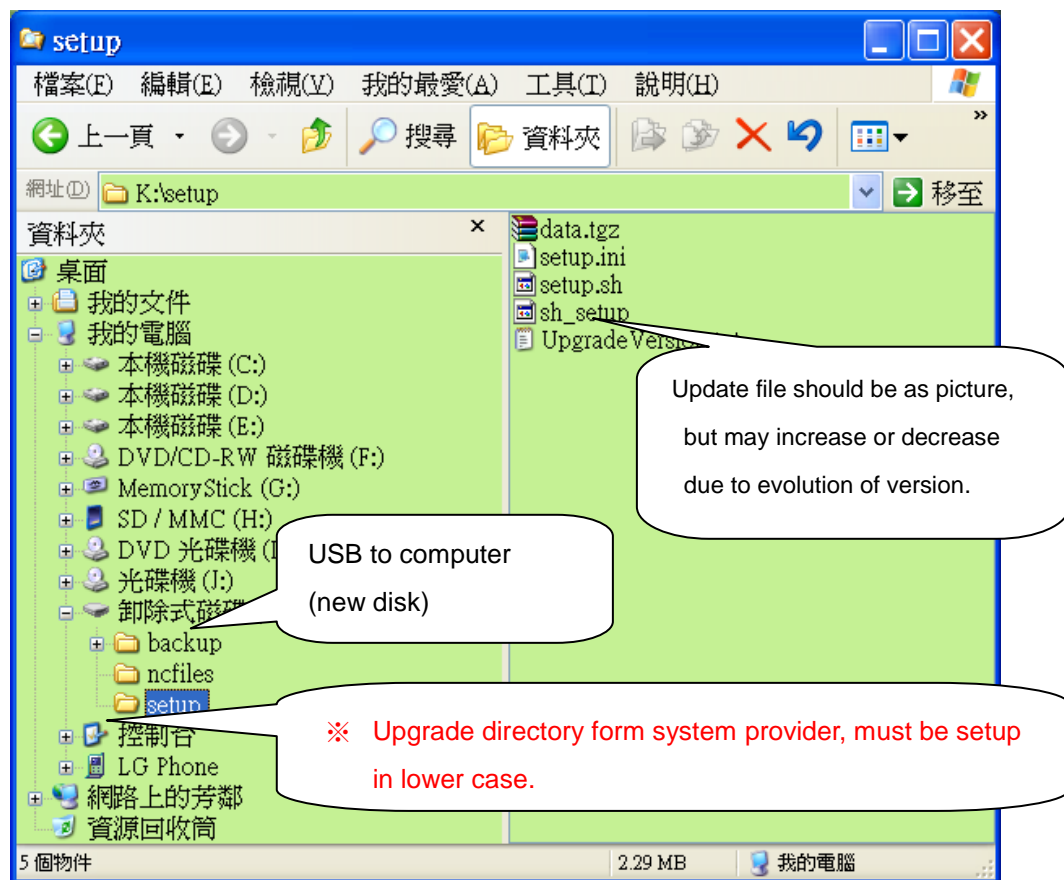


7.8 Upgrade

You may need to have upgrade when the current operating system has error or this system has new software functions.

Notice :

1. Currently only support 4GB and below USB drive.
2. Save the new upgrade file from system provider into USB setup directory, such as below.



Operation :

1. Go to **【SYSTEM】** , press **【UPGRADE】** to see below.

LNC	Upgrade	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
						WARNING	

1. Confirm Device

Pls Click OK after USB is plugged-in.

2. Confirm Upgrade Version

3. Copy File

0 %

4. Restart

<	F2 OK	F3 Cancel					
---	-------	-----------	--	--	--	--	--

2. Insert the USB with upgrade file into controller.
3. Press **【F2 OK】** , if controller can not read this USB, there will be a message to show the USB insert fail. If the loading is ok, system will show upgrade file version number, you can check if the version number is correct before loading.

LNC	Upgrade	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
						WARNING	

1. Confirm Device

Pls Click OK after USB is plugged-in.

2. Confirm Upgrade Version

Std_03.01.45

3. Copy File

0 %

4. Restart

<- F2 OK F3 Cancel

4. After confirming, press **【F2 OK】**, system will copy the upgrade file into controller data buffer area. After copy, you will need to press EMG button first and reboot the system.

LNC	Upgrade	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
						WARNING	

1. Confirm Device

Pls Click OK after USB is plugged-in.

2. Confirm Upgrade Version

Std_03.01.45

3. Copy File

100 %

4. Restart

Click OK to Restart & Install New Versio

<- F2 OK F3 Cancel

5. You will need to reboot after upgrading, then the upgrade is complete.
6. While upgrading, you can press **【F3 cancel】** to cancel before rebooting.

7.9 Operator authority

Set up authority for different users with different operation functions. Level 13 users can see level 13~29 and 99 operation page, but can not see higher level 12 page.

LNC		Operator	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
							WARNING	
Current User 1								
NO.	Limit	Page Name						
1	99	Home						
2	99	Action						
3	99	Teach Mode						
4	99	Infomation						
5	99	Parameter						
6	99	Upgrade						
7	99	FileManage						
8	99	Transfer						
9	99	Stack						

<-
F2 Backup
F3 Upgrade
F4 Operator
F5 I/O
F6 Password
F7 TP Cali
>>

7.10 I/O

Show current system I、O、C、S、A status.

LNC

IO

Semi Ready

MY MZ

0.00 0.00

SY SZ

0.00 0.00

X

0.00

Alarm

Reset

WARNING

I Bits

	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	1	1	1	1
10	1	1	1	1	1	1	0	0	1	1
20	0	0	0	0	1	0	0	0	0	0
30	0	1	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0
60	1	1	0	1	0	0	0	0	0	0

O Bits

	0	1	2	3	4	5	6	7	8	9
0	0	1	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
40	0	0	1	1	1	1	1	0	0	0
50	0	0	0	0	0	0	0	0	0	0
60	1	1	1	1	0	1	0	0	0	0

A Bits

	0	1	2	3	4	5	6	7	8	9
0	1	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	1	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0

C Bits

	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0

S Bits

	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0

<

Backup

Upgrade

Operator

I/O

Password

TP Cali

>>

7.11 Change password

Notice :

Here you can only change current user's password. If you want to change user user level, refer to user change chapter.

Description :

Go to 【MAINTAIN】 , press 【PASSWORD】 to see below.

LNC	Password	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
WARNING							
Current User 1							
User		1					
Password							
New password							
Password confirm							
OK							
<	F2 Backup	F3 Upgrade	F4 Operator	F5 I/O	F6 Password	F7 TP Cali	>

1. Here can only show current user level, you can not do any change here.
2. Then input current password, new password and confirm again new passwordd. Password will be shown as *.

LNC	Password	Semi Ready	MY 0.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
	WARNING						

Current User 1

Keyboard

HOME											END	CANCEL
1	2	3	4	5	6	7	8	9	0	Backspace		
Q	W	E	R	T	Y	U	I	O	P	Del		
A	S	D	F	G	H	J	K	L	Space			
Z	X	C	V	B	N	M	_	OK				

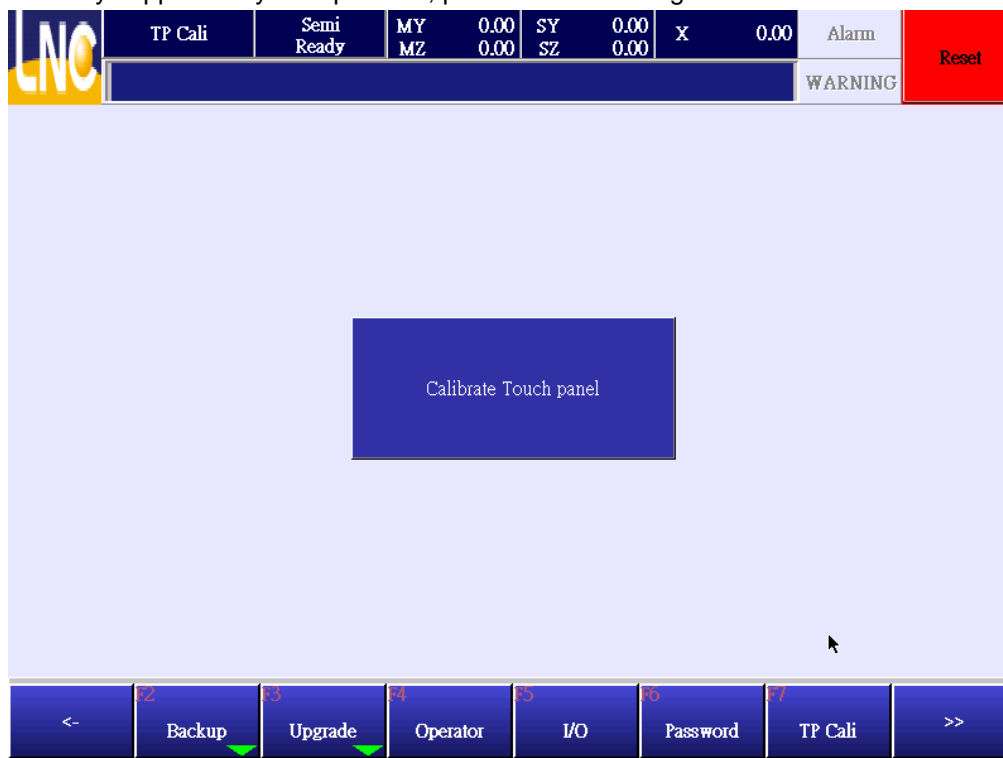
<-	F2 Backup	F3 Upgrade	F4 Operator	F5 I/O	F6 Password	F7 TP Cali	>>
----	--------------	---------------	----------------	-----------	----------------	---------------	----

3. Password must be your current one.
4. New password and confirm password should be the same. If there are different, the setting will be fail.

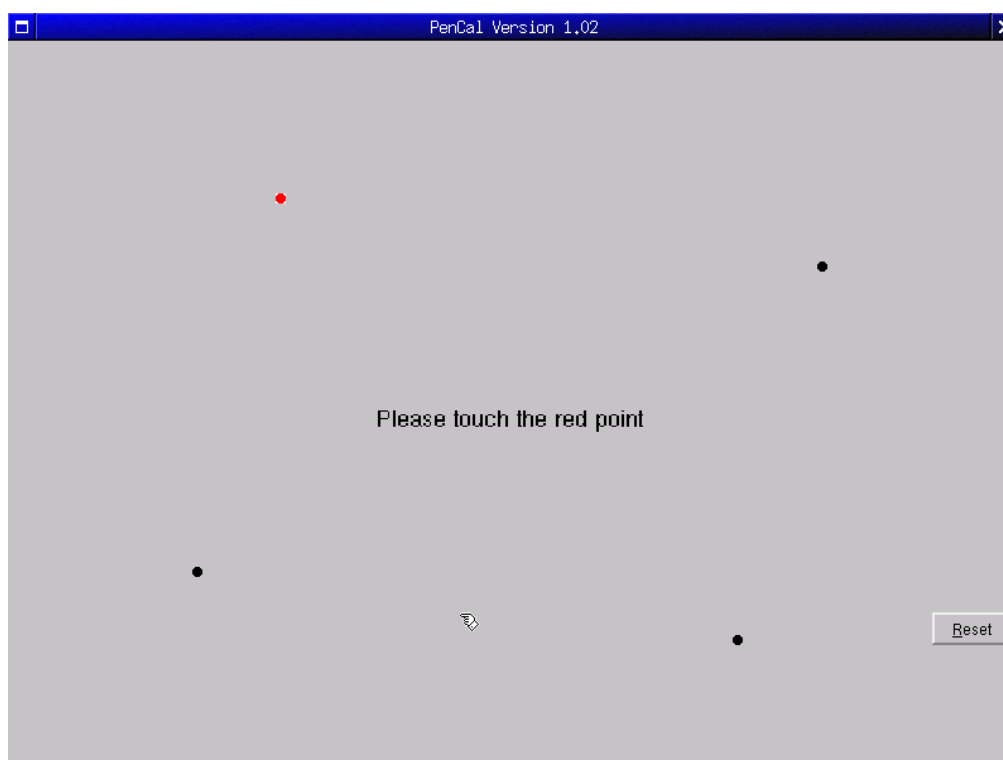
7.12 Monitor tuning

When monitor touching is not precise, you can use this function to do tuning.

1. This function only support to system provider, press monitor tuning to continue.



2. Press Reset, and power off to reboot.



3. After rebooting, if the touch is still not precise, you can go to tuning page to retune again. At this time, you can use tough pen to touch the little red point, after touch these 4 points in order, power off and reboot again.

8 Alarm record

8.1 Alarm

Show current alarm content.

	Alarm	Manual Ready	MY 200.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
	WARNING						
No	Time	Comment					
110001	2012-03-13 20:35:26	M-Arm C+ Wait Time Overrun					
							<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>
<-	F2 Alarm	F3 Warning	F4 History	F5 OP History			

8.2 Warning

Show current warning content.

	Warning	Manual Ready	MY 200.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
	WARNING						
No	Time	Comment					
120000	2012-03-13 20:36:17	EMG Button is Triggered test					

<-

F2 Alarm

F3 Warning

F4 History

F5 OP History

8.3 Alarm/warning history

Show record of alarm and warning.

	History	Manual Ready	MY MZ	200.00 0.00	SY SZ	0.00 0.00	X	0.00	Alarm	Reset
	WARNING									
	No	Date	Comment							
WARNING	120000 PLC	2012-03-13 20:36:57	EMG Button is Triggered test							
WARNING	120000 PLC	2012-03-13 20:36:55	EMG Button is Triggered test							
WARNING	120000 PLC	2012-03-13 20:36:51	EMG Button is Triggered test							
WARNING	120000 PLC	2012-03-13 20:36:17	EMG Button is Triggered test							
Alarm	110001 PLC	2012-03-13 20:35:26	M-Arm C+ Wait Time Overrun							
Alarm	110010 PLC	2012-03-13 20:33:55	Both main arm wrist vertical signal and main arm wrist horizontal sig							
Alarm	110010 PLC	2012-03-13 20:20:38	Both main arm wrist vertical signal and main arm wrist horizontal sig							
<-	F2 Alarm	F3 Warning	F4 History	F5 OP History						

8.4 Operation history

Show operator's total record.

	OP History	Manual Ready	MY 200.00 MZ 0.00	SY 0.00 SZ 0.00	X 0.00	Alarm	Reset
							WARNING
Date	Time						
2012-03-13 20:36:15	DI Map DI22:CardSet 18->108						
2012-03-13 20:36:10	Current User 99->10						
2012-03-13 20:35:22	Mode Home->Manual						
2012-03-13 20:33:52	Enter the system, Software Version:03.01.45						
2012-03-13 20:33:52	Status Error->Ready						
2012-03-13 20:33:52	Mode Ready->Home						
2012-03-13 20:33:15	TP Cali Calibrate Touch panel End						
<-	F2 Alarm	F3 Warning	F4 History	F5 OP History			

9 Switch users

1. If end-user wants to edit program, he needs to change level to 20~29.
2. If machine maker wants to do maintenance, he needs to change to 10~19.
3. User 99 can only open file and do processing.
4. Default level is 99.
5. Every users can have his own password, password setting method refer to MANTAIN>CHANGE PASSWORD chapter.

User	Manual Ready	MY 200.00	SY 0.00	X 0.00	Alarm	Reset
					WARNING	

Current User 10

User

Password

OK

F1 Home	F2 Manual	F3 Auto	F4 Teach	F5 Parameter	F6 Maintain	F7 Alarm	F8 User
---------	-----------	---------	----------	--------------	-------------	----------	---------

Level should be as below

User 0~9 : System provider

User 10~19 : Machine maker, default password=1111.

User 20~29 : End-user, but can edit program file, default password=2222.

User 99 : can only open file and do processing, no need to use password here, only need to input user and press OK.

10 Parameter

10.1 General parameter

Parameter 7999 running mode[0:General;1:trial]

Range : 0~1 °

0 : under auto mode, open mold should have OFF→ON signal, then arm will go down to pick goods.

1 : under auto mode, open mold only have ON signal, then arm will go down to pick goods. This is for tuning mode.

Tuning mode as below :

- a. Open mold only have ON signal, robot can run, no need to have upper side trigger.
- b. Ignore I/Ostep delay time.
- c. When system reboot or return home, this parameter will return to 0.

Parameter 8000.2 the main arm posture when going into mold[0:vertical;1:horizontal]

Range : 0~1 °

Check if the posture is not corresponding to setting when going into mold, trigger alarm.

0 : The posture to go into mold should be vertical.

1 : The posture to go into mold should be horizontal.

Parameter 8000.10 main arm posture when standby[0:vertical;1:horizontal]

- a. The rotating posture when main arm return to standby point.
- b. If posture is not the same with parameter, stop processing.

Parameter 8004 parts drop check while moving [0:check for whole travel;1:check in mold 2:not check]

Range : 0~2 °

Check timing for drop parts while picking goods with vacuum/gripper.

0 (Check for whole travel) : continue checking when picking to placing.

1 (Check in mold) : only check while X axis in mold area.

2 (Not check) : do no check if goods drop.

Parameter 8005 standby vertically[0:N/A;1:Yes]

If vertical standby.

0 : N/A

Main arm : limit location is the max. distance to go down in mold 『 (P8): MZ axis to go in/out safety height 』

Sub arm : limit location is the max. distance to go down in mold 『 (P8): SZ axis to go in/out safety height 』

1 : Yes

Main arm : limit location is the max. distance to go down in mold 『 (P4): the height of MZ axis to close mold safely 』

Sub arm : limit location is the max. distance to go down in mold 『 (P4): the height of SZ axis to close mold safely 』

Parameter 8010.1 check main arm posture when going out [0:Not check;1:check]

Range : 0~1 °

In order to check the program, you can set up parameter to check if moving posture correct or not while X axis in mold.

0 : do not check °

1 : check if correct, refer to parameter 8010.2 to see posture setting(vertical, horizontal).

Parameter 8010.2 check main arm posture when going out [0:vertical;1:horizontal]

Range : 0~1 °

Check if moving posture correct or not while X axis in mold. This only valid when parameter 8010.1=1

0 : vertical

1 : horizontal

Parameter 8050.2 safety door status when vacuumer/gripper takes fail[0:N/A;1:close door and continue]

When vacuumer/gripper takes fail, it will trigger warning and stop machine. Under general situation, users need to press [cycle start] to run again. In order to speed up processing, users can close safety door one time, this action is equivalent to pressing the[cycle start] button.

Parameter 8050.6 middle plate[0:Yes;1:N/A]

a. When machine do not use middle plate function, make parameter to be 『1 : N/A』

b. When using middle plate function, check below info and run.

- If wiring correct.
- If DI Map setting correct.

Parameter 20001.2 not using robot[0:N;1:Y]

Range : 0~1.

If output not using robot signal.

0 : N

1 : Y

Parameter 48401 monitor sleep time setting[unit:minute]

Range : 0~999 °

When monitor is not under operation, go to sleep mode.

0 : N/A

1~999 : delay time setting

10.2 Common parameter→Mutual parameter

Parameter 8050.0 in mold, Z axis in mold to return to standby point[0:N/A;1:Yes]

Range : 0~1

Return standby point function is easy, but when robot is going down in mold, it has risk to scratch mold, so default setting is that you can not return to standby. You need to move the robot arm to certain safe height and then return standby point.

Below is the order to return standby point :

Arm location

- In mold : pull axis→vertical axis→turning→horizontal axis.
- No in mold : vertical axis → turning → pull axis → horizontal axis.

Parameter 8050.3 run and check injection molding machine auto signal [0:check;1:not check]

If you run auto mode, you will need to check injection molding machine auto signal.

Parameter 8050.3 run and check injection molding machine auto signal [0:check;1:not check]

Range : 0~1 ◦

This function is to set up the check system for injection molding machine auto signal and then robot to run auto mode .

machine did not have auto signal, set up parameter= 1 : Not check.

0 : need to check

1 : no need to check

Parameter 8050.4 out of mold, if z axis did not go to up limit, can not return to standby[0:N/A; 1:Yes]

Range : 0~1 ◦

Return standby point function is easy, but when robot is at safe area out of mold when robot goes down to pick goods, it has risk to collide with other parts, so default setting is that you can not return to standby. You need to move the robot arm to certain safe height and then return standby point, set up parameter to be 1 : Yes

Below is the order to return standby point :

Arm location

- In mold : pull axis → vertical axis → turning → horizontal axis
- Not in mold : vertical axis → turning → pull axis → horizontal axis

Parameter 8070 return standby point speed [unit:mm/Min]

Range : 10~50000 ◦

Press 【return standby】 , the speed for every axis to go to this point.

Parameter 8071 safe door status in auto mod[0:door close, press cycle start to continue;1:door close and continue working;2:stop immediately]

Range : 0~2

Under auto mode, open safety door, robot will...

0 : door close, press cycle start to continue → when opening safe door, alarm will stop immediately, when close the door, you will need to press cycle start to continue the next movement.

1 : door close and continue working → when opening safe door, alarm will stop immediately. But when closing safety door, robot will continue to move later movement.

2 : Stop immediately → when open safety door, alarm will stop immediately (the same to reset button) , you will need to return robot to standby point and repress cycle start button to continue.

※ If there is customers who want to cancel this safety door function, you will need to emphasize the risk, if the customer does not accept this, please recommend customer to short connect the safety door signal.

Parameter 8072 buzzer ring time[0~9999,unit:second]

Range : 0~9999

If you think the buzzer is too noisy, you can set up the time for buzzer to shut down.

0 : buzzer continued to do output, do not have auto shut down function.

Not 0 : for how many seconds, buzzer to shut down, until next alarm to ring.

Parameter 8073 alarm light flash interval time [0~99 , unit : 0.1second]

Range : 0~99

The setting of alarm light flash interval time.

0 : always on, if the alarm light has flash function, set up parameter=0.

Not 0 : for how many seconds, light to shut down or turn on period.

Parameter 8074 buzzer flash interval time [0~99 , unit : 0.1second]

Range : 0~99

The setting of buzzer to ring on and off interval time.

0 : always on, if the buzzer has on and off function, set up parameter=0.

Not 0 : for how many seconds, buzzer to shut down or turn on period.

Parameter 9001.0 axis movement safety switch check setting [0:Not check;1:check]

Range : 0~1 °

When moving axis manually, if need to check right side safety switch on teach pendant.

0 : Not check °

1 : Check °

Parameter 9001.1 general O point safety switch check setting[0:Not check;1:check]

Range : 0~1 °

When manual output or close robot air cylinder, if need to check right side safety switch on teach pendant. Air cylinder movement has vertical, horizontal, sub-arm.

0 : Not check °

1 : Check °

Parameter 9001.2 vacuumer/gripper O point safety switch check setting[0:Not check;1:check]

Range : 0~1 °

When manual output or close vacuumer or gripper, if need to check right side safety switch on teach pendant.

0 : Not check °

1 : Check °

Parameter 9001.3 peripheral devices O point safety switch check setting[0:Not check;1:check]

Range : 0~1 °

When manual output or close peripheral devices, if need to check right side safety switch on teach pendant

0 : Not check °

1 : Check °

Parameter 9001.4 run/stop safety switch check setting [0:Not check;1:check]

Range : 0~1 °

When teach or auto mode run or stop, if need to check right side safety switch on teach pendant

0 : Not check °

1 : Check °

Parameter 9030 robot I/O alarm delay time[unit:minute]

Range : 0~9.9 °

When output vertical/horizontal/robot air cylinder movement, the corresponding input arrive signal did not trigger, system will send alarm.

- Recommend is 3 second.

Parameter 9037 Movable max.position & offset of limit position in manual mode[unit:mm]

Range : 0~100.00

0 : when moving manually, you can move to soft limit or restricted location to trigger soft limit warning.

Not zero value : when in manual movement, you can only move to soft limit or restricted location to minus

parameter setting value, then this is the max.movable location to prevent trigger soft limit warning.

EX : the max movement position of horizontal axis in mold is 100, min. is -20, offset is 5, then arm can move between -15~95 to prevent trigger soft limit warning.

Parameter 9039 open mold complete, delay for how long to do down[unit:ms]

Range : 0~10000 (max.10 second)

System may receive open mold complete signal, but the injection molding machine still not opens up completely, therefore you can set up ON delay time, then robot will go down in mold to prevent collision.

Parameter 48056 editable distance range under auto mode [unit:mm]

Range : 0~999999.999

If you want to do position fine tune under auto mode, but you are afraid that the tuning value is too big to have collision. You can set this parameter to define the range.

Parameter 48057 machine type[0:5 servo;1:3 servo]

Range : 0~1

Set up machine type.

Parameter 48091 interval between main arm and sub-arm pull out axis after returning home[unit:mm]

Range : 0~999999.999

- This parameter is only valid for 5 servo axis robot.
- The distance between main pull arm and sub pull arm after returning home and 2 pull out axis standby point is zero.
- If this parameter setting is too big may lead wrong range judgement to make main arm and sub-arm pull arm to collide.

Parameter 48402 delay time when monitor sleep to wake [unit:second]

Range : 0~999 °

When monitor in sleep mode, you can touch monitor to wake it up, but there will be a delay time. You can set up this parameter to define the delay. This delay can prevent wrong operation while monitor is still black, recommend setting is 3 second.

Parameter 50012 arrive check range default[unit:mm]

Range : 0~999999.999 °

When point to point, range is smaller than parameter setting, you can run next command. If this parameter setting is too small, the movement speed will be too slow, recommend setting is 30mm.

Parameter 60172 movement max. speed[unit:mm/Min]

Range : 0.001~999999.999 °

The max. movement speed(program speed is 100% and run speed is 100%). But the exact speed will need to refer to exact situation under auto mode (Parameter 60214~60218) .

10.3 Common parameter → Axis parameter

Parameter 48011 、 48013 、 48015 、 48017 、 48019 xx axis soft limit(+)[unit:mm]

Range : -999999.999~999999.999 °

After returning home, max. (+)distance that axis can move

Parameter 48012、48014、48016、48018、48020 xx axis soft limit(-) [unit:mm]

Range : -999999.999~999999.999 °

After returning home, max. (-)distance that axis can move

Parameter 48048~48052 xx axis max.speed manually[unit:mm/min]

Range : 1000~200000 °

When moving axis manually,100% speed.

Parameter 60214~60218 xx axis max.speed[unit:mm/Min]

Range : 0.1~999999.999 °

The max. speed to move under auto mode. Because the speed for every axis is not the same. You can use this parameter to set up max. speed to prevent motor overload.

Parameter 71200~71204 xx axis linear ACC/DEC time[unit:ms]

Range : 0~2000 °

Linear ACC/DEC under auto mode.

Parameter 71232~71236 xx axis S shape ACC/DEC time [unit:ms]

Range : 0~2000 °

S shape ACC/DEC under auto mode.

Parameter 77064~77068 xx axis return home offset[unit:mm]

Range : -999999.999~999999.999 °

If the axis position is wrong after retuning home(may be (+) or (-)) to lead the movement insufficient, you can use this parameter to move axis home position.

Parameter 77097.0~77097.4 xx axis return home direction(0:+;1:-)

Range : 0~1 °

Choose axis to go (+) or (-) to return home.

Parameter 77132~77136 xx axis return home section 1 speed[unit:mm/Min]

Range : 1.000~999999.999 °

The moving speed to find home dog when returning home. When the speed is too slow, you can make this parameter bigger, but not to hit home dog.

Parameter 77164~77168 xx axis return home section 2 speed [unit:mm/Min]

Range : 1.000~999999.999 °

The moving speed to find motor Z signal when leaving home dog after returning home. This value can not be too big, otherwise you may not find motor Z signal.

11 Troubleshooting

11.1 Alarm troubleshooting

Alarm 110000 notify main arm vertical over delay waiting time

- (1) Main arm vertical check signal did not trigger, check if switch signal is ok.
- (2) Check common parameter → mutual parameter 9030 setting.
- (3) Check if air is not enough to stop this movement.

Alarm 110001 notify main arm horizontal over delay waiting time

- (1) Main arm horizontal check signal did not trigger, check if switch signal is ok
- (2) Check common parameter → mutual parameter 9030 setting
- (3) Check if air is not enough to stop this movement.

Alarm 110002 Z axis is not in safety height, move to certain safe height then return to standby point

- (1) Z axis is not in safe height, move manually to safety position and return to standby point.
- (2) Inside mold, arm is not at safe height, but you still want to go home, set u parameter 8050.0 to be 1. (inside mold, Z axis can return home when [0:N/A; 1:Yes])
- (3) Outside of mold, arm is not at safe height, can not return home, set u parameter 8050.4 to be 0. (outside of mold, if Z axis did not move to up limit, can not return home [0:N/A; 1:Yes])

Alarm 110004 I/O communication errors

I/O card communication error will make I/O stop.

- (1) Reboot to check if working.
- (2) If the trouble is the same, check I/O card or relating hardware.
- (3) Check cables.
- (4) Check if there is any strong interference.

Alarm 110005 the posture to go in mold is vertical, but vertical limit did not trigger

- (1) Check is the posture is vertical when going in mold.
- (2) Check main arm limit switch.
- (3) If you want to set up the posture to be horizontal, set up parameter 8000.2 (main arm posture [0:vertical; 1:horizontal]) to be 1.

Alarm 110006 the posture to go in mold is horizontal, but horizontal limit did not trigger

- (1) Check is the posture is horizontal when going in mold.
- (2) Check main arm limit switch.
- (3) If you want to set up the posture to be horizontal, set up parameter 8000.2 (main arm posture [0:vertical; 1:horizontal]) to be 0.

Alarm 110008 posture is not vertical, stop moving horizontally.

- (1) When arm is in mold, the moving posture need to be vertical.
- (2) If you want to cancel check function, set up general parameter 8010.1 to be 0.
- (3) If you want to change the check posture to be horizontal, set up parameter 8010.2 to be 1.

Alarm 110009 posture is not horizontal, stop moving horizontally.

- (1) When arm is in mold, the moving posture need to be horizontal.

- (2) If you want to cancel check function, set up general parameter8010.1 to be 0.
- (3) If you want to change the check posture to be vertical, set up parameter8010.2 to be 0.

Alarm 110010 main arm posture is not vertical nor horizontal, output correct posture manually

After entering system, vertical and horizontal signal did not trigger, in order to prevent error, output arm posture manually

Alarm 110011 main arm vertical and horizontal signal trigger together, check if vertical and horizontal sensor error.
Check if both limit sensors have errors.

Alarm 110012 sub-arm vertical and horizontal signal trigger together, check if sensor error

Check if limit sensor has error.

Alarm 110013 open mold complete and close mold complete signals trigger together, check if injection molding machine signal error.

Check open mold and close mold complete signal from injection molding machine.

Alarm 110014 vertical check signal flash, check if turning device or low air.

- (1) When arm is vertical, but there is no vertical signal. The reason may be low air or high vibration.
- (2) Turning device may have error or bad sensor.

Alarm 110015 horizontal check signal flash, check if turning device or low air.

- (1) When arm is horizontal, but there is no horizontal signal. The reason may be low air or high vibration. °
- (2) Turning device may have error or bad sensor.

Alarm 110016 open mold complete, but middle plate signal did not trigger

Under open mold complete, but middle plate check signal did not trigger.

- (1) Check if middle plate check signal is general.
- (2) Check DI Map setting.
- (3) If you do not use middle plate check function, set up parameter8050.6 to be1.

Alarm 110017 complete home return before returning standby point

After returning home, the movement will be correct. So before go to standby point, you will need to return home.

Alarm 110018 there is no Y axis safety confirm signal out of mold when going down ,check signal

When axis moves to safety area out of mold, the safe signal out of mold should be ON, then arm can go down. When there is no this signal, even the position is in the safe area, arm still can not go down. Therefore if you want to enlarge safe area out of the mold, you can enlarge safety area setting and extended the length of the iron sheet.

Alarm 110025 notify sub-arm horizontal over delay waiting time

- (1) Sub-arm horizontal check signal did not trigger, check switch signal is ok.
- (2) Check common parameter→mutual parameter 9030 setting.
- (3) Check if air low to stop movement.

Alarm 110027 notify sub-arm vertical over delay waiting time

- (1) Sub-arm vertical check signal did not trigger, check switch signal is ok.
- (2) Check common parameter→mutual parameter 9030 setting.
- (3) Check if air low to stop movement.

Alarm 110036 air low

- a. check if air pressure is not enough.
- b. After clearing, press **【stop】** to clear alarm.

Alarm 110037~110041

MY axis servo drive error

MZ axis servo drive error

SY axis servo drive error

SZ axis servo drive error

X axis servo drive error

Servo drive has errors, check error codes of drives and refer to driver manual.

Alarm 110042~110051

MY axis over soft limit(+)

MZ axis over soft limit(+)

SY axis over soft limit(+)

SZ axis over soft limit(+)

X axis over soft limit(+)

MY axis over soft limit(-)

MZ axis over soft limit(-)

SY axis over soft limit(-)

SZ axis over soft limit(-)

X axis over soft limit(-)

- a. Trigger axis soft limit(+) under auto mode.
- b. When there is alarm, check if this movement command is over soft limit setting or not.
- c. Press **【stop】** to clear alarm.
- d. Switch to manual mode, move to (-) direction to clear warning.

Alarm 110052~110061

MY axis trigger hard limit(+)

MY axis trigger hard limit(-)

MZ axis trigger hard limit(+)

MZ axis trigger hard limit(-)

SY axis trigger hard limit(+)

SY axis trigger hard limit(-)

SZ axis trigger hard limit(+)

SZ axis trigger hard limit(-)

X axis trigger hard limit(+)

X axis trigger hard limit(-)

- a. Confirm alarm axis direction.
- b. Press **【stop】** to clear alarm.
- c. Switch to manual mode, move to reverse direction to clear warning.
- d. Check if hardware limit sensor.

Alarm 410160 Tangent in position check timeout

- a. Make note of **【MAINTAIN】** → **【SYSTEM】** pulse and total command servo lag value(Pluse).

- b. Check 【MANUAL】→【Parameter】→【machine parameter】→【mutual parameter】arrive check range setting value, setting can not smaller than 3mm.
- c. Check program line movement setting range, setting can not smaller than 3mm.
- d. Press EMG, return home, run again.
 - (target position – current position) < arrive check range
 - Under auto mode, every movement command will check the distance between exact position and target position is smaller than arrive range setting. If current position cannot meet check range, this alarm will be triggered.

Alarm 416400 axis 1 command and feedback over max. lag (Axis 1 Servo Lag Over Range)

- b. Y1 axis servo lag is over than parameter71400 setting, trigger this alarm 『 Axis 1 max. command and feedback lag(Pulse) 』
- c. Make a record of 【MAINTAIN】→【SYSTEM】 , Y1 axis servo lag value(Pulse) and Vcmd servo lag value.
- d. Press EMG to clear value, move Y1 manually, check if there is servo lag.
- e. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416401 axis 2 command and feedback over max. lag (Axis 2 Servo Lag Over Range)

- a. Z1 axis servo lag is over than parameter71401 setting, trigger this alarm 『 Axis 2 max. command and feedback lag(Pulse) 』
- b. Make a record of 【MAINTAIN】→【SYSTEM】 , Z1 axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move Z1 manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416402 axis 3 command and feedback over max. lag (Axis 3 Servo Lag Over Range)

- a. Y2 axis servo lag is over than parameter71402 setting, trigger this alarm 『 Axis 3 max. command and feedback lag(Pulse) 』
- b. Make a record of 【MAINTAIN】→【SYSTEM】 , Y2 axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move Y2 manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416403 axis 4 command and feedback over max. lag (Axis 4 Servo Lag Over Range)

- a. Z2 axis servo lag is over than parameter71403 setting, trigger this alarm 『 Axis 4 max. command and feedback lag(Pulse) 』

- b. Make a record of 【MAINTAIN】 → 【SYSTEM】 , Z2 axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move Z2 manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416404 axis 5 command and feedback over max. lag (Axis 5 Servo Lag Over Range)

- a. X axis servo lag is over than parameter71404 setting, trigger this alarm 『 Axis 5 max. command and feedback lag(Pulse) 』
- b. Make a record of 【MAINTAIN】 → 【SYSTEM】 , X axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move X manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416432 axis1 rest, command and feedback over max. lag (Axis 1 Servo Lag Over Range in Standstill Status)

- a. Y1 axis servo lag is over than parameter71432 setting, trigger this alarm 『 Axis 1 rest, command and feedback max.lag(Pulse) 』
- b. Make a record of 【MAINTAIN】 → 【SYSTEM】 , Y1 axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move Y1 manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416433 axis 2 rest, command and feedback over max. lag (Axis 2 Servo Lag Over Range in Standstill Status)

- a. Z1 axis servo lag is over than parameter71433 setting, trigger this alarm 『 Axis 2 rest, command and feedback max.lag(Pulse) 』
- b. Make a record of 【MAINTAIN】 → 【SYSTEM】 , Z1 axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move Z1 manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416434 axis 3 rest, command and feedback over max. lag (Axis 3 Servo Lag Over Range in Standstill Status)

- a. Y2 axis servo lag is over than parameter71434 setting, trigger this alarm 『 Axis 3 rest, command and

feedback max.lag(Pulse) (Pulse) 』

- b. Make a record of 【MAINTAIN】 → 【SYSTEM】 , Y2 axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move Y2 manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416435 axis 4 rest, command and feedback over max. lag (Axis 4 Servo Lag Over Range in Standstill Status)

- a. Z2 axis servo lag is over than parameter71435 setting, trigger this alarm 『 Axis 4 rest, command and feedback max.lag(Pulse) (Pulse) 』
- b. Make a record of 【MAINTAIN】 → 【SYSTEM】 , Z2 axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move Z2 manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

Alarm 416436 axis 5 rest, command and feedback over max. lag (Axis 5 Servo Lag Over Range in Standstill Status)

- a. X axis servo lag is over than parameter71436 setting, trigger this alarm 『 Axis 5 rest, command and feedback max.lag(Pulse) (Pulse) 』
- b. Make a record of 【MAINTAIN】 → 【SYSTEM】 , X axis servo lag value(Pulse) and Vcmd servo lag value.
- c. Press EMG to clear value, move X manually, check if there is servo lag.
- d. If there is still have servo lag, check below items.
 - Check if servo cable is lose or braking.
 - Check if drive rigidity parameter setting too low.
 - Change motor or drives, confirm if there is error or not.
 - Change controller, confirm if there is error or not.

11.2 Warning troubleshooting

Warning 12000 EMG trigger

- Release EMG button on teach pendant.
- Release EMG button on injection molding machine.

Warning 12002 There is no open mold complete signal, arm can not move down inside mold.

- In mold, if arm did not have open mold complete signal, arm can not go down.
- When arm goes into to mold, open mold complete signal will be off and trigger this warning.

Warning 12003 Robot not in safe area, stop move down

- The position that arm goes down is not the position inside mold or outside mold.
- Check if safe height too small, can not smaller than 10mm.

Warning 12004 Robot not in safe area, stop move out

- When robot move down to mold, stop move out.
- Move to certain safe height and move out.

Warning 12005 Processing parts meet cycle times

Go to auto cycle monitor page, make acceptable parts to be 0.

Warning 12007 Maintain time arrive, do machine maintenance

- Run hint maintain item.
- Go to **【Parameter setting】** → **【periodical check】** → **【status】** , go to certian items and press **【maintain】** button.

Warning 120064~120083 When putting, vacuummer 1 limit interrupt

:
:

When putting, hold 12 limit interrupt.

Press **【cyclestart】** to clear warning and process.

Warning 120096~120105 wait conveyor OFF to over delay waiting time

:
:

Wait peripherals 8 OFF over delay waiting time.

Press **【cyclestart】** to clear warning and process.

Warning 120128~120137 wait conveyor ON to over delay waiting time

:
:

Wait peripherals 8 ON over delay waiting time.

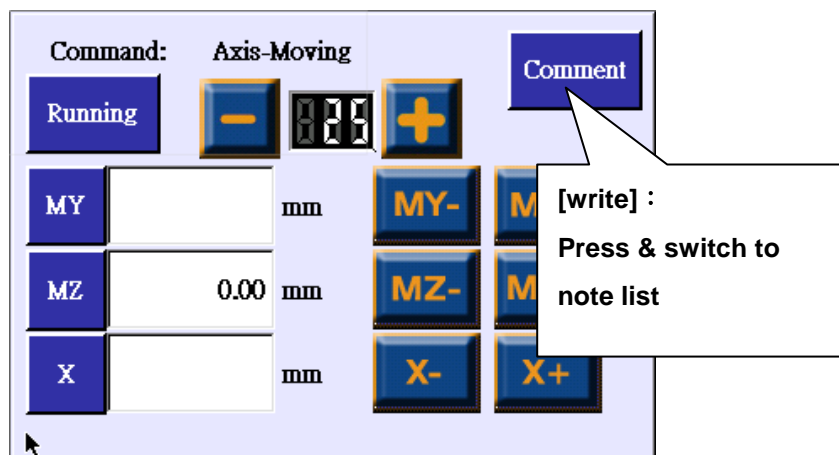
Press **【cyclestart】** to clear warning and process.

12 Q&A

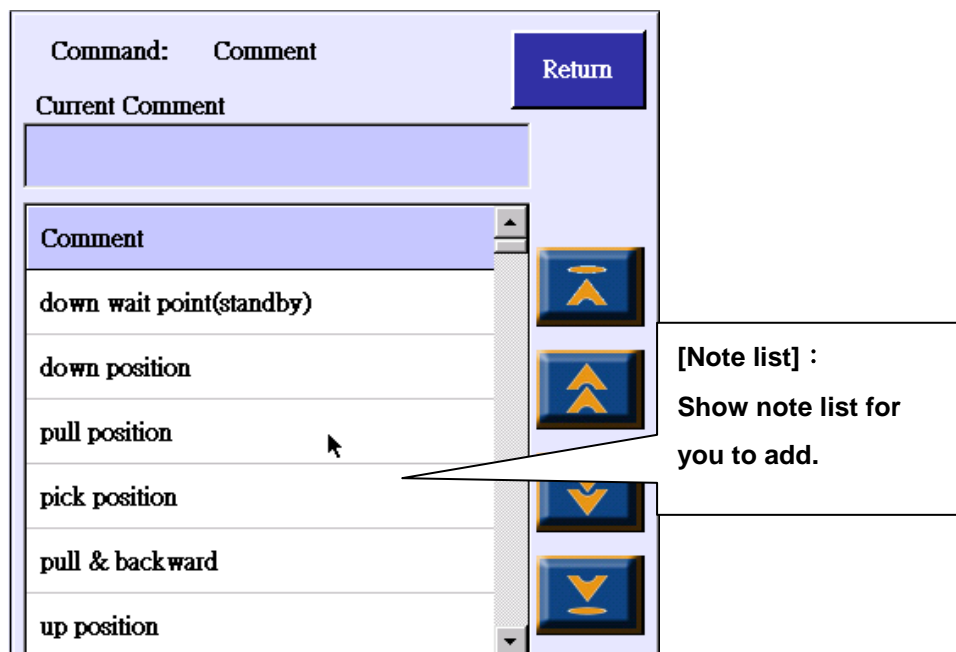
12.1 How to write note of movement command of mold document

12.1.1 Add one line note for movement command

1. Go to TEACH>linear move command, set up value for axis, then press write note button.



2. Choose the note you want, then press [ADD] to complete this.

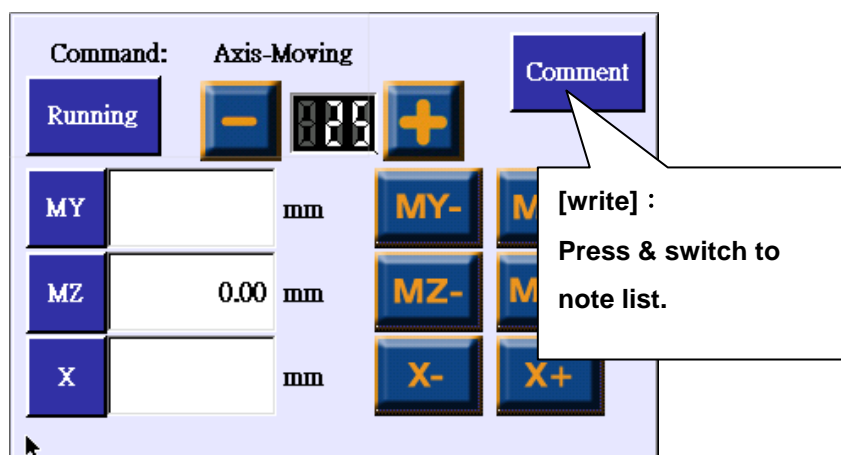


3. According above operation, there will be a new line of program command.

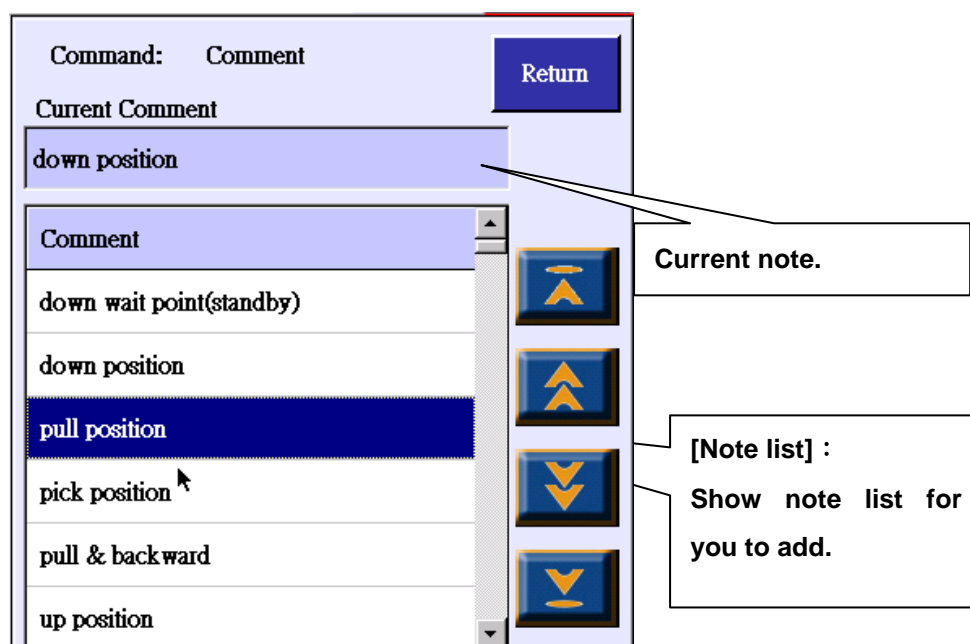
Move to MZ= 800.00 // down position

12.1.2 Modify note

1. Go to TEACH>linear movement command, choose the linear movement command that you want to change, EX :[move to MZ= 700.00 // drop location].
2. Press[write]button.

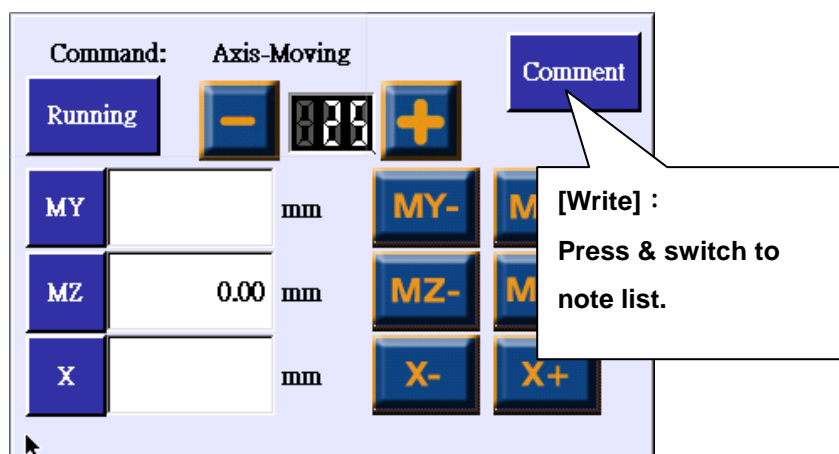


3. Choose the note you want, then press [MODIFY] to complete this modification.

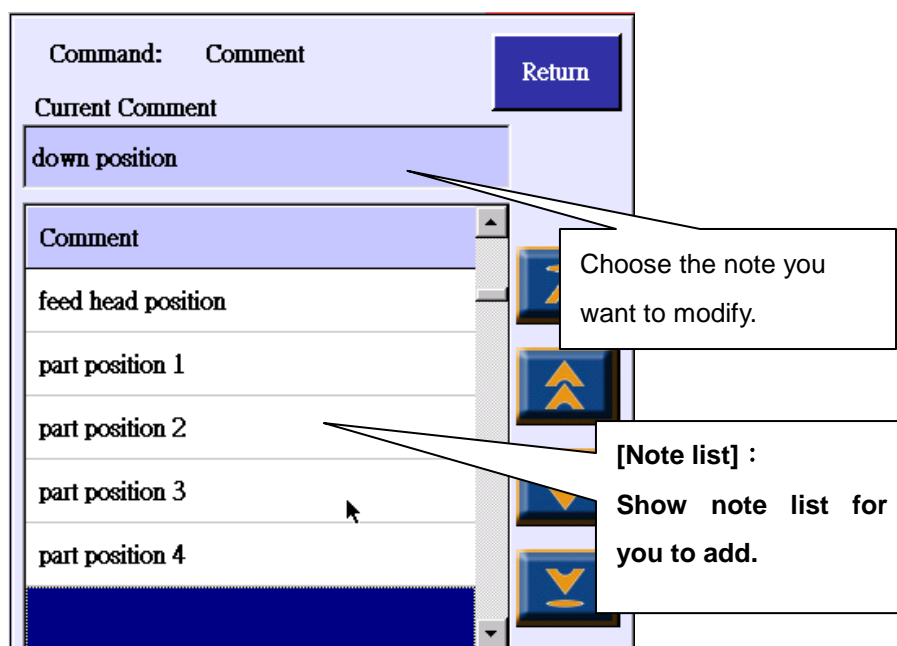


12.1.3 Delete note

- Go to TEACH>linear movement command, choose the linear movement command that you want to delete.
EX:choose[move to MZ= 700.00 //drop location], then press[write].



- Click on the blank note and press[MODIFY] to complete this delete.



12.1.4 Add note that you want to note

1. Go to 「SYSTEM」 → 「BACKUP」 → 「Parameter backup」, refer to chapter 7.1.1.
2. Under backup\ncfiles directory, there will be macro00xx.str, xx=number 00~42, refer to language and change.
macro0000.str : Traditional Chinese
macro0001.str : Simplified Chinese
macro0002.str : English

3. Use word editor to open file, EX : Note or Word.

4. File example as below :

[HMIstring]

2300=MACRO 0

2301=MACRO 1

2302=MACRO 2

This line is file keyword, must have. If there is no keyword, it cannot show.

5800=drop wait(standby point)

5801=drop location

5802=pullout location

5803=pick position

5804=pullout backward

5805=Up position

5806=cylinder turning location

5807=feed head location

5808=production position 1

5809=production position 2

5810=production position 3

5811=production position 4

5812=

5813=

...

...

5846=

5847=

5848=

5849=

- a. **5800**=this is the first line of note.
- b. 『5800=』 ~ 『5848=』 can write 49 sets of notes.
- c. In order to offer delete function,『5849』must be blank.
- d. Left string definition is system default setting.

5. Go to 「SYSTEM」 → 「BACKUP」 → 「Parameter restore」 import function, refer to chapter 7.1.2.

6. Reboot controll to complete modification.