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**Leading Numerical Controller** 





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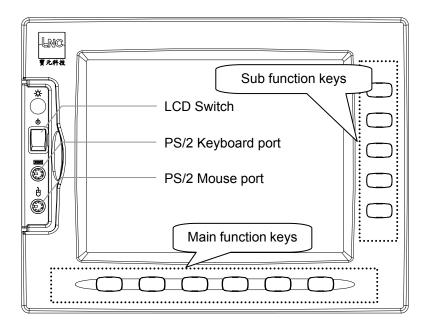
# **1** CNC Group Instruction

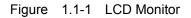
# 1.1 Types of Operation Device

Ragarding the panel for the operators to proceed manipulation, it is divided into the MDI Data Input Panel and the Operation Panel. MDI Data Input Panel's major function is to let users edit or modify the program word by word, and to set values. The Operation Panel is the control panel used to achieve kinds of manufacturing needs, and it is composed of switches and buttons of many kinds of functions, and a Manual Pulse Generator (handwheel, MPG), etc. The design of the Operation Panel may differ due to the differences between types of machine tools, but this system provides a standard panel for machine tool manufacturers to utilize.



### 1.1.1 LCD Monitor





### 1.1.2 MDI Data Input Panel

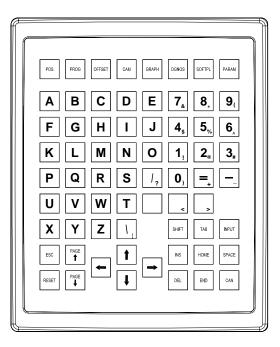


Figure 1.1-2 MDI Data Input Panel

# **1.2 Operation Device Introduction**

Buttons shown on the LCD monitor and the MDI Data Input Panel can be divided into 4 types according to the functions respectively:

(1). Major function button :

Right below the LCD are 6 horizontal buttons. They can be sued by users to input selections of functions displayed at the lower side of the monitor.

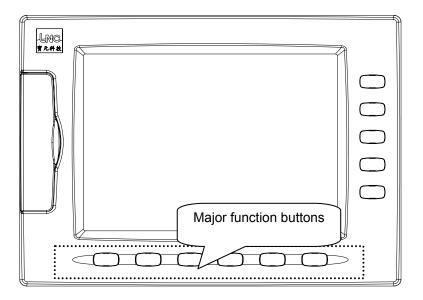


Figure 1.2-1 6 major function buttons below the monitor

### (2). Minor function button:

After selecting the major function buttons, minor function contents will be displayed on the right side of the monitor. Click the corresponding minor function button to make selection.

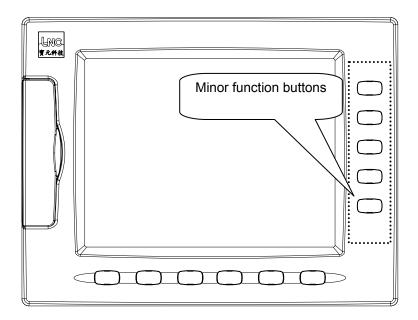


Figure 1.2-2 5 minor function buttons on the right side of the monitor

(3). Function group selection buttons:

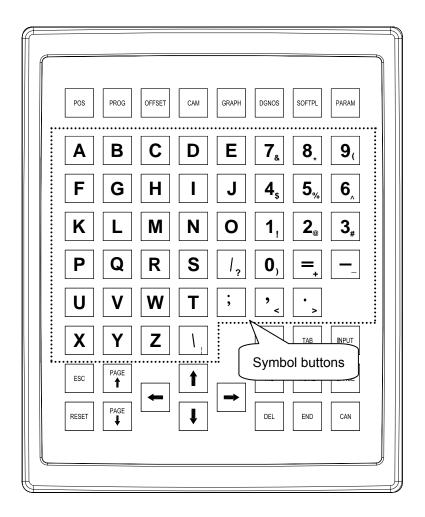
Select from 8 types of function including POS, PROG, OFFSET, CAM, GRAPH, DGNOS, SOFTPL and PARAM.

- <POS> : Coordinate display screens
- <PROG> : Program-related information screens
- <OFFSET>: Tool compensation setting
- <CAM> : Graphic-aided part program editing
- <GRAPH> : Draw tool path
- <DGNOS> : Display instant information of the diagnosis screen
- <SOFTPL>: Software Panel switch
- <PARAM> : Display parameter screen.

POS	PROG	OFFSET	CAM	GRAPH DGNOS SOFTPL PARAM
Α	<b>B</b>	С	D	Function Group
F	G	Η	Ι	selection buttons
Κ	<b>L</b>	Μ	Ν	0 1 <sub>!</sub> 2 <sub>@</sub> 3 <sub>#</sub>
Ρ	Q	R	S	
U	V	W	Τ	; , , , ,
X	Y	Ζ		SHIFT TAB INPUT
ESC	PAGE		1	INS HOME SPACE
RESET	PAGE		ļ	

### (4). Letter and symbol buttons:

These letters, symbols and number buttons are mainly used to edit program and input data. Some of the symbols are shrinked to the right lower corner of the buttons, and if need to use these shrinked symbols, just hold the SHIFT button and click the symbol buttons.



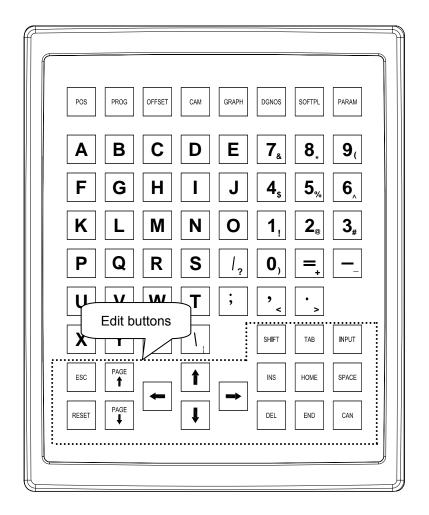
### (5). Edit buttons:

Use these buttons along with the cursor on the monitor to modify programs, set data and switch pages.

- <SHIFT> : Accompany symbol and number buttons to input special symbols.
- <INPUT> : Input button, confirm the input data.
- <INS> : Switch between Insert Character and Replace Characer modes
- <DEL> : Character cancellation button.
- <HOME> : When editing program, move the cursor to the beginning of a line
- <END> : When editing program, move the cursor to the end of a line
- <SPACE> : Input a blank character
- <CAN> : Cancel previous character



- <PAGE $\uparrow$ > : Move to previous page
- <PAGE $\downarrow$ > : Move to next page.
- $<\rightarrow>$  : Cursor moves rightward
- <--> : Cursor moves leftward
- <>> : Cursor moves upward
- <\_> : Cursor moves downward
- <RESET> : Reset system



# 1.3 Screen and Fnction Instruction

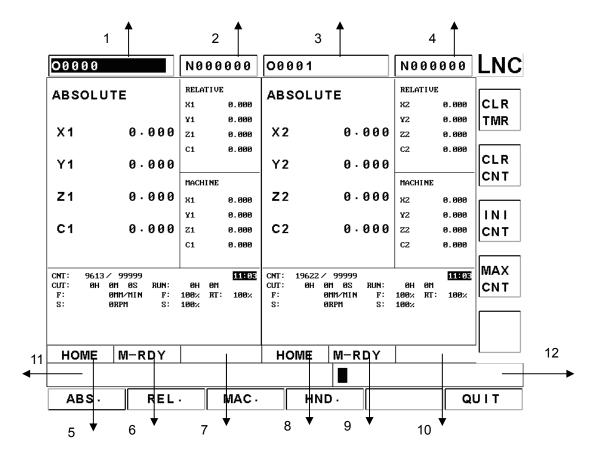
There are 7 function groups in this controller. They are Coordinate (POS), Program (PROG), Compensation (OFFSET), Graph (GRAPH), Diagnosis (DGNOS), Soft Panel (SOFTPL), and Parameter (PARAM). In this manual, [ ] is used to indicate the function buttons below and on the right side of the monitor, and < > for buttons on the MDI Data Input Panel.

### 1.3.1 Alposition of the Display Screen

When switching groups in dual systems, both systems' groups will be switched. The figure below is a screen displaying simultaneous data of both systems, and on the left side of the screen (X1, Y1, Z1, C1) is System 1, on the right side of the screen (X2, Y2, Z2, C2) is System 2. The position dedicated to System 1 and System 2 can be changed by Pr.4989.

The buttons only work on the currently working system. To know which the currently working system is, distinguish from whether the cursor stays on position 1 or 3 in the figure below. When cursor stays on position 1, the currently working system is System 1; and when on position 3, the currently working system is System 2.

The screen introduction below is for the system data screens appear in the screen.





- 1: System 1 currently specified program name.
- 2: System 1 currently executed block.
- **3:** System 2 currently specified program name.
- 4: System 2 currently executed block.
- 5: System 1 mode information.
- 6: System 1 machine status information.
- 7: System 1 alarm information (Alarm), warning information (Waring).
- 8: System 2 mode information.
- 9: System 2 machine status information.
- 10: System 2 alarm information (Alarm), warning information (Waring).
- **11:** Simple information prompt area.
- 12: Input area.

Data of both systems can be displayed on the screen simultaneously or separately as shown in the following figure:

00000	N000000 00001		N0000	00 LNC
AB	SOLUTE	1	ATIVE	
	002012	X1	0.0	
X 1	0.000	Y1	0.0	
	0.000	Z1	0.0	
Y1	0.000	C1	0.0	CLR
	0.000	MAG	CHINE	CNT
Z 1	0.000	X1	0.0	00
~ '	0.000	Y1	0.0	00 INI
C1	0.000	Z1	0.0	00 CNT
•••		C1	0.0	00
				MAX
F: S:	0MM/MIN F: 100× 0RPM S: 100×(	RT: CUT:	100% 11: 0H 0M	03 05 CNT
3.		RUN:	0H 0M	03
		CNT	9613/ 999	999
HOME	M-RDY HOME	M-R	DY	
ABS.	REL· MAC· HI	ND.		QUIT



### 1.3.2 Functions of Each Function Group

#### **Tree Diagram of POS Function Keys**

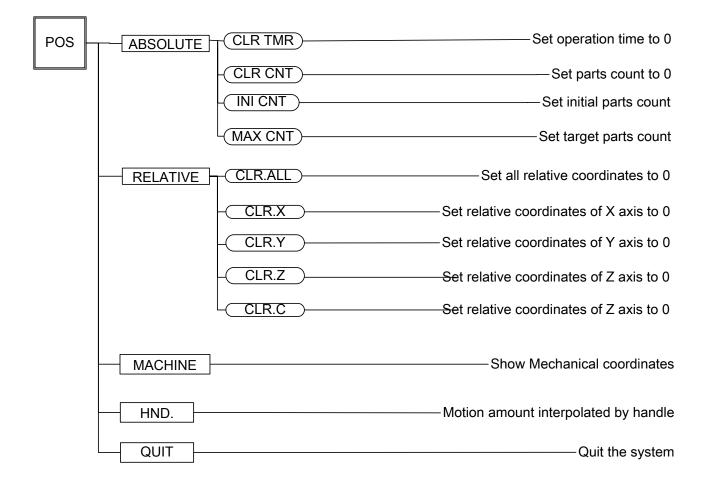


Figure 1.3-1 Tree Diagram of POS Function Keys



### Tree Diagram of PROG Function Keys

PROG -	FGPROG GOTO	Move cursor to the designated line
	(WORDFIND)	——— Move cursor to the designated word
	(INS CYCL)	Insert MACRO
	(EDITCYCL)	Edit MACRO
	(NEXT)	
		Delete the line pointed by cursor
	- MARK	Mark the selected range
	UN MARK	Unmark the selected range
	COPY	Copy the selected range
		Cut the selected range
	BIND	Paste the selected range
	(THINMODE)	Open Teach In window
		Open a file
	- COPY	Copy the selected file
	COPYA>C	Copy files from A to C
	-(COPYC>A)	Copy files from C to A
	(NEXT)	
	- DEL	Delete the selected file
	- REN	Change the selected file name
	-(SETDIR)	Set default diretory
	LOOWNLOAD (NEXT)	Download file via RS232
	UP LOAD	Upload file via RS232
	PROCHK	Show current program's information
	MDI	Execute MDI command
		File transmission main screen
		Set RS232 protocol
	NET SET	Set network connection

Figure 1.3-2 Tree Diagram of PROG Function Keys



### Tree Diagram of OFFSET Function Keys

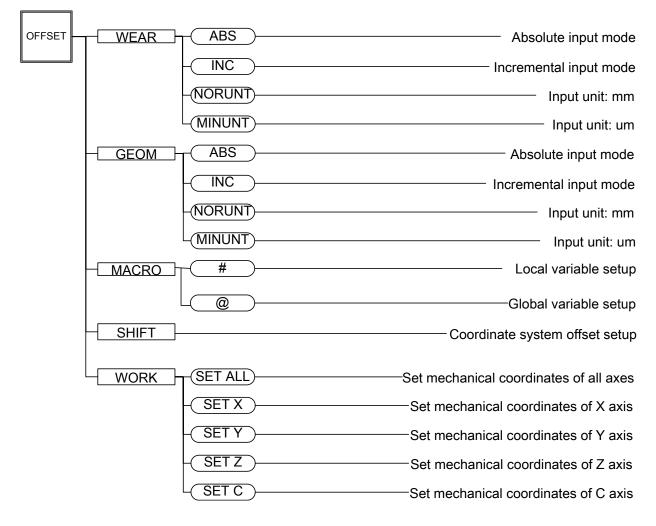


Figure 1.3-3 Tree Diagram of OFFSET Function Keys



**Tree Diagram of GRAPH Function Keys** 

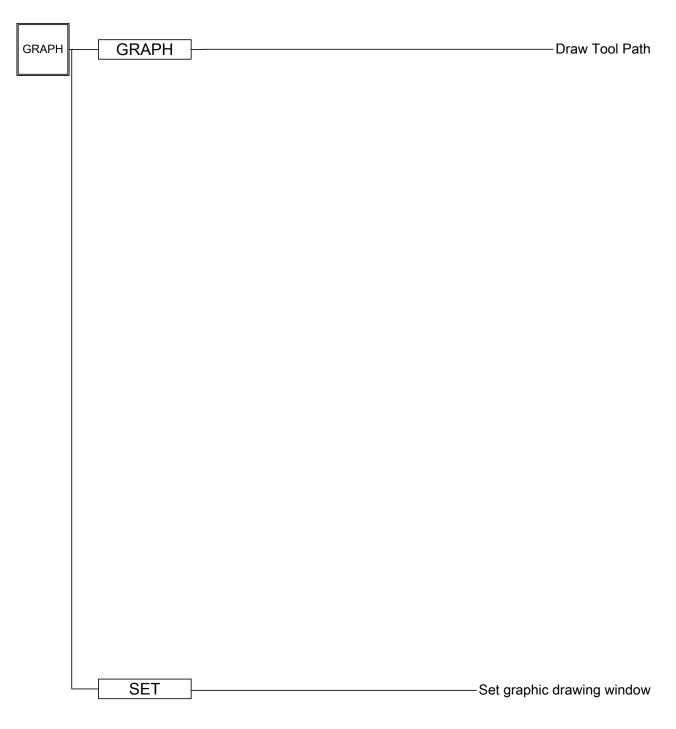


Figure 1.3-4 Tree Diagram of GRAPH Function Keys



### Tree Diagram of DGNOS Function Keys

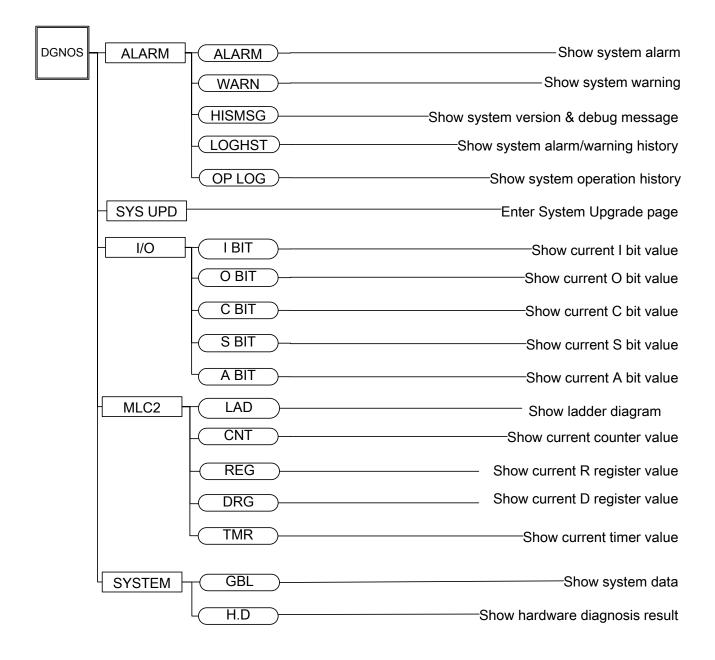


Figure 1.3-5 Tree Diagram of DGNOS Function Keys



# Tree Diagram of SOFTPL Function Keys

6

-1

SOFTPL	M LOCK	Activate machine lock function
-	DRY RUN	Activate dry run function
-	OP SKIP	Activate optional block skip function
-	OP STOP	Activate optional stop function
-	MST SKIP	Activate MST skip function
_	MPG DRY	Activate MPG dry run function
	ZIGNORE	Activate Z axis ignore function

Figure 1.3-6 Tree Diagram of SOFTPL Function Keys



### **Tree Diagram of PARAM Function Keys**

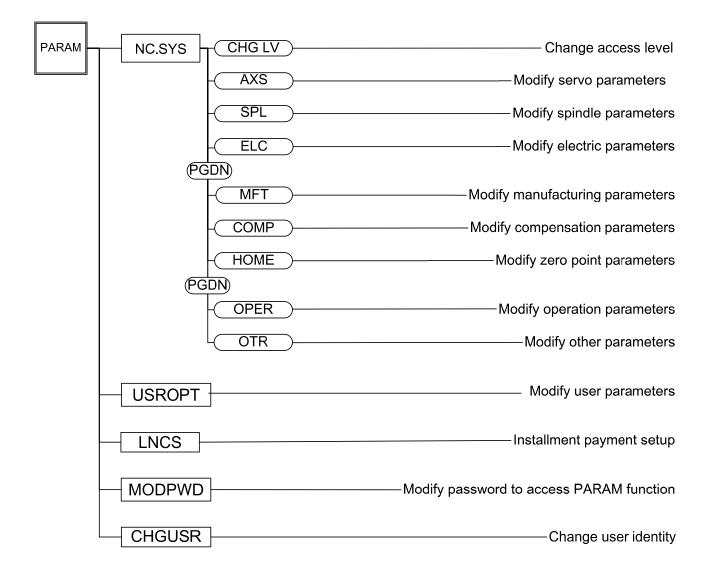


Figure 1.3-7 Tree Diagram of PARAM Function Keys

### 1.3.3 Absolute Coordinate screen

Click [ABS.] to enter Absolute Coordinate major screen.

The screens aside are relative coordinate and machine coordinate minor screens.

00000	N 0	00000	00001		1	1000000	LNC
AE	3SOLU1	Е		REL	ATIV.	E 0.000	
		_	~ ~	Y1		0.000	
X 1		0.0	00	Z1		0.000	
Y1		0.0	00	C1		0.000	CLR
				MAG	HINE		CNT
Z1		0.0	00	X1		0.000	
				Y1		0.000	
C1		0.0	00	Z1		0.000	
				C1		0.000	
F:	0 MM / M		100×		100%	11:03	CNT
S:	ØRPM	S		CUT:	0H	0M 0S	
				RUN : CNT :	0H 9613	0M 3/9999	9
HOME	M-RDY		HOME	M-R	DY		
ABS -	REL·	MAC	н	ND ·			QUIT

Figure 1.3-8 Absolute Coordinate major screen

Absolute coordinate is program coordinate, (current value - tool offset = program value), which displays current positions of each axis subtract offset of each axis.

### 1.3.4 Relative Coordiante Screen

Click [REL.] to enter Relative Coordiante major screen.

The screens aside are absolute coordinate and machine coordinate minor screens.

00000	N00000	00001		N	00000	LNC
RE	LATIVE			OLUTE		
			X1 Y1		0.00	- JOEN.
X 1	0.0	00	Z1		0.00	
Y1	0.0	00	C1		0.00	CLR
			MAC	HINE		X
Z1	0.0	00	X1		0.00	-
			Y1		0.00	
C1	0.0	00	Z1		0.00	
			C1		0.00	
F:	0MM/MIN F∶	100×	RT:	100×	11:0	
S	0RPM S:			0H	0M 0 0M	sĽ
			RUN: CNT:	0H 9613/	9999 9999	9 CLR.
HOME	M-RDY	HOME	M-R	DY		
ABS -	REL. MAC.	н	ND ·			QUIT

Figure 1.3-9 Relative Coordiante major screen

Relative coordiante system indicates the distance between current position and any point specified by users. Therefore, users can make the relative coordiante values return to zero at any time, they can also directly input values which are not zero.

Meanwhile, if want to reset coordinate values, and make X coordinate as 100. 000, Y coordinate as 200. 000 and Z coordinate as 300. 000, just input X100. Y200. Z300. And click <INPUT>, then coordinate values will be reset immediately.

If want to zero relative coordinate values of the 3 axes simultaneously or respectively, simply click corresponding minor function buttons **[CLR. All]**, **[CLR. X]**, **[CLR. Y]**, and **[CLR. Z]**.

### 1.3.5 Machine Coordinate Screen

Click **[MAC.]** to enter Machine Coordinate major screen.

The screens aside are absolute coordinate and relative coordinate minor screens.

00000	N000000	00001		N000000	LN
MAG	CHINE		ABSOLU		
			X1 Y1	0.000	
X 1	0.00	00	Z1	0.000 0.000	
			C1	0.000	
Y1	0.0	00	RELAT	IVE	
Z1	0.0	0 A	X1	0.000	
	0.00		Y1	0.000	
C1	0.00	00	Z1	0.000	
			C1	0.000	
F:	0MM/MIN F∶	100× F	RT: 100	× 11:04	
S	ORPM S:	100 × Cl		H OM OS	Ľ
				H 0M 13/99999	
HOME N	I-RDY	HOME	M-RDY		<u> </u>
ABS -	REL· MAC·	HN	D.	Q	UIT

Figure 1.3-10 Machine coordinate major screen

Machine coordinate is the distance of the current position and the reference point. Each machine owns a reference point, and, for the sake of safety, search the home point before manufacturing every time when restarting the system.



### 1.3.6 Handle Interrupt Screen

Click **[HND.]** to enter handle interrupt major screen.

The screens aside are absolute coordinate and relative coordinate minor screens.

00000	N0000	00	00001		1	100000	INC LNC
F	ANDLE				SOLUT		
		-		X1 Y1		0.00 0.00	
X 1	Ø	. 0	00	Z1		0.00	
Y1	Q	A	00	C1		0.00	0
	-			MA	CHINE		
Z 1	Ø	. 0	00	X1		0.00	
~ 1	•	~	~ ~	Y1		0.00	
C1	U	. 0	00	Z1 C1		0.00 0.00	
F	0 MM ∕ M I N	F	100×	RT:	100×	11:0	
S	ØRPM	S	100×	RUN	0H 0H	0M 0 0M	s L
				CNT		3/999	99
HOME	M-RDY		HOME	M-F	DY		
ABS -	REL. N	IAC ·	H	IND ·			QUIT

In MDI Mode, users can use handle interrupt function to increase or decrease tool's movement amount, and change the cutting path.

absolute coordinate	Not effected by handle interrupt, still displays program coordinate						
relative coordiante	Not effected by handle interrupt						
machine coordinate	Effected by handle interrupt and change, displays actual machine position						

Because absolute coordinate is not affected by handle interrupt, the later tool path will have an offset between the original program path, and this offset can be eliminated by manual home returning. For detailed instruction on this function, refer to "Select Axis Direction Signal of Handle INT" (C BITS 066 ~ 071) and "MPG Ratio Select" (R014) in software application manual.

### 1.3.7 Quit System

Click **[QUIT]** function button, and password input window is displayed. Correctly input the password, and click **[OK]** button to leave CNC system and return to DOS operation system. click **[CANCEL]** button to return to execute program.

00000	N00000	0 00001		N000000	LNC
ŀ	HANDLE			SOLUTE	
· ·			X1 Y1	0.000 0.000	
X1	0.	000	Z1	-0.003	
			C1	0.000	
Y1	0.	000			-
74	0	000		CHINE	
Z 1		ASSWORD	1 8 9	9 · 002	
C1			Z1	-0.003	
C 1	υ.	000	C1	0.000	
F	* * * * * * * * * * * * *	F: 100×	RT:	100× 11:04	
S:	ØRPM	S: 100×	CUT: RUN:	0H 0M 0S 0H 0M	
			CNT	9613/99999	
HOME	NO-RDY WARN	HOME	NO-	RDY WARN	
ок	CANCEL				

Figure 1.3-11 Quit System



# 1.4 Program Function (PROG)

Click **<PROG>** to enter Program Function Group screen. This function group provides functions including part program editing, checkup, file management, and communication, etc.

00000	N000000	00001		N000000	LNC
/* all Can_C	ycle that'	s ok ×/			
G53X0Z0 :					GOTO
N025 G92 X200	0.Z50;				
G94G00	T0404 M42;				
; G96 S180	9 M03;				
N026 G94G00 >	(140.Z2 F1	800:			WORD
N027 G70 P28	Q34;				FIND
N028 G00 X40	:				
N029 G01 Z-30	9;				
N030 X60 W-30	9:				INS
N031 W-20;					CYCL
N032 X100 W-	10:				
N033 W-20;					EDIT
N034 X140 W-2	20:				
N035 G00 X200	0.Z50;				CYCL
ROW:	1/	104 COL :	1		NEXT
EDIT M-RDY		EDIT	M-RDY		
FGPROG DIR	ING PROCH	K MD			MM ·

Figure 1.4-1 Program Function Group

### 1.4.1 Current Program

In edit mode, click **[FGPROG]** to display contents of the program currently opened in the controller. Meanwhile, use the minor function button on the right side and the Input Line below to edit the program.

# [GOTO]

Click **[GOTO]** function button to directly input line number after "LN" in the dialogue box, and then click **[OK]** to position cursor directly to the line.

00000 N000000 00001 N000000	LNC
/* all Can_Cycle that's ok */	
G53X0Z0 :	GOTO
N025 G92 X200-Z50; ; G94G00 T0404 M42;	
; G96 S180 M03;	
N026 G94G00 X140 Z2 F1800	WORD
N027 G70 P28 Q34;	FIND
N028 G00 X40:	
N029 G01 Z-30; LN :	INS
N030 X60 W-30	CYCL
N031 W-20;	CICL
N032 X100 W-10; N033 W-20;	
N033 W-20;	EDIT
N035 G00 X200 Z50;	CYCL
ROW: 1/ 104 COL: 1	NEXT
	J
EDIT M-RDY EDIT M-RDY	
OK CANCEL	

Figure 1.4-2 Line Positioning input column

### [WORDFIND]

Click **[WORDFIND]** function button to directly input the key word to be searched after "KEY" in the dialogue box, and then click **[OK]** to directly position cursor to the key word. If want to search for the next same key word, click again **[WORDFIND]** function button, and it will automatically search by using the key word of the last time as the default, and click **[OK]** button to search afterward.

00000 N000000 00001 N000000	INC
/* all Can_Cycle that's ok */	
G53X0Z0:	бото
N025 G92 X200 Z50;	GOIO
: G94G00 T0404 M42:	
; G96 S180 M03;	
N026 G94G00 X140 Z2 F1800:	WORD
N027 G70 P28 Q34; N028 G00 X40;	FIND
N029 G01 2	
N029 G01 2 N030 X60 L KEY:	INS
N031 W-20;	CYCL
N032 X100 W-10:	
N033 W-20;	EDIT
N934 X149 W-29: N935 G99 X299-Z59:	CYCL
N035 G00 X200-250	
ROW: 1/ 104 COL: 1	NEXT
EDIT M-RDY EDIT M-RDY	1
OK CANCEL	

Figure 1.4-3 String Search input column



# [LDEL]

Directly delete the line of program codes where the cursor is, or delete all marked lines.

# [MARK]

Move cursor to the begin/end line of the lines to be marked, and click **[MARK]** function button on the right side, and move cursor to the begin/end line of the lines to be marked, and click **[MARK]** function button again to mark the lines. (Figure 2.5-3)

00000 N000000 O0001 N000000	LNC
/× all Can_Cycle that's ok ×/ G53X0Z0∶ N025 G92 X200⊷Z50∶	LDEL
: G94G00 T0404 M42: : G96 S180 M03:	
N026 G94G00 X140-Z2 F1800: N027 G70 P28 Q34:	MARK
N028 G00 X40: N029 G01 Z-30:	
N030 X60 W-30:	UN MARK
N031 W-20; N032 X100 W-10;	
N033 W-20; N034 X140 W-20;	COPY
N035 G00 X200.Z50;	
ROW: 6 / 104 COL: 1	NEXT
EDIT M-RDY EDIT M-RDY	
FGPROG DIRMNG PROCHK MDI CO	· MMC

Figure 1.4-4 Mark Range function

### [UNMARK]

Cancel previous marks.

### [Copy]

Copy the marked range.

# [CUT]

Clip the marked range.

### [BIND]

Paste previously copied or clipped range of program code.

### [THINMODE]

Click **[THINMODE]** function button, then the button of Teach becomes to **[THINCANC]** and **[THININST]** function button, and absolute coordinate and machine coordinate appear on the right side of the window. Firstly, move cursor to the previous line of the position to be inserted, switch to manual operation modes (JOG, RAPID and MPG) and move machine to desired position, then click **[THININST]** to insert current absolute coordinate to the program where the cursor is. To cancel Teach Mode, just click **[THINCANC]** button.

00000	1	000000	00001		N000000	LNC		
/* all Can_Cycle that's ok */ G53X0Z0: N025 G92 X200.Z50:								
; G94		104 M42;						
	P28 Q	10-Z2 F18 34;	800:			BIND		
ABSOL		RELAT		MA	CHINE			
X1	0.002	X1	0.002	X1	0.002			
Y1	0.000	Y1	0.000	Y1	0.000	THIN		
Z1	-0.003	Z1	-0.003	Z1	-0.003	INST		
C1	0.000	C1	0.000	C1	0.000			
ROW:	ROW: 6/ 104 COL: 1							
EDIT N	A-RDY		EDIT	M-RDY				
FGPROG	DIRMNO	PROCH	< MD I		C	· MMC		

Figure 1.4-5 Teach input function

NOTE: In Edit Mode, program start can not be executed.



# 1.4.2 Background Program

In MEM mode, click **[BGPROG]** to enter Background Edit Mode. Background edit allows users to edit another part program while in MEM mode and executing a part program, and the editing method is the same as that of editing current program in edit mode.

00000		000000	00006		N000000	LNC
/∗ all	Can_Cyc	e that'	s ok ×/		-	
G53X0Z0	3:					GOTO
N025 G9	92 X200.2	50:				
: G9	94G00 T04	04 M42;				
; G	96 S180 N	103 ;				
N026 G	94G00 X14	0.Z2 F1	800:			WORD
N027 G	70 P28 Q3	4;				FIND
N028 G6	30 X40;					<u> </u>
N029 G0	01 Z-30;					[
N030 X0	50 W-30;					INS
N031 W-	-20;					CYCL
N032 X'	100 W-10:					
N033 W-	-20;					EDIT
N034 X	140 W-20:					CYCL
N035 G0	90 X200.2	50;				
ROW:	1/		104 COL	1 00	001:BACK	NEXT
ROW	17		104 COL	1 00	001 BACK	
MEM	M-RDY		MEM	M-RDY		
BGPROG	DIRMNG	PROCH	K MD		C	MM .

Figure 1.4-6 Background Edit Mode

### 1.4.3 Program Checkup

In MEM Mode, click **[PROCHK]** major function button to enter Auto Program Checkup screen as the following figure shows. The upper half of the monitor displays program content, and the currently executed program is highlighted. The lower half displays coordinate values, current M/S/G/T code values, and actual speed, etc.

00000 NG	00000	00006	N000000 LNC
N026 G94G00 X140 N027 G70 P28 G34 N028 G00 X40: N029 G01 Z-30: N030 X60 W-30: N031 W-20:	• Z2 F	1800:	
ABSOLUTE           X1         0 ⋅ 002           Y1         0 ⋅ 000           Z1         -0 ⋅ 003           C1         0 ⋅ 000	DIST X1 Y1 Z1 C1	TO GO (G) 0.000 G01 0.000 G18 0.000 G40 0.000 G98 0.000 G64	G97 G90 G95 G21 G23 G80 G67 G54 G69
LN: 6 AF: 0 AS: 0	FO: RO: SO:	100* F 1000.00 100* R 100* P Q M	0T 0 H 0 D 0 S 1000
MEM M-RDY		MEM M-RDY	
BGPROG DIRMNG	PROC	HK MDI	COMM ·

Figure 1.4-7 In mem mode, click [PROCHK] major function button

### 1.4.4 MDI

In MDI Mode, click [MDI] major function button to enter MDI screen as the following figure shows. In this screen, it is able to directly execute the input block program. The operation method is: directly compile the program to be executed in the edit area, the program can be more than 1 line, when input is finished, click Cycle Start button, and then the just compiled program will be executed from the beginning, and related information will be displayed. It is safer to preceed tests in this way, and is more efficient. If the program contains no M30, when the last line of program is executed, the controller uses M30 to end the program. If the program contains M0, when M0 is executed the program stops, and the status will switch to B-STOP; if click Cycle Start button again, it will re-execute from the 1<sup>st</sup> line, click Reset to cancel this mode. In MDI mode, and the status is B-STOP, it is able to switch to MEM Mode and keeps manufacturing, and then switch back to MDI mode to keep editing part program.

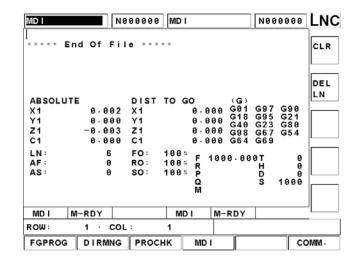


Figure 1.4-8 In MDI Mode, click [MDI] major function button

### 1.4.5 DIRMNG

In file management screen, system provides functions including File Open, Copy, Delete, Rename, Set Folder, etc. Detailed instructions are as following:

### [FILE]

1. Enter file management screen, and use direction buttons to move cursor to select the file to be opened, and then click <INPUT> to open a file.

00000	N00	0000	00	006			N000	000	LNC
<rs232></rs232>	DNC	PROG	RAM						
00000	:/*	all	Can_	Cyc I	e t	ha t'	s ok	¥ /	FILE
00001	;/*	all	Can_	Cycl	e t	ha t′	s ok	н /	
00006	;								
08999	;								
SPD_S1	;								COPY
SPD_S2	;								
									COPY
									A>C
									COPY
									C>A
00001	182	7	1	0:57	AM	03/0	9/20	0	
COUNT :	6		FRE	Ε:		5036	032		NEXT
EDIT M-RDY			E	DIT	M-F	RDY			<u> </u>
					T				
FGPROG DIRM	/NG	PROC	нк	MD	I I			co	MM -

Figure 1.4-9 File Management

2. Click [File] button, a dialogue box appears. Move cursor to select or directly input the name of file to be opened, and then click <INPUT> to open a file.

00000 <rs23 00000 00001 00006 08999 SPD_S1 SPD_S2</rs23 		DNC PF	OGR I C LE	00006 AM An_Cycl OPEN 001	e that '	N00000 sok ≏ok		FILE COPY A>C COPY COPY C>A
00001 COUNT:		1827	F	10:57 REE:	AM 03/ 5036		,	NEXT
EDIT	M-RDY			EDIT	M-RDY			
ок	CANCE	EL						

Figure 1.4-10 Click [File] function button

3. In **MEM Mode**, the opened file is Background Program; in **EDIT Mode**, the opened file is Current Program; files can not be opened in other modes.



# [Copy]

1. Click [COPY] function, and a dialogue box appears. Click Up, Down, Left, Right buttons to select source file. FDD and online disk can also be the source. After selection, click [OK] button.

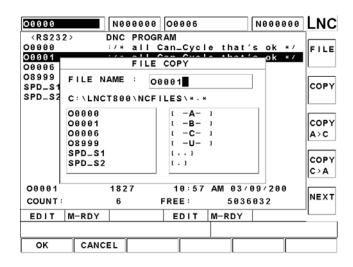


Figure 1.4-11 Copy File Function Button

2. After clicking [OK] button, the destination file use the source file's name as the default file name, if want to use a different file name, manually input the name and click [YES] button to finish copy. When copy is finished, users can use Program List to check.

00000		N000000 O	0006	1	0000000	LNC
<rs23< td=""><td>2&gt; D</td><td>NC PROGRAM</td><td>Л</td><td></td><td></td><td></td></rs23<>	2> D	NC PROGRAM	Л			
00000				e that's		FILE
00001		FILE	DPY	a that!a	ok ⊧⁄	
08999 SPD_S1 SPD_S2	CURRENT	C:\LNCT800	NCFI	LES		COPY
	SOURCE	00001				COPY A>C
	TARGET	00002				COPY C>A
00001	1	827	10:57	AM 03/09	9/200	
COUNT		6 FR	EE :	50360		NEXT
EDIT	M-RDY		EDIT	M-RDY		1
YES	CALCE	L				

Figure 1.4-12 Input destination file name

# [COPY A>C]

1. Copy files from a disk to the controller. Before executing this function, make sure a disk containing the program is inserted in the FDD. After clicking this function button, a box appears to show the file list of the disk. Move the cursor to the specific file to be copied, and then click [OK].

0010		N0000	00 00	006		N000	000	LNC
<rs23< td=""><td>2&gt;</td><td>DNC PF</td><td>ROGRAM</td><td></td><td></td><td></td><td></td><td></td></rs23<>	2>	DNC PF	ROGRAM					
A 00000 -		:						FILE
00006		F	LE CO	PY				
0001 0002	FILE N	AME :	0004					COPY
0003 0004	0004					ok	× /	
0005	0005					ok	*/	COPY
0007	0007					ОК	* /	A>C
0008 0009	0009					ok	× /	COPY
0010 0011	0011							C>A
								NEXT
COUNT		575	FRE	:E :	454322	688		
EDIT	M-RDY		E	DIT	M-RDY			
ок	CANC	EL						

Figure 1.4-13 Copy A>C operation screen 1

2. After clicking [OK], the name of the source file becomes the default of destination file's name. If users want to assign a different file name, input the desired name, and then click [YES] to finish copy.

0010		N000000	00006		N000000	LNC
<rs23< td=""><td>2&gt; [</td><td>ONC PROGR</td><td>RAM</td><td></td><td></td><td></td></rs23<>	2> [	ONC PROGR	RAM			
A						FILE
00000		FILE	COPY			
0001					_	
0002						COPY
0003	FLOOPY	COPY TO	WORK DI	RECTORY	ok ⊭∕	
0004						
0005	SOURCE	0002			a I	COPY
0006	SOURCE	0003			_ok ∗/	A>C
0007						ALC
0008 0009	TARGET	0883			ok ⊮/	
0010					_ OK */	COPY
0011						C>A
0011						
COUNT	; 5	75	FREE :	454322	688	NEXT
EDIT	M-RDY		EDIT	M-RDY		
						-
YES	CALCE	EL				

Figure 1.4-14 copy A>C operation screen 2

# [COPY C>A]

1. Copy files from the controller to a disk. Before executing this function, make sure a disk containing the program is inserted in the FDD. After clicking this function button, a box appears to show the file list currently in the cutting path. Move the cursor to the specific file to copy, and then click [OK].

0010	N000000 00006 N000000	LNC
<r\$23< td=""><td>2&gt; DNC PROGRAM</td><td></td></r\$23<>	2> DNC PROGRAM	
A	1	FILE
00000	FILE COPY	
0001	FILE NAME : 0003	COPY
0003	0883 0884	
0005	0885 0886 ok */	COPY
0007 0008	0667	A>C
0009	0889 0010	COPY
0011	0010	C>A
COUNT	575 FREE: 454322688	NEXT
EDIT	M-RDY EDIT M-RDY	
ок	CANCEL	

Figure 1.4-15 copy C>A operation screen 1

2. After clicking [OK], the name of the source file becomes the default of destination file's name. If want to assign a different file name, input the desired name and click [YES] to finish copy.

0010		N000000	00006		N000000	LNC
<rs23< td=""><td>2&gt; [</td><td>ONC PROGR</td><td>RAM</td><td></td><td></td><td></td></rs23<>	2> [	ONC PROGR	RAM			
Α		:				FILE
00000			COPY		_	
00006		FILE	COPT		_	
0001						
0002					.	COPY
0003	WORK D	RECTORY	COPY TO	FLOOPY	ok ∗/	
0004						
0005					- I	[
0006	SOURCE	0004			ok ×/	COPY
0007						A>C
0008					-	
0009	TARGET	0004			_ok ⊮/	COPY
0010						
0011						C>A
COUNT	: 5	75	FREE :	454322	688	NEXT
EDIT	M-RDY		EDIT	M-RDY		
YES	CALCE	EL .				

Figure 1.4-16 Copy C>A operation screen 2

# [DEL]

1. Delete a file. After clicking this function button, a dialogue box appears on the screen for the selection of the file users want to delete. After selecting the file, click [OK].

00000	N000000 00006 N000000	LNC
<rs232 00000 00001 00002</rs232 	:/* all Can_Cycle that's ok */ 	DEL
00006 08999 SPD_S1 SPD_S2	FILE NAME : 00001∎	REN
	00002 00006 08999 SPD_S1	SE TD I R
	SPD_S2	DOWN LOAD
00001 COUNT:	1827 10:57 AM 03/09/200 7 FREE: 4960256	NEXT
EDIT	M-RDY EDIT M-RDY	
ок	CANCEL	

Figure 1.4-17 Click [Delete] function button



2. After clicking [OK], a message appears for users to confirm the deletion. If user is sure to delete the file, click [OK] to finish the process of file deletion. After the deletion is completed, user can inspect the result with the Program List.

00000	N000000 00006 N000000	.NC
<rs232></rs232>	DNC PROGRAM	
00000	:/* all Can_Cycle that's ok */	DEL
00001	;/* all Can_Cycle that's ok */	
00002	:/* all Can_Cycle that's ok */	
00006	;	
08999	:	REN
SPD_S1	;	
SPD_S2		
		SETD
		IR
	O0002: DELETE FILE?	
		NMOC
	1 1	
		OAD
00002	1827 11:19 AM 03/09/200	
COUNT :	7 FREE: 4960256	IEXT
EDIT M-RD	Y EDIT M-RDY	
2211 11 110		
OK CA	NCEL	

Figure 1.4-18 Users can confirm again

# [REN]

1. Change the name of a file. After clicking this function button, a dialogue box appears on the screen. After the selection of the file which users want to change name, click [OK].

00000	N000000 00006 N000000	LNC
<rs23< td=""><td></td><td></td></rs23<>		
00000	:/* all Can_Cycle that's ok */	DEL
00002	SOURCE OK */	
00006 08999	FILE NAME : 00002	REN
SPD_S1 SPD_S2	09999 09991	
	00002	SETD
	O0006 O8999	IR
	SPD_S1	
	SPD_S2	DOWN
		LOAD
00002	1827 11:19 AM 03/09/200	
COUNT :	7 FREE: 4960256	NEXT
EDIT	M-RDY EDIT M-RDY	ʻL
ок	CANCEL	

Figure 1.4-19 After clicking [Rename] function button

After clicking [OK], one more dialog box appears to show the location and name of the file users select, and provides an input column for users to input the desired new name. After the input, click [YES] to finish the process of Change Name. After the process is completed, users can inspect the result with Program List.

00000		N00000	00006		N000000	LNC
<rs23< td=""><td>2&gt;</td><td>DNC PRO</td><td>GRAM</td><td></td><td></td><td>]</td></rs23<>	2>	DNC PRO	GRAM			]
00000		;/∗all	Can_Cycl	e that'	s ok */	DEL
00001		· · · · · · ·	Con Cual	a that!	∽_ok ×∕	
00002		RE	NAME		ok ∗/	
00006						
08999						REN
SPD_S1	CURREN	TC:\LNC	T800\NCFI	LES		
SPD_S2						
					-	0.0.00
	SOURCE	00002				SETD
						IR
					-	
	TARGET	00003				DOWN
						LOAD
						LOAD
00002		1827	11:19	AM 03/0	99/200	
COUNT		7	FREE:	4960	256	NEXT
EDIT	M-RDY		EDIT	M-RDY		
YES	CALC	EL				

Figure 1.4-20 Input destination file name

# [SETDIR]

Change the path of the work folder. After clicking the function button, a dialogue box appears. Users can input or click Up or Down to select the path of the work folder. After the selection, click Right or Left buttons to move the cursor to the Input Line and click [OK].

00000	N000000 00006 N000000	LNC
<rs232< td=""><td>2&gt; DNC PROGRAM</td><td></td></rs232<>	2> DNC PROGRAM	
00000	∶/* all Can_Cycle that's ok */	DEL
00001	NCFILES DIR SET	
00003	NCFILES DIR SEI	
00006 08999	DIR NAME : NCT800\NCFILES\	REN
SPD_S1	[ -C- ]	
SPD_S2	( -U- )	
	[]	
	( , )	SETD
		IR
		DOWN
		LOAD
00003	1827 11:19 AM 03/09/200	
COUNT :	7 FREE: 4882432	NEXT
EDIT	M-RDY EDIT M-RDY	
ок	CANCEL	

Figure 1.4-21 Set part program folder



# [DOWNLOAD]

1. Transmit files from NC side to PC side via RS232. Click the [DOWNLOAD] function button. The screen is as the following.

00000	N000000 00006 N000000	LNC
<rs232< td=""><td>2&gt; DNC PROGRAM</td><td></td></rs232<>	2> DNC PROGRAM	
00000	∶/* all Can_Cycle that's ok */	DEL
00001 -	·/* all Can Cuala that's ok */	
00003	DOWNLOAD ok #/	
00006		
08999		REN
SPD_S1	1. POU YUEN SOFTWARE	
SPD_S2	TOPOU TUEN SOFTWARE	
		SETD
	2 GERNAL SOFTWARE	IR
	2. GERNAL SOFTWARE	<u> </u>
		DOWN
		LOAD
L		· · · · ·
00003	1827 11:19 AM 03/09/200	
COUNT:	7 FREE: 4882432	NEXT
EDIT	M-RDY EDIT M-RDY	1
EDIT		
YES	CALCEL	



2. Select [2.GERNAL SOFTWARE] to switch to the screen of communication connection as the following figure shows. Refer to [COMM.] for detailed instructions on the operation.

0000	N000000	00006		N000000	LNC
					сомм
					SETT
					NE T SE T
EDIT M-RDY		EDIT	M-RDY		
FGPROG DIRM	NG PROCH	IK MDI		C	DMM ·

Figure 1.4-23



00000	N000000 00006 N000000	LNC
<rs232< td=""><td>2&gt; DNC PROGRAM</td><td></td></rs232<>	2> DNC PROGRAM	
00000	<pre>:/* all Can_Cycle that's ok */</pre>	DEL
00001 -	Ve all Can Cuala that's ok #/	
00003		
00006 08999	FILE NAME : 00006	REN
SPD_S1	* O0000	
SPD_S2	* 00001	
1 I	* Q0003	
1 I	× Q0006	SETD
1 I	08999	IR
1 I	SPD_S1	
1 I	SPD_S2	DOWN
1 I	5F0=52	
1 I		LOAD
00003	1827 11:19 AM 03/09/200	
		NEXT
COUNT	7 FREE: 4833280	
EDIT	M-RDY EDIT M-RDY	
ок	SEL USEL ALL UALL CAN	ICEL

3. Select [1.POU YUEN SOFTWARE] to switch to the screen as the following figure.

Figure 1.4-24

Introduction of function buttons

[SEL], [USEL], [ALL] and [UALL] are effective only when the cursor is at the file list.[OK]: After selecting the file to download, click [OK] to move to the next step.

**[SEL]**: Add the file where the cursor is to the list for download. The file selected is marked with an asterisk (\*) in front of it.

**[USEL]**: Delete selected file from the list. The asterisk will then disappear.

**[ALL]**: Select all the files on the list.

**[UALL]**: Cancel the selection of all the files.

**[CANCEL]**: Cancel the function of file download.

- Introduction of the operation of columns is as the following.
  - a. At the column showing a single file name, click Up or Down to switch to file list.
  - b. At file list, click Right or Left to switch to the column showing a single file name.
- Introduction of Download function
  - a. When executing this function, make sure hardware connection is normal, and the PC has to run LNCTools which is developed by our company. Make sure also the communication protocols of both sides are consistent.
  - b. Select files on NC side to be downloaded.
  - c. If download a file only, move cursor to the desired file and click [YES].



- d. Select save path or file name to be stored on PC side.
  - ①. If download a file only, users can select destination path and file name on PC side.

Users can also input a new file name. After selection, click **[YES]** to move to next step.

00000	N00000	00006		N000000	LNC
	DOWNLO	AD C PC >			
ι -C- ι		AUTOEXEC			DEL
( -D- )		DEBUG LOG	-		
ι -E- 1 ι -H- 1		IBMDOS - SY PDOXUSRS -			
( <b>-Z-</b> )		PDOXOSKS.			REN
(BC31)					
[ DEVTOOL ]					
	AND SETTIN	4			SETD
GOING321					IR
[LNCM300]					
LNCM5001					DOWN
					LOAD
TARGET AU	TOEXEC.BAT				
CURRENT	: \				NEXT
EDIT M-R	DY	EDIT M	RDY		°
YES	INTO REP	H CALCE	L		
· · · · · ·					

Figure 1.4-25

②. If download more than a file, users can only select the path on PC side for download, destination file names will be the same as the source files. After selection, click

**[YES]** to move to next step.

00000	N000000	00006		N000000	LNC
	DOWNLOAD	) ⊂ PC →			
[ -C- ]					DEL
ι -D- 1					
( <b>-E</b> - )					
ι -H- Ι					REN
(BC31)					
DOCUMENTS AN		<b>S</b> 1			
GOING321	D SETTING				SETD
LNCLATHE					IR
[LNCM300]					
LNCM5001					DOWN
[LNCM5201]					LOAD
LNCM600MATE					
CURRENT C: \					NEXT
		FRIT	M DDV		
EDIT M-RDY		EDIT	M-RDY		
	O REFH	CAL			



e. Inspect the name of the file to be downloaded. If decide to download the file, click [OK] to start downloading file to PC side.



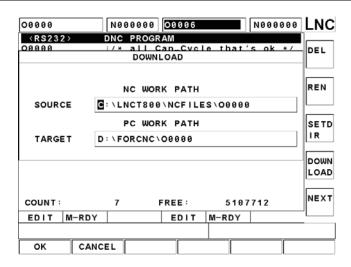


Figure 1.4-27

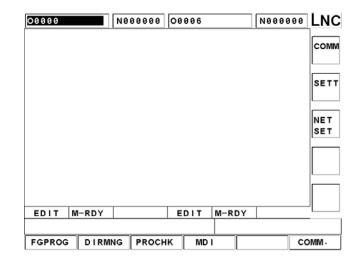
# [UPLOAD]

1. Transmit file from PC side to NC side via RS232. Click [UPLOAD] function button to show the following screen.

00000	N00000	00006	Ν	000000	LNC
<pre></pre>	DNC PROG :/* all :/* UP	Can_Cycle Can_Cycle LOAD	e that's	ok */ 	UP LOAD
08999 SPD_S1 SPD_S2	1.POU YUE	N SOFTWAR	Ε		
	2 - GERNAL	SOFTWARE			
COUNT:	7	FREE :	50565	12	HOME
EDIT M	I-RDY	EDIT	M-RDY		
YES	CALCEL				

Figure 1.4-28

2. Select [2.GENERNAL SOFTWARE] to switch to the screen of communication connection as the following figure. Refer to [COMM.] for detailed instructions on the operation.





3. Select [1.POU YUEN SOFTWARE], and if PC side is running the transmission software developed by LNC, the following screen appears.

00000	NØ	00000	00006		N00	0000	LNC
	U	P LOAI	D C PC )				
ι -C- ι			0000	0			UP
τ - D - ι			0000				LOAD
[ -E- ]			0001	I		I	
( -H- )			0002	-			
ι – <b>Ζ</b> – ι			0003				
11			0004				
[.]			0005				
			0000				
			0007				
			0008			I	
			0009			l	
			0010	,			
SOURCE 00	000						
SOURCE OF	000						
CURRENT C	: \LNCT	800\NC	FILES				HOME
EDIT M-R	DY		EDIT	M-R	DY	,	
YES	ΙΝΤΟ	SEL	US	EL	PGDN	CAL	CEL

Figure 1.4-30

	00000	N0	00000	00006		N0000	00	LNC	
		U	DOAL						
	ι -C- ι			0000				UP	
	τ — D — ι			0000	6			LOAD	
	ι — Ε— Ι			0001					Column B
	ι — Η — ι			0002					
	- <b>Z</b> - 1			0003					
Column A	τ			0004					
Columna	1			0005					
				0006					
				0007					
				0008			P	- (	
				0009			lr		Column C
				0010					Columnic
	SOURCE	00000				_			
	SOURCE	00000					—lr		
	CURRENT	C:\LNCT	800\NC	FILES				HOME	
	EDIT N	I-RDY		EDIT	M-RDY				
								$\mathbf{r}$	Column D
	YES	ALL	UALL	REF	н	NEXT	CAL	CEL	

Figure 1.4-31

Introduction of function buttons

[SEL], [USEL], [AII] and [UALL] are effective only when the cursor is at the file list.
 [YES]: This function button is not effective when the cursor is at folder selection column. Click this button to move to next step.

- [INTO]: This function button works as the <input> button. Click this button at folder selection column to enter subsidiary folders. Click this button at other columns will work as the [OK] button.
- **(SEL)**: Add the file where the cursor is to the list for download. The file selected is marked with an asterisk (\*) in front of it.
- **[USEL]**: Delete selected file from the list. The asterisk (\*) will then disappear.
- **[ALL]**: Select all the files on the list.
- **[UALL]**: Cancel the selection of all the files.
- **[REFH]**: Refresh folders and file lists in work path.
- **[CANCEL]**: Cancel the function of file upload.
- Introduction of column operation methods
  - a. Column A : Column of folder selection. Displays all drive letters and folders in work path excluding which with Chinese names. When cursor is at column A, click Right to switch to column B, and click Left to switch to column C. Click Up or Down to select folder, and then click enter key or [Enter] button to switch work path.
  - b. **Column B**: Column of file selection. Displays file list in work path excluding which with Chinese names. When cursor is at column B, click Right to switch to column C, and click

Left to switch to column A. Click Up or Down to move cursor, the file name where cursor is is displayed in column C.

- c. Column C : Displays file name where cursor is in column B. When cursor is at column C, click Up to switch to column A, and click Down to switch to column D. If don't want to find file through column B, directly input file name in this column.
- d. **Column D**: Current work path of PC side. When cursor is at column D, click Up to switch to column C, and click Down to switch to column B. If length of work path is too long to be displayed in column D, click Right and Left to move cursor to inspect the correctness of the path. This column does not provide the function to let users input data, but it memorizes the last used path and hence reduces the time needed for path searching.
- Introduction of Upload function
  - a. When executing this function, make sure hardware connection is normal, and the PC has to run LNCTools which is developed by our company. Make sure also the communication protocols of both sides are consistent.
  - b. Select file in PC side to be uploaded. If upload a file only, move cursor to the file and click
     [OK].
  - c. Select files in NC side to Save As. The path to upload to NC is the same as current working path. If want to save to other path, use File Management to set the desired working path at first.
    - If upload a file only, select or enter a file name to save. After selecting, click [OK] to move to next step.

00000	N000000 00006 N000000	
<rs23< td=""><td>2&gt; DNC PROGRAM</td><td>1</td></rs23<>	2> DNC PROGRAM	1
00000	:/* all Can_Cycle that's ok */	UP
00001	ok */	LOAD
00003	UP LOAD ( NC ) ok */	LOAD
00006 08999	FILE NAME : 00000	
SPD_S1	00000	
SPD_S2		
0.0101	00003	
	00006	
	08999	
	SPD_S1	
	SPD_S1 SPD_S2	
	3PD_32	
I		
COUNT	: 7 FREE: 5027840	HOME
EDIT	M-RDY EDIT M-RDY	_
ок	CANCEL	

Figure 1.4-32

 If upload more than a file, destination file names will be the same as source files. Move to next step directly.



d. Inspect uploaded file names, and if surely to upload files click **(**OK**)** to start uploading files to NC side.

00000	N0000	00 0006	N00000	INC LNC
<r\$232></r\$232>	DNC PR			
00000	:/* al		that's ok *	<u> </u>
	UF	LOAD		LOAD
	PC	WORK PATH		
SOURCE	: \LNCT	800\NCFILES	00000	
	NC	WORK PATH		
TARGET	C:\LNCT	800\NCFILES	00000	
COUNT	7	FREE:	5027840	HOME
EDIT M-R	Y V	EDIT N	I-RDY	
			·	_
ок си	NCEL			

Figure 1.4-33

## 1.4.6 COMM. (RS232 Communiaction)

In Edit mode, users can click **[**COMM.**]** function button to perform file transmission or receiving functions between controller and other PC.

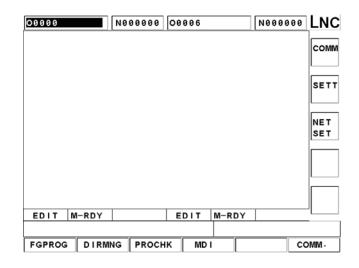


Figure 1.4-34 Communiaction Connection major screen

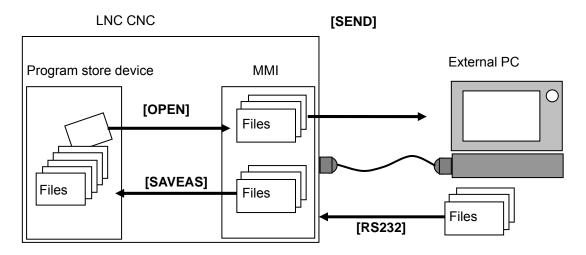


Figure 1.4-35 File transmission or receiving between controller and other PC Click [COMM] function button, and then functions of [COMM] [SETT] and [NET SET] appear.

# [COMM.]

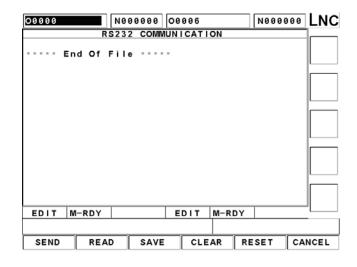


Figure 1.4-36 File Transmission Major Screen

Before using RS232, make sure wiring is OK, and check if RS232 settings are compatible with external device. When RS232 transmission screen appears, controller is ready to receive programs at any time; controller receives automatically and displays the external program on screen whenever a program comes in, and meanwhile external PC dominates the transmission.

After users click **[COMM.]**, buttons on screen become function buttons of **[SEND]**, **[READ]**, **[SAVE]**, **[CLEAR]**, **[RESET]**, **[CANCEL]**, etc.

Introduction on each function button is as the following:

**[SEND]** :Transmit part programs in controller to external PC by RS232.

00000	N000000 00006	N000000	LNC
End	RS232 COMMUNICATION		
	SELECT FILE		
	FILE NAME : O00000 C:\LNCT800\NCFILES\*		
	00000         [ -A- ]           00001         [ -B- ]           00003         [ -C- ]           00006         [ -U- ]		
EDIT M-F	RDY EDIT M-RDY		
ок (			

Figure 1.4-37 Select file transmission function

**(READ)** :Read part programs transmitted from external PC to controller by RS232.

**[SAVE]** :Save received part program. Part program transmitted to controller are not saved after the transmission, users have to manually save the programs. Click Save function button, and the following screen appears, select the save path and file namem and then click **[OK]** button finish the process of saving file.

00000	N000000	00006	N000000	LNC
	RS232 COM	NUNICATION		
···· End	Of File			
	SA	VE		
	FILE NAME :	00000		
	C:\LNCT800\	NCFILES\*		
	00000 00001	τ -A- 1 τ -B- 1		
	00003	( -C- )		
	00006	t -U- 1		
EDIT M-F	RDY	EDIT M-RDY		·
ок с	CANCEL			

Figure 1.4-38 Save file function screen

**[CLEAR]**: Give up and clear program files on screen. If the received data are not correct, click this function button to reset transmission status of the hardware.

# [SETT]

Settings of RS232 must be correct and compatible with PC in order to successfully proceed RS232 transmission. Adjust with the following parameters:

Parameter Serial Number	Name
P0388	File Transmission Port (0:not use, 1:COM1, 2:COM2)
P0389	File Transmission Rate (bps)
P0390	File Transmission Data Bit (5~8 bit)
P0391	File Transmission Stop Bit (0:1 bit,1:1.5 or 2bit)
P0392	File Transmission Parity Check Bit (0:not ust, 1:odd, 2:even)
P0393	File Transmission Code (0:ASCII, 1:EIA, 2:ISO)

# [NET SET]

Click Network Setting function button, and the following screen is displayed. Up tp 10 online disks can be set.

00000	N000000	00006		N000000	LNC
NC NAME: LNC USERNAME: LNC GROUP: WOF					
STATUS PC NA	ME	SHARE D	IR	PWD -	1
E) X UICH4 F) X G) X H) X J) X J) X K) X L) X	INXP	FORCNC		****	
M) X CHING N) X	i−YI	CNC	I	* * * * * *	
EDIT M-RDY		EDIT	M-RDY		
OK CANC	EL				

Figure 1.4-39

- Introduction of columns
  - a. **NC NAME:** Displays computer name in the content of C : \Net\system.ini. The name cannot be duplicated in the same web domain. Default content of file is LNCDOS.
  - b. **USERNAME**: Displays user name in the content of C : \Net\system.ini. The name is the account used to log in computer. Default content of file is LNCDOS.
  - c. **GROUP:** Displays workgroup in the content of C : \Net\system.ini. The name is the workgroup name used to log in controller. Default content of file is WORKGROUP.
  - d. STATUS
    - (1). Displays drive letter used for connection in C : \Net\2net.bat.
    - 2. 10 drive letters from E to N.
    - ③. Driver letter is fixed, users cannot set by themselves.
    - ④. o and X after drive letter indicates the connection condition of the drive. o indicates there is a connection, and X indicates no connection.
    - (5). If previously set online drive letter is not E~N, online drives E~X will be deleted after using Network setting functions.
  - e. **PC NAME:** Input complete computer name which controller connects to. Chinese names are not supported, and the biggest length is 12 digits.
  - f. **SHARE DIR** : Input shared folder names in computer which controller connects to. Chinese names are not supported, and the biggest length is 12 digits.



- g. PWD: This column is used to input the password used to log in connected computer. The real content of password shows while being entered in input column, but after clicking Enter button the column will use 6 asterisks (\*) to show the password. The biggest length of password is 12 digits.
- Introduction of function buttons
  - a. Use Up, Down, Right, Left buttons to move cursor to input column.
  - b. Input data in input line, and click Enter button to input data to the column assigned by cursor.
  - c. Data in column will be deleted after clicking Enter button if not data input in Input Line.
  - d. Use Page Up and Page Down to switch page.
  - e. Cancel : Quit network setting page without saving changes.
  - f. ESC : Same function as Cancel button.
  - g. [OK]: Data changed will be stored after [OK] button is clicked. Network settings will be effective after reboot, a prompt box appears to ask whether users want to reboot. The screen is shown below as the following.
- Network condition may sometimes be not very good and makes a connection hard to be made. If the above functions are used but a certain online drive cannot be connected, the same drive will be attempted to be connected to automatically for 3 times and, if all failed, next online drive will be connected to. When all online drives are tried, it will then enter system.

# 1.5 Compensation Function (OFFSET)

Click <OFFSET> to enter [WEAR], [GEOM], [SHIFT], [MACRO], [WORK]. Operators can modify these settings in MDI Mode when machine preparation is done.

## 1.5.1 WEAR : Tool Wear Compensation

Click [WEAR] button to enter the following screen, and then manually input data in MDI mode. When users input wear compensation while program is running, a password input dialogue box appears. After the password is correctly input, the values can be input. Some users are not used to input password when input compensation values, so they can set Pr.0899 as 0, then password protection is disabled. Timings for password protection are shown in the following chart:

NC status	Parameter 0206	Parameter 0899	Password protection	Remark
Machine not ready	_	_	_	Cursor locked, unable to input
Machine ready	—	_	No	Not in program execution
Cycle Start	0	_	No	Can't do wear compensation when in motion
Machine Hold	1	0	No	Password protection not enabled
Section stop	1	1	Yes	

000	00			N 0 0	0000	00	006			N 0 0	0000	LNC
NUN 01 02	ITYP 0		W_R 0.000 0.000		W 0.0 0.0			W. 1 • 0 (	00	-	W_Z 000 000	ABS
03 04 05	0 0 0		0 · 0 0 0 0 · 0 0 0 0 · 0 0 0		0 · 0 0 · 0 0 · 0	00 00	e	· 01	00	0. 0.	000	INC
06 07 08	0 0 0		0 · 000 0 · 000 0 · 000		0 · 0 0 · 0 0 · 0	00 00	6	· 0( · 0(	00	0. 0.	000 000 000	NORU
09 10 INP	0 0 UT:	IN	0.000 0.000 C U		0.0 0.0 : MM	00		1		0.	000 000 10	NT
ABSOLI	ЛЕ 8.882	RELA X1	TIVE 8.882	MACI X1	11NE 8.882	ABSC X2	OLUTE 8.888	RELA	TIVE 8.888	MACH	INE 8.888	MINU
¥1	8.888 -8.883 8.889	¥1 21 C1	8.000 -0.003 0.000	¥1 21 C1	8.888 -8.883 8.889	Y2 Z2 C2	8.000 -0.001 0.000	YZ ZZ C2	0.000 -0.001 0.000	YZ ZZ C2	8.889 -8.881 8.889	NT
ED	IT	M-I	RDY			E	DIT	M-F	RDY			-
w	EAR		GEOM		SHIF	r	MAC	RO	WO	RK		

Figure 1.5-1 Tool Offset



Figures and decription of each column are as the following:

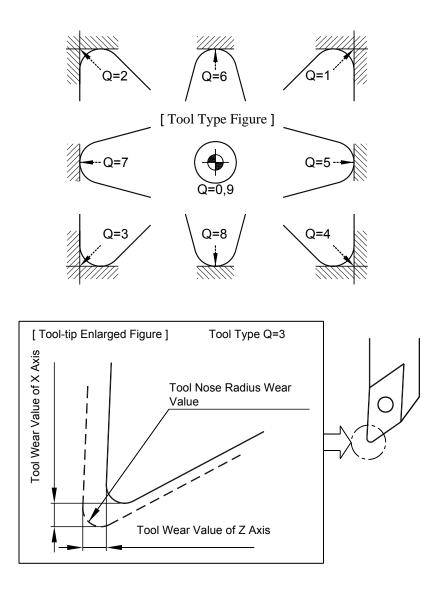
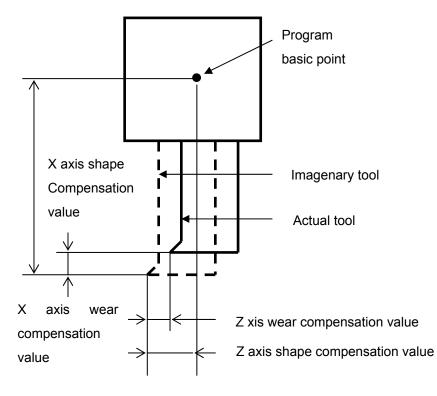


Figure 1.5-2 Tool Type & Wear Value

Types: tool type

- W\_X: X AXIS wear compensation value
- W\_Z: Z AXIS wear compensation value
- W\_R: Radius wear compensation value





Each time when use a tool compensation number in a part program, absolute coordinate changes along with tool compensation value, and the value is:

# absolute coordinate value = machine coordinate values – external offset (WORK SHIFT) – G54 ~ G59 offset – (tool shape compensation value + tool wear compensation value)

Click <PAGE $\downarrow$ > buttonto see more sets of setting (up to 30 sets).

Move cursor to the set to be set, in MDI mode, input setting values, and click <INPUT> to write into controller.

## 1.5.2 GEOM : Tool Shape Compensation

Click [GEOM] button to enter the following screen, and perform modification.

000	00			N 0 0	0000	00	006			N 0 0	0000	LNC
NUM 01 02 03 04 05	TYP 0 0 0 0		G_R 0.000 0.000 0.000 0.000 0.000	)	0.0 0.0 0.0 0.0	00	6	G_ - 00 - 00 - 00 - 00	0 0 0 0	0. 0. 0.	G_Z 000 000 000 000 000	ABS
06 07 08 09 10	0 0 0 0		0.000 0.000 0.000 0.000 0.000		0.0	00 00 00 00		- 00 - 00 - 00 - 00 - 00	0 0 0 0	0. 0. 0.	000 000 000 000 000	
ABSOLUT		ABS	S UI	MACE		ABSO	LITE	P	AGE :	1 / HeCH	10	МІМ
X1 Y1	0.002 0.000 0.003 0.000	81 ¥1 Z1 C1	8.002 8.000 -0.003 0.000	81 ¥1 Z1 C1	0.002 0.000 -0.003 0.000	X2 Y2 Z2 C2	8.000 8.000 -0.001 8.000	¥2 ¥2 Z2 C2	0.000 8.000 -0.001 0.000	HZ YZ ZZ C2	8.888 8.888 -8.881 8.889	NT
ED	IT	M-F	RDY			E	DIT	M-R	DY			]
WE	AR		GEOM		SHIF	r	MAC	RO	wo	RK		

Figure 1.5-4 tool shape compensation screen

Types: tool type

G\_X: X AXIS shape compensation value

G\_Z: Z AXIS shape compensation value

G\_R: radius shape compensation value

Directly input and midify values in MDI mode when preparation is done. But to G\_X, G\_Z, use [MXxx] and [MZzz] to perform compensation value setting. The formula is as the following:

Compensation value =machine coordinate values –external offset (WORK SHIFT) –G54 ~ G59offset – input value

## 1.5.3 SHIFT : Work Coordinate Offset

00000		N00	0000	00006		N000000	LN
(	SHIFT VA	LUE>		MEASU	REMENT		
х	1 0	.000		X1	0.000		
Y	1 0	. 000		Y1	0.000		
z	1 0	. 000		Z1	0.000		
с	1 0	.000		C1	0.000		
							L
ARS			PELAT	IVE	MAC		
	OLUTE		RELAT		MACH	=	
X1	0.002	X 1		0.002	X1	0.002	
X1 Y1	0 · 002 0 · 000	X1 Y1		0.002 0.000	X1 Y1	0.002 0.000	
X1 Y1 Z1	0 · 002 0 · 000 - 0 · 003	X1 Y1 Z1		0 · 002 0 · 000 -0 · 003	X1 Y1 Z1	0.002 0.000 -0.003	
X1 Y1	0 · 002 0 · 000	X1 Y1 Z1		0.002 0.000	X1 Y1	0.002 0.000	
X1 Y1 Z1	0 · 002 0 · 000 -0 · 003 0 · 000	X1 Y1 Z1		0 · 002 0 · 000 -0 · 003	X1 Y1 Z1	0.002 0.000 -0.003	
X1 Y1 Z1 C1	0 · 002 0 · 000 -0 · 003 0 · 000	X1 Y1 Z1		0.002 0.000 -0.003 0.000	X1 Y1 Z1 C1	0.002 0.000 -0.003	

Click **[SHIFT]** button to enter the following Work Coordinate Offset (WORK SHIFT) setting screen:

Figure 1.5-5 Work Coordinate Offset (WORK SHIFT) setting screen

In MDI Mode, there are 2 input methods. Instructions are as the following.

- Method 1 : Directly input offset amount of each axis, input [X20. Z20.], and click [INPUT]. The input values are updated to offset values, i.e., offset value = input value.
- Method 2 : Input measured values, input [MXxx MZzz], and click [INPUT]. The input values are updated to measured values, i.e., measured value = input value.

Offset value formula is as the following:

offset value =machine coordinate values - input value -G54 ~ G59offset - (wear compensation value +shape compensation value )

### 1.5.4 MACRO Variable

Click **[MACRO]** button to enter Macro Variable screen. In this function, variables can be input ormodified. The modification method is to move cursor the position which is to be modified, and input desired value, and then click <INPUT>. Variables begin with # are Local Variable, and those begin with @ are Global Variables. Refer to the chapter of macro in programmer's manual for detailed instructions.

00000		N000000	00006		N000000	LNC
NO	VALUE		NO	VALUE		I
#0001	\ \	ACANT	#0011	,	VACANT	#
#0002	\ \	ACANT	#0012	,	VACANT	
#0003	\ \	ACANT	#0013	,	VACANT	<u> </u>
#0004	۱ ۱	ACANT	#0014	,	VACANT	
#0005	\ \	ACANT	#0015		VACANT	0
#0006	\ \	ACANT	#0016		VACANT	
#0007	\ \	ACANT	#0017	,	VACANT	· · · · ·
#0008	۱ ۱	ACANT	#0018	,	VACANT	
#0009	\ \	ACANT	#0019	,	VACANT	
#0010	\ \	ACANT	#0020	,	VACANT	
				PAGE	: 1/ 3	
ABSO	LUTE	RELA	TIVE	MACH	INE	
X1	0.002	X1	0.002	X1	0.002	
Y1	0.000	Y1	0.000	Y1	0.000	<u> </u>
Z1	-0.003	Z1	-0.003	Z1	-0.003	
C1	0.000	C1	0.000	C1	0.000	
EDIT	M-RDY		EDIT	M-RDY		·
WEAR	GEOM	SHIF	T MAC	RO W	ORK	

Figure 1.5-6 Local Variable of Macro Variable

00000		N000000	00006		N000000	LN
NO	VALUE		NO	VALUE		
00001		0.000	@0011		0.000	#
00002		0.000	00012		0.000	
0003		0.000	@0013		0.000	r
00004		0.000	@0014		0.000	
0005		0.000	0015		0.000	0
0006		0.000	@0016		0.000	
00007		0.000	00017		0.000	<u> </u>
0008		0.000	@0018		0.000	
0009		0.000	@0019		0.000	
00010		0.000	@0020		0.000	
				PAGE	1/75	
ABSO	LUTE	RELAT	IVE	MACH	INE	1
X1	0.002	X1	0.002	X1	0.002	
Y1	0.000	Y1	0.000	Y1	0.000	<u>г                                    </u>
Z1	-0.003	Z1	-0.003	Z1	-0.003	
C1	0.000	C1	0.000	C1	0.000	
EDIT	M-RDY		EDIT	M-RDY		<u> </u>
WEAR	GEOM	SHIF	T MAC	RO WO	DRK	

Figure 1.5-7 Global Variable of Macro Variable

#### 1.5.5 WORK : Workpiece Coordinate System

Click function button **[WORK]** to enter workpiece coordinate system setting screen. There are totally 7 sets of workpiece coordinate system to be set which respectively represent expansion offset, and G54 to G59. When preparation is done, operators can use cursor to mark sets, and input strings of Xxx...Zxx..., xx represents the axis-direction to be input with values, and click <INPUT>, and then coordinate value will be renewed immediately for part programs to call different coordinate systems.

The 1<sup>st</sup> page is expansion offset (0), G54, G55, G56, etc. workpiece coordinate system, and the next pageis for G57, G58, G59, etc.

G54 machine coordinate values of home point =G54 setting value +expansion offset (0) setting value. G55 machine coordinate values of home point =G55 setting value +expansion offset (0) setting value. G56 machine coordinate values of home point =G56 setting value +expansion offset (0) setting value. G57 machine coordinate values of home point =G57 setting value +expansion offset (0) setting value. G58 machine coordinate values of home point =G58 setting value +expansion offset (0) setting value. G58 machine coordinate values of home point =G58 setting value +expansion offset (0) setting value. G59 machine coordinate values of home point =G59 setting value +expansion offset (0) setting value.

00000	)	NØ	00000	00	006				N000	000	LNC
0 G54	X1 Y1 Z1 C1 X1 Y1 Z1	0 0 0 0	· 0 0 0 · 0 0 0	G5 G5	-	X1 Y1 C1 X1 Y1 Z1			0 · 0 0 0 · 0 0	0 0 0	SET ALL SET X
	C1		.000			C1		AGE :	0.00	0	Y
AB	SOLUTE		RELAT	' I VE			M	ACH	INE		SET
X1	0.0	02   X	1	0.	00	2	X 1		0.0	02	z
Y1	0.0	00   Y	1	0.	00	0	Y1		0.0	00	<u> </u>
Z1	-0.0	03   Z	1	-0.	00	3	Z1		-0.0	03	
C1	0.0	90 C	1	Θ.	00	0	C1		0.0	00	SET
EDIT	M-RD	,		E	DIT	·	M-RI	ŊΥ			
WEA	R GE	OM	SHIF	т	M	AC	RO	WC	DRK		

Figure 1.5-8 Workpiece coordinate system setting screen-1

Expansion offset setting directly effects other coordinate systems. G54 to G59 are workpiece coordinate systems, when being set, consider workpiece coordinate, tool and program content. If want to reset a coordinate system, move cursor to the number of the coordinate system to be set, and input axis name and new coordinate value, and then click <INPUT> to set the value to the cursor-specified coordinate system. 3 axes can be written in a row, but remember to input decimal points to avoid misleading. (E.g.: X100. Z200.).

# 1.6 Graph Function (GRAPH)

## 1.6.1 Function Introduction

Click **<GRAPH>** group button. On the screen of this group, cutting path, vision angles of the path and settings for display range are shown.

### 1.6.2 GRAPH

Path display screen is as the following figure. The coordinate values displayed at the upper right part are current tool absolute coordinate and coordinate vision angles are displayed at the lower right part.

00000	N000000	00006		N000000	LNC
			X 1	0.002	
			Y1	0.000	
			Z1 C1	-0.003 0.000	
				0.000	
			MMR = 1	∱X Z	
: G96 S180		0.0.0			
N026 G94G00 X	140.Z2 F1	800;			
EDIT M-RDY		EDIT	M-RDY		"
GRAPH SET			<u> </u>		

Figure 1.6-1 Path Display screen

## 1.6.3 SET

This page is mainly for the use of setting related parameters for the display of cutting path. Usages of parameters are stated below.

00000		DOD LNC
AXES (1=XY·2	3 2 = YZ · 3 = ZX · 4 = YX · 5 = ZY · 6 = XZ · 0 = XYZ )	
METHOD (0=MANU	0 UAL・1 = SIMU−ALL・2 = SIMU−CUT)	
RANGE	(MIN) (MAX)	
X =	-100000 100000	
<b>Y</b> =	-100000 100000	
Z =	-100000 100000	
MARGIN	0	
ERASE	0 (0=NO·1=YES)	
KEEP	0 (USE SIMU GRAPH 0:NO 1:YES)	
AUTO	0 (0:AUTO 1:MANUAL)	
HOME	M-RDY HOME M-RDY	
GRAPH	SET	

Figure 1.6-2 Window definition major screen

## AXES:

Input coordinate vision angles (1=XY, 2=YZ, 3=ZX, 4=YZ, 5=ZY, 6=XZ, 0=XYZ) used when displaying the path.

# METHOD:

Input drawing range on **[GRAPH]** screen (0=manual, 1=result preview—whole travel, 2=result preview — cutting travel).

**0-MANUAL :** Preview drawing range is to read manually set maximum and minimum value.

**1-SIMU-ALL:** Preview drawing range is to read program cutting path's maximum and minimum value.

**2-SIMU-CUT:** Preview drawing range is to read program-performed cutting path's maximum and minimum value.

RANGE(MAX):

Set maximum values of X, Y, Z AXIS ranges of manual drawing.

RANGE(MIN):

Set minimum values of X, Y, Z AXIS ranges of manual drawing.

MARGIN:

Set the values of preserved margins of [GRAPH] screen.

ERASE:

When program preview is not performed, and path display is performed, select here whether to erase the previous path display screen when cutting starts. (0=NO, 1=YES).

# 1.7 Diagnosis Function (DGNOS)

Click **<DGNOS>** to enter the screen containing functions of **【ALARM】**, **【SYSUPD 【IOCSA】**, **【MLC2】**, and **【SYSTEM】**. On diagnosis function screen HMI signals and machine status can be obtained, and hence brings the convenience to maintenance and system test.

## 1.7.1 ALARM

Click [ALARM] to enter a minor function display screen which contains [ALARM], [WARN], [HISMSG],

**[LOGHST]**, **[OP LOG]** functions. When any Alarm or PLC-related operation alarm appears, Alarm or information is displayed on the monitor. Therefore, operators can use this button to obtain status explanations.

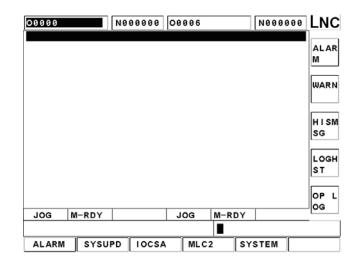
When problems occur during system operation, alarm information will be generated, and users can depend on it to find out the problem and resolution. If system gives out an alarm, users operations will immediately be stopped, and relevant information will be listed on the monitor. When the problem is resolved, click <RESET> to cancel the status.

When operation caution appears on screen, click **[HISMSG]** button for detailed information. The display of a caution will not interrupt the process of manufacturing, and it just reminds users the solution for certain condition.

Operation alarm is decided along with the design of PLC LADDER. For example, if the protection door is not well closed, the mechanism of LADDER will generate an alarm of [DOOR NOT CLOSE], and the malfunction of cooling water circulation for cutting will result in the message of [COOLANT LOW], and so on. Therefore, when an alarm occurs, carefully inspect the condition of the machine and peripheral equipments.

(This section is applicable to tool machine manufacturing personnel.)

The compilation of alarm messages is done by technician of tool machine manufacturing factories in accordance with the designs of PLC LADDER, and considerations for machine operation. Users should not change them discretionarily. When machines leave the factory, customers should be immediately informed of the related instructions. The contents of these alarms should be compact and clear.



**[ALARM]** : This screen mainly displays abnormalities inside of the system.

Figure 1.7-1

[WARN] : This screen mainly displays abnormalities of PLC.

00000		N000000			N000	DOD LNC
<u>MOT 9001</u> X axis			/12/200 t(+)	7		ALAR M
						WARN
						H I SM SG
						LOGH ST
						OP L
HOME	1-RDY	WARN	HOME	M-RDY		OG C
	1-801	WARN				
ALARM	SYSU	PD IOCSA	MLC2	S	STEM	

Figure 1.7-2

**[HISMSG]** : This screen mainly displays system version information and grammar status of manufacturing.

00000 N00	00000 00006	N000000 LNC
VER 04.00.000C17 Reset issue Reset issue Reset issue Reset issue Reset issue Reset issue Reset issue Reset issue Reset issue NO=10-1234 : Alar NO=10-1234 : Alar	rm Message Not F	AL AR M WARN H I SM SG
HOME M-RDY	HOME M-F	
ALARM SYSUPD	IOCSA MLC2	SYSTEM

Figure 1.7-3 Information function screen

**[LOGHST]** : This screen mainly records previous alarms and warnings.

00000	N00	0000 00	006	N00000	• LNC
MOT 9003 Yaxis	3: 14:23:4 over soft		2/2007 +)		ALAR M
	3: 14:23:4 oft limit	16 03/1	2/2007		WARN
	l∶ 14∶23∶6 over soft				H I SM SG
	l0: 14:17: prror of >			communica	t LOGH ST
	58: 17:00: A-RDY		09/2007	DY	OP L Og
ALARM	SYSUPD	IOCSA	MLC2	SYSTEM	

Figure 1.7-4

# [OP LOG]

This screen mainly records previous operations such as managment, measurement, tool compensation, thermal, variable, coordinate, statistics, RG.D of PLC, System, User, Change of controller mode and status, and Change of S bit status.

Each of the records is divided into 2 lines. The formats are as the following :

# Format 1 : Related to operation page Time/Date : [Page Name : Modify Data 1 | Modify Data 2 | Modify Data 3 | …] (Previous value → Modified value)

#### Format 2 : Not related to operation page

Time /Date : [Simple button action | Modification of controller information | ...] Previous value  $\rightarrow$  Modified value

The format of time is hh : mm : ss; hh represents hour ; mm represents minute ; ss represents second. The format of date is MM/DD/YYYY, MM represents month ; DD represents day ; YYYY represents year. [Page Name] indicates which page is edited. And the next item is the category of the data modified, and data category appears one at a time. [Previous Values] indicates the value of data prior to modification, and [Modified Value] indicates the value of data after modification.

0000	N000000 O	0006	N000000	LNC
2007/03/12 1	4:23:46			
MODE: MEM -	> EDIT			ALAR
2007/03/12 1	4:23:46			M
MODE: MDI -	> MEM			
2007/03/12 1	4:23:45			
MODE: MPG -	> MD I			WARN
2007/03/12 1	4:23:45			
MODE: RAPID -	> MPG			
2007/03/12 1	4:23:45			
MODE: JOG -	RAPID			HISM
2007/03/12 1	4:23:45			SG
MODE: HOME -	> JOG			
2007/03/12 1	4:23:27			LOGH
Reset				
2007/03/12 1	4:23:26			ST
Reset				
2007/03/12 1	4:23:26			OP L
				OG
EDIT M-RDY		EDIT M-RDY		
ALARM SYS	UPD IOCSA	MLC2 SY	STEM	

Figure 1.7-5

## 1.7.2 SYSUPD : System Update

This function can be executed only when machine is in NO-RDY status. Firstly click EMG-STOP, and click [SYSUPD], and then the system update screen appears. Users can use Up and Down to select the item to proceed. After selection, click [YES] to perform the function.

00000	N000000	00006		N000000	LNC
					YES
	SYSTEM	I UPDATE			
1	<ul> <li>SYSTEM</li> </ul>	UPGRADE			
2	· DISK DI	AGNOSIS			
3	· PARAMET	ERS BAC	KUP		
4	· PARAMET	ERS RES	TORE		
5	· FONT IN	STALL			
HOME NO-RDY	WARN	HOME	NO-RDY	WARN	
Choose functi	on item t				
ALARM SYSU	PD IOCSA	MLC2	2 SYS	STEM	

Figure 1.7-6 System Upgrade screen

# A. SYSTEM UPGRADE:

Select [SYSTEM UPGRADE] and click [YES]. There are 2 methods to upgrade.

[1. GENERAL DISK/NET] : Upgrade by online drives or disk.

[2. RS232 TRANSMISSION] : Upgrade by RS232.

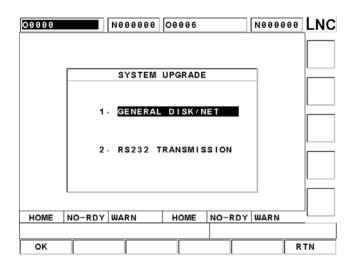


Figure 1.7-7 upgrade method Selection Screen



Select desired method according to necessity, and click [OK] button.

- 1. Upgrade by 【1. GENERAL DISK/NET:】
  - a. After selecting this method, a dialog box appears to let users select the path of file source.
    - Column A : When cursor is at column A, use Up and Down buttons to move cursor to column B. Column A displays source path of upgrade files, if the path is known, directly enter it in column A.
    - Column B : When cursor is at column B, use Right and Left buttons to move cursor to column A. Column B is used for the selection of source folder of upgrade files, and it displays both drive letters and folder names. Use Up and Down buttons to move cursor to desired folder, and click 【INPUT】 button; and meanwhile column A displays the selected path, and column B displays folders and drive letter in the path.
  - b. After selecting source path, move cursor to column A and click [OK].

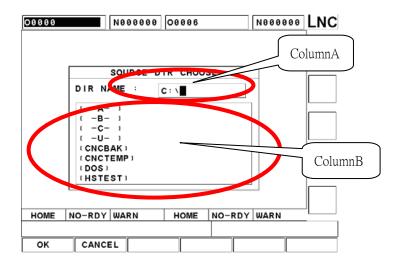


Figure 1.7-8 Upgrade Path Selection screen



c. After selecting path, confirm if surely to upgrade from that path. If yes, click [OK].

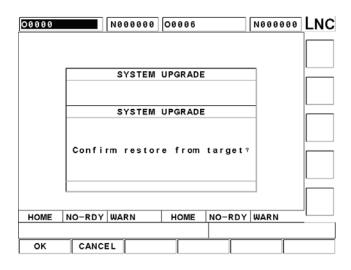


Figure 1.7-9 upgrade Path [OK] ation Screen

d. If the specified path is incorrect, the following screen appears.

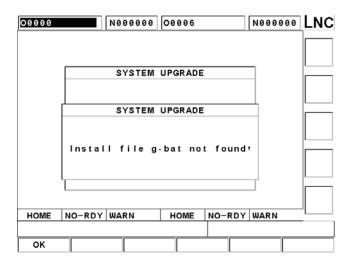


Figure 1.7-10 Upgrade Path Error Prompt screen

e. If the source path is correct, system automatically enters the installation screen.

## 2. Upgrade by [2. RS232 TRANSMISSION]

When executing this function, make sure hardware connection is normal, and the PC has to run LNCTools which is developed by our company. Make sure also the communication protocols of both sides are consistent.

Select source path of upgrade files. The path is on the connected PC. (Refer to the introductions of upload, download and DNC functions of File Manager for the information about columns and function buttons.)

00000	N000000 00006	N000000	NC.
	SYSTEM UPGRADE		
	[ - <b>C</b> - ]	1	
	ι -D- 1		
	τ -E- 1 τ -H- 1		
	(-Z-)		
	(BC31)		
	[DEVTOOL]		
	IDOCUMENTS AND SETTINGS IGOING321		
	C : \		
		ʻ	
EDIT	NO-RDY WARN EDIT NO-RDY	WARN	
UPG	INTO REFH	RTN	1

Figure 1.7-11 Upgrade Path Selection screen

After clicking Upgrade, confirm if surely to upgrade from that path. If yes, click [UPG] button.

00000	N000000	00006		N000000	LNC
	SYSTEM	UPGRADE			
τ -C-	1				
t -D-	1				
	SYSTEM	UPGRADE		_	
Confi	rm restor	e from	target?		
0.100	CNCYLNCS			-	
				-	
EDIT NO-RDY	WARN	EDIT	NO-RDY	WARN	
OK CANC	EL				

Figure 1.7-12 Upgrade Path [OK] ation screen

If the source path is correct, system automatically enters the installation screen.



#### Introduction of System Installation:

After leaving the system, the following screen appears. Version of current installed software in CF card (Current Version) is displayed on the screen, and if this is the first time to install, it displays Not Install and the version of the software (Installing Version) to be installed now. Click [N] if don't want to install, and it will reboot to enter the system. Click [Y] if want to install, it will also reboot after the installation, and enter the system.

WELCOME TO INSTALL LNC-T800 SERIES Current Version: T800\_VER\_00.00.028

Installing Version: T800\_VER\_00.00.028

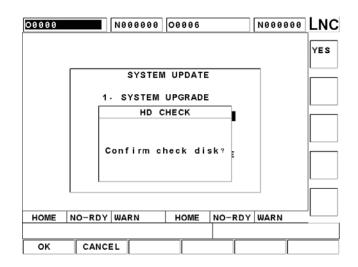
Are you sure to install?[Y,N]?

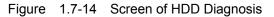
Figure 1.7-13 Screen of instruction before upgrade



#### B. HD CHECK

The following dialog box appears. Click [OK] and return to DOS mode.





Users input drive letter A or C. If users do not input, it will diagnose drive C by default.

Welcome maintenance utility ... What DRIVE to DIAG[A,C]?

Figure 1.7-15 Select letter of drive to be diagnosed

Users can choose between 4 work items : (1) Scan for Virus, (2) Disc Scan, (3) Disk Defrag, (4) Reboot

Welcome maintenance utility ... What DRIVE to DIAG[A,C]?C 1.PCscan Virus checking 2.DISK doctor disk diagnostic and errer-fix 3.DEFRAG Disk access performance enhancement 0.Quit Choise an Option[0,1,2,3]?

Figure 1.7-16 Options of HDD diagnosis functions

## C. PARAM BACKUP

The following dialog box appears after selecting this function. It displays parameter types for backup. Move cursor with Up and Down to desired type, and click Select to start the backup of files of the type. If want to backup parameters of all types, click Select All. After selecting, click [OK].

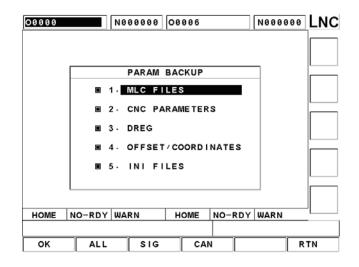


Figure 1.7-17 Parameter Backup Item Selection screen

Select method of parameter backup.

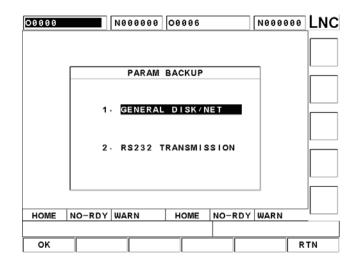


Figure 1.7-18 Parameter Backup Method Selection screen

1. If use [1. GENERAL DISK/NET], the following screen appears. Select the path to save file, and click [OK].

00000	N00000	00006		N000000	LNC
	TARGET D	IR CHOOS	SE .		
	DIR NAME :	C:\CNCBA	K N		
	( -A- ) ( -B- ) ( -C- ) ( -U- )				
	[] [.]				
HOME	NO-RDY	HOME	NO-RDY		
ок	CANCEL				

Figure 1.7-19 Parameter Backup Path Selection 1

If use [2. RS232 TRANSMISSION], the following screen appears. Select the path to save files, and click [BAK]. When executing this function, make sure hardware connection is normal, and the PC has to run LNCTools which is developed by our company. Make sure also the communication protocols of both sides are consistent.

00000 N000000 00006 N000000	
PARAM BACKUP	
( -C- )	
( <b>-D-</b> )	
(BC31)	
(DEVTOOL)	
(DOCUMENTS AND SETTINGS)	
(GO1NG32)	
C: N	
EDIT NO-RDY WARN EDIT NO-RDY WARN	
BAK INTO REFH	RTN

Figure 1.7-20 Parameter Backup Path Selection 2



#### D. PARAM RESTORE

Use Up and Down to move cursor to the type to lead in, and click Select to start the restored files of the option. If want to restore parameters of all types, click Select All. After selecting, click [OK] button.

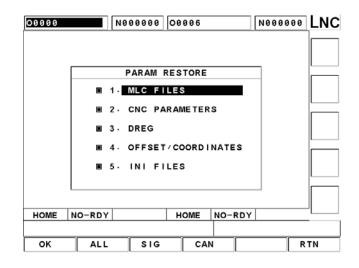


Figure 1.7-21 Parameter Type Selection

Select method to lead in parameters.

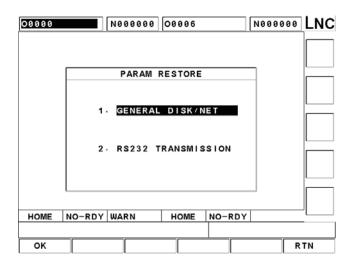


Figure 1.7-22 Parameter Lead In Method Selection

 If use 【1. GENERAL DISK/NET】, the following screen appears. At input line, users can use Up and Down to switch to subsidiary screen of folder selection, and at the subsidiary screen, use Right and Left to return to input line. After input or selection of source path, check if cursor is at input line, and if not, move cursor to input line. Click 【OK】 to lead in parameter files.

00000	N000	000 000	06	N00000	■LNC
	SOURC	EDIRC	HOOSE		
	DIR NAME :	C:\	HUUJE		
		C: \			
	ι -A- ι ι -B- ι				
	ι -C- ι ι -U- ι				
	CNCBAK 1				
	( DOS )				
L	(HSTEST)				
HOME N	IO-RDY	НО		NDY WARN	_
ок	CANCEL				

Figure 1.7-23 Parameter Restore Path Selection screen 1

2. If use [2. RS232 TRANSMISSION], the following screen appears. Click [RES] after selecting the path for restore. When executing this function, make sure hardware connection is normal, and the PC has to run LNCTools which is developed by our company. Make sure also the communication protocols of both sides are consistent.

00000		N000000	00006		N000000	
		PARAM	RESTORE			
	t −C−	1				
	( -D-	1				
	( -E- ( -H-	1				
	t – Z –	1				
	BC311					
		OLI ENTS AND	OF TTIN	201		
	GOING		SETTING	351		
	C : \				1	
L					_	
EDIT N	O-RDY	WARN	EDIT	NO-RDY	WARN	
RES		REF	1		F	TN

Figure 1.7-24 Parameter Restore Path Selection screen 2

a. After restoring finishes, it automatically reboots and enters system.



E. Font Installation

Select method to install font.

00000		N000000	00006		N000000	LNC
_					_	
-		FONT	INSTALL		_	
	1.	GENERA	AL DISK/N	1ET		
	2 -	RS232	TRANSMIS	SION		
HOME	O-RDY		HOME	NO-RDY		
ок					R	TN

Figure 1.7-25 Font Installation Method Selection screen

 If use 【1. GENERAL DISK/NET】, the following screen appears. At input line, users can use Up and Down to switch to subsidiary screen of folder selection, and at the subsidiary screen, use Right and Left to return to input line. After input or selection of source path, check if cursor is at input line, and if not, move cursor to input line, and click 【OK】.

00000	N000000 00006 N00	0000 LNC
	FONT INSTALL	
	DIR NAME : C:\	
	t -A- 1 t -B- 1 t -C- 1	
	(CNCTEMP) (DOS)	
	(HSTEST)	
HOME	NO-RDY HOME NO-RDY WAR	N
ок	CANCEL	

Figure 1.7-26 Font Installation Path Selection Screen 1



2. If use [2. RS232 TRANSMISSION], the following screen appears. Click [FONT] after selecting the path for installation. When executing this function, make sure hardware connection is normal, and the PC has to run LNCTools which is developed by our company. Make sure also the communication protocols of both sides are consistent.

00000	N000000	00006		N000000	LNC
	FONT	INSTALL			
t — t					
	- ,  - ,				
	- 1				
(BC)					
	TOOLI CUMENTS AND	SETTING	351		
	NG321				
C: \				1	
			_		
EDIT NO-RDY EDIT NO-RDY					
FONT I	NTO REF	H		R	ΤN

Figure 1.7-27 Font Installation Path Selection Screen 2

3. After clicking [OK], users will be asked if the path is correct. If yes, click [OK].

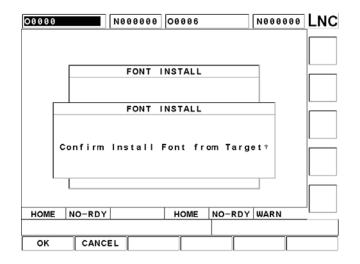


Figure 1.7-28 Font Installation Path



1. If path is correct, it will quit system, and the following screen appears. Click Y to start installing font.

24x24 Font 3.0 of LNC serial Install on First Disk[C:\LncT800] Make sure for INSTALL C:\LncT800[Y,N]?

#### Figure 1.7-29 Font Installation

2. The following screen appears after installation is complete. Click any button to finish installation and reboot.

16x15 Font 3.0 of LNC serial Install on First Disk[C:\LncT800] Make sure for INSTALL C:\LncT800[Y,N]?Y Please wait,file preparing ... Please wait,file installing ... C:\LncT800\:Finish !! Press any key to continue . . .

Figure 1.7-30 Font Installation Complete screen



#### 1.7.3 IOCSA

**[IOCSA]** is used to inspect I/O and system interior status. There are I, O, C, S, A.

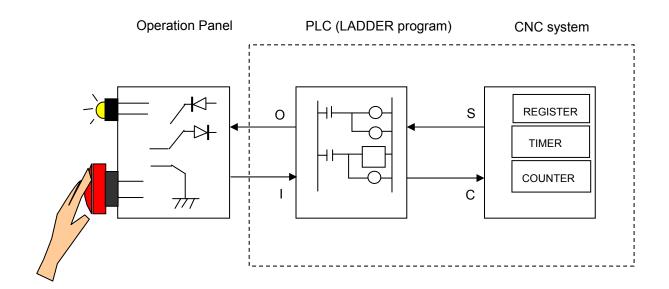


Figure 1.7-31 I/O and System Interior Status

0000	N000000 00006	N000000 LNC
I 0000 [0]0 0 0 0010 0 0 0 0 0020 0 0 0 0 0030 0 0 0 0	0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0	0000000000000000000000000000000000000
0040 0000 0050 0000 0050 0000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<u> </u>
0070 0000 00000 0000 0010 0000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000000000000000000000000000000000000
0020 0000 0030 0000 0040 0000 0050 0000	0 0 0 0 0 0 0 0 0 0 0 0 0 A 0000 0 0 0 0	
0060 0000 0070 0000	0     0 <td>000000000000000000000000000000000000000</td>	000000000000000000000000000000000000000
10000: 程式編輯 準備完成	程式编辑	
警報内容 系統更		系統資訊

Figure 1.7-32 IOCSA Major Screen

This screen has 5 parts. Appoint focus by using function buttons on the right side. Use <PAGE↑>, <PAGE↓> to switch IOCSA pages. In IOCSA window, click Up, Down, Left, Right direction buttons to move cursor to specified positions. During the movment, instructons on certain IOCSA can be seen. Besides, positioning methods are provides. Add the number to be positioned after I, O, C, S, A, and click <INPUT> to directly position to the specified position. E.g.: Input I111, O222, C121, S8, A124.

### 1.7.4 MLC2

Click **[MLC2]** major function button to enter the screen as the following. On the screen, there are 5 minor functions including **[LAD]**, **[CNT]**, **[REG]**, **[DRG]**, and **[TMR]**.

Click  $\ensuremath{\left[ \ensuremath{\mathsf{LAD}} \ensuremath{\right]}$  , the screen is as the following:

00000	NØ	00000	00006		N00000	LNC
-JLAB EMG [-						LAD
				( ) A0499		СNТ
AØ499				C0036		
				()- CØ536	-	REG
–] END (–				—   ( )- A0001 00030		DRG
					1	TMR
HOME N	I-RDY		HOME	M-RDY		
ALARM	SYSUPD	IOCSA	MLC	2 SY	STEM	

Figure 1.7-33 MLC2\LADDER Graph

In the Input Line of [LAD] screen, input letters such as I, O, C, S, A, R, TM, etc., followed by numbers to perform search, and then click <INPUT> to find the specified position. E.g.: Input TM001 or TM1 to find the respective positions.

Click **[CNT]**, the screen is as the following:

00000	N000000 00006	N000000	LNC
NUM 000	CUR·VALSET·VAL NUM 0 013	CUR · VAISET · VAL	LAD
001 002	0 014 0 015	0 0	
003 004	0 016 0 017	0 0	СNТ
005 006 007	0 018 0 019 0 020	0 0 0	REG
008 009	0 021 0 022	0	REG
010 011 012	0 023 0 024 0 025	0 0 0	DRG
	PAGE: 1/ 10	-	
			TMR
HOME M	HOME	M-RDY	
ALARM	SYSUPD IOCSA MLC2	SYSTEM	

Figure 1.7-34 MLC2\Counter

Click **[REG]**, the screen is as the following:

In Input Line, input Rxxxx and click <INPUT> to directly position to the input Variable position. E.g., input R123 and click <INPUT> to position to Variable R0123.

00000		N000000	00006		N000000	
NUM V	ALUE	NUM VA	LUE	NUM V	ALUE	
0000	0	0013	7	0026	30	LAD
0001	-2	0014	3	0027	0	
0002	1000	0015	9	0028	30	
0003	0	0016	10	0029	0	
0004	0	0017	10	0030	30	CNT
0005	0	0018	4	0031	0	
0006	0	0019	9	0032	0	
0007	0	0020	9	0033	0	
0008	0	0021	0	0034	0	REG
0009	0	0022	0	0035	0	
0010	0	0023	0	0036	4	
0011	0	0024	30	0037	10	DRG
0012	0	0025	0	0038	0	DRG
		PAGE :	1/27			
						TMR
HOME N	1-RDY		HOME	M-RDY		
ALARM	SYSUP	DIOCSA	A MLC	2 5	YSTEM	

Figure 1.7-35 MLC2\Variable R

Click **[DRG]**, the screen is as the following:

In Input Line, input Dxxxx and click <INPUT> to directly position to the input Variable position. E.g., input D123 and click <INPUT> to position to Variable D0123.

00000		000000	00006		N000000	LNC
NUM VAL	UE.	NUM VA	LUE	NUM VA	LUE	
0000	0	0013	0	0026	0	LAD
0001	0	0014	0	0027	0	
0002	0	0015	0	0028	0	
0003	0	0016	0	0029	0	
0004	0	0017	0	0030	0	CNT
0005	0	0018	0	0031	0	
0006	0	0019	0	0032	0	
0007	0	0020	0	0033	0	
0008	0	0021	0	0034	0	REG
0009	0	0022	0	0035	0	
0010	0	0023	0	0036	0	<u> </u>
0011	0	0024	0	0037	0	
0012	0	0025	0	0038	0	DRG
		PAGE :	1/27 -			
						TMR
HOME M-	RDY		HOME	M-RDY		
ALARM	SYSUPD	IOCSA	MLC	2 SY	STEM	

Figure 1.7-36 MLC2\Variable D

Click **[TMR]**, the screen is as the following:

00000	N000000	00006	N000	000 LNC
NUM 000	CUR·VAISET·VAL Ø	NUM 013	CUR VALSET	
001	0	014		0
002	0	015		0
003	5	016		0 CNT
004	5	017		0
005 006	3 3	018 019		0 L
007	0	019		
008	õ	021		0 REG
009	õ	022		ě 📖
010	0	023		
011	0	024		3 3 5 DRG
012	0	025		5
	PAGE:	1/ 10 -	-	
				TMR
HOME N	A-RDY	HOME	M-RDY	
ALARM	SYSUPD IOCSA	MLC2	2 SYSTEM	

Figure 1.7-37 MLC2\Timer

### 1.7.5 System Information

# [GBL]

The **[**GBL**]** page displays system maintenance variables, and this function is useful to designers and system maintenance technician. The screen is as the following:

00000	N00000	00006	N000000	LNC
NUM VALU	E NUM V	ALUE NUM	VALUE	
000	76137 013	-1 026	0	GBL
001	0 0 1 4	-1 027	0	
002	-1015	0 0 2 8	0	
003	0 0 1 6	0 0 2 9	0	
004	0 0 1 7	0 0 3 0	0	H · D
005	0 0 1 8	0 031	0	
006	0 0 1 9	0 032	0	
007	0 0 2 0	0 033	0	
008	0 021	1 0 3 4	0	
009	0 0 2 2	2 0 3 5	0	
010	0 023	0 0 3 6	1	· · · ·
011	0 0 2 4	0 0 3 7	0	
012	1 0 2 5	0 0 3 8	0	
	PAGE:	1/ 13		
ISR Coun	ter			
HOME M	RDY	HOME M-RI	DY	
ALARM	SYSUPD IOC	SA MLC2	SYSTEM	

Figure 1.7-38 System Information\System

### [H.D]: Hardware Information

Diagnosis function is composed of 5 items which inspect respectively the following objects.

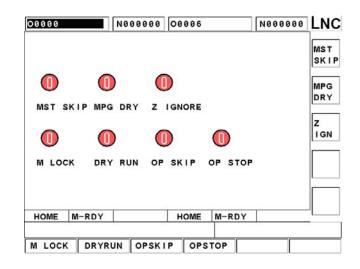
- 1. Serial number of 1<sup>st</sup> motion card
- 2. Serial number of 2<sup>nd</sup> motion card
- 3. D disk Status: display if there is a 2<sup>nd</sup> CF card installed
- 4. RAMDISK Status: display if a RAMDISK is currently installed
- 5. RAMDISK Use: If a RamDisk is installed, users can distinguish from here whether it is usable.

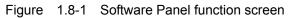
00000		LNC
EPCI01:	EPCIO CARD UNDEFINED	GBL
EPCIO2:	PCC1620-2	
DISK D:	NOT EXIST	H · D
R · D :	NOT EXIST	
R.D USE:	ABNORMAL	
HOME M-	RDY HOME M-RDY	
ALARM	SYSUPD IOCSA MLC2 SYSTEM	

Figure 1.7-39 System Information\Hardware Diagnosis

# 1.8 Software Panel function (SOFTPL)

Click **<SOFTPL>** to enter the following screen. On the screen, there are 7 function switches which are **[M** LOCK], **[DRY RUN]**, **[OP SKIP]**, **[OP STOP]**, **[MST SKIP]**, **[MPG DRY]**, and **[Z IGNORE]**.





When respectively click a button corresponding to the displayed functions, the function icon on screen will turn from Red to Green which indicates that the function is enabled. Click again to disable the function. The following chart lists instruction on the functions:

Function Switch	Function Enable (ON)	Function Disable (OFF)
	MPG can modify program coordinates, but servo axis does not be affected.	MPG can modify program coordinates, and servo axis is changed also.
	Single blocks begin with a / symbol will be ignored, and won't be executed.	Single blocks begin with a / symbol will be executed.
OP STOP	Whenever M01 is met, program will halt. If users want to continue the execution, click CYCLE START.	Controller ignores M01, and directly moves on to execute next single block.
DRY RUN	When program is running, servo feed complies with the rate by Dry Run parameters, rather than with the rate assigned by program.	Servo feed complies with the rate assigned by program.
MST SKIP	Ignore M code, S code, T code commands	Consider M code , S code , T code commands
MLOCK	When program is running, controller continues running program, but motion commands for servo axis will not be output, therefore servo axis does not move.	When program is running, motion commands of servo axis are output along with the program.
Z IGNORE	Does not execute any command relevant to Z axis.	Execute Z axis commands.

Chart 1-1

# 1.9 PARAM

Click **<PARAM>**, and parameter setting screen appears. This screen contains functions of **[NC.SYS]**, **[USROPT]**, etc.

00000		Ne	00000	00006		N00000	De LNC
R8882	30000 [81]	Maximun fo	llowing error	of X axis(um)			
R0003	30000 [S1]	Haximun fo	llouing error	of Y axis(um)			CHG
R0084	30000 [S1]	Maximun fo	llowing error	of Z axis(um)			LV
R0005 3	999999 [S1]	Maximun fo	llowing error	of 4th axis(u	m)		
R0006	1 [S1]	X axis in-	position chec	k window(um)			
R8887	1 [81]	Y axis in-	position chec	k window(um)			
R0008	1 [S1]	Z axis in-	position chec	k window(um)			AXS
R8889	1 [S1]	4th axis i	n-position ch	eck window(um)			
08818	150 [81]	X axis rap	id travel acc	/dec time(ms)			
00011	150 [S1]	Y axis rap	id travel acc	/dec time(ms)			
© <b>001</b> 2	150 [81]	Z axis rap	id travel acc	/dec time(ms)			SPL
00013	150 [31]	4th axis r	apid travel a	cc/dec time(ms	.)		JAL
00014	80 [S1]	G01 acc/de	c time(ms)				
00018	58 [81]	Thred cutt	ing acc/dec t	ine(ns)			
R0040	10 [S1]	Hinimum fe	edrate overri	ide of rapid tr	avel(%)		
©8866	0 [S1]	4th axis t	ype(8:Rotary	1:Linear)			ELC
00065	0 [S1]	Enable abs	olute encoder	(bit0"3,X:+1,Y	:+2,Z:+4,4th:+	(8)	
00172 1 [S1] Acc/Dec type for rapid travel(0:Linear, 1:S curve)							
00173	1 [81]	Acc/Dec ty	pe for cuttin	g(0:Linear,1:S	curve)		
R8088	1 [S1]	X axis rap	id travel in-	position check	windows(um)		PGDN
			PAGE	:1/6			PGDN
HOME	M-R	DY		HOME	M-RDY		
NC·S	ve 🗐	SROPT	LNCS			DPWD	CHGUSR

### 1.9.1 NC.SYS : System Parameter>

After clicking <PARAM >, parameter setting page appears on screen, and 2 minor function buttons of **[MODPWD]** and **[CHGUSR]** appear at the lower part of thescreen.

Move cursor to the parameter which is to be modified, on the right side of the parameter is the description of the parameter, and if the word string is too long and can not be displayed totally, use Right or Left buttons to move the word description. And then in the input area, directly input the desired parameter values, and click <INPUT>, then a password input dialogue box appears. After the password is correctly input, the values can be input. If leave the parameter function page and Pr.0899 is set as 0, when re-enter parameter function page to modify parameters, values will be directly input without the constraint of password protection; if leave parameter page and Pr.0899 is set to 1, when re-enter parameter page to modify parameters, the password input dialogue box will appear again, and after the password is input correctly, then the values can be input.

There are 3 timings when changing of parameters takes effect:

- 1.  $\odot$  (takes effect after reboot).
- 2. R (takes effect after reset)
- 3. Blank (takes effect at once).

Because system parameters are the references used by the controller when performing any kind of calculation, the modification and adjustment of parameters have to be extra careful, and operators have to thouroughly understand the meaning of a parameter before modifying it. In order to prevent users from mistakenly modifying certain parameters and resulting in the machine's malfunction, this controller divides users into 2 identities: General User and Manufacturer. According to different user identities, the content of the minor function buttons on the right side differ. Moreover, the color of Manufacture parameters displayed is purple, and that of those of General User is green.

### User Identity as MAKER

Click **[NC.SYS]**, and parameter setting screen appears. Categories of parameter including **[**AXS**]**, **[**SPL**]**, **[**ELC**]**, **[**MFT**]**, **[**COMP**]**, **[**HOME**]**, **[**OPER**]**, **[**OTR**]**, etc. Moreover, there is a function button, **[**CHG LV**]**, which is used to change the identity of user when changing the password. The process of the operation is firstly move cursor to parameter's position, and click Change Level; if the parameter belongs to manufacturer level, it will become a general user level parameter. Otherwise, if the password before the change belongs to general user level parameter, after the change it will become manufacturer level.

## User Identity as END USER

Click **[NC.SYS]**, and parameter setting screen appears. Because manufacturers can decide which kind of parameter is to be permitted to users to make modification, number of displayed parameters is not certain. General users can modify less parameters than manufacturers.

#### 1.9.1.1 MODPWD

Click **[MODPWD]**, and a change password dialogue box appears. This function is majorly dedicated to let users to change the password needed when modifying parameters. The password used for leaving system is not set here.

#### User Identity as MAKER

If you click **[MODPWD]** with a identity of manufacturer, the password to be modified can be:

- ♦ The password used when changing to the identity of manufacturer from the identity of general user.
- ♦ The password used when changing password with the identity of manufacturer.

### User Identity as END USER

If you click **[MODPWD]** with a identity of general user, the password to be modified can only be the password used when changing password with the identity of general user.

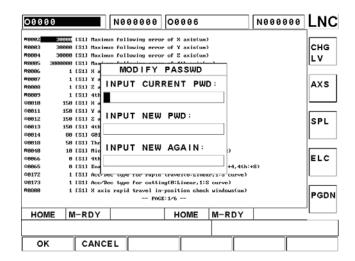


Figure 1.9-1 Change Password

#### 1.9.2 CHGUSR

Click [CHGUSR], and a dialogue box used for changing identity appears. The [\*] symbol indicates the current identity.

This function let users switch personalities between general user and manufacturer. When switch from general user to manufacturer, system requires a password, and input it switches after the password is correctly input. When switch from manufacturer to general user, no password is needed.

09999 N000000 00006	N000000	LNC
R8882 SUBUE (S1) Maximum following error of X axis(um) R8848 10 (S1) Minimum feedrate override of rapid travel(%)		AXS
		SPL
USER LIST		
* END USER Maker		MFT
		номе
POGE: 1/1		OPER
HOME M-RDY HOME M-RDY		<u> </u>
OK CANCEL		

Figure 1.9-2 Switch Personality



### 1.9.3 USROPT

Click **[USROPT]** to enter User Parameter modification screen. The method of modifying user parameters is the same as that of system parameters. Please refer to the previous chapter.

00000	N00000	00006		N000000	LNC
0001	0 Prg Prtct				
0002	0 ZRN RQURE				$\square$
0003	0 HOME 1ST				
0004	0 RPD 50×				
0005	0 TOOL NO				
0006	0 DR INTRLC	< .			
0007	0 LUB. MTHD				
0008	0 LUB. ON				
0009	0 LUB. OFF				
0010	255 POWER OFF				
	PAGE	1/20 -			
HOME	M-RDY	HOME	M-RDY		
D0801=	0:EDITABLE 1:PRC	DTECT			
NC.SYS	USROPT LNCS	\$			

Figure 1.9-3 Users Parameter

# **1.10 RESET**

There are at least 3 timings to use <RESET> button:

- 1. When alarm occurs, users have to take relevant procedures. When problem is resolved, click RESET button to return to normal system function.
- 2. After editing a program, cursor stays at a certain line of the program. Use RESET to move cursor back to the start of program. If not, program will be executed from the place where cursor stays.
- 3. Cancel an action which is currently performing. If click RESET while program is running, machine stops actions, cursor returns the beginning of program at the same time, and system returns to status of NC Ready.

# 2 LNC Controller Operation Instruction

# 2.1 Introduction of File Operation

#### 2.1.1 Open File

The 1<sup>st</sup> step to start manufacturing is to open manufacturing program. Open File is divided to open a new file and open an existing file. Instructions are as the following.

- Open Existing File:
  - 1. Switch to Edit Mode (EDIT), and make sure machine is currently in the status of preparation done.
  - 2. Switch to <PROG> module.
  - 3. Click [DIRMNG] function button to switch to File Manager screen.
  - 4. Click Up, Down buttons to move cursor to the file to be opened.
  - 5. Click <INPUT>function button to open an existing file.
- Open new file:
  - 1. Switch to Edit Mode (EDIT), and make sure machine is currently in the status of preparation done.
  - 2. Switch to <PROG> module.
  - 3. Click [DIRMNG] function button to switch to File Manager screen.
  - 4. In the Input Line, enter a new file name.
  - 5. Click <INPUT>function button to open the new file.

## 2.1.2 Copy File

## 2.1.2.1 Copy File from Disk to Controller

Instruction of operation procedures is as the following:

- 1. Switch to Edit Mode (EDIT), and make sure machine is currently in the status of preparation done.
- 2. Switch to <PROG> module.
- 3. Click [DIRMNG] function button to switch to File Manager screen.
- 4. Insert the disk containing part programs to FDD.
- 5. Click [COPY A>C] function button, and a file list of the files in the disk appears. Move cursor to select the files to be copied, and click [OK] button.
- 6. After clicking **(**OK**)** button, the destination file use the source file's name as the default file name, if want to use a different file name, manually input the name and click **(**OK**)** button to finish copy.

### 2.1.2.2 Copy File from Controller to Disk

Instructions are as the following:

- 1. Switch to Edit Mode (EDIT), and make sure machine is currently in the status of preparation done.
- 2. Switch to <PROG> module.
- 3. Click [DIRMNG] function button to switch to File Manager screen.
- 4. Insert the disk containing part programs to FDD.
- 5. Click [COPY C>A] function button, and a list of files in the controller will be displayed. Move cursor to the file to be copied, and click [OK].
- 6. After clicking [OK] button, the destination file use the source file's name as the default file name, if want to use a different file name, manually input the name and click [OK] button to finish copy.

#### 2.1.2.3 Copy File to Controller from Any Source

Instructions are as the following:

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Switch to <PROG> module.
- 3. Click [DIRMNG] function button to switch to the screen of File Manager.
- Click [COPY] function button, after clicking this function button, a dialog box appears on screen. Use Up, Down, Right, Left to move cursor to source file. FDD and online drive can also be the file source. Click [OK] after selection.
- 5. File name of the target file will be the same as the source file. If want to use a different name, input the name and click [OK] to finish copy process. After copy, users can use program list to check result.

#### 2.1.3 Delete File

Instructions on Delete File are as the following :

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Switch to <PROG> module.
- 3. Click [DIRMNG] function button to switch to the screen of File Manager.
- 4. The Delete File function button is on the 2<sup>nd</sup> page of File Manager. Therefore click Next Page at first to find the function button.
- 5. Click [DEL], and then file list is displayed. Select the file to be deleted, and click [OK].
- 6. A message box for users to confirm the deletion appears. If surely to delete file, click [OK] to finish the process of Delete File. After delete, users can use program list to check result.

### 2.1.4 Rename File

Instructions on Rename File are as the following :

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Switch to <PROG> module.
- 3. Click [DIRMNG] to switch to the screen of File Manager.
- 4. The Rename File function button is on the 2<sup>nd</sup> page of File Manager. Therefore click Next Page at first to find the function button.
- 5. Click [REN], and then file list is displayed. Select the file to be renamed, and click [OK].
- 6. After clicking [OK] button, a dialog box appears. It display the path and the file name users select, and provides an input line for users to input the new file name. When input is done, click [OK] to finish file rename process. Use program list to check result.

# 2.2 Program Edit

This chapter contains instructions on program edit and relevant functions.

### 2.2.1 Program Edit

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Open the manufacturing program to be edited.
- 3. Click **[**FGPROG**]** function button to switch to program edit screen.
- 4. Input program codes in edit screen.

### 2.2.2 Line Positioning

To position to certain position of the program, take the following procedures.

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Click [FGPROG] function button to switch to program edit screen.
- 3. Click [GOTO] function button, and an input box appears. Input serial number of the line to be positioned in the input box, and click [OK] button to position to the appointed line.

### 2.2.3 Search for Word String

To search for certain word string of the program, take the following procedures.

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Click [FGPROG] function button to switch to program edit screen.
- 3. Click [WORDFIND] button, and an input box appears. Input word string to be searched in the input box, and click [OK] button. Cursor will stayed at the first corresponding word string.
- 4. If it is not the desired word string. Click 【WORDFIND】 again, and the input box appears will contain the word string input last time. Click 【OK】 to keep searching downward. Repeat this procedure until finding the desired result or reaching the end of program.

#### 2.2.4 Copy Data Segment

To copy certain data segment of the program, take the following procedures.

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Click [FGPROG] function button to switch to program edit screen.
- 3. Move cursor to the first line of the segment to be copied.
- 4. Click **[NEXT]** to switch function button list and find **[MARK]** function button. Click it to highlight the line.
- 5. Move cursor to the last line of the segment to be copied.
- 6. Click [MARK] again to highlight the whole segment. Click [COPY], and move cursor to the position where to paste the copied program segment.
- 7. Click **[BIND]** to paste the copied segment at where cursor is. The data lines originally at where the segment is pasted will be moved to behind the segment.
- 8. Click **[UNMARK]** to cancel the highlight, and then data segment copy is done.

## 2.2.5 Delete Data Segment

To delete a single line of data, move cursor to the line and click [LDEL] to delete the line. To delete a segment of data, take the following procedures.

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Click [FGPROG] function button to switch to program edit screen.
- 3. Move cursor to the first line of the segment to be deleted.
- 4. Click **[NEXT]** to switch function button list and find **[MARK]** function button. Click it to highlight the line.
- 5. Move cursor to the last line of the segment to be deleted.
- 6. Click [MARK] again to highlight the whole segment. Click [LDEL], and the highlighted segment will be deleted.

### 2.2.6 Teach Input

When compiling a program, after moving the machine to a certain position in manual modes such as JOG, RAPID, and MPG, etc., system can automatically write absolute coordinates of the position into the program. The method with which the program is generated is as the following.

- 1. Switch to Edit mode and make sure machine preparation is done.
- 2. Click [FGPROG] function button to switch to program edit screen.
- 3. Click **[NEXT]** to switch function button list, and find **[THINMODE]** function button.
- 4. Click **[THINMODE]** function button, and then it disappears, but instead, function buttons of Cancel Teach and Insert appear.
- 5. Switch to any manual mode, such as JOG, RAPID, MPG, etc., and move machine to desired position.
- 6. Click **[THININST]**, and the current coordinates will be input to program.
- 7. When Teach Input is done, click **[THINCANC]** function button to cancel teach mode, and then buttons of Cancel Teach and Insert disappear, but Teach button appear.

# 2.3 Manual Data Input (MDI)

During manufacturing, if want to independently execute certain segments of program commands, it can be done in this mode. The method is as the following.

- 1. Switch to MDI mode, and make sure machine preparation is done.
- 2. Switch to <PROG> module.
- 3. Click [MDI] function button to switch to Manual Input screen.
- 4. Edit the program to be executed in edit screen.
- 5. When compilation is done, click cycle start, then the edited manufacturing program will be executed.

# 2.4 Execution of Part Program

The method to execute manufacturing program after opening a file or editing a part program is as the following.

- 1. Make sure the current manufacturing program is the one to be executed.
- 2. Switch to MEM Mode, and make sure machine is currently in the status of preparation done.
- 3. Click Cycle Start.

# 2.5 Origin Return (HOME)

Before executing manufacturing, proceed to Origin Return process to assure the correctness of coordinates. The method is as the following.

- 1. Switch to HOME mode, and make sure machine preparation is done.
- 2. Click the axis direction button which has to return to origin. (X+, Y+, Z+...)
- 3. After Origin Return, make sure axis direction indicator is alight. If yes, the axis' Origin Return process is done.

# 2.6 Instruction on JOG Operation

The method to move machine in JOG mode is as the following.

- 1. Switch to JOG mode, and make sure machine preparation is done.
- 2. Depending on the direction to move to, click corresponding direction buttons, e.g. X+, X-, Y+, Y-....

# 2.7 Instruction on MPG Operation

The method to move machine in MPG mode is as the following.

- 1. Switch to MPG mode, and make sure machine preparation is done.
- 2. Select the desired axis direction to move to on MPG.
- 3. Select movement magnification on MPG. The bigger the magnification is, the faster the machine moves.
- 4. After setting is done, rotate MPG to move the machine.

# 2.8 Tool Wear Compensation Setting

Instruction on tool wear compensation is as the following:

- 1. Make sure machine is currently in the status of preparation done.
- 2. Switch to <OFFSET> group.
- 3. Click [WEAR] function button to switch to tool wear compensation setting screen.
- 4. Use UP, Down buttons along with Page Down, Page Up buttons to move cursor to the number of tool to be set.
- 5. Compensation categories include [W\_R], [W\_X], [W\_Y], [W\_Z]. Use Left, Right buttons to move cursor the category to be set.
- 6. In Input Line, input compensation values and click <INPUT> to finish tool compensation setting.

# 2.9 Tool Length Compensation Setting

Instruction on tool length compensation is as the following:

- 1. Make sure machine is currently in the status of preparation done.
- 2. Switch to <OFFSET> group.
- 3. Click **[GEOM]** function button to switch to tool length compensation setting screen.
- 4. Use UP, Down buttons along with Page Down, Page Up buttons to move cursor to the number of tool to be set.
- 5. Compensation categories include [G\_R], [G\_X], [G\_Y], [G\_Z]. Use Left, Right buttons to move cursor the category to be set.
- 6. In Input Line, input compensation values and click <INPUT> to finish tool compensation setting.

# 2.10 Setting of Work Coordinate System (00, G54~G59)

The method to set work coordinate system is as the following :

- 1. Make sure machine preparation is done.
- 2. Switch to <OFFSET> module.
- 3. Click **[**WORK**]** function button to switch to coordinate system setting screen.
- 4. Use Up, Down, Right, Let buttons to move cursor to the work coordinate system to be set.
- 5. There are 2 methods to set coordinate system including manual input and button input. According to necessity to select from the following methods.
  - ♦ Manual Input :
    - a. In input line, directly input desired coordinates of each axis. The format of input is X\_Y\_Z\_, e.g. X10.Y20.Z30.
    - b. Remember to input the points to avoid misconception. E.g. X100. Z200.
    - c. Click <INPUT> to input values into controller, and coordinate system setting is done.
  - Button Clicking Input :
    - a. Introduction of function buttons :

[SET All]: Set current coordinate values of all 3 axes of the machine directly into the coordinate system where cursor stays.

[SET X]: Set current coordinate values of X of the machine directly into the coordinate system where cursor stays.

[SET Y]: Set current coordinate values of Y of the machine directly into the coordinate system where cursor stays.

[SET Z]: Set current coordinate values of Z of the machine directly into the coordinate system where cursor stays.

- b. Move machine coordinate to desired teach-in position at first.
- c. According to the axis direction needed to teach in to click corresponding function buttons. E.g. To teach in X-AXIS, click [SET X]; to teach in coordinates of all axes, click [SET AII].

# 2.11 Parameter Setting

The method of parameter setting is as the following:

- 1. Make sure machine is currently in the status of preparation done.
- 2. Switch to <PARAM> group.
- 3. Click [NC.SYS] function button to switch to parameter screen.
- 4. Use Up, Down, Right, Let buttons to move cursor to the parameter to be set. If the serial number of the parameter to be edit is known, input Pxxxx in input line, and click INPUT button to position to the parameter. The xxxx represents the serial number of the parameter.
- 5. After moving to the parameter, input desired values in input line, and click <INPUT>.
- 6. A box asking for a password appears. Input correct password to proceed to parameter modification.
- 7. Default value of password is 0000. The password can be changed. Please well remember the changed password, if not, parameters will not be able to be changed.

# 2.12 Backup System Parameters

It is recommended to backup machine setting parameters after machine adjustment is done. The method to backup parameters is as the following:

- 1. Prepare an empty disk, make sure it's not write-protected, and scan it for virus at first. Insert it to FDD.
- 2. Click emergent stop to let machine enter the NO-RDY status.
- 3. Switch to <DGNOS> group.
- 4. Click [SUSUPD] function button to switch to system upgrade operation screen.
- 5. Use UP, Down buttons to move cursor to PARAM BACKUP position, and click [OK] button.
- 6. Click [ALL] function button to select all parameter categories and click [OK] button.
- 7. Use UP, Down buttons to move cursor to GENERAL DISK/NET Method and click [OK] button.
- 8. Clear the displayed folder path, and input A:\. Click [OK] button to start backup parameters. When the backup is done, a prompt appears in prompt line.

# 2.13 Restore System Parameter

If the storage devices of machine break down, or the storage devices have to be replaced, and the backup of

parameters has to be led in, refer to following instructions to proceed to the process.

- 1. Insert the disk containing parameter backup to FDD.
- 2. Click emergent stop to let machine enter the NO-RDY status.
- 3. Switch to <DGNOS> group.
- 4. Click [SUSUPD] function button to switch to system upgrade operation screen.
- 5. Use UP, Down buttons to move cursor to parameter lead-in position and click [OK] button.
- 6. Click [ALL] function button to select all parameter categories and click [OK] button.
- 7. Use UP, Down buttons to move cursor to GENERAL DISK/NET Method and click [OK] button.
- 8. Clear the displayed folder path, and input A:\. Click [OK] button. Users will be asked to confirm the process. Click [OK] to start parameter lead-in. When the process is done, system will reboot automatically.