

21 Series Mill Controller Operation Manual

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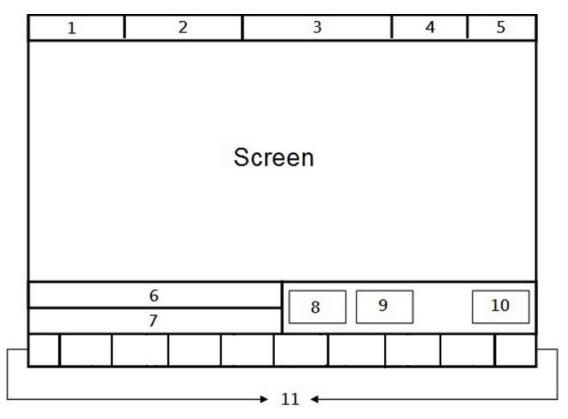
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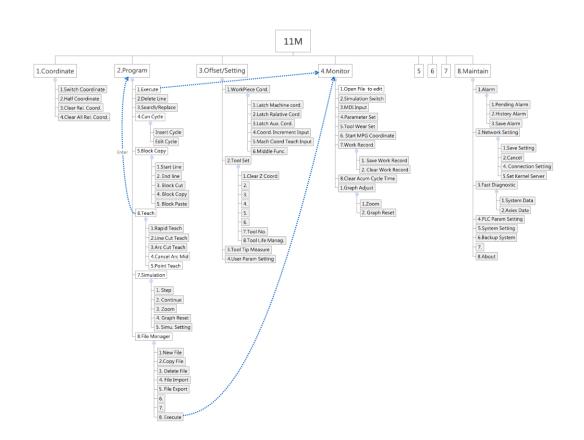
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1 Function Key and System Configuration

1.1 Main Screen Sections



- Meanings for Sections on the Display:
 - 1. Present coordinate system
 - 2. Working file name and machining command line
 - 3. Title of interface(Current interface)
 - 4. Date
 - 5. Time
 - 6. Data input
 - 7. Display(Hint)
 - 8. Status
 - 9. Mode
 - 10. Alarm
 - 11. Function Key



1.2 CNC System Configuration

1.3 Coordinate

G54 0814-2712測Z軸準	直度 N0 L1	Position	2013/9/	6 11:19:33
Machine X		000		Relative X 0.000 Y 0.000 Z 0.000
Ž	0.0 0.0	000	>	Absolute K -20.000 Y 0.000 Z 50.000
Feedrate Spindle		0.0 mm/mii 0 RPM		Dist. To Go K 0.000 Y 0.000 Z 0.000
			Auto	Alarm

- Command
 - ♦ F1 Coordinate

• Function

- \diamond Switch current coordinate system on the screen.
- ♦ Display the frequently use machining information.
- $\diamond~$ Use the function key [POS] , can switch to the current page

quickly.

PS: By pressing **[**POS**]** Key, you may jump from other page to this page interface.

1.3.1 Explanation of Function

1.3.1.1 Coordinate Display

- ♦ Current screen can display 4 kind of coordinate system.
- ♦ Whenever users press F1 [¬] Switch Coordinate _¬ function key, the coordinate on the screen will switch between four different kinds of coordinates.

1.3.1.2 F(Feedrate)

- \diamond User input Feedrate (mm/min).
- \diamond Actual Feedrate of cutting tool (mm/min).
- \diamond Percentages of Feedrate.

1.3.1.3 S(Rotating Speed of Spindle)

- ♦ User input Spindle speed (RPM).
- \diamond Actual speed of spindle (mm/min).
- \diamond Percentages of Spindle speed.

1.3.1.4 Run Time

 \diamond Machining Duration.

1.3.1.5 Part counter

 \diamond Number of parts that had been finished.

1.3.1.6 T(Tool No.)

♦ Current Tool no. and Tool compensation no.



1.3.2 Switch Coordinate

- Command
 - ♦ F1 Coordinate \rightarrow F1 switch coordinate

• Function

♦ Whenever users press F1 \lceil Switch Coordinate \rfloor function key, the

coordinate display on the screen will switch between four

different kinds of coordinates.

1.3.3 Half Coordinate

- Command
 - ♦ F1 Coordinate → F2 Half Coordinate
- Function
 - \diamond Relative coordinate divided by 2.

calculate the middle point of the object.

Operation Method

 \diamond Key in the axis that you want to calculate and then press $^{\top}$ Half

Coordinate \bot .

- Example
 - \diamond Current Rel. Coord. of X axis is 10.000.
 - ♦ Key in $\lceil X \rfloor$, and then press $\lceil half coordinate \rfloor$.
 - ♦ Current Rel. Coord. of X axis Will become 5.000.

1.3.4 Clear Rel. Coord.

- Command
 - ♦ F1 Coordinate \rightarrow F3 Clear Rel. Coord.
- Function
 - \diamond Set the Relative Coordinate to zero.
- Operation Method
 - \diamond Key in the axis that you want to calculate and then press $\[\] Clear$

Rel. Coord. \lrcorner

• Example

- \diamond Current Rel.Coord.of X axis is 10.000.
- ♦ Key in $\lceil X \rfloor$, and then press \lceil Clear Rel. Coord. \rfloor .
- \diamond Current Rel. Coord. of X axis Will be set to 0.000.

1.3.5 Clear All Rel. Coord.

- Command
 - ♦ F1 Coordinate \rightarrow F4 Clear All Rel. Coord.
- Function
 - ♦ Clear all Relative Coordinate.
- Example
 - \diamond Current X axis of relative coordinate is 10.000, Y axis is 5.000.
 - ♦ Press \ulcorner Clear All Rel. Coord. ightharpoonup function key.
 - \diamond Relative Coordinate of X and Y will be set to 0.000.



1.4 Program

G54 AT	EST-161 N0	L1	Program	20)13/7/2	15:14:50
Edit Program Name:ATEST-161	Line: 1	Column :	25			
X0.000 Y0.000	Z0.000					<u>^</u>
%@MACRO						
M66;						E
M98 P0011;						
M88;						
M98 P0012;						
M88;						
M98 P0021;						
M88;						
M98 P0022;						
M88;						
M98 P0031;						
M88;						
KI CONTRACTOR						
			 Ready 	Auto		Alarm

• Command

♦ F2 Program

- Function
 - ♦ This function provides users program management and editing

functions.

- Operation Method
 - ♦ Users can use 【 ↑ 】 【 ↓ 】 【 ← 】 【 → 】 on the key pad to move the cursor to anywhere on the screen for editing purpose.
 - \diamond With **[**Page Up**] [**Page Down**]** to switch the pages.
 - With [Home] [End] can let the cursor jump between the top and end of the line.
 - ♦ With the function key 【Prog/File】 can quickly switch between
 □ Program _ and □ File Manager _ .

1.4.1 Execute

• Command

♦ F2 Program \rightarrow F1 Execute

- Function
 - \diamond Execute current program and also change the screen to

 $^{\sqcap}$ Monitor $_{\perp}$ page.

• Note

 \diamond This function will be disabled during machining.

1.4.2 Delete Line

• Command

♦ F2 Program \rightarrow F2 Delete Line

- Function
 - \diamond Delete a line where the cursor is located.



1.4.3 Search/Replace

G54	ATE	EST-161 N0	L1	Program		20	13/7/2	15:20:19
<u> </u>	n Name:ATEST-161	Line:1	Column :	0	-		Replace	x
X0.0	000 Y0.000 Z	20.000			Search	h		î ^
%@M	ACRO							
M66;					Repla	·		E
M98 P	0011;							
M88;								
M98 P	0012;							
M88;								
M98 P	0021;							
M88;								
M98 P	0022;							
M88;								
M98 P	0031;							
M88;								
								+
				•Read	у	Auto		Alarm

- Command
 - ♦ F2 Program \rightarrow F3 Search/Replace
- Function
 - ♦ Quick search for every occurrence of a specific word or phrase

and automatically replace text.

- Operation Method
 - \diamond Press $\[\]$ Search/Replace $\]$ function key, then Replace box will

appear, just enter the text that you want to search and replace for.

1.4.3.1 Find Next

- Command
 - ♦ F2 Program \rightarrow F3 Search/Replace \rightarrow F1 Find Next
- Function
 - \diamond Find next.

1.4.3.2 Replace

• Command

 \Rightarrow F2 Program \rightarrow F3 Search/Replace \rightarrow F2 Replace

- Function
 - \diamond Replace with input text
- Operation Method
 - \diamond Press F2 \ulcorner Replace \lrcorner to replace highlight string with new string.
 - ♦ If you want to skip the current highlighted string, press F1 \lceil Find
 - Next $\ \ \,]$.

1.4.3.3 Replace All

• Command

♦ F2 Program \rightarrow F3 Search/Replace \rightarrow F3 Replace All

- Function
 - \diamond Replace all search text with input text.

1.4.3.4 Modify Setting

- Command
 - \Rightarrow F2 Program \rightarrow F3 Search/Replace \rightarrow F4 Modify Setting
- Function
 - \diamond Reset $\[\]$ Search/Replace $\]$ string.
- Operation Method
 - ♦ Press F4 \ulcorner Modify Setting \lrcorner to reset the \ulcorner Search/Replace \lrcorner content.



1.4.4 Can Cycle

Edit Prog		EST-161 N0 L1	Program	201.	3/7/2	16:57:54
	gram Name:0318-Lesso	-				
G160 G00 G03 G03 G03 G03 G03	X20. Y54. R X20. Y126. F X20. Y198. F X20. Y270. F X20. Y342. F X20. Y414.R 5; 0;	Y16.18. Z1 CommonCan	Canned Cycle Men	u k		
	11		•Read	dy Auto		Alarm

- Command
 - ♦ F2 Program \rightarrow F4 Can Cycle
- Function
 - ♦ Because SYNTEC system provides many kind of G code and

different G code has each function. When editing the program,

this function can help user to edit G code easily.

1.4.4.1 Insert Cycle

- Command
 - ♦ F2 Program \rightarrow F4 Can Cycle \rightarrow F1 Insert Cycle
- Function
 - \diamond Insert the required G code.
- Operation Method
 - \diamond Under the program edit mode, move the cursor to the desired

location and press $\[\]$ Insert Cycle $\]$.

insert into the next line of current cursor.

1.4.4.2 Edit Cycle

- Command
 - ♦ F2 Program \rightarrow F4 Can Cycle \rightarrow F2 Edit Cycle
- Function
 - \diamond Edit the current cycle.
- Operation Method

page will show up. Modify the contents and press $\ ^{\lceil}OK \, \lrcorner \,$, the

contents of the current cycle will change.



1.4.5 Block Copy

G54	ATEST-161	1 N0 L1	Program	201	3/7/2	17:01
Edit Prog	ram Name: 0318-Lesson-polar	Line: 8	Column: 0			
G90 (G00 X11.76. Y16.1	8. Z10.	• •			
G160	÷17;					
G00 2	X20. Y54. R11.76;					
G03 I	X20. Y126. R11.76	.;				
G03 I	X20. Y198. R11.76	.;				
G03 2	X20. Y270. R11.76	.;				
G03]	X20. Y342. R11.76					
	X20. Y414.R11.76.	2				
//G15		,				
//M30	-					
M02						
<u> </u>						
			Ready	Auto		/
•	Path					
	♦ F2 Program \rightarrow F5 B	Block Copy				
•	Function					

 \diamond Select, cut, copy and paste more than one line of programs.

1.4.5.1 Start Line

• Command

♦ F2 Program→F5 Block Copy→F1 Start Line

- Function
 - \diamond Define the start line of block.

1.4.5.2 End Line

• Command

♦ F2 Program \rightarrow F5 Block Copy \rightarrow F2 End Line

• Function

 \diamond Define the end line of block.

1.4.5.3 Block Cut

• Command

♦ F2 Program→F5 Block Copy→F3 Block Cut

• Function

 \diamond Cut the block that had been selected.

1.4.5.4 Block Copy

• Command

♦ F2 Program \rightarrow F5 Block Copy \rightarrow F4 Block Copy

• Function

 \diamond Copy the block that had been selected.

1.4.5.5 Block Paste

• Command

♦ F2 Program \rightarrow F5 Block Copy \rightarrow F5 Block Paste

• Function

- Operation Method
 - ♦ Move the cursor to the desire line and press 「Start Line」 and function key 「End Line」 enable.
 - ♦ Press (↑) (↓) (Page Up) (Page Down) to select desired area.
 - ♦ Press 「End Line」, block between 「Start Line」 and 「End Line」
 will be selected.
 - 1. \rightarrow Function key $\[\]$ End Line $\]$ disable.
 - 2. \rightarrow Function key $\[\]$ Block Copy $\]$ enable.
 - 3. \rightarrow Function key $\[\]$ Block Cut $\]$ enable.
 - 4. \rightarrow If $\[\]$ Block Cut $\]$ being use, the whole block that had been highlight will be cut off.
 - 5. \rightarrow Function key $\lceil Block Copy \rfloor / \lceil Block Cut \rfloor$ disable.
 - 6. \rightarrow Function key $\[\]$ Block Paste $\]$ enable.

the content that had been cut or copy will paste at the cursor location.

- ☆ If 「Block Copy」is used, the block that had been selected will not disappear.
- Note
- ❖ If 「Block Cut」 is use, and do not paste the content immediately, the cut program will disappear.
- ♦ The contents of 「Block Cut」 can be pasted for only one time but the contents of 「Block Copy」 can be pasted for many times.

1.4.6 Teach

G54 ATEST-161 N0 L1 Program	2013/7/2	17:04:32
Edit Program Name : 0318-Lesson-polar Line : 1 Column : 0		1 -
G90 G00 X11.76. Y16.18. Z10.;	Absolu	te
G16G17;		
G00 X20. Y54. R11.76;	X	0.000
G03 X20. Y126. R11.76.;	Y	0.000
G03 X20. Y198. R11.76.;	-	
G03 X20. Y270. R11.76.;	Z	0.000
E		
G03 X20. Y342. R11.76.;		
G03 X20. Y414.R11.76.;		
//G15;		
//M30;	Arc Middle Point	
	X axis coord.	
M02	Y axis coord.	
•Ready	Auto	Alarm

• Command

♦ F2 Program \rightarrow F6 Teach

• Function

absolute coordinate value to NC program.

 \diamond Omit the manual input problem.

1.4.6.1 Rapid Teach

• Command

♦ F2 Program \rightarrow F6 Teach \rightarrow F1 Rapid Teach

- Function

Traverse $\ \ \,$ function in current program.



1.4.6.2 Line Cut Teach

• Command

♦ F2 Program \rightarrow F6 Teach \rightarrow F2 Line Cut Teach

- Function
 - \diamond Add the current absolute coordinate as the value of $\[G01\]$ Linear

Cutting $\ \ \,$ function in current program.

1.4.6.3 Arc Cut Teach

- Command
 - ♦ F2 Program \rightarrow F6 Teach \rightarrow F3 Arc Cut Teach
- Function
 - Add current absolute coordinate as the input value of 「G02/G03
 Circular Cutting ↓ function in current program.
- Operation Method
 - ♦ Move the worktable to the arc center and press 「Arc Cut Teach」,
 current absolute coordinate will be define as the arc center.
 - ♦ Move the worktable to the ending of the arc and press 「Arc Cut Teach」, current absolute coordinate will be define as the ending of the arc. Controller will automatically calculate the relation between middle and end point and determine whether to use G02 or G03. The calculation result will be regarded as the input value of 「G02/G03 Circular Cutting」 function.

1.4.6.4 Cancel Arc Middle

- Command
 - ♦ F2 Program \rightarrow F6 Teach \rightarrow F4 Cancel Arc Middle
- Function
 - \diamond Clear the arc middle that had been set.
 - \diamond If the arc middle are not being set, this function will not enable.

1.4.6.5 Point Teach

• Command

- ♦ F2 Program \rightarrow F6 Teach \rightarrow F5 Point Teach
- Function
 - $\diamond~$ Move the worktable to the arc center and press $~~^{\mbox{\sc Point Teach}}$,

current absolute coordinate will be input into current cursor

location.



1.4.7 Simulation

G54	ATEST-10	61 N0 L1		Program	2013/	7/2	16:2
X=(348.244294954151, -	11.76) Y=(27.62253668583	24, -24.59306	17527345) Z	=(10, 10)		:0318-Lesso	n-polar L4
			100.0	200.0	Absol	ute	
					Х	348.	244
					Y	16.	180
					Z	10.	000
200.0							
100,0					G90 G00) X11.	76. Y
					G16G17		
					G00 X20	#"	R11
0.0				D=0.1 m			
Syntax Error							
					G03 X20		
					G03 X20). Y27	0. R1
ļ						3704	1 1
				•Ready	Auto		

- Command
 - ♦ F2 Program→F7 Simulation
- Function
 - ♦ Program simulation for the actual machining route.
 - \diamond Capability of debug.
 - \diamond Default display range will be the span of the full program.
 - ♦ Simulation setting can be modified by F5 \lceil simulate Setting \rfloor ...

1.4.7.1 Step

- Command
 - ♦ F2 Program→F7 Simulation→F1 Step
- Function
 - \diamond Simulate the program block by block.
 - \diamond Monitor the variation of the coordinate for single block.



1.4.7.2 Continue

- Command
 - ♦ F2 Program \rightarrow F7 Simulation \rightarrow F2 Continue
- Function
 - \diamond System will scan all of the programs and then do the simulation.

1.4.7.3 Zoom

- Command
 - ♦ F2 Program \rightarrow F7 Simulation \rightarrow F3 Zoom
- Function
 - \diamond Zoom in/out the simulation window.
- Operation Method
 - ♦ Press F3 \lceil Zoom $_{
 m J}$, there will be a block show up. Use [↑] [↓]
 - (\leftarrow) (\rightarrow) can move the window up, down, left and right.
 - ♦ Use [Page Up] [Page Down] to change the zooming area.
 - \diamond Press **[ENTER]** to check the result.

1.4.7.4 Graph Reset

- Command
 - ♦ F2 Program \rightarrow F7 Simulation \rightarrow F4 Graph Reset
- Function
 - \diamond Reset the simulation result to default.

G54 ATEST-161 N0 L1 Program 2013/7/2 16:37:02 X=(348.244294954151, -11.76) Y=(27.6225366858324, -24.5930617527345) Z=(10, 10) :0318-Lesson-polar L4 Parameter Setting X 00.0 Color 14 15 0 1 2 10 2 3 Path 13 Cursor 14 200.0 R 255 G 0 B 255 R 255 G 255 B 0-4 5 Draw Mode YX 🔻 Quadrant 1st Quadrant 6 Simu Mode Simulation V 00.0 /16.1: View Angle 8. Vertical 0.000 0.000 Horizontal .76; 9 Scope 1.76. Syntax Error X Min. 0.000 X Max. 0.000 11.76. 0.000 Y Min. 0.000 Y Max. 11.76. 0.000 0.000 Z Min. Z Max. (m) X20 X242 n 11 74 Alarm

1.4.7.5 Simu. Setting

- Command
 - ♦ F2 Program \rightarrow F7 Simulation \rightarrow F5 Simu. Setting
- Function
 - \diamond Setting the relative simulation item.
- Simulation parameter
 - 1. Color
 - Provide 16 different colors (Setting 0~15).
 - 2. Path Color



- Simulation path color.
- Provide 16 different colors (Setting $0 \sim 15$).

3. Cursor Color

• Color of cursor point

- Provide 16 different colors (Setting $0 \sim 15$).
- 4. RGB Value
 - Except the 16 default color, user can define the color by them self.
- 5. Draw Mode
 - User can define the profile simulate plane.
 - Plane can define are as below.



- 6. Setting quadrant
 - User can define the quadrant of simulate plane.
 - Quadrant can define are as below.
 - ♦ First
 - ♦ Second
 - Third
 - Fourth

- 7. Simulate Mode
 - Setting profile simulate method.
 - Simulation
 - When user go to the ^r Monitor ^a page, simulation will show up automatically.
 - System will scan the whole program and detect the simulation boundary, and then simulation will execute. No need to define the simulate boundary.
 - Direct Draw
 - ◆ When user go to the [『]Monitor』 page, cursor will

show up but simulation will not execute

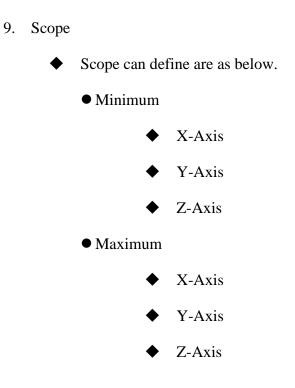
automatically.

- User need to define the simulation boundary first.
- When the machining starts, cursor will follow up as well.
- Not Simulation
 - Close the simulation function.
- 8. View Angle Setting
 - Under XYZ draw mode, by setting this parameter,

simulation will show up with 3D simulation.

- View angle can define are as below.
 - Vertical
 - ♦ Horizontal







G54	ATEST-161	NOL1 File N	lanager	2013/7/2	15:52:57
\DiskC2\OpenCNC\NcFiles	Free Space: 14	4506093KB			
Name	Size	Modified	Comm	ent	<u>^</u>
0318-lathe	215	2013/03/19 14:33	3:09 G00 X	(20.0 Z5.0;	
0318-Lesson	269	2013/03/18 16:24	4:18 G90 G	600 X0. Y0. Z10.;	
0318-Lesson-polar	212	2013/04/18 17:18	3:39 G90 G	00 X11.76. Y16.18. Z	.10.;
ATEST-161	421	2013/06/28 18:57	7:17 X0.	000 Y0.000 Z0.000	
Bug-0411	61	2013/04/11 21:11	L:37 G00 A	10. Y10. Z0.	
G0201	86	2013/03/29 15:18	8:18 %@M	IACRO	_
G0300	855	2013/04/01 11:35	5:53 %@M	IACRO	-
klp-c d6r0.nc	241657	2011/05/16 15:02	2:32 %//Bo	ottle Base Rough Cut	
M0066	376	2013/06/14 17:30):11 %@M	IACRO	
M0088	471	2013/06/14 17:30):49 %@M	IACRO	
Marco_hw1	288	2013/04/02 10:50	5:15 %@M	IACRO	
Marco_hw3	61	2013/03/28 22:10):58 %@M	IACRO	
Marco_hw4	34	2013/04/01 11:37	7:16 G54 G	90	
MDIBlock	2	2013/04/16 15:45	5:51		
O0003	23	2013/04/02 21:19	9:24 %@M	IARCO	
O0010	210	2013/04/18 14:52	2:17 % @N	/IACRO	
O0011	26	2013/06/14 17:20):27 %@M	IACRO	
O0012	25	2013/06/14 17:21	l:10 %@M	IACRO	
O0900	177	2012/06/08 10:38	8:26 % @N	IACRO	
O1234	32	2013/03/27 21:39			
05555 NC	226	2013/03/29 11:03	3-43	-	-
			 Ready 	Auto	Alarm

1.4.8 File Manager

• Command

♦ F2 Program→F8 File Manager

• Function

 \diamond This function key can manage all of the NC files within the data

storage device. The device can be setting with Pr3213.

- Operation Method
 - ♦ Use 【 ↑ 】 【 ↓ 】 on the key pad to move the cursor to anywhere on the screen for editing purpose.
 - ♦ With 【Page Up】 【Page Down】 to switch the cursor between pages.
 - Press [ENTER] on the key pad, to assign the current cursor file as the execute file, screen will show up with the program content and can enable to edit the program.



1.4.8.1 New File

- Command
 - ♦ F2 Program \rightarrow F8 File Manager \rightarrow F1 New File
- Function
 - \diamond Open a new file, that file will be the current edit file.
- Operation Method
 - \diamond Press \lceil New File \rfloor function key, a dialog box will appear, enter the

new file name and press [ENTER].

• Note

 \diamond Default file name has no file extension. If user want to create a

new file with file extension such as *.NC, just enter the

extension (*.NC) as well.

 \diamond The length of file name cannot be longer than 32 characters

(include file extension)

1.4.8.2 Copy File

- Command
 - ♦ F2 Program \rightarrow F8 File Manager \rightarrow F2 Copy File
- Function
 - \diamond Copy the file that remarked by cursor.
- Operation Method
 - \diamond Use (\uparrow) (\downarrow) to move the cursor to the file that want to copy.
 - \diamond Press \ulcorner Copy File \lrcorner function key.
 - \diamond A dialog box will appear, enter the new file name.
- Note
- Default file name has no file extension. If user want to create a new file with file extension such as *.NC, just enter the extension (*.NC) as well.



 \diamond The length of file name cannot be longer than 32 characters

(include file extension)

1.4.8.3 Delete File

- Command
 - ♦ F2 Program \rightarrow F8 File Manager \rightarrow F3 Delete File
- Function
 - \diamond Delete file that remarked by cursor.
- Operation Method
 - ♦ Press F3[¬] Delete File , check box will show up in front of the NC file within the [¬] File Manager _ monitor page. Use 【 ↑ 】 【 ↓ 】

to select the delete file.

- Sub-function Key
 - ♦ Select: Select file, can select more than one file and also can cancel the selection of one file.
 - ♦ Select All: Select all file.
 - ♦ Cancel Select: Deselect all files.
 - \diamond Delete File: Delete all of the selected files.
 - ♦ Delete All: Delete all file within data storage device.
- Note
- ♦ Current Programming and machining file cannot be deleted.



1.4.8.4 File Import

- Command
 - ♦ F2 Program \rightarrow F8 File Manager \rightarrow F4 File Import
- Function
 - ♦ Import outer file into controller
- Function Page Explanation
 - \diamond The upper block shows the outer devices selection with the

following choice.



DiskA

- Network
- USBDisk2
- \diamond Left column shows data structure of the outer device.
- Right column shows data structure of the inner storage of the controller.
- Sub-function Explanation
 - Copy: Copy the remarked file from the outer device to the controller.
 - ♦ Select: Select or deselect each file. (Not available for folder)
 - \diamond Select All: Select all files.
 - ♦ Cancel Select: Deselect all files.
 - ♦ Device Change: Change outer device selection.
- Operation Method
 - ♦ Press F1 \lceil File Import \rfloor , a dialog box will appear.
 - ♦ Default outer device is USB Disk.
 - ♦ If you want to change the outer device, press F5 \lceil Device

Change_, switch the cursor to the desire device and press [Enter],

then the left column data structure will change and show the data structure of selected device.

- ♦ Use (\uparrow) to select file.
- ♦ Move the cursor to the import file and press F2 「Select」 or
 【Space】 to remark file.
- After remarked all of the import file, press F1 [¬]Copy _→ then all of the remarked file will import into controller.



1.4.8.5 File Export

- Command
 - ♦ F2 Program \rightarrow F8 File Manager \rightarrow F5 File Export
- Function
 - \diamond Export file within controller to outer device.
- Function Page Explanation
 - \diamond The upper block shows the outer devices selection with the

following choice.



DiskA

- Network
- USBDisk2
- \diamond Left column shows data structure of the outer device.
- Right column shows data structure of the inner storage of the controller.
- Sub-function Explanation
 - ♦ Copy: Copy the remarked file from the outer device to the controller.
 - ♦ Select: Select or deselect each file. (Not available for folder)
 - \diamond Select All: Select all files.
 - ♦ Cancel Select: Deselect all files.
 - ♦ Device Change: Change outer device selection.
- Operation Method
 - ♦ Press \ulcorner File Export ightharpoonup, a dialog box will appear.
 - ♦ Default outer device is USBDisk.
 - ♦ If you want to change the destination device, press F5 \lceil Device

Change _, switch the cursor to the desire device and press [Enter],

then the below left column data structure will change, according to the selected device .

- ♦ Use (\uparrow) (\downarrow) to select file.
- ♦ Move the cursor to the export file and press F2 「Select」 or
 【Space】 to remark file.
- After remarked all of the export file, press F1 [¬]Copy 」 then all of the remarked file will export from controller to outer device.



1.4.8.6 Execute

- Command
 - ♦ F2 Program→F8 File Manager→F8 Execute
- Function
 - \diamond Execute current program. and also change the screen to the

 $^{\sqcap}$ monitor $_{\perp}$ page.

- Operation Method
 - ◆ Use 【 ↑ 】【 ↓ 】 to select file, and then press □ Execute _ the selected file will be the executive file.
- Note
- \diamond This function is invalid when machining.

1.5 Offset/Setting

G54			N0 L1	Offset/Setti	ng	201	3/8/22	17:05:42
Exte	rnal Shift	G54	P1(G54)	G54	P2(G55)		Machi	ne
X Y	0.000	X Y	0.000	X Y	0.000		X Y Z A	0.000 0.000 0.000 4.158
Z A	0.000	Z A	0.000 0.000	Z A	0.000 0.000		Relativ	
MPG	Shift	G54	P3(G56)	G54	P4(G57)		X Y Z A	0.000 0.000 0.000 4.158
Х	0.000	Х	0.000	Х	0.000			
Y	0.000	Y	0.000	Y	0.000		Aux. C	oord
Z	0.000	Z	0.000	Z	0.000		х	0.000
A	0.000	A	0.000	A	0.000		Y Z	0.000 0.000
				●Re	ady A	ıto		Alam

• Command

♦ F3 Offset/Setting

• Function

 \diamond User can set up the coordinate system and tool offsets with this

function.

 $\diamond~$ With the function key <code>[Offset/Setting]</code> can switch the page

quickly to the Offset/Setting page.



1.5.1 Workpiece Cord.

G54			N0 L1	Offset/Setti	ng	201	13/8/22	17:12:48
Externa	al Shift	G54F	P1(G54)	G54F	P2(G55)		Machi	ne
Y Z	0.000 0.000 0.000 0.000	X Y Z A	0.000 0.000 0.000 0.000	X Y Z A	0.000 0.000 0.000 0.000		X Y Z A	0.000 0.000 0.000 4.158
MPG S	hift	G54F	P3(G56)	G54F	P4(G57)		Relativ X Y Z A	ve 0.000 0.000 0.000 4.158
	0.000 0.000	X Y	0.000 0.000	X Y	0.000 0.000		Aux. C	oord
	0.000 0.000	Z A	0.000 0.000	Z A	0.000 0.000		X Y Z	0.000 0.000 0.000
				•Re	ady Au	ito		Alarm

- Command
 - ♦ F3 Offset/Setting \rightarrow F1 Workpiece Cord.

• Function

- ♦ For workpiece coordinate setting purpose.
- ♦ System default will be G54 if there are no specific declaration

with G54~G59.10 in the NC code.

- ♦ The External Shift will include into all the workpiece coordinate.
- Operation Method:
 - ♦ Move the cursor with $(\uparrow) (\downarrow) (\leftarrow) (\rightarrow)$.
 - ♦ Use [PageUp] [PageDown] to switch the pages.
- Note
- After setting the workpiece coordinate, user need to check the tool length again.

1.5.1.1 Latch Machine Cord.

• Command

- Function
 - ♦ Set current mechanical coordinate value into work piece

coordinate.

- Operation Method
 - \diamond Move the worktable to the target location.
 - ♦ Move the cursor to the relate work piece coordinate and press

 $^{\ }$ Latch Machine Cord. $_{\ }$

- Original value of workpiece coordinate will be replaced by the corresponding mechanical coordinate.
- Example
 - ♦ Current mechanical coordinate of X axis is 5.000
 - ♦ Current value of X axis of G54 is 0.000
 - \diamond Move the cursor to G54 X axis.
 - $\diamond~$ Press ~ $^{\mbox{\tiny F}}$ Latch Machine Cord. $_{\mbox{\tiny J}}$, the value of X axis of G54

becomes 5.000

1.5.1.2 Latch Relative Cord.

• Command

 \Rightarrow F3 Offset/Setting \rightarrow F1 Work Piece Cord. \rightarrow F2 Latch Ralative

Cord.

• Function

♦ Set current relative coordinate value into work piece coordinate.

- Operation Method
 - \diamond Move the worktable to the target location.

- Move the cursor to the relate work piece coordinate and press
 Latch Relative Cord.
- ♦ Original value of workpiece coordinate will be replaced by the corresponding relative coordinate.
- Example
 - ♦ Current relative coordinate of X axis is 5.000
 - ♦ Current value of X axis of G54 is 0.000
 - \diamond Move the cursor to G54 X axis.
 - ♦ Press 「Latch Relative Cord.」, the coordinate of G54 X axis become 5.000

1.5.1.3 Latch Aux. Cord.

- Command
 - ♦ F3 Offset/Setting \rightarrow F1 Work Piece Cord. \rightarrow F3 Latch Aux. Cord.
- Function
 - Set the current cursor located work piece coordinate value as the aux. coordinate value.
 - \diamond Aux. value appears after using middle function.
- Operation Method
 - \diamond Using middle function to calculate the aux. coordinate value.
 - \diamond Move the cursor to the relate work piece coordinate and press

 $^{\ }$ Latch Aux. Cord. $^{\ }$

- Original value of workpiece coordinate will be replaced by the corresponding Aux. coordinate.
- Example
 - ♦ Current mechanical coordinate of X axis is 5.000
 - ♦ Current value of X axis of G54 is 0.000
 - \diamond Move the cursor to G54 X axis.

♦ Press 「Latch Aux. Cord.」, the value of X axis of G54 become 5.000

1.5.1.4 Coord. Increment Input

- Command
 - ♦ F3 Offset/Setting→F1 Work Piece Cord.→F4 Coord. Increment

Input

- Function
 - \diamond Add the work piece coordinate value with the manual input value
 - and restore into work piece coordinate again.

• Operation Method

- \diamond Move worktable to the target location.
- ♦ Input increment value.
- ♦ Move the cursor to the work piece coordinate and press Coord.
 Increment Input.
- Work piece coordinate will be replaced by the cursor located coordinate +input value.
- Example
 - ♦ Current mechanical coordinate of X axis is 5.000
 - \diamond Move cursor to the workpiece coordinate G54 of X axis
 - ♦ Key in 10.000
 - ♦ Press $\[\]$ Coord. Increment Input. $\]$
 - ♦ The coordinate of G54 X axis become 15.000

1.5.1.5 Mach. Coord Teach Input

- Command
- Function
 - \diamond By the Mach. Coord Teach Input, set the current cursor located

work piece coordinate value as the new start coordinate value.

- Operation Method
 - \diamond Move the worktable to the destination.
 - ♦ Move the cursor to the relate work piece coordinate and press

 \ulcorner Mach. Coord Teach Input. $_$

- Current cursor located work piece coordinate will be replaced by the cursor coordinate+input number.
- Example
 - ♦ Current mechanical coordinate of X axis is 5.000
 - ♦ Current workpiece coordinate G54 of X axis
 - ♦ Key in 10,000
 - ♦ Press 「Mach. Coord Teach Input.」
 - ♦ the coordinate of G54 X axis become 15.000

G54 N0 L1	Offset/Setti	ng	2013/8/22	17:39:23
Aanual Center 0 (0:Manual,1:Auto) 0 (0:4Pts, 1:3Pts) Image: space	Px1 Px2 Pxm Py1 Py2 Pym press Px1 to set press Px2 to set press Py1 to set press Py2 to set	e Coorc 0.000 0.000 0.000 0.000 0.000) Z A Relat X Y Z A	0.000 0.000 0.000 4.158
<u>.</u>	●Re	ady Auto	D	Alarm

1.5.1.6 Middle Func.

• Command

♦ F3 Offset/Setting \rightarrow F1 Work Piece Cord. \rightarrow F6 Middle Func.

- Function
 - This function can help to correlate the middle point of the work piece.
 - ♦ Input the number that Middle Func caculate result to G54~G59

work piece coordinate.

 \diamond Including manual and auto setting method.

1.5.1.6.1 Manual

- Function
 - \diamond Set the Middle Func. as 0
 - \diamond User controls the machine by MPG, and then moves the tip of 3D

machine to the X&Y end point of the workpiece. This system

will calculate the center point of the workpiece automatically.

• Operation method

- Move the machine by MPG, touching Px1 point in tis figure and then press PX1 Set. The system will record the current mechanical coord. to Px1. It will also compute the middle point of Px1 and Px2 and puts the result on Pxm and Aux. X position.
- Move the machine by MPG, touching Px2 point in this figure and then press PX2 Set. The system will record the current mechanical coord. to Px2. It will also compute the middle point of Px1 and Px2 and puts the result on Pxm and Aux. X position.
- Move the machine by MPG, touching Py1 point in tis figure and then press PY1 Set. The system will record the current mechanical coord. to Py1. It will also compute the middle point of Py1 and Py2 and puts the result on Pym and Aux. Y position.
- Move the machine by MPG, touching Py2 point in this figure and then press PY2 Set. The system will record the current mechanical coord. to Py2. It will also compute the middle point of Py1 and Py2 and puts the result on Pym and Aux. Y position.
- Now, the values of Pxm and Pym are the middle point of the workpiece.
- In the WorkPiece Cord. Screen, move the cursor to the coord you want to set, press F3 insert the Aux. Coord value then this system will set the value according to the Aux Coord.

1.5.1.6.2 Auto

- Function
 - \diamond Set the Middle Func. as 1
 - ☆ Auto middle func. is different form Manual func. User only needs to enter the dimension of the workpiece and enter the boundary

coordinate. Move the machine to the start point, system will find out the middle point automatically.

- Auto middle func. is different form Manual func. User only needs to enter the dimension of the workpiece and enter the boundary coordinate. Move the machine to the start point, system will find out the middle point automatically.
- Parameter description
 - ♦ Length I: Workpiece X dimension length
 - ♦ Width J: Workpiece Y dimension length
 - ☆ Safe Distance H: This is the distance between start point P2 and the workpiece no matter X or Y direction.
 - ♦ Feedrate F: Auto. center detect speed.
 - ☆ Z Coordinate: This is the safety distance prevent the contact between the tool and work piece while moving.

• Operation method

- ☆ Move the tool to the Z height, the safe distance between tool and work piece. After that, press Z Coordinate Set, then system will record the present Z coordinate value as the safe distance.
- Move the tool down to P2 under the work piece, the start point for auto center.
- Press Auto center start, system will move the tool according to the setting data to contact with work piece and show the coordinate on the screen. It will also calculate the X Y center point of the work piece.

Go back to WorkPiece Cord. Move the cursor the workpiece
 coordinate position, press F3 insert the Aux. Cord value then this
 system will set the value according to the Aux Cord.

1.5.2 Tool Set

G5	4		N	0 L1	Offset/Setting	g	2013/8/22
	4 but Mode(A)bs Absolut Diame Geometry 0.000 0.000 0.000 0.000 0.000 0.000	e		asure	Offset/Setting	9	Machine X Y Z A Dist. To Go X Y Z A Relative
7 8	0.000	0.000	0.000	0.000			X Y Z A
	-	-	-	-	•Rea	dy	Auto

- Command
 - ♦ F3 Offset/Setting \rightarrow F2 Tool Set
- Function
 - \diamond Switch to compensate setting page.
 - \Rightarrow Actual G41/G42 compensation value = Geometry + Wear

diameter

- \Rightarrow Actual G43/G44 compensation value = Geometry + Wear length
- Function of parameter
 - ♦ Geometry: G41/G42 tool radius Dn compensation setting(not

diameter)

- \diamond Wear of geometry: Tiny geometry modification of tool.
- ♦ Length: G43/G44 tool lengths Hn compensation.
- ♦ Length wear: Tiny length modification of tool.

• Operation method

♦ With $(\uparrow) (\downarrow) (\leftarrow) (\rightarrow)$ key to move the cursor.

 \diamond [PageUp] [PageDown] to switch the page.

♦ Key in method: Absolute, Increment, Measure method

• Absolute method:

■ Press $\lceil A \rfloor$ and press $\lceil Enter \rfloor$

■ The value where the cursor is will be set as the input value.

• Increment method

■ Press $\lceil I \rfloor$ and then press $\lceil Enter \rfloor$.

■ The value where the cursor is will be set as input value +

cursor value.

• Measure method

■ Press $\lceil Z \rfloor$ and then press $\lceil Enter \rfloor$.

The value where the cursor is will be set as current Z coord

relative coord value.

- Note
 - \diamond When the tool length had been set, related tool wear will become zero.
 - ♦ This Setting is disabled during machining condition.

1.5.2.1 Clean Z relative coordinate

- Command
 - ♦ F3 Offset/Setting→F2 Tool Set.→F1 Clear Z Coord
- Function
 - \diamond Clean the relative value of Z coord.

1.5.2.2 Tool No.

• Command

♦ F3 Offset/Setting \rightarrow F2 Tool Set \rightarrow F7Tool No.

• Function

 \diamond Refer the chapter 3.3.3.5

1.5.2.3 Tool Life Manag.

- Command
 - ♦ F3 Offset/Setting \rightarrow F2 Tool Set \rightarrow F8 Tool Life Manag.
- Function
 - \diamond Refer the chapter 3.3.3.6

1.5.3 Tool Tip Measure

♦ F3 Offset/Setting→F3 Tool Tip Measure

• Function

- When the machine is equip with tool detection equipment, via the parameter setting, can move the machine table to the detective location and execute the top tip measure.
- \diamond According to different situation, here are three different method

-Single tool, single workpiece

-Single tool, multi workpiece

-multi tool, multi workpiece

-Refer the chapter 3.3.3.3.

1.5.4 User Parameter Setting

- Command
 - ♦ F3 Offset/Setting→F4 User Parameter Setting
- Function
 - ♦ SYNTEC controller provided user to set the related machining

parameter by them self.

- Function of parameter
 - ♦ Detail explanation please reference \lceil Mill Parameter Manual \rfloor .



1.6 Monitor

G54	TEST NO L1 M	onitor	2013	3/7/2	20:05:46
Absolute X -20.000 Z 100.000 Y 100.000	Dist. To Go X 0.000 Z 0.000 Y 0.000	G18 G9		Run Time Accum Run Time G00 Over G01 Over Spd Over	100 %
Feedrate Spindle	0.0mm/min 1000RPM	T 0000 Start Bloc No.		TotalAcum Part Count	
G00 X100.000 Y1 G0X100.Y100.Z10 G00 X0.000 Z100 G04X5.S1000 G00 X100.000	00.C100.				
		•Ready N	ot Select		Alarm

- Command:
 - ♦ F4 Monitor
- Function
 - ♦ This page monitors key machining information during machining

process.



1.6.1	Monitor	Area	of]	Mach	ining	Information
-------	---------	------	------	------	-------	-------------

G54		TEST N0 L1	Mor	nitor	201	3/7/2	20:05:46	ļ
Abso X Z Y	-20.000 100.000 100.000	Dist. To Go X Z Y	0.000 0.000 0.000		e G1 G90 G95 G40 G49	Run Time Accum Run Time G00 Over G01 Over Spd Over	$ \begin{array}{c} 0 & 2 \\ 0 & 0 \\ 100 & 3 \\ 100 & 3 \\ 100 & 6 \\ 100 & 6 \end{array} $	
Feed	rate	0.0 m	nm/min	т ос	000	TotalAcum	1Par	0
Spino	dle	1000R	PM	Start B No.	lock 1	Part Count	t	0
G00 2	X100.000 Y10	0.000 Z10	0.000					1
	00.Y100.Z10		8		7	6		
	X0.000 Z100.	.000;						
	(5.S1000 (100.000							
G00 2	100.000							-
				•Readv	Not Select		Alarm	
UL.				Ready	NOT Select		Alarm	I

1.6.1.1 Machine Status Monitor

- Machine information
- Absolute coordinate
- Distance to go
- Feed rate
- Spindle

1.6.1.2 Program Monitor Block

- ♦ This block will display current machining program
- ♦ Yellow bar indicate to the current running block.

1.6.1.3 Machining Information

• Function

- ♦ It is overlap with $\[\]$ Process Setting $\]$.
- ♦ Press $\[\]$ Parameter Set $\]$ can switch display information.
- Description
 - 1. G Code
 - It will show the G code under machining

- 2. Run Time Accum
 - Processing time for this workpiece now
- 3. Run Time
 - Total machining process time
- 4. Percentage ratio
 - G00 percentage
 - G01 percentage
 - Spindle speed percentage
- 5. Total Acum Par
 - Total work pieces that had been finished.
 - System won't do any initialized action automatically.
 - If you want to do the initialization by manual, press

 \ulcorner Parameter Set \lrcorner switch to \ulcorner Part count \lrcorner , set the \ulcorner Total

Acum Par 」 as 0.Part Count

- 6. Part Count
 - Count no. will begin from zero when the program is running.
 - Total work pieces number machined by CNC
- 7. Start Block
 - We can set the start block of machining process.
 - n: Set the start line number as n. (Ex. 20)
 - L+n: Set the start line number as n. (Ex.L20)
 - N+n: Search N+n located line number and then assign that line as the start line (Ex. N3).
 - T+n: Search T+n located line number and assign it as the start line (Ex. T01).
 - If line number is out of max line number, then it will assign to the last line.
 - Please refer to 3.4.3.4 break point initialization about start block go back.

- 8. Tool Data
 - T
 - 4 numbers
 - The first two code are the tool no..
 - The last two code are the tool compensate no.

1.6.1.4 Display Area of Machining Setting

- Description

 $\[\]$ Parameter Set $\]$ to change the displays.

- Explanation of Display:
 - 1. Interrupt Line No.
- \diamond Display the last interrupted serial number (N)
 - 2. Interrupt Colum No.
- ♦ Display the last interrupted line number (L)
 - 3. Spindle speed
- \diamond Speed of spindle.
- \Rightarrow It is allow to setting when system is busy. Moreover, it will be enabled
 - immediately
- Feed rate
 - \diamondsuit Set the speed of the feed rate. \circ
 - \diamond It is allow to setting when system is busy, but the value will be updated

after completely executing processing block.

- Total AcumPar
 - \diamond Total work pieces number machined by CNC
 - System cannot automatically reset this value to zero
- Part count
 - \diamond Setting current work pieces no.
 - \diamond Count no. will begin from zero when the running program is change.

- When CNC executes M code defined by parameter 3804, part count would be added 1 and run time will be reset to 0. When required part number is reached, system will change to halt status.
- Required part
 - \diamond Set the upper limit of part count number.
 - \diamond Once part count number is reached, an alarm will be pop up and

system will change to halt status.

1.6.1.5 Simulation Area

- Description
 - \diamond Display the tool trajectory of current program.
 - ♦ Related setting, please see F2-program → F5-simulaiton → F5- Simu.
 Setting.
 - ♦ Use F2 \lceil Simulation Switch \rfloor to change the display content

1.6.2 Open File to Edit

• Command:

♦ F4 Monitor \rightarrow F1 Open File to Edit

- Function
 - \diamond Load and edit the current machining program, also switch to

"F2-program" interface.

- Note:
 - \diamond Once system is on running state, edit function will be disabled.

1.6.3 Simulation Switch

- Command:
 - ♦ F4 Monitor→F2 Simulation Switch
- Description
 - \diamond Display or hide simulation display
 - \diamond $\[\]$ Graph Adjust $\]$ will enable under $\[\]$ Simulation Switch $\]$ conditions.

1.6.4 MDI Input

- Command:
 - ♦ F4 Monitor \rightarrow F3 MDI Input
- Description
 - ♦ Manual Data Input. Using for simple NC program or testing purpose.
- Operation:
 - ♦ Select MDI mode
 - \diamond MDI function is enabled after finishing HOME search action.
 - ♦ Press F3 \lceil MDI \rfloor , edit the program.
 - \diamond Press F1 (OK) to confirm the input command.
 - \diamond The command line will show up on the right upper corner of screen.
 - \diamond Press **[**CYCLE START**]** to execute the command.
- Note:

 \diamond This function is enables under MDI mode.

1.6.5 Parameter Set

- Command:
 - ♦ F4 Monitor \rightarrow F4 Parameter Set
- Function

 \ulcorner machining information ightharpoonup .

1.6.6 Tool Wear Set

- Command:
 - ♦ F4 Monitor \rightarrow F5 Tool Wear Set
 - Description
 - ♦ Display the tool wear setting interface, user can setting tool
 wear here.
 - \diamond Actual Tool length= Tool length + Tool wear
 - Parameter Setting
 - \diamond Tool Wear Set: Tiny tool length modification.
 - Note
 - \diamond If the tool length is setting by measure method tool wear

setting will become 0 after the tool length is set.

1.6.7 Start MPG Coordinate

- 1. Command:
 - F4 Monitor \rightarrow F6 Start MPG Coordinate
- 2. Description
 - Detail descriptions please refer to 3.4.3.3.

1.6.8 Work Record

• Command:

♦ F4 Monitor → F7 Work Record

- Description
 - ♦ Check current machining record and export to external storage

device.

1.6.9 Clear Acum Cycle Time

• Command:

♦ F4 Monitor → F8 Clear Acum Cycle Time

• Function

 \diamond Clear the accumulative time

1.6.10 Graph Adjust

• Command:

♦ F4 Monitor \rightarrow Next \rightarrow F1 Graph Adjust

• Description

 \diamond Zoom in/out simulation graph, this function will enable under

 \lceil Simulation Switch \rfloor is open.

- Operation
 - ♦ Please refer to 1.4.7 \lceil Simulation \rfloor .



1.7 Maintain

• Command:

♦ F8 Maintain

- Description
 - ♦ Screen displays alarm, network setting, fast diagnostic, PLC

param setting, system setting

1.7.1 Alarm

G54			TEST N0 L1	Alarm	2013/7/2	20:06:11
No.	Module	D	Issue Time	Content		
				•Ready	Not Select	Alarm
				Tready	Hor Golder	Alaitti

- Command:
 - ♦ F8 Maintain→F1 Alarm
- Description
 - ♦ Display alarm messages on the screen.

1.7.1.1 Pending Alarm

- Command:
 - ♦ F8 Maintain \rightarrow F1 Alarm \rightarrow F1 Pending Alarm
- Description
 - \diamond Display current system alarm.

1.7.1.2 History Alarm

- Command:
 - ♦ F8-Maintain \rightarrow F1 Alarm \rightarrow F2 History Alarm
- Description

 \diamond Show all the alarm history of the system.

- Note:
 - ♦ Some alarm were not displayed here, ex: MACRO alarm

1.7.1.3 Save Alarm

- Command:
 - ♦ F8 Maintain \rightarrow F1 Alarm \rightarrow F3 Save Alarm
- Description
 - ♦ Save Alarm History to external device according to the current display

content.

- \diamond Export file name are default :
- ♦ Actual alarm: actalm.txt.
- ♦ History: histalm.txt.



G54		TES	ST NO L1	Network Setting	2013/7/2	20:12:22
		IP Addres	s Paramete	ər		
IP Address	Setting		Specify an	IP Address	T	
IP Address	210	.20.98.21	Name Se	erver Parameter		
Subnet Ma	Subnet Mask 255.255.255.0			ONS		
Default Gat	tewa 21	0.20.98.1	Primary V	WINS		
		Network Dis	skRemote H	lost Path		
PC Name	N	CYANG	Dir Name	123		
User Name	•		Passwor	d		
Net Status	Code :	-1 Unknown	Error			
		Reso	urce Shared	I		
Shared Fol	der Path	DiskA\Oper	nCNC\NcFile	s		
				•Ready N	ot Select	Alarm

1.7.2 Network Setting

- Command:
 - ♦ F8 Maintain → F2 Network Setting
 - Description
 - \diamond System network setting
 - Related information
 - \diamond IP address setting
 - \diamond Select $\[\]$ Obtain an IP address automatically $\]$ when network

cable(with HUB) is used.

✤ For jumper (without HUB), select "use the following IP address" and enter IP address(the last IP no. must different from controller setting) and Subnet mask(same with controller setting)

- IP Address
 - \diamond Enter IP address that can be used.

• Sunet Mask

♦ Enter the IP address for subnet mask (the same with PC setting).

- PC name
 - \diamond Enter the same full computer name of PC.
- Dir name
 - ♦ Enter the sharing folder name (same with PC sharing folder)
 - \diamond User name and password

 \diamond If the shared folder is not setting the user and password name, user do not need to enter user name, if yes, please enter the same user name and password.





G54	TEST	10 L1 Netwo	ork Setting	2013/7/2	20:45:58
		Kernel S	erver Setting		
	Start server while boot		V		
	TimeOut (milisec)				
			•Ready N	ot Select	Alarm

• Command:

♦ F8 Maintain \rightarrow F2 Network Setting \rightarrow F5 Set Kernel Server

• Description

♦ Setting related function to kernel server

- Related infor.
 - \diamond Start server and kernel or not when power on.
 - ♦ Timeout(ms)
 - \diamond Set the acceptable time out when connecting to Kernel server

unsuccessfully.

1.7.2.1.1 Start Server

- Command:
 - ♦ F8 Maintain \rightarrow F2 Network setting \rightarrow F5 Set Kernel Server \rightarrow F1

Start Server

• Description

 \diamond Start server immediately



1.7.3 Fast Diagnostic

G54	TES	T N0 L1 Fast I	Diagnostic	2013/7/2	20:13:35
Browser::Ta	ıl				
FastSysData1	7067	FastSysData7	99	FastSysData11	-1
FastSysData2	360596	FastSysData12	0	FastSysData22	0
FastSysData3	72119	FastSysData14	5000	FastSysData23	0
FastSysData4	300495	FastSysData13	1000	FastSysData19	0
FastSysData5	2000	FastSysData15	0	FastSysData20	0
FastSysData6	10000	FastSysData16	0	FastSysData21	0
FastSysData10	23	FastSysData17	0	FastSysData24	0
FastSysData8	153358336	FastSysData18	0	FastSysData25	0
FastSysData9	153358336	FastSysData27	0.0.11	FastSysData26	6B
			•Ready No	t Select	Alarm

- Command:
 - ♦ F8 Maintain→F3 Fast Diagnostic
- Description

 \diamond Display simple diagnostic information of system and axes

G54	TES	ST N0 L1 Fast D	Diagnostic	2013/7/2	20:13:35
Browser::Ta	d				
FastSysData1	7067	FastSysData7	99	FastSysData11	-1
FastSysData2	360596	FastSysData12	0	FastSysData22	0
FastSysData3	72119	FastSysData14	5000	FastSysData23	0
FastSysData4	300495	FastSysData13	1000	FastSysData19	0
FastSysData5	2000	FastSysData15	0	FastSysData20	0
FastSysData6	10000	FastSysData16	0	FastSysData21	0
FastSysData10	23	FastSysData17	0	FastSysData24	0
FastSysData8	153358336	FastSysData18	0	FastSysData25	0
FastSysData9	153358336	FastSysData27	0.0.11	FastSysData26	6B
			•Ready No	t Select	Alarm

1.7.3.1 System Data

- Command:
 - ♦ F8 Maintain→F3 Fast Diagnostic→ F1 System Data
- Description
 - \diamond Display simple diagnostic information of system

14 TEST	N0 L1 Fast Diagr	ostic	2013/7/2	20:14:27
Browser::Tab	х	Y	Z	
FastAxiesData1	-20000	100000	100000	
FastAxiesData1	100000	100000	100000	
FastAxiesData3	100000	100000	100000	
FastAxiesData4	100000	100000	100000	
FastAxiesData5	0	0	0	
FastAxiesData6	0	0	0	
FastAxiesData7	5556	5556	5556	
FastAxiesData8	0	0	0	
FastAxiesData9	0	0	0	
FastAxiesData10	0	0	0	
FastAxiesData11	0	0	0	
FastAxiesData12	0	0	0	
FastAxiesData13	0	0	0	
		eady Not Se	lect	Alarr

1.7.3.2 Axes Data

- Command:
 - ♦ F8 Maintain→F3 Fast Diagnostic→ F2 Axes Data
- Function
 - ♦ Display simple diagnostic information of Axes

G54		TEST NO	L1		Of	fset/:	Setti	ng			20	13/7					4:56	
Inde	× Item	Value		-							-			Valu	ie(V	lot L	ogi	n)
3401	Extension Parameter(F		0	Е 0		0	8	0	0	0	0	0	0	0	0	0		0
3402	Extension Parameter(F		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3403	Extension Parameter(F		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3404	Extension Parameter(R	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3405	Extension Parameter(R	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3406	Extension Parameter(R	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3407	Extension Parameter(R	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3408	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3409	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3410	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3411	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3412	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3413	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3414	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3415	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3416	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Comment Extension Parameter Bit R81.1																		
)~1							•Re	ady	N	ot Si	elect						Ala	rm

1.7.4 PLC Param Setting

- Command:
 - ♦ F8 Maintain → F4 PLC Param Setting
- Description
 - ♦ SYNTEC's controller provides R81 ~ R100, totally 20 sets of registers

for machine manufacture use, each register have 16 Bits.

 \diamond Machine manufacture can use those 20 sets of registers provide user to

control the flag of PLC specific functions.

- Operation
 - Press \uparrow \downarrow \downarrow \downarrow \leftarrow \downarrow \rightarrow \downarrow to move cursor and [PageUp] PageDown]

go to next/previous page

- \diamond Users are able to input [0] or [1] and also add comment for every bits.
- Corresponding file name for comment: ParamExt_RBit_(L).xml
- ♦ (L)=COM/CHT/CHS/language



1.7.5 System Setting

G54	TEST NO L1	Offset/Setting	2013/7/2	20:15:32
Or	erator Mode Setting			
Inp	ut/Display Unit(0:mm, 1:inch)	0		
SV	stem Time Setting			
Da	te 2013/7/2			
Tir	ne 20/15/32			
Pr	ogram file font szie setting			
Si				
(0~1)		•Ready No	ot Select	Alarm
(0~1)				

- Command:
 - ♦ F8 Maintain \rightarrow F5 System Setting
- Description
 - ♦ This page is used to set system environment
- Operation
 - ♦ Press (\uparrow) (\downarrow) (\leftarrow) (\rightarrow) to move cursor and [PageUp] (PageDown)

go to next/previous page

1.7.5.1 Operator Mode Setting

- ♦ Setting system unit
 - $\blacksquare 0$: mm (Metric unit)
 - \blacksquare 1 : Inch (British unit)
- \diamond Note: reboot to enable setting

1.7.5.2 System Time Setting

- ♦ Date: input format YYYY/MM/DD
 - ♦ YYYY: year
 - MM: month
 - ♦ DD: day
- ♦ Time: input format HH/MM/SS
 - ♦ HH: hours
 - MM: minute
 - ♦ SS: second

1.7.5.3 Program File Font Size Setting

- ♦ Setting display of font size in program
- \diamond Note: reboot to enable setting



1.7.6 Backup System

G54	TEST NO L1	Offset/Setting	2013/7/2	20:15:59
	System Data Back	up		
	Starting to backup these files.	system files and o	compress	
	And Save it into ex	ternal Disk.		
		•Ready I	Not Select	Alarm

- Command:
 - ♦ F8 Maintain \rightarrow F6 Backup System
- Description

♦ Compress backup system data and save it into external device.

1.7.7 About

- Command:
 - ♦ F8 Maintain \rightarrow F8 About
- Function
 - ♦ Provide controller software version

2 Machine Operation Panel

2.1 Operation Panel

- POWER ON
 - \diamond Turn on controller's power

• POWER OFF

- ♦ Turn off controller's power
- Emergency Stop
 - \diamond For safety reason of user and machine in case of unusual phenomenon,

after this button is pressed, CNC would stop all motion, and all main

power. Therefore safety of people and machine will be guaranteed.

Home Mode



• When CNC power is on, please implement home search

JOG Mode (Rapid JOG)



• Operators can use JOG to control axis movement with

 $^{\Gamma}X+/X-/Y+/Y-/Z+/Z- \Box$ on panel.

Incremental JOG (IN JOG)



• Operators can use JOG to control axis movement.

MPG Mode

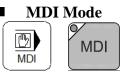


• User can use MPG (Manual Pulse Generator) mode to control axis

movement.



• Users use this function to execute machining NC file



• Users use this function to execute a block without NC file



• Enable this function under $\lceil AUTO \rfloor$ and $\lceil MDI \rfloor$ Mode, the percentage

of moving speed is depend on the MPG turning speed . This function used to check NC file.



• Enable this function under 「AUTO」 and 「MDI」 Mode, after finished

one block action hold on the $\lceil B-STOP \rfloor$ mode. To continue, users need to do the $\lceil Cycle start \rfloor$ action again. This function used to check NC file.



• Users can use this function to decide whether CNC is stop or not when

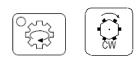
encounter with $\lceil M01 \rfloor$ within NC (Numerical Control) program, while executing NC program.



• Users can use this function to decide whether program skips or not when

program is encountered with \lceil / \rfloor sign in NC file.

Auto Tool Change in clock wise direction





Auto Tool Change ATC in counter clock wise direction

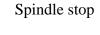


Spindle Control



Spindle CW rotation







CCW



Spindle CCW rotation

Spindle rate deceleration: Spindle speed will decelerate 10%.

Spindle rate 100%: Spindle will rotate with 100%.

Spindle rate acceleration: Spindle speed will accelerate 10%.





• Turn ON/OFF working LED

G01 Rank



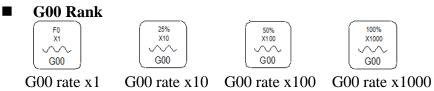




G01 rate100%

Decrease G01 rate 10%

Increase G01rate10%



- Those function key can be regard as G00, MPG or INJOG rank.
- Blowing



- ON/OFF blowing air.
- Cutting coolant system



- Turn ON/OFF working liquid.
- Auto cutting coolant system



- This function will be enable, when encounter with relate coolant on/off M code in NC program.
- Chip conveyor machine move in clockwise direction



• Chip conveyor machine move in counter clockwise direction



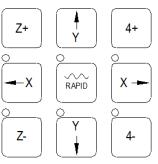
Augment key(User define)



Machine builder augment key, combine with PLC ladder.

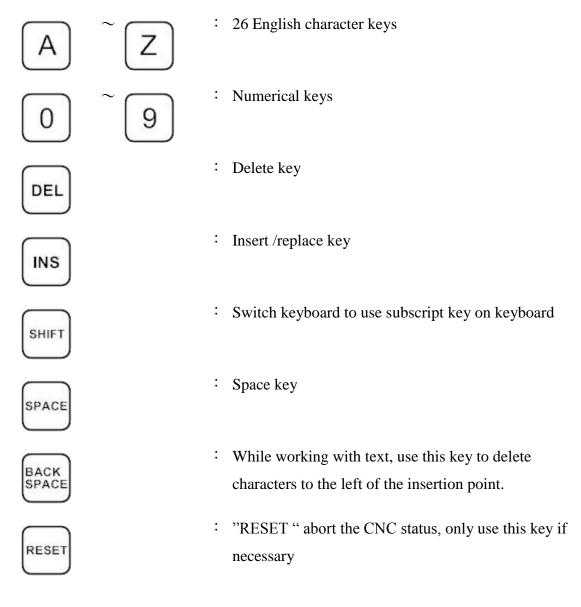


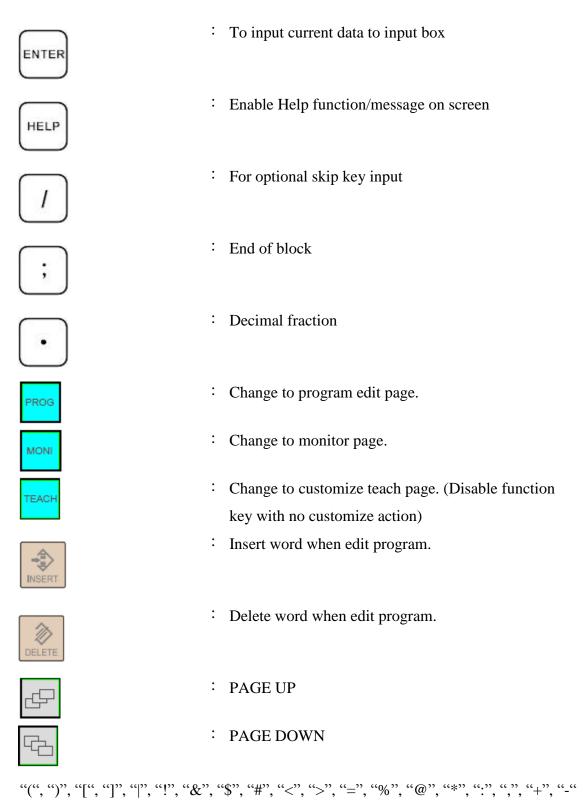
Direction of linear Axes &Rotation Axes & fast travel key



• Move the axes with fast travel speed key when press the axes and fast travel key at the same time.

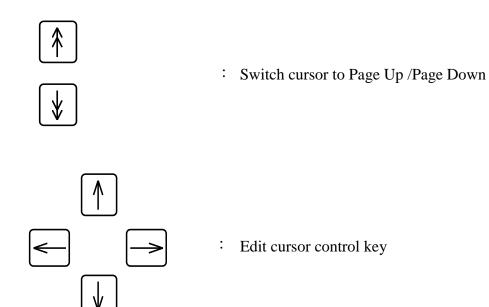
2.2 Text Key Description





All above symbols are used for "Program Edit" mode.





3 How to Operate 21 Series Controller

3.1 System Status

3.1.1 Not Ready

On Not Ready status, system cannot implement any operations Conditions:

- \diamond Emergency stop button is pressed
- \diamond Serious alarm appears
- ♦ System is switched to "Not Ready" status and stop all operations to ensure safety of machine and human

SYNTEC's controller will display different status corresponding to different conditions as below:

3.1.2 Ready

On "Ready" status, system can implement all operations Conditions:

- ☆ "Emergency stop" button is released and no alarm exists, system is switched "Not Ready" to "Ready" status.
- ♦ On "Busy"/ "Pause"/ "B-stop" status, if user presses "Reset" key; System is switched to "Ready" status.

3.1.3 Busy

System is operating program Conditions:

♦ On"Busy"/ "Pause"/ "B-stop" status, if if system executes process; System will switched to "Busy" status.

3.1.4 Pause

In operational process, system pause the axis movement Conditions:

 \diamond Once Feed hold button is pressed when system is on "Busy"

status, System will be switched from "Busy" to "Pause" status Note: On "Pause" status, Spindle still rotates

3.1.5 B-stop

Conditions:

- Machine program runs to M0 single block when system is on "Busy" status.
- ♦ Single block function is triggered when system is on "Busy" status.

Note: On "B-Stop" status, Spindle still rotates

3.2 Machine Preparation

3.2.1 Manual Function

SYNTEC controller provides 4 functions used to control axis movement including JOG, INC JOG, MPG and Rapid JOG

3.2.1.1 JOG

- Function:
 - ♦ Control the axis movement X, Y, Z according to selected

direction

 \diamond Can control more than one axis at the same time

• Condition:

- ♦ System is on "Ready" status
- \diamond JOG mode is selected
- Operation:
 - ♦ Press axis direction key (X+,X-,Y+,Y-,Z+...)
 - \diamond Hold the axis direction key to keep the axis moving uninterrupted
 - \diamond JOG speed can be adjusted by G01%

3.2.1.2 Rapid JOG

- Function:
 - ♦ Control axis movement X, Y, Z according to selected direction

with G00 speed

- \diamond Can control more than one axis at the same time
- Condition:
 - ♦ System is on "Ready" status
 - \diamond JOG mode is selected
- Operation:
 - ♦ Press axis direction key (X+,X-,Y+,Y-,Z+...) and rapid key "~

"at the same time ,machine will move with G00- rapid speed

- ♦ Hold the axis direction key to keep the axis moving uninterrupted
- \diamond Rapid JOG speed can be adjusted by G00%
- Note:
- Rapid JOG is usually much faster than JOG, so when operating,
 please confirm the axis position to ensure human and machine safety.

1. INC JOG (incremental JOG)

- Function:
 - ♦ Control axis movement X, Y, Z according to selected direction
 - with fixed distance(incremental distance)

• Condition:

- ♦ System is on "Ready" status
- \diamond INC JOG mode is selected
- Operation:
 - \diamond Press axis direction key (X+, X-,Y+,Y-,Z+...)
 - ♦ Cannot be constantly triggered like JOG or rapid JOG mode, INC

JOG mode only moves once with a fixed distance when axis

direction key is pressed once.

♦ The fixed distance in INC JOG mode can be selected by

percentage movements as below:

- \Rightarrow X1 : Distance 0.001mm
- ♦ X10 : Distance 0.010mm
- ♦ X100 : Distance 0.100mm
- ♦ Those percentage movements is shared with MPG mode

2. MPG

- Function:
 - ♦ Control axis movement X, Y, Z according to selected direction
- Condition:
 - ♦ System is on "Ready" status
 - \diamond MPG mode is selected
- Operation:
 - \diamond Press axis direction key (X+, X-, Y+, Y-, Z+...)
 - ♦ Cannot be constantly triggered like JOG or rapid JOG mode, INC

JOG mode only moves once with a fixed distance when axis direction key is pressed once.

- The moving distance when turning one track in MPG mode can be selected by percentage movements as below:
- ♦ X1 : Distance 0.001mm
- ♦ X10 : Distance 0.010mm
- ♦ X100 : Distance 0.100mm

3.2.2 Machining Process

3.2.2.1 AUTO

- Condition:
 - ♦ System is on "Ready" status
 - \diamond AUTO mode is selected

• Operation:

- \diamond Press $\ \ \Box$ CYCLE START $\ \ \$ button
- ♦ System will machine the current machining program
- ♦ System status will be switched from "Ready" to "busy" and backs
 - to "Ready" when machining is finished

3.2.2.2 Single Block

• Function:

♦ Excute each single block in program

- Condition:
 - ♦ System is on "Ready" status
 - ♦ Single block mode is selected
- Operation:

 - \diamond System will excute process the current single block in program
 - ♦ System status will be switched from "Ready" to "busy" and backs

to "Ready" when machining is finished

3.2.2.3 Home

Because tool and workpiece coordinate setting is based on Machine zero point, it is necessary to make sure where is machine zero (HOME). Therefore, when CNC restarts, return to reference point (search HOME) is very important. Otherwise, SYNTEC CNC controller will not be allowed to execute AUTO NC files.

- Operation:
 - ♦ Release emergency stop button, CNC status will change "NOT READY" to "READY"
 - ♦ Select HOME mode
 - ♦ Press axis direction key(X+,X-,Y+,Y-,Z+...) ,each axis would start HOMING
 - ♦ Home direction is defaulted in the CNC parameter
 - \diamond Home function can run 3 axes at the same time
 - ♦ After HOMING, all machine coordinates will be zero.
 - After HOMING, software stroke limit of each axis just is enable,
 so before HOMING, please do not run machine too fast

3.3 Workpiece Preparation

3.3.1 Workpiece Cord set

G54			N0 L1	Offset/Setti	ng	20	13/8/22	17:59:33
Ext	ernal Shift	G54I	P1(G54)	G54	P2(G55)		Mach	ine
X Y Z	0.000 0.000 0.000	X Y Z	0.000 0.000 0.000	X Y Z	0.000 0.000 0.000		X Y Z A	0.000 0.000 0.000 4.158
A	0.000	А	0.000	А	0.000		Relat	ive
MP	G Shift	G54	P3(G56)	G54	P4(G57)		X Y Z A	0.000 0.000 0.000 4.158
X	0.000	Х	0.000	Х	0.000		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1.100
Y	0.000	Y	0.000	Y	0.000		Aux. (Coord
Z	0.000	Z	0.000	Z	0.000		Х	0.000
A	0.000	A	0.000	A	0.000		Y Z	0.000 0.000
				●Re	ady /	Auto		Alarm

- Command:
 - ♦ F3 Offset/Setting \rightarrow F1 Workpiece Cord Set
 - \diamond Switch the cursor to the position wants to set by using page

up/down keys and arrow keys

- ♦ Use ↑↓ ← → and ↑ ↓ move the cursor to the coord you want to key in ∘
- \diamond Can use the Latch Machine Cord to insert the value.
- ♦ Can use the Relative Machine Cord to insert the value.
- \diamond Can use the Aux. Cord to insert the value

3.3.2 Middle Func.

• Function:

Middle function is used for finding middle point of the workpiece. Use the middle point as the start point. As a result, we need to touch the edge of the workpiece by too or detector. After controller gets the coordinate, it will calculate the middle point itself. We only need to set this point as the machining start point. Please confirm that your maching has automatic alignment tool and then you can use this function.

• Operation:

In the 8 botton system, user can use this function by press F3 Offset/Setting \rightarrow F1 Workpeice Cord. \rightarrow F6 Middle Func.

G54 N0 L1	Offset/Setting	2)13/8/22	18:03:28
Manual Center 0 (0:Manual,1:Auto) 0 (0:4Pts, 1:3Pts) Image: Center Operation Si Step1 : take the tool to the point Px1 and pi Step1 : take the tool to the point Px2 and pi Step3 : take the tool to the point Py1 and pi Step4 : take the tool to the point Py2 and pi Step5 : back to Workpiece screen to do Au	ress Px2 to set ress Py1 to set ress Py2 to set	Coorc 0.000 0.000 0.000 0.000 0.000 0.000	Mach X Y Z A Relat X Y Z A Aux. 0 X Y Z	0.000 0.000 0.000 4.158
	•Read	y Auto		Alarm

3.3.2.1 Manual 4Pts Center

• Function

- \diamond Set the Middle Func. as 0
- ♦ User controls the machine by MPG, and then moves the tip of 3D machine to the X&Y end point of the workpiece. This system will calculate the center point of the workpiece automatically.

- Operation method
 - Move the maching by MPG, touching Px1 point in this figure and then press PX1 Set. The system will record the current machnical coord. to Px1. It will also compute the middle point of Px1 and Px2 and puts the result on Pxm and Aux. X position.
 - Move the maching by MPG, touching Px2 point in this figure and then press PX2 Set. The system will record the current machnical coord. to Px2. It will also compute the middle point of Px1 and Px2 and puts the result on Pxm and Aux. X position.
 - Move the maching by MPG, touching Py1 point in this figure and then press PY1 Set. The system will record the current machnical coord. to Py1. It will also compute the middle point of Py1 and Py2 and puts the result on Pym and Aux. Y position.
 - Move the maching by MPG, touching Py2 point in this figure and then press PY2 Set. The system will record the current machnical coord. to Py2. It will also compute the middle point of Py1 and Py2 and puts the result on Pym and Aux. Y position.
 - Now, the values of Pxm and Pym are the middle point of the workpiece.
 - In the WorklPiece Cord. Screen, move the cursor to the coord you want to set, press F3 insert the Aux. Coord value then this system will set the value accordind to the Aux Coord.

88

	5.5.2.2 Manual 51 to Center						
G54 N0 L1	Offset/Setting	20	13/8/22	18:07:10			
Manual 3Pts Center () ():4Pts, 1:3Pts) () () () () () () () () () (Machine Px1 Py1 Px2 Py2 Px3 Py3 Pxm Pym R	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Machi X Z A Relati X Y Z A Aux. C X Y Z	0.000 0.000 0.000 4.158			

3.3.2.2 Manual 3Pts Center

- Operation:
 - ♦ Set the Middle func. as 0, the left upper side will show Manual Center
 - ♦ Set the second line, the middle method, as 1. You can see the screen as this figure.
 - \diamond Move the tool or detector to the round workpiece edge.
 - Press P1 set, system will record the current X and Y coordinates to Px1 and Py1.
 - Move to another edge point, press P2 set. System will record the current X and Y coordinates to Px2 and Py2.
 - Move to another edge point, press P3 set. System will record the current X and Y coordinates to Px3 and Py3.
 - ♦ After setting these, press Calculate the Center. System will calculate the center point Pxm, Pym and R.

- ♦ The Aux. Coordinate will become Pxm and Pym.
- If you set the same point or this three point is inline, it will have a warning window pop out.
- Now you can press go back to previous page to reset the coordinate.
- In the WorklPiece Cord. Screen, move the cursor to the coord you want to set, press F3 insert the Aux. Coord value then this system will set the value accordind to the Aux Coord.

3.3.2.3 OUTAutoCenter

- Operation:
 - ♦ Set the Middle func. as 1, the left upper side will show Manual Center.
 - ♦ Set the second line, the middle method, as 0. You can see the screen as this figure.
 - ♦ Key in Length I and Width J for workpiece real length and width.
 - Set Z coordinate, this value is for the the automatical measurement that tool can touch the workpiece edge plane
 - ♦ Set Safe Distance H, this distance is that the tool will not hit with workpiece.
 - ♦ Set Feedrate F, this Feedrate is the measuring tool velocity during auto center process.
 - Press Auto center start, system will move the tool according to the setting data to contact with workpiece and show the coordinate

on the screen. It will also calculate the X Y center point of the workpiece

- \diamond The center point will be saved at Pxm and Pym.
- ♦ After setting these, press Calculate the Center. System will calculate the center point Pxm, Pym and R.
- ♦ The Aux. Coordinate will become Pxm and Pym.
- Now you can press go back to previous page to set the coordinate.
- In the WorkPiece Cord. Screen, move the cursor to the coord you want to set, press F3 insert the Aux. Coord value then this system will set the value according to the Aux Coord.

Auto Center 1 (0:Manual,1:Auto)	Machine	Coordina	Machine	
1 (0:OUTAutoCenter,1:INAutoCenter)Px1	0.000	X Y	0.000 0.000
Z+ ★ v+	Px2	0.000	Z	0.000
P1	Pxm	0.000	A	4.158
	Py1	0.000	Relative	
	Py2	0.000	Х	0.000
0 × X+	Pym	0.000	Y Z	0.000 0.000
Auto Center Operation Step:	Please Input Par	ameter	Ā	4.158
Step1 : Parameter Input Step2 : take the tool to the P2 and set Z height	Lenght I	0.000	Aux. Coord	
Step3 : take the tool to the start point P1	Width J	0.000		
Step4 : press the start center button	Safe Distance	0.000	X	0.000 0.000
Step5 : back to Workpiece screen to do	Feedrate F	0.000	Z	0.000
Auxiliary point set	Z Coordinate	0.000		
0~1)	•Ready	Auto		Alarm

3.3.2.4 INAutoCenter

- Operation:
 - ♦ Set the Middle func. as 1, the left upper side will show Manual Center.
 - Set the second line, the middle method, as 1. You can see the screen as this figure.
 - ♦ Key in Length I and Width J for workpiece real length and width.
 - Set Z coordinate, this value is for the auto measurement that tool can touch the workpiece edge plane
 - ♦ Set Safe Distance H, this distance is that the tool will not hit with workpiece.
 - Set feed rate F, this feed rate is the measuring tool velocity during auto center process.
 - \diamond Press Auto center start



3.3.3 Tool Prepare

3.3.3.1 Tool Set

- Purpose
 - \diamond We can set the length and the diameter geometry and wear
 - \diamond Operation condition
 - \diamond Can be used at Manual or Auto mode
 - ♦ Wear value increment upper limit is 1.0, warning will appear if exceed 1.0.
- Operation method
 - ♦ Use direction key $(\uparrow) (\downarrow) (\downarrow)$ (\frown) move the cursor.
 - ♦ Use [PageUp] [PageDown] switch the page.
 - ♦ Key in method: Absolute, Increment, Measure method.
 - ♦ Absolute: for radius and length compensate.
 - ♦ Increment: for radius wear and length wear.
 - \Rightarrow Radius compensate + radius wear = real G41/G42 compensate.
 - \diamond Length compensate +length wear = real G43/G44 compensate.

3.3.3.2 Manual Measurement of Tool Length

- Purpose
 - Describe how to use manual measurement to set tool length and work piece coordinate in order to set the machining tool.
- Function
 - ♦ We usually set the tool length and offset in the External Shift if we only use one tool in this machine.
 - ❖ If we have more than one tool, we need to set every tool length we can use relative length or absolute length.
- Operation condition

- \diamond Manual mode.
- Manual Operation method

-Relative method.

- ♦ Use manual function moving the <u>reference tool</u> to the
 Z-coordinate code 0 position of the workpiece (Ex. surface), set
 the value at G54.
- \diamond Clean all the relative coordinate value.
- Install the measured tool, move the tool to the same position as before (reference surface).
- ♦ The tool length is the different between measured tool and reference tool.
- \diamond Key in this number to the corresponding tool No.
- ❖ If tool break during machining and replace a new tool, we need to change to a new tool. If the Z-cord 0 position already disappear, we can use the standard tool to touch anywhere of the machine and then use new tool to touch the same position. The relative cord. is tool length.
 - -Absolute method
- Use manual function moving the measuring tool to a reference point (Ex. Work piece table).
- \diamond Measure every tool repeatedly.
- Move the machining tool to the reference position, clean all the relative coordinate.
- \diamond Move the tool to the Z-coord code zero position, set it to G54.

 ❖ If tool break during machining so we need change a new tool, we must touch the reference position first, and then the Z coordinate value is tool length.

3.3.3.3 Tool Tip Measure

- Function
 - Measuring different tool No. tip position. Because the trigger position of tool alignment equipment is fixed, user can use different tool tip position key in the workpiece coordinate system for the reference of tool length offset. You must check this machine has tool alignment equipment.
- Operation Method

♦ Offset/Setting→Tool Tip Measure

G54	N0 L1	Offset/Setting	20	13/8/22	18:12:45
Auto Tool Function AutoTool 1 1:One Tool One Workpiece,2:O 3:Many Tools Many Workpie	WorkPiece No. Feedrate F Juluse Reference Ref Coord. X Ref Coord. Y Start Coord. Z Min. Z Mach. H Select if use Ref 1:Set All measu 2:If not use Ref to upper of me	ef Point re parameter , Take tool tip	0 0.000 0 0.000 0.000 0.000 0.000	Mach X Y Z A Relat X Y Z A	0.000 0.000 0.000 4.158
Delta Z Set	3:Press F1, Me Delta Z Set Do tool tip meas 1:Take tool tip to 2:Press F3, Del	asure Start sure before do o top of good	0.000 Delt	Aux. (X Y Z	
(1~3)		•Read	y Auto		Alarm

3.3.3.4 Auto Tool Function

• Function

Z coord. Auto Tool Function is to measure different tool No. by tool alignment equipment. Because the trigger position of the tool alignment equipment is almost the same. User can key in different tool No. tip position into workpiece coordinate for the tool length offset setting, please this machine is equipped with tool alignment equipment.

• Operation description

Offset/Setting→Tool Tip Measure

G54	N0 L1	Offset/Setting	20	13/8/22	18:12:45
Auto Tool Function AutoTool 1 1:One Tool One Workpiece,2:O 3:Many Tools Many Workpie	WorkPiece No. Feedrate F OnUse Reference Ref Coord. X Ref Coord. Y Start Coord. Z Min. Z Mach. H Select if use Re 1:Set All measu	0.000 0 0.000 0.000 0.000 0.000 0.000		Mach X Z A Relati X Y	0.000 0.000 0.000 4.158
Delta Z Set	2:If not use Ref to upper of me 3:Press F1, Me	asurement		Z A Aux. C	0.000 4.158
	Delta Z Set Do tool tip meas 1:Take tool tip to 2:Press F3, De	sure before do Delt top of good		X Y Z	0.000 0.000 0.000
(1~3)		●Ready	Auto		Alarm

• One Tool One Workpiece

- \diamond Set the Auto Tool number as 1(left-upper corner).
- ♦ Set the WorkPiece No. P as the workpiece coordinate.
- Table X- Coordinate table

Workpiece coord No. P	Workpiece coord	Workpiece coord No. P	Workpiece coord
0	Aux. Coord	1	G54
2	G55	3	G56
4	G57	5	G58

- Table X- Coordinate table
 - Set the Feedrate F for the first time alignment and pull back everytime.
 - Please skip to next step setting XY Ref. Coord. Teach if tool alignment equipment already has fixed mechanical coordinate. If current position is the same with tool alignment equipment, please set Use Reference as 0.
 - While setting the XY Ref. Coord. Teach, you will need code "520", enter it and choose yes. These vaules will be entered in to Ref coord.X and Ref coord.Y.
 - Move the cursor to Start Coord. Z, setting the start point for the auto alignment. Press F10 and then press Z Mach. Coord. Teach, you can insert the current Z coord. value into Start Coord. Z.
 - Move the cursor to the Min. Z Mach. H, setting the minimum height for the alignment. System will pop out warning masseage and stop if the tool is lower than it.
 - \diamond Please switch to auto mode after setting these and then press Start.
 - After finishing alignment, this tool height value will be saved into Aux. Coord. and External Shift.
 - Move the tool tip (Manual) to the surface of workpiece, press Z Delta Set, the distance between alignment tool and workpiece surface will be calculate and set into this workpiece Z coordinate.
 - ♦ One Tool One Workpiece is finished

G54	N0 L1 Of	ffset/Setting	2013	3/8/22	18:13:59
Auto Tool Function AutoTool 2 1:One Tool One Workpiece,2: 3:Many Tools Many Workpie $\int_{z}^{z+} \underbrace{(X,Y)}_{y+} \underbrace{Y+}_{y+}$ Delta Z Set	Feedrate F OnUse Reference Ref Coord. X Ref Coord. Y Start Coord. Z Min. Z Mach. H Select if use Ref F 1:Set All measure 2:If not use Ref, Ta to upper of measu 3:Press F1, Measu WorkPoiece No. F	parameter ake tool tip urement ure Start		Machir X Z A Relativ X Y Z A Aux. C	0.000 0.000 4.158 7e 0.000 0.000 0.000 4.158
	Do tool tip measur 1:Take tool tip to to 2:Press F3, Delta	pp of good Z Set	Jto	X Y Z	0.000 0.000 0.000 Alarm

One Tool Many Workpieces

- ♦ Set the Auto Tool number as 2.(left-upper corner)
- ♦ Set the feed rate F for the first time alignment and pull back every time.
- Please skip to next step setting XY Ref. Coord. Teach if tool alignment equipment already has fixed mechanical coordinate. If current position is the same with tool alignment equipment, please set Use Reference as 0.
- While setting the XY Ref. Coord. Teach, you will need code "520", enter it and choose yes. These values will be entered in to Ref coord.X and Ref coord.Y.
- ☆ Move the cursor to Start Coord. Z, setting the start point for the auto alignment. Press F10 and then press Z Mach. Coord. Teach, you can insert the current Z coord. value into Start Coord. Z.

- Move the cursor to the Min. Z Mach. H, setting the minimum height for the alignment. System will pop out warning message and stop if the tool is lower than it.
- \diamond Please switch to auto mode after setting these and then press Start.
- After finishing alignment, this tool height value will be saved into Aux. Coord. and External Shift.
- Move the tool tip (Manual) to the surface of workpiece, press Z
 Delta Set, the distance between alignment tool and workpiece
 surface will be calculate and set into this workpiece Z
 coordinate.
- Move the tool tip (Manual) to the surface of next workpiece, press Z Delta Set, the distance between alignment tool and workpiece surface will be calculate and set into this workpiece Z coordinate.

Workpiece coord No. P	Workpiece coord	Workpiece coord No. P	Workpiece coord
1	G54	2	G55
3	G56	4	G57
5	G58		

Z Delta set table

 \diamond If you have another workpieces need to set do the previous step

again.

ullet	Many Tool	Many	Workpieces
-------	-----------	------	------------

G54	N0 L1 C	Offset/Setting	201	13/8/22	18:15:00
Auto Tool Function AutoTool 3 1:One Tool One Workpiece,2:0 3:Many Tools Many Workpie	Tool No. T Feedrate F On Use Reference Ref Coord. X Ref Coord. Y Start Coord. Z Min. Z Mach. H	0 0.000 0 0.000 0.000 0.000 0.000		Mach X Y Z A Relati	0.000 0.000 0.000 4.158
Delta Z Set	Select if use Ref 1:Set All measure 2:If not use Ref, 7 to upper of meas 3:Press F1, Meas	parameter Fake tool tip surement		X Y Z A	0.000 0.000 0.000 4.158
	WorkPoiece No. Do tool tip measu 1:Take tool tip to t 2:Press F3, Delta	P 0 re before do Delt op of good		Aux. C X Y Z	Coord 0.000 0.000 0.000
(1~3)		•Ready A	uto		Alarm

- ♦ Set the Auto Tool number as 3.(left-upper corner)
- \diamond Set the Tool No. T for the tool you want to align.
- Set the feed rate F for the first time alignment and pull back every time.
- Please skip to next step setting XY Ref. Coord. Teach if tool alignment equipment already has fixed mechanical coordinate. If current position is the same with tool alignment equipment, please set Use Reference as 0.
- While setting the XY Ref. Coord. Teach, you will need code "520", enter it and choose yes. These values will be entered in to Ref coord.X and Ref coord.Y.
- Move the cursor to Start Coord. Z, setting the start point for the auto alignment. Press F10 and then press Z Mach. Coord. Teach, you can insert the current Z coord. values into Start Coord. Z.

- Move the cursor to the Min. Z Mach. H, setting the minimum height for the alignment. System will pop out warning message and stop if the tool is lower than it.
- \diamond Please switch to auto mode after setting these and then press Start.
- After finishing alignment, this tool height value will be saved into Aux. Coord. and External Shift.
- Move the tool tip (Manual) to the surface of workpiece, press Z Delta Set, the distance between alignment tool and workpiece surface will be calculate and set into this workpiece Z coordinate.
- Move the tool tip (Manual) to the surface of next workpiece, press Z Delta Set, the distance between alignment tool and workpiece surface will be calculate and set into this workpiece Z coordinate.
- ✤ If you have another workpieces and tools need to set do the previous step again.
- \diamond Finish alignment.

3.3.3.5 Tool No. Setting

This Chapter will describe how to set the tool No.

- Purpose:
 - \diamond We need to confirm the relation between Tool No. and real tool in

order to change tool correctly.

- Condition:
 - ♦ Both Auto mode or Manual mode are OK..
- Operation Method
 - ♦ Tool Set \rightarrow Tool No.
 - \diamond You will see the table about Tool No. and Tool MG.



G54		N0 L1	Offset/Setting	2013	8/8/22	18:16:09
MG And Tool N	No. T Table					
MG	Т	MG	Т	MG	Т	
1	0	11	0	21	0	
2	0	12	0	22	0	
3	0	13	0	23	0	
4	0	14	0	24	0	
5	0	15	0	25	0	
6	0	16	0	26	0	
7	0	17	0	27	0	
8	0	18	0	28	0	
9	0	19	0	29	0	
10	0	20	0	30	0	
Turrent No	0					
Spindle No	0					
			•Ready	Auto		Alarm

\Rightarrow MG5—T = 7 means we in	nstall tool No.7 at Tool case No.5
-------------------------------------	------------------------------------

- \diamond This table will renew during change a new tool.
- Time to Modify
 - ♦ First initialized when it is made from factory.
 - \diamond Need to confirm the MG No. and T No. Manually when it is

disordered.

3.3.3.6 Tool Manager Function

• Purpose:

Record the status of all cutting tool on machine, make users know whether cutting tool reached to Max. Life, avoid machining in case cutting tool is broken. This function needs a related PLC setting. In case, customer need to use this function, please contact to machine maker.

No	Turret	group	Inf	form	nati	on	Cur. Life	Max. Life	Announce	Status	
01	0	0	U	Ν	С		0	0	0	No Managed	
02	0	0	U	Ν	С	-	0	0	0	No Managed	
03	0	0	U	Ν	С		0	0	0	No Managed	
04	0	0	U	Ν	С	-	0	0	0	No Managed	
05	0	0	U	Ν	С	<u>.</u>	0	0	0	No Managed	
06	0	0	U	Ν	С	-	0	0	0	No Managed	
07	0	0	U	Ν	С	-	0	0	0	No Managed	
08	0	0	U	Ν	С	U.	0	0	0	No Managed	
09	0	0	U	Ν	С	-	0	0	0	No Managed	
10	0	0	U	Ν	С	-	0	0	0	No Managed	
11	0	0	U	Ν	С		0	0	0	No Managed	
12	0	0	U	Ν	С	-	0	0	0	No Managed	

- Condition
 - \diamond Both auto and manual can be used.
- Operation
 - \Rightarrow Pr.3228 is the on/off control of $\[\]$ Tool management $\]$
- Description
 - ♦ Turret
 - \diamond Current tool case no. that tool located.
 - ♦ Group
 - \diamond Same kind of tool within in one group, if the first tool of that

group is on lock state or $\ ^{\sqcap}$ Tool life $_{\perp}$ is end, whenever user use T

code to change the tool, system will skip the first tool and use the second one, when the second one is lock or^{Γ} Tool life _is end, will use the third one, and so on.

- Tool information (Status)
- ♦ L—Lock / U—Unlock
- If the status of tool is lock, that tool cann't be use and when T code is use to change the tool, system will skip that tool.
- ♦ B—Large diameter Tool/ N—Normal Diameter Tool
- ♦ Adjacent side of large diameter tool set is empty(for display)
- ✤ T—working time T / C—Number of working times
- \diamond Decide the current life time, the maximum life time, life time

prediction, unit of timing and number of time.

- R—effective value / —non effective value.
- \diamond Current tool are using tool management or not.
 - Current Life time
- ♦ Current Tool Using Condition
 - Maximum Life Time
- ♦ Maximum lifetime of tool.
 - Lifetime prediction
- \diamond When lifetime of tool is greater than lifetime prediction, alarm

will be show up.

- Current Status of Tool
- (0)Without management: Set values are not effective.
- (1) Without use: Lifetime of tool is zero.
- (2) Usable:0< Tool Life Time <lifetime prediction

(3) End prediction: Lifetime prediction < Tool Lifetime < Maximum Lifetime

(4) End of Life: Maximum Lifetime < Tool Lifetime

(5)ware of tool

3.4 Program Preparation and Execute Machining

3.4.1 Specifying Machining Program

- Condition
 - \diamond Except single block mode
- Operation
 - ♦ Specify current edit program as machining program
 - \diamond Switch to edit page
 - Select F1-Excute, and the program will be designated as the machining program
 - ♦ Specify machining program in file manager.
 - ♦ Switch to the "File Management" page
 - ♦ Move the cursor to the expected program and press Enter
 - Select F1-Excute, and the program will be designated as the machining program
- Confirmation:
 - ♦ There are two ways to confirm whether machining program is specified successfully.
 - \diamond The screen displays the correct machining program name
 - \diamond The content of machining program is displayed when pressing

F4-Monitor



3.4.2 Simu. Setting

SYNTEC's controller provides simulation program, after editing machining program, users can easily simulate the path machining process, this feature also contains checking features that help users to quickly verify the syntax error in machining program or unreasonable actions, we suggest users should use this function to check machining program.

- Condition
 - \diamond Except single block mode
- Operation
 - ☆ In the "File Management" page, select the program you want to edit after completing edit program, press F7-Simulation
 - Screen will switch to the "graphic simulation" page and scan the contents of the program
- Detail description
 - -Simulation screen
 - \diamond The solid line represents the cutting path
 - \diamond The dashed line represents the moving path
 - In the scanning process, if there is any syntax or content error, they will be displayed on the screen with corresponding error line number.
 - F1-step: To simulate tool path corresponding to single block in NC files. It is used for coordinate checking purpose.
 - ✤ F2-Continue: System scans the whole program first before executing simulation.
 - F3-zoom: To zoom in/out the workpiece graph. Users can use the
 arrow key "←", "↑", "→", "↓" to move the frame to the

determined area, use "PageUp" "PageDn" to zoom in/out this

area. After selecting zoom scales, press "enter" to finish.

♦ F5- simu. Setting: To set simulation parameter

3.4.3 Machining Test

3.4.3.1 MPG Simulation

- Condition
 - \diamond Only for single block and auto mode
- Operation
 - \diamond Select Auto mode
 - ♦ Press MPG simulation button on operation panel
 - ♦ Turn MPG to execute machining
 - ☆ If MPG is turned in CW direction, Program will be run from current NC line down to below NC line
 - ☆ If MPG is turned in CCW direction, Program will be run from current NC line up to above NC line

• Confirm

- We can confirm MPG simulation successful or not by these two method.
- Not machining, execute MPG function, and then in the monitor page try to rotate the MPG. If you can see G01 is zero before you rotate and has value after you rotate MPG.
- While machining, execute MPG function, and then machine will stop to 0 immediately, until you rotate MPG or cancel MPG function.

3.4.3.2 Single Block

- Condition
 - \diamond Only for single block and auto mode
- Operation
 - ♦ Select Auto mode
 - ♦ Press single block button on operation panel
 - ♦ After programming and decelerating to 0, system status changes

to B-stop

- ♦ Press CYCLE START again
- ♦ After completing next single block in NC file, system will be on

B-stop status again

3.4.3.3 Start MPG Coordinate

This section will introduce how to execute the function of part count and work record

- Condition
 - ♦ MDI or Auto mode
- Operation Method
 - ♦ F4 Monitor→F6 Start MPG Coordinate
 - \diamond You will see the MPG coordinate system window.
 - \diamond Switch to the MPG mode.
 - \diamond Rotate the MPG, you can see the value at this window.
- Confirmation
 - ♦ Switch to workpiece coordinate page, confirm the value in MPG

Shift is correct.

- Relative parameter
 - \diamond .Pr 3201 Set the Lathe Rule, you must set 0 if you want to use

Start MPG Coordinate function

- Note
- ♦ R606 must be 1
- ♦ Only accept MPG command, JOG&INJOG are invalid.
- ♦ It is still work while Machine Lock

• Time to disable

-Keep the MPG coordinate while starting the machine.

-Don't clear the value while G54/G55 is changed.

-Don't clear the value while change the machining code.

-Don't clear the value after go back to Home.

-Don't clear the value after go back to referent point by

G28/G29/G30.

• Limit

 \diamond Use the Start MPG Coordinate function under MPG simulation

mode. Command will send to MPG coordinate while rotate the

MPG until you finish the MPG coordinate function, the

command will go to MPG simulation.

3.4.3.4 Break Point

This section will introduce how to execute the function of part count and work record

• Condition

♦ Under Auto mode

Operation Method

- \diamond Move cursor to the Start Block No.
- \diamond Enter the line number you want return
- ♦ Line number can be refer to break point line number.
- ♦ System will pop out confirm window.
- \diamond Press enter, wait the cursor move to the line number you choose.



 \diamond Execute.

3.4.4 Machining Monitor

This section will introduce how to use Break Point Return function.

3.4.4.1 Part Count Manager

• Description

- 1. Total accum part
- ♦ The total accumulative part machined by CNC
- 2. Required part count
- ♦ Once machining program specifies the needed workpiece number,

and CNC continues machining when it meets M99, if the

demand workpiece number is reached, machining process will

be paused and notification message will be displayed.

- 3. Part count
- ♦ Once CNC continues machining when it meets M99, this number will be accumulated until reset
- \diamond Part count reset (clear to 0) condition
- ♦ Required part count is reached
- ♦ Change machining files
- Modify the required part count, and the required part count is smaller than part count.

3.4.4.2 Work Record Function

- Description
 - Once CNC continues machining when it meets M99, work record function will automatically record status
- Work record condition
 - ♦ Required part count is reached
 - ♦ Change machining files

 Modify the required part count, and the required part count is smaller than part count.



3.4.5 Alarm Processing

In order to avoid wrong operation effects on safety of human and machine, the system and PLC have many kinds of protection. When these protection conditions are triggered, the system will issue warning or alarm to users. This section will describe how to view and troubleshooting alarm.

3.4.5.1 Emergency Stop

Machine failure or unexpected movements may cause un-safety for human and machine. Pressing emergency stop button, you can immediately stop the machine.

3.4.5.2 Alarm Display

Alarm is basically divided into the pending alarm and history alarm.

3.4.5.3 Pending Alarm

- \diamond The current status of system alarm
- Once an alarm occurs, the controller will issue alarm and display the current alarm content on screen
- ♦ Press ESC to jump that window
- \diamond If the alarm is still not remove, press reset button, alarm window

will be not displayed.

♦ Press F8-Maintain to display pending alarm contents.

3.4.5.4 History Alarm

Accessing into this page enables user to see all system alarms which have occurred, so users may find out the alarm reason.

- Command:
 - ♦ F8- maintain → F1-Alarm → F2 History alarm
- Display history alarm
 - \diamond The smaller No. alarm is, the sooner alarm occurres



3.4.5.5 Save Alarm

In case users need support from machinery manufactory to repair once alarm appears, users can export the alarm contents to an external storage device, and send it to machinery manufactory. By that way, they could clarify and find out the possible reasons.

- Operation
 - ☆ Insert the external storage device into controller, or set the corresponding network folder
 - \Rightarrow Switch to "Alarm" page(F8-maintain \rightarrow F1-alarm)
 - ♦ To export the pending alarm, press F1-pending alarm → F3-save alarm
 - ♦ To export the history alarm, press F2-history alarm → F3-save alarm
 - ♦ External storage device will be displayed on screen, select the destination folder to save
 - ♦ Select OK to complete export alarm content
- File Name
 - \diamond Actual alarm : Actalm.txt
 - ♦ History alarm : Histalm.txt

3.4.6 Network Setting

- On the interface screen, press down"F8 Maintain" => "F2 Network Setting" to access IP address setting.
- 2. **IP Address Setting**: select "Specify an IP Address" when the PC connects with controller directly. And select "Obtain an IP Address via DHCP" if using network connection via Dynamic Host Configuration Protocol
- 3. IP Address: if you select "Specify an IP Address", enter the free IP address

	Network Setting		X	
	IP Address Parameter			
IP Address Setting			7	
IP Address	Specify an IP Address Obtain an IP Address via DHCP		Ĩ	
Subnet Mask	Primary DNS			
Default Gateway	Primary WINS		Ē	
	Network DiskRemote Host Path			
PC Name	Dir Name			
User Name	Password			
Net Status Code :	-1		-	
Resource Shared				
Shared Folder Path				

- 4. **Subnet Mask**: Enter the IP address for subnet mask (the same with PC subnet mask).
- 5. **PC Name**: Enter the full computer name of your PC.
- 6. **Dir Name**: Enter the sharing folder name (the same name with PC sharing folder)
- 7. **User Name**: Enter GUEST
- 8. Press $\lceil F1 \text{ OK} \rfloor$, and then reboot controller to finish installation.



3.4.7 PC Setting

3.4.7.1 XP OS

1. Guest account setting

Log in as an Administrator and select "start" \rightarrow "control panel" \rightarrow "user account" \rightarrow Guest



- 2. Sharing resource setting
 - Right click the folder you want to share and select "Sharing and security"
 - Click on "If you understand security risks but want to share files without running the wizard, click here"

Address C CA System Tasks C This dra contents of the original for the or	haring Customize aring and security To share this folder with other users of this computer only, drag it to the <u>Shared Documents</u> folder. To make this folder and its subfolders private so that only you have access, select the following check box.
	Make this folder private Make this folder private sharing and security As a security measure, Windows has disabled remote access to this computer. However, you can enable remote access and safely share files by running the <u>Network Setup Wizard</u> . You understand the security risks but want to share files without running the wizard, click here.
116	pre about <u>sharing and security</u> .

0K

Cancel

Apply



3. Click "OK" to confirm sharing setting; Select "Share this folder on the network", and "Allow network users to change my files".



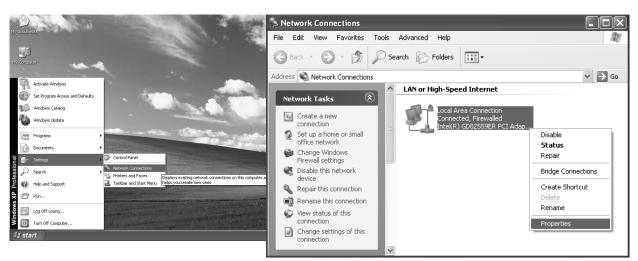
4. Setting PC name and workgroup

"Start" \rightarrow "control panel" \rightarrow "System" \rightarrow "change" to set "Computer Name" and "Workgroup", and remember these setting contents to use later on when setting controller.

System Res	tore Autor	matic Updates	Remote	
General	Computer Name	Hardware	Advanced	
	ows uses the following a network.	information to identify	your computer	Computer Name Changes
Computer descri	ption:			You can change the name and the membership of this computer. Changes may affect access to network resour
	For example: Computer''.	"Kitchen Computer"	or "Mary's	Computer name:
Full computer na	ame: test.			Full computer name: David.
Workgroup:	WORKGRO	UP		Mon
domain and crea ID.	vork Identification Wiza ate a local user accour computer or join a doma	it, click Network	Network ID Change	Member of Domain: Workgroup: HOME DK Can



5. TCP/IP setting



"Start" => "Setting" => "Network connections" and right click on

"Properties", and select "Internet Protocol [TCP/IP]"

- Jumper cable (without HUB), select "use the following IP address" and enter IP address (the forth number is different from controller setting) and Subnet mask (same with controller setting)
- ♦ Network cable (with HUB), select "Obtain an IP address automatically"

🕂 Local Area Connection Properties 🛛 🔹 💽	
General Authentication Advanced	Internet Protocol (TCP/IP) Properties
Connect using:	
Intel(R) GD82559ER PCI Adapter	General
This connection uses the following items:	You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
 Client for Microsoft Networks File and Printer Sharing for Microsoft Networks QoS Packet Scheduler 	<u>D</u> btain an IP address automatically
Internet Protocol (TCP/IP)	Image: Second
Install Uninstall Properties	Subnet mask: [255 . 255 . 0
Description	Default gateway:
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Obtain DNS server address automatically O Use the following DNS server addresses:
Show icon in notification area when connected	Preferred DNS server:
Notify me when this connection has limited or no connectivity	Alternate DNS server:
OK Cancel	Ad <u>v</u> anced
	OK Cancel



3.4.7.2 VISTA OS

1. Guest account setting

Log in as Administrator and select "Start" \rightarrow "Control Panel" \rightarrow "User

Account"→ Guest

G v 🗟 « User Accounts » User Accounts » Manage Accounts v 47 Search	Q
Choose the account you would like to change John Administrator Guest Guest Guest account is off	
Create a new account What is a user account?	le
Additional things you can do Go to the main User Accounts page	



2. Sharing Resource Setting

Create a sharing folder, and change this folder's setting to offer controller to use, as the below figure.

- A. Click on "advanced sharing"
- B. Click on "share this folder"

General Sharing Security Previous Versions Customize	
Network File and Folder Sharing	
public Shared	Advanced Sharing
Network Path: \\TRUONGTHO-PC\Users\TRUONGTHO\Desktop\public	Share this folder
Share	Settings
Advanced Sharing Set custom permissions, create multiple shares, and set other advanced sharing options.	Share name: public Add Remove
Referenced Sharing	Limit the number of simultaneous users to: 20
Password Protection	Comments:
People without a user account and password for this computer can access folders shared with everyone.	
To change this setting, use the <u>Network and Sharing Center</u> .	Permissions Caching
Close Cancel Apply	OK Cancel Apply

- C. Click on "permission"
- D. Click on "add"
- E. Enter "GUEST" as the new group name, click "OK" to complete setting

ecurity		
Object name: P:\!!LTSTraining	gFolder\VideoTutori	als
Group or user names:		
Se Everyone		
SYSTEM		
LTS.VIDEO.STAFF (UWEC	LTS.VIDEO.STAF	F)
DELTS CAT DOOD ADALTON LE	CAT DOCC	
LTS.CAT.DOCS (UWEC\L)	13.CAT.DUC3)	
MEDIA01.ADMINS.VIDEO		ADMINS.VID.
	(UWEC\MEDIA01.	ADMINS.VID.
MEDIA01.ADMINS.VIDEO	(UWEC\MEDIA01. dministrators)	
Administrators (MEDIA01 A	(UWEC\MEDIA01.	ADMINS.VID. Remove
Administrators (MEDIA01\A	(UWEC\MEDIA01. dministrators)	Remove
Administrators (MEDIA01 A	(UWEC\MEDIA01. dministrators)	
Administrators (MEDIA01\A	(UWEC\MEDIA01. dministrators)	Remove
MEDIA01.ADMINS.VIDEO Administrators (MEDIA01\A Permissions for LTS.VIDEO.STAFF	(UWEC\MEDIA01. dministrators)	Deny
MEDIA01.ADMINS.VIDEO Administrators (MEDIA01\A Permissions for LTS.VIDEO.STAFF Full control	(UWEC\MEDIA01. dministrators) Add Allow	Remove Deny
MEDIA01.ADMINS.VIDEO Administrators (MEDIA01\A Permissions for LTS.VIDEO.STAFF Full control Modify	(UWEC\MEDIA01 dministrators) Add Allow	Deny

3. Security setting

Right click on folder to share \rightarrow properties \rightarrow security \rightarrow Edit \rightarrow add "Guest" as a new group, then open group permissions to maximum.

Object name: C:\Apps				
Group or user names:				
& Authenticated Users				
SYSTEM .				
A Peter (PetersPC\Peter)				-
Administratore (Patare PC)	Administrator	ne)		
Ta aleman and initial align	Eula			-
To change permissions, click	Eait.		<u>E</u> dit	
Permissions for Authenticated				
Users		Allow	Deny	
Full control				-
Modify		\checkmark		
Read & execute		\checkmark		=
List folder contents		\checkmark		
Read		\checkmark		
Write		\checkmark		+
For special permissions or adv click Advanced.	anced setting	js,	Ad <u>v</u> anced	
Learn about access control ar	nd namieeion	~		

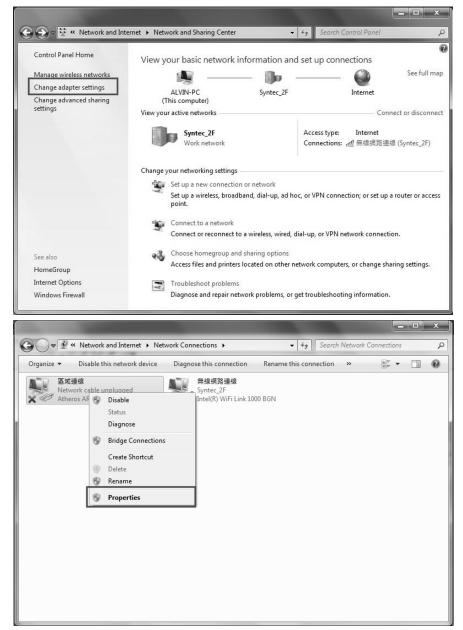


4. Setting PC name and workgroup

"Start" \rightarrow "control panel" \rightarrow "System" \rightarrow "change" to set "Computer Name" and "Workgroup", and remember these setting contents to use later on when setting controller.

System Properties		Ŀ	x
Computer Name Hardware Advance	ed System Protection	Remote	
Windows uses the followin on the network.	g information to identify y	our computer	r l
Computer description:			
For examp Computer	e: "Kitchen Computer" o	or "Mary's	Computer Name Changes
Full computer name: abc12)		You can change the name and the membership of this computer. Changes may affect access to network resources.
Workgroup: THSTUDE	NT		Computer name:
To rename this computer, click Chan	ge.	Change	David
			Full computer name: David.
			More
			Member of
			O Domain:
			(☉) Workgroup:
🛕 Changes will take effect after y	ou restart this computer.		HOME
	K Cancel	Apply	y OK Cancel

- 5. TCP/IP Setting
 - a. "Start" → "control panel" → "Network and Internet"→"Network and Sharing Center" → "Properties"





- b. Select "internet protocol(TCP/IP)" as shown below:
- Jumper cable (without HUB), select "use the following IP address" and enter IP address (the forth number is different from controller setting) and Subnet mask (same with controller setting)
- ♦ Network cable (with HUB), select "Obtain an IP address automatically"

🕂 Local Area Connection Properties 🛛 🔹	3
General Authentication Advanced	Internet Destand (TCD/ID) Despective
Connect using: Intel(R) GD82559ER PCI Adapter This connection uses the following items: Client for Microsoft Networks Client for Microsoft Networks File and Printer Sharing for Microsoft Networks	Internet Protocol (TCP/IP) Properties ? × General You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings. O Dbtain an IP address automatically
	IP address: 210.20.98.20 Subnet mask: 255.255.255.0 Default gateway: .
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Obtain DNS server address automatically Obtain DNS server addresses: Preferred DNS server:
✓ Notify me when this connection has limited or no connectivity OK Cancel	Alternate DNS server:



3.4.7.3 Win 7 OS

- 1. Sharing resource setting
 - Right-click on folder wants to share, select "share with" and "specific people"
 - \diamond Share this folder to everyone, and then click "Share" as follows.
 - \diamond Set permission as write/read

🔆 Favorites 🔳 Desktop		te modified Type Size 12/2/11 上午 09: File folder	
Downloads	Open Open Open in new window	1327/9 下午 12:10 File folder 8 下午 12:55 File folder 14 上午 10: File folder	I II File Sharing
Uibraries Uibraries Uibraries Uibraries Visideos Computer Local Disk (Cc) DATA (Dc) Vetwork	 1の影響の構(A). 加影でNC-SHARING rat[*](T) 重編出版時本。 重編成でAC-SHARING rat[*] 並發展件 共用資料及同合規構 Restore previous versions Include in library 	A Nobody Homegroup (Read) Homegroup (Read)/Wite) Specific people	Choose people to share with Type a name and then click Add, or click the arrow to find someone. Add Alvin Guest Everyone Create a new user
CNC-SHARING File folder	Delete Rename	in; Everyone	
-	Properties	1	I'm having trouble sharing

♦ Left-click on "advanced sharing" and select "share this folder" to everyone.

General Sharing Security Previous Versions Customize	
General Sharing Security Previous Versions Customize Network File and Folder Sharing public Shared Network Path: \\TRUONGTHO-PC\Users\TRUONGTHO\Desktop\public Share Advanced Sharing Set custom permissions, create multiple shares, and set other advanced sharing options.	Advanced Sharing
Password Protection People without a user account and password for this computer can access folders shared with everyone. To change this setting, use the <u>Network and Sharing Center</u> .	Limit the number of simultaneous users to: 20 🚖 Comments: Permissions Caching
Close Cancel Apply	OK Cancel Apply

♦ Select "permission" and select "full control" "only read" and "change"

🕕 New Share Proper	ties			×
General Sharing S	ecurity	Previous Versions	Customize	
Permissions for Ne	ew Shar	e	films from	23
Security				
Object name: C:\\	Users\Ca	orpsecrank\Desktop	\New Share	
Group or user names	:			
Serveryone <-	Click To	o Select		
SYSTEM				
🖁 👗 Corpsecrank (C	OM1\Co	orpsecrank)		
🔍 Administrators (COM1\A	dministrators)		
		Add	Remov	e
Permissions for Every	yone	Allow	Deny	
Full control				*
Modify		1		_
Read & execute		1		E
List folder content:	s	\checkmark		
Read		V		-
Learn about access	control a	and permissions	Click	Apply
Done? Click ->	0	K Come	Ap	ply

Open "Network and sharing center", select "turn off password protected sharing" and "Open sharing....."

General	Sharing	Security	Previous	Versions	Customiz	e
Network	. File and	l Folder Sh	naring			
D	New S Share					
Network		.Corpsecra	nk\Deskto	op∖New S	hare	
Sha	ire					
Advanc	ed Shari	ng				
		nissions, cr ng options.	reate multip	le shares,	and set o	ther
	dvance	d Sharing.				
Passwo	rd Protec	tion				
			ount and p with every		or this corr	puter
To cha	nge this :	setting, use	e the <u>Netw</u>	ork and S	haring Cer	nter.

				_
() = () = () = ()	Network and Sharing Center Advanced sharing settings	▼ ↓ 49	Search Control Panel	Q
	File sharing connections Windows 7 uses 128-bit encryption to help protect file sharing c support 128-bit encryption and must use 40- or 56-bit encryptio © Use 128-bit encryption to help protect file sharing conne © Enable file sharing for devices that use 40- or 56-bit encr	on. ections (re		
	Password protected sharing When password protected sharing is on, only people who have a computer can access shared files, printers attached to this comp other people access, you must turn off password protected shar © Turn on password protected sharing © Turn off password protected sharing	outer, and		
	HomeGroup connections Typically, Windows manages the connections to other homegro same user accounts and passwords on all of your computers, yo account instead. <u>Help me decide</u> O Allow Windows to manage homegroup connections (rev © Use user accounts and passwords to connect to other co	comment	ve HomeGroup use your ded)	II.
P	iblic	Sav	ve changes Cancel]



2. Setting PC name and workgroup

"Start" \rightarrow "control panel" \rightarrow "system and security" \rightarrow "System" \rightarrow "change " to set "Computer Name" and "Workgroup", remember these setting contents to use later on when setting controller.

🚱 🗢 💌 🕨 Control Panel 🕨	System and Security System	✓ 4 Search Control	Panel 👂
Control Panel Home	View basic information	about your computer	e
and the second s	view basic information	about your computer	
🚱 Device Manager	Windows edition		
🚱 Remote settings	Windows 7 Ultimate		\frown
System protection	Copyright © 2009 Microso	ft Corporation. All rights reserved.	
Advanced system settings			H.
	System		
	Rating:	System rating is not available	
	Processor:	AMD Athlon(tm) 64 Processor 3200+ 2	.01 GHz
	Installed memory (RAM):	2,00 GB	
	System type:	64-bit Operating System	
	Pen and Touch:	No Pen or Touch Input is available for th	is Display
	Computer name, domain, and	workgroup settings	
	Computer name:	kodyaz	🛞 Change settings
	Full computer name:	kodyaz	
	Computer description:		
See also	Workgroup:	WORKGROUP	
Action Center	Windows activation		
Windows Update	_		
Performance Information and Tools	🐘 26 days to activate. Act		
	Product ID: 00447-321-700	1166-70210 Change product key	

- 3. TCP/IP Setting
 - Double click "Internet Protocol Version 4 (TCP/IPv4)"
 - Jumper cable(without HUB), select "use the following IP address" and enter IP address(the forth number is different from controller setting) and Subnet mask(same with controller setting)
 - Network cable(with HUB), select "Obtain an IP address automatically"

col Version 4 (TCP/IPv4)	Properties	2
t IP settings assigned auto	matically if your ne	
ropriate IP settings.		
ss:	10 . 10 . 1	. 20
nask:	255 . 255 . 25	5.0
gateway:		•
	,	
· · · · · · · · · · · · · · · · · · ·		
e DNS server:		
ate settings upon exit		Advanced
	t IP settings assigned autor ty. Otherwise, you need tr ropriate IP settings. an IP address automatica e following IP address: ss: nask: gateway: DNS server address autor ie following DNS server add d DNS server: e DNS server: e DNS server:	a an IP address automatically the following IP address: ss: 10 . 10 . 1 nask: 255 . 255 . 25 gateway: DNS server address automatically the following DNS server addresses: d DNS server: E DNS server:



3.5 File Transfer

This section will show how to transfer files, files transfer is divided into import and export files, allowing controller share files to external devices, such as USB, CF card or users on the network.

3.5.1 File Import

• Operation

- ♦ Path: F2-program → F8-file manager → F4 File import
- ♦ Other interface will appear on screen, press F5-"device change" to move cursor to desired external device on the status bar
- Press [Enter] key to access to inside device, if the device icon has red cross, which means that there is no connection to this device,
- ♦ Select the file wants to import and press [Copy] to complete import file
- ♦ Press F4 cancel select to cancel the selected file
- ♦ After complete file transfer, press [Left] or [ESC] to leave this screen

Disk				File N	Manager		X	
Nam 0318 0318 0318	\USBDisk) DiskA	Network					
	\DiskA				\DiskC2\OpenCNC\Nc	Files		=
071 <u>5</u> 0802	Name		Size		Name	Size	A	
0802 0814 1234 aigor ATE Bug- G00 G00 G00 G00 G00 G00 G00 G00 G00 G0	 OpenCN OpenCN 		is Free Sna	, ce: 130639310	 ○ 0318-lathe ○ 0318-lathe ○ 0318-lesson ○ 0318-lesson -polar ○ 0612.NC ○ 0715.治樟_0715 ○ 0802-1 ○ 0802-1 ○ 0814-2712測2軸 ○ 12345 ○ aigong.nc ○ ATEST-161 ○ Proc. 0411 ○ Proc. 0411 ○ Proc. 0411 ○ Proc. 0411 	215 253 217 130 8855 22 10 213 8 1949359 394 61	20 20 20 20 20 20 20 20 20 20 20 20 20 2	
kehu	10101012 0000	5115 01 110						~
					●Ready Auto		Ala	rm
F1 Copy	F2 Select	F	3 Select ALL	F4 Cancel Select	F5 Device Change		F8 Exit	

3.5.2 File Export

- Operation
 - ♦ Path: F2-program → F8-file manager → F5 File export
 - ♦ Other interface will appear on screen, press F5-device change to move cursor to desired external device on the status bar
 - Press [Enter] key to access to inside device, if the device icon has red cross, which means that there is no connection to this device, Select the file wants to export and press [Copy] to complete export file
 - ♦ Press F4 cancel select to cancel the selected file
 - ♦ After complete file transfer, press [left] or [ESC] to leave this screen
- Note:



4 Appendix

4.1 Release Note

Doc. Ver.	Content	Release Date	Author	Reviwer	CNC Ver.
1.0	1 st Version	2013/11/08	Sandy.duan	Yulius.Duma	1.0.6
02					
03					
04					
05					

4.2 Contact Window

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