

21 Series Lathe Operation Manual

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Function Key and System configuration





1	2	3	4	5
	ç	Screen		
	6			10
<u> </u>	7			
		→ 11 ←		
Meanings for 1.1	or Sections on the Present coordinat	e Display: e system		
2.5	Working file nam	e and machining co	mmand line	2

- 3. Title of interface
- 4.Date
- 5. Time
- 6. Data input
- 7. Display(Hint)
- 8. Status
- 9. Mode
- 10. Alarm
- 11. Function Key Switch

1.2 CNC System Configuration

5 buttons



8 buttons



1.3 Coordinate

G54 ATEST-161 NO L	.1 Co	ordinate	2013	37/2	15 08 47
Machine X Y	0.0 0.0	000		Relative X Y Z Absolute	0.000 0.000 0.000
Z	0.0	000		X Y Z	0.000 0.000 0.000
		0.001		X	0.000
F 0.0 mm/min (Actual)	S	0 RPN	I (Actual)	ž	0.000
Run Time 0 : 0 : 0	PartCou	0	т 0		
		 Rondy 	Auto		Alarm

• Path

♦ F1 Coordinate

• Function

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

current page quickly.

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 defines Feedrate (mm/min).
- \diamond Actual Feedrate of cutting tool (mm/min).
- \diamond Percentages of Feedrate that user define.

1.3.1.3 S (Rotating Speed of Spindle)

- \diamond User defines Spindle speed (RPM).
- \diamond Actual speed of spindle (mm/min).
- \diamond Percentages of Spindle speed that user define.

1.3.1.4 **Run Time**

 \diamond Timer for the execution of program.

1.3.1.5 Part counter

 \diamond Number of parts that had been finished.

1.3.1.6 T(Tool No.)

 \diamond Current Tool no. and Tool compensation no.

1.3.2 Switch Coordinate

- path
- ♦ F1 Coordinate \rightarrow F1 switch coordinate
- Function
 - \diamond Whenever users press F1^{\lceil} Switch Coordinate _function

key, the coordinate display on the screen will switch between four different kinds of coordinates.

1.3.3 Half Coordinate

• Path

♦ F1 Coordinate→F2 Half Coordinate

• Function

 \diamond Relative coordinate devided by 2.

- Co-operate with Clear Rel. Coord. J function, this function can quickly calculate the middle point of the object.
- Operation Method
 - \diamond Enter the axis that you want to calculate and then

press $\[\]$ Half Coordinate $\]$.

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

1.3.4 Clear Rel. Coord.

- path
- ♦ F1 Coordinate \rightarrow F3 Clear Rel. Coord.
- Function
 - \diamond Set the Relative Coordinate to zero.
- Operation Method
 - \diamond Enter the axis that you want to calculate and then
 - press [「]Clear Rel. Coord.」
- Example
 - \diamond Current Rel.Coord.of X axis is 10.000.
 - ♦ Enter $\lceil X \rfloor$, and then press \lceil Clear Rel. Coord. \rfloor .
 - ♦ Current Rel. Coord. of X axis Will become 0.000.

1.3.5 Clear All Rel. Coord.

- path
- ♦ F1 Coordinate \rightarrow F4 Clear All Rel. Coord.
- Function
 - \diamond Clear all Relative Coordinate.
- Example
 - Current X axis of relative coordinate is 10.000, Y axis is 5.000.
 - ♦ Press [¬] Clear All Rel. Coord. J function key.
 - \diamond Relative Coordinate of X and Y will become 0.000.

1.4 **Program**

G54	ATEST-161 N0	L1 F	Program	201	3/7/2	15:14:50
Edit Program Name:ATEST	-161 Line:1	Column: 2	5			
X0.000 Y0.00	0 Z0.000					<u> </u>
%@MACRO						
M66;						E
M98 P0011;						
M88;						
M98 P0012;						
M88;						
M98 P0021;						
M88;						
M98 P0022;						
M88;						
M98 P0031;						
M88;						
KI W						
	_	_	•Ready	Auto		Alarm

• Path

♦ F2 Program

• Function

This function provides users program management and editing functions.

- Operation Method
 - ♦ Users can use $\{\uparrow\} \{\downarrow\} \{\leftarrow\} \{\rightarrow\}$ key to move the cursor to anywhere on the screen for editing purpose.
 - \diamond Press [Page Up] [Page Down] to switch the pages.
 - With [Home] [End] can let the cursor switch between the top and end of the line.
 - ♦ With the group function key 【Prog/File】 can quickly switch between 「Program」 and 「File Manager」.



1.4.1 Execute

- Path
- ♦ F2 Program \rightarrow F1 Execute
- Function
 - \diamond This function can assign the current editing program
 - as the executive program and also change the minitor
 - to the $\[\]$ Monitor $\]$ page.
- Note
- \diamond This function will be disable when machining.

1.4.2 Delete Line

- Path
- ♦ F2 Program \rightarrow F2 Delete Line
- Function
 - \diamond Delete a line where the cursor is located.

1.4.3 Search/Replace

G54 ATE	ST-161 N0	L1	Program		2013/7/2	15:20:19
Edit Program Name : ATEST-161	Line : 1	Column:	0		Replace	x
X0.000 Y0.000 Z	20.000			Search		î
%@MACRO				Penlace	, 	
M66;						
M98 P0011;						
M88;						
M98 P0012;						
M88;						
M98 P0021;						
M88;						
M98 P0022;						
M88;						
M98 P0031;						
M88;						
K						*
			•Ready	y Aut	to	Alarm

• Path

♦ F2 Program→F3 Search/Replace

• Function

- This function can help to find and replace the string within the editing program.
- Press[¬] Search/Replace J function key, a dialog box will appear to ask users input a string that need to find and replace for.

• Operation Method

♦ With 【ENTER】 key, can change the cursor location
 between 「Search」 and 「Replace」.

1.4.3.1 **Find Next**

• Path

- ♦ F2 Program \rightarrow F3 Search/Replace \rightarrow F1 Find Next
- Function
 - According to the [¬] Search String 」, find the next same string within the current editing program.
 - Cursor will move the next same string and the string will be highlight.

1.4.3.2 **Replace**

• Path

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

- Function
 - According to the 「Search String」, find the next same string within the current editing program and replace with the 「Replace String」
- Operation Method
 - ♦ If there's no highlight string on the screen, press Find
 Next ⊥.
 - Press F2 「Replace」 will replace the current highlight
 string with new string and also cursor will go to the
 next same 「Search String」.
 - ♦ If you want to skip the current highlight string, press
 F1 \ulcorner Find Next ightharpoonup.

1.4.3.3 Replace All

• Path

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

• Function

 Replace all of the string defined in [¬] Search String _J by new string and move the cursor to the line of last string.

1.4.3.4 Modify Setting

• Path

♦ F2 Program→F3 Search/Replace→F4 Modify Setting
 ● Function

♦ Reset the \lceil Search/Replace \rfloor string.

• Operation Method

♦ After executing \lceil Find Next \rfloor / \lceil Replace \rfloor / \lceil Replace

All \lrcorner , Cursor will be switched to the program edit screen.

♦ Press F4 \lceil Modify Setting \rfloor to reset the

 $^{\sqcap}$ Search/Replace $_{\perp}$ string.



G54	ATEST-161	N0 L1	File Manag	jer	2013/7/2		15:52:57
\DiskC2\OpenCNC\NcF	iles Free Space: 1	44506093I	КB				
Name	Size	1	Modified	Comn	nent		^
0318-lathe	215	2013/	03/19 14:33:09	G00 X	(20.0 Z5.0;		
0318-Lesson	269	2013/	03/18 16:24:18	G90 (300 X0. Y0. Z10.		
0318-Lesson-polar	212	2013/	04/18 17:18:39	G90 (300 X11.76. Y16	18. Z10.;	
ATEST-161	421	2013/	06/28 18:57:17	X0.	.000 Y0.000 Z0.0	00	
Bug-0411	61	2013/	04/11 21:11:37	G00 A	10. Y10. Z0.		
G0201	86	2013/	03/29 15:18:18	%@N	IACRO		
G0300	855	2013/	04/01 11:35:53	%@N	IACRO		-
klp-c d6r0.nc	241657	2011/	05/16 15:02:32	%//B	ottle Base Rough (Cut	
M0066	376	2013/	06/14 17:30:11	%@N	IACRO		
M0088	471	2013/	06/14 17:30:49	%@N	IACRO		
Marco_hw1	288	2013/	04/02 10:56:15	%@N	IACRO		
Marco_hw3	61	2013/	03/28 22:10:58	%@N	IACRO		
Marco_hw4	34	2013/	04/01 11:37:16	G54 (390		
MDIBlock	2	2013/	04/16 15:45:51				
O0003	23	2013/	04/02 21:19:24	%@N	IARCO		
O0010	210	2013/	04/18 14:52:17	% @N	MACRO		
O0011	26	2013/	06/14 17:20:27	%@N	ÍACRO		
O0012	25	2013/	06/14 17:21:10	%@N	ÍACRO		
O0900	177	2012/	06/08 10:38:26	% @N	MACRO		
O1234	32	2013/	03/27 21:39:19	O123	4;		
O5555 NC	226	2013/	03/29 11:03:43				*
			●Re	ady	Auto		Alarm

1.4.4 File Manager

• Path

- ♦ 5 Buttons type: F2 Program→F4 File Manager
- ♦ 8 Buttons type: F2 Program→F8 File Manager

• Function

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

data storage device set by Pr3213.

- Operation Method
 - ♦ Use 【↑】【↓】 key to move the cursor to anywhere on the screen for editing purpose.
 - Page Up] [Page Down] to switch the cursor between pages.

 Press [ENTER] key to assign the current cursor file as the executed file, screen will display the program content and user can edit the program.

1.4.4.1 New File

• Path

- ♦ 5 Buttons type: F2 Program→F4 File Manager→F1
 New File
- ♦ 8 Buttons type: F2 Program→F8 File Manager→F1
 New File
- Function
 - ♦ Open a new file, and that file will be set as the current edit file.
- Operation Method
 - \diamond Press $\[\]$ New File $\]$ function key, a dialog box will

appear, enter the new file name and press [ENTER].

• Note

- Default format of file name does not have file
 extension. *.NC is valid file extension incase user
 wants to creat new file with file extension.
- The file name cannot be longer than 32 characters(including file extension)

1.4.4.2 **Copy File**

- Path
- ♦ 5 Buttons type: F2 Program→F4 File Manager→F2
 Copy File
- ♦ 8 Buttons type: F2 Program→F8 File Manager→F2
 Copy File
- Function
 - \diamond Copy the file that remarked by cursor.

• Operation Method

♦ Use 【↑】【↓】 to move the cursor to the file wants to copy.

♦ Press \ulcorner Copy File \rfloor key.

 \diamond A dialog box will appear, enter the new file name.

• Note

Default format of file name does not have file
 extension. *.NC is valid file extension incase user
 wants to creat new file with file extension.

 The file name cannot be longer than 32 characters(including file extension)

1.4.4.3 Delete File

- Path
- ♦ 5 Buttons type:F2 Program→F4 File Manager→F3
 Delete File
- ♦ 8 Buttons type:F2 Program→F8 File Manager→F3
 Delete File
- Function
 - \diamond Delete the file remarked by cursor.
- Operation Method
 - ♦ Press $F3^{T}$ Delete File J, selection box will be shown in

front of the NC file within the \lceil File Manager r minitor

page. Use (\uparrow) (\downarrow) 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.
 - \diamond Select All: Select all file.
 - \diamond Cancel Select: Cancel all of the selected files.
 - \diamond Delete File: Delete all of the selected files.
 - \diamond Delete All: Delete all file within data storage device.
- Note
- Current Programming and machining file cannot be deleted.

1.4.4.4 File Transfer

• Path

- ♦ 5 Buttons type: F2 Program→F4 File Manager→F4
 File Transfer
- ♦ 8 Buttons type: F2 Program→F8 File Manager→F4
 File Transfer

• Function

Transmit data between controller and external storage device.

- **1.5.2.4.1 File Import**
- Path
- ♦ 5 Buttons type: F2 Program→F4 File Manager→F4
 File Transfer→F1 File Import
- ♦ 8 Buttons type: F2 Program→F8 File Manager→F4
 File Transfer→F1 File Import
- Function
 - ♦ Import external file into controller
- Screen Explanation
 - \diamond The upper block is the external devices with the

following choices.



- \diamond Left column are data storaged in the external device.
- Right column are current data storaged in the controller.
- Sub-function Explanation
 - Copy: Copy the remarked file from the external device to the controller.
 - ♦ Select: Select file, can select more than one file and also can cancel the selection of one file.
 - \diamond Select All: Select all file.
 - \diamond Cancel Select: Cancel all of the selected files.
 - ♦ Device Change: Change external device.
- Operation Method

- ♦ Press F1 \ulcorner File Import \lrcorner , a dialog box will appear.
- ♦ Default external device is USBDisk.
- Press F5 「Device Change」 to switch between
 external devices, switch the cursor to the desire device
 and press [Enter], then the left column data structure
 will change, according to the selected device.
- ♦ Use (\uparrow) (\downarrow) 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.

1.5.2.4.1 File Export

- Path
- ♦ 5 Buttons type: F2 Program→F4 File Manager→F4
 File Transfer→F2 File Export
- ♦ 8 Buttons type: F2 Program→F8 File Manager→F4
 File Transfer→F2 File Export
- Function
 - \diamond Export file in controller to external device.
- Function Page Explanation
 - ☆ The upper block is the external devices with the following choice.



- \diamond Left column are data storage from controller.
- Right column are current data storage in external device.
- Sub-function Explanation
 - ♦ Copy: Copy the remarked file from the external device to the controller.
 - Select: Select file, can select more than one file and also can cancel the selection of one file.
 - \diamond Select All: Select all file.
 - \diamond Cancel Select: Cancel all of the selected files.
 - ♦ Device Change: Change external device.
- Operation Method

- \diamond Press \ulcorner File Export \lrcorner , a dialog box will appear.
- ♦ Default external device is USBDisk.
- Press F5[¬] Device Change _, to switch between external devices, move 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 ^C Copy J
 then all of the remarked file will export from
 controller to external device.

1.4.4.5 **Execute**

• Path

- ♦ 5 Buttons type: F2 Program→F4 File Manager→F5
 Execute
- ♦ 8 Buttons type: F2 Program→F8 File Manager→F5
 Execute
- Function
 - This function can assign the current cursor located
 program as the executive program and also change the
 screen to the 「monitor」 page.
- Operation Method
 - ♦ Use $\{\uparrow\}$ $\{\downarrow\}$ to select file, and then press \ulcorner Execute $_{_}$ the selected file excuted.
 - ♦ The screen will change to the \lceil monitor \rfloor page.
- Note
- \diamond This function will be disable when machining.



1.4.5 Simulation

G54		ATEST-161 N0 L1	Progra	ım	201	13/7/2	16:28:51
X=(348.2	44294954151, -11.76) Y=(27	7.6225366858324, -24.59306	17527345) Z=(10, 10)			:0318-Less	on-polar L4
300.0	-200.0		100.0 200),0	Abs	olute	
					Х	348	.244
					Y	16	5.180
200.0					Z	10	.000
	X						
1000							
100,0					G90 G	00 X11	.76. Y16.1
					G16G1	7;	=
0.0					G00 X	20. Y54	4. R11.76; 🗆
: \: Syntax En	007			;D=0.1 m	G03 X	20. Y12	26. R11.76.
					G03 X	20. Y19	98. R11.76.
					G03 X	20. Y27	70. R11.76.
ļ						00 370	10 D11 7
			•	Ready	Auto		Alarm

• Path

- ♦ 5 buttons type: F2 Program \rightarrow F5 Simulation
- ♦ 8 buttons type: F2 Program→F7Simulation

• Function

- This function can simulate and predict machining path for machining program.
- \diamond Debug ability.
- Default display range is the largest limit dimension defined by machining program.
- \diamond Relative simulate function can be modified by

 \lceil simulate Setting \rfloor .

- 1.4.5.1 **Step**
- Path
- ♦ 5 Buttons type: F2 Program→F5 Simulation→F1
 Step
- ♦ 8 Buttons type: F2 Program→F7 Simulation→F1
 Step
- Function
 - \diamond Simulate the each single block of machining program.
 - Minitor the coordinate change after single block is executed.

1.4.5.2 Continue

- Path
- ♦ 5 Buttons type: F2 Program→F5 Simulation→F2
 Continue
- ♦ 8 Buttons type: F2 Program→F7 Simulation→F2
 Continue
- Function
 - Kernel will scan all of the program and then do the simulation.

1.4.5.3 **Zoom**

- Path
- ♦ 5 Buttons type: F2 Program→F5 Simulation→F3
 Zoom
- ♦ 8 Buttons type: F2 Program→F7 Simulation→F3
 Zoom
- Function

- \diamond Zoom out/in the simulation result
- Operation Method
 - ♦ Press F3 \lceil Zoom $_{\perp}$,there will be a block shown up.

Using $(\uparrow) (\downarrow) (\leftarrow) (\rightarrow)$ can move the block to up, down, left and right.

- Use [Page Up] [Page Down] to zoom in/out the area within the block.
- ♦ After the area is selected, press [ENTER] to check the result.

1.4.5.4 Graph Reset

• Path

- ♦ 5 buttons type: F2 Program→F5 Simulation→F4
 Graph Reset
- ♦ 8 buttons type: F2 Program→F7 Simulation→F4
 Graph Reset

• Function

 According the program reset the simulation result to the normal condition.

1.4.5.5 Simu. Setting

	G54	ATEST-161 N0 L1	Program	2013/7/2	16:37:02
	X=(348.2442949	254151, -11.76) Y=(27.6225366858324, -24.593061	7527345) Z=(10, 10)	:0318-Less	on-polar L4
2 — 5 —	200.0	Color 3 4 5 6 0 1 2 3 4 5 6 Path 13 13 13 13 13 13 13 13 14 5 6 0 B 255 5 G 0 B 255 5 0 Draw Mode Y Y Simu Mode Simulation Simulation	Parameter Setting 7 8 10 11 Cursor R 255 G X Quadrant	12 13 14 15 14 255 B 0 1st Quadrant ▼.	3 4
8		View Angle Vertical 0.0	000 Horizontal	0.000	716.1 .76;
	Synax Enor	X Min. 0.0 Y Min. 0.0	000 X Max. 000 Y Max. 000 Z Max	0.000	1.76.
			2 1100.		11.70. 12 D11 76
			•Ready	Auto	Alarm

• Path

- ♦ 5 buttons type: F2 Program→F5 Simulation→F5
 Simu. Setting
- ♦ 8 buttons type: F2 Program→F7 Simulation→F5
 Simu. Setting

- Function
 - \diamond Setting the relative simulation item.
- Simulation parameter
 - 1.5.2.4.1 Color
 - Provide 0~15 selections, total 16 different kind of color.

Path Color

- Simulation cutting path color.
- Provide 0~15 selections, total 16 different
 - kind of color.

Cursor Color

- Color of cursor point
- Provide 0~15 selections, total 16 different

kind of color.

RGB Value

 Except the provided 16 different kind of color, user can define the color by theirself.

Draw Mode



• User can define the profile simulate plane.

■Plane can be defined as below.

•	XYZ	•	YX
	XY	•	ZY
ullet	YZ	•	XZ
ullet	ZX	•	

Setting quadrant

■User can define the profile simulate plane is on

which quadrant.

■Quadrant can define are as below.



• Fourth
Simulate Mode

• Setting profile simulate method.

• Simulation

- When user change to the ^r Monitor _a page, simulation will be displayed automatically.
- Controller will simulate machining program after completing scan program. User does not need to define the simulate boundary.
- Direct Draw
 - When user change to the 『Monitor』 page, cursor will show up but simulation will not execute automatically.
 - User need to define the simulation scope first.
 - When the machining is started, cursor will simulate machining path according to single block.
- Not Simulation
 - Close the simulation function.

View Angle Setting

■Under XYZ draw mode, by setting this parameter,

simulation will become 3D simulation.

■View angle can define are as below.



♦ Horizontal

Scope

■Scope can define are as below.

■Minimum



♦ Y-Axis

♦ Z-Axis

■Maximum



- ♦ Y-Axis
- ♦ Z-Axis

1.4.6 Can Cycle

G54	ATEST-10	61 N0 L1	Program	2013/7/2	16:57:54
Edit Program	Name: 0318-Lesson-polar	Line: 8	Column: 0		
G90 G0 G16G1 G00 X2 G03 X2 G03 X2 G03 X2 G03 X2 G03 X2 //G15; //M30;	00 X11.76. Y16. 7; 20. Y54. R 20. Y126. F 20. Y198. F 20. Y270. F 20. Y342. F 20. Y414.R	18.Z10	.: Canned Cycle Menu rcle	X	
M02	III				
			•Ready	Auto	Alarm

• Path

- ♦ 5 Buttons type: F2 Program→Next→F1 Can Cycle
- ♦ 8 Buttons type: F2 Program→F4Can Cycle

• Function

 Because Syntec system provides many kind of G code with different function. When editing the program, this function can help user easy to edit G code.

1.4.6.1 Insert Cycle

• Path

- ♦ 5 buttons type: F2 Program→Next→F1 Can
 Cycle→F1 Insert Cycle
- ♦ 8 buttons type: F2 Program→F4 Can Cycle→F1
 Insert Cycle
- Operation Method
 - \diamond Move the cursor to the insert location and press

[¬] Insert Cycle _¬, follow the instruction and insert the required parameters.

♦ Press 「OK」, the desire G code will insert into the next line of the current cursor.

1.4.6.2 Edit Cycle

• Path

- ♦ 5 buttons type: F2 Program \rightarrow Next \rightarrow F1 Can
 - Cycle→F2 Edit Cycle
- ♦ 8 buttons type: F2 Program→F4 Can Cycle→F2 Edit
 Cycle
- Function
 - \diamond Edit the cycle at current cursor.
- Operation Method
 - \diamond Move the cursor to the intend modify location, press

^rEdit Cycle _ ,a modify page will show up. Modify

the content and press $\lceil OK \rfloor$, the content of the current

cursor will change.

1.4.7 Block Copy

G54 ATEST-161 N0 L1	Program	2013/7/2	17:01:38
Edit Program Name: 0318-Lesson-polar Line: 8 (Column: 0		
G90 G00 X11.76. Y16.18. Z10.;			ŕ
G16G17;			
G00 X20. Y54. R11.76;			
G03 X20. Y126. R11.76.;			
G03 X20. Y198. R11.76.;			
G03 X20. Y270. R11.76.;			
			E
G03 X20. Y342. R11.76.;			
G03 X20. Y414.R11.76.;			
//G15;			
//M30;			
M02			
<			× *
	 Ready 	Auto	Alarm

• Path

- ♦ 5 buttons type: F2 Program \rightarrow Next \rightarrow F2 Block Copy
- ♦ 8 Buttons type: F2 program→F5 Block Copy
- Function
 - Provide copy, cut, paste for more than one single
 block

1.4.7.1 **Start Line**

- Path
- ♦ 5 Buttons: F2 Program→Next→F2 Block Copy→F1
 Start Line
- ♦ 8 Buttons: F2 Program→F5Block Copy→F1 Start Line

• Function

 \diamond Select the beginning block.

1.4.7.2 End Line

- Path
- ♦ 5 Buttons: F2 Program→Next→F2 Block Copy→F2
 End Line
- ♦ 8 Buttons: F2 Program→F5Block Copy→F2 End Line

• Function

 \diamond Select the finishing block.

1.4.7.3 Block Cut

- Path
- ♦ 5 Buttons: F2 Program→Next→F2 Block Copy→F3
 Block Cut
- ♦ 8 Buttons: F2 Program→F5Block Copy→F3 Block
 Cut
- Function
 - \diamond Cut the block that had been selected.

1.4.7.4 Block Copy

• Path

- ♦ 5 Buttons: F2 Program→Next→F2 Block Copy→F4
 Block Copy
- ♦ 8 Buttons: F2 Program→F5Block Copy→F4 Block
 Copy

• Function

 \diamond Copy the block that had been selected.

1.4.7.5 Block Paste

- Path
- ♦ 5 Buttons: F2 Program→Next→F2 Block Copy→F5
 Block Paste
- ♦ 8 Buttons: F2 Program→F5Block Copy→ F5 Block
 Paste

• Function

 \diamond Paste the block that had been \ulcorner Block Cut $_$ and \ulcorner Block

Copy \lrcorner .

• Operation Method

 \diamond Move the cursor to the desire block and press ^{Γ} Start

Line, function key \lceil End Line \rfloor will be enable.

- ♦ Use the key on panel (↑) X ↓ X Page Up X Page Down)
 to select the block, the block selected will be
 highlight.
- \diamond Confirm the block that had been selected and press

^{Γ} End Line \rfloor .

 \rightarrow Function key $\[\]$ End Line $\]$ disable.

 \rightarrow Function key $\ ^{\sqcap}$ Block Copy \lrcorner enable.

 \rightarrow Function key $\[\]$ Block Cut $\]$ enable.

 \rightarrow If $\[\]$ Block Cut $\]$ being use, the whole block that had been highlight will be cut off.

 \rightarrow Function key $\lceil Block Copy \rfloor / \lceil Block Cut \rfloor$ disable.

 \rightarrow Function key $\[\]$ Block Paste $\]$ enable.

 \diamond Move the cursor to the desire location and press

[¬]Block Paste _¬, the content that had been cut or copy will paste at the cursor location.

 ♦ If 「Block Copy」 is used, the selected blocks will not be disappeared.

• Note

◇ If 「Block Cut」 is used, however if 「Block Paste」
 is not executed, the selected blocks will be
 disappeared.

 \diamond $\[\] Block Cut \]$ can paste only one time and $\[\] Block$

Copy _ can paste many time.

1.4.8 **Teach**

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

• Path

- ♦ 5 Buttons type: F2 Program \rightarrow Next \rightarrow F3 Teach
- ♦ 8 Buttons type: F2 Program \rightarrow F6 Teach

• Function

- ♦ Use function 『MPG』/『JOG』/『INJOG』, move the machine to destination and use 『Teach』 function, to teach the current absolute coordinate value to the NC program.
- \diamond Omit the manual input problem.

1.4.8.1 Rapid Teach

- Path
- ♦ 5 Buttons type: F2 Program→Next→F3 Teach→F1
 Rapid Teach
- ♦ 8 Buttons type: F2 Program→F6 Teach→F1 Rapid
 Teach
- Function
 - \diamond Add the current absolute coordinate as the value of

[¬]G00 Rapid Traverse _¬ function in current program.

1.4.8.2 Line Cut Teach

- Path
- ♦ 5 Buttons type:F2 Program→Next→F3 Teach→F2
 Line Cut Teach
- ♦ 8 Buttons type:F2 Program→Next→F6Teach→F2
 Line Cut Teach
- Function
 - \diamond Add the current absolute coordinate as the value of

[¬]G01 Linear Cutting _¬ function in current program.

1.4.8.3 Arc Cut Teach

- Path
- ♦ 5buttons key: F2 Program→Next→F3 Teach→F3
 Arc Cut Teach
- ♦ 8 buttons key: F2 Program→F6 Teach→F3 Arc Cut
 Teach
- Function

Add the current absolute coordinate as the machining value of 「G02/G03 Circular Cutting 」 function in current program.

Operation Method

- Move the machine table to the arc center and press
 [¬] Arc Cut Teach , current absolute coordinate will be defined as the arc center.
- Move the machine table to the ending of the arc and press [¬] Arc Cut Teach _J, current absolute coordinate will be defined 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 added in current cursor location of program.

1.4.8.4 Cancel Arc Middle

- Path
- ♦ 5 Buttons type: F2 Program→Next→F3 Teach→F4
 Cancel Arc Middle
- ♦ 8 Buttons type: F2 Program→F6 Teach→F4 Cancel
 Arc Middle
- Function
 - \diamond Clear the arc middle point that had been set.
 - If the arc middle were not set, this function will be disable.

1.4.8.5 Point Teach

- Path
- ♦ 5 buttons type: F2 Program→Next→F3 Teach→F5
 Point Teach
- ♦ 8 buttons type: F2 Program→F6 Teach→F5 Point
 Teach
- Function
 - Move the worktable to the arc center and press
 Point

 Teach
 , current absolute coordinate will be added in

 current cursor location of program.

1.5 Offset/Setting

G54	ke l	TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:39:48
Inp	ut Mode (A	A)bsolute (I)ncrement		Mac	nine	
	Absolute				Х	100	.000
	XWear	YWear	ZWear		Z	100	.000
1	0.000	0.000	0.000		Y ·	100	.000
2	0.000	0.000	0.000	•	Abso	olute	
3	0.000	0.000	0.000		Х	-20	.000
4	0.000	0.000	0.000		Z	100	.000
5	0.000	0.000	0.000		Y	100	.000
6	0.000	0.000	0.000		Rela	tive	
7	0.000	0.000	0.000		X	100	.000
8	0.000	0.000	0.000		Z	100	.000
					Т	100	.000
INC: +/	-1.000			•Ready	Not Select	<u>.</u>	Alarm

• Path

- ♦ F3 Offset/Setting
- Function
 - Under this function group, user can do the offset/Setting.
 - \diamond Use the group function key [Offset/Setting] can

switch to the current page quickly.

1.5.1 **Tool Wear Set**

G54	1	TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:39:48
Inp	out Mode (A	A)bsolute (I)ncrement		Mach	nine	
	Absolute				Х	100	0.000
	XWear	YWear	ZWear		Z	100	0.000
1	0.000	0.000	0.000		Y ·	100	0.000
2	0.000	0.000	0.000		Abso	lute	
3	0.000	0.000	0.000		Х	-20	0.000
4	0.000	0.000	0.000		Z	100	0.000
5	0.000	0.000	0.000		Y	100	0.000
6	0.000	0.000	0.000		Relat	tive	
7	0.000	0.000	0.000		Х	100	0.000
8	0.000	0.000	0.000		Z	100	0.000
					Ť	100	0.000
INC:+/	/-1.000			•Ready	Not Select		Alarm

• Path

 \Rightarrow F3 Offset/Setting \rightarrow F1 Tool Wear Set

- Function
 - \diamond Set the wear of tool.
 - \diamond Actual tool length=Tool length+Tool wear
- Function of parameter
 - \diamond Wear: Tiny modification of tool length.
- Note
- When the tool length had been set, related tool wear will become zero.
- If the tool wear is set under the machining condition, new tool wear setting will be effective in next compensation time.

1.5.2 **Tool Length Set**

G54	k	TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:43:43
Inp	ut Mode (A	A)bsolute (I)ncrement		Macl	hine	
	XLength	YLength	ZLength		X Z	10 10	0.000 0.000
1 2	0.000 0.000	0.000 0.000	0.000 0.000		Abso	olute	0.000
3 4	0.000 0.000	0.000 0.000	0.000 0.000		X Z	-2 10	0.000 0.000
5	0.000 0.000	0.000 0.000	0.000 0.000		Rela	tive	0.000
7 8	0.000 0.000	0.000 0.000	0.000 0.000		X Z Y	10 10 10	0.000 0.000 0.000
				•Ready	Not Select		Alarm

• Path

- ♦ F3 Offset/Setting→F2 Tool Length Set
- Function
 - \diamond Set the length of tool.
 - ♦ Actual tool length=Tool length+Tool wear
- Function of parameter
 - ✤ Tool length: G43/G44 tool length compensation setting.
- Note
- ♦ When the tool length had been set, related tool wear will become zero.
- \diamond Setting is prohibited in machining condition.

1.5.3 Tool Nose Set

G54	k	TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:46:48
Inp	ut Mode (A	A)bsolute (I	ncrement		Mac	nine	
	Absolute				х	10	0.000
	Radius	R.Wear	Nose		Z	10	0.000
1	0.000	0.000	0		Y	10	0.000
2	0.000	0.000	0		Abso	lute	
3	0.000	0.000	0		Х	-2	0.000
4	0.000	0.000	0		Z	10	0.000
5	0.000	0.000	0		<u>Y</u>	10	0.000
6	0.000	0.000	0		Rela	tive	
7	0.000	0.000	0		X	10	0.000
8	0.000	0.000	0			10	0.000
						10	0.000
				Ready	Not Select		Alarm

• Path

- ♦ F3 Offset/Setting \rightarrow F3 Tool Nose Set
- Function
 - \diamond Set the top position of Tool.
 - ♦ Real Tool Nose= Tool Nose Radius+Tool Nose

Radius wear

- Function of parameter
 - ✤ Tool Nose Radius: G41/G42 Tool Nose Radius compensation (not diameter).
 - Tool Nose Radius Wear : G41/G42 Tiny modification of Tool Nose Radius.
 - Tool Nose direction: Set the machining direction of Tool Nose.

♦ Syntec provide total 8 different kind of Tool Nose
 direction option, see 《Syntec Lathe Programming
 Manual—G41/G42》 ∘

• Note

♦ Setting is prohibited in machining condition.

G54	ATEST-161 N0 L1 Offset/Setting 2013/7/2	17:42:56						
Index	Index Item Va							
4001	Tapping mode(0:peck tapping,1:high-speed)	0						
4002	Drilling cycle retrace amount(LIU)	5000						
4004	Tapping cycle retrace amount(LIU)	0						
4006	Tapping cycle retrace speed(%)	100						
4010	Facing cycle X/Y plane milling stepover percent	50						
4020	OSS direction of boring cyle(0:X+,1:X-,2:Y+,3:Y-,4:Z+,5:Z-)	0						
0~1	•Ready Auto	Alarm						

1.5.4 User Parameter Setting

• Path

♦ F3 Offset/Setting→F4 User Parameter Setting

• Function

♦ Syntec controller provided user to set the related

machining parameter.

• Function of parameter

Manual \lrcorner .

1.5.5 Working Shift

G54		TEST N-1 L1	Offset/Setting	2013/7/	12	19:47:32
Input	t Mode: Increm	ental		Z'	Absolu	ite
Shift	Amount	S		X	-2	0.000
v	0.000			Z	10	0.000
~	0.000	2		Ŷ	10	0.000
Ζ	0.000					
Incre	emental				Machi	ne
1.1	Move cursor to X or 2	Z field		х	10	0.000
2.	Input increment value)		Z	10	0.000
Abs	olute			Y	10	0.000
1.	Input X*** to set X ab	solute position	1			
2.	Input Z*** to set Z ab	solute position	1			
Can	't set in busying, exec	cute G92 will c	hange shift amoun	tl		
			•Ready	Not Select		Alarm

• Path

- ♦ F3 Offset/Setting→F5 Working Shift
- Function
 - \diamond Set G92 coordinate offset.
- Operation Method
 - ■Absolute Input
 - \diamond Enter [X] / [Z] and then Enter value, press

[ENTER].

■Increment Input

- \diamond Move the cursor to the coordinate that want to setting.
- \diamond Enter value and press **[ENTER]**.

G54		TEST	「N-1 L1	Offset/Sett	ing	2	013/7/2	19:48:53
Exte	rnal Shift	G54	P1(G54)	G54	P2(G55)		Machi	ine
X Y Z	0.000	X Y 7	120.000 0.000	X Y 7	0.000		X Z Y	100.000 100.000 100.000
G54	P3(G56)	G54I	P4(G57)	G54I	P5(G58)		Relati X Z Y	ve 100.000 100.000 100.000
Х	0.000	Х	0.000	Х	0.000			
Y	0.000	Y	0.000	Y	0.000		Aux. C	Coord
Z	0.000	Z	0.000	Z	0.000		X Y Z	0.000 0.000 0.000
				•Re	ady No	t Selec	t	Alarm

1.5.6 Work Piece Cord.

• Path

- ♦ 5 Buttons key: F3 Offset/Setting→Next→F1 Work
 Piece Cord.
- ♦ 8 Buttons key: F3 Offset/Setting→F6Work Piece
 Cord.

• Function

 \diamond This function key switch the screen to the ^{$\[\]} Work$ </sup>

Piece Cord *J* setting page.

- ♦ If user do not define the coordinate system as
 G54~G59.10, the default system is G54.
- ♦ 『External Shift』: All setting of 『External Shift』

will be effective in G54~G59.10.

• Operation Method

- ♦ Use the key on panel (\uparrow) (\downarrow) to move the cursor.
- ♦ Use 【Page Up】 【Page Down】 to switch page.
- Note
- After Setting Work Piece Cord , Tool Length compensation need to re-setting again.

1.5.6.1 Mach. Coord. Teach

- Path
- ♦ 5 Buttons type: F3 Offset/Setting→Next→F1 Work
 Piece Cord.→F1Mach. Coord. teach
- ♦ 8 Buttons type: F3 Offset/Setting→F6 Work Piece
 Cord.→F1 Mach. Coord. teach
- Function
 - By the absolute input method, set the current cursor located work piece coordinate value as the mechanical coordinate value.
- Operation Method
 - \diamond Move the worktable to the destination.
 - ♦ Move the cursor to the relate work piece coordinate
 and press 「Mach. Coord. teach」
 - Current cursor located work piece coordinate will be replaced by the mechanical coordinate.
- Example
 - ♦ Current mechanical coordinate of X axis is 5.000
 - ♦ Current workpiece coordinate G54 of X axis is 0.000
 - \diamond Move the cursor to G54 X axis.
 - ♦ Press 「Mach. Coord. teach 」, the coordinate of G54 X axis become 5.000

1.5.6.2 Mach. Coord. Inc. Teach

• Path

- ♦ 5 buttons type:F3 Offset/Setting→Next→F1 Work
 Piece Cord.→F2 Mach. Coord Inc. Teach
- ♦ 8 buttons type:F3 Offset/Setting→F6Work Piece
 Cord.→F2 Mach. Coord Inc. Teach

• Function

- Current cursor located work piece coordinate will be replaced by the 「Mechanical coordinate 」 plus
 Mach. Coord Inc. Teach 」 value.
- Operation Method
 - \diamond Move the worktable to the destination.
 - ♦ Move the cursor to the relate work piece coordinate,
 key in teach value. And then press [¬] Mach. Coord Inc.
 Teach _→
 - Current cursor located work piece coordinate will be replaced by the mechanical coordinate plus Increment value.
- Example
 - \diamond Current mechanical coordinate of X axis is 5.000
 - \diamond Current workpiece coordinate G54 of X axis is 0.000
 - \diamond Move the cursor to G54 X axis.
 - ♦ Key in 10.

♦ Press 「Mach. Coord Inc. Teach」, the coordinate of
 G54 X axis become 15.000

1.5.6.3 Inc. Input

- path
- ♦ 5 buttons type: F3 Offset/Setting→Next→F1 Work
 Piece Cord.→F3 Inc. Input
- ♦ 8 buttons type: F3 Offset/Setting→F6 Work Piece
 Cord.→F3 Inc. Input
- Function
 - Current cursor located work piece coordinate will be replaced by current cursor value plus teach value.
- Operation Method
 - \diamond Move the worktable to the destination.
 - Move the cursor to the relate work piece coordinate,
 key in teach value. And then press 「Inc. Input 」
 function key.
 - Current cursor located work piece coordinate will be replaced by the current coordinate value plus teach value.
- Example
 - \diamond Current G54 X axis value is 5.000
 - \diamond Move the cursor to G54 X axis.
 - ♦ Key in 10.

 \diamond Press $\ ^{\ }$ Inc. Input $\ _{\ }$ function key ,the coordinate of

G54 X axis become 15.000

1.6 Monitor

G54	TEST NO L1 Mo	nitor	201	31712	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	G Code G18 G9 G71 G4	G1 0 G95 0 G49	Run Time Accum Run Time G00 Over G01 Over Spd Over	0 : 0 : 0 0 : 0 100 % 100 %
Feedrate Spindle	0.0mm/min 1000RPM	T 0000 Start Bloc No.	k 1	TotalAcun Part Coun	nPar 0 t 0
G00 X100.000 Y1	00.000 Z100.000				
G0X100.Y100.Z10 G00 X0.000 Z100 G04X5.S1000 G00 X100.000	00.C100. 0.000;				
		•Ready No	ot Select	,	Alarm

• Path:

♦ F4 Monitor

• Description

 \diamond This function key provides all necessary required

information in machining process.



• Menu description

1. Machine Monitor Area

- This area displays current machining data
- ♦ Absolute coordinate
- Dist. To go
- Feedrate
- ◆ Spindle speed,
- 2. Program Monitor Area
 - Display current machining program
 - The yellow single block indicates the current machined one



G54		TEST NO L1	Mor	itor 👔	201	3/7/2	20:05:46	
Absol X Z Y	-20.000 100.000 100.000	Dist. To Go X Z Y	0.000 0.000 0.000	G Code G18 G G71 G	G1 90 G95 40 G49	Run Time Accum Run Time G00 Over G01 Over Spd Over	0 : 0 : 0 : 0 100 % 100 %	0 <u>2</u> 3 6 6 4
Feedr Spind	rate le	0.0m 1000R	nm/min PM	T 000 Start Blo No.	0 ck 1	TotalAcum Part Count	Par	0 — 5 0 — 6
G00 X G0X10 G00 2 G04X: G00 X	(100.000 Y10 00.Y100.Z10 K0.000 Z100. 5.S1000 (100.000	00.000 Z100 0.C100. 000;	0.000	8	' 7			
				Ready	Not Select		Alar	m

1.6.1 Monitor Area of Machining Information

• Description

 This area and machining setting are overlapped, users can press "F4-parameter set" to switch between those two displays

- 1. G-code status
 - Display the current G-code that system are running.
- 2. Run time
 - Display machining time of one workpiece.
 - When machining program is started, it will start to count.
- 3. Accum run time



4. Override

- ♦ G00 Overide
- ♦ G01 Override
- Spindle Override
- 5. Total AcumPar
 - Total workpieces that CNC machined
 - The system can not automatically reset this value to zero
 - If users want to reset manually, please switch to the "machining setting area" and set Total AcumPar equal to 0
- 6. Part count
 - It will is reset to 0 when machining other machining program
 - Display the No. workpieces machined currently
- 7. Start block
 - Users can set the starting single block in machining program.

• Operation:

- n: Specify the starting single block is the nth row in program. (Ex: 20)
- L+ n: Specify the starting single block is the nth row in program. (Ex: L20)

- N+ n: Search the single block that has N+n sign and specify that single block as the starting line. (Ex: N3)
- T+ n: Search the single block that has T+n sign and specify that single block as the starting line.. (Ex: T01)
- If users specify the number of single block exceeding the maximum row number of program, system will set the last single block as default value
- 8. Machining tool information
 - T
 - 4 codes displayed.
 - First 2 codes are the tool number currently machining
 - 2 subsequent codes specify the tool number executing compensation.

1.6.2 **Display Area of Machining Setting**

- Description
 - This area and machining information are overlapped, users can press "F4-parameter set" to exchange between those two display.
- Display description
 - •Interrupt Line No.
 - \diamond Display the line number interupted at last time (L)
 - •Interupt Colum No.
 - \diamond Display the Colum No. interrupted at last time (N)
 - •Spindle speed
 - \diamond Set the speed of spindle
 - Can be set when system is on busy status. Moreover,
 it will be activated immediately

• Feedrate

- \diamond Set the speed of the feed. \circ
- \diamond Can be set when system is on busy status
- This value will be updated after completely excuting current single block

Total AcumPar

- ♦ Total workpieces that CNC machined
- The system can not automatically reset this value to zero
- Part count
 - It will is reset to 0 when machining other machining program

- ♦ Display the No. workpieces machined currently
- When CNC executes one M code defined by parameter 3804-part count M code, part count would be added 1 automatically and run time will be reseted to 0. When part count is reached, system will change to pause status.

• Required Part

- \diamond Set number of workpieces wants to machine
- Once the number of required part is reached, an alarm will be issued and system will change to pause status.

1.6.3 Simulation Graph

• Description

- Display the tool trajectory of current machining program.
- ♦ Related setting, please refer to" Simu. Setting."
- ♦ Use " simulation switch" to change display content

1.6.4 **Open File to Edit**

- Path:
- ♦ F4 monitor \rightarrow F1 Open file to edit
- Description
 - Enter and edit the current machining program, also switch to "F2-program" interface
 - Note: once system is on busy status, user cannot edit current maching program

1.6.5 Simulation Switch

- Path:
- ♦ F4 monitor \rightarrow F2 Simulation switch
- Description
 - \diamond Check whether simulation function works properly
 - Only modifying simulation properties when entering simulation setting interface.

1.6.6 MDI Input

- Path:
- ♦ F4 monitor \rightarrow F3 MDI input
- Description
 - Manual Data Input. Using for simple NC program or testing purpose
- Operation:
 - ♦ Select MDI mode
 - MDI function is enabled after finishing to return referent point (HOME)
 - \diamond Press F3 -MDI input and type in G or M code.

- \Rightarrow Press F1 (OK) to confirm the input command.
- The typed-in command line will show on right upper corner of the screen.
- Press 【CYCLE START】 on the operator panel to execute the single-line command.
- Note:
- ♦ must select MDI mode first

1.6.7 Parameter Set

- Path:
- ♦ F4 monitor \rightarrow F4 Parameter set
- Description
 - Switching between "machining setting" and
 "machining information"

1.6.8 Tool Wear Set

- Path:
- ♦ F4 monitor \rightarrow F5 Tool wear set
- Description
 - Display the tool wear setting interface, user can setting tool wear here.

1.6.9 Work Record

- Path:
- ♦ 5 Buttons type: F4 monitor \rightarrow Next \rightarrow F2 work record
- ♦ 8 Buttons type: F4 monitor \rightarrow F7 work record

• Description

 \diamond Check current machining record, can export to

external storage devices

1.6.10 Clear Acum Cycle time

• Path:

- ♦ 5 Buttons type: F4 monitor → Next → F3 Clear Acum
 Cycle time
- ♦ 8 Buttons type: F4 monitor →F8 Clear Acum Cycle
 time

• Description

 \diamond Clear the accumulative time
1.6.11 Graph Adjust

• Path:

- ♦ 5 Buttons type: F4 monitor → Next → F4 Graph adjust
- ♦ 8 Buttons type: F4 monitor \rightarrow Next \rightarrow F1 Graph adjust
- Description

 \diamond Zoom in/out simulation graph

- Operation
 - ♦ See "Zoom " in "simulation"

1.7 Maintain

• Path:

♦ F5 Maintain

- Description
 - \diamond This function key displays alarm, network setting, fast

diagnostic, PLC param setting, system setting



1.7.1 **Alarm**

G54	2	TEST N0 L1	Alarm	2013/7/2	20:06:11
No. Module	D	Issue Time	Content		
			-Deedu Ni	at Calast	Alarma
			•Ready No	JI Select	Alarm
• Path:					

- ♦ F5 Maintain→F1 Alarm
- Description
 - \diamond Whenever the system or the program stops due to

errors, alarm messages will be shown on the screen

1.7.1.1 Pending Alarm

• Path:

♦ F5 Maintain \rightarrow F1 Alarm \rightarrow F1 Pending Alarm

• Description

 \diamond Display system alarm content at present

1.7.1.2 History Alarm

• Path:

♦ F5-Maintain \rightarrow F1 Alarm \rightarrow F2 History Alarm

Description

 \diamond Show all the alarm history of the system.

• Note:

♦ Some alarm is not displayed here, ex: MACRO alarm

1.7.1.3 Save Alarm

• Path:

♦ F5 Maintain \rightarrow F1 Alarm \rightarrow F3 Save alarm

• Description

♦ Save Alarm History to external disk.

- •Default export file name:
- \diamond Actual alrm: actalm.txt.
- \diamond History: histalm.txt.



1.7.2 Network Setting

G54			TES	ST NO L1	Network Setting	2013/7/2	20:12:22
			IP Addres	s Paramete	r		
IP A	Address Sett	ting		Specify an	IP Address	¥	
IP A	Address	210.	20.98.21	Name Se	rver Parameter		
Sub	onet Mask	255.2	255.255.0	Primary D	ONS		
Def	ault Gatewa	210	.20.98.1	Primary V	VINS		
			Network Dis	skRemote H	lost Path		
PC	Name	NC	CYANG	Dir Name	123		
Use	er Name			Password	t l		
Net	Status	Code:	-1 Unknown	Error			
			Reso	urce Shared	l		
Sha	ared Folder f	⊃ath	DiskA\Oper	CNC\NcFile	s		
					•Ready	Not Select	Alarm

• Path:

- ♦ F5 Maintain \rightarrow F2 Network setting
- Description
 - ♦ Set system network setting
- Related infor.
 - \diamond IP address setting
 - Network cable(with HUB), select "Obtain an IP address automatically"
 - Jumper cable(without HUB), select "use the following IP address" and enter IP address(the forth number is different from PC setting) and Subnet mask(same with PC setting)
- IP address

- Only applied for "use the following IP address" option.
- Sunet mask
 - Enter the IP address for subnet mask (the same with PC subnet mask).
- PC name
 - \diamond Enter the full computer name
 - \diamond Need to be the same with PC

• Dir name

- Enter the sharing folder name (the same name with
 PC sharing folder)
- \diamond User name and password
- If the shared folder is not set the password, user do not need to enter user name, if yes, please enter the same password.

G54	TEST	NOL1 Netwo	ork Setting	2013/7/	2 20	45:58
		Kernel S	erver Settir	ng		
	Start server while boot			V		
	(minisec)					
			•Ready	Not Select		Alarm

1.7.2.1 Set Kernel Server

- \diamond Path:
- ♦ F5 Maintain→F2 Network Setting→ F5 Set Kernel Server
- Description
 - \diamond Setting function related to kernel server
 - \diamond Related infor.
 - \diamond Start server while boot
 - \diamond Setting whether server is started when booting
 - ♦ Timeout(Milisec)
 - Set the acceptable time out when connecting to the Kernel server unsuccessfully

1.8.2.1.1 Start Server

• Path:

♦ F5 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	TN0L1 Fas	st Diagnostic	2013/7/2	20:13:35
Browser::Tal					
FastSysData1	7067	FastSysData7	99	FastSysData11	-1
FastSysData2	360596	FastSysData1	2 0	FastSysData22	0
FastSysData3	72119	FastSysData1	4 5000	FastSysData23	0
FastSysData4	300495	FastSysData1	3 1000	FastSysData19	0
FastSysData5	2000	FastSysData1	5 0	FastSysData20	0
FastSysData6	10000	FastSysData1	6 0	FastSysData21	0
FastSysData10	23	FastSysData1	7 0	FastSysData24	0
FastSysData8	153358336	FastSysData1	8 0	FastSysData25	0
FastSysData9	153358336	FastSysData2	7 0.0.1	1 FastSysData26	6B
			•Ready	Not Select	Alarm

• Path:

♦ F5 Maintain→F3 Fast diagnostic

• Description

 \diamond Display simple diagnostic information of system and

axies



1.7.3.1 System Data

67 FastS 596 FastS 119 FastS	SysData7 SysData12	99 0	FastSysData11	-1
67 FastS 596 FastS 119 FastS	SysData7 SysData12	99 0	FastSysData11	-1
596 FastS	SysData12	0	F 10 B 1 00	
119 FastS			FastSysData22	0
	SysData14	5000	FastSysData23	0
495 FastS	SysData13	1000	FastSysData19	0
00 FastS	SysData15	0	FastSysData20	0
000 FastS	SysData16	0	FastSysData21	0
3 FastS	SysData17	0	FastSysData24	0
58336 FastS	SysData18	0	FastSysData25	0
58336 FastS	SysData27	0.0.11	FastSysData26	6B
		Ready	Select	Alarm
	000 FastS 3 FastS 58336 FastS 58336 FastS	000 FastSysData16 3 FastSysData17 58336 FastSysData18 58336 FastSysData27	000 FastSysData16 0 3 FastSysData17 0 58336 FastSysData18 0 58336 FastSysData27 0.0.11 •Ready Not	000 FastSysData16 0 FastSysData21 3 FastSysData17 0 FastSysData24 58336 FastSysData18 0 FastSysData25 58336 FastSysData27 0.0.11 FastSysData26

• Path:

♦ F5 Maintain \rightarrow F3 Fast diagnostic \rightarrow F1 System Data

• Description

 \diamond Display simple diagnostic information of system

G54 TI	EST NO L1	Fast Diagnosti	c	2013/7/2	20:14:27
Browser::Tab		x	Y	Z	
FastAxiesData1	-2	20000	100000	100000	
FastAxiesData1	10	00000	100000	100000	
FastAxiesData3	10	00000	100000	100000	
FastAxiesData4	10	00000	100000	100000	
FastAxiesData5		0	0	0	
FastAxiesData6		0	0	0	
FastAxiesData7		5556	5556	5556	
FastAxiesData8		0	0	0	
FastAxiesData9		0	0	0	
FastAxiesData1	D	0	0	0	
FastAxiesData1	1	0	0	0	
FastAxiesData1	2	0	0	0	
FastAxiesData1	3	0	0	0	
		•Read	ly Not Sel	ect	Alarm

1.7.3.2 Axies Data

• Path:

- ♦ F5 Maintain \rightarrow F3 Fast diagnostic \rightarrow F2 Axies data
- Description

♦ Display simple diagnostic information of Axies



G54	TEST NO	IL1		Of	fset/:	Setti	ng			20	13/7	12		5	20:1	4:56	1
Index Item												1	Valu	ie(N	lot L	.ogii	n)
	Value	F	E	D	C	в	A	9	8	7	6	5	4	3	2	1	0
3401 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3402 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3403 Extension Parameter(R 0x0000	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(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3409 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3410 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3411 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3412 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension Parameter	R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8414 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3415 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3416 Extension Parameter(R 0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Comment Extension Parameter Bit R81.1																	
0~1			1			•Re	ady	N	ot S	elect						Ala	rm

- Path:
- ♦ F5 Maintain \rightarrow F4 PLC param setting
- Description
 - \Rightarrow SYNTEC's controller provides R81 ~ R100, totally

20 sets of registers for machinerymanufacture use,

with 16Bits of each register.

- Machinery manufacture can use these 20 sets of registers to provide user execute control flag in PLC specific functions.
- Operation
 - ♦ Use (\uparrow) (\downarrow) (\leftarrow) (\rightarrow) to move cursor and

[PageUp] [PageDown] to switch to next page

 \diamond Only can enter [0] or [1].

- \diamond Available some bits for comment
- ♦ Corresponding file name for comment:

ParamExt_RBit_(L).xml

♦ (L)=COM/CHT/CHS/language



1.7.5 System Setting

G54	TEST N0 L1	Offset/Setting	2013/7/2	20:15:32
Operate	r Mada Satting			
Operato	i woue Setting			
Input/Dis	splay Unit(0:mm, 1:inch)	0		
1000				
System	Time Setting			
Date	2013/7/2			
Time	20/15/32			
THILD I	20/10/02			
Program	n file font szie setting			
Size	20			
		-Doody N	at Salaat	Alarm
(0~1)		•Ready No	JI Select	Alarm

• Path:



- Description
 - \diamond This part is used to set system environment
- Operation

♦ Use $[\uparrow] [\downarrow] [\leftarrow] [\rightarrow]$ to move cursor and

[PageUp] [PageDown] to switch to next page

1.7.5.1 Operator Mode Setting

- ♦ Setting system unit
- ♦ 0 : mm
- \diamond 1 : Inch
- \diamond Note: reboot to enable setting

1.7.5.2 System Time Setting

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

1.7.5.3 Program File Font Size Setting

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



1.7.6 Backup System



- ♦ 5 buttons type:F5Maintain→Next→F3System permissions
 - permissions
- ♦ 8 buttons type:F5Maintain→F8 System permissions
- Description
 - \diamond Display system data
 - \diamond CPU board

- ♦ Serial NO
- ♦ Model Info
- ♦ Machine Type
- ♦ Software Option

1.7.7.1 Series No Setting

- Path
- ♦ 5 buttons type: F5Maintain→Next→F3System

Permissions \rightarrow F1 Ser. NO setting

♦ 8 buttons type:F5Maintain→F8 System

permissions \rightarrow F1 Ser. NO setting

• Description

- \diamond Can set system series
- ♦ Required to obtain the original setting of the password

1.7.7.2 Use Time Setting

• Path

 \diamond 5 buttons type:F5Maintain \rightarrow Next \rightarrow F3System

Permissions \rightarrow F2 Use time setting

♦ 8 buttons type:F5Maintain→F8System

Permissions \rightarrow F2 Use time setting

• Description

- \diamond Can set system series
- \diamond Required to obtain the original setting of the password

1.7.7.3 Option Setting

- Path
- ♦ 5 buttons type:F5Maintain→Next→F3System

Permissions→F3 Option setting

♦ 8 buttons type:F5Maintain→F8System

Permissions→F3 Option setting

• Description

- \diamond Can set optional function
- ♦ Required to obtain the original setting of the password

1.7.7.4 **Op. Info Restore**

- Path
- ♦ 5 buttons type:F5Maintain→Next→F3System
 Permissions→F4 Op. Info Restore
- ♦ 8 buttons type:F5Maintain→F8System
 - Permissions \rightarrow F4 Op. Info Restore

• Description

- ♦ Can restore system Permissions
- ♦ Required to obtain the original setting of the password

1.7.8 User Login

- Path
- ♦ 5 buttons type:F5Maintain \rightarrow Next \rightarrow F1Login
- ♦ 8 buttons type:F5Maintain \rightarrow Next \rightarrow F1Login

• Description

- \diamond Enter username and password to login to the system
- ♦ login different users can have different permissions

♦ Permissions can be set in "Authority mangement"

1.7.9 User Logout

- Path
- ♦ 5 buttons type:F5Maintain \rightarrow Next \rightarrow Next \rightarrow F2Logout
- ♦ 8 buttons type:F5Maintain \rightarrow Next \rightarrow F2 Logout
- Description
 - \diamond logout the accessed acount

1.7.10 Forget Password

- Path
 - ♦ 5 buttons type:F5Maintain→Next→Next→F3 Forget
 Password
 - ♦ 8 buttons type:F5Maintain→Next→F3 Forget
 Password

• Description

- ✤ For general user, please contact the manager to reset password.
- For mechanery manufacturer or manager, please contact to SYNTEC's customer service.

1.7.11 Authority Management

- Path
 - \diamond 5 buttons
 - type:F5Maintain \rightarrow Next \rightarrow Next \rightarrow F4Authority

management

 \diamond 8 buttons type:F5Maintain \rightarrow Next \rightarrow F4Authority

management

- Description
 - \diamond Set the authority management of user

1.7.11.1 Change Password

- Path
 - \diamond 5 buttons type:F5Maintain \rightarrow Next \rightarrow F4

Authority management \rightarrow F1Reset password

- ♦ 8 buttons type:F5Maintain→Next→F4 Authority management→F1Reset password
- Description
 - \diamond Change the old password
 - \diamond Required to enter the old password

1.7.11.2 Set Authority of Default

- Path
- ♦ 5 buttons type:F5Maintain→Next→Next→F4
 Authority management→F2Set authority of default
- \diamond 8 buttons type:F5Maintain \rightarrow Next \rightarrow F4 Authority

management \rightarrow F2Set authority of default

• Description

 \diamond When no user is logged in, the function is enabled

1.7.11.3 Set Authority of Other Users

- Path
- ♦ 5 buttons type:F5Maintain→Next→Next→F4
 Authority management→F3 Set authority of other users
- ♦ 8 buttons type:F5Maintain→Next→F4 Authority management→F3 Set authority of other users
- Description
 - Machinery manufacture or manager can set each account permissions

1.7.12 Reset Password

- Path
 - ♦ 5 buttons type:F5Maintain \rightarrow Next \rightarrow Next \rightarrow F5Reset

password

- ♦ 8 buttons type:F5Maintain→Next→F5Reset password
- Description
 - \diamond Can reset machinery manufacturer password



1.7.13**About**

- Path:
- ♦ F5 Maintain \rightarrow Next \rightarrow F5 About
- Description
 - \diamond Provide controller software version



$2 \\ \text{Machine Operation Panel}$

2.1 **Operation Panel**

- POWER ON
 - \diamond Turn on controller's power
- POWER OFF
 - \diamond Turn OFF power
- Emergency STOP
 - 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
 - Description:
 - When CNC power is on, please implement home search
 - Operation:
 - ♦ Select HOME mode
 - Press axis manual key X+ or X-, Y+ or Y-, Z+

or Z- or press cycle start

 CNC would start to return reference position (HOME)

- JOG mode (Rapid JOG)
 - Operation:



- Press X+,X-,Y+,Y-,Z+,Z- key, machine table will move according to axis name and direction
- Operators can use JOG% or G01% to adjust
 Jog feedrate
- When operator press both above key and

rapid Key "~~" at the same time, CNC will

move the machine table with "RAPID

speed".

- Incremental JOG (IN JOG)
 - Operation:
 - ◆ Select INC JOG mode
 - Press X+,X-,Y+,Y-,Z+,Z- key, moving distance of machine table equal to the [incremental distance × pressing number of operator]
 - Operators can set the incremental distance by rotary switch
 - *1:1um ,*10:10um ,*100:100um
- MPG JOG
 - Description:
 - User can use MPG (Manual Pulse Generator)

mode to move the machine table

• Operation:



• Select incremental rate

Select corresponding axis X, Y, Z by rotary switch on MPG device, rotate MPG, machine table will move with velocity according to rotation speed of MPG device.

- AUTO mode
 - Description:
 - Users use this function to execute machining
 NC file
 - Operation:
 - Select AUTO mode after returning reference point (HOME)
 - Set workpiece coor.(G54..G59), CNC will default G54 in case user do not set any workpiece coor.
 - Excute Tool setting by setting tool wear, tool length, and tool nose
 - Press "CYCLE START" key to run the NC program.
 - Press "Feedhold" key to feedhold the NC program if necessary
- MDI mode
 - Description:

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



- Operation:
 - Select MDI mode
 - MDI only is enabled after machine returns reference point (HOME)
 - ◆ Select F4"Monitor"
 - Press F3 "MDI Input", another interface
 screen would appear to input program.
 - Press OK key after finishing input program
 - Press "CYCLE START" key to execute the MDI block.
 - If MDI block SYNTAX is incorrect, data in MDI menu will disappear
- MPG Simulation
 - Description:
 - Users can use this function to check NC fileOperation:
 - ♦ Select AUTO mode
 - Press MPG simulation button, and the corresponding led will be "ON"
 - Press "CYCLE START" key to start running NC file.
 - CNC would change machine status from "READY" to "BUSY"
 - Machine does not move
 - Operator can rotate MPG to run NC file

- The faster MPG rotates, the faster machining speed is
- MPG stops, CNC stops too.
- This function can be "Enable" " Disable" immediately
- P.S. This function is easy to use for checking purpose
- **Dry Run**
 - Description:
 - User can use this function to check NC file
 - Operation:
 - Select AUTO mode ◆
 - Press Dry run button, and the corresponding led will be "ON"
 - Press "CYCLE START" key to start running the NC file.
 - CNC will change machine status from "READY" to "BUSY"
 - This function can be "Enable" " Disable" immediately
 - → Single block
 - Description:

User can use this function to check NC file

• Operation:



- Press single block button, and corresponding led will be "ON"
- Press "CYCLE START" key to start running the NC file
- CNC will execute NC file only one block and STOP
- CNC will change machine status from "BUSY " to "B_STOP"
- Press "CYCLE START" again ,then CNC execute next block
- This function is used to check NC file by checking each Block of NC file.



- Description:
 - Users can use this function to decide NC file

M01 is STOP or not

- Operation:
 - Select AUTO mode
 - Press Optional stop button, and

corresponding led will be "ON"

- Press "CYCLE START" key to run the NC file.
- When CNC run "M01" code, CNC would STOP

- CNC would change machine status from "BUSY " to "Feedhold"
- This function is used to change tool or check workpiece.



- Description:
 - Users can use this function to decide whether program skips or not when program is run to
 - '/" sign in NC file.
- Operation:
 - ♦ Select AUTO mode
 - Press Optional skip button, and corresponding led will be "ON"
 - Press "CYCLE START" key to run the NC file.
 - When CNC execute to "/" sign in

program ,CNC would Skip this block

 If this key is not pressed, CNC will execute this block

• Spindle control



Spindle CW rotation

Spindle stop



Spindle CCW rotation



Low spindle speed: When spindle rotates, if this button is pressed, spindle will rotate with low speed

• Working led & Blower











``(``, ``)`', ``[``, ``]`', ``|`', ``&`', ``\$'', ``#'', ``<'', ``>'', ``='', ``%'', ``@'', ``*'', ``;'', ``, `', ``+'', ``-``

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



: Switch cursor to Page Up /Page Down



: Edit cursor control key



How to Operate 21 Series

Controller



3.1 System Status

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

3.1.1 Not Ready

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

- \diamond Emerency 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

3.1.2 **Ready**

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

- "Emerency 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 Feed Hold

In operational process, system pauses the axis movement Conditions:

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

System will be switched from "Busy" to "Feedhold" status

Note: On "Feedhold" 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**

- Description:
 - ♦ 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:
 - $\Rightarrow Press axis direction key (X+,X-,Y+,Y-,Z+...)$
 - \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

- Description:
 - ♦ 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.

3.2.1.3 INC JOG (incremental JOG)

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


- Condition:
 - ♦ System is on "Ready" status
 - ♦ 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:
 - X1 : Distance 0.001mm
 - X10 : Distance 0.010mm
 - X100 : Distance 0.100mm

Those percentage movements is shared with MPG mode

3.2.1.4 **MPG**

- Description:
 - ♦ 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

Those percentage movements is shared with INC JOG mode

3.2.2 Machining Process

3.2.2.1 Auto

- Condition:
 - \diamond System is on "Ready" status
 - \diamond AUTO mode is selected
- Operation:
 - ♦ Press CYCLE START button
 - \diamond 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

- Description:
 - ♦ Excute each single block in program
- Condition:
 - ♦ System is on "Ready" status
 - ♦ Single block mode is selected
- Operation:
 - ♦ Press CYCLE START button
 - 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



3.2.3 **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
 - \diamond 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 Tool Preparation

When programming and editing machining program, user usually wite Gcode related to tool and workpiece, and does not care about the real position. Moreover, tool length is different between each cutting tool, so tool preparation is necessary to avoid disturbing caused by different tool length.

Syntec lathe controller provides: tool length set, tool wear set, tool nose set and working shift.



3.3.1 Tool Length Set

G54	1	TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:43:43
Inp	Input Mode (A)bsolute (I)ncrement				Mac	nine	
	Absolute				х	10	0.000
	XLength	YLength	ZLength		Z	10	0.000
1	0.000	0.000	0.000		Y	10	0.000
2	0.000	0.000	0.000		Abso	olute	
3	0.000	0.000	0.000		Х	-2	0.000
4	0.000	0.000	0.000		Z	10	0.000
5	0.000	0.000	0.000		Y	10	0.000
6	0.000	0.000	0.000		Rela	tive	
7	0.000	0.000	0.000		Х	10	0.000
8	0.000	0.000	0.000		Z Y	10 10	0.000
				•Ready	Not Select		Alarm

• Path:

■F3 Offset/Setting \rightarrow F2 Tool length set

- Switch the cursor to the position wants to set by using page up/down keys and arrow keys
- There are 3 methods to input: absolute, incremental and teaching
- Enter A*** Jto input absolute value, here *** is input value; generally, this method is used to input tool radius compensation or tool length compensation.
- Enter 「I***」 to input incremental value, here *** is input value; generally, this method is used to input tool radius wearing compensation or tool length wearing compensation.

- ♦ Enter [¬]X*** [¬] or [¬]Z*** [¬] to input teaching value.
 User can input other axis name as Y, X1, X2, here
 *** is teaching value; generally, this method is used to input tool length compensation.
- ♦ Fomula calculated compensation value
- Tool radius + radius wear) is real G41/G42
 compensation value
- ♦ (Tool length + length wear) is real G43/G44
 compensation value
- Using teaching method, user does not need to move cursor to desired input position, only need move cursor to right tool number and enter axis name, controller will automatically enter setup value according to axis name.
- After setting tool length by teaching method, tool wear value is set to zero automatically.



3.3.2 Tool Length Measurement

Once NC file has T code, G43 will enable automatically. Therefore, users must set tool length before machining.

Before measuring, please confirm whether working shift(G92)and workpiece coordinate system is correct

3.3.2.1 Z axis tool length measurement

G54		TES	STN-1L1	Offset/Setting
Inp	ut Mode (A)bsolute (I)ncremen	t
4	Absolute			
	XLength	YLength	ZLength	
1	0.000	0.000	0.000	6
2	0.000	0.000	0.000	
3	0.000	0.000	0.000	l.

Use MDI mode and enter the tool No. want to measure. For example: T0101 • Path:

♦ F3 Offset/Setting \rightarrow F2 Tool length set

- Operation:
 - Move cursor to tool No. wants to set tool length, ex tool No. 1
 - Use manual mode (JOG, INJOG, MPG mode) to move the cutting tool until it touches the Z axis work
 piece zero point. Use teaching input method 「Z0」 to set current workpiece zero point position.
 - ♦ Input Z axis cutting measuring

 Normally, it is not easy to move cutting tool until it touches the Z axis work piece zero point. In this case, user usually inputs Z axis cutting measuring

Operation

- ♦ Clamp the round workpiece by spindle
- Use manual mode to move tool nose touch of workpiece end face, ensure that workpiece can be cut by moving X axis
- Spindle rotates CW direction, using MPG mode to move X axis in direction that can cut workpiece
- \diamond Move X axis in invert direction, do not move Z axis
- ♦ Use teaching input method, enter [¬]Z0, the workpiece end face that just is cut is theworkpiece zero point.



♦ Note: After setting Z axis tool length by teaching method, Z axis tool wear value is set to zero automatically.

3.3.2.2 X axis Tool Length Measurement

- ♦ Input X axis cutting measuring
- Normally, it is not easy to move cutting tool until it touches the X axis work piece zero point. In this case, user usually inputs X axis cutting measuring

• Operation:

- ♦ Use MDI mode and enter the tool No. wants to measure. For example: T0101
- ♦ Path: F3 Offset/Setting \rightarrow F2 Tool length set
- Move cursor to tool No. wants to set tool length, ex tool No. 1
- Use manual mode (JOG, INJOG, MPG mode) to move the cutting tool until it touches the X axis work piece zero point. Use teaching input method 「X0」 to set current workpiece zero point position.

• Example

- Clamp the round workpiece (diameter14mm) by spindle, ensure workpiece can be cut by moving cutting tool along Z axis
- \diamond Rotary spindle, Cut a distance along Z axis
- \diamond Retract cutting tool along Z axis, do not move X axis
- ♦ Measure cutting diameter "D "
- Input this teaching value "X+/-D". For example, after cutting, the workpiece diameter is 13.5mm, input X13.5

The plus/minus sign is decided by tool tip position, if tool tip is located at X+ (tool tip is located above central line), sign is "+", if tool tip is located at X-, the sign is "-"



- Note:
- ♦ After setting Xaxis tool length by teaching method, X axis tool wear value is set to zero automatically.



3.3.2.3 Tool Wear Setting

Tool wear setting commonly used to compensate tool wear, tool expansion and contraction caused by thermal, or corrects the tool length in fine machining process. After completing tool length setting, do not modify tool length value randomly, only use tool wear setting to correct the size workpiece in fine machining process.

After setting tool length, tool wear value is set to zero automatically. If machining result has error, users can use tool wear function to compensate tool length. Actually, tool length = tool length + tool wear

G54	ka 🛛	TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:39:48
Inp	ut Mode (A Absolute	A)bsolute (I)ncrement		Macl X	nine 10	0.000
1	XWear 0.000	YWear 0.000	ZWear 0.000		Z Y	10 10	0.000
2	0.000	0.000	0.000		Abso	lute	
3	0.000	0.000	0.000		X	-2	0.000
4	0.000	0.000	0.000		Ý	10	0.000
6	0.000	0.000	0.000		Rela	tive	
7	0.000	0.000	0.000		X	10	0.000
8	0.000	0.000	0.000		Ý	10	0.000
INC:+/	1.000			•Ready	Not Select		Alarm

• Path:

♦ F3 Offset/Setting \rightarrow F1Tool wear set

• Input method

- ♦ Absolute: input the absolute value of tool wear by entering "A**". Tool wear would equal this value
- ♦ Incremental: enter tool wear incremental value by entering "I** ". Tool wear will be changed to pre-value plus this value

- Input mode: only need to input "A" or "I" single character, then "absolute "or "incremental" setting would be kept, then users can directly input only setting value.
- \diamond plus/minus sign +/- :
- \diamond Input value can be assigned sign "+/-"
- The plus/minus sign is decided by adjusted direction of tool tip.
- If adjusted direction of tool tip is "Plus" direction,
 then enter tool wear value with plus sign
- If adjusted direction of tool tip is "minus" direction,
 then enter in tool wear value with minus sign



• Example:

If machining result is bigger than diameter 10um, tool tip is adjusted to X-, then input "I–0.01" to tool wear. -10um diameter will be added to current tool wear value. The next cutting time, tool tip cutting path would move toward "X-" direction 10um in diameter.

• Parameter

No	Descriptions	Range	Unit	initial	occasion	
3245	Max inc. value of input for tool	[1~200000]	BLU	1000	reset	
5215	wear compen.(BLU)	[1 200000]	220		reset	

Set the param to limit the value of input for tool wear compention to avoid collide.



3.3.2.4 Tool Nose Setting

Tool nose is circular, however; tool length measurement only measures tool length, so for precision machining, users can set tool nose to compensate tool nose dimension error, operation method are shown as below:

• Path:

G54		TES	ST N-1 L 1	Offset/Setting	2013/	7/2	19:46:48
Inp	ut Mode (A	A)bsolute (I)ncrement		Mach	nine	
	Radius	R.Wear	Nose		Z	100.0 100.0 100.0	00 00
1	0.000	0.000	0		Abso	lute	
3	0.000	0.000	0		X Z	-20.0 100.0	00 00
5	0.000	0.000	0		Y	100.0	00
6	0.000	0.000	0		X	100 0	00
8	0.000	0.000	0		ZY	100.0 100.0	00 00
				•Ready	Not Select		Alarm

♦ F3-Offset/setting → F3 tool nose set

• There are 3 kinds tool nose data to input

- \diamond Radius: tool nose radius
- R.wear: tool nose radius wear, real tool nose equals to
 (Radius+R.wear)
- Nose: Depending on tool nose shape, there are 8 tool nose directions to be selected. Please see SYNTEC programming manual to know more detail (G41/G42).
- Using G41/G42 in NC files to enable tool nose compensation





3.3.3 Working Shift

During writing program process, user often uses the workpiece coordinate system, it needs to set properly in CNC before machining. Machining program will modify the relation between the workpiece coordinate and machine coordinate system according to different workpice coordinate system shift

- Syntec's controller provides 2 methods to set workpiece coordinate system
 - ♦ Use NC program or MDI execute G92 code
 - \diamond Use working shift function
 - ♦ Working shift function
- Path:

♦ F3-Offset/Setting → F5 working shift

G54	TEST N-1 L1	Offset/Setting	2013/7/2	19:47:32	
Input Mode:	Incremental	× ×	z: Abs	solute	
Shift Amount		Shift	² X	-20.000	
х	0.000		Ý	100.000	
Z	0.000				
Incremental			Ма	chine	
1. Move curs	or to X or Z field		х	100.000	
2. Input incre	ment value		Z	100.000	
Absolute			Y	100.000	
1. Input X***	to set X absolute position	on			
2. Input Z*** to set Z absolute position					
Can't set in bu	sying, execute G92 will	change shift amount	tl		
		•Ready	Not Select	Alarm	

• Working shift function has 2 input methods.

 \diamond Incremental : Move cursor to axis wants to set, enter

offset value. This value describes the offset relation

between absolute coordinate and machine corrdinate.



♦ Absolute : Enter $\lceil X^{***} \rfloor$ or $\lceil Z^{***} \rfloor$. $\lceil *** \rfloor$

means absolute coordinate value of current position.



3.3.4 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, cutomers need to use this function, please contact to machine maker.

G54			TEST	N0 L1	Offset/Setting	20	13/7/2	20:18:05
Т	loc	Ma	nager	Funct	tion			
No	Turret	group	Information	Cur. Life	Max. Life	Announce	Status	
01	0	0	UNC-	0	0	0	No Managed	
02	0	0	UNC-	0	0	0	No Managed	
03	0	0	UNC-	0	0	0	No Managed	
04	0	0	UNC-	0	0	0	No Managed	
05	0	0	UNC-	0	0	0	No Managed	
06	0	0	UNC-	0	0	0	No Managed	
07	0	0	UNC-	0	0	0	No Managed	
08	0	0	UNC-	0	0	0	No Managed	
09	0	0	UNC-	0	0	0	No Managed	
10	0	0	UNC-	0	0	0	No Managed	
11	0	0	UNC-	0	0	0	No Managed	
12	0	0	UNC-	0	0	0	No Managed	
(0~96) Turr	nt tool No).			•Ready	Not Select		Alarm

• Condition

- \diamond Both auto and manual can be use.
- \diamond Operation
- ♦ 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 $\[\]$ Tool life $\]$ 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 informations (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)
- \Rightarrow T—working time T / C—Number of working times
- Decide the current life time, the maximum life time, life time prediction, unit of timing and number of time.
- \Rightarrow 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
- \diamond 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

- \diamond (0)Without management: Set values are not effective.
- \diamond (1) Without use: Lifetime of tool is zero.
- \diamond (2) usable:0< Tool Life Time lifetime prediction
- (3) End prediction: Lifetime prediction < Tool
 Lifetime < Maximum Lifetime
- \diamond (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.
 - The screen displays the correct machining program name
 - The content of machining program is displayed when presssing 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
 F5-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 scaning 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 simulaiton button on operation panel
 - \diamond 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
- Confirmation
 - There are two ways to confirm whether MPG simulation is boot successfully.
 - After enable MPG simulation function and not machining: check whether G01 override on [monitor screen] is 0 when not rotating MPG, unequal to 0 when rotating MPG
 - After enable MPG simulation function and during machining process : whether Machine immediately decelerates to 0 until turn MPG or cancel MPG simulation mode

3.4.3.2 Single Block

• Condition

- \diamond Only for single block and auto mode
- Operation
 - \diamond 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

3.4.4 Machining Monitor

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

3.4.4.1 Part count Manager

• Description

- 1. Total accumpart
- ♦ 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
- Part count reset (clear to 0) condition
 - ♦ Required part count is reached
 - \diamond 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
 - \diamond Required part count is reached
 - \diamond Change machining files
 - Modify the required part count, and the required part count is smaller than part count.



3.5 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.

3.5.1 Emerency Stop

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

3.5.2 Alarm Display

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

3.5.2.1 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

• If the alarm still is not removed, press reset button, alarm window will be not displayed.

• Press F5-Maintain to display pending alarm contents.

3.5.2.2 History Alarm

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

• Path:

♦ F5- maintain → F1-Alarm → F2 History alarm

 \diamond Display history alarm

The smaller No. alarm is, the sooner alarm occurres

3.5.3 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
 - ♦ Switch to "Alarm" page(F5-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
 - \diamond Select OK to complete export alarm content
- File name
 - ♦ Actual alarm : Actalm.txt
 - ♦ History alarm : Histalm.txt

3.6 Network Setting

- A. On the interface screen, press down"F5 Maintain" => "F2 Network setting" to access IP address setting.
- B. **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
- C. IP Address: if you select "Specify an IP Address", enter the free IP address

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

- D. Subnet mask: Enter the IP address for subnet mask (the same with PC subnet mask).
- E. **PC Name**: Enter the full computer name of your PC.
- F. Dir Name: Enter the sharing folder name (the same name with PC sharing folder)
- G. User Name: Enter GUEST
- H. Press $\lceil F1 \ OK \rfloor$, and then reboot controller to finish installation.



3.7 PC Setting

3.7.1 XP OS

1. Guest account setting

Log in as 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"





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

Public Properties ?X
General Sharing Customize Local sharing and security To share this folder with other users of this computer only, drag it to the Shared Documents folder. To make this folder and its subfolders private so that only you have access, select the following check box. Make this folder private Network sharing and security To share this folder private Network sharing and security To share this folder with both network users and other users of this computer, select the first check box below and type a share name. Share this folder on the network! Share name: Public Allow network users to change my files Learn more about sharing and security. Windows Firewall will be configured to allow this folder to be shared with other computers on the network. View your Windows Firewall settings OK Cancel

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.

computer Name Hardwi	are Advanced System Protection Remote	1
Windows use on the networ	s the following information to identify your computer k.	Computer Name Changes ?
Computer description:		You can change the name and the membership of this computer. Changes may affect access to network resources.
	For example: "Kitchen Computer" or "Mary's Computer".	
Full computer name:	UONGANNE	Computer name:
Workgroup:	SYNTECCLUB	YOUNG
To rename this compute workgroup, click Change	er or change its domain or Change	YOUNG More
		Member of Demain
		💿 Workgroup:



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.
Lient for Microsoft Networks Image: Statistical Activity of the statistical	O Obtain an IP address automaticallu
🗹 📕 QoS Packet Scheduler	Use the following IP address:
Internet Protocol (TCP/IP)	<u>I</u> P address: 210.20.98.20
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



3.7.2 **VISTA OS**

1. Guest account setting

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

E User Accounts	
Q Q 88	
Learn About	ि 👰 User Accounts
② User accounts ③ User account types ③ Switching users	Pick a task
	Change an account
	Create a new account
	Change the way users log on or off
	or pick an account to change
	Computer administrator Password protected
	Guest Guest Guest account is off


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 forlder"

Seneral Sharing Security Previous Versions Customize	
Network File and Folder Sharing	
Docs Shared	
Network Path:	
Share	Advanced sharing
Advanced Shafes	Settings
Set custom permissions, create multiple shares, and set other	Share name:
advanced sharing options.	Add Remove
Advanced Sharing	Limit the number of simultaneous users to:
Password Protection	Comments:
People must have a user account and password for this computer to access shared folders.	2
To change this setting, use the $\underline{\text{Network}}$ and $\underline{\text{Sharing Center}}.$	
	Permissions Caching

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

Serveryone		
		4
	Add	Remove
Permissions for Evervone	Allow	Denv
elect Users or Groups		-9-
Select this object type:		
Users, Groups, or Built-in security principals		Object Types
rom this location:		Locations
-nter the object names to select (examples)		~
Docs GUEST _		Check Names

3. Security setting

Right click on forlder to share \rightarrow properties \rightarrow security \rightarrow Edit \rightarrow add "Guest" as a new group,

then open group permissions to maximum.

bject name: C: \Docs				
roup or user names:				
Everyone CREATOR OWNER	· · · · · · · · · · · · · · · · · · ·	Security		
Re Administratore (: \Administratore)	*	Select Users or Groups		- P-
۰ (m	•	Select this object type:		
o change permissions, click Edit.	Edit	Users, Groups, or Built-in security princip. From this location:	als	Object Types.
ermissions for Everyone	Allow Deny	Docs		Locations
Full control	v *	Enterly object names to select (example	<u>es):</u>	
Modify	1	Docs GUEST		Check Names
Read & execute	✓ E	5		J
List folder contents	1	Advanced		Cancel
Read	1			
Write	✓ [−]	Modify		
or special permissions or advanced setting	s, Advanced	Read & execute	V	
ick Advanced.	, availood	List folder contents		
an about access control and namissions	0	Read	V	-
2011 01001 010 633 10000 0101 06000330003	E Contraction of the second seco			

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.

omputer Name Hardw	are Advanced System Protection Remote	
Windows use on the networ	es the following information to identify your computer rk.	Computer Name Changes
Computer description:		You can change the name and the membership of this computer. Changes may affect access to network resources
	For example: "Kitchen Computer" or "Mary's Computer".	
Full computer name:	HONGANNE	Computer name:
Workaroup:	SYNTECCLUB	YOUNG
To use a wizard to join a Network ID. To rename this compute workgroup, click Chang	a domain or workgroup, click Network ID er or change its domain or e. Change	YOUNG More
		⊙ Workgroup:



5. TCP/IP Setting

a. "START" → "control panel" → "Network and sharing center"→"Network connection manager" → "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"

General Authentication Advanced	Internet Protocol (TCP/IP) Properties
Connect using: Intel(R) GD82559ER PCI Adapter Chient for Microsoft Networks Client for Microsoft Networks File and Printer Sharing for Microsoft Networks QoS Packet Scheduler Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks. Show icon in notification area when connected Notify me when this connection has limited or no connectivity	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. ① Dbtain an IP address automatically ③ Uge the following IP address: IP address: <td< th=""></td<>
OK Cancel	Ad <u>v</u> anced
	OK Cancel



3.7.3 Win 7 OS

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

🕅 Favorites	Name	Date modified Type Size	
Kange Desktop	CM_2320_Full_Solution_Win7_3_1_AP	2012/2/11 上午 09: File folder	
Downloads	Open Open in new window	2013-27/9 下午12:10 File folder 8 下午12:55 File folder (14 上午10: File folder	→ D → D → D → D → D → D → D → D → D → D
 Libraries Documents Music Pictures 	Share with 資 加到重線備(A) 資 加到"CNC-SHARING.rar"(T) 資 脂組並發影件	Nobody Homegroup (Read) Homegroup (Read/Write)	Choose people to share with Type a name and then click Add, or click the arrow to find someone.
Videos Computer	 E編成 "CNC-SHARING.rar" 並發郵件 共用資料次同步處理 Restore previous versions Include in library 	specific people	Add
DATA (D:)	Send to Cut Copy	•	Guest Level Everyone Ureate a new User Everyone Resurveryone Resurveryone
CNC-SHARING File folder D	Create shortcut Delete at	in; Everyone	
	Properties		I'm bruing trouble charing

♦ Left-click on "advanced sharing" and select "share this forlder"

Network File and Folder Sharing	
arun Shared Network Path: \\ HONGANNB\arun	Share this folder Settings Share name:
Share	Add Remove
Advanced Sharing Set custom permissions, create multiple shares, and set other advanced sharing options. Click Here	Limit the number of simultaneous users to: 20
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> .	Permissions Caching



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

Settings Share name:	Share Permissions Group or user names:		
Add Remove	Stream Administrators (TaylorGibb-PC\Administrators)		
Comments:	Permissions for Everyone	Add	Remove
Permissions Caching	Full Control Change Read	2	

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

File Edit View To	Help	
	Public folder sharing	
	When Public folder sharing is on, people on the network, including homegroup members, can access files in the Public folders. <u>What are the Public folders?</u>	
	 Turn on sharing so anyone with network access can read and write files in the Public folders. Turn off Public folder sharing (people logged on to this computer can still access these folders) 	
	Media streaming	
	When media streaming is on, people and devices on the network can access pictures, music, and videos on this computer. This computer can also find media on the network.	
	Media streaming is on. Choose media streaming options	F
	File sharing connections	
	Windows 7 uses 128-bit encryption to help protect file sharing connections. Some devices don't support 128-bit encryption and must use 40- or 56-bit encryption.	
	@ Use 128-bit encryption to help protect file sharing connections (recommended) Enable file sharing for devices that use 40- or 56-bit encryption	
	Password protected sharing	
	When password protected sharing is on, only people who have a user account and password on this computer can access shared files, printers attached to this computer, and the Public folders. To give other people access, you must turn off password protected sharing. Turn on password protected sharing Turn off password protected sharing	
	HomeGroup connections	
	Typically, Windows manages the connections to other homegroup computers. But if you have the same user accounts and passwords on all of your computers, you can have HomeGroup use your account instead. <u>Heap medication</u>	
	Allow Windows to manage homegroup connections (recommended)	
	Use user accounts and passwords to connect to other computers.	
	Public 💮	Ļ



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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.

System and Secur	ity 🕨 System 🔹 🕇	• Search Control Panel
Control Panel Home		
Device Manager	System	
Remote settings System protection	Rating:	3,2 Windows Experience Index
Advanced system settings	Processor:	Intel(R) Core(TM)2 CPU T5500 @ 1.66GHz 1.67 GHz
	Installed memory (RAM):	1.00 GB
	System type:	32-bit Operating System
	Pen and Touch:	No Pen or Touch Input is available for this Display
See also	Computer name, domain, and	workgroup settings
Action Center	Computer name: HC	NGANNB Change settings
Windows Update	Full computer name: HC	NGANNB
Performance Information and	Computer description:	
1005	Workgroup:	SYNTECCLUB

- 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"

letworking Sharing	Internet Protocol Version 4 (TCP	(IDu4) Proportion
Connect using: Image: Connect using: Image: Atheros AR8131 PCI-E Gigabit Ethemet Controller (NDIS €	General	/IPV4) Properties
Configure	fou can get IP settings assigned this capability. Otherwise, you for the appropriate IP settings.	a automatically if your network supports need to ask your network administrator
Client for Microsoft Networks	Obtain an IP address auto	matically
V Show PC Network Filter Driver	Our Dise the following IP address	ss:
Ele and Printer Sharing for Microsoft Networks	IP address:	10 . 10 . 1 . 20
✓ Internet Protocol Version 6 (TCP/IPv6)	Subnet mask:	255 . 255 . 255 . 0
Internet Protocol Version 4 (TCP/IPv4) Link-Layer Topology Discovery Mapper I/O Driver	Default gateway:	
🗹 🗉 Link-Layer Topology Discovery Responder	Obtain DNS server addres	s automatically
	Use the following DNS service	ver addresses:
Description	Preferred DNS server:	
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication	Alternate DNS server:	
across diverse interconnected networks.	Validate settings upon ex	Advanced



3.8 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.

3.8.1 File Import

Operation

- ♦ Path: F2-program → F4-file manager → F4-file transfer → F1-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 eccess 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
- \diamond Press F4 cancel select to cancel the selected file
- \diamond After complete file transfer, press [left] or [ESC] to leave this screen



3.8.2 File Export

• Operation

- ◇ Path: F2-program → F4-file manager → F4-file
 transfer → F2-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 eccess 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: if destination of export file does not exist, below alarm will appear



4.1 Release Note

Doc. Ver.	Content	Release Date	Author	Reviewer	CN C Ver.
1.0	1 st Version	2013/11/20	Andy Ngo	許維中	1.0.1 4
1.1	Modify Composition	2014/01/09	Sandy. Duan	張宏安	1.0.1 4
1.2	Modify [WorkPiece Cord] key	2014/03/02	Andy Ngo	張宏安	2.2.2
1.3	Add Chinese topic, and increase front size	2015/11/13	Linda Chen	Yu-An Chiang	
05					



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