

# <u>6 Series Lathe Operation</u> <u>Manual</u>

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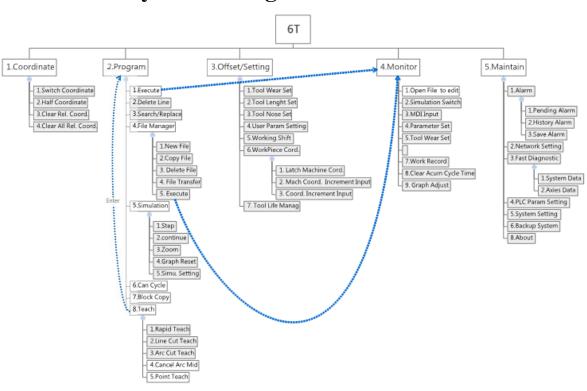
## 1 Function Key and System configuration

## 1.1 Main Screen Sections

Screen	1	2	3	4	5		
6 8 9 10							
6 8 9 10							
8 9 10	Screen						
8 9 10							
8 9 10							
8 9 10							
		6	8	•	10		
		7					
		-					
<ul> <li>Meanings for Sections on the Display:</li> </ul>	1.Present coordinate system						
	2.Work	ting file name a	nd machining comm	and line			
	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

## 1.3 Coordinate

G54 ATEST-161 NO L	1 Co	ordinate	2013	112 1	5 08 47
Machine X		000		Relative X Y Z	0.000 0.000 0.000
Y Z		)00 )00		Absolute X Y Z	0.000 0.000 0.000
F 1000.000 mm/min 100 % 0.0 mm/min (Actual)	S	v	0 % Actual)	Dist. To Go X Y Z	0.000 0.000 0.000
Run Time 0 : 0 : 0	PartCou	•Roady /	0 Vuto		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<sup>¬</sup> 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
  - ♦ Whenever users press  $F1^{\Gamma}$  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
  - $\diamond$  Key in the axis that you want to calculate and then

press  $\ ^{\sqcap}$  Half Coordinate  $\ _{\mid}$  .

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

#### 1.3.4 Clear Rel. Coord.

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

press 「Clear Rel. Coord.」

- Example
  - ♦ Current Rel.Coord.of X axis is 10.000.
  - ♦ Key in  $\lceil X \rfloor$ , 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 <sup>¬</sup> Clear All Rel. Coord. J function key.
  - $\diamond$  Relative Coordinate of X and Y will become 0.000.



#### 1.4 Program

G54 A	TEST-161 N0	L1	Program	2013/7/2	15:14:50
Edit Program Name : ATEST-10	61 Line:1	Column :	25		
X0.000 Y0.000	Z0.000				<u> </u>
%@MACRO					
M66;					E
M98 P0011;					
M88;					
M98 P0012;					
M88;					
M98 P0021;					
M88;					
M98 P0022;					
M88;					
M98 P0031;					
M88;					
KI W					
	_	_	•Ready	Auto	Alarm
	a.	4		7	

- Path
  - ♦ F2 Program
- Function
  - This function provides users program management and editing functions.
- Operation Method
  - ♦ Users can use 【↑】【↓】【←】【→】 on the key pad to move the cursor to anywhere on the screen for editing purpose.
  - ♦ With 【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  $\lceil \operatorname{Program} \rfloor$  and  $\lceil \operatorname{File} \operatorname{Manager} \rfloor$ .

#### 1.4.1 Execute

- Path
  - ♦ F2 Program $\rightarrow$ F1 Execute
- Function
  - This function can assign the current editing program as the executive program and also change the minitor

to the  $\lceil$  Monitor  $\rfloor$  page.

- Note
  - $\diamond$  This function will out of control when machining.

#### 1.4.2 Delete Line

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

## 1.5 Search/Replace

G54 ATE	ST-161 N0 I	L1	Program		2013/7/2	15:20:19
Edit Program Name : ATEST-161	Line : 1	Column :	0		Replace	х —
X0.000 Y0.000 Z	0.000			Search		î
%@MACRO				- · ·		
M66;				Replace		E
M98 P0011;						
M88;						
M98 P0012;						
M88;						
M98 P0021;						
M88;						
M98 P0022;						
M88;						
M98 P0031;						
M88;						
× · · · · · · · · · · · · · · · · · · ·						, i
			•Ready	y Auto		Alarm

- Path
  - ♦ F2 Program→F3 Search/Replace
- Function
  - This function can help to find and replace the string within the editing program.
  - Press<sup>r</sup> 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
  - $\diamond$  With **(ENTER)** on the key pad, can alter the cursor

location between  $\lceil \text{Search} \rfloor$  and  $\lceil \text{Replace} \rfloor$ .

#### 1.5.1.1 **Find Next**

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ F3 Search/Replace $\rightarrow$ F1 Find Next
- Function
  - According to the <sup>¬</sup> 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.

#### 1.5.1.2 **Replace**

- Path
  - $\Rightarrow$  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 stirng, press
    F1  $\ulcorner$  Find Next ightharpoonup.

#### 1.5.1.3 Replace All

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ F3 Search/Replace $\rightarrow$ F3 Replace All
- Function
  - Replace all of the string that define in <sup>¬</sup> Search String <sub>¬</sub>
     with the new string and move the cursor to the line of last string.

#### 1.5.1.4 Modify Setting

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ F3 Search/Replace $\rightarrow$ F4 Modify Setting
- Function
  - ♦ Reset the  $\lceil$  Search/Replace  $\rfloor$  string.
- Operation Method
  - ♦ After Executed  $\lceil$  Find Next  $\rfloor$  /  $\lceil$  Replace  $\rfloor$  /  $\lceil$  Replace

All \_ cursor will change to the program edit place.

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

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



1.5.2	File Manager
-------	--------------

G54	ATEST-161	N0 L1	File Manag	er	2013/7/2	15:52:57
\DiskC2\OpenCNC\NcF	iles Free Space: 1	445060931	¢В			
Name	Size	1	Modified	Comm	ent	^
0318-lathe	215	2013/0	03/19 14:33:09	G00 X	20.0 Z5.0;	
0318-Lesson	269	2013/0	03/18 16:24:18	G90 G	00 X0. Y0. Z10.;	
0318-Lesson-polar	212	2013/0	04/18 17:18:39	G90 G	00 X11.76. Y16.18. Z	210.;
ATEST-161	421	2013/0	06/28 18:57:17	X0.0	000 Y0.000 Z0.000	
Bug-0411	61	2013/0	04/11 21:11:37	G00 A	10. Y10. Z0.	
G0201	86	2013/0	03/29 15:18:18	%@M	ACRO	_
G0300	855	2013/0	04/01 11:35:53	%@M	ACRO	1
klp-c d6r0.nc	241657	2011/0	05/16 15:02:32	%//Bo	ttle Base Rough Cut	
M0066	376	2013/0	06/14 17:30:11	%@M	ACRO	
M0088	471	2013/0	06/14 17:30:49	%@M	ACRO	
Marco_hw1	288	2013/0	04/02 10:56:15	%@M	ACRO	
Marco_hw3	61	2013/0	03/28 22:10:58	%@M	ACRO	
Marco_hw4	34	2013/0	04/01 11:37:16	G54 G	90	
MDIBlock	2	2013/0	04/16 15:45:51			
O0003	23	2013/0	04/02 21:19:24	%@M	ARCO	
O0010	210	2013/0	04/18 14:52:17	% @N	IACRO	
O0011	26	2013/0	06/14 17:20:27	%@M	ACRO	
O0012	25	2013/0	06/14 17:21:10	%@M	ACRO	
O0900	177	2012/0	06/08 10:38:26	% @N	IACRO	
O1234	32	2013/0	03/27 21:39:19	O1234		
05555 NC	226	2013/0	03/29 11:03:43			-
			•Rea	ady	Auto	Alarm

- Path
  - ♦ F2 Program $\rightarrow$ F4 File Manager
- Function
  - This function key can manage all of the NC files
     within the data storage device. The device can be

setting with Pr3213.

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



with the program content and can enable to edit the program.

#### 1.5.2.1 New File

- Path
  - ♦ F2 Program $\rightarrow$ F4 File Manager $\rightarrow$ F1 New File
- Function
  - $\diamond$  Open a new file, that file will be the current edit file.
- Operation Method
  - ♦ Press  $\lceil$  New File  $\rfloor$  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. If user want to create a new file with file extension such as \*.NC, enter \*.NC is ok.
  - The size of file name cannot be longer than 32 characters(include file extension)

#### 1.5.2.2 Copy File

- Path
  - ♦ F2 Program $\rightarrow$ F4 File Manager $\rightarrow$ F2 Copy File
- Function
  - $\diamond$  Copy the file that remarked by cursor.
- Operation Method
  - ♦ Use 【↑】【↓】 to move the cursor to the file that want to copy.
  - ♦ Press  $\ulcorner$  Copy File  $\lrcorner$  function key.
  - $\diamond$  A dialog box will appear, enter the new file name.
- Note

- Default format of file name does not have file extension. If user want to create a new file with file extension such as \*.NC, it is also ok.
- The size of file name must not be longer than 32 characters(include file extension)

#### 1.5.2.3 Delete File

- Path
  - ♦ F2 Program $\rightarrow$ F4 File Manager $\rightarrow$ F3 Delete File
- Function
  - $\diamond$  Delete file remarked by cursor.
- Operation Method
  - ♦ Press F3  $\lceil$  Delete File ightarrow , selection box will show up in

fornt of the NC file within the  $\ulcorner$  File Manager  $\lrcorner$  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.

## 1.5.2.4 File Transfer

- Path
  - ♦ F2 Program $\rightarrow$ F4 File Manager $\rightarrow$ F4 File Transfer
- Function
  - $\diamond$  Transmit data between controller and outer device.

1.5.2.4.1 File Import

• Path

♦ F2 Program $\rightarrow$ F4 File Manager $\rightarrow$ F4 File

Transfer→F1 File Import

- Function
  - $\diamond$  Import outer file into controller
- Function Page Explanation
  - $\diamond$  The upper block is the outer devices with the

following choice.



- DiskA
- Network
- ♦ USBDisk2
- $\diamond$  Left column are data storage in the outer device.
- Right column are current data storage in the controller.
- Sub-function Explanation
  - Copy: Copy the remarked file from the outer 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 outer device.
- Operation Method
  - ♦ Press F1  $\lceil$  File Import  $\rfloor$ , a dialog box will appear.

- ♦ Default outer device is USBDisk.
- ♦ If you want to change the outer device, press F5
   □ Device Change \_\_, 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 <sup>¬</sup> Copy <sub>→</sub>
   then all of the remarked file will import into
   controller.

1.5.2.4.1 File Export

• Path

♦ F2 Program $\rightarrow$ F4 File Manager $\rightarrow$ F4 File

Transfer→F2 File Export

- Function
  - $\diamond$  Export file within controller to outer device.
- Function Page Explanation
  - $\diamond$  The upper block is the outer devices with the

following choice.



- DiskA
- Network
- ♦ USBDisk2
- $\diamond$  Left column are data storage from controller.
- $\diamond$  Right column are current data storage in outer device.
- Sub-function Explanation
  - Copy: Copy the remarked file from the outer 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 outer device.
- Operation Method
  - ♦ Press  $\ulcorner$  File Export  $\lrcorner$  , a dialog box will appear.
  - $\diamond$  Default outer device is USBDisk.
  - ∻

- If you want to change the destination device, press F5
  Device Change , switch the cursor to the desire
  device and press [Enter], then the below left column
  data structure will change, according to the selected
  device.
- ♦ Use  $(\uparrow)$   $(\downarrow)$  to select file.
- ♦ Move the cursor to the export file and press F2
   □ Select □ or [Space] to remark file.
- After remarked all of the export file, press F1 Copy J
   then all of the remarked file will export from
   controller into outer device.

#### 1.5.2.5 **Execute**

- Path
  - ♦ F2 Program $\rightarrow$ F4 File Manager $\rightarrow$ 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 will be the executive file.
  - ♦ The screen will change to the  $\lceil$  monitor  $\rfloor$  page.
- Note
  - $\diamond$  This function will be out of control when machining.

#### 1.5.3 Simulation

G54	ATEST-161 N0 L1	Program	2013/7/2	16:28:51	
X=(348.244294954151, -11.76) Y	(=(27.6225366858324, -24.59306		:0318-Lesson-polar L4		
-200.0	0.0	-100.0	Absolute		
			X 34	8.244	
			Y 1	6.180	
200.0			Z 1	0.000	
/					
100,0					
			G90 G00 X1	1.76. Y16.1	
		· · - · · - · · · · · · · · · · · ·	G16G17;	E	
0.0	<i></i>	D=0.1 m	G00 X20. Y5		
Syntax Error		:   \; ; ; ;   ;D=0.1 m	G03 X20. YI		
			G03 X20. Y1	.98. R11.76.	
			G03 X20. Y2		
				10 D11 7	
		<ul> <li>Ready</li> </ul>	Auto	Alarm	

- Path
  - ♦ F2 Program→F5 Simulation
- Function
  - This function can simulate the program and make a prediction for the actual machining route.
  - $\diamond$  Capability of debug.
  - Default display range will be the largest limit of the program.
  - $\diamond$  Relative simulate function can be modify by changing

 $^{\sqcap}$  simulate Setting  $_{\perp}$  .

#### 1.5.3.1 Step

- Path
  - ♦ F2 Program $\rightarrow$ F5 Simulation $\rightarrow$ F1 Step
- Function
  - $\diamond$  Simulate the program step by step.
  - $\diamond$  Minitor the variation of the coordinate step by step.

#### 1.5.3.2 Continue

- Path
  - ♦ F2 Program $\rightarrow$ F5 Simulation $\rightarrow$ F2 Continue
- Function
  - Kernel will scan all of the program and then do the simulation.

#### 1.5.3.3 **Zoom**

- Path
  - ♦ F2 Program $\rightarrow$ F5 Simulation $\rightarrow$ F3 Zoom
- Function
  - ♦ Enlarge/contract the simulation result
- Operation Method
  - ♦ Press F3  $\lceil$  Zoom  $\rfloor$  ,there will be a block show up. Use
    - $(\uparrow) (\downarrow) (\leftarrow) (\rightarrow)$  can move the block to up and down, left and right.
  - Use [Page Up] [Page Down] to enlarge/contract the area within the block.
  - ♦ After the area is selected, press [ENTER] to check the result.

#### 1.5.3.4 Graph Reset

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ F5 Simulation $\rightarrow$ F4 Graph Reset
- Function
  - According the program reset the simulation result to the normal condition.

#### 1.5.3.5 Simu. Setting

	G54	ATEST-161 N0 L1	Program	2013/7/2	16:37:02
	X=(348.24429495	54151, -11.76) Y=(27.6225366858324, -24.593061752734	5) Z=(10, 10)	:0318-Less	on-polar L4
		Par	ameter Setting		X
2— 5— 7— 8—	<u>300.0</u> 200.0 200.0 100.0 100.0	Color       0       1       2       3       4       5       6       7         Path R       255       G       0       B       255         Draw Mode       YX       YX         Simu Mode       Simulation       Y         View Angle       View Angle       Y	8 10 11 Cursor R 255 G Quadrant	14 15 14 255 B 0 1st Quadrant V	<b>3</b> 4 <b>-6</b> 716.11
_	0.0	Vertical 0.000	Horizontal	0.000	
9—		Scope	_		1.76.
	Syntax Error	X Min. 0.000	X Max.	0.000	
		Y Min. 0.000	Y Max.	0.000	1.76.
		Z Min. 0.000	Z Max.	0.000	1.76.
	<u> </u>		(		10 D11 7
			●Ready	Auto	Alarm

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ F5 Simulation $\rightarrow$ F5 Simu. Setting
- Function
  - $\diamond$  Setting the relative simulation item.
- Simulation parameter
  - 1. Color

• Provide 0~15 total 16 different kind of color.

- 2. Path Color
  - Simulation path color.
  - Provide 0~15 total 16 different kind of color.



- 3. Cursor Color
  - Color of cursor point
  - Provide 0~15 total 16 different kind of color.
- 4. RGB Value
  - Except the provided 16 different kind of color, user can define the color by theirself.

5. Draw Mode



• User can define the profile simulate plane.

YX ZY

XZ

■Plane can define are as below.

- XYZ
  XY
  XY
  YZ
  ZX
- 6. Setting quadrant
  - ■User can define the profile simulate plane is on

which quadrant.

■Quadrant can define are as below.



- Thrid
- Fourth

- 7. Simulate Mode
  - Setting profile simulate method.
  - Simulation
    - When user change to the <sup>I</sup> Monitor <sub>I</sub> page, simulation will become automatically.
    - When the system had scan all of the programs, simulation will execute, user do 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 start, following to the program cursor will begin simulation.
  - Not Simulation
    - Close the simulation function.
- 8. View Angle Setting
  - ■Under XYZ draw mode, by setting this parameter,

simulation will become 3D simulation.

- ■View angle can define are as below.
  - Vertical
  - ♦ Horizontal
- 9. Scope
  - ■Scope can define are as below.
  - ■Minimum

•	X-Axis
•	Y-Axis
•	Z-Axis
■Maxii	num
•	X-Axis
•	Y-Axis
•	Z-Axis

## 1.5.4 Can Cycle

G54 ATEST-161 N0 L1	Program	2013/7/2	16:57:54
G90 G00 X11.76. <u>Y16.18. Z10.:</u>	hmn : 0 d Cycle Menu	X	
M02			
	●Ready	Auto	Alarm

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F1 Can Cycle
- Function
  - $\Leftrightarrow \text{ Because Syntec system provides many kind of G code}$

and different G code have different kind of function.

When editing the program, this function can help user

to edit G code easily.

### 1.5.4.1 Insert Cycle

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F1 Can Cycle $\rightarrow$ F1 Insert Cycle
- Operation Method
  - Under the program edit page, move the cursor to the insert location and press 「Insert Cycle」, follow the instruction and insert the require G code.
  - ♦ Press 「OK」, the desire G code will insert into the next line of the current cursor.

## 1.5.4.2 Edit Cycle

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F1 Can Cycle $\rightarrow$ F2 Edit Cycle
- Function
  - $\diamond$  Edit the cycle of current cursor.
- Operation Method
  - $\diamond$  Move the cursor to the intend modify location, press

<sup>r</sup>Edit Cycle <sub>J</sub>, a modify page will show up. Modify

the content and press  $\lceil OK \rfloor$ , the content of the current cursor will change.



# 1.5.5 Block Copy

G54 ATEST-161 N0		20	013/7/2	17:01:38
Edit Program Name : 0318-Lesson-polar Lin	ne: 8 Column: 0			
G90 G00 X11.76. Y16.18.	Z10.;			<u> </u>
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				
< III				+
	- Re	ady Auto		Alarm
	UNC	Auto		Alaitti
Doth				

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F2 Block Copy
- Function
  - $\diamond$  In current program, this function provides more than

one line of program select, cut, copy and paste action.

### 1.5.5.1 Start Line

• Path

 $\Rightarrow$  F2 Program $\rightarrow$ Next $\rightarrow$ F2 Block Copy $\rightarrow$ F1 Start Line

- Function
  - $\diamond$  Select the beginning block.

### 1.5.5.2 End Line

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F2 Block Copy $\rightarrow$ F2 End Line
- Function
  - $\diamond$  Select the end block.

## 1.5.5.3 Block Cut

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F2 Block Copy $\rightarrow$ F3 Block Cut
- Function
  - $\diamond$  Cut the block that had been selected.

### 1.5.5.4 Block Copy

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F2 Block Copy $\rightarrow$ F4 Block

Copy

- Function
  - $\diamond$  Copy the block that had been selected.

### 1.5.5.5 Block Paste

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F2 Block Copy $\rightarrow$ F5 Block Paste
- Function

♦ Paste the block that had been  $\lceil Block Cut \rfloor and \lceil Block$ 

Copy 」.

- Operation Method
  - ♦ Move the cursor to the desire block and press  $\lceil$  Start

Line  $\Box$  and function key  $\ulcorner$  End Line  $\Box$  enable.

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

 $^{\mathsf{F}}$  End Line  $\lrcorner$  .

 $\rightarrow$ 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

 $^{\sqcap}$  Block Paste  $_{\perp}$ , the content that had been cut or copy will paste at the cursor location.

♦ If 「Block Copy」 is use, the block that had been selected will not disappear.

- Note
  - ♦ If 「Block Cut 」 is use, but the cutted programs do not paste, the program that had been cutted will disappear.

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

Copy \_ can paste many time.

#### 1.5.6 Teach

G54	ATEST-161 N0 I	_1 I	Program	20	13/7/2	17:04:32
Edit Program Name:031	8-Lesson-polar Line	:1 Colur	mn:0			
G90 G00 X11.	76. Y16.18. Z	Z10.;	<u> </u>	Ab	solu	te
G16G17;						
G00 X20. Y54	. R11.76;			Х		0.000
G03 X20. Y12	6. R11.76.;			Y		0.000
G03 X20. Y19	8. R11.76.;			-		
G03 X20. Y27	0. R11.76.;			Z		0.000
			E			
G03 X20. Y34	2. R11.76.;					
G03 X20. Y41	4.R11.76.;					
//G15;						
//M30;				Arc Mide	dle Point	
				X axis	coord.	
M02				Y axis	coord.	
			• • •	_		
	_	_	<ul> <li>Ready</li> </ul>	Auto		Alarm

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F3 Teach
- Function
  - ♦ Use function  $\[MPG_{\rfloor}/\[Scale{abc}]$  JOG  $\]/\[Scale{abc}]$  INJOG  $\]$ , move the

machine to destination and use <sup>r</sup> Teach <sup>a</sup> function, to teach the current absolute coordinate value to the NC program.

 $\diamond$  Omit the manual input problem.

#### 1.5.6.1 Rapid Teach

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ Next $\rightarrow$ F3 Teach $\rightarrow$ F1 Rapid Teach
- Function
  - $\diamond$  Add the current absolute coordinate as the value of
    - <sup>¬</sup>G00 Rapid Traverse <sub>→</sub> function in current program.

### 1.5.6.2 Line Cut Teach

- Path
  - ♦ F2 Program $\rightarrow$ Next $\rightarrow$ F3 Teach $\rightarrow$ F2 Line Cut Teach
- Function
  - $\diamond$  Add the current absolute coordinate as the value of

<sup>¬</sup>G01 Linear Cutting <sub>¬</sub> function in current program.

#### 1.5.6.3 Arc Cut Teach

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ Next $\rightarrow$ F3 Teach $\rightarrow$ F2 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 worktable to the arc center and press Arc
     Cut Teach , current absolute coordinate will be define as the arc center.

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Move the worktable to the ending of the arc and press
 <sup>¬</sup> Arc Cut Teach 」, current absolute coordinate will be define as the ending of the arc. Controller will automatically calculate the relation between middle and end point and determine whether to use G02 or G03. The calculation result will be added in current cursor location of program.

### 1.5.6.4 Cancel Arc Middle

- Path
  - ♦ F2 Program→Next→F3 Teach→F4 Cancel Arc Middle
- Function
  - $\diamond$  Clear the arc middle that had been set.
  - If the arc middle were not been set, this function will not enable.

## 1.5.6.5 Point Teach

- Path
  - $\Rightarrow$  F2 Program $\rightarrow$ Next $\rightarrow$ F3 Teach $\rightarrow$ F5 Point Teach
- Function
  - ♦ Move the worktable to the arc center and press  $\ulcorner$  Point

Teach \_ , current absolute coordinate will be added in current cursor location of program.

# 1.6 Offset/Setting

G54		TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:39:48
	ut Mode (A Absolute XWear	)bsolute (I  YWear	ncrement ZWear		Mach X Z	100 100	.000
1	0.000	0.000 0.000	0.000 <sub>.</sub> 0.000		Abso	0.005	.000
3	0.000	0.000	0.000		X Z	100 C 100	.000
4	0.000 0.000	0.000 0.000	0.000 0.000		Y		.000
6	0.000	0.000	0.000		Relat	tive	
7	0.000	0.000	0.000		X Z		.000
8	0.000	0.000	0.000		Y		.000
INC: +/-1	1.000			•Ready	Not Select	5	Alarm

- Path
  - ♦ F3 Offset/Setting
- Function
  - $\diamond$  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.

### **1.6.1** Tool Wear Set

G54		TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:39:48		
	ut Mode (A Absolute XWear	A)bsolute (I)	)ncrement ZWear		Macl X Z	100	).000 ).000		
1	0.000	0.000	0.000		Υ·	100	0.000		
2	0.000	0.000	0.000		Abso	Absolute			
3	0.000	0.000	0.000		Х	-20	0.000		
4	0.000	0.000	0.000		Z		).000 ).000		
5	0.000	0.000	0.000		Ť		0.000		
6	0.000	0.000	0.000		Rela	tive			
7	0.000	0.000	0.000		X		0.000		
8	0.000	0.000	0.000		Z Y		).000 ).000		
INC: +/-	1.000			<ul> <li>Ready</li> </ul>	Not Select		Alarm		

- Path
  - ♦ F3 Offset/Setting→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.

G54		TES	ST N-1 L1	Offset/Setting	2013	17/2	19:43:43		
	ut Mode (A Absolute	A)bsolute (I	)ncrement		Mac X	100010101	0.000		
1	XLength 0.000	YLength 0.000	ZLength 0.000		Z Y		0.000		
2	0.000	0.000	0.000		Abso	olute			
3	0.000	0.000	0.000		Х	1	0.000		
4	0.000	0.000	0.000		Z		0.000		
5	0.000	0.000	0.000		-		0.000		
6	0.000	0.000	0.000		Rela	tive			
7	0.000	0.000	0.000		X		0.000		
8	0.000	0.000	0.000		Z Y		0.000 0.000		
				•Ready	Not Select		Alarm		

### **1.6.2** Tool length Set

- Path
  - ♦ F3 Offset/Setting→F2 Tool Length Set
- Function
  - $\diamond$  Set the length of tool.
  - $\diamond$  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.

### 1.6.3 Tool Nose Set

G54		TES	ST N-1 L1	Offset/Setting	201	3/7/2	19:46:48		
	ut Mode (A bsolute	)bsolute (I)	ncrement		Mac X	hine	0.000		
1	Radius 0.000	R.Wear 0.000	Nose 0		ZY	100	D.000 D.000		
2	0.000	0.000	0		Abs	osolute			
3	0.000	0.000	0		Х		0.000		
4	0.000	0.000	0		Z		0.000 0.000		
5	0.000	0.000	0		Del				
6	0.000	0.000	0			ative			
7	0.000	0.000	0		X		0.000		
8	0.000	0.000	0		Z Y		0.000 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.



## **1.6.4** User Parameter Setting

G54	ATEST-161 N0 L1 Offset/Setting 2013/7/2	17:42:56
Index	ltem	/alue(Not Login)
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

- Path
  - ♦ F3 Offset/Setting→F4 User Parameter Setting
- Function
  - $\diamond$  Syntec controller provided user to set the related
    - machining parameter.
- Function of parameter

Manual  $\bot$  .

## 1.6.5 Working Shift

G54	TEST N-1 L1	Offset/Setting	2013/7/2	19:47:32
Input Mode:	Incremental	x, , , , , , , , , , , , , , , , , , ,	z Ab	solute
Shift Amount		Shift	Z X Z	-20.000
x	0.000		Z Y	100.000 100.000
z	0.000			
Incremental			Ma	achine
1. Move curse	or to X or Z field		Х	100.000
2. Input incre	ment value		Z	100.000
Absolute			Y	100.000
1. Input X*** t	o set X absolute positi	on		
2. Input Z*** t	o set Z absolute positio	on		
Can't set in bus	sying, execute G92 will	change shift amount	r.	
		•Ready	Not Select	Alarm

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

[ENTER].

■Increment Input

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

#### 1.6.6 Work Piece Cord.

G54		TEST	۲N-1L1	Offset/Sett	ing	2013/7	12	19:48:53
X Y	mal Shift 0.000 0.000	X Y	P1(G54) 120.000 0.000	X Y	P2(G55) 0.000 0.000		Vlachine X Z Y	9 100.000 100.000 100.000
Z G54I	0.000 P3(G56)	Z G541	0.000 P4(G57)	Z G541	0.000 P5(G58)		Relati∨e X Z Y	100.000 100.000 100.000
X Y Z	0.000 0.000 0.000	X Y Z	0.000 0.000 0.000	X Y Z	0.000 0.000 0.000		Aux. Co K K	ord 0.000 0.000 0.000
				•Re	eady Not	Select		Alarm

- Path
  - ♦ F3 Offset/Setting $\rightarrow$ Next $\rightarrow$ F1 Work Piece Cord.
- Function
  - $\diamond$  This function key switch the screen to the <sup> $\[ \]</sup> Work$ </sup>

Piece Cord *a* 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
  - $\diamond~$  After Setting  $~~^{\mathbb{F}}$  Work Piece Cord  $_{\mathbb{J}}$  , Tool Length

compensation need to re-setting again.

#### 1.6.6.1 Mach. Coord. Teach

- Path
  - ♦ F3 Offset/Setting→Next→F1 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

#### 1.6.6.2 Mach. Coord Inc. Teach

- path
  - ♦ F3 Offset/Setting→Next→F1 Work Piece Cord.→F2
     Mach. Coord Inc. Teach
- Function
  - $\diamond$  Current cursor located work piece coordinate will be

replaced by the 「Mechanical coordinate 」 plus

- Operation Method
  - $\diamond$  Move the worktable to the destination.
  - $\diamond$  Move the cursor to the relate work piece coordinate,

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
  - ♦ 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

#### 1.6.6.3 Inc. Input

- Path
  - ♦ F3 Offset/Setting→Next→F1 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
  - ♦ Current G54 X axis value is 5.000
  - $\diamond$  Move the cursor to G54 X axis.
  - ♦ Key in 10.
  - ♦ Press 「Inc. Input 」 function key ,the coordinate of
     G54 X axis become 15.000



# 1.7 Monitor

G54	TEST NO L1	Nonitor	2013/7	12	20:05:46	0:05:46	
Absolute X -20.000 Z 100.000 Y 100.000	Dist. To Go X 0.00 Z 0.00 Y 0.00	G18 G90		un Time ccum un Time 600 Over 601 Over 601 Over	0 : 0 : 0 : 0 100 9 100 9	% %	
Feedrate Spindle	0.0mm/mii 1000RPM	T 0000 Start Block		otalAcum Part Count		0	
G0X100.Y100.Z10 G00_X0.000 Z100.							
G04X5.S1000 G00 X100.000							
		•Ready No	t Select		Alar	m	

- ♦ 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

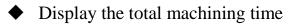
- Display current machining program
- The yellow single block indicates the current machined one



G54		TEST NO L1	Mor	itor <u>1</u>	201	3/7/2	20:05:46	5
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 G9 G71 G4		G01 Over	0 : 0 0 : 0 100 100 100	%
Feed Spind		0.0m 1000R	nm/min PM	T 000 Start Bloc No.	3.	TotalAcum Part Count		0
G0X1 G00 2 G04X	X100.000 Y10 00.Y100.Z10 X0.000 Z100. 5.S1000 X100.000	0.C100.	0.000	8	<b>'</b> 7			
<u> </u>				•Ready	lot Select			<b>₽</b>

## **1.7.1** Monitor area of machining information

- Description
  - This area and machining setting are overlapped, users can press "F4-parameter set" to exchange 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 n<sup>th</sup> row in program. (Ex: 20)
    - L+ n: Specify the starting single block is the n<sup>th</sup> 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
- Machining tool information
  - 8. T
- ♦ 4 codes displayed.
- First 2 codes is the tool number currently machining
- 2 subsequent codes specify the tool number executing compensation.

### 1.7.2 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 (N)
  - ♦ Interupt Colum No.
  - $\diamond$  Display the Colum No. interrupted at last time (N)
  - $\diamond$  Spindle speed
  - $\diamond$  Set the speed of spindle
  - $\diamond$  Can be set when system is on busy status. Moreover,
    - it will be enalbled immediately
- Feedrate
  - ♦ 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
  - $\diamond$  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.

## **1.7.3** Simulation graph

- Description
  - Display the tool trajectory of current machining program.
  - ♦ Related setting, please see "F2-program→
    F5-simulaiton→ F5- Simu. Setting."
  - ♦ Use "F2-simulation switch" to change display content

### 1.7.3.1 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

### 1.7.3.2 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.

### 1.7.3.3 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)
  - ♦ 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:
  - $\diamond$  must select MDI mode first

#### 1.7.3.4 Parameter set

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

"machining information"

#### 1.7.3.5 Tool wear set

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

setting tool wear here.

### 1.7.3.6 Work record

- Path:
  - ♦ F4 monitor → Next → F2 work record
- Description
  - ♦ Check current machining record, can export to

external storage devices



# 1.7.3.7 Clear Acum Cycle time

- Path:
  - ♦ F4 monitor → Next → F3 Clear Acum Cycle time
- Description
  - $\diamond$  Clear the accumulative time

## 1.7.3.8 Graph adjust

- Path:
  - ♦ F4 monitor → Next → F4 Graph adjust
- Description
  - $\diamond$  Zoom in/out simulation graph
- Operation
  - ♦ See "Zoom " in "simulation"

# 1.8 Maintain

- Path:
  - ♦ F5 Maintain
- Description
  - This function key displays alarm, network setting, fast diagnostic, PLC param setting, system setting



### 1.8.1 Alarm

G54		·	TEST N0 L1	ŀ	Alarm	201	13/7/2	20:06:11	
No.	Module	D	Issue Time	Conter	nt				
_	_	-			<ul> <li>Ready</li> </ul>	Not Select		Ala	ırm
	Det					-			

- 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

#### 1.8.1.1 Pending alarm

- Path:
  - ♦ F5 Maintain $\rightarrow$ F1 Alarm $\rightarrow$ F1 Pending Alarm
- Description
  - ♦ Display system alarm content at present

#### 1.8.1.2 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

#### 1.8.1.3 Save Alarm

- Path:
  - ♦ F5 Maintain $\rightarrow$ F1 Alarm $\rightarrow$ F3 Save alarm
- Description
  - $\diamond$  Save Alarm History to external disk.
  - $\diamond$  Default export file name:
  - $\diamond$  Actual alrm: actalm.txt.
  - $\diamond$  History: histalm.txt.



### 1.8.2 Network setting

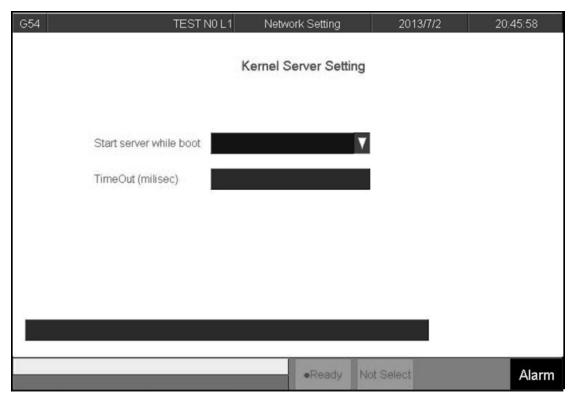
G54			TES	ST NO L1	Network Setting	2013/7/2	20:12:22
			IP Addres	s Paramete	r		
IP A	Address Set	ting		Specify an	IP Address	Y	
IP A	Address	210.	20.98.21	Name Se	rver Parameter		
Sub	onet Mask	255.2	255.255.0	Primary D	NS		
Def	ault Gatewa	210	.20.98.1	Primary V	VINS		
			Network Dis	skRemote H	ost Path		
PC	Name	NC	CYANG	Dir Name	123		
Use	er Name			Password	t l		
Net	Status	Code:	-1 Unknown	Error			
			Reso	urce Shared			
Sha	ared Folder I	Path	\DiskA\Oper	CNC\NcFile:	s		
					●Ready	Not Select	Alarm
							7 464111

- Path:
  - ♦ F5 Maintain  $\rightarrow$  F2 Network setting
- Description
  - $\diamond$  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 controller setting) and Subnet mask(same with controller setting)
- IP address
  - $\diamond$  Only used 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 of your PC.
  - $\diamond$  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.



1.8.2.1	Set	Kernel	Server
---------	-----	--------	--------



- $\diamond$  Path:
- ♦ F5 Maintain $\rightarrow$ F2 Network Setting $\rightarrow$ F5 Set Kernel

Server

- Description
  - $\diamond$  Setting function related to kernel server
  - $\diamond$  Related infor.
  - $\diamond$  Start server whie boot
  - $\diamond$  Setting whether server is started when booting
  - ♦ Timeout(Milisec)
  - $\diamond$  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



# **1.8.3 Fast Diagnostic**

G54	TES	TN0L1 Fast [	Diagnostic	2013/7/2	20:13:35
Browser::Ta	ıl				
FastSysData1	7067	FastSysData7	99	FastSysData11	-1
FastSysData2	360596	FastSysData12	0	FastSysData22	0
FastSysData3	72119	FastSysData14	5000	FastSysData23	0
FastSysData4	300495	FastSysData13	1000	FastSysData19	0
FastSysData5	2000	FastSysData15	0	FastSysData20	0
FastSysData6	10000	FastSysData16	0	FastSysData21	0
FastSysData10	23	FastSysData17	0	FastSysData24	0
FastSysData8	153358336	FastSysData18	0	FastSysData25	0
FastSysData9	153358336	FastSysData27	0.0.11	FastSysData26	6B
					_
	_		Ready No	ot Select	Alarm

- Path:
  - ♦ F5 Maintain $\rightarrow$ F3 Fast diagnostic
- Description
  - $\diamond$  Display simple diagnostic information of system and

axies

# 1.8.3.1 System data

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

- Path:
  - ♦ F5 Maintain $\rightarrow$ F3 Fast diagnostic $\rightarrow$ F1 System Data
- Description
  - $\diamond$  Display simple diagnostic information of system

4	TEST N0 L1	Fast Di	agnostic		2013/7/2	20:14:27
Browser::Tab		х		Y	z	
FastAxiesData	1	-20000	1	00000	100000	
FastAxiesData	1	100000	1	00000	100000	
FastAxiesData	13	100000	1	00000	100000	
FastAxiesData	4	100000	1	00000	100000	
FastAxiesData	15	0		0	0	
FastAxiesData	6	0		0	0	
FastAxiesData	7	5556		5556	5556	
FastAxiesData	8	0		0	0	
FastAxiesData	9	0		0	0	
FastAxiesData	10	0		0	0	
FastAxiesData	11	0		0	0	
FastAxiesData	12	0		0	0	
FastAxiesData	13	0		0	0	
			<ul> <li>Ready</li> </ul>	Not Se	lect	Ala

## 1.8.3.2 Axies data

- Path:
  - ♦ F5 Maintain $\rightarrow$ F3 Fast diagnostic $\rightarrow$ F2 Axies data
- Description
  - ♦ Display simple diagnostic information of Axies



1.8.4 <b>F</b>	PLC param	setting
----------------	-----------	---------

G54		TEST NO	IL1		Of	fset/:	Setti	ng			20	13/7					4:56	
Inde	< Item	Value	-	-							-			Valu	ie(N	lot L	.ogi	
3401	Extension Parameter(R		0	E 0	0	0	B	0	0	8	0	0	0	0	0	0		0
3402	Extension Parameter(R		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3403	Extension Parameter(F		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3404	Extension Parameter(R		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(F	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
3413	Extension Parameter(R	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3414	Extension Parameter(F	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3415	Extension Parameter(R	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3418	Extension Parameter(R	0x0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Comr	nent Extension Pa	rameter	Bit	R81	.1													
0~1		_					•Re	ady	N	ot S	elect						Ala	rm

- Path:
  - ♦ F5 Maintain → 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

# 1.8.5 System setting

G54	TE	EST NO L1	Offset/Setting	2013/7/2	20:15:32
Op	erator Mode Setting				
Inp	out/Display Unit(0:mm	, 1:inch)	0		
Sy	stem Time Setting				
Da	te 2013/7/2				
Tir	ne 20/15/32				
Pr	ogram file font szie se	etting			
Siz	20				
(0~1)			•Ready No	t Select	Alarm
(0 1)			1	1	

- Path:
  - ♦ F5 Maintain  $\rightarrow$  F5 System setting
- 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

#### 1.8.5.1 Operator mode setting

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

#### 1.8.5.2 System time setting

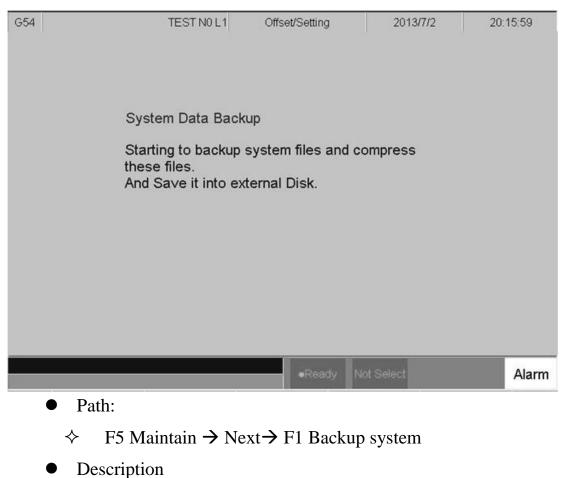
- ♦ Date: input format YYYY/MM/DD
- $\diamond$  YYYY: year
- $\diamond$  MM: month
- $\diamond$  DD: day
- ♦ Time: input format HH/MM/SS
- $\diamond$  HH: hours
- $\diamond$  MM: minute
- $\diamond$  SS: second

#### 1.8.5.3 Program file font size setting

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



# 1.8.6 Backup system



 $\diamond$  This area executes backup system data.

#### 1.8.7 About

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



# ${\bf 2} \,\, {\bf Machine \,\, operation \,\, panel}$

# 2.1 Operation panel

- POWER ON
  - $\diamond$  Turn on controller's power
- POWER OFF
  - ♦ 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

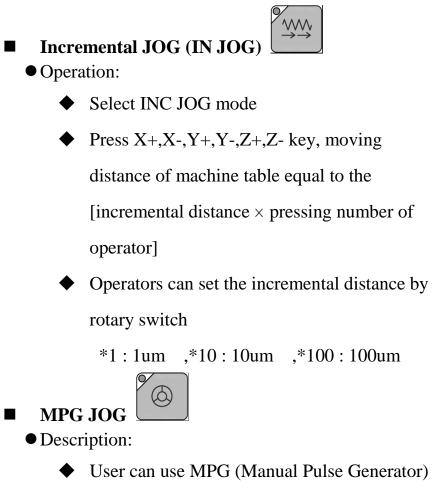
- CNC would start to return reference position (HOME)
- JOG mode (Rapid JOG)



- Operation:
  - Select JOG mode

- 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".



mode to move the machine table

- Operation:
  - Select MPG mode

• 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.



- 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



#### • 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

Ď

- MPG Simulation
  - Description:
    - Users can use this function to check NC file

#### • Operation:

- ♦ 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



• Description:

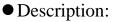
• User can use this function to check NC file

#### • Operation:

- ♦ Select AUTO mode
- 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.

Optional Stop



• 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

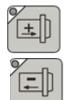


Spindle CCW rotation



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

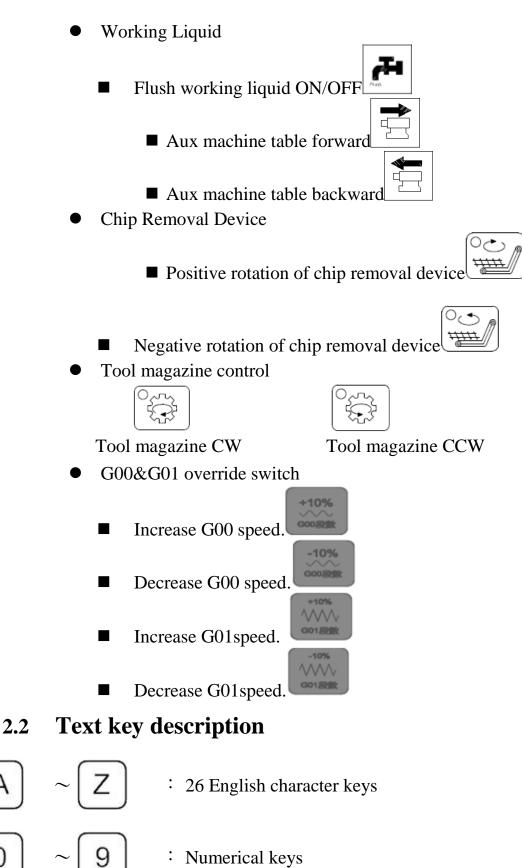
■ Spindle speed increases of 10%

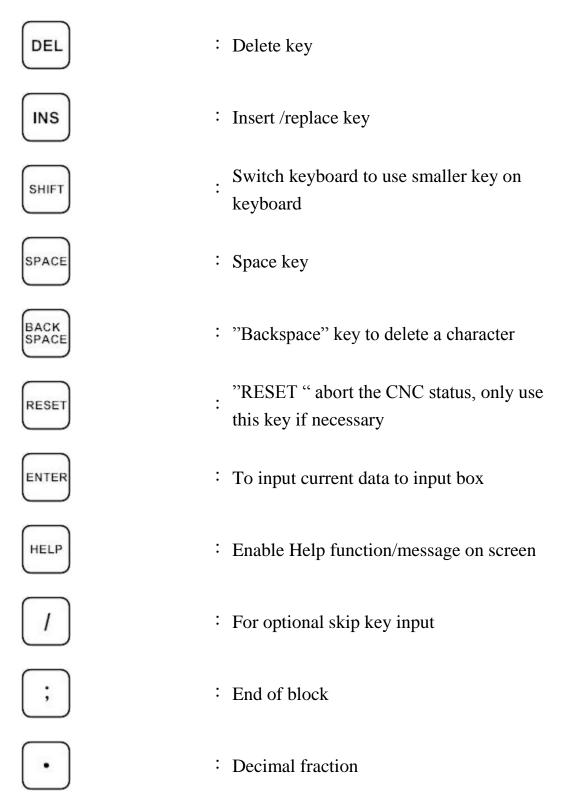


- Spindle speed decreases of 10%
- Working led & Blower
  - Working led ON/OFF



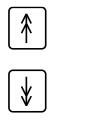
Blower ON/OFF



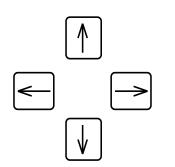


"((", ")", "[", "]", "!", "&", "\$", "#", "<", ">", "=", "%", "@", "\*", ":", ",", "+", "-" All above symbols are used for "Program Edit" mode.





: Switch cursor to Page Up /Page Down



: Edit cursor control key



# How to operate 6 series controller



#### 3.1 System status

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

#### 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

#### 12. 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.

#### 13. Busy

System is operating program Conditions:

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

#### 14. Pause

In operational process, system pauses the axis movement Conditions:

- Once Feed hold button is pressed when system is on "Busy" status, System will be switched from "Busy" to "Pause" status
- Note: On "Pause" status, Spindle still rotates

#### 15. 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**

• Manual Function

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

## 3.2.1 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
- $\Rightarrow$  JOG mode is selected
- Operation:
- $\diamond$  Press axis direction key (X+,X-,Y+,Y-,Z+...)
- Hold the axis direction key to keep the axis moving uninterrupted
- ♦ JOG speed can be adjusted by G01%

### 3.2.2 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 " $\sim$  "at the same time ,machine will move with G00- rapid speed

- Hold the axis direction key to keep the axis moving uninterrupted
- $\Rightarrow$  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.

### 3.2.3 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

#### 3.2.4 MPG

- Description:
  - $\diamond$  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

# 3.3 Machining process

#### 3.3.1 AUTO

- Condition:
  - ♦ System is on "Ready" status
  - ♦ 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

# 3.3.2 Single block

- Description:
  - $\diamond$  Excute each single block in program
- Condition:
  - ♦ System is on "Ready" status
  - $\diamond$  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



#### **3.4 HOME**

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

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



## **3.5 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.

G54	2	TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:43:43
	ut Mode (A Absolute	A)bsolute (I	)ncrement		Macl X	100	0.000
1	XLength 0.000	YLength 0.000	ZLength 0.000		Z Y	10.000	).000 ).000
2	0.000	0.000	0.000		Abso	lute	
3	0.000 0.000	0.000 0.000	0.000 0.000		X Z	0.000	).000 ).000
5	0.000	0.000	0.000		Y		0.000
6	0.000	0.000	0.000		Rela	tive	
7	0.000	0.000	0.000		X Z		0.000 0.000
8	0.000	0.000	0.000		Ϋ́		0.000
				<ul> <li>Ready</li> </ul>	Not Select		Alarm

#### 3.5.1 Tool length set

• 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 <sup>¬</sup>X\*\*\* 」 or <sup>¬</sup>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.
- $\diamond$  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.



#### 3.5.2 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

#### 3.5.2.1 Z axis tool length measurement

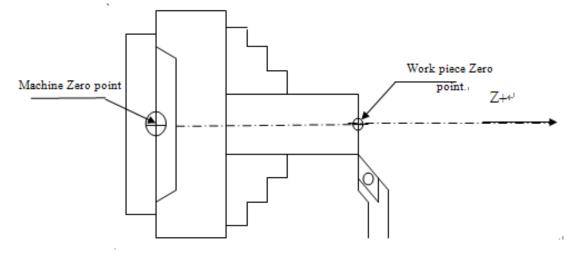
G54		TE	ST N-1 L1	Offset/Setting
Inp	ut Mode (A	)bsolute (I	)ncrement	
1	Absolute			
	XLength	YLength	ZLength	
1	0.000	0.000	0.000	
2	0.000	0.000	0.000	
3	0.000	0.000	0.000	

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
  - $\diamond$  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  $\lceil Z0$ , the workpiece

end face that just is cut is theworkpiece zero point.



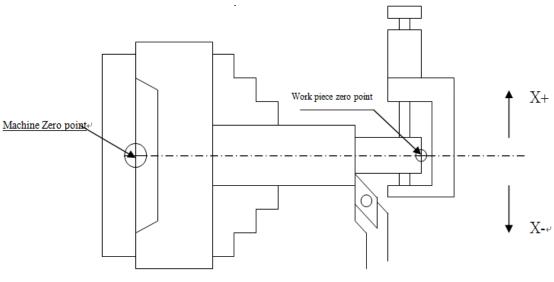
Note: After setting Z axis tool length by teaching method, Z axis tool wear value is set to zero automatically.

#### 3.5.2.2 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

110

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.



#### 3.5.2.3 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		TES	ST N-1 L1	Offset/Setting	2013/	7/2	19:39:48
	ut Mode (A Absolute	)bsolute (I	)ncrement		Macl X		0.000
1	XWear 0.000	YWear 0.000	ZWear 0.000		Z Y	10	0.000
2	0.000	0.000	0.000		Abso	olute	
3	0.000	0.000	0.000		X	10.00	0.000
4	0.000	0.000	0.000		Z		0.000 0.000
5	0.000	0.000	0.000		Rela		
6	0.000	0.000	0.000				
7	0.000	0.000	0.000		X		0.000
8	0.000	0.000	0.000		Z Y		0.000 0.000
INC:+/-	1.000		-	•Ready	Not Select	0	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.
- ♦ 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	Maxinc. value of input for tool	[1~200000]	BLU	1000	reset
3243	wear compen.(BLU)	[1~200000]			

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



#### 3.5.2.4 Tool nose setting

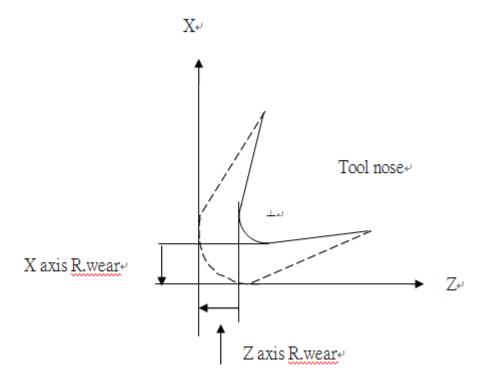
Tool nose is circular, however; tool length measurement only measures tool length, so for precision machining, users can set tool nose to compensate tool nose dimension error, operation method are shown as below:

#### • Path:

#### TEST N-1 L1 Offset/Setting 2013/7/2 19:46:48 Input Mode (A)bsolute (I)ncrement Machine Absolute Х 100.000 Ζ 100.000 Radius R.Wear Nose Y 100.000 0.000 1 0.000 0 Absolute 2 0.000 0.000 0 3 0.000 0.000 0 Х -20.000 Ζ 100.000 4 0.000 0.000 0 Y 100.000 5 0.000 0.000 0 Relative 6 0.000 0.000 0 Х 100.000 7 0.000 0.000 0 Ζ 100.000 8 0.000 0.000 0 Y 100.000 Ready 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: epending 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





#### 3.5.2.5 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
  - $\diamond$  Working shift function
- Path:
  - ♦ F3-Offset/Setting → F5 working shift

nput Mode:	Incremental	x, i i	AL	osolute
		Z'	100	
Shift Amount		<u>sua</u>	Z X Z	-20.000
				100.000
х	0.000		Y	100.000
Z	0.000			
Incremental			M	achine
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 positio	n		
2. Input Z***	to set Z absolute positio	n		
Can't set in bu	sying, execute G92 will o	change shift amount!		
		•Ready No	ot Select	Alar

Working shift function has 2 input methods.

- 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 <sup>¬</sup> X\*\*\* 」 or <sup>¬</sup> Z\*\*\* 」. <sup>¬</sup> \*\*\* 」 means absolute coordinate value of current position.



#### 3.5.2.6 Tool manager function

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

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	

- 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

- 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 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)
- 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

- 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 <li>lifetime prediction
- (3) End prediction: Lifetime prediction < Tool</li>
   Lifetime < Maximum Lifetime</li>
- $\diamond$  (4) End of Life: Maximum Lifetime < Tool Lifetime
- $\diamond$  (5)ware of tool

# **3.6 Program preparation and execute machining**

# 3.6.1 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



#### 3.6.2 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

# 3.6.3 Machining test

### 3.6.3.1 MPG simulation

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

# 3.6.3.2 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



# 3.6.4 Machining monitor

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

#### 3.6.4.1 Part count manager

- Description
  - 1. Total accumpart
  - $\diamond$  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
  - $\diamond$  Required part count is reached
  - $\diamond$  Change machining files
  - Modify the required part count, and the required part count is smaller than part count.

### 3.6.4.2 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.



#### 3.6.5 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.

#### 3.6.5.1 Emerency stop

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

#### 3.6.5.2 Alarm display

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

#### 1. Pending alarm

- $\diamond$  The current status of system alarm
- $\diamond$  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.

#### 3.6.5.3 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
  - $\diamond$  The smaller No. alarm is, the sooner alarm occurres



#### 3.5.2.3 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
  - $\Rightarrow$  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
  - ♦ Select OK to complete export alarm content
- File name
  - ♦ Actual alarm : Actalm.txt
  - ♦ History alarm : Histalm.txt

#### **3.6.6** 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			7				
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 :	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  $\lceil F1 \text{ OK} \rfloor$ , and then reboot controller to finish installation.



#### 3.6.7 PC setting

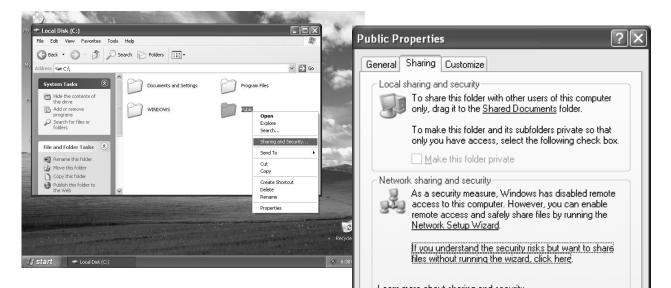
#### 3.6.7.1 **XP OS**

1. Guest account setting

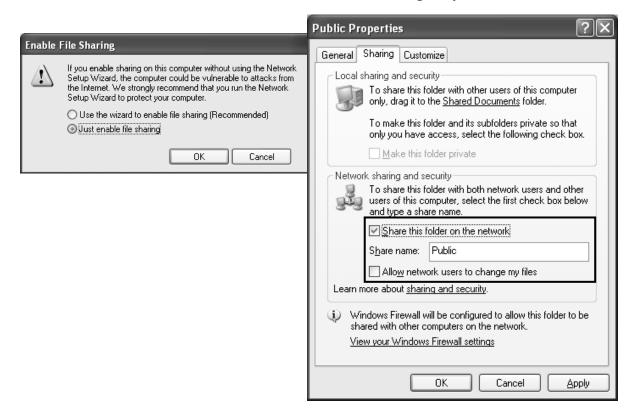
Log in as Administrator and select "start"  $\rightarrow$  "control panel"  $\rightarrow$  "user account"  $\rightarrow$  Guest

🗉 User Accounts	
G === 0 92 -==	
Learn About	දල් User Accounts
User accounts     User account types     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 account is off

- 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"



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





4. Setting PC name and workgroup

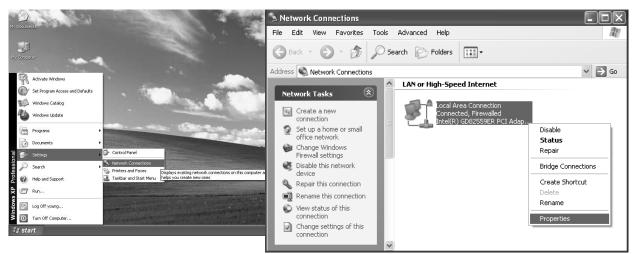
"Start"  $\rightarrow$  "control panel"  $\rightarrow$  "System"  $\rightarrow$  "change" to set "Computer Name" and "Workgroup", and remember these setting contents to use later on when setting controller.

System Properties	and the second sec	23
Computer Name Hardwa	are Advanced System Protection Remote	
Windows uses on the network	s the following information to identify your computer k.	Computer Name Changes
Computer description:	For example: "Kitchen Computer" or "Mary's Comouter".	You can change the name and the membership of this computer. Changes may affect access to network resources.
Full computer name:	HONGANNB	Computer name:
Workgroup:	SYNTECCLUB	YOUNG
Network ID.	domain or workgroup, click Network ID	Full computer name: YOUNG More
workgroup, click Change	e.	Member of
		O Domain:
		Workgroup:     SYNTECCLUB
1.1		
	OK Cancel Apply	OK Cancel



#### 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"

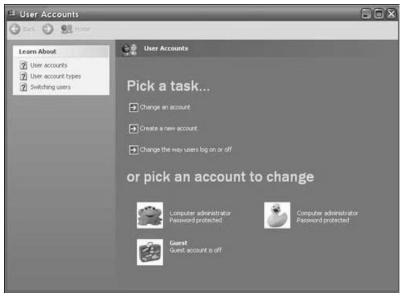
🕂 Local Area Connection Properties 🔹 🕐	
General Authentication Advanced	Internet Protocol (TCP/IP) Properties
Connect using:         Intel(R) GD82559ER PCI Adapter         Configure         This connection uses the following items:         Image: Client for Microsoft Networks         Ima	General         You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.         O       O         Datain an IP address automatically         O       Use the following IP address:         IP address:       210.20.98.20
Install         Properties           Description         Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Subnet mask:       255.255.255.0         Default gateway:       .         Obtain DNS server address automatically         Use the following DNS server addresses:
□ Sho <u>w</u> icon in notification area when connected ☑ Notify <u>m</u> e when this connection has limited or no connectivity OK Cancel	Breferred DNS server:       .       .         Alternate DNS server:       .       .         Adyanced       .
	OK Cancel



# 3.6.8 VISTA OS

#### 1. Guest account setting

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





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"

, Docs Properties	
Network File and Folder Sharing Docs Shared Network Path: \\VISTAPC\Docs	Advanced Sharing
Share Advanced Sharing Set custom permissions, create multiple shares, and set other advanced sharing options. Advanced Sharing 1	Share this folde 2 Settings Share name: Docs Add Remove Limit the number of simultaneous users to: 10 🜩
Password Protection People must have a user account and password for this computer to access shared folders. To change this setting, use the <u>Network and Sharing Center</u> .	Comments:
OK Cancel Apply	OK Cancel Apply

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



Group or user names:		
		4
	Add	Remove
Permissions for Evervone	Allow	Denv
elect Users or Groups		
Select this object type:		_
Users, Groups, or Built-in security principals		Object Types
From this location:		
Docs		Locations
Interty e object names to select (examples):		
Docs GUEST		Check Name
5 COLORIS IS		



#### 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.

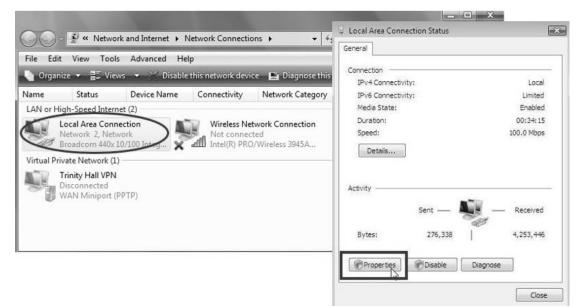
Object name: C: \Docs			
Group or user names:			
CREATOR OWNER		Security	
SYSTEM	-	Select Users or Groups	
٠ [	•	Select this object type:	
To change permissions, click Edit.	Edit	Users, Groups, or Built-in security principals From this location:	Object Types.
Permissions for Everyone Allow	Deny	Docs	Locations
Full control 🗸		Enterty object names to select (examples):	
Modify 🗸		Doc GUEST E	Check Names
Read & execute 🗸	E	5	)
List folder contents 🗸		Advanced	OK Cancel
Read 🗸			
Write 🗸	-	Modify	
or special permissions or advanced settings,	Advanced	Read & execute	V
lick Advanced.	,	List folder contents	
earn about access control and permissions		Read	<u>v</u>
		Learn about access control and permissions	

4. Setting PC name and workgroup

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

System Properties		<u>_</u>
Computer Name Hardwa	are Advanced System Protection Remote	
Windows uses on the networ	s the following information to identify your computer k.	Computer Name Changes
Computer description:	For example: "Kitchen Computer" or "Mary's Computer".	You can change the name and the membership of this computer. Changes may affect access to network resources.
Full computer name:	HONGANNB	Computer name:
Workgroup:	SYNTECCLUB	YOUNG
To use a wizard to join a Network ID.	domain or workgroup, click Network ID	Full computer name: YOUNG
To rename this compute workgroup, click Change	r or change its domain or Change	More
		O Domain:
		⊙ Workgroup:
		SYNTECCLUB
	OK Cancel Apply	OK Cancel

- 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"

eneral Authentication Advanced	Internet Protocol (TCP/IP)	Properties ?
Intel(R) GD82559ER PCI Adapter <u>Configure</u>		ed automatically if your network supports
This connection uses the following items: ✓ ■ Client for Microsoft Networks ✓ ■ File and Printer Sharing for Microsoft Networks	this capability. Otherwise, you n the appropriate IP settings. O Dbtain an IP address auto	eed to ask your network administrator for matically
☑ 💭 QoS Packet Scheduler ☑ 🐨 Internet Protocol (TCP/IP)	Use the following IP address:	210 . 20 . 98 . 20
Install     Properties       Description	S <u>u</u> bnet mask: <u>D</u> efault gateway:	255.255.255.0
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	<ul> <li>Obtain DNS server addres</li> <li>O Use the following DNS server</li> </ul>	
Sho <u>w</u> icon in notification area when connected Notify <u>m</u> e when this connection has limited or no connectivity	<u>P</u> referred DNS server: <u>A</u> lternate DNS server:	· · ·
OK Cancel		Ad <u>v</u> anced



# 3.6.9 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 CM 2320 Full Solution Win7 3 1 AP	Date modified Type 2012/2/11 上年 09: File folder	Size	
Downloads	Open Open in new window	2012/211 上午 0.5 File folder 78 下午 12:50 File folder 74 上午 10: File folder		B File Sharing
Libraries Decuments  Music Pictures Videos  Computer Local Disk (C:)  DATA (D:)  Network	Share with 전 知到還達得(A) 2 加到 (CNC-SHARNG.car'(T) 章 聖祖立臣왕平 章 聖祖句: CNC-SHARNG.car' 立용량( 11 共用 환자곳하으로 Restore previous versions Include in library Send to Cut Copy			Choose people to share with Type a name and then click Add, or click the arrow to find someone.
CNC-SHARING File folder	Create shorkout Delete Rename Properties	vin; Everyone		Em having trouble sharing

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

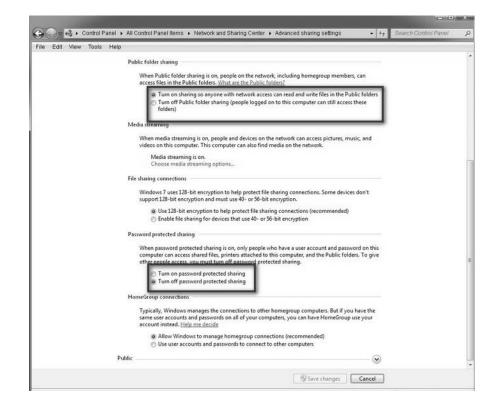
Network File and Folder Sharing arun Shared Network Path: \\ HONGANNB\arun Share	Share this folder Settings Share name: arun
Advanced Sharing Set custom permissions, create multiple shares, and set other advanced sharing options.	Add     Remove       Limit the number of simultaneous users to:     20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



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

Settings Share name:	Share Permissions Group or user names:		
Add Remove Limit the number of simultaneous users to:	Administrators (TaylorGibb-1	PC\Administrators)	
Comments:	Permissions for Everyone	Add	Remove
Permissions Caching	Full Control Change Read		

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





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:	B: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 Tools	Computer description:	
	Workgroup:	SYNTEOCLUB .

- 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"

etworking Sharing	Internet Protocol Version 4 (TCP/IP	V4) Properties
Connect using:   Atheros AR8131 PCI-E Gigabit Ethemet Controller (NDIS {  Configure  This connection uses the following items:	General You can get IP settings assigned a	utomatically if your network supports ed to ask your network administrator
Client for Microsoft Networks	Obtain an IP address automa	
✓       ♥ Virtual PC Network Filter Driver         ✓       ♥ QoS Packet Scheduler         ✓       ● File and Printer Sharing for Microsoft Networks         ✓       ▲ Internet Protocol Version 6 (TCP/IPv6)         ✓       ▲ Internet Protocol Version 4 (TCP/IPv4)	Ouse the following IP address:     IP address:     Subnet mask:     Default gateway:	10 . 10 . 1 . 20 255 . 255 . 255 . 0
-&- Link-Layer Topology Discovery Mapper I/O Driver     -&- Link-Layer Topology Discovery Responder      Install     Uninstall     Properties      Description     Transmission Control Protocol/Internet Protocol. The default     wide area network protocol that provides communication	<ul> <li>Obtain DNS server address a</li> <li>Use the following DNS server</li> <li>Preferred DNS server:</li> <li>Alternate DNS server:</li> </ul>	
across diverse interconnected networks.	Validate settings upon exit	Advanced



# 3.7 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.

# 3.7.1 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
  - ♦ Press F4 cancel select to cancel the selected file
  - After complete file transfer, press [left] or [ESC] to leave this screen

G54		HW1 N0 L1	File Manager	2013/12/23	19:25:28
Disk			File Manager		X
Nan 1 12 123	VUSBDisk VDiskA	Network	External d	evice stat	us
190_	DiskC2\OpenCNC\Nc	Files	USBDisk		
2	Name	Size	^ Name	Size	
asd bug COS DO G01: G02: G10 G10 G10	□ □ 1 □ □ 12 □ □ 123 □ □ 190_115-G.NC □ □ 2 □ □ asd □ □ bug Source	12941 11 55 6009 42 12941 ce <b>∳iles</b>	20 20 20 20 20 20 20 20 20 20 20	stination	files
G10 g123 g200 G21 h3 hw1	DO G0130 G0231 C1000	2 4816 5322	20 20 20 6 Files Free Space: 818	15195KB Name	
hw2			•Ready	Home	Alarm

## 3.7.2 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.

Image: Name     Size     Month       Image: Name     Size     Month
Name     Size     Mo       Image: Size     Mo
Name Size Mo Name Size Mo
□ ͡ · · · · · · · · · · · · · · · · · ·
□⊒ File Manager
VDiskC\OpenCNC\NcFiles 1 SubDirs 0 Files Free Space: 420063903KB Name:

# **4** Appendix

# 4.1 Release note

Doc. Ver.	Content	Release Date	Author	Review er	CN C Ver.
1.0	6 Series Lathe Operation Manual	2013/07/ 08	許維中 段生杏		0.0.1
1.1	Modify [WorkPiece Cord] key	2014/03/ 02	Andy Ngo	Changh ungan	
1.2	Modify Network setting	2014/06/ 27	Andy Ngo	Changh ungan	
1.3	Add Chinese topic, and increase front size	2015/11/ 13	Linda Chen	Yu-An Chiang	
4					

# 4.2 Contact Window

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County 420, Taiwan, R.O.C	
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